

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.		34
SEC./SUR. 33&34 TWP. 45N RGE. 5E		

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 235. AS BUILT PILE DATA
 236. AS BUILT PILE DATA

DESIGNED AUG 1996
DETAILED NOV 1997
CHECKED NOV 1997

SHEET 1 OF 236.

DATE

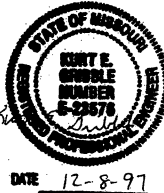
B.M. 32-80 CHISLED "□" ON CORN. OF CONC.
DITCH OUT. C.B. 42.062m RT, OF STA. 16+483.62±
ELEV. 190.049M

BRIDGE OVER RTE. 1-270, RAMP 2A &
DES PERES RD.

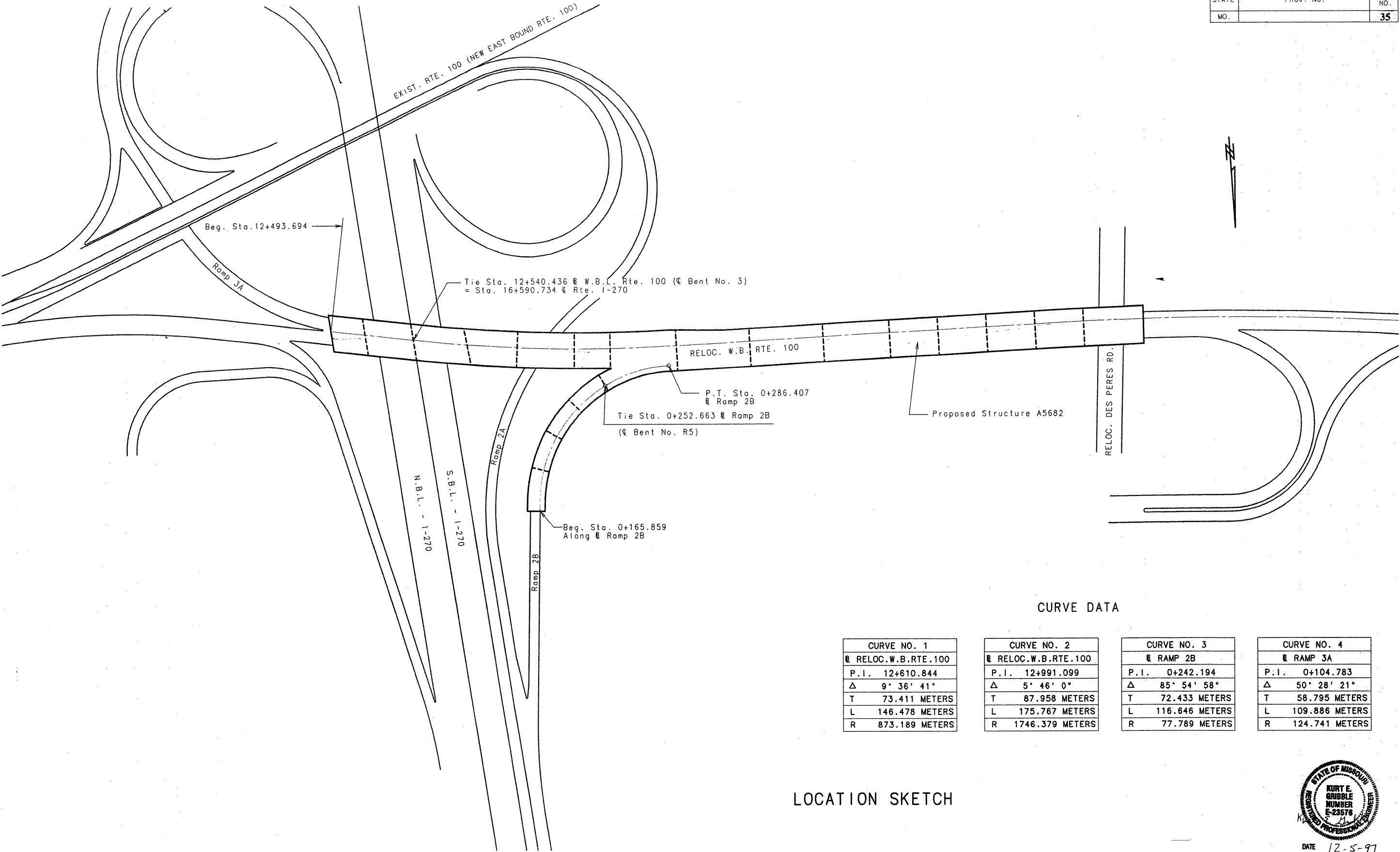
STATE ROAD AT RTE. 1-270 & RTE. 100 INTERCHANGE
IN DES PERES

PROJECT NO. STA. 12+493.694
JOB NO. J610651C RTE. 1-270

ST. LOUIS COUNTY



STD. M504.00
STD. M606.00
STD. M609.00
STD. M611.60
STD. M706.35
STD. M901.01
STD. M903.03
STD. M903.12
A5682



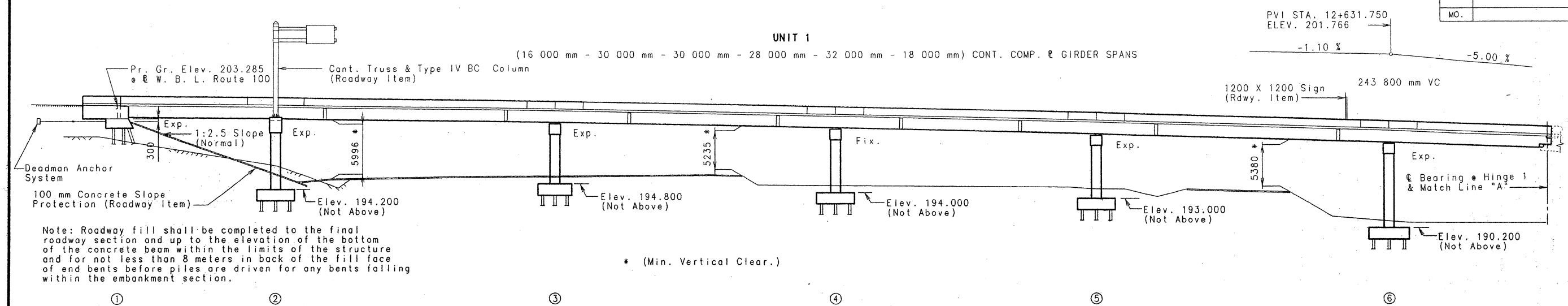
CURVE DATA

CURVE NO. 1		CURVE NO. 2		CURVE NO. 3		CURVE NO. 4	
RELOC.W.B.RTE.100		RELOC.W.B.RTE.100		RAMP 2B		RAMP 3A	
P.I. 12+610.844		P.I. 12+991.099		P.I. 0+242.194		P.I. 0+104.783	
Δ 9° 36' 41"		Δ 5° 46' 0"		Δ 85° 54' 58"		Δ 50° 28' 21"	
T 73.411 METERS		T 87.958 METERS		T 72.433 METERS		T 58.795 METERS	
L 146.478 METERS		L 175.767 METERS		L 116.646 METERS		L 109.886 METERS	
R 873.189 METERS		R 1746.379 METERS		R 77.789 METERS		R 124.741 METERS	

LOCATION SKETCH



DATE 12-5-97



"⊕" Indicates location of boring.

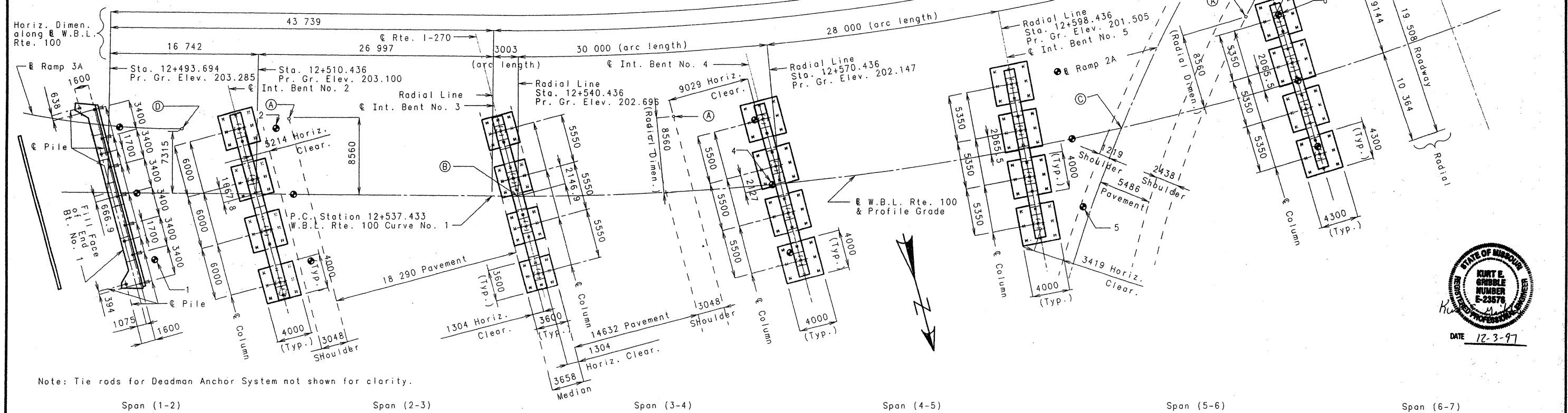
NOTICE AND DISCLAIMER REGARDING BORING LOG DATA

The locations of all subsurface boring for this structure are shown on the bridge plan sheets for this structure. Boring data for the numbered locations is shown on sheets No. 10, 11 & 12. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, is available from the district materials engineer upon written request as outlined in

the project special provisions. No greater significance or weight should be given to the boring data depicted on the plan sheets than to subsurface data available from the district or elsewhere.

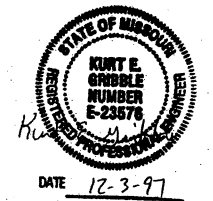
The commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the commission.

PART GENERAL ELEVATION



PART PLAN

Note: For General Notes, Pile and Footing Data and quantity tables, see sheets No. 7, 8 & 9. For Location Sketch see sheet No. 2. Work this sheet with sheets No. 4, 5 & 6.

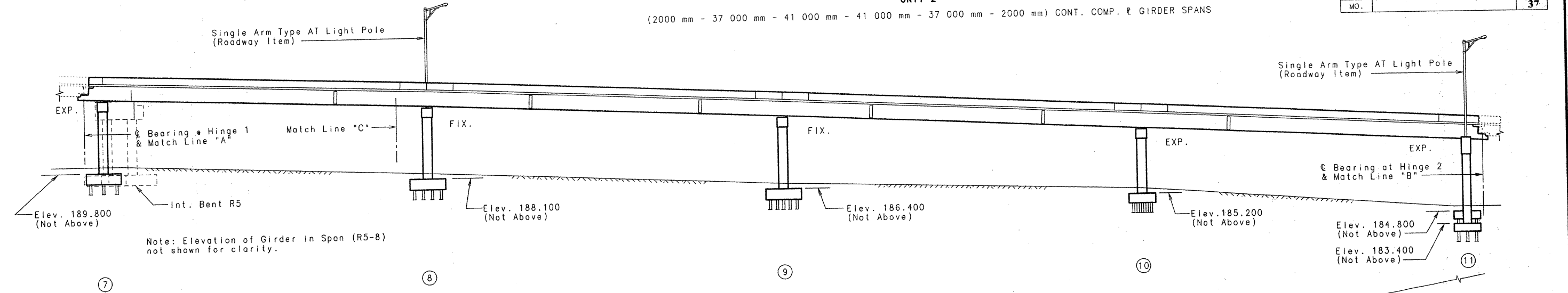


DETAILED OCT. 1997
CHECKED OCT. 1997

STATE	PROJ. NO.	SHEET NO.
MO.		37

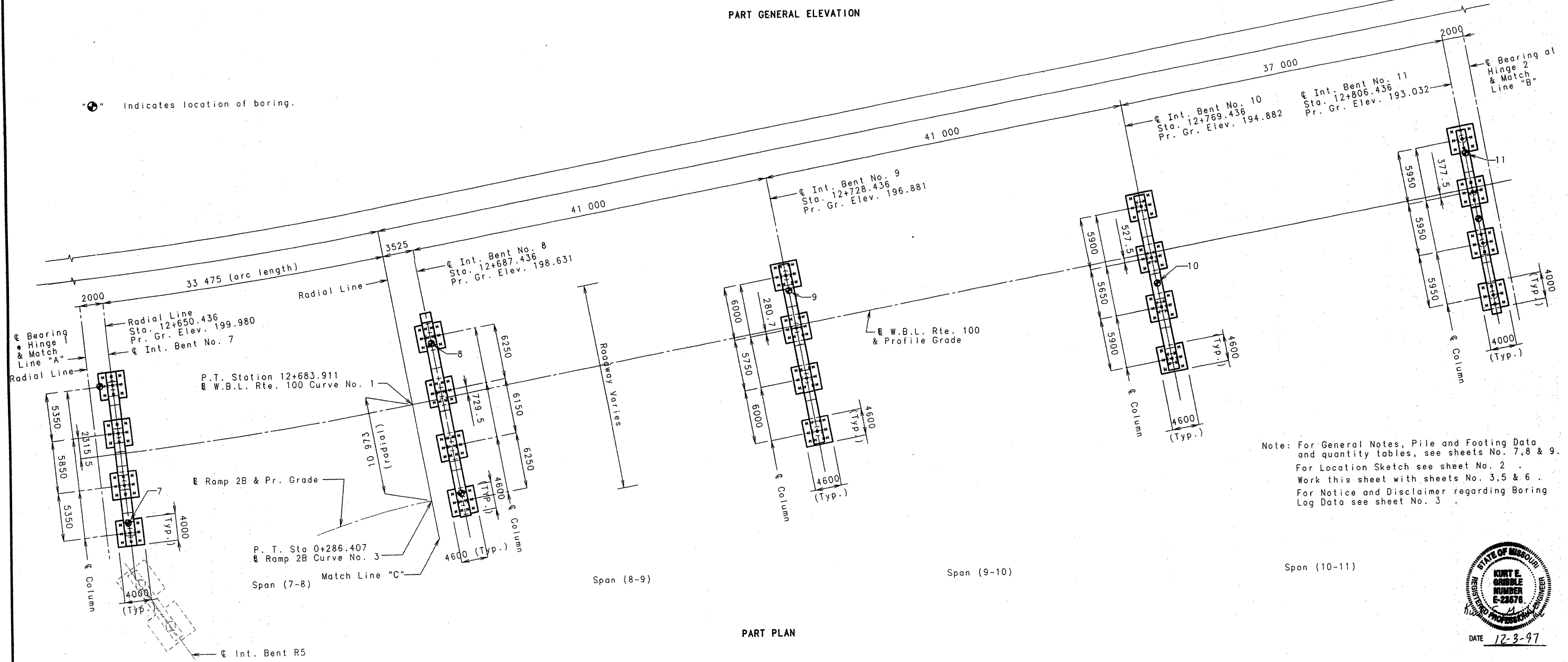
UNIT 2

(2000 mm - 37 000 mm - 41 000 mm - 41 000 mm - 37 000 mm - 2000 mm) CONT. COMP. & GIRDER SPANS



PART GENERAL ELEVATION

⊙ Indicates location of boring.

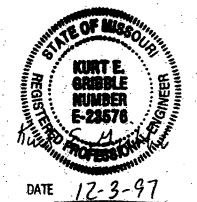


PART PLAN

DETAILED OCT. 1997
CHECKED OCT. 1997

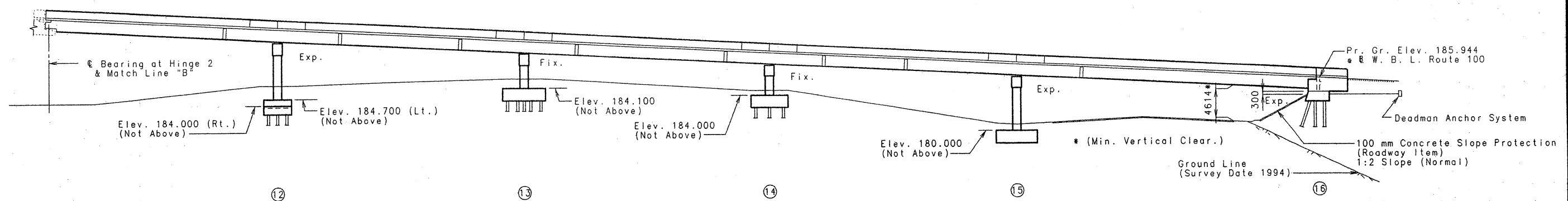
Sheet No. 4 of 236

ST. LOUIS COUNTY A5682



UNIT 3

(25 000 mm - 3 * 27 000 mm - 33 000 mm) CONT. COMP. & GIRDER SPANS

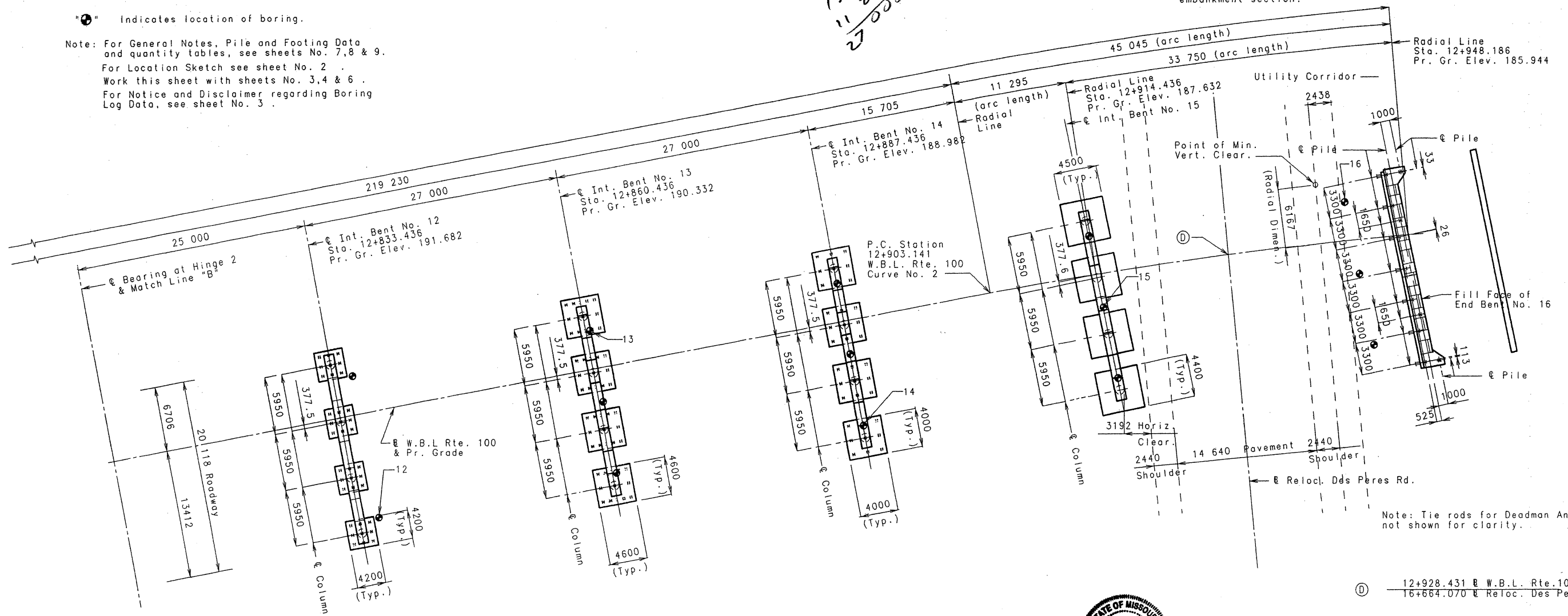


PART GENERAL ELEVATION

"⊕" Indicates location of boring.
 Note: For General Notes, Pile and Footing Data and quantity tables, see sheets No. 7, 8 & 9.
 For Location Sketch see sheet No. 2.
 Work this sheet with sheets No. 3, 4 & 6.
 For Notice and Disclaimer regarding Boring Log Data, see sheet No. 3.

Note: Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 8 meters in back of the fill face of end bents before piles are driven for any bents falling within the embankment section.

15.705
 11.295
 27.000



Span (11-12)

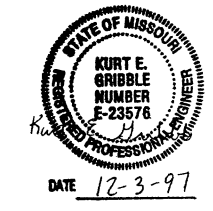
Span (12-13)

Span (13-14)

Span (14-15)

Span (15-16)

PART PLAN



GENERAL NOTES:

DESIGN SPECIFICATIONS:

A.A.S.H.T.O. - 1996
LOAD FACTOR DESIGN
SEISMIC PERFORMANCE CATEGORY B.
ACCELERATION COEFFICIENT = .11.

DESIGN LOADING:

MS18 MODIFIED
185 kg/m² FUTURE WEARING SURFACE
EARTH 1900 kg/m³ EQUIVALENT FLUID PRESSURE 7.4 kPa/m.
 $\phi = 26^\circ$
FATIGUE STRESS - CASE I

DESIGN UNIT STRESSES:

CLASS B CONCRETE (SUBSTRUCTURE) $f'c = 21$ MPa.
CLASS B1 CONCRETE (SAFETY BARRIER CURB) $f'c = 28$ MPa.
CLASS B2 CONCRETE (SUPERSTRUCTURE, EXCEPT SAFETY BARRIER CURB) $f'c = 28$ MPa.
REINFORCING STEEL (GRADE 420) $f_y = 420$ MPa.
STRUCTURAL CARBON STEEL (ASTM A709M GRADE 250) $f_y = 250$ MPa.
STRUCTURAL STEEL (ASTM A709M GRADE 345) $f_y = 345$ MPa.
STEEL PILE (ASTM A709M GRADE 250) $f_b = 62$ MPa.

FABRICATED STEEL CONNECTIONS:

FIELD CONNECTIONS SHALL BE MADE WITH 19.0 mm DIAMETER HIGH STRENGTH BOLTS AND 20.6 mm DIAMETER HOLES, EXCEPT AS NOTED.

REINFORCING STEEL:

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 40 mm, UNLESS OTHERWISE SHOWN.

COATING:

PROTECTIVE COATING: SYSTEM G BY THE CONTRACTOR.
PRIME COAT: THE COST OF THE PRIME COAT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE OF THE FABRICATED STRUCTURAL STEEL. TINT OF THE PRIME COAT FOR SYSTEM G SHALL BE SIMILAR TO THE COLOR OF THE FIELD COAT TO BE USED.
FIELD COAT: THE COLOR OF THE FINISH COAT SHALL BE GRAY (FEDERAL STANDARD #26373). THE COST OF THE INTERMEDIATE AND FINISH COATS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER SQ. METER OF FIELD COAT (SYSTEM G) GRAY.

JOINT FILLER:

ALL JOINT FILLER SHALL MEET THE REQUIREMENTS OF SECTION 1057.2.4 OF THE MISSOURI STANDARD SPECIFICATIONS (METRIC), EXCEPT AS NOTED.

DIMENSIONS:

ALL DIMENSIONS ARE SHOWN IN MILLIMETERS (mm) UNLESS OTHERWISE SPECIFIED.
DRAWINGS NOT TO SCALE. FOLLOW DIMENSIONS.

ELEVATIONS:

ALL ELEVATIONS ARE SPECIFIED IN METERS EXCEPT AS NOTED.

MISCELLANEOUS:

HIGH STRENGTH BOLTS, NUTS AND WASHERS WILL BE SAMPLED FOR QUALITY ASSURANCE AS SPECIFIED IN SECTION 106 OF THE MISSOURI STANDARD SPECIFICATIONS (METRIC) AND FIELD SECTION (FS-712) FROM MATERIALS MANUAL.
A MINIMUM VERTICAL CLEARANCE OF 4.50m AND A MIN. LATERAL CLEARANCE OF 19.06m FOR I-270 N.B.L., 15.40m FOR I-270 S.B.L., 15.24m FOR DESPERES ROAD, AND 6.10m FOR RAMP 2A WITH OPENINGS CENTERED ON LANES SHALL BE MAINTAINED DURING CONSTRUCTION.

GENERAL NOTES CONTINUED:

CONDUIT SYSTEM:

COST OF FURNISHING AND PLACING ANCHOR BOLTS FOR LIGHT STANDARD SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR OTHER ITEMS.

ALL CONDUIT SHALL BE RIGID GALVANIZED STEEL AND SHALL MEET THE REQUIREMENTS OF SECTION 1060 OF THE MISSOURI STANDARD SPECIFICATIONS (METRIC).

SHIFT REINFORCING STEEL IN FIELD WHERE NECESSARY TO CLEAR CONDUIT AND JUNCTION BOXES.

LIGHT STANDARDS, WIRING AND FIXTURES SHALL BE FURNISHED AND INSTALLED BY OTHERS.

TOP OF LIGHT STANDARD SUPPORTS SHALL BE MADE HORIZONTAL: ANCHOR BOLTS SHALL BE PLACED VERTICALLY.

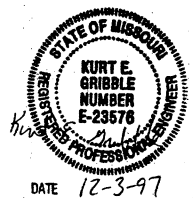
FOR DETAILS OF LIGHT STANDARDS, AND WIRING, SEE ELECTRICAL PLANS.

ALL JUNCTION BOXES SHALL BE PVC MOLDED FLUSH MOUNTED AND EQUAL TO CARLON ELECTRICAL CONSTRUCTION PRODUCTS OR CANTEX, INC. THE CONDUIT TERMINATIONS SHALL BE PERMANENT OR SEPARABLE. THE TERMINATIONS AND COVERS SHALL BE OF WATERTIGHT CONSTRUCTION AND SHALL MEET REQUIREMENTS FOR NEMA 4 ENCLOSURE.

WEEPHOLES SHALL BE PROVIDED AT APPROPRIATED LOCATIONS TO DRAIN ANY MOISTURE IN THE CONDUIT SYSTEM.

CONDUIT SHALL BE SECURED TO CONCRETE WITH CLAMPS AT ABOUT 1500 mm CENTERS. CONCRETE ANCHORS FOR CLAMPS SHALL BE IN ACCORDANCE WITH FEDERAL SPECIFICATIONS FF-S-325, GROUP II, TYPE 4, CLASS I AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM - 153, B695-91 CLASS 50 OR STAINLESS STEEL. MINIMUM EMBEDMENT IN CONCRETE SHALL BE 45 mm. THE SUPPLIER SHALL FURNISH A MANUFACTURERS CERTIFICATION THAT THE CONCRETE ANCHORS MEET THE REQUIRED MATERIAL AND GALVANIZING SPECIFICATIONS.

PAYMENT FOR FURNISHING AND INSTALLING CONDUIT SYSTEM COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR CONDUIT SYSTEM ON STRUCTURE, LUMP SUM.



[illegible]

ESTIMATED QUANTITIES FOR SLAB ON STEEL						
ITEM		UNIT 1	UNIT 2	UNIT 3	UNIT 4	TOTAL
REINFORCING STEEL (EPOXY COATED)	KILOGRAM	93 060	111 475	78 260	40 685	323 480
CONCRETE	CU. METER	530	609.7	474.4	200.5	1814.6

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

CONCRETE ABOVE THE UPPER CONSTRUCTION JOINT IN BACKWALL AT END BENTS NO. 1, 16, & R1 IS INCLUDED WITH CLASS B2 CONCRETE (SLAB ON STEEL) QUANTITIES.

THE COST OF FURNISHING, FABRICATING, AND INSTALLING LAMINATED NEOPRENE BEARING PADS, (STEEL STRUCTURES) COMPLETE-IN-PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR PLAIN LAMINATED NEOPRENE BEARING PADS PER EACH.

COST OF CHANNEL SHEAR CONNECTORS C100 X 8 (ASTM A709M, GRADE 250)
IN PLACE TO BE INCLUDED IN CONTRACT UNIT PRICE FOR STRUCTURAL STEEL PILES (250 mm, & 310 mm).

CONCRETE FOR DIAPHRAGMS NEAR END BENT NO. 1 AND INTERMEDIATE BENT NO. R5
IS INCLUDED IN THE ESTIMATED QUANTITIES FOR SLAB ON STEEL.

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

SEE SPECIAL PROVISIONS FOR ALTERNATE METHODS OF FORMING SLABS.

THE ESTIMATED QUANTITIES FOR SLAB ON STEEL ARE BASED ON SKEWED PRECAST PRESTRESSED END PANELS.

THE PRESTRESSED PANEL QUANTITIES ARE NOT INCLUDED IN THE TABLE OF ESTIMATED QUANTITIES FOR SLAB ON STEEL.

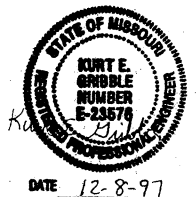
DETAILED	OCT	1997
CHECKED	NOV	1997

SHEET 8 OF 236

ST. LOUIS

COUNTY

A5682



PILE AND FOOTING DATA																						
Unit No.		1					2					3					4 (RAMP 2B)					
Bent No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	R1	R2	R3	R4	R5
Bearing Pile	Pile type and size	HP 250 X 62															HP 310 X 79	HP 250 X 62				
	Number	11	36	36	36	36	36	36	48	44	44	36	36	44	36		11	9	24	24	24	24
	Approximate length meter	13.0	4.5	3.5	3.5	4.5	4.5	4.5	4.5	4.5	3.5	3.5	3.5	3.5	3.5		11.0	11.0	8.0	8.0	7.0	6.0
	Design bearing kN	498.2	386.7	402.2	368.3	390.6	380.9	337.2	479.7	481.8	488.5	390.7	420.8	376.1	387.4		622.8	448.9	329.3	309.6	330.0	338.7
	Hammer energy required kN-m	18.7	13.2	13.8	12.6	13.4	13.1	11.6	16.5	16.5	16.8	13.4	14.5	12.9	13.3		21.4	15.3	11.3	10.6	11.6	11.6
Spread Footings	Foundation material															ROCK						
	Design bearing kN/m²															484.9						

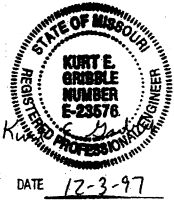
NOTE: MINIMUM ENERGY REQUIREMENT OF HAMMER IS BASED ON PLAN LENGTH AND DESIGN BEARING VALUE OF PILES.

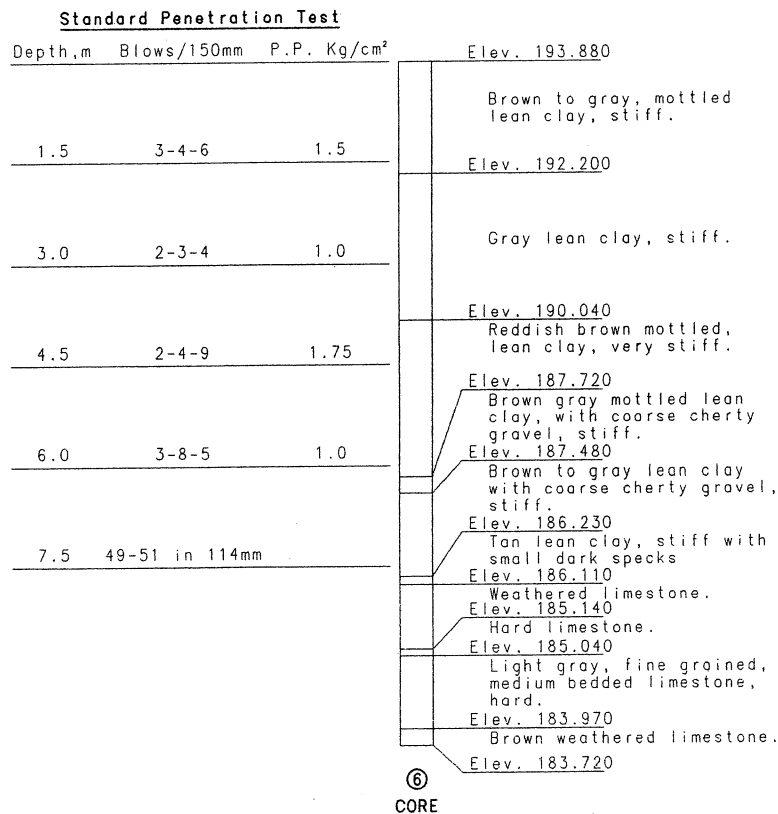
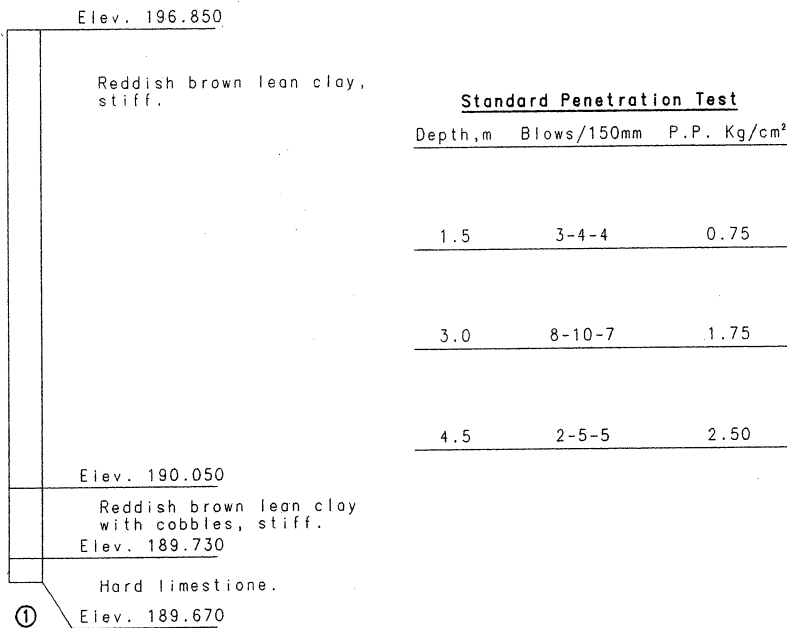
ALL PILE SHALL BE DRIVEN TO PRACTICAL REFUSAL.

PRE-BORE FOR PILES TO RESPECTIVE ELEVATIONS ARE SHOWN IN TABLE BELOW.

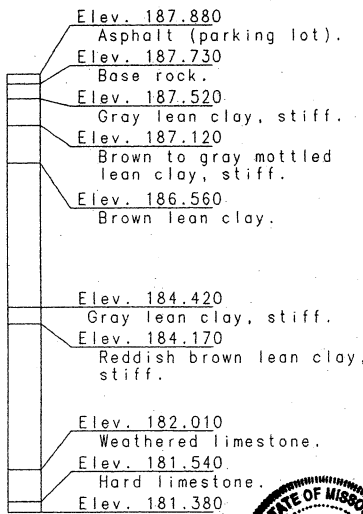
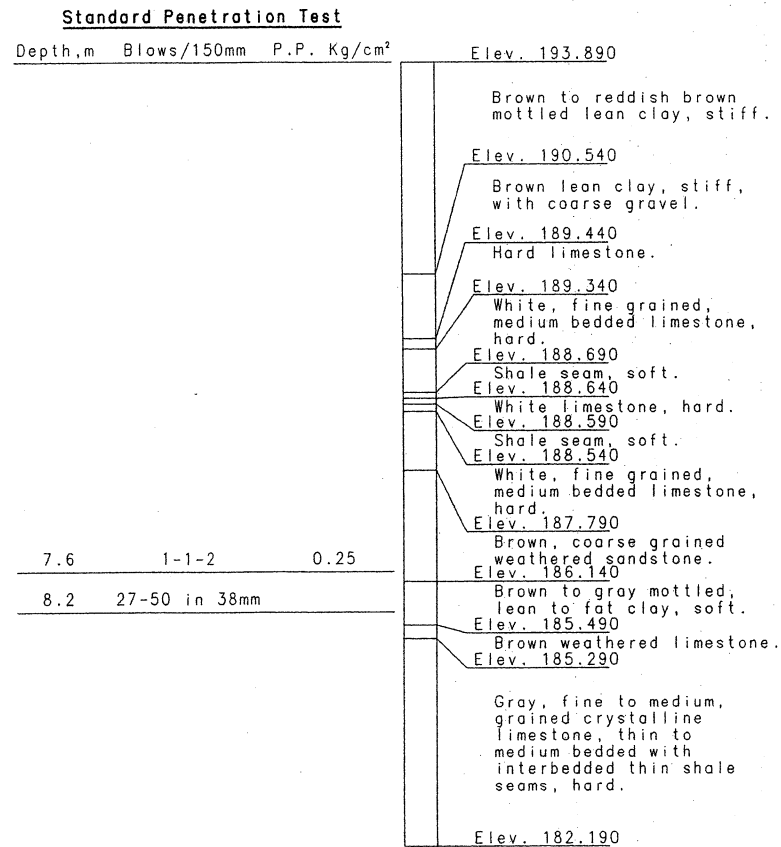
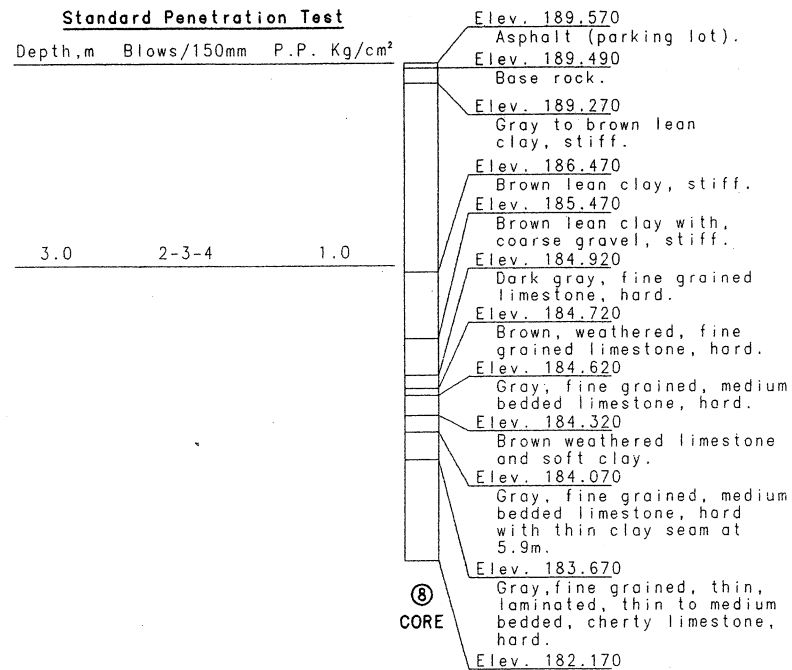
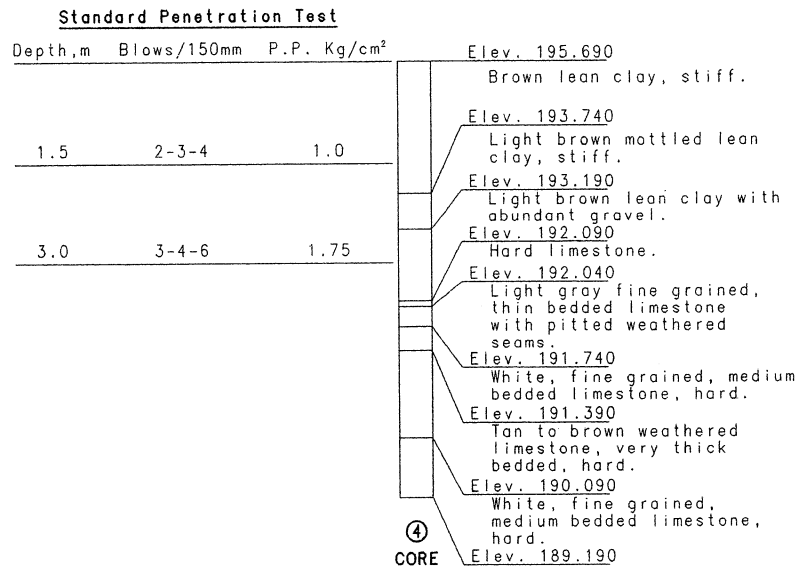
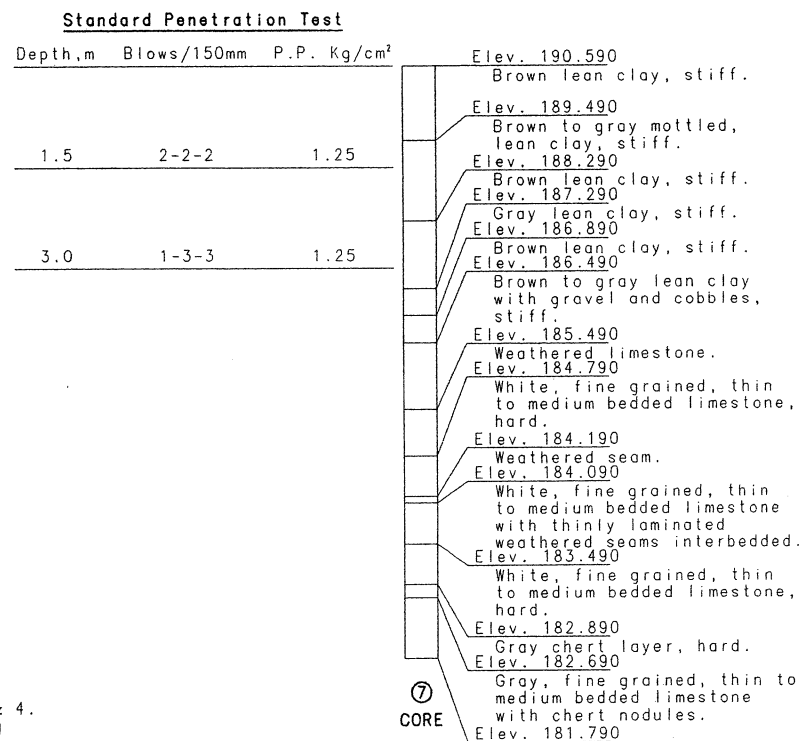
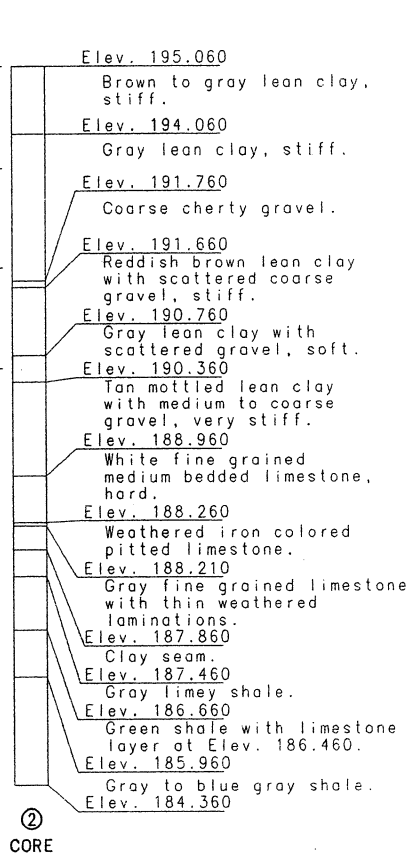
IN NO CASE SHALL FOOTINGS OF BENTS NO. 15 BE PLACED HIGHER THAN ELEV. 180.000.

PREBORE FOR PILE ELEVATIONS		
Bent No.	Footings	Elevations
3	ALL	190.600
4	ALL	189.800
5	ALL	188.000
8	ALL	183.600
10	ALL	180.900
11	LT TO RT CENTER	180.600
11	RT	179.200
12	LT	180.500
12	RT	179.800
13	ALL	179.800
14	ALL	179.700
16	ALL	175.000





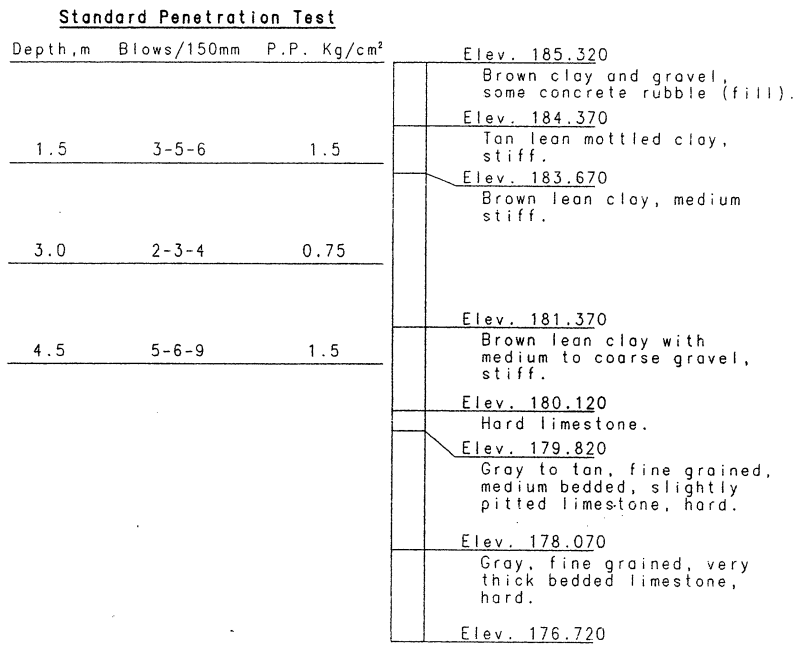
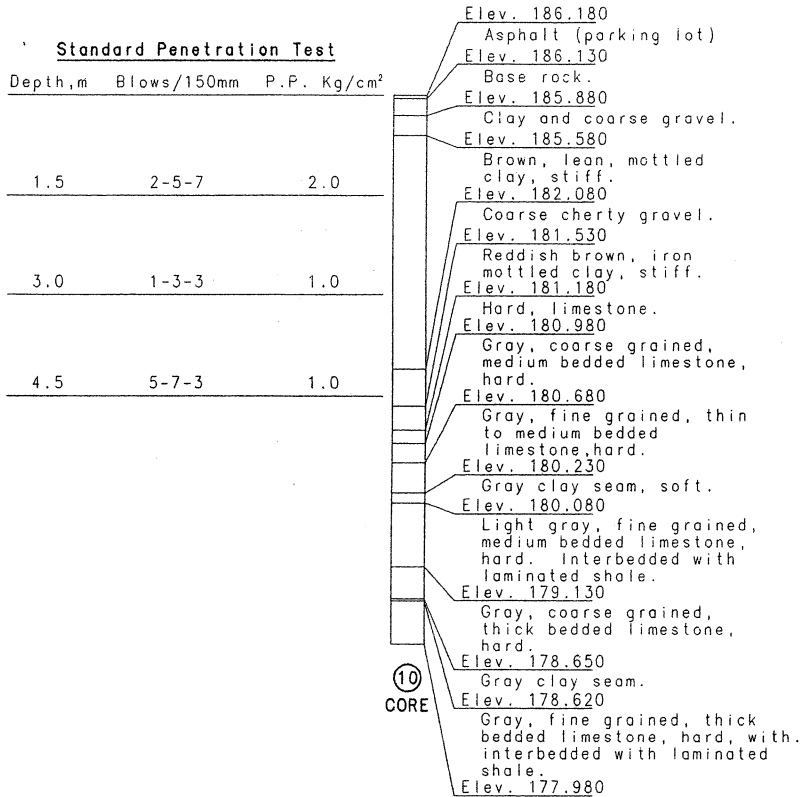
Note: For location of borings see sheets No. 3 & 4.
For Notice and Disclaimer regarding Boring Log Data see sheet No. 3.



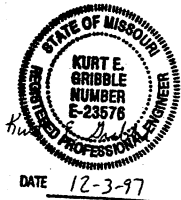
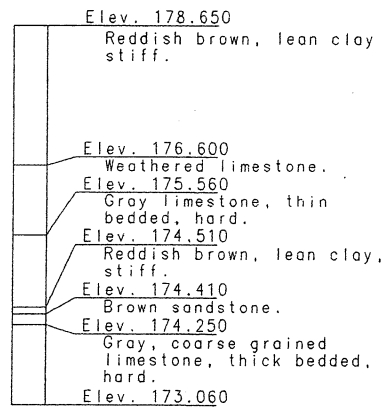
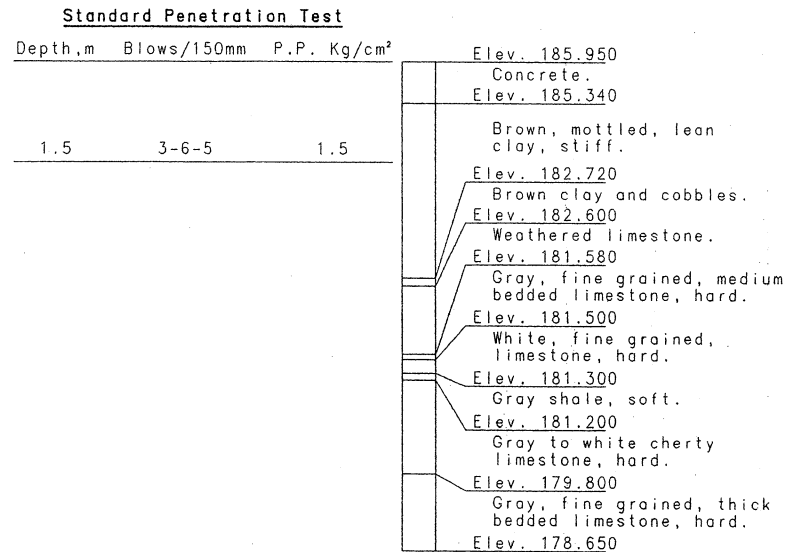
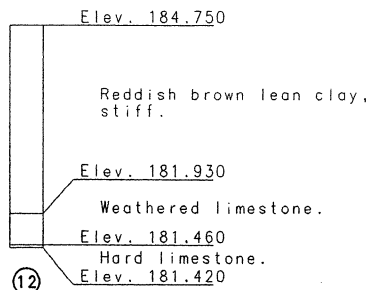
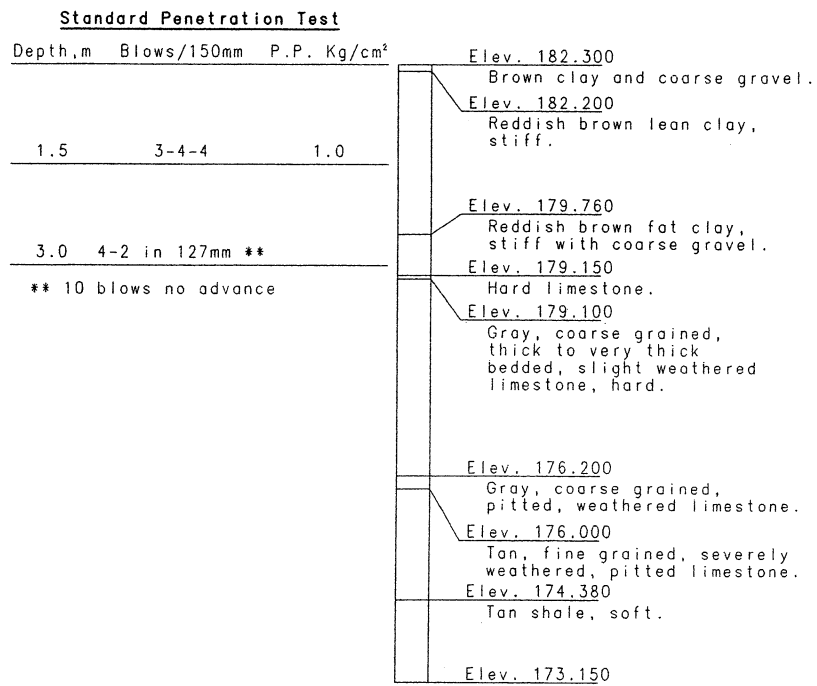
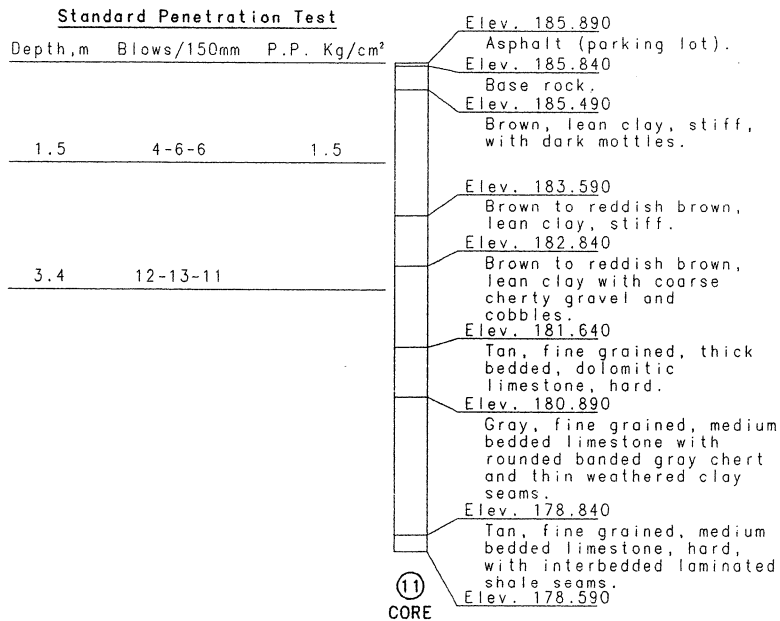
BORING DATA

Sheet No. 10 of 236

ST. LOUIS COUNTY A5682



Note: For location of borings see sheets No. 4 & 5.
For Notice and Disclaimer regarding Boring Log Data see sheet No. 3.



BORING DATA

Sheet No. 11 of 236

ST. LOUIS COUNTY A5682

Standard Penetration Test			
Depth, m	Blows/150mm	P.P. Kg/cm²	
1.5	1-4-6	1.25	Elev. 192.450 Asphalt (shoulder). Elev. 192.420 Base rock. Elev. 192.350 Brown to gray mottled lean clay, stiff. Elev. 190.200 Tan, lean clay, with medium gravel. Elev. 189.000 Tan, lean clay, with medium gravel. Elev. 188.500 Reddish brown, lean clay, stiff. Elev. 187.700 Gray, lean clay, very stiff. Elev. 186.150 Reddish brown to gray, lean clay, very stiff. Elev. 185.750 Tan, fine to medium grained, well rounded sand, medium dense. Elev. 184.850 Tan, fine grained, weathered sand, dense. Elev. 183.400 Tan shale, hard. Elev. 183.000 Dark gray shale. Elev. 182.050 White, fine grained, thick bedded limestone, hard. Elev. 180.750 Tan, coarse grained, slightly pitted, weathered limestone, hard. Elev. 179.950
3.0	3-4-6	2.50	
4.5	2-2-4		
6.2	5-7-11		
7.5	32-32-32		
9.0	28-100 in 130mm		

R3

CORE

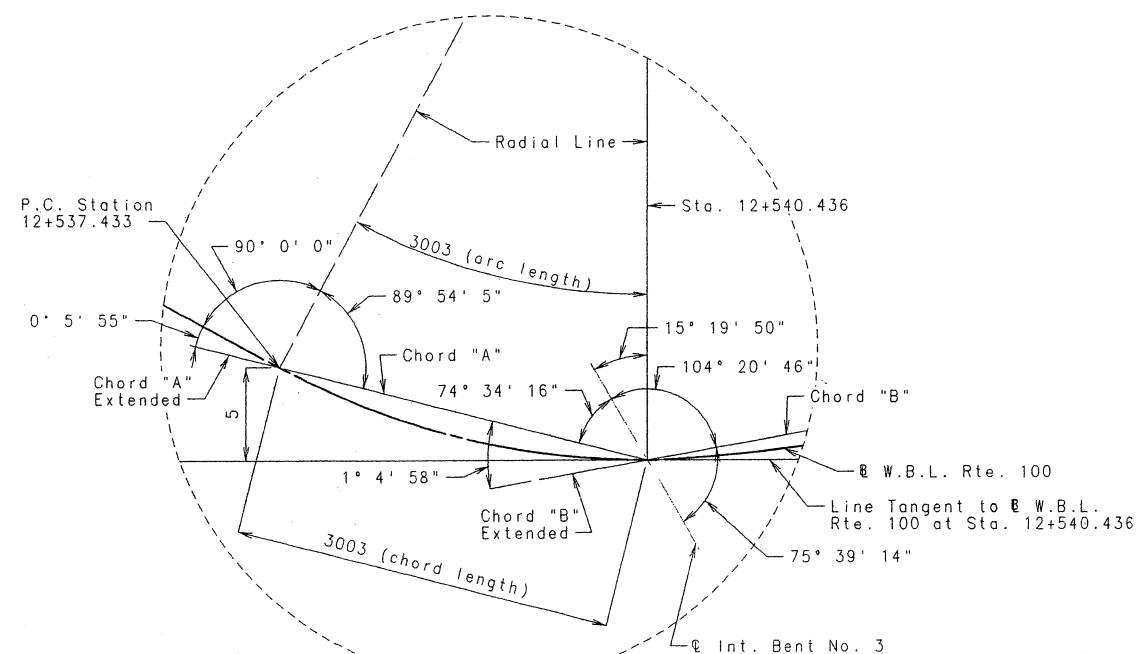
Elev. 191.900 Brown, lean clay, very stiff. Elev. 191.140 Brown to gray, mottled, lean clay, very stiff with fine scattered gravel. Elev. 190.550 Reddish brown, lean clay, very stiff with fine scattered gravel. Elev. 190.040 Brown to gray, lean clay, stiff. Elev. 188.160 Reddish brown, lean clay, medium stiff, moist. Elev. 187.020 Brown to gray, lean clay, stiff, slightly moist. Elev. 186.340 Brown, lean clay, stiff with gravel. Elev. 183.360 Hard limestone. Elev. 183.260
--

R4

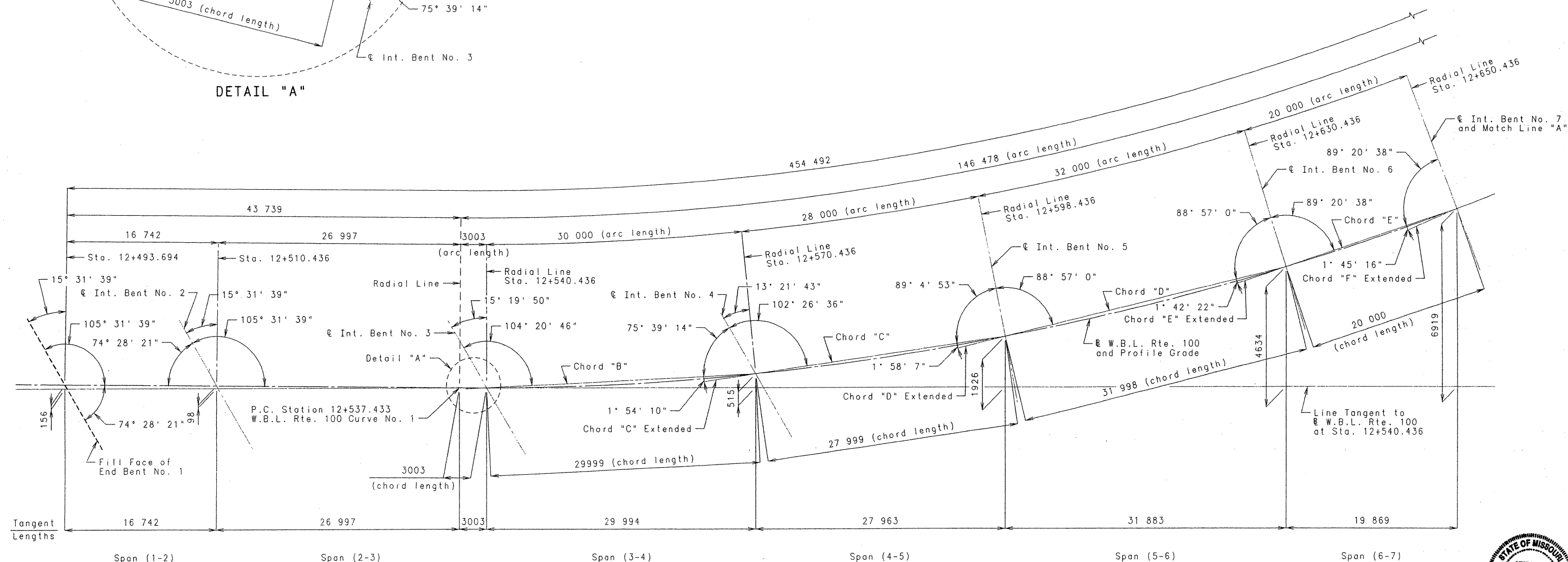
Elev. 190.450 Light brown lean clay with scattered gravel, very stiff. Elev. 189.750 Brown to gray, lean clay, stiff. Elev. 189.050 Reddish brown, lean clay, stiff. Elev. 187.450 Brown, lean clay, stiff, slightly moist. Brown lean clay, very stiff. Elev. 184.960 Clay and gravel Elev. 183.740 Hard limestone. Elev. 183.490
--

R5

Note: For location of borings see sheet No. 6 .
For Notice and Disclaimer regarding Boring Log Data see sheet No. 3.



Note: Dimensions shown are horizontal.
 Bents 1 thru 4 are skewed 15° 19' 50"
 R.A. to a radial line at Sta. 12+540.436.
 Bents 5 thru 7 are radial.

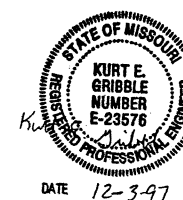


LAYOUT DATA FOR SUBSTRUCTURE

Detailed Sept. 1996
 Checked Aug. 1997

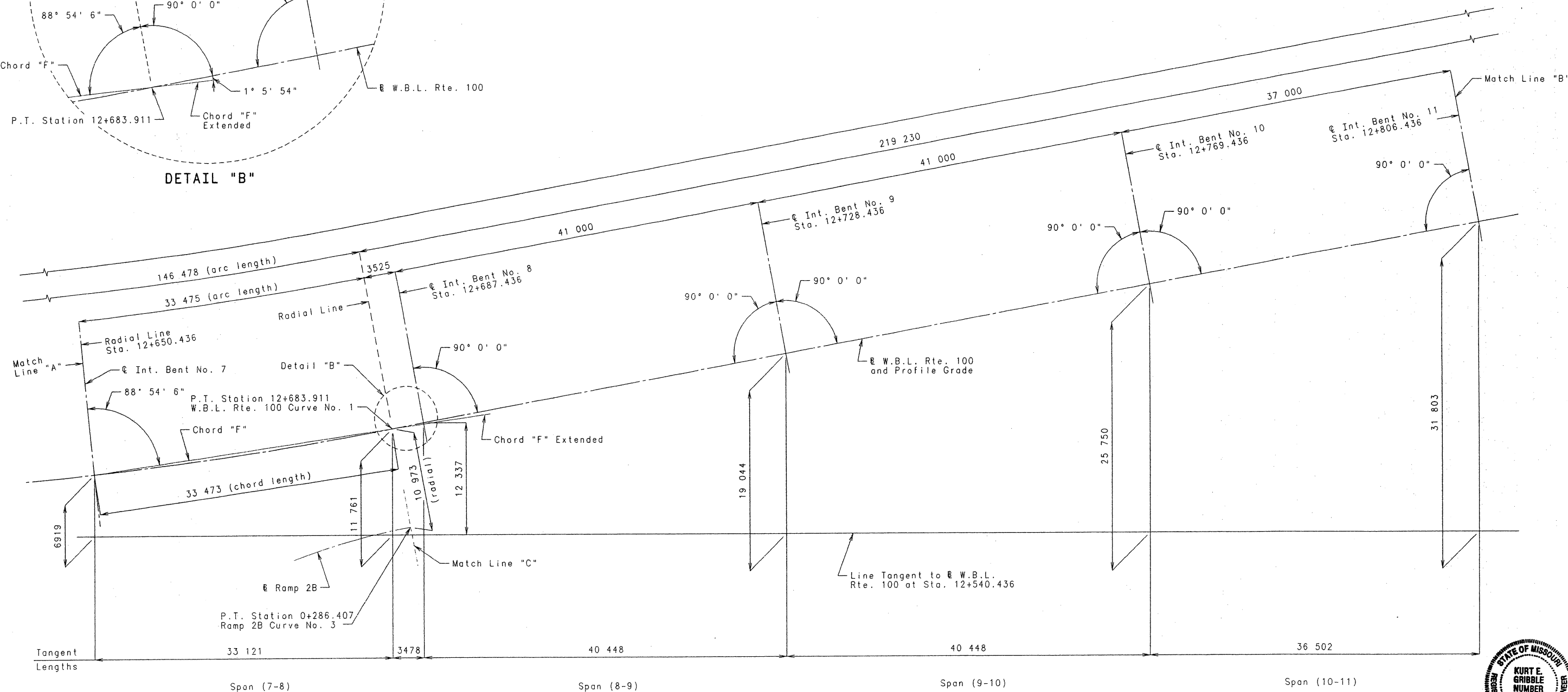
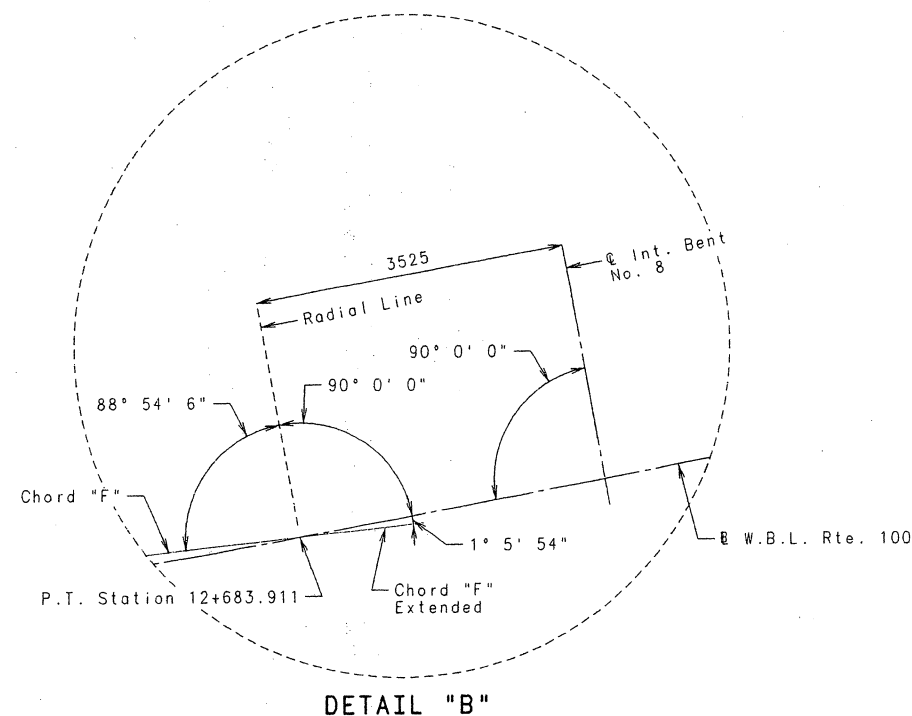
Sheet No. 13 of 236

ST. LOUIS COUNTY A5682



UNIT 1

Note: Dimensions shown are horizontal.
Bent No. 7 is radial.
Bents no 8 thru 11 are square.



LAYOUT DATA FOR SUBSTRUCTURE

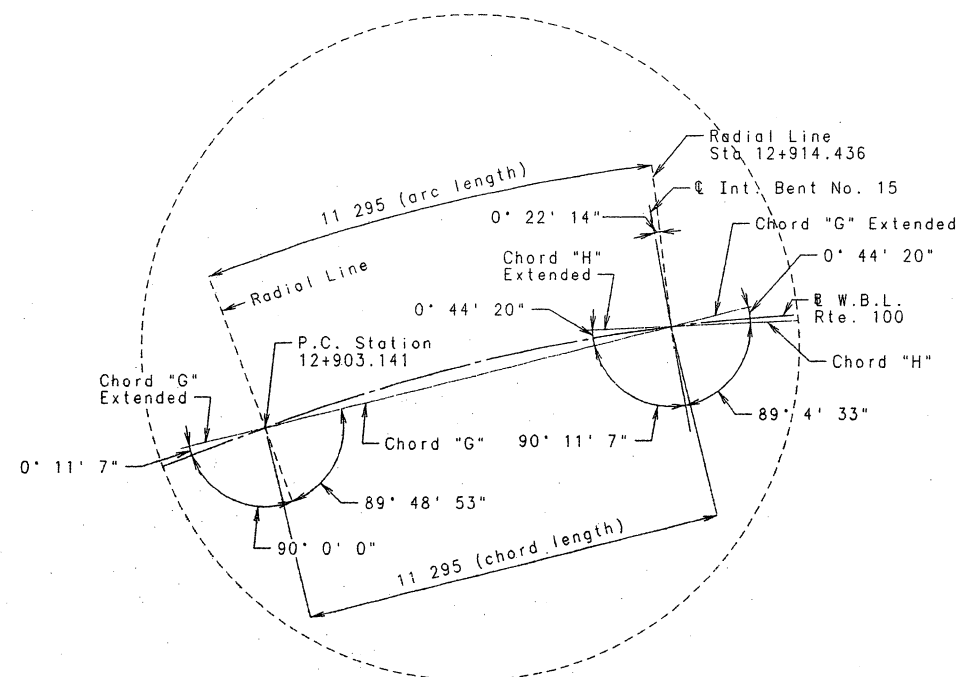
Detailed Sept. 1996
Checked Sept. 1997

Sheet No. 14 of 236

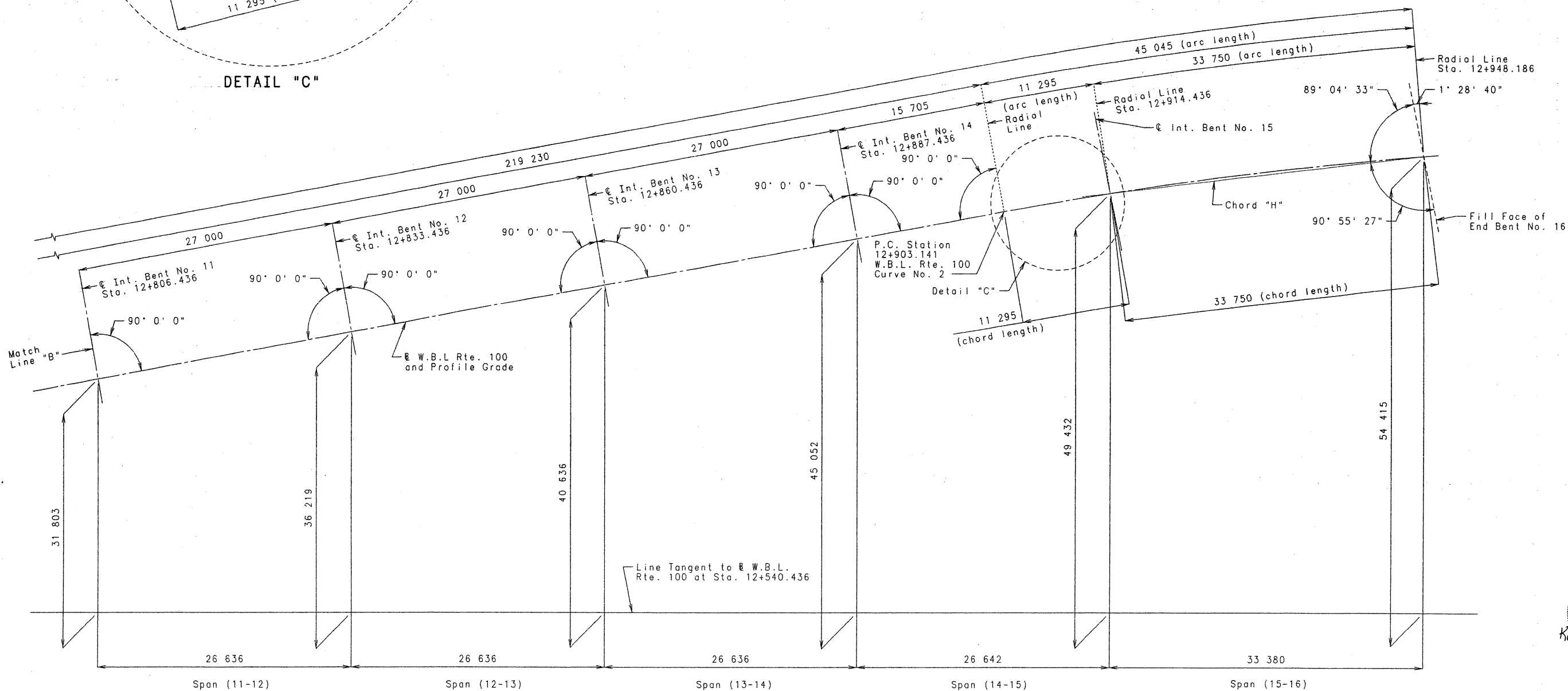
ST. LOUIS COUNTY

UNIT 2
A5682





Note: Dimensions shown are horizontal.
 Bents No 11 thru 14 are square.
 Bents 15 and 16 are parallel to
 a radial line at Sta. 12+903.141.



LAYOUT DATA FOR SUBSTRUCTURE

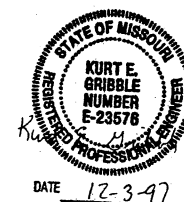
Detailed Sept. 1996
 Checked July 1997

Sheet No. 15 of 236

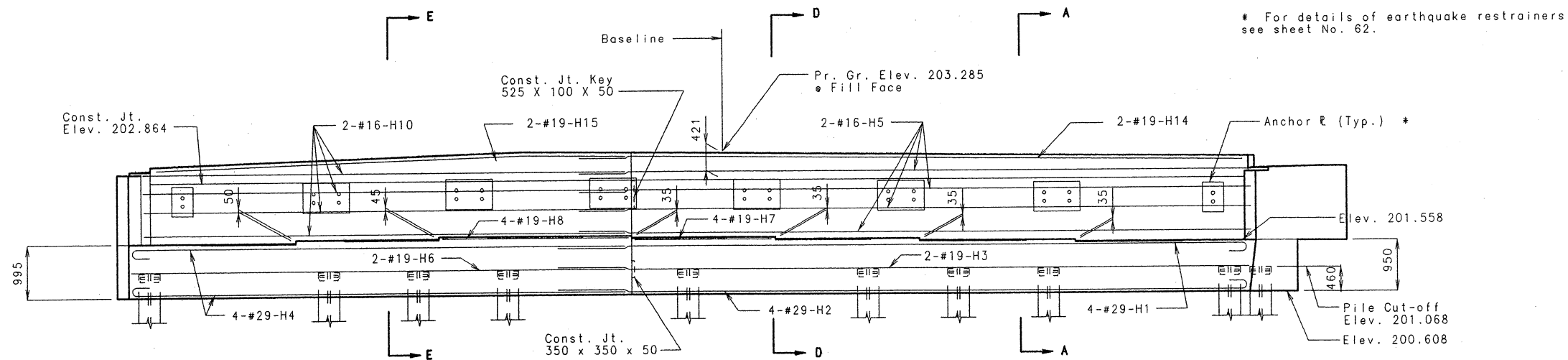
ST. LOUIS COUNTY

UNIT 3

A5682



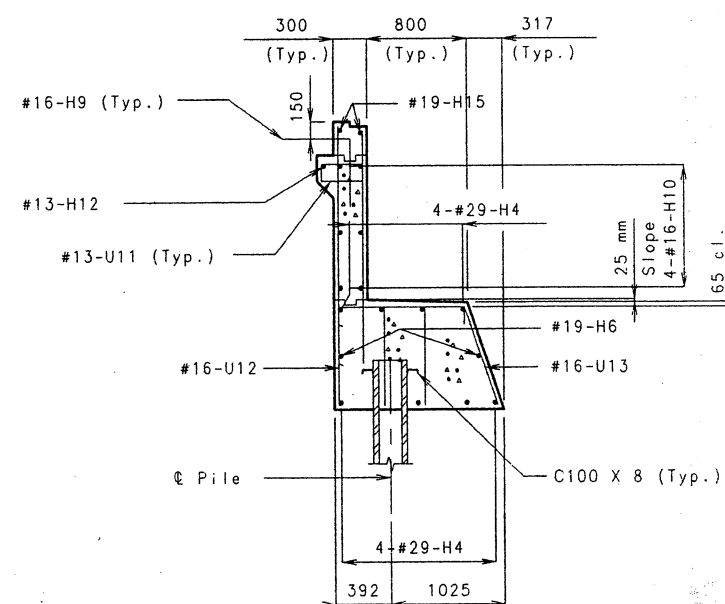
STATE	PROJ. NO.	SHEET NO.
MO.		51



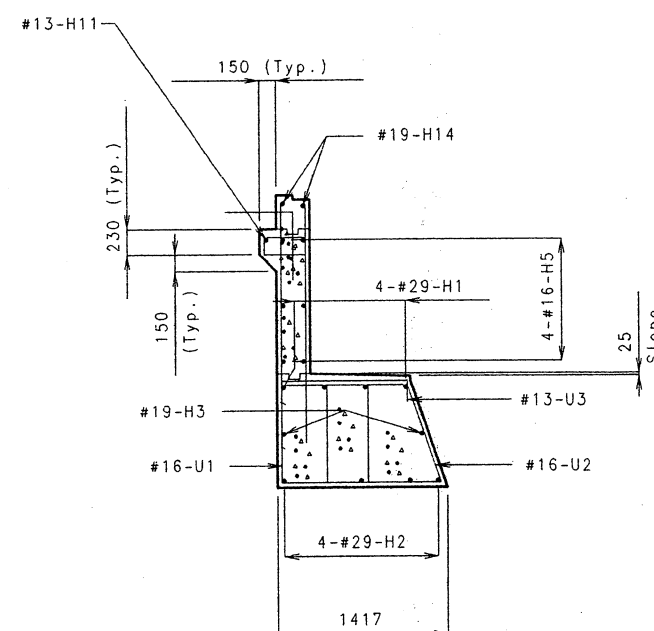
ELEVATION

BEAM SEAT ELEVATIONS	
Gdr. No. 1	201.558
Gdr. No. 2	201.593
Gdr. No. 3	201.628
Gdr. No. 4	201.663
Gdr. No. 5	201.698
Gdr. No. 6	201.698
Gdr. No. 7	201.653
Gdr. No. 8	201.603

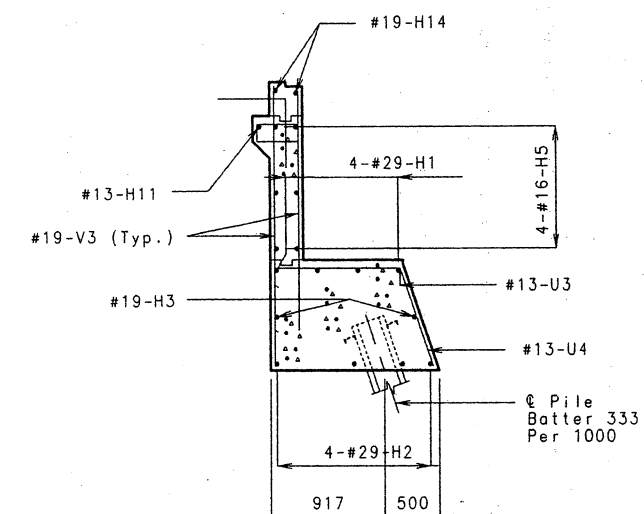
Note: For Details of Expansion Device see sheet No. 91.
Field bending shall be required at wings for #16-H5 & #16-H10 bars in backwalls for skewed structures and for #19-F1 & #19-F2 bars when necessary to conform to slope of wing.



SECTION E-E



SECTION D-D



SECTION A-A

DETAILS OF END BENT NO. 1



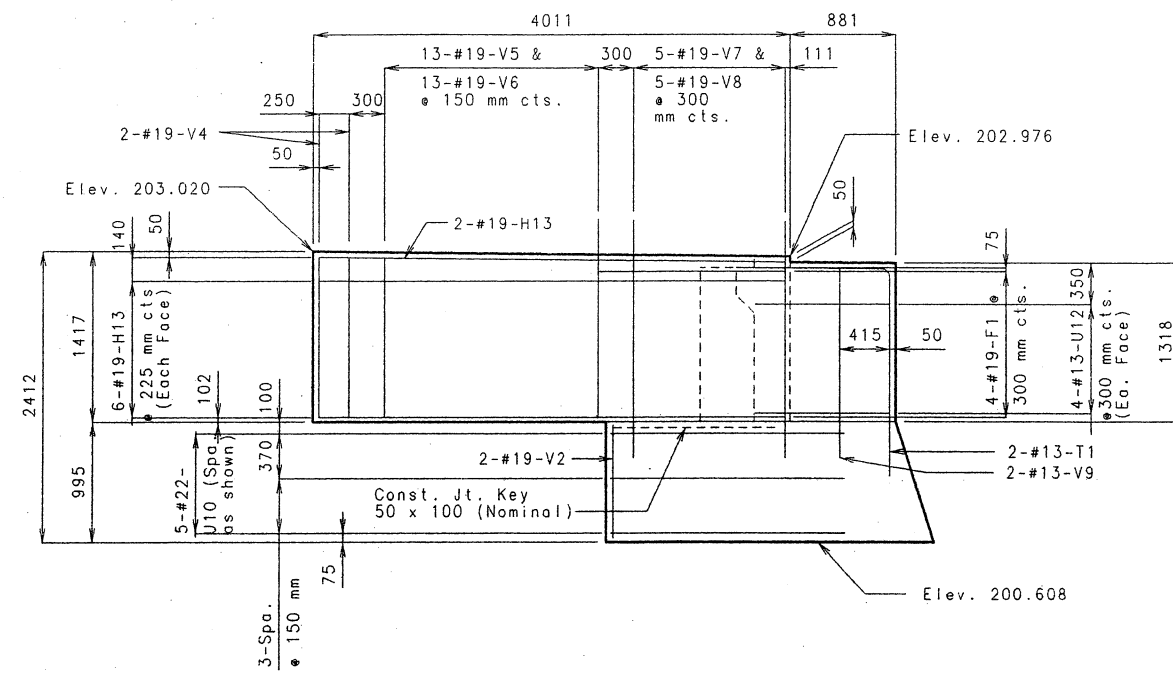
DATE 12-4-97

Note:
For Detail of Steel Pile Splice see sheet No. 51.
For Plan of Bearing Layout see sheet No. 65.
For Plan of Anchor Bolt spacing and Detail of Anchor Bolt Wells see sheet No. 65.

DETAILED SEPT 1997
CHECKED OCT 1997

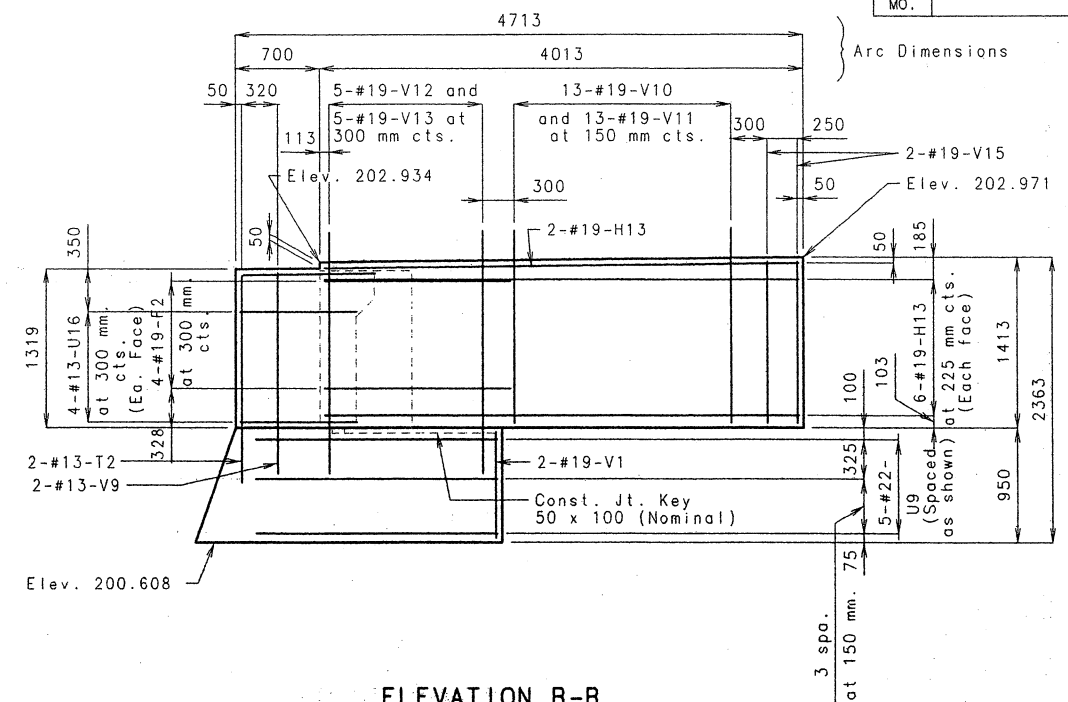
SHEET NO. 18 OF 236.

ST. LOUIS COUNTY UNIT 1 A5682

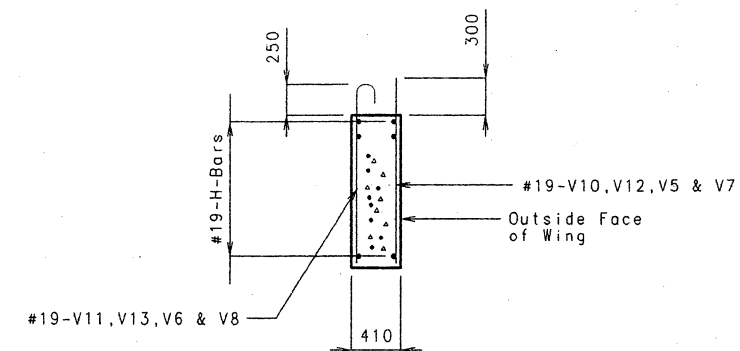


ELEVATION A-A

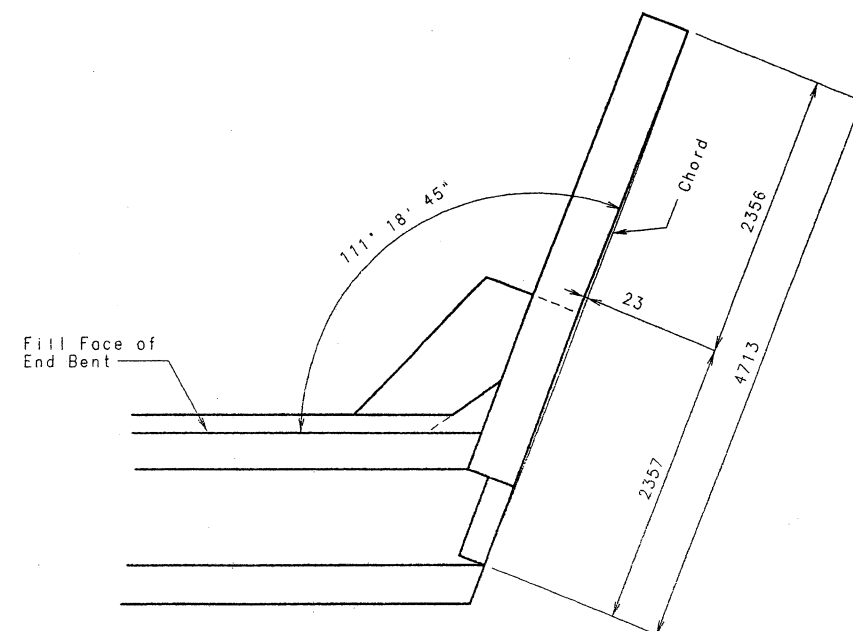
Note: For reinforcement of Safety Barrier Curb,
see sheet no. 93.



ELEVATION B-B



SECTION THRU WING



WING B-B CURVE ORDINATES



SUBSTRUCTURE QUANTITIES FOR END BT. NO. 1		
ITEM		QUANTITY
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	143.0
PRE-BORE FOR PILING - METRIC	METER	38.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	45.0
REINFORCING STEEL (EPOXY COATED) - METRIC	KILOGRAM	4285

These Quantities are included in the Estimated Quantities table on sheet No. 8.

SHEET NO. 19 OF 236.

ST. LOUIS COUNTY A5682

DATE 12-4-97

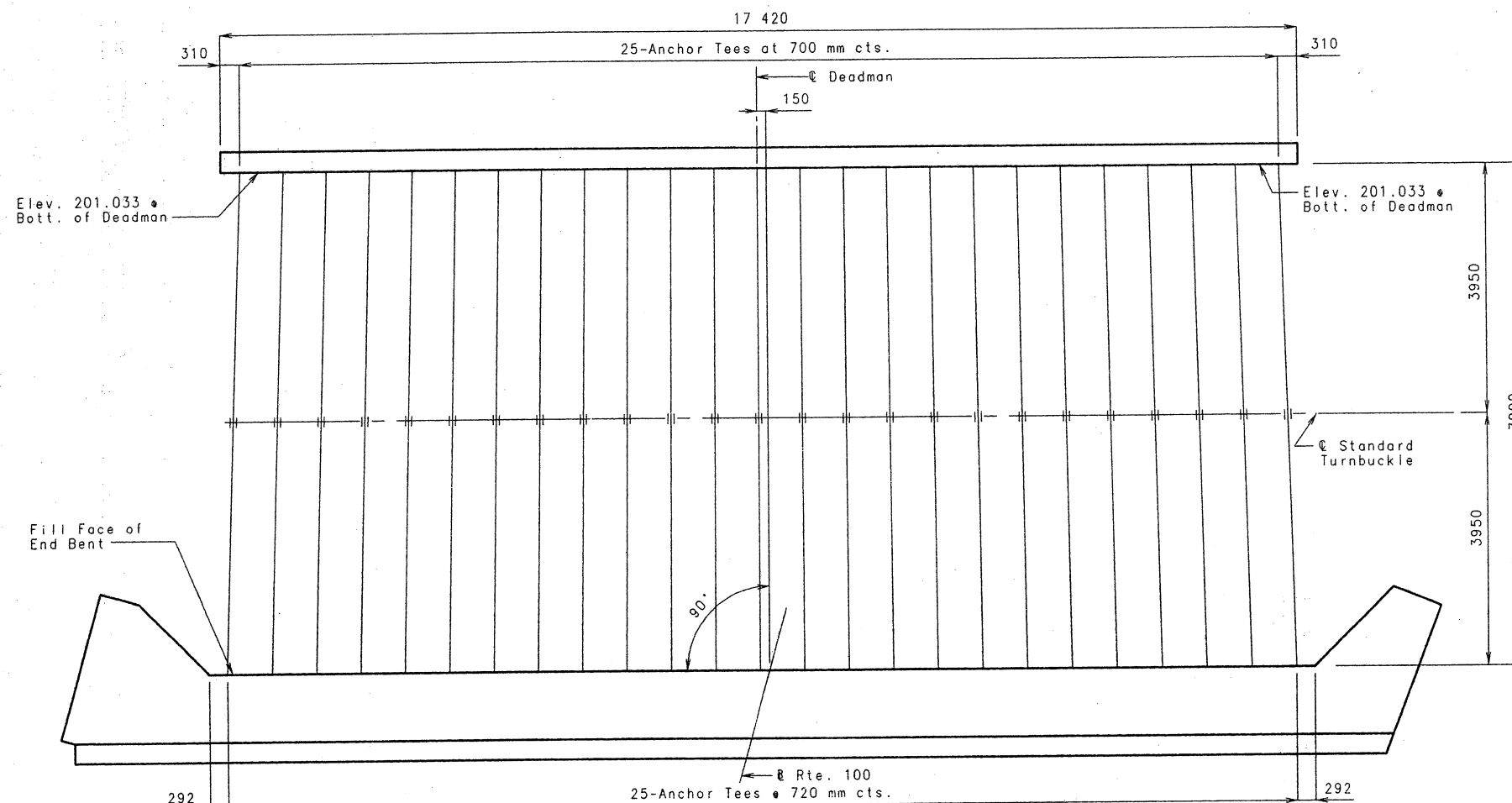
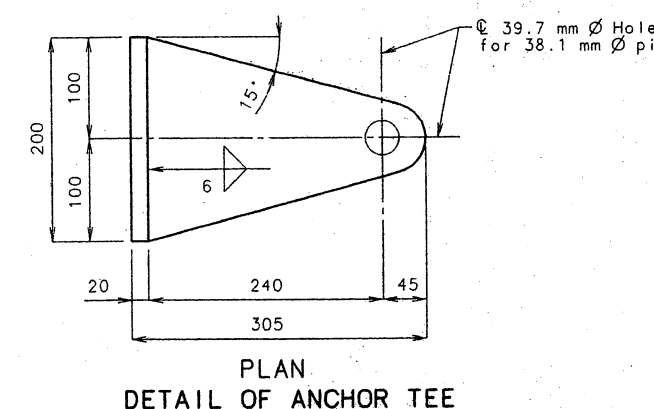
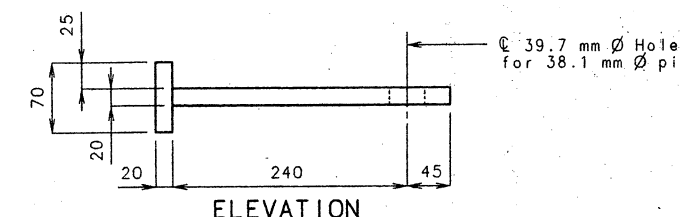
UNIT 1

CONSTRUCTION SEQUENCE:

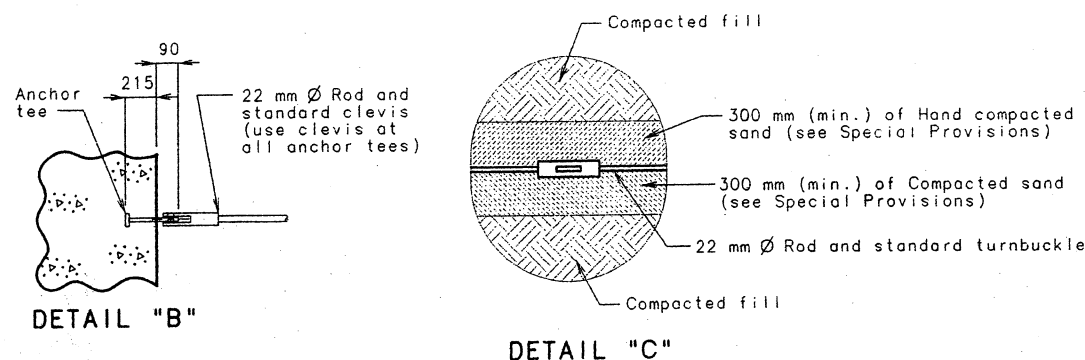
- Construct end bent with anchor tees in place.
- Construct deadman with anchor tees in place.
- Machine compact fill up to elevation of 22 mm Ø rod and turnbuckle.
- Install 22 mm Ø rod, clevis and turnbuckle assembly.
- Tighten turnbuckle until snug.
- Hand compact fill for 300 mm (min.) over 22 mm Ø rod and turnbuckle.
- Machine compact remaining fill.

BILL OF REINFORCING STEEL EACH DEADMAN		
NUMBER	SIZE & MARK	LENGTH
16	#13-H100	8950
116	#13-U100	1360

Note: Reinforcing Steel Lengths are Based on Nominal Lengths, Out to Out.

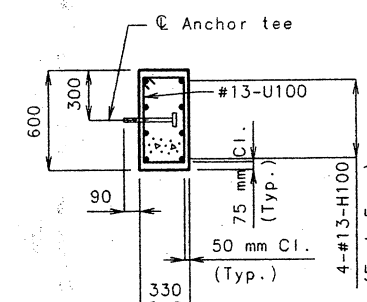


PLAN

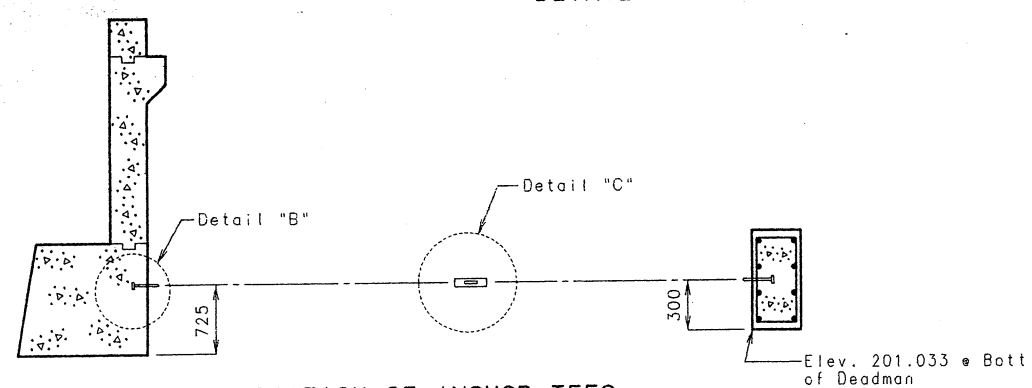


DETAIL "B"

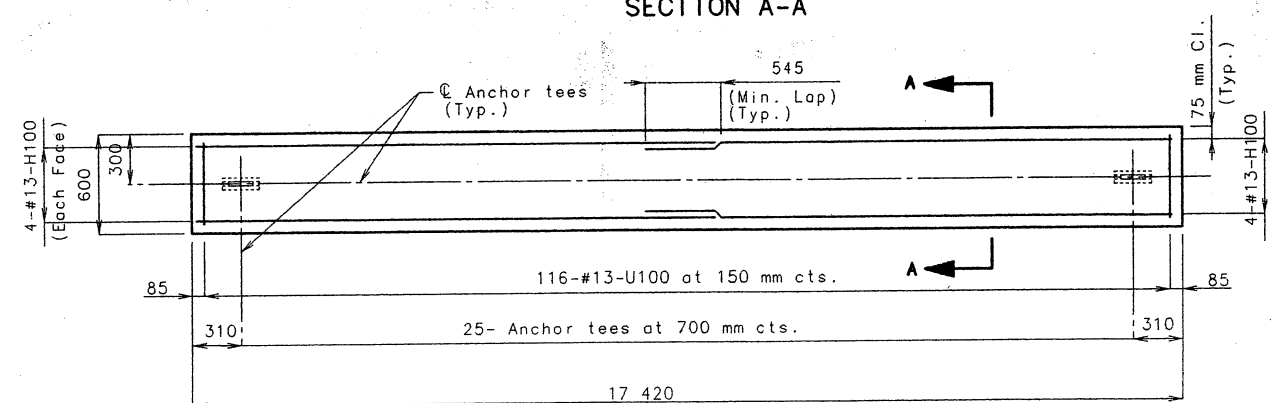
DETAIL "C"



SECTION A-A



LOCATION OF ANCHOR TEES



ELEVATION OF DEADMAN

DETAILS OF DEADMAN ANCHORAGE SYSTEM FOR BENT NO. 1

Sheet No. 20 of 236

ST. LOUIS COUNTY



DATE 12-4-97

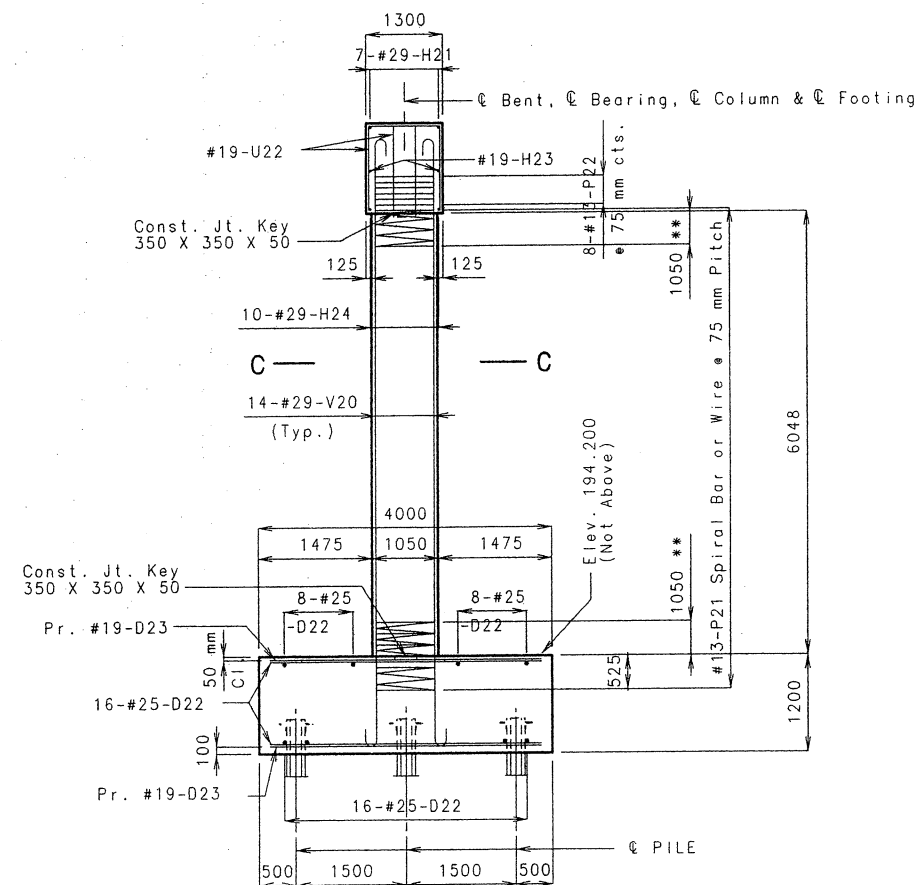
UNIT 1
A5682

dms 1m, deadman, 1, a
Deadman Anchor Revised:
March 1997

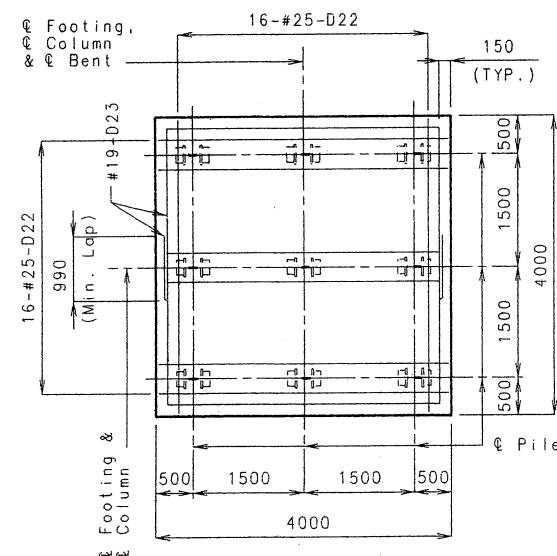
DETAILED SEPT 1997
CHECKED OCT 1997

NOTE:
 ** Lapping of spiral
 reinforcement in this
 region is not permitted.

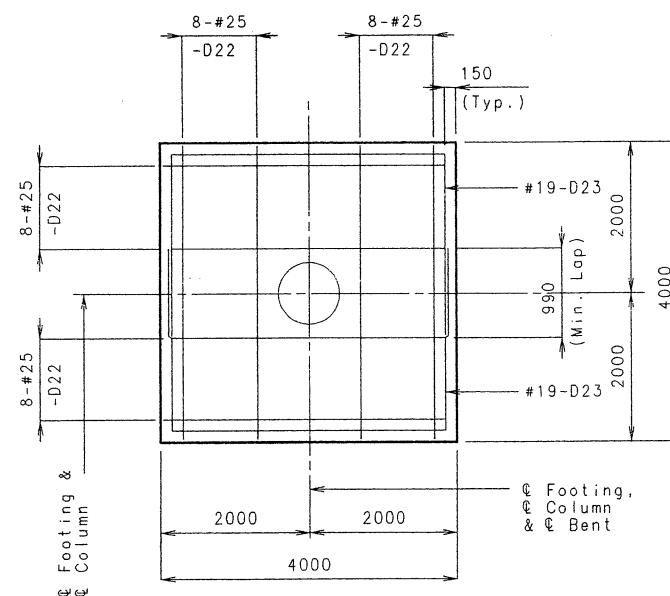
STATE	PROJ. NO.	SHEET NO.
MO.		55



SECTION E-E

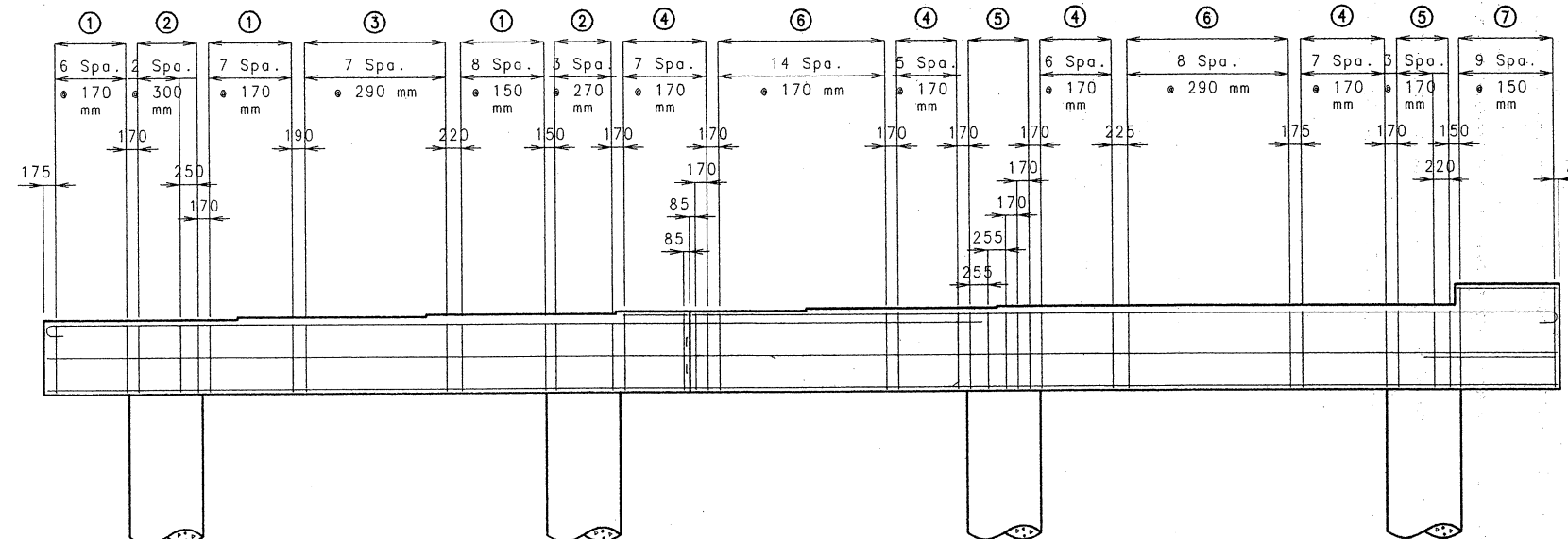


PLAN OF FOOTING SHOWING
 BOTTOM REINFORCEMENT

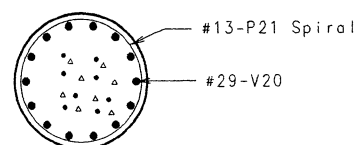


PLAN OF FOOTING SHOWING
 TOP REINFORCEMENT

DETAILS OF INTERMEDIATE BENT NO. 2

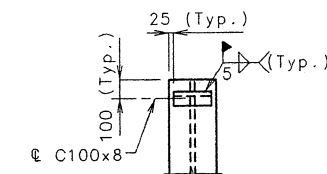


ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING

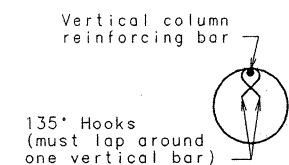


SECTION C-C

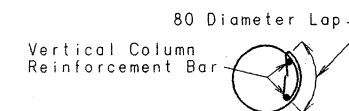
- ① #19-U21
Spaced as shown
(Double)-48 Total Bars Req'd.
- ② #19-U22
Spaced as shown
(Double)-16 Total Bars Req'd.
- ③ #19-U23
Spaced as shown
(Single)-8 Total Bars Req'd.
- ④ #19-U24
Spaced as shown
(Double)-58 Total Bars Req'd.
- ⑤ #19-U25
Spaced as shown
(Double)-20 Total Bars Req'd.
- ⑥ #19-U26
Spaced as shown
(Single)-24 Total Bars Req'd.
- ⑦ #19-U27
Spaced as shown
(Double)-20 Total Bars Req'd.



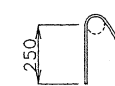
TYPICAL DETAIL OF PILE
 CHANNEL SHEAR CONNECTOR



DETAIL OF SEISMIC
 STIRRUP BAR (#13-P22)



ANCHOR SPLICES
 IN SPIRAL AROUND
 VERTICAL BAR



DETAILS OF 135°
 SEISMIC SPIRAL
 TIE HOOK

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 2		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	180
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	162.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	130.9
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	12240

These Quantities are included in the Estimated Quantities table on sheet No. 8.



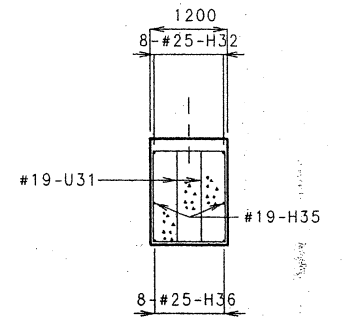
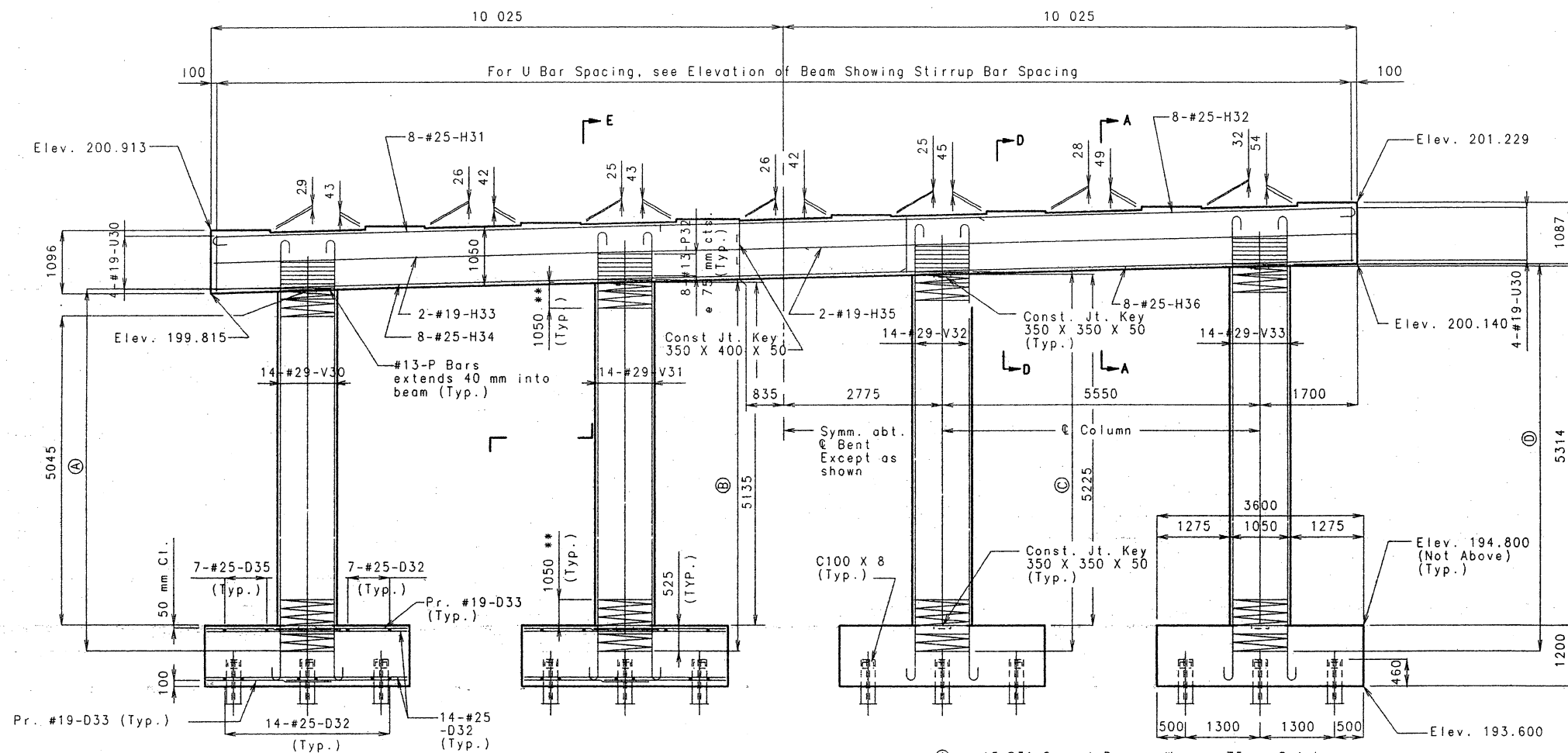
DATE 12-4-97

DETAILED MAY 1997
 CHECKED OCT. 1997

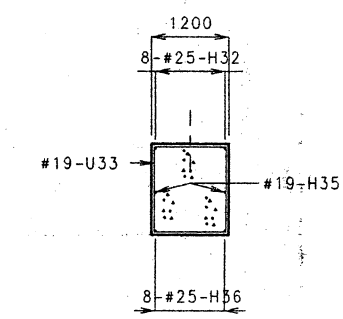
SHEET NO. 22 OF 236.

ST. LOUIS COUNTY

UNIT 1
 A5682



SECTION D-D



SECTION A-A

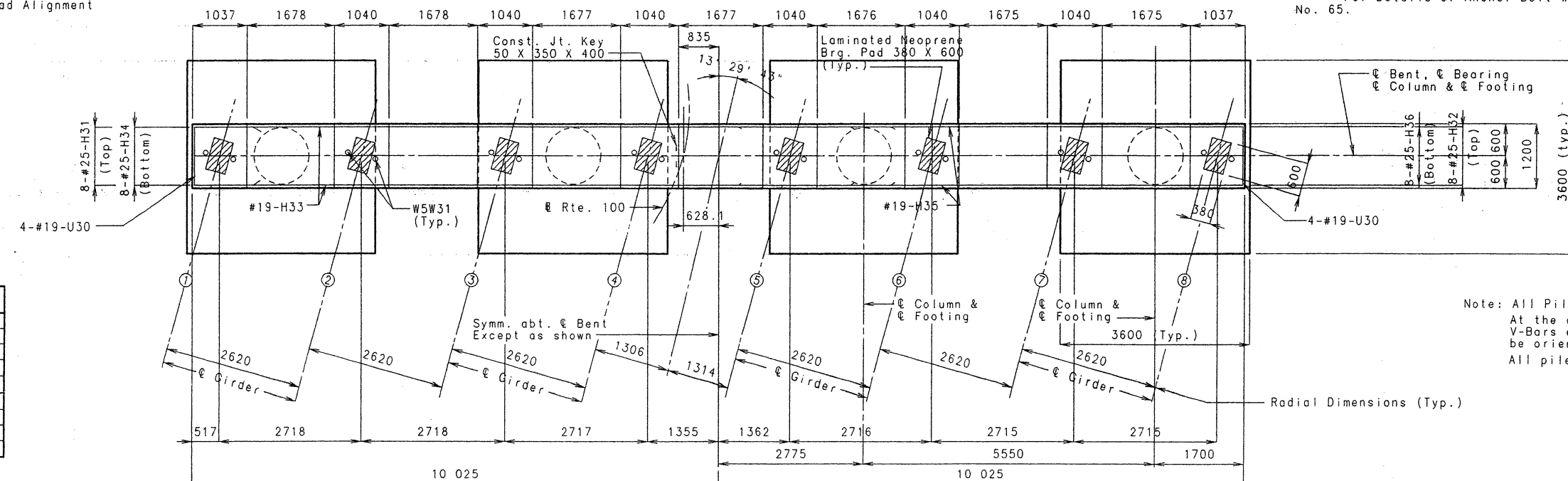
Note: Lapping of spiral reinforcement in this region is not permitted.

Note: For Detail of Laminated Neoprene Brg. Pad see sheet No. 64.
For Detail of Steel Pile Splice see sheet No. 51.
For Elevation of Beam Showing Stirrup Bar Spacing see sheet No. 24.
For Details of Brg. Pad Alignment see sheet No. 65.

- (A) #13-P31 Spiral Bar or Wire • 75 mm Pitch
- (B) #13-P33 Spiral Bar or Wire • 75 mm Pitch
- (C) #13-P34 Spiral Bar or Wire • 75 mm Pitch
- (D) #13-P35 Spiral Bar or Wire • 75 mm Pitch

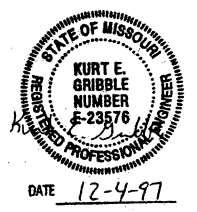
Note: For Section E-E, Details of Footing and Substructure Quantity Table for Int. Bt. No. 3 see sheet No. 24.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15 mm.
For Details of Anchor Bolt Wells and spacing see sheet No. 65.

BEAM SEAT ELEVATIONS	
Gdr. No. 1	200.913
Gdr. No. 2	200.954
Gdr. No. 3	200.997
Gdr. No. 4	201.042
Gdr. No. 5	201.085
Gdr. No. 6	201.132
Gdr. No. 7	201.180
Gdr. No. 8	201.229



PLAN

DETAILS OF INTERMEDIATE BENT NO. 3

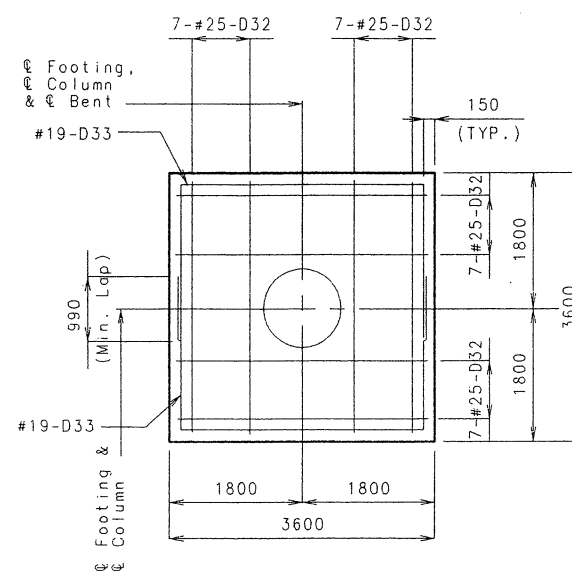
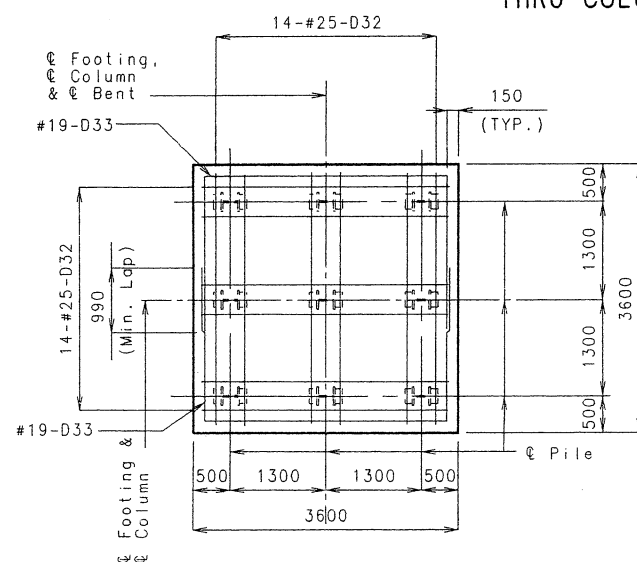
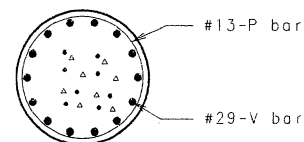
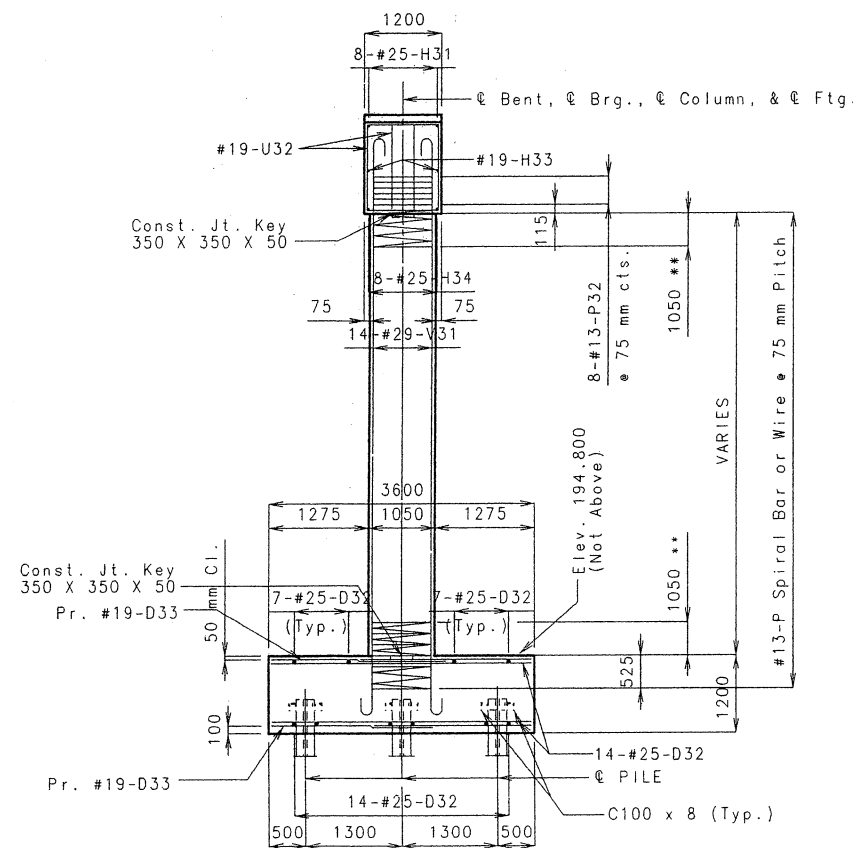


Note: All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.

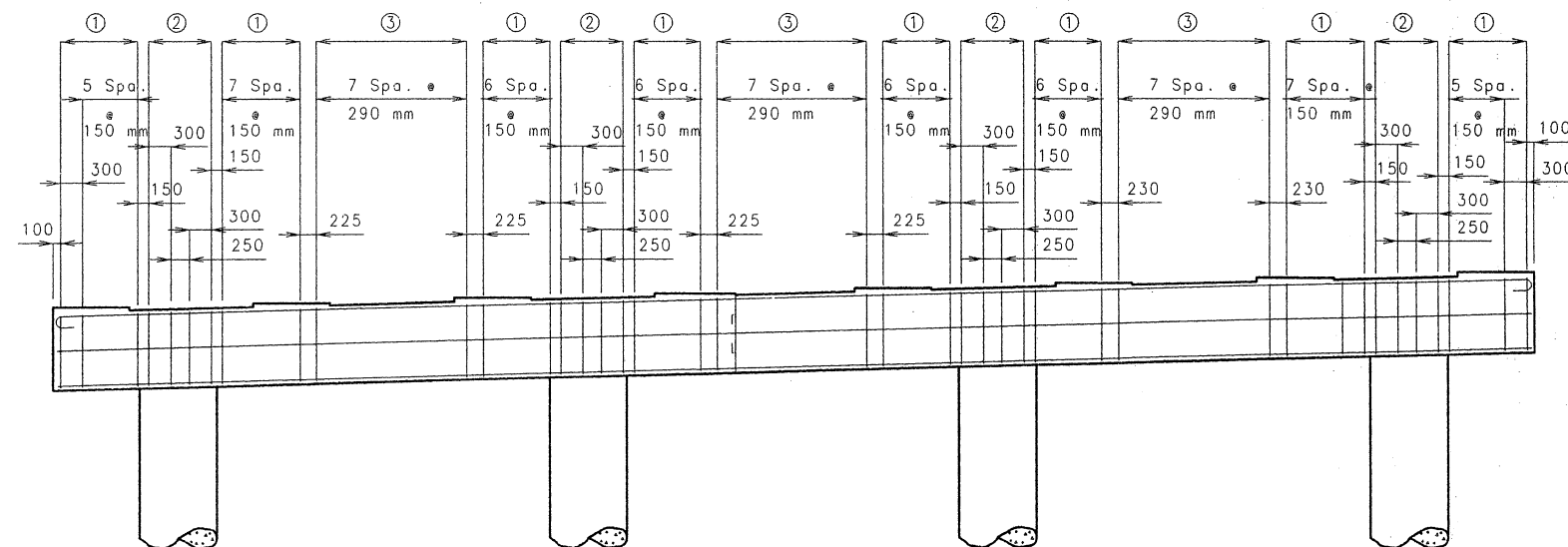
DETAILED AUG 1997
CHECKED OCT 1997

SHEET NO. 23 OF 236.

ST. LOUIS COUNTY A5682



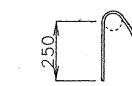
DETAILS OF INTERMEDIATE BENT NO. 3



Vertical column reinforcing bar

135° Hooks (must lap around one vertical bar)

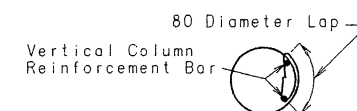
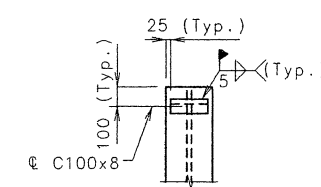
DETAIL OF SEISMIC STIRRUP BAR (#13-P32)



SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 3

ITEM	QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER 155
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER 126.0
PRE-BORE FOR PILING - METRIC	METER 108
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER 105.8
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM 9630

These Quantities are included in the Estimated Quantities table on sheet No. 8.



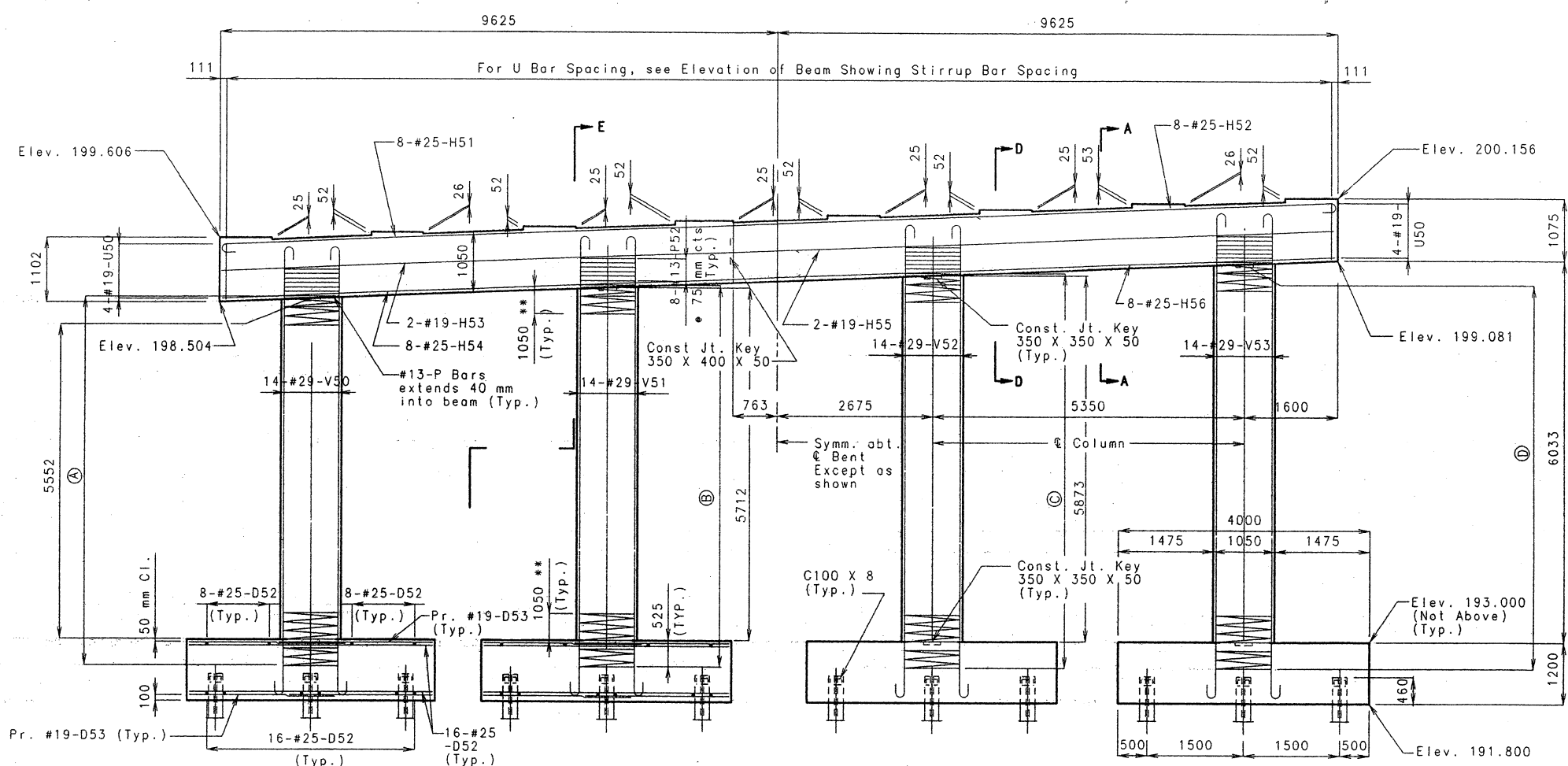
DATE 12-4-97

DETAILED AUG 1997
CHECKED OCT 1997

SHEET NO. 24 OF 236.

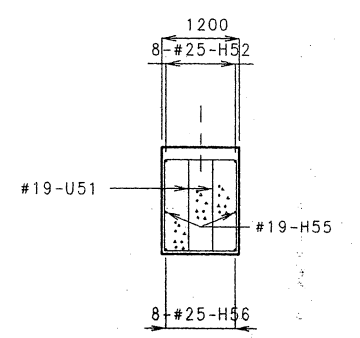
ST. LOUIS COUNTY

UNIT 1
A5682

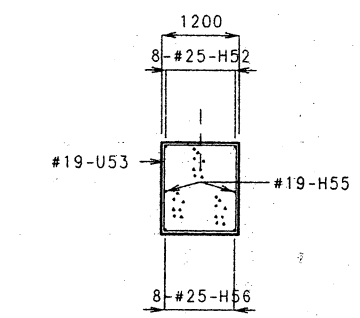


Note:
 ** Lapping of spiral reinforcement in this region is not permitted.

Note: For Detail of Laminated Neoprene Brg. Pad see sheet No. 64.
 For Detail of Steel Pile Splice see sheet No. 51.
 For Elevation of Beam Showing Stirrup Bar Spacing see sheet No. 28.
 For Details of Brg. Pad Alignment see sheet No. 65.



SECTION D-D

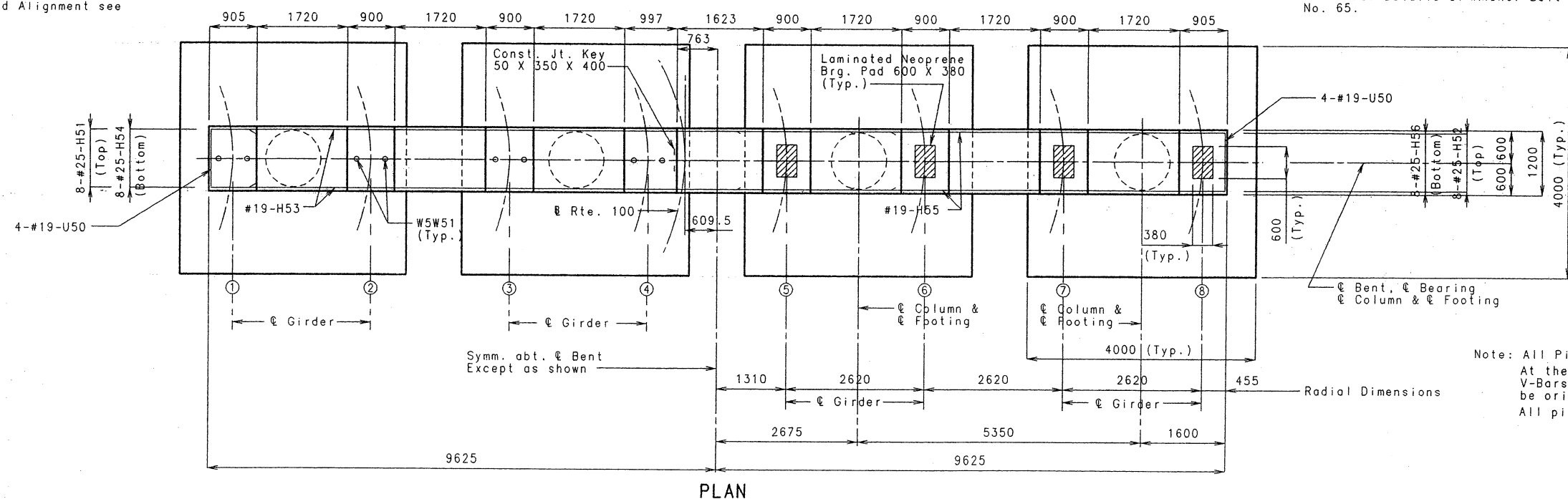


SECTION A-A

- Ⓐ #13-P51 Spiral Bar or Wire • 75 mm Pitch
- Ⓑ #13-P53 Spiral Bar or Wire • 75 mm Pitch
- Ⓒ #13-P54 Spiral Bar or Wire • 75 mm Pitch
- Ⓓ #13-P55 Spiral Bar or Wire • 75 mm Pitch

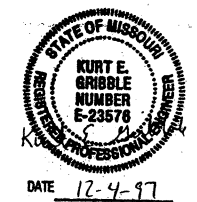
Note: For Section E-E, Details of Footing and Substructure Quantity Table for Int. Bt. No. 5 see sheet No. 28.

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15 mm.
 For Details of Anchor Bolt Wells and spacing see sheet No. 65.



PLAN
 DETAILS OF INTERMEDIATE BENT NO. 5

BEAM SEAT ELEVATIONS	
Gdr. No. 1	199.606
Gdr. No. 2	199.685
Gdr. No. 3	199.763
Gdr. No. 4	199.842
Gdr. No. 5	199.920
Gdr. No. 6	199.999
Gdr. No. 7	200.078
Gdr. No. 8	200.156



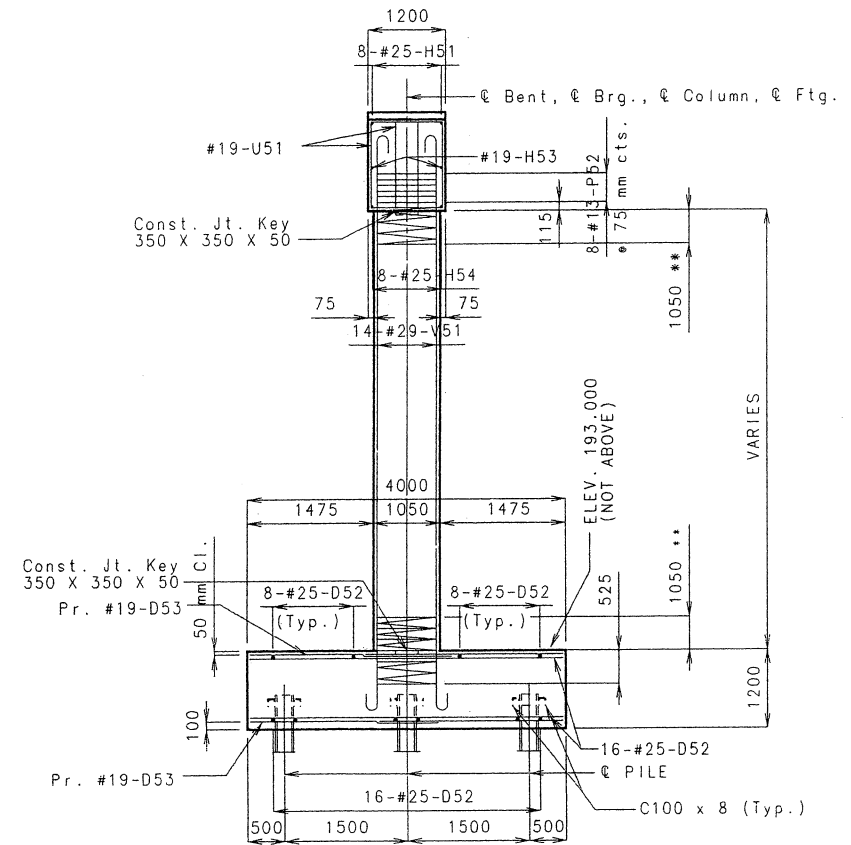
Note: All Piles are HP 250 X 62.
 At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
 All pile shall be driven vertical.

DETAILED AUG 1997
 CHECKED OCT 1997

SHEET NO. 27 OF 236.

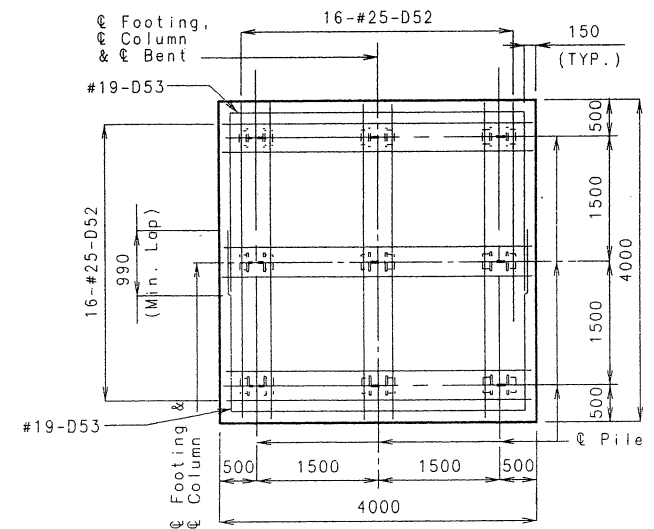
ST. LOUIS COUNTY

UNIT 1
 A5682



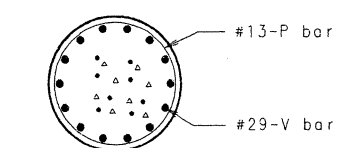
SECTION E-E

Note: ** Lapping of Spiral Reinforcement in this Region is not Permitted.

