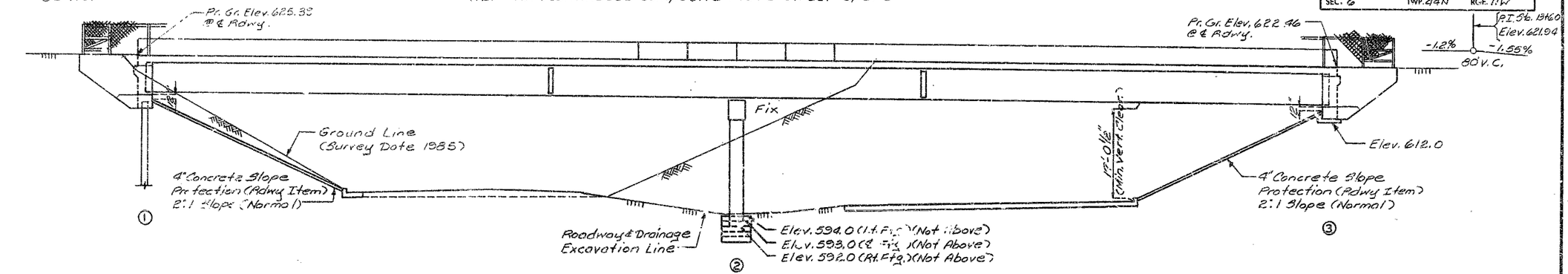
MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(121'-121') Continuous Composite Plate Girder Spans

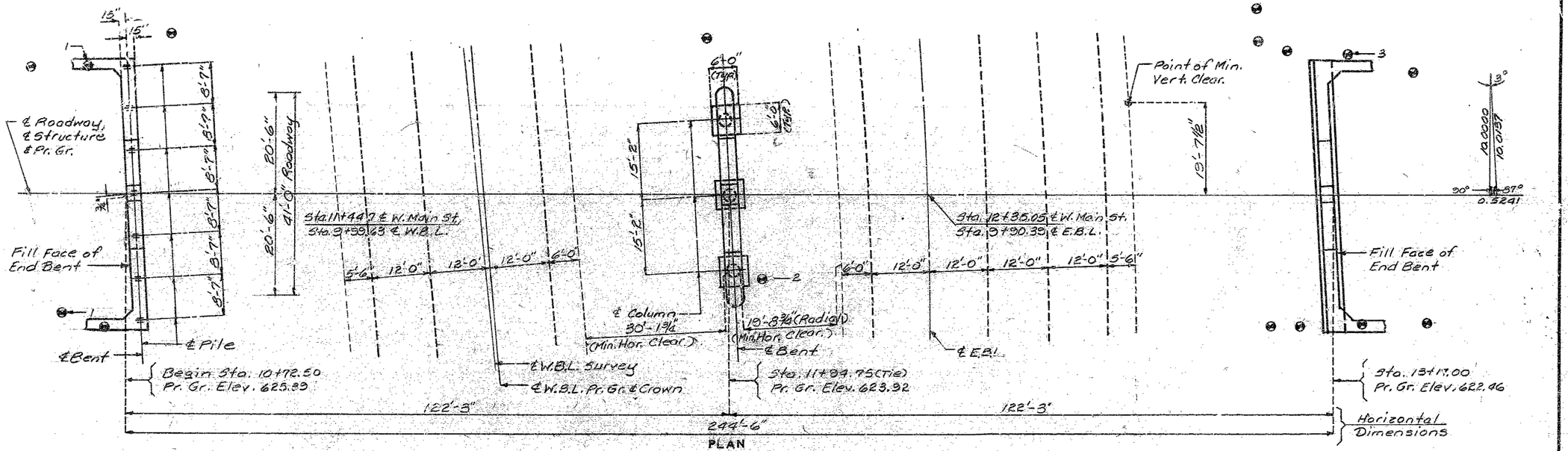
STATE	PROJ. NO.	SHEET NO.
MO.		27
SEC. 6	TWP. 44N	RGE. 11W



GENERAL ELEVATION

Note: For General Notes and Estimated Quantities, see Sh. No 2

"◉" Indicates location of borings. Boring data for all locations is available upon request from the district office. Boring data for numbered locations is detailed on Sh. No. 2



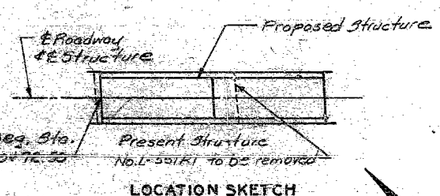
PLAN

FOOTING DATA		
BENT NO.	2	3
Foundation Material	Rock	Rock
Design Bearing Tons/Sq. Ft.	10.0	2.0

Note: In no case shall footings of bent No. 2 be placed higher than elevations shown.

PILE DATA		
BENT NO.		1
Pile Type and Size		1-12X53
Number		7
Approximate Length	Ft.	171.4-218
Design Bearing	Tons	61
Hammer Energy Required	Ft. Lbs.	19,600

Note: Minimum energy requirement of hammer is based on plan length and design bearing value of piles.
All piles shall be driven to practical refusal.
Prebore for piles at Bent No. 1 to Elev. 600.0.



LOCATION SKETCH

B.M. #5 - Elev. 560.52 Top of N.E. bolt on conc. base of A.R. signal 180' W. of Mo. River Bridge.

BRIDGE: W. MAIN ST. OVER ROUTE 54

STATE ROAD IN JEFFERSON CITY

AT W. MAIN ST.

PROJECT NO. STA. 10+72.50 (W. MAIN ST.)

JOB NO. 5-U-54-258I RTE. 54

COLE COUNTY

DATE 8/16/89

STD. 611.60	
STD. 706.35	
A-4662	

DESIGNED JAN. 1989
DETAILED MAR. 1989
CHECKED JUNE 1989

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

383 87

STATE	PROJ. NO.	SHEET NO.
MO.		28

Standard Penetration Test

Depth Blows/6"

Elev. 625.5

5 3-2-1 — Fill.

10 1-2-2 — Elev. 615.0

15 4-6-8 — Brown silty clay, lost water at 10-0'.

20 3-3-6 — Elev. 604.1

25 5-8-10 — Brown mottled silty clay.

Elev. 599.0

Brown silty clay with scattered cobbles.

30 100 In 6" — Elev. 595.2

Dolomite, cut with rock bit. Light brown thin bedded dolomite. Chert layer — Elev. 594.5

Elev. 592.2

Light brown thin to medium bedded dolomite. — Elev. 592.1

Light brown dolomite with shale seams, very broken, thin bedded. — Elev. 587.4

Elev. 586.0

Light brown thin to medium bedded dolomite, with a few scattered chert layers very hard. — Elev. 584.5

Light brown, medium bedded dolomite with a few scattered shale seams very hard. — Elev. 579.5

① (Rt.) (CORE)

Elev. 625.6

Concrete sidewalk.

Elev. 625.2

Brown silty clay.

Clay and gravel. — Elev. 607.7

Weathered dolomite. — Elev. 607.0

Hard dolomite — Elev. 606.1

Elev. 604.4

Refusal (possible bridge footing)

① (Lt.)

Elev. 623.7

Concrete bridge deck.

Elev. 622.7

Void beneath bridge.

Elev. 608.7

Brown silty clay

Elev. 606.0

Weathered rock — Elev. 604.1

Hard rock, ledge — Elev. 603.7

Soft seam — Elev. 602.4

Weathered rock — Elev. 601.0

Refusal in hard rock

Elev. 599.9

②

Elev. 622.0

Brown silty clay and gravel.

Hard Dolomite — Elev. 619.6

Elev. 619.0

③

BORING DATA

Note: For location of borings see Sh. No. 1 Boring Data for all locations is available upon request from the district office.

ESTIMATED QUANTITIES FOR ALTERNATE SLABS			
TYPE OF SLABS	REINF. (LBS.)		CONC. (CU. YDS.)
	EPOXY	PLAIN	
Cast-In-Place Conventional Forms	89,770	10,530	368.6
Precast Panel Forms	59,640	10,530	316.1
Stay-In-Place Forms	**89,770	10,530	*352.1

Note: The table of Estimated Quantities for Alternate Slabs represents the quantities used by 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 corrugations of S.I.P. forms.

** Does not include reinforcing bars used as bar supports. Precast panel quantities are based on skewed end panels.

ESTIMATED QUANTITIES				
ITEM		SUBSTR	SUPERSTR	TOTAL
Removal of Bridge (No. L-551A1)	Lump Sum			1
Class I Excavation	Cu. Yd.	180		180
72 In. Pedestrian Fence	Lin. Ft.		535	535
Structural Steel Piles (12 In.)	Lin. Ft.	193		193
Pre-Bore for Piling	Lin. Ft.	109		109
Class B Concrete	Cu. Yd.	86.8		86.8
Slab on Steel (See Special Prov.)	Sq. Yd.		1186	1186
Safety Barrier Curb	Lin. Ft.		489	489
Sidewalk (Bridges)	Sq. Ft.		2,690	2,690
Laminated Neoprene Brg. Pads (Tapered)	Each		10	10
Laminated Neoprene Brg. Pads (Steel Structure)	Each		5	5
Reinforcing Steel	Lb.	7,900		7900
Fabricated Structural Carbon Steel (Pit. Gir.)	Lb.		189,270	189,270
Fabricated Structural Low Alloy Steel (Pit. Gir.) A-572	Lb.		122,630	122,630
Vertical Drain at End Bents	Each			2
Painting (System C) Green	Ton		155.1	155.1

Note: All concrete above top of beam and below top of slab in End Bents is included in the estimated superstr. quantities for Slab on Steel, see Special Provisions.

All reinforcement in the End Bents is included with superstr. quantities.

The cost of furnishing, fabricating and installing Neoprene Bearing Pads, complete-in-place, will be paid for at the contract unit price for Laminated Neoprene Bearing Pads tapered per each.

All concrete and reinforcing steel in the sidewalk are included in the superstructure quantities for sidewalks.

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O.-1983 and interims thru 1988 d Factor Design

Design Loading:
HS 20-44 35#/Sq. Ft. Future Wearing Surface.
Earth 120#/cu. ft. Equivalent Fluid Pressure 45#/cu. ft.
Fatigue Stress - Case II.

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 3,000 psi.
Class B1 Concrete (Safety Barrier Curb) f'c = 4,000 psi.
Class B2 Concrete (Superstr. except Safety Barrier Curb) f'c = 4,000 psi.
Reinforcing Steel (Grade 60) fy = 60,000 psi.
Structural Carbon Steel fy = 36,000 psi.
Structural Steel (A.S.T.M. A572) Grade 50 fy = 50,000 psi.
Steel Pile fy = 9,000 psi.

Fabricated Steel Connections:
Field connectors, High Strength Bolts 7/8" ϕ, holes 15/16" ϕ except as noted.

Joint Filler:
All joint filler shall meet the requirements of Std. Spec. 1057.2.4, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

Paint:
System C by Contractor in accordance with Std. Spec. 712.12. (Color of final field coat for System C shall be green).
Areas to be encased in End Bent concrete shall be painted one coat of System C primer and scratched or damaged surfaces are to be touched up in the field before concrete is poured.

Construction Clearance:
A minimum vertical clearance of 15'-6" from existing lanes and a mimimum lateral clearance of 50'-0" centered on existing lanes shall be maintained during construction.

All reinforcing bars in top of substructure beam shall be spaced to clear anchor bolts for bearings by at least ½".

SEE FINAL PLANS

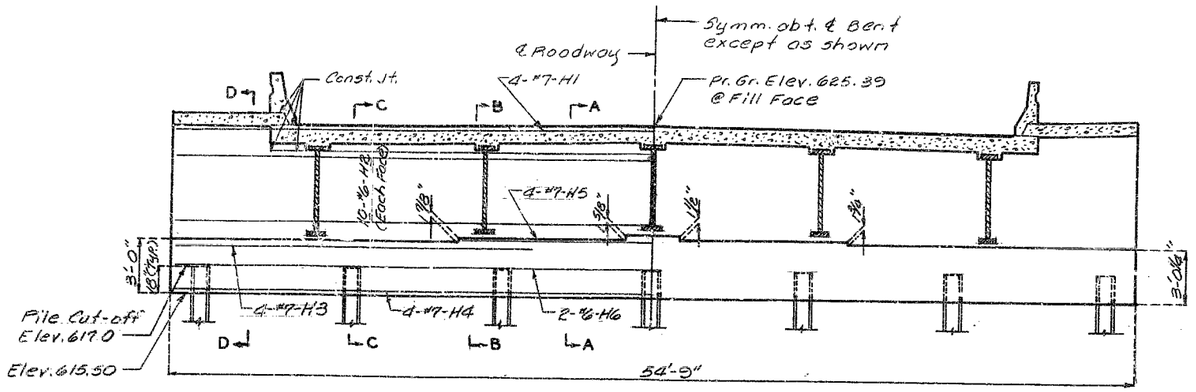
DETAILED FEB 1989
CHECKED June 1989

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

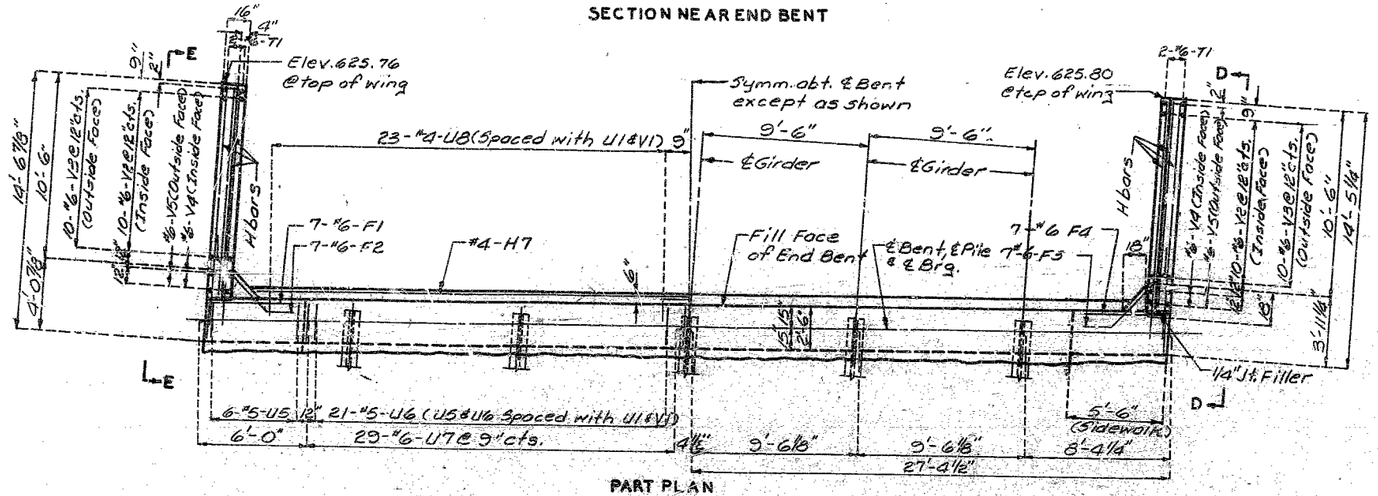
Sheet No. 2 of 17

COLE COUNTY A-4662

STATE	PROJ. NO.	SHEET NO
MO.		29

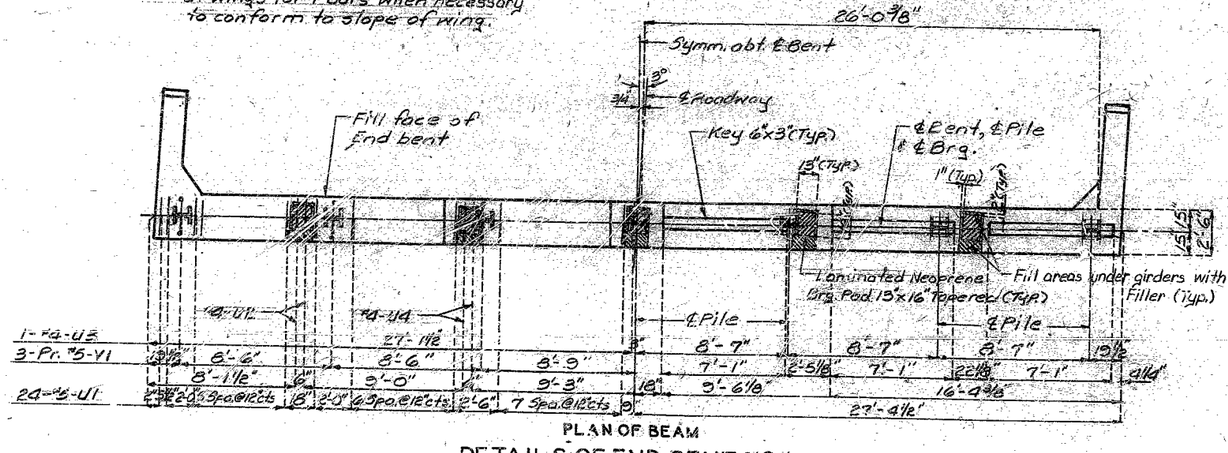


SECTION NEAR END BENT



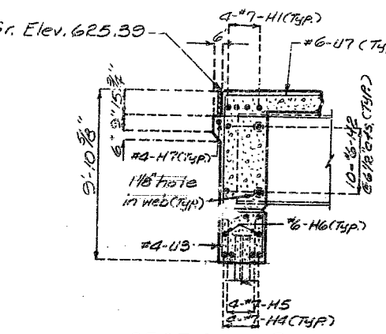
PART PLAN

Note: Field bending shall be required at wings for Fbars when necessary to conform to slope of wing.

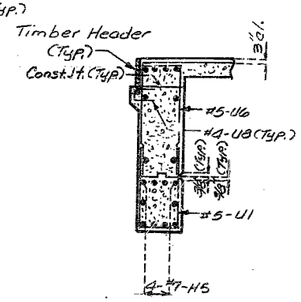


PLAN OF BEAM

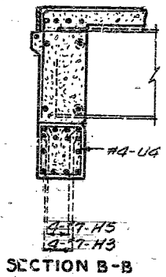
DETAILS OF END BENT NO. 1



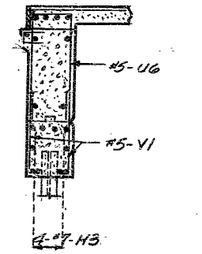
SECTION AT ℄ ROADWAY



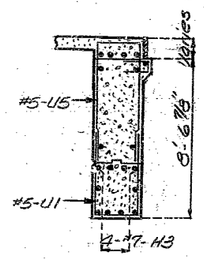
SECTION A-A



SECTION B-B

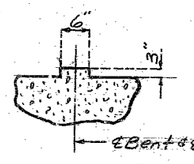


SECTION C-C

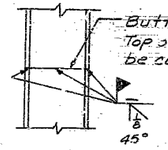


SECTION D-D

Note: Concrete diaphragm shall be poured prior to the slab, allowing sufficient time for the set of the concrete in the diaphragm.
All concrete in the End Bent above top of beam and below top of slab shall be class B2.



