

MISSOURI STATE HIGHWAY DEPARTMENT
 BRIDGE OVER THE MISSOURI RIVER
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT I-229 (14),(16) a,b,c (FAI-RT.1) - I-70-3 (15) a,b (RT. I-70)
 BOONE - COOPER COUNTIES
 1957

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SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MISSOURI

APPROVED

SUBMITTED BY:
MO. STATE HIGHWAY DEPARTMENT

J.A. Williams 8-15-1957
BRIDGE ENGINEER DATE

APPROVED:
MO. STATE HIGHWAY DEPARTMENT

Rev. M. Wilson 8/15-1957
CHIEF ENGINEER DATE

SUBMITTED BY:
James F. ...
REGISTERED PROFESSIONAL ENGINEER
MISSOURI NO. E-99

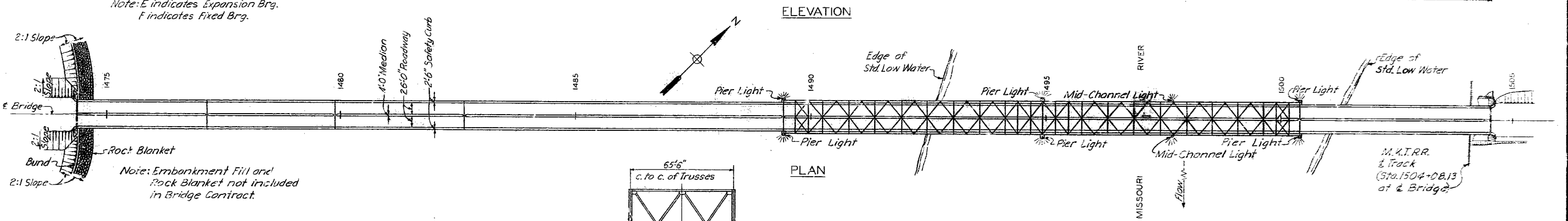
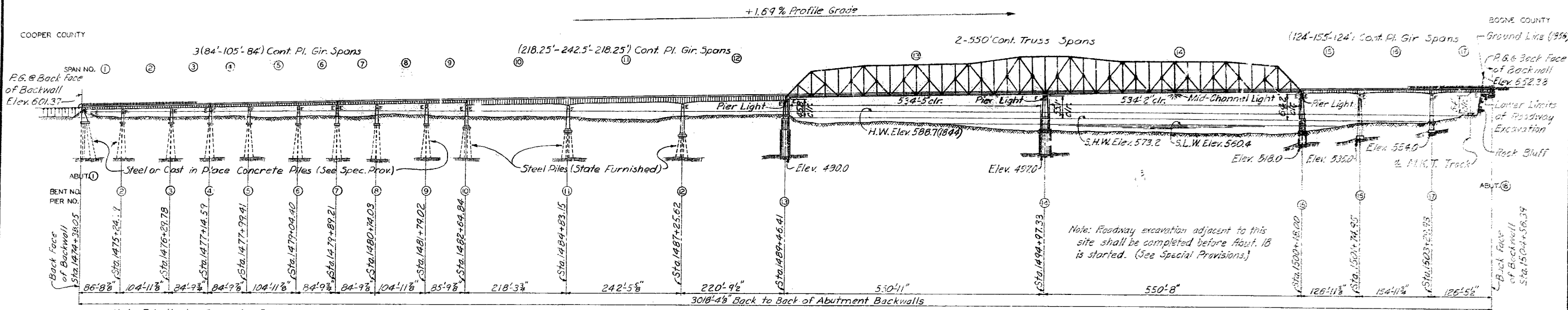
STANDARD

L-962

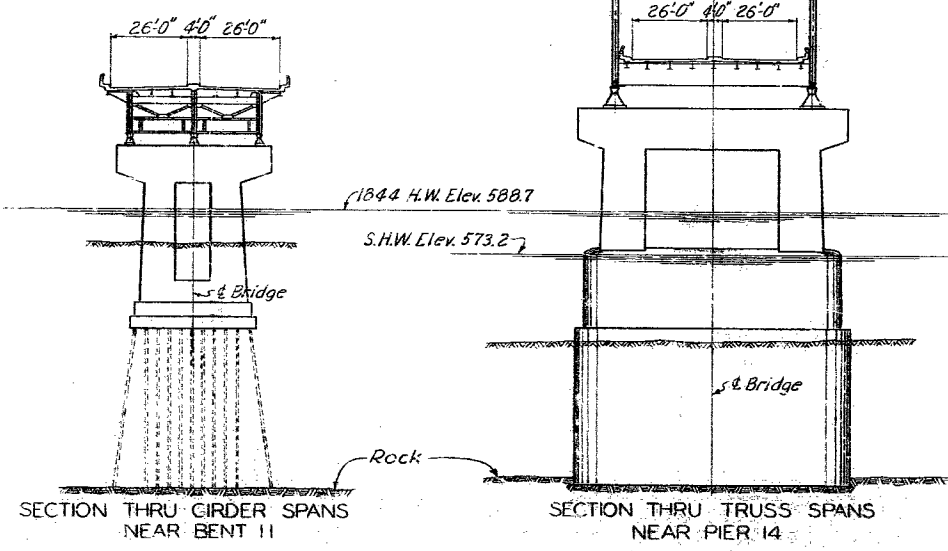
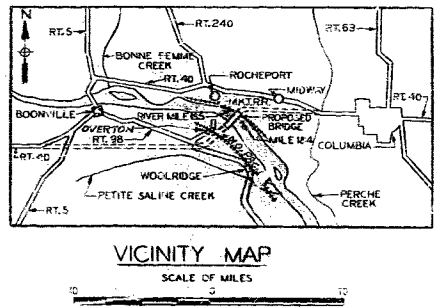
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MISSOURI STATE HIGHWAY DEPARTMENT

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



BENCH MARKS: *50—U.S. Corps of Engineers
 R-184.6. Brass cap in concrete post
 Flush with ground—10' Rt. of Sta. 1487-86.
 Elev. 579.84
 *52—U.S. Corps of Engineers
 L-184.51 on East bank of the Missouri
 River—115' Rt. of Sta. 1555-65. Elev. 588.82.



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) sub (FAI RT. I) STA. 1474+38.05
 I-70-3(15) sub (RT. I-70)
BOONE—COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

1427
 365/102
 DRAWN BY: N.J. Ballar d, Nov. 1956
 TRACED BY:
 CHECKED BY: E. Lemcoe, Dec. 1956

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

GENERAL PLAN AND ELEVATION

SHEET 2 OF 8

L-962

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YR.	SHEET NO.	TOTAL SHEETS
3	MO.		19	4	

GENERAL NOTES

SPECIFICATIONS: Missouri State Highway Commission (1955 Standard) and Special Provisions.

DESIGN LOADING: In accordance with Division III of the A.A.S.H.O. Standard Specifications for Highway Bridges, 1953 edition, with the following exceptions and interpretations:

Live Load: H20-S16-44, except for the design of floor systems (stringers and floor beams of truss and girder spans), a special loading of 2-24,000 lb. axles at 4'-0" centers is used where this loading governs over the standard H20-S16 truck loadings. For lane loads, the standard loading is used.

For truss spans only, the concentrated load used in combination with a lane load is taken as 26,000 lbs. for both shear and moment calculations.

Safety Curb Live Load: None

Dead Load: Provision is made for a future wearing surface of 15 pounds per square foot of roadway surface and utilities weighing 200 pounds per foot of bridge in addition to the weight of the structure.

(Wind Load) Provision is made for transverse, longitudinal, quartering and vertical wind forces.

For superstructure design, the transverse wind forces are assumed to be:

- (1) 50 pounds per square foot on 1/2 times the area of the span in elevation or
- (2) a combination of 30 pounds per square foot on 1/2 times the area of the span in elevation and 200 pounds per lineal foot of bridge on the live load.

For substructure design, the transverse wind loads from the superstructure are assumed to be:

- (3) 50 pounds per square foot on 1/2 times the area of the span in elevation or
- (4) a combination of 15 pounds per square foot on 1/2 times the area of the span in elevation and 100 pounds per lineal foot of bridge on the live load.

Transverse wind forces on substructure units are assumed to be 50 pounds per square foot when combined with loading (3) above, or 15 pounds per square foot when combined with loading (4) above.

Longitudinal wind force on the superstructure spans is as specified in the A.A.S.H.O.

For a quartering wind (45° to bridge centerline), the simultaneous lateral and longitudinal forces applied to a continuous superstructure unit are as follows:

For truss spans:
Lateral-----70% times total transverse wind.
Longitudinal-----35% times total transverse wind.

For girder spans:
Lateral-----70% times total transverse wind.
Longitudinal-----17% times total transverse wind.

Wind area of substructure units is actual projection. A vertical wind force acting on the truss spans only is assumed in design of shoes and substructure. The assumed force is an upward force of 20 pounds per square foot of plan area acting at the windward quarter point of plan width. This vertical wind force is used in combination with the transverse wind of 50 pounds per square foot for stability investigation.

Impact: No impact for substructure units.

FOUNDATION DESIGN LOADS: Maximum computed load on foundations is limited to the following:

	14BP73	14BP89	Rock Bearing
Tons per pile	64	78	12
Vertical Forces	64	78	12

When vertical forces are combined with lateral and/or longitudinal forces, the maximum computed load is limited to a percentage of the above maximums, as specified in A.A.S.H.O. Art. 3.4.1.

DESIGN UNIT STRESSES FOR CONCRETE:

Concrete in flexure---- f_c = 1,200 pounds per square inch.
Reinforcing Steel-----20,000 pounds per square inch.
These unit stresses apply for all loadings except that higher unit stresses are allowed for construction loadings of coissons.

REINFORCEMENT: All dimensions to reinforcing steel on detail drawings are to centerline of bar, except where the clear dimension is noted from the face of concrete. All reinforcing steel shall be lapped a minimum of 32 diameters of splices unless otherwise shown or noted.

ROADWAY WEARING SURFACE: The roadway slab as detailed includes a 1/2" wearing surface poured monolithically with slab.

CONCRETE: Class B air-entrained concrete shall be used for all substructure concrete, including bases of Piers 13, 14 and 15. Class B-1 air-entrained concrete shall be used for all superstructure concrete. (Concrete for cast-in-place piles shall be as noted in the Special Provisions).

BEVELED EDGES: All exposed edges of concrete shall be beveled 3/4" unless otherwise shown or noted.

CONSTRUCTION JOINTS: Construction joints shall be made only at locations shown on the plans, except that the Engineer will approve such changes to construction joints in the coissons and ice breakers as may be necessary or desirable for a satisfactory handling of this work. Provide keys at all construction joints.

BEARING AREAS: Raised bearing areas on piers shall be poured monolithically with pedestal or cap. All bearing areas to receive superstructure shall be finished perfectly smooth and level at the elevations shown on the plans. (See Standard Specifications).

ANCHOR BOLT WELLS: Care shall be exercised in locating anchor bolts and anchor bolt wells to the dimensions shown on the detail drawings.

STRUCTURAL CARBON STEEL: All structural steel unless otherwise noted shall be Structural Carbon Steel and shall conform to A.S.T.M. Specification A7.

WELDING: All welding shall be in accordance with the "Standard Specifications for Welded Highway and Railway Bridges" of the American Welding Society as supplemented by the Special Provisions. Qualification of welding operators will be required.

ROCK FOUNDATION: For Bents 16 and 17, all loose, shelly or disintegrated rock shall be removed and the footings placed on or into hard, solid undisturbed rock. If soft rock or shale is encountered these footings shall be carried at least 2'-0" into and cast against vertical faces of same. Abutment 18 shall be carried at least 2'-0" into rock and cast against vertical faces of same with bottom at Elevation 641.0.

PILES: Steel Piles for Bents 10, 11 and 12 shall be 14BP89 (Site Furnished) and shall be driven to sustain a minimum load of 100 tons. Piles for Abutment 1 and Bents 2 to 9 inclusive shall be 14BP73 or cast-in-place concrete piles (See Special Provisions) and shall be driven to sustain a minimum load of 80 tons. All piles are to be driven to rock with a steam hammer.

WELDABLE STRUCTURAL CARBON STEEL: Weldable structural carbon steel shall conform to A.S.T.M. Specification A373.

MANGANESE STRUCTURAL STEEL: See Special Provisions.

STRUCTURAL LOW-ALLOY STEEL: Structural Low-Alloy Steel shall conform to A.S.T.M. Specification A242 as modified by the Special Provisions.

RIVET STEEL: Rivet Steel shall conform to A.S.T.M. Specification A141.

FABRICATION: Fabrication shall be in accordance with the requirements of the Standard Specifications as revised and supplemented by the Special Provisions.

ERECTION: For notes on erection of truss spans see Sheet 39 and Special Provisions. For erection of girder spans, see Special Provisions.

PAINTING OF METAL WORK: See Special Provisions.

SHOES: All finished surfaces shall be coated with white lead and tallow before leaving the shop.

WATERPROOFING: Superstructure deck shall be waterproofed. See Special Provisions.

TURNED BOLTS: The diameter billed on drawings shall be the shank diameter. The threaded portion shall be 1/8" smaller in diameter than the shank and the hole shall be 3/8" in diameter larger than the shank.

GALVANIZING: Payment for galvanizing will be considered as fully covered under contract prices for other items, See Special Provisions.

JOINT FILLER: Where joint filler is specified on the plans it shall conform to the requirements for "Gray Rubber Compound Joints" as given in Section 59-22B of the Standard Specifications. Payment for filler will be included in contract prices for items in which it is placed.

JOINT SEAL: Where joint seal is specified it shall conform with the requirements as given in the Standard Specifications. Payment for joint seal will be included in contract prices for other items of work.

RUBBER WATERSTOP: Payment for rubber waterstop will be included in contract unit prices for concrete.

MASONRY PADS: See Special Provisions.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

TABLE OF ESTIMATED QUANTITIES

SUBSTRUCTURE - PIERS 13, 14 AND 15		Quantity
Item	Unit	Quantity
Class B Concrete (except Bases of Piers 13, 14 and 15)	Cu. Yds.	5,173
Class B Concrete (Base of Pier 13)	Cu. Yds.	3,005
Class B Concrete (Base of Pier 14)	Cu. Yds.	4,014
Class B Concrete (Base of Pier 15)	Cu. Yds.	1,367
Reinforcing Steel	Lbs.	571,990
OTHER SUBSTRUCTURE		1,229 (16)
Class 1 Excavation for Structures	Cu. Yds.	4,540
Class 2 Excavation for Structures	Cu. Yds.	2,945
Class B Concrete	Cu. Yds.	4,699.8
Class B Concrete in Seal Courses	Cu. Yds.	371.1
Reinforcing Steel	Lbs.	549,730
14 BP 73 Steel Piles in Place (Alternate "A")	Lin. Ft.	15,828
14 BP 89 Steel Piles in Place (State furnished)	Lin. Ft.	8,984
Porous Backfill	Cu. Yds.	29
6" Class B Perforated Corrugated Metal Pipe Underdrain	Lin. Ft.	65
6" Class B Corrugated Metal Pipe Underdrain	Lin. Ft.	16
Concrete Piles in Place (Alternate "B")	Lin. Ft.	15,828
SUPERSTRUCTURE		1,229 (16)
Class B-1 Concrete	Cu. Yds.	1,229 (16)
Fab. Structural Carbon Steel (Pl. Girder Spans)	Lbs.	2,330,000
Fab. Manganese Structural Steel (Pl. Girder Spans)	Lbs.	2,676,000
Fab. Structural Low-Alloy Steel (Pl. Girder Spans)	Lbs.	35,400
Fab. Structural Carbon Steel (Truss Spans)	Lbs.	3,995,000
Fab. Manganese Structural Steel (Truss Spans)	Lbs.	4,540,000
Fab. Structural Low-Alloy Steel (Truss Spans)	Lbs.	54,000
Steel Castings (Pl. Girder Spans)	Lbs.	67,820
Steel Castings (Truss Spans)	Lbs.	82,400
Reinforcing Steel	Lbs.	1,105,140
Roadway Inlets, Drains and Downspouts	Lump Sum	1
Aluminum Alloy Handrail	Lin. Ft.	6,030
Navigation Lighting System	Lump Sum	1

Note:

"Estimated Quantities of 14BP89 piles in place include an allowance of 8" per splice as payment for an estimated number of 36 splices. Excavation for bridge above Elev. 581.0 shall be paid for as Class 1 Excavation for Structures. Excavation for bridge made below Elev. 581.0 shall be paid for as Class 2 Excavation for Structures. The cost of excavation necessary for the construction of Piers 13, 14 and 15 shall be included in the price bid for Class B concrete (Base of Piers 13, 14 and 15). The volumes of Class B concrete (Base of Piers 13, 14 and 15) are the gross volumes of the bases as shown on the plans with no deductions for the wells.

Revision & Wind Load April 22, 1957 by N.W.S. Chkl. E.L.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA

ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16)abc (FAR RT 1) STA. 1474+38.03

I-70-3(15)abc (RT. 170)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

GENERAL NOTES AND QUANTITIES

SHEET 4 OF 4

L-962

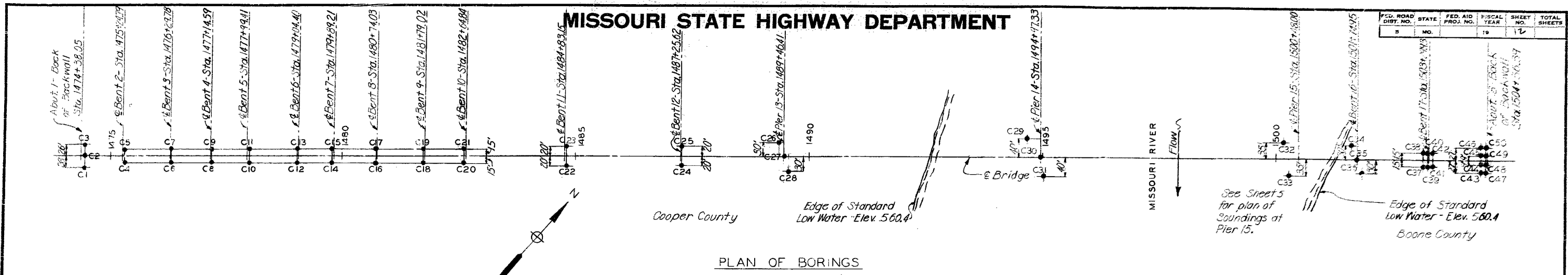
SEE FINAL PLANS BROWN LINES

382

DRAWN BY: W.L. Ballard, Nov. 1956
TRACED BY:
CHECKED BY: E. Lemcoe, Dec. 1956
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1427

MISSOURI STATE HIGHWAY DEPARTMENT

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



PLAN OF BORINGS

LOG OF BORINGS

ELEV.	HOLE C1 Station 1474+45 26' Rt. of & Bridge	HOLE C2 Station 1474+45 On & Bridge	HOLE C3 Station 1474+45 26' Lt. of & Bridge	HOLE C4 Station 1475+26.25 15' Rt. of & Bridge	HOLE C5 Station 1475+26.25 15' Lt. of & Bridge	HOLE C6 Station 1476+30.25 15' Rt. of & Bridge	HOLE C7 Station 1476+30.25 15' Lt. of & Bridge	HOLE C8 Station 1477+15 15' Rt. of & Bridge	HOLE C9 Station 1477+15 15' Lt. of & Bridge	HOLE C10 Station 1478+00 15' Rt. of & Bridge	HOLE C11 Station 1478+00 15' Lt. of & Bridge	HOLE C12 Station 1479+04 15' Rt. of & Bridge	HOLE C13 Station 1479+04 15' Lt. of & Bridge	ELEV.
590														590
580	577.8	577.4	577.9	576.7	577.1	575.5	575.5	577.6	578.4	579.0	576.8	577.2	577.2	580
570														570
560	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	560
550	553.8	550.4	553.9	552.7	553.1	551.5	553.3	553.0	554.4	554.0	552.8	553.2	553.2	550
540	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	540
530														530
520	523.8	520.4	523.9	522.7	523.1	521.5	523.3	523.0	524.4	524.0	522.8	523.2	523.2	520
510	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	510
500	496.8	496.4	496.9	494.7	496.1	494.3	496.5	496.6	497.4	497.0	495.8	496.2	496.2	500
490	Sand and Gravel	Sand & Gravel	Sand & Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	490
480	486.6	486.1	487.4	483.0	487.4	483.4	485.0	486.3	487.9	486.4	486.2	484.1	486.1	480
470	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	470

ELEV.	HOLE C14 Station 1479+88.5 15' Rt. of & Bridge	HOLE C15 Station 1479+88.5 15' Lt. of & Bridge	HOLE C16 Station 1480+73.5 15' Rt. of & Bridge	HOLE C17 Station 1480+73.5 15' Lt. of & Bridge	HOLE C18 Station 1481+77.5 15' Rt. of & Bridge	HOLE C19 Station 1481+77.5 15' Lt. of & Bridge	HOLE C20 Station 1482+62 15' Rt. of & Bridge	HOLE C21 Station 1482+62 15' Lt. of & Bridge	HOLE C22 Station 1484+83.25 20' Rt. of & Bridge	ELEV.
590										590
580	576.7	577.3	576.6	577.0	577.1	576.7	577.5	577.0	576.4	580
570										570
560	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	560
550	552.7	553.3	552.6	553.0	553.1	552.7	553.5	553.0	552.4	550
540	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	540
530										530
520	522.7	523.3	522.6	523.0	523.1	522.7	523.5	523.0	522.4	520
510	Coarse Sand and Gravel	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	510
500										500
490	496.3	493.6	493.6	496.9	496.1	495.7	496.5	496.0	495.4	490
480	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	Coarse Sand and Gravel	480
470	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	470

Notes:
 For log of borings of holes C23 thru C50, See sheet 5
 The subsurface data shown hereon were obtained by
 auger borings and core borings at the locations indicated.
 These data are furnished for information only and do
 not guarantee the actual conditions which may be found
 when the work is executed.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(14) a,b,c (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGRS - ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: R.D. Miller, Nov. 1956
 TRACED BY:
 CHECKED BY: A. Korr, Dec. 1956

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

MISSOURI STATE HIGHWAY DEPARTMENT

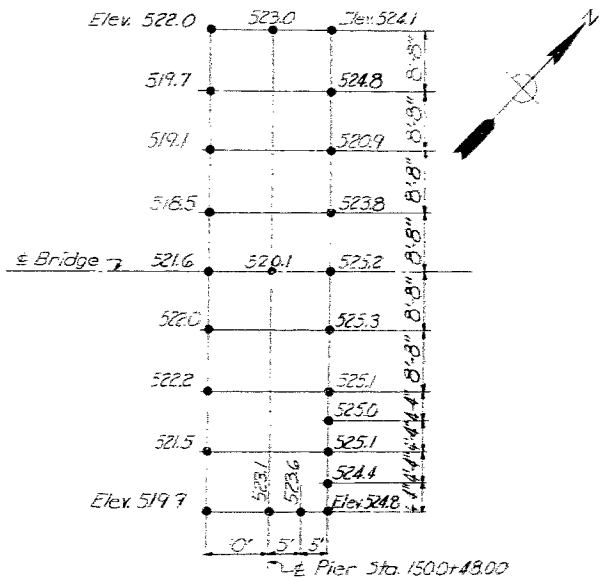
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	3	3

ELEV.	HOLE C23 Station 1484+83.25 20' Lt. of Bridge	HOLE C24 Station 1487+26 20' Rt. of Bridge	HOLE C25 Station 1487+26 20' Lt. of Bridge	HOLE C26 Station 1489+36 30' Lt. of Bridge	HOLE C27 Station 1489+46.5 On Bridge	HOLE C28 Station 1489+56 30' Rt. of Bridge	HOLE C29 Station 1494+83.5 40' Lt. of Bridge	HOLE C30 Station 1494+97.5 On Bridge	HOLE C31 Station 1495+01.5 40' Rt. of Bridge	HOLE C32 Station 1500+18 35' Lt. of Bridge	HOLE C33 Station 1500+28 35' Rt. of Bridge	HOLE C34 Station 1501+63 30' Lt. of Bridge	HOLE C35 Station 1501+73 On Bridge	ELEV.
590														590
580	576.5	575.9	576.6	578.9	579.7	580.2								580
570							Water	Water						570
560	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	562.6	562.4	562.5	562.7	562.6	562.0	562.4	560
550	552.5	551.9	552.6	554.9	555.7	556.2	550.1	548.4	547.5	542.7	549.1	551.0	551.4	550
540														540
530	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	Fine Sand	534.6	531.9	527.5	527.5	527.1	535.0	536.4	530
520	522.5	521.9	522.6	522.9	523.7	526.2	528.7	524.7	527.5	524.7	527.1	535.0	536.4	520
510	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	Coarse Sand	510
500	495.5	495.9	496.0	499.9	499.7	500.2	498.1	498.1	497.7	498.6	506.5			500
490	Coarse Sand & Gravel	Sand & Gravel	Sand & Gravel	Sand & Gravel	Sand & Gravel	Sand & Gravel	488.1	488.1	485.7	485.7	485.7			490
480														480
470	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Gray Limestone (Hard)	Gray Limestone (Hard)	Gray Limestone (Hard)	Gray Limestone (Hard)				470

ELEV.	HOLE C36 Station 1501+83 30' Rt. of Bridge	HOLE C37 Station 1503+18 15' Rt. of Bridge	HOLE C38 Station 1503+18 15' Lt. of Bridge	HOLE C39 Station 1503+28 15' Rt. of Bridge	HOLE C40 Station 1503+28 15' Lt. of Bridge	HOLE C41 Station 1503+38 15' Rt. of Bridge	HOLE C42 Station 1503+38 15' Lt. of Bridge	ELEV.
590								590
580		578.8		581.8	579.4	581.9	581.1	580
570			574.3	566.8	566.9	566.9	566.1	570
560	566.4	566.8	564.3	561.8	564.4	561.9	561.1	560
550	551.4	554.8	554.5	553.5	554.3	556.0	553.2	550
540	Silty Clay	Silt	Blue Clay	Blue Clay	Blue Clay	Blue Clay	Blue Clay	540
530	Sand	Blue Clay	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	530
520	Top of Rock	Top of Rock						520

ELEV.	HOLE C43 Station 1504+44.5 27' Rt. of Bridge	HOLE C44 Station 1504+44.5 9' Rt. of Bridge	HOLE C45 Station 1504+44.5 9' Lt. of Bridge	HOLE C46 Station 1504+44.5 27' Lt. of Bridge	HOLE C47 Station 1504+54.5 27' Rt. of Bridge	HOLE C48 Station 1504+54.5 9' Rt. of Bridge	HOLE C49 Station 1504+54.5 9' Lt. of Bridge	HOLE C50 Station 1504+54.5 27' Lt. of Bridge	ELEV.
690									690
680	680.4	675.8		670.8	675.7	671.2	665.6	661.1	680
670	675.3	669.2	669.2	665.1	669.0	664.5	657.4	661.1	670
660	Clay & Boulders	Clay & Boulders	Clay & Boulders	Clay & Boulders	Clay & Boulders	Clay & Boulders	Clay & Boulders	Clay & Boulders	660
650	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	Top of Rock	650
640									640

Note A: Gray Fine Sand with Trace Lignite & Medium Gravel.
 Note B: Gray Fine to Coarse Sand with Small to Medium Gravel & Limestone Fragments.



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. 1-229(14), (16) a, b, c (FAT RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

LOG OF BORINGS

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

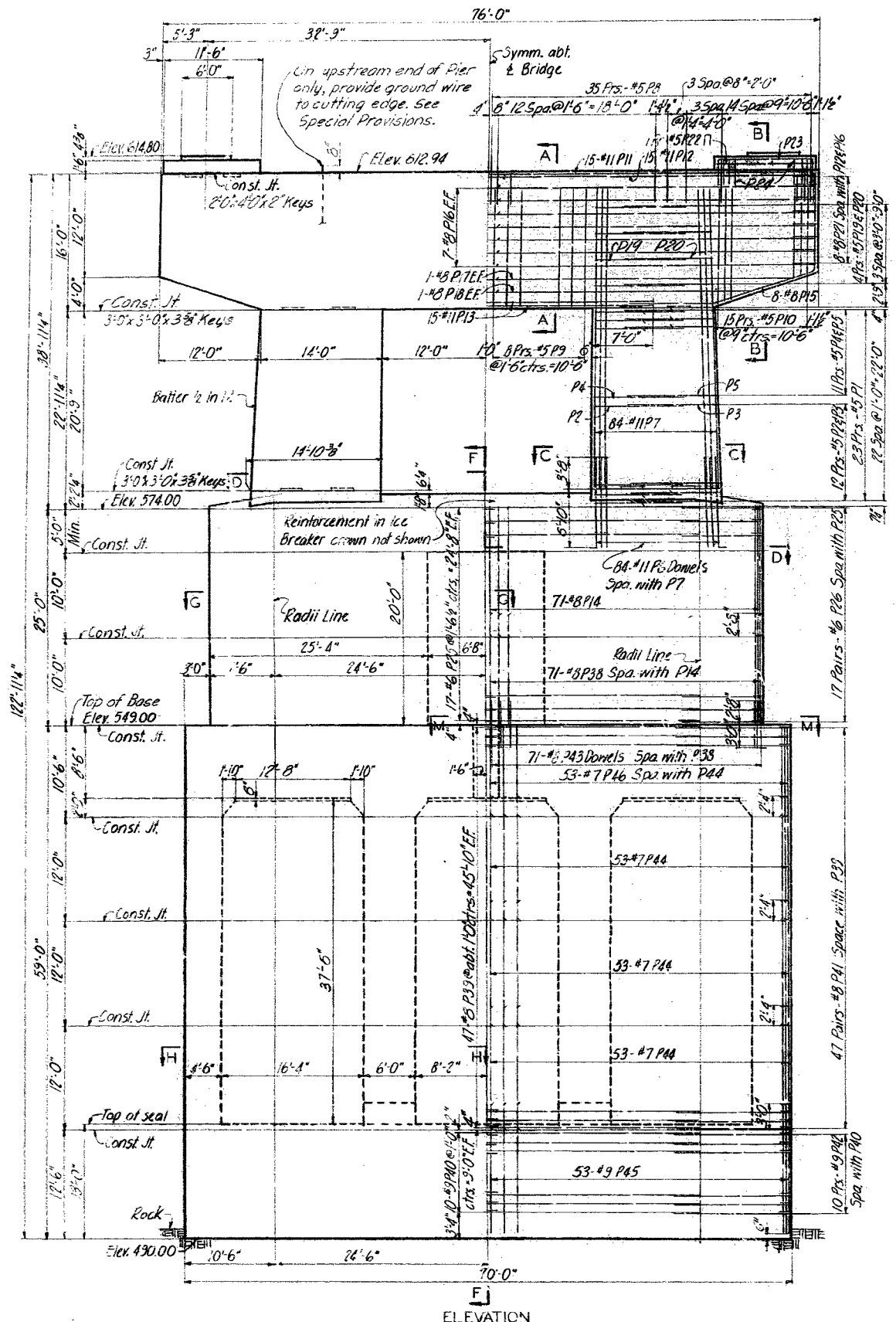
DRAWN BY: H.P. Maloney, Dec. 1956
 TRACED BY:
 CHECKED BY: E. Lemcoe, Dec. 1956

L-962

384

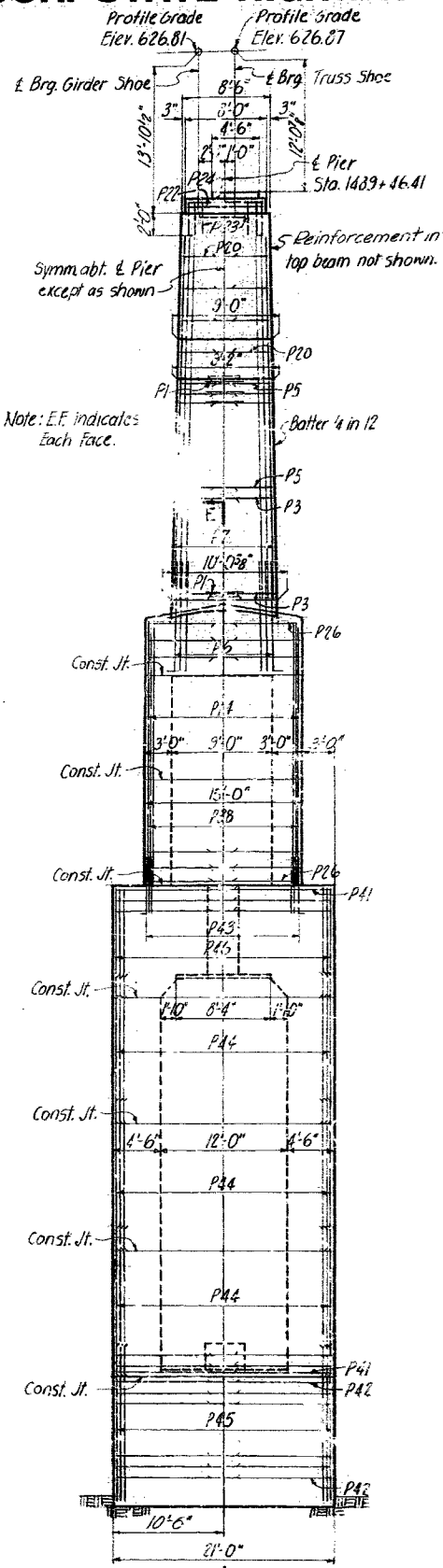
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	4	

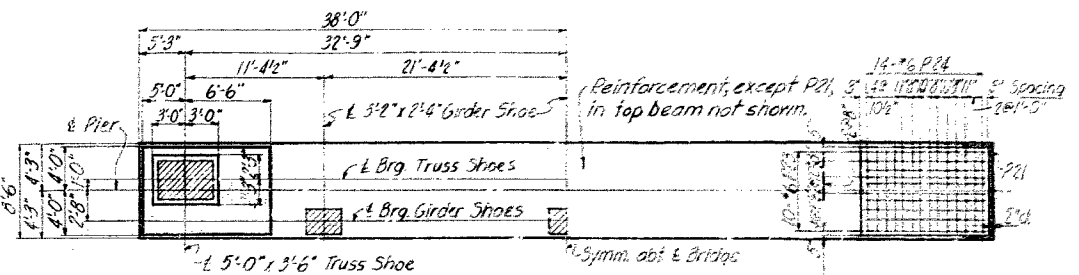


ELEVATION

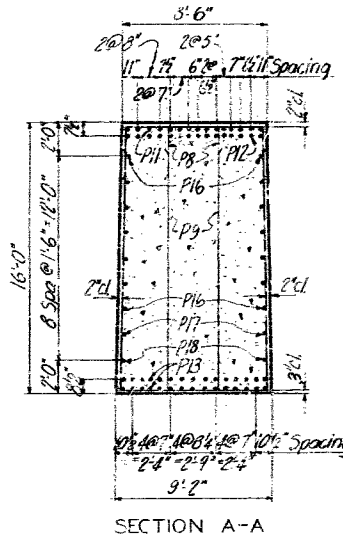
Note: Wells shown in Ice Breaker and Base are permanent wells.



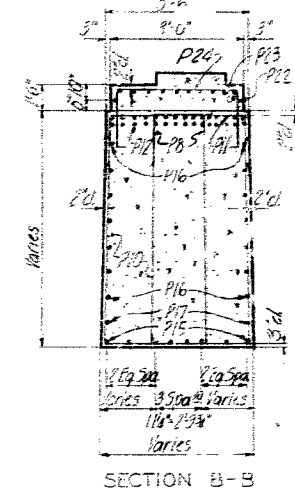
END ELEVATION



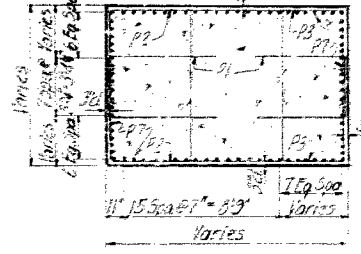
TOP PLAN
Note: For location and size of Anchor Bolt Wells, see Sheet 12



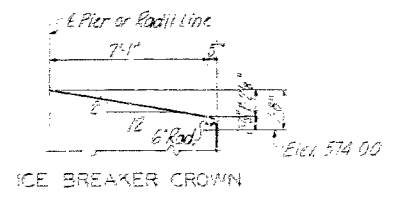
SECTION A-A



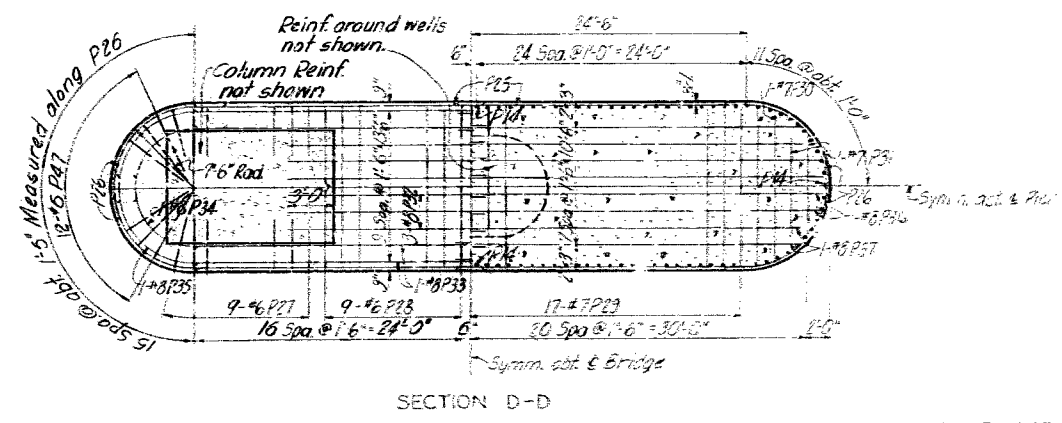
SECTION B-B



SECTION C-C



ICE BREAKER CROWN



SECTION D-D

NOTES
The 4' x 8' shoe post shall be monolithic with the pedestal. The 16' deep top beam shall be poured in one continuous operation. Work this sheet with Sheet 7.

BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(14)(16) abc (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

PIER 13

SHEET 6 OF 8

L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

SEE FINAL PLANS BROWN-LINES

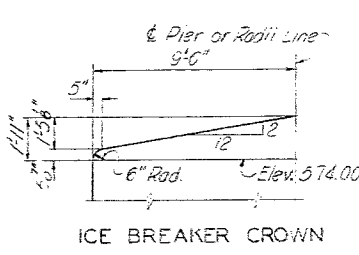
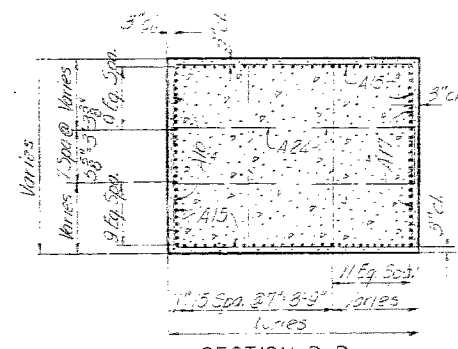
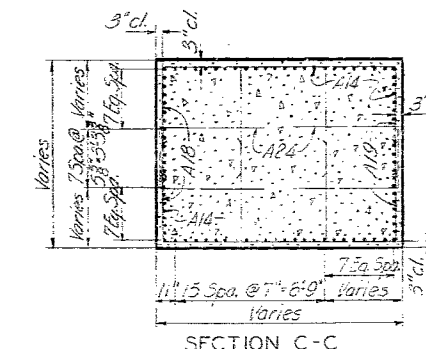
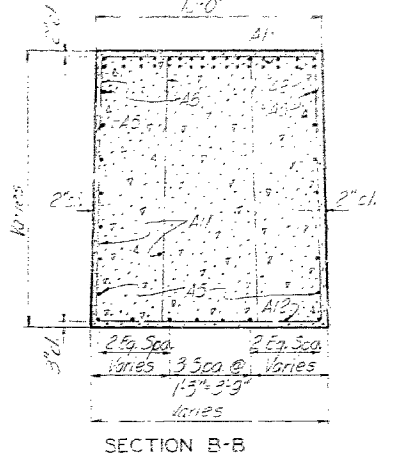
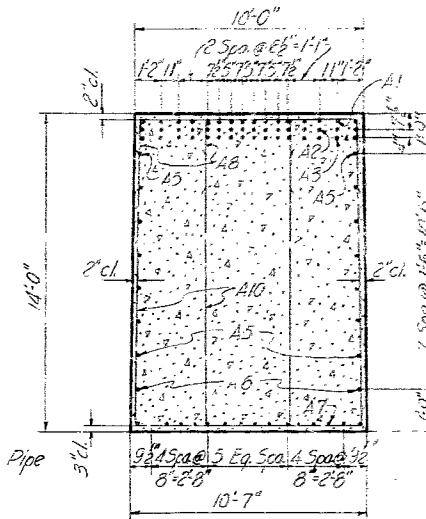
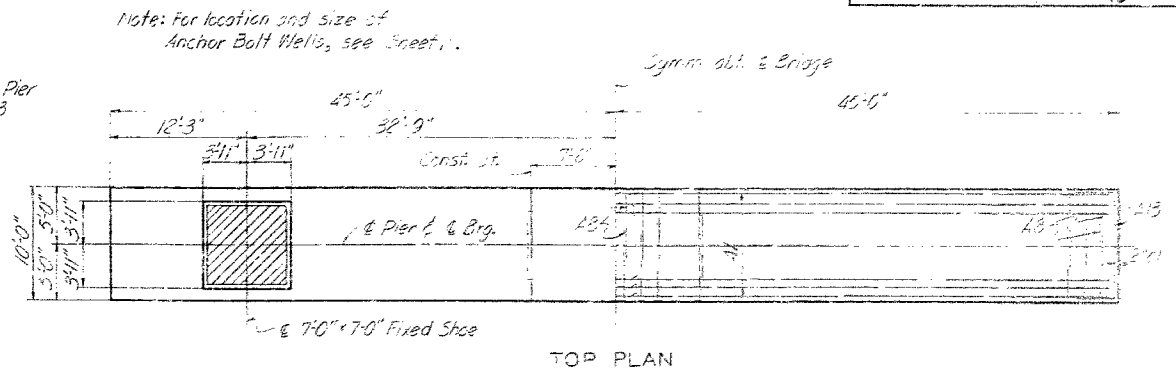
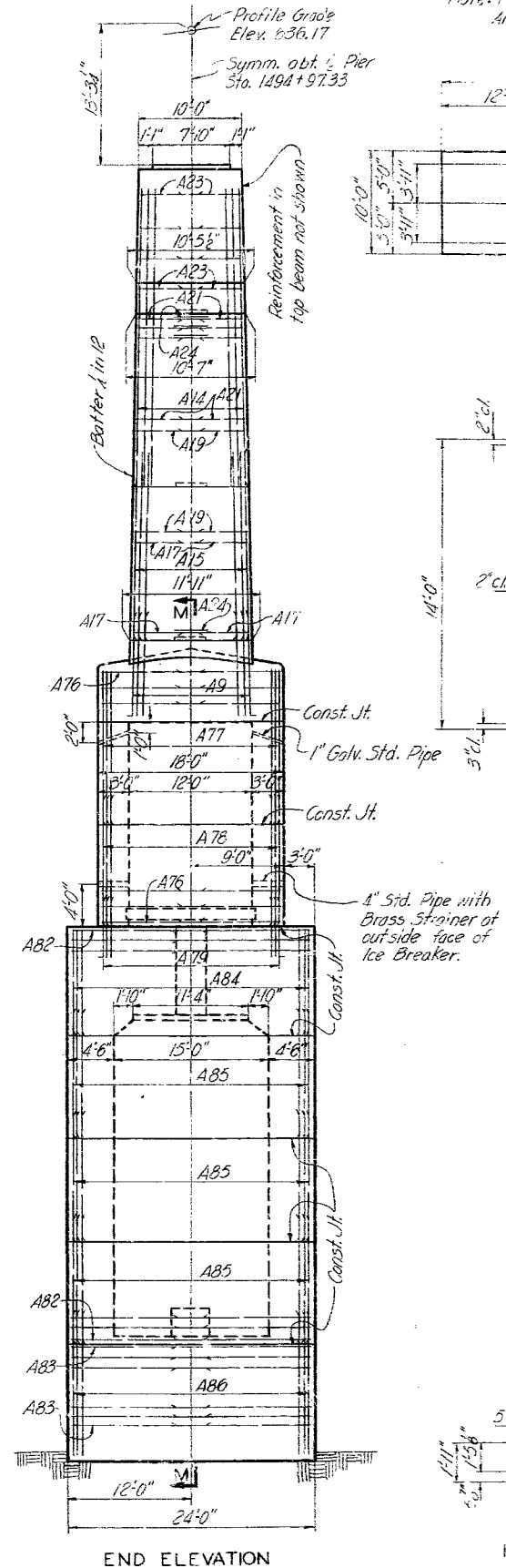
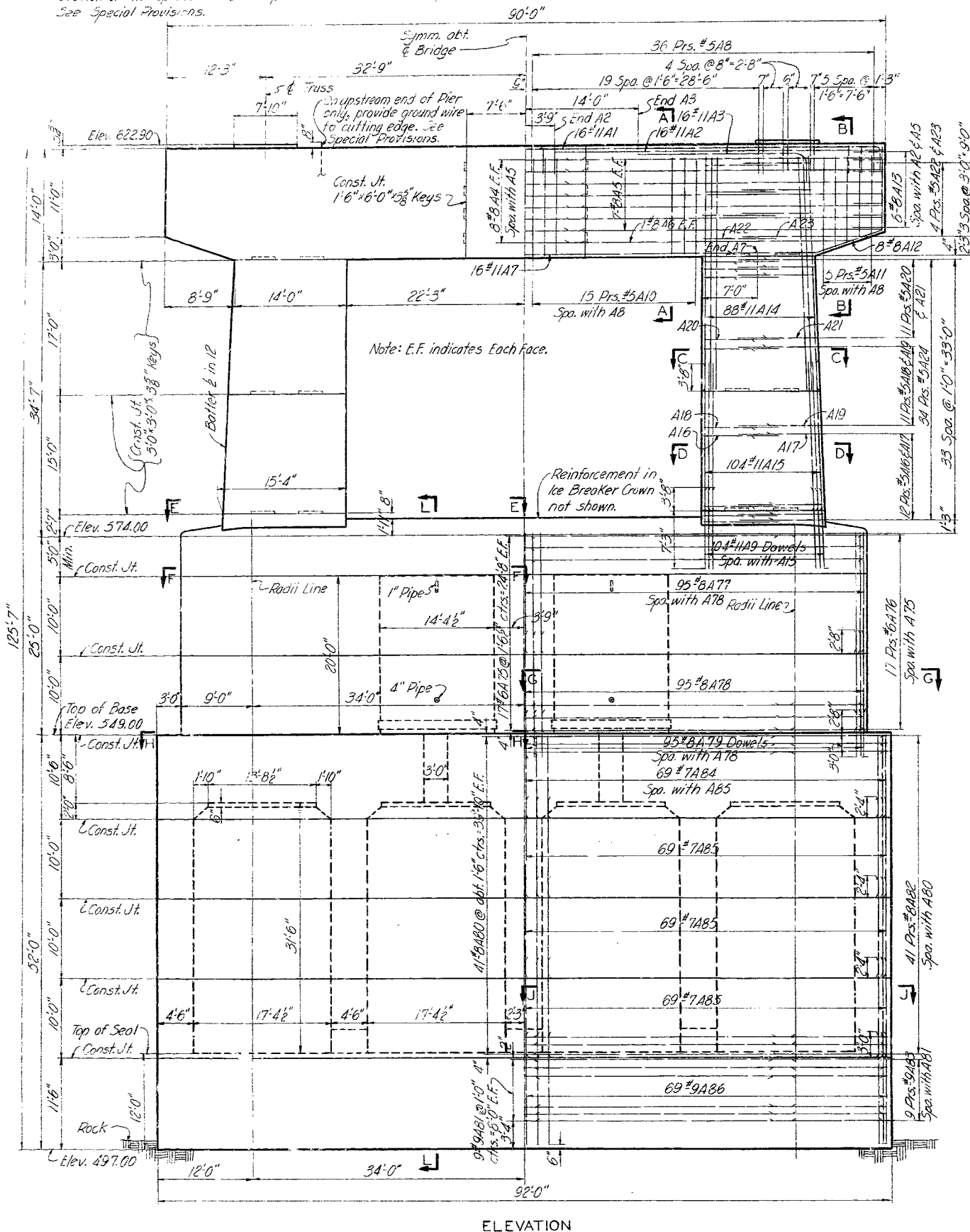
385

DRAWN BY: P.E. Skubiz Dec. 1956
CHECKED BY: M.C. Williams Dec. 1956

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	10	

Note: The 3/2" splice pads shall be monolithic with the top beam. Each section of the top beam shall be poured in a continuous operation. See Special Provisions.



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(14)(16) a,b,c (FAIR) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

PIER 14

SHEET 8 OF 21

L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

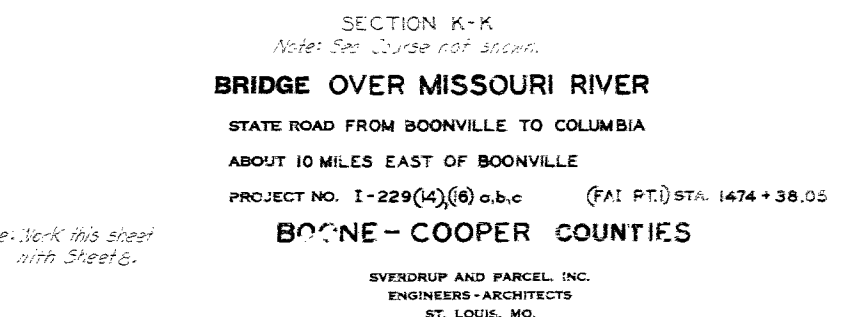
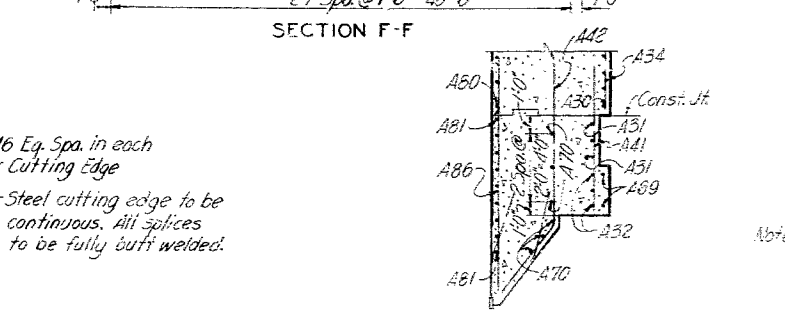
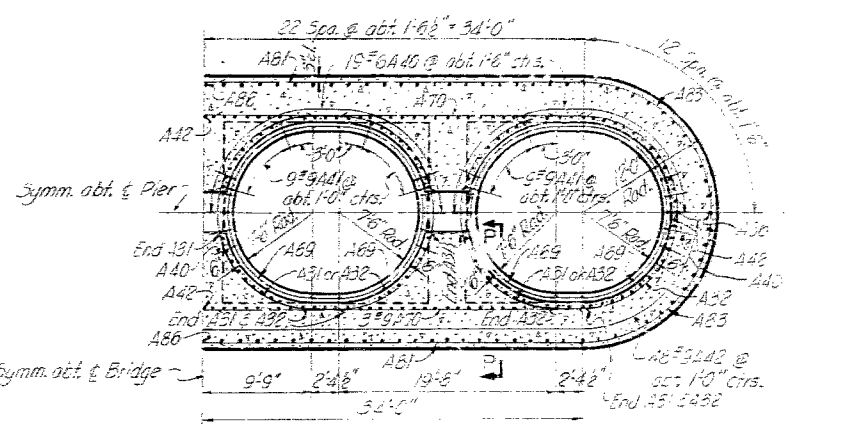
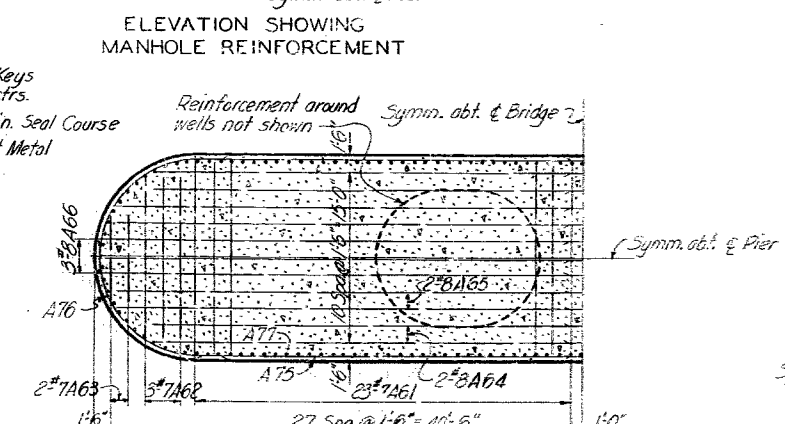
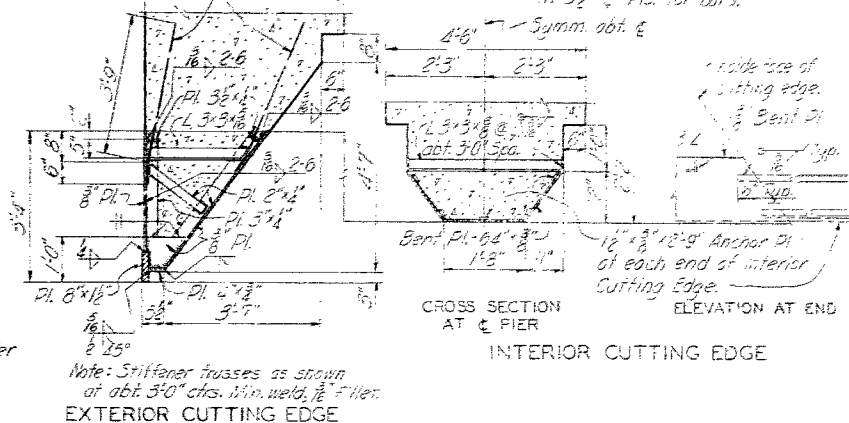
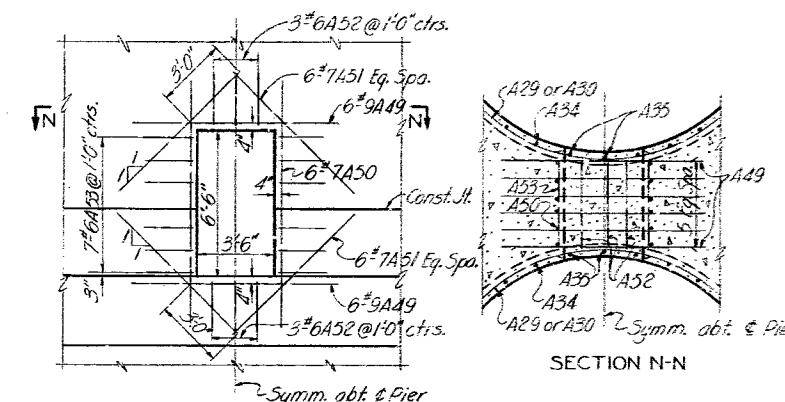
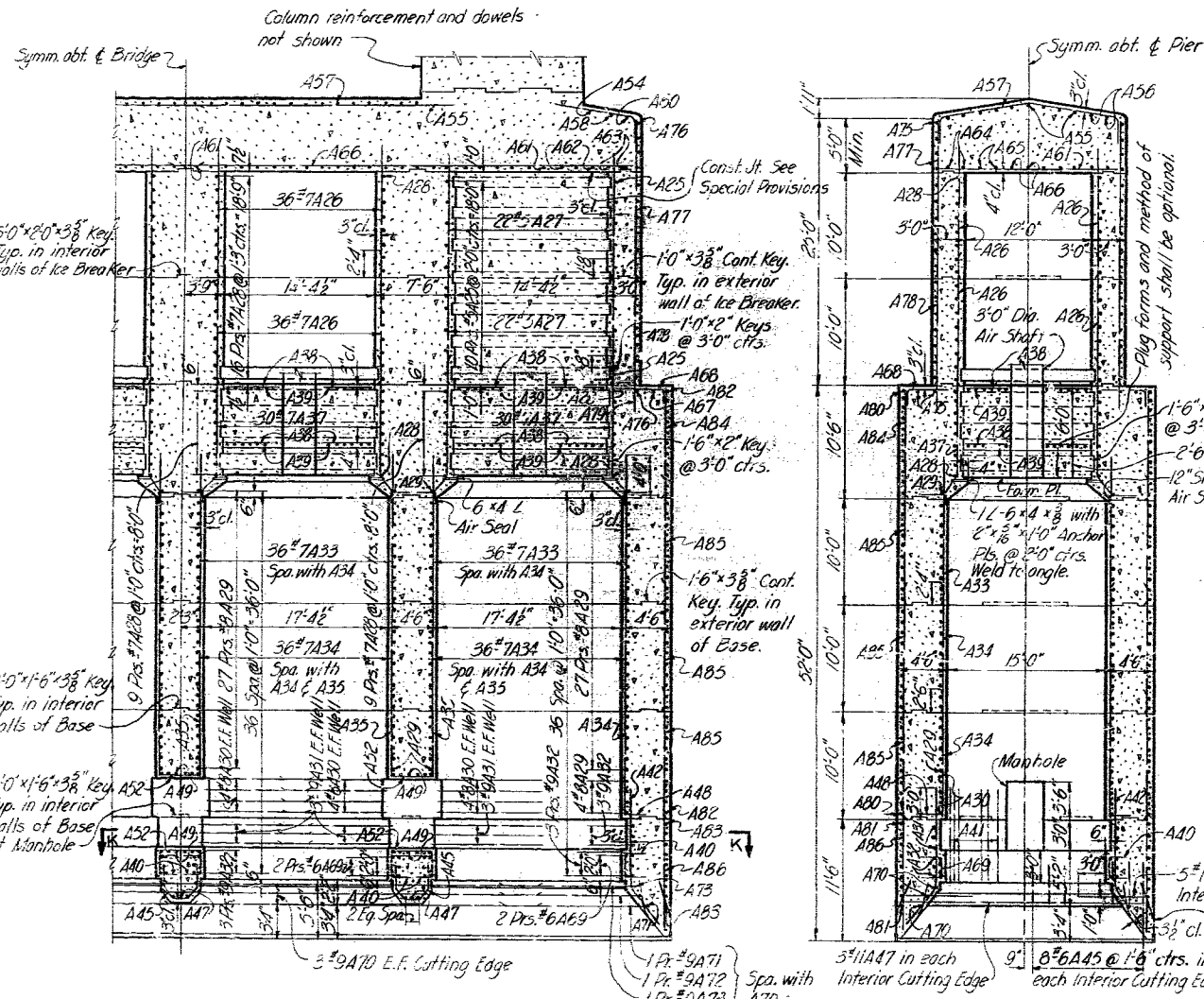
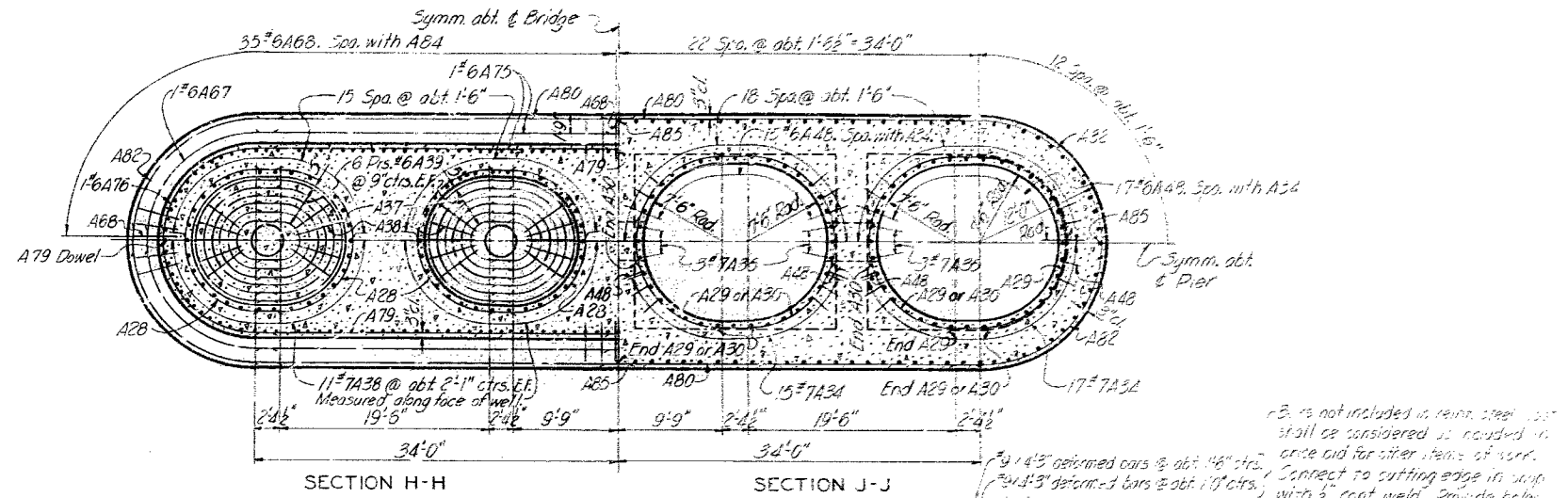
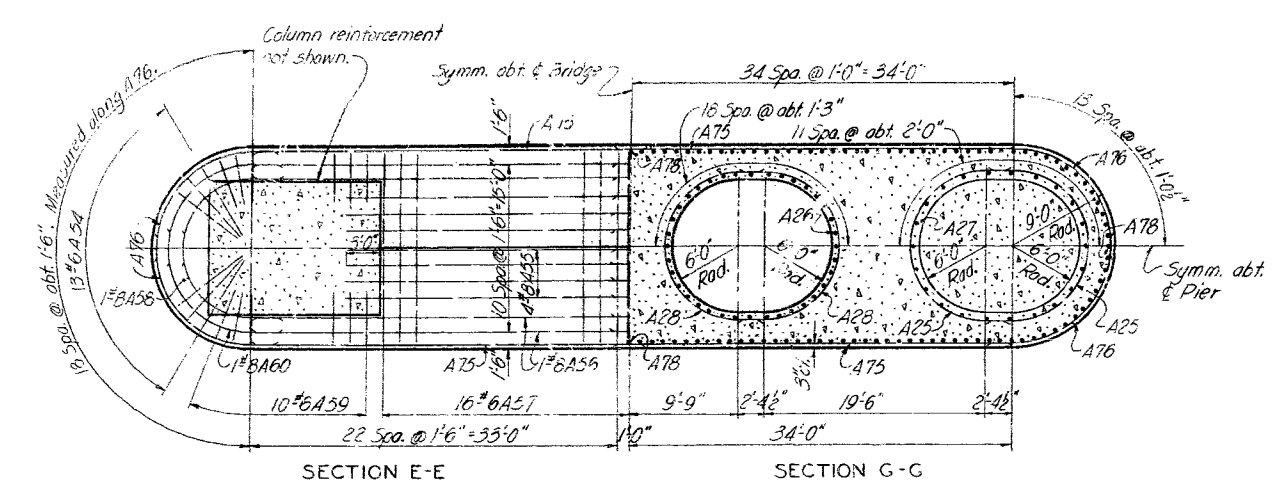
387

12-27
 5657110
 DRAWN BY: J. A. Liebsch Dec. 1956
 TRACED BY:
 CHECKED BY: M. C. Williams Dec. 1956

SEE FINAL PLANS FOR DIMENSIONS

MISSOURI STATE HIGHWAY DEPARTMENT

PROJ. NO.	STATE	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-229(14)(16) a,b,c	MO.	1958	17	17



388

DRAWN BY: J.A. Liebsch Dec. 1956
 TRACED BY:
 CHECKED BY: M.C. Williams Dec. 1958

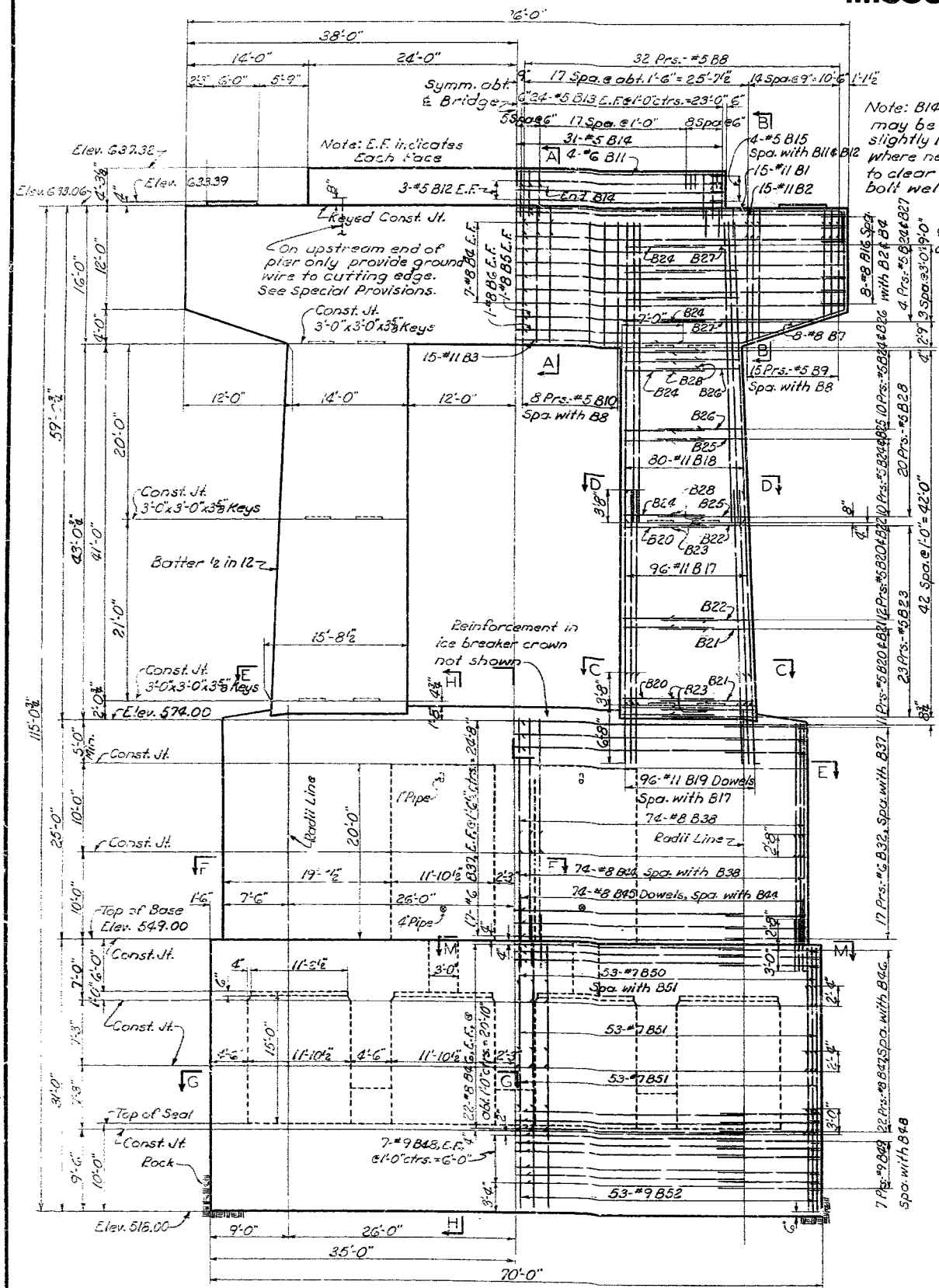
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

PIER 14
 SHEET 9 OF 9
 L-962

SEE FINAL PLANS DRAWN LINES

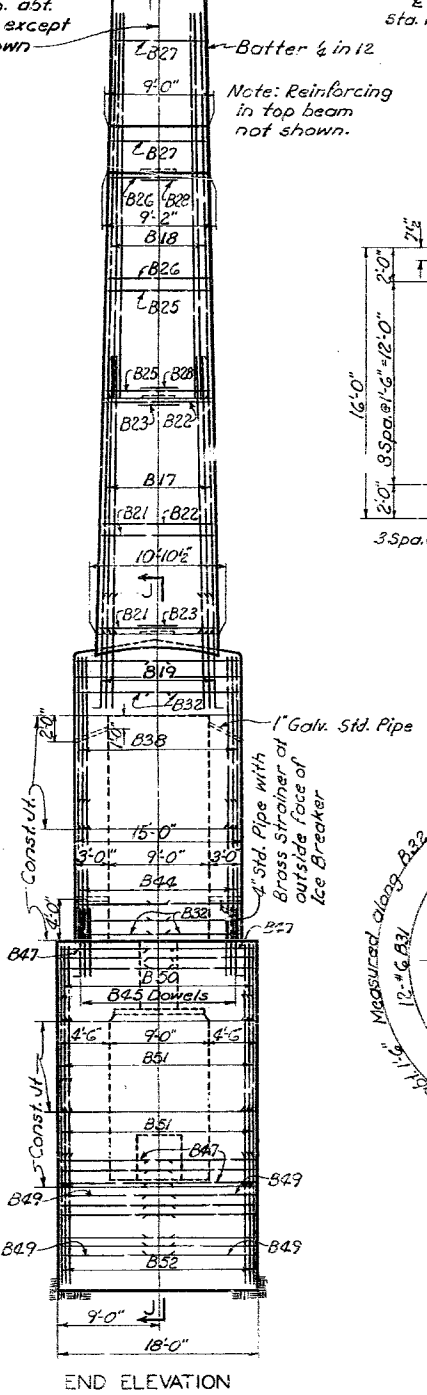
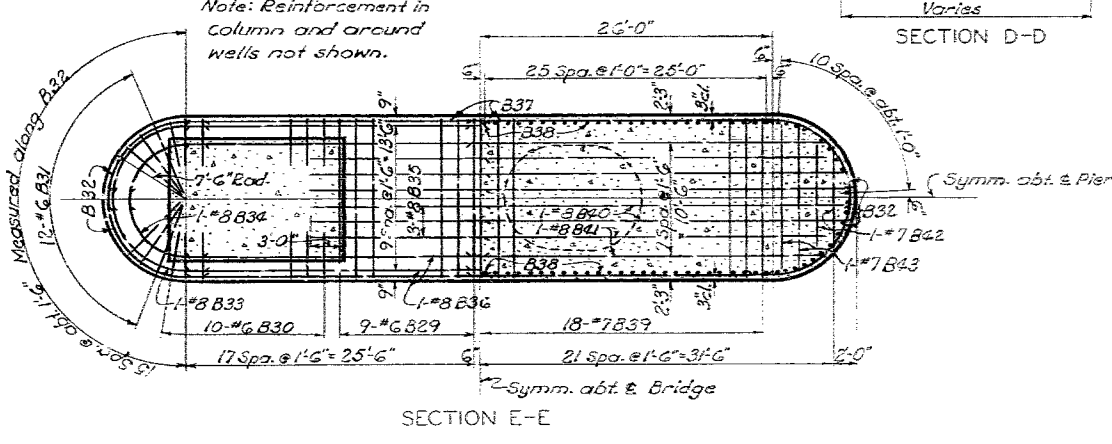
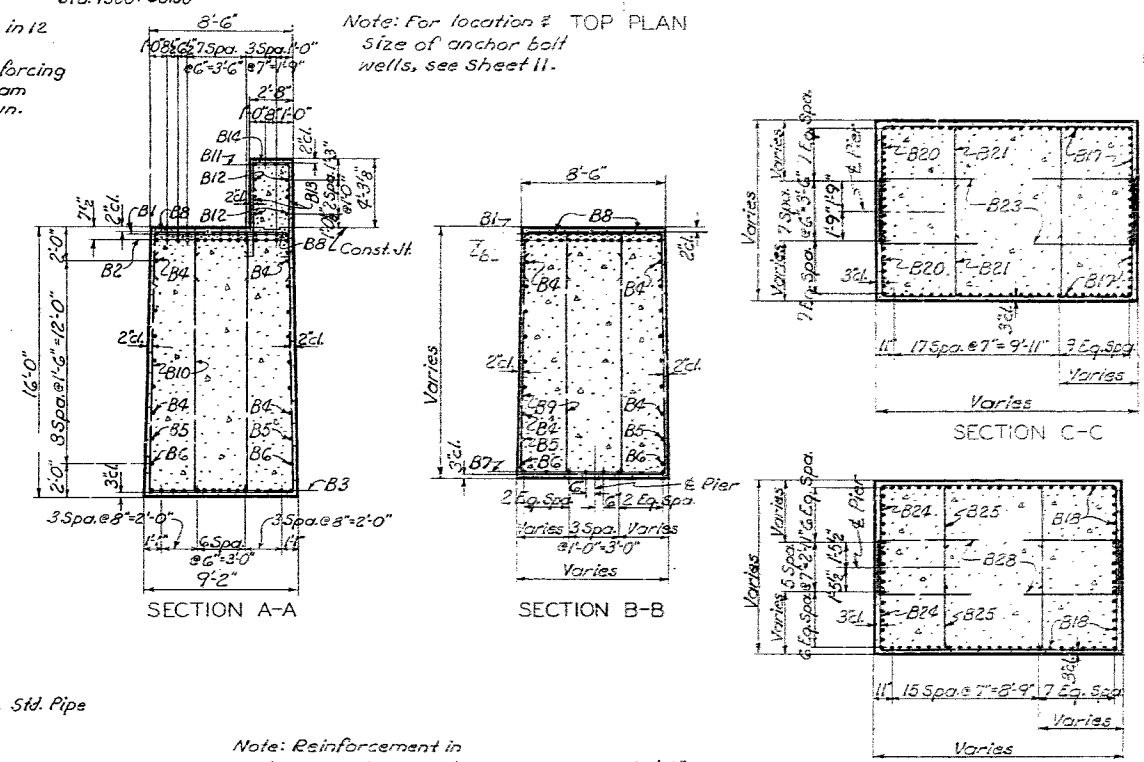
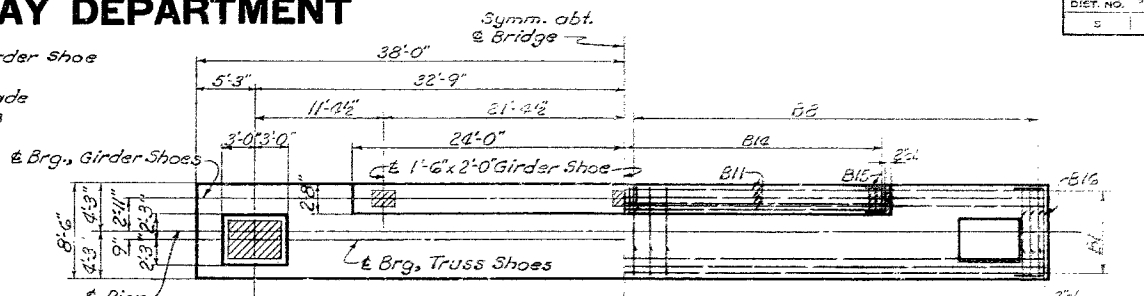
MISSOURI STATE HIGHWAY DEPARTMENT

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



Note: B14 bars may be shifted slightly in field where necessary to clear anchor bolt wells.

Note: Reinforcing in top beam not shown.



Note: Walls shown in Ice Breaker and Base are permanent walls.

NOTES
The 4' Shoe Pad shall be monolithic with the top beam. The top beam shall be poured in one continuous operation.
Work this sheet with Sheet . . .

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(14)(16) a,b,c (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

389

DRAWN BY: L.H. Glaser, Dec., 1956
TRACED BY:
CHECKED BY: A.E.M. & M.C.W., Jan., 1967

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

PIER 15

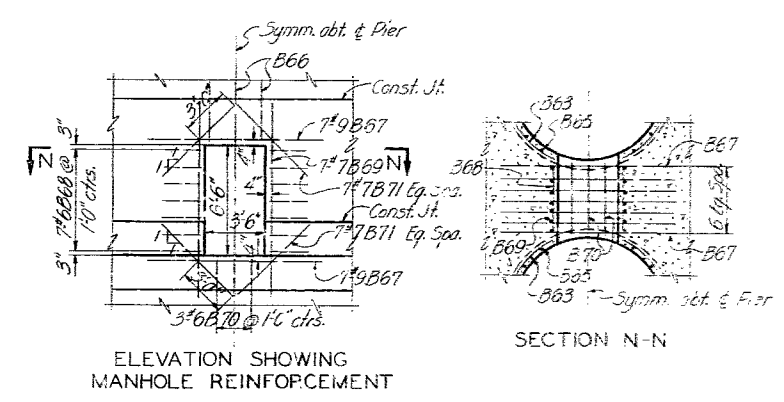
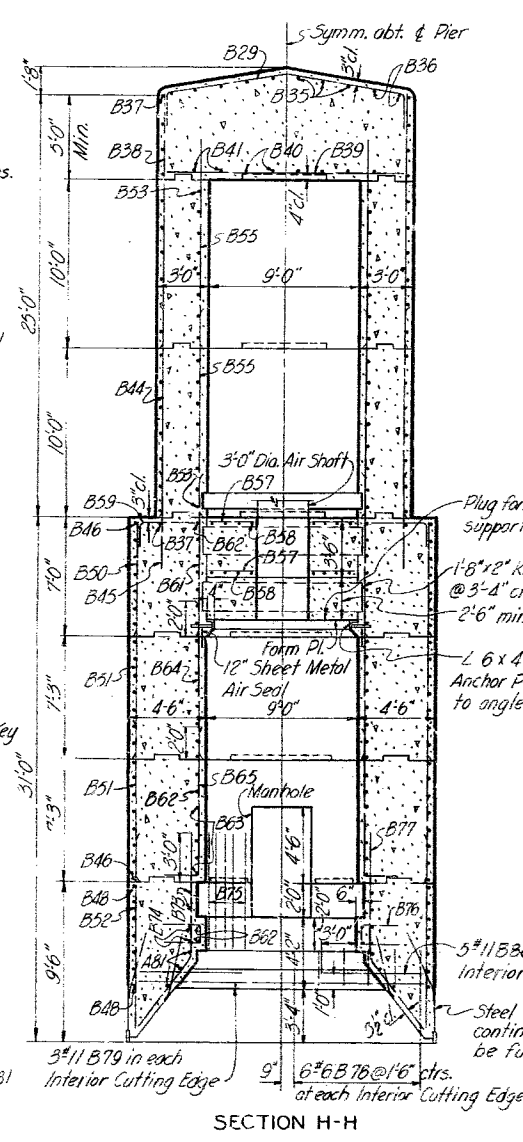
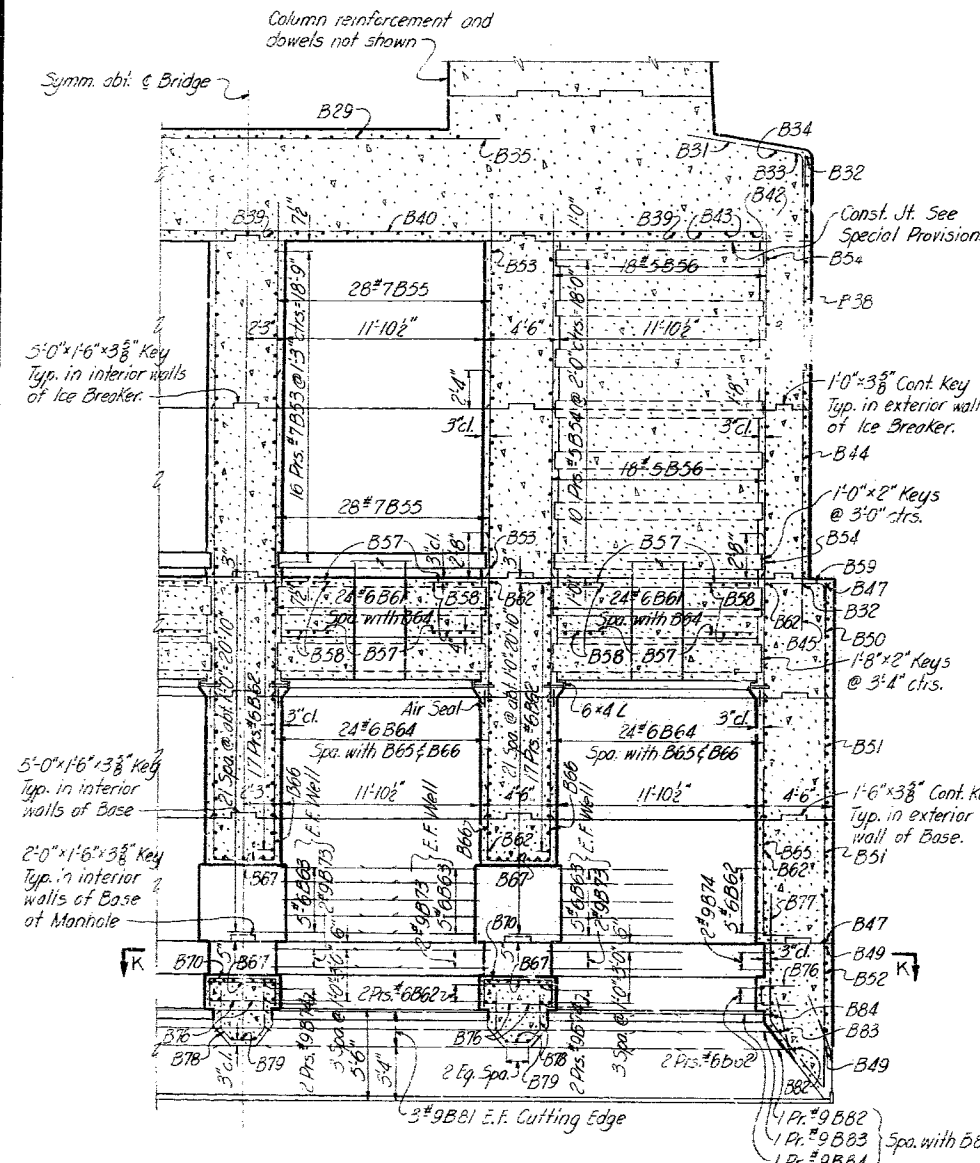
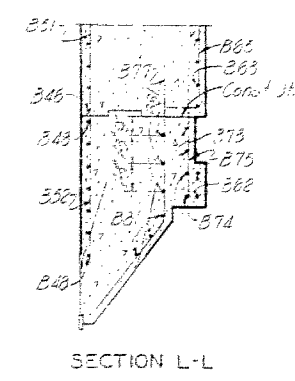
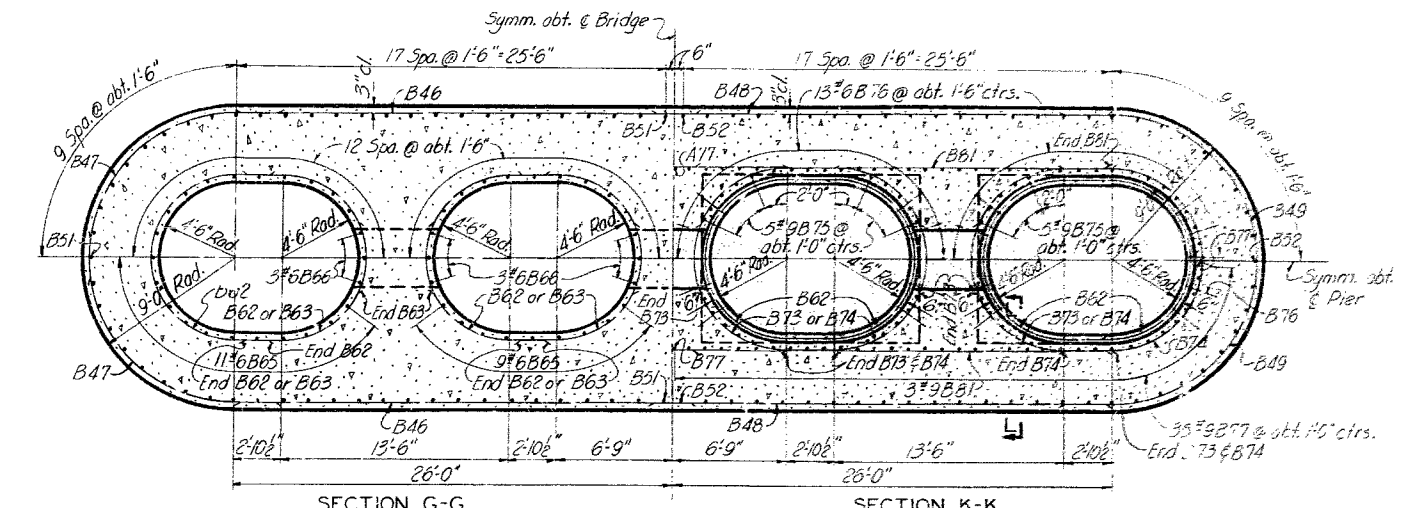
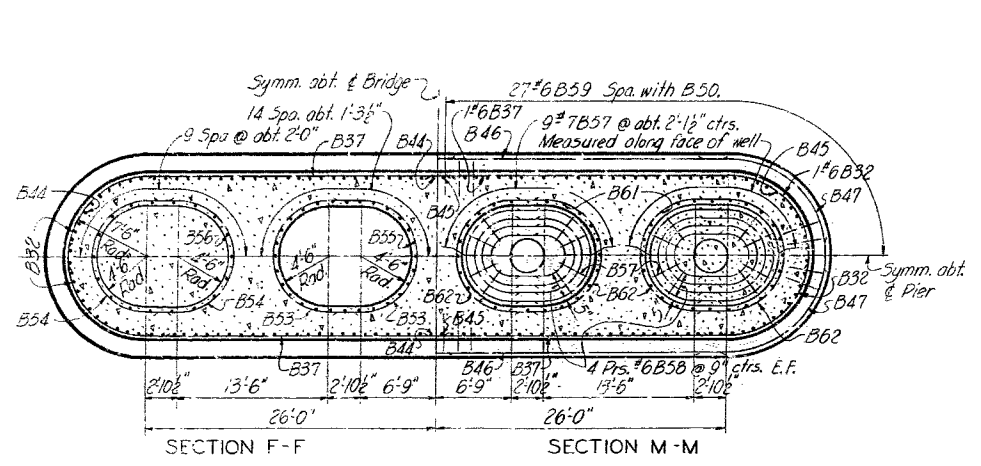
SHEET 10 OF 8

L-962

SEE FINAL PLANS BROWN-LINER

MISSOURI STATE HIGHWAY DEPARTMENT

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



NOTES
Work this sheet with Sheet 1.
For details of cutting edges, see Sheet 4.

BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(14)(16) a,b,c (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: J.A. Liebsch Jan. 1957
TRACED BY:
CHECKED BY: M.C. Williams Jan. 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

PIER 15

SHEET 11 OF 31

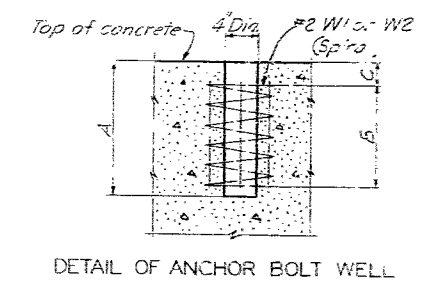
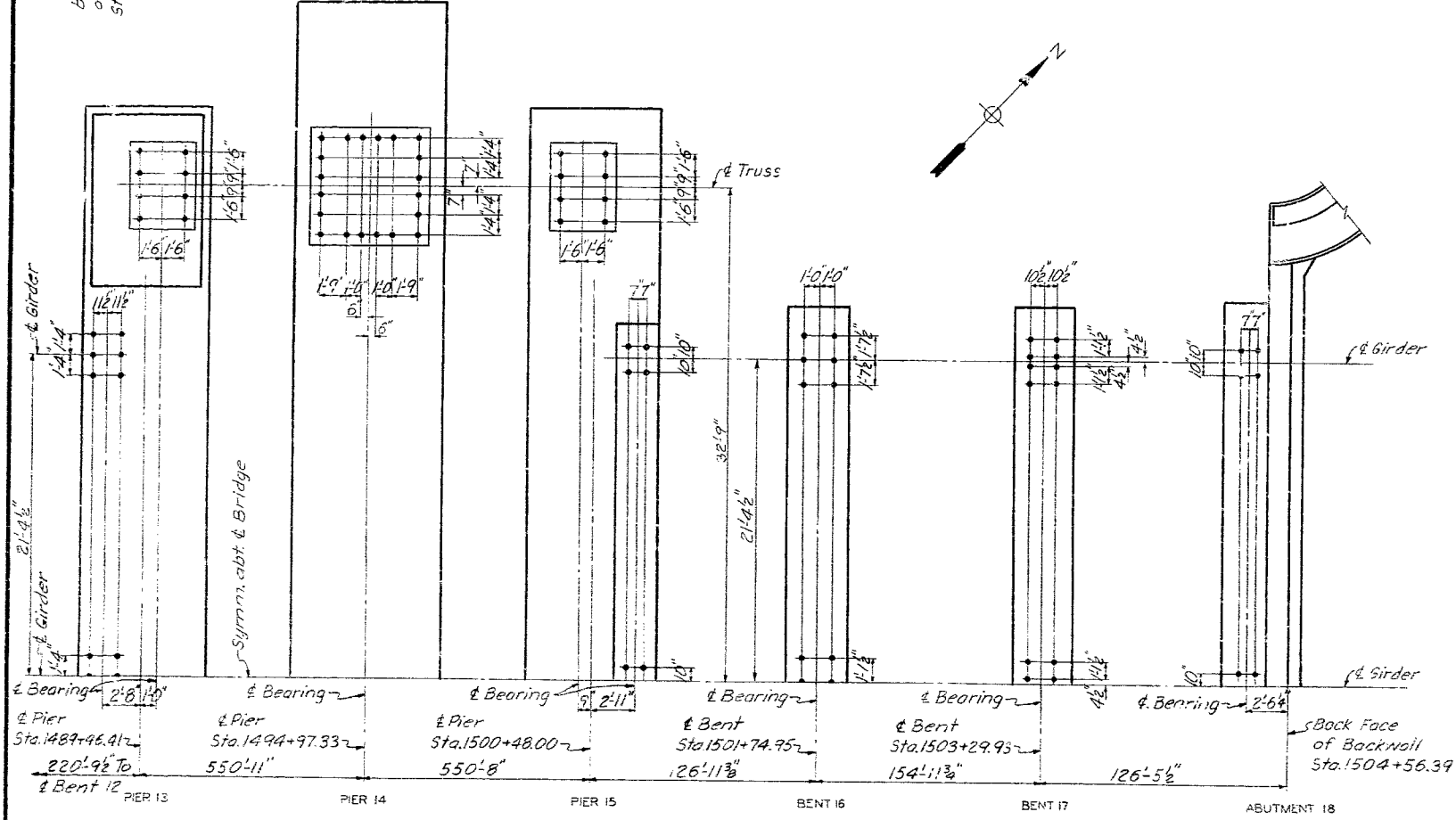
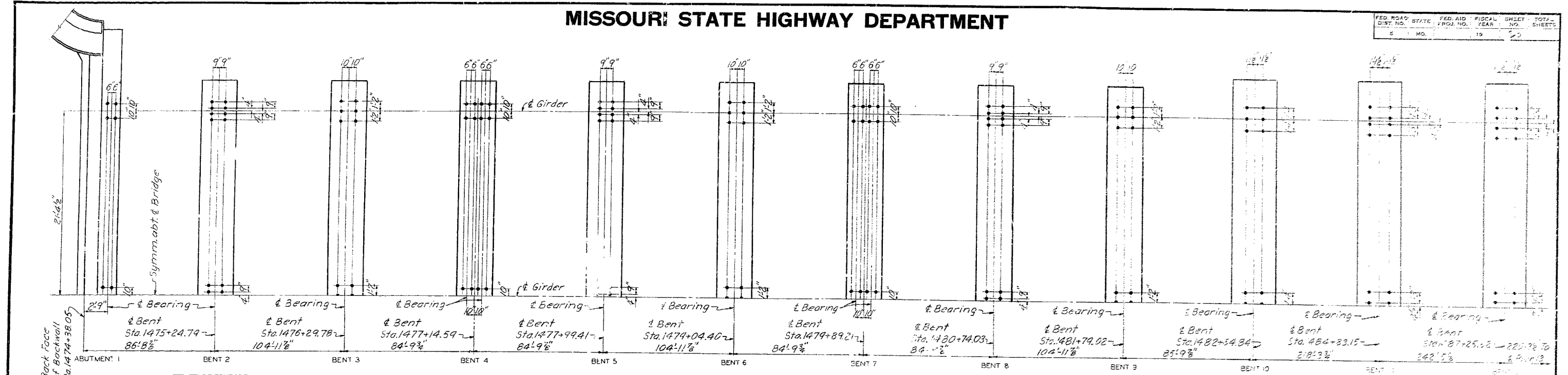
L-962

SEE FINAL PLANS DRAWING 10-35

390

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE MO. PROJ. NO. 19 FISCAL YEAR 19 SHEET NO. 25 TOTAL SHEETS 25



NOTES

All anchor bolts are to be grouted in wells.
 Anchor bolt wells shall be kept dry in freezing weather. See Special Provisions.
 Anchor bolt wells shall be formed in substructure by placing and setting with a template.
 After the steel has been erected and adjusted, anchor bolts shall be securely grouted into the wells with a non-shrink cement grout containing Embeco, or an approved equivalent iron-oxide.

Location	Bar Mark	Dimensions		
		A	B	C
Abut. 1, Bents 4, 7, Abut. 18, Pier 15 (Girder Shoes)	W1	2'-3"	2'-0"	4"
Bents 2, 3, 5, 6, 8, 9	W2	2'-3"	1'-6"	9"
Bents 10, 11, 12, 16, 17 and Pier 13 (Girder Shoes)	W1	2'-8"	2'-0"	9"
Pier 13 (Truss Shoes)	W2	2'-8"	1'-5"	4"
Pier 15 (Truss Shoes)	W2	2'-8"	1'-5"	4-1"
Pier 14	W1	3'-2"	2'-0"	1'-4"

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(14)(16) a,b,c (F&I RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

EVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

ANCHOR BOLT PLAN

1487
 1487
 DRAWN BY: W.J. Ballard, Nov. 1956
 TRACED BY:
 CHECKED BY: E. Lemcoe, Dec. 1956

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

SHEET 12 OF 25

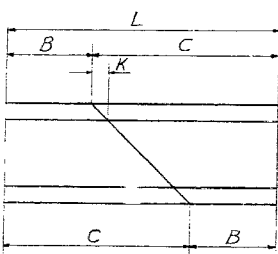
L-962

391

MISSOURI STATE HIGHWAY DEPARTMENT

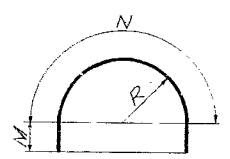
FED. ROAD DIST. NO. STATE PROJ. NO. FISCAL YEAR SHEET NO. TOTAL SHEETS
 5 MO. 19 32

No. Kept	Size	Length	Mark	Type	Location	Dimensions for Bending												
						A	B	C	D	E	F	G	H	J	K	R	O	
PIER 15 (CONT'D)																		
42	#9	10'-0"	B67	Str	Base													
48	#6	8'-6"	B68	Str	do	2'-3"	4'-0"	2'-3"										
48	#6	11'-6"	B69	Str	do													
5	#6	7'-0"	B70	Str	do	1'-6"	4'-0"	1'-6"										
5	#6	6'-0"	B71	Str	do													
Not Used																		
2	#5	9'-7"	B73	Spcl	Base	See Bending Detail												
20	#6	23'-1"	B74	Str	do	3'-0"	17'-1"	3'-0"									5'-4 1/2"	10'-10 1/2"
30	#6	5'-9"	B75	Str	do													
36	#6	5'-3"	B76	Str	do	2'-0"	1'-3"	2'-0"										
36	#6	12'-7"	B77	Str	do													
36	#6	8'-10"	B78	Str	do	2'-6"	1'-2 1/2"	1'-3 1/2"	1'-2 1/2"	2'-6"				3'-2 1/2"		4'-0 1/2"		11'-6 1/2"
9	#11	17'-6"	B79	Str	do									11'-6"		9'-6"		2'-1 1/2"
30	#11	7'-3"	B80	Str	do													
22	#9	27'-6"	B81	Str	do													
4	#9	15'-1"	B82	Spcl	do	See Bending Detail												
4	#9	14'-1"	B83	Spcl	do	See Bending Detail												
4	#9	19'-1"	B84	Spcl	do	See Bending Detail												
2	#2	3'-6"	W1	Spcl	A.B. Wells	See Bending Detail												
2	#2	2'-6"	W2	Spcl	do	See Bending Detail												

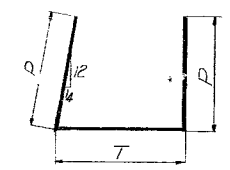


CUTTING DIAGRAM

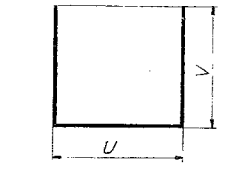
Mark	Cutting Schedule	B	C	K	L
A11	Cut 2 Sets of 5 Each Bend	26'-1"	30'-1"	1'-0"	56'-2"
A13	Cut 1 Set of 8 Bend	4'-11"	15'-4 1/2"	3"	30'-3"
A39	Cut 8 Sets of 6 Each Bend	10'-3 1/2"	2'-4 1/2"	2'-4 1/2"	32'-2"
B9	Cut 2 Sets of 15 Each Bend	26'-8"	33'-8"	6"	60'-4"
B16	Cut 1 Set of 8 Bend	19'-4 1/2"	13'-10 1/2"	3"	27'-5 1/2"
B58	Cut 8 Sets of 4 Each Bend	10'-8 1/2"	17'-8 1/2"	2'-4 1/2"	28'-6"
F10	Cut 1 Set of 15 Bend	26'-5"	33'-5"	6"	59'-10"
P21	Cut 1 Set of 8 Bend	19'-6 1/2"	13'-11 1/2"	3"	27'-6"
P48	Cut 6 Sets of 4 Each Bend	12'-2 1/2"	17'-5"	2'-4 1/2"	31'-5"



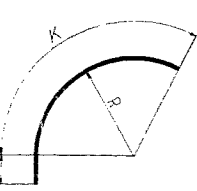
Mark	M	N	R
A39	2'-2"	5'-10 1/2" to 11'-7 1/2" (Int=2 1/2")	11'-8" to 5'-6 1/2" (Int=9")
B58	2'-5"	5'-0 1/2" to 12'-11 1/2" (Int=2 1/2")	11'-8" to 4'-0 1/2" (Int=9")
P48	3'-2"	5'-10 1/2" to 12'-11 1/2" (Int=2 1/2")	11'-8" to 4'-0 1/2" (Int=9")



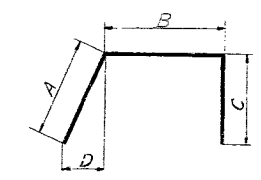
Mark	P	T
A11	9'-6" to 11'-6" (Int=6")	7'-1"
B9	10'-4" to 13'-10" (Int=3")	6'-0"
P10	10'-3" to 13'-9" (Int=3")	5'-11"



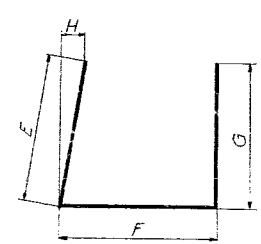
Mark	U	V
A13	9'-7" to 10'-0 1/2" (Int=3")	2'-8"
B16	8'-0 1/2" to 8'-6 1/2" (Int=3")	2'-8"
P21	8'-3 1/2" to 8'-7 1/2" (Int=3")	2'-8"



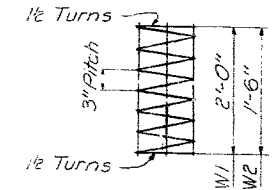
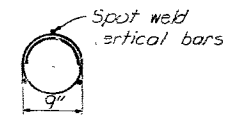
Mark	J	K	R
A30	2'-6"	10'-5"	7'-9 1/2"
A31	2'-8"	11'-3"	8'-4 1/2"
A58	2'-8"	10'-10"	8'-11 1/2"
A60	2'-8"	13'-2"	7'-5 1/2"
A67	2'-0"	17'-2"	10'-2 1/2"
A77	3'-0"	16'-9"	9'-7 1/2"
A72	3'-0"	15'-9"	9'-0"
A73	3'-0"	14'-10"	8'-4 1/2"
A76	2'-0"	14'-9"	8'-8 1/2"
A82	2'-8"	19'-10"	11'-5 1/2"
A83	3'-0"	20'-0"	11'-7 1/2"
B32	2'-0"	18'-5"	7'-2 1/2"
B33	2'-8"	12'-0"	6'-8 1/2"
B34	2'-8"	9'-8"	5'-8 1/2"
B47	2'-8"	15'-1"	8'-8"
B49	3'-0"	15'-3"	8'-7 1/2"
B53	2'-5"	5'-8"	4'-9 1/2"
B73	3'-0"	5'-6 1/2"	5'-4 1/2"
B82	3'-0"	12'-1"	6'-7 1/2"
B83	3'-0"	11'-0 1/2"	5'-11 1/2"
B84	3'-0"	10'-0 1/2"	5'-4 1/2"
P20	2'-0"	12'-5"	7'-2 1/2"
P34	2'-8"	9'-8"	5'-0 1/2"
P35	2'-8"	12'-0"	6'-8 1/2"
P41	2'-8"	18'-9"	10'-8"
P42	3'-0"	19'-1"	10'-1 1/2"
P52	3'-6"	8'-1"	6'-3 1/2"
P53	3'-8"	8'-1"	6'-10 1/2"
P56	3'-0"	12'-5"	6'-4 1/2"
P57	3'-0"	3'-5"	7'-3 1/2"
P58	3'-0"	14'-5"	8'-1 1/2"
P59	2'-0"	14'-9"	8'-2 1/2"
P63	2'-0"	12'-5"	7'-2 1/2"



Mark	A	B	C	D
A8	3'-2"	5'-9 1/2"	3'-2"	3"
B5	3'-4"	5'-8 1/2"	3'-4"	3"
P8	3'-5"	5'-6 1/2"	3'-5"	3"



Mark	E	F	G	H
A10	12'-1"	7'-0 1/2"	12'-1"	3"
B10	13'-11"	6'-0 1/2"	13'-11"	3 1/2"
P9	13'-0"	6'-10 1/2"	13'-10"	3 1/2"



393

DRAWN BY: H.P. Maloney, Jan. 1957
 TRACED BY:
 CHECKED BY: E. Lemcoe, Jan. 1957

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(14),(16) a,b,c (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

BAR LIST & SPECIAL BENDING DETAILS
 AND CUTTING DIAGRAMS

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

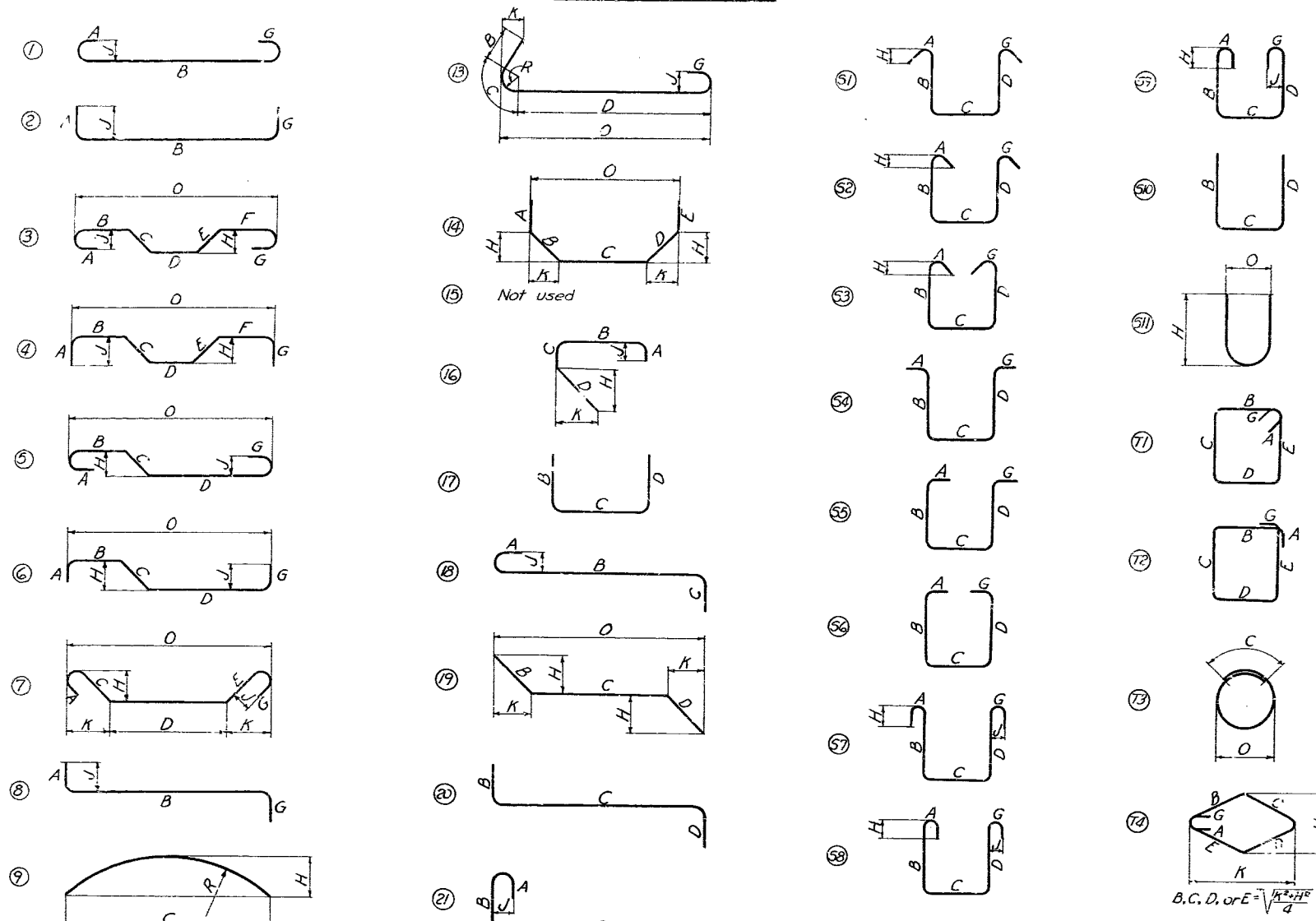
SHEET 14 OF 61

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

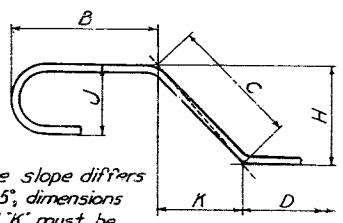
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		19	2	

TYPICAL BAR TYPES



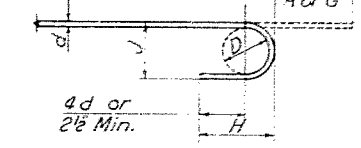
Where slope differs from 45°, dimensions "H" and "K" must be shown.

ENLARGED VIEW SHOWING BAR BENDING DETAILS



STANDARD HOOK DIMENSIONS

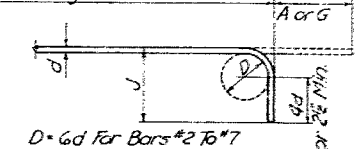
Detailing Dimension - 0 Hook 180° HOOK



$D = 6d$ For Bars #2 To #7
 $D = 8d$ For Bars #8 To #11

Bar Size	Hook A or G	J	Approx H
#2	4"	2"	3 1/2"
#3	5"	3"	4"
#4	6"	4"	4 1/2"
#5	7"	5"	5"
#6	8"	6"	6"
#7	10"	7"	7"
#8	11"	10"	9"
#9	13"	11 1/2"	10 1/2"
#10	15"	13 1/2"	11 1/2"
#11	17"	15 1/2"	13 1/2"

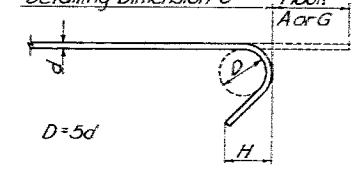
Detailing Dimension - 0 Hook 90° HOOK



$D = 6d$ For Bars #2 To #7
 $D = 8d$ For Bars #8 To #11

Bar Size	Hook A or G	J	Approx H
#2	3"	3 1/2"	4"
#3	3"	4"	4"
#4	3"	4 1/2"	4"
#5	4"	5"	5"
#6	4"	6"	6"
#7	5"	7"	7"
#8	6"	9"	9"
#9	7"	10"	10"
#10	8"	11 1/2"	11 1/2"
#11	9"	13 1/2"	13 1/2"

Detailing Dimension - 0 Hook 135° STIRRUP HOOK



$D = 5d$

Bar Size	Hook A or G	H
#2	3 1/2"	2"
#3	4"	2 1/2"
#4	4 1/2"	2 1/2"
#5	5"	2 1/2"

BAR SIZE EQUIVALENTS

#2	1/4"	#7	7/8"
#3	3/8"	#8	1"
#4	1/2"	#9	1 1/8"
#5	5/8"	#10	1 1/4"
#6	3/4"	#11	1 3/8"

NOTES

1. All dimensions are out to out, except "R" which is to inside of bend.
2. "J" Dimension on 180° hooks to be shown in Bar List only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where "J" is not shown, "J" will be kept equal to or less than "H". Where "J" can exceed "H", it should be shown in Bar List.
4. "H" Dimension on stirrups to be shown on Bar List where necessary to restrict hooks.
5. Corrections in length, due to bending around a mandrel, will be made only when the radius "R" (as in types 11 and 13) exceeds the standard radii indicated in standard hook dimensions. However, the dimensions "A" or "G" shown for standard hooks have been corrected for curvature.
6. All bends shown are bent around a standard mandrel, except where radius "R" is indicated.
7. Figures in circles show bar types.
8. Where "R" is shown on bar types 9, 10, 11 and 13, the length of bend shall be measured along outside of bend. The length of bar type T3 shall also be measured along outside of bar.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(14), (16) a, b, c (FAI RT. I) STA. 1474+38.05
 -70-3(15) (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

TYPICAL BAR TYPES
 AND HOOK DIMENSIONS

SHEET 15 OF 3

L-902

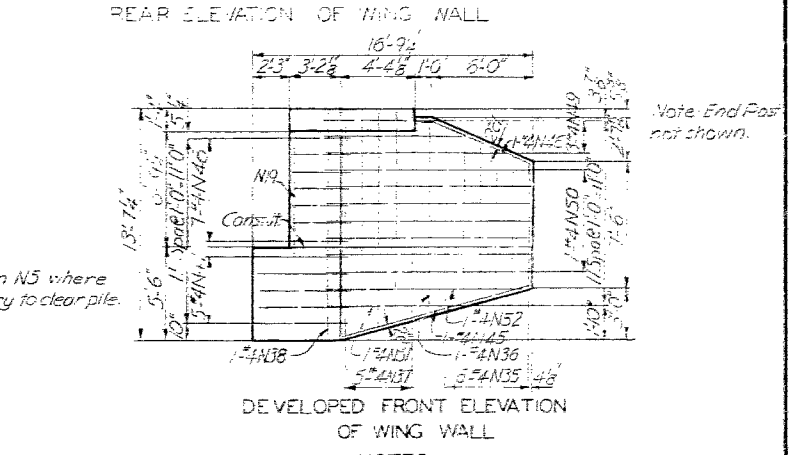
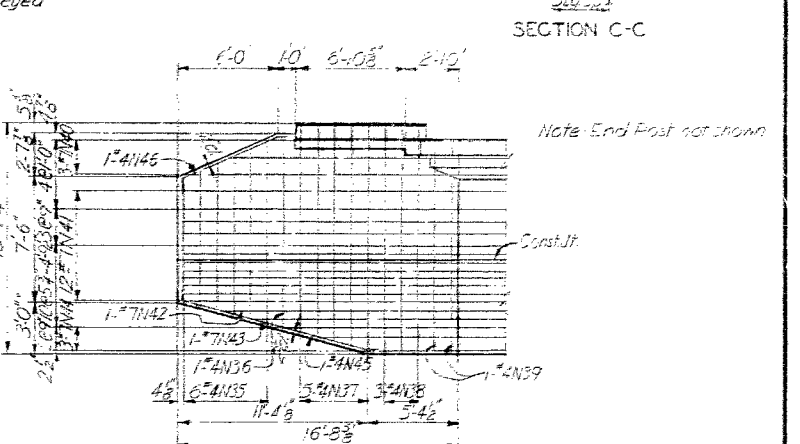
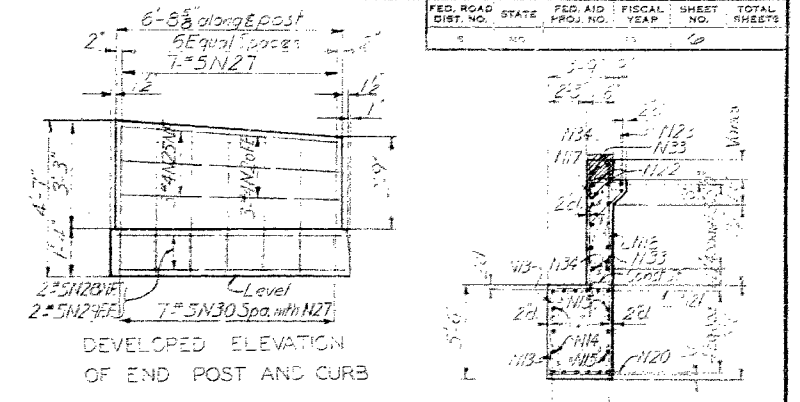
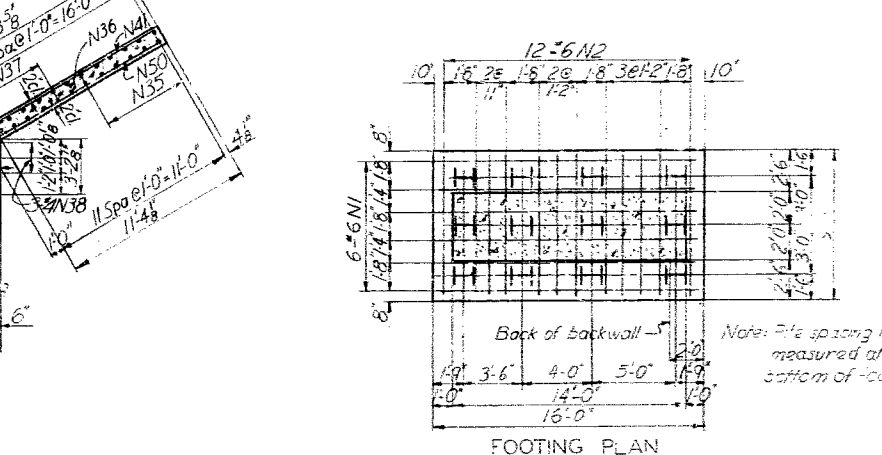
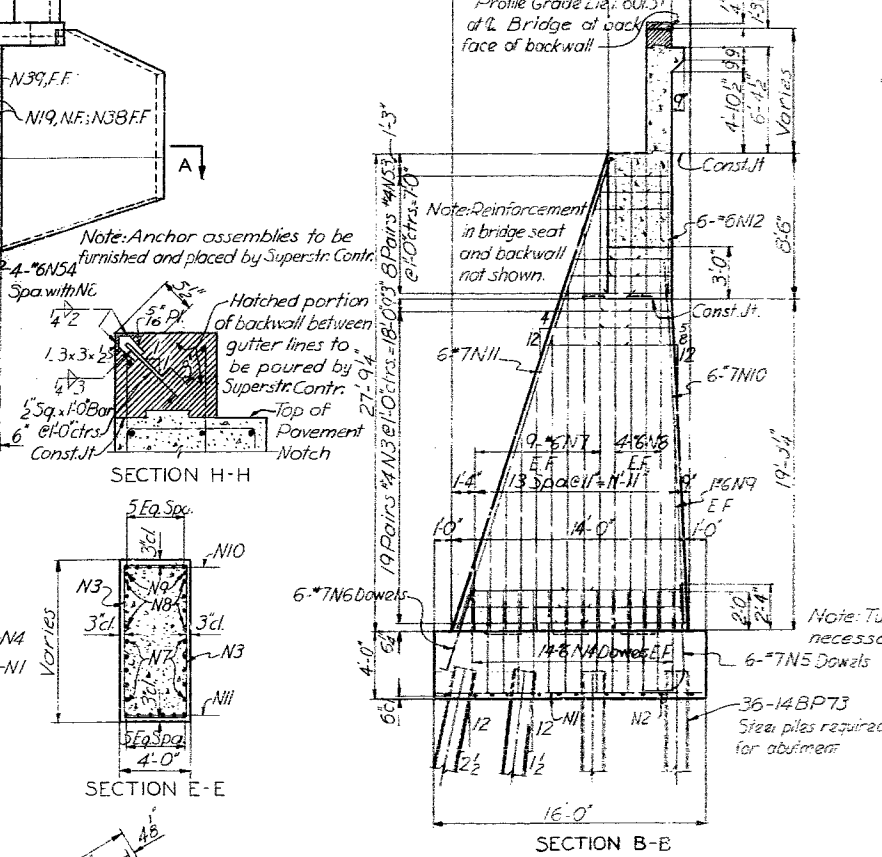
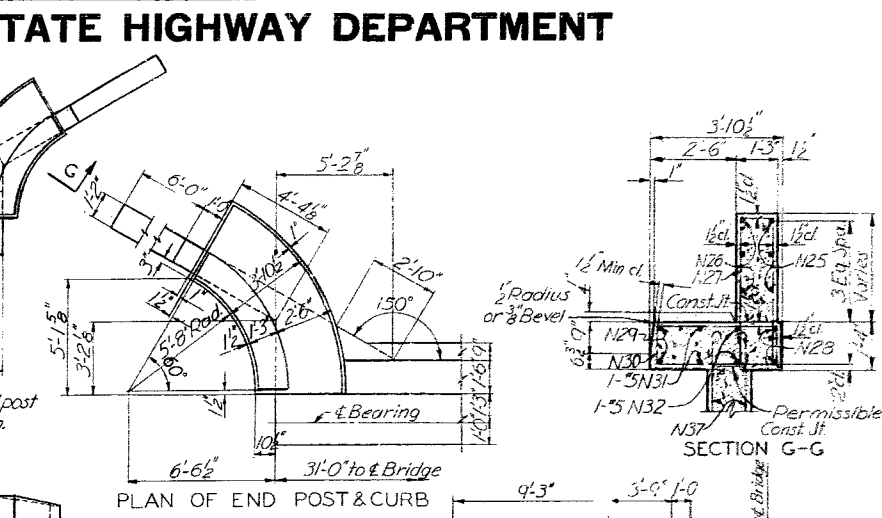
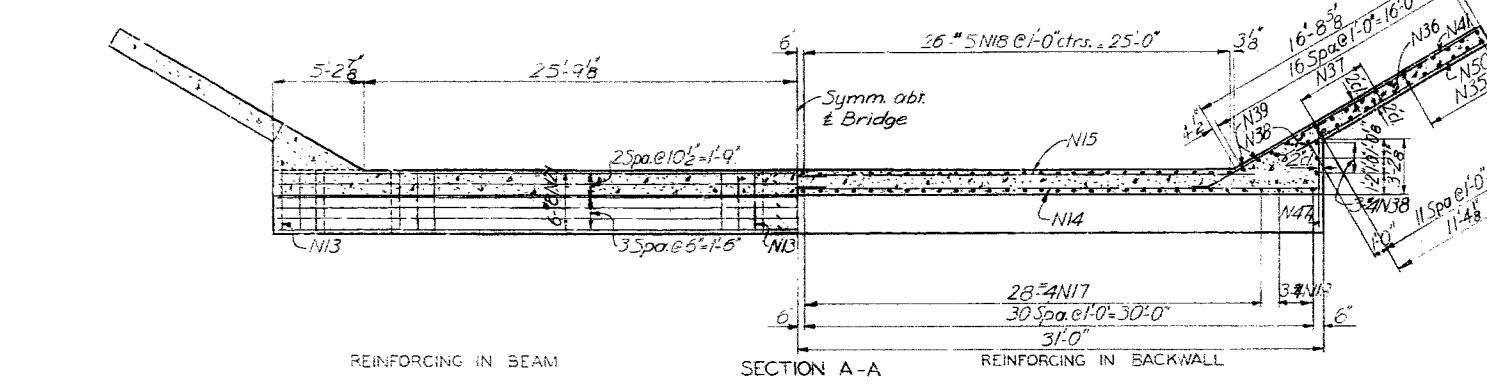
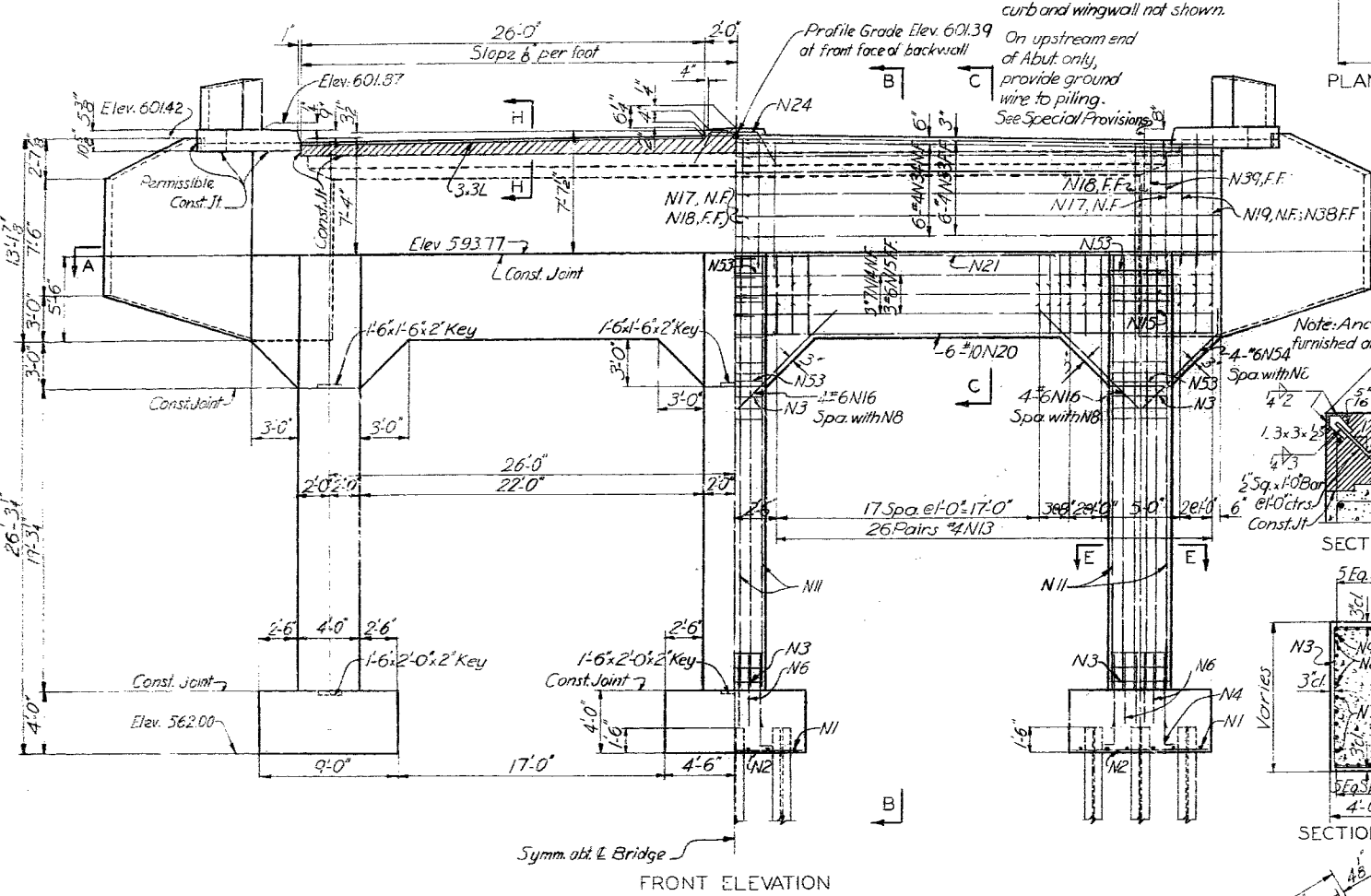
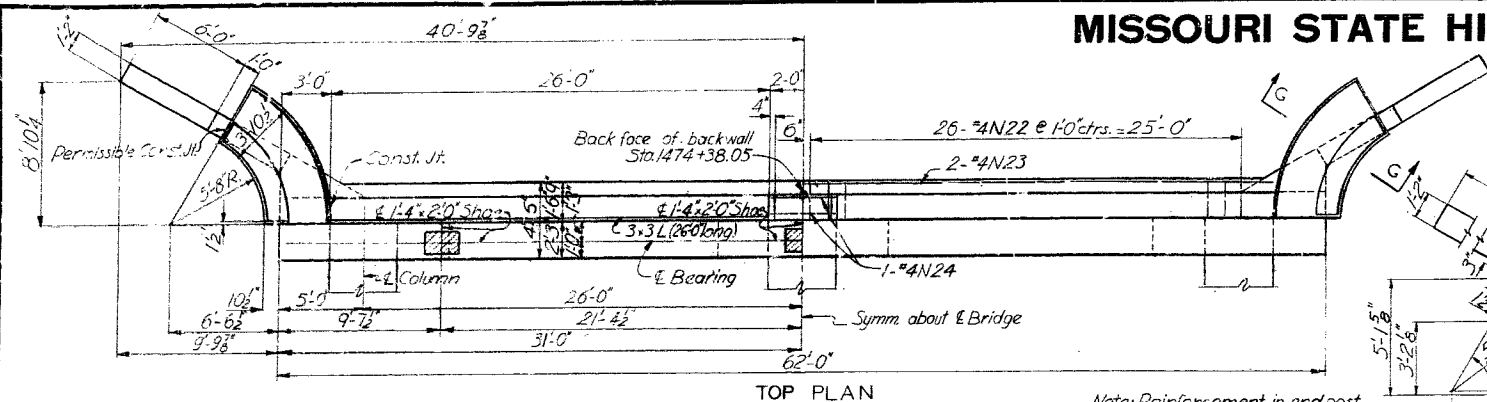
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

1427
 DRAWN BY: A. Avila Dec. 1951
 TRACED BY: L. Glaser Dec. 1951
 CHECKED BY: W. Littlefield Jan. 1952

394

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	MO		1957	6	10



NOTES

See Sheet 12 for location and details of anchor bolts wells.

See Sheet 23 for Bar List.

N.F. indicates Near Face; F.F. indicates Far Face; and E.F. indicates Each Face.

See Sheet 3 for Steel Pipe Pile.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA

ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a, b, c (F.A.I. RT. I.) STA. 1474+38.05

I-70-3(15) a (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.

ENGINEERS - ARCHITECTS

ST. LOUIS, MO.

395

DRAWN BY: Adnan Kar Feb 1957

TRACED BY:

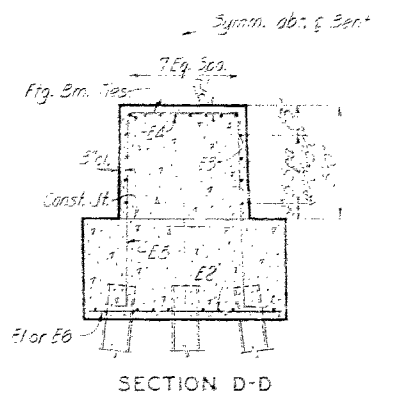
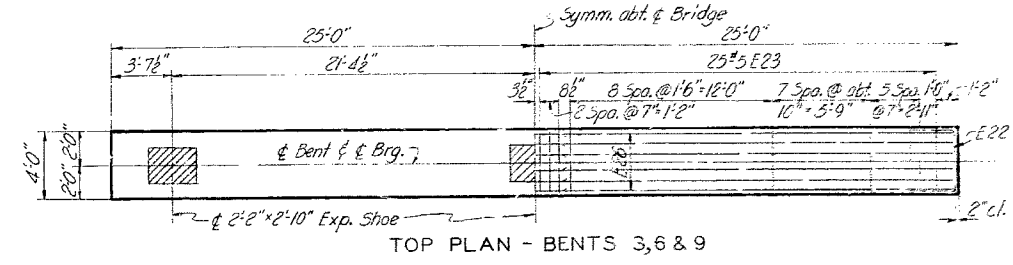
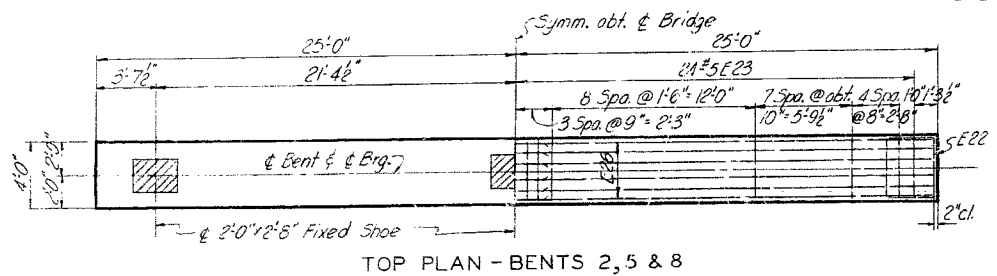
CHECKED BY: H.C. Morris April 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

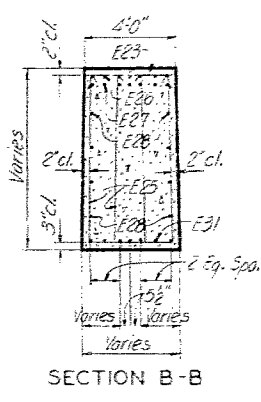
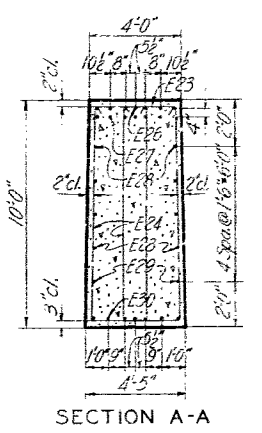
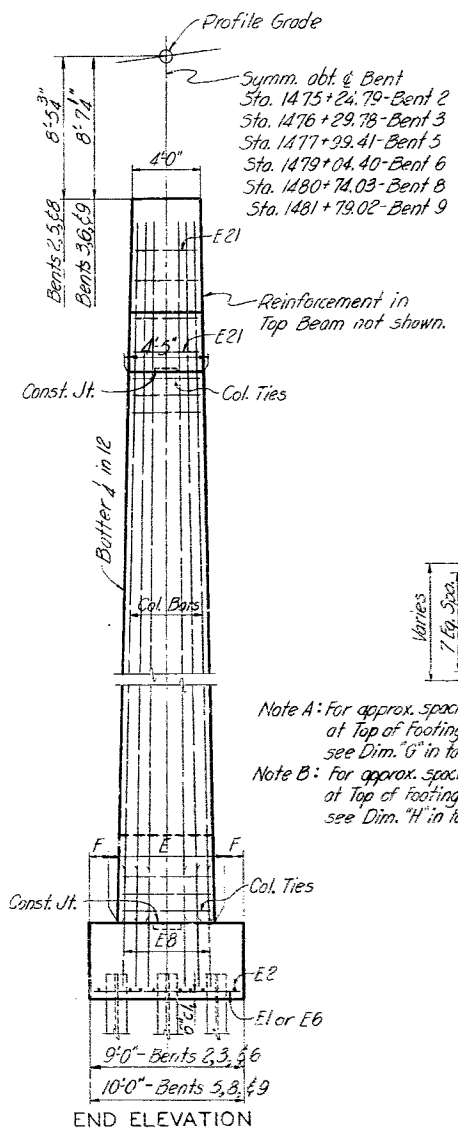
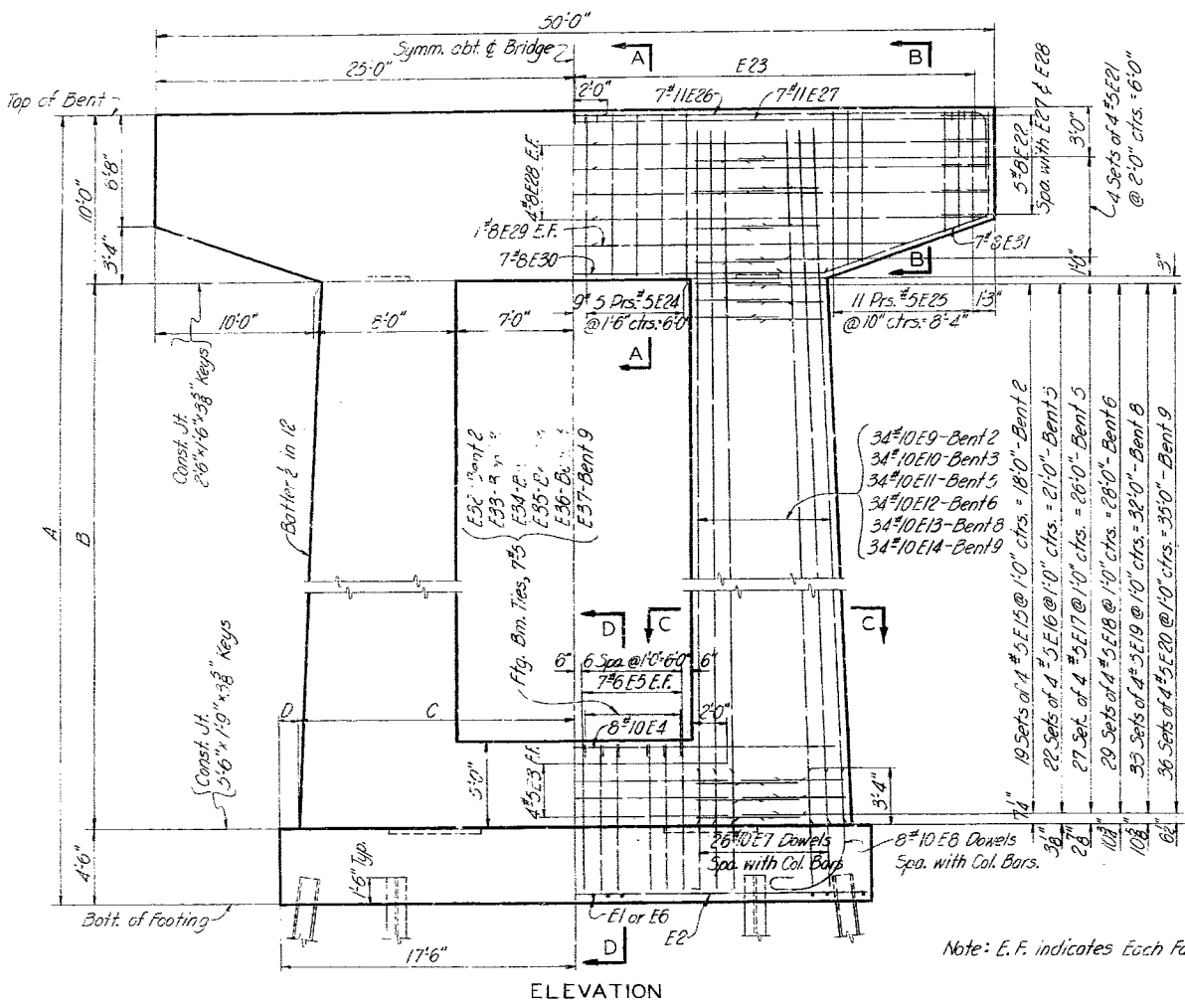
NO CONSTRUCTION

MISSOURI STATE HIGHWAY DEPARTMENT

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

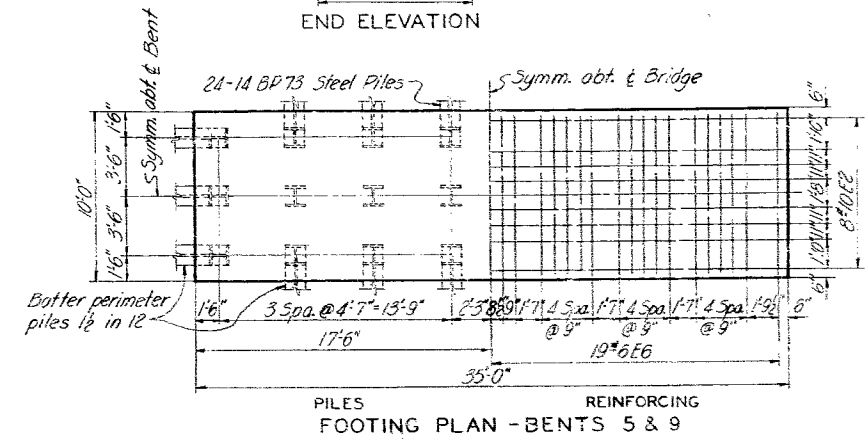
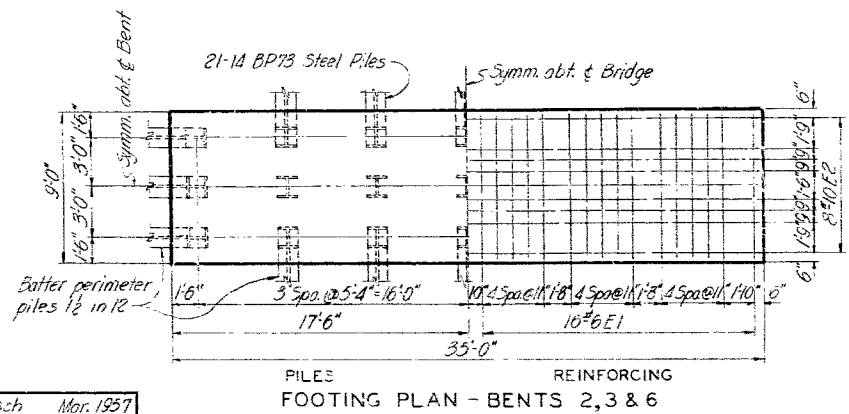
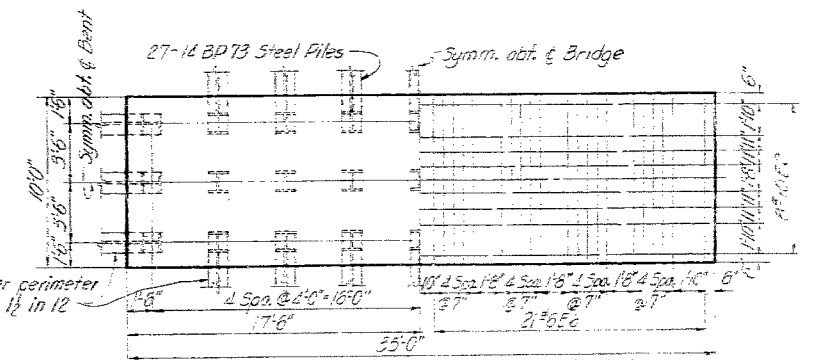


NOTES
 The 10'-0" top beams shall be poured in one continuous operation.
 See Sheet 15 for steel pile splice.
 For location and size of anchor bolt wells, see Sheet 12.
 For Bar List, see Sheet 23.
 Pile spacing shown is measured at bottom of footing.



Bent	Elev. Profile Grade	Elev. Top of Bent	Elev. Bottom of Footing	A	B	C	D	E	F	G	H
2	602.63	594.35	561.00	53'-4 1/2"	18'-10 1/2"	15'-9 1/2"	1'-8 1/2"	5'-2 1/2"	1'-10 1/2"	9 1/2"	7 1/2"
3	604.61	596.01	562.00	36'-0 1/2"	21'-6 1/2"	15'-10 1/2"	1'-7 1/2"	5'-3 1/2"	1'-10 1/2"	9 1/2"	7 1/2"
5	607.47	598.99	558.00	40'-11 1/2"	28'-5 1/2"	16'-1 1/2"	1'-4 1/2"	5'-6 1/2"	2'-2 1/2"	10 1/2"	8 1/2"
6	609.25	600.65	557.00	43'-7 1/2"	29'-1 1/2"	16'-2 1/2"	1'-3 1/2"	5'-7 1/2"	1'-8 1/2"	10 1/2"	8 1/2"
8	612.12	603.62	556.00	47'-7 1/2"	33'-1 1/2"	16'-4 1/2"	1'-2 1/2"	5'-9 1/2"	2'-1 1/2"	10 1/2"	8 1/2"
9	613.89	605.29	555.00	50'-3 1/2"	35'-9 1/2"	16'-6"	1'-0"	5'-11"	2'-0 1/2"	10 1/2"	8 1/2"

Note A: For approx. spacing at Top of Footing, see Dim. "G" in table.
 Note B: For approx. spacing at Top of Footing, see Dim. "H" in table.



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16)abc (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

BENTS 2, 3, 5, 6, 8 & 9

SHEET 7 OF 8

L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

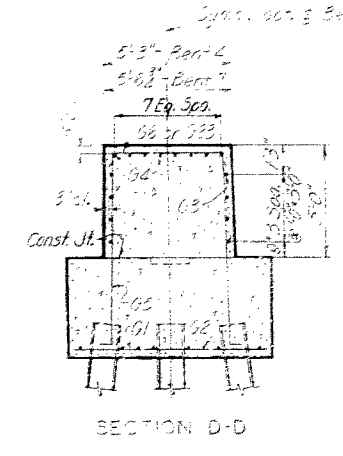
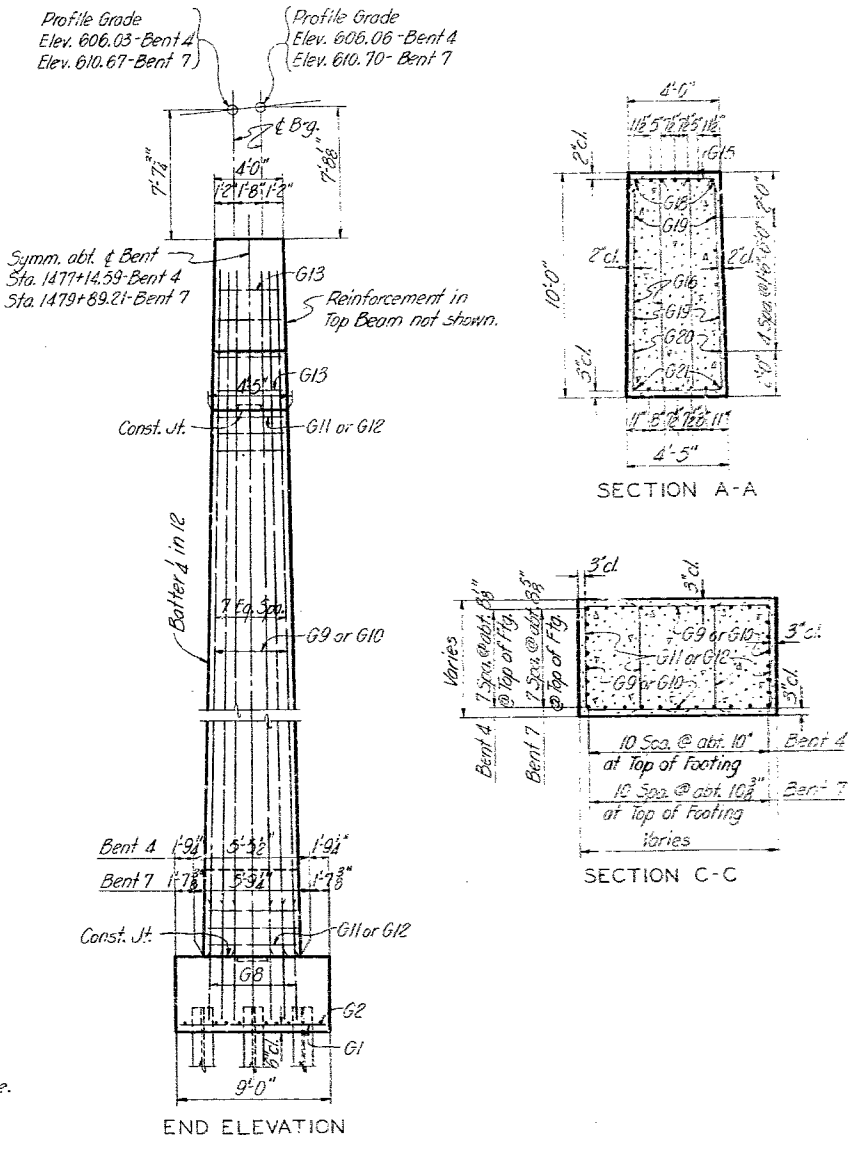
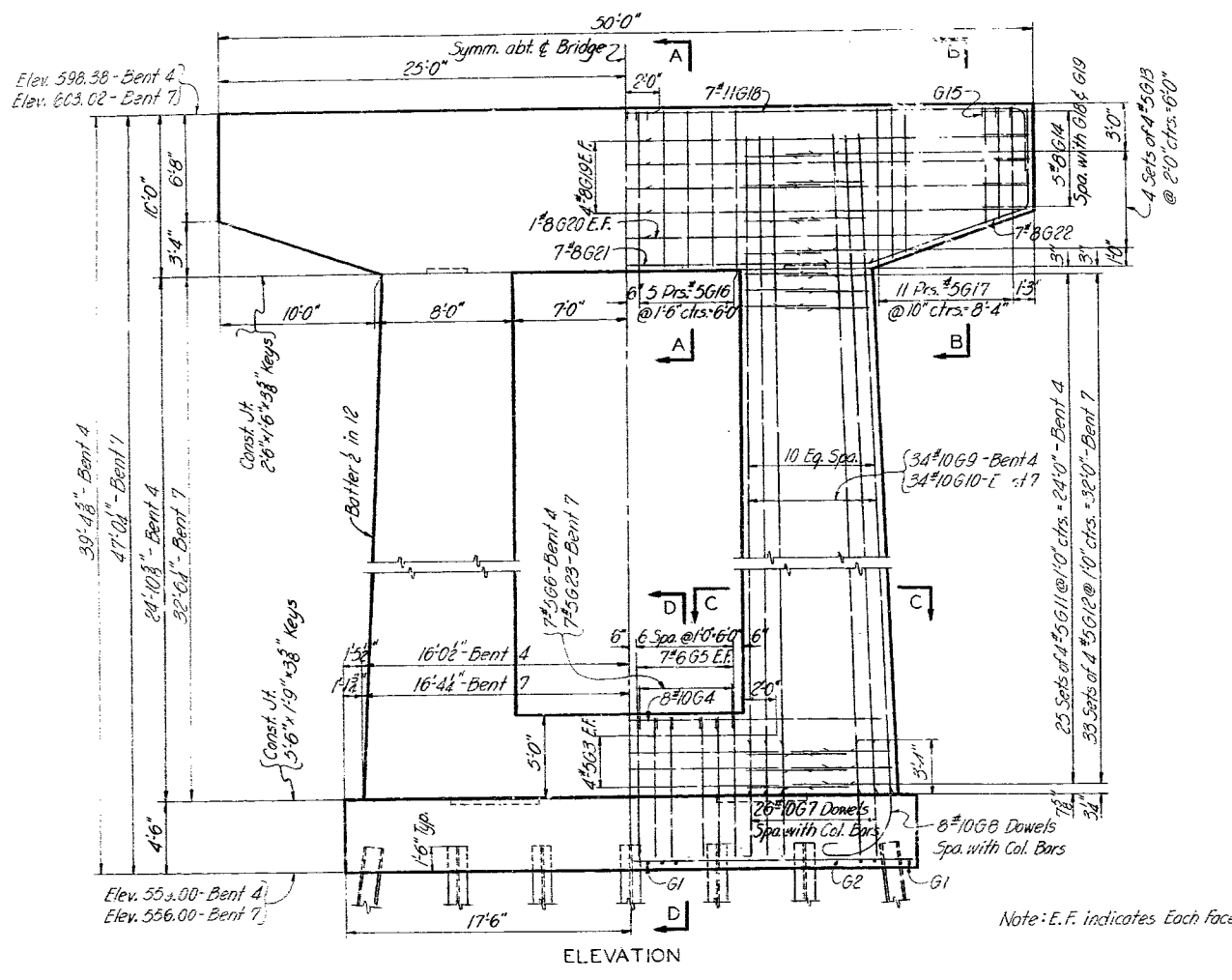
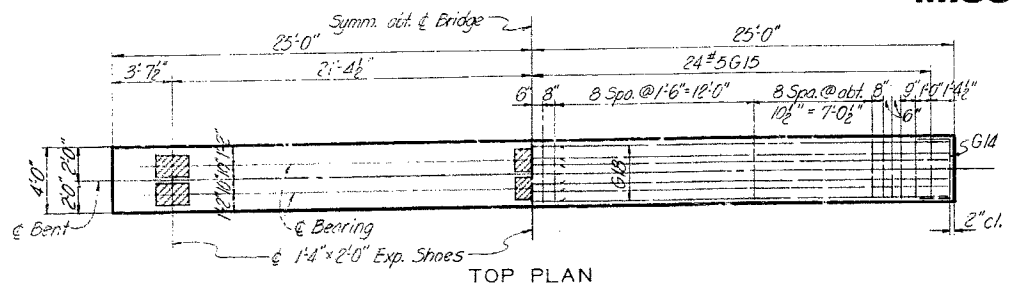
NO CONSTRUCTION SHALL BE

396

DRAWN BY: J. A. Liebsch Mar. 1957
 TRACED BY:
 CHECKED BY: M. C. Williams Mar. 1957

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	29	

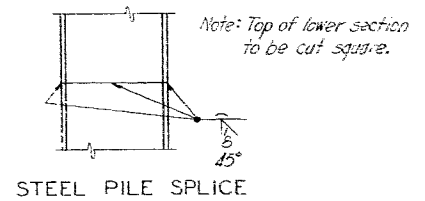
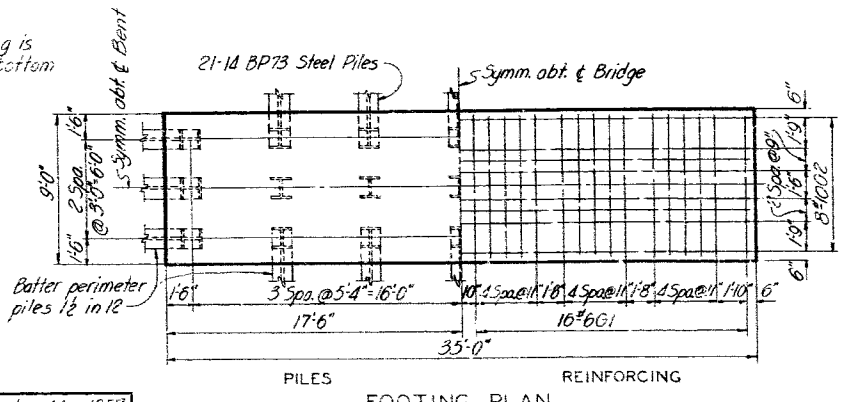


NOTES

The reinforcement bars to be placed in one continuous operation.

For location and size of anchor bolts, see Sheet 2.

For Bar List, see Sheet 23.



Note: Dike spacing is measured at bottom of footing.

Note: Top of lower section to be cut square.

