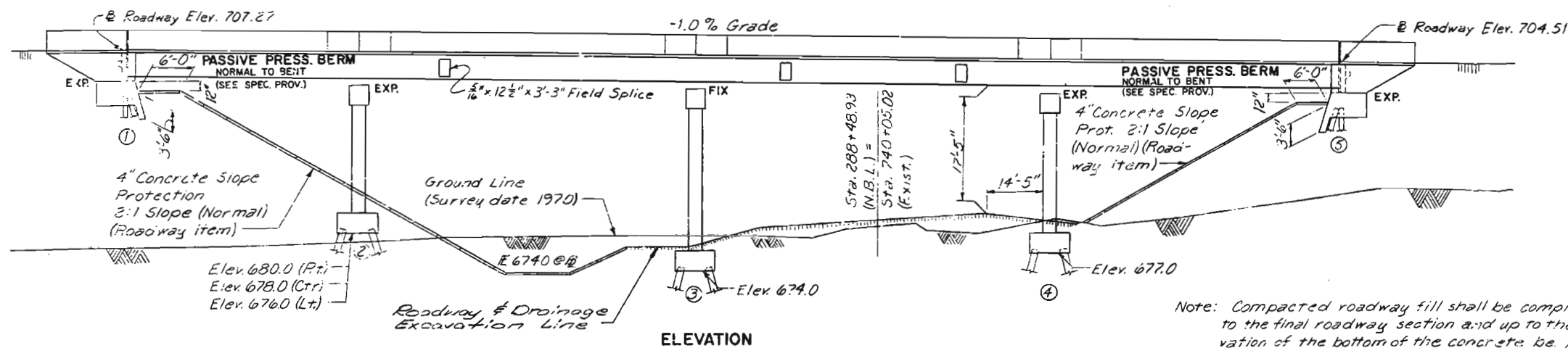


MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

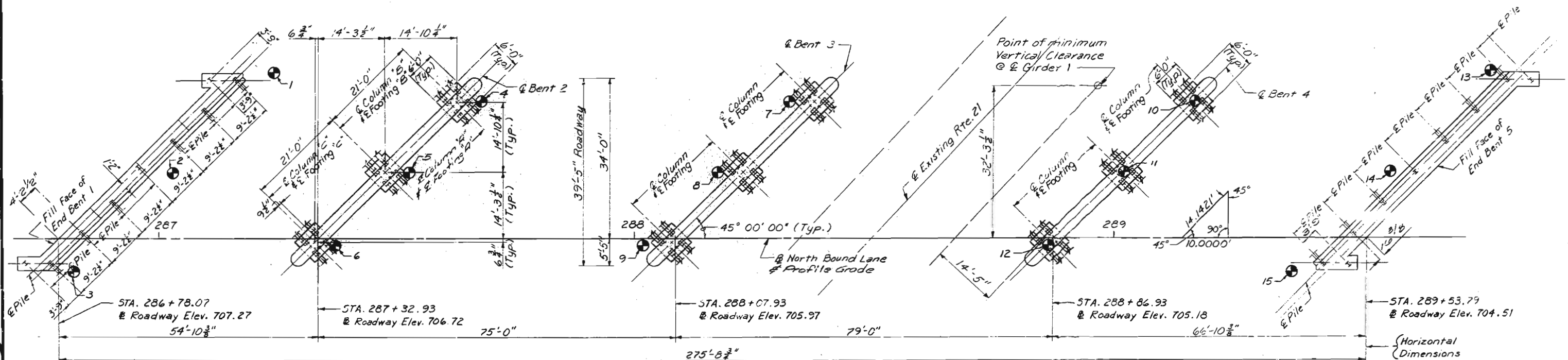
FED. ROAD DIST. NO.	STATE	FED. AND PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	97	
Sec. 51 3E Trp. 42N 4E 11 Ege. 5E					

(52'-75'-79'-64') CONTINUOUS COMPOSITE R GIRDER SPANS

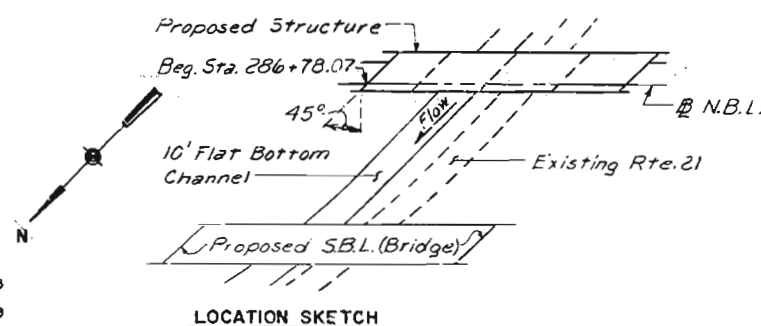


Note: For passive pressure fill requirements, see Special Provisions.

Note: Compacted roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete b.e. m within the limits of the structure and for not less than 25' in back of the fill face of the end bents before piles are driven for any bents falling within the embankment section.



Note: "B" Indicates location of borings. For Boring Data see sheet No. 3



DESIGNED DEC. 1978
DETAILED JAN. 1979
CHECKED FEB. 1979

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

SUBMITTED BY
ERNEST BROWN, P.E. MO. 13022

Sheet No. 1 of 13

B.M. #50 - Elev. 676.76 "a" on S. end of Hdw. of Culv. @ Ent. to Pine L. near
#51 - Elev. 695.19 Spike in trunk of 36" Sycamore 10' Rt. of Sta.
294+60 @ of N.B. Lane

BRIDGE N.B. LANE OVER EXISTING ROUTE 21

STATE ROAD FROM ROUTE 141 TO OTTO

ABOUT 3 MILES NORTH OF OTTO

PROJECT NO. F-31-2(35)

STA. 286+78.07

JOB NO. 6-P-21-17

RTE. 21 N.B.L.

JEFFERSON

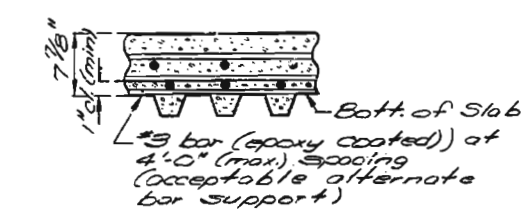
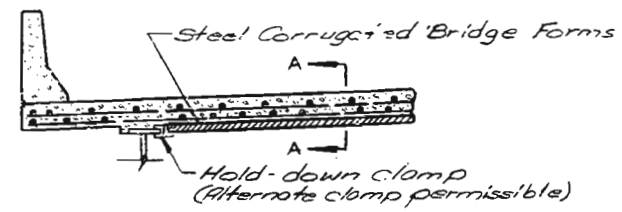
COUNTY

DATE 6/15/87

STD. 611.60
STD. 706.35
A-2942

MISSOURI STATE HIGHWAY DEPARTMENT

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



SECTION A-A

Note: Bottom transverse reinforcing steel shall be placed to match form corrugations. To determine haunch for the stay-in-place alternate add 5/8" to the haunch for the cast-in-place alternate.

ESTIMATED QUANTITIES				
ITEM	UNIT	SUBSTR.	SUPERSTR.	TOTAL
Reinforcing Steel (Epoxy Coated)	Lbs.	3050		3050
Vertical Drain at End Bents	Each			2
File Print Reinforcement	Each	12		12
Class I Excavation	Cu. Yds.	115		115
Structural Steel Pile (10")	Lin. Ft.	1,167		1,167
Reinforcing Steel (Grade 60)	Lbs.	33850		33850
Fabricated Structural Carbon Steel	Lbs.	232,360		232,360
Class B Concrete	Cu. Yds.	243.2		243.2
() Slab on Steel (See Spec. Prov.)	Sq. Yd.		1274	1274
Painting (System B) Green	Ton		115.5	115.5
Elastomeric Exp. Jt. Seal (3.0")	Lin. Ft.		112	112
Safety Barrier Curb	Lin. Ft.		601	601
Slab Drains	Each		36	36
Laminated Neoprene Bgs. Pads (Steel Structures)	Each		25	25

Note: All concrete and reinforcement in safety barrier curbs is included with superstructure quantities.

Concrete above upper construction joint in backwall at end bents No. 1 & 5 is included with Class B (substructure) quantities.

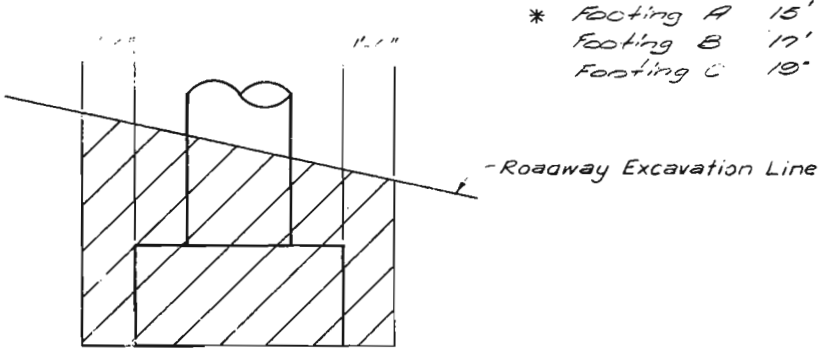
PILE & FOOTING DATA						
BENT NO.		1	2	3	4	5
BEARING PILE	Pile Type and Size	10BP42	10BP42	10BP42	10BP42	10BP42
	Number	9	12	12	12	9
	Approximate Length Ft.	39	*	12	15	32
	Design Bearing (Tons)	26	45	53	45	32
	Hammer Energy req'd Ft. Lbs.	7000	7000	7000	7000	7000

Note: Minimum energy requirement of hammer based on plan length and design bearing value of piles.

All piles shall be driven to practical refusal. Manufactured pile point reinforcement shall be used on all piles at Bent No. 4. (See Spec. Prov.)

Estimated Quantities for Alternate Slab		
Slab on Steel		
Qty.	Unit	Qty.
	Epoxy Coated	Cu. Yd.
C.I.P. Conventional Forms	79290	311.5
Precast Panel Forms	51480	220.0
Stay-In-Place Forms	79290 **	291.7*

The table of Estimated Quantities for Alternate Slabs 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 Alternate Slab used. See Special Provisions for alternate methods of forming slabs. * Does not include concrete required to fill corrugation of S.I.P. forms. ** Does not include reinforcing bars used as bar supports. Precast panel quantities based on skewed end panels.



LIMITS OF EXCAVATION

GENERAL NOTES

DESIGN SPECIFICATION: A.A.S.H.T.O. - 1983 & Interims 1984 & 1985 Load Factor Design

DESIGN LOADING:
HS-20-44
15#/Sq. ft. Future Wearing Surface
Earth 120#/cu. ft., Equivalent Fluid Pressure 30#/cu. ft.
Fatigue Stress - Case II

DESIGN UNIT STRESSES:
Class B Concrete (Substructure) $f'_c = 3000$ psi
Class B1 Concrete (Safety Barrier Curb) $f'_c = 4000$ psi
Class B2 Concrete (Superstructure except Safety Barrier Curb) $f'_c = 4000$ psi
Reinforcing Steel (Grade 60) $f_y = 60,000$ psi
Structural Carbon Steel $f_y = 36,000$ psi
Steel Pile $f_b = 9,000$ psi

STRUCTURAL STEEL:
Field Connections, High Strength Bolts $\frac{3}{4}$ " Dia., Holes $\frac{13}{16}$ " Dia. except as noted.
Turn of Nut Method of tensioning high strength bolts will be permitted.

PAINTING:
Paint: System B by Contractor in accordance with Std. Spec. 712.12 (Color of the final field coat for System B shall be green.

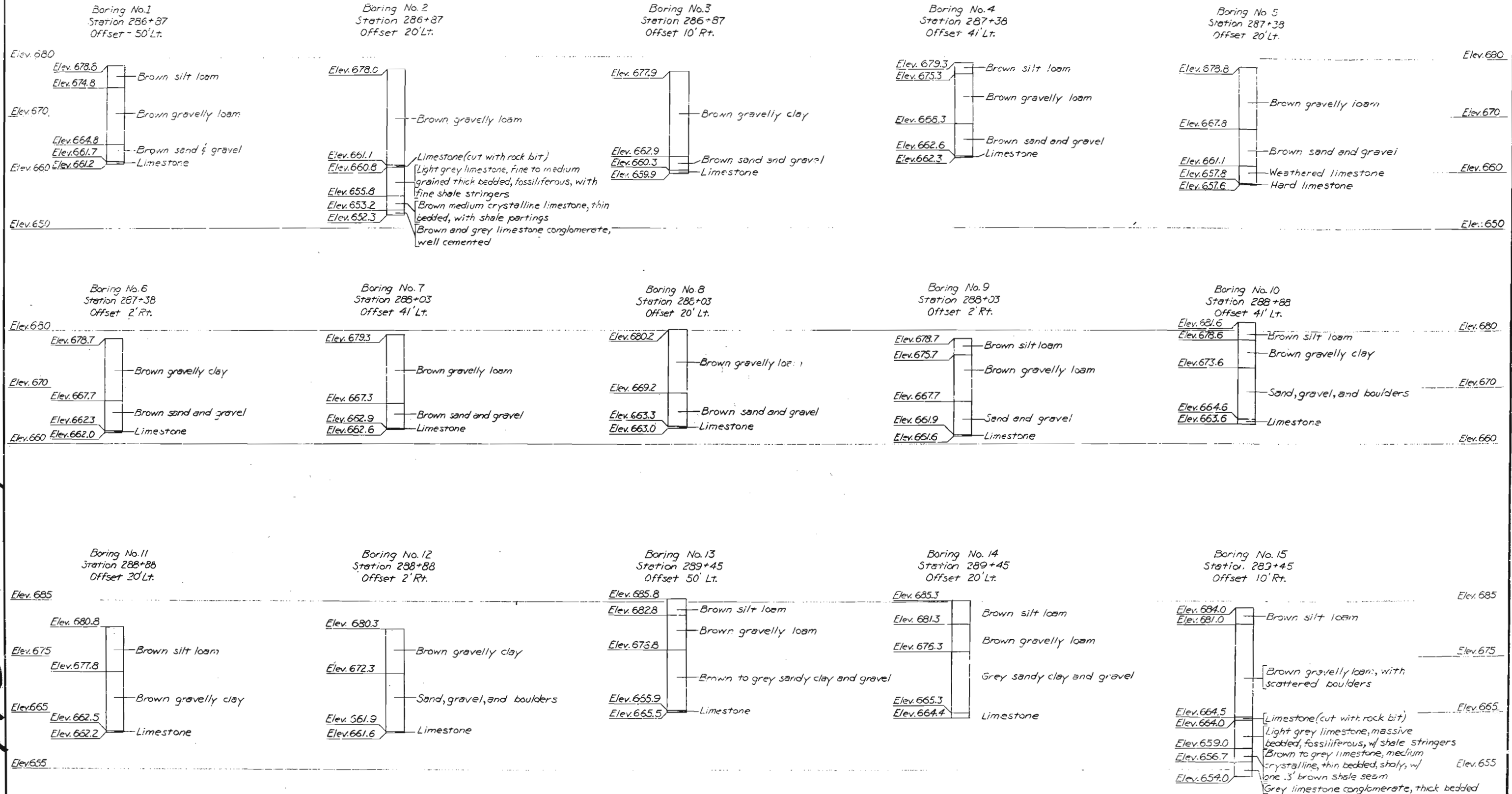
CONSTRUCTION CLEARANCE:
A minimum vertical clearance of 14'-6" from Crown of existing lanes and a minimum lateral clearance of 28'-0" centered on existing lanes shall be maintained during construction.

REINFORCING STEEL:
Minimum clearance to reinforcing steel shall be 1 1/2" unless otherwise shown.
All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least 1/2".

JOINT FILLER:
All joint filler shall meet the requirement of 1057.2.4, except as noted.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		79	99	



BORING DATA

Note: For location of Borings see plat No. 1.

DETAILED JAN. 1979
CHECKED FEB. 1979

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

Sheet No. 3 of 19.

JEFFERSON COUNTY

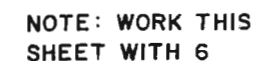
A-2942

TT 222

Note: Top of Backwall and Expansion Device for End Bents 1/5 to conform to Crown of Roadway Slab. Backwall above upper construction joints shall not be poured until super-structure slab has been poured in adjacent span.

Field bending shall be required at wings for *6A4 & *4A5 bars in backwalls with Expansion Device and for *6W3 and *6W13 when necessary to conform to slope of wing.

See Sheet 7 for details of anchor bolt wells.