SECTION THRU KEY



DETAIL STEEL PILE SPLICE

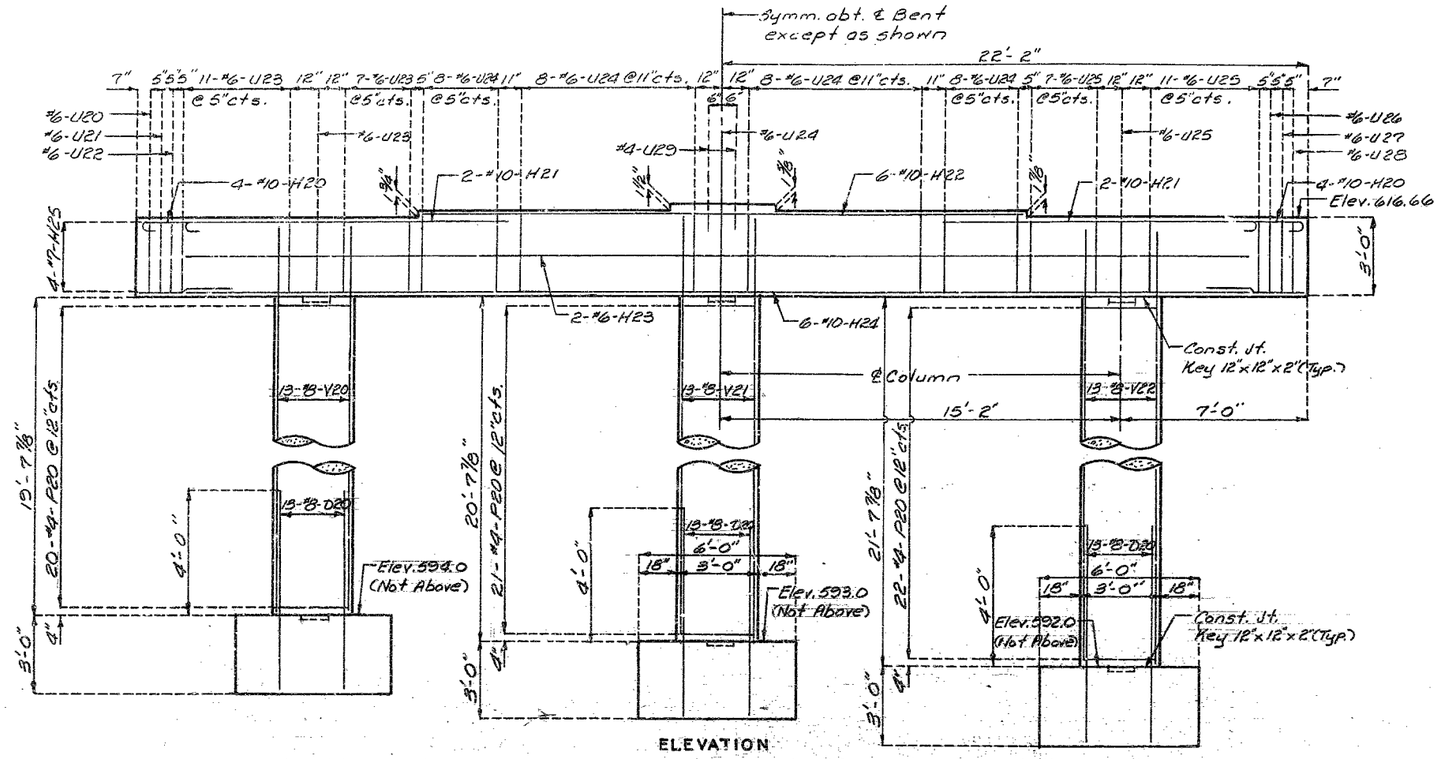
Note: For Elevations D-D and ℄-℄ see sh. No. 6
For details and reinforcement of safety barrier curb & timber header, see sh. No. 15.
For details and reinforcement of sidewalk, see sh. No. 14.
All Ubars in end bent are to be placed parallel to ℄ Roadway.
For details of laminated neoprene bearing pad, see sh. No. 5.
All pile shall be HP12x53.

DETAILED MARCH 1989
CHECKED June 1989

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

385 19

STATE	PROJ. NO.	SHEET NO.
MO.		30



Note: For detail of anchor bolt wells, see sh. No. 10

DETAILS OF INTERMEDIATE BENT NO. 2

SEE FINAL PLANS

386 190

DETAILED JAN. 1989
CHECKED June 1989

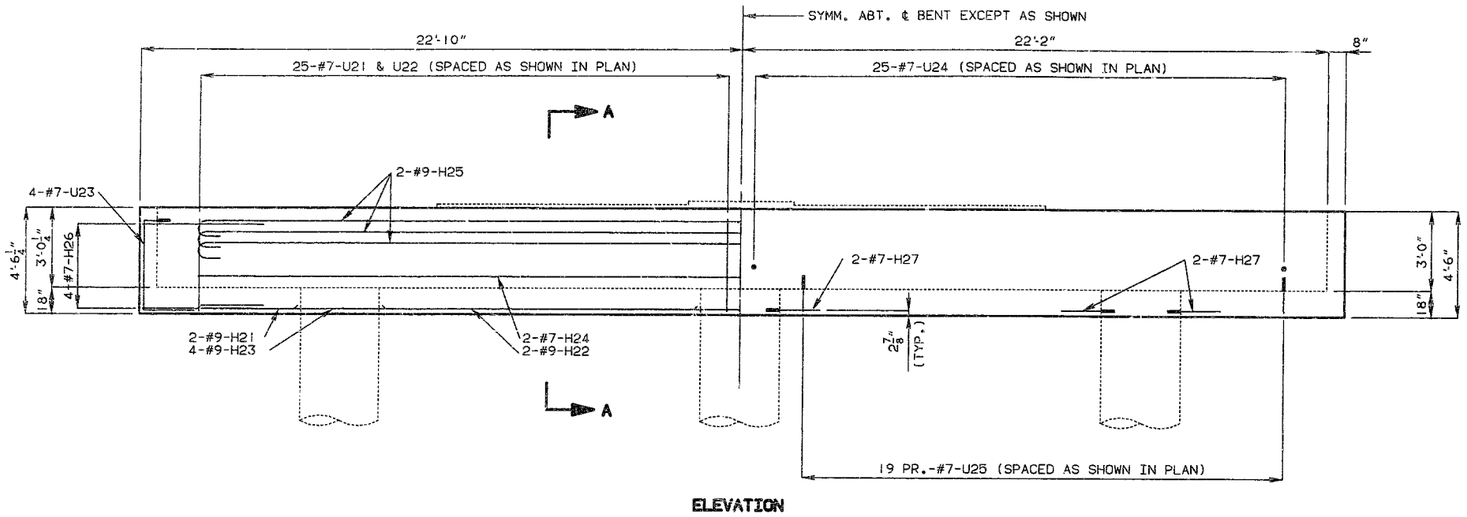
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 17

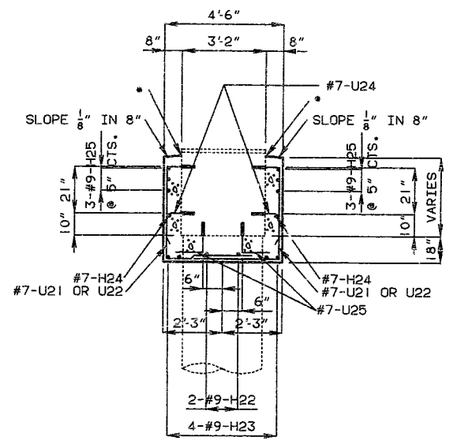
COLE COUNTY

A-4662

STATE	PROJ. NO.	SHEET NO.
MO.		



ELEVATION



SECTION A-A

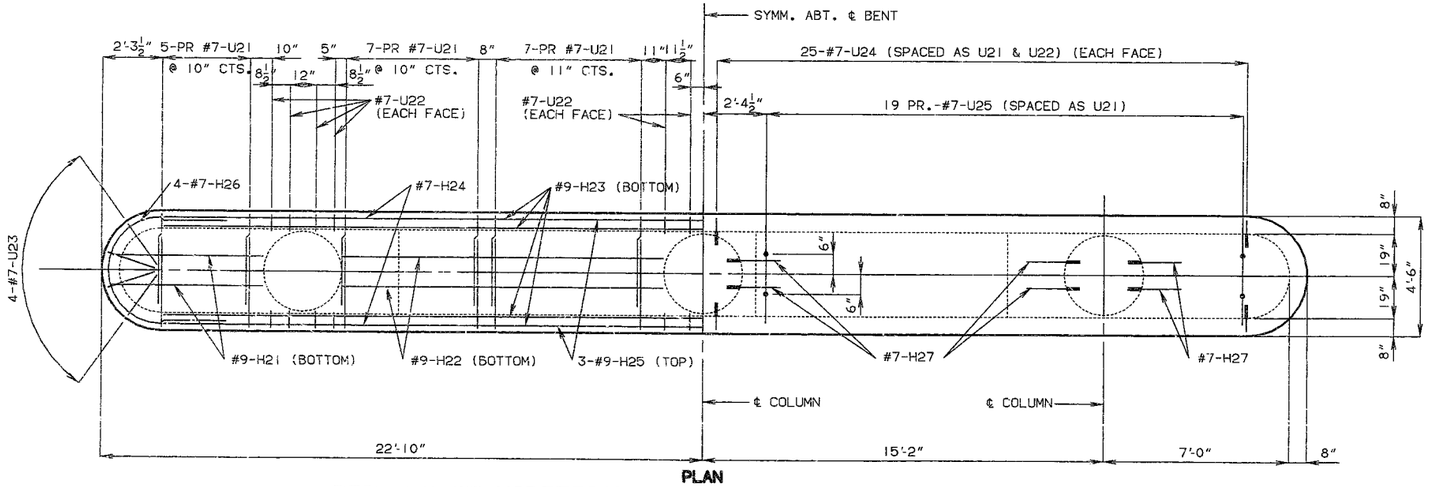
NOTE: THE EXISTING GIRDERS SHALL BE RAISED AND SUPPORTED AS REQUIRED TO RELIEVE THE LOAD ON THE BEARINGS. RAISING THE GIRDERS SHALL BE DONE SIMULTANEOUSLY TO PREVENT ANY DAMAGE TO THE ADJOINING STEEL AND CONCRETE DECK. THE JACKING POINT SHALL BE WITHIN 7'-0" OF THE ℄ OF BEARING OF BENT NO. 2 AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

JACKS SHALL SUPPORT 200 TONS PER GIRDER.

FLANGES AND WEBS SHALL BE BRACED AT ℄ OF JACK.

SANDBLASTING SHALL BE REQUIRED ON EXISTING CONCRETE SURFACE THAT WILL BE IN CONTACT WITH NEW CONCRETE.

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



PLAN

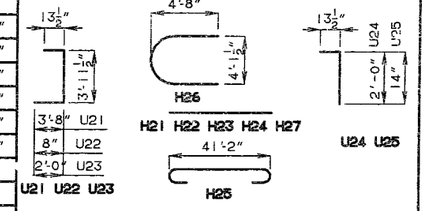
DETAILS OF MODIFICATION AT INTERMEDIATE BENT NO. 2

NOTE: THE ESTIMATED QUANTITIES FOR THE MODIFICIATION OF INTERMEDIATE BENT NO. 2 ARE 4750 POUNDS OF REINFORCING STEEL AND 17.0 CUBIC YARDS OF CLASS B CONCRETE.

ALL REINFORCEMENT SHALL BE GRADE 60.

BILL OF REINFORCING STEEL

NO REQD	SIZE & MARK	NOMINAL LENGTH	ACTUAL LENGTH	BENDING DIAGRAMS (DIMENSIONS ARE OUT-TO-OUT)
4	9H21	5'-9"	5'-9"	
4	9H22	12'-1"	12'-1"	
4	9H23	41'-2"	41'-2"	
2	7H24	41'-2"	41'-2"	
6	9H25	43'-8"	43'-8"	
8	7H26	11'-8"	11'-8"	
12	7H27	2'-6"	2'-6"	
76	7U21	8'-9"	8'-5"	
24	7U22	5'-9"	5'-5"	
8	7U23	7'-1"	6'-9"	
100	7U24	3'-2"	3'-0"	
76	7U25	2'-4"	2'-2"	



NOTE:

ACTUAL LENGTH MEASURED ALONG ℄ OF BAR.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES STIRRUP AND TIE DIMENSIONS.

NOTE:

THE CONTRACTOR SHALL USE ONE OF THE ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS. THESE ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS EXCEPT THAT A #7 GRADE 60, REINFORCING BAR EXTENDING 7" INTO THE OLD CONCRETE SHALL BE SUBSTITUDED FOR THE THREADED ROD STUD. THE #7 GRADE 60, REINFORCING BARS ARE SHOWN IN THE BAR BILL ABOVE.

DETAILED APR. 1990
CHECKED APR. 1990

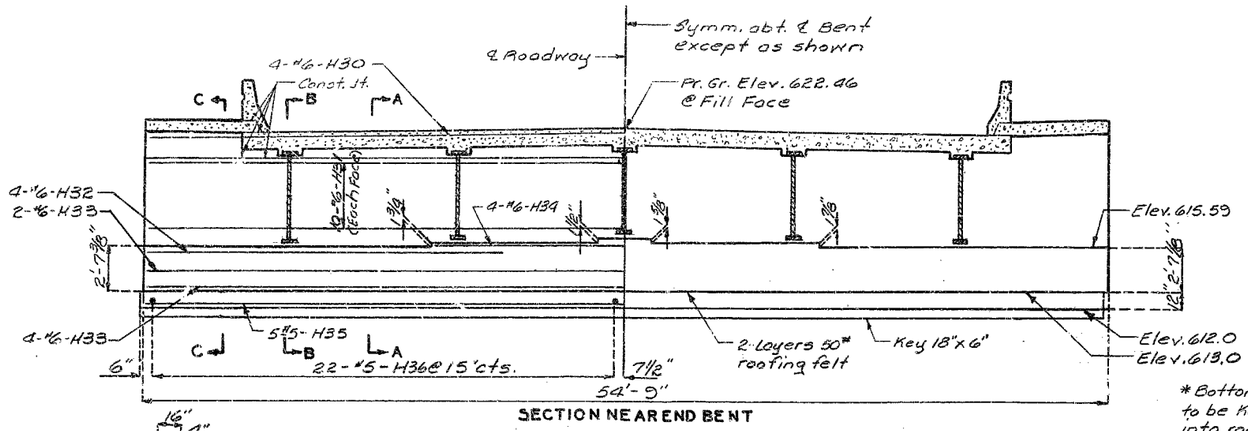
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

⚠ ADD SHEET 4-8-90

COLE COUNTY

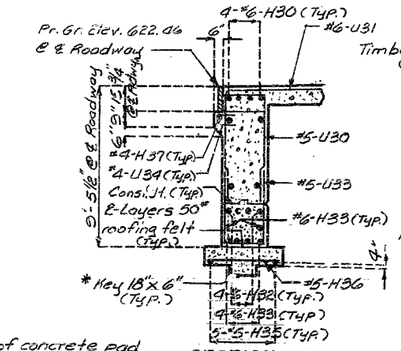
A-4662

STATE	PROJ. NO.	SHEET NO.
MO.		31

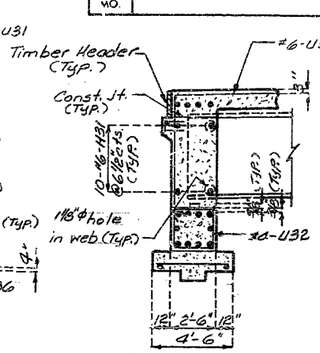


SECTION NEAR END BENT

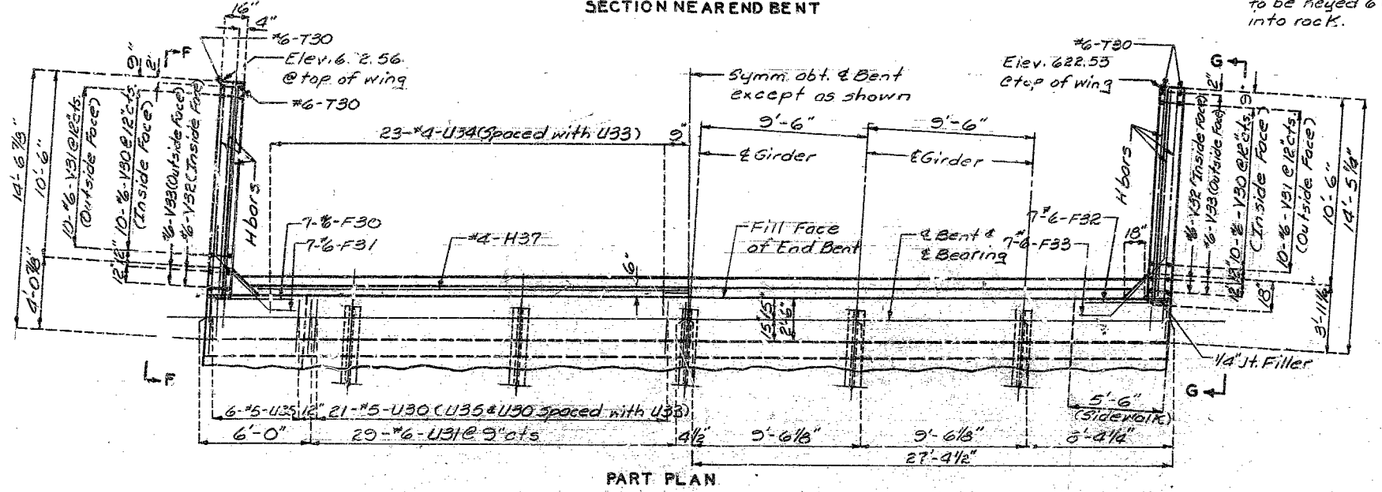
* Bottom of concrete pad to be Keyed 6" (min.) depth into rock.