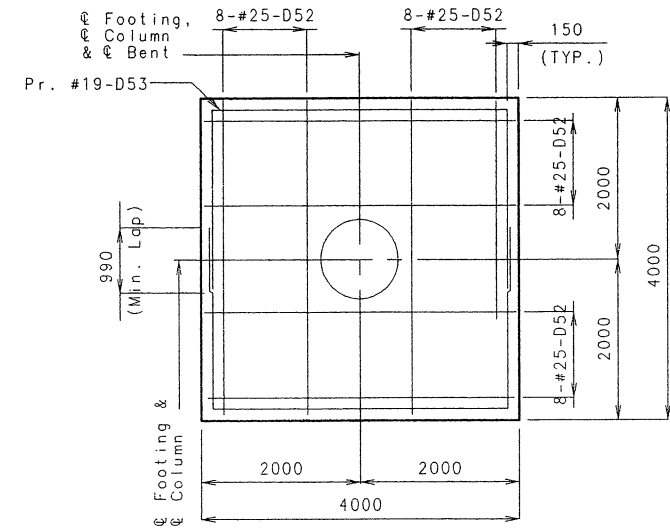


PLAN OF FOOTING SHOWING
BOTTOM REINFORCEMENT

- ① #19-U51
Spa. as shown
(Double)
122 Total Bars Req'd
- ② #19-U52
Spa. as shown
(Double)
32 Total Bars Req'd
- ③ #19-U53
Spa. as shown
(Single)
18 Total Bars Req'd

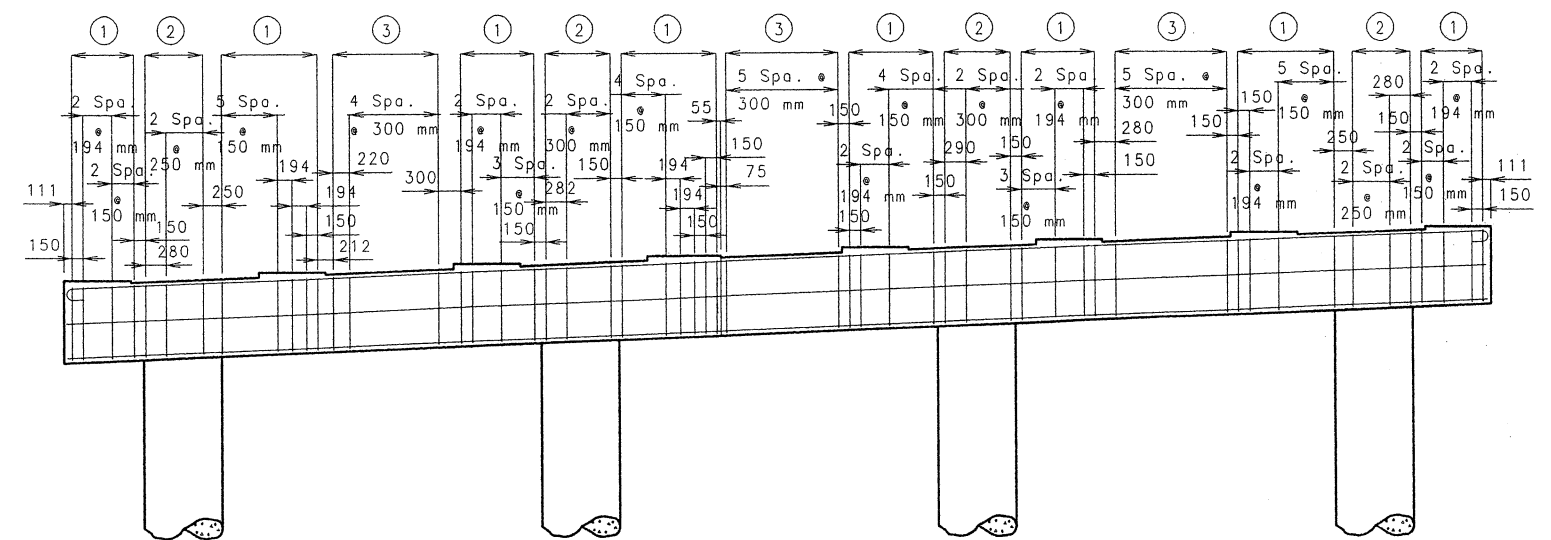


TYPICAL SECTION
THRU COLUMN

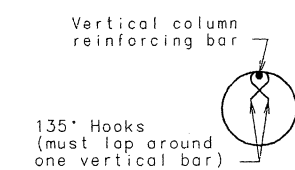


PLAN OF FOOTING SHOWING
TOP REINFORCEMENT

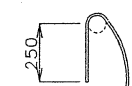
DETAILS OF INTERMEDIATE BENT NO. 5



ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING



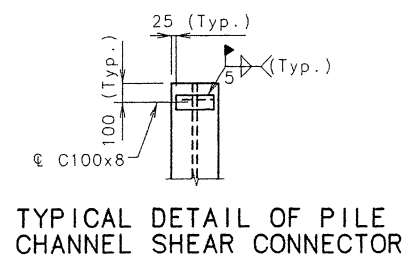
DETAIL OF SEISMIC
STIRRUP BAR (#13-P52)



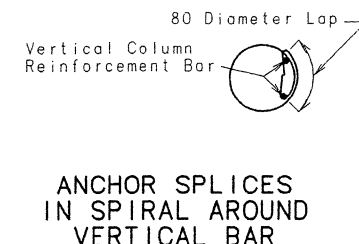
DETAILS OF 135°
SEISMIC SPIRAL
TIE HOOK

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 5		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	180
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	162.0
PRE-BORE FOR PILING - METRIC	METER	144.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	121.5
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	10720

These Quantities are included in the Estimated Quantities table on sheet No. 8.



TYPICAL DETAIL OF PILE
CHANNEL SHEAR CONNECTOR



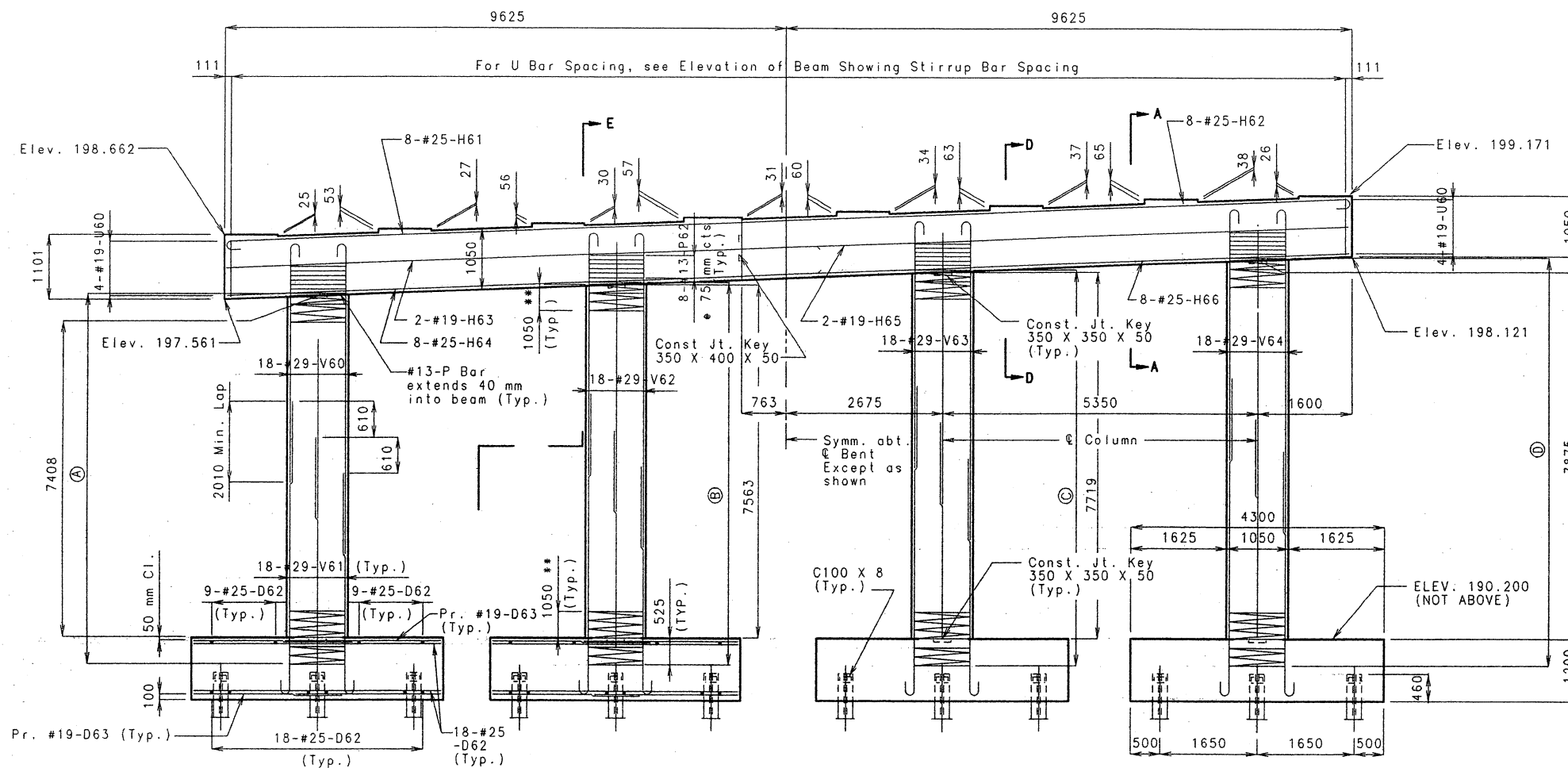
ANCHOR SPLICES
IN SPIRAL AROUND
VERTICAL BAR



DATE 12-4-97

UNIT 1

A5682



Note:
** Lapping of spiral reinforcement in this region is not permitted.

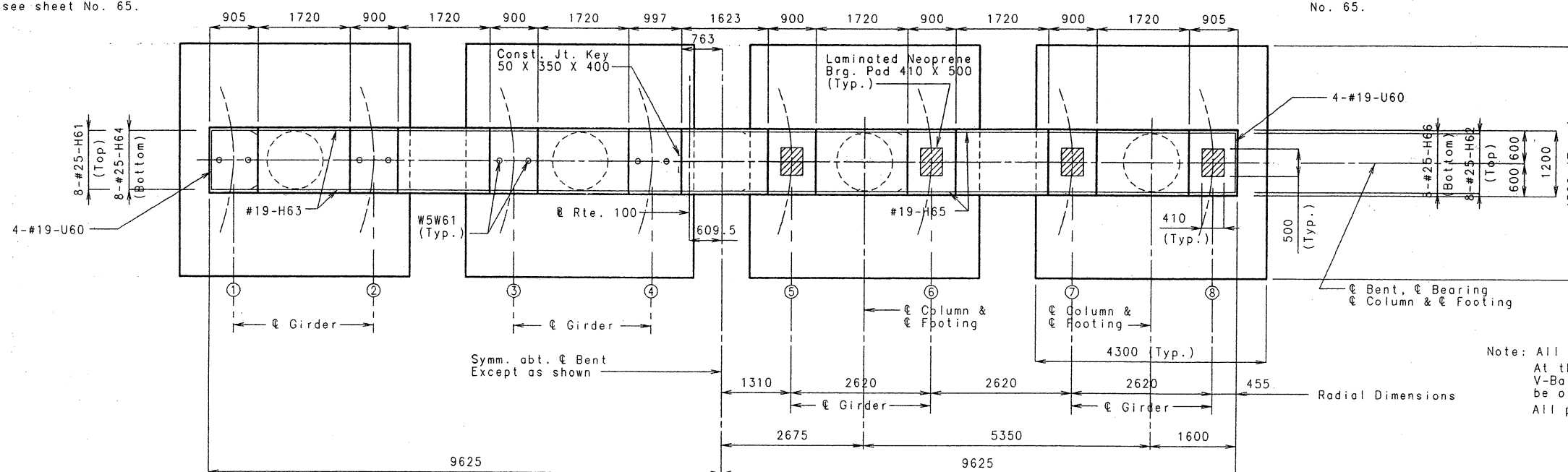
Note: For Detail of Laminated Neoprene Brg. Pad see sheet No. 64.
For Detail of Steel Pile Splice see sheet No. 51.
For Elevation of Beam Showing Stirrup Bar Spacing see sheet no. 30.
For Brg. Pad Alignment see sheet No. 65.

ELEVATION

- (A) #13-P61 Spiral Bar or Wire • 75 mm Pitch
- (B) #13-P63 Spiral Bar or Wire • 75 mm Pitch
- (C) #13-P64 Spiral Bar or Wire • 75 mm Pitch
- (D) #13-P65 Spiral Bar or Wire • 75 mm Pitch

Note: For Section E-E, Details of Footing and Substructure Quantity Table for Int. Bt. No. 6 see sheet No. 30.

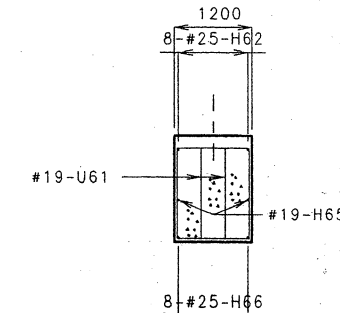
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15 mm.
For Details of Anchor Bolt Wells and spacing see sheet No. 65.



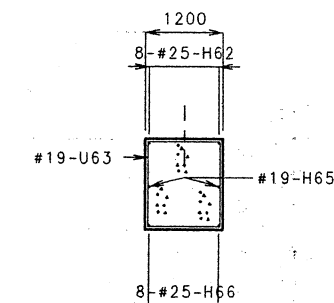
PLAN

DETAILS OF INTERMEDIATE BENT NO. 6

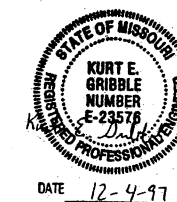
BEAM SEAT ELEVATIONS	
Gdr. No. 1	198.662
Gdr. No. 2	198.740
Gdr. No. 3	198.819
Gdr. No. 4	198.897
Gdr. No. 5	198.976
Gdr. No. 6	199.055
Gdr. No. 7	199.133
Gdr. No. 8	199.171



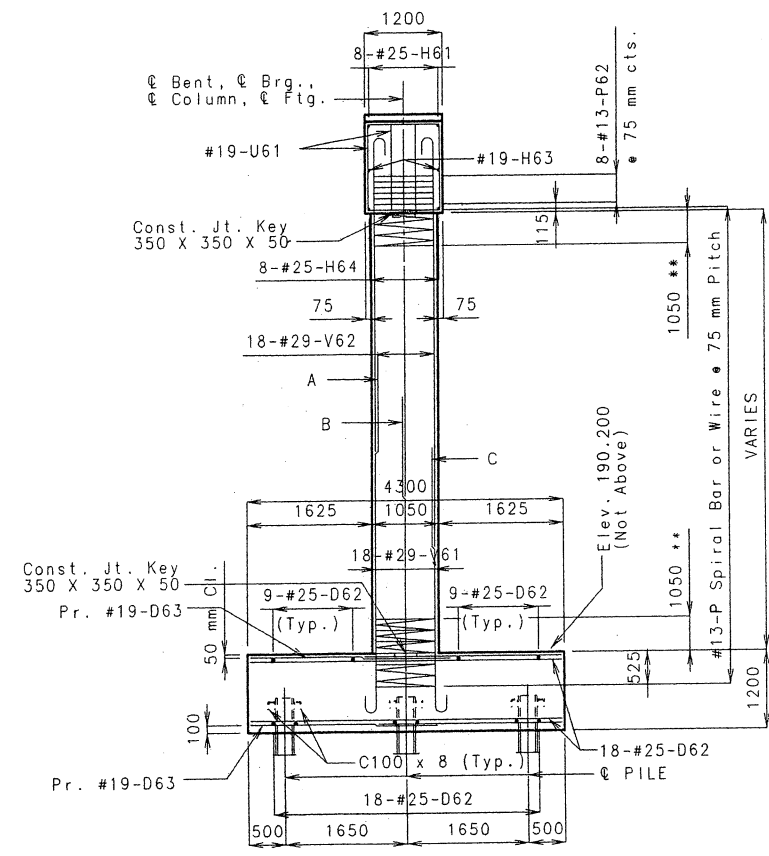
SECTION D-D



SECTION A-A

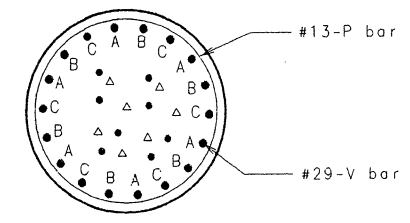


Note: All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.



SECTION E-E

- ① #19-U61 122 total bars reqd. Sp. as shown (Double)
- ② #19-U62 32 total bars reqd. Sp. as shown (Double)
- ③ #19-U63 18 total bars reqd. Sp. as shown (Single)



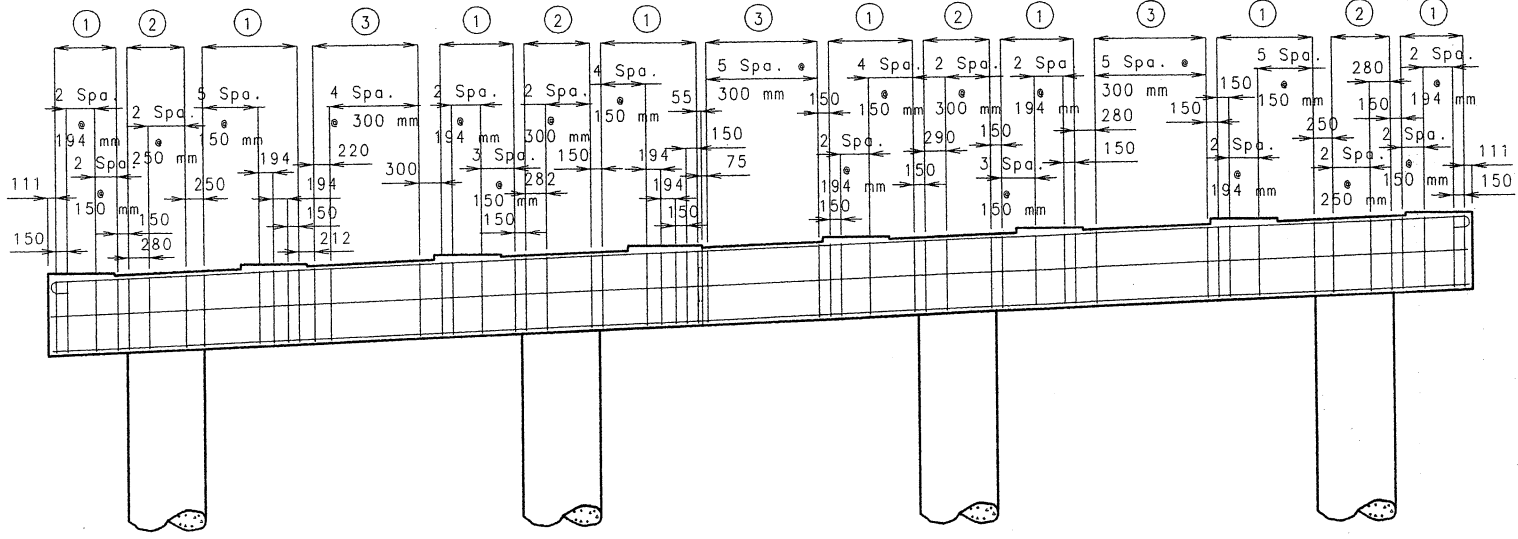
TYPICAL SECTION THRU COLUMN

Vertical column reinforcing bar

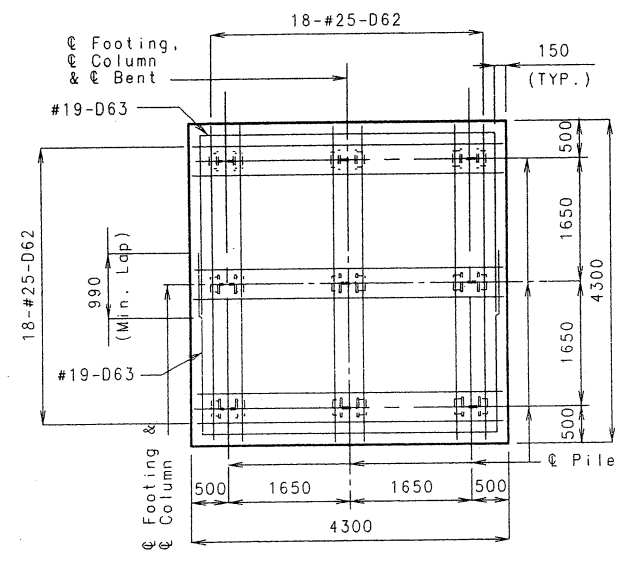
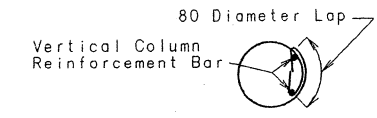
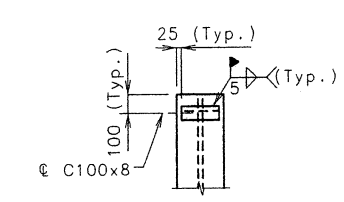
135° Hooks (must lap around one vertical bar)

DETAIL OF SEISMIC STIRRUP BAR (#13-P62)

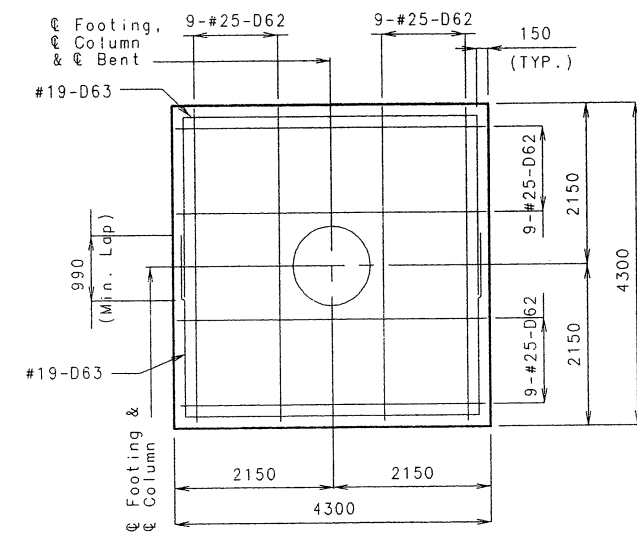
DETAILS OF 135° SEISMIC SPIRAL TIE HOOK



ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING



PLAN OF FOOTING SHOWING BOTTOM REINFORCEMENT



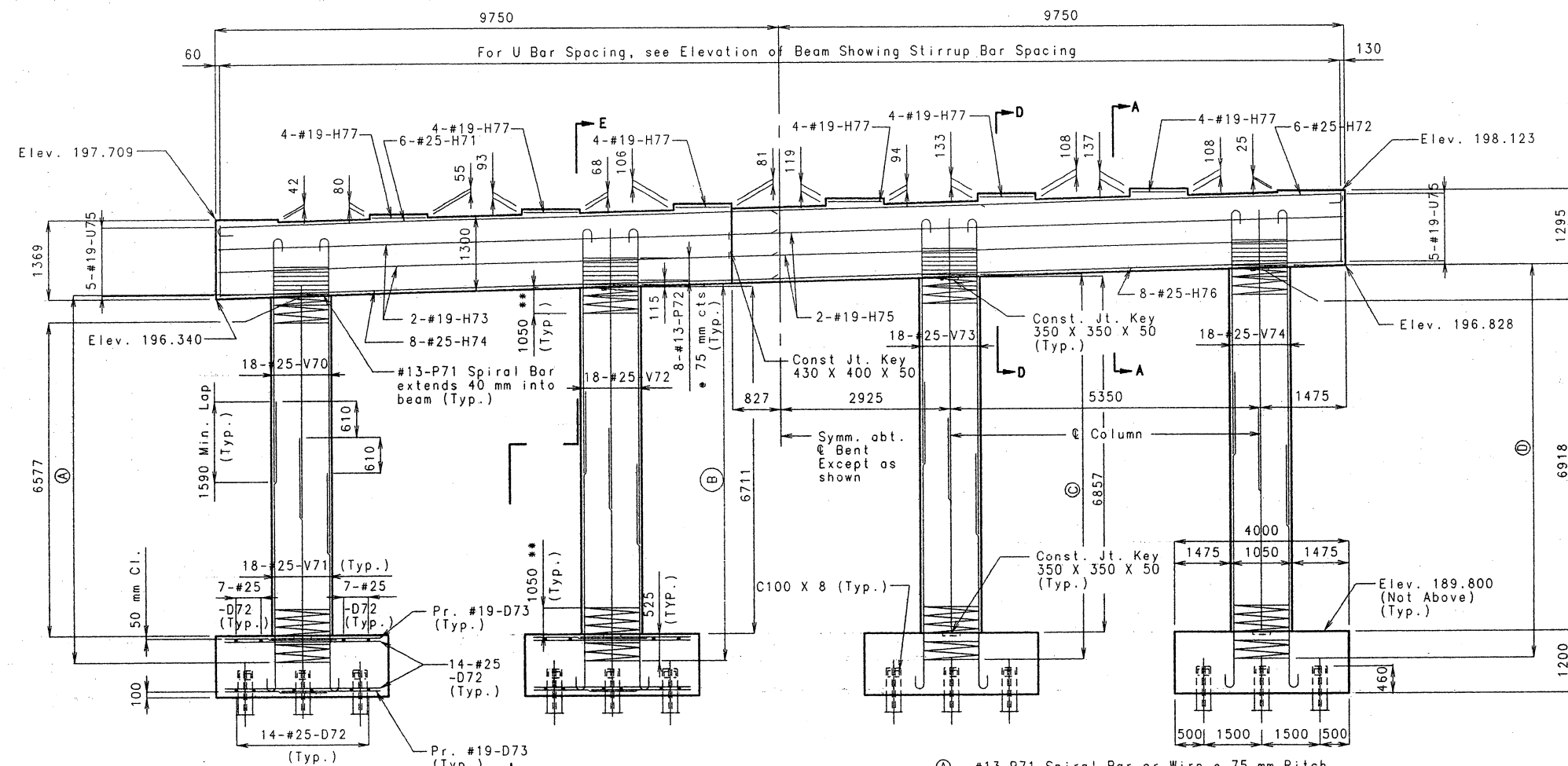
PLAN OF FOOTING SHOWING TOP REINFORCEMENT

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 6		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	255
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	162.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	139.8
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	13970

These Quantities are included in the Estimated Quantities table on sheet No. 8.



DATE 12-4-97



ELEVATION

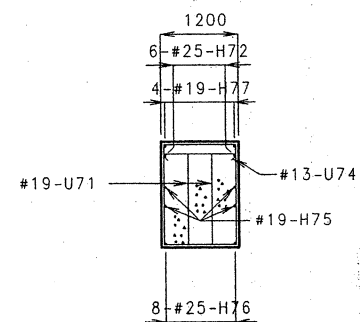
Note:
** Lapping of spiral reinforcement in this region is not permitted.

Note: For Details of Type "N" PTFE Bearings see sheet No. 102.
For Detail of Steel Pile Splice see sheet No. 51.
For Elevation of beam showing stirrup bar spacing see sheet No. 32.
For Brg. Pad Alignment see sheet No. 108.

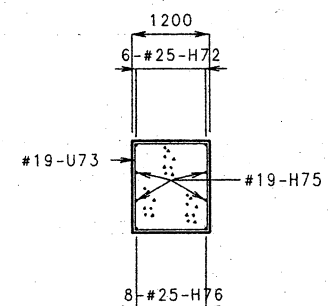
- Ⓐ #13-P71 Spiral Bar or Wire • 75 mm Pitch
- Ⓑ #13-P73 Spiral Bar or Wire • 75 mm Pitch
- Ⓒ #13-P74 Spiral Bar or Wire • 75 mm Pitch
- Ⓓ #13-P75 Spiral Bar or Wire • 75 mm Pitch

Note: For Section E-E, Details of Footing and Substructure Quantity Table for Int. Bt. No. 7 see sheet No. 32.

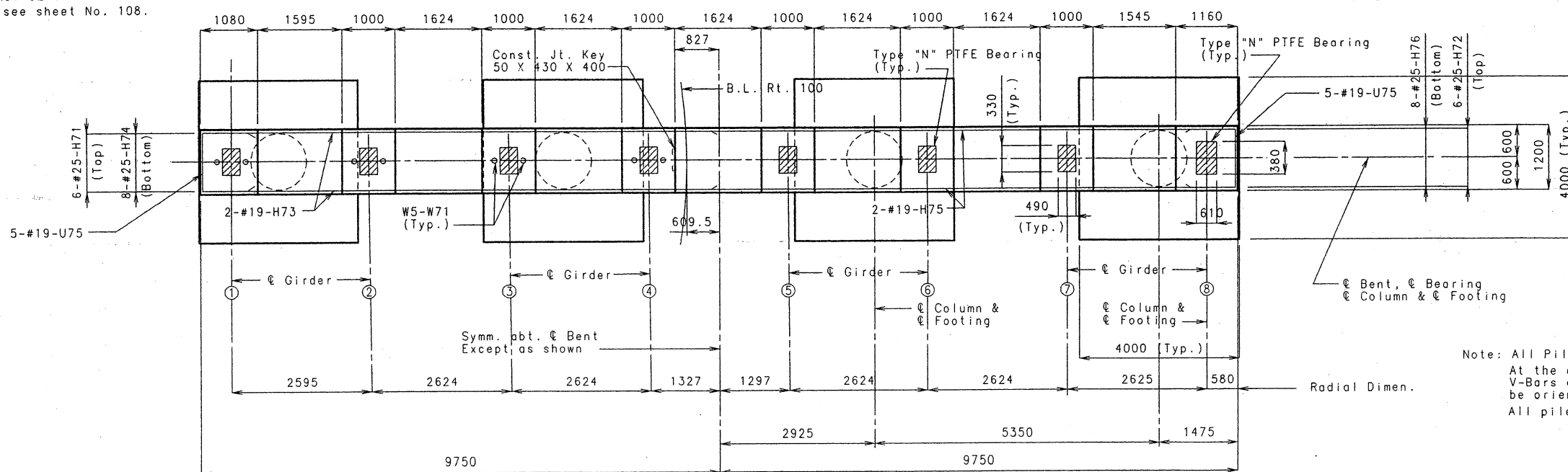
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15 mm.
For Details of Anchor Bolt Wells and spacing see sheet No. 108.



SECTION D-D



SECTION A-A

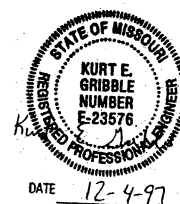


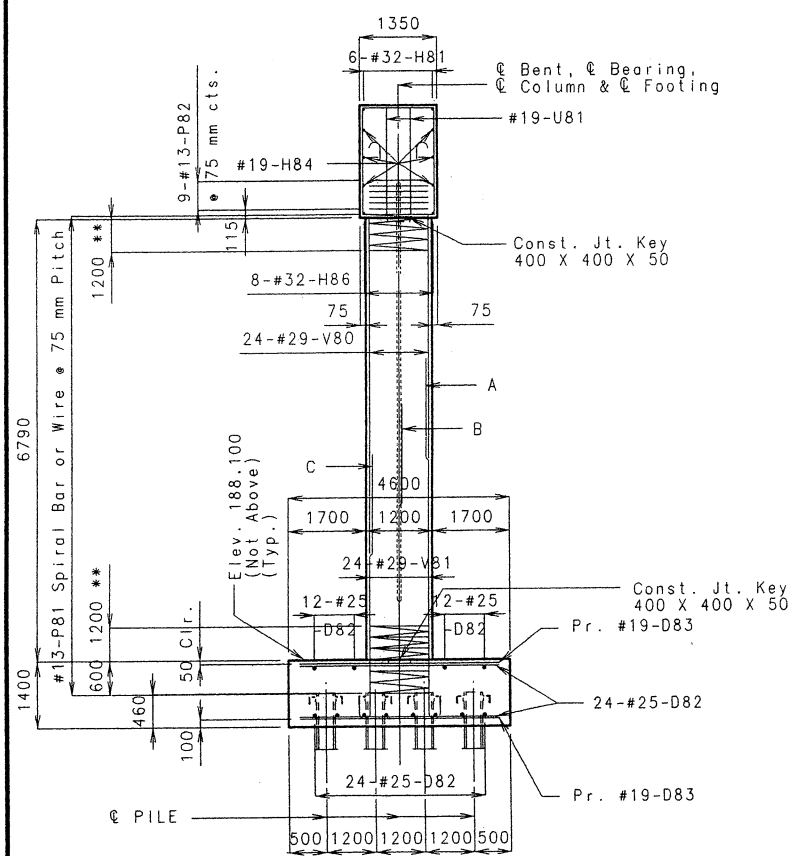
PLAN

DETAILS OF INTERMEDIATE BENT NO. 7

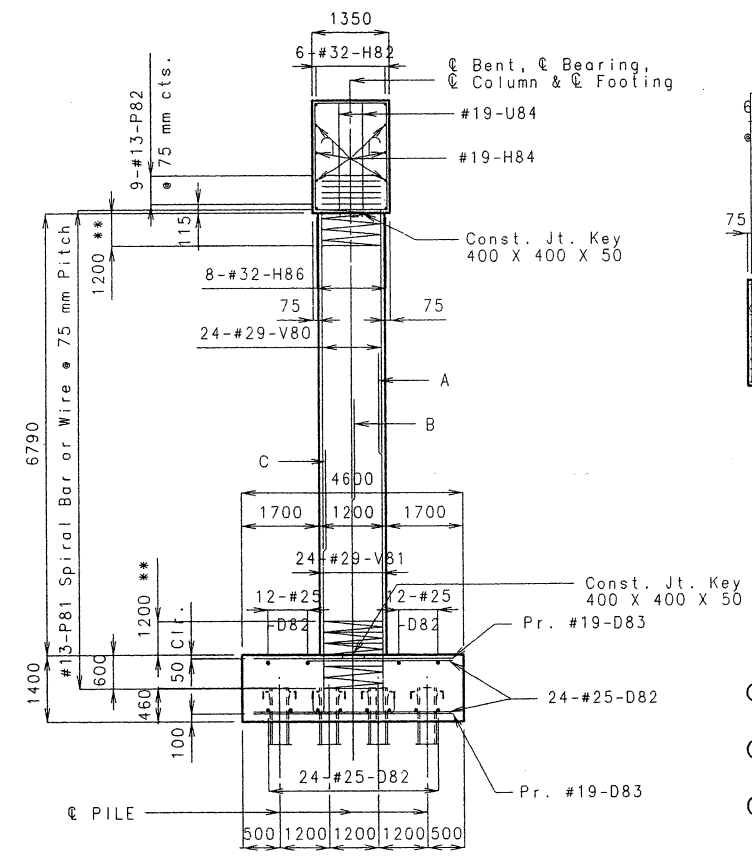
BEAM SEAT ELEVATIONS	
Gdr. No. 1	197.709
Gdr. No. 2	197.787
Gdr. No. 3	197.865
Gdr. No. 4	197.944
Gdr. No. 5	198.023
Gdr. No. 6	198.102
Gdr. No. 7	198.172
Gdr. No. 8	198.123

Note: All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.

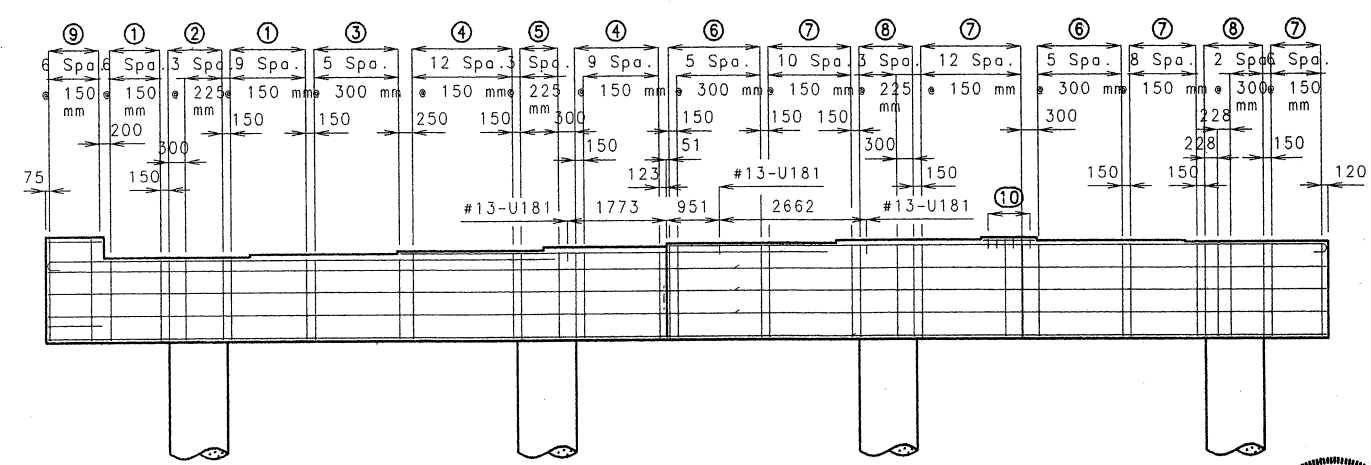




SECTION C-C

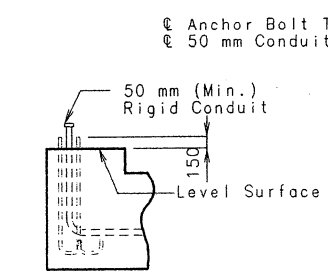


SECTION E-E

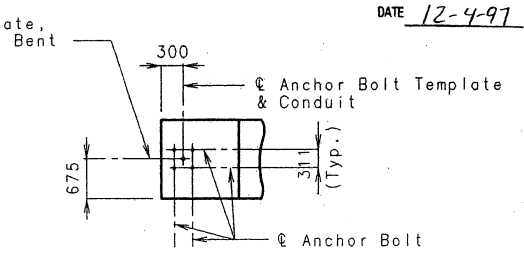


ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING

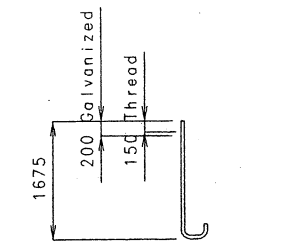
- ① #19-U81 34 total bars reqd. spaced as shown (Double)
- ② #19-U82 10 total bars reqd. spaced as shown (Double)
- ③ #19-U83 6 total bars reqd. spaced as shown (Single)
- ④ #19-U84 48 total bars reqd. spaced as shown (Double)
- ⑤ #19-U85 8 total bars reqd. spaced as shown (Double)
- ⑥ #19-U86 6 total bars reqd. spaced as shown (Single)
- ⑦ #19-U87 80 total bars reqd. spaced as shown (Double)
- ⑧ #19-U88 20 total bars reqd. spaced as shown (Double)
- ⑨ #19-U89 14 total bars reqd. spaced as shown (Double)
- ⑩ 6-#13-U181 spaced at 150 mm (Single)



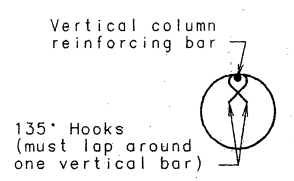
SECTION B-B



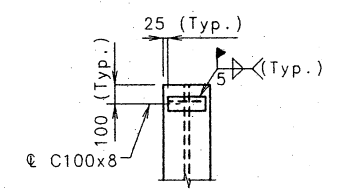
PART PLAN OF BEAM SHOWING ANCHOR BOLT LOCATION



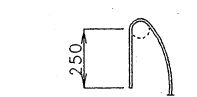
DETAIL OF 45 mm ANCHOR BOLT



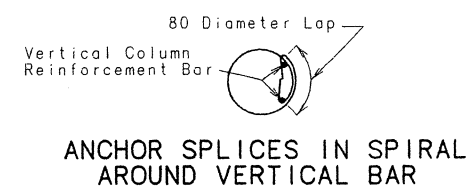
DETAIL OF SEISMIC STIRRUP BAR (#13-P82)



TYPICAL DETAIL OF PILE CHANNEL SHEAR CONNECTOR

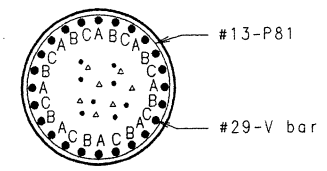


DETAILS OF 135° SEISMIC SPIRAL TIE HOOK

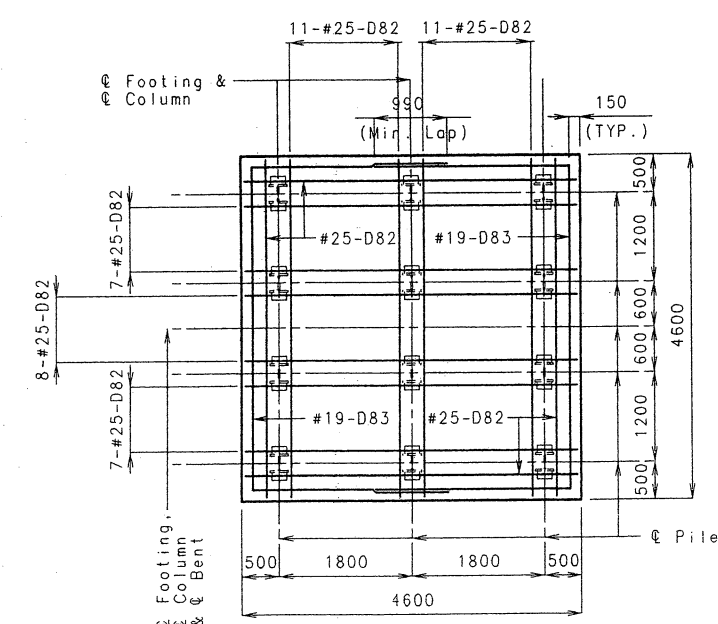


ANCHOR SPLICES IN SPIRAL AROUND VERTICAL BAR

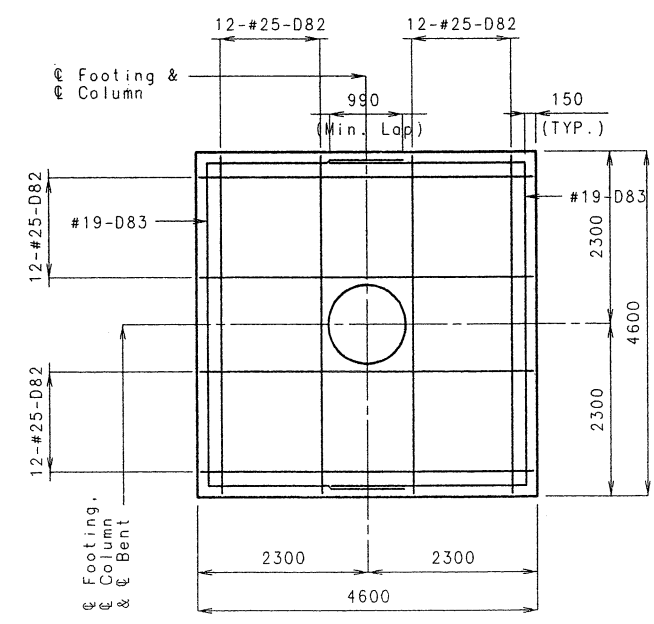
Note:
** Lapping of spiral reinforcement in this region is not permitted.



TYPICAL SECTION THRU COLUMN



PLAN OF FOOTING SHOWING BOTTOM REINFORCEMENT

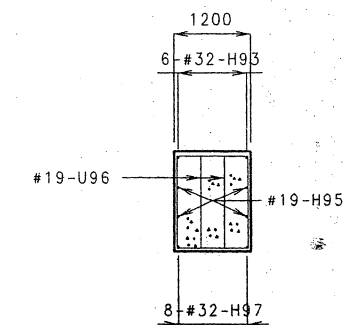
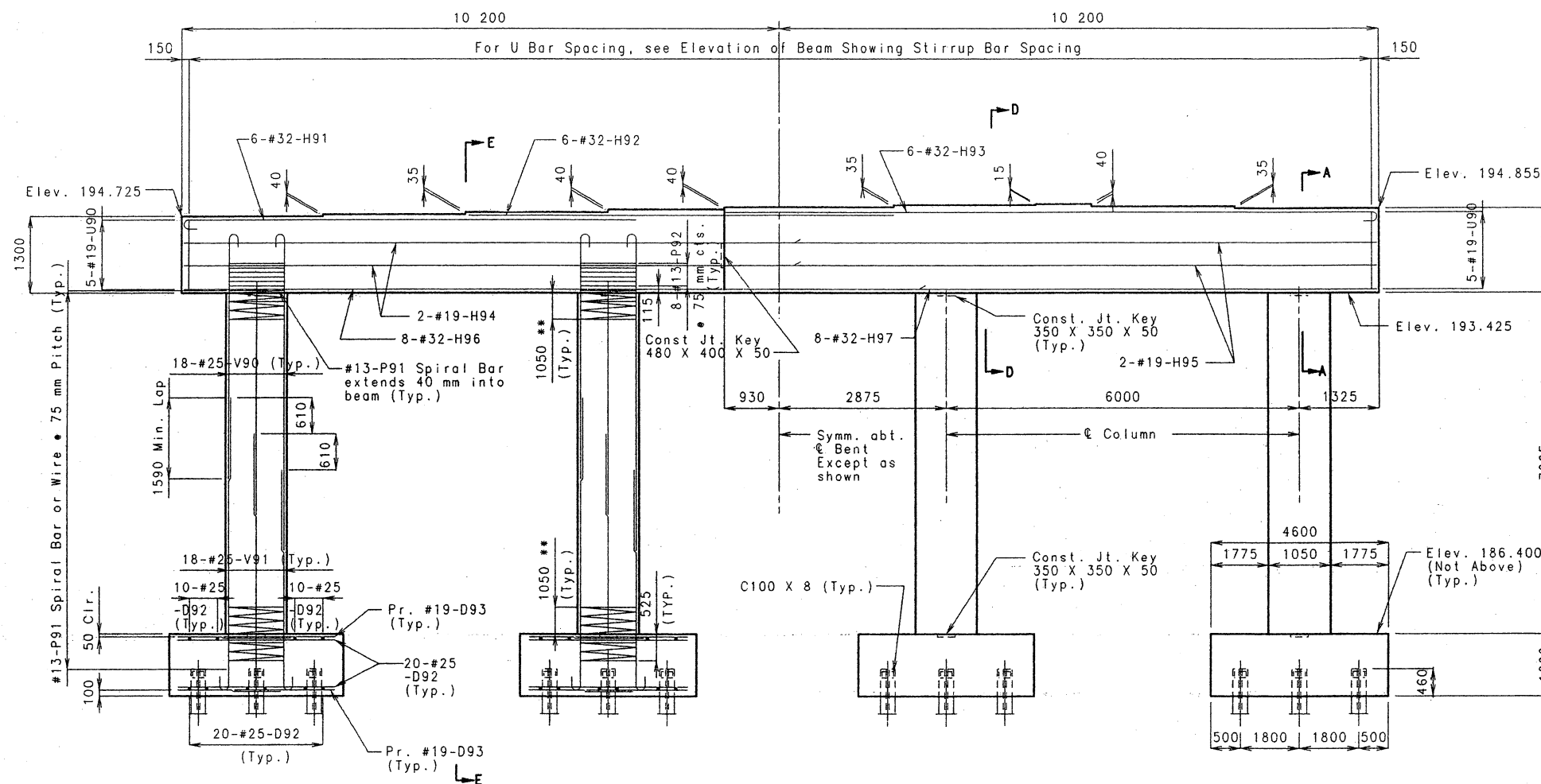


PLAN OF FOOTING SHOWING TOP REINFORCEMENT

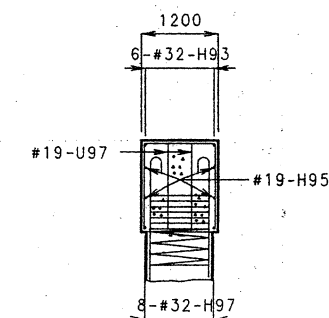
DETAILS OF INTERMEDIATE BENT NO. 8

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 8		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	300
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	216
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	201.3
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	20185
PRE-BORE FOR PILING - METRIC	METER	144

These Quantities are included in the Estimated Quantities table on sheet No. 8.



SECTION D-D

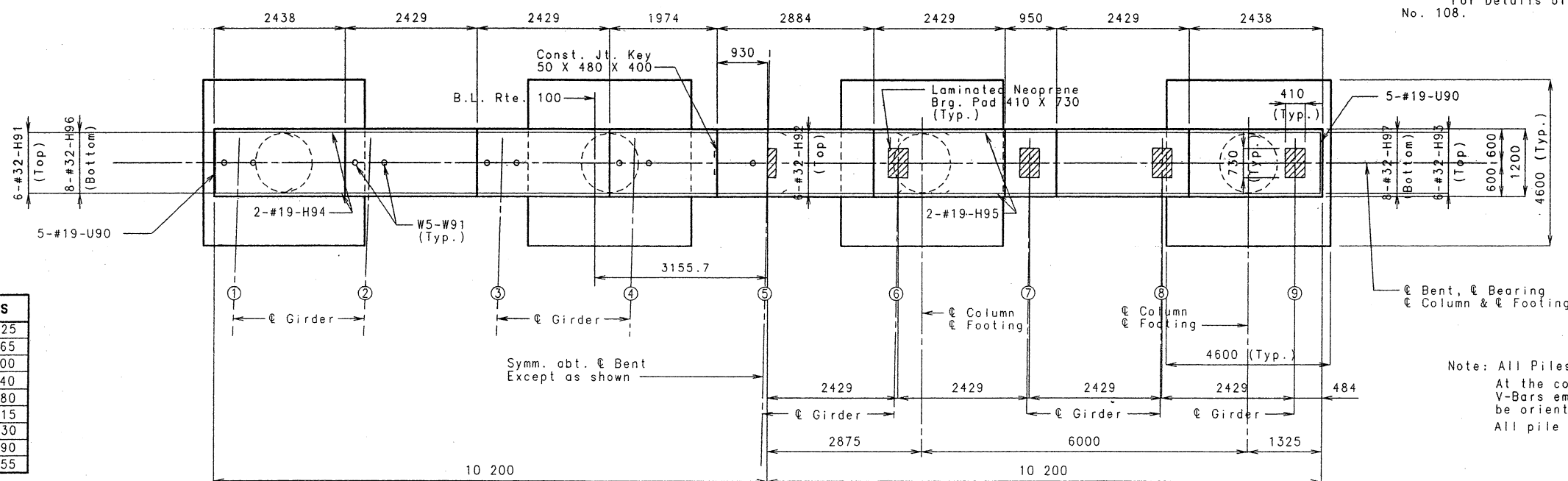


SECTION A-A

NOTE:
** Lapping of spiral reinforcement in this region is not permitted.

Note: For Detail of Laminated Neoprene Brg. Pad see sheet No. 104.
For Details of Bearing Alignment, see sheet No. 108.
For Detail of Steel Pile Splice see sheet No. 51.

Note: For Section E-E, Details of Footing and Substructure Quantity Table for Int. Bt. No. 9 see sheet No. 36.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15 mm.
For Details of Anchor Bolt Wells and spacing see sheet No. 108.

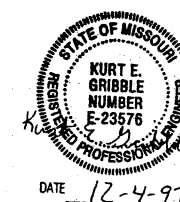


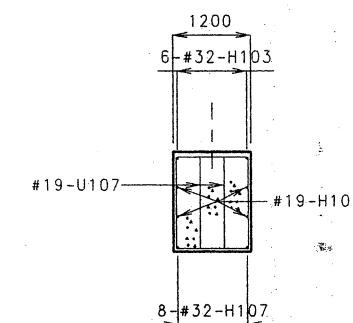
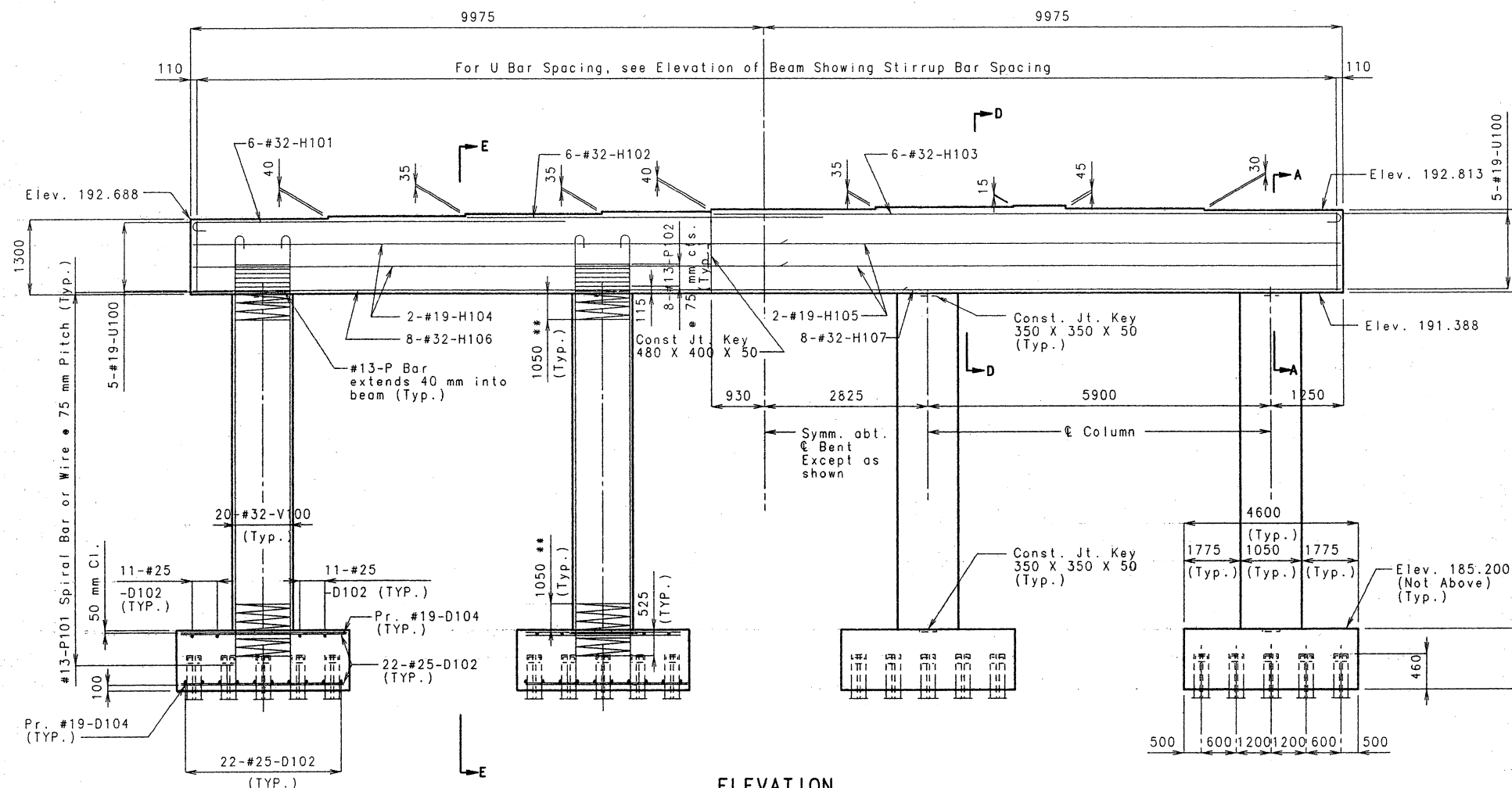
PLAN

DETAILS OF INTERMEDIATE BENT NO. 9

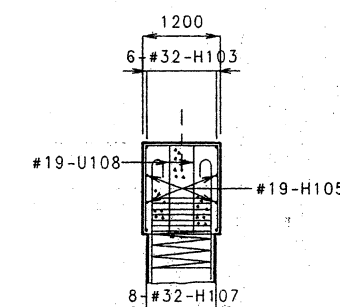
BEAM SEAT ELEVATIONS	
Gdr. No. 1	194.725
Gdr. No. 2	194.765
Gdr. No. 3	194.800
Gdr. No. 4	194.840
Gdr. No. 5	194.880
Gdr. No. 6	194.915
Gdr. No. 7	194.930
Gdr. No. 8	194.890
Gdr. No. 9	194.855

Note: All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.





SECTION D-D



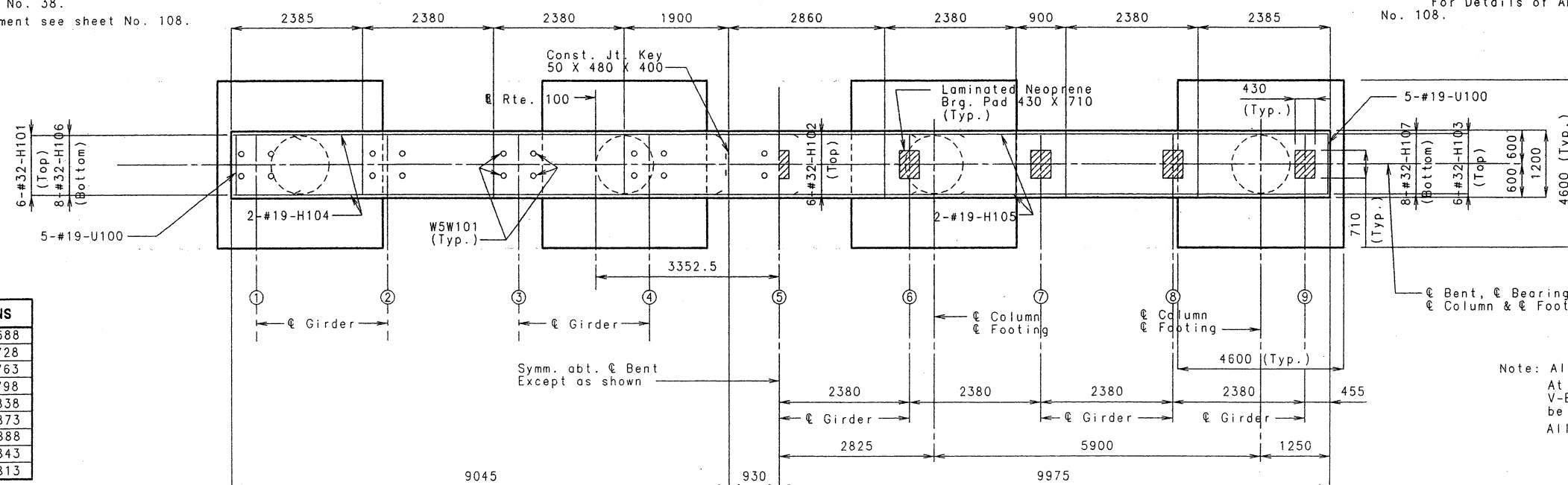
SECTION A-A

Note:
** Lapping of spiral reinforcement in this region is not permitted.

Note: For Detail of Laminated Neoprene Brg. Pad see sheet No. 103.
For Detail of Steel Pile Splice see sheet No. 51.
For Elevation of Beam showing Stirrup Bar Spacing see sheet No. 38.
For Brg. Pad Alignment see sheet No. 108.

Note: For Section E-E, Details of Footing and Substructure Quantity Table for Int. Bt. No. 10 see sheet No. 38.
All reinforcing bars in the tops of substructure beams or cap shall be spaced to clear anchor bolt wells for bearings by at least 15 mm.
For Details of Anchor Bolt Wells and spacing see sheet No. 108.

BEAM SEAT ELEVATIONS	
Gdr. No. 1	192.688
Gdr. No. 2	192.728
Gdr. No. 3	192.763
Gdr. No. 4	192.798
Gdr. No. 5	192.838
Gdr. No. 6	192.873
Gdr. No. 7	192.888
Gdr. No. 8	192.843
Gdr. No. 9	192.813



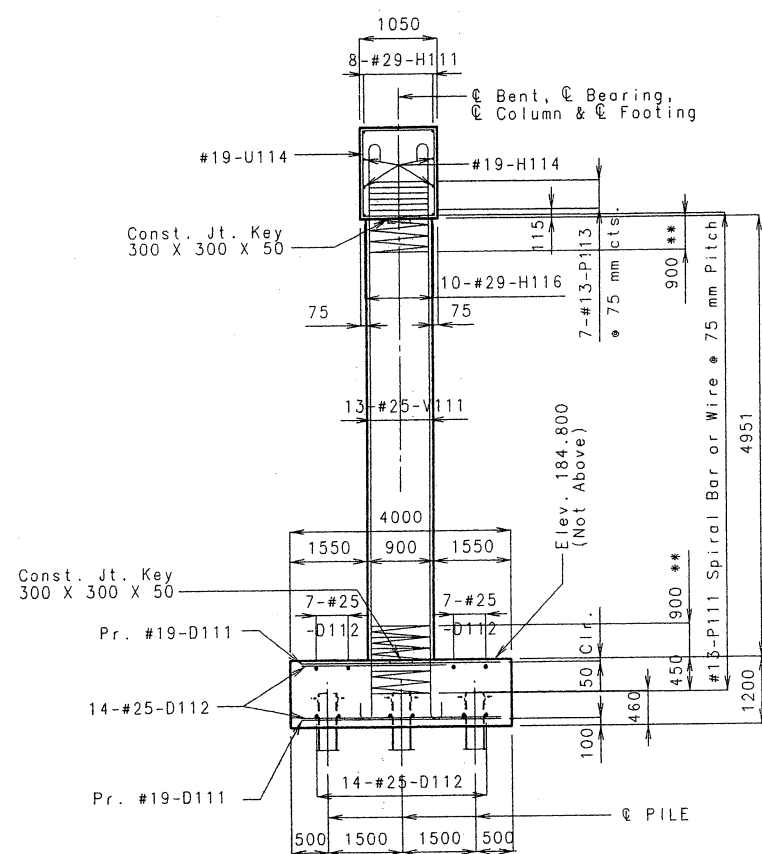
PLAN

DETAILS OF INTERMEDIATE BENT NO. 10

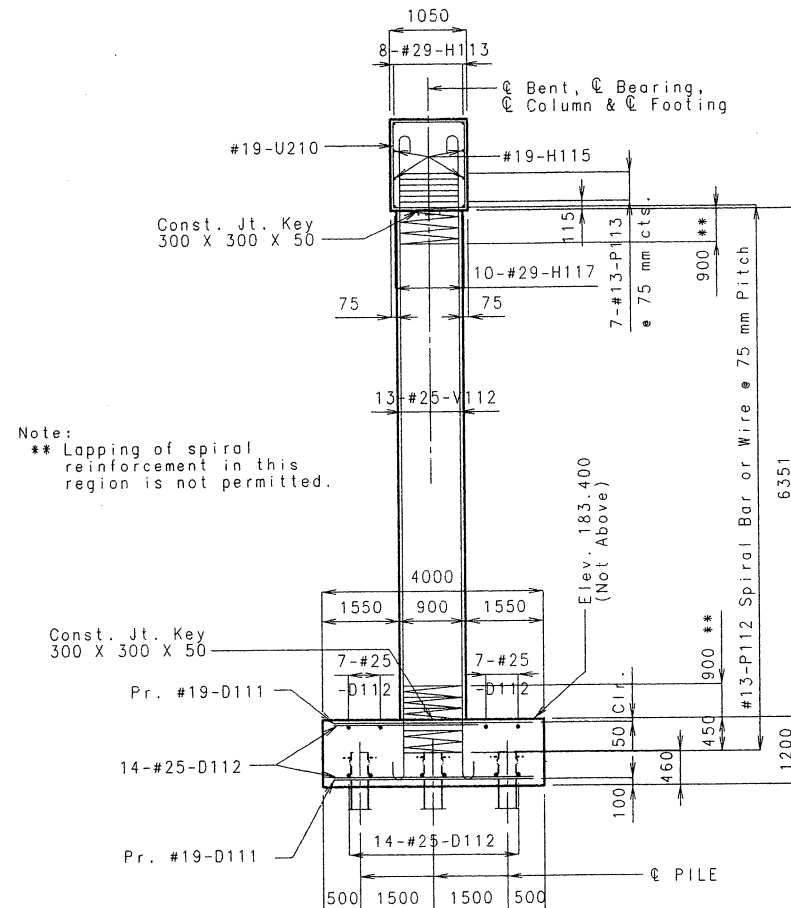


DATE 12-4-97

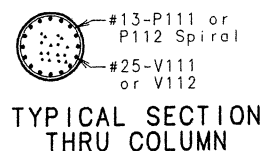
Note: All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.



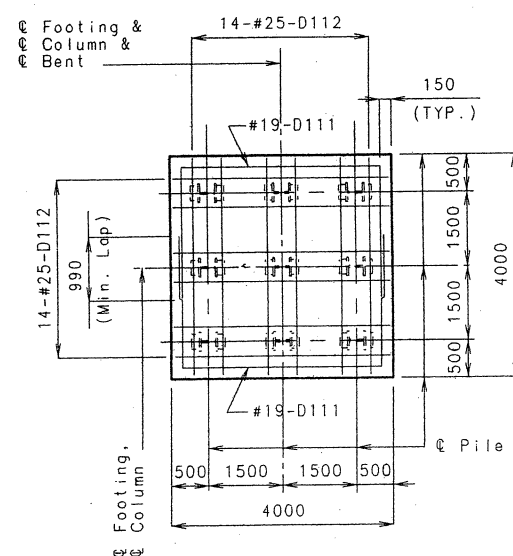
SECTION E-E



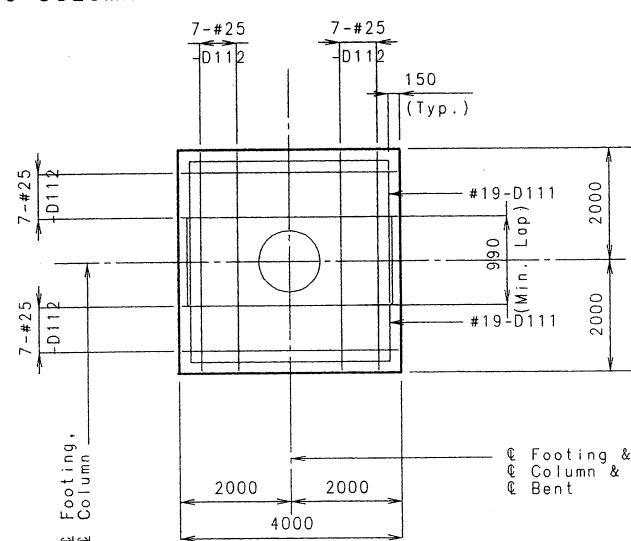
SECTION C-C



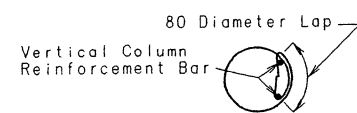
TYPICAL SECTION THRU COLUMN



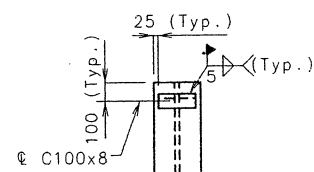
PLAN OF FOOTING SHOWING BOTTOM REINFORCEMENT



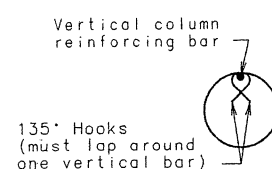
PLAN OF FOOTING SHOWING TOP REINFORCEMENT



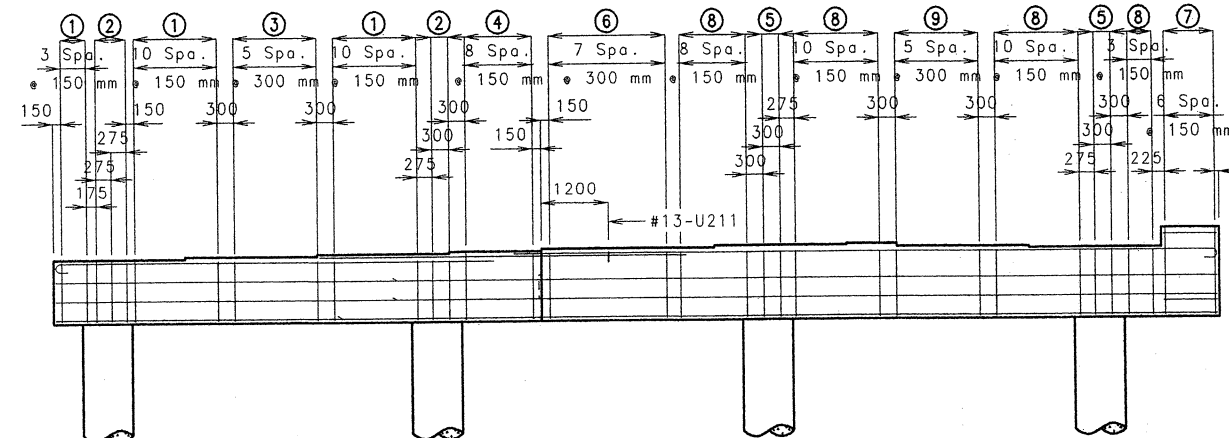
ANCHOR SPLICES IN SPIRAL AROUND VERTICAL BAR



TYPICAL DETAIL OF PILE CHANNEL SHEAR CONNECTOR

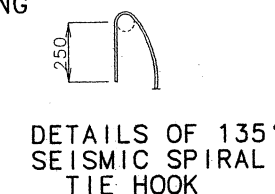


DETAIL OF SEISMIC STIRRUP BAR (#13-P113)



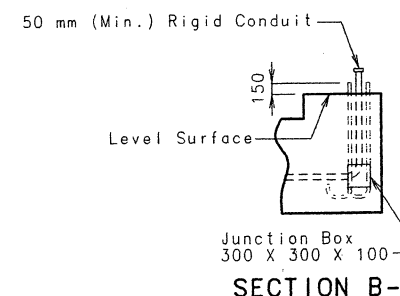
ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING

① #19-U112 spaced as shown (Double)	52 total bars reqd.	⑤ #19-U116 spaced as shown (Double)	8 total bars reqd.
② #19-U113 spaced as shown (Double)	10 total bars reqd.	⑥ #19-U117 spaced as shown (Single)	8 total bars reqd.
③ #19-U114 spaced as shown (Single)	6 total bars reqd.	⑦ #19-U118 spaced as shown (Double)	14 total bars reqd.
④ #19-U115 spaced as shown (Double)	18 total bars reqd.	⑧ #19-U119 spaced as shown (Double)	70 total bars reqd.
		⑨ #19-U210 spaced as shown (Single)	6 total bars reqd.

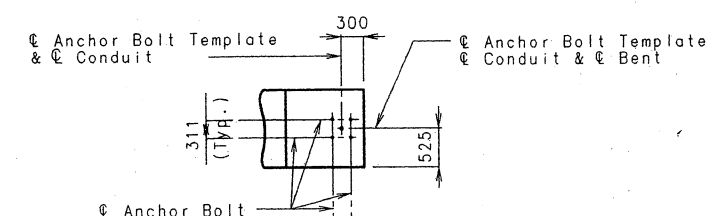


DETAILS OF 135° SEISMIC SPIRAL TIE HOOK

DETAIL OF 45 mm ANCHOR BOLT



SECTION B-B



PART PLAN OF BEAM SHOWING ANCHOR BOLT LOCATION

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 11

ITEM	QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER 215
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER 126
PRE-BORE FOR PILING - METRIC	METER 108
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER 118.5
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM 10515

These Quantities are included in the Estimated Quantities table on sheet No. 8.

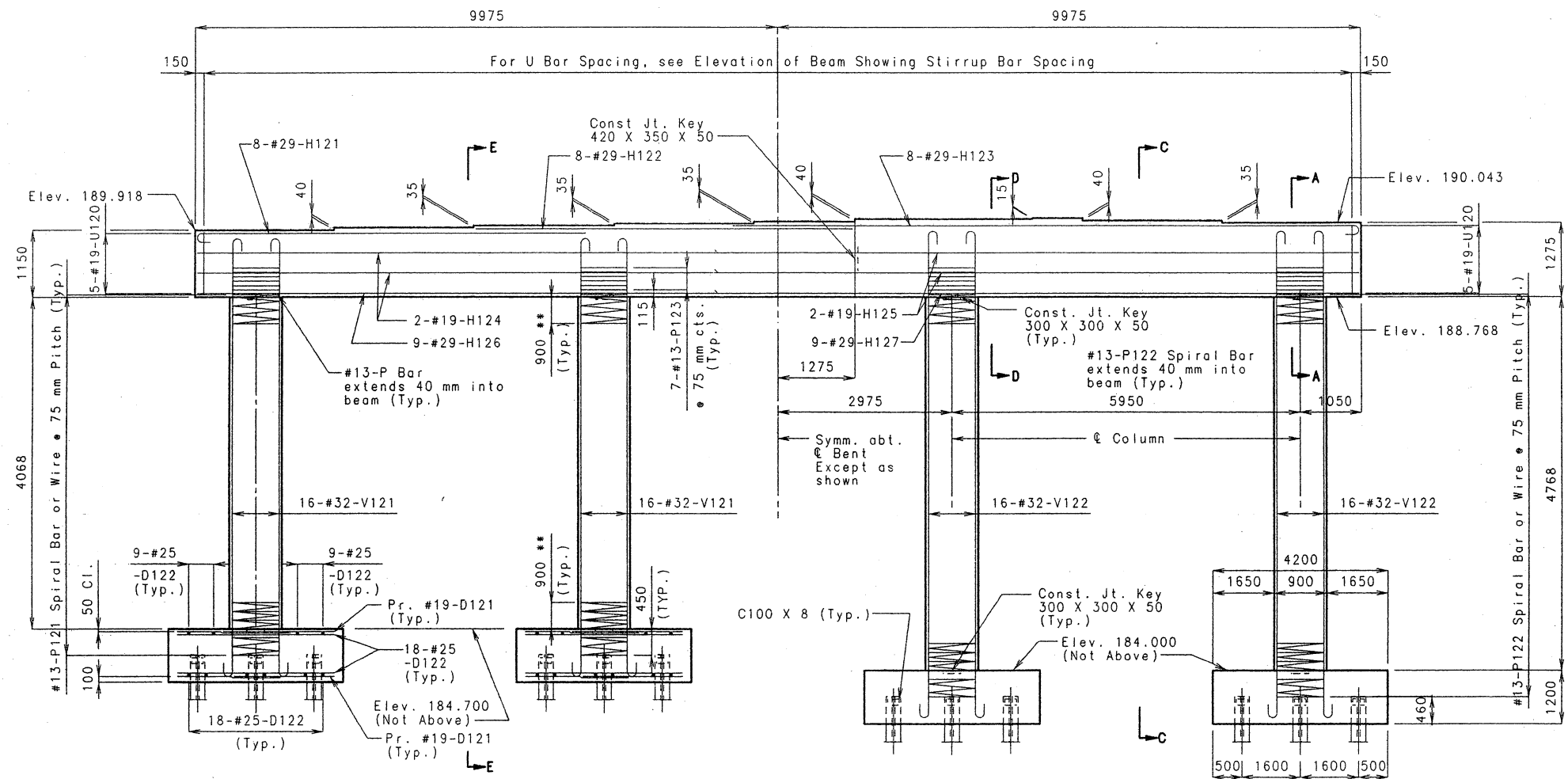


DATE 12-4-97

UNIT 2

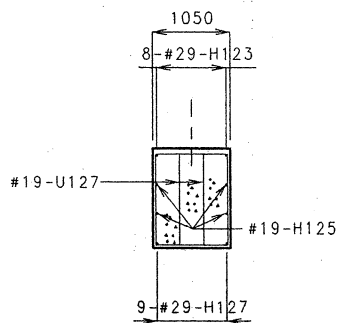
A5682

STATE	PROJ. NO.	SHEET NO.
MO.		74

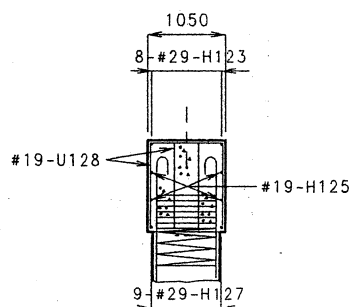


Note:
** Lapping of spiral reinforcement in this region is not permitted.

Note: For Detail of Laminated Neoprene Brg. Pad see sheet No. 167.
For Detail of Steel Pile Splice see sheet No. 51.
For Brg. Pad Alignment see sheet No. 168.
For Elevation of Beam Showing Stirrup Bar Spacing see sheet No. 42.

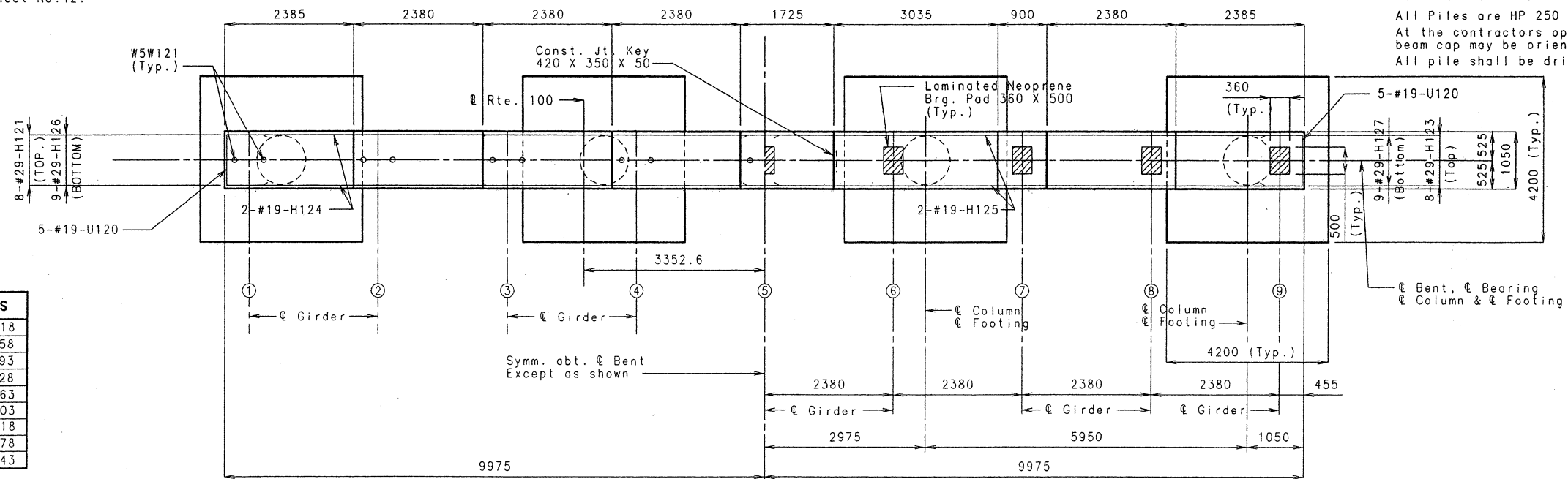


SECTION D-D



SECTION A-A

Note: For Section E-E, C-C, Details of Footing and Substructure Quantity Table for Int. Bt. No. 12 see sheet No. 42.
All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15 mm.
For Details of Anchor Bolt Wells and spacing see sheet No. 168.
All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.



BEAM SEAT ELEVATIONS	
Gdr. No. 1	189.918
Gdr. No. 2	189.958
Gdr. No. 3	189.993
Gdr. No. 4	190.028
Gdr. No. 5	190.063
Gdr. No. 6	190.103
Gdr. No. 7	190.118
Gdr. No. 8	190.078
Gdr. No. 9	190.043

PLAN

DETAILS OF INTERMEDIATE BENT NO. 12

DETAILED MAY 1997
CHECKED SEPT 1997

SHEET NO. 41 OF 236.

ST. LOUIS

COUNTY

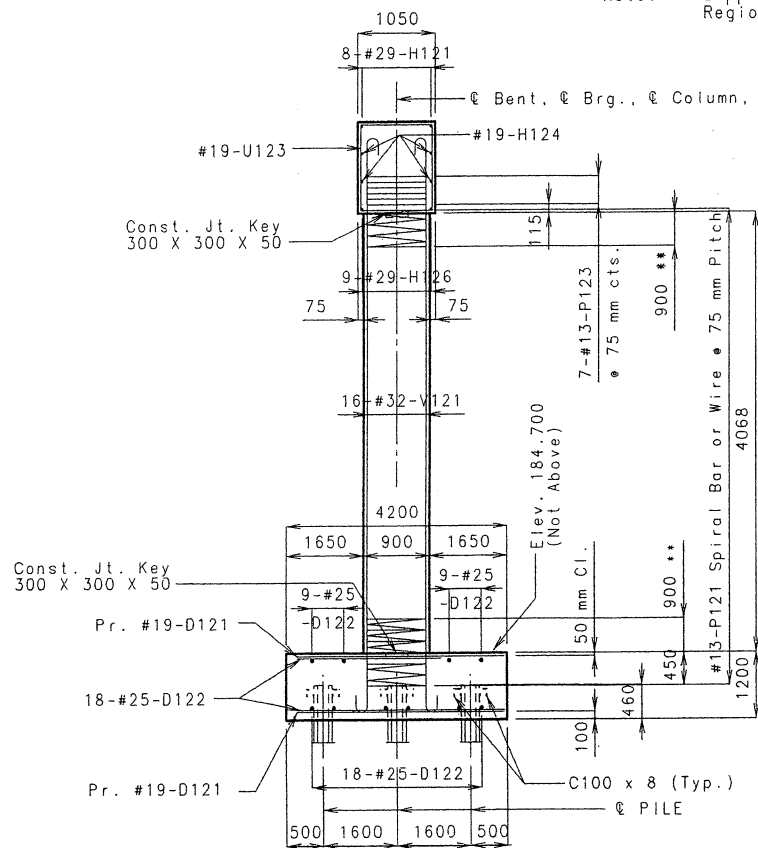
UNIT 3

A5682

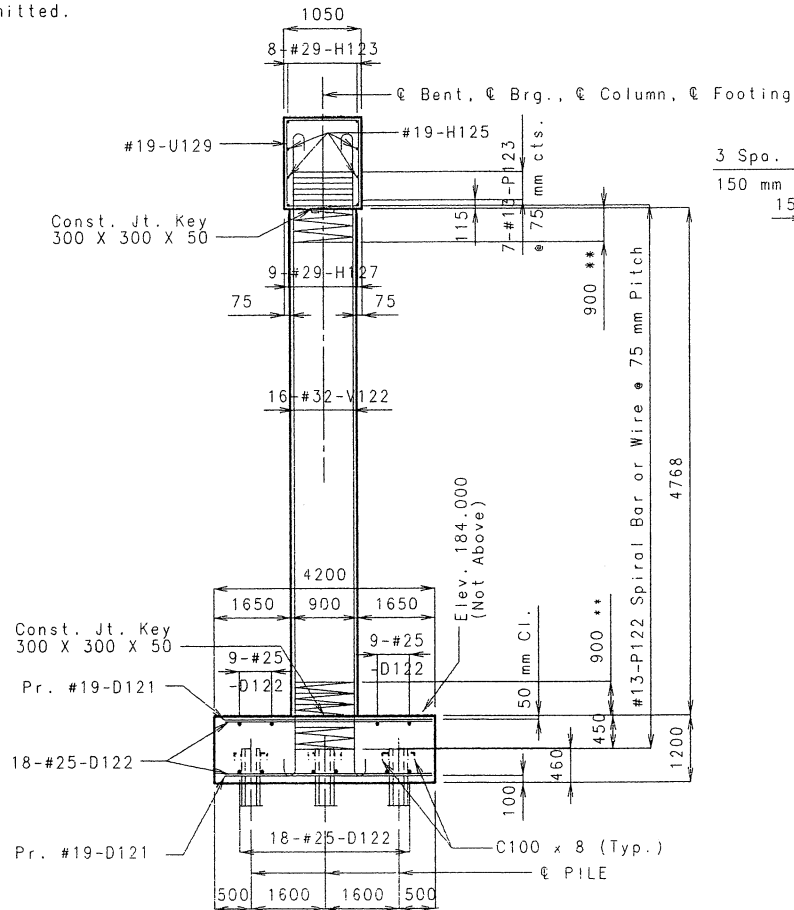


DATE 12-4-97

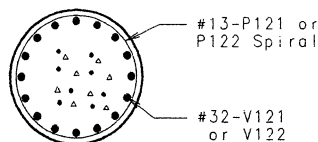
Note: ** Lapping of Spiral Reinforcement in this Region is not Permitted.



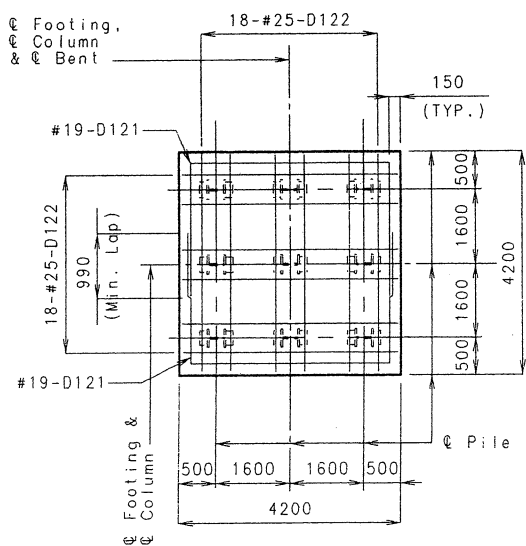
SECTION E-E



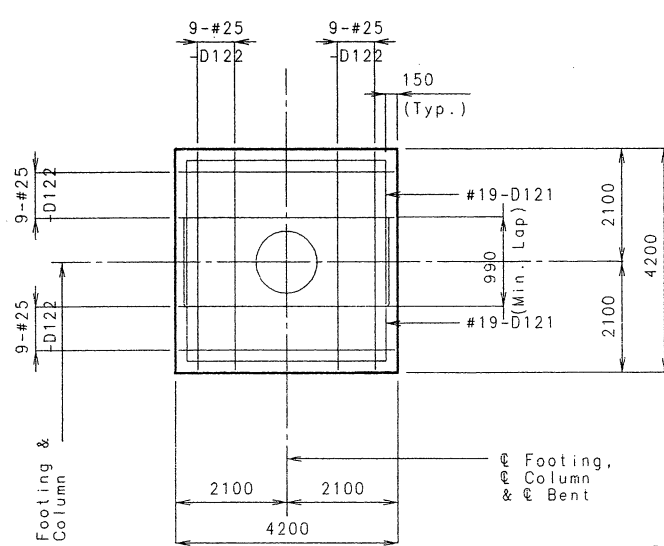
SECTION C-C



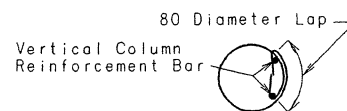
TYPICAL SECTION THRU COLUMN



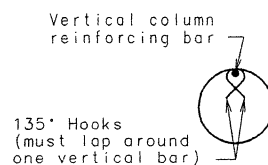
PLAN OF FOOTING SHOWING BOTTOM REINFORCEMENT



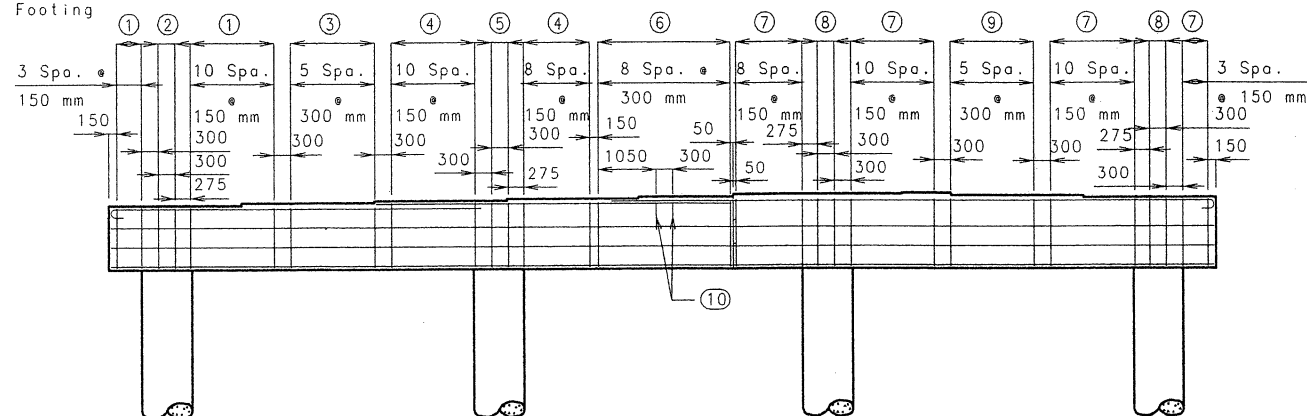
PLAN OF FOOTING SHOWING TOP REINFORCEMENT



ANCHOR SPLICES IN SPIRAL AROUND VERTICAL BAR

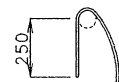


DETAIL OF SEISMIC STIRRUP BAR (#13-P123)

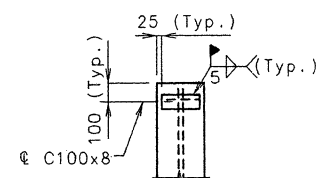


ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING

- ① #19-U121 30 total bars reqd. Spa. as shown (Double)
- ② #19-U122 4 total bars reqd. Spa. as shown (Double)
- ③ #19-U123 6 total bars reqd. Spa. as shown (Single)
- ④ #19-U124 40 total bars reqd. Spa. as shown (Double)
- ⑤ #19-U125 4 total bars reqd. Spa. as shown (Double)
- ⑥ #19-U126 9 total bars reqd. Spa. as shown (Single)
- ⑦ #19-U127 70 total bars reqd. Spa. as shown (Double)
- ⑧ #19-U128 8 total bars reqd. Spa. as shown (Double)
- ⑨ #19-U129 6 total bars reqd. Spa. as shown (Single)
- ⑩ #13-U221 2 total bars reqd. Spa. as shown (Single)



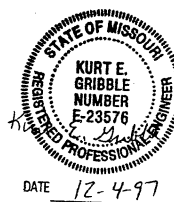
DETAILS OF 135° SEISMIC SPIRAL TIE HOOK



TYPICAL DETAIL OF PILE CHANNEL SHEAR CONNECTOR

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 12		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	220
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	126.0
PRE-BORE FOR PILING - METRIC	METER	108
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	122.3
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	12680

These Quantities are included in the Estimated Quantities table on sheet No. 8.



DATE 12-4-97

DETAILS OF INTERMEDIATE BENT NO. 12

DETAILED MAY 1997
CHECKED SEPT 1997

SHEET NO. 42 OF 236.

ST. LOUIS COUNTY

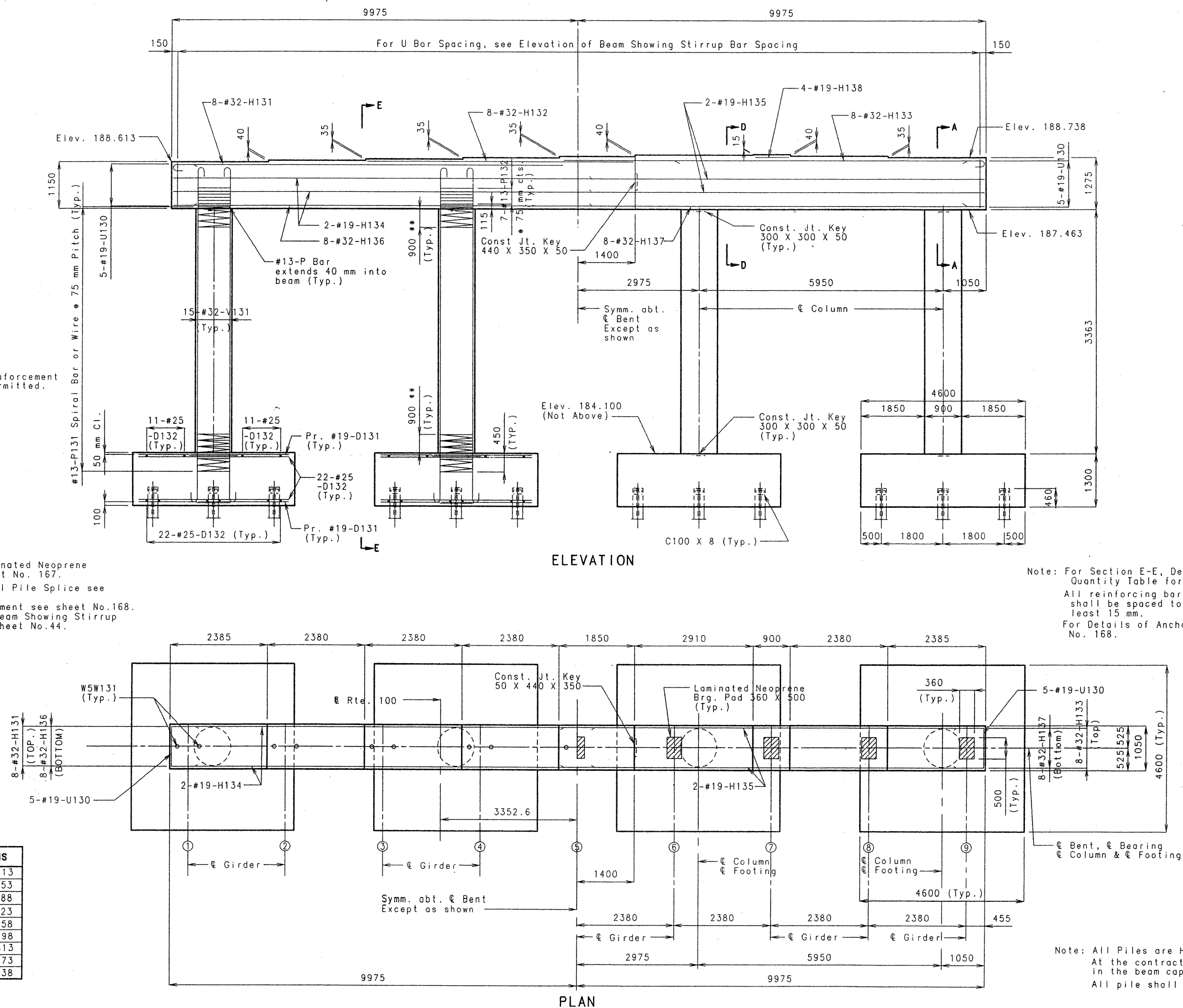
UNIT 3
A5682

Note:
** Lapping of spiral reinforcement
in this region is not permitted.

Note: For Detail of Laminated Neoprene
Brg. Pad see sheet No. 167.
For Detail of Steel Pile Splice see
sheet No. 51.
For Brg. Pad Alignment see sheet No. 168.
For Elevation of Beam Showing Stirrup
Bar Spacing see sheet No. 44.

Note: For Section E-E, Details of Footing and Substructure
Quantity Table for Int. Bt. No. 13 see sheet No. 44.
All reinforcing bars in the tops of substructure beams or caps
shall be spaced to clear anchor bolt wells for bearings by at
least 15 mm.
For Details of Anchor Bolt Wells and spacing see sheet
No. 168.

BEAM SEAT ELEVATIONS	
Gdr. No. 1	188.613
Gdr. No. 2	188.653
Gdr. No. 3	188.688
Gdr. No. 4	188.723
Gdr. No. 5	188.758
Gdr. No. 6	188.798
Gdr. No. 7	188.813
Gdr. No. 8	188.773
Gdr. No. 9	188.738



DETAILS OF INTERMEDIATE BENT NO. 13

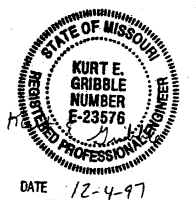
DETAILED MAY 1997
CHECKED SEPT 1997

SHEET NO. 43 OF 236.

ST. LOUIS COUNTY

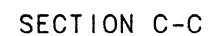
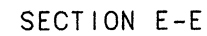
UNIT 3

A5682

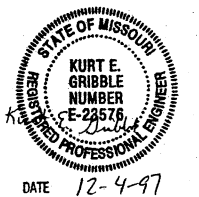


Note: All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded
in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.

STATE	PROJ. NO.	SHEET NO.
MO.		77



These Quantities are included in the Estimated Quantities table on sheet No. 8.



DATE 12-4-97

UNIT 3

ST. LOUIS COUNTY

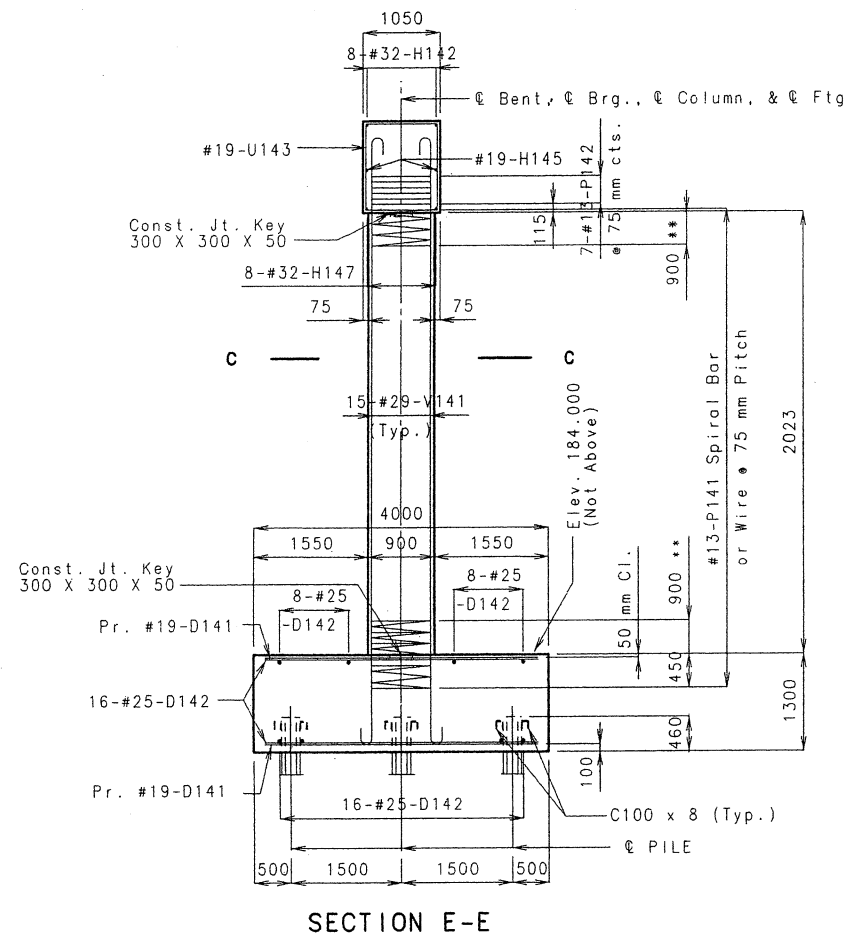
A5682

DETAILED MAY 1997
CHECKED SEPT 1997

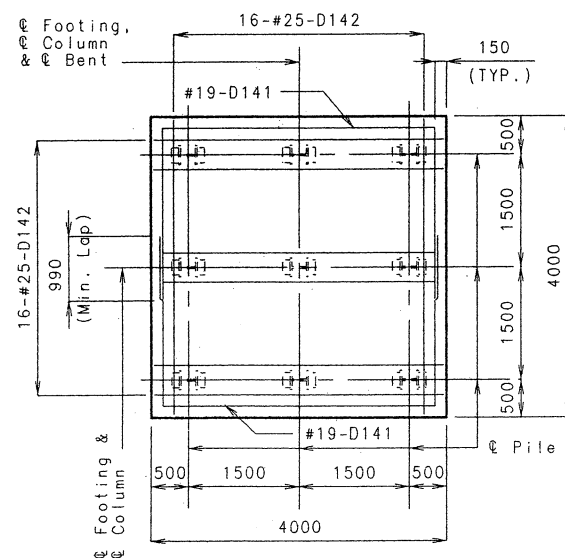
SHEET NO. 44 OF 236.

Note: ** Lapping of Spiral Reinforcement in this Region is not Permitted.

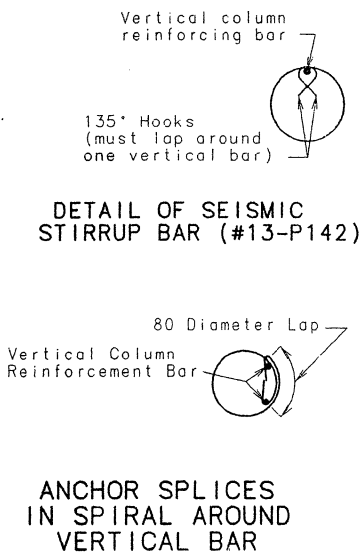
STATE	PROJ. NO.	SHEET NO.
MO.		79



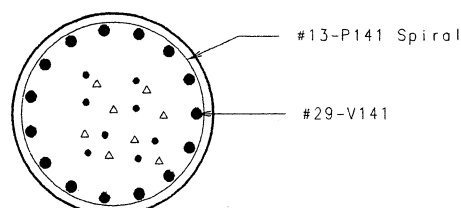
SECTION E-E



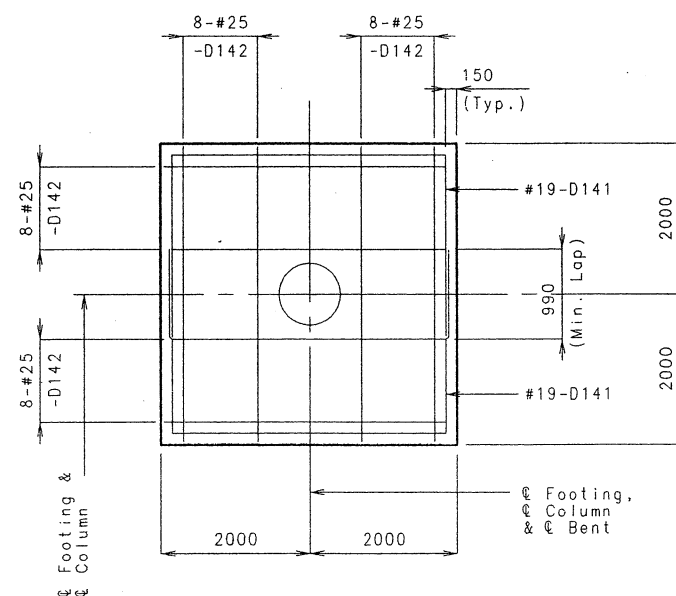
PLAN OF FOOTING SHOWING
BOTTOM REINFORCEMENT



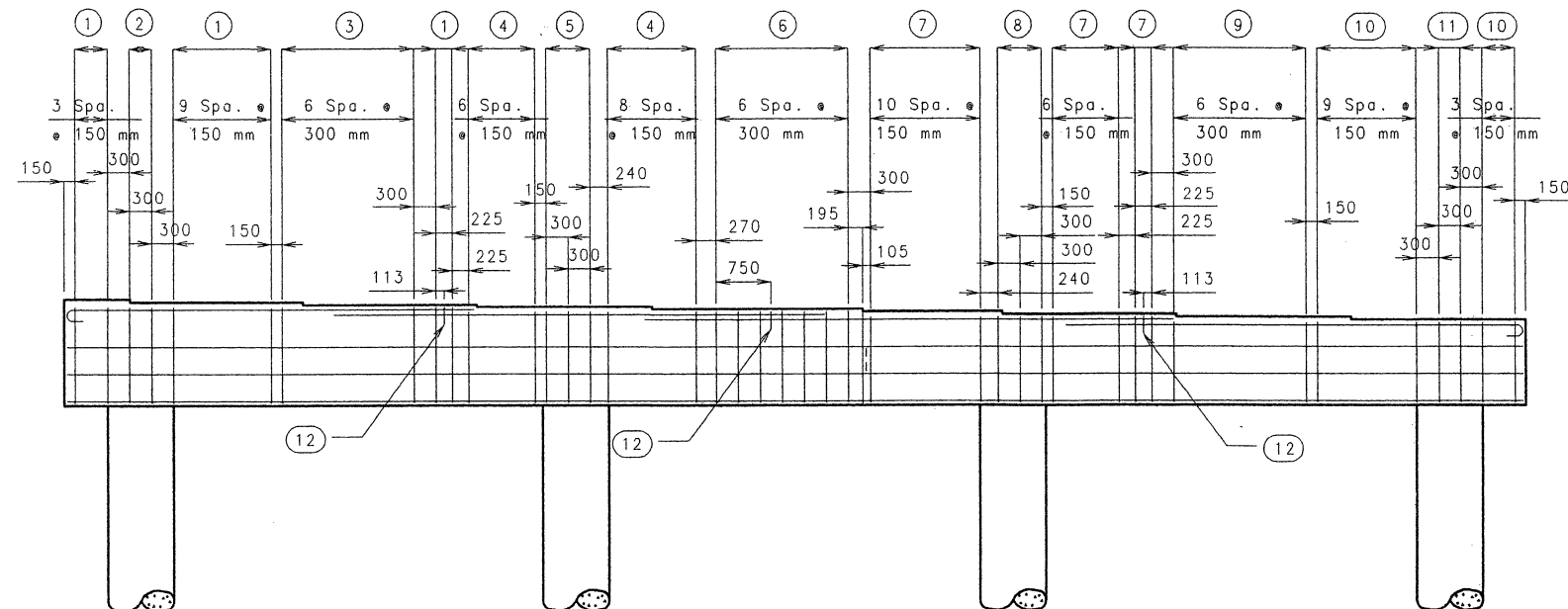
ANCHOR SPLICES
IN SPIRAL AROUND
VERTICAL BAR



SECTION C-C

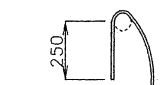


PLAN OF FOOTING SHOWING
TOP REINFORCEMENT

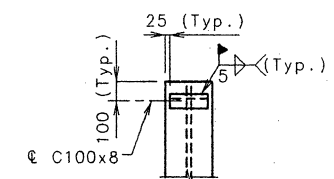


ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING

- ① #19-U141 32 total bars reqd.
Spa. as shown (Double)
- ② #19-U142 4 total bars reqd.
Spa. as shown (Double)
- ③ #19-U143 7 total bars reqd.
Spa. as shown (Single)
- ④ #19-U144 32 total bars reqd.
Spa. as shown (Double)
- ⑤ #19-U145 6 total bars reqd.
Spa. as shown (Double)
- ⑥ #19-U146 7 total bars reqd.
Spa. as shown (Single)
- ⑦ #19-U147 40 total bars reqd.
Spa. as shown (Double)
- ⑧ #19-U148 6 total bars reqd.
Spa. as shown (Double)
- ⑨ #19-U149 7 total bars reqd.
Spa. as shown (Single)
- ⑩ #19-U241 28 total bars reqd.
Spa. as shown (Double)
- ⑪ #19-U242 4 total bars reqd.
Spa. as shown (Double)
- ⑫ #13-U243 3 total bars reqd.
Spa. as shown (Single)



DETAILS OF 135°
SEISMIC SPIRAL
TIE HOOK



TYPICAL DETAIL OF PILE
CHANNEL SHEAR CONNECTOR

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 14		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	185
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	126.0
PRE-BORE FOR PILING - METRIC	METER	108.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	115.2
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	10750

These Quantities are included in the Estimated Quantities table on sheet No. 8.



DATE 12-4-97

SHEET NO. 46 OF 236.

ST. LOUIS COUNTY

UNIT 3
A5682

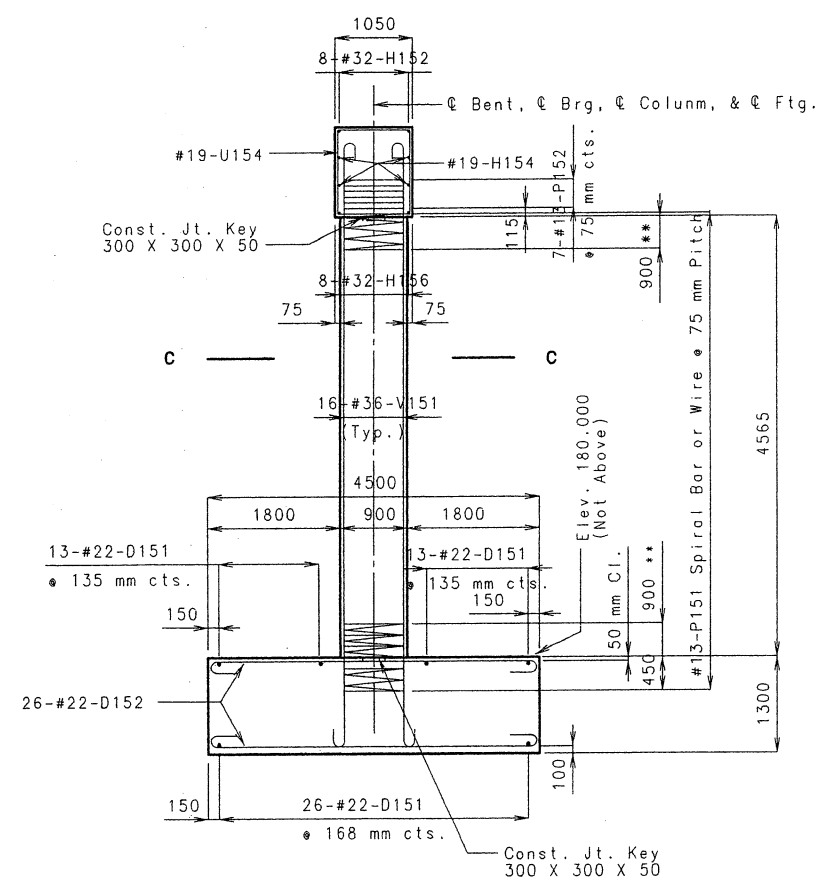
DETAILED MAY 1997
CHECKED SEPT 1997

DETAILS OF INTERMEDIATE BENT NO. 14

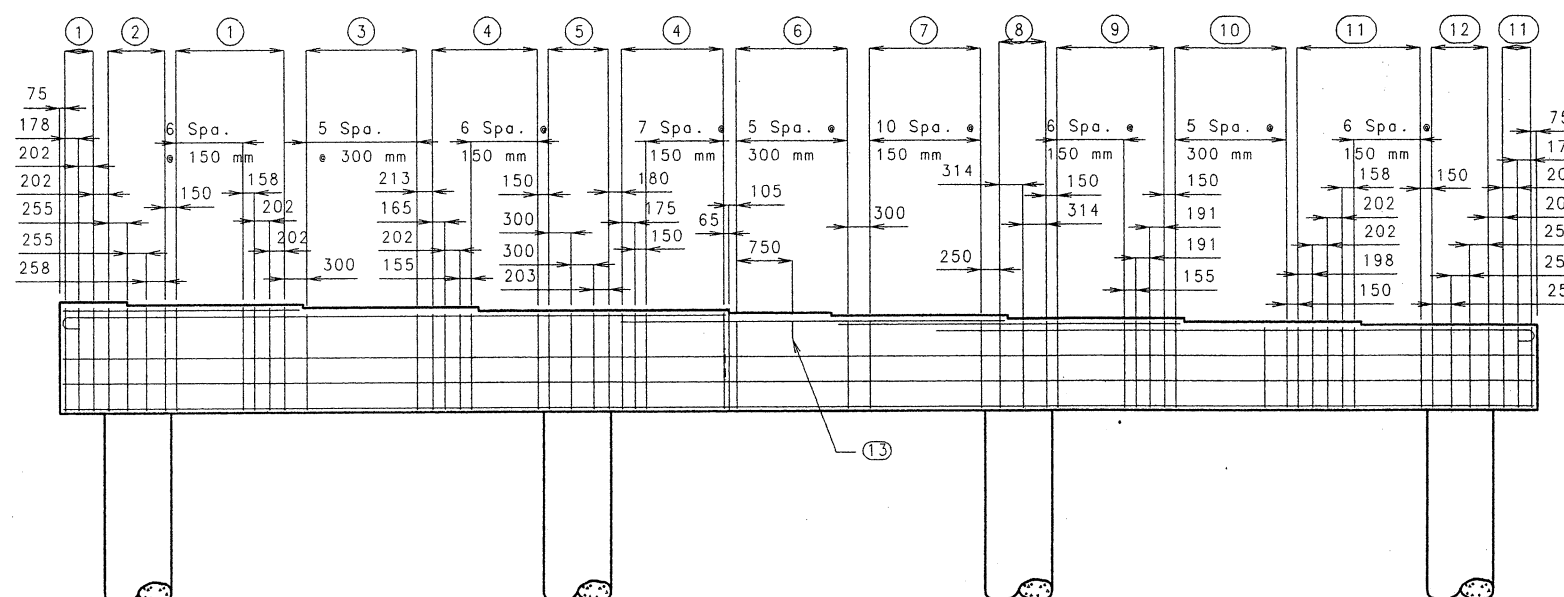
Note: ** Lapping of Spiral Reinforcement in this Region is not Permitted.

80 Diameter Lap

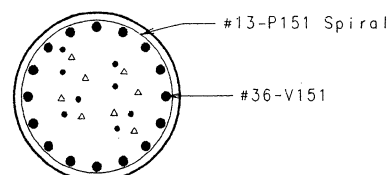
Vertical Column Reinforcement Bar



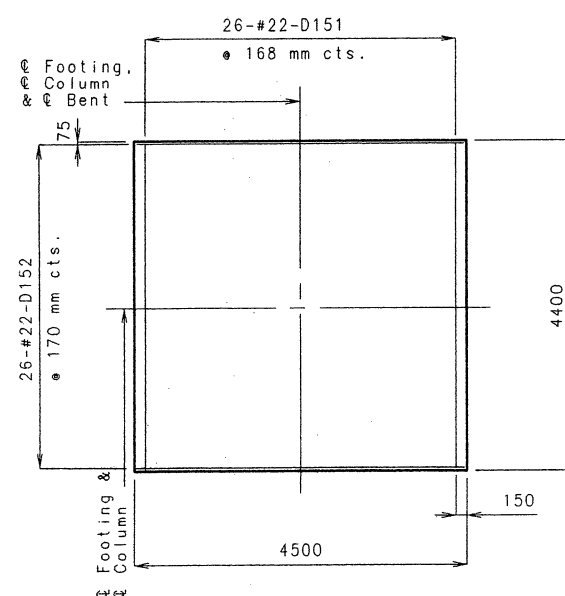
SECTION E-E



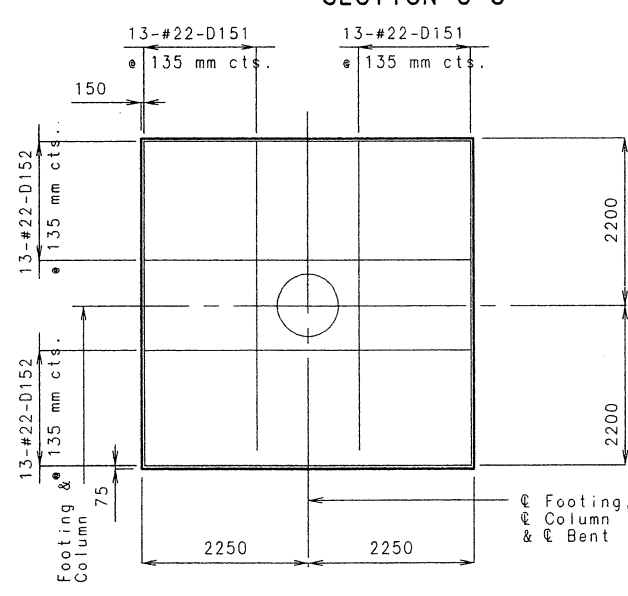
ELEVATION OF BEAM SHOWING STIRRUP BAR SPACING



SECTION C-C

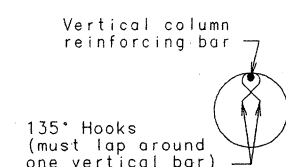


PLAN OF FOOTING SHOWING
BOTTOM REINFORCEMENT

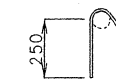


PLAN OF FOOTING SHOWING
TOP REINFORCEMENT

- | | |
|---|---------------------|
| ① #19-U152
Spa. as Shown
(Double) | 26 total bars reqd. |
| ② #19-U153
Spa. as Shown
(Double) | 8 total bars reqd. |
| ③ #19-U154
Spa. as Shown
(Single) | 6 total bars reqd. |
| ④ #19-U155
Spa. as Shown
(Double) | 40 total bars reqd. |
| ⑤ #19-U156
Spa. as Shown
(Double) | 8 total bars reqd. |
| ⑥ #19-U157
Spa. as Shown
(Single) | 6 total bars reqd. |
| ⑦ #19-U158
Spa. as Shown
(Double) | 22 total bars reqd. |
| ⑧ #19-U159
Spa. as Shown
(Double) | 6 total bars reqd. |
| ⑨ #19-U250
Spa. as Shown
(Double) | 20 total bars reqd. |
| ⑩ #19-U251
Spa. as Shown
(Single) | 6 total bars reqd. |
| ⑪ #19-U252
Spa. as Shown
(Double) | 28 total bars reqd. |
| ⑫ #19-U253
Spa. as Shown
(Double) | 8 total bars reqd. |
| ⑬ #13-U254
Spa. as Shown
(Single) | 1 total bar reqd. |

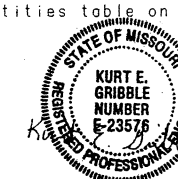


DETAIL OF SEISMIC
STIRRUP BAR (#13-P152)



SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. 15		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	305
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	142.2
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	15640

These Quantities are included in the Estimated Quantities table on sheet No. 8.



DATE 12-4-91

UNIT 3

DETAILED MAY 1997
CHECKED SEPT 1997

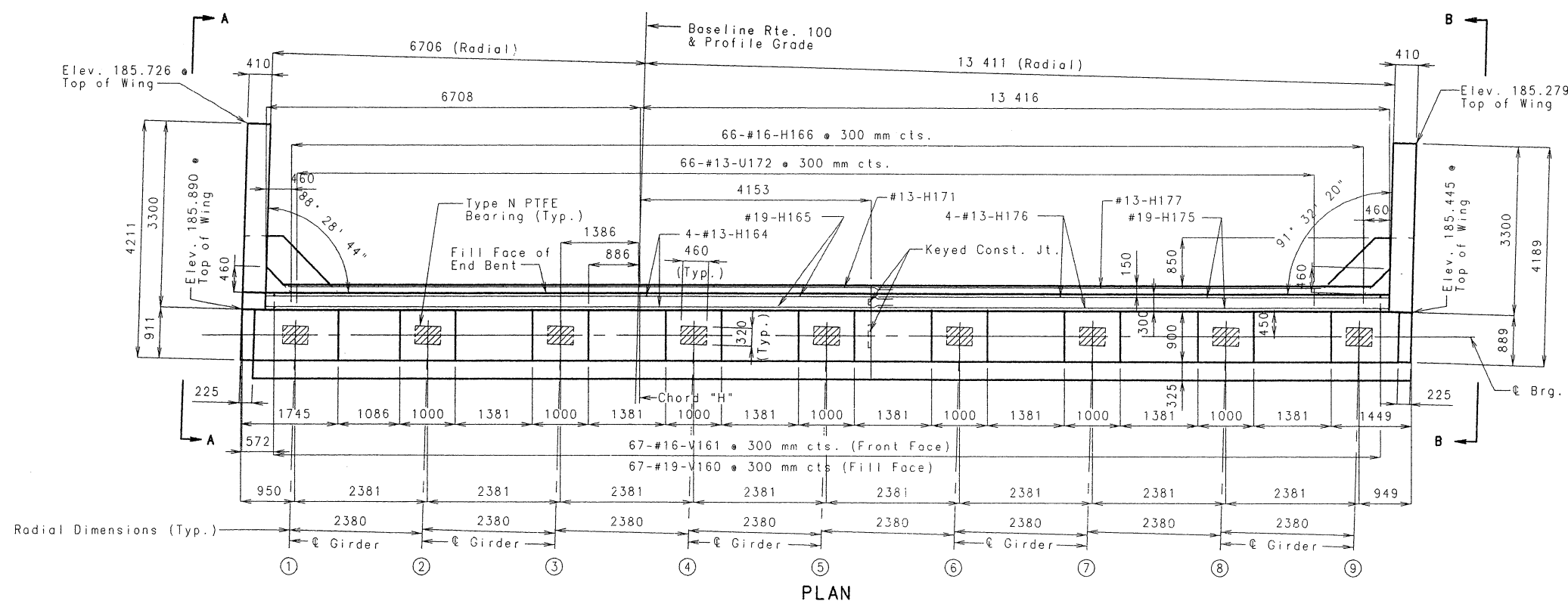
DETAILS OF INTERMEDIATE BENT NO. 15

SHEET NO. 48 OF 236.

ST. LOUIS

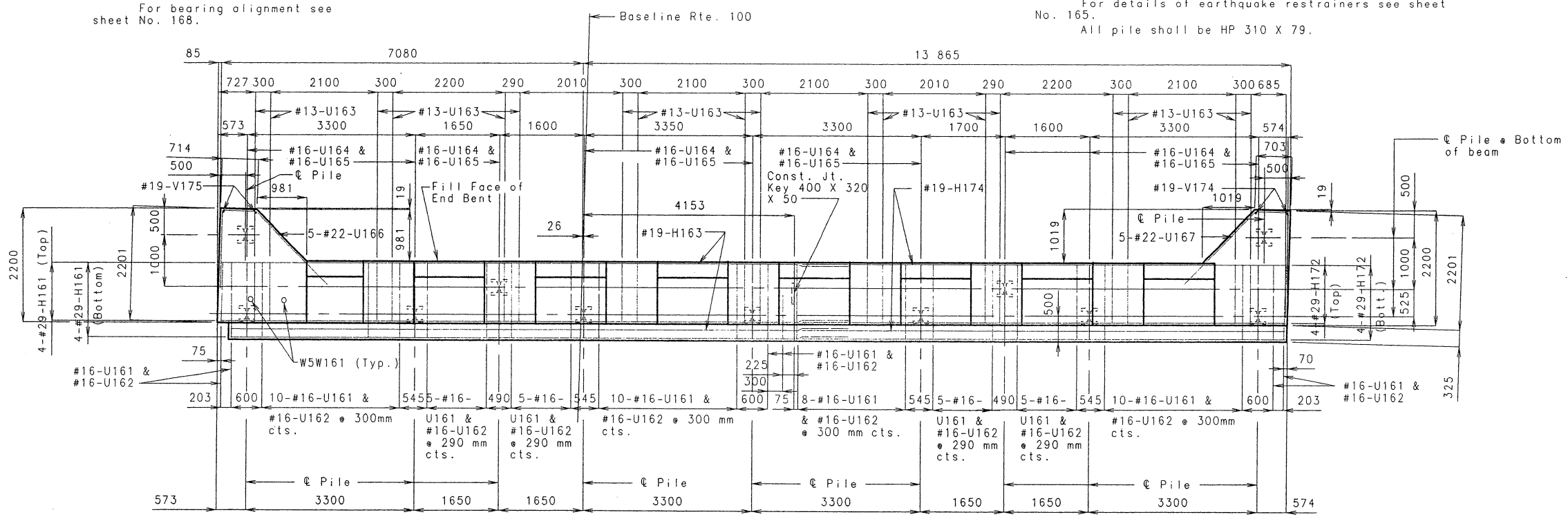
COUNTY _____

A5682



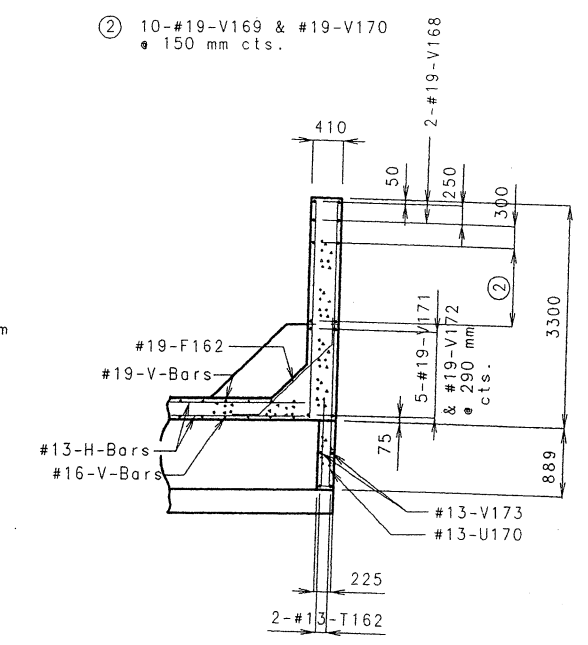
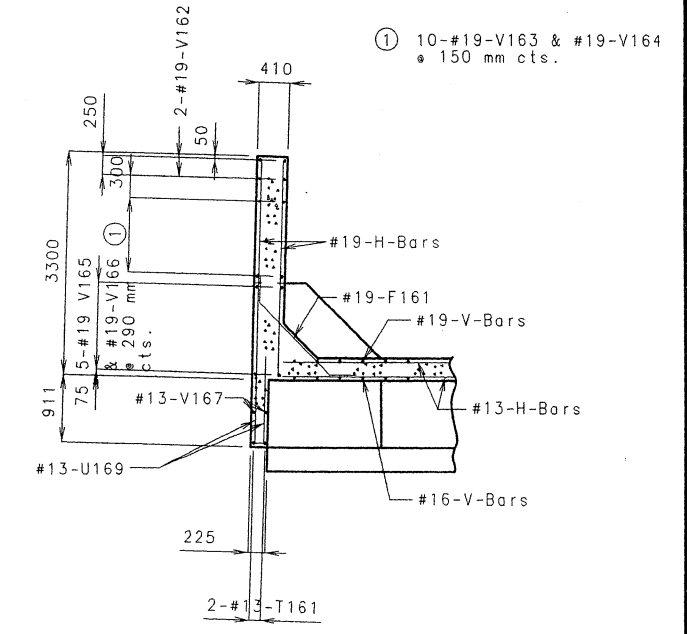
Note: For Elevation of End Bent see sheet No. 50.
 For Elevation of Wing A-A and Wing B-B, see sheet No. 51.
 For Detail of Type N PTFE Bearings see sheet No. 166.
 For bearing alignment see sheet No. 168.

Note: All reinforcing bars in tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15mm.
 Top of backwall and expansion device for end bent No. 16 shall conform to the slope of roadway slab. Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in the adjacent span.
 For details of earthquake restrainers see sheet No. 165.
 All pile shall be HP 310 X 79.



Note: For Plan of Anchor Bolt spacing and Detail of Anchor Bolt Wells see sheet No. 168.

DETAILS OF END BENT NO. 16



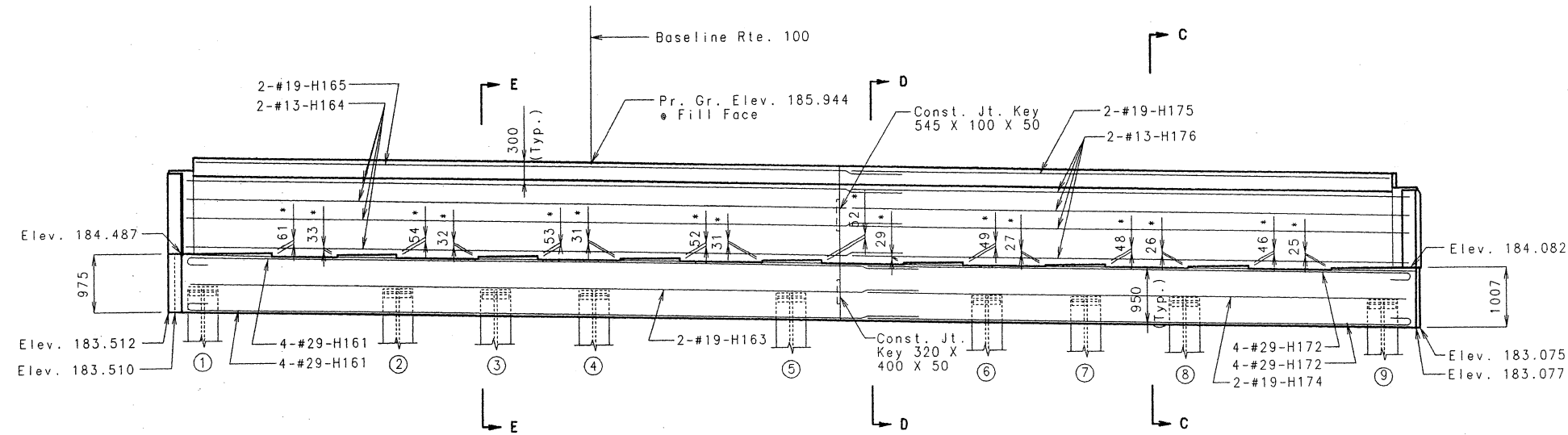
STATE OF MISSOURI
 KURT E. GRIBBLE
 NUMBER E-23576
 PROFESSIONAL ENGINEER
 DATE 12-4-97

UNIT 3

ST. LOUIS COUNTY A5682

DETAILED APRIL 1997
 CHECKED SEPT 1997

SHEET NO. 49 OF 236.

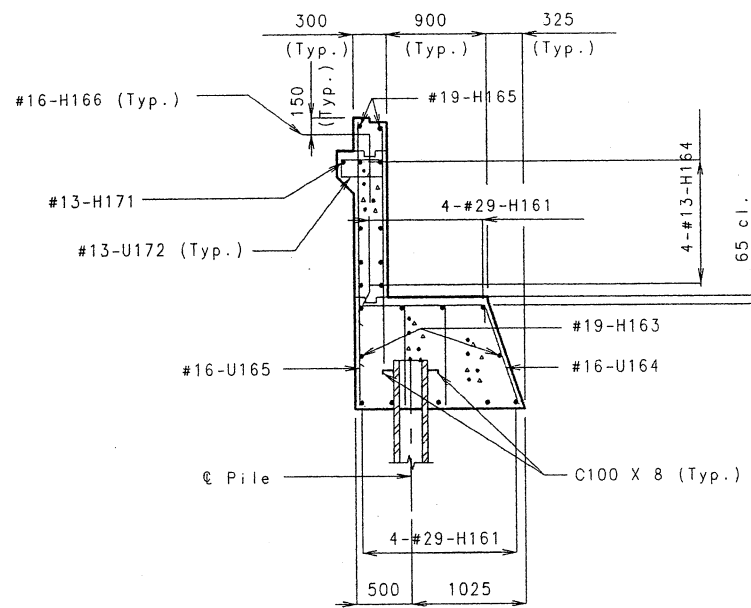


* Step dimensions are at front face of backwall.

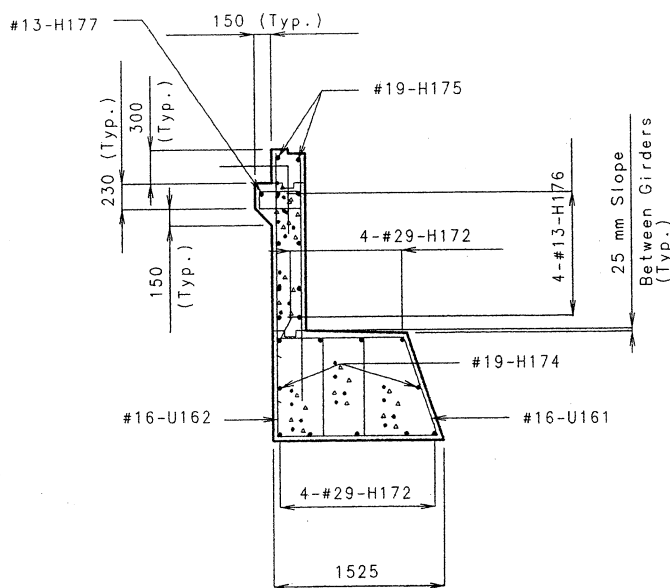
Note: For Details of Expansion Device see sheet No. 190.
Field bending shall be required at wings for #13-H164 & #13-H176 bars in backwalls for skewed structures and for #19-F161 & #19-F162 bars when necessary to conform to slope of wing.

PILE CUT-OFF ELEVATION	
Heel Pile Lt.	183.962
Pile No. 1	183.960
Pile No. 2	183.891
Pile No. 3	183.857
Pile No. 4	183.823
Pile No. 5	183.754
Pile No. 6	183.686
Pile No. 7	183.652
Pile No. 8	183.617
Pile No. 9	183.549
Heel Pile Rt.	183.547

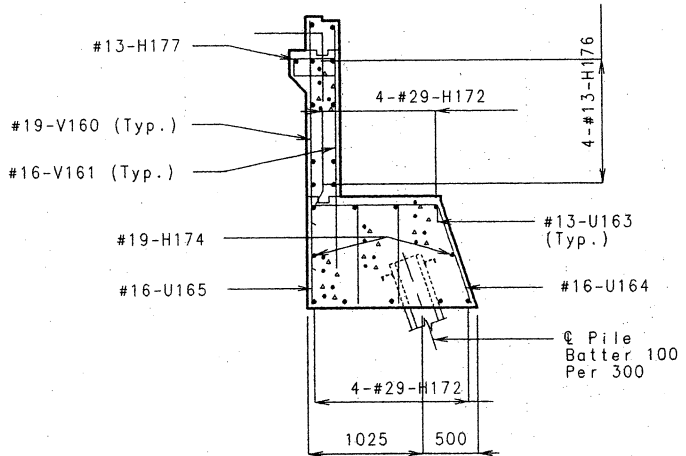
BEAM SEAT ELEVATIONS	
Gdr. No. 1	184.487
Gdr. No. 2	184.436
Gdr. No. 3	184.386
Gdr. No. 4	184.335
Gdr. No. 5	184.286
Gdr. No. 6	184.234
Gdr. No. 7	184.183
Gdr. No. 8	184.132
Gdr. No. 9	184.082



SECTION E-E



SECTION D-D



SECTION C-C

DETAILS OF END BENT NO. 16

STATE OF MISSOURI
KURT E. GRIBBLE
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-23578
DATE 12-4-97

UNIT 3

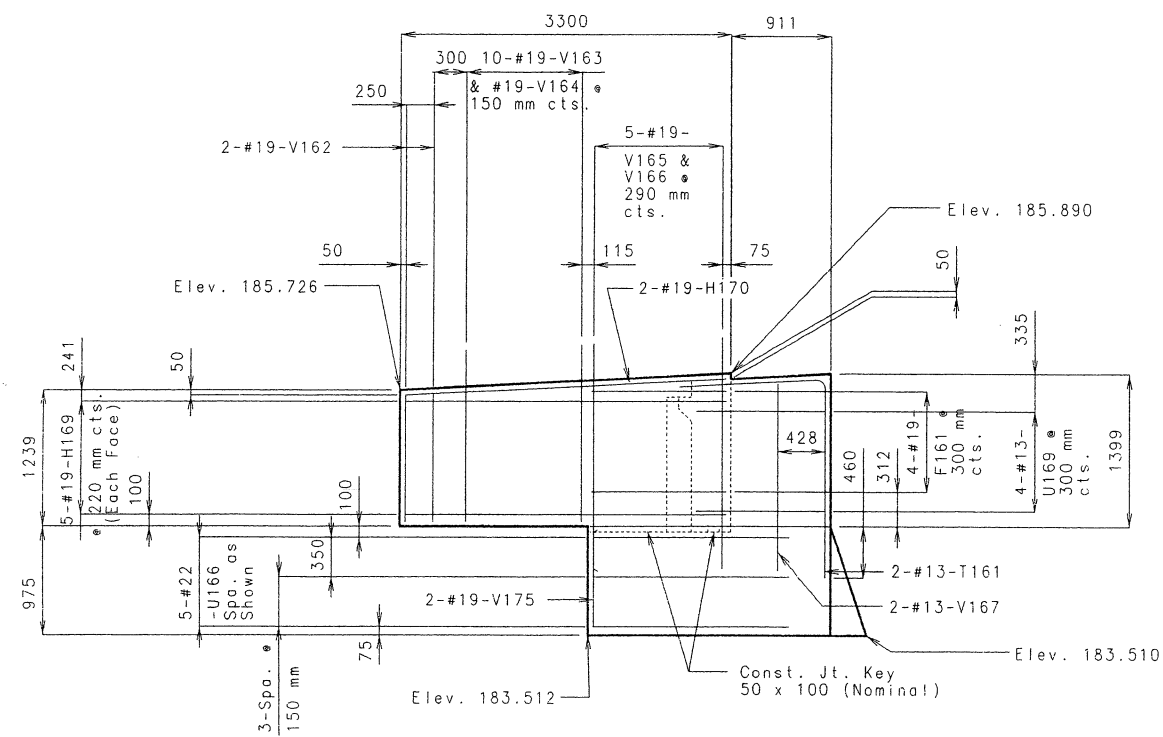
ST. LOUIS

COUNTY

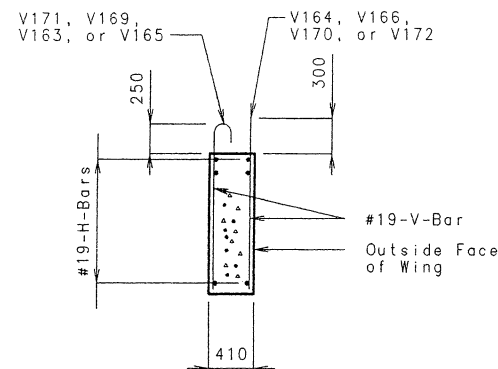
A5682

DETAILED APRIL 1997
CHECKED SEPT 1997

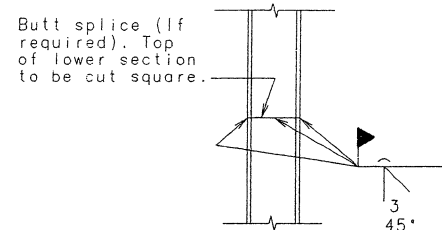
SHEET NO. 50 OF 236.