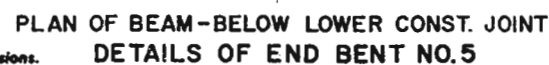
A-2942

0537

Note: Top of Backwall and Expansion Device for End Bents 1&5 to conform to Crown of Roadway Slab. Backwall above upper construction joints shall not be poured until superstructure slab has been poured in adjacent span.

Field bending shall be required at wings for #6C4 & #4C5 bars in backwalls with Expansion Device and for #6W3 and #6W13 when necessary to conform to slope of wing.

See Sheet 7 for details of anchor bolt wells.



DETAILED JAN. 1979
CHECKED FEB. 1979

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

Sheet No. 5 of 19.

JEFFERSON COUNTY

A-2942

4531

Structural drawing of a beam-column joint showing reinforcement details. The drawing includes dimensions for overall size, joint size, and reinforcement spacing. Key components labeled include 2-#6W1, 2-#6W5, 2-#6W2@6, 2-#6W8@12, 2-#6W9@12, 2-#4W6, and 2-#4W7. A constant joint is indicated with an arrow pointing to the joint area. The drawing is oriented with 'Near' on the right and 'Far' on the left.

The diagram shows a side view of a bolted connection between two plates. The left plate has a thickness of 1/2 inch. The right plate has a thickness of 1/2 inch. The total width of the assembly is 4 inches. The distance from the centerline of the bolt hole to the edge of the plate is 1 1/8 inches. The bolt hole diameter is 3/4 inch. The bolt is labeled W10. The nut is labeled W11. The washer is labeled W1. The bolts are labeled W2 or W12. The nuts are labeled W5 or W17. The label "Const. Jt." appears twice, indicating constant joint conditions.

Technical drawing of a structural connection showing a beam (W5) and a column (W6) with various reinforcement bars (A1, A2, A3, A5, W3, W4) and dimensions (14", 3", 10").

Hand-drawn structural steel connection detail for a beam-to-column joint. The diagram shows a top-down view of the connection. A horizontal beam is connected to a vertical column. The beam has a top flange with 2-#6 W1 bars and a bottom flange with 2-#6 W5 bars. The column has a top flange with 2-#4 W6 bars and a bottom flange with 2-#6 W7 bars. The connection is a 'Const. Joint' (Constant Moment Joint). Dimensions are given in feet and inches. Key dimensions include: beam depth 21'-9 1/2", column depth 3'-0", beam flange thickness 1'-6", column flange thickness 1'-6", and various spacing dimensions for reinforcement bars. Reinforcement bars are labeled with their size and quantity, such as 2-#6 W1, 2-#6 W5, 2-#4 W6, 2-#6 W7, 2-#6 W2 @ 12" cts (N.F.), 5-#6 W10 @ 12" cts (N.F.), 8-#6 W22 @ 12" cts (F.F.), 5-#6 W11 @ 12" cts (F.F.), 2-#6 W2 @ 12" cts (N.F.), and 3-#6 W1 @ 12" cts (F.F.). A 'Const. Joint Key 2" x 4" (Nominal)' is shown at the bottom right. The drawing is labeled 'El. 703.18' and 'El. 703.32'.

[illegible]

DETAIL OF WING BENT NO. 1

3'-7 3/4" 14'-0" 14'-0"

EI. 703.79 EI. 703.61

Const. Joint 2-#6 W1

2-#4 W15 2-#6 W16

1'-0" 4'-2" 4'-8" W14 @ 10" 12" cts. 4'-8" W13 @ 8" cts. 12" cts. 1'-8 1/2" 1'-0" 1'-6" 4'-0" 2-#6 W17 4'-0" 4'-8" W23 @ 8" cts. (6 bars) 8'-7 1/8" 1'-6" 7'-7" 3'-5 1/2" 2-#6 W26

Const. Jt. Key 2" x 4" (Nominal)

5-#6 W10 @ 12" cts. (N.F.) 1'-0" 8-#6 W24 @ 12" cts. (U.F.) 1'-7" 2" 5-#6 W11 @ 12" cts. (F.F.) 2-#6 W25 @ 12" cts. (F.F.) 4'-11 3/4" 9'-0"

Technical drawing of a structural connection between a column and a beam. The column is labeled W5 and the beam is labeled W1 or W20. The connection is a moment-resisting joint. Reinforcement includes #4 W6 bars and #3 bars. Dimensions include 1'-9" for the column height, 1'-0" for the beam depth, and 1'-0" for the joint length. The joint is filled with concrete. Labels C1, C2 or C3 point to the concrete. W3, W4, and W7 are also labeled.

Technical drawing of a pile cap cross-section. The drawing shows a rectangular pile cap with various dimensions and reinforcement details. Key dimensions include:

- Overall width: 4'-3 1/2"
- Overall height: 4'-11 1/2"
- Top reinforcement: 4'-3 1/2" (width), 1'-0" (height), 2'-2" (width), 1'-1 1/2" (height)
- Bottom reinforcement: 1'-10" (width), 1'-2" (height), 1'-10 3/8" (width), 4'-3 1/2" (height)
- Reinforcement labels: A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A175, A176, A177, A178, A179, A180, A181, A182, A183, A184, A185, A186, A187, A188, A189, A190, A191, A192, A193, A194, A195, A196, A197, A198, A199, A200, A201, A202, A203, A204, A205, A206, A207, A208, A209, A210, A211, A212, A213, A214, A215, A216, A217, A218, A219, A220, A221, A222, A223, A224, A225, A226, A227, A228, A229, A230, A231, A232, A233, A234, A235, A236, A237, A238, A239, A240, A241, A242, A243, A244, A245, A246, A247, A248, A249, A250, A251, A252, A253, A254, A255, A256, A257, A258, A259, A260, A261, A262, A263, A264, A265, A266, A267, A268, A269, A270, A271, A272, A273, A274, A275, A276, A277, A278, A279, A280, A281, A282, A283, A284, A285, A286, A287, A288, A289, A290, A291, A292, A293, A294, A295, A296, A297, A298, A299, A300, A301, A302, A303, A304, A305, A306, A307, A308, A309, A310, A311, A312, A313, A314, A315, A316, A317, A318, A319, A320, A321, A322, A323, A324, A325, A326, A327, A328, A329, A330, A331, A332, A333, A334, A335, A336, A337, A338, A339, A340, A341, A342, A343, A344, A345, A346, A347, A348, A349, A350, A351, A352, A353, A354, A355, A356, A357, A358, A359, A360, A361, A362, A363, A364, A365, A366, A367, A368, A369, A370, A371, A372, A373, A374, A375, A376, A377, A378, A379, A380, A381, A382, A383, A384, A385, A386, A387, A388, A389, A390, A391, A392, A393, A394, A395, A396, A397, A398, A399, A400, A401, A402, A403, A404, A405, A406, A407, A408, A409, A410, A411, A412, A413, A414, A415, A416, A417, A418, A419, A420, A421, A422, A423, A424, A425, A426, A427, A428, A429, A430, A431, A432, A433, A434, A435, A436, A437, A438, A439, A440, A441, A442, A443, A444, A445, A446, A447, A448, A449, A450, A451, A452, A453, A454, A455, A456, A457, A458, A459, A460, A461, A462, A463, A464, A465, A466, A467, A468, A469, A470, A471, A472, A473, A474, A475, A476, A477, A478, A479, A480, A481, A482, A483, A484, A485, A486, A487, A488, A489, A490, A491, A492, A493, A494, A495, A496, A497, A498, A499, A500, A501, A502, A503, A504, A505, A506, A507, A508, A509, A510, A511, A512, A513, A514, A515, A516, A517, A518, A519, A520, A521, A522, A523, A524, A525, A526, A527, A528, A529, A530, A531, A532, A533, A534, A535, A536, A537, A538, A539, A540, A541, A542, A543, A544, A545, A546, A547, A548, A549, A550, A551, A552, A553, A554, A555, A556, A557, A558, A559, A560, A561, A562, A563, A564, A565, A566, A567, A568, A569, A570, A571, A572, A573, A574, A575, A576, A577, A578, A579, A580, A581, A582, A583, A584, A585, A586, A587, A588, A589, A590, A591, A592, A593, A594, A595, A596, A597, A598, A599, A600, A601, A602, A603, A604, A605, A606, A607, A608, A609, A610, A611, A612, A613, A614, A615, A616, A617, A618, A619, A620, A621, A622, A623, A624, A625, A626, A627, A628, A629, A630, A631, A632, A633, A634, A635, A636, A637, A638, A639, A640, A641, A642, A643, A644, A645, A646, A647, A648, A649, A650, A651, A652, A653, A654, A655, A656, A657, A658, A659, A660, A661, A662, A663, A664, A665, A666, A667, A668, A669, A670, A671, A672, A673, A674, A675, A676, A677, A678, A679, A680, A681, A682, A683, A684, A685, A686, A687, A688, A689, A690, A691, A692, A693, A694, A695, A696, A697, A698, A699, A700, A701, A702, A703, A704, A705, A706, A707, A708, A709, A710, A711, A712, A713, A714, A715, A716, A717, A718, A719, A720, A721, A722, A723, A724, A725, A726, A727, A728, A729, A730, A731, A732, A733, A734, A735, A736, A737, A738, A739, A740, A741, A742, A743, A744, A745, A746, A747, A748, A749, A750, A751, A752, A753, A754, A755, A756, A757, A758, A759, A760, A761, A762, A763, A764, A765, A766, A767, A768, A769, A770, A771, A772, A773, A774, A775, A776, A777, A778, A779, A780, A781, A782, A783, A784, A785, A786, A787, A788, A789, A790, A791, A792, A793, A794, A795, A796, A797, A798, A799, A800, A801, A802,

[illegible]

DETAIL OF WINGS BENT NO. 5

-Relate to E.J.S. Detail
Sheet 12.

Technical drawing of a square plate. The top view shows a square with a side length of 3'-0". The thickness of the plate is 1'-0". The drawing includes a fillet radius of 1/4" at the corners and a hole diameter of 3/16". The hole spacing is 1/8". The side view shows the plate's profile with a thickness of 1'-0".

NOTE: WORK THIS SHEET
WITH 4.5

Butt. splice (if required,
Top of lower section
to be cut square

DETAILED JAN. 1979
CHECKED FEB. 1979

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

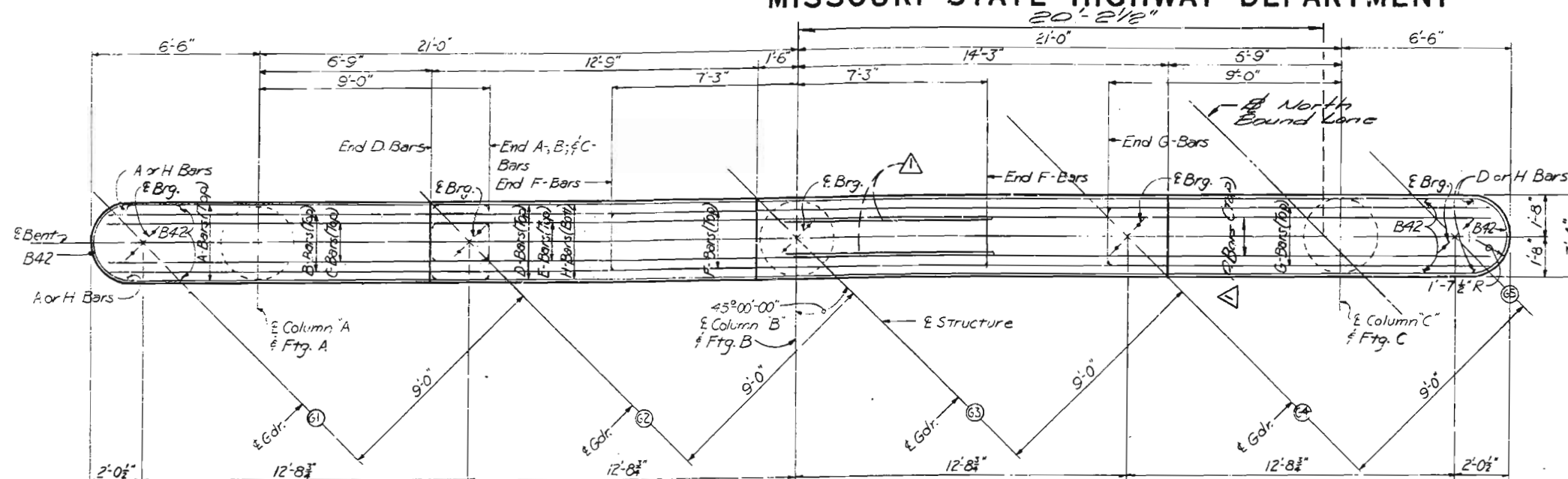
Sheet No. 6 of 19.

JEFFERSON COUNTY

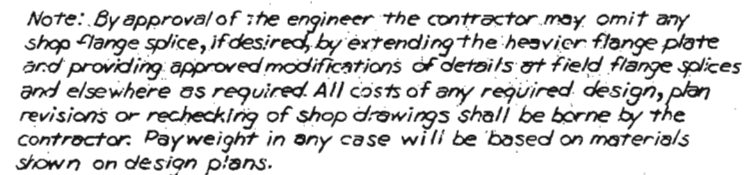
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MISSOURI STATE HIGHWAY DEPARTMENT

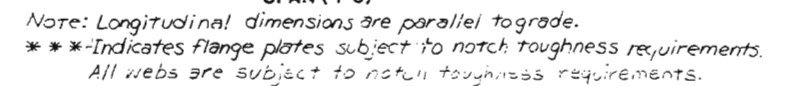
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	11	10	103	



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		29	104	



Note: Longitudinal dimensions are parallel to grade along top of slab.
Fabricated Structural Steel shall be A36,
except as noted.



A-2942

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	PHYSICAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		3	105	

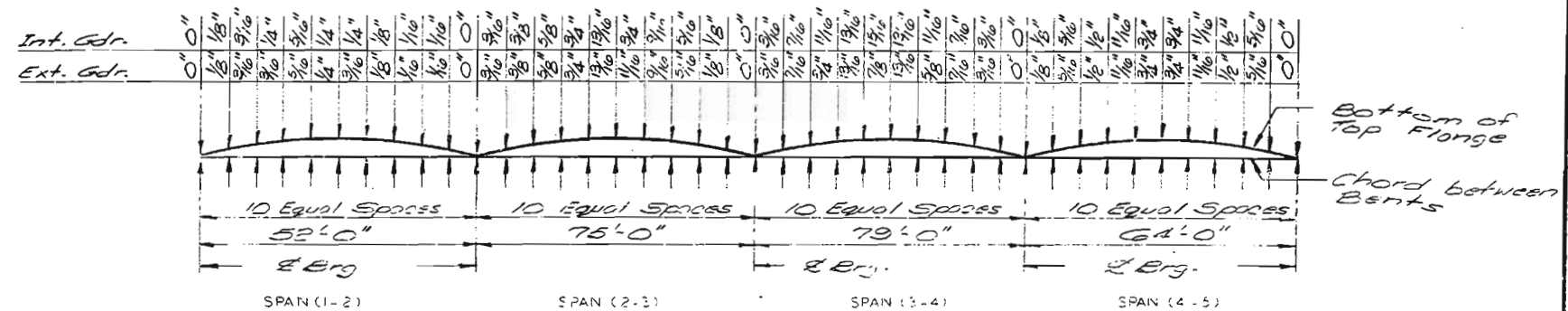
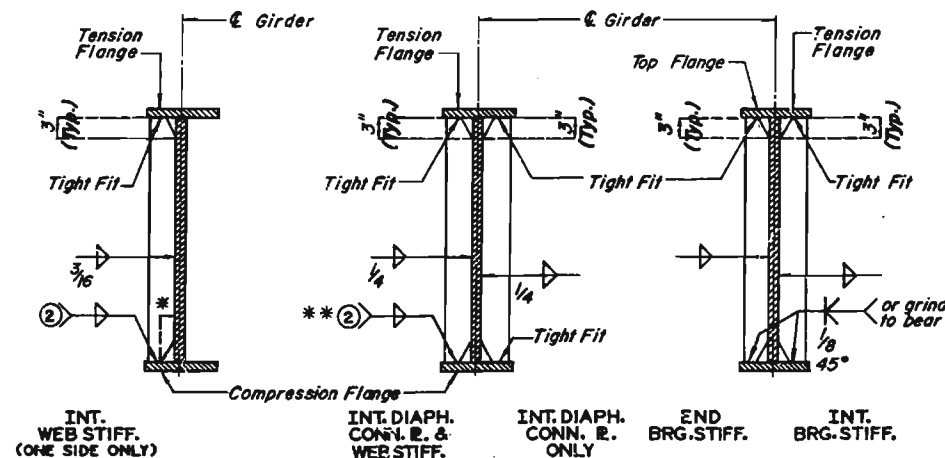


PLATE GIRDER CAMBER DIAGRAM

Note: Camber includes allowance for dead load deflection due to concrete slab, curb and structural rest.