SECTION A-A

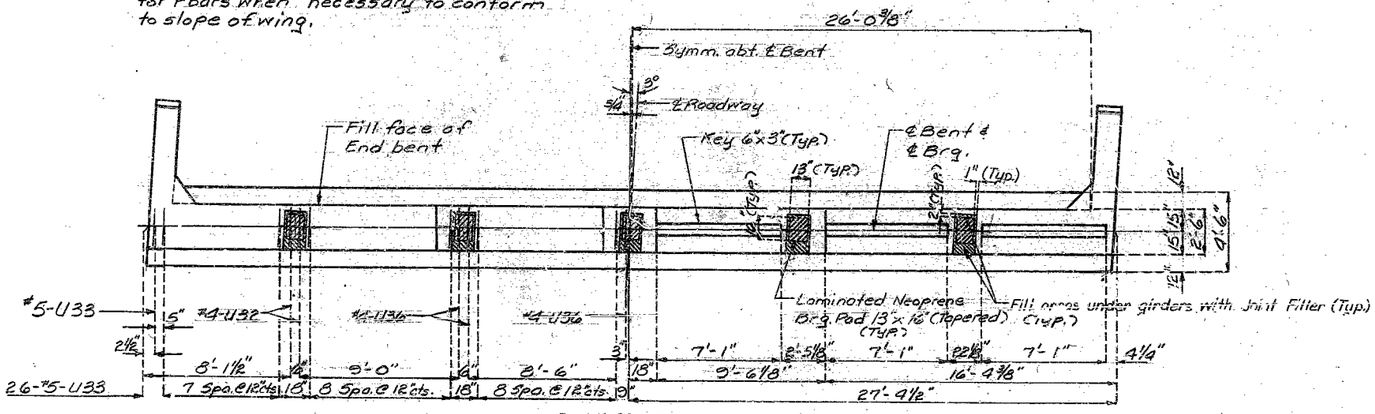


SECTION B-B



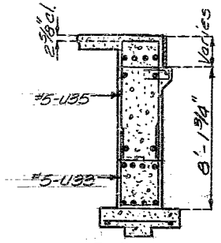
PART PLAN

Note: Field bending shall be required at wings for F bars when necessary to conform to slope of wing.



PLAN OF BEAM

DETAILS OF END BENT NO. 3

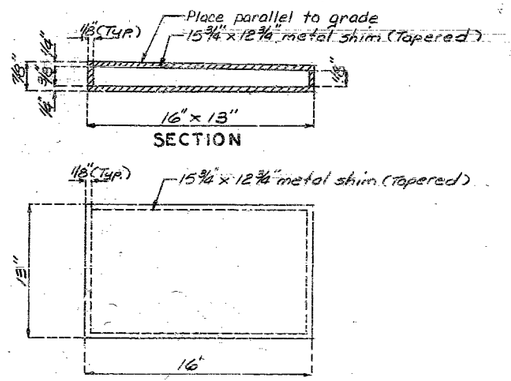


SECTION C-C

Note: Concrete diaphragm shall be poured prior to the slab, allowing sufficient time for the set of concrete in the diaphragm.

Note: Rock shall be excavated to provide at least 6" of earth under the wings.
All concrete in the End Bent above top of beam and below top of slab shall be class B2.

Note: For Elevations F-F, and G-G, see sh. No. 6.
For details and reinforcement of safety barrier curb & timber header, see sh. No. 15
For details and reinforcement of sidewalk, see sh. No. 14
All U bars in end bent are to placed parallel to ℄ Roadway.
For detail of Key, see sh. No. 3.



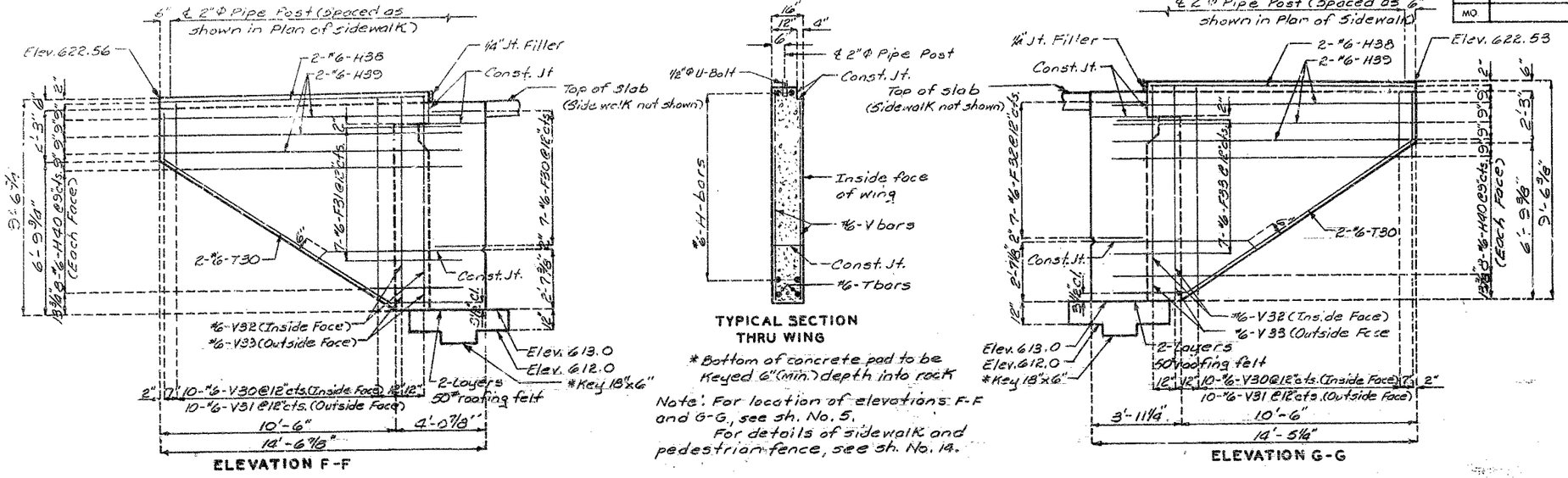
DETAILS OF LAMINATED NEOPRENE BRG. PAD
BTS. NO. 1 & 3

DETAILED FEB. 1989
CHECKED June 1989

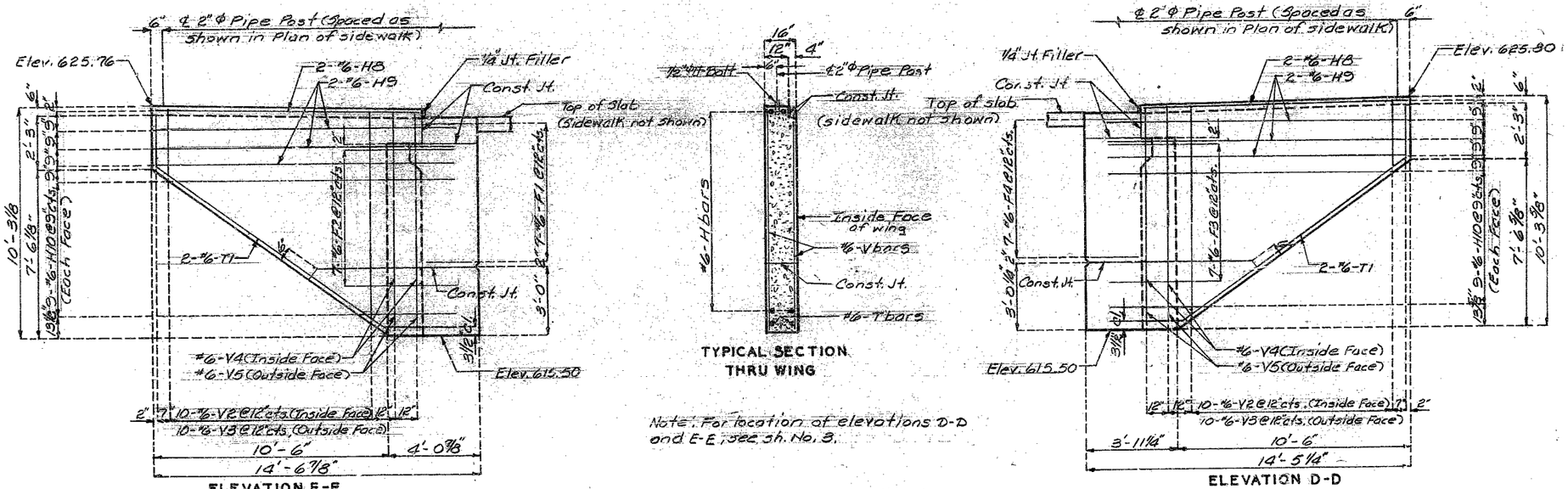
Note: This drawing is not to scale. Follow dimensions.

38Z 192

STATE	PROJ. NO.	SHEET NO.
MO		32



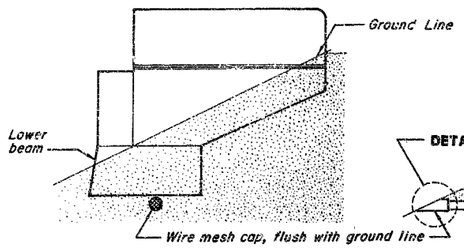
DETAILS OF END BENT NO. 3



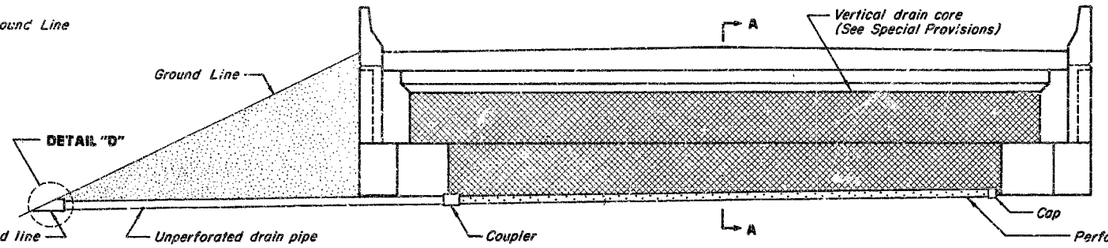
DETAILS OF END BENT NO. 1

388 193

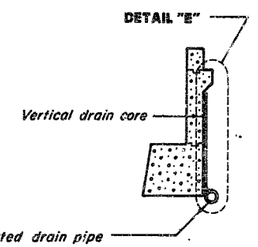
STATE	PROJ NO	SHEET NO
MO		33



ELEVATION OF WING



ELEVATION AT END BENT
(NON-INTEGRAL END BENT)



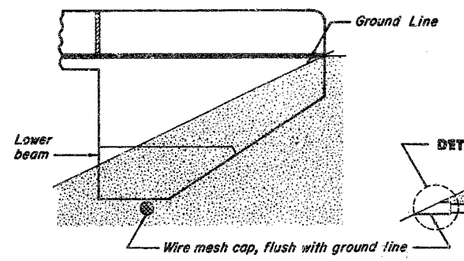
SECTION A-A

GENERAL NOTES:

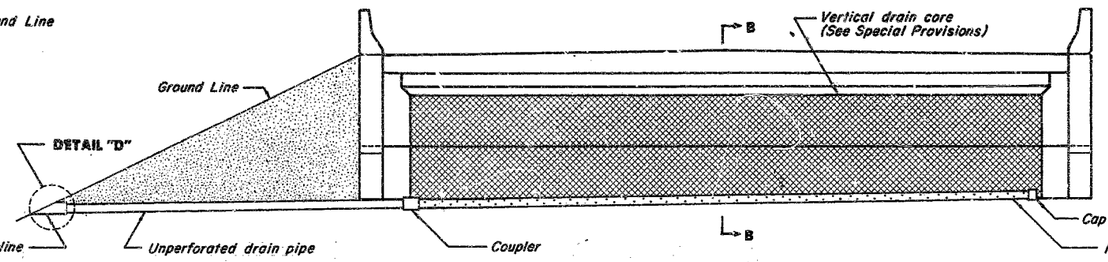
DRAIN PIPE MAY BE EITHER 6" DIAMETER CORRUGATED METALLIC-COATED STEEL PIPE UNDERDRAIN, 4" DIAMETER CORRUGATED POLY VINYL CHLORIDE (PVC) DRAIN PIPE, OR 4" DIAMETER CORRUGATED POLYETHYLENE (PE) DRAIN PIPE.

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 1½".
(SEE ELEVATION AT END BENT)

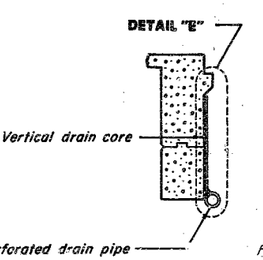
PERFORATED PIPE SHALL BE PLACED AT FILL FACE SIDE AT THE BOTTOM OF END BENT AND PLAIN PIPE SHALL BE USED WHERE THE VERTICAL DRAIN ENDS TO THE EXIT AT GROUND LINE.



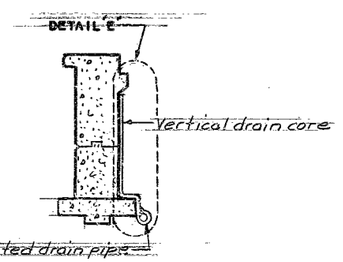
ELEVATION OF WING



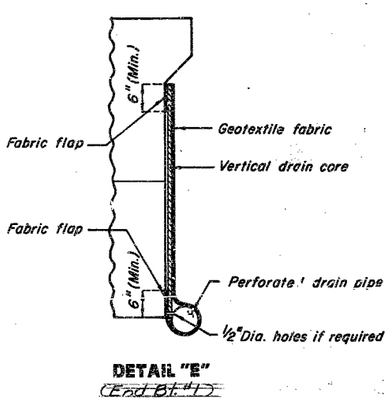
ELEVATION AT END BENT
(INTEGRAL END BENT)



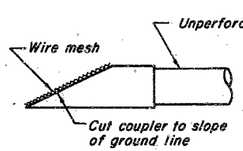
SECTION B-B
(End Bt. #1)



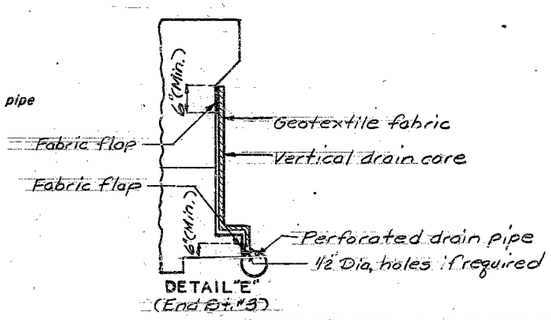
SECTION C-C
(End Bt. #3)



DETAIL "E"
(End Bt. #1)



DETAIL "D"



DETAIL "E"
(End Bt. #3)

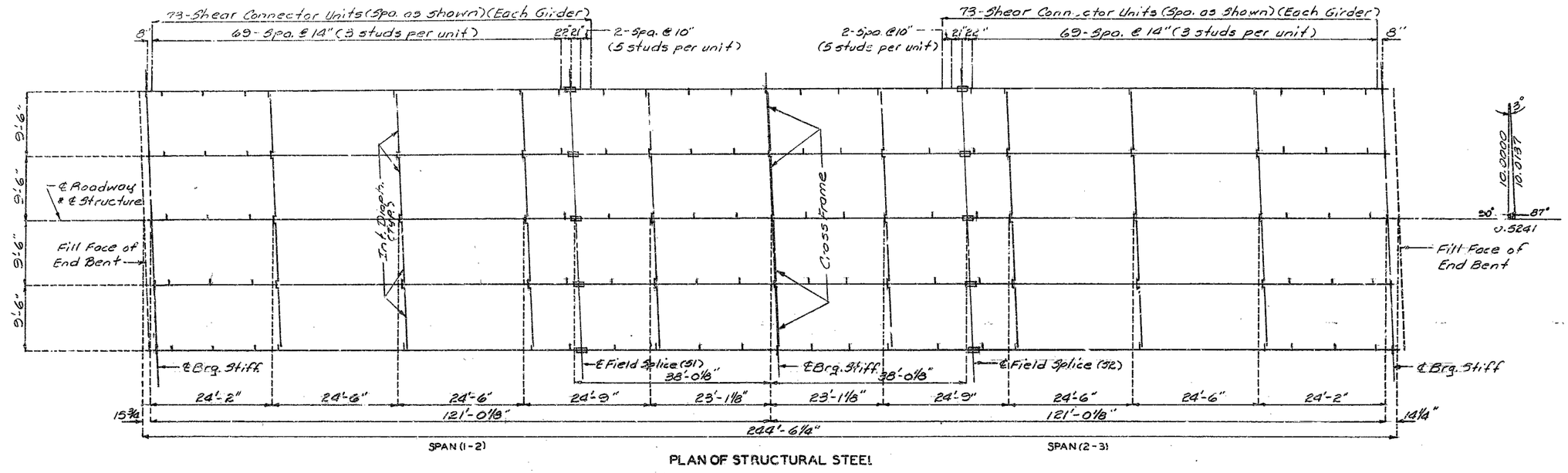
VERTICAL DRAIN AT END BENTS

Vert. Drain	Revised
MARCH 1986	MAR. 1987

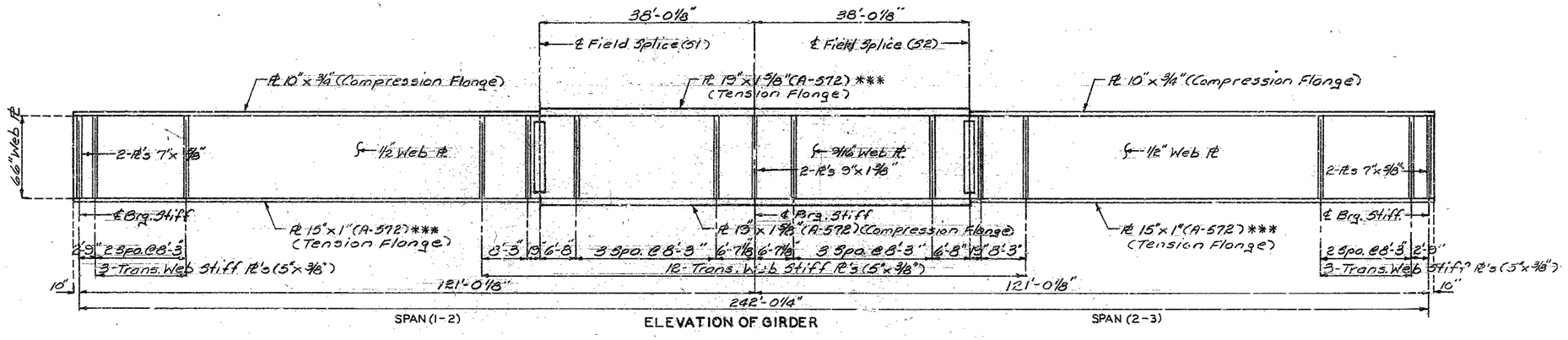
DETAILED MAY 1989
CHECKED June 1989

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

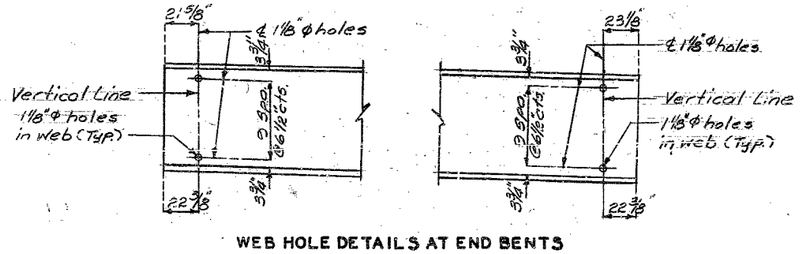
STATE	PROJ. NO.	SHEET NO.
MO.		34



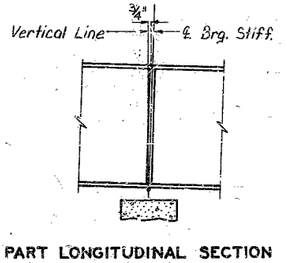
PLAN OF STRUCTURAL STEEL



ELEVATION OF GIRDER



WEB HOLE DETAILS AT END BENTS



PART LONGITUDINAL SECTION (ALL BENTS)

Note: Plate girders shall be fabricated to conform to the camber diagram shown on sh. No. 10.