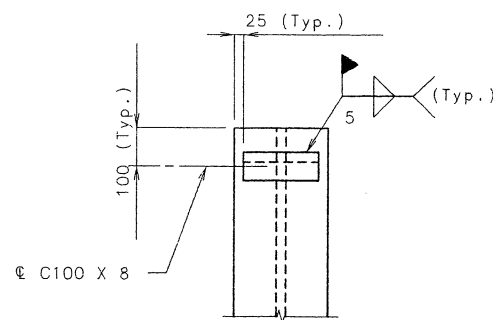
ELEVATION A-A



SECTION THRU WING

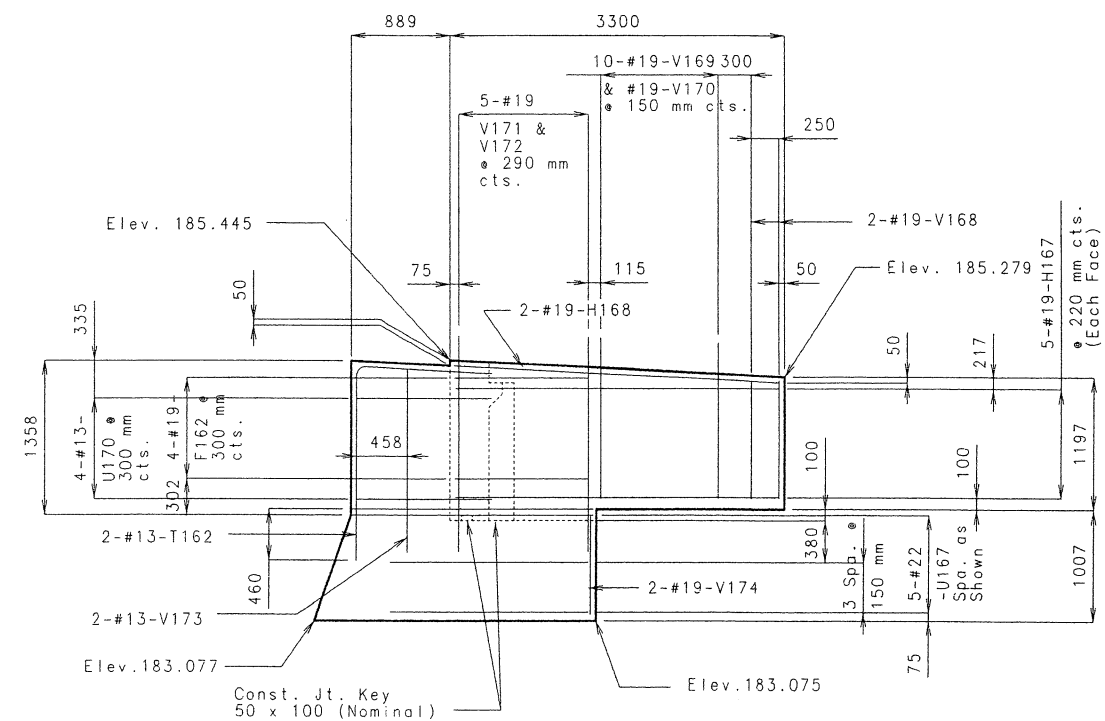


DETAIL OF STEEL PILE SPLICE



TYPICAL DETAIL OF PILE CHANNEL SHEAR CONNECTOR

DETAILS OF END BENT NO. 16



ELEVATION B-B

Note: For reinforcement of the safety barrier curb see sheet No. 195.

SUBSTRUCTURE QUANTITIES FOR END BT. NO. 16		
ITEM		QUANTITY
STRUCTURAL STEEL PILES (310 mm) - METRIC	METER	121
PRE-BORE FOR PILING - METRIC	METER	63.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	43.1
REINFORCING STEEL (EPOXY COATED) - METRIC	KILOGRAM	3675

Note: These quantities are included in the estimated quantities table on sheet no. 8.



UNIT 3

ST. LOUIS COUNTY

A5682

DETAILED APRIL 1997
CHECKED SEPT 1997

SHEET NO. 51 OF 236.

CONSTRUCTION SEQUENCE:

Construct end bent with anchor tees in place.

Construct deadman with anchor tees in place.

Machine compact fill up to elevation of 22 mm Ø rod and turnbuckle.

Install 22 mm Ø rod, clevis and turnbuckle assembly.

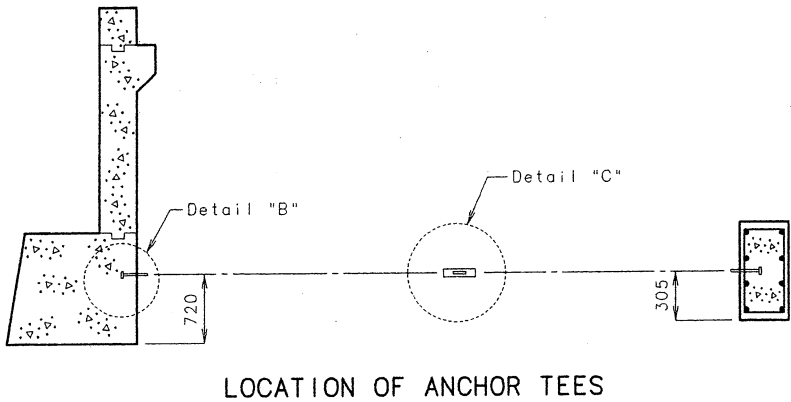
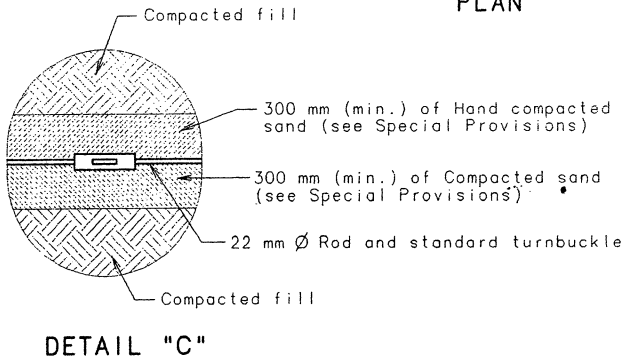
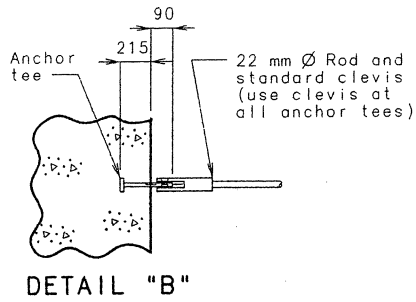
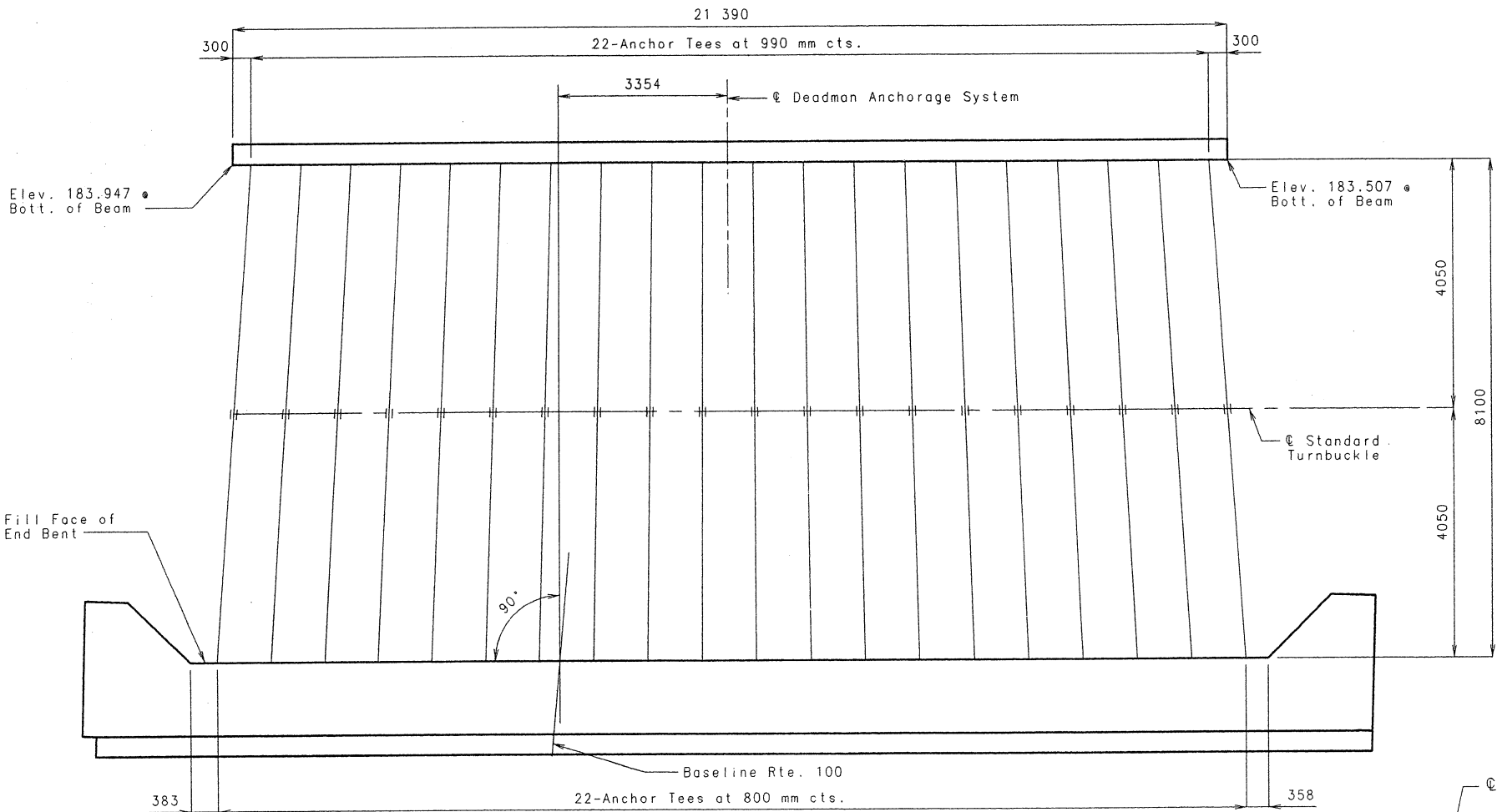
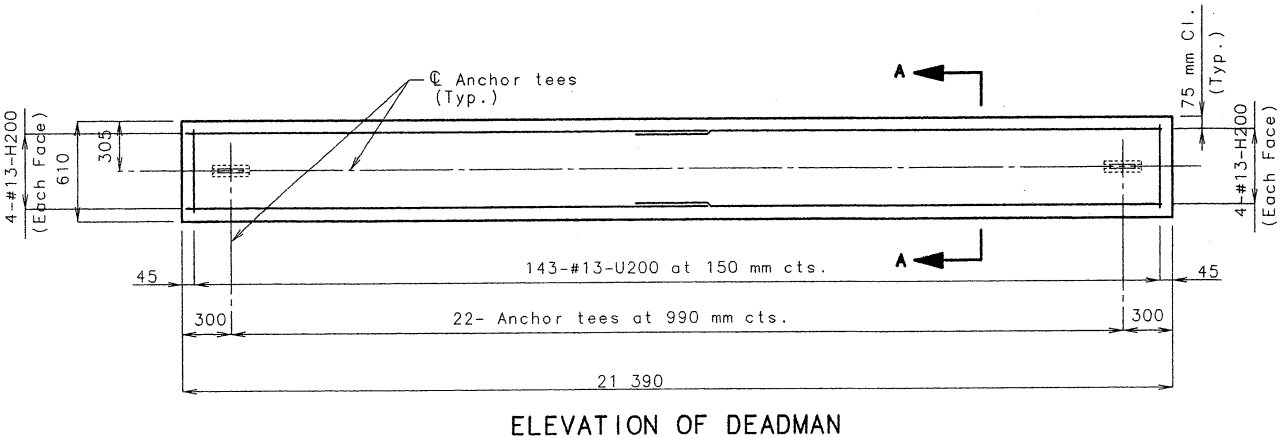
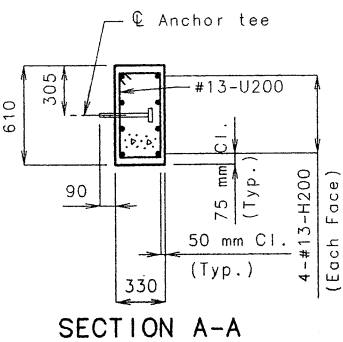
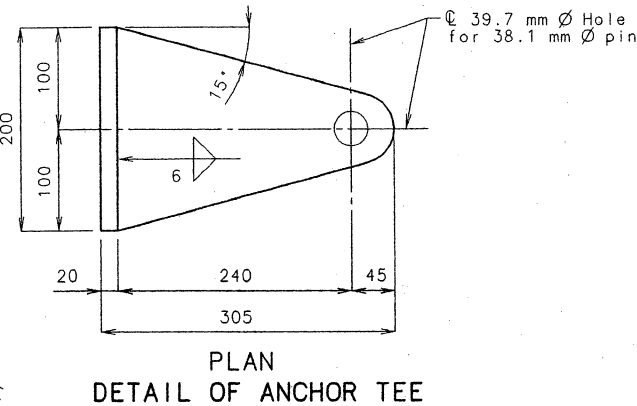
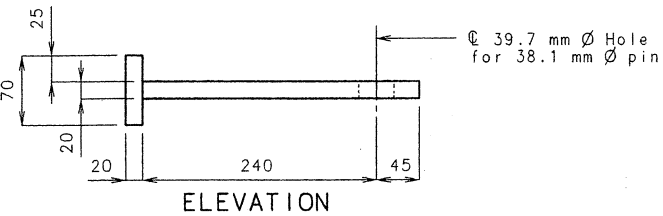
Tighten turnbuckle until snug.

Hand compact fill for 300 mm (min.) over 22 mm Ø rod and turnbuckle.

Machine compact remaining fill.

BILL OF REINFORCING STEEL EACH DEADMAN		
NUMBER	SIZE & MARK	LENGTH
16	#13-H200	10 840
143	#13-U200	1380

Note: Reinforcing Steel Lengths are Based on Nominal Lengths, Out to Out.



dms 1m, deadman, 1, a
Deadman Anchor Revised:
March 1997

DETAILED MAY 1997
CHECKED SEPT 1997

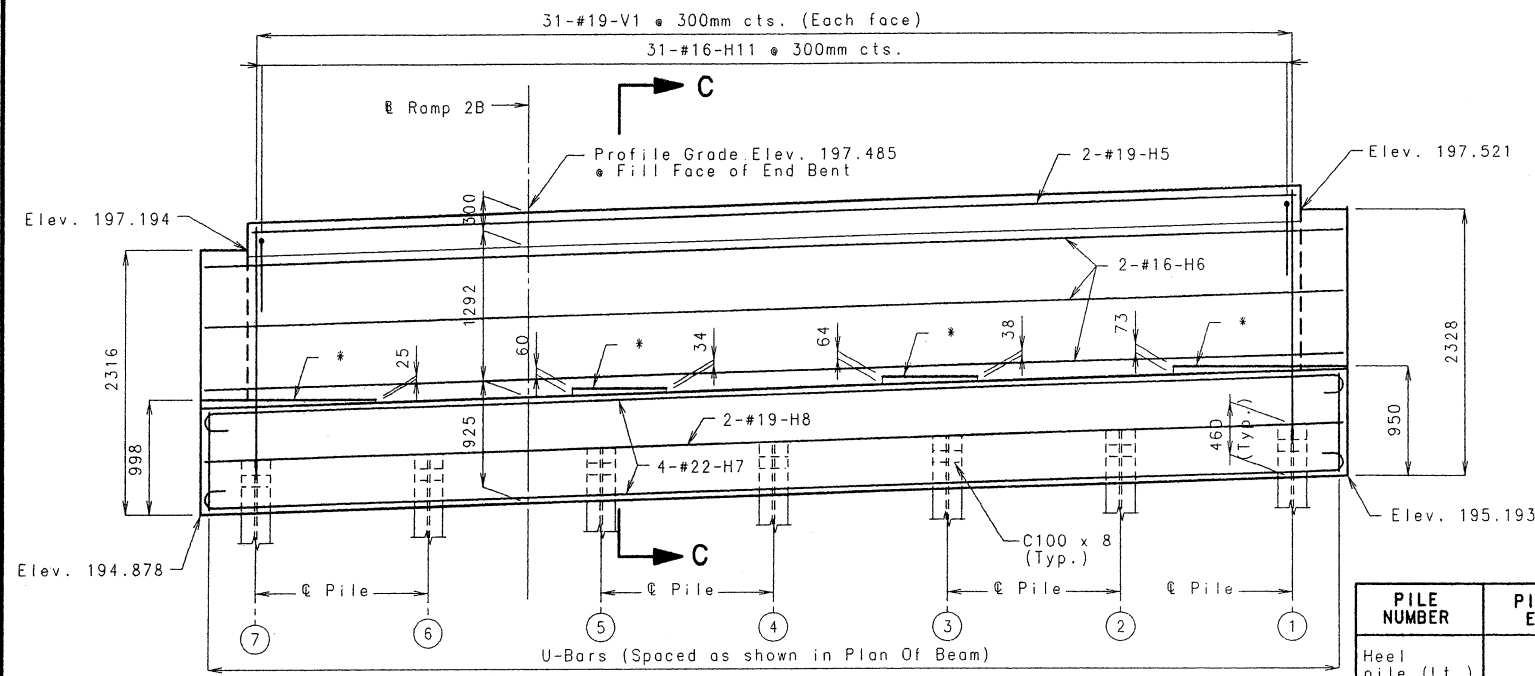
DETAILS OF DEADMAN ANCHORAGE SYSTEM FOR BENT NO. 16

Sheet No. 52 of 236

ST. LOUIS COUNTY

STATE OF MISSOURI
KURT E. GRIBBLE
REGISTERED PROFESSIONAL ENGINEER
DATE 12-4-97

UNIT 3
A5682

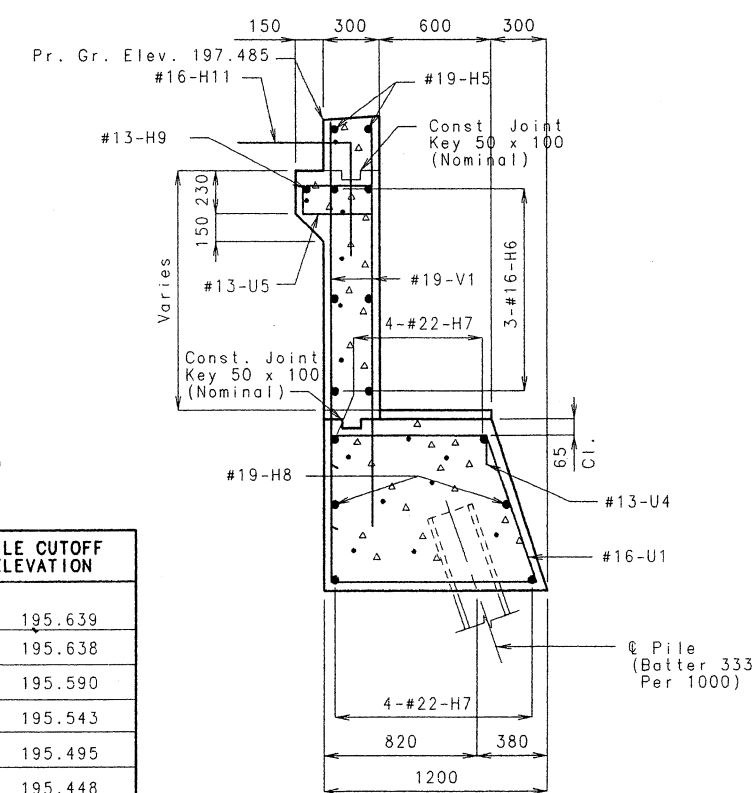


ELEVATION

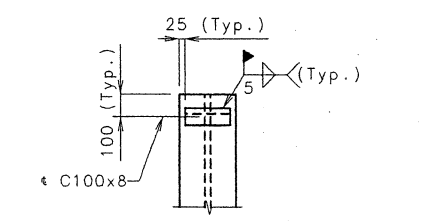
Note: Backwall above upper construction joint shall not be poured until the superstructure slab has been poured in the adjacent span.

GIRDER NUMBER	* BEAM SEAT ELEVATION
1	196.143
2	196.054
3	195.965
4	195.876

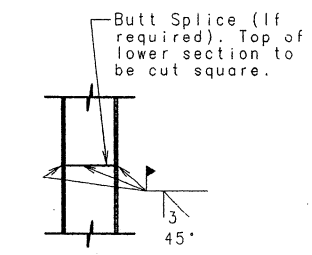
PILE NUMBER	PILE CUTOFF ELEVATION
Heel pile (Lt.)	195.639
1	195.638
2	195.590
3	195.543
4	195.495
5	195.448
6	195.401
7	195.353
Heel pile (Rt.)	195.352



SECTION C-C

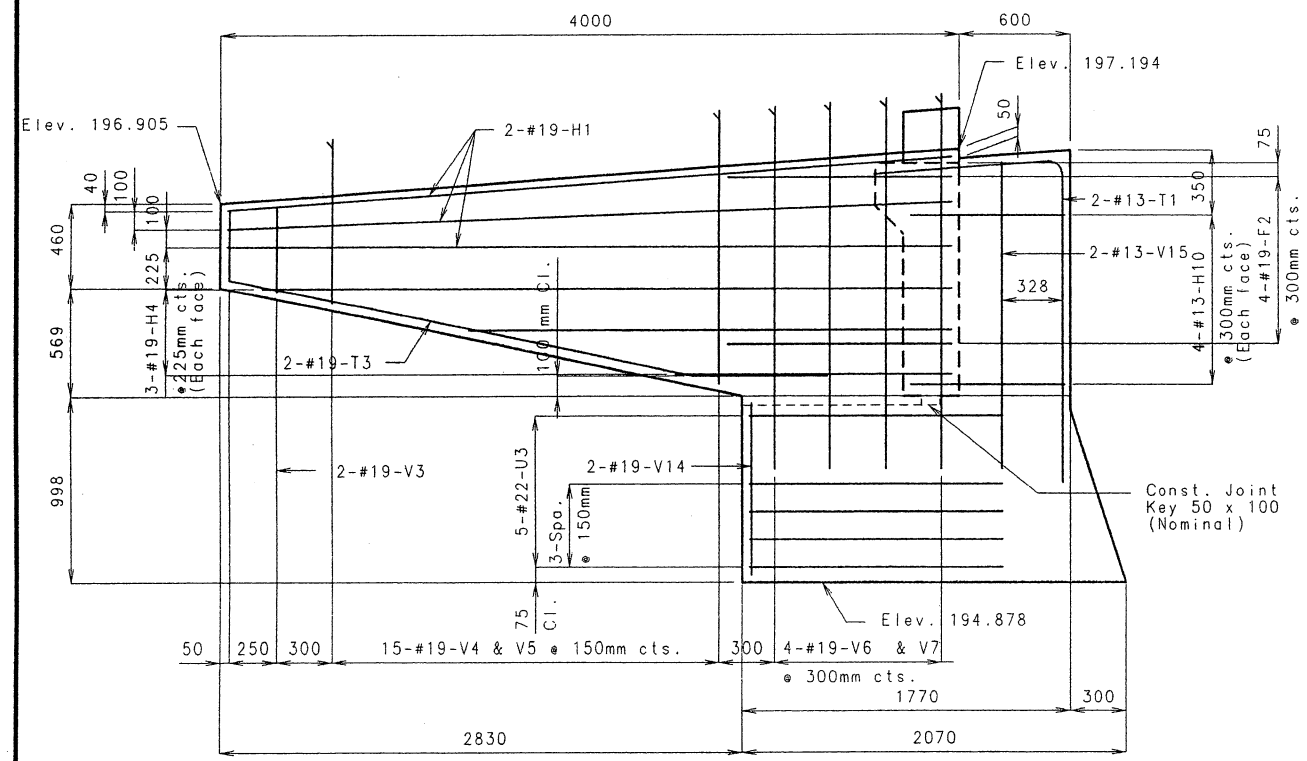


TYPICAL DETAIL OF PILE CHANNEL SHEAR CONNECTOR

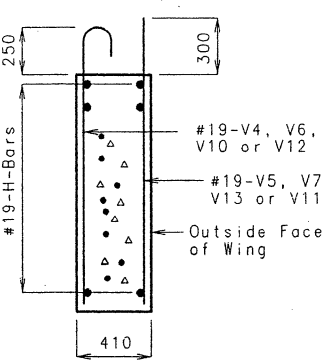


DETAIL OF STEEL PILE SPLICE

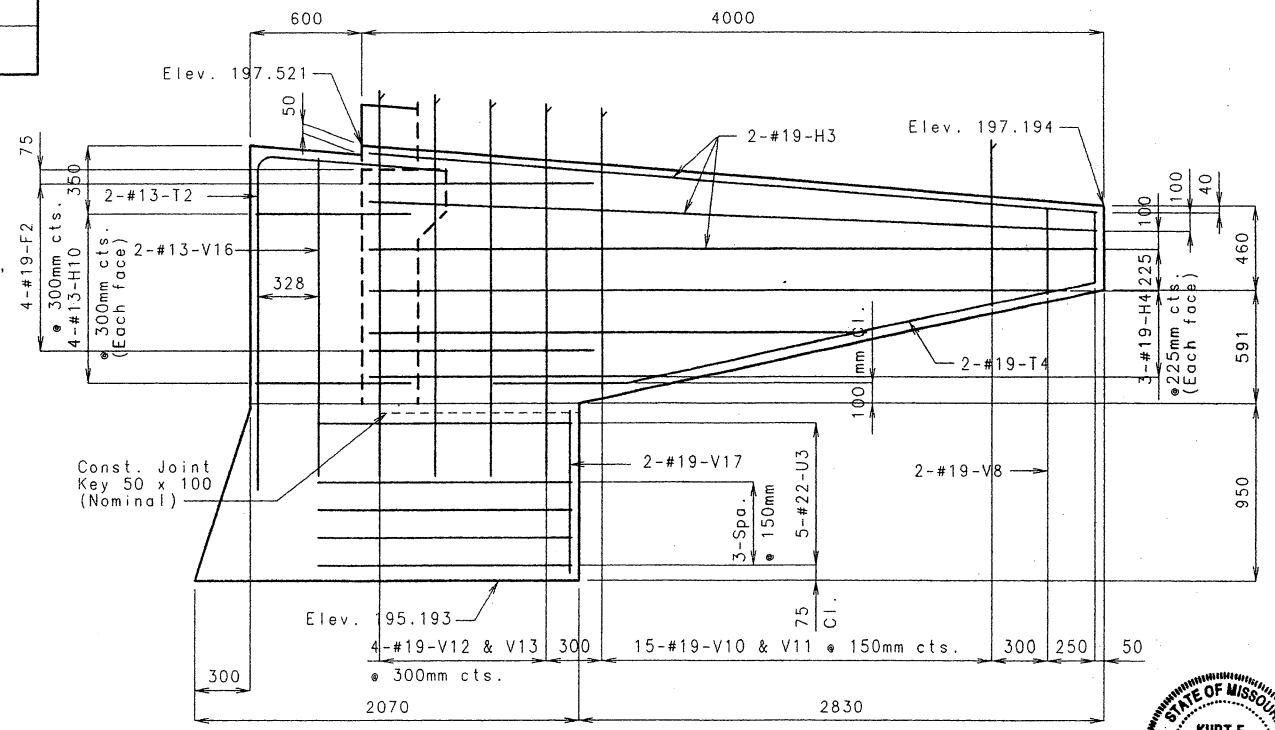
Note: Field bending shall be required for #19-F2 bars when necessary to conform to slope of wing.



ELEVATION A-A



SECTION THRU WING



ELEVATION B-B

Note: For details of safety barrier curb, see sheet No. 216.
For detail of anchor bolt wells, see sheet No. 201.

DETAILS OF END BENT NO. R1

Note: For location of Elevations A-A & B-B and Plans of Beam, see sheet No. 53.

STATE OF MISSOURI
KURT E. GRIBBLE
REGISTERED PROFESSIONAL ENGINEER
NUMBER 23576
DATE 12-4-97

Detailed Apr. 1997
Checked Oct. 1997

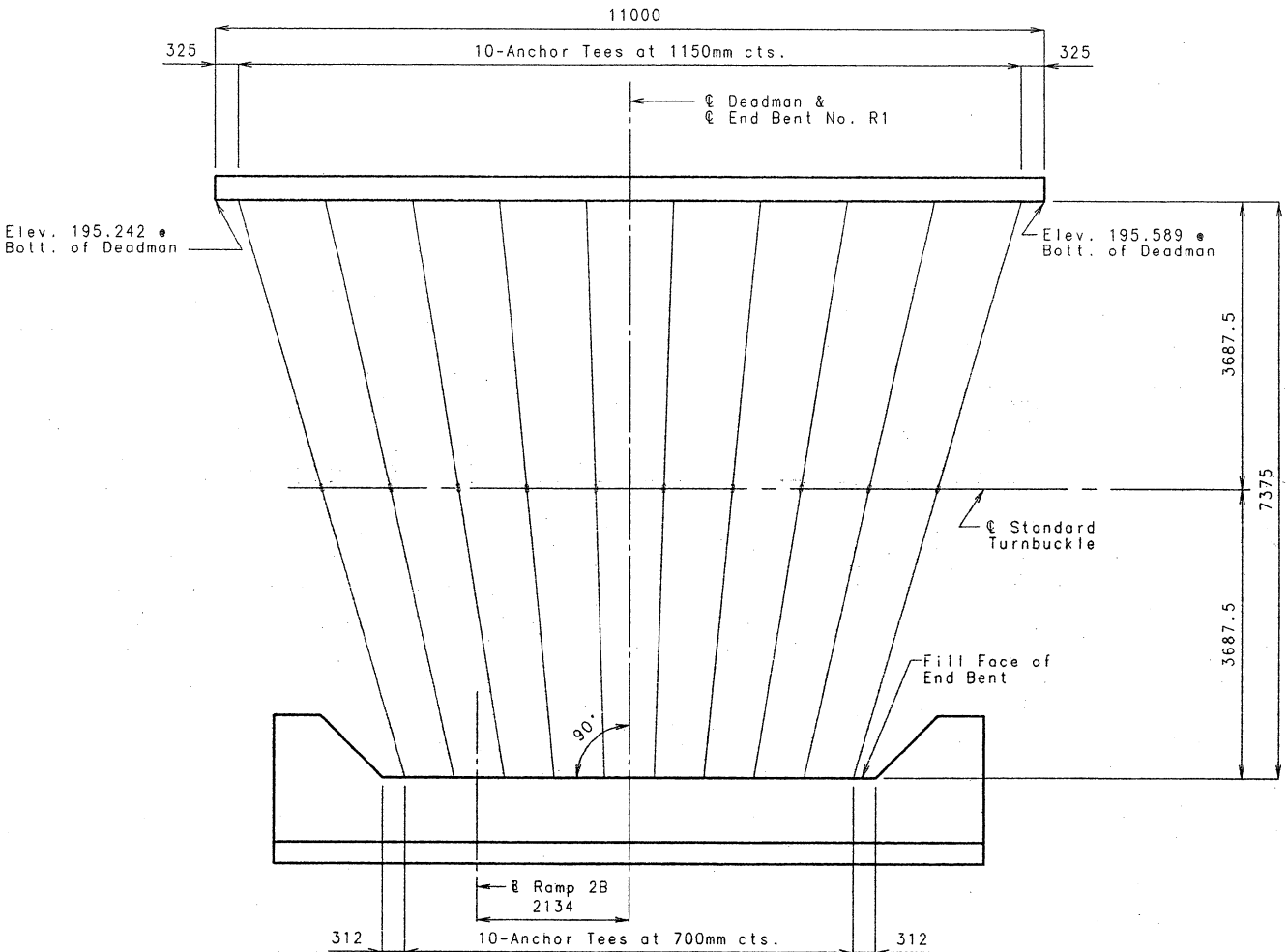
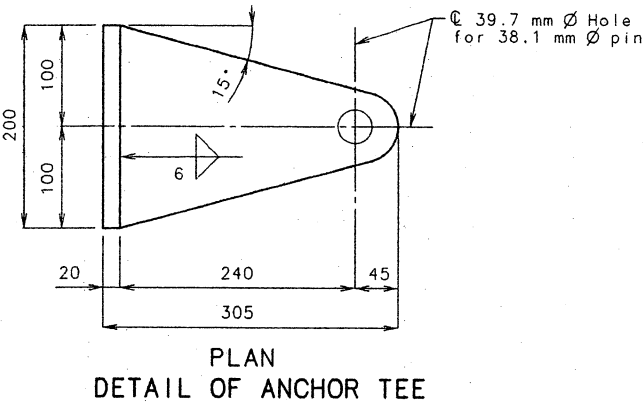
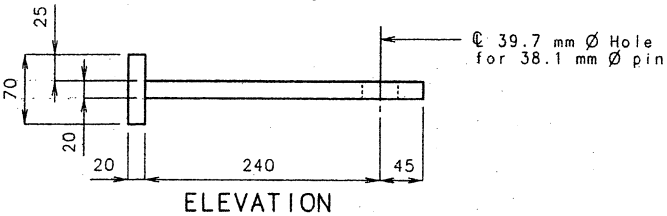
Sheet No. 54 of 236

CONSTRUCTION SEQUENCE:

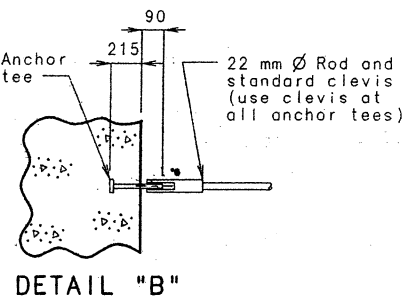
- Construct end bent with anchor tees in place.
- Construct deadman with anchor tees in place.
- Machine compact fill up to elevation of 22 mm Ø rod and turnbuckle.
- Install 22 mm Ø rod, clevis and turnbuckle assembly.
- Tighten turnbuckle until snug.
- Hand compact fill for 300 mm (min.) over 22 mm Ø rod and turnbuckle.
- Machine compact remaining fill.

BILL OF REINFORCING STEEL EACH DEADMAN		
NUMBER	SIZE & MARK	LENGTH
8	#13-H200	10 920
73	#13-U200	1360

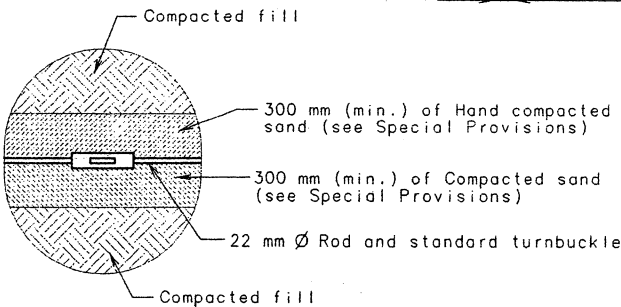
Note: Reinforcing steel lengths are based on nominal lengths, out to out.



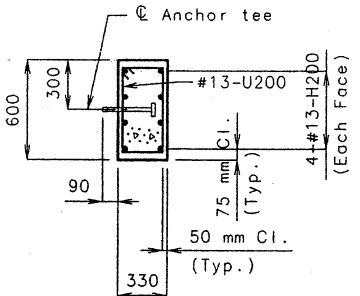
PLAN



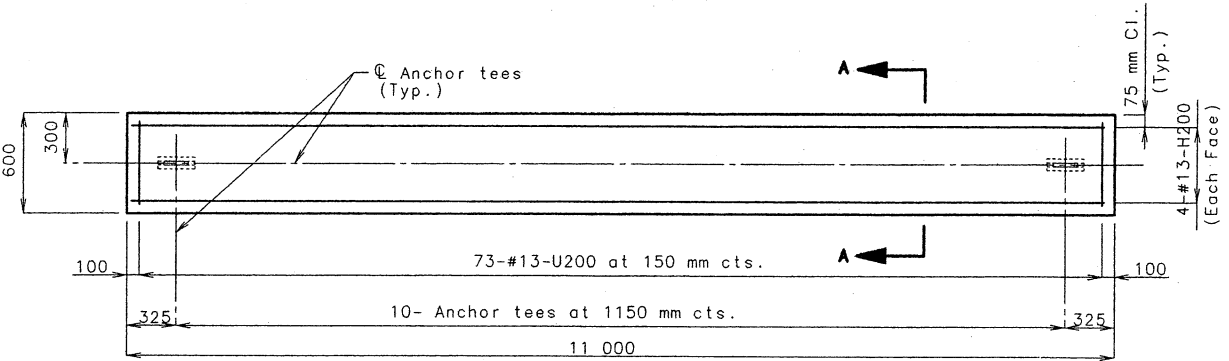
DETAIL "B"



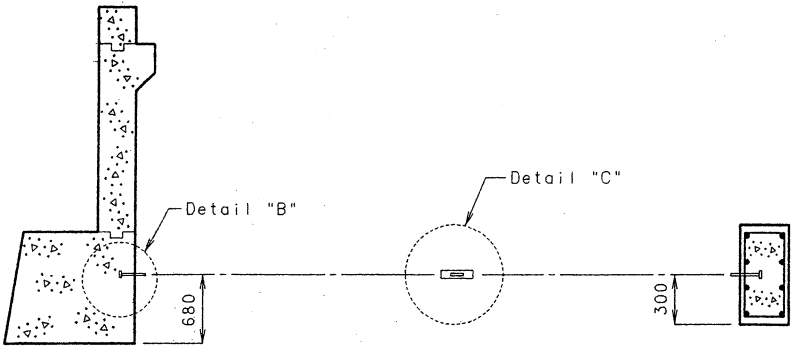
DETAIL "C"



SECTION A-A



ELEVATION OF DEADMAN



LOCATION OF ANCHOR TEES

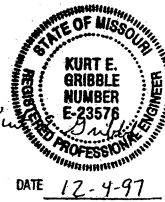
DETAILS OF DEADMAN ANCHORAGE SYSTEM FOR BENT R1

Sheet No. 55 of 236

ST. LOUIS COUNTY

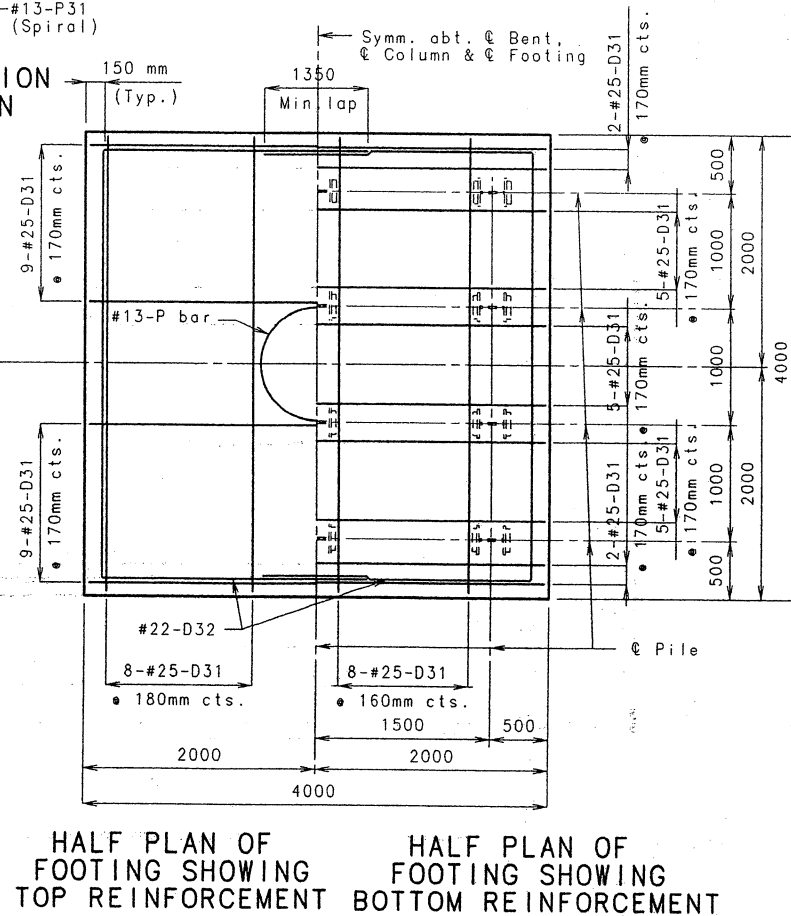
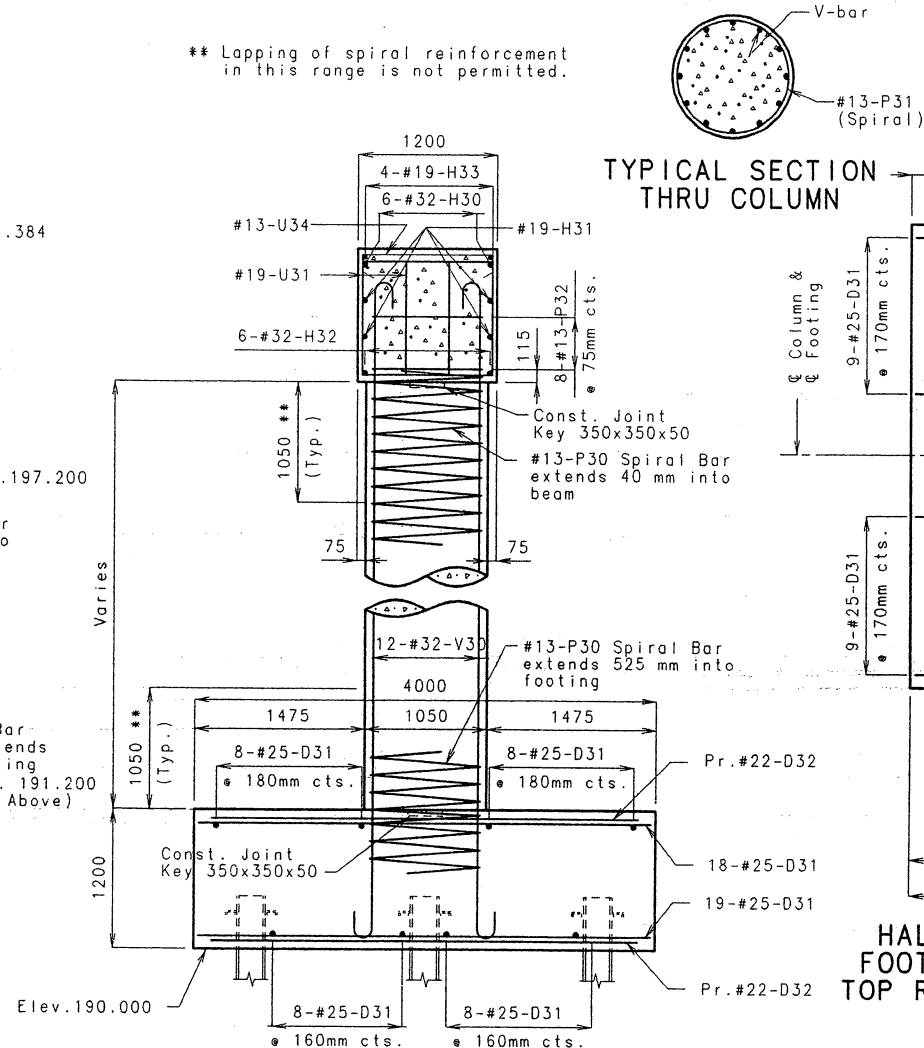
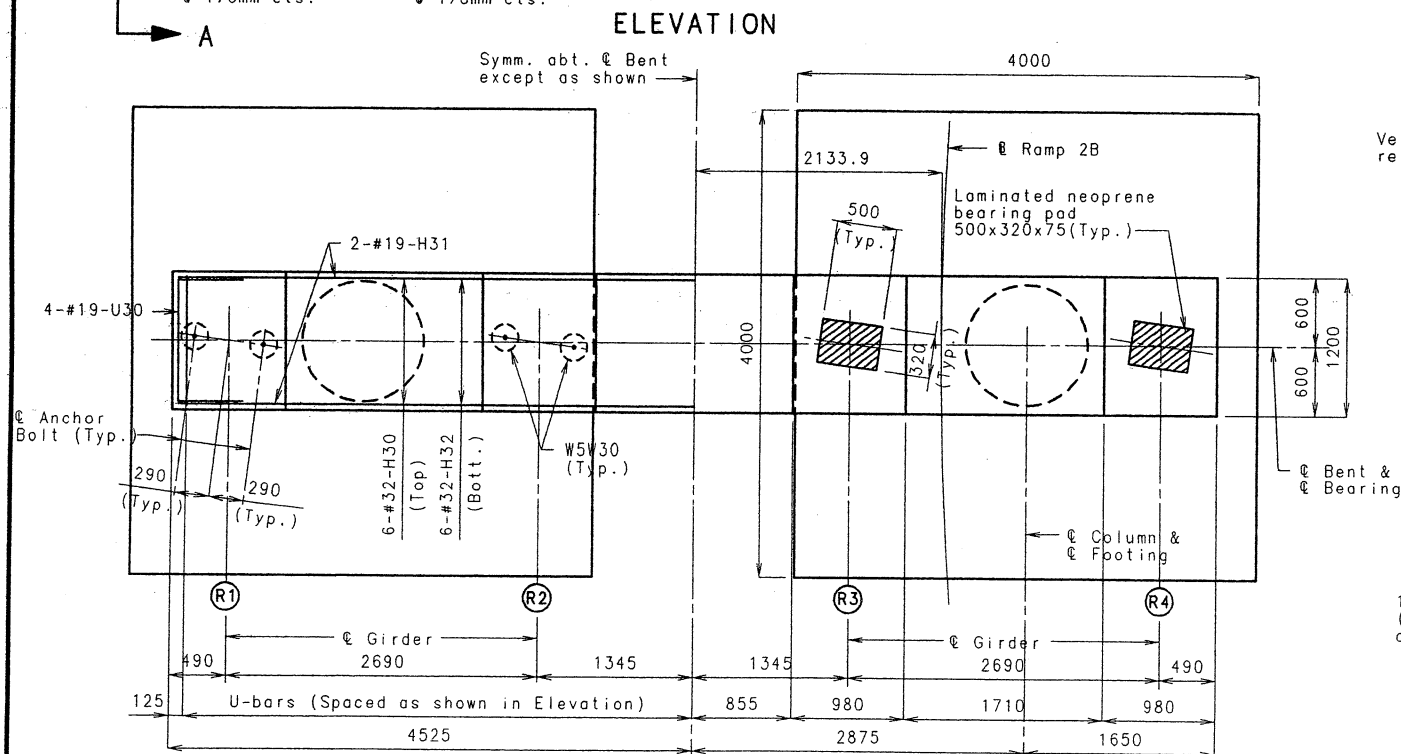
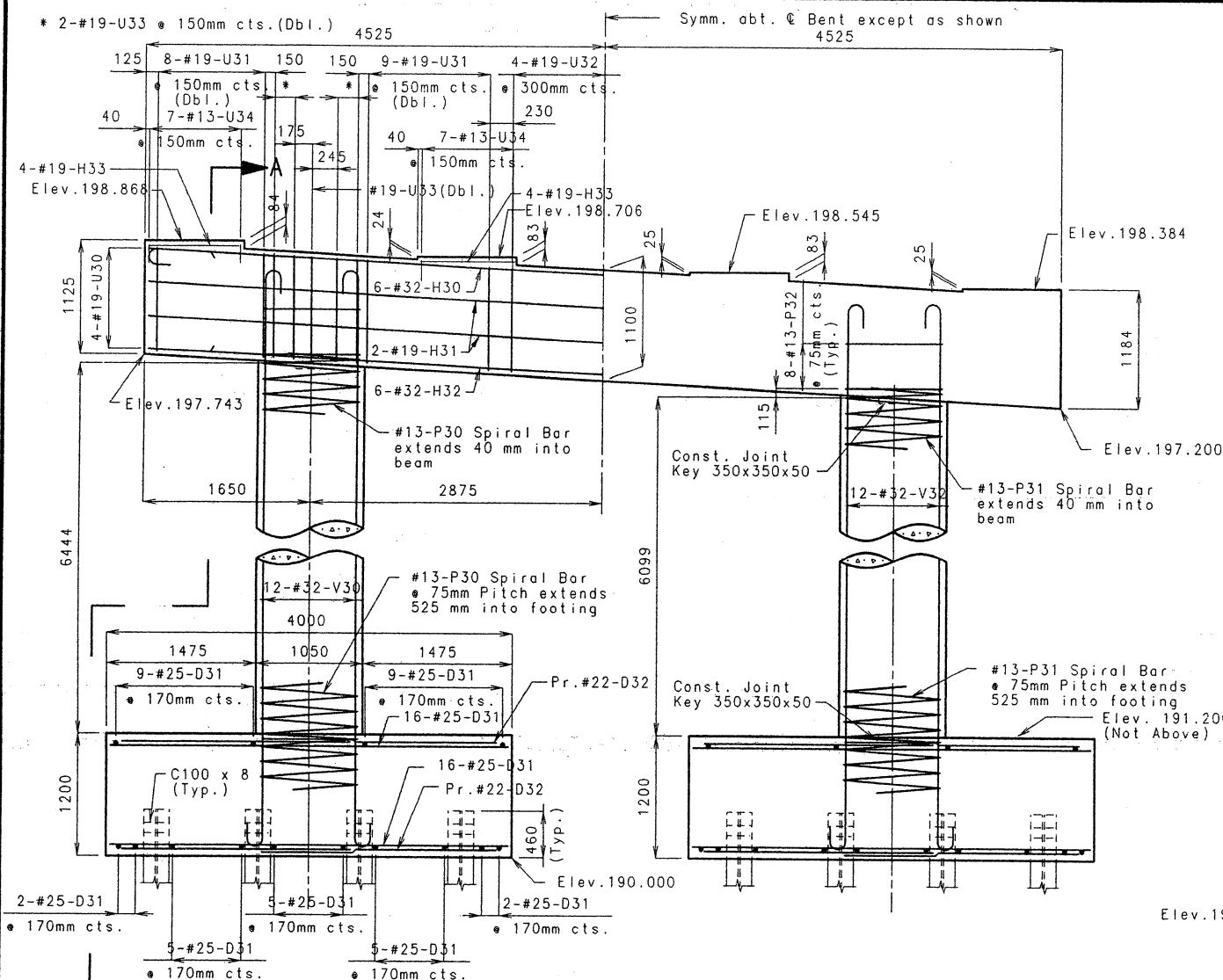
UNIT 4

A5682



dms 1m, deadman, 1, 1, a
Deadman Anchor Revised:
March 1997

Detailed Sept. 1997
Checked Oct. 1997



Note: For Details of Laminated Neoprene Bearing Pads see sheet no. 200.

For Details of Anchor Bolt Wells see sheet no. 201.

For alignment of bearings see sheet no. 201.

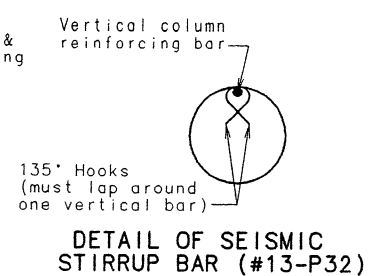
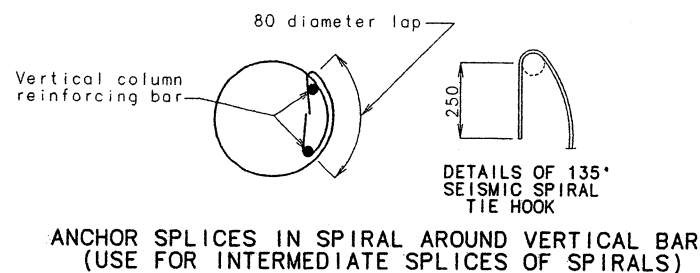
For Details of Steel Pile Splice and C100 x 8 see sheet no. 54.

All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15mm.

All Piles are HP 250 X 62.

At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.

All pile shall be driven vertical.



SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. R3		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	95
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	192.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	61.5
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	6080

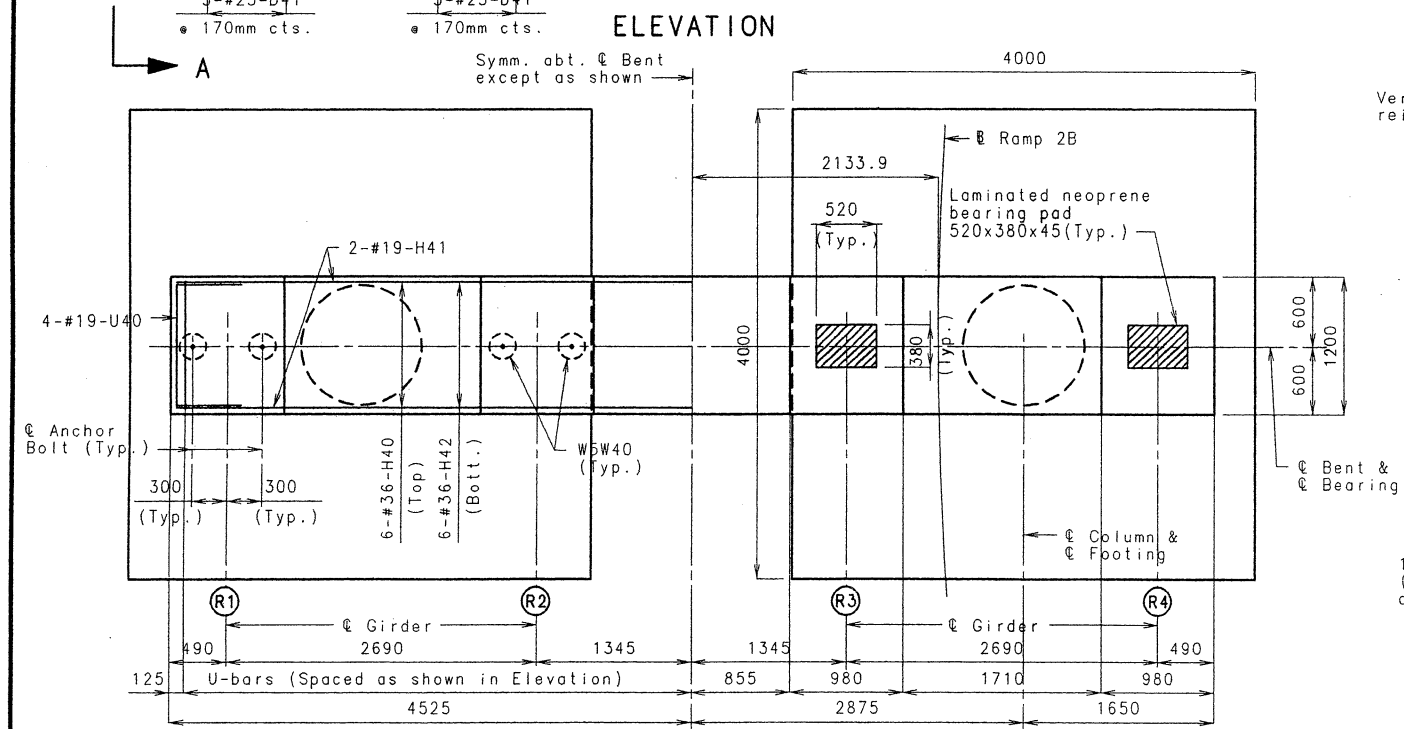
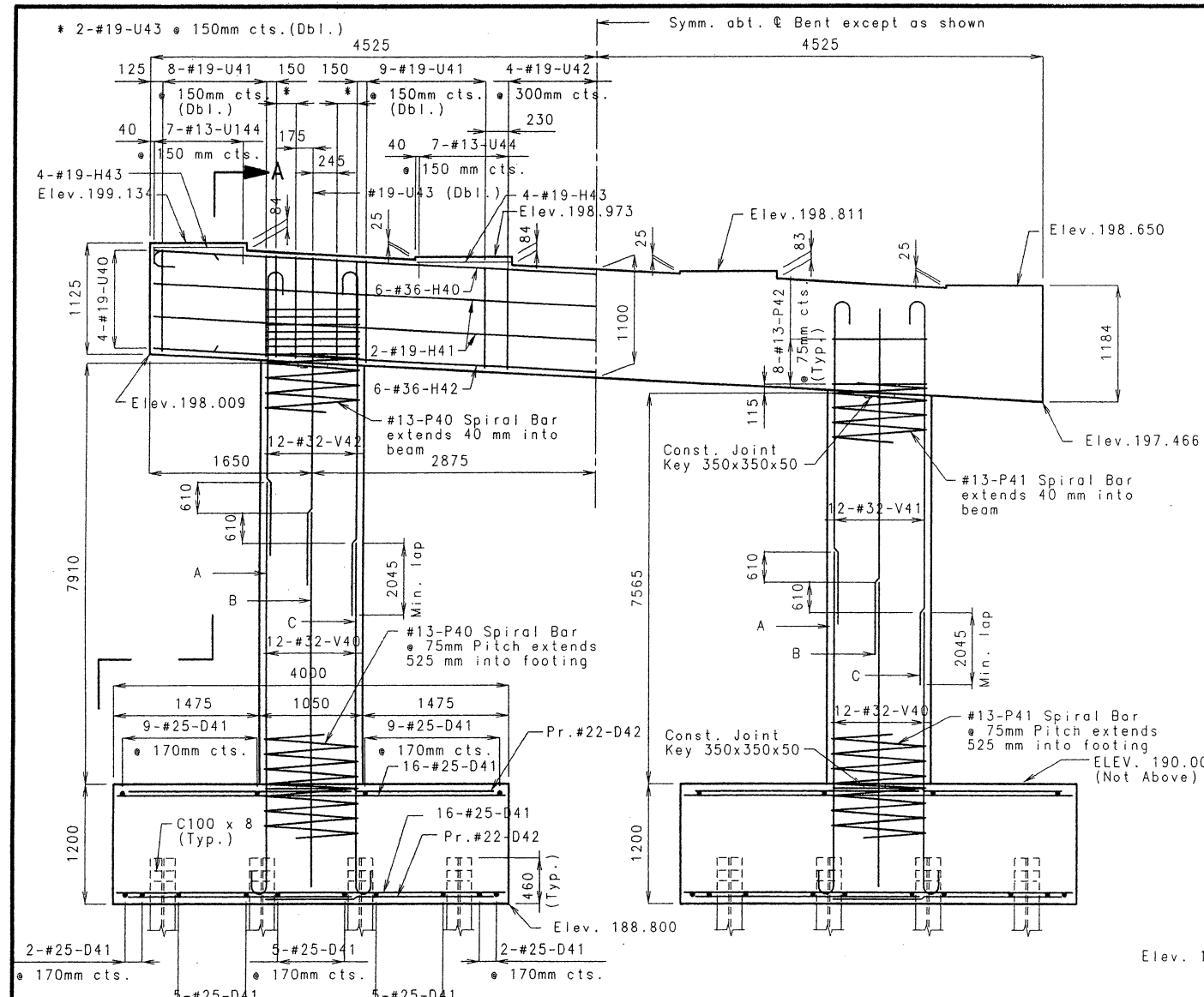
These Quantities are included in the Estimated Quantities table on sheet No. 8.



DATE 12-4-9

UNIT 4

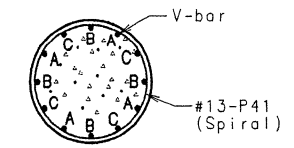
ST. LOUIS COUNTY A5682



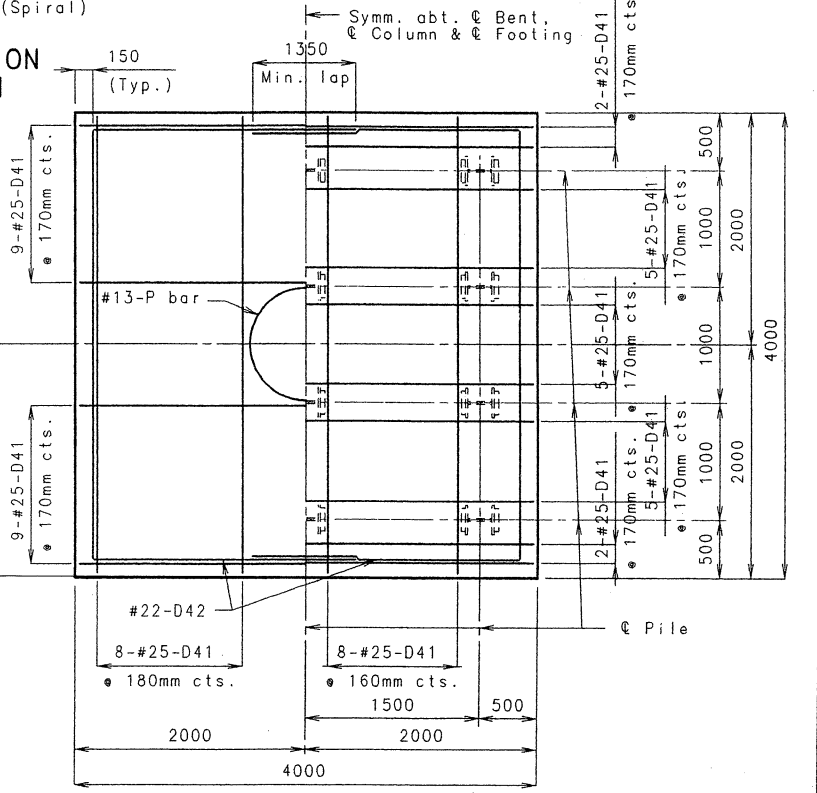
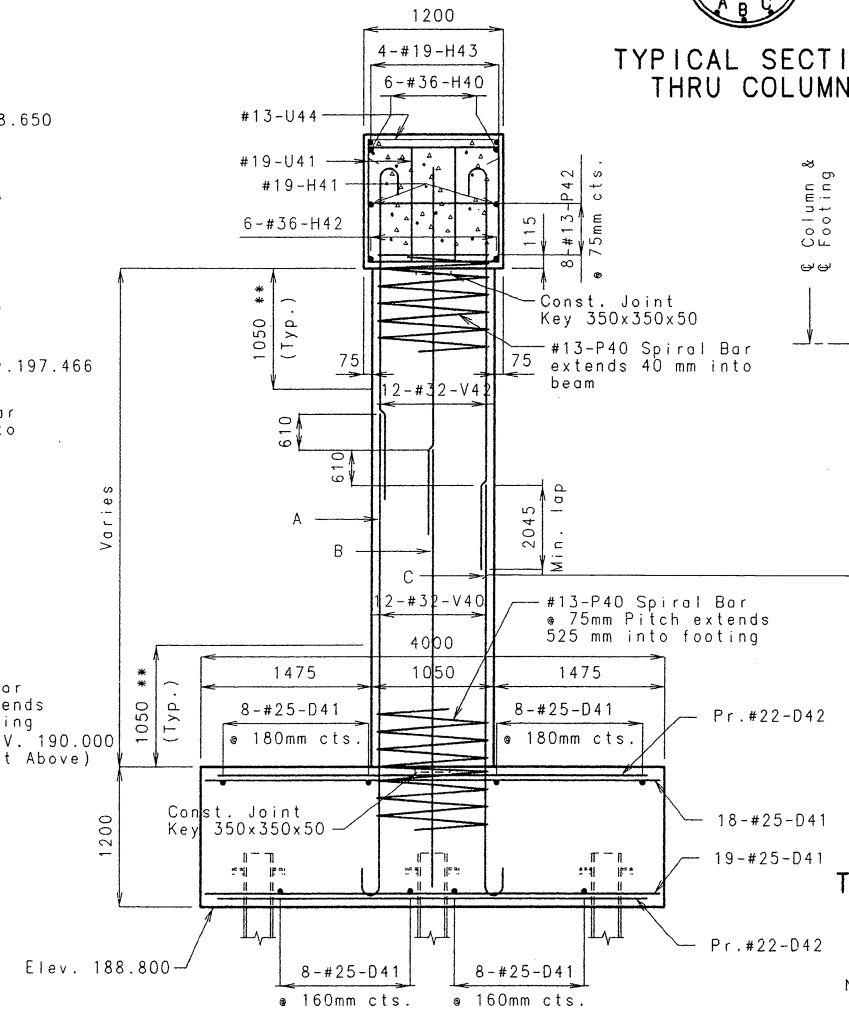
Detailed May 1997
Checked Oct. 1997

DETAILS OF INTERMEDIATE BENT NO. R4

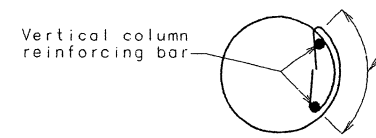
** Lapping of spiral reinforcement in this range is not permitted.



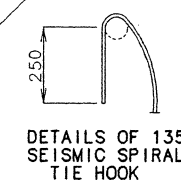
TYPICAL SECTION THRU COLUMN



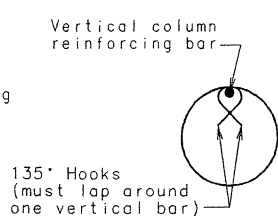
Note: For Details of Laminated Neoprene Bearing Pads see sheet no. 200.
For Details of Anchor Bolt Wells see sheet no. 201.
For alignment of bearings see sheet no. 201.
For Details of Steel Pile Splice and C100 x 8 see sheet no. 54.
All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15mm.
All Piles are HP 250 X 62.
At the contractors option, the hooks at V-Bars embedded in the beam cap may be orientated inward or outward.
All pile shall be driven vertical.



ANCHOR SPLICES IN SPIRAL AROUND VERTICAL BAR (USE FOR INTERMEDIATE SPLICES OF SPIRALS)



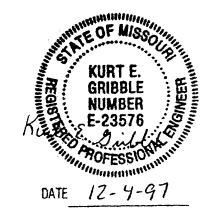
DETAILS OF 135° SEISMIC SPIRAL TIE HOOK



DETAIL OF SEISMIC STIRRUP BAR (#13-P42)

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. R4		
ITEM		QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER	95
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER	168.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER	64.0
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM	6915

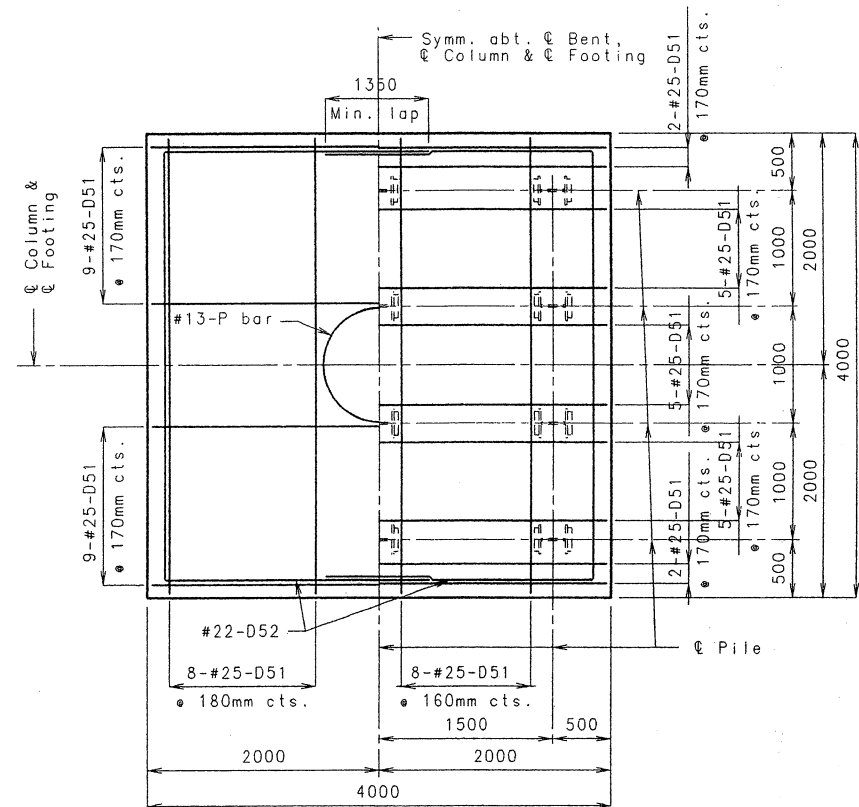
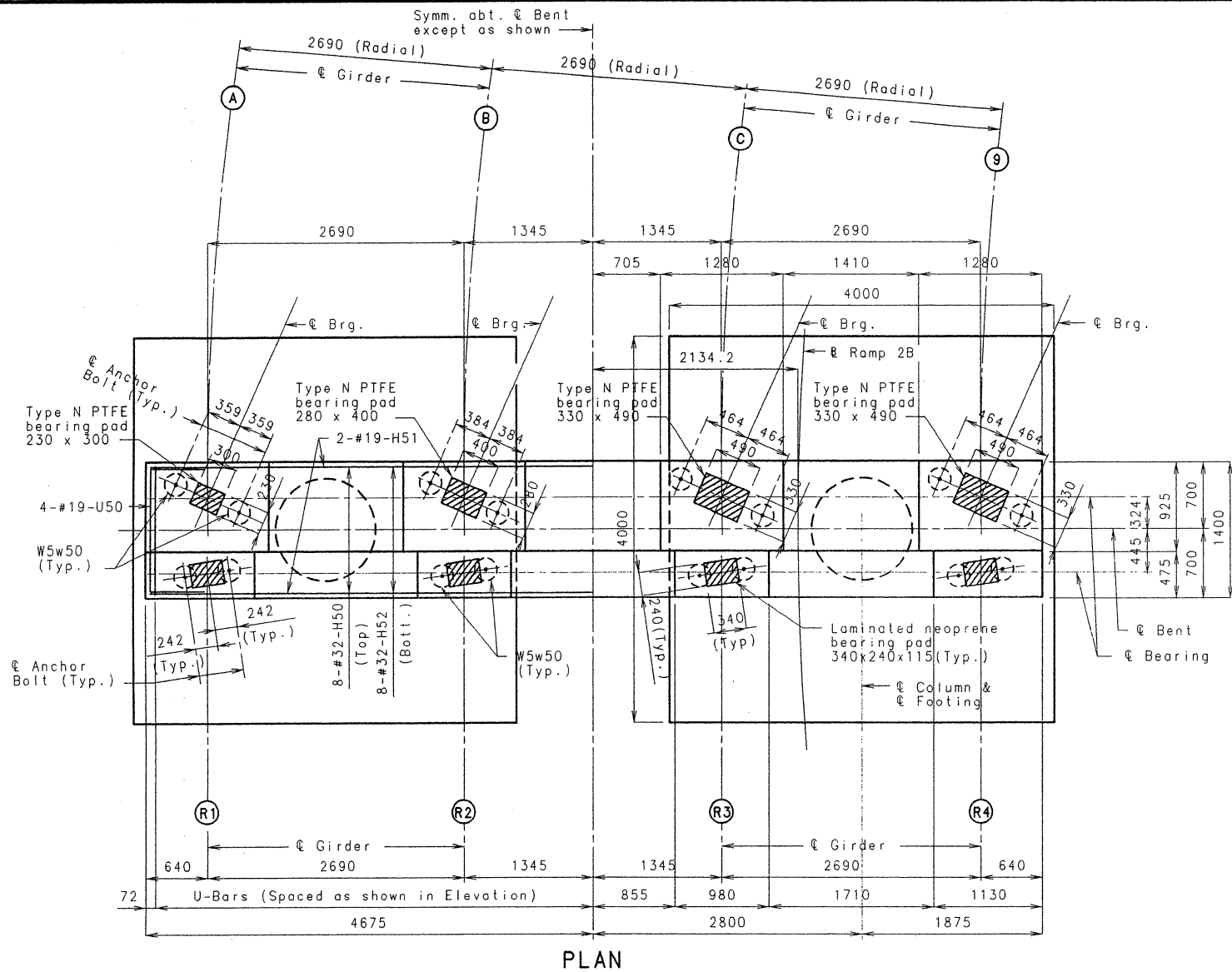
These Quantities are included in the Estimated Quantities table on sheet No. 8.



DATE 12-4-97

UNIT 4

ST. LOUIS COUNTY A5682



HALF PLAN OF FOOTING SHOWING TOP REINFORCEMENT HALF PLAN OF FOOTING SHOWING BOTTOM REINFORCEMENT

Note: For Elevation of bent and section thru bent, see sheet no. 59.

For Details of Laminated Neoprene Bearing Pads see sheet no. 200.

For Details of Type "N" PTFE Bearings, see sheet no. 107.

For Details of Anchor Bolt Wells see sheet no. 201.

For Plan of Anchor Bolt Wells and Bearing Alignment see sheets no. 108 and 201.

For Details of Steel Pile Splice and C100 x 8 see sheet no. 54.

All reinforcing bars in the top of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 15mm.

SUBSTRUCTURE QUANTITIES FOR INT. BT. NO. R5

ITEM	QUANTITY
CLASS 1 EXCAVATION - METRIC	CU. METER 95
STRUCTURAL STEEL PILE (250 mm) - METRIC	METER 144.0
CLASS B CONCRETE (SUBSTR) - METRIC	CU. METER 70.7
REINFORCING STEEL (BRIDGES) - METRIC	KILOGRAM 3270
REINFORCING STEEL (EPOXY COATED) - METRIC	KILOGRAM 3950

These Quantities are included in the Estimated Quantities table on sheet No. 8.



Detailed Sept. 1997
Checked Oct. 1997

DETAILS OF INTERMEDIATE BENT NO. R5

Sheet No. 60 of 236

UNIT 4
ST. LOUIS COUNTY
A5682

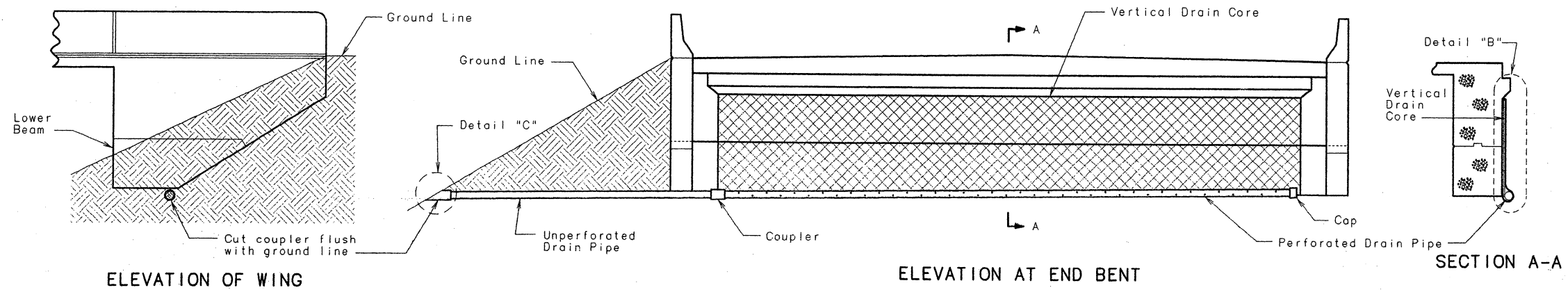
STATE	PROJ. NO.	SHEET NO.
MO.		94

GENERAL NOTES:

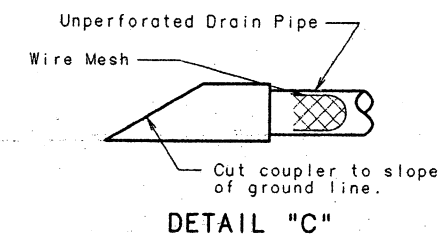
Drain pipe may be either 150 mm diameter corrugated metallic-coated steel pipe underdrain, 100 mm diameter corrugated polyvinyl chloride (PVC) drain pipe, or 100 mm diameter corrugated polyethylene (PE) drain pipe.

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 40 mm (see Elevation at End Bent).

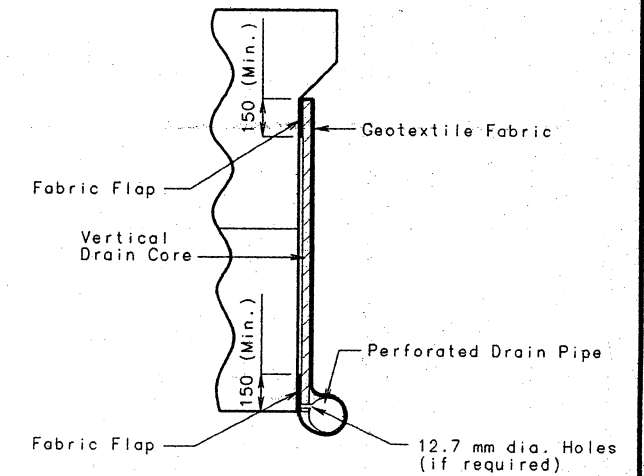
Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.



ELEVATION AT END BENT
VERTICAL DRAIN AT END BENTS



DETAIL "C"



DETAIL "B"

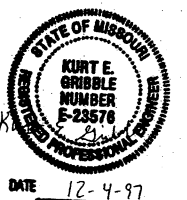
DRAIN 1M, Vert I, EBT, , A
Vert. Drain (Int E Bt) Revised:
March 1996 November 1996

Detailed Nov. 1997
Checked Nov. 1997

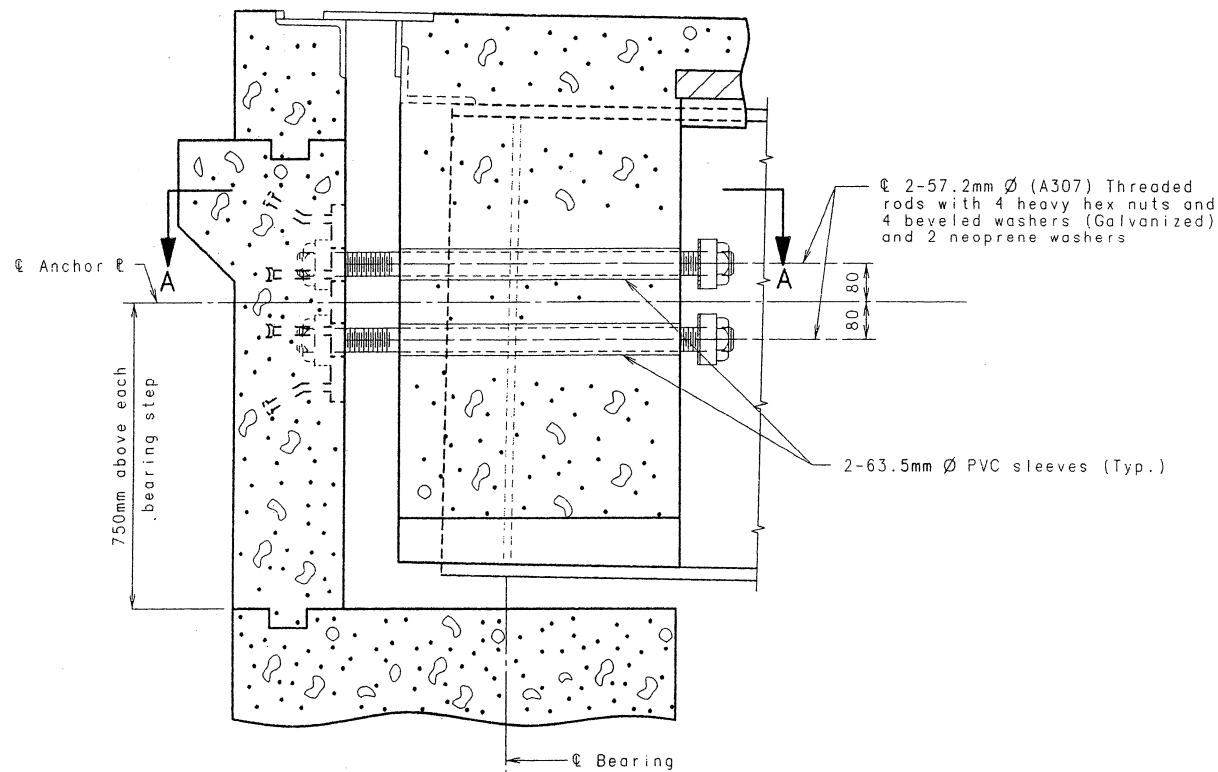
Sheet No. 61 of 236

ST. LOUIS COUNTY

A5682

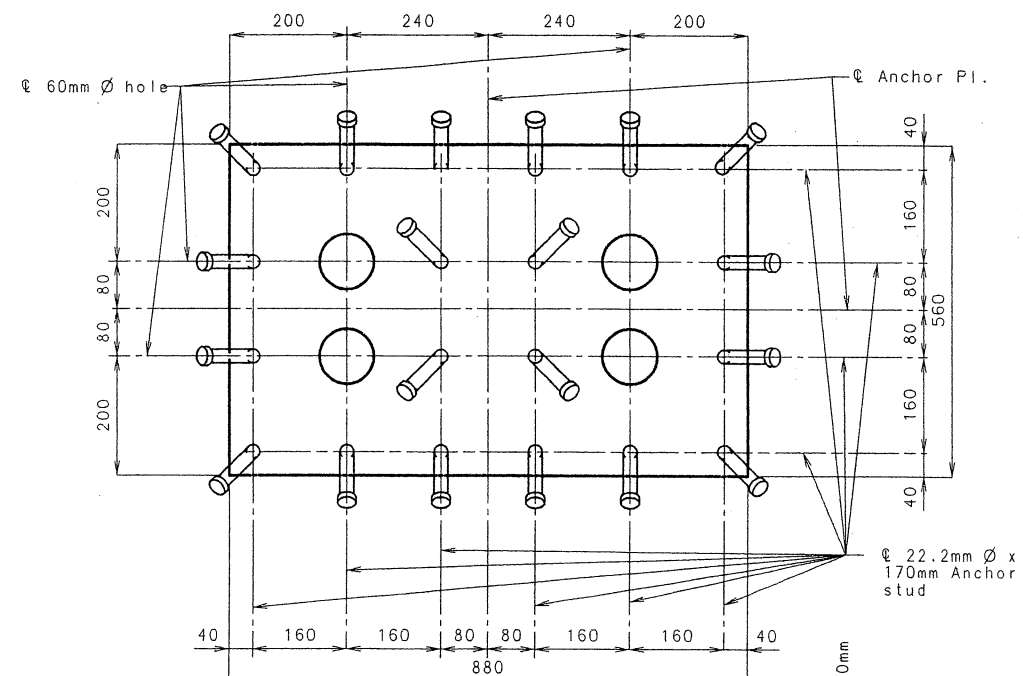


DATE 12-4-97

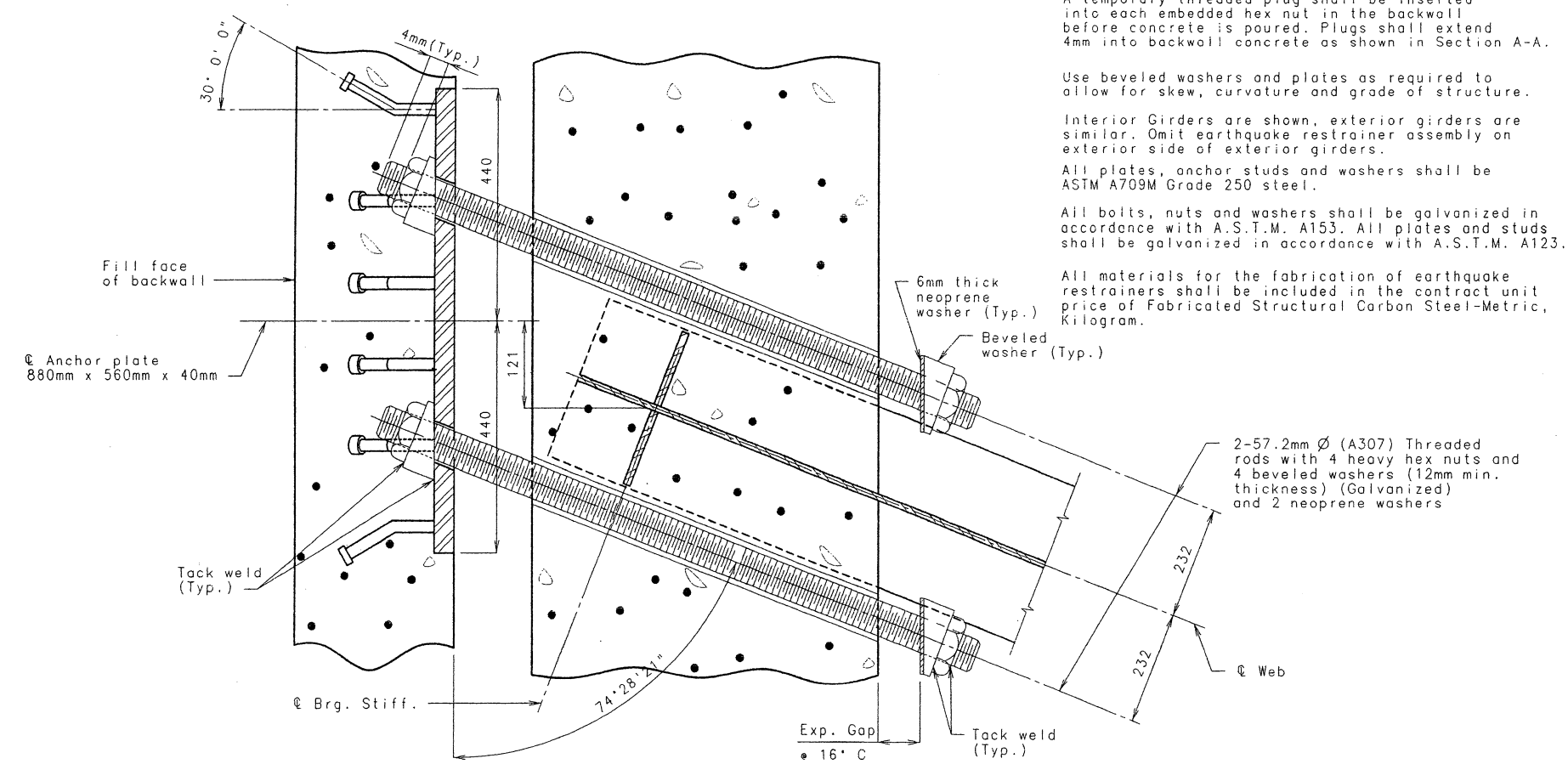


PART SECTION AT END BENT NO. 1

Note: Threaded rods shall be horizontal.
 @ 60mm Ø holes in anchor plates shall align with the 57.2 mm Ø threaded rods.



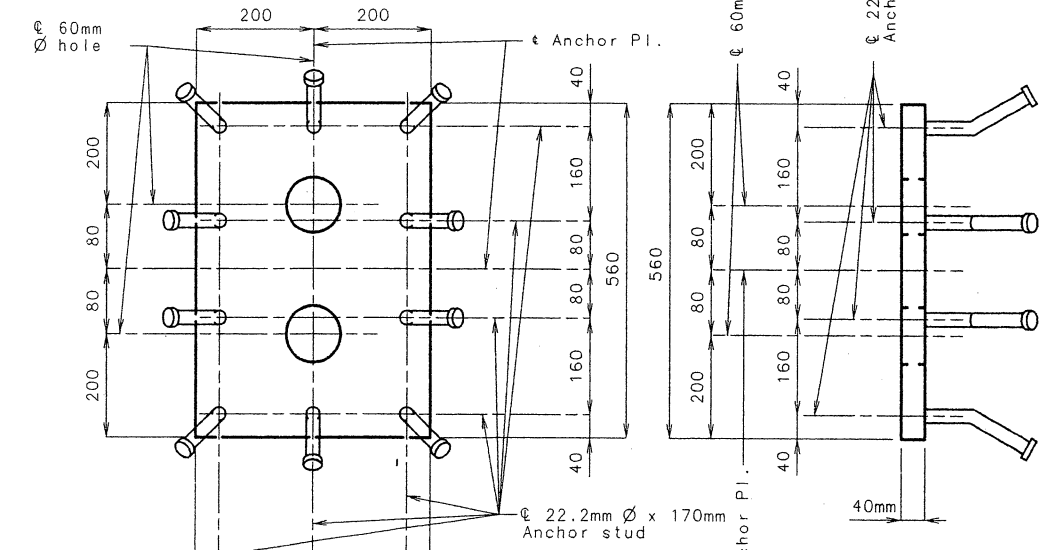
DETAIL OF ANCHOR PLATE FOR INTERIOR GIRDER



SECTION A-A

GENERAL NOTES:
 A temporary threaded plug shall be inserted into each embedded hex nut in the backwall before concrete is poured. Plugs shall extend 4mm into backwall concrete as shown in Section A-A.
 Use beveled washers and plates as required to allow for skew, curvature and grade of structure.
 Interior Girders are shown, exterior girders are similar. Omit earthquake restrainer assembly on exterior side of exterior girders.
 All plates, anchor studs and washers shall be ASTM A709M Grade 250 steel.
 All bolts, nuts and washers shall be galvanized in accordance with A.S.T.M. A153. All plates and studs shall be galvanized in accordance with A.S.T.M. A123.
 All materials for the fabrication of earthquake restrainers shall be included in the contract unit price of Fabricated Structural Carbon Steel-Metric, Kilogram.

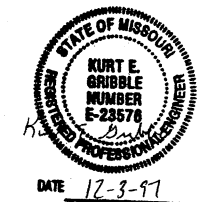
DETAILS OF EARTHQUAKE RESTRAINERS AT END BENT NO. 1



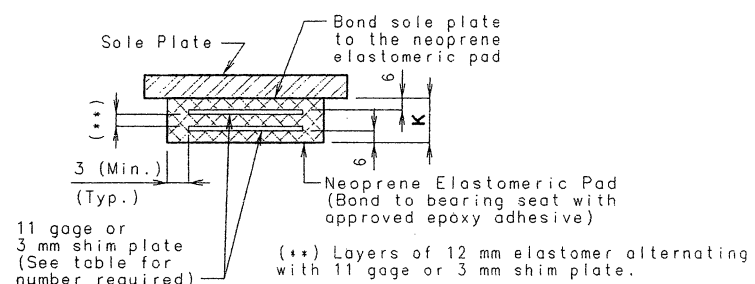
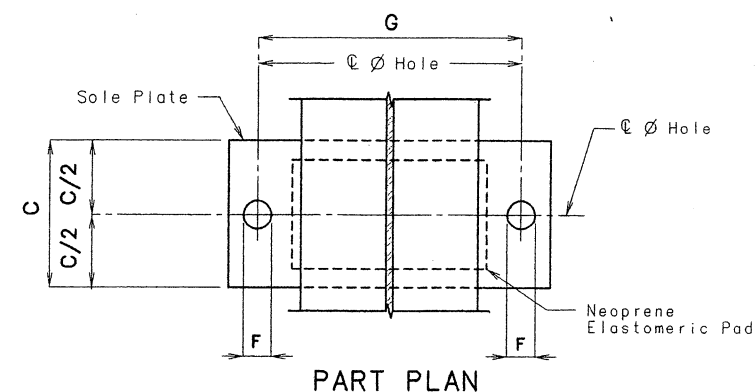
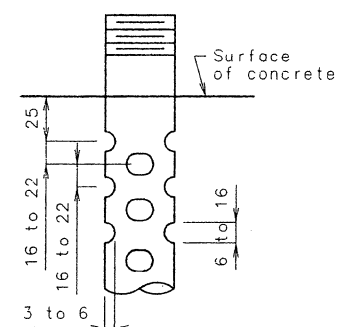
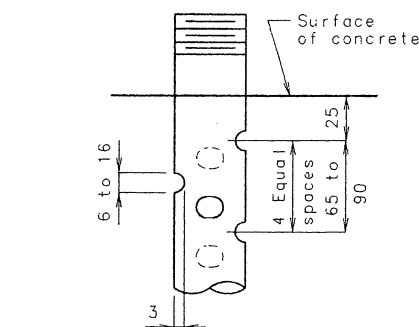
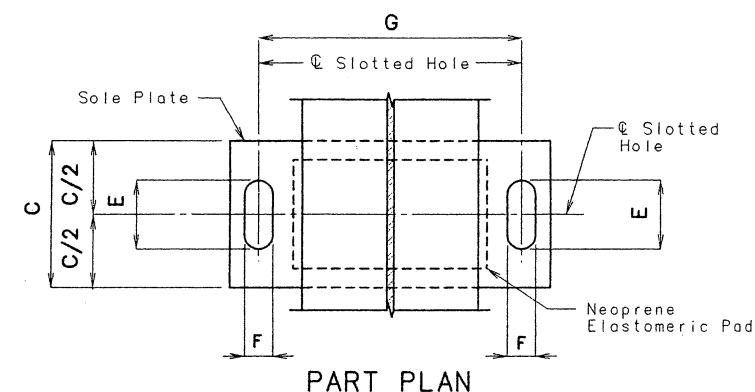
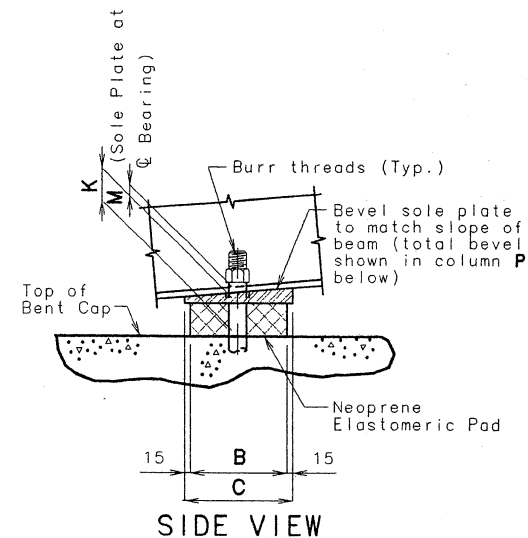
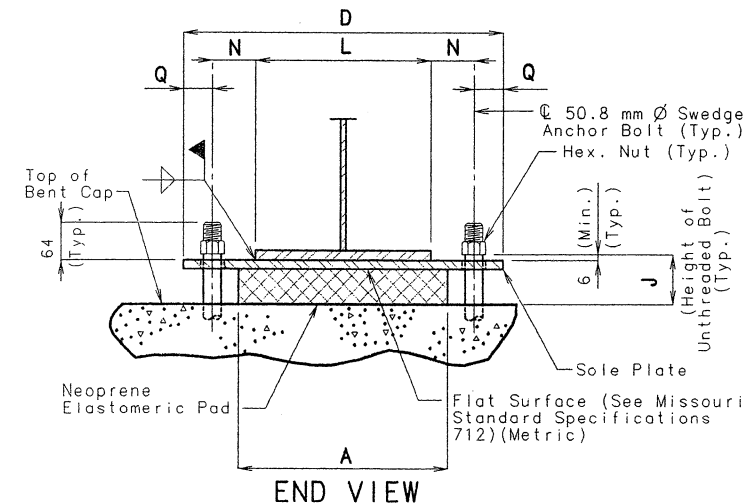
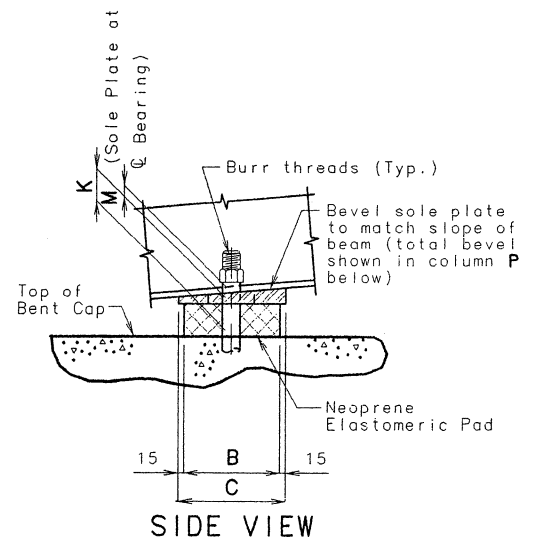
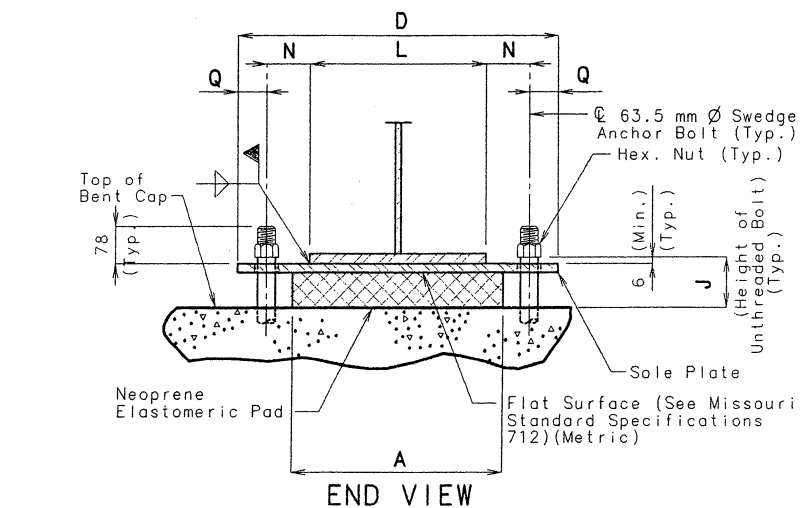
DETAIL OF ANCHOR PLATE FOR EXTERIOR GIRDER

TYPICAL END ELEVATION OF ANCHOR PLATE

DETAILS OF ANCHOR PLATES FOR EARTHQUAKE RESTRAINERS AT END BENT NO. 1



Detailed Oct. 1997
 Checked Nov. 1997



NEOPRENE ELASTOMERIC PAD

GENERAL NOTES:

Anchor bolts shall be 50.8 mm dia. at bent no. 4 and 63.5 mm dia. at bents no. 2, 3, 5 and 6 ASTM A709M Grade 345W steel swaged bolts and shall extend 457 mm at bent no. 4 and 635 mm at bents no. 2, 3, 5 and 6 into the concrete with ASTM A194M-2, 2H, or ASTM A563M-C, C3, D, DH, DH3 heavy hexagon nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 25 mm less than the extension into the concrete.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness) or galvanized in accordance with ASTM A153.

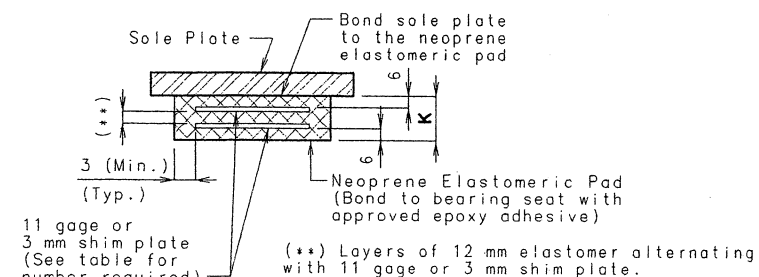
The neoprene elastomeric pads shall be 60 durometer. The neoprene pad shall be bonded to the bearing seat with an epoxy adhesive as approved by the bearing manufacturer for bonding neoprene to concrete.

The sole plate shall be furnished with the bearing and field welded to the girders.

Structural steel for the sole plate shall be ASTM A709M Grade 250 and shall be coated with a minimum of 2 coats of inorganic zinc primer (125 micrometers minimum thickness).

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.

Payment for the sole plate, anchor bolts, and heavy hexagon nuts shall be included in the cost of the bearing assembly. See Special Provisions.



NEOPRENE ELASTOMERIC PAD

EXPANSION BEARINGS															
BENT NO.	GIRDERS	A	B	C	D	E	F	G	H	I	J	K	L	M	N
2	1-8	410	500	530	730	150	74	520	182	135	380	38	70	4	105
3	1-8	380	600	630	730	120	74	536	124	75	400	40	68	10	97
5	1-8	380	600	630	730	120	74	536	126	75	400	42	68	16	97
6	1-8	410	500	530	730	152	74	536	186	135	400	42	68	16	97
TOTAL BEARINGS															32

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

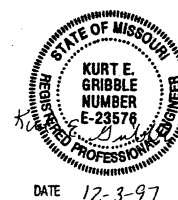
FIXED BEARINGS															
BENT NO.	GIRDERS	A	B	C	D	E	F	G	H	I	J	K	L	M	N
4	1-8	560	360	390	800	60	640	94	45	400	41	120	8	80	
TOTAL BEARINGS															8

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

DETAILS OF LAMINATED NEOPRENE BEARINGS (STEEL STRUCTURES)

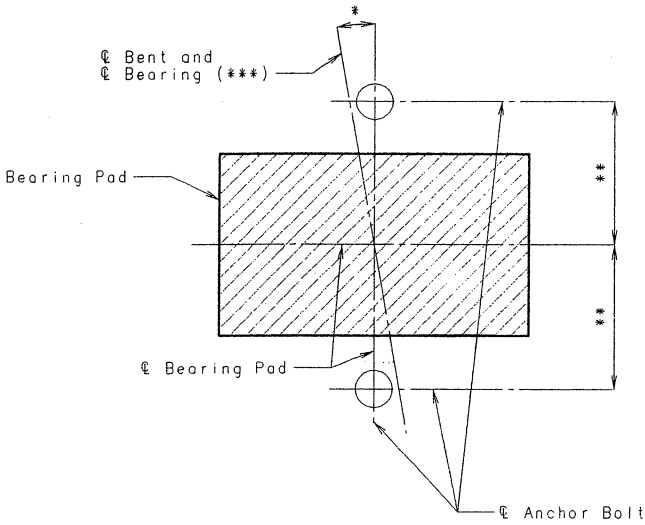
Sheet No. 64 of 236

ST. LOUIS COUNTY A5682



UNIT 1

(***) \varnothing Bent applies only to intermediate bents

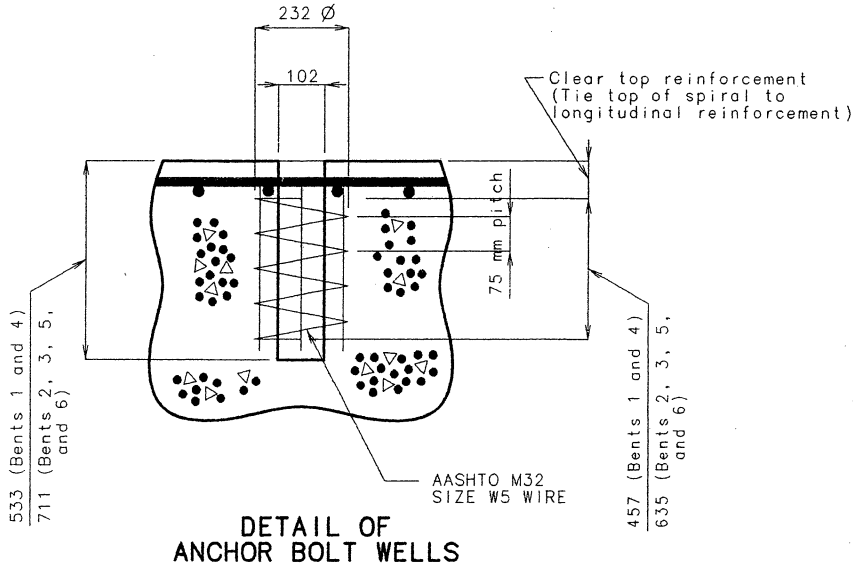


PLAN SHOWING ANCHOR BOLT
AND BEARING PAD ALIGNMENT

**	
Bent No. 1	285
Bent No. 2	260
Bent No. 3	268
Bent No. 4	320
Bent No. 5	268
Bent No. 6	268

Note: For Bearing Alignment and Anchor Bolt Details
at Hinge near bent no. 7 see sheet no. 108.
For details of Sledge Anchor Bolts see sheet no. 63.

*						
	Bent No. 1	Bent No. 2	Bent No. 3	Bent No. 4	Bent No. 5	Bent No. 6
Girder No. 1	15° 25' 55"	15° 0' 33"	14° 29' 29"	13° 29' 48"	0° 59' 10"	2° 2' 9"
Girder No. 2	15° 15' 25"	14° 59' 9"	14° 26' 48"	13° 27' 19"	0° 57' 55"	2° 0' 54"
Girder No. 3	15° 4' 53"	14° 57' 45"	14° 24' 8"	13° 24' 50"	0° 56' 41"	1° 59' 40"
Girder No. 4	15° 3' 45"	14° 56' 18"	14° 21' 29"	13° 22' 22"	0° 55' 27"	1° 58' 26"
Girder No. 5	15° 2' 35"	14° 54' 50"	14° 18' 51"	13° 19' 56"	0° 54' 13"	1° 57' 13"
Girder No. 6	15° 1' 25"	14° 53' 21"	14° 16' 13"	13° 17' 30"	0° 53' 00"	1° 56' 00"
Girder No. 7	15° 0' 13"	14° 51' 50"	14° 13' 37"	13° 15' 5"	0° 51' 48"	1° 54' 47"
Girder No. 8	14° 59' 0"	14° 50' 18"	14° 11' 2"	13° 12' 41"	0° 50' 36"	1° 53' 35"



DATE 12-2-97

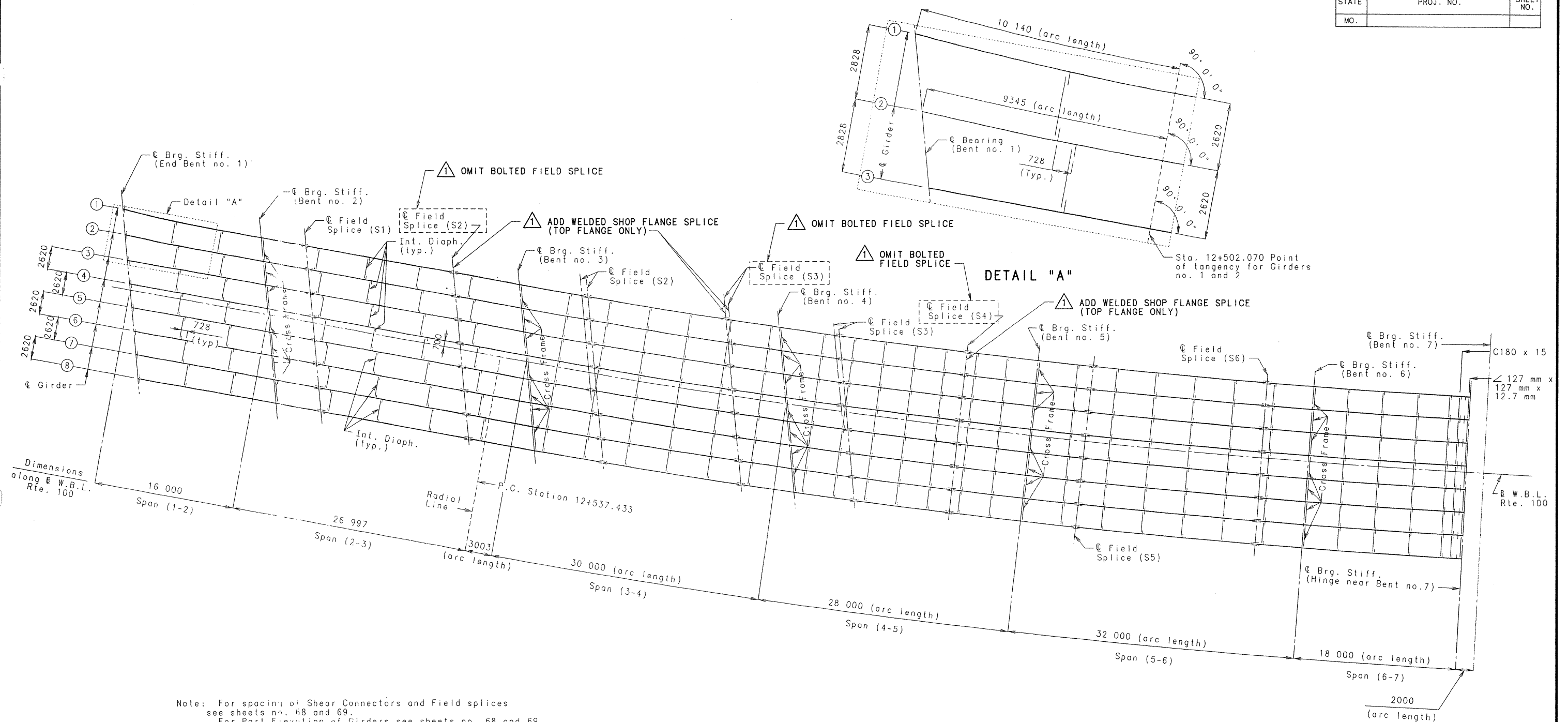
UNIT 1

Detailed Jan. 1997
Checked Aug. 1997

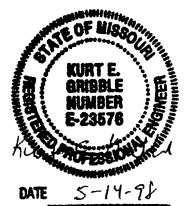
Sheet No. 65 of 236

ST. LOUIS COUNTY A5682

STATE	PROJ. NO.	SHEET NO.
MO.		



Note: For spacing of Shear Connectors and Field splices see sheets no. 68 and 69.
 For Part Elevation of Girders see sheets no. 68 and 69.
 For girder Curve Offsets see sheet no. 72.
 For detail of Intermediate Diaphragms, End Diaphragms and Crossframes see sheet no. 78.
 For detail of Field Splices see sheet no. 76.
 For detail of the end angle and channel diaphragm near the Hinged Girder conn see sheet no. 124.
 Longitudinal dimensions shown are horizontal dimensions (horizontal arc dimensions where appropriate) from C Brg. to C Brg. See Part Longitudinal section on sheet no. 67.
 For detail of Bearing Stiffeners and Int. Diaphragm Connection Plate see sheet no. 74.
 Int. Diaphragms from Span (3-4) through Span (6-7) shall be placed radially.
 Int. diaphragm connection plates shall be orientated as shown.
 For diaphragm spacing along girders, see sheets no. 70 and 71.
 For details of Concrete diaphragm at Bent no. 1 see sheet no. 77.



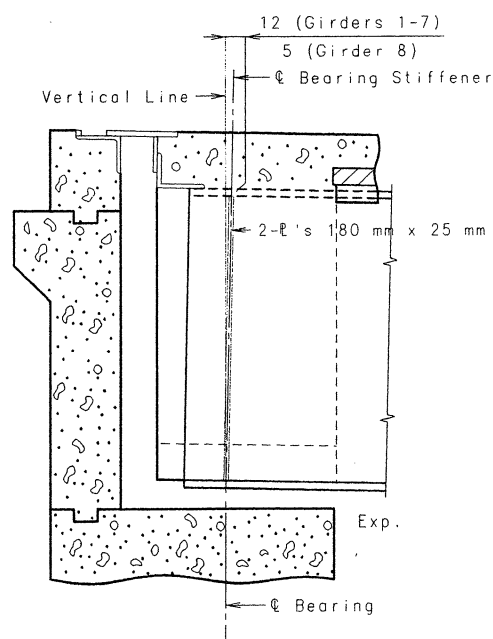
Detailed Jan. 1997
 Checked Aug. 1997

PART PLAN OF STRUCTURAL STEEL

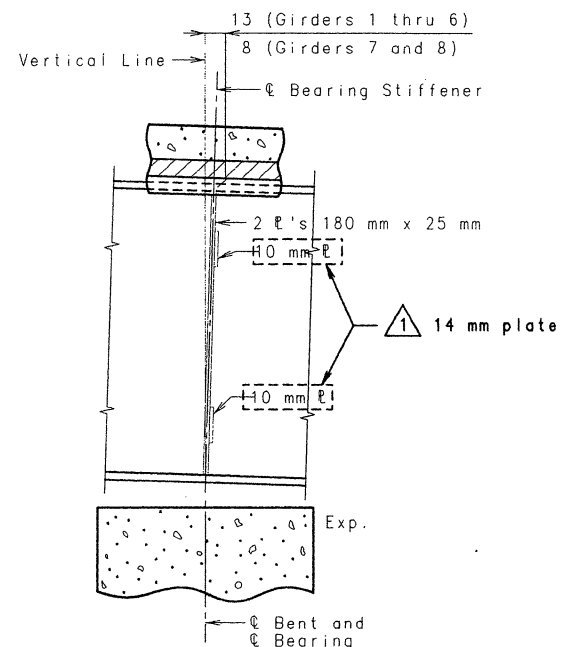
REVISED MAY 13, 1998

Sheet No. 66 of 236

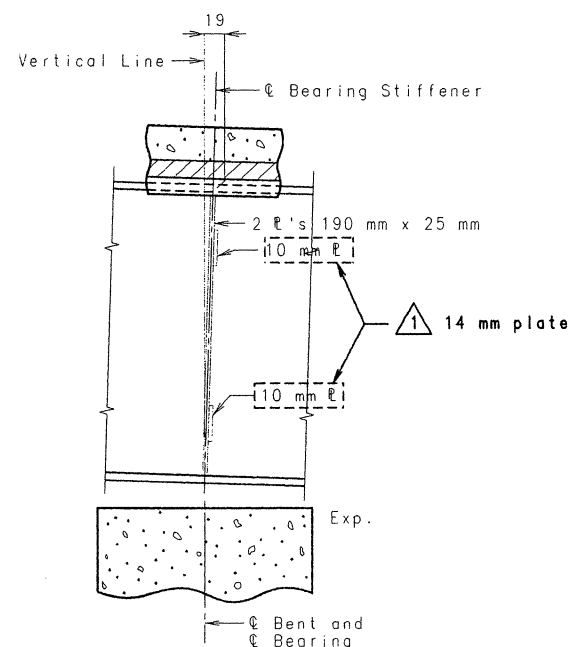
UNIT 1
 ST. LOUIS COUNTY A5682



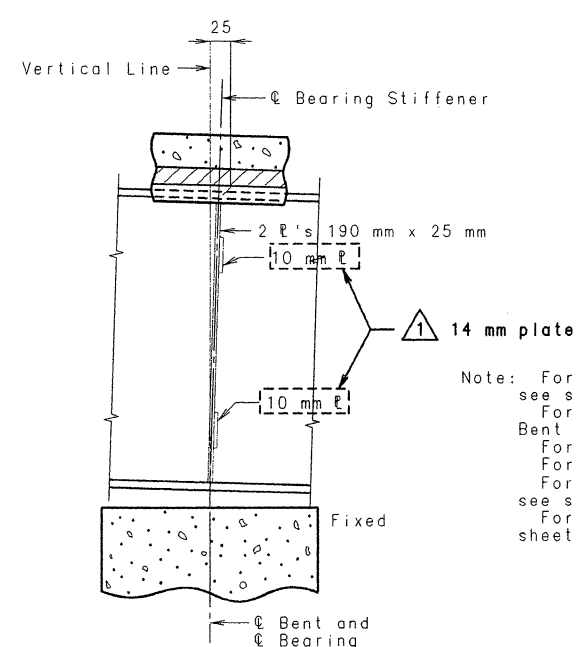
①



②

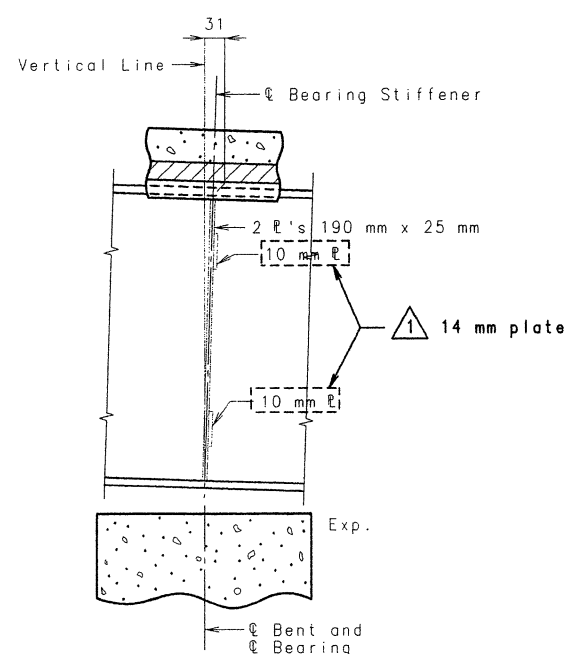


③

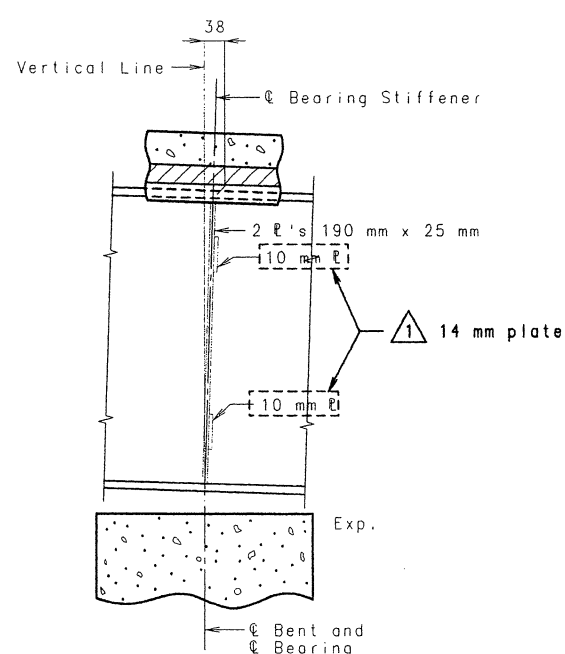


④

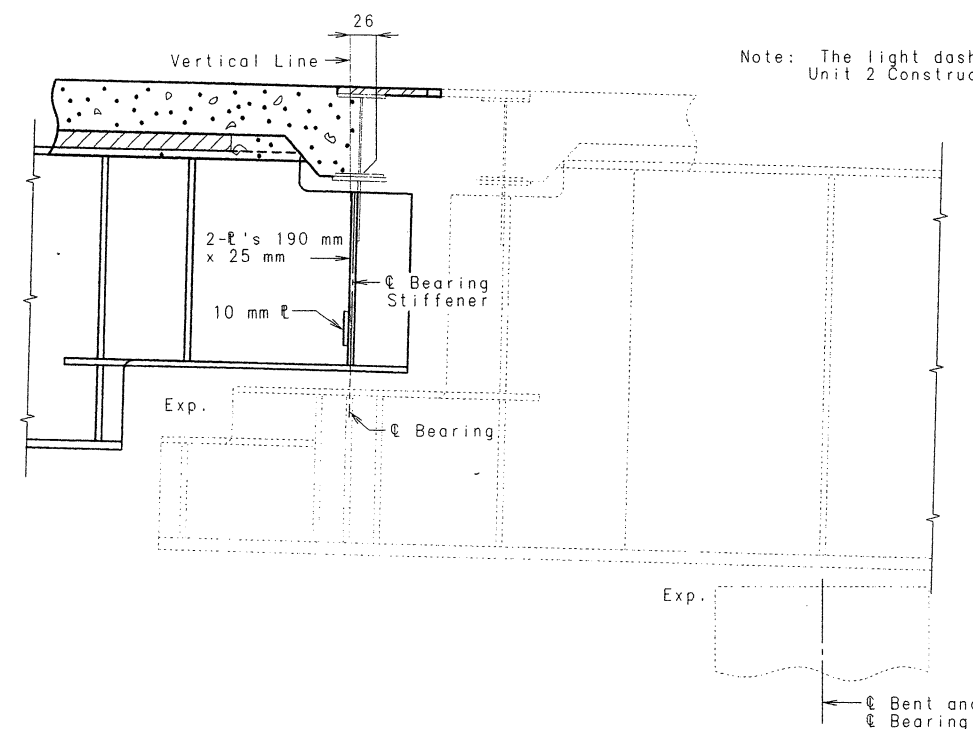
Note: For Details of Expansion Device at Bent no. 1 see sheet no. 91.
For Details of Expansion Device at hinge near Bent no. 7 see sheet no. 144.
For Plan of Structural Steel see sheet no. 66.
For Elevation of Girder see sheets no. 68 and 69.
For detail of hinged connection near Bent no. 7 see sheet no. 124.
For details of Earthquake Restrainers see sheet no. 62 and 98.



⑤



⑥



⑦

Note: The light dashed lines indicate Unit 2 Construction.



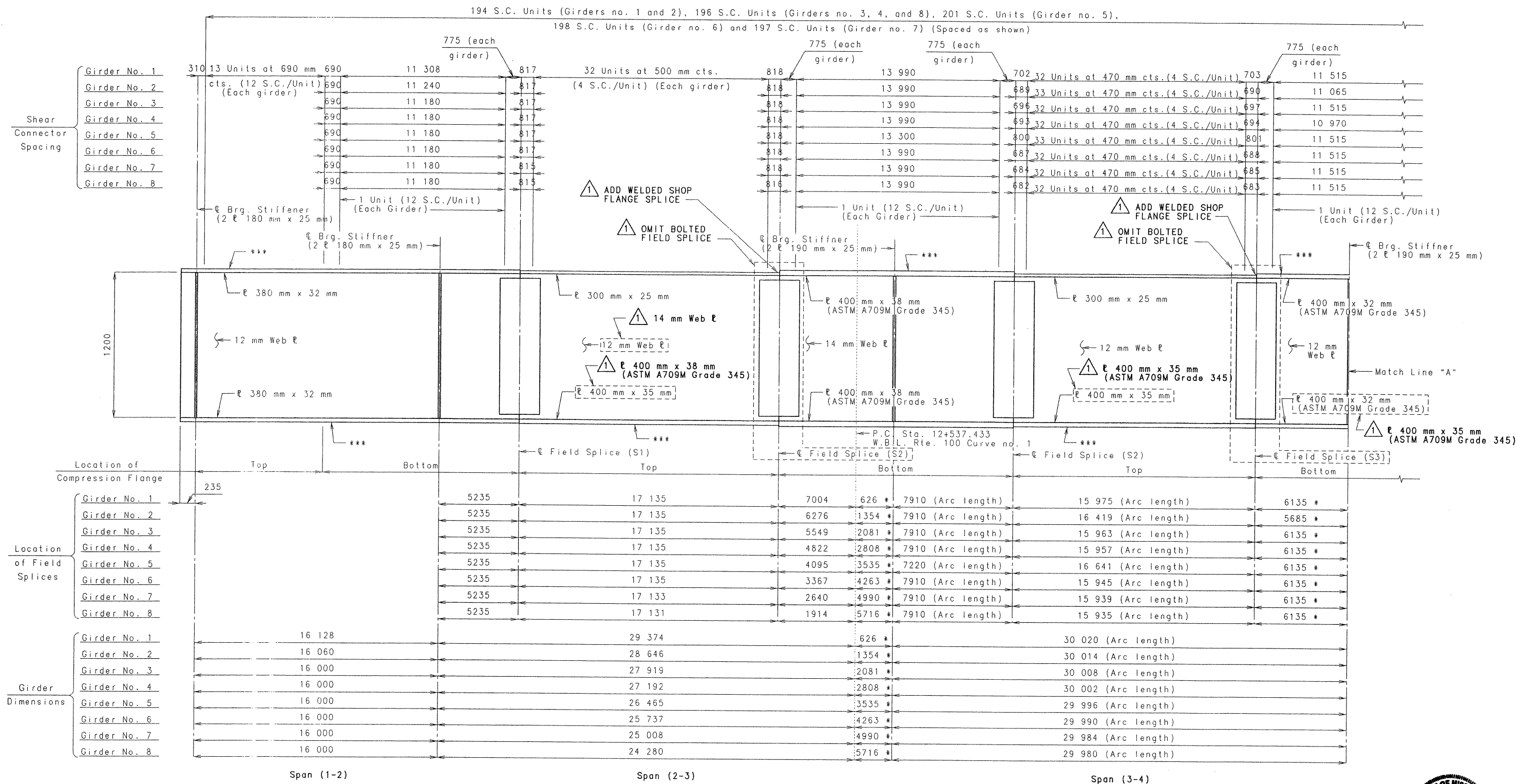
PART LONGITUDINAL SECTIONS

Detailed Feb. 1997
Checked Aug. 1997

① REVISED SEPT. 25, 1988

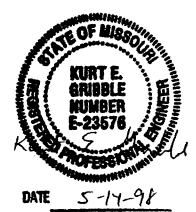
Sheet No. 67 of 236

UNIT 1
ST. LOUIS COUNTY A5682



Note: Plate girders shall be fabricated to conform to the Camber Diagram shown on sheet no. 85.
For detail of Shear Connectors see sheet no. 74.
Longitudinal dimensions are horizontal (horizontal arc dimensions where appropriate) from the C of brg. to the C of brg. See Part Longitudinal Section on sheet no. 67.
All web plates shall be subject to notch toughness requirements.
For plan of Structural Steel see sheet no. 66.
Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.
For detail of earthquake restrainers, see sheet no. 62.
For detail of Hinged Connection near Bent no. 7 see sheet no. 124.
For diaphragm spacing see sheets no. 70 and 71.

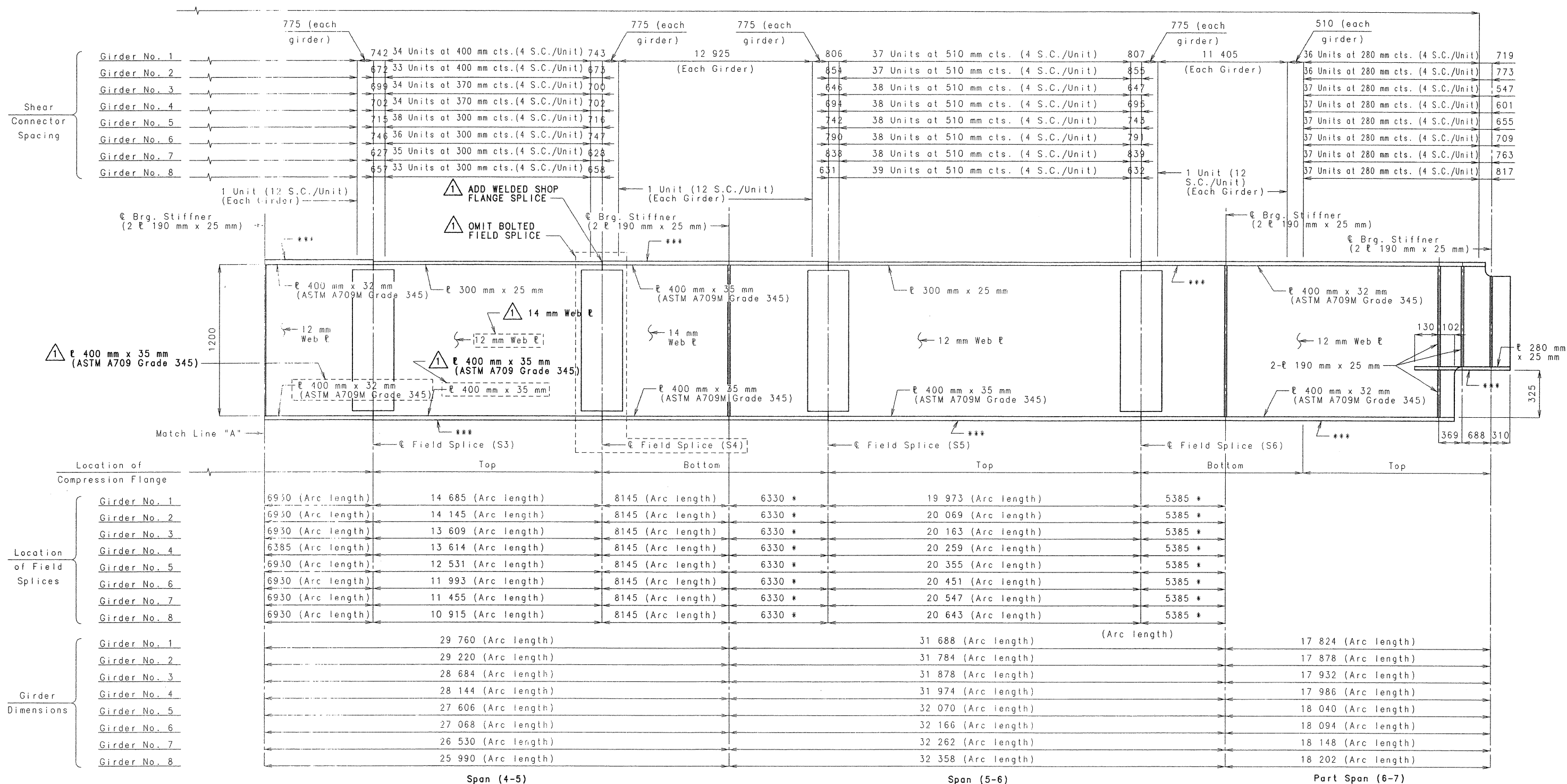
* Arc Length
*** Indicates flange plates subject to notch toughness requirements.



PART ELEVATION OF GIRDERS

REVISED MAY 13, 1998

Sheet No. 68 of 236



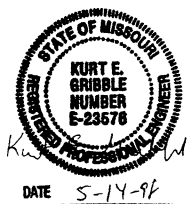
Note: Plate girders shall be fabricated to conform to the Camber Diagram shown on sheet no. 85.
 For detail of Shear Connectors see sheet no. 74.
 Longitudinal dimensions are horizontal (horizontal arc dimensions where appropriate) from the C of brg. to the C of brg. See Part Longitudinal Section on sheet no. 67.
 All web plates shall be subject to notch toughness requirements.
 For plan of Structural Steel see sheet no. 66.
 Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.
 For details of earthquake restrainers, see sheet no. 98.
 For details of Hinged Connection near Bent no. 7 see sheet no. 124.
 For diaphragm spacing see sheets no. 70 and 71.

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

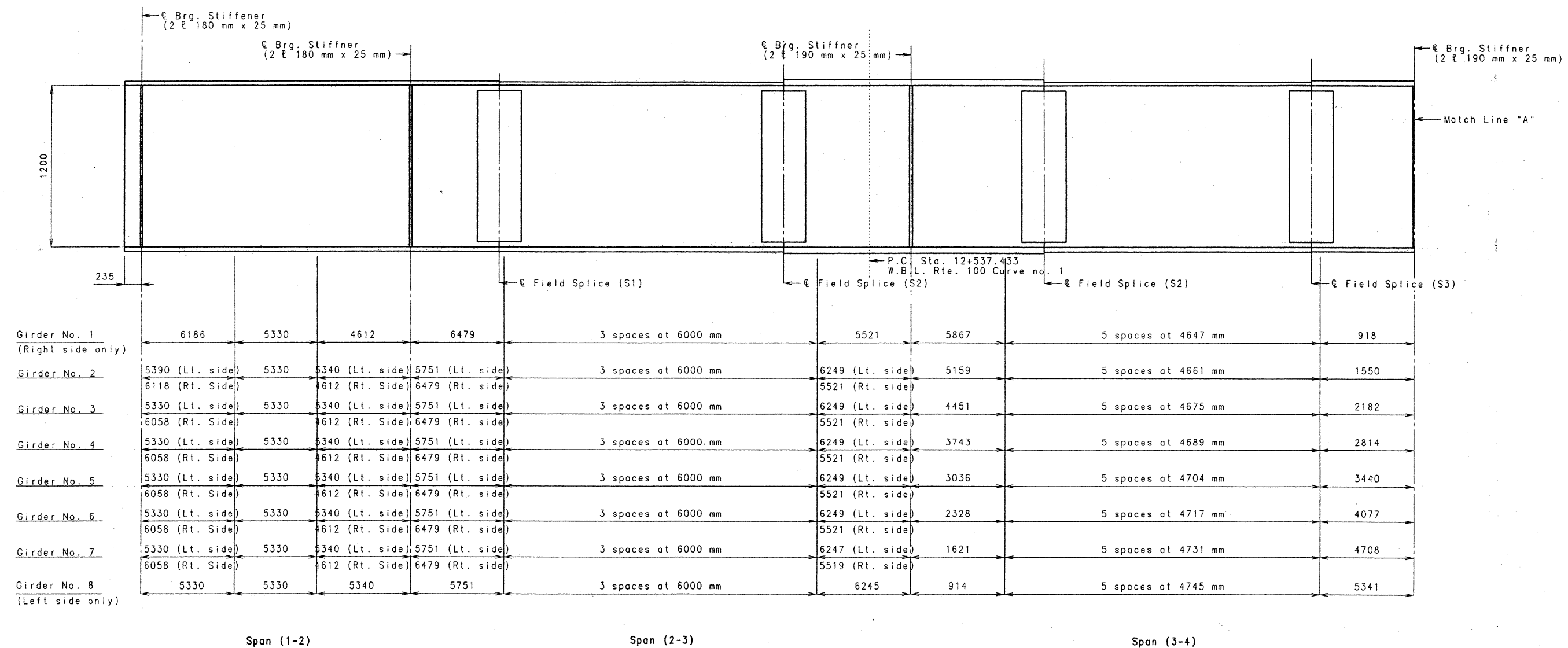
PART ELEVATION OF GIRDERS

REVISED MAY 13, 1998

Sheet No. 69 of 236



DATE 5-14-96

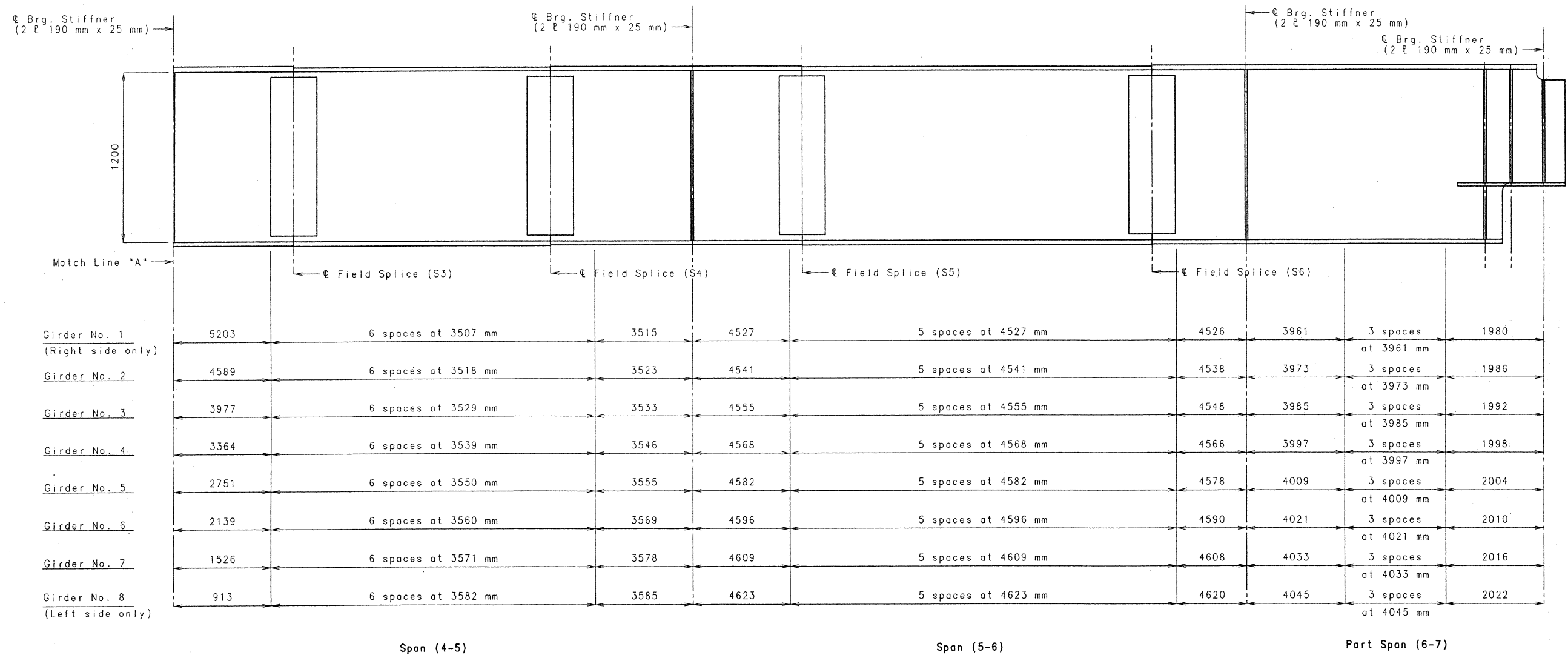


Note: For Plan of Structural Steel see sheet no. 66.
 For details of Intermediate Diaphragms, End Diaphragms
 and Crossframes see sheet no. 78.
 Longitudinal dimensions are shown horizontal.
 For details of Bearing Stiffeners and Intermediate
 Diaphragm connection plates see sheet no. 74.
 Intermediate Diaphragms from Span (3-4) through Span
 (6-7) shall be placed radially.

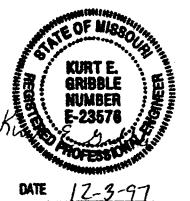


PART ELEVATION OF GIRDERS SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS

Detailed Jan. 1997
 Checked Aug. 1997



Note: For Plan of Structural Steel see sheet no. 66.
For details of Intermediate Diaphragms, End Diaphragms
and Crossframes see sheet no. 78.
Longitudinal dimensions are shown horizontal.
For details of Bearing Stiffeners and Intermediate
Diaphragm connection plates see sheet no. 74.
Intermediate Diaphragms from Span (3-4) through Span
(6-7) shall be placed radially.