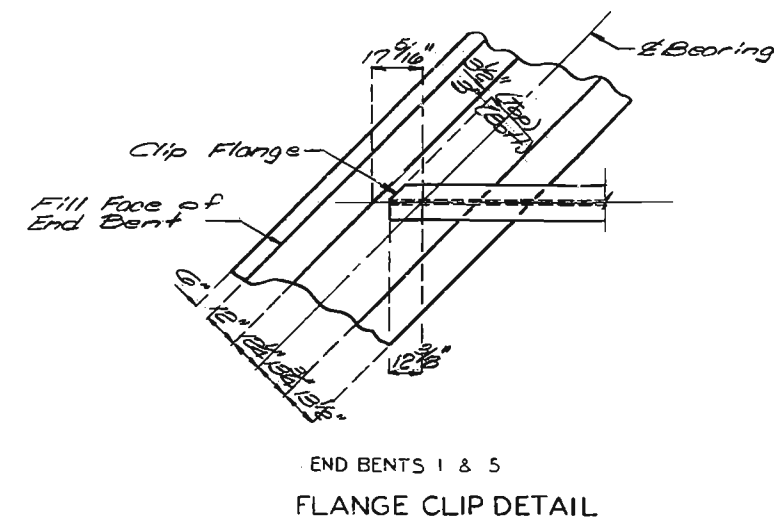
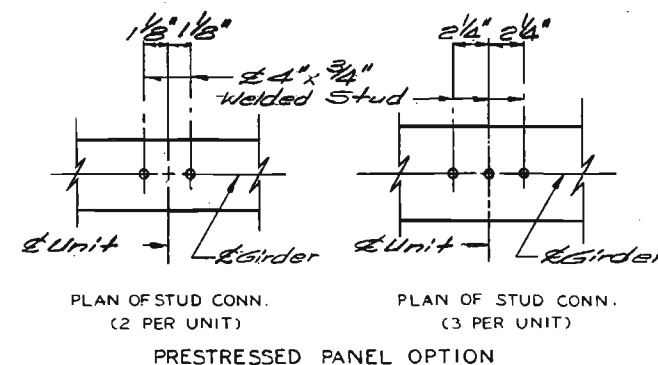
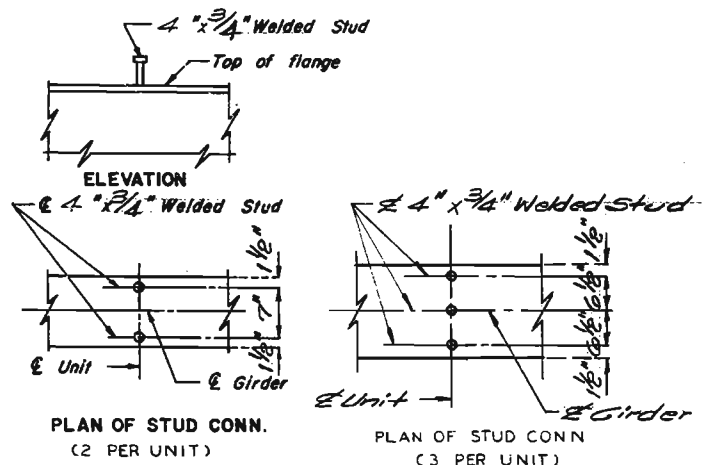
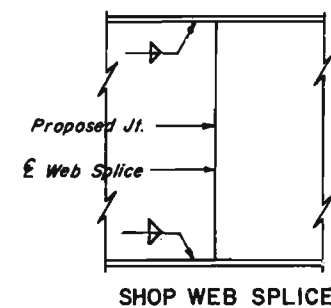
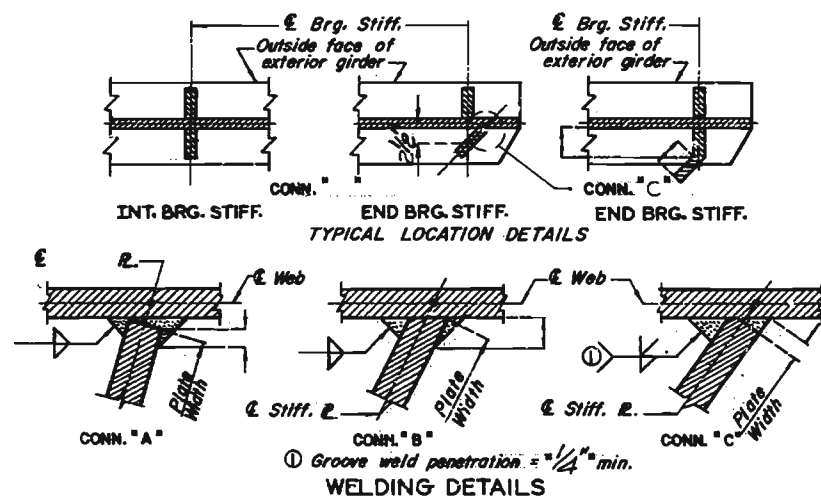
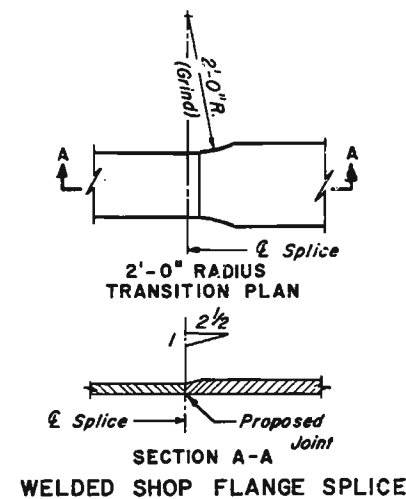
18% of dead load deflection due to weight of structural steel.

SPICE LOCATION	TABLE OF DIMENSIONS — FIELD SPICE													
	Flange	a	b	c	d	e	f	g	j	k	n	p	q	
10"x12" to 16"x1" R	10"x3/8"	10"	3/8"	18 1/2"	4"	1/2"	18 1/2"	2"	2	2	10"	1/4"	9"	
10"x12" to 16"x1 1/2" R	10"x3/4"	10"	3/8"	18 1/2"	4"	1/2"	18 1/2"	2"	2	2	10"	1/2"	9"	
10"x12" to 16"x2" R	10"x3/4"	10"	3/8"	18 1/2"	4"	1/2"	18 1/2"	2"	2	2	10"	3/4"	9"	
12"x1" R to 16"x1" R	12"x1"	12"	1/2"	21 6 1/2"	3"	3/8"	21 0 1/2"	2 1/2"	4	3	—	—	—	
12"x1" R to 16"x1 1/2" R	12"x1"	12"	1/2"	21 6 1/2"	5"	3/8"	21 0 1/2"	2 1/2"	4	3	12"	1/4"	15"	
12"x1" R to 16"x2" R	12"x1"	12"	1/2"	21 6 1/2"	5"	3/8"	21 0 1/2"	2 1/2"	4	3	12"	3/4"	15"	



② Weld to compression flange as located on ELEVATION OF GIRDER.
 * 1/2" typical for all Int. Web Stiff., Int. Diaph. Conn. R. and Brg. Stiff.,
 ** Weld may be omitted on interior girders, and Tight Fit used when Int. Diaph. Conn. R. is required on both sides.

WELDING DETAILS



DETAIL OF SHEAR CONNECTORS

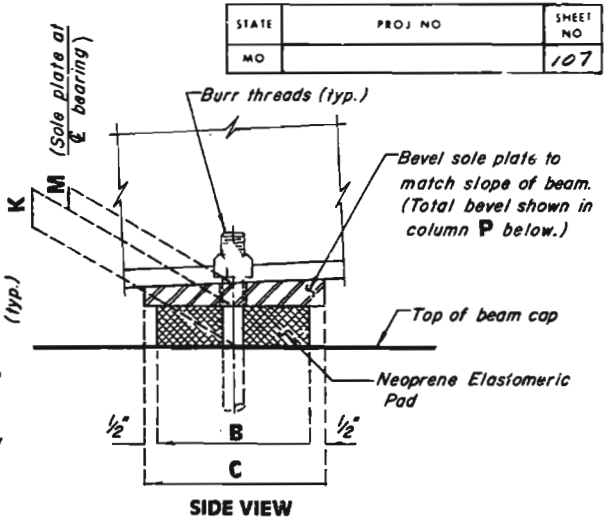
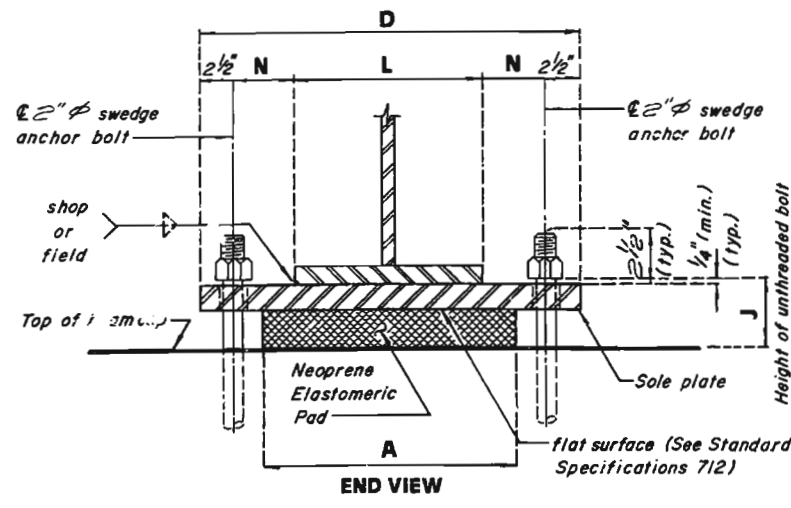
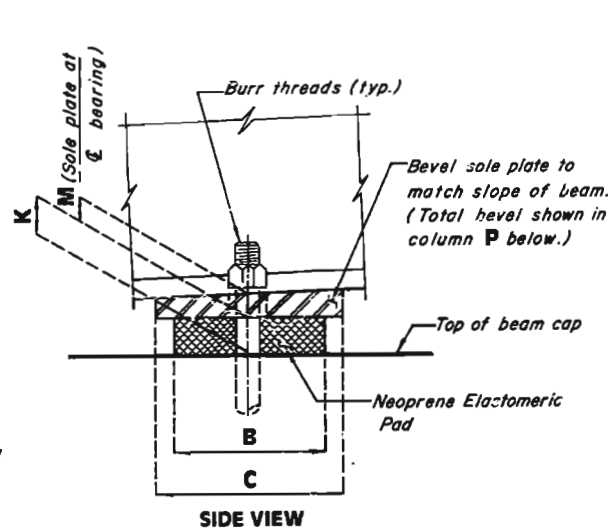
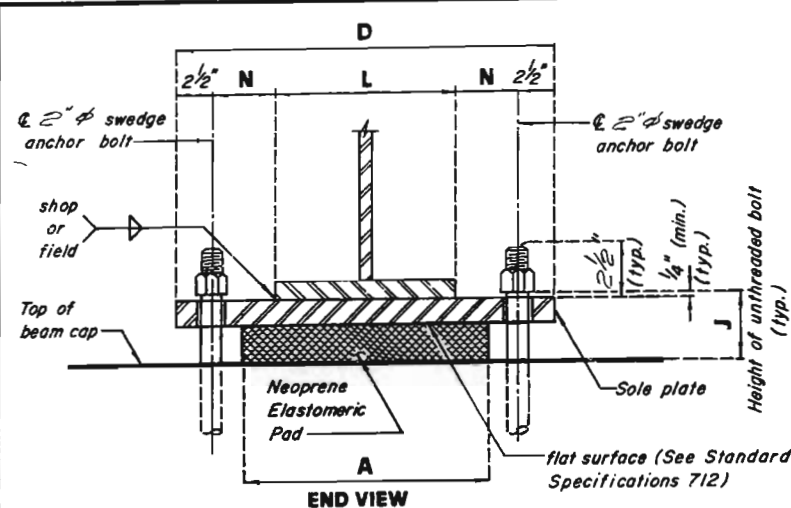
Note: Weight of 1270 lbs. of shear connectors is included in weight of Fabricated Structural Carbon Steel.

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

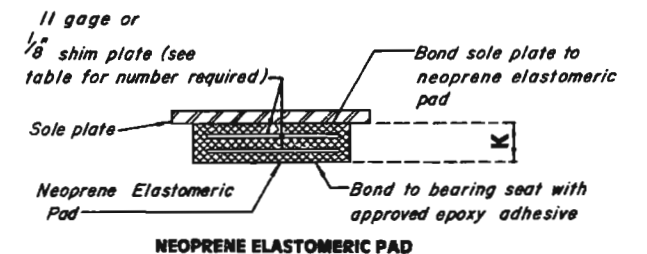
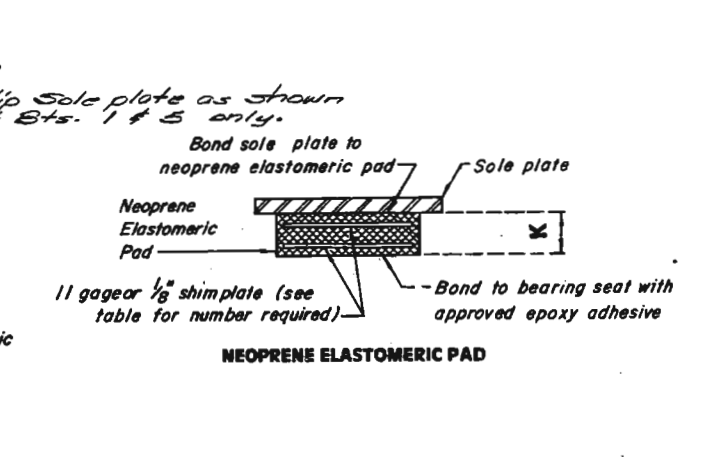
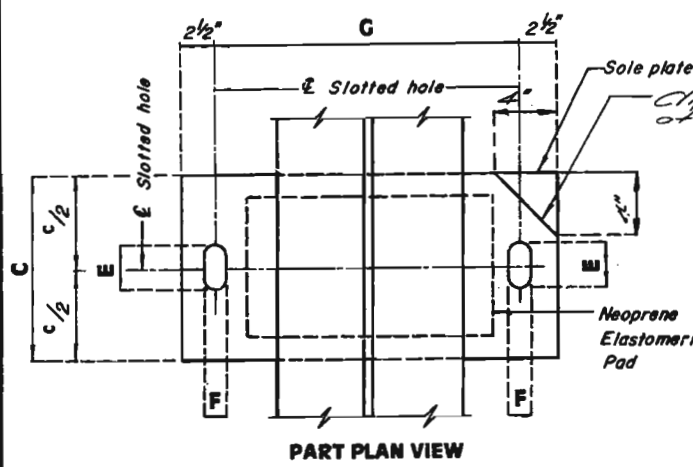
477 341

478 342

LAM. NEOP. BRGS. REVISION
MARCH 1979 JAN. 1987



Note: The location of anchor bolts in relation to the slotted holes in the sole plate shall correspond with the temperature at the time of erection. At 60° F. the slotted holes should center on the anchor bolts.



EXPANSION BEARINGS

NUMBER REQUIRED = 5 @ Bt. 1
5 @ Bt. 2
5 @ Bt. 4
5 @ Bt. 5

60 for Bts. 1 & 5
50 for Bts. 2, 3 & 4

FIXED BEARINGS

NUMBER REQUIRED = 5 @ Bt. 3

BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES (*)
1 & 5	9"	12"	13"	21"	5 1/2"	2 1/8"	16"	6 3/8"	4 1/8"	12"	①	2"	—	7
2 & 4	18"	12"	13"	2' 2"	4 1/2"	2 1/8"	21"	4 3/8"	2 3/8"	16"	①	2 1/2"	—	3

(*) THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN EQUAL LAYERS OF ELASTOMER AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.

① 1 1/2" for Edrs. 61, 62, 63 & 55
1 3/4" for Edr. 64.