Transverse web stiffeners shall be located as shown in plan of structural steel.

Intermediate web stiffener plate and diaphragm spacings may vary from plan dimensions by a maximum of 3" for diaphragm to connect to the intermediate web stiffener plate.

*** Indicates flange plates subject to notch toughness requirements.

All web plates shall be subject to notch toughness requirements.

Fabricated structural steel shall be A36, except as noted.

Longitudinal dimensions are parallel to grade.

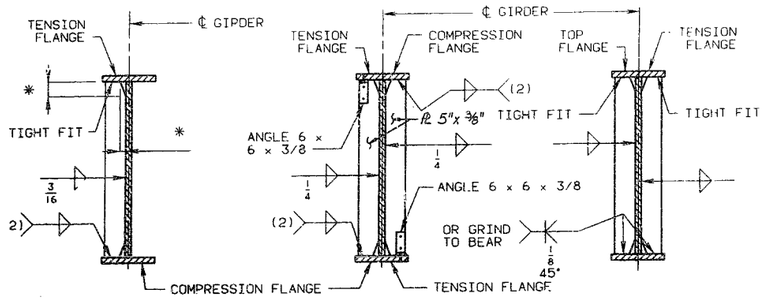
For details of shear connectors, see sh. No. 10.

DETAILED MARCH 1989
CHECKED June 1989

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

398 195

STATE	PROJ. NO.	SHEET NO.
MO.		35



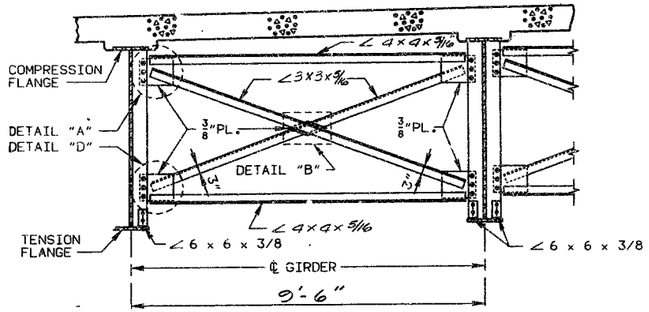
INT. WEB STIFF. (ONE SIDE ONLY) | INT. DIAPH. CONN. PLATE | END BRG. STIFF. | INT. BRG. STIFF.

(2) WELD TO COMPRESSION FLANGE AS LOCATED ON ELEVATION OF GIRDER.

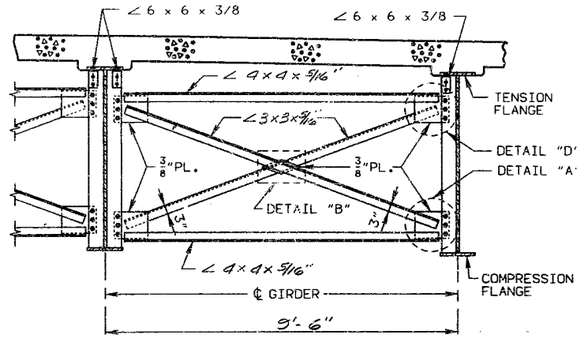
* 1-1/2" x 3" TYPICAL FOR ALL INT. WEB STIFF., INT. DIAPH. CONN. PL. AND BRG. STIFF.

WELDING DETAILS

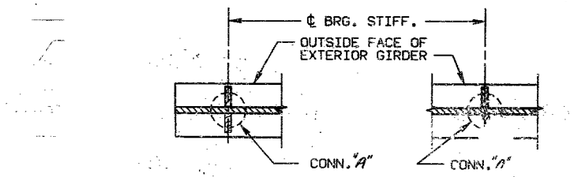
Note: The two 3/4"ø H.S. Bolts that connect the 6x6x3/8 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.



TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS BOTTOM FLANGE IN TENSION

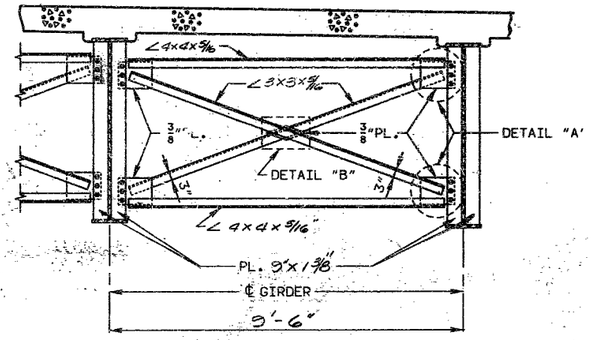


TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS TOP FLANGE IN TENSION

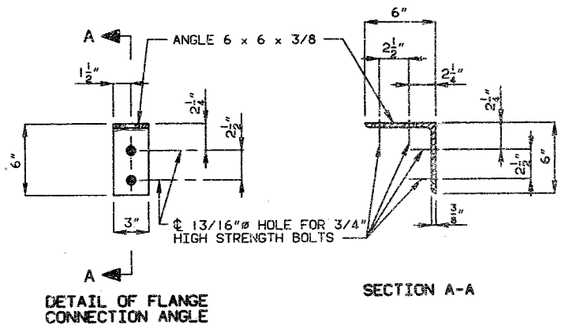


END BRG. STIFF. | INT. BRG. STIFF.

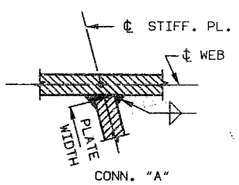
TYPICAL LOCATION DETAILS



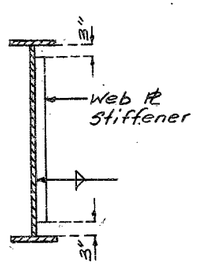
TYPICAL PART SECTION SHOWING CROSS FRAMES



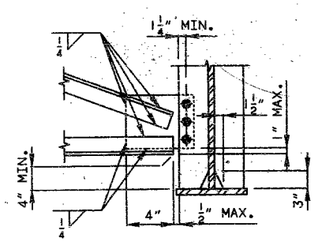
DETAIL OF FLANGE CONNECTION ANGLE | SECTION A-A



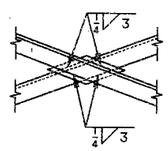
WELDING DETAILS



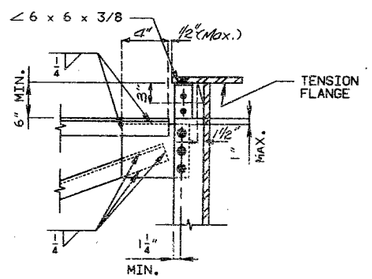
DETAIL OF CLIPPED WEB STIFF. NEAR FIELD SPLICE



DETAIL "A"



DETAIL "B"



DETAIL "D"

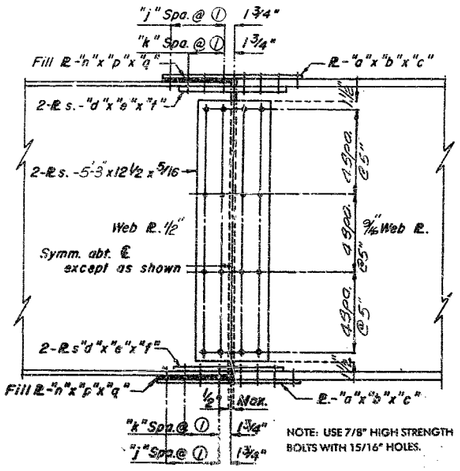
Note: When web stiffener plates interfere with flange splice plates and bolts, clip stiffener plates as shown.

DETAILED MAY 1989
CHECKED June 1989

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

37 196

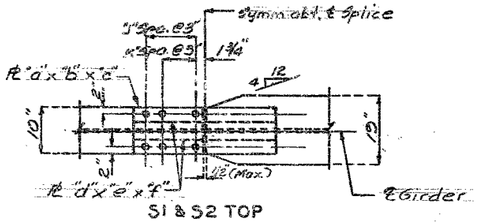
STATE	PROJ. NO.	SHEET NO.
MO.		36



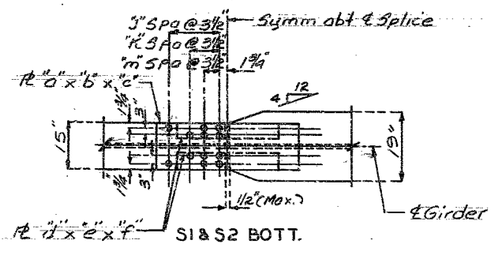
NOTE: USE 7/8" HIGH STRENGTH BOLTS WITH 15/16" HOLES.

BOLTED FIELD SPLICE

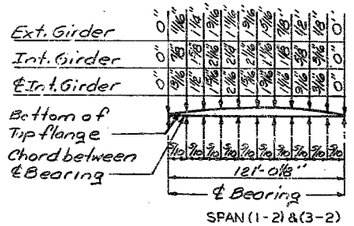
① See plan of flange for spacing



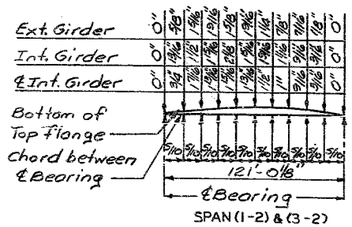
S1 & S2 TOP



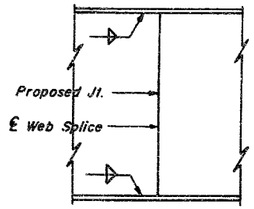
S1 & S2 BOTT.



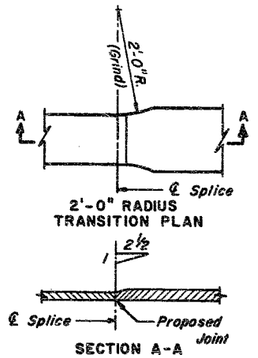
SPAN (1-2) & (3-2)
CAMBER DIAGRAM
(S.I.P. option)



SPAN (1-2) & (3-2)
CAMBER DIAGRAM
(C.I.P. or Pls Panel Option)



SHOP WEB SPLICE

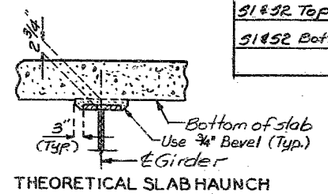


2'-0" RADIUS TRANSITION PLAN

SECTION A-A

WELDED SHOP FLANGE SPLICE

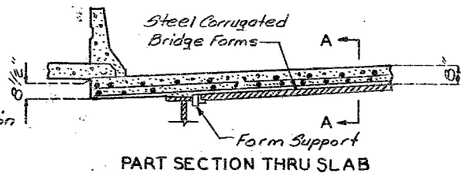
SPLICE	TABLE OF DIMENSIONS - FIELD SPLICE											
	"a"	"b"	"c"	"d"	"e"	"f"	"j"	"k"	"m"	"n"	"p"	"q"
S1 & S2 Top	10"	⅜"	18½"	4"	½"	18½"	2	2	-	10"	⅞"	9"
S1 & S2 Bott.	15"	⅞"	2'-10½"	6½"	1"	2'-3½"	4	3	2	15	⅝"	17



THEORETICAL SLAB HAUNCH

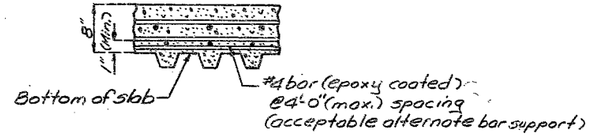
Note: 2¾" Dimension may vary if girder camber after erection differs from plan camber by more than the % of D.L. deflection due to weight of structural steel. No payment will be made for additional forming or concrete required for variation in haunching.

Note: Camber includes allowance for dead load deflection due to concrete slab, sidewalks, curb and structural steel.
18% of dead load deflection is due to weight of structural steel.



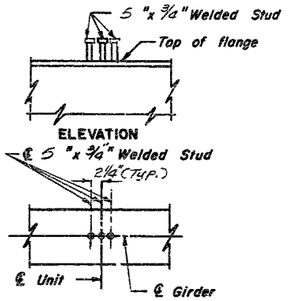
PART SECTION THRU SLAB
(S.I.P. OPTION)

Note: S.I.P. option is the same as C.I.P. except as shown.



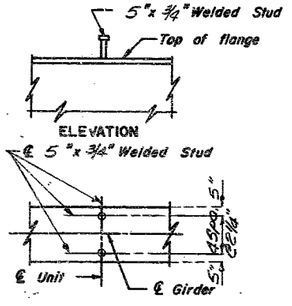
SECTION A-A

Note: The corrugation valleys of forms shall match the bottom transverse reinforcing steel spacing.
To determine the haunch for the stay-in-place alternate, add ½" to the haunch for the cast-in-place alternate.



PLAN OF STUD CONN.
(3 studs per unit)

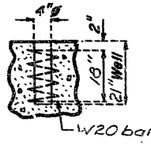
DETAILS OF SHEAR CONNECTORS



PLAN OF STUD CONN.
(5 studs per unit)

DETAILS OF SHEAR CONNECTORS

Note: Weight of 1699 lbs. of shear connectors is included in the weight of Fabricated Carbon Steel.

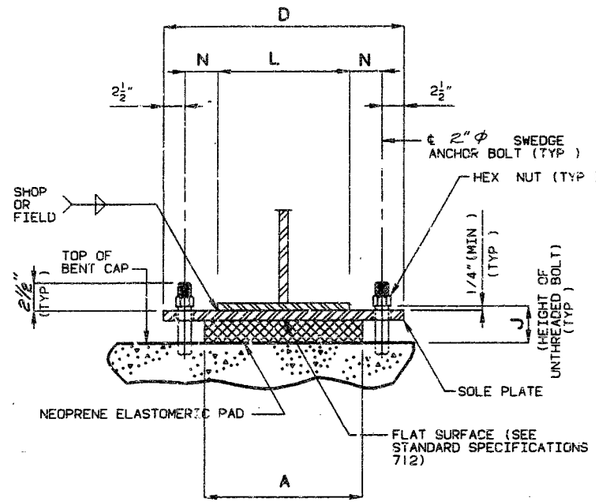


DETAIL OF ANCHOR BOLT WELLS

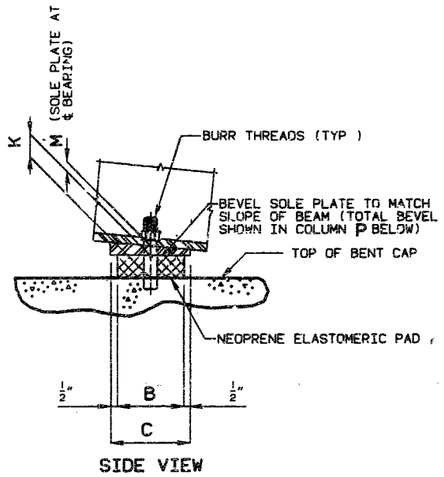
DETAILED MAY 1989
CHECKED June 1989

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

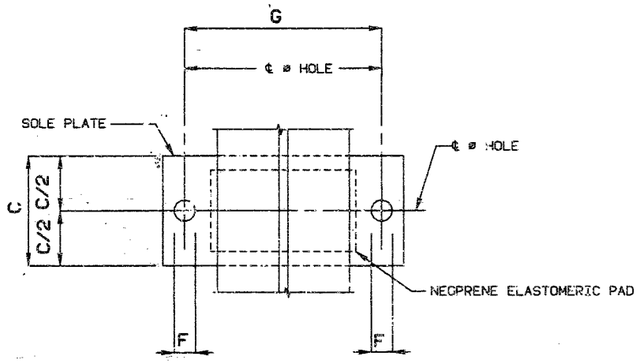
STATE	PROJ. NO.	SHEET NO.
MO.		37



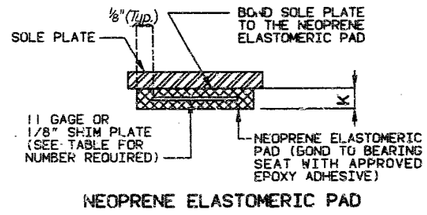
END VIEW



SIDE VIEW



PART PLAN VIEW



NEOPRENE ELASTOMERIC PAD

GENERAL NOTES:

ANCHORS BOLTS SHALL BE 2"ø A588 STEEL SWEDGED BOLTS AND SHALL EXTEND 18 " INTO THE CONCRETE WITH A194-2, 2H OR A563-C, C3, D, DH, DH3 HEAVY HEXAGON NUTS ACTUAL MANUFACTURER'S CERTIFIED MILL TEST REPORTS (CHEMICAL AND MECHANICAL) SHALL BE PROVIDED (SWEDGING SHALL BE 1" LESS THAN THE EXTENSION INTO THE CONCRETE)