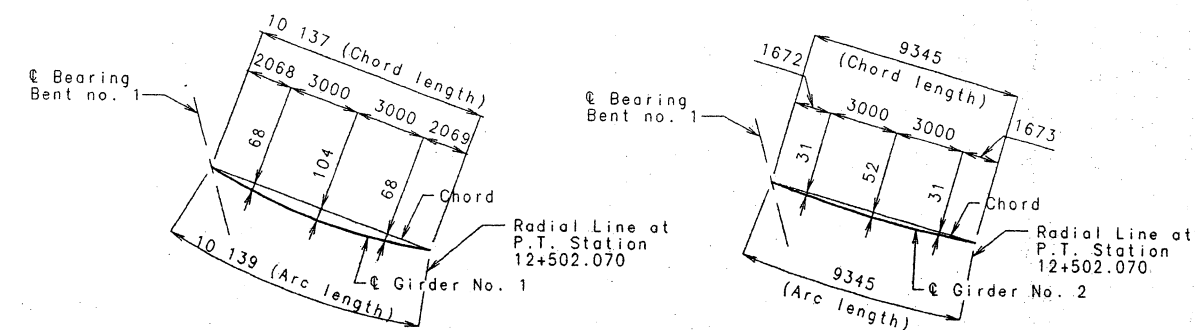


PART ELEVATION OF GIRDERS SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS

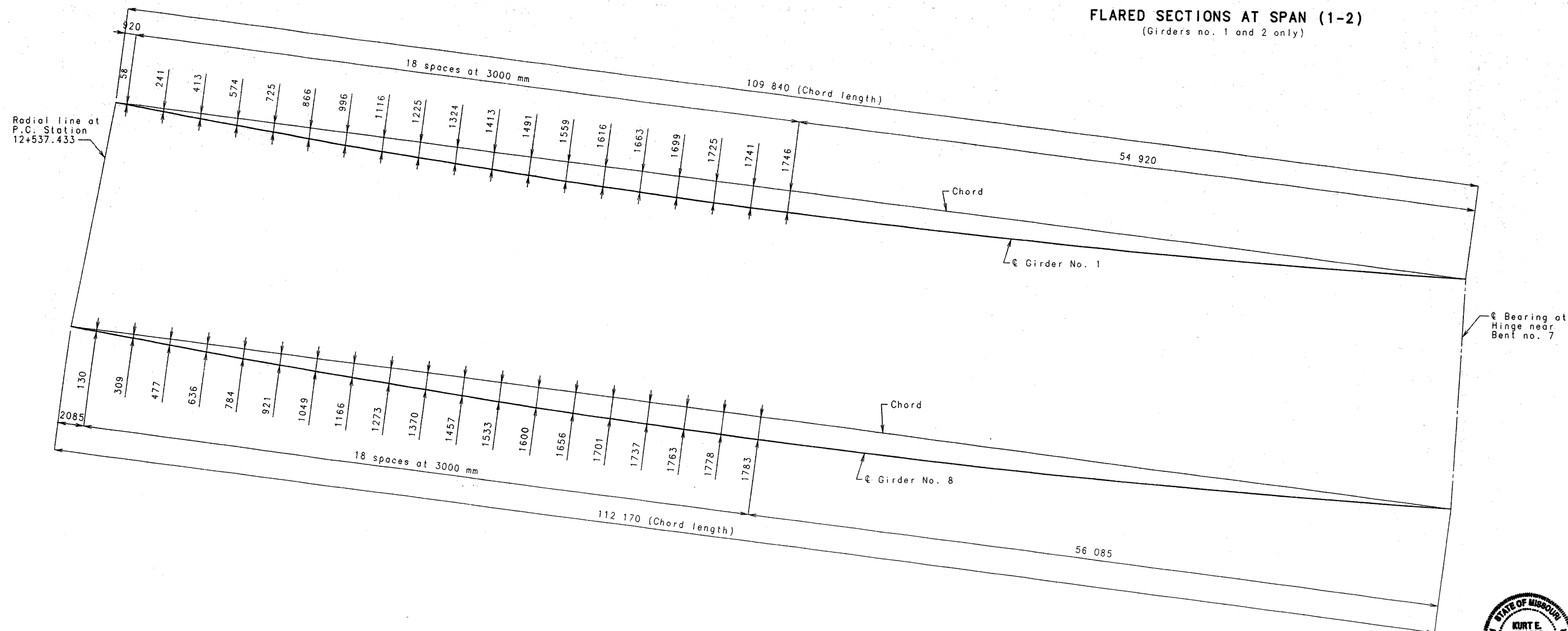
Detailed Jan. 1997
Checked Aug. 1997

Sheet No. 71 of 236

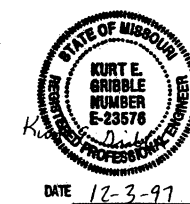
ST. LOUIS COUNTY UNIT 1 A5682



FLARED SECTIONS AT SPAN (1-2)
(Girders no. 1 and 2 only)



Note: Dimensions shown are horizontal.



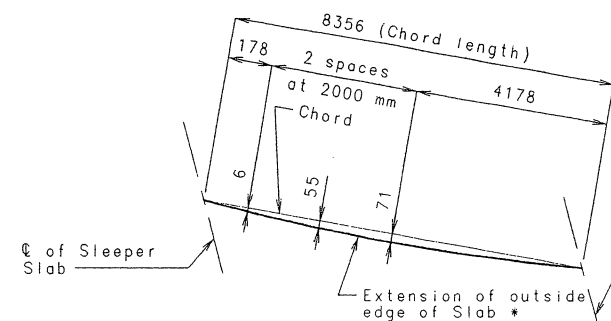
Detailed Mar. 1997
Checked Aug. 1997

EXTERIOR GIRDER CURVE OFFSETS

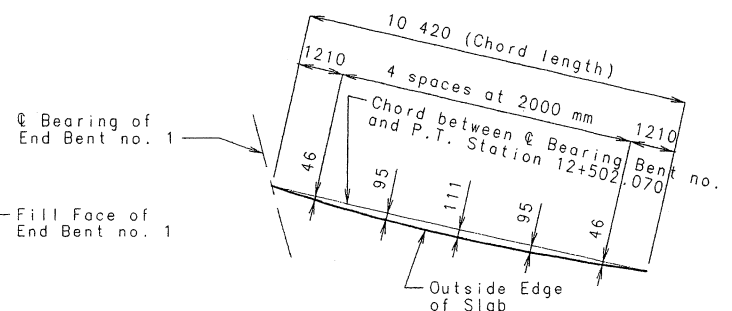
Sheet No. 72 of 236

ST. LOUIS COUNTY UNIT 1
A5682

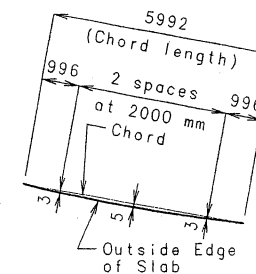
* Extension of Outside Face of Bridge Safety Barrier Curb



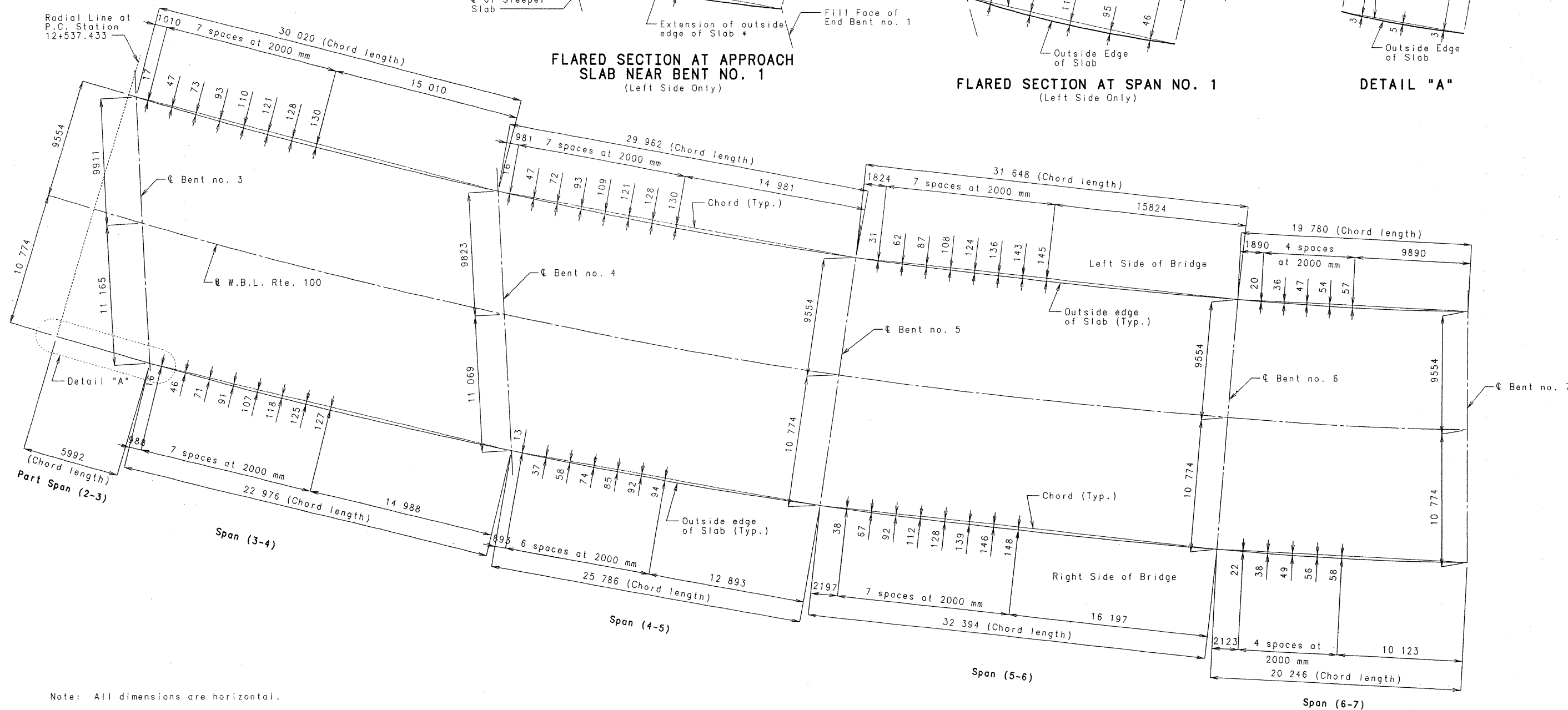
FLARED SECTION AT APPROACH SLAB NEAR BENT NO. 1
(Left Side Only)



FLARED SECTION AT SPAN NO. 1
(Left Side Only)



DETAIL "A"



Note: All dimensions are horizontal.

PART PLAN OF SLAB SHOWING CURVE ORDINATES

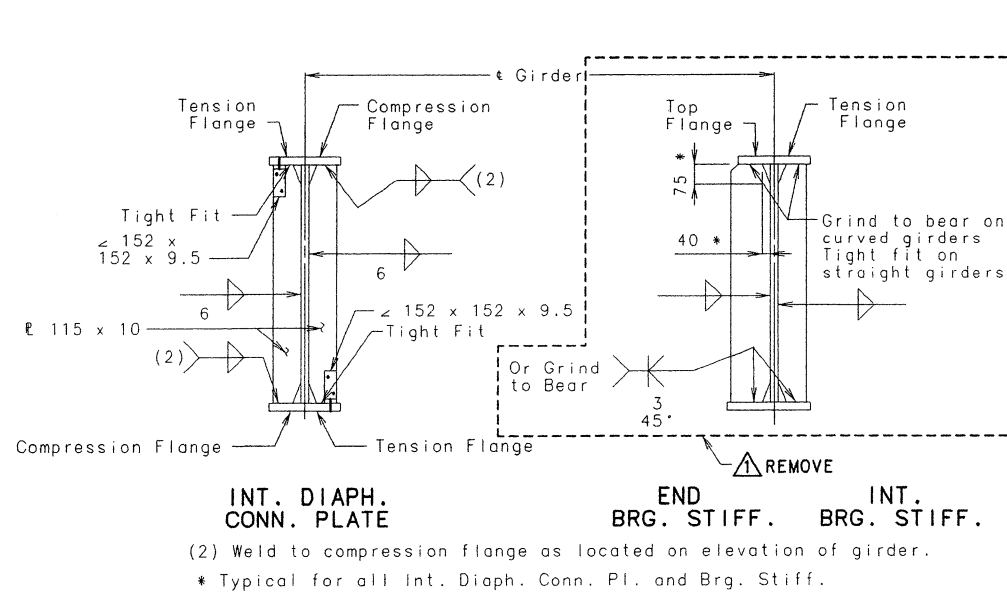
Detailed Jan. 1997
Checked Aug. 1997

Sheet No. 73 of 236

ST. LOUIS COUNTY

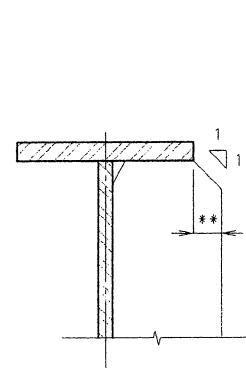
UNIT 1
A5682



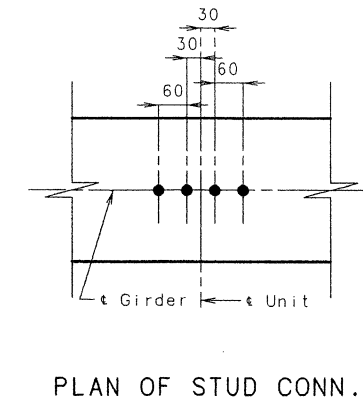
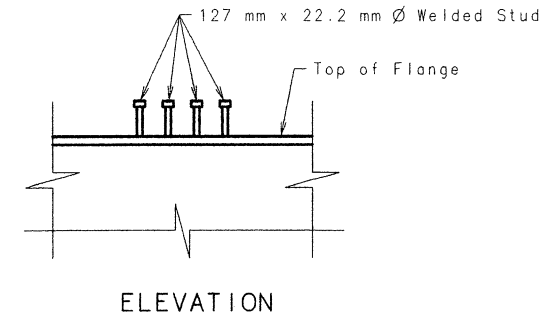
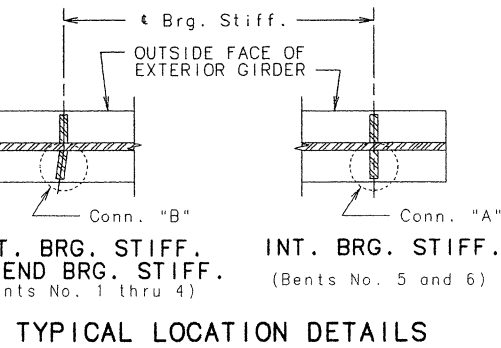
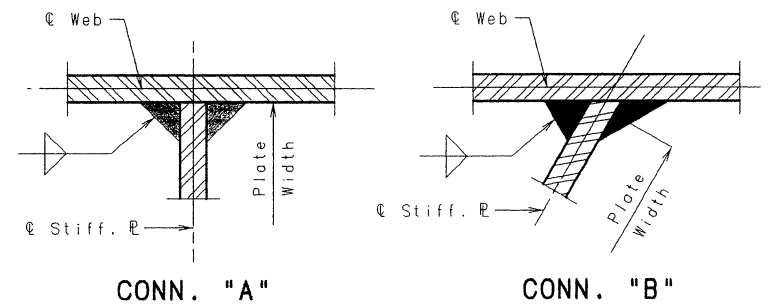


WELDING DETAILS

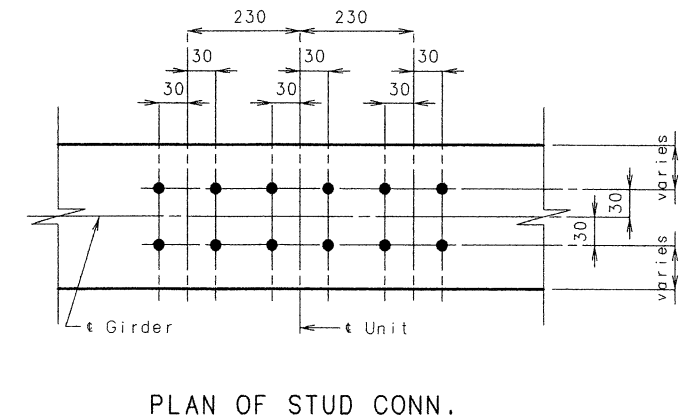
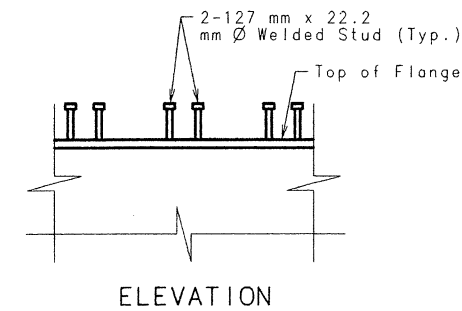
Note: For details of stiffeners at Hinge near bent no. 7 see sheet no. 124.
 For details of flange connection angle see sheet no. 78.



** When dimension exceeds 12 mm, bevel stiffener plate.
BEVELED STIFFENER PLATE

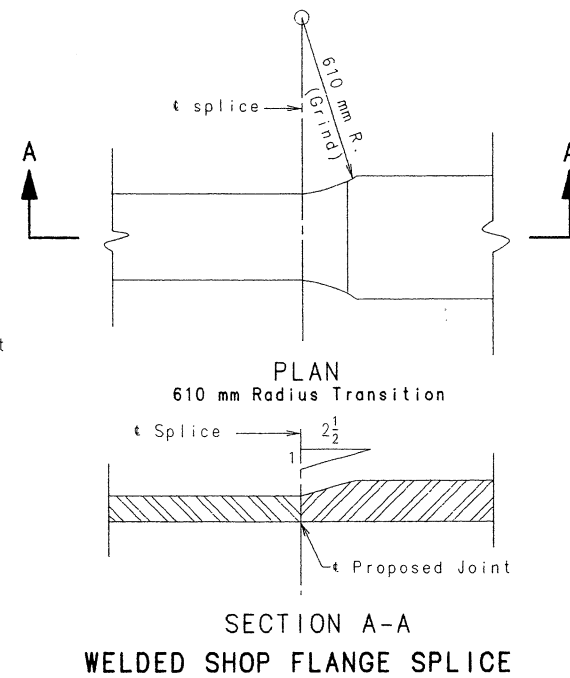
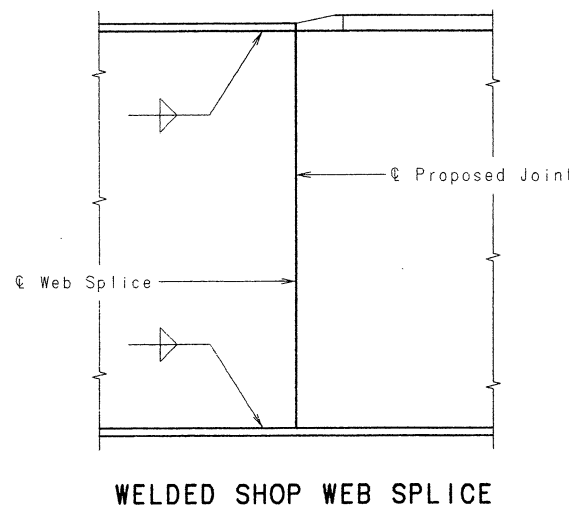
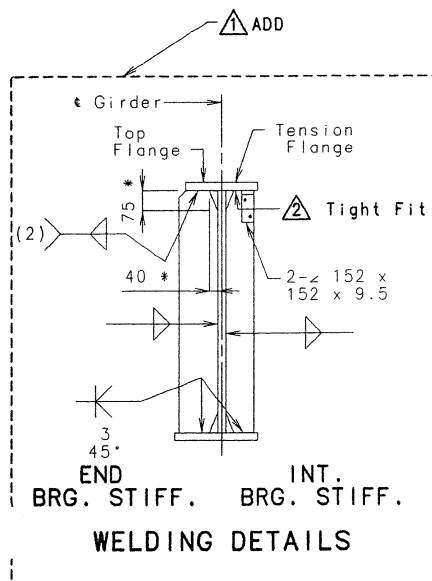


4 SHEAR CONN. PER UNIT

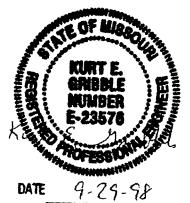


12 SHEAR CONN. PER UNIT
DETAILS OF SHEAR CONNECTORS

Note: For Location of Shear Connectors see sheets no. 68 and 69.
 Mass of 3450 kg. of shear connectors is included in the mass of Fabricated Structural Carbon Steel.



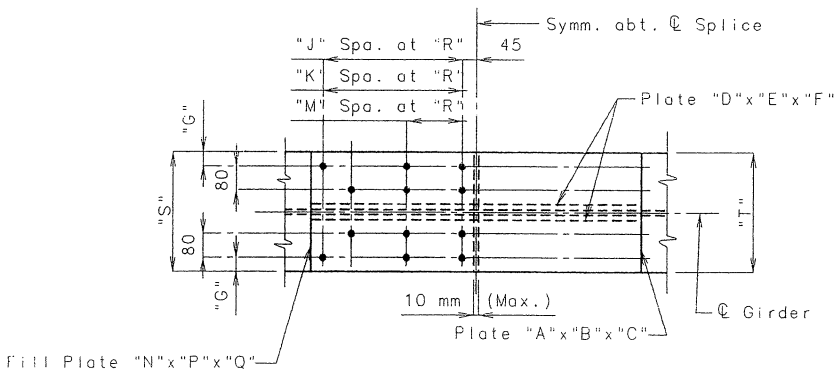
Note: Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



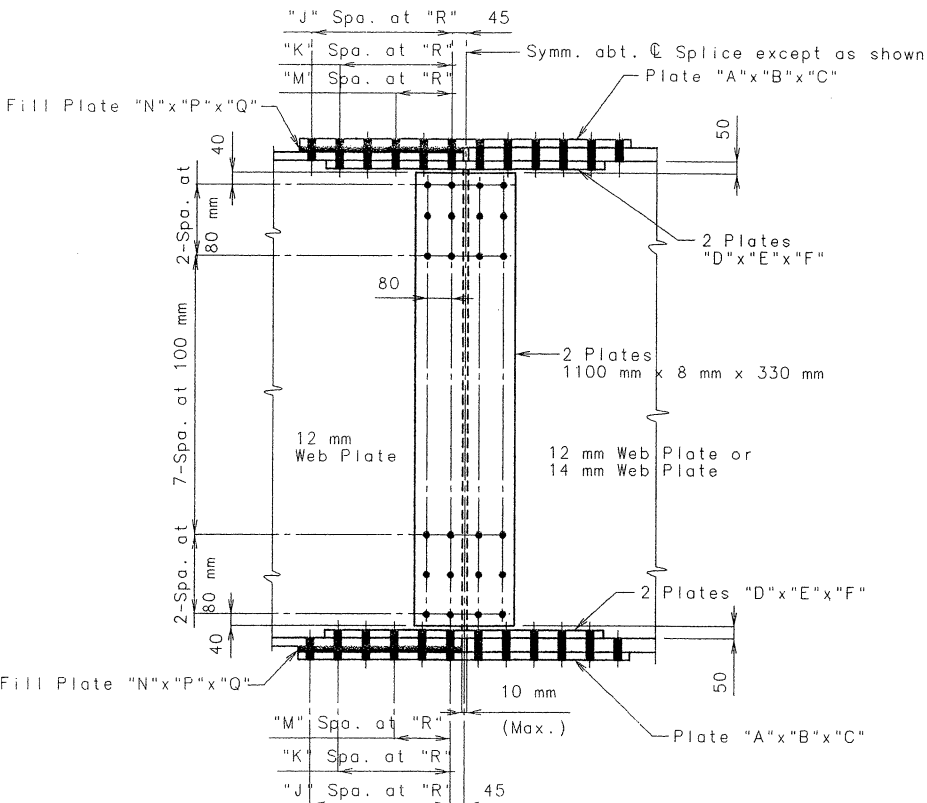
DATE 9-29-98

SPLICE LOCATION	SPLICE LOCATION	TABLE OF DIMENSIONS-FIELD SPLICE															
		"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"	"K"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"
S1	Top	300	14	970	120	14	810	60	5	4	-	300	7	480	80	300	380
S2	Top	300	14	970	120	14	810	60	5	4	-	300	13	480	80	300	400
S3 and S6	Top	300	14	970	120	14	810	60	5	4	-	300	7	480	80	300	400
△ OMIT S4 and S5	Top	300	14	970	120	14	810	60	5	4	-	300	10	480	80	300	400
△ OMIT S1	Bottom	380	18	810	160	18	810	40	4	4	2	380	3	400	80	380	400
△ OMIT S2 thru S3	Bottom	400	20	810	170	20	810	45	4	4	3	400	3	400	80	400	400
△ OMIT S4	Bottom	400	20	810	170	20	810	45	4	4	3	-	-	-	80	400	400
S5	Bottom	400	28	1130	170	28	1130	45	6	6	4	-	-	-	80	400	400
S6	Bottom	400	25	970	170	25	970	45	5	5	4	400	3	480	80	400	400
S3	Bottom	400	20	810	170	20	810	45	4	4	3	-	-	-	80	400	400

△ ADD

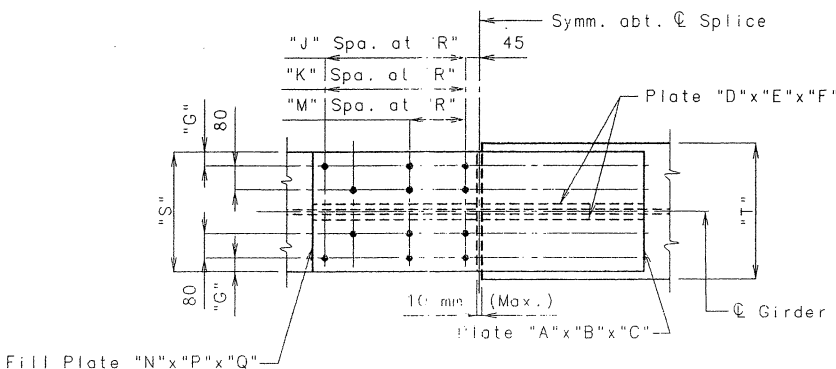


PLAN OF FLANGE
S2 thru S6 (Bottom)

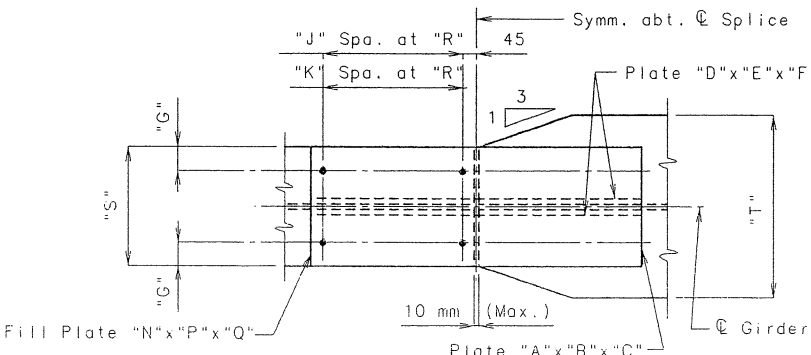


DETAIL OF BOLTED FIELD SPLICE

Note:
Use 22.2 mm Ø high strength bolts with 23.8 mm Ø holes.
Contact surfaces are to be blast cleaned in accordance with Section 712.12.2.1 of the Missouri Standard Specifications (Metric).
For location of Field Splices see sheets no. 68 and 69.

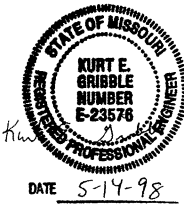


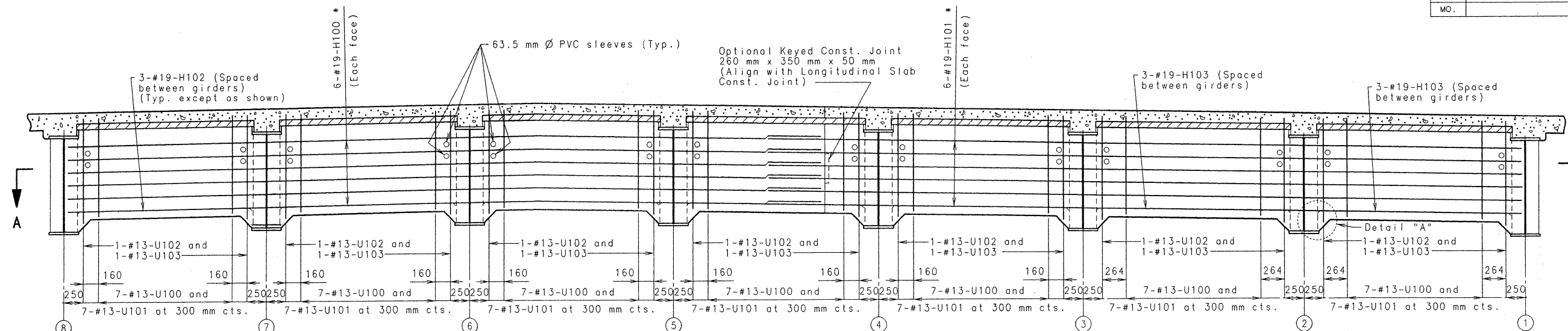
PLAN OF FLANGE
S1 (Bottom)



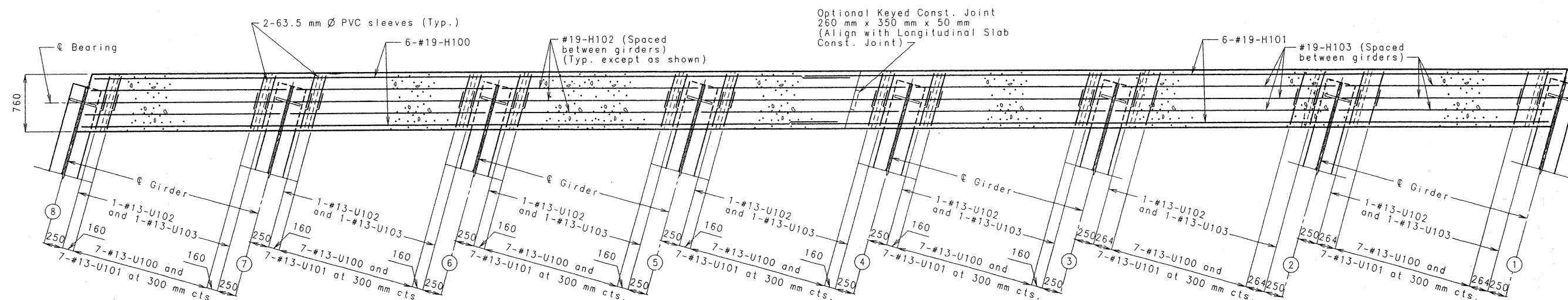
PLAN OF FLANGE
S1 thru S6 (Top)

FIELD SPLICES

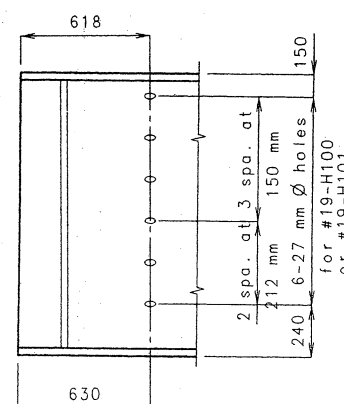




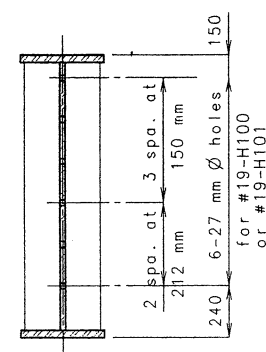
SECTION NEAR END BENT



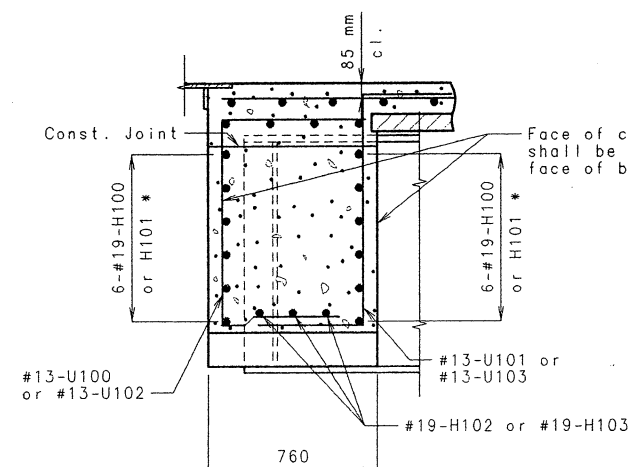
SECTION A-A



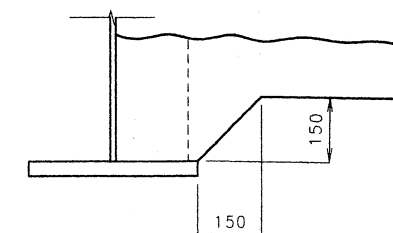
WEB HOLE DETAILS AT END BENT NO. 1 (Girders 2-7 only)



* Bars spaced as shown in Web Hole Detail

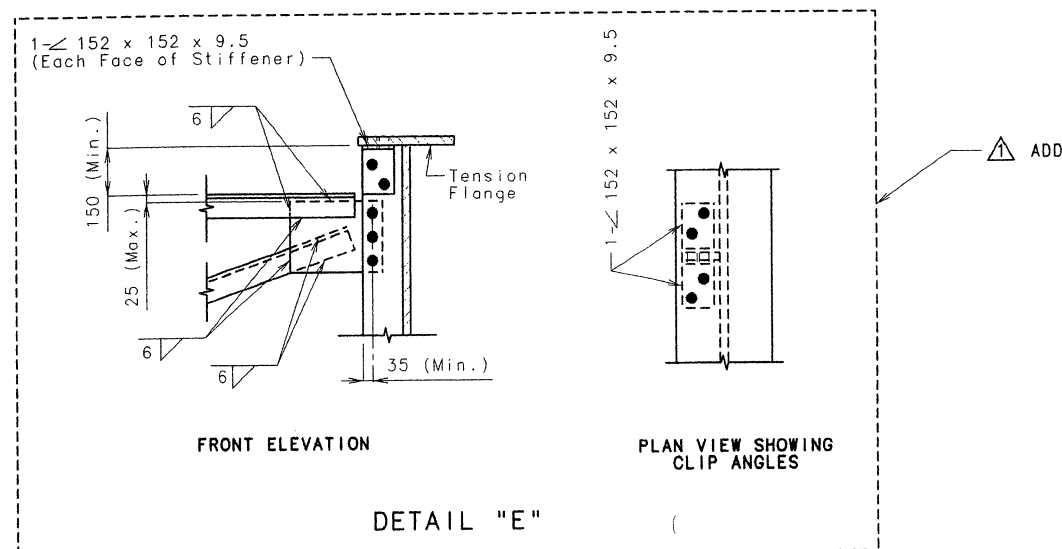


TYPICAL SECTION THRU DIAPHRAGM

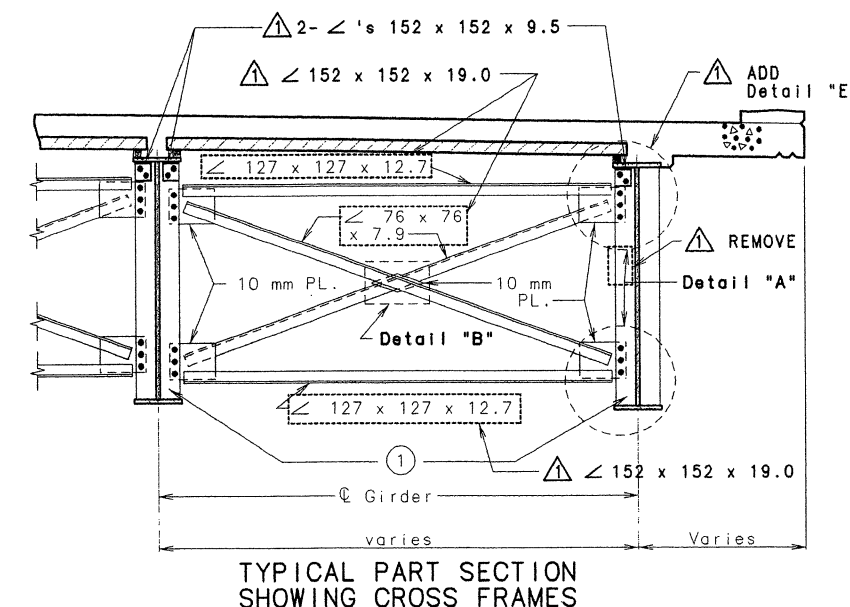


DETAIL "A"

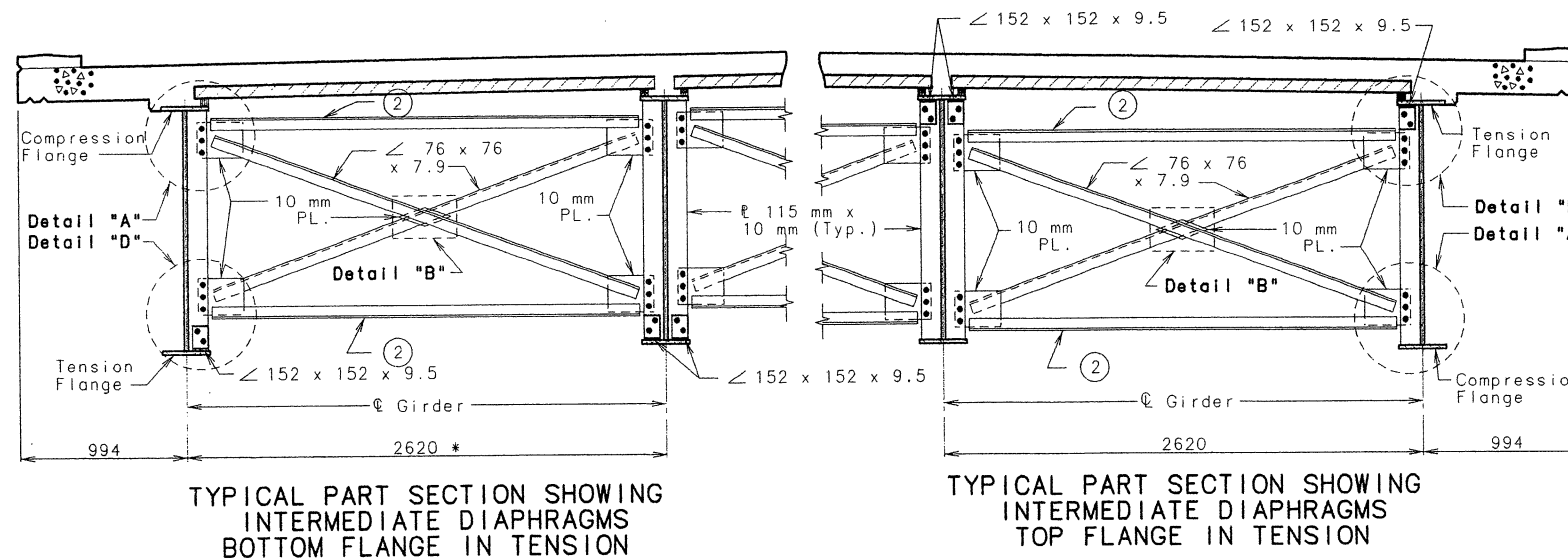
Note: For details of Flat Plate Expansion Device see sheet no. 91. For location of PVC sleeves and details of Earthquake restrainers see sheet no. 62. Concrete Diaphragm shall achieve a concrete strength (f'_c) equal to 17 MPa before slab is poured. Work this sheet with sheets no. 89 and 90. #13-U102 and U103 bars may be shifted to avoid interference with 63.5 mm Ø PVC sleeves.



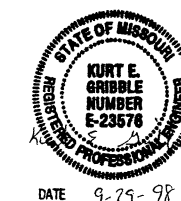
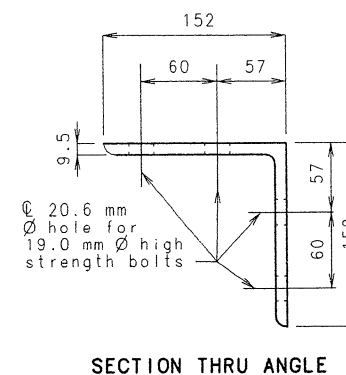
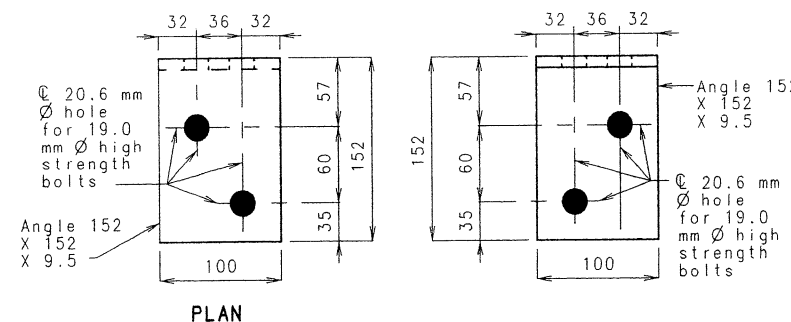
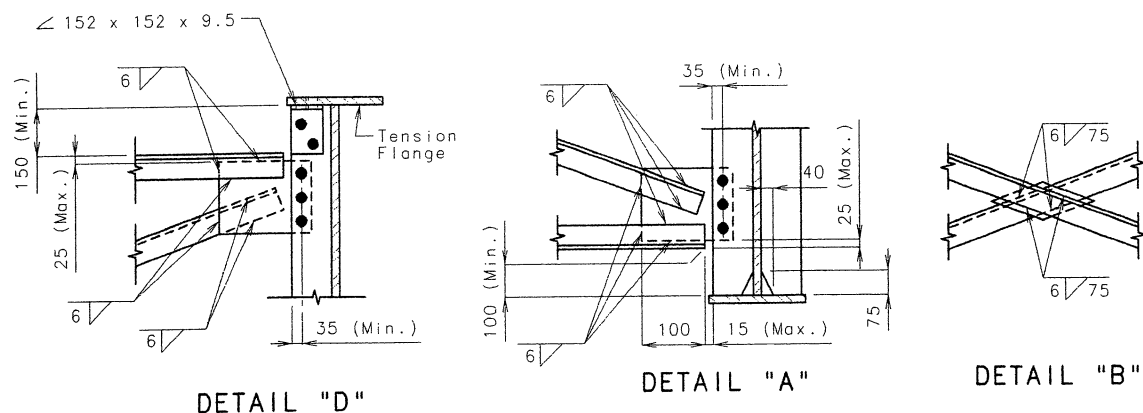
- ① Bent no. 2 use \angle 180 mm x 25 mm
Bents no. 3 thru 6 use \angle 190 mm x 25 mm
 - ② Diaphragms in Spans (1-2) and (2-3) use \angle 89 mm x 89 mm x 7.9 mm
Diaphragms in Spans (3-4) thru (5-6) use \angle 127 mm x 127 mm x 12.7
- * 2646 at 1st diaphragm in Span 1 between girders no. 1 and 2
2645 at 1st diaphragm in Span 1 between girders no. 2 and 3



Note: At the contractors option, holes in the diaphragm plate for spans (1-2) and (2-3) on non slab bearing diaphragms may be made 5 mm larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the girder diaphragm connection plate or transverse web stiffener shall be standard size. For details of the end angle and channel diaphragm near the Hinged Girder Connection, see sheet no. 124.



Note: The two 19.0 mm ϕ high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.



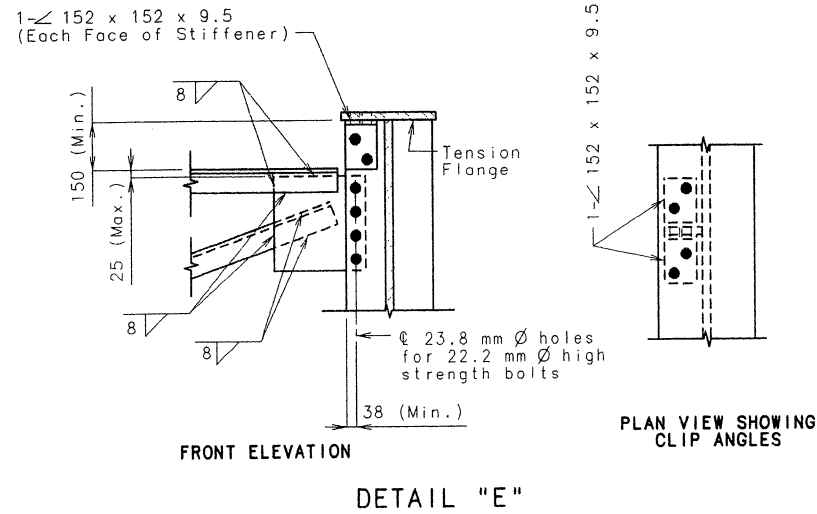
Detailed Feb. 1997
Checked Aug. 1997

REVISED JUNE 8, 1998
REVISED SEPT. 25, 1998
VOID THIS SHEET, SEE SHEET NO. 78A

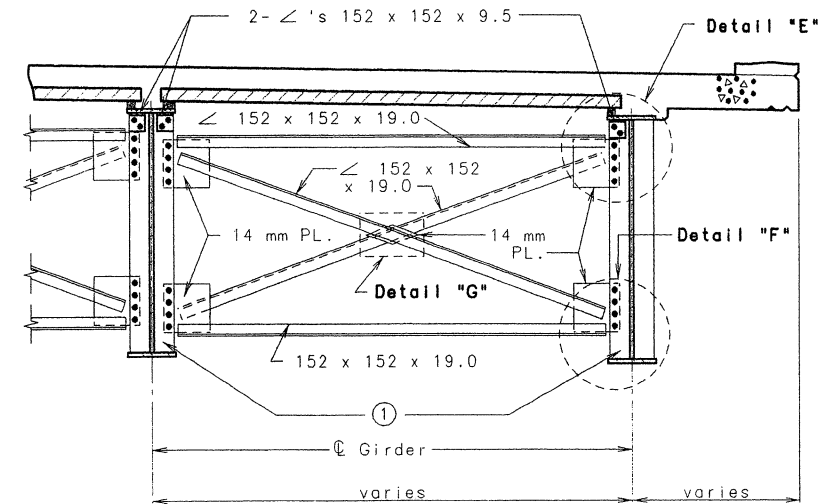
Sheet No. 78 of 236

DETAIL OF FLANGE CONNECTION ANGLE

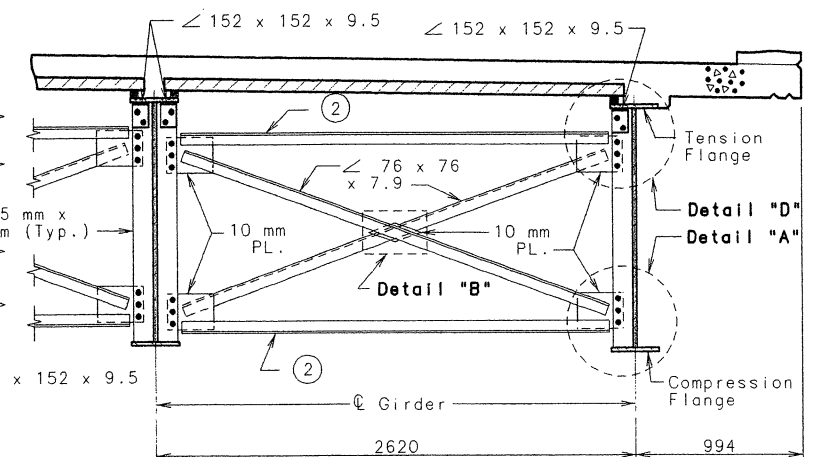
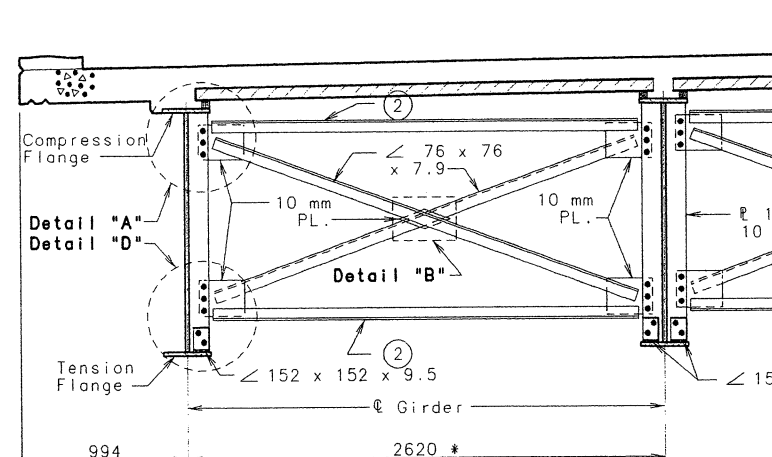
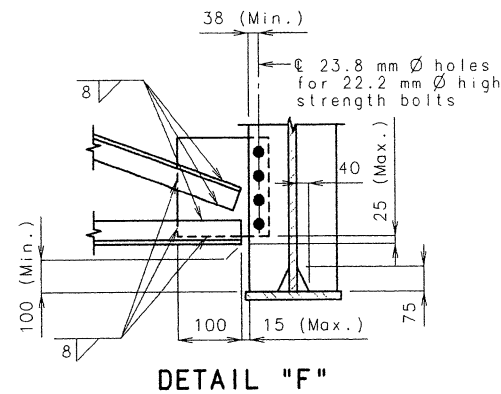
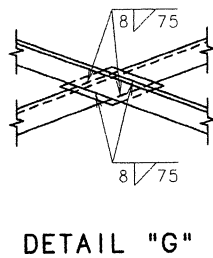
UNIT 1
ST. LOUIS COUNTY A5682



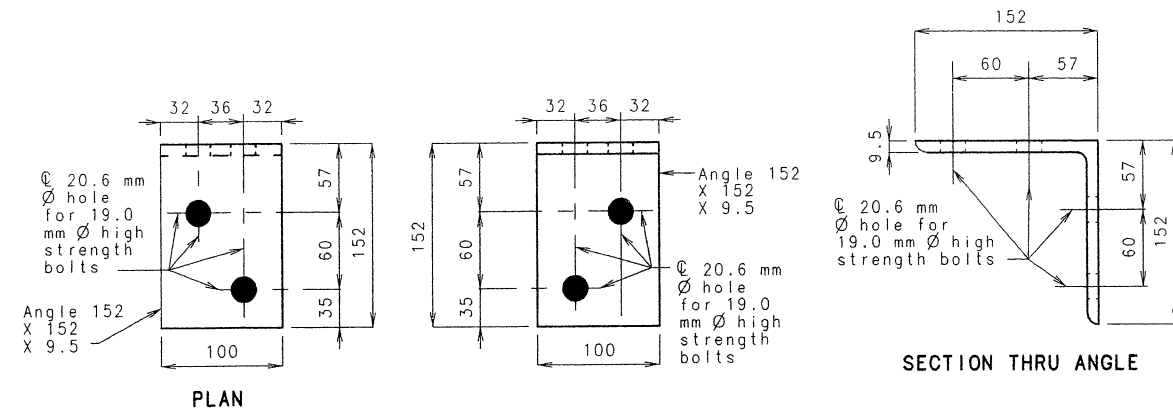
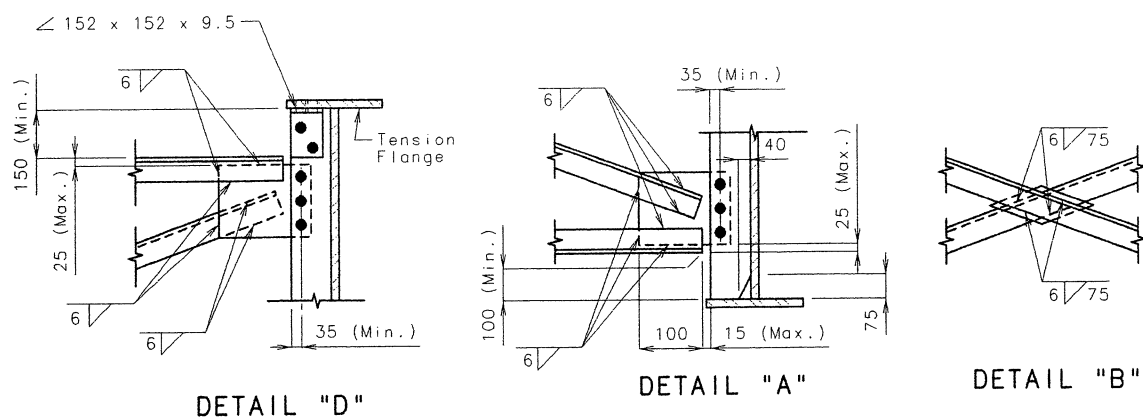
- ① Bent no. 2 use \angle 180 mm x 25 mm
Bents no. 3 thru 6 use \angle 190 mm x 25 mm
 - ② Diaphragms in Spans (1-2) and (2-3) use \angle 89 mm x 89 mm x 7.9 mm
Diaphragms in Spans (3-4) thru (5-6) use \angle 127 mm x 127 mm x 12.7
- * 2646 at 1st diaphragm in Span 1 between girders no. 1 and 2
2645 at 1st diaphragm in Span 1 between girders no. 2 and 3



Note: At the contractors option, holes in the diaphragm plate for spans (1-2) and (2-3) on non slab bearing diaphragms may be made 5 mm larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the girder diaphragm connection plate or transverse web stiffener shall be standard size. For details of the end angle and channel diaphragm near the Hinged Girder Connection, see sheet no. 124.



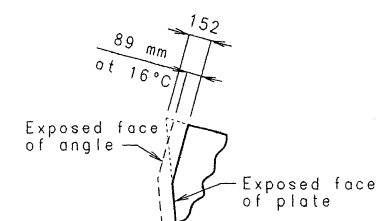
Note:
The two 19.0 mm ϕ high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.



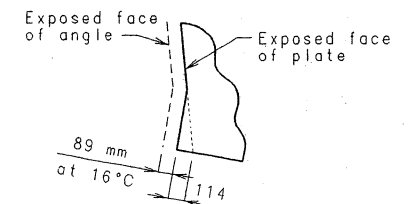
DETAIL OF FLANGE CONNECTION ANGLE

STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
DATE 9-29-98

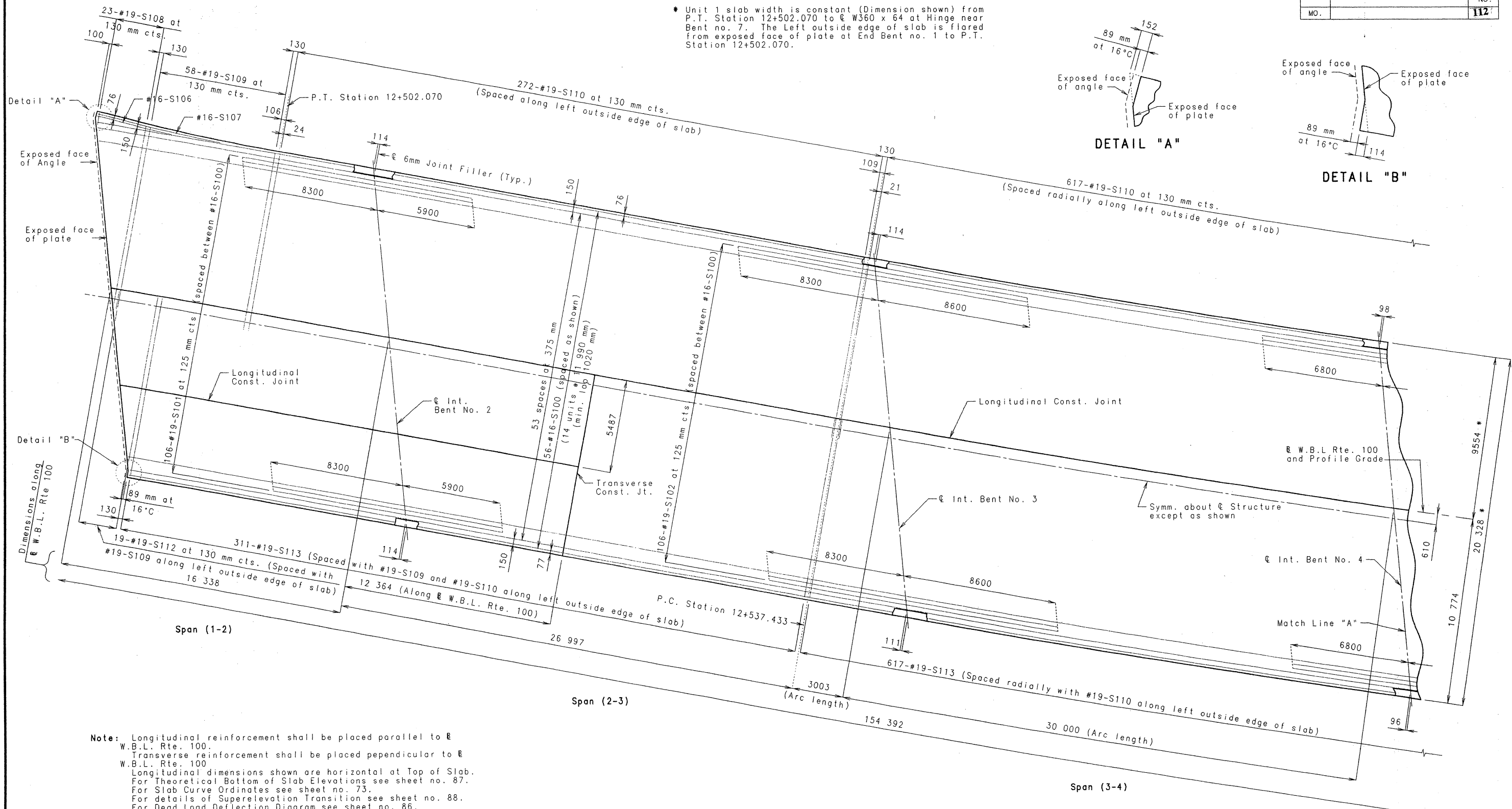
* Unit 1 slab width is constant (Dimension shown) from P.T. Station 12+502.070 to @ W360 x 64 at Hinge near Bent no. 7. The left outside edge of slab is flared from exposed face of plate at End Bent no. 1 to P.T. Station 12+502.070.



DETAIL "A"



DETAIL "B"



Note: Longitudinal reinforcement shall be placed parallel to @ W.B.L. Rte. 100.
 Transverse reinforcement shall be placed perpendicular to @ W.B.L. Rte. 100.
 Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 87.
 For Slab Curve Ordinates see sheet no. 73.
 For details of Superelevation Transition see sheet no. 88.
 For Dead Load Deflection Diagram see sheet no. 86.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 85.
 For Diagram of Slab Pouring Sequence see sheet no. 83.
 For location of Slab Drains see sheet no. 92.
 For Sections thru slab see sheet no. 83 and 84.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.

PART PLAN OF SLAB SHOWING TOP REINFORCEMENT

Detailed Apr. 1997
 Checked Aug. 1997

Sheet No. 79 of 236

ST. LOUIS COUNTY

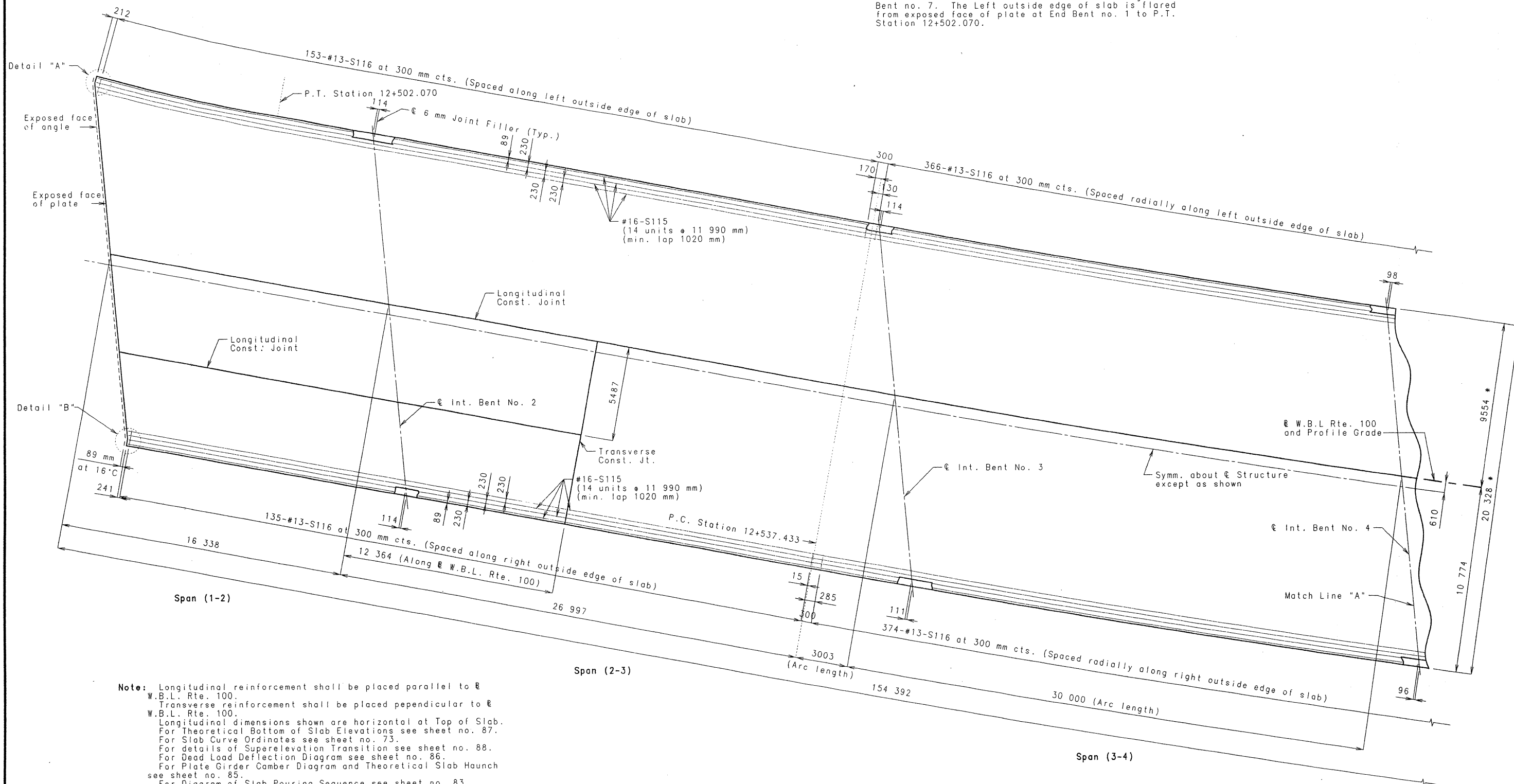


DATE 12-3-97

UNIT 1

A5682

* Unit 1 slab width is constant (Dimension shown) from P.T. Station 12+502.070 to ∇ W360 x 64 at Hinge near Bent no. 7. The Left outside edge of slab is flared from exposed face of plate at End Bent no. 1 to P.T. Station 12+502.070.



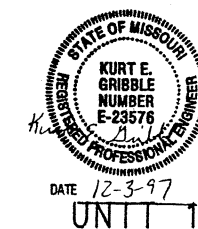
Note: Longitudinal reinforcement shall be placed parallel to ∇ W.B.L. Rte. 100.
 Transverse reinforcement shall be placed perpendicular to ∇ W.B.L. Rte. 100.
 Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 87.
 For Slab Curve Ordinates see sheet no. 73.
 For details of Superelevation Transition see sheet no. 88.
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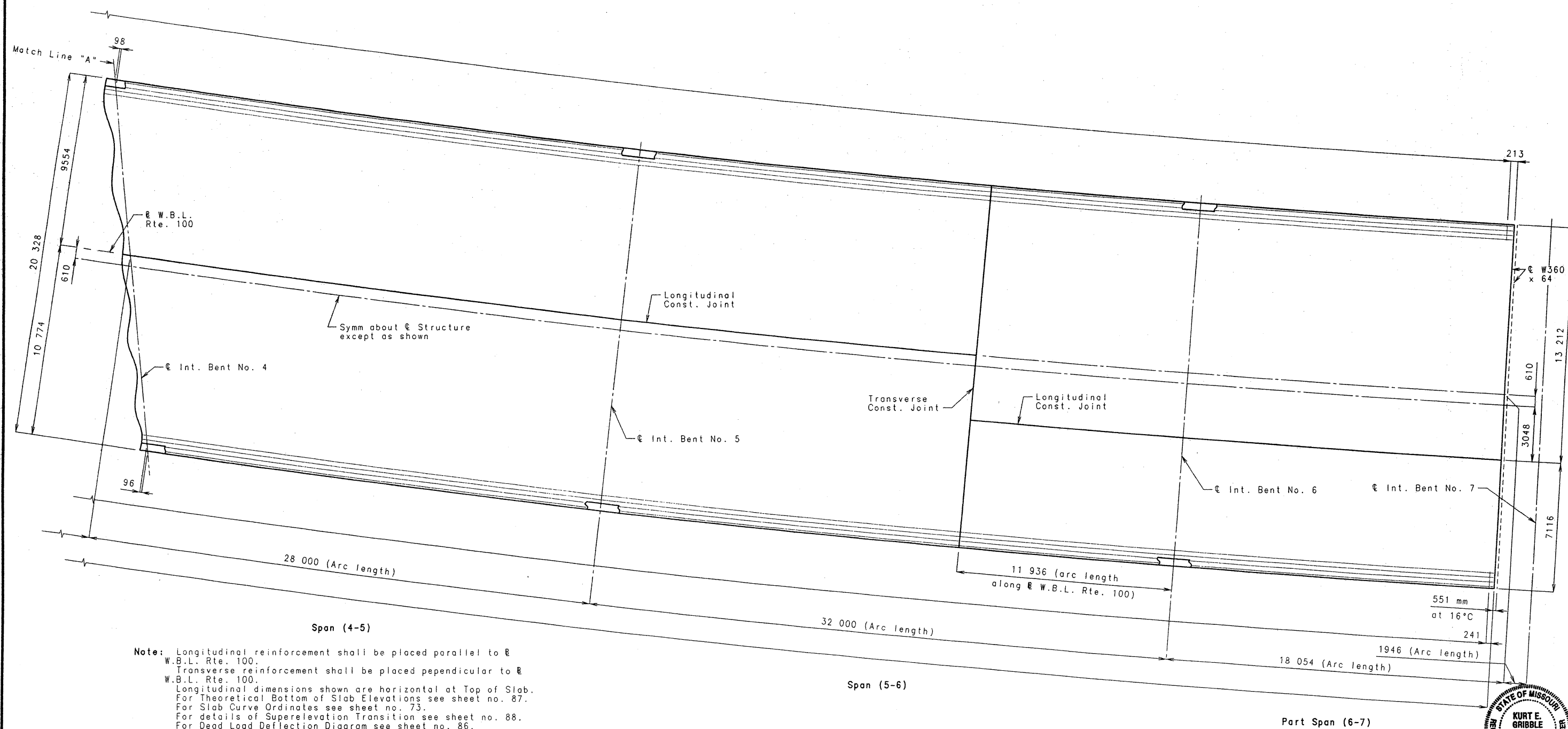
PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Detailed Apr. 1997
 Checked Mar. 1997

Sheet No. 81 of 236

ST. LOUIS COUNTY A5682





Note: Longitudinal reinforcement shall be placed parallel to W.B.L. Rte. 100.
 Transverse reinforcement shall be placed perpendicular to W.B.L. Rte. 100.
 Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 87.
 For Slab Curve Ordinates see sheet no. 73.
 For details of Superelevation Transition see sheet no. 88.
 For Dead Load Deflection Diagram see sheet no. 86.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 85.
 For Diagram of Slab Pouring Sequence see sheet no. 83.
 For location of Slab Drains see sheet no. 92.
 For Sections thru slab see sheets no. 83 and 84.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.

Detailed Apr. 1997
 Checked Aug. 1997

PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Sheet No. 82 of 236

ST. LOUIS COUNTY UNIT 1 A5682

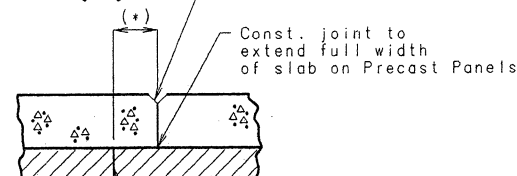


DATE 12-3-97

SEQUENCE OF POURS	DIRECTION											MIN. RATE OF POUR CU. METERS/HR.	
	EITHER DIRECTION											WITH RETARDER	NO RETARDER
	1	2	3	4	5	6	7	8	9	10	11	20	20
BASIC SEQUENCE	1	2	3	4	5	6	7	8	9	10	11	20	20
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 (METRIC).													
ALTERNATE "A" POURS	1 + 11	2 + 10	3 + 9	4 + 8	5 + 7 + 6	END TO 2		11 TO 3	10 TO 4	9 TO 5	8 TO END	20	27
ALTERNATE "B" POURS	1 + 11 + 2 + 10	3 + 9 + 4 + 8	5 + 7 + 6	END TO 3		10 TO 5	8 TO END	END TO 4		9 TO END	END TO 5		20
ALTERNATE "C" POURS	1 + 11 + 2 + 10 + 3 + 9	4 + 8 + 5 + 7 + 6	END TO 4		9 TO END	END TO 5		8 TO END	END TO 6		7 TO END	20	27
ALTERNATE "D" POURS	1 + 11 + 2 + 10 + 3 + 9 + 4 + 8 + 5 + 7 + 6	END TO 6		7 TO END	END TO 7		6 TO END	END TO 8		5 TO END	END TO 9		20

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 concrete to 2.5 hours.

Finish each side of joint with 6mm radius edging tool

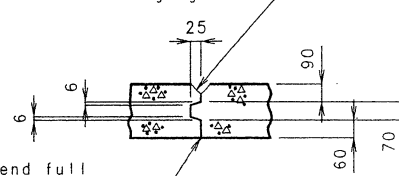


(*) Adjust the construction joint to a clearance of 150 mm (Min.) from panel joint.

SLAB ON PRECAST PANEL

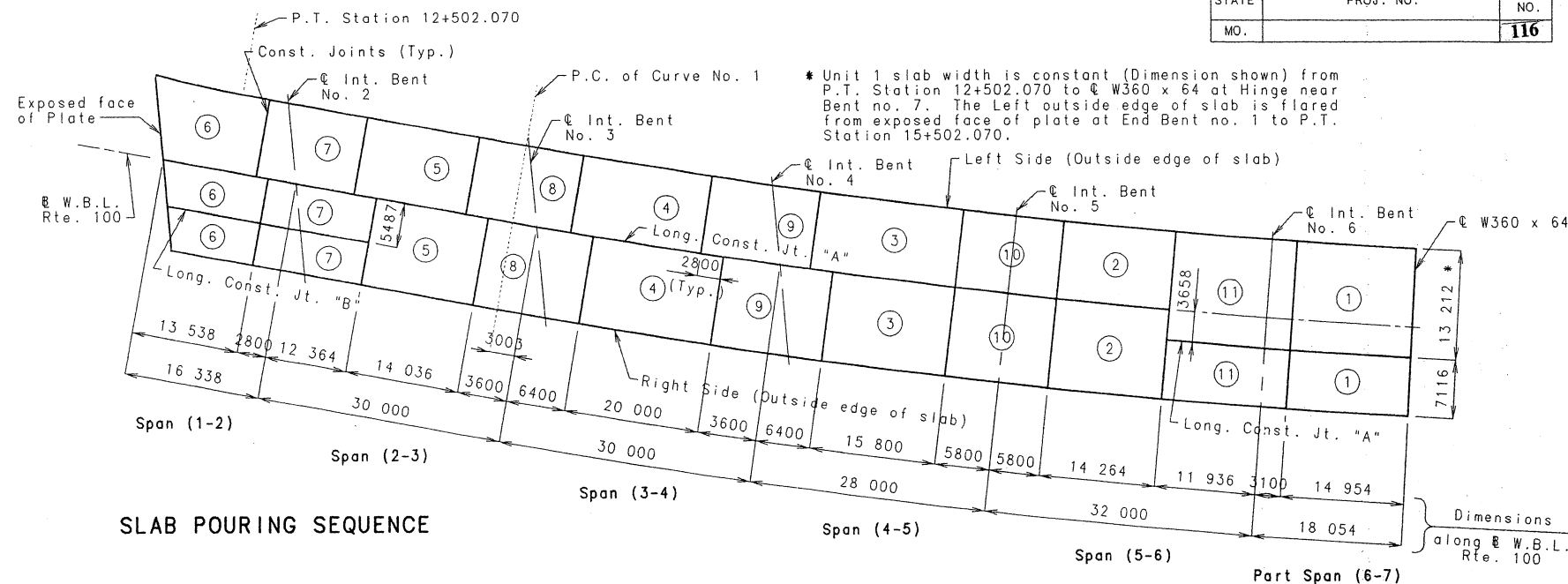
SLAB CONSTRUCTION JOINT DETAILS

Finish each side of joint with 6mm edging tool



Key to extend full width of slab cantilever

CAST IN PLACE SLAB (Full Depth)



SLAB POURING SEQUENCE

Note: All structural steel in Unit 1 and Span (7-8) of Unit 2 shall be erected prior to establishing girder elevations for Unit 1 girders.

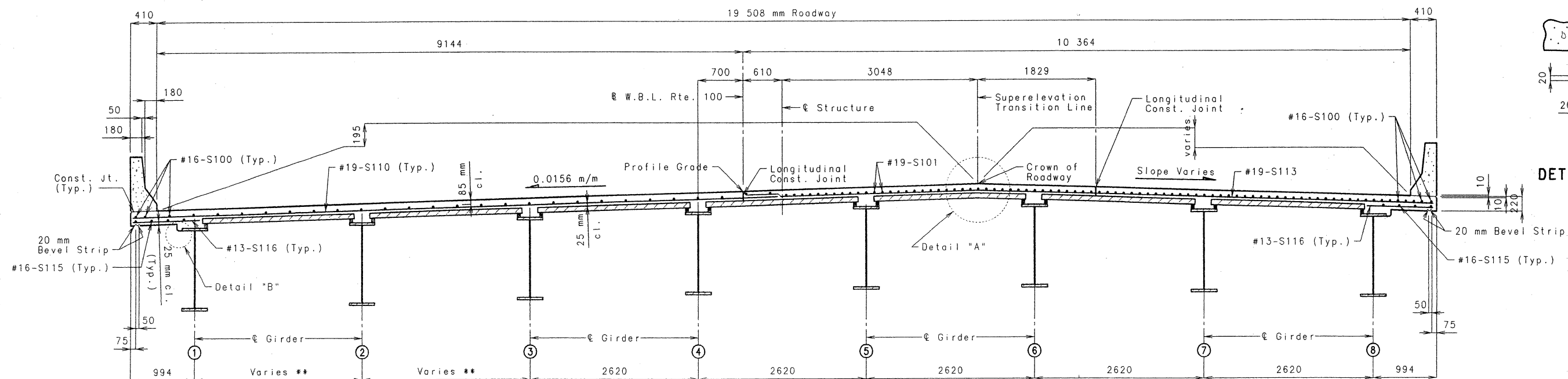
All structural steel shall be erected and elevations of girders established in Units 1 and 2 prior to any forming (including P/C panels) for the slab in Span (6-7) of Unit 1.

The pouring sequences on the left side of longitudinal joint "A" shall be poured prior to the pouring sequences on the right side of longitudinal joint "A".

A longitudinal construction joint may be omitted with the approval of the Engineer.

If longitudinal construction joint "A" is eliminated, the minimum rate of pour for alternate pouring sequences shall be increased by a factor of 1.9.

Note: For details of Safety Barrier Curb not shown, see sheets no. 93 thru 96. For Detail "A" and details of Superelevation Transition, see sheet no. 88. For Plan of Slab Showing Top and Bottom Reinforcement see sheets 79 thru 82. For location of Section A-A see sheet no. 88.

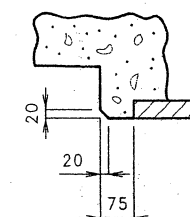


HALF SECTION NEAR @ SPAN

** Girders 1 and 2 are flared in part of Span (1-2). See Girder Curve Offsets, sheet no. 72.

SECTION A-A

HALF SECTION NEAR @ INTERMEDIATE BENT



DETAIL "B"



DATE 12-3-97

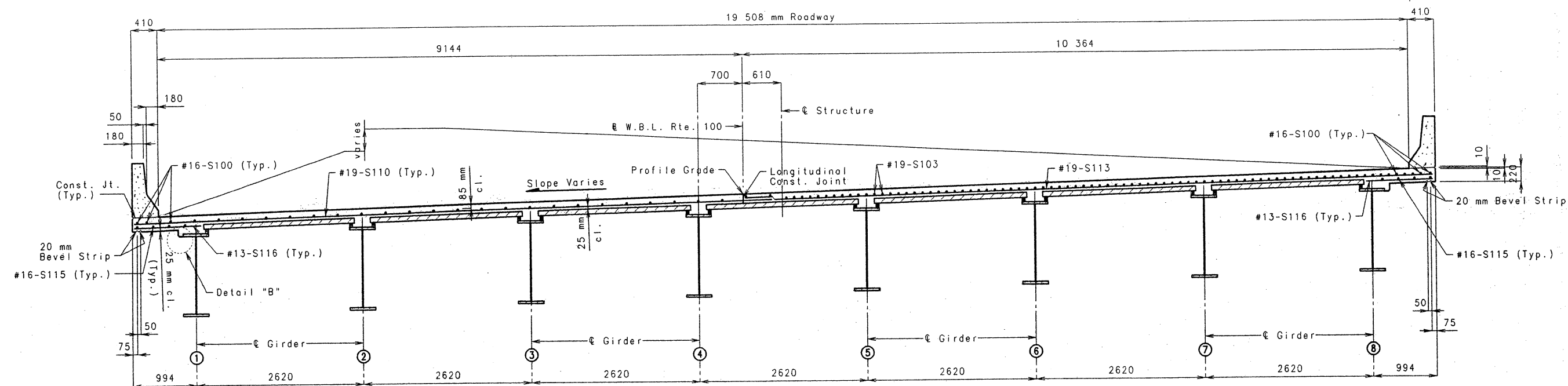
UNIT 1

ST. LOUIS COUNTY

A5682

Detailed Sept. 1997
Checked Oct. 1997

Sheet No. 83 OF 236

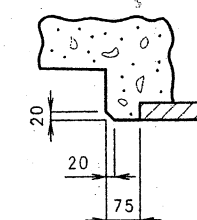


HALF SECTION NEAR & SPAN

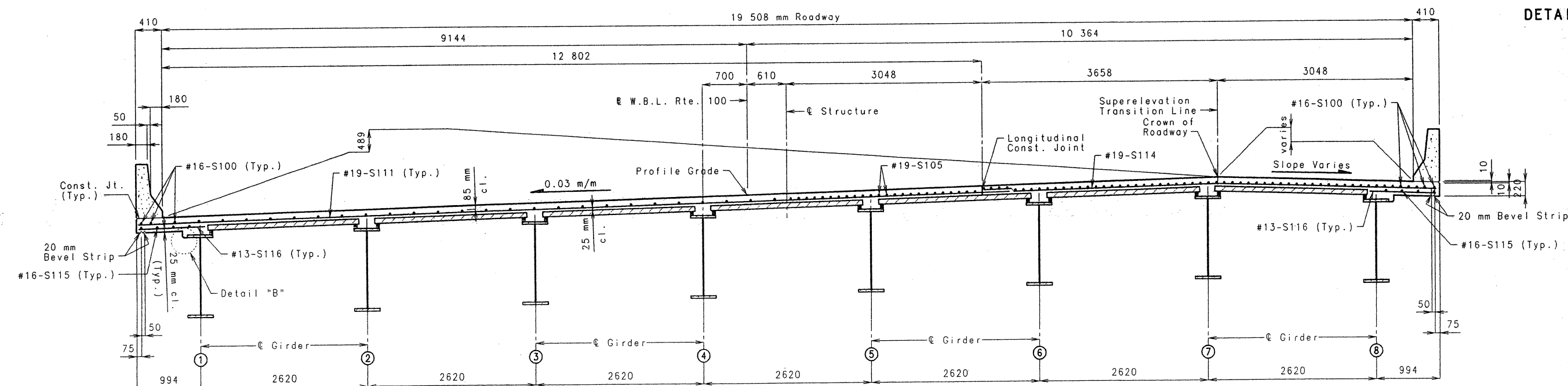
SECTION B-B

HALF SECTION NEAR & INTERMEDIATE BENT

Note: For details of Safety Barrier Curb not shown, see sheets no. 93 thru 96.
 For details of Superelevation Transition, see sheet no. 88.
 For Slab Pouring Sequence and Slab Construction Joint Details, see sheet no. 83.
 For Plan of Slab Showing Top and Bottom Reinforcement see sheets 79 thru 82.
 For location of Sections B-B and C-C see sheet no. 88.



DETAIL "B"



HALF SECTION NEAR & SPAN

SECTION C-C

HALF SECTION NEAR & INTERMEDIATE BENT



DATE 12-3-97

Detailed Sept. 1997
 Checked Oct. 1997

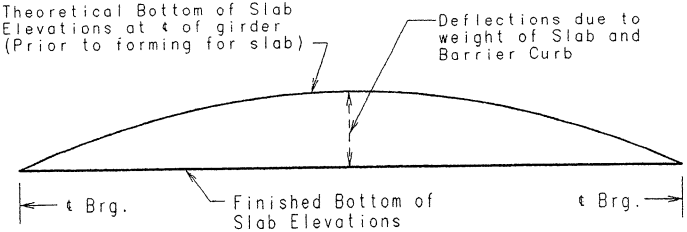
Sheet No. 84 OF 236

ST. LOUIS COUNTY UNIT 1 A5682

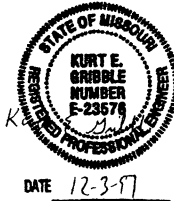
** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT C GIRDER (PRIOR TO FORMING SLAB)																															
	Span (1-2) (C Brg. - C Brg.)										Span (2-3) (C Brg. - C Brg.)										Span (3-4) (C Brg. - C Brg.)										
	C Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	C Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	C Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	C Brg. Stiff.
Girder No. 1	202.944	202.928	202.912	202.896	202.879	202.861	202.843	202.825	202.807	202.790	202.773	202.744	202.715	202.683	202.649	202.610	202.560	202.506	202.449	202.392	202.335	202.279	202.224	202.168	202.110	202.049	201.984	201.916	201.846	201.775	201.712
Girder No. 2	202.979	202.963	202.946	202.929	202.912	202.894	202.876	202.858	202.840	202.823	202.806	202.777	202.748	202.717	202.683	202.643	202.594	202.542	202.487	202.431	202.376	202.324	202.272	202.219	202.164	202.106	202.044	201.978	201.909	201.841	201.778
Girder No. 3	203.015	202.997	202.980	202.962	202.944	202.926	202.908	202.890	202.873	202.855	202.839	202.810	202.780	202.749	202.715	202.674	202.628	202.578	202.525	202.472	202.419	202.369	202.320	202.270	202.218	202.162	202.103	202.039	201.973	201.907	201.844
Girder No. 4	203.048	203.030	203.013	202.995	202.977	202.959	202.941	202.923	202.906	202.888	202.872	202.842	202.812	202.781	202.746	202.706	202.662	202.615	202.564	202.514	202.464	202.416	202.370	202.322	202.273	202.220	202.163	202.102	202.038	201.974	201.909
Girder No. 5	203.081	203.063	203.046	203.028	203.010	202.992	202.974	202.956	202.938	202.921	202.904	202.875	202.844	202.812	202.777	202.740	202.698	202.653	202.605	202.557	202.509	202.464	202.420	202.376	202.329	202.278	202.224	202.166	202.104	202.040	201.975
Girder No. 6	203.086	203.069	203.053	203.037	203.021	203.004	202.988	202.972	202.956	202.940	202.925	202.898	202.871	202.842	202.810	202.775	202.735	202.692	202.647	202.601	202.556	202.514	202.472	202.430	202.386	202.338	202.286	202.231	202.171	202.106	202.041
Girder No. 7	203.037	203.023	203.012	203.002	202.991	202.979	202.968	202.957	202.946	202.936	202.925	202.908	202.890	202.870	202.844	202.811	202.774	202.733	202.690	202.647	202.604	202.564	202.526	202.486	202.444	202.399	202.350	202.297	202.237	202.172	202.107
Girder No. 8	202.988	202.982	202.977	202.971	202.965	202.959	202.953	202.947	202.941	202.935	202.930	202.921	202.912	202.900	202.876	202.845	202.811	202.773	202.734	202.693	202.653	202.616	202.579	202.542	202.502	202.459	202.412	202.362	202.302	202.237	202.172

** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT G GIRDER (PRIOR TO FORMING SLAB)																															
	Span (4-5) (G Brg. - G Brg.)										Span (5-6) (G Brg. - G Brg.)										Span (6-7) (G Brg. - G Brg.)										
	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.
Girder No. 1	201.712	201.652	201.591	201.529	201.465	201.398	201.328	201.254	201.179	201.103	201.028	200.951	200.874	200.796	200.714	200.628	200.538	200.443	200.344	200.242	200.141	200.078	200.015	199.953	199.890	199.826	199.762	199.696	199.630	199.562	199.503
Girder No. 2	201.778	201.718	201.659	201.598	201.535	201.469	201.400	201.328	201.254	201.180	201.107	201.030	200.954	200.878	200.797	200.712	200.621	200.525	200.425	200.322	200.219	200.156	200.093	200.031	199.968	199.904	199.840	199.774	199.708	199.640	199.581
Girder No. 3	201.844	201.784	201.725	201.666	201.604	201.539	201.471	201.401	201.329	201.256	201.185	201.109	201.034	200.957	200.876	200.791	200.700	200.604	200.504	200.401	200.298	200.235	200.172	200.109	200.047	199.983	199.918	199.853	199.786	199.719	199.659
Girder No. 4	201.909	201.851	201.792	201.734	201.672	201.609	201.542	201.474	201.404	201.333	201.264	201.188	201.113	201.036	200.956	200.871	200.780	200.683	200.583	200.479	200.376	200.313	200.250	200.188	200.125	200.061	199.996	199.931	199.864	199.797	199.738
Girder No. 5	201.975	201.917	201.860	201.801	201.741	201.679	201.614	201.547	201.479	201.410	201.342	201.267	201.192	201.116	201.035	200.950	200.859	200.762	200.662	200.558	200.455	200.392	200.329	200.266	200.203	200.140	200.075	200.010	199.943	199.876	199.817
Girder No. 6	202.041	201.984	201.927	201.869	201.810	201.749	201.685	201.620	201.553	201.487	201.421	201.346	201.271	201.195	201.115	201.030	200.939	200.842	200.741	200.637	200.534	200.470	200.407	200.345	200.282	200.218	200.153	200.088	200.021	199.954	199.896
Girder No. 7	202.107	202.050	201.994	201.937	201.879	201.819	201.757	201.693	201.628	201.563	201.500	201.425	201.351	201.275	201.195	201.109	201.018	200.921	200.819	200.716	200.612	200.549	200.486	200.424	200.361	200.298	200.233	200.168	200.102	200.034	199.974
Girder No. 8	202.172	202.117	202.061	202.005	201.948	201.889	201.829	201.767	201.704	201.640	201.578	201.503	201.428	201.351	201.270	201.184	201.093	200.989	200.878	200.764	200.650	200.580	200.511	200.441	200.372	200.301	200.230	200.157	200.084	200.010	199.945

** Elevations are based on a constant slab thickness of 220 mm and include allowances for Theoretical Dead Load Deflections due to mass of slab (Including Precast Panel) and barrier curb.



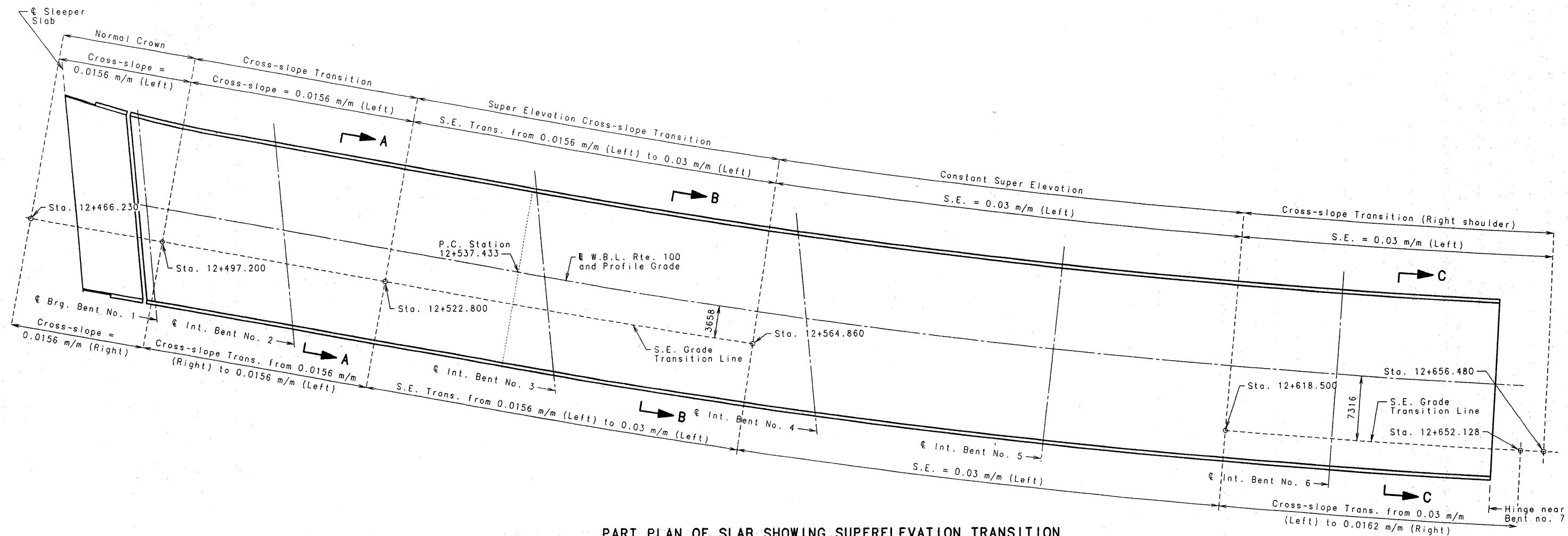
TYPICAL SLAB ELEVATIONS DIAGRAM



THEORETICAL BOTTOM OF SLAB ELEVATIONS

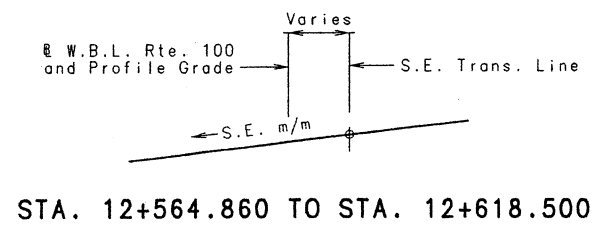
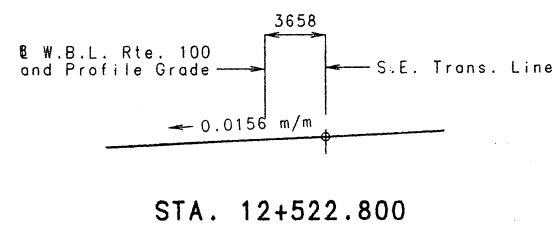
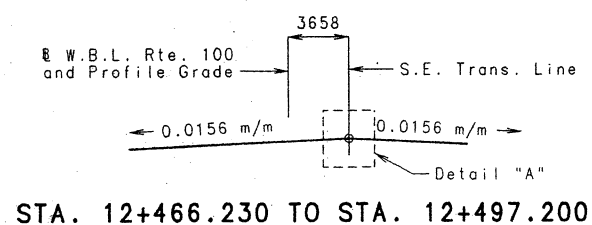
Detailed Jan. 1997
Checked Aug. 1997

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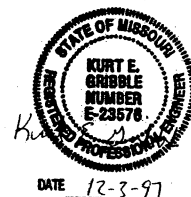
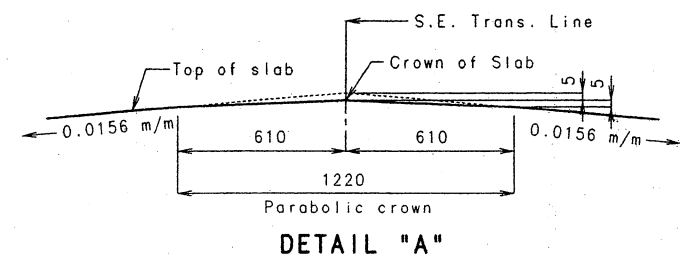


PART PLAN OF SLAB SHOWING SUPERELEVATION TRANSITION

Note: For Sections A-A, B-B, and C-C see sheets no. 83 and 84.



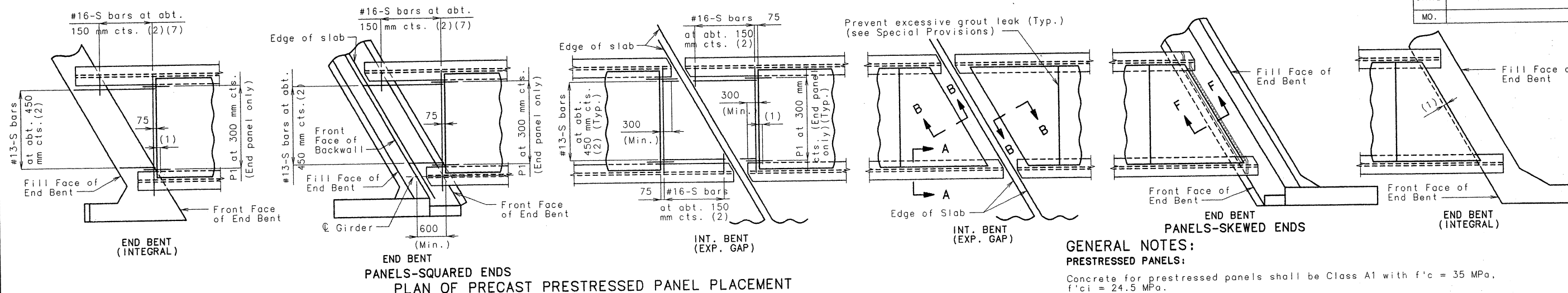
ROADWAY CROSS SLOPES



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UNIT 1
ST. LOUIS COUNTY A5682



GENERAL NOTES:

PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A1 with $f'_c = 35$ MPa, $f'_{ci} = 24.5$ MPa.

The top surface of all panels shall receive a scored finish with a depth of scoring of 3 mm perpendicular to the prestressing strands in the panels (see Special Provisions).

Prestressing tendons shall be high-tensile strength uncoated seven (7) wire, low-relaxation strands for prestressed concrete conforming to AASHTO M203, except that nominal diameter of strand = 9.53 mm and nominal area = 54.8389 sq. mm and minimum ultimate strength = 102.3 kN (1860 MPa). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 66.3 kN per 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.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 21 MPa compressive strength.

Minimum joint filler or polystyrene bedding material thickness shall be 19 mm, except over splice plates where minimum thickness shall be 6 mm. When joint filler or polystyrene bedding material is less than 12 mm thick over a splice plate, make the width of material at the 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 50 mm 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 6 mm to correct for variations from girder camber diagram. The polystyrene bedding material may be cut to match haunch height above top of flange.

REINFORCING STEEL:

All dimensions are out to out.

Minimum clearance to reinforcing steel shall be 40 mm unless otherwise shown.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest 10 mm.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Steel Girder.

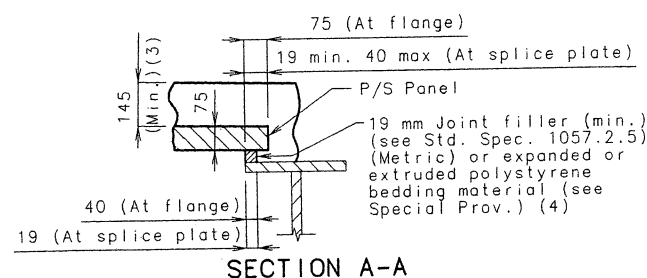
If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Welded wire fabric or welded deformed bar mats providing a minimum area of reinforcing perpendicular to strands of 466 sq. mm/m, with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #10-P2 bars, shown. Wire or bar diameter shall not be larger than 10 mm. The above alternative reinforcement criteria may be used in lieu of the #10-P3 bars, when required, and placed over a width of not less than 600 mm.

Tie the #10-U1 bars to the #10-P2 bars, to the welded wire fabric or the welded deformed bar mats at about 900 mm centers.

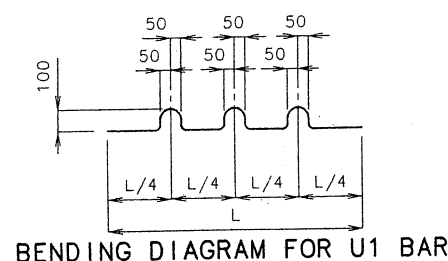
The reinforcing steel shall be tied securely to the 9.53 mm ϕ strands with the following maximum spacing in each direction: #10-P2 bars at 400 mm and welded wire fabric or welded deformed bar mats at 600 mm.

All reinforcement other than prestressing strands shall be epoxy coated.

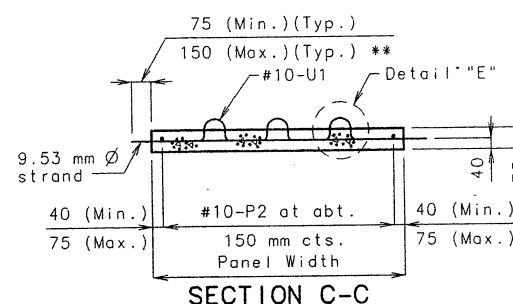


Note:

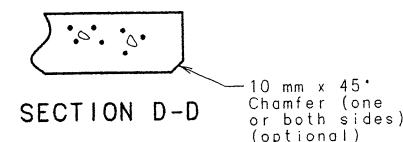
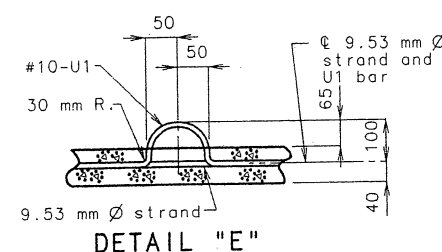
Use slab haunching diagram on sheet No. 85 for determining thickness of joint filler or polystyrene bedding material within the limits noted in General Notes.



(U1 bars may be oriented at right angles to location and spacing shown. U1 bars shall be placed between P1 bars.)



** Prestressing strands to extend 150 mm or to within 25 mm of adjacent panel.



NOTES:

Cost of S-bars shall be included in price bid for Slab on Steel per square meter.

S-bars are not listed in bill of reinforcing.

(1) End panels shall be dimensioned 25 mm min. to 40 mm max. inside the face of the 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 percent of dead load deflection due to the mass of structural steel. No payment will be made for additional labor or materials for the adjustment.

(4) All panel support pads shall be glued to the girder. When support thickness exceeds 40 mm, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pad's manufacturer.

(5) Use #10-P3 bars if panel is skewed 45° or greater.

(6) The #16-S bars shall extend the width of the slab (785 mm lap if necessary).

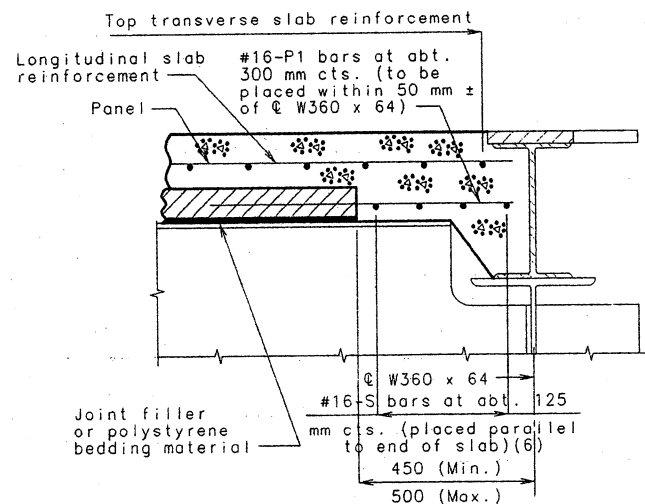
(7) Extend S-bars 500 mm beyond the front face of end bents.

(8) S bars shown are used with skewed end panels, or square end panels of square structures only. The #16-S bars shall extend the width of slab (785 mm lap if necessary) or to within 75 mm of expansion device assemblies.

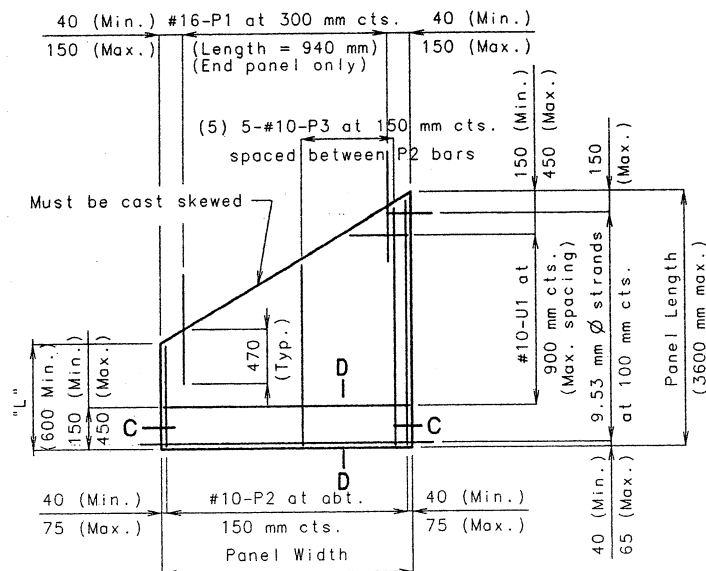
(9) Any strand 600 mm or shorter shall have a #13 reinforcing bar on each side of it centered between strands. Strands 600 mm or shorter may then be debonded at the fabrications option.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

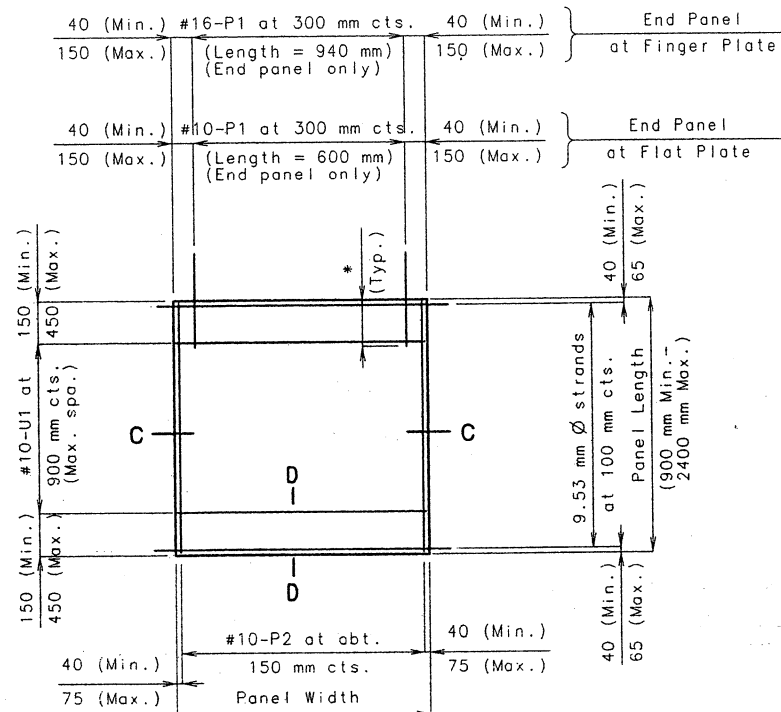
For details of Port Sections B-B and F-F, Precast Panels at Finger Plate and Flat Plate Expansion Devices, and Plan of Precast Prestressed Panel see sheet no. 90.



PART SECTION B-B



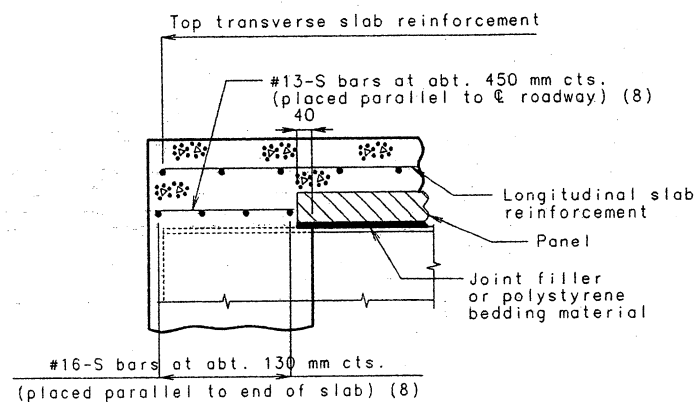
PLAN OF PRECAST PRESTRESSED PANEL
(SKEWED END-OPTIONAL)
DETAILS OF PRECAST PANELS AT
FINGER PLATE EXPANSION DEVICE



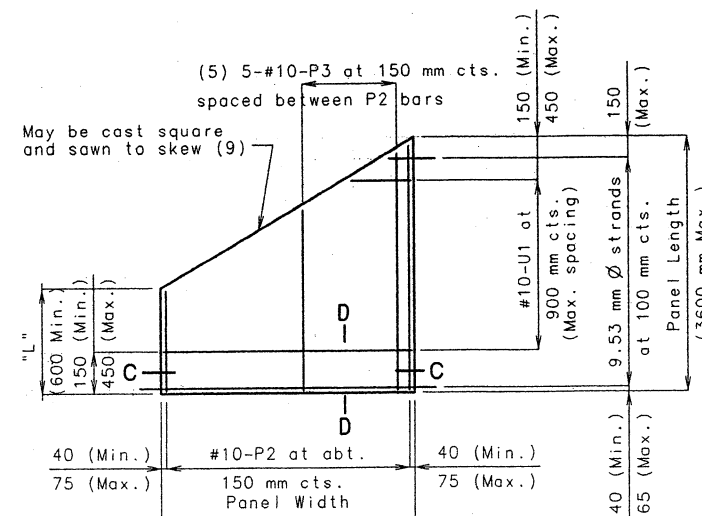
PLAN OF PRECAST PRESTRESSED PANEL

Note: For Location of Sections
B-B and F-F see sheet no. 89.

* 470 mm on end panel at Finger Plate Expansion Device,
300 mm on end panel at Flat Plate Expansion Device



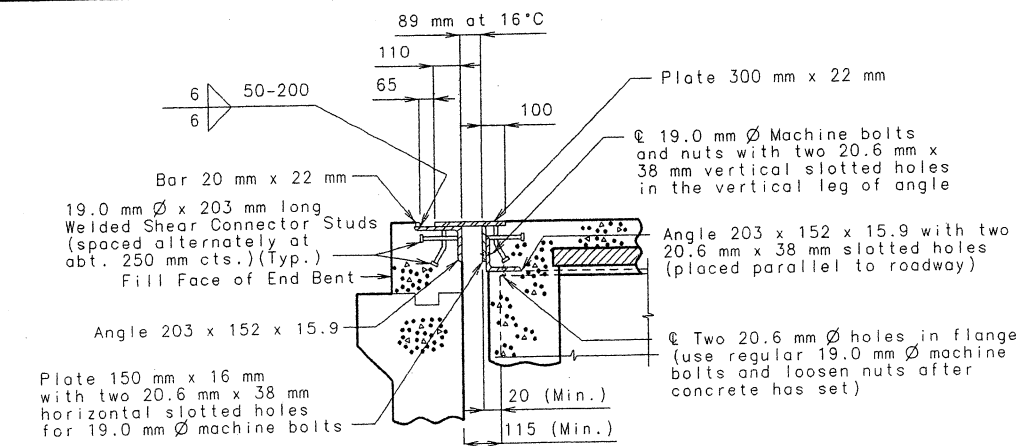
PART SECTION F-F



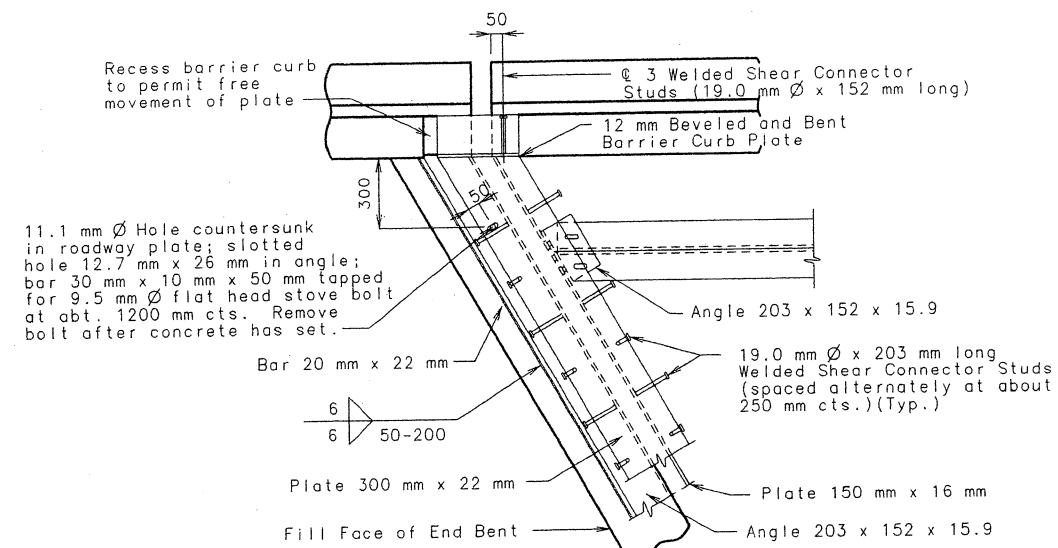
PLAN OF PRECAST PRESTRESSED PANEL
(SKEWED END-OPTIONAL)
DETAILS OF PRECAST PANELS AT
FLAT PLATE EXPANSION DEVICE

Note: For Section C-C and D-D and notes concerning details of
the Precast Prestressed Panels, see sheet no. 89.

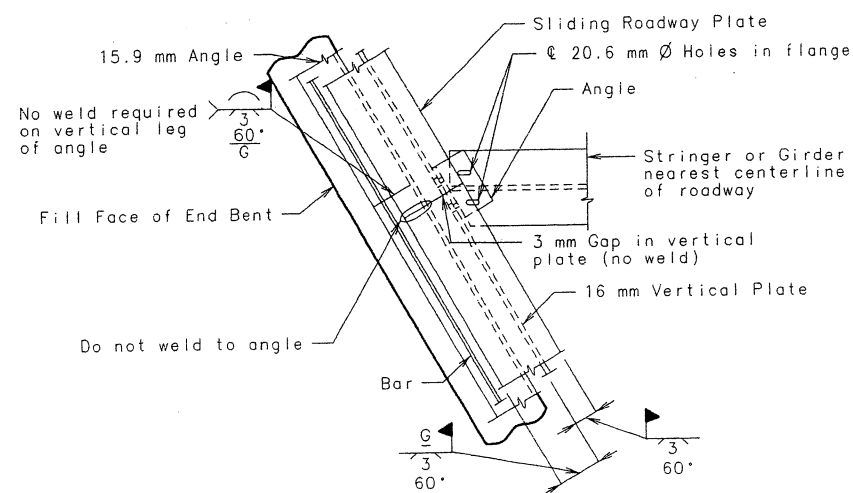




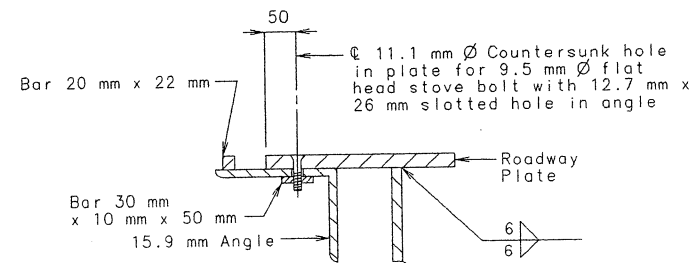
PART SECTION AT END BENT



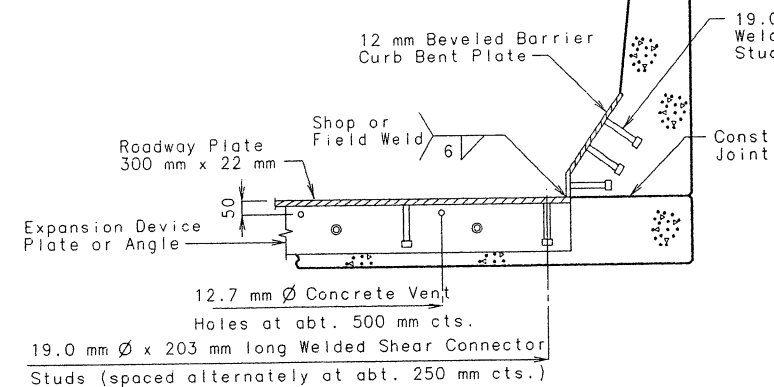
PART PLAN



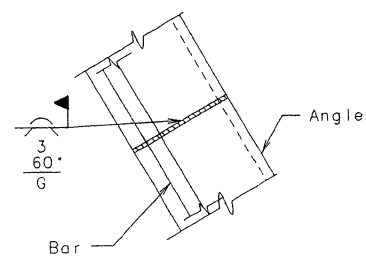
PERMISSIBLE FIELD SPLICE AT END BENT



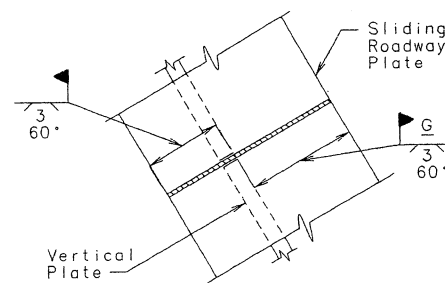
PART SECTION (TYPICAL)



PART SECTION A-A



PART PLAN OF ANGLE AND BAR



PART PLAN OF ROADWAY PLATE AND VERTICAL PLATE

GENERAL NOTES:

Expansion device shall be fabricated in one section, except for stage construction and when the length is over 15 meters, splicing is permissible. The expansion device shall be bent to conform to crown of roadway.

Material for the expansion device shall be ASTM A709M Grade 250 structural steel. Anchors for the expansion device shall be approved stud-welded anchors (C1010 thru C1020).

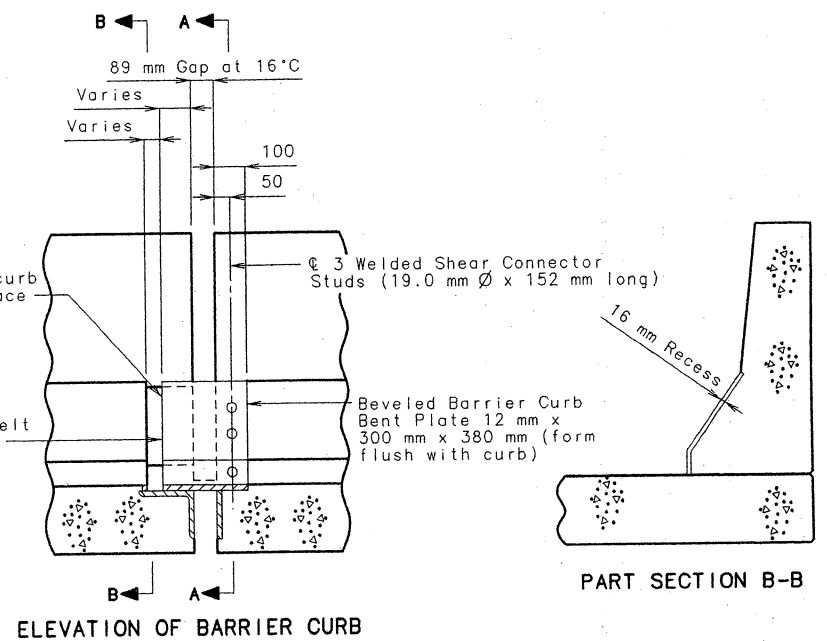
Structural steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometer minimum thickness) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Use 2 layers of 23 kg roofing felt between the sliding contact surface of beveled barrier curb bent plate and concrete barrier curb.

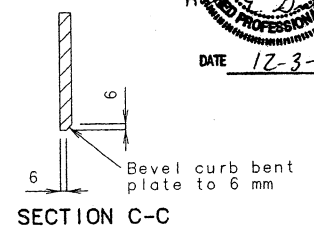
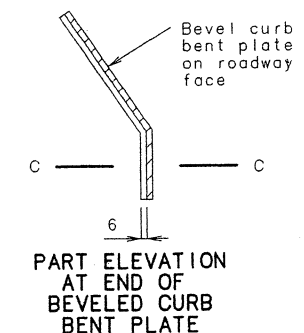
Plan dimensions are based on installation at 16°C. The expansion gap and other dimensions shall be increased 9 mm for each 10°C fall and decreased 9 mm for each 10°C rise in temperature at installation.

Furnishing, coating or galvanizing, and installing the expansion device and barrier curb plates shall be included in the contract unit price for Expansion Device (Flat Plate).

Concrete shall be forced under and around flat plate, studs, and angles. Proper consolidation of the concrete shall be achieved by localized internal vibration.



PART SECTION B-B



SECTION C-C

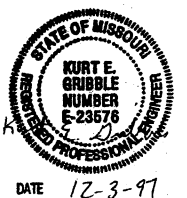
DETAILS OF FLAT PLATE EXPANSION DEVICE AT END BENT NO. 1

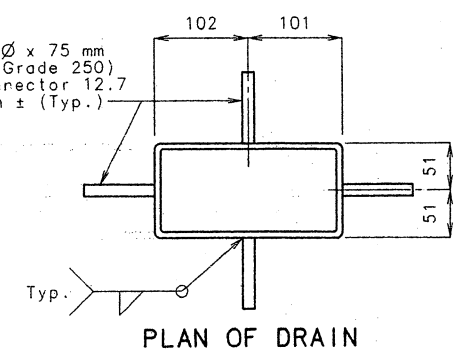
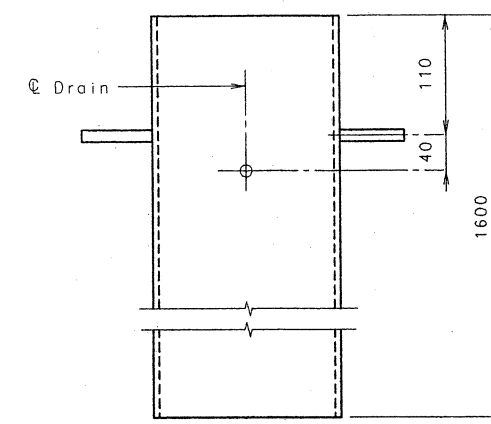
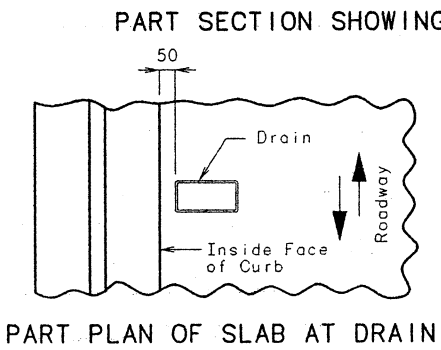
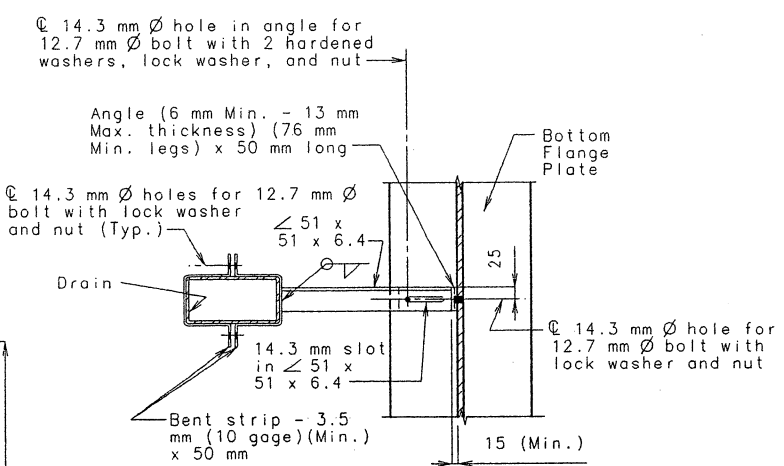
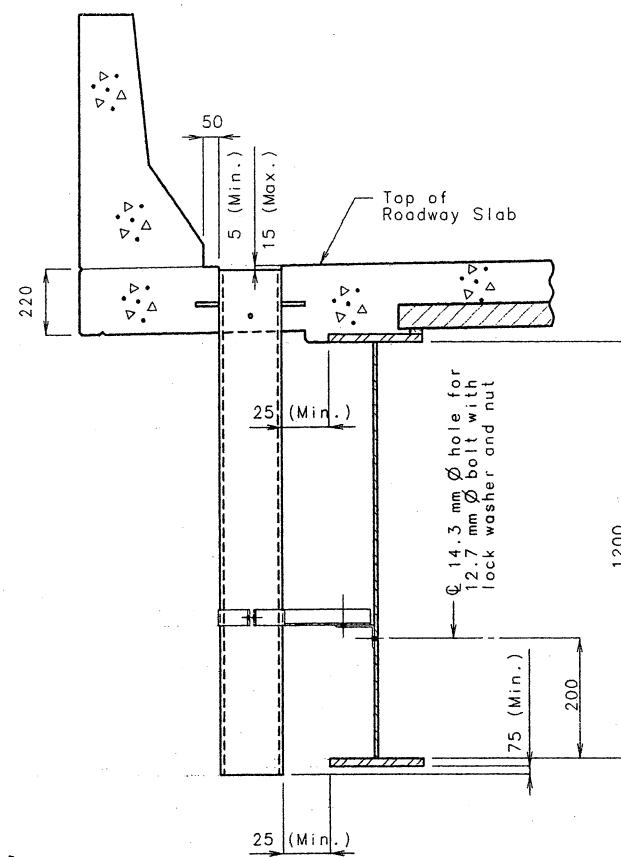
Detailed Jan. 1997
Checked Aug. 1997

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ST. LOUIS COUNTY

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GENERAL NOTES:

Slab drains may be fabricated of either 6 mm welded sheets of ASTM A709M Grade 250 steel or from 6.4 mm structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 203 mm x 102 mm.

Locate drains in the slab by dimensions shown in Part Section Near Drain.

Shift reinforcing in field where necessary to clear drains.

The drains and bracket assembly shall be galvanized in accordance with ASTM A123.

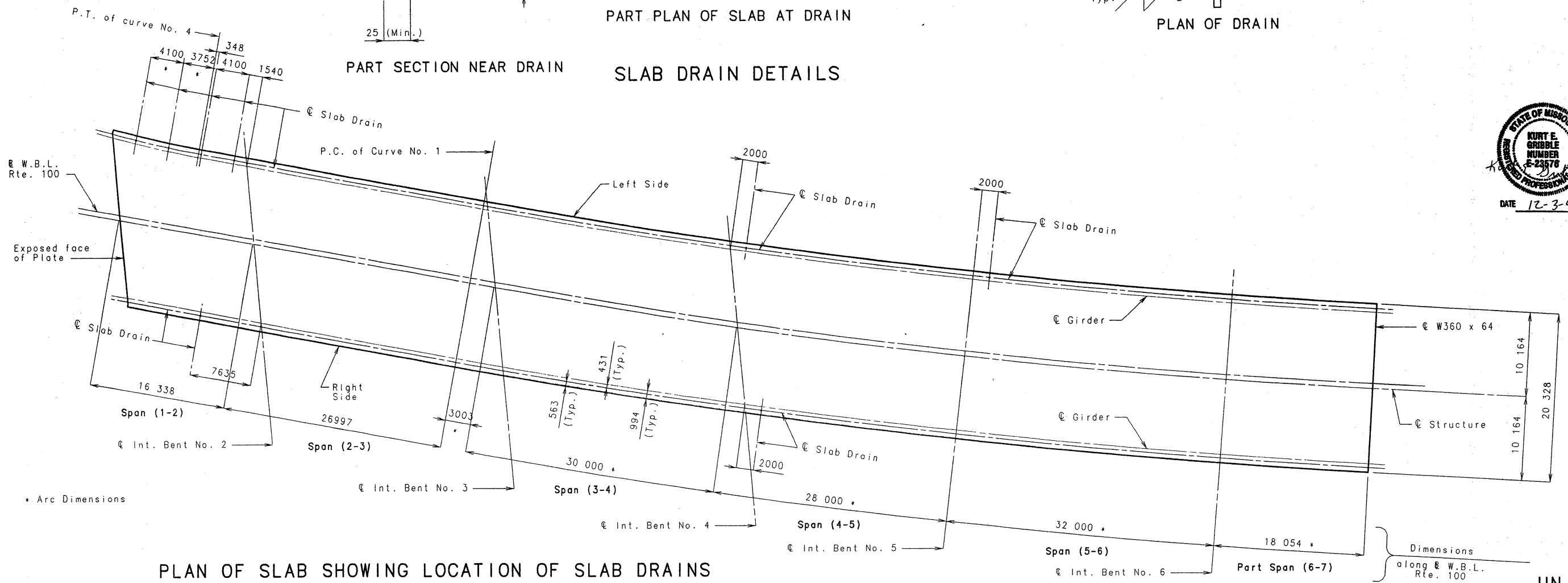
All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.

The bolt hole for the bracket assembly attachment shall be located on the plate girder shop drawings.

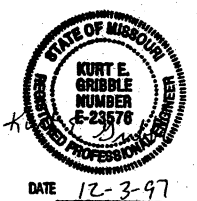
Shop drawings will not be required for slab drains and the bracket assembly.

PART SECTION NEAR DRAIN

SLAB DRAIN DETAILS



PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

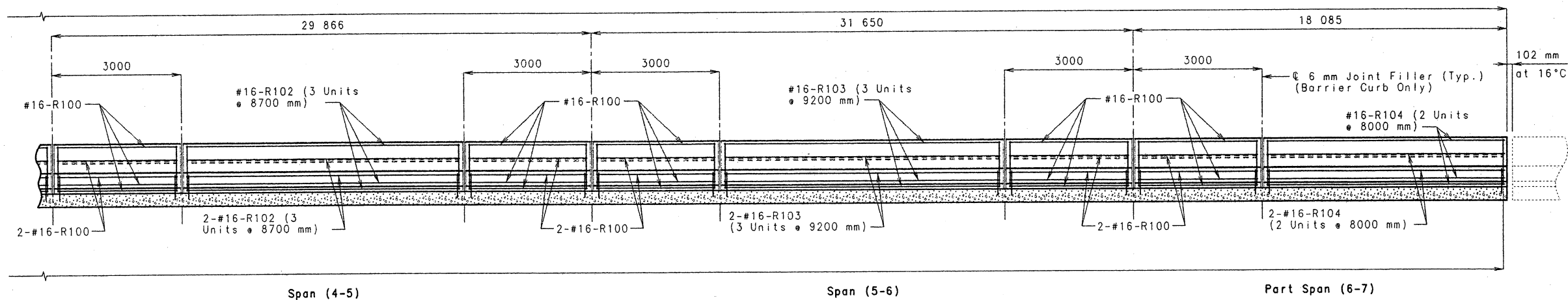
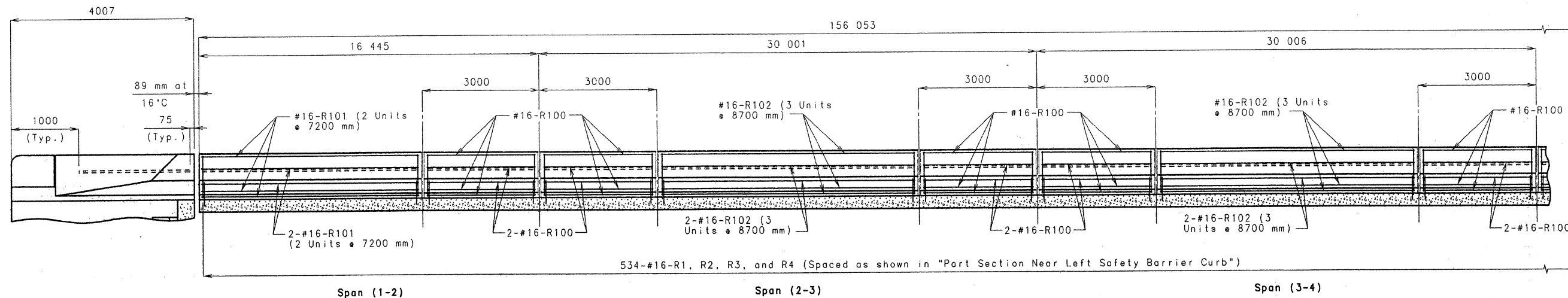


Drain 6M, Stl Gdr, Str, A
Steel Girder Drain
March 1996
Revised: November 1996

DETAILED NOV. 1997
CHECKED NOV. 1997

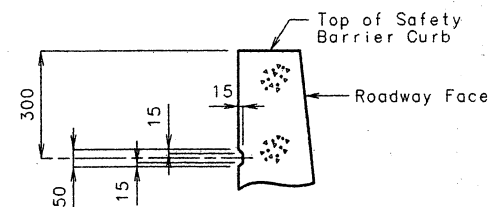
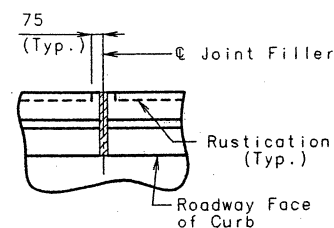
Sheet No. 92 of 236

ST. LOUIS COUNTY UNIT 1 A5682



SECTION NEAR LEFT BARRIER CURB

Note: Longitudinal dimensions are horizontal along outside edge of Safety Barrier Curb.



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

PART SECTION SHOWING RUSTICATION DETAILS

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

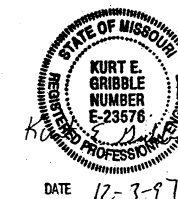
When the safety barrier curb is bid per half meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.

Concrete in the safety barrier curb shall be Class B1.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For Details of Movement Gauge see sheet no. 93.

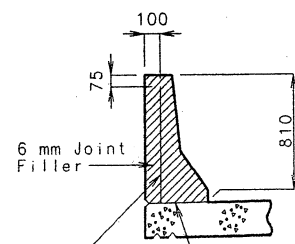
For details of Safety Barrier Curb near expansion devices see sheets no. 91 and 144.



DATE 12-3-97

UNIT 1

ST. LOUIS COUNTY A5682



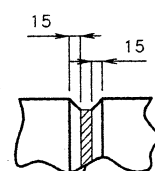
Note: 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Centered on joint)

Plastic waterstop shall be placed in all safety barrier curb filled joints. (Except structures with superelevation, use on all lower safety barrier curb joints only).

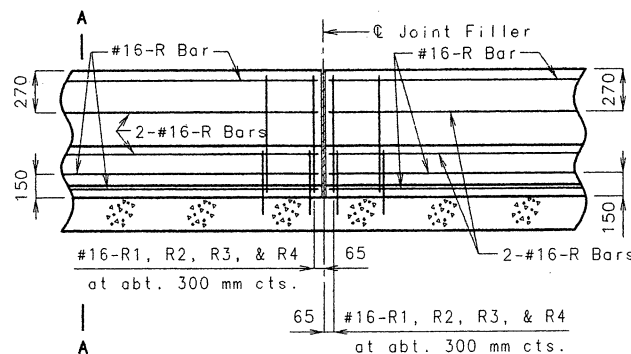
Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

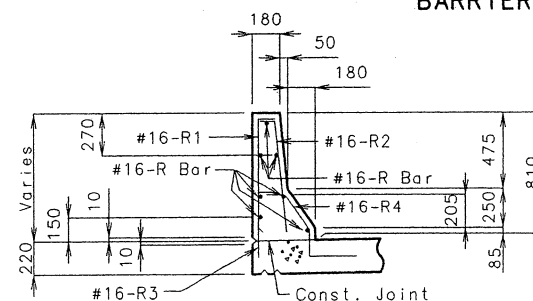
Detailed Mar. 1997
Checked Aug. 1997



FILLED JOINT DETAIL



PART SECTION NEAR LEFT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



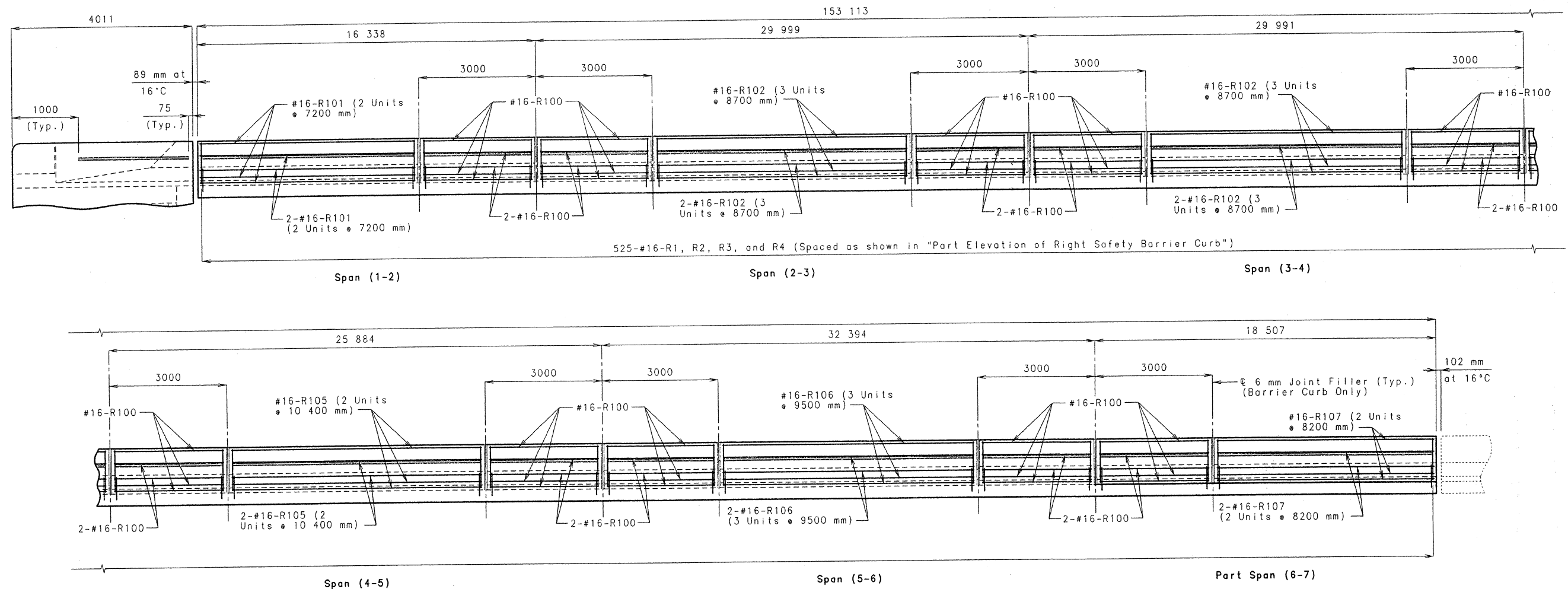
PART SECTION A-A

Note:

Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

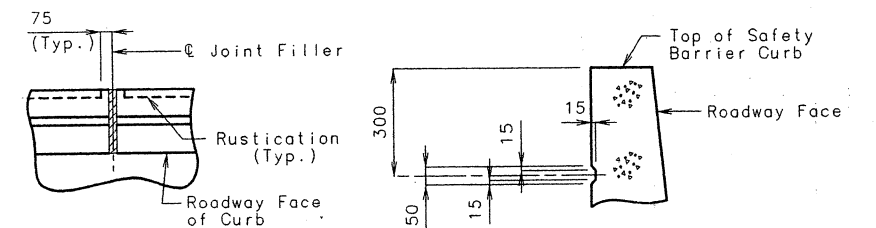
The cross-sectional area above the slab = 212 225 sq. mm.

Sheet No. 94 OF 236



ELEVATION OF RIGHT BARRIER CURB

Note: Longitudinal dimensions are horizontal along outside edge of Safety Barrier Curb.



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

PART SECTION SHOWING RUSTICATION DETAILS

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

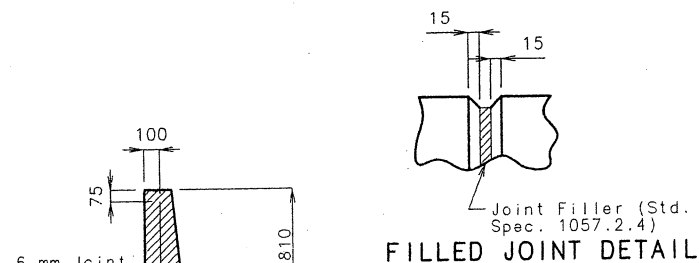
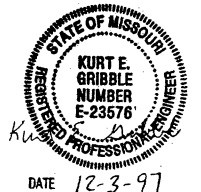
When the safety barrier curb is bid per half meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.

Concrete in the safety barrier curb shall be Class B1.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For Details of Movement Gauge see sheet no. 93.

For details of Safety Barrier Curb near expansion devices see sheets no. 91 and 144.



FILLED JOINT DETAIL

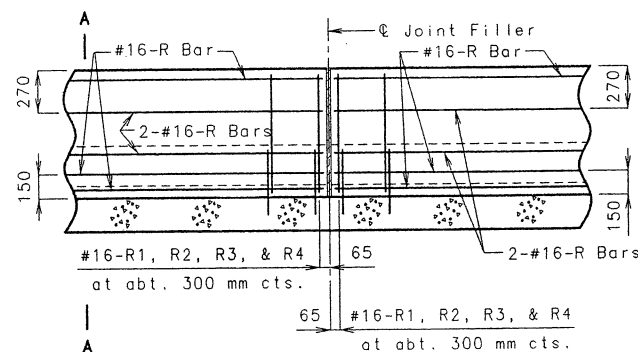
Note: 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Centered on joint)

Plastic waterstop shall be placed in all safety barrier curb filled joints. (Except structures with superelevation, use on all lower safety barrier curb joints only).