GENERAL NOTES:

ANCHOR BOLTS SHALL BE 2" ø SWEDGED BOLTS AND SHALL EXTEND 18" INTO CONCRETE WITH HEXAGON NUTS. (SWEDGING SHALL BE 1" LESS THAN EXTENSION INTO CONCRETE.)
WEIGHT OF ANCHOR BOLTS AND HEXAGON NUTS FOR BEARINGS SHALL BE INCLUDED IN WEIGHT OF FABRICATED STRUCTURAL STEEL.
NEOPRENE ELASTOMERIC PADS SHALL BE ③ DUROMETER.
THE SOLE PLATE SHALL BE FURNISHED WITH THE BEARING AND FIELD OR SHOP WELDED TO THE STRINGERS OR GIRDERS.
STRUCTURAL STEEL FOR SOLE PLATE SHALL BE A-36.
PAYMENT FOR THE SOLE PLATE WILL BE INCLUDED IN THE COST OF THE BEARING ASSEMBLY. SEE SPECIAL PROVISIONS.
ALL ANCHOR BOLTS SHALL BE A-588 STEEL WITH A-563 DHS OR A-563 C3 (HEAT TREATED) HEXAGON NUTS.
THE ACCEPTED QUANTITY OF ELASTOMERIC BEARING ASSEMBLIES, COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES), EACH.
ALL STRUCTURAL STEEL FOR SOLE PLATES, ANCHOR BOLTS AND HEXAGON NUTS SHALL BE PAINTED WITH 2 COATS (5 MILS MINIMUM) OF INORGANIC ZINC WELD AREAS TO BE TOUCHED UP AFTER ASSEMBLY.

BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES (*)
3	20"	18"	14"	2' 4"	2 1/8"	23"	3 1/2"	1 3/4"	16"	②	3 1/2"	—	2

(*) THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN EQUAL LAYERS OF ELASTOMER AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.

② 1 1/2" for Edrs. 61, 62, 63 & 55
1 3/4" for Edr. 64

DETAILS OF LAMINATED NEOPRENE BEARINGS (STEEL STRUCTURES)

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

Sheet No. 11 of 19

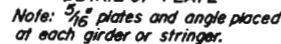
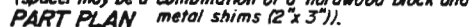
JEFFERSON COUNTY

A-2942

DETAILED May 1987
CHECKED May 1987

479 343

SPS - END BT.	REVISED
FEB. 1978	MAR. 1985



NOTE: All dimensions are at right angles.
Expansion gap and dimension "A" shall be increased $1/16"$ for each 10° fall in temperature and decreased $1/16"$ for each 10° rise in temperature.

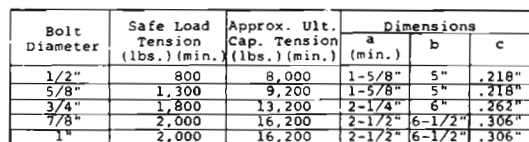
THE CERTIFIED NUTS AND BOLTS FOR THE ANCHOR STUDS OR WING TYPE THREADED INSERTS SHALL BE TIGHTENED TO THE FOOT POUNDS "G" SPECIFIED IN THE TABLE OF DIMENSIONS. RETIGHTEN TO "G" FOOT POUNDS A MINIMUM OF 30 MINUTES AFTER INITIAL TIGHTENING. THE WELDED ANCHOR STUDS SHALL BE THE REDUCED BASE TYPE.

SEE SPECIAL PROVISIONS FOR PAINTING.

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.

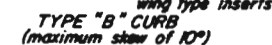
FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT AND CURB PLATES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR EXPANSION JOINT SEAL.

PLATES SHALL BE FIELD ADJUSTED BY ADDING OR REMOVING METAL SHIMS (2" x 3"), AS REQUIRED FOR TEMPERATURE CORRECTION. THE EXPANSION GAP SHALL BE ADJUSTED FOR ANY TEMPERATURE CORRECTION PRIOR TO POURING TOP OF END BENT BACKWALL.



(Machine bolts need only be used to secure the Wing Type Threaded Inserts to the steel plate until the concrete has attained 3,000 p.s.i.)

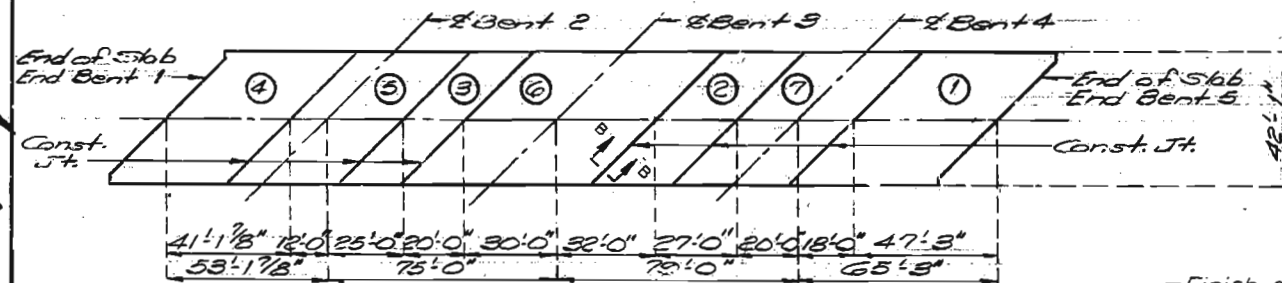
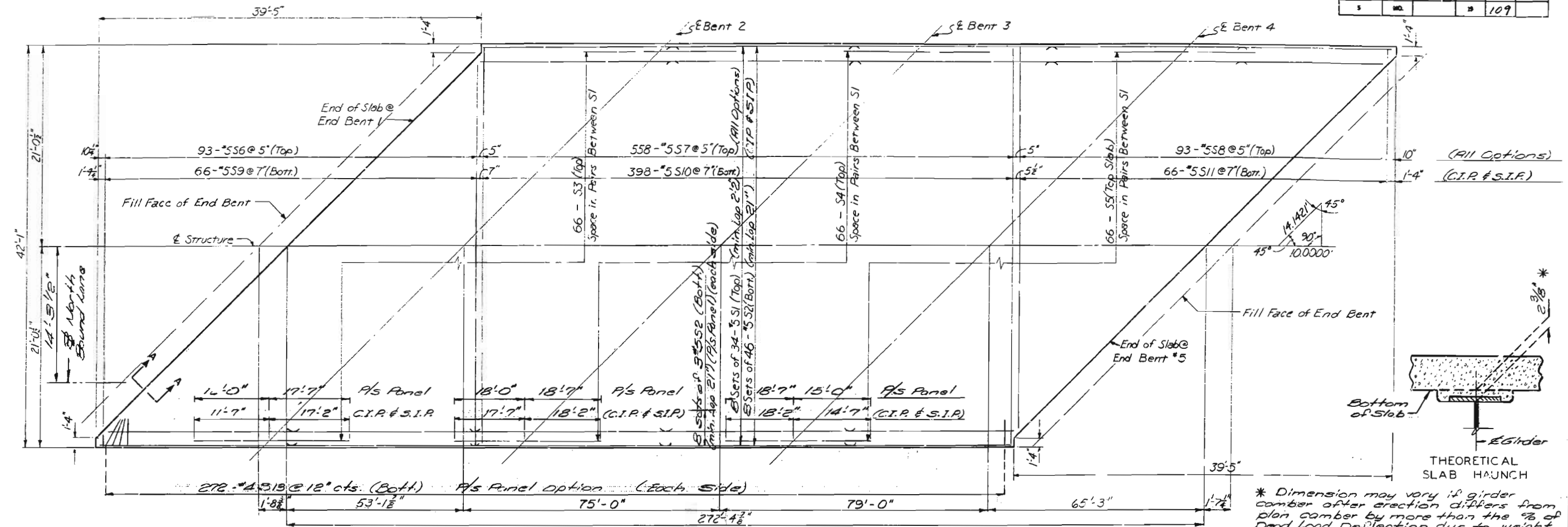
Sheet No. 12 of 19.



ALTERNATE CURB TREATMENTS

MISSOURI STATE HIGHWAY DEPARTMENT

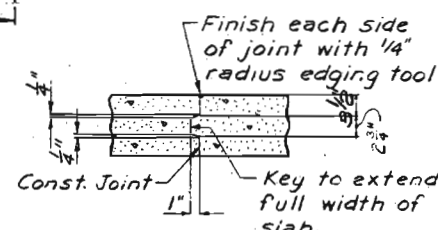
FFD. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		10	109	



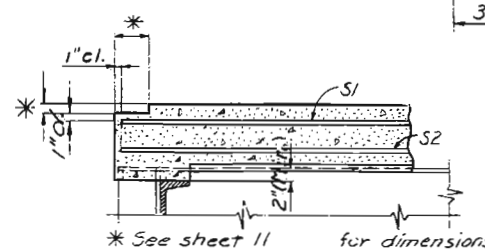
	Sequence of Pours							Min. Rate of Pour Cu. Yds. / Hr.	With Retarder Grade
	Direction								
Basic	1	2	3	4	5	6	7	25	25
Sequence	Either Direction								
Alternate pours to the basic strip sequence are subject to the approval of the engineer in accordance with section 203.3.1E.4 of Missouri Standard Specifications.									
Alternate "A" Pours	1	7+2	6+3	5+4	End to 7, 1 to 6, 2 to 5, 3 to End			26	44
Alternate "B" Pours	1+7+2	6+3	5+4	End to 6, 2 to 5, 3 to End			26	44	
Alternate "C" Pours	1+7+2	6+3+5+4	End to 6, 2 to End					26	44
Alternate "D" Pours	1+7+2+6+3+5+4	End to End					26	44	

Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of the concrete to 2.5 hours.

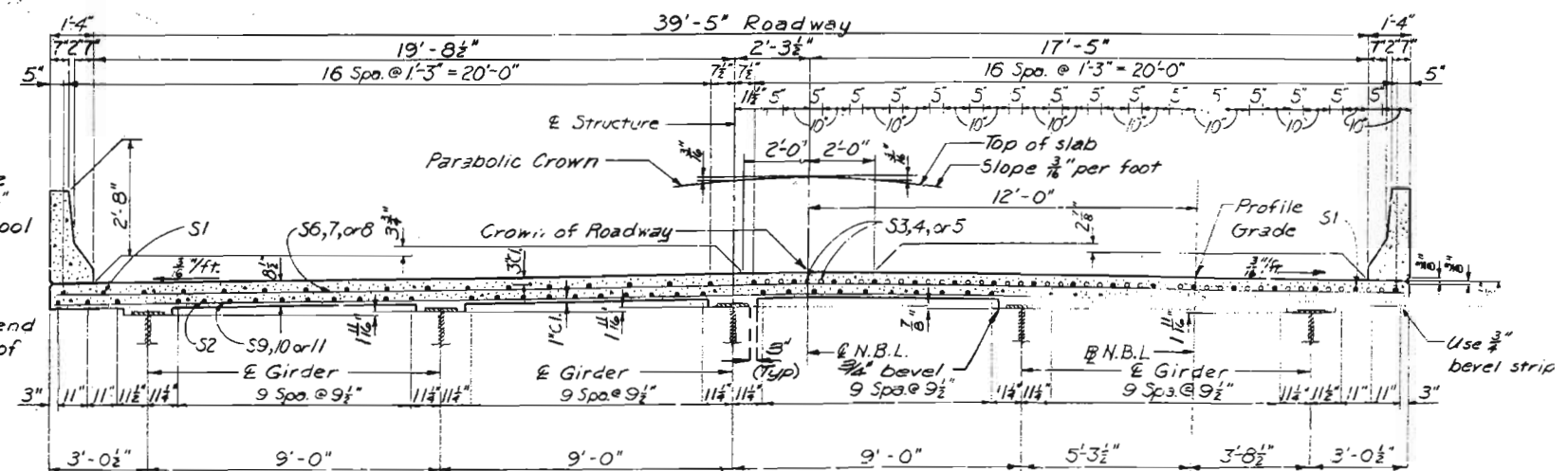
SLAB POURING SEQUENCE



SECTION B-B



SECTION A-A



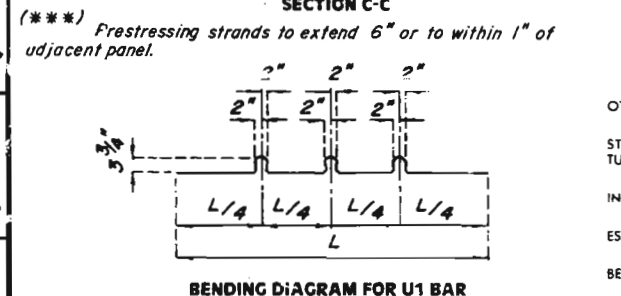
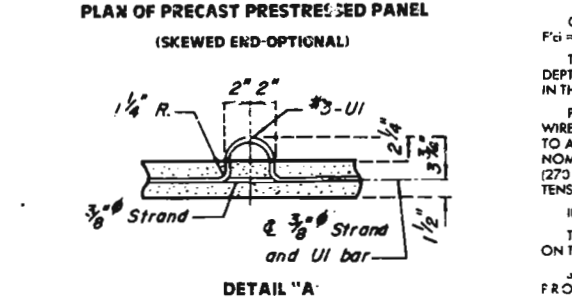
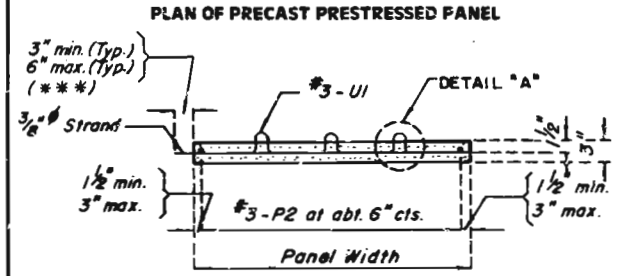
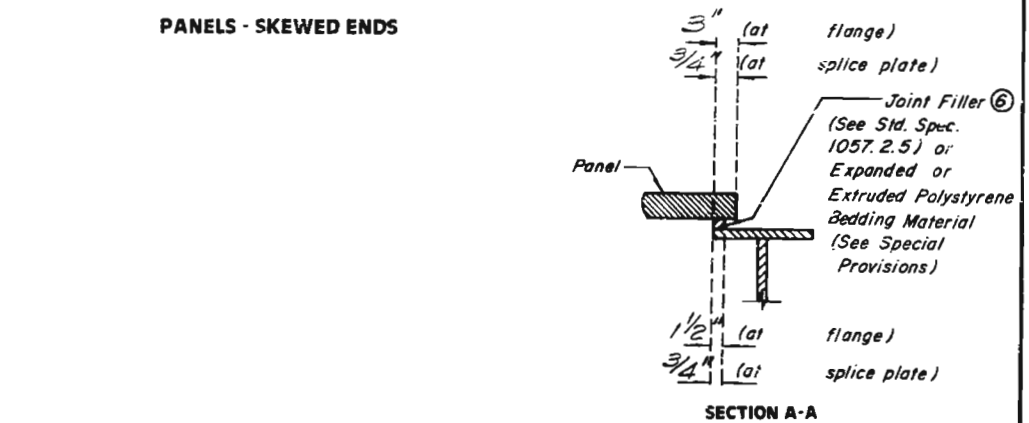
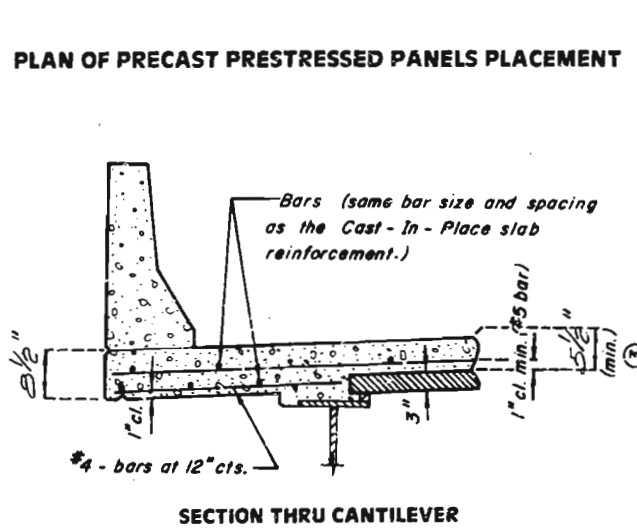
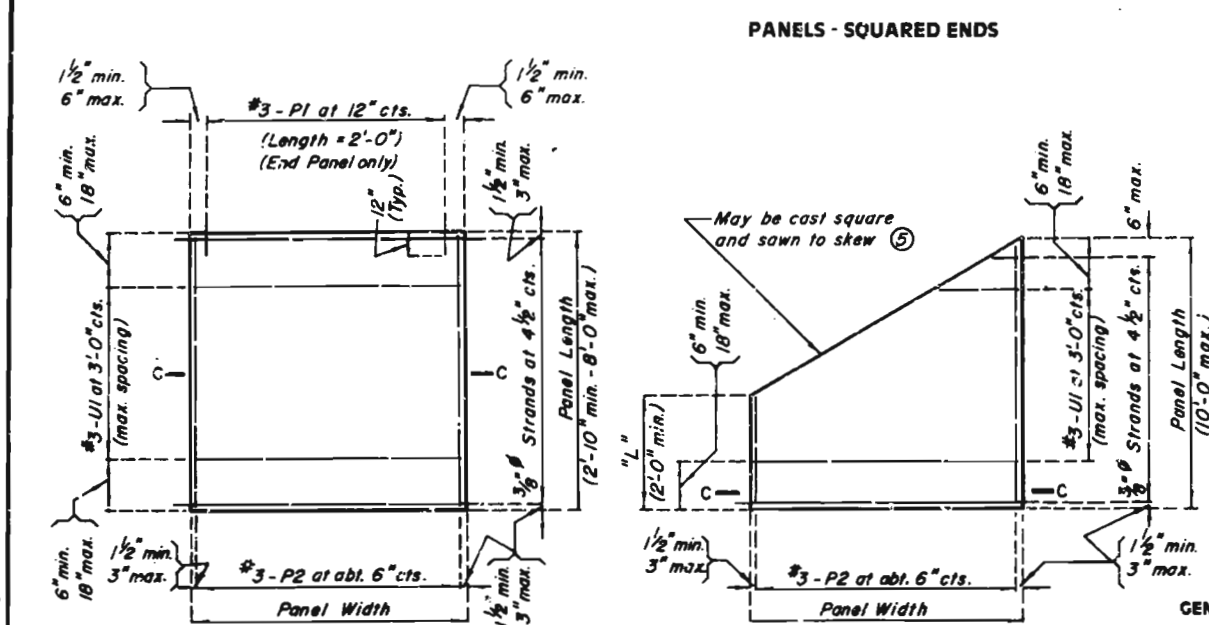
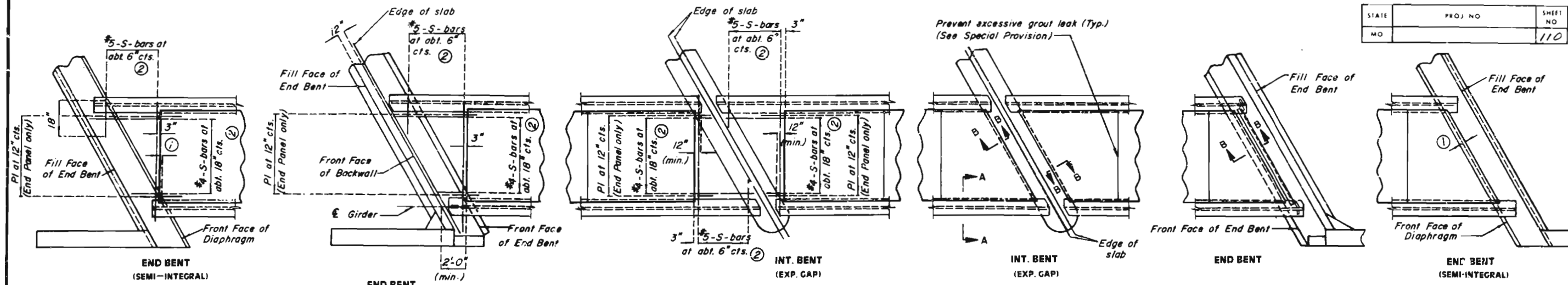
HALF SECTION NEAR & SPAN