ALL STRUCTURAL STEEL FOR THE SOLE PLATE, ANCHOR BOLTS AND THE HEAVY HEXAGON NUTS SHALL BE PAINTED WITH 2 COATS (5 MILS MIN) OF INORGANIC ZINC WELD AREAS TO BE TOUCHED UP AFTER ASSEMBLY

WEIGHT OF THE ANCHOR BOLTS AND HEAVY HEXAGON NUTS FOR BEARINGS SHALL BE INCLUDED IN THE WEIGHT OF THE FABRICATED STRUCTURAL STEEL

THE NEOPRENE ELASTOMERIC PADS SHALL BE 60 DUROMETER

THE SOLE PLATE SHALL BE FURNISHED WITH THE BEARING AND FIELD OR SHOP WELDED TO THE GIRDERS

STRUCTURAL STEEL FOR THE SOLE PLATE SHALL BE A-36

PAYMENT FOR THE SOLE PLATE WILL BE INCLUDED IN THE COST OF THE BEARING ASSEMBLY, SEE SPECIAL PROVISIONS

THE ACCEPTED QUANTITY OF THE ELASTOMERIC BEARING ASSEMBLIES, COMPLETE-IN-PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES), EACH

FIXED BEARINGS

BENT NO	A	B	C	D	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES(•)	NUMBER REQUIRED
2	2'-2"	2'-2"	2'-3"	2'-10"	2⅛"	2'-5"	5 1/16"	3⅛"	19"	1 11/16"	5"	3/16"	5	5

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

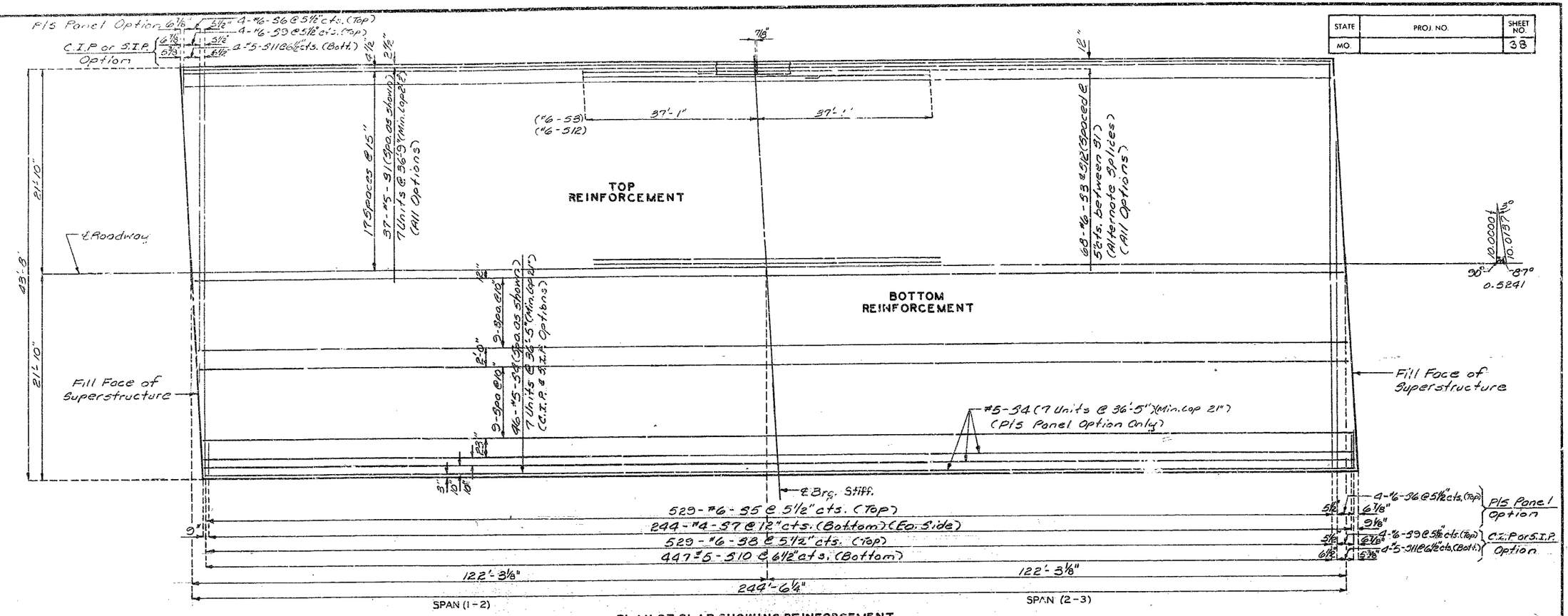
TOTAL BEARINGS	5

DETAILS OF LAMINATED NEOPRENE BEARINGS (STEEL STRUCTURES)

DETAILED FEB. 1989
CHECKED June 1989

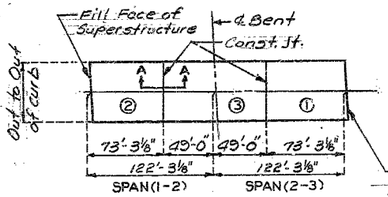
Note: This drawing is not to scale. Follow dimensions.

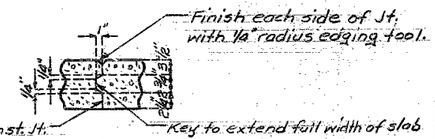
STATE	PROJ. NO.	SHEET NO.
MO.		38



PLAN OF SLAB SHOWING REINFORCEMENT

Note: Longitudinal dimensions are parallel to grade.





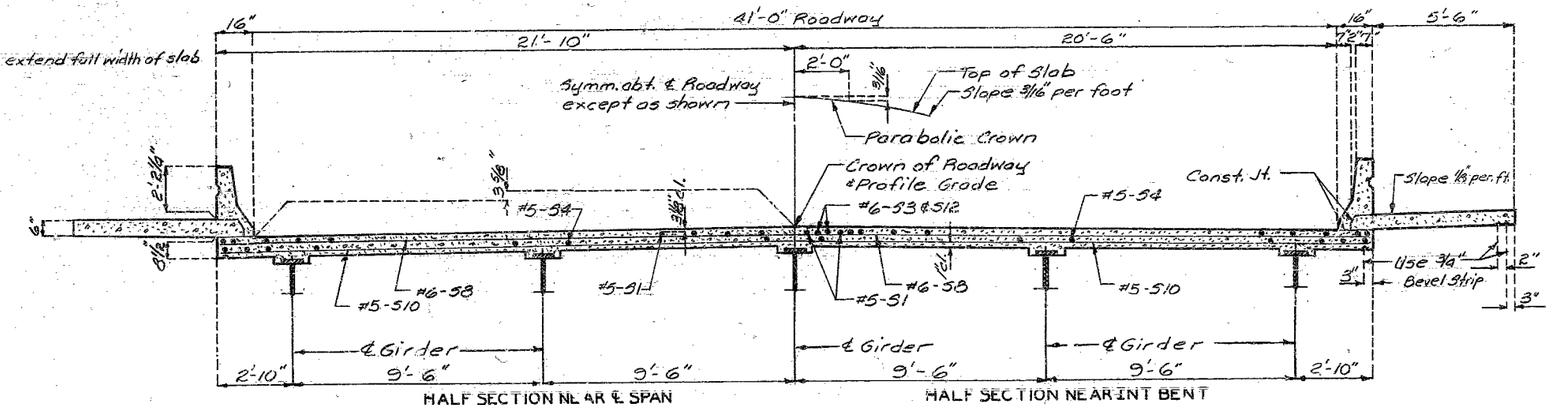
SECTION A-A

	Sequence of Pours			dim. Rate of Pour cu. yds / Hr.
	Direction			
Basic Sequence	1	2	3	25
	Either Direction			
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	59
	End to 3		1 to End	
Alternate "B" Pours	1 + 3 + 2			59
	End to End			

Note: The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours and shall pour and satisfactorily finish the slab pours at the rate given.

If the Precast Panel Option is use, the values shown for the minimum rate of pour may be reduced by 25%. However, in no case shall the minimum rate of pour be less than 25 yd³/hour.

SLAB POURING SEQUENCE



HALF SECTION NEAR ℄ SPAN

HALF SECTION NEAR INT BENT

CAST-IN-PLACE OPTION

Note: For part section of stay-in-place option, camber diagram and theoretical slab haunch, see sheet No. 10

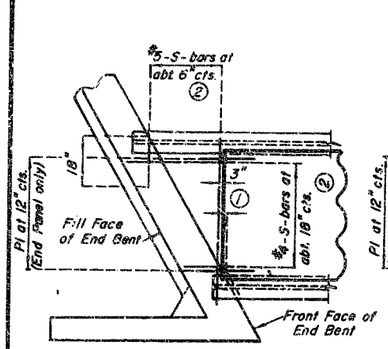
For details and reinforcement in sidewalk, see Sh. No. 14

Note: For details and reinforcement of safety barrier curb, see sh. No. 15.

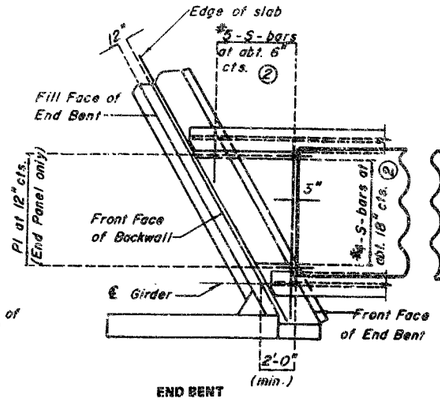
DETAILED FEB. 1989
CHECKED June 1989

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

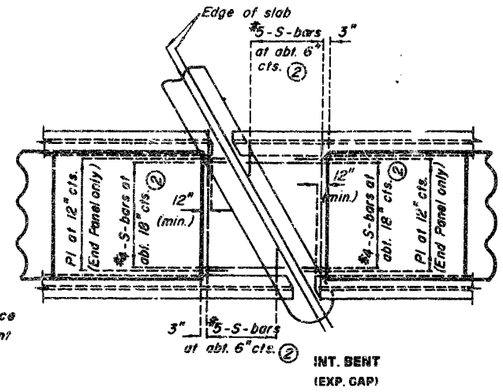
STATE	PROJ NO	SHEET NO
MO		39



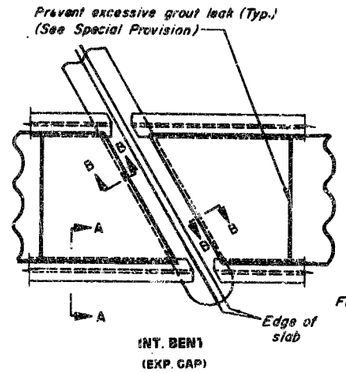
END BENT (INTEGRAL)



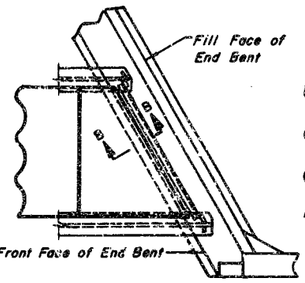
END BENT



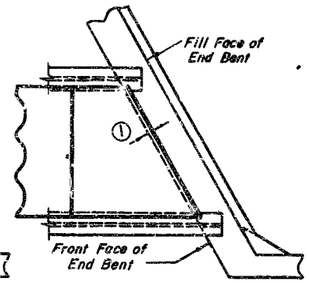
INT. BENT (EXP. GAP)



INT. BENT (EXP. GAP)



END BENT

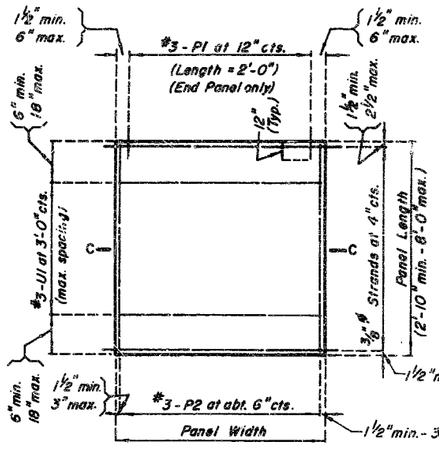


END BENT (INTEGRAL)

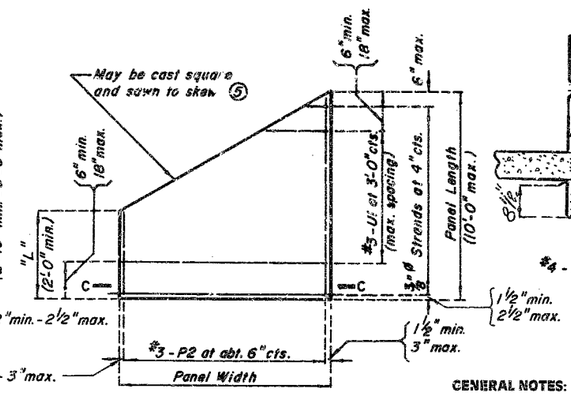
PANELS - SQUARED ENDS

PANELS - SKEWED ENDS

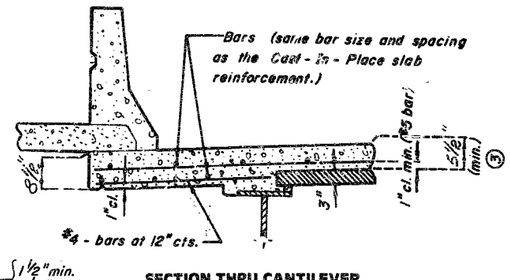
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



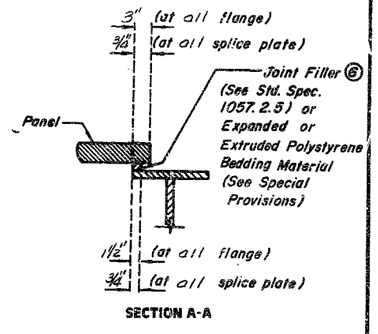
PLAN OF PRECAST PRESTRESSED PANEL



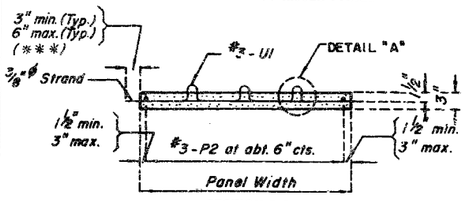
PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



SECTION THRU CANTILEVER

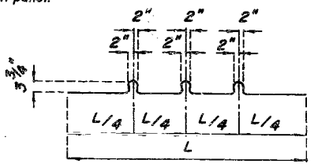


SECTION A-A

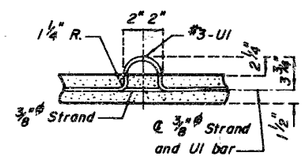


SECTION C-C

(***) Prestressing strands to extend 6" or to within 1" of adjacent panel.



BENDING DIAGRAM FOR U1 BAR



DETAIL "A"

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 ⅛ INCH PERPENDICULAR TO THE PRESTRESSING STRANDS IN THE PANELS (SEE SPECIAL PROVISIONS).

PRESTRESSING TENDON'S 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 = ⅜ INCH AND NOMINAL AREA = 0.085 SQ. IN. AND MINIMUM ULTIMATE STRENGTH = 23,000 LBS. (270 KSI). LARGER STRANDS MAY BE USED WITH THE SAME SPACING AND INITIAL TENSION.

INITIAL PRESTRESSING FORCE = 14.9 KIPS/STRAND.

THE METHOD AND SEQUENCE OF RELEASING 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 ½ INCH, EXCEPT OVER SPLICE PLATES WHERE MINIMUM THICKNESS SHALL BE ¼ INCH. WHEN JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL IS LESS THAN ½" THICK OVER SPLICE PLATE, MAKE THE WIDTH OF MATERIAL AT SPLICE THE SAME WIDTH AS PANEL ON SPLICE. THICKER MATERIAL MAY BE USED ON ONE OR BOTH SIDES OF THE GIRDER TO REDUCE CAST-IN-PLACE CONCRETE THICKNESS, WITHIN TOLERANCES. NO MORE THAN 2 INCHES TOTAL THICKNESS OF JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL SHALL BE USED.

THE SAME THICKNESS OF JOINT FILLER MATERIAL SHALL BE USED UNDER ANY ONE EDGE OF ANY PANEL EXCEPT AT SPLICES, AND THE MAXIMUM CHANGE IN THICKNESS BETWEEN ADJACENT PANELS SHALL BE ¼ INCH TO CORRECT FOR VARIATIONS FROM GIRDER CAMBER DIAGRAM. THE POLYSTYRENE BEDDING MATERIAL MAY BE CUT TO MATCH HAUNCH HEIGHT ABOVE TOP OF FLANGE.

SUPPORT FROM DIAPHRAGM FORMS IS REQUIRED UNDER THE OPTIONAL SKEWED END UNTIL CAST-IN-PLACE CONCRETE HAS REACHED 3,000 PSI COMPRESSIVE STRENGTH.

REINFORCING STEEL:

ALL DIMENSIONS ARE OUT TO OUT.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½, INCH UNLESS OTHERWISE SHOWN.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE C.R.S.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, STIRRUP AND TIE DIMENSIONS.

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE OF BAR TO THE NEAREST INCH.

THE PRESTRESSED PANEL QUANTITIES ARE NOT INCLUDED IN THE TABLE OF ESTIMATED QUANTITIES FOR ALTERNATE SLABS.

IF U1 BARS INTERFERE WITH PLACEMENT OF SLAB STEEL, U1 LOOPS MAY BE BENT OVER, AS NECESSARY, TO CLEAR SLAB STEEL.

WELDED WIRE FABRIC OR WELDED DEFORMED BAR MATS PROVIDING A MINIMUM AREA OF REINFORCING PERPENDICULAR TO STRANDS OF 0.22 SQ. IN./FT. WITH SPACING PARALLEL TO STRANDS SUFFICIENT TO INSURE PROPER HANDLING, MAY BE USED IN LIEU OF THE #3-P2 BARS SHOWN. WIRE OR BAR DIAMETER SHALL NOT BE LARGER THAN 0.375 INCHES. #3-U1 BARS MAY BE ORIENTED AT RIGHT ANGLES TO LOCATION AND SPACING SHOWN. U1 BARS SHALL BE PLACED BETWEEN PI BARS.

(*) ADJUST THE PERMISSIBLE CONSTRUCTION JOINT TO A CLEARANCE OF 6 INCHES MINIMUM FROM THE JOINTS OF THE PANELS.

NOTES:

① END PANELS TO BE DIMENSIONED 1½ INCHES FROM THE INSIDE FACE OF DIAPHRAGM.