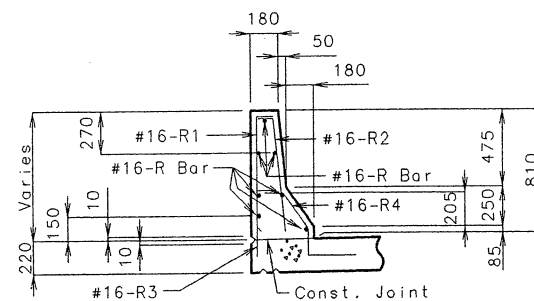
Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

Detailed Mar. 1997
Checked Aug. 1997



PART ELEVATION OF RIGHT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



PART SECTION A-A

Note:

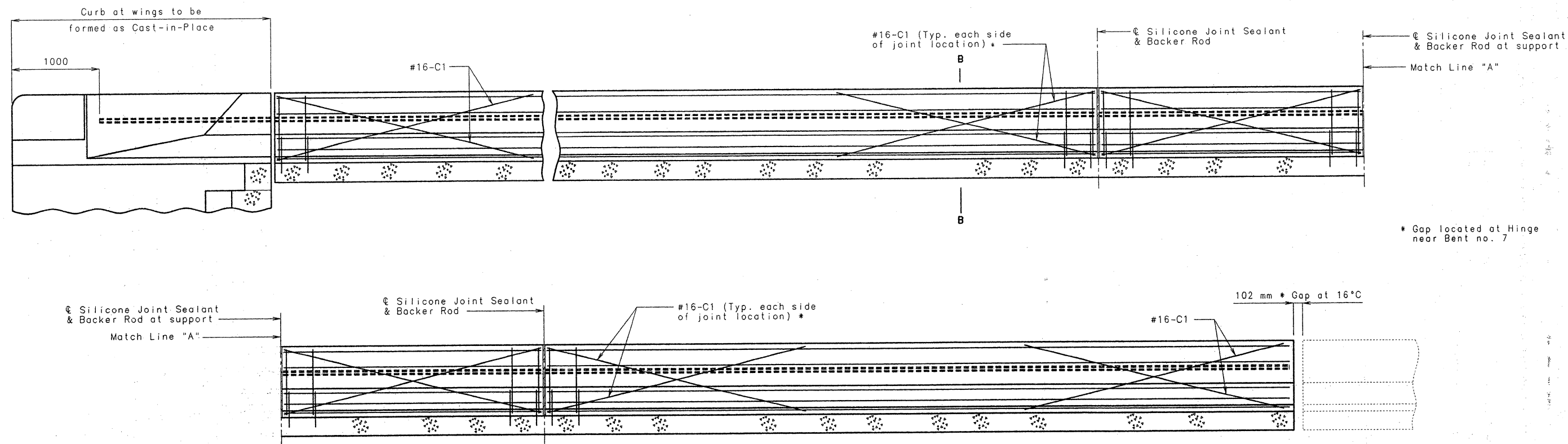
Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 212 225 sq. mm.

Sheet No. 95 OF 236

ST. LOUIS COUNTY

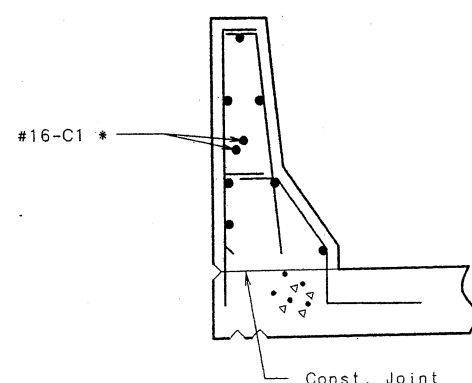
UNIT 1
A5682



Note:
Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.
When the safety barrier curb is bid per half meter, 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 half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

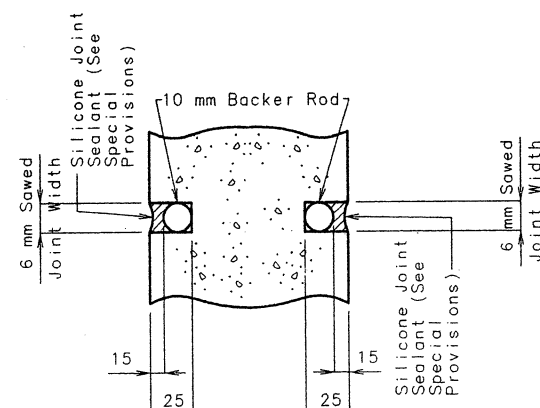
TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS (OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note:
Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler.
Plastic waterstop shall not be used with slip-form option.
Barrier curbs at end bents shall be cast-in-place, slip form option is not allowed.
C Bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.



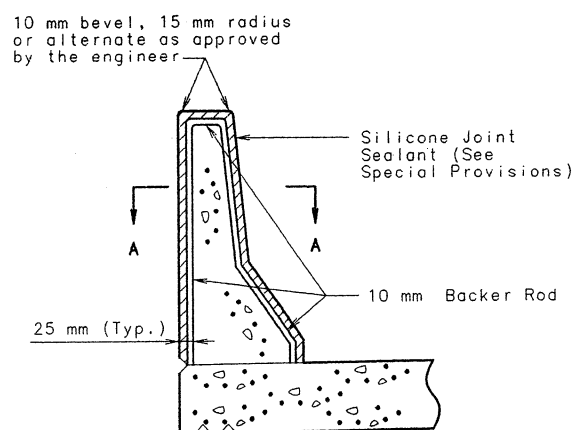
PART SECTION B-B

Note: * Each side of joint location.



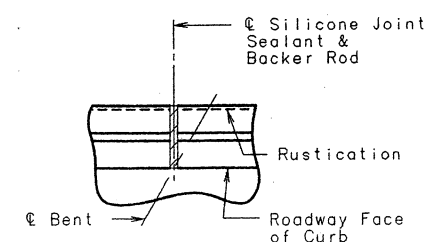
SECTION A-A

Note:
Cost of silicone joint sealant and backer rod complete in place to be included in the contract unit price for safety barrier curb.

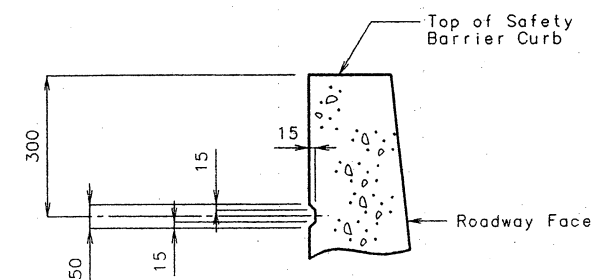


SECTION THRU JOINT

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB (Left barrier curb shown; right barrier curb similar.)



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL
(Use on highway grade separation only)

Detailed Mar. 1997
Checked Aug. 1997

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STATE	PROJ. NO.	SHEET NO.
MO.		130

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Section 503 (f'c = 28 MPa) of the Missouri Standard Specifications (Metric).

All joint filler shall meet the requirements of Section 1057.2.5 of the Missouri Standard Specifications (Metric), except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 420 with Fy = 420 MPa.

Minimum clearance to reinforcing steel shall be 40 mm, unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #13 & #19 bars 700 mm and 1055 mm respectively.

Mechanical bar splices will be permitted and shall develop at least 125 percent of the specified yield strength of the reinforcing bars being spliced. The contractor shall furnish the Engineer the manufacturer's certification that this requirement is met and is required to follow the manufacturer's recommendation for installation.

Mechanical bar splices shall be epoxy coated in accordance with Mo. Std. Spec. 710.

When a lap splice is required for the use of a mechanical bar splice, the minimum lap length shall be 1055 mm for transverse approach slab bar splices.

At the contractor's option, Grade 300 reinforcement may be substituted for the Grade 420 #16 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 300 reinforcement is substituted for the Grade 420 #16 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 50 mm minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired according to Mo. Std. Spec. 710.3.3 of the Missouri Standard Specifications (Metric).

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge slab before pouring the bridge approach slabs.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

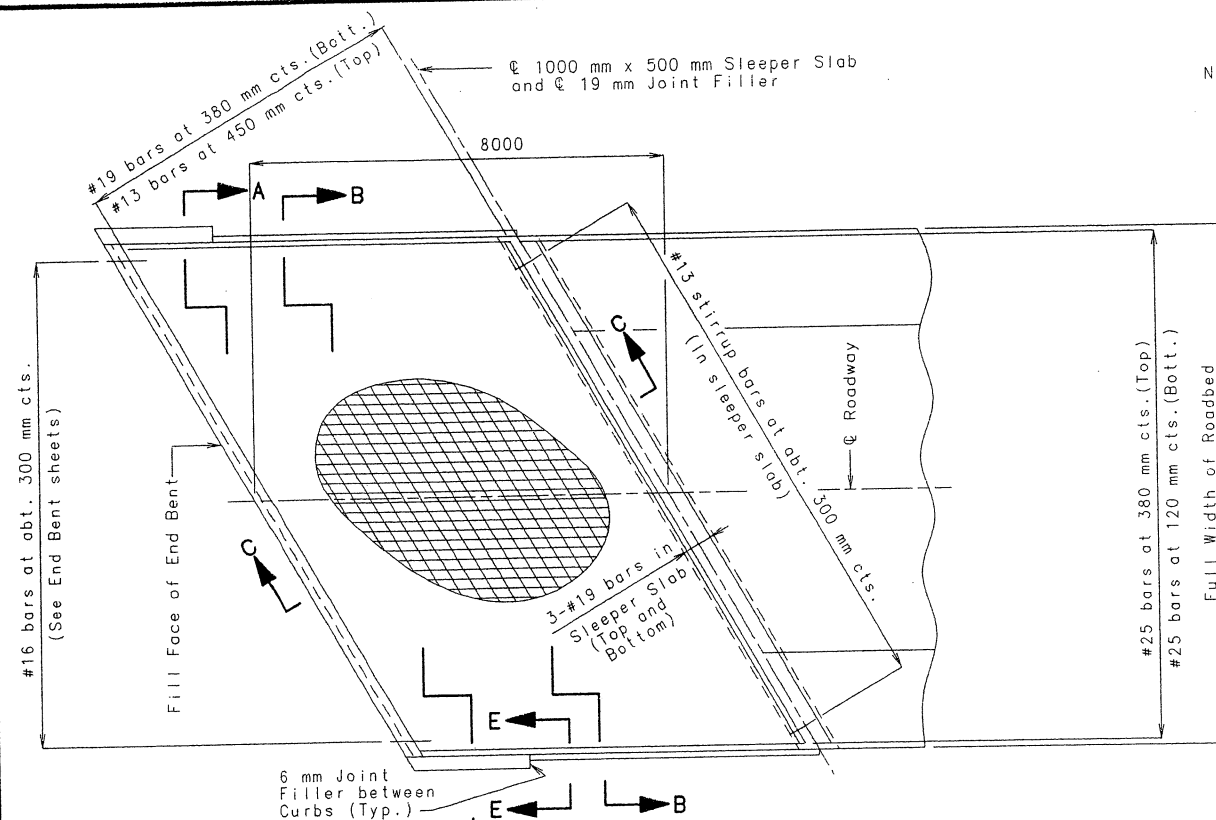
Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, base and all other appurtenances and incidental work as shown on this sheet, complete in place, shall be considered as completely covered under the contract unit price for Bridge Approach Slab (Bridge), per square meter.

See Missouri Standard Plans Drawing M504.00 for details of Concrete Approach Pavement.

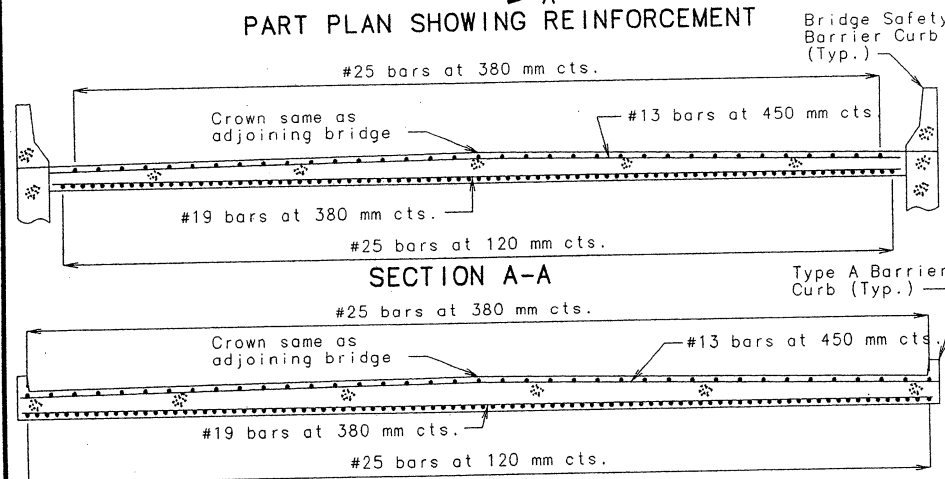
Drain pipe may be either 150 mm diameter corrugated metallic-coated pipe underdrain, 100 mm diameter corrugated polyvinyl chloride (PVC) drain pipe, or 100 mm diameter corrugated polyethylene (PE) drain pipe.

See Missouri Standard Plans Drawing M606.00 or M609.00 for details of Type A Barrier Curb.

Note: For Curve Ordinates for left side of the Approach Slab see sheet no. 73.

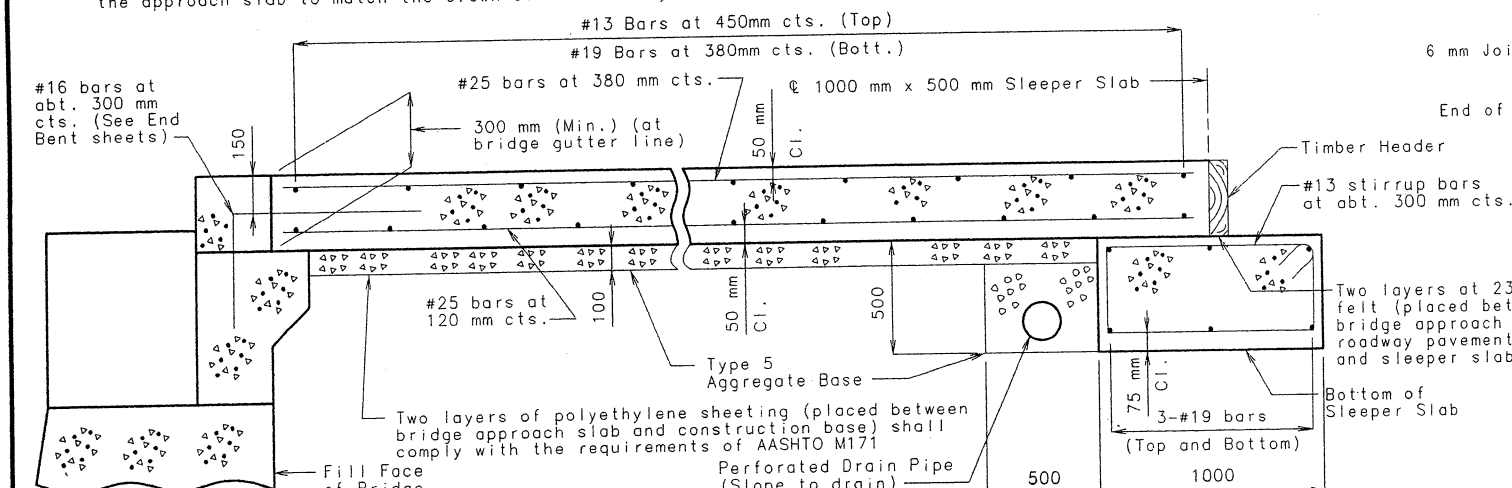


PART PLAN SHOWING REINFORCEMENT

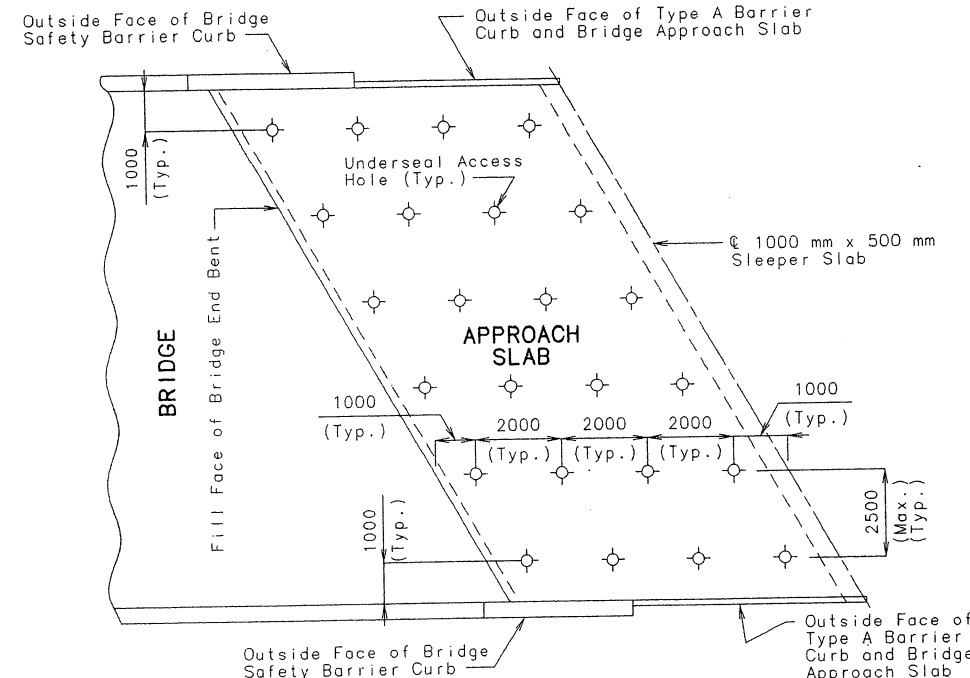


SECTION B-B

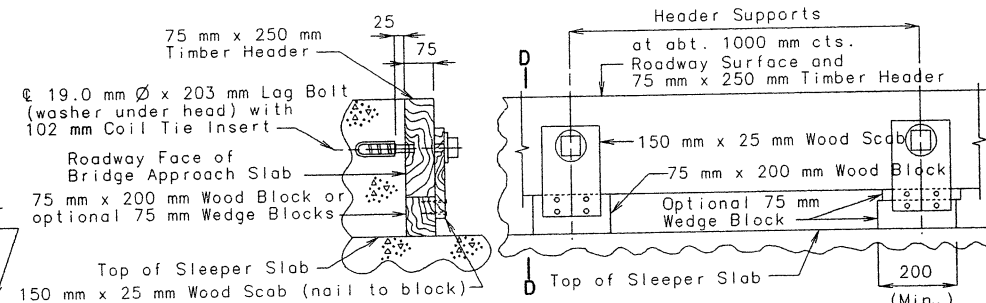
Note: With the approval of the Engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



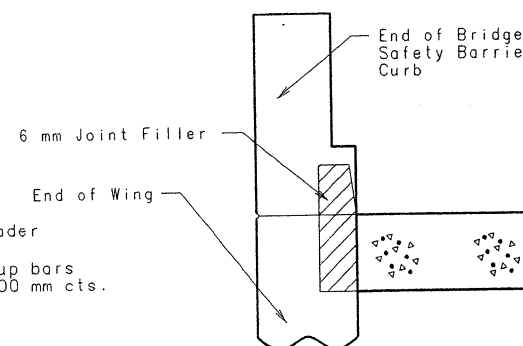
SECTION C-C



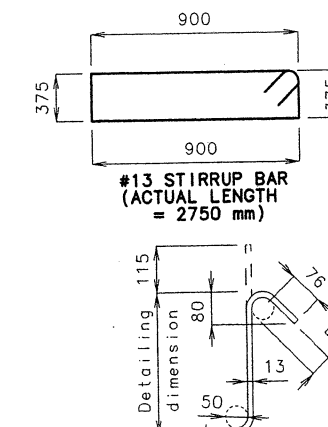
PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



SECTION D-D
Note: Remove timber header when concrete pavement is placed.
DETAILS OF TIMBER HEADER

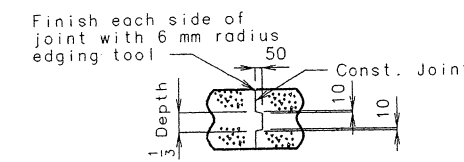


SECTION E-E (BETWEEN CURBS)

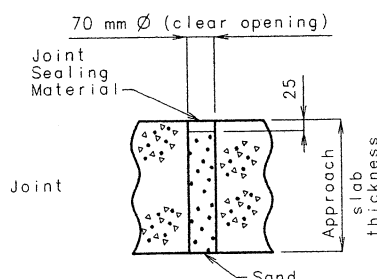


TYPICAL 13# STIRRUP BAR HOOK DIMENSIONS BENDING DIAGRAM

Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest 10 mm).



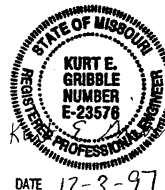
CONST. JOINT DETAIL (IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

BRIDGE APPROACH SLAB

Sheet No. 97 OF 236

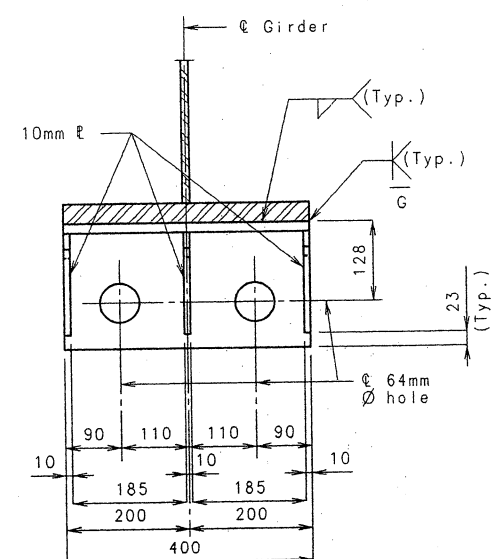


DATE 12-3-97

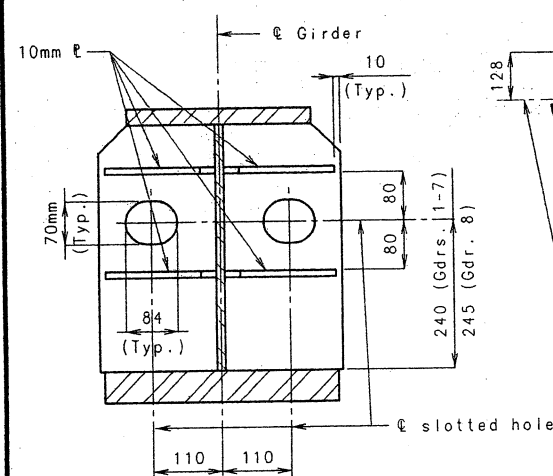
UNIT 1

ST. LOUIS COUNTY

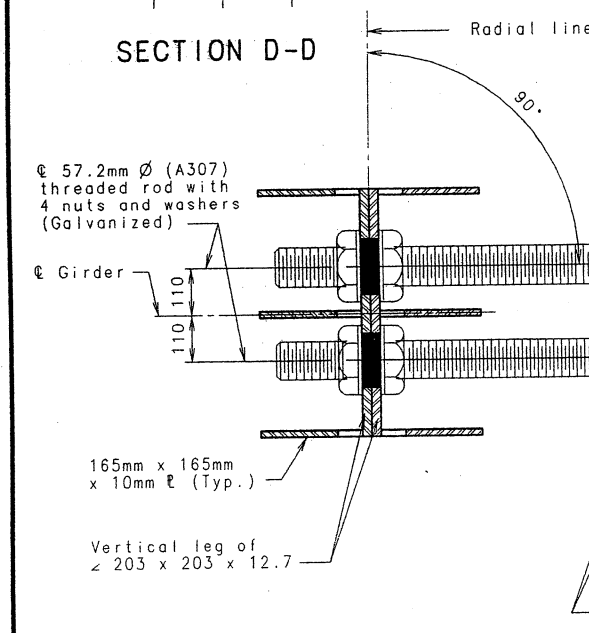
A5682



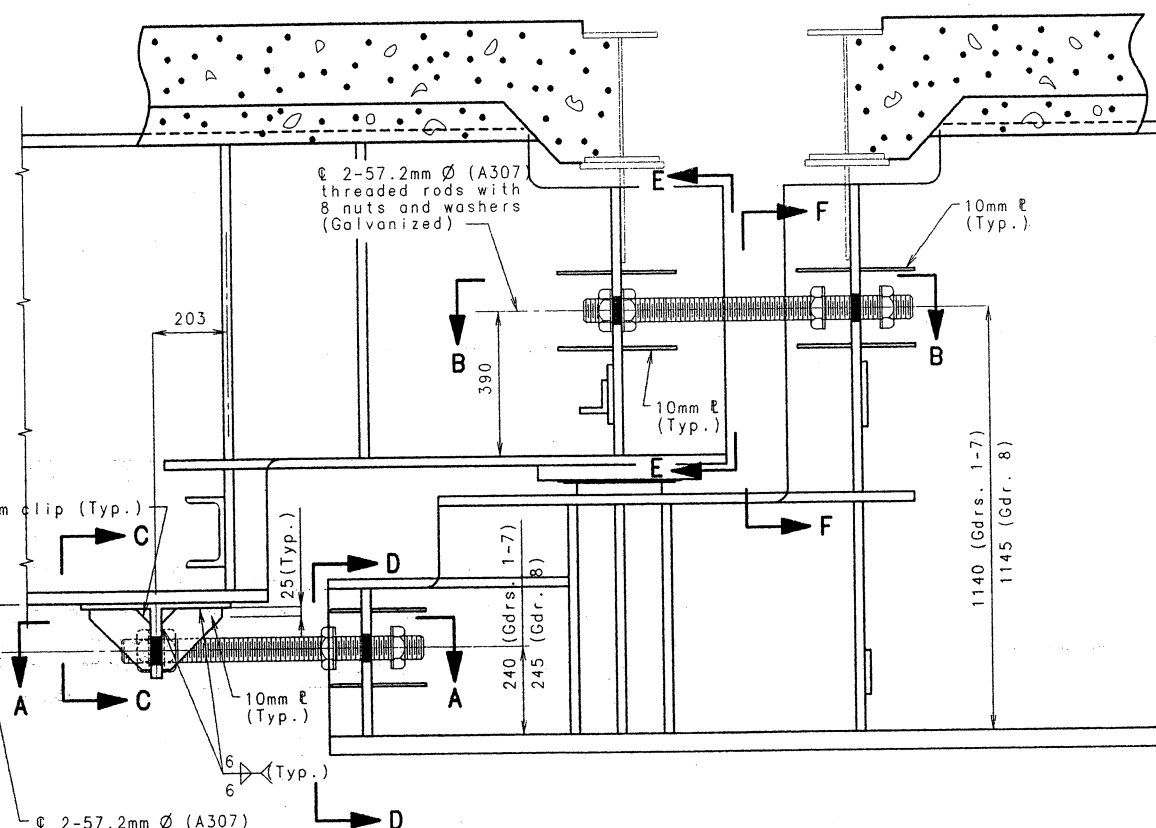
SECTION C-C



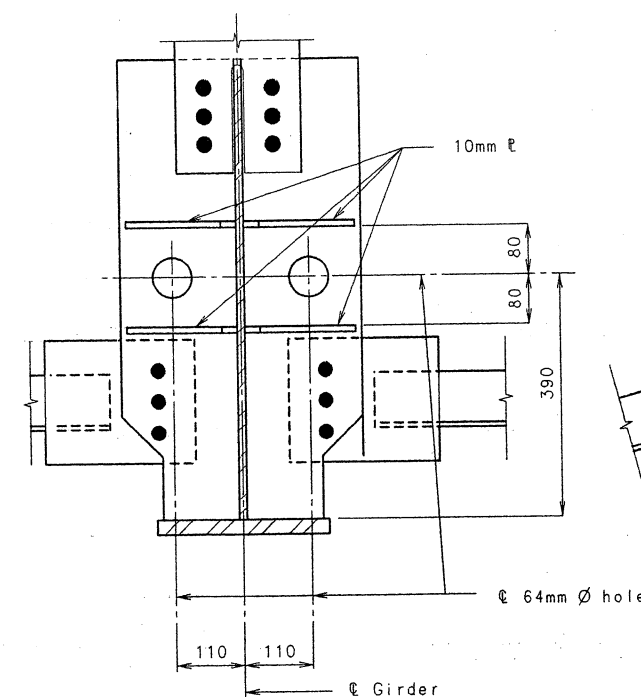
SECTION D-D



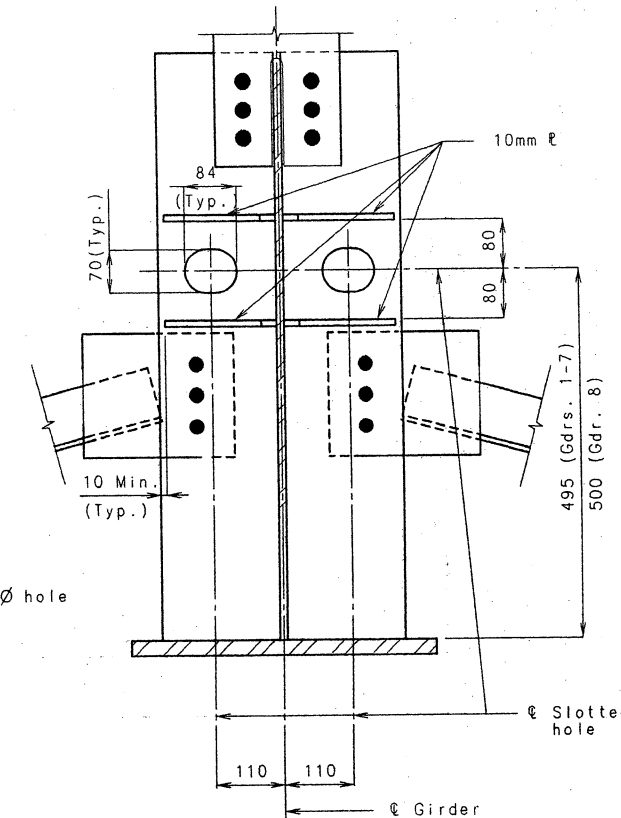
SECTION A-A



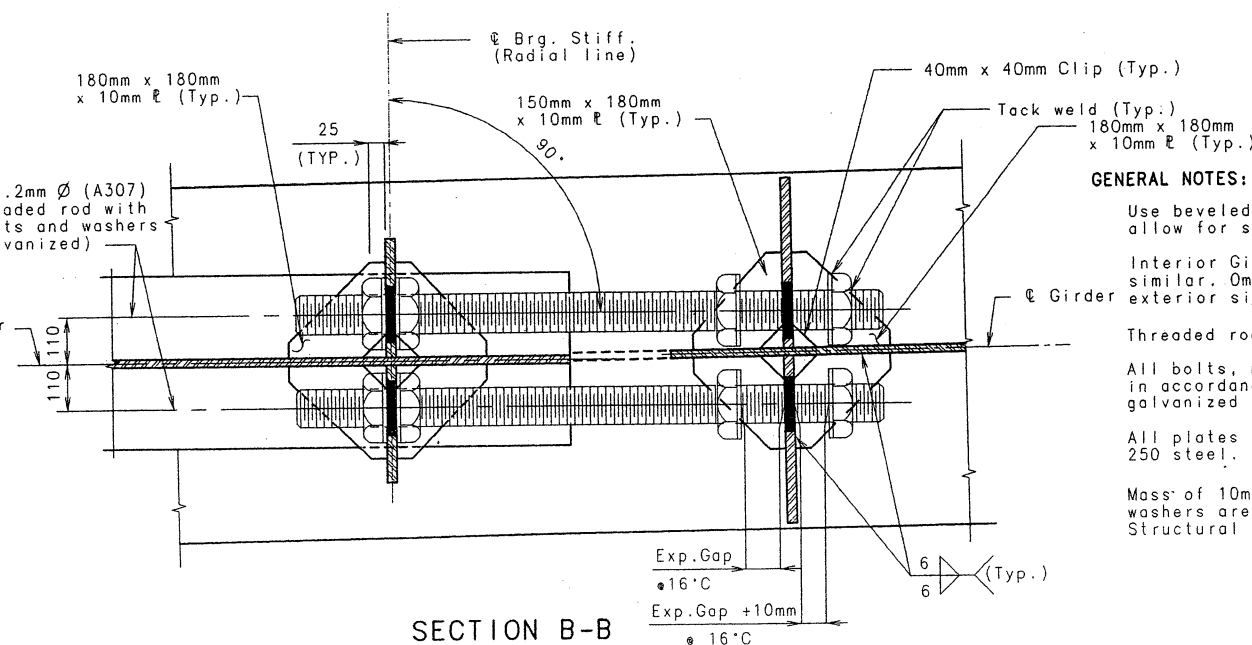
DETAILS AT HINGED CONNECTION NEAR BENT NO. 7



SECTION E-E



SECTION F-F



SECTION B-B

GENERAL NOTES:

Use beveled washers and plates as required to allow for skew, curvature and grade of structure.

Interior Girders are shown, exterior girders are similar. Omit earthquake restrainer assembly on exterior side of exterior girder.

Threaded rods shall be parallel to grade.

All bolts, nuts and washers shall be galvanized in accordance with ASTM A153. All plates shall be galvanized in accordance with ASTM A123.

All plates and washers shall be ASTM A709M Grade 250 steel.

Mass of 10mm plates, threaded rods, nuts and washers are included in Mass of Fabricated Structural Carbon Steel.



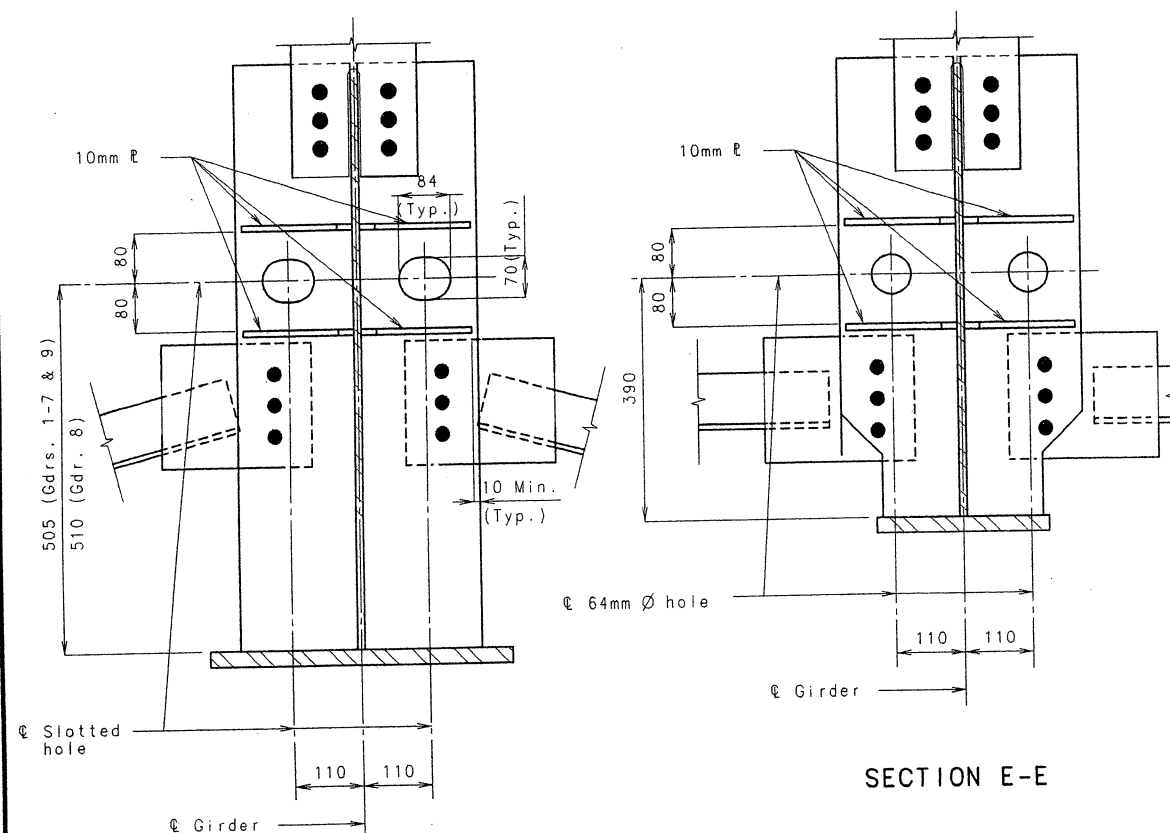
DATE 12-4-97

UNIT 2

Detailed Oct. 1997
Checked Nov. 1997

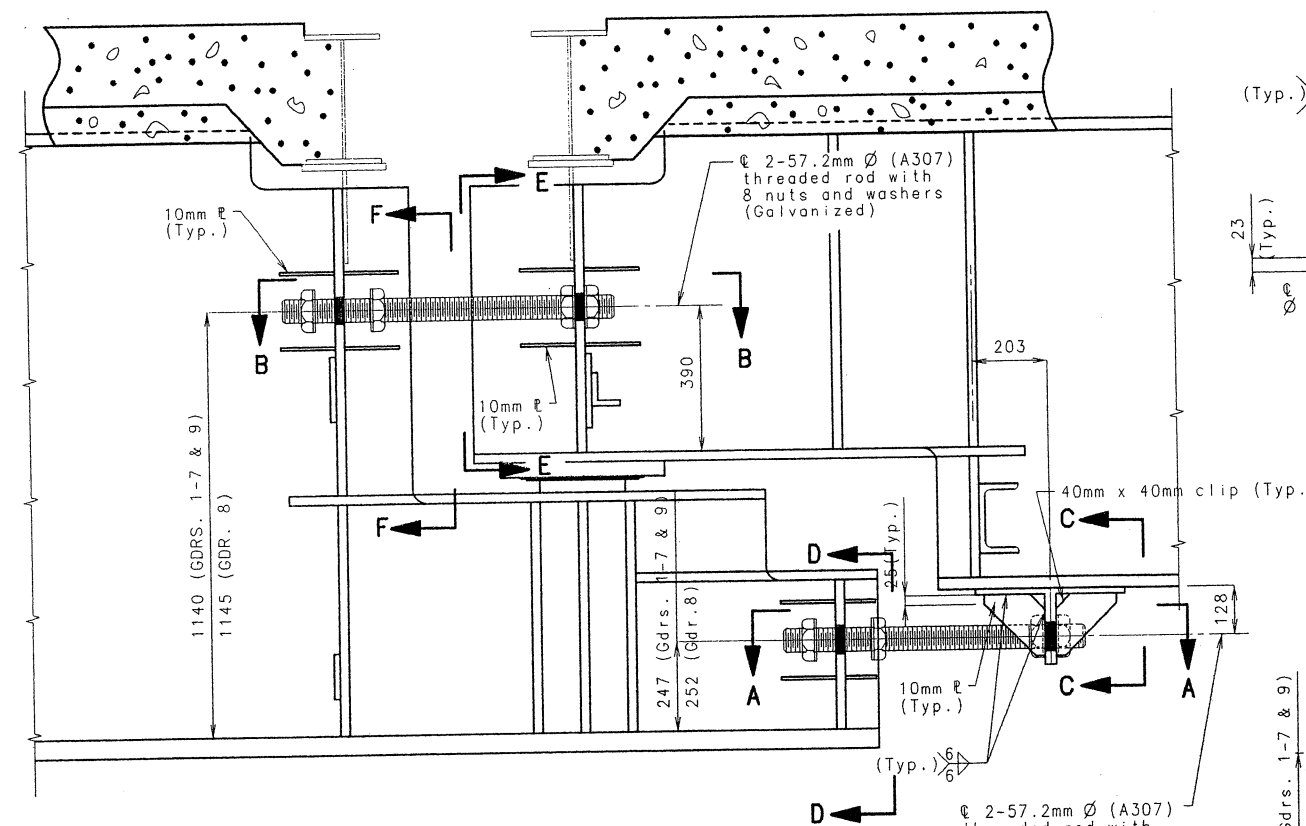
Sheet No. 98 of 236.

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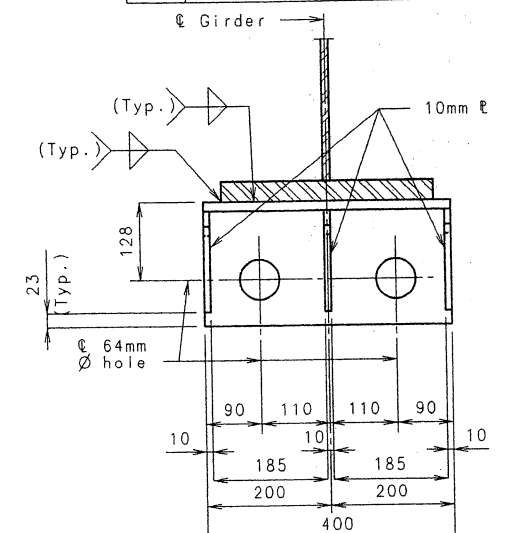


SECTION F-F

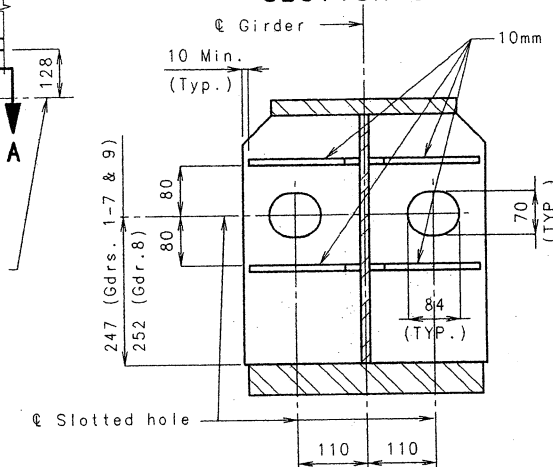
SECTION E-E



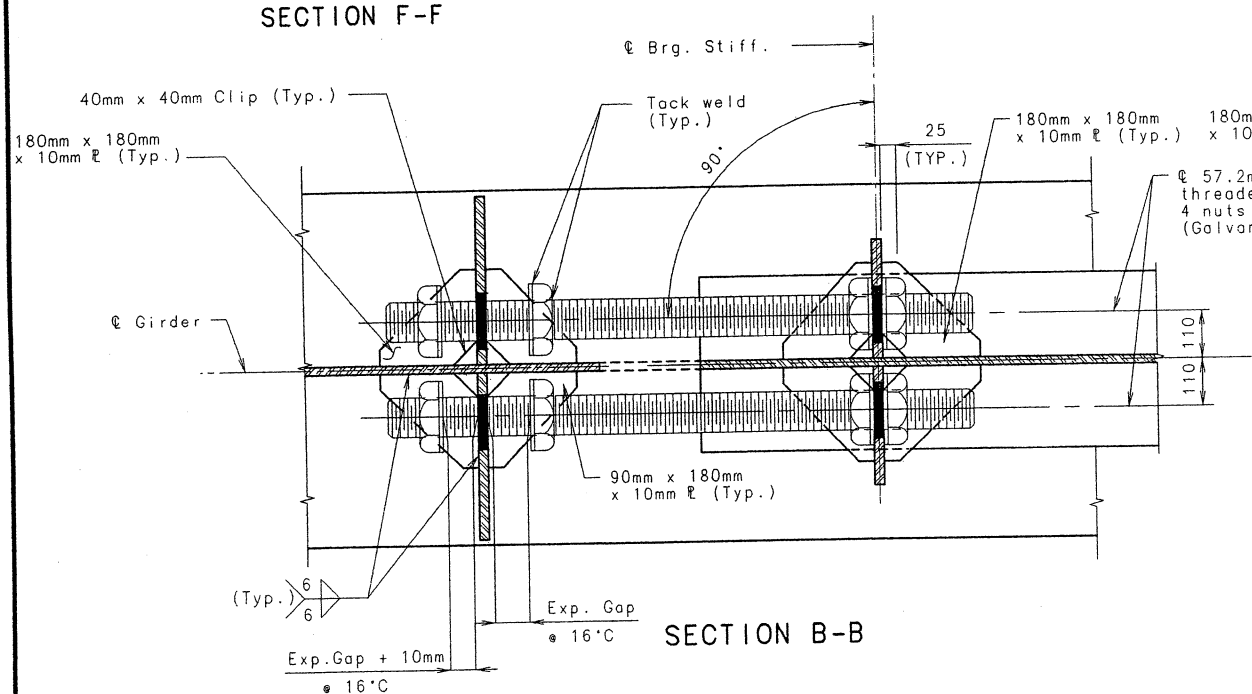
DETAILS AT HINGED CONNECTION
NEAR BENT NO. 11



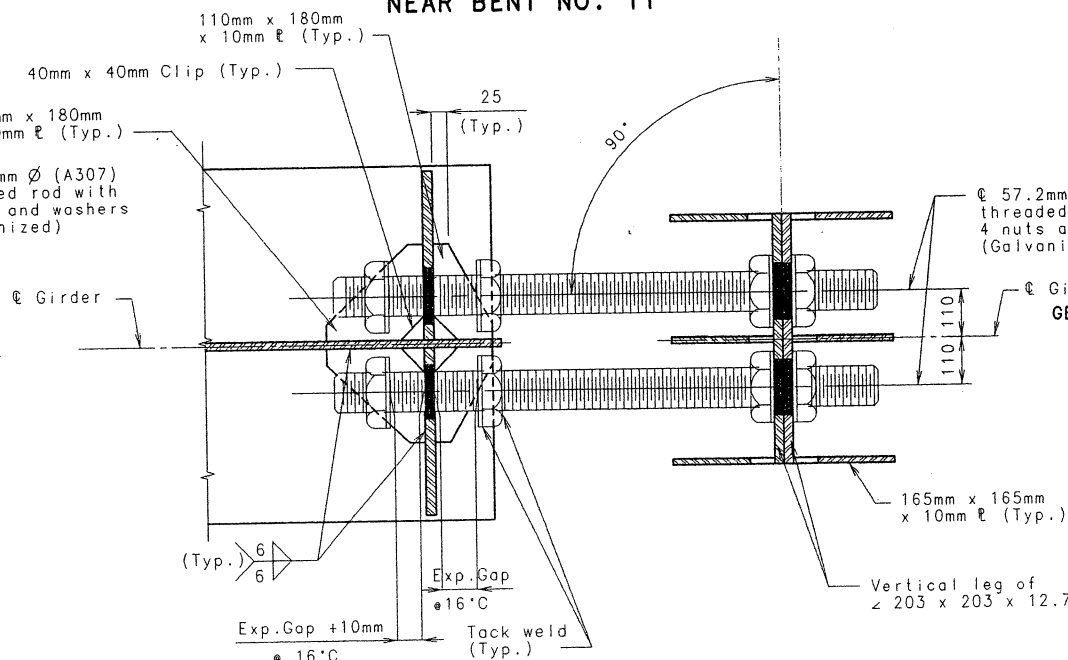
SECTION C-C



SECTION D-D



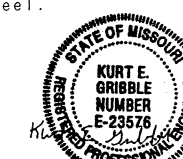
SECTION B-B



SECTION A-A

GENERAL NOTES:

- Use beveled washers and plates as required to allow for skew, curvature and grade of structure.
- Interior Girders are shown, exterior girders are similar.
- Omit earthquake restrainer assembly on exterior side of exterior girder.
- All plates and washers shall be ASTM A709M Grade 250 steel.
- All bolts, nuts and washers shall be galvanized in accordance with ASTM A153. All plates shall be galvanized in accordance with ASTM A123.
- Mass of 10mm plates, threaded rods, nuts and washers are included in Mass of Fabricated Structural Carbon Steel.



DATE 12-4-97

UNIT 2

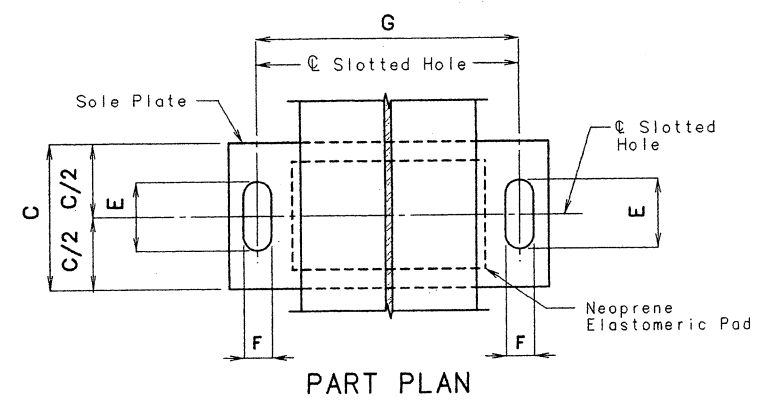
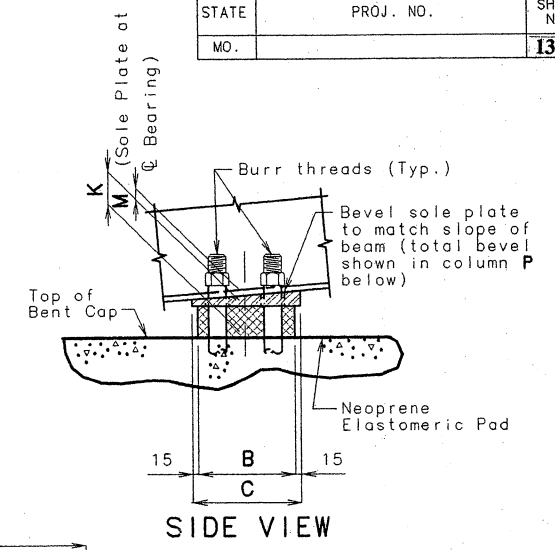
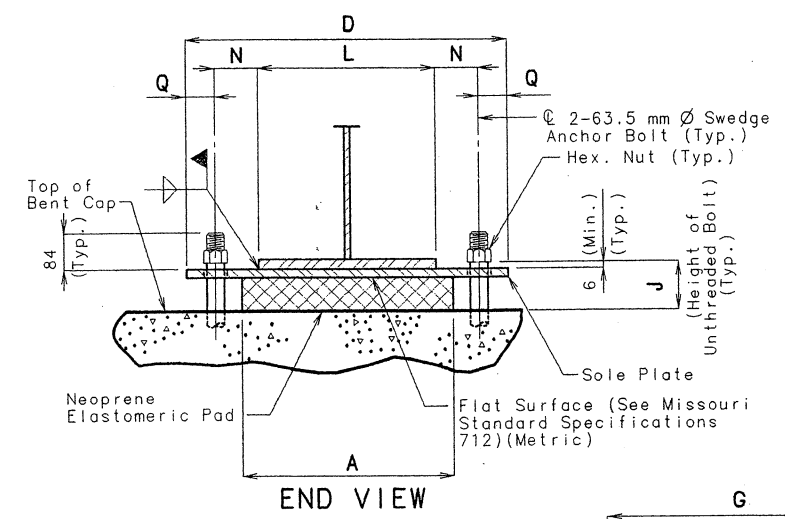
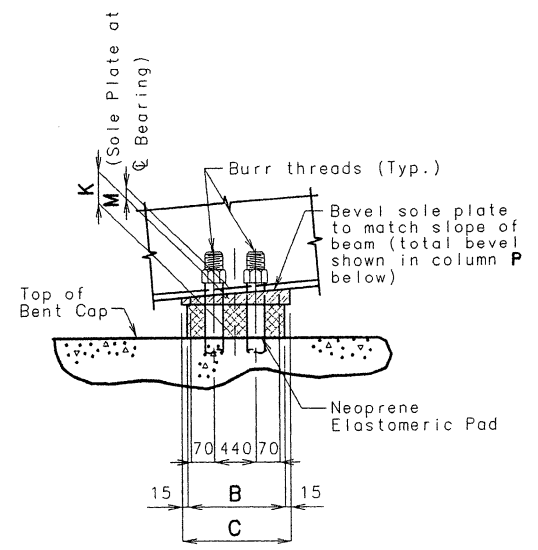
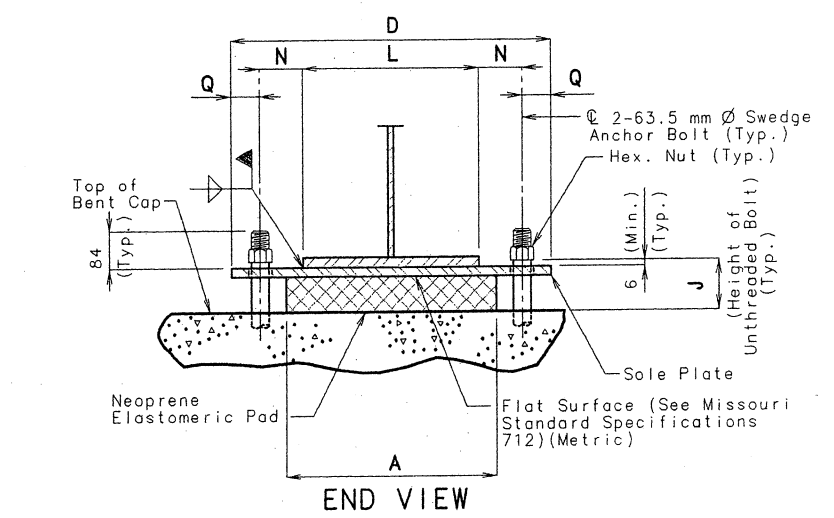
DETAILS OF EARTHQUAKE RESTRAINERS AT HINGED CONNECTION NEAR BENT NO. 11

Detailed Oct. 1997
Checked Nov. 1997

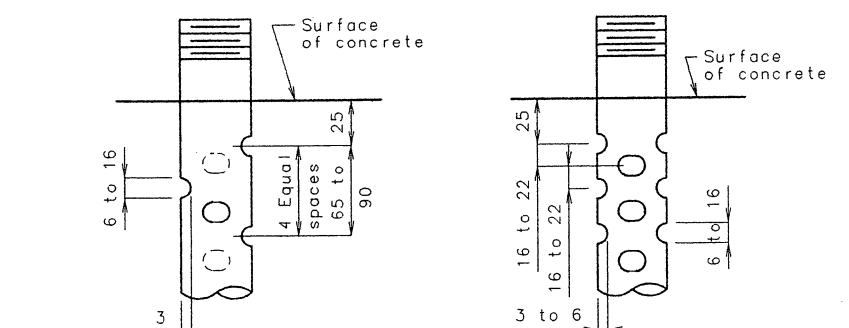
Sheet No. 99 of 236.

ST. LOUIS COUNTY

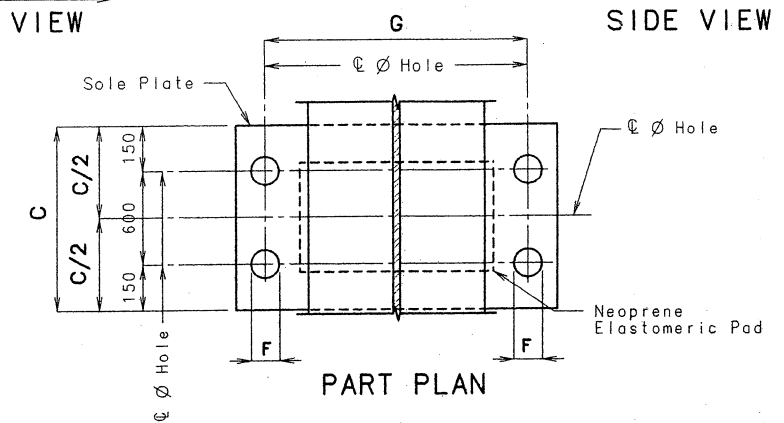
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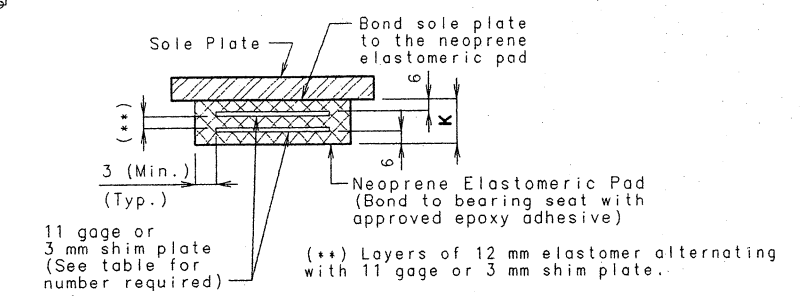
SIDE VIEW



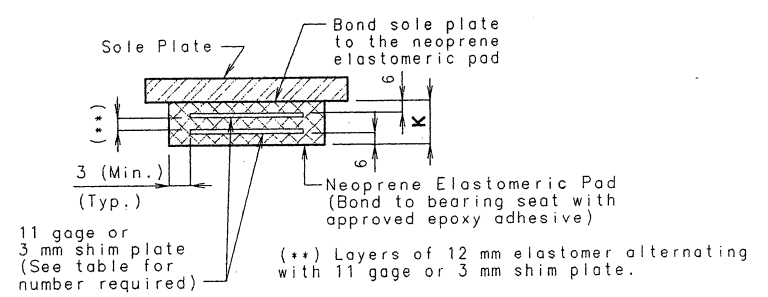
DETAIL FOR 19.0 mm Ø THRU 63.5 mm Ø ANCHOR BOLTS
SWEDGE ANCHOR BOLT DETAILS
OPTIONAL DETAIL FOR 34.9 mm Ø THRU 63.5 mm Ø ANCHOR BOLTS



PART PLAN



NEOPRENE ELASTOMERIC PAD



NEOPRENE ELASTOMERIC PAD

GENERAL NOTES:

Anchor bolts shall be 63.5 mm diameter ASTM A709M Grade 345W steel swedged bolts and shall extend 635 mm into the concrete with ASTM A194M-2, 2H, or ASTM A563M-C, C3, D, DH, DH3 heavy hexagon nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 25 mm less than the extension into the concrete.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness) or galvanized in accordance with ASTM A153.

The neoprene elastomeric pads shall be 60 durometer. The neoprene pad shall be bonded to the bearing seat with an epoxy adhesive as approved by the bearing manufacturer for bonding neoprene to concrete.

The sole plate shall be furnished with the bearing and field welded to the girders.

Structural steel for the sole plate shall be ASTM A709M Grade 250 and shall be coated with a minimum of 2 coats of inorganic zinc primer (125 micrometers minimum thickness).

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.

Payment for the sole plate, anchor bolts, and heavy hexagon nuts shall be included in the cost of the bearing assembly. See Special Provisions.

FIXED BEARINGS																
BENT NO.	GIRDERS	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
8	1-7 & 9	510	870	900	790	74	596	174	105	460	47	68	36	97	7	8
8	8	510	870	900	930	74	736	174	105	600	47	68	36	97	7	1
															TOTAL BEARINGS	9

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

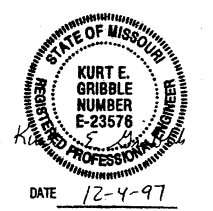
EXPANSION BEARINGS																
BENT NO.	GIRDERS	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)
10	1-9	430	710	740	730	580	74	536	184	120	400	47	68	36	97	8
															TOTAL BEARINGS	9

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

DETAILS OF LAMINATED NEOPRENE BEARINGS AT BENTS NO. 8 AND 10

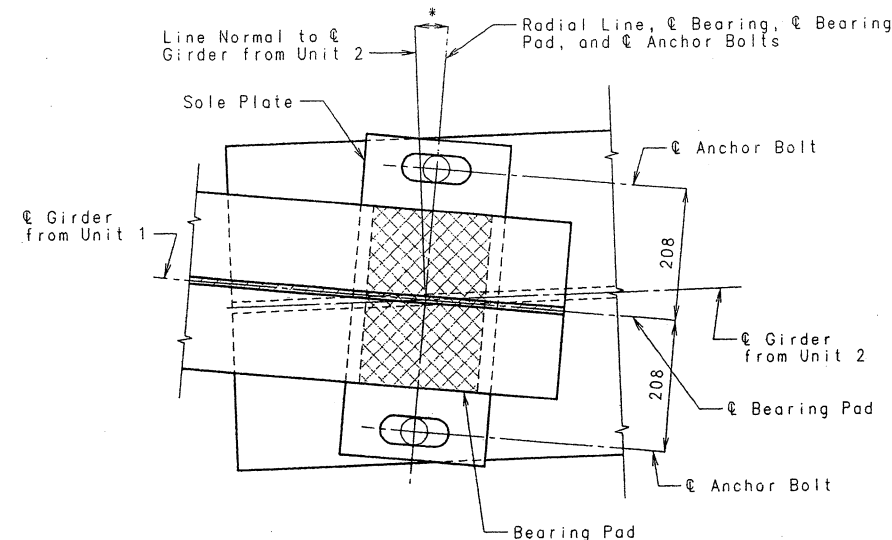
Sheet No. 103 of 236.

ST. LOUIS COUNTY A5682

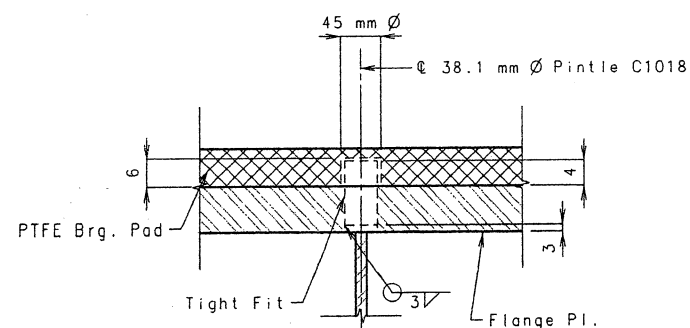


UNIT 2

Detailed May 1997
Checked Aug. 1997



PLAN SHOWING ANCHOR BOLT
AND BEARING PAD ALIGNMENT



DETAIL OF PINTLE

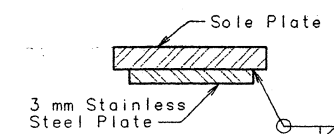
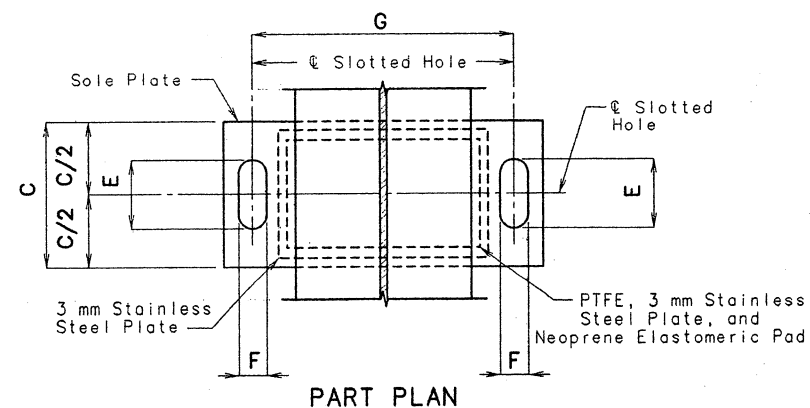
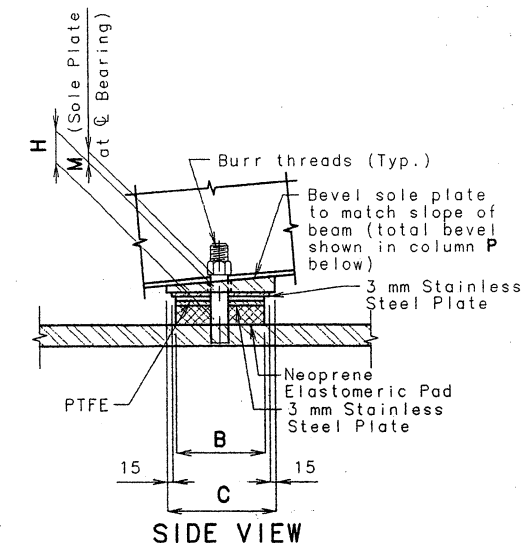
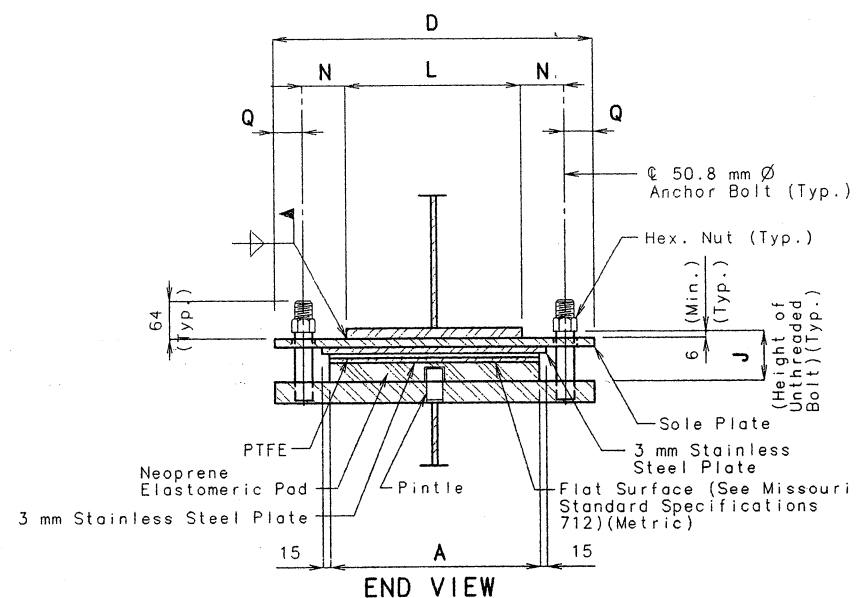
Note: For detail of hinged connection near Bent no. 7, see sheet no. 124.
For detail of anchor bolt connection to Flange Plate, see sheet no. 124.
To prevent sliding, the neoprene pad shall be bonded to the bearing seat with an epoxy adhesive as approved by the manufacturer for bonding neoprene to steel.

PTFE SLIDING BEARINGS AT HINGE NEAR BENT NO. 7																	
GIRDERS	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(★)	NUMBER REQUIRED
1-7	280	230	440	570	230	60	416	41	89	33	280	40	68	0	77	3	7
8	280	230	440	570	230	60	416	41	94	33	280	45	68	0	77	3	1

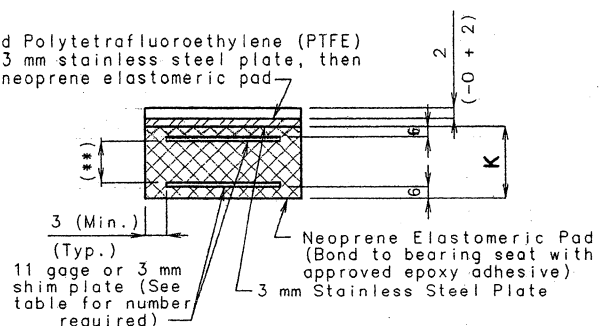
(★) The required shim plate shall be placed between layers of

TOTAL BEARINGS	8
----------------	---

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.



Bond Polytetrafluoroethylene (PTFE) to 3 mm stainless steel plate, then to neoprene elastomeric pad→



(**) Layers of 6 mm elastomer alternating with 11 gage or 3 mm shim plate

NEOPRENE ELASTOMERIC PAD

GENERAL NOTES:

GENERAL NOTES:
Anchor bolts shall be 50.8 mm diameter ASTM A709M Grade 345W steel bolts with ASTM A194M-2, 2H, or ASTM A563M-C, C3, D, DH, DH3 heavy hexagon nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided.

All structural steel for the anchor bolts and heavy hexagon nuts shall be zinc coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness) or galvanized in accordance with ASTM A153.

Neoprene Elastomeric Pads shall be 70 Durometer.

The sole plate shall be furnished with the bearing and field welded to the girders.

Structural steel for the sole plate shall be ASTM A709M Grade 250 and shall be coated with a minimum of 2 coats of inorganic zinc primer (125 micrometers minimum thickness).

The accepted quantity of the elastomeric bearing assemblies, complete-in-place, will be paid for at the contract unit price for Type "N" PTFE Bearings, each.

Payment for the sole plate, anchor bolts, and heavy hexagon nuts shall be included in the cost of the bearing assembly. See Special Provisions.

The bottom of the 3 mm stainless steel plate that is welded to the sole plate shall be lubricated with a lubricant that is approved by the bearing manufacturer.

DETAILS OF TYPE "N" PTFE BEARINGS AT HINGED GIRDER CONNECTION NEAR BENT NO. 7

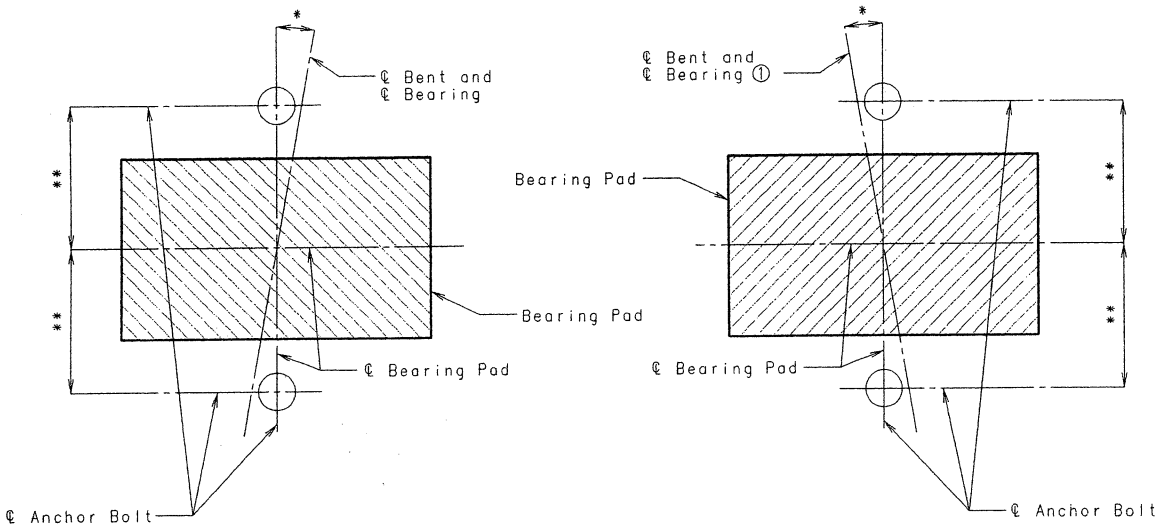
UNIT 2

Detailed Mar. 1997
Checked Aug. 1997

Sheet No. 105 of 236.

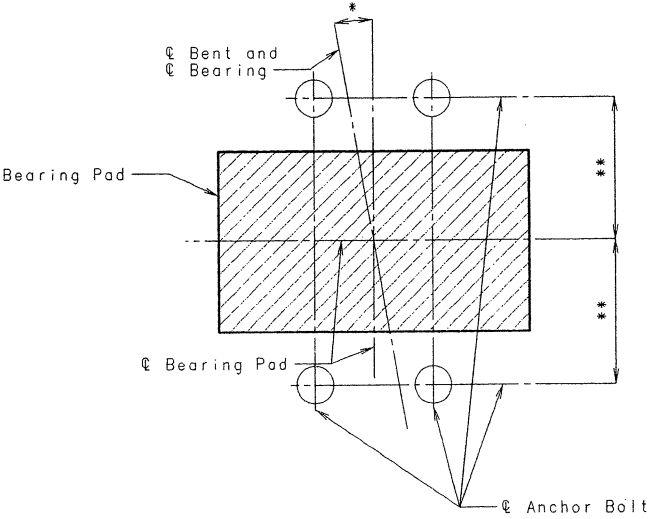
ST. LOUIS COUNTY A5682

① ϕ Bearing of Intermediate Bent no. R5 is offset parallel to the right of ϕ Bent no. R5.



PLAN SHOWING ANCHOR BOLT AND BEARING PAD ALIGNMENT FOR BENT NO. 7 GIRDERS 1-7

PLAN SHOWING ANCHOR BOLT AND BEARING PAD ALIGNMENT FOR BENT NO. 7 GIRDER NO. 8, BENT NO. 9, BENT NO. 11, AND BENT NO. R5

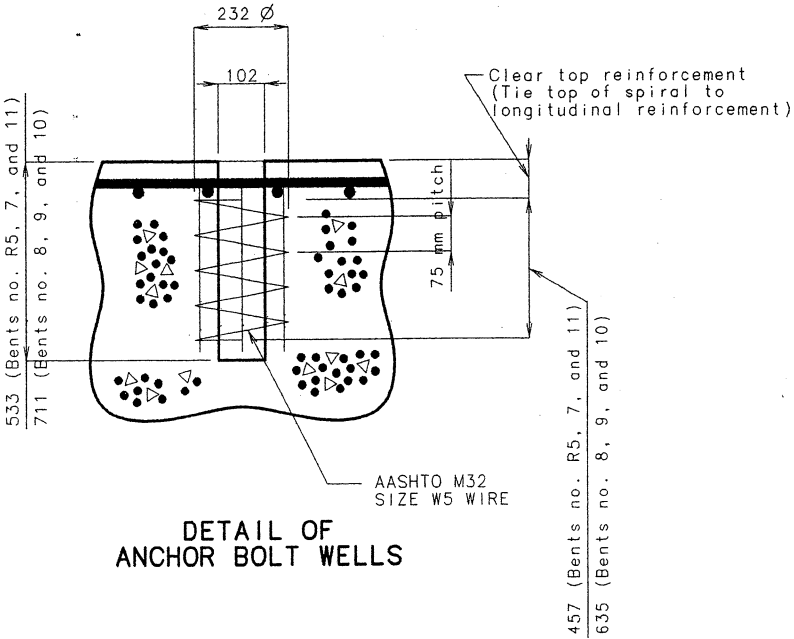


PLAN SHOWING ANCHOR BOLT AND BEARING PAD ALIGNMENT FOR BENT NO. 8 AND BENT NO. 10

**	
Bent No. 7 (Girders 1-7)	297
Bent No. 7 (Girder 8)	365
Bent No. 8 (Girders 1-7 & 9)	298
Bent No. 8 (Girder 8)	368
Bent No. 9	258
Bent No. 10	268
Bent No. 11	230
Bent No. R5 (Girder A)	270
Bent No. R5 (Girder B)	320
Bent No. R5 (Girders C and 9)	350

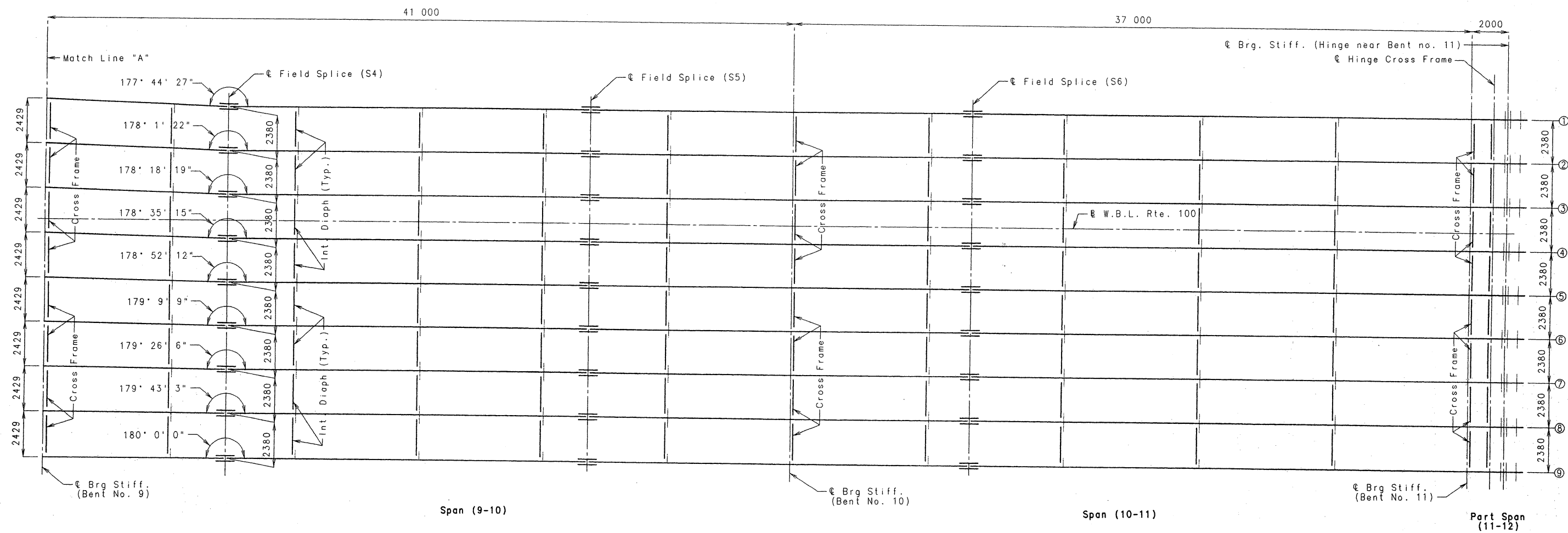
Note: For Bearing Alignment and Anchor Bolt Details at Hinge near bent no. 7 and 11 see sheets no. 105 and 106 respectively.
For details of Swedge Anchor Bolts see sheet no. 107.

	*			
	Bent No. 7	Bents No. 8 and 9	Bents No. 10 and 11	Bent No. R5
Girder No. 1	0°	2° 15' 33"	0°	—
Girder No. 2	0° 40' 50"	1° 58' 38"	0°	—
Girder No. 3	0° 33' 23"	1° 41' 41"	0°	—
Girder No. 4	0° 25' 58"	1° 24' 45"	0°	—
Girder No. 5	0° 18' 37"	1° 7' 48"	0°	—
Girder No. 6	0° 11' 19"	0° 50' 51"	0°	—
Girder No. 7	0° 4' 5"	0° 33' 54"	0°	—
Girder No. 8	0° 3' 7"	0° 16' 57"	0°	—
Girder No. 9	—	0°	0°	9° 41' 1"
Girder A	—	—	—	21° 34' 56"
Girder B	—	—	—	17° 46' 32"
Girder C	—	—	—	13° 47' 59"

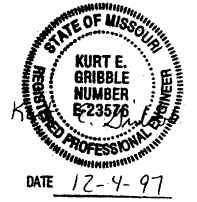


DETAIL OF ANCHOR BOLT WELLS

STATE OF MISSOURI
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REGISTERED PROFESSIONAL ENGINEER
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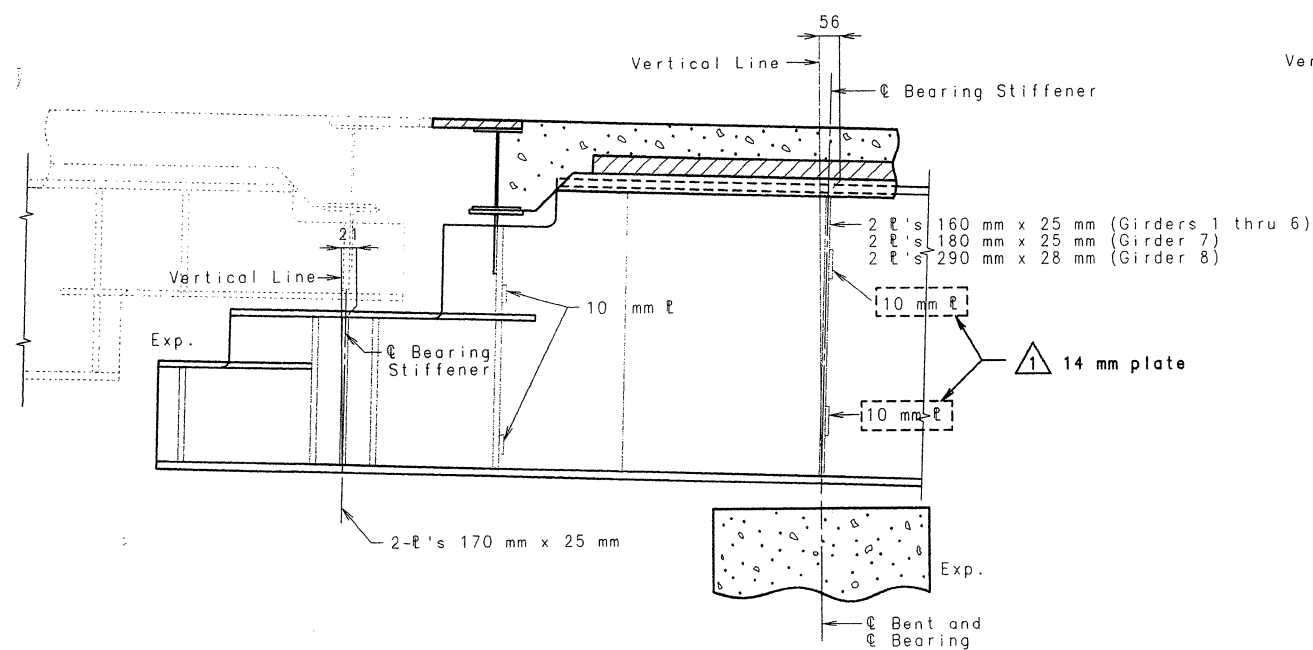
Note: For Spacing of Shear Connectors and Field Splices see sheets no. 112 thru 115.
 For Part Elevation of Girders see sheets no. 112 thru 115.
 For Girder Curve Offsets see sheet no. 120.
 For details of Intermediate Diaphragms and Crossframes see sheet no. 129.
 For details of Field Splices see sheet no. 113 & 114.
 Longitudinal dimensions shown are horizontal dimensions (Horizontal arc dimensions where appropriate) from @ Bearing to @ Bearing see Part Longitudinal Sections on sheet no. 111.
 For details of Bearing Stiffeners, Intermediate Diaphragm Connection Plates, and Intermediate Transverse Web Stiffeners see sheet no. 122.
 Intermediate Diaphragm Connection Plates shall be orientated as shown.
 For Diaphragm spacing see sheets no. 116 & 119.
 Intermediate Diaphragms between girders 1 thru 8 in Part Span (6-7) and Span (7-8) shall be placed radially with respect to @ W.B.L. Rte. 100. Intermediate Diaphragms between girders A, B, C, 8, and 9 between Bents R5 and 8 shall be placed radially to @ Ramp 2B. Intermediate Diaphragms in Spans (8-9), (9-10), (10-11), and Part Span (11-12) shall be placed perpendicular to @ W.B.L. Rte. 100.



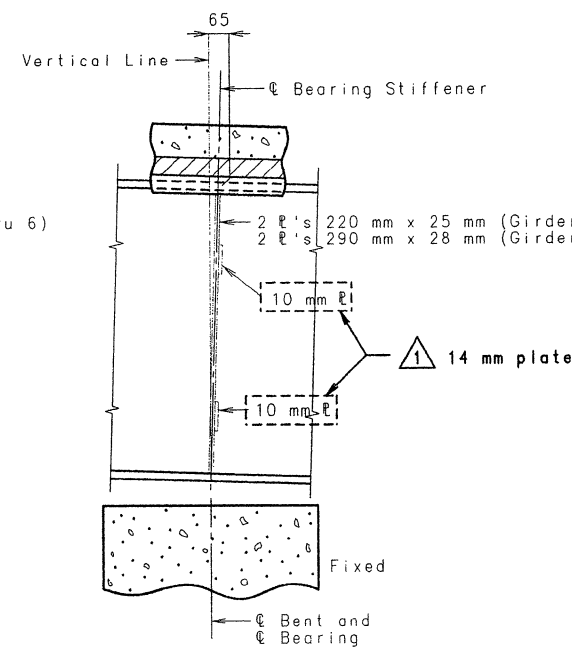
PART PLAN OF STRUCTURAL STEEL

Detailed Feb. 1997
 Checked Aug. 1997

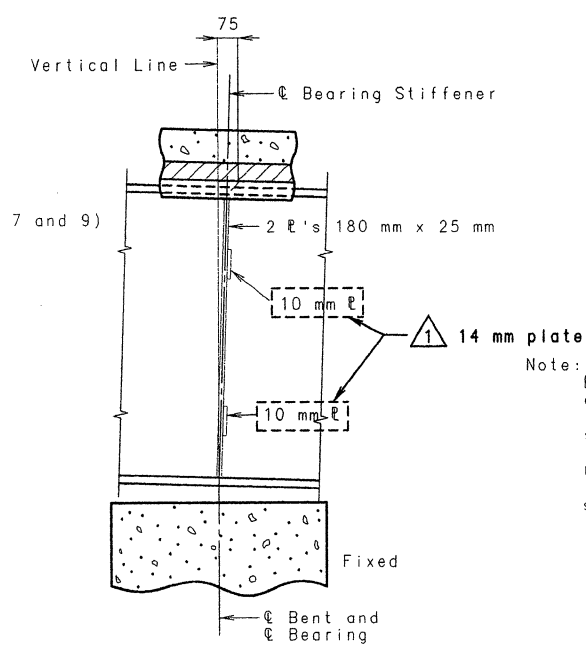
Sheet No. 110 of 236



7



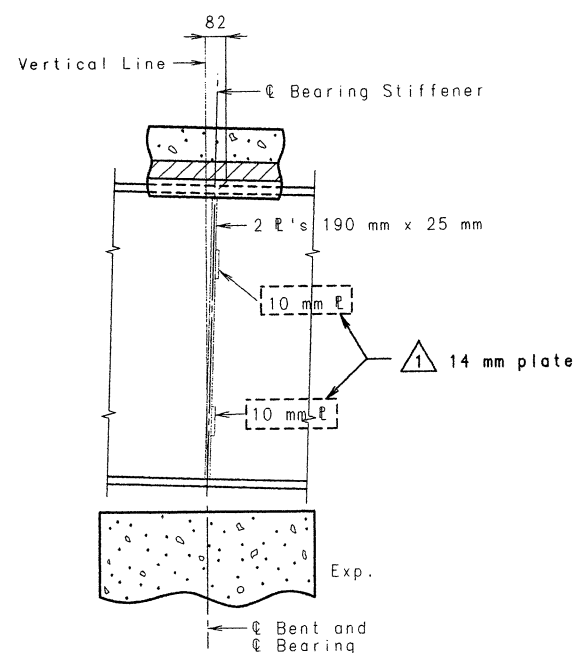
8



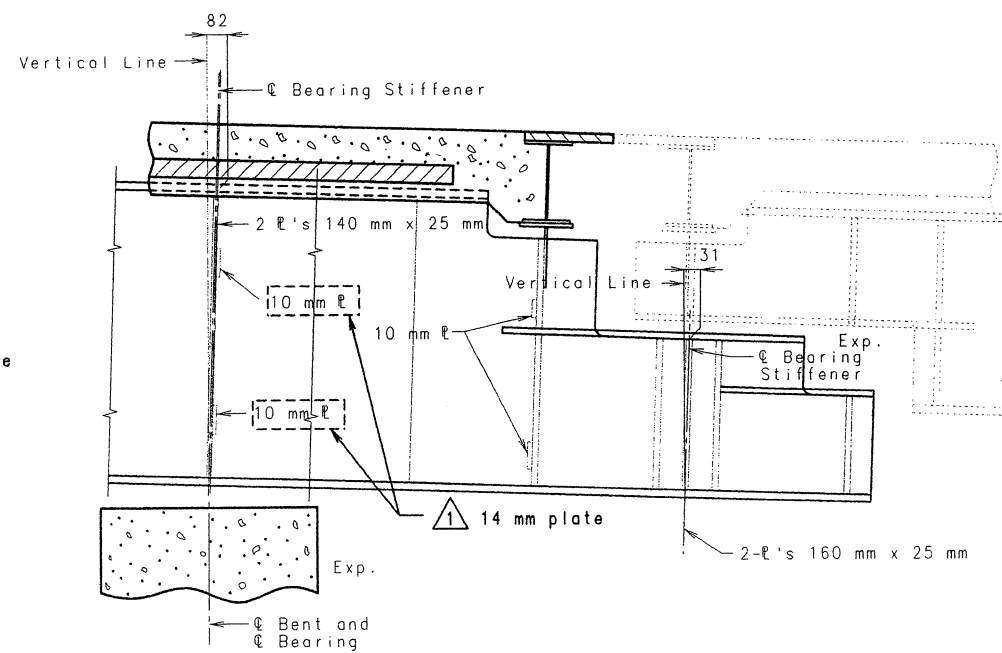
9

Note: For Details of Expansion Joints at Bent R5 and hinges near bents no. 7 and 11 see sheets no. 124 & 125.
For Plan of Structural Steel see sheet no. 109 & 110.
For Elevation of Girder see sheets no. 112 thru 115.
For Details of Earthquake Restrainers see sheets no. 98 thru 101.

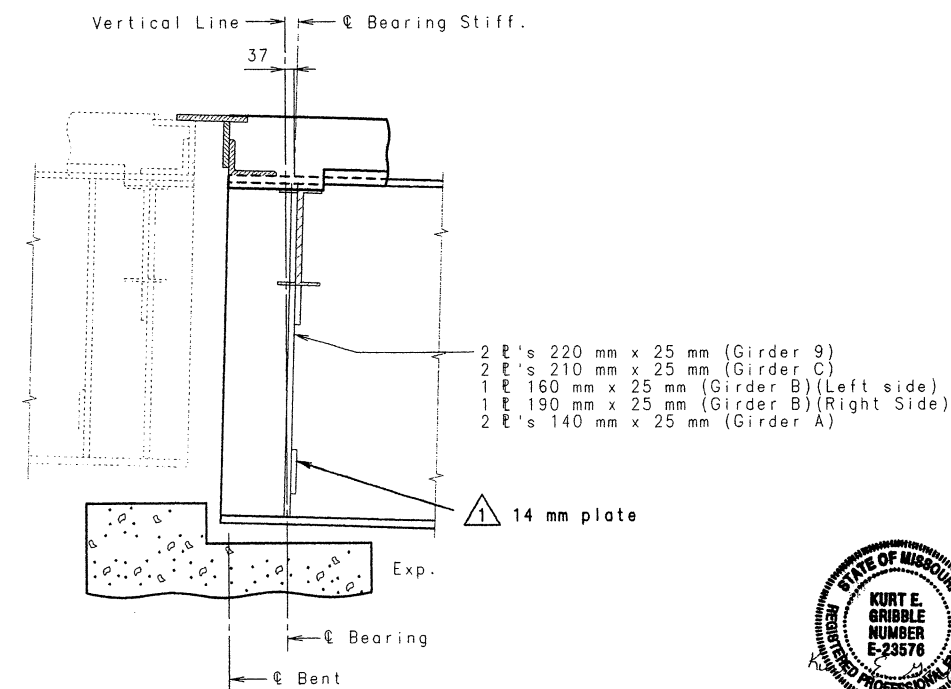
Note: Light dashed lines indicate construction other than Unit 2 construction.



10



11



R5

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NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER
DATE 9-29-98

PART LONGITUDINAL SECTIONS

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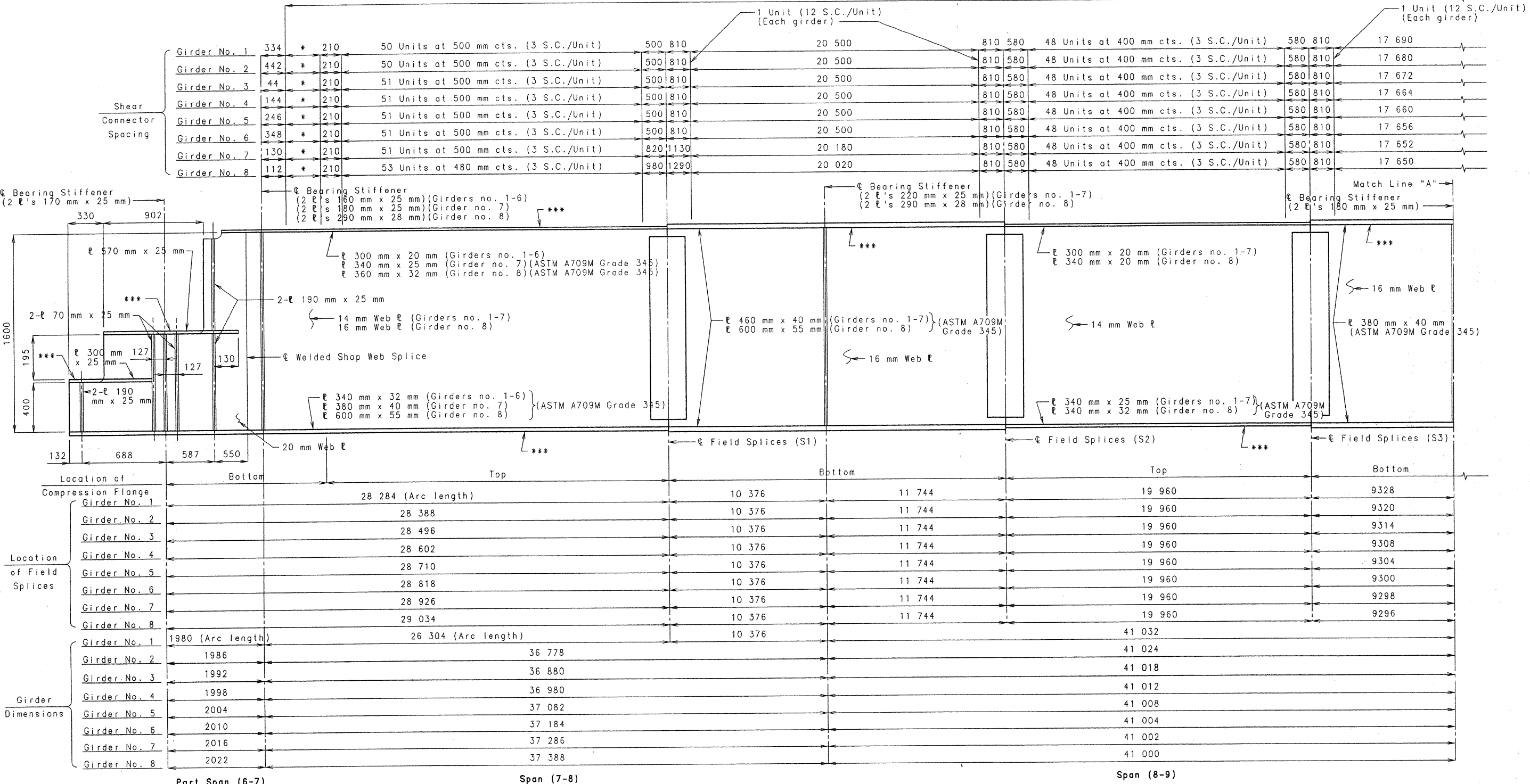
REVISED SEPT. 25, 1998

Sheet No. 111 of 236

UNIT 2
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* 6 Units at 150 mm cts. (2 S.C./Unit)
*** Indicates flange plate subject to notch toughness requirements.

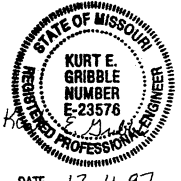
212 S.C. Units (Girders no. 1 and 2), 213 S.C. Units (Girders no. 3 thru 7), and 215 S.C. Units (Girder no. 8) (Spaced as shown)



Note: Plate girders shall be fabricated to conform to the Camber Diagram shown on sheet no. 139. For detail of Shear Connectors see sheet no. 122. Longitudinal dimensions are horizontal (horizontal arc dimensions where appropriate) from the C of bearing to the C of bearing. See Part Longitudinal Section on sheet no. 111. All web plates shall be subject to notch toughness requirements. For plan of Structural Steel see sheet no. 109. Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.

For details of earthquake restrainers, see sheet no. 98.
For details of Hinged Connection near Bent no. 11 see sheet no. 125.
For details of Hinged Connection near Bent no. 7 see sheet no. 124.
For Part Elevation of Girder no. 9 see sheet no. 114.
For Elevation of Girders A, B, and C see sheet no. 115.
For details of Welded Shop Web Splices see sheet no. 122.
For transverse web stiffener spacing see sheet no. 116.

PART ELEVATION OF GIRDERS NO. 1 THRU 8



DATE 12-4-97

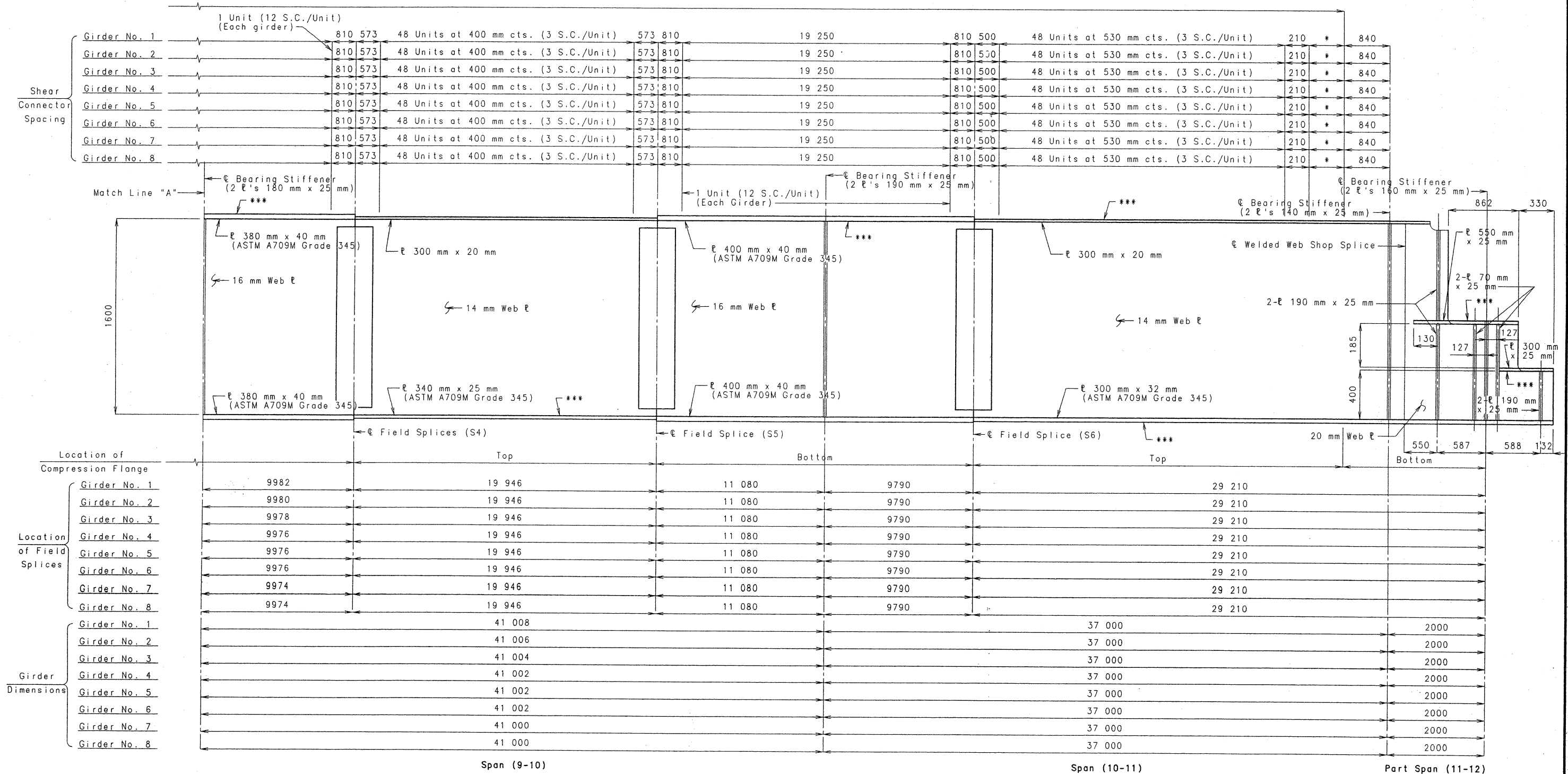
UNIT 2

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Checked Aug. 1997

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* 6 Units at 150 mm cts. (2 S.C./Unit)
 *** Indicates Flange plate subject to notch toughness requirements.



Note: Plate girders shall be fabricated to conform to the Camber Diagram shown on sheet no. 139.
 For detail of Shear Connectors see sheet no. 122.
 Longitudinal dimensions are horizontal (horizontal arc dimensions where appropriate) from the center of bearing to the center of bearing. See Part Longitudinal Section on sheet no. 111.
 All web plates shall be subject to notch toughness requirements.
 For plan of Structural Steel see sheet no. 110.
 Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.

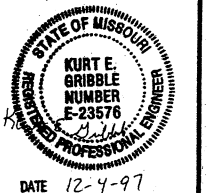
For details of earthquake restrainers, see sheet no. 99.
 For details of Hinged Connection near Bent no. 11 see sheet no. 125.
 For details of Hinged Connection near Bent no. 7 see sheet no. 124.
 For Part Elevation of Girder no. 9 see sheet no. 114.
 For Elevation of Girders A, B, and C see sheet no. 115.
 For details of Welded Shop Web Splices see sheet no. 122.
 For Transverse Web Stiffener spacing see sheet no. 117.

PART ELEVATION OF GIRDERS NO. 1 THRU 8

Detailed Jan. 1996
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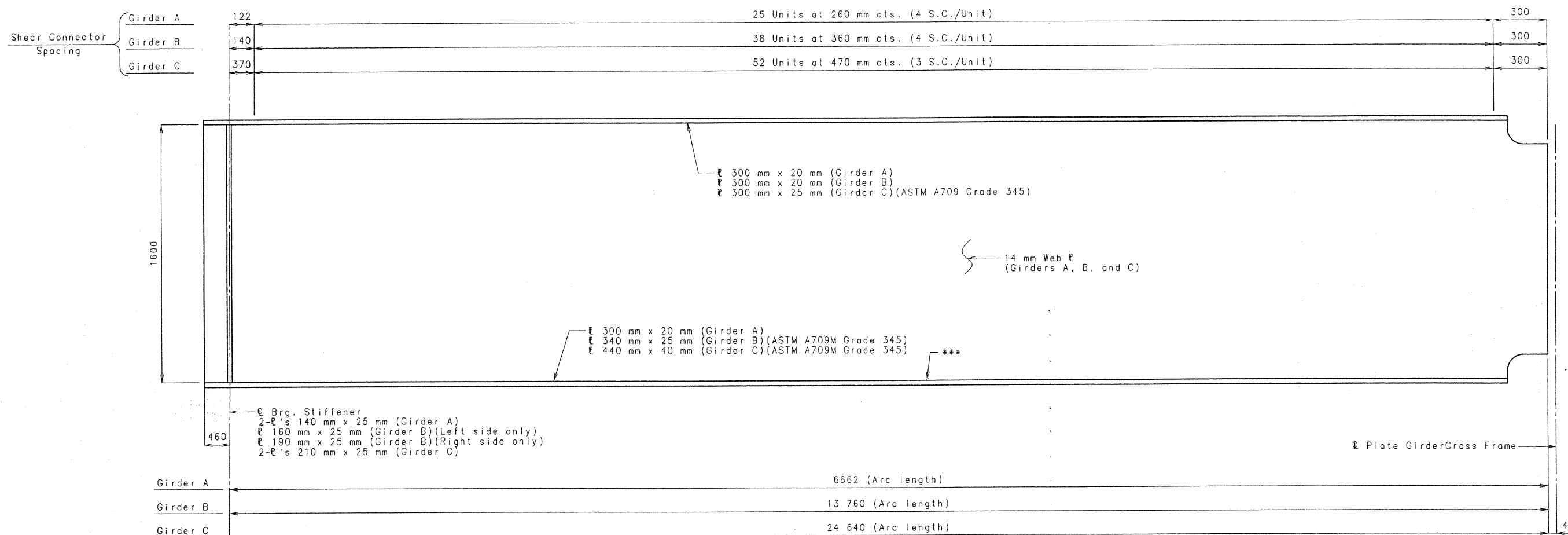
Sheet No.113 of 236

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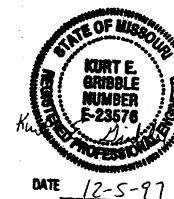
UNIT 2

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



Note: Plate girders shall be fabricated to conform to the Camber Diagram shown on sheet no. 139. For detail of Shear Connectors see sheet no. 122. Longitudinal dimensions are horizontal (horizontal arc dimensions where appropriate) from the ϕ of bearing to the ϕ of bearing. See Part Longitudinal Section on sheet no. 111. All web plates shall be subject to notch toughness requirements. For plan of Structural Steel see sheets no. 109 & 110. Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.

For details of earthquake restrainers, see sheets no. 100 & 101. For Part Elevation of Girder no. 9 see sheet no. 114. For Part Elevation of Girders 1-8 see sheets no. 112 and 113. For details of Welded Shop Web Splices see sheet no. 122. For details of concrete diaphragm between girders A and B at bent R5 see sheet no. 130. For details of Plate Girder Crossframe see sheet no. 123.

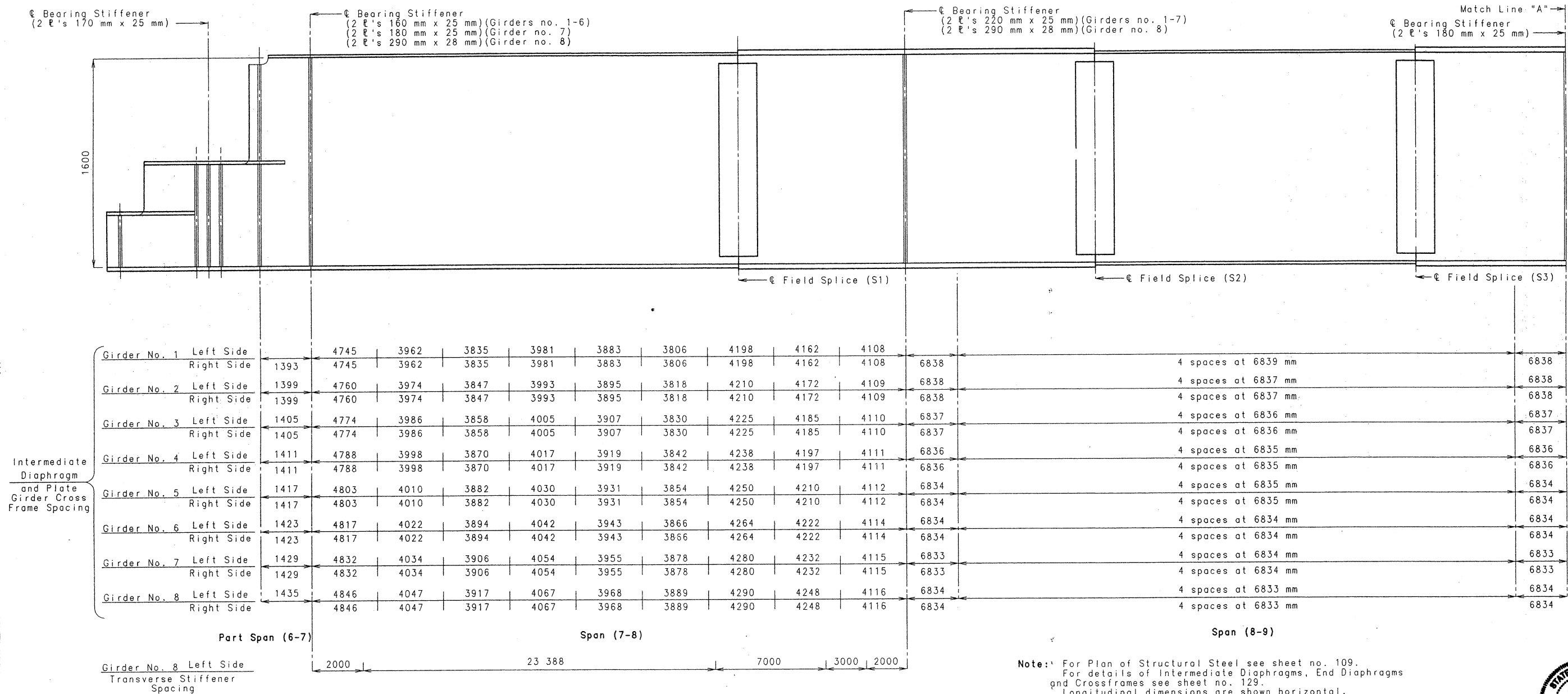


ELEVATION OF GIRDERS A, B, AND C

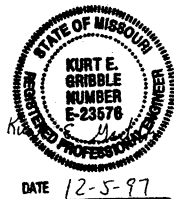
Detailed Jan. 1996
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Note: For Plan of Structural Steel see sheet no. 109.
For details of Intermediate Diaphragms, End Diaphragms and Crossframes see sheet no. 129.
Longitudinal dimensions are shown horizontal.
For details of Bearing Stiffeners, Intermediate Diaphragm connection plates, and Intermediate Transverse Stiffeners see sheet no. 122.
Intermediate Diaphragms between girders 1 thru 8 in Part Span (6-7) and Span (7-8) shall be placed radially with respect to W.B.L. Rte. 100. Intermediate Diaphragms between girders A, B, C, 8, and 9 between Bents R5 and 8 shall be placed radially to Ramp 2B. Intermediate Diaphragms in Spans (8-9), (9-10), (10-11), and Part Span (11-12) shall be placed perpendicular to W.B.L. Rte. 100.
Transverse stiffeners, diaphragm connection plates, and plate girder cross frame connection plates shall be orientated as shown in Part Plan of Structural Steel.



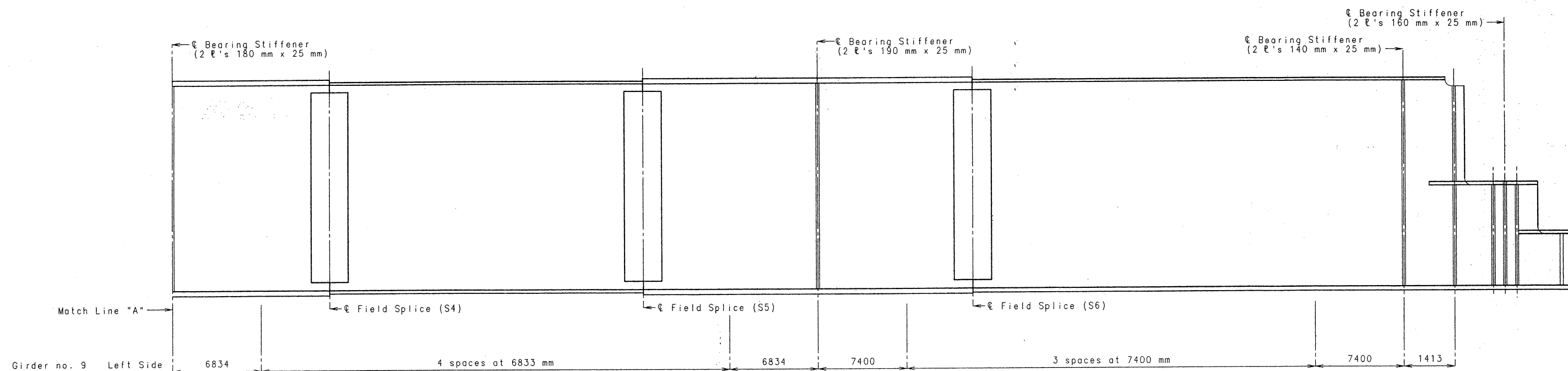
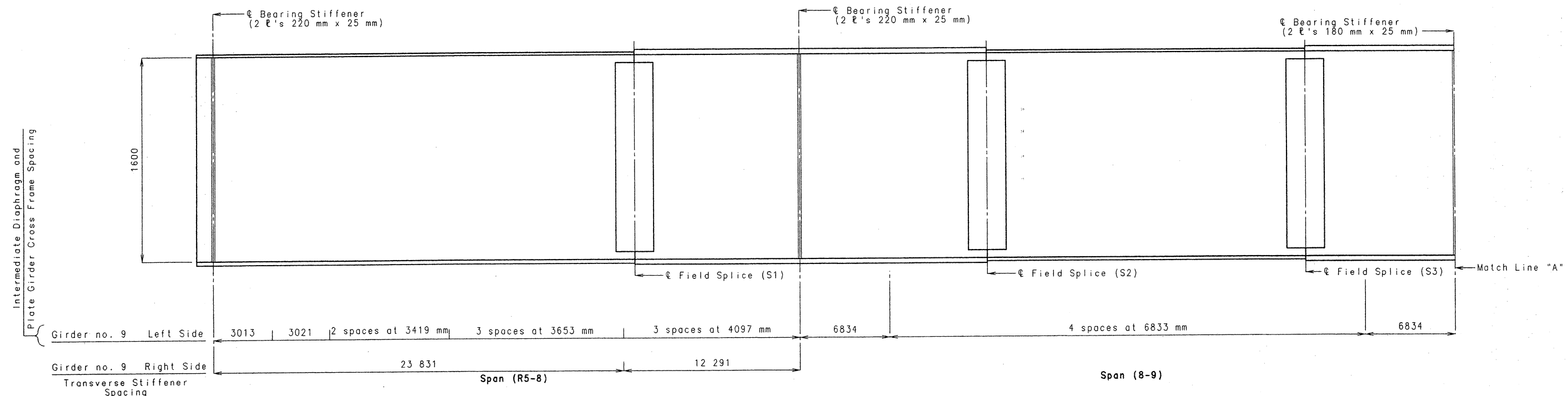
PART ELEVATION OF GIRDERS NO. 1 THRU 8 SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS

UNIT 2

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Note: For Plan of Structural Steel see sheets no. 109 & 110.
 For details of Intermediate Diaphragms, End Diaphragms and Crossframes see sheet no. 129.
 Longitudinal dimensions are shown horizontal.
 For details of Bearing Stiffeners, Intermediate Diaphragm connection plates, and Intermediate Transverse Stiffeners see sheet no. 122.
 Intermediate Diaphragms between girders 1 thru 8 in Part Span (6-7) and Span (7-8) shall be placed radially with respect to W.B.L. Rte. 100. Intermediate Diaphragms between girders A, B, C, 8, and 9 between Bents R5 and 8 shall be placed radially to Ramp 2B. Intermediate Diaphragms in Spans (8-9), (9-10), (10-11), and Part Span (11-12) shall be placed perpendicular to W.B.L. Rte. 100.
 Transverse stiffeners, diaphragm connection plates, and plate girder cross frame connection plates shall be orientated as shown in Part Plan of Structural Steel.



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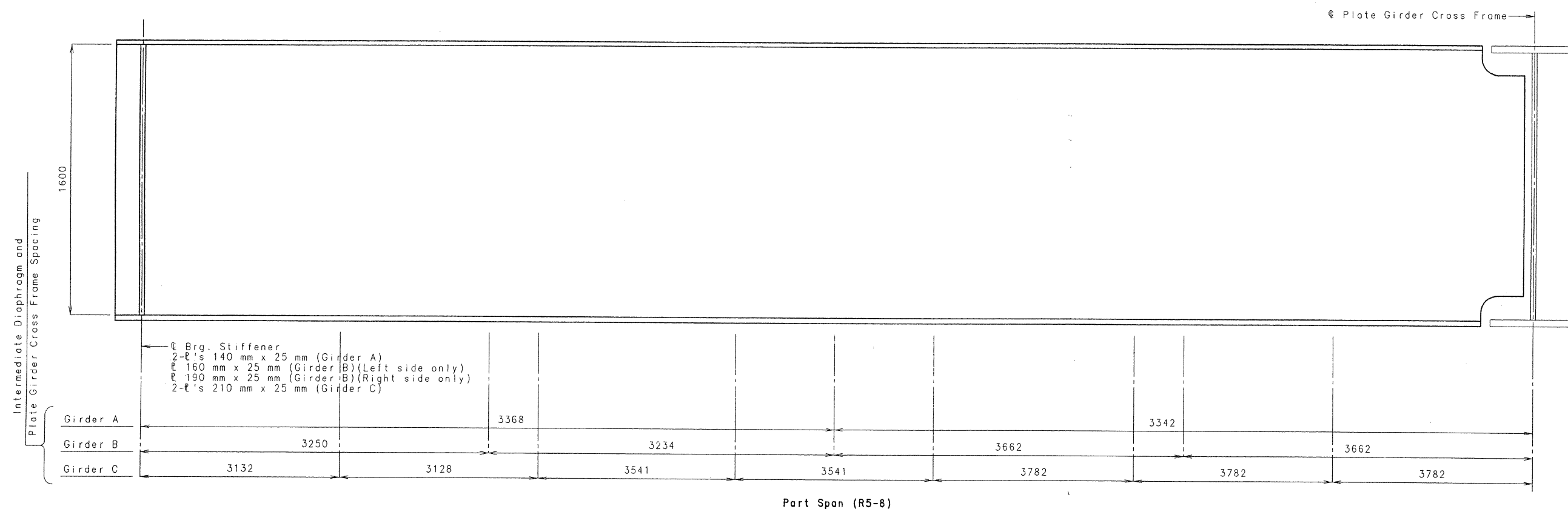
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ELEVATION OF GIRDER NO. 9 SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS

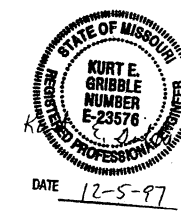
Sheet No. 118 of 236

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Note: For Plan of Structural Steel see sheet no. 109.
For details of Intermediate Diaphragms, End Diaphragms and Crossframes see sheet no. 129.
Longitudinal dimensions are shown horizontal arc dimensions.
For details of Bearing Stiffeners, Intermediate Diaphragm connection plates, and Intermediate Transverse Stiffeners see sheet no. 122.
Intermediate Diaphragms between girders 1 thru 8 in Part Span (6-7) and Span (7-8) shall be placed radially with respect to W.B.L. Rte. 100. Intermediate Diaphragms between girders A, B, C, 8, and 9 between Bents R5 and 8 shall be placed radially to Ramp 2B. Intermediate Diaphragms in Spans (8-9), (9-10), (10-11), and Part Span (11-12) shall be placed perpendicular to W.B.L. Rte. 100.
For detail of Plate Girder Crossframe see sheet no. 123.
Transverse stiffeners, diaphragm connection plates, and plate girder cross frame connection plates shall be orientated as shown in Part Plan of Structural Steel.

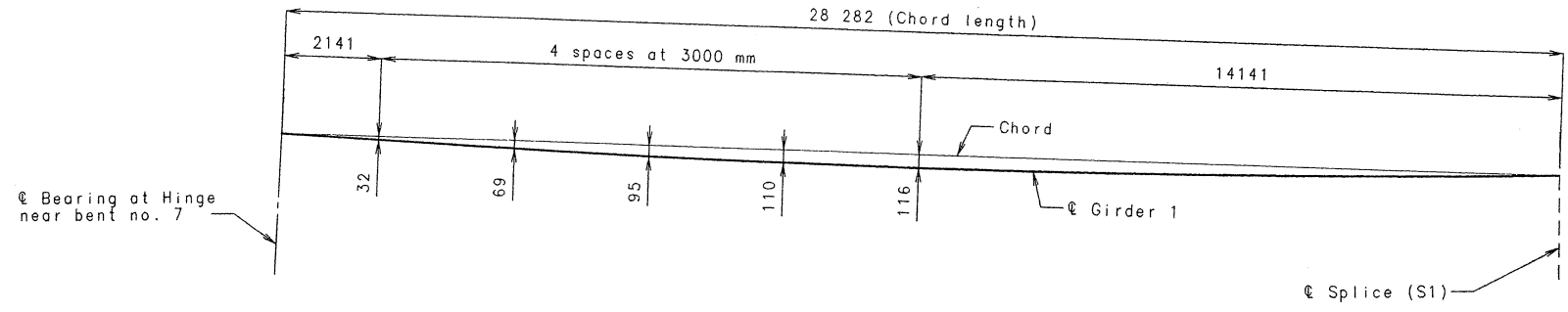


ELEVATION OF GIRDERS A, B, AND C SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS

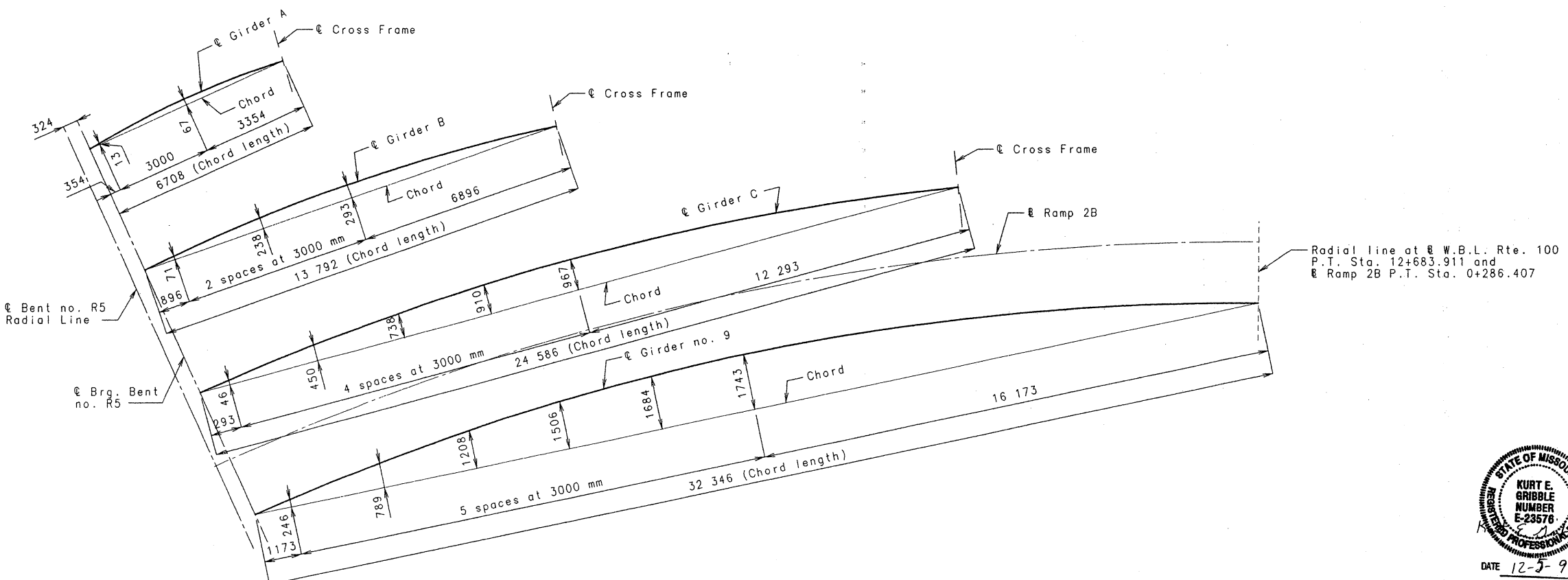
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Part Span (6-7) and (7-8)
(Girder no. 1 only)



Note: Dimensions shown are horizontal.

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REGISTERED PROFESSIONAL ENGINEER
E-23576
DATE 12-5-97

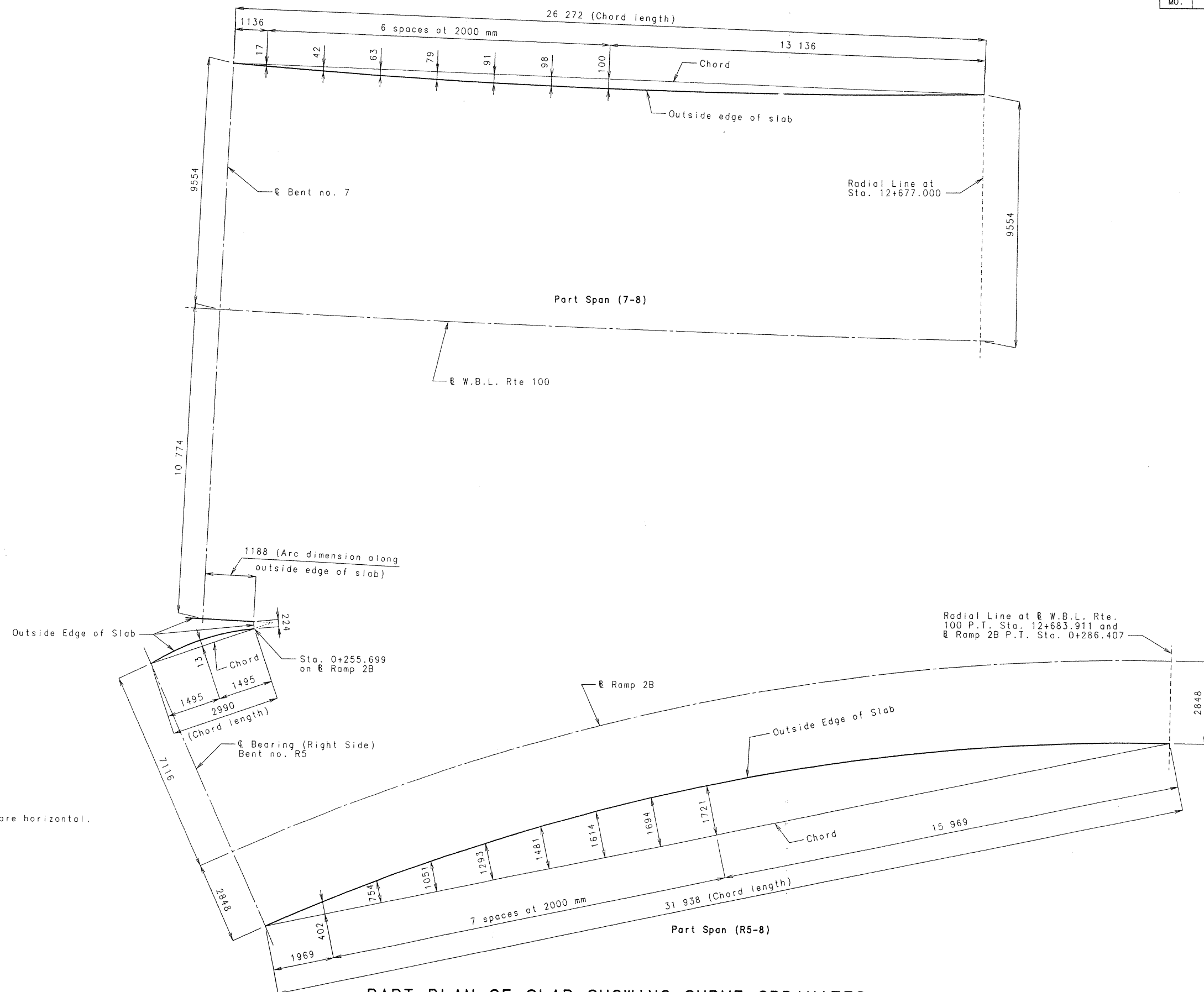
EXTERIOR GIRDER CURVE OFFSETS

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STATE	PROJ. NO.	SHEET NO.
MO.		154



PART PLAN OF SLAB SHOWING CURVE ORDINATES

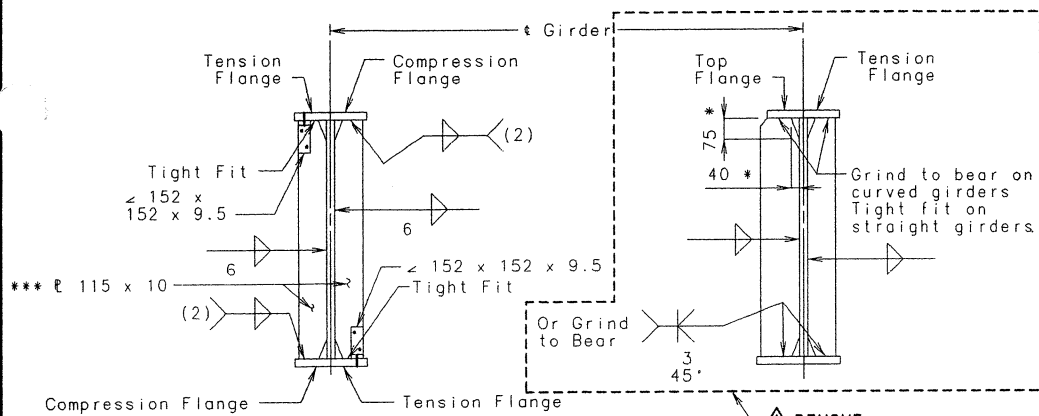
Detailed Feb. 1997
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SHEET NO. 121 OF 236.

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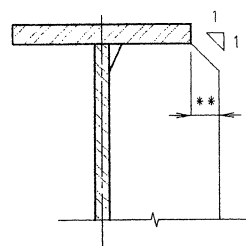
INT. DIAPH. CONN. PLATE AND TRANS. WEB STIFFENER **

END BRG. STIFF. INT. BRG. STIFF.

(2) Weld to compression flange as located on elevation of girder.
 * Typical for all Transverse Web Stiff., Int. Diaph. Conn. Pl. and Brg. Stiff.
 ** Omit $\angle 152 \text{ mm} \times 152 \text{ mm} \times 9.5 \text{ mm}$ on Transverse Web Stiffener
 *** Transverse Web Stiffener Plates shall be $150 \text{ mm} \times 12 \text{ mm}$

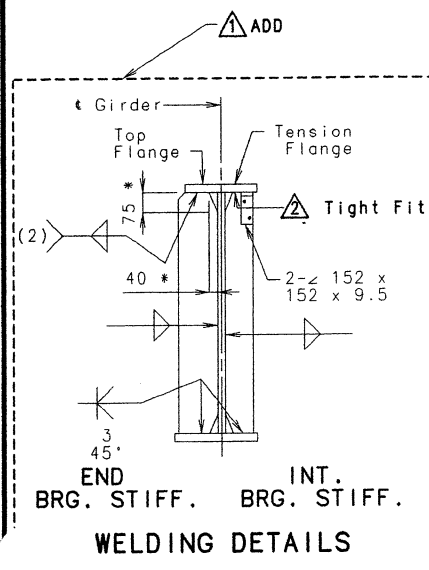
WELDING DETAILS

Note: For details of stiffeners at Hinge near bent no. 7 and Hinge near bent no. 11 see sheets no. 124 & 125.
 For details of flange connection angle see sheet no. 129.
 For details of Plate Girder Cross Frame Connection Plates see sheet no. 123.

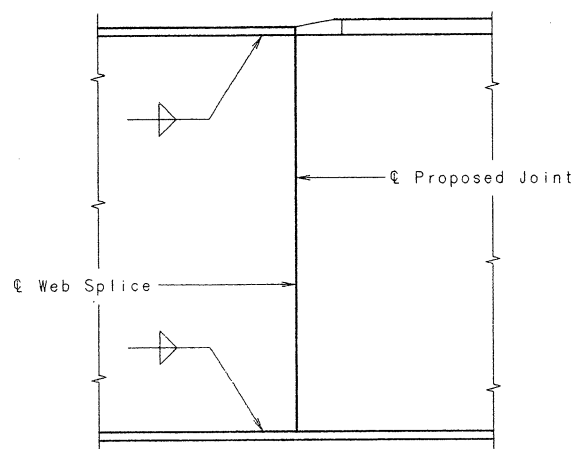


** When dimension exceeds 12 mm, bevel stiffener plate.

BEVELED STIFFENER PLATE DETAIL

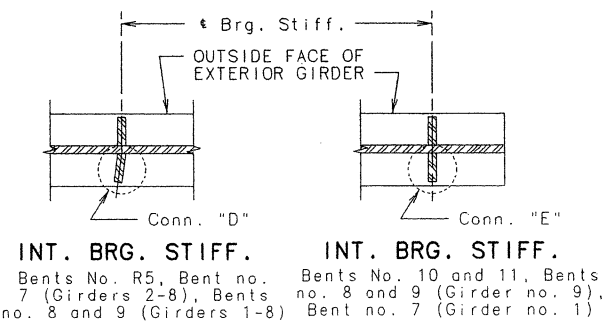


WELDING DETAILS

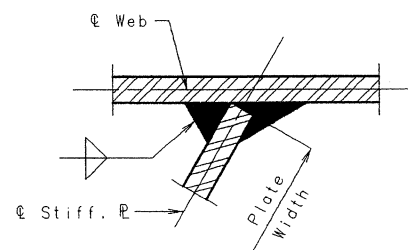


WELDED SHOP WEB SPLICE

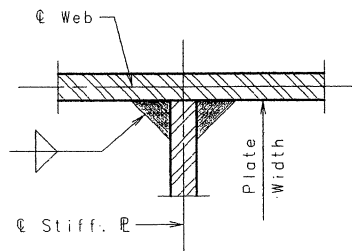
Note: Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



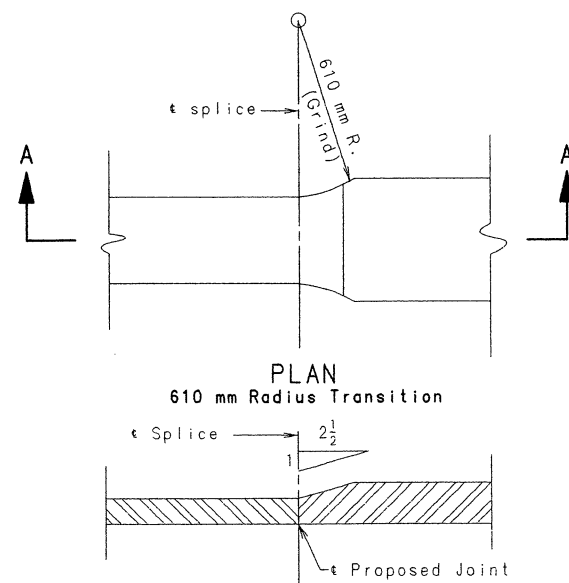
TYPICAL LOCATION DETAILS



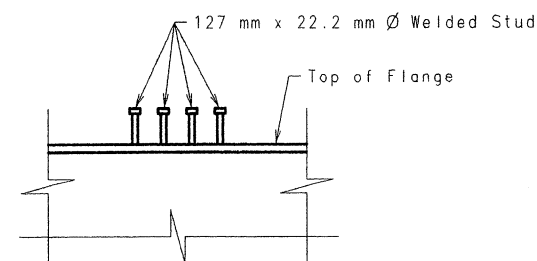
CONN. "D"



CONN. "E"

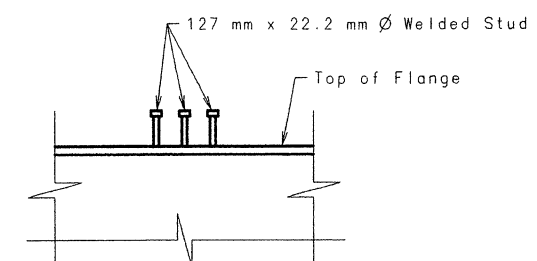


**SECTION A-A
WELDED SHOP FLANGE SPLICE**



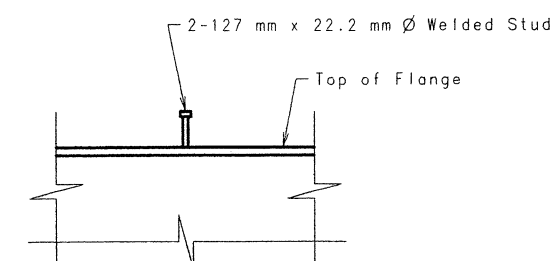
ELEVATION

4 SHEAR CONN. PER UNIT



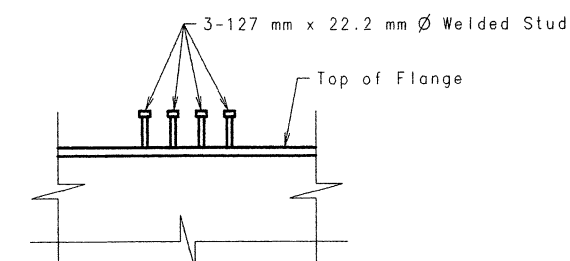
ELEVATION

3 SHEAR CONN. PER UNIT



ELEVATION

2 SHEAR CONN. PER UNIT

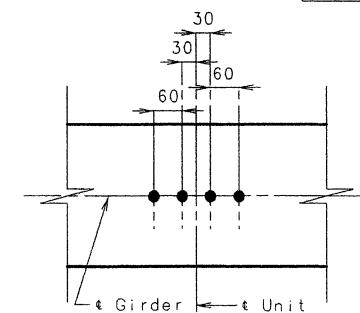


ELEVATION

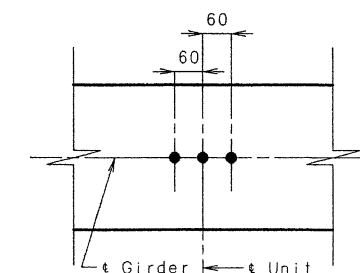
12 SHEAR CONN. PER UNIT

DETAILS OF SHEAR CONNECTORS

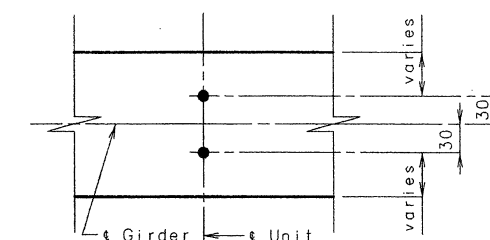
Note: For Location of Shear Connectors see sheets no. 112 thru 114.
 Mass of 2900 kg. of shear connectors is included in the Mass of Fabricated Structural Carbon Steel.



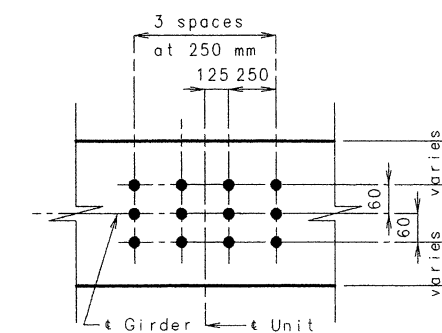
PLAN OF STUD CONN.



PLAN OF STUD CONN.