HALF SECTION NEAR INT. BENT

TYPICAL SECTION THRU SLAB

Note: C.I.P. option shown. For S.I.P. option details see Sht. 2. For prestressed Panel option see Sht. 14.

Note: End slab dimensions are based on 2" Exp. Gap. See Sht. 12.



GENERAL NOTES:

PRESTRESSED PANEL:
CONCRETE FOR PRESTRESSED PANELS SHALL BE CLASS A1 WITH $F_c = 5,000$ PSI, $F_{ci} = 3,500$ PSI.

THE TOP SURFACE OF ALL PANELS SHALL RECEIVE A SCORED FINISH WITH A DEPTH OF SCORING OF 1/4 INCH PERPENDICULAR TO THE PRESTRESSING STRANDS IN THE PANEL (SEE SPECIAL PROVISIONS).

PRESTRESSING TENDON SHALL BE HIGH-TENSILE STRENGTH UNCOATED SEVEN-WIRE (7) LOW RELAXATION STRANDS FOR PRESTRESSED CONCRETE CONFORMING TO AASHTO M203 EXCEPT THAT NOMINAL DIAMETER OF STRAND = 3/4 INCH AND NOMINAL AREA = 0.085 SQ. IN. AND MINIMUM ULTIMATE STRENGTH = 23,000 LBS. (273 KSI). LARGER STRANDS MAY BE USED WITH THE SAME SPACING AND INITIAL TENSION.

INITIAL PRESTRESSING FORCE = 17.2 KIPS/STRAND.

THE METHOD AND SEQUENCE OF RELAXING THE STRANDS SHALL BE SHOWN ON THE SHOP DRAWINGS.

SUITABLE ANCHORAGE DEVICES FOR LIFTING PANELS MAY BE CAST IN PANELS PROVIDED THEY ARE SHOWN ON THE SHOP DRAWINGS AND APPROVED BY THE ENGINEER. PANEL LENGTHS SHALL BE DETERMINED BY THE CONTRACTOR AND SHOWN ON THE SHOP DRAWINGS.

WHEN SQUARE END PANELS ARE USED AT SKEWED BENTS IT IS REQUIRED THAT THE SKEWED PORTION BE CAST FULL DEPTH. NO SEPARATE PAYMENT WILL BE MADE FOR THE ADDITIONAL CONCRETE AND REINFORCING REQUIRED.

MINIMUM JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL THICKNESS SHALL BE 1/4 INCH EXCEPT OVER SPICE PLATES WHERE MINIMUM THICKNESS SHALL BE 1/2 INCH. WHEN JOINT FILLER IS LESS THAN 1/2\"/>

NOTES:

① END PANEL TO BE DIMENSIONED 1 1/2 INCH INSIDE FACE OF DIAPHRAGM.

② S-BARS SHOWN ARE BOTTOM STEEL IN SLAB BETWEEN PANELS AND USED WITH SKEWED END PANELS ONLY.

③ ADJUSTMENT IN THE SLAB THICKNESS, JOINT FILLER OR EXPANDED POLYSTYRENE BEDDING MATERIAL THICKNESS OR GRADE WILL BE NECESSARY IF THE GIRDER CAMBER AFTER ERECTION DIFFERS FROM PLAN CAMBER BY MORE THAN THE % OF DEAD LOAD DEFLECTION DUE TO THE WEIGHT OF STRUCTURAL STEEL. NO PAYMENT WILL BE MADE FOR ADDITIONAL LABOR OR MATERIALS FOR THE ADJUSTMENT.

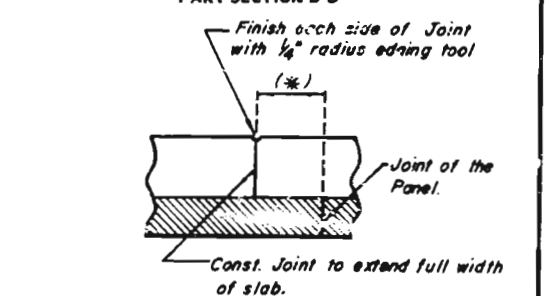
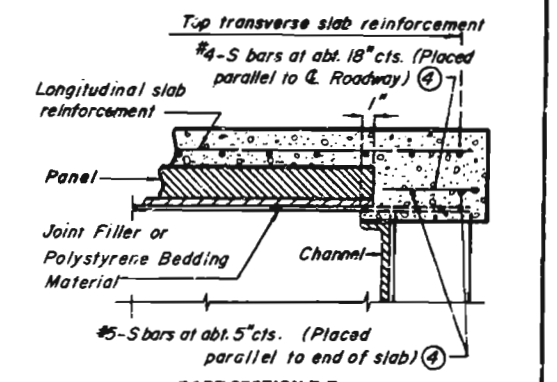
④ S-BARS SHOWN ARE USED WITH SKEWED END PANELS OR SQUARE END PANELS OF SQUARE STRUCTURES ONLY. #5 S-BARS SHALL EXTEND THE WIDTH OF SLAB (21 INCHES LAP IF NECESSARY) OR TO WITHIN 3 INCHES OF EXPANSION DEVICE ASSEMBLIES.

COST OF S-BARS SHALL BE INCLUDED IN PRICE BID FOR SLAB PER SQUARE YARD.

S-BARS ARE NOT LISTED IN BILL OF REINFORCING.

SLAB EXTERIOR GIRDER HAUNCH TO BE THE SAME AS CAST-IN-PLACE.

⑤ ANY STRAND 2'-0\"/>



ADJUST THE PERMISSIBLE CONST. JOINT TO A CLEARANCE OF 6 INCHES MIN. FROM THE JOINTS OF THE PRESTRESSED PANELS.

DETAILS OF PRECAST PRESTRESSED PANELS

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

Sheet No. 14 of 19.

JEFFERSON COUNTY

A-2942

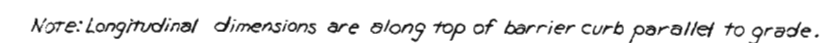
DETAILED Aug. 1985
CHECKED Aug. 1985

481 345

STEEL
P/C-P/S PANEL (3")
MAY 1986

346

STD. 1.7.7(N)	REVISED
AUG. 1978	SEPT. 1978



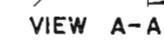
Note: Top of barrier curb to be built parallel to grade with barrier curb joints (except at end bents) normal to grade.
All exposed edges of barrier curb shall have $\frac{1}{2}$ " radius or $\frac{3}{8}$ " bevel, unless otherwise noted.
When the barrier curb is bid by linear feet, the contract unit price shall include the cost of all concrete and reinforcement, complete in place.
Concrete in the safety barrier curb shall be class B1.
Measurement of safety barrier curb is to the nearest linear foot for each structure measured along the outside top of slab from end of wing to end of wing.
Maximum height of 17" B-6 horizontal

Note: Plastic waterstop shall be placed in all safety barrier curb filled joints.

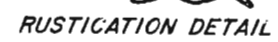
SECTION A-A

5-R18 at 3 1/2" c.s. (Each Face)

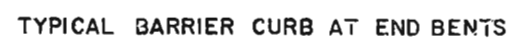
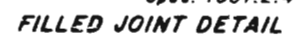
SECTION A-A



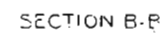
DETAILS OF GUARD RAIL ATTACHMENT



FILLED JOINT DETAIL



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

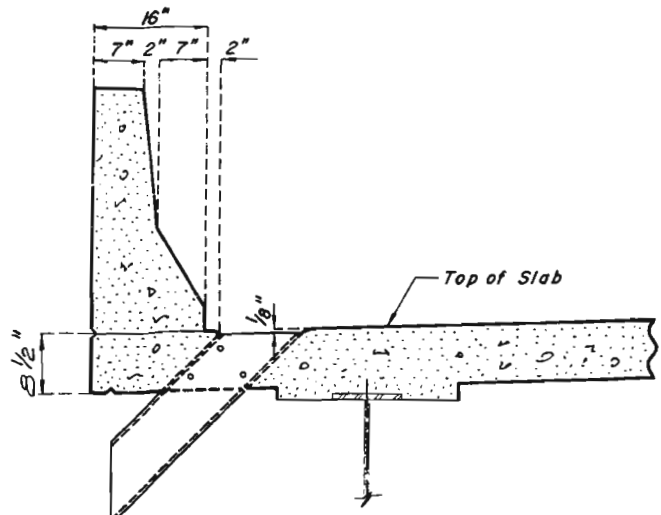


MISSOURI STATE HIGHWAY DEPARTMENT

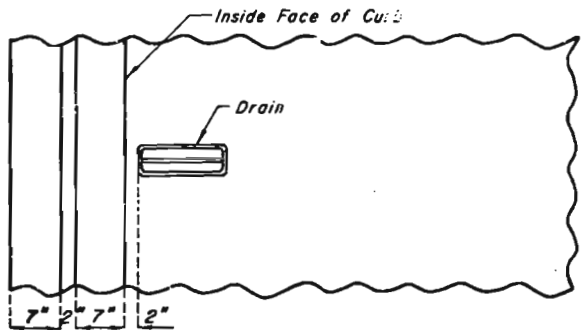
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	112	

GENERAL NOTES:

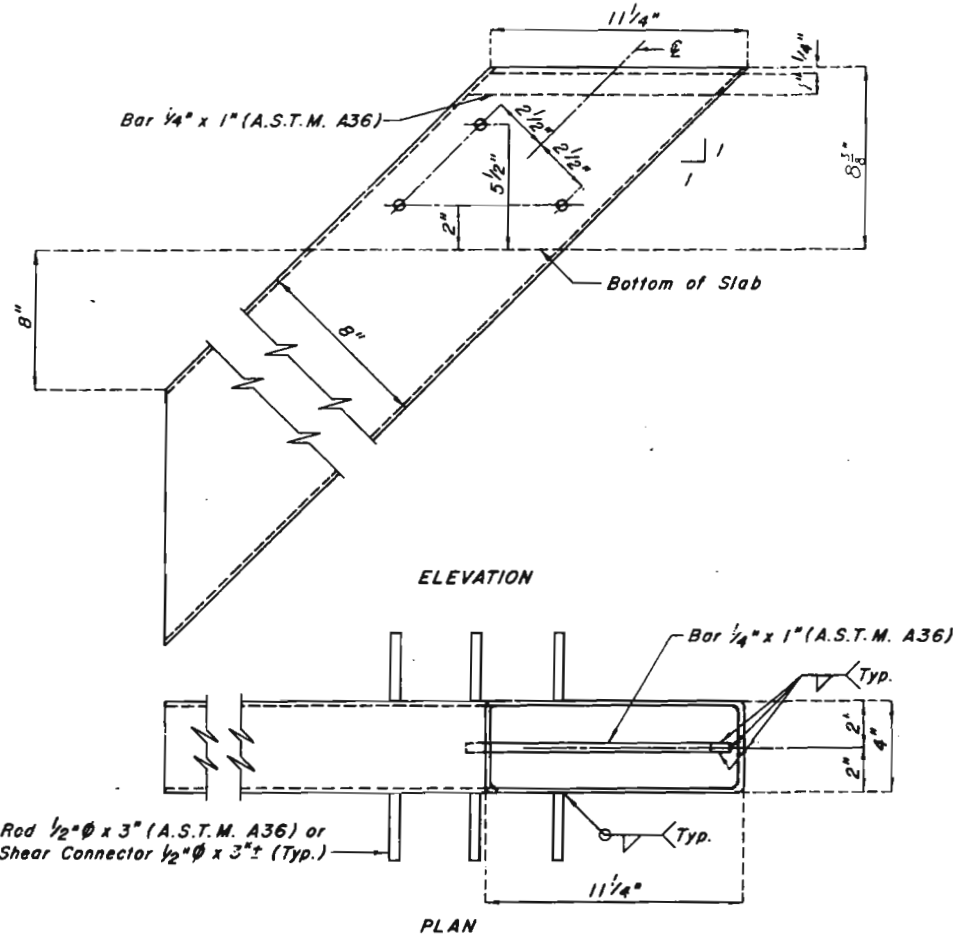
- SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.
- OUTSIDE DIMENSIONS OF DRAINS ARE 8"x4".
- THE DRAINS SHALL BE CAST IN THE CONCRETE WITH THE TOP OF THE DRAINS BEING 1/8" BELOW THE FINISHED CONCRETE LINE.
- LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION & PLAN OF SLAB DRAINS.
- SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR DRAINS.
- THE DRAINS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.
- SHOP DRAWINGS WILL NOT BE REQUIRED FOR THE SLAB DRAINS.