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

③ ADJUSTMENT IN THE SLAB THICKNESS, JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL THICKNESS, OR GRADE, WILL BE NECESSARY IF THE GIRDER CAMBER AFTER ERECTION DIFFERS FROM PLAN CAMBER BY MORE THAN THE ¾ 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.

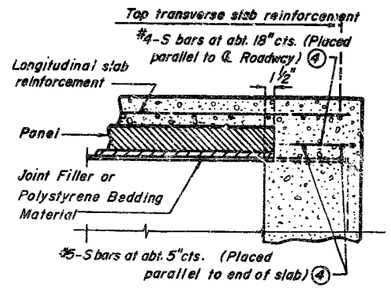
SLAB EXTERIOR GIRDER HAUNCH SHALL BE THE SAME AS CAST-IN-PLACE.

⑤ ANY STRAND 2'-0" OR SHORTER SHALL HAVE A #4 REINFORCING BAR ON EACH SIDE OF IT CENTERED BETWEEN STRANDS. STRANDS 2'-0" OR SHORTER MAY THEN BE DEBONDED AT FABRICATORS OPTION.

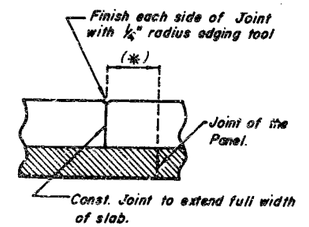
⑥ ALL PANEL SUPPORT PADS SHALL BE GLUED TO THE GIRDER. WHEN SUPPORT THICKNESS EXCEEDS 1¼ INCHES, THE PADS SHALL BE GLUED TOP AND BOTTOM. THE GLUE USED SHALL BE THE TYPE RECOMMENDED BY THE PANEL SUPPORT PADS MANUFACTURER.

NOTE:

USE SLAB HAUNCHING DIAGRAM ON SHEET NO. 10 FOR DETERMINING THICKNESS OF JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL WITHIN THE LIMITS NOTED BELOW.



PART SECTION B-B



PERMISSIBLE CONST. JOINT

(*) ADJUST THE PERMISSIBLE CONSTRUCTION JOINT TO A CLEARANCE OF 6 INCHES MINIMUM FROM THE JOINTS OF THE PANELS.

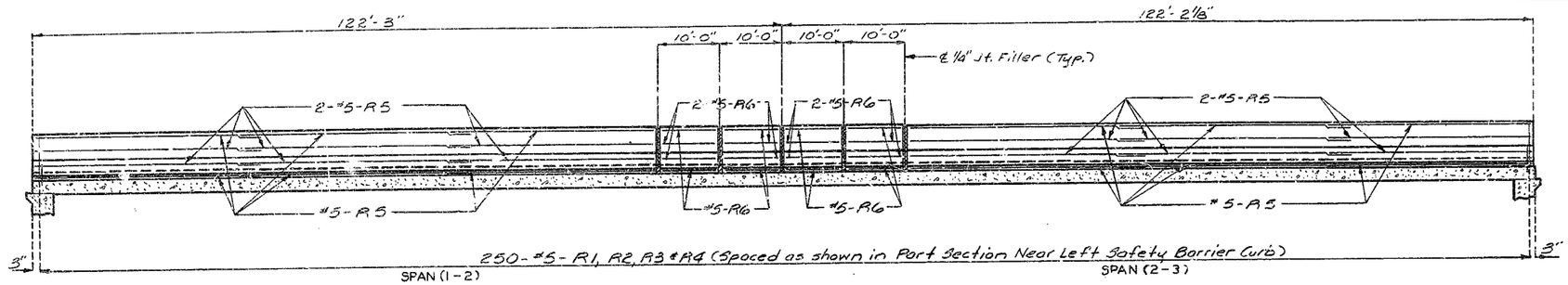
STEEL P/C-P/S PANEL (3") MAY 1986 REVISED JAN. 1989

DETAILED FEB. 1989
CHECKED June 1989

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

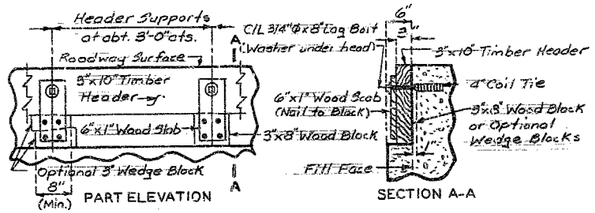
DETAILS OF PRECAST PRESTRESSED PANELS

STATE	PROJ. NO.	SHEET NO.
MO.		41



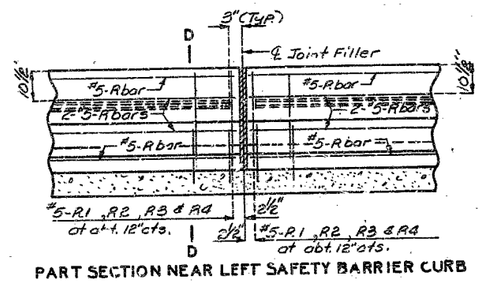
SECTION NEAR LEFT SAFETY BARRIER CURB
(Right Safety Barrier Curb Similar)

Note: Longitudinal dimensions are horizontal.

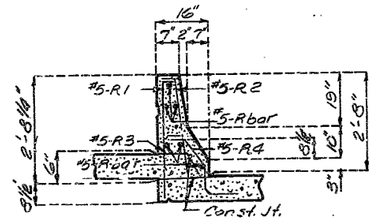


DETAILS OF TIMBER HEADER AT END BENTS

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

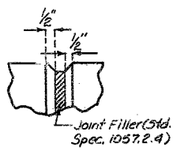


PART SECTION NEAR LEFT SAFETY BARRIER CURB

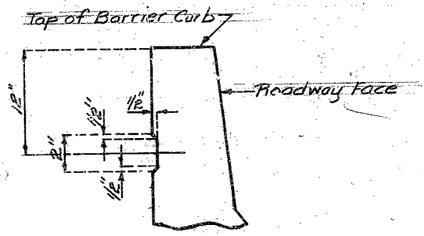


SECTION D-D

Note: Use a minimum lap of 17" for #5 horizontal safety barrier curb bars.
Sidewalk reinforcement not shown for clarity.



FILLED JOINT DETAIL



RUSTICATION DETAIL

Note: Top of safety barrier curb to be built parallel to grade with safety barrier curb joints 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.

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.

Concrete for the safety barrier curb shall be class B-1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the ~~top outside face of curb~~ from fill face of superstructure to fill face of superstructure.

SEE 201

DETAILED FEB. 1989
CHECKED June 1989

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

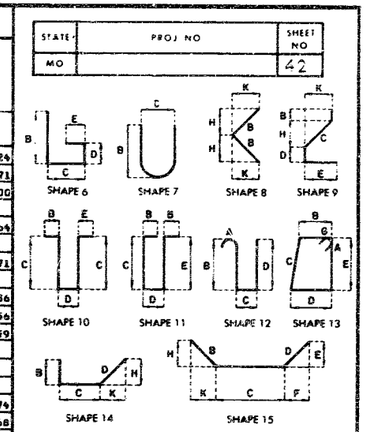
FOR INFORMATION ONLY **A46622, Sht. 70**

COMPLETE BILL OF REINFORCING STEEL

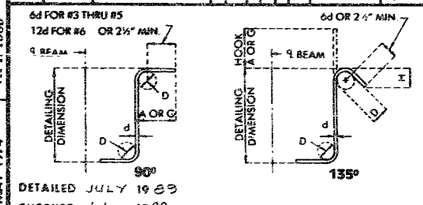
NO REQD	MARK NO SIZE	MARK	LOCATION				B IN	C FT IN	D FT IN	E FT IN	F FT IN	H IN	K FT IN	NOMINAL LENGTH FT IN	ACTUAL LENGTH FT IN	WEIGHT LBS
			SUBSTRUCTURE													
			INT. BENT NO.2													
39	8D2C	FOOTING & COL.		20	X		6 4.000							6 4	6 4	659
8	10H20	BEAM		17	X		19 3.000							20 8	20 8	711
4	10H21	BEAM		17	X		18 9.000							19 5	19 5	336
6	10H22	BEAM		20	X		22 9.000							22 9	22 9	587
2	6H23	BEAM		20	X		41 2.000							41 2	41 2	124
6	10H24	BEAM		20	X		41 2.000							41 2	41 2	1063
8	7H25	BEAM		7	X		3 11.000	2 9.500						9 4	9 4	153
63	4P20	COLUMN		16	X		2 9.000							9 6	9 6	400
1	6U20	BEAM		13	S X		2 1.500	2 9.250	2 1.500	2 9.250				11 1	10 7	16
1	6U21	BEAM		13	S X		2 8.500	2 9.250	2 8.500	2 9.250				12 3	11 9	18
1	6U22	BEAM		13	S X		2 10.750	2 9.250	2 10.750	2 9.250				12 8	12 2	18
19	6U23	BEAM		13	S X		2 11.000	2 9.250	2 11.000	2 9.250				12 8	12 2	347
33	6U24	BEAM		13	S X		2 11.000	2 10.875	2 11.000	2 10.875				12 11	12 6	620
19	6U25	BEAM		13	S X		2 11.000	2 9.000	2 11.000	2 9.000				12 8	12 2	347
1	6U26	BEAM		13	S X		2 10.750	2 9.000	2 10.750	2 9.000				12 7	12 1	18
1	6U27	BEAM		13	S X		2 8.500	2 9.000	2 8.500	2 9.000				12 3	11 9	16
1	6U2E	BEAM		13	S X		2 1.500	2 9.000	2 1.500	2 9.000				11 1	10 7	16
2	4U29	BEAM		10	S X			6.000	2 11.000					3 11	3 9	5
13	8V20	COL.& BEAM		20	X		22 1.000							22 1	22 1	767
13	8V21	COL.& BEAM		20	X		23 1.000							23 1	23 1	801
13	8V22	COL.& BEAM		20	X		24 1.000							24 1	24 1	836
10	W5W2C	ANCHOR BOLT WELL		22	X		18.000	9.125						26 1	26 1	44
			SUPERSTRUCTURE													
			END BENT NO.1													
7	6F1	DIAPH.		15			2 2.250	5 0.000				2 2.250	3.375	7 2	7 1	74
7	6F2	WING BRACE		15			14.000	4 3.125	14.000	10.125	9.625	10.125	9.625	6 7	6 6	68
7	6F3	WING BRACE		15			14.000	4 5.250	14.000	9.625	10.125	9.625	10.125	6 10	6 9	71
7	6F4	DIAPH		21			2 2.250	5 0.000				2 2.250	1.375	7 2	7 0	74
6	7H1	SLAB	E	20			54 6.000							54 6	54 6	668
20	6M2	DIAPH.		20			54 6.000							54 6	54 6	1637
8	7H3	BEAM		20			20 7.000							20 7	20 7	337
4	7H4	BEAM		20			54 6.000							54 6	54 6	446
4	7H5	BEAM		20			21 9.000							21 9	21 9	176
2	6H6	BEAM		20			54 6.000							54 6	54 6	164
2	6H7	APPR. HAUNCH		20			25 10.000							25 10	25 10	35
4	6H8	WINGS	E	20			11 9.000							11 9	11 9	71
12	6H9	WINGS		20			13 5.000							13 5	13 5	242
36	6H1G	WINGS		20		V 4	12 9.000							12 9	12 9	
		INCR = 12.500 IN					4 5.000							4 5	4 5	464
4	6T1	WING		25			2 1.000	12 5.375	3 2.000			7 3.000	10 1.500	17 8	17 7	166
48	5U1	BEAM & DIAPH.		10	S			5 1.000	2 3.000					12 5	12 3	613
4	4U2	BEAM		13	S		2 3.000	2 9.000	2 3.000	2 9.000				10 9	10 6	28
2	4U3	BEAM		10	S			2 10.875	2 3.000					8 1	7 11	13
4	4U4	BEAM		13	S		2 3.000	2 10.875	2 3.000	2 10.875				11 1	10 10	29
12	5U5	DIAPH.	E	10	S			7 0.000	2 3.000					16 3	16 1	201
42	5U6	DIAPH	E	10	S							6 2.000	4 3.750	14 5	14 3	624
58	6U7	DIAPH	E	19	S							6 2.000	4 3.750	16 2	16 0	871
46	4U8	APPR. HAUNCH		10	S							17.500	6.000	3 5	3 3	100
12	5V1	BEAM & DIAPH.		20								5 1.000		5 1	5 1	64
20	6V2	WINGS		20		V 2						8 10.000		8 10	8 10	
		INCR = 8.375 IN										2 7.000		2 7	2 7	171
20	6V3	WINGS		20		V 2						9 4.000		9 4	9 4	
		INCR = 8.375 IN										3 1.300		3 1	3 1	186
4	6V4	WINGS		20								9 3.000		9 3	9 3	56
4	6V5	WINGS		20								9 9.000		9 9	9 9	59
		END BENT NO.3														
7	6F3C	DIAPH.		15								2 2.250	5 0.000			
7	6F31	WING BRACE		15								14.000	4 3.125	14.125	10.125	9.875
7	6F32	DIAPH		21								2 2.250	5 0.000			
7	6F33	WING BRACE		15								14.250	4 5.750	14.000	9.625	10.125
4	6N3C	SLAB	E	20								54 6.000				
20	6H31	DIAPH		20								54 6.000				
8	6H32	BEAM		20								19 6.000				
6	6H33	BEAM		20								54 6.000				
4	6H34	BEAM		20								21 9.000				
5	5H35	FOOTING		20								54 6.000				
44	5H36	FOOTING		20								4 3.000				
2	4H37	APPR.HAUNCH		20								25 10.000				
4	6H38	WINGS	E	20								11 9.000				
12	6H39	WINGS		20								13 5.000				
32	6H4C	WINGS		20		V 4						12 9.000				
		INCR = 14.000 IN										4 7.000				
4	6T3C	WING		25								2 1.000	12 0.625	3 2.000		
42	5U3C	DIAPH	E	10	S							6 1.000	2 3.000			
58	6U31	DIAPH.	E	19	S							6 2.000	4 0.000			
4	4U32	BEAM		13	S							2 3.000	2 4.125	2 3.000	2 4.125	
54	5U33	BEAM & DIAPH.		10	S								4 8.000	2 3.000		
46	4U34	APPR. HAUNCH		10	S								17.500	6.000		
12	5U35	DIAPH.	E	10	S								6 11.000	2 3.000		
6	4U36	BEAM		13	S							2 3.000	2 6.000	2 3.000	2 6.000	
20	6V3C	WINGS		20		V 2						8 4.000				
		INCR = 7.750 IN										2 6.000				
20	6V31	WINGS		20		V 2						8 10.000				
		INCR = 7.750 IN										3 0.000				
4	6V32	WINGS		20								8 11.000				
4	6V33	WINGS		20								9 5.000				
146	4S4C	SIDEWALK	E	20								31 10.000				
652	5S41	SIDEWALK	E	9	S							15.000	11.875	6 0.000		
500	5R1	BARRIER CURB	E	19	S							2 6.000	3.500			
500	5R2	BARRIER CURB	E	15	S							2 6.125	3.500			
500	5R3	BARRIER CURB	E	19	S							17.000	6.000			
500	5R4	BARRIER CURB	E	27	S								6.000	11.125	7.000	12.000
74	5R5	BARRIER CURB	E	20								35 6.000				
48	5R6	BARRIER CURB	E	20								9 9.000				

F IN	H FT IN	K FT IN	NOMINAL LENGTH FT IN	ACTUAL LENGTH FT IN	WEIGHT LBS
			14 5	14 3	624
			10 2	10 0	871
			3 5	3 3	100
			5 1	5 1	64
			4 10	8 10	
			2 7	2 7	171
			9 4	9 4	
			3 1	3 1	186
			9 3	9 3	56
			9 9	9 9	59
2 2.250	1.375		7 2	7 1	74
10.125	9.625	10.125	6 7	6 6	68
10.125	9.625	10.500	6 10	6 9	71
			54 6	54 5	327
			54 6	54 6	1637
			19 6	19 6	234
			54 6	54 6	491
			21 9	21 9	131
			54 6	54 6	204
			4 3	4 3	195
			25 10	25 10	35
			11 9	11 9	71
			13 5	13 5	262
			12 9	12 9	
			4 7	4 7	417
6 6.375	10 1.500		17 4	17 3	104
			34 5	34 3	624
			10 2	10 0	871
			9 11	9 8	26
			11 7	11 5	643
			3 5	3 3	100
			16 1	15 11	199
			10 3	10 0	40
			8 4	8 4	
			2 6	2 6	163
			8 10	8 10	
			3 6	3 0	178
			8 11	8 11	54
			9 5	9 5	57
2 2.250	1.375		7 2	7 0	74
9.625	10.125	9.625	6 10	6 9	71
			54 6	54 6	1637
			19 6	19 6	234
			54 6	54 6	491
			21 9	21 9	131
			54 6	54 6	204
			4 3	4 3	195
			25 10	25 10	35
			11 9	11 9	71
			13 5	13 5	262
			12 9	12 9	
			4 7	4 7	417
6 6.375	10 1.500		17 4	17 3	104
			34 5	34 3	624
			10 2	10 0	871
			9 11	9 8	26
			11 7	11 5	643
			3 5	3 3	100
			16 1	15 11	199
			10 3	10 0	40
			8 4	8 4	
			2 6	2 6	163
			8 10	8 10	
			3 6	3 0	178
			8 11	8 11	54
			9 5	9 5	57
			31 10	31 10	3105
7.250	8.750		8 3	8 2	5554
			2 10	2 8	1391
2 6.000	3.000		2 10	2 9	1634
			23	22	956
9.125	6.375		3 0	2 10	1678
			35 0	35 0	2701
			9 9	9 9	488

Two (2) additional HI,S40BR5 are included in bar bill for testing.



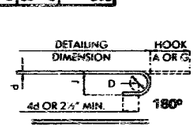
BENDING DIAGRAMS



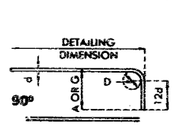
DETAILED JULY 1989
CHECKED July 1989

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
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	12"	7¾"	4½"

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



SIZE OF 180° HOOKS (GRADE 40 KSI)
D 5d FOR #3 THRU #11
D 10d FOR #14 AND #18



SIZE of 90° HOOKS (ALL GRADES AND 180° HOOKS (GRADE 60 KSI)
D 6d FOR #3 THRU #8
D 8d FOR #9, #10 AND #11
D 10d FOR #14 AND #18

END HOOK DIMENSIONS					
BAR SIZE	D (IN.)	180° HOOKS ALL GRADES		90° HOOKS ALL GRADES	
		A OR G	J	A OR G	
#3	2¼"	5"	3"	6"	
#4	3"	6"	4"	8"	
#5	3¾"	7"	5"	10"	
#6	4½"	8"	6"	12"	
#7	5¼"	10"	7"	14"	
#8	6"	11"	8"	16"	
#9	9½"	15"	11¼"	19"	
#10	10¾"	17"	13¼"	22"	
#11	12"	19"	14¾"	2'-0"	
#14	18¾"	2'-3"	21¾"	2'-7"	

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 CUT TO CUT 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.