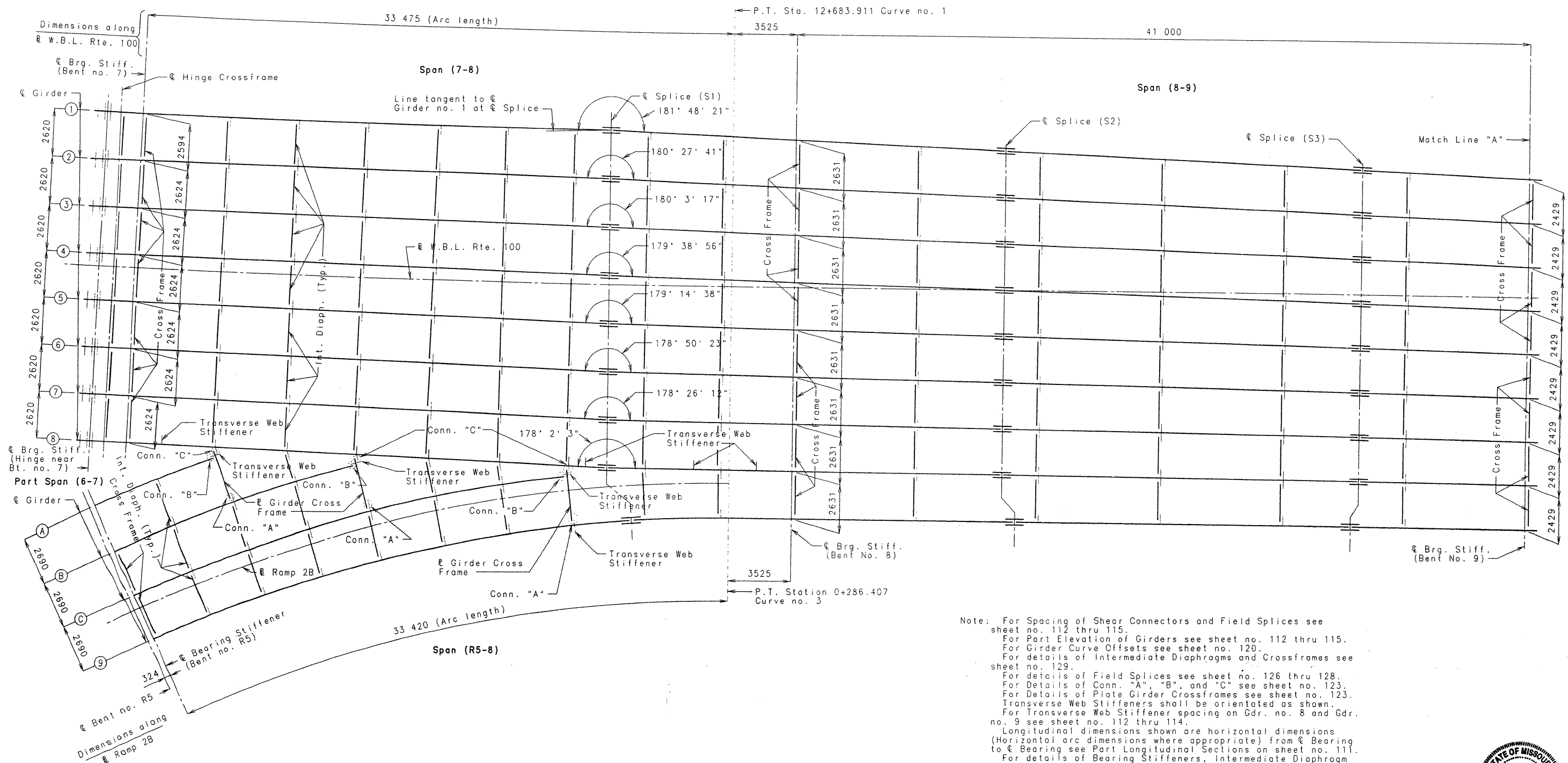


PLAN OF STUD CONN.

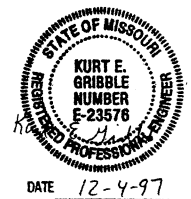


PLAN OF STUD CONN.

STATE OF MISSOURI
 KURT E. GRIBBLE
 NUMBER E-23578
 REGISTERED PROFESSIONAL ENGINEER
 DATE 9-29-98



Note: For Spacing of Shear Connectors and Field Splices see sheet no. 112 thru 115.
 For Part Elevation of Girders see sheet no. 112 thru 115.
 For Girder Curve Offsets see sheet no. 120.
 For details of Intermediate Diaphragms and Crossframes see sheet no. 129.
 For details of Field Splices see sheet no. 126 thru 128.
 For Details of Conn. "A", "B", and "C" see sheet no. 123.
 For Details of Plate Girder Crossframes see sheet no. 123.
 Transverse Web Stiffeners shall be orientated as shown.
 For Transverse Web Stiffener spacing on Gdr. no. 8 and Gdr. no. 9 see sheet no. 112 thru 114.
 Longitudinal dimensions shown are horizontal dimensions (Horizontal arc dimensions where appropriate) from @ Bearing to @ Bearing see Part Longitudinal Sections on sheet no. 111.
 For details of Bearing Stiffeners, Intermediate Diaphragm Connection Plates, and Intermediate Transverse Web Stiffeners see sheet no. 122.
 Intermediate Diaphragm Connection Plates shall be orientated as shown.
 For Diaphragm spacing see sheets no. 116 thru 119.
 Intermediate Diaphragms between girders 1 thru 8 in Part Span (6-7) and Span (7-8) shall be placed radially with respect to W.B.L. Rte. 100. Intermediate Diaphragms between girders A, B, C, 8, and 9 between Bents R5 and 8 shall be placed radially to B. Ramp 2B. Intermediate Diaphragms in Spans (8-9), (9-10), (10-11), and Part Span (11-12) shall be placed perpendicular to W.B.L. Rte. 100.
 For details of Concrete Diaphragm at Bent no. R5 between Girders A and B see sheet no. 130.



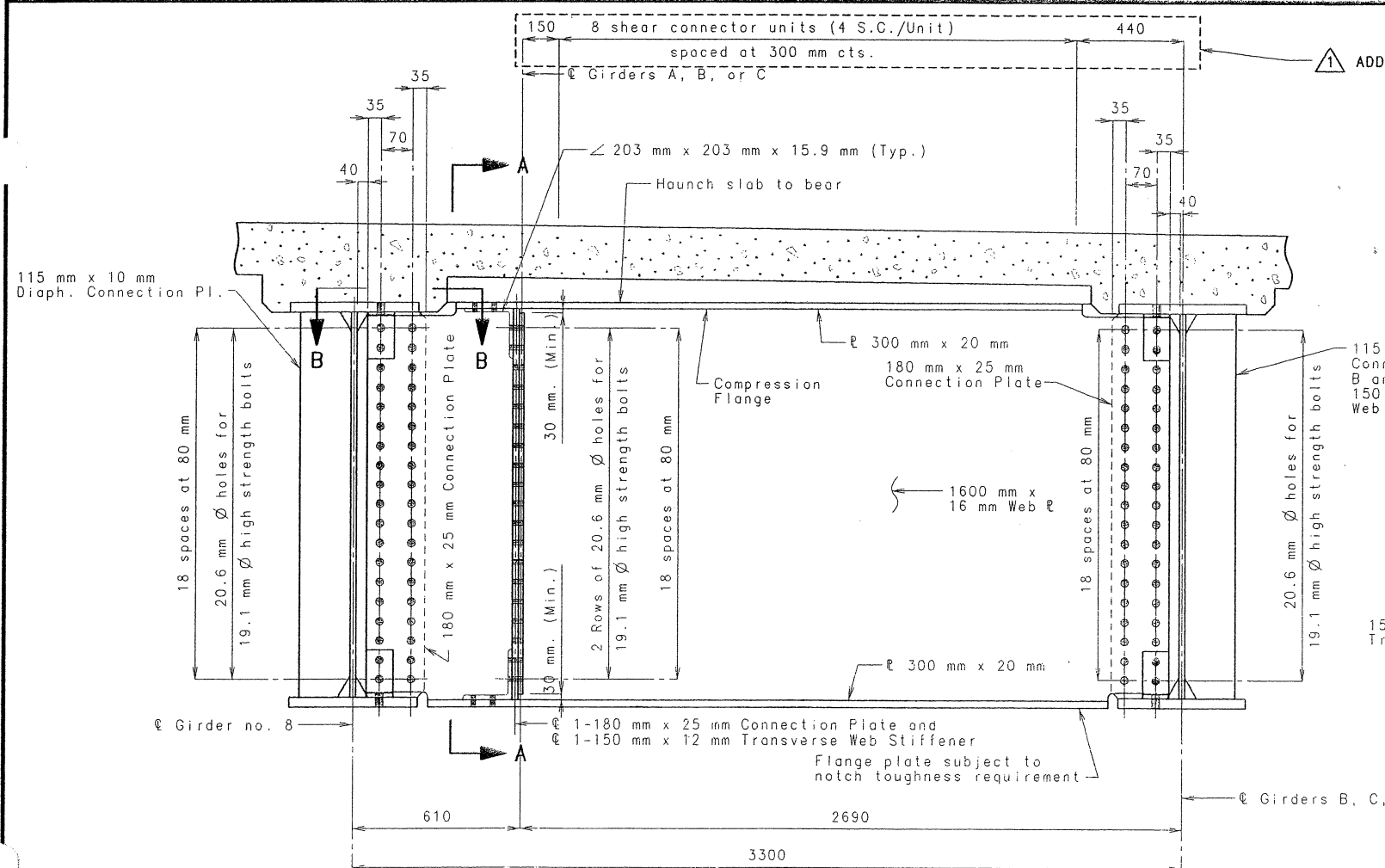
PART PLAN OF STRUCTURAL STEEL

Detailed Feb. 1997
 Checked Aug. 1997

Sheet No. 109 of 236.

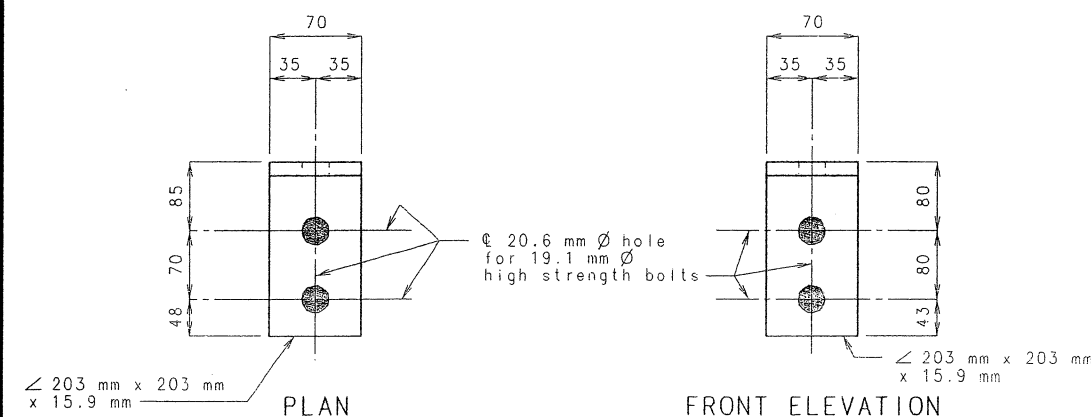
UNIT 2
 ST. LOUIS COUNTY A5682

STATE	PROJ. NO.	SHEET NO.
MO.		



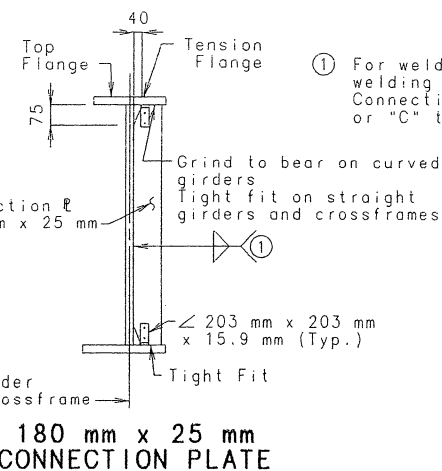
ELEVATION OF PLATE GIRDER CROSS FRAME DETAIL

Note: For location of Plate Girder Crossframe see sheets no. 116 & 117.

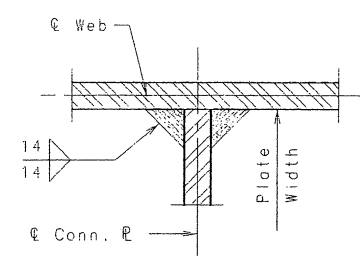


DETAIL OF CONNECTION ANGLE

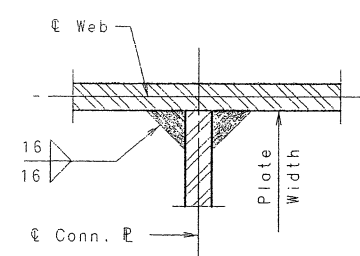
Note: All dimensions shown are horizontal.
Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.
All Web Plates shall be subject to notch toughness requirements.
For Part Plan of Structural Steel see sheets no. 109 & 110
For details of Int. Diaphragm Connection Plates and Int. Transvers Web Stiffeners Plates see sheet no. 122.



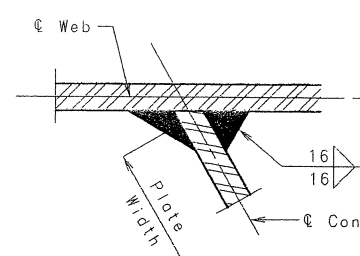
180 mm x 25 mm CONNECTION PLATE



CONN. "A"

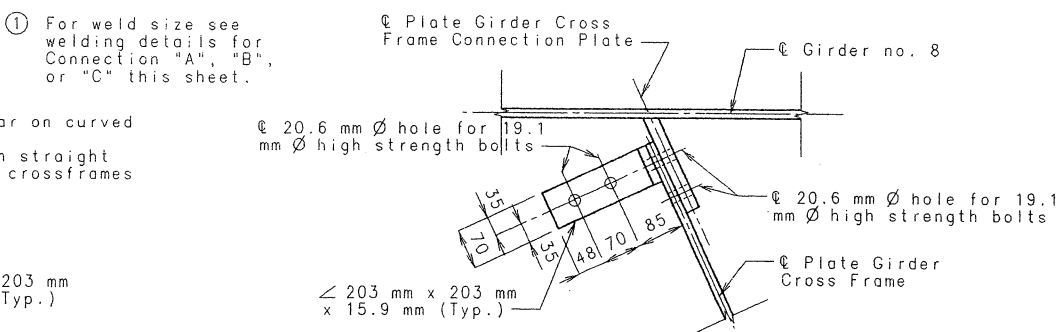


CONN. "B"
WELDING DETAILS

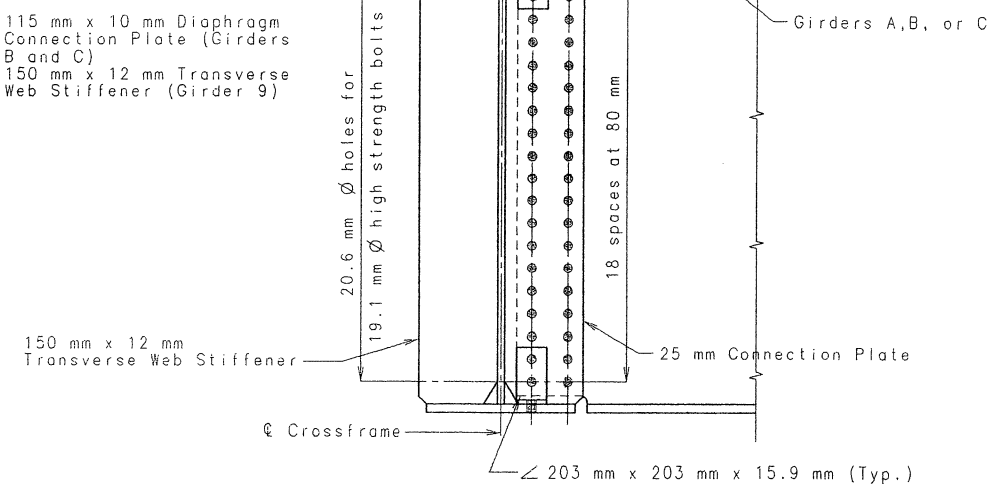


CONN. "C"

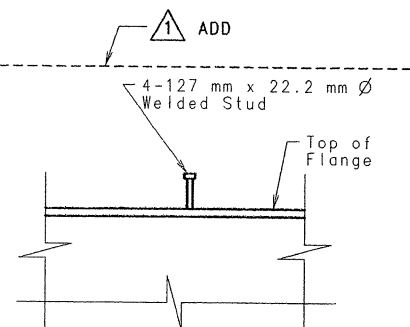
Note: For location of Conn. "A", "B", and "C" see sheet no. 109.



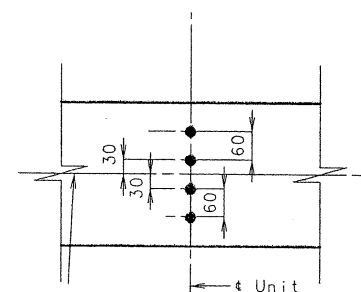
SECTION B-B



SECTION A-A



ELEVATION



PLAN OF STUD CONN.

4 SHEAR CONN. PER UNIT



DATE 6-10-98

PLATE GIRDER CROSSFRAME DETAIL

REVISED JUNE 9, 1998

Sheet No.123 of 236

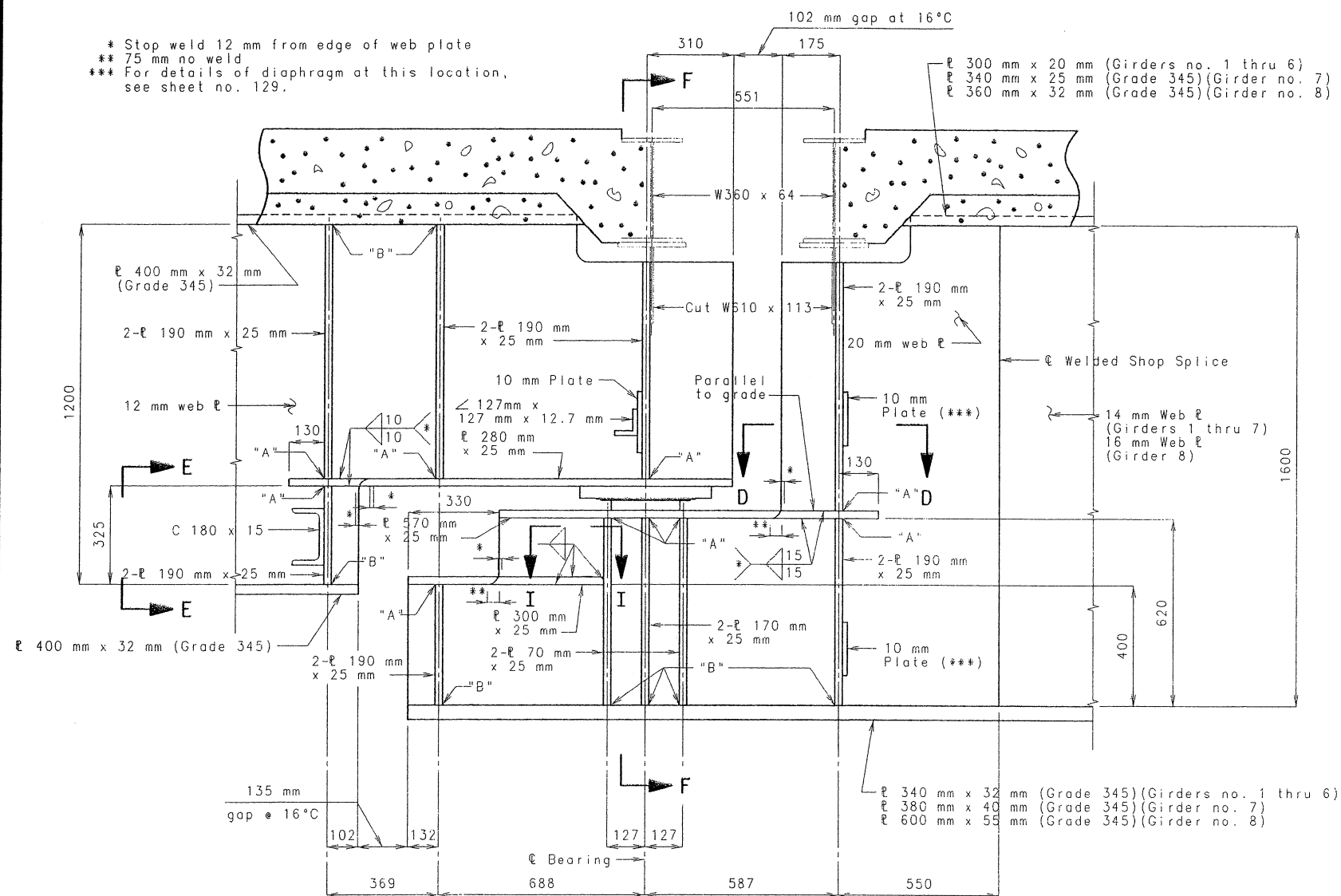
ST. LOUIS COUNTY

UNIT 2

A5682

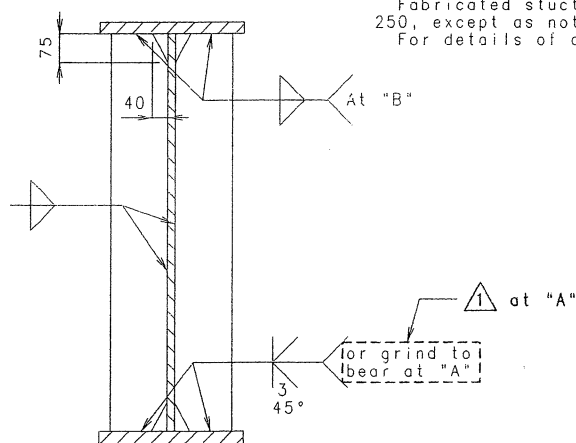
Detailed Oct. 1996
Checked Nov. 1997

* Stop weld 12 mm from edge of web plate
 ** 75 mm no weld
 *** For details of diaphragm at this location, see sheet no. 129.



DETAIL OF HINGED CONNECTION
NEAR BENT NO. 7

Note : For details of Finger Plate see sheet no. 144.
 For details of Earthquake Restraints see sheet no. 98.
 For PTFE Sliding Plate Expansion Bearings, Anchor Bolt and Pintle details see sheet no. 105.
 For details of Welded Shop Splice see sheet no. 122.
 Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.
 For details of drain trough, see sheets no. 150 thru 153.

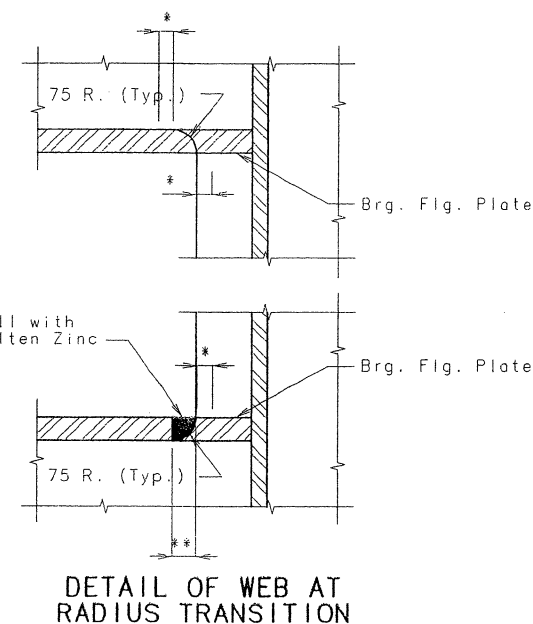


TYPICAL WELDING DETAILS
FOR STIFF. PLATES

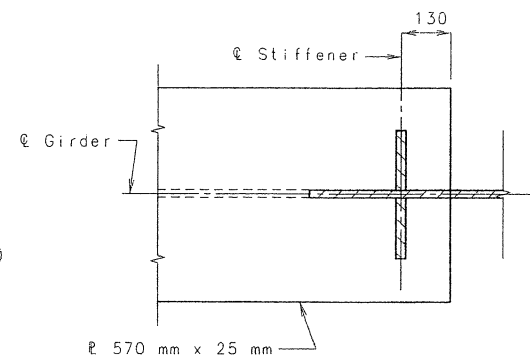
Detailed Mar. 1997
 Checked Aug. 1997

REVISED JUNE 8, 1988

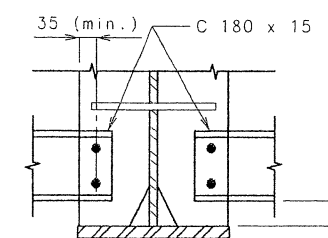
Sheet No. 124 of 236



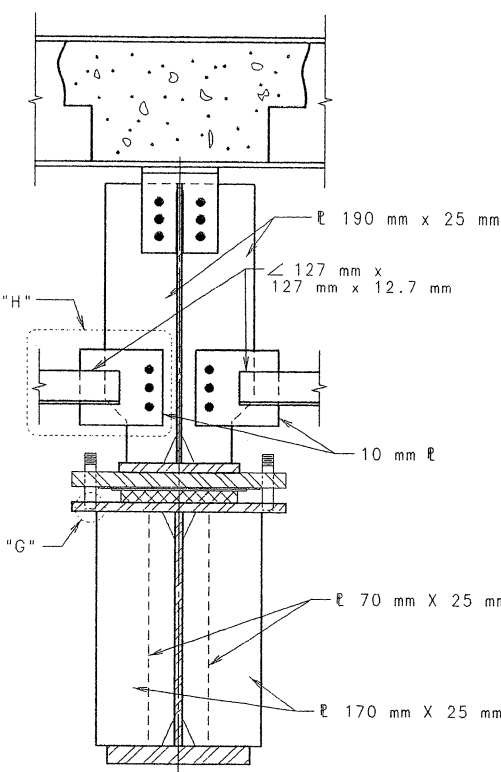
DETAIL OF WEB AT
RADIUS TRANSITION



SECTION D-D

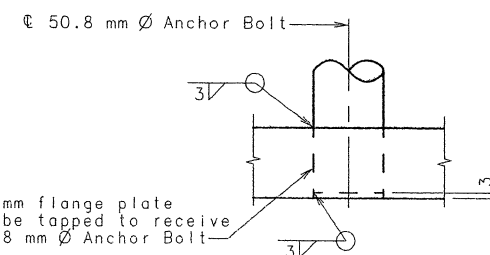


SECTION E-E

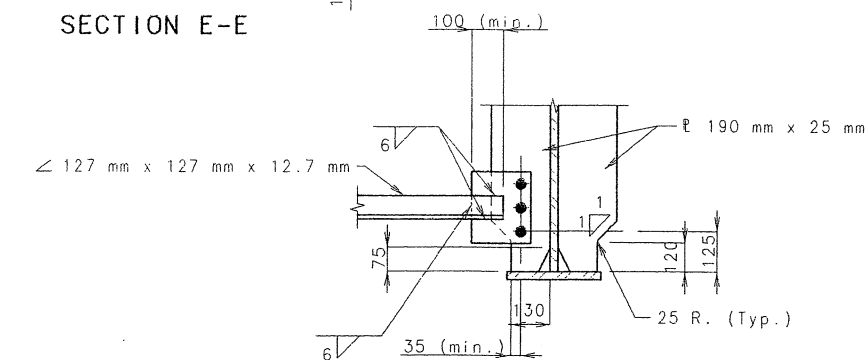


SECTION F-F

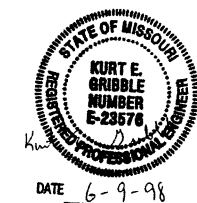
Note: For Beveled Stiffener
Plate detail, see sheet
no. 122.



DETAIL "G"



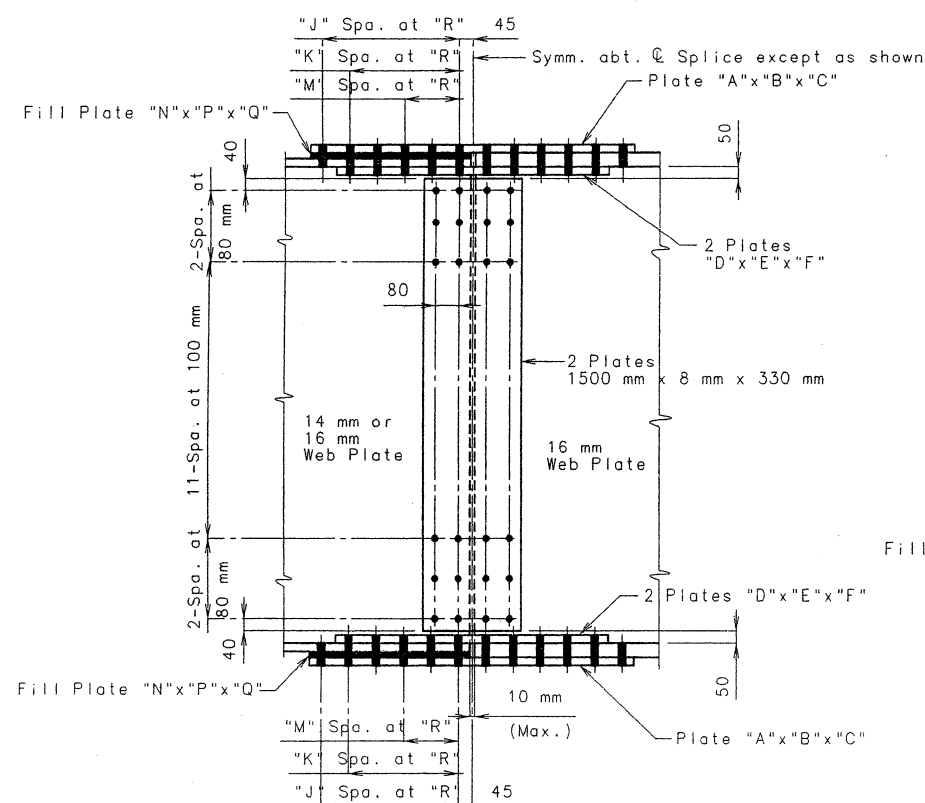
DETAIL "H"



UNIT 2

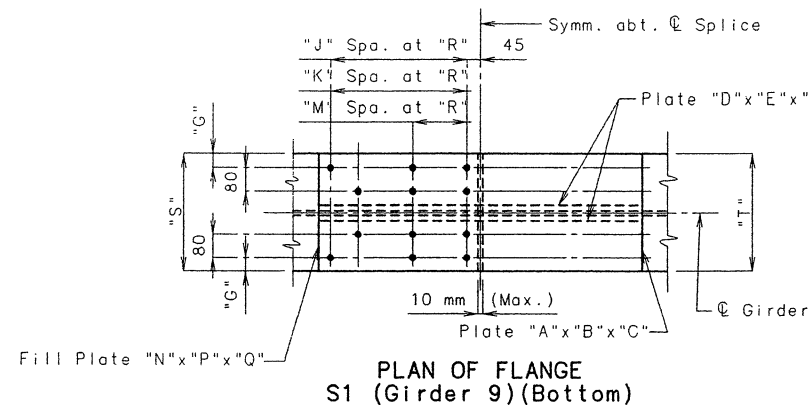
ST. LOUIS COUNTY A5682

SPlice LOCATION	GIRDER NUMBER	SPlice LOCATION	TABLE OF DIMENSIONS-FIELD SPlice															
			"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"	"K"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"
S1	9	Top	300	20	1130	120	20	1130	60	6	6	-	300	15	560	80	300	460
S1	9	Bottom	460	30	1610	200	30	1450	60	9	8	6	-	-	-	80	460	460
S2	1 - 7 and 9	Top	300	11	810	120	12	650	60	4	3	-	300	20	400	80	300	460
S2	8	Top	340	11	810	140	11	810	70	4	4	-	340	35	400	80	340	600
S2	1 - 7 and 9	Bottom	340	20	1450	140	20	1290	70	8	7	-	340	15	720	80	340	460
S2	8	Bottom	340	25	1770	140	25	1610	70	10	9	-	340	23	880	80	340	600
S3	1 - 7 and 9	Top	300	11	810	120	12	650	60	4	3	-	300	20	400	80	300	380
S3	8	Top	340	11	810	140	11	810	70	4	4	-	340	20	400	80	340	380
S3	1 - 7 and 9	Bottom	340	20	1450	140	20	1290	70	8	7	-	340	15	720	80	340	380
S3	8	Bottom	340	25	1770	140	25	1610	70	10	9	-	340	8	880	80	340	380
S4	9	Top	300	11	810	120	12	650	60	4	3	-	300	20	400	80	300	380
S4	9	Bottom	340	20	1450	140	20	1290	70	8	7	-	340	15	720	80	340	380
S5	1 - 9	Top	300	11	810	120	12	650	60	4	3	-	300	20	400	80	300	400
S5	1 - 9	Bottom	340	20	1450	140	20	1290	70	8	7	-	340	15	720	80	340	400
S6	1 - 9	Top	300	11	810	120	12	650	60	4	3	-	300	20	400	80	300	400
S6	1 - 9	Bottom	300	25	1450	120	25	1450	60	8	8	-	300	8	720	80	300	400

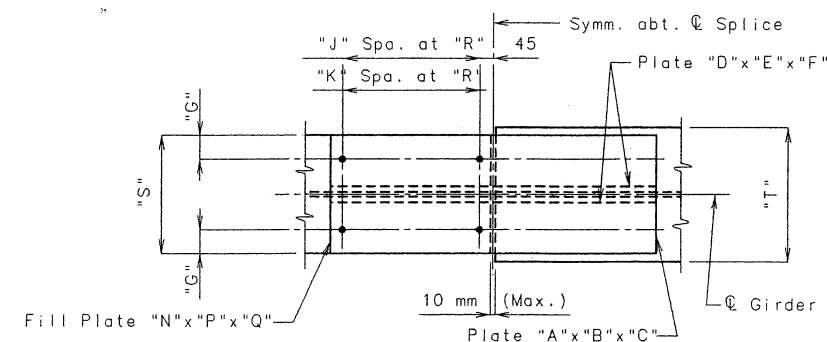


DETAIL OF BOLTED FIELD SPlice

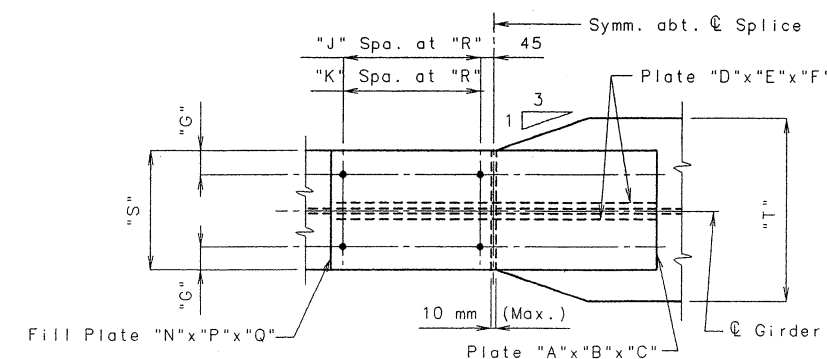
Note:
 Use 22.2 mm Ø high strength bolts with 23.8 mm Ø holes.
 Contact surfaces are to be blast cleaned in accordance with Section 712.12.2.1 of the Missouri Standard Specifications (Metric).
 For location of Field Splices shown see sheets no. 112 thru 114.



PLAN OF FLANGE
S1 (Girder 9)(Bottom)



PLAN OF FLANGE
S3 (Girder 8)(Top and Bottom)
S3 (Girders 1-7 and 9)(Bottom)
S4 (Girder 9)(Bottom)



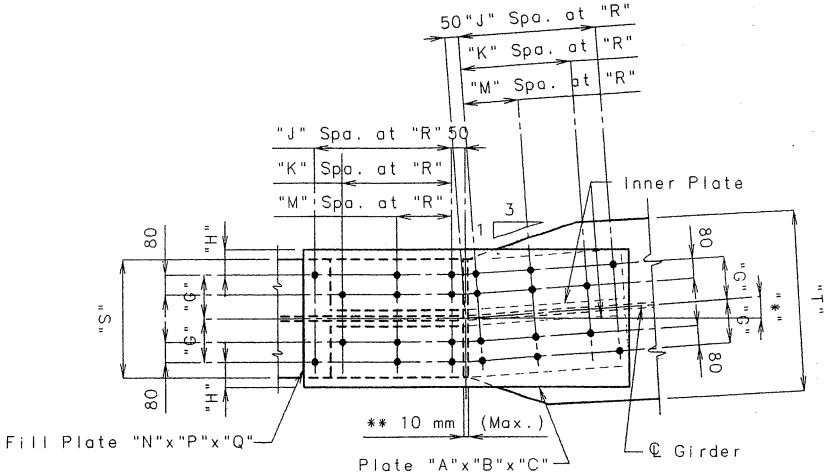
PLAN OF FLANGE
S1 (Girder 9)(Top)
S2 (Girders 1-7 and 9)(Top and Bottom)
S2 (Girder 8)(Top and Bottom)
S3 (Girders 1-7 and 9)(Top)
S4 (Girder 9)(Top)
S5 (Girders 1-9)(Top and Bottom)
S6 (Girders 1-9)(Top and Bottom)

FIELD SPLICES

SPLICE LOCATION	GIRDER NUMBER	SPLICE LOCATION	TABLE OF DIMENSIONS-FIELD SPLICE																
			"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"
S1	1 - 3	Top	340	11	830	120	12	330	90	80	4	3	-	300	20	410	80	300	460
S1	4 - 6	Top	340	11	830	120	12	330	90	80	4	3	-	300	20	410	80	300	460
S1	7	Top	400	20	1470	140	20	650	100	100	8	7	-	340	15	730	80	340	460
S1	8	Top	430	25	1790	150	25	890	105	110	10	10	-	360	23	890	80	360	600
S1	1 - 3	Bottom	400	25	1790	140	25	810	100	100	10	9	-	340	8	890	80	340	460
S1	4 - 6	Bottom	400	25	1790	140	25	810	100	100	10	9	-	340	8	890	80	340	460
S1	7	Bottom	420	30	1150	160	32	570	150	60	6	6	5	-	-	-	80	380	460
S1	8	Bottom	690	40	2590	270	40	1290	205	140	15	15	14	-	-	-	80	600	600
S4	1-8	Top	340	11	830	120	12	330	90	80	4	3	-	300	20	410	80	300	380
S4	1-8	Bottom	400	20	1470	140	20	650	100	100	8	7	-	340	15	730	80	340	380

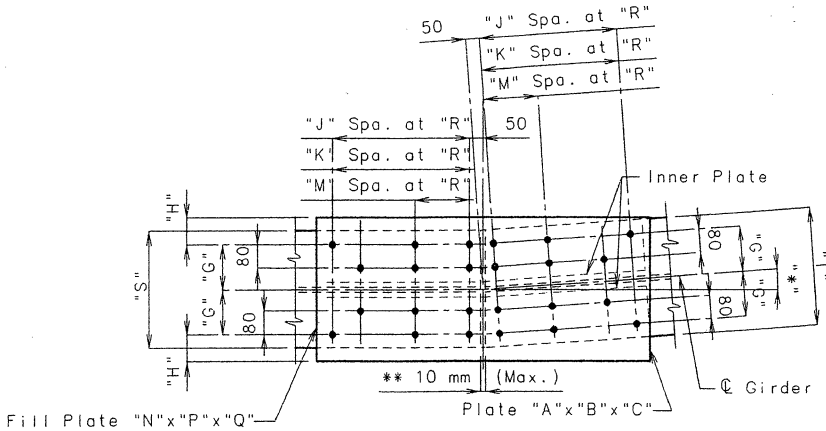
SPLICE LOCATION	GIRDER NUMBER	*
S1	1	1° 48' 21"
S1	2	0° 27' 41"
S1	3	0° 3' 17"
S1	4	0° 21' 4"
S1	5	0° 45' 22"
S1	6	1° 9' 37"
S1	7	1° 33' 48"
S1	8	1° 57' 57"

SPLICE LOCATION	GIRDER NUMBER	*
S4	1	2° 15' 33"
S4	2	1° 58' 38"
S4	3	1° 41' 41"
S4	4	1° 24' 45"
S4	5	1° 7' 48"
S4	6	0° 50' 51"
S4	7	0° 33' 54"
S4	8	0° 16' 57"



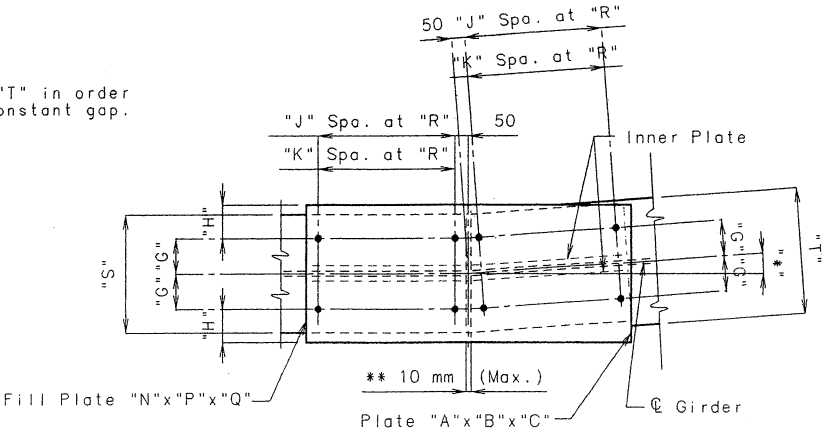
PLAN OF FLANGE
S1 (Girder 7)(Bottom)

Note: For details of the Inner Plates see sheet no. 128.

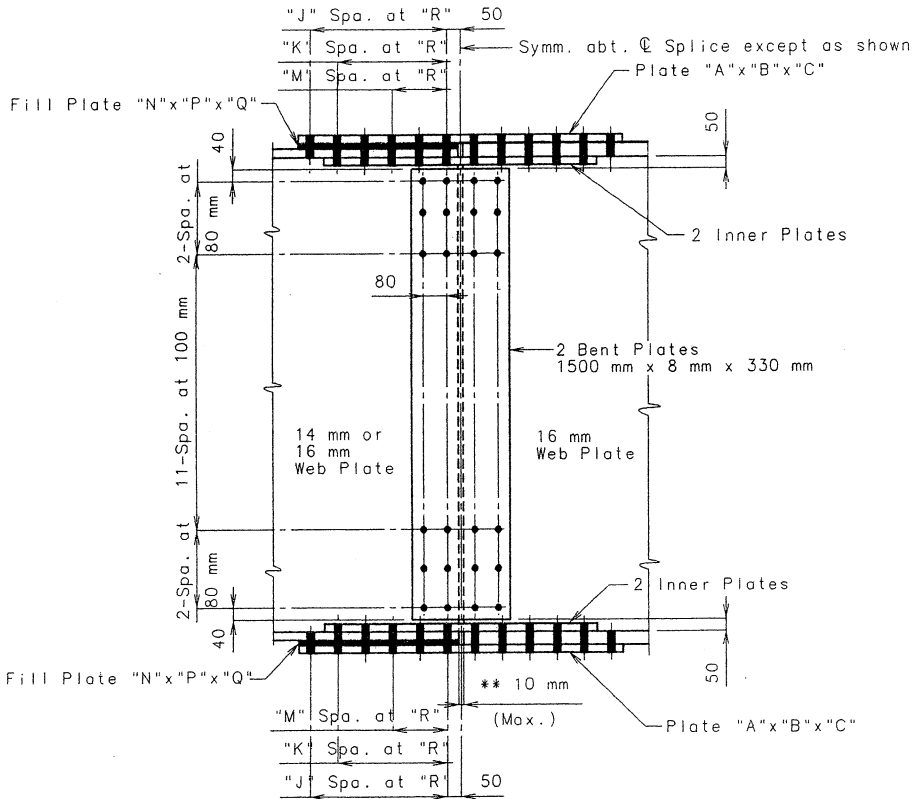


PLAN OF FLANGE
S1 (Girder 8)(Bottom)

** Clip Flange "T" in order maintain a constant gap.

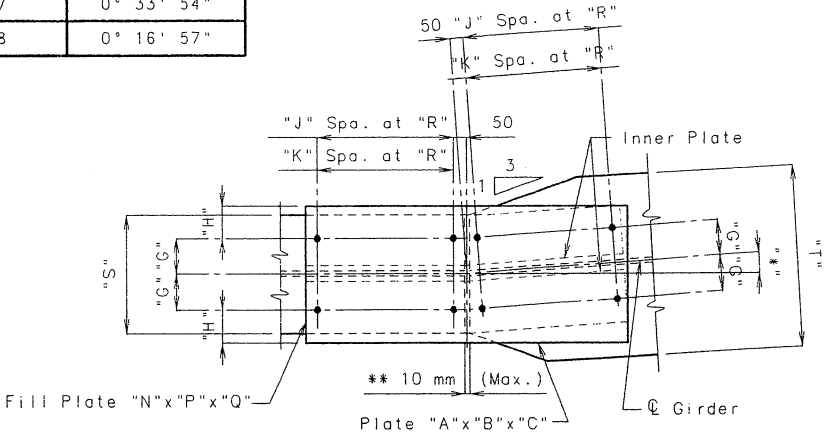


PLAN OF FLANGE
S4 (Girders 1-8)(Bottom)

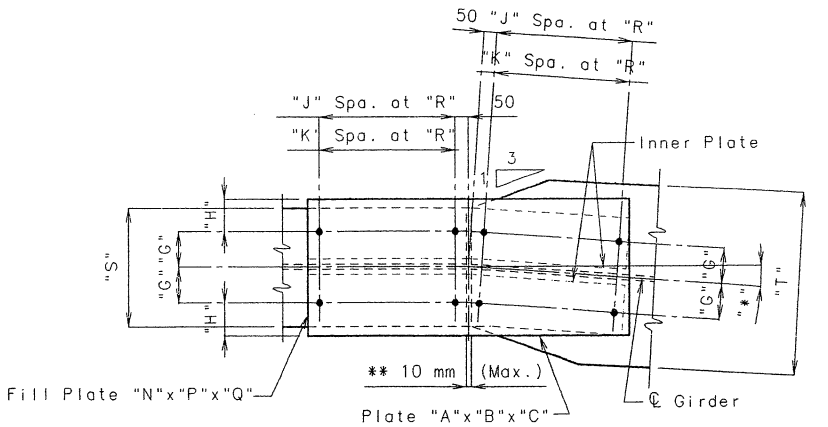


DETAIL OF BOLTED FIELD SPLICE

Note:
Use 22.2 mm Ø high strength bolts with 23.8 mm Ø holes.
Contact surfaces are to be blast cleaned in accordance with Section 712.12.2.1 of the Missouri Standard Specifications (Metric).
For location of Field Splices shown see sheets no. 112 thru 114.



PLAN OF FLANGE
S1 (Girders 4-6)(Top and Bottom)
S1 (Girders 7-8)(Top)
S4 (Girders 1-8)(Top)



PLAN OF FLANGE
S1 (Girders 1-3)(Top and Bottom)

FIELD SPLICES

Detailed Jan. 1997
Checked Aug. 1997

SHEET NO. 127 OF 236.

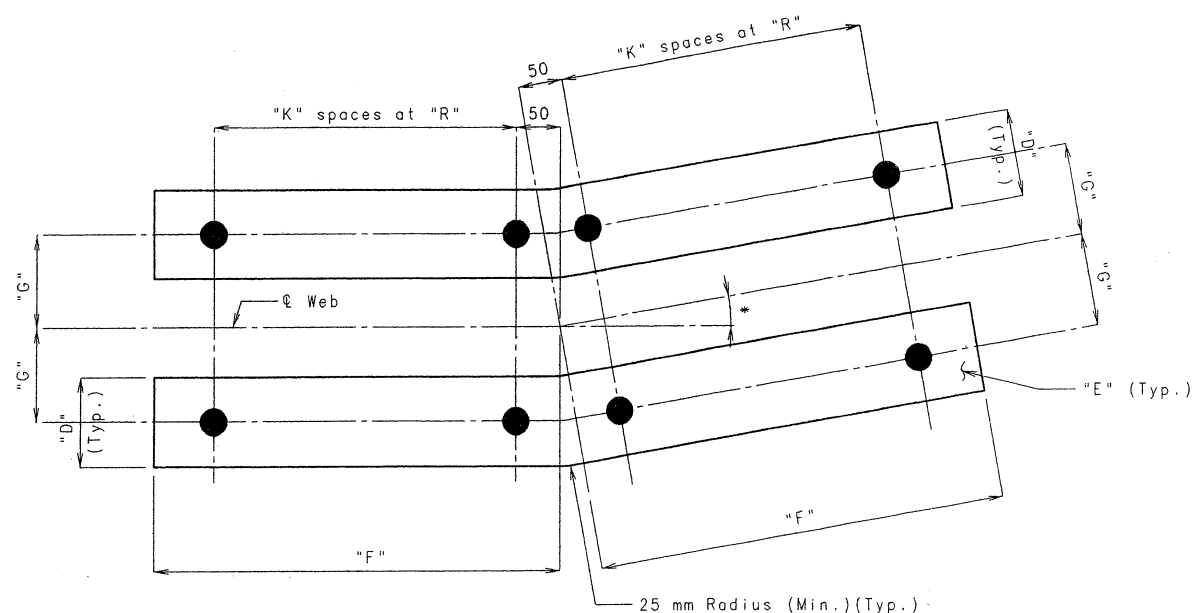
ST. LOUIS COUNTY

UNIT 2

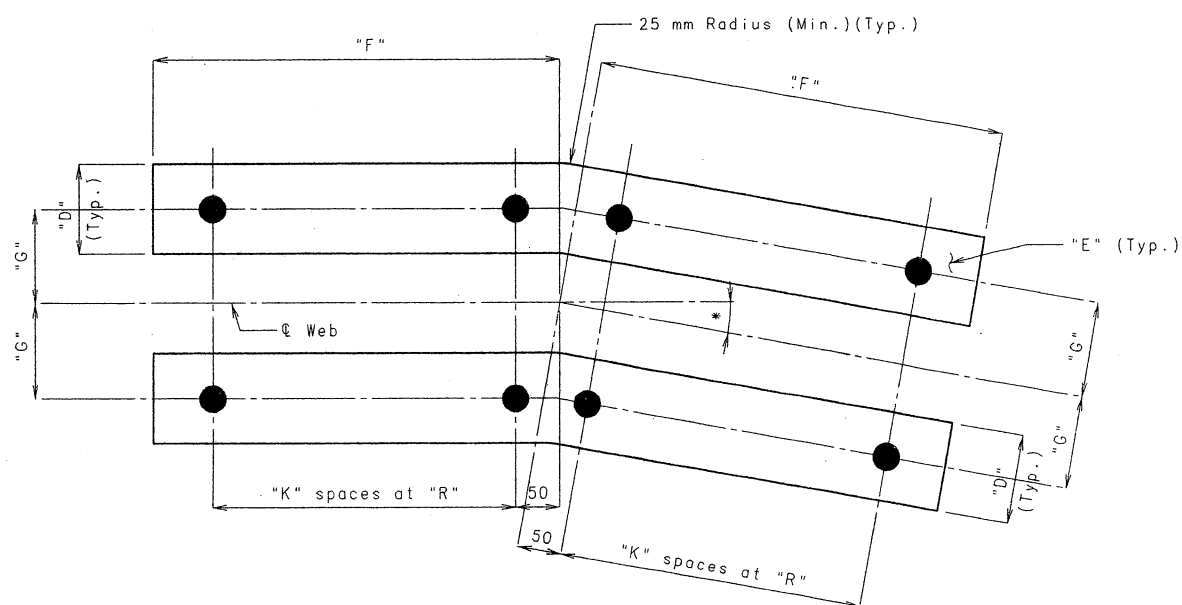
A5682



DATE 12-5-97

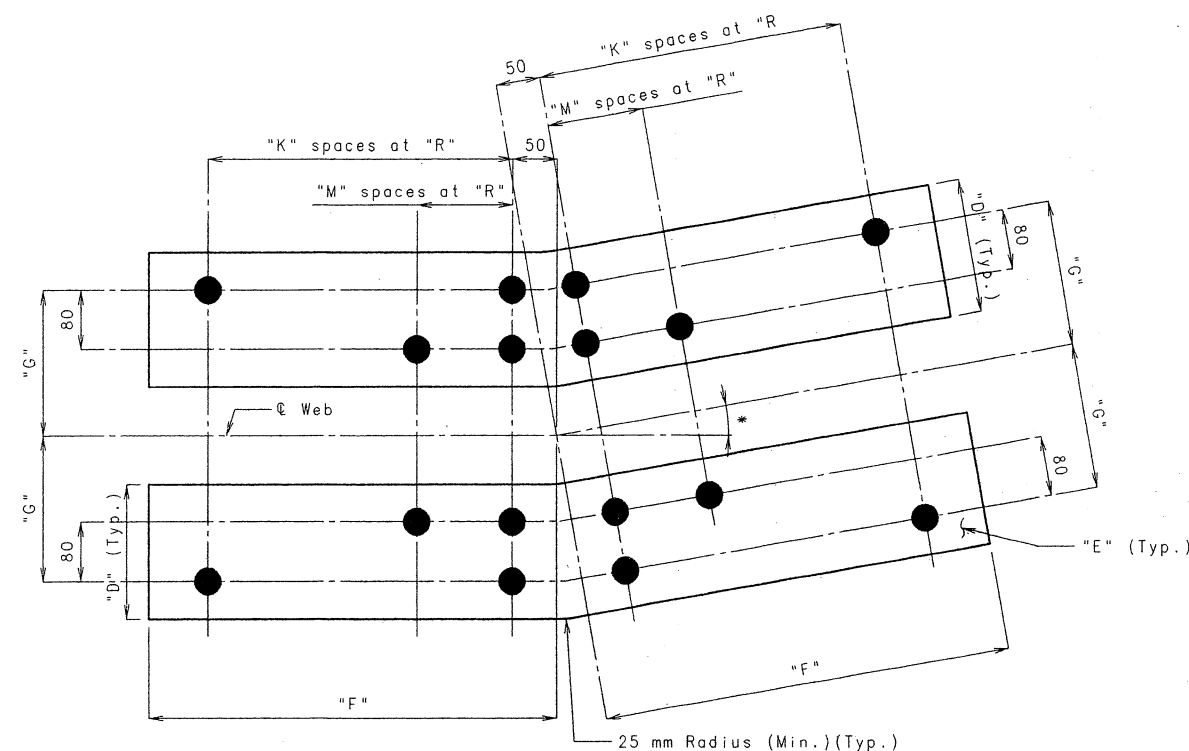


PLAN OF INNER PLATES
S1 (Girders 4 thru 6)(Top and Bottom)
S1 (Girders 7 and 8)(Top)
S4 (Girders 1 thru 8)(Top and Bottom)



PLAN OF INNER PLATES
S1 (Girders 1 thru 3)(Top and Bottom)

Note: Work this sheet with sheet no. 127.



PLAN OF INNER PLATES
S1 (Girders 7 and 8)(Bottom)

STATE OF MISSOURI
KURT E. GRIBBLE
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-23576
DATE 12-5-97

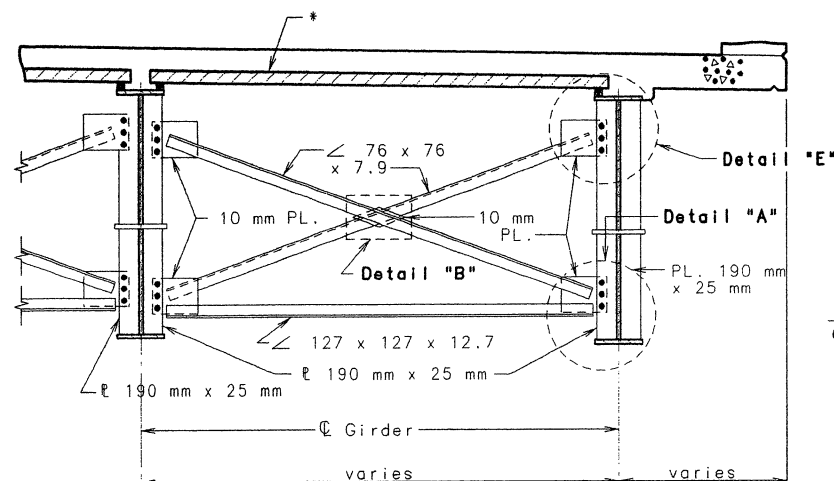
FIELD SPLICE DETAILS

Detailed Jan. 1997
Checked Aug. 1997

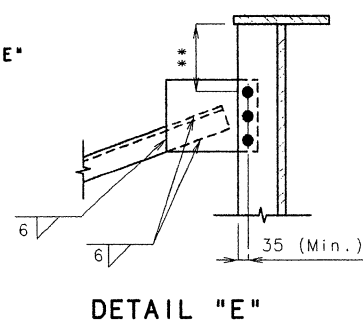
SHEET NO. 128 OF 236.

ST. LOUIS COUNTY UNIT 2 A5682

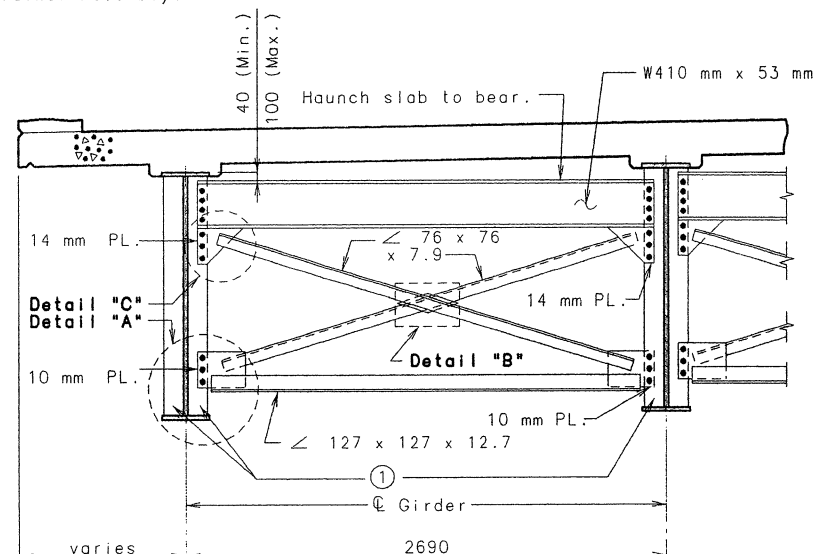
** Dimension shall be such as to provide adequate clearance for Earthquake Restrainer Assembly.



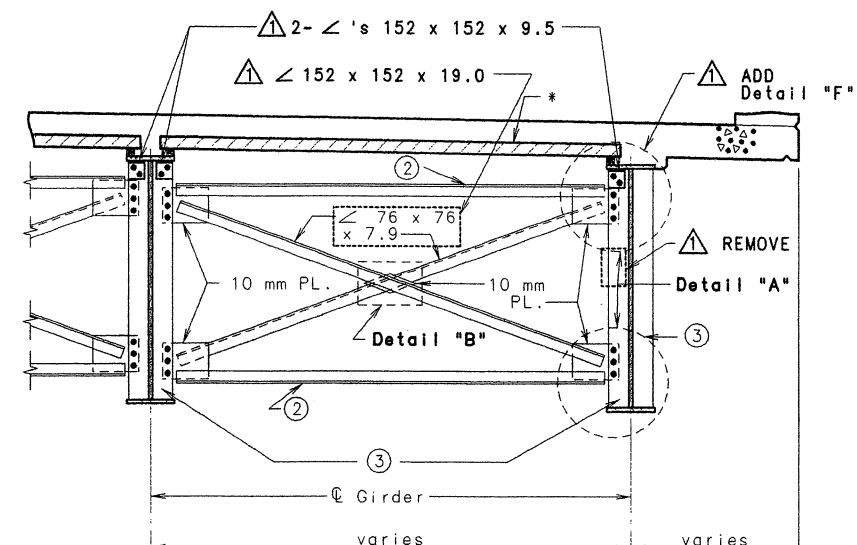
**TYPICAL PART SECTION
SHOWING CROSS FRAMES
AT HINGES NEAR BENTS
NO. 7 AND 11**



DETAIL "E"

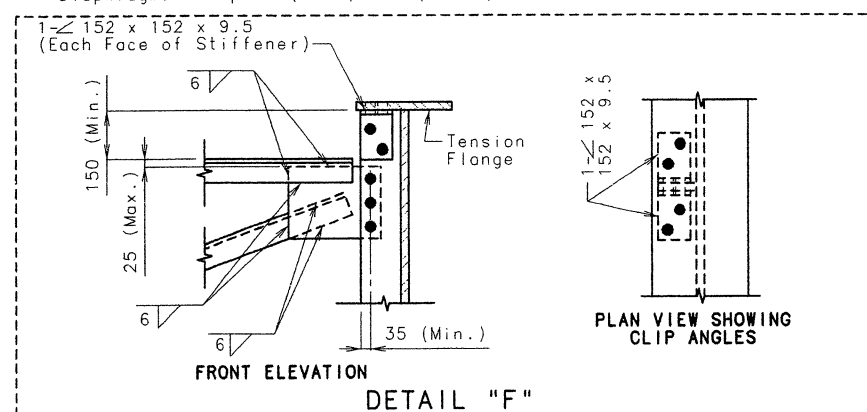


**TYPICAL PART SECTION SHOWING
END DIAPHRAGMS AT BENT NO. R5
BETWEEN GIRDERS (B AND C)
AND GIRDERS (C AND 9)**



**TYPICAL PART SECTION
SHOWING CROSS FRAMES
AT INTERMEDIATE BENTS**

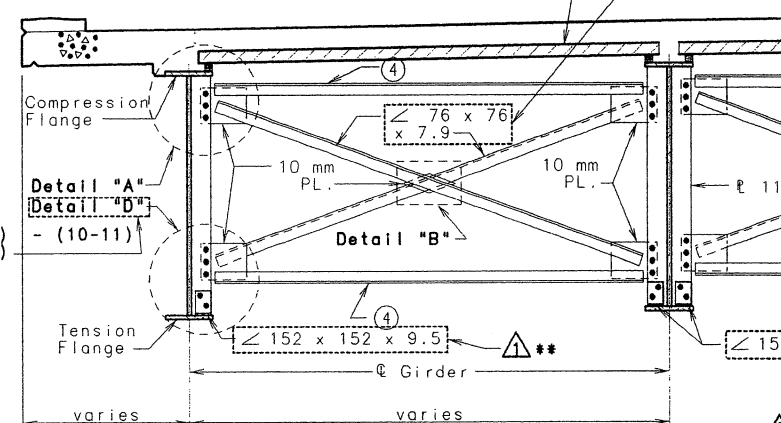
- ① Bent no. R5 use 190 mm x 25 mm (Girder no. 9), 210 mm x 25 mm (Girder C) and 190 mm x 25 mm (Girder B) (Right side)
- ② Bents no. 7 thru 9 use 127 mm x 127 mm x 12.7 mm (Girder no. 10 and 11 use 89 mm x 76 mm x 7.9 mm)
- ③ Bent no. 7 use 160 mm x 25 mm (Girders no. 1-6), 180 mm x 25 mm (Girder no. 7), and 290 mm x 28 mm (Girder no. 8)
Bent no. 8 use 220 mm x 25 mm (Girders no. 1 thru 7 and 9) and 290 mm x 28 mm (Girder no. 8)
Bent no. 9 use 180 mm x 25 mm
Bent no. 10 use 190 mm x 25 mm
Bent no. 11 use 140 mm x 25 mm
- ④ Diaphragms in Spans (R5-8), (7-8) and (8-9) use 127 mm x 127 mm x 12.7 mm
Diaphragms in Spans (9-10) and (10-11) use 89 mm x 76 mm x 7.9 mm



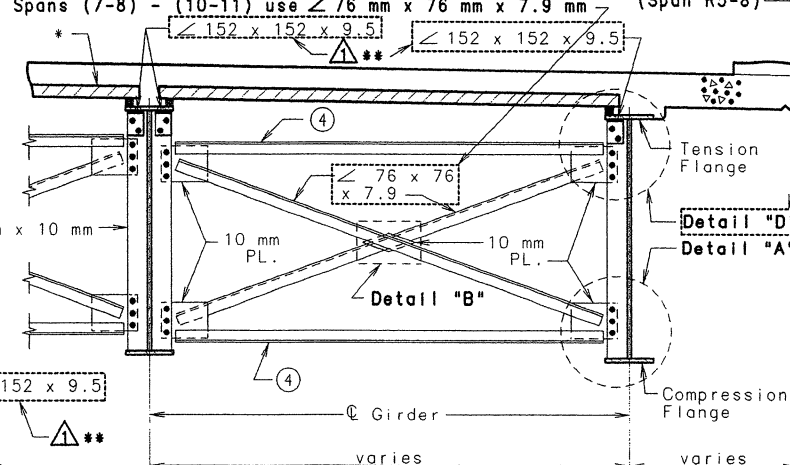
DETAIL "F"

Detail "D" Spans (7-8) - (10-11)
Detail "F" (Span R5-8)

ADD



**TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION**

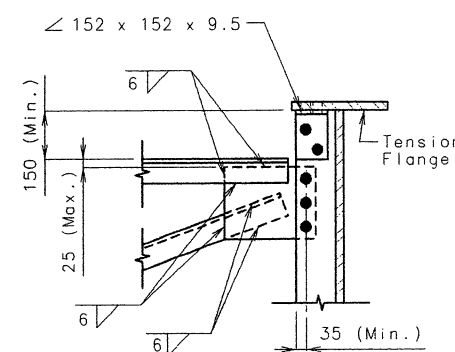


**TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION**

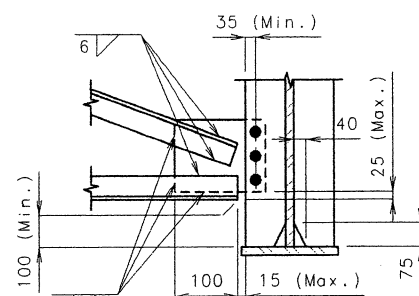
ADD
** 152 x 152 x 9.5
Spans (7-8) - (10-11)
2- 152 x 152 x 9.5
Span (R5-8)

* Panel option not allowed in some areas of Unit 2, see Part Plan of Slab Showing Reinforcement for these areas.

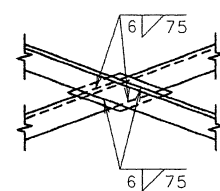
Note:
The two 19.0 mm Ø high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.



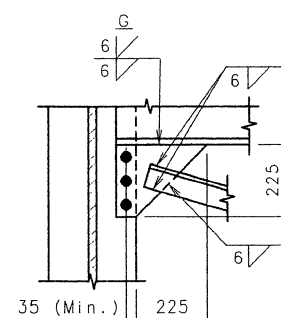
DETAIL "D"



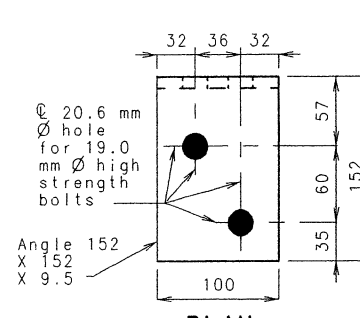
DETAIL "A"



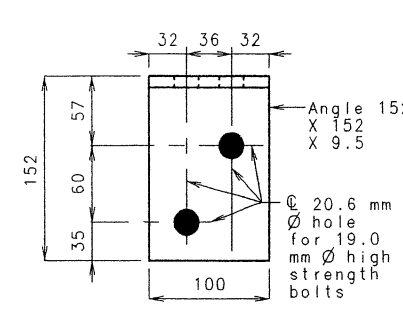
DETAIL "B"



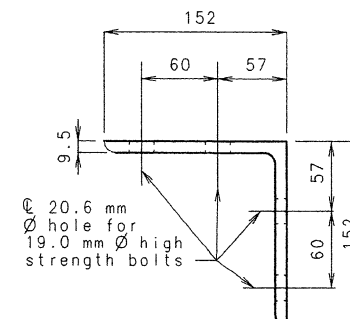
DETAIL "C"



PLAN

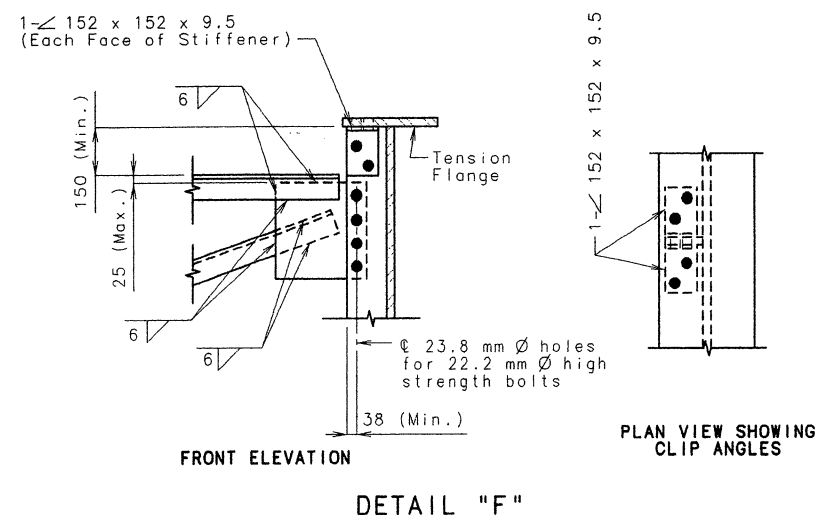


**FRONT ELEVATION
DETAIL OF FLANGE CONNECTION ANGLE**

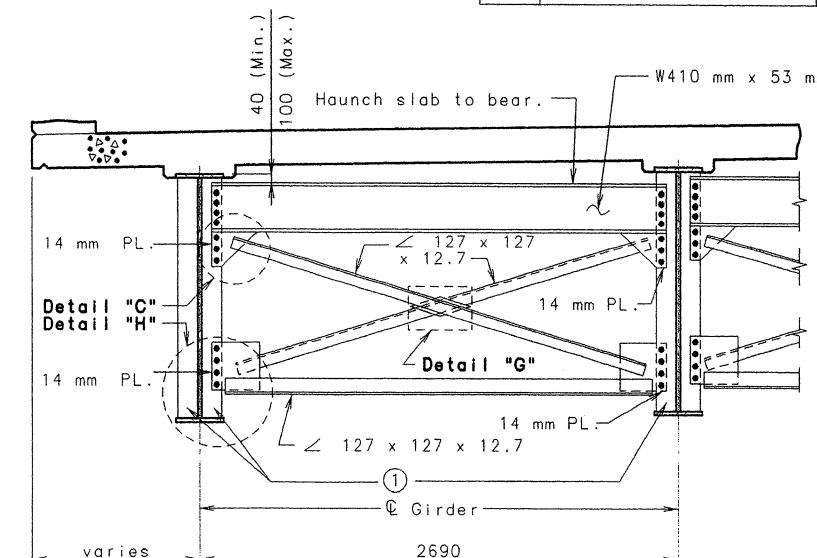


SECTION THRU ANGLE

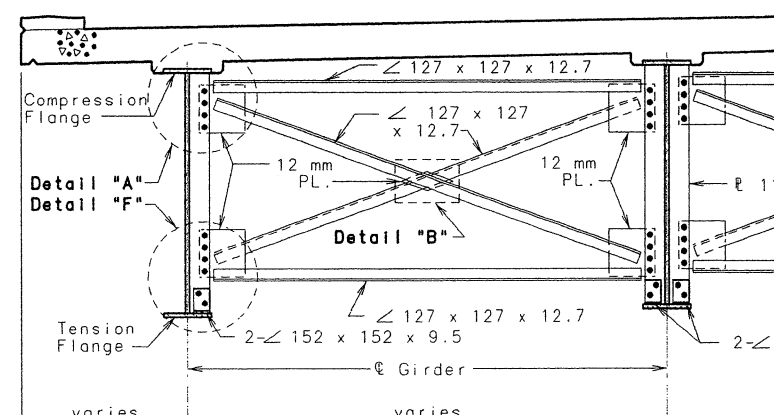
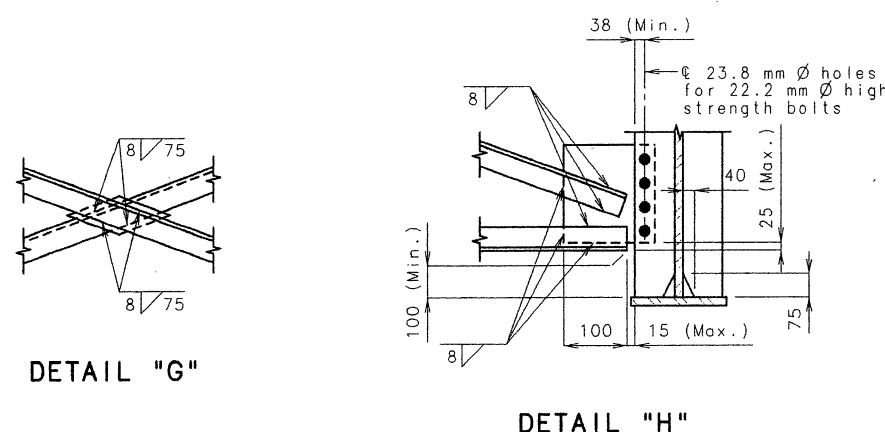




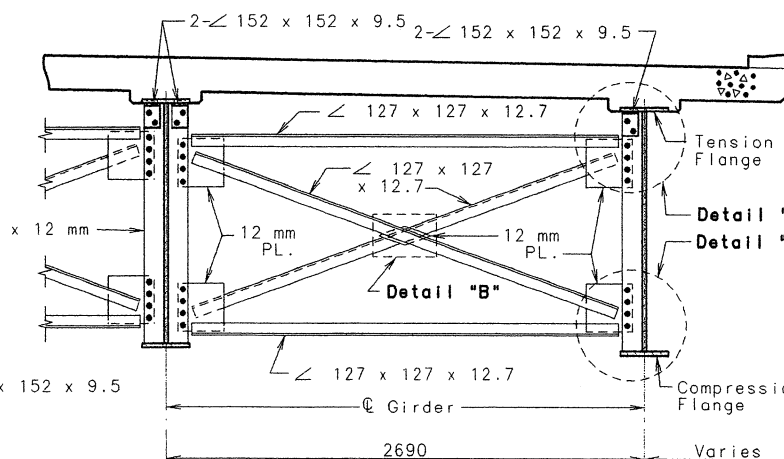
① Bent no. R5 use \angle 220 mm x 25 mm (Girder no. 9), \angle 210 mm x 25 mm (Girder C) and \angle 190 mm x 25 mm (Girder B) (Right side)



TYPICAL PART SECTION SHOWING
END DIAPHRAGMS AT BENT NO. R5
BETWEEN GIRDERS (B AND C)
AND GIRDERS (C AND 9)

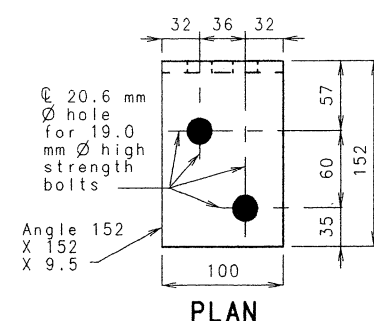
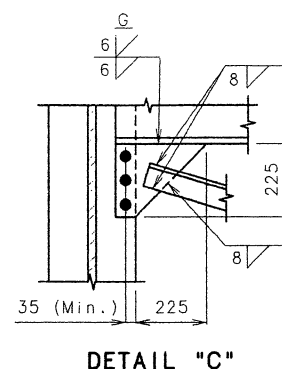
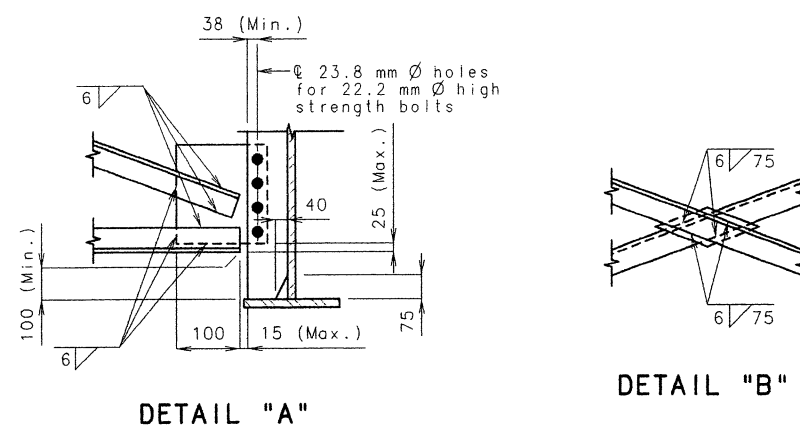


TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION
FOR SPAN (R5-8)

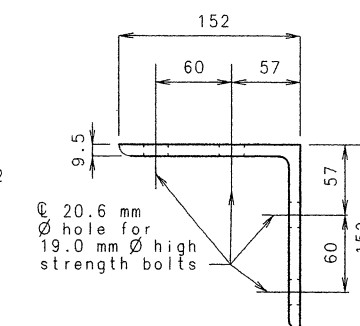


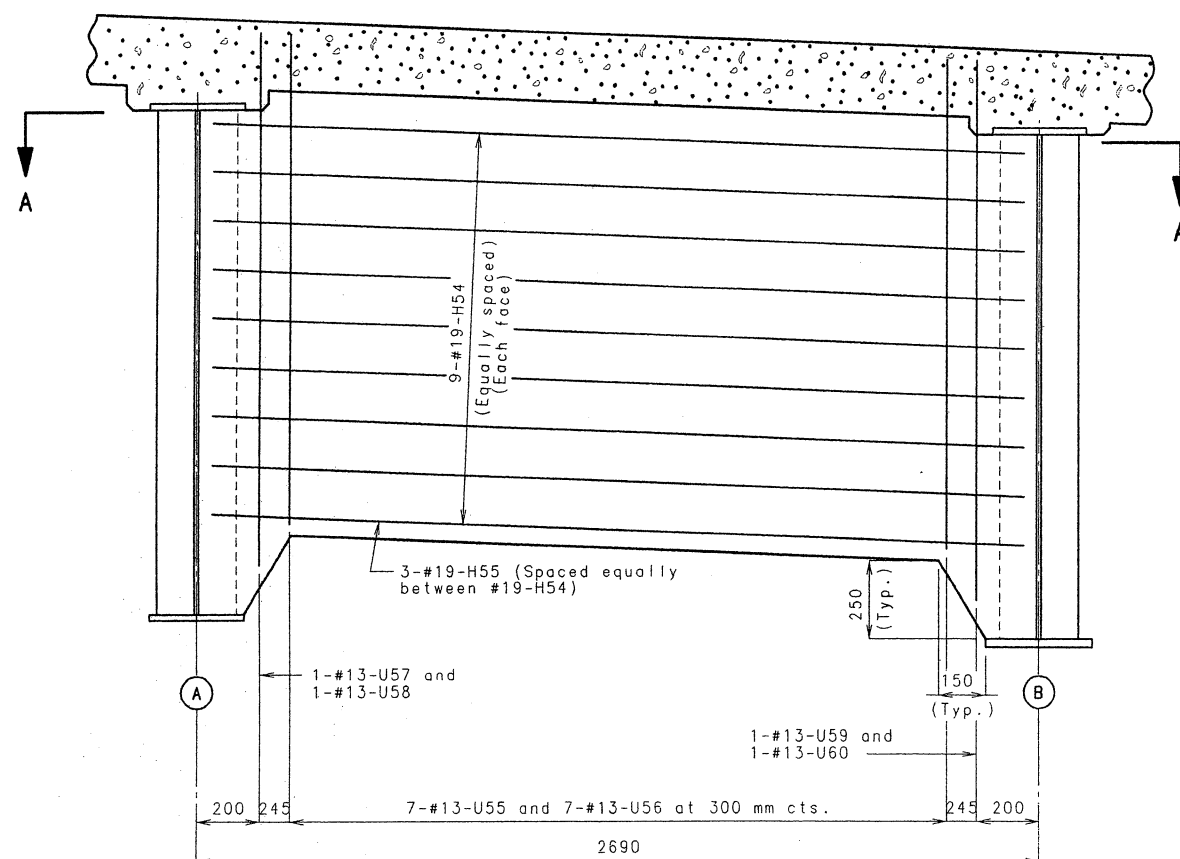
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION
FOR SPAN (R5-8)

Note:
The two 19.0 mm ϕ high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.

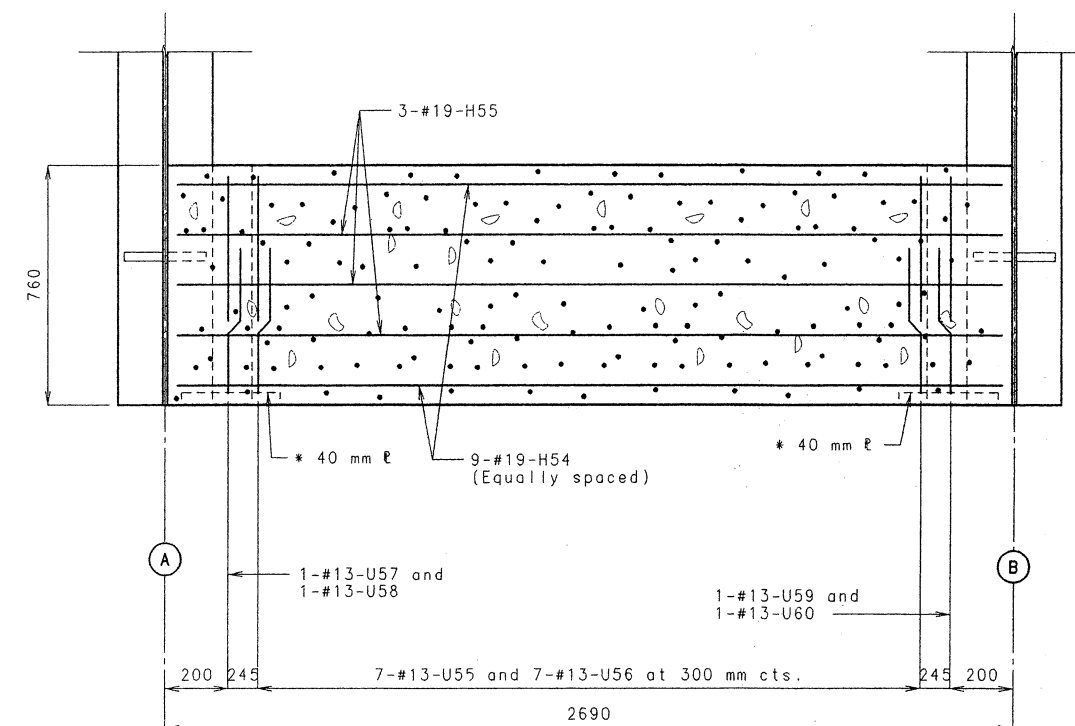


FRONT ELEVATION
DETAIL OF FLANGE CONNECTION ANGLE

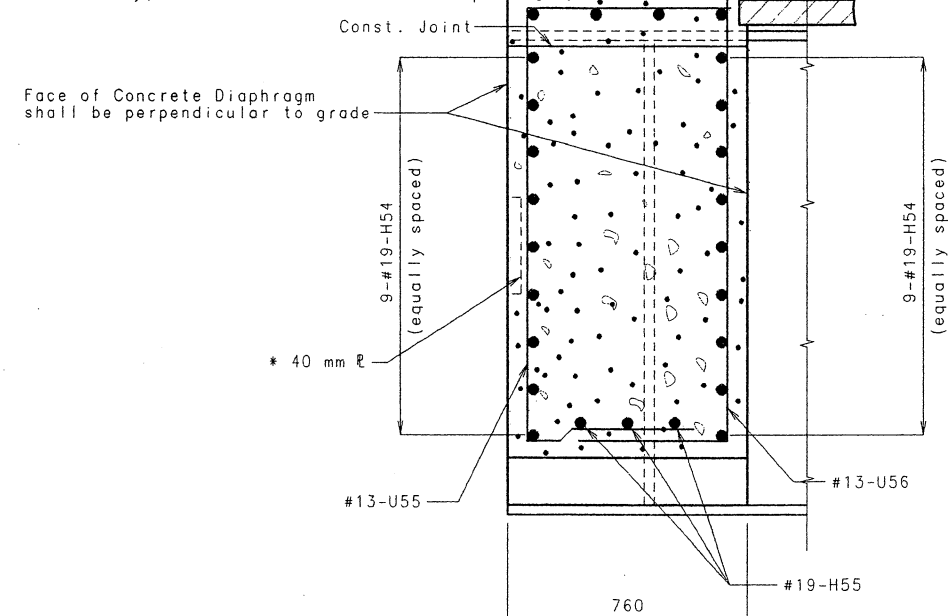




SECTION NEAR INTERMEDIATE BENT NO. R5
(Concrete Diaphragm between Girders A and B only)



SECTION A-A

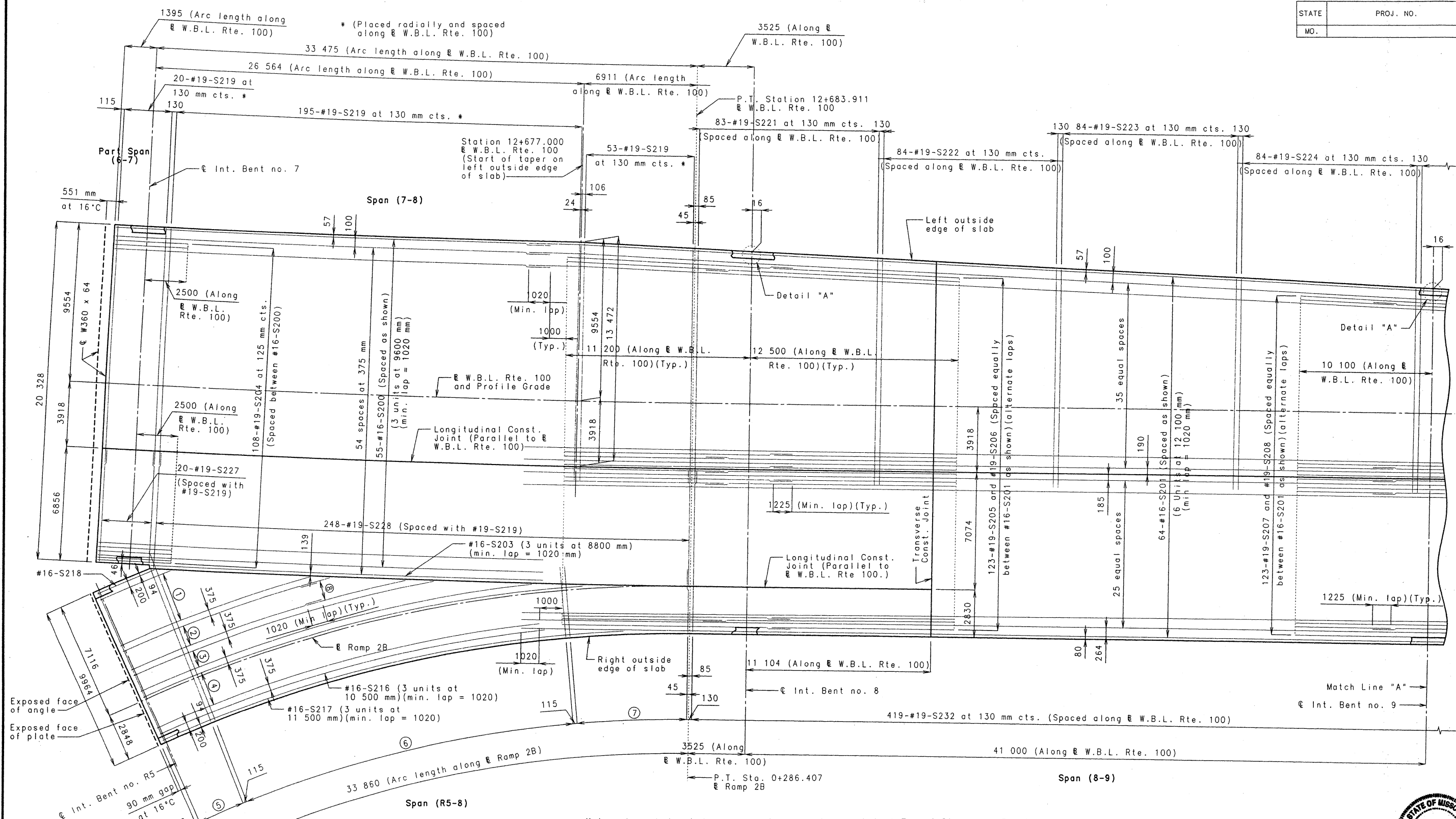


TYPICAL SECTION THRU DIAPHRAGM

* For details of 40 mm Plate and Earthquake Restrainers see sheets no. 100 & 101.

Note: For details of Flat Plate Expansion Device see sheet no. 146.
Concrete Diaphragm shall achieve a strength (f'_c) equal to 17 MPa before slab is poured.
#19-H54 bars may be shifted to avoid interference with the Earthquake Restrainer Assemblies.

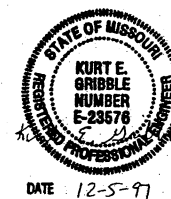
STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
DATE 12-5-97



- ① 9-#16-S212 at 375 mm cts.
- ② 4-#16-S213 at 375 mm cts.
- ③ 4-#16-S214 at 375 mm cts.
- ④ 8-#16-S215 at 375 mm cts.
- ⑤ 27-#19-S229 at 115 mm cts.
- ⑥ 187-#19-S230 at 115 mm cts.
- ⑦ 70-#19-S231 at 115 mm cts.
- ⑧ 4-#16-S220 at 375 mm cts.

Note: Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 141.
 For Slab Curve Ordinates see sheet no. 121.
 For details of Superelevation Transition see sheet no. 142.
 For Dead Load Deflection Diagram see sheet no. 140.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 139.
 For Diagram of Slab Pouring Sequence see sheet no. 138.
 Transverse reinforcement from P.T. Station 12+683.911 to Hinge near Bent no. 11 shall be placed perpendicular to W.B.L. Rte. 100.

For Sections thru slab see sheets no. 136 and 137.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.
 For Detail "A" see sheet no. 132.
 For location of Slab Drains with Grates and Details of C.I.P. Bars around grates with additional slab reinforcement see sheets no. 147 thru 149.

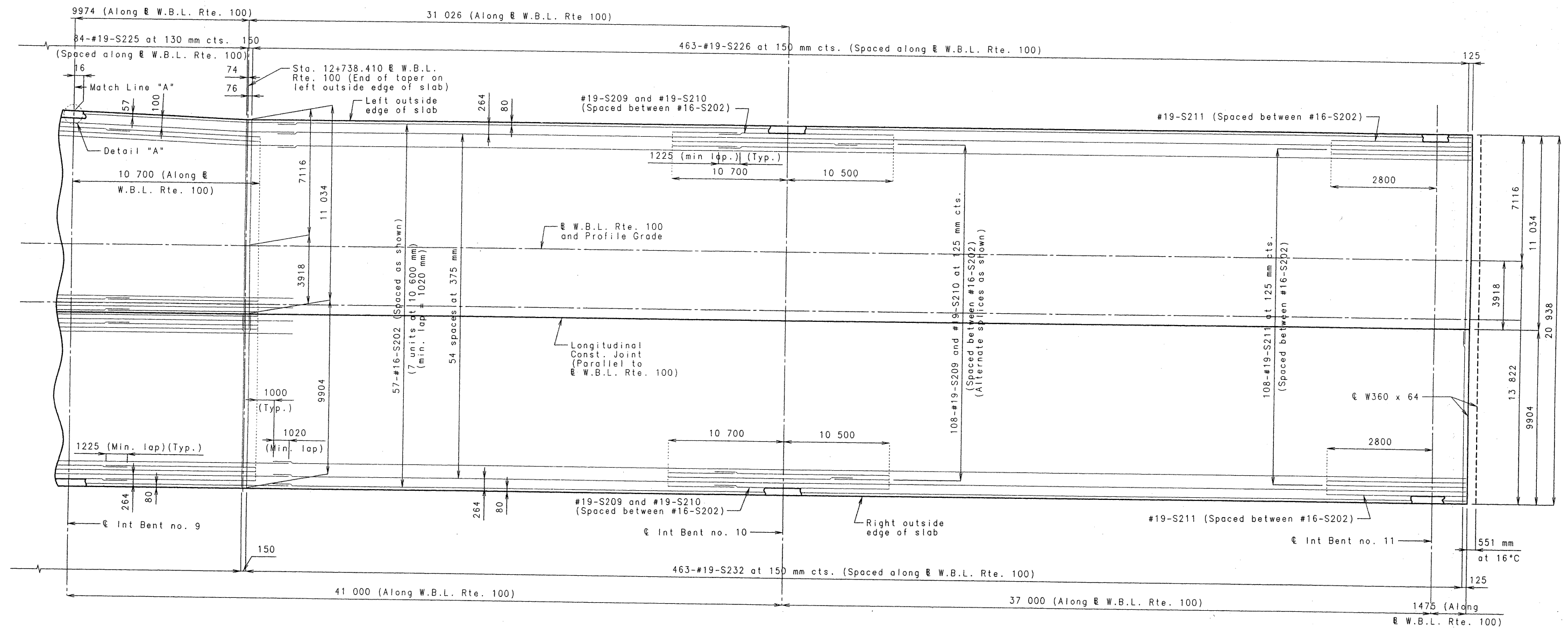


DATE: 12-5-97

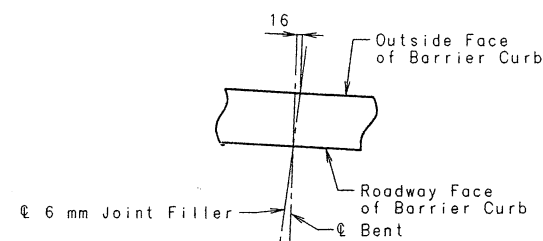
PART PLAN OF SLAB SHOWING TOP REINFORCEMENT

Sheet No. 131 of 236

UNIT 2
 ST. LOUIS COUNTY A5682

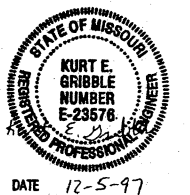


Note: Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 141.
 For Slab Curve Ordinates see sheet no. 121.
 For Details of Superelevation Transition see sheet no. 142.
 For Dead Load Deflection Diagram see sheet no. 140.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 139.
 For Diagram of Slab Pouring Sequence see sheet no. 138.
 For Sections thru slab see sheets no. 136 and 137.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Transverse reinforcement from P.T. Station 12+683.911 to hinge near Bent no. 11 shall be placed perpendicular to W.B.L. Rte. 100.
 For location of Slab Drains with Grates and Details of C.I.P. Bars around grates with additional slab reinforcement see sheets no. 147 thru 149.



DETAIL "A"

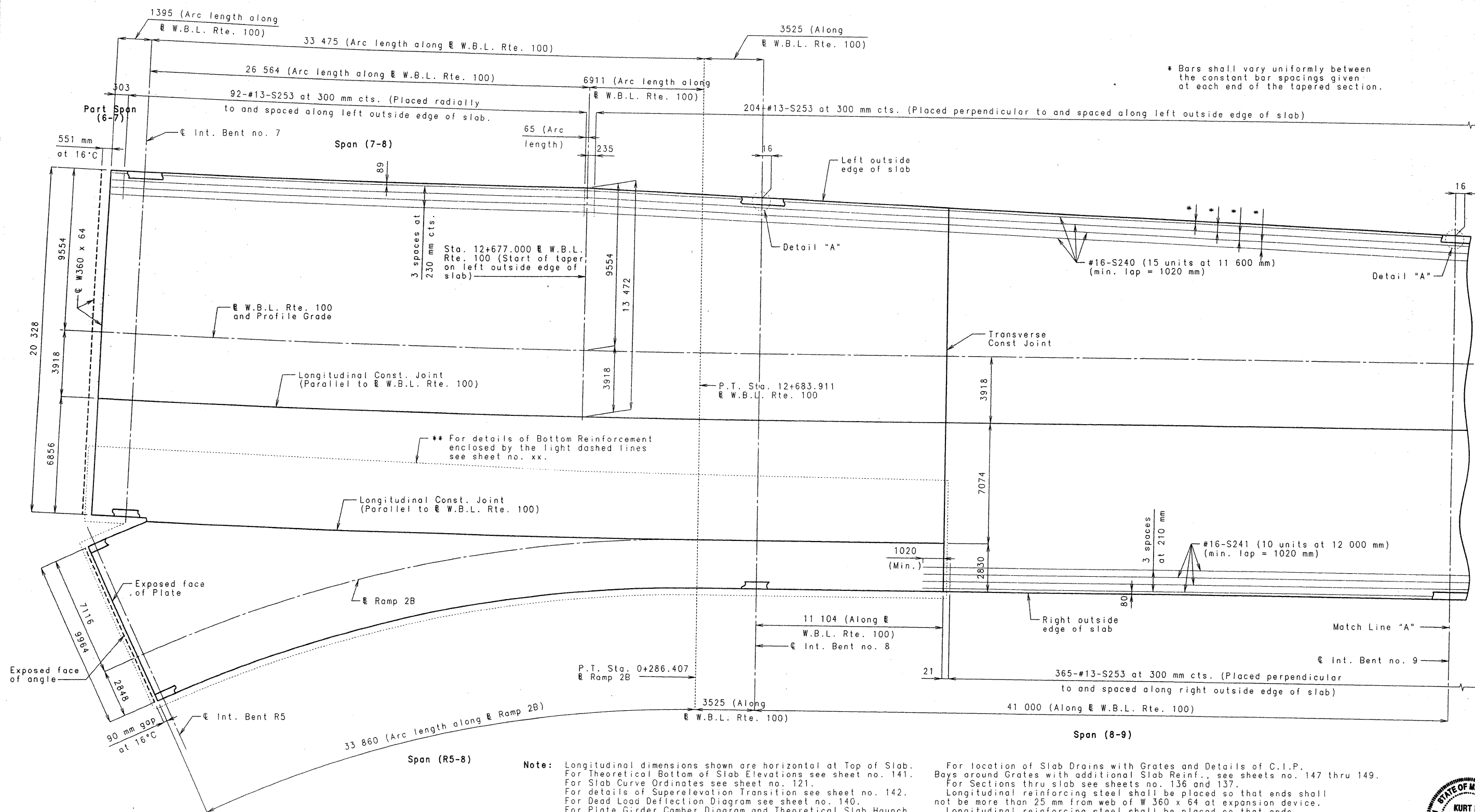
PART PLAN OF SLAB SHOWING TOP REINFORCEMENT



Detailed Oct. 1997
 Checked Nov. 1997

Sheet No. 132 of 236

ST. LOUIS COUNTY UNIT 2 A5682



* Bars shall vary uniformly between the constant bar spacings given at each end of the tapered section.

Note: Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 141.
 For Slab Curve Ordinates see sheet no. 121.
 For details of Superelevation Transition see sheet no. 142.
 For Dead Load Deflection Diagram see sheet no. 140.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 139.
 For Diagram of Slab Pouring Sequence see sheet no. 138.

For location of Slab Drains with Grates and Details of C.I.P. Bays around Grates with additional Slab Reinf., see sheets no. 147 thru 149.
 For Sections thru slab see sheets no. 136 and 137.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.
 For Detail "A" see sheet no. 132.

** Panels will not be allowed between girders A-C and girder 9 in Span (R5-8); nor between girders 7 and 8 in Part Span (6-7) and Span (7-8); nor between girders 7, 8, and 9 from Bent no. 8 to the Transverse Construction Joint shown. These slab areas will be cast-in-place. The two end panels between Girders 7, 8, and 9 at the Transverse Construction Joint shown shall be fabricated with # 16-P1 bars as shown on sheet no. 143.



DATE 12-5-97

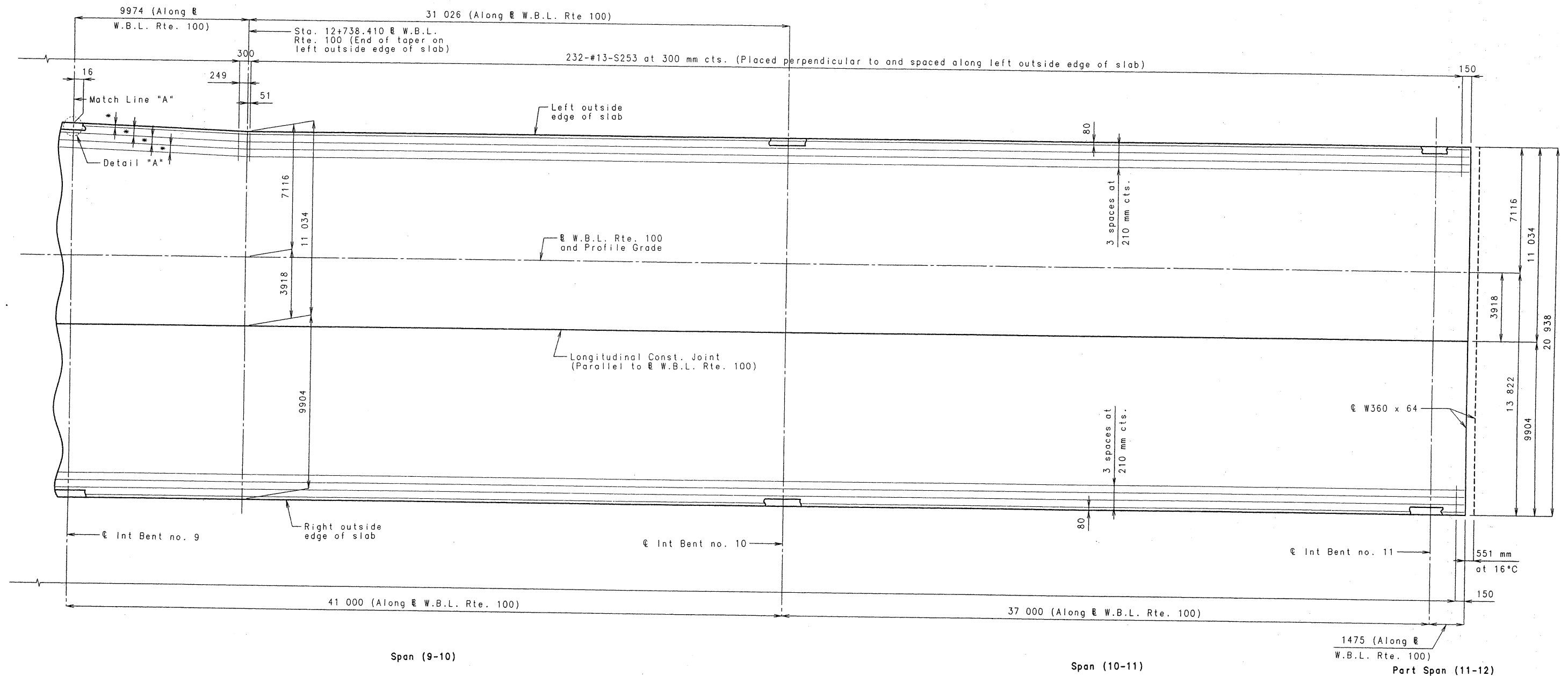
Detailed Oct. 1997
 Checked Nov. 1997

PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Sheet No. 133 of 236.

STATE	PROJ. NO.	SHEET NO.
MO.		167

* Bars shall vary uniformly between the spacings given at each end of the tapered slab.



Note: Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 141.
 For Slab Curve Ordinates see sheet no. 121.
 For details of Superelevation Transition see sheet no. 142.
 For Dead Load Deflection Diagram see sheet no. 140.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 139.
 For Diagram of Slab Pouring Sequence see sheet no. 138.
 For Sections thru slab see sheets no. 136 and 137.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 For Detail "A" see sheet no. 132.
 For location of Slab Drains with Grates and Details of C.I.P. Bars around grates with additional slab reinforcement see sheets no. 147 thru 149.

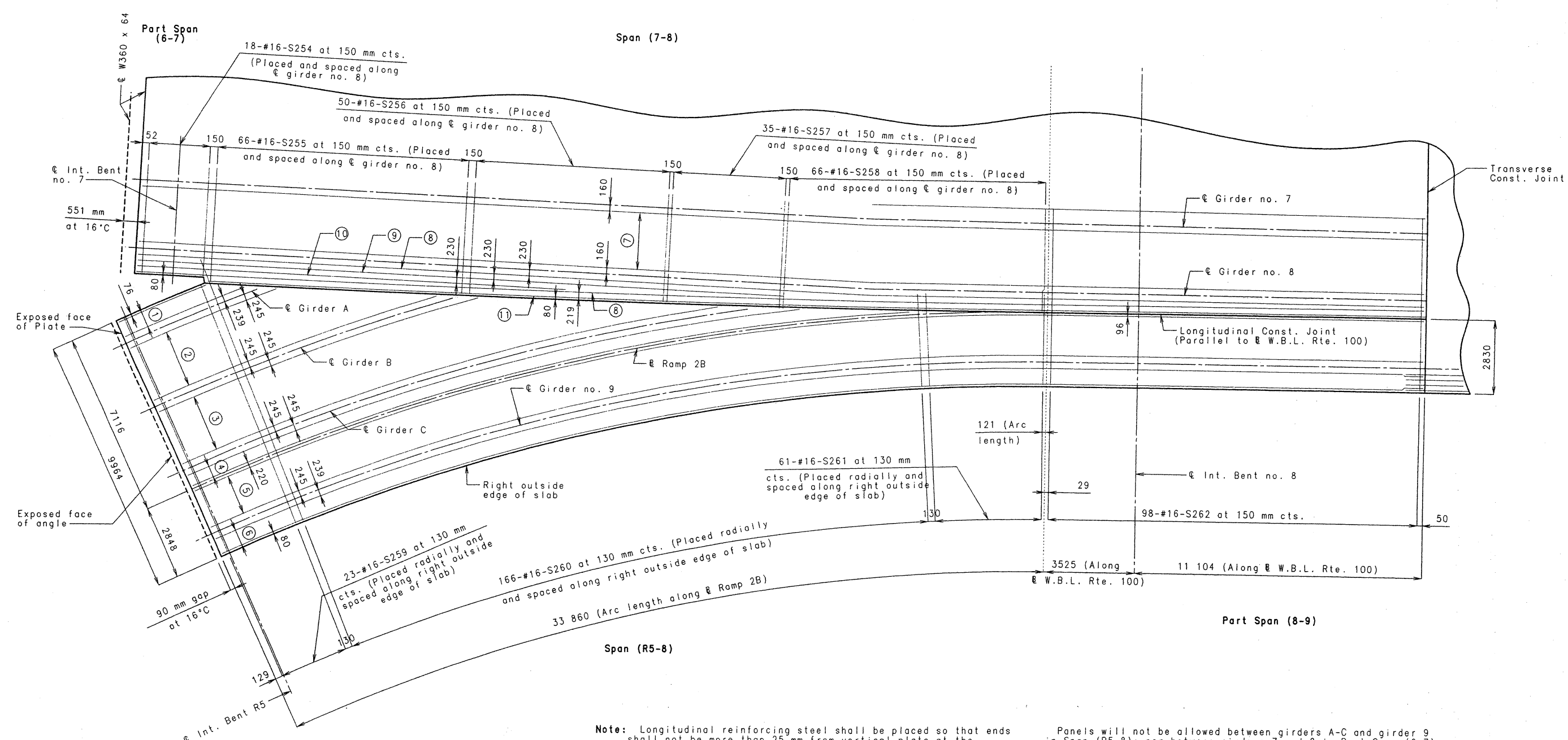


PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Detailed Oct. 1997
 Checked Nov. 1997

Sheet No.134 of 236

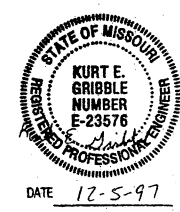
UNIT 2
 ST. LOUIS COUNTY A5682



- | | |
|--|--|
| ① 4-#16-S242 at 210 mm cts. | ⑧ 1-#16-S249 (5 units at 10 900 mm)(min. lap = 1020) |
| ② 11-#16-S243 at 220 mm cts. | ⑨ 1-#16-S250 (3 units at 10 400 mm)(min. lap = 1020) |
| ③ 11-#16-S244 at 220 mm cts. (2 units at 11 500 mm)(min. lap = 1020) | ⑩ 1-#16-S251 (2 units at 10 800 mm)(min. lap = 1020) |
| ④ 3-#16-S245 at 220 mm cts. (3 units at 10 600 mm)(min. lap = 1020) | ⑪ 1-#16-S252 (5 units at 10 300 mm)(min. lap = 1020) |
| ⑤ 8-#16-S246 at 220 mm cts. (5 units at 10 500 mm)(min. lap = 1020) | |
| ⑥ 4-#16-S247 at 210 mm cts. (5 units at 10 500 mm)(min. lap = 1020) | |
| ⑦ 11-#16-S248 equally spaced (5 units at 10 900 mm)(min. lap = 1020) | |

Note: Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.
 Longitudinal dimensions shown are horizontal at Top of Slab. For Theoretical Bottom of Slab Elevations see sheet no. 141. For Slab Curve Ordinates see sheet no. 121. For details of Superelevation Transition see sheet no. 142. For Dead Load Deflection Diagram see sheet no. 140. For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 139. For Diagram of Slab Pouring Sequence see sheet no. 138. For Sections thru slab see sheets no. 136 & 137. Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device. For location of Slab Drains with Grates and Details of C.I.P. Bars around grates with additional slab reinforcement see sheets no. 147 thru 149.

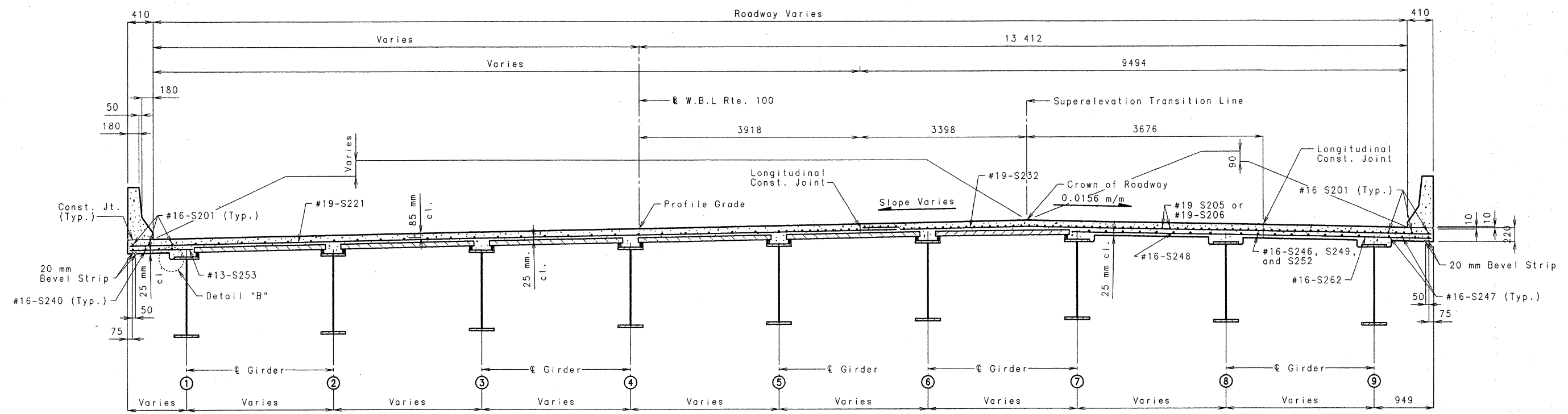
Panels will not be allowed between girders A-C and girder 9 in Span (R5-8); nor between girders 7 and 8 in Part Span (6-7) and Span (7-8); nor between girders 7, 8, and 9 from Bent no. 8 to the Transverse Construction Joint shown. These slab areas will be cast-in-place. The two end panels between Girders 7, 8, and 9 at the Transverse Construction Joint shown shall be fabricated with # 16-P1 bars as shown on sheet no. 143.



Detailed Oct. 1997
 Checked Nov. 1997

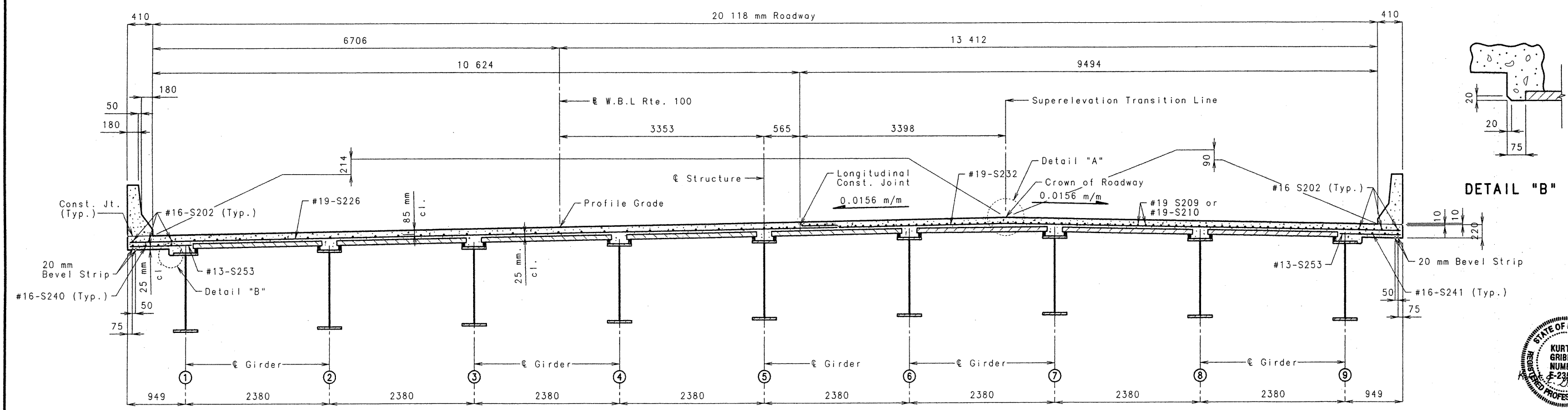
PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Sheet No.135 of 236

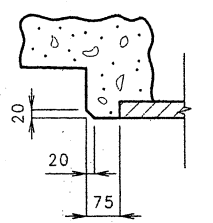


HALF SECTION NEAR & SPAN SECTION C-C HALF SECTION NEAR INTERMEDIATE BENT

Note: For details of Safety Barrier Curb not shown, see sheets no. 160 thru 164.
 For Detail "A" and details of Superelevation Transition, see sheet no. 142.
 For Slab Pouring Sequence and Slab Construction Joint Details, see sheet no. 138.
 For Plan of Slab Showing Top and Bottom Reinforcement see sheets 131 thru 135.
 For location of Sections C-C and D-D see sheet no. 142.



HALF SECTION NEAR & SPAN SECTION D-D HALF SECTION NEAR INTERMEDIATE BENT

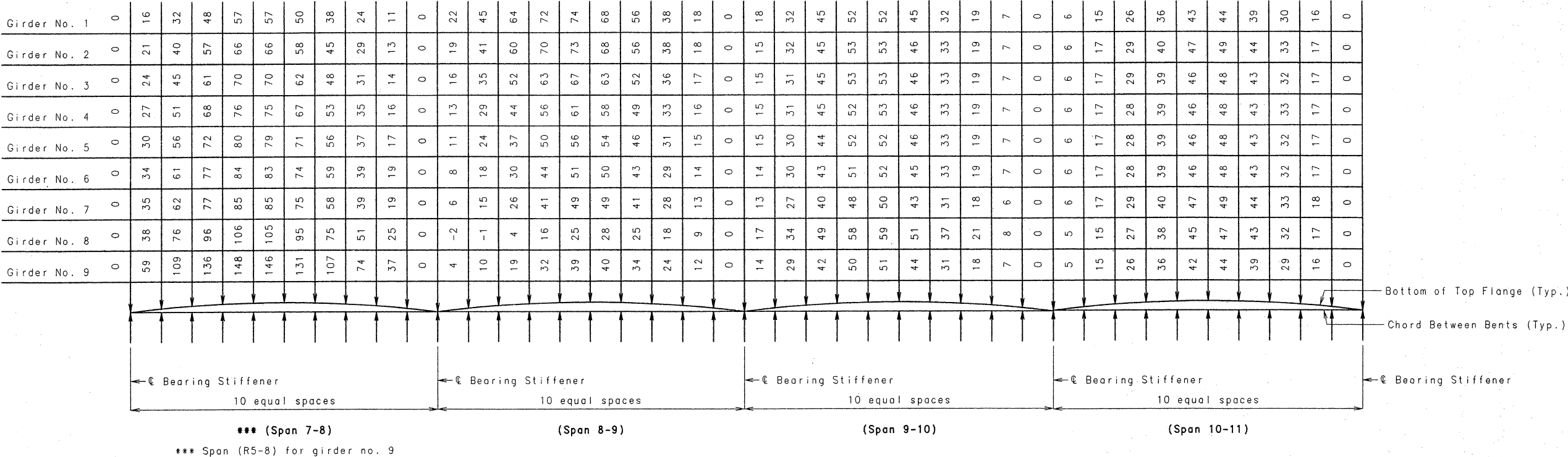


DETAIL "B"

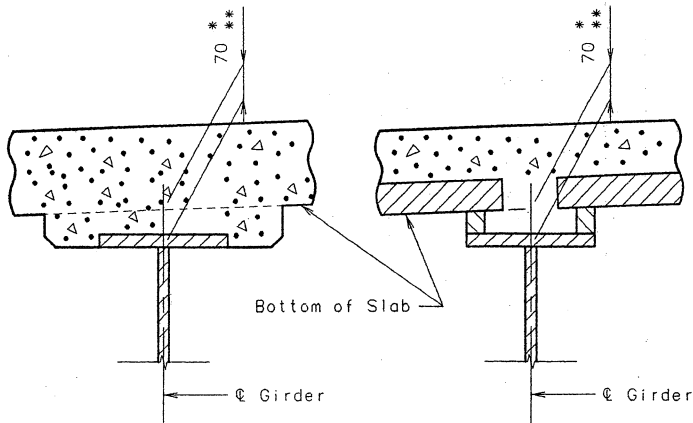
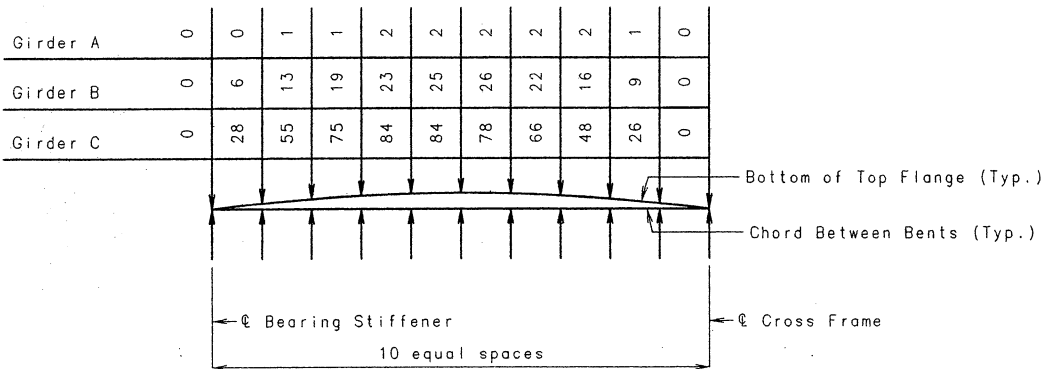
STATE OF MISSOURI
 KURT E. GRIBBLE
 REGISTERED PROFESSIONAL ENGINEER
 DATE 12-5-97

Detailed Mar. 1997
 Checked Aug. 1997

Sheet No. 137 OF 236.



Note: Camber includes allowance for vertical curve, superelevation transition, and for dead load deflection due to mass of concrete slab, curb, and structural steel.



THEORETICAL SLAB HAUNCH

NOTE: * From the Hinge near Bent no. 7 to the Hinge near Bent no. 11 on Girder no. 8, the dimension is 75 mm.

** Dimension may vary if the girder camber after erection differs from plan camber by more or less than the 1/2 of D.L. deflection due to mass of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

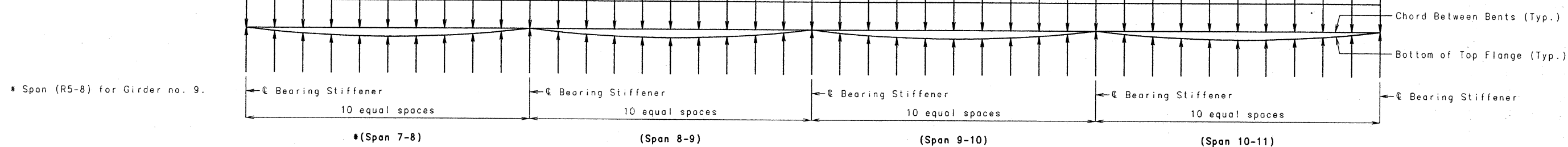
STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
PROFESSIONAL ENGINEER
DATE 12-5-97

PLATE GIRDER CAMBER DIAGRAM

Detailed Jan. 1997
Checked Sept. 1997

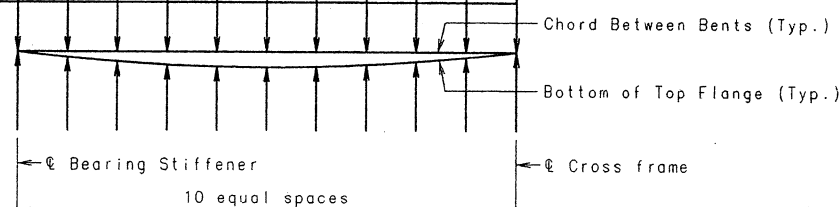
Sheet No.139 of 236

Girder No. 1	0	0	17	31	40	45	43	36	26	15	6	0	0	1	1	7	14	21	25	23	18	10	3	0	0	3	3	10	10	18	23	25	23	25	22	15	7	1	1	6	0	0	6	6	15	16	30	30	16	0	0
Girder No. 2	0	0	19	36	47	52	50	42	30	18	7	7	7	0	0	0	0	0	0	0	0	12	12	4	4	4	3	3	11	11	20	20	21	28	27	27	27	23	24	29	40	47	49	44	39	32	33	17	17	0	0
Girder No. 3	0	0	19	36	47	51	50	42	30	18	7	7	7	0	0	0	0	0	0	0	12	12	4	4	4	4	3	3	11	11	20	20	20	27	27	27	24	28	39	46	48	48	43	32	32	17	17	0	0		
Girder No. 4	0	0	20	37	49	54	52	44	32	19	7	7	7	0	0	0	0	0	0	0	11	11	4	4	4	4	3	3	11	11	20	20	20	27	27	27	24	28	39	46	48	48	43	32	32	17	17	0	0		
Girder No. 5	0	0	20	37	49	54	52	44	32	19	7	7	7	0	0	0	0	0	0	0	11	11	4	4	4	4	3	3	11	11	20	20	20	27	27	27	24	28	39	46	48	48	43	32	32	17	17	0	0		
Girder No. 6	0	0	20	37	49	54	52	44	32	19	7	7	7	0	0	0	0	0	0	0	11	11	4	4	4	4	3	3	11	11	20	20	20	27	27	27	24	28	39	46	48	48	43	32	32	17	17	0	0		
Girder No. 7	0	0	17	32	42	46	45	38	28	16	6	7	7	1	1	8	17	25	29	28	21	12	4	4	4	4	3	3	10	19	20	20	27	27	27	23	29	40	47	49	44	39	32	33	17	17	0	0			
Girder No. 8	0	0	24	45	60	68	68	61	47	30	13	0	0	-7	-7	-4	0	5	7	5	2	2	-1	4	4	4	4	7	17	27	34	35	31	23	24	28	40	47	49	44	39	32	33	17	17	0	0				
Girder No. 9	0	18	33	43	48	48	42	31	19	7	0	0	-1	3	10	16	20	19	15	8	2	2	0	0	0	0	4	11	20	27	26	16	8	1	0	5	15	26	44	39	29	16	0	0	0	0					



Note: Dead load deflection includes mass of structural steel, concrete slab, and barrier curb.

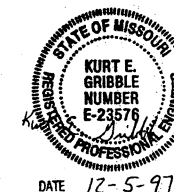
Girder A	0	0									
Girder B	0	0	1	2	3	4	4	4	3	2	0
Girder C	0	9	17	24	28	29	28	24	18	9	0



PERCENT OF DEAD LOAD DEFLECTION DUE TO MASS OF STRUCTURAL STEEL					
SPAN NUMBER	GIRDER NO. 1	GIRDERS NO. 2 THRU 6	GIRDER NO. 7	GIRDER NO. 8	GIRDER NO. 9
(7-8)*	21.6%	19.0%	20.7%	18.6%	21.7%
(8-9)	22.8%	20.2%	20.2%	21.9%	23.5%
(9-10)	23.0%	20.9%	20.8%	20.4%	23.0%
(10-11)	21.7%	19.8%	19.6%	19.5%	21.7%

Note: 17.3% (Girder A), 15.4% (Girder B), and 19.0% (Girder C) of dead load deflection is due to the mass of structural steel.

* Span (R5-8) for girder no. 9.



DATE 12-5-97

DEAD LOAD DEFLECTION DIAGRAM

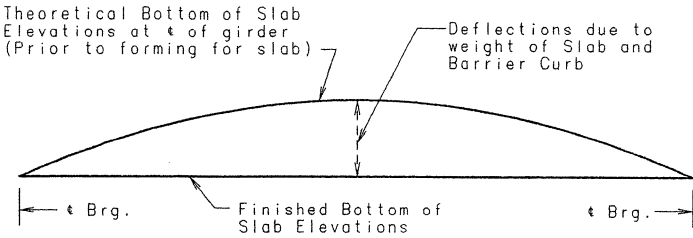
** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT € GIRDER (PRIOR TO FORMING SLAB)																															
	Span (7-8)(€ Brg. - € Brg.) *											Span (8-9)(€ Brg. - € Brg.)										Span (9-10)(€ Brg. - € Brg.)									
	€ Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	€ Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	€ Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	€ Brg. Stiff.
Girder No. 1	199.503	199.391	199.279	199.168	199.050	198.926	198.795	198.660	198.523	198.387	198.252	198.105	197.957	197.805	197.642	197.474	197.299	197.118	196.933	196.746	196.558	196.374	196.189	196.001	195.808	195.608	195.403	195.192	194.981	194.771	194.565
Girder No. 2	199.581	199.470	199.359	199.246	199.126	198.999	198.865	198.726	198.585	198.443	198.303	198.152	198.002	197.848	197.686	197.517	197.342	197.160	196.974	196.785	196.596	196.411	196.227	196.040	195.847	195.647	195.441	195.231	195.019	194.809	194.603
Girder No. 3	199.659	199.549	199.436	199.320	199.197	199.067	198.930	198.788	198.644	198.498	198.354	198.199	198.044	197.887	197.724	197.556	197.380	197.198	197.012	196.823	196.634	196.449	196.265	196.077	195.884	195.685	195.479	195.268	195.056	194.846	194.640
Girder No. 4	199.738	199.629	199.516	199.397	199.271	199.138	198.998	198.852	198.703	198.554	198.406	198.245	198.087	197.927	197.763	197.595	197.419	197.237	197.050	196.861	196.672	196.487	196.302	196.114	195.921	195.722	195.516	195.305	195.093	194.883	194.677
Girder No. 5	199.817	199.708	199.594	199.472	199.343	199.206	199.063	198.914	198.762	198.609	198.457	198.292	198.130	197.967	197.803	197.634	197.458	197.276	197.088	196.899	196.710	196.524	196.339	196.151	195.958	195.759	195.553	195.342	195.131	194.920	194.714
Girder No. 6	199.896	199.787	199.672	199.547	199.415	199.275	199.129	198.977	198.821	198.664	198.508	198.339	198.173	198.007	197.843	197.674	197.497	197.315	197.127	196.937	196.748	196.562	196.376	196.188	195.995	195.796	195.590	195.380	195.168	194.957	194.751
Girder No. 7	199.974	199.863	199.745	199.616	199.480	199.337	199.186	199.028	198.869	198.709	198.548	198.376	198.205	198.036	197.870	197.699	197.521	197.336	197.147	196.955	196.764	196.576	196.389	196.200	196.007	195.808	195.602	195.391	195.180	194.969	194.763
Girder No. 8	199.945	199.835	199.725	199.599	199.464	199.319	199.167	199.006	198.840	198.673	198.507	198.329	198.152	197.978	197.811	197.640	197.465	197.285	197.100	196.913	196.726	196.542	196.357	196.170	195.978	195.778	195.571	195.359	195.145	194.933	194.726
Girder No. 9	199.679	199.613	199.539	199.442	199.331	199.209	199.074	198.931	198.779	198.623	198.466	198.292	198.120	197.949	197.783	197.612	197.435	197.253	197.066	196.877	196.688	196.502	196.315	196.126	195.933	195.733	195.527	195.317	195.105	194.895	194.689

* Span (R5-8) for Girder no. 9.

** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT € GIRDER (PRIOR TO FORMING SLAB)

	Span (10-11)(£ Brg. - £ Brg.)										
	£ Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	£ Brg. Stiff.
Girder No. 1	194.565	194.385	194.207	194.031	193.854	193.674	193.490	193.302	193.109	192.913	192.715
Girder No. 2	194.603	194.423	194.246	194.071	193.895	193.716	193.532	193.343	193.149	192.952	192.753
Girder No. 3	194.640	194.460	194.283	194.108	193.932	193.752	193.569	193.380	193.186	192.989	192.790
Girder No. 4	194.677	194.497	194.320	194.145	193.969	193.789	193.606	193.417	193.223	193.026	192.827
Girder No. 5	194.714	194.534	194.357	194.182	194.006	193.827	193.643	193.454	193.260	193.063	192.864
Girder No. 6	194.751	194.571	194.395	194.219	194.043	193.864	193.680	193.491	193.297	193.100	192.901
Girder No. 7	194.763	194.583	194.407	194.232	194.056	193.877	193.693	193.504	193.310	193.113	192.913
Girder No. 8	194.726	194.545	194.369	194.193	194.017	193.838	193.654	193.466	193.272	193.075	192.876
Girder No. 9	195.689	194.508	194.331	194.154	193.977	193.797	193.614	193.425	193.232	193.036	192.839

** Elevations are based on a constant slab thickness of 220 mm and include allowances for Theoretical Dead Load Deflections due to mass of slab (including Precast Panels) and barrier curb.



TYPICAL SLAB ELEVATIONS DIAGRAM

** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT € GIRDER (PRIOR TO FORMING SLAB)

	(€ Brg. € Cross frame)										
	€ Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	€ Brg. Stiff.
Girder A	199.920	199.904	199.889	199.874	199.858	199.843	199.827	199.811	199.795	199.778	199.761
Girder B	199.839	199.809	199.779	199.748	199.716	199.682	199.646	199.605	199.563	199.519	199.474
Girder C	199.759	199.711	199.662	199.606	199.540	199.465	199.384	199.299	199.208	199.112	199.013

** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT € GIRDER (PRIOR TO FORMING SLAB)

	(€ Brg. - € Cross frame)										
	€ Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	€ Cross frame
Girder A	199.920	199.906	199.892	199.878	199.864	199.851	199.837	199.823	199.809	199.795	199.781
Girder B	199.839	199.808	199.776	199.745	199.713	199.680	199.648	199.615	199.581	199.548	199.514
Girder C	199.759	199.696	199.632	199.566	199.499	199.430	199.358	199.284	199.208	199.130	199.052

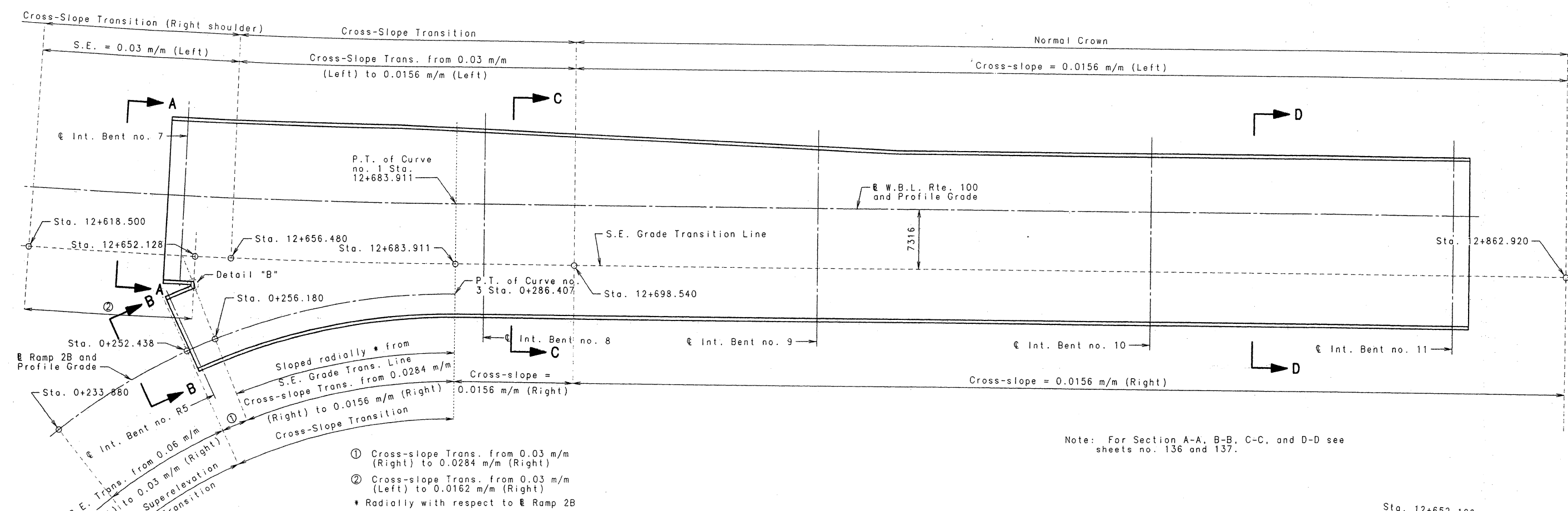
1 ADD



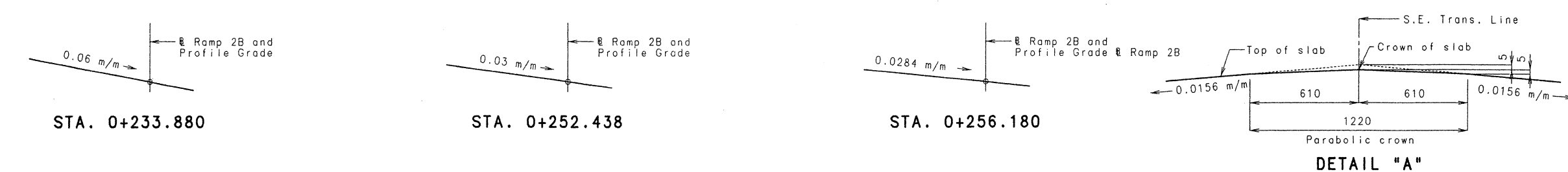
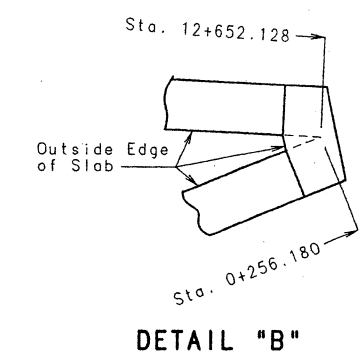
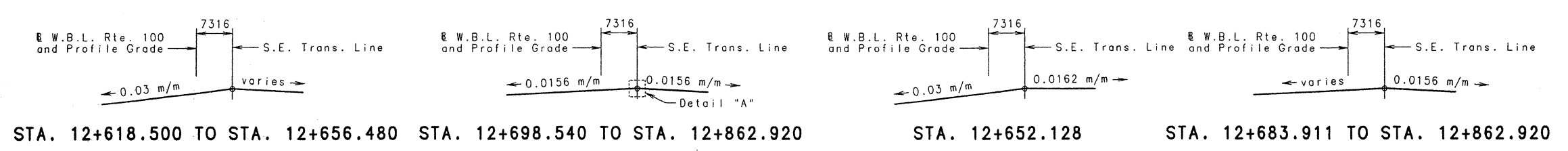
THEORETICAL BOTTOM OF SLAB ELEVATIONS

Detailed Jan. 1997
Checked Sept. 1997

1 DELETE



PART PLAN OF SLAB SHOWING SUPERELEVATION TRANSITION

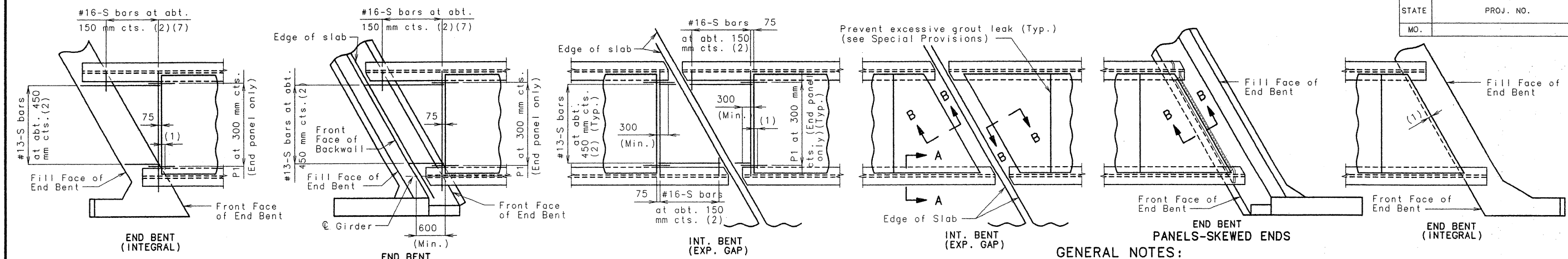


ROADWAY CROSS SLOPES

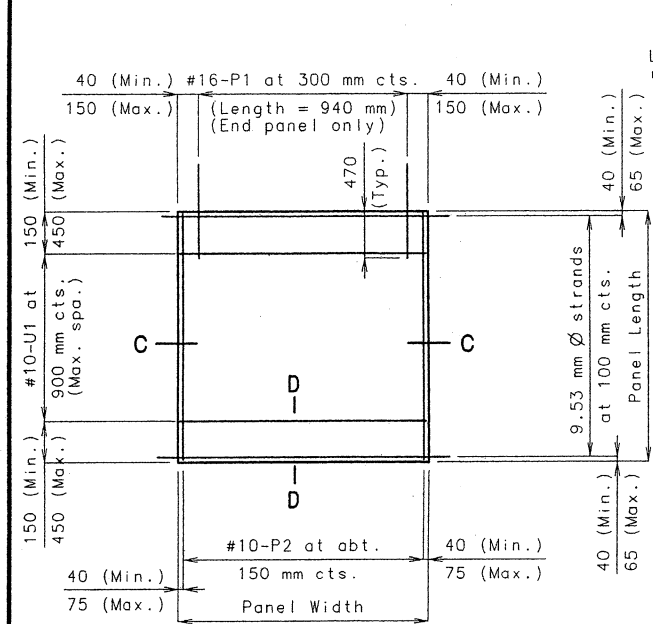
STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER
DATE 12-5-97

Detailed Oct. 1997
Checked Oct. 1997

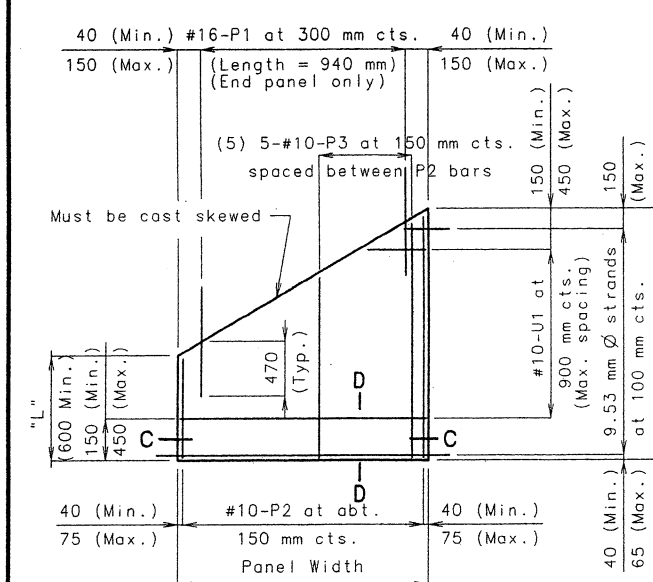
Sheet No. 142 OF 236.