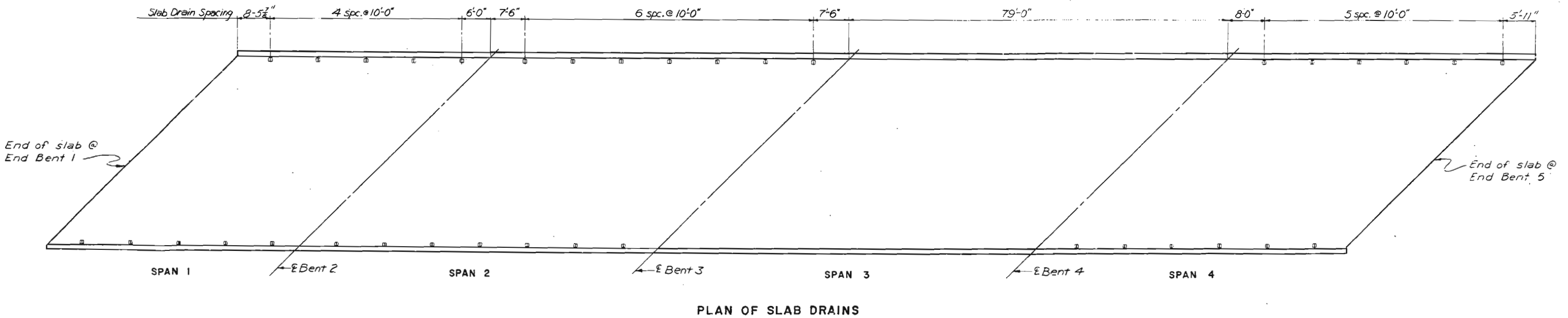
PART ELEVATION OF SLAB



PART PLAN OF SLAB



SLAB DRAIN DETAILS



PLAN OF SLAB DRAINS

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

Sheet No. 16 of 19.

JEFFERSON COUNTY

A-2942

STD. S.D.-N.W.S. REVISED
FEB. 1975
MAR. 1978

DETAILED JAN. 1979
CHECKED FEB. 1979

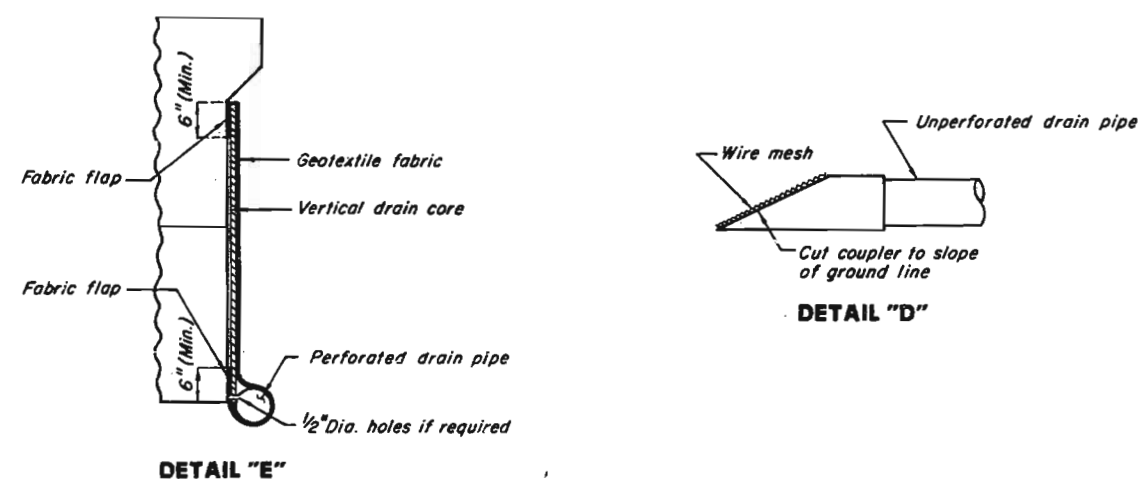
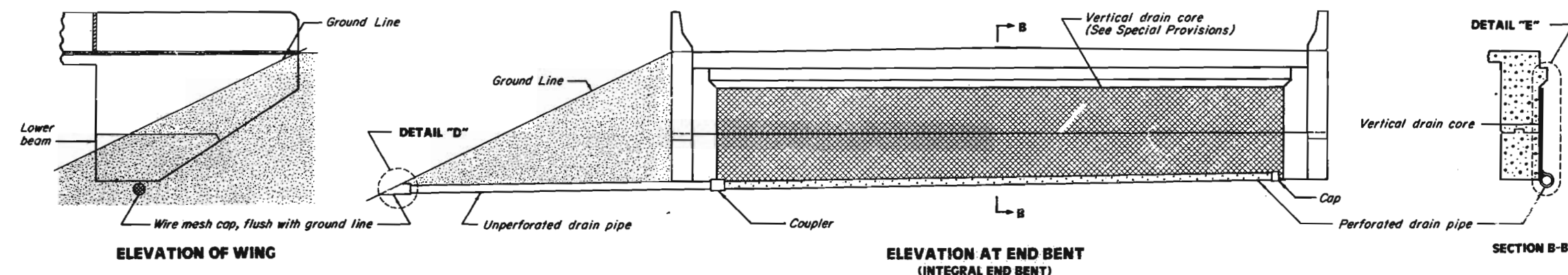
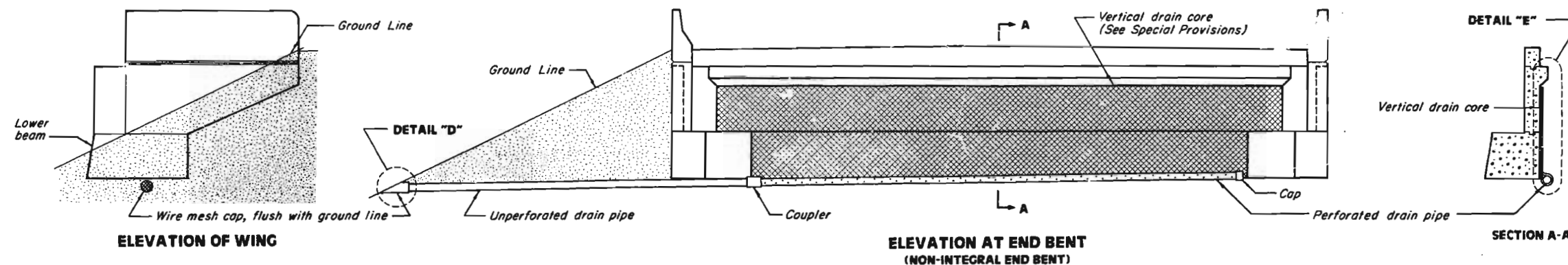
STATE	PROJ NO	SHEET NO
MO		113

GENERAL NOTES:

DRAIN PIPE MAY BE EITHER 6" DIAMETER CORRUGATED METALLIC COATED STEEL PIPE UNDERDRAIN, 4" DIAMETER CORRUGATED POLY VINYL CHLORIDE (PVC) DRAIN PIPE, OR 4" DIAMETER CORRUGATED POLYETHYLENE (PE) DRAIN PIPE.

PLACE DRAIN PIPE AT FILL FACE OF END BENT AND SLOPE TO LOWEST GRADE OF GROUND LINE, ALSO MISSING THE LOWER BEAM OF END BENT BY 1/4". (SEE ELEVATION AT END BENT)

PERFORATED PIPE SHALL BE PLACED AT FILL FACE SIDE AT THE BOTTOM OF END BENT AND PLAIN PIPE SHALL BE USED WHERE THE VERTICAL DRAIN ENDS TO THE EXIT AT GROUND LINE.



VERTICAL DRAIN AT END BENTS

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

Sheet No. 17 of 19

JEFFERSON COUNTY

A-2942

484 388

Revised	MAR. 1987
Verit Drain	MARCH 1988

DETAILED May 1987
CHECKED May 1987

COMPLETE BILL OF REINFORCING STEEL

NO REQD.	MARK NO.	LOCATION	(E)	EPOXY	SHAPE NO.	(S)	STIRRUP	(X)	SUBSTR.	(V)	NO EACH	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.			
8	6W24	WING D	E 20			X	V	1				2	10.000												2	10	2	10			
		INCR = 3.750 IN										5	0.000												5	0	5	0			
8	6W25	WING D	E 17			X	V	1				2	8.000												3	4	3	4			
		INCR = 3.750 IN										4	10.000												5	6	5	6			
2	W26	WING D	E 20			X						15	0.000												15		15				
10	2B44	BEAM	E 22			X						18	0.000	9.125											26	1	26	1			
		CIP & SIP SLAB																													
272	5S1	SLAB	E 20									35	11.000												35	11	35	11	1018		
368	5S2	SLAB	E 20									35	7.000												35	7	35	7	1365		
66	5S3	SLAB	E 20									28	9.000												28	9	28	9	197		
66	5S4	SLAB	E 20									35	9.060												35	9	35	9	246		
66	5S5	SLAB	E 20									32	9.000												32	9	32	9	225		
53	5S6	SLAB	E 20				V	1				23	0.000												23		23				
		INCR = 5.000 IN										40	3.000												40	3	40	3	204		
558	5S7	SLAB	E 20									41	10.000												41	10	41	10	2434		
93	5S8	SLAB	E 20				V	1				23	0.000												23		23				
		INCR = 5.000 IN										40	3.000												40	3	40	3	204		
66	5S9	SLAB	E 20				V	1				2	5.000												2	5	2	5			
		INCR = 7.000 IN										40	4.000												40	4	40	4	147		
398	5S10	SLAB	E 20									4	10.000												4	10	4	10	1736		
66	5S11	SLAB	E 20				V	1				2	5.000												2	5	2	5			
		INCR = 7.000 IN										40	4.000												40	4	40	4	147		
		P/S PANEL SLAB																													
272	5S1	SLAB	E 20									35	11.000												35	11	35	11	1018		
48	5S2	SLAB	E 20									35	7.000												35	7	35	7	178		
68	6S3	SLAB	E 20									29	7.000												29	7	29	7	302		
66	6S4	SLAB	E 20									36	7.000												36	7	36	7	362		
66	6S5	SLAB	E 20									33	7.000												33	7	33	7	322		
93	5S6	SLAB	E 20				V	1				23	0.000												23		23				
		INCR = 5.000 IN										40	3.000												40	3	40	3	204		
558	5S7	SLAB	E 20									41	10.000												41	10	41	10	2434		
93	5S8	SLAB	E 20				V	1				23	0.000												23		23				
		INCR = 5.000 IN										40	3.000												40	3	40	3	204		
544	4S13	SLAB	E 20									3	0.000												3	0	3	0	109		
		BARRIER CURB																													
24	5R1	BARRIER CURB	E 20									22	10.000												22	10	22	10	572		
74	5R2	BARRIER CURB	E 20									9	9.000												9	9	9	9	753		
24	5R3	BARRIER CURB	E 20									28	1.000												28	1	28	1	703		
24	5R4	BARRIER CURB	E 20									30	1.000												30	1	30	1	753		
24	5R5	BARRIER CURB	E 20									27	7.000												27	7	27	7	1003		
626	5R6	BARRIER CURB	E 17									2	6.000	3.500											2	10	2	8	1741		
626	5R7	BARRIER CURB	E 15									2	6.125	3.500											2	6.000	3.000	2	10	2	1741
558	5R8	BARRIER CURB	E 27										6.000		11.125	7.000	12.000	9.125	6.375	3	0	2	10	1649							
558	5R9	BARRIER CURB	E 19									17.000		6.000											23	22	1067				
52	5R12	BARRIER CURB	E 27									12.000	9.500	11.125	6.000			6.375	9.125	3	3	3	0	163							
52	5R13	BARRIER CURB	E 19									18.500	6.000												2	1	23	104			
16	5R14	BARRIER CURB	E 10										2	8.000	6.000										5	10	5	7	93		
44	5R18	BARRIER CURB	E 20									13	9.000												13	9	13	9	631		
4	5R19	BARRIER CURB	E 20									13	3.000												13	3	13	3	55		
8	5R22	BARRIER CURB	E 20									11	9.000												11	9	11	9	98		

Note: Two additional *G53, and *5EE are included in

END HOOK DIMENSIONS

BAR	D	180° HOOKS	90° HOOKS
		1W GRADE	1W GRADE

NOTES:
ALL STANDARD HOOKS

SHAPE 6

SHAPE 7

SHAPE 8

SHAPE 9

SHAPE 10

SHAPE 11

SHAPE 12

SHAPE 13

SHAPE 14

SHAPE 15

SHAPE 16

SHAPE 17

SHAPE 18

SHAPE 19

SHAPE 20

SHAPE 21

SHAPE 22

SHAPE 23

SHAPE 24

SHAPE 25

SHAPE 26

SHAPE 27

SHAPE 28

SHAPE 29

SHAPE 30

SHAPE 31

SHAPE 32

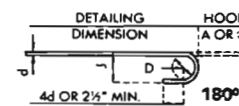
SHAPE 33

NOTES:

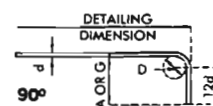
E - EPOXY COATED REINFORCEMENT.
S - STEEL.
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. - NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAM AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK		135° HOOK
		HOCK A OR G	HOCK A OR G	APPROX. H
#3	1 1/4"	4"	4"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 1/2"
#6	4 1/4"	12"	7 1/2"	4 1/2"

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



SIZE OF 180° HOOKS (GRADE 40 KSI)



SIZE of 90° HOOKS (ALL GRADES)

AND 180° HOOKS | GRADE 60 KSI

D 6d FOR #3 THRU #8

D. 104 FOR #14 AND #18

Sheet No. 19 of 19

Revised 7-27-88

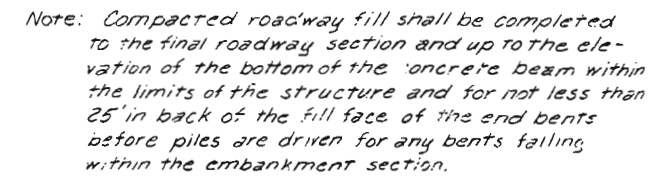
JEFFERSON COUNTY

A-2942

05/01/2018

STD. 90.6	REVISED
MAY 1974	JUNE 1986

REAL FLANS

(52'-75'-79'-64') CONTINUOUS COMPOSITE R. GIRDER SPANS

A-2942

Sheet No. 1A of 19.

DATE 6/15/87

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		13	98	

QUANTITIES

ITEM	UNIT	SUBSTR.	SUPERSTR.	TOTAL
Reinforcing Steel (Epoxy Coated)	Lbs	3050		3050
Vertical Drain at End Bents	Each			2
Pile Point Reinforcement	Each	12		12
Class I Excavation	Cu. Yds.	175		175
Structural Steel Pile (10")	Lin. Ft.	1,169		1,169
Reinforcing Steel (Grade 60)	Lbs.	33,850		33,850
Fabricated Structural Carbon Steel	Lbs.		233,530	233,530
Class B Concrete	Cu. Yds.	243.2		243.2
Slab on Steel P/C Panel Opt.	Sq. Yd.		1274	1274
Painting (System B) Green	Ton		116.1	116.1
Elastomeric Exp. Jt. Seal (30")	Lin. Ft.		112	112
Safety Barrier Curb - Slip Form	Lin. Ft.		601	601
Slab Drains	Each		36	36
Laminated Neoprene Bds. Pads (Steel Structures)	Each		25	25
Safety Barrier Curb	Lin. Ft.		0	0

Note: All concrete and reinforcement in safety barrier curbs is included with superstructure quantities.

Concrete above upper construction joint in backwall at end bents No. 1 & 5 is included with class B (substructure) quantities.

PILE & FOOTING DATA

BENT NO.		1	2	3	4	5
BEARING PILE	Pile Type and Size	10BP42	10BP42	10BP42	10BP42	10BP42
	Number	9	12	12	12	9
	Average Length Ft.	40	*	11	14	32
	Design Bearing (Tons)	26	45	53	45	32
	Hammer Energy req'd Ft. Lbs.	7000	7000	7000	7000	7000

Note: Minimum energy requirement of hammer based on plan length and design bearing value of piles.

All piles shall be driven to practical refusal.

Manufactured pile point reinforcement shall be used on all piles at Bent No. 4. (See Spec. Prov.)

Quantities for Slab		
Type of Slab	Slab on Steel	
	Paint (Lbs)	Cong. Epoxy Coated Cu. Yd.
Precast Panel Forms *	51480	220.0e

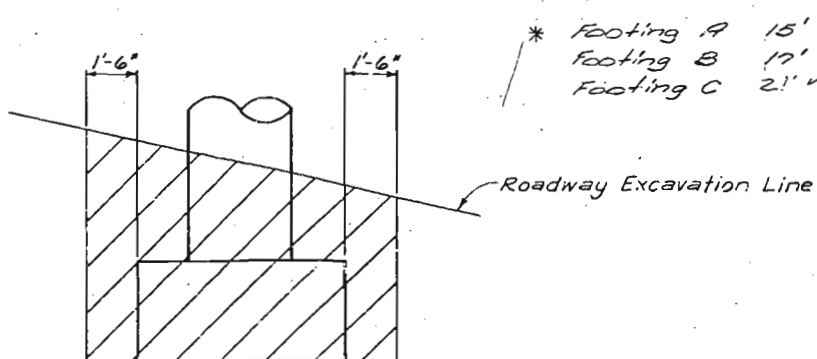
* Built P/C Panel Option.