Note: E.F. indicates Each Face.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. -229(18)950 (FAI RT.1) STA. 1474+38.05
BOONE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

BENTS 4 & 7

SHEET 5 OF 5

L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

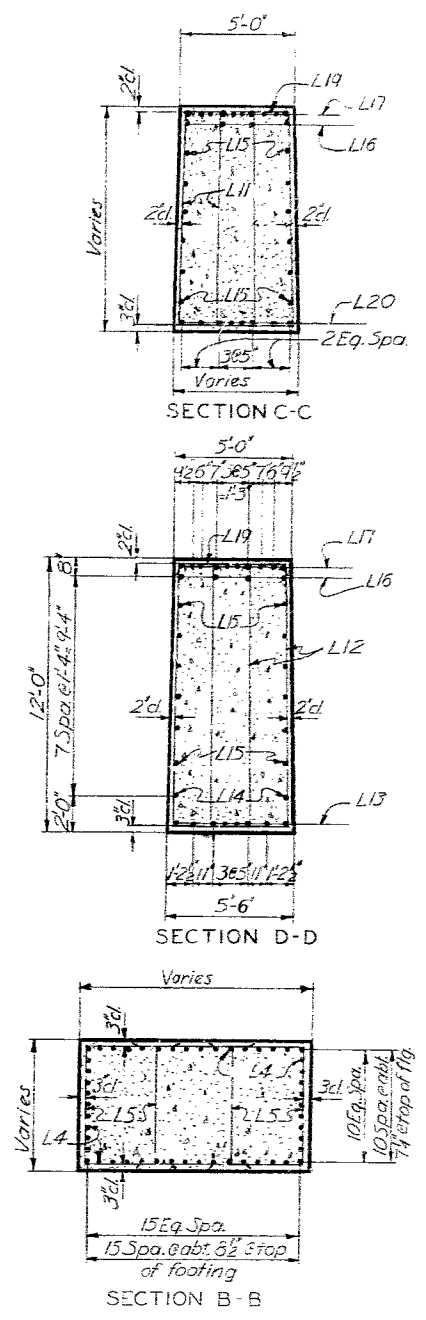
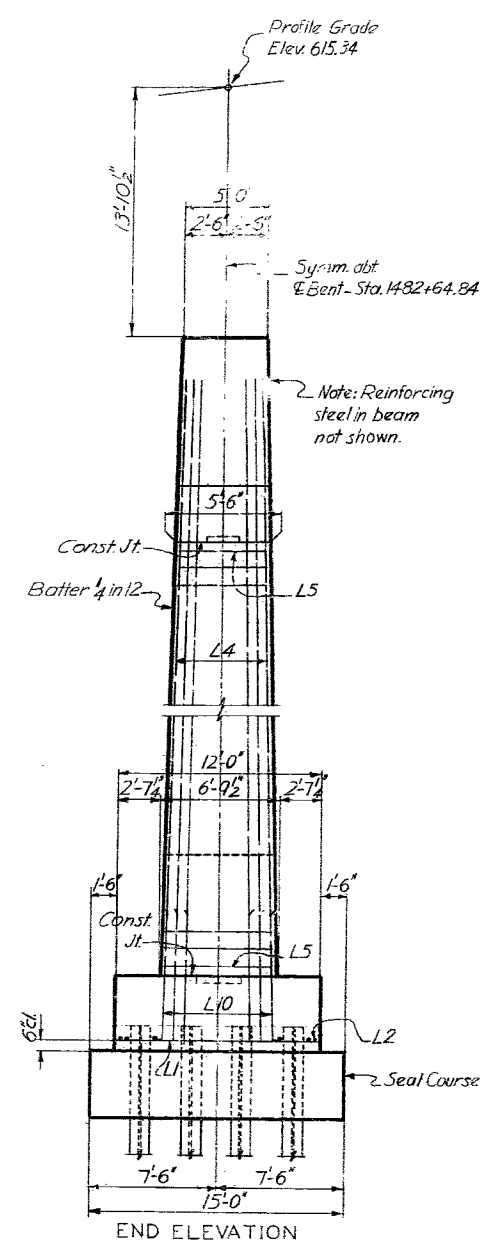
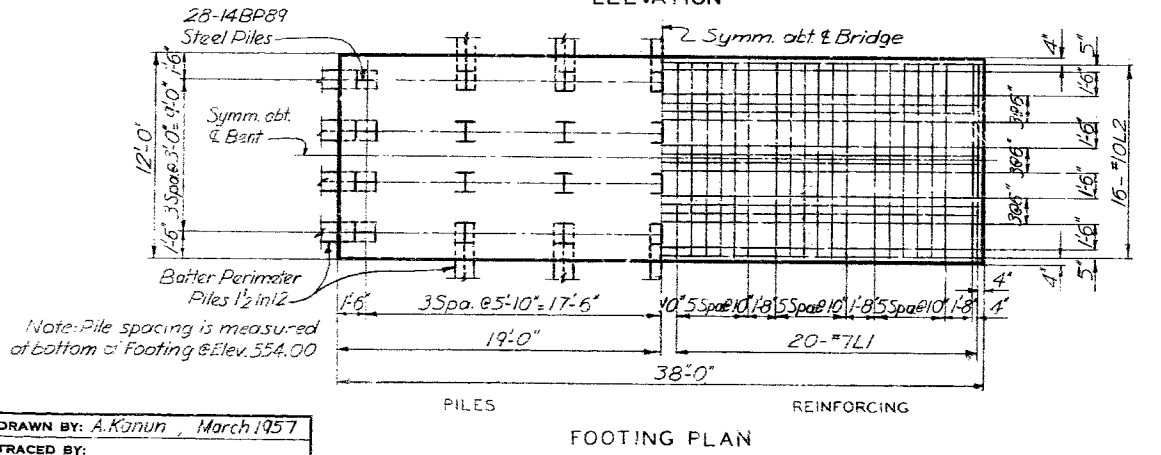
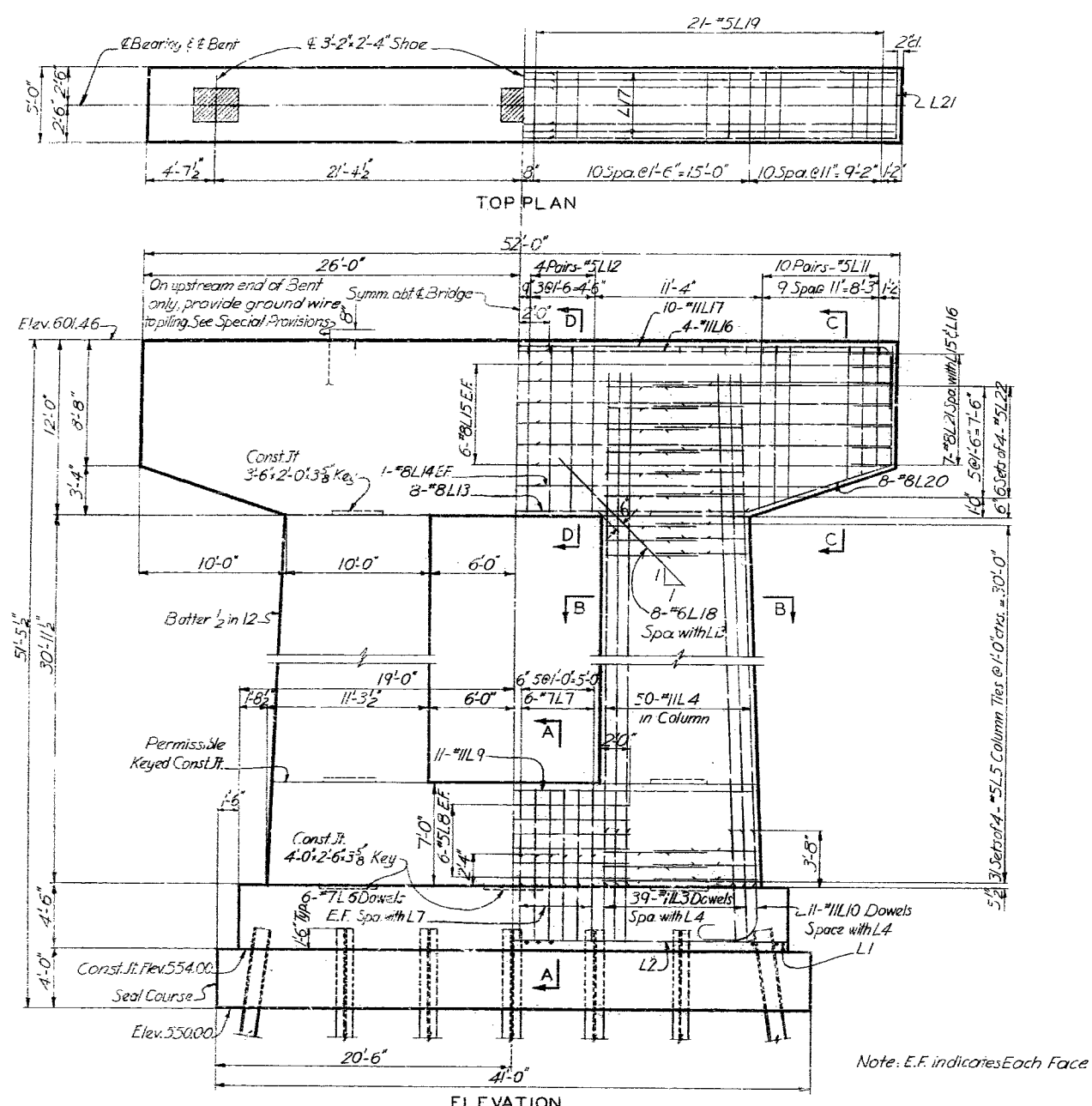
NO CONSTRUCTION CHANGES

397

DRAWN BY: J. A. Liebsch, Mar. 1957
 TRACED BY:
 CHECKED BY: J. S. Hicallito, Mar. 1957

MISSOURI STATE HIGHWAY DEPARTMENT

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



NOTES

The 12'-0" deep top beam shall be cured in one continuous operation.
 For location and size of anchor bolt wells, see Sheet 12.
 For Bar List, see Sheet 23.
 For Steel Pile Splice see Sheet 18.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16)abc (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

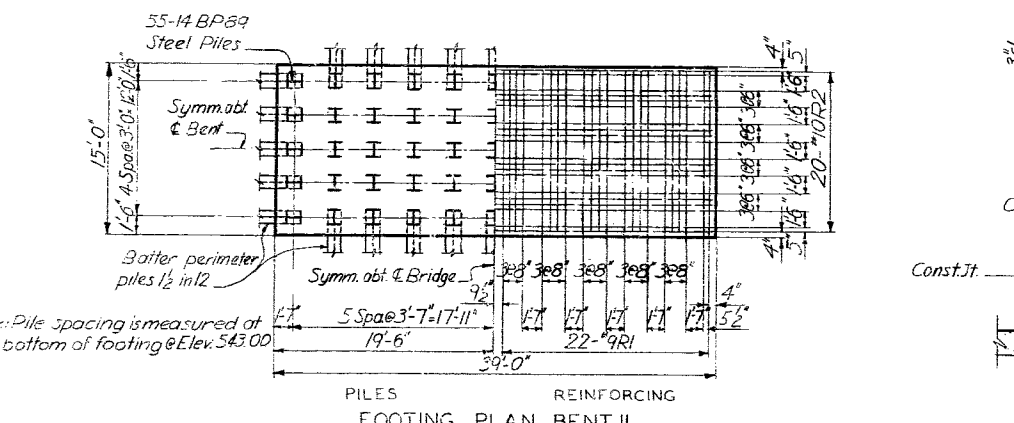
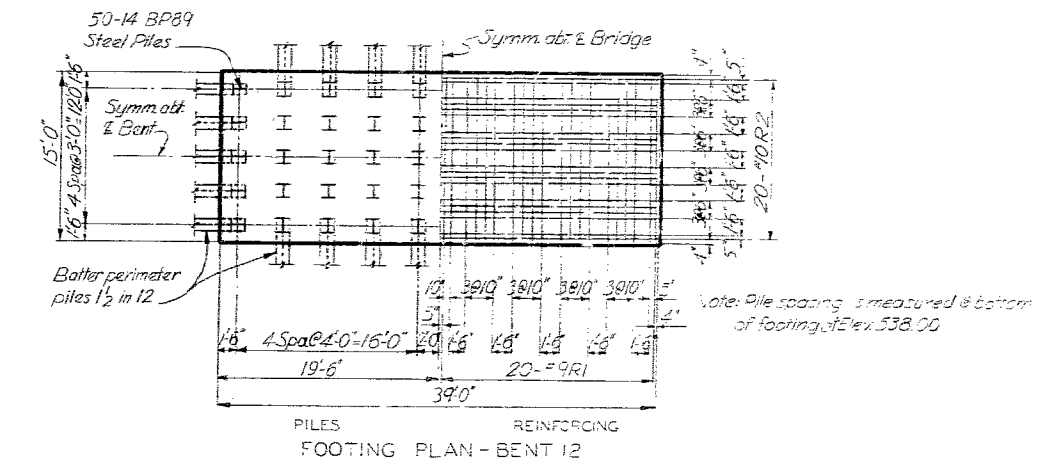
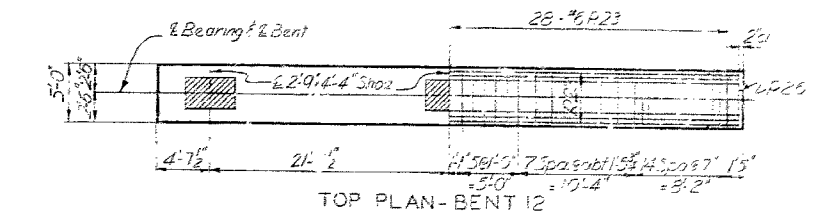
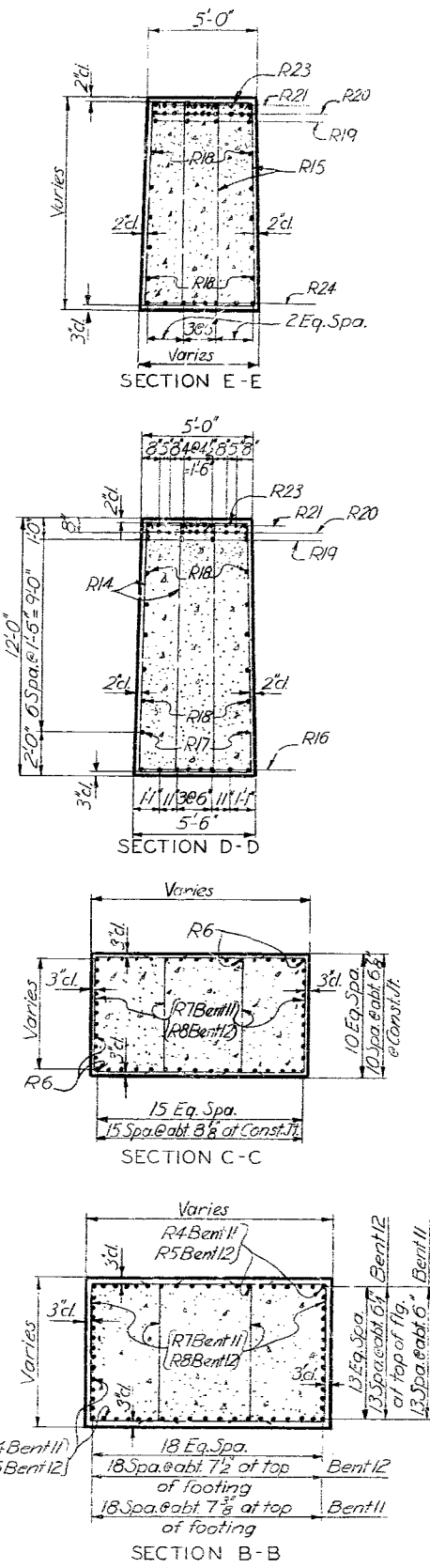
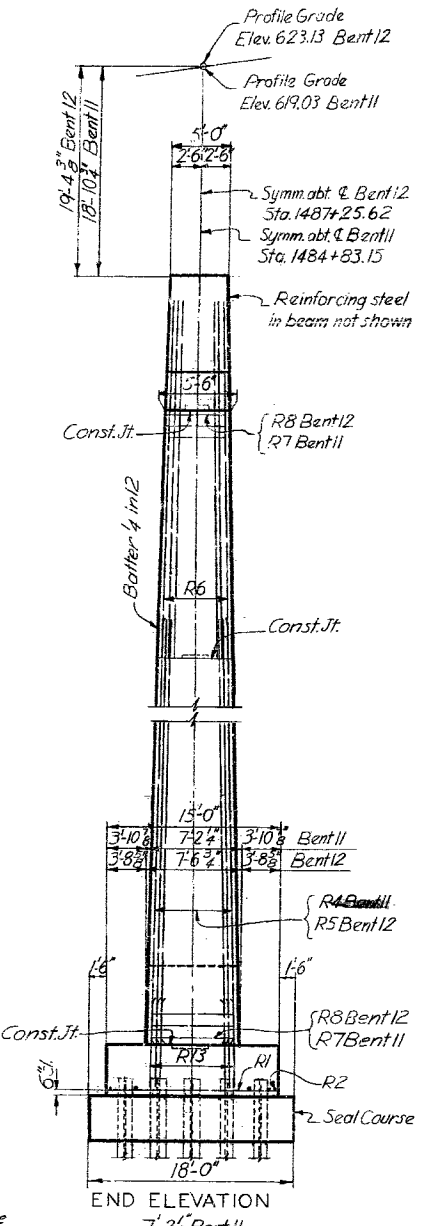
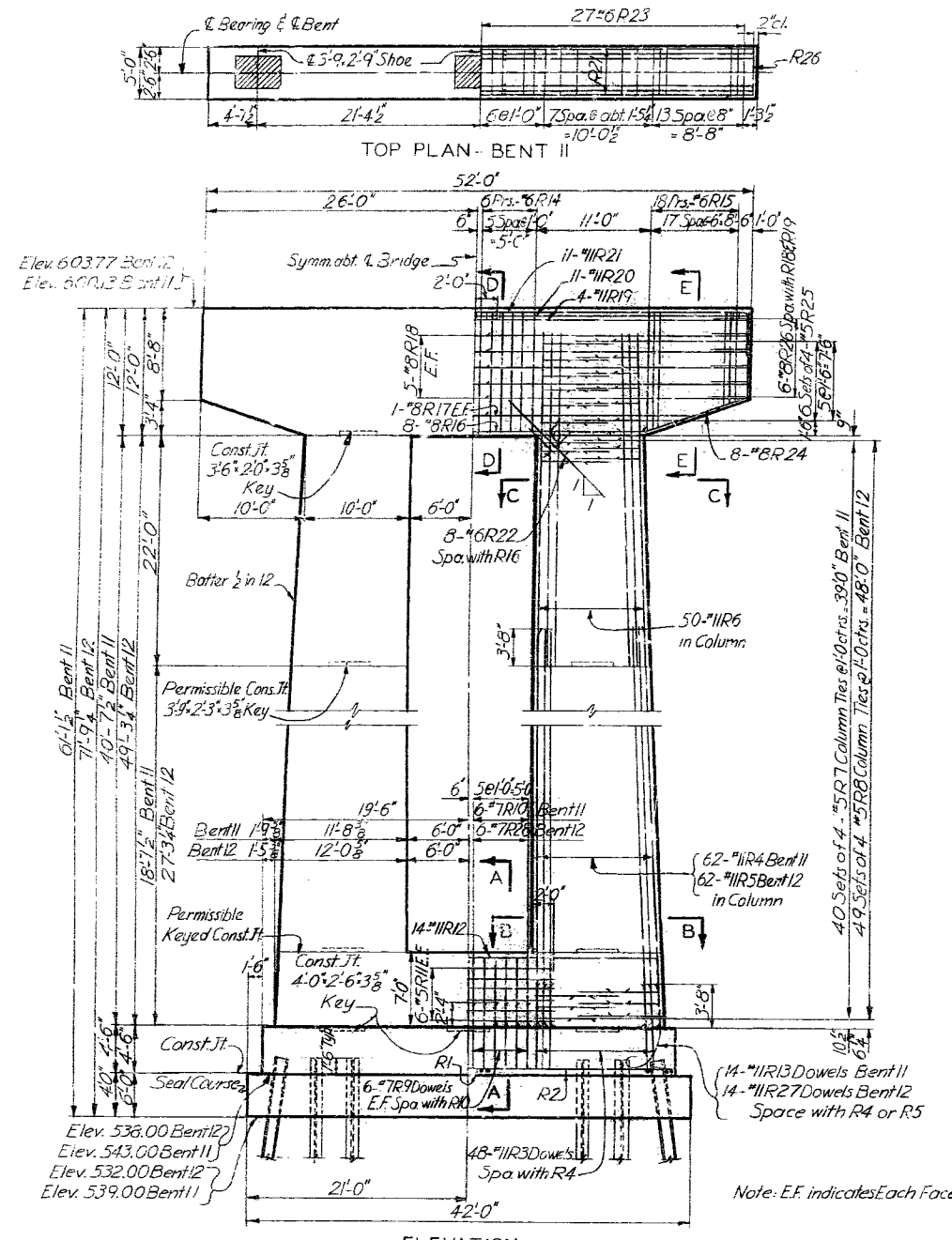
SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

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	24	



NOTES
 The 12'-0" deep top beam shall be poured in one continuous operation.
 For location and size of anchor bolt wells see Sheet 12.
 For Bar List, see Sheet 23.
 For Steel Pile Splice see Sheet 18.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a,b,c (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

BENTS II & I2

SHEET 23 OF 6

L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

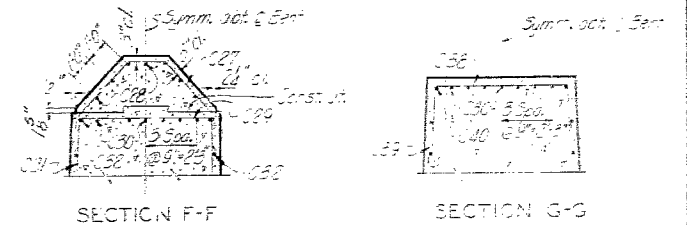
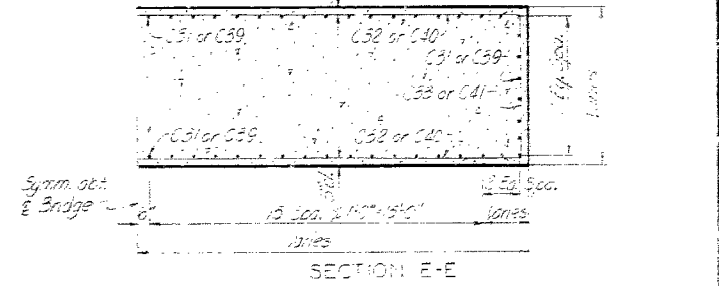
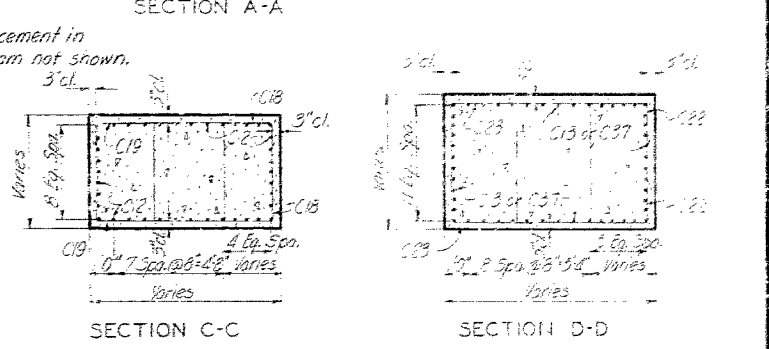
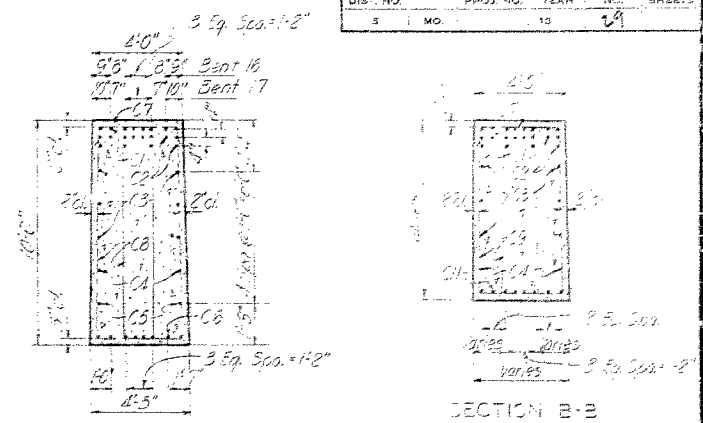
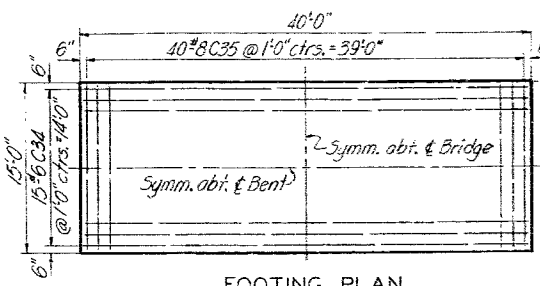
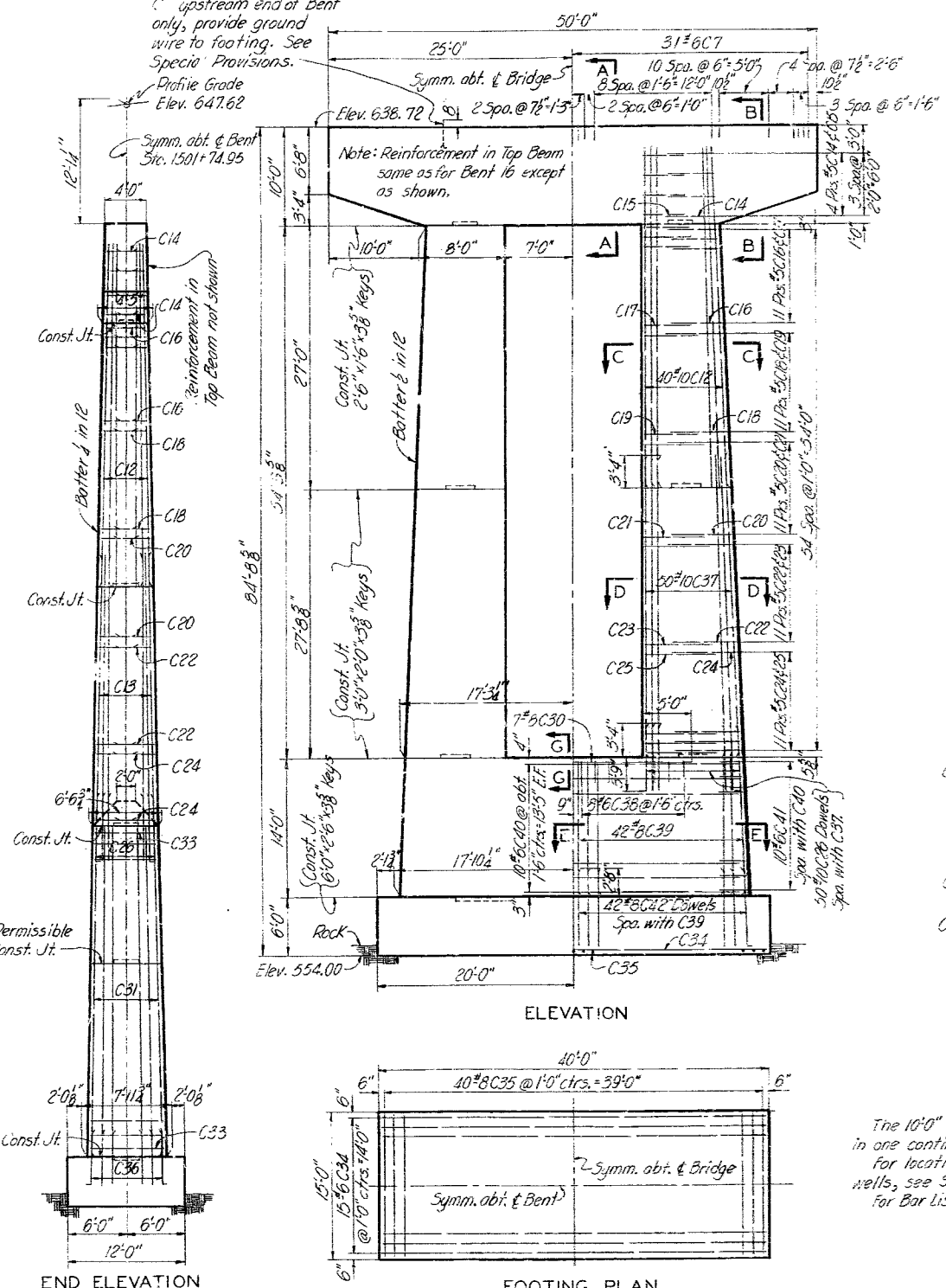
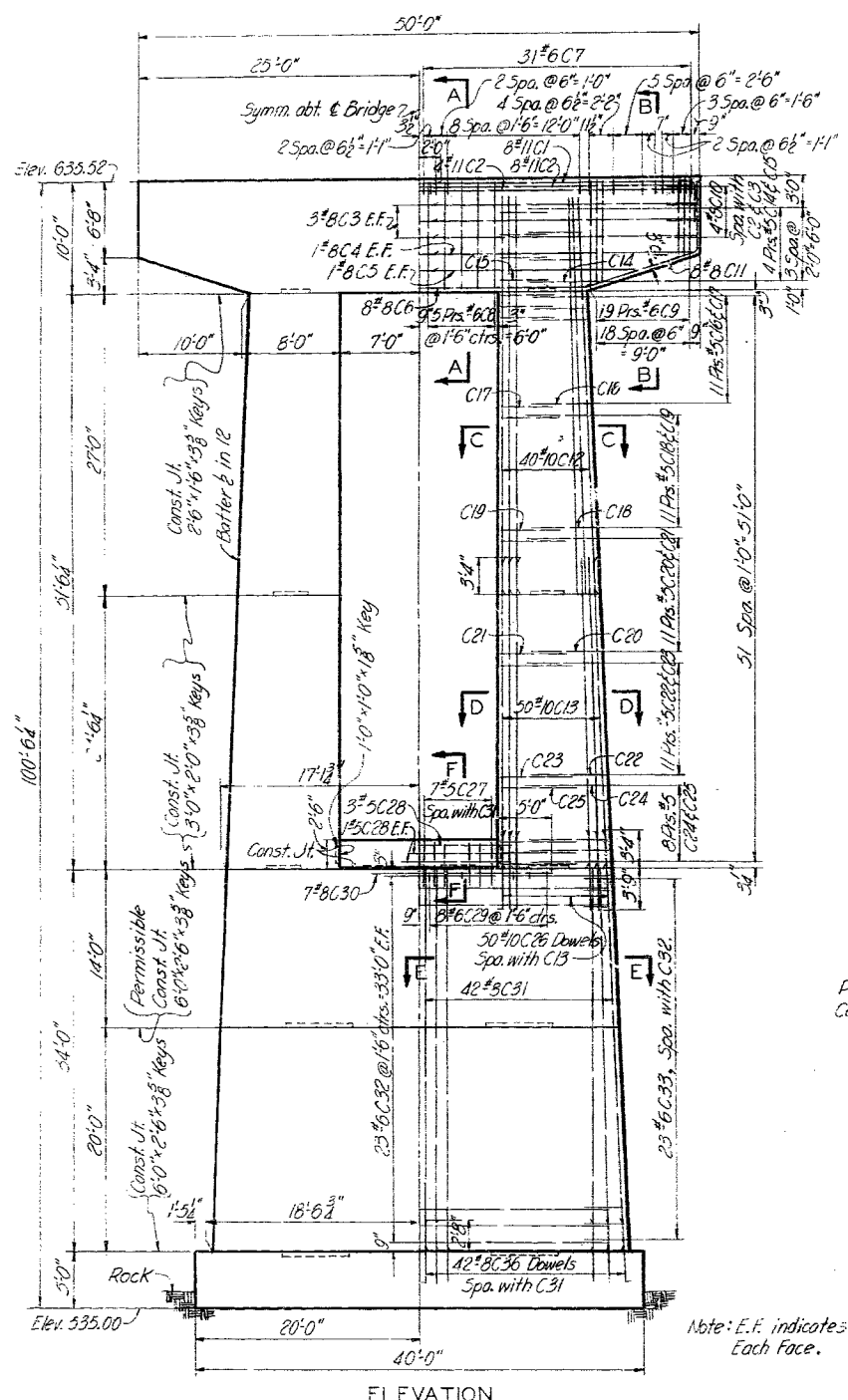
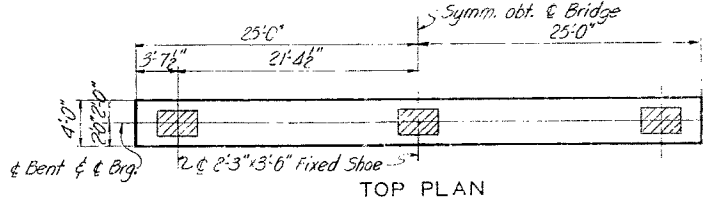
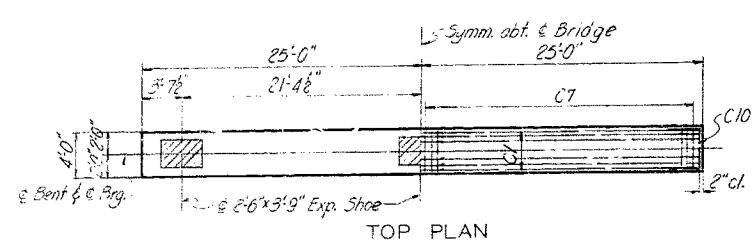
NO CONSTRUCTION CHANGES

399

DRAWN BY: A. Kanun, March 1957
 TRACED BY:
 CHECKED BY: J. J. Hipolito, April 1957

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		1957	21	69



NOTES
 The 10'-0" top beams shall be poured in one continuous operation. For location and size of anchor bolt wells, see Sheet 12. For Bar List, see Sheet 23.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLLEADIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16)a,b,c (FAI RT. I) STA. 1474+33.05
BOCNE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: J.A. Liebsch Mar. 1957
 TRACED BY:
 CHECKED BY: M.C. Williams Mar. 1957

BENT 16

BENT 17

BENTS 16 & 17

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

SHEET 21 OF 6

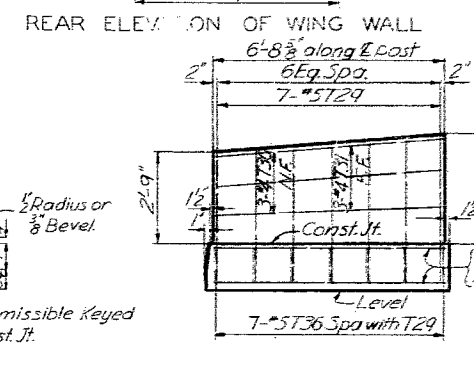
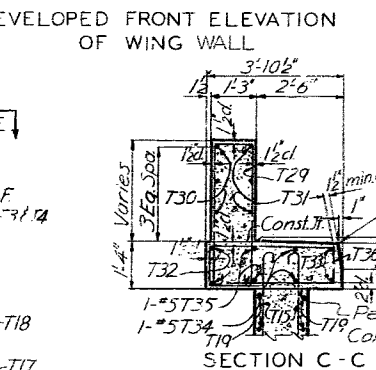
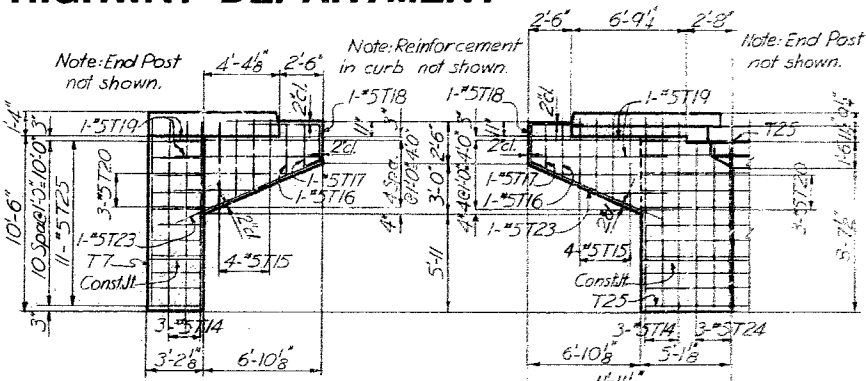
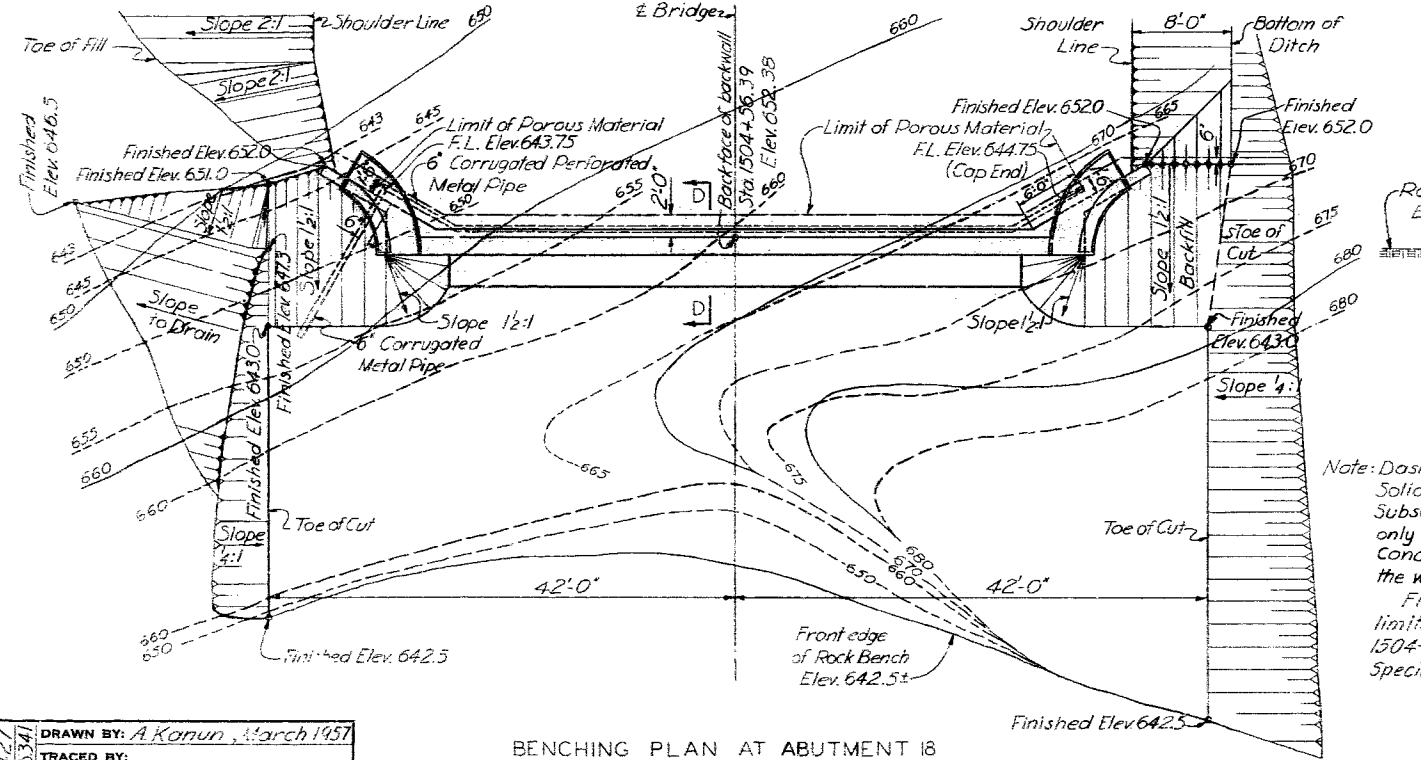
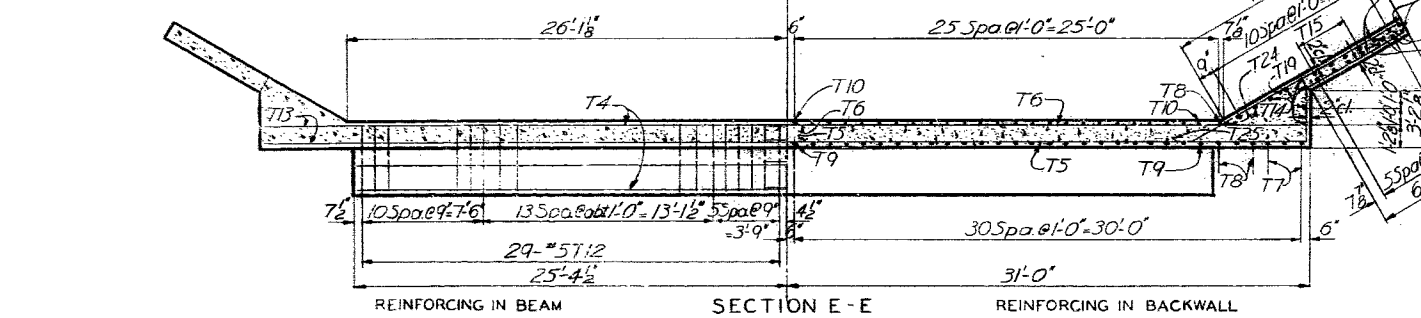
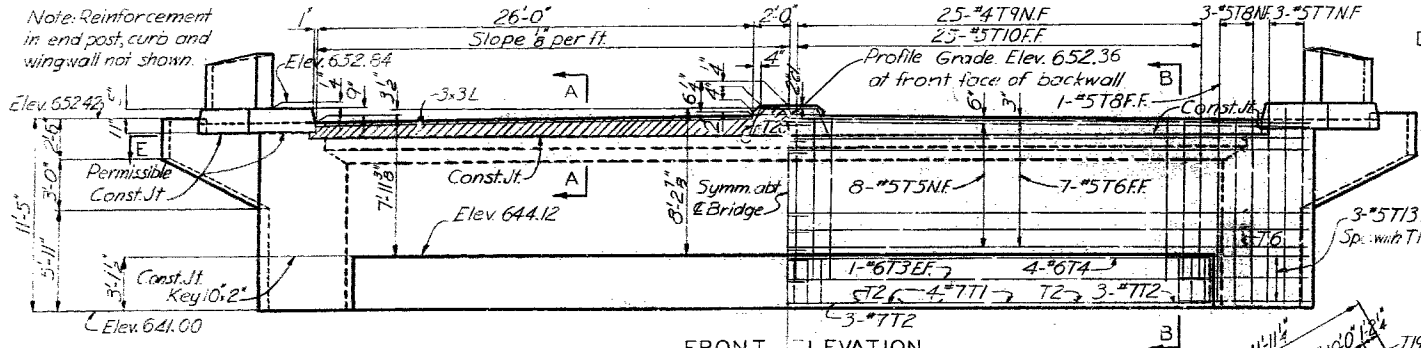
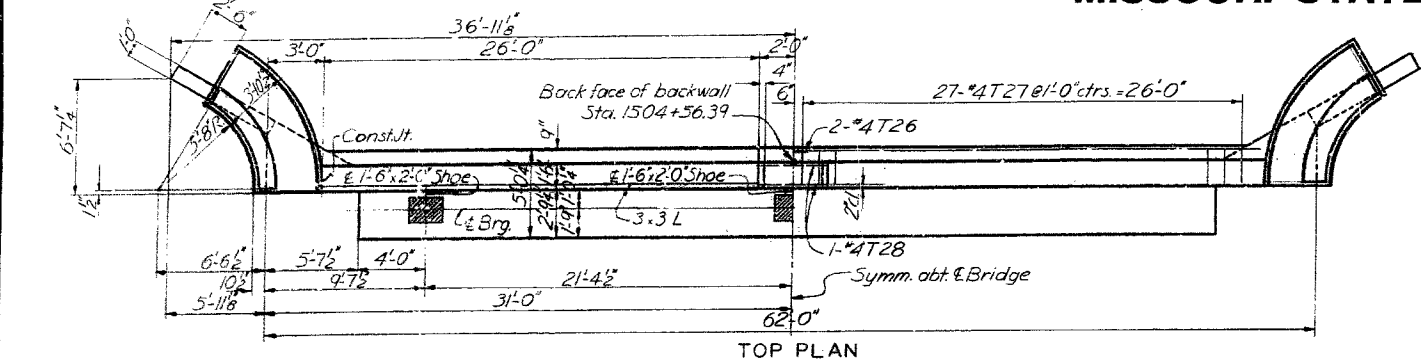
L-962

SEE FINAL PLANS BROWN LINES

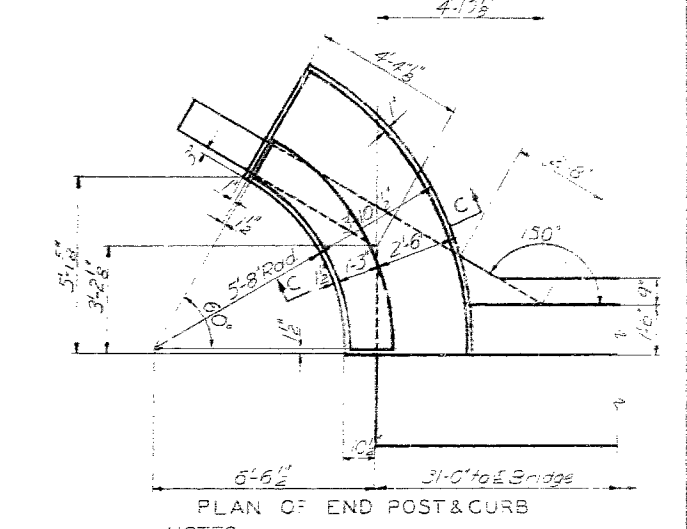
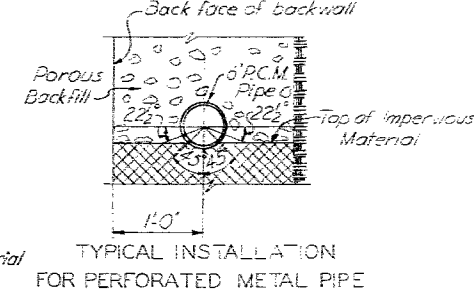
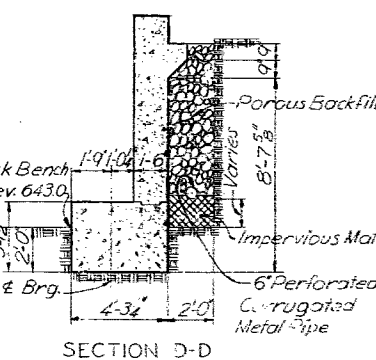
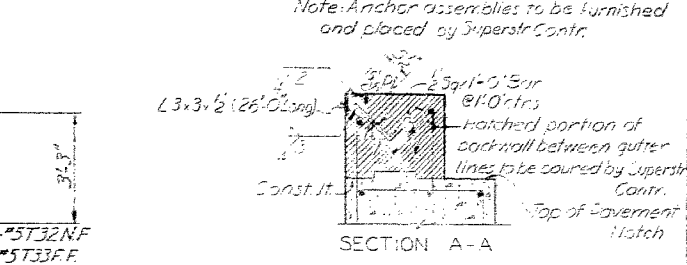
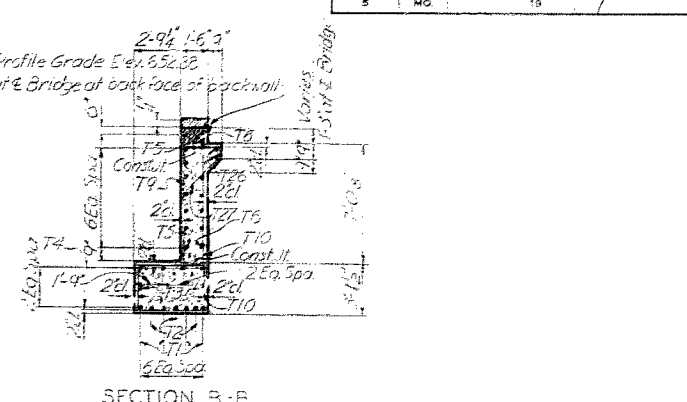
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MISSOURI STATE HIGHWAY DEPARTMENT

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



DEVELOPED ELEVATION OF END POST & CURB



NOTES
 See Sheet 12 for location and size of anchor bolt with
 See Sheet 23 for Bar List
 N.F. indicates Near Face; F.F. indicates Far Face; and
 E.F. indicates Each Face.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-223(16) a,b,c (FA I RT. I) STA. 1474+38.05
 I-70-3(15) a (RT. I-70)
BOONE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

11/27
 5/13/57
 DRAWN BY: A. Konun, March 1957
 TRACED BY:
 CHECKED BY: H. C. Morris, Apr. 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

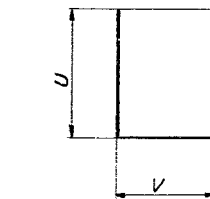
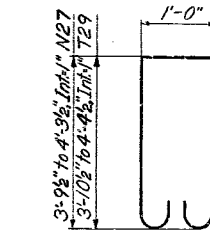
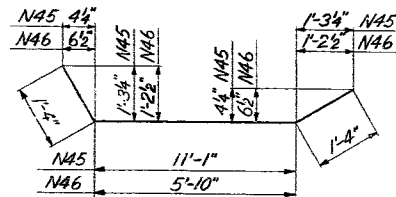
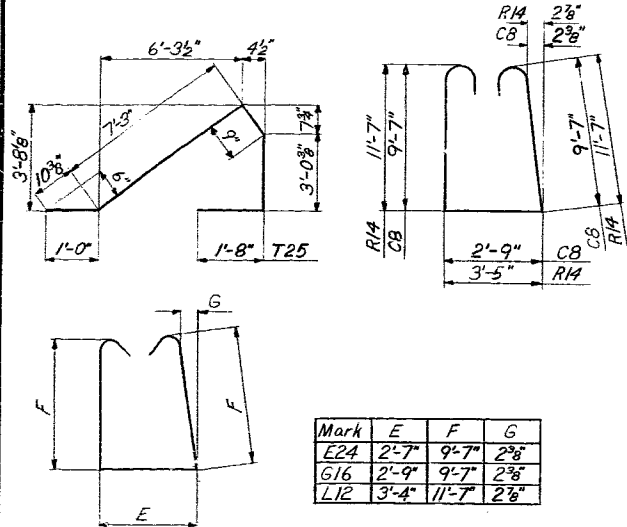
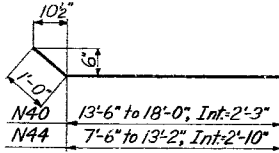
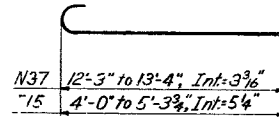
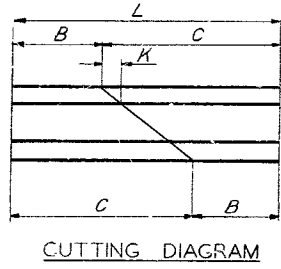
ABUTMENT 18
 SHEET 22 OF 2
L-962

SEE FINAL PLANS FOR DIMENSIONS

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		1957	13	15

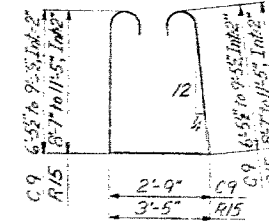
NO. REQ'D	SIZE NO.	LENGTH	MARK	TYPE	LOCATION	DIMENSIONS FOR BENDING													
						A	B	C	D	E	F	G	H	J	K	R	O		
ABUT. 18 (CONTD.)																			
58	#5	14-4"	T11	TI	Bridge Seat	Not Used													
12	#5	7-2"	T13	Str.	Wingwall	Used	3-11/4"	2-9/8"	3-1/4"	2-9/8"				5"					
12	#5	12-1"	T14	Str.	do	7"	11-6"												
8	#5	10-6"	T15	Spcl.	do	See Cutting Diagram & Bending Detail													
4	#5	3-2"	T16	Str.	do														
4	#5	2-9"	T17	Str.	do														
4	#5	7-11"	T18	Str.	do	-	4-0"	2-3"	1-8"				1-6"	B"					
6	#5	9-1"	T20	Str.	do	See Cutting Diagram													
			T21			Not Used													
			T22			Not Used													
4	#5	9-0"	T23	Str.	Wingwall														
6	#5	9-9"	T24	Str.	do														
22	#5	13-8"	T25	Spcl.	do	See Bending Detail													
4	#4	29-0"	T26	Str.	Backwall														
54	#4	5-3"	T27	16	do	3"	1-11"	6"	2-8"				7-10 1/2"	1-10 1/2"					
2	#4	6-10"	T28	14	Median	-	1-9"	3-4"	1-9"				1-7"	9"					3-10"
7	#5	20-10"	T29	Spcl.	End Post	See Cutting Diagram & Bending Detail													
6	#4	3-10"	T30	9	do					5-7 1/2"			9"						5-11 1/2"
6	#4	6-11"	T31	9	do					6-6"			10 1/2"						6-10"
4	#5	6-2"	T32	9	Sidewalk					5-10 1/2"			9 1/2"						5-10 1/2"
4	#5	9-2"	T33	9	do					9-2 3/4"			1-2 3/8"						9-2 3/4"
4	#5	8-5"	T34	9	do					8-0 1/2"			1-1"						8-0"
4	#5	7-3"	T35	9	do					6-11 1/2"			11 1/4"						5-11"
14	#5	10-10"	T36	Spcl.	do	See Bending Detail													
12	#2	32-6"	W1	Spcl.	A.B. Wells	See Bending Detail													



Mark	Cutting Schedule	B	C	K	L
C9	Cut 4 Sets of 19 Each & Bend	17'-0"	23'-0"	4"	40'-0"
C10	Cut 2 Sets of 4 Each & Bend	8'-11"	9'-1"	3 1/2"	18'-0"
C33	Cut 1 Set of 23 & Bend	12'-11"	14'-4"	3 1/2"	27'-3"
C41	Cut 1 Set of 10 & Bend	11'-5"	12'-0"	1 3/8"	23'-5"
E15	Cut 4 Sets of 19 Each & Bend	10'-11"	12'-5"	1"	23'-4"
E16	Cut 4 Sets of 22 Each & Bend	10'-11"	12'-8"	1"	23'-7"
E17	Cut 4 Sets of 27 Each & Bend	10'-11"	13'-1"	1"	24'-0"
E18	Cut 4 Sets of 29 Each & Bend	10'-11"	13'-3"	1"	24'-2"
E19	Cut 4 Sets of 33 Each & Bend	10'-11"	13'-7"	1"	24'-6"
E20	Cut 4 Sets of 36 Each & Bend	10'-11"	13'-10"	1"	24'-9"
E21	Cut 24 Sets of 4 Each & Bend	10'-4 1/2"	10'-4 1/2"	1 3/8"	21'-2"
E22	Cut 6 Sets of 5 Each & Bend	8'-11"	9'-2"	3/4"	18'-7"
E25	Cut 12 Sets of 11 Each & Bend	16'-9"	22'-3"	6 3/4"	39'-0"
G11	Cut 4 Sets of 25 Each & Bend	10'-11"	12'-11"	1"	23'-10"
G12	Cut 4 Sets of 33 Each & Bend	10'-11"	13'-7"	1"	24'-6"
G13	Cut 8 Sets of 4 Each & Bend	10'-5"	10'-11"	2"	21'-4"
G14	Cut 2 Sets of 5 Each & Bend	8'-11"	9'-2"	3/4"	18'-7"
G17	Cut 4 Sets of 11 Each & Bend	16'-11"	22'-5"	6 3/8"	39'-4"
L5	Cut 4 Sets of 31 Each & Bend	13'-1"	15'-4"	7/8"	28'-5"
L11	Cut 2 Sets of 10 Each & Bend	21'-6"	27'-0"	7 3/8"	48'-6"
L21	Cut 1 Set of 7 & Bend	9'-11"	10'-3"	4 1/2"	20'-2"
L22	Cut 4 Sets of 6 Each & Bend	12'-6"	13'-0"	1 3/8"	25'-6"
N3	Cut 3 Sets of 19 Each & Bend	11'-2"	18'-2"	4 3/8"	29'-4"
N7	Cut 3 Sets of 9 Each	3'-4"	25'-4"	2'-9"	28'-8"
N27	Cut 1 Set of 7 & Bend	9'-9"	10'-9"	2"	20'-6"
N35	Cut 2 Sets of 6 Each	7'-4"	10'-10"	5 3/8"	18'-2"
N37	Cut 2 Sets of 5 Each & Bend	12'-8"	13'-9"	3 3/8"	26'-5"
N40	Cut 1 Set of 3 & Bend	14'-6"	19'-0"	2'-3"	33'-6"
N44	Cut 1 Set of 3	8'-6"	14'-2"	2'-10"	22'-8"
N49	Cut 1 Set of 3	7'-0"	11'-6"	2'-3"	18'-6"
N53	Cut 3 Sets of 8 Each & Bend	8'-6"	10'-10"	4"	19'-4"
R7	Cut 4 Sets of 40 Each & Bend	13'-1 1/2"	15'-10 1/2"	6 1/2"	29'-0"
R8	Cut 4 Sets of 49 Each & Bend	13'-1 1/8"	16'-6 1/8"	7 1/8"	29'-8"
R15	Cut 4 Sets of 18 Each & Bend	21'-11"	27'-7"	4"	49'-6"
R25	Cut 8 Sets of 6 Each & Bend	12'-5 1/2"	12'-11 1/2"	1 3/8"	25'-5"
R26	Cut 2 Sets of 6 Each & Bend	9'-11 1/2"	10'-2 1/2"	3/4"	20'-2"
T15	Cut 2 Sets of 4 Each & Bend	4'-7"	5'-11"	5 1/4"	10'-6"
T20	Cut 2 Sets of 3 Each	2'-3"	6'-10"	2'-3 1/2"	9'-11"
T29	Cut 1 Set of 7 & Bend	9'-11"	10'-11"	2"	20'-10"

Mark	U	V
C10	2'-8"	3'-7" to 3'-9" (Int: 3/8")
C33	3'-5 1/2"	6'-0 1/2" to 7'-5 1/2" (Int: 3/8")
C41	2'-7 3/8"	6'-2 1/4" to 6'-9 1/4" (Int: 1 1/8")
E15	3'-6" to 3'-10 1/2" (Int: 1/4")	3'-11" to 4'-8" (Int: 1/2")
E16	3'-6" to 3'-11 1/4" (Int: 1/4")	3'-11" to 4'-9 1/2" (Int: 1/2")
E17	3'-6" to 4'-0" (Int: 1/4")	3'-11" to 5'-0" (Int: 1/2")
E18	3'-6" to 4'-1" (Int: 1/4")	3'-11" to 5'-1" (Int: 1/2")
E19	3'-6" to 4'-2" (Int: 1/4")	3'-11" to 5'-2" (Int: 1/2")
E20	3'-6" to 4'-2 3/4" (Int: 1/4")	3'-11" to 5'-4 1/2" (Int: 1/2")
E21	3'-4 1/2" to 3'-5 1/2" (Int: 5/16")	3'-7 1/2" to 3'-10 1/2" (Int: 1")
E22	2'-8"	3'-7" to 3'-10" (Int: 5/8")
G11	3'-6" to 4'-0" (Int: 1/4")	3'-11" to 4'-11" (Int: 1/2")
G12	3'-6" to 4'-2" (Int: 1/4")	3'-11" to 5'-3" (Int: 1/2")
G13	3'-4 3/8" to 3'-6 1/4" (Int: 1/8")	3'-7 1/2" to 3'-10 1/2" (Int: 1")
G14	2'-8"	3'-7" to 3'-10" (Int: 3/4")
L5	4'-0 1/8" to 4'-6 3/8" (Int: 3/16")	5'-0 1/2" to 6'-3 1/4" (Int: 1/8")
L21	2'-8"	4'-7" to 4'-11" (Int: 1/8")
L22	3'-11 1/2" to 4'-0" (Int: 1/4")	4'-7 1/4" to 4'-11 1/2" (Int: 3/4")
N3	3'-10" to 4'-4" (Int: 2 1/4")	3'-6"
N53	2'-6" to 3'-8" (Int: 2")	3'-6"
R7	4'-0 1/2" to 4'-7 3/8" (Int: 3/8")	5'-0 1/4" to 6'-7 1/4" (Int: 1/2")
R8	4'-0 1/8" to 4'-9" (Int: 3/8")	5'-0 1/2" to 7'-0 1/8" (Int: 1/2")
R25	3'-11" to 4'-0 1/2" (Int: 1/4")	4'-7 1/2" to 4'-11 1/4" (Int: 3/4")
R26	2'-8"	4'-7 1/8" to 4'-10 1/8" (Int: 3/4")

Mark	P	S
E25	6'-8" to 9'-5" (Int: 3 1/2")	2'-7"
G17	6'-8" to 9'-5" (Int: 3 1/2")	3'-9"
L11	8'-8" to 11'-5" (Int: 3 3/8")	3'-4"



NOTES

Dimensioning, bending and hooks for Special Bending Details shall conform to the standards as noted or shown on Sheet 15.

A dash is used in the appropriate dimension column to indicate that a hook, bend or portion of the standard detail is to be omitted.

See Sheet 15 for Typical Bar Types and Hook Dimensions.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-223(16)abc (FAI RT.1) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

BAR LIST, SPECIAL BENDING DETAILS AND CUTTING DIAGRAMS

L-962

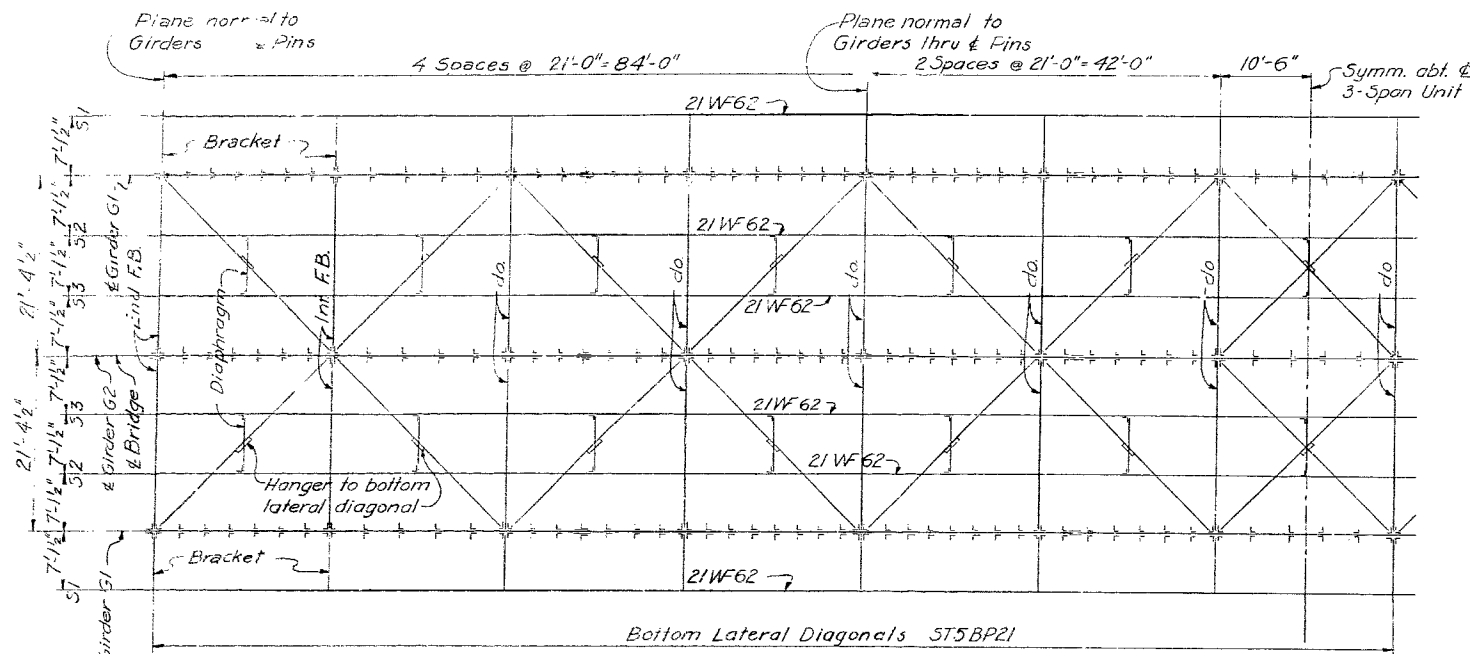
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

403

DRAWN BY: B. Greaves, April, 1957
 CHECKED BY: H.C. Morris, April, 1957

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. YEAR SHEET NO. TOTAL SHEETS
 5 MO. 19 2



GIRDER SPAN NOTES (Spans 1 to 9 and 15 to 17)

DESIGN: In accordance with Division III of the A.A.S.H.O. Standard Specifications for Highway Bridges, 1953 edition, with design loadings as given on Sheet 3.

MATERIALS: All materials marked (M.S.) shall be Manganese Structural Steel (See Special Provisions); all material marked (W.S.) shall be weldable Structural Carbon Steel; all other material shall be Structural Carbon Steel unless otherwise noted.

RIVETS: Rivets shall be $\frac{7}{8}$ " unless otherwise noted.

DETAILS: All field connections shall be riveted unless otherwise noted. Where desired for convenience in erection, shop and field rivets may be interchanged. Top and bottom cover plates shall have the same point of cut-off except as shown and noted. Cover plates shall have a staggered rivet spacing of $3\frac{1}{2}$ " for at least 2'-6" at the ends of the plates, gradually increasing to a maximum staggered spacing of 5". Each cover plate shall have enough rivets to develop its full strength before the end of the next outside plate is reached. Cover plates shall have a maximum of 2 holes out to maintain net section except as shown and noted. In lieu of crimping stiffener angles, the Fabricator may provide fills at his own expense. Position of splices shall be substantially as shown but may be shifted slightly in either direction if desired by the Contractor. All cover plates and all flange splice plates shall be universal mill plates. Shop web splices may be omitted if desired by the Contractor. See General Notes, Sheet 3.

FABRICATION: Spans 1 to 9 - Girders shall not be cambered for loads.

CAMBER: Spans 15 to 17 - Girders shall be cambered for full dead load exclusive of future wearing surface and future utilities.

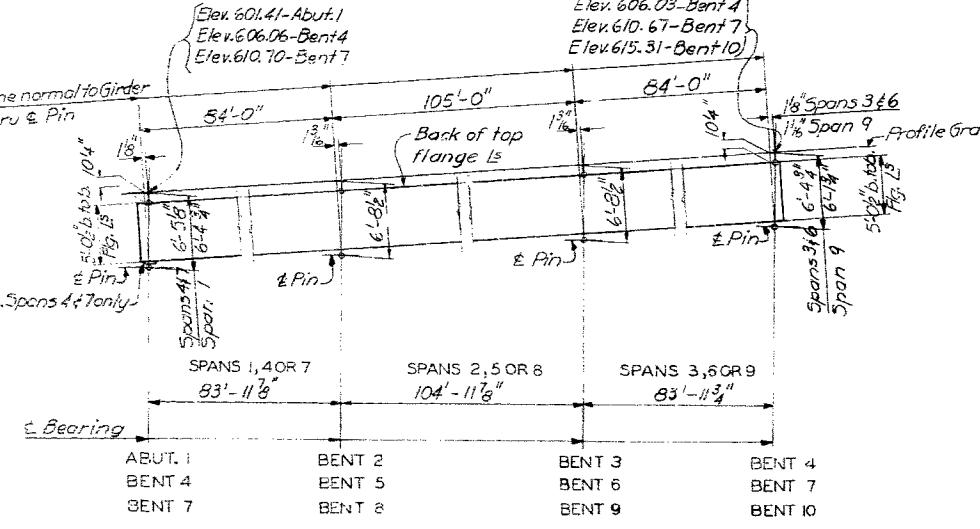
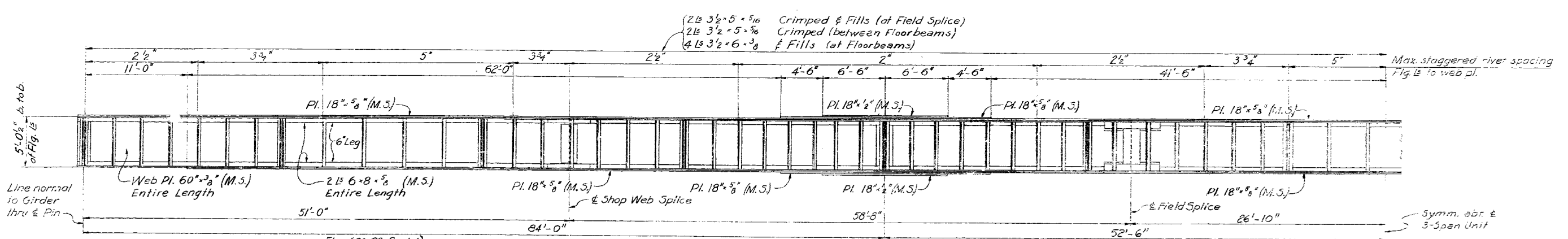
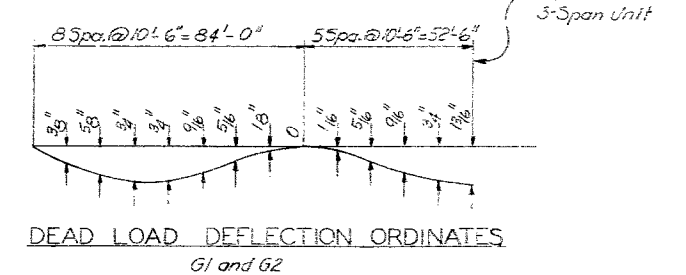


TABLE OF MAX. MOMENTS AND REACTIONS

Loading	Max. Reaction		Max. Pos. Moment		Max. Neg. Moment
	A	B	C	D	B
Dead Load	98	328	1520	1470	2820
Live Load	96	151	1511	1586	1489
Impact	23	34	363	344	339
Total	217	513	3394	3400	4648

Note: Reactions are given in kips. Moments are given in Ft.-kips.



BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a,b,c (FAI RT. I) STA. 1474+38.05
 I-70-3(15) a,b (RT. I-70)

BOONE - COOPER COUNTIES

SYVERDRUP AND PARCEL, INC.
 ENGINEERS-ARCHITECTS
 ST. LOUIS, MO.

GIRDER SPANS 1 TO 9
 FRAMING PLAN AND ELEVATION

SHEET 25 OF 31 **L-962**

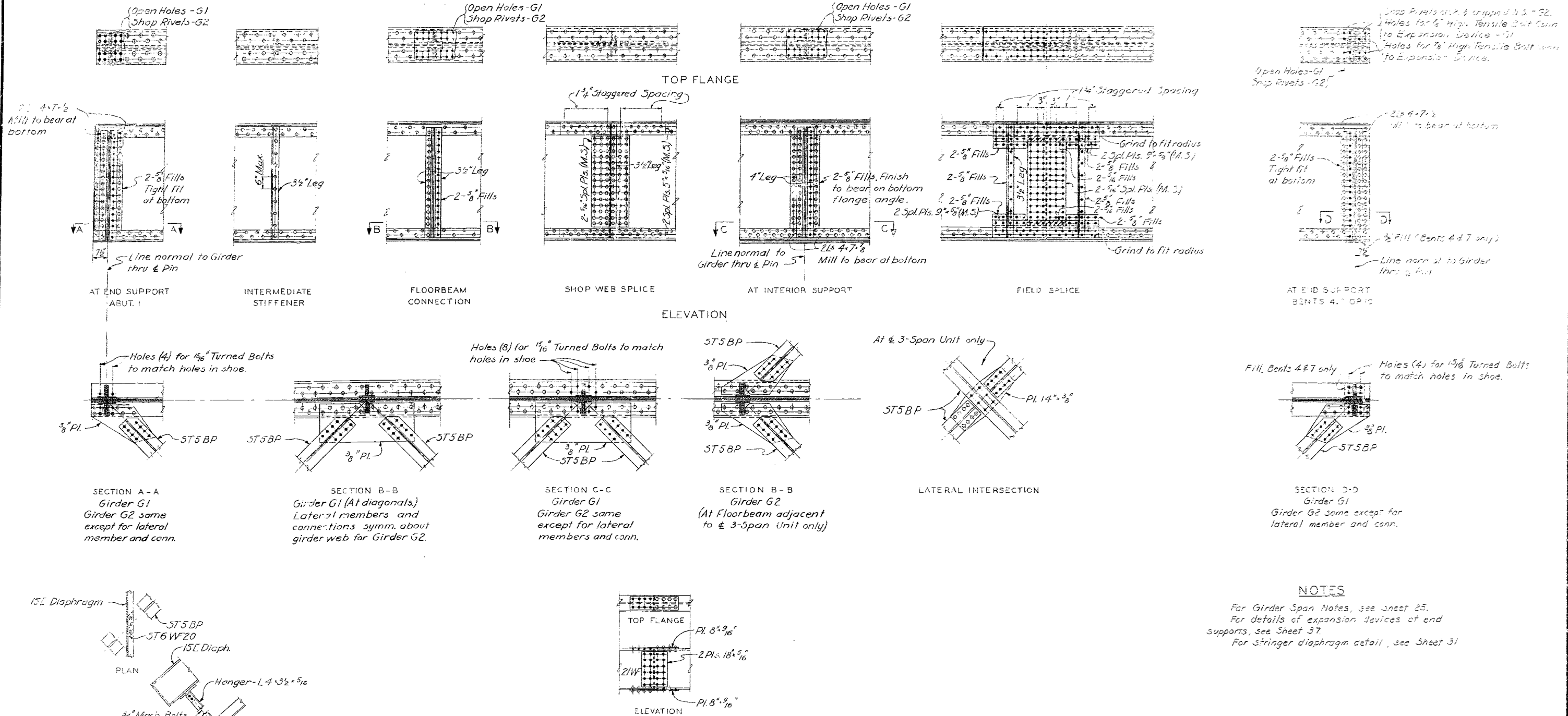
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

404

DRAWN BY: R. Sandberg & Castroque - 1956
 TRACED BY:
 CHECKED BY: K. L. Fogg, June 1957

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. YEAR SHEET NO. TOTAL SHEETS
 2 MO. 19 27



Loop Rivets 1/2" x 3/4" x 3/4" x 3/4" - G2
 Holes for 1/2" High Tensile Bolt Conn. to Expansion Device - G1
 Holes for 1/2" High Tensile Bolt Conn. to Expansion Device

2x4x7/8 Mill to bear at bottom
 2-5/8" Fills Tight fit at bottom
 3/8" Fill (Bents 4 & 7 only)
 Line normal to girder thru pin

Fill, Bents 4 & 7 only
 Holes (4) for 1 5/16" Turned Bolts to match notes in shoe.
 3/8" Pl.
 ST5BP

NOTES
 For Girder Span Notes, see Sheet 25.
 For details of expansion devices at end supports, see Sheet 37.
 For Stringer diaphragm detail, see Sheet 31

Note: Stringer lengths furnished to be determined by the Contractor with all splices near 4 points between intermediate floorbeams.

405

DRAWN BY: R. Sandberg, Dec. 1956
 TRACED BY:
 CHECKED BY: K. L. Fogg, June 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a,b,c (FA I.R.T.) STA. 1474+38.05
 I-70-3(C)576 (RT. I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

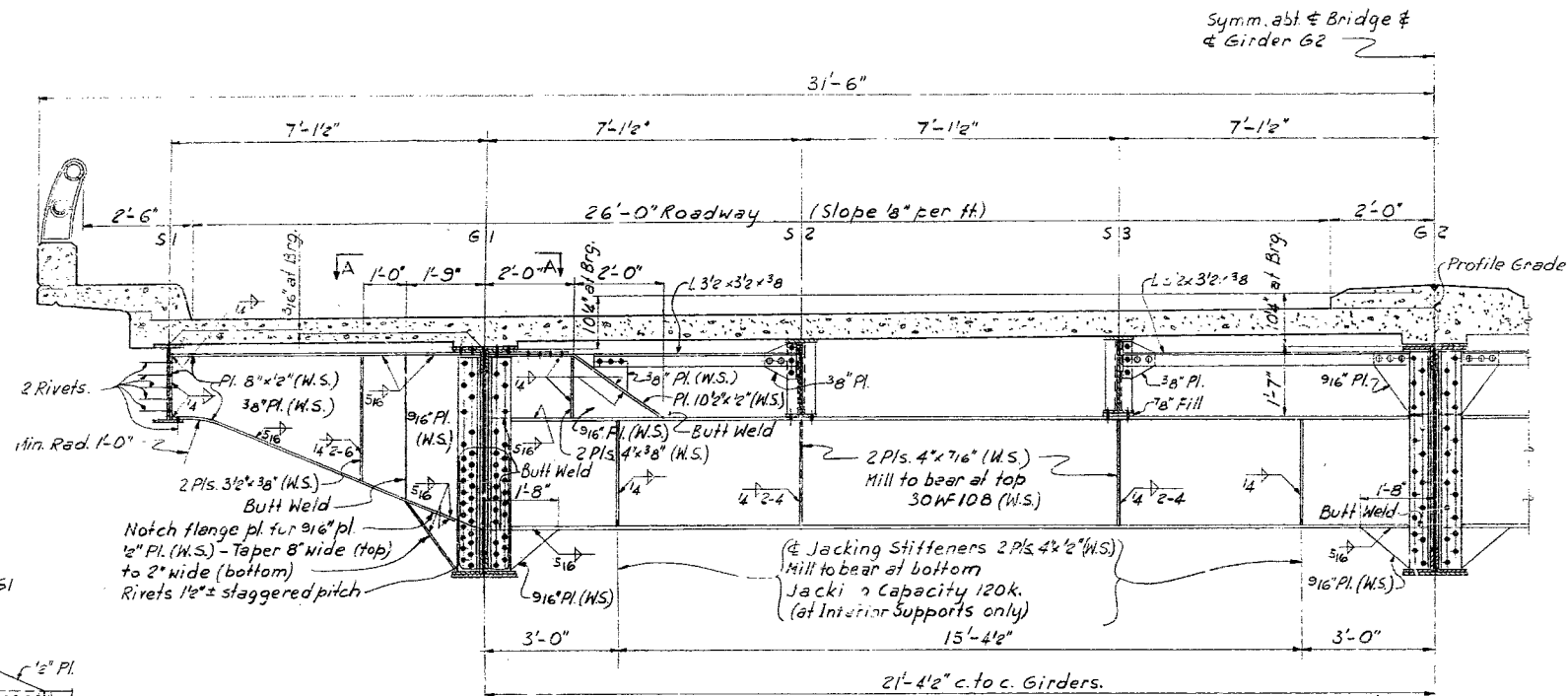
GIRDER SPANS 1 TO 9
 GIRDER DETAILS

SHEET 26 OF 6

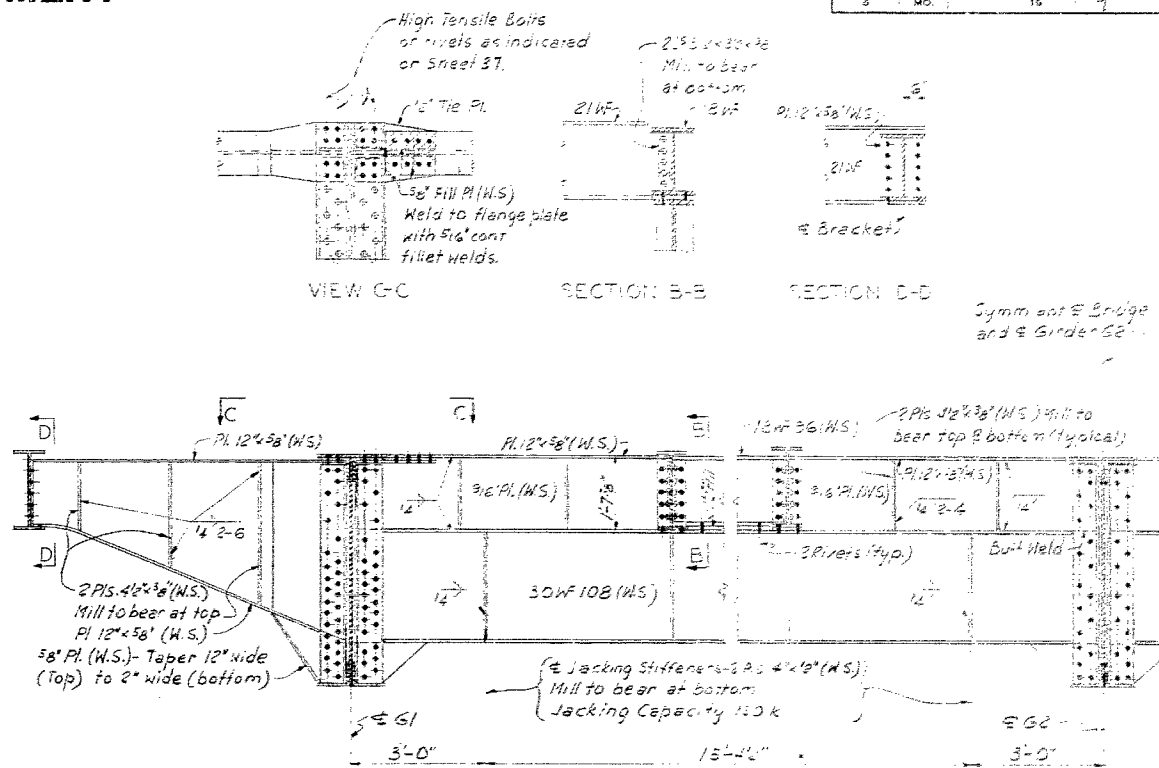
L-962

MISSOURI STATE HIGHWAY DEPARTMENT

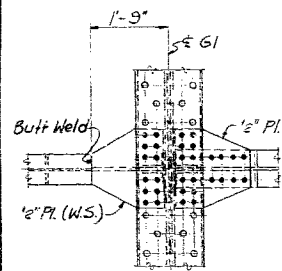
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		16	9	



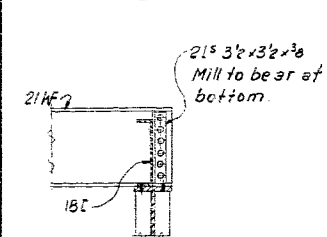
HALF CROSS SECTION AT INTERMEDIATE FLOORBEAM
Half Cross Section at Interior Supports same except for Jacking Stiffeners.



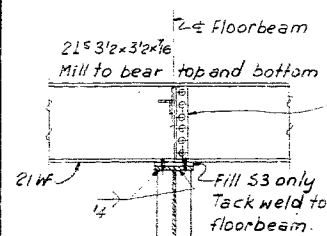
PARTIAL CROSS SECTION AT END FLOORBEAM-BENTS 4, 7 & 10
Same as Intermediate Floorbeam except as shown or noted.



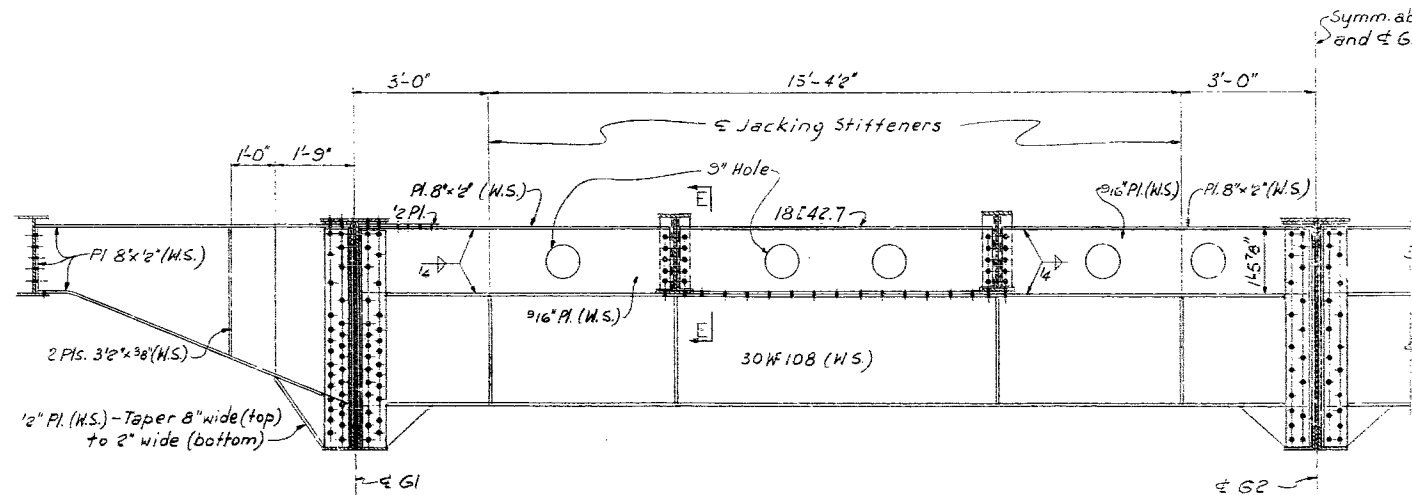
VIEW A-A



SECTION E-E



SECTION AT INTERMEDIATE FLOORBEAM
(for Stringers S2 & S3 only)



HALF CROSS SECTION AT END FLOORBEAM-ABUTMENT 1
Same as End Floorbeam at Bents 4, 7 & 10 except as shown or noted.

NOTES
For Girder Span Notes, see Sheet 25.

BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(16) 400 (FA R.T. I) STA. 1474+38.05
I-229(16) 400 (RTI 701)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

GIRDER SPANS TO 9
CROSS SECTIONS

SHEET 27 OF 29

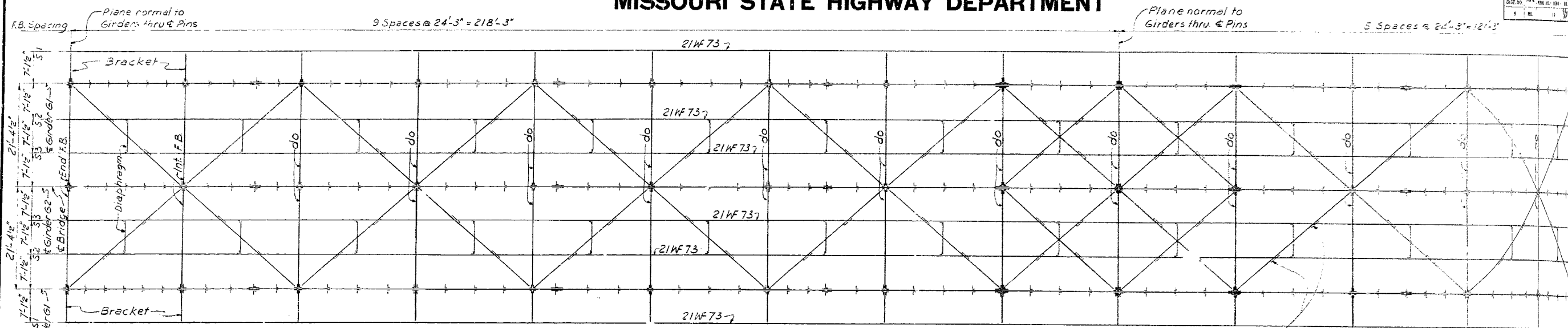
L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DRAWN BY: W. Piechowski, June 1957
TRACED BY:
CHECKED BY: K. L. Fogg, June 1957

406

MISSOURI STATE HIGHWAY DEPARTMENT



Note: Plan of top and bottom lateral systems same.

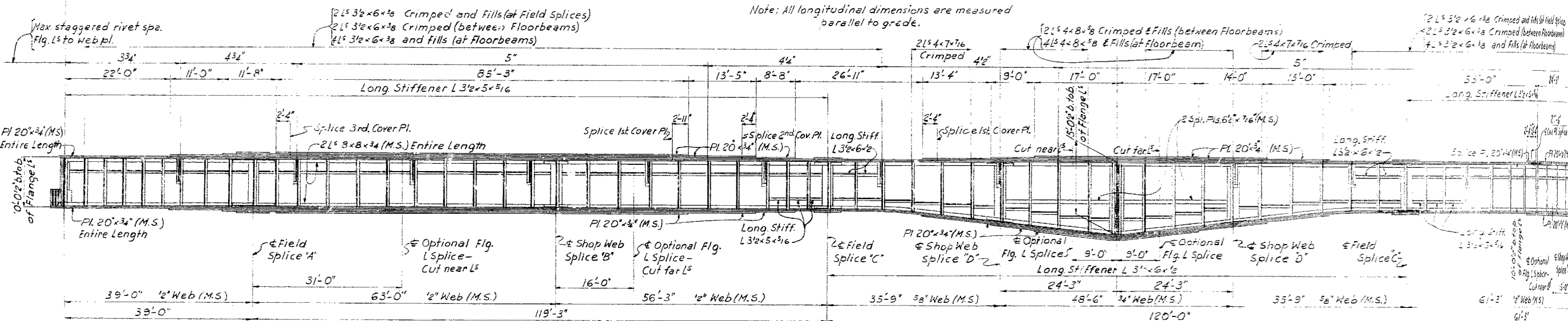
Top lateral diagonals ST 4WF17.5
 Bottom lateral diagonals ST 5BP21

HALF FRAMING PLAN

Note: All longitudinal dimensions are measured parallel to grade.

Hanger to bottom lateral diagonal.
 Two hangers required for each diagonal.

Symmetrical for details at end supports.



HALF ELEVATION OF GIRDER G1 and G2

Note: Gage line of longitudinal web stiffener angle shall be 5/8" from face of compression flange angle, where D is the clear distance between flanges. An average D between pairs of transverse stiffeners shall be used when the angle spacing varies.

NOTES

For Girder Span 10 see Sheet 3.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA

ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. 1-229(16) a,b,c

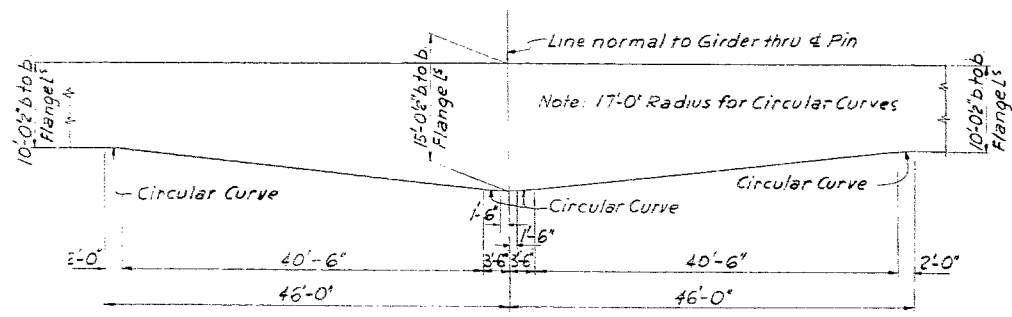
(PART) STA. 10+38.00

1:20 3/15

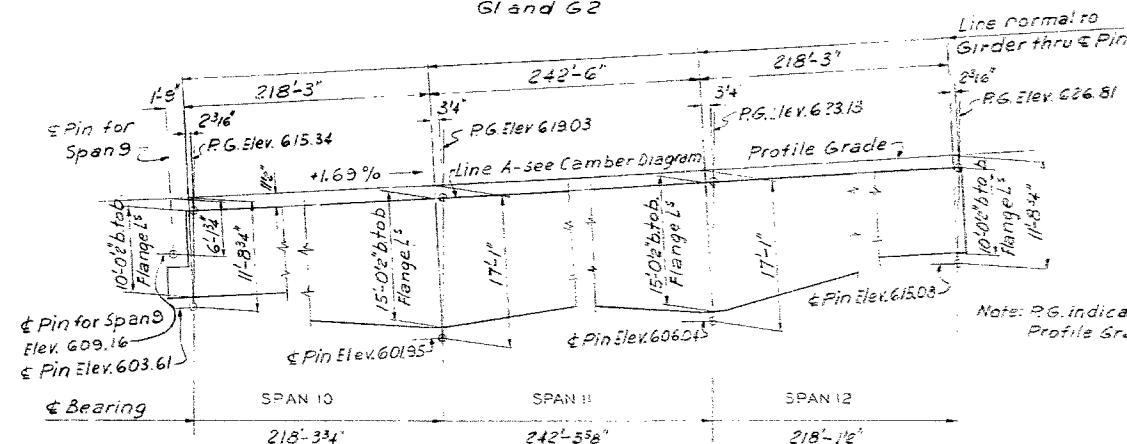
(PT: 70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.



SHAPE OF BOTTOM FLANGE AT INTERIOR SUPPORT



GIRDER LAYOUT

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

GIRDER SPANS 10 TO 12

FRAMING PLAN AND ELEVATION

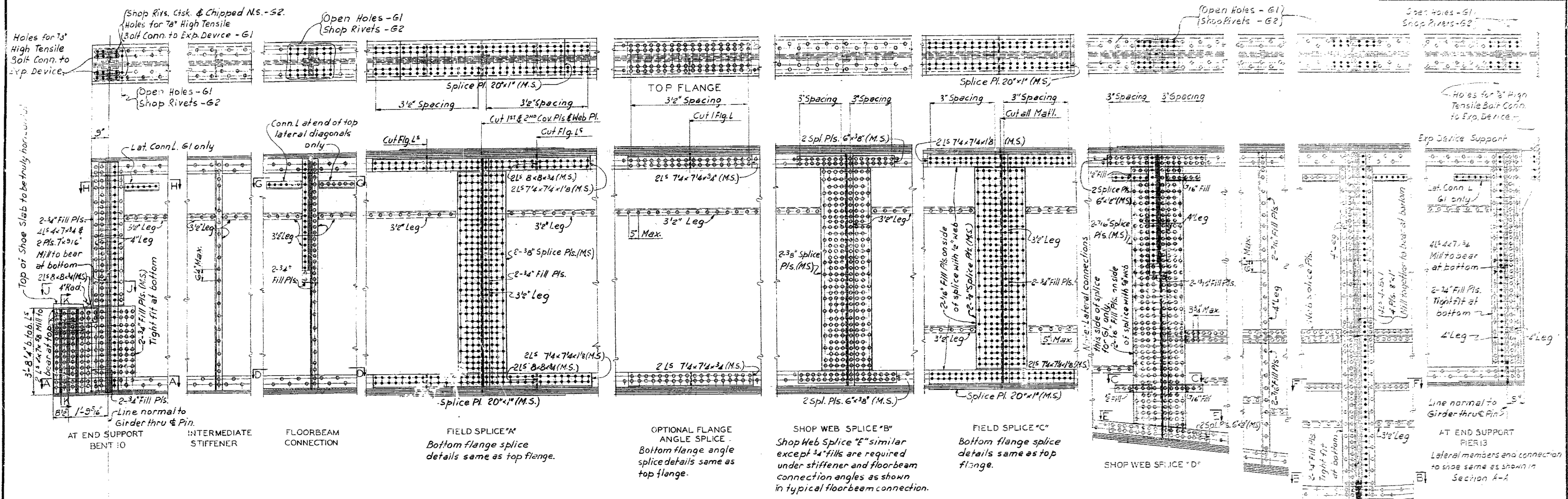
SHEET 3 OF 3

DRAWN BY: W. Piechowski, Nov/956
 TRACED BY:
 CHECKED BY: K.L. Fogg, May 1957

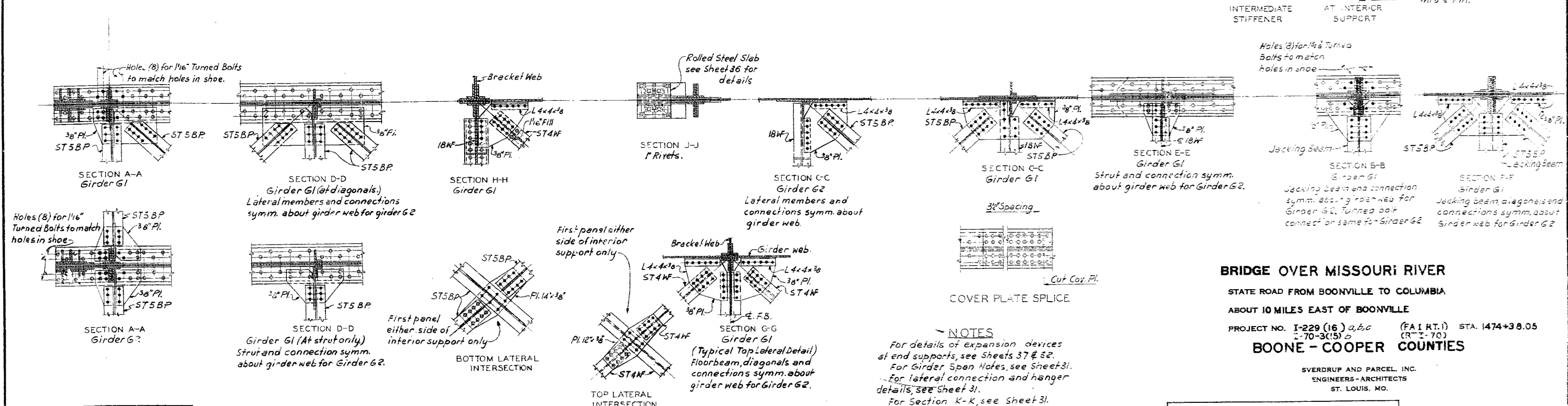
407

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	15	51	2	3



ELEVATION



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229 (16) a,b,c (FA 1 RT. 1) STA. 1474+38.05
 I-70-3(15) (R-1-70)
BOONE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

NOTES
 For details of expansion devices at end supports, see Sheets 37 & 52.
 For Girder Span Notes, see Sheet 31.
 For lateral connection and hanger details, see Sheet 31.
 For Section K-K, see Sheet 31.

DRAWN BY: W. Piechowski, Feb. 1957
 TRACED BY:
 CHECKED BY: K.L. Fugg, May 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

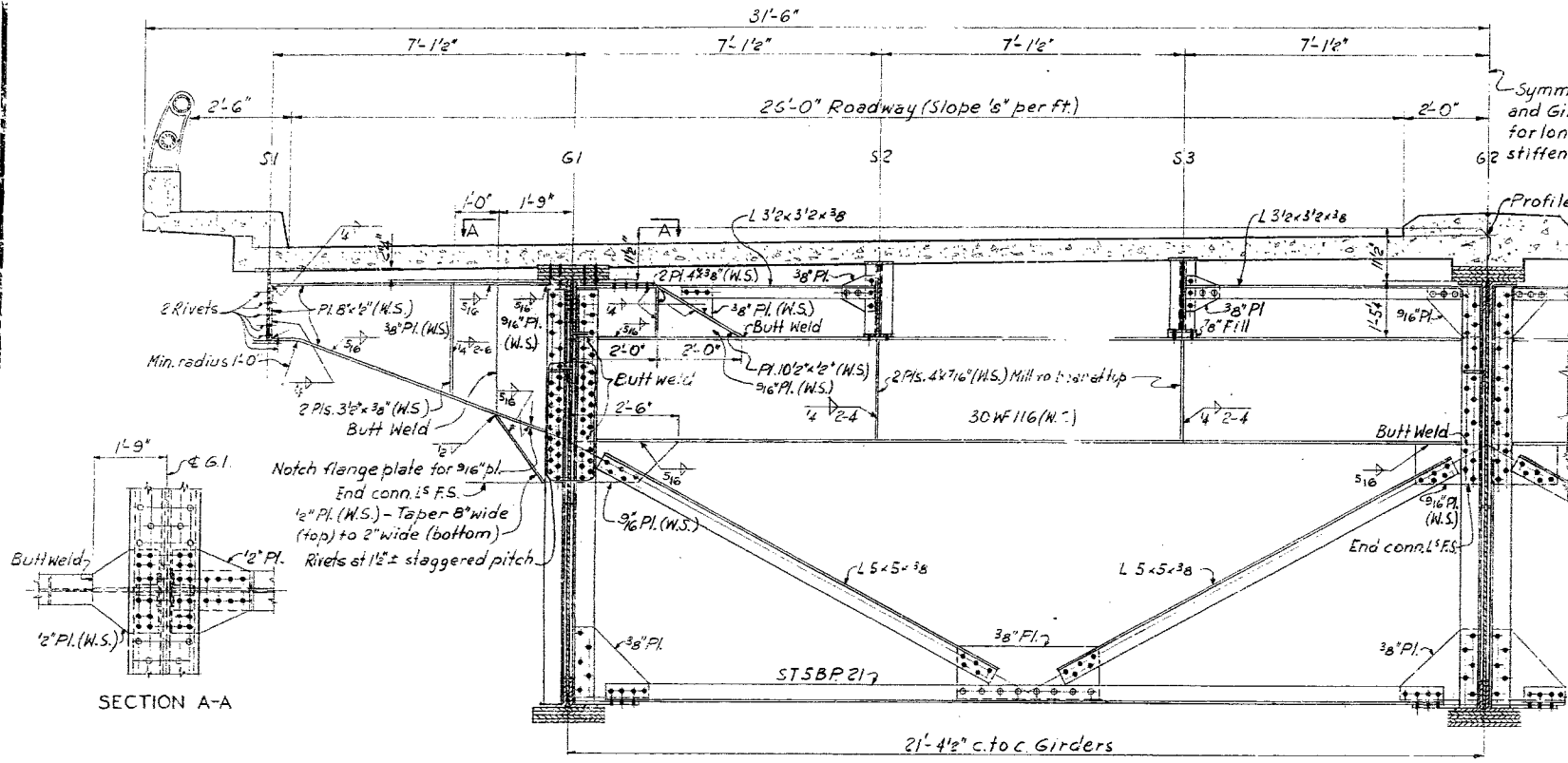
GIRDER SPANS 1 TO 2
 GIRDER DETAILS
 SHEET 2 OF 3

408

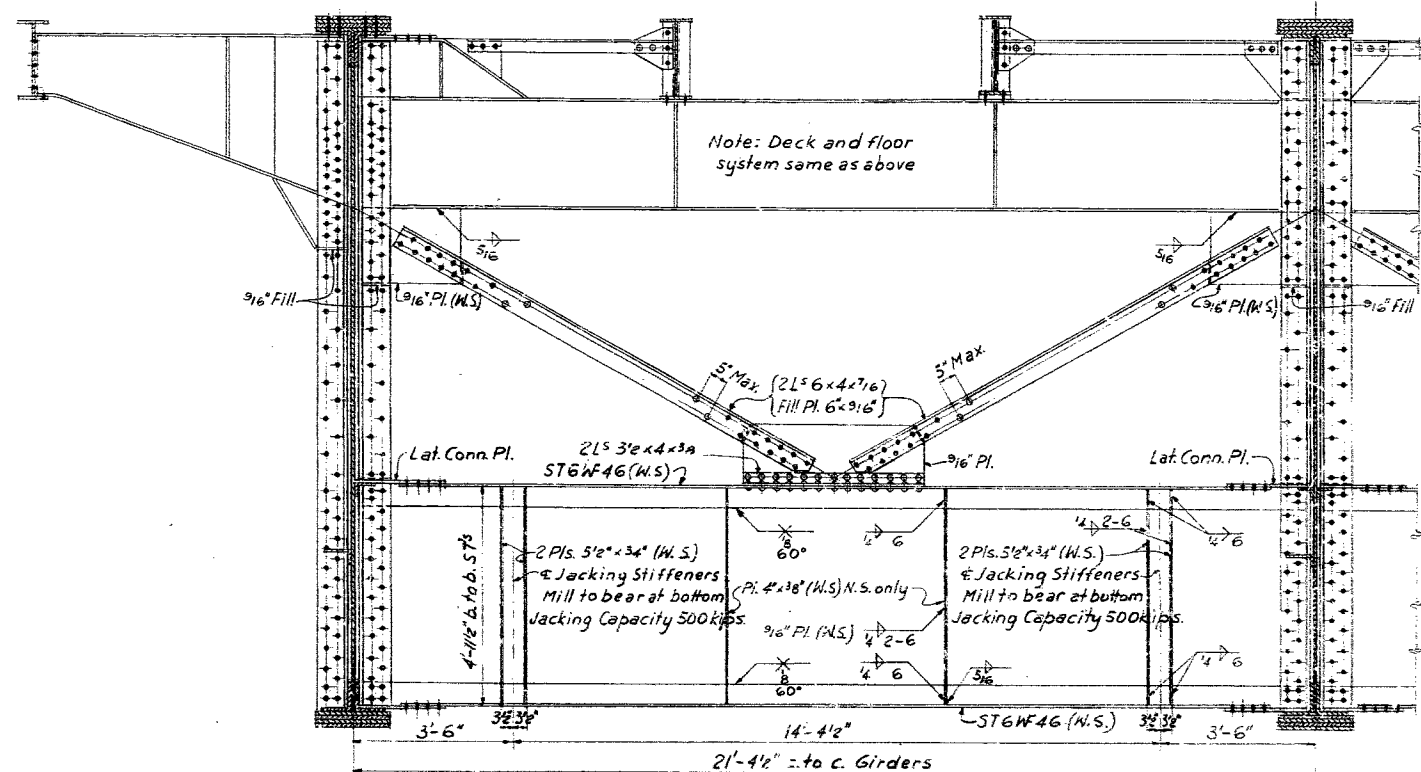
L-962

MISSOURI STATE HIGHWAY DEPARTMENT

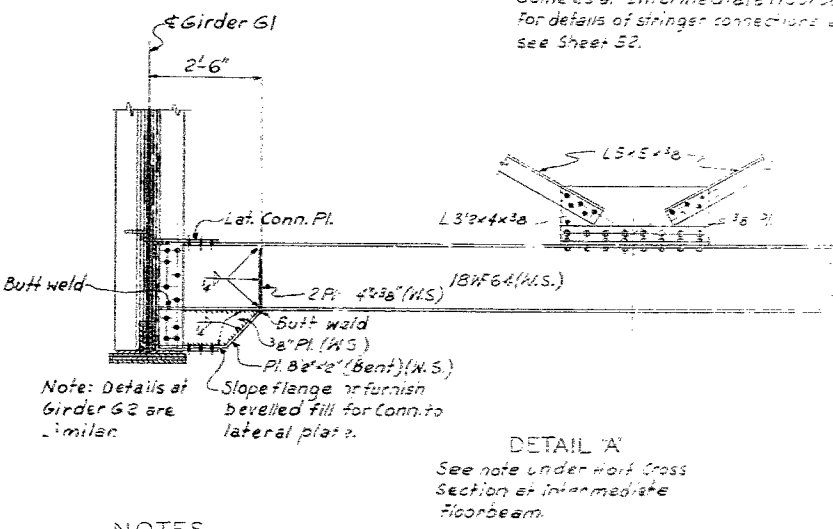
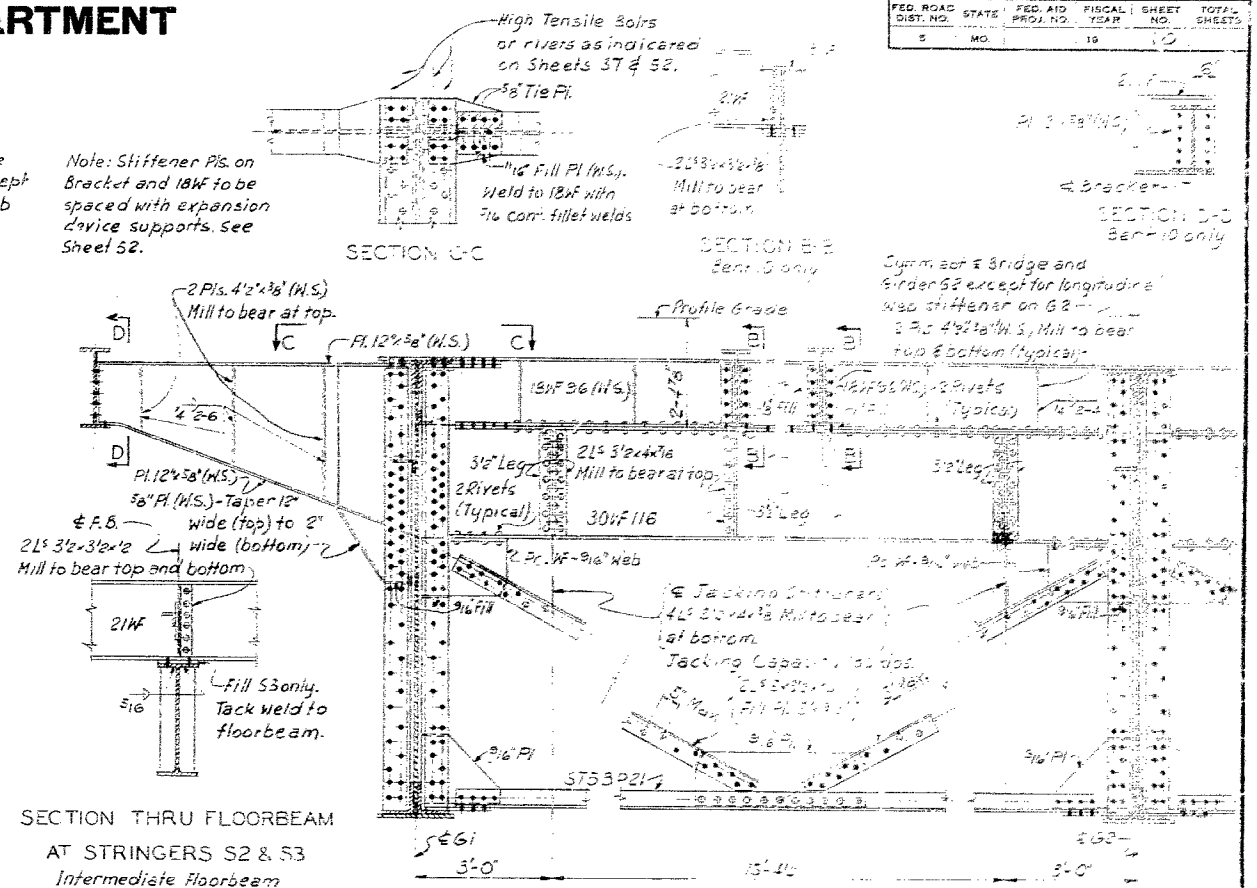
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	16	19	10	15



HALF CROSS SECTION AT INTERMEDIATE FLOORBEAM - 10'-0 1/2" SECTIONS
 Half Cross Section at first floorbeam either side of interior supports similar except for bracing details as shown in Detail "A".



HALF CROSS SECTION AT INTERIOR SUPPORT



NOTES
 For Girder Span Notes, see Sheet 31

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) (FAI AT D) STA. 1474+38.05
 I-70-30(15) (CMT I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS-ARCHITECTS
 ST. LOUIS, MO.

GIRDER SPANS 17' 11 1/2"
 CROSS SECTION 15

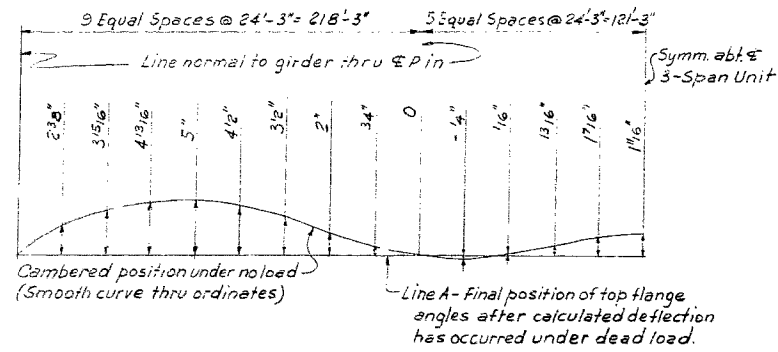
SHEET 10 OF 15
L-962

DRAWN BY: W. Piechowski, Nov 1936
 TRACED BY:
 CHECKED BY: K.L. Fogg, May 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

409

MISSOURI STATE HIGHWAY DEPARTMENT

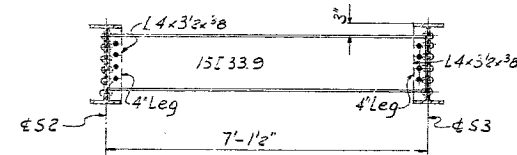
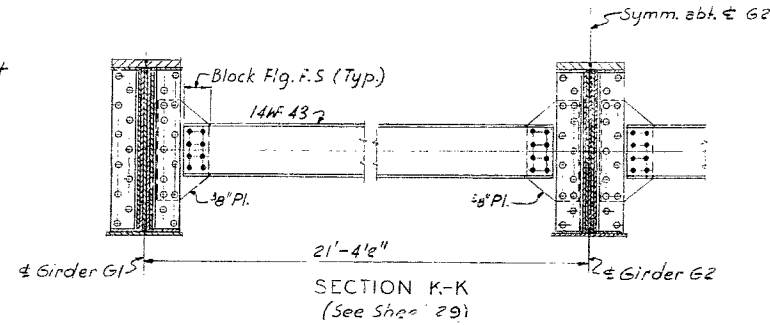


CAMBER DIAGRAM (S1 and G2)

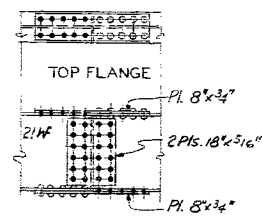
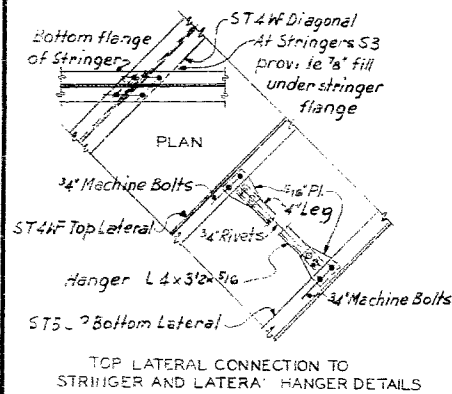
The deflection for steel only equals about 33% of the camber.

TABLE OF MAXIMUM MOMENTS AND REACTIONS							
	A	C	B	D	B	C	A
	97'-0"	121'-3"	121'-3"	121'-3"	121'-3"	121'-3"	97'-0"
Loading	Max. Reaction		Max. Pos. Moment		Max. Neg. Moment		
	A	B	C	D	B	C	
Dead Load	292	920	11600	5050	21150		
Unif. Live Load	98	279	4840	3580	7010		
Conc. Live Load	40	40	1240	1030	1400		
Impact	20	45	890	630	1190		
Total	450*	1284	18570	10290	30750		

Note: Reactions are given in kips.
 Moments are given in ft kips.
 *Reaction for Span 10 does not include loads from Girder Span 9.



STRINGER DIAPHRAGM
 Note: To be spaced midway between floorbeams.



STRINGER SPLICE
 Note: Stringer lengths furnished to be determined by the Contractor with all splices near 4 points between intermediate floorbeams.

GIRDER SPAN NOTES (Spans 10-12)

DESIGN: In accordance with Division III of the A.A.S.H.O. Standard Specifications for Highway Bridges, 1933 edition, with design loadings as given on Sheet 3.

MATERIALS: All material marked (M.S.) shall be Manganese Structural Steel, (see Special Provisions); all material marked (W.S.) shall be weldable Structural Carbon Steel, all other materials shall be structural Carbon Steel unless otherwise noted.

RIVETS: Rivets in top and bottom cover plates shall be 1"; all others shall be 3/4" unless otherwise noted.

DETAILS: All field connections shall be riveted unless otherwise noted. Where desired for convenience in erection, shop and field rivets may be interchanged.
 Top and bottom cover plates shall have the same point of cut-off. Cover plates shall have a staggered rivet spacing of 3 1/2" for at least 2'-0" at the ends of the plates, gradually increasing to a maximum staggered spacing of 5". Each cover plate shall have enough rivets to develop its full strength before the end of the next outside plate is reached.
 In lieu of crimping stiffener angles, the fabricator may provide fills at his own expense.
 Position of splices shall be substantially as shown, but may be shifted slightly in either direction if desired by the Contractor.
 All cover plates and all flange splice plates shall be universal mill plates.
 Shop web splices and shop cover plate splices may be omitted if desired by the Contractor.

FABRICATION: See General Notes, Sheet 3.

CAMBER: Girders shall be cambered for full dead load exclusive of future wearing surface and future utilities.

ERECTION: See Special Provisions.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a, b, c (FAI RT. 1) STA. 1474+38.05
 I-70-3(15) d (RT 1-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS-ARCHITECTS
 ST. LOUIS, MO.

GIRDER SPANS 10 TO 12
 MISC. DETAILS

SHEET 3 OF 4

L-962

DRAWN BY: W. Piechowski, Mar 1957
 TRACED BY:
 CHECKED BY: K. L. Fogg, May 1957

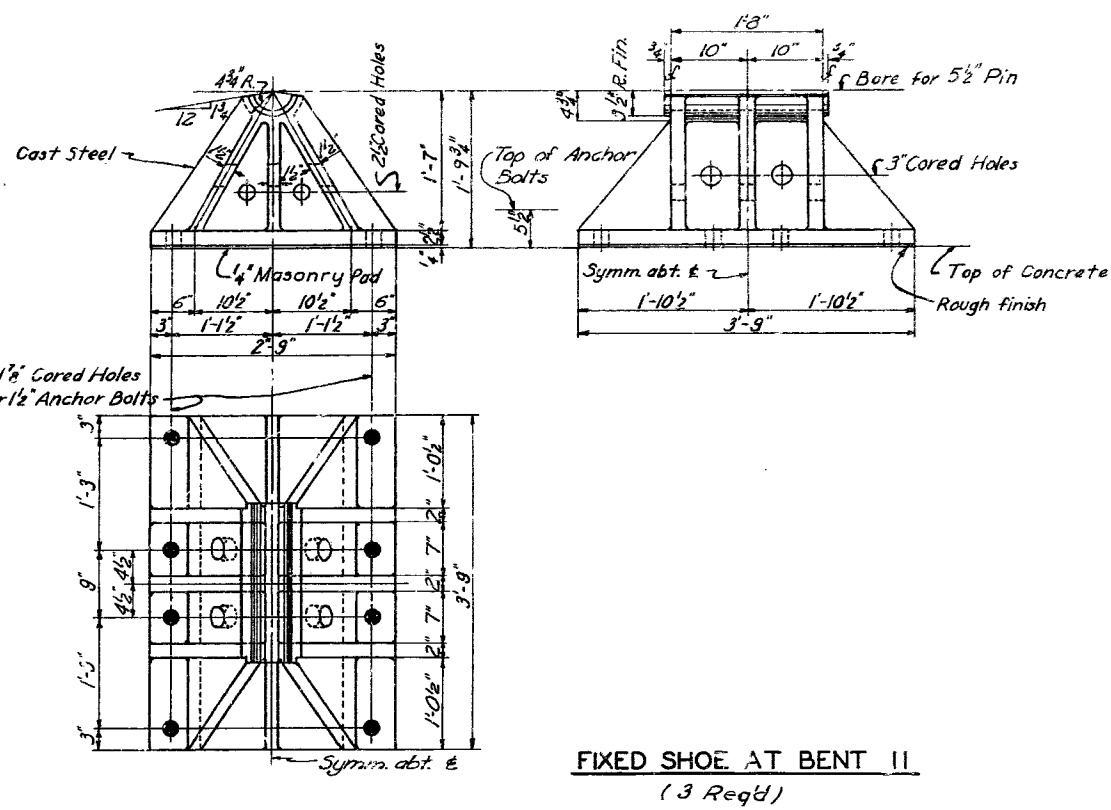
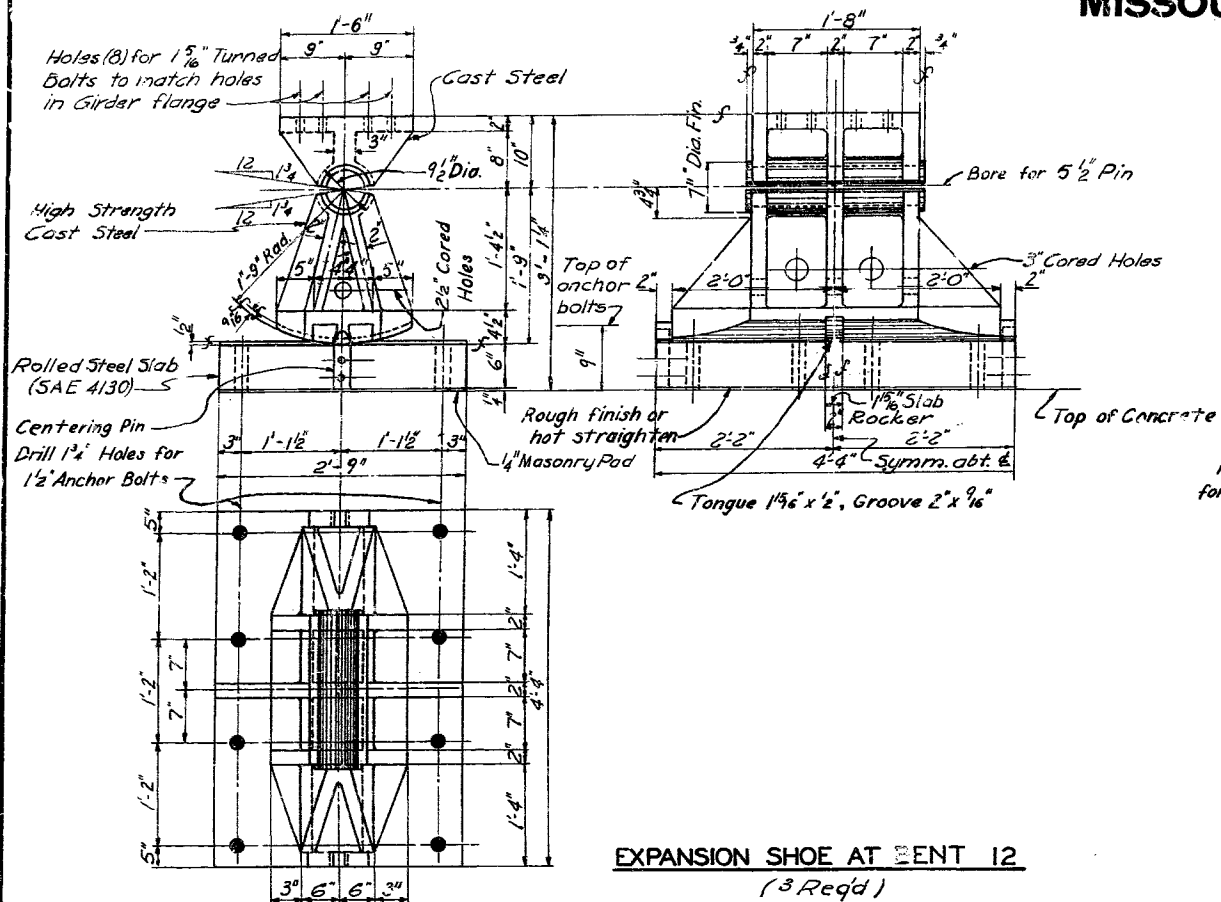
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

410

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	16	36

TOP SHOE SAME AS FOR EXPANSION SHOE AT BENT 12



NOTES

Castings shall conform to A.S.T.M. Designation A27, Grade 65-35, except High Strength Cast Steel shall conform to A.S.T.M. Designation A148, Grade 80-50.

All fillets on castings shall be 1/2".

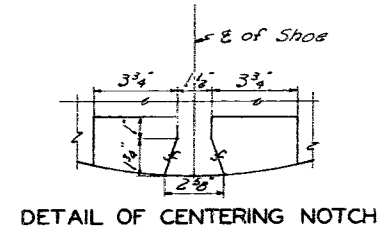
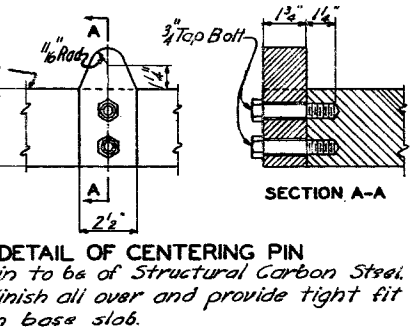
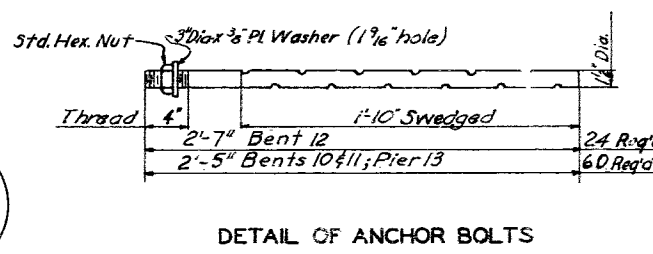
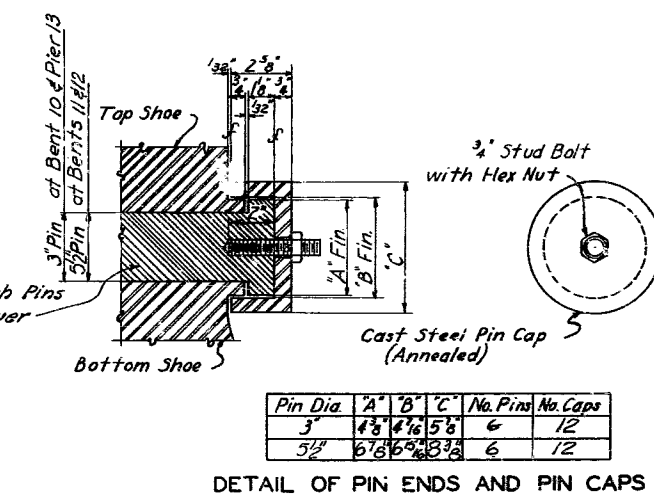
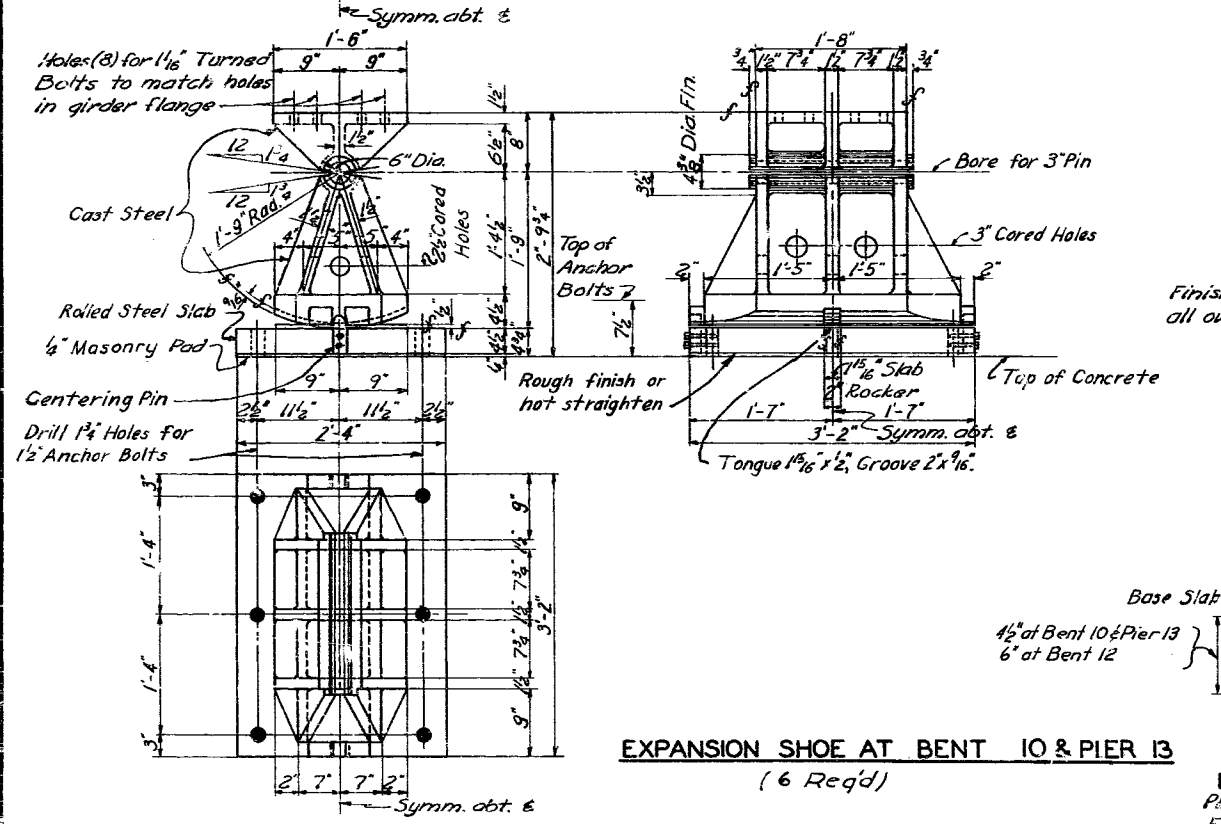
All pins shall be forged carbon steel.

All bolts, nuts, washers, pins, centering pins and base slabs shall be paid for as "Fabricated Structural Carbon Steel (Girder Spans)".

The cost of furnishing and placing Masonry pads shall be considered as included in the price bid for other items.

For expansion shoes, position of rocker is to be vertical at median temperature of 60°F. Corrections for temperature above or below 60°F. shall be made in setting shoes using a coefficient of expansion of .0000065.

Base slab for expansion shoes at Bent 12 to be hot rolled annealed, conforming to SAE 4130, with a minimum yield point of 45000 psi.



BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(15)abc (FAI RT. I) STA. 1474-38.05
I-70-3(15)5 (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: F. Castro Feb. 1957
TRACED BY:
CHECKED BY: J. A. Wise, Jr. April 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

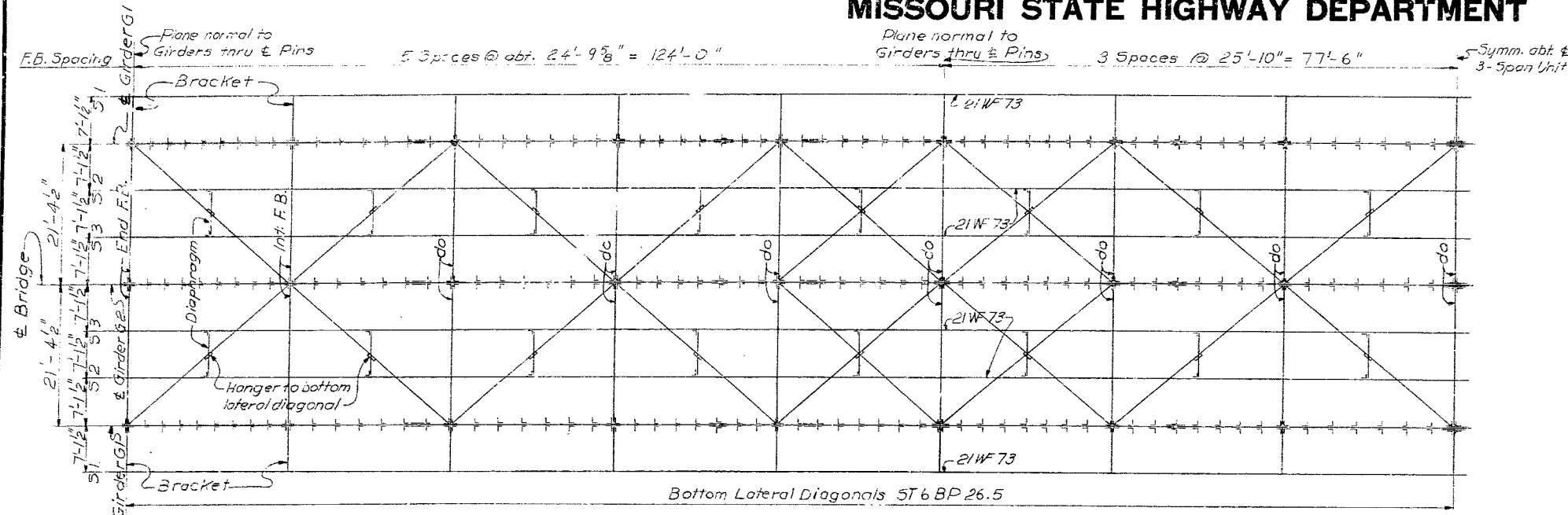
GIRDER SPANS 10 TO 12 - SHOES

SHEET 32 OF 61

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE FED. AID YEAR FISCAL YEAR SHEET NO. TOTAL SHEETS
5 MO 1955 1955 1955 18

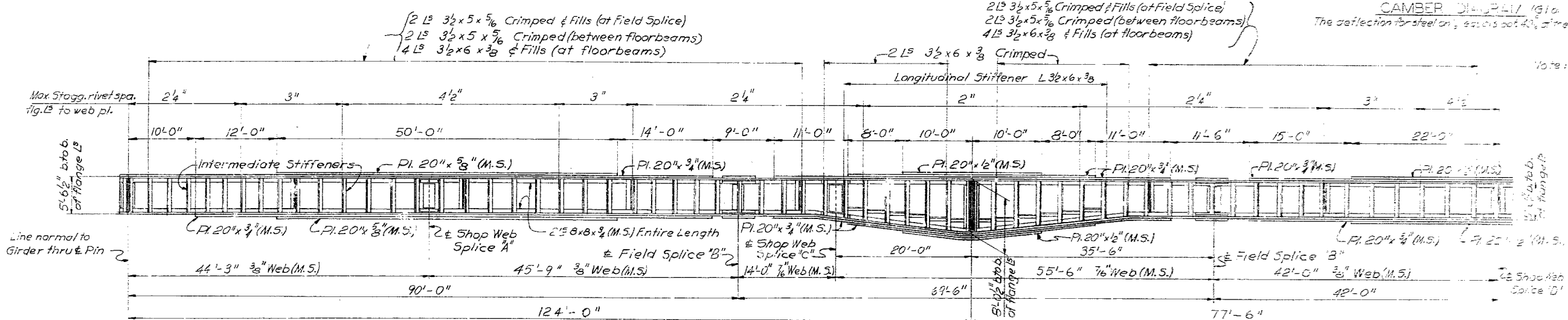
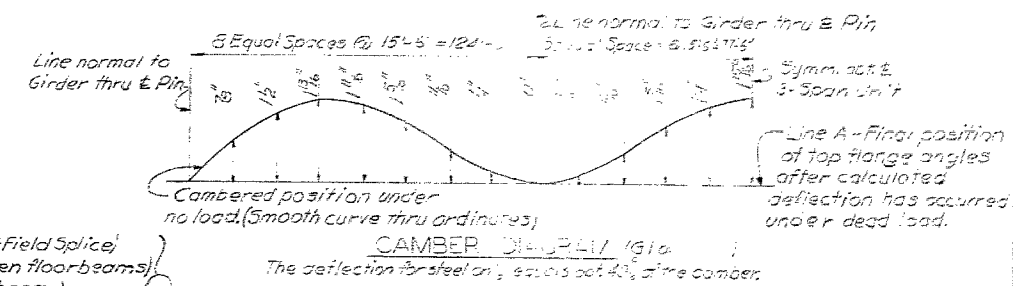


HALF FRAMING PLAN

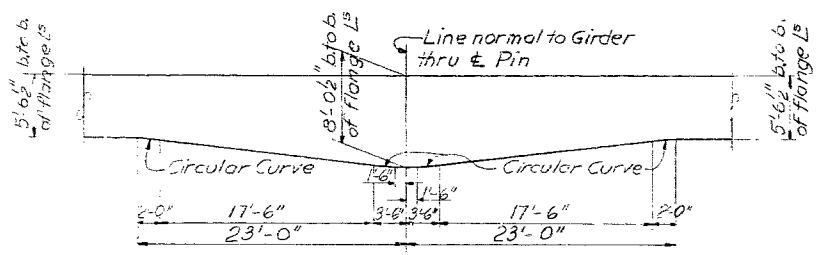
TABLE OF MAX. MOMENTS AND REACTIONS

Loading	Max Reaction		Max Pos. Moment		Max Neg. Mom.
	A	B	C	D	B
Dead Load	149	521	3520	2890	7380
Live Load	101	206	2419	2410	2230
Impact	20	39	255	429	610
Total	270	766	6294	5729	10920

Note: Reactions are given in kips. Moments are given in ft-kips.

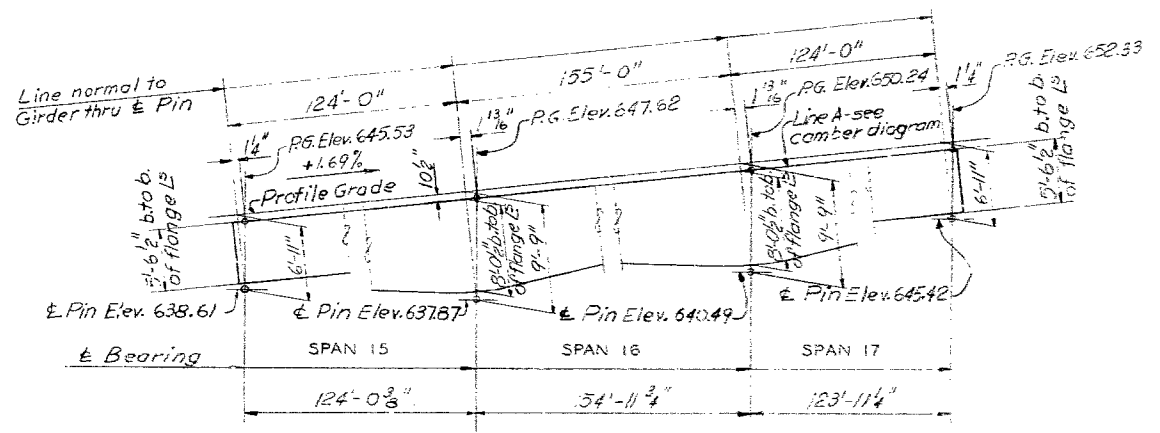


HALF ELEVATION OF GIRDER
G1 and G2



Note: 5'-6" Radius for Circular Curves.

SHAPE OF BOTTOM FLANGE AT INTERIOR SUPPORT



GIRDER LAYOUT

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

Note: Scribe line of longitudinal web stiffener angle shall be 1/8" from toe of compression flange angle, where D is the clear distance between flanges. An average D between pairs of transverse stiffeners shall be used where the flange is sloping.

Symm. abt & 3-Span Unit exc. for details at end supports.

NOTES

For Girder Splice Notes see Sheet C1.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16)abc (FAI RT. I) STA. 1474+26.05
I-70-305 (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

GIRDER SPAN 15
FRAMING PLAN AND ELEVATION

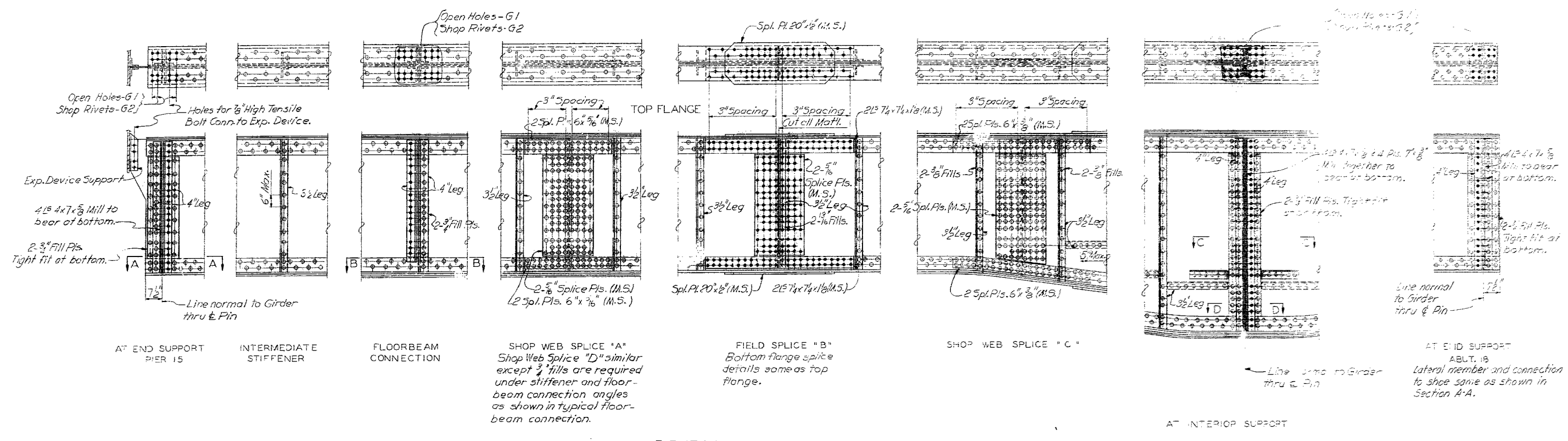
SHEET 13 OF 18
L-962

DRAWN BY: T. Castro, Feb 1957
TRACED BY:
CHECKED BY: K. L. Fogg, June 1957

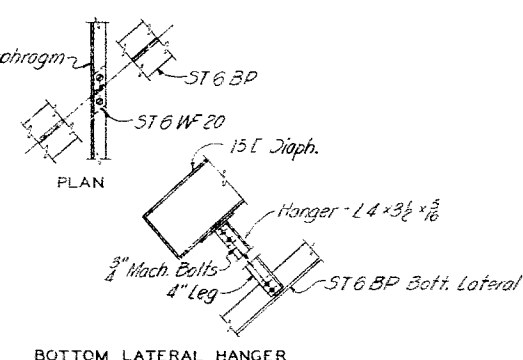
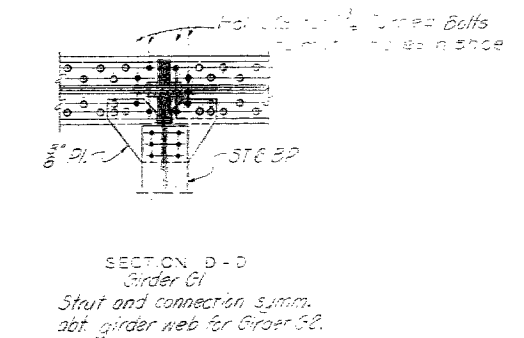
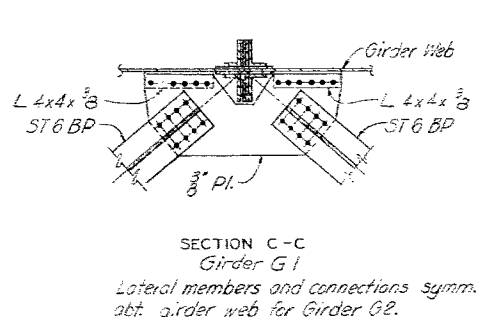
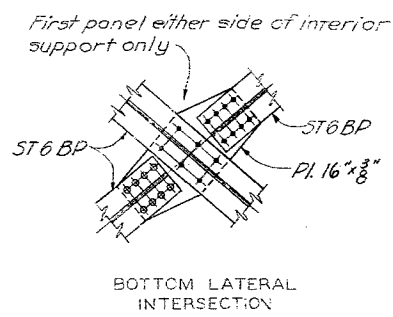
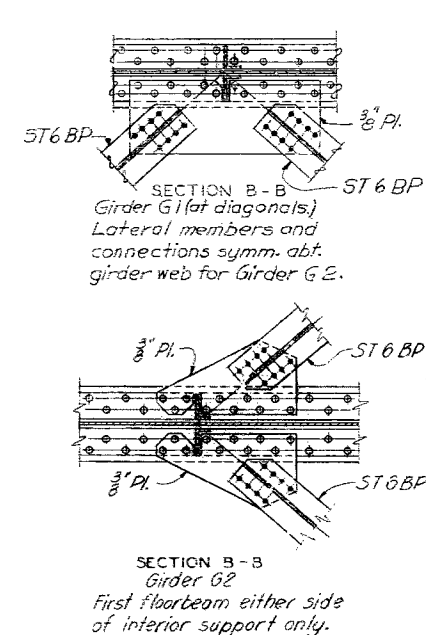
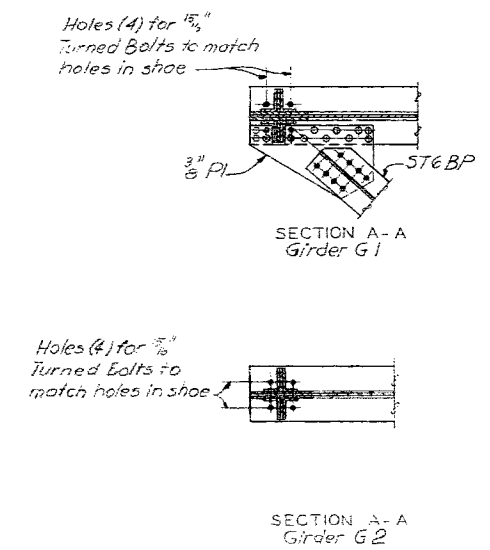
412

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	42	



ELEVATION



NOTES
 For Girder Span Notes, see Sheet 25.
 For details of expansion devices of end supports, see Sheet 52.
 For details of stringer splice, see Sheet 31.
 For stringer diaphragm details, see Sheet 31.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a,b,c (FAI RT. I) STA. 1474+38.05
 I-70-3(15) b (RT. I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

GIRDER SPANS 15 TO 17
 GIRDER DETAILS

L-962

DRAWN BY: T. Castro, Mar. 1957
 TRACED BY:
 CHECKED BY: K. L. Fogg, June 1957

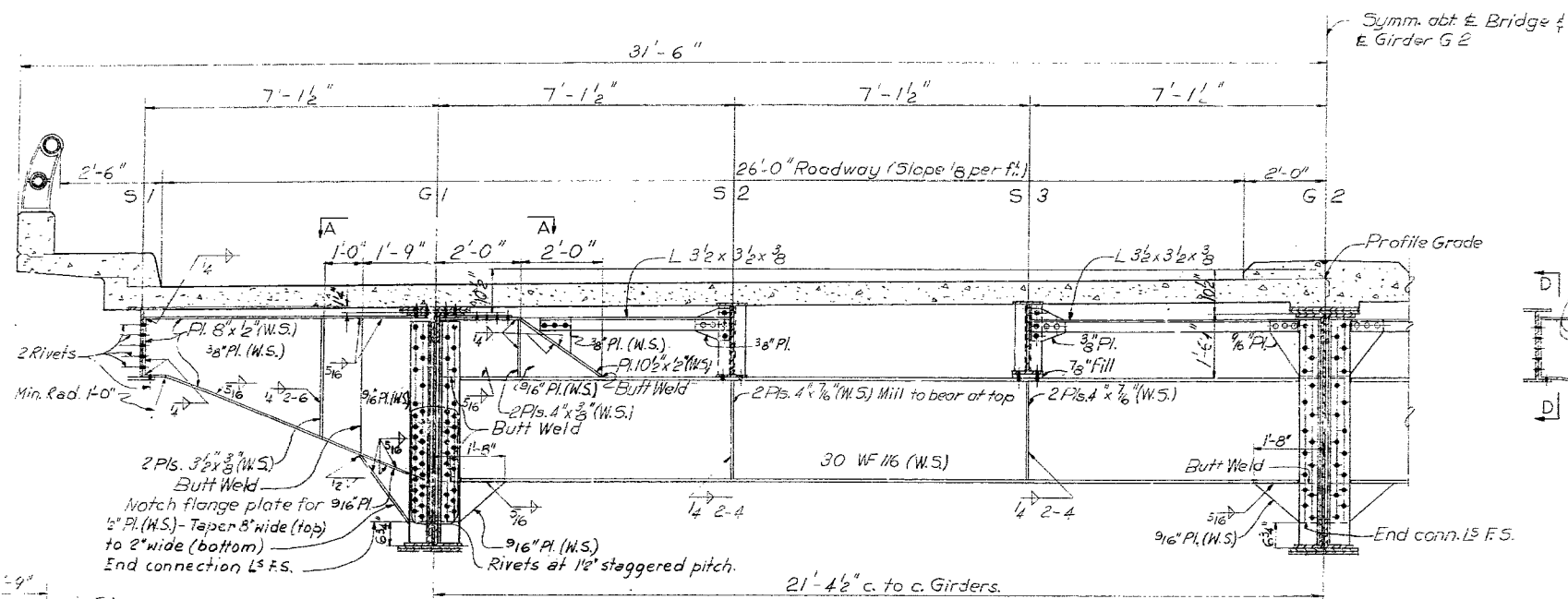
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

SHEET 24 OF 31

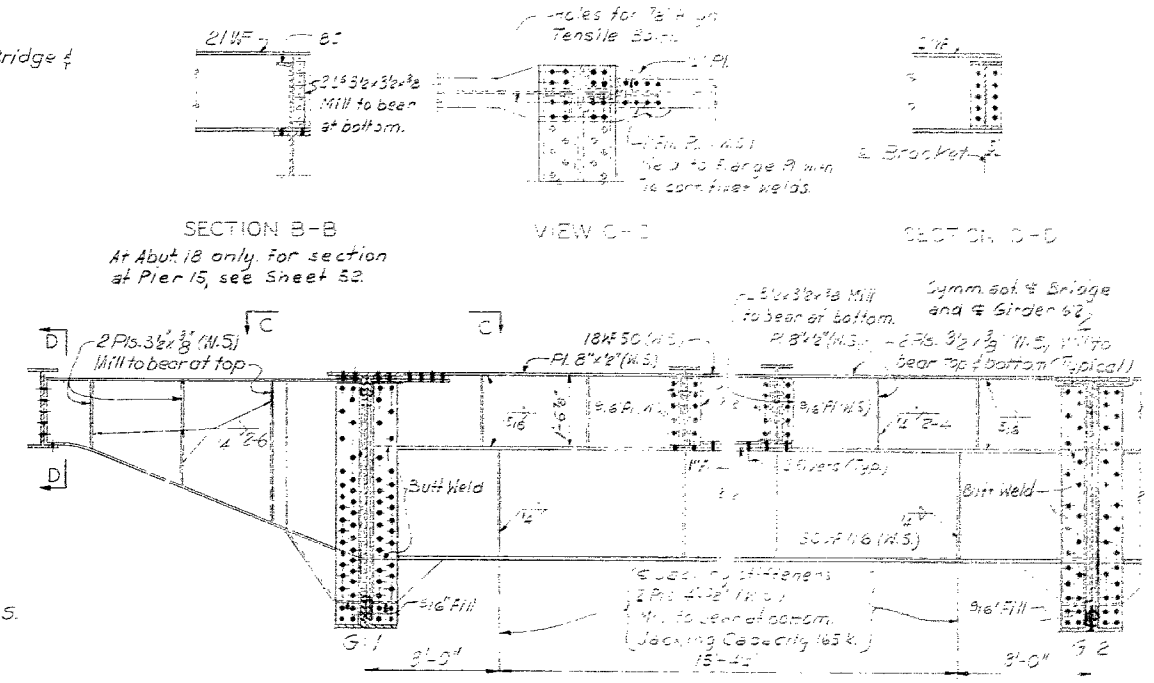
413

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		15	2	2

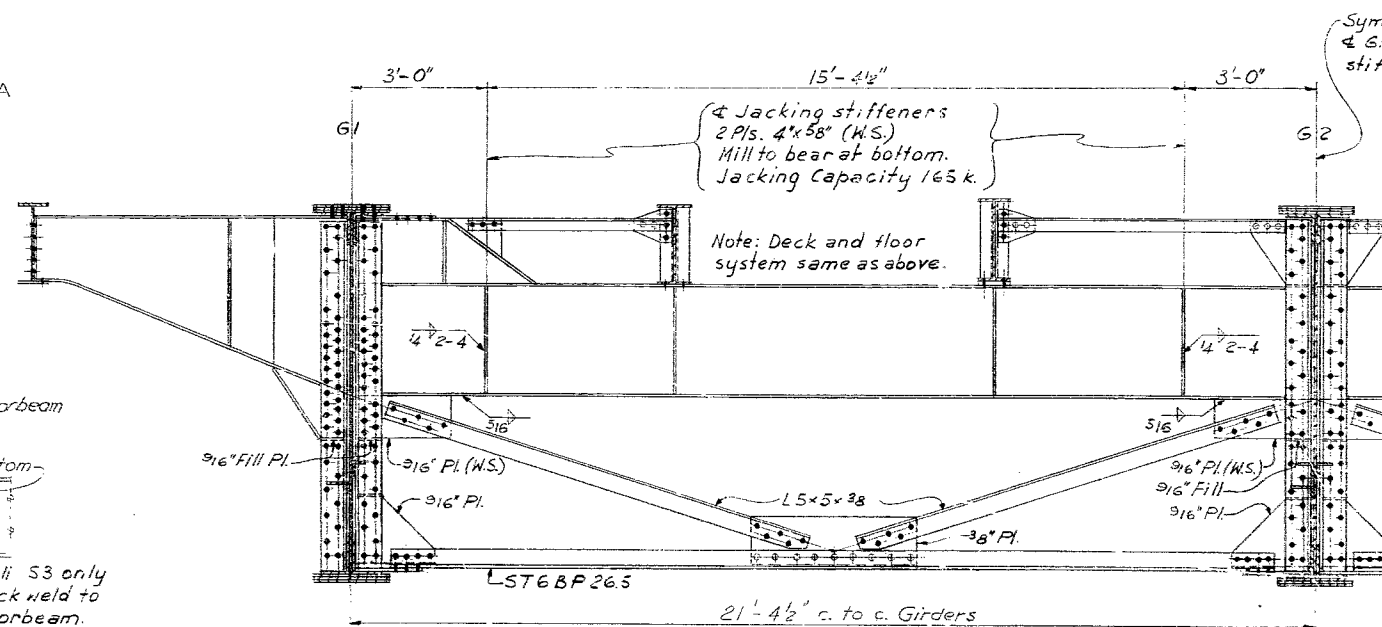
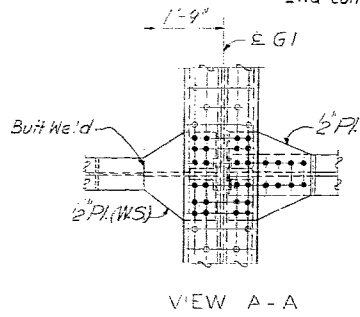


HALF CROSS SECTION AT INTERMEDIATE FLOORBEAM — 5'-6 1/2" SECTIONS

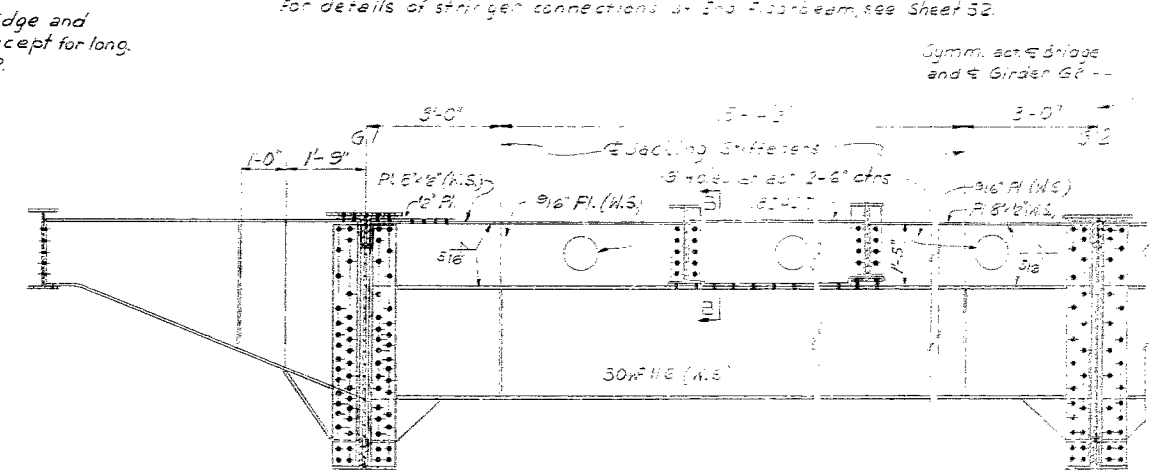


PARTIAL CROSS SECTION AT END FLOORBEAM—PIER 15

Same as Intermediate Floorbeam except as shown or noted. For details of stringer connections at End Floorbeam, see Sheet 52.



HALF CROSS SECTION AT INTERIOR SUPPORT



PARTIAL CROSS SECTION AT END FLOORBEAM—ABUTMENT 18

Same as End Floorbeam at Pier 15 except as shown or noted.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA

ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a, b, c (FA I RT. 1) STA. 1474+39.05
I-70-3(15) a, b (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

GIRDER SPANS 15 TO 17
CROSS SECTIONS

SHEET 2 OF 2

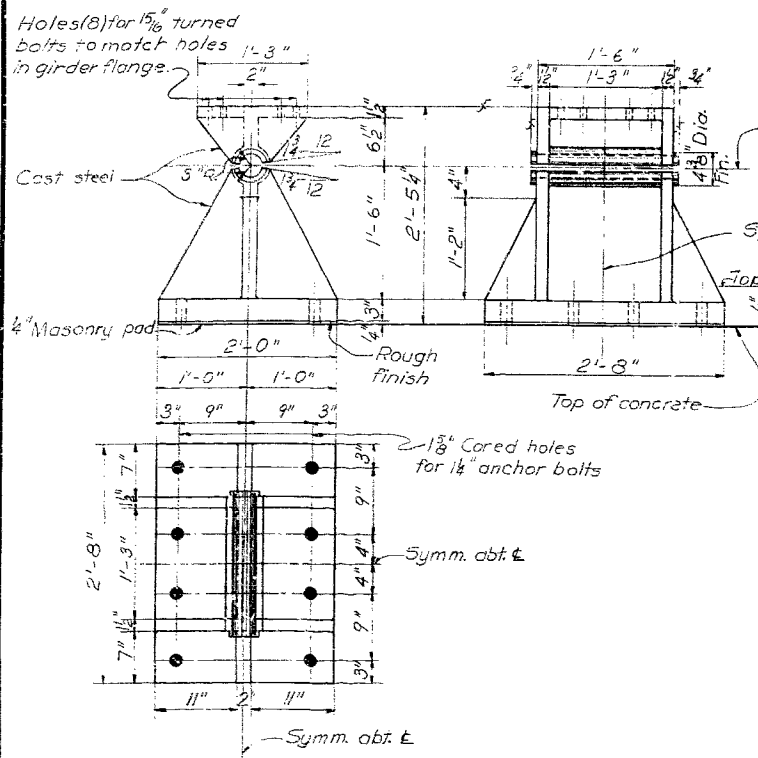
L-962

NOTES
For Girder Span Notes, see Sheet 25.

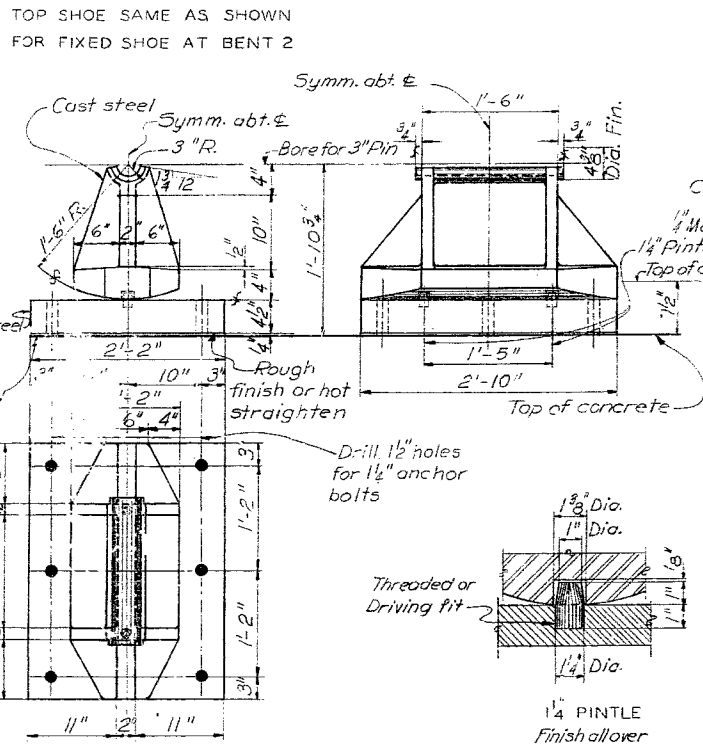
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DRAWN BY: J. Castro, Mar. 1957
TRACED BY:
CHECKED BY: K. L. Fogg, June 1957

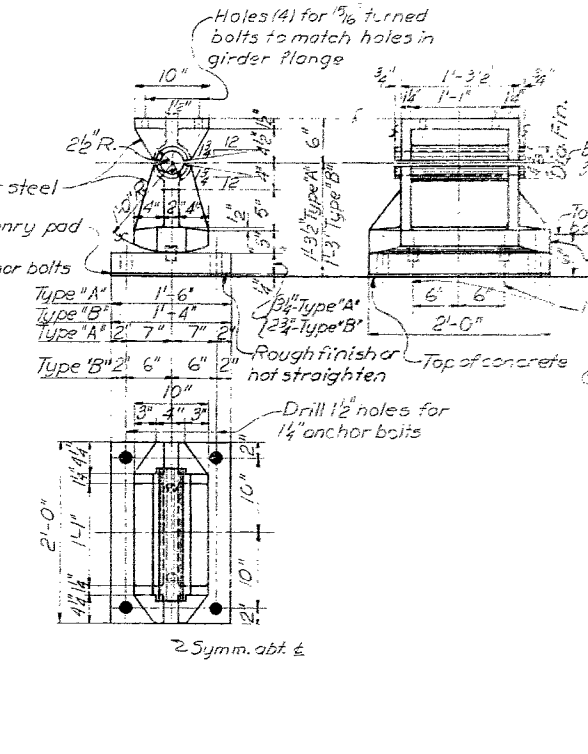
MISSOURI STATE HIGHWAY DEPARTMENT



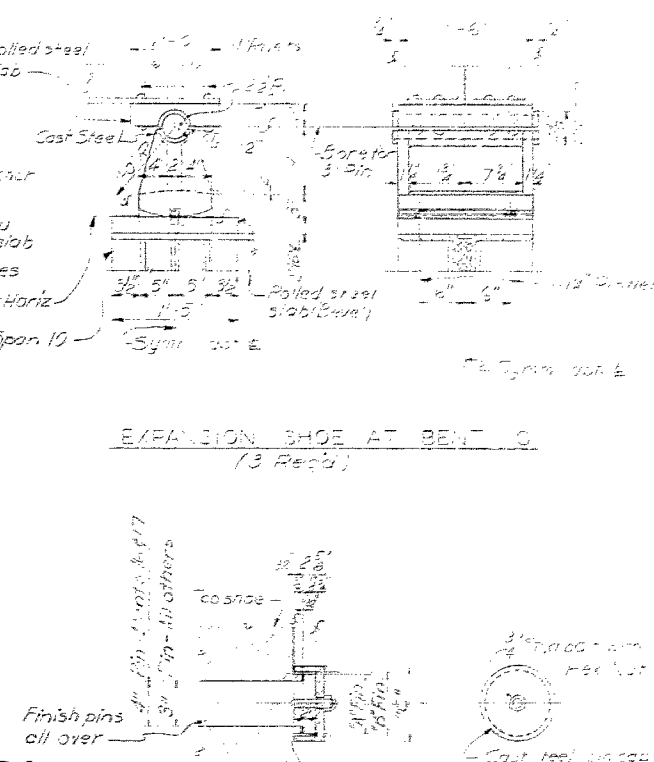
FIXED SHOE AT BENTS 2, 5 & 8
(9 Req'd.)



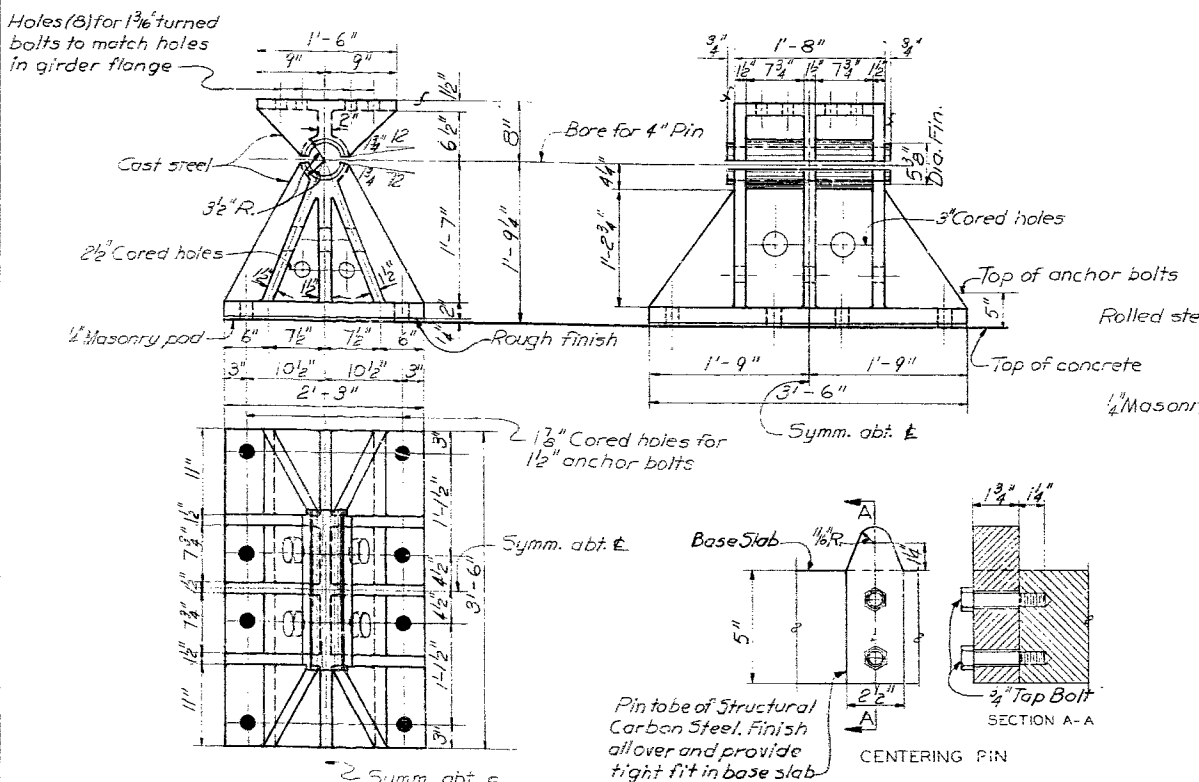
EXPANSION SHOE AT BENTS 3, 6 & 9
(9 Req'd.)



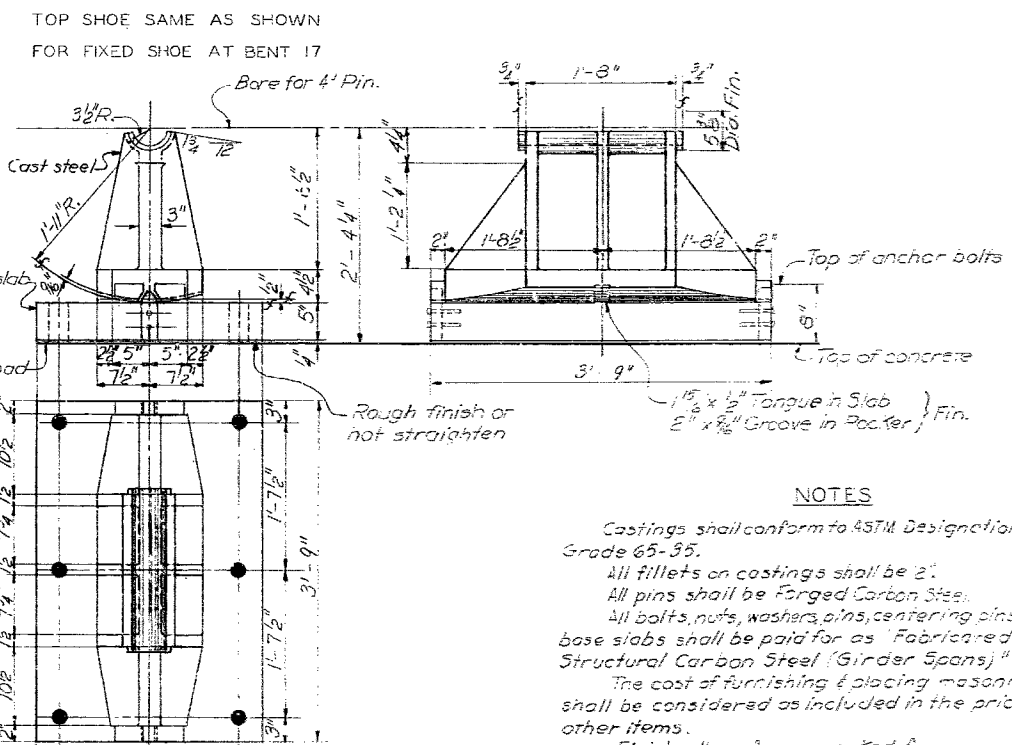
EXPANSION SHOE AT ABUTS 1 & 8, BENTS 4 & 7 & PIER 15
Type 'A' at Pier 15 & Abut 8 - 3 Req'd.
Type 'B' at Abut. 1 & Bents 4 & 7 - 15 Req'd.



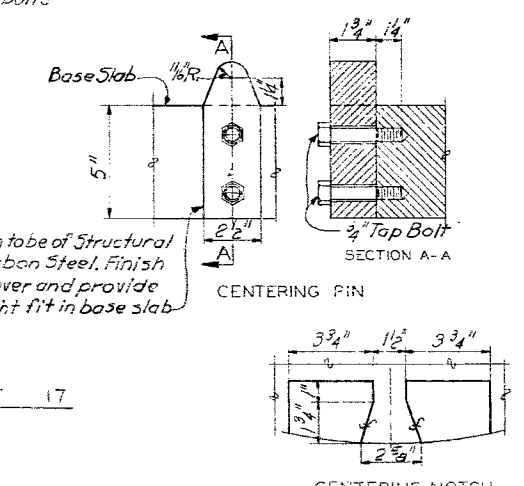
EXPANSION SHOE AT BENT 10
(3 Req'd.)



FIXED SHOE AT BENT 17
(3 Req'd.)



EXPANSION SHOE AT BENT 18
(3 Req'd.)



NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

NOTES

- Castings shall conform to ASTM Designation A 27 Grade 65-35.
- All fillets on castings shall be 2".
- All pins shall be Forged Carbon Steel.
- All bolts, nuts, washers, pins, centering pins and base slabs shall be paid for as "Fabricated Structural Carbon Steel (Girder Spans)".
- The cost of furnishing & placing masonry pads shall be considered as included in the price bid for other items.
- Finish all surfaces marked 'f'.
- For expansion shoes, position of rocker is to be vertical at median temperature of 60°F. Correction for temperature above or below 60°F shall be made in setting shoes, using a coefficient of expansion of 0.0000065.