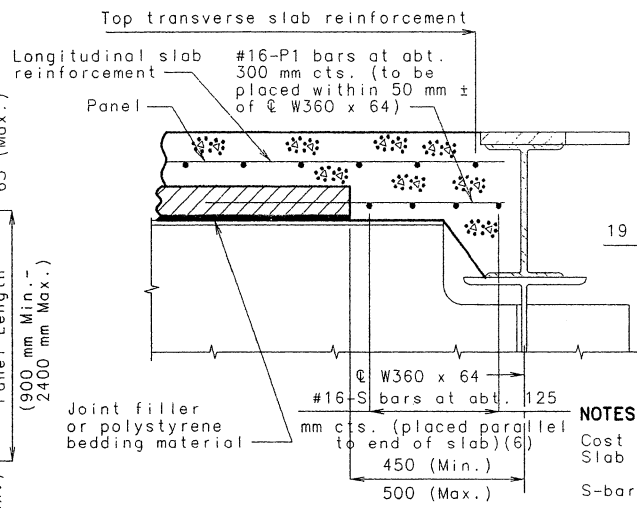
END BENT
PANELS-SQUARED ENDS
PLAN OF PRECAST PRESTRESSED PANEL PLACEMENT



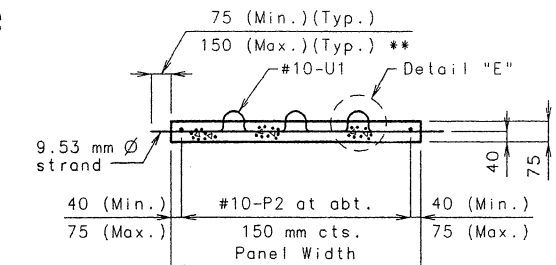
PLAN OF PRECAST PRESTRESSED PANEL



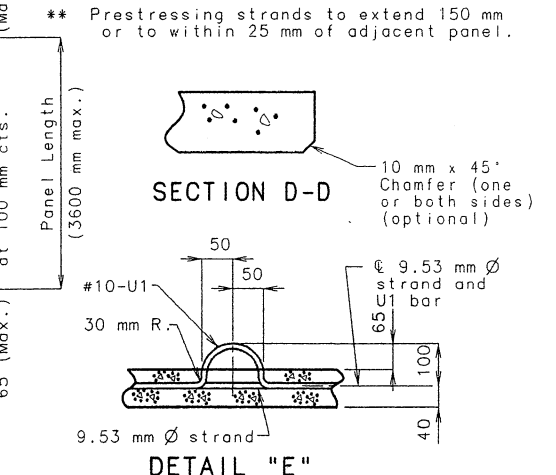
PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



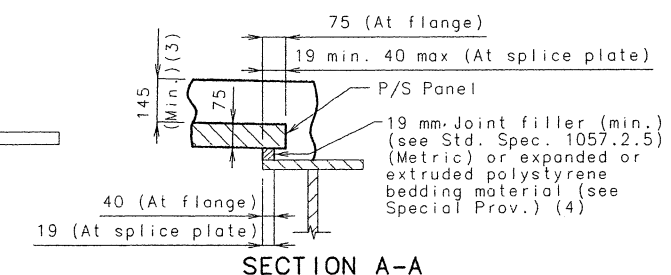
PART SECTION B-B



SECTION C-C



DETAIL "E"



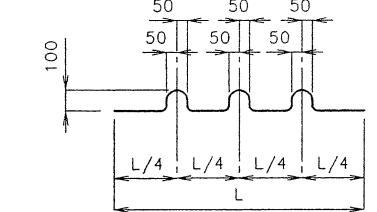
SECTION A-A

Note:
Use slab haunching diagram on sheet No. 139 for determining thickness of joint filler or polystyrene bedding material within the limits noted in General Notes.

NOTES:
Cost of S-bars shall be included in price bid for Slab on Steel per square meter.
S-bars are not listed in bill of reinforcing.

- (1) End panels shall be dimensioned 25 mm min. to 40 mm max. inside the face of the 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 percent of dead load deflection due to the mass of structural steel. No payment will be made for additional labor or materials for the adjustment.
- (4) All panel support pads shall be glued to the girder. When support thickness exceeds 40 mm, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pad's manufacturer.
- (5) Use #10-P3 bars if panel is skewed 45° or greater.
- (6) The #16-S bars shall extend the width of the slab (785 mm lap if necessary). At Hinge near Bent no. 7, the #16-S bars shall be lapped (785 mm) with the bottom transverse reinforcement shown on sheet no. xx.
- (7) Extend S-bars 500 mm beyond the front face of end bents.

Precast panels may be in contact with stirrup reinforcing in diaphragms.



BENDING DIAGRAM FOR U1 BAR

(U1 bars may be oriented at right angles to location and spacing shown. U1 bars shall be placed between P1 bars.)

GENERAL NOTES:
PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A1 with $f'c = 35$ MPa, $f'ci = 24.5$ MPa.
The top surface of all panels shall receive a scored finish with a depth of scoring of 3 mm perpendicular to the prestressing strands in the panels (see Special Provisions).

Prestressing tendons shall be high-tensile strength uncoated seven (7) wire, low-relaxation strands for prestressed concrete conforming to AASHTO M203, except that nominal diameter of strand = 9.53 mm and nominal area = 54.8389 sq. mm and minimum ultimate strength = 102.3 kN (1860 MPa). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 66.3 kN per 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.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 21 MPa compressive strength.

Minimum joint filler or polystyrene bedding material thickness shall be 19 mm, except over splice plates where minimum thickness shall be 6 mm. When joint filler or polystyrene bedding material is less than 15 mm thick over a splice plate, make the width of material at the 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 50 mm 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 6 mm to correct for variations from girder camber diagram. The polystyrene bedding material may be cut to match haunch height above top of flange.

REINFORCING STEEL:

All dimensions are out to out.

Minimum clearance to reinforcing steel shall be 40 mm unless otherwise shown.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest 10 mm.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Steel Girder.

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 466 sq. mm/m, with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #10-P2 bars, shown. Wire or bar diameter shall not be larger than 10 mm. The above alternative reinforcement criteria may be used in lieu of the #10-P3 bars, when required, and placed over a width of not less than 600 mm.

Tie the #10-U1 bars to the #10-P2 bars, to the welded wire fabric or the welded deformed bar mats at about 900 mm centers.

The reinforcing steel shall be tied securely to the 9.53 mm ϕ strands with the following maximum spacing in each direction: #10-P2 bars at 400 mm and welded wire fabric or welded deformed bar mats at 600 mm.

All reinforcement other than prestressing strands shall be epoxy coated.



DATE 12-5-97

Detailed Mar. 1997
Checked Sept. 1997

DETAILS OF PRECAST PRESTRESSED PANELS

Sheet No. 143 of 236

ST. LOUIS COUNTY

UNIT 2
A5682

STATE	PROJ. NO.	SHEET NO.
MO.		178

GENERAL NOTES:

Finger plates shall be cut with a machine guided gas torch from one plate. The plate from which fingers are cut may be spliced before fingers are cut. The surface of cut shall be perpendicular to the surface of the plate. The cut shall not exceed 3 mm in width. The centerline of cut shall not deviate more than 2 mm from the position of centerline of cut shown. No splicing of finger plate or finger plate assembly will be allowed after fingers are cut.

Plan dimensions are based on installation at 16 degree Celsius. The expansion gap and other dimensions shall be increased 19mm for each 10 degree Celsius fall in temperature and decreased 19mm for each 10 degree Celsius rise in temperature at installation.

Structural steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometer minimum thickness) or galvanized in accordance with the ASTM A123. Anchors need not be protected from overspray.

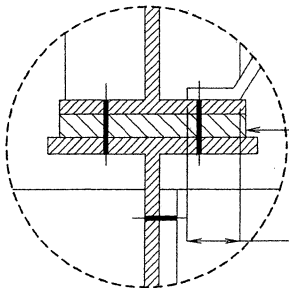
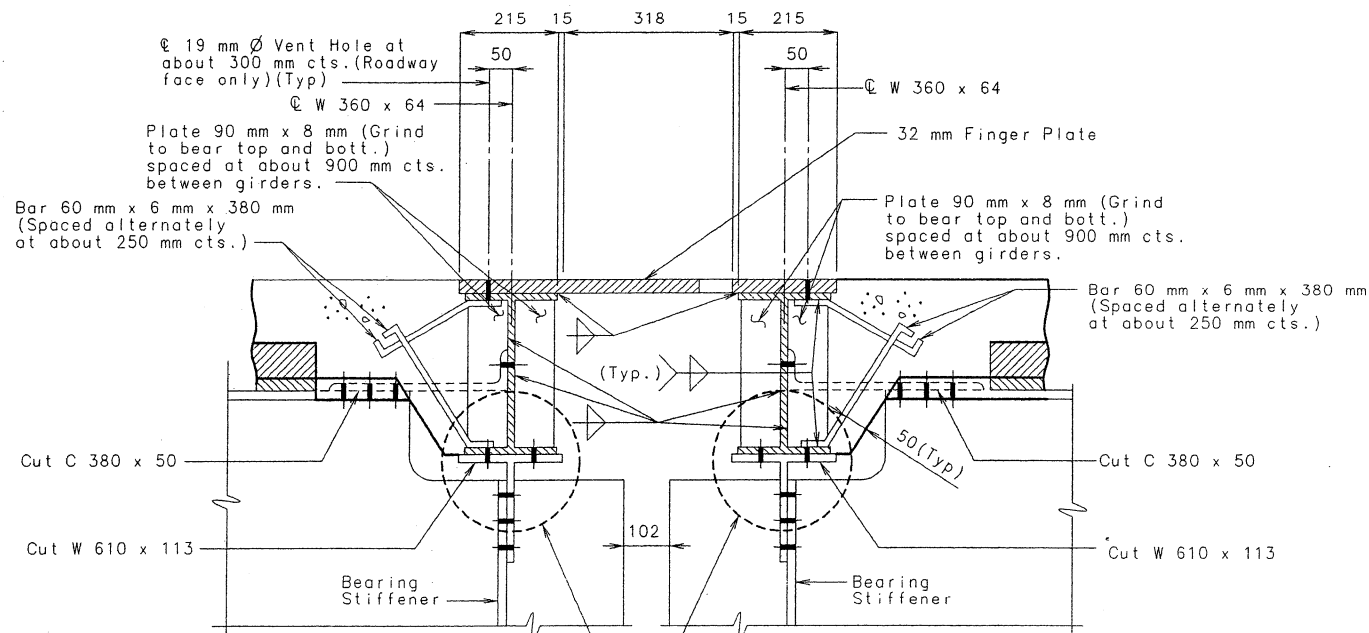
Payment for furnishing, coating or galvanizing and installing structural steel for the expansion device will be made at the contract unit price for Expansion Device (Finger Plate) per meter.

All holes shown for connections to be subpunched 17.5 mm Ø and reamed to 20.6 mm Ø in field.

32 mm Finger Plate and W 360 x 64 shall be bent to conform to crown of roadway.

Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.

Material for the expansion device shall be ASTM A709M, Grade 250 structural steel. Anchors for the expansion device shall be approved stud welded anchors (C1010 thru C1020).



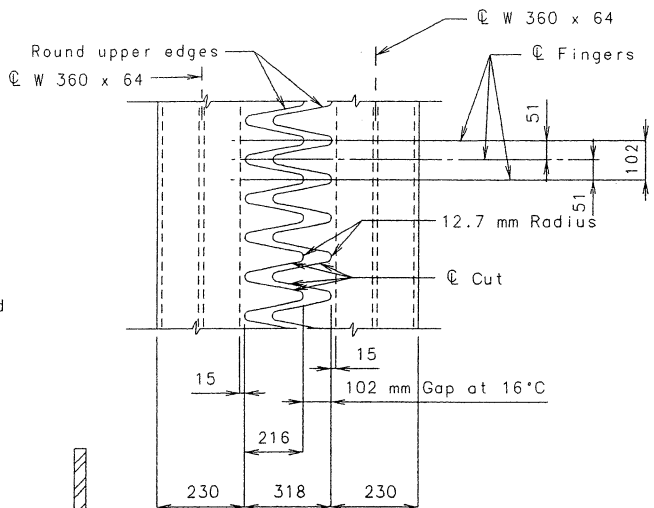
DETAIL "A"

PART SECTION THRU EXPANSION DEVICE

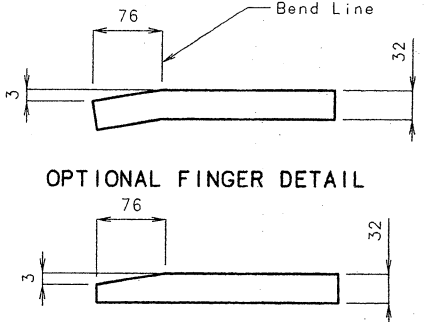
Optional:
One full size shim plate
Thickness = 6 mm min.
25 mm max.

Note: Concrete shall be forced under and around finger plate supporting hardware, studs, angles and bars. Proper consolidation of the concrete shall be achieved by localized internal vibration.

Note: For detail of Hinged Conn. near Bent no. 11 see sheet no. 125.
For details of drain trough see sheets no. 154 thru 158.

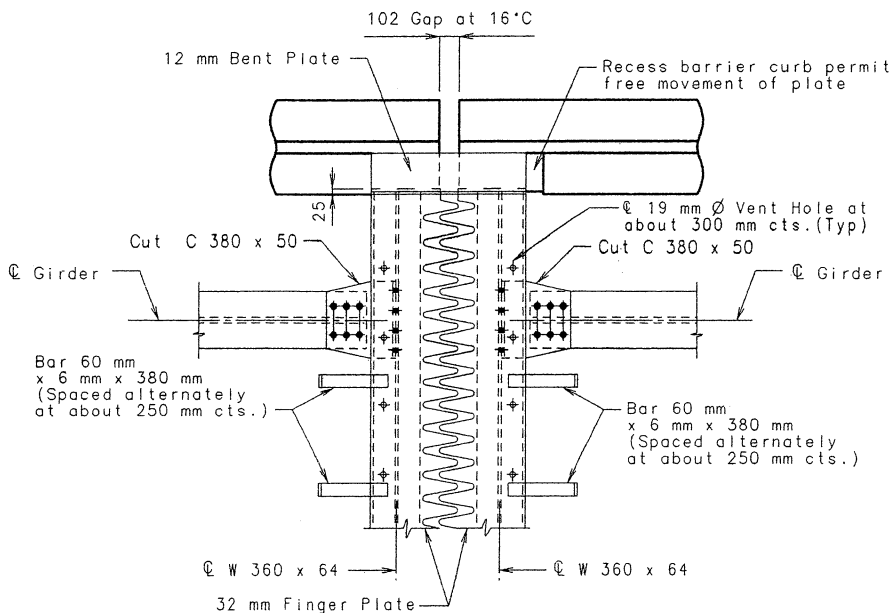


TYPICAL PLAN OF PLATE A

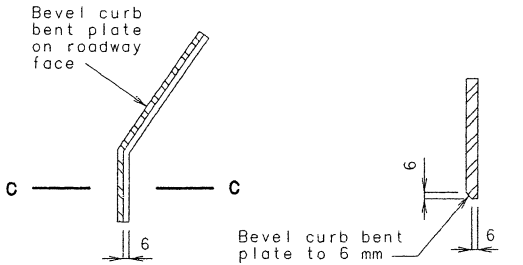


OPTIONAL FINGER DETAIL

FINGER DETAIL

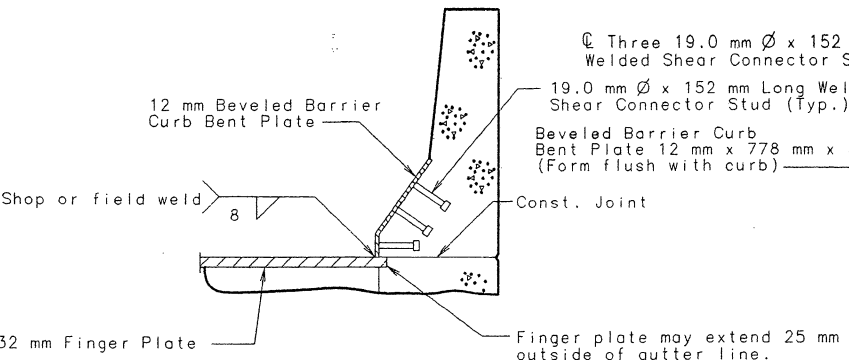


PART PLAN OF EXPANSION DEVICE

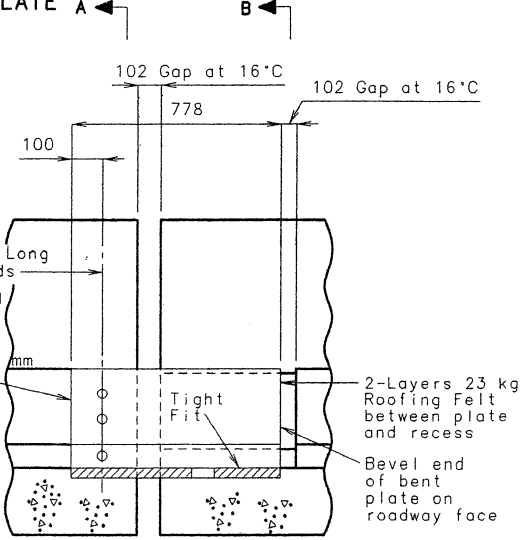


PART ELEVATION AT END OF BEVELED CURB BENT PLATE

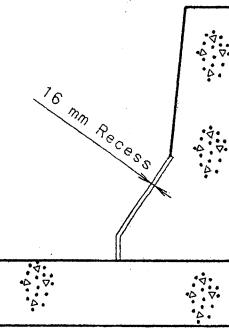
SECTION C-C



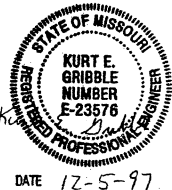
PART SECTION A-A



ELEVATION OF BARRIER CURB



PART SECTION B-B



DETAILS OF FINGER PLATE EXPANSION DEVICE NEAR INT. BENT NO. 11

Detailed Mar. 1997
Checked Aug. 1997

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ST. LOUIS COUNTY

UNIT 2

A5682

STATE	PROJ. NO.	SHEET NO.
MO.		179

GENERAL NOTES:

Expansion device shall be fabricated in one section, except for stage construction and when the length is over 15 meters, splicing is permissible. The expansion device shall be bent to conform to crown of roadway.

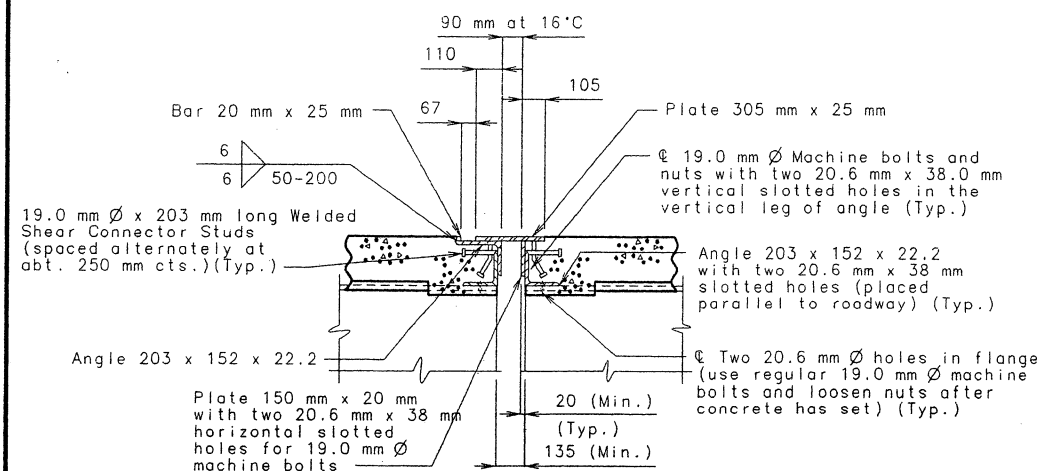
Material for the expansion device shall be ASTM A709M Grade 250 structural steel. Anchors for the expansion device shall be approved stud-welded anchors (C1010 thru C1020).

Structural steel for the expansion device shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometer minimum thickness) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

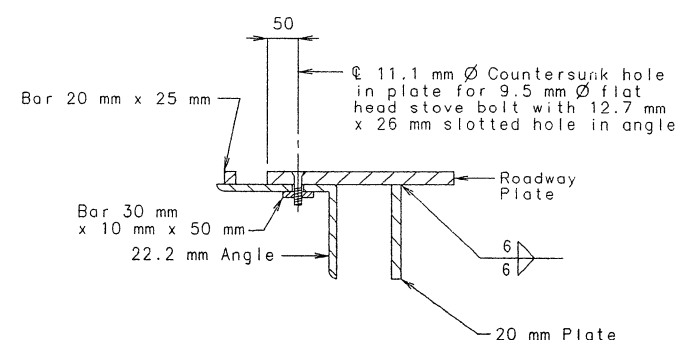
Plan dimensions are based on installation at 16°C. The expansion gap and other dimensions shall be increased 12 mm for each 10°C fall and decreased 12 mm for each 10°C rise in temperature at installation.

Furnishing, coating or galvanizing, and installing the expansion device shall be included in the contract unit price for Expansion Device (Flat Plate).

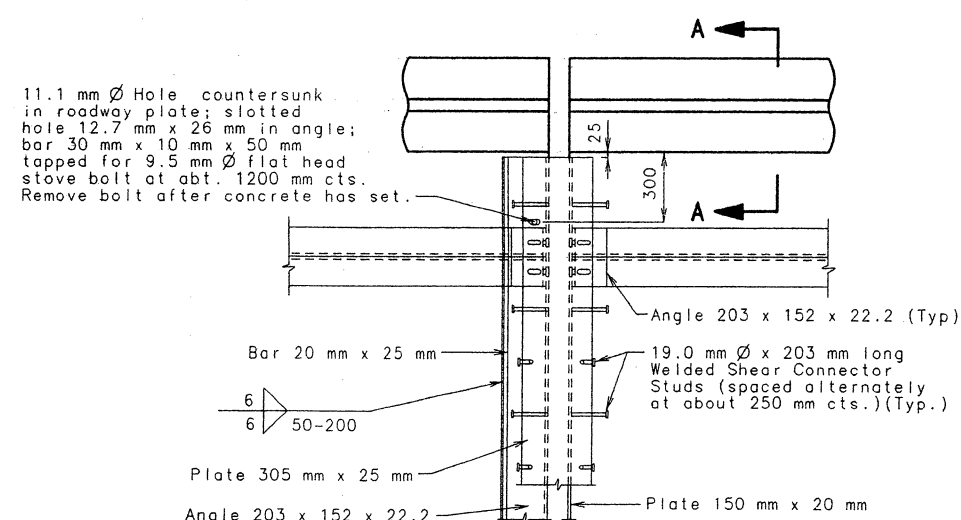
Concrete shall be forced under and around flat plate, studs, and angles. Proper consolidation of the concrete shall be achieved by localized internal vibration.



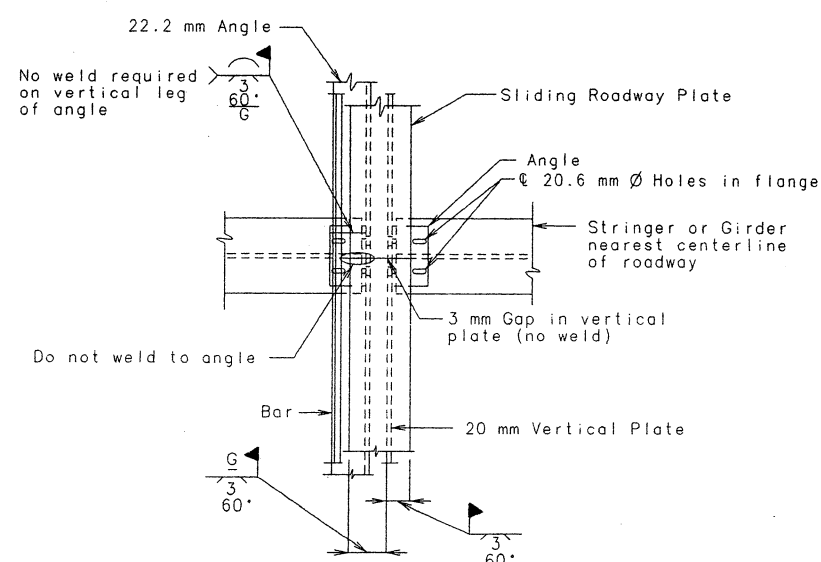
PART SECTION AT INTERMEDIATE BENT



PART SECTION (TYPICAL)

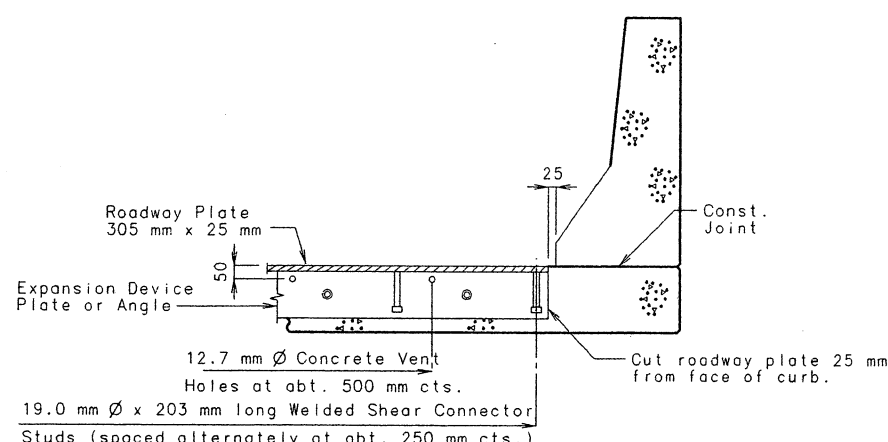


PART PLAN

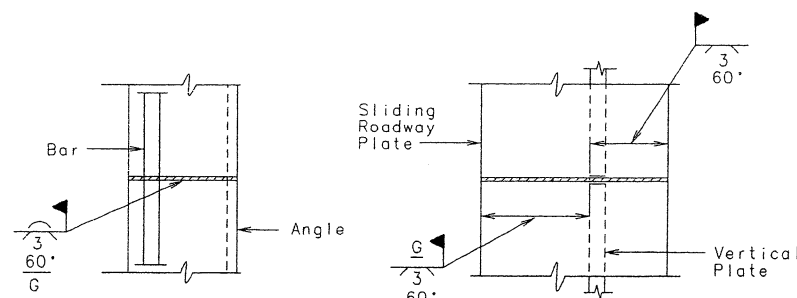


PERMISSIBLE FIELD SPLICE AT INT. BENT

Note: Roadway plate shall end 25 mm from the face of each Barrier Curb to allow for lateral movement of joint.



PART SECTION A-A



PART PLAN OF ANGLE AND BAR

PART PLAN OF ROADWAY PLATE AND VERTICAL PLATE

DETAILS OF FLAT PLATE EXPANSION DEVICE AT INT. BENT NO. R5

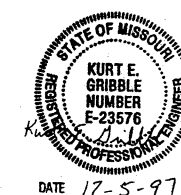
Detailed Oct. 1997
Checked Nov. 1997

Sheet No. 146 OF 236

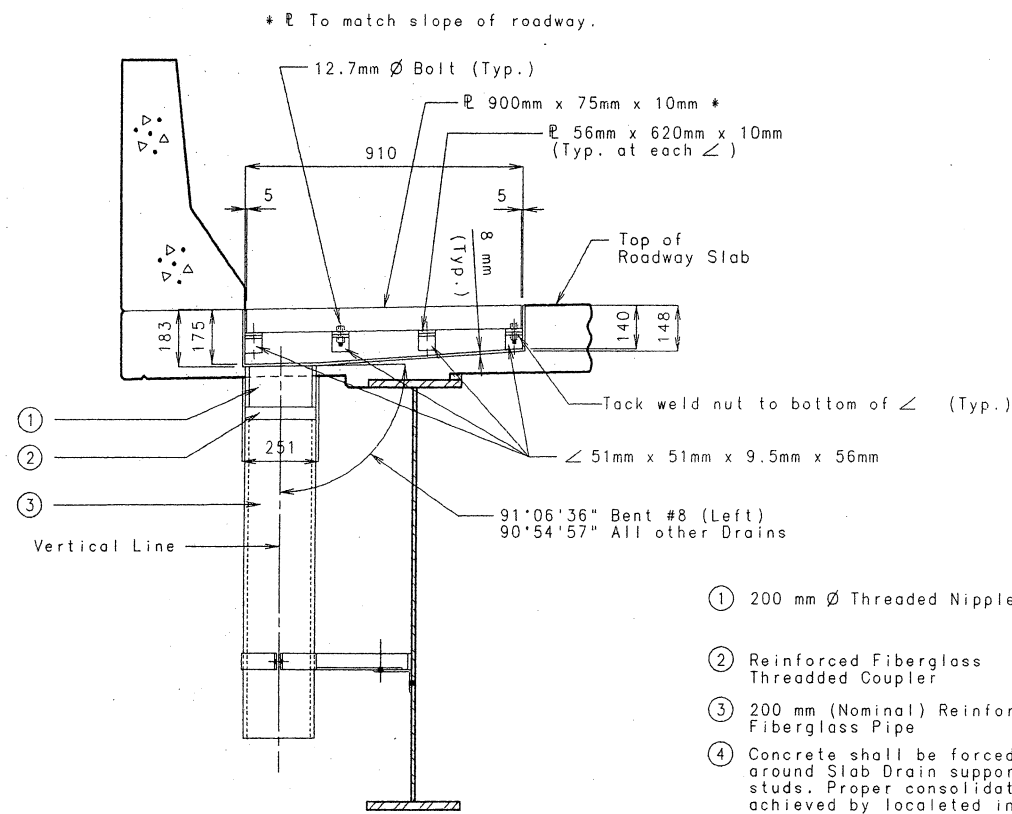
ST. LOUIS COUNTY

UNIT 2

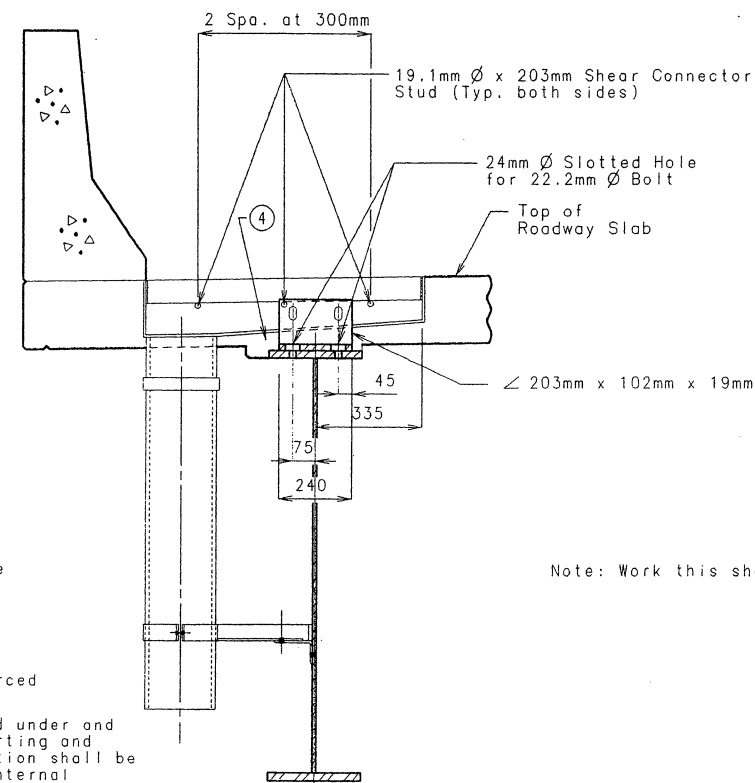
A5682



DATE 12-5-97



PART SECTION NEAR DRAIN



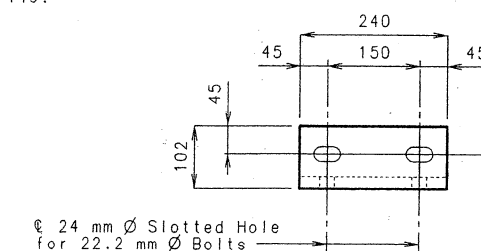
PART SECTION NEAR DRAIN

(Showing connection of drain to girder)

- ① 200 mm Ø Threaded Nipple
- ② Reinforced Fiberglass Threaded Coupler
- ③ 200 mm (Nominal) Reinforced Fiberglass Pipe
- ④ Concrete shall be forced under and around Slab Drain supporting and studs. Proper consolidation shall be achieved by localized internal vibration.

Note: Work this sheet with sheet Nos. 148 & 149.

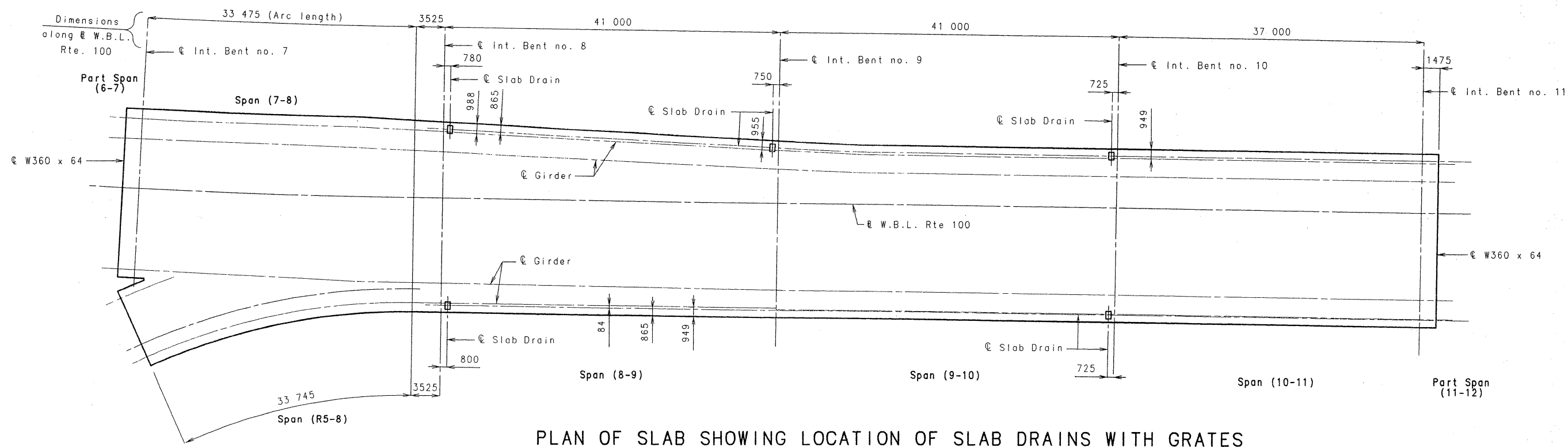
ELEVATION OF ∠ 203 MM X 102 MM X 19 MM



SECTION A - A



DETAILS OF SLAB DRAIN WITH GRATE



PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS WITH GRATES

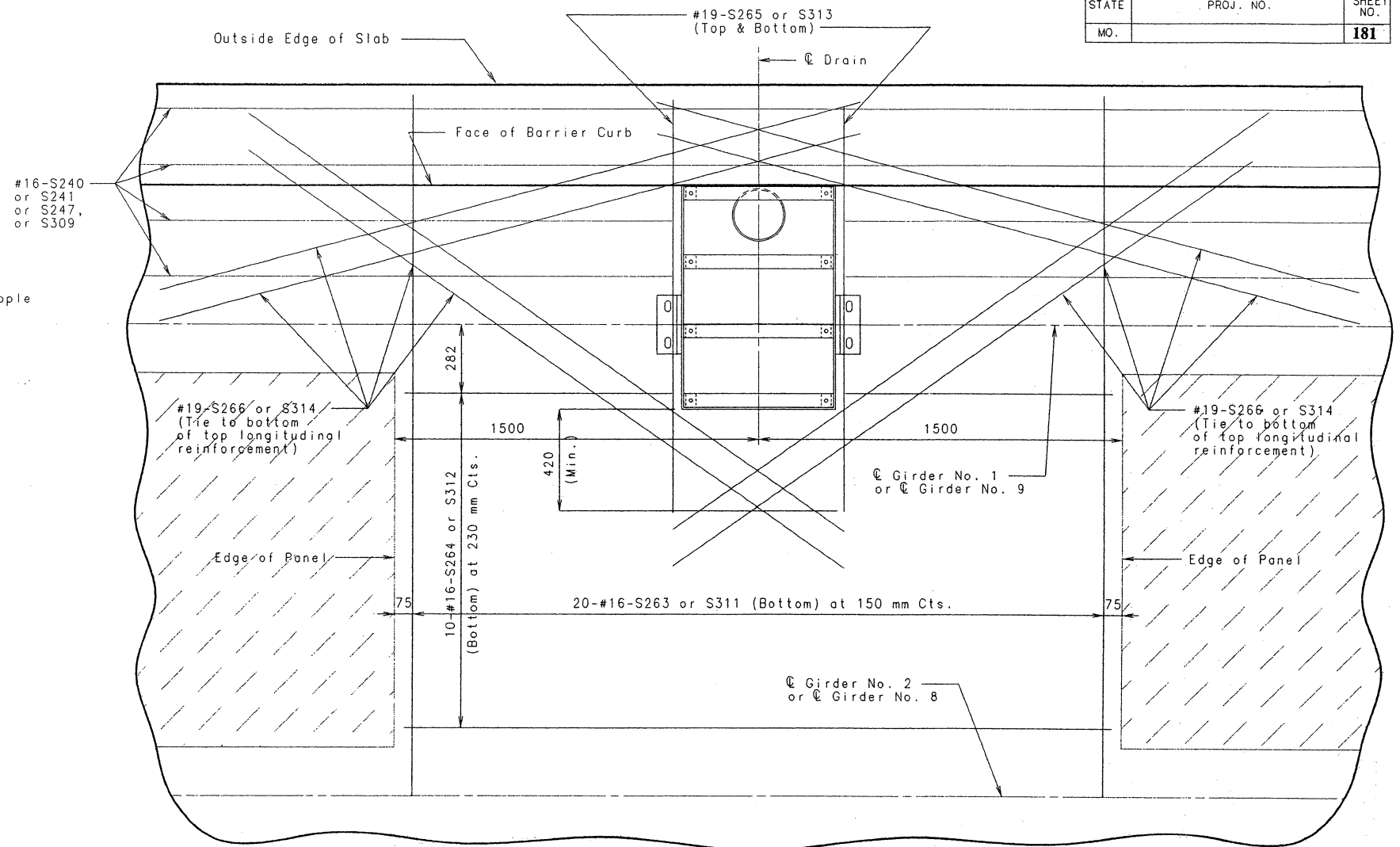
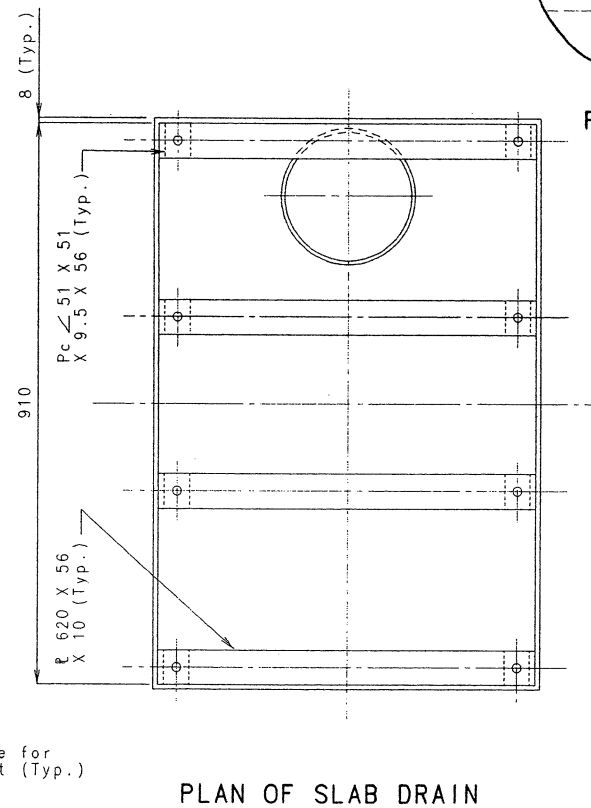
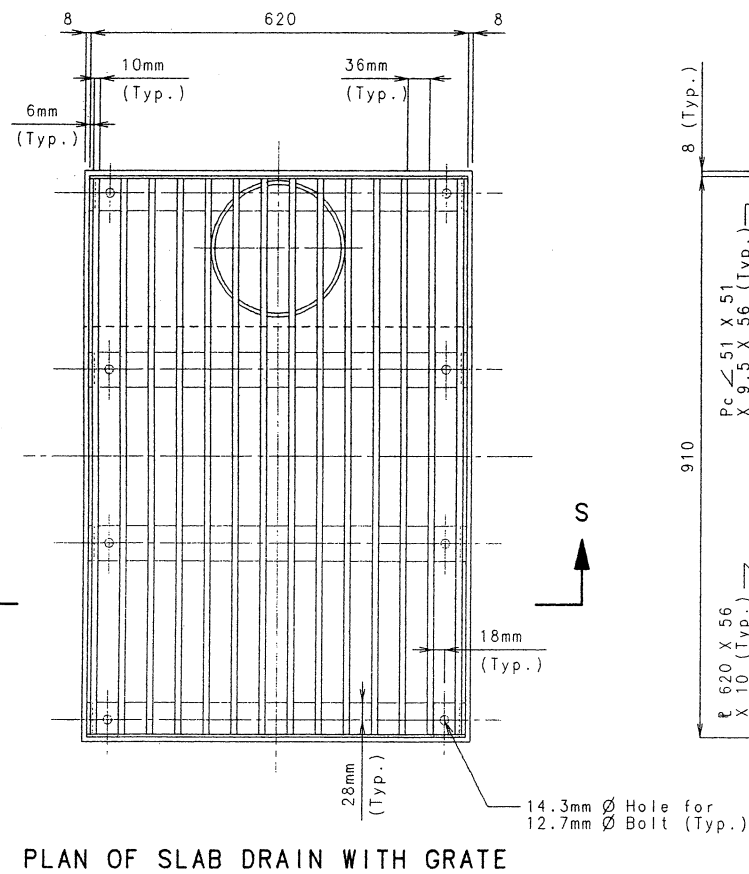
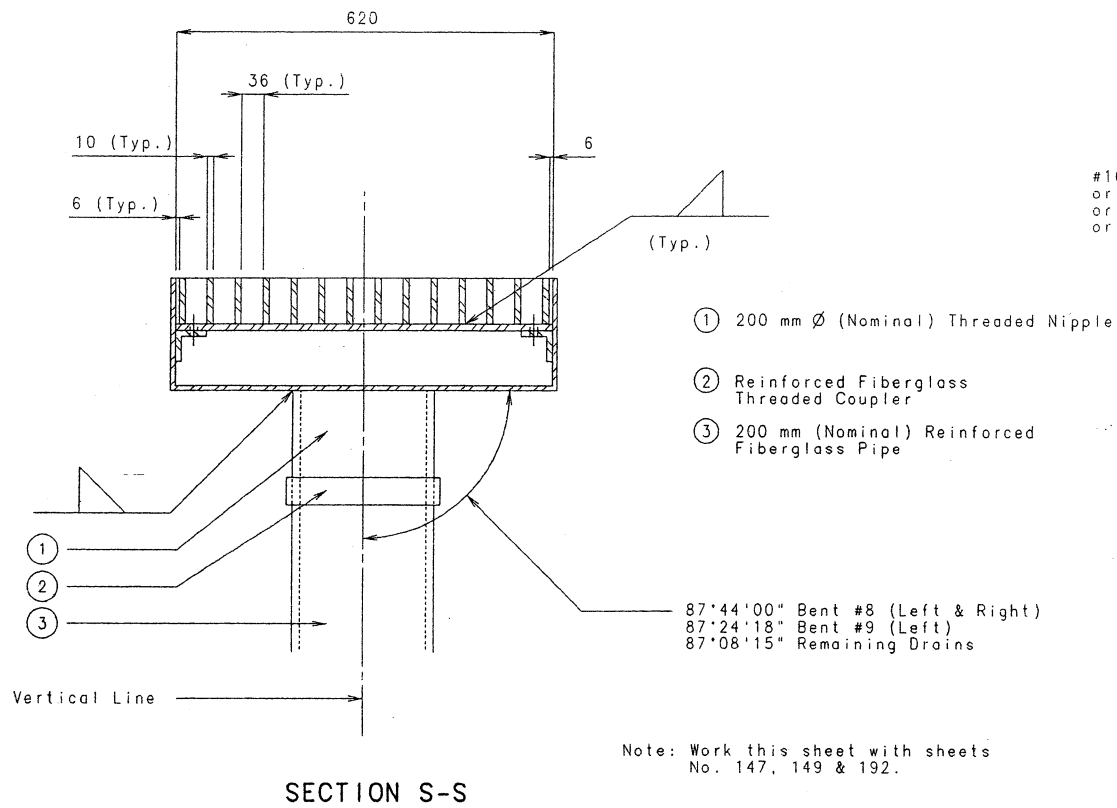
DRAIN 6M, Stl Gdr, Str, A
Steel Girder Drain
Revised: November 1996
March 1996

DETAILED NOV. 1997
CHECKED NOV. 1997

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ST. LOUIS COUNTY

UNIT 2
A5682



Note: At the contractors option, #19-S265 may be field bent to clear Barrier Curb reinforcement. Minimum lap shall be 820 mm. S Bars to be epoxy coated.

Slab reinforcement shall be field cut, as required to clear slab drain. Repairs to epoxy coating shall be in accordance with Missouri Standard Specifications (Metric) Section 710.00.

GENERAL NOTES FOR SLAB DRAINS WITH GRATES:

Drains shall be fabricated from ASTM A709M Grade 250 steel.

The drains and bracket assembly and connection material shall be galvanized in accordance with ASTM A123. Galvanizing shall take place after drain has been fabricated.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.

The bolt holes in the web for the bracket assembly supporting the downspout shall be located in the plate girder shop drawings. Location of drains are dimensioned along the centerline of girder. Shop drawings will not be required for bracket assembly.

The bolt holes for the $\angle 203 \times 102 \times 19$ in the top flange shall be located in the plate girder shop drawings.

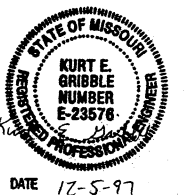
Downspouting shall be 200 mm dia. (nominal) Reinforced Fiberglass Pipe ASTM D2996. See Special Provisions.

Payment for "Slab Drain with Grates" per each shall include the slab drain, grate, bracket attached to girder, couplers and fiberglass pipe down to, but not including, the 300 mm x 200 mm fiberglass reducer complete in place.

The fiberglass pipe for the downspout, including the 300 mm x 200 mm fiberglass reducer, and all anchorage material including neoprene spacers complete in place shall be included in "Drainage System on Structure", per lump sum.

The final color of the reinforced fiberglass pipe and fittings shall be concrete gray and the pipes and fittings shall be ultraviolet protected.

Paint, if necessary, and surface preparation shall be as recommended by the manufacturer, to be VOC compliant, ultraviolet resistant and shall be approved by the engineer prior to its usage.



DATE 12-5-97

UNIT 2

A5682

ST. LOUIS COUNTY

Sheet No. 148 of 236.

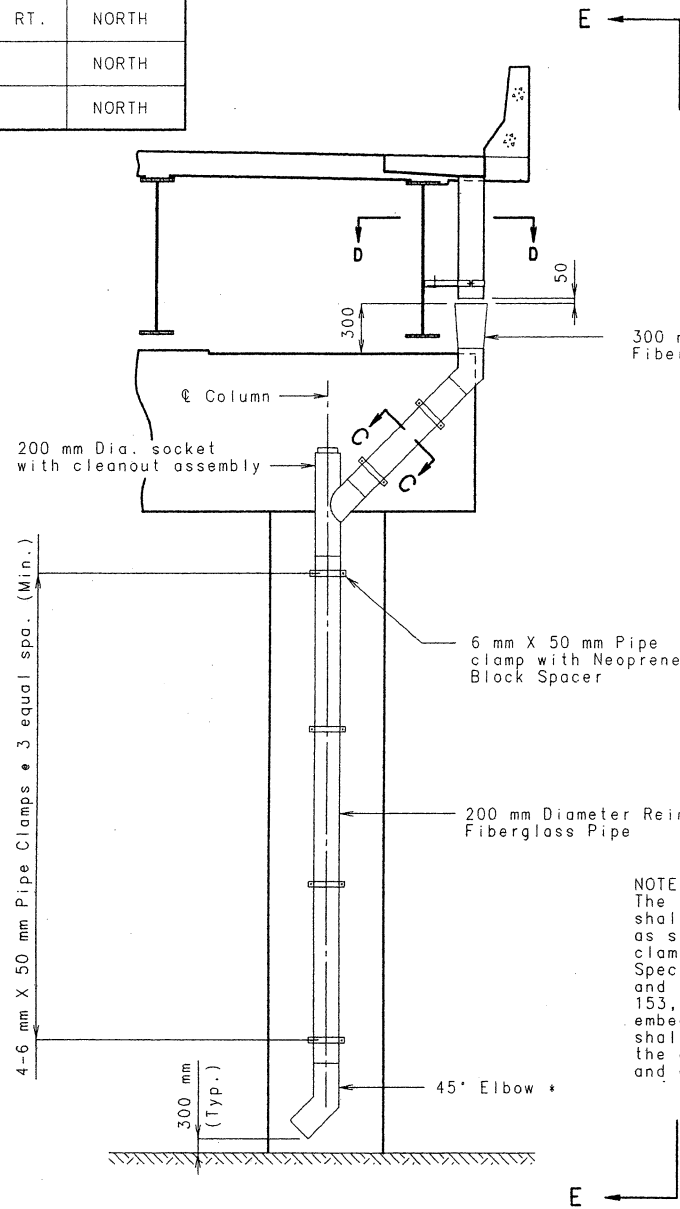
Drain 6M, Stl Gdr, Str., A
Steel Girder Drain
Revised: November 1996
March 1996

DETAILED NOV. 1997
CHECKED NOV. 1997

• DIRECTION OF ELBOW OUTLET		
BENT NO. 8	LT.	NORTH
BENT NO. 8	RT.	NORTH
BENT NO. 9		NORTH
BENT NO. 10		NORTH
BENT NO. 12		SOUTH
BENT NO. 13	LT.	SOUTH
BENT NO. 13	RT.	NORTH
BENT NO. 14		NORTH
BENT NO. 15		NORTH

Note: Work this sheet with sheets No. 147, 148 & 192.
Contractor shall locate all reinforcing steel in column before drilling holes for expansion anchors.

STATE	PROJ. NO.	SHEET NO.
MO.		182



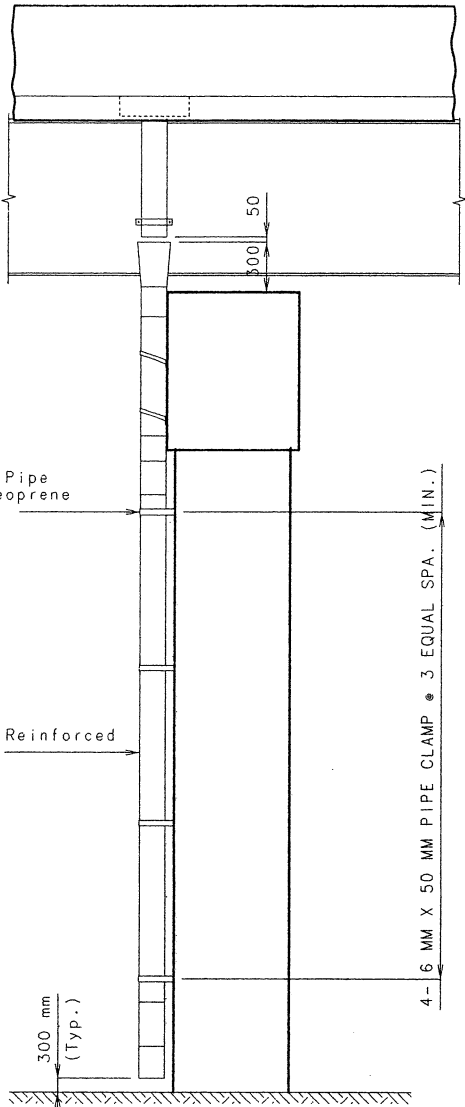
300 mm X 200 mm Concentric Fiberglass Reducer

6 mm X 50 mm Pipe clamp with Neoprene Block Spacer

200 mm Diameter Reinforced Fiberglass Pipe

NOTE:
The 200 mm diameter reinforced fiberglass pipe shall be secured to concrete with clamps spaced as shown on bridge plans. Concrete anchors for clamps shall be in accordance with Federal Specification FF-S-325, Group II, Type 4, Class I and shall be galvanized in accordance with ASTM-153, B695-91 Class 50 or stainless steel. Minimum embedment in concrete shall be 50 mm. The supplier shall furnish a manufacturer's certification that the concrete anchors meet the required material and galvanizing specifications.

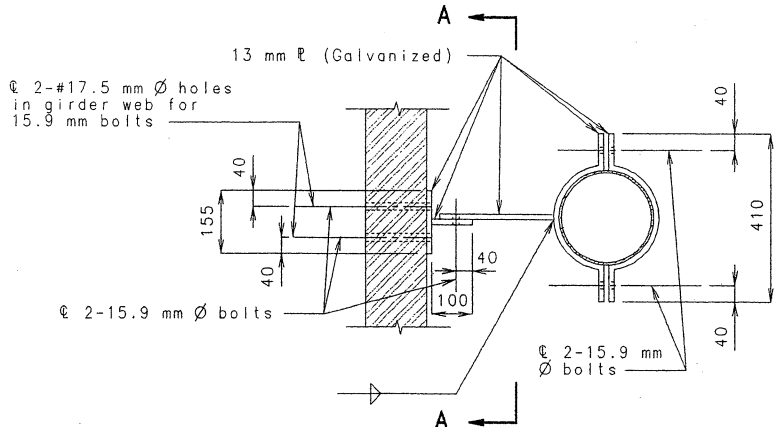
PART SECTION NEAR SLAB DRAIN SHOWING ROUTING OF REINFORCED FIBERGLASS DOWNSPOUT



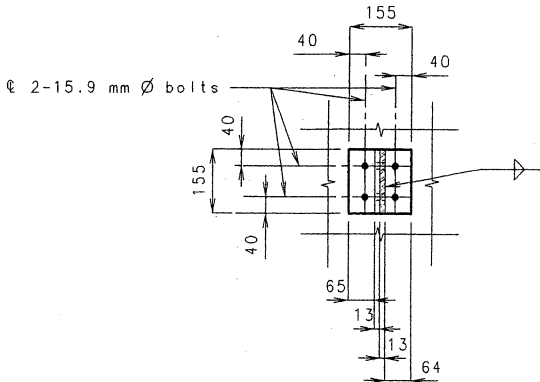
6 mm X 50 mm Pipe clamp with Neoprene Block Spacer

200 mm Diameter Reinforced Fiberglass Pipe

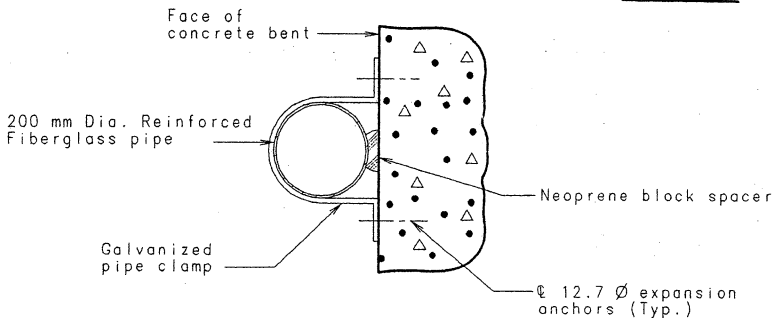
SECTION E-E



SECTION D-D

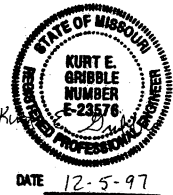


SECTION A-A



SECTION C-C

DRAINAGE DETAILS AT BENTS FOR SLAB DRAINS WITH GRATES



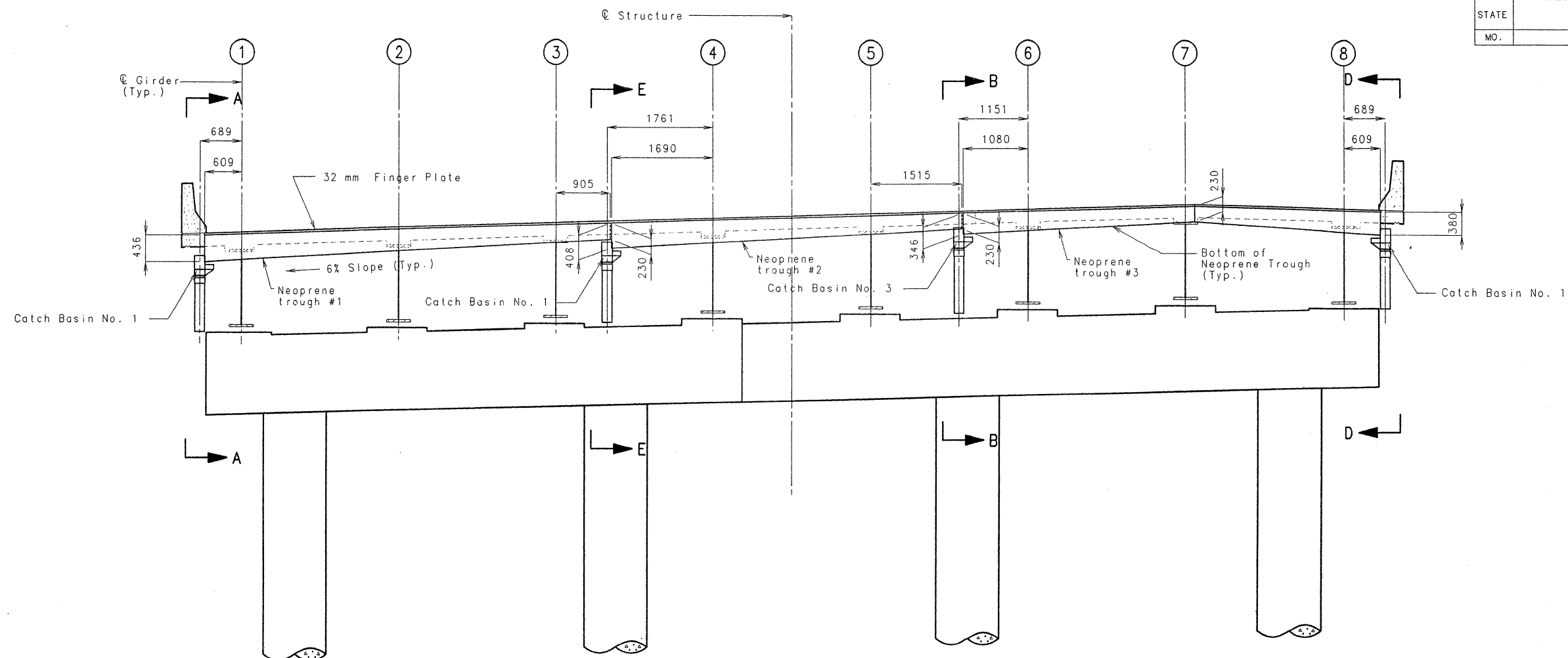
DETAILED NOV. 1997
CHECKED NOV. 1997

Sheet No. 149 of 236

ST. LOUIS COUNTY

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STATE	PROJ. NO.	SHEET NO.
MO.		183



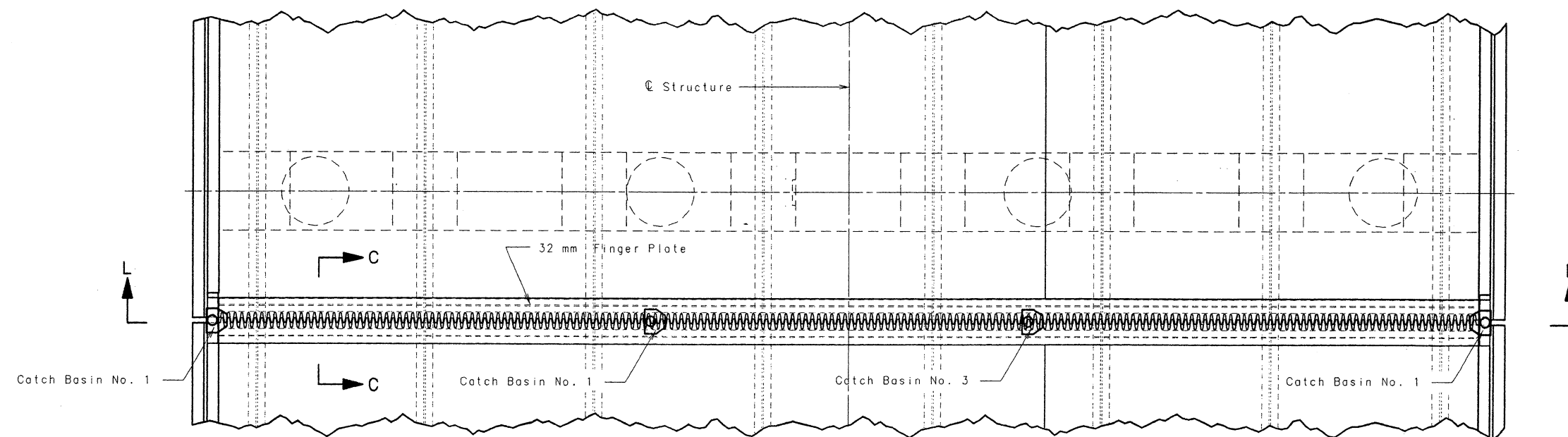
PART ELEVATION L-L NEAR INTERMEDIATE BENT NO. 7 SHOWING NEOPRENE DRAIN TROUGH

For Details of Sections A-A, B-B, C-C & D-D, see sheet No. 151.

For Details of Catch Basins, see sheet No. 152.

For Section E-E, see sheet No. 151.

For Developed Plans of Neoprene Troughs, see sheet No. 153.



PART PLAN NEAR INTERMEDIATE BENT NO. 7

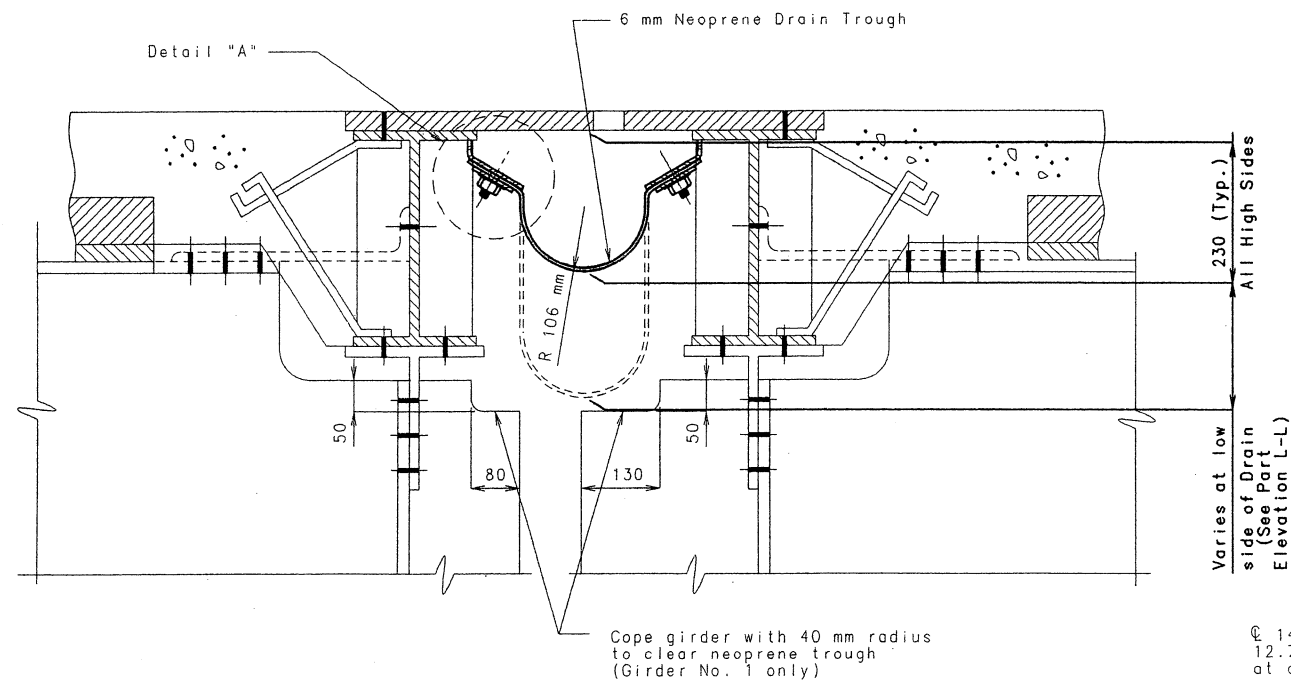


DETAILED NOV. 1997
CHECKED NOV. 1997

SHEET NO. 150 OF 236.

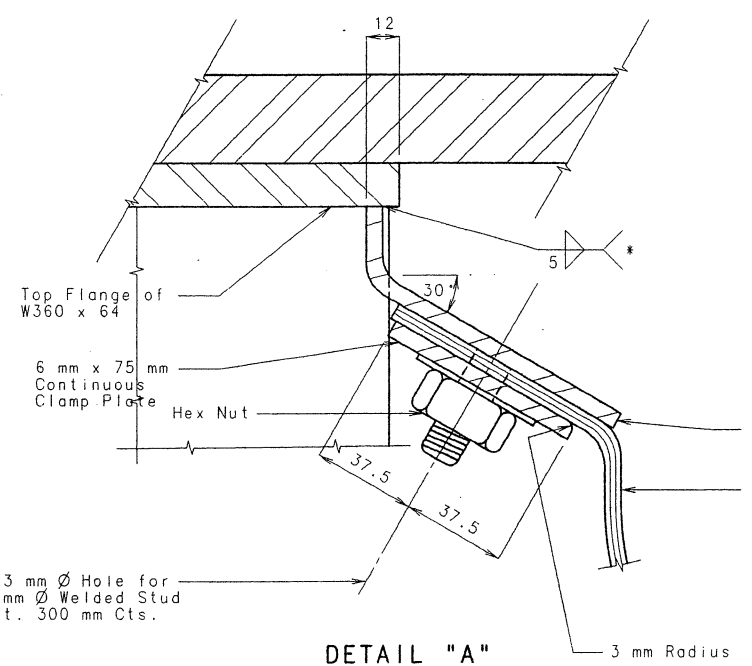
ST. LOUIS COUNTY

UNIT 2
A5682



SECTION C-C THRU FINGER PLATE EXPANSION DEVICE

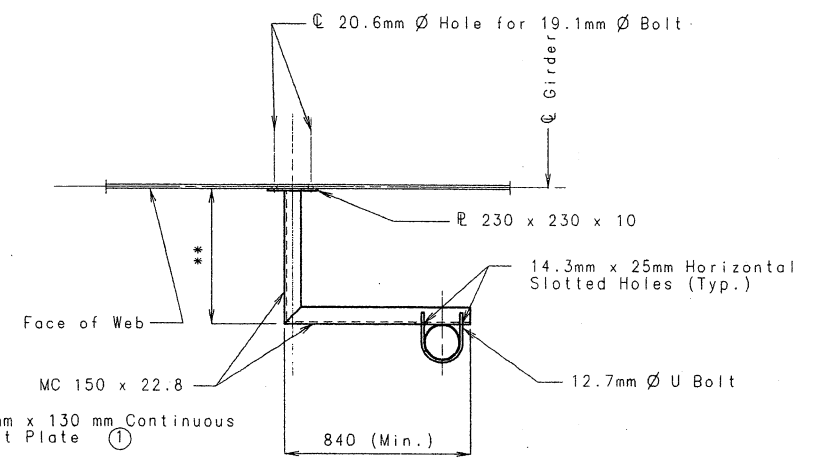
For locations of Section A-A, B-B, C-C, D-D & E-E, see sheet No. 150.
 For Details of Catch Basin, see sheet No. 152.
 For Developed Plans of Neoprene Trough, see sheet No. 153.



DETAIL "A"

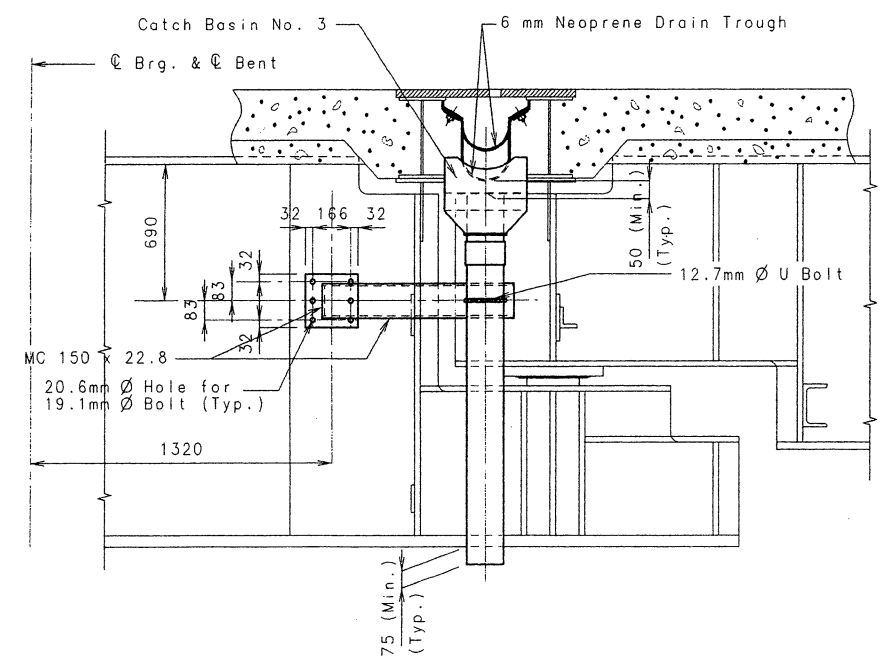
* Galvanizing (if used) damaged by welding shall be repaired in accordance with Missouri Standard Specifications (Metric)

① Bent plate shall be coped around stiffener plates and fillet welded along connected area to make watertight.

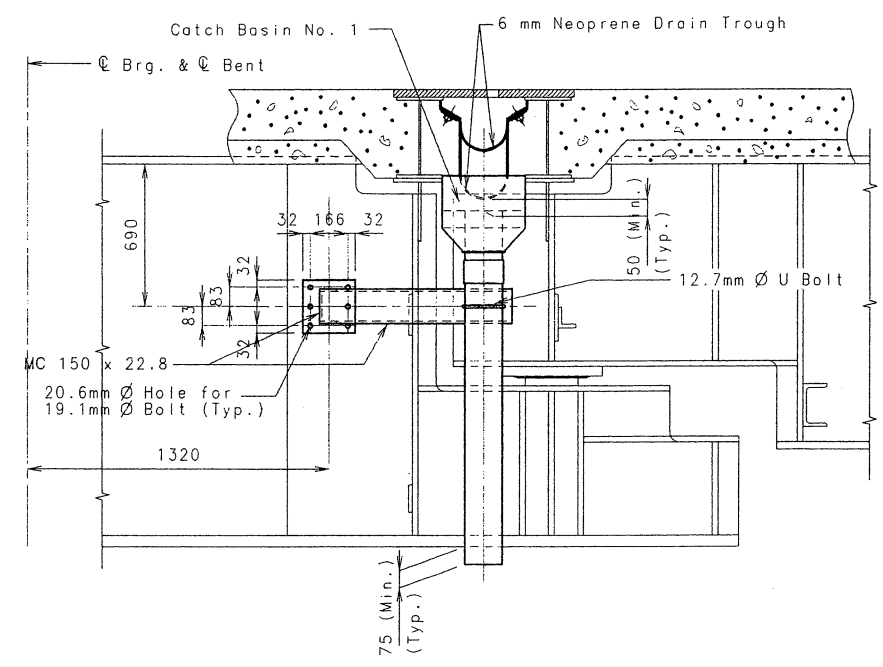


PART SECTION F-F

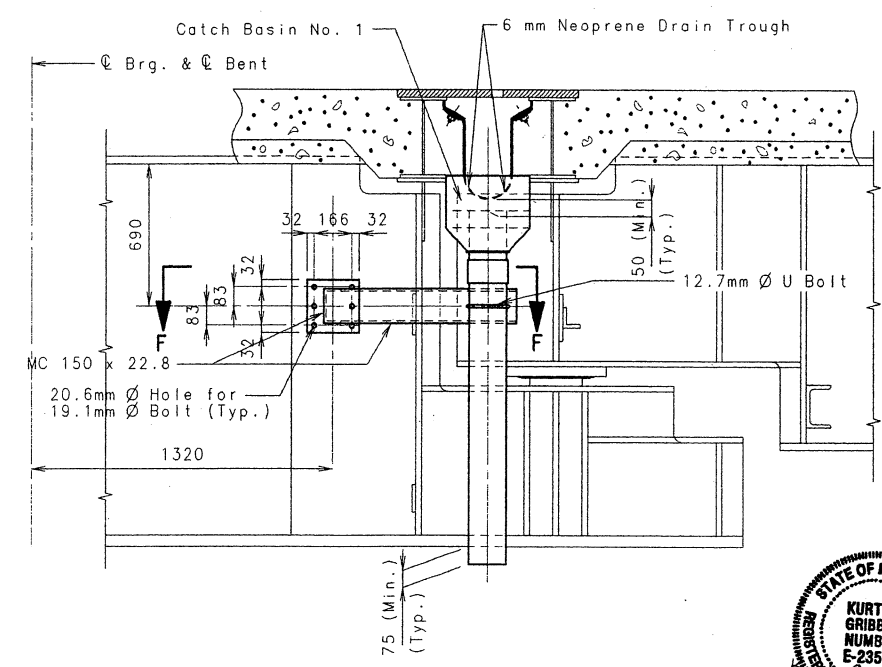
GIRDER NO.	**
Girder No. 1	608
Girder No. 3	778
Girder No. 6	1070
Girder No. 8	608



SECTION B-B



SECTION E-E



SECTION A-A
(SECTION D-D SIMILAR BY ROTATION)

DETAILS OF NEOPRENE DRAIN TROUGH AT HINGE NEAR BENT NO. 7

DETAILED NOV. 1997
 CHECKED NOV. 1997

Sheet No. 151 of 236.

ST. LOUIS COUNTY



DATE 12-5-97

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STATE	PROJ. NO.	SHEET NO.
MO.		185

NOTES:

Trough fabric shall be 6 mm continuous reinforced neoprene. Width of neoprene shall vary to conform to the slope of the drain. Neoprene Trough shall meet requirements of ASTM D3253 Type III or ASTM D2000 with call out of 28C 615 A14 B14 C12 F17. The Contractor shall furnish manufacturer's certification for these Neoprene Components.

Material for trough connection and downspout supports shall be ASTM A709M Grade 250 and shall be fabricated in accordance with Section 7.12 of the Missouri Standard Specifications (Metric).

Catch Basins shall be fabricated from reinforced fiberglass, ASTM D2996.

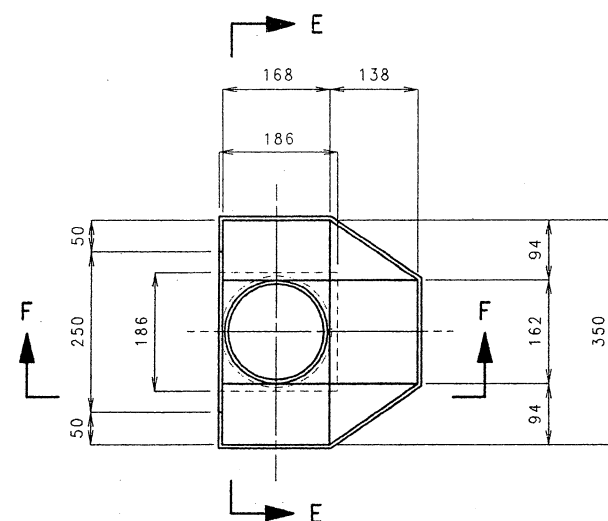
At the contractor's option, the structural steel may be either painted (System G) or galvanized in accordance with ASTM A153.

Downspouts shall be 150 mm (Nominal) reinforced fiberglass pipe.

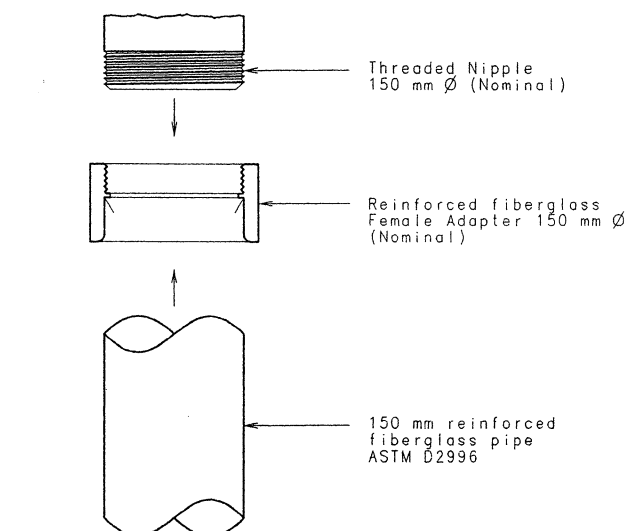
The final color of the reinforced fiberglass pipe and fittings shall be concrete gray and the pipes and fittings shall be ultraviolet protected. Paint, if necessary, and surface preparation shall be as recommended by the manufacturer, to the VOC compliant, ultraviolet resistant and shall be approved by the engineer prior to its usage.

Payment for furnishing, painting (or galvanizing) and installing Bent Plate, Clamp Plate and Neoprene Trough shall be included in the Contract Unit Price for Expansion Device (Finger Plate)-metric, per meter. Payment for furnishing and installing the Catch Basin, Reinforced Fiberglass Pipe, Brackets and all other Anchorage material, complete in place, shall be included in the contract Unit Price of Drainage System on Structure, lump sum. See Special Provisions.

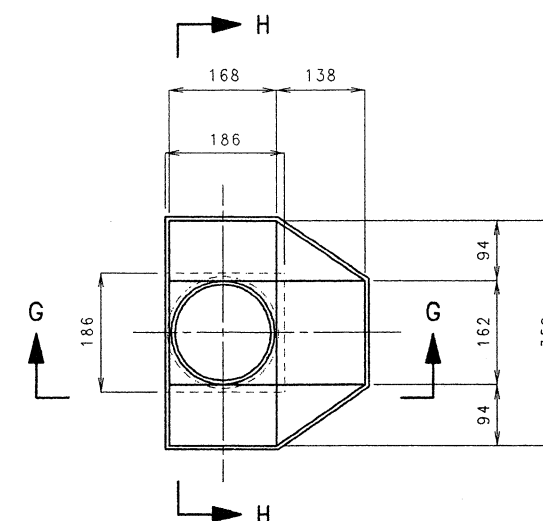
For Details of Finger Plate Expansion Device, see sheet No. 144.



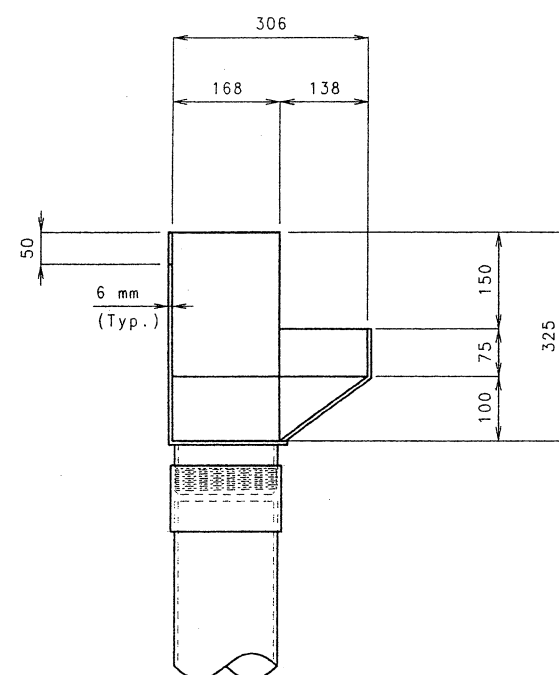
PLAN OF CATCH BASIN NO. 3



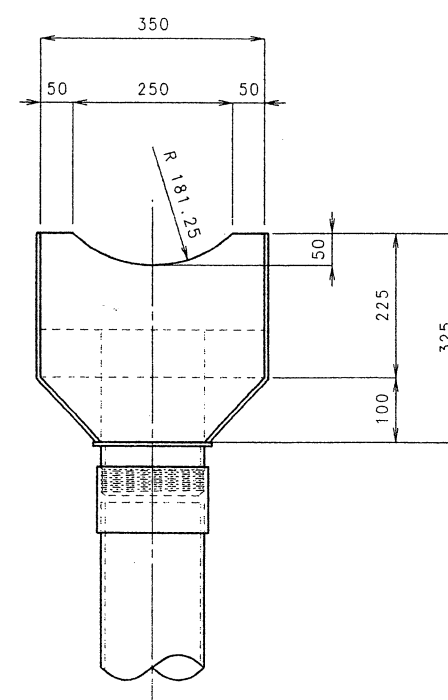
DETAIL "B"
(SHOWING CONNECTION
OF CATCH BASIN
TO PVC PIPE)



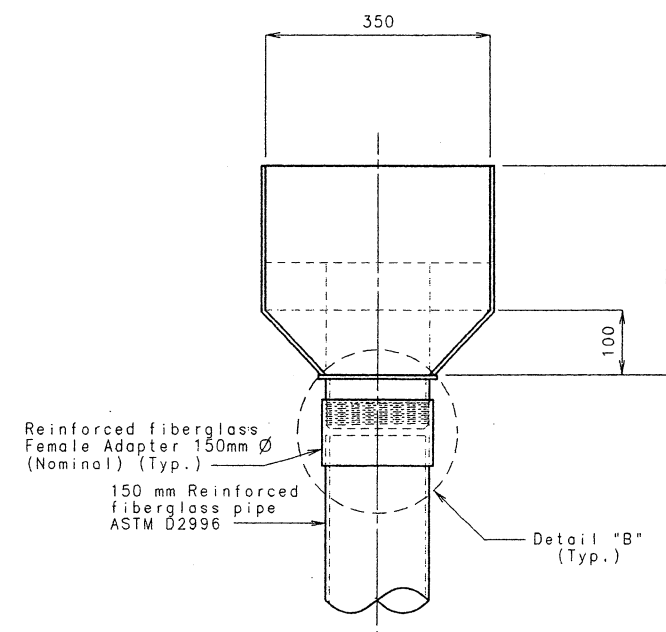
PLAN OF CATCH BASIN NO. 1



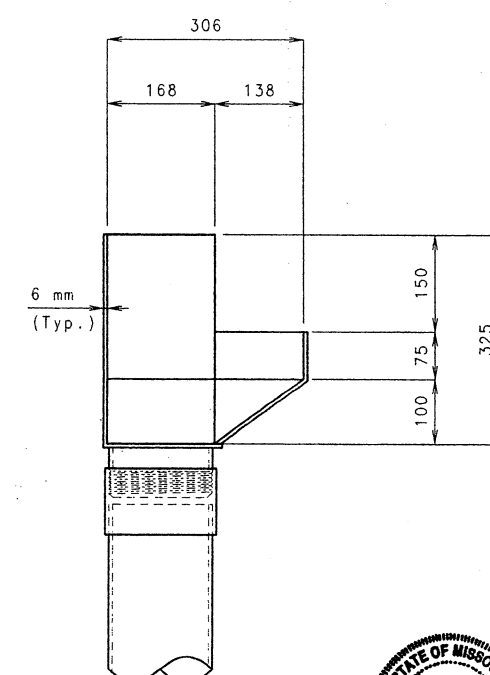
SECTION F-F



SECTION E-E AT CATCH BASIN NO. 3
(1 REQUIRED)



SECTION H-H AT CATCH BASIN NO. 1
(3 REQUIRED)



SECTION G-G

DETAILS OF CATCH BASIN AT HINGE NEAR BENT NO. 7

DETAILED NOV. 1997
CHECKED NOV. 1997

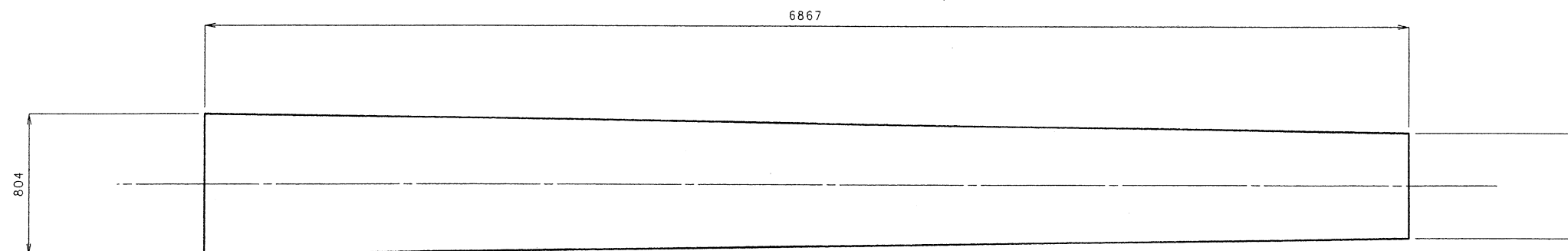
SHEET NO. 152 OF 236.

ST. LOUIS COUNTY



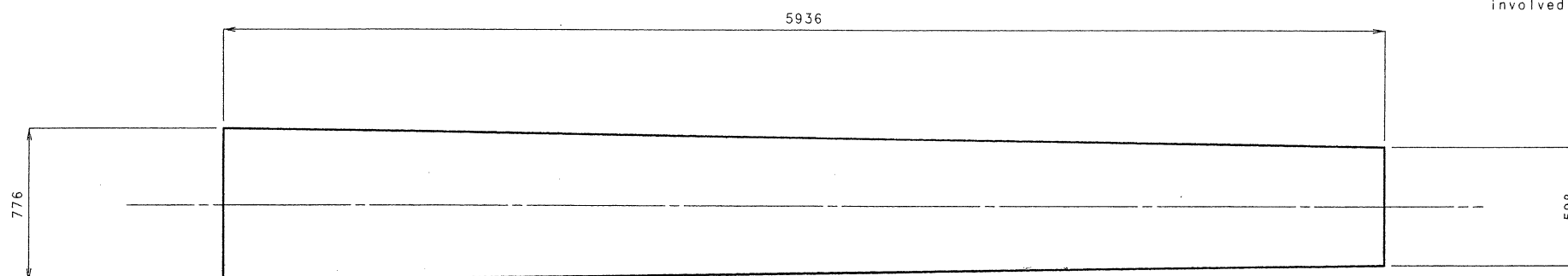
UNIT 2

A5682

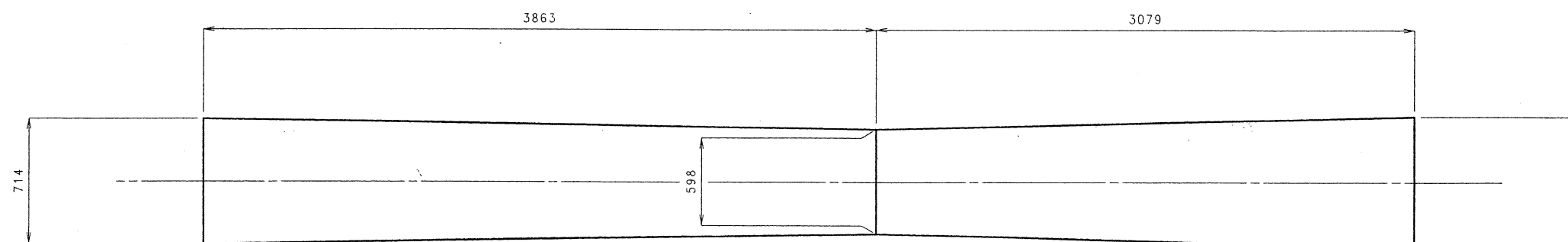


DEVELOPED PLAN OF NEOPRENE TROUGH NO. 1

NOTE:
It shall be the responsibility of the contractor to verify the dimensions shown on the bridge plans for the neoprene troughs before cutting in order to insure proper drainage of water into the catch basins. The contractor shall also be responsible for developing all required dimensional adjustments and coordinating the implementation of these dimensional adjustments with all involved fabricators and subcontractors.



DEVELOPED PLAN OF NEOPRENE TROUGH NO. 2



DEVELOPED PLAN OF NEOPRENE TROUGH NO. 3

DETAILS OF NEOPRENE DRAIN TROUGH AT HINGE NEAR BENT NO. 7

DETAILED NOV. 1997
CHECKED NOV. 1997

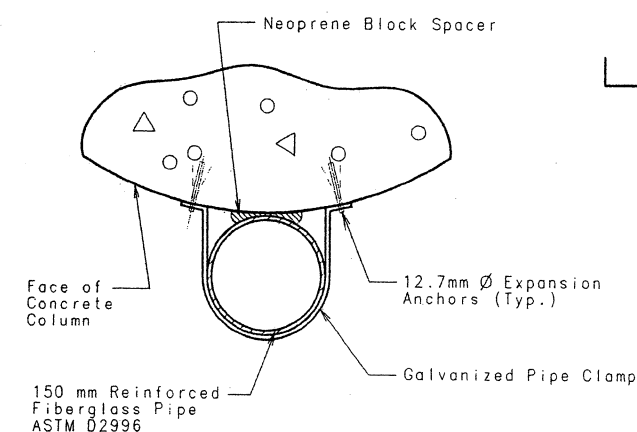
Sheet No. 153 of 236.

ST. LOUIS COUNTY

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A5682



NOTE:
The 150 mm diameter reinforced fiberglass pipe shall be secured to concrete with clamps spaced as shown on bridge plans. Concrete anchors for clamps shall be in accordance with Federal Specification FF-S-325, Group II, Type 4, Class I and shall be galvanized in accordance with ASTM 153, B695-91 Class 50 or stainless steel. Minimum embedment in concrete shall be 50 mm. The supplier shall furnish a manufacturer's certification that the concrete anchors meet the required material and galvanizing specifications.

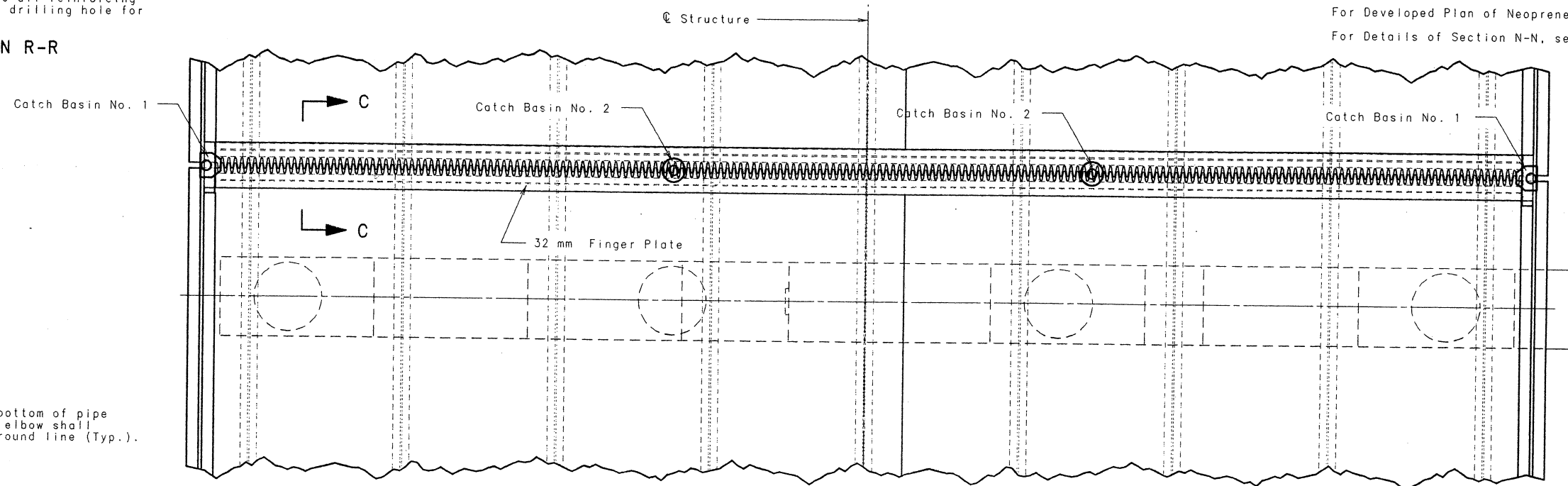


NOTE:
Contractor shall locate all reinforcing steel in column before drilling hole for expansion anchor.

PART SECTION R-R

PART ELEVATION NEAR INTERMEDIATE BENT NO. 11 SHOWING NEOPRENE DRAIN TROUGH

For Details of Sections M-M & O-O, see sheet No. 155.
For Details of Catch Basin, see sheet No. 157.
For Developed Plan of Neoprene Troughs, see sheet No. 158.
For Details of Section N-N, see sheet No. 156.



NOTE:
Place a 45° PVC elbow at bottom of pipe on the column. Center of elbow shall be 300mm above finished ground line (Typ.).

PART PLAN NEAR INTERMEDIATE BENT NO. 11

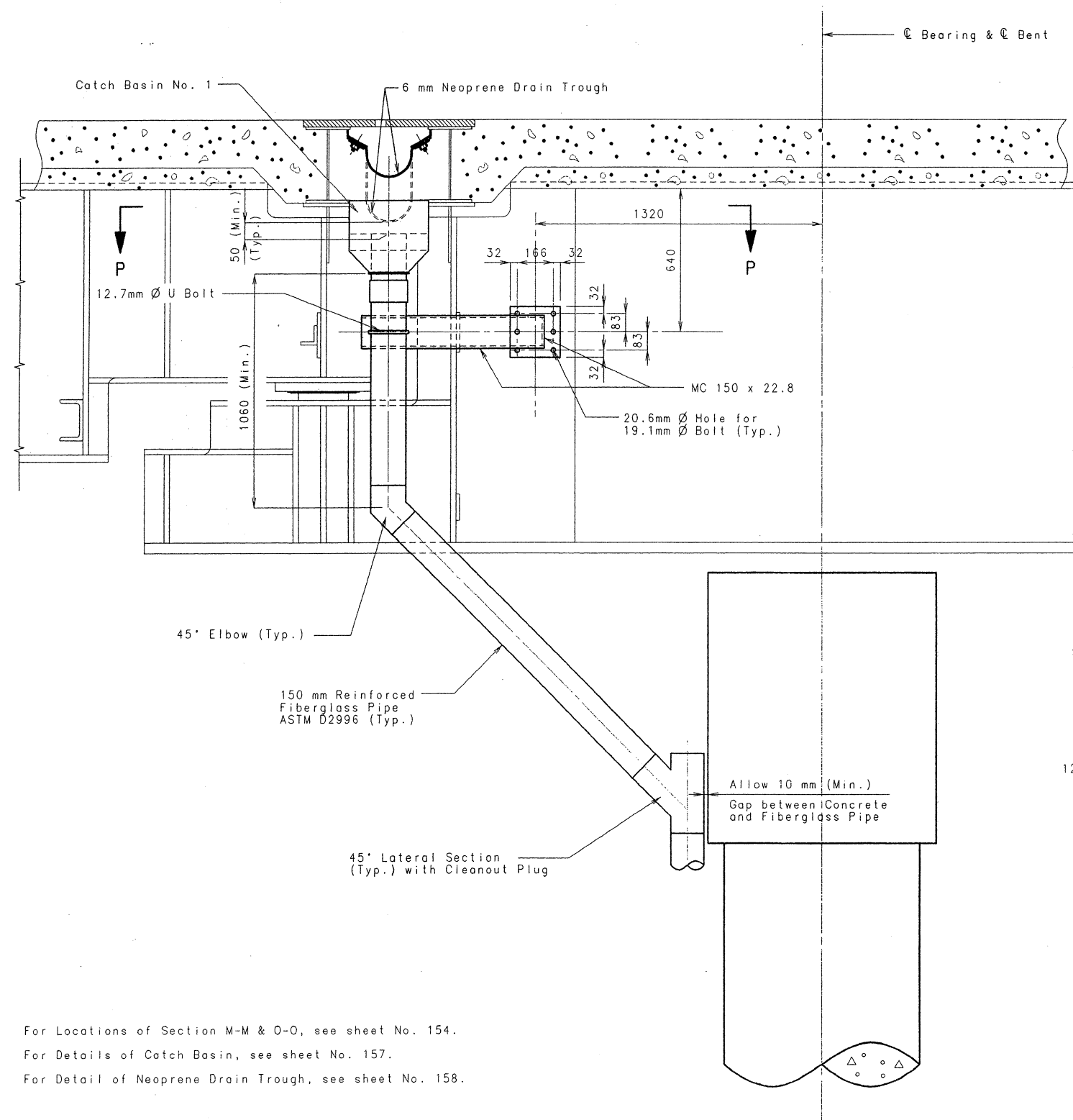
DETAILED NOV. 1997
CHECKED NOV. 1997

SHEET NO. 154 OF 236.

ST. LOUIS COUNTY

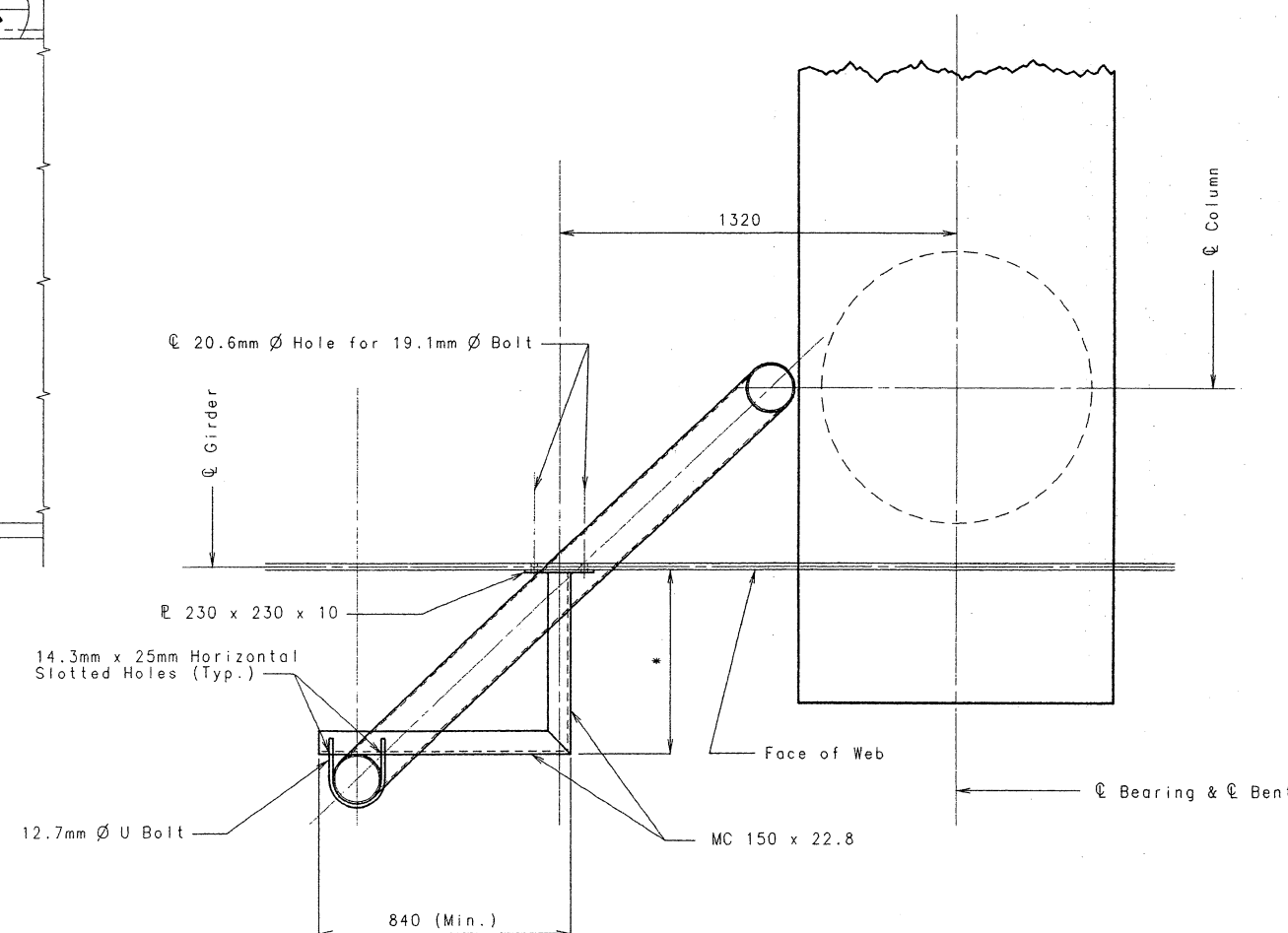


UNIT 2
A5682



SECTION M-M
(SECTION O-O SIMILAR BY ROTATION)

For Locations of Section M-M & O-O, see sheet No. 154.
For Details of Catch Basin, see sheet No. 157.
For Detail of Neoprene Drain Trough, see sheet No. 158.



PART SECTION P-P

Hinge Near Bt. 11	*
Girder No. 1	614
Girder No. 4	520
Girder No. 6	1015
Girder No. 9	608

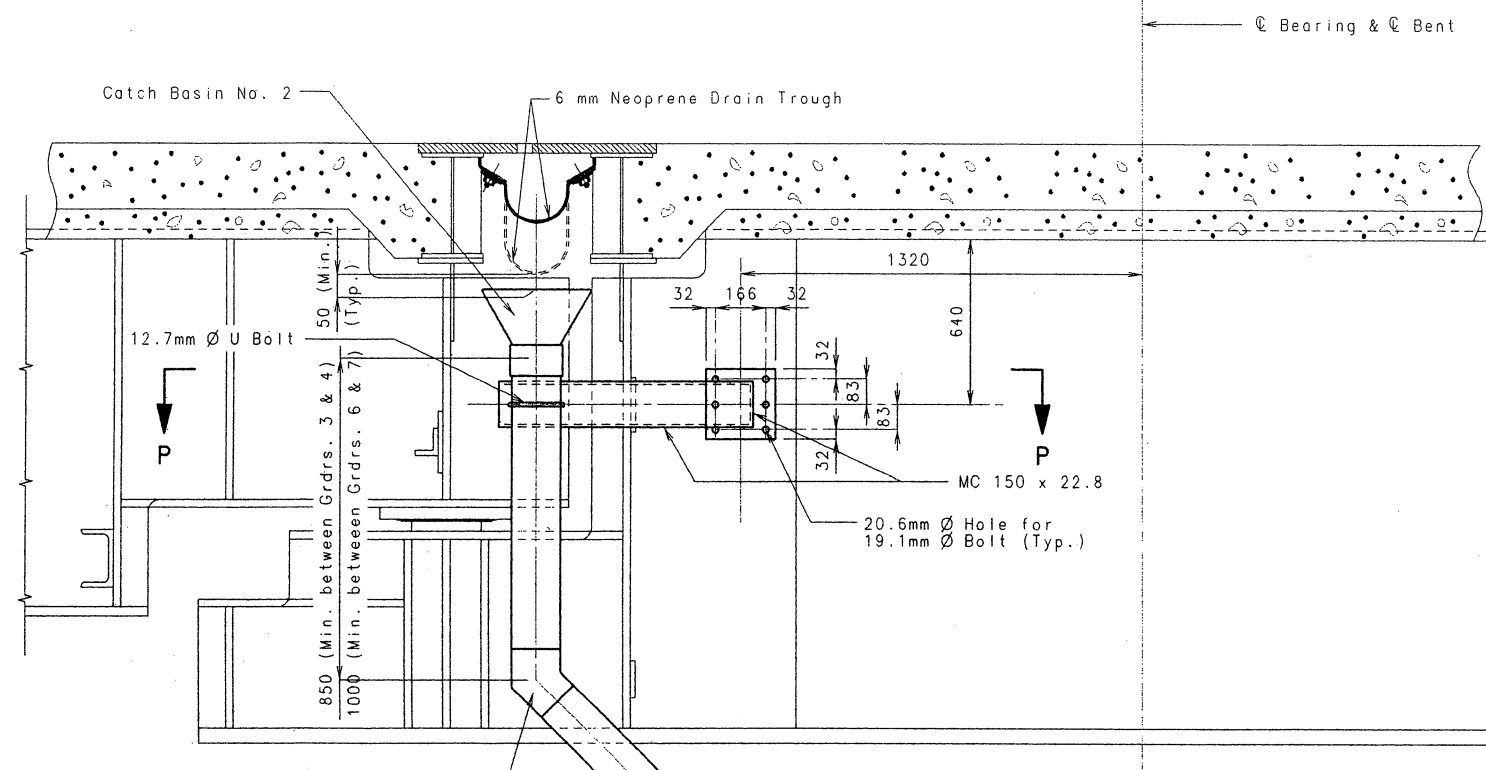
DETAILS OF NEOPRENE DRAIN THROUGH AT HINGE NEAR BENT NO. 11

STATE OF MISSOURI
KURT E. GRIBBLE
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-23576
DATE 12-5-97

DETAILED NOV. 1997
CHECKED NOV. 1997

Sheet No. 155 of 236.

UNIT 2
ST. LOUIS COUNTY A5682



45° Elbow (Typ.)

150 mm Reinforced
Fiberglass Pipe
ASTM D2996

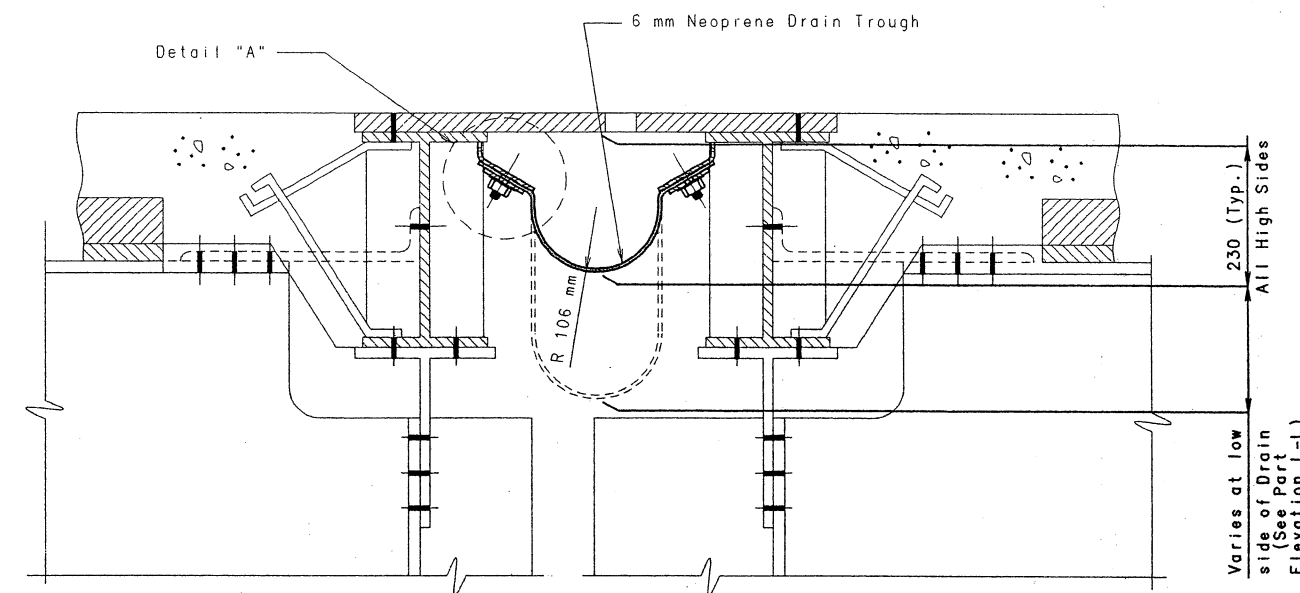
45° Lateral Section
(Typ.) with Cleanout Plug

Allow 10 mm (Min.)
Gap between Concrete
and Fiberglass Pipe

For Locations of Section N-N & C-C, see sheet No. 154.
For Details of Catch Basin, see sheet No. 157.
For Detail of Neoprene Drain Trough, see sheet No. 158.
For Section P-P, see sheet No. 155.

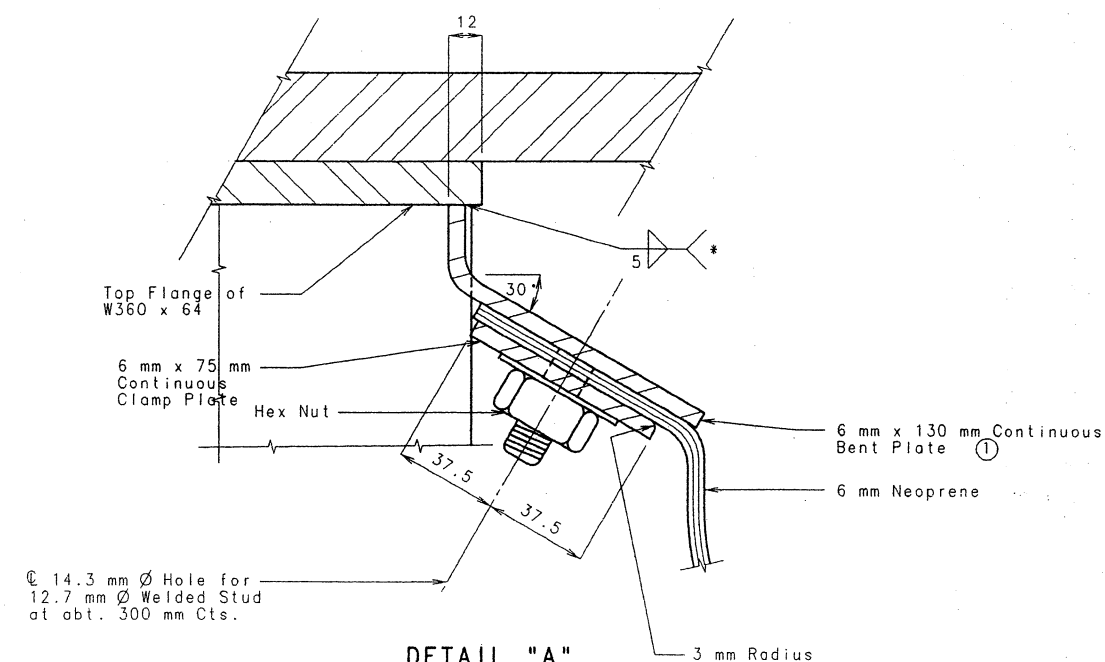
SECTION N-N

DETAILS OF NEOPRENE DRAIN THROUGH AT HINGE NEAR BENT NO. 11



SECTION C-C THRU FINGER PLATE EXPANSION DEVICE

NOTE: For Developed Plan of Neoprene Troughs, see sheet No. 158.



DETAIL "A"

* Galvanizing (if used) damaged by welding shall be repaired in accordance with Missouri Standard Specifications (Metric)

① Bent plate shall be coped around stiffener plates and fillet welded along connected area to make watertight.



DETAILED NOV. 1997
CHECKED NOV. 1997

Sheet No. 156 of 236.

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UNIT 2
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NOTES:

Trough fabric shall be 6 mm continuous reinforced neoprene. Width of neoprene shall vary to conform to the slope of the drain. Neoprene Trough shall meet requirements of ASTM D3253 Type III or ASTM D2000 with call out of 2BC 615 A14 B14 C12 F17. The Contractor shall furnish manufacturer's certification for these Neoprene Components.

Material for trough connection and downspout supports shall be ASTM A709M Grade 250 and shall be fabricated in accordance with Section 7.12 of the Missouri Standard Specifications (Metric).

Catch Basins shall be fabricated from reinforced fiberglass, ASTM D2996.

At the contractor's option, the structural steel may be either painted (System G) or galvanized in accordance with ASTM A153.

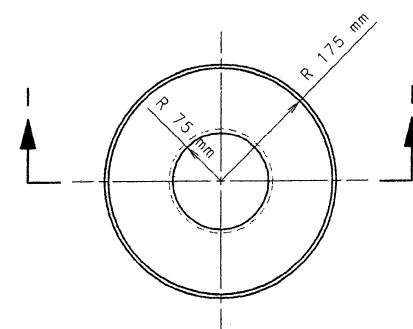
Downspouts shall be 150 mm (Nominal) reinforced fiberglass pipe.

The final color of the reinforced fiberglass pipe and fittings shall be concrete gray and the pipes and fittings shall be ultraviolet protected. Paint, if necessary, and surface preparation shall be as recommended by the manufacturer, to the VOC compliant, ultraviolet resistant and shall be approved by the engineer prior to its usage.

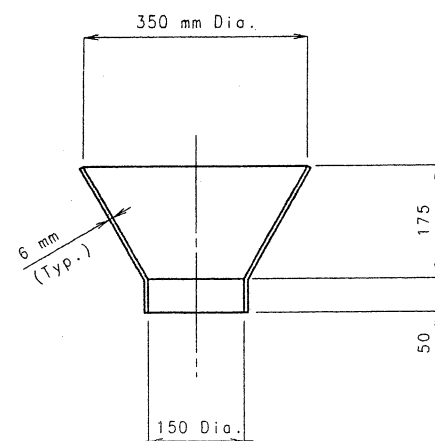
Payment for furnishing, painting (or galvanizing) and installing Bent Plate, Clamp Plate and Neoprene Trough shall be included in the Contract Unit Price for Expansion Device (Finger Plate)-metric, per meter.

Payment for furnishing and installing the Catch Basin, Reinforced Fiberglass Pipe, Brackets and all other Anchorage material, complete in place, shall be included in the contract Unit Price of Drainage System on Structure, lump sum. See Special Provisions.

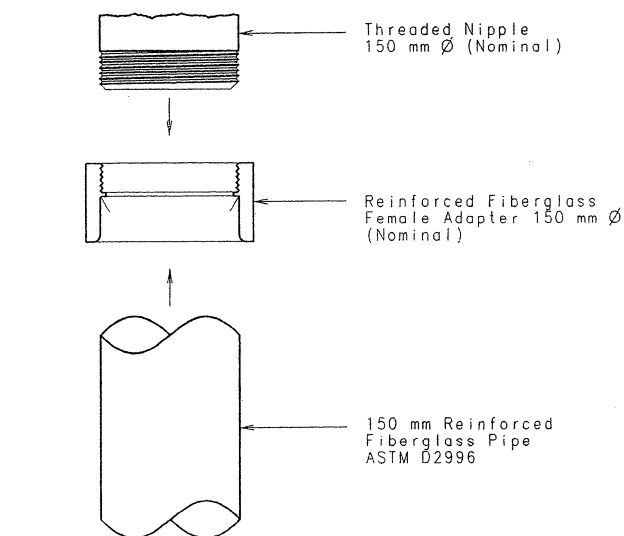
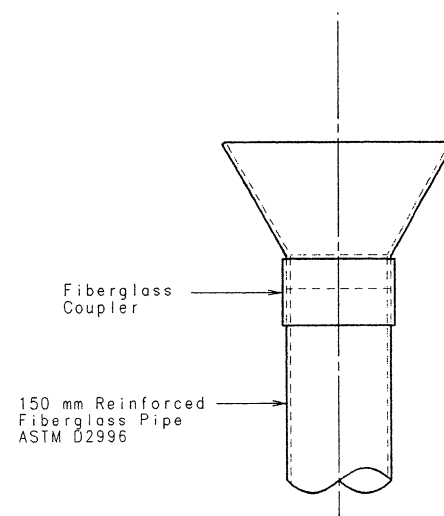
For Details of Finger Plate Expansion Device, see sheet No. 145.



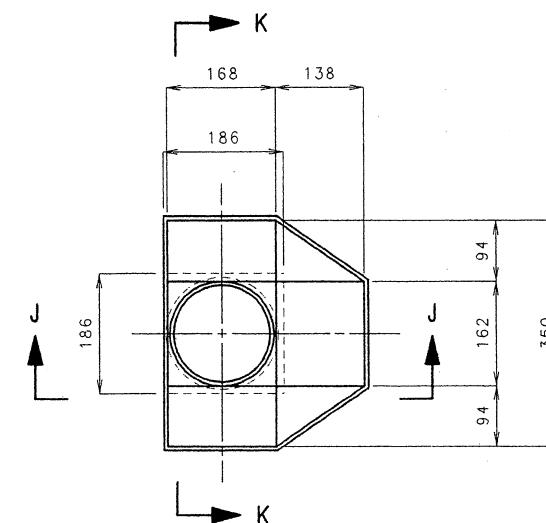
PLAN OF CATCH BASIN NO. 2



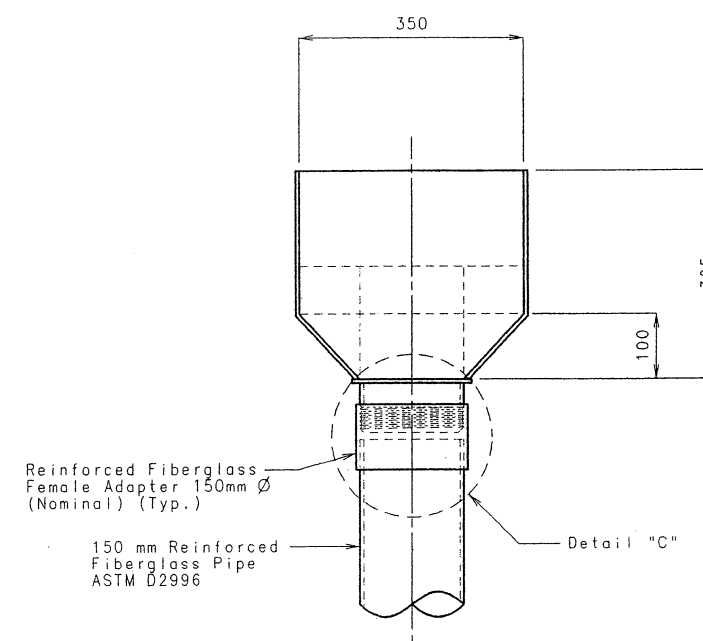
SECTION I-I AT CATCH BASIN NO. 2
(2 REQUIRED)



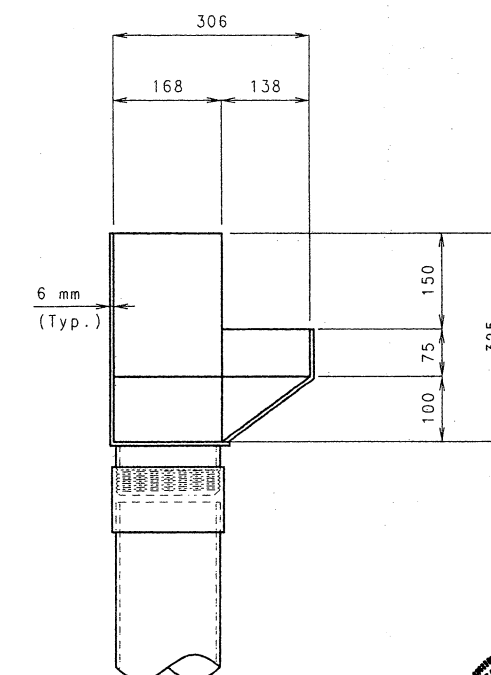
DETAIL "C"
(SHOWING CONNECTION
OF CATCH BASIN
TO PVC PIPE)



PLAN OF CATCH
BASIN NO. 1



SECTION K-K AT CATCH BASIN NO. 1
(2 REQUIRED)



SECTION J-J

DETAILS OF CATCH BASIN AT HINGE NEAR BENT NO. 11

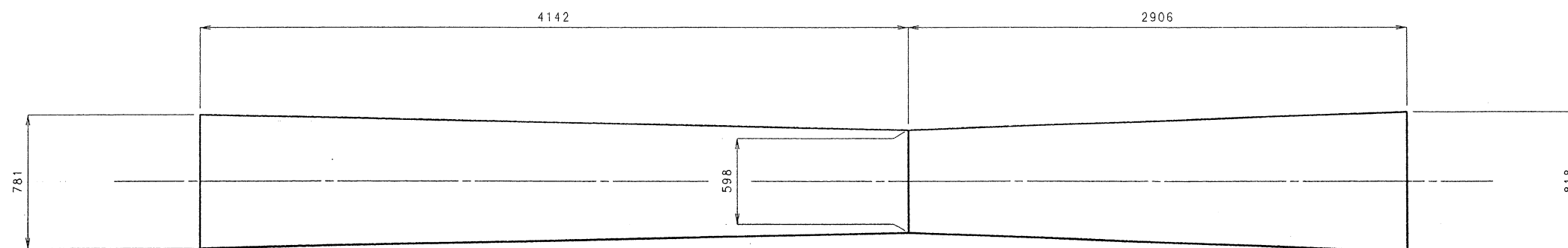
DETAILED NOV. 1997
CHECKED NOV. 1997

SHEET NO. 157 OF 236.

ST. LOUIS COUNTY

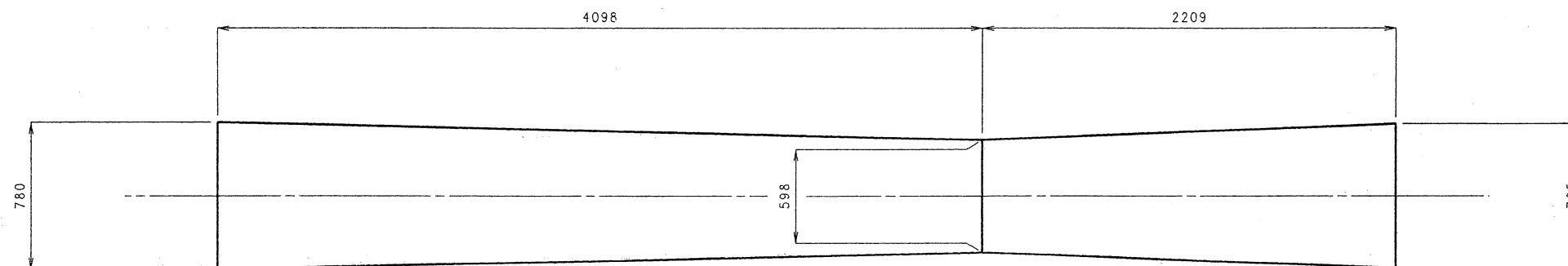


UNIT 2
A5682

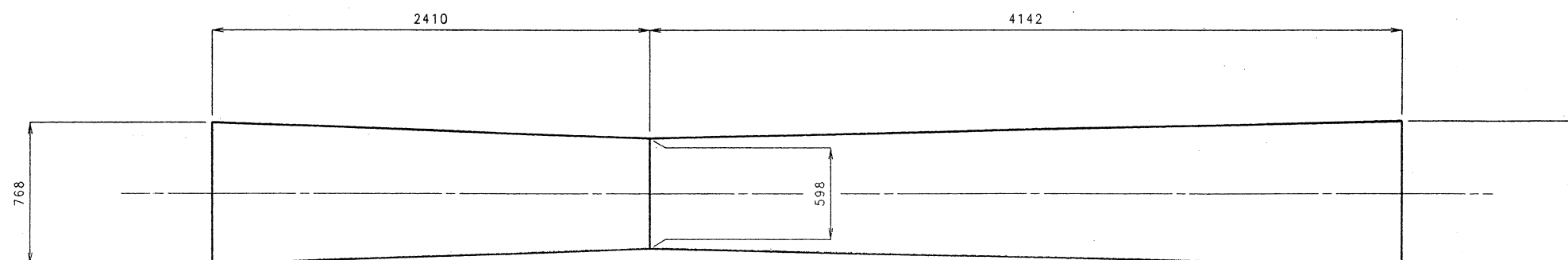


DEVELOPED PLAN OF NEOPRENE TROUGH NO. 1

NOTE:
It shall be the responsibility of the contractor to verify the dimensions shown on the bridge plans for the neoprene troughs before cutting in order to insure proper drainage of water into the catch basins. The contractor shall also be responsible for developing all required dimensional adjustments and coordinating the implementation of these dimensional adjustments with all involved fabricators and subcontractors.



DEVELOPED PLAN OF NEOPRENE TROUGH NO. 2



DEVELOPED PLAN OF NEOPRENE TROUGH NO. 3

DETAILS OF NEOPRENE DRAIN TROUGH AT HINGE NEAR BENT NO. 11

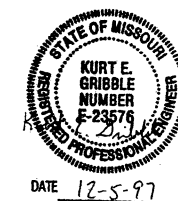
DETAILED NOV. 1997
CHECKED NOV. 1997

Sheet No. 158 of 236.

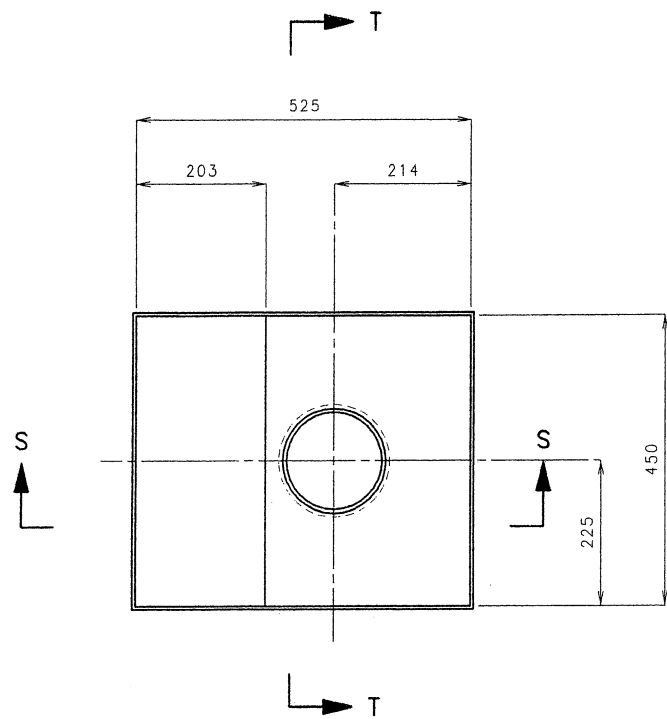
ST. LOUIS COUNTY

UNIT 2

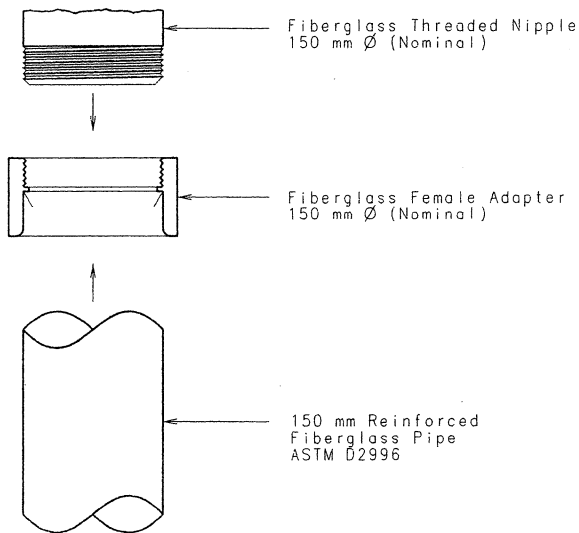
A5682



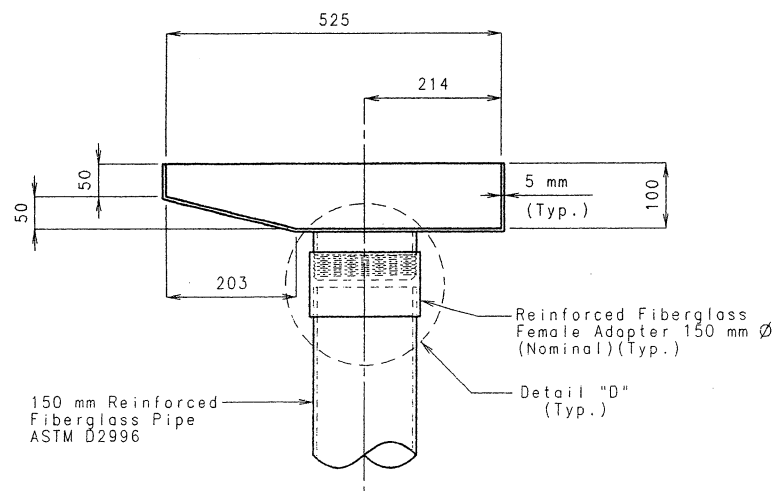
STATE	PROJ. NO.	SHEET NO.
MO.		192



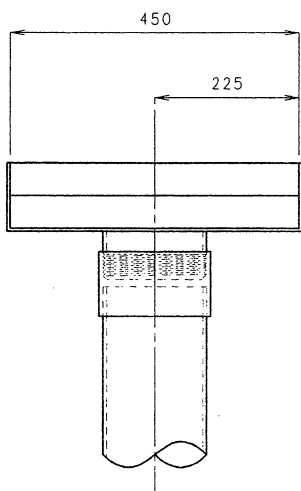
PLAN OF CATCH BASIN NO. 4



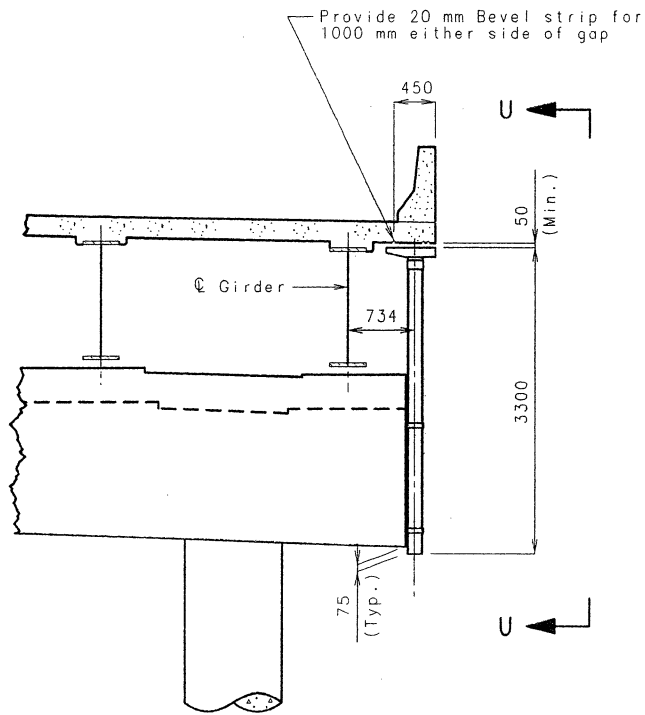
DETAIL "D"
(SHOWING CONNECTION
OF CATCH BASIN TO
FIBERGLASS PIPE)



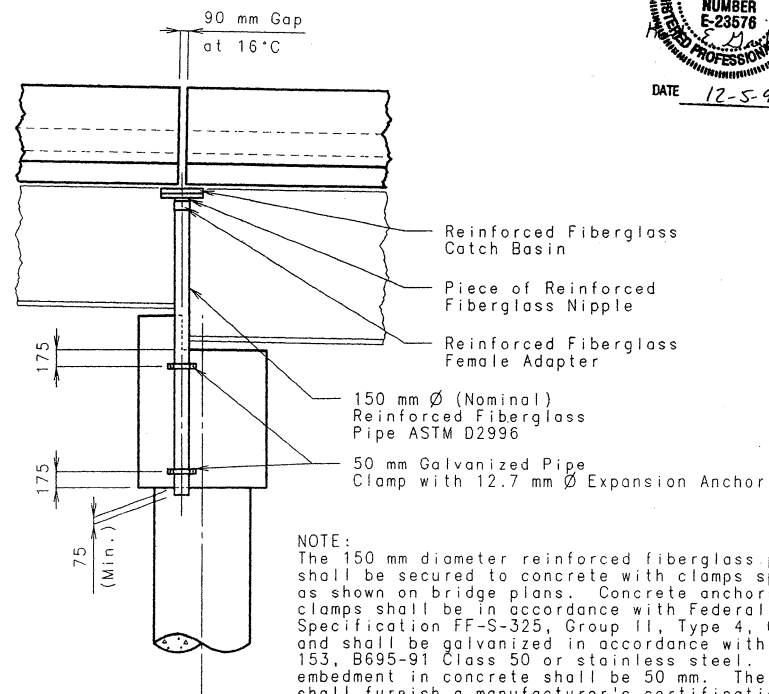
SECTION S-S AT CATCH BASIN NO. 4
(1 REQUIRED)



SECTION T-T



PART ELEVATION OF RIGHT
SIDE OF BENT NO. R5



NOTE:
The 150 mm diameter reinforced fiberglass pipe shall be secured to concrete with clamps spaced as shown on bridge plans. Concrete anchors for clamps shall be in accordance with Federal Specification FF-S-325, Group II, Type 4, Class I and shall be galvanized in accordance with ASTM-153, B695-91 Class 50 or stainless steel. Minimum embedment in concrete shall be 50 mm. The supplier shall furnish a manufacturer's certification that the concrete anchors meet the required material and galvanizing specifications.

NOTE:
Contractor shall locate all reinforcing steel in beam before drilling hole for expansion anchors.

PART SECTION U-U

NOTES:

Catch Basin shall be fabricated from reinforced fiberglass, ASTM D2996.

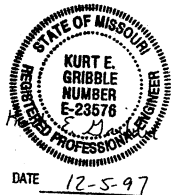
Downspouts shall be 150 mm (Nominal) Reinforced Fiberglass Pipe ASTM D2996.

The final color of the reinforced fiberglass pipe and fittings shall be concrete gray and the pipes and fittings shall be ultraviolet protected. Paint, if necessary, and surface preparation shall be as recommended by the manufacturer, to the VOC compliant, ultraviolet resistant and shall be approved by the engineer prior to its usage.

Payment for furnishing and installing catch basin, reinforced fiberglass pipe and pipe strap shall be included in the contract unit price for Expansion Device (Flat Plate) - Metric per meter.

For Details of Flat Plate Expansion Device, see sheet No. 146.

The final color of the reinforced fiberglass pipe and fittings shall be concrete gray and the pipes and fittings shall be ultraviolet protected. Paint, if necessary, and surface preparation shall be as recommended by the manufacturer, to the VOC compliant, ultraviolet resistant and shall be approved by the engineer prior to its usage.



DETAILS OF CATCH BASIN AT BENT NO. R5

DETAILED NOV. 1997
CHECKED NOV. 1997

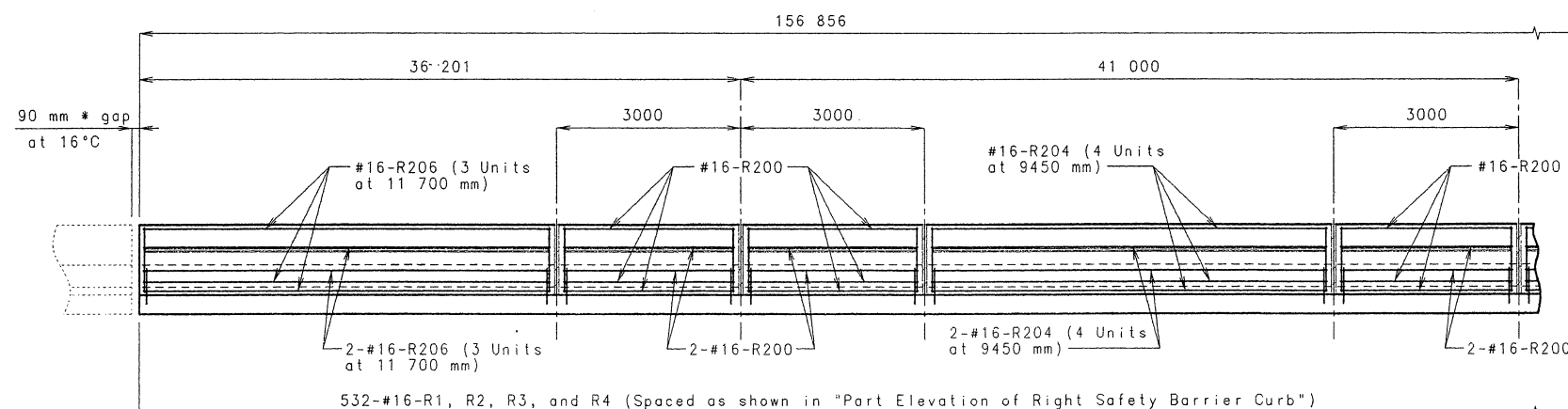
SHEET NO. 159 OF 236.

ST. LOUIS COUNTY

UNIT 2
A5682

* Gap located at Bent no. R5.