The table of Estimated Quantities for Alternate Slabs 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 Alternate Slab used. See Special Provisions for alternate methods of concrete slabs.

Precast panel quantities based on skewed end panels.

Used On Flex 35 Expansion Joint (See Sheet 12)

LIMITS OF EXCAVATION



GENERAL NOTES

DESIGN SPECIFICATION: A.A.S.H.T.O. - 1983 # Interims 1984 & 1985 Load Factor Design

DESIGN LOADING:

HS-20-44

15#/Sq. ft. Future Wearing Surface

Earth 120#/cu. ft., Equivalent Fluid Pressure 30#/cu. ft.

Fatigue Stress - Case II

DESIGN UNIT STRESSES:

Class B Concrete (Substructure) $f'_c = 3000$ psi

Class B1 Concrete (Safety Barrier Curb) $f'_c = 4000$ psi

Class B2 Concrete (Superstructure except Safety Barrier Curb) $f'_c = 4000$ psi

Reinforcing Steel (Grade 60) $f_y = 60,000$ psi

Structural Carbon Steel $f_y = 36,000$ psi.

Steel Pile $f_b = 9,000$ psi

STRUCTURAL STEEL:

Field Connections, High Strength Bolts $\frac{3}{4}$ " Dia., Holes $\frac{13}{16}$ " Dia.

except as noted.

Turn of Nut Method of tensioning high strength bolts will be permitted.

PAINTING:

Paint: System B by Contractor in accordance with Std. Spec. 712.12

(Color of the final field coat for System B shall be green.)

CONSTRUCTION CLEARANCE:

A minimum vertical clearance of 14'-6" from Crown of existing lanes and a minimum lateral clearance of 28'-0" centered on existing lanes shall be maintained during construction.

REINFORCING STEEL:

Minimum clearance to reinforcing steel shall be 12" unless otherwise shown.

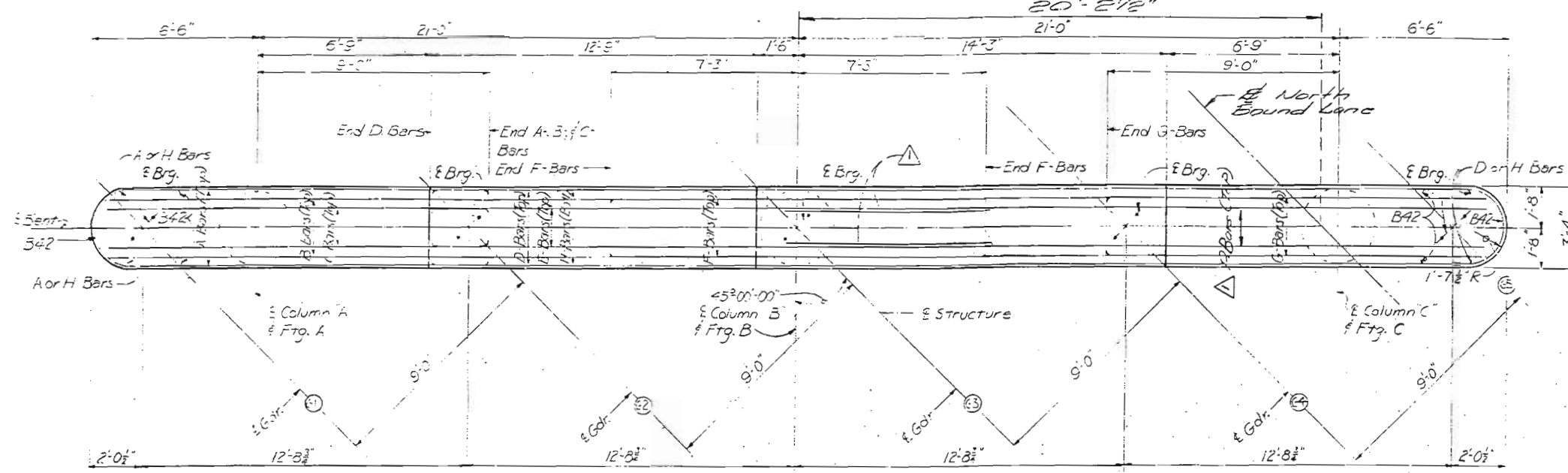
All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolts for bearings by at least 12".

JOINT FILLER:

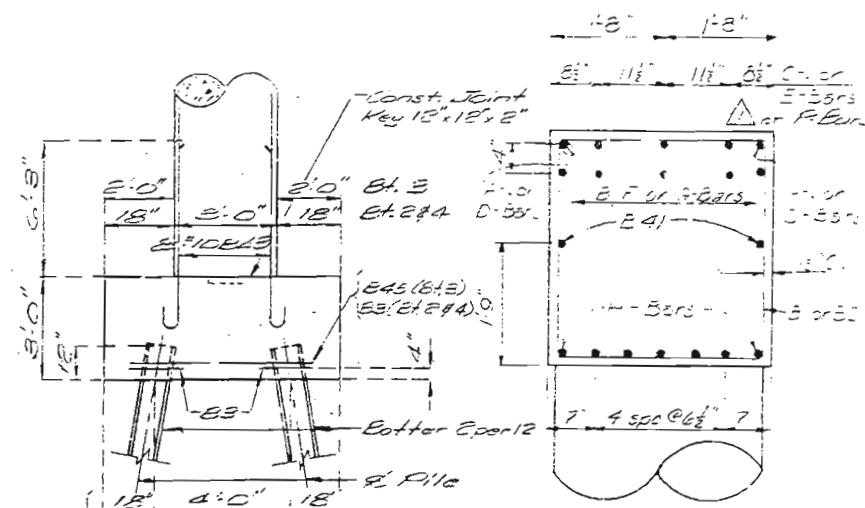
All joint filler shall meet the requirement of Std. Spec. 1057.2.4, except as noted.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	103	

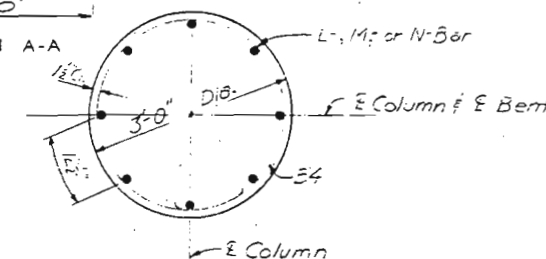


PLAN



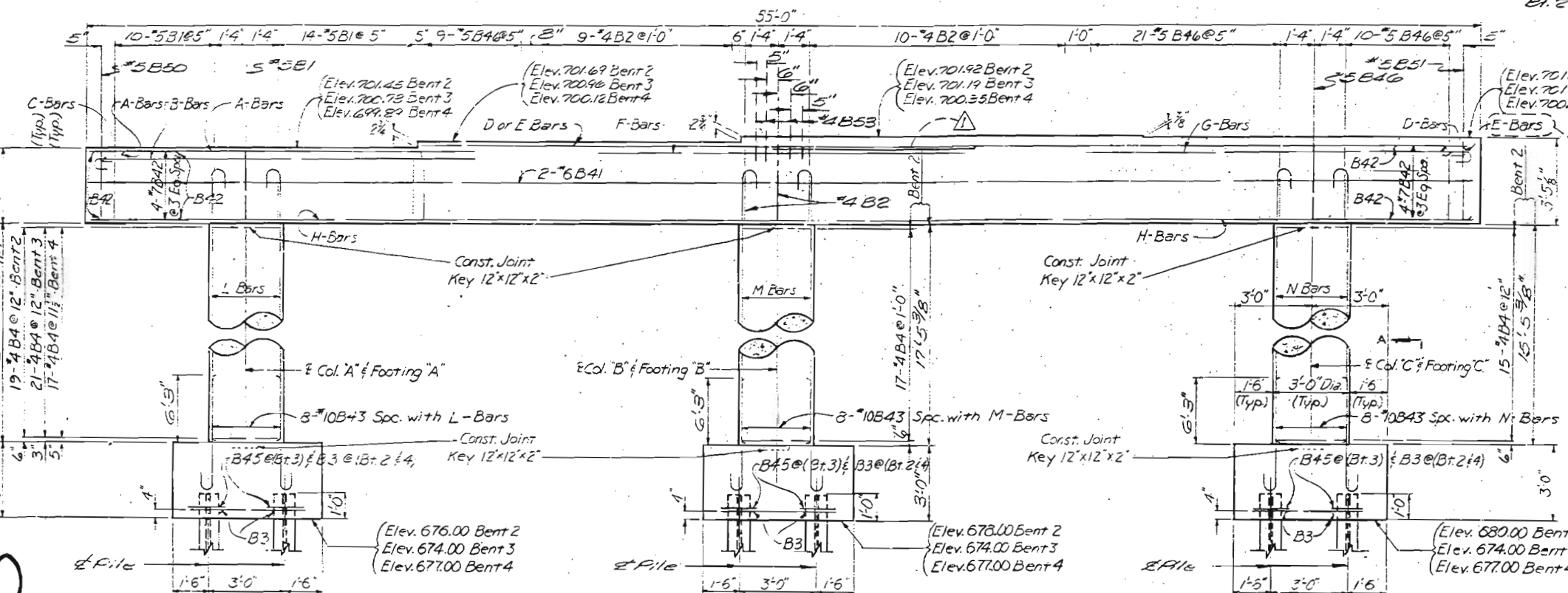
TYPICAL SECTION THRU CAP

SECTION A-A



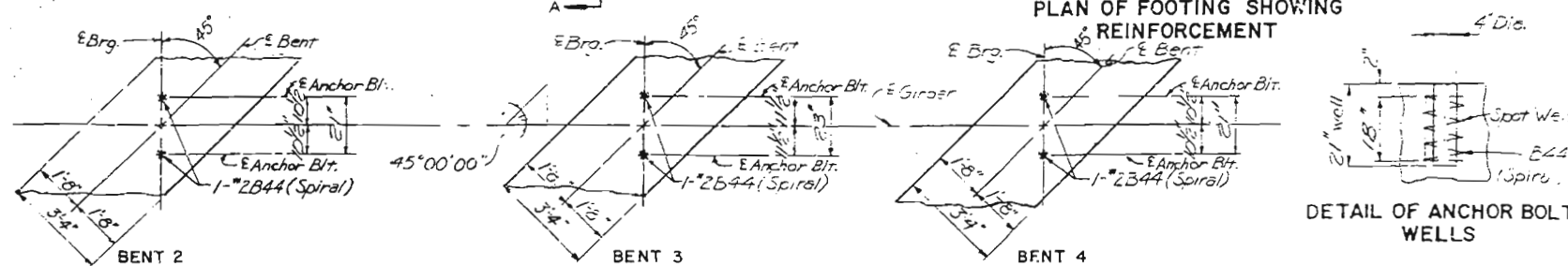
TYPICAL SECTION THRU COLUMN

Notes: BPI 10x42 Pile Req'd.
Bent No. 2 12 Req'd.
Bent No. 3 12 Req'd.
Bent No. 4 12 Req'd.



ELEVATION

BENT	A-BARS	B-BARS	C-BARS	D-BARS	E-BARS	F-BARS	G-BARS	H-BARS	L-BARS	M-BARS	N-BARS	P-BARS
2	2-9B6	5-9B7	3-9B8	2-9B9	3-9B10	2-9B11	5-9B12	7-9B13	3-10B16	8-10B17	8-10B18	3-9B55
3	2-9B19	5-9B20	3-9B21	2-9B22	3-9B23	2-9B24	5-9B25	7-11B26	8-10B29	8-10B29	8-10B29	3-9B55
4	2-9B30	5-9B31	3-9B32	2-9B33	3-9B34	2-9B35	5-9B36	7-10B37	8-10B40	8-10B40	8-10B40	3-9B55



BENT 2

BENT 3

BENT 4

TYPICAL ANCHOR BOLT LAYOUT

DETAIL OF ANCHOR BOLT WELLS

DETAILED JAN. 1979
CHECKED FEB. 1979

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

DETAILS OF INTERMEDIATE BENTS NO. 2-3 & 4

Sheet No. 7 of 13

Revised 7-27-88

JEFFERSON COUNTY

A-2942

COMPLETE BILL OF REINFORCING STEEL																								
NO REQD.	MARK NO.	LOCATION	EPOXY	SHAPE NO	STIRRUP	SUBSTR	VARIES	NO EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT					
									B	C	D	E	F	H	K	IN				FT	IN	FT	IN	FT
		SUBSTRUCTURE																						
		END BENT 1																						
54	5A1	BACKWALL	E 20	X				5	10.000								5	10	5	10	329			
54	5A2	BACKWALL	E 10	S X						2	2.500	9.000					5	2	5	0	287			
54	5A3	BACKWALL	E 20	X				5	10.000								5	10	5	10	329			
4	6A4	BACKWALL	E 20	X				30	5.000								30	5	30	5	183			
12	4A5	BACKWALL	E 20	X				29	10.000								29	10	29	10	239			
15	4A6	BEAM	E 13	S X				2	11.000	2	9.250	3	8.000	2	8.000		12	9	12	6	125			
46	4A7	BEAM	E 13	S X				2	9.750	3	0.250	3	8.000	2	10.750		13	2	12	10	394			
10	4A8	BEAM	E 10	S X						6.000	2	11.000					3	11	3	9	25			
4	9A9	BEAM	E 17	X				18	0.000								19	3	19	3	262			
4	9A10	BEAM	E 17	X				42	2.000								43	5	43	5	590			
4	9A11	BEAM	E 18	X				56	0.000								58	6	58	6	796			
2	6A12	BEAM	E 20	X				58	0.000								58	0	58	0	174			
4	4A13	APRON	E 20	X				30	0.000								30	0	30	0	80			
11	6A14	BEAM	E 10	S X						2	1.500	3	0.000				7	3	6	11	114			
8	6A15	BEAM	E 10	S X						2	1.500	2	8.000				6	11	6	7	79			
2	6A16	BEAM	E 20	X				2	9.000								2	9	2	9	8			
5	7A17	BEAM	E 14	X				6	0.000	2	9.000	2	10.000			2	0.000	2	0.000	11	7	11	4	116
5	7A18	BEAM	E 11	X						5	11.000	2	9.000	6	1.000		14	9	14	5	147			
1	4A19	BEAM	E 13	S X				18.000		2	10.500	2	7.000	2	8.000		10	5	10	1	7			
69	4A20	APRON	E 10	S X						2	6.000	9.000					5	9	5	7	257			
2	6A21	BEAM	E 20	X				3	2.000								3	2	3	2	10			
4	6W1	WING A	E 20	X				13	9.000								13	9	13	9	83			
8	6W2	WING A	E 20	X V	2			6	0.000								6	0	6	0				
		INCR = 28.625 IN						13	2.000								13	2	13	2	115			
4	6W3	WING A	E 15	X				12.000		6	7.000	12.000	4.625	11.125	4.625	11.125	8	7	8	7	52			
4	6W4	MUDWALL	E 10	S X				2	7.000	6.000							5	8	5	6	15			
2	6W5	WING A	E 25	X				15.000		8	11.875	2	3.000			2	8.000	8	7.000	12	6	12	5	37
2	6W6	MUDWALL	E 20	X				5	0.000								5	0	5	0	7			
2	6W7	MUDWALL	E 19	X				5	6.000	3	1.000						8	7	8	5	25			
8	6W8	WING A	E 20	X V	1			3	1.000								3	1	3	1				
		INCR = 3.750 IN						5	3.000								5	3	5	3	50			
8	6W9	WING A	E 17	X V	1			2	9.000								3	5	3	5				
		INCR = 3.625 IN						4	10.000								5	6	5	6	54			
5	6W10	WING A	E 20	X				6	4.000								6	4	6	4	48			
5	6W11	WING A	E 17	X				6	2.000								6	10	6	10	51			
2	6W12	WING A	E 20	X				15.000									15	15			4			
4	6W1	WING B	E 20	X				13	9.000								13	9	13	9	83			
5	6W10	WING B	E 20	X				6	4.000								6	4	6	4	48			
5	6W11	WING B	E 17	X				6	2.000								6	10	6	10	51			
8	6W12	WING B	E 20	X V	2			6	2.000								6	2	6	2				
		INCR = 28.000 IN						13	2.000								13	2	13	2	116			
4	6W13	WING B	E 15	X				12.000		2	11.000	12.000	11.125	4.625	11.125	4.625	4	11	4	9	29			
4	6W14	WING B	E 10	X				4	6.000	6.000							9	6	9	4	25			
2	6W15	WING B	E 20	X				4	11.000								4	11	4	11	7			
2	6W16	WING B	E 19	X				5	5.000	5	0.000						10	5	10	3	31			
2	6W17	WING B	E 25	X				15.000		8	7.875	2	3.000			2	7.500	8	3.000	12	2	12	1	36
8	6W18	WING B	E 20	X V	1			3	0.000								3	0	3	0				
		INCR = 3.750 IN						5	2.000								5	2	5	2	49			
8	6W19	WING B	E 17	X V	1			2	9.000								3	5	3	5				
		INCR = 3.750 IN						4	11.000								5	7	5	7	54			
2	6W20	WING B	E 20	X				15.000									15	15			4			
10	2B44	BEAM	E 22	X				18.000		9.125							26	1	26	1	44			
		INT BENT 2																						
25	5B1	PIER CAP	E 13	S X				3	1.000	2	9.000	3	1.000	2	9.000		12	7	12	3	319			
21	4B2	PIER CAP	E 13	S X				3	1.000	3	0.000	3	1.000	3	0.000		12	11	12	8	178			