Bottom shoe

Part	Qty	Notes
1/2" Dia. Pins	42	84
1/2" Dia. Washers	42	84
1/2" Dia. Nuts	42	84

ANCHOR BOLTS

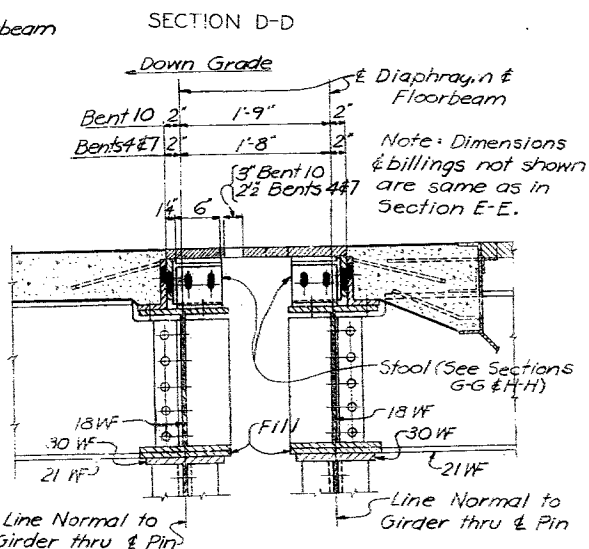
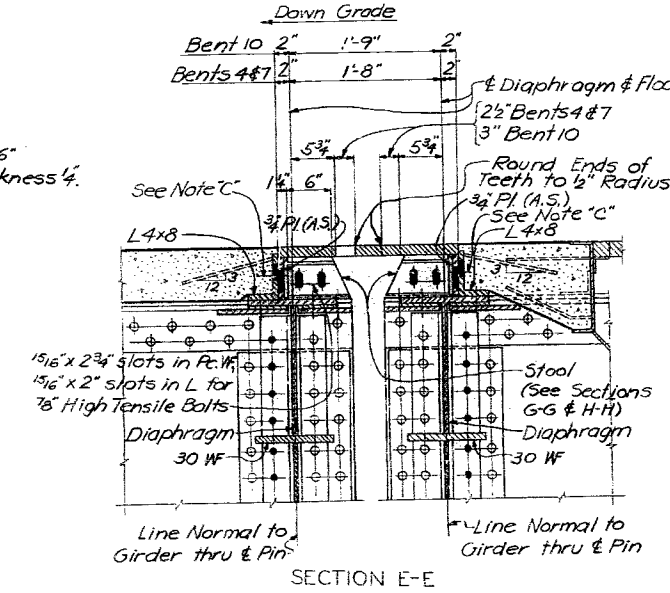
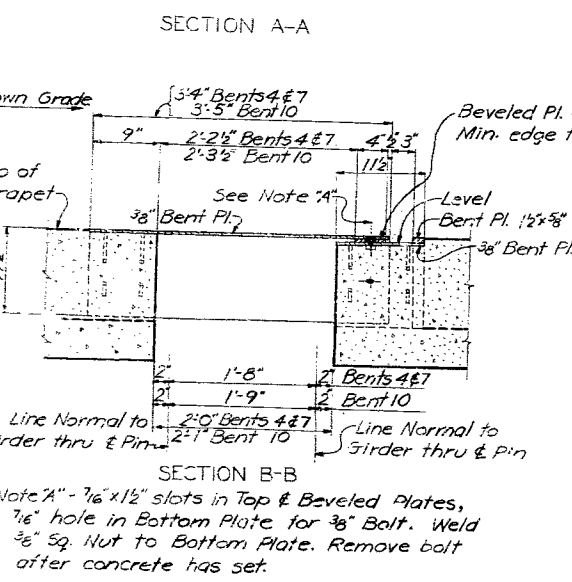
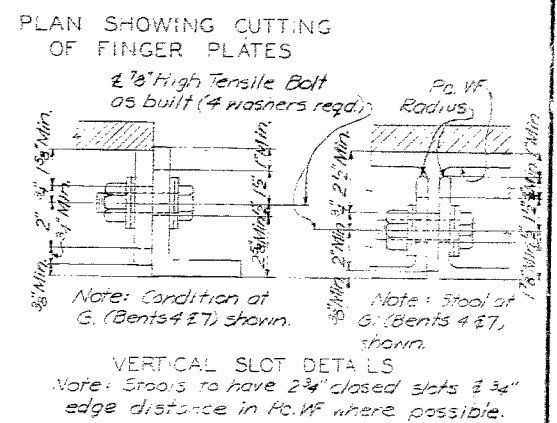
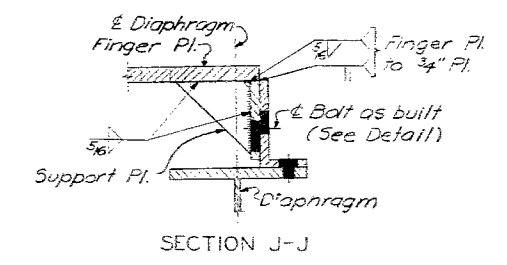
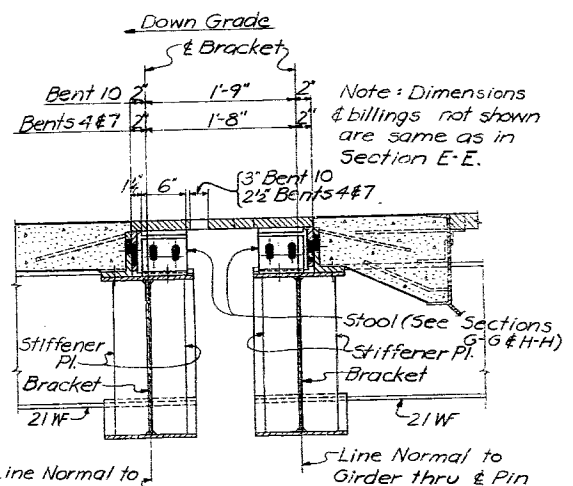
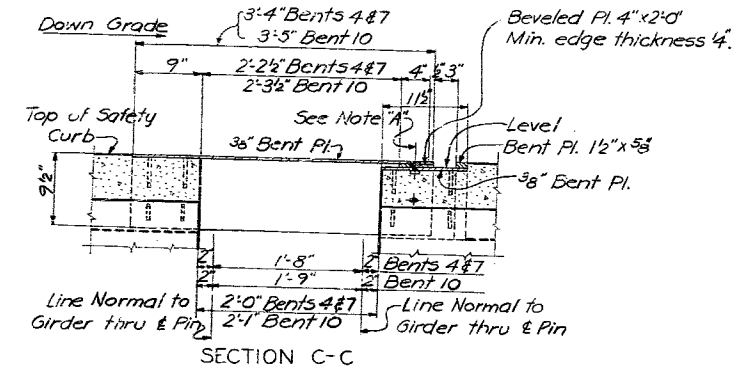
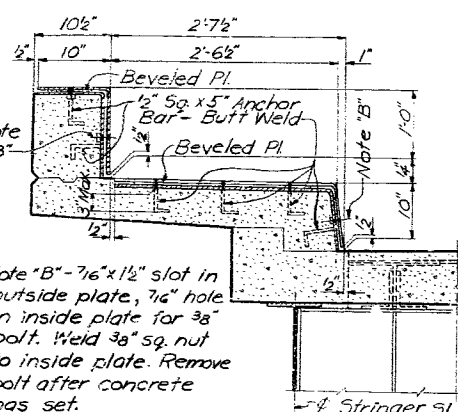
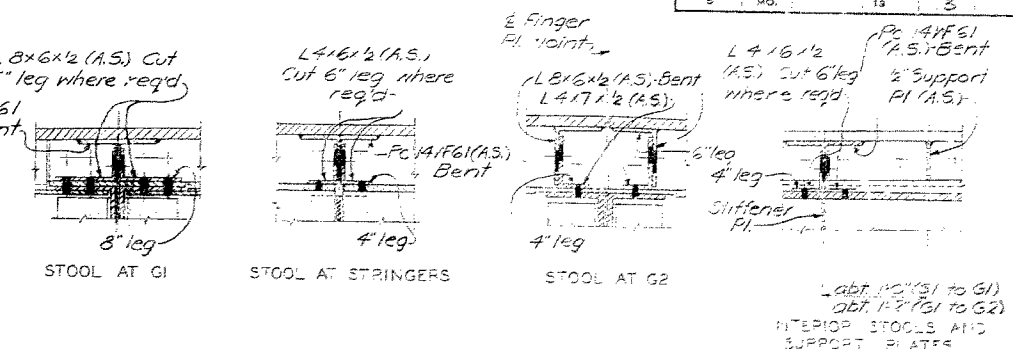
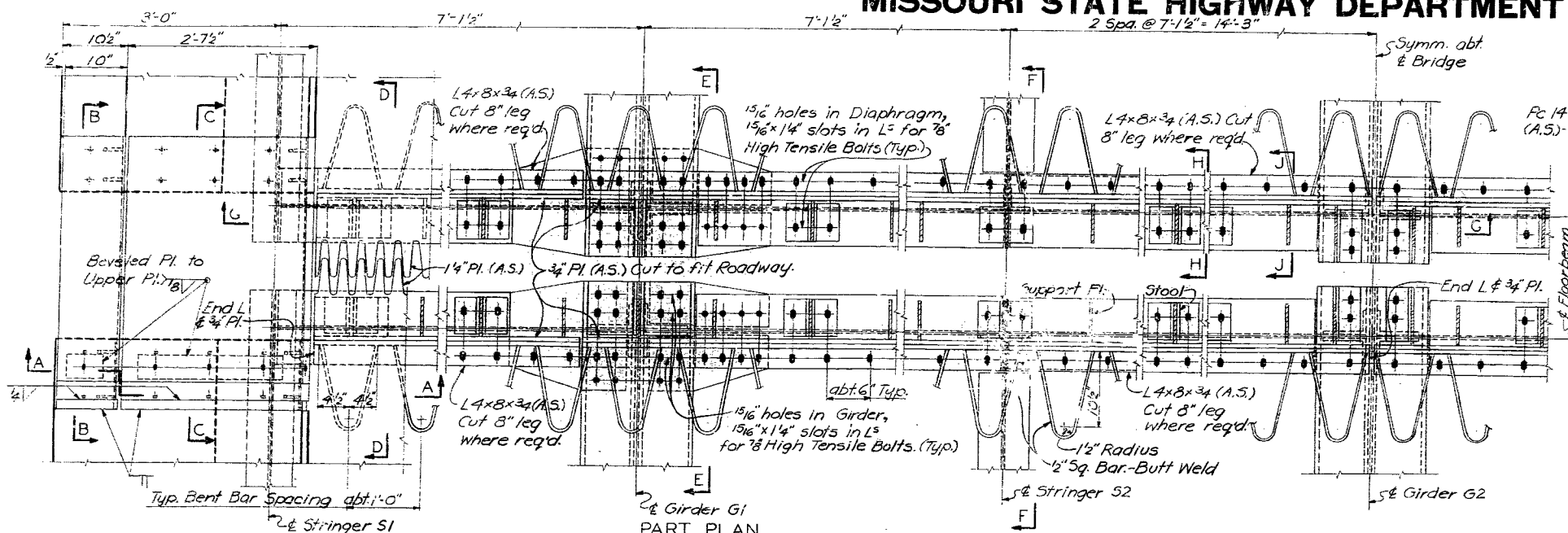
Part	Qty	Notes
1 1/2" Dia. Pins	42	84
1 1/2" Dia. Washers	42	84
1 1/2" Dia. Nuts	42	84

415

DRAWN BY: T. Castro, Feb. 1957
TRACED BY:
CHECKED BY: A. Wise, Jr., Apr. 1957

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	MO.	13	13	3	3



NOTES

For Girder Span Notes, see Sheets 25 & 31.
 All Rivets $7/8$.
 Vertical slots to provide for $1/4$ " lowering and $2/2$ " raising of Finger Pl.
 All expansion devices are shown in normal position at a temperature of $60^\circ F$.
 Flame cutting of finger plates shall be as narrow as practicable and shall not exceed $1/4$ " width. A mechanical guide shall be used to guide the cutting torch. All burrs shall be ground smooth.
 Finger plate dimensions include $1/4$ " allowance for flame cutting.
 All material marked (A.S.) shall be fully weldable Structural Low-Alloy Steel conforming to A.S.T.M. designation A242.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a,b,c (F.A.I.R.T.) STA. 1474+38.03
 I-70-3(15) a,b (R.T.I. 70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

ROADWAY EXPANSION
 DEVICES AT BENTS 4, 7 & 10

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

416

DRAWN BY: A. Korn, Apr. 1957
 TRACED BY:
 CHECKED BY: K. L. Fogg, June 1957

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD STATE FED. AID FISCAL SHEET TOTAL
SHEET NO. YEAR NO. SHEETS
5 MO 19 40 40

Stresses in Kips. C-Compression T-Tension

TABLE OF TRUSS MEMBERS AND STRESSES

Member	D.L.	L.L.	I.	Trans. Wind Structure (30° Wind)		30° Trans. Wind on Studs (L.C.)		D.L. + I.	D.L. + L.L. + I.	Area in sq. in. Furnished	Eff. Gross	Net	Material	
				30° W	50° W	30° W	50° W							
L0-L2	1162T	285T	23T	83T	138T	111T	1470T	1581T	1900T	70.69	57.13	M.S.	4 Ls 5x5x3/8; 2 Pls. 26"x3/8"; 2 Cov. Pls. 20"x3/8"	
L2-L4	1166T	301T	24T	163T	272T	222T	1491T	1713T	1438T	70.69	57.13	M.S.	do	
L4-L6	1240T	517T	41T	221T	368T	309T	2498T	2907T	2308T	117.01	95.64	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 16"x1/2"; 2 Cov. Pls. 20"x3/8"	
L6-L8	1940T	522T	42T	254T	424T	355T	2504T	2859T	2364T	117.01	95.64	M.S.	do	
L8-L10	1663T	541T	43T	264T	440T	369T	2247T	2615T	2103T	106.76	86.51	M.S.	4 Ls 5x5x3/8; 2 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 19"x3/8"	
L10-L12	1665T	539T	43T	251T	419T	350T	2247T	2597T	2084T	106.76	86.51	M.S.	do	
L12-L14	266T	267C	26T	213T	355T	290T	*672T	922T	615T	60.50	47.72	M.S.	4 Ls 5x5x3/8; 2 Pls. 26"x3/8"; 2 Cov. Pls. 21"x3/8"	
L14-L16	261T	267C	26T	151T	251T	203T	*665T	831T	512T	60.50	47.72	M.S.	do	
L16-L18	1920T	402C	32C	151C	251C	203C	*119C	230C	2134C	115.76	92.26	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Cov. Pls. 19"x3/8"	
L18-L20	1910C	402C	32C	128C	244C	187C	2354C	2541C	2134C	115.76	92.26	M.S.	do	
U0-U2	1669C	425C	34C	128C	244C	187C	2354C	2541C	2134C	115.76	92.26	M.S.	4 Ls 5x5x3/8; 2 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 20"x3/8"	
U2-U4	1878C	537C	43C	163C	272C	222C	2498C	2907C	2308C	117.01	95.64	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 16"x1/2"; 2 Cov. Pls. 20"x3/8"	
U4-U6	1284C	446C	36C	163C	272C	222C	2498C	2907C	2308C	117.01	95.64	M.S.	4 Ls 5x5x3/8; 2 Pls. 26"x3/8"; 2 Cov. Pls. 20"x3/8"	
U6-U8	851T	283T	23T	163T	272T	222T	1491T	1713T	1438T	70.69	57.13	M.S.	4 Ls 5x5x3/8; 2 Pls. 26"x3/8"; 2 Cov. Pls. 21"x3/8"	
U8-U10	3478T	650T	52T	190T	315T	261T	4100T	4810T	3910T	140.51	115.50	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Pls. 24"x3/8"; 2 Cov. Pls. 21"x3/8"	
M0-M1	1649T	403C	32C	49C	82C	62C	2078C	2140C	1725C	128.26	100.26	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 16"x1/2"; 2 Cov. Pls. 20"x3/8"	
M1-M2	1526C	377C	30C	25C	42C	38C	1933C	1971C	1568C	108.26	83.26	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 20"x3/8"	
M2-M3	885T	242T	19T	108.26	242T	19T	108.26	242T	19T	108.26	242T	19T	M.S.	4 Ls 4x4x1/2; 2 Pls. 22"x3/8"; 2 Cov. Pls. 21"x3/8"
M3-M4	702T	232T	19T	95.3T	232T	19T	95.3T	232T	19T	95.3T	232T	19T	M.S.	4 Ls 4x4x1/2; 2 Pls. 22"x3/8"; 2 Cov. Pls. 21"x3/8"
M4-M5	430C	187C	15C	63.6C	187C	15C	63.6C	187C	15C	63.6C	187C	15C	M.S.	2-18 Ls 51.9; 2 Cov. Pls. 22"x3/8"
M5-M6	312C	163C	13C	49.0C	163C	13C	49.0C	163C	13C	49.0C	163C	13C	M.S.	2-18 Ls 45.8; 2 Cov. Pls. 22"x3/8"
M6-M7	12T	36T	11T	*224T	36T	11T	*224T	36T	11T	*224T	36T	11T	M.S.	2-15 Ls 33.9; 2 Cov. Pls. 22"x3/8"
M7-M8	105C	151C	12C	*298C	151C	12C	*298C	151C	12C	*298C	151C	12C	M.S.	do
M8-M9	326T	173T	14T	51.3T	173T	14T	51.3T	173T	14T	51.3T	173T	14T	M.S.	2-15 Ls 33.9; 2 Cov. Pls. 22"x3/8"
M9-M10	442T	176T	14T	30.3T	176T	14T	30.3T	176T	14T	30.3T	176T	14T	M.S.	do
U0-U1	889C	229C	18C	115.6C	229C	18C	115.6C	229C	18C	115.6C	229C	18C	M.S.	4 Ls 4x4x1/2; 2 Pls. 22"x3/8"; 2 Cov. Pls. 20"x3/8"
U1-U2	1007C	258C	20C	65.26C	258C	20C	65.26C	258C	20C	65.26C	258C	20C	M.S.	4 Ls 4x4x1/2; 2 Pls. 22"x3/8"; 2 Pls. 20"x3/8"; 2 Cov. Pls. 20"x3/8"
U2-U3	1215T	282T	23T	1520T	282T	23T	1520T	282T	23T	1520T	282T	23T	M.S.	4 Ls 4x4x1/2; 2 Pls. 22"x3/8"; 2 Pls. 20"x3/8"; 2 Cov. Pls. 20"x3/8"
U3-U4	1329T	292T	23T	1644T	292T	23T	1644T	292T	23T	1644T	292T	23T	M.S.	4 Ls 4x4x1/2; 2 Pls. 22"x3/8"; 2 Pls. 20"x3/8"; 2 Cov. Pls. 20"x3/8"
U4-U5	1659C	334C	27C	2014C	334C	27C	2014C	334C	27C	2014C	334C	27C	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 19"x3/8"
U5-U6	1706C	356C	28C	2154C	356C	28C	2154C	356C	28C	2154C	356C	28C	M.S.	4 Ls 5x5x3/8; 2 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 19"x3/8"
U6-U7	1885T	374T	30T	2269T	374T	30T	2269T	374T	30T	2269T	374T	30T	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 19"x3/8"
U7-U8	2003T	391T	31T	2425T	391T	31T	2425T	391T	31T	2425T	391T	31T	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 19"x3/8"
M1-M2	2632C	481C	38C	315C	481C	38C	315C	481C	38C	315C	481C	38C	M.S.	4 Ls 5x5x3/8; 4 Pls. 26"x3/8"; 2 Pls. 26"x3/8"; 2 Cov. Pls. 21"x3/8"
M2-M3	2768C	501C	40C	330C	501C	40C	330C	501C	40C	330C	501C	40C	M.S.	do
M3-M4	134T	87T	23T	244T	87T	23T	244T	87T	23T	244T	87T	23T	M.S.	4 Ls 6x4x1/8; 2 Pls. 22"x3/8"
M4-M5	134T	87T	23T	244T	87T	23T	244T	87T	23T	244T	87T	23T	M.S.	do
M5-M6	140T	87T	23T	250T	87T	23T	250T	87T	23T	250T	87T	23T	M.S.	do
M6-M7	140T	87T	23T	250T	87T	23T	250T	87T	23T	250T	87T	23T	M.S.	do
M7-M8	138T	87T	23T	248T	87T	23T	248T	87T	23T	248T	87T	23T	M.S.	do
M8-M9	140T	87T	23T	250T	87T	23T	250T	87T	23T	250T	87T	23T	M.S.	do
M9-M10	134T	87T	23T	244T	87T	23T	244T	87T	23T	244T	87T	23T	M.S.	do
M10-M11	134T	87T	23T	244T	87T	23T	244T	87T	23T	244T	87T	23T	M.S.	do
M11-M12	142T	87T	23T	252T	87T	23T	252T	87T	23T	252T	87T	23T	M.S.	do
M12-M13	142T	87T	23T	252T	87T	23T	252T	87T	23T	252T	87T	23T	M.S.	do
M13-M14	134T	87T	23T	244T	87T	23T	244T	87T	23T	244T	87T	23T	M.S.	do
M14-M15	134T	87T	23T	244T	87T	23T	244T	87T	23T	244T	87T	23T	M.S.	do
M15-M16	142T	87T	23T	252T	87T	23T	252T	87T	23T	252T	87T	23T	M.S.	do
M16-M17	142T	87T	23T	252T	87T	23T	252T	87T	23T	252T	87T	23T	M.S.	do
M17-M18	142T	87T	23T	252T	87T	23T	252T	87T	23T	252T	87T	23T	M.S.	do
M18-M19	314T	105T	23T	442T	105T	23T	442T	105T	23T	442T	105T	23T	M.S.	2-15 Ls 40.0; 2 Cov. Pls. 22"x3/8"
M19-M20	332T	105T	23T	460T	105T	23T	460T	105T	23T	460T	105T	23T	M.S.	do
U0-U1	332T	103T	23T	460T	103T	23T	460T	103T	23T	460T	103T	23T	M.S.	do
U1-U2	330T	103T	23T	458T	103T	23T	458T	103T	23T	458T	103T	23T	M.S.	do
U2-U3	367T	105T	23T	495T	105T	23T	495T	105T	23T	495T	105T	23T	M.S.	2-15 Ls 33.9; 2 Cov. Pls. 22"x3/8"
U3-U4	320C	91C	19C	458C	91C	19C	458C	91C	19C	458C	91C	19C	M.S.	2-12 Ls 25; 2 Cov. Pls. 22"x3/8"
U4-U5	320C	91C	19C	458C	91C	19C	458C	91C	19C	458C	91C	19C	M.S.	do
U5-U6	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U6-U7	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U7-U8	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U8-U9	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U9-U10	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U10-U11	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U11-U12	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U12-U13	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U13-U14	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U14-U15	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U15-U16	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U16-U17	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U17-U18	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U18-U19	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
U19-U20	310C	87C	19C	442C	87C	19C	442C	87C	19C	442C	87C	19C	M.S.	do
M1-M2	117C	62C	16C	145C	62C	16C	145C	62C	16C	145C	62C	16C	M.S.	2-18 Ls 45.8; 2 Cov. Pls. 22"x3/8"
M2-M3	122C	62C	16C	200C	62C	16C	200C	62C	16C	200C	62C	16C	M.S.	2-15 Ls 33.9; 2 Cov. Pls. 22"x3/8"
M3-M4	117C	57C	15C	189C	57C	15C	189C	57C	15C	189C	57C	15C	M.S.	do
M4-M5	117C	57C	15C	189C	57C	15C	189C	57C	15C	189C	57C	15C	M.S.	do
M5-M6	116C	57C	15C	188C	57C	15C	188C	57C	15C	188C	57C	15C	M.S.	do
M6-M7	118C	57C	15C	190C	57C	15C	190C	57C	15C	190C	57C	15C	M.S.	do
M7-M8	114C	56C	15C	185C	56C	15C	185C	56C	15C	185C	56C	15C	M.S.	do
M8-M9	118C	56C	15C	188C	56C	15C	188C	56C	15C	188C	56C	15C	M.S.	do
M9-M10	118C	56C	15C	188C	56C	15C	188C	56C	15C	188C	56C	15C	M.S.	do
M10-M11	136C	53C	14C	203C	53C	14C	203C	53C	14C	203C	53C	14C	M.S.	do
M11-M12	144													

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		15	67	

TRUSS SPAN NOTES

DESIGN: In accordance with Division III of the A.A.S.H.O. Standard Specifications for Highway Bridges, 1953 edition, with the following exceptions and interpretations.

DESIGN LOADING: Roadway Live Load: H20-S16 except for the design of stringers and floorbeams a special loading of 2-24,000 lb. axles at 2'-0" centers is used where this loading governs over the standard H20-S16 truck loadings. For lane loads the standard loading is used. The concentrated load used in combination with a lane load is taken as 26,000 lbs. for both shear and moment calculations.

Safety Curb Live Load: None.
Impact: Stringers, I = 30%; Floorbeams, I = 26%; two Panel Hangers and Sub-diagonals, I = 26%; four Panel Hangers, I = 22%; Main Truss Members, I = 8%; Shoes, I = 8%.

Dead Load: Provision is made for a future wearing surface of 15 pounds per square foot of roadway surface and future utilities weighing 200 pounds per foot of bridge in addition to the weight of the structure.

Wind Load: See General Notes, Sheet 3.

UNIT STRESSES: The normal allowable unit stresses for structural carbon steel and weldable structural carbon steel shall be as given in A.A.S.H.O. Art. 3.4.2. The normal allowable unit stresses for structural low-alloy steel and manganese structural steel shall be as given in A.A.S.H.O. Art. 3.4.7.

MATERIALS: All members and materials marked (M.S.) shall be manganese structural steel; all members and materials marked (A.S.) shall be structural low-alloy steel; all members and materials marked (W.S.) shall be weldable structural carbon steel; all other material shall be structural carbon steel unless otherwise noted on detail drawings.

DETAILS: All field connections shall be riveted, unless otherwise noted. Where desired for convenience in erection, shop and field rivets may be interchanged. All web plates and cover plates for truss members shall be universal mill plates. All gusset plates and splice plates shall be cut back not more than 1/4" from the back of chord angles, except as otherwise noted on the detail drawings. Access holes may be flame-cut provided exposed edges are ground smooth.

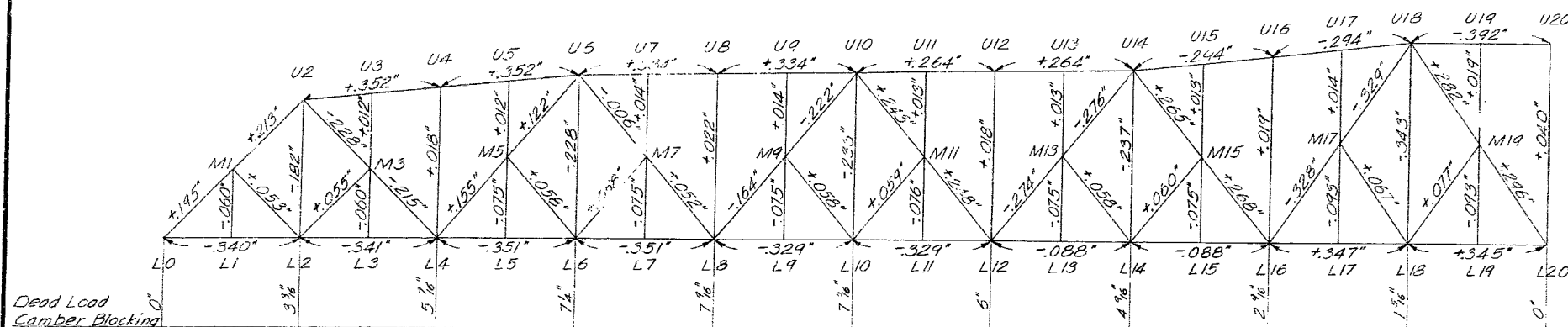
RIVETS: Rivets shall be of the sizes as noted on the detail drawings.

FABRICATION: See General Notes, Sheet 3.

CAMBER: Trusses shall be cambered for the design dead load, including future wearing surface and future utility loads.

ERECTION: Before ordering material the Contractor shall submit to the Engineer for approval, complete plans showing the method of erection he proposes to use, and showing erection stresses in all truss members. Erection stresses shall be composed of the dead load stress of the structure and erection equipment plus the stress of a 30 pound wind on the structure, as defined in the A.A.S.H.O. Standard Specifications, and on erection equipment. Erection stresses shall not exceed the normal unit stresses by more than 33%. No payment will be made for any extra material required due to erection conditions.

See General Notes, Sheet 3, for additional Superstructure Notes.

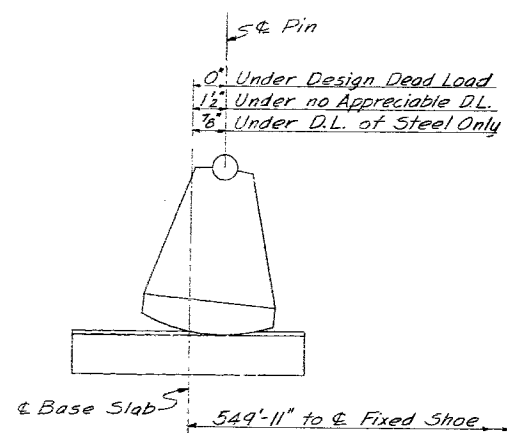


Dead Load
Camber Blocking

Note: Lengths of members to be computed for geometric shape of truss and the corrections indicated are to be applied to these lengths. + indicates lengthening, - indicates shortening. The blocking dimensions given are the positions of lower chord joints above the geometric shape to provide for dead load deflection.

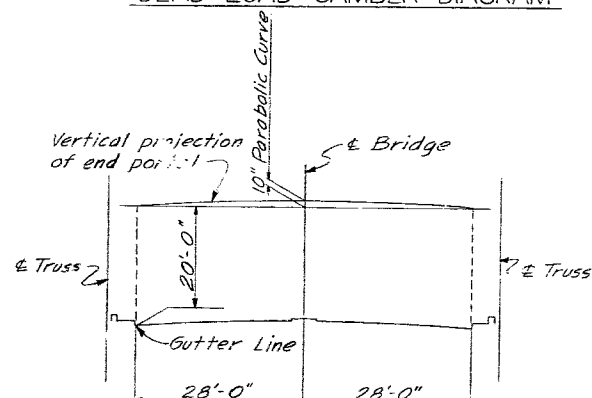
Symm. abt. C

DEAD LOAD CAMBER DIAGRAM



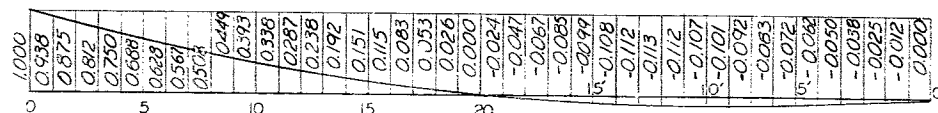
SHOE SETTINGS AT LO

Note: Position of rocker is to be vertical at median temperature of 60° F. Corrections for temperature above or below 60° F shall be made in setting shoes using a coefficient of expansion of .0000065.



Note: Other overhead bracing provides greater vertical clearance.

OVERHEAD CLEARANCE DIAGRAM



ELASTIC CURVE FOR END REACTION

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA

ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-22J(16) a, b, c (FAIRT.) STA. 1474+38.05
 I-70 3(15) a (RT.I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS-ARCHITECTS
 ST. LOUIS, MO.

TRUSS SPANS-STRESS SHEET

SHEET 33 OF 33

L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

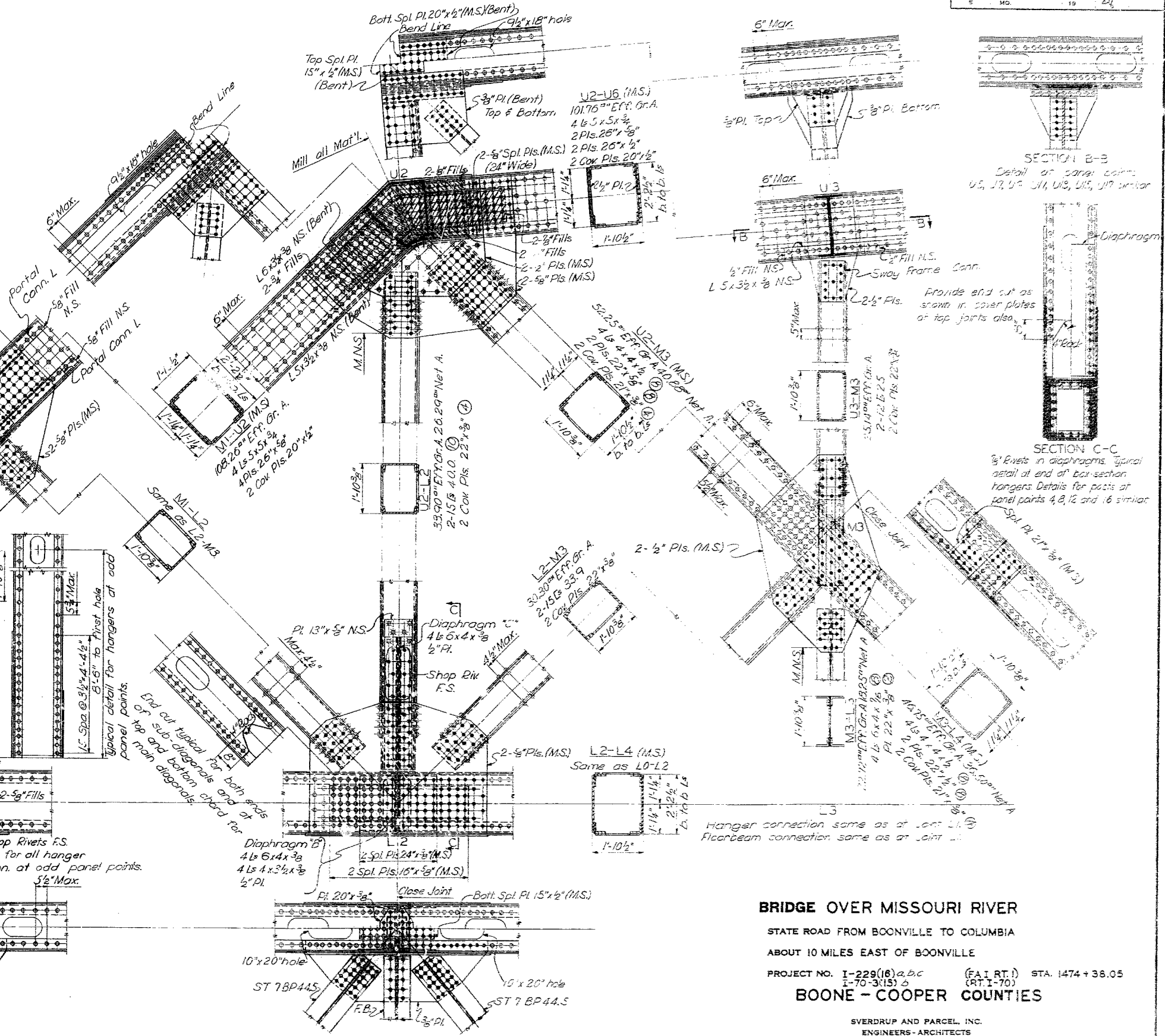
DRAWN BY: R.W. Burhop April 1957
 TRACED BY:
 CHECKED BY: E. Lemcoe May 1957

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. YEAR SHEET NO. TOTAL SHEETS
 5 MO. 19 27

TRUSS DETAIL NOTES

See Sheet 39 for Truss Span Notes.
 All rivets to be 1" unless noted herein or noted on drawings: Rivets in cover plates of all truss members, web plates of π hangers, and in all lateral bracing members and lateral plates to be $\frac{5}{8}$ ".
 In tension members $\textcircled{2}$ indicates number of holes out to maintain net section. Where "M.N.S." is given, sufficient pitch shall be provided to maintain net section in a staggered chain of holes on the face indicated.
 Perforated cover plates shall extend into the joint the minimum number of rivet spaces as shown in joint details.
 Provide 4"x8" access holes at about 4'-0" centers in both cover plates of lower chord and in bottom cover plate of upper chord and members L0-M1 and M1-U2. Provide 6"x16" holes at about 3'-5" centers in both cover plates of all other box section members. Provide 6"x12" holes at about 3'-5" centers in web plate of π section verticals.
 Larger access holes at joints shall be provided where noted and shall be of the size indicated on the joint details.
 In members in which both cover plates are perforated, the perforations shall be opposite in the two cover plates of the same member except where otherwise shown.
 For diaphragms in truss members between joints, see Sheet 44.
 For detail of top lateral diagonals, see Sheet 45.
 For lower lateral system details, see Sheet 45.
 For notes governing stitch rivets at joints see Sheet 44.



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(18) a,b,c (FAI RT. I) STA. 1474 + 38.05
 I-70-3(15) d (RT. I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: W. Piechowiski, Apr. 1957
 TRACED BY: R. E. Bernard, Apr. 1957
 CHECKED BY: E. H. Spinner, May 1957

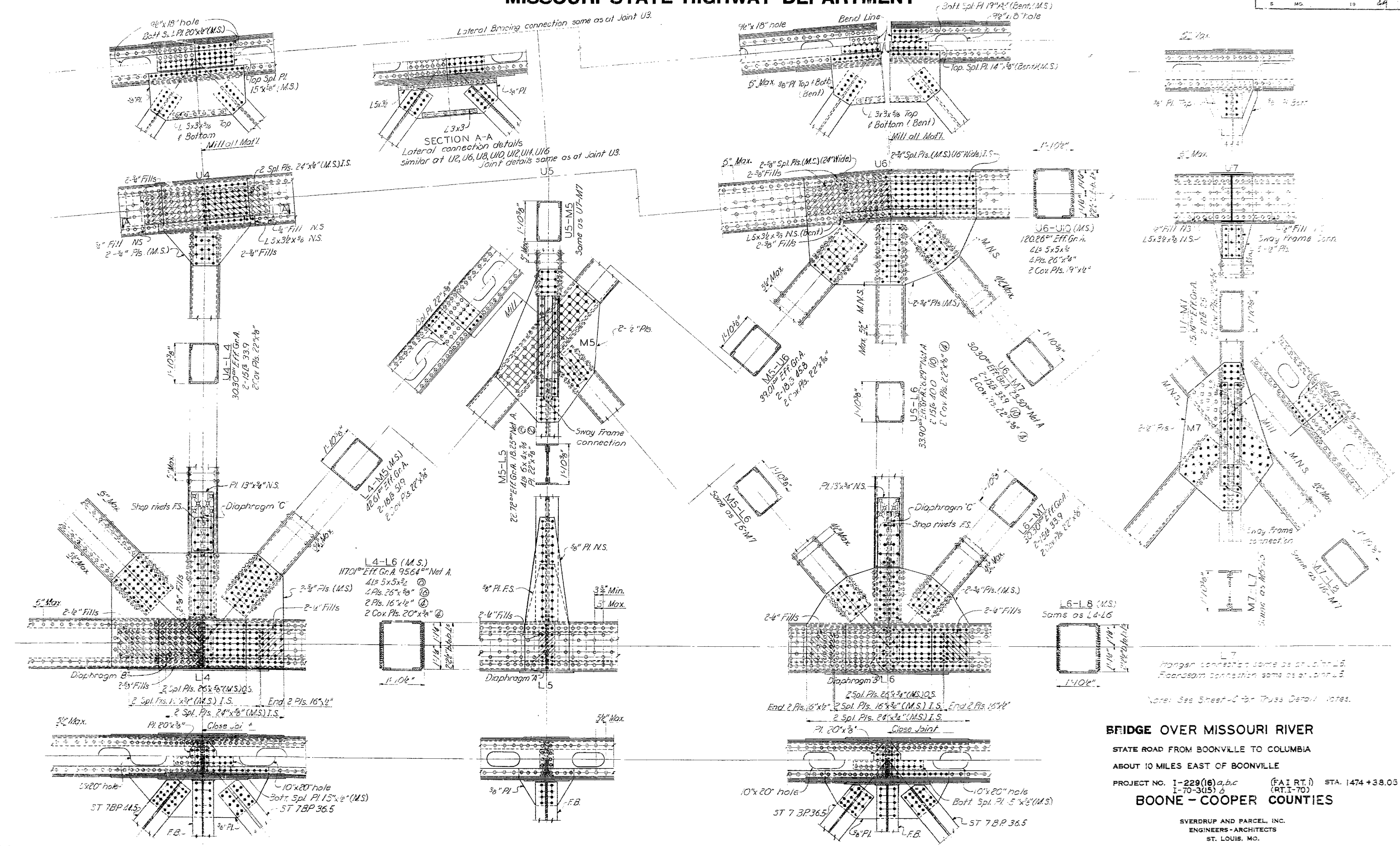
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

TRUSS DETAILS—L0 TO L3

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	24	



420

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a,b,c (FAI RT.) STA. 1474 + 38.05
 I-70-3(15) d (RT. I-70)
BOONE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: M. Piechowski, April 1957
 TRACED BY: H.R. Wolney, April 1957
 CHECKED BY: E.H. Spinner, May 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

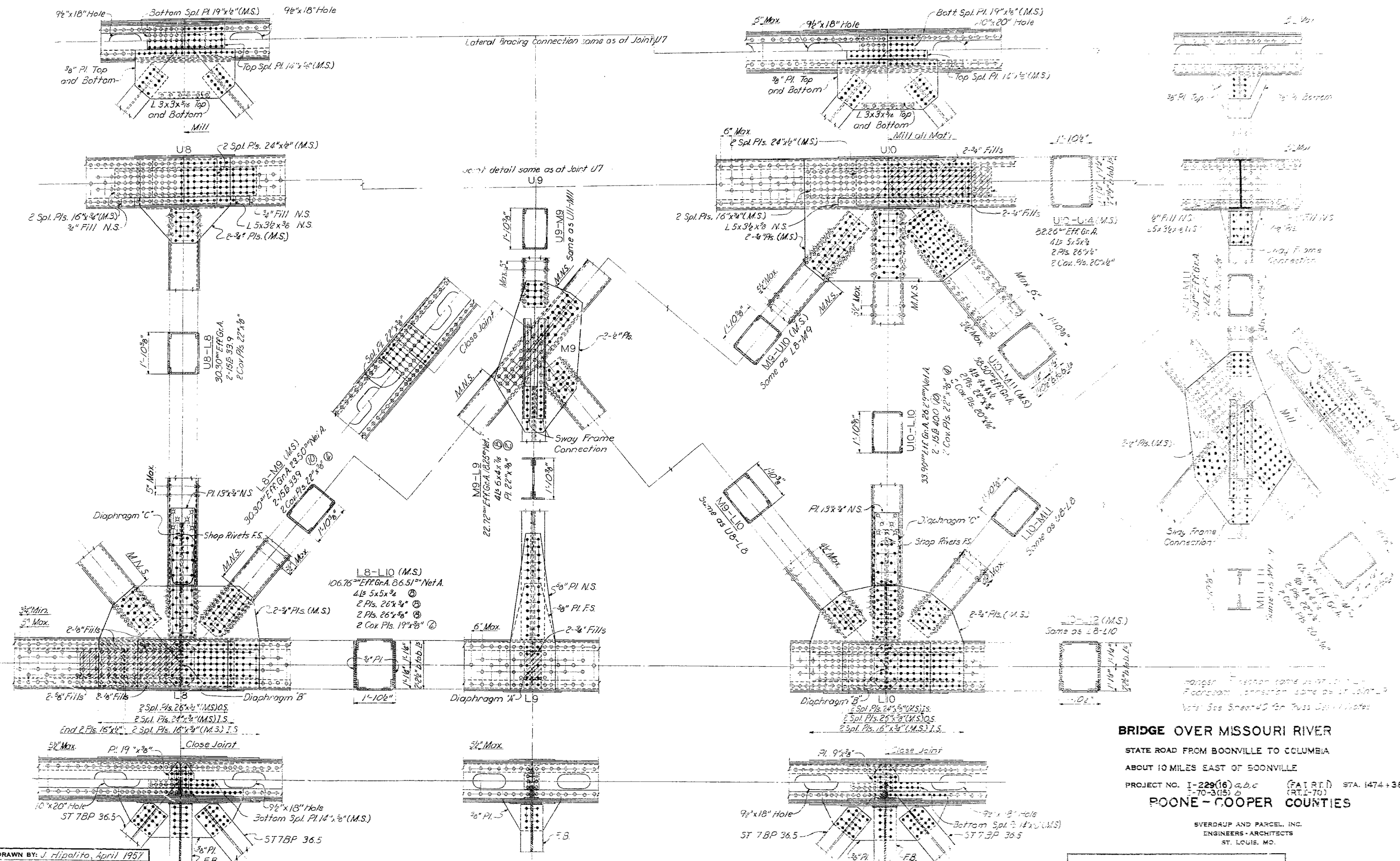
TRUSS DETAILS - L4 TO L7

SHEET 2 OF 5

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	35	



42

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a,b,c (FAIRB.) STA. 1474+38.05
 1-70-3(15) b (RT. L-70)
POONE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

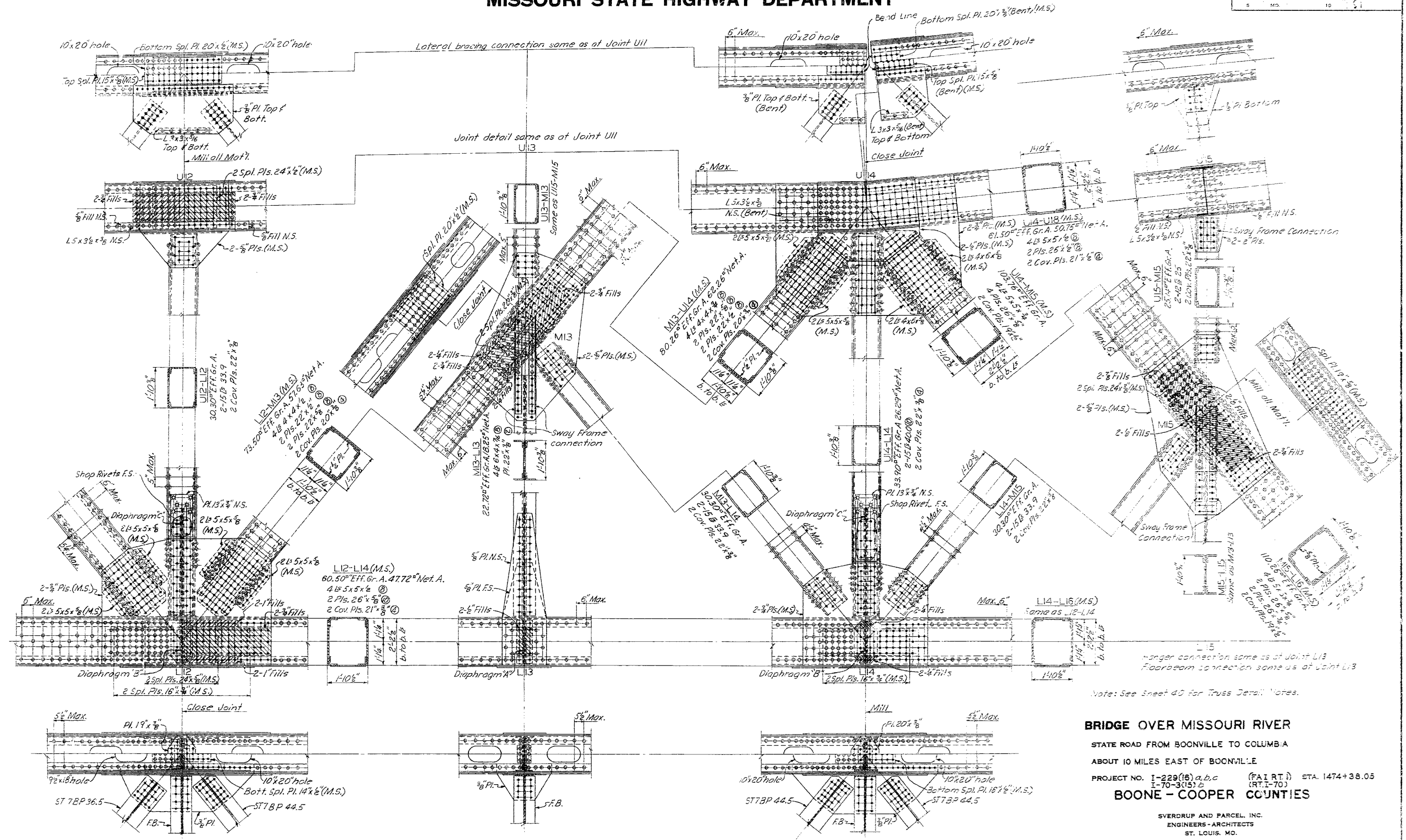
DRAWN BY: J. Ripalito, April 1957
 TPACED BY: H. P. Maloney, April 1957
 CHECKED BY: B. H. Spinner, May 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

TRUSS DETAILS - L3 TO L12
 SHEET - 3 OF 4
L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		10	21	



422

Note: See Sheet 40 for Truss Detail Notes.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA

ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a, b, c (FAI RT. I) STA. 1474+38.05

I-70-3(15) b (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: W. Piechowski, May 1957
TRACED BY: W. J. Ballard, May 1957
CHECKED BY: B. H. Spinner, June 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

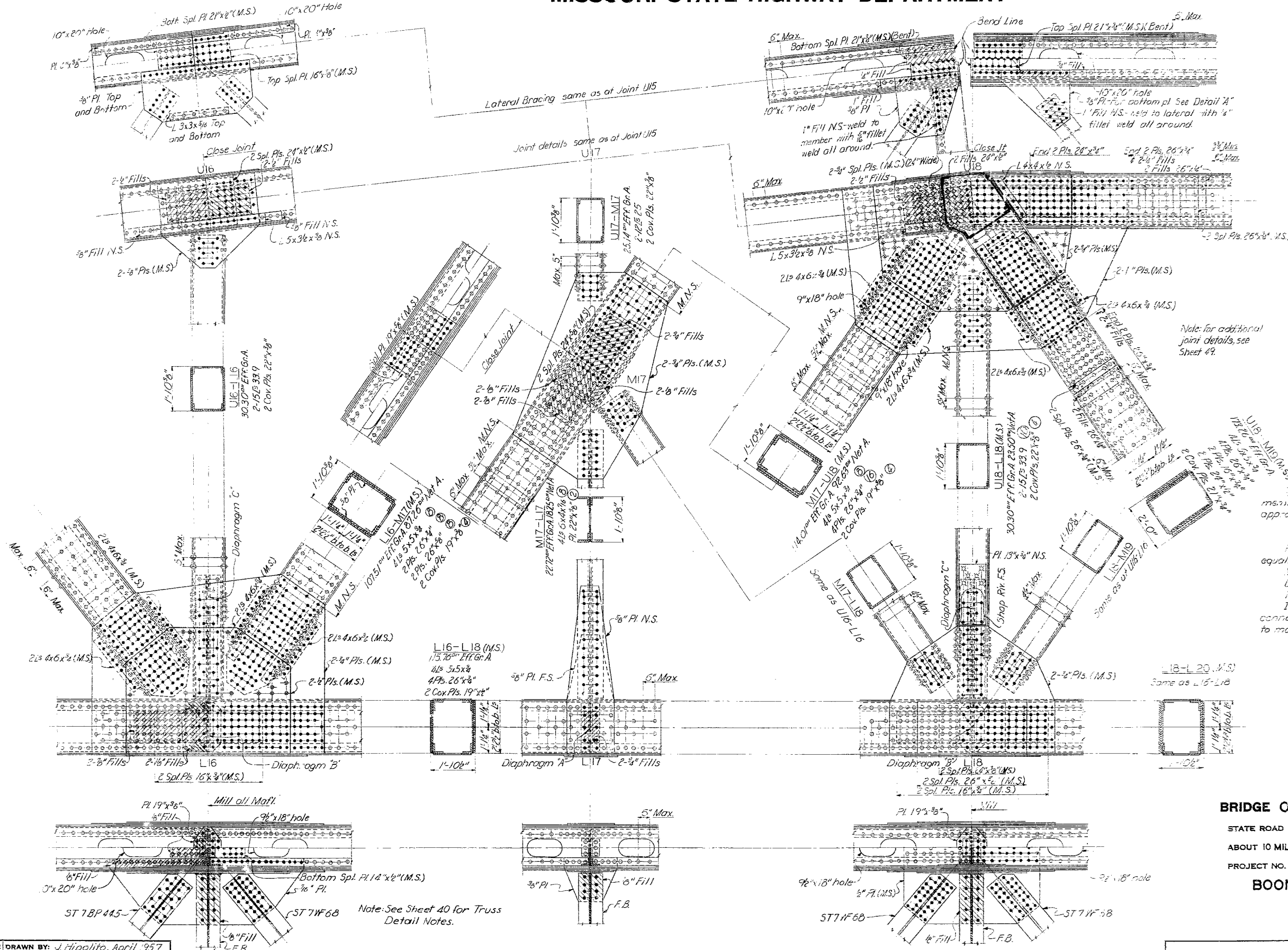
TRUSS DETAILS - L12 TO L15

SHEET - 3 OF 7

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		15	27	



STITCH RIVETS AT TRUSS JOINTS

For all chord and main diagonal members at splice points and at ends of main diagonal members, the pitch of stitch rivets in the web plates of the member outside of the gusset plates shall gradually increase from the spacing used at the edge of the gusset plate to the maximum spacing indicated on the member in a distance of not less than 1/2 times the depth of the member.

For all chord and main diagonal members at splice points, the pitch of stitch rivets in the cover plates shall not exceed 4" spacing within the length of the gusset plate and shall gradually increase to the maximum pitch indicated on the member in a distance not less than the width of the member.

If the ends of main diagonal, sub-diagonal and chord section member members, the stitch rivets in the cover plates within the gusset plates shall be as shown on the joint details and the spacing shall gradually increase to the maximum spacing shown on the member in a distance not less than the width of the member.

If non-splice panel points, the stitch rivets in the chords shall be as shown in joint details.

DIAPHRAGMS FOR COMPRESSION MEMBERS

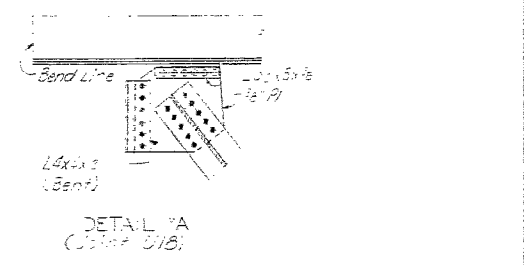
Typical chord diaphragm shown. Diaphragms for other members similar. Provide two diaphragms per panel at approximate mid points in chord members as follows:

- Lower Chord from L12 to L20
- Upper Chord from U2 to U14

Provide noted number of diaphragms approximately equally spaced in the following members:

- Members L0-M1, M1-U2, L4-M5, M5-U6, L5-U7, M7-U8, U10-M11, M11-U12, U14-M15 and M15-U16.
- Members U18-M19 and M19-L20.

In members in which net section is limited, rivets connecting diaphragms to segments are to be arranged to maintain net section.



BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a, b, c (FAI RT. I) STA. 1474 + 38.05
I-70-3(5) (RTI-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

423

DRAWN BY: J. Hipolito, April, 1957
TRACED BY: H. R. Maloney, May, 1957
CHECKED BY: E. Lemcoe, June, 1957

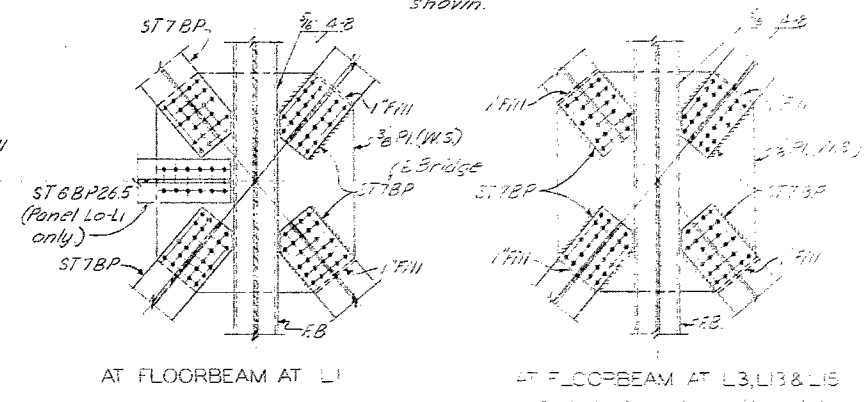
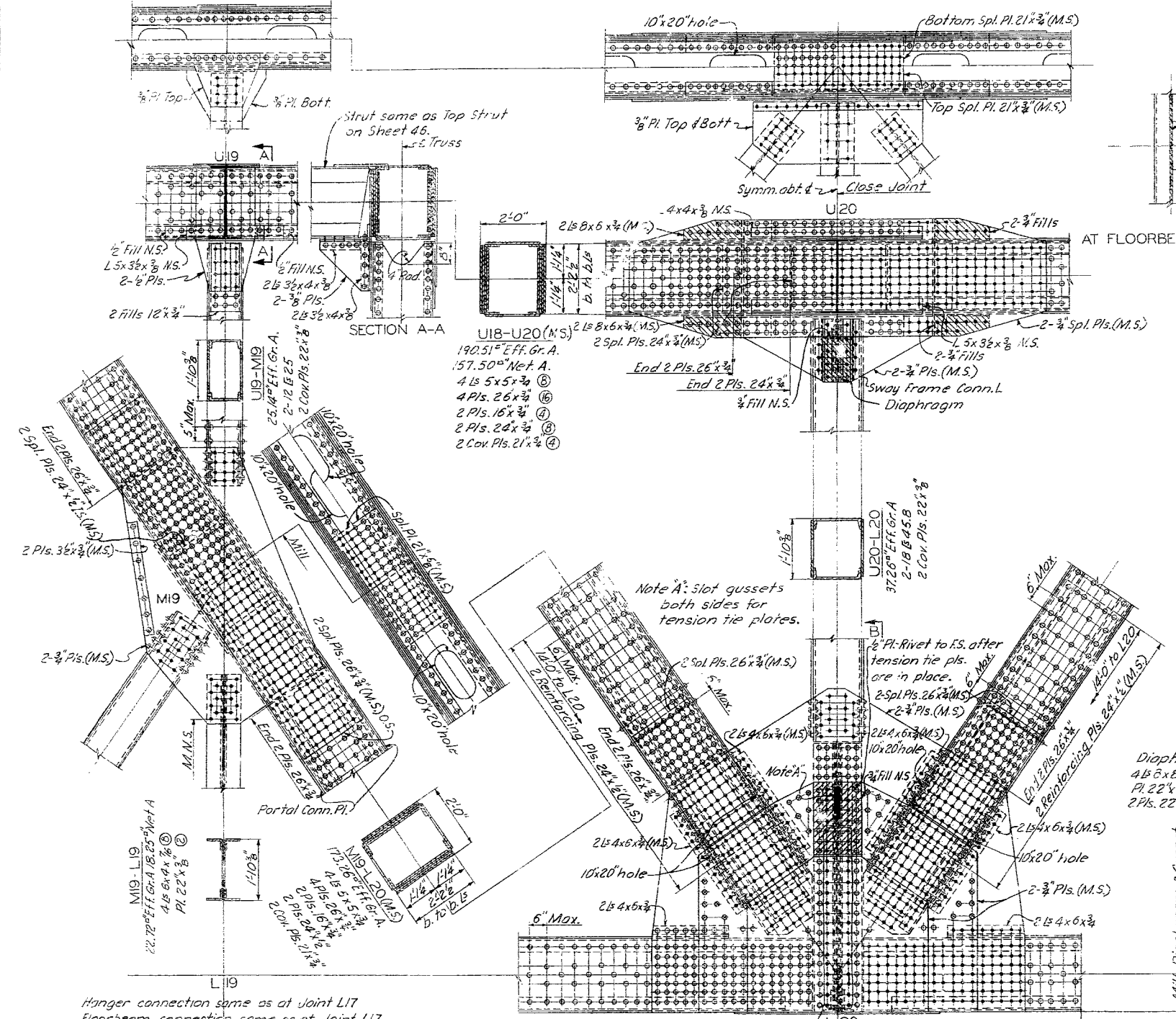
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

Note: See Sheet 40 for Truss Detail Notes.

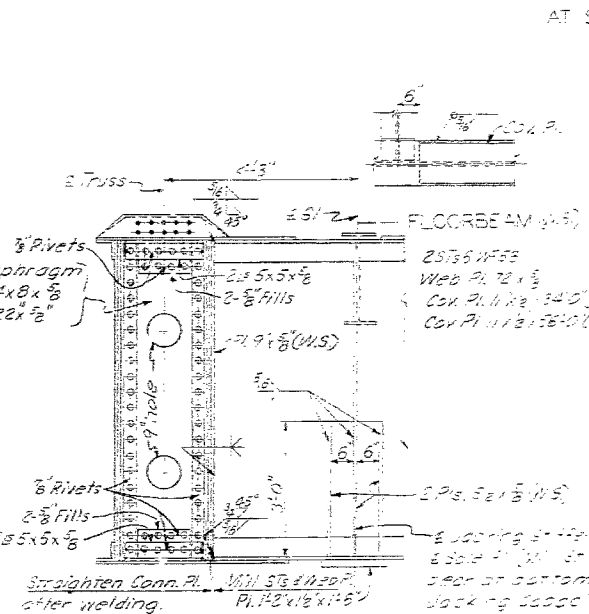
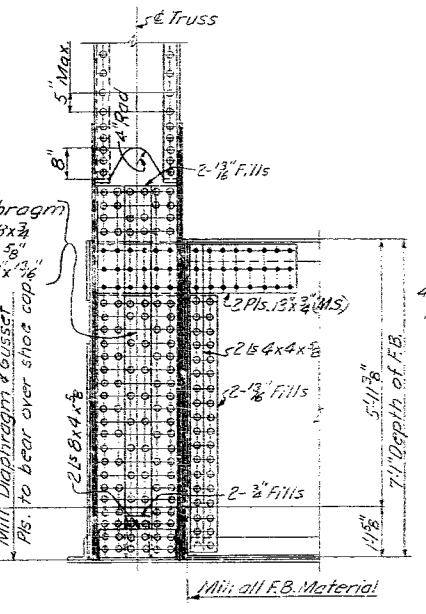
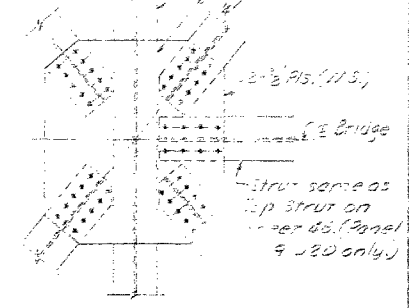
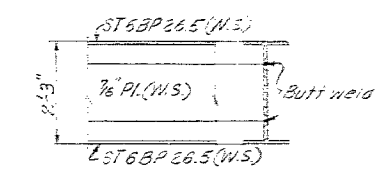
MISSOURI STATE HIGHWAY DEPARTMENT

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

Note: Fills, where required, to be welded to laterals with $\frac{3}{8}$ " continuous fillet welds as shown.



Details for intersection of FB at L3, L13, L15, L17, L19 similar except for lateral size and rivet connection.



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. 1-249(16) a, b, c (PAI RT. I) STA. 1474 + 38.05
 1-70-3(15) 2 (RT. I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

TRUSS DETAILS - L19 TO L20
 AND MISC. DETAILS

L-962

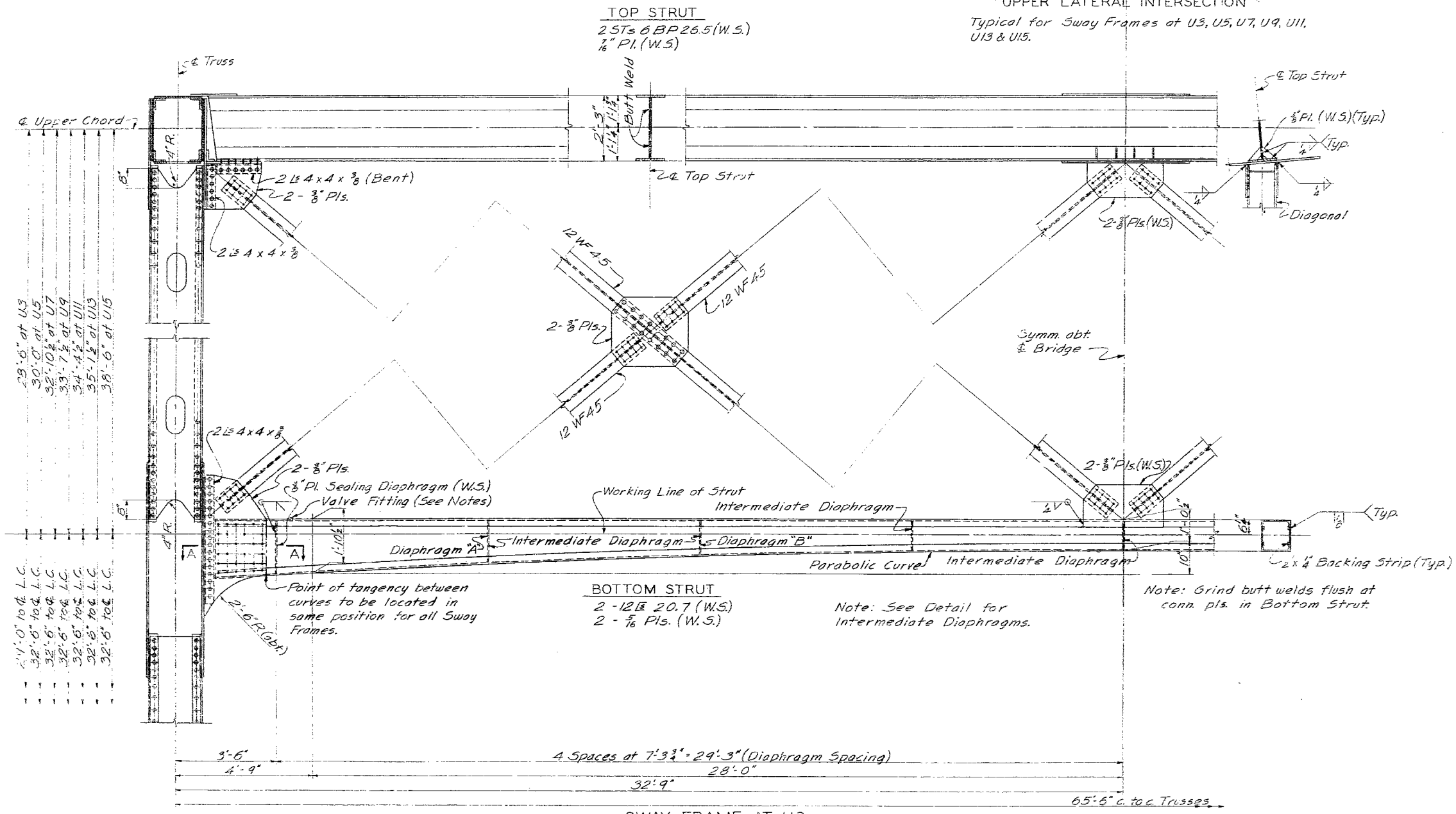
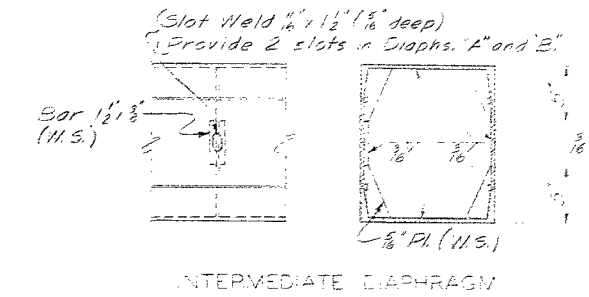
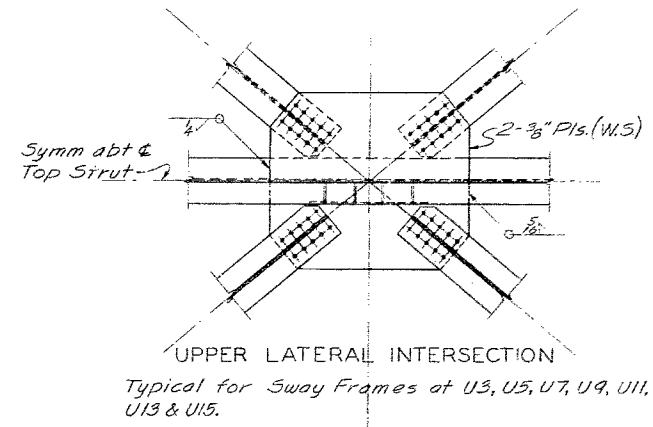
DRAWN BY: W. Piechowksi, Apr. 1957
 TRACED BY: W. Ballard, May 1957
 CHECKED BY: B.H. Spinner, June 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

424

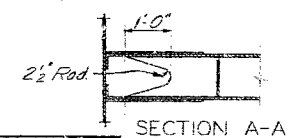
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	38	



- 29'-6" at U3
 - 30'-0" at U5
 - 32'-10 1/2" at U7
 - 33'-7 1/2" at U9
 - 34'-4 1/2" at U11
 - 35'-1 1/2" at U13
 - 38'-6" at U15
- 32'-0" 104 L.C.
 - 32'-6" 104 L.C.
 - 32'-6" 104 L.C.
 - 32'-6" 104 L.C.
 - 32'-6" 104 L.C.
 - 32'-6" 104 L.C.

NOTES
One valve fitting required per Bottom Strut. See Special Provisions for air test requirements.
Rivets 5/8"



BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(16) a,b,c (FAI RT. I) STA. 1474 + 38.05
I-70-3(15) b (RT. I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

1427
575946
DRAWN BY: R.W. Burhop, March 1957
TRACED BY:
CHECKED BY: E.P. Spinner, May 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

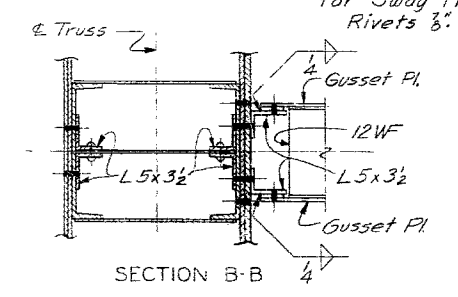
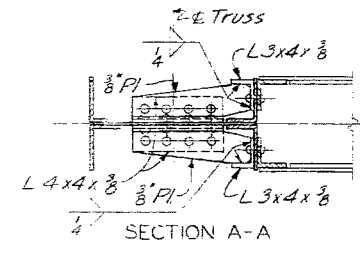
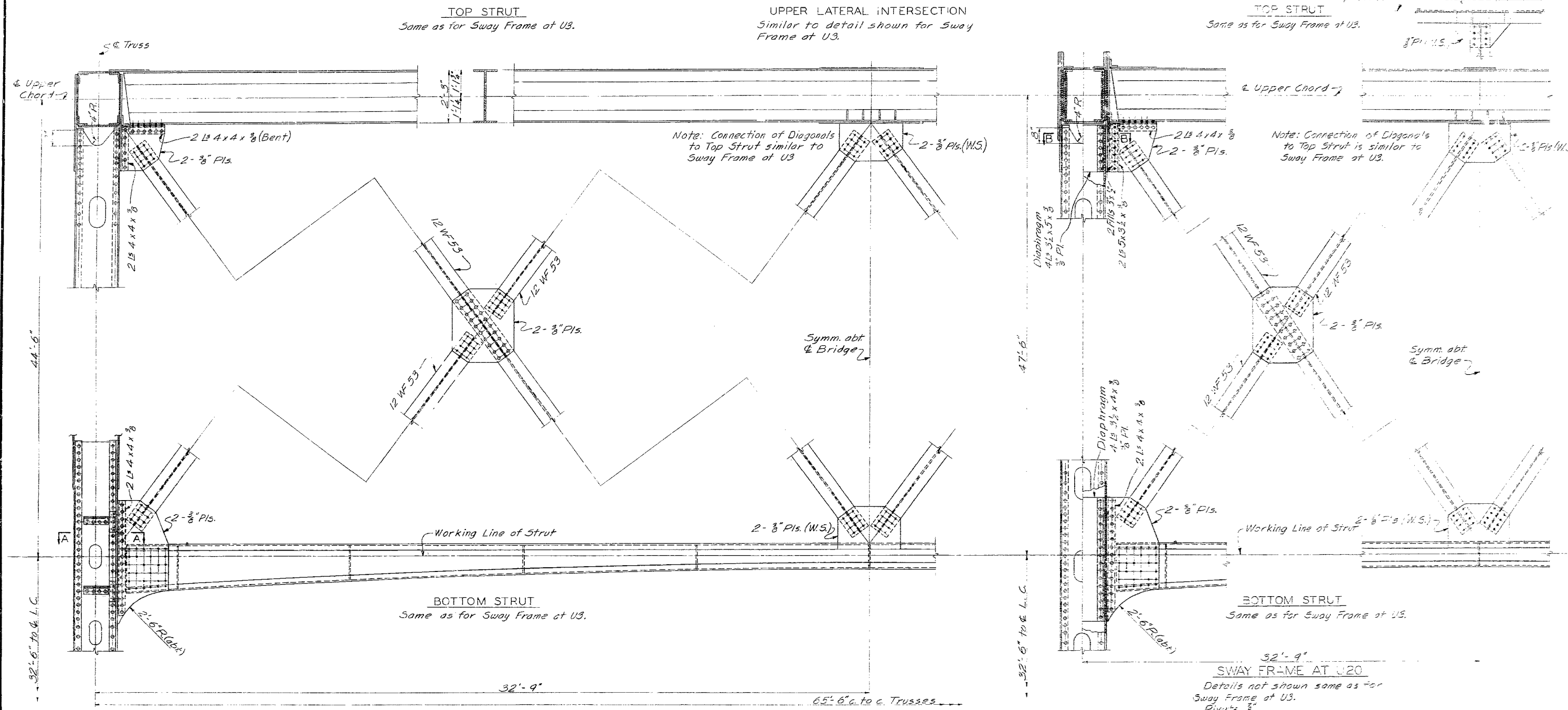
TRUSS SPANS-SWAY FRAMES

SHEET 46 OF 6

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SP. RT.	TOTAL SHEETS
5	MO.	15	1957	11	22



BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a,b,c (FAI RT. I) STA. 1474+38.05
I-70-3(15) d (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

TRUSS SPANS-SWAY FRAMES

1427
575667
DRAWN BY: R.W. Burhop, April 1957
TRACED BY:
CHECKED BY: B.H. Spinner, June 1957

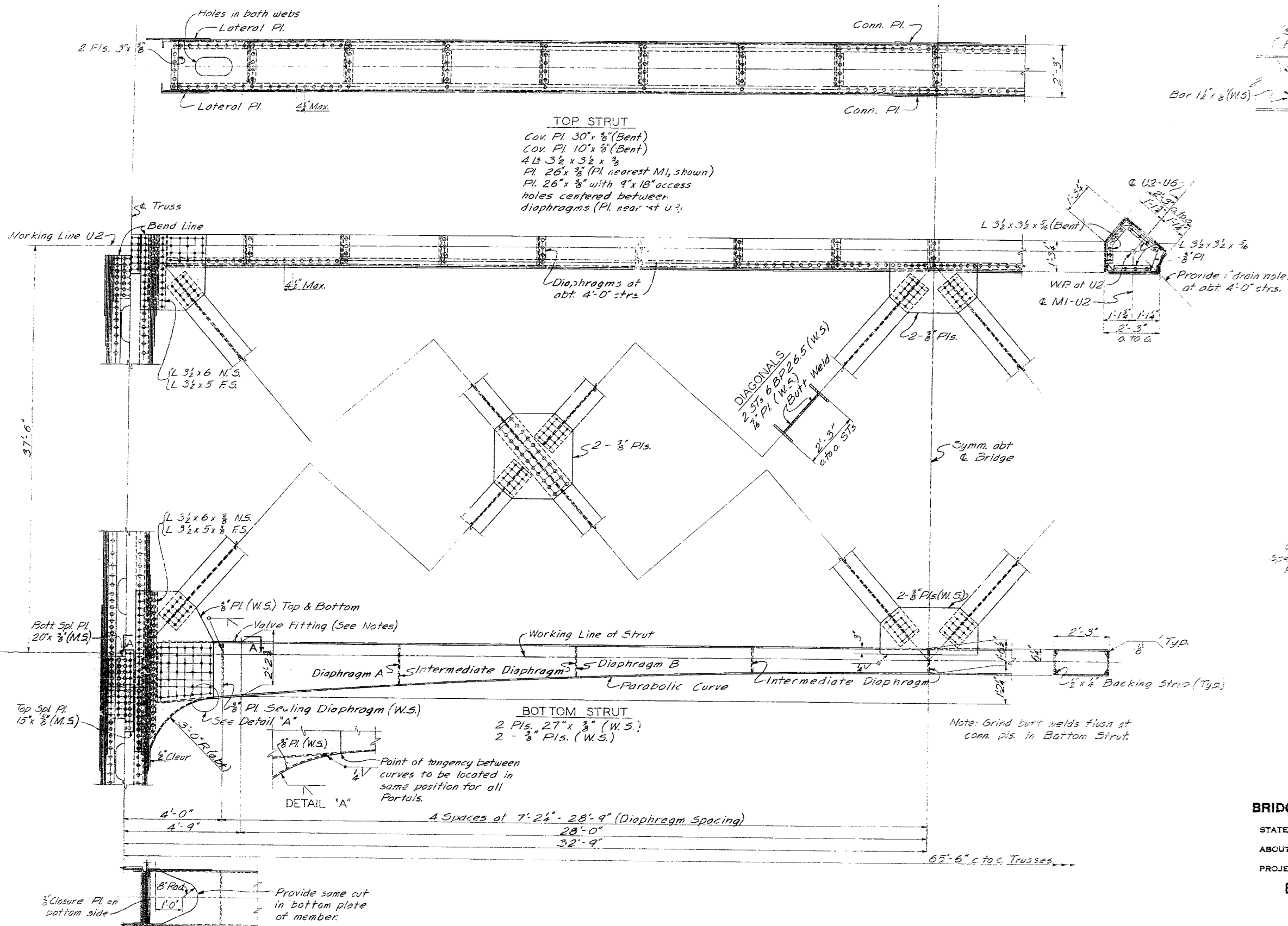
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

SHEET 17 OF 21 L-962

426

MISSOURI STATE HIGHWAY DEPARTMENT

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



BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a,b,c (FAI RT.) STA. 1474+38.05
 I-70-3(15) o (8" 1-70)
BOONE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO

1427
 5/15/57
 DRAWN BY: R.H. Burhop, April 1957
 TRACED BY:
 CHECKED BY: B.H. Spinner, May 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

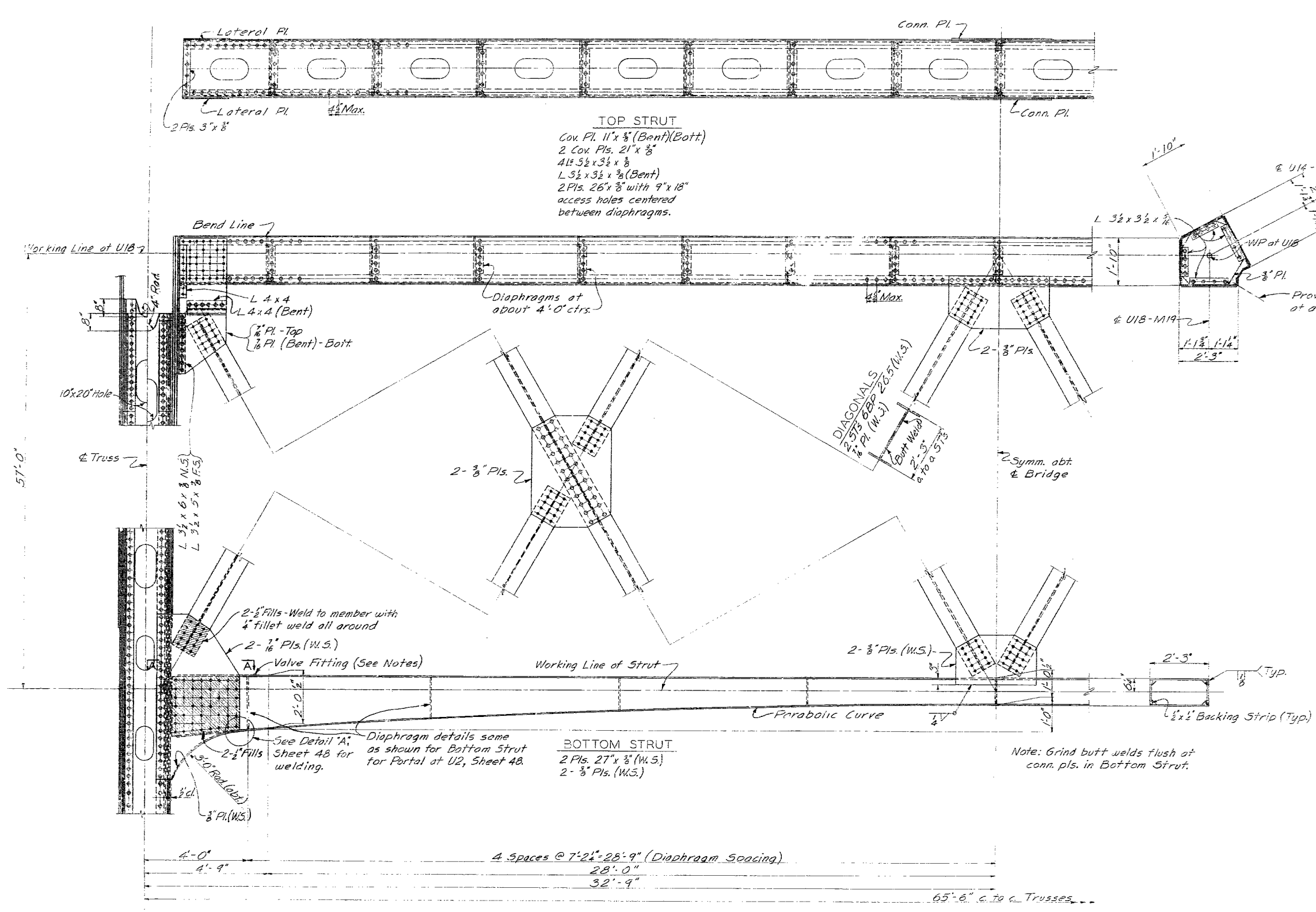
TRUSS SPANS-PORTAL AT U2

SHEET 13 OF 23

L-962

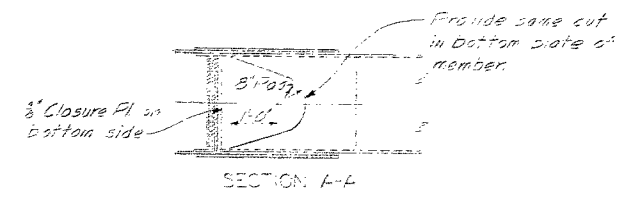
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	19	4	7	4



TOP STRUT
 Cov. Pl. 11' x 3/8" (Bent) (Bott.)
 2 Cov. Pls. 21' x 3/8"
 4 Ls. 3 1/2 x 3 1/2 x 3/8
 L 3 1/2 x 3 1/2 x 3/8 (Bent)
 2 Pls. 26' x 3/8 with 9" x 18" access holes centered between diaphragms.

BOTTOM STRUT
 2 Pls. 27' x 3/8 (W.S.)
 2 - 3/8" Pls. (W.S.)



NOTES
 One valve fitting required per Bottom Strut. See Special Provisions for air test requirements. Rivets 3/8".

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a, b, c (FAI RT. 1) STA. 1474+38.05
 I-70-3(15) d (RT. 1-0)
BOONE - COOPER COUNTIES
 SVERDUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

428
 DRAWN BY: P.W. Burhop April 1951
 TRACED BY:
 CHECKED BY: E. Lemcca June 1951

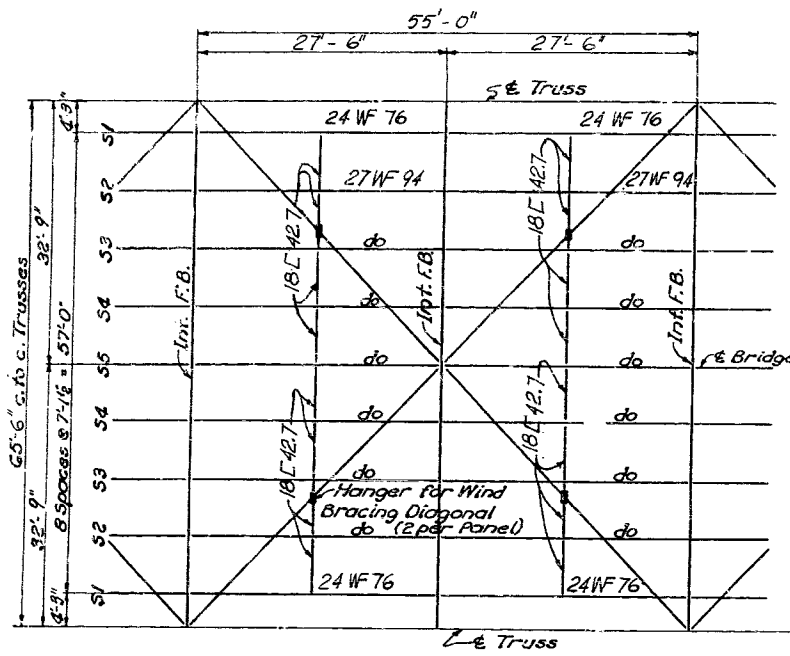
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

TRUSS SPANS - PORTAL AT U3

SHEET 4 OF 4
L-962

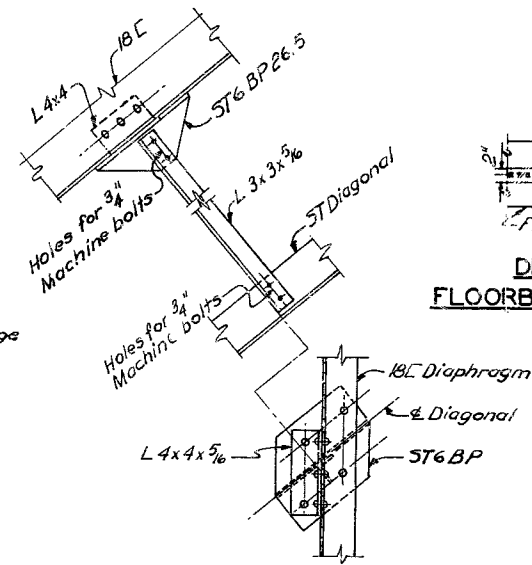
MISSOURI STATE HIGHWAY DEPARTMENT

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

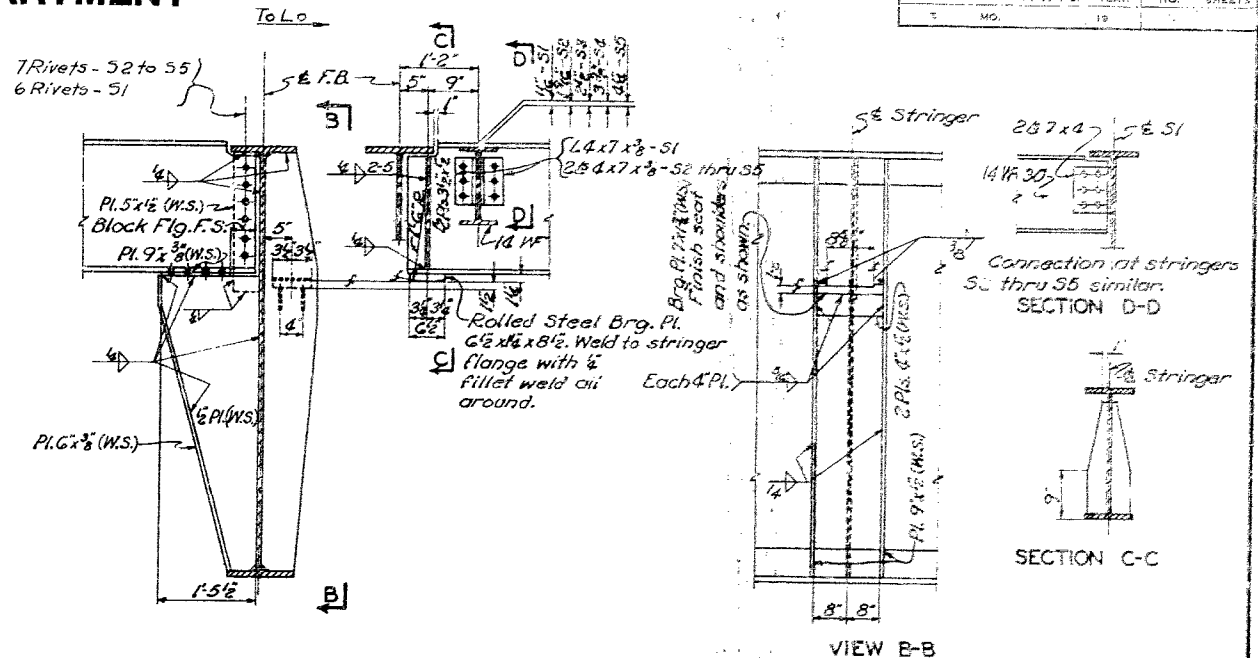
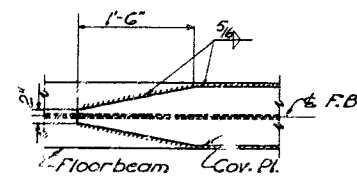


TYPICAL DOUBLE PANEL OF FLOOR FRAMING

HANGER CONNECTION FOR WIND BRACING DIAGONALS

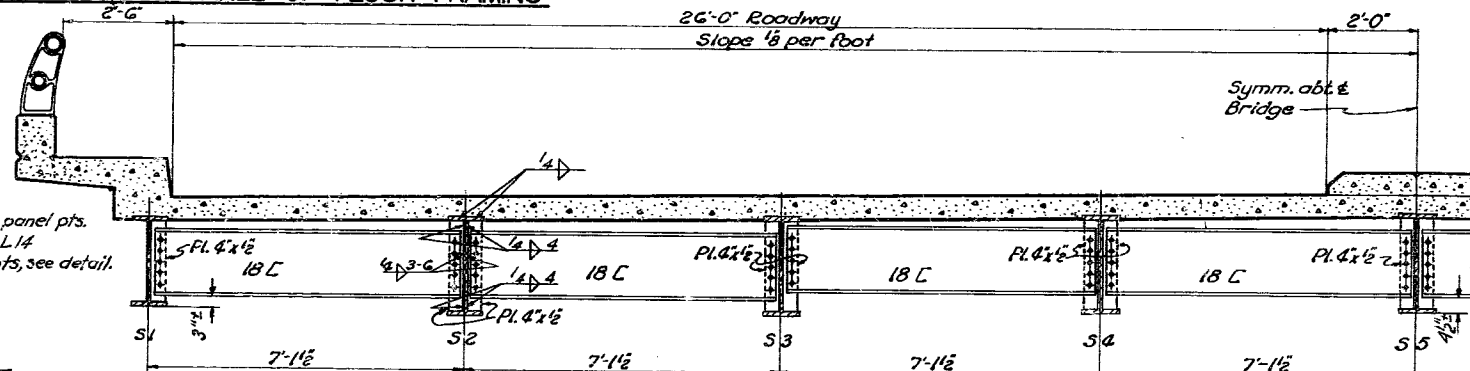


DETAIL AT END OF FLOORBEAM COVER PLATES

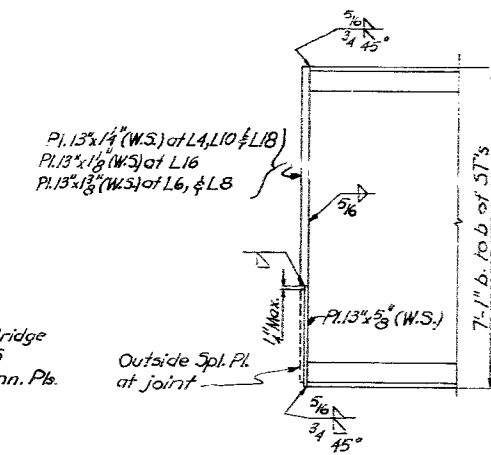


DETAIL OF STRINGER EXPANSION DEVICES AT L4, L8, L12, L16 & L19

Note "A": Pl. 9x4x5/8 (W.S.) at odd panel pts.
Pl. 13x1/2 (W.S.) at L2, L12 & L14
For other panel points, see detail.



TYPICAL HALF CROSS SECTION BETWEEN PANEL POINTS



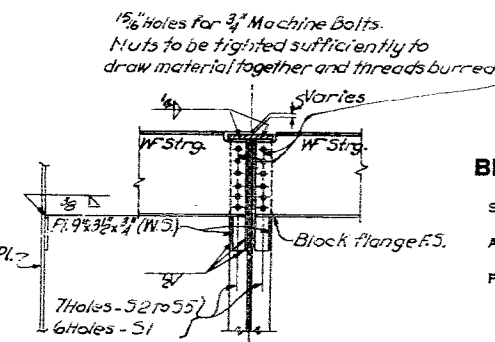
FLOORBEAM BEVEL DIAGRAM

Bevel ends of all intermediate floorbeams as shown so that trusses will be vertical after calculated floorbeam dead load deflection has occurred. Ends of floorbeam at L0 and L20 are not to be beveled.

NOTES

See Sheet 39 for Truss Span Notes.
All connections to be 7/8" rivets unless other wise noted.
For details of floorbeam at L0, see Sheet 45 and 52.
For details of floorbeam at L20 see Sheet 45.

FLOORBEAM END CONN. PLATE AT L4, L6, L8, L10, L16 & L18



STRINGER CONNECTION TO FLOORBEAM

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) 3, 5, 6 (FAI RT.) STA. 1474 + 38.05
I-70-3(15) 5, 6 (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

TRUSS SPANS - FLOOR SYSTEM

SHEET 50 OF 81

L-962

422

DRAWN BY: T. Castro Mar 1957
TRACED BY:
CHECKED BY: E. Lemcoe May 1957

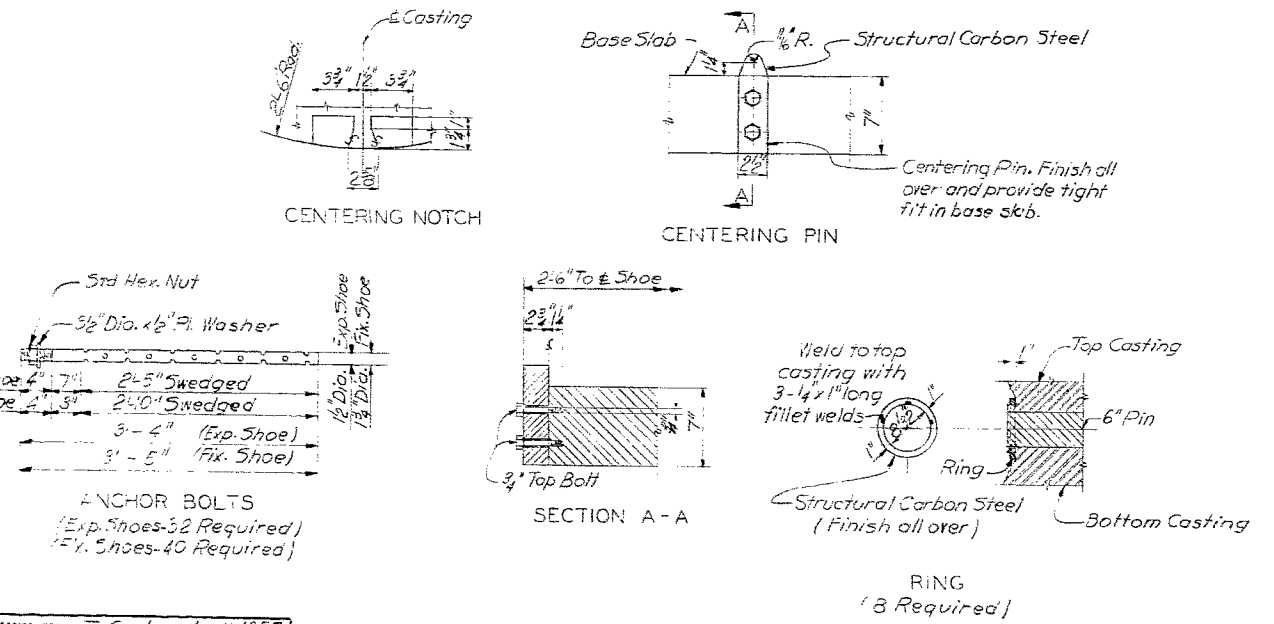
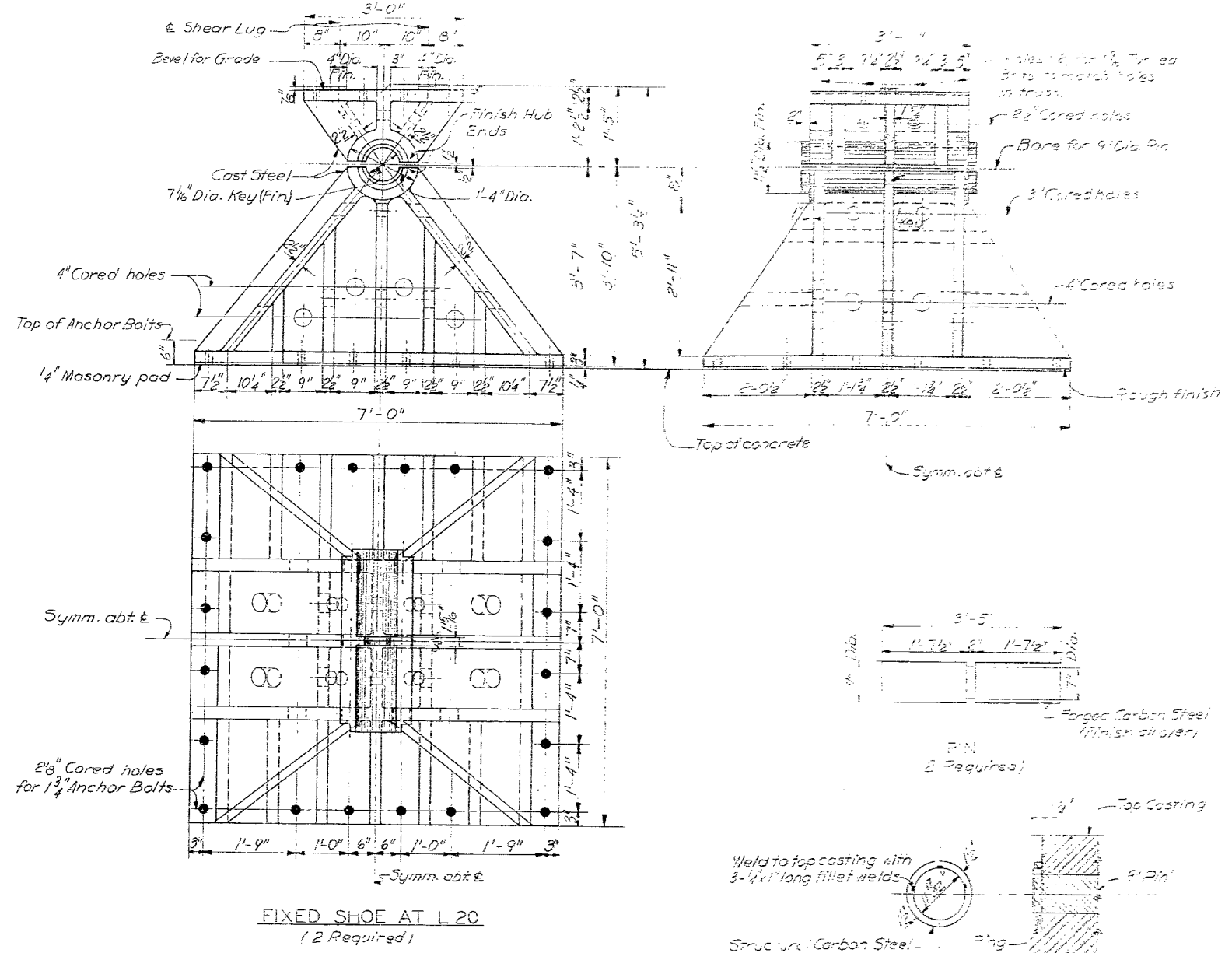
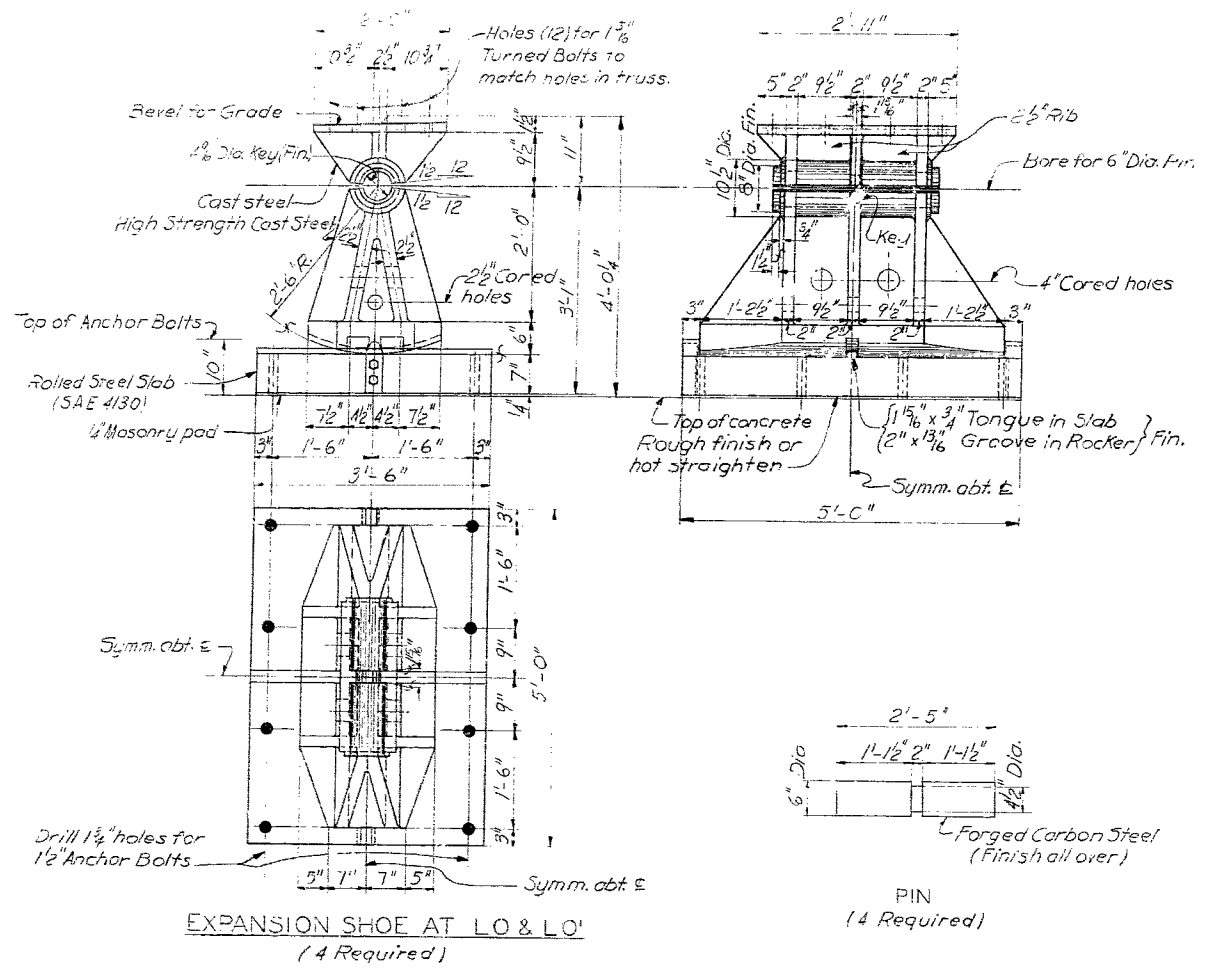
HALF CROSS SECTION AT INTERMEDIATE FLOORBEAM

Floorbeams are not to be cambered.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		13	19	21



NOTES

- Castings shall conform to A.S.T.M. Designation A27, Grade 65-35, except High Strength Cast Steel shall conform to A.S.T.M. Designation A143, Grade 80-50.
- Base Slab for expansion shoes to be hot rolled, annealed, conforming to S.A.E. 4130, with a minimum yield point of 45,000 p.s.i.
- All fillets on castings shall be 3/4".
- All pins shall be Forged Carbon Steel.
- All bolts, nuts, washers, pins, centering pins, rings, and base slabs shall be paid for as "Fabricated Structural Carbon Steel (Truss Spans)".
- The cost of furnishing and placing masonry pads shall be considered as included in the price bid for other items of work.

BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(16)abc (FAI RT. 1) STA. 1474+38.05
I-70-3(15)2 (RT. I-70)
BOGNE - COOPER COUNTIES
VERDRUF AND PARCEL, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: T. Castro April 1957
TRACED BY:
CHECKED BY: E. Lyncoas, May, 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

TRUSS SPANS-SHOES

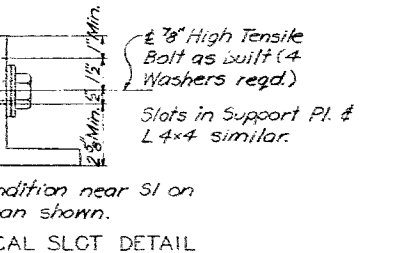
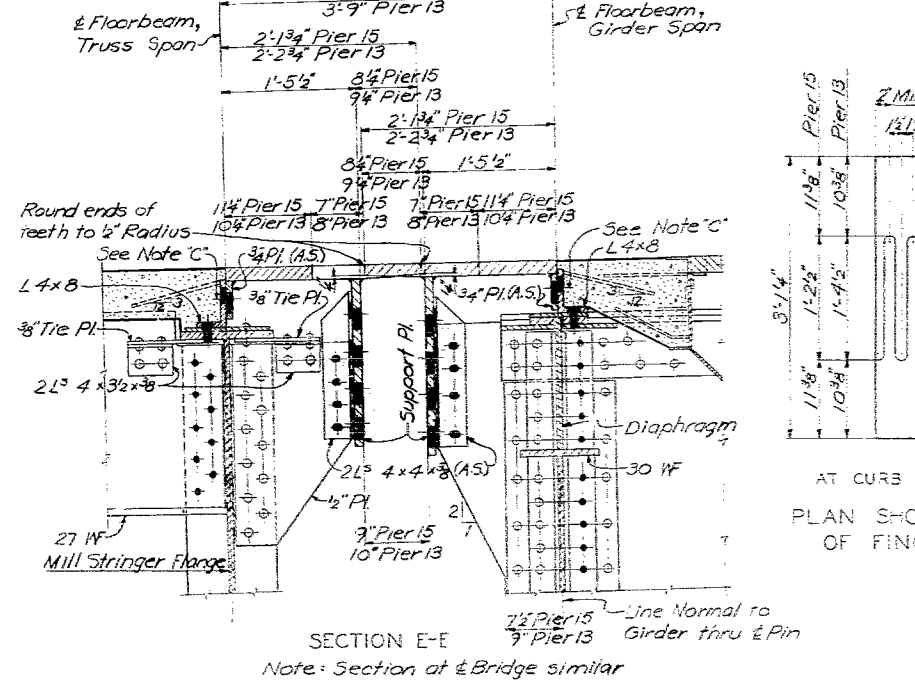
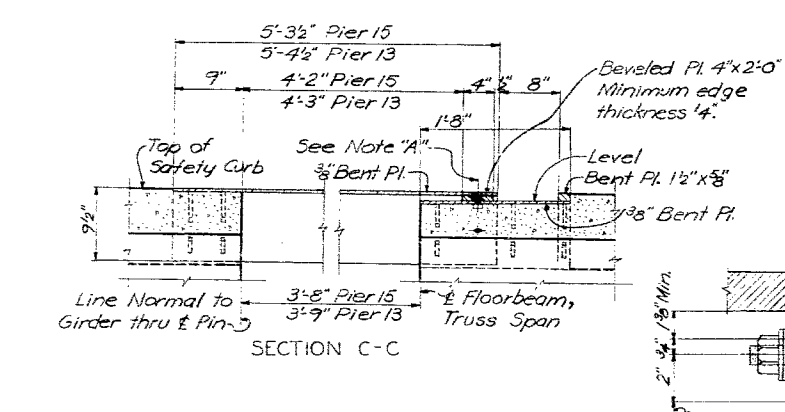
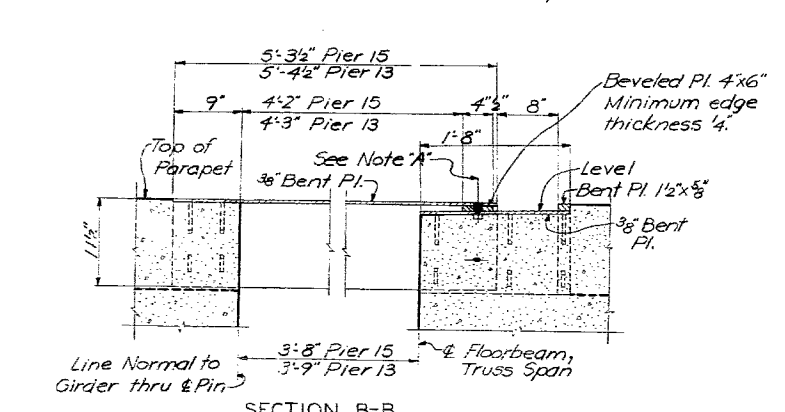
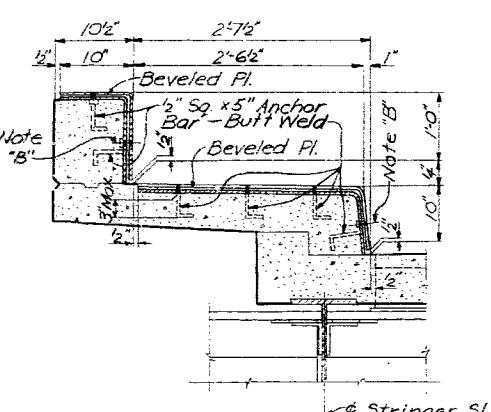
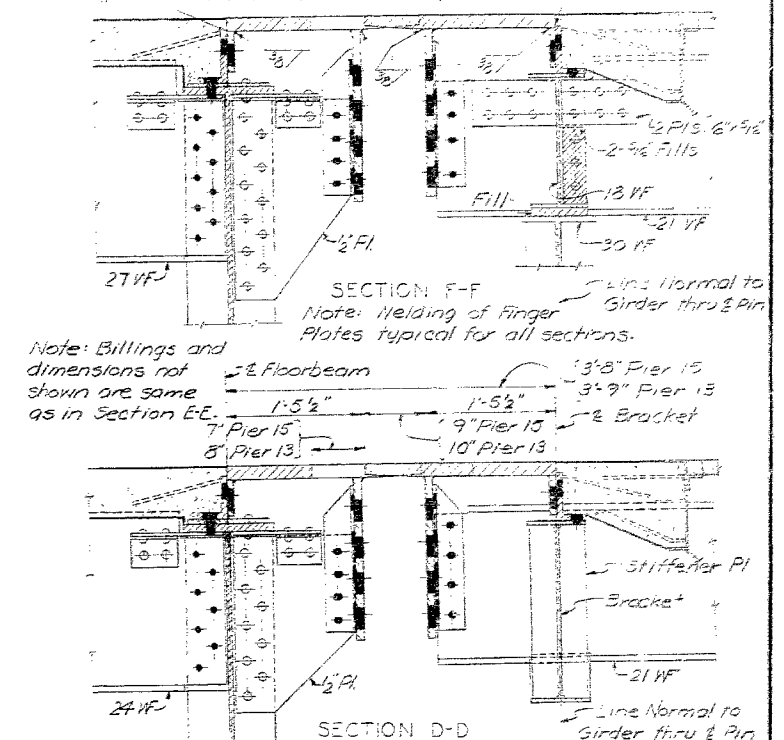
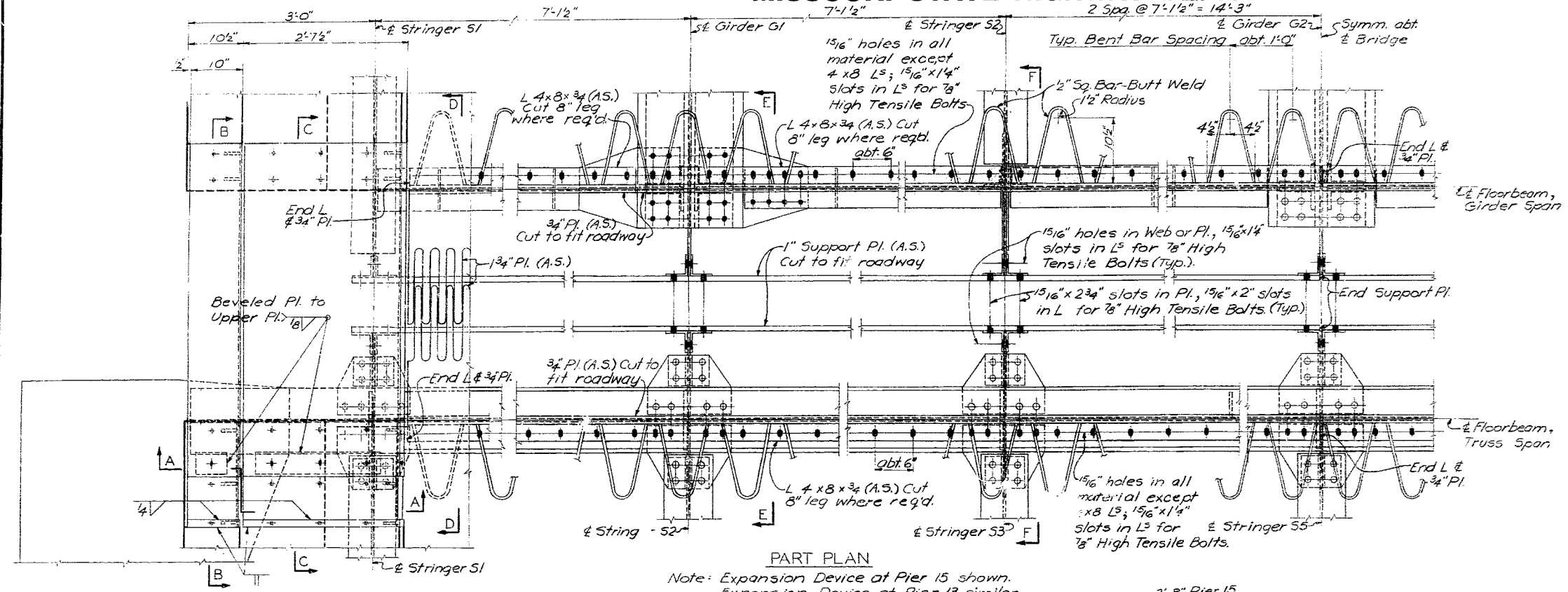
SHEET 3 OF 3

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

Note: Billings and dimensions not shown are same as in Section E-E.

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



Note "A" - 1/16" x 1/2" slots in Top & Beveled Plates, 3/16" hole in Bottom Plate for 3/8" Bolt. Weld 3/8" Sq. Nut to Bottom Plate. Remove bolt after concrete has set.

Note "B" - 1/16" x 1/2" slot in outside plate, 1/16" hole in inside plate for 3/8" bolt. Weld 3/8" sq. nut to inside plate. Remove bolt after concrete has set.

Note "C" - 1/16" x 2 3/4" slots in Pl., 1/16" x 2" slots in L for 7/8" High Tensile Bolts at T maximum spacing. Space Bolts to miss Bent Bars to provide maximum future raising of Finger Plate.

NOTES

For Truss Span Notes, See Sheet 39. All Rivers 7a.

Vertical Slots to provide for 1/4" raising and 2 1/2" raising of Finger Pl.

All expansion devices are shown in normal position at a temperature of 60°F. Flame cutting of finger plates shall be as narrow as practicable and shall not exceed 1/4" width. A mechanical guide shall be used to guide the cutting torch. All burrs shall be ground smooth.

Finger plate dimensions include 1/4" allowance for flame cutting.

All material marked (A.S.) shall be fully weldable Structural Low-Alloy Steel conforming to A.S.T.M. designation A242.



BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16)abc (FAI RT. 1) STA. 1474 + 38.05
E-70-3(15)a,o (RT. 1-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

ROADWAY EXPANSION
DEVICES AT PIERS 3 & 5

SHEET 12 OF 9

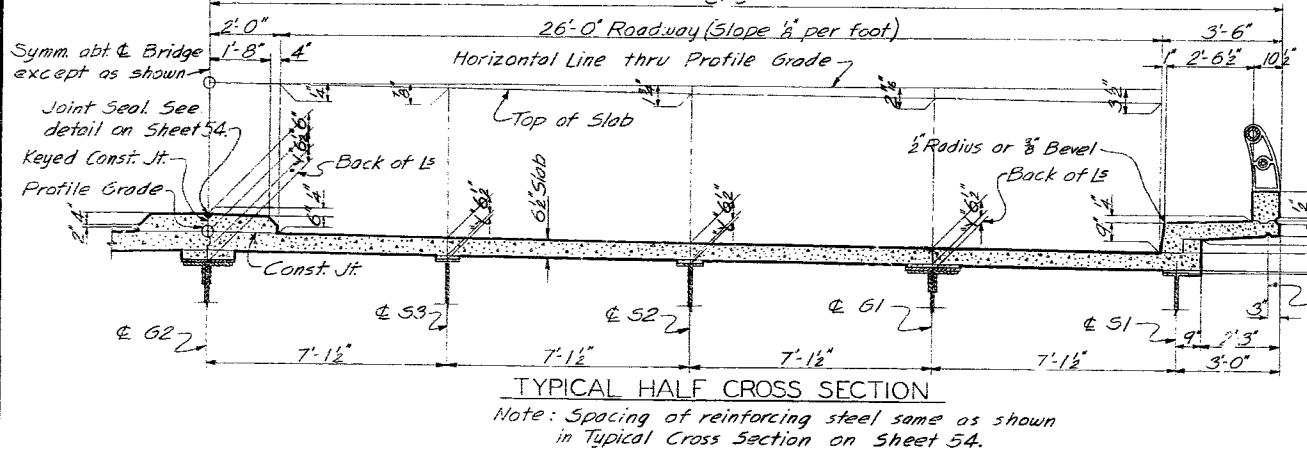
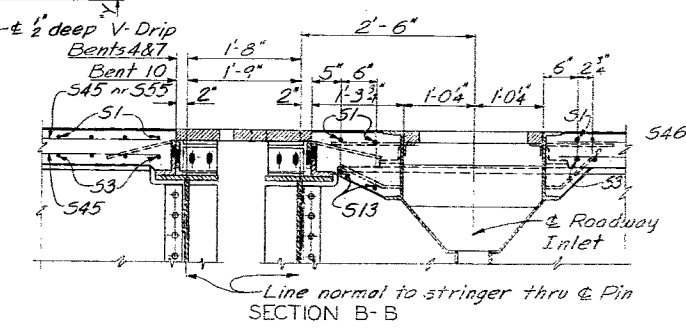
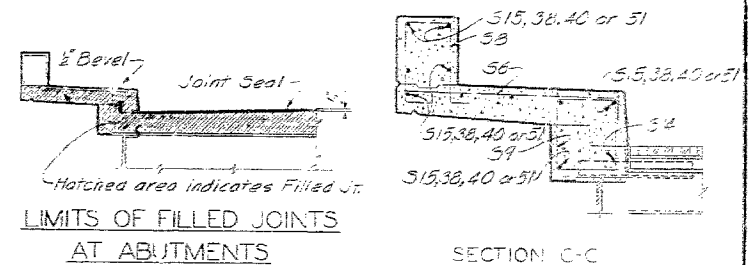
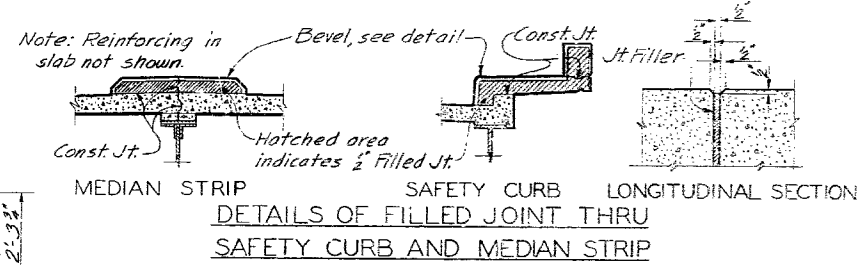
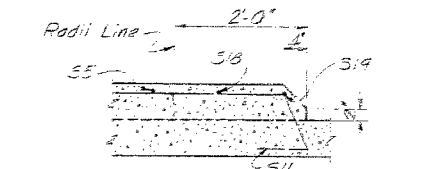
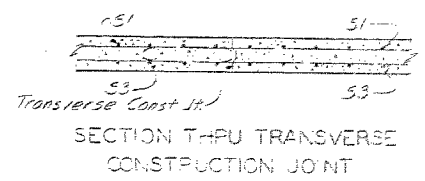
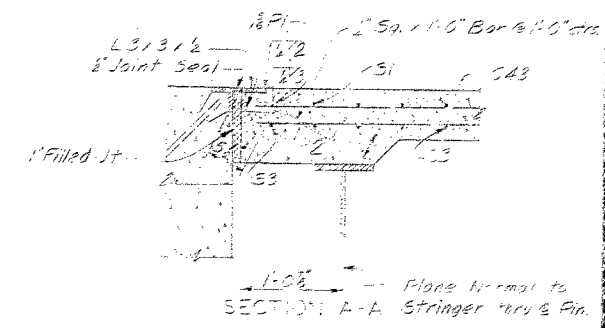
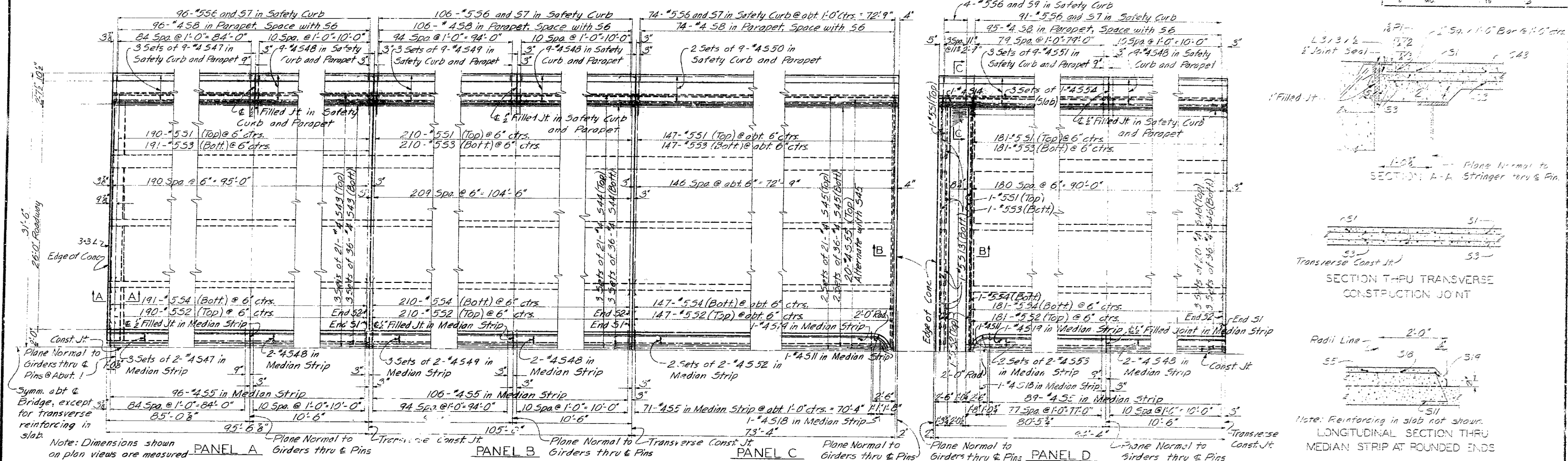
L-962

DRAWN BY: A. Korn, Apr. 1957
TRACED BY:
CHECKED BY: K.L. Fogg, June 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. LOCAL YEAR SHEET NO. TOTAL SHEETS
 5 MO 19 2



PANEL LOCATION AND SEQUENCE FOR POURING SLABS

Transverse Const. Jts.		DIRECTION OF POURING (See Special Provisions)								
POURING SEQUENCE		3	2	1	3	2	1	3	2	1
PANEL		A	B	C	D	B	C	D	B	C
SPAN		1	2	3	4	5	6	7	8	9
Plane Normal to Girders Thru & Pins		10'-6"	8'-4"	10'-6"	8'-4"	10'-6"	8'-4"	10'-6"	8'-4"	10'-6"
ABUT 1	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8	BENT 9	BENT 10	
SPANS 1 TO 9										

TABLE OF HAUNCH HEIGHTS 'Y'

Strg. or Gdr.	'Y'
51	0"
61	1 1/2"
52	0"
53	0"
62	3 3/4"

Note: 'Y' dimensions shown above are given at bearings. For intermediate points add the dead load deflection ordinates shown on Sheet 25 to the 'Y' dimension.
 NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

NOTES

For Bar List and Special Bending Details see Sheet 51.
 For details of Roadway Expansion Devices or Bents 4, 7 & 10 see Sheet 37.
 For details of Roadway Drains and Inlets see Sheet 57.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16)G.C.C. (FAI RT 1) STA. 1474+38.05
 I-70-3(15)O.S. (RT.I-70)
BOONE - COOPER COUNTIES

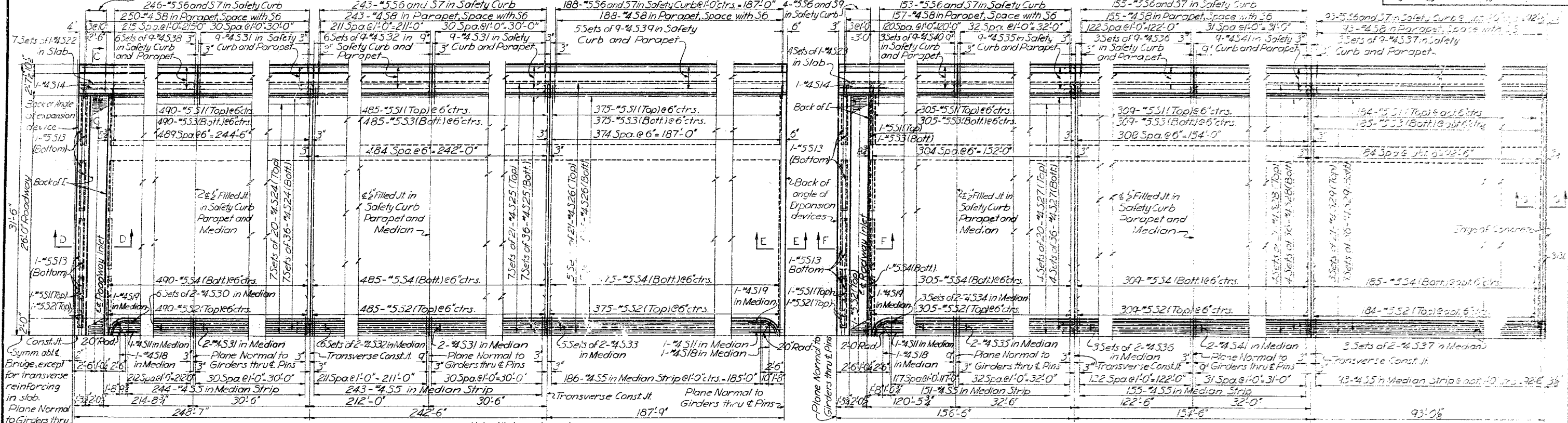
SYVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

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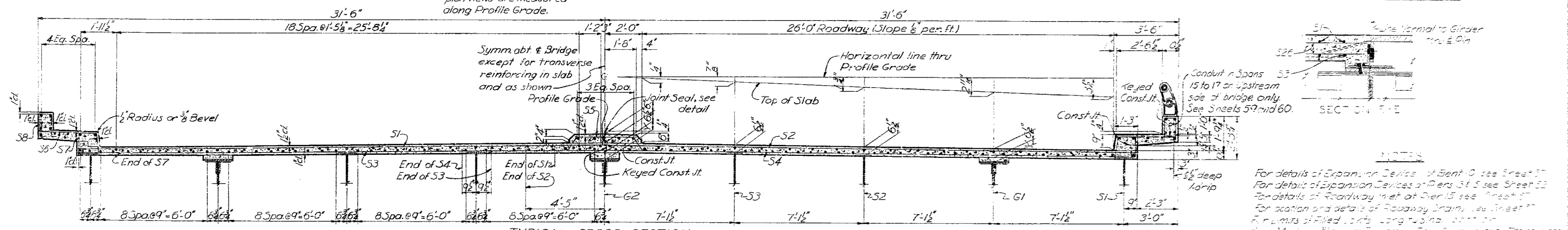
DRAWN BY: R.W. Burhop May, 1957
 TRACED BY:
 CHECKED BY: H.C. Morris, June, 1957

MISSOURI STATE HIGHWAY DEPARTMENT

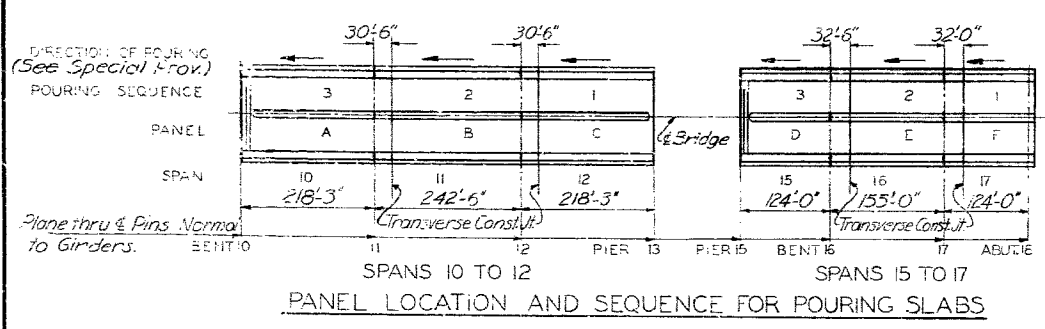
FED. ROAD DIST. NO. 5 STATE MO PROJ. NO. 19 FISCAL YEAR 19 SHEET NO. TOTAL SHEETS



Note: All dimensions shown on plan views are measured along Profile Grade.



NOTES
 For details of Expansion Devices at Pier 10 see Sheet 57
 For details of Expansion Devices at Piers 11 & 12 see Sheet 58
 For details of Roadway Inlet at Pier 13 see Sheet 59
 For section and details of Roadway Drain, see Sheet 60
 Reinforcement Bars Longitudinal, Spacing, Transverse Const. Jt. and Section C-C, see Sheet 61
 For Bar List, see Sheet 62



TYPICAL CROSS SECTION

SECTION G-G

SECTION D-D

SECTION F-F

PART SECTION THRU MEDIAN STRIP SHOWING JOINT SEAL

Girder	Spans 10-12	Spans 15-17
G1	2'-6"	1'-6"
G2	5"	4"

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) a,b,c (RT I-70) STA. 1474+36.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS-ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: A. Konur, May 1957
 TRACED BY:
 CHECKED BY: H.C. Morris, June 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

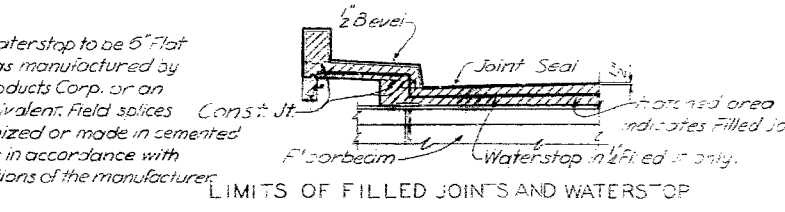
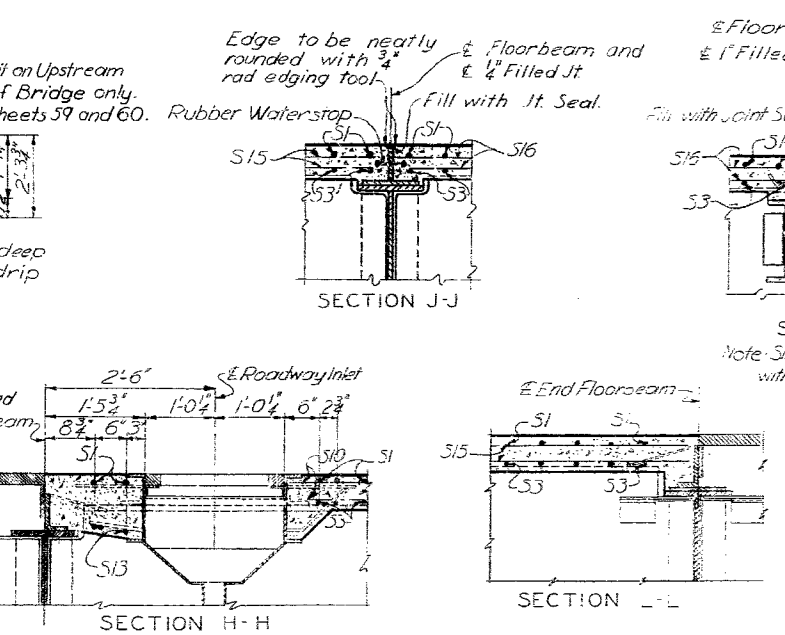
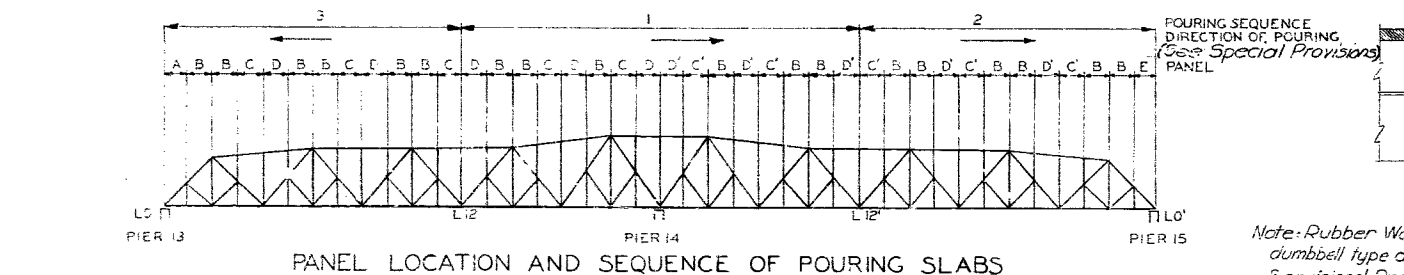
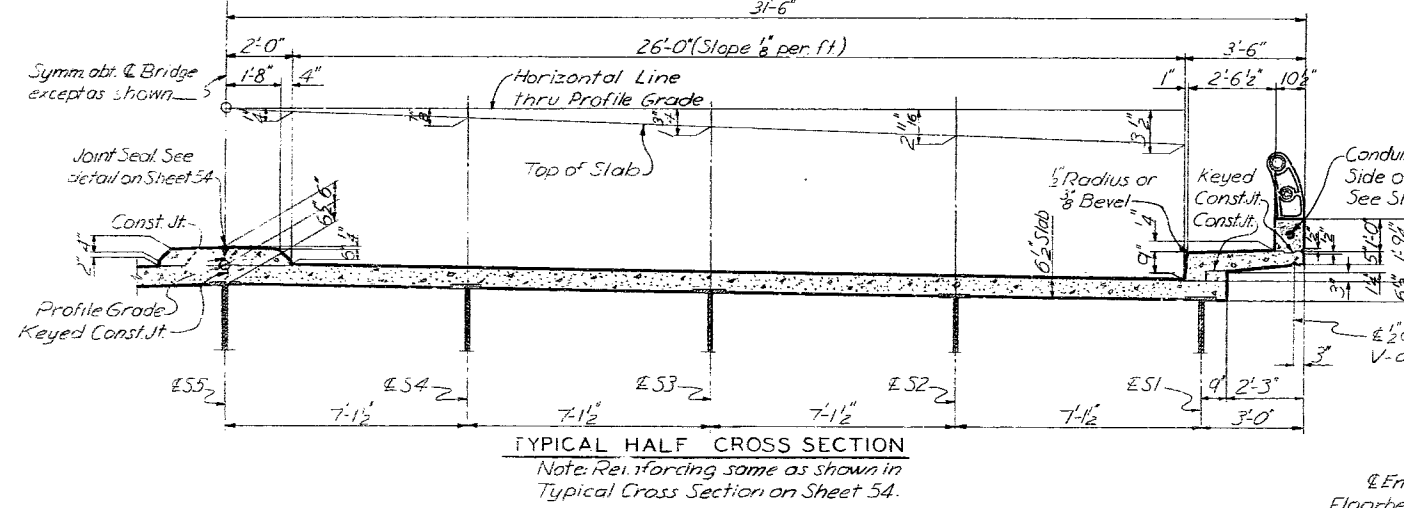
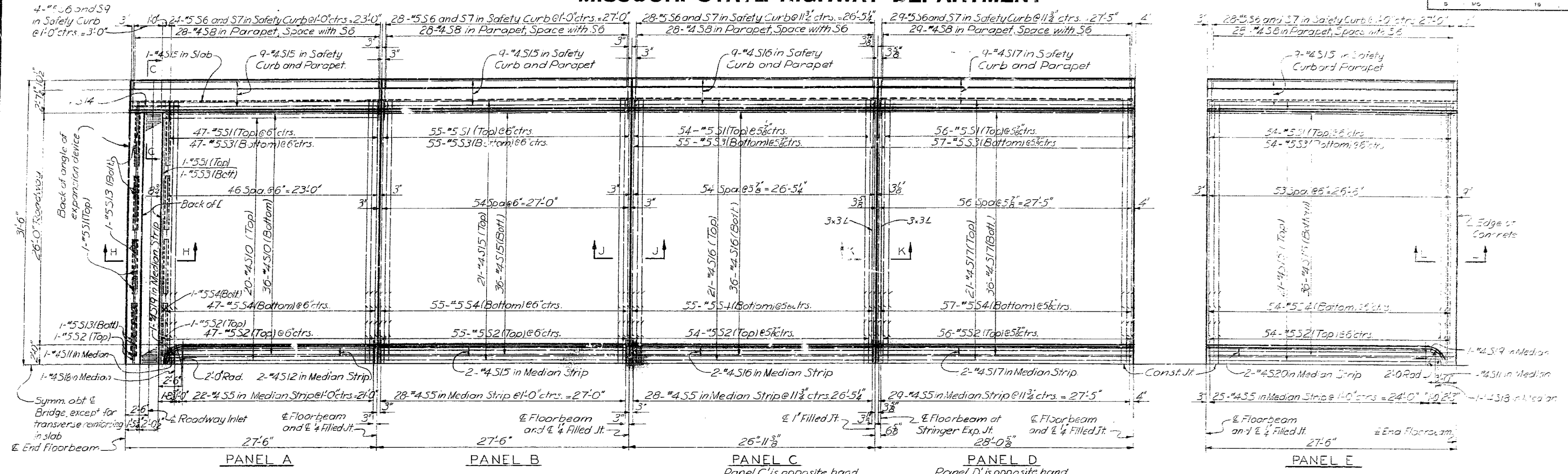
SLAB DETAILS - SPANS 10 TO 12 & 15 TO 17

L-962

433

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	2	



Note: All dimensions shown on plan views are measured along Profile Grade.

Note: For details of plates & anchor bars in slab, see Section G-G on Sheet 54.

For details of Expansion Devices, see Sheet 52.

For details of Roadway Joints at Piers 13, 14, see Sheet 57.

For location and details of Roadway Drains, see Sheet 57.

For Longitudinal Section thru Median or Rounded End, and Section G-G, see Sheet 53.

For Bar List, see Sheet 51.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229(18)a,b,c (F.A.R.T.) STA. 1474+38.05
I-70-3(15)a,b (R.T.I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

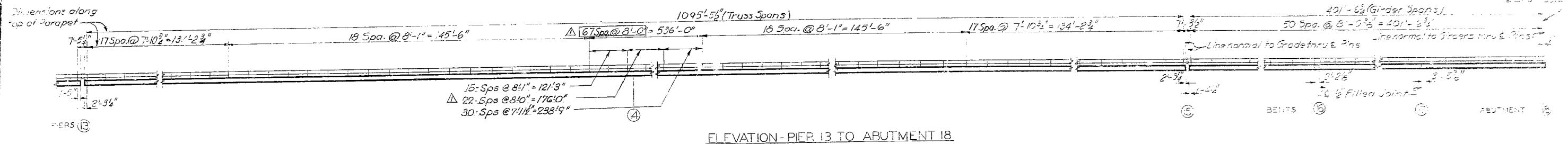
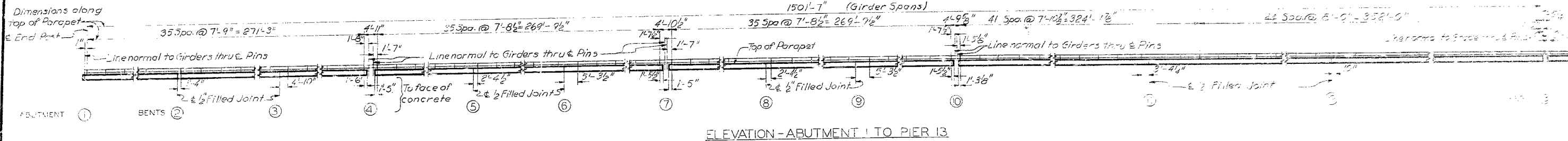
DRAWN BY: A. Kanus, March 1957
TRACED BY:
CHECKED BY: H. C. Morris, June 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

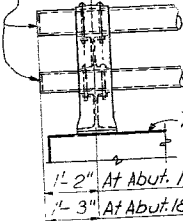
SLAB DETAILS - SPANS 3 & 4 SHEET 53 OF 51 L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. YEAR SHEET NO. TOT. SHEETS
 6 1 10 19 9



1/4" Closure Pl. Weld to rail and grind smooth



3/4" Gap @ 60°F
 1/8" x 1/8" Slot, top and bottom of rails. Bolt threads to be burred and nut loosened enough to allow rail to slide.

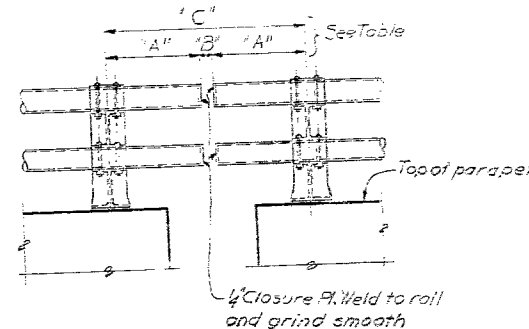
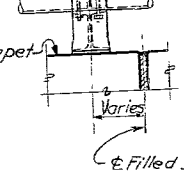


TABLE OF VARIABLE DIMENSIONS			
	"A"	"B"	"C"
Bent 4	2'-0"	2'-6"	3'-11"
Bent 7	2'-4"	3'-0"	4'-2"
Bent 10	2'-3 1/2"	3'-0"	4'-2 1/2"

Note: Dimension "B" and "C" are setting at 60°F.

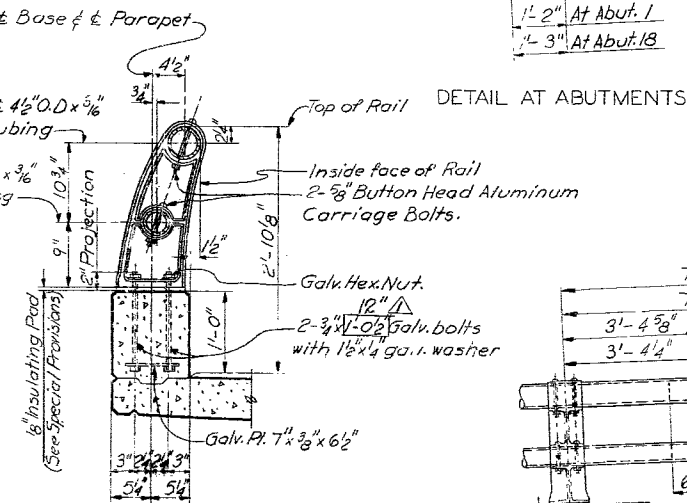
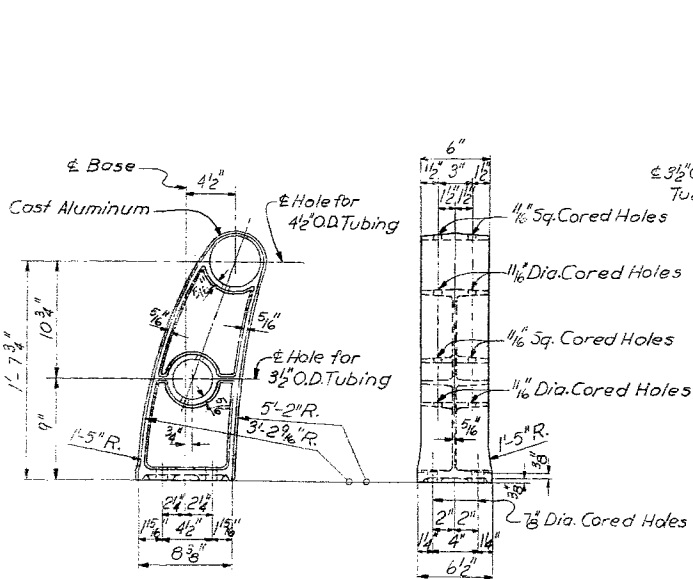
NOTES

Handrail posts shall be set normal to grade. Aluminum washer shims between mounting pads and bases may be used for adjusting rail alignment. Maximum thickness of shims to be 1/4".

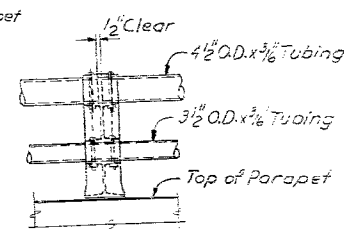
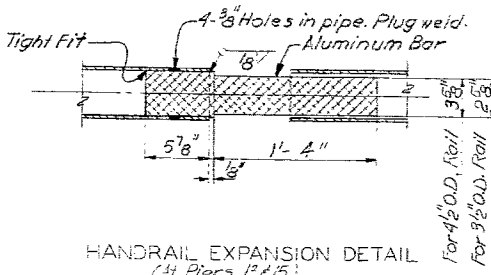
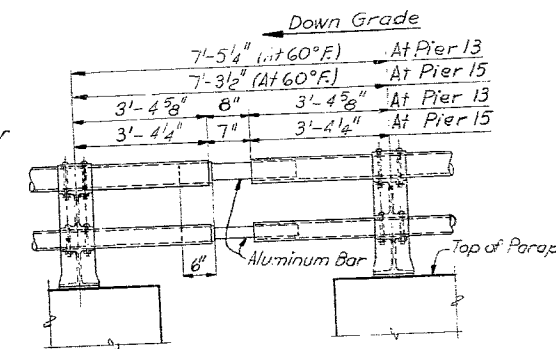
All parts of handrail except anchor bolts, nuts, washers, and insulating pads to be aluminum. See Special Provisions.

The contractor shall furnish per linear foot for "Aluminum Inlay Handrail" shall include furnishing and erecting the handrail complete with anchor bolts, nuts, and insulating pads.

The length of Aluminum Inlay Handrail measured for payment shall be the total length out to out of rails measured along top of parapet.



TYPICAL DETAIL NEAR STRINGER EXPANSION DEVICE



Stagger joints for upper and lower rails throughout bridge.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16) 2, 3, 4 (F.A.I. RT. 1) STA. 1474+38.05
 I-70-3(15) 2, 3, 4 (RT. I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: J. Castro & H. Chin, Inc. 1957
 TRACED BY:
 CHECKED BY: H.C. Morris, June, 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

Revised 4/16/59

- HANDRAIL

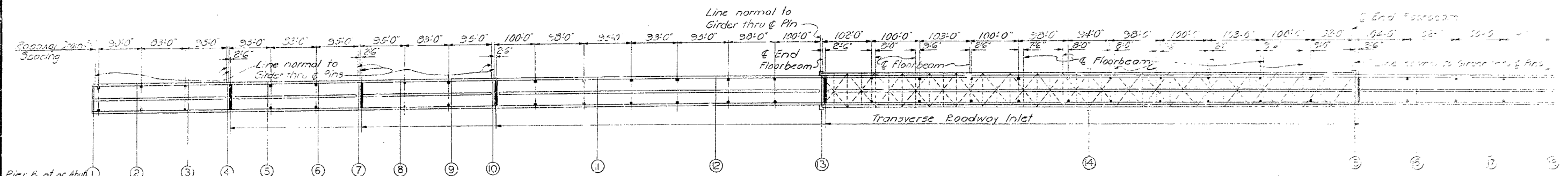
SHEET 58 OF 6

L-962

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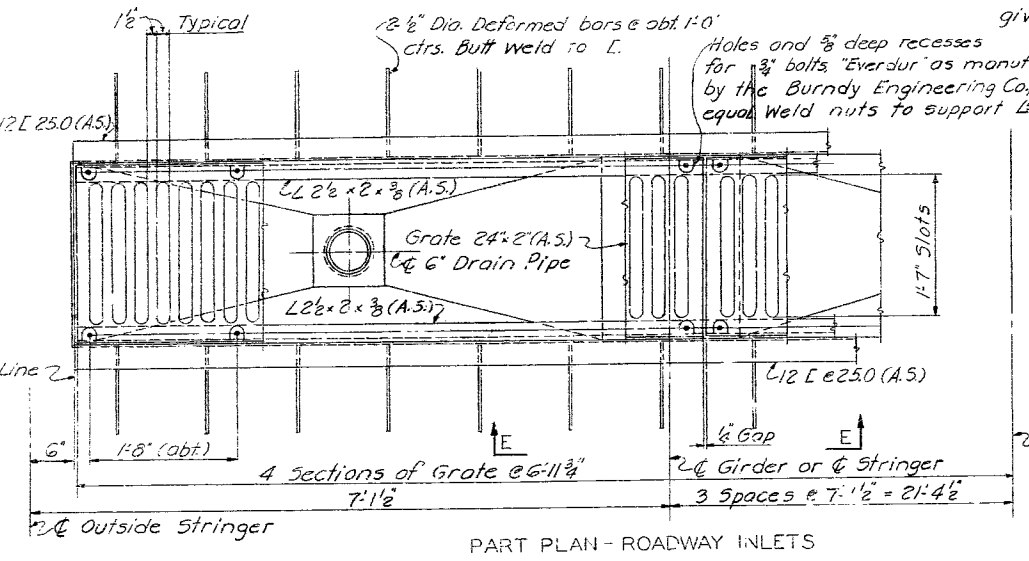
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO			25	

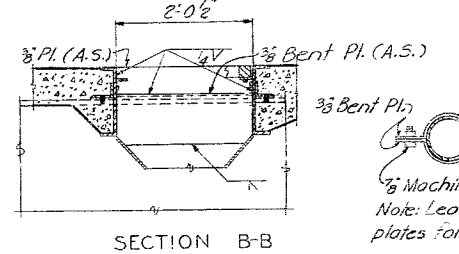


ROADWAY DRAIN AND INLET LOCATION
 Dimensions to roadway drains and inlets are given to @ of drain pipes and are measured along grade.

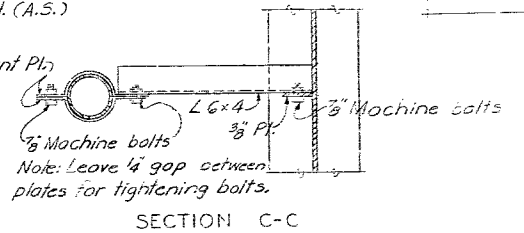
@ joint and @ Bridge. Field weld @ and bottom plate watertight inside all around.



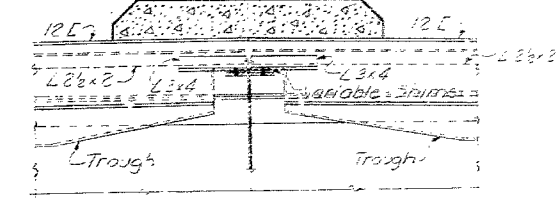
PART PLAN - ROADWAY INLETS



SECTION B-B

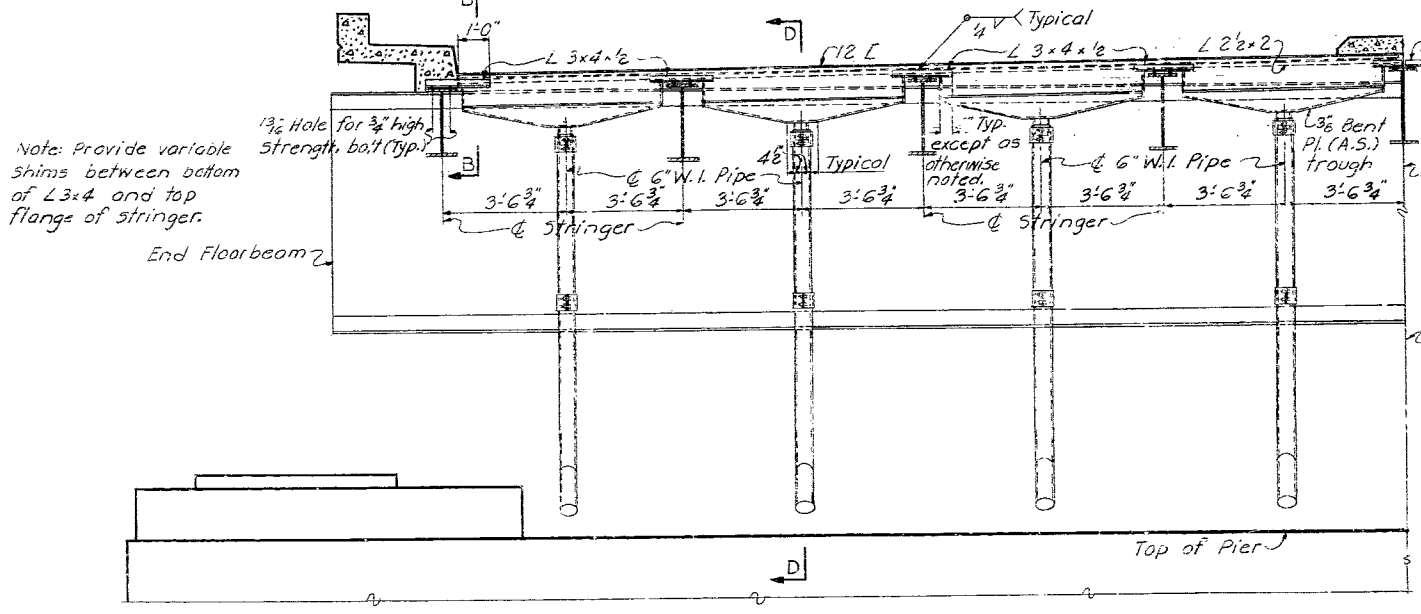


SECTION C-C

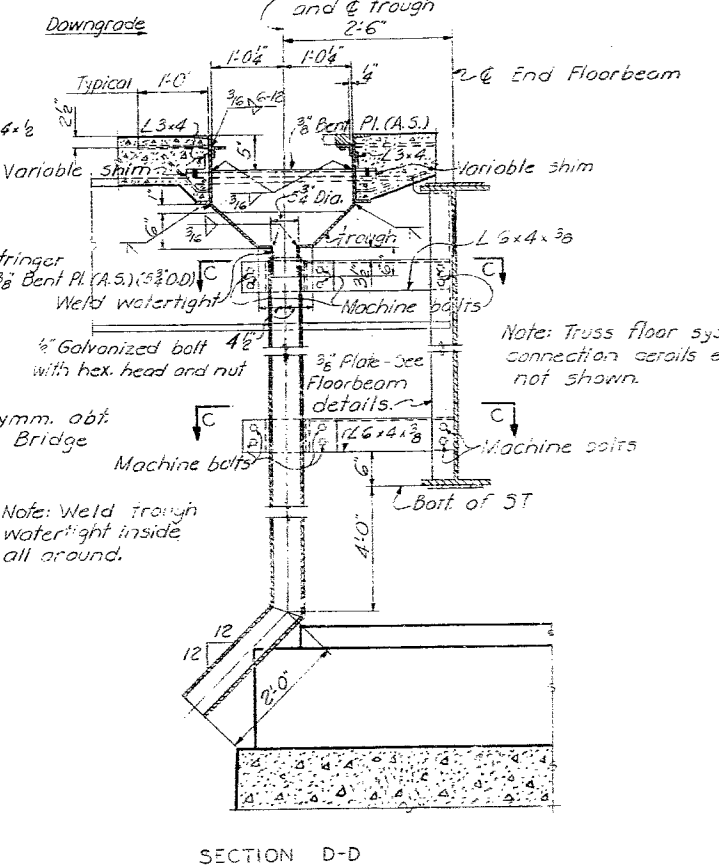


ROADWAY DRAINAGE NOTES

Work this sheet with Sheet 53.
 Roadway drain grates shall be made of cast steel in accordance with A.S. Standards, Designation A27, grade 65-35, fully annealed.
 Wrought iron pipe shall be 6" standard height 10.27" per foot in accordance with A.S.T.M. Standards, Designation A27.
 Where necessary, reinforcing steel may be moved or bent in the field to clear inlets or drains.
 Joints in wrought iron pipe shall be welded with a square or bevel weld with full penetration.
 The cost of finishing and plating inlet troughs, grates, drain castings, downspouts, anchor bolts, all connecting material, etc. shall be included in the lump sum bid for Roadway Inlets, Drains, and Downspouts. See Special Provisions.
 Roadway drain castings shall be made of cast gray iron in accordance with A.S.T.M. Standards, Designation A78, Class No. 30.
 All material marks (A.S.) shall be Structural Low-Alloy Steel. All other materials shall be Structural Carbon Steel unless otherwise noted.
 Apply two coats of Ka-pure Bitumastic Epoxi-Service Block or an approved equivalent to the top of stringer or other steel inlets and downspouts and to bottom of roadway inlets and parts of flange, in fact before roadway is created; concrete cost to be included in lump sum bid for Roadway Inlets, Drains and Downspouts.



SECTION A-A
 Note: Roadway inlet shown is near Pier 13. For details of other roadway inlets see Sheet 53.