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

STD. 90.8 REVISED APR 1988
MAY 1974

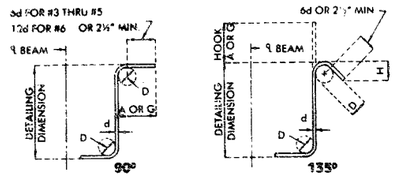
STATE	PROJ NO	SHEET NO
MO		42

Sheet No. 16 of 17

COLE **COUNTY**

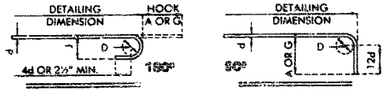
A-4662

398 302



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
#3	1½"	4"	4"	2½"
#4	2"	4½"	4½"	3"
#5	2½"	6"	5½"	3¾"
#6	4½"	12"	7¾"	4½"

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



SIZE OF 180° HOOKS (GRADE 40 KSI)

D 5d FOR #3 THRU #11
D 10d FOR #14 AND #18

SIZE of 90° HOOKS (ALL GRADES) AND 180° HOOKS (GRADE 60 KSI)

D 6d FOR #3 THRU #8
D 8d FOR #9, #10 AND #11
D 10d FOR #14 AND #18

END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	180° HOOKS ALL GRADES		90° HOOKS ALL GRADES
		A OR G	J	A OR G
#3	2½"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3½"	7"	5"	10"
#6	4½"	8"	6"	12"
#7	5¼"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9½"	15"	11¾"	19"
#10	10¼""	17"	13¼"	22"
#11	12"	19"	14⅞"	2'-0"
#14	18¼"	2'-3"	21⅜"	2'-7"

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.

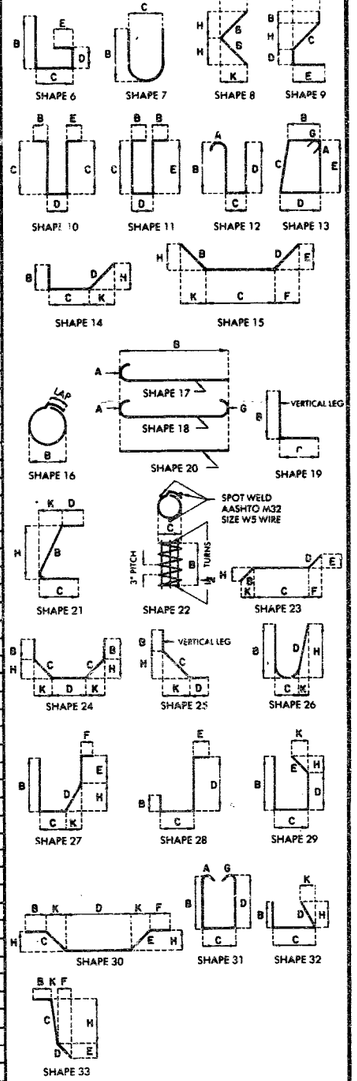
E - EPOXY COATED REINFORCEMENT.
S - STIRRUP
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. - NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN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

COMPLETE BILL OF REINFORCING STEEL

NO R'QD	MARK NO. SIZE MARK	LOCATION	E	SHAPE NO	S	X	V	NO EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
		CAST-IN-PLACE																
		CONVENTIONAL																
		FORMS OR																
		STAY-IN-PLACE																
		FORMS																
259	5S1	SLAB	E	20					36 9.000							36 9	36 9	9928
70	6S3	SLAB	E	20					24 9.000							24 9	24 9	2602
322	5S4	SLAB	E	20					36 5.000							36 5	36 5	12230
529	6S8	SLAB	E	20					43 5.000							43 5	43 5	34497
8	6S9	SLAB	E	20			V	2	34 6.000							34 6	34 6	
		INCR =105.000 IN							8 3.000							8 3	8 3	257
447	5S10	SLAB	E	20					43 5.000							43 5	43 5	20242
8	5S11	SLAB	E	20			V	2	36 11.875							36 11	36 11	
		INCR =124.375 IN							5 10.000							5 10	5 10	178
60	6S12	SLAB	E	20					52 0.000							52 0	52 0	5311
		PRECAST																
		PRESTRESSED																
		PANEL FORMS																
259	5S1	SLAB	E	20					36 9.000							36 9	36 9	9928
70	6S3	SLAB	E	20					24 9.000							24 9	24 9	2602
42	5S4	SLAB	E	20					36 5.000							36 5	36 5	1595
529	6S5	SLAB	E	20					43 5.000							43 5	43 5	34497
8	6S6	SLAB	E	20			V	2	34 6.000							34 6	34 6	
		INCR =105.000 IN							8 3.000							8 3	8 3	257
4.3	4S7	SLAB	E	20					2 10.000							2 10	2 10	924
60	6S12	SLAB	E	20					52 0.000							52 0	52 0	5311
		END OF BAR LIST																

NOTE: Two (2) additional S3 are included in bar bill for testing.

STATE	PROJ NO	SHEET NO
MO		43



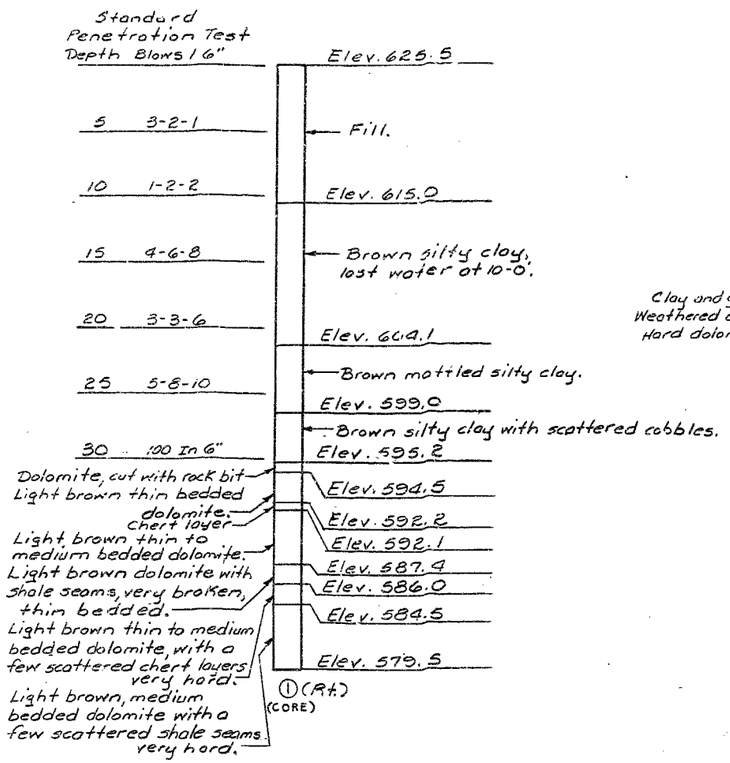
BENDING DIAGRAMS

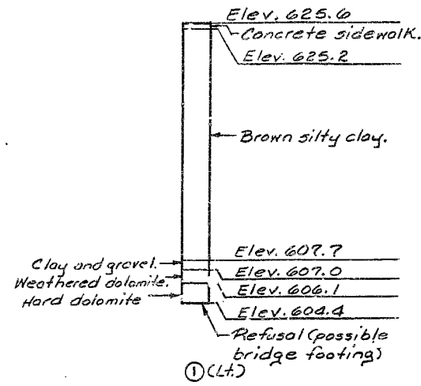
STD. 90.8.5	REVISED
MAY 1974	APR 1988

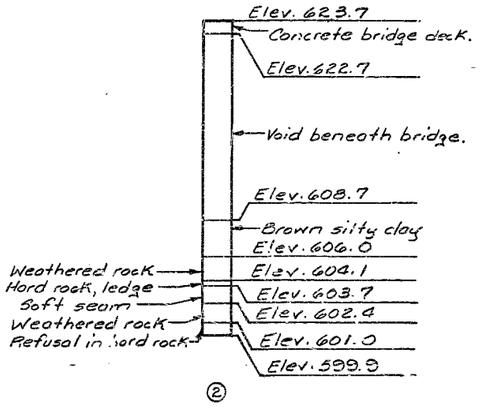
DETAILED JULY 1989
CHECKED July 1989

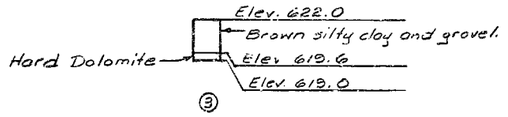
FINAL PLANS

STATE	PROJ. NO.	SHEET NO.
MO	5-(1-54(258 I)	28









BORING DATA

Note: For location of borings see sh. No. 1 Boring Data for all locations is available upon request from the district office.

FINAL QUANTITIES FOR ALTERNATE SLABS			
TYPE OF SLABS	REINF. (LBS.)		CONC. (CU. YDS.)
	EPOXY	PLAIN	
Precast Panel Forms	59,640	10,530	316.1

Precast panel quantities are based on skewed end panels.

FINAL QUANTITIES				
ITEM		SUBSTR	SUPERSTR	TOTAL
Removal of Bridge (No. L-551 Rt)	1 Lump Sum			1
Class 1 Excavation	1 Cu. Yd.	132		132
72 In. Pedestrian Fence	1 Lin. Ft.		535	535
Structural Steel Piles (12 In.)	1 Lin. Ft.	138		138
Pre-Bore for Piling	1 Lin. Ft.	109		109
Class B Concrete	1 Cu. Yd.	86.8		86.8
Slab on Steel (See Special Prov.)	1 Sq. Yd.		1186	1186
Safety Barrier Curb	1 Lin. Ft.		489	489
Sidewalk: (Bridges)	1 Sq. Ft.		2690	2690
Laminated Neoprene Brg. Pads (Tapered)	1 Each		10	10
Laminated Neoprene Brg. Pads (Steel Structures)	Each		5	5
Reinforcing Steel	1 Lb.	7,300		7,300
Fabricated Structural Carbon Steel (Plt. Gir.)	1 Lb.		189,270	189,270
Fabricated Structural Low Alloy Steel (Plt. Gir.) A-572	Lb.		122,630	122,630
Vertical Drain at End Bents	Each			2
Painting (System C) Green	1 Ton		155.1	155.1
Bridge Cap Modification	1 Lump Sum	1		1
Test Holes	Lin. Ft.	16		16

Note: All concrete above top of beam and below top of slab in End Bents is included in the estimated superstr. quantities for Slab on Steel, see Special Provisions.

All reinforcement in the End Bents is included with superstr. quantities.

The cost of furnishing, fabricating and installing Neoprene Bearing Pads, complete-in-place, will be paid for at the contract unit price for Laminated Neoprene Bearing Pads tapered per each.

All concrete and reinforcing steel in the side walk are included in the superstructure quantities for sidewalks.

GENERAL NOTES:

Design Specifications: A.A.S.H.T.O.-1983 and interims thru 1988 Load Factor Design

Design Loading:
HS 20-44 35#/sq.ft. Future Wearing Surface.
Earth 120#/cu.ft., Equivalent Fluid Pressure 45#/cu.ft.
Fatigue Stress - Case II.

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 3,000 psi.
Class B1 Concrete (Safety Barrier Curb) f'c = 4,000 psi.
Class B2 Concrete (Superstr. except Safety Barrier Curb) f'c = 4,000 psi.
Reinforcing Steel (Grade 60) fy = 60,000 psi.
Structural Carbon Steel fy = 36,000 psi.
Structural Steel (A.S.T.M. A572) Grade 50 fy = 50,000 psi.
Steel Pile fb = 9,000 psi.

Fabricated Steel Connections:
Field connectors, High Strength Bolts 7/8"ø, holes 15/16"ø except as noted.

Joint Filler:
All joint filler shall meet the requirements of Std. Spec. 1057.2.4, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

Paint:
System C by Contractor in accordance with Std. Spec. 712.12. (Color of final field coat for System C shall be green).
Areas to be encased in End Bent concrete shall be painted one coat of System C primer and scratched or damaged surfaces are to be touched up in the field before concrete is poured.

Construction Clearance:
A minimum vertical clearance of 15'-6" from existing lanes and a minimum lateral clearance of 50'-0" centered on existing lanes shall be maintained during construction.
All reinforcing bars in top of substructure beam shall be spaced to clear anchor bolts for bearings by at least ½".