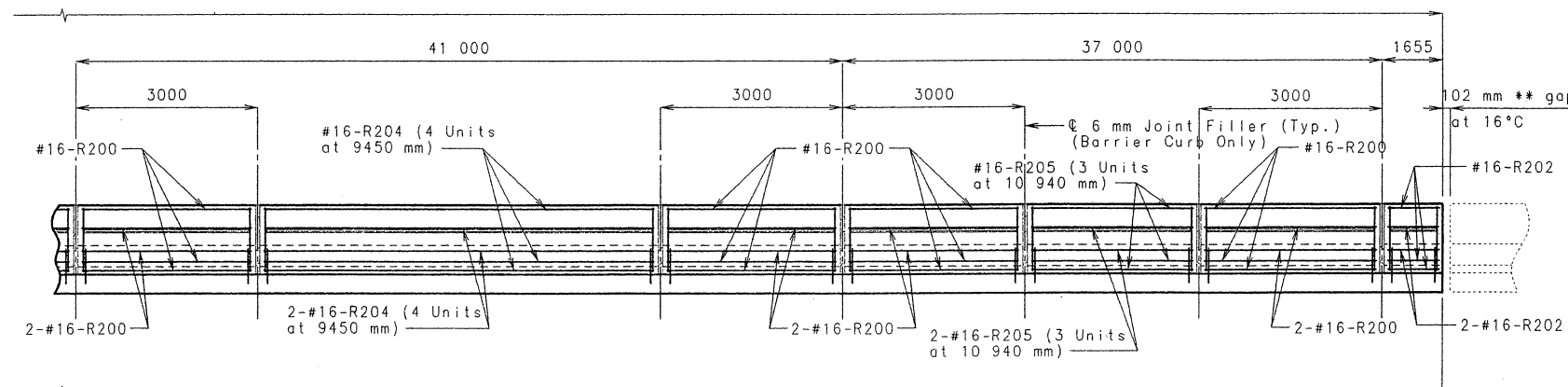
Note: Light dashed lines indicate construction in other units.



Span (R5-8)

Span (8-9)

** Gap located at hinge near Bent no. 11.

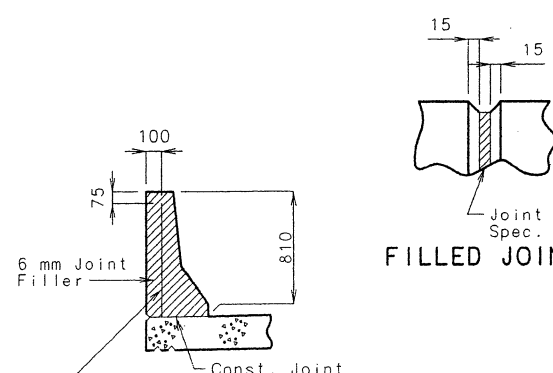


Span (9-10)

Span (10-11)

Part Span (11-12)

ELEVATION OF RIGHT BARRIER CURB



FILLED JOINT DETAIL

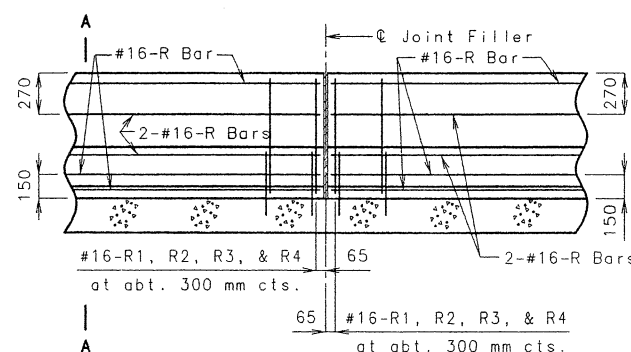
Note: 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Centered on joint)

Plastic waterstop shall be placed in all safety barrier curb filled joints. (Except structures with superelevation, use on all lower safety barrier curb joints only).

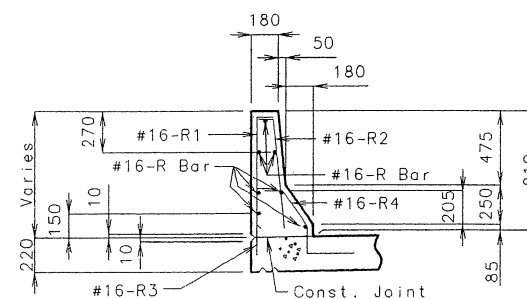
Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

Detailed Mar. 1997
Checked Aug. 1997



PART ELEVATION OF RIGHT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



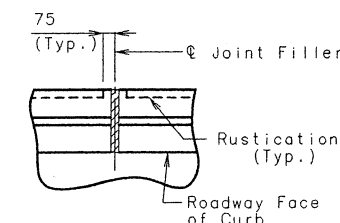
PART SECTION A-A

Note:

Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 212,225 sq. mm.

Sheet No. 161 OF 236.



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

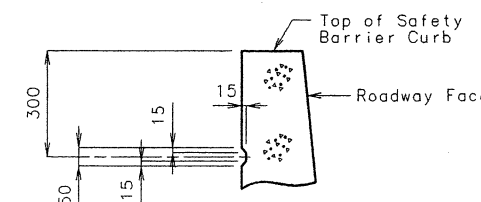
When the safety barrier curb is bid per half meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.

Concrete in the safety barrier curb shall be Class B1.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For Details of Movement Gauge see sheet no. 214.

For details of Safety Barrier Curb near expansion devices see sheets no. 144 and 145.



PART SECTION SHOWING RUSTICATION DETAILS



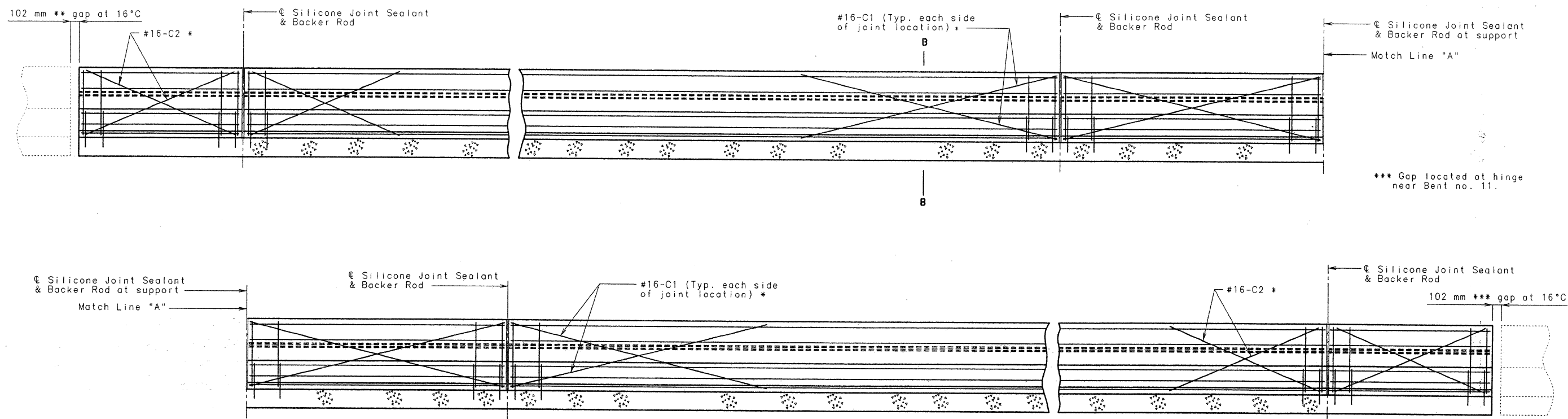
UNIT 2

ST. LOUIS COUNTY

A5682

** Gap located at hinge near Bent no. 7.

Note: Light dashed lines indicate construction in other units.



Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

When the safety barrier curb is bid per half meter, 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 half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS (OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

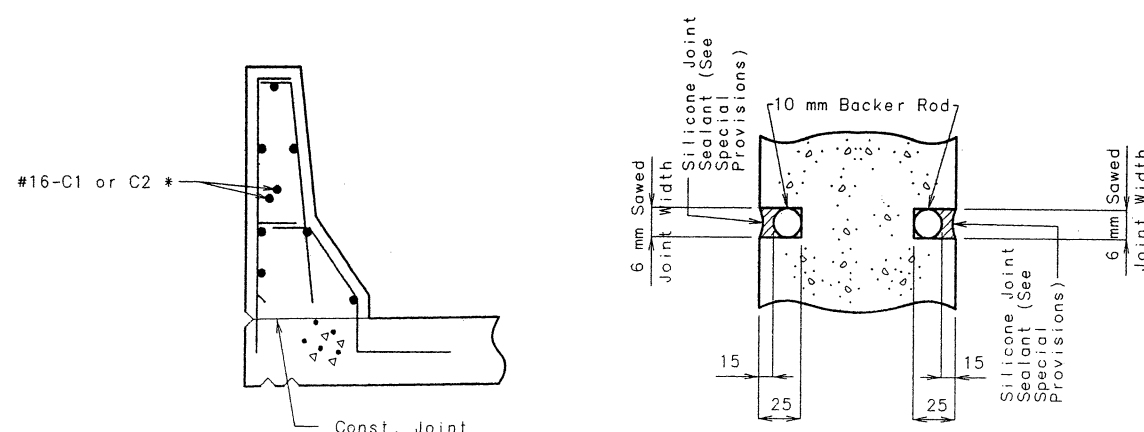
Note:

Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler.

Plastic waterstop shall not be used with slip-form option.

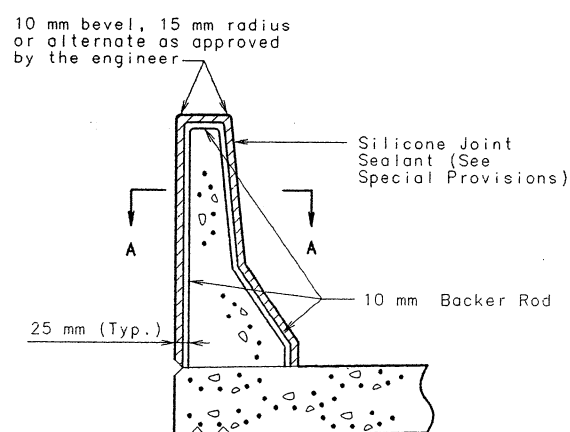
C Bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

Barrier Curb in Unit 2 at the intersection of the left side of Ramp 2B with the right side of Rte. 100 shall be cast-in-place, slip form option is not allowed.

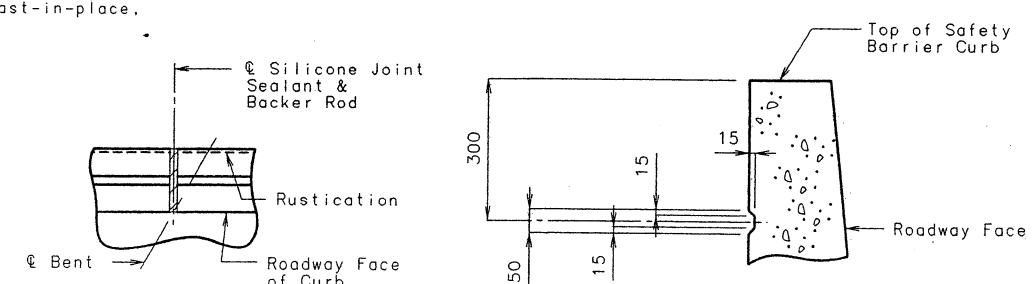


PART SECTION B-B

Note: * Each side of joint location.



SECTION THRU JOINT



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL (Use on highway grade separation only)



Detailed Mar. 1997
Checked Aug. 1997

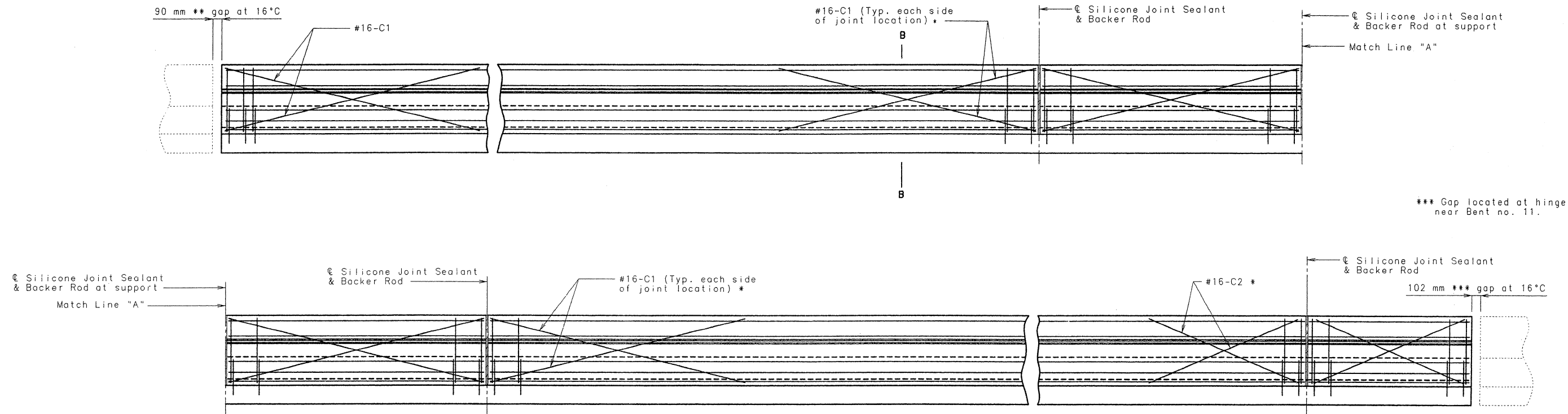
OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB (LEFT SIDE)

Sheet No. 162 OF 236

UNIT 2
ST. LOUIS COUNTY A5682

** Gap located at Bent no. R5.

Note: Light dashed lines indicate construction in other units.



*** Gap located at hinge near Bent no. 11.

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

When the safety barrier curb is bid per half meter, 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 half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

TYPICAL ELEVATION OF RIGHT SAFETY BARRIER CURB AT SUPPORT LOCATIONS (OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

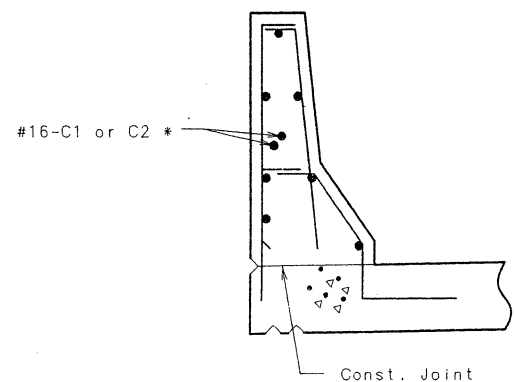
Note:

Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler.

Plastic waterstop shall not be used with slip-form option.

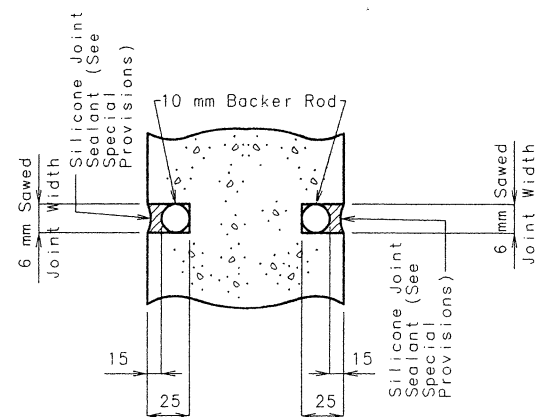
C Bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

Barrier Curb in Unit 2 at the intersection of the left side of Ramp 2B with the right side of Rte. 100 shall be cast-in-place, slip form option is not allowed.



PART SECTION B-B

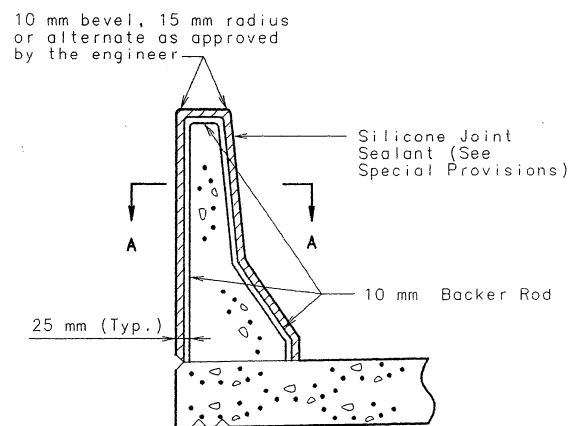
Note: * Each side of joint location.



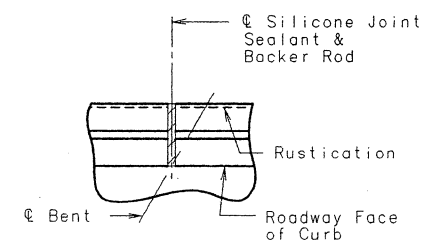
SECTION A-A

Note:

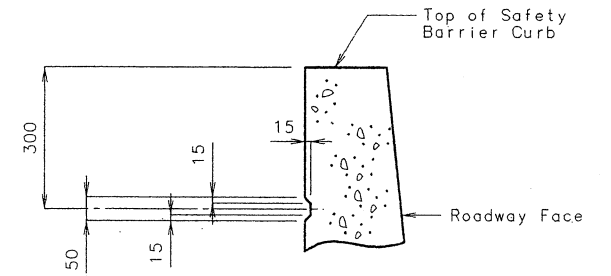
Cost of silicone joint sealant and backer rod complete in place to be included in the contract unit price for safety barrier curb.



SECTION THRU JOINT



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL
(Use on highway grade separation only)

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB (RIGHT SIDE)

Detailed Mar. 1997
Checked Aug. 1997

Sheet No. 163 OF 236

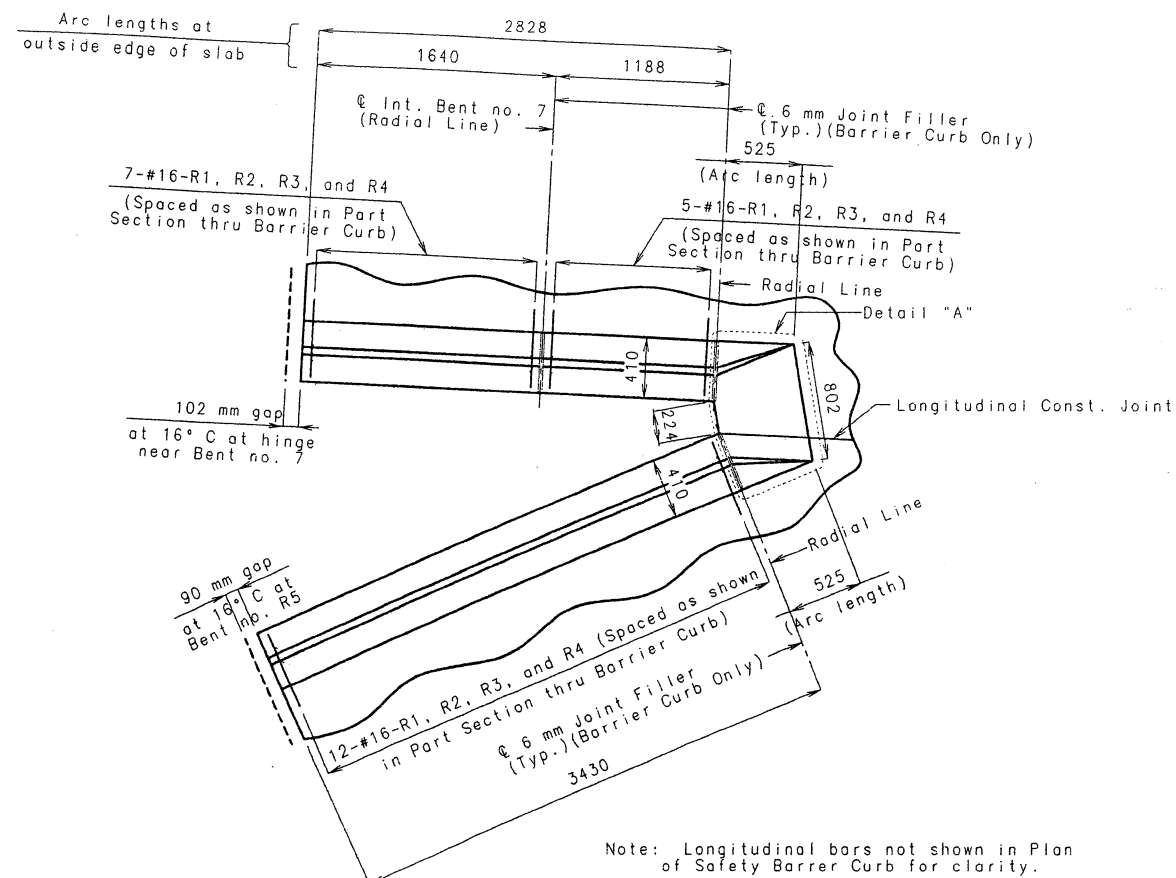
ST. LOUIS COUNTY

UNIT 2

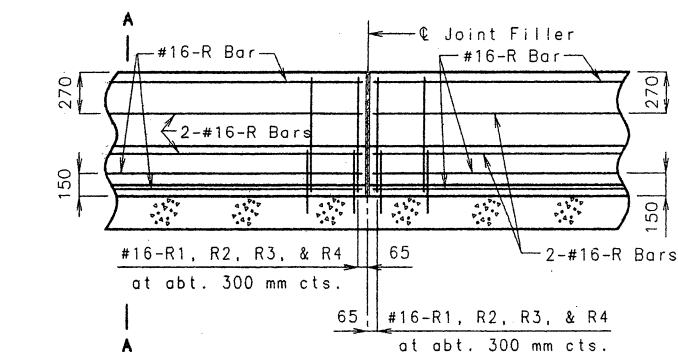
A5682



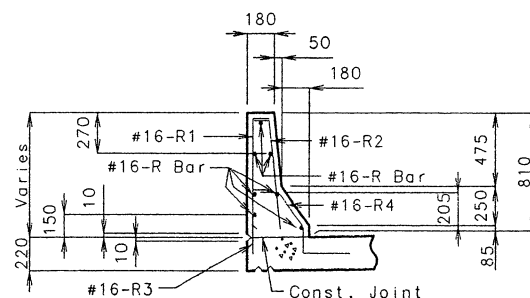
STATE	PROJ. NO.	SHEET NO.
MO.		197



PLAN OF SAFETY BARRIER CURB
AT INTERSECTION OF RAMP 2B AND W.B.L. RTE. 100

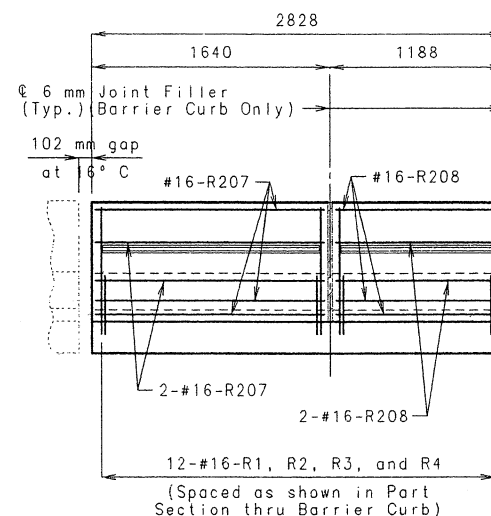


PART SECTION THRU BARRIER CURB
(CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

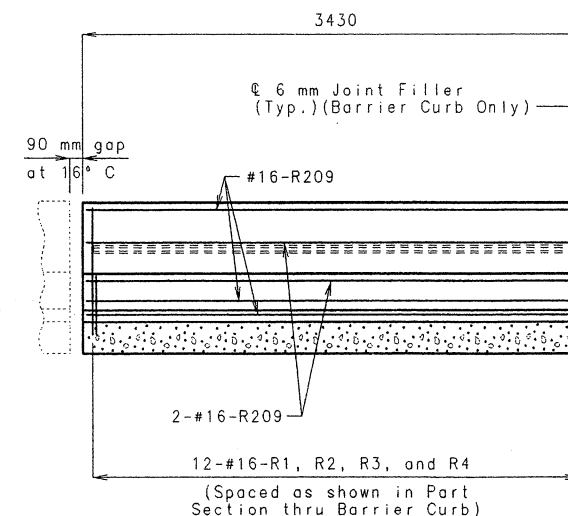


PART SECTION A-A

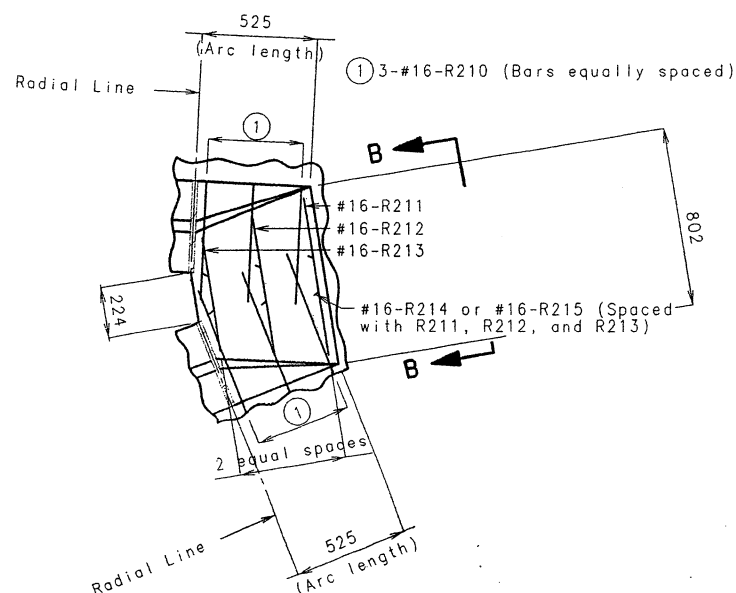
Note:
The cross-sectional area above the slab = 212 225 sq. mm.



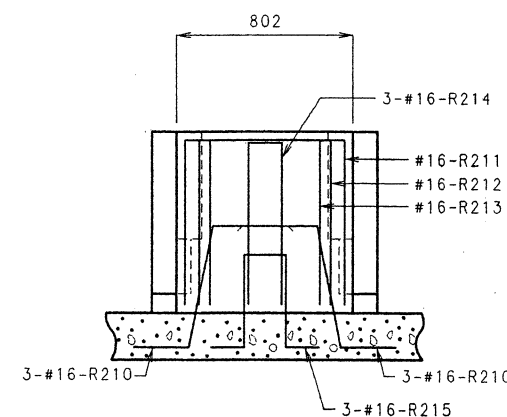
ELEVATION OF RIGHT BARRIER
CURB ON W.B.L. RTE. 100



ELEVATION OF LEFT
BARRIER CURB ON RAMP 2B



DETAIL "A"



SECTION B-B

Note:

For Details of Movement Gauge see sheet no. 214.

For details of Safety Barrier Curb near expansion devices see sheets no. 144 and 146.

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

When the safety barrier curb is bid per half meter, 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 half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For Rustication details see sheet no. 160.

For detail of Filled Joint see sheet no. 160.

For details of Plastic Waterstop see sheet no. 160.

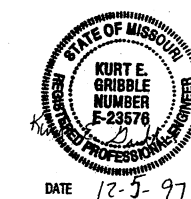
Slip-form option not allowed for details of Safety Barrier Curb shown on this sheet.

Detailed Nov. 1997
Checked Nov. 1997

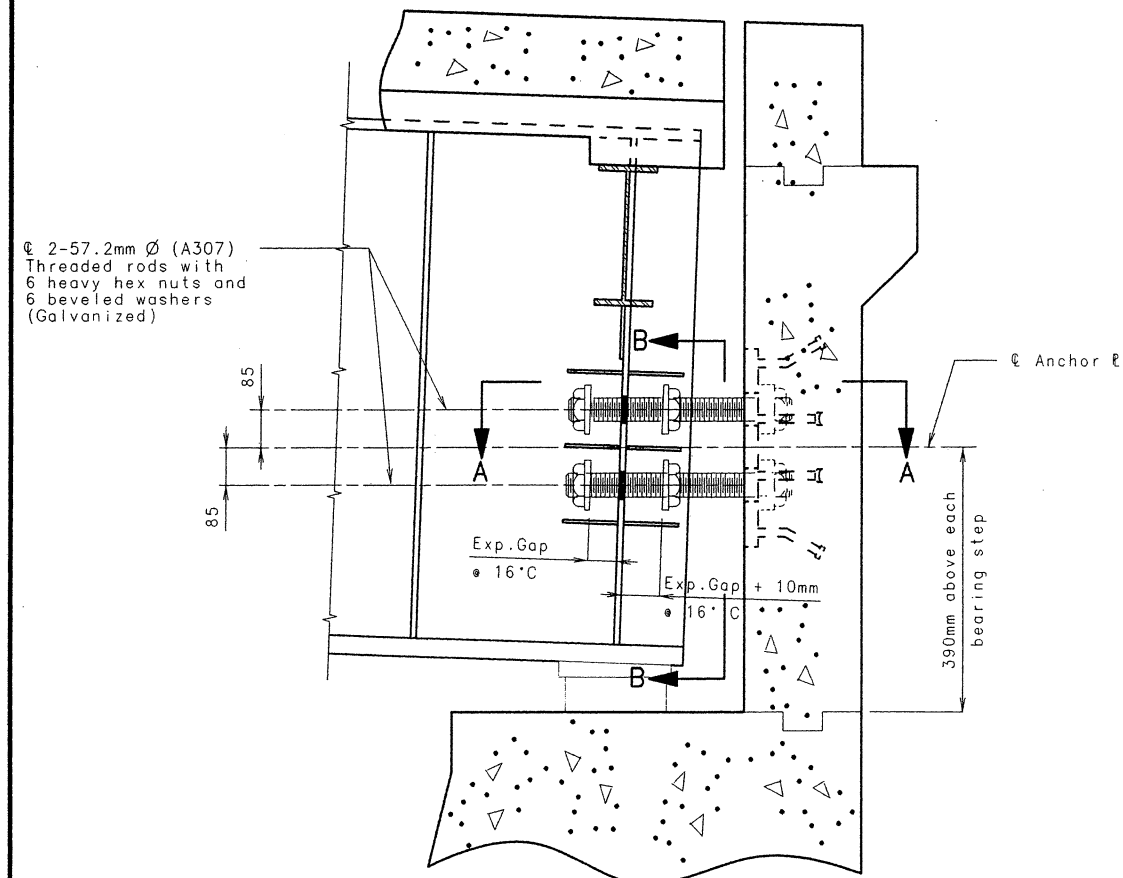
Sheet No. 164 OF 236

ST. LOUIS COUNTY

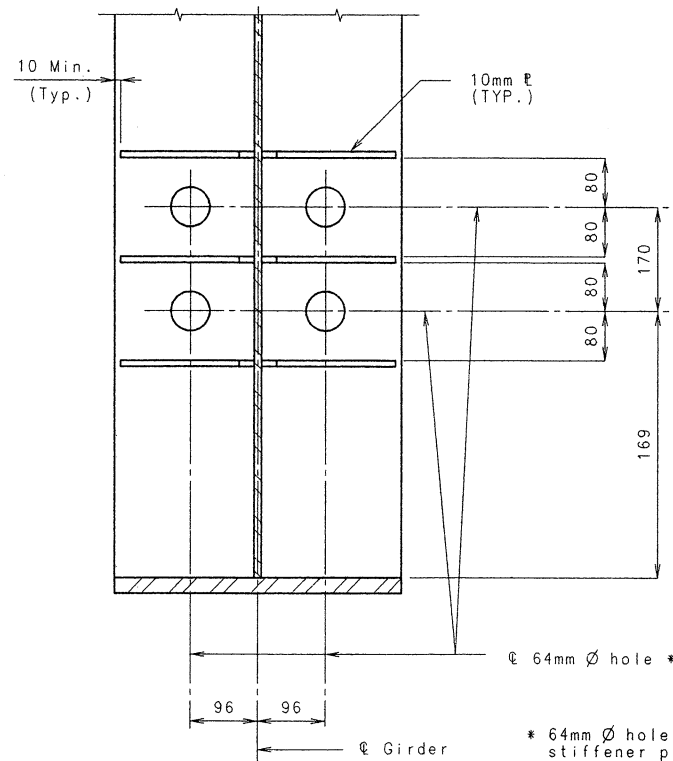
UNIT 2
A5682



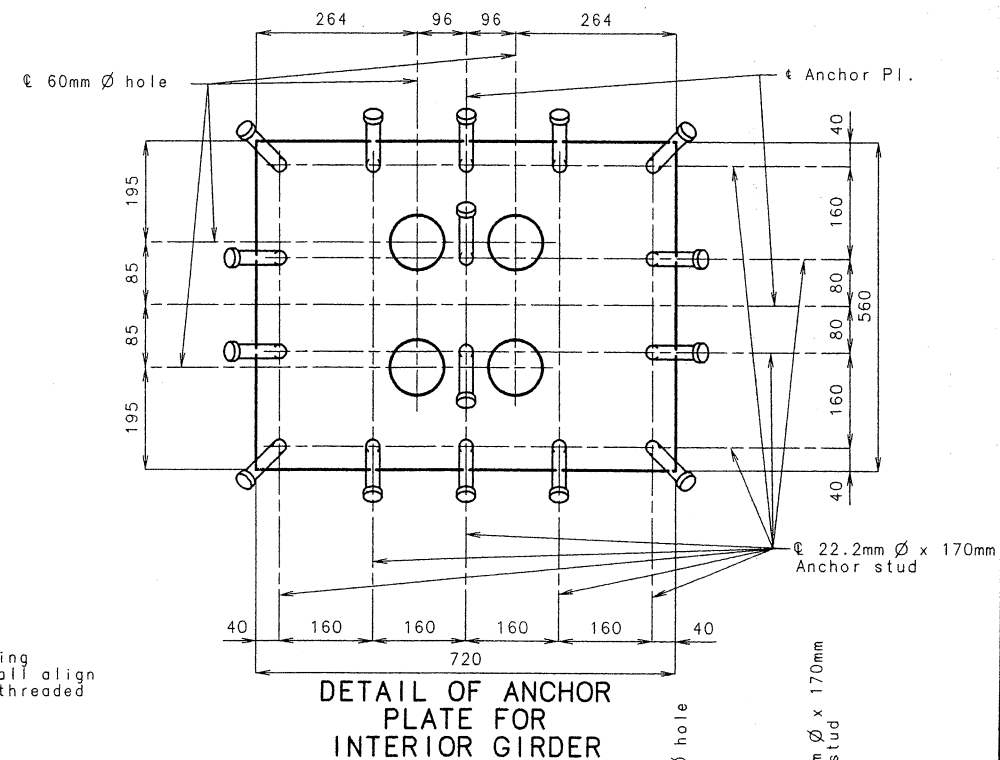
DATE 12-5-97



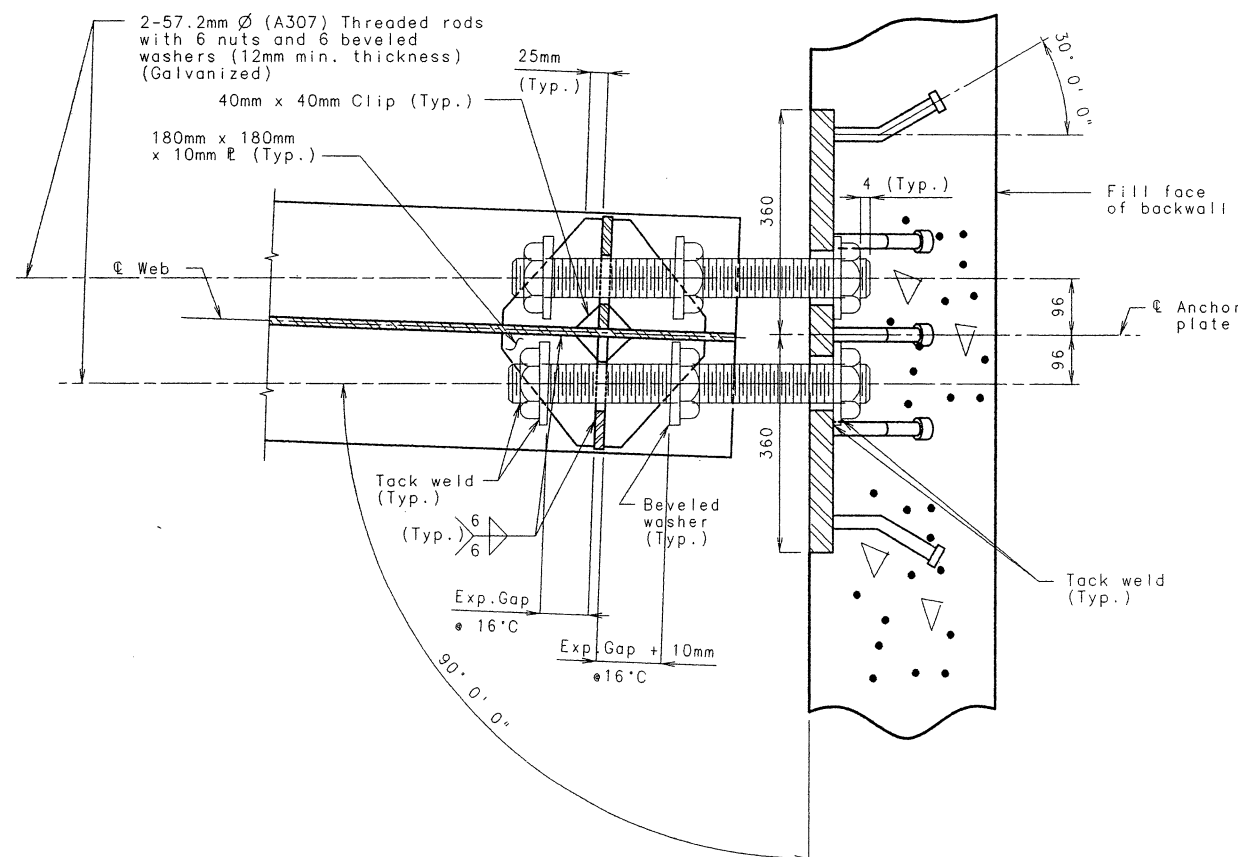
PART SECTION AT END BENT NO. 16



SECTION B-B



DETAIL OF ANCHOR PLATE FOR INTERIOR GIRDER



SECTION A-A

GENERAL NOTES:

A temporary threaded plug shall be inserted into each embedded hex nut in the backwall before concrete is poured. Plugs shall extend 4mm into backwall concrete as shown in Section A-A. Threaded rods shall be horizontal.

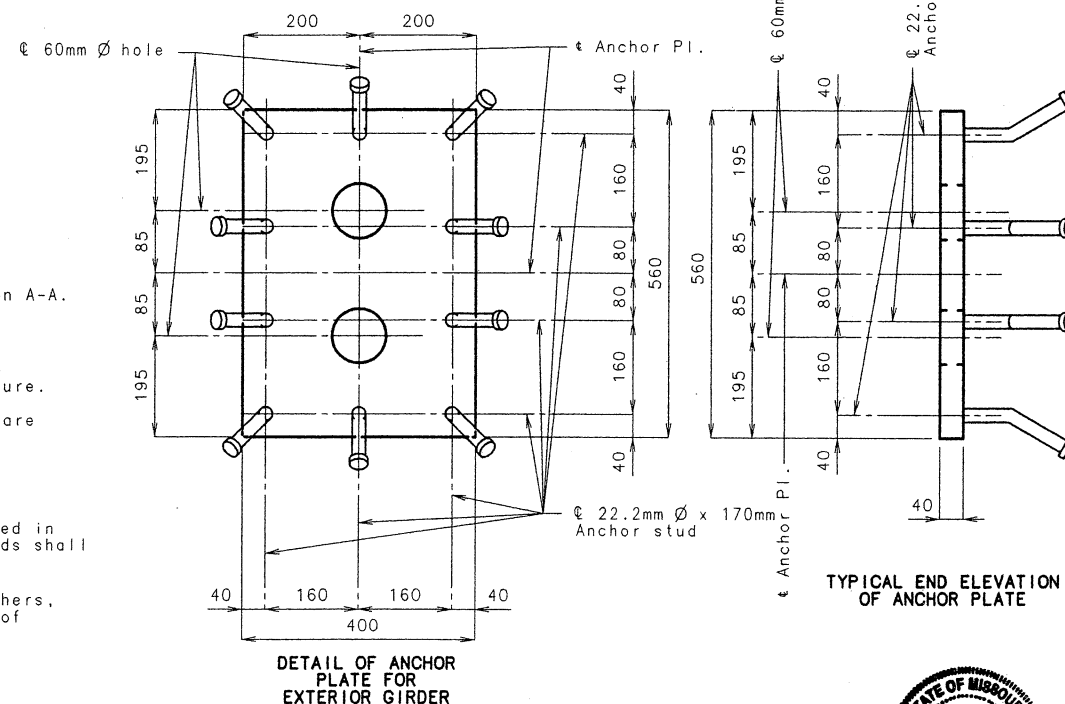
Use beveled washers and plates as required to allow for skew, curvature and grade of structure.

Interior Girders are shown, exterior girders are similar. Omit earthquake restrainer assembly on exterior side of exterior girders.

All plates, anchor studs and washers shall be ASTM A709M grade 250 steel.

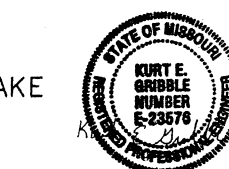
All bolts, nuts and washers shall be galvanized in accordance with ASTM A153. All plates and studs shall be galvanized in accordance with ASTM A123.

Mass of 10mm plates, threaded rods, nuts, washers, anchor plates and studs are included in Mass of Fabricated Structural Carbon Steel.



DETAIL OF ANCHOR PLATE FOR EXTERIOR GIRDER

DETAILS OF ANCHOR PLATES FOR EARTHQUAKE RESTRAINERS AT END BENTS NO. 16



DATE 12-5-97

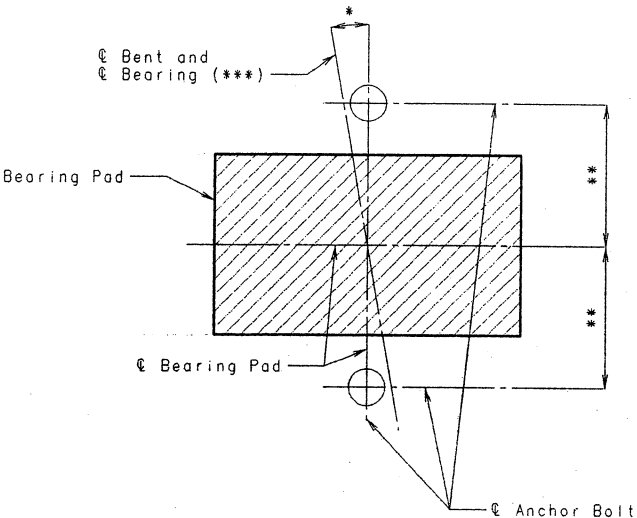
Detailed Oct. 1997
Checked Nov. 1997

DETAILS OF EARTHQUAKE RESTRAINERS AT END BENT NO. 16

Sheet No. 165 of 236

UNIT 3
ST. LOUIS COUNTY A5682

(***) @ Bent applies only to intermediate bents

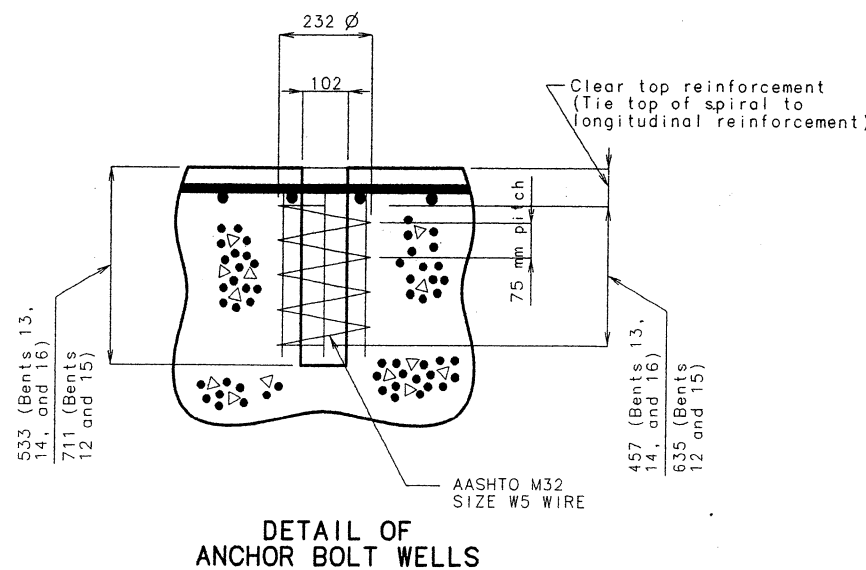


PLAN SHOWING ANCHOR BOLT AND BEARING PAD ALIGNMENT

**	
Bent No. 12	229
Bent No. 13	222
Bent No. 14	222
Bent No. 15	267
Bent No. 16	297

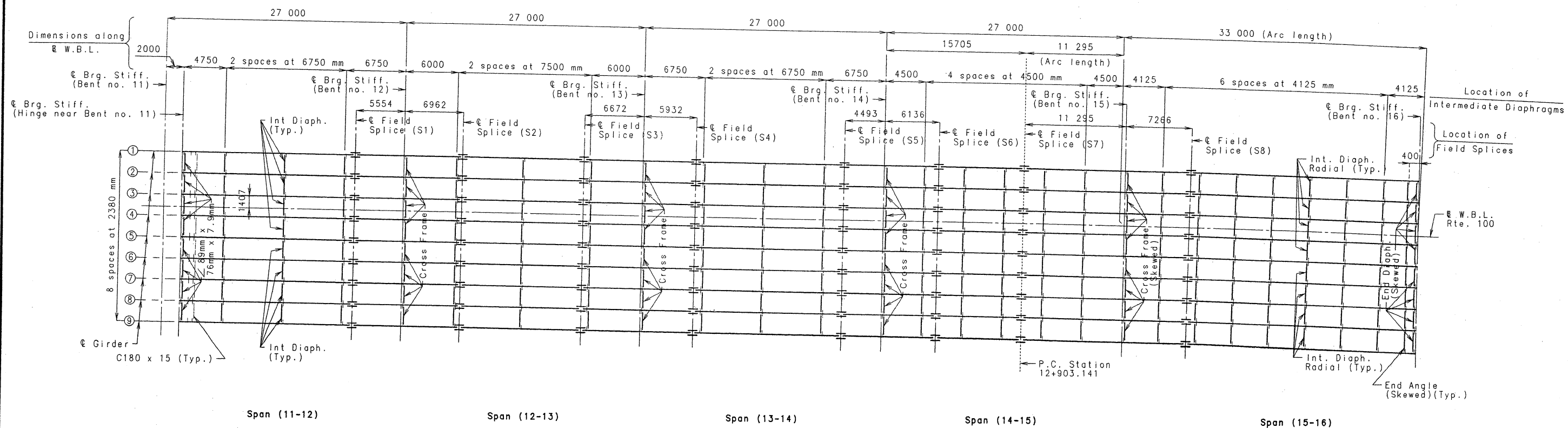
Note: For Bearing Alignment and Anchor Bolt Details at Hinge near bent no. 11 see sheet no. 106.
For details of Swedge Anchor Bolts see sheet no. 167.

	*		
	Bents No. 12-14	Bent No. 15	Bent No. 16
Girder No. 1	0'	0° 4' 38"	0° 32' 4"
Girder No. 2	0'	0° 4' 38"	0° 32' 7"
Girder No. 3	0'	0° 4' 39"	0° 32' 10"
Girder No. 4	0'	0° 4' 39"	0° 32' 12"
Girder No. 5	0'	0° 4' 40"	0° 32' 15"
Girder No. 6	0'	0° 4' 40"	0° 32' 18"
Girder No. 7	0'	0° 4' 40"	0° 32' 20"
Girder No. 8	0'	0° 4' 41"	0° 32' 23"
Girder No. 9	0'	0° 4' 41"	0° 32' 26"



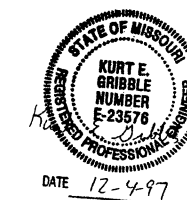
STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23578
REGISTERED PROFESSIONAL ENGINEER
DATE 12-4-97

Detailed Mar. 1997
Checked July 1997



PLAN OF STRUCTURAL STEEL

Note: For spacing of Shear Connectors see sheets no. 171 & 172.
 For Part Elevation of Girders see sheets no. 171 & 172.
 For girder Curve Offsets see sheet no. 174.
 For details of Intermediate Diaphragms, End Diaphragms, End Angles near Bent No. 16 and Crossframes see sheet no. 177.
 For details of Field Splices see sheet no. 176.
 For details of the end angle and channel diaphragm near the Hinged Girder conn see sheet no. 125.
 Longitudinal Dimensions shown are horizontal dimensions (horizontal arc dimensions where appropriate) from C Brg. to C Brg. See Part Longitudinal section on sheet no. 170.
 For details of Bearing Stiffeners and Int. Diaphragm Connection Plates see sheet no. 175.
 Int. diaphragm conn. plates shall be oriented as shown.
 Int. diaphragms from the P.C. Station in Span (14-15) through Span (15-16) shall be placed radially.

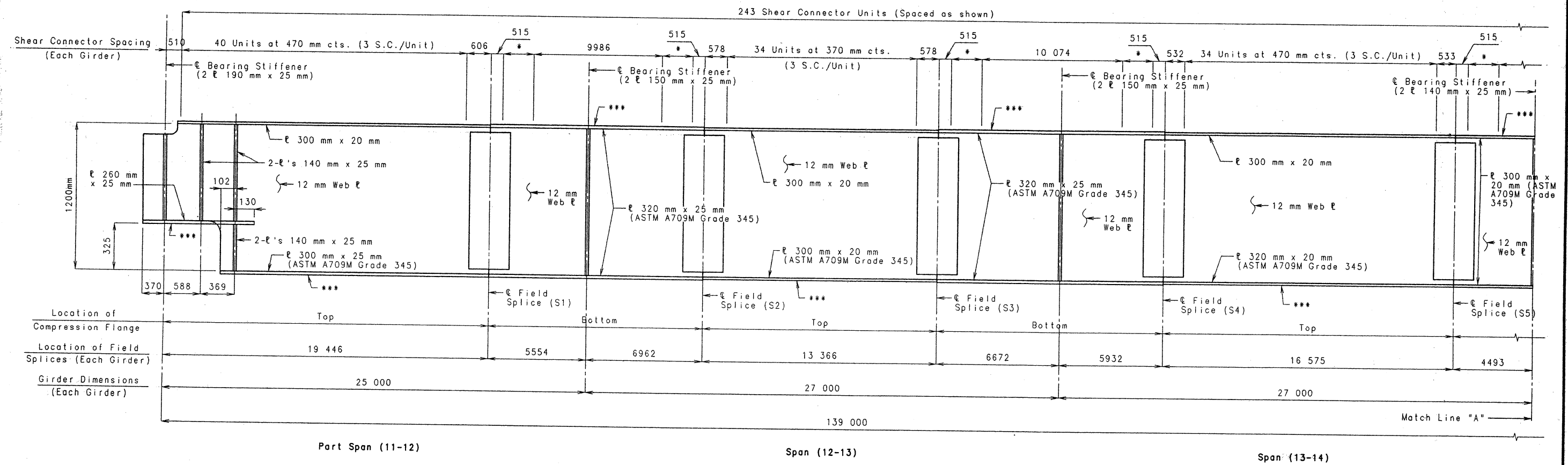


Detailed Mar. 1997
 Checked Aug. 1997

Sheet No. 169 of 236

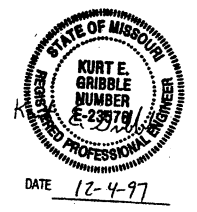
UNIT 3
 ST. LOUIS COUNTY A5682

* 7 Units at 125 mm cts. (2 S.C./Unit)
 *** Indicates flange plates subject to notch toughness requirements.



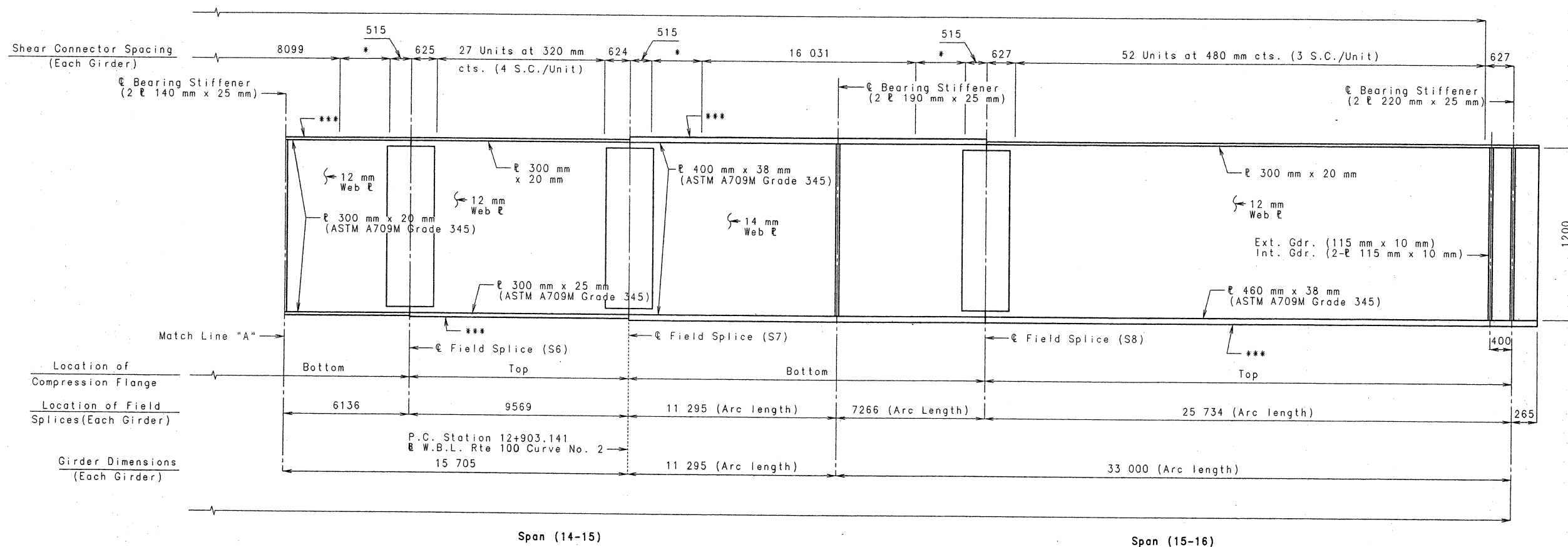
Note: Plate girders shall be fabricated to conform to the Camber Diagram shown on sheet no. 184.
 For detail of Shear Connectors see sheet no. 175.
 Longitudinal dimensions are horizontal (horizontal arc dimensions where appropriate) from the C of bearing to the C of bearing. See Part Longitudinal Section on sheet no. 170.
 All web plates shall be subject to notch toughness requirements.
 For plan of Structural Steel see sheet no. 169.
 Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.
 For details of earthquake restrainers, see sheet no. 99 & 165.
 For details of Hinged Connection near Bent no. 11 see sheet no. 125.
 For location of slab drain attachment holes, see Slab Drain Details sheets.
 For diaphragm spacings see sheet no. 169.

PART ELEVATION OF GIRDERS



Detailed July 1997
 Checked Aug. 1997

* 7 Units at 125 mm cts. (2 S.C./Unit)
 *** Indicates flange plates subject to notch toughness requirements.



Note: Plate girders shall be fabricated to conform to the Camber Diagram shown on sheet no. 184.
 For detail of Shear Connectors see sheet no. 175.
 Longitudinal dimensions are horizontal (horizontal arc dimensions where appropriate) from the L of bearing to the L of bearing. See Part Longitudinal Section on sheet no. 170.
 All web plates shall be subject to notch toughness requirements.
 For plan of Structural Steel see sheet no. 169.
 Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.
 For details of earthquake restrainers, see sheet no. 99 & 165.
 For details of Hinged Connection near Bent no. 11 see sheet no. 125.
 For location of slab drain attachment holes, see Slab Drain Details sheets.
 For diaphragm spacings see sheet no. 169.

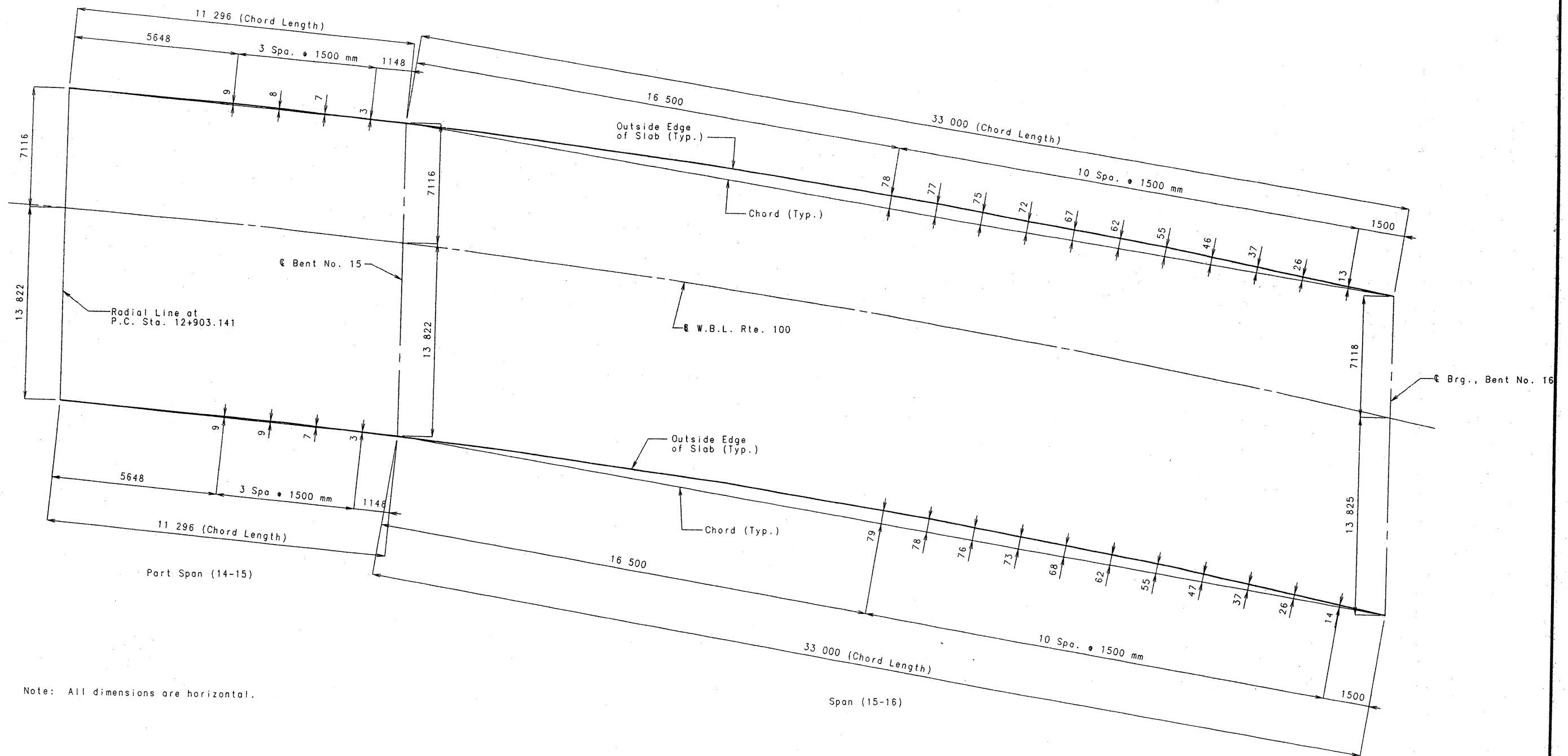
PART ELEVATION OF GIRDERS



Detailed July 1997
 Checked Aug 1997

Sheet No. 172 of 236

UNIT 3
 ST. LOUIS COUNTY A5682

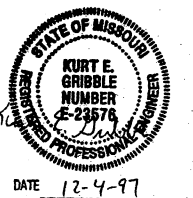


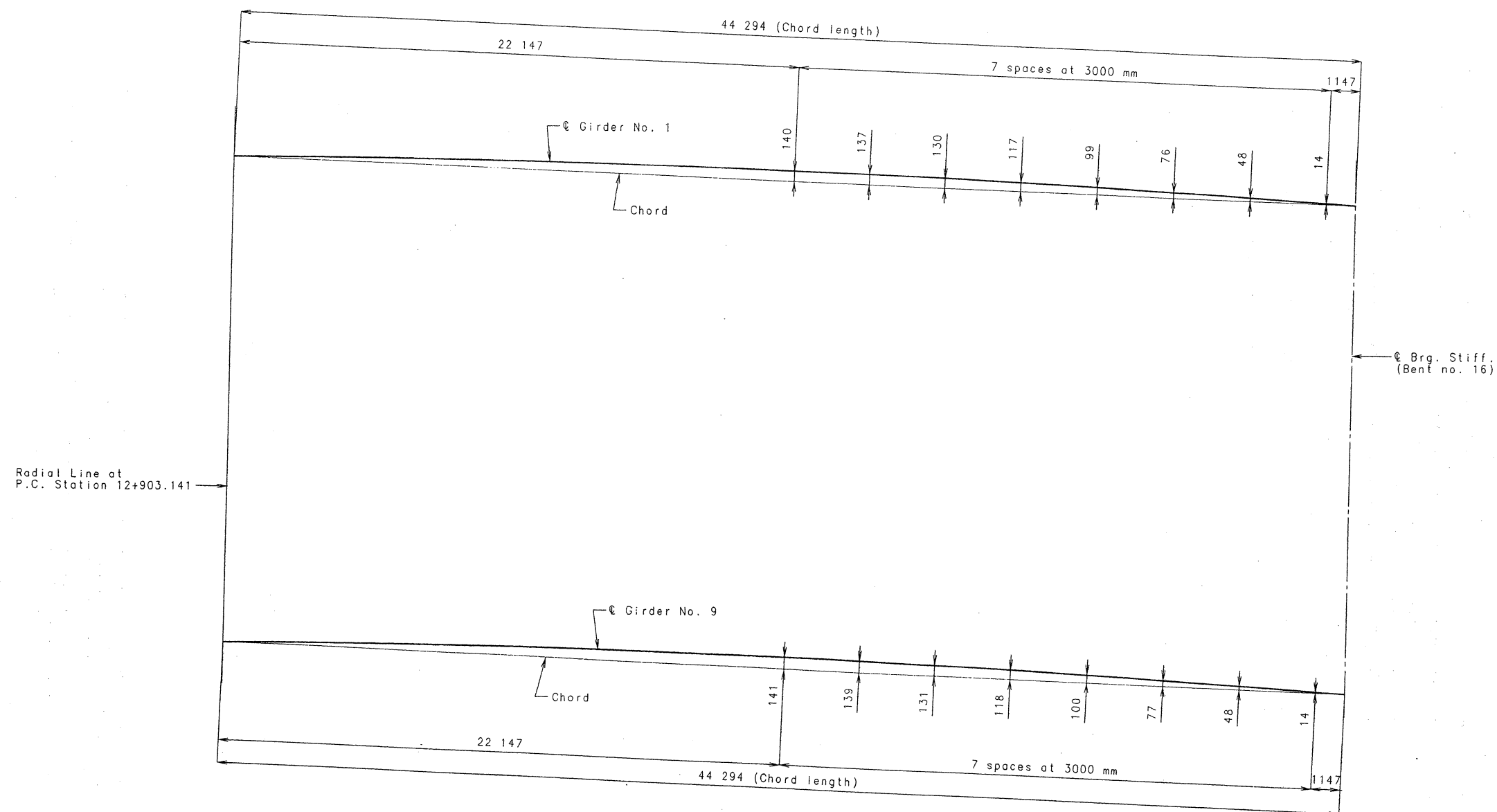
PART PLAN OF SLAB SHOWING CURVE ORDINATES

DETAILED AUG 1997
CHECKED SEPT 1997

SHEET NO. 173 OF 236.

ST. LOUIS COUNTY UNIT 3 A5682





Note: Dimensions shown are horizontal.

EXTERIOR GIRDER CURVE OFFSETS

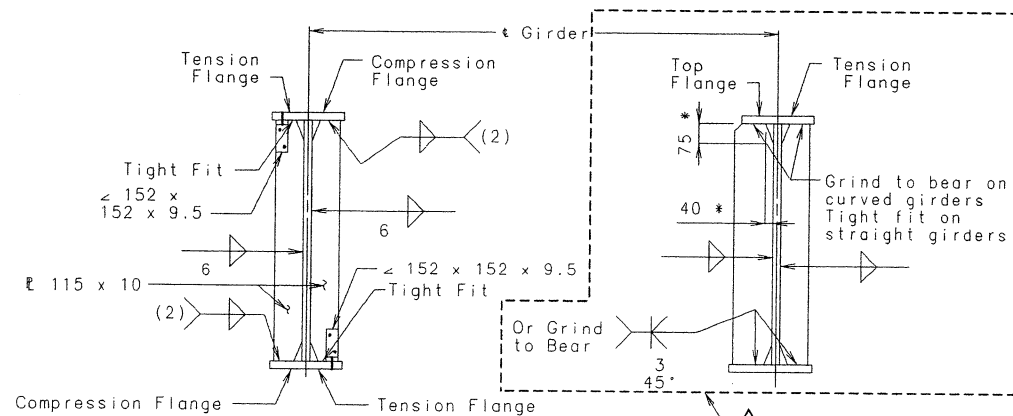
Detailed July 1997
Checked Aug. 1997

Sheet No. 174 of 236

ST. LOUIS COUNTY



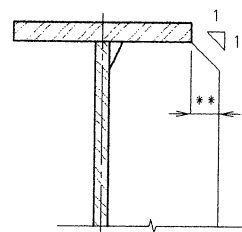
UNIT 3
A5682



INT. DIAPH. CONN. PLATE
END BRG. STIFF. INT. BRG. STIFF.
(2) Weld to compression flange as located on elevation of girder.
* Typical for all Int. Diaph. Conn. Pl. and Brg. Stiff.

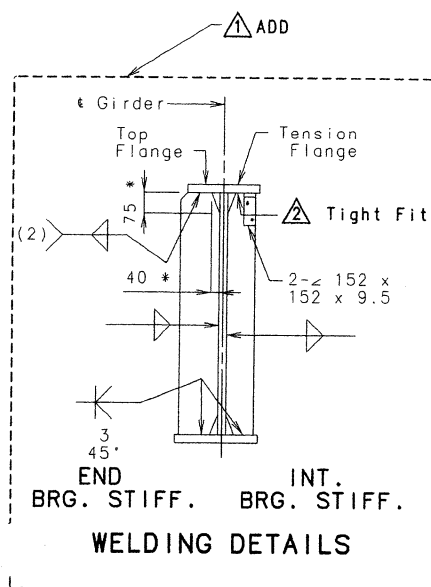
WELDING DETAILS

Note: For details of stiffeners at Hinge near bent no. 11 see sheet no. 125.
For details of flange connection angle see sheet no. 177.

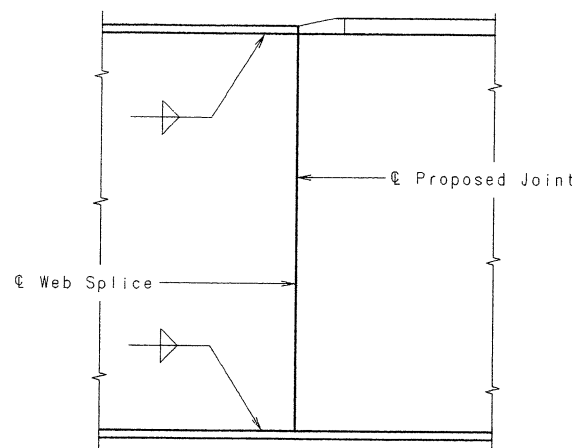


** When dimension exceeds 12 mm, bevel stiffener plate.

BEVELED STIFFENER PLATE DETAIL

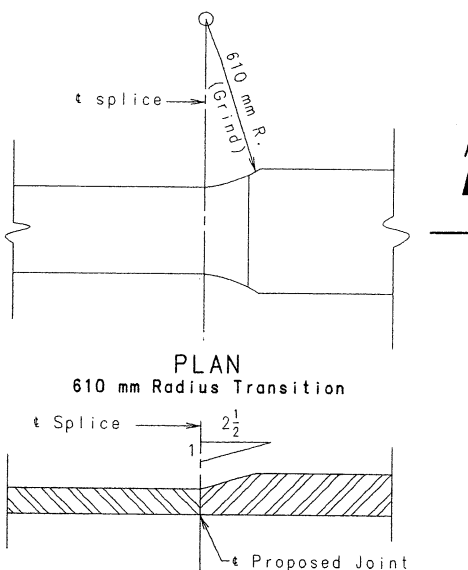


WELDING DETAILS

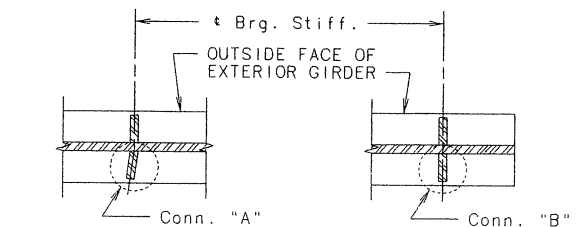


WELDED SHOP WEB SPLICE

Note: Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.

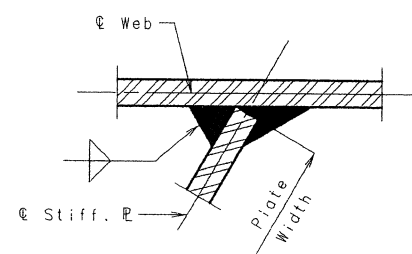


SECTION A-A WELDED SHOP FLANGE SPLICE

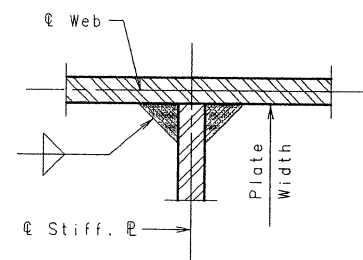


INT. BRG. STIFF. AND END BRG. STIFF. (Bents No. 15 and 16)
INT. BRG. STIFF. (Bents No. 12, 13 and 14)

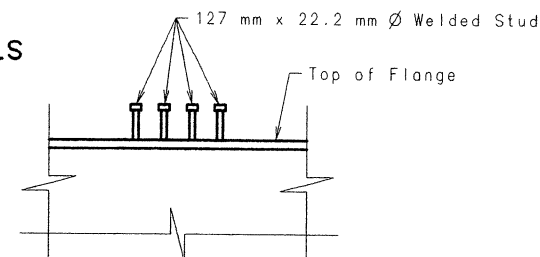
TYPICAL LOCATION DETAILS



CONN. "A"

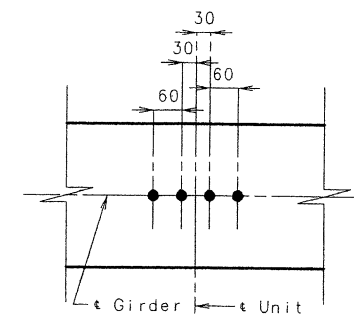


CONN. "B"

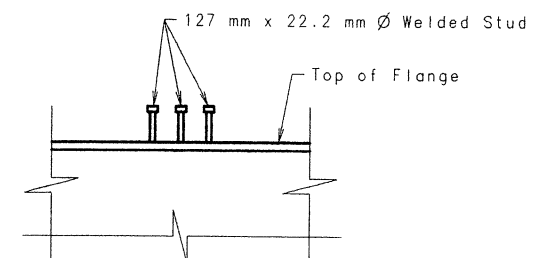


ELEVATION

4 SHEAR CONN. PER UNIT

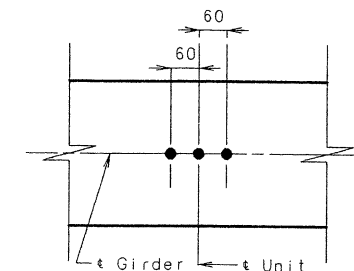


PLAN OF STUD CONN.

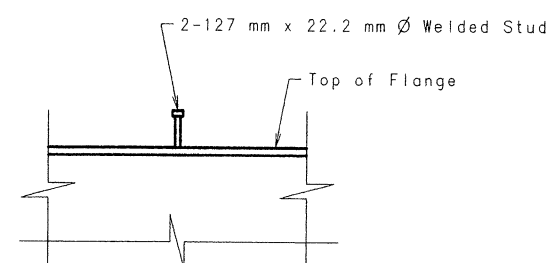


ELEVATION

3 SHEAR CONN. PER UNIT

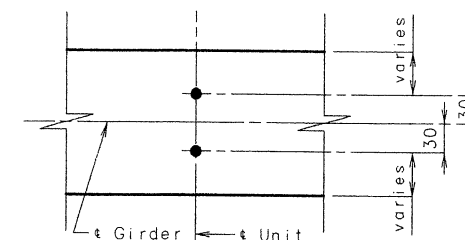


PLAN OF STUD CONN.



ELEVATION

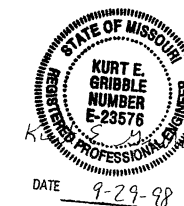
2 SHEAR CONN. PER UNIT



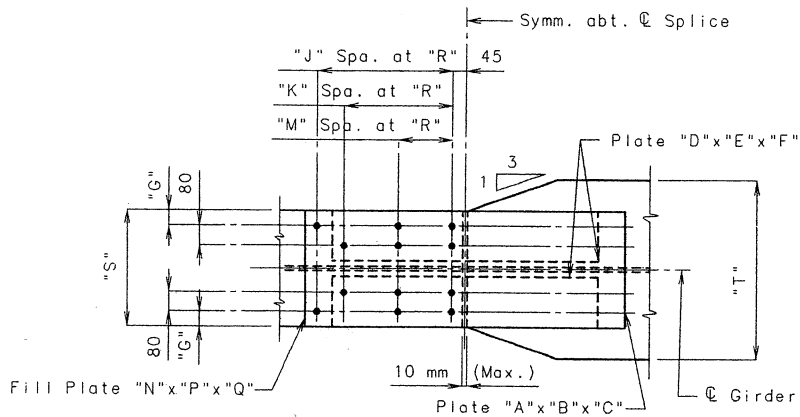
PLAN OF STUD CONN.

DETAILS OF SHEAR CONNECTORS

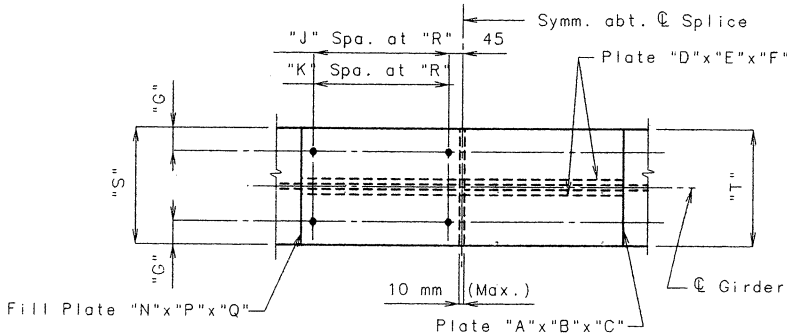
Note: For Location of Shear Connectors see sheets no. 171 & 172.
Mass of 2800 kg. of shear connectors is included in the Mass of Fabricated Structural Carbon Steel.



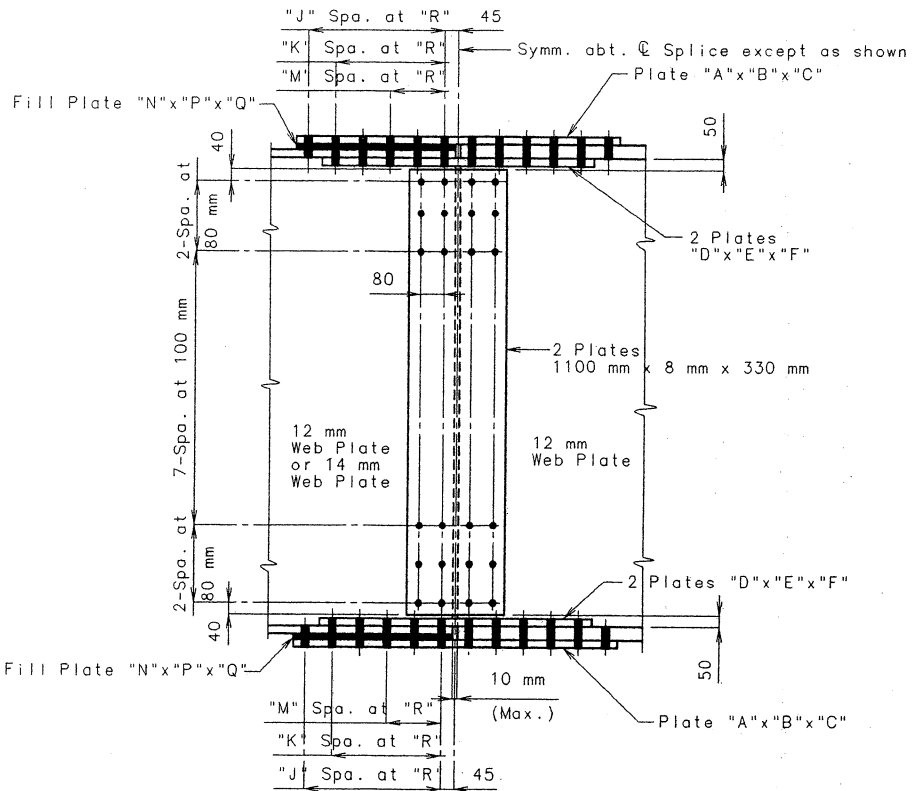
SPlice LOCATION	SPlice LOCATION	TABLE OF DIMENSIONS-FIELD SPLICE															
		"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"	"K"	"M"	"N"	"P"	"Q"	"R"	"S"	"T"
S1 - S4	Top	300	11	810	120	12	650	60	4	3	-	300	5	400	80	300	320
S5 and S6	Top	300	11	810	120	12	650	60	4	3	-	-	-	-	80	300	300
S7 and S8	Top	300	11	810	120	12	650	60	4	3	-	300	18	400	80	300	400
S1	Bottom	300	20	1130	120	20	1130	60	6	6	-	-	-	-	80	300	320
S2 and S3	Bottom	300	16	970	120	16	970	60	5	5	-	300	5	480	80	300	320
S4	Bottom	320	16	1130	130	16	970	65	6	5	-	320	5	560	80	320	320
S5	Bottom	300	16	970	120	16	970	60	5	5	-	-	-	-	80	300	320
S6	Bottom	300	16	970	120	16	970	60	5	5	-	300	5	480	80	300	300
S7	Bottom	300	20	1130	120	20	1130	60	6	6	-	300	13	560	80	300	400
S8	Bottom	400	28	1130	170	30	1130	45	6	6	5	-	-	-	80	400	460



PLAN OF FLANGE
S8 (Bottom)

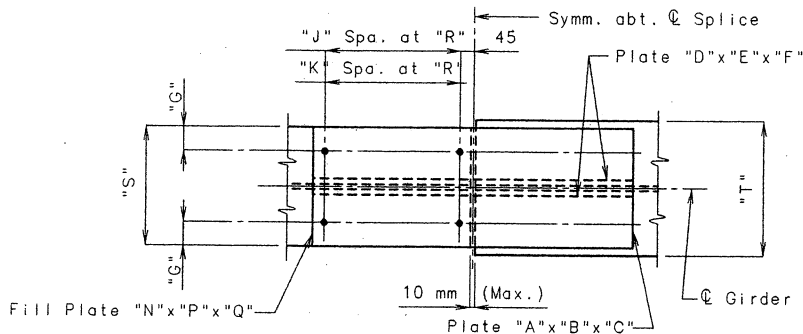


PLAN OF FLANGE
S5 and S6 (Top)
S4 and S6 (Bottom)

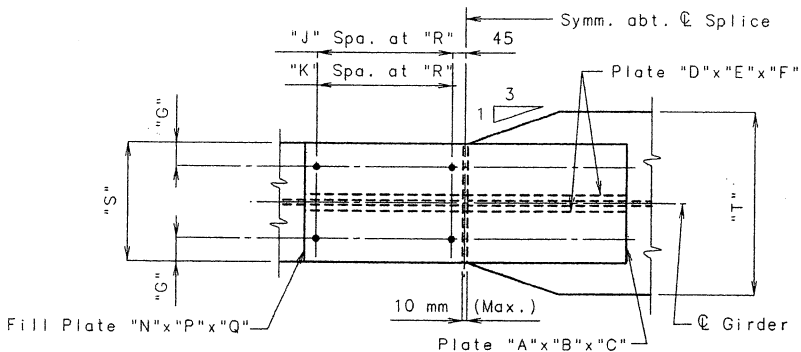


DETAIL OF BOLTED FIELD SPLICE

Note:
Use 22.2 mm \varnothing high strength bolts with 23.8 mm \varnothing holes.
Contact surfaces are to be blast cleaned in accordance with Section 712.12.2.1 of the Missouri Standard Specifications (Metric).



PLAN OF FLANGE
S1 THRU S4 (Top)
S1 THRU S3 AND S5 (Bottom)



PLAN OF FLANGE
S7 AND S8 (Top)
S7 (Bottom)

Note: For location of Field Splices see sheets no. 171 & 172.

FIELD SPLICES

Detailed Jan. 1997
Checked Aug. 1997

SHEET NO. 176 OF 236.

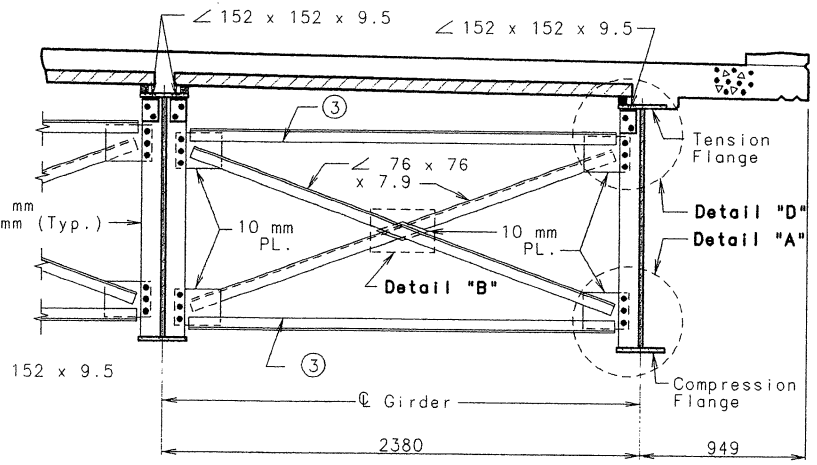
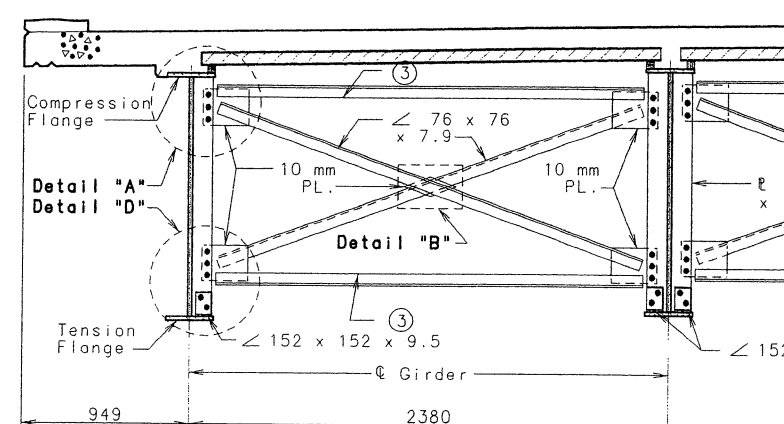
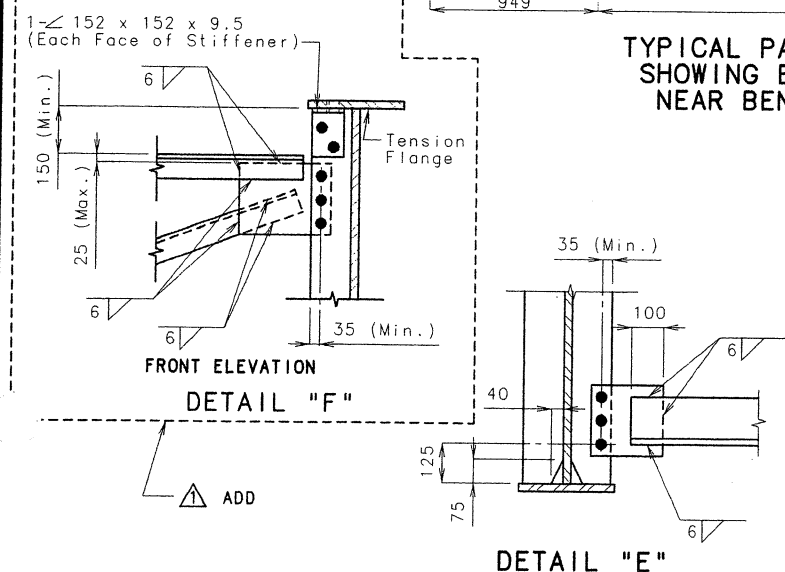
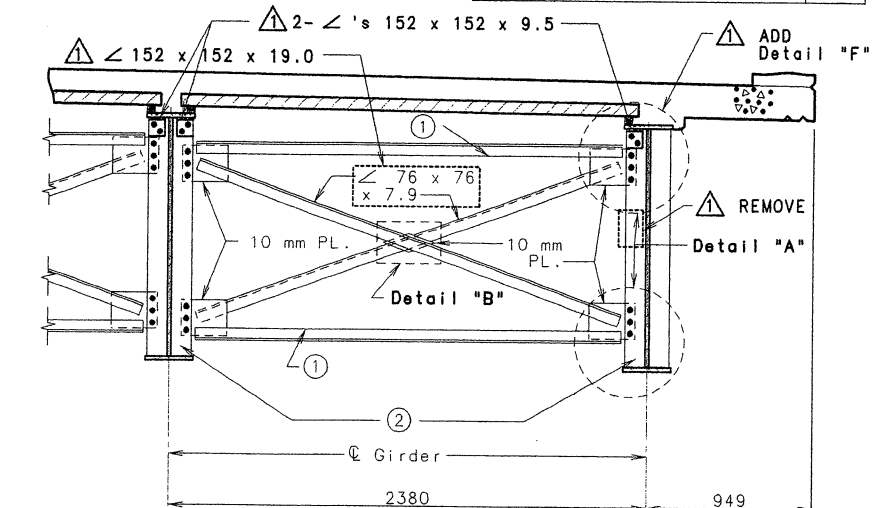
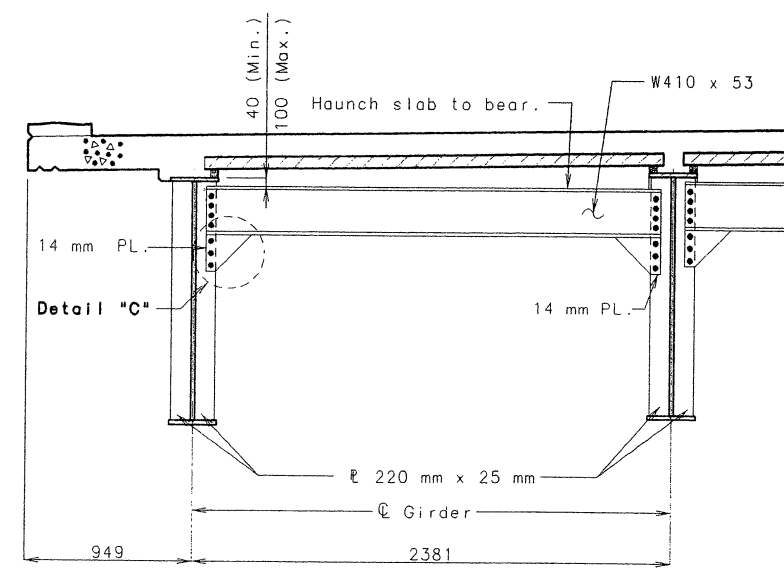
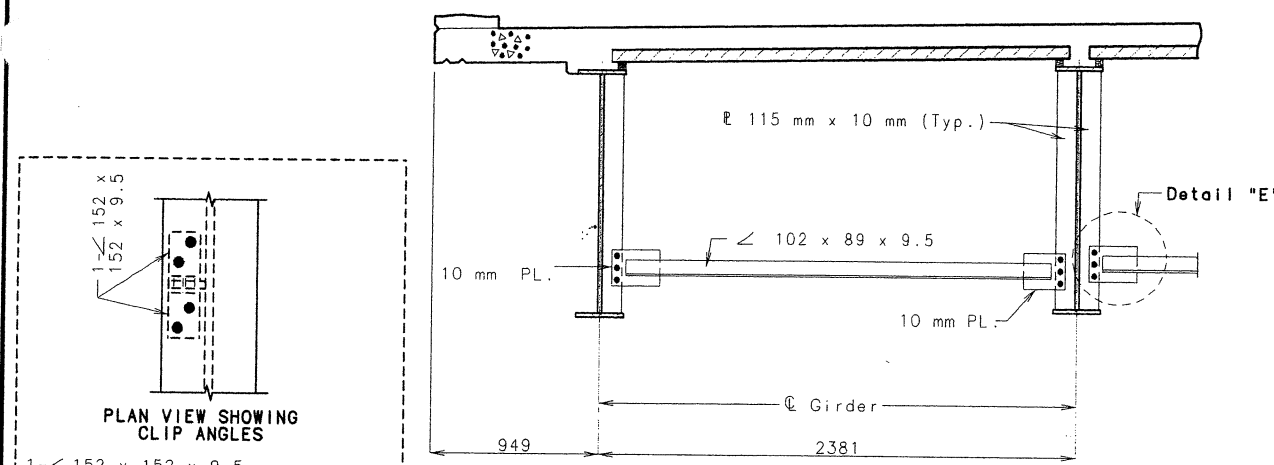
ST. LOUIS COUNTY

UNIT 3

A5682



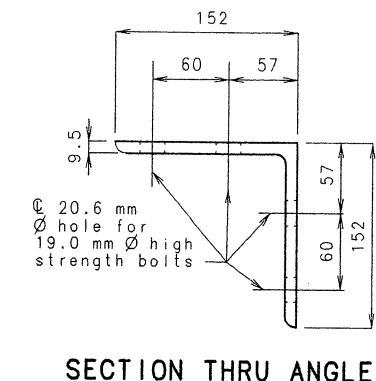
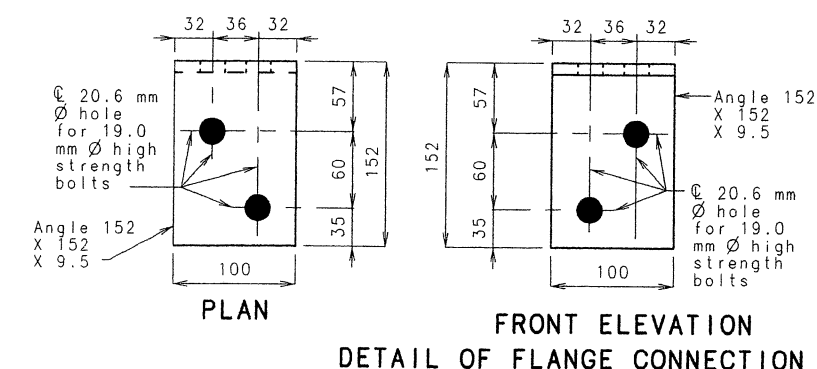
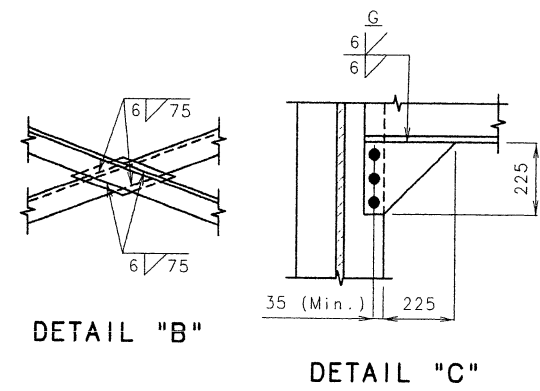
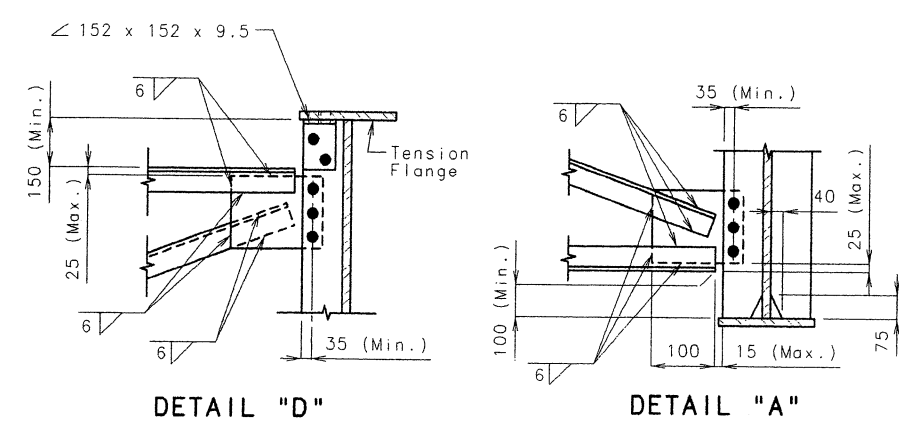
DATE 12-4-97



Note: At the contractors option, holes in the diaphragm plate for spans (11-12), (12-13) and (13-14) on non slab bearing diaphragms may be made 5 mm larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the girder diaphragm connection plate or transverse web stiffener shall be standard size. For details of the end angle and channel diaphragm near the Hinged Girder Connection, see sheet no. 125.

- ① Bents no. 14 and 15 use $\angle 102 \text{ mm} \times 89 \text{ mm} \times 9.5 \text{ mm}$
Bents no. 12 and 13 use $\angle 89 \text{ mm} \times 76 \text{ mm} \times 7.9 \text{ mm}$
- ② Bents no. 12 and 13 use $\angle 150 \text{ mm} \times 25 \text{ mm}$
Bent no. 14 use $\angle 140 \text{ mm} \times 25 \text{ mm}$
Bent no. 15 use $\angle 190 \text{ mm} \times 25 \text{ mm}$
- ③ Diaphragms in Spans (11-12), (12-13) and (13-14) use $\angle 89 \text{ mm} \times 76 \text{ mm} \times 7.9 \text{ mm}$
Diaphragms in Spans (14-15) and (15-16) use $\angle 102 \text{ mm} \times 89 \text{ mm} \times 9.5 \text{ mm}$

Note: The two 19.0 mm ϕ high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.

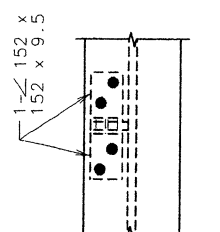


STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
REGISTERED PROFESSIONAL ENGINEER
DATE 9-29-98

Detailed Feb. 1997
Checked Aug. 1997

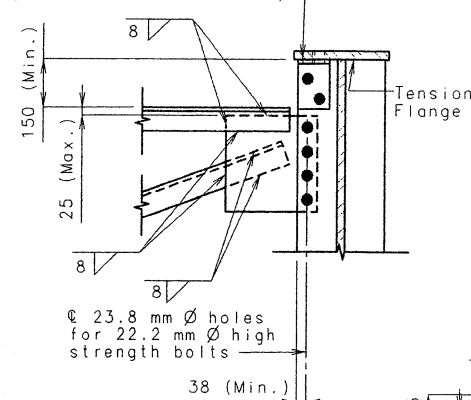
REVISED JUNE 8, 1998
REVISED SEPT. 25, 1998
VOID THIS SHEET SEE SHEET NO. 177A
Sheet No. 177 of 236

UNIT 3
ST. LOUIS COUNTY
A5682

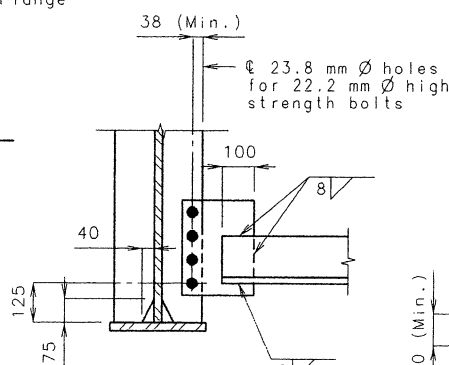


PLAN VIEW SHOWING CLIP ANGLES

1-152 x 152 x 9.5 (Each Face of Stiffener)



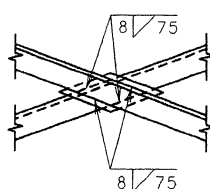
FRONT ELEVATION
DETAIL "F"



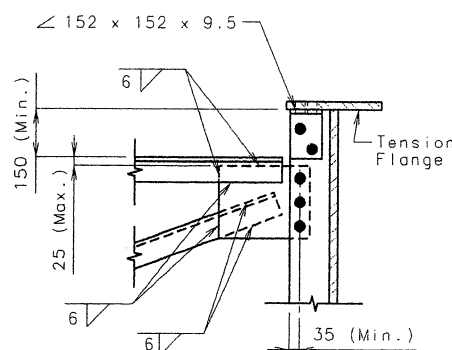
DETAIL "E"

TYPICAL PART SECTION
SHOWING END ANGLES
NEAR BENT NO. 16

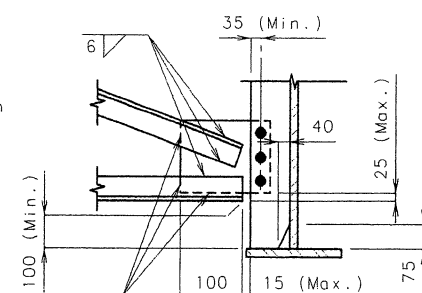
Note: At the contractors option, holes in the diaphragm plate for spans (11-12), (12-13) and (13-14) on non slab bearing diaphragms may be made 5 mm larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the girder diaphragm connection plate or transverse web stiffener shall be standard size. For details of the end angle and channel diaphragm near the Hinged Girder Connection, see sheet no. 125.



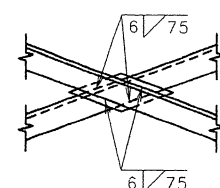
DETAIL "H"



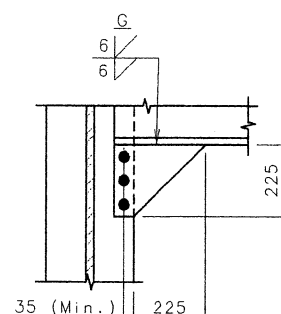
DETAIL "D"



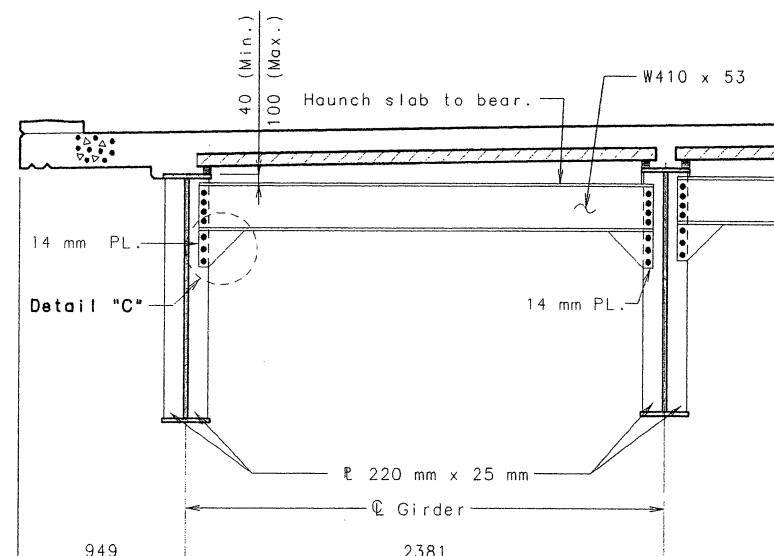
DETAIL "A"



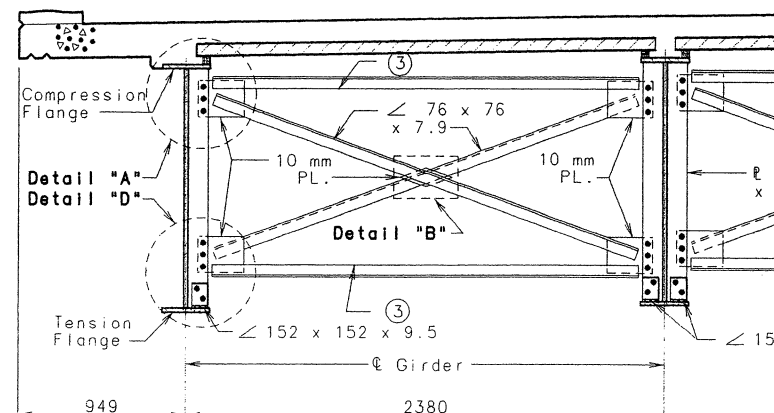
DETAIL "B"



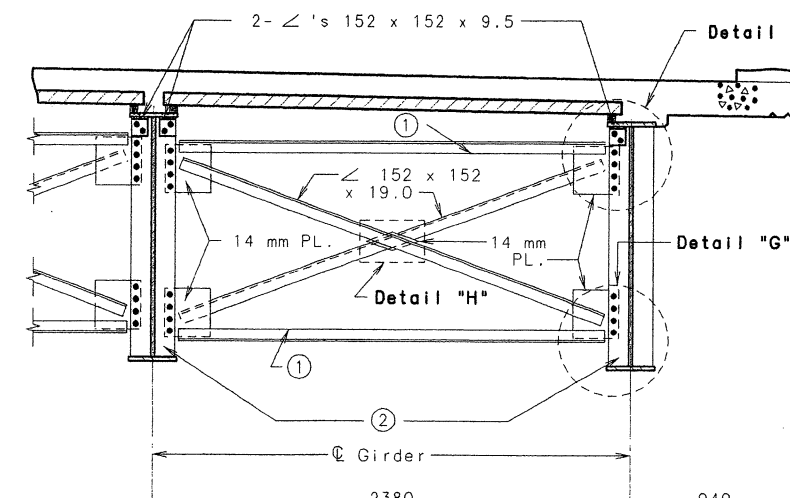
DETAIL "C"



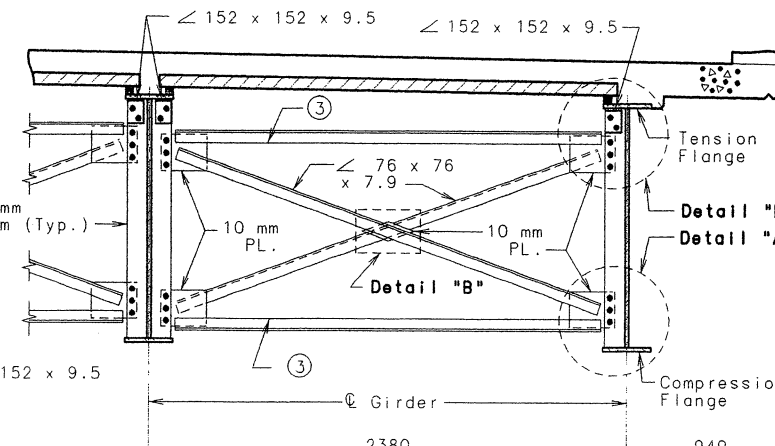
TYPICAL PART SECTION
SHOWING END DIAPHRAGMS
AT BENT NO. 16



TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION



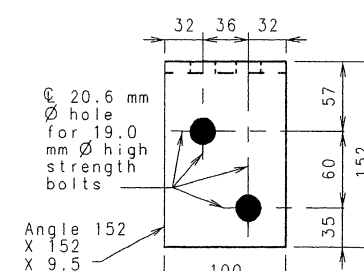
TYPICAL PART SECTION
SHOWING CROSS FRAMES



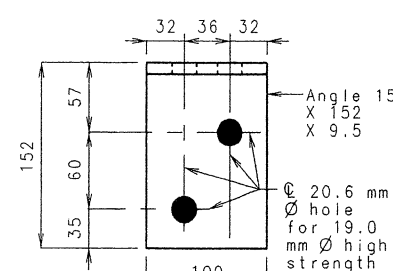
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION

- ① Bents no. 12 thru 15 use $\angle 152 \text{ mm} \times 152 \text{ mm} \times 19.0 \text{ mm}$
- ② Bents no. 12 and 13 use $\angle 150 \text{ mm} \times 25 \text{ mm}$
Bent no. 14 use $\angle 140 \text{ mm} \times 25 \text{ mm}$
Bent no. 15 use $\angle 190 \text{ mm} \times 25 \text{ mm}$
- ③ Diaphragms in Spans (11-12), (12-13) and (13-14) use $\angle 89 \text{ mm} \times 76 \text{ mm} \times 7.9 \text{ mm}$
Diaphragms in Spans (14-15) and (15-16) use $\angle 102 \text{ mm} \times 89 \text{ mm} \times 9.5 \text{ mm}$

Note: The two 19.0 mm ϕ high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.

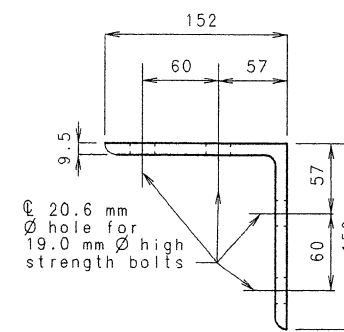


PLAN



FRONT ELEVATION

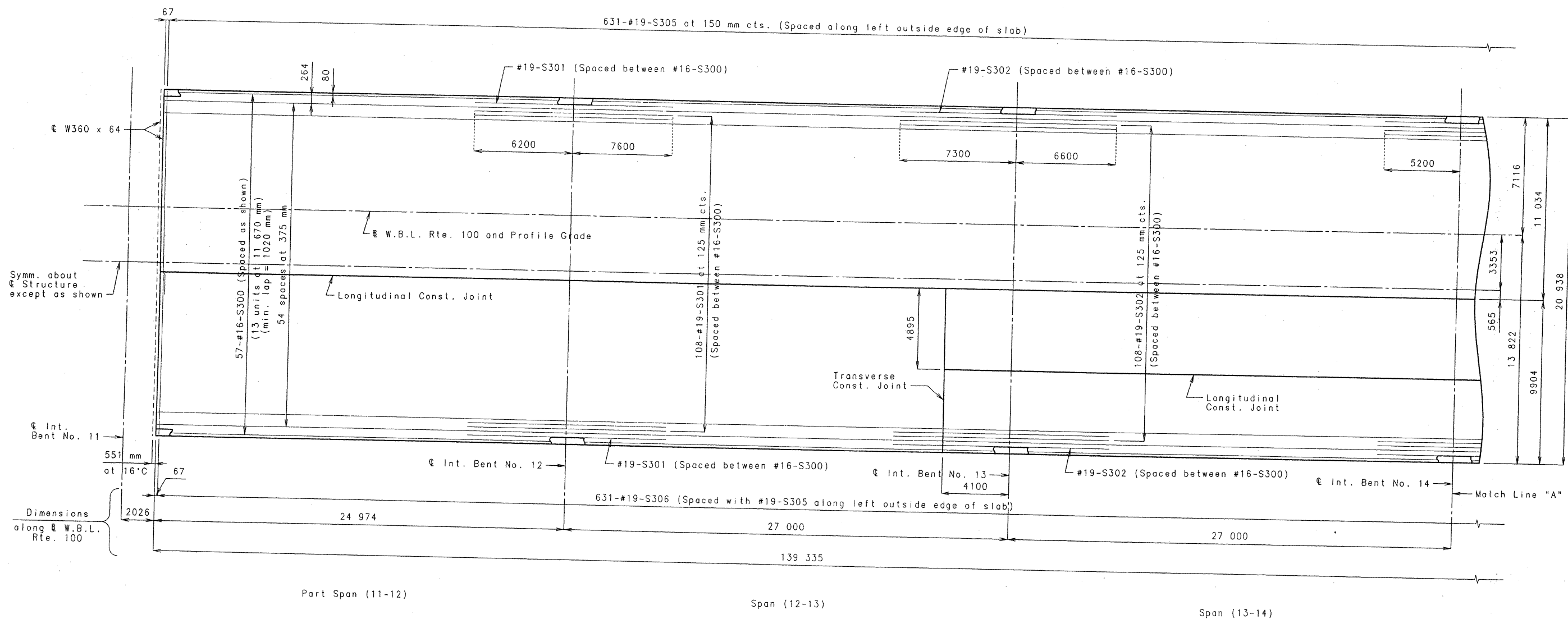
DETAIL OF FLANGE CONNECTION ANGLE



SECTION THRU ANGLE



DATE 9-29-98



Note: Longitudinal reinforcement shall be placed parallel to W.B.L. Rte. 100.
 Transverse reinforcement shall be placed perpendicular to W.B.L. Rte. 100.
 Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 186.
 For Slab Curve Ordinates see sheet no. 173.
 For details of Superelevation Transition see sheet no. 187.
 For Dead Load Deflection Diagram see sheet no. 185.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 184.
 For Diagram of Slab Pouring Sequence see sheet no. 183.
 For location of Slab Drains and Slab Drains with Grates showing C.I.P. Bay and additional reinforcement in Slab, see sheets no. 191 & 192.
 For Sections thru slab see sheet no. 182.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.

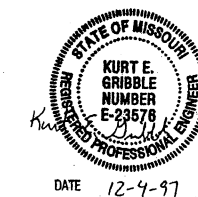
PART PLAN OF SLAB SHOWING TOP REINFORCEMENT

Detailed July 1997
 Checked Aug. 1997

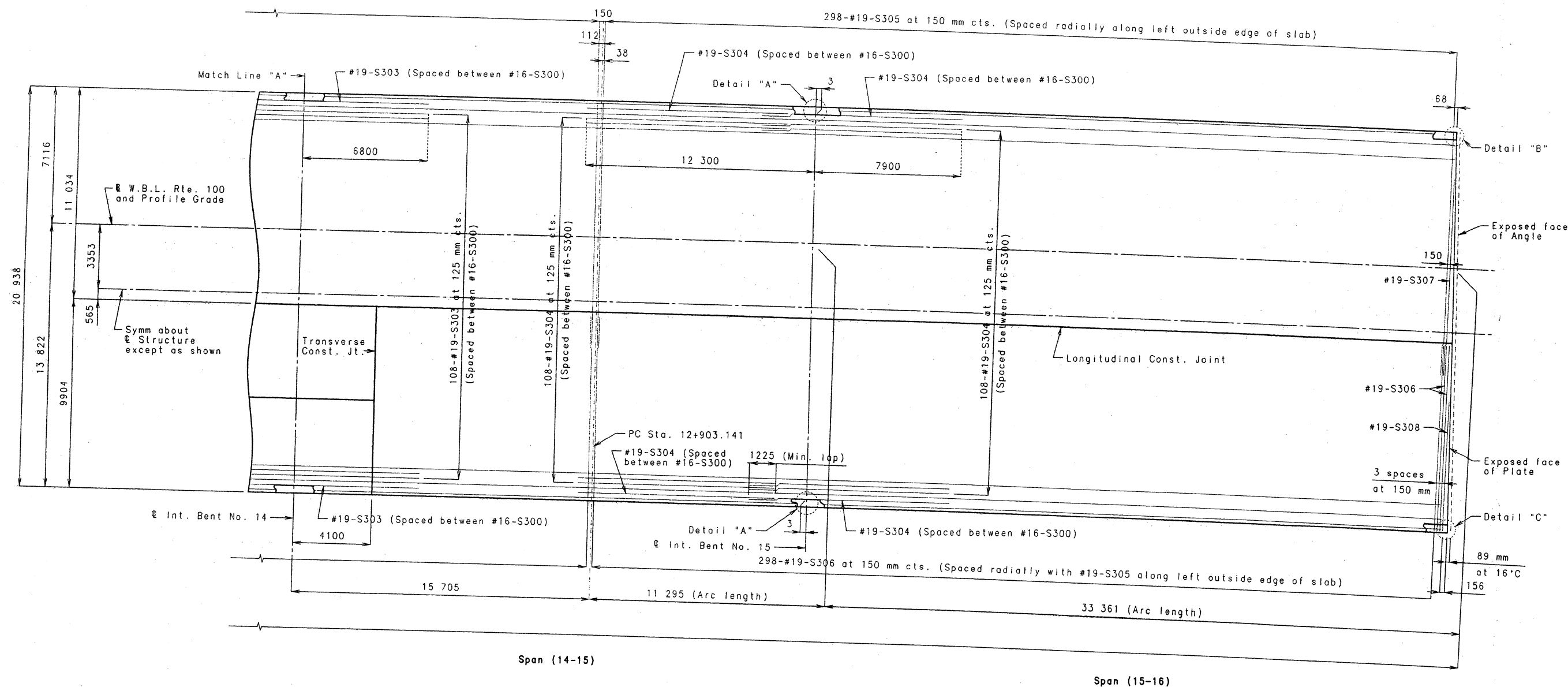
SHEET NO. 178 OF 236.

ST. LOUIS COUNTY

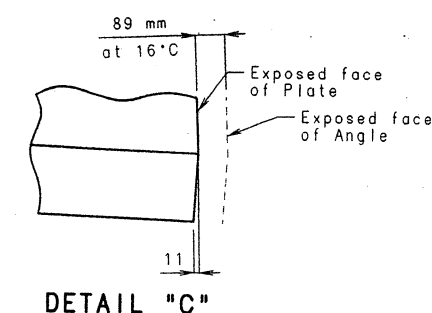
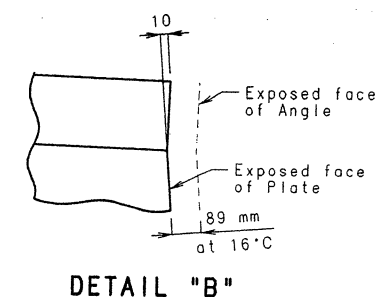
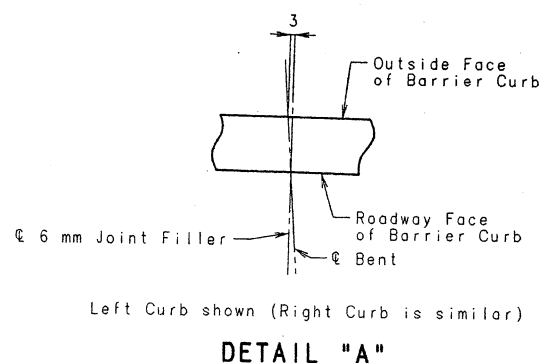
UNIT 3
 A5682



DATE 12-4-97



Note: Longitudinal reinforcement shall be placed parallel to W.B.L. Rte. 100.
 Transverse reinforcement shall be placed perpendicular to W.B.L. Rte. 100.
 Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 186.
 For Slab Curve Ordinates see sheet no. 173.
 For details of Superelevation Transition see sheet no. 187.
 For Dead Load Deflection Diagram see sheet no. 185.
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 For location of Slab Drains and Slab Drains with Grates showing C.I.P. Bay and additional reinforcement in Slab, see sheets no. 191 & 192.
 For Sections thru slab see sheet no. 182.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.



PART PLAN OF SLAB SHOWING TOP REINFORCEMENT

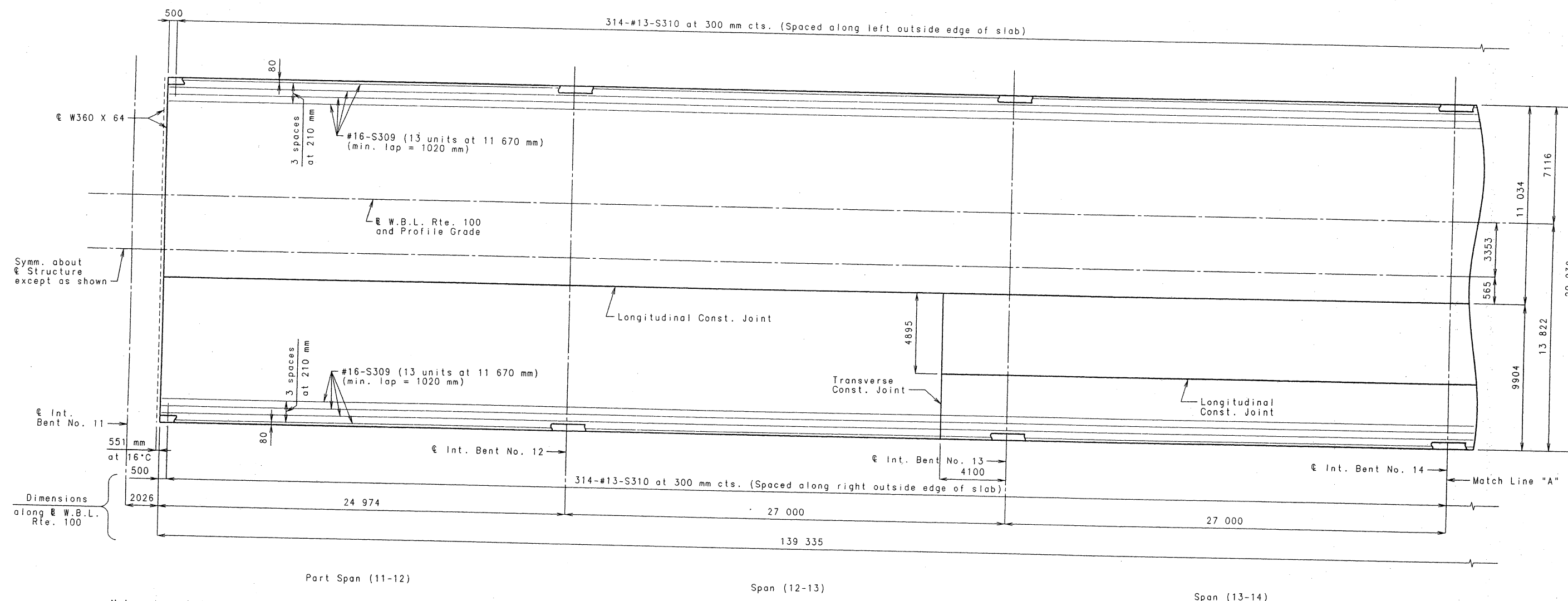
Detailed July 1997
 Checked Aug. 1997

SHEET NO. 179 OF 236.

ST. LOUIS COUNTY

UNIT 3
 A5682





Note: Longitudinal reinforcement shall be placed parallel to W.B.L. Rte. 100.
 Transverse reinforcement shall be placed perpendicular to W.B.L. Rte. 100.
 Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 186.
 For Slab Curve Ordinates see sheet no. 173.
 For details of Superelevation Transition see sheet no. 187.
 For Dead Load Deflection Diagram see sheet no. 185.
 For Plate Girder Camber Diagram and Theoretical Slab Haunch see sheet no. 184.
 For Diagram of Slab Pouring Sequence see sheet no. 183.
 For location of Slab Drains and Slab Drains with Grates showing C.I.P. Bay and additional reinforcement in Slab, see sheets no. 191 & 192.
 For Sections thru slab see sheet no. 182.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.

PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

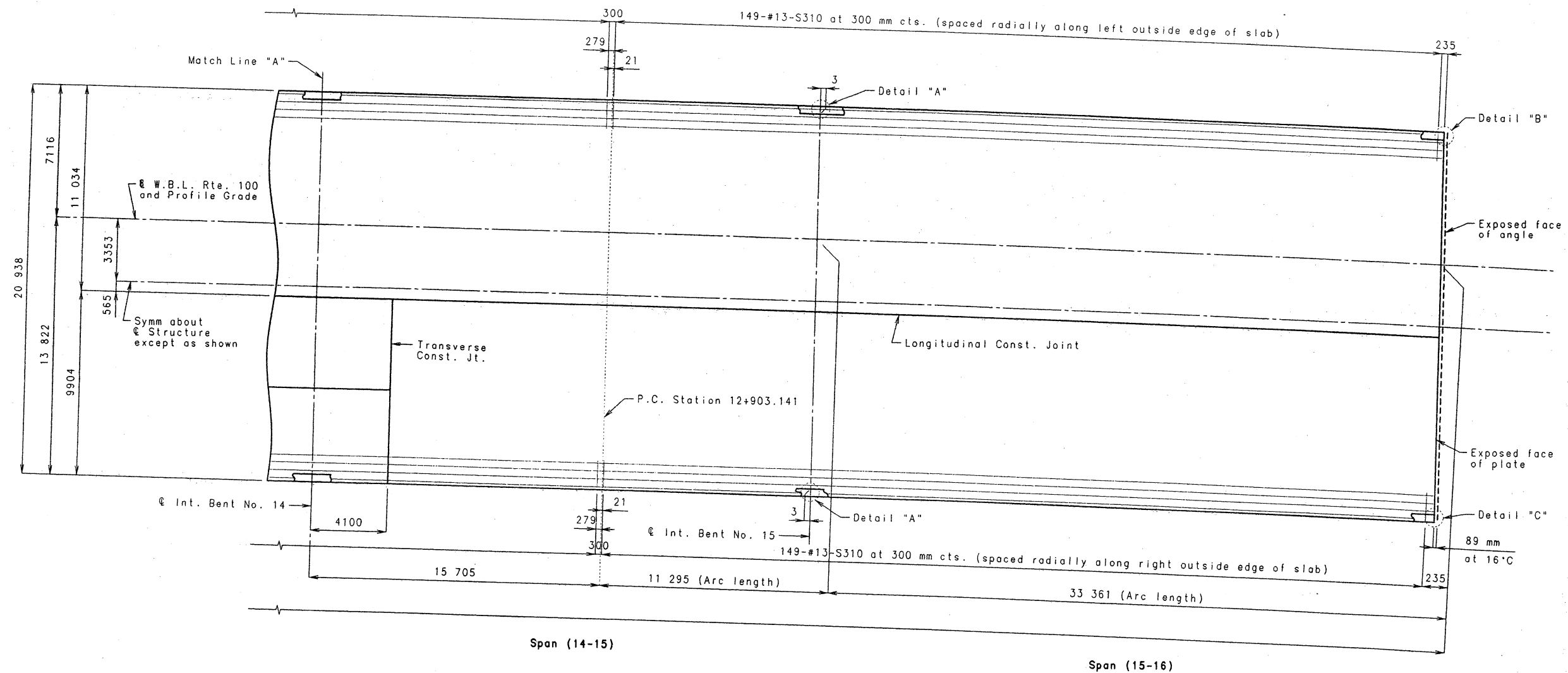
Detailed July 1997
 Checked Aug. 1997

SHEET NO. 180 OF 236.

ST. LOUIS COUNTY

UNIT 3
 A5682





Note: Longitudinal reinforcement shall be placed parallel to W.B.L. Rte. 100.
 Transverse reinforcement shall be placed perpendicular to W.B.L. Rte. 100.
 Longitudinal dimensions shown are horizontal at Top of Slab.
 For Theoretical Bottom of Slab Elevations see sheet no. 186.
 For Slab Curve Ordinates see sheet no. 173.
 For details of Superelevation Transition see sheet no. 187.
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 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from web of W 360 x 64 at expansion device.
 Longitudinal reinforcing steel shall be placed so that ends shall not be more than 25 mm from vertical plate at the expansion device.

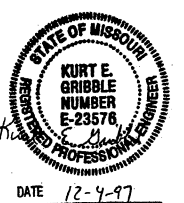
Note: For Details "A", "B", and "C" see sheet no. xx

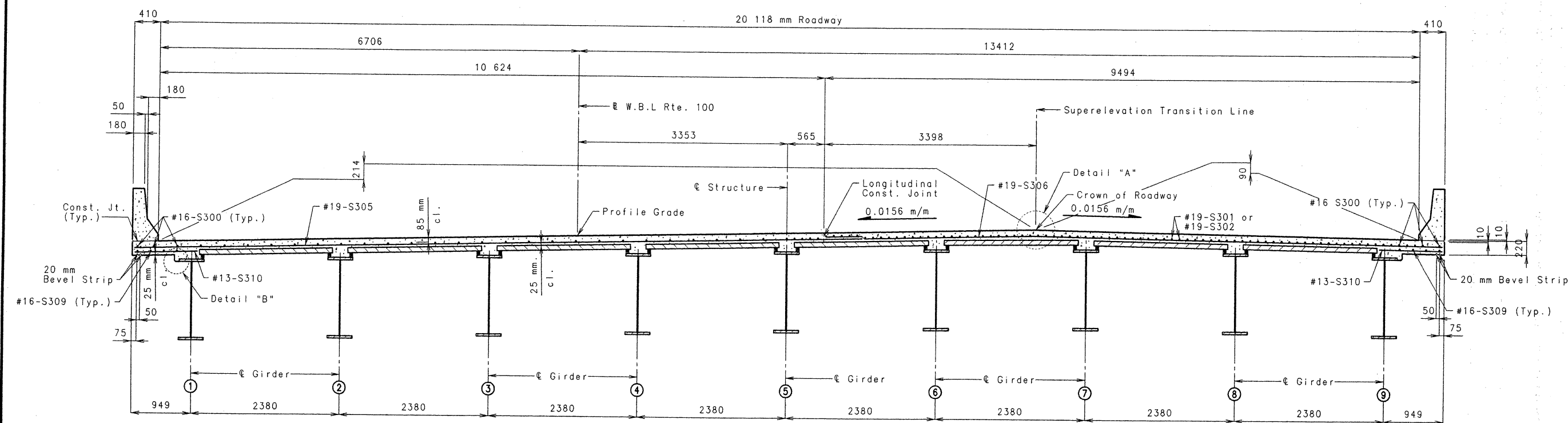
PART PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Detailed July 1997
 Checked Aug. 1997

SHEET NO. 181 OF 236.

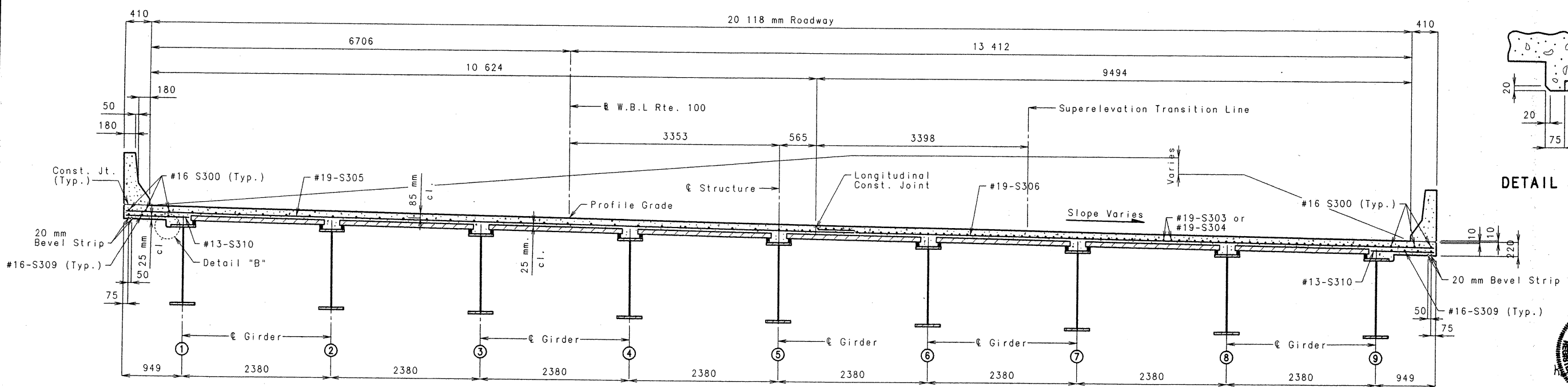
ST. LOUIS COUNTY UNIT 3 A5682



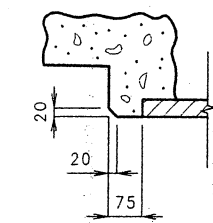


HALF SECTION NEAR & SPAN HALF SECTION NEAR INTERMEDIATE BENT
SECTION A-A

Note: For details of Safety Barrier Curb not shown, see sheets no. 193, 194, 195 & 196.
For Detail "A" and details of Superelevation Transition, see sheet no. 187.
For Slab Pouring Sequence and Slab Construction Joint Details, see sheet no. 183.
For Plan of Slab Showing Top and Bottom Reinforcement see sheets 178 thru 181.
For location of Section A-A and B-B see sheet no. 187.



HALF SECTION NEAR & SPAN HALF SECTION NEAR INTERMEDIATE BENT
SECTION B-B



DETAIL "B"



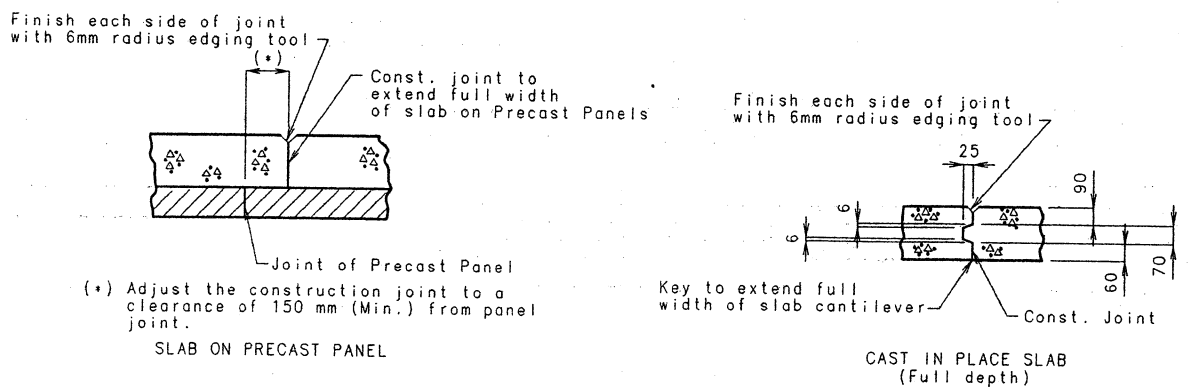
DATE 12-5-97

Detailed Mar. 1997
Checked Aug. 1997

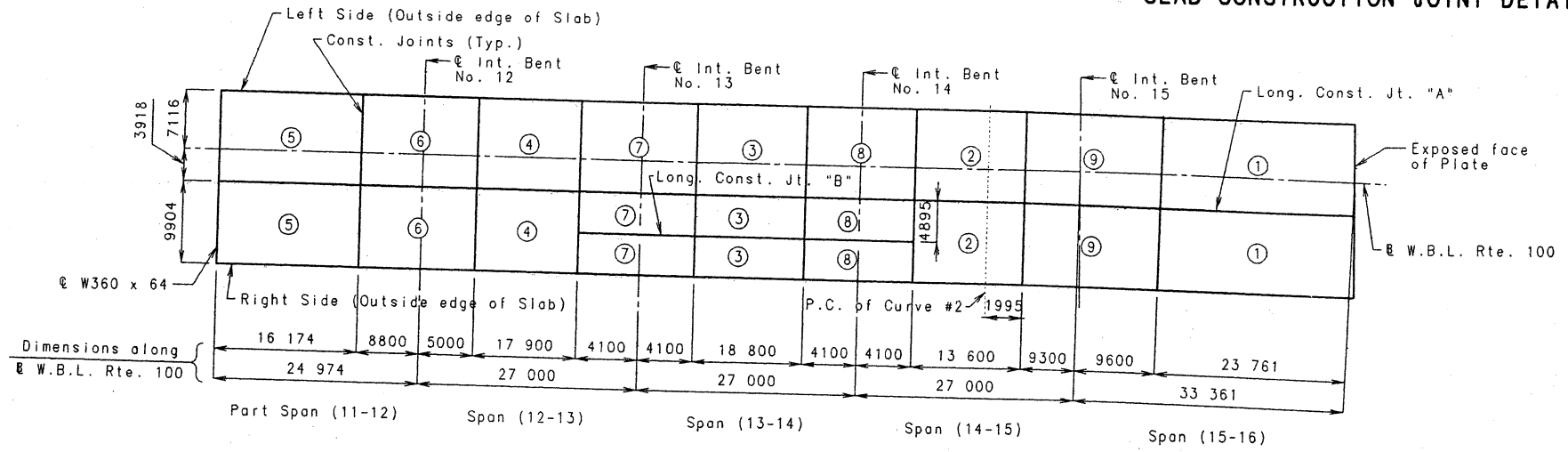
Sheet No. 182 OF 236.

BASIC SEQUENCE	SEQUENCE OF POURS									MIN. RATE OF POUR CU. METERS/HR.	
	DIRECTION									WITH RETARDER	NO RETARDER
	1	2	3	4	5	6	7	8	9	20	20
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 (METRIC).											
ALTERNATE "A" POURS	1	9 + 2		8 + 3		7 + 4		6 + 5		20	30 (Right side) 27 (Left Side)
	END TO 9	1 TO 8	2 TO 7		3 TO 6		4 TO END				
ALTERNATE "B" POURS	1 + 9 + 2			8 + 3			7 + 4 + 6 + 5			20	30 (Right side) 27 (Left Side)
	END TO 8			2 TO 7			3 TO END				
ALTERNATE "C" POURS	1 + 9 + 2 + 8 + 3				7 + 4 + 6 + 5				20	30 (Right side) 27 (Left Side)	
	END TO 7				3 TO END						
ALTERNATE "D" POURS	1 + 9 + 2 + 8 + 3 + 7 + 4 + 6 + 5									20	30 (Right side) 27 (Left Side)
	END TO END										

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 concrete to 2.5 hours.



SLAB CONSTRUCTION JOINT DETAILS



Note: All structural steel in Unit 3 and Span (10-11) of Unit 2 shall be erected prior to establishing girder elevations for Unit 3 girders.

All structural steel shall be erected and elevations of girders established in Units 2 and 3 prior to any forming (including P/C panels) for the slab in Span (11-12) of Unit 3.

The pouring sequences on the left side of longitudinal joint "A" shall be poured prior to the pouring sequences on the right side of longitudinal joint "A".

A longitudinal construction joint may be omitted with the approval of the Engineer.

If longitudinal construction joint "A" is eliminated, the minimum rate of pour for alternate pouring sequences shall be increased by a factor of 1.9.

SLAB POURING SEQUENCE

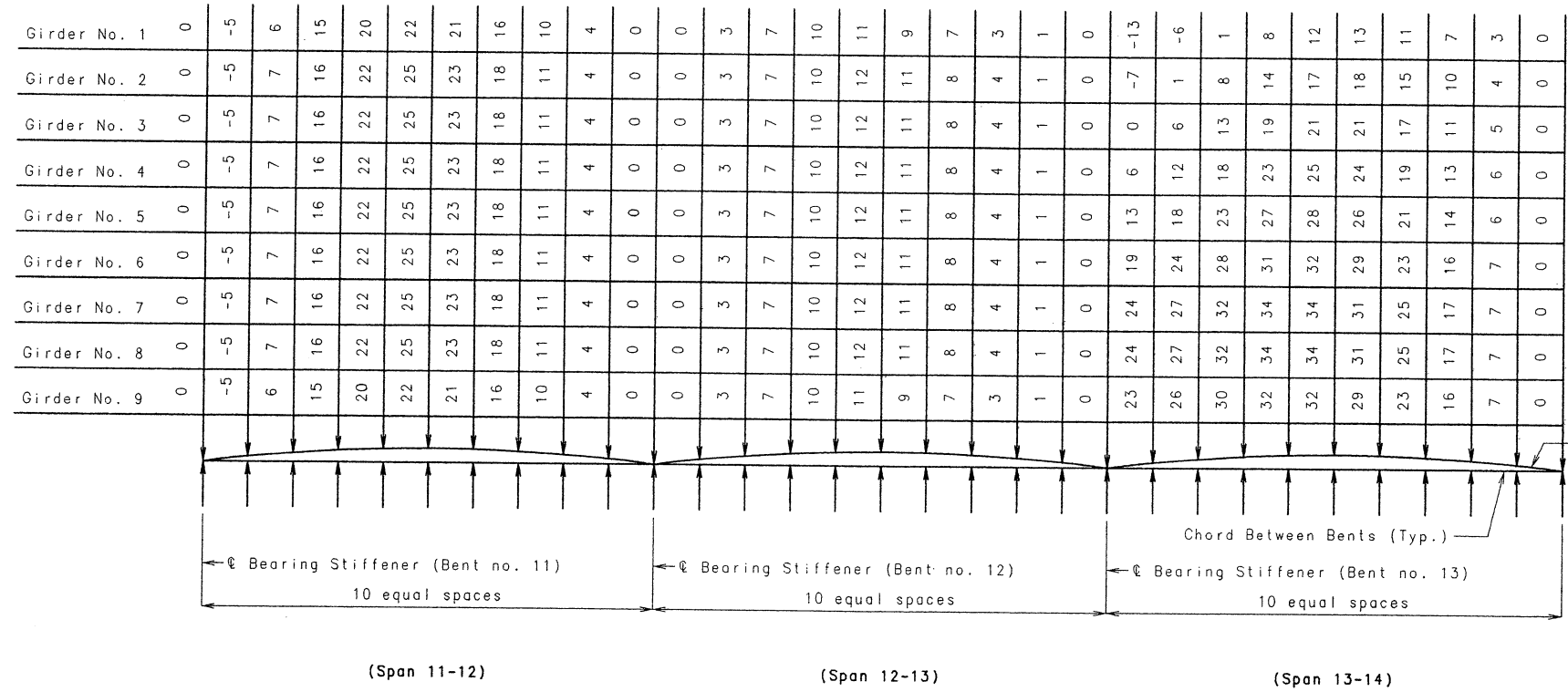
Detailed Mar. 1997
Checked Aug. 1997

Sheet No. 183 OF 236.

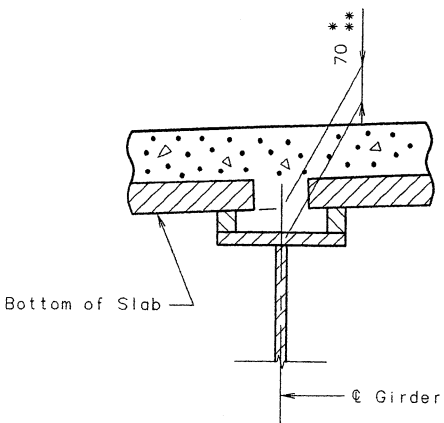