SECTION D-D

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229 (18) a,b,c (FAT RT. 1) STA. 1474+38.05
 I-70-3(15) 0,1,2 (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

1927
 575357
 DRAWN BY: T. Castro & H. Chin, May 1957
 TRACED BY:
 CHECKED BY: J.A. Wess Jr. Nov. 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

ROADWAY DRAINAGE

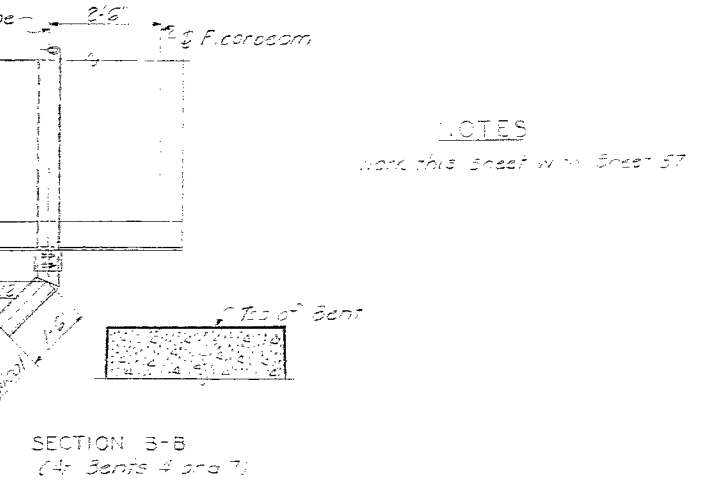
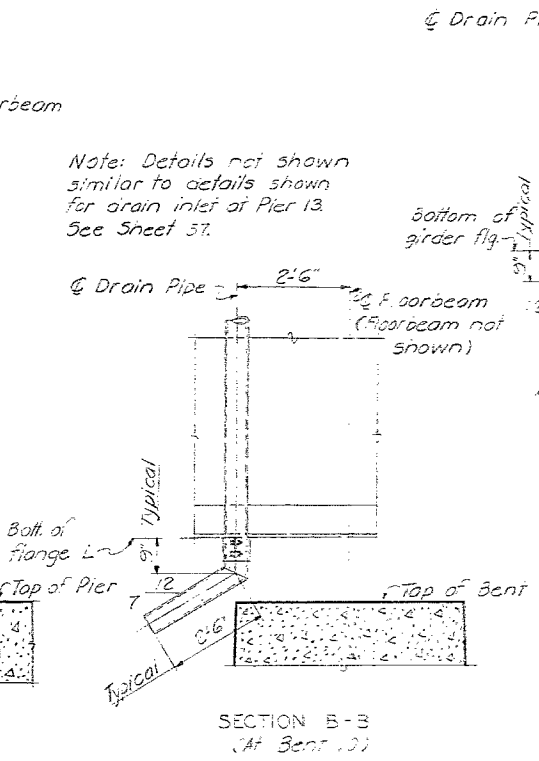
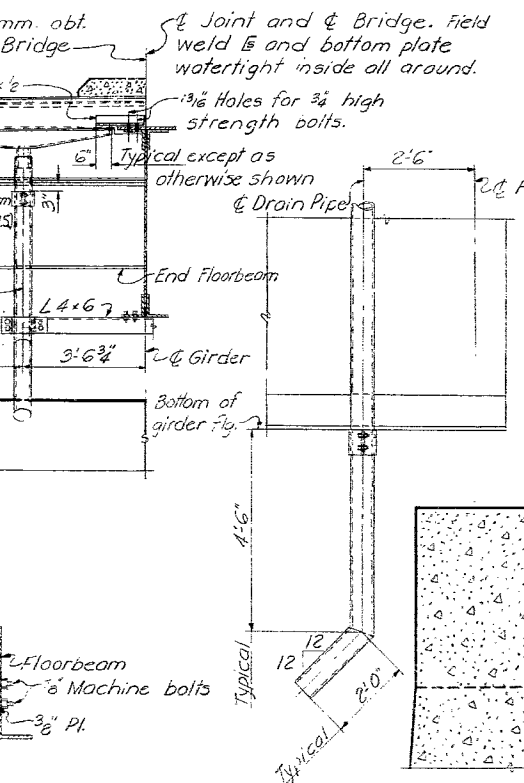
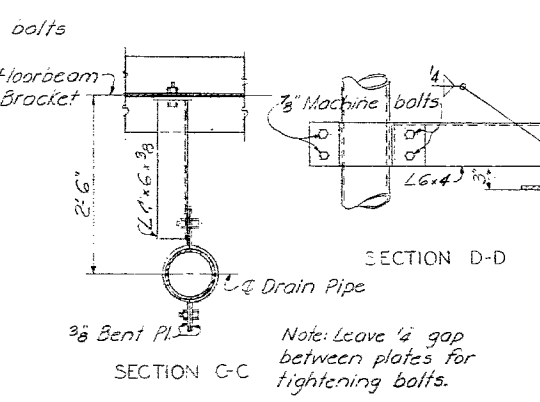
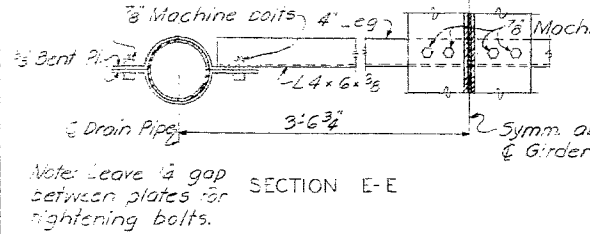
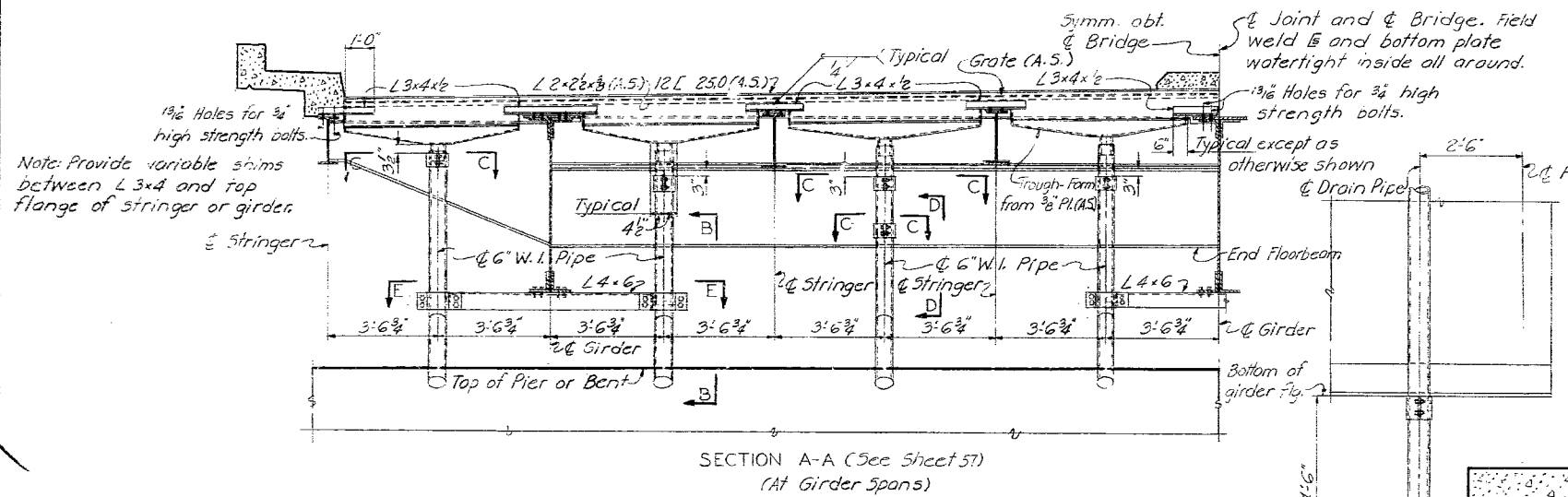
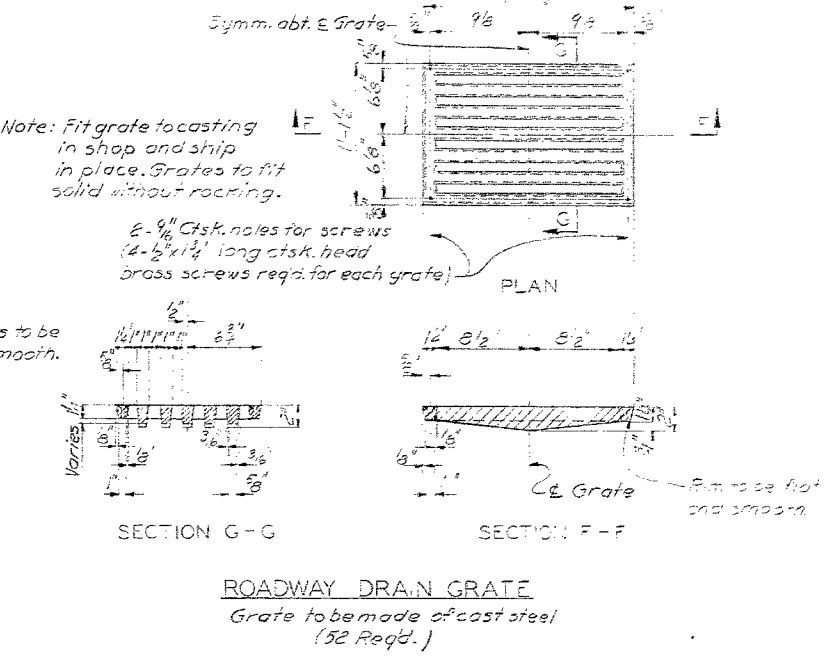
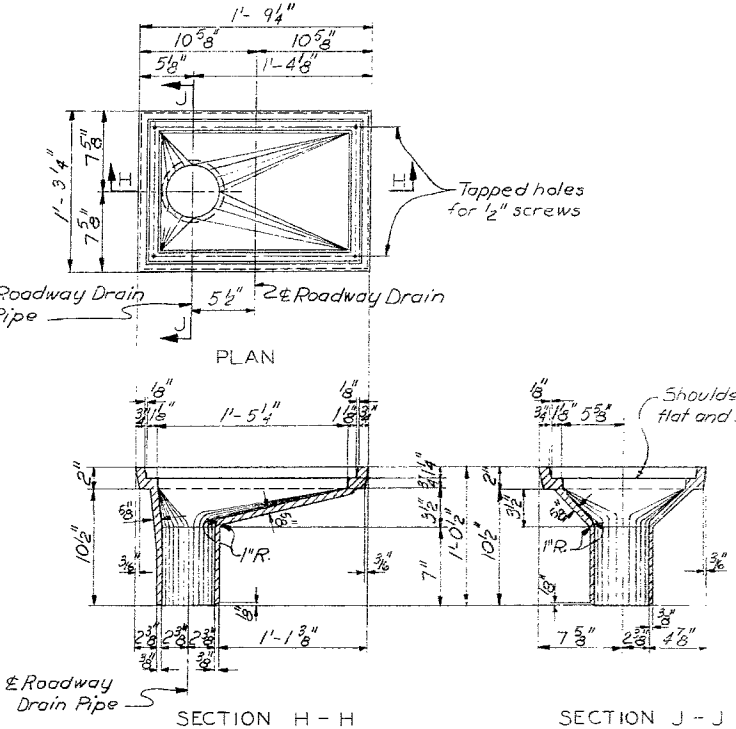
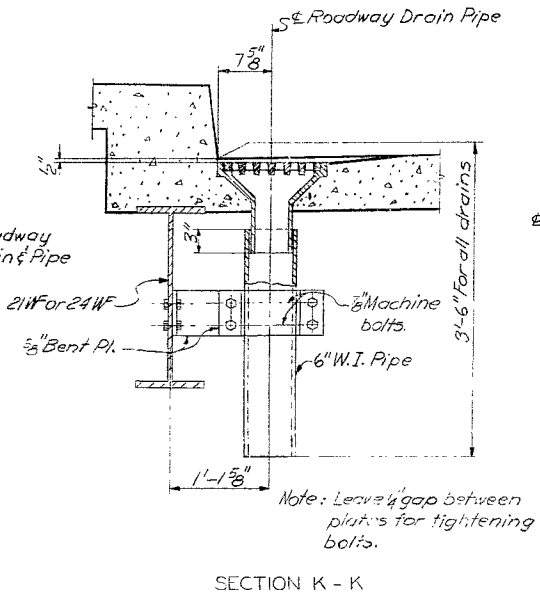
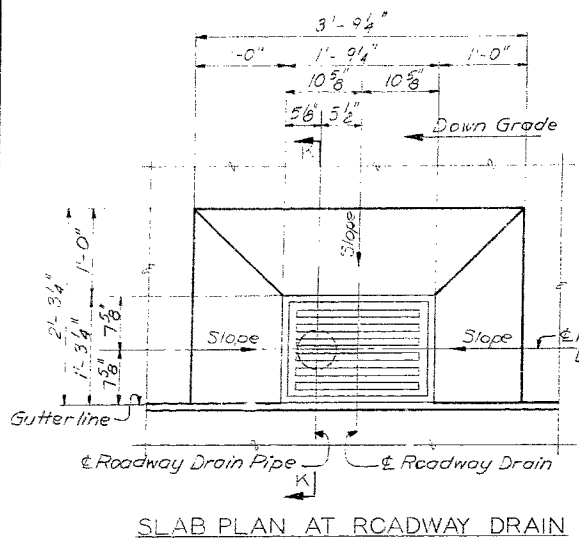
SHEET 27 OF 31

L-962

436

MISSOURI STATE HIGHWAY DEPARTMENT

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



BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(16)abc (FAI RT. I) STA. 1474+38.05
I-70-3(15) d,e (RT. I-70)
BOONE - COOPER COUNTIES
SVERDRUP AND PARCEL INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: Chin & Castro April 1957
TRACED BY:
CHECKED BY: J. J. Wise, Jr. May 1957

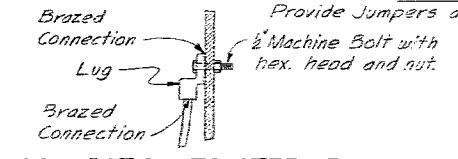
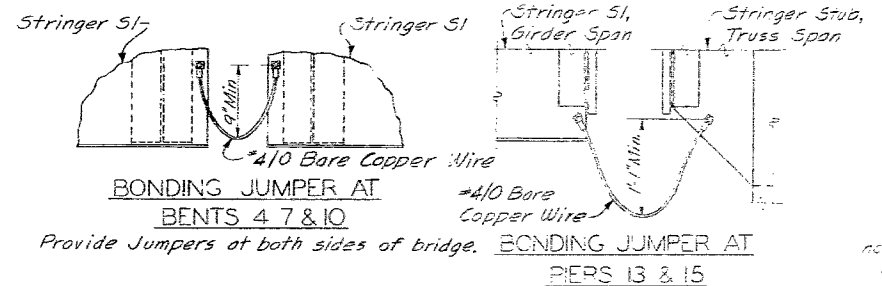
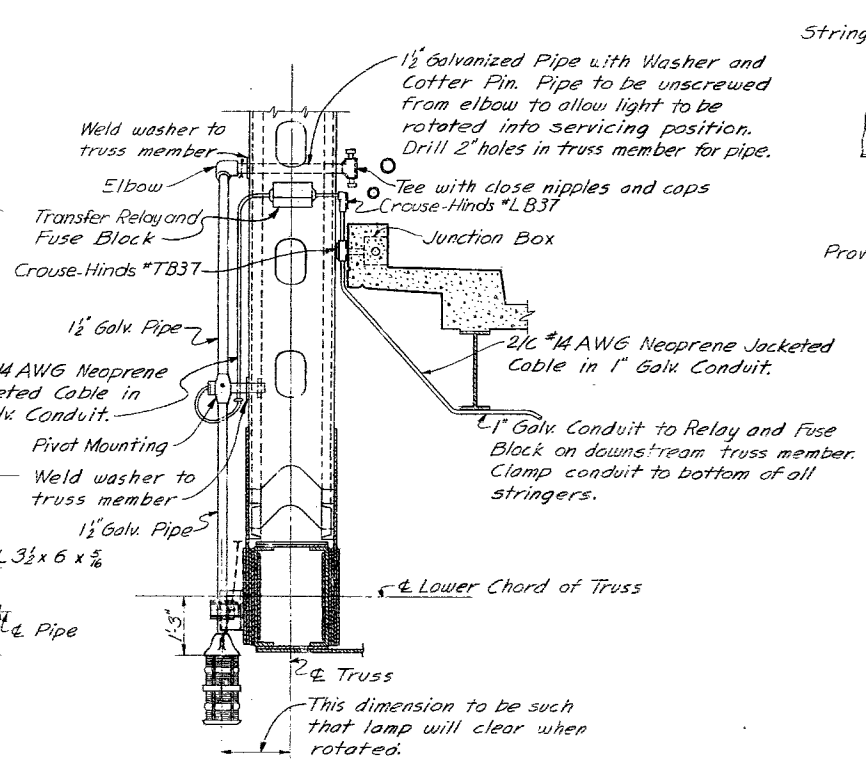
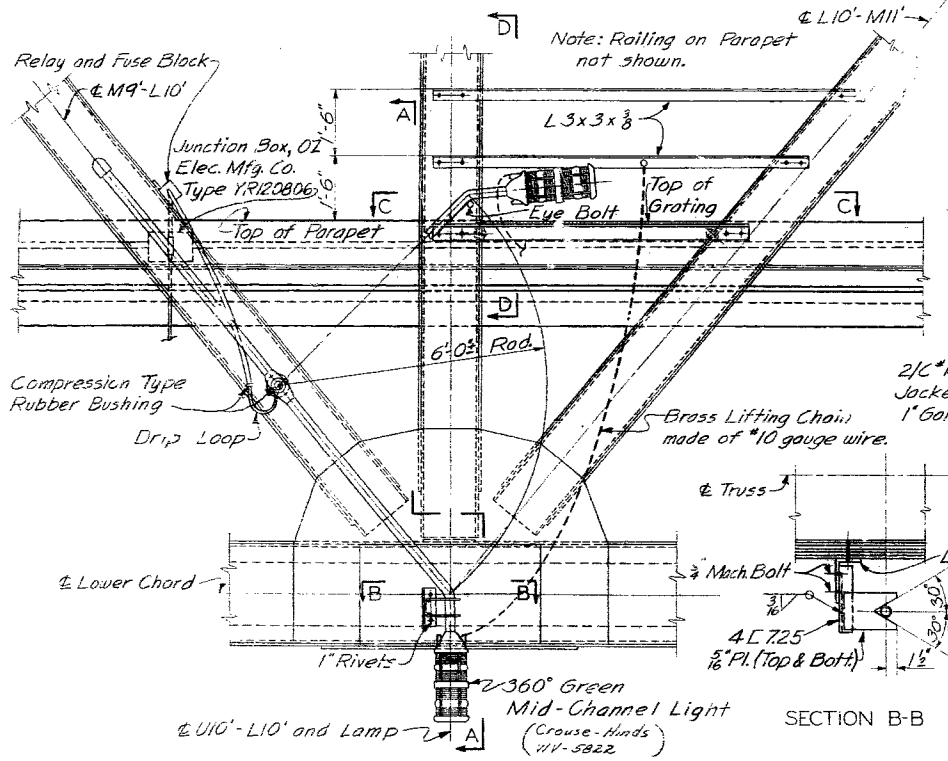
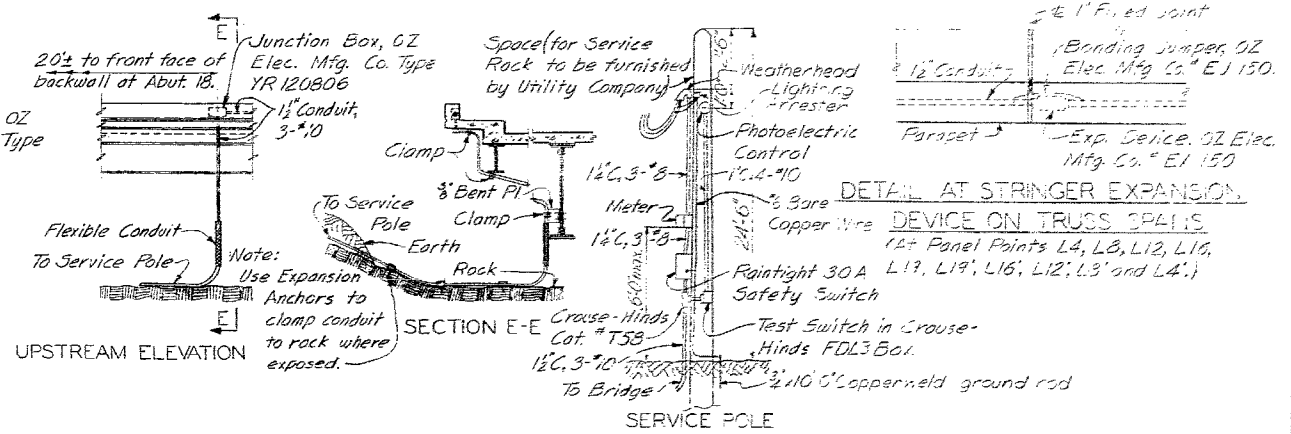
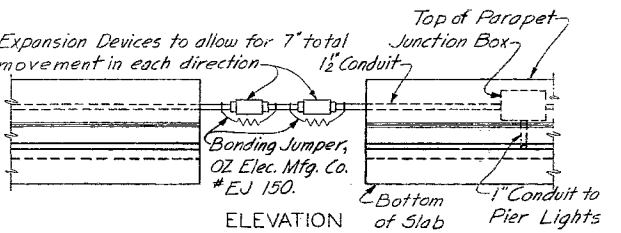
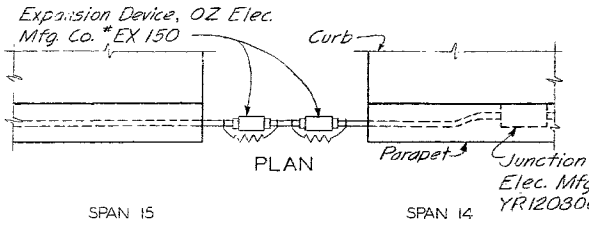
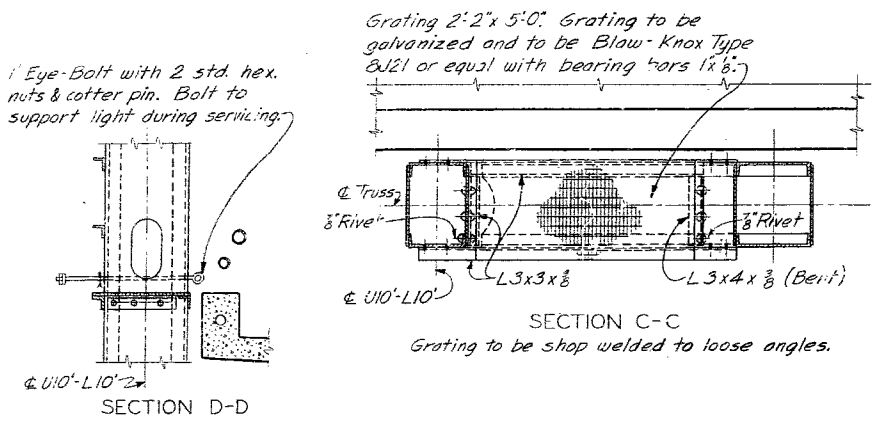
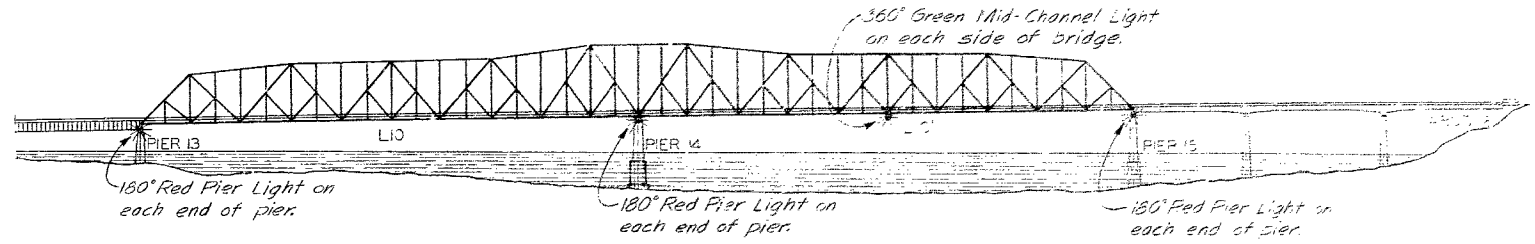
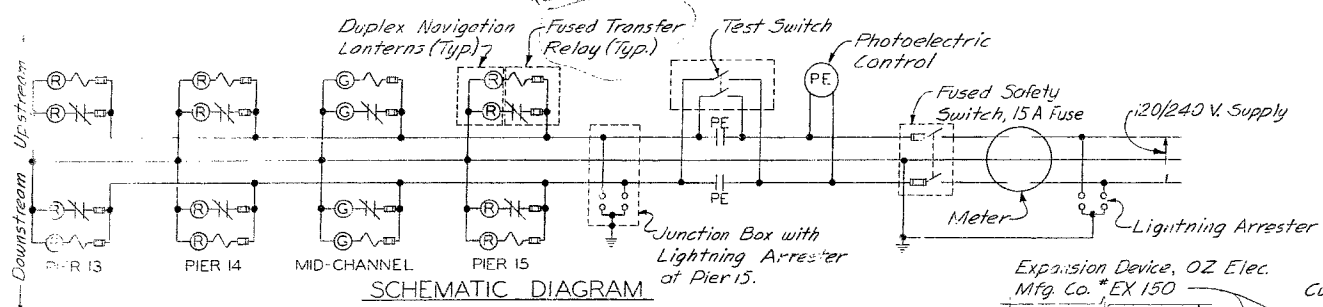
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

ROADWAY DRAIN S & INLETS

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	22	



CONNECTION TO STEEL FOR BONDING AND GROUNDING
 Note: Steel superstructure to be grounded at Abut. 1, Bent 10, Piers 13, 14, 15 and Bent 17. Grounding details at Piers 13, 14 and 15 are shown on Sheet 60. At other locations provide #4/0 bare copper ground wire from web of upstream girder to ground wire provided at top of substructure units. Allow sufficient slack in ground wire to allow for movement of spans.

NOTES
 Work this sheet with Sheet 60
 All rivets to be 3/8" unless otherwise noted.
 All Conduit to be galvanized.
 Minimum fillet welds to be 3/16".
 All structural steel to be Structural Carbon Steel.
 Junction Boxes to be provided as shown. Additional Junction Box to be provided at L10 for future use.

438

DETAIL OF MID-CHANNEL LIGHT AT PANEL POINT L10'
 Upstream light shown. Downstream light and platform are similar.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 0 MILES EAST OF BOONVILLE

PROJECT NO. I-229(16) a,b,c (RT. 1) STA. 1474 + 38.05
 1-70-3(15) a,b,c (RT. 70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: P.H. Burhop, June 1957
 TRACED BY:
 CHECKED BY: K.L. Fogg, June 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

NAVIGATION LIGHTS

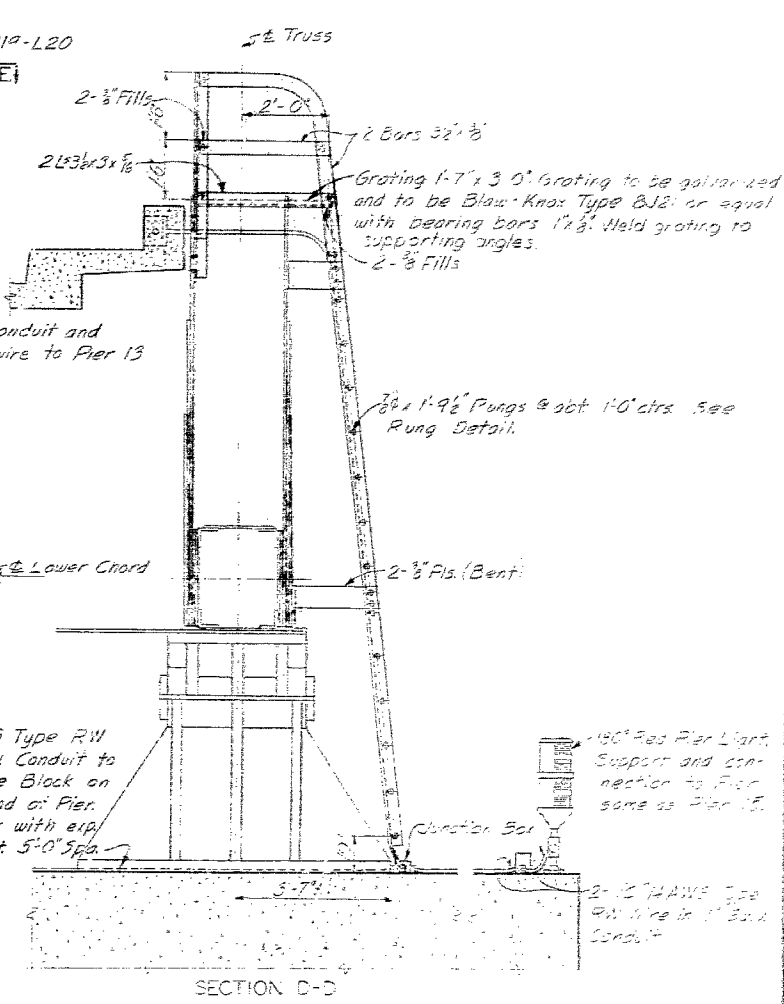
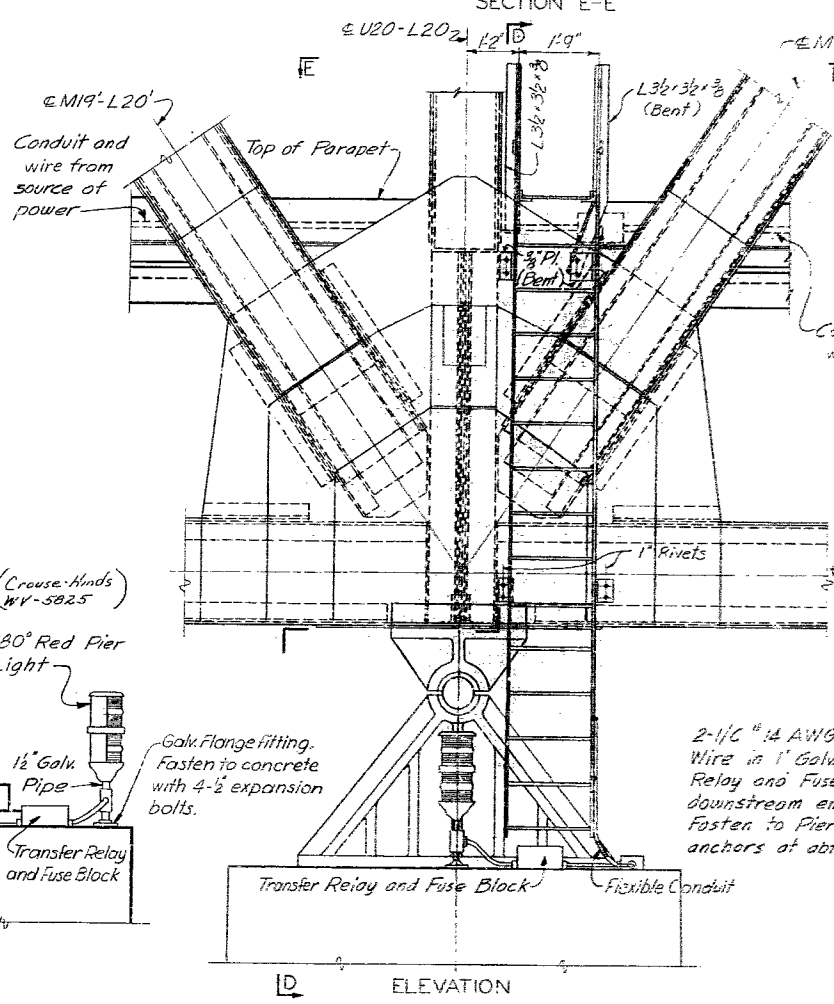
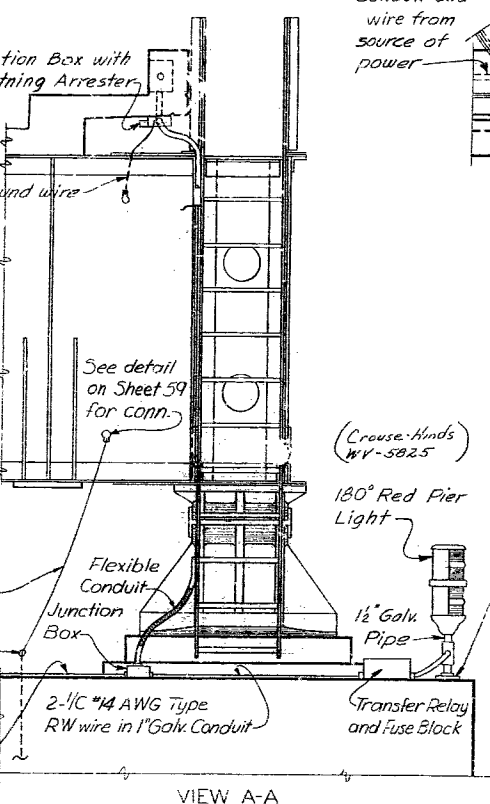
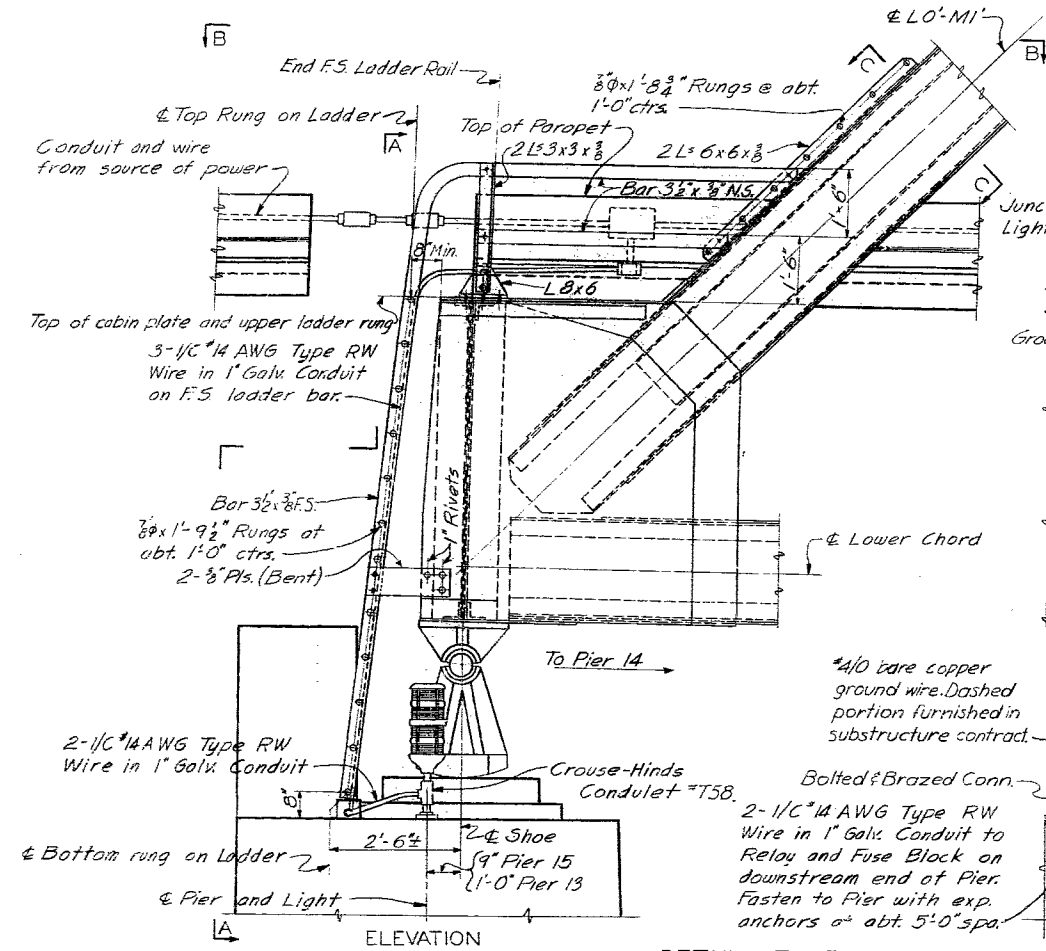
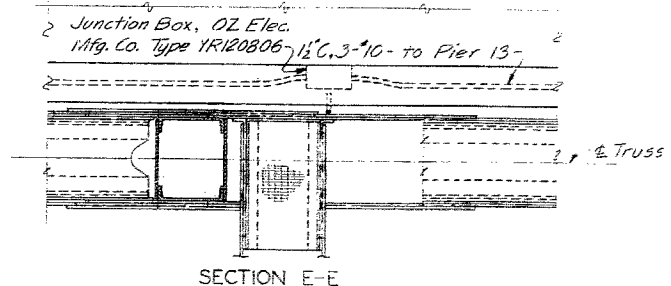
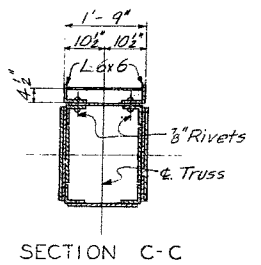
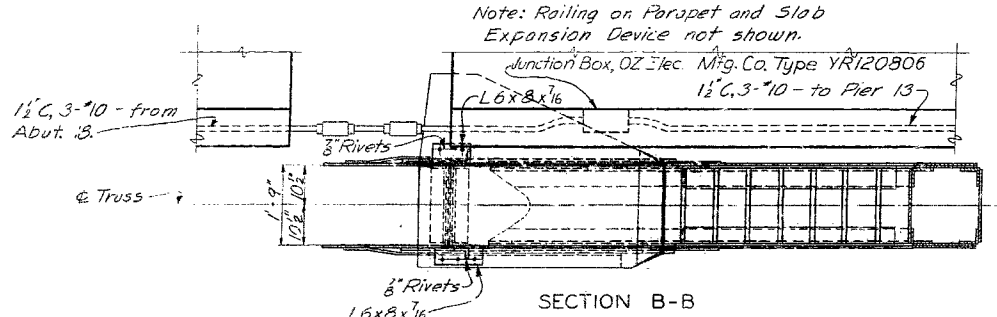
SHEET 22 OF 22

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	23	

Note: Railing on Parapet and Slab Expansion Device not shown.

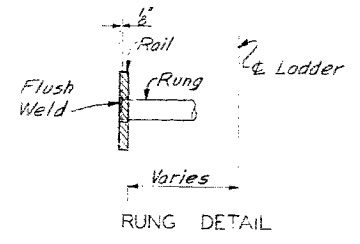


DETAIL AT PIER 15
Upstream Light shown. Downstream Pier Light and Ladder details are similar. Details at Pier 13 similar.

DETAIL AT PIER 14
Upstream Light shown. Downstream Pier Light and Ladder details are similar. Detail of ground from floorbeam to pier similar to Pier 15.

NOTES

Work this sheet with Sheet 59.
All rivets to be 3/4" unless otherwise noted.



BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(16) a, b, c (FAI RT. 1) STA. 1474+38.05
I-70-3(15) a, b (RT. I-70)
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: R.W. Burhop, June 1957
TRACED BY:
CHECKED BY: K.L. Fogg, July 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

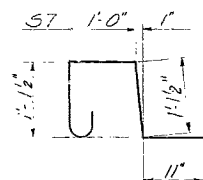
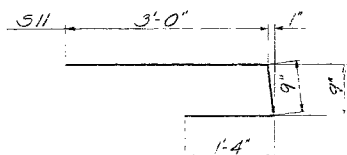
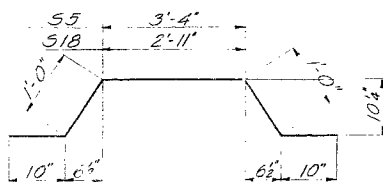
NAVIGATION LICENSING

SHEET 23 OF 25

L-962

MISSOURI STATE HIGHWAY DEPARTMENT

Va. Reg'd.	Size	Length	Mark	Type	Location	Dimensions for Bending										
						A	B	C	D	E	F	G	H	J	K	R
SPANS 1 TO 9																
123	5	20.5	51	Str	Slab											
124	5	33.7	52	Str	do											
628	5	2	53	Str	do											
629	5	2	54	Str	do											
630	5	7.0	55	Spcl	Median Strip	See Bending Detail										
631	5	3.9	56	Str	Safety Curb	5 3/4 3 3/4										
632	5	4.9	57	Spcl	do	See Bending Detail										
633	5	3.8	58	Spcl	Parapet	3 1 1/2 8 1 1/2										
16	5	5.1	59	Str	Safety Curb	5 1 0 1 1 1/2 1 0 1 1 1/2										
10	4	5.1	511	Spcl	Median Strip	See Bending Detail										
32	5	6.0	513	Str	Slab											
4	4	5.6	512	Str	do											
5	4	6.7	515	Spcl	Median Strip	See Bending Detail										
5	4	8.1	519	10	do	1.6	5.14	1.6							1-7	3-3
542	4	32.9	543	Str	Slab											
1026	4	6.4	544	Str	do											
684	4	37.1	545	Str	do											
672	4	31.2	546	Str	do											
66	4	29.2	547	Str	Curb, Parapet & Median											
192	4	10.2	548	Str	do											
193	4	32.9	549	Str	do											
106	4	38.0	550	Str	Curb & Parapet											
108	4	28.9	551	Str	do											
24	4	36.8	552	Str	Median Strip											
16	4	39.8	553	Str	do											
12	4	32.3	554	Str	Slab											
120	4	6.0	555	1	do	6	5.6									
SPANS 10 TO 12 AND 15 TO 17																
2153	5	26.5	51	Str	Slab											
2154	5	33.7	52	Str	do											
2150	5	22.10	53	Str	do											
2150	5	37.1	54	Str	do											
1012	4	7.0	55	Spcl	Median Strip	See Bending Detail										
2172	5	3.9	56	Str	Safety Curb	5 3/4 3 3/4										
2176	5	4.9	57	Spcl	do	See Bending Detail										
2172	4	3.8	58	Spcl	Parapet	3 1 1/2 8 1 1/2										
16	5	5.1	59	Str	Safety Curb	5 1 0 1 1 1/2 1 0 1 1 1/2										
6	4	5.1	511	Spcl	Median Strip	See Bending Detail										
32	5	6.0	513	Str	Slab											
4	4	5.6	512	Str	do											
3	4	6.7	515	Spcl	Median Strip	See Bending Detail										
3	4	8.1	519	10	do	1.6	5.14	1.6							1-7	3-3
14	4	36.10	522	Str	Slab											
8	4	40.1	523	Str	do											
784	4	36.2	524	Str	do											
684	4	36.0	525	Str	do											
510	4	38.10	526	Str	do											
448	4	38.3	527	Str	do											
456	4	40.0	528	Str	do											
342	4	32.4	529	Str	do											
24	4	36.6	530	Str	Median Strip											
34	4	30.4	531	Str	Curb, Parapet & Median											
132	4	36.8	532	Str	do											
20	4	38.5	533	Str	Median Strip											
12	4	40.3	534	Str	do											
22	4	32.4	535	Str	Curb, Parapet & Median											
66	4	42.2	536	Str	do											
66	4	32.4	537	Str	do											
108	4	37.5	538	Str	Curb & Parapet											
90	4	38.10	539	Str	do											
54	4	42.1	540	Str	do											
22	4	31.10	541	Str	Curb, Parapet & Median											
SPANS 13 AND 14																
2194	5	26.5	51	Str	Slab											
2194	5	33.7	52	Str	do											
2212	5	22.10	53	Str	do											
2212	5	37.1	54	Str	do											
1181	4	7.0	55	Spcl	Median Strip	See Bending Detail										
2260	5	3.9	56	Str	Safety Curb	5 3/4 3 3/4										
2252	5	4.9	57	Spcl	do	See Bending Detail										
2260	4	3.8	58	Spcl	Parapet	3 1 1/2 8 1 1/2										
6	5	5.1	59	Str	Safety Curb	5 1 0 1 1 1/2 1 0 1 1 1/2										
112	4	23.8	510	Str	Slab											
4	4	3.1	511	Spcl	Median Strip	See Bending Detail										
4	4	21.4	512	Str	do											
16	5	6.0	513	Str	Slab											
2	4	5.6	512	Str	do											
2200	4	21.1	515	Str	do											
1360	4	26.7	516	Str	do											
1360	4	27.8	517	Str	do											
2	4	6.7	518	Spcl	Median Strip	See Bending Detail										
2	4	8.1	519	10	do	1.6	5.14	1.6							1-7	3-3
4	4	24.4	520	Str	do											



NOTES

A dash is used in the appropriate dimension column to indicate that a hook, bend or portion of the standard bar type is to be omitted.
 See Sheet 15 for Typical Bar Types and Hook Dimensions.
 Dimensioning, bending and hooks for Special Bending Details shall conform to the standards as noted or shown on Sheet 5.

BRIDGE OVER MISSOURI RIVER

STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE

PROJECT NO. I-229 (16) a, b, c (FAI RT. I) STA. 1474+38.05
 I-70-3(15) a (RT. I-70)

BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

SUPERSTRUCTURE BAR L ST AND
 SPECIAL BENDING DETAILS

L-962

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

SHEET 2 OF 5

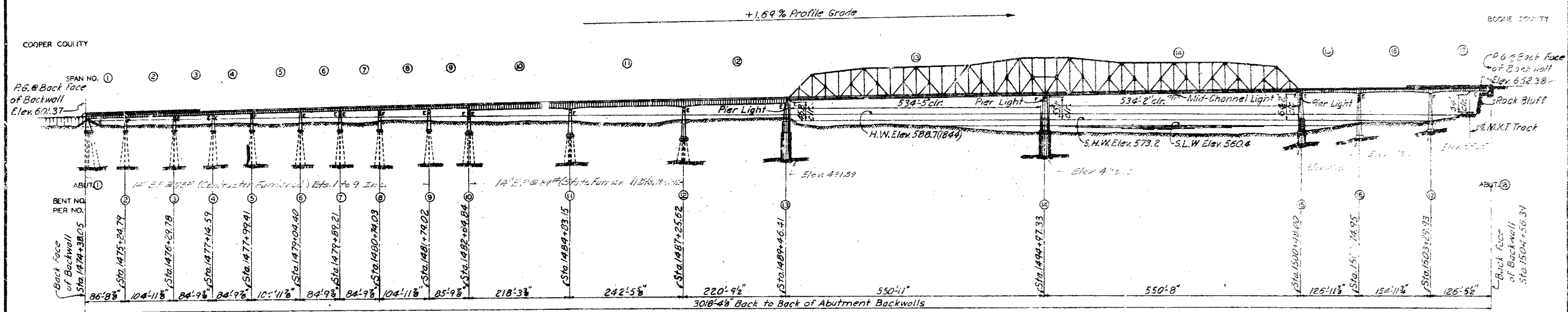
240

DRAWN BY: R.W. Burkhead May, 1957
 TRACED BY:
 CHECKED BY: H.C. Morris May, 1957

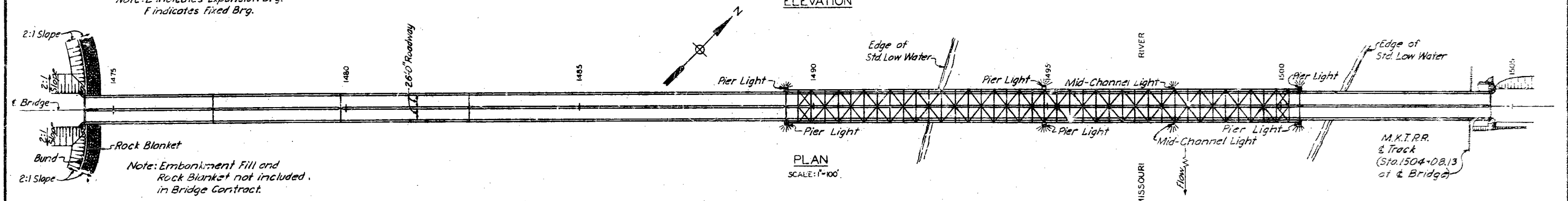
MISSOURI STATE HIGHWAY DEPARTMENT

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

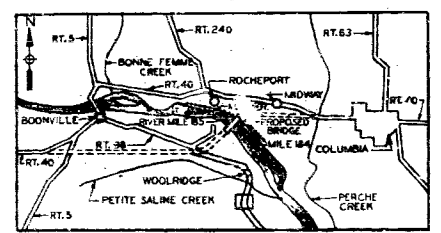
FINAL PLANS



Note: E indicates Expansion Brg.
F indicates fixed Brg.



BENCH MARKS: *50 - U.S. Corps of Engineers
R-184.6, Brass cap in concrete post
flush with ground - 10' Rt. of Sta. 1467+86.
Elev. 579.84
*52 - U.S. Corps of Engineers
L-184.51 on East bank of the Missouri
River - 115' Rt. of Sta. 1503+65. Elev. 588.82.



BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. 1-229(4) (INT. RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

EVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

1427
105102
DRAWN BY: W.J. Ballard, Nov. 1956
TRACED BY:
CHECKED BY: E. Lemcoe, Dec. 1956

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

GENERAL PLAN AND ELEVATION

SHEET 2A of 2

L-962

FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE NO. FED. AID PROJ. NO. SHEET NO. TOTAL SHEETS
5 MO 16 14 2

GENERAL NOTES

SPECIFICATIONS: Missouri State Highway Commission (1955 Standard) and Special Provisions.

DESIGN LOADS: In accordance with Division III of the A.A.S.H.O. Standard Specifications for Highway Bridges, 1955 edition, with the following exceptions and interpretations:
Live Load: H-20-S16-44, except for the design of floor systems (stringers and floor beams of truss and girder spans), a special loading of 2-24,000 lb. axles at 4'-0" centers is used where this loading governs over the standard H-20-S16 truck loadings. For lane loads, the standard loading is used.

For truss spans only, the concentrated load used in combination with a lane load is taken as 26,000 lbs. for both shear and moment calculations.

Safety Curb Live Load: None

Dead Load: Provision is made for a future wearing surface of 15 pounds per square foot of roadway surface and utilities weighing 200 pounds per foot of bridge in addition to the weight of the structure.

Wind Load: Provision is made for transverse, longitudinal, quartering and vertical wind forces.

For superstructure design, the transverse wind forces are assumed to be:
(1) 50 pounds per square foot on 1/2 times the area of the span in elevation or

(2) a combination of 30 pounds per square foot on 1/2 times the area of the span in elevation and 200 pounds per lineal foot of bridge on the live load.

For substructure design, the transverse wind loads from the superstructure are assumed to be:

(3) 50 pounds per square foot on 1/2 times the area of the span in elevation or

(4) a combination of 15 pounds per square foot on 1/2 times the area of the span in elevation and 100 pounds per lineal foot of bridge on the live load.

Transverse wind forces on substructure units are assumed to be 50 pounds per square foot when combined with loading (3) above, or 15 pounds per square foot when combined with loading (4) above.

Longitudinal wind force on the superstructure spans is as specified in the A.A.S.H.O.

For a quartering wind (45° to bridge centerline), the simultaneous lateral and longitudinal forces applied to a continuous superstructure unit are as follows:

for truss spans:

Lateral-----70% times total transverse wind.

Longitudinal-----35% times total transverse wind

for girder spans:

Lateral-----70% times total transverse wind.

Longitudinal-----17% times total transverse wind.

Wind area of substructure units is actual projection.

A vertical wind force acting on the truss spans only is assumed in design of shoes and substructure. The assumed force is an upward force of 20 pounds per square foot of plan area acting at the windward quarter point of plan width. This vertical wind force is used in combination with the transverse wind of 50 pounds per square foot for stability investigation.

Impact: No impact for substructure units.

FOUNDATION DESIGN LOADS: Maximum computed load on foundations is limited to the following:

	14BP73	14BP89	Rock Bearing
Tons per pile			Tons per sq. ft.
Vertical forces	64	78	12

When vertical forces are combined with lateral and/or longitudinal forces, the maximum computed load is limited to a percentage of the above maximums, as specified in A.A.S.H.O. Art. 3.4.1.

DESIGN UNIT STRESSES FOR CONCRETE:

Concrete in flexure----- f_c =1,200 pounds per square inch.

Reinforcing Steel-----20,000 pounds per square inch.

These unit stresses apply for all loadings except that higher unit stresses are allowed for construction loadings of caissons.

REINFORCEMENT: All dimensions to reinforcing steel on detail drawings are to centerline of bar, except where the clear dimension is noted from the face of concrete. All reinforcing steel shall be lapped a minimum of 32 diameters at splices unless other wise shown or noted.

ROADWAY WEARING SURFACE: The roadway slab as detailed includes a 1/2" wearing surface poured monolithically with slab.

Note

This project was constructed in accordance with the General Notes on this sheet pertaining to this project.

CONCRETE: Class B air-entrained concrete shall be used for all substructure concrete, including bases of Piers 13, 14 and 15. Class B-1 air-entrained concrete shall be used for all superstructure concrete. (Concrete for cast-in-place piles shall be as noted in the Special Provisions).

BEVELED EDGES: All exposed edges of concrete shall be beveled 3/8" unless otherwise shown or noted.

CONSTRUCTION JOINTS: Construction joints shall be made only at locations shown on the plans, except that the Engineer will approve such changes to construction joints in the caissons and ice breakers as may be necessary or desirable for a satisfactory handling of this work. Provide keys at all construction joints.

BEARING AREAS: Raised bearing areas on piers shall be poured monolithically with pedestal or cap. All bearing areas to receive superstructure shall be finished perfectly smooth and level at the elevations shown on the plans. (See Standard Specifications).

ANCHOR BOLT WELLS: Care shall be exercised in locating anchor bolts and anchor bolt wells to the dimensions shown on the detail drawings.

STRUCTURAL CARBON STEEL: All structural steel unless otherwise noted shall be structural Carbon Steel and shall conform to A.S.T.M. Specification A7.

WELDING: All welding shall be in accordance with the "Standard Specifications for Welded Highway and Railway Bridges" of the American Welding Society as supplemented by the Special Provisions. Qualification of welding operators will be required.

ROCK FOUNDATION: For Bents 16 and 17, all loose, shaly or disintegrated rock shall be removed and the footings placed on or into hard, solid undisturbed rock. If soft rock or shale is encountered these footings shall be carried at least 2'-0" into and cast against vertical faces or same. Abutment 18 shall be carried at least 2'-0" into rock and cast against vertical faces of same with bottom at elevation 241.6.

PILES: Steel Piles for Bents 10, 11 and 12 shall be 14BP89 (State furnished) and shall be driven to sustain a minimum load of 100 tons.

Piles for Abutment 1 and Bents 2 to 9 inclusive shall be 14BP73 or cast-in-place concrete piles (See Special Provisions) and shall be driven to sustain a minimum load of 50 tons. All piles are to be driven to rock with a steam hammer.

WELDABLE STRUCTURAL CARBON STEEL: Weldable structural carbon steel shall conform to A.S.T.M. Specification A 373.

MANGANESE STRUCTURAL STEEL: See Special Provisions.

STRUCTURAL LOW-ALLOY STEEL: Structural Low-Alloy Steel shall conform to A.S.T.M. Specification A242 as modified by the Special Provisions.

RIVET STEEL: Rivet Steel shall conform to A.S.T.M. Specification A141.

FABRICATION: Fabrication shall be in accordance with the requirements of the Standard Specifications as revised and supplemented by the Special Provisions.

ERECTION: For notes on erection of truss spans see Sheet 39 and Special Provisions. For erection of girder spans, see Special Provisions.

PAINTING OF METAL WORK: See Special Provisions.

SHOES: All finished surfaces shall be coated with white lead and tallow before leaving the shop.

WATERPROOFING: Superstructure deck shall be waterproofed. See Special Provisions.

TURND BOLTS: The diameter billed on drawings shall be the shank diameter. The threaded portion shall be 1/8" smaller in diameter than the shank and the hole shall be 1/8" in diameter larger than the shank.

GALVANIZING: Payment for galvanizing will be considered as fully covered under contract prices for other items. See Special Provisions.

JOINT FILLER: Where joint filler is specified on the plans it shall conform to the requirements for "Gray Rubber Compound Joints" as given in Section 59-22B of the Standard Specifications. Payment for filler will be included in contract prices for items in which it is placed.

JOINT SEAL: Where joint seal is specified it shall conform with the requirements as given in the Standard Specifications. Payment for joint seal will be included in contract prices for other items of work.

RUBBER WATERSTOP: Payment for rubber waterstop will be included in contract unit prices for concrete.

MASONRY PADS: See Special Provisions.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

TABLE OF QUANTITIES	
SUBSTRUCTURE - PIERS 13, 14 AND 15	
Item	Quantity
Class B Concrete (Bases of Pier 13, 14 and 15)	Cu Yds. 1,222.14
Class B Concrete (Base of Pier 13)	Cu Yds. 1,222.14
Class B Concrete (Base of Pier 14)	Cu Yds. 1,222.14
Class B Concrete (Base of Pier 15)	Cu Yds. 1,222.14
Reinforcing Steel	Lbs. 1,222.14
TOTAL SUBSTRUCTURE 7,222.14	
SUPERSTRUCTURE 1,222.14	
TOTAL QUANTITIES 8,444.28	
CLASSIFICATION: 100-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000	

Note: Estimated Quantities of 14BP89 piles in place include an allowance of 3' per splice as payment for an estimated number of 36 splices. Excavation for bridge above Elev. 361.0 shall be paid for as Class 2 Excavation for Structures. Excavation for bridge made below Elev. 351.0 shall be paid for as Class 2 Excavation for Structures. The cost of excavation necessary for the construction of Piers 13, 14 and 15 shall be included in the price bid for Class B concrete (Base of Piers 13, 14 and 15). The volumes of Class B concrete (Base of Piers 13, 14 and 15) are the gross volumes of the bases as shown on the plans with no deductions for the wells.

Revision I Wind Load April 22, 1957 S.M.V. US Chks E.L.
BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(16) (L.S.) (F.A.R.I.) STA. 1474+38.05
1-70-3(15) 0-3
BOONE - COOPER COUNTIES

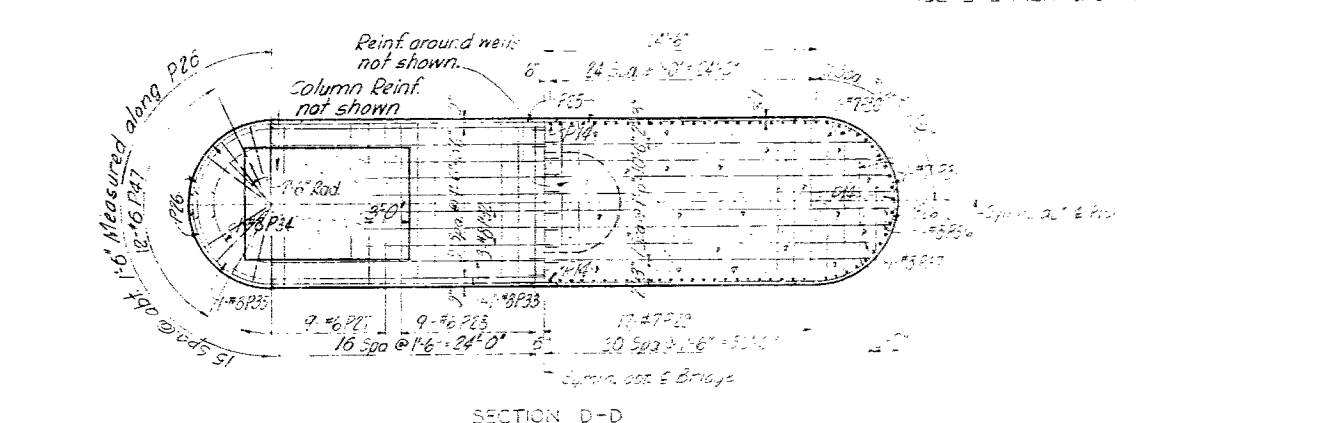
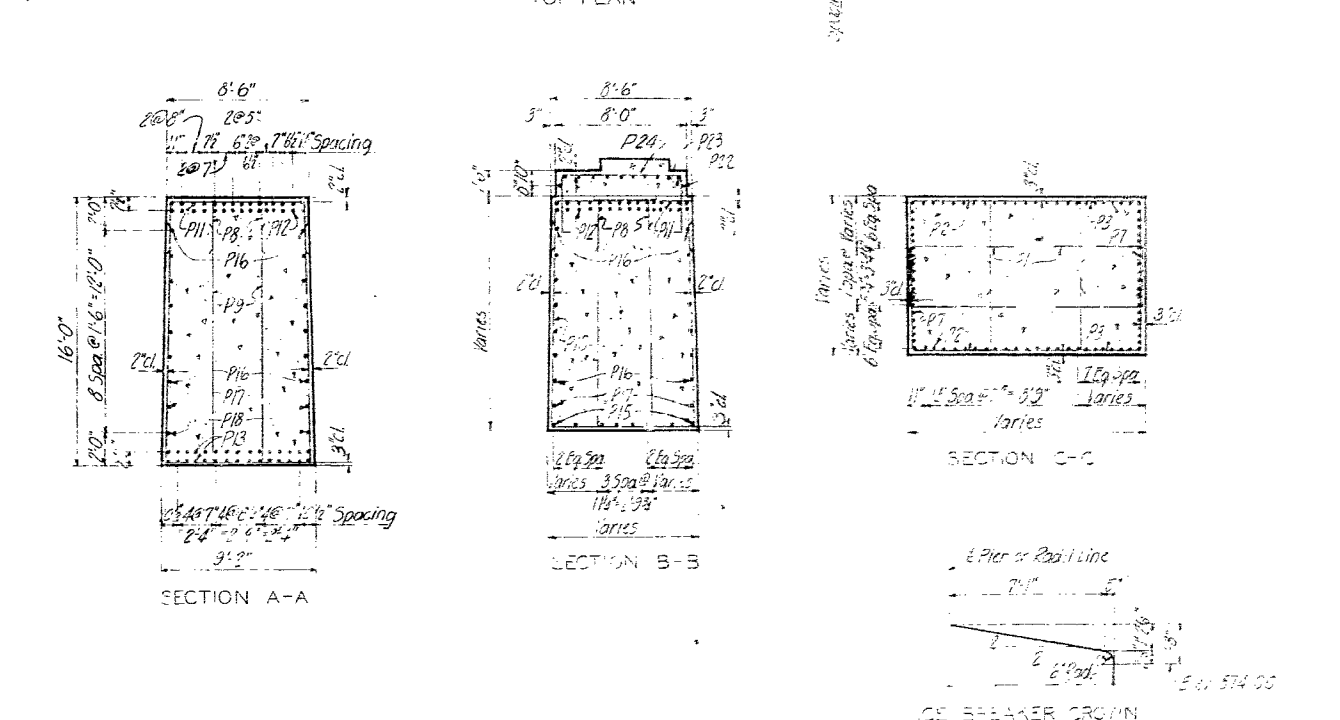
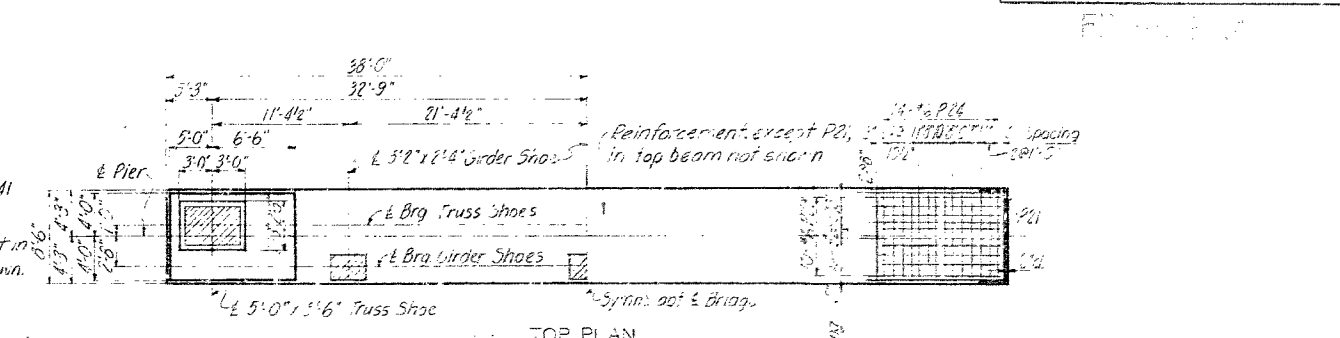
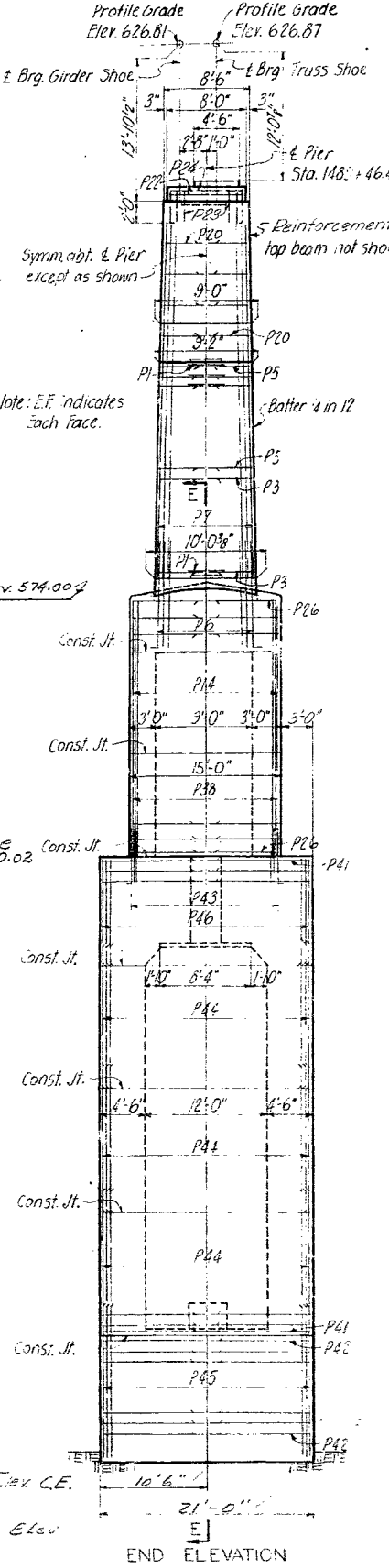
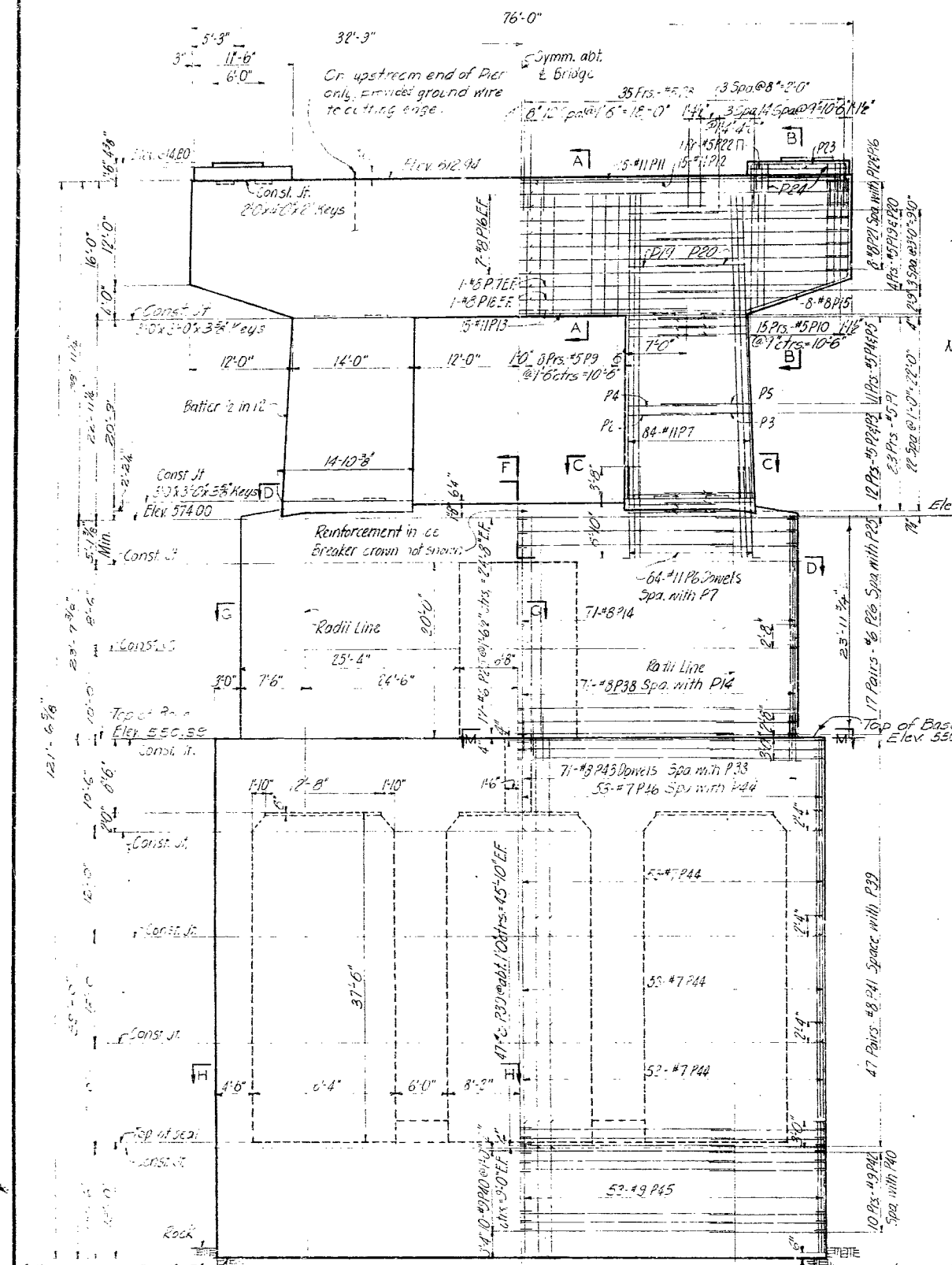
EVERDRUP AND FITZEL, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: M.L. Ballard, Nov. 1955
TRACED BY: E. Lemcoog, Dec. 1956
CHECKED BY: E. Lemcoog, Dec. 1956
665117
1427

FINAL PLAN

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. FISCAL YEAR SHEET NO. TOTAL SHEETS
 5 MO 10 14



NOTES
 The 4'8" Shoe has 15 monolithic with the pedestal. The 18' deep top beam was poured in one continuous operation. Work this shoe with care.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(14)(16) a,b,c (FAI RT.) STA. 1474 + 38.05
BOONE - COOPER COUNTIES
 SVERDRUP AND PARCEL, INC.
 ENGINEERS-ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: P.E. Skujiz Dec. 1966
 TRACED BY:
 CHECKED BY: P.C. Williams Dec. 1966

Note: Wells shown in Ice Breaker and Base are permanent wells.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

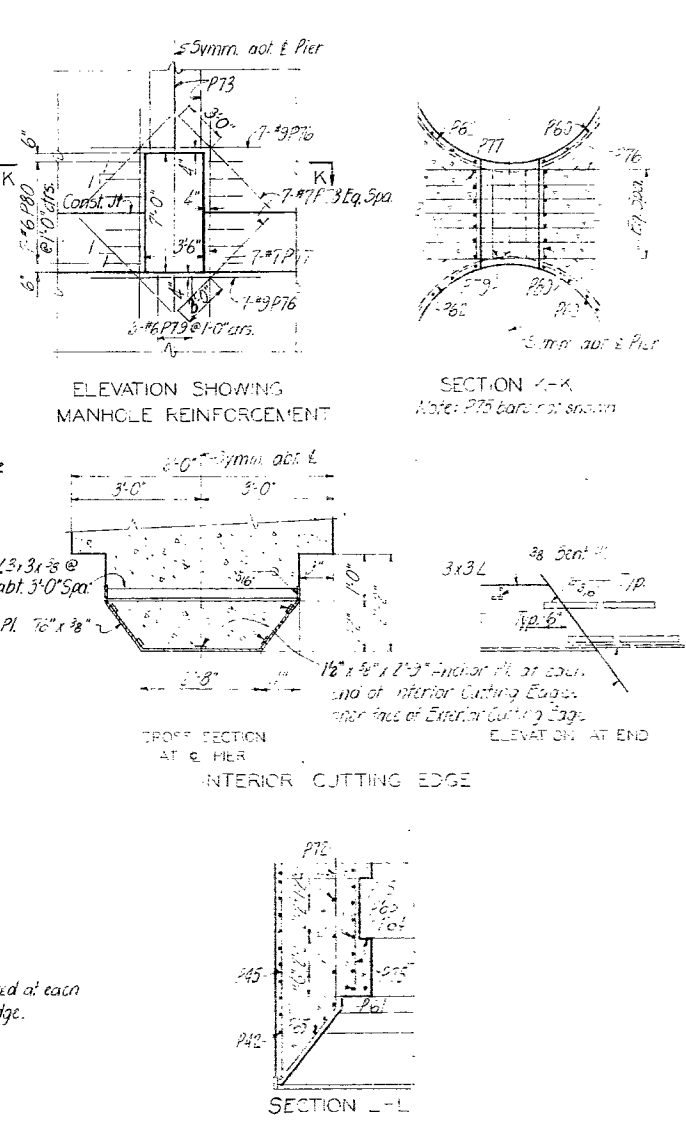
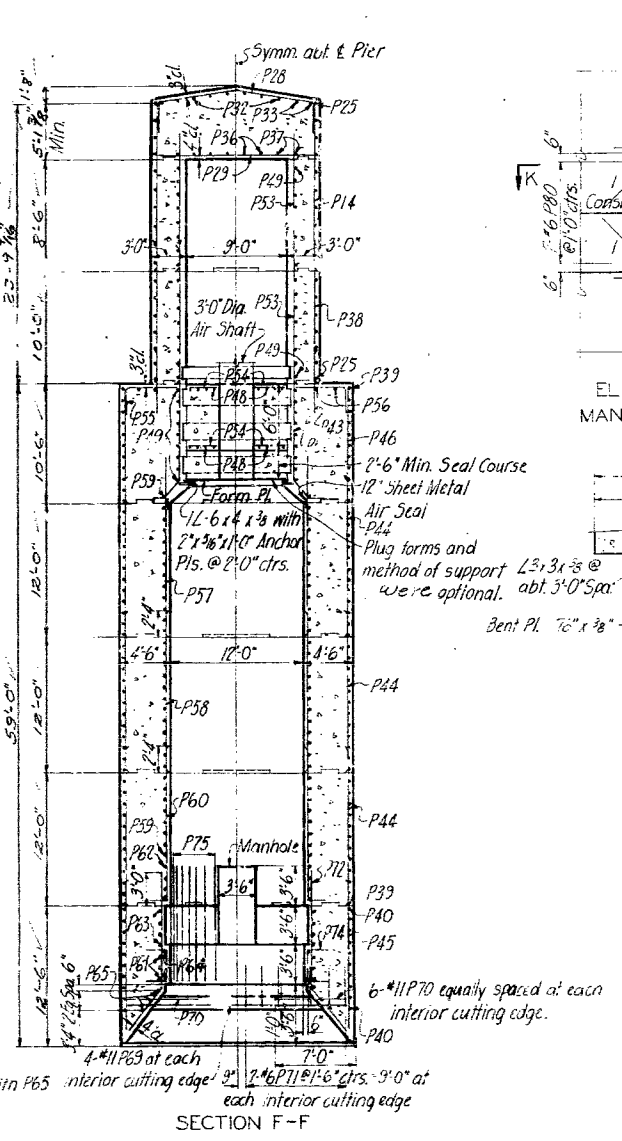
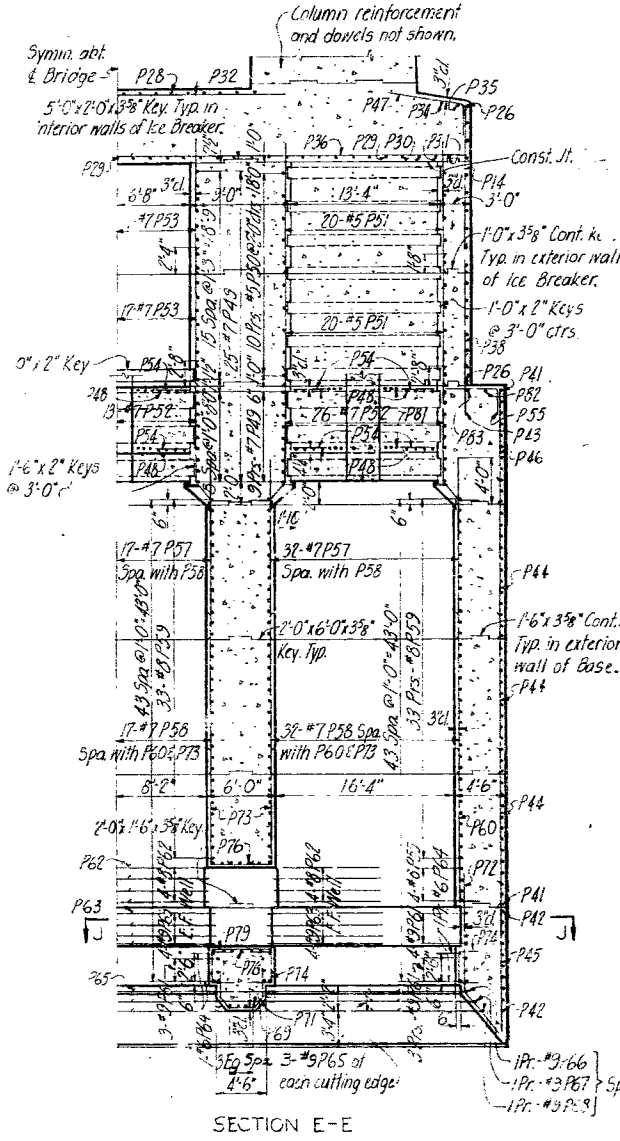
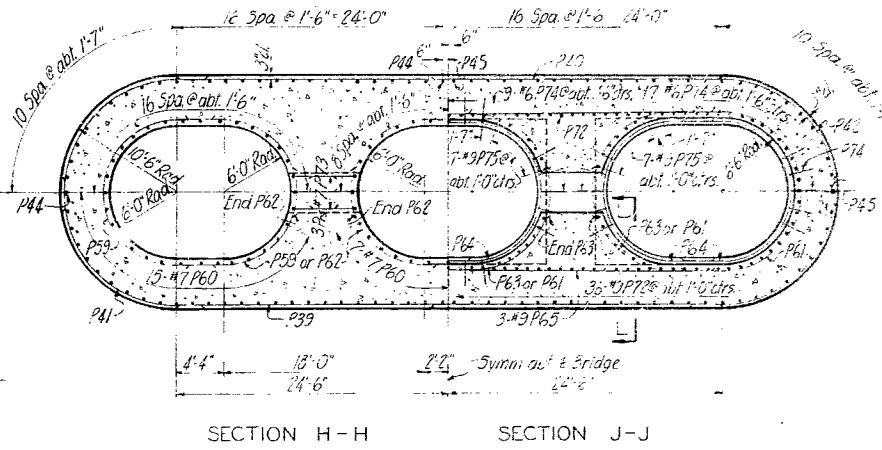
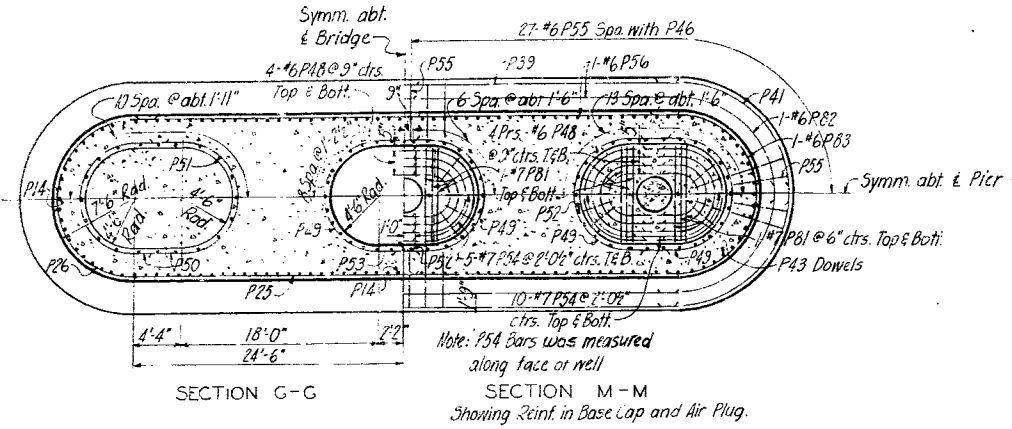
PIER 13 SHEET 6 of 8 L-962

FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. YEAR SHEET NO. TOTAL SHEETS

FINAL PLANS



BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-226(14) (INT. RT. I) STA. 1474+38.05
BOONE - COOPER COUNTIES
SVERDRUP AND PARCEL, INC.
ENGINEERS - ARCHITECTS
ST. LOUIS, MO.

444

DRAWN BY: R.E. Skubiz Dec. 956
TRACED BY:
CHECKED BY: E.J. Shields Jan. 1357

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

PER 13
SHEET 24 of 2
L-962

FINAL PLANS

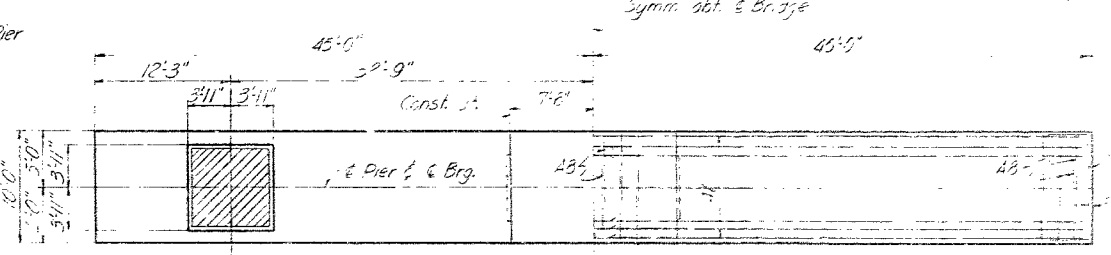
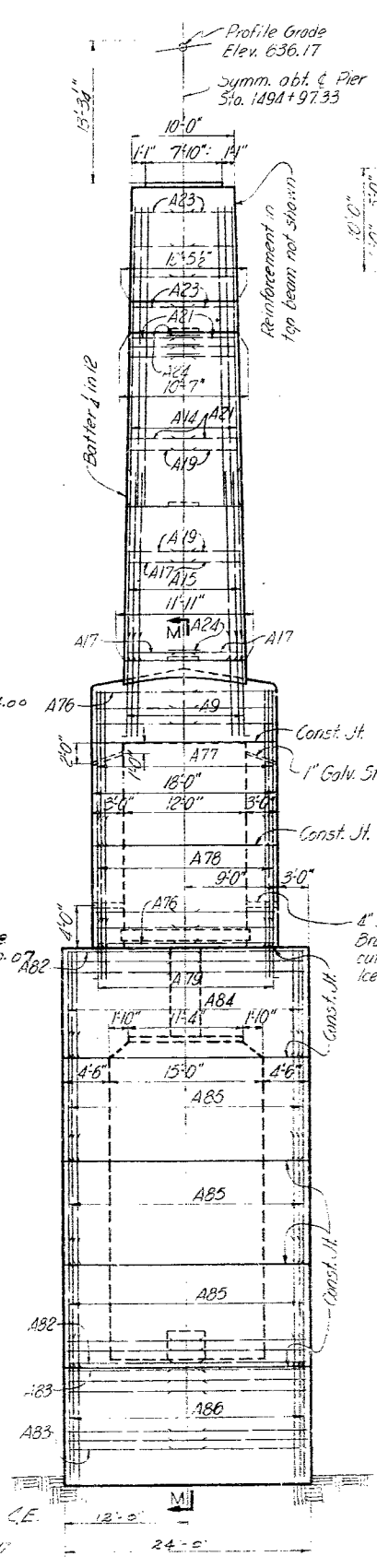
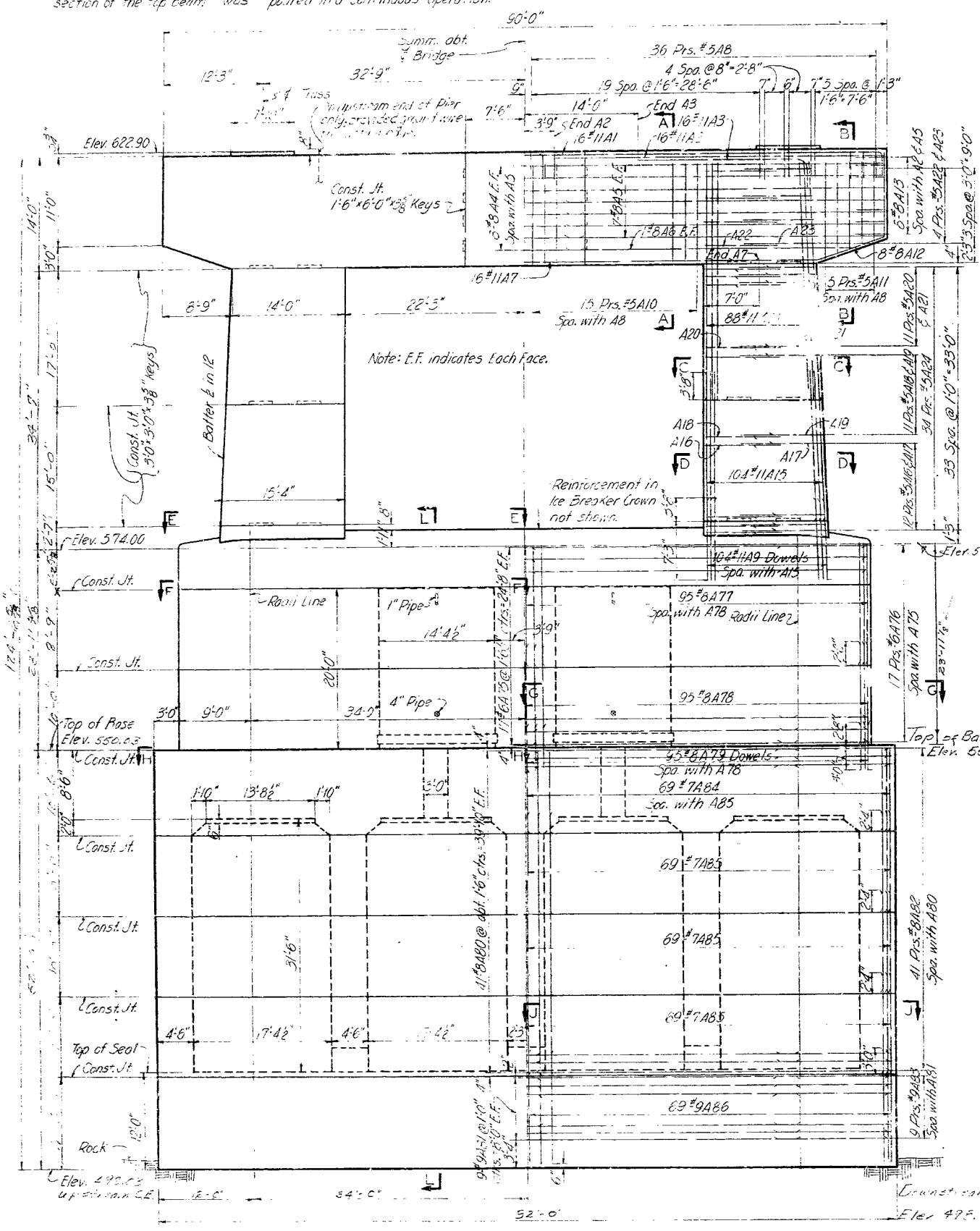
MISSOURI STATE HIGHWAY DEPARTMENT

Table with columns: FED. ROAD DIST. NO., STATE, FED. AID PROJ. NO., FISCAL YEAR, SHEET NO., TOTAL SHEETS. Values: 5, MO, 40, 19, 19.

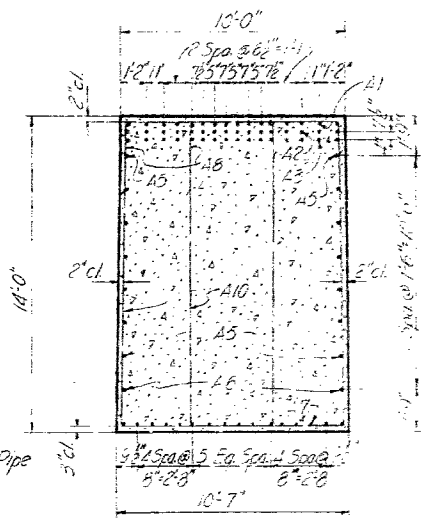
Note: The 3/4" steel pads 15' monolithic with the top beam. Each section of the top beam was poured in a continuous operation.

Note: For location and size of Anchor Bolt Wells, see sheet

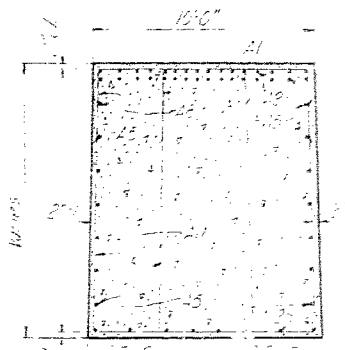
Symm. abt. & Bridge



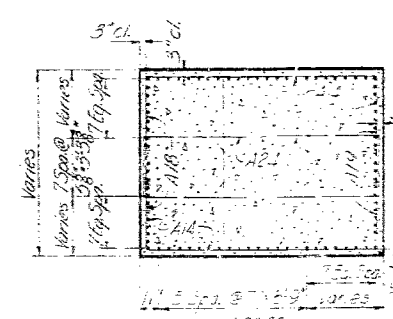
TOP PLAN



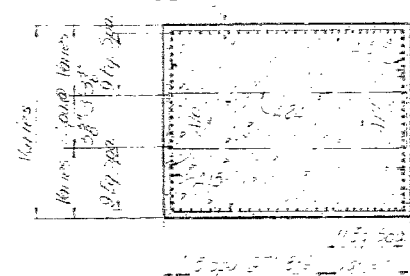
SECTION A-A



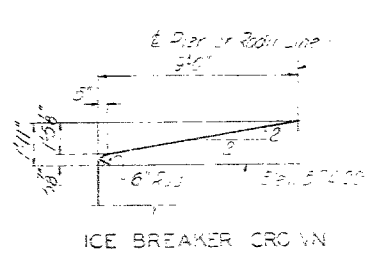
SECTION B-B



SECTION C-C



SECTION D-D



ICE BREAKER CROWN

ELEVATION

END ELEVATION

Note: Wells shown in Ice Breaker and Base are permanent wells.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(4)(6) a,b,c (FAIR) STA. 1474+38.03
BOONE-COOPER COUNTIES

SVERDRUP AND PARSONS, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: J.A. Liebsch Dec. 1936
TRACED BY:
CHECKED BY: M.C. Williams Dec. 1936

PIER 14

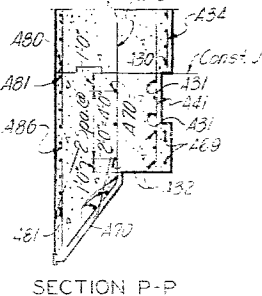
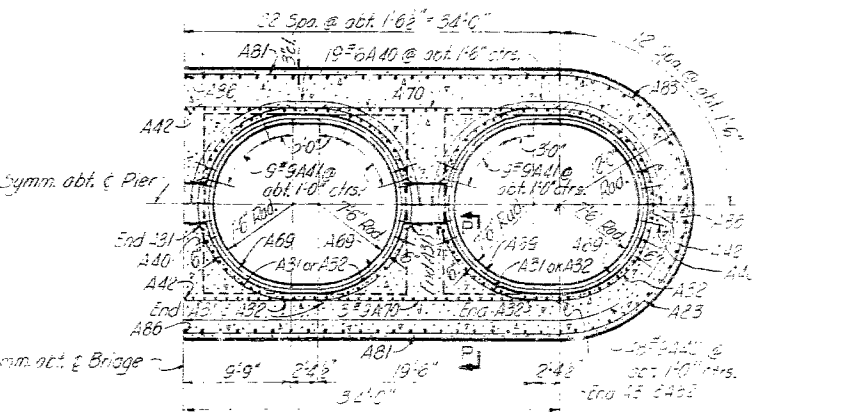
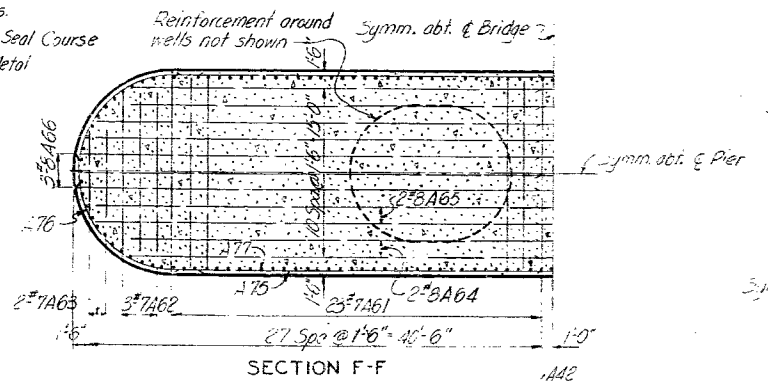
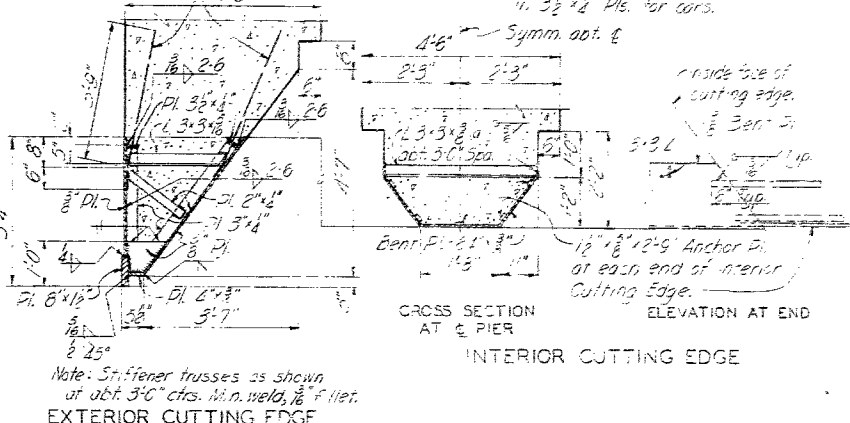
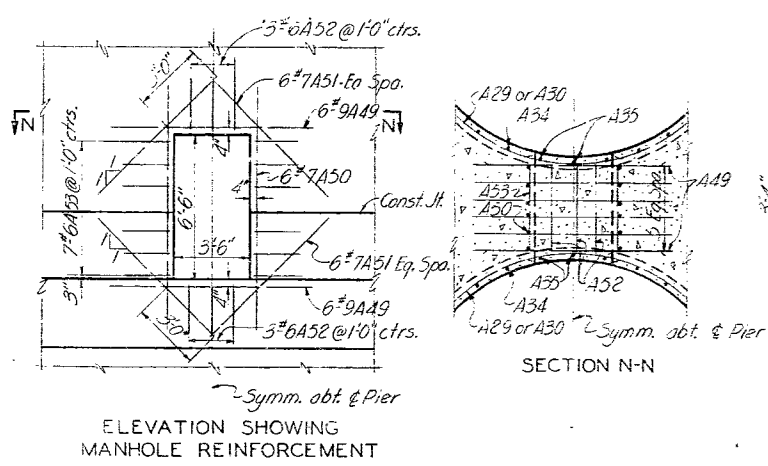
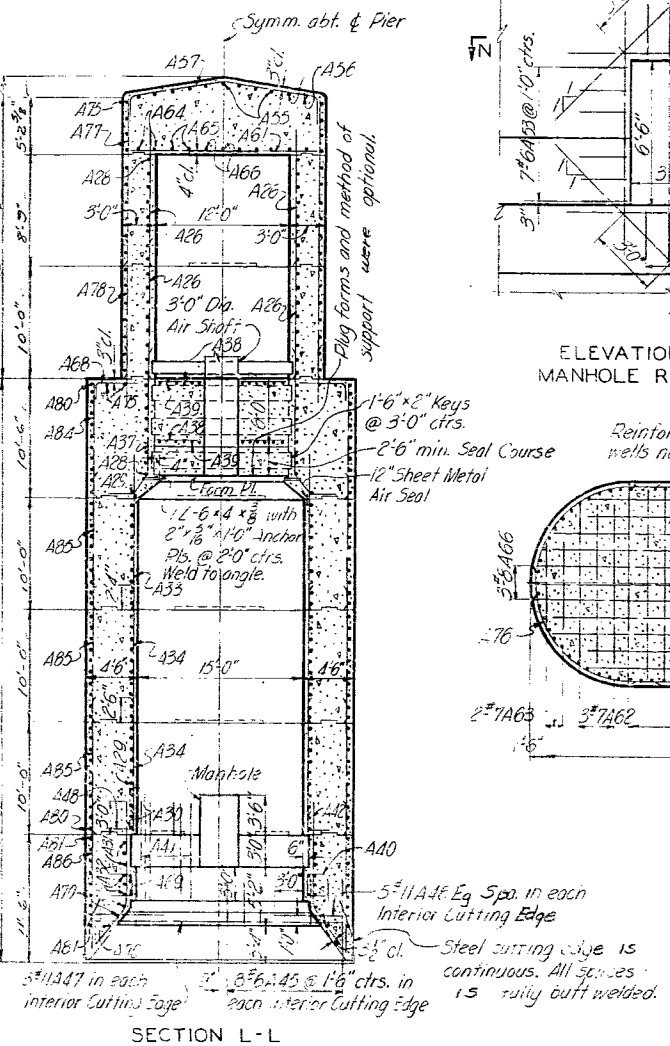
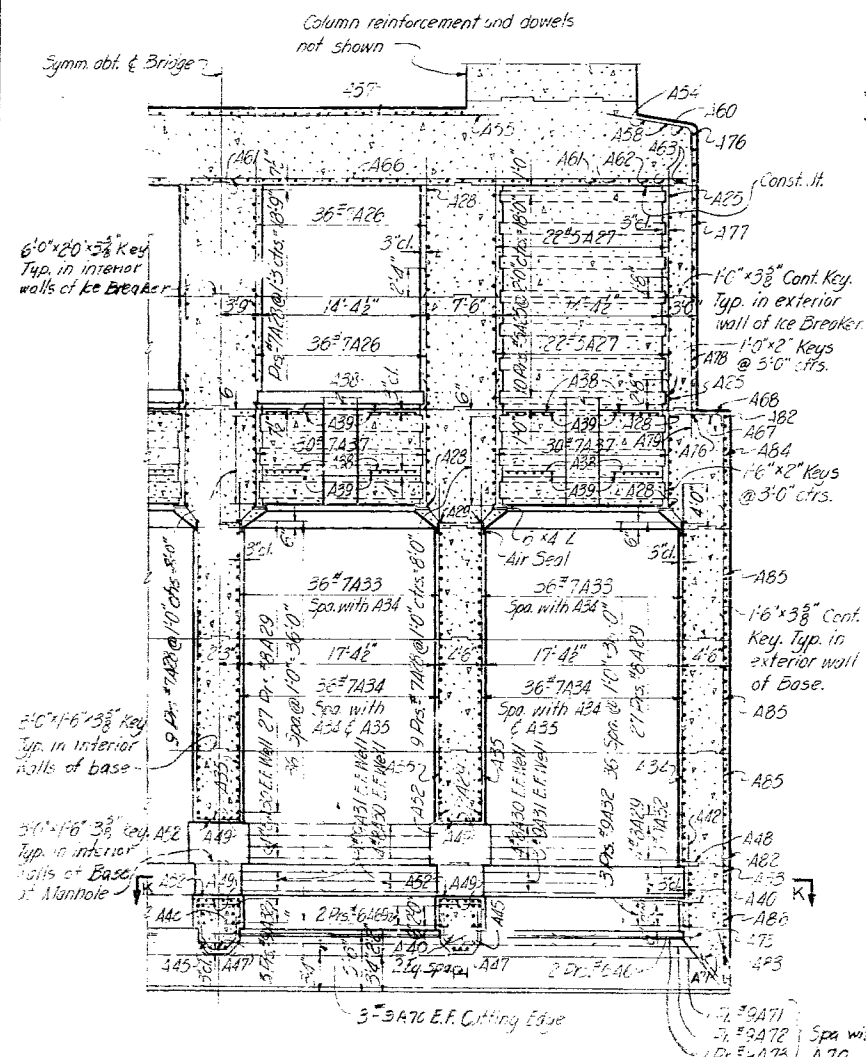
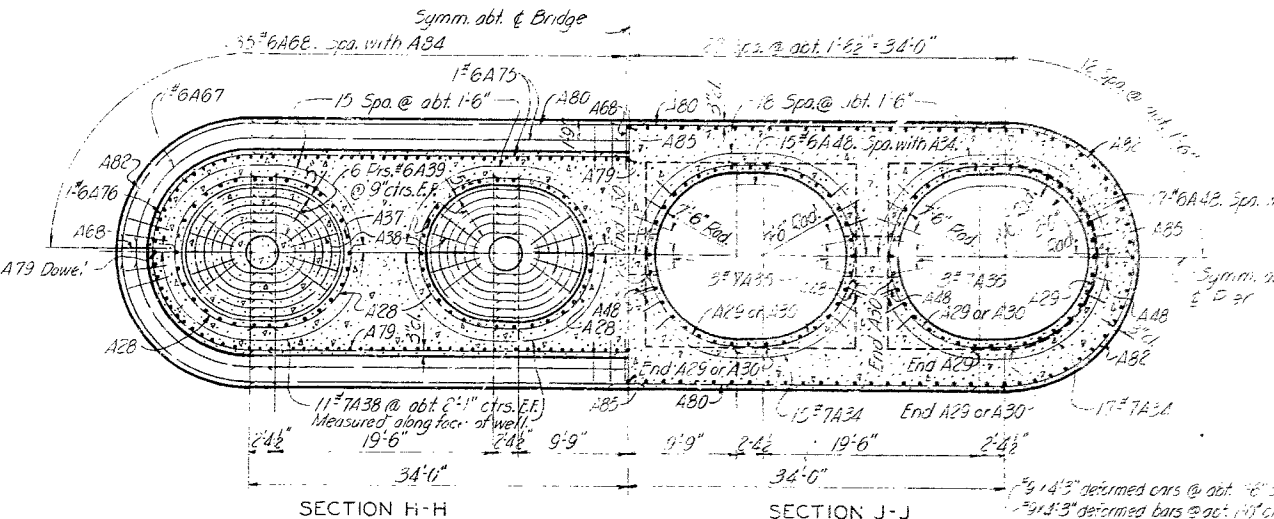
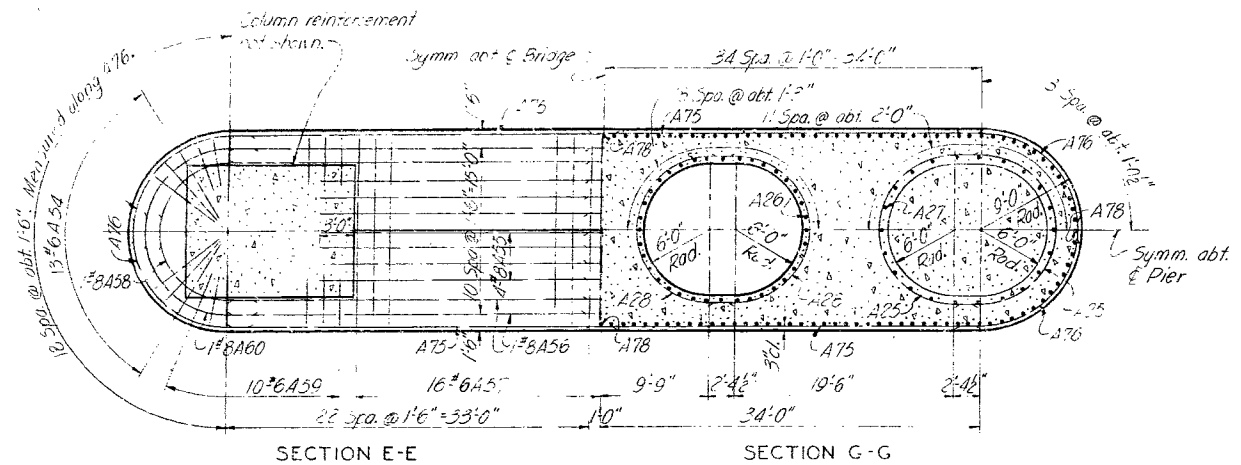
SHEET 8 of 8

L-962

445

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE PROJ. NO. YEAR SHEET NO. TOTAL SHEETS



BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(14) (INT. RT. I) STA 1474+38.05
BOONE-COOPER COUNTIES
SVERDRUP AND PARCEL INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: J.A. Lebesch Dec. 1956
TRACED BY:
CHECKED BY: M.C. Williams Dec. 1956

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

PIER 14

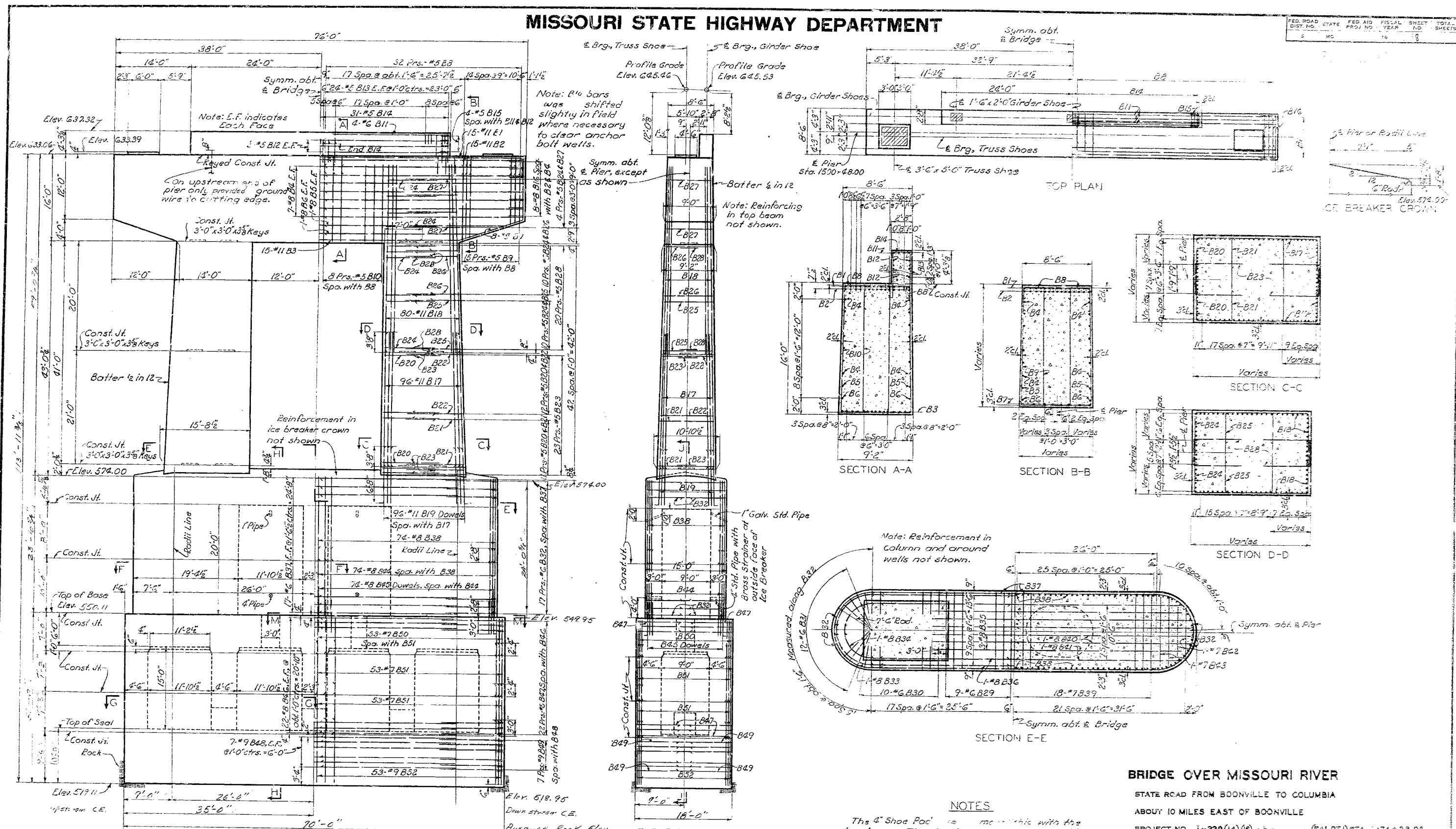
FINAL PLANS

L-962

446

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO. STATE FED. AID PROJ. NO. FISCAL YEAR SHEET NO. TOTAL SHEETS
5 MO 16 9



Note: R14 bars was shifted slightly in field where necessary to clear anchor bolt wells.

Note: Reinforcing in top beam not shown.

Note: Reinforcement in column and around wells not shown.

Note: Wells shown in Ice Breaker and Base are permanent walls.

NOTES
The 4" Shoe Pac is made with the top beam. The top beam was poured in one continuous operation.

BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(14)(16) a,b,c (FAI RT.) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

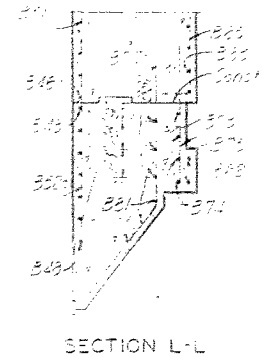
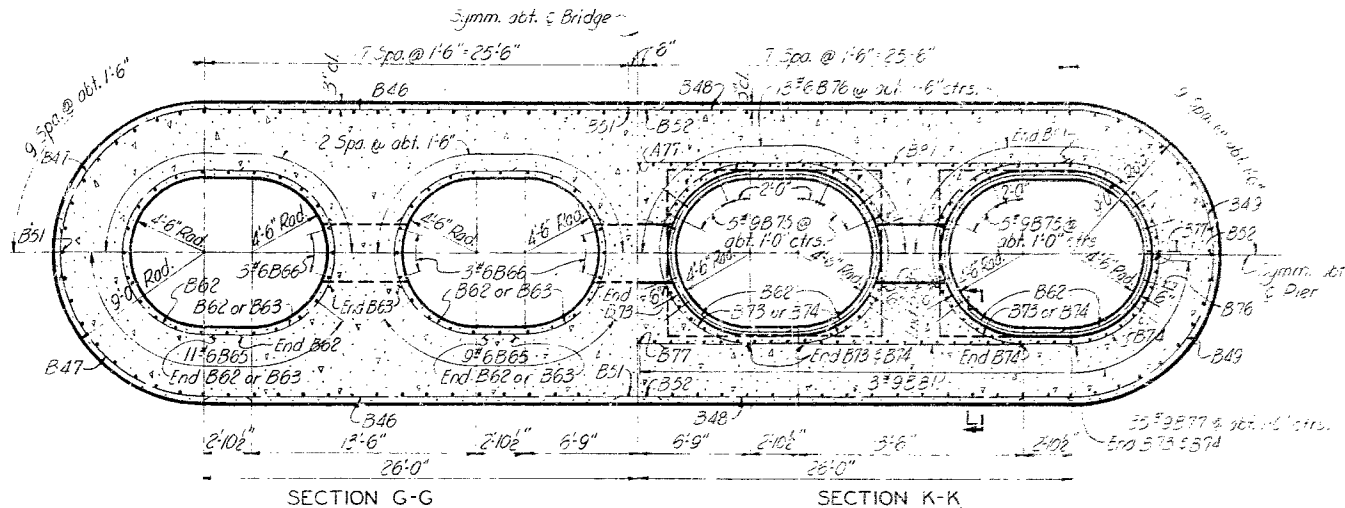
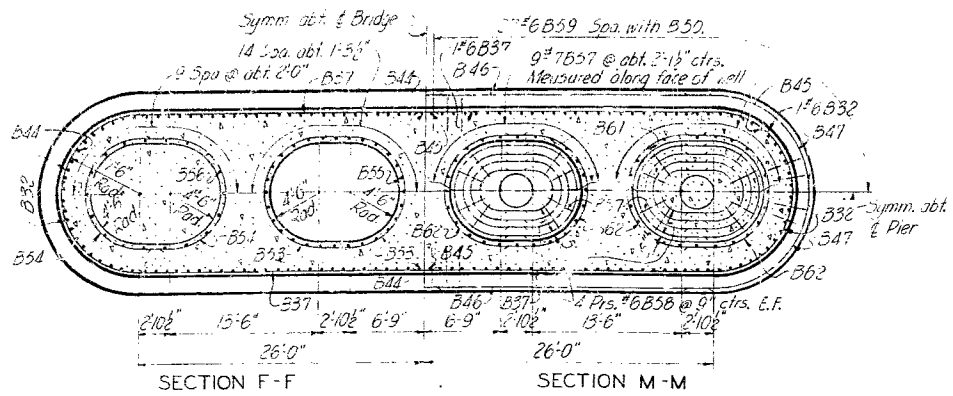
DRAWN BY: L.H. Glaser, Dec., 1956
TRACED BY:
CHECKED BY: A.E.M. & J.C.W., Jan., 1957

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

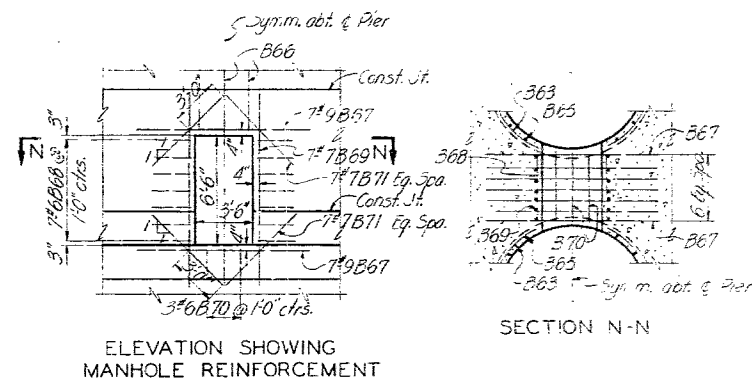
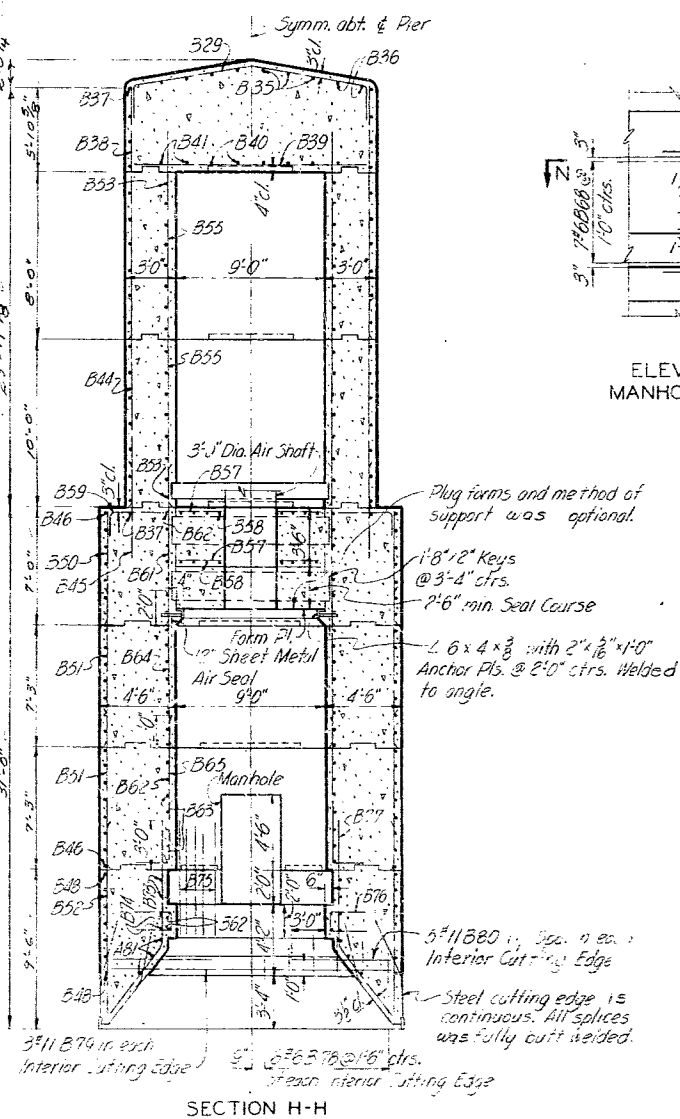
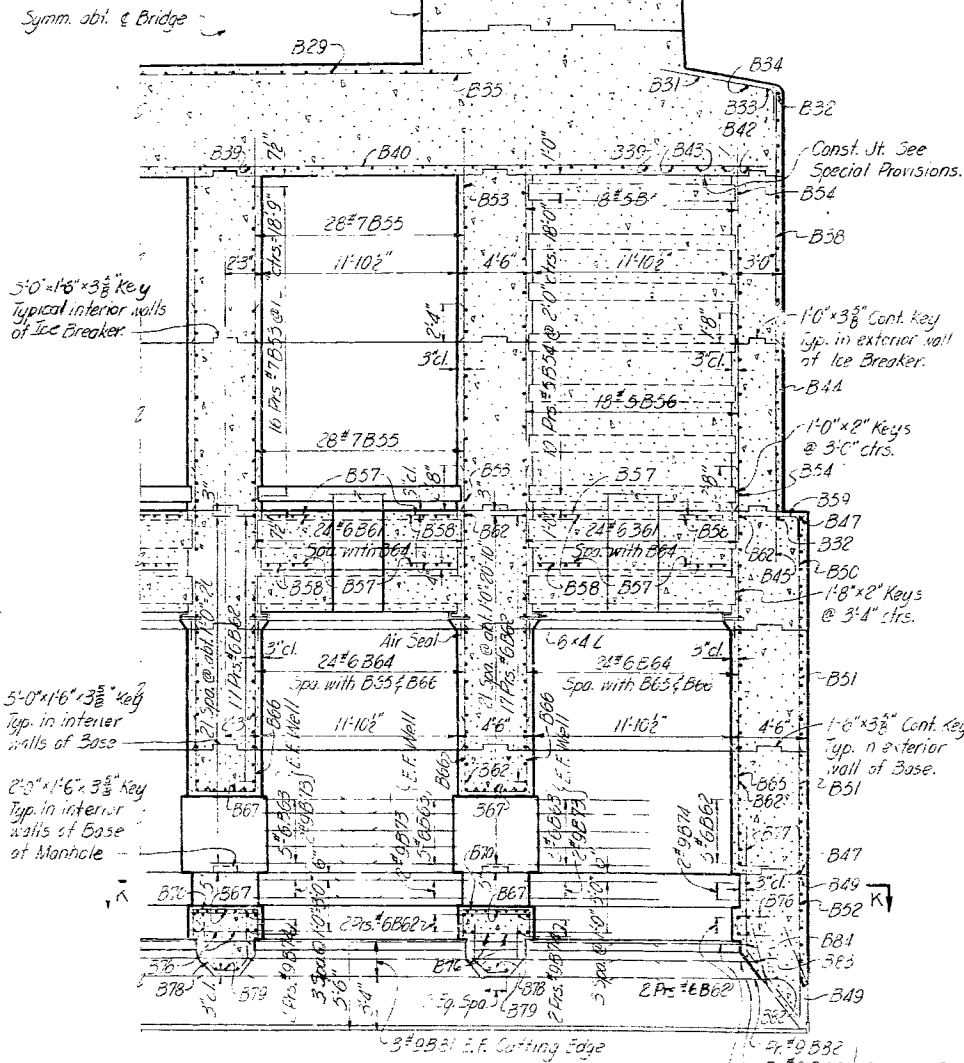
PIER 15

L-962

MISSOURI STATE HIGHWAY DEPARTMENT



Column reinforcement and dowels not shown



BRIDGE OVER MISSOURI RIVER
STATE ROAD FROM BOONVILLE TO COLUMBIA
ABOUT 10 MILES EAST OF BOONVILLE
PROJECT NO. I-229(14) (INT. RT.1) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL INC.
ENGINEERS-ARCHITECTS
ST. LOUIS, MO.

DRAWN BY: J. A. Liebisch Jan. 1937
TRACED BY:
CHECKED BY: M. C. Williams Jan. 1937

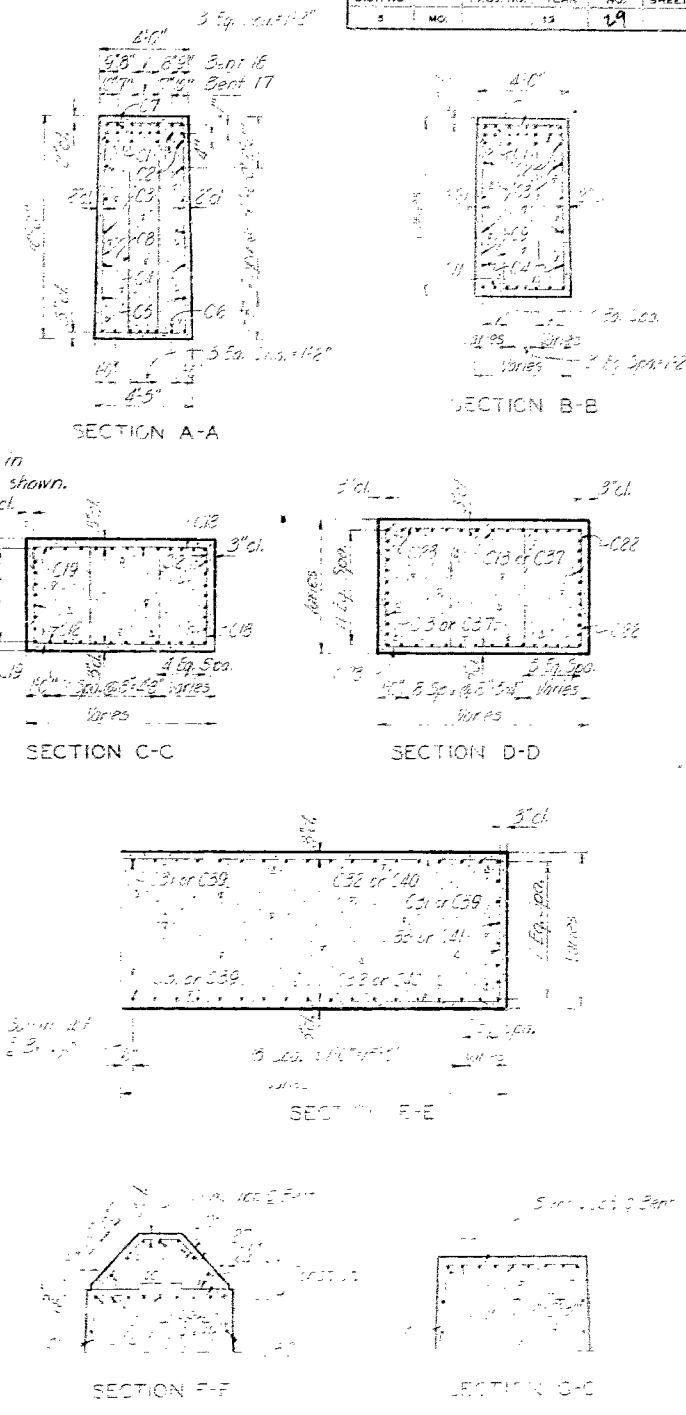
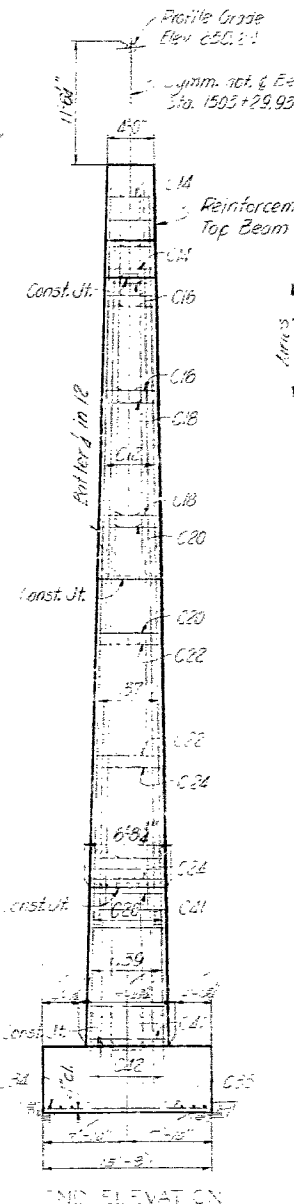
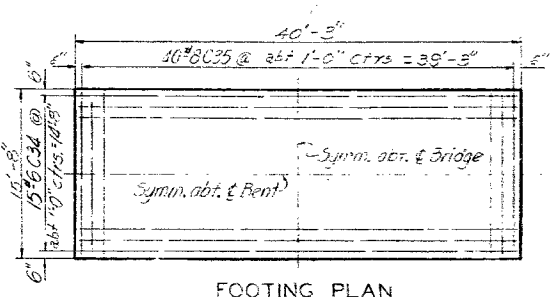
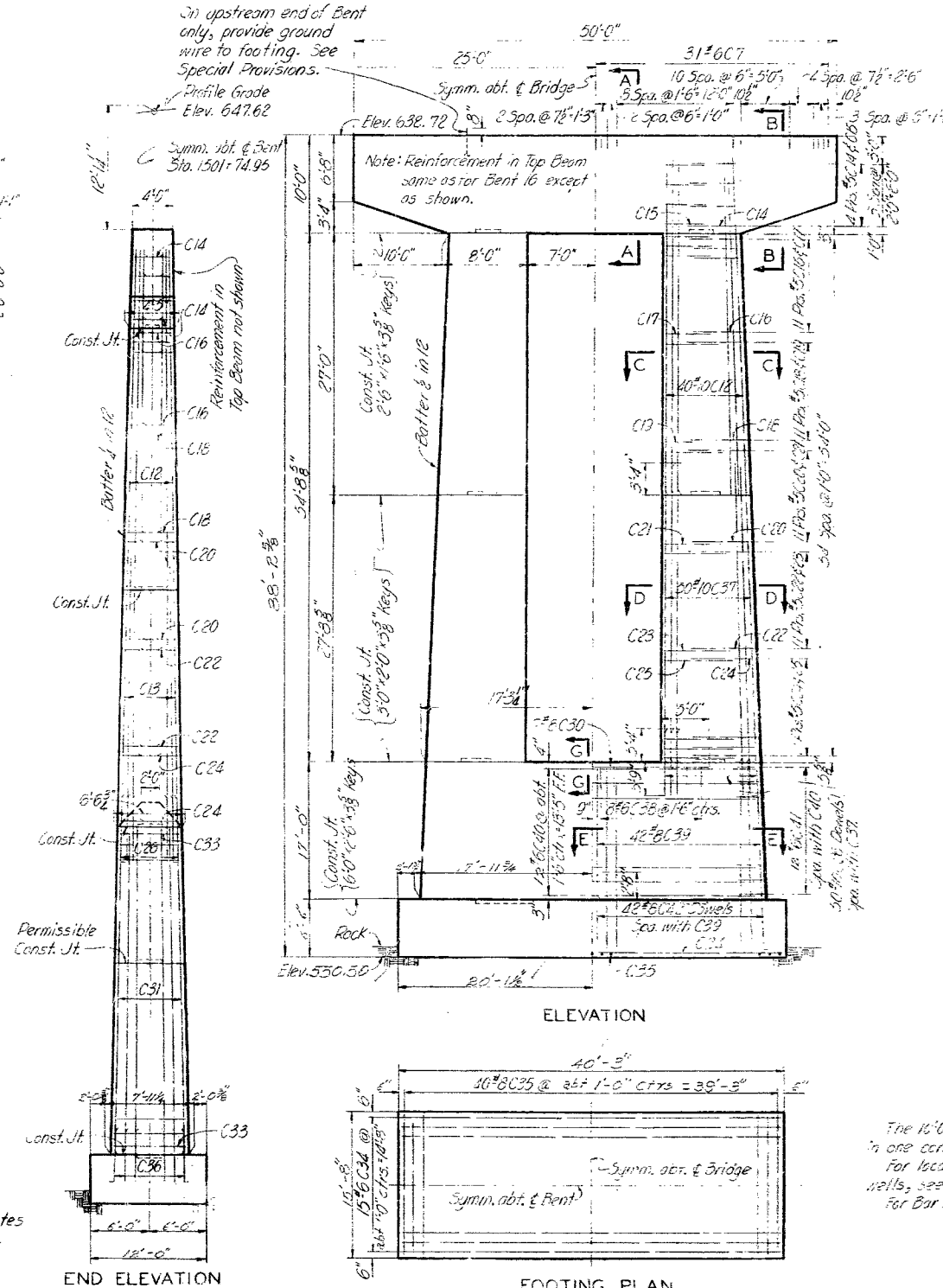
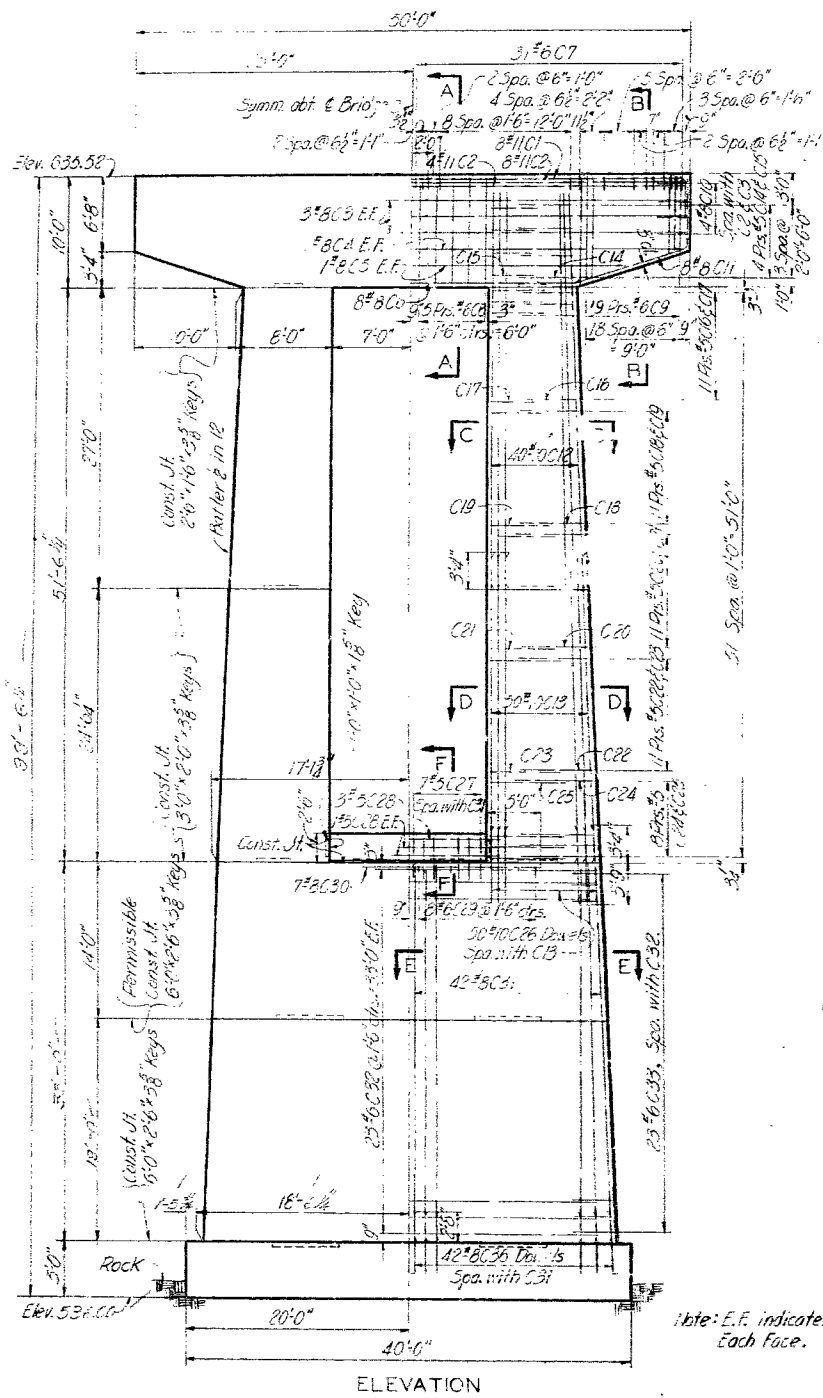
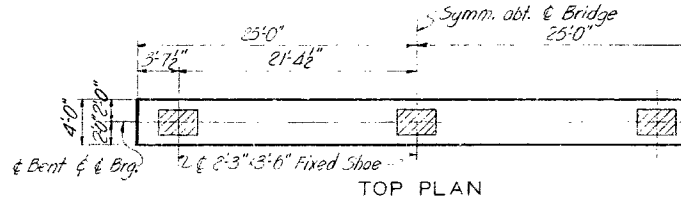
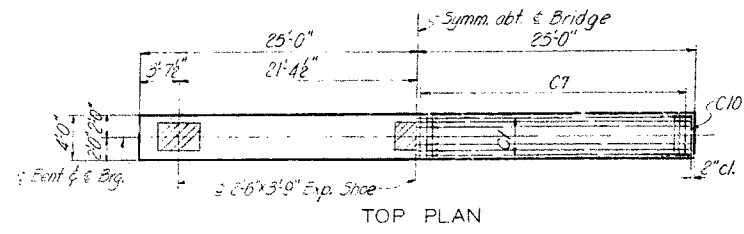
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

857

MISSOURI STATE HIGHWAY DEPARTMENT

FINAL PLANS

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



NOTES
 The 16" x 16" top beams shall be poured in one continuous operation.
 For location and size of anchor coil walls, see Sheet 12.
 For Bar List, see Sheet 23.

BRIDGE OVER MISSOURI RIVER
 STATE ROAD FROM BOONVILLE TO COLUMBIA
 ABOUT 10 MILES EAST OF BOONVILLE
 PROJECT NO. I-229(16)a,b,c (FAI RT. I) STA. 1474+38.05
BOONE - COOPER COUNTIES

SVERDRUP AND PARCEL, INC.
 ENGINEERS - ARCHITECTS
 ST. LOUIS, MO.

DRAWN BY: J.A. Lietzsch Mar. 1957
TRACED BY:
CHECKED BY: M.C. Williams Mar. 1957

BENT 16

BENT 17

BENT 16 & 17

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

FINAL PLANS

L-962

447

TITLE SHEET

SEE

BOONE CO. RTE. FAI-1

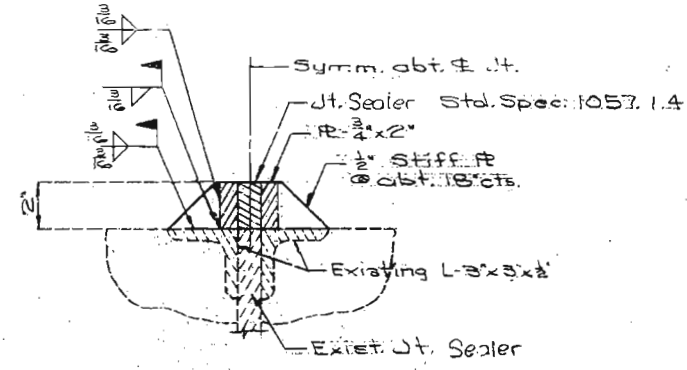
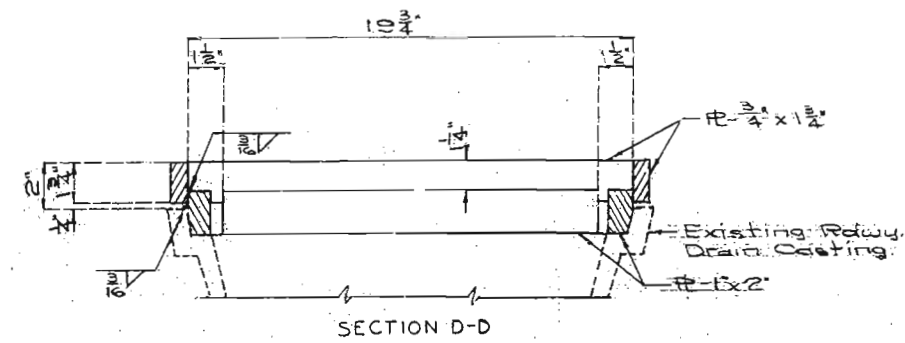
I-229 (14) (16) A, B & C

L-962

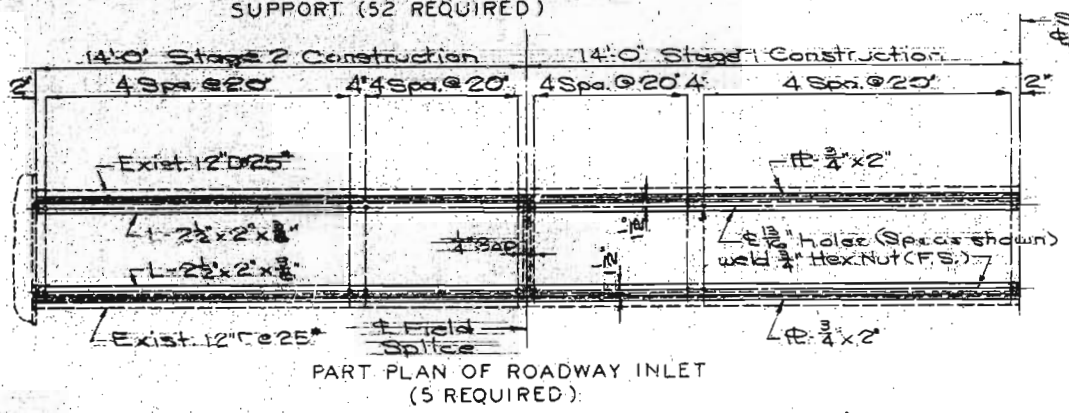
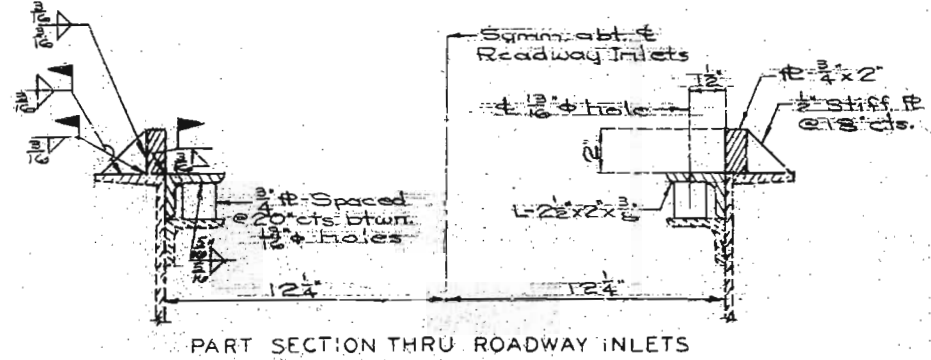
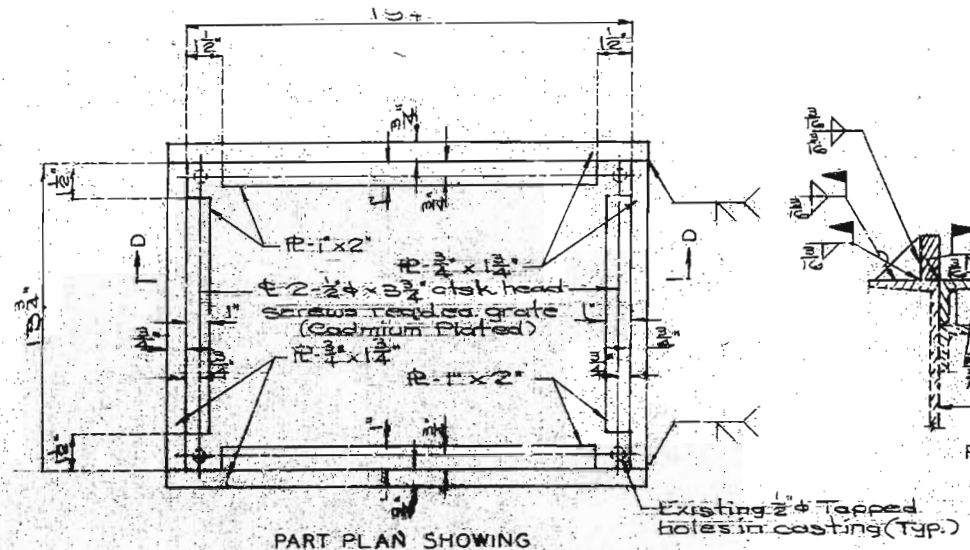
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MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		70		
SEC./SUR.		TWP.		RGE.	



Note: Similar at all floorbeams with stringer expansion devices. Grind snowplow guards smooth where required.



BOONE-COOPER COUNTIES
L-962R

Project 5-I-70-114A
Route I-70

1 of 2

BRIDGE
STATE ROAD
ABOUT
PROJECT NO. 5-I-70-114A STA.
JOB NO. RTE. I-70
BOONE-COOPER COUNTIES

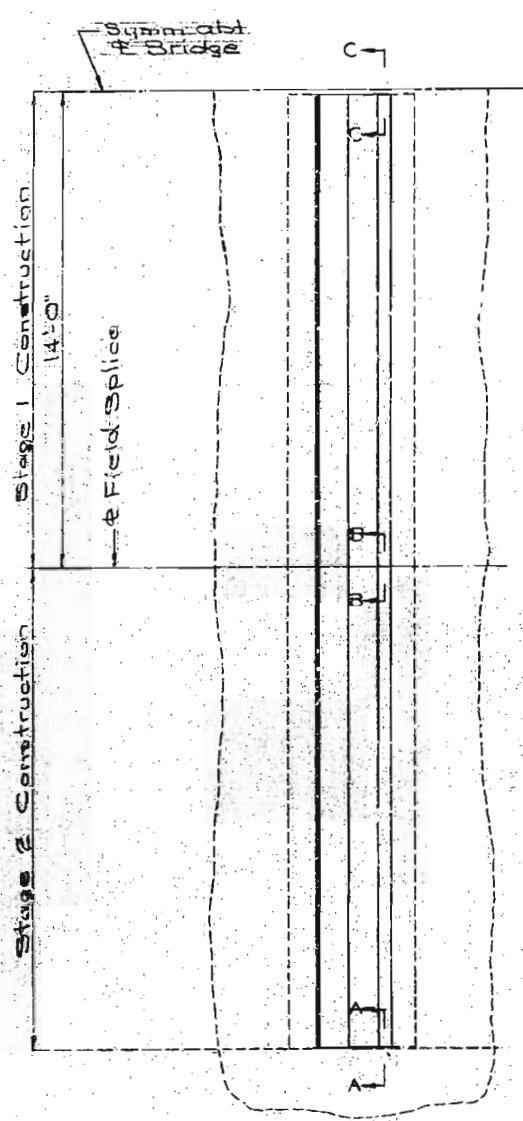
STD.
STD.
L-962R

DESIGNED 18
DETAILED 18
CHECKED 18

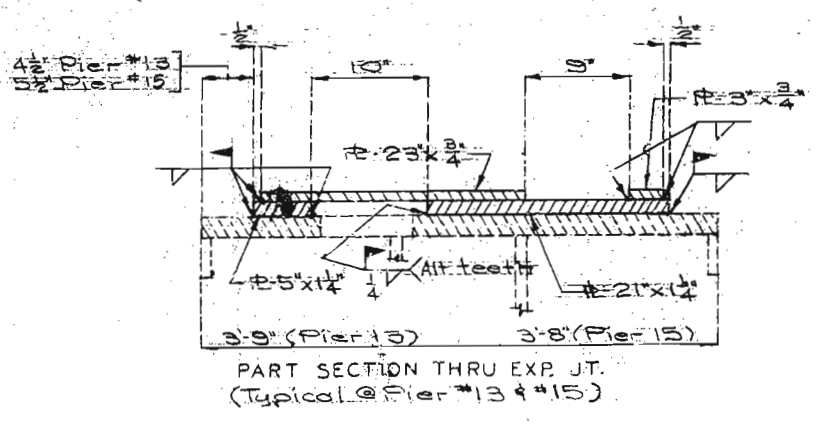
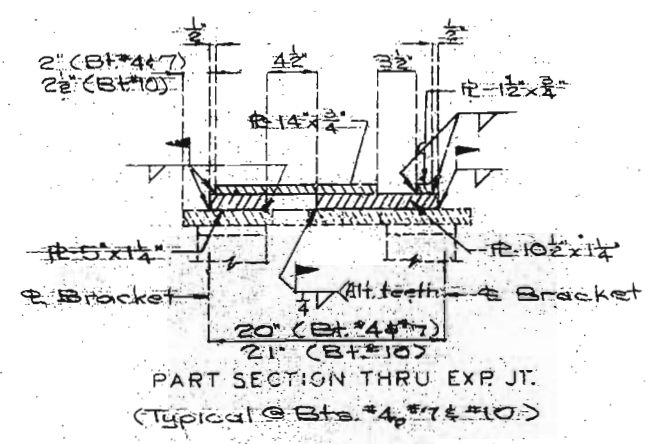
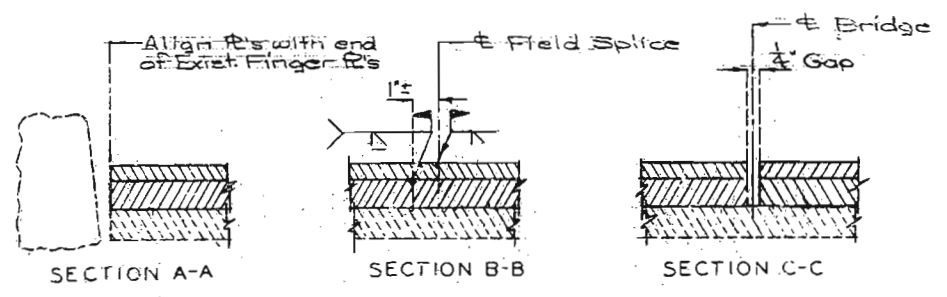
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 2

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	DC.		70		



PART PLAN OF EXP. DEVICE
Typical @ Bts. *4, *7 & *10 & Pier *13 & *15



BOONE - COOPER COUNTIES
L-962R

Project 5-I-70-114A
Route I-70

2 of 2

DETAILED 10
CHECKED 10

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

Sheet No. 2 of 2

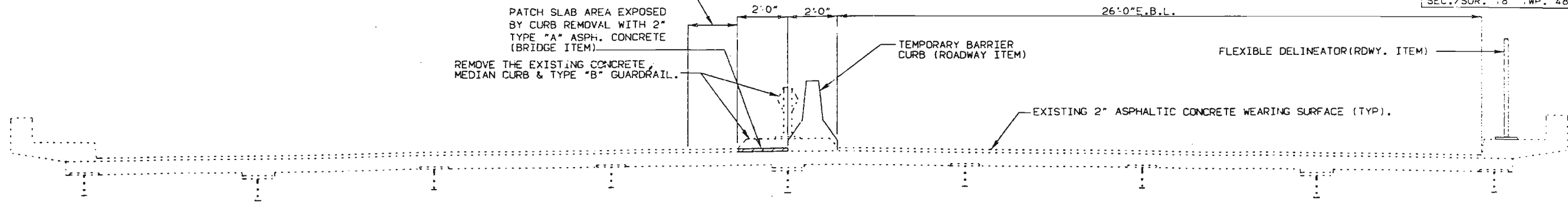
BOONE - COOPER COUNTIES

L-962R

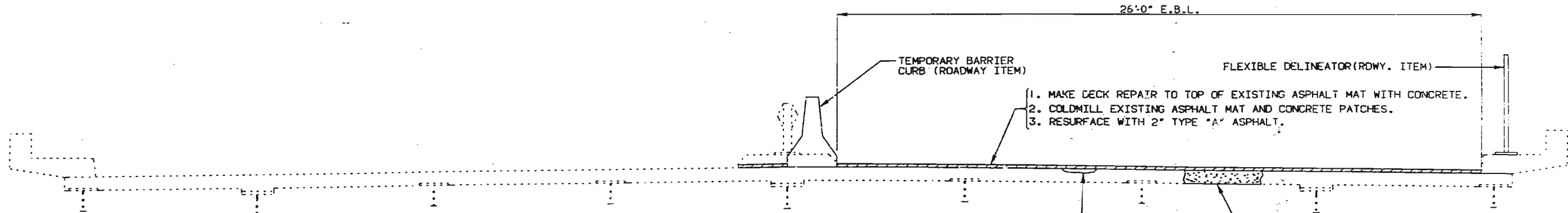
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

SEE ROADWAY PLANS FOR TRAFFIC CONTROL DEVICE

STATE	PROJ. NO.	SHEET NO.
MO.	F.A.I.-70-3(161)	5
SEC./SUR.	8 TWP. 48N RGE. 14W	



STAGE ONE CONSTRUCTION



STAGE TWO CONSTRUCTION

GENERAL NOTES:

OUTLINE OF OLD WORK IS INDICATED BY LIGHT DASHED LINES.
HEAVY LINES INDICATES NEW WORK.
MAINTAIN TRAFFIC ON STRUCTURE DURING CONSTRUCTION.
(SEE ROADWAY PLANS.)

ESTIMATED QUANTITIES

ITEM		TOTAL
MEDIAN CURB REMOVAL (BRIDGES)	LIN. FT.	3018
REMOVAL OF EXISTING BITUMINOUS PAVEMENT (COLD MILLING)	SQ. YD.	8720
ASPH. CEMENT (ASPH. CONC.) 60-70 OR AC-20 (TYPE A MIX)	TON	60.4
MINERAL AGGREGATE (ASPH. CONC.) (TYPE A MIX)	TON	1123.0
FULL DEPTH REPAIR	SQ. FT.	1281.0
MODIFIED DECK REPAIR	SQ. FT.	2556.0
TACK COAT	GAL.	630.0

NOTE: THE COST OF REMOVING TYPE "B" GUARDRAIL AND GUARDRAIL POSTS IS INCLUDED IN THE COST FOR MEDIAN CURB REMOVAL (BRIDGES).

THE TACK COAT SHALL BE EMULSIFIED ASPHALT APPLIED @ A RATE OF 0.05 GAL PER SQ. YD.

REPAIRS TO E.B.L. OVER MISSOURI RIVER

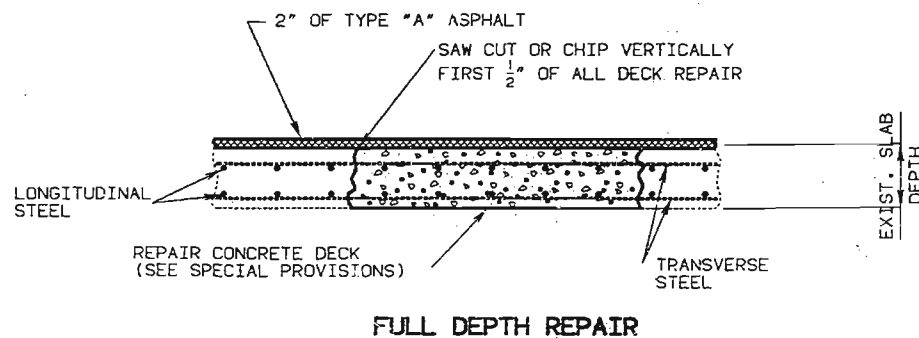
STATE ROAD ROUTE I-70 NEAR ROCHEPORT

PROJECT NO. F.A.I.-70-3(161) STA. 1474+38.05±

JOB NO. J510313D RTE. I-70

BOONE-COOPER COUNTY

STD.
STD.
L096222



DESIGNED MAR. 1993
DETAILED MAR. 1993
CHECKED MAR. 1993

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

SHEET NO. 1A OF 1.

DATE 4/9/93

360 448

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	FAI-70-3(165)	17
SEC. 18	TWP. 48 N RGE. 14 W	

1	GENERAL NOTES & QUANTITIES
2	STAGED CONSTRUCTION DETAILS
3	ABUTMENT NO. 1 MODIFICATION DETAILS
4	ABUTMENT NO. 18 MODIFICATION DETAILS
5	ABUTMENT END POST DETAILS
6	LIMITS OF PROTECTIVE COATING
7	BENT NO. 10 DIAPHRAGM REPAIR DETAILS
8	ROADWAY INLET AND EXPANSION ASSEMBLY REMOVAL DETAILS
9-10	SLAB SECTIONS
11-17	SLAB PLAN
18	SLAB POURING SEQUENCE
19-29	HAUNCH WORKSHEET - STAGE I CONSTRUCTION
30-40	HAUNCH WORKSHEET - STAGE II CONSTRUCTION
41	SLAB DRAIN DETAILS
42	COMPRESSION SEAL DETAILS ABUTMENT NO. 1 & 18
43	MISCELLANEOUS COMPRESSION SEAL DETAILS
44	STRINGER EXPANSION JOINT DETAILS
45	MISCELLANEOUS STRINGER EXPANSION JOINT DETAILS
46	EXPANSION DEVICE DETAILS BENTS NO. 4 & 7
47	EXPANSION DEVICE DETAILS BENT NO. 10
48	EXPANSION DEVICE DETAILS PIER NO. 13
49	EXPANSION DEVICE DETAILS PIER NO. 15
50	MISCELLANEOUS EXPANSION DEVICE DETAILS
51	FINGER PLATE DETAILS BENTS NO. 4, 7 & 10
52	FINGER PLATE DETAILS PIERS NO. 13 & 15
53	DETAILS OF FINGER PLATE SUPPORT ASSEMBLY
54	SAFETY BARRIER CURB CLOSURE DETAILS
55	MEDIAN BARRIER CURB CLOSURE DETAILS
56	EXPANSION JOINT TROUGH DETAILS
57	MISCELLANEOUS TROUGH DETAILS
58	DRAINAGE SYSTEM ASSEMBLY
59	COLLECTION BASIN & SPOUTING DETAILS
60-62	SAFETY BARRIER CURB DETAILS
63	MISCELLANEOUS SAFETY BARRIER CURB DETAILS
64-66	MEDIAN BARRIER CURB DETAILS
67	MISCELLANEOUS MEDIAN BARRIER CURB DETAILS
68-70	CONDUIT SYSTEM DETAILS
71	DETAILS OF BRIDGE APPROACH SLAB
72-73	REINFORCEMENT SCHEDULE

ESTIMATED QUANTITIES			
ITEM		SUPERSTR.	TOTAL
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM		1
REMOVAL OF EXISTING BRIDGE DECK	SQ. FT.	189,970	189,970
BRIDGE APPROACH SLAB (BRIDGE)	SQ. YD.		345
PROTECTIVE COATING-CONCRETE BENTS (DELETERIOUS AGENTS)	LUMP SUM		1
SLAB ON STEEL	SQ. YD.	21,129	21,129
* SAFETY BARRIER CURB	LIN. FT.	6046	6046
* MEDIAN BARRIER CURB	LIN. FT.	3068	3068
PREFORMED COMPRESSION EXPANSION JOINT SEAL (3.0 IN.)	LIN. FT.	61	61
PREFORMED COMPRESSION EXPANSION JOINT SEAL (4.0 IN.)	LIN. FT.	61	61
CONDUIT SYSTEM ON STRUCTURE	LUMP SUM	1	1
EXPANSION DEVICE (FINGER PLATE) (BENTS NO. 4, 7 & 10)	LIN. FT.	182	182
EXPANSION DEVICE (FINGER PLATE) (PIERS NO. 13 & 15)	LIN. FT.	121	121
SLAB DRAINS	EACH	600	600
DRAINAGE SYSTEM (ON STRUCTURE)	LUMP SUM	1	1
REPAINTING (SYSTEM C) ALUMINUM	LUMP SUM	1	1
STRINGER EXPANSION JOINT	LIN. FT.	630	630
STRINGER TO DIAPHRAGM CONNECTION REPLACEMENT	EACH	8	8
** SPECIAL WORK (BRIDGE)	EACH	100	100
TRANSPORTING SANDBLAST RESIDUE	LUMP SUM	1	1

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989 AND INTERIM 1990 LOAD FACTOR DESIGN

DESIGN LOADING:
HS20-44 MODIFIED 24,000# TANDEM AXLE
NO FUTURE WEARING SURFACE

DESIGN UNIT STRESSES:
CLASS B1 CONCRETE (SAFETY BARRIER AND MEDIAN BARRIER CURB) $f_c = 4,000$ PSI
CLASS B2 CONCRETE (SUPERSTRUCTURE, EXCEPT SAFETY BARRIER AND MEDIAN BARRIER CURB) $f_c = 4,000$ PSI
REINFORCING STEEL (GRADE 60) $f_y = 60,000$ PSI
STRUCTURAL CARBON STEEL $f_y = 36,000$ PSI
STRUCTURAL STEEL (A.S.T.M. A572) GRADE 50 $f_y = 50,000$ PSI

FABRICATED STEEL CONNECTIONS:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS EXCEPT AS NOTED.

HIGH STRENGTH BOLTS, NUTS AND WASHERS WILL BE SAMPLED FOR QUALITY ASSURANCE AS SPECIFIED IN STD. SPEC. 106.

NOTE: OUTLINE OF OLD WORK IS INDICATED BY LIGHT DASHED LINES. HEAVY LINES INDICATE NEW WORK.

TRAFFIC: TRAFFIC TO BE MAINTAINED DURING CONSTRUCTION. SEE SHEET NO. 2 AND SPECIAL PROVISIONS.

CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS IN FIELD BEFORE ORDERING MATERIALS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE $1\frac{1}{2}$ ", UNLESS OTHERWISE NOTED.

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

PAINT:
SYSTEM C BY THE CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 712 AND SPECIAL PROVISIONS. (COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.)

CONTRACTOR SHALL PROVIDE OVERHEAD PROTECTION FOR USERS OF THE MKT TRAIL LOCATED UNDER SPAN (17-18) OF THE BRIDGE. SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL PROVIDE UNINTERRUPTED POWER TO THE NAVIGATIONAL LIGHTS. SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DEBRIS AND OTHER MATERIAL FROM DROPPING INTO THE RIVER. SEE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES FOR SLAB ON STEEL				
ITEM		STAGE I	STAGE II	TOTAL
REINFORCING STEEL (EPOXY COATED)	LB.	427,250	507,900	935,150
CLASS B2 CONCRETE	CJ. YDS.	2283.7	2886.0	5169.7

1,054,600 Δ

THE TABLE OF ESTIMATED QUANTITIES FOR SLAB ON STEEL REPRESENTS THE QUANTITIES USED BY THE STATE IN PREPARING THE COST ESTIMATE FOR CONCRETE SLABS. VARIATIONS MAY BE ENCOUNTERED IN THESE ESTIMATED QUANTITIES BUT THESE VARIATIONS CANNOT BE USED FOR AN ADJUSTMENT IN THE CONTRACT UNIT PRICE PER SQUARE YARD OF SLAB ON STEEL.

CONCRETE AND REINFORCING STEEL ABOVE EXISTING UPPER CONSTRUCTION JOINT IN BACKWALL AND IN WINGS AT ABUTMENTS NO. 1 AND 18 IS INCLUDED WITH THE SLAB ON STEEL QUANTITIES.

* SAFETY BARRIER CURB AND MEDIAN BARRIER CURB SHALL BE CAST-IN-PLACE OPTION OR SLIP-FORM OPTION.

** CONTRACTOR SHALL REPLACE ALL LOOSE AND MISSING BOLTS AND RIVETS WITH NEW HIGH STRENGTH BOLTS OF EQUIVALENT DIAMETERS. THE COST FOR FURNISHING AND INSTALLING NEW HIGH STRENGTH BOLTS, COMPLETE-IN-PLACE, SHALL BE INCLUDED IN THE PRICE BID FOR SPECIAL WORK (BRIDGE), PER EACH. SEE SPECIAL PROVISIONS.



REPAIRS TO: BRIDGE OVER MISSOURI RIVER

STATE ROAD I-70 FROM BOONVILLE TO COLUMBIA
AT ROCHEPORT
PROJECT NO. FAI-70-3(165) STA. 1474+38.05
JOB NO. J510313B RTE. I-70

STD.	706.35
STD.	504.00
STD.	605.10
STD.	809.00

BOONE-COOPER COUNTIES

DATE 8/16/93 SEE FINAL PLANS SHEET NO. 1 OF 73

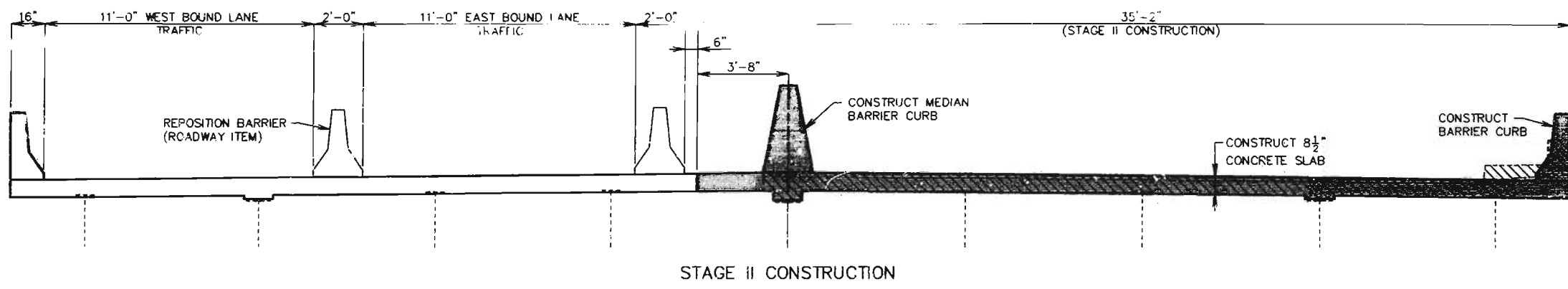
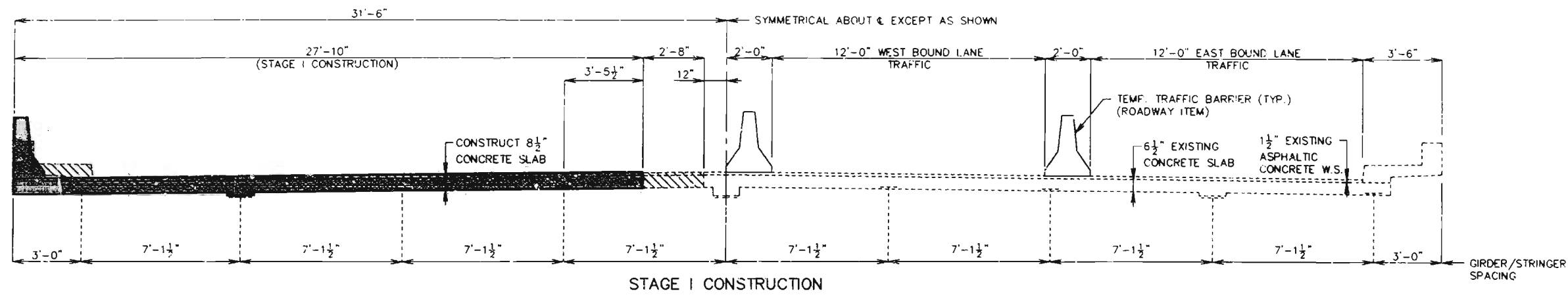
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Δ Revised February 4, 1994

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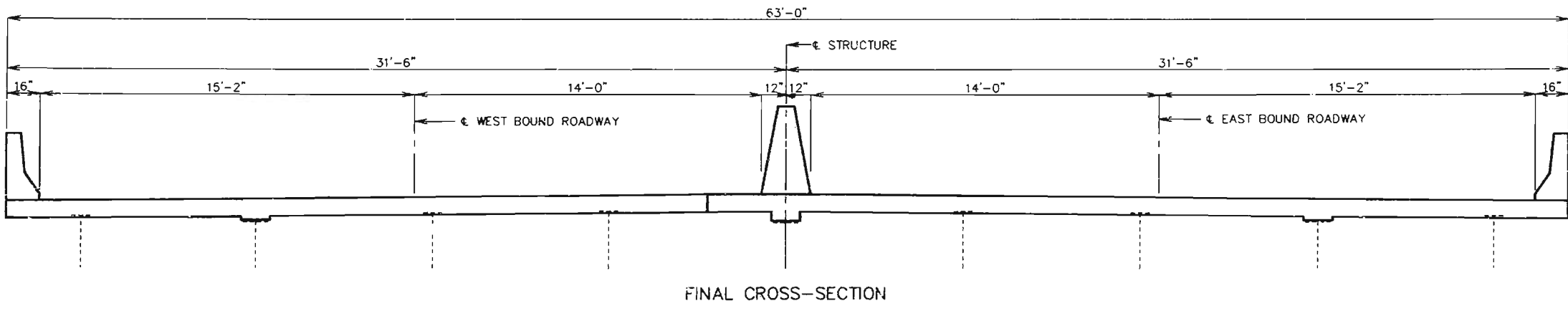
DUCHER, WILLS & RATUFF ENGINEERS & PLANNERS & ARCHITECTS	
DRAWN BY: DJC	7/93
TRACED BY: THM	7/93
CHECKED BY: DMA	7/93



LEGEND

STAGED REMOVAL LIMITS

STAGED CONSTRUCTION LIMITS



480 83

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	DNA	6/93
TRACED BY:	TMM	6/93
CHECKED BY:	SAC	7/93

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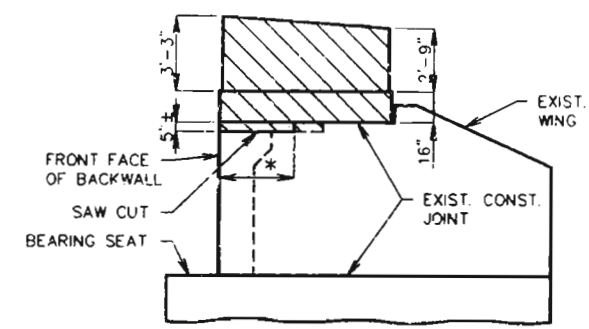
BOONE-COOPER COUNTIES

STAGED CONSTRUCTION SEQUENCE

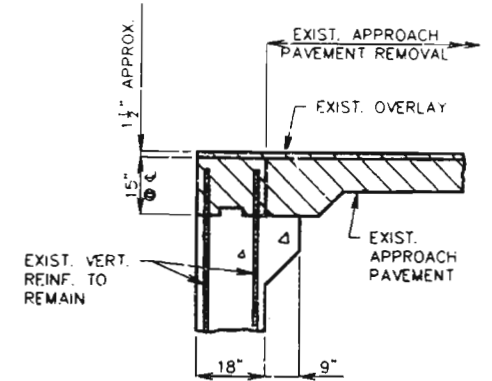
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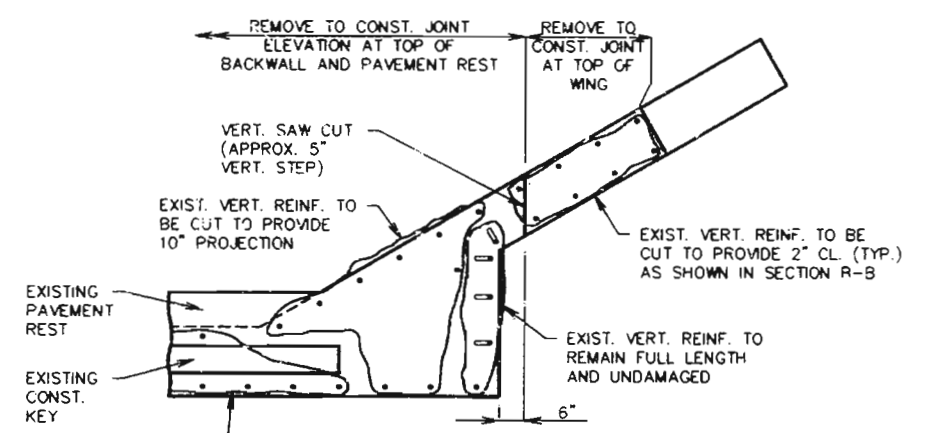
• SAW CUT FRONT FACE OF BACKWALL AND ENDS OF BACKWALL TO FACILITATE REMOVAL OF WINGS TO THE ELEVATION OF THE EXISTING CONST. JOINT AND PAVEMENT REST.



REMOVAL LIMITS ON DEVELOPED FRONT ELEVATION OF WING



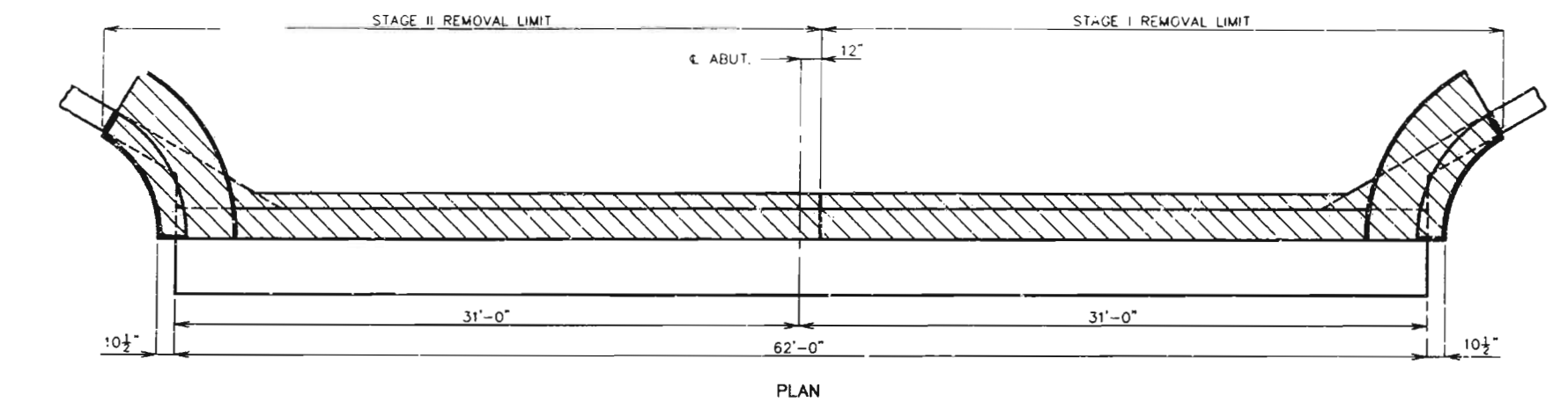
PARTIAL SECTION AT ROADWAY (SHOWING REMOVAL LIMITS)



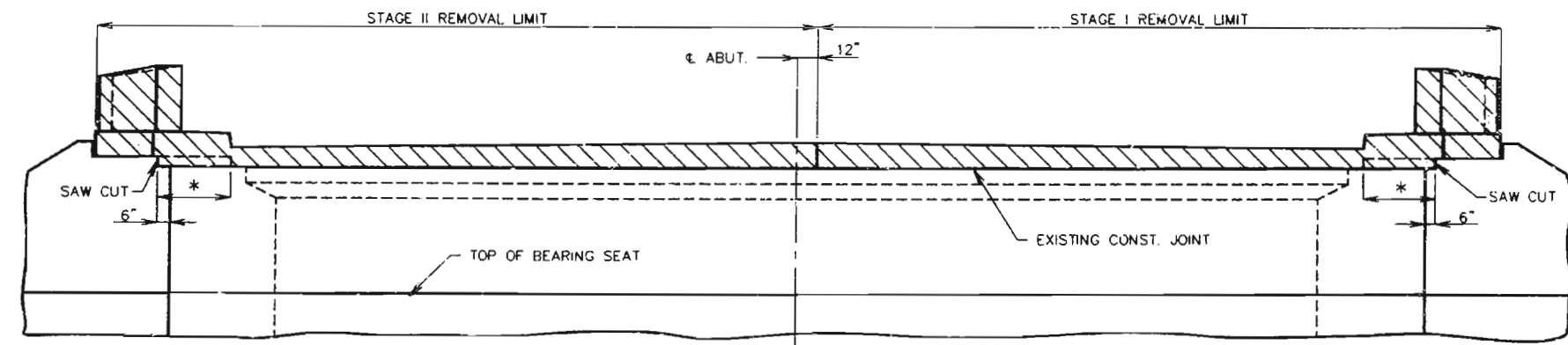
PARTIAL PLAN OF WING (SHOWING EXISTING VERTICAL REINFORCING TO REMAIN)

NOTES:

- FOR PARTIAL SECTION A-A AND SECTION B-B, SEE SHEET NO. 4.
- EXISTING BARS BONDED IN OLD CONCRETE NOT REMOVED SHALL BE CLEANLY STRIPPED AND EPOXY COATED PRIOR TO EMBEDDING INTO THE NEW CONCRETE. SEE SPECIAL PROVISIONS.
- THE COST FOR PARTIAL REMOVAL OF EXISTING CONCRETE BACKWALL, REMOVAL OF EXISTING ABUTMENT SAFETY BARRIER CURB AND CLEANING AND EPOXY COATING OF EXISTING REINFORCING STEEL SHALL BE INCLUDED WITH THE PRICE BID FOR PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE, LUMP SUM. SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL USE ONE OF THE RESIN ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS FOR EPOXY GROUTING THE BARS IN THE BACKWALL.
- THESE ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS.
- THE COST OF FURNISHING AND INSTALLING THE ANCHOR SYSTEM, COMPLETE-IN-PLACE, SHALL BE INCLUDED IN THE PRICE BID FOR SUPERSTRUCTURE QUANTITIES.
- TOP OF BACKWALL AND EXPANSION DEVICE FOR ABUTMENTS SHALL CONFORM TO THE CROWN OF ROADWAY SLAB. BACKWALL ABOVE UPPER EXISTING CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL THE SUPERSTRUCTURE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.
- SAFETY BARRIER CURB END POST SHALL NOT BE POURED UNTIL THE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.
- THE COST OF FURNISHING AND INSTALLING CONCRETE AND EPOXY COATED REINFORCING STEEL FOR THE ABUTMENT BACKWALL AND WINGS, COMPLETE-IN-PLACE, SHALL BE INCLUDED IN THE PRICE BID FOR SUPERSTRUCTURE QUANTITIES.