384 204

DETAILED FEB 1989
CHECKED June 1989

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

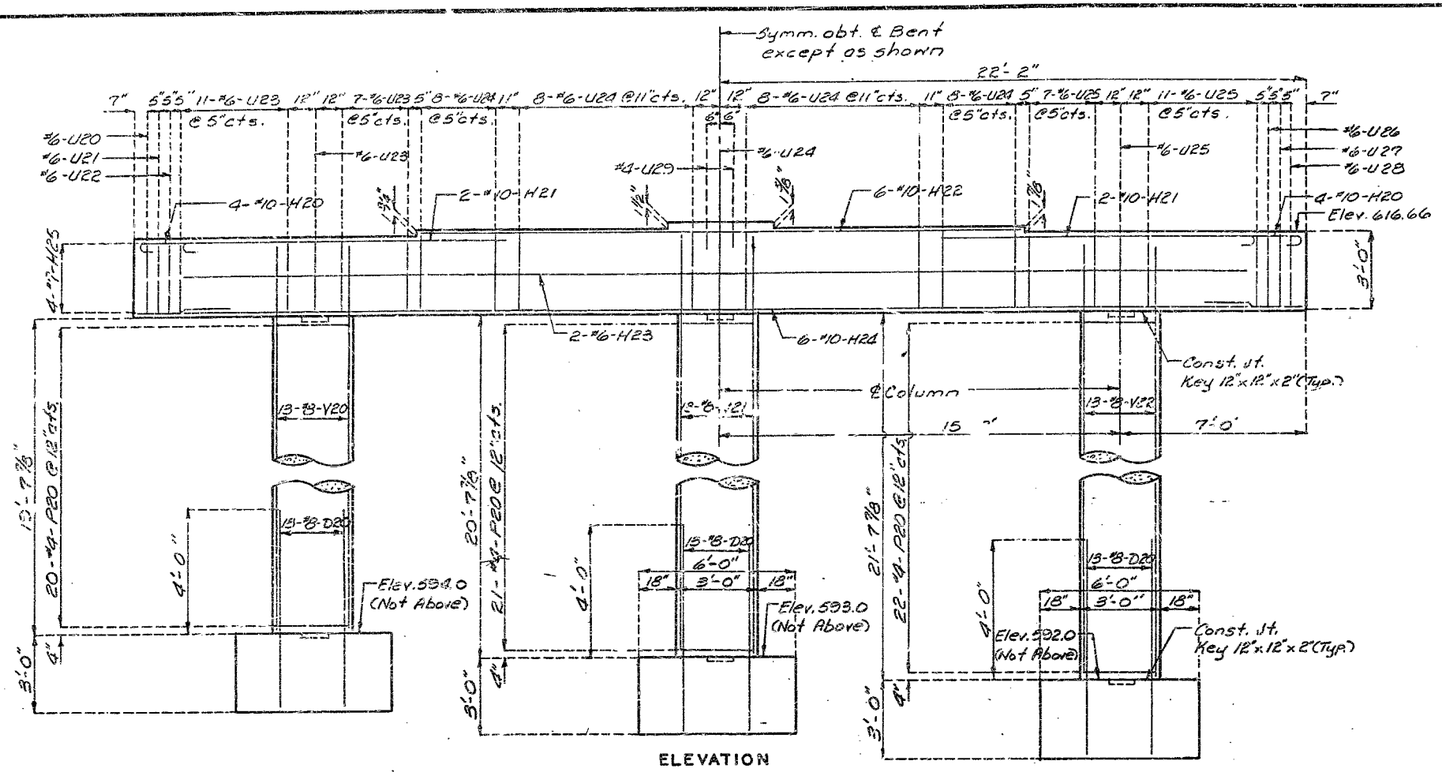
Sheet No. 2A of 17

COLE COUNTY

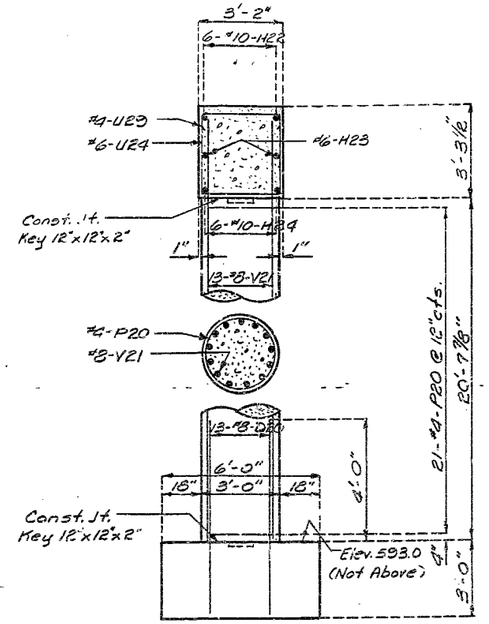
A-4662

FINAL PLANS

STATE	PROJ. NO.	SHEET NO.
MO.	5-U-54(258 I)	30

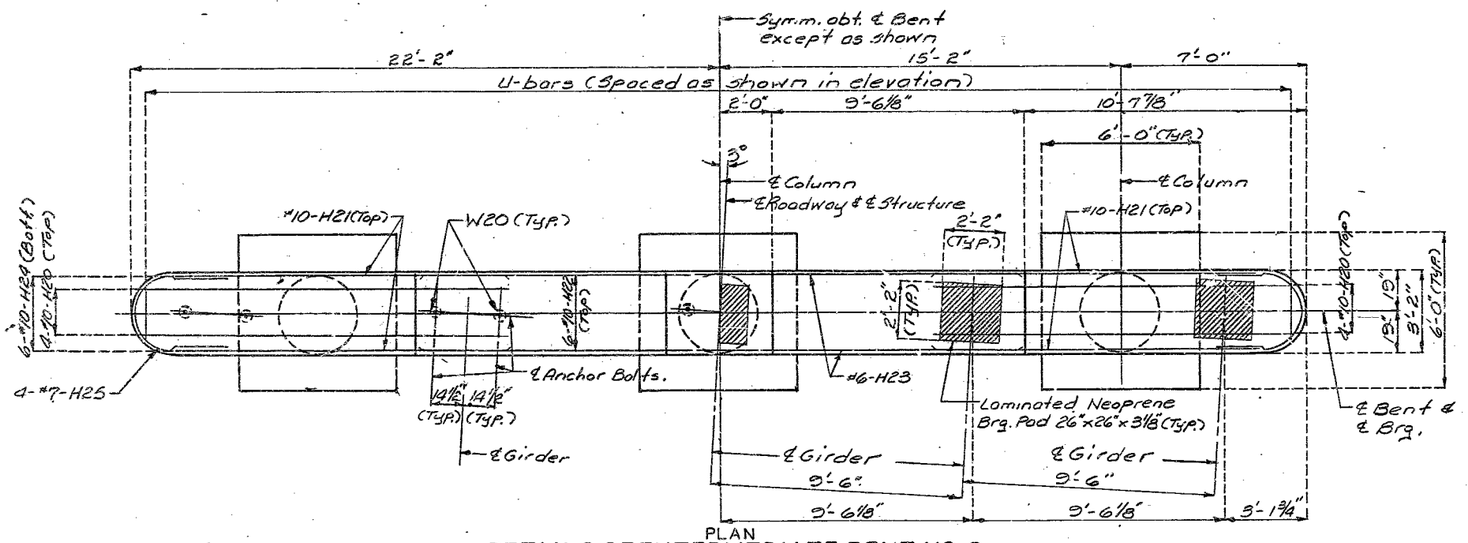


ELEVATION



SECTION AT ℄ BENT

Note: For detail of anchor bolt wells, see sh. No. 10



PLAN

DETAILS OF INTERMEDIATE BENT NO. 2

38 205

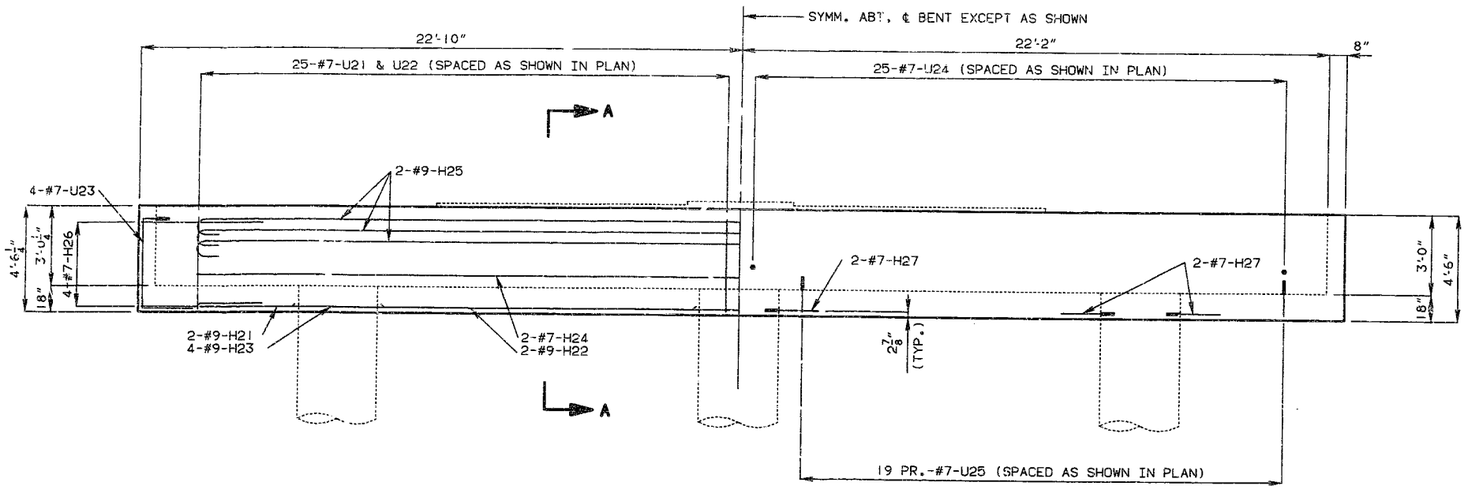
DETAILED JAN. 1989
CHECKED June 1989

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

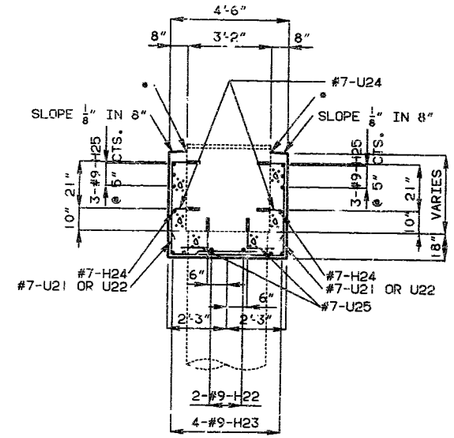
COLE COUNTY A-4662

FINAL PLANS

STATE	PROJ. NO.	SHEET NO.
MO.	5-U-5(47253)	30A



ELEVATION

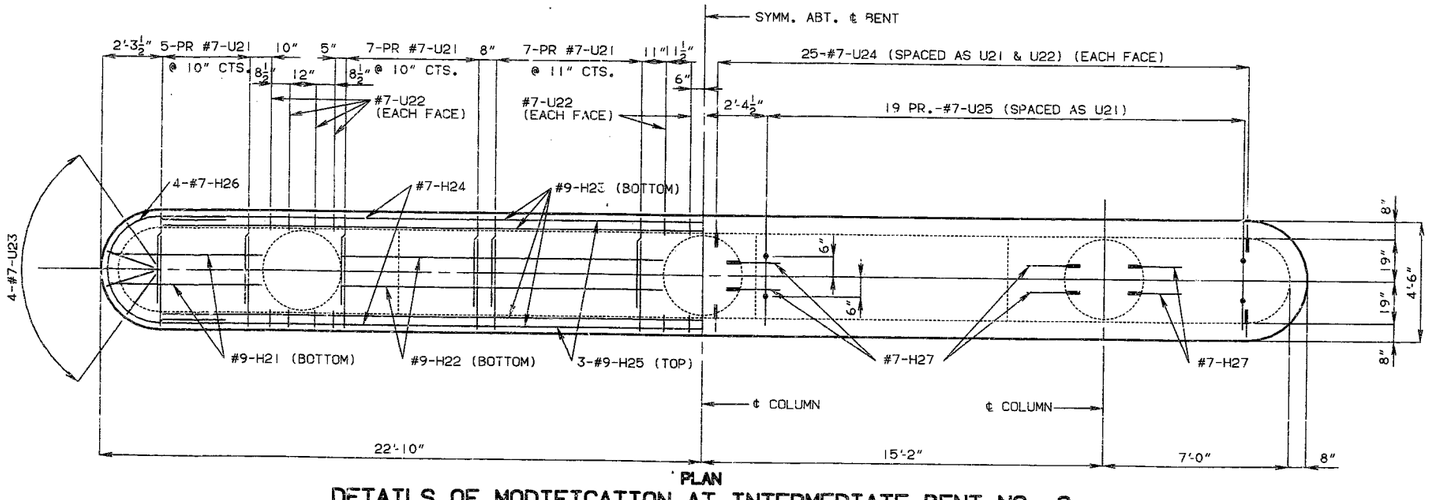


SECTION A-A

• APPLY SEALANT AS APPROVED BY ENGINEER.

NOTE: THE EST[illegible] QUANTITIES FOR THE MODIFICIATION OF INTERMEDIATE BENT NO. 2 ARE [illegible] POUNDS OF REINFORCING STEEL AND 17.9 CUBIC YARDS OF CLASS B CONCRETE.
ALL REINFORCEMENT SHALL BE GRADE 60.

NOTE: THIS EXISTING GIRDERS SHALL BE RAISED AND SUPPORTED AS REQUIRED TO RELIEVE THE LOAD ON THE BEARINGS. RAISING THE GIRDERS SHALL BE DONE SIMULTANEOUSLY TO PREVENT ANY DAMAGE TO THE ADJOINING STEEL AND CONCRETE DECK. THE JACKING POINT SHALL BE WITHIN 7'-0" OF THE ℄ OF BEARING OF BENT NO. 2 AND SUBJECT TO THE APPROVAL OF THE ENGINEER.
JACKS SHALL SUPPORT 200 TONS PER GIRDER.
FLANGES AND WEBS SHALL BE BRACED AT ℄ OF JACK.
SANDBLASTING SHALL BE REQUIRED ON EXISTING CONCRETE SURFACE THAT WILL BE IN CONTACT WITH NEW CONCRETE.
OUTLINE OF OLD WORK IS INDICATED BY LIGHT DASHED LINES. HEAVY LINES INDICATE NEW WORK.



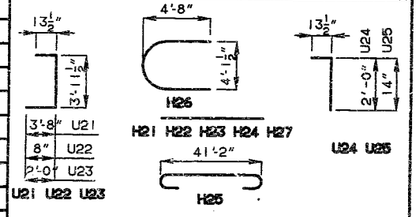
PLAN

DETAILS OF MODIFICATION AT INTERMEDIATE BENT NO. 2

BILL OF REINFORCING STEEL

NO REQD	SIZE & MARK	NOMINAL LENGTH	ACTUAL LENGTH	BENDING DIAGRAMS (DIMENSIONS ARE OUT-TO-OUT)
4	7U21	5'-9"	5'-9"	
4	9H22	12'-1"	12'-1"	
4	9H23	41'-2"	41'-2"	
2	7H24	41'-2"	41'-2"	
6	9H25	43'-8"	43'-8"	
8	7H26	11'-8"	11'-8"	
12	7H27	2'-6"	2'-6"	
76	7U21	8'-9"	8'-5"	
24	7U22	5'-9"	5'-5"	
8	7U23	7'-1"	6'-9"	
100	7U24	3'-2"	3'-0"	
76	7U25	2'-4"	2'-2"	

BENDING DIAGRAMS (DIMENSIONS ARE OUT-TO-OUT)



NOTE:
ACTUAL LENGTH MEASURED ALONG ℄ OF BAR.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES STIRRUP AND TIE DIMENSIONS.

NOTE:
THE CONTRACTOR SHALL USE ONE OF THE ANCHOR SYSTEMS LISTED IN THE JOB SPECIAL PROVISIONS. THESE ANCHOR SYSTEMS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS EXCEPT THAT A #7 GRADE 60, REINFORCING BAR EXTENDING 7" INTO THE OLD CONCRETE SHALL BE SUBSTITUDED FOR THE THREADED ROD STUD. THE #7 GRADE 60, REINFORCING BARS ARE SHOWN IN THE BAR BILL ABOVE.

DETAILED APR. 1990
CHECKED APR. 1990

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

4A-A Final Plans

SHEET NO. 4A OF 17.

⚠ ADD SHEET 4-8-90

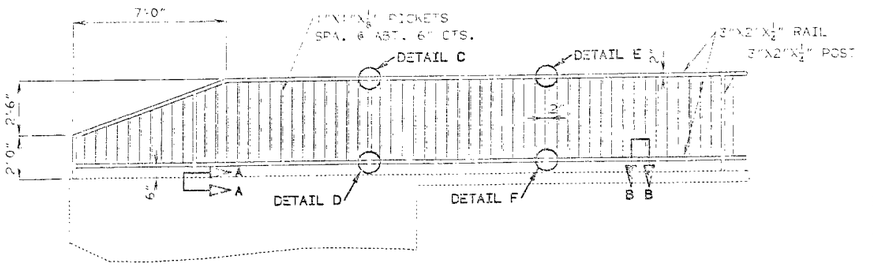
COLE COUNTY

A-4662

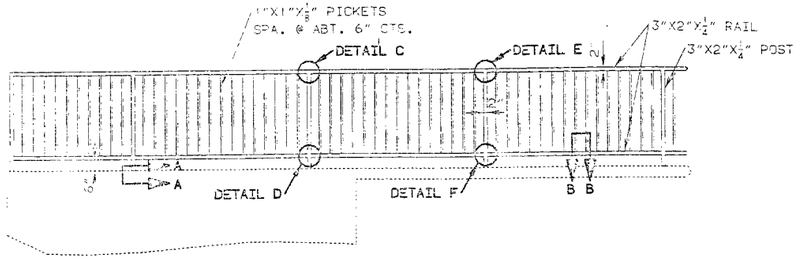
206

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.	FA-54-3(78)	1/2
SEC./SUR. 6	TWP. 44N	RGE. 11W



PART ELEVATION (LEFT SIDE)



PART ELEVATION (RIGHT SIDE)

GENERAL NOTES:

STRUCTURAL STEEL TUBING SHALL BE A.S.T.M. A-500 GRADE B FY=46,000 PSI.

ALL RAIL POSTS SHALL BE NORMAL TO GRADE. GROUT OF 1/2" MINIMUM THICKNESS SHALL BE PLACED UNDER THE FLOOR PLATES TO PROVIDE ALIGNMENT OF RAIL POSTS.

THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR PEDESTRIAN GUARD RAIL SHALL INCLUDE FURNISHING AND ERECTING THE GUARD RAIL COMPLETE WITH FLOOR PLATES, NEW HEX NUTS AND WASHERS.

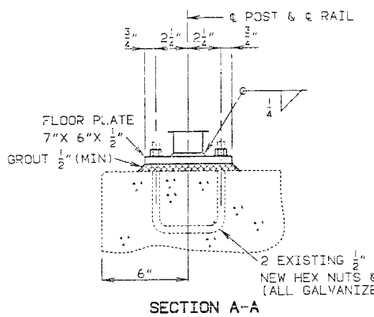
MEASUREMENT OF PEDESTRIAN GUARD RAIL SHALL BE TAKEN PARALLEL TO GRADE THROUGH THE CENTERLINE OF POSTS.

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

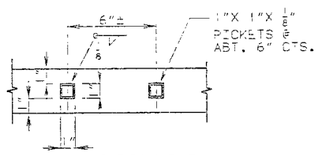
CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE ORDERING MATERIAL.

ALL STEEL RAILING, BOLTS, NUTS, WASHERS AND FLOOR PLATES SHALL BE GALVANIZED AFTER FABRICATION FOR PROTECTIVE COATING AND MATERIAL REQUIREMENT OF STEEL RAILING, SEE SECTION 1040 OF THE MO. STANDARD SPECIFICATIONS.

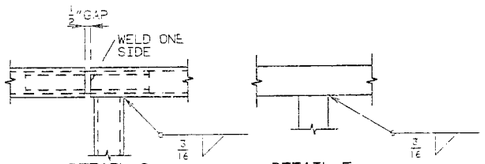
PROVIDE VENTHOLES AT ALL INTERNALLY CLOSED JOINTS FOR GALVANIZED.



SECTION A-A

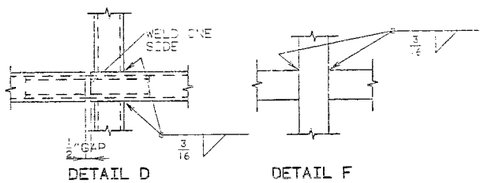


SECTION B-B



DETAIL C (EXPANSION POST)

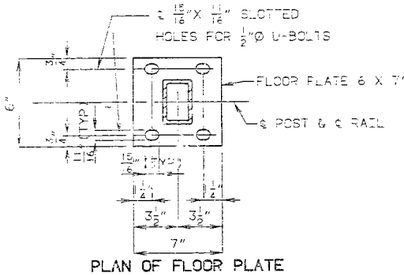
DETAIL E (FIXED POST)



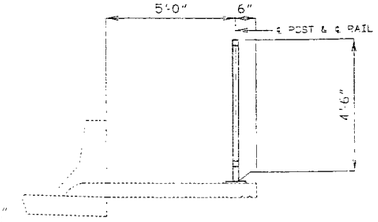
DETAIL D (EXPANSION POST)

DETAIL F (FIXED POST)

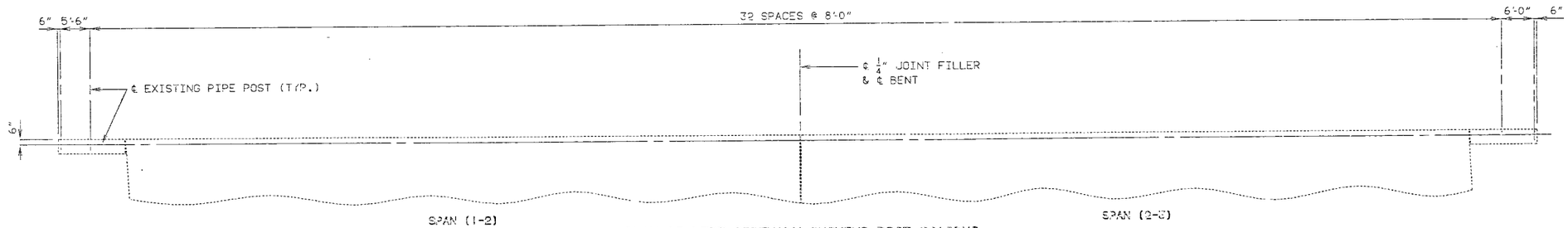
NOTE: NO MORE THAN ONE FIXED POST WILL BE ALLOWED BETWEEN EXPANSION POSTS EXCEPT AT END OF WINGS.



PLAN OF FLOOR PLATE



TYPICAL SECTION THRU SIDEWALK



PLAN OF LEFT SIDEWALK SHOWING POST SPACING
(RIGHT SIDEWALK SIMILAR)

FINAL QUANTITIES		TOTAL	
ITEM			
REMOVAL & STORAGE OF EXISTING PEDESTRIAN FENCE	LUMP SUM	1	✓
PEDESTRIAN GUARD RAIL	LIN. FT.	535	✓
FABRICATED SIGN SUPPORT BRACKETS (STEEL)	LUMP SUM	1	✓

DESIGNED JAN. 1991
DETAILED JAN. 1991
CHECKED JAN. 1991

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

SHEET NO. 1 OF 2.

REPAIRS TO
BRIDGE: W. MAIN ST. OVER ROUTE 54
STATE ROAD IN JEFFERSON CITY
AT W. MAIN ST.
PROJECT NO. FA-54-3(78) STA. 10+72.50 (W. MAIN ST.)
JOB NO. 5U 258D 54 RTE. 54
COLE COUNTY

STD.	
STD.	
A-4662R	

DATE 3/14/91