COMPLETE BILL OF REINFORCING STEEL																													
NO REQD	MARK NO	LOCATION	EPOXY	SHAPE NO	STIRRUP	SUBSTR	VARIES	NO EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT						
									B		D		E		F		H		K										
									FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN									
24	6P3	FOOTINGS		31	S	X			3	0.000	18.000	3	0.000					8	10	8	6	30							
51	4B4	COLUMN		16	X				2	9.000								9	6	9	6	32							
2	9B6	PIER CAP		20	X				14	0.000								14	0	14	0	9							
5	9B7	PIER CAP		17	X				15	0.000								16	3	16	3	27							
3	9B8	PIER CAP		17	X				14	0.000								16	3	16	3	16							
2	9B9	PIER CAP		19	X				19.000	40	3.000							41	10	41	7	28							
3	9B10	PIER CAP		20	X				21	4.000								21	4	21	4	21							
2	8B11	PIER CAP		20	X				14	6.000								14	6	14	6	7							
5	9B12	PIER CAP		17	X				15	0.000								16	3	16	3	27							
7	9B13	PIER CAP		20	X				52	4.000								52	4	52	4	124							
8	10B16	COLUMN A		17	X				21	1.000								22	6	22	6	77							
8	10B17	COLUMN B		17	X				19	1.000								20	6	20	6	70							
8	10B18	COLUMN C		17	X				17	1.000								18	6	18	6	63							
2	6B41	PIER CAP		20	X				52	0.000								52	0	52	0	15							
8	7B42	PIER CAP		7	X				4	0.000	2	11.750						9	7	9	7	15							
24	10B43	FOOTINGS		17	X				8	3.000								9	8	9	8	99							
10	2B44	PIER CAP		22	X				18.000	9.125								26	1	26	1	4							
41	5B46	PIER CAP		13	S	X			3	1.000	3	0.000	3	1.000	3	0.000		13	1	12	9	54							
1	5B50	PIER CAP		13	S	X			2	9.000	2	9.000	2	9.000	2	9.000		11	11	11	7	1							
1	5B51	PIER CAP		13	S	X			2	9.000	3	0.000	2	9.000	3	0.000		12	5	12	1	1							
4	4B53	PIER CAP		10	S	X			6.000	3	1.000							4	1	3	11	1							
3	9B55	Pier Cap		17	X				27	1.000								28	4	28	4	2							
		INT BENT 3																											
25	5B1	PIER CAP		13	S	X			3	1.000	2	9.000	3	1.000	2	9.000		12	7	12	3	31							
21	4B2	PIER CAP		13	S	X			3	1.000	3	0.000	3	1.000	3	0.000		12	11	12	8	17							
63	4B4	COLUMN		16	X				2	9.000								9	6	9	6	40							
2	9B19	PIER CAP		20	X				14	0.000								14	0	14	0	9							
5	9B20	PIER CAP		17	X				15	0.000								16	3	16	3	27							
3	9B21	PIER CAP		17	X				15	0.000								16	3	16	3	16							
2	9B22	PIER CAP		19	X				19.000	40	3.000							41	10	41	7	28							
3	9B23	PIER CAP		20	X				21	4.000								21	4	21	4	21							
2	9B24	PIER CAP		20	X				14	6.000								14	6	14	6	9							
5	9B25	PIER CAP		17	X				15	0.000								16	3	16	3	27							
7	11B25	PIER CAP		20	X				52	4.000								52	4	52	4	194							
24	10B29	COLUMN		17	X				22	5.000								23	10	23	10	246							
2	6B41	PIER CAP		20	X				52	0.000								52	0	52	0	154							
8	7B42	PIER CAP		7	X				4	0.000	2	11.750						9	7	9	7	15							
24	10B43	FOOTINGS		17	X				8	3.000								9	8	9	8	99							
10	2B44	PIER CAP		22	X				18.000	9.125								26	1	26	1	4							
24	6B45	FOOTINGS		31	S	X			4	0.000	18.000	4	0.000					10	10	10	6	37							
4	5B46	PIER CAP		13	S	X			3	1.000	3	0.000	3	1.000	3	0.000		13	1	12	9	54							
1	5B50	PIER CAP		13	S	X			2	9.000	2	9.000	2	9.000	2	9.000		11	11	11	7	12							
1	5B51	PIER CAP		13	S	X			2	9.000	3	0.000	2	9.000	3	0.000		12	5	12	1	13							
4	4B53	PIER CAP		10	S	X			6.000	3	1.000							4	1	3	11	1							
3	9B55	Pier Cap		17	X				27	1.000								28	4	28	4	2							
		INT BENT 4																											
25	5B1	PIER CAP		13	S	X			3	1.000	2	9.000	3	1.000	2	9.000		12	7	12	3	31							
21	4B2	PIER CAP		13	S	X			3	1.000	3	0.000	3	1.000	3	0.000		12	11	12	8	17							
24	6B3	FOOTINGS		31	S	X			3	0.000	18.000	3	0.000					8	10	8	6	30							
51	4B4	COLUMN		16	X				2	9.000								9	6	9	6	32							
2	9B30	PIER CAP		20	X				14	0.000								14	0	14	0	9							
5	9B31	PIER CAP		17	X				15	0.000								16	3	16	3	27							
3	9B32	PIER CAP		17	X				15	0.000								16	3	16	3	16							
2	9B33	PIER CAP		20	X				19.000	40	3.000							19		19		11							
3	9B34	PIER CAP		20	X				21	4.000								21	4	21	4	21							
2	9B35	PIER CAP		20	X				14	6.000								14	6	14	6	9							
																				END HOOK DIMENSIONS									
																				BAR SIZE		D		180° HOOKS ALL GRADES		90° HOOKS ALL GRADES			
																								NOTES:					
																								ALL STANDARD HOOKS SAME PROCEDURE AS					

486 355

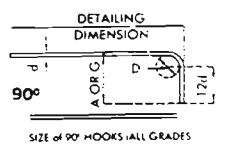
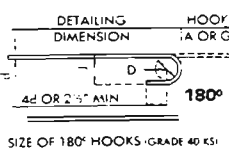
COMPLETE BILL OF REINFORCING STEEL

NO. REQ.	MARK NO.	LOCATION	EPOXY	SHAPE NO.	STIRRUP	SUBSTR.	VARIES	NO. EACH	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.
5	9836	PIER CAP		17	X				15	0.000									16	3	16	3	274		
7	10B37	PIER CAP		20	X				52	4.000									57	4	52	4	1576		
24	10B40	COLUMN		17	X				18	8.000									20	1	20	1	2074		
2	6B41	PIER CAP		20	X				52	0.000									52	0	52	0	156		
8	7B42	PIER CAP		7	X				4	0.000	2	11.750							9	7	9	7	157		
24	10B43	COLUMN		17	X				8	3.000									9	8	9	8	998		
10	2B44	PIER CAP		22	X				18.000	9.125									26	1	26	1	64		
41	5B46	PIER CAP		13	S	X			3	1.000	3	0.000	3	1.000	3	0.000			13	1	12	9	645		
1	5B50	PIER CAP		13	S	X			2	9.000	2	9.000	2	9.000	2	9.000			11	11	11	7	17		
1	5B51	PIER CAP		13	S	X			2	9.000	3	0.000	2	9.000	3	0.000			12	5	12	1	13		
4	4B53	PIER CAP		10	S	X				6.000	3	1.000							4	1	3	11	10		
3	9B55	Pier Cap		17	X				57	1.000									28	4	28	4	289		
		END BENT 5																							
54	5C1	BACKWALL	E	20	X				5	10.000									5	10	5	10	329		
54	5C2	BACKWALL	E	10	S	X				2	2.500	9.000							5	2	5	0	282		
54	5C3	BACKWALL	E	20	X				5	10.000									5	10	5	10	329		
4	6C4	BACKWALL	E	20	X				30	5.000									30	5	30	5	183		
12	4C5	BACKWALL		20	X				29	10.000									29	10	29	10	239		
15	4C6	BEAM		13	S	X			2	11.000	2	9.250	3	8.000	2	8.000			12	9	12	6	125		
46	4C7	BEAM		13	S	X			2	9.750	3	0.250	3	8.000	2	10.750			13	2	12	10	394		
10	4C8	BEAM		10	S	X				6.000	2	11.000							3	11	3	9	25		
4	9C9	BEAM		17	X				18	0.000									19	3	19	3	262		
4	9C10	BEAM		17	X				42	2.000									43	5	43	5	590		
4	9C11	BEAM		18	X				56	0.000									58	6	58	6	796		
2	6C12	BEAM		20	X				58	0.000									58	0	58	0	174		
4	4C13	APRON		20	X				30	0.000									30	0	30	0	83		
11	6C14	BEAM		10	S	X				2	1.500	2	8.000						6	11	6	7	109		
8	6C15	BEAM		10	S	X				2	1.500	3	1.030						7	4	7	0	84		
2	6C16	BEAM		20	X				2	9.000									2	9	2	9	8		
5	7C17	BEAM		14	X				6	0.000	2	9.000	2	10.000			2	0.000	11	7	11	4	116		
5	7C18	BEAM		11	X				5	11.000	2	9.000	6	1.000					14	9	14	5	147		
1	4C19	BEAM		13	S	X			15.000	2	10.500	2	7.000	2	8.000				10	5	10	1	7		
69	4C20	BEAM		10	S	X			2	6.000	9.000								5	9	5	7	257		
2	6C21	BEAM		20	X				3	2.000									3	2	3	2	10		
4	6W1	WING C		20	X				13	9.000									13	9	13	9	83		
4	6W3	WING C		15	X				12.000	6	7.000	12.000	4.625	11.125	4.625	11.125			8	7	8	7	52		
4	4W4	MUDWALL		10	S	X			2	7.000	6.000								5	8	5	6	15		
2	6W5	WING C		25	X				15.000	8	10.000	2	3.000			2	8.000	8	5.000	12	4	12	3	37	
2	4W6	MUDWALL		20	X				5	0.000									5	0	5	0	7		
2	6W7	MUDWALL		19	X				5	6.000	3	1.000							8	7	8	5	25		
5	6W10	WING C	E	20	X				6	4.000									6	4	6	4	48		
5	6W11	WING C	E	17	X				6	2.000									6	10	6	10	51		
8	6W20	WING C		20	X	V		2	5	10.000									5	10	5	10			
		INCR = 29.375 IN							13	2.000									13	2	13	2	114		
8	6W21	WING C	E	20	X	V		1	2	10.000									2	10	2	10			
		INCR = 3.375 IN							4	10.000									4	10	4	10	46		
8	6C22	WING C	E	17	X	V		1	2	8.000									3	4	3	4			
		INCR = 3.375 IN							4	8.000									5	4	5	4	52		
2	6W26	WING C		20	X				15.000										15	15			4		
4	6W1	WING D		20	X				13	9.000									13	9	13	9	83		
5	6W10	WING D	E	20	X				6	4.000									6	4	6	4	48		
5	6W11	WING D	E	17	X				6	2.000									6	10	6	10	51		
4	6W13	WING D		15	X				12.000	2	11.000	12.000	11.125	4.625	11.125	4.625			4	11	4	9	29		
4	4W14	MUDWALL		10	X				4	6.000	6.000								9	6	9	4	25		
2	4W15	MUDWALL		20	X				4	11.000									4	11	4	11	7		
2	6W16	MUDWALL		19	X				5	5.000	5	0.000							10	5	10	3	31		
2	6W17	WING D		25	X				15.000	8	5.250	2	3.000			2	5.000	8	1.000	11	11	11	10	36	
8	6W23	WING D		20	X	V		2	6	4.000									6	4	6	4			
		INCR = 27.375 IN							13	2.000									13	2	13	2	117		

Note: Two additional "G53" and "5B2" are included in bar bill for testing.

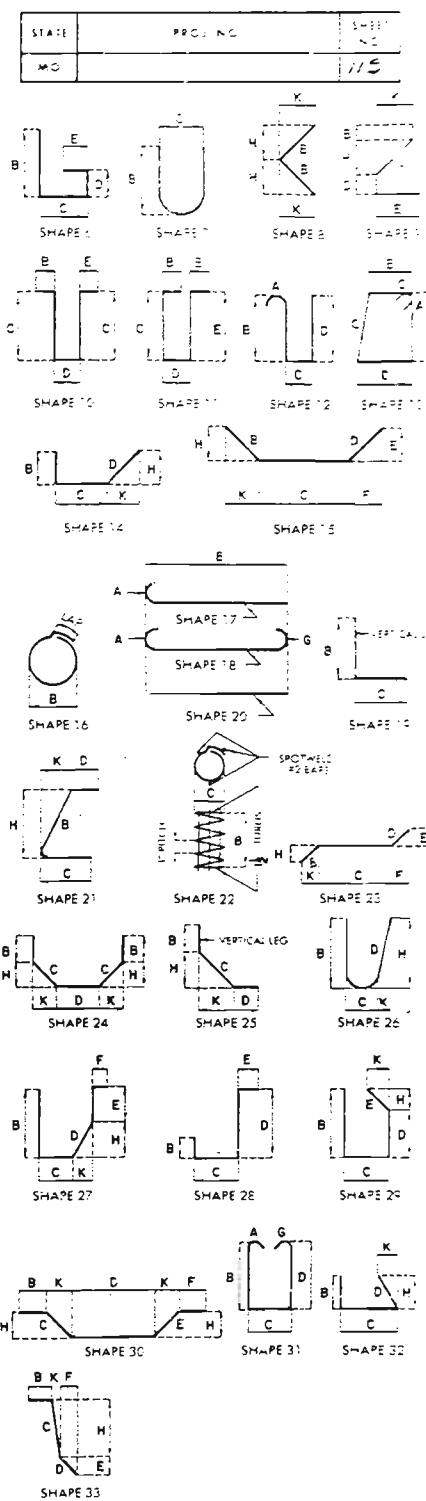
STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KS				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#3	1 1/8"	4"	4"	2 3/4"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/8"	12"	7 1/2"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND "HOOKS ON A BAR".

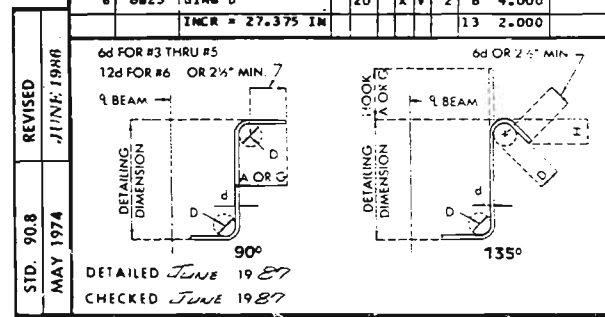


BAR SIZE	D (IN.)	END HOOK DIMENSIONS			
		180° HOOKS ALL GRADES		90° HOOKS ALL GRADES	
		A OR G	J	A OR G	J
#3	2 1/8"	5"	3"	6"	
#4	3"	6"	4"	8"	
#5	3 1/2"	7"	5"	10"	
#6	4 1/2"	8"	6"	12"	
#7	5 1/2"	10"	7"	14"	
#8	6"	11"	8"	16"	
#9	9 1/8"	15"	11 1/2"	19"	
#10	10 1/2"	17"	13 1/2"	22"	
#11	12"	19"	14 1/2"	24"	
#14	18 1/2"	27 3/4"	21 1/2"	27 3/4"	

NOTES:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEG TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEG. STD. HC JKS
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 FABRICATORS USE. NEAREST INCH ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS



BENDING DIAGRAMS



STD. 908
MAY 1974
REVISED
JUNE 1988

DETAILED JUNE 1987
CHECKED JUNE 1987

Note: This drawing is not to scale. Follow dimensions

Sheet No. 19A/19

Revised 7-27-88 JEFFERSON COUNTY

A-2942