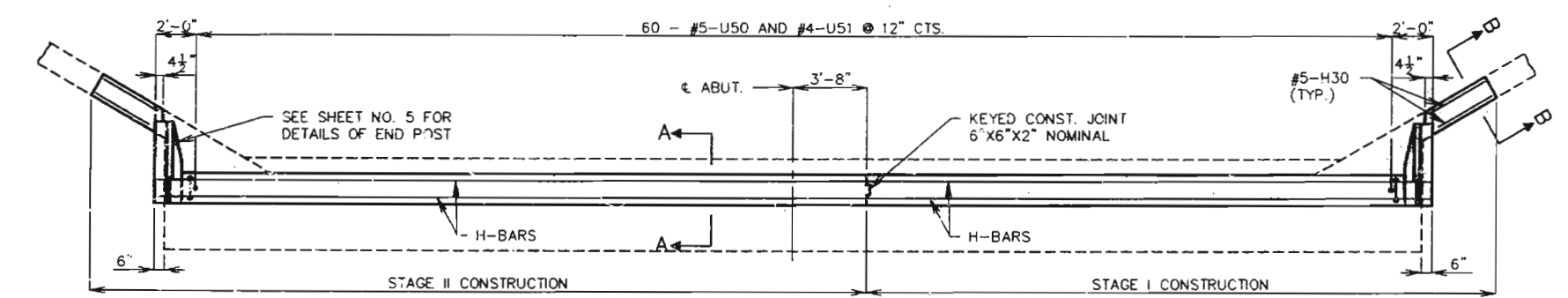


PLAN

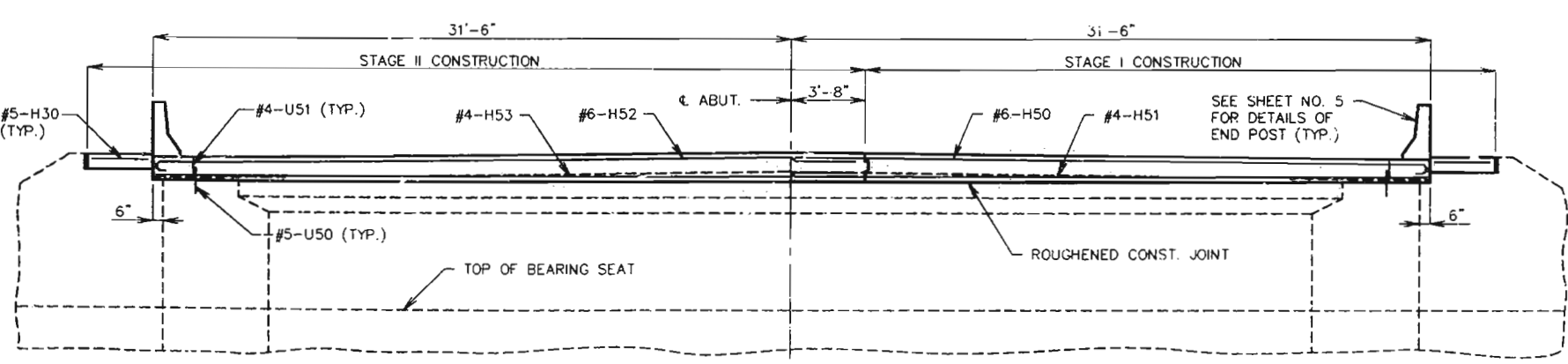


ELEVATION REMOVAL LIMITS

STAGED REMOVAL LIMITS



PLAN



ELEVATION CONSTRUCTION LIMITS

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

BUCHER, WILLS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	SAC	6/93
TRACED BY:	TMM	6/93
CHECKED BY:	DMA	6/93

BOONE-COOPER COUNTIES

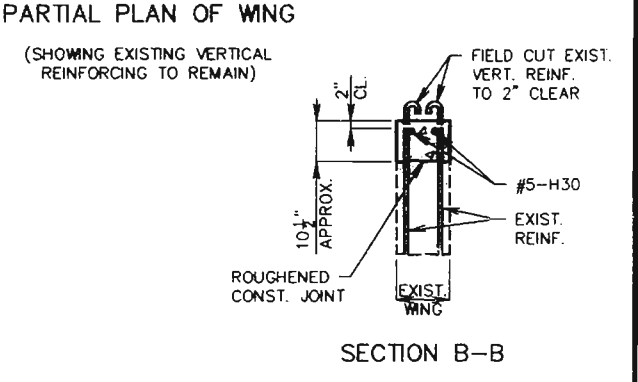
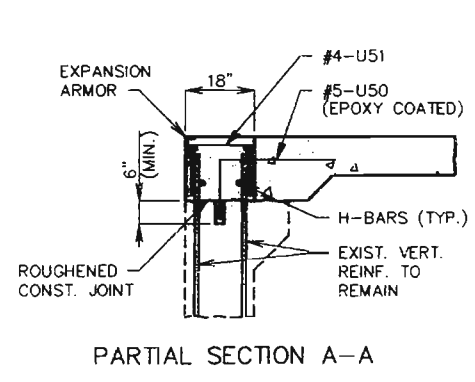
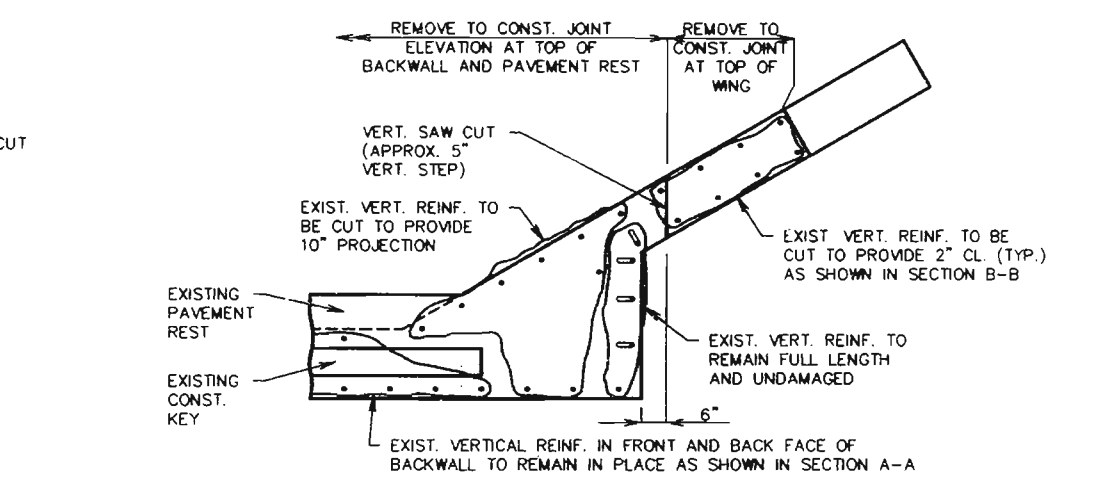
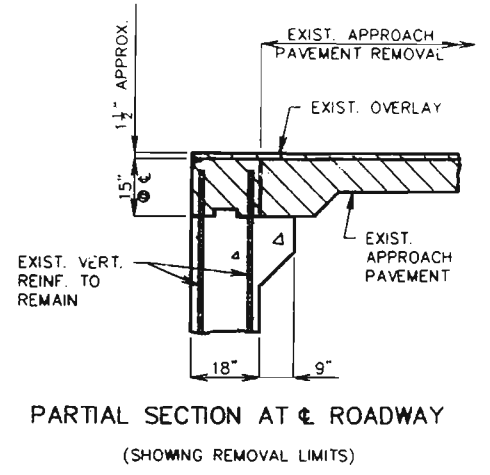
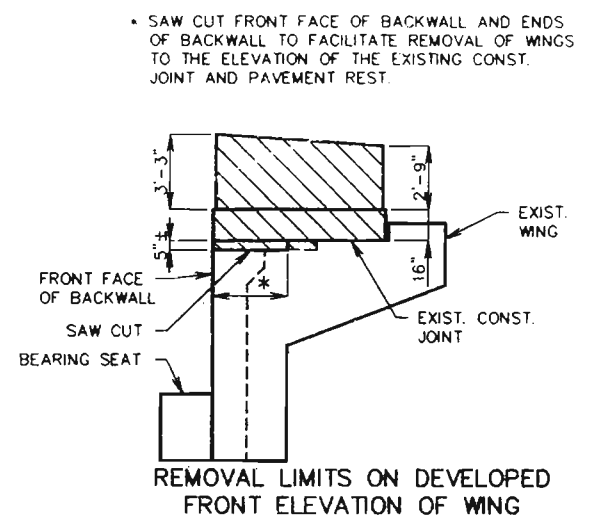
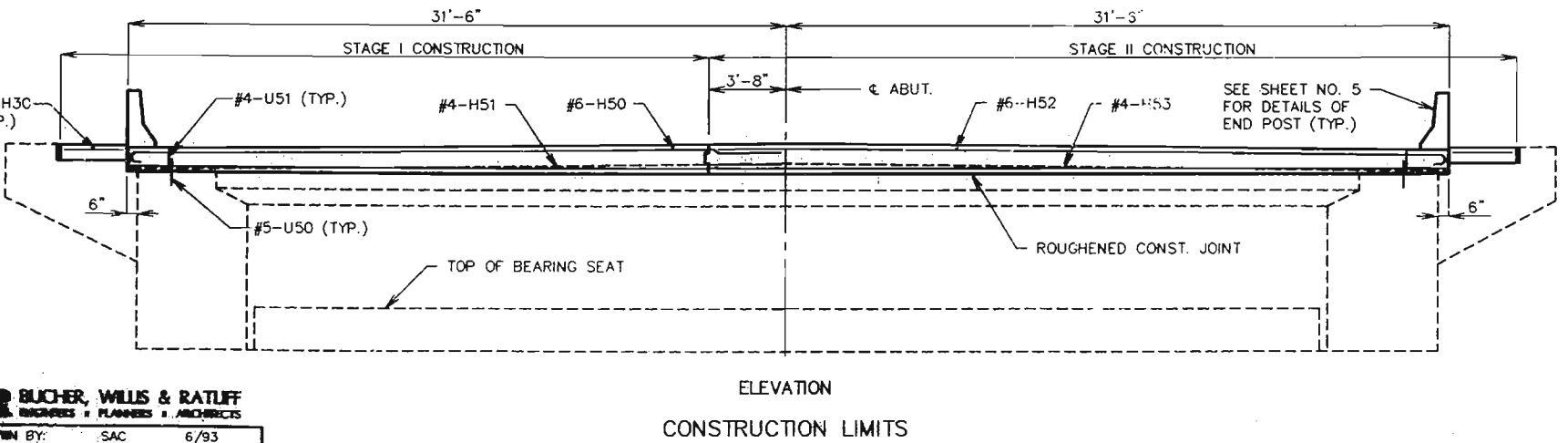
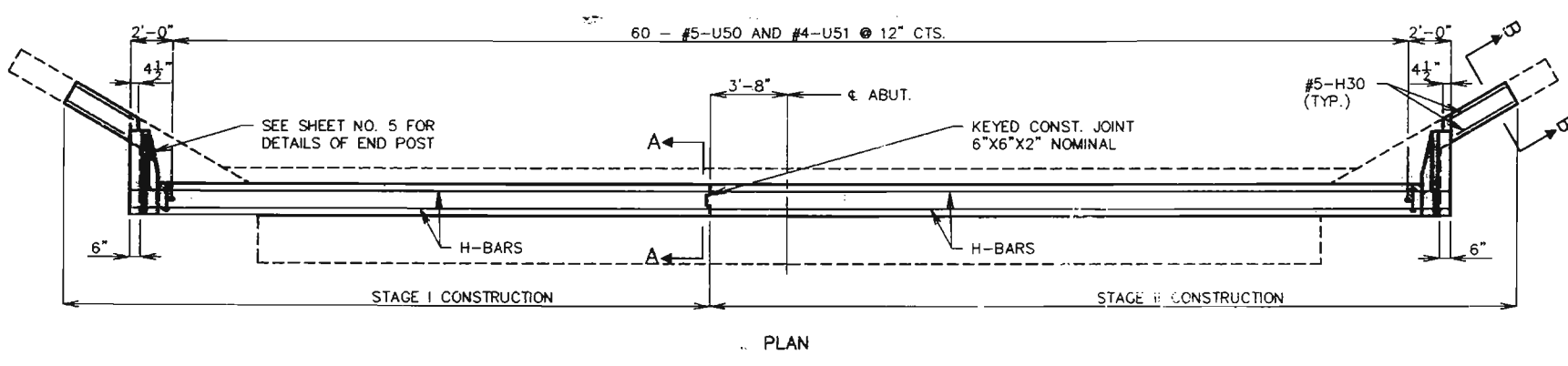
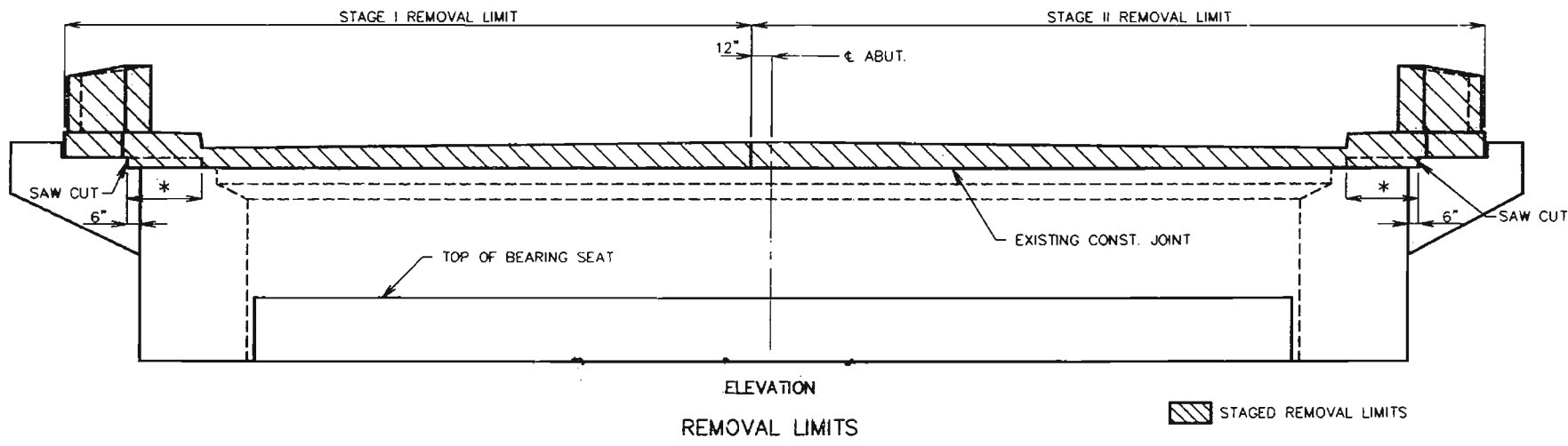
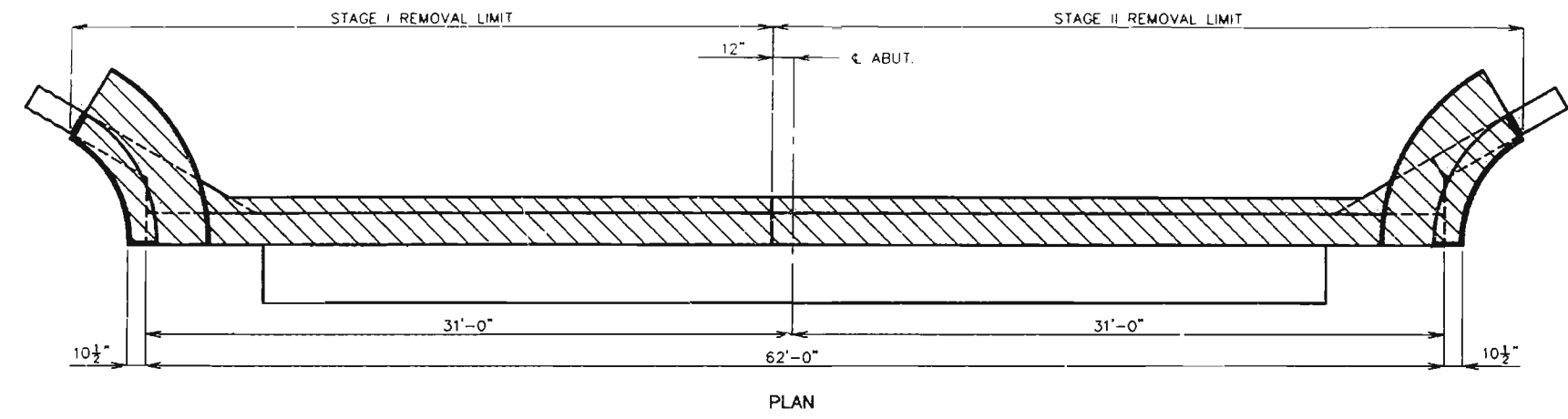
ABUTMENT NO. 1
MODIFICATION DETAILS

SHEET NO. 3 OF 73



L096223

487 24



NOTE:
FOR NOTES PERTAINING TO ABUTMENT MODIFICATIONS, SEE SHEET NO. 3.

402 25
 PROJECT NO. 104741
 DRAWING DATE: 07/19/93 @ 10:20
 COUNTY: BOONE AND COOPER COUNTIES
 DRAWN BY: SAC 6/93
 TRACED BY: THM 6/93
 CHECKED BY: DMA 7/93

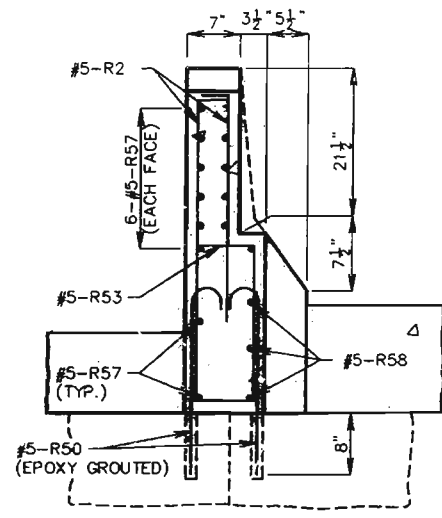
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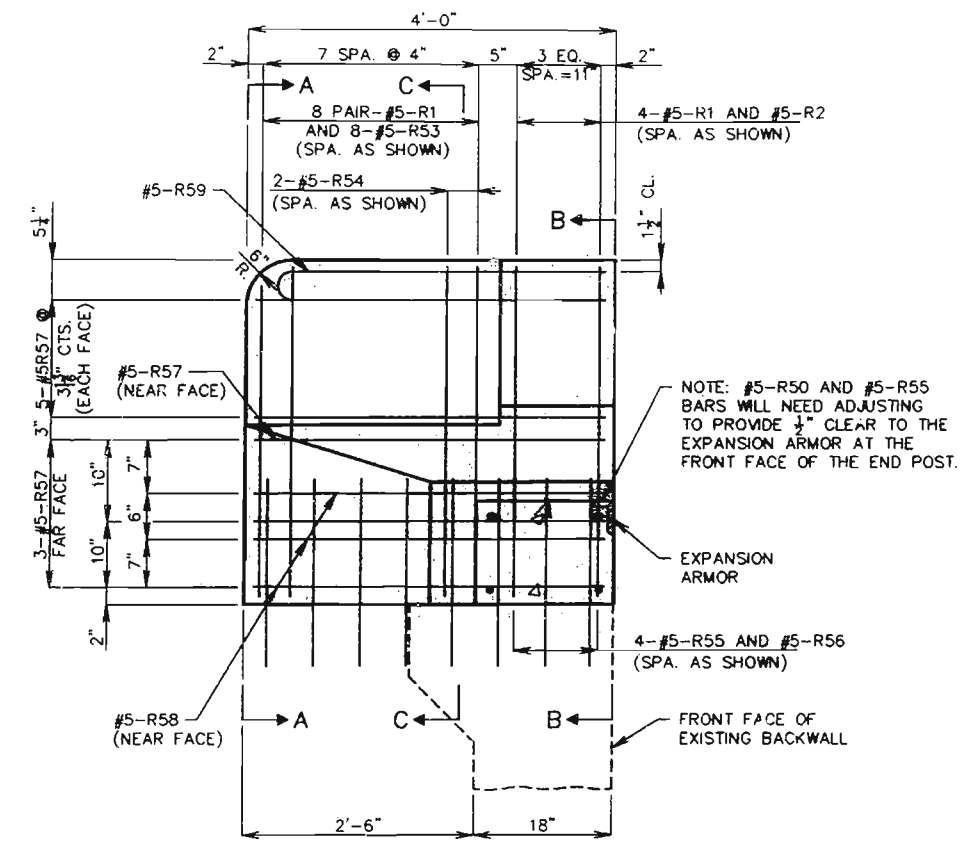
BOONE-COOPER COUNTIES
 ABUTMENT NO. 18
 MODIFICATION DETAILS



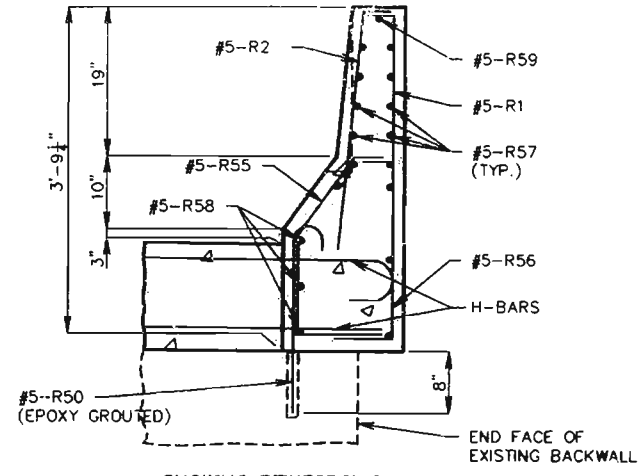
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MO.		27



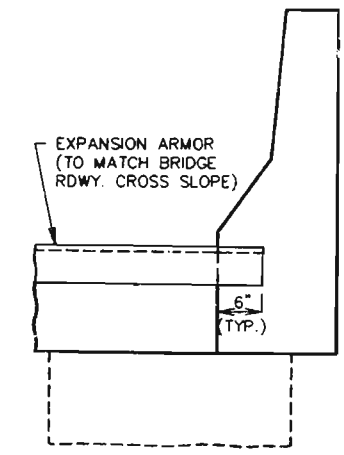
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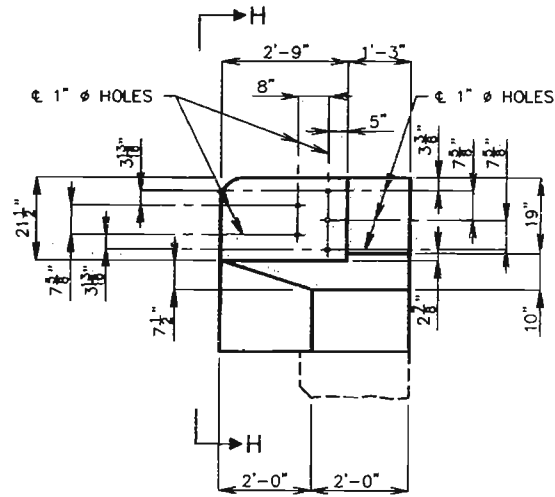
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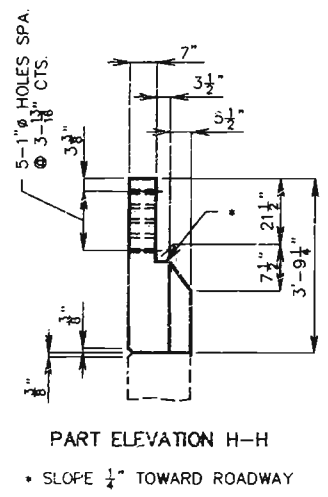
SECTION B-B



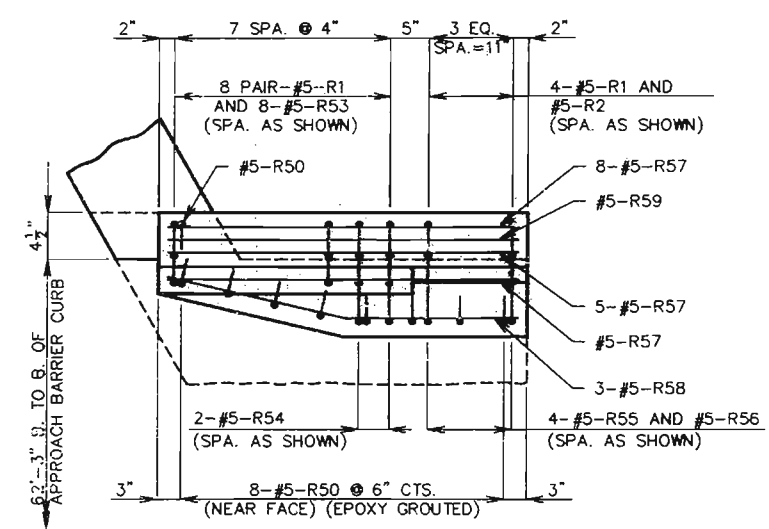
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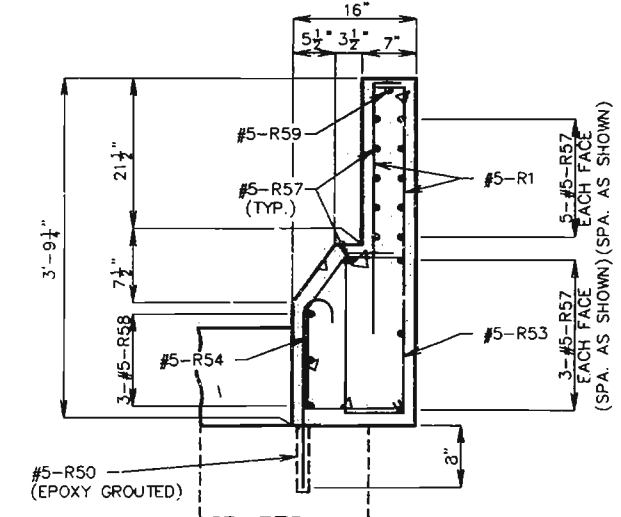
PART ELEVATION



PART ELEVATION H-H
• SLOPE 1/4\"/>



PLAN



PARTIAL SECTION C-C

NOTES:

THE CONTRACTOR SHALL USE ONE OF THE RESIN ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS FOR THE EPOXY GROUTED BARS IN THE WING.

THESE ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS MODIFIED BY THE JOB SPECIAL PROVISIONS.

THE COST OF FURNISHING AND INSTALLING THE ANCHOR SYSTEM COMPLETE-IN-PLACE SHALL BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF SAFETY BARRIER CURB.

ALL EXPOSED EDGES OF SAFETY BARRIER CURB SHALL HAVE EITHER A 1/2\"/>

TOP OF SAFETY BARRIER CURB SHALL BE CONSTRUCTED PARALLEL TO GRADE.

CONCRETE FOR CAST-IN-PLACE SAFETY BARRIER CURB SHALL BE CLASS B1.

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

ABUTMENT END POSTS ARE MEASURED TO THE NEAREST LINEAR FOOT AND ARE INCLUDED IN THE PRICE BID FOR SAFETY BARRIER CURB.

405-26

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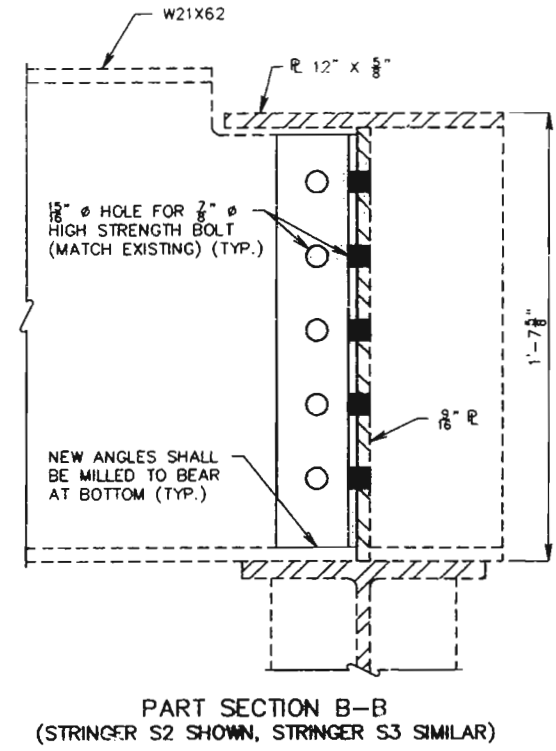
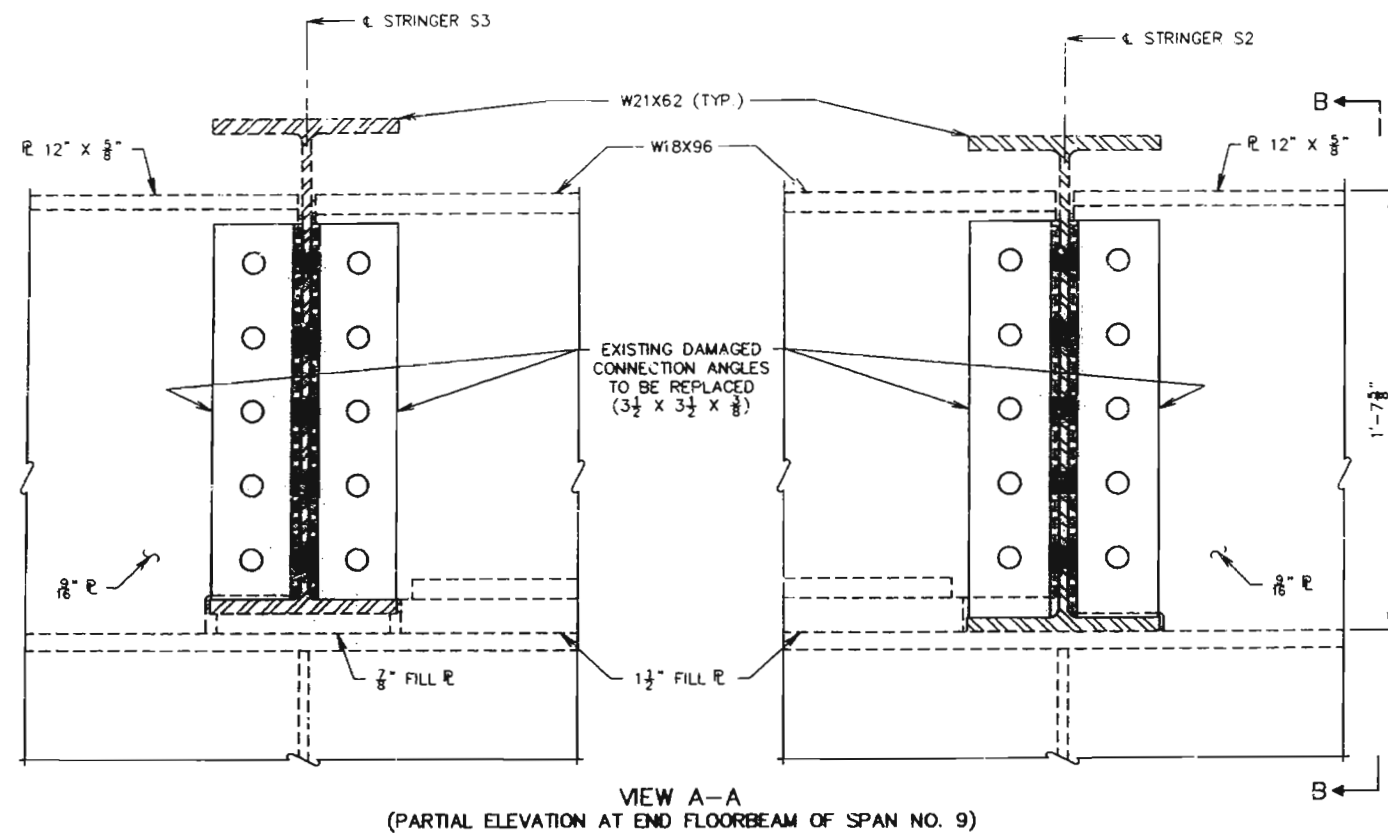
BOONE-COOPER COUNTIES

ABUTMENT END POST DETAILS



SHEET NO. 5 OF 73

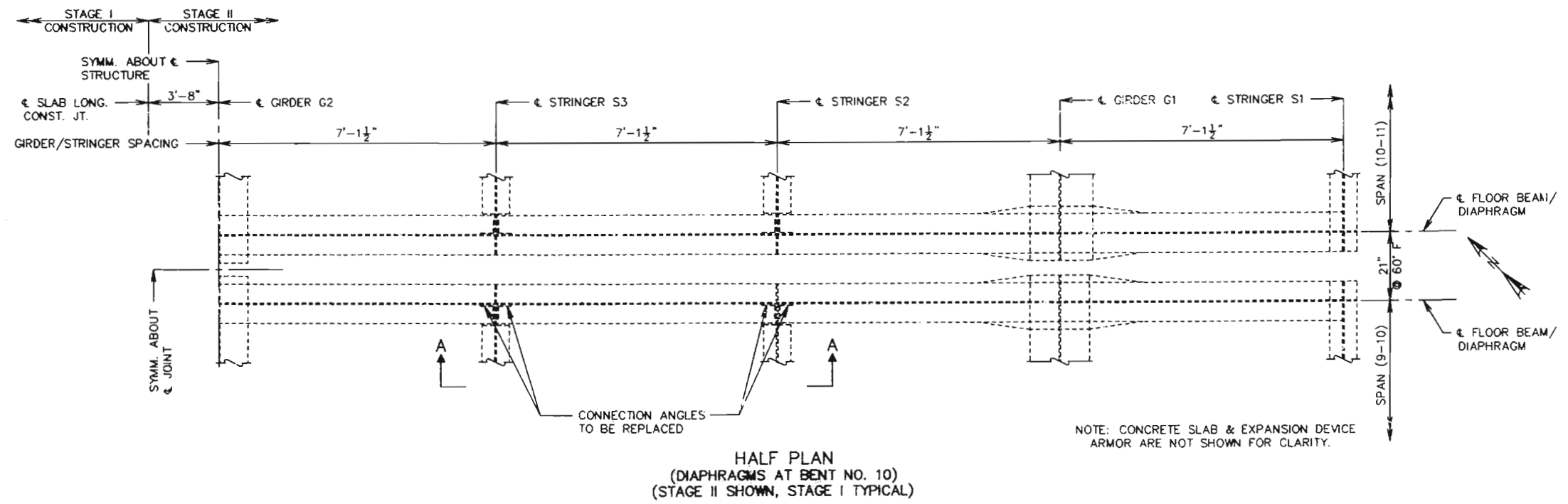
L096223



NOTES:

CONTRACTOR TO REPLACE ALL THE DIAPHRAGM CONNECTION ANGLES ON THE 4 INTERIOR STRINGERS FOR SPAN (9-10) AT BENT NO. 10. THE EXISTING ANGLES SHALL BE MATCH MARKED PRIOR TO REMOVAL AND NEW ANGLES FABRICATED AND INSTALLED.

THE COST FOR FURNISHING AND INSTALLING NEW DIAPHRAGM CONNECTION ANGLES, COMPLETE-IN-PLACE SHALL BE INCLUDED IN THE COST FOR STRINGER TO DIAPHRAGM CONNECTION REPLACEMENT, PER EACH. SEE SPECIAL PROVISIONS.



NOTE: CONCRETE SLAB & EXPANSION DEVICE ARMOR ARE NOT SHOWN FOR CLARITY.

485 20

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ENGINEERS & ARCHITECTS

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TRACED BY:	MLJ	7/93
CHECKED BY:	SAC	7/93

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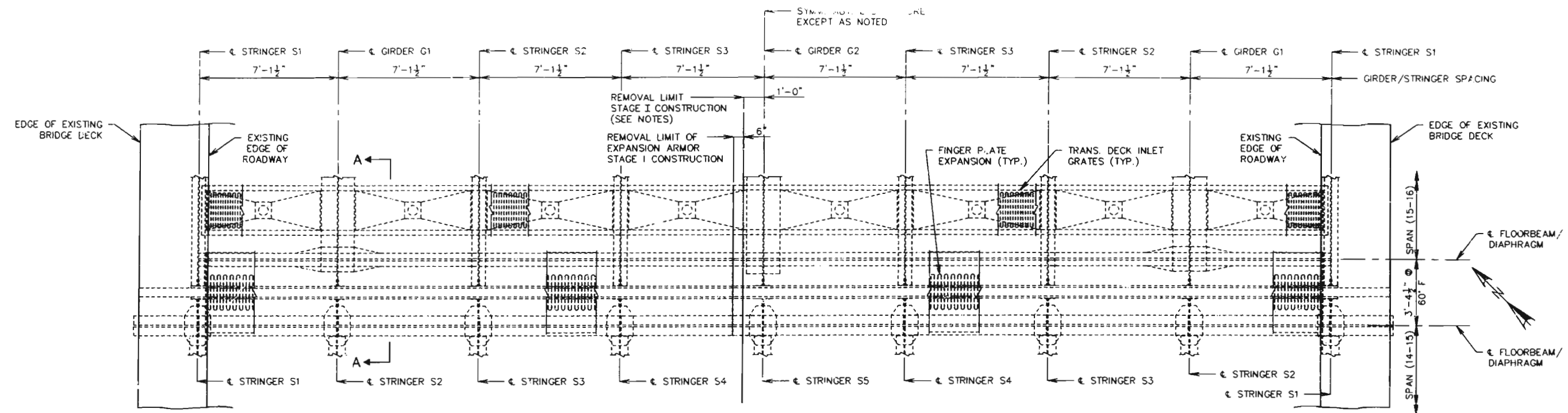
BOONE-COOPER COUNTIES

**BENT NO. 10
DIAPHRAGM REPAIR DETAILS**



SHEET NO. 7 OF 73

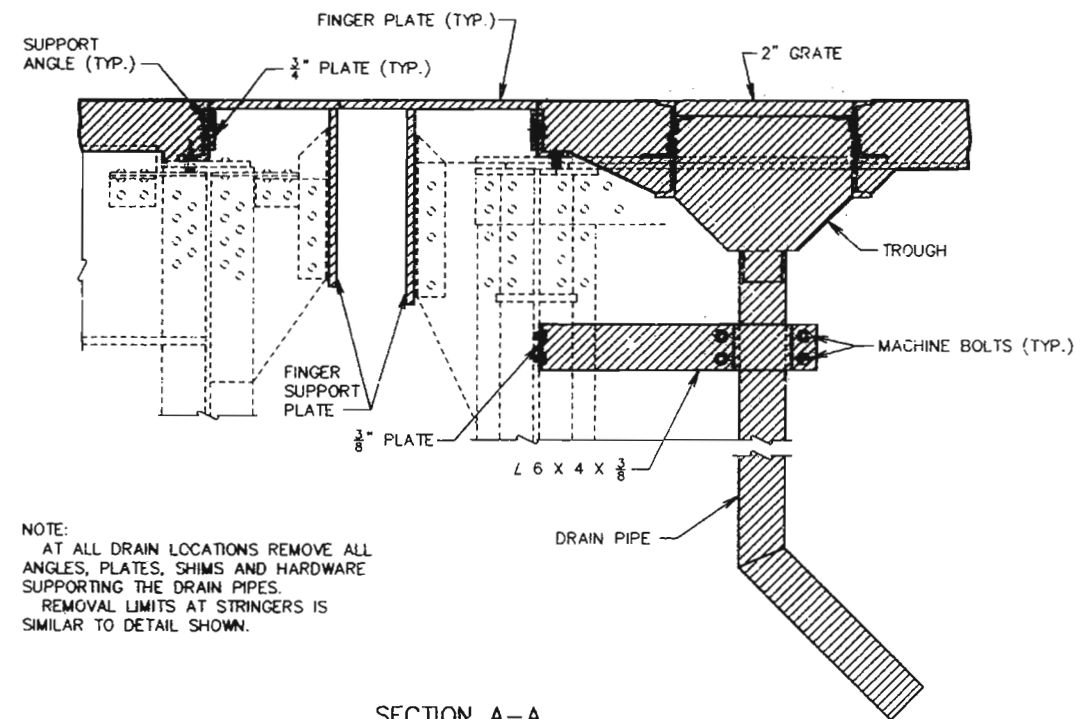
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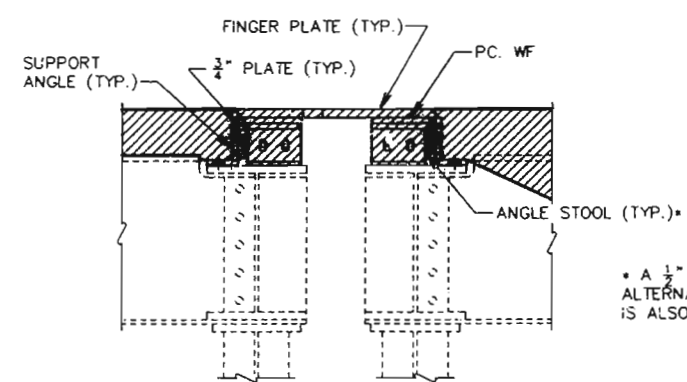
PARTIAL PLAN VIEW AT PIER NO. 15
(CONCRETE DECK NOT SHOWN FOR CLARITY)

NOTES:

FINGER PLATES, FINGER SUPPORT PLATES AND SUPPORT ANGLES SHALL BE FIELD CUT AND REMOVED TO THE LIMITS SHOWN.
COST FOR REMOVAL OF EXISTING EXPANSION DEVICES, TROUGH DRAINS, ROADWAY DRAINS AND ASSOCIATED SUPPORT ASSEMBLIES SHALL BE INCLUDED IN THE PRICE BID FOR REMOVAL OF EXISTING BRIDGE DECK, PER SQ. FT. SEE SPECIAL PROVISIONS.



SECTION A-A
(REMOVAL LIMITS AT GIRDERS AT PIER NO. 15)
(BENTS NO. 4, 7, 10 & PIER NO. 13 SIMILAR)



REMOVAL LIMITS
(AT STRINGERS AT BENTS NO. 4, 7 & 10)

NOTE: DRAIN DETAILS NOT SHOWN. SEE SECTION A-A FOR REMOVAL LIMITS OF DRAINS.

NOTE:
AT ALL DRAIN LOCATIONS REMOVE ALL ANGLES, PLATES, SHIMS AND HARDWARE SUPPORTING THE DRAIN PIPES. REMOVAL LIMITS AT STRINGERS IS SIMILAR TO DETAIL SHOWN.

* A 1/2\"/>

486 29

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS
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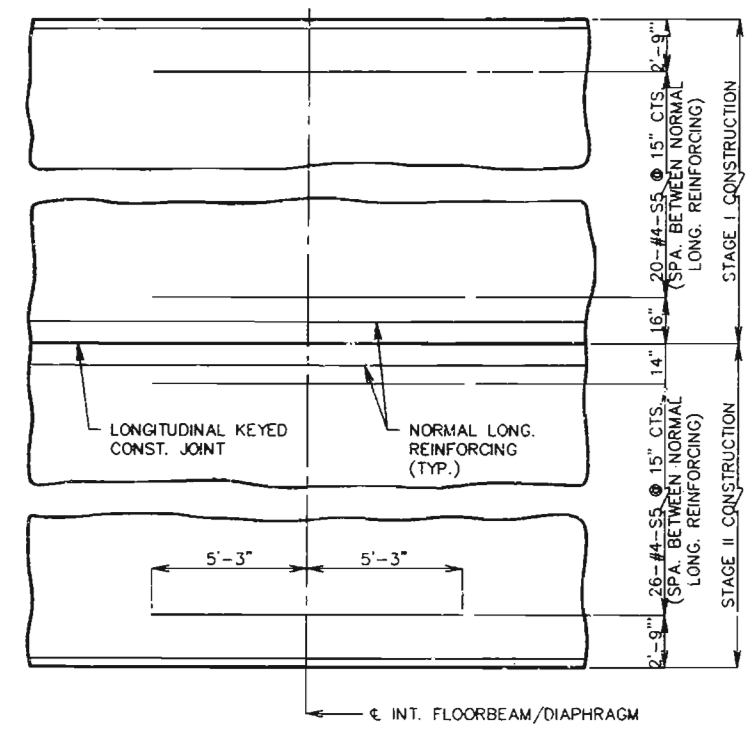
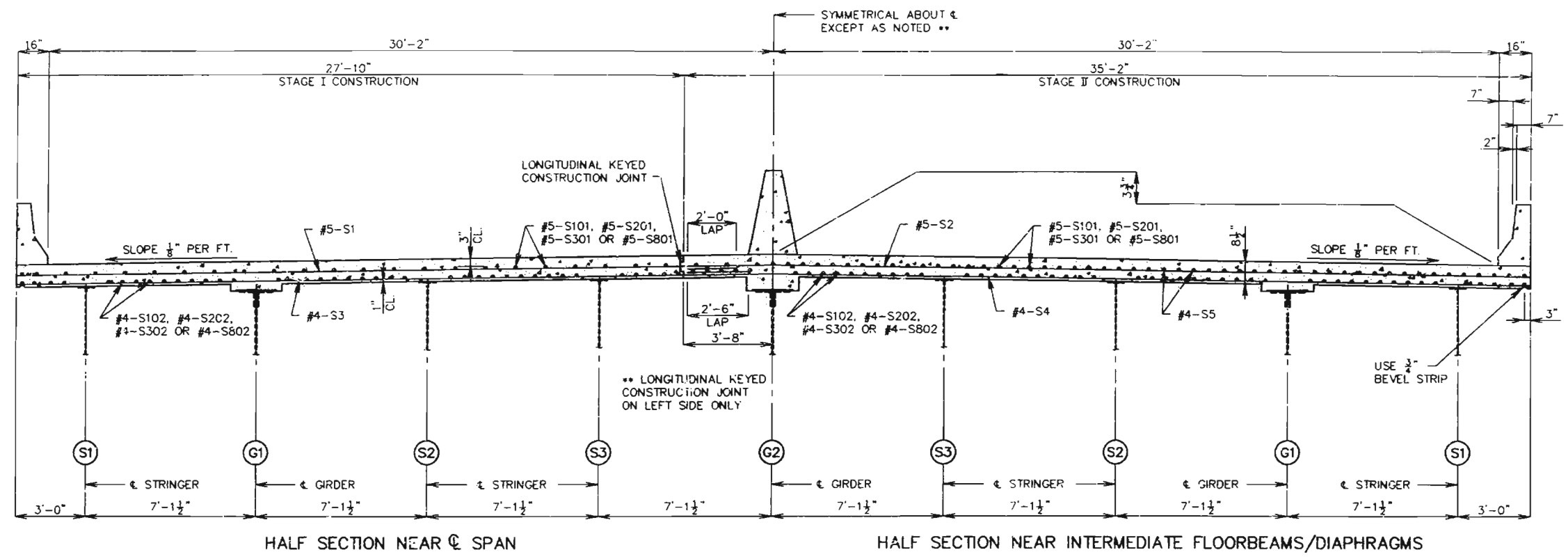
BOONE-COOPER COUNTIES

ROADWAY INLET AND EXPANSION
ASSEMBLY REMOVAL DETAILS

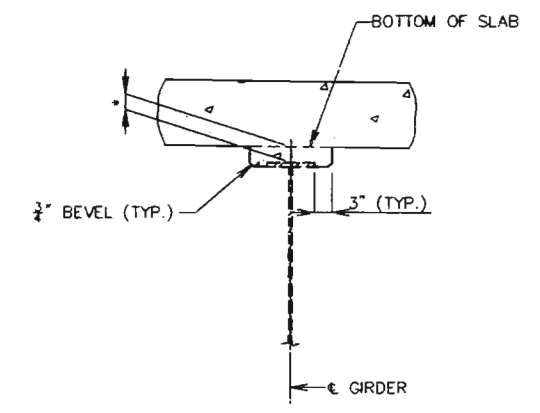
SHEET NO. 8 OF 73



L096223



UNIT	NO. OF INTERMEDIATE FLOORBEAMS/DIAPHRAGMS
1	12
2	12
3	27
8	15



TYPICAL SLAB HAUNCH

* CONTRACTOR SHALL VERIFY EXISTING HAUNCH AND REPLACE IN KIND. SEE HAUNCH WORKSHEETS ON SHEETS NO. 19 - 40.

PART PLAN OF TOP STEEL AT INTERMEDIATE FLOORBEAMS/DIAPHRAGMS

#4-S5 BARS ARE LOCATED IN THE TOP OF SLAB AND ARE CENTERED OVER ALL INTERMEDIATE FLOORBEAMS/DIAPHRAGMS WITHIN EACH UNIT.

7/27/93

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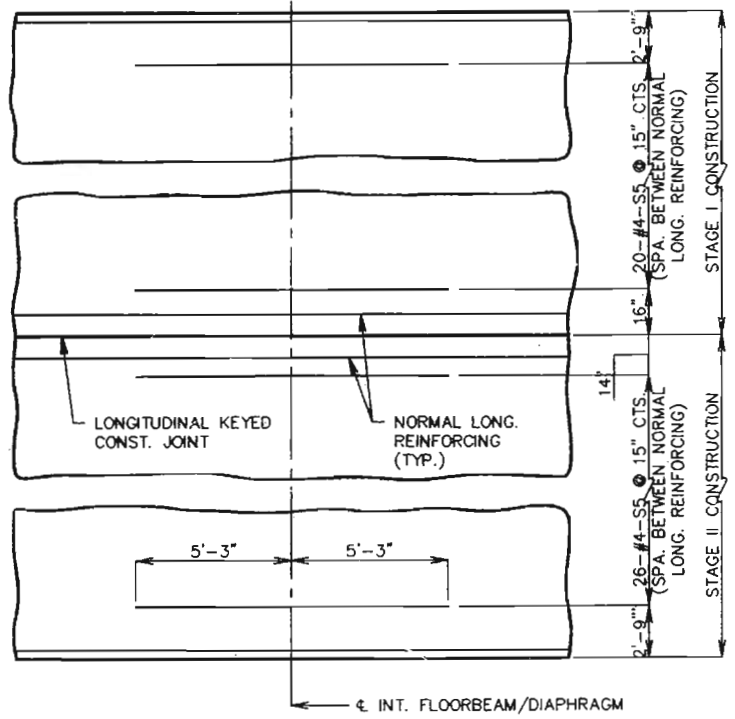
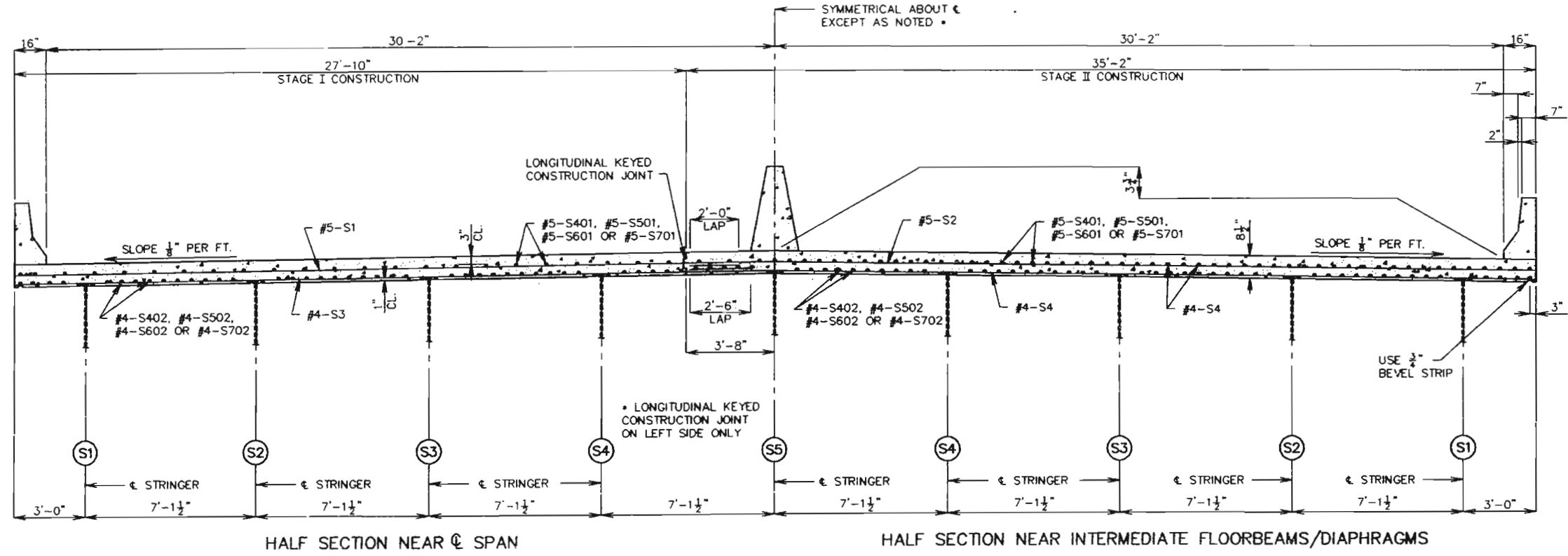
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TRACED BY:	TMM	6/93
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BOONE-COOPER COUNTIES

SLAB SECTION - UNITS 1,2,3&8





UNIT	NO. OF INTERMEDIATE FLOORBEAMS/DIAPHRAGMS
4	3
5	3
6	2
7	1

PART PLAN OF TOP STEEL AT INTERMEDIATE FLOORBEAMS/DIAPHRAGMS

#4-S5 BARS ARE LOCATED IN THE TOP OF SLAB AND ARE CENTERED OVER ALL INTERMEDIATE FLOORBEAMS/DIAPHRAGMS WITHIN EACH UNIT.

NOTE:
FOR TYPICAL SLAB HAUNCH
DETAILS SEE SHEET NO. 9.



BOONE-COOPER COUNTIES

SLAB SECTION
UNITS 4, 5, 6 & 7

L096223

SHEET NO. 10 OF 73

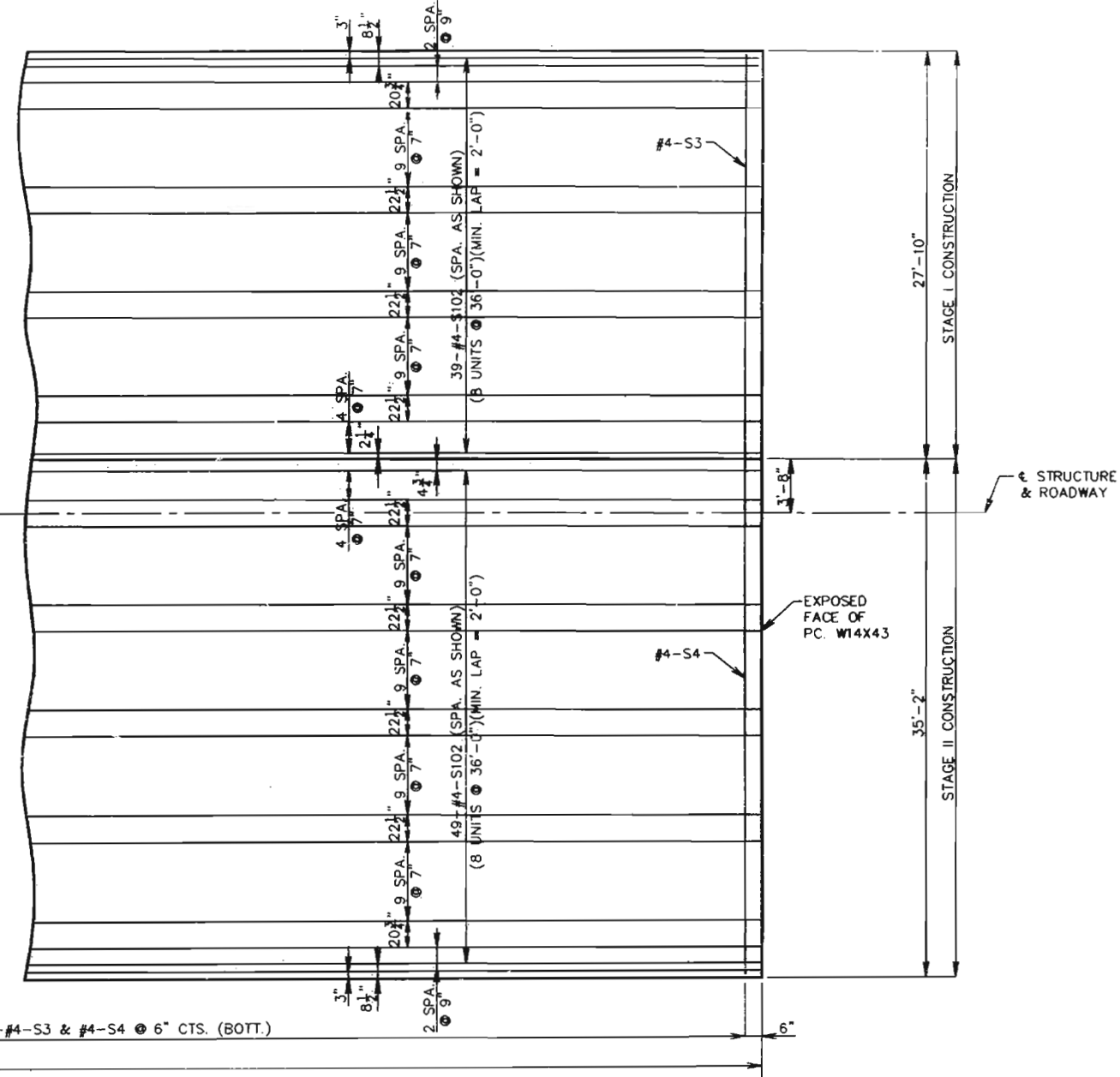
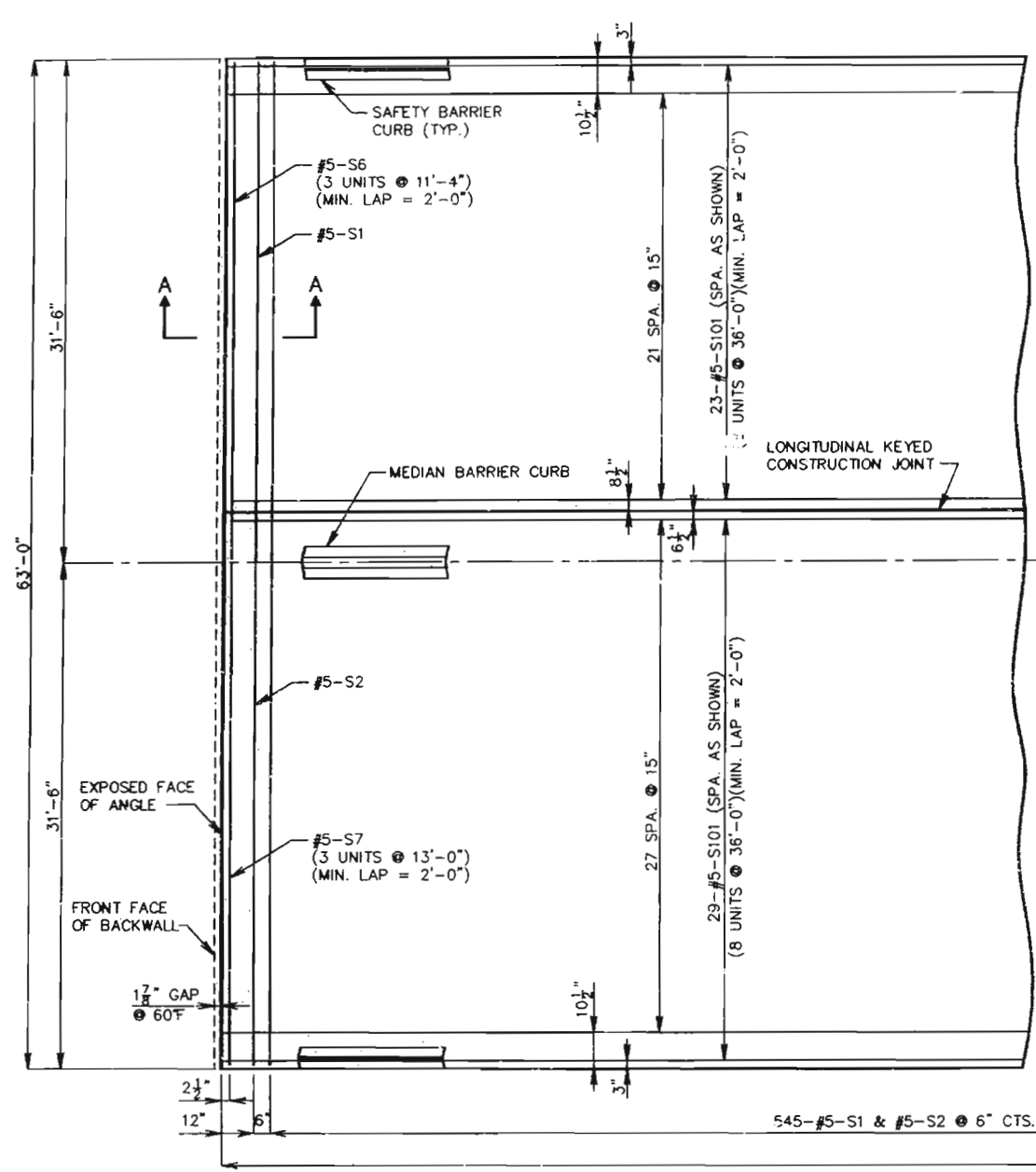
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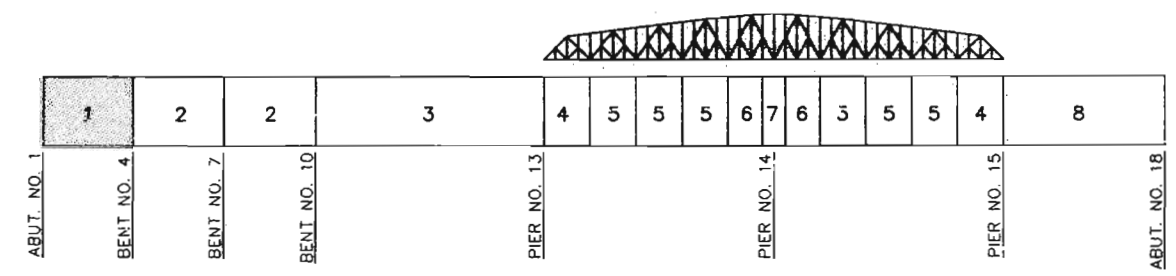
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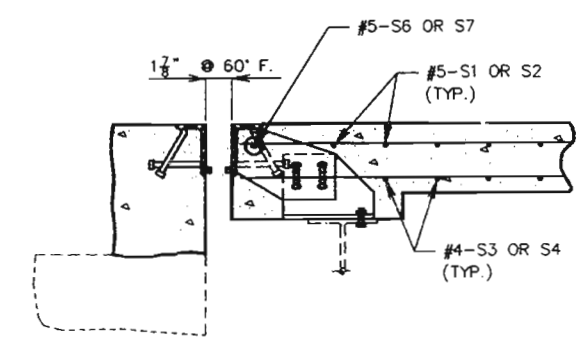


PLAN OF SLAB SHOWING TOP REINFORCEMENT

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



UNIT LOCATION PLAN



PART SECTION A-A

NOTES:
 LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GRIDER.
 LONGITUDINAL REINFORCING STEEL SHALL BE PLACED SO THAT ENDS SHALL NOT BE MORE THAN 1"± FROM VERTICAL ARMOR AT EXPANSION DEVICE.
 ALL REINFORCING SHALL BE EPOXY COATED.
 CONCRETE IN THE SLAB HAUNCHES IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL.
 FOR THE TYPICAL SLAB SECTION AND DETAILS OF ADDITIONAL REINFORCEMENT REQUIRED OVER THE INTERMEDIATE FLOORBEAMS/DIAPHRAGMS, SEE SHEET NO. 9.
 FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER CURBS, SEE SHEET NO. 60 & 63.
 FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 64 & 67.
 FOR SLAB POURING SEQUENCE, SEE SHEET NO. 18.
 FOR HAUNCH WORKSHEETS, SEE SHEETS NO. 19 & 30.



BOONE-COOPER COUNTIES

BUCHER, WILLIS & RATLIFF
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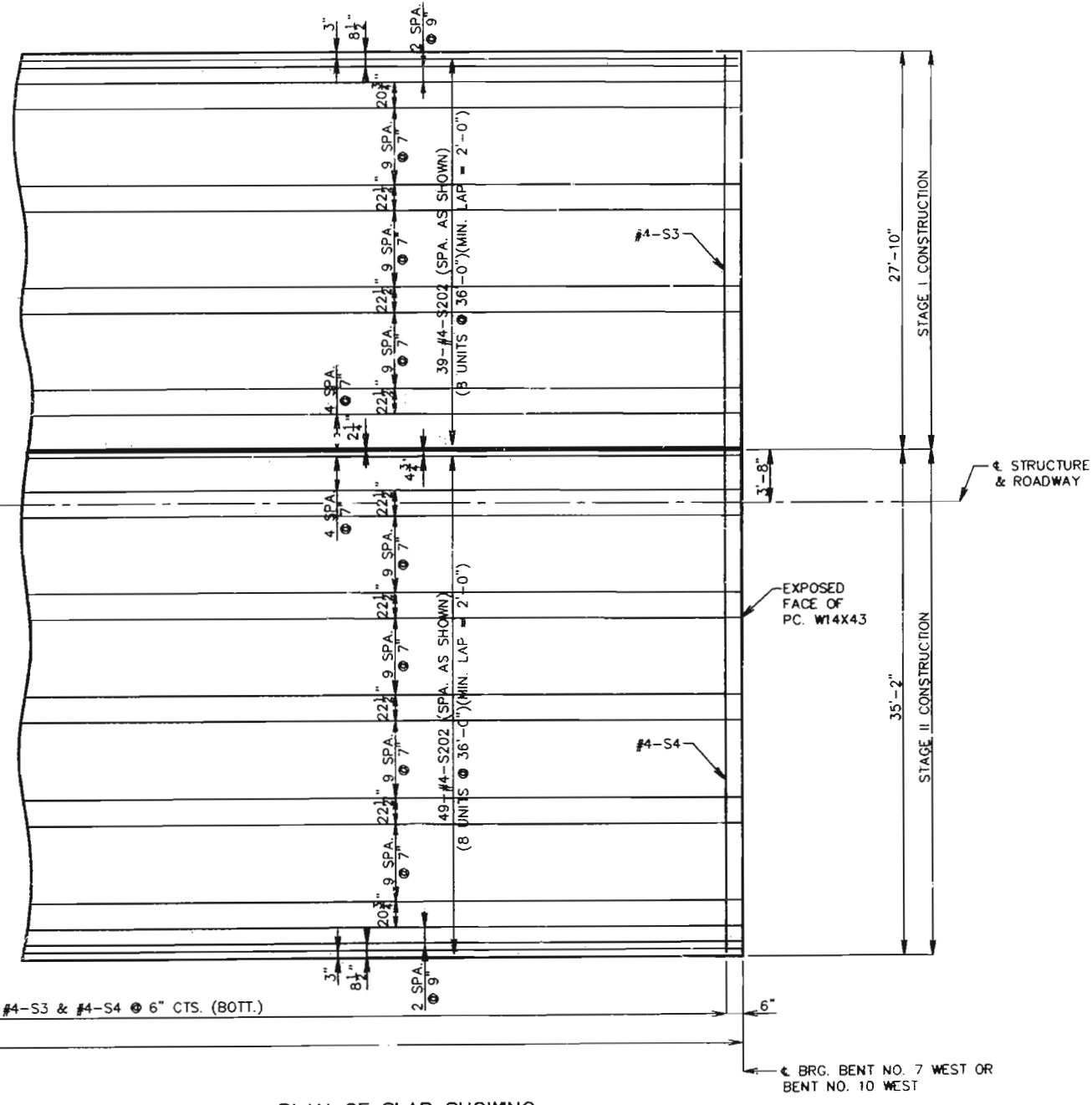
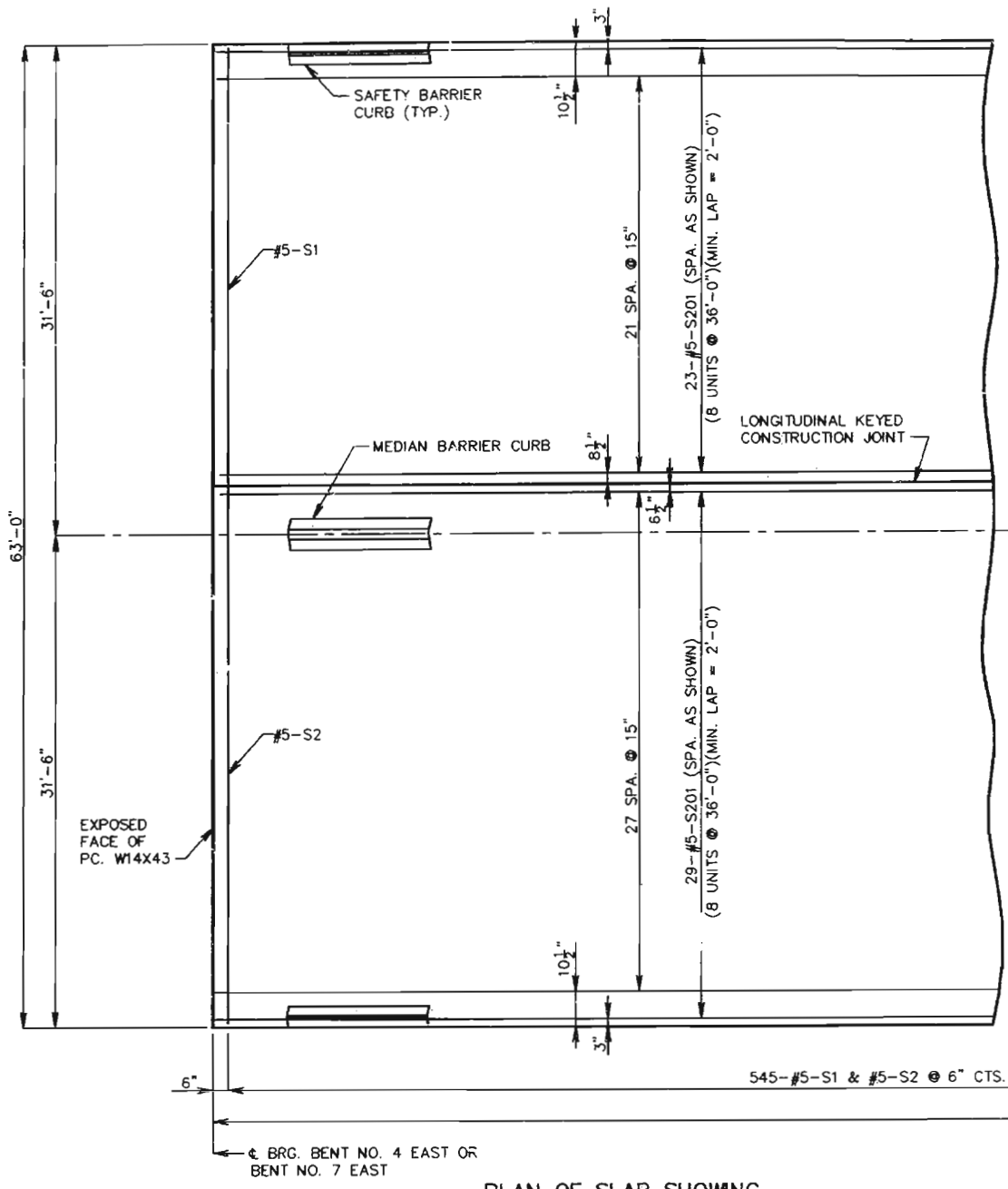
SLAB PLAN - UNIT 1

SHEET NO. 11 OF 73

L096223

409 302

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PLAN OF SLAB SHOWING TOP REINFORCEMENT

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



1	2	2	3	4	5	5	5	6	7	6	5	5	5	4	8
ABUT. NO. 1	BENT NO. 4	BENT NO. 7	BENT NO. 10	PIER NO. 13				PIER NO. 14						PIER NO. 15	ABUT. NO. 18

UNIT LOCATION PLAN

NOTES:
 LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.
 LONGITUDINAL REINFORCING STEEL SHALL BE PLACED SO THAT ENDS SHALL NOT BE MORE THAN 1"± FROM VERTICAL ARMOR AT EXPANSION DEVICE.
 ALL REINFORCING SHALL BE EPOXY COATED.
 CONCRETE IN THE SLAB HAUNCHES IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL.
 FOR THE TYPICAL SLAB SECTION AND DETAILS OF ADDITIONAL REINFORCEMENT REQUIRED OVER THE INTERMEDIATE FLOORBEAMS/DIAPHRAGMS, SEE SHEET NO. 9.
 FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER CURBS, SEE SHEET NO. 60 & 63.
 FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 64 & 67.
 FOR SLAB POURING SEQUENCE, SEE SHEET NO. 18.
 FOR HAUNCH WORKSHEETS, SEE SHEETS NO. 20, 21, 31 & 32.

PROJECT NO. 8110-33
 DRAWN BY: DMA 6/93
 TRACED BY: RCC 6/93
 CHECKED BY: DJM 6/93
 PROJECT NO. 8110-33
 DRAWN BY: DMA 6/93
 TRACED BY: RCC 6/93
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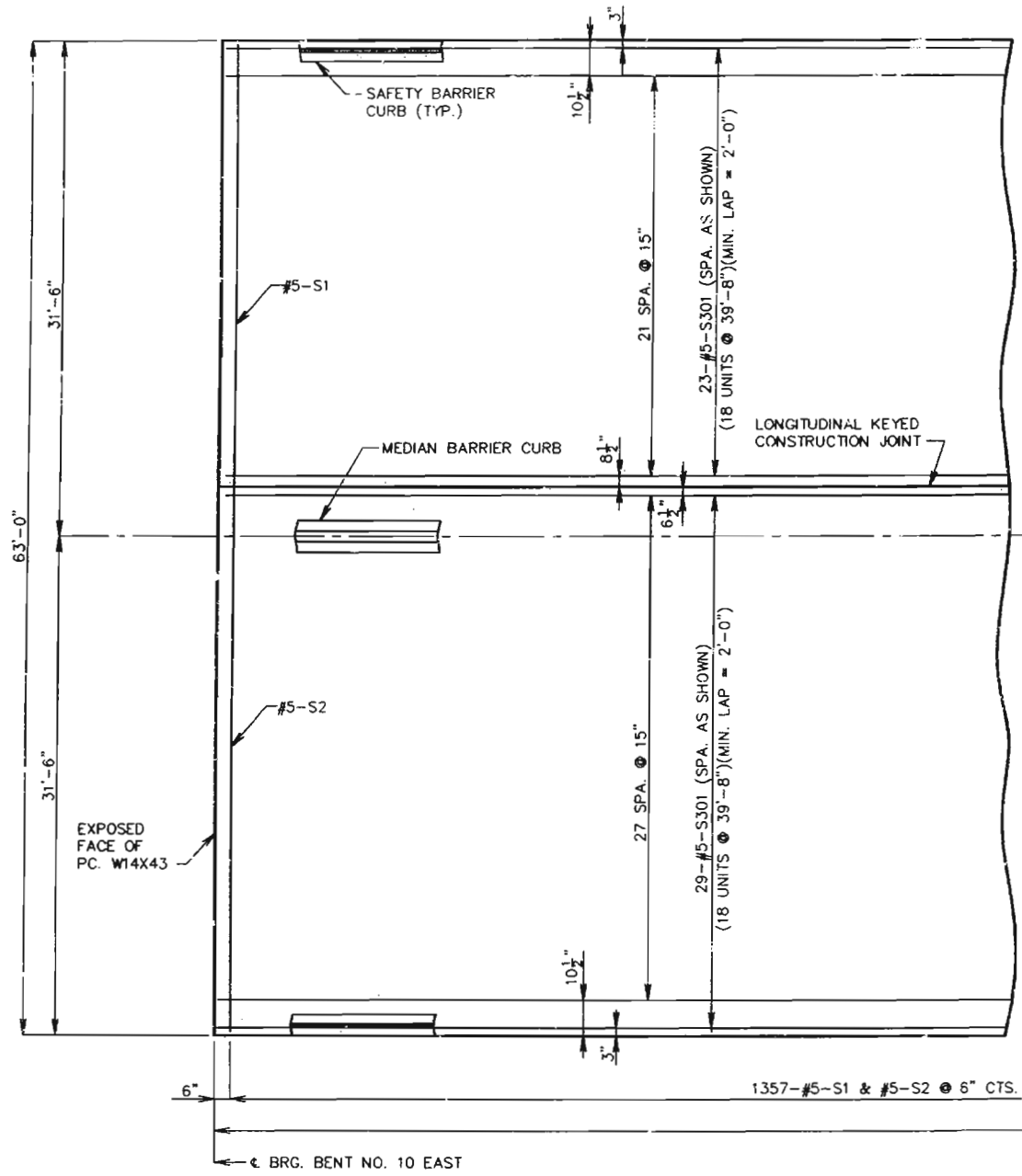
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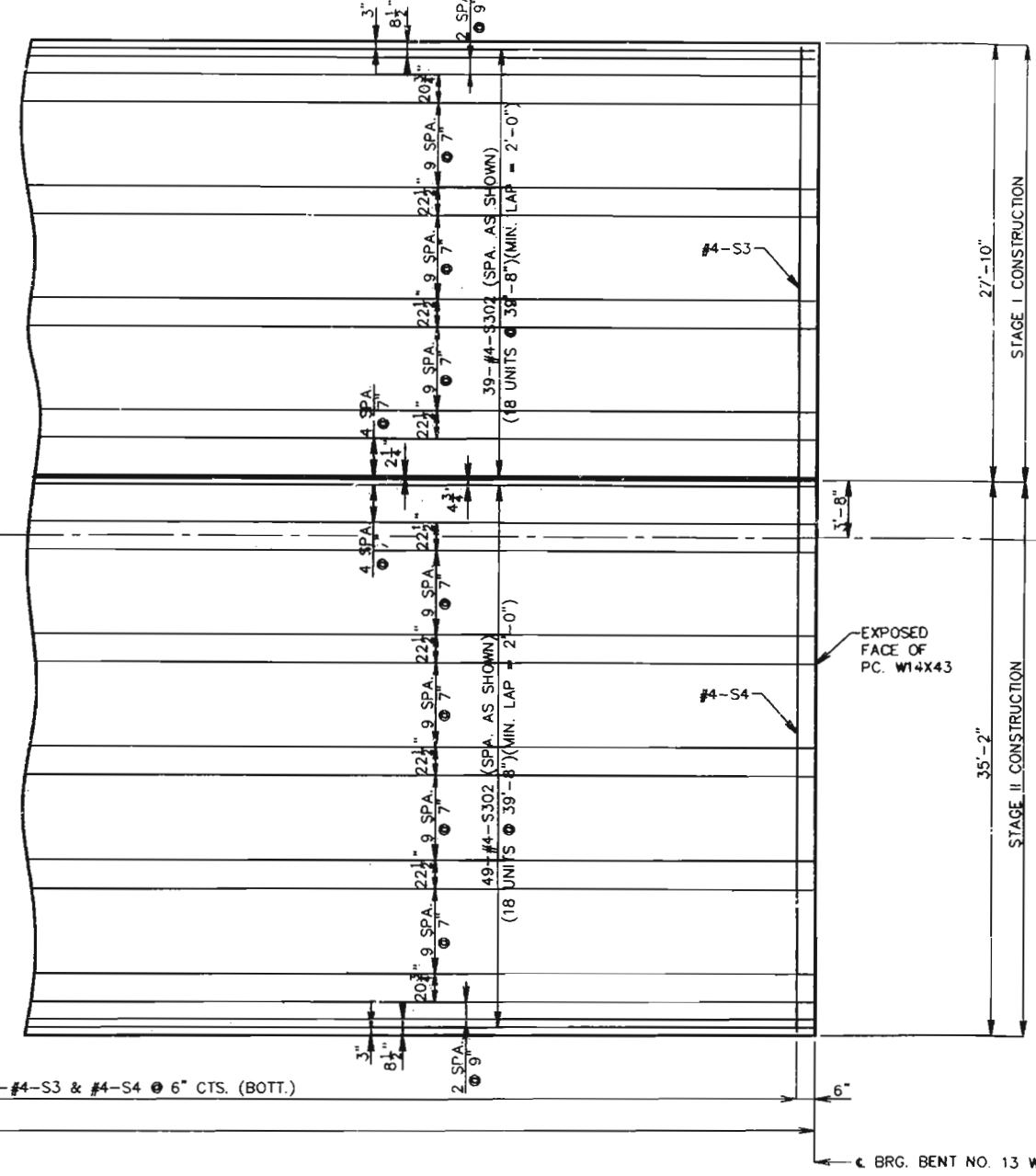
BOONE-COOPER COUNTIES

SLAB PLAN - UNIT 2

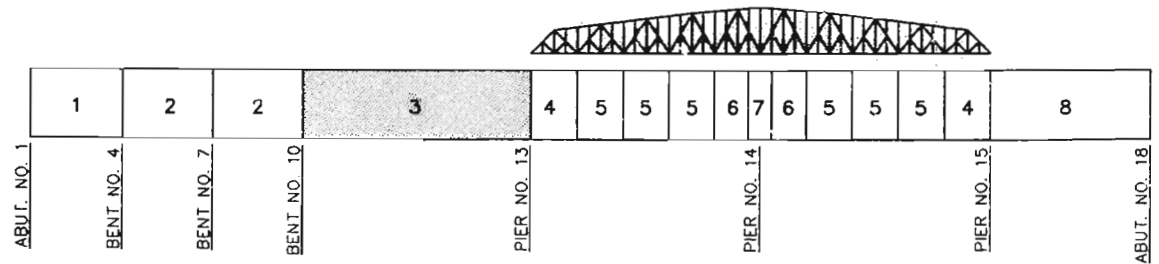




PLAN OF SLAB SHOWING TOP REINFORCEMENT



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



UNIT LOCATION PLAN

NOTES:
 LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.
 LONGITUDINAL REINFORCING STEEL SHALL BE PLACED SO THAT ENDS SHALL NOT BE MORE THAN 1"± FROM VERTICAL ARMOR AT EXPANSION DEVICE.
 ALL REINFORCING SHALL BE EPOXY COATED.
 CONCRETE IN THE SLAB HAUNCHES IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL.
 FOR THE TYPICAL SLAB SECTION AND DETAILS OF ADDITIONAL REINFORCEMENT REQUIRED OVER THE INTERMEDIATE FLOORBEAMS/DIAPHRAGMS, SEE SHEET NO. 9.
 FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER CURBS, SEE SHEET NO. 61 & 63.
 FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 65 & 67.
 FOR SLAB POURING SEQUENCE, SEE SHEET NO. 18.
 FOR HAUNCH WORKSHEETS, SEE SHEETS NO. 22, 23, 33 & 34.

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

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BOONE-COOPER COUNTIES

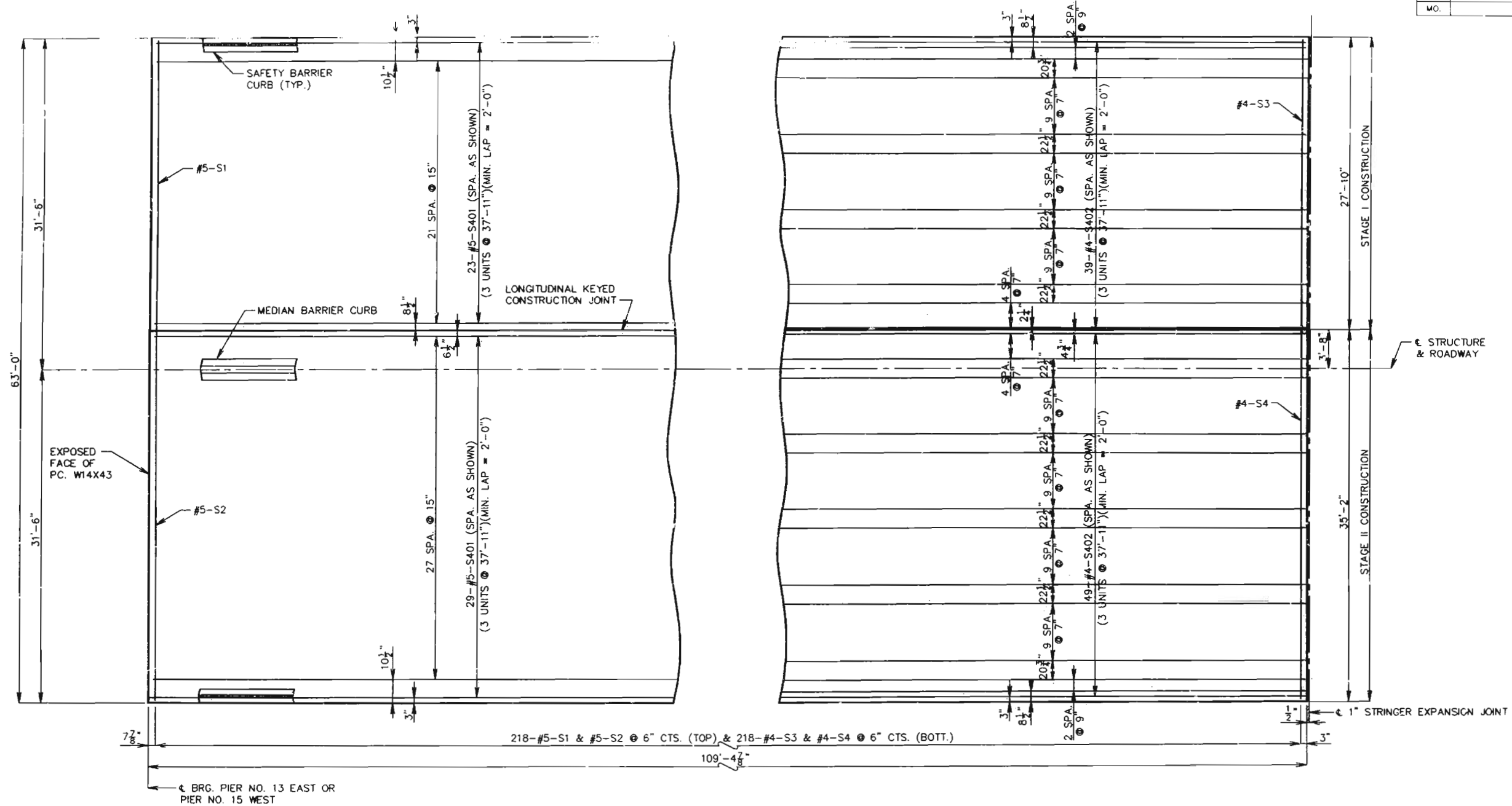
SLAB PLAN - UNIT 3

SHEET NO. 13 OF 73



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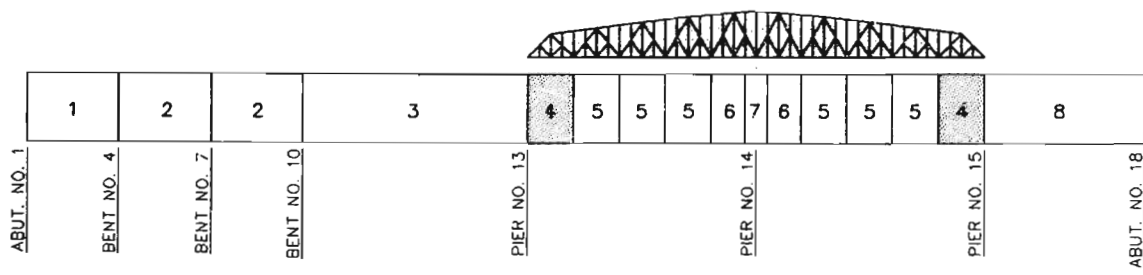
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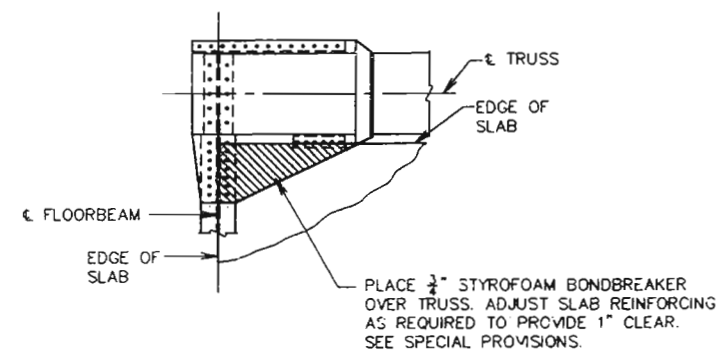
PLAN OF SLAB SHOWING TOP REINFORCEMENT

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

UNIT 4 SPAN (13-14) SHOWN,
UNIT 4 SPAN (14-15) IS OPPOSITE HAND



UNIT LOCATION PLAN



PLAN VIEW AT EDGES OF SLAB AT PIER NO. 13 EAST & 15 WEST

NOTES:
LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER. LONGITUDINAL REINFORCING STEEL SHALL BE PLACED SO THAT ENDS SHALL NOT BE MORE THAN 1"± FROM VERTICAL ARMOR AT EXPANSION DEVICE. ALL REINFORCING SHALL BE EPOXY COATED. CONCRETE IN THE SLAB HAUNCHES IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL. FOR THE TYPICAL SLAB SECTION AND DETAILS OF ADDITIONAL REINFORCEMENT REQUIRED OVER THE INTERMEDIATE FLOORBEAMS/DIAPHRAGMS, SEE SHEET NO. 10. FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER CURBS, SEE SHEET NO. 62 & 63. FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 66 & 67. FOR SLAB POURING SEQUENCE, SEE SHEET NO. 13. FOR HAUNCH WORKSHEETS, SEE SHEETS NO. 24, 27, 35 & 38.

BOONE-COOPER COUNTIES

SLAB PLAN - UNIT 4

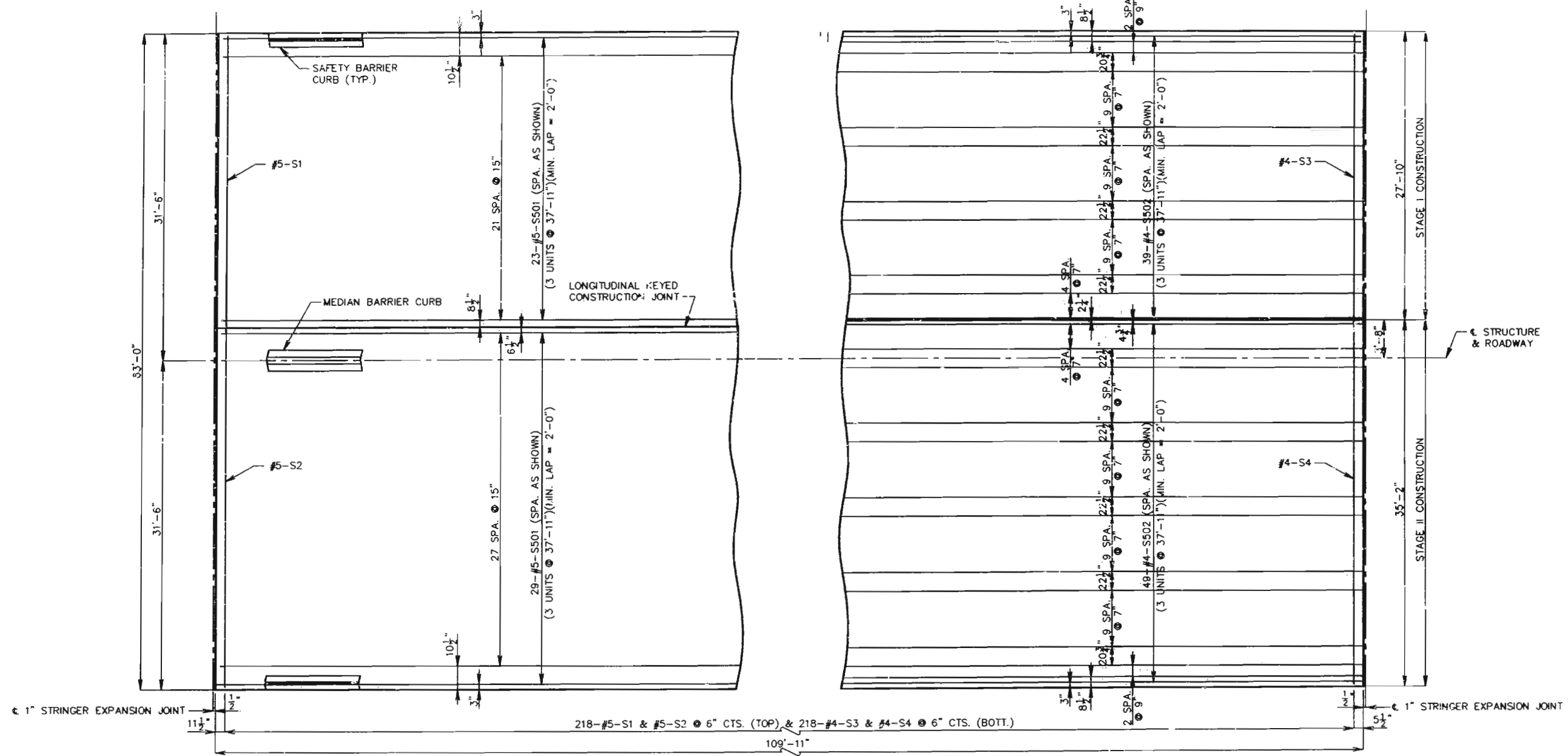


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 472
 PROJECT NO. 97/AN/08 14-43
 DATE: 07/24/98

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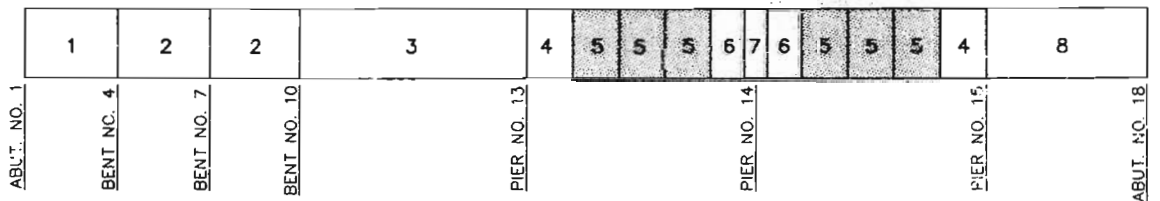


PLAN OF SLAB SHOWING TOP REINFORCEMENT

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

UNIT 5 SPAN (13-14) SHOWN
UNIT 5 SPAN (14-15) IS OPPOSITE HAND

413 36



UNIT LOCATION PLAN

- NOTES:
- LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.
 - LONGITUDINAL REINFORCING STEEL SHALL BE PLACED SO THAT ENDS SHALL NOT BE MORE THAN 1" ± FROM VERTICAL ARMOR AT EXPANSION DEVICE.
 - ALL REINFORCING SHALL BE EPOXY COATED.
 - CONCRETE IN THE SLAB HAUNCHES IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL.
 - FOR THE TYPICAL SLAB SECTION AND DETAILS OF ADDITIONAL REINFORCEMENT REQUIRED OVER THE INTERMEDIATE FLOORBEAMS/DIAPHRAGMS, SEE SHEET NO. 10.
 - FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER CURBS, SEE SHEET NO. 62 & 63.
 - FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 66 & 67.
 - FOR SLAB POURING SEQUENCE, SEE SHEET NO. 18.
 - FOR HAUNCH WORKSHEETS, SEE SHEETS NO. 24 THRU 27 AND 35 THRU 38.

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

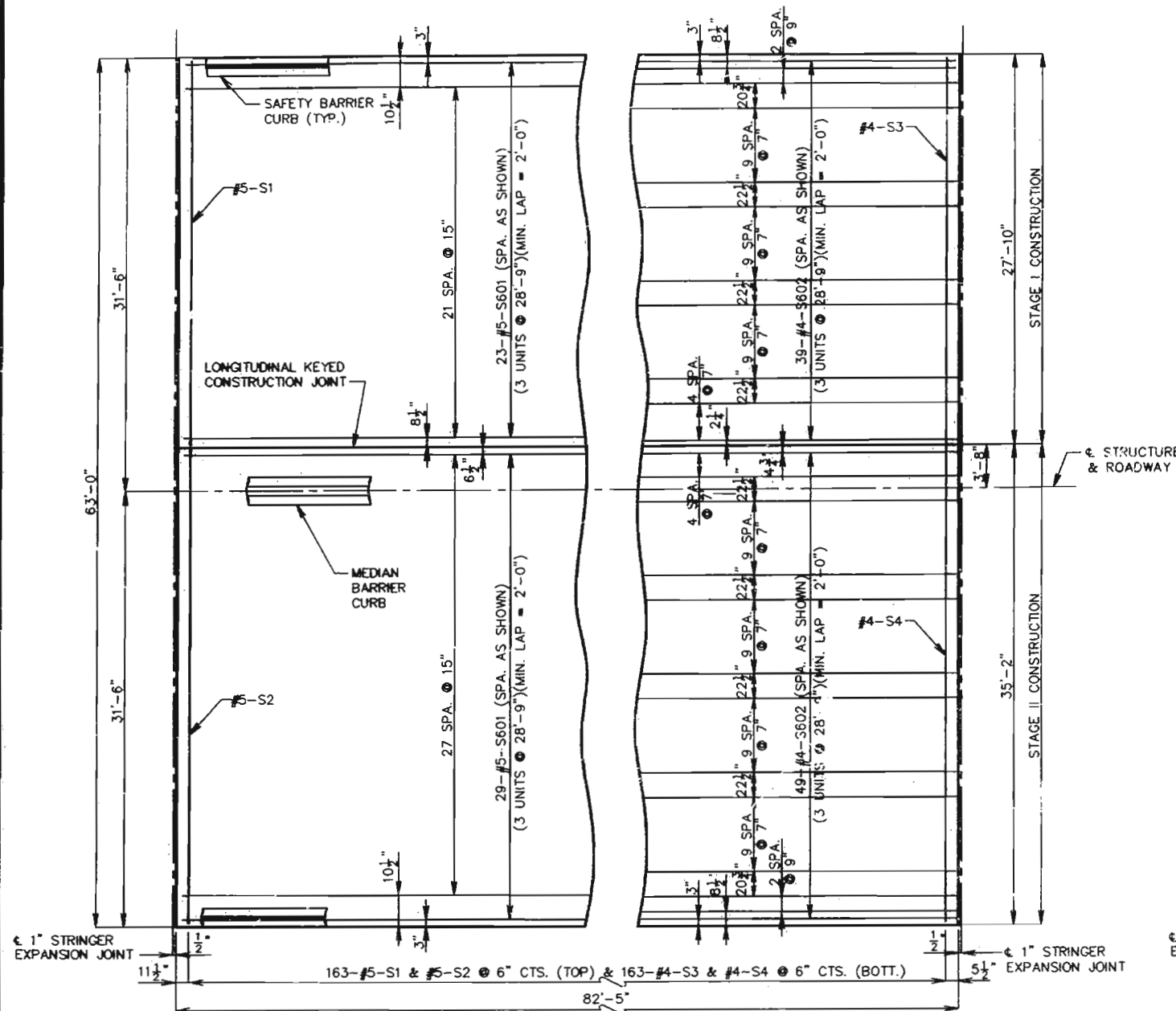
BUCHER, WILLIS & RATUFF
ENGINEERS, PLANNERS & ARCHITECTS

DRAWN BY:	DMA	6/93
TRACED BY:	RCC	C/93
CHECKED BY:	DJM	6/93

BOONE-COOPER COUNTIES

SLAB PLAN - UNIT 5



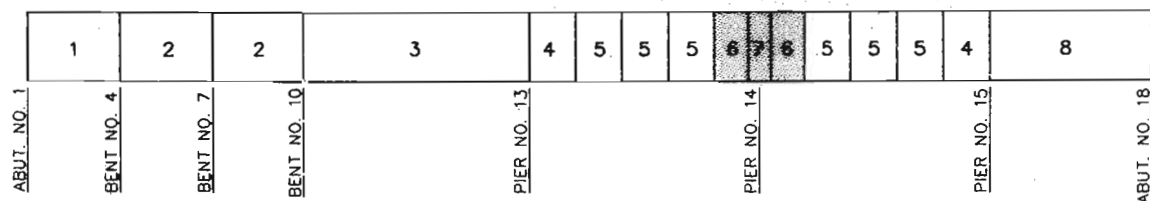


PLAN OF SLAB SHOWING TOP REINFORCEMENT

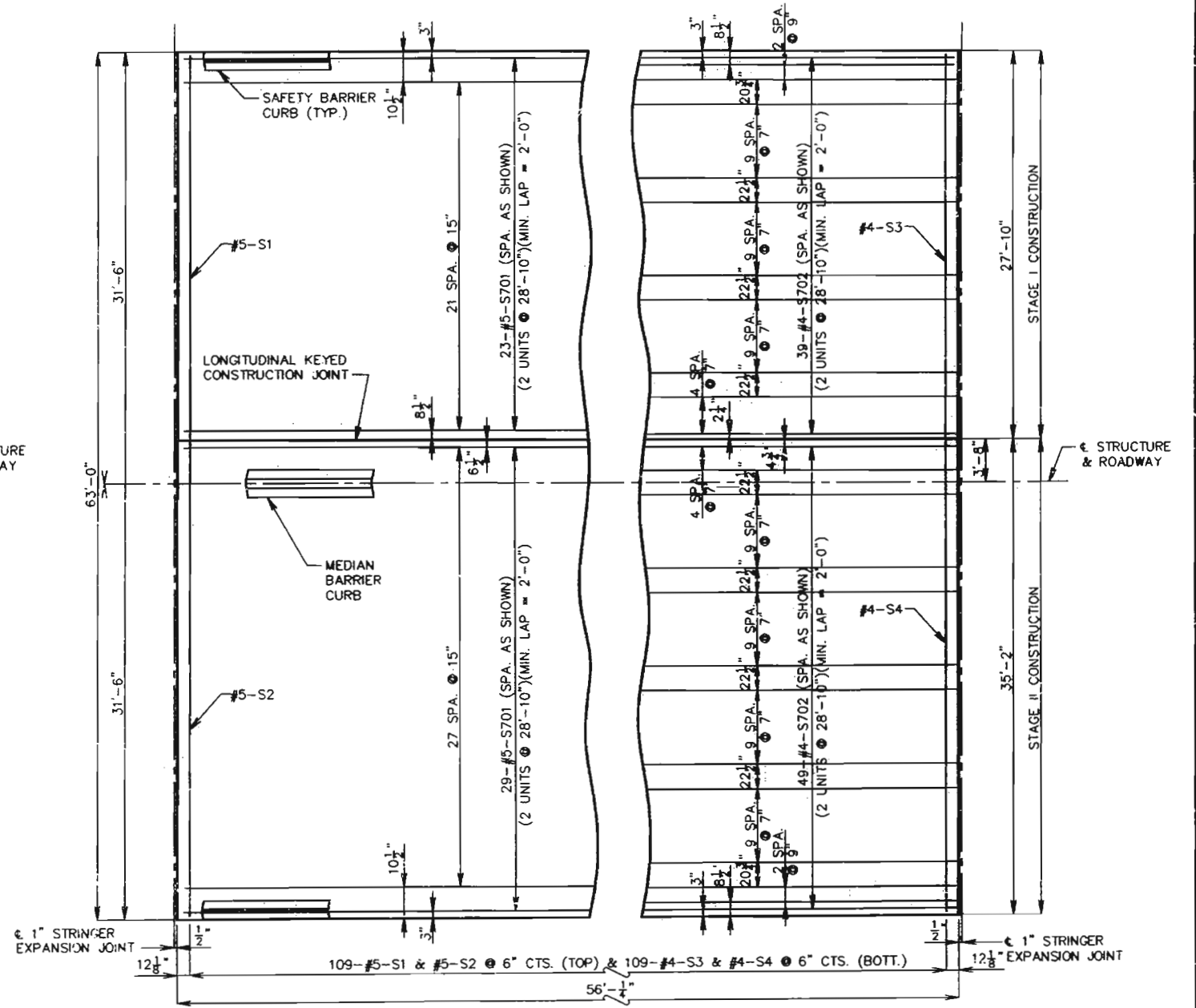
PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

UNIT 6 SPAN (13-14) SHOWN
UNIT 6 SPAN (14-15) IS OPPOSITE HAND

UNIT 6



UNIT LOCATION PLAN



PLAN OF SLAB SHOWING TOP REINFORCEMENT

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

UNIT 7

NOTES:

- LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.
- LONGITUDINAL REINFORCING STEEL SHALL BE PLACED SO THAT ENDS SHALL NOT BE MORE THAN 1 1/2" FROM VERTICAL ARMOR AT EXPANSION DEVICE.
- ALL REINFORCING SHALL BE EPOXY COATED.
- CONCRETE IN THE SLAB HAUNCHES IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL.
- FOR THE TYPICAL SLAB SECTION AND DETAILS OF ADDITIONAL REINFORCEMENT REQUIRED OVER THE INTERMEDIATE FLOORBEAMS/DIAPHRAGMS, SEE SHEET NO. 10.
- FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER CURBS, SEE SHEET NO. 62 & 63.
- FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 66 & 67.
- FOR SLAB POURING SEQUENCE, SEE SHEET NO. 18.
- FOR HAUNCH WORKSHEETS, SEE SHEETS NO. 25, 26, 36 & 37.

BOONE-COOPER COUNTIES

SLAB PLAN - UNIT 6 & UNIT 7

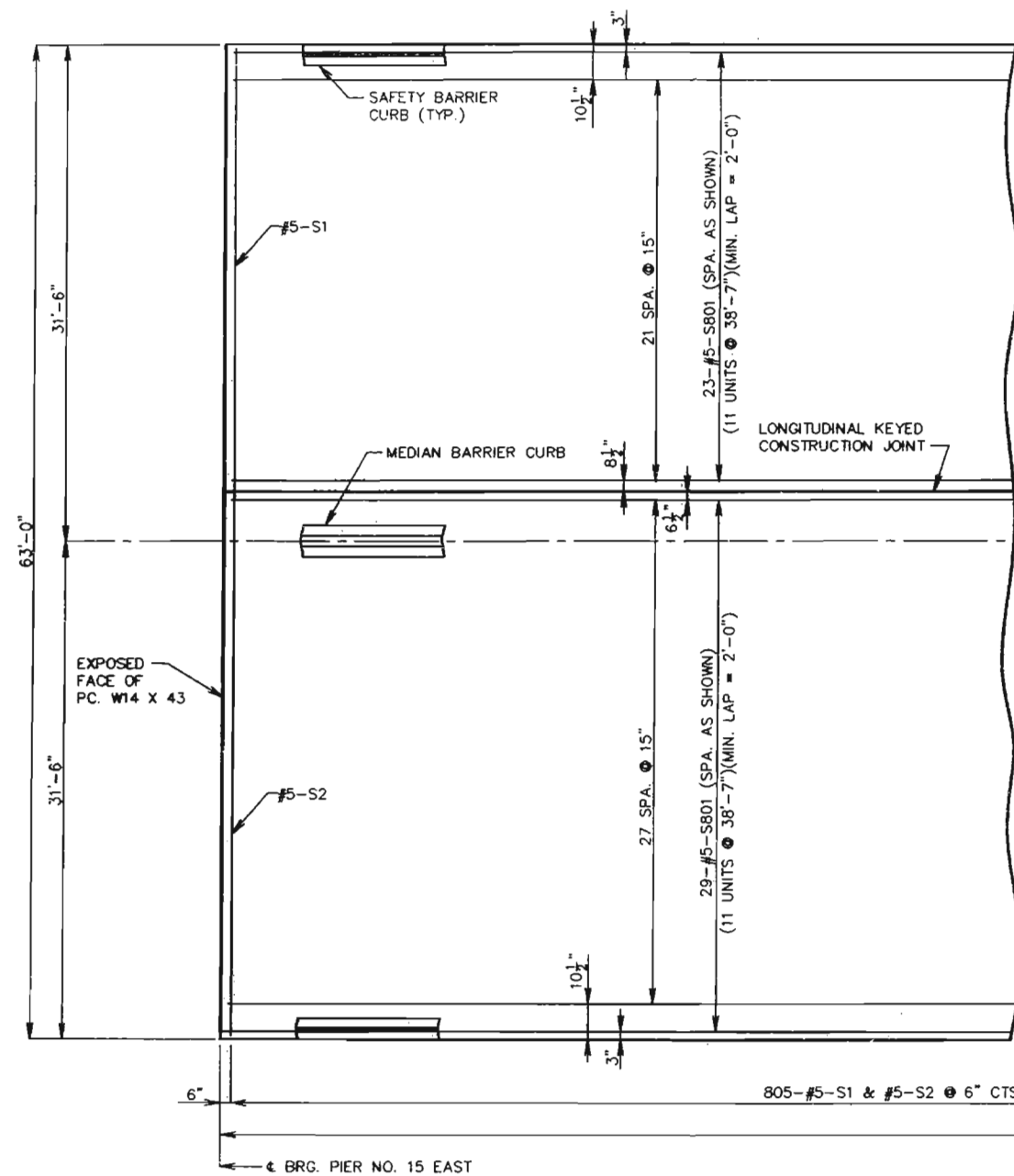
SHEET NO. 16 OF 73

L096223

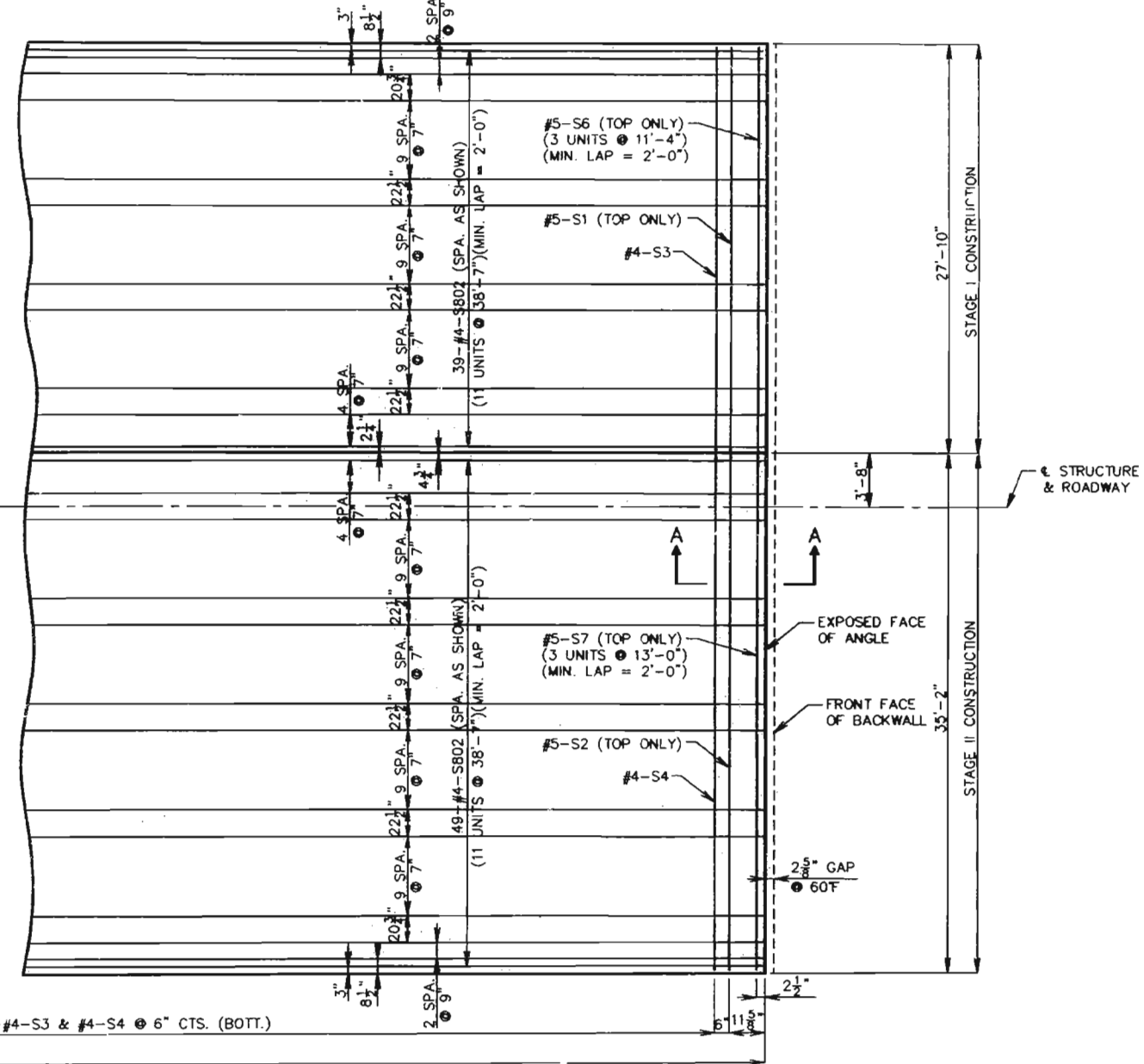
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

DESIGNED BY:	DMA	6/93
TRACED BY:	RCC	6/93
CHECKED BY:	DJM	6/93





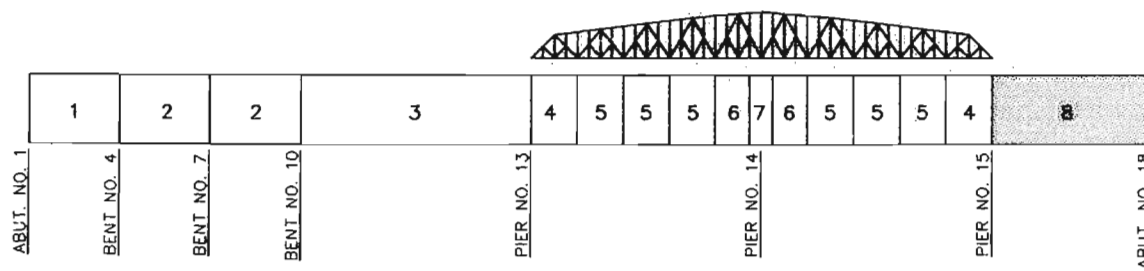
PLAN OF SLAB SHOWING TOP REINFORCEMENT



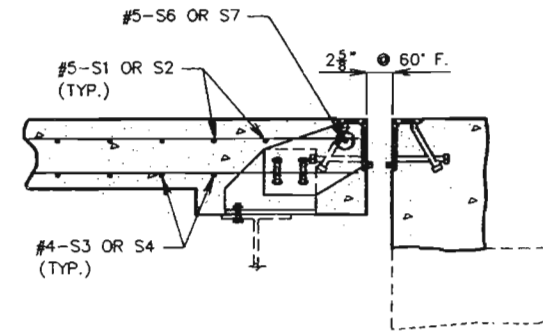
PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT (EXCEPT AS NOTED)

NOTES:

- LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.
- LONGITUDINAL REINFORCING STEEL SHALL BE PLACED SO THAT ENDS SHALL NOT BE MORE THAN 1"± FROM VERTICAL ARMOR AT EXPANSION DEVICE.
- ALL REINFORCING SHALL BE EPOXY COATED.
- CONCRETE IN THE SLAB HAUNCHES IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL.
- FOR THE TYPICAL SLAB SECTION AND DETAILS OF ADDITIONAL REINFORCEMENT REQUIRED OVER THE INTERMEDIATE FLOORBEAMS/DIAPHRAGMS, SEE SHEET NO. 9.
- FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER CURBS, SEE SHEET NO. 61 & 63.
- FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 65 & 67.
- FOR SLAB POURING SEQUENCE, SEE SHEET NO. 18.
- FOR HAUNCH WORKSHEETS, SEE SHEETS NO. 28, 29, 39 & 40.



UNIT LOCATION PLAN



PART SECTION A-A

BOONE-COOPER COUNTIES

SLAB PLAN - UNIT 8

SHEET NO. 17 OF 73

L096223

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

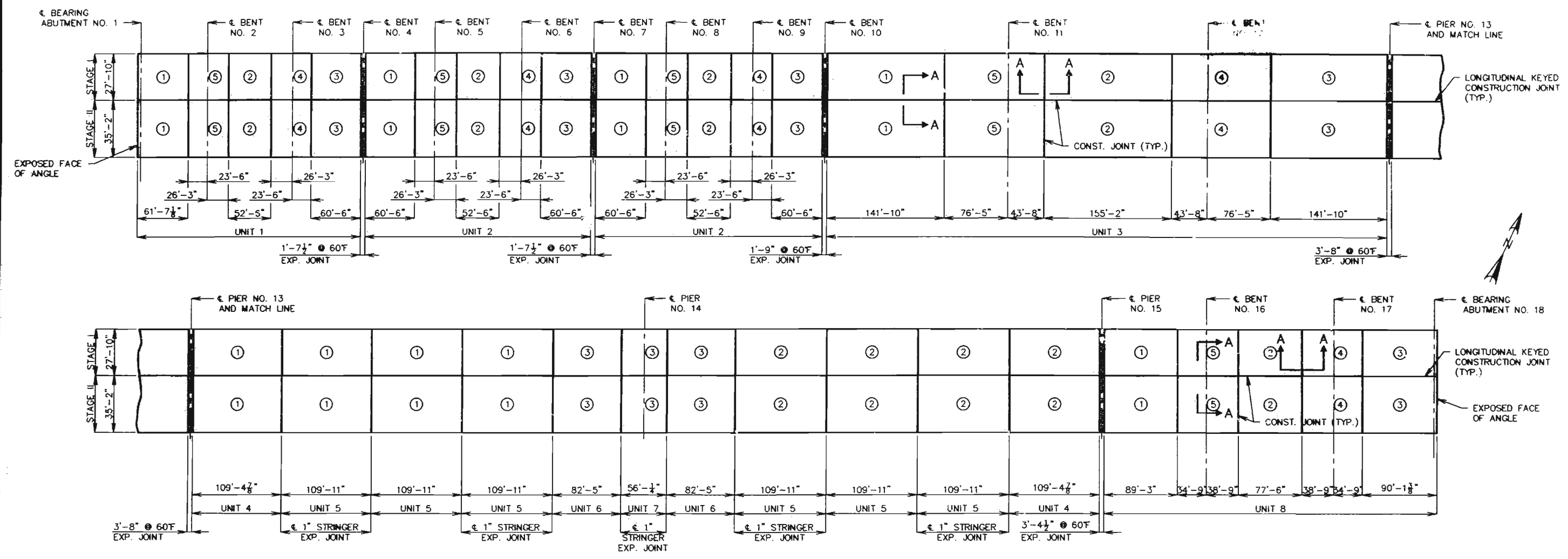
BUCHER, WILLS & RATLIFF
ENGINEERS - PLANNERS - ARCHITECTS

DRAWN BY:	DMA	6/93
TRACED BY:	RCC	6/93
CHECKED BY:	DJM	6/93

445 38

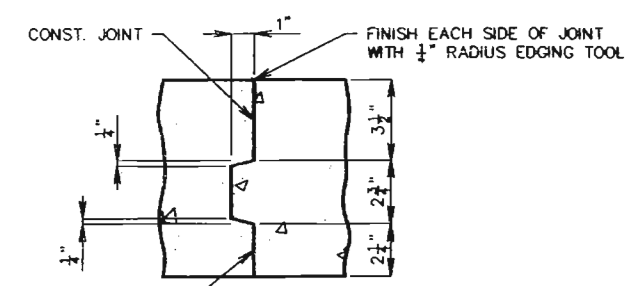
LAST REVISION 07/11/93 @ 14:27

PROJECT NO. 98-1101 - BOONE-COOPER COUNTIES BOONE-COOPER COUNTIES BRIDGE OVER MISSISSIPPI RIVER



	SEQUENCE OF POURS					MINIMUM RATE OF POUR CU. YDS./HR.								
	DIRECTION					UNIT 1		UNIT 2		UNIT 3		UNIT 8		
	1	2	3	4	5	WITH RETARDER	NO RETARDER	WITH RETARDER	NO RETARDER	WITH RETARDER	NO RETARDER	WITH RETARDER	NO RETARDER	
BASIC SEQUENCE	EITHER DIRECTION					STAGE I	25	25	25	25	25	25	25	25
	EITHER DIRECTION					STAGE II	25	25	25	25	25	25	25	25
ALTERNATE POURS TO THE BASIC SKIP SEQUENCE ARE SUBJECT TO THE APPROVAL OF THE ENGINEER IN ACCORDANCE WITH SECTION 703.3.12.4 OF MISSOURI STANDARD SPECIFICATIONS.														
ALTERNATE "A" POURS	1	5 + 2	4 + 3	STAGE I		25	38	25	38	50	50	34	50	
	END TO 5		1 TO 4	2 TO END	STAGE II		29	48	29	48	50	50	43	50
ALTERNATE "B" POURS	1 + 5 + 2		4 + 3	STAGE I		25	38	25	38	50	50	34	50	
	END TO 4		2 TO END	STAGE II		29	48	29	48	50	50	43	50	
ALTERNATE "C" POURS	1 + 5 + 2 + 4 + 3				STAGE I		25	38	25	38	50	50	34	50
	END TO END				STAGE II		29	48	29	48	50	50	43	50
	SEQUENCE OF POURS					MINIMUM RATE OF POUR CU. YDS./HR.								
	DIRECTION					UNIT 4		UNIT 5		UNIT 6		UNIT 7		
	1	2	3	STAGE I <th>WITH RETARDER</th> <th>NO RETARDER</th> <th>WITH RETARDER</th> <th>NO RETARDER</th> <th>WITH RETARDER</th> <th>NO RETARDER</th> <th>WITH RETARDER</th> <th>NO RETARDER</th>		WITH RETARDER	NO RETARDER	WITH RETARDER	NO RETARDER	WITH RETARDER	NO RETARDER	WITH RETARDER	NO RETARDER	
BASIC SEQUENCE	EITHER DIRECTION					STAGE I	25	25	25	25	25	25	25	
	EITHER DIRECTION					STAGE II	25	25	25	25	25	25	25	
ALTERNATE POURS TO THE BASIC SKIP SEQUENCE ARE SUBJECT TO THE APPROVAL OF THE ENGINEER IN ACCORDANCE WITH SECTION 703.3.12.4 OF MISSOURI STANDARD SPECIFICATIONS.														
ALTERNATE "A" POURS	1	3 + 2			STAGE I		50	50	50	50	50	50	50	
	END TO 3		1 TO END			STAGE II		50	50	50	50	50	50	
ALTERNATE "B" POURS	1 + 3 + 2				STAGE I		50	50	50	50	50	50	50	
	END TO END				STAGE II		50	50	50	50	50	50	50	

NOTE:
IN UNITS 4, 5, 6 & 7 POURS
MAY BE INTERRUPTED AT ANY
OF THE STRINGER EXPANSION
JOINTS.



KEY TO EXTEND FULL LENGTH OF JOINT

SECTION A-A

BOONE-COOPER COUNTIES

SLAB POURING SEQUENCE

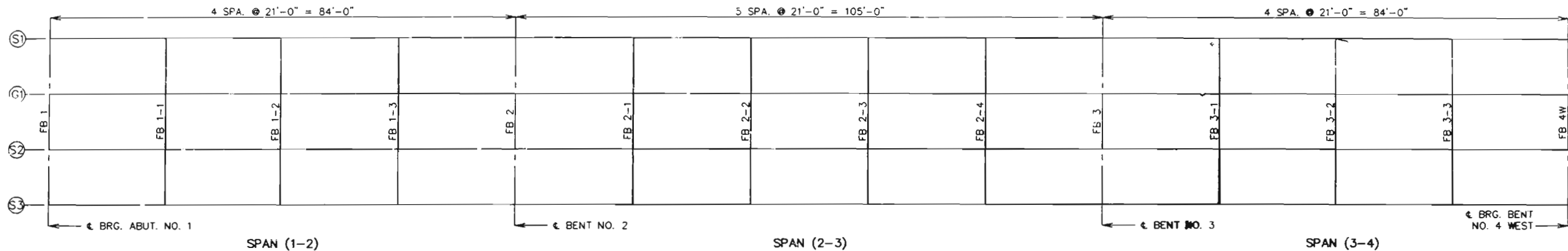


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DRAWN BY: DMA 6/93
TRACED BY: TMM 6/93
CHECKED BY: SAC 7/93

976-37

← BACK STA. AHEAD STA. →

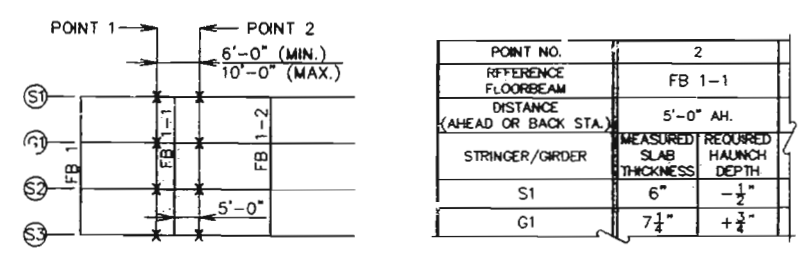


SPAN (1-2)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

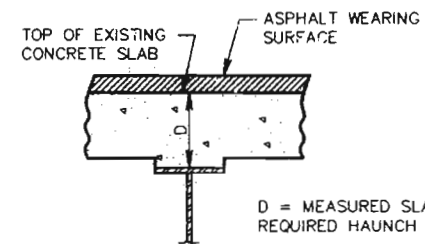
SPAN (2-3)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

SPAN (3-4)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

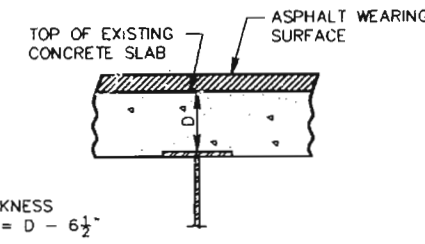
NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL SEE SPECIAL PROVISIONS.



EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
REQUIRED HAUNCH DEPTH = D - 6 1/2"

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

41740

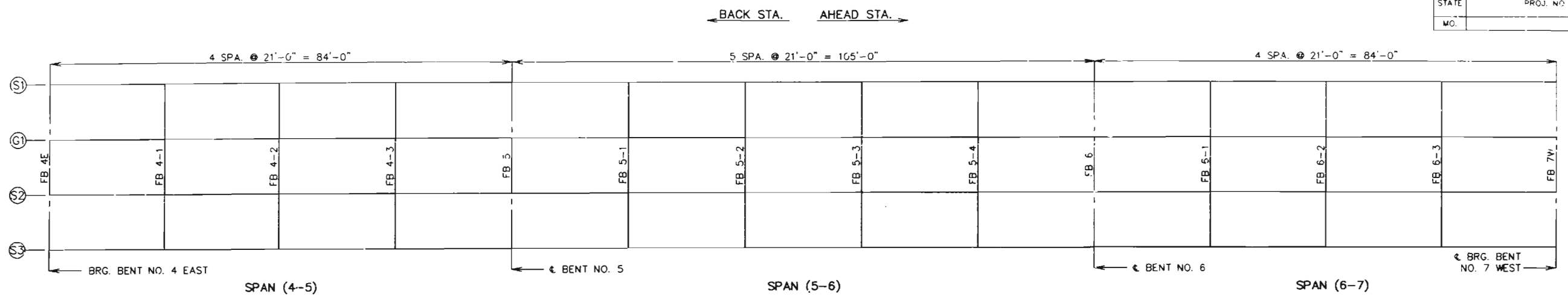
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DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: SAC 7/93

BOONE-COOPER COUNTIES

STAGE I CONSTRUCTION
HAUNCH WORKSHEET
ABUT. NO. 1 TO BENT NO. 4



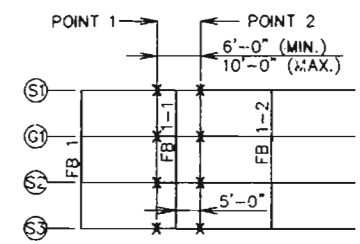


SPAN (4-5)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

SPAN (5-6)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

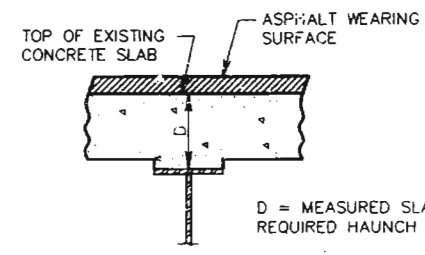
SPAN (6-7)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

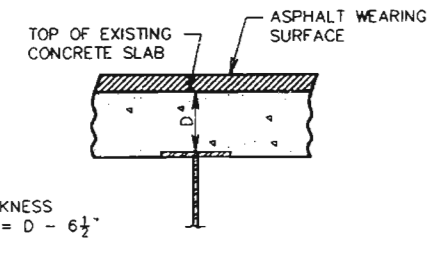


POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	- 1/2"
G1	7 1/2"	+ 3/4"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: SAC 7/93

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

BOONE-COOPER COUNTIES

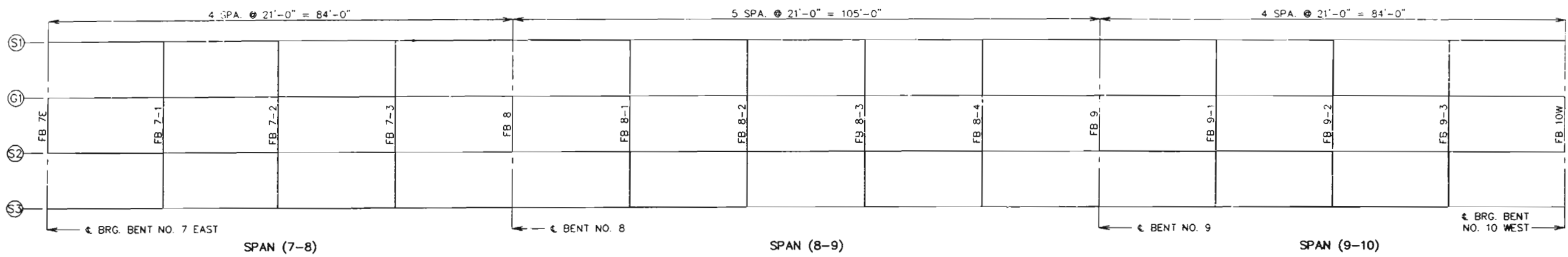
STAGE I CONSTRUCTION
HAUNCH WORKSHEET
BENT NO. 4 TO BENT NO. 7

SHEET NO. 20 OF 73



L096223

← BACK STA. AHEAD STA. →

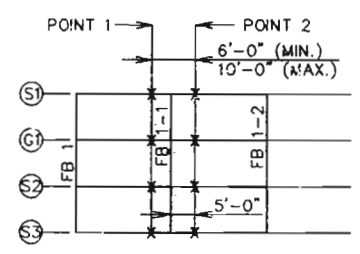


SPAN (7-8)																												
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12					
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

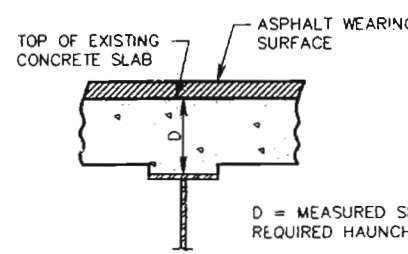
SPAN (8-9)																														
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH		
S1																														
G1																														
S2																														
S3																														

SPAN (9-10)																												
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12					
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

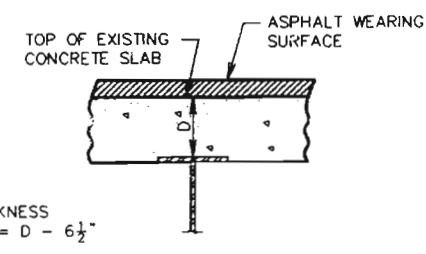
479 482



POINT NO.	2	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	- 1/2"
G1	7 1/2"	+ 3/4"



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
 REQUIRED HAUNCH DEPTH = D - 6 1/2"

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

BUCHER, WELLS & RATLIFF
 ENGINEERS & ARCHITECTS
 DRAWN BY: DMA 7/93
 TRACED BY: MLJ 7/93
 CHECKED BY: SAC 7/93

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

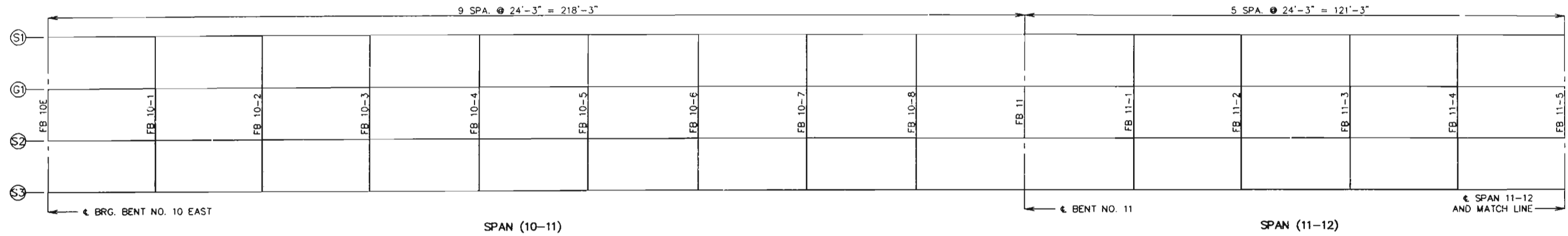
BOONE-COOPER COUNTIES

STAGE I CONSTRUCTION
 HAUNCH WORKSHEET
 BENT NO. 7 TO BENT NO. 10



← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		23

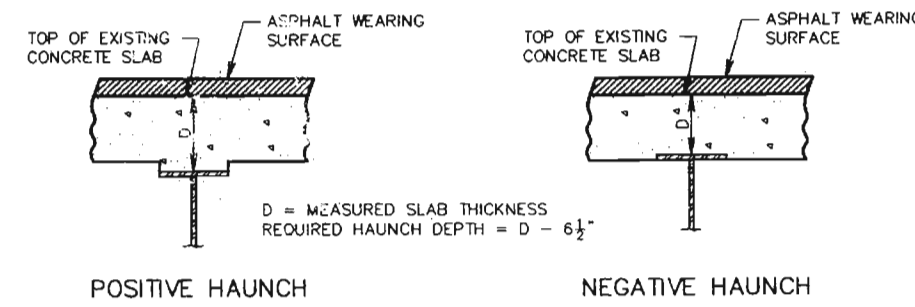
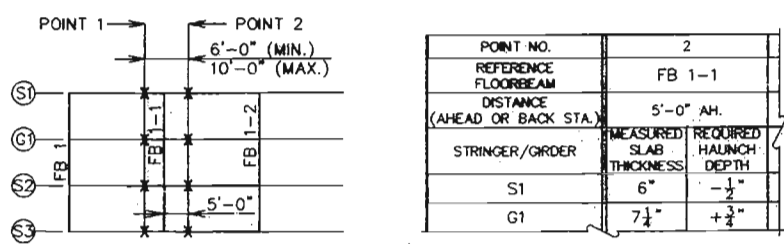


SPAN (10-11)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

SPAN (10-11 CONTINUED)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

SPAN (11-12)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.



BOONE-COOPER COUNTIES

STAGE I CONSTRUCTION
HAUNCH WORKSHEET
BENT NO. 10 TO & SPAN 11-12



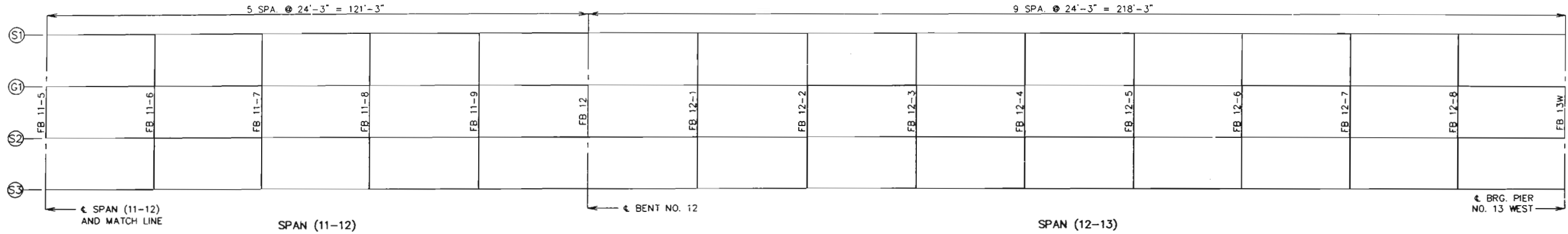
8-9-93
L096223

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

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS
DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: SAC 7/93

43
 PROJECT NO. 87-100-100
 DRAWING NO. 10-11-12
 DATE: 7/93

← BACK STA. AHEAD STA. →

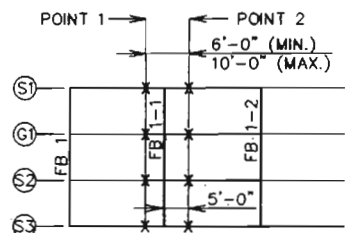


SPAN (11-12 CONTINUED)																													
POINT NO.	1																												
REFERENCE FLOORBEAM																													
DISTANCE (AHEAD OR BACK STA.)																													
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																													
G1																													
S2																													
S3																													

SPAN (12-13)																													
POINT NO.	1																												
REFERENCE FLOORBEAM																													
DISTANCE (AHEAD OR BACK STA.)																													
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																													
G1																													
S2																													
S3																													

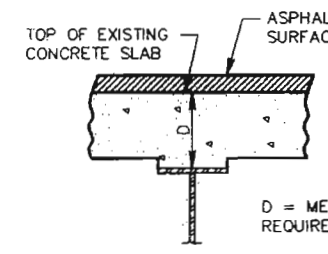
SPAN (12-13 CONTINUED)																													
POINT NO.	16																												
REFERENCE FLOORBEAM																													
DISTANCE (AHEAD OR BACK STA.)																													
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																													
G1																													
S2																													
S3																													

NOTE:
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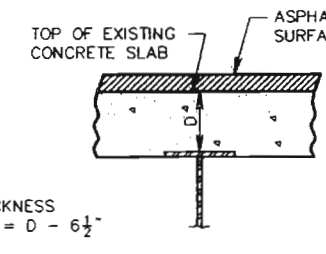


POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	-1/2"
G1	7 1/4"	+3/4"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
REQUIRED HAUNCH DEPTH = D - 6 1/2"

444

BUCHER, WILLS & RATLIFF
ENGINEERS & PLANNERS & ARCHITECTS

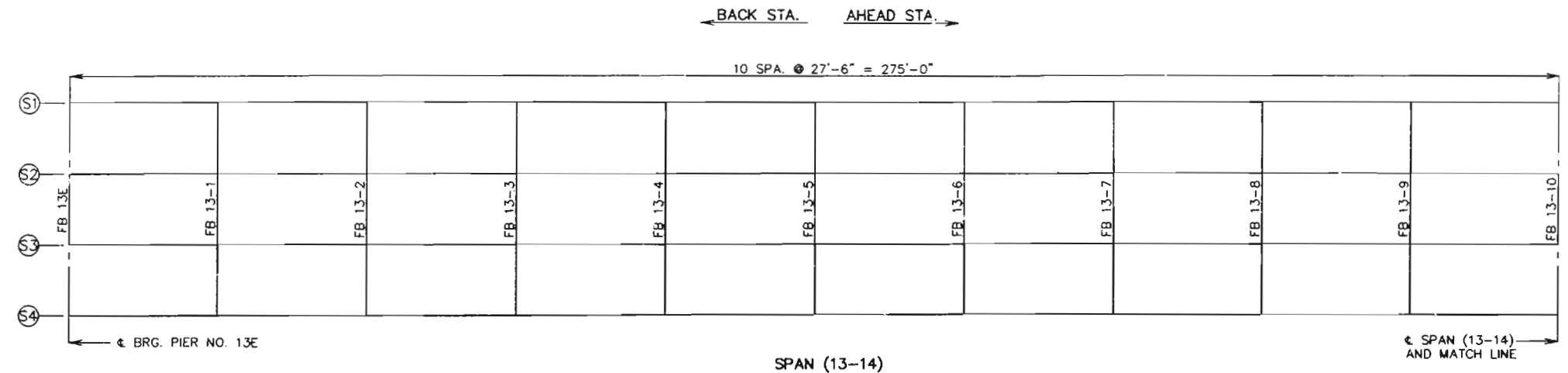
DRAWN BY:	DMA	7/93
TRACED BY:	MLJ	7/93
CHECKED BY:	SAC	7/93

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

BOONE-COOPER COUNTIES
STAGE I CONSTRUCTION
HAUNCH WORKSHEET
SPAN 11-12 TO PIER NO. 13



L096223

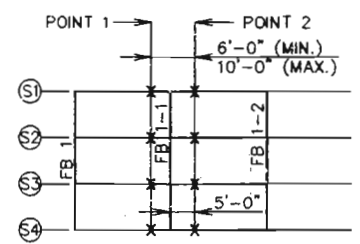


SPAN (13-14)																															
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
REFERENCE FLOORBEAM																															
DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRDOR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																															
S2																															
S3																															
S4																															

SPAN (13-14) CONTINUED																															
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		
REFERENCE FLOORBEAM																															
DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRDOR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																															
S2																															
S3																															
S4																															

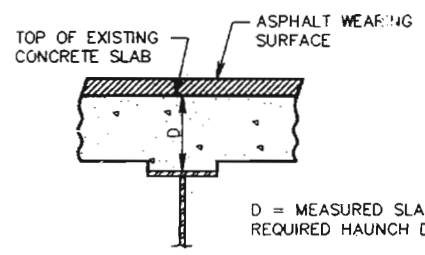
POINT NO.																															
REFERENCE FLOORBEAM																															
DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRDOR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																															
S2																															
S3																															
S4																															

NOTE:
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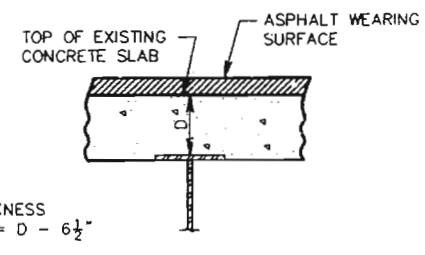


POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GRDOR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	-1/2"
S2	7 1/2"	+3/4"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: SAC 7/93

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

BOONE-COOPER COUNTIES

STAGE I CONSTRUCTION
HAUNCH WORKSHEET
PIER NO. 13 TO & SPAN 13-14



8-4-93

SHEET NO. 24 OF 73

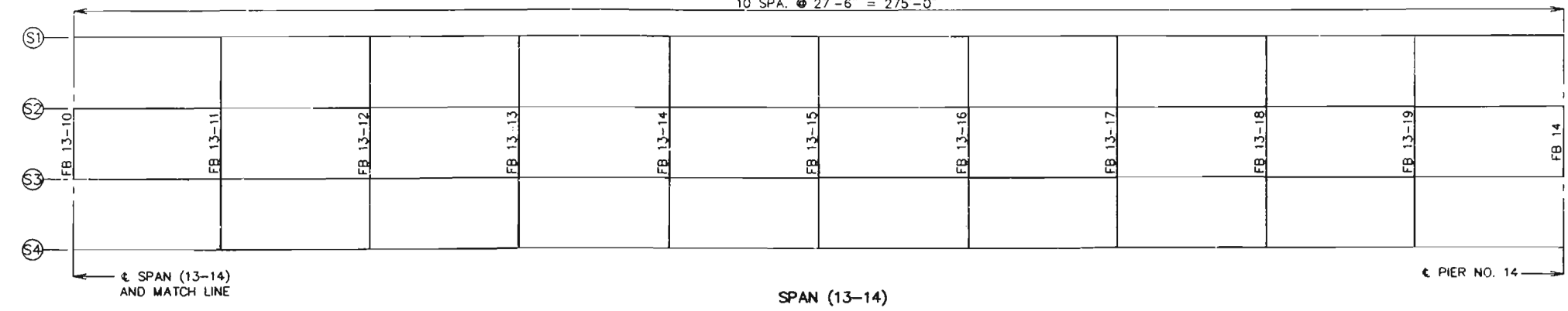
L096223

4727 45

PROJECT FILED IN 1-18-93

← BACK STA. AHEAD STA. →

10 SPA. @ 27'-6" = 275'-0"

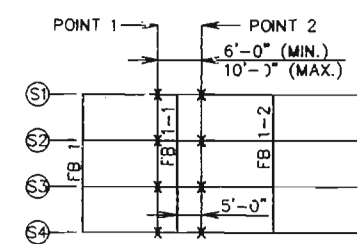


SPAN (13-14 CONTINUED)																														
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																														
S2																														
S3																														
S4																														

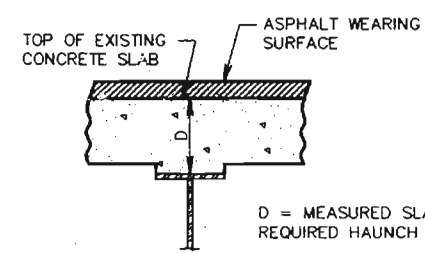
SPAN (13-14 CONTINUED)																														
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30	
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																														
S2																														
S3																														
S4																														

SPAN (13-14 CONTINUED)																														
POINT NO.																														
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																														
S2																														
S3																														
S4																														

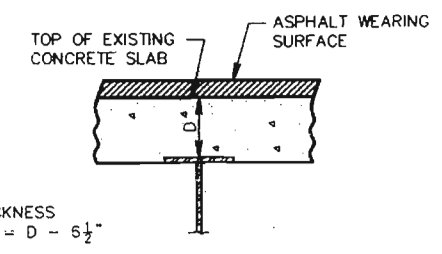
NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.



POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	- 1/2"
S2	7 1/2"	+ 3/4"



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
REQUIRED HAUNCH DEPTH = D - 5 1/2"

EXAMPLE TABULATION

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

427-96

BUCHER, WILLIS & PATLIF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: SAC 7/93

BOONE-COOPER COUNTIES

STAGE I CONSTRUCTION
HAUNCH WORKSHEET
SPAN 13-14 TO PIER NO. 14

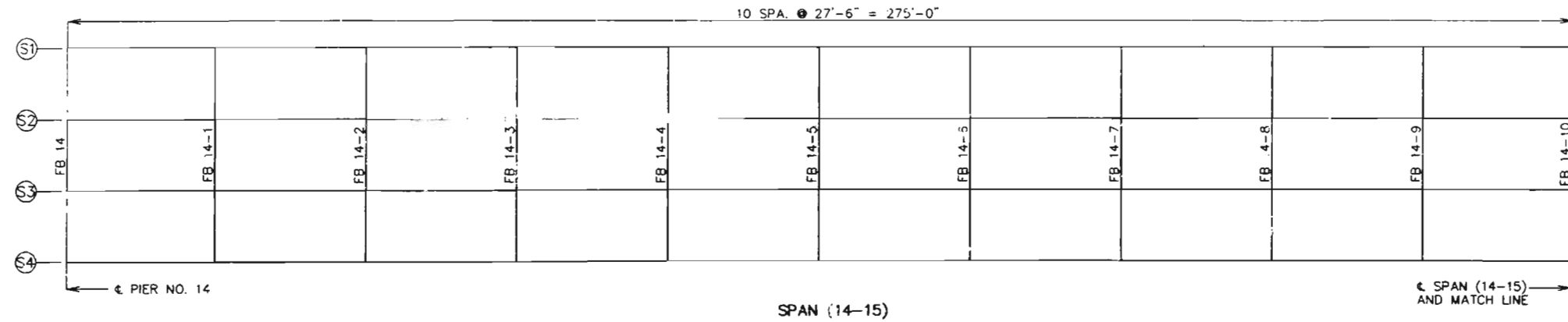


9-4-93

L096223

← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		-2-

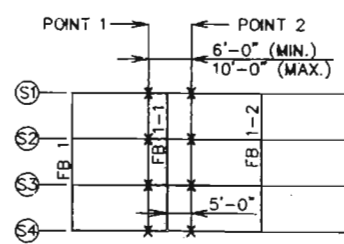


SPAN (14-15)																															
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
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SPAN (14-15 CONTINUED)																															
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																															
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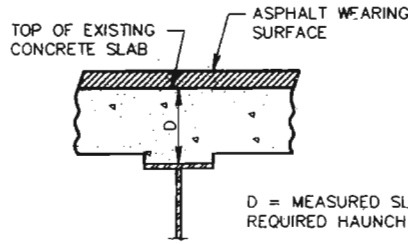
POINT NO.																																
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																																
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH		
S1																																
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NOTE:
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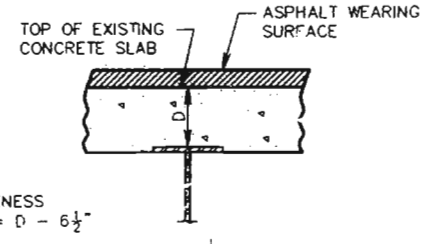


POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	-1/2"
S2	7 1/2"	+3/4"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
REQUIRED HAUNCH DEPTH = D - 6 1/2"

BUCHER, WILLIS & RATLIFF
ENGINEERS - PLANNERS - ARCHITECTS
DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: SAC 7/93

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

BOONE-COOPER COUNTIES

STAGE I CONSTRUCTION
HAUNCH WORKSHEET
PIER NO. 14 TO & SPAN 14-15

SHEET NO. 26 OF 73

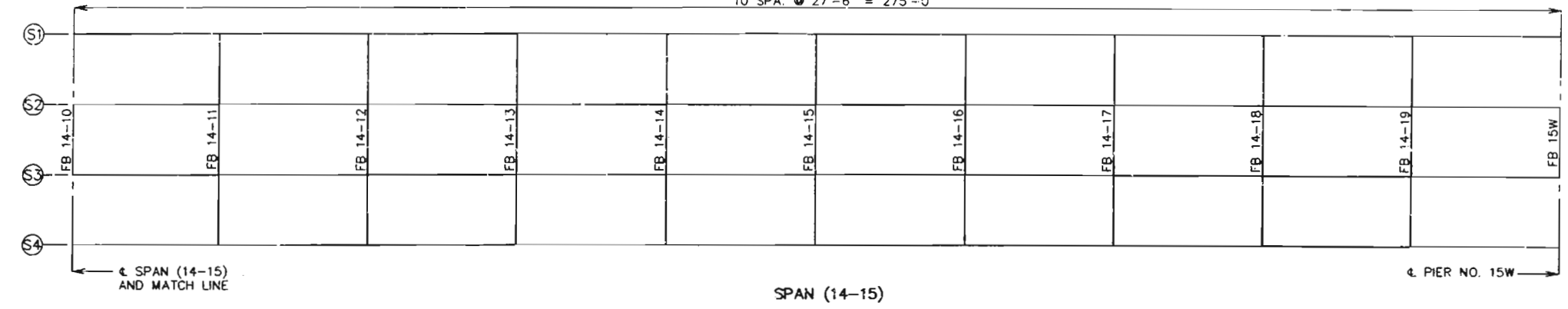


L096223

← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		42

10 SPA. @ 27'-6" = 275'-0"

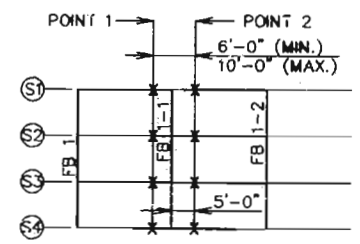


SPAN (14-15 CONTINUED)																															
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
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S2																															
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SPAN (14-15 CONTINUED)																															
POINT NO.	16		17		18		19		20		21		22		23		24		22		26		27		28		29		30		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
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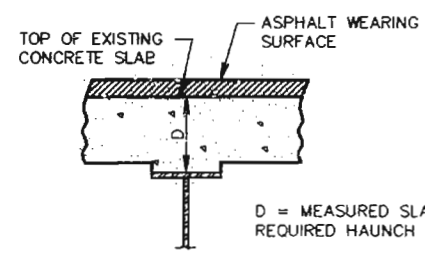
SPAN (14-15 CONTINUED)																															
POINT NO.																															
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S1																															
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NOTE:
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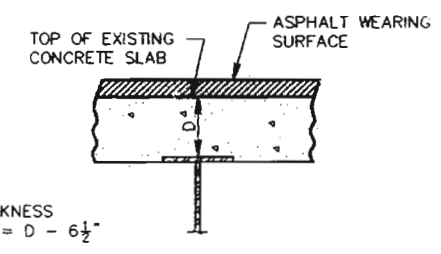


POINT NO.	2	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GRD.	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	- 1/2"
S2	7 1/2"	+ 3/4"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
REQUIRED HAUNCH DEPTH = D - 6 1/2"

BOONE-COOPER COUNTIES

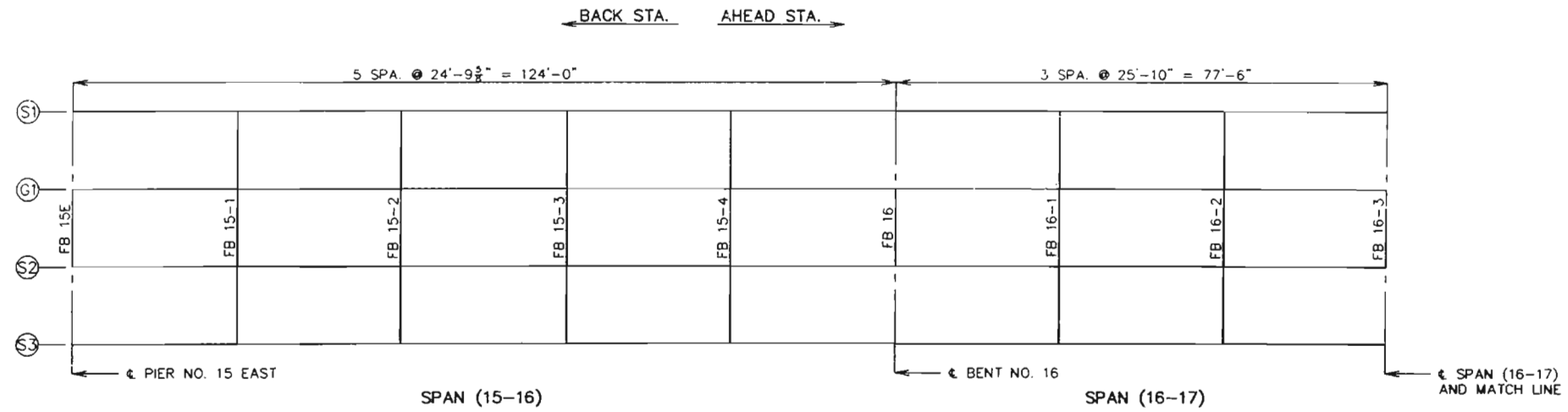
STAGE 1 CONSTRUCTION HAUNCH WORKSHEET
SPAN 14-15 TO PIER NO. 15



L096223

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

DRAWN BY:	DMA	7/93
TRACED BY:	MLJ	7/93
CHECKED BY:	SAC	7/93



SPAN (15-16)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

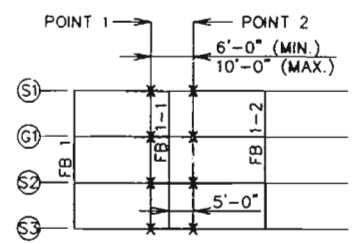
SPAN (16-17)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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SPAN (16-17)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
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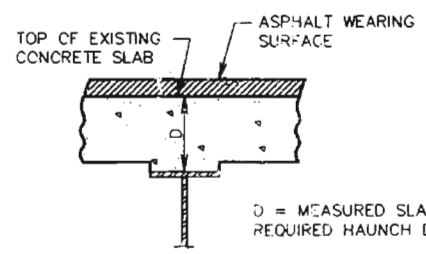
426 49

PROJECT FILE NUMBER: 426 49
PROJECT NAME: STAGE I CONSTRUCTION HAUNCH WORKSHEET
DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: SAC 7/93

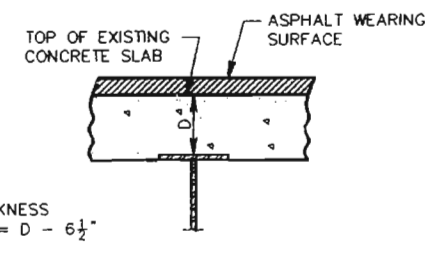


POINT NO.	2
REFERENCE FLOORBEAM	FB 1-1
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.
STRINGER/GIRDER	MEASURED SLAB THICKNESS
S1	6"
G1	7 1/2"
S2	-1/2"
S3	+3/4"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

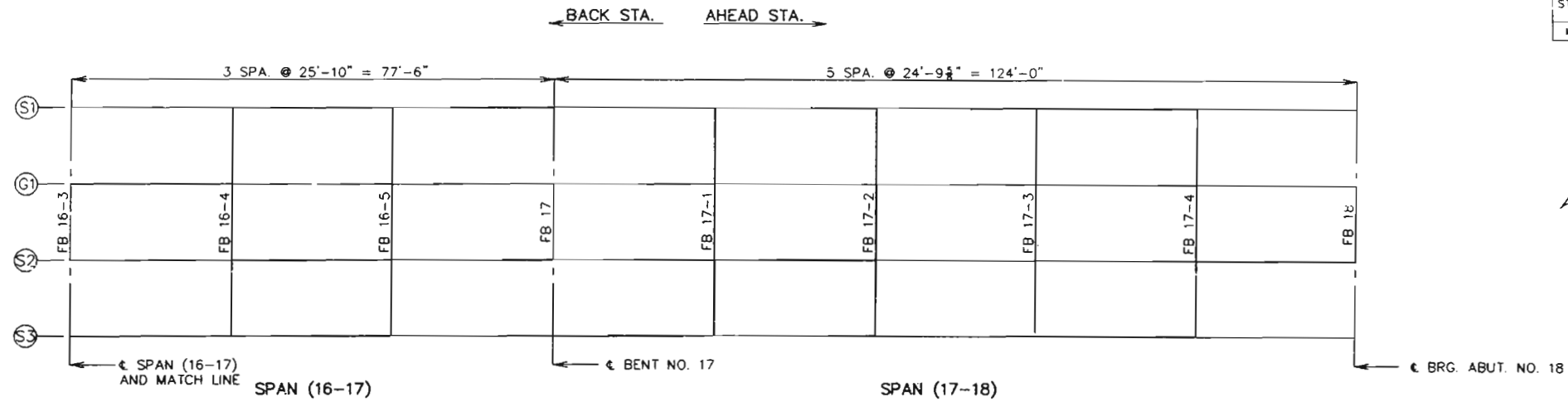
BUCHER, WILLIS & RATLIFF
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BOONE-COOPER COUNTIES

STAGE I CONSTRUCTION
HAUNCH WORKSHEET
PIER NO. 15 TO & SPAN 17



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

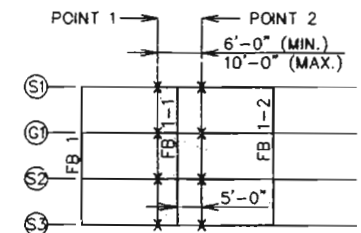


SPAN (16-17 CONTINUED)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

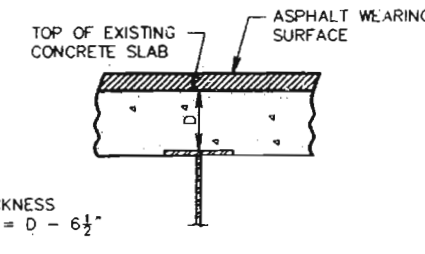
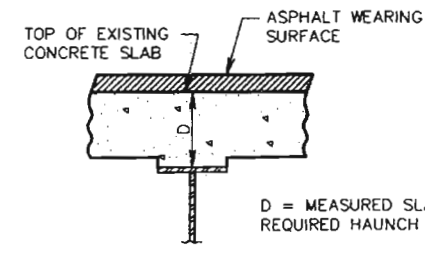
SPAN (17-18)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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G1																												
S2																												
S3																												

SPAN (17-18)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1																												
G1																												
S2																												
S3																												

NOTE:
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POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S1	6"	-1/2"
G1	7 1/4"	+3/4"



EXAMPLE TABULATION

POSITIVE HAUNCH

NEGATIVE HAUNCH

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

47750

LAST SET DATE: 8/7/93 © 1993
PROPERTY MADE BY: BUCHER, WILLIS & RATLIFF ENGINEERS, PLANNERS & ARCHITECTS

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	DWA	7/93
TRACED BY:	MLJ	7/93
CHECKED BY:	SAC	7/93

BOONE-COOPER COUNTIES

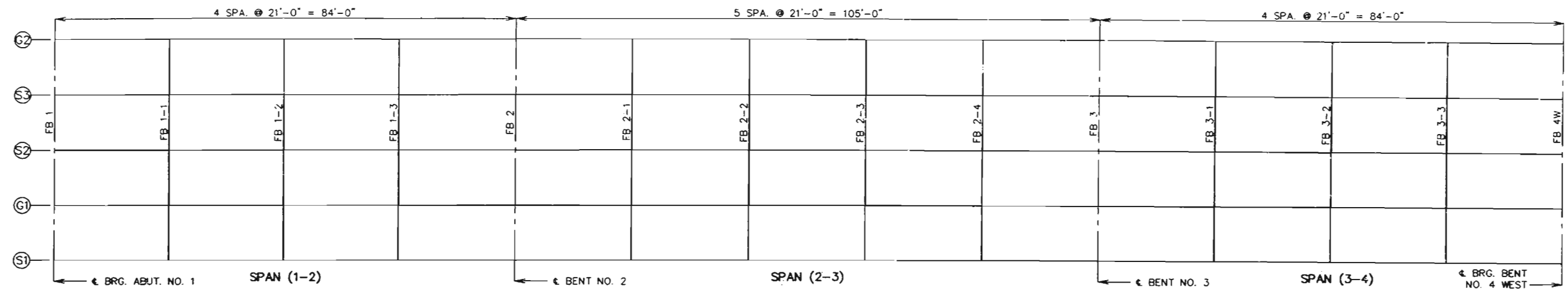
STAGE I CONSTRUCTION
HAUNCH WORKSHEET
SPAN 16-17 TO ABUT. NO. 18

SHEET NO. 29 OF 73



L096223

← BACK STA. AHEAD STA. →



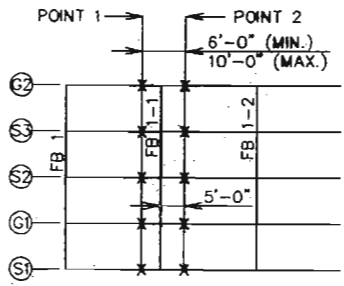
SPAN (1-2)																													
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12						
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																													
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
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S2																													
G1																													
S1																													

SPAN (2-3)																															
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
G2																															
S3																															
S2																															
G1																															
S1																															

SPAN (3-4)																															
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12								
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
G2																															
S3																															
S2																															
G1																															
S1																															

428-5

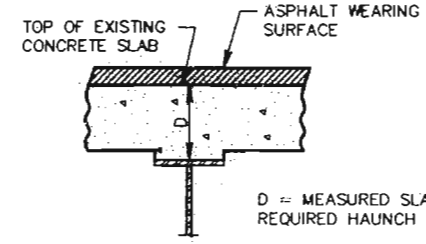
BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS
 DRAWN BY: DMA 7/93
 TRACED BY: MLJ 7/93
 CHECKED BY: AFR 7/93



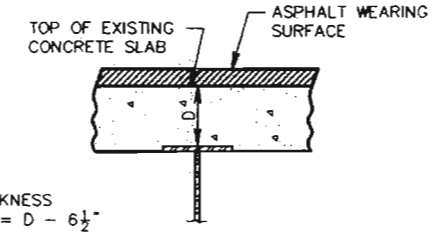
POINT NO.	2	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2	7 1/4"	+ 2"
S3	6"	- 1/2"

EXAMPLE TABULATION

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

$D = \text{MEASURED SLAB THICKNESS}$
 $\text{REQUIRED HAUNCH DEPTH} = D - 6\frac{1}{2}"$

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

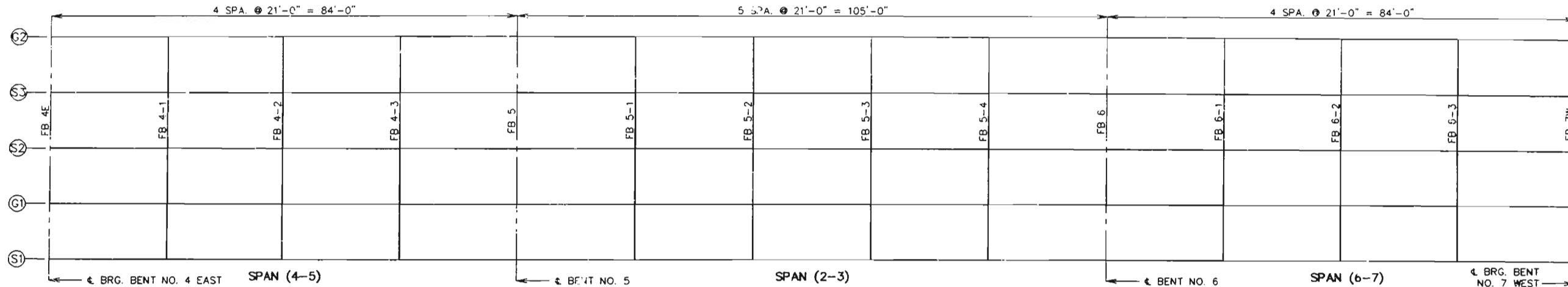
BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
 HAUNCH WORKSHEET
 ABUT. NO. 1 TO BENT NO. 4



← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		17

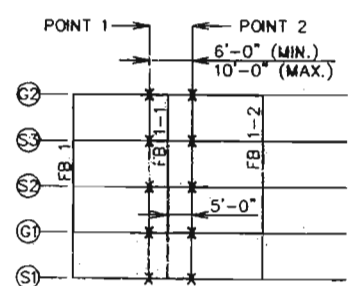


SPAN (4-5)																												
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12					
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

SPAN (5-6)																														
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH		
G2																														
S3																														
S2																														
G1																														
S1																														

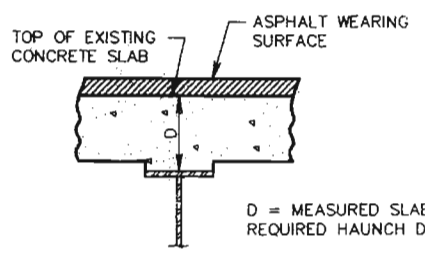
SPAN (6-7)																												
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12					
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

4875
 LIFT BENT DATA 8/7/93 @ 12:18
 PROJECT: I-75 BRIDGE OVER MISSOURI RIVER AT BENT NO. 4
 CHECKED: AFR 7/93

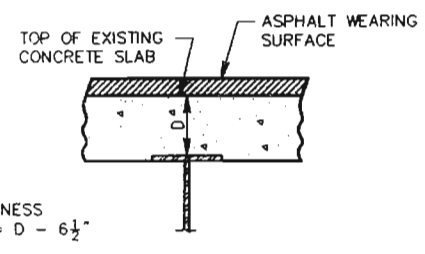


POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2	7 1/2"	+ 3/4"
S3	6"	- 1/2"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

DRAWN BY:	DMA	7/93
TRACED BY:	MLJ	7/93
CHECKED BY:	AFR	7/93

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

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
HAUNCH WORKSHEET
BENT NO. 4 TO BENT NO. 7

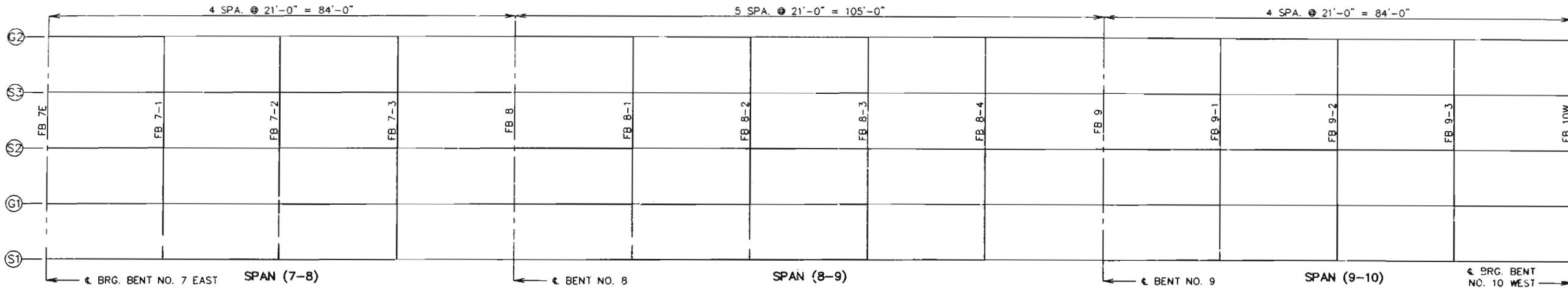
SHEET NO. 31 OF 73



L096223

← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		33

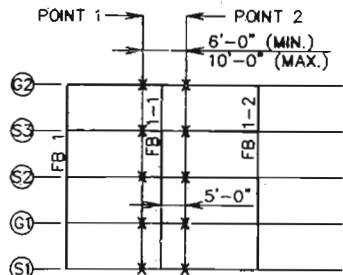


SPAN (7-8)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

SPAN (8-9)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

SPAN (9-10)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

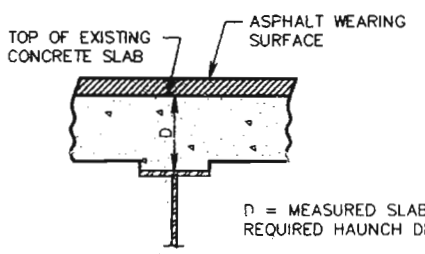
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 PROJECT NO. 93-110
 DRAWING NO. 100
 DATE 7/93



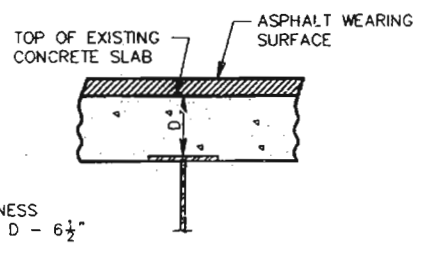
POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2	7 1/4"	+ 3/4"
S3	6"	- 1/2"

EXAMPLE TABULATION

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

$D = \text{MEASURED SLAB THICKNESS}$
 $\text{REQUIRED HAUNCH DEPTH} = D - 6\frac{1}{2}"$

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

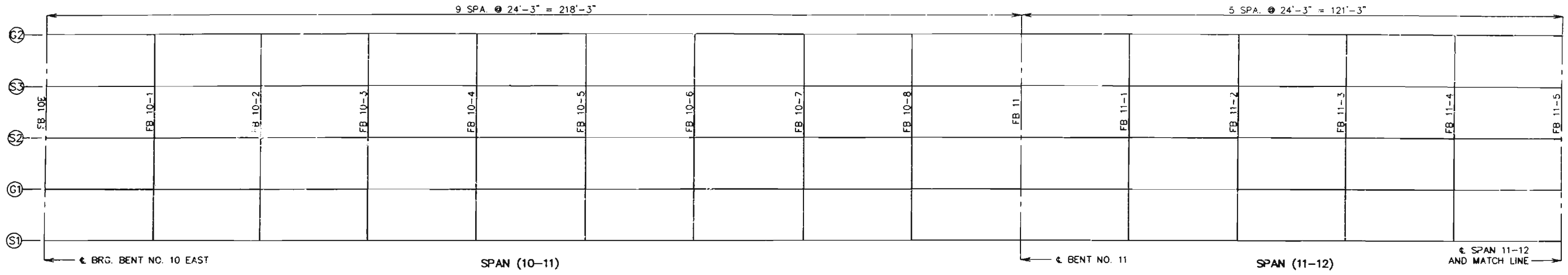
BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
 HAUNCH WORKSHEET
 BENT NO. 7 TO BENT NO. 10



← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		47



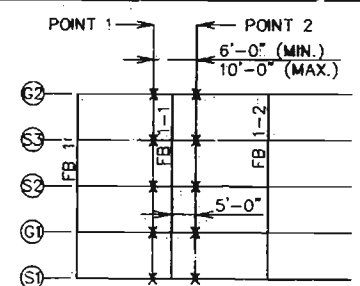
SPAN (10-11)																											
POINT NO.																											
REFERENCE FLOORBEAM																											
DISTANCE (AHEAD OR BACK STA.)																											
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
G2																											
S3																											
S2																											
G1																											
S1																											

SPAN (10-11 CONTINUED)																											
POINT NO.																											
REFERENCE FLOORBEAM																											
DISTANCE (AHEAD OR BACK STA.)																											
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
G2																											
S3																											
S2																											
G1																											
S1																											

SPAN (11-12)																											
POINT NO.																											
REFERENCE FLOORBEAM																											
DISTANCE (AHEAD OR BACK STA.)																											
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
G2																											
S3																											
S2																											
G1																											
S1																											

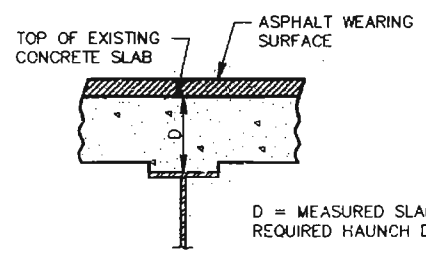
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BACER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS
DRAWN BY: DMA 7/93
TRACED BY: MLJ 7/93
CHECKED BY: AFR 7/93

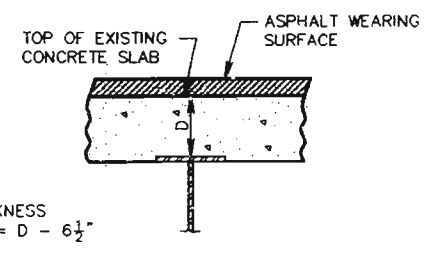


POINT NO.	REFERENCE FLOORBEAM	DISTANCE (AHEAD OR BACK STA.)	STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
2	FB 1-1	5'-0" AH.	G2	7 1/2"	+ 2"
			S3	6"	- 1/2"

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION HAUNCH WORKSHEET
BENT NO. 10 TO & SPAN 11-12

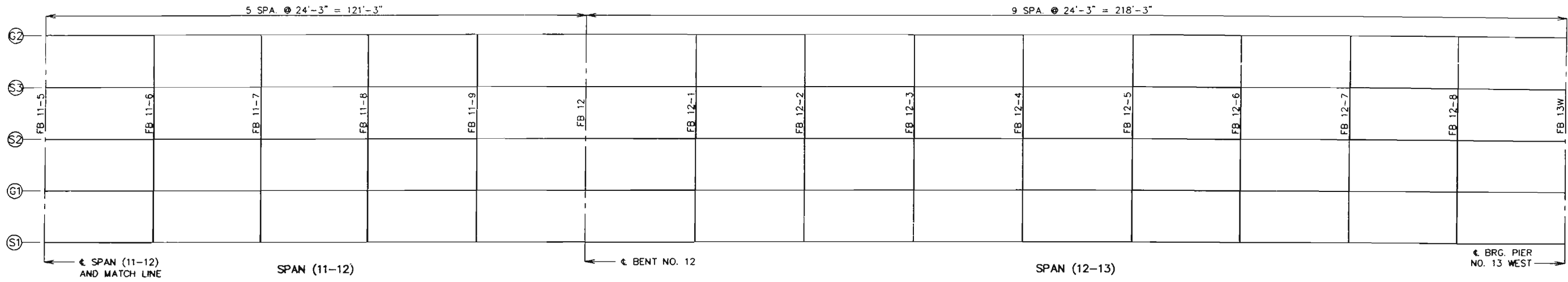


L096223

SHEET NO. 33 OF 73

← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		ED

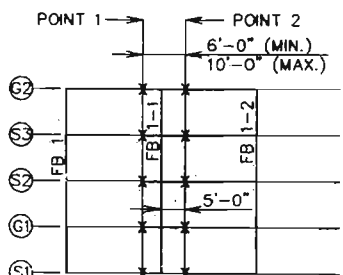


SPAN (11-12 CONTINUED)																														
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																														
S3																														
S2																														
G1																														
S1																														

SPAN (12-13)																														
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																														
S3																														
S2																														
G1																														
S1																														

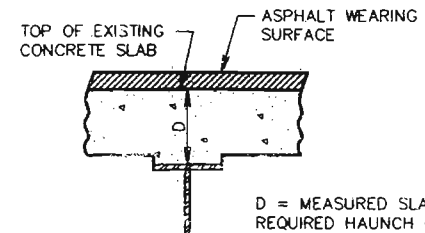
SPAN (12-13 CONTINUED)																														
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27							
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																														
S3																														
S2																														
G1																														
S1																														

737 SS
 PROJECT NAME: I-75 BOONE-COOPER COUNTY DIVISION (MAY 2008)

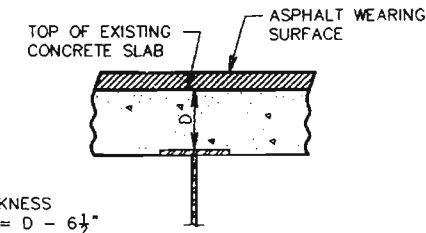


POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2	7 1/4"	+ 3/4"
S3	6"	- 1/2"

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
HAUNCH WORKSHEET
SPAN 11-12 TO PIER NO. 13

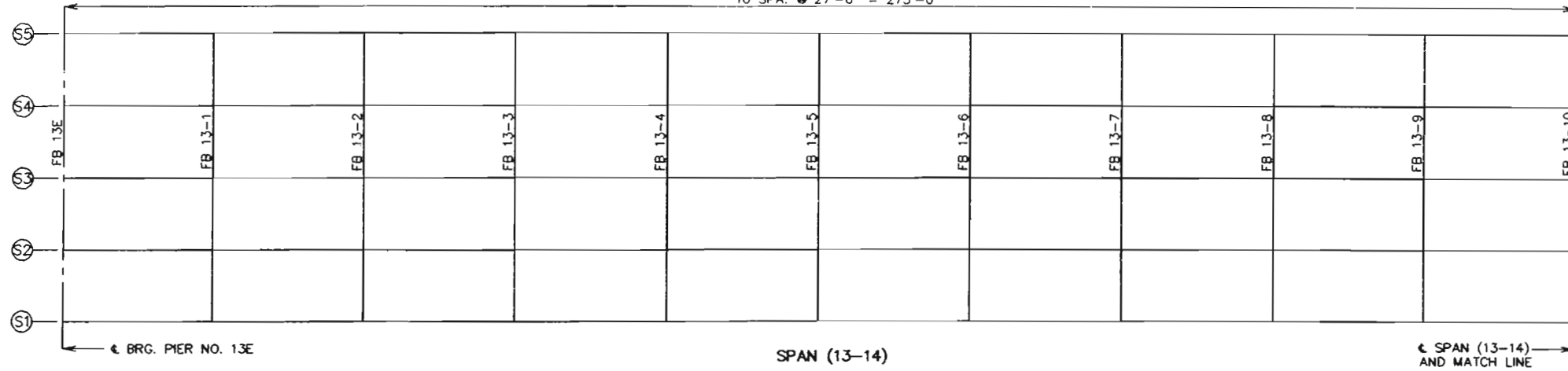


SHEET NO. 34 OF 73
L096223

← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		51

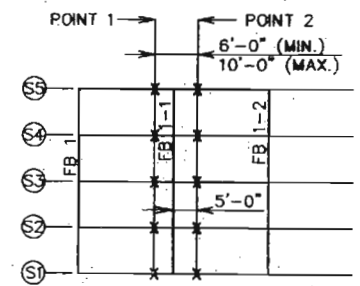
10 SPA. @ 27'-6" = 275'-0"



SPAN (13-14)																															
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/ORDR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S5																															
S4																															
S3																															
S2																															
S1																															

SPAN (13-14 CONTINUED)																															
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/ORDR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S5																															
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S3																															
S2																															
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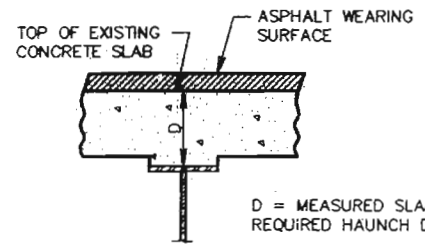
POINT NO.																																
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																																
STRINGER/ORDR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH		
S5																																
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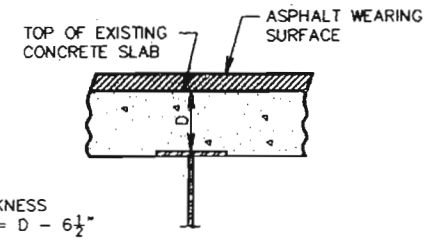
POINT NO.	2	
REFERENCE FLOORBEAM	FB 11-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/ORDR	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S5	7 1/2"	+ 1/2"
S4	6"	- 1/2"

EXAMPLE TABULATION

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
 REQUIRED HAUNCH DEPTH = D - 6 1/2"

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
 HAUNCH WORKSHEET
 PIER NO. 13 TO & SPAN 13-14

SHEET NO. 35 OF 73



8-9-93

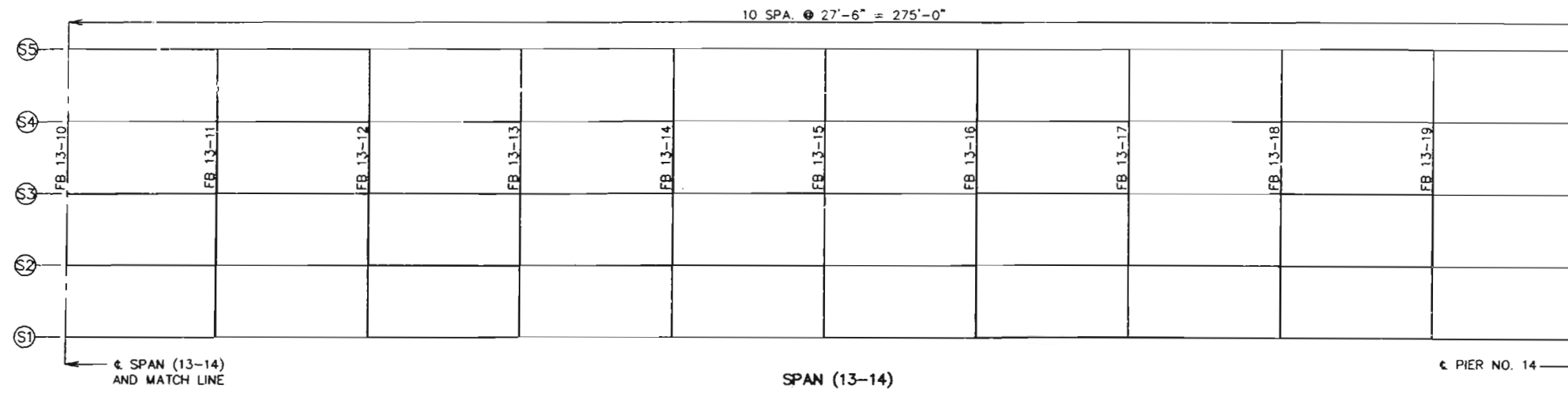
L096223

7-2-93

BLANCHARD, WELLS & RATLIFF
 ENGINEERS - PLANNERS - ARCHITECTS
 DESIGNED BY: DMA 7/93
 TRACED BY: MLJ 7/93
 CHECKED BY: AFR 7/93

← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		58

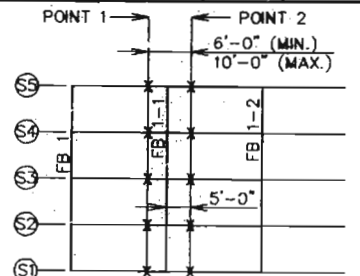


SPAN (13-14 CONTINUED)																														
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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SPAN (13-14 CONTINUED)																														
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30	
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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SPAN (13-14 CONTINUED)																														
POINT NO.																														
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GRIDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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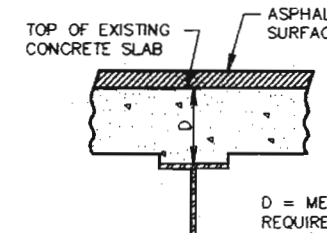
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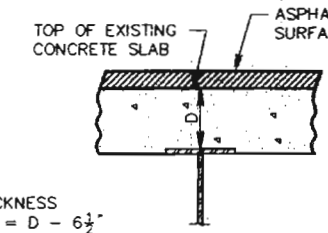
POINT NO.	2
REFERENCE FLOORBEAM	FB 1-1
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.
STRINGER/GRIDER	
S5	MEASURED SLAB THICKNESS: 7 1/4" REQUIRED HAUNCH DEPTH: + 3/4"
S4	MEASURED SLAB THICKNESS: 6" REQUIRED HAUNCH DEPTH: - 1/2"

EXAMPLE TABULATION

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
 REQUIRED HAUNCH DEPTH = D - 6 1/2"

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

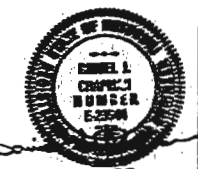
BAKER, WALLIS & RATLIFF
 ENGINEERS & ARCHITECTS

DRAWN BY: DMA 7/93
 TRACED BY: MLJ 7/93
 CHECKED BY: AFR 7/93

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
 HAUNCH WORKSHEET
 e SPAN 13-14 TO PIER NO. 14

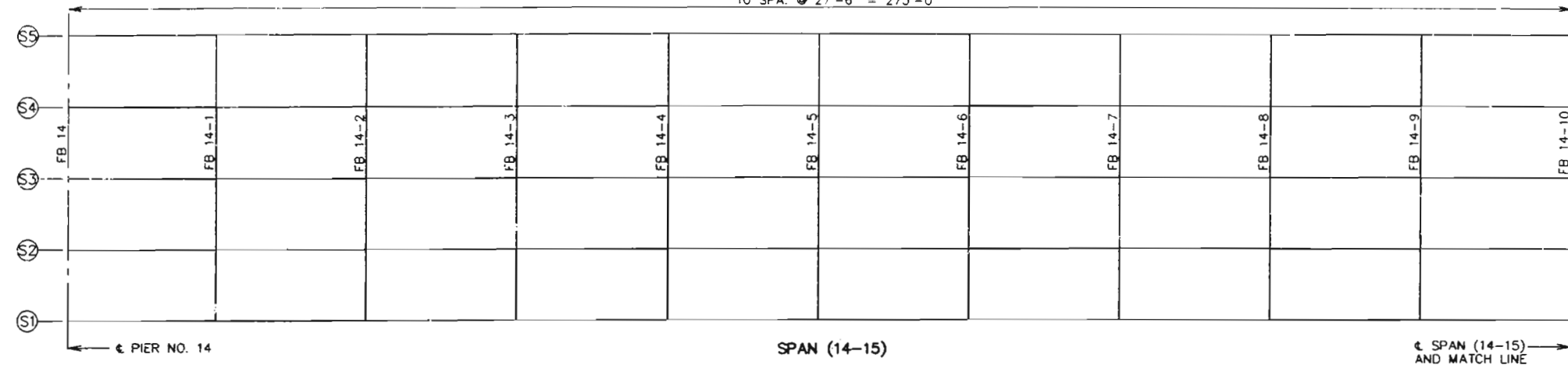
SHEET NO. 36 OF 73



8-9-97
 L096223

← BACK STA. AHEAD STA. →

10 SPA. @ 27'-6" = 275'-0"

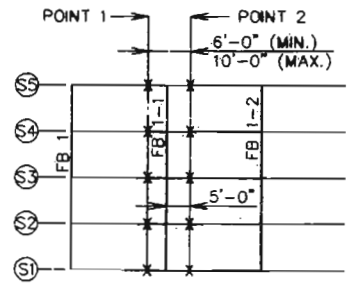


SPAN (14-15)																														
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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S4																														
S3																														
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SPAN (14-15 CONTINUED)																														
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30	
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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POINT NO.																														
REFERENCE FLOORBEAM																														
DISTANCE (AHEAD OR BACK STA.)																														
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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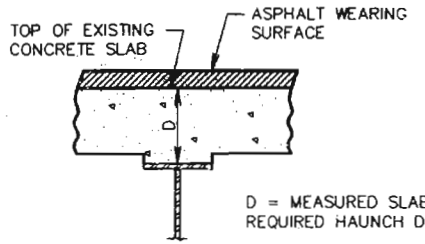
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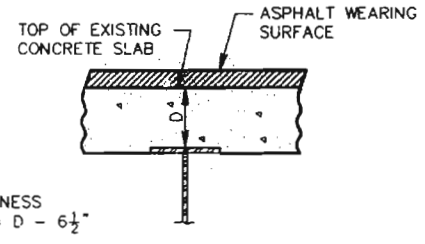
POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S5	7 1/2"	+ 3/4"
S4	6"	- 1/2"

EXAMPLE TABULATION

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
 REQUIRED HAUNCH DEPTH = D - 6 1/2"

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY: DMA 7/93
 TRACED BY: MLJ 7/93
 CHECKED BY: AFR 7/93

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
 HAUNCH WORKSHEET
 PIER NO. 14 TO & SPAN 14-15

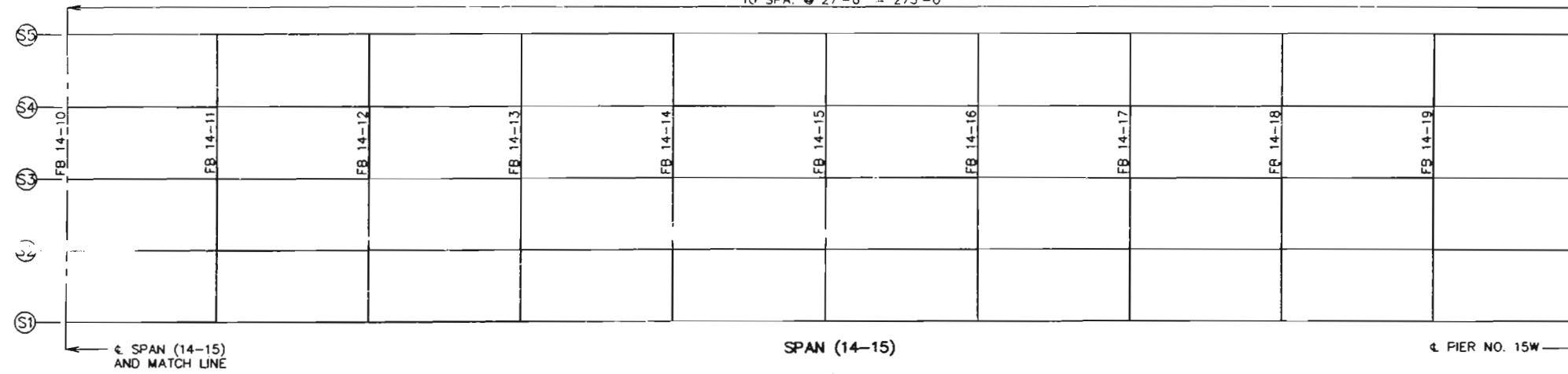
SHEET NO. 37 OF 73



L096223

← BACK STA. AHEAD STA. →

10 SPA. @ 27'-6" = 275'-0"

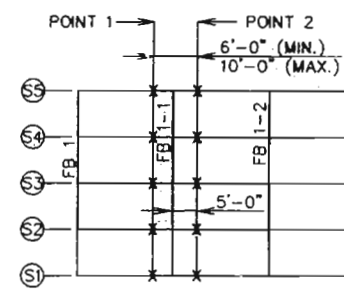


SPAN (14-15 CONTINUED)																															
POINT NO.	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																															
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
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SPAN (14-15 CONTINUED)																																
POINT NO.	16		17		18		19		20		21		22		23		24		25		26		27		28		29		30			
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																																
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
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SPAN (14-15 CONTINUED)																																	
POINT NO.																																	
REFERENCE FLOORBEAM DISTANCE (AHEAD OR BACK STA.)																																	
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	
S5																																	
S4																																	
S3																																	
S2																																	
S1																																	

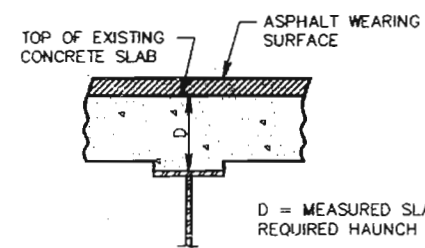
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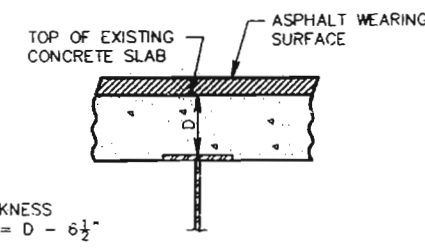
POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
S5	7 1/4"	+ 3/4"
S4	6"	- 1/2"

EXAMPLE TABULATION

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



POSITIVE HAUNCH



NEGATIVE HAUNCH

$D = \text{MEASURED SLAB THICKNESS}$
 $\text{REQUIRED HAUNCH DEPTH} = D - 6\frac{1}{2}"$

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

BUCHER, WILLIS & RATLIFF
 ENGINEERS & ARCHITECTS
 DRAWN BY: DMA 7/93
 TRACED BY: MLJ 7/93
 CHECKED BY: AFR 7/93

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
 HAUNCH WORKSHEET
 SPAN 14-15 TO PIER NO. 15

SHEET NO. 38 OF 73

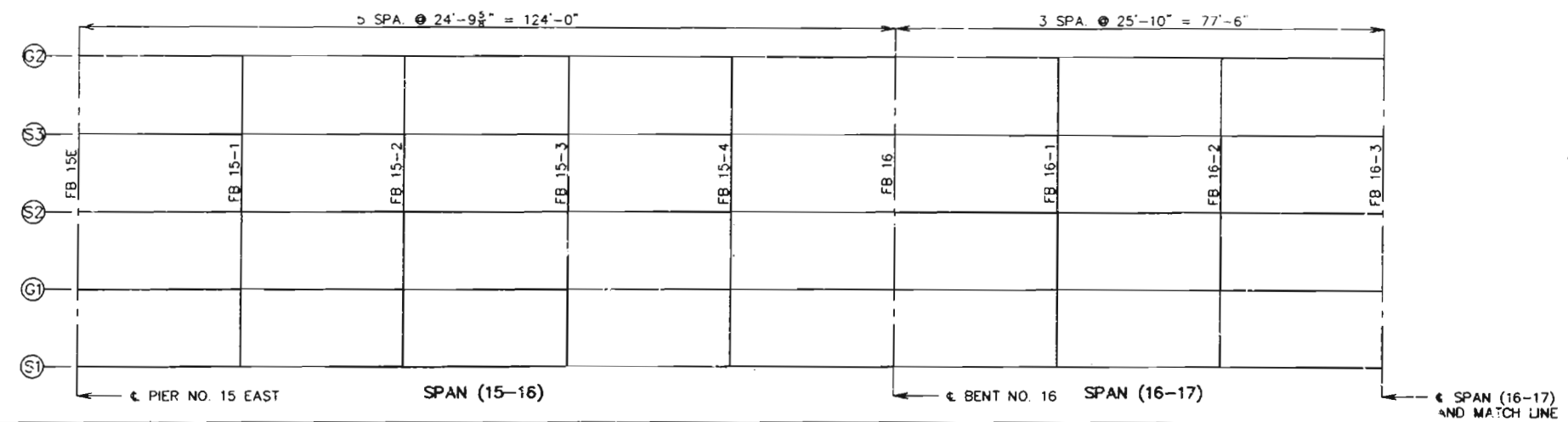


8-9-93

L096223

← BACK STA. AHEAD STA. →

STATE	PROJ. NO.	SHEET NO.
MO.		55

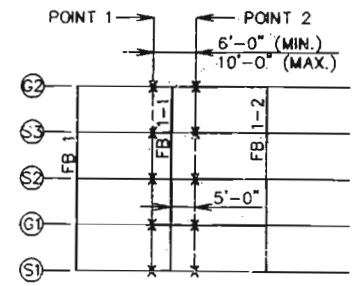


SPAN (15-16)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

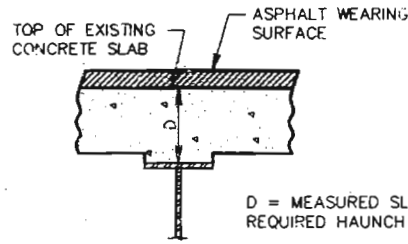
SPAN (16-17)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

SPAN (16-17) AND MATCH LINE																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

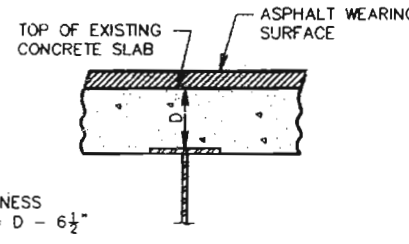
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POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/ORDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2	7 1/4"	+ 3/4"
S3	6"	- 1/2"



POSITIVE HAUNCH



NEGATIVE HAUNCH

NOTE:
THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

DRAWN BY:	DMA	7/93
TRACED BY:	MLJ	7/93
CHECKED BY:	AFR	7/93

EXAMPLE TABULATION

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

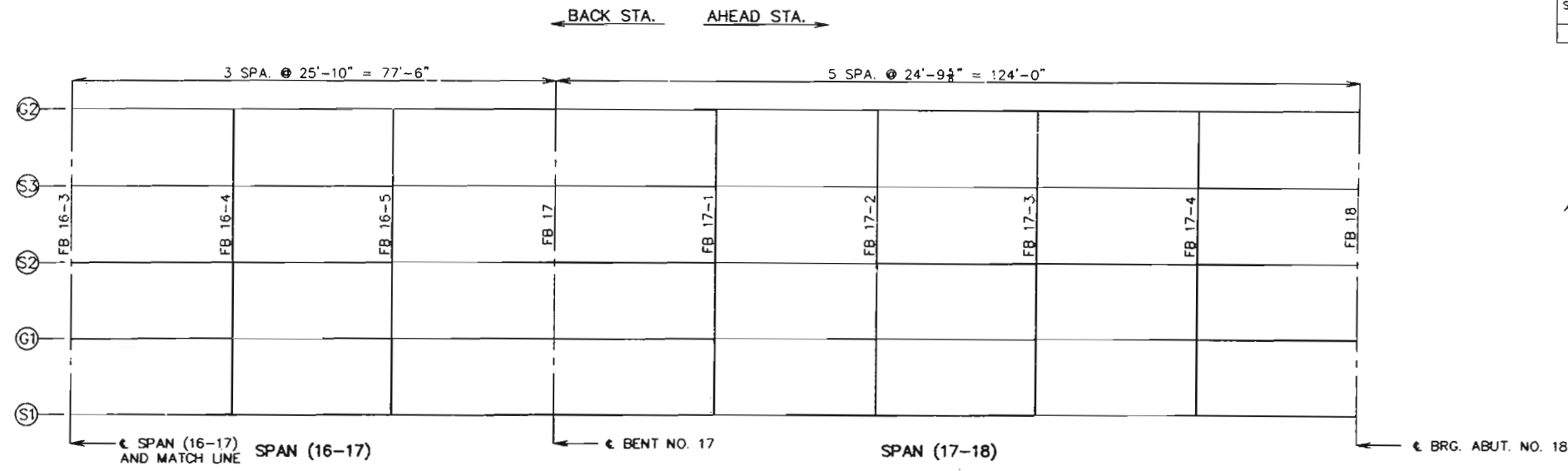
BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
HAUNCH WORKSHEET
PIER NO. 15 TO & SPAN 16-17



SHEET NO. 39 OF 73

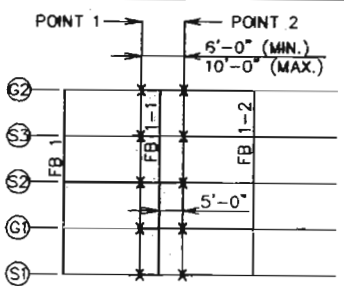
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SPAN (16-17) CONTINUED																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

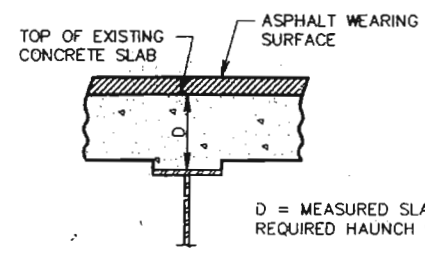
SPAN (17-18)																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

SPAN (17-18) CONTINUED																												
POINT NO.																												
REFERENCE FLOORBEAM																												
DISTANCE (AHEAD OR BACK STA.)																												
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2																												
S3																												
S2																												
G1																												
S1																												

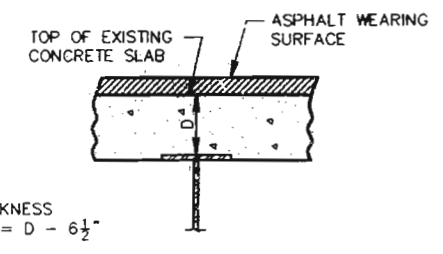


POINT NO.	2	
REFERENCE FLOORBEAM	FB 1-1	
DISTANCE (AHEAD OR BACK STA.)	5'-0" AH.	
STRINGER/GIRDER	MEASURED SLAB THICKNESS	REQUIRED HAUNCH DEPTH
G2	7 1/2"	+ 3/4"
S3	6"	- 1/2"

EXAMPLE TABULATION



POSITIVE HAUNCH



NEGATIVE HAUNCH

D = MEASURED SLAB THICKNESS
 REQUIRED HAUNCH DEPTH = D - 6 1/2"

NOTE:
 THIS SHEET TO BE COMPLETED BY CONTRACTOR'S PERSONNEL. SEE SPECIAL PROVISIONS.

BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS
 DRAWN BY: DMA 7/93
 TRACED BY: MLJ 7/93
 CHECKED BY: AFR 7/93

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

BOONE-COOPER COUNTIES

STAGE II CONSTRUCTION
 HAUNCH WORKSHEET
 & SPAN 16-17 TO ABUT. NO. 18

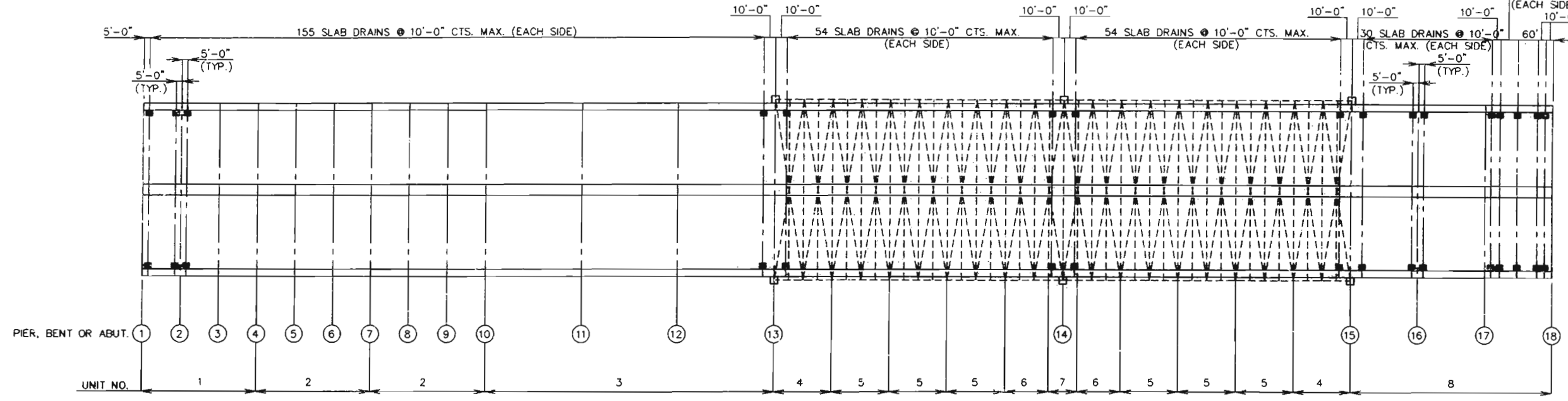
SHEET NO. 40 OF 73



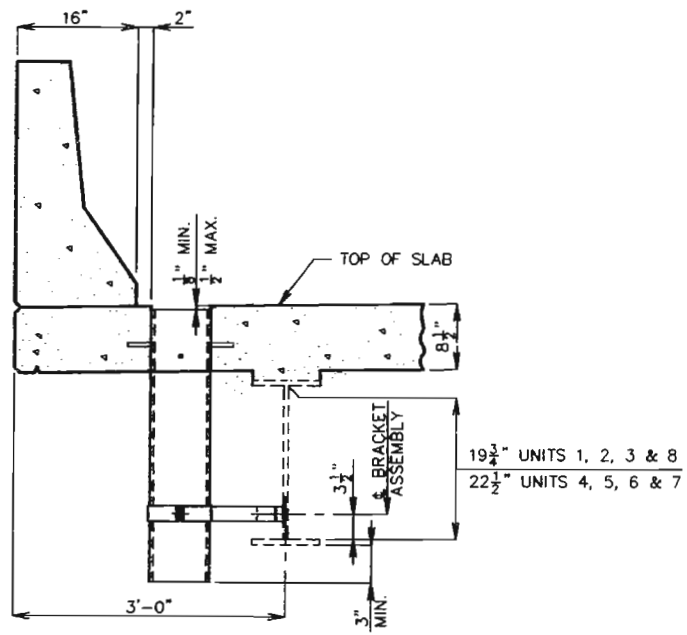
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4286
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 PROJECT NO. 880107
 DRAWING NO. 102
 SHEET NO. 40 OF 73

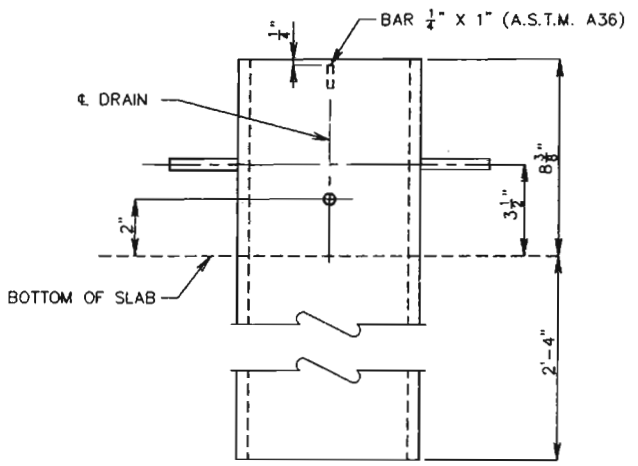
5 SLAB DRAINS @ 5'-0" CTS. (EACH SIDE)
10'-0"



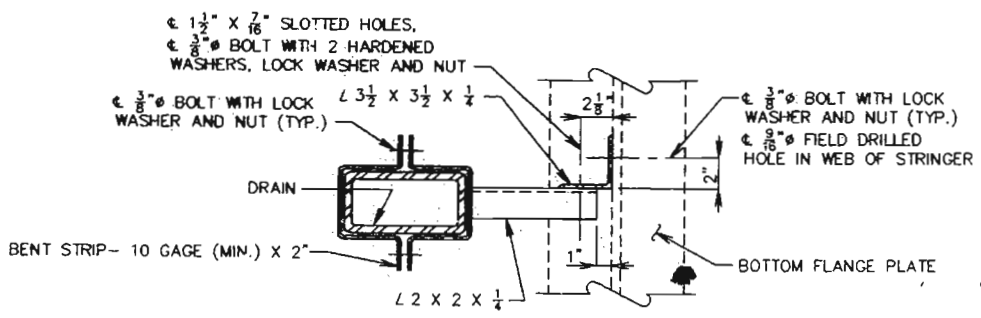
SLAB DRAIN LOCATIONS



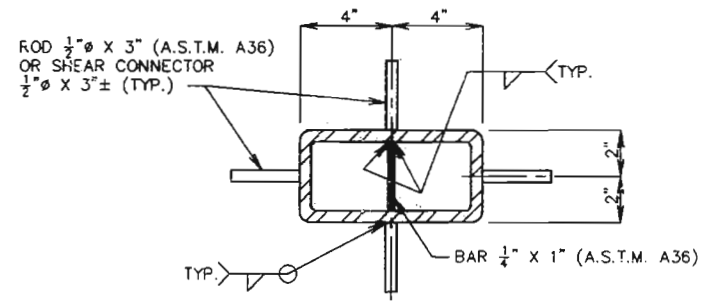
PART ELEVATION OF SLAB AT DRAIN



ELEVATION OF DRAIN



PART SECTION SHOWING BRACKET ASSEMBLY



PLAN OF DRAIN

NOTES:

- SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.
- OUTSIDE DIMENSIONS OF DRAINS ARE 8" X 4".
- DRAINS SHALL BE LOCATED 5'-0" FROM SUPPORTS UNLESS SHOWN OTHERWISE. SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR DRAINS.
- THE DRAINS AND BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.
- ALL BOLTS, HARDENED WASHERS, LOCK WASHERS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A153.
- SHOP DRAWINGS WILL NOT BE REQUIRED FOR THE SLAB DRAINS AND THE BRACKET ASSEMBLY.

LIFT DATE DATE 07/1/93 @ 10:48

BUCHER, WILLS & RATLIFF ENGINEERS & PLANNERS ARCHITECTS		
DRAWN BY:	DJM	6/93
TRACED BY:	ROC	6/93
CHECKED BY:	DMA	7/93

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

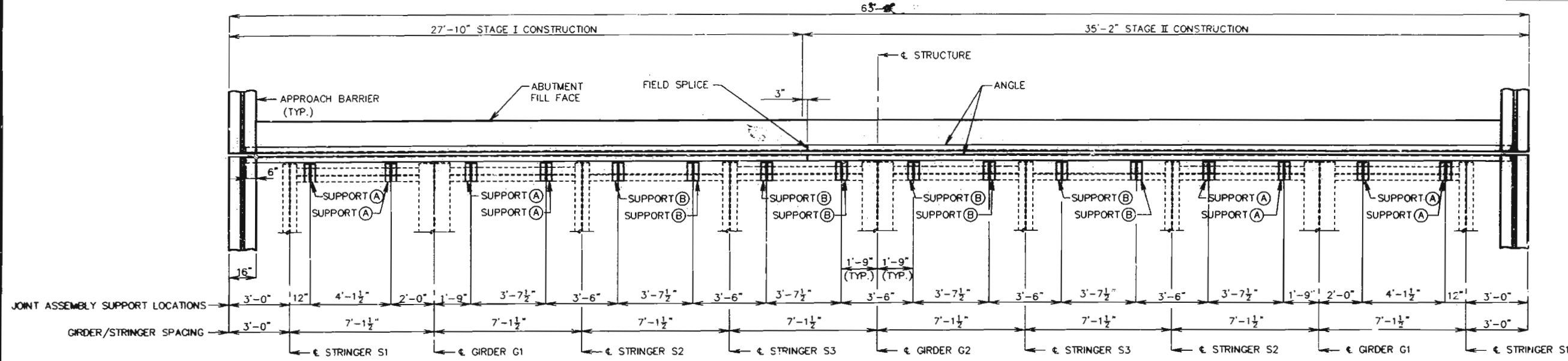
BOONE-COOPER COUNTIES

SLAB DRAIN DETAILS



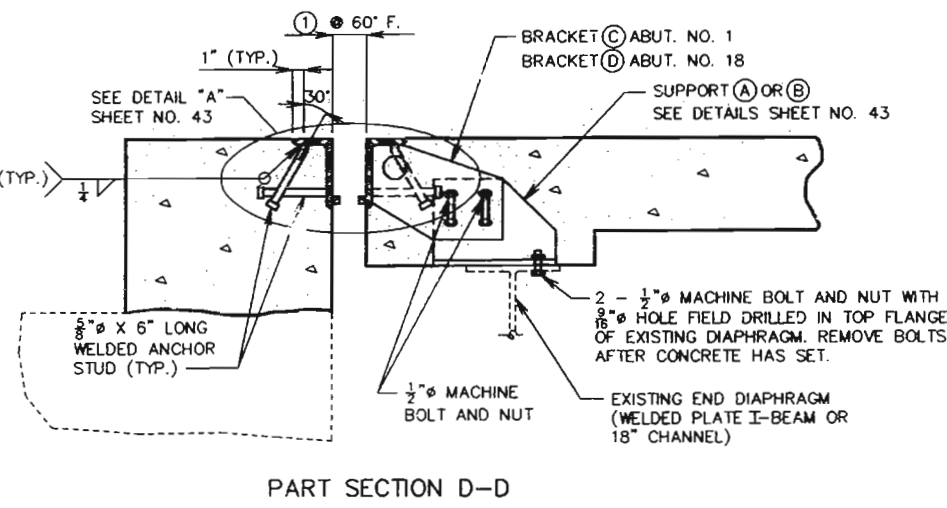
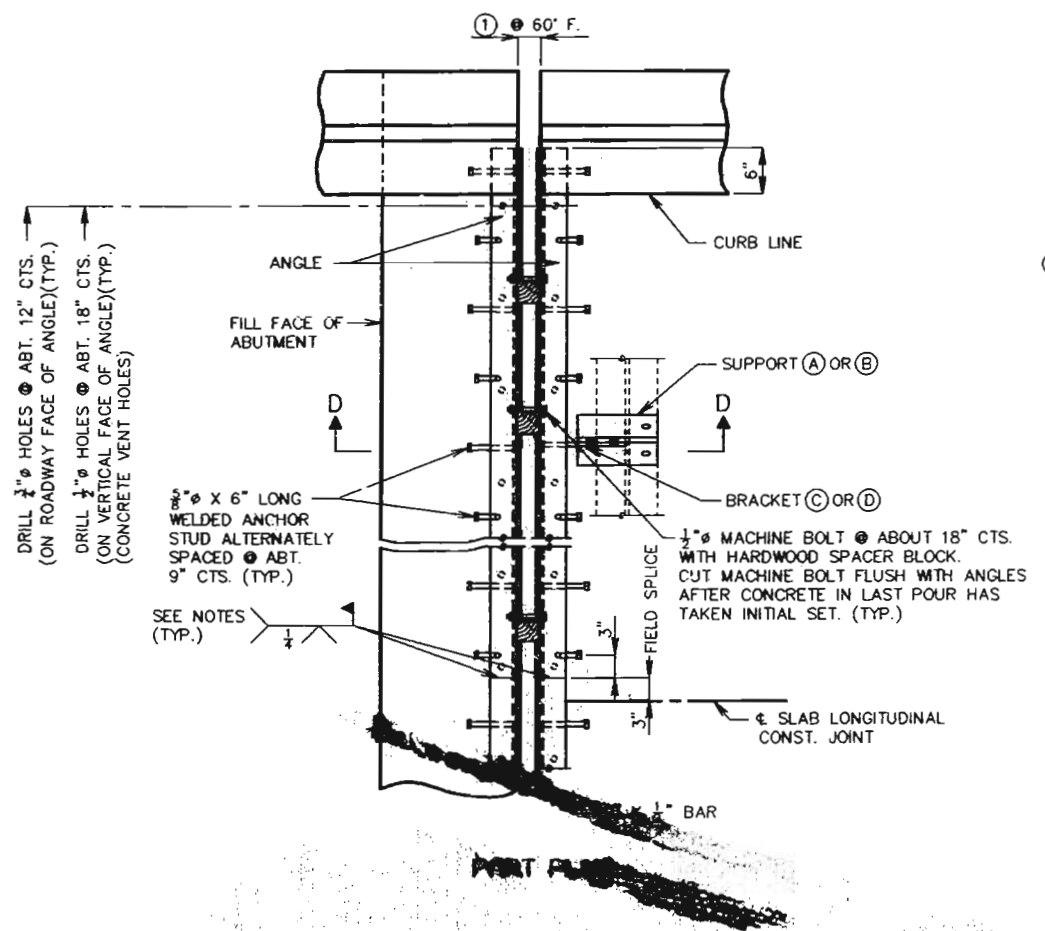
SHEET NO. 41 OF 73

L096223



PLAN
ABUTMENT NO. 18 SHOWN. ABUTMENT NO. 1 SIMILAR.

- NOTES:**
- STRUCTURAL STEEL FOR COMPRESSION SEAL SHALL BE FABRICATED IN TWO SECTIONS. DEVICE SHALL EXTEND 3" BEYOND EDGE OF SLAB LONGITUDINAL CONSTRUCTION JOINT AND FIELD SPLICED. WELDED ANCHOR STUDS SHALL BE LOCATED A MAXIMUM OF 6" FROM FIELD SPLICE. EXPOSED SURFACE OF FIELD SPLICE SHALL BE GROUND SMOOTH. DO NOT WELD INSIDE OF SLOT THAT HOLDS EXPANSION SEAL.
 - STRUCTURAL STEEL FOR THE EXPANSION DEVICE SHALL BE PAINTED IN THE SHOP WITH TWO COATS OF AN INORGANIC ZINC PRIMER AS SPECIFIED FOR SYSTEM C TO PRODUCE A DRY FILM THICKNESS OF NOT LESS THAN 5.0 MILS. NO FINISH COAT SHALL BE APPLIED. SEE SPECIAL PROVISIONS.
 - THE EXPANSION DEVICE SHALL BE BENT TO CONFORM TO THE CROWN AND GRADE OF ROADWAY.
 - STRUCTURAL STEEL FOR THE ARMORED JOINT SHALL BE GRADE A36.
 - ANCHORS FOR COMPRESSION SEAL ARMOR SHALL BE APPROVED STUD WELDED ANCHORS (C1010 THRU C1020).
 - PLAN DIMENSIONS ARE BASED ON INSTALLATION @ 60° F.
 - DIMENSION (1) SHALL BE INCREASED $\frac{1}{16}$ " @ ABUTMENT NO. 1 AND $\frac{1}{8}$ " AT ABUTMENT NO. 18 FOR EACH 10° FALL IN TEMPERATURE AND DECREASED $\frac{1}{16}$ " @ ABUTMENT NO. 1 AND $\frac{1}{8}$ " @ ABUTMENT NO. 18 FOR EACH 10° RISE IN TEMPERATURE @ INSTALLATION.
 - SEE SPECIAL PROVISIONS FOR THE REQUIREMENTS OF COMPRESSION JOINT SEAL.
 - FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT SHALL BE INCLUDED IN CONTRACT UNIT PRICE FOR PREFORMED COMPRESSION EXPANSION JOINT SEAL.
 - NEOPRENE EXTRUSIONS SHALL MEET A.S.T.M. D3542-83.
 - SEE SHEET NO. 43 FOR MISCELLANEOUS COMPRESSION SEAL DETAILS.
- SIZE OF ARMOR JOINT**
- VERTICAL LEG OF ANGLE SHALL BE A MINIMUM OF DEPTH OF SEAL + $1\frac{1}{2}$ ". HORIZONTAL LEG OF ANGLE SHALL BE A MINIMUM OF 3". MINIMUM THICKNESS OF ANGLE SHALL BE $\frac{1}{2}$ ".
 - IF A SEAL SIZE LARGER THAN THAT INDICATED ON THE PLANS IS USED, THE MOVEMENT RANGE, THE OPENING @ 60° AND ALL DIMENSIONS FOR THE ARMOR ANGLES SHALL BE SHOWN ON THE SHOP DRAWINGS.



LOCATION	SEAL (WIDTH)	①	②	REQUIRED MOVEMENT RANGE
ABUTMENT NO. 1	3.0"	$1\frac{7}{8}$ "	SEAL DEPTH + $\frac{3}{4}$ "	1.0"
ABUTMENT NO. 18	4.0"	$2\frac{3}{8}$ "	SEAL DEPTH + $\frac{3}{4}$ "	1.6"

NOTE: DEPTH OF SEAL SHALL NOT BE LESS THAN WIDTH OF SEAL. SEE SHEET NO. 43 FOR LOCATION OF DIMENSION (2).

44863

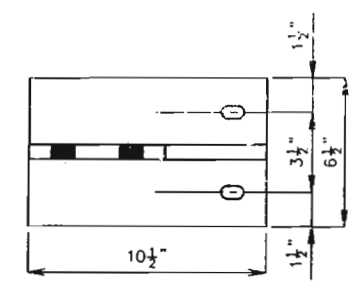
BUCHER, WILLIS & RATLIFF
ENGINEERS & ARCHITECTS

DRAWN BY: [Signature] 6/93
TRACED BY: ROC 6/93
CHECKED BY: SAC 7/93

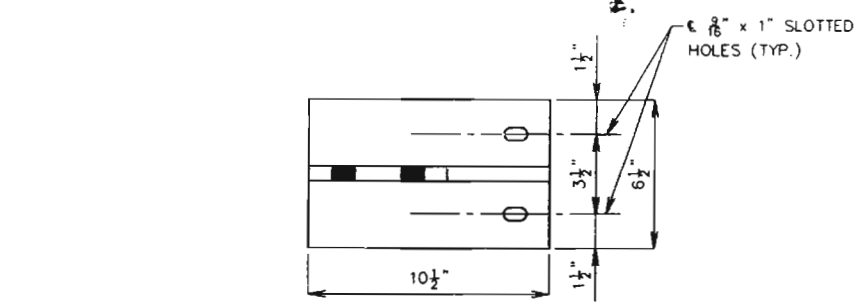
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

BOONE-COOPER COUNTIES
COMPRESSION SEAL DETAILS
ABUTMENTS NO. 1 & 18



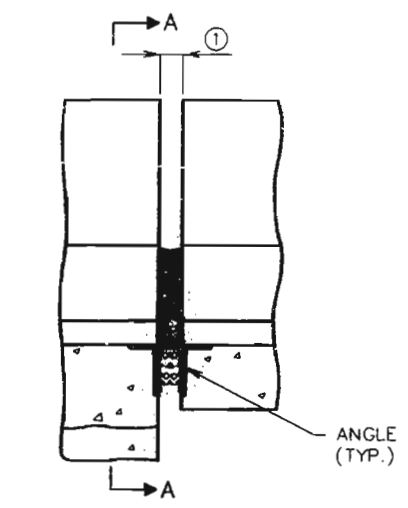
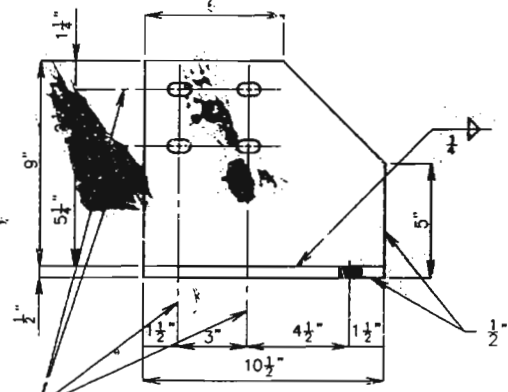
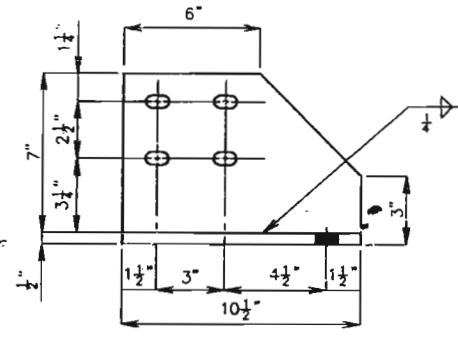


SUPPORT A

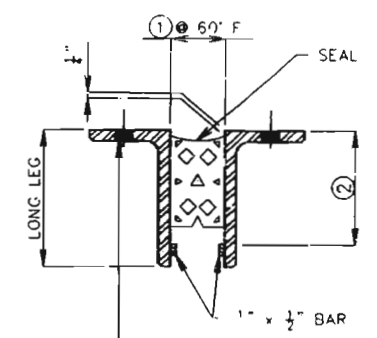


SUPPORT B

1/8" x 1" SLOTTED HOLES (TYP.) USE 2-1/2" MACHINE BOLTS

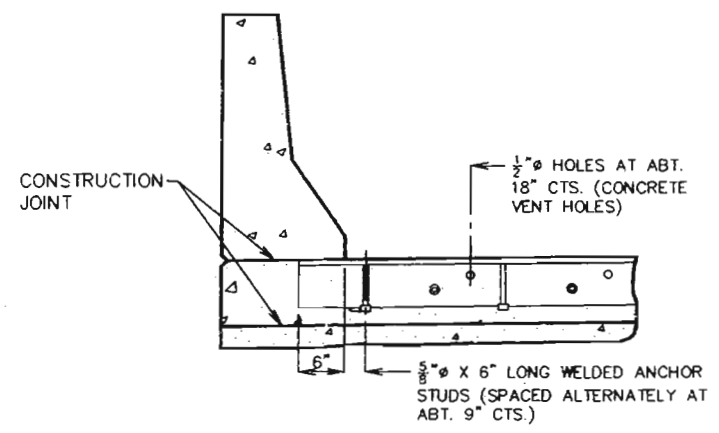


PART ELEVATION ABUTMENTS NO. 1 & 18

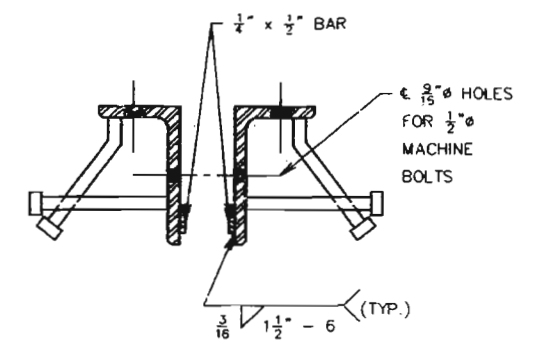


PART CROSS SECTION THRU EXPANSION JOINT

NOTE: SEE DIMENSION TABLE ON SHEET NO. 42 FOR DIMENSIONS ① AND ②

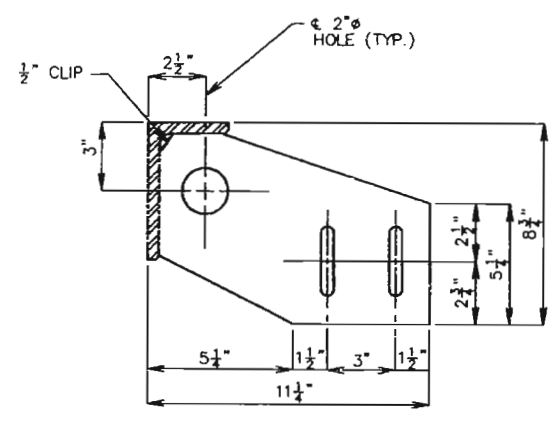


PART SECTION A-A

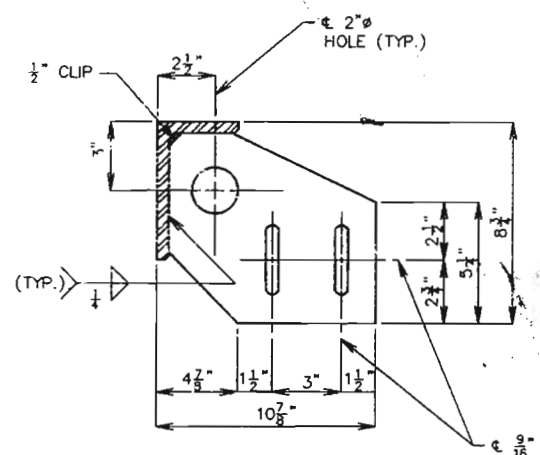


DETAIL A

NOTE: SEE SHEET NO. 42 FOR COMPRESSION SEAL DETAILS.

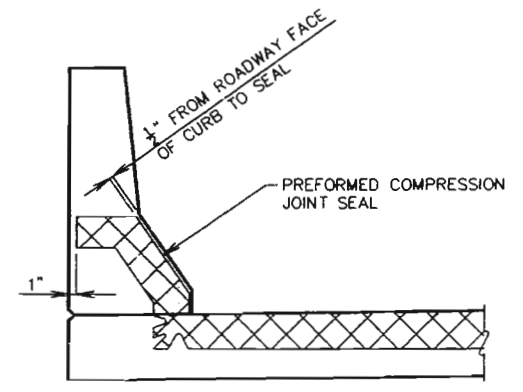


BRACKET C ABUTMENT NO. 1



BRACKET D ABUTMENT NO. 18

3/16" x 3" HOLES (TYP.) MACHINE BOLTS



PART SECTION A-A THRU JOINT SEAL

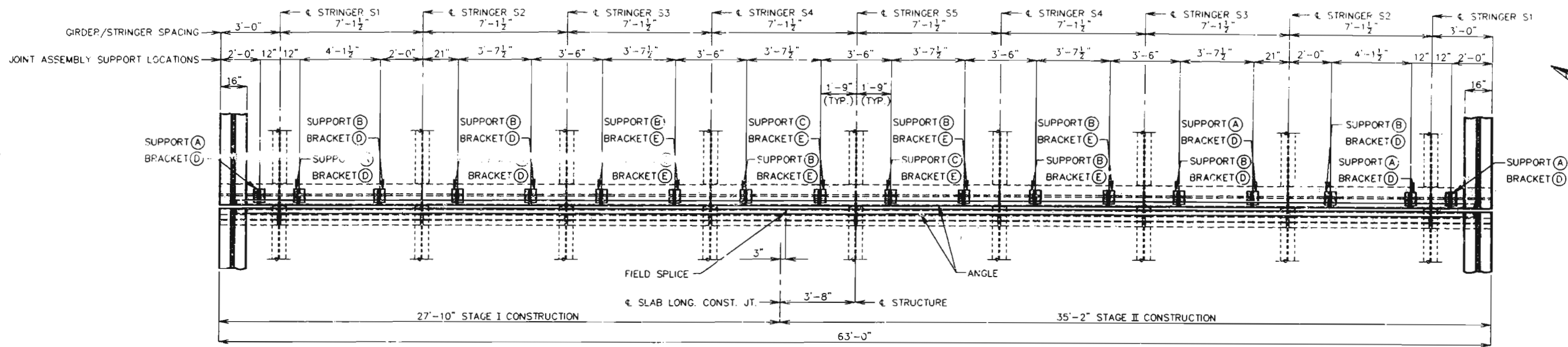
59-1445

BUCKER, WALLS & RATUFF
 ENGINEERS • PLANNERS • ARCHITECTS
 DRAWN BY: DJM 6/93
 TRACED BY: KAM 6/93
 CHECKED BY: SAC 7/93

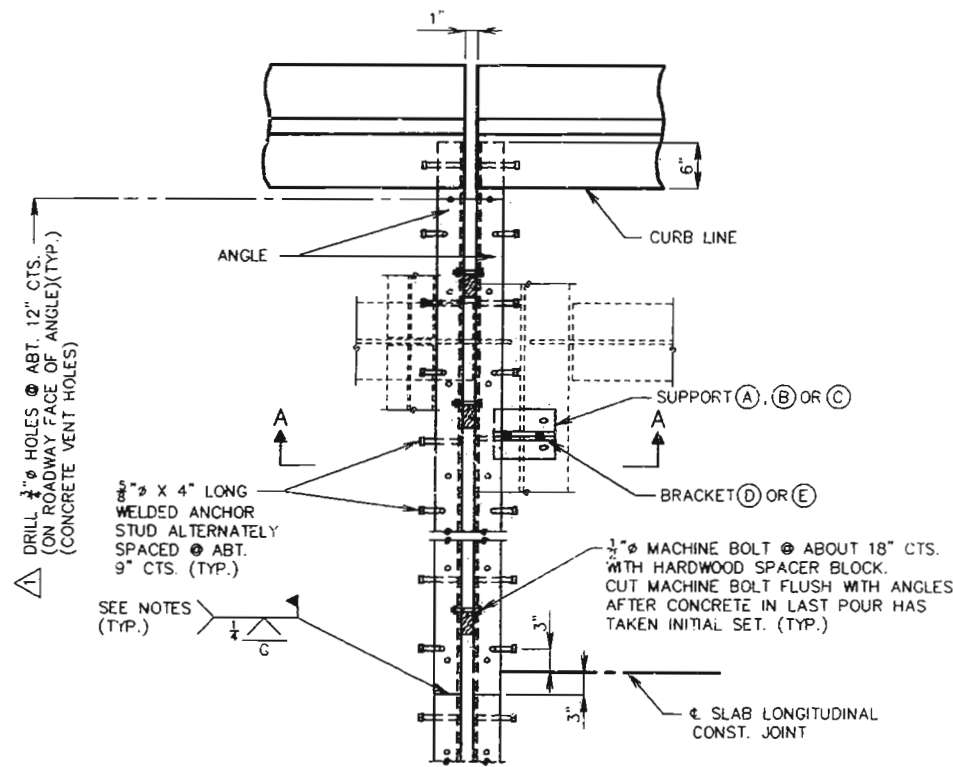
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

BOONE-COOPER COUNTIES
 MISCELLANEOUS COMPRESSION SEAL DETAILS

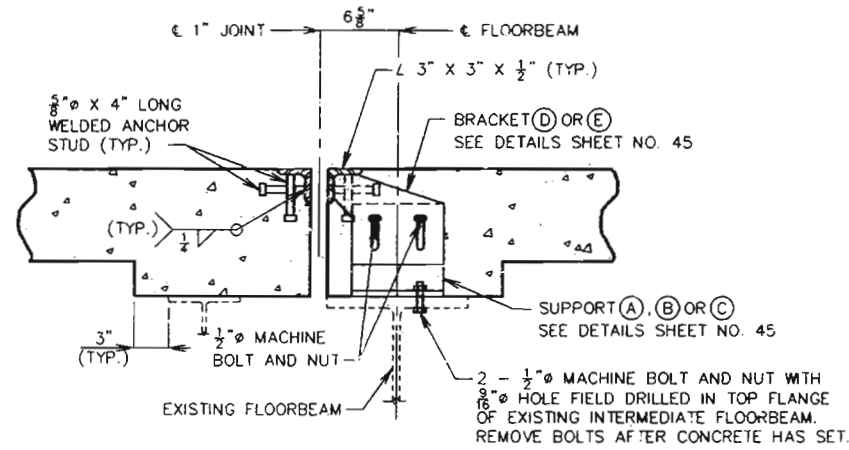




PLAN



PART PLAN



PART SECTION A-A

NOTES:

- STRUCTURAL STEEL FOR EXPANSION JOINT SHALL BE FABRICATED IN TWO SECTIONS. DEVICE SHALL EXTEND 3" BEYOND EDGE OF SLAB LONGITUDINAL CONSTRUCTION JOINT AND FIELD SPLICED. WELDED ANCHOR STUDS SHALL BE LOCATED A MAXIMUM OF 6" FROM FIELD SPLICE. EXPOSED SURFACE OF FIELD SPLICE SHALL BE GROUND SMOOTH.
- STRUCTURAL STEEL FOR THE JOINT SEALANT ASSEMBLY SHALL BE PAINTED IN THE SHOP WITH TWO COATS OF AN INORGANIC ZINC PRIMER AS SPECIFIED FOR SYSTEM C TO PRODUCE A DRY FILM THICKNESS OF NOT LESS THAN 5.0 MILS. NO FINISH COAT SHALL BE APPLIED. SEE SPECIAL PROVISIONS.
- THE ARMOR SHALL BE BENT TO CONFORM TO THE CROWN AND GRADE OF ROADWAY.
- STRUCTURAL STEEL FOR THE ARMORED JOINT SHALL BE GRADE A36.
- ANCHORS FOR EXPANSION JOINT ARMOR SHALL BE APPROVED STJD WELDED ANCHORS (C1010 THRU C1020).
- SEE SPECIAL PROVISIONS FOR THE REQUIREMENTS OF JOINT SEALANT.
- FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT SHALL BE INCLUDED IN CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR STRINGER EXPANSION JOINT. SEE SPECIAL PROVISIONS.
- SEE SHEET NO. 45 FOR MISCELLANEOUS STRINGER EXPANSION JOINT DETAILS.

65

PROJECT MADE WITH L-TO BOONE-COOPER COUNTIES BY MAILED IN VARIOUS VALUES (MINIMUM 20% PERCENT)

BUCHER, WILLIS & RATLIFF ENGINEERS • PLANNERS • ARCHITECTS		
DRAWN BY:	DMA	6/93
TRACED BY:	RCC	7/93
CHECKED BY:	SAC	7/93

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

REVISED MARCH 7, 1994

BOONE-COOPER COUNTIES

STRINGER
EXPANSION JOINT DETAILS

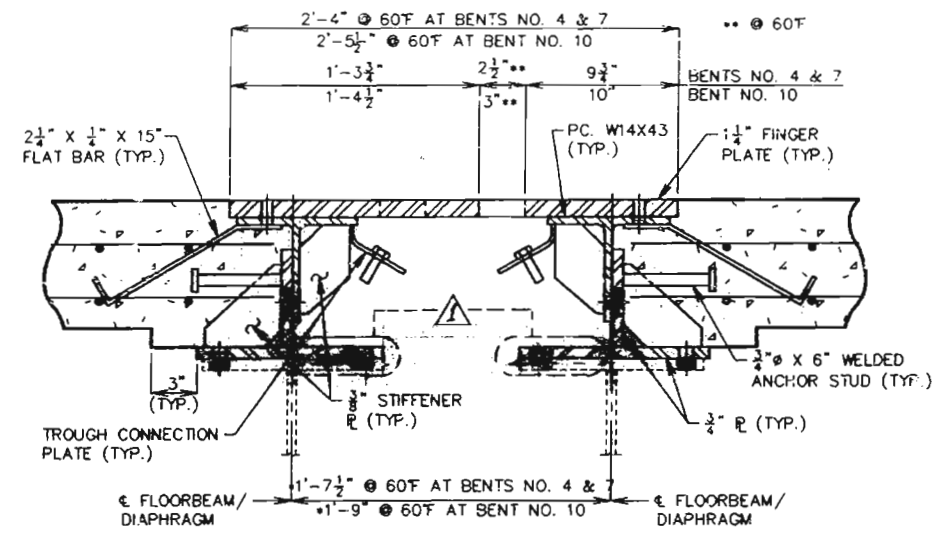
SEE FINAL PLANS

SHEET NO. 44 OF 73

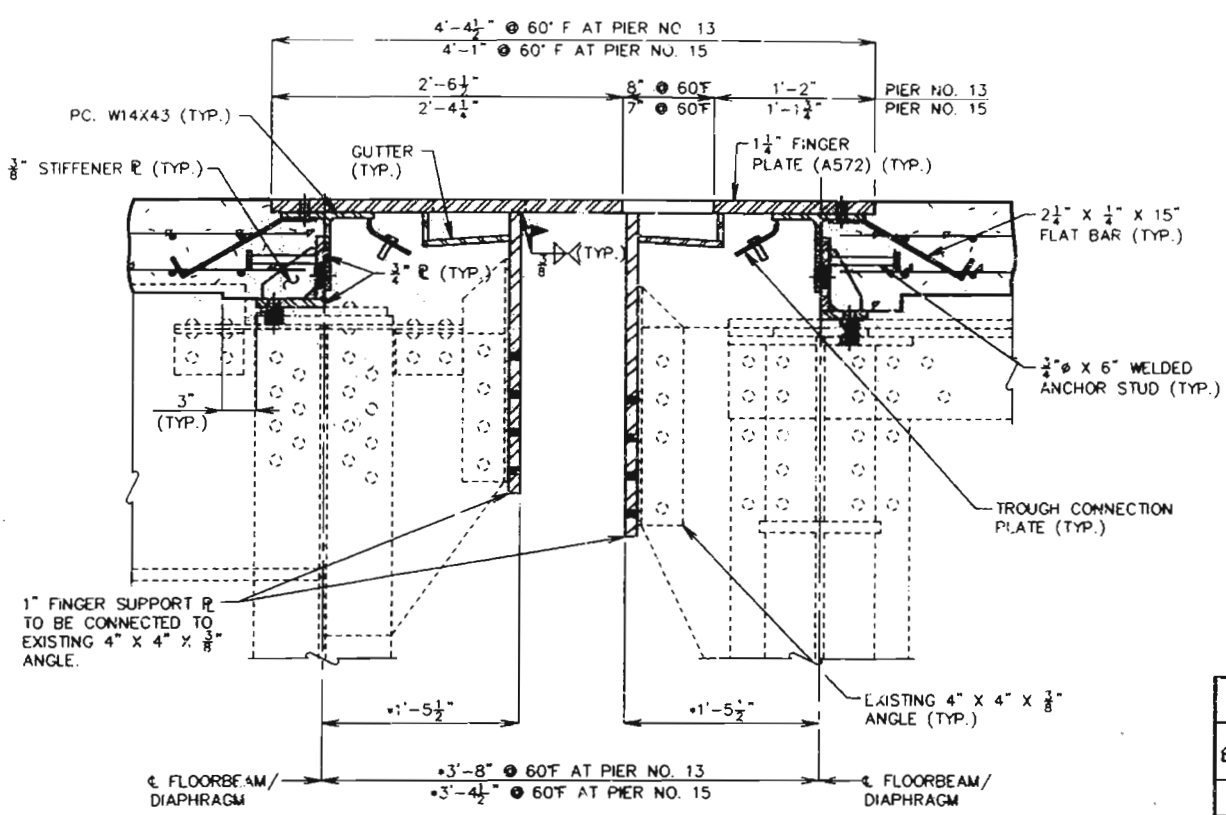


8-9-93

L096223

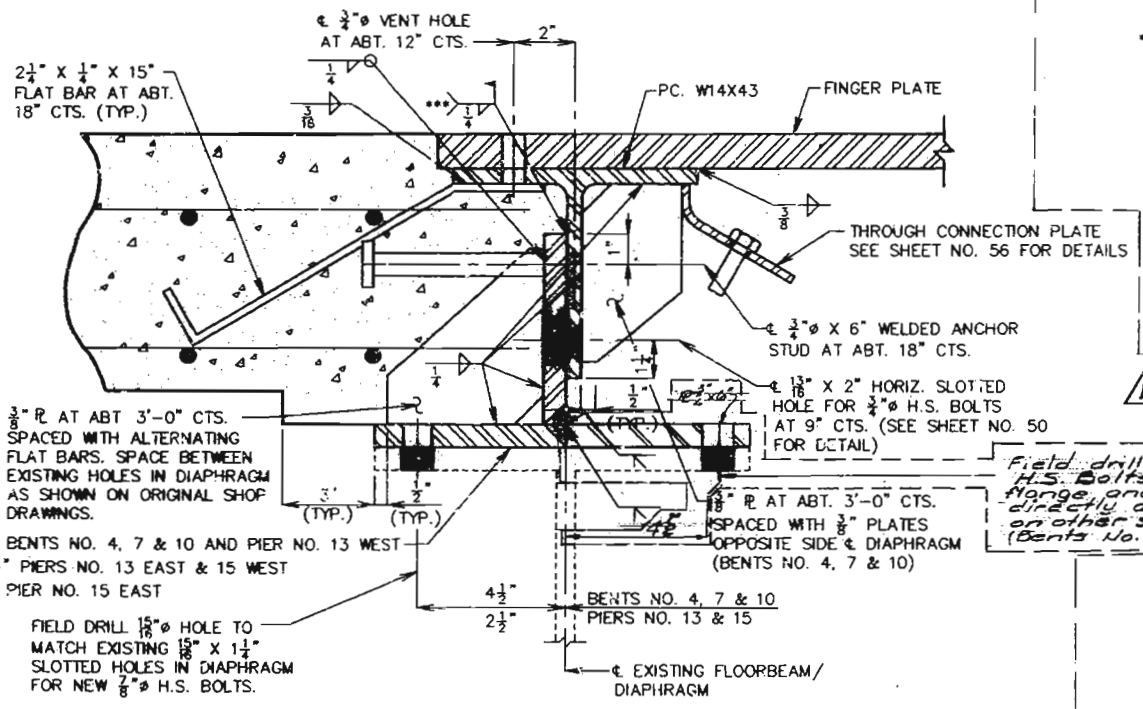


TYPICAL SECTION
BENTS NO. 4, 7 & 10

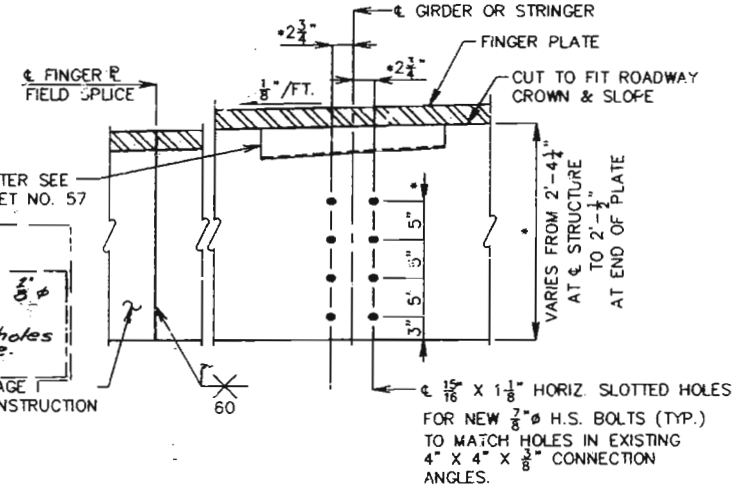


TYPICAL SECTION
PIERS NO. 13 & 15

TABLE OF JOINT MOVEMENT	
BENT/PIER NO.	JOINT MOVEMENT PER 10° F TEMPERATURE CHANGE
4	1/4"
7	1/4"
10	3/8"
13	1/4"
15	3/8"



FINGER PLATE SUPPORT ASSEMBLY



FINGER SUPPORT PLATE ELEVATION

NOTES:

PLAN DIMENSIONS ARE BASED ON INSTALLATION AT 60° F. THE EXPANSION GAP AND OTHER DIMENSIONS SHALL BE ADJUSTED DURING INSTALLATION FOR COMPLIANCE WITH ANY TEMPERATURE CHANGE. SEE TABLE ON THIS SHEET.

MATERIAL FOR THE EXPANSION DEVICE SHALL BE A-36 STRUCTURAL GRADE STEEL, EXCEPT AS NOTED; FABRICATED IN ACCORDANCE WITH SECTION 712 OF THE STANDARD SPECIFICATIONS.

STRUCTURAL STEEL FOR THE EXPANSION DEVICE SHALL BE PAINTED IN THE SHOP WITH TWO COATS OF AN INORGANIC ZINC PRIMER AS SPECIFIED FOR SYSTEM C TO PRODUCE A DRY FILM THICKNESS OF NOT LESS THAN 5.0 MILS. NO FINISH COAT SHALL BE APPLIED. SEE SPECIAL PROVISIONS.

PAYMENT FOR FURNISHING, PAINTING AND INSTALLING STRUCTURAL STEEL FOR THE EXPANSION DEVICE WILL BE MADE AT THE CONTRACT UNIT PRICE PER LIN. FT. FOR EXPANSION DEVICE (FINGER PLATE). SEE SPECIAL PROVISIONS.

⚠ Delete (see sheet No. 53B & 53C)

⚠ Revised 7-5-1994

⚠ Revised 6-29-1994

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

BOONE-COOPER COUNTIES

DETAILS OF FINGER PLATE
SUPPORT ASSEMBLY

SHEET NO. 53 OF 73

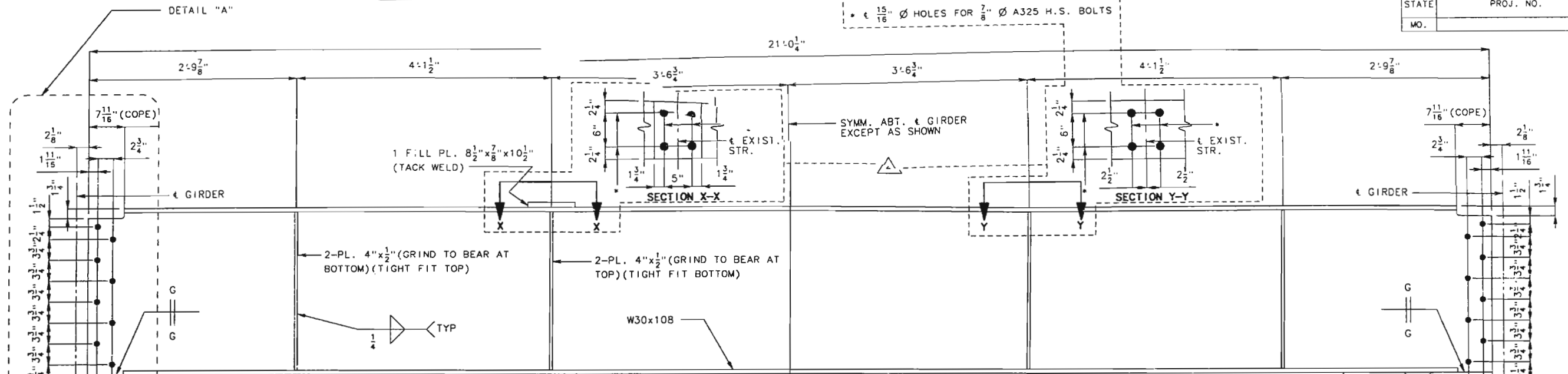


L096223

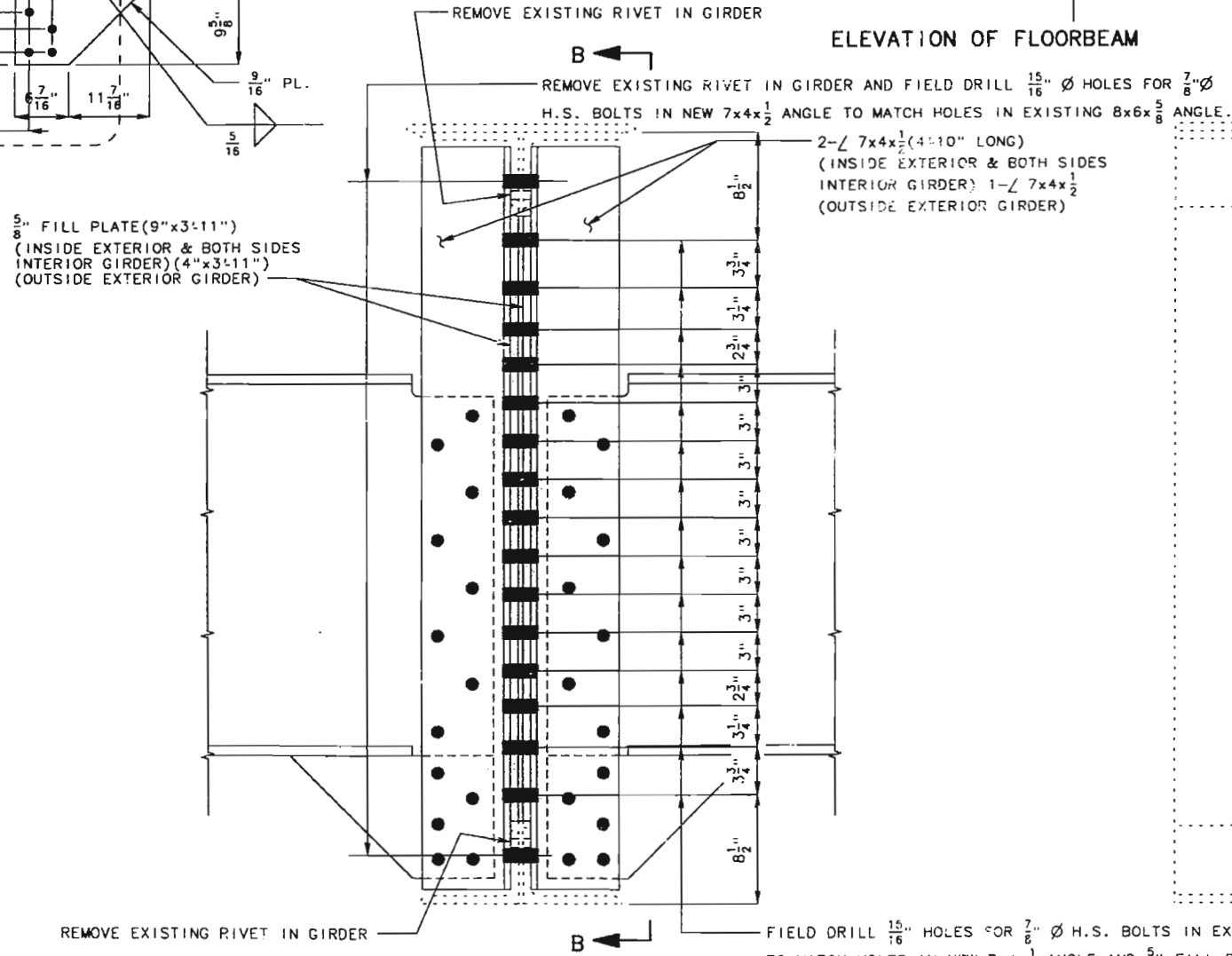
66 957

DECHER, WILLS & RATUFF
ENGINEERS • PLANNERS • ARCHITECTS

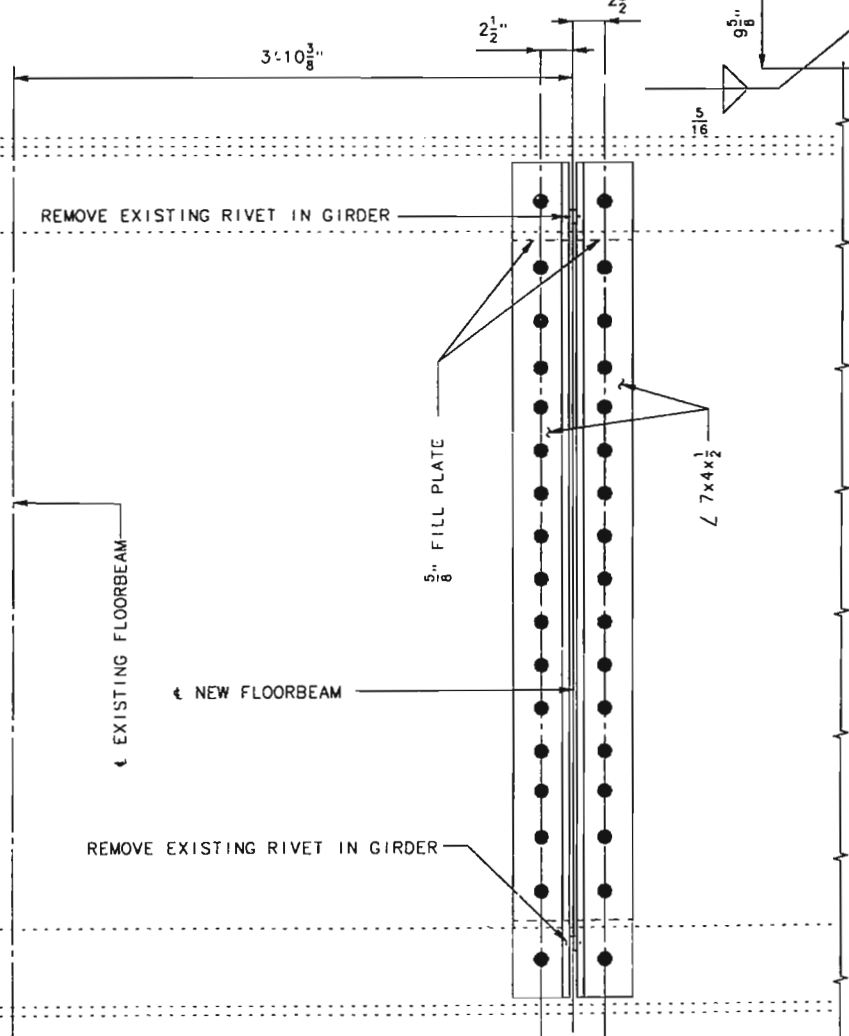
DESIGN BY: DMA 6/93
TRACED BY: TMM 6/93
CHECKED BY: DJC 7/93



ELEVATION OF FLOORBEAM



DETAIL "A" (INTERIOR SHOWN) (EXTERIOR SIMILAR)



SECTION B-B

NOTE: ALL BOLTS SHALL BE $\frac{7}{8}$ " ϕ A325 H.S. BOLTS (ALL HOLES $\frac{15}{16}$ " ϕ)
 ALL STEEL SHALL BE A36.
 THIS RETROFIT SHALL BE ON BOTH SIDES OF BENTS NO. 4 & NO. 7 AND THE SPAN (9-10) SIDE OF BENT NO. 10.

ADD SHEET 53A

67

DETAILS OF FLOOR BEAM RETROFIT REVISED 7-20-1994

DETAILED JUNE 1994
 CHECKED JUNE 1994

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

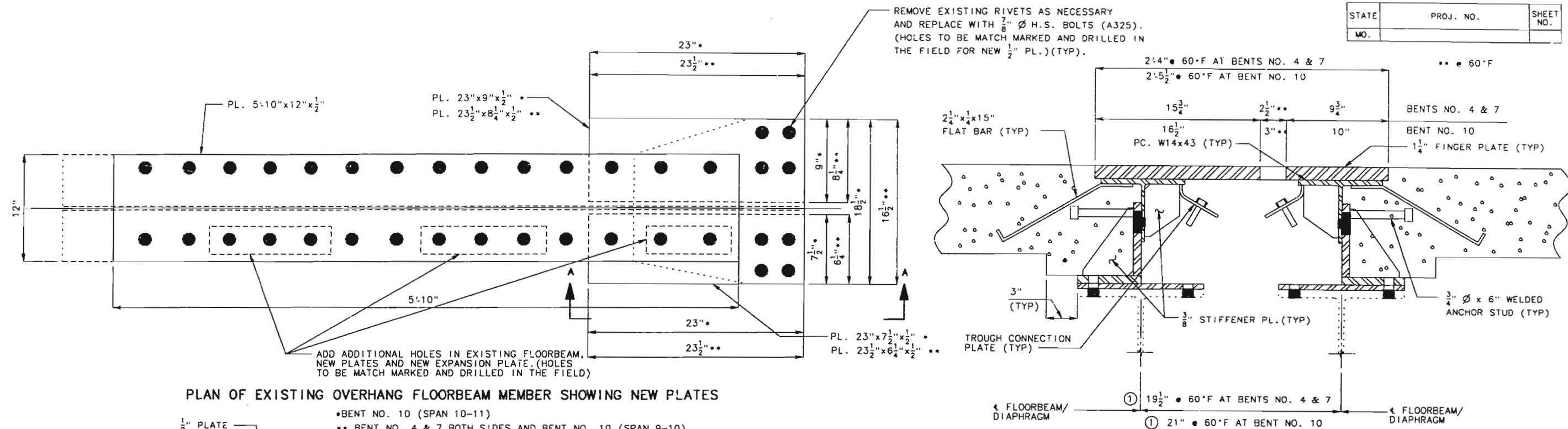
REVISED 6-29-1994 SHEET NO. 53A OF 73.

BOONE-COOPER COUNTIES

L096223

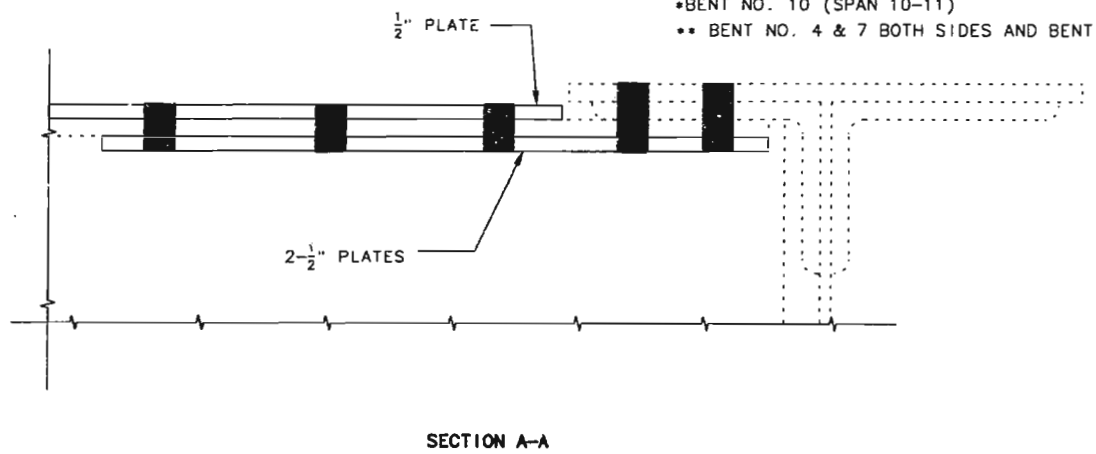
SEE OTHER PLANS

STATE	PROJ. NO.	SHEET NO.
MO.		



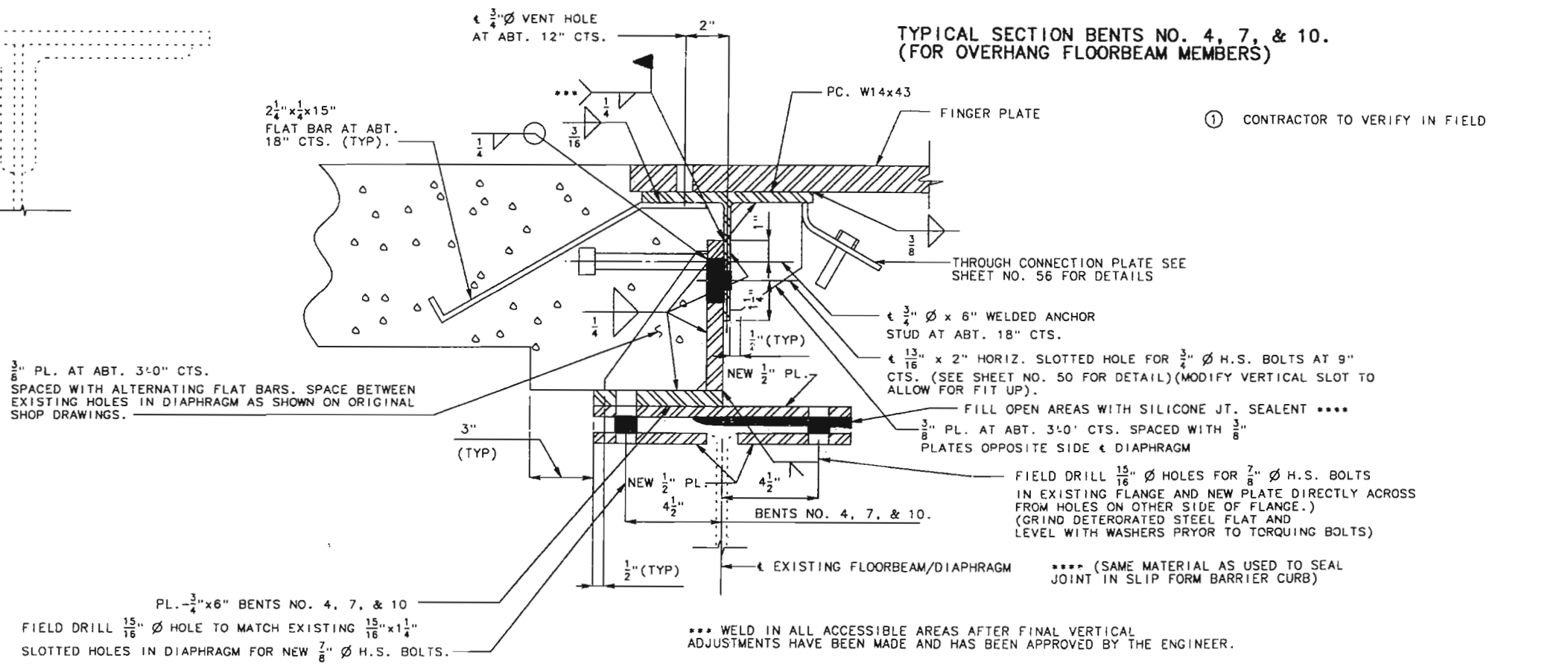
PLAN OF EXISTING OVERHANG FLOORBEAM MEMBER SHOWING NEW PLATES

*BENT NO. 10 (SPAN 10-11)
 ** BENT NO. 4 & 7 BOTH SIDES AND BENT NO. 10 (SPAN 9-10)



TYPICAL SECTION BENTS NO. 4, 7, & 10. (FOR OVERHANG FLOORBEAM MEMBERS)

① CONTRACTOR TO VERIFY IN FIELD



FINGER PLATE SUPPORT ASSEMBLY BENTS NO. 4, 7, & 10 (FOR OVERHANG FLOORBEAM MEMBERS)

DETAILS OF FINGER PLATE SUPPORT ASSEMBLY

ADD SHEET 53B

68
 DETAILED JULY 1994
 CHECKED JULY 1994

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

REVISED 7-12-1994

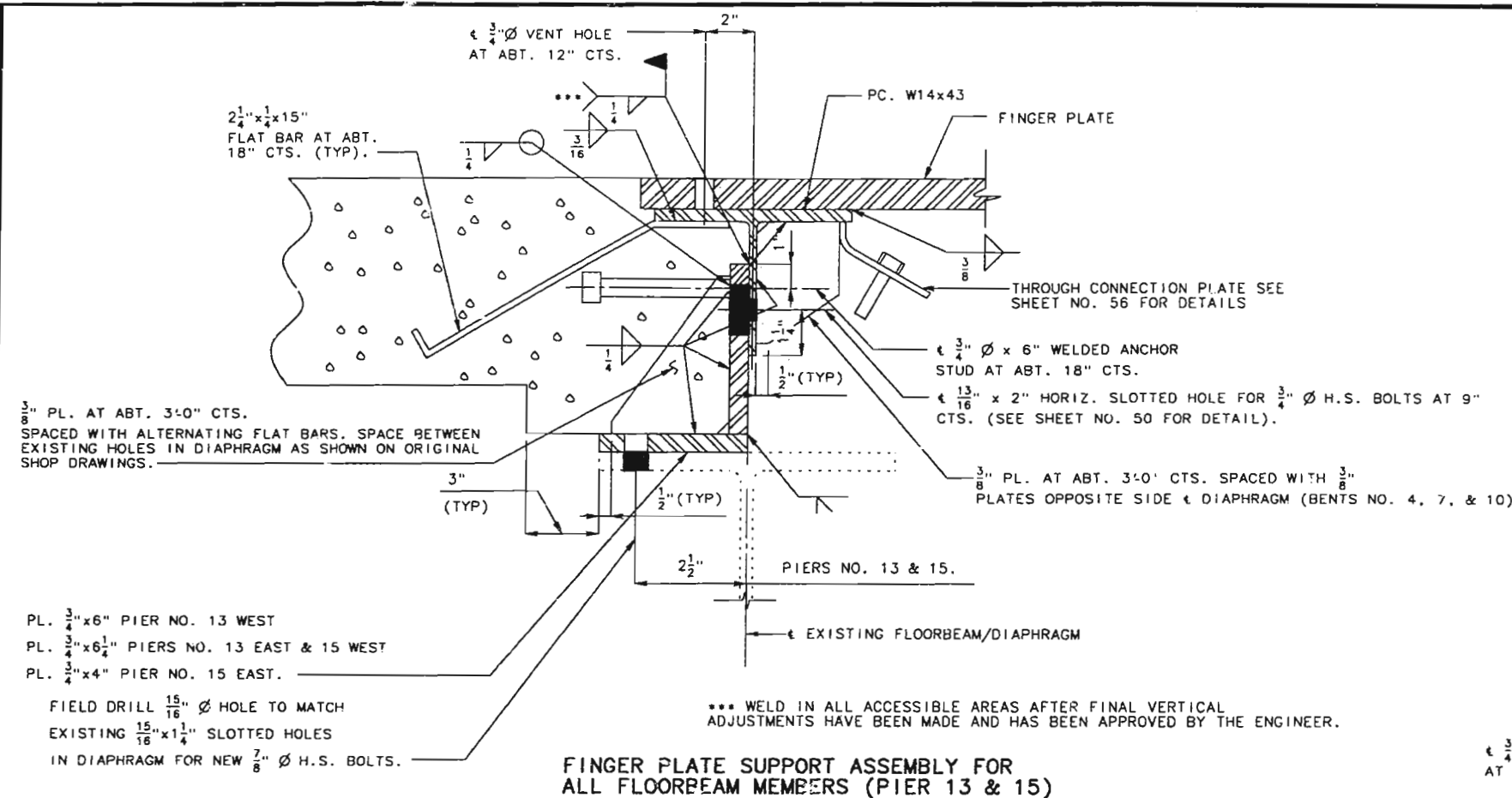
SHEET NO. 53B OF 73

BOONE-COOPER COUNTIES

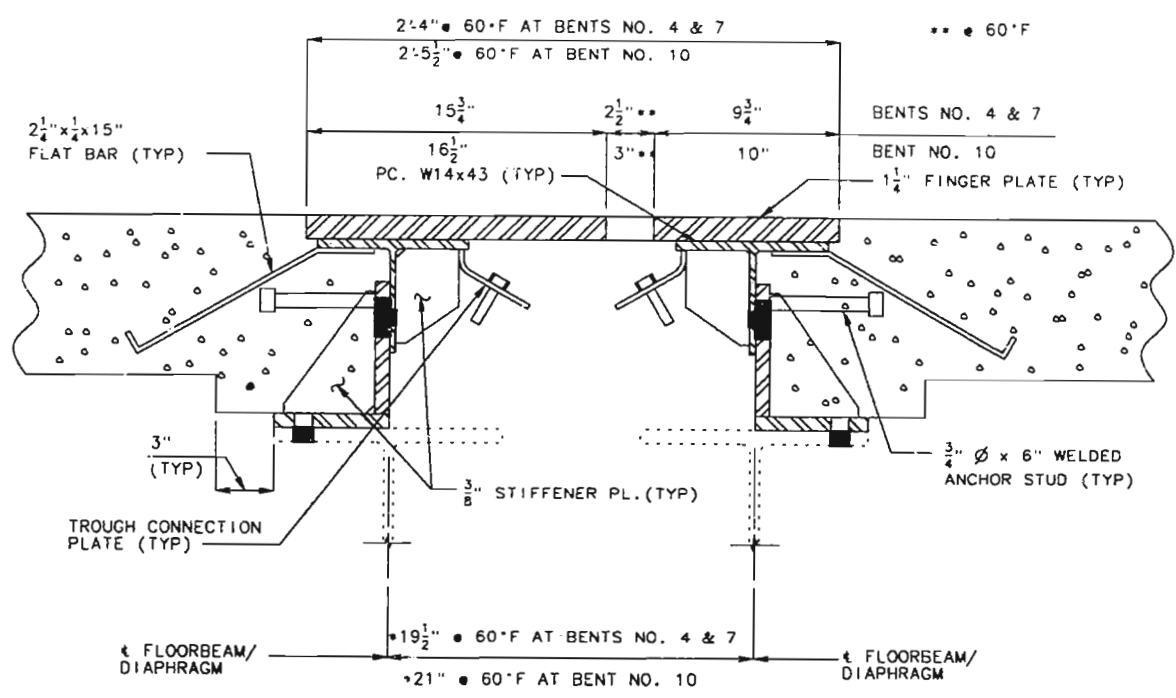
L096223

SEE FINAL PLANS

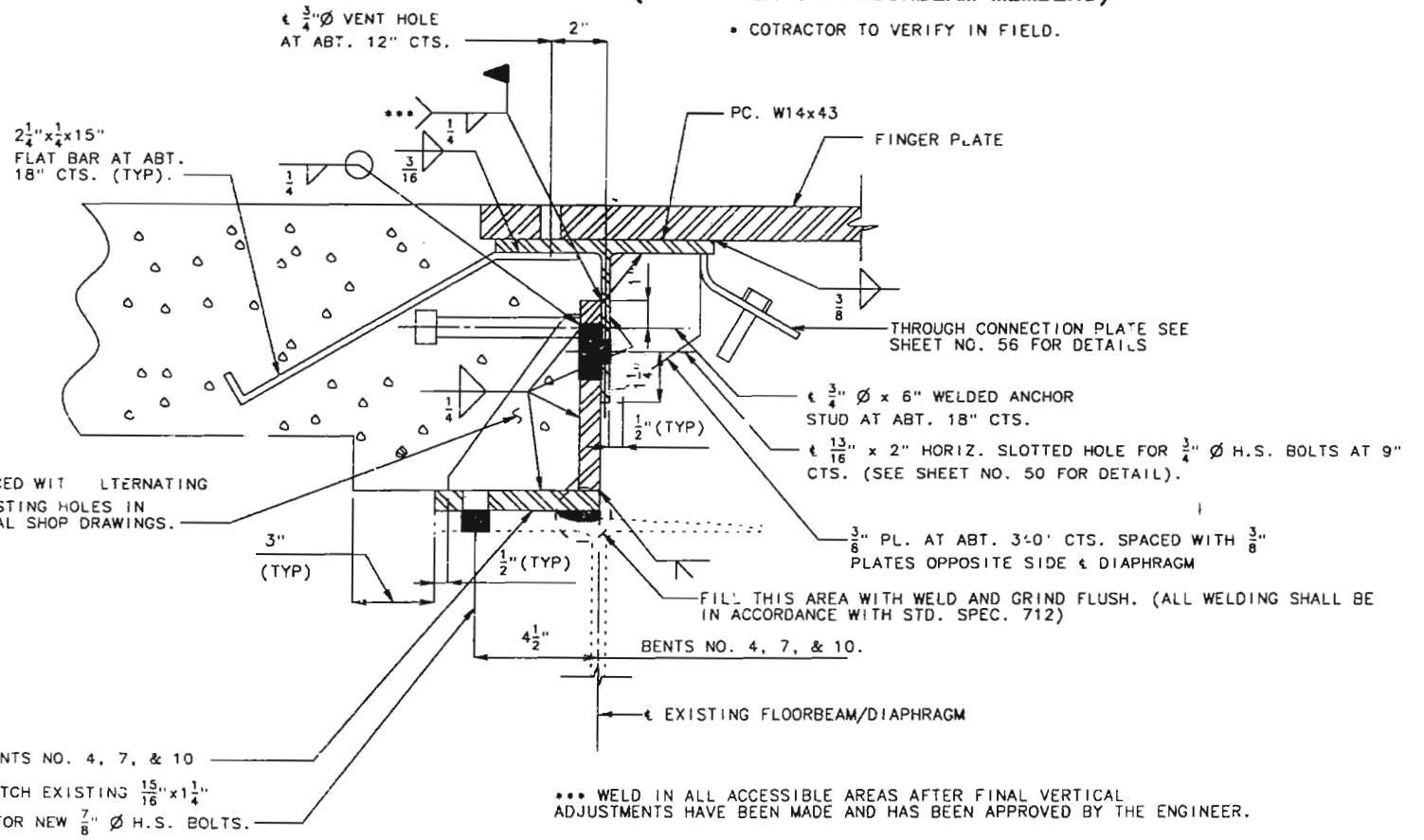
STATE	PROJ. NO.	SHEET NO.
MO.		



FINGER PLATE SUPPORT ASSEMBLY FOR ALL FLOORBEAM MEMBERS (PIER 13 & 15)



TYPICAL SECTION BENTS NO. 4, 7, & 10. (FOR INTERIOR FLOORBEAM MEMBERS)



FINGER PLATE SUPPORT ASSEMBLY (FOR INTERIOR FLOORBEAM MEMBERS BENTS NO. 4, 7, & 10.)

DETAILS OF FINGER PLATE SUPPORT ASSEMBLY

ADD SHEET 53C

DETAILED JULY 1994
CHECKED JULY 1994

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

REVISED 7-5-1994

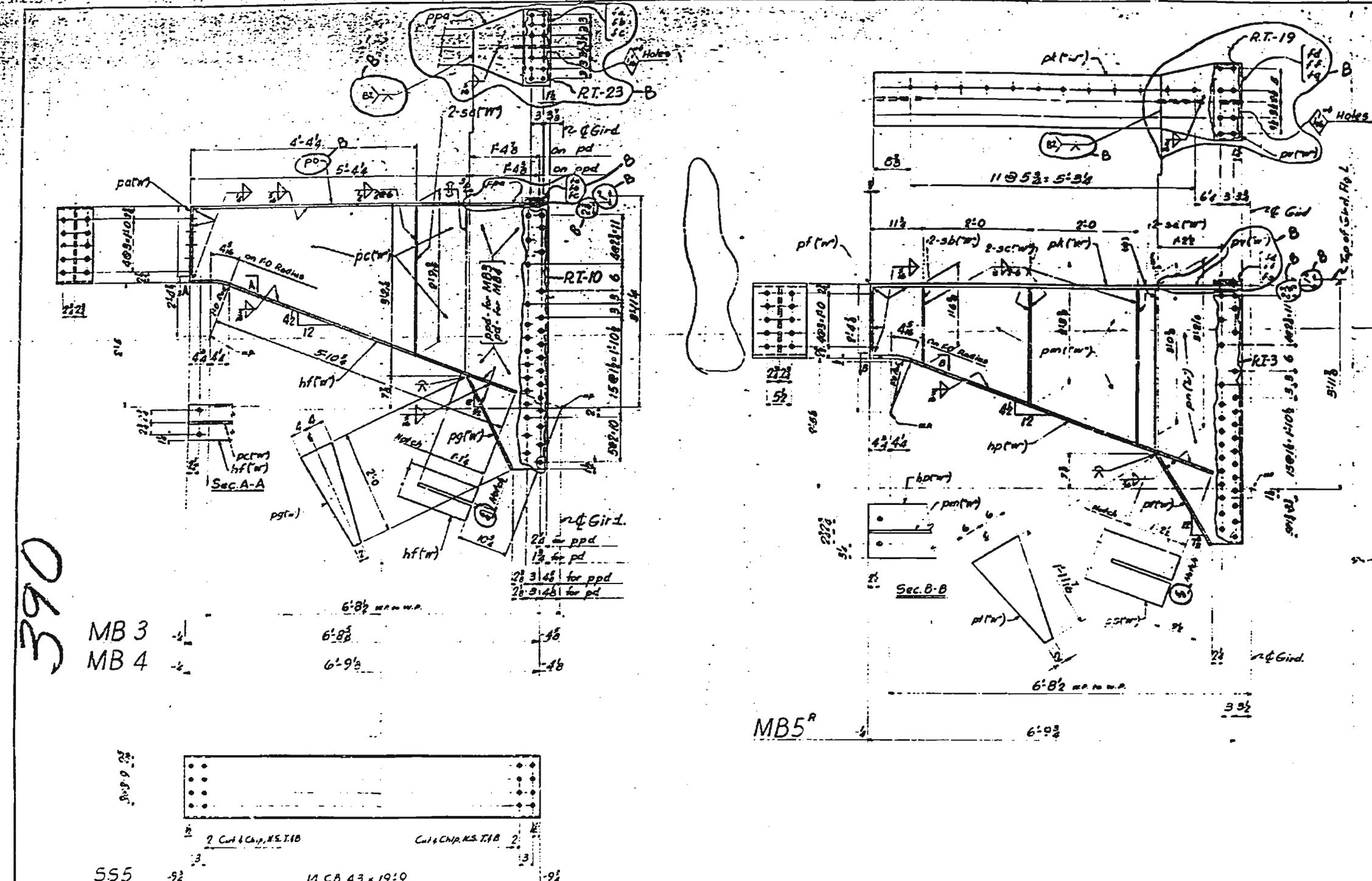
SHEET NO. 53C OF 73

BOONE-COOPER COUNTIES

L096223

69

SEE FINAL PLANS



DIVISION #	ITEM	QUANTITY	UNIT	REMARKS	
				DESCRIPTION	REMARKS
1	8- W24 BRACKETS	1	EA	RT-19	
	2- 1/2" dia. bolts	1	EA		
	2- 1/2" dia. nuts	1	EA		
	2- 1/2" dia. washers	1	EA		
	2- 1/2" dia. plates	1	EA		
	2- 1/2" dia. rods	1	EA		
	2- 1/2" dia. bars	1	EA		
	2- 1/2" dia. cables	1	EA		
	2- 1/2" dia. tendons	1	EA		
	2- 1/2" dia. anchors	1	EA		
	2- 1/2" dia. sleeves	1	EA		
	2- 1/2" dia. caps	1	EA		
	2- 1/2" dia. cones	1	EA		
	2- 1/2" dia. collars	1	EA		
	2- 1/2" dia. nuts	1	EA		
	2- 1/2" dia. bolts	1	EA		
	2	2- 1/2" dia. bolts	1	EA	
2- 1/2" dia. nuts		1	EA		
2- 1/2" dia. washers		1	EA		
2- 1/2" dia. plates		1	EA		
2- 1/2" dia. rods		1	EA		
2- 1/2" dia. bars		1	EA		
2- 1/2" dia. cables		1	EA		
2- 1/2" dia. tendons		1	EA		
2- 1/2" dia. anchors		1	EA		
2- 1/2" dia. sleeves		1	EA		
2- 1/2" dia. caps		1	EA		
2- 1/2" dia. cones		1	EA		
2- 1/2" dia. collars		1	EA		
2- 1/2" dia. nuts		1	EA		
2- 1/2" dia. bolts		1	EA		

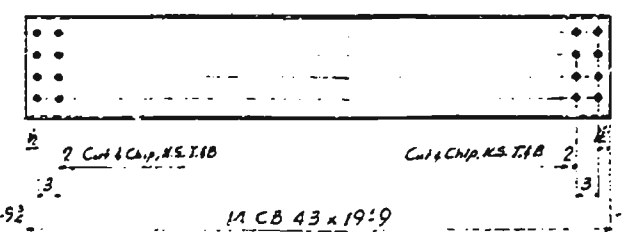
390

MB 3
MB 4

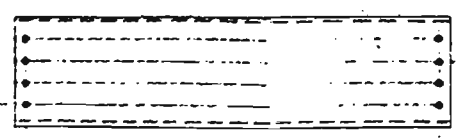
6'-8 1/2"
6'-9 1/2"

MB 5^R

6'-8 1/2"
6'-9 1/2"



555 -2 11 CB 43 x 19.9 -2



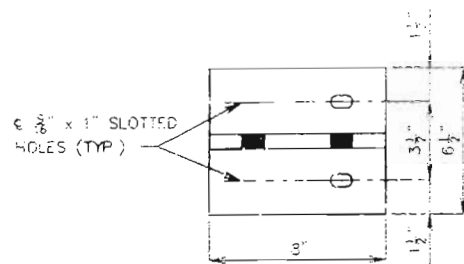
556 -1/2 15 C 33.9 x 6.11 -1/2

Gen. Notes -
 Specifications - Missouri Standard Specs 1955
 A.A.S. N.O. 1955
 Material - Struct. Carbon Steel A.S.T.M. - A7-56T
 Rivets - 3"
 Open Holes - 1/2" U.N.
 Reaming - Holes marked RT to be reamed 1/2" to nominal size thru a steel turn plate.
 No other reaming.
 Note: material shall be to be reamed structural steel - A.S.T.M. - A375-56T.
 SEE FINAL PLANS
 PART: None
 SHOP CONTACT SURFACES: No

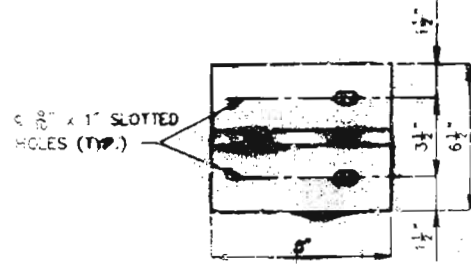
ORDER APPROACH SPAN FOR MISSOURI RIVER BRIDGE NEAR ESCAPE, MISSOURI
 DRAWING MADE AT Gary Plant
 WORK FABRICATED AT Gary Plant
 IN CHARGE OF Miller
 DRAW MADE BY R.T.J. DATE 11-25-55
 CHECKED BY P.L.B. DATE 11-25-55
 ORDER NO. 17-2055
 SHEET NO. 117

This original shop drawing sheet is added to replace the existing bracket on the North side of the bridge of Pier #13 on the span (12-13) side.
 Sheet No. 530 of 73. 2-1-1995

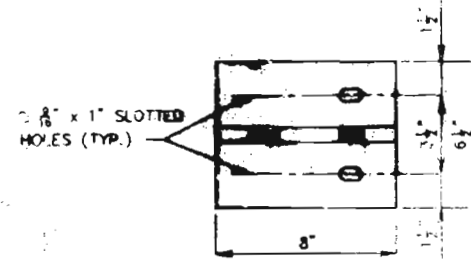
443 2



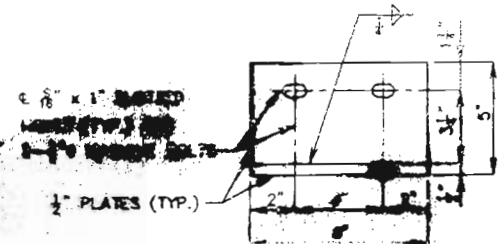
SUPPORT A



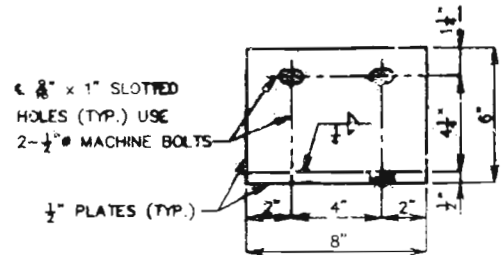
SUPPORT B



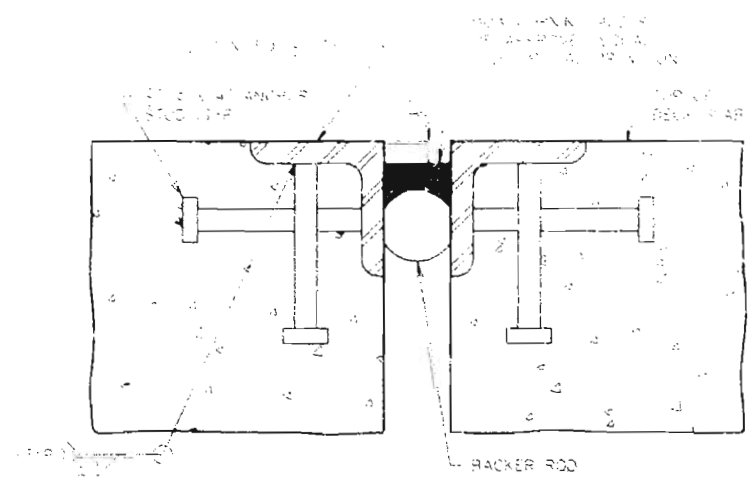
SUPPORT C



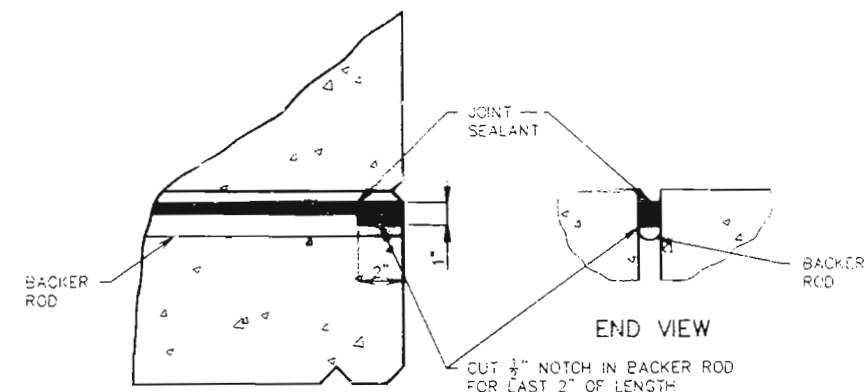
BRACKET D



BRACKET E

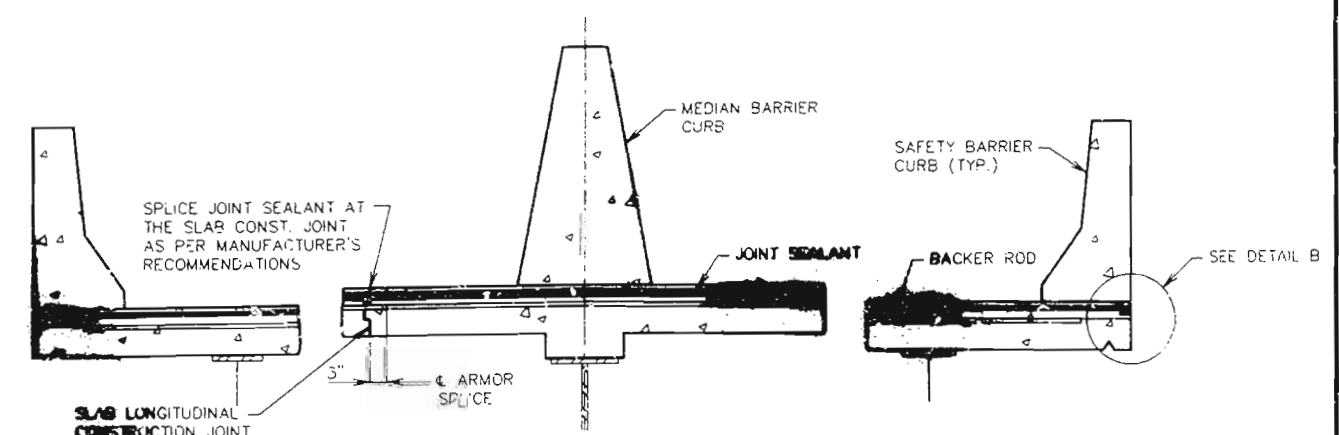


SECTION THRU JOINT



END VIEW

DETAIL B



SECTION THRU SLAB AT JOINT

BOONE-COOPER COUNTIES

MISCELLANEOUS STRINGER
EXPANSION JOINT DETAILS



8.9.93

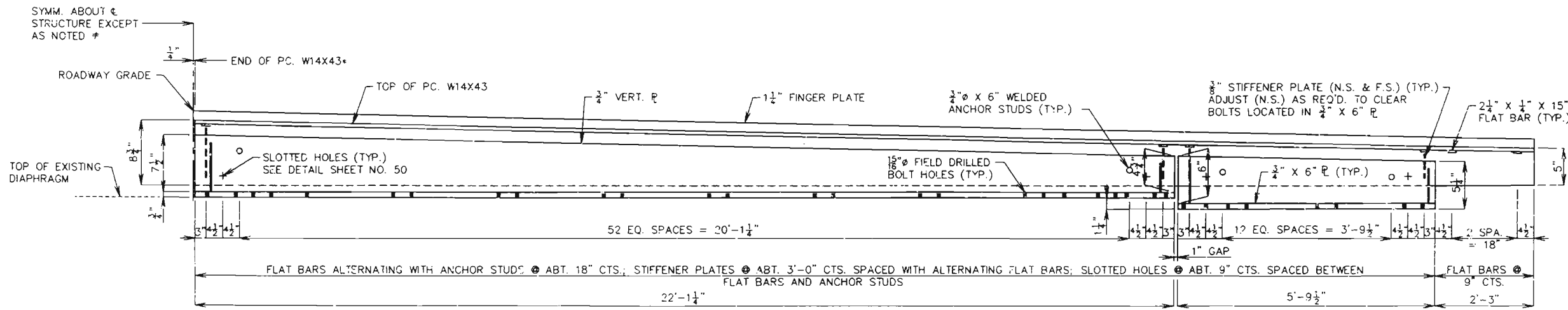
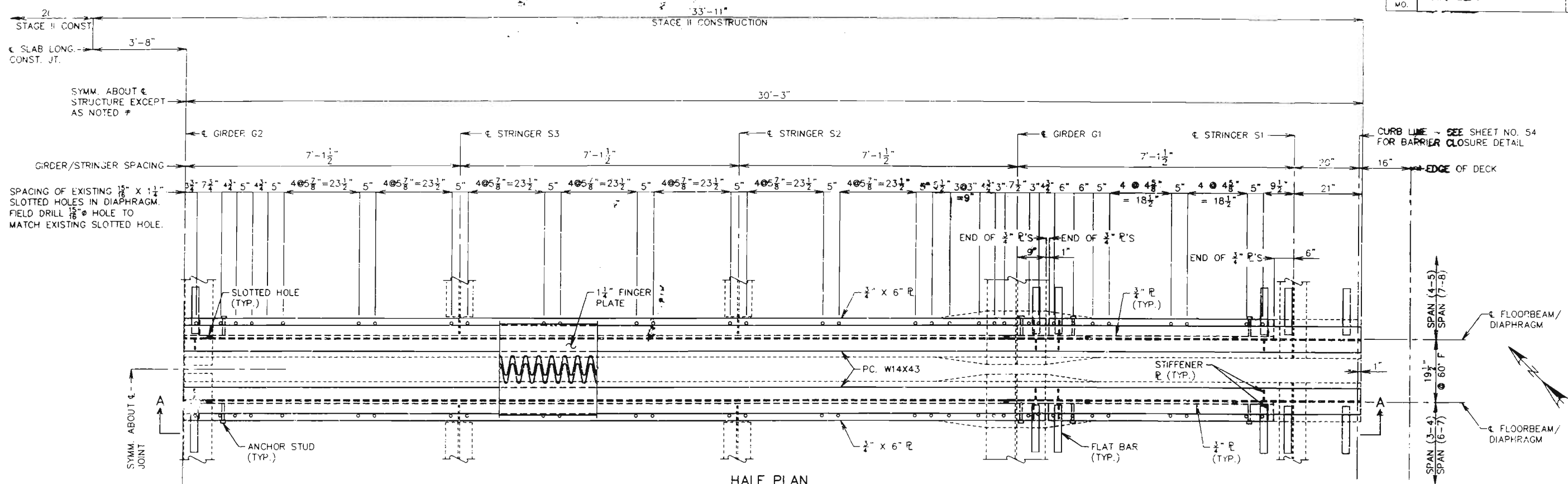
L096223

BUCHER, WILLIS & RATLIFF ENGINEERS • PLANNERS • ARCHITECTS		
DRAWN BY:	DMA	6/93
TRACED BY:	RCC	7/93
CHECKED BY:	SAC	7/93

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

NOTE: SEE SHEET NO. 44 FOR STRINGER EXPANSION JOINT DETAILS.

SHEET NO. 45 OF 73



* PROVIDE 1/2" GAP IN PC. W.4X43 CENTERED ON ϵ STRUCTURE.

NOTES:

SPACING OF EXISTING SLOTTED HOLES WAS TAKEN FROM ORIGINAL SHOP DRAWINGS. BOLT HOLES ARE SYMMETRICAL ABOUT ϵ STRUCTURE. HOLE SPACINGS ARE SHOWN FOR INFORMATION ONLY.

DRAINAGE TROUGH NOT SHOWN. SEE SHEET NO. 56.

FOR FINGER PLATE FIELD SPLICE LOCATION. SEE SHEET NO. 51.

SPACING OF ANCHOR STUDS, FLAT BARS, STIFFENER PLATES AND SLOTTED HOLES FOR THE OPPOSITE SIDE OF JOINT SHALL BE SIMILAR TO THE SIDE SHOWN WITH THE EXCEPTION OF THE FINGER PLATE FIELD SPLICE LOCATION. SPACINGS ON THE OPPOSITE SIDE OF THE JOINT SHALL BE ADJUSTED AT THE FINGER PLATE FIELD SPLICE LOCATION AS SHOWN ON SHEET 50.

SEE SHEET NO. 53 FOR TYPICAL SECTION THROUGH JOINT.

744

PROJECT NAME: I-75 BOONE-COOPER COUNTY OVERPASS COOPER COUNTY MISSOURI COUNTY ROAD AND BRIDGE DEPARTMENT

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	DMA	5/93
TRACED BY:	TWM	6/93
CHECKED BY:	DJC	7/93

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

BOONE-COOPER COUNTIES

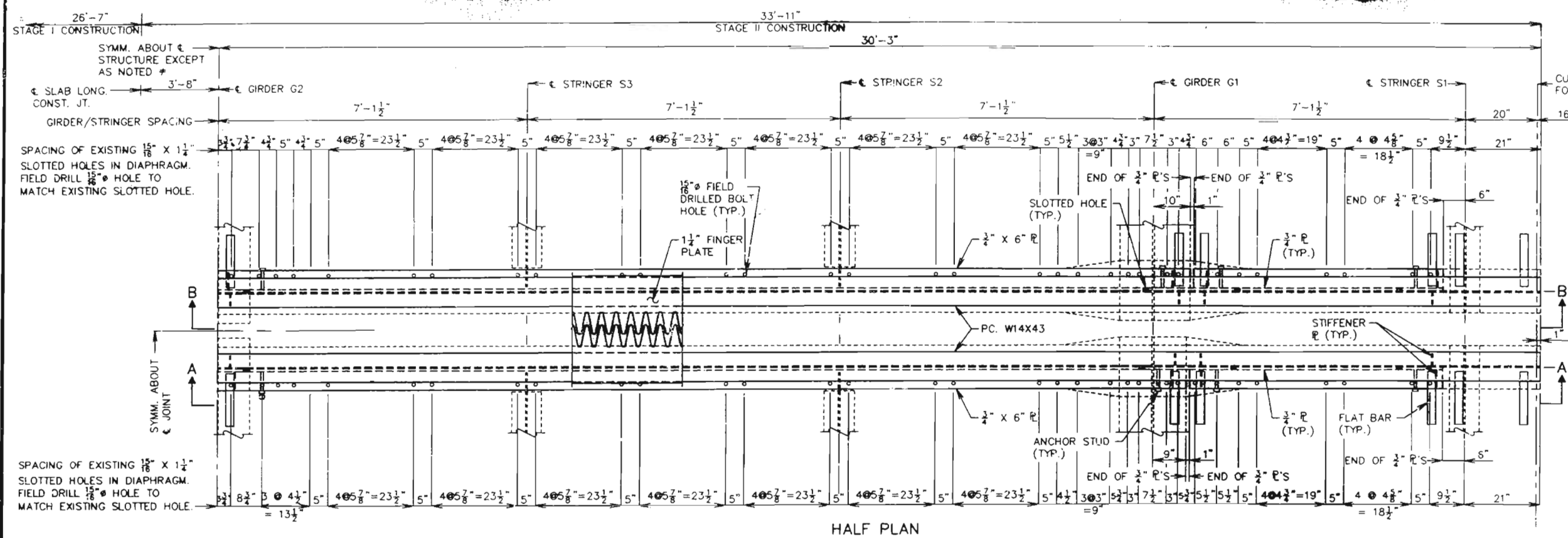
EXPANSION DEVICE DETAILS
BENTS NO. 4 & 7



9-9-93

SHEET NO. 46 OF 73

L096223



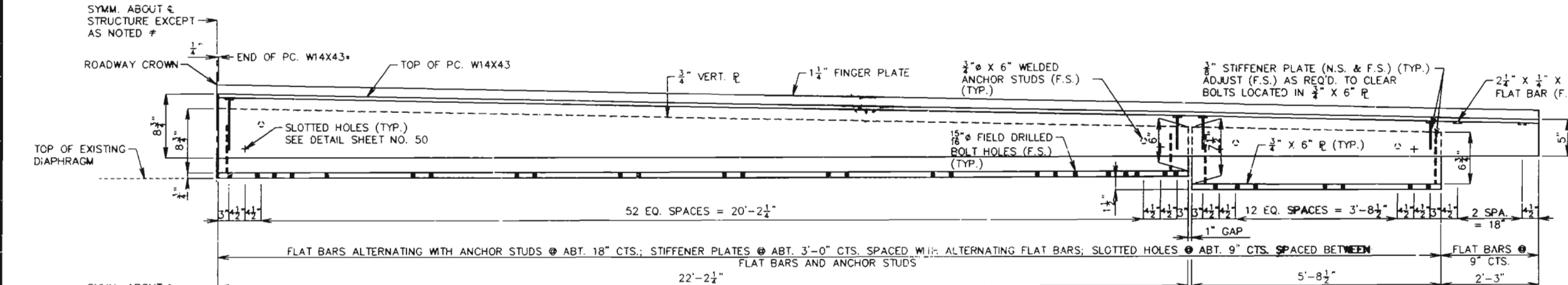
HALF PLAN

CURB LINE - SEE SHEET NO. 54 FOR BARRIER CLOSURE DETAIL

EDGE OF DECK

SPAN (10-11)
21"
SPAN (9-10)
80" F

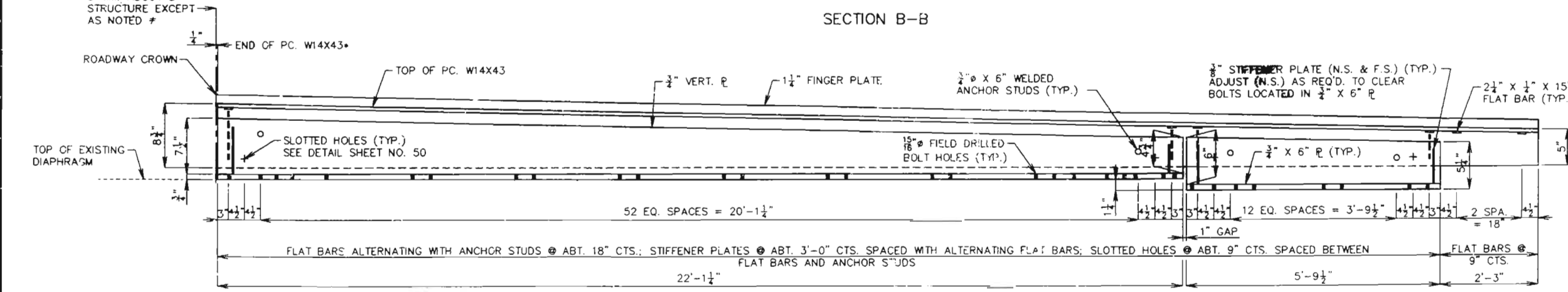
FLOORBEAM/DIAPHRAGM
FLOORBEAM/DIAPHRAGM



SECTION B-B

NOTES:

- SPACING OF EXISTING SLOTTED HOLES WAS TAKEN FROM ORIGINAL SHC-2 DRAWINGS. BOLT HOLES ARE SYMMETRICAL ABOUT ϵ STRUCTURE. HOLE SPACINGS ARE SHOWN FOR INFORMATION ONLY.
- DRAINAGE TROUGH NOT SHOWN. SEE SHEET NO. 56.
- # FOR FINGER PLATE FIELD SPLICE LOCATION, SEE SHEET NO. 51.
- SPACING OF ANCHOR STUDS, FLAT BARS, STIFFENER PLATES AND SLOTTED HOLES FOR THE OPPOSITE SIDE OF JOINT SHALL BE SIMILAR TO THE SIDE SHOWN WITH THE EXCEPTION OF THE FINGER PLATE FIELD SPLICE LOCATION. SPACINGS ON THE OPPOSITE SIDE OF THE JOINT SHALL BE ADJUSTED AT THE FINGER PLATE FIELD SPLICE LOCATION AS SHOWN ON SHEET 50.
- SEE SHEET NO. 53 FOR TYPICAL SECTION THROUGH JOINT.



SECTION A-A

BOONE-COOPER COUNTIES

EXPANSION DEVICE DETAILS
BENT NO. 10

SHEET NO. 47 OF 73

L096223

BUCHER, WILLS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

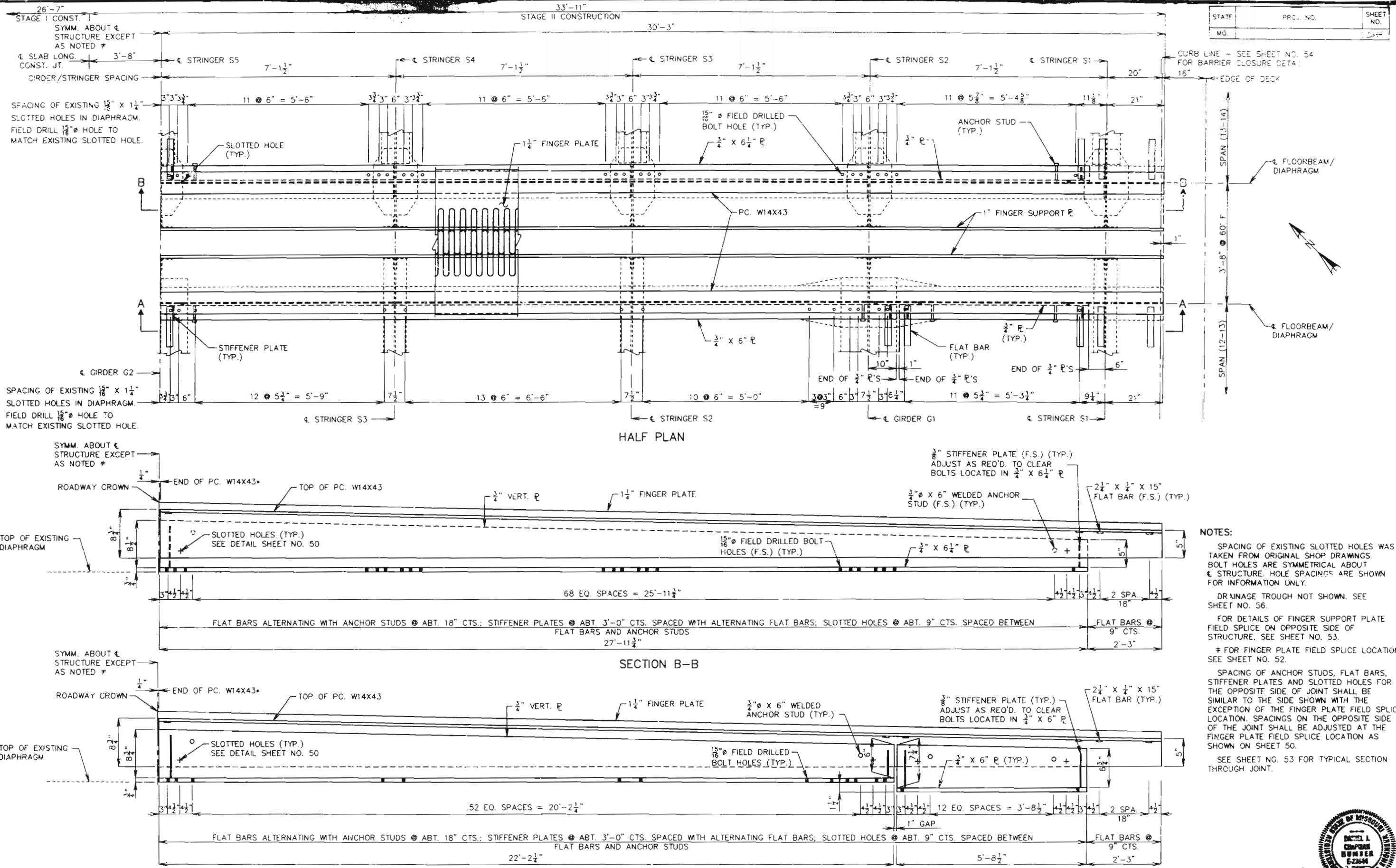
DRAWN BY:	DWA	5/93
TRACED BY:	TWM	6/93
CHECKED BY:	DJC	7/93

* PROVIDE 1/2" GAP IN PC. W14X43 CENTERED ON ϵ STRUCTURE

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

44573





STATE	PROJ. NO.	SHEET NO.
MO.		

26'-7" STAGE I CONST. SYMM. ABOUT ϵ STRUCTURE EXCEPT AS NOTED #

33'-11" STAGE II CONSTRUCTION 30'-3"

SLAB LONG. CONST. JT. 3'-8" ORDER/STRINGER SPACING

SPACING OF EXISTING $\frac{15}{16}$ " X $1\frac{1}{4}$ " SLOTTED HOLES IN DIAPHRAGM. FIELD DRILL $\frac{15}{16}$ " ϕ HOLE TO MATCH EXISTING SLOTTED HOLE.

SYMM. ABOUT ϵ STRUCTURE EXCEPT AS NOTED #

SYMM. ABOUT ϵ STRUCTURE EXCEPT AS NOTED #

SYMM. ABOUT ϵ STRUCTURE EXCEPT AS NOTED #

CURB LINE - SEE SHEET NO. 54 FOR BARRIER CLOSURE DETAIL.

EDGE OF DECK

SPAN (13-14)
SPAN (12-13)

HALF PLAN

SECTION B-B

SECTION A-A

- NOTES:
- SPACING OF EXISTING SLOTTED HOLES WAS TAKEN FROM ORIGINAL SHOP DRAWINGS. BOLT HOLES ARE SYMMETRICAL ABOUT ϵ STRUCTURE. HOLE SPACINGS ARE SHOWN FOR INFORMATION ONLY.
 - DRAINAGE TROUGH NOT SHOWN. SEE SHEET NO. 56.
 - FOR DETAILS OF FINGER SUPPORT PLATE FIELD SPLICE ON OPPOSITE SIDE OF STRUCTURE, SEE SHEET NO. 53.
 - # FOR FINGER PLATE FIELD SPLICE LOCATION, SEE SHEET NO. 52.
 - SPACING OF ANCHOR STUDS, FLAT BARS, STIFFENER PLATES AND SLOTTED HOLES FOR THE OPPOSITE SIDE OF JOINT SHALL BE SIMILAR TO THE SIDE SHOWN WITH THE EXCEPTION OF THE FINGER PLATE FIELD SPLICE LOCATION. SPACINGS ON THE OPPOSITE SIDE OF THE JOINT SHALL BE ADJUSTED AT THE FINGER PLATE FIELD SPLICE LOCATION AS SHOWN ON SHEET 50.
 - SEE SHEET NO. 53 FOR TYPICAL SECTION THROUGH JOINT.

446 79

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	DMA	5/93
TRACED BY:	TMM	6/93
CHECKED BY:	DJC	7/93

• PROVIDE $\frac{1}{2}$ " GAP IN PC. W14X43 CENTERED ON ϵ STRUCTURE

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

BOONE-COOPER COUNTIES

EXPANSION DEVICE DETAILS
PIER NO. 13



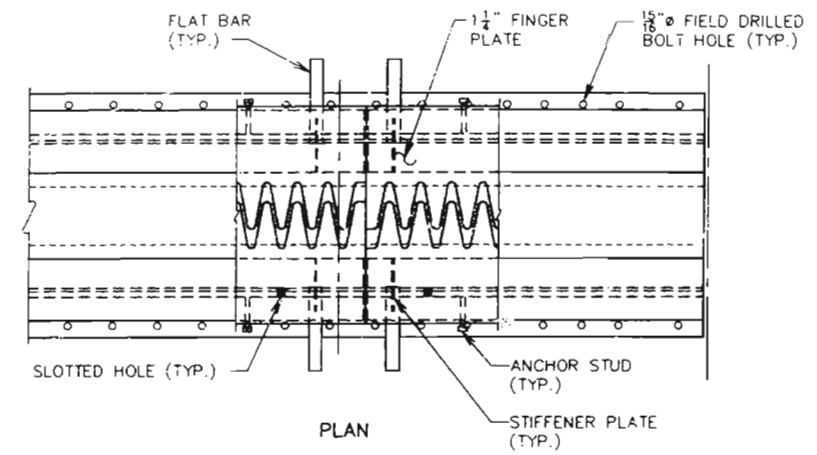
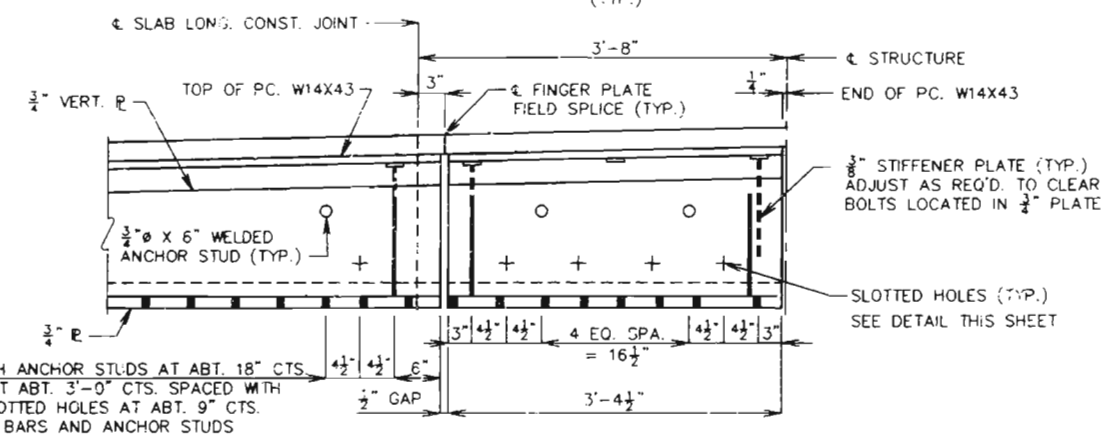
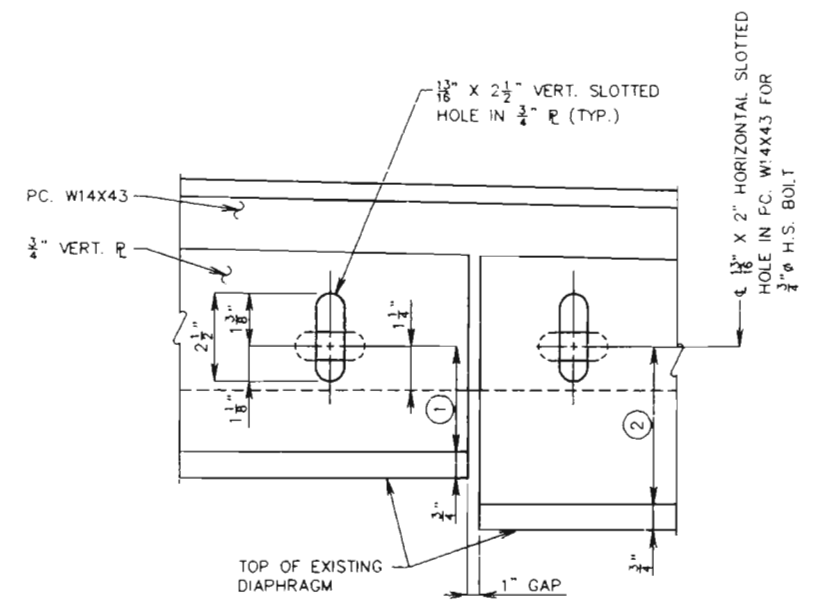


TABLE OF DIMENSIONS		
BENT/PIER NO.	(1)	(2)
4	2"	3 $\frac{1}{2}$ "
7	2"	3 $\frac{1}{2}$ "
10 WEST	2"	3 $\frac{1}{2}$ "
10 EAST	3 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
13 WEST	3 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
13 EAST	3"	--
15 WEST	3"	--
15 EAST	2 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "

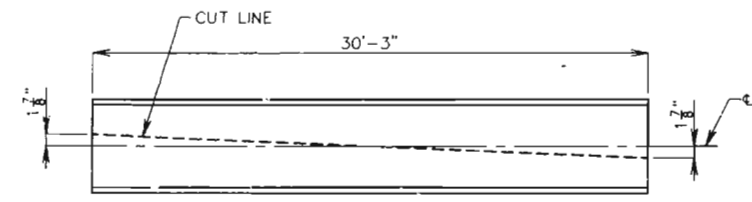


NOTE:
 JOINT SHOWN IS AT BENT'S NO. 4, 7 & 10.
 SPACING OF THE FLAT BARS, ANCHOR STUDS, STIFFENER PLATES AND SLOTTED HOLES IS AS SHOWN AT ALL EXPANSION JOINTS.

ELEVATION
 LONGITUDINAL SLAB CONSTRUCTION JOINT



SLOTTED HOLE DETAIL



PC. W14X43 FABRICATION

448 76
 PROJECT NAME: MTD 1-70 BRIDGE - COOPER COUNTY MISSOURI
 PROJECT NO.: 11-82
 DATE: 07/11/93

BUCHER, WILLS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	DWA	7/93
TRACED BY:	TWM	4/93
CHECKED BY:	SAC	7/93

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

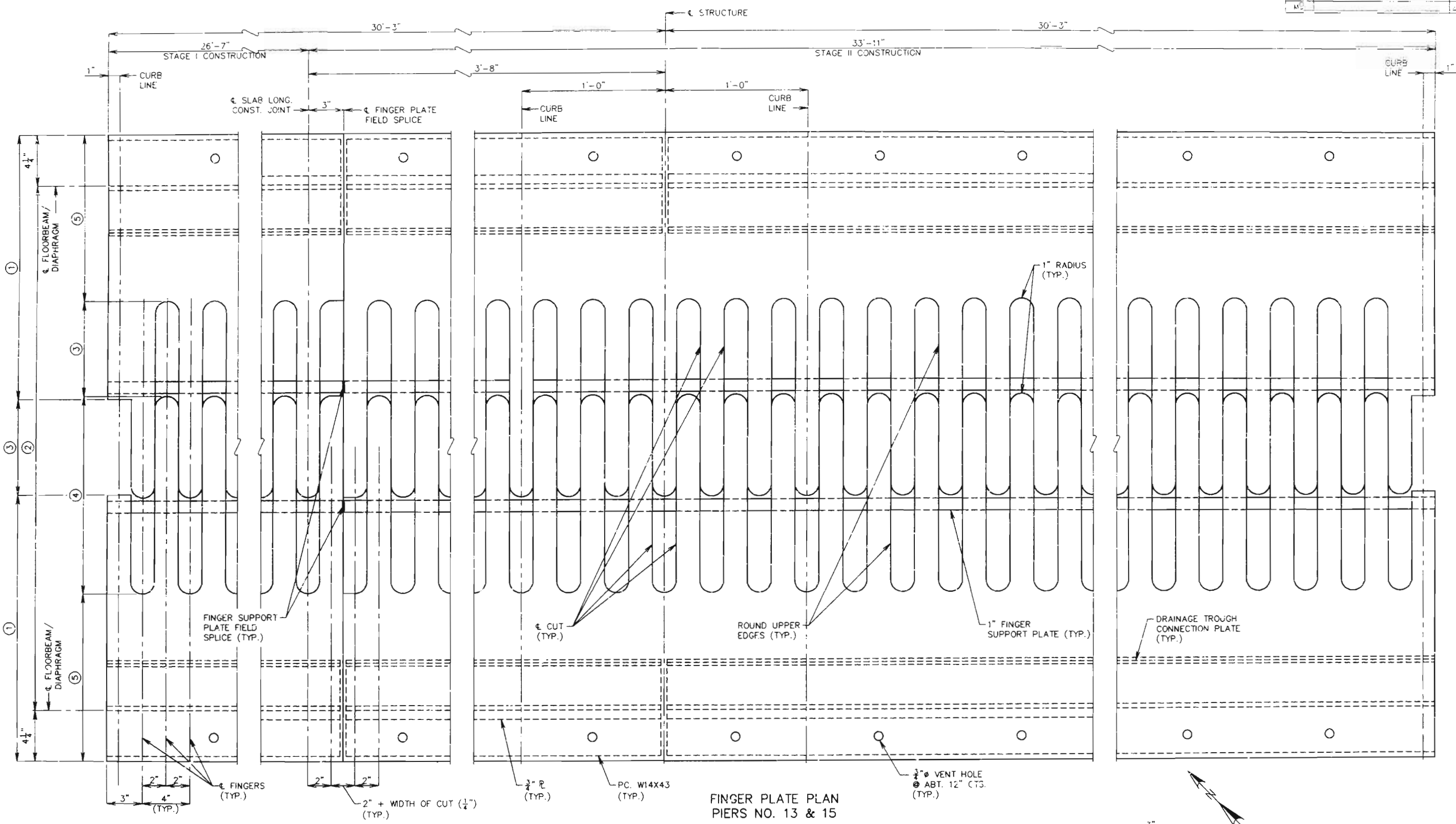
BOONE-COOPER COUNTIES

MISCELLANEOUS EXPANSION
 DEVICE DETAILS

SHEET NO. 50 OF 73



L096223



FINGER PLATE PLAN
PIERS NO. 13 & 15

PIER NO.	TABLE OF DIMENSIONS					
	AT 60° F			④	⑤	⑥
13	22 1/4"	3'-8"	8"	16 1/2"	14"	3'-8 1/2"
15	21"	3'-4 1/2"	7"	14 1/2"	13 3/4"	3'-6"

NOTES:
 FINGER PLATE SHALL BE CUT WITH A MACHINE GUIDED GAS TORCH FROM ONE PLATE @ X 1-1/4". THE SURFACE OF CUT SHALL BE PERPENDICULAR TO THE SURFACE OF THE PLATE. THE CUT SHALL NOT EXCEED 1/4" IN WIDTH. THE CENTERLINE OF CUT SHALL NOT DEVIATE MORE THAN 1/16" FROM THE POSITION OF CENTERLINE OF CUT SHOWN. SPLICES ARE PERMITTED FOR SECTIONS OVER 50 FEET IN LENGTH.
 MATERIAL FOR THE FINGER PLATE SHALL BE A-572 GRADE 50 STEEL.
 THE 1-1/4" FINGER PLATE SHALL BE BENT TO CONFORM TO CROWN OF ROADWAY.



FINGER DETAIL
BOONE-COOPER COUNTIES

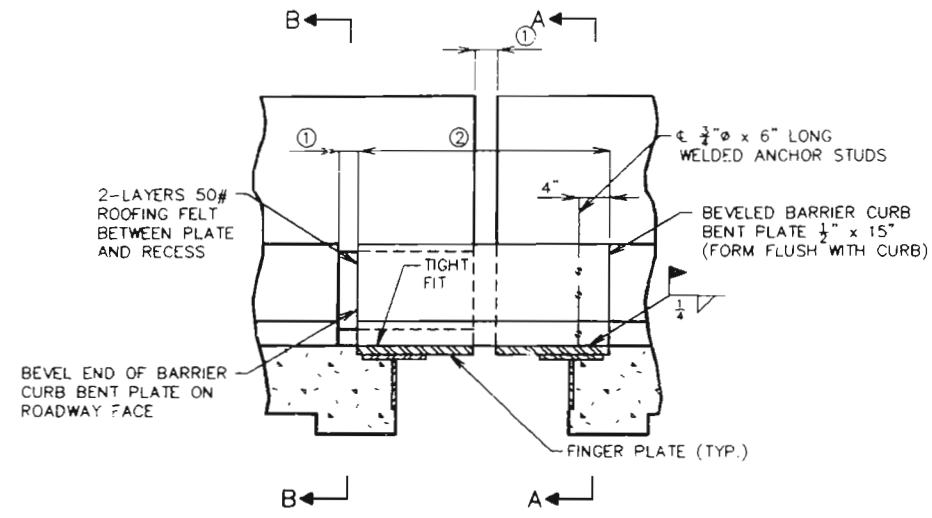
FINGER PLATE DETAILS
PIERS NO. 13 & 15



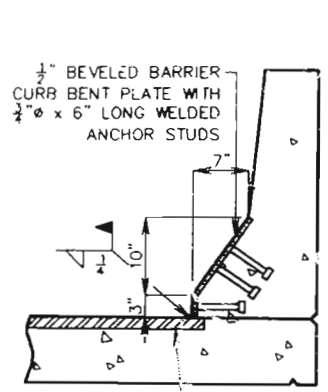
458-78

BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS
 DRAWN BY: DMA 5/93
 TRACED BY: TWM 6/93
 CHECKED BY: DJC 7/93

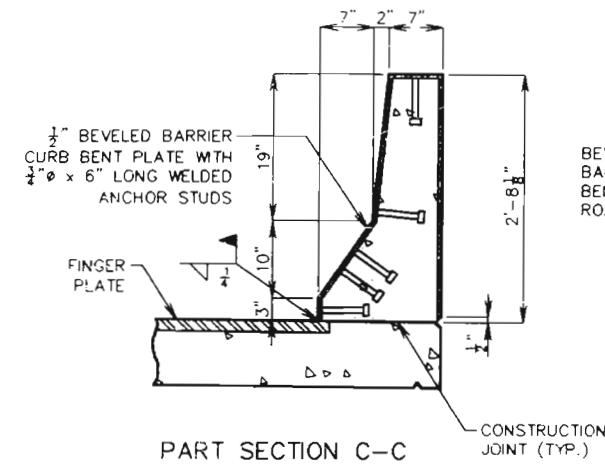
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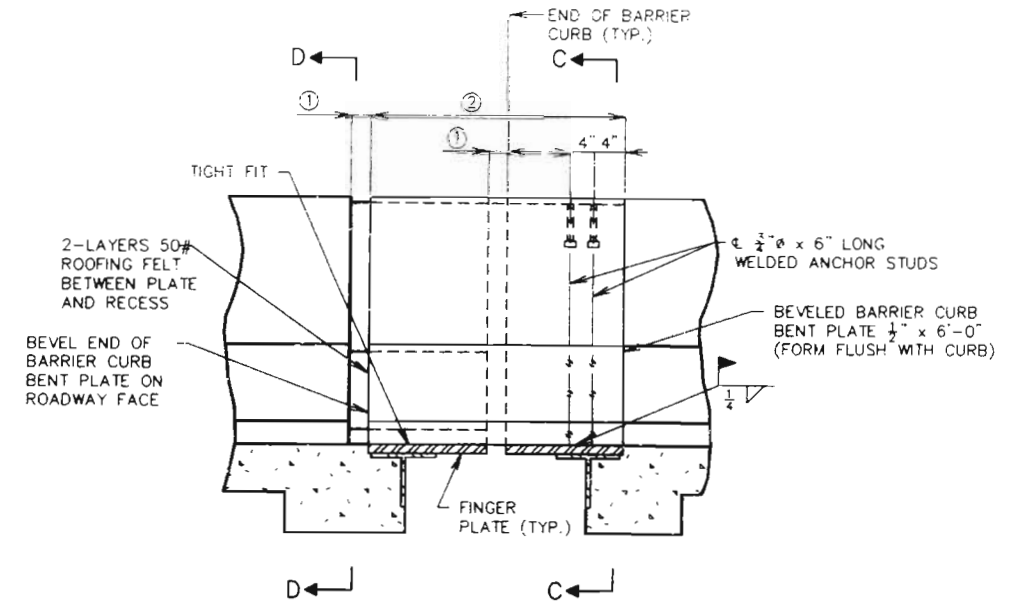
PART ELEVATION
BENTS NO. 4, 7 & 10



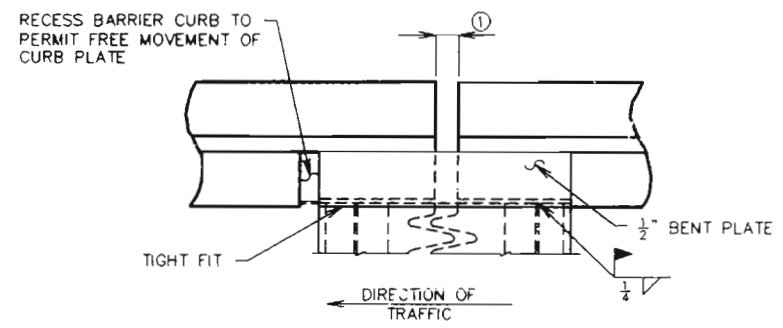
PART SECTION A-A



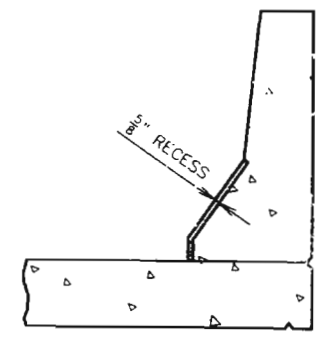
PART SECTION C-C



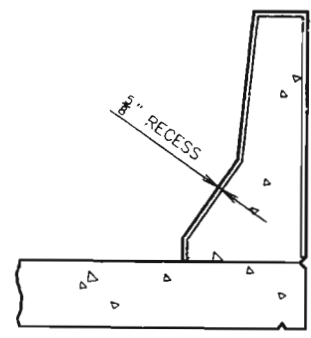
PART ELEVATION
PIERS NO. 13 & 15



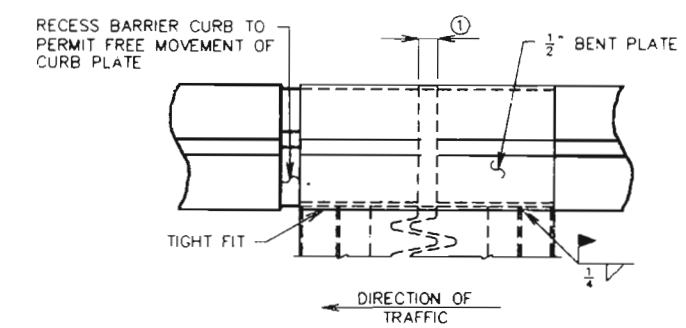
PART PLAN
BENTS NO. 4, 7 & 10



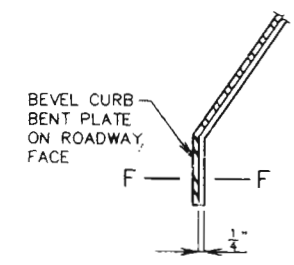
PART SECTION B-B



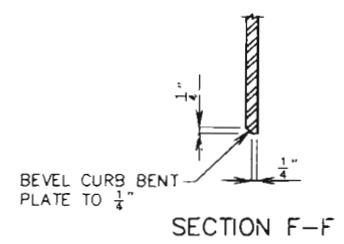
PART SECTION D-D



PART PLAN
PIERS NO. 13 & 15



PART ELEVATION
AT END OF
BEVELED BARRIER CURB
BENT PLATE



SECTION F-F

LOCATION	AT 60' F	
	①	②
BENT NO. 4	2 1/2"	2'-4"
BENT NO. 7	2 1/2"	2'-4"
BENT NO. 10	3"	2'-5 1/2"
PIER NO. 13	8"	4'-4 1/2"
PIER NO. 15	7"	4'-1"

NOTES:

MATERIAL FOR BARRIER CURB PLATES SHALL BE A-36 STRUCTURAL STEEL; FABRICATED IN ACCORDANCE WITH SECTION 712 OF THE STANDARD SPECIFICATIONS.

THE BARRIER CURB PLATE SHALL BE PAINTED IN THE SHOP WITH TWO COATS OF AN INORGANIC ZINC PRIMER AS SPECIFIED FOR SYSTEM C TO PRODUCE A DRY FILM THICKNESS OF NOT LESS THAN 5.0 MILS. NO FINISH COAT SHALL BE APPLIED TO THE CURB PLATE. SEE SPECIAL PROVISIONS.

PAYMENT FOR FURNISHING, PAINTING AND INSTALLING THE SAFETY BARRIER CURB PLATES SHALL BE INCLUDED WITH THE CONTRACT UNIT PRICE PER LIN. FT. FOR EXPANSION DEVICE (FINGER PLATE). SEE SPECIAL PROVISIONS.

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

4587 79

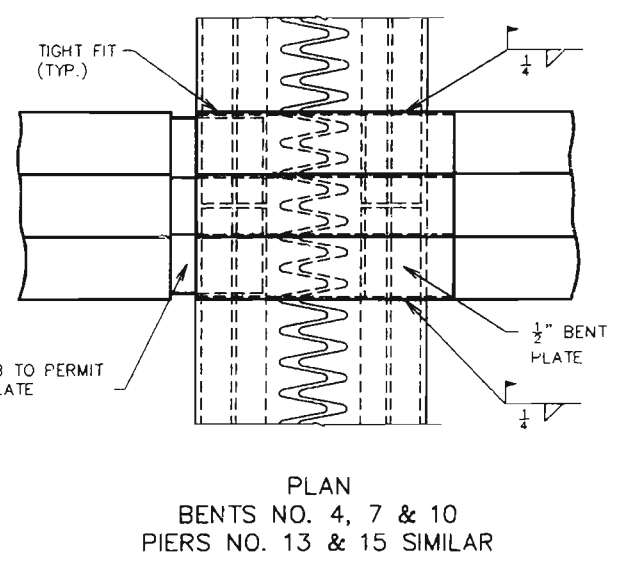
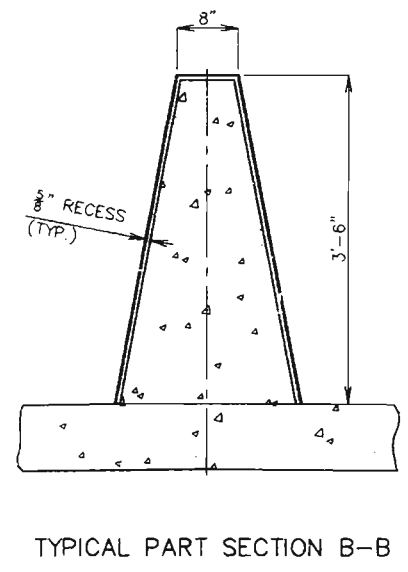
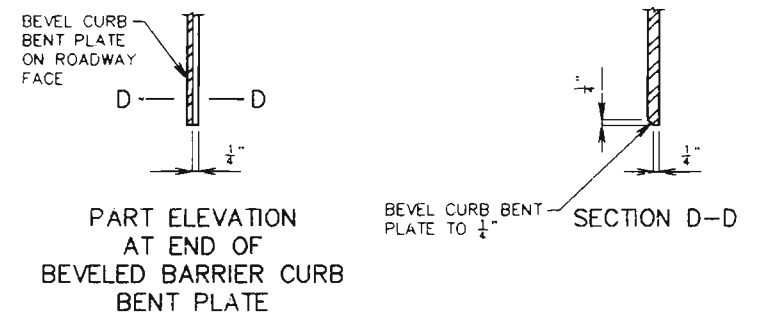
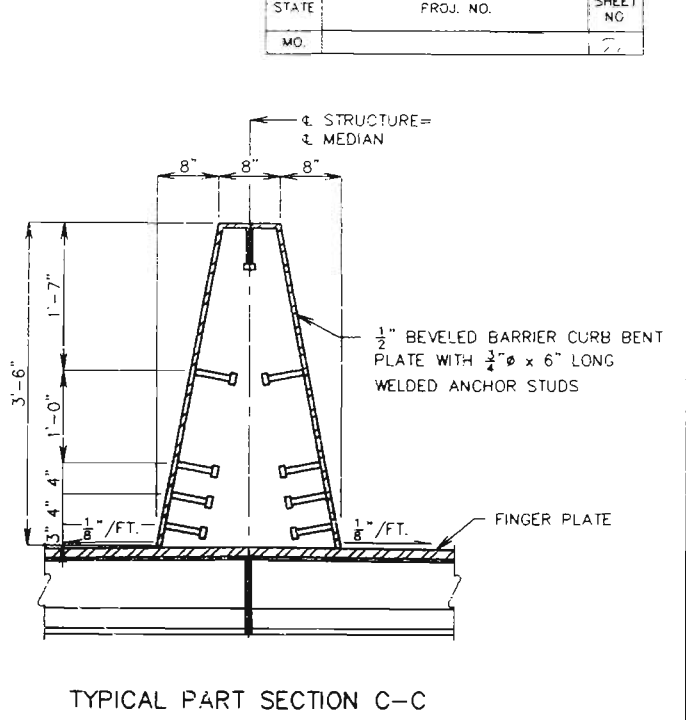
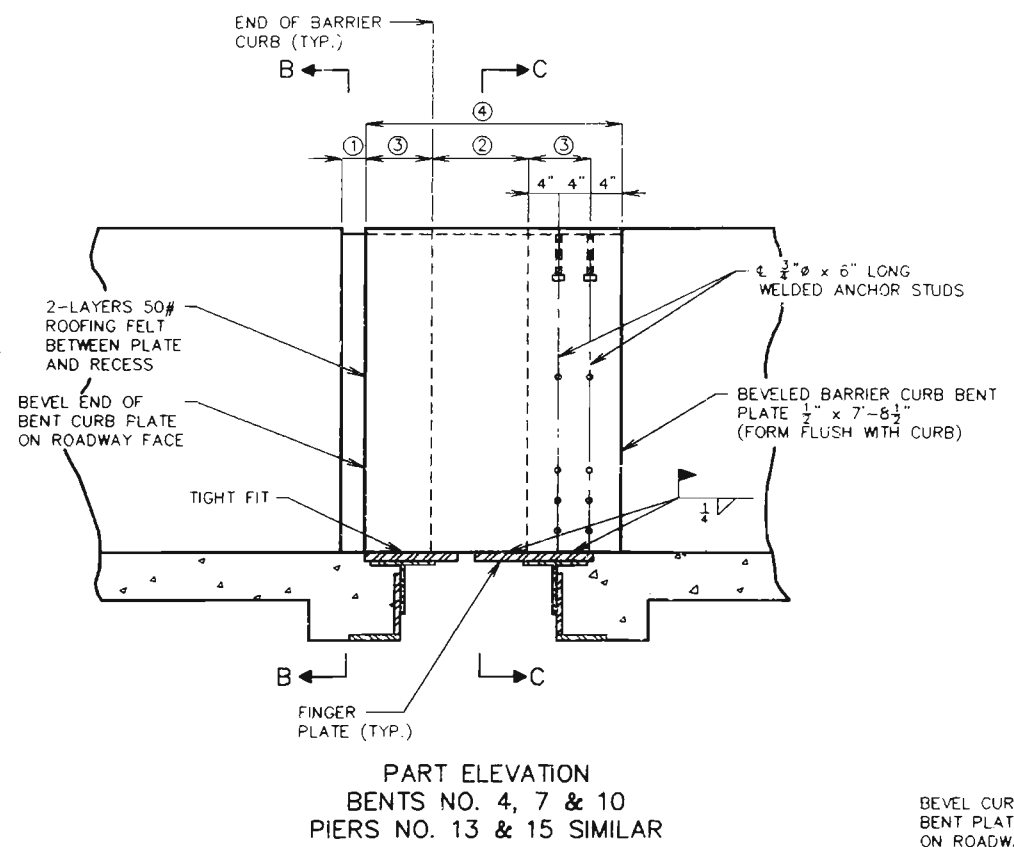
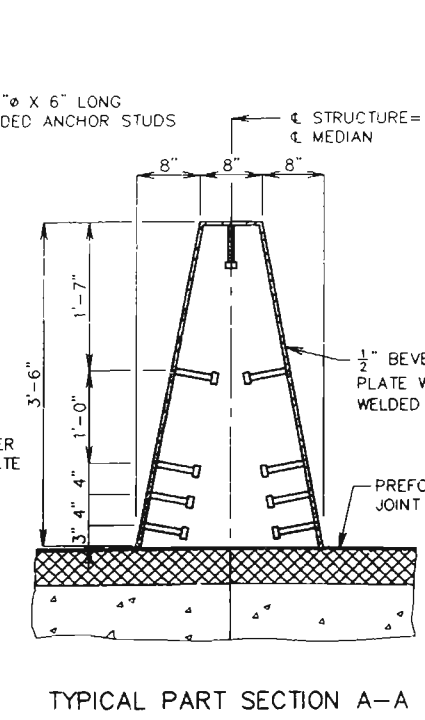
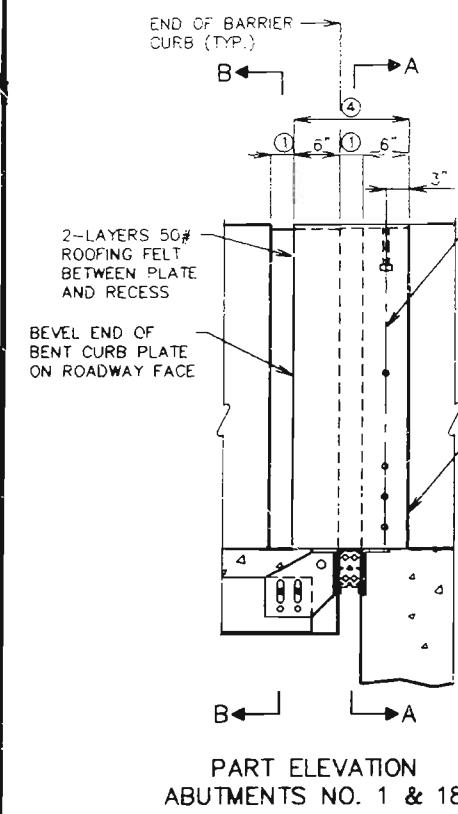
BUCHER, WILLS & RATLIFF
ENGINEERS & ARCHITECTS

DRAWN BY:	DJM	6/93
TRACED BY:	KAM	6/93
CHECKED BY:	SAC	7/93

BOONE-COOPER COUNTIES

SAFETY BARRIER CURB
CLOSURE DETAILS





LOCATION	AT 60° F			
	①	②	③	④
ABUTMENT NO. 1	17 7/8"	-	-	13 7/8"
BENT NO. 4	2 1/2"	12"	8"	2'-8"
BENT NO. 7	2 1/2"	12"	8"	2'-8"
BENT NO. 10	3"	13 1/2"	8"	2'-9 1/2"
PIER NO. 13	8"	2'-4 1/2"	12"	4'-4 1/2"
PIER NO. 15	7"	2'-1"	12"	4'-1"
ABUTMENT NO. 18	2 5/8"	-	-	14 5/8"

NOTES:
 PAYMENT FOR FURNISHING, PAINTING AND INSTALLING THE COMPRESSION SEAL MEDIAN BARRIER CURB PLATES SHALL BE INCLUDED WITH THE CONTRACT UNIT PRICE PER LIN. FT. FOR PREFORMED COMPRESSION EXPANSION JOINT SEAL. PAYMENT FOR FURNISHING AND PAINTING THE FINGER PLATE MEDIAN BARRIER CURB PLATES SHALL BE INCLUDED WITH THE CONTRACT UNIT PRICE PER LIN. FT. FOR EXPANSION DEVICE (FINGER PLATE). SEE SPECIAL PROVISIONS.
 SEE SHEET NO. 54 FOR ADDITIONAL NOTES.

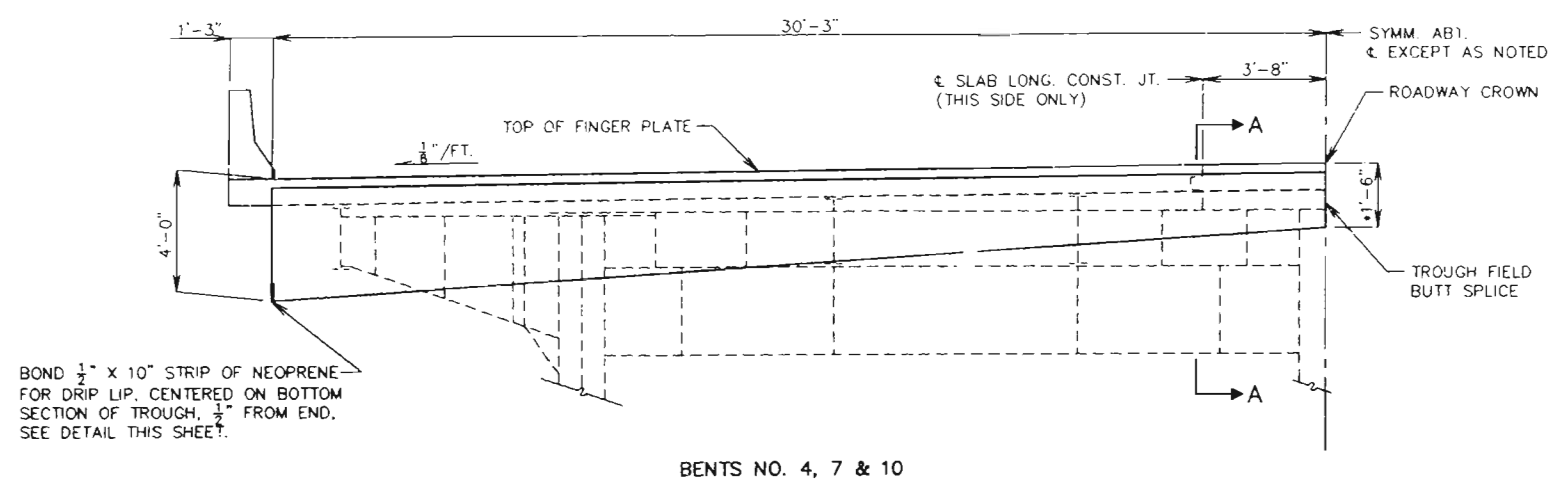
4553 90

BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS
 DRAWN BY: DJM 6/93
 TRACED BY: KAM 6/93
 CHECKED BY: SAC 7/93

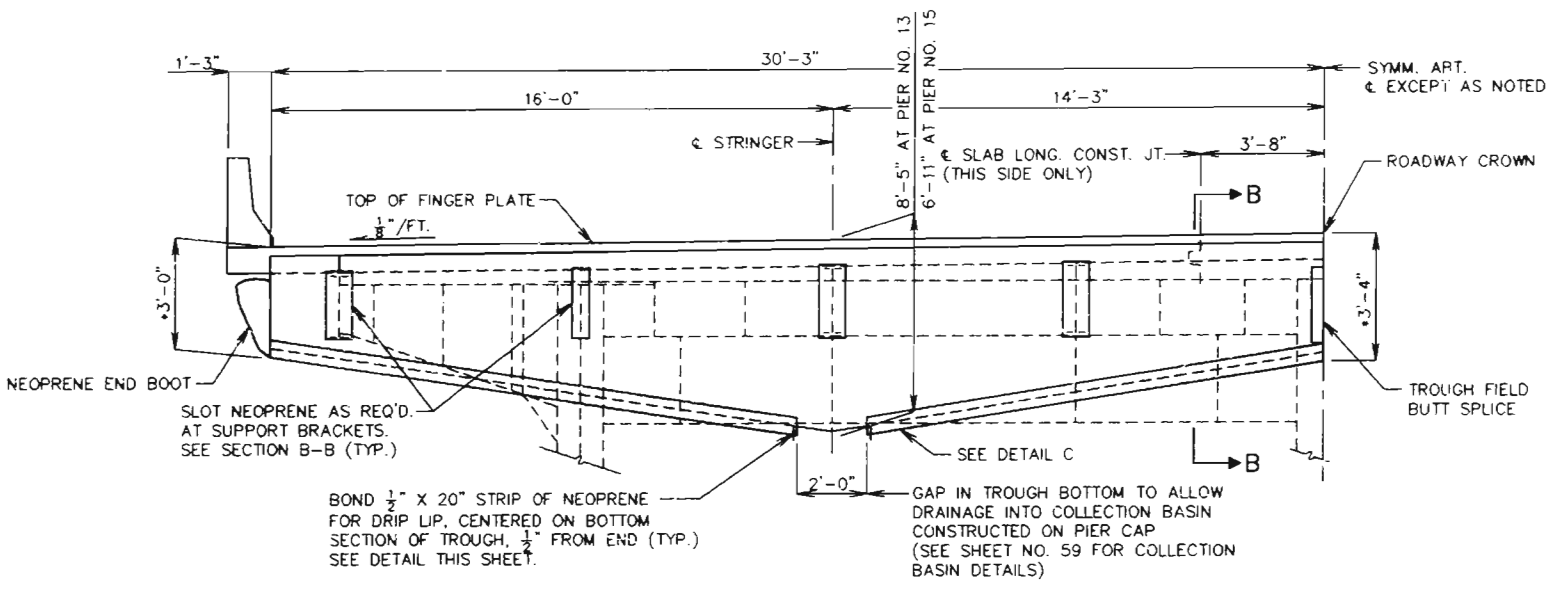
BOONE-COOPER COUNTIES
 MEDIAN BARRIER CURB
 CLOSURE DETAILS



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



BENTS NO. 4, 7 & 10

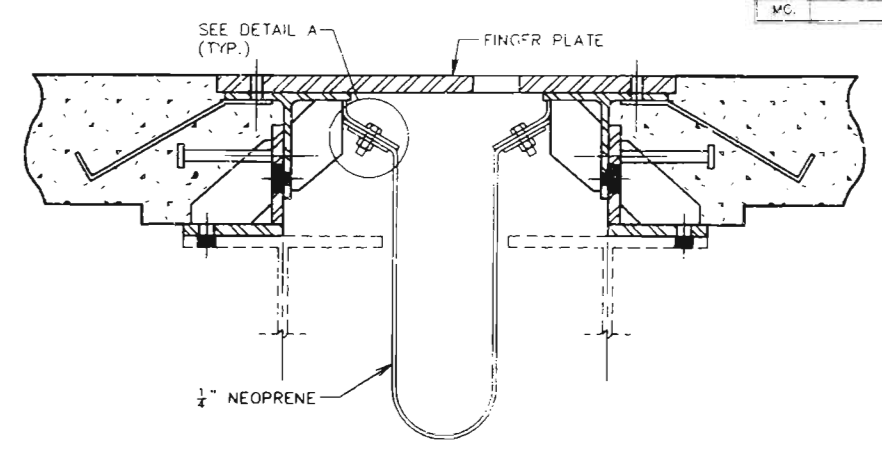


PIERS NO. 13 & 15
TROUGH ELEVATIONS

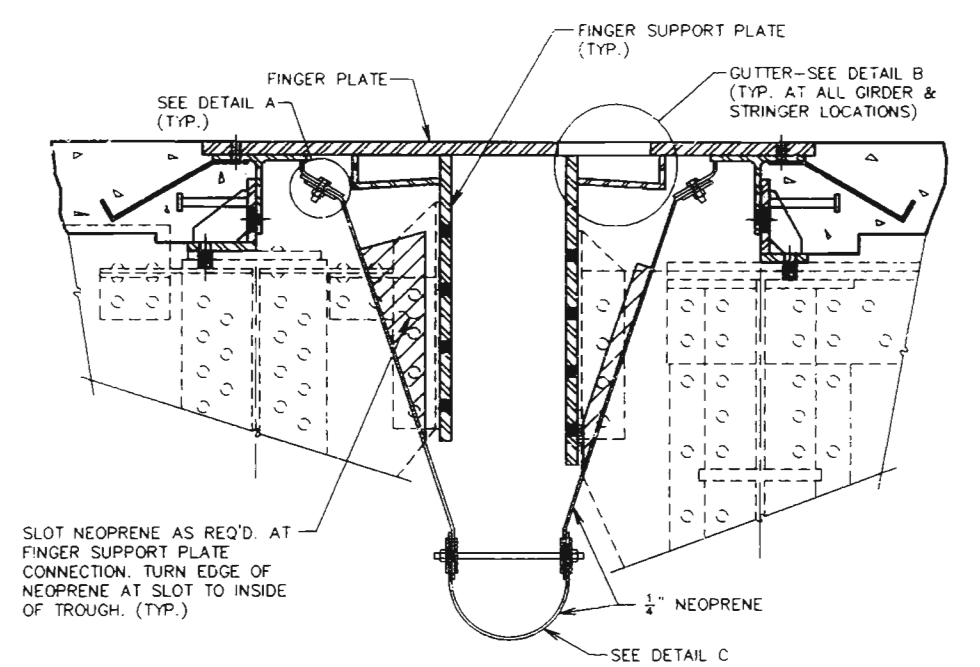
NOTES:

- SEE SHEET NO. 57 FOR DETAILS A, B & C AND FOR TROUGH FIELD SPlice DETAILS.
- SEE SHEET NO. 58 FOR DETAILS OF NEOPRENE END BOOT.
- NEOPRENE TROUGH FABRIC SHALL BE SLOTTED AS REQUIRED AROUND FINGER SUPPORT PLATE CONNECTIONS AT GIRDER AND STRINGER LOCATIONS. SECTIONS SHOWN REPRESENT EXISTING CONDITION AT CENTERLINE STRUCTURE. SEE ATTACHED ORIGINAL PLANS FOR DETAILS OF EXISTING CONDITIONS AT OTHER GIRDER AND STRINGER LOCATIONS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO CUTTING SLOTS IN TROUGH FABRIC. SLOTS SHALL BE LOCATED AND SIZED TO PROVIDE A SNUG FIT AROUND THE FINGER SUPPORT PLATE CONNECTIONS. WIDTH OF SLOTS SHALL NOT EXCEED 1'-6".
- TROUGH FABRIC SHALL BE 1/4" CONTINUOUS REINFORCED NEOPRENE. A FIELD BUTT SPlice SHALL BE LOCATED AT CENTERLINE STRUCTURE. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS DURING STAGE II CONSTRUCTION SO AS NOT TO DAMAGE TROUGH SECTION INSTALLED DURING STAGE I CONSTRUCTION. WITH THE APPROVAL OF THE ENGINEER ADDITIONAL FIELD SPlice MAY BE UTILIZED TO FACILITATE STAGED CONSTRUCTION. SEE SPECIAL PROVISIONS.
- MATERIAL FOR TROUGH CONNECTION, SPACER AND GUTTER ASSEMBLIES SHALL BE A-36 STRUCTURAL STEEL, FABRICATED AND GALVANIZED IN ACCORDANCE WITH SECTION 712 OF THE STANDARD SPECIFICATIONS.
- PAYMENT FOR FURNISHING, PAINTING AND INSTALLING EXPANSION JOINT TROUGH, INCLUDING NEOPRENE AND STRUCTURAL STEEL FOR CONNECTION, SPACER AND GUTTER ASSEMBLIES, SHALL BE INCLUDED WITH THE CONTRACT UNIT PRICE PER LIN. FT. FOR EXPANSION DEVICE (FINGER PLATE). SEE SPECIAL PROVISIONS.

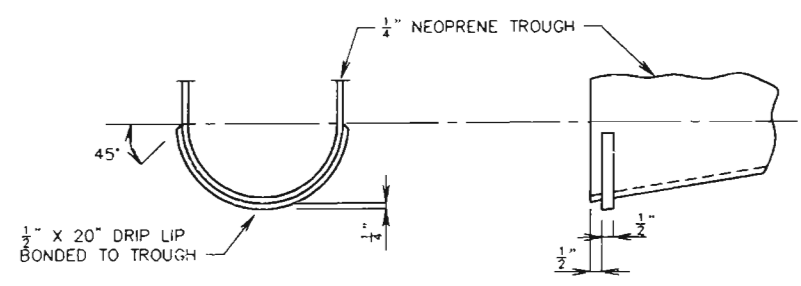
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.



SECTION A-A



SECTION B-B



DRIP LIP DETAIL

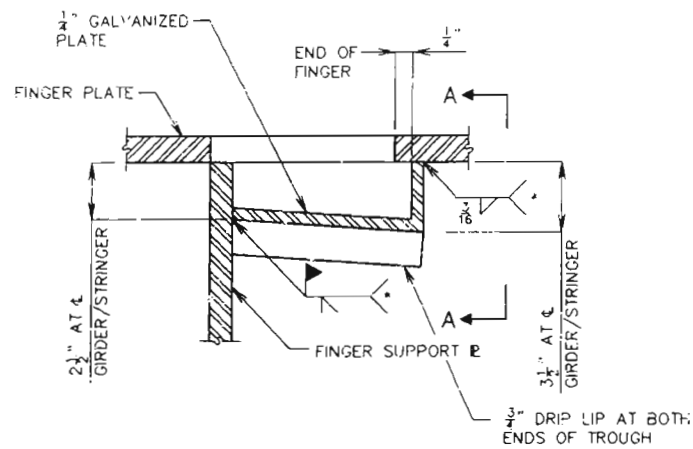
18754

DRAWN BY:	DJC	12/92
TRACED BY:	RCC	12/92
CHECKED BY:	DMA	7/93

BOONE-COOPER COUNTIES

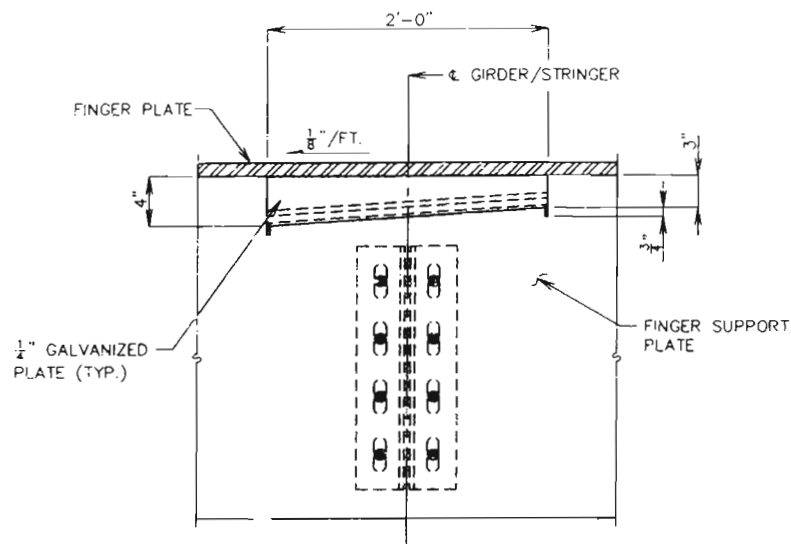
EXPANSION JOINT
TROUGH DETAILS





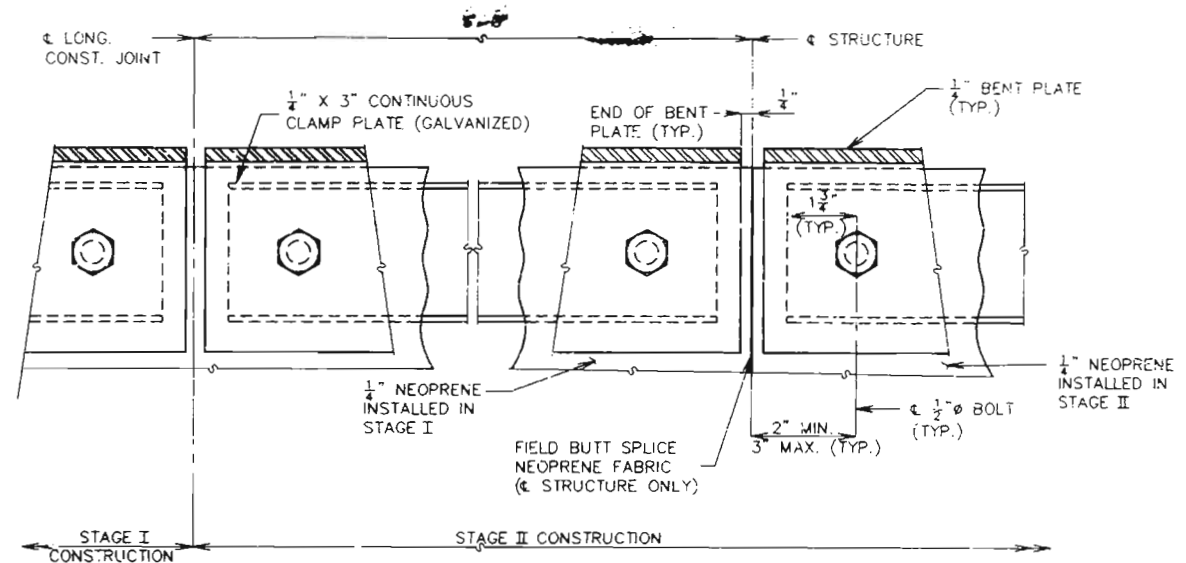
DETAIL B

• GALVANIZING DAMAGED BY WELDING SHALL BE REPAIRED IN ACCORDANCE WITH SECTION 712.14 OF THE STANDARD SPECIFICATION.

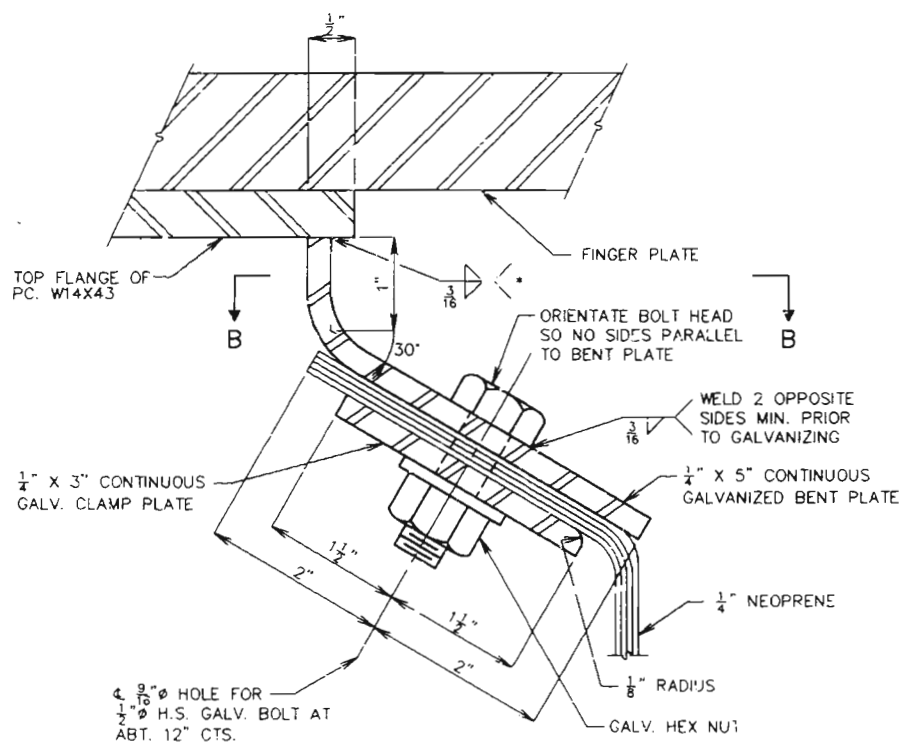


ELEVATION A-A

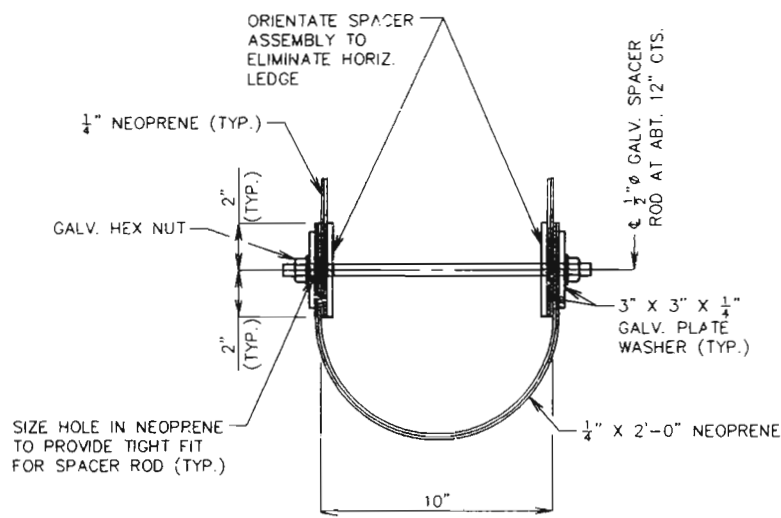
NOTE: NEOPRENE TROUGH NOT SHOWN



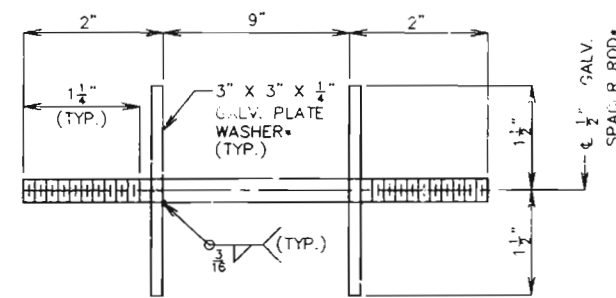
VIEW B-B
PART PLAN OF TROUGH



DETAIL A



DETAIL C



TROUGH SPACER ASSEMBLY

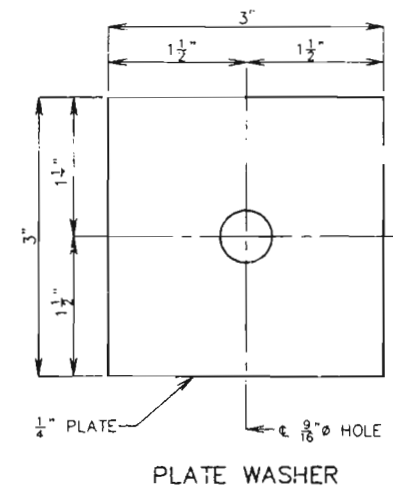


PLATE WASHER

PROJECT NO. 170 BOONE-COOPER COUNTIES 170 BOONE-COOPER COUNTIES 170 BOONE-COOPER COUNTIES
 PROJECT NAME: 170 BOONE-COOPER COUNTIES 170 BOONE-COOPER COUNTIES 170 BOONE-COOPER COUNTIES
 LAST DATE: 07/19/93 @ 10:48
 977-008

BUCHER, WILLIS & RATLIFF	
ENGINEERS • PLANNERS • ARCHITECTS	
DRAWN BY:	DJC 12/92
TRACED BY:	RCC 12/92
CHECKED BY:	DMA 7/93

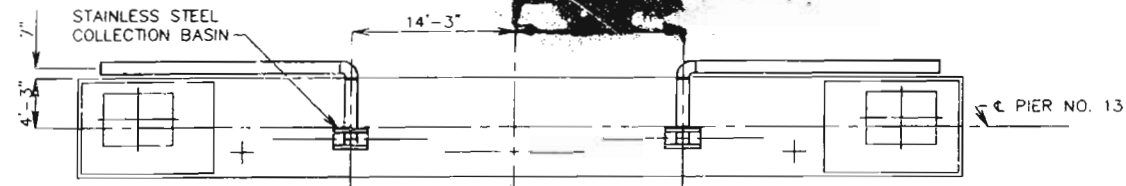
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

BOONE-COOPER COUNTIES

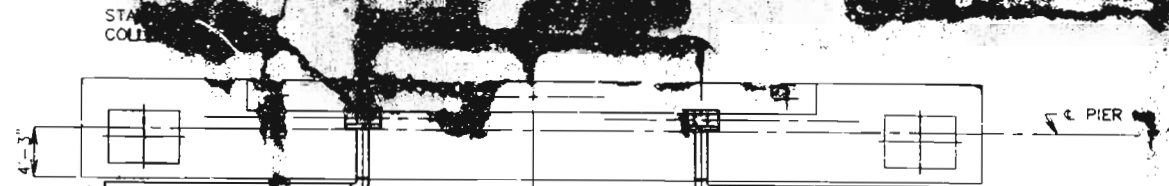
MISCELLANEOUS TROUGH
DETAILS



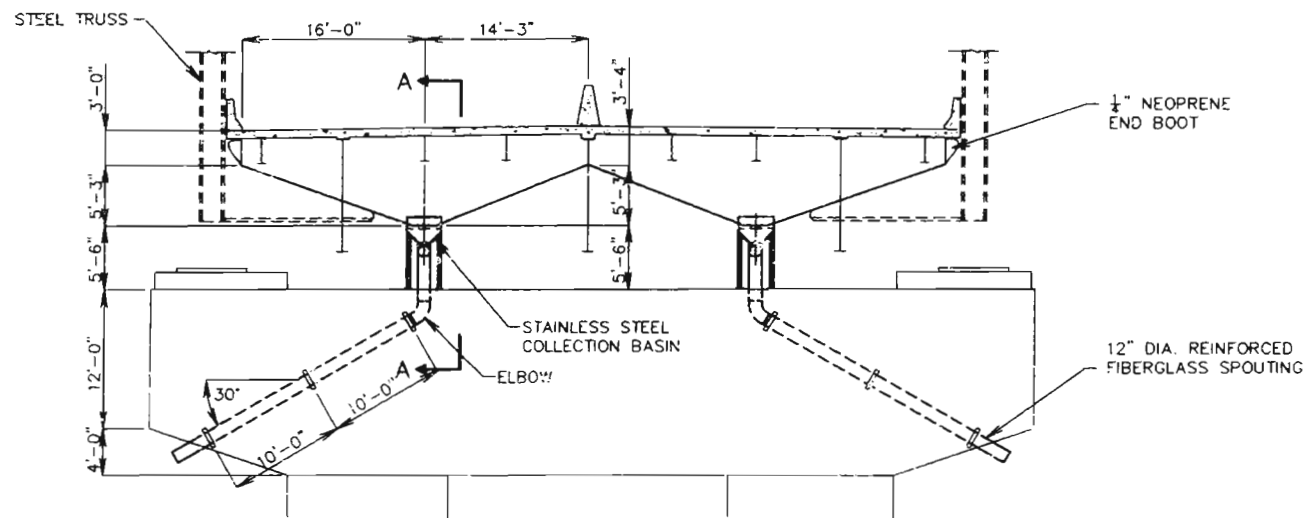
SHEET NO. 57 OF 73 L096223



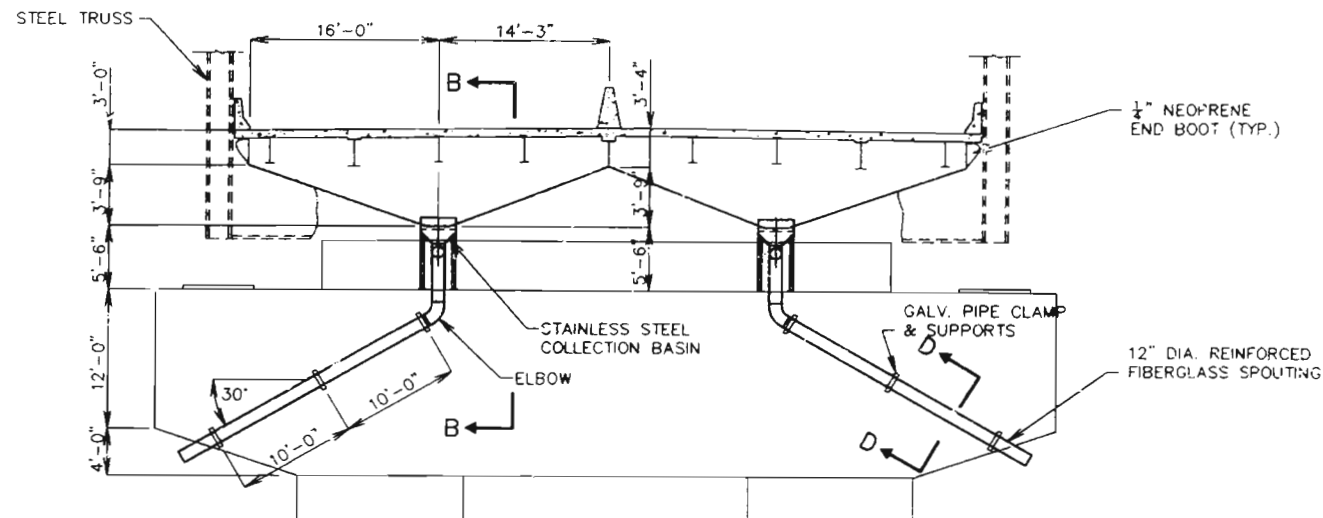
PLAN



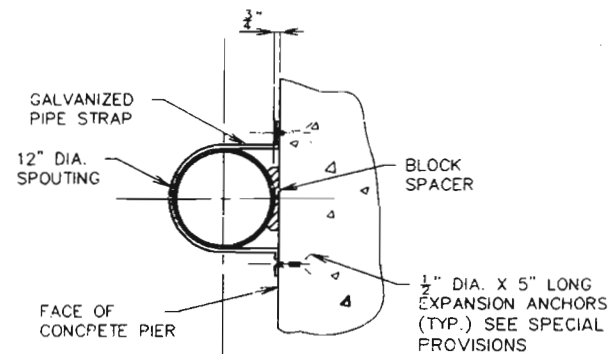
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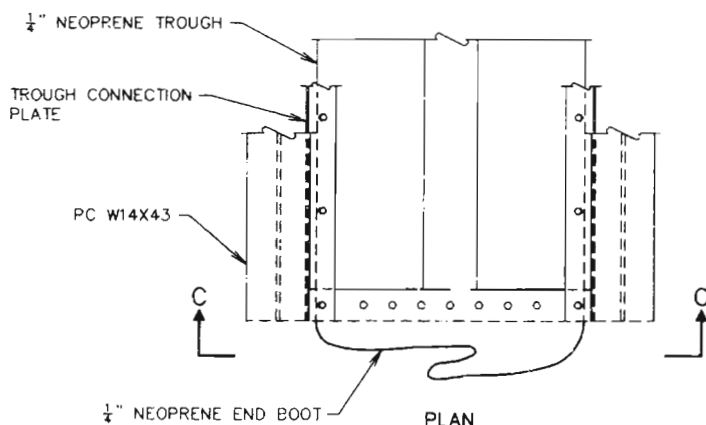
ELEVATION
PIER NO. 13



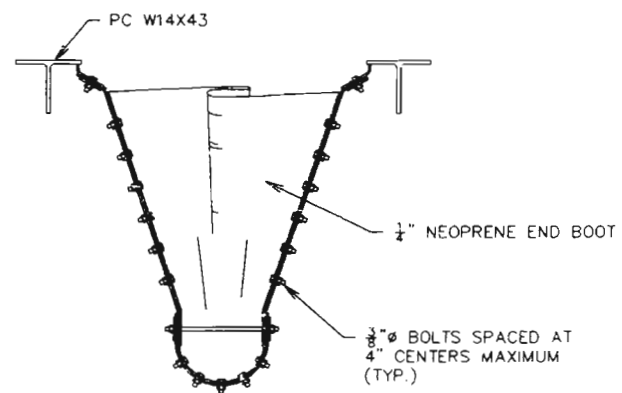
ELEVATION
PIER NO. 15



SECTION D-D



END BOOT DETAIL



SECTION C-C

NOTES:
 SEE SHEET NO. 56 FOR NEOPRENE TROUGH DETAILS.
 SEE SHEET NO. 59 FOR SECTION A-A AND B-B.
 ALL MATERIAL FOR COLLECTION BASIN, SPOUTING AND MOUNTING BRACKETS, COMPLETE-IN-PLACE SHALL BE PAID FOR AS DRAINAGE SYSTEM (ON STRUCTURE), PER LUMP SUM. SEE SPECIAL PROVISIONS.
 DRAINAGE SYSTEM ASSEMBLY FOR STAGE I SHALL BE COMPLETELY INSTALLED DURING STAGE I AT THE CONTRACTOR'S OPTION, THE REMAINING DRAINAGE SYSTEM ASSEMBLY MAY BE INSTALLED DURING STAGE I.

BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	SAC	6/93
TRACED BY:	TWM	5/93
CHECKED BY:	DMA	7/93

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

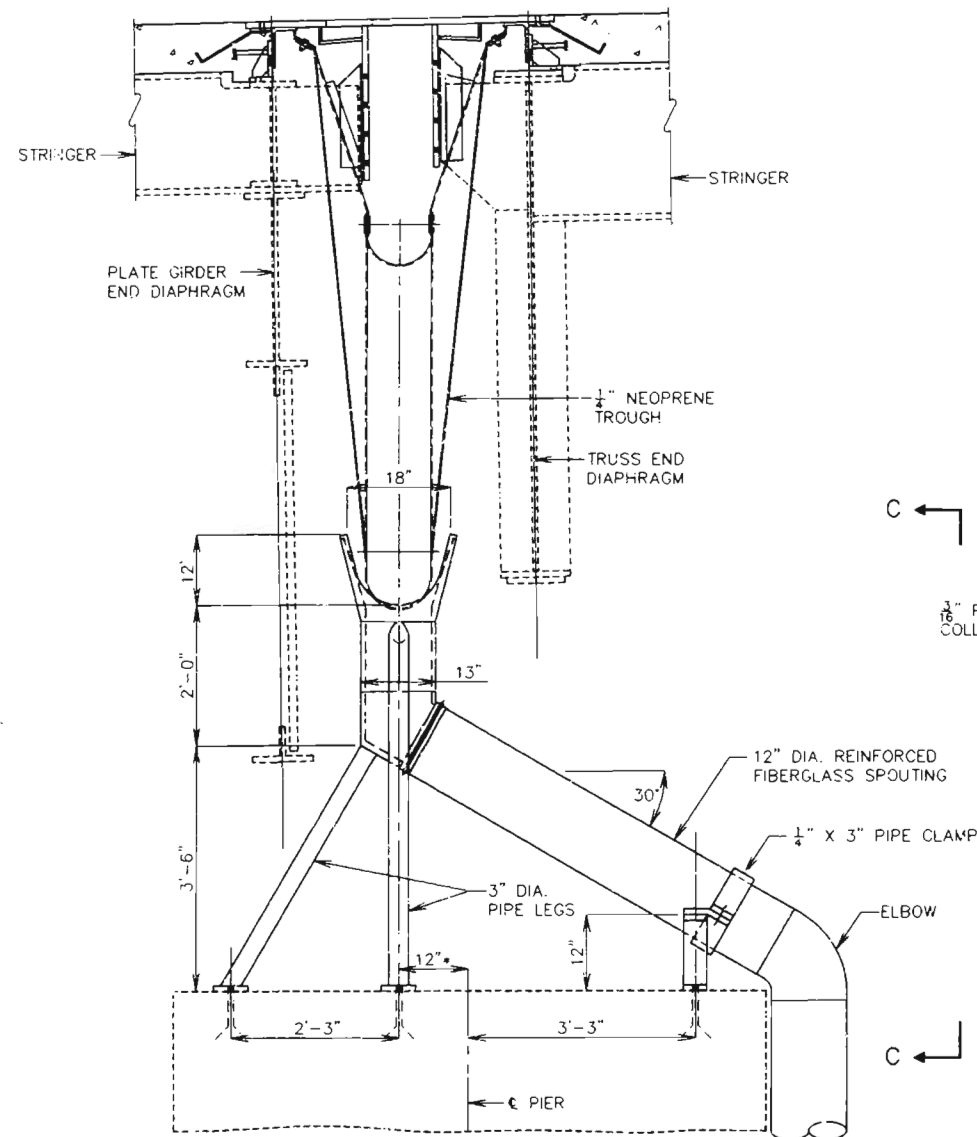
BOONE-COOPER COUNTIES

DRAINAGE SYSTEM ASSEMBLY

SHEET NO. 58 OF 73

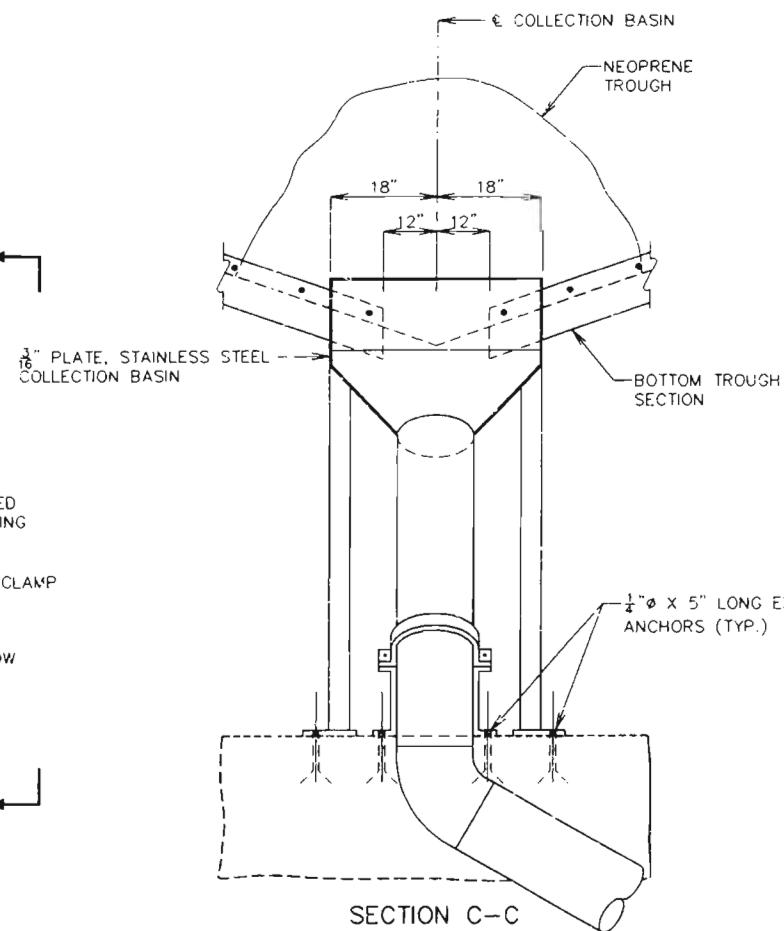


L096223

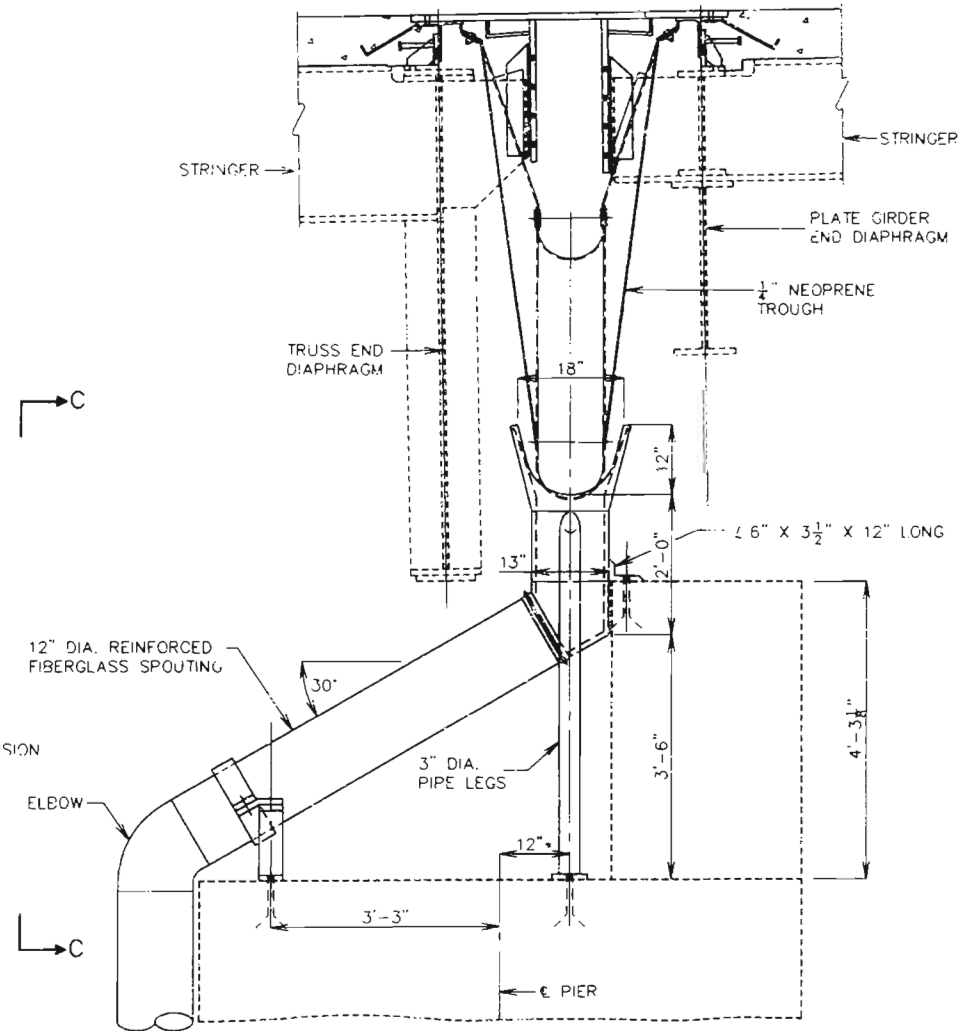


SECTION A-A

PIER NO. 13



SECTION C-C



SECTION B-B

PIER NO. 15

NOTES:

- SEE SHEET NO. 56 FOR NEOPRENE TROUGH DETAILS.
- SEE SHEET NO. 58 FOR LOCATION OF SECTION A-A & B-B.
- STAINLESS STEEL COLLECTION BASIN SHALL BE FABRICATED FROM TYPE 302 STAINLESS STEEL. SEE SPECIAL PROVISIONS.
- REINFORCED FIBERGLASS SPOUTING SHALL BE FIBERCAST, CENTRICAST PIPE OR APPROVED EQUAL. SEE SPECIAL PROVISIONS.

- * DIMENSION BASED ON ORIGINAL PLAN DIMENSIONS. CONTRACTOR TO REPOSITION COLLECTION BASIN WITH THE APPROVAL OF THE ENGINEER TO BE CENTERED UNDER THE TROUGH.

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

457289

PROJECT NO. 847401
PROJECT NAME: BRIDGE 1-70 BOONE-COOPER COUNTIES, BRIDGE 1A, VERTICALLY ADJUSTABLE BRIDGE
LAST EDIT DATE: 08/09/93 @ 09:03

BUCHER, WILLIS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	SAC	6/93
TRACED BY:	TWM	8/93
CHECKED BY:	DMA	7/93

BOONE-COOPER COUNTIES

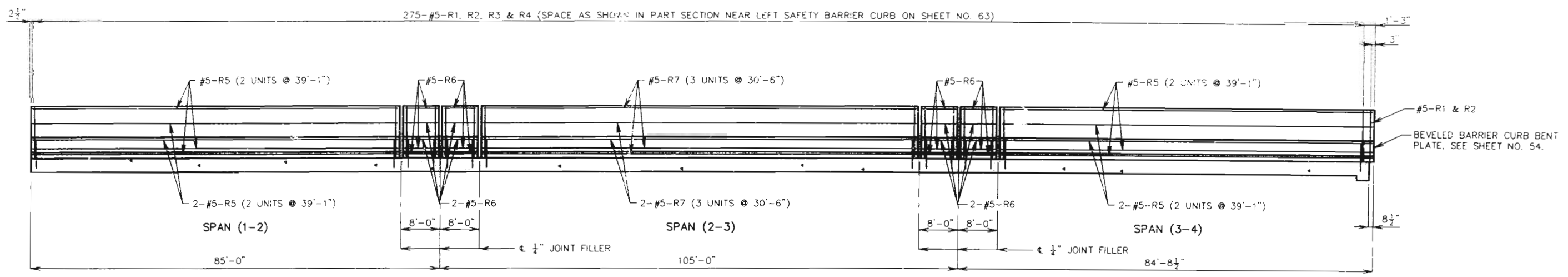
COLLECTION BASIN AND
SPOUTING DETAILS

SHEET NO. 59 OF 73

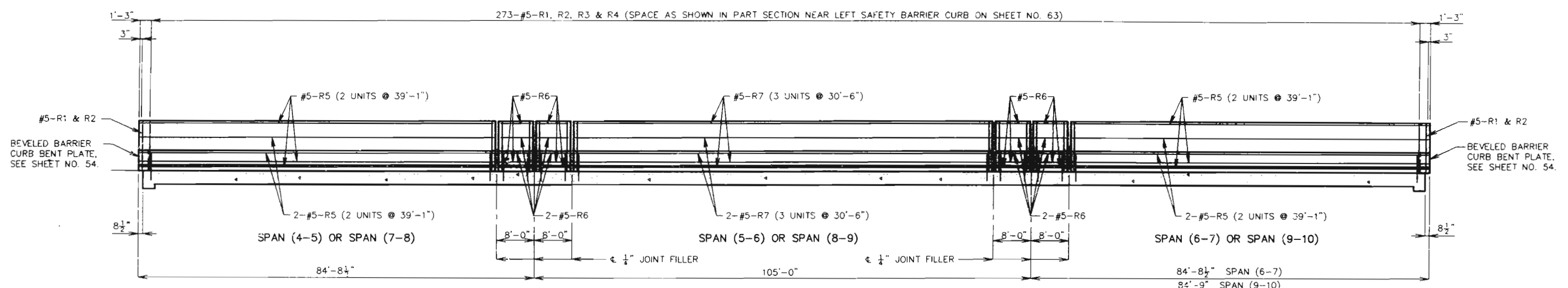


8-9-93

L096223



UNIT 1



UNIT 2

SECTIONS NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)

- NOTES:
- USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS.
 - FOR MISCELLANEOUS SAFETY BARRIER CURB DETAILS, SEE SHEET NO. 63.
 - LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.



1	2	2	3	4	5	5	5	6	7	5	5	5	4	8
ABUT. NO. 1	BENT NO. 4	BENT NO. 7	BENT NO. 10	PIER NO. 13	PIER NO. 14	PIER NO. 15	PIER NO. 18							

UNIT LOCATION PLAN

BUCHER, WILLS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY: DJM 6/93
TRACED BY: RCC 6/93
CHECKED BY: DMA 6/93

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

BOONE-COOPER COUNTIES

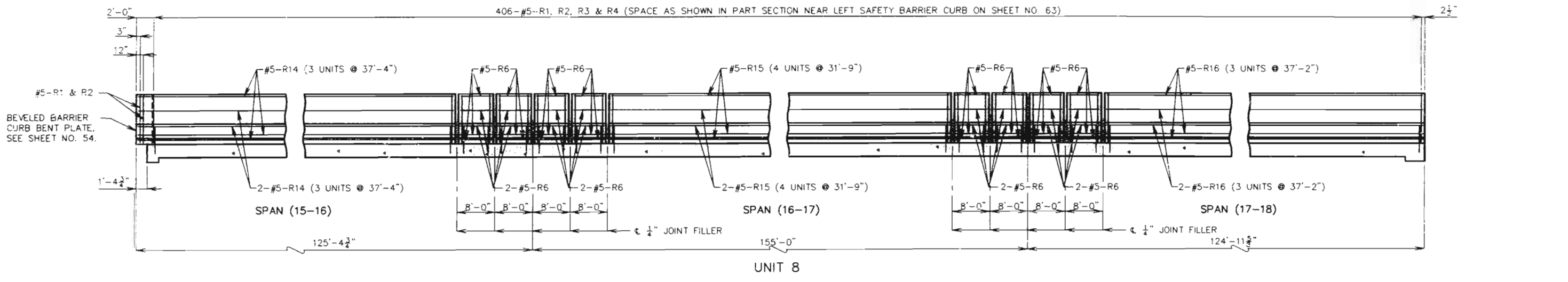
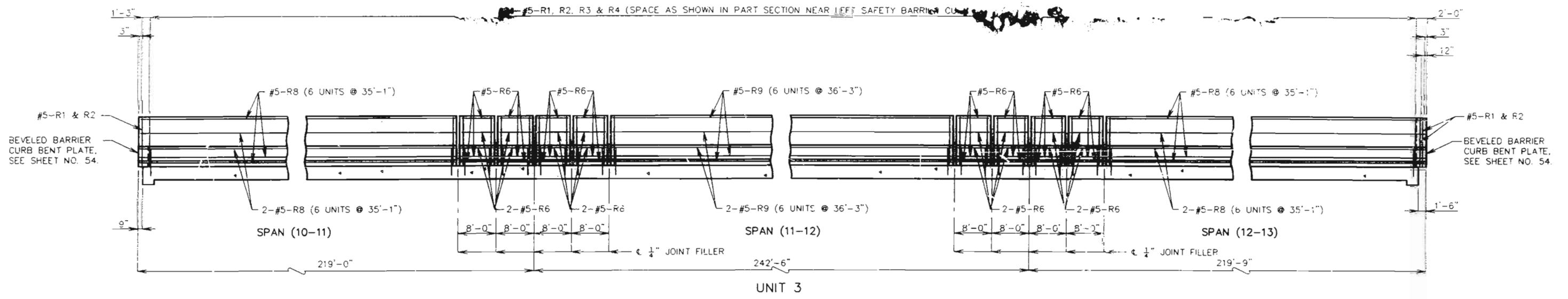
SAFETY BARRIER CURB DETAILS
UNITS 1 AND 2



SHEET NO. 60 OF 73

L096223

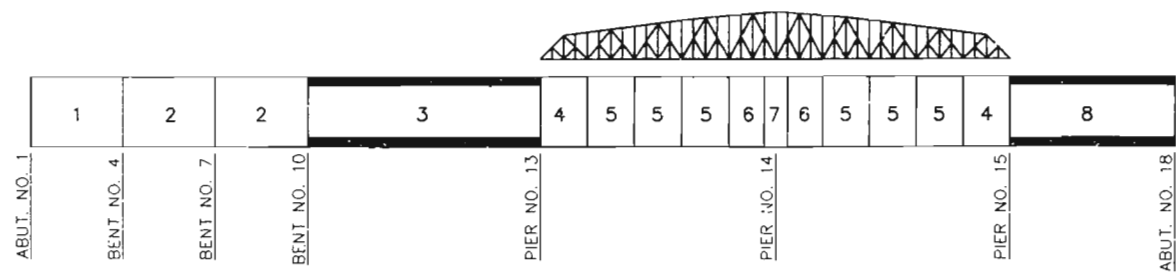
PROJECT NAME: I-70 BOONE-COOPER COUNTIES BRIS HAAS IN PARTS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100



SECTIONS NEAR LEFT BARRIER CURB (RIGHT BARRIER CURB SIMILAR)

NOTES:

- USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS.
- FOR MISCELLANEOUS SAFETY BARRIER CURB DETAILS, SEE SHEET NO. 63.
- LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.



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

BUCHER, WILLIS & RATLIFF
ENGINEERS & ARCHITECTS

DRAWN BY: DJM 6/93
TRACED BY: RCC 6/93
CHECKED BY: DWA 6/93

BOONE-COOPER COUNTIES

SAFETY BARRIER CURB DETAILS
UNITS 3 AND 8

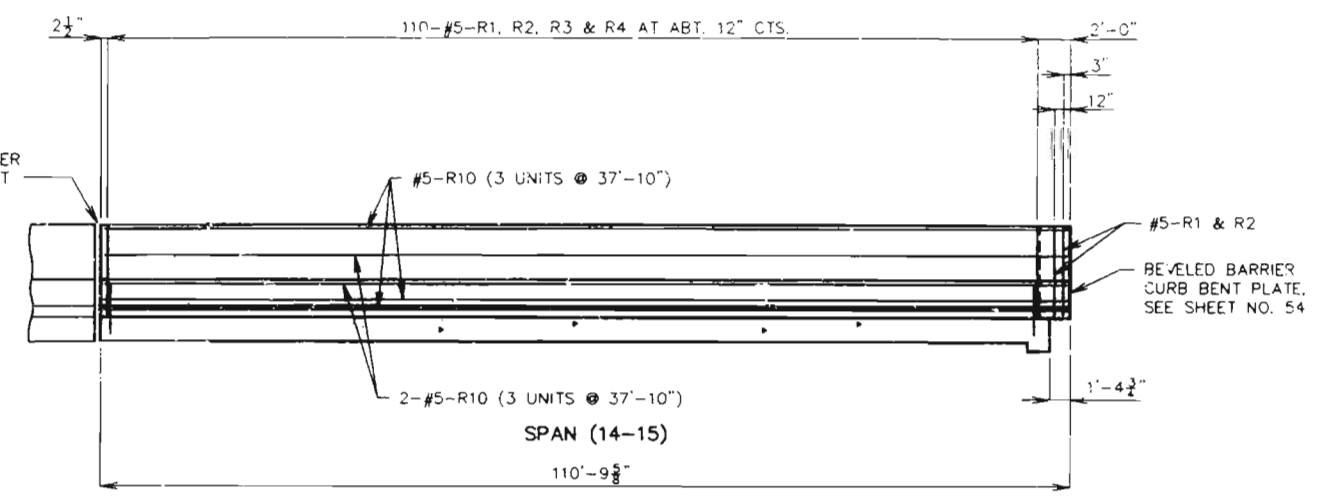
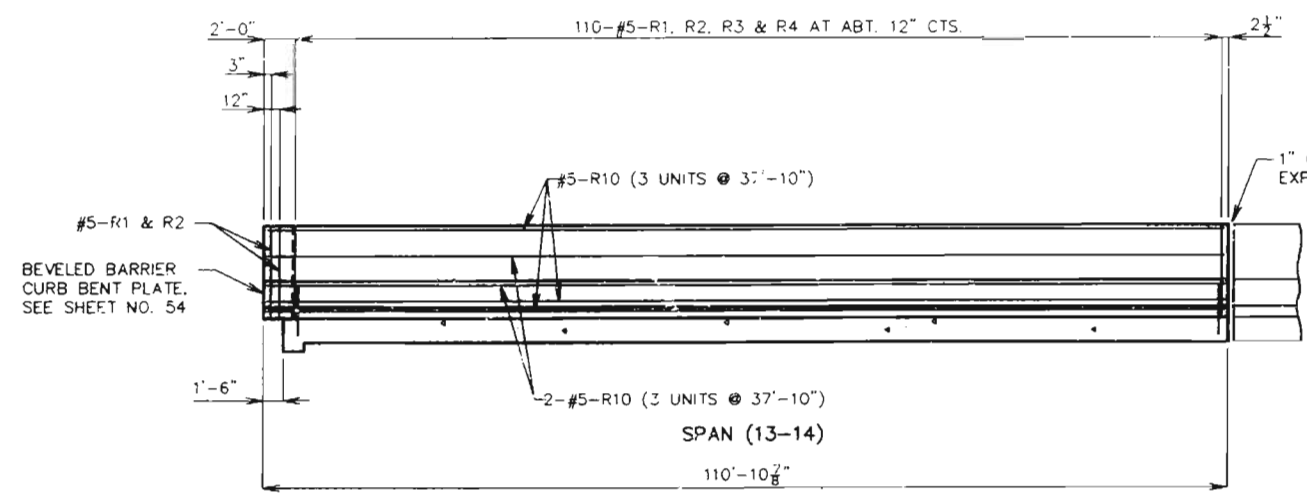
SHEET NO. 61 OF 73

L096223

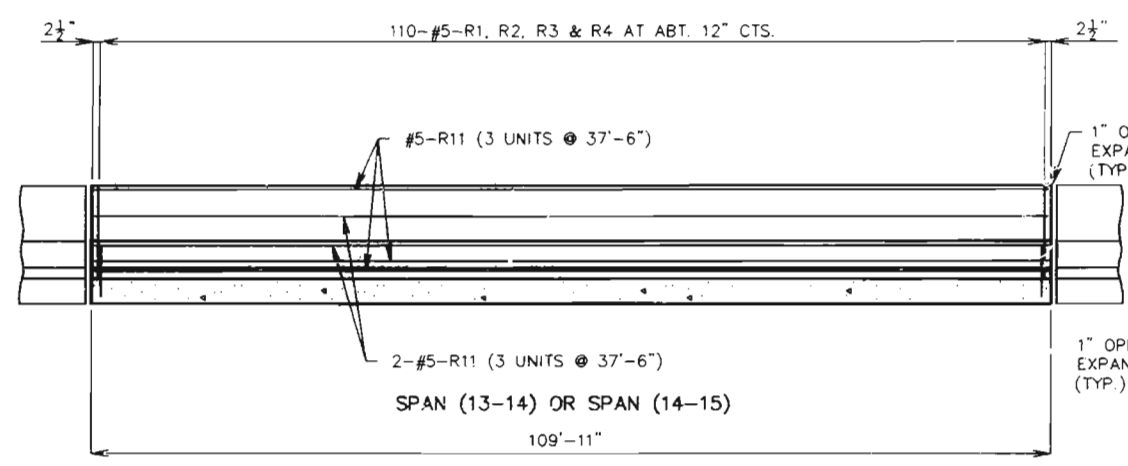


PROJECT NAME: I-70 BOONE-COOPER COUNTIES SAFETY BARRIER CURB DETAILS (UNITS 3 AND 8)

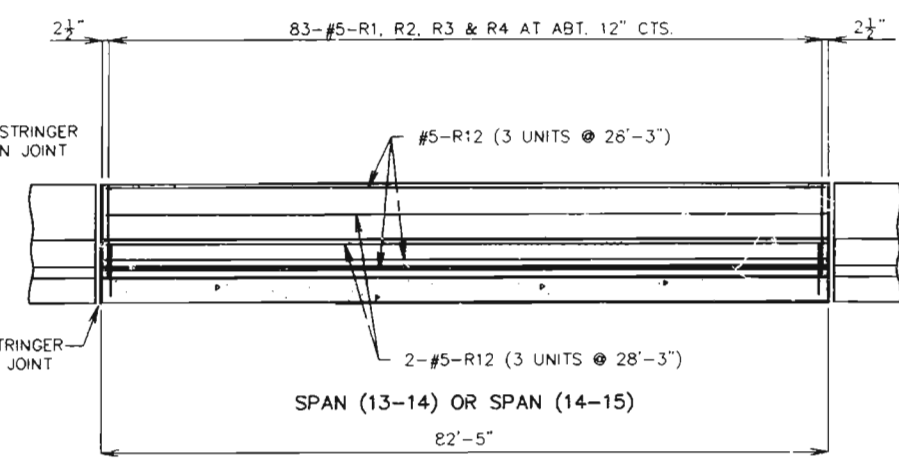
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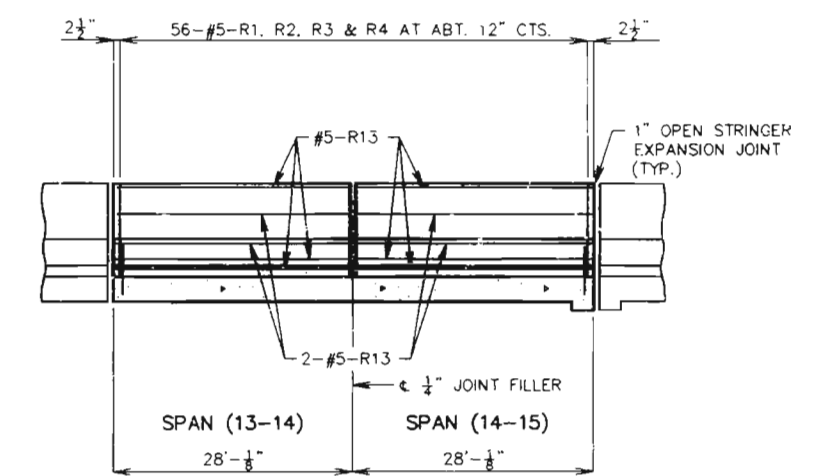
UNIT 4



UNIT 5



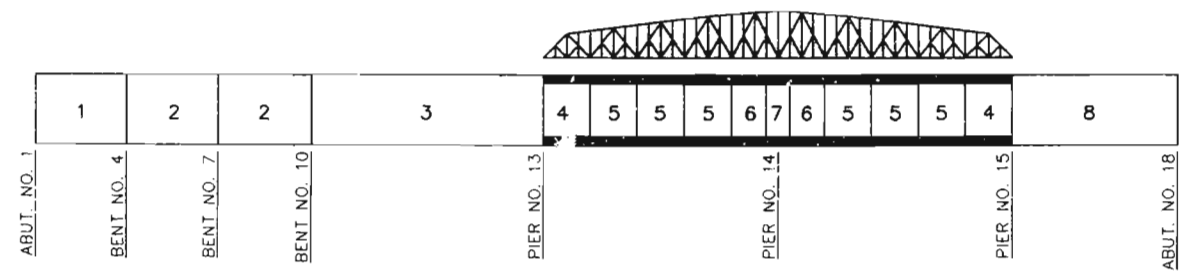
UNIT 6



UNIT 7

SECTIONS NEAR LEFT BARRIER CURB
(RIGHT BARRIER CURB SIMILAR)

- NOTES:
- USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS.
 - FOR MISCELLANEOUS SAFETY BARRIER CURB DETAILS, SEE SHEET NO. 63.
 - LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.



UNIT LOCATION PLAN

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

46887

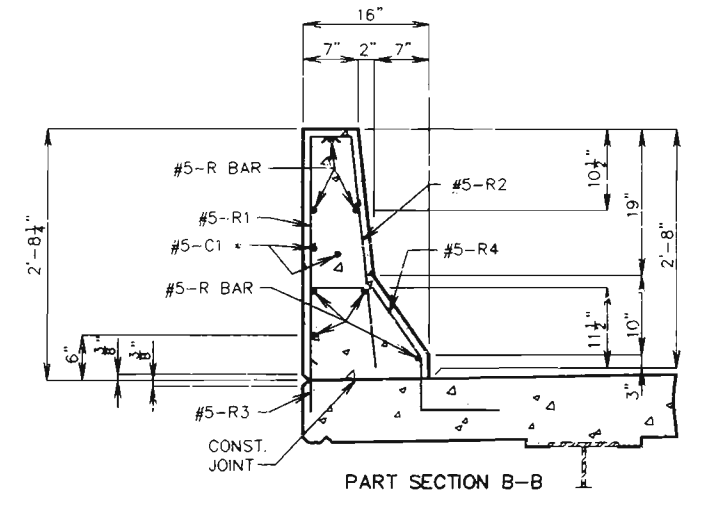
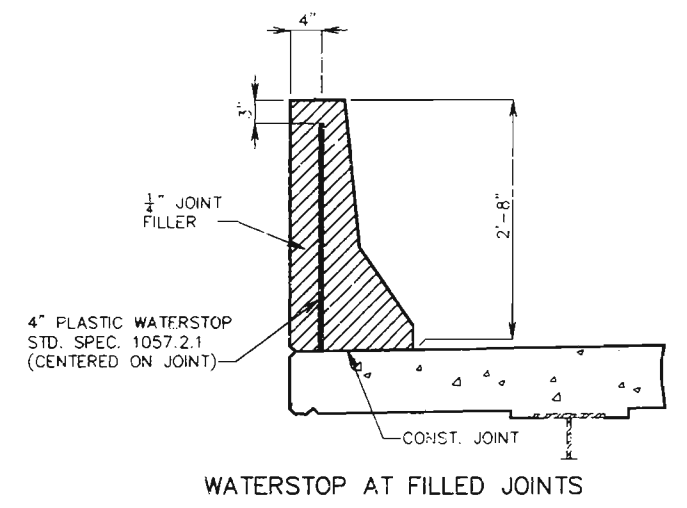
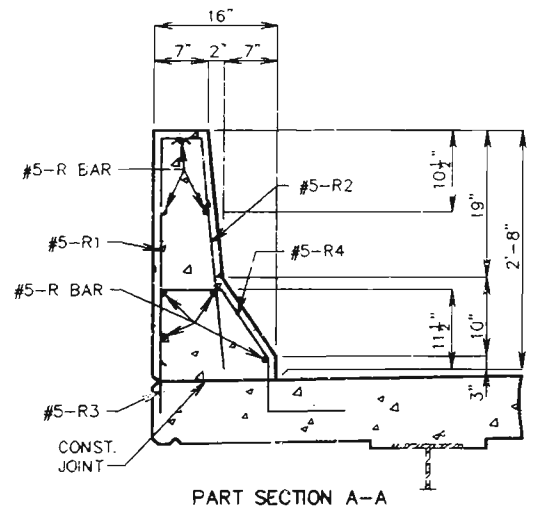
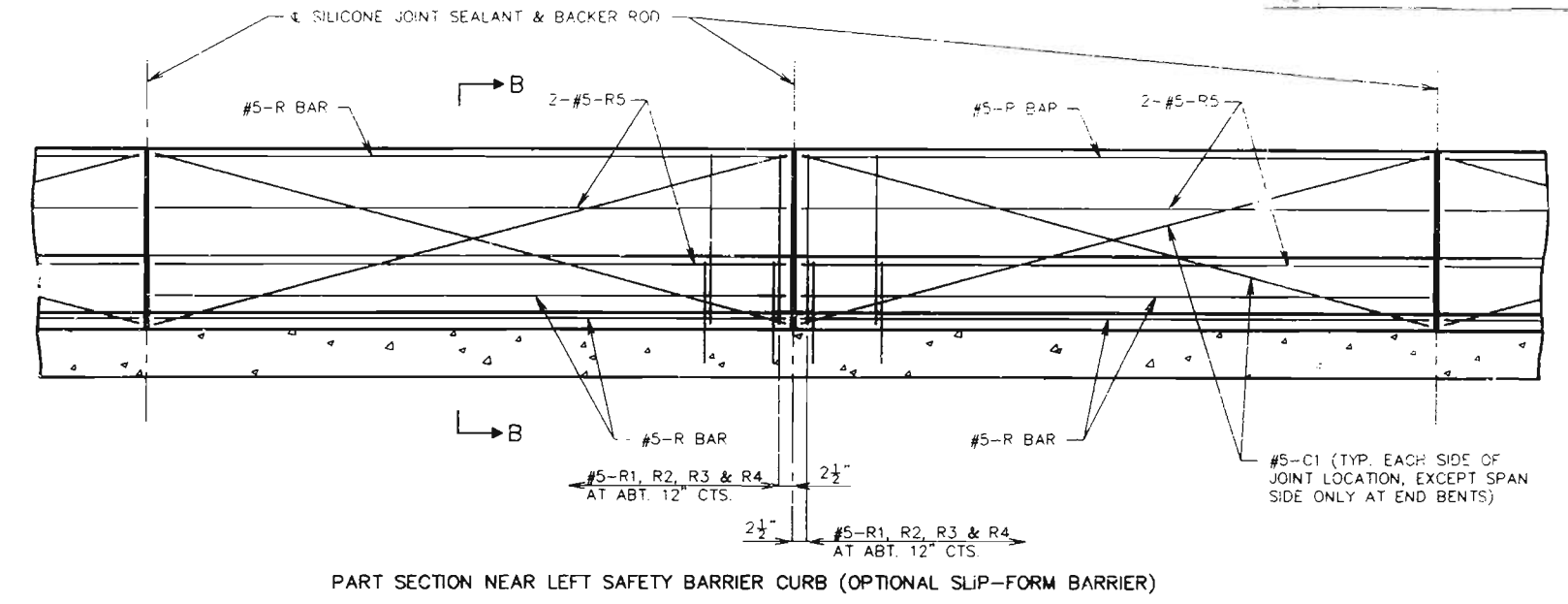
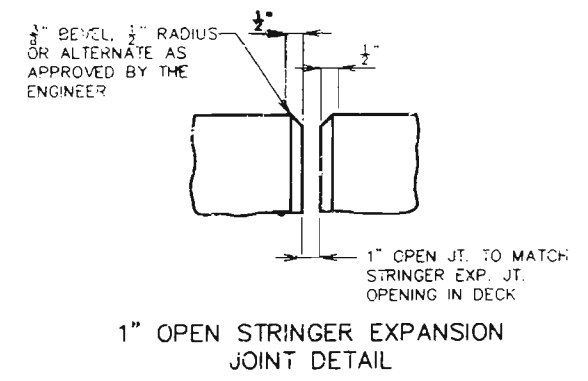
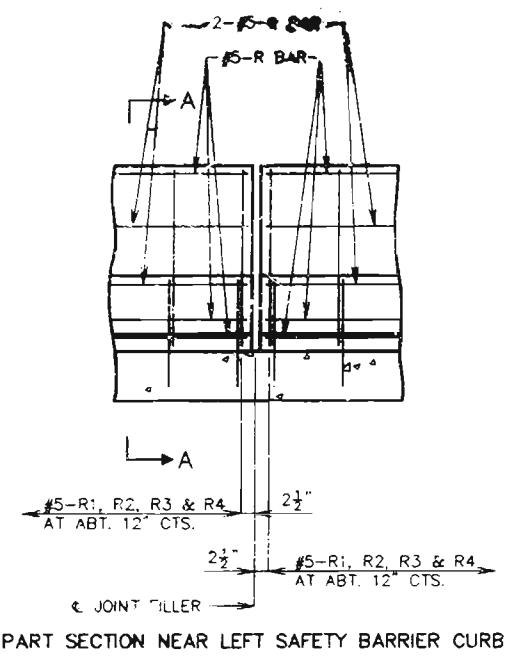
BUCHER, WILLS & RATLIFF
ENGINEERS + PLANNERS + ARCHITECTS

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TRACED BY: RCC 6/93
CHECKED BY: DMA 6/93

BOONE-COOPER COUNTIES

SAFETY BARRIER CURB DETAILS
UNITS 4, 5, 6 AND 7

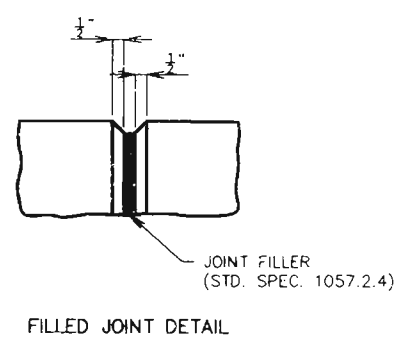




USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS.
THE CROSS-SECTIONAL AREA ABOVE THE SLAB = 2.27 SQ. FT.

NOTE: PLASTIC WATERSTOP SHALL BE PLACED IN ALL SAFETY BARRIER CURB FILLED JOINTS. COST OF PLASTIC WATERSTOP, COMPLETE-IN-PLACE, TO BE INCLUDED IN CONTRACT UNIT PRICE FOR SAFETY BARRIER CURB.

USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS.
THE CROSS-SECTIONAL AREA ABOVE THE SLAB = 2.27 SQ. FT.
• EACH SIDE OF JOINT LOCATION.



NOTES:

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

ALL EXPOSED EDGES OF SAFETY BARRIER CURB SHALL HAVE EITHER A 1/2" RADIUS OR A 3/8" BEVEL, UNLESS OTHERWISE NOTED.

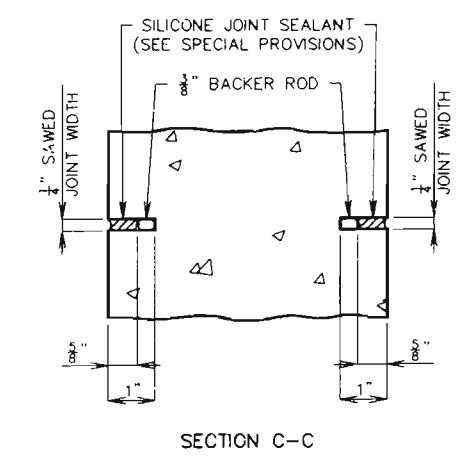
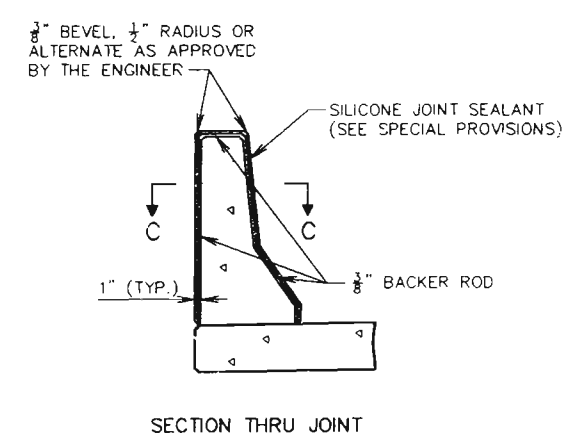
CONCRETE FOR THE SAFETY BARRIER CURB SHALL BE CLASS B1.

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

MEASUREMENT OF THE SAFETY BARRIER CURB IS TO THE NEAREST LINEAR FOOT FOR EACH STRUCTURE, MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER FROM END TO END OF BARRIER CURB, INCLUDING 4'-0" END POSTS ON MODIFIED ABUTMENTS.

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

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



CAST-IN-PLACE BARRIER CURB DETAILS

SLIP-FORM BARRIER CURB DETAILS
BOONE-COOPER COUNTIES
MISCELLANEOUS SAFETY BARRIER CURB DETAILS

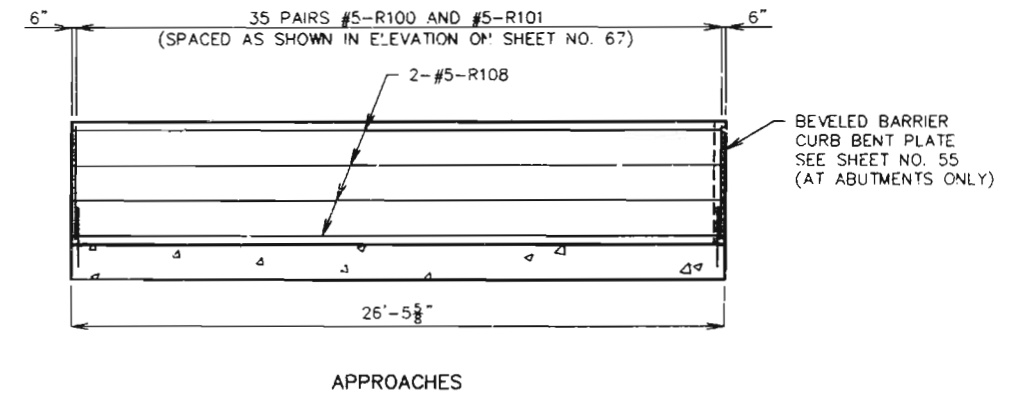
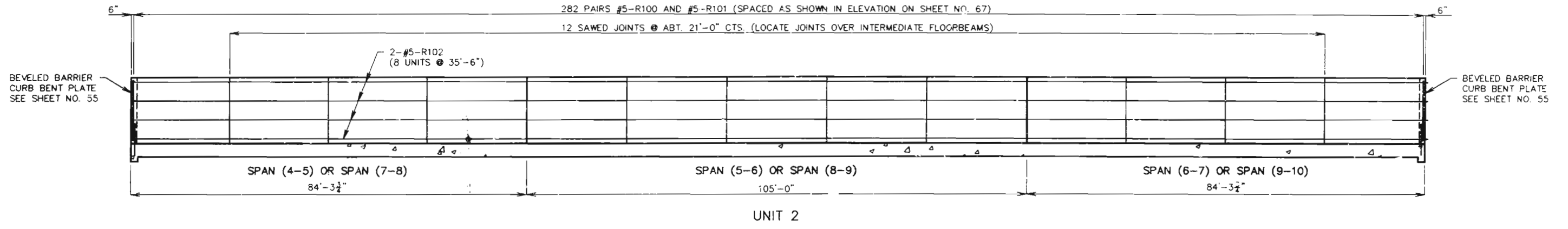
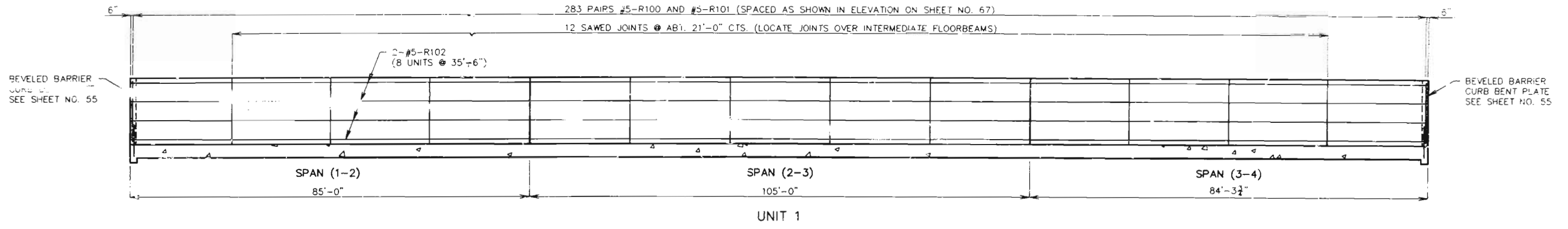


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TRACED BY:	RCC 6/93
CHECKED BY:	DMA 6/93

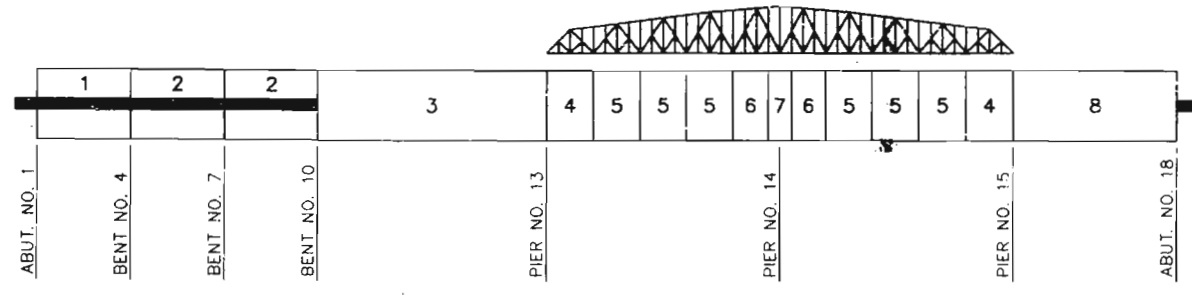
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

767 88

LAST DATE OF REV. 07/16/93 @ 16:00



SECTIONS NEAR MEDIAN BARRIER CURB



UNIT LOCATION PLAN

- NOTES:
- USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL MEDIAN BARRIER CURB BARS.
 - FOR MISCELLANEOUS MEDIAN BARRIER CURB DETAILS, SEE SHEET NO. 67.
 - LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.

BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS

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TRACED BY:	TWM	6/93
CHECKED BY:	DMA	6/93

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

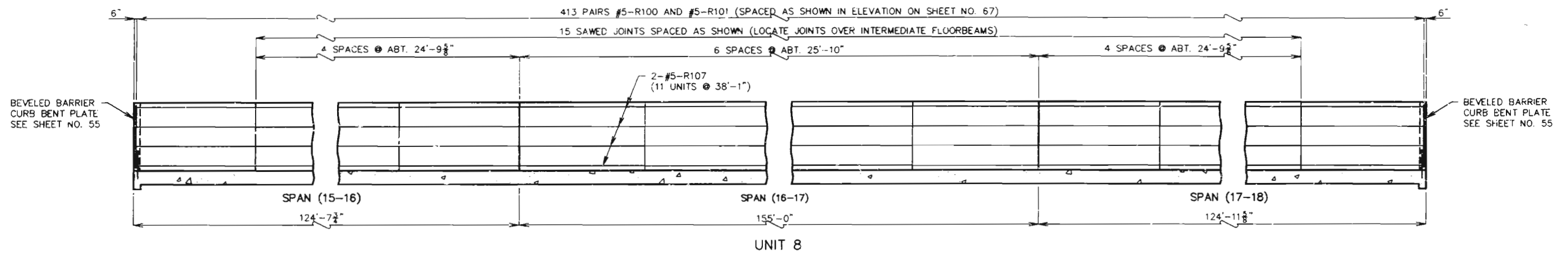
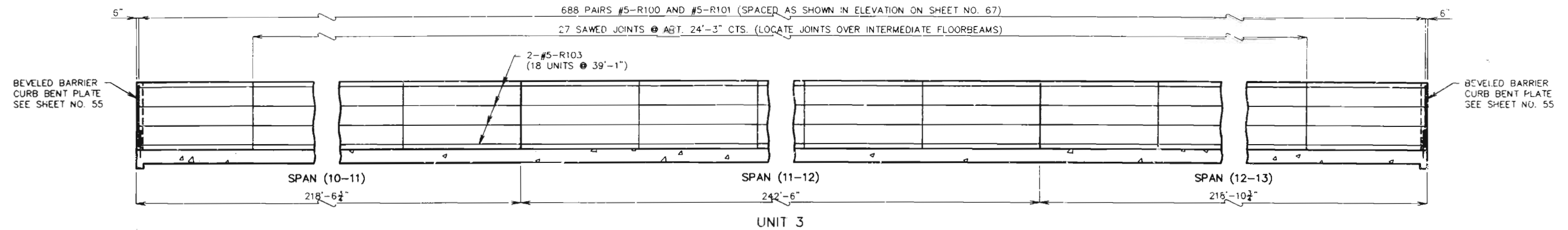
BOONE-COOPER COUNTIES
 MEDIAN BARRIER CURB DETAILS
 UNITS 1 & 2 AND APPROACHES

9-93

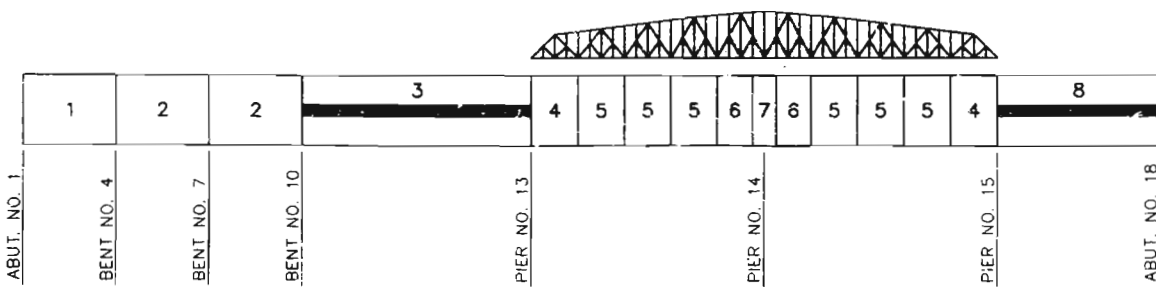
L096223

467 89
 PROJECT NUMBER 1-70 BOONE-COOPER COUNTIES MEDIAN BARRIER CURB DETAILS (CONTRACT)

LAST REVISION 07/11/93 @ 17:18



SECTIONS NEAR MEDIAN BARRIER CURB



UNIT LOCATION PLAN

NOTES:

USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL MEDIAN BARRIER CURB BARS.

FOR MISCELLANEOUS MEDIAN BARRIER CURB DETAILS, SEE SHEET NO. 67.

LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.



BOONE--COOPER COUNTIES

MEDIAN BARRIER CURB DETAILS
 UNITS 3 & 8

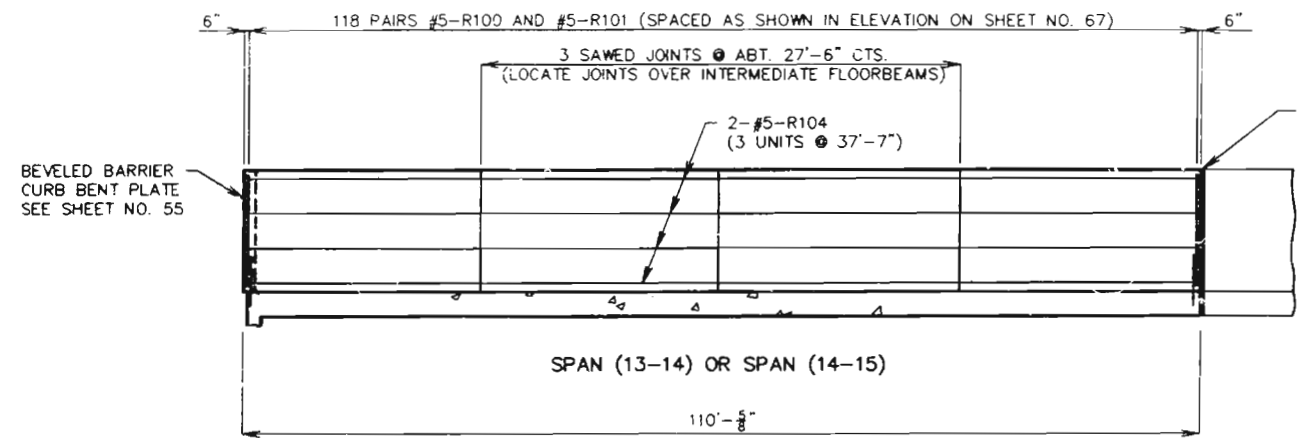
SHEET NO. 65 OF 73

L096223

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

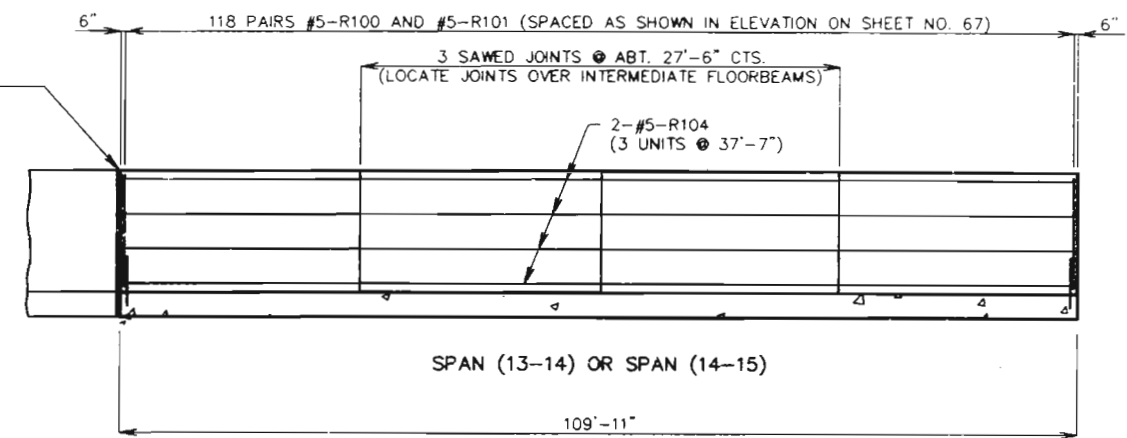
EUCHER, WILLIS & RATLIFF ENGINEERS • PLANNERS • ARCHITECTS		
DRAWN BY:	DJM	6/93
TRACED BY:	TWM	6/93
CHECKED BY:	DMA	6/93

463 70
 PROJECT NAME: BOONE-COOPER COUNTIES MEDIAN BARRIER CURB DETAILS (SEE SHEET NO. 67)
 PROJECT NO. 93-01-001

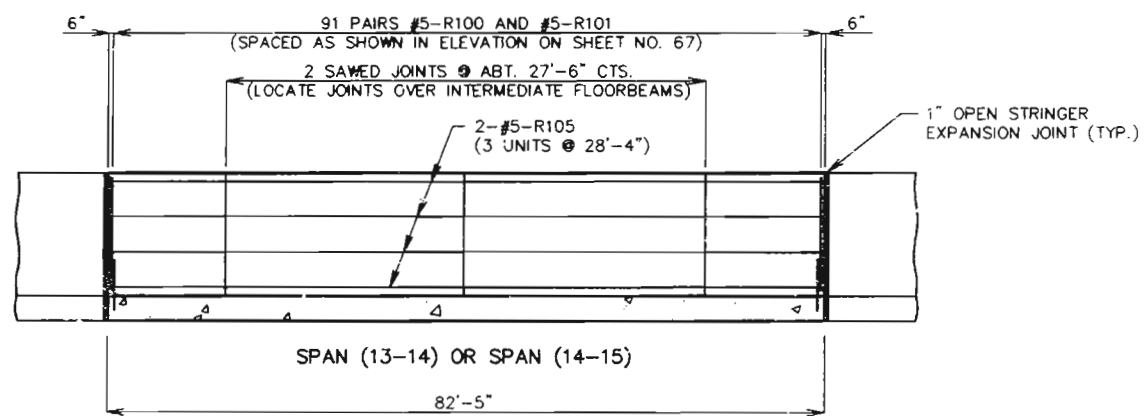


UNIT 4

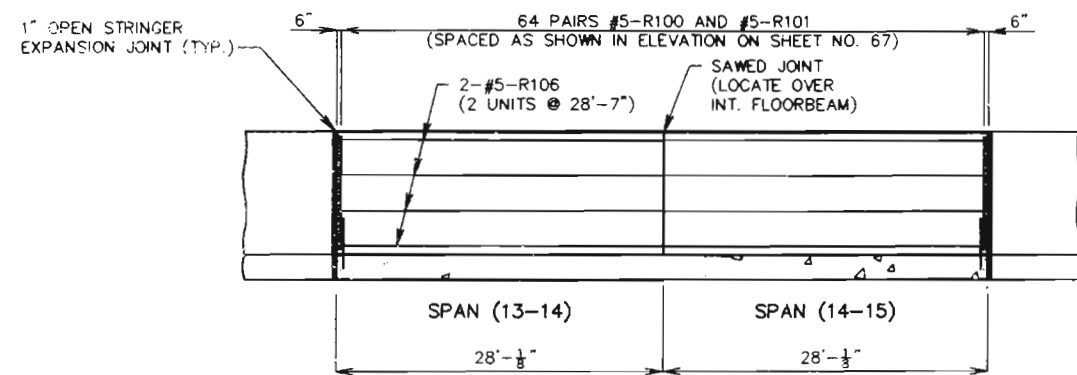
NOTE:
UNIT 4 IN SPAN (13-14) SHOWING
UNIT 4 IN SPAN (14-15) IS OPPOSITE HAND



UNIT 5

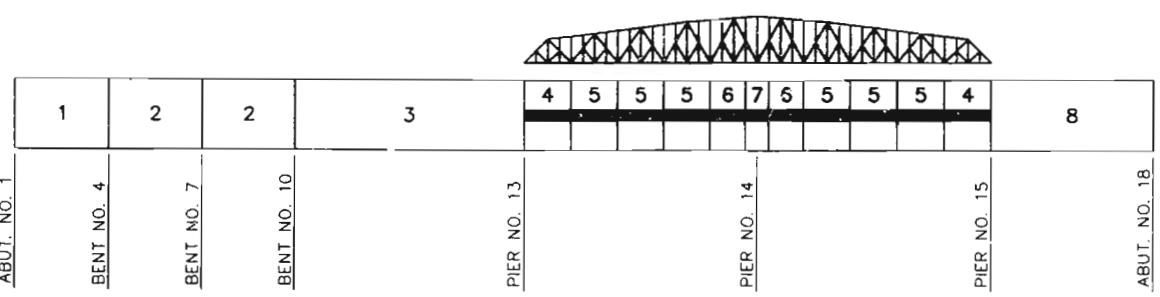


UNIT 6



UNIT 7

SECTIONS NEAR MEDIAN BARRIER CURB



UNIT LOCATION PLAN

NOTES:
USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL MEDIAN BARRIER CURB BARS.
FOR MISCELLANEOUS MEDIAN BARRIER CURB DETAILS, SEE SHEET NO. 67.
LONGITUDINAL DIMENSIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER.

BUCHER, WILLS & RATLIFF
ENGINEERS & ARCHITECTS

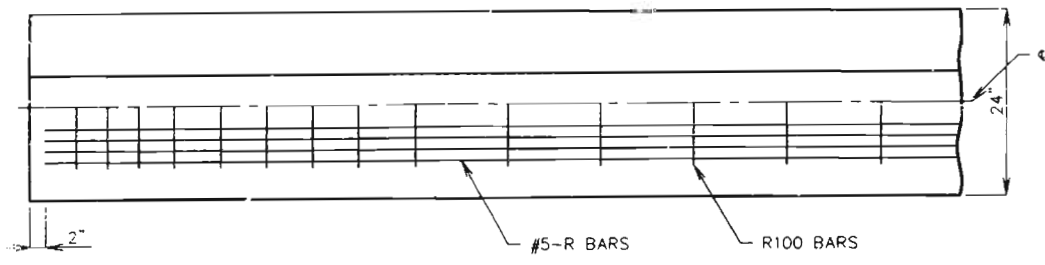
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CHECKED BY:	DMA	6/93

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BOONE-COOPER COUNTIES

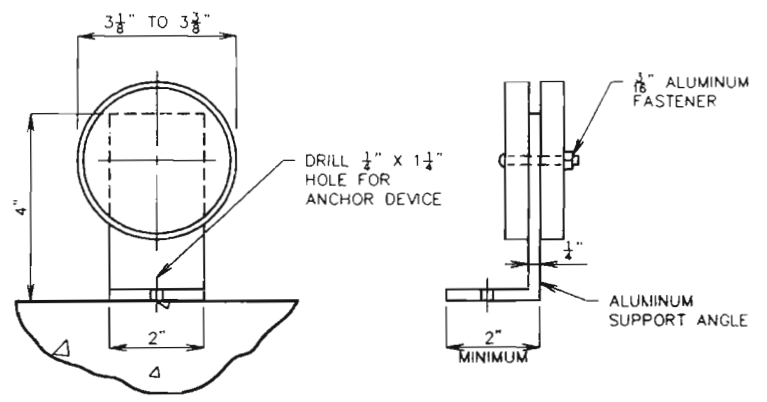
MEDIAN BARRIER CURB DETAILS
UNITS 4, 5, 6 & 7



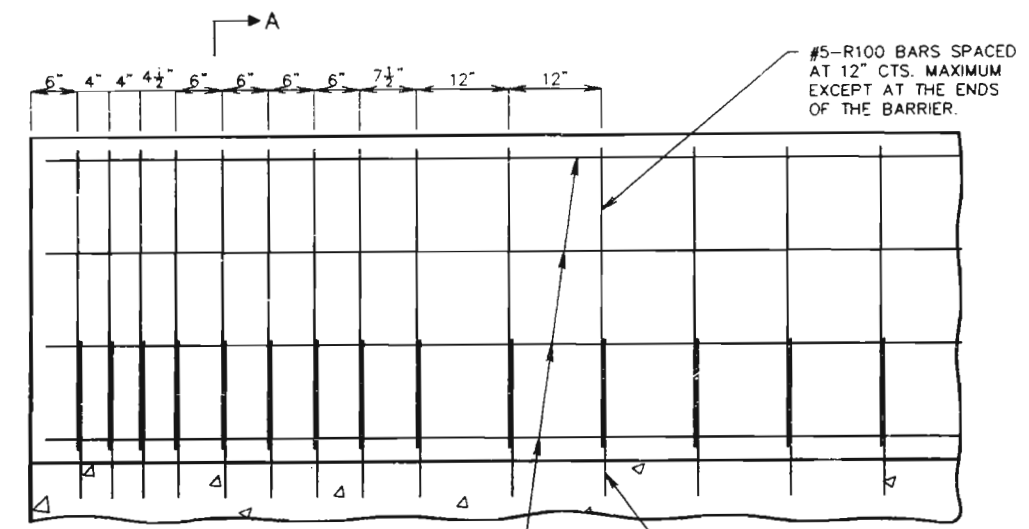


PLAN VIEW
(SYMMETRICAL ABOUT CENTER LINE)

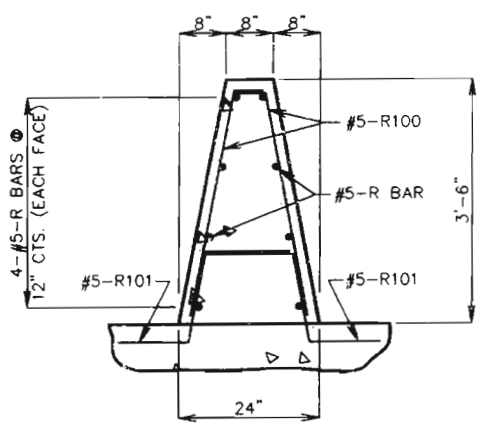
NOTE: CONCRETE IN BOTTOM HALF OF PLAN VIEW IS REMOVED IN ORDER TO SHOW REINFORCING DETAILS.



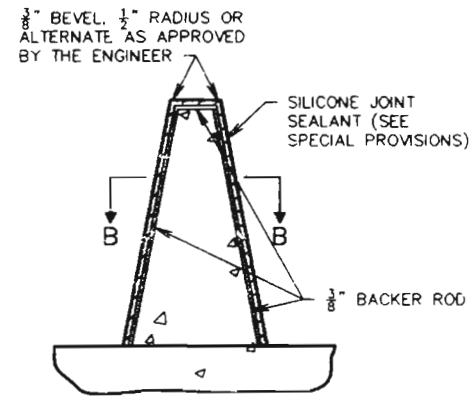
DOUBLE DELINEATOR



ELEVATION



SECTION A-A

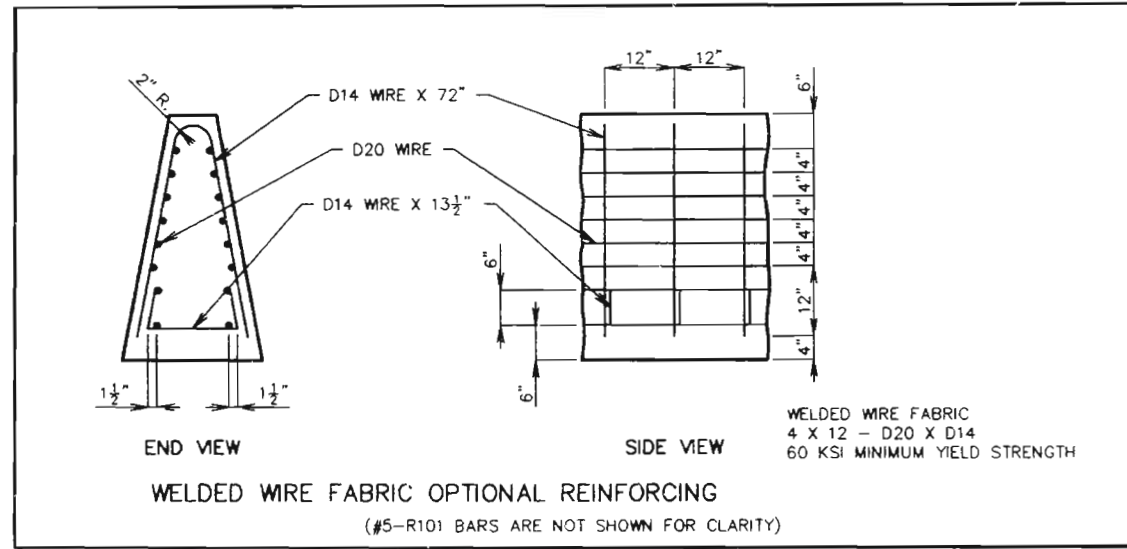


SECTION THRU JOINT

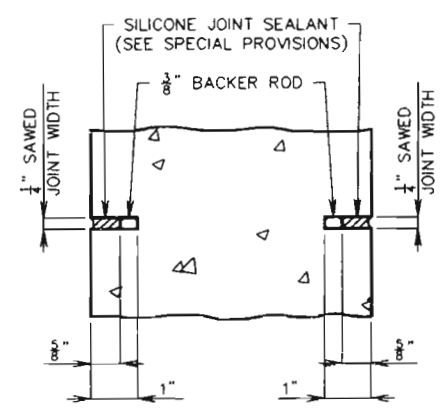
NOTES: USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL MEDIAN BARRIER CURB BARS.
THE CROSS-SECTIONAL AREA ABOVE THE SLAB = 4.67 SQ. FT..

NOTES:

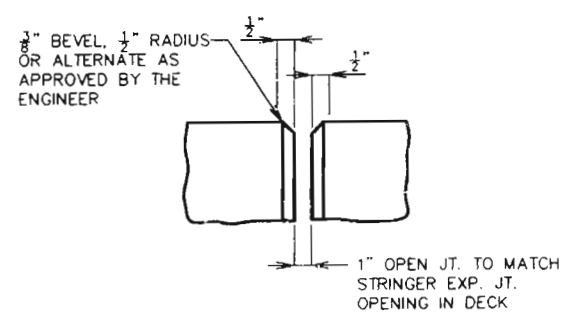
- TOP OF MEDIAN BARRIER CURB SHALL BE BUILT PARALLEL TO GRADE WITH MEDIAN BARRIER CURB JOINTS (EXCEPT AT ABUTMENTS) NORMAL TO GRADE.
- ALL EXPOSED EDGES OF MEDIAN BARRIER CURB SHALL HAVE EITHER A 1/2" RADIUS OR 3/8" BEVEL, UNLESS OTHERWISE NOTED.
- WHEN THE MEDIAN BARRIER CURB IS BID BY LINEAR FEET, THE CONTRACT UNIT PRICE SHALL INCLUDE THE COST OF ALL CONCRETE AND REINFORCEMENT, COMPLETE-IN-PLACE.
- CONCRETE IN THE MEDIAN BARRIER CURB SHALL BE CLASS B1.
- MEASUREMENT OF MEDIAN BARRIER CURB IS TO THE NEAREST LINEAR FOOT MEASURED PARALLEL TO TOP FLANGE OF STRINGER/GIRDER FROM END TO END OF MEDIAN BARRIER.
- ALL CONCRETE AND REINFORCING STEEL SHALL CONFORM TO SECTION 617 OF THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
- ANY METHOD DEvised BY THE CONTRACTOR AND APPROVED BY THE ENGINEER THAT WILL ASSURE THE LONGITUDINAL ROADWAY STEEL WILL BE POSITIONED ± 1/2" AS DIMENSIONED WILL BE SATISFACTORY.
- WELDED WIRE FABRIC MAY BE USED AS AN OPTION TO CONVENTIONAL REINFORCEMENT FOR THE CAST-IN-PLACE BARRIER. WELDED WIRE FABRIC SHALL CONFORM WITH SECTION 617 OF THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
- THE CONTRACTOR HAS THE OPTION TO SLIP-FORM THE BARRIER, IN WHICH CASE, ADDITIONAL REINFORCEMENT MAY BE TACK WELDED TO THE UPPER TWO-THIRDS OF THE REINFORCING CAGE TO PROVIDE BRACING.
- DELINEATORS TO BE MOUNTED ON MEDIAN BARRIER SHALL BE DOUBLE YELLOW.
- ALL MATERIALS FOR SUPPORTING DELINEATORS SHALL BE ALUMINUM EXCEPT ANCHOR DEVICES.
- ANCHOR DEVICES SHALL BE EITHER ALUMINUM OR GALVANIZED STEEL AND SHALL BE EXPANSIVE BOLTS OR ADHESIVE SELF-GROUTING BOLTS. IF GALVANIZED STEEL BOLTS ARE USED, A NONCONDUCTIVE WASHER SHALL BE USED BETWEEN THE ALUMINUM ALLOY SUPPORT ANGLE AND THE HEAD OF THE BOLT.
- DELINEATORS SHALL HAVE A MAXIMUM OF 100' SPACING.
- NO DIRECT PAYMENT IS MADE FOR DELINEATORS.
- THE COST OF SILICONE JOINT SEALANT AND BACKER ROD COMPLETE IN PLACE IS TO BE INCLUDED IN THE CONTRACT UNIT PRICE FOR MEDIAN BARRIER CURB.
- ALL REINFORCING STEEL SHALL BE EPOXY-COATED IN ACCORDANCE WITH SECTION 1036 OF THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.



WELDED WIRE FABRIC OPTIONAL REINFORCING
(#5-R101 BARS ARE NOT SHOWN FOR CLARITY)



SECTION B-B



1" OPEN STRINGER EXPANSION JOINT DETAIL

46592

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TRACED BY:	TWM	6/93
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NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

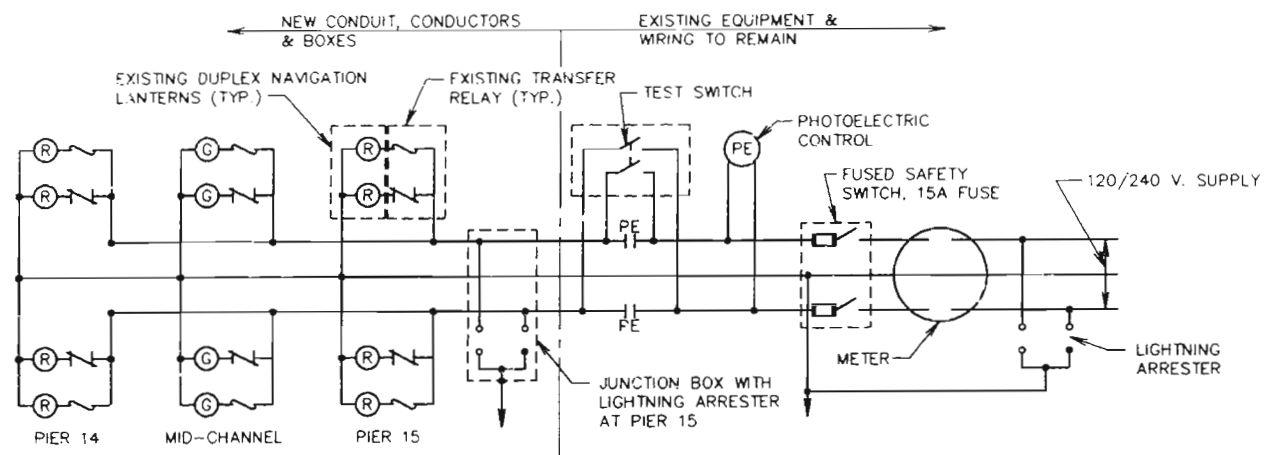
BOONE-COOPER COUNTIES

MISCELLANEOUS MEDIAN BARRIER CURB DETAILS

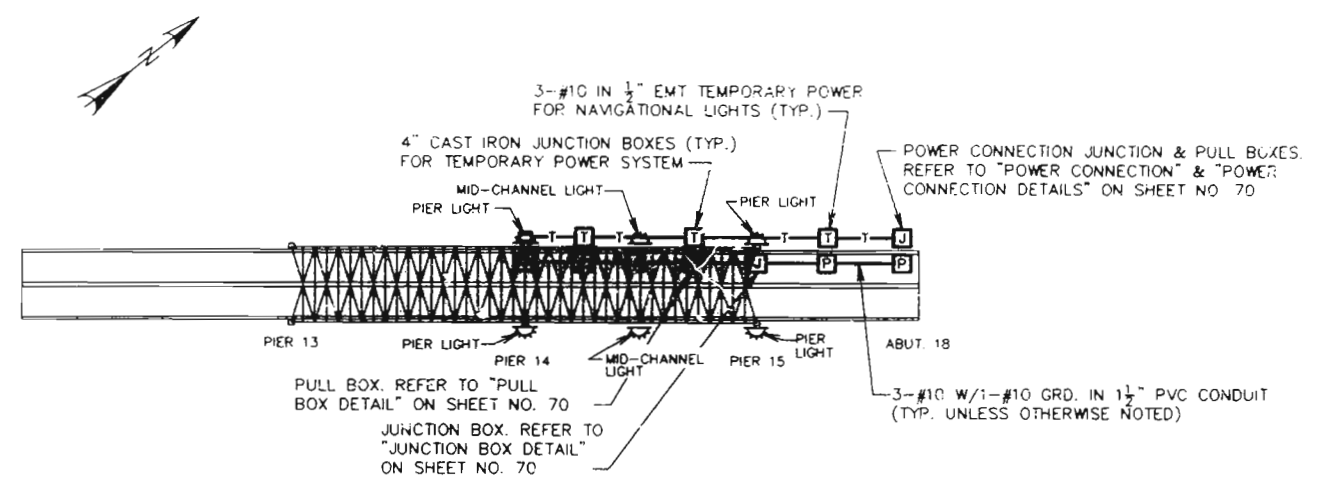


SHEET NO. 67 OF 73

L096223



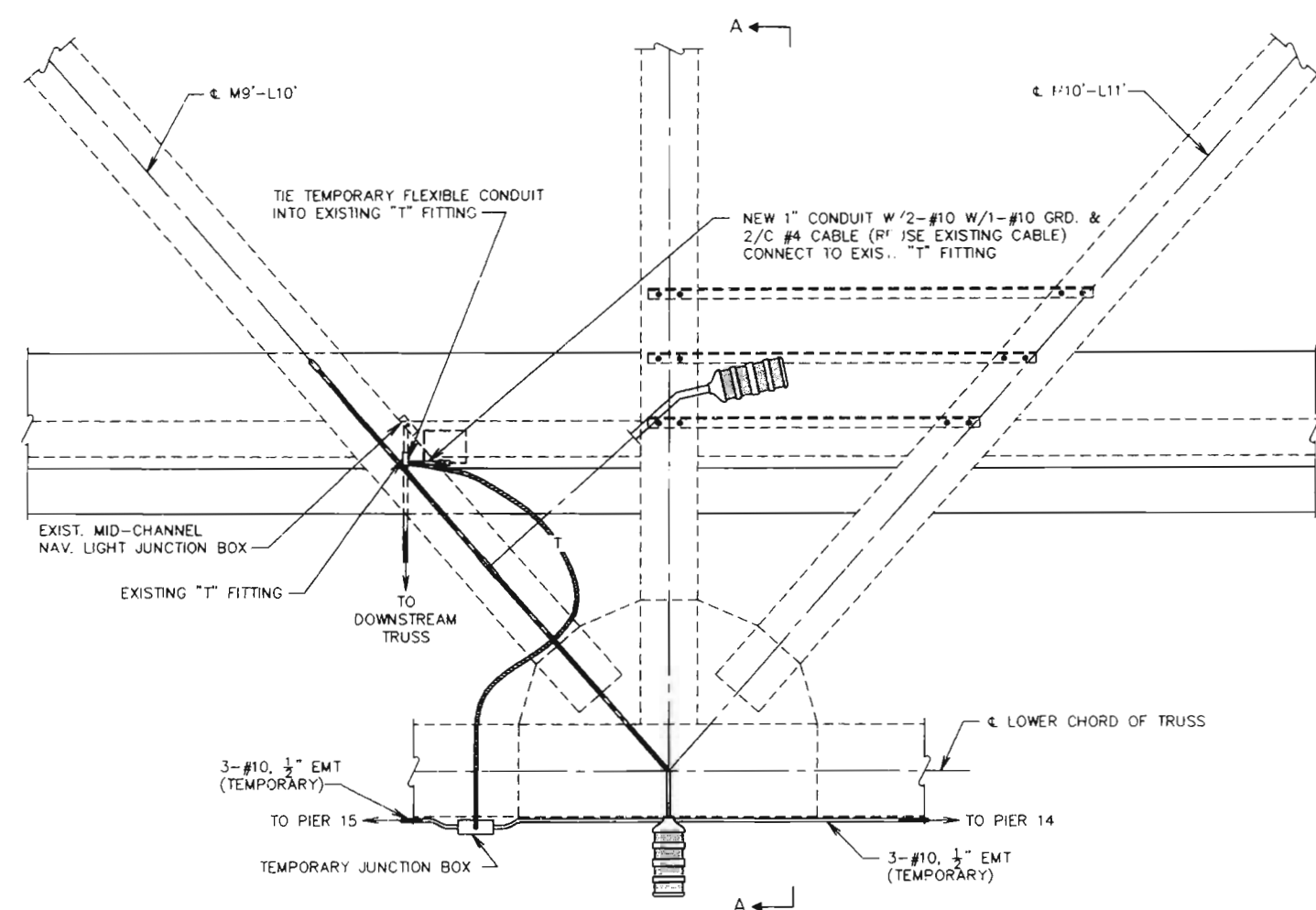
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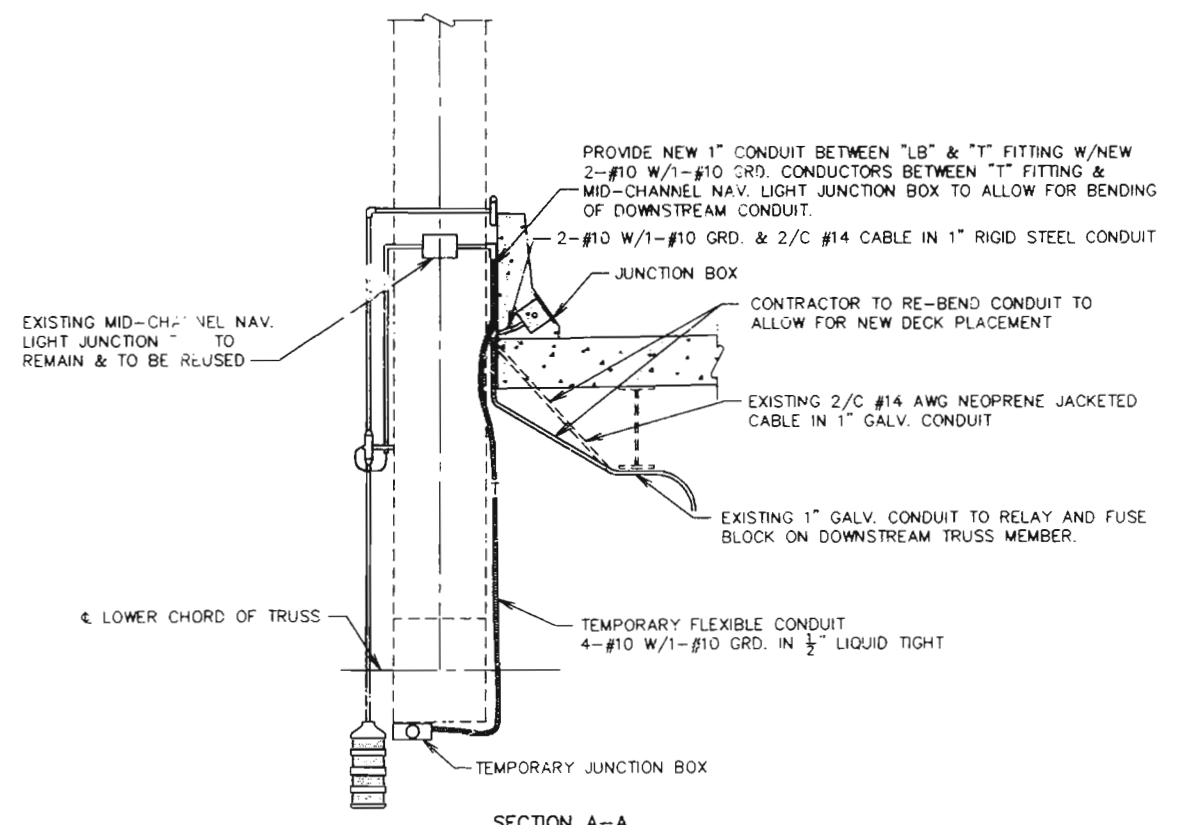
PARTIAL PLAN

LEGEND

- PULL BOX
- JUNCTION BOX
- TEMPORARY JUNCTION BOX
- TEMPORARY CONDUIT
- LIGHT



ELEVATION



SECTION A-A

DETAIL OF MID-CHANNEL LIGHT

700 73
 PROJECT NAME: MISSOURI RIVER BRIDGE-COOPER COUNTY, MISSOURI
 PROJECT NO.: 80-000-0000
 DATE: 07/7/93
 SHEET NO.: 58 OF 73

BUCHER, WILLIS & RATLIFF ENGINEERS • PLANNERS • ARCHITECTS	
DRAWN BY:	LWS 7/93
TRACED BY:	RCC 7/93
CHECKED BY:	LWS 7/93

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

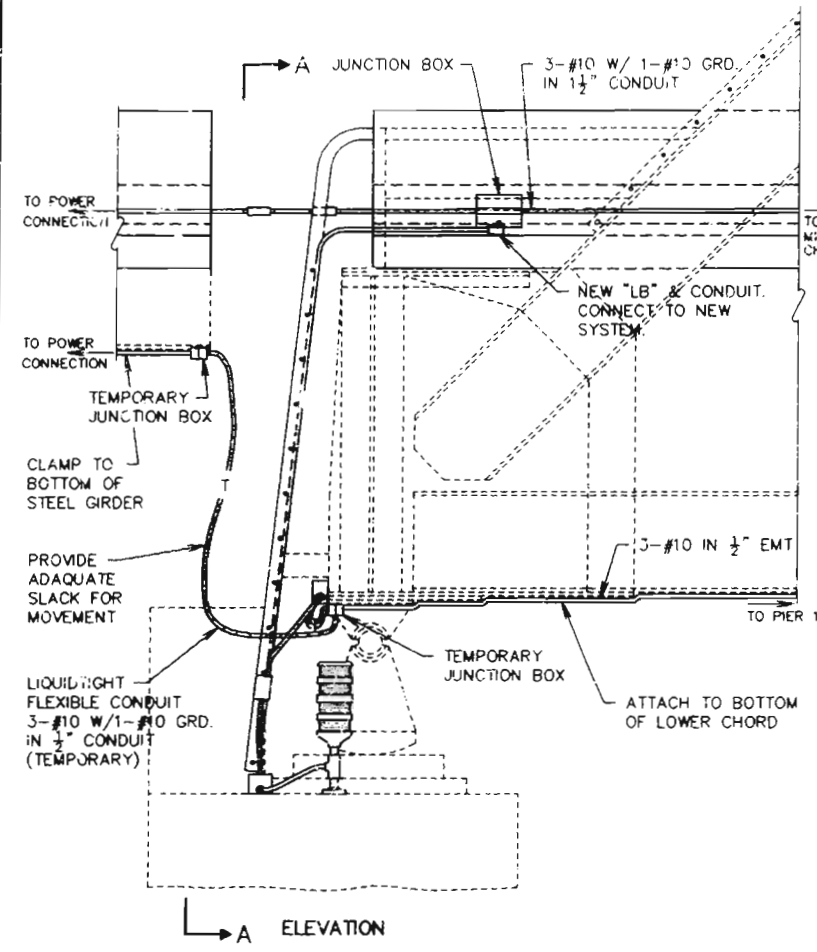
BOONE-COOPER COUNTIES

CONDUIT SYSTEM DETAILS

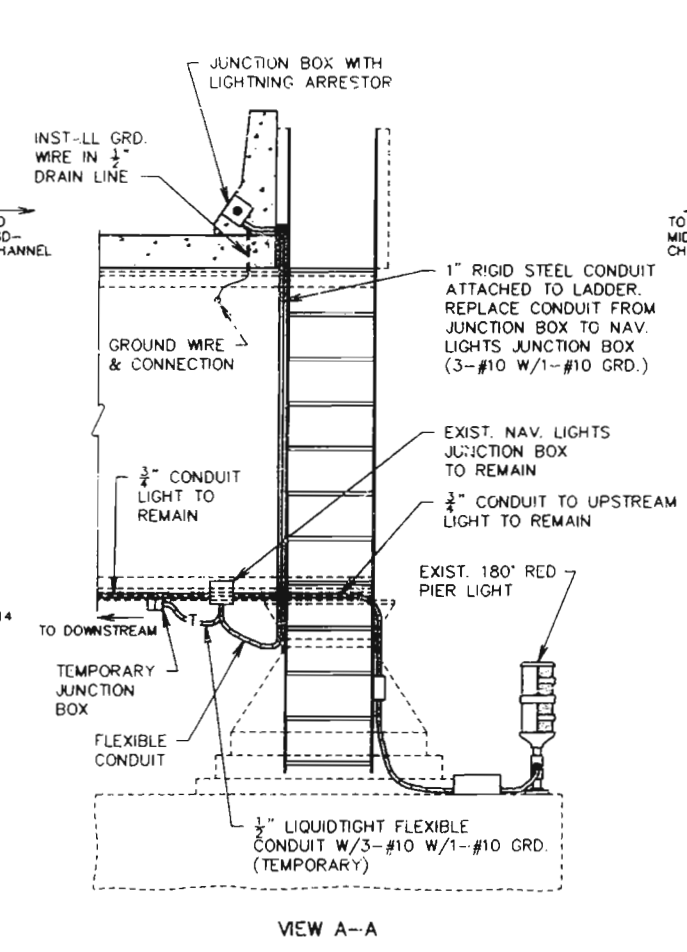
SHEET NO. 68 OF 73



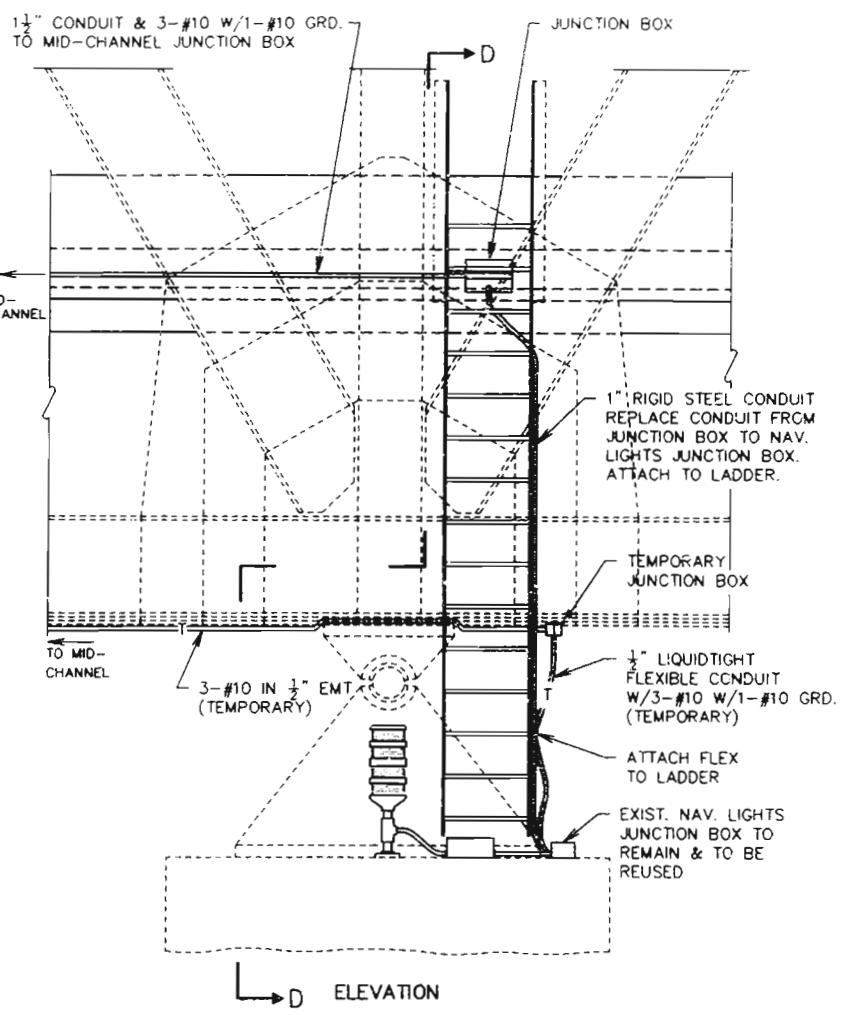
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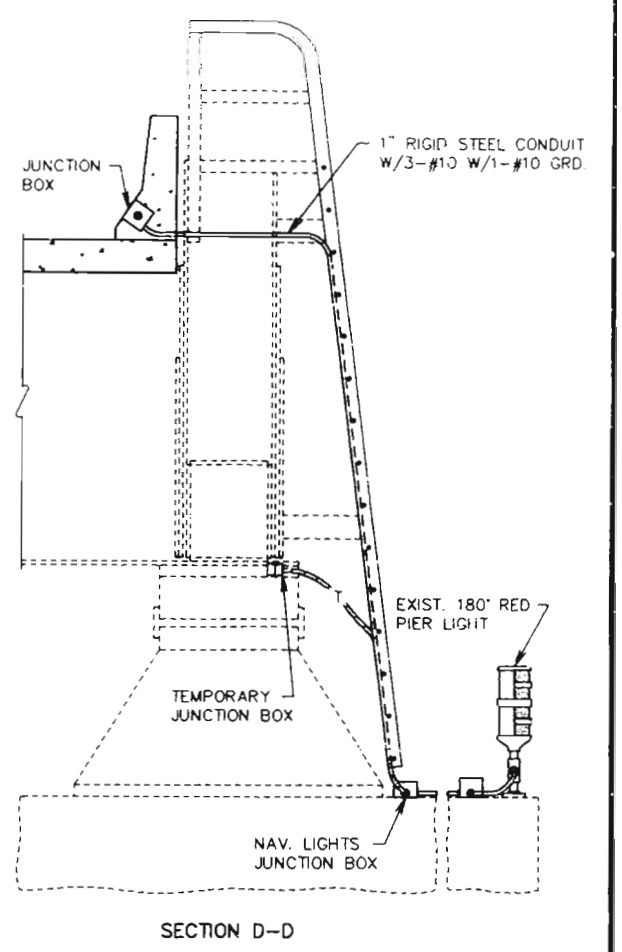
DETAIL AT PIER 15



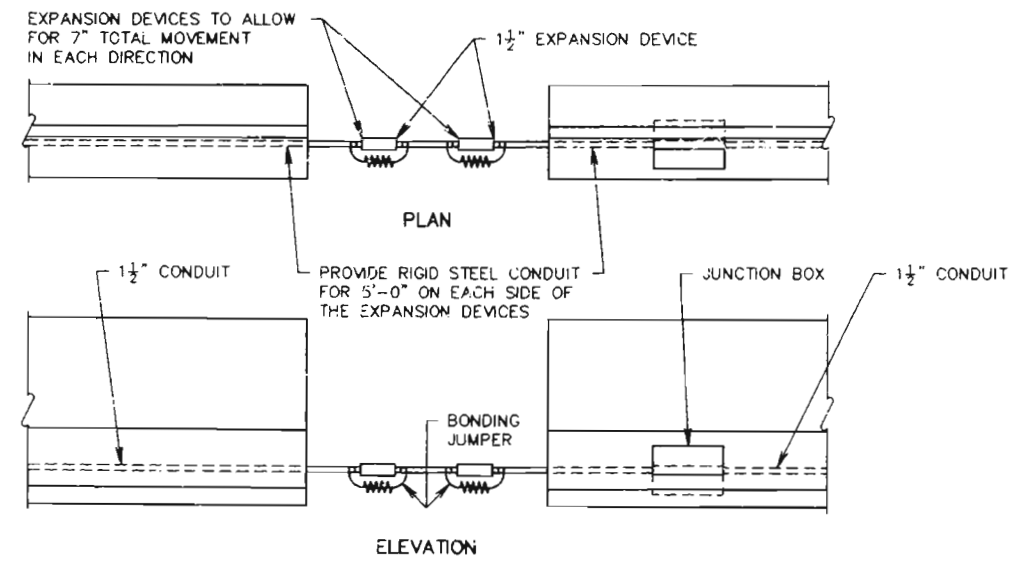
VIEW A-A



DETAIL AT PIER 14



SECTION D-D



DETAIL OF EXPANSION DEVICE AT PIER 15

NOTES:

ALL PERMANENT CONDUIT SHALL BE RIGID NON-METALLIC SCHEDULE 40 HEAVY WALL PVC (POLYVINYL CHLORIDE PLASTIC) WITH 3" MINIMUM COVER IN CONCRETE. EACH SECTION OF CONDUIT SHALL BEAR THE UNDERWRITERS "LABORATORIES, INC., (UL) LABEL.

SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR CONDUIT AND JUNCTION BOXES.

INSTALL CONDUIT EXPANSION COUPLINGS AT ALL EXPANSION JOINTS.

EXPANSION FITTINGS SHALL PROVIDE A MINIMUM MOVEMENT IN EITHER DIRECTION OF 7" AT OPEN JOINT AT PIER NO. 15. EXPANSION FITTING SHALL PROVIDE A MINIMUM MOVEMENT IN EITHER DIRECTION OF 1/2" AT 1" OPEN STRINGER EXPANSION JOINTS, TYPICAL 5 LOCATIONS. EXPANSION FITTINGS SHALL BE EQUAL TO CARLON ELECTRICAL CONSTRUCTION PRODUCTS OR TRIANGLE CONDUIT AND CABLE COMPANY, INC.

CONNECT 5'-0" OF RIGID STEEL CONDUIT AT EACH END OF THE EXPANSION JOINT FITTING AND USE A RIGID TO P.V.C. ADAPTOR AND USE P.V.C. CONDUIT FOR THE REMAINDER OF THE RUN.

ALL END BENT AND SAFETY BARRIER CURB JUNCTION BOXES SHALL BE PVC MOLDED FLUSH MOUNTED AND EQUAL TO CARLON ELECTRICAL CONSTRUCTION PRODUCTS OR TRIANGLE CONDUIT AND CABLE COMPANY, INC. THE CONDUIT TERMINATIONS SHALL BE PERMANENT OR SEPARABLE. THE TERMINATIONS AND COVERS SHALL BE WATERTIGHT CONSTRUCTION. THE NOMINAL INSIDE DIMENSIONS SHALL BE 12" X 6" X 6", EXCEPT AT THE POWER CONNECTION WHICH SHALL BE 10" X 8" X 4".

WEEPHOLES SHALL BE PROVIDED AT APPROPRIATE LOCATIONS TO DRAIN ANY MOISTURE IN THE CONDUIT LINES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE GROUNDING SYSTEM.

ALL ELECTRICAL WORK SHALL CONFORM TO THE LATEST NATIONAL ELECTRICAL CODE.

THE CONTRACTOR SHALL FURNISH AND INSTALL THE COMPLETE CONDUIT SYSTEM INCLUDING BOXES, LIQUIDTIGHT FLEXIBLE CONDUIT, CONDUCTORS, FITTINGS, SUPPORTS AND ALL EQUIPMENT NECESSARY FOR THE INSTALLATION AND OPERATION OF THE NAVIGATIONAL LIGHTING SYSTEM WITHIN THE LIMITS SHOWN ON THE PLANS, WHETHER SPECIFICALLY MENTIONED OR NOT.

THE CONTRACTOR SHALL INSTALL THE COMPLETE TEMPORARY CONDUIT SYSTEM FROM THE POWER CONNECTION JUNCTION BOX TO THE FLEXIBLE CONDUIT AT PIER 14 BEFORE ATTEMPTING TO MAKE ANY CHANGE-OVERS AND BEFORE DEMOLITION OF EXISTING SYSTEM. WITH PRIOR APPROVAL, THE NAVIGATIONAL LIGHTING SYSTEM WILL BE CHANGED TO THE TEMPORARY SYSTEM AND BE TOTALLY OPERATIONAL BY DUSK. THE TEMPORARY SYSTEM SHALL REMAIN OPERATIONAL UNTIL THE NEW CONDUIT, BOXES AND CABLE SYSTEM IS INSTALLED AND ANOTHER SCHEDULED CHANGE-OVER IS USED TO TRANSFER THE TEMPORARY SYSTEM TO THE PERMANENT NAVIGATIONAL LIGHTING SYSTEM, IN BARRIER CURB. AT NO TIME SHALL THE NAVIGATIONAL LIGHTING SYSTEM BE NON-OPERATIONAL EXCEPT DURING CHANGE-OVER AND THEN ONLY DURING DAYLIGHT HOURS.

THE CONDUIT SYSTEM, COMPLETE-IN-PLACE, INCLUDING INSTALLATION AND SUBSEQUENT REMOVAL OF THE TEMPORARY CONDUIT SYSTEM, SHALL BE PAID FOR AS CONDUIT SYSTEM ON STRUCTURE, PER LUMP SUM. SEE SPECIAL PROVISIONS.

BUCHER, WILLS & RATLIFF
ENGINEERS • PLANNERS • ARCHITECTS

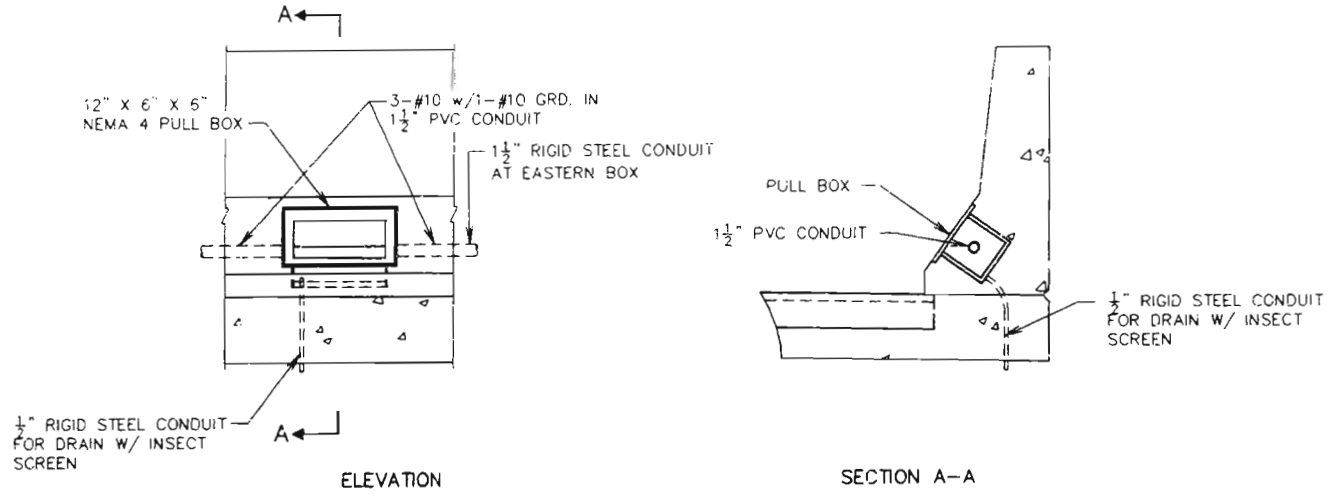
DRAWN BY:	LWS	7/93
TRACED BY:	TMM	7/93
CHECKED BY:	LWS	7/93

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

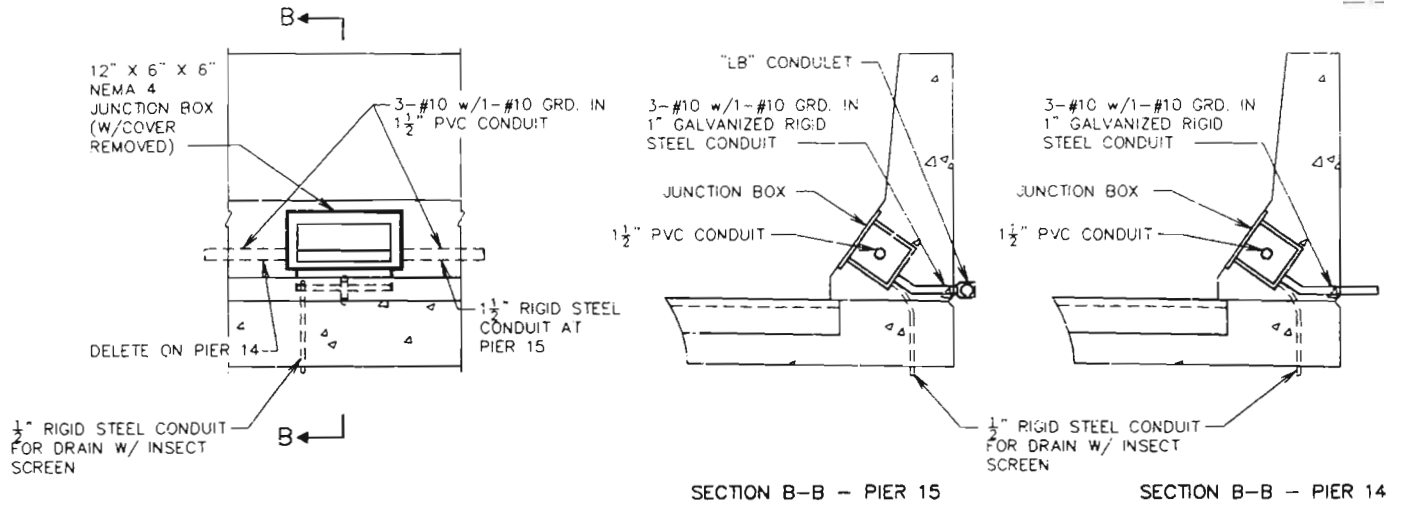
BOONE-COOPER COUNTIES

CONDUIT SYSTEM DETAILS



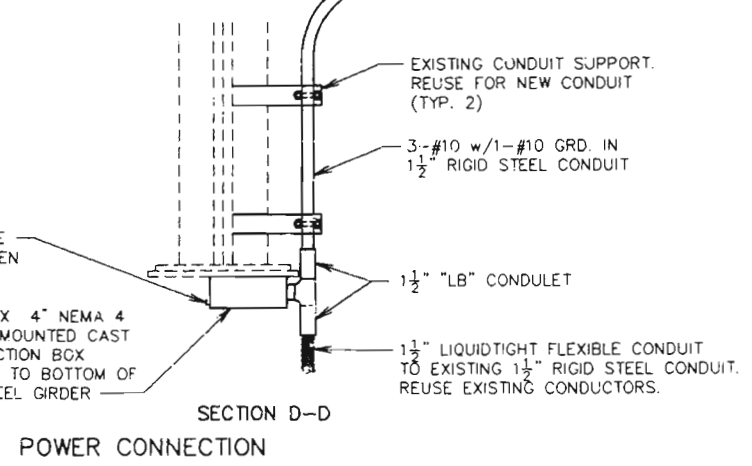
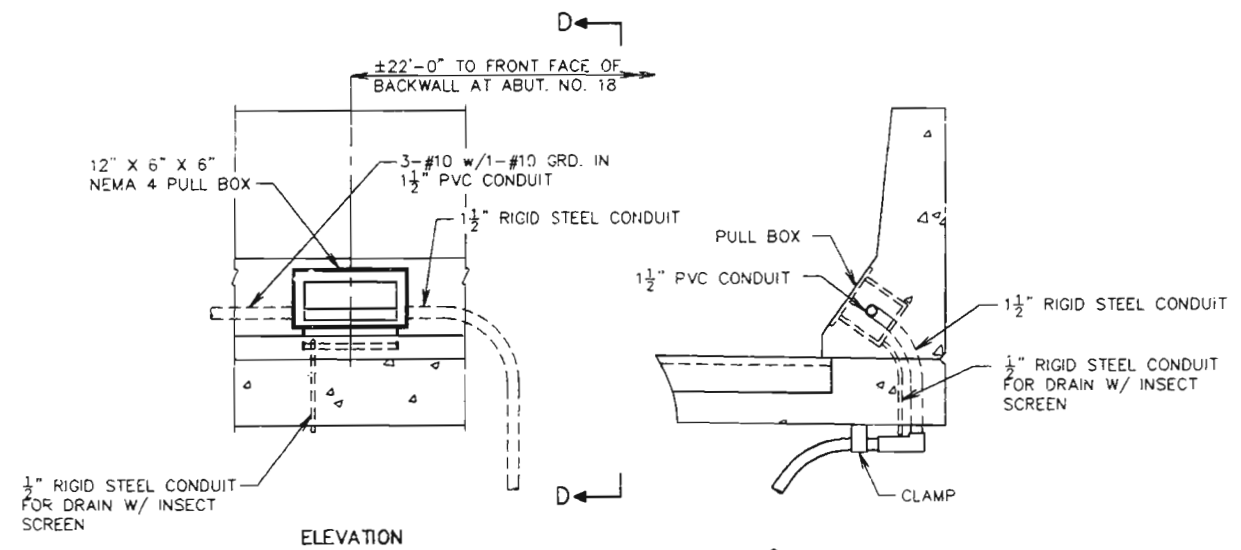


PULL BOX DETAIL

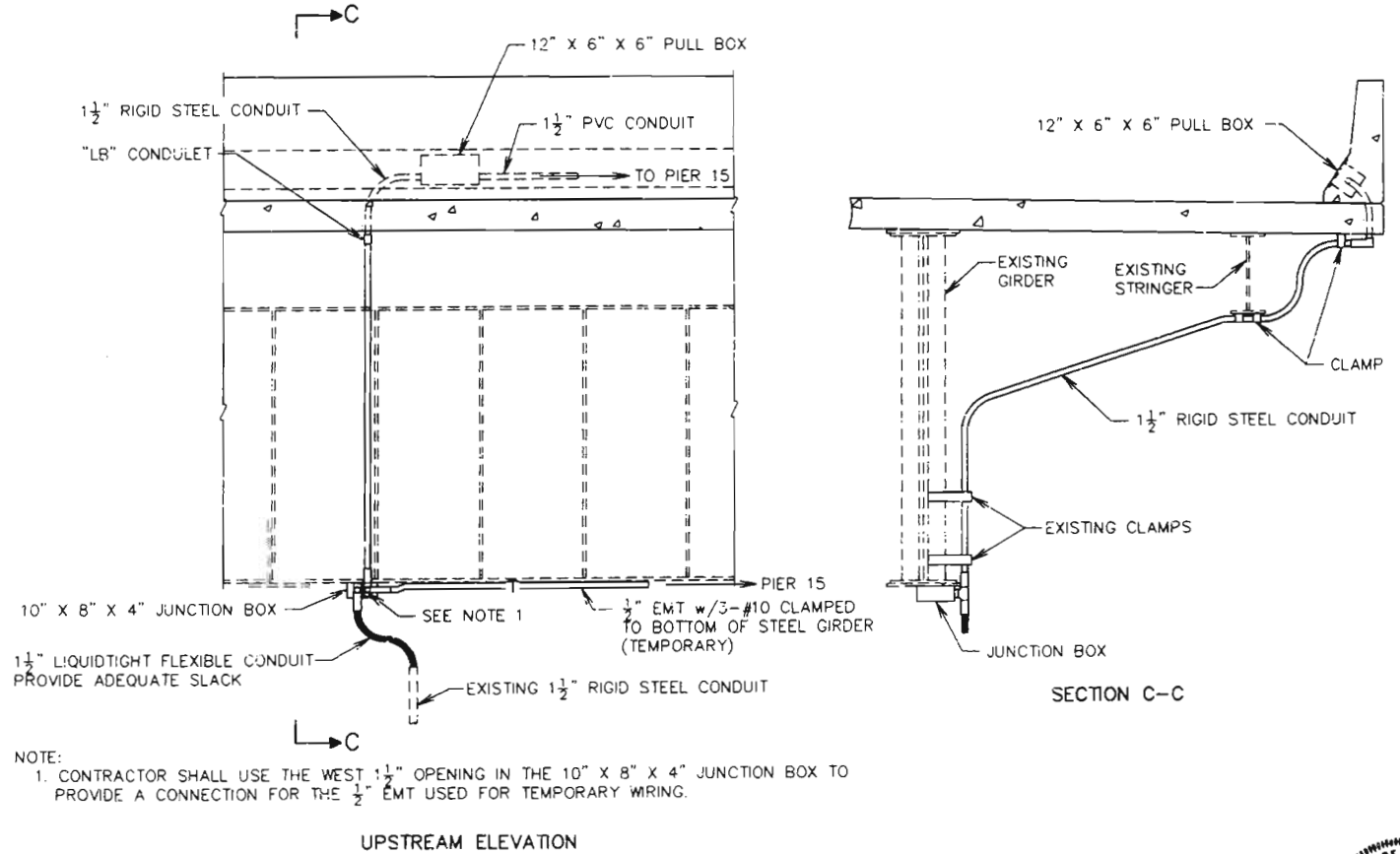


SECTION B-B - PIER 15 & MID-CHANNEL JUNCTION BOX DETAIL

SECTION B-B - PIER 14



POWER CONNECTION



UPSTREAM ELEVATION POWER CONNECTION DETAILS

NOTE:
1. CONTRACTOR SHALL USE THE WEST 1 1/2\"/>

PROJECT NAME: MISSOURI RIVER BRIDGE-COOPER COUNTY, MISSOURI
 DRAWN BY: LWS 7/93
 TRACED BY: RCC 7/93
 CHECKED BY: LWS 7/93

BUR **BUCHER, WILLIS & RATLIFF**
 ENGINEERS & ARCHITECTS

DRAWN BY:	LWS 7/93
TRACED BY:	RCC 7/93
CHECKED BY:	LWS 7/93

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

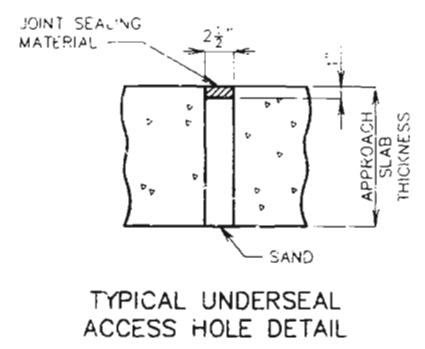
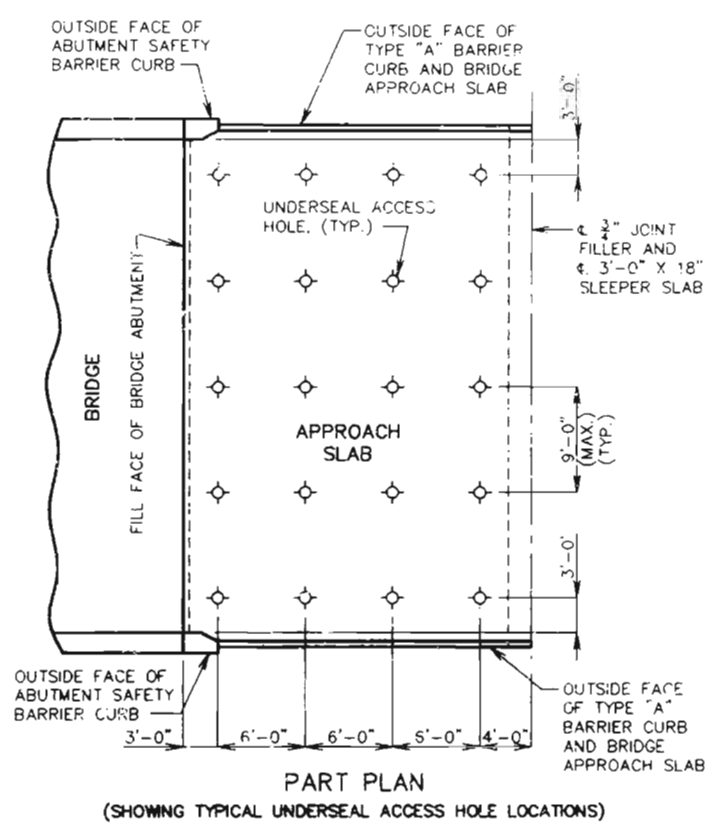
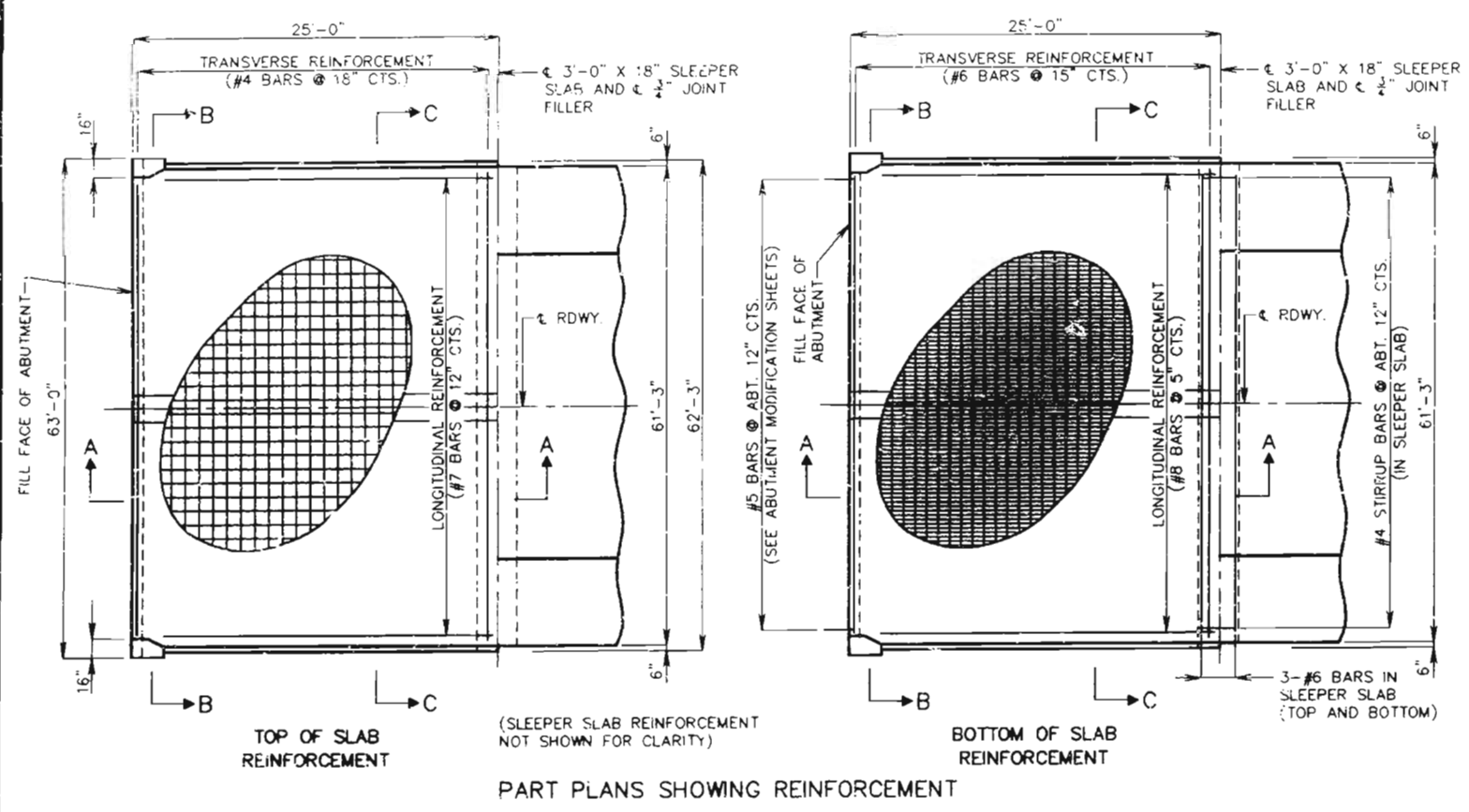
BOONE-COOPER COUNTIES

CONDUIT SYSTEM DETAILS

SHEET NO. 70 OF 73



L096223



NOTES:

ALL CONCRETE FOR THE BRIDGE APPROACH SLAB AND SLEEPER SLAB SHALL BE IN ACCORDANCE WITH SECTION 503 (f'c=4,000 PSI).

ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF SECTION 507.2.5, EXCEPT AS NOTED.

THE REINFORCING STEEL IN THE BRIDGE APPROACH SLAB AND THE SLEEPER SLAB SHALL BE EPOXY COATED GRADE 60 WITH F_y=60,000 PSI.

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

THE REINFORCING STEEL IN THE BRIDGE APPROACH SLAB AND THE SLEEPER SLAB SHALL BE CONTINUOUS. THE TRANSVERSE REINFORCING STEEL MAY BE MADE CONTINUOUS BY LAP SPLICING THE #4 AND #6 BARS 22" AND 34" RESPECTIVELY.

MECHANICAL BAR SPLICES WILL BE PERMITTED AND SHALL DEVELOP AT LEAST 25 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING BARS BEING SPLICED. THE CONTRACTOR SHALL FURNISH THE ENGINEER THE MANUFACTURER'S CERTIFICATION THAT THIS REQUIREMENT IS MET AND IS REQUIRED TO FOLLOW THE MANUFACTURER'S RECOMMENDATION FOR INSTALLATION.

MECHANICAL BAR SPLICES SHALL BE EPOXY COATED IN ACCORDANCE WITH MISSOURI STD. SPEC. 710.

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

PLACE CLASS A UNDERDRAIN AT FACE OF SLEEPER SLAB UNDER BRIDGE APPROACH SLAB.

THE CONTRACTOR SHALL POUR AND SATISFACTORILY FINISH THE BRIDGE SLAB BEFORE POURING THE BRIDGE APPROACH SLABS.

LONGITUDINAL CONSTRUCTION JOINT IN APPROACH SLAB AND SLEEPER SLAB SHALL BE ALIGNED WITH LONGITUDINAL CONSTRUCTION JOINT IN BRIDGE SLAB.

PAYMENT FOR FURNISHING ALL MATERIALS AND LABOR NECESSARY TO CONSTRUCT THE APPROACH SLAB AND TIMBER HEADER, COMPLETE-IN-PLACE, AS SHOWN ON THIS SHEET, SHALL BE CONSIDERED AS COMPLETELY COVERED UNDER THE CONTRACT UNIT PRICE FOR "BRIDGE APPROACH SLAB (BRIDGE)", PER SQ. YD.

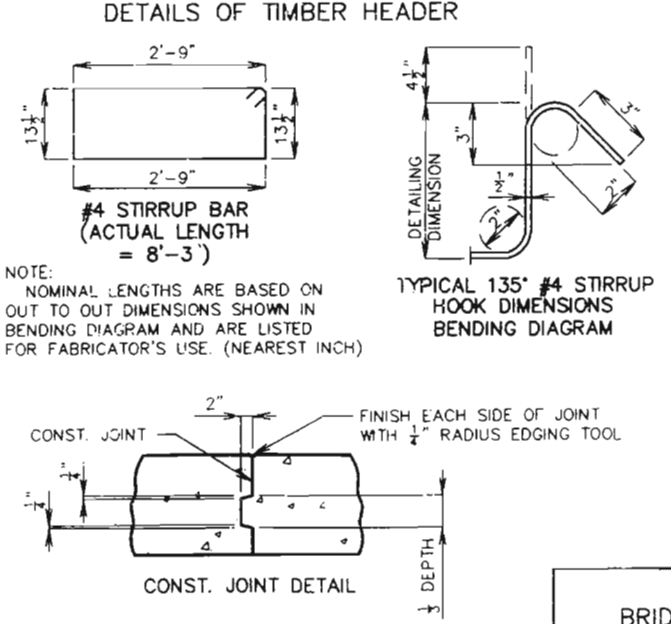
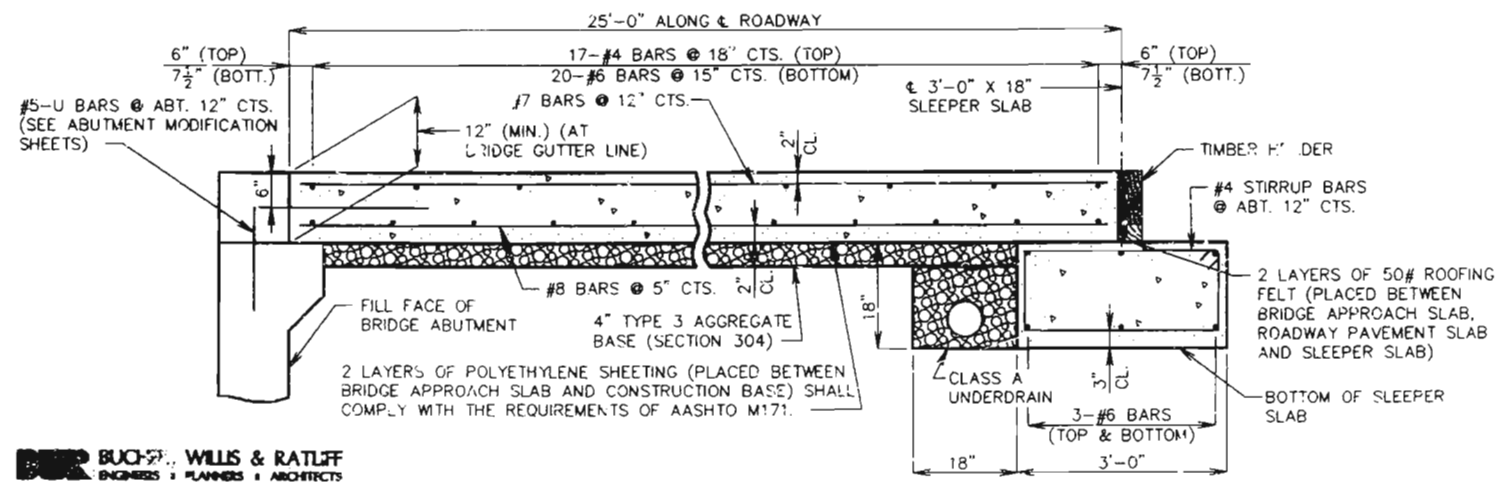
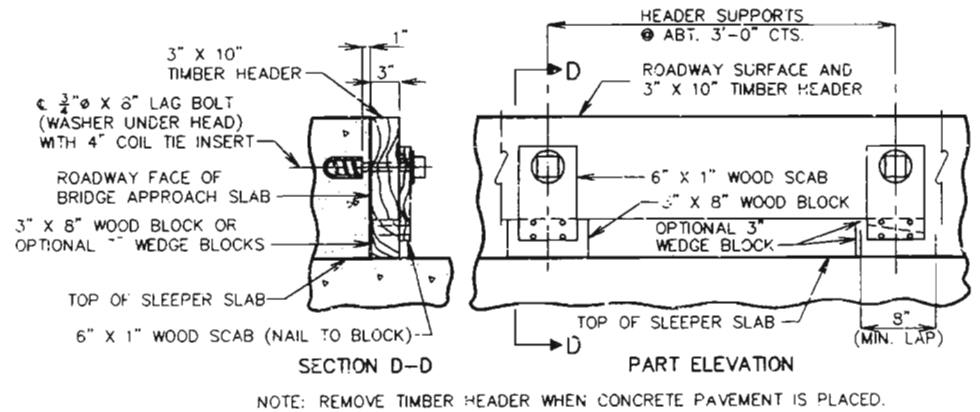
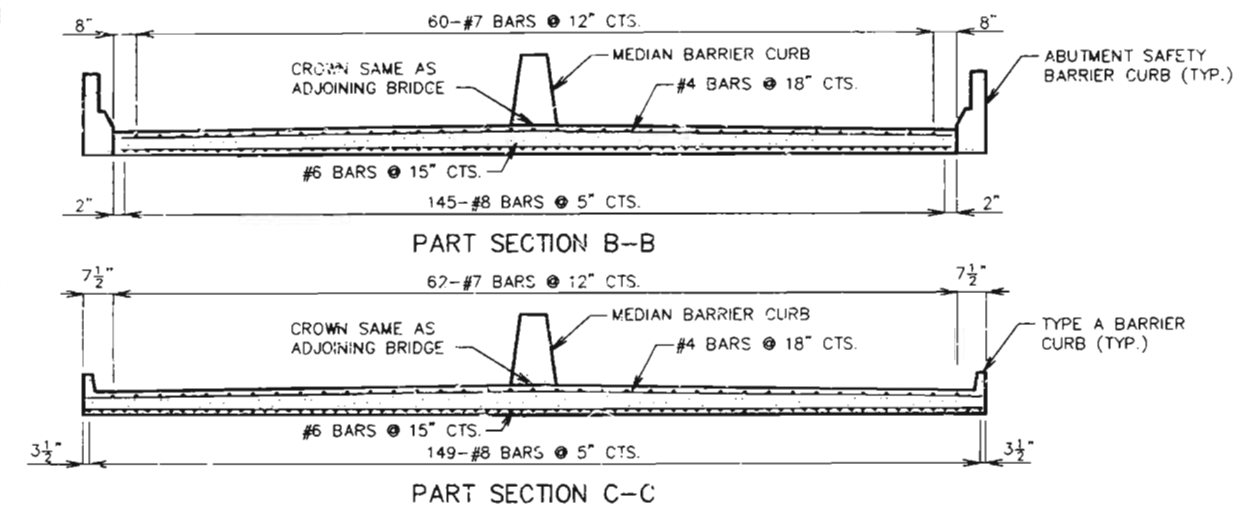
SEE MISSOURI STANDARD PLANS DRAWING 504.00 FOR DETAILS OF CONCRETE APPROACH PAVEMENT.

SEE MISSOURI STANDARD PLANS DRAWING 605.10 FOR DETAILS OF CLASS A UNDERDRAIN.

SEE MISSOURI STANDARD PLANS DRAWING 609.00 FOR DETAILS OF TYPE A BARRIER CURB.

WHEN REQUIRED, A MINIMUM LAP SPLICE OF 34" SHALL BE PROVIDED FOR MECHANICAL BAR SPLICES.

FOR DETAILS AND REINFORCEMENT OF MEDIAN BARRIER CURB, SEE SHEET NO. 64.



PROJECT NO. 96-1-1 TO BE COMPLETED BY 10/96
 PROJECT MANAGER: DANIEL J. CHAPMAN
 LAST DATE: 07/14/93 @ 10:30 AM

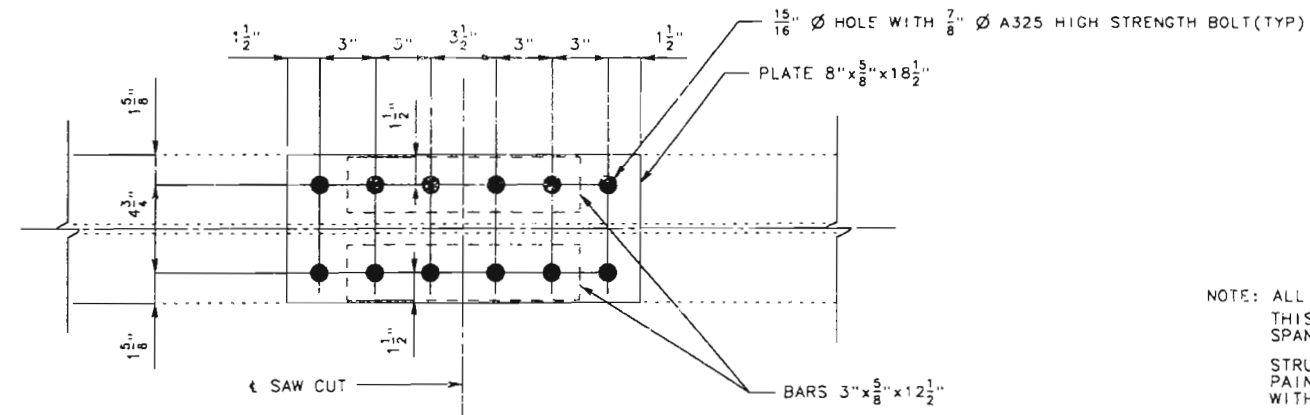
BUCHER, WILLS & RATLIFF
 ENGINEERS, PLANNERS & ARCHITECTS

DRAWN BY:	DJM	6/93
TRACED BY:	RCC	6/93
CHECKED BY:	DMA	7/93

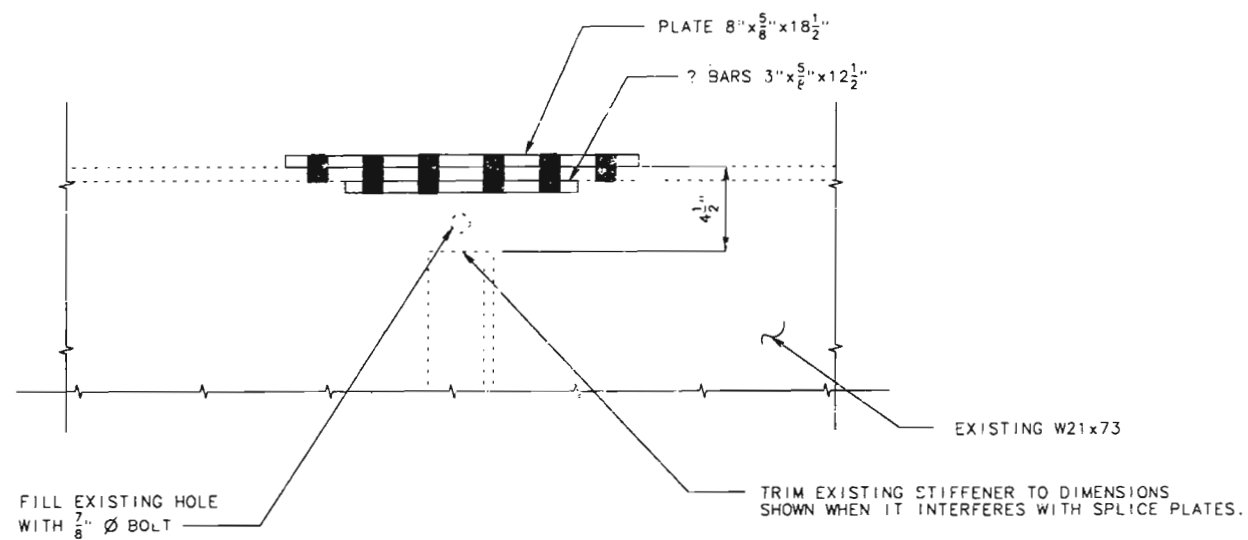
PART LONGITUDINAL SECTION A-A
 NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

DETAILS OF BRIDGE APPROACH SLAB
 SHEET NO. 71 OF 73
 L096223



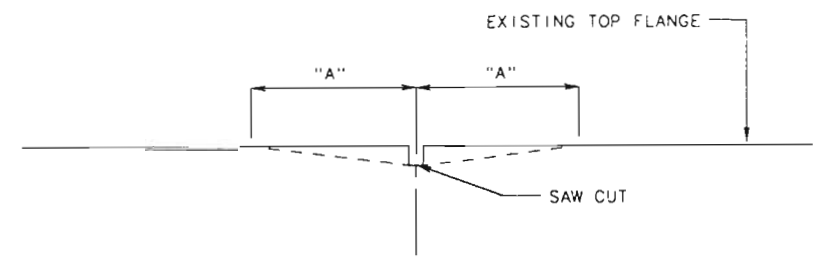


NOTE: ALL STEEL SHALL BE A36.
 THIS RETROFIT EFFECTS STRINGERS S2 & S3,
 SPANS 10, 11, & 12 OF THE WBL.
 STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE
 PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE
 WITH SPECIAL PROVISIONS.
 PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL
 PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.
 STIFFENERS CUT TO FIT AS SHOWN IN DETAIL SHALL HAVE
 CUT EDGE GROUND FREE OF DELETERIOUS OR INJURIOUS MATERIAL.
 CUT END OF STIFFENER SHALL BE PAINTED AS MENTIONED ABOVE.



SPLICE DETAILS OF STRINGER RETROFIT

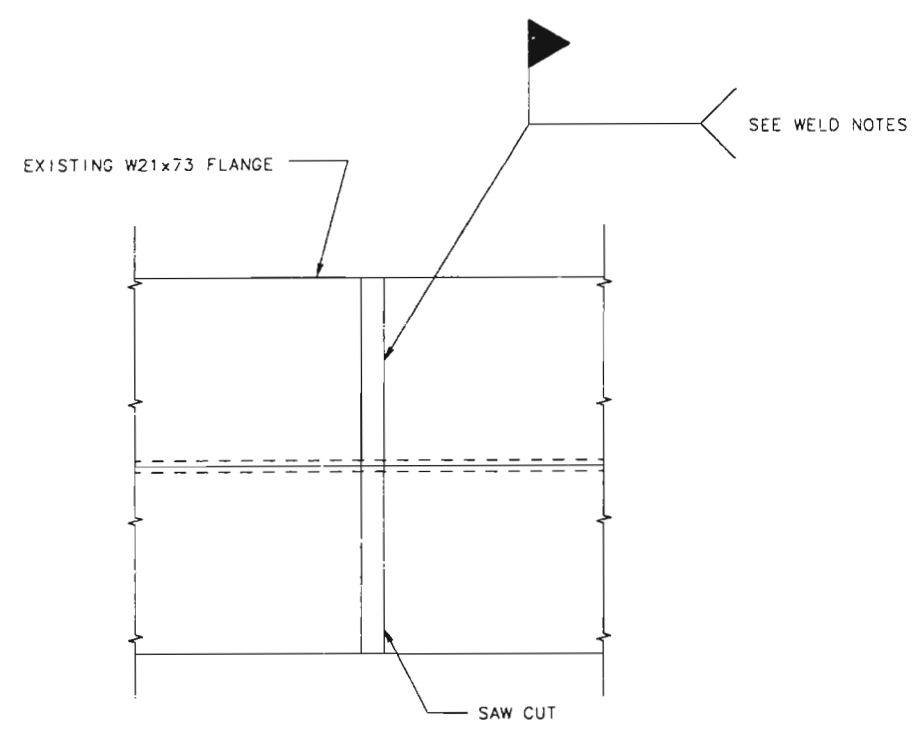
97



DEPTH	"A"
$\frac{1}{16}$ "	$\frac{5}{8}$ "
$\frac{1}{8}$ "	$1\frac{1}{4}$ "

GRIND DETAIL FOR STRINGER RETROFIT

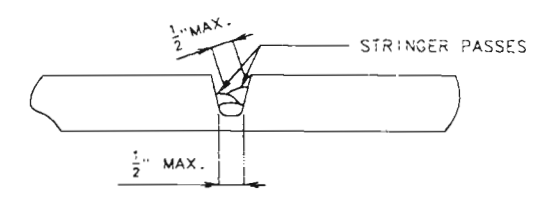
NOTE: REPAIRS BY GRINDING SHALL HAVE EDGES FAIRED TO THE FLANGE SURFACE WITH A SLOPE NOT EXCEEDING 1 IN 10.



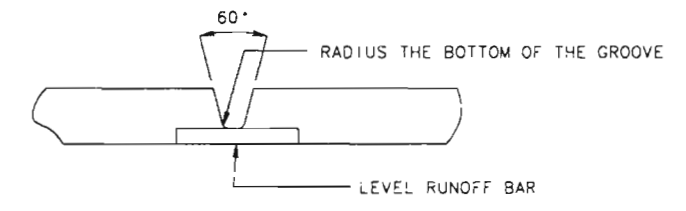
WELD DETAIL OF STRINGER RETROFIT

**WELD NOTES:
FLANGE SAW-CUT REPAIR**

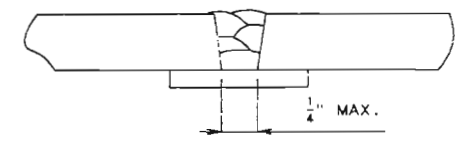
1. ALL WELDS SHOULD BE MADE USING $\frac{1}{8}$ " OR $\frac{5}{32}$ " E7018 ELECTRODES ONLY. (NO E7028).
2. MAXIMUM WELD SIZE SHOULD BE $\frac{1}{2}$ " ACROSS THE FACE OF THE WELD ON EACH PASS, STRINGER PASSES SHALL USED TO ACHIEVE THIS DIMENSION.



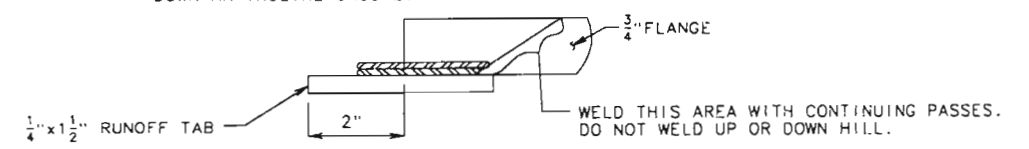
3. PREHEAT SHOULD BE 250° F. MIN. PRIOR TO ANY TACKING OR WELDING.
4. ALL RUNOFF BARS AND WELD BACKING BARS SHOULD BE $\frac{1}{4}$ "x $\frac{1}{2}$ " FLAT BAR MINIMUM, AND SHOULD EXTEND 2" BEYOND THE EDGE OF THE FLANGE. RUNOFF BAR SHOULD ALWAYS BE USED.
5. THE GROOVE WELDS SHOULD HAVE A MINIMUM OF 60° INCLUDED ANGLE.



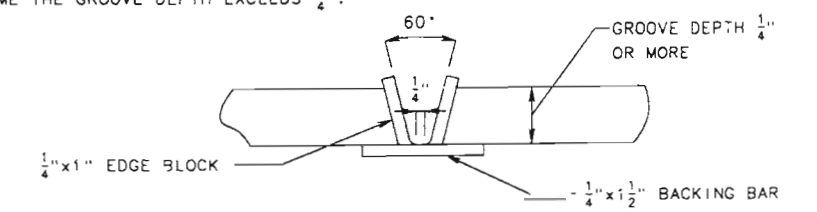
6. ALL WELDS SHOULD BE STARTED 1" OUT ON THE RUNOFF BAR AND CONTINUED TOWARD THE CENTER OF THE FLANGE. RUNOFF BARS SHOULD BE LEVEL WITH THE BOTTOM OF THE GROOVE.
7. 100% PENETRATION WELDS SHOULD HAVE A MIN. $\frac{1}{4}$ " ROOT OPENING AND ALL WELDING WILL BE DONE FROM THE TOP SIDE. NO OVERHEAD WELDING.



8. ALL RUNOFF BARS ARE TO BE BURNED OFF $\frac{1}{8}$ " MIN. BEYOND THE EDGE OF THE FLANGE AND HAND GROUND FLUSH.
9. ALL 100% GROOVE WELD BACKING BARS ARE TO BE TORCHED OR ARC GOUGED OFF TO WITHIN $\frac{1}{8}$ " OF THE FLANGE AND THEN HAND GRIND SMOOTH. THE TOPS OF THE FLANGES ARE TO BE GROUND SMOOTH AFTER WELDING.
10. ALL WELDS SHOULD BE MADE IN THE FLAT POSITION WITH NO WELDING UP OR DOWN AN INCLINE GROOVE.

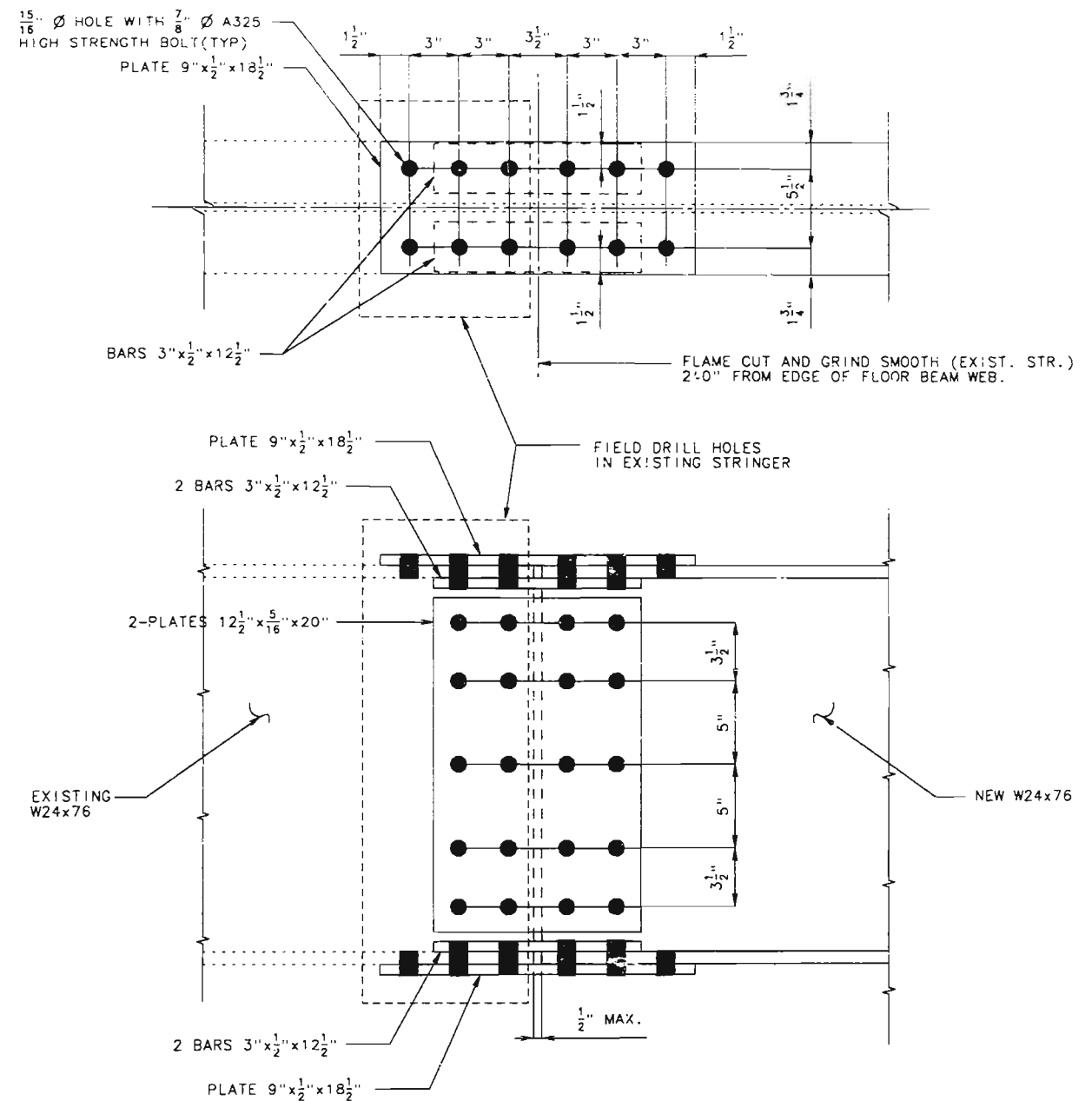
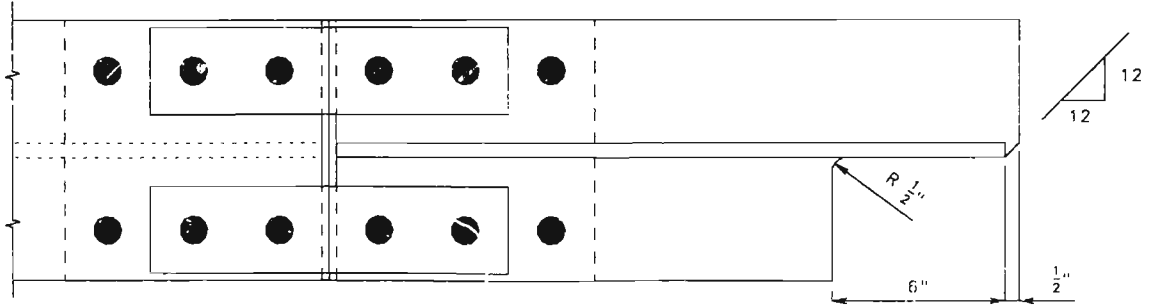
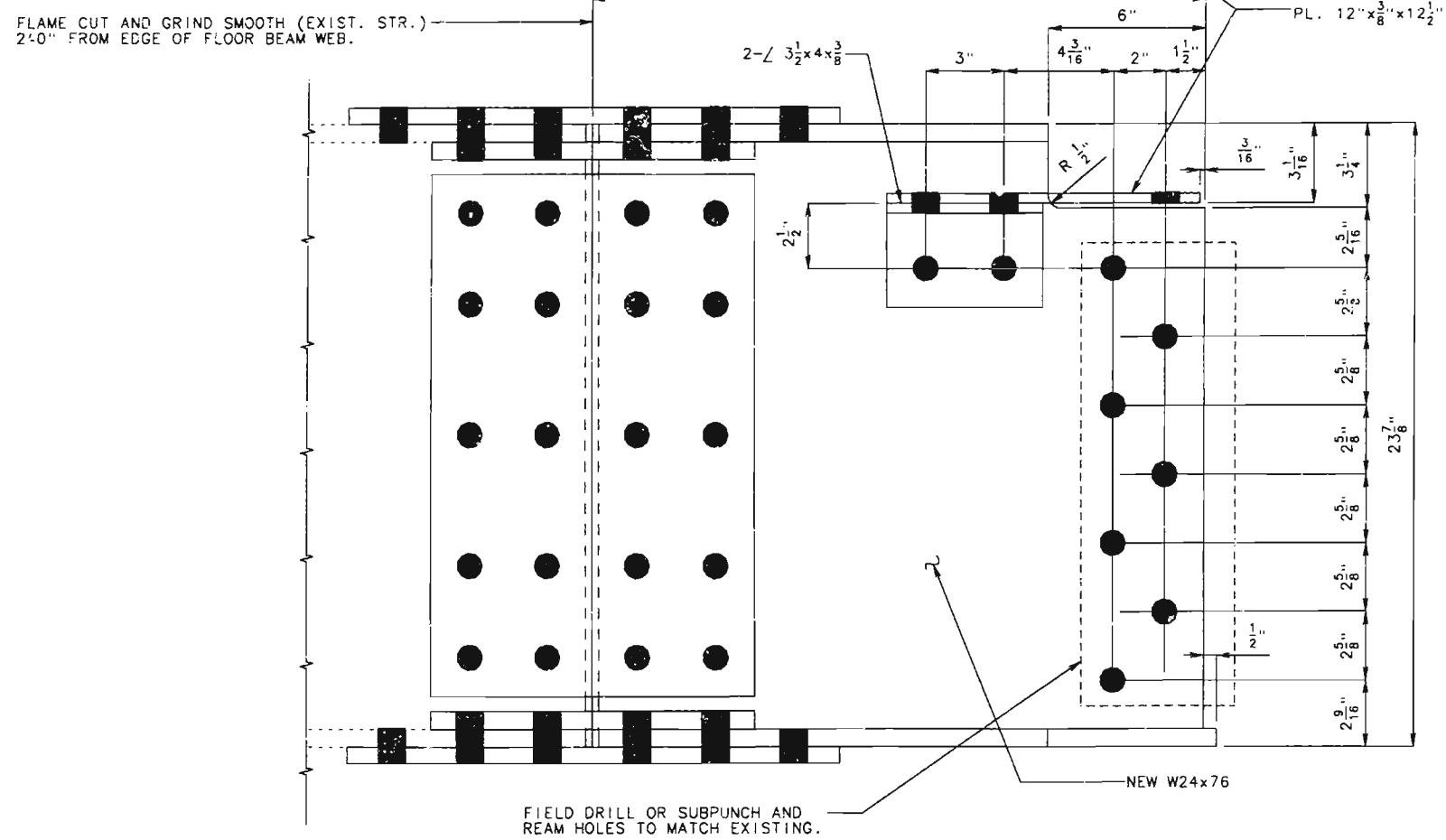
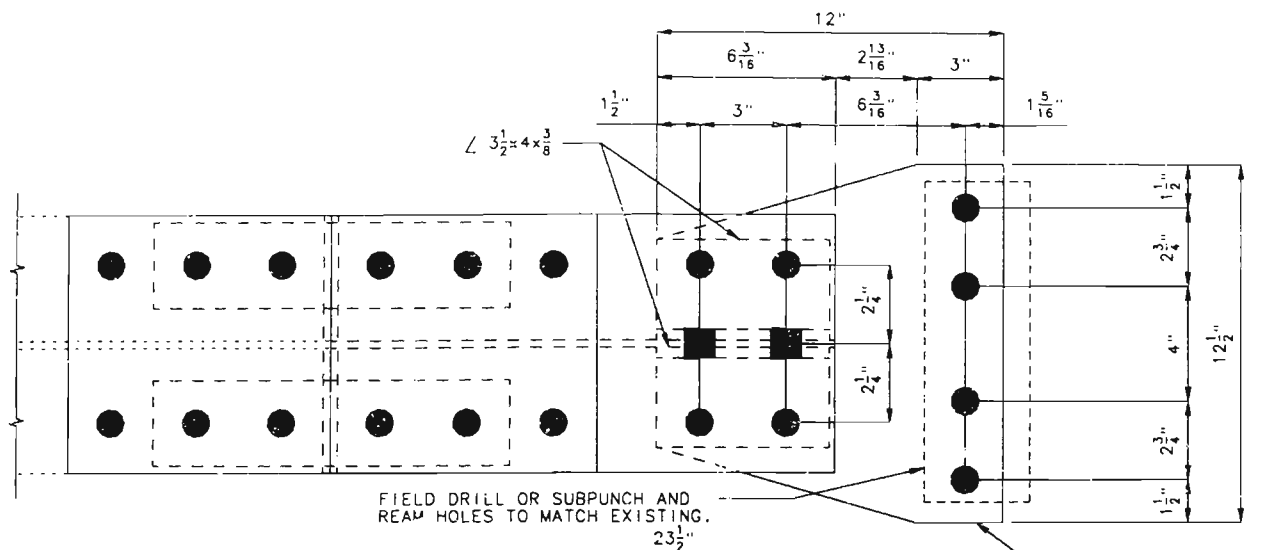


11. USE $\frac{1}{4}$ "x1" FLAT BAR TO SUPPORT THE EDGE OF WELDS THAT ARE LAYERED, ANYTIME THE GROOVE DEPTH EXCEEDS $\frac{1}{4}$ ".



EDGE BLOCKS SHOULD EXTEND 2" FROM EDGE OF FLANGE, AND BE REMOVED AFTER WELDING IN THE SAME MANNER AS THE BACKING BAR. ALL WELDS MUST BE GROUND SMOOTH.

98



SPLICE DETAILS OF STRINGER RETROFIT

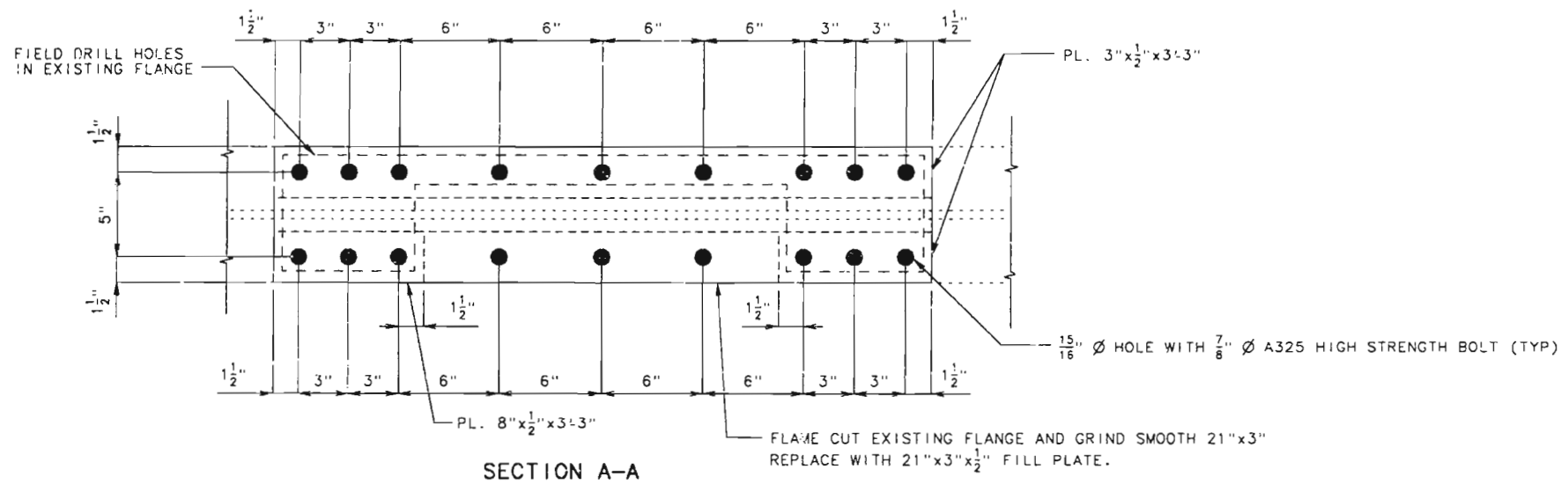
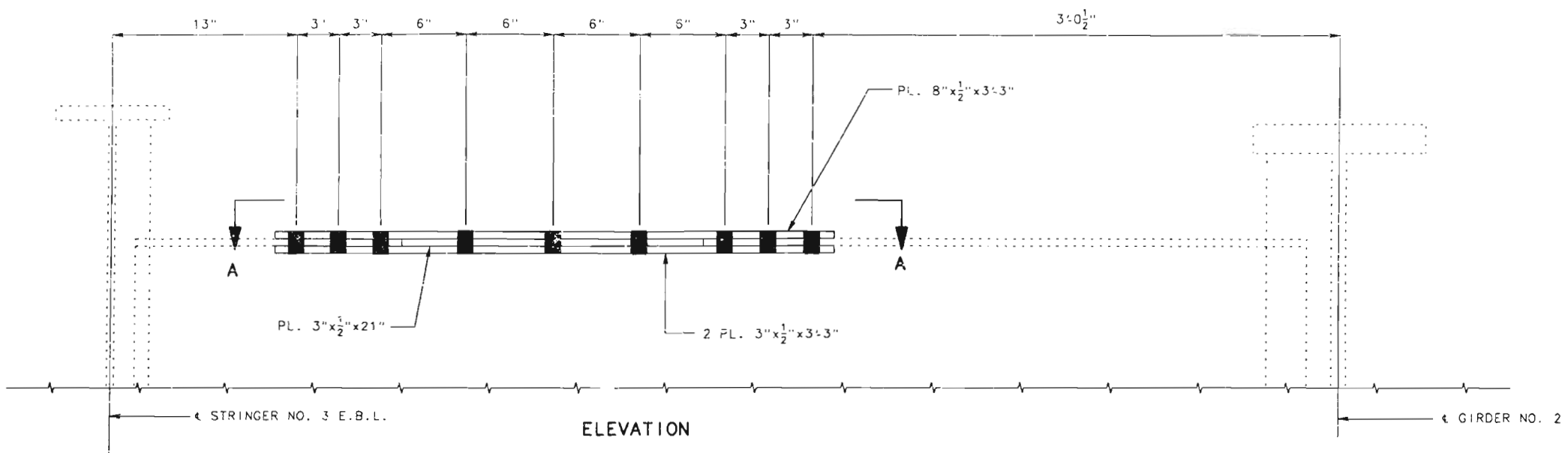
NOTE: ALL STEEL SHALL BE A36.
USE $\frac{7}{8}$ " HIGH STRENGTH BOLTS WITH $\frac{15}{16}$ " REAMED HOLES.

STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE WITH SPECIAL PROVISIONS.
PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.
REPLACE ALL EXISTING RIVETS INVOLVED IN THE CONNECTIONS WITH $\frac{7}{8}$ " \varnothing A325 HIGH STRENGTH BOLTS.

REHABILITATION OF STRINGER NO. 3 IN SPAN (14-15) OF E.B.L.

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

100



NOTE: ALL STEEL SHALL BE A36.
 STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE WITH SPECIAL PROVISIONS.
 PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.

DETAILS OF RETROFIT OF DIAPHRAGM AT BENT NO. 18

101
 DETAILED SEPT. 1994
 CHECKED SEPT. 1994

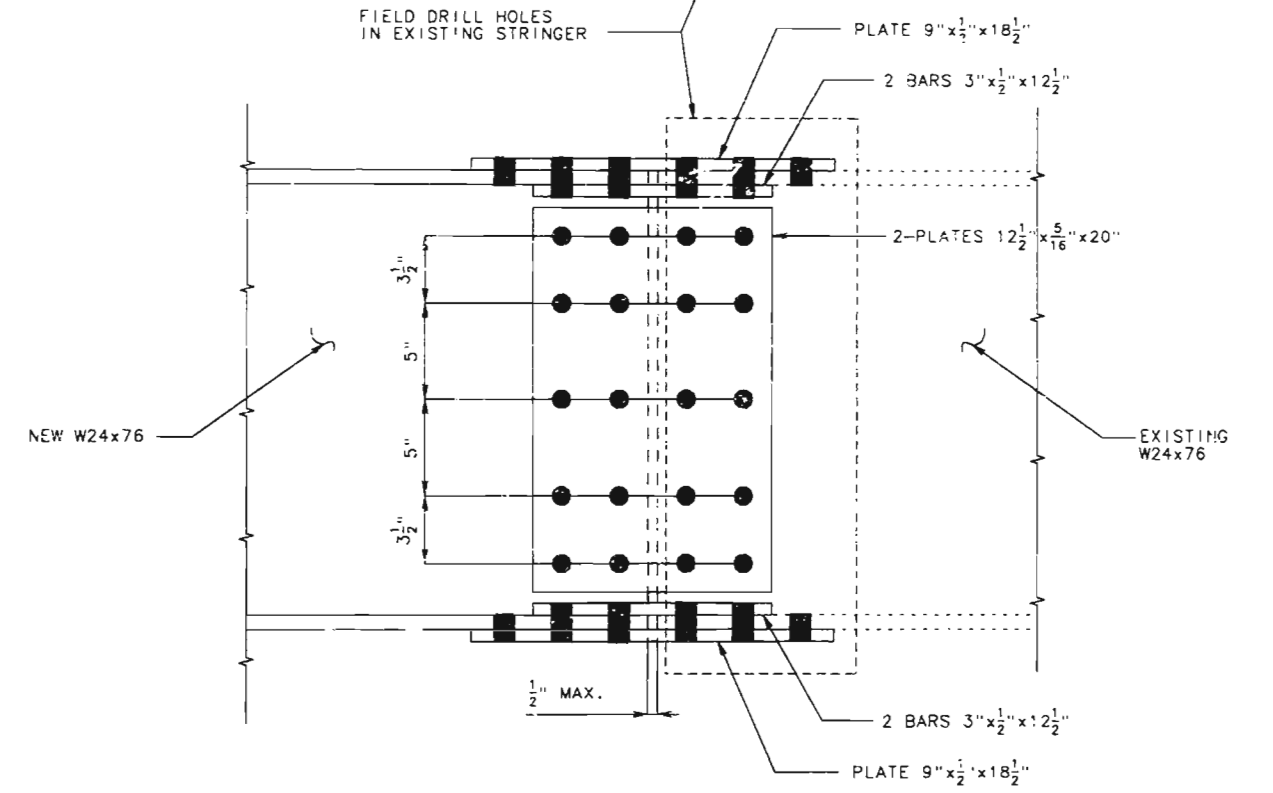
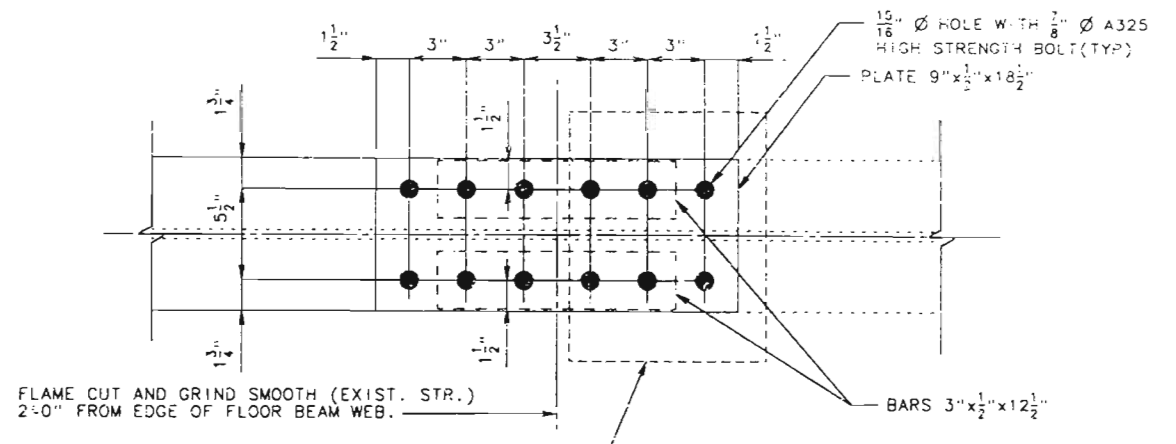
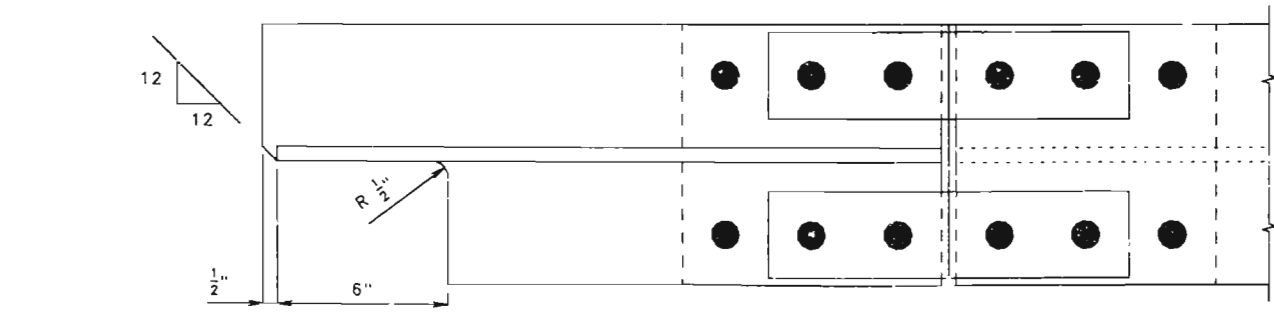
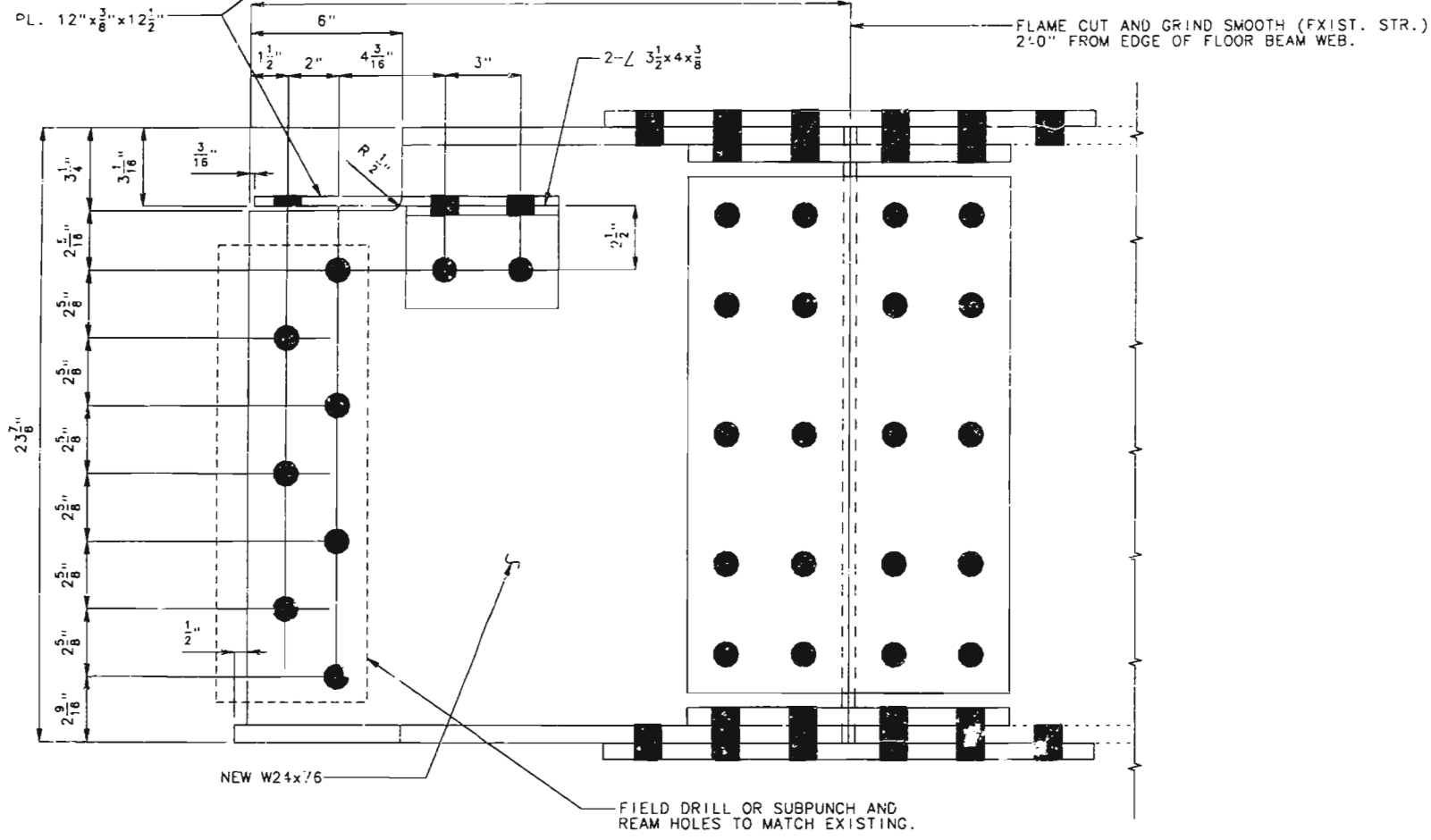
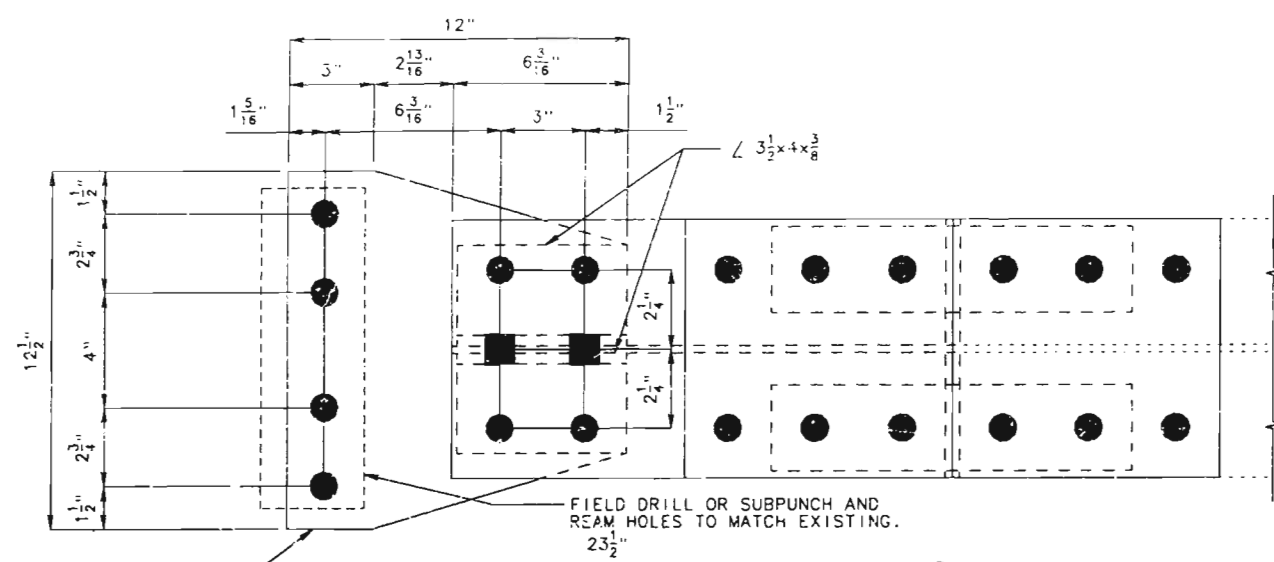
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 71F OF 73.

BOONE-COOPER

COUNTIES

L096223



SPLICE DETAILS OF STRINGER RETROFIT

NOTE: ALL STEEL SHALL BE A36.
USE 7/8" HIGH STRENGTH BOLTS WITH 15/16" REAMED HOLES.

STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE WITH SPECIAL PROVISIONS.
PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.
REPLACE ALL EXISTING RIVETS INVOLVED IN THE CONNECTIONS WITH 7/8" Ø A325 HIGH STRENGTH BOLTS.

REHABILITATION OF STRINGER NO. 3 IN SPAN (13-14) OF E.B.L.

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

SHEET NO. 71D OF 73.

BOONE-COOPER

COUNTY

L096223

102

DETAILED SEPT. 1994
CHECKED SEPT. 1994

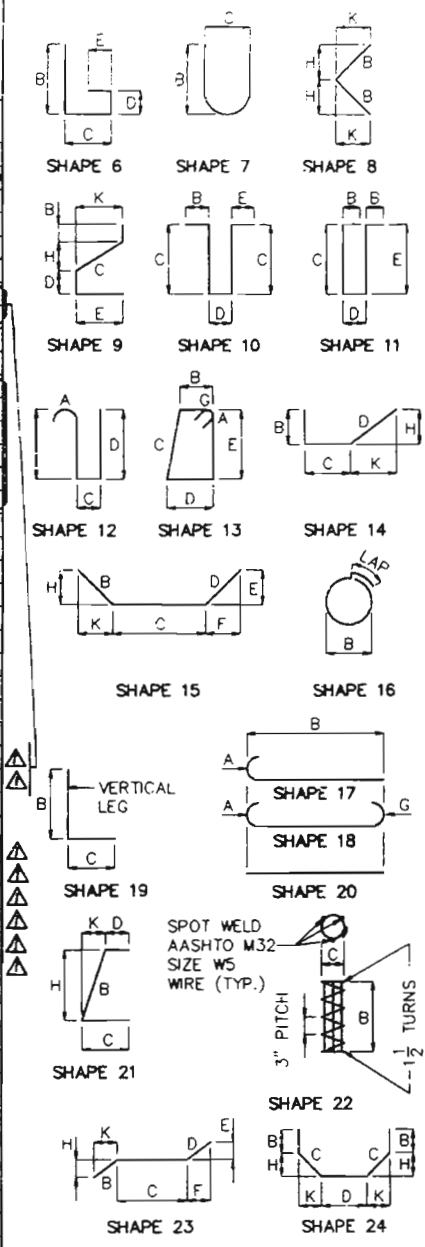
STAGE II CONSTRUCTION BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT			
								B	C	D	E	F	H	K	FT. IN.				FT. IN.	FT. IN.	FT. IN.
SUPERSTRUCTURE																					
OPTIONAL SLIP FORM BARRIER																					
164	5-C1	BARRIER CURB	E	20				8	0.000								8	0	8	0	1368
4	5-H30	WINGWALL	E	20				3	3.000								3	3	3	3	14
4	6-H52	BACKWALL	E	17				34	10.000								35	6	35	6	213
4	4-H53	BACKWALL	E	20				34	10.000								34	10	34	10	93
3064	5-R1	BARRIER CURB	E	19				2	6.000	3.500							2	10	2	8	8533
3032	5-R2	BARRIER CURB	E	15				2	6.125	3.500			2	6.000	3.000		2	10	2	8	8444
3010	5-R3	BARRIER CURB	E	19					17.000	6.000							1	11	1	9	5494
3010	5-R4	BARRIER CURB	E	27					6.000	11.125	7.000	12.000	9.125	6.375			3	0	2	10	8885
84	5-R5	BARRIER CURB	E	20				39	1.000								39	1	39	1	3424
196	5-R6	BARRIER CURB	E	20				7	8.000								7	8	7	8	1568
63	5-R7	BARRIER CURB	E	20				30	6.000								30	6	30	6	2004
84	5-R8	BARRIER CURB	E	20				35	1.000								35	1	35	1	3073
42	5-R9	BARRIER CURB	E	20				36	3.000								36	3	36	3	1588
42	5-R10	BARRIER CURB	E	20				37	10.000								37	10	37	10	1657
126	5-R11	BARRIER CURB	E	20				37	6.000								37	6	37	6	4928
42	5-R12	BARRIER CURB	E	20				28	4.000								28	4	28	4	1241
14	5-R13	BARRIER CURB	E	20				27	8.000								27	8	27	8	404
21	5-R14	BARRIER CURB	E	20				37	4.000								37	4	37	4	818
28	5-R15	BARRIER CURB	E	20				31	9.000								31	9	31	9	927
21	5-R16	BARRIER CURB	E	20				37	2.000								37	2	37	2	814
18	5-R50	BARRIER CURB	E	17				2	2.000								2	9	2	9	52
16	5-R53	BARRIER CURB	E	13				8.000	21.000	8.000	21.000						5	9	5	9	90
4	5-R54	BARRIER CURB	E	27				12.500	13.000	8.500	8.000			5.000	7.000		3	6	3	3	14
8	5-R55	BARRIER CURB	E	27				12.500	13.000	11.125	6.000			6.375	9.125		3	7	3	4	28
8	5-R56	BARRIER CURB	E	10					6.000	23.000							2	11	2	9	23
28	5-R57	BARRIER CURB	E	20				3	8.000								3	8	3	8	107
6	5-R58	BARRIER CURB	E	14					22.000	23.000			5.000	22.500			3	9	3	9	23
2	5-R59	BARRIER CURB	E	17				3	6.000								4	1	4	1	9
6416	5-R100	MEDIAN	E	15				3	3.750	4.000			3	3.000	7.500		3	8	3	6	23422
6416	5-R101	MEDIAN	E	9					15.000	16.250	15.000		3.000	16.000			3	10	3	7	23857
192	5-R102	MEDIAN	E	20				35	6.000								35	6	35	6	7109
144	5-R103	MEDIAN	E	20				39	1.000								39	1	39	1	5870
192	5-R104	MEDIAN	E	20				37	7.000								37	7	37	7	7526
48	5-R105	MEDIAN	E	20				28	4.000								28	4	28	4	1418
16	5-R106	MEDIAN	E	20				28	7.000								28	7	28	7	477
88	5-R107	MEDIAN	E	20				38	1.000								38	1	38	1	3495
16	5-R108	MEDIAN	E	20				26	1.000								26	1	26	1	435

STAGE II CONSTRUCTION BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT			
								B	C	D	E	F	H	K	FT. IN.				FT. IN.	FT. IN.	FT. IN.
5978	5-S2	SLAB	E	20				34	10.000								34	10	34	10	217167
5978	4-S4	SLAB	E	20				34	10.000								34	10	34	10	139040
2782	4-S5	SLAB	E	20				10	6.000								10	6	10	6	19513
6	5-S7	SLAB	E	20				13	0.000								13	0	13	0	81
232	5-S101	SLAB	E	20				36	0.000								36	0	36	0	8711
392	4-S102	SLAB	E	20				36	0.000								36	0	36	0	9427
232	5-S201	SLAB	E	20				36	0.000								36	0	36	0	8711
392	4-S202	SLAB	E	20				36	0.000								36	0	36	0	9427
522	5-S301	SLAB	E	20				39	8.000								39	8	39	8	21588
882	4-S302	SLAB	E	20				39	8.000								39	8	39	8	23373
87	5-S401	SLAB	E	20				37	11.000								37	11	37	11	3441
147	4-S402	SLAB	E	20				37	11.000								37	11	37	11	3724
87	5-S501	SLAB	E	20				37	11.000								37	11	37	11	3441
147	4-S502	SLAB	E	20				37	11.000								37	11	37	11	3724
87	5-S601	SLAB	E	20				28	9.000								28	9	28	9	2609
147	4-S602	SLAB	E	20				28	9.000								28	9	28	9	2823
58	5-S701	SLAB	E	20				28	10.000								28	10	28	10	1744
98	4-S702	SLAB	E	20				28	10.000								28	10	28	10	1887
319	5-S901	SLAB	E	20				38	7.000								38	7	38	7	12836
539	4-S902	SLAB	E	20				38	7.000								38	7	38	7	13891
68	5-U50	BACKWALL	E	19				2	6.000	18.000							4	0	3	10	272
68	4-U51	BACKWALL	E	10						12.000	15.000						3	3	3	1	140
464	5-S201	SLAB	E	20				36	0.000								36	0	36	0	17422
784	4-S202	SLAB	E	20				36	0.000								36	0	36	0	18854
174	5-S401	SLAB	E	20				37	11.000								37	11	37	11	6882
294	4-S402	SLAB	E	20				37	11.000								37	11	37	11	7448
522	5-S501	SLAB	E	20				37	11.000								37	11	37	11	20646
882	4-S502	SLAB	E	20				37	11.000								37	11	37	11	22344
174	5-S601	SLAB	E	20				28	9.000								28	9	28	9	5218
294	4-S602	SLAB	E	20				28	9.000								28	9	28	9	5646

STATE _____ PROJ. NO. _____ SHEET NO. _____
Mo _____



THE WELDED WIRE FABRIC OPTIONAL REINFORCING FOR THE MEDIAN BARRIER REPLACES R102 THRU R108 BARS.

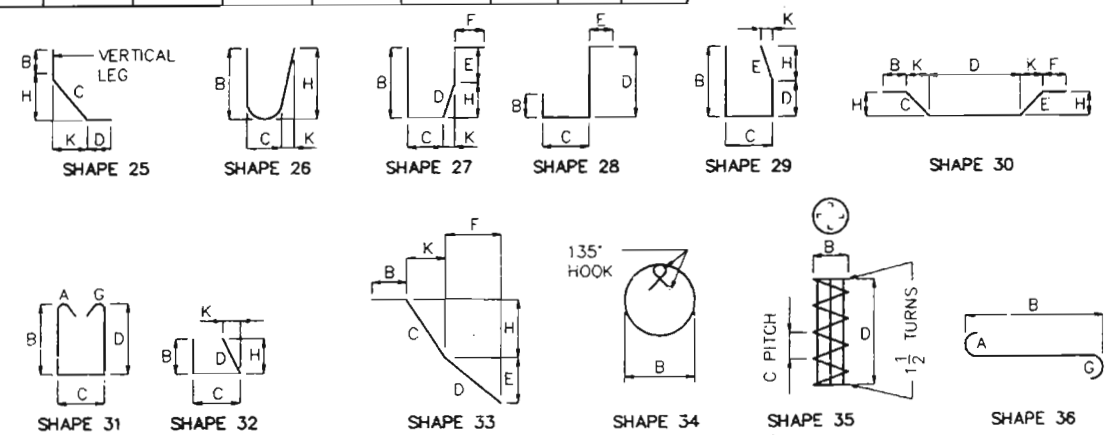
NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT
S = STIRRUP
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.

NO. EA. = NUMBER OF BARS OF EACH LENGTH. NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATOR'S USE. (NEAREST INCH) ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS. FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) = FY 60,000 PSI.



BENDING DIAGRAMS
BOONE-COOPER COUNTIES

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE _____ PROJECT NO. _____ SHEET NO. _____
 NO. FAI-70-3(165) 17
 SEC. 16 WC 45 N PCE 14 A

- 1 GENERAL NOTES & QUANTITIES
- 2 STAGED CONSTRUCTION DETAILS
- 3 ABUTMENT NO. 1 MODIFICATION DETAILS
- 4 ABUTMENT NO. 18 MODIFICATION DETAILS
- 5 ABUTMENT END POST DETAILS
- 6 LIMITS OF PROTECTIVE COATING
- 7 BENT NO. 10 DIAPHRAGM REPAIR DETAILS
- 8 ROADWAY INLET AND EXPANSION ASSEMBLY REMOVAL DETAILS
- 9-10 SLAB SECTIONS
- 11-17 SLAB PLAN
- 18 SLAB POURING SEQUENCE
- 19-29 HAUNCH WORKSHEET - STAGE I CONSTRUCTION
- 30-40 HAUNCH WORKSHEET - STAGE II CONSTRUCTION
- 41 SLAB DRAIN DETAILS
- 42 COMPRESSION SEAL DETAILS ABUTMENT NO. 1 & 18
- 43 MISCELLANEOUS COMPRESSION SEAL DETAILS
- 44 STRINGER EXPANSION JOINT DETAILS
- 45 MISCELLANEOUS STRINGER EXPANSION JOINT DETAILS
- 46 EXPANSION DEVICE DETAILS BENTS NO. 4 & 7
- 47 EXPANSION DEVICE DETAILS BENT NO. 10
- 48 EXPANSION DEVICE DETAILS PIER NO. 13
- 49 EXPANSION DEVICE DETAILS PIER NO. 15
- 50 MISCELLANEOUS EXPANSION DEVICE DETAILS
- 51 FINGER PLATE DETAILS BENTS NO. 4, 7 & 10
- 52 FINGER PLATE DETAILS PIERS NO. 13 & 15
- 53 DETAILS OF FINGER PLATE SUPPORT ASSEMBLY
- 54 SAFETY BARRIER CURB CLOSURE DETAILS
- 55 MEDIAN BARRIER CURB CLOSURE DETAILS
- 56 EXPANSION JOINT TROUGH DETAILS
- 57 MISCELLANEOUS TROUGH DETAILS
- 58 DRAINAGE SYSTEM ASSEMBLY
- 59 COLLECTION BASIN & SPOUTING DETAILS
- 60-62 SAFETY BARRIER CURB DETAILS
- 63 MISCELLANEOUS SAFETY BARRIER CURB DETAILS
- 64-66 MEDIAN BARRIER CURB DETAILS
- 67 MISCELLANEOUS MEDIAN BARRIER CURB DETAILS
- 68-70 CONDUIT SYSTEM DETAILS
- 71 DETAILS OF BRIDGE APPROACH SLAB
- 72-73 REINFORCEMENT SCHEDULE

ESTIMATED QUANTITIES			
ITEM	SUPERSTR.	TOTAL	
PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE	LUMP SUM		1
REMOVAL OF EXISTING BRIDGE DECK	SQ. FT.	189,970	189,970
BRIDGE APPROACH SLAB (BRIDGE)	SQ. YD.		345
PROTECTIVE COATING-CONCRETE BENTS (DELETERIOUS AGENTS)	LUMP SUM		1
SLAB ON STEEL	SQ. YD.	21,129	21,129
* SAFETY BARRIER CURB	LIN. FT.	6046	6046
* MEDIAN BARRIER CURB	LIN. FT.	3068	3068
PREFORMED COMPRESSION EXPANSION JOINT SEAL (3.0 IN.)	LIN. FT.	61	61
PREFORMED COMPRESSION EXPANSION JOINT SEAL (4.0 IN.)	LIN. FT.	61	61
CONDUIT SYSTEM ON STRUCTURE	LUMP SUM	1	1
EXPANSION DEVICE (FINGER PLATE) (BENTS NO. 4, 7 & 10)	LIN. FT.	182	182
EXPANSION DEVICE (FINGER PLATE) (PIERS NO. 13 & 15)	LIN. FT.	121	121
SLAB DRAINS	EACH	626	626
DRAINAGE SYSTEM (ON STRUCTURE)	LUMP SUM	1	1
REPAINTING (SYSTEM C) ALUMINUM	LUMP SUM	1	1
STRINGER EXPANSION JOINT	LIN. FT.	630	630
STRINGER TO DIAPHRAGM CONNECTION REPLACEMENT	EACH	7	7
** SPECIAL WORK (BRIDGE)	EACH	44	44
TRANSPORTING SANDBLAST RESIDUE	LUMP SUM	1	1

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989 AND INTERIM 1992 LOAD FACTOR DESIGN.

DESIGN LOADING:
 HS20-44 MODIFIED 24,000# TANDEM AXLE
 NO FUTURE WEARING SURFACE

DESIGN UNIT STRESSES:
 CLASS B1 CONCRETE (SAFETY BARRIER AND MEDIAN BARRIER CURB) $f_c = 4,000$ PSI
 CLASS B2 CONCRETE (SUPERSTRUCTURE, EXCEPT SAFETY BARRIER AND MEDIAN BARRIER CURB) $f_c = 4,000$ PSI
 REINFORCING STEEL (GRADE 60) $f_y = 60,000$ PSI
 STRUCTURAL CARBON STEEL $f_y = 36,000$ PSI
 STRUCTURAL STEEL (A.S.T.M. A572) GRADE 50 $f_y = 50,000$ PSI

FABRICATED STEEL CONNECTIONS:
 FIELD CONNECTIONS, HIGH STRENGTH BOLTS EXCEPT AS NOTED

HIGH STRENGTH BOLTS, NUTS AND WASHERS WILL BE SAMPLED FOR QUALITY ASSURANCE AS SPECIFIED IN STD. SPEC. 106

NOTE: OUTLINE OF OLD WORK IS INDICATED BY LIGHT DASHED LINES. HEAVY LINES INDICATE NEW WORK.

TRAFFIC: TRAFFIC TO BE MAINTAINED DURING CONSTRUCTION. SEE SHEET NO. 2 AND SPECIAL PROVISIONS.

CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS IN FIELD BEFORE ORDERING MATERIALS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2". UNLESS OTHERWISE NOTED.

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

PAINT:
 SYSTEM C BY THE CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 712, AND SPECIAL PROVISIONS. (COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.)

CONTRACTOR SHALL PROVIDE OVERHEAD PROTECTION FOR USERS OF THE MKT TRAIL LOCATED UNDER SPAN (17-18) OF THE BRIDGE. SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL PROVIDE UNINTERRUPTED POWER TO THE NAVIGATIONAL LIGHTS. SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DEBRIS AND OTHER MATERIAL FROM DROPPING INTO THE RIVER. SEE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES FOR SLAB ON STEEL			
ITEM	STAGE I	STAGE II	TOTAL
REINFORCING STEEL (EPOXY COATED) LB.	427,250	507,900	935,150
CLASS B2 CONCRETE CU. YDS.	2283.7	2886.0	5169.7

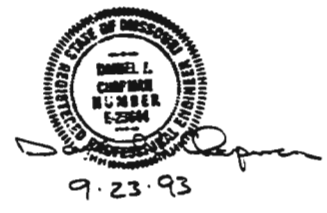
1,054,600 Δ

Δ 480,140 Δ 574,460

THE TABLE OF ESTIMATED QUANTITIES FOR SLAB ON STEEL REPRESENTS THE QUANTITIES USED BY THE STATE IN PREPARING THE COST ESTIMATE FOR CONCRETE SLABS. VARIATIONS MAY BE ENCOUNTERED IN THESE ESTIMATED QUANTITIES BUT THESE VARIATIONS CANNOT BE USED FOR AN ADJUSTMENT IN THE CONTRACT UNIT PRICE PER SQUARE YARD OF SLAB ON STEEL.

CONCRETE AND REINFORCING STEEL ABOVE EXISTING UPPER CONSTRUCTION JOINT IN BACKWALL AND IN WINGS AT ABUTMENTS NO. 1 AND 18 IS INCLUDED WITH THE SLAB ON STEEL QUANTITIES.

- * SAFETY BARRIER CURB AND MEDIAN BARRIER CURB SHALL BE CAST-IN-PLACE OPTION OR SLIP-FORM OPTION.
- ** CONTRACTOR SHALL REPLACE ALL LOOSE AND MISSING BOLTS AND RIVETS WITH NEW HIGH STRENGTH BOLTS OF EQUIVALENT DIAMETERS. THE COST FOR FURNISHING AND INSTALLING NEW HIGH STRENGTH BOLTS, COMPLETE-IN-PLACE, SHALL BE INCLUDED IN THE PRICE BID FOR SPECIAL WORK (BRIDGE), PER EACH. SEE SPECIAL PROVISIONS.



**REPAIRS TO:
 BRIDGE OVER MISSOURI RIVER**

STATE ROAD I-70 FROM BOONVILLE TO COLUMBIA
 AT ROCHEPORT
 PROJECT NO. FAI-70-3(165) STA. 1474+38.05
 JOB NO. J510313B RTE. I-70

STD. 706.35
STD. 504.00
STD. 605.10
STD. 609.00
L096223

BOONE-COOPER COUNTIES

DATE 8/16/93

SHEET NO. 1A OF 73

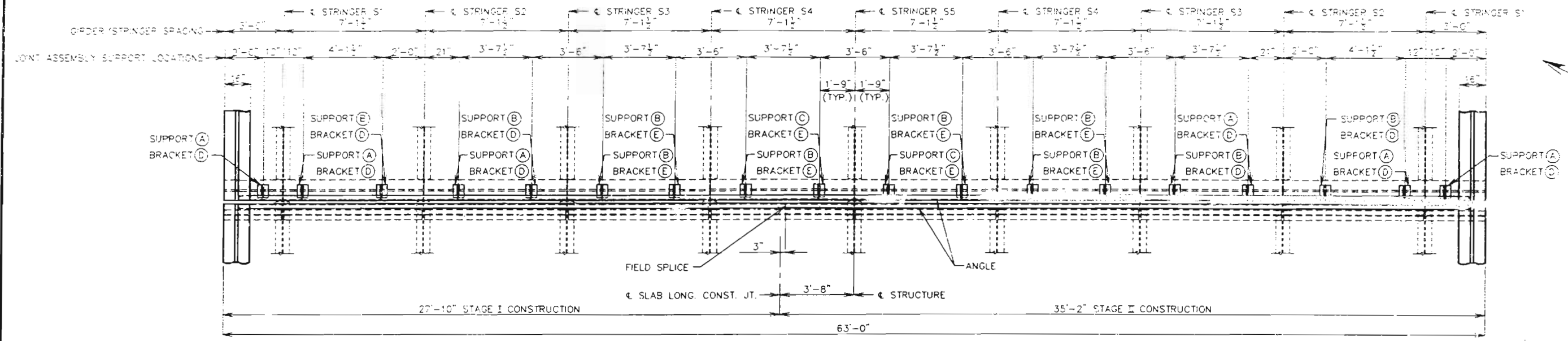
Δ Revised February 4, 1994

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

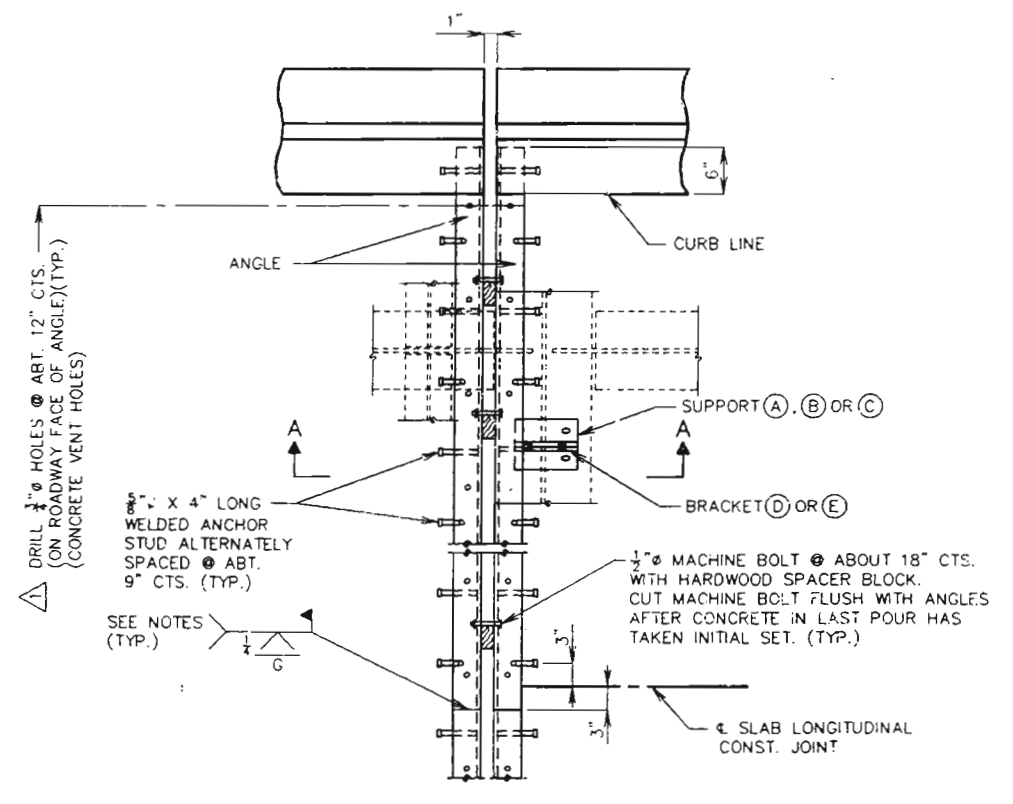
BUCHER, WILLIS & RATLIFF
 ENGINEERS • PLANNERS • ARCHITECTS

DRAWN BY:	DJC	7/93
TRACED BY:	TMM	7/93
CHECKED BY:	DMA	7/93

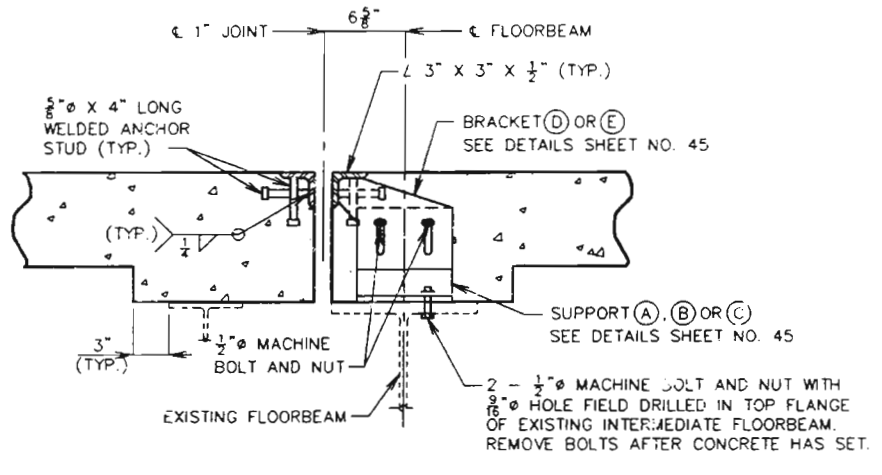
PROJECT MADE INTO 1/4" BOUND COPIES FOR THE MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION
 LAST DATE: 07/11/93 @ 13:00



PLAN



PART PLAN



PART SECTION A-A

NOTES:

- STRUCTURAL STEEL FOR EXPANSION JOINT SHALL BE FABRICATED IN TWO SECTIONS. DEVICE SHALL EXTEND 3" BEYOND EDGE OF SLAB LONGITUDINAL CONSTRUCTION JOINT AND FIELD SPLICED. WELDED ANCHOR STUDS SHALL BE LOCATED A MAXIMUM OF 6" FROM FIELD SPLICE. EXPOSED SURFACE OF FIELD SPLICE SHALL BE GROUND SMOOTH.
- STRUCTURAL STEEL FOR THE JOINT SEALANT ASSEMBLY SHALL BE PAINTED IN THE SHOP WITH TWO COATS OF AN INORGANIC ZINC PRIMER AS SPECIFIED FOR SYSTEM C TO PRODUCE A DRY FILM THICKNESS OF NOT LESS THAN 5.0 MILS. NO FINISH COAT SHALL BE APPLIED. SEE SPECIAL PROVISIONS.
- THE ARMOR SHALL BE BENT TO CONFORM TO THE CROWN AND GRADE OF ROADWAY.
- STRUCTURAL STEEL FOR THE ARMORED JOINT SHALL BE GRADE A36.
- ANCHORS FOR EXPANSION JOINT ARMOR SHALL BE APPROVED STUD WELDED ANCHORS (C1010 THRU C1020).
- SEE SPECIAL PROVISIONS FOR THE REQUIREMENTS OF JOINT SEALANT.
- FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT SHALL BE INCLUDED IN CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR STRINGER EXPANSION JOINT. SEE SPECIAL PROVISIONS.
- SEE SHEET NO. 45 FOR MISCELLANEOUS STRINGER EXPANSION JOINT DETAILS.

106

BUCHER, WILLIS & RATLFF ENGINEERS • PLANNERS • ARCHITECTS		
DRAWN BY:	DMA	6/93
TRACED BY:	RCC	7/93
CHECKED BY:	SAC	7/93

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

REVISED MARCH 7, 1994

BOONE-COOPER COUNTIES

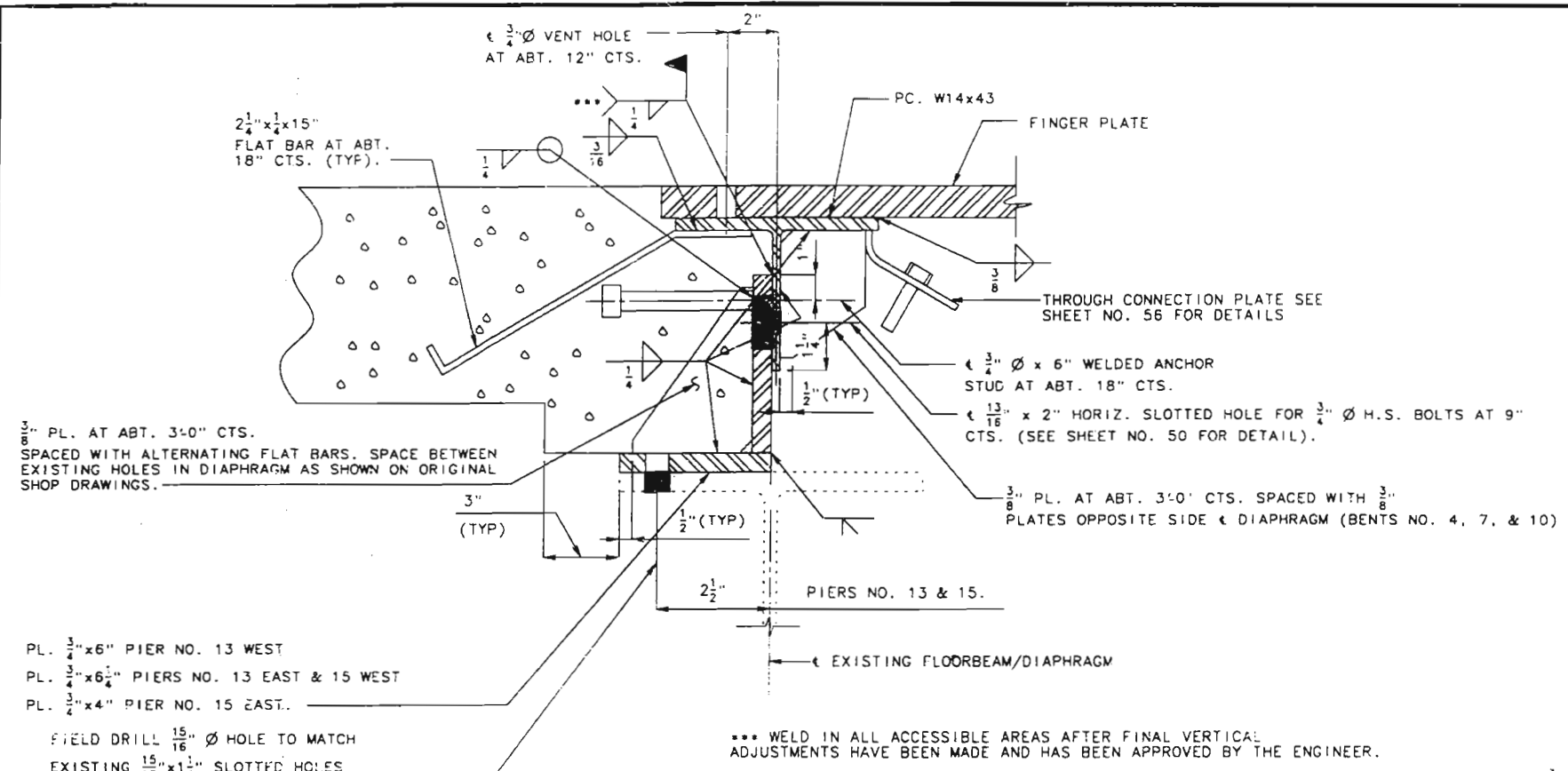
STRINGER
EXPANSION JOINT DETAILS

SHEET NO. 44 OF 73



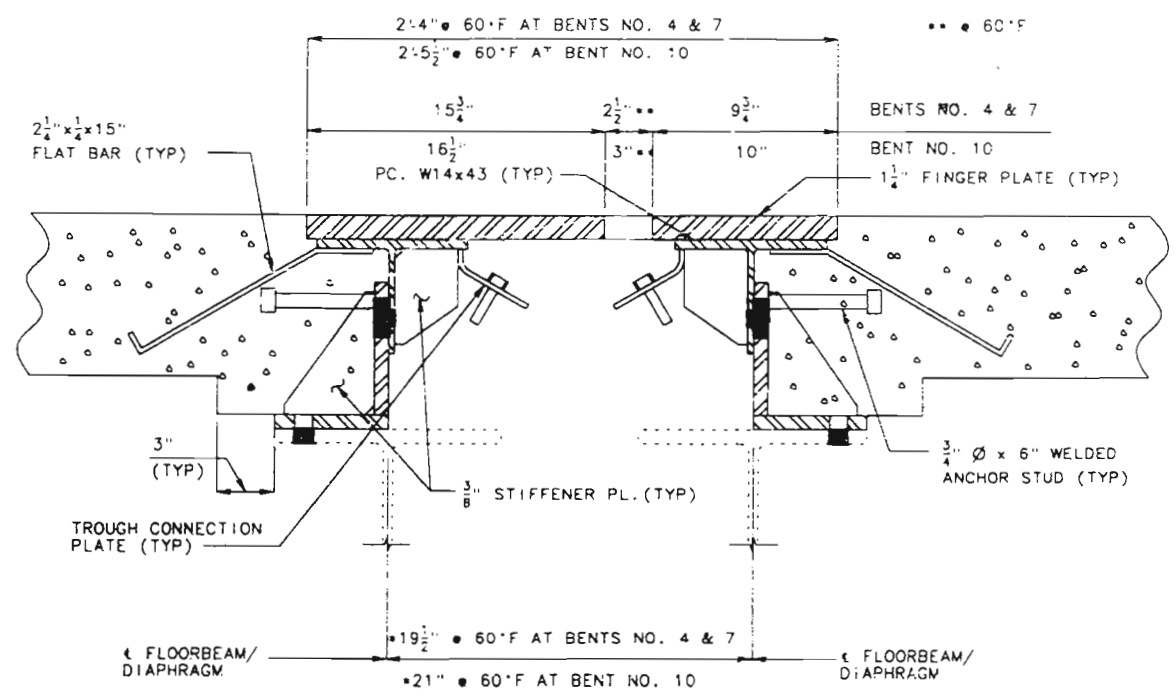
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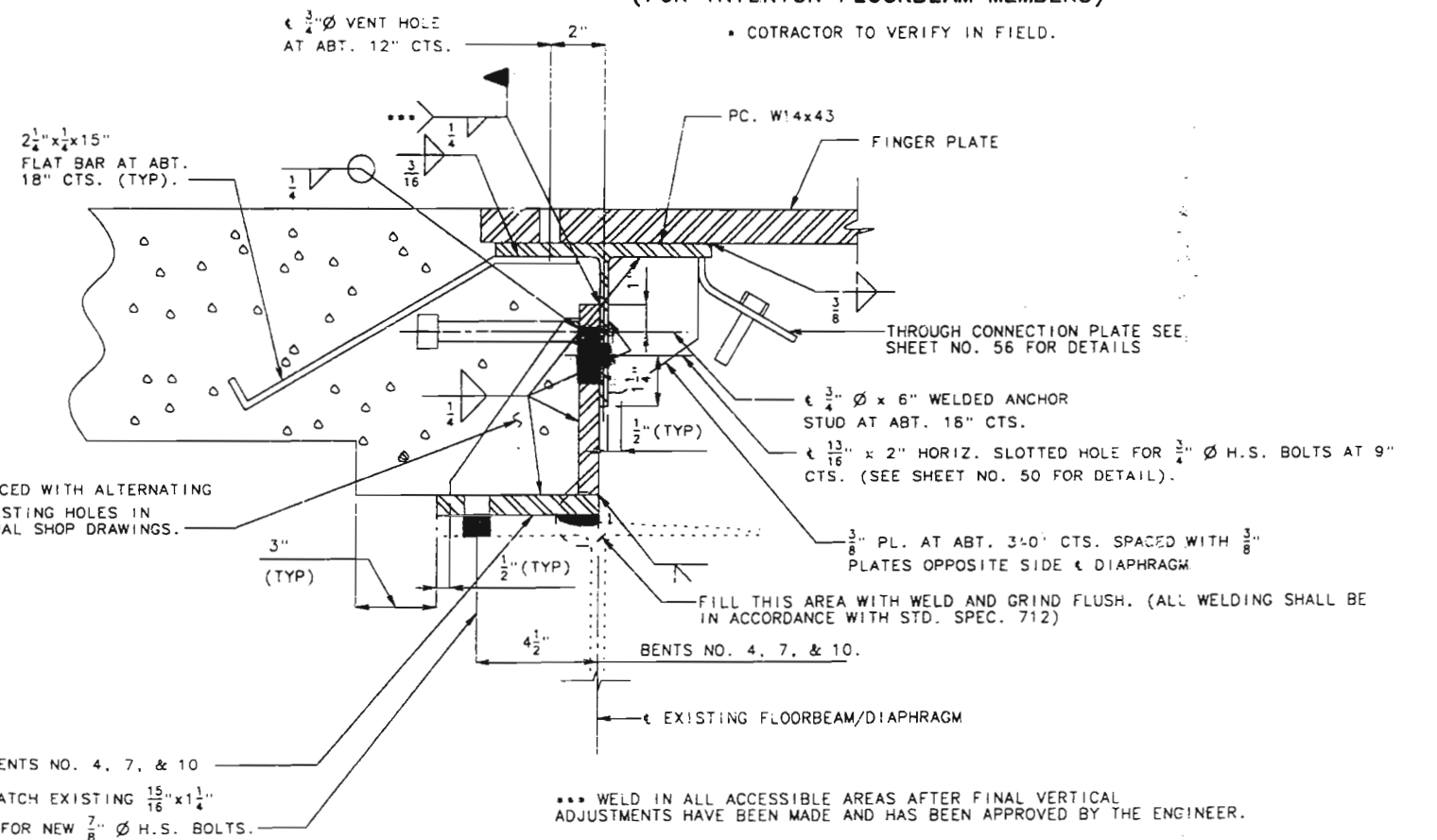
FINGER PLATE SUPPORT ASSEMBLY FOR ALL FLOORBEAM MEMBERS (PIER 13 & 15)

$\frac{3}{4}$ " x 6" PIER NO. 13 WEST
 $\frac{3}{4}$ " x 6" PIER NO. 13 EAST & 15 WEST
 $\frac{3}{4}$ " x 4" PIER NO. 15 EAST.
 FIELD DRILL $\frac{15}{16}$ " ϕ HOLE TO MATCH EXISTING $\frac{15}{16}$ " x $\frac{1}{4}$ " SLOTTED HOLES IN DIAPHRAGM FOR NEW $\frac{7}{8}$ " ϕ H.S. BOLTS.



TYPICAL SECTION BENTS NO. 4, 7, & 10. (FOR INTERIOR FLOORBEAM MEMBERS)

• CONTRACTOR TO VERIFY IN FIELD.



FINGER PLATE SUPPORT ASSEMBLY (FOR INTERIOR FLOORBEAM MEMBERS BENTS NO. 4, 7, & 10.)

DETAILS OF FINGER PLATE SUPPORT ASSEMBLY

ADD SHEET 53C 2

DETAILED JULY 1994
 CHECKED JULY 1994

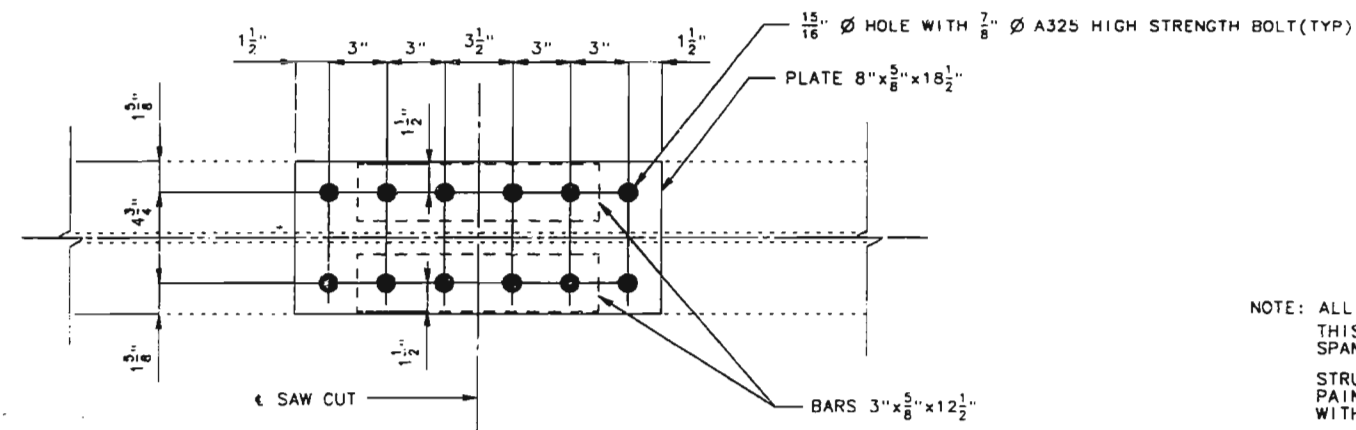
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

2 REVISED 7-5-1994 SHEET NO. 53C-AOF 73.

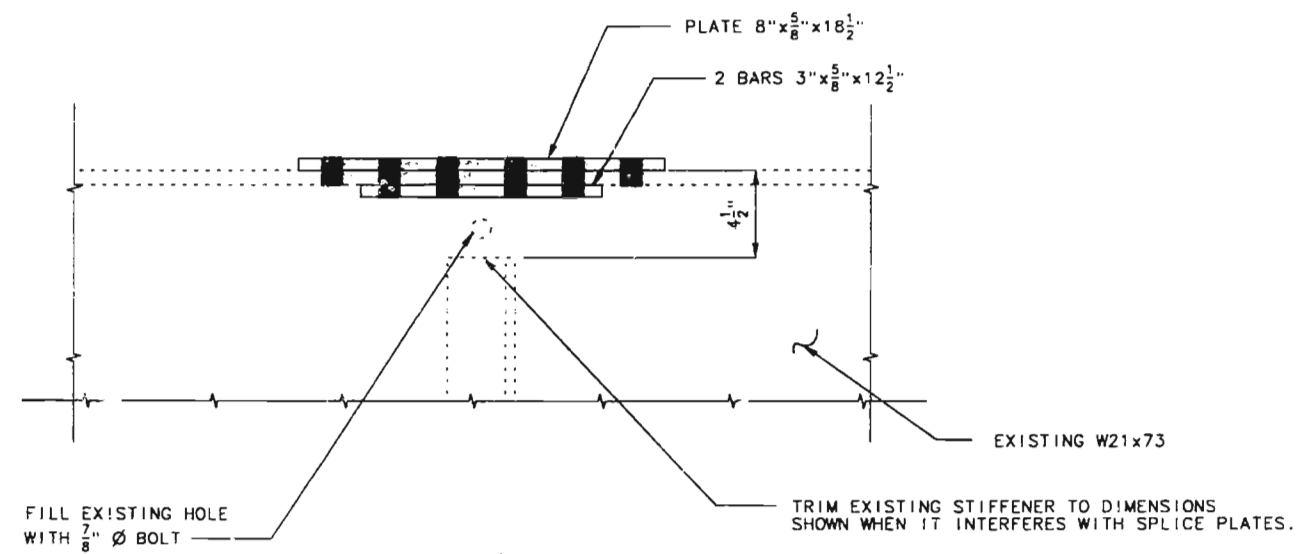
BOONE-COOPER COUNTIES

L096223

Final Plans



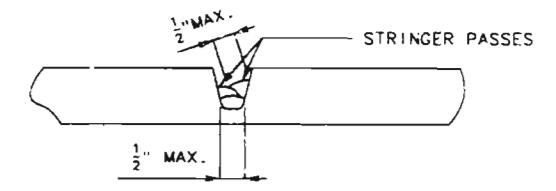
NOTE: ALL STEEL SHALL BE A36.
 THIS RETROFIT EFFECTS STRINGERS S2 & S3,
 SPANS 10, 11, & 12 OF THE WBL.
 STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE
 PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE
 WITH SPECIAL PROVISIONS.
 PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL
 PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.
 STIFFENERS CUT TO FIT AS SHOWN IN DETAIL SHALL HAVE
 CUT EDGE GROUND FREE OF DELETERIOUS OR INJURIOUS MATERIAL.
 CUT END OF STIFFENER SHALL BE PAINTED AS MENTIONED ABOVE.



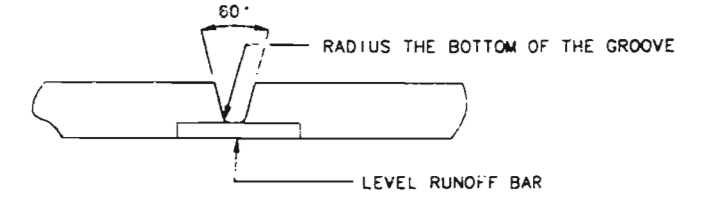
SPLICE DETAILS OF STRINGER RETROFIT

WELD NOTES:
FLANGE SAW-CUT REPAIR

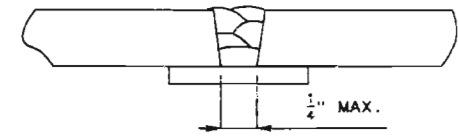
1. ALL WELDS SHOULD BE MADE USING $\frac{1}{8}$ " OR $\frac{5}{32}$ " E7018 ELECTRODES ONLY. (NO E7028).
2. MAXIMUM WELD SIZE SHOULD BE $\frac{1}{2}$ " ACROSS THE FACE OF THE WELD ON EACH PASS, STRINGER PASSES SHALL USED TO ACHIEVE THIS DIMENSION.



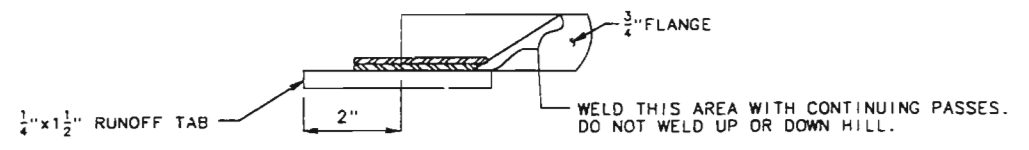
3. PREHEAT SHOULD BE 250° F. MIN. PRIOR TO ANY TACKING OR WELDING.
4. ALL RUNOFF BARS AND WELD BACKING BARS SHOULD BE $\frac{1}{4}$ "x $\frac{1}{2}$ " FLAT BAR MINIMUM, AND SHOULD EXTEND 2" BEYOND THE EDGE OF THE FLANGE. RUNOFF BAR SHOULD ALWAYS BE USED.
5. THE GROOVE WELDS SHOULD HAVE A MINIMUM OF 60° INCLUDED ANGLE.



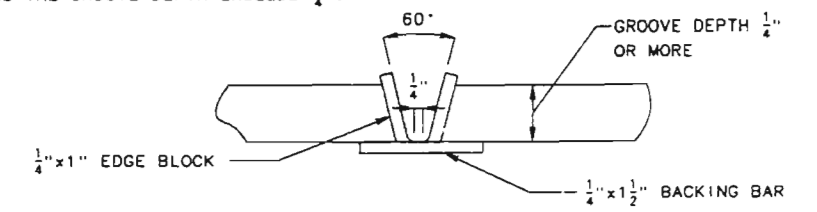
6. ALL WELDS SHOULD BE STARTED 1" OUT ON THE RUNOFF BAR AND CONTINUED TOWARD THE CENTER OF THE FLANGE. RUNOFF BARS SHOULD BE LEVEL WITH THE BOTTOM OF THE GROOVE.
7. 100% PENETRATION WELDS SHOULD HAVE A MIN. $\frac{1}{4}$ " ROOT OPENING AND ALL WELDING WILL BE DONE FROM THE TOP SIDE. NO OVERHEAD WELDING.



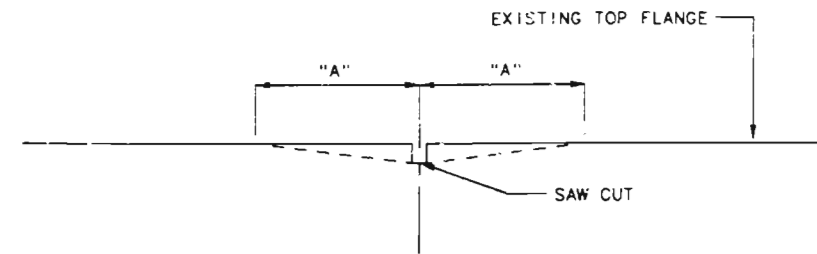
8. ALL RUNOFF BARS ARE TO BE BURNED OFF $\frac{1}{8}$ " MIN. BEYOND THE EDGE OF THE FLANGE AND HAND GROUND FLUSH.
9. ALL 100% GROOVE WELD BACKING BARS ARE TO BE TORCHED OR ARC GOUGED OFF TO WITHIN $\frac{1}{8}$ " OF THE FLANGE AND THEN HAND GRIND SMOOTH. THE TOPS OF THE FLANGES ARE TO BE GROUND SMOOTH AFTER WELDING.
10. ALL WELDS SHOULD BE MADE IN THE FLAT POSITION WITH NO WELDING UP OR DOWN AN INCLINE GROOVE.



11. USE $\frac{1}{4}$ "x1" FLAT BAR TO SUPPORT THE EDGE OF WELDS THAT ARE LAYERED. ANYTIME THE GROOVE DEPTH EXCEEDS $\frac{1}{4}$ ".



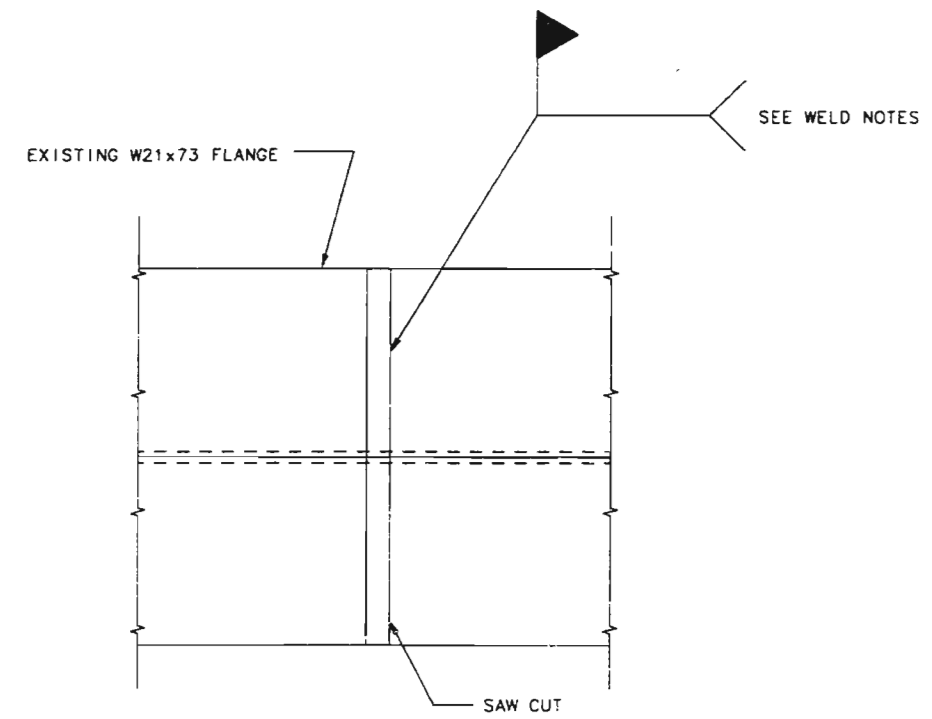
EDGE BLOCKS SHOULD EXTEND 2" FROM EDGE OF FLANGE, AND BE REMOVED AFTER WELDING IN THE SAME MANNER AS THE BACKING BAR. ALL WELDS MUST BE GROUND SMOOTH



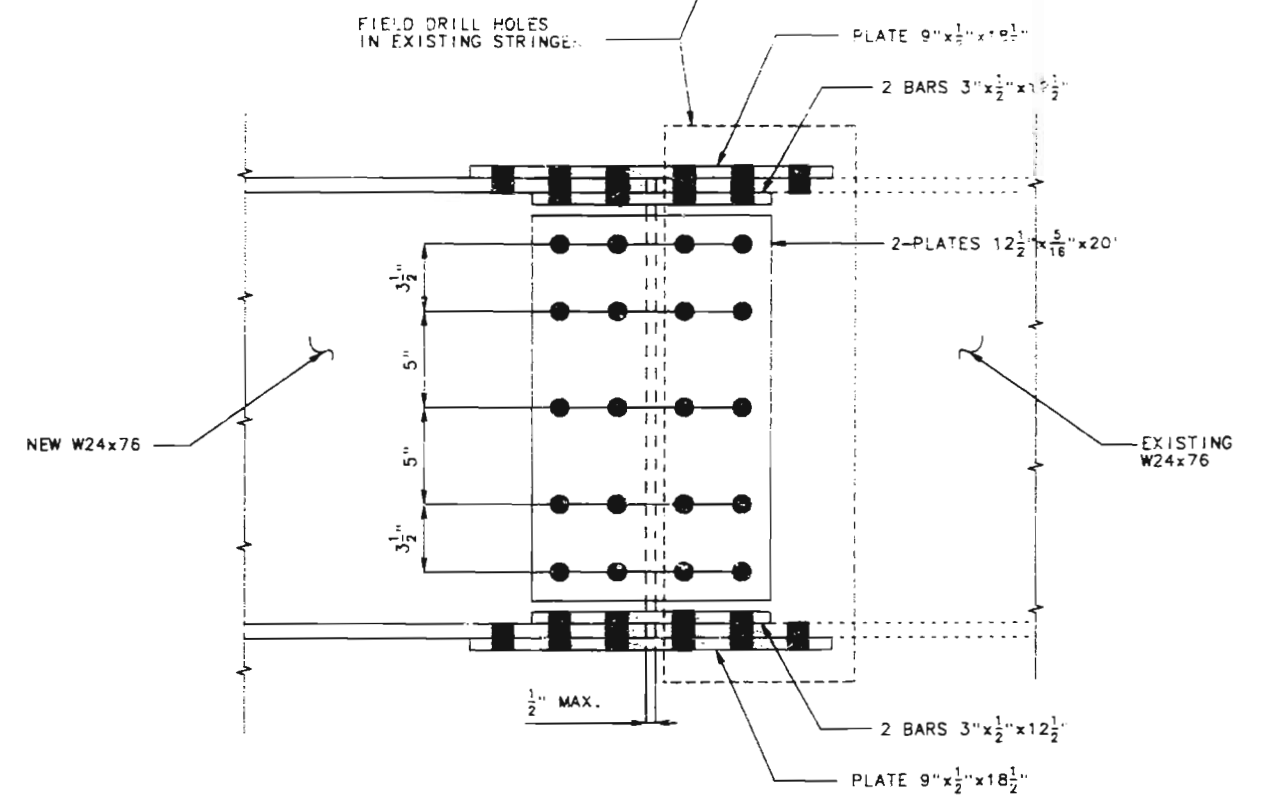
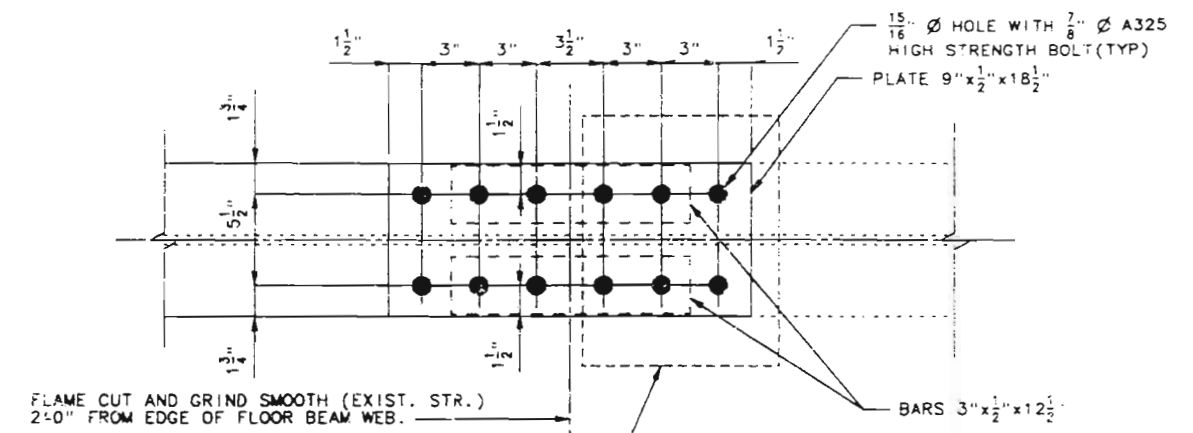
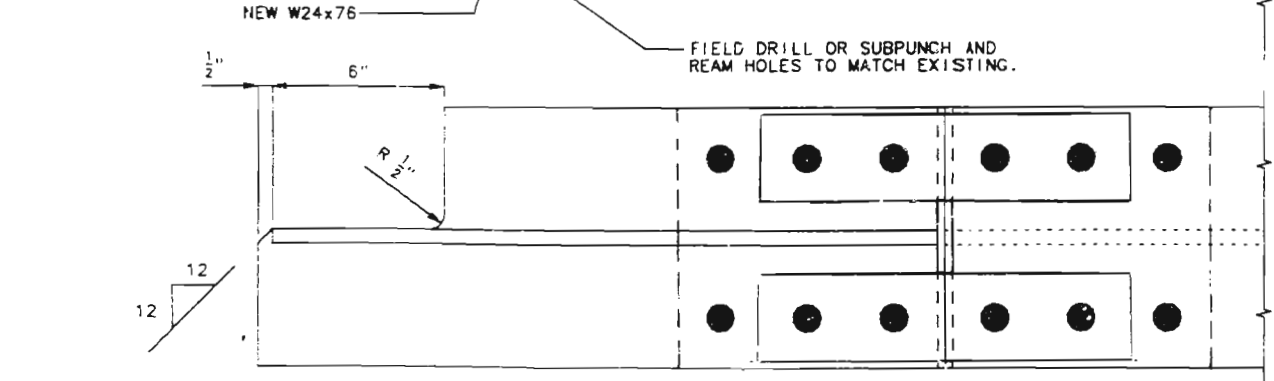
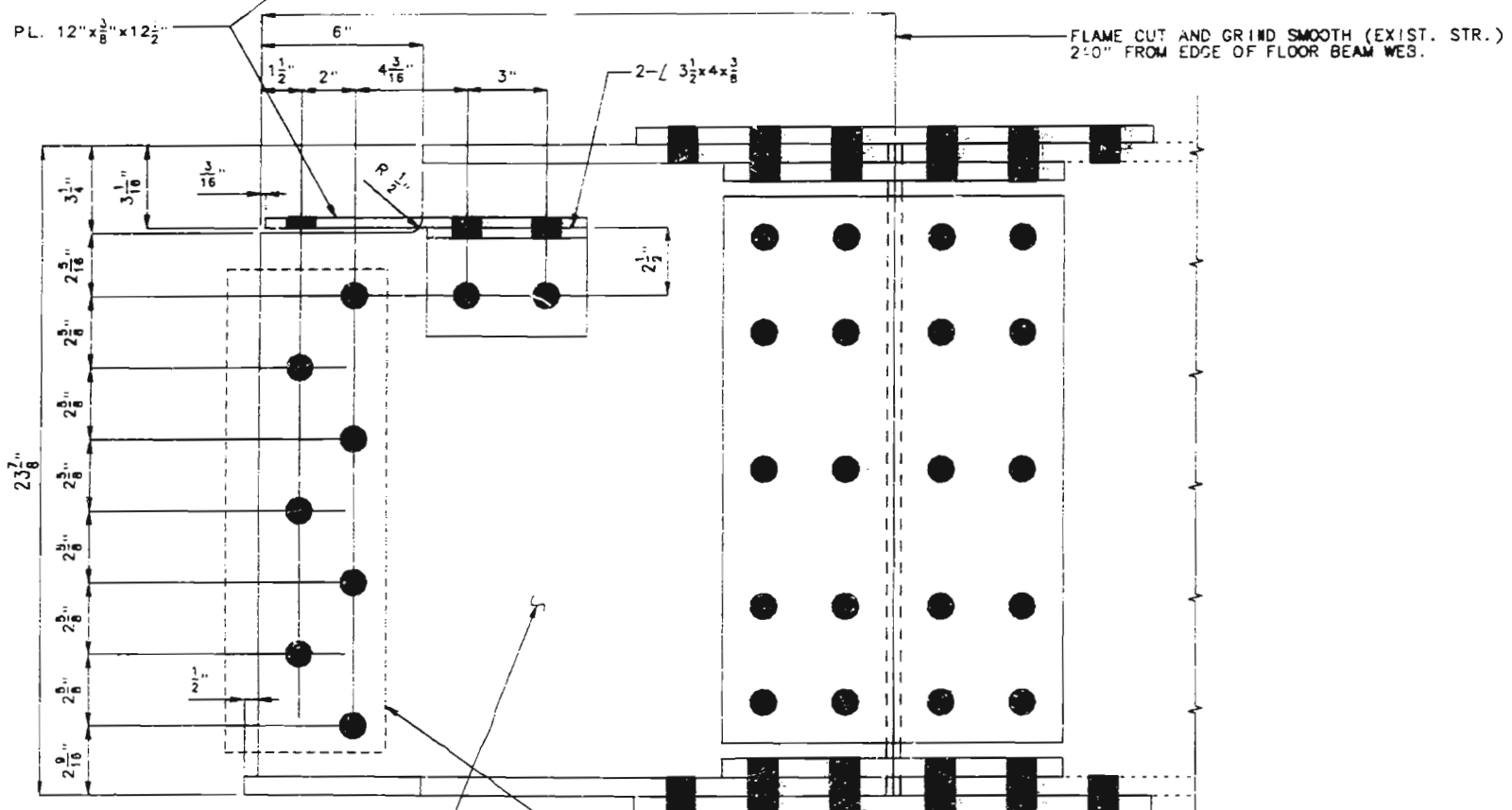
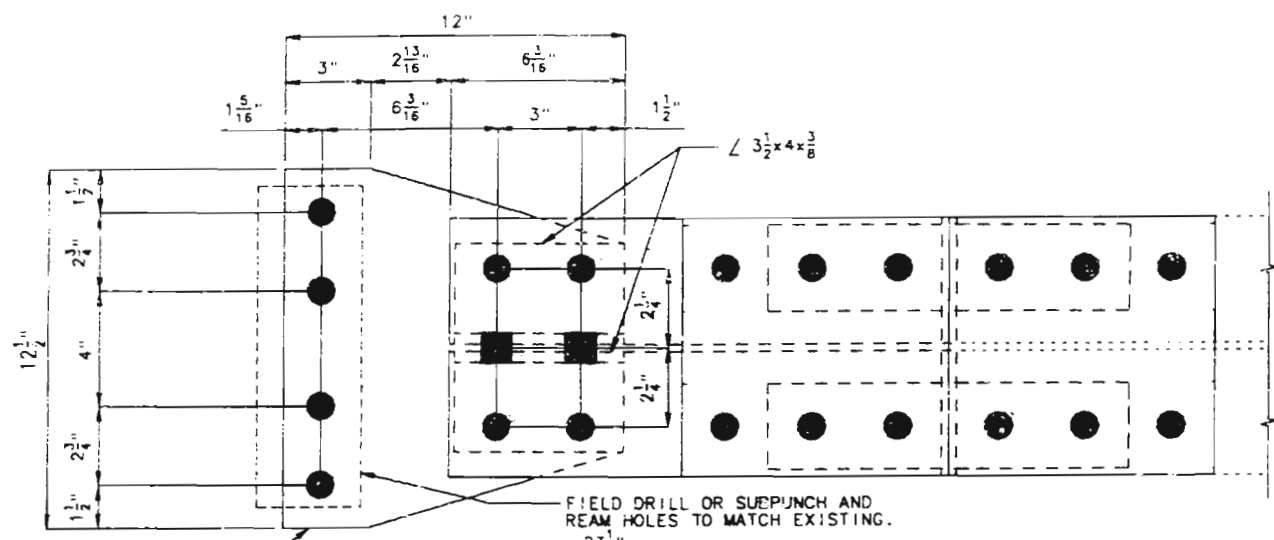
DEPTH	"A"
$\frac{1}{16}$ "	$\frac{5}{8}$ "
$\frac{1}{8}$ "	$1\frac{1}{4}$ "

GRIND DETAIL FOR STRINGER RETROFIT

NOTE: REPAIRS BY GRINDING SHALL HAVE EDGES FAIRED TO THE FLANGE SURFACE WITH A SLOPE NOT EXCEEDING 1 IN 10.



WELD DETAIL OF STRINGER RETROFIT



SPLICE DETAILS OF STRINGER RETROFIT

NOTE: ALL STEEL SHALL BE A36.
USE ⁷/₈" HIGH STRENGTH BOLTS WITH ¹⁵/₁₆" REAMED HOLES.

STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE WITH SPECIAL PROVISIONS.
PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.
REPLACE ALL EXISTING RIVETS INVOLVED IN THE CONNECTIONS WITH ⁷/₈" Ø A325 HIGH STRENGTH BOLTS.

REHABILITATION OF STRINGER NO. 1 IN SPAN (13-14) OF W.B.L.

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

SHEET NO. 71C-A07 73.

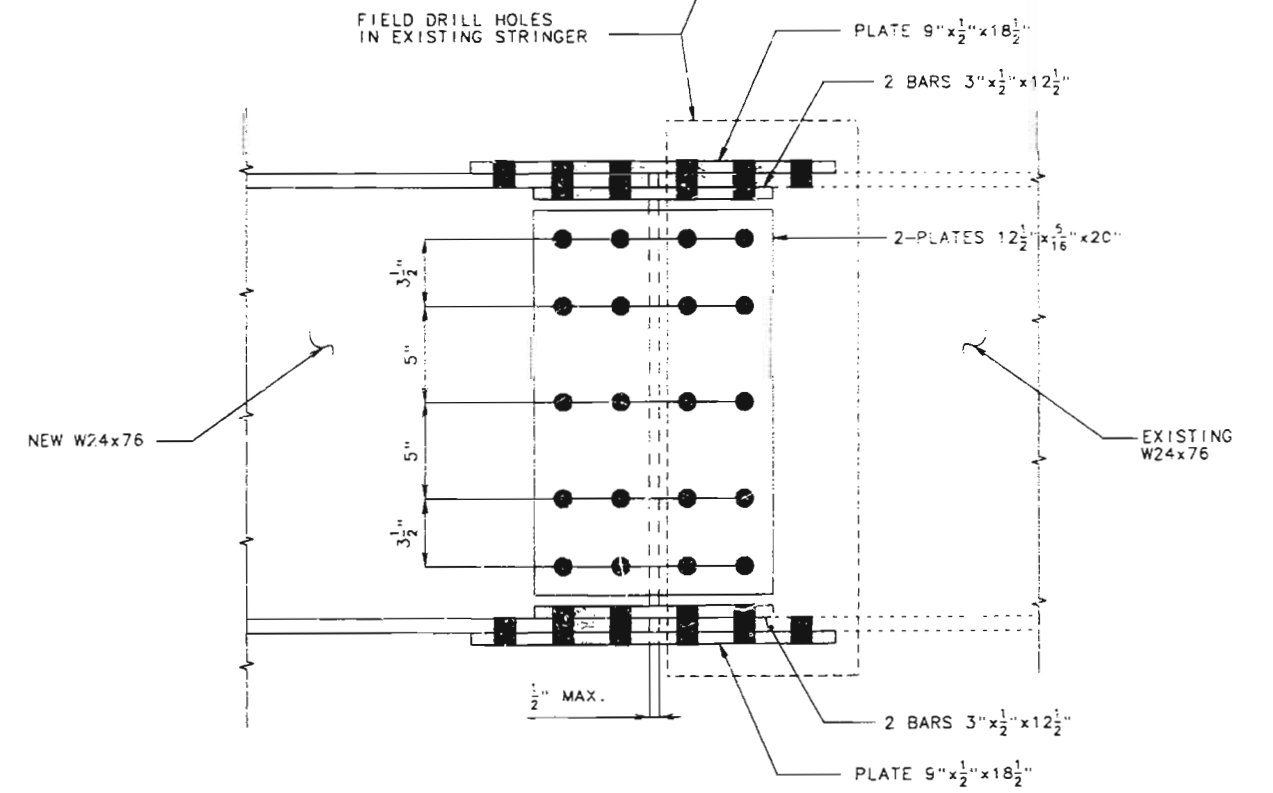
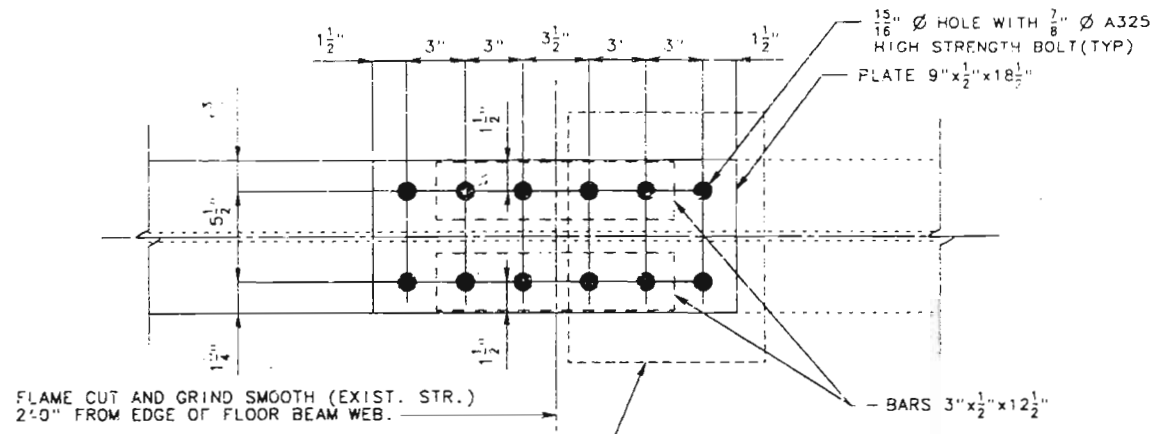
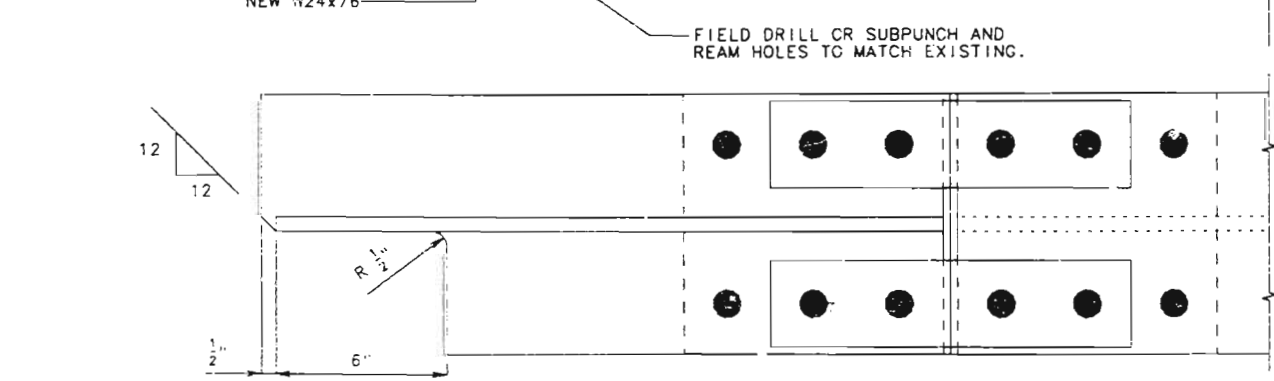
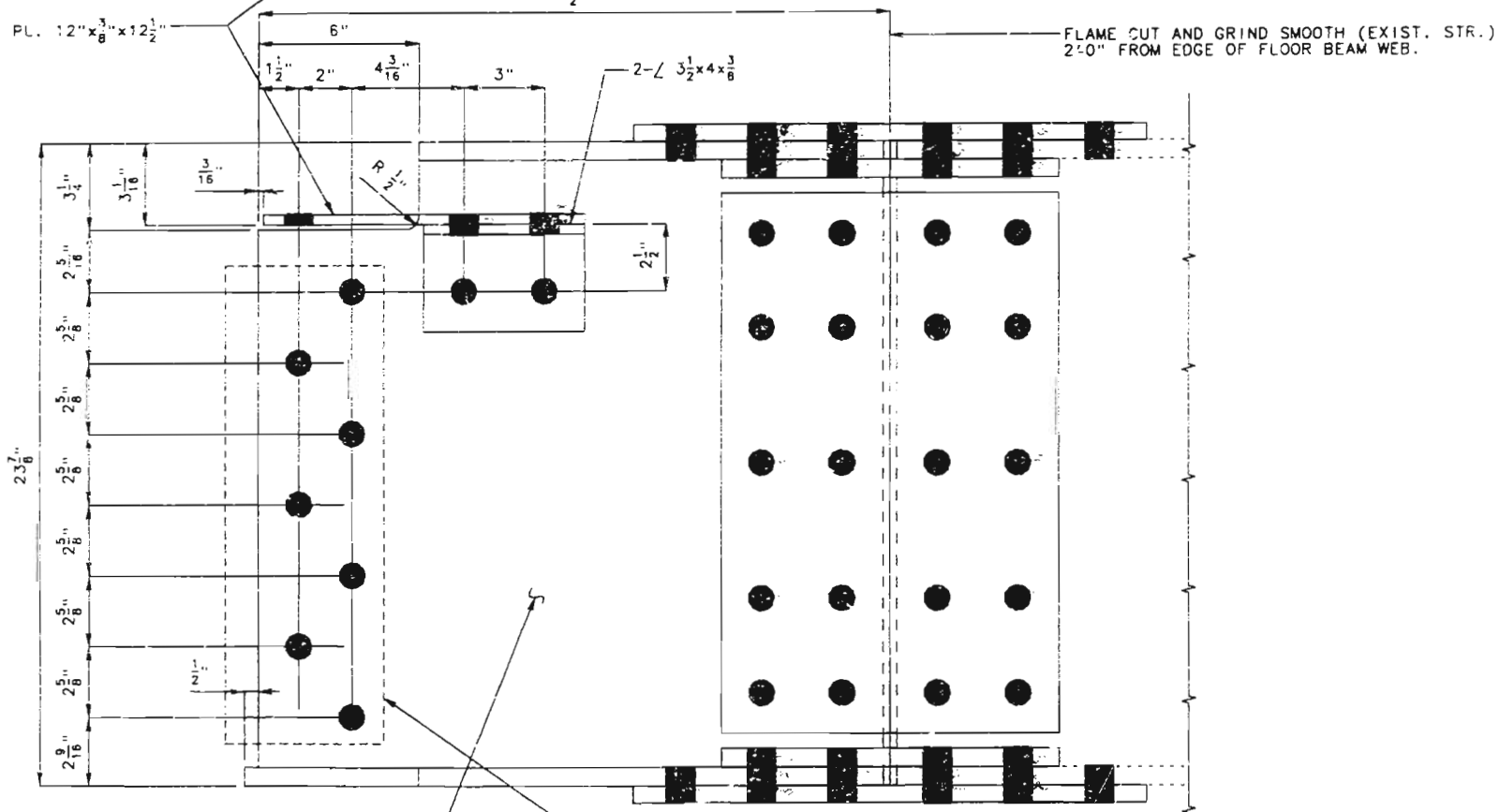
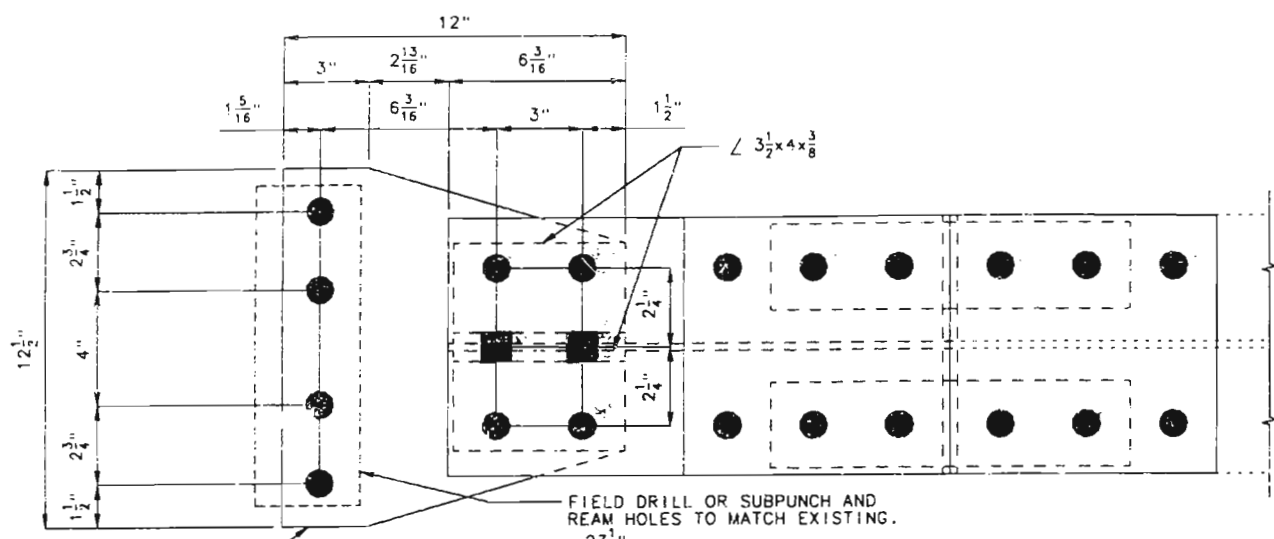
BOONE-COOPER

COUNTY

L096223

DETAILED AUG. 1994
CHECKED AUG. 1994

Final Plans



SPLICE DETAILS OF STRINGER RETROFIT

NOTE: ALL STEEL SHALL BE A36.
USE 7/8" HIGH STRENGTH BOLTS WITH 15/16" REAMED HOLES.

STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE WITH SPECIAL PROVISIONS.
PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.
REPLACE ALL EXISTING RIVETS INVOLVED IN THE CONNECTIONS WITH 7/8" A325 HIGH STRENGTH BOLTS.

REHABILITATION OF STRINGER NO. 3 IN SPAN (13-14) OF E.B.L.

DETAILED SEPT. 1994
CHECKED SEPT. 1994

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

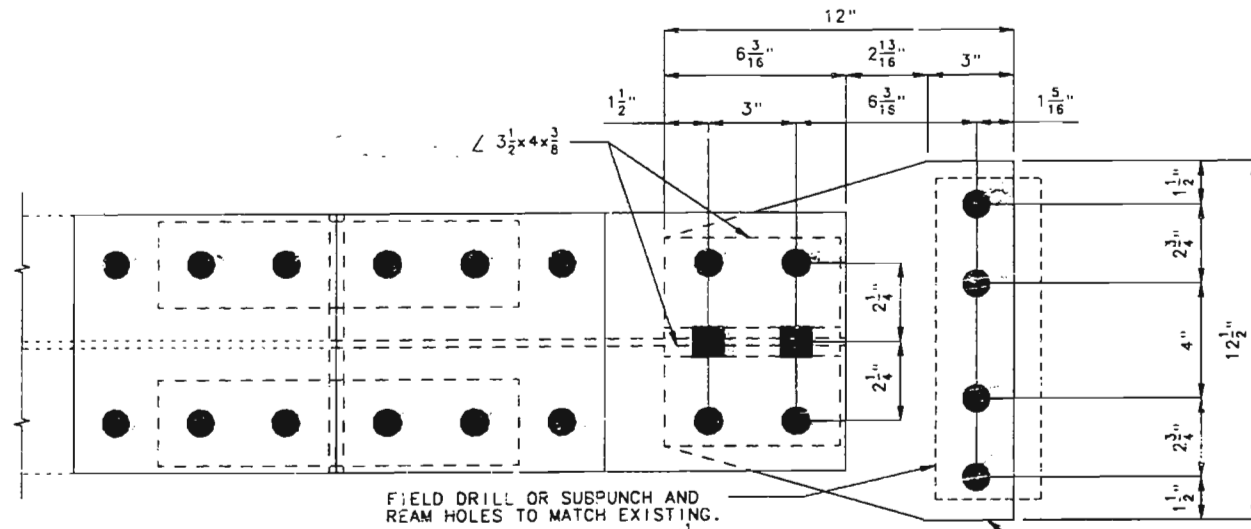
SHEET NO. 710-A OF 73.

BOONE-COOPER

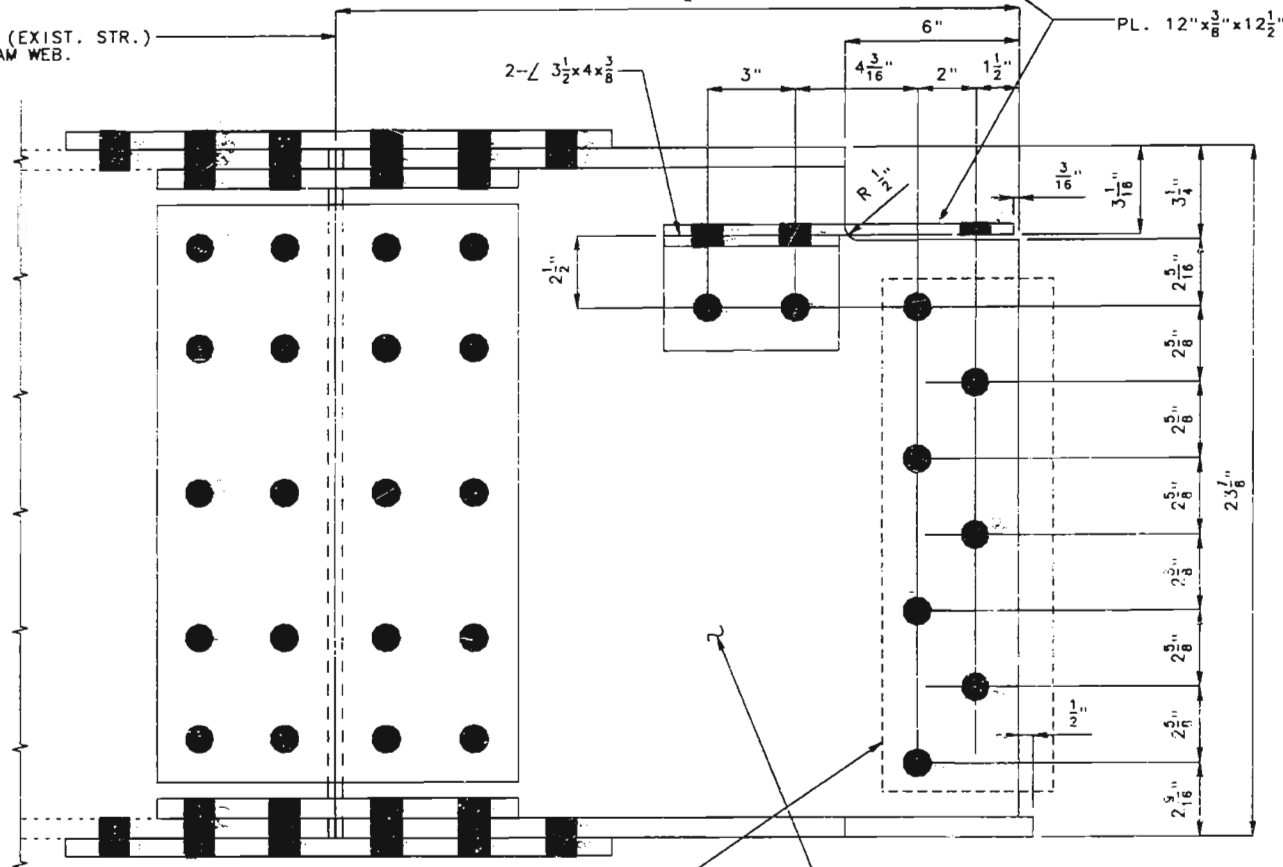
COUNTY

L096223

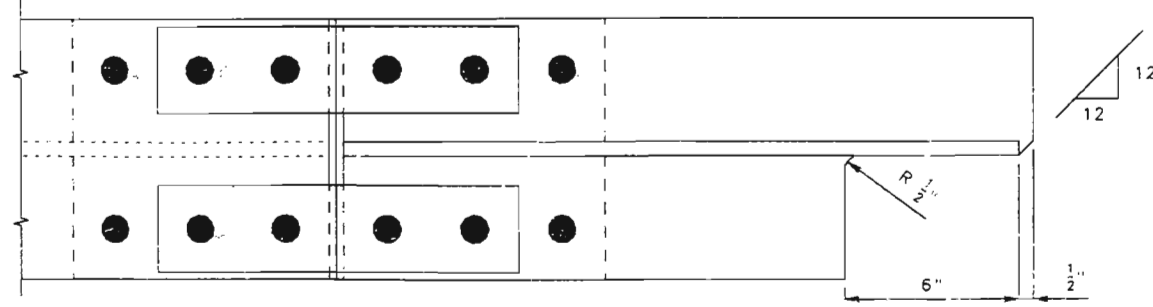
Final Plans



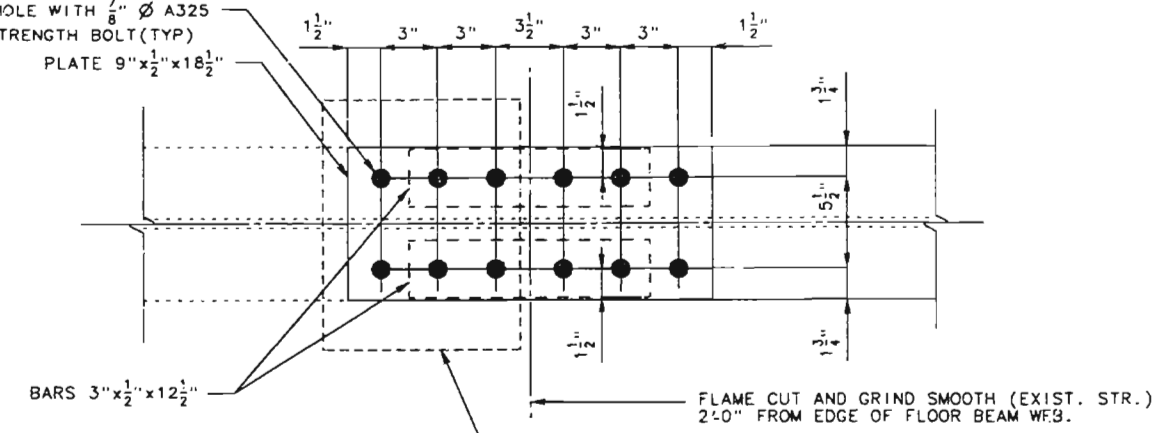
FLAME CUT AND GRIND SMOOTH (EXIST. STR.)
2'-0" FROM EDGE OF FLOOR BEAM WEB.



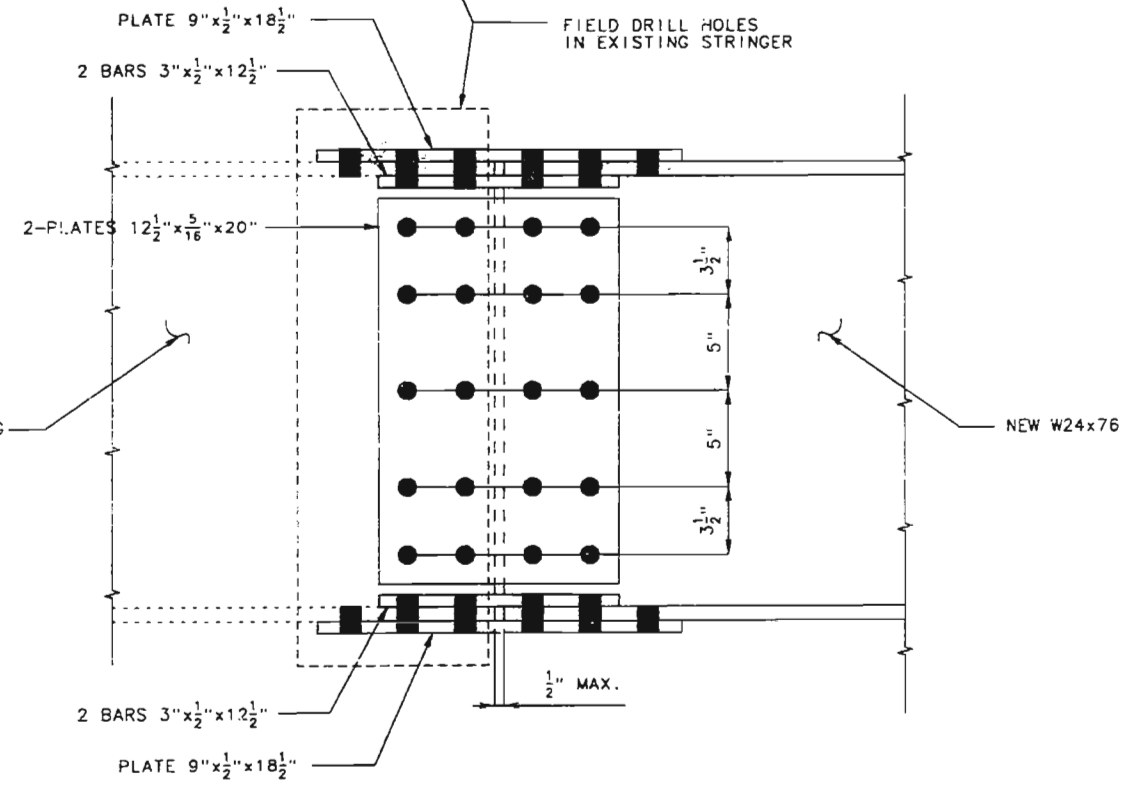
FIELD DRILL OR SUBPUNCH AND REAM HOLES TO MATCH EXISTING.



15/16" Ø HOLE WITH 7/8" Ø A325 HIGH STRENGTH BOLT (TYP)
PLATE 9"x2"x18 1/2"



EXISTING W24x76



SPLICE DETAILS OF STRINGER RETROFIT

NOTE: ALL STEEL SHALL BE A36.
USE 7/8" HIGH STRENGTH BOLTS WITH 15/16" REAMED HOLES.

STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE WITH SPECIAL PROVISIONS.
PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.
REPLACE ALL EXISTING RIVETS INVOLVED IN THE CONNECTIONS WITH 7/8" Ø A325 HIGH STRENGTH BOLTS.

REHABILITATION OF STRINGER NO. 3 IN SPAN (14-15) OF E.B.L.

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

SHEET NO. 71E-A OF 73.

BOONE-COOPER

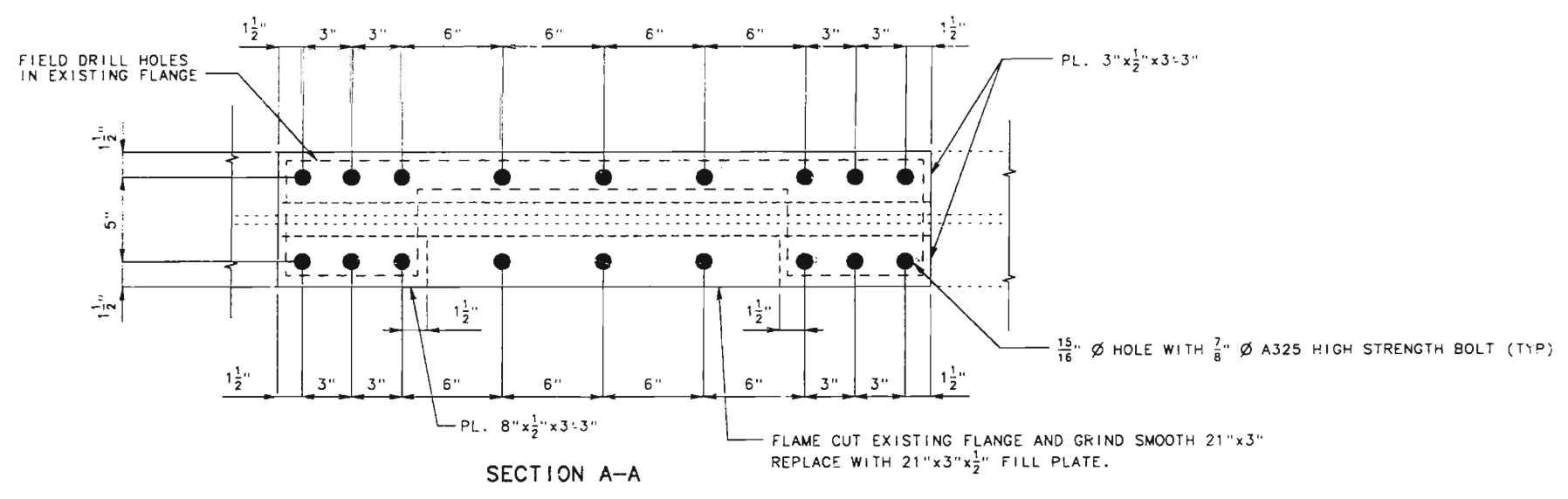
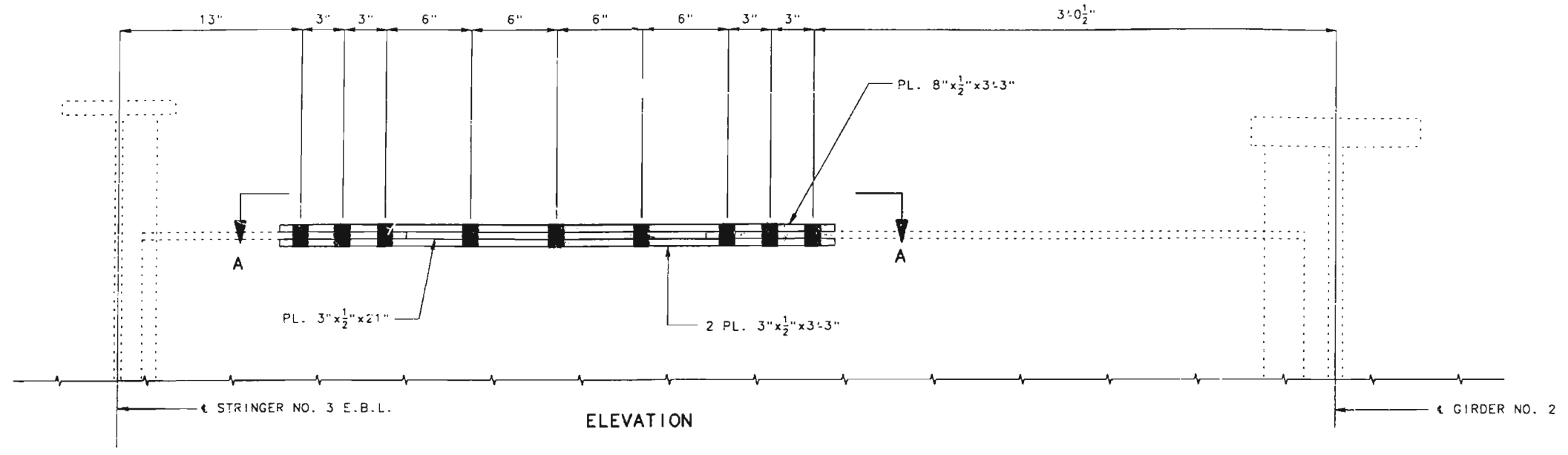
COUNTY

L096223

DETAILED SEPT. 1994
CHECKED SEPT. 1994

Final Plans

STATE	PROJ. NO.	SHEET NO.
MO.	FA-70-3(102)	



NOTE: ALL STEEL SHALL BE A36.
 STRUCTURAL STEEL IN AREAS TO BE ENCLOSED IN CONCRETE SHALL BE PAINTED WITH ONE COAT INORGANIC ZINC PRIMER IN ACCORDANCE WITH SPECIAL PROVISIONS.
 PAINT SYSTEM "C" BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISIONS. COLOR OF THE FINAL FIELD COAT SHALL BE ALUMINUM.

DETAILS OF RETROFIT OF DIAPHRAGM AT BENT NO. 18

116
 DETAILED SEPT. 1994
 CHECKED SEPT. 1994

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

SHEET NO. 71F-A OF 73.
 Final Plans

BOONE-COOPER COUNTIES

L096223

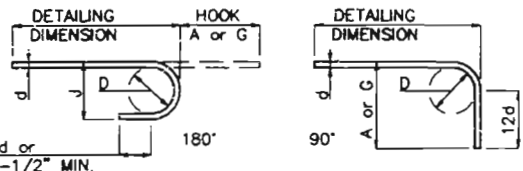
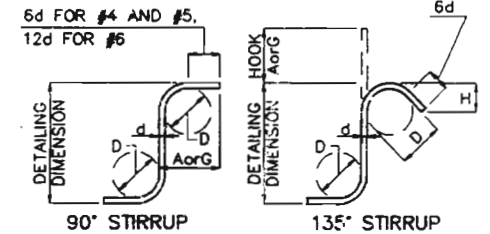
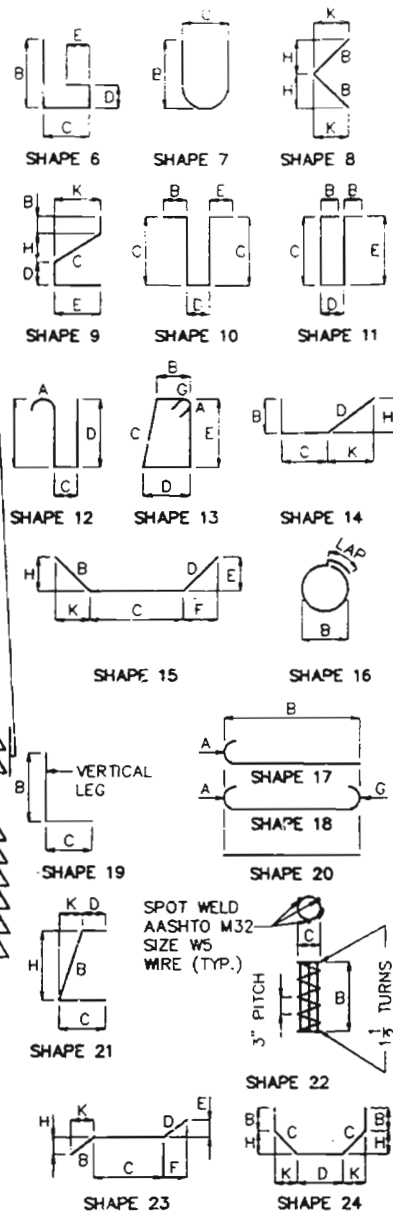
STAGE I CONSTRUCTION BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
								B	C	D	E	F	H	K			
								FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.			
SUPERSTRUCTURE																	
OPTIONAL SUP FORM BARRIER																	
164	5-C1	BARRIER CURB	E	20				8	0.000						8 0	8 0	1368
4	5-H30	WINGWALL	E	20				3	3.000						3 3	3 3	14
6	6-H50	BACKWALL	E	17				30	1.000						30 9	30 9	277
4	4-H51	BACKWALL	E	20				30	1.000						30 1	30 1	80
3064	5-R1	BARRIER CURB	E	19				2	6.000	3.500					2 10	2 8	8533
3032	5-R2	BARRIER CURB	E	15				2	6.125	3.500		2	6.000	3.000	2 10	2 8	8444
3010	5-R3	BARRIER CURB	E	19					17.000	6.000					1 11	1 9	5494
3010	5-R4	BARRIER CURB	E	27					6.000	11.125	7.000	12.000	9.125	6.375	3 0	2 10	8885
84	5-R5	BARRIER CURB	E	20				39	1.000						39 1	39 1	3424
196	5-R6	BARRIER CURB	E	20				7	8.000						7 8	7 8	1568
63	5-R7	BARRIER CURB	E	20				50	6.000						50 6	50 6	2004
84	5-R8	BARRIER CURB	E	20				35	1.000						35 1	35 1	3073
42	5-R9	BARRIER CURB	E	20				36	3.000						36 3	36 3	1588
42	5-R10	BARRIER CURB	E	20				37	10.000						37 10	37 10	1857
126	5-R11	BARRIER CURB	E	20				37	6.000						37 6	37 6	4928
42	5-R12	BARRIER CURB	E	20				28	4.000						28 4	28 4	1241
14	5-R13	BARRIER CURB	E	20				27	8.000						27 8	27 8	404
21	5-R14	BARRIER CURB	E	20				57	4.000						57 4	57 4	818
28	5-R15	BARRIER CURB	E	20				31	9.000						31 9	31 9	927
21	5-R16	BARRIER CURB	E	20				57	2.000						57 2	57 2	814
18	5-R50	BARRIER CURB	E	17				2	2.000						2 9	2 9	52
16	5-R53	BARRIER CURB	E	13				8.000	21.000	8.000	21.000				5 9	5 5	90
4	5-R54	BARRIER CURB	E	27				12.500	13.000	8.500	8.000		5.000	7.000	3 6	3 3	14
8	5-R55	BARRIER CURB	E	27				12.500	13.000	11.125	6.000		6.375	9.125	3 7	3 4	28
8	5-R56	BARRIER CURB	E	10					6.000	23.000					2 11	2 9	23
28	5-R57	BARRIER CURB	E	20				3	8.000						3 8	3 8	107
6	5-R58	BARRIER CURB	E	14					22.000	23.000		5.000	22.500		3 9	3 9	23
2	5-R59	BARRIER CURB	E	17				3	6.000						4 1	4 1	9

STAGE I CONSTRUCTION BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
								B	C	D	E	F	H	K			
								FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.			
5978	5-S1	SLAB	E	20				29	10.000						29 10	29 10	185992
5978	4-S3	SLAB	E	20				30	4.000						30 4	30 4	121076
2142	4-S5	SLAB	E	20				10	6.000						10 6	10 6	15024
8	5-S6	SLAB	E	20				11	4.000						11 4	11 4	95
184	5-S101	SLAB	E	20				36	0.000						36 0	36 0	6909
312	4-S102	SLAB	E	20				36	0.000						36 0	36 0	7503
184	5-S201	SLAB	E	20				36	0.000						36 0	36 0	6909
312	4-S202	SLAB	E	20				36	0.000						36 0	36 0	7503
414	5-S301	SLAB	E	20				39	8.000						39 8	39 8	17130
702	4-S302	SLAB	E	20				39	8.000						39 8	39 8	18603
69	5-S401	SLAB	E	20				37	11.000						37 11	37 11	2729
117	4-S402	SLAB	E	20				37	11.000						37 11	37 11	2964
69	5-S501	SLAB	E	20				37	11.000						37 11	37 11	2729
117	4-S502	SLAB	E	20				37	11.000						37 11	37 11	2964
69	5-S601	SLAB	E	20				28	9.000						28 9	28 9	2069
117	4-S602	SLAB	E	20				28	9.000						28 9	28 9	2247
48	5-S701	SLAB	E	20				28	10.000						28 10	28 10	1383
78	4-S702	SLAB	E	20				28	10.000						28 10	28 10	1502
253	5-S901	SLAB	E	20				38	7.000						38 7	38 7	10180
429	4-S902	SLAB	E	20				38	7.000						38 7	38 7	11056
52	5-U50	BACKWALL	E	19				2	6.000	18.000					4 0	3 10	208
52	4-U51	BACKWALL	E	10							12.000	15.000			3 3	3 1	107
368	5-S201	SLAB	E	20				36	0.000						36 0	36 0	13818
624	4-S202	SLAB	E	20				36	0.000						36 0	36 0	15006
138	5-S401	SLAB	E	20				37	11.000						37 11	37 11	5458
234	4-S402	SLAB	E	20				37	11.000						37 11	37 11	5928
444	5-S501	SLAB	E	20				37	11.000						37 11	37 11	16374
702	4-S502	SLAB	E	20				37	11.000						37 11	37 11	17784
138	5-S601	SLAB	E	20				28	9.000						28 9	28 9	4138
234	4-S602	SLAB	E	20				28	9.000						28 9	28 9	4494

STATE: MO. PROJ. NO. FAT-20-3/LWS. SHEET NO. 95



BAR SIZE	D (IN.)	180° HOOKS		90° HOOKS	
		A OR G	J	A OR G	H
#3	2-1/4"	5"	3"	6"	
#4	3"	6"	4"	8"	
#5	3-3/4"	7"	5"	10"	
#6	4-1/2"	8"	6"	12"	
#7	5-1/4"	10"	7"	14"	
#8	6"	11"	8"	16"	
#9	9-1/2"	15"	11-3/4"	19"	
#10	10-3/4"	17"	13-1/4"	22"	
#11	12"	19"	14-3/4"	2'-0"	
#14	18-1/4"	2'-3"	21-3/4"	2'-7"	

TWO ADDITIONAL S5, S6 AND H50 ARE INCLUDED IN BAR BILL FOR TESTING.

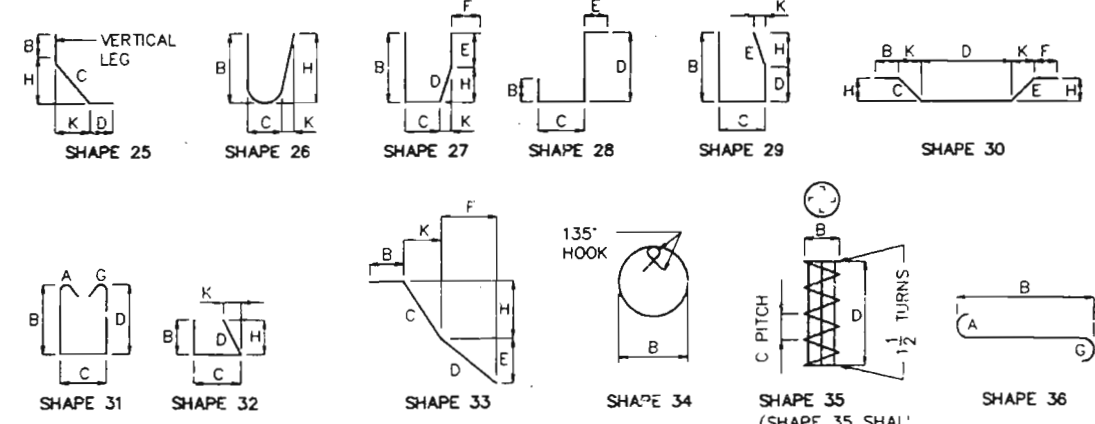
NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT
S = STIRRUP
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.

NO. EA. = NUMBER OF BARS OF EACH LENGTH. NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATOR'S USE. (NEAREST INCH) ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS. FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) = FY 60,000 PSI.



BENDING DIAGRAMS BOONE-COOPER COUNTIES

REINFORCING SCHEDULE STAGE I CONSTRUCTION

SHEET NO. 72 OF 73 L096223



Revised February 4, 1994

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS

BUCHER, WILLIS & RATLIFF
ENGINEERS - PLANNERS - ARCHITECTS
DRAWN BY: RCC 7/93
TRACED BY: RCC 7/93
CHECKED BY: DMA 7/93

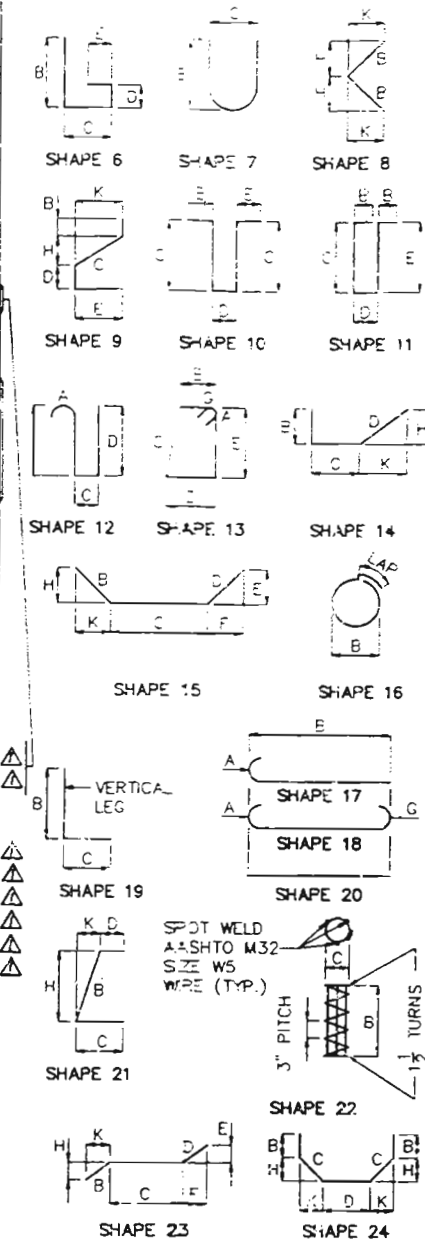
LIFT DATE WITH 87/1/1/93 @ 11:18

STAGE II CONSTRUCTION BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT							
								B		C		D		E					F		H		K		
								FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.	FT.
SUPERSTRUCTURE																									
OPTIONAL SLIP FORM BARRIER																									
164	5-C1	BARRIER CURB	E	20												8 0	8 0	1368							
4	5-H30	WINGWALL	E	20												3 3	3 3	14							
4	6-H52	BACKWALL	E	17												34 10	35 6	213							
4	4-H53	BACKWALL	E	20												34 10	34 10	93							
3064	5-R1	BARRIER CURB	E	19												2 6	3 500	8533							
3032	F-R2	BARRIER CURB	E	15												2 6	3 500	8444							
3010	5-R3	BARRIER CURB	E	19												17 000	6 000	5494							
3010	5-R4	BARRIER CURB	E	27												6 000	11 125	8885							
34	5-R5	BARRIER CURB	E	20												39 1	39 1	3424							
196	5-R6	BARRIER CURB	E	20												7 8	7 8	1568							
63	5-R7	BARRIER CURB	E	20												30 6	30 6	2004							
84	5-R8	BARRIER CURB	E	20												35 1	35 1	3073							
42	5-R9	BARRIER CURB	E	20												36 3	36 3	1588							
42	5-R10	BARRIER CURB	E	20												37 10	37 10	1657							
126	5-R11	BARRIER CURB	E	20												37 6	37 6	4928							
42	5-R12	BARRIER CURB	E	20												28 4	28 4	1241							
14	5-R13	BARRIER CURB	E	20												27 8	27 8	404							
21	5-R14	BARRIER CURB	E	20												37 4	37 4	818							
28	5-R15	BARRIER CURB	E	20												31 9	31 9	927							
21	5-R16	BARRIER CURB	E	20												37 2	37 2	814							
18	5-R50	BARRIER CURB	E	17												2 9	2 9	52							
15	5-R53	BARRIER CURB	E	13												8 000	21 000	8 000	21 000	5 9	5 9	90			
4	5-R54	BARRIER CURB	E	27												12 500	13 000	8 500	8 000	5 000	7 000	3 6	3 3	14	
8	5-R55	BARRIER CURB	E	27												12 500	13 000	11 125	6 000	6 375	9 125	3 7	3 4	28	
8	5-R56	BARRIER CURB	E	10												6 000	23 000					2 11	2 9	23	
28	5-R57	BARRIER CURB	E	20												3 8	3 8	3 8	107						
6	5-R58	BARRIER CURB	E	14												22 000	23 000			5 000	22 500	3 9	3 9	23	
2	5-R59	BARRIER CURB	E	17												3 6	3 6	9				4 1	4 1	9	
6416	5-R100	MEDIAN	E	15												3 3	4 000			3 3	3 000	7 500	3 8	3 6	23422
6416	5-R101	MEDIAN	E	9												15 000	16 250	15 000		3 000	16 000	3 10	3 7	23957	
192	5-R102	MEDIAN	E	20												35 6	6 000					35 6	35 6	7109	
144	5-R103	MEDIAN	E	20												39 1	3 000					39 1	3 000	5870	
192	5-R104	MEDIAN	E	20												37 7	7 000					37 7	7 000	7526	
48	5-R105	MEDIAN	E	20												28 4	4 000					28 4	4 000	1418	
16	5-R106	MEDIAN	E	20												28 7	7 000					28 7	7 000	477	
86	5-R107	MEDIAN	E	20												38 1	1 000					38 1	38 1	3495	
16	5-R108	MEDIAN	E	20												26 1	1 000					26 1	26 1	435	

STAGE II CONSTRUCTION BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT							
								B		C		D		E					F		H		K		
								FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.	FT.
5978	5-S2	SLAB	E	20												34 10	34 10	21767							
5976	4-S4	SLAB	E	20												34 10	34 10	139040							
2782	4-S5	SLAB	E	20												10 6	10 6	19513							
6	5-S7	SLAB	E	20												13 0	13 0	81							
232	5-S101	SLAB	E	20												36 0	36 0	8711							
392	4-S102	SLAB	E	20												36 0	36 0	9427							
232	5-S201	SLAB	E	20												36 0	36 0	8711							
392	4-S202	SLAB	E	20												36 0	36 0	9427							
522	5-S301	SLAB	E	20												39 8	39 8	21598							
882	4-S302	SLAB	E	20												39 8	39 8	23373							
87	5-S401	SLAB	E	20												37 11	37 11	3441							
147	4-S402	SLAB	E	20												37 11	37 11	3724							
87	5-S501	SLAB	E	20												37 11	37 11	3441							
147	4-S502	SLAB	E	20												37 11	37 11	3724							
87	5-S601	SLAB	E	20												28 9	28 9	2609							
147	4-S602	SLAB	E	20												28 9	28 9	2823							
58	5-S701	SLAB	E	20												28 10	28 10	1744							
98	4-S702	SLAB	E	20												28 10	28 10	1887							
319	5-S801	SLAB	E	20												38 7	38 7	12836							
539	4-S802	SLAB	E	20												38 7	38 7	13891							
68	5-U50	BACKWALL	E	19												2 6	18 000					4 0	3 10	272	
68	4-U51	BACKWALL	E	10													12 000	15 000					3 3	3 1	140
464	5-S201	SLAB	E	20												36 0	36 0	17422							
784	4-S202	SLAB	E	20												36 0	36 0	18854							
174	5-S401	SLAB	E	20												37 11	37 11	6882							
294	4-S402	SLAB	E	20												37 11	37 11	7448							
522	5-S501	SLAB	E	20												37 11	37 11	20646							
882	4-S502	SLAB	E	20												37 11	37 11	22344							
174	5-S601	SLAB	E	20												28 9	28 9	5218							
294	4-S602	SLAB	E	20												28 9	28 9	5646							



THE WELDED WIRE FABRIC OPTIONAL REINFORCING FOR THE MEDIAN BARRIER REPLACES R102 THRU R108 BARS.

NOTES: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG. TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT
 S = STIRRUP
 X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES
 V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.

NO. EA. = NUMBER OF BARS OF EACH LENGTH.
 NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATOR'S USE. (NEAREST INCH)
 ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS. FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) - FY 60,000 PSI.

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

5d FOR #4 AND #5, 12d FOR #6

90° STIRRUP, 135° STIRRUP

STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK		135° HOOK
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2			

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT No. & SEC.	SHEET NO.
5	MO	I-70-3(15) A&B	
COUNTY		ROUTE	SECTION
5 COOPER		I-70	

TITLE SHEET
SEE

BOONE CO. RTE. I-70

I-70-3(15) A&B

L-962

FINAL SURVEY NOTE BOOK NO.	SURVEYED BY	DATE

ORIGINAL SURVEY NOTE BOOK NO.	SURVEYED BY	DATE

15

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	SHEET NO.
5	MO.	I-229(14) & (16) AB&C	
	COUNTY	ROUTE	SEC.
5	COOPER	FAI-1	

TITLE SHEET
SEE

BOONE CO. RTE. FAI-1

I-229 (14) & (16)

L-962

FINAL SURVEY	DATE
BY	
NO. OF SHEETS	
NO. OF PLATS	
NO. OF AREAS CHECKED	

ORIGINAL SURVEY	DATE
BY	
NO. OF SHEETS	
NO. OF PLATS	
NO. OF AREAS CHECKED	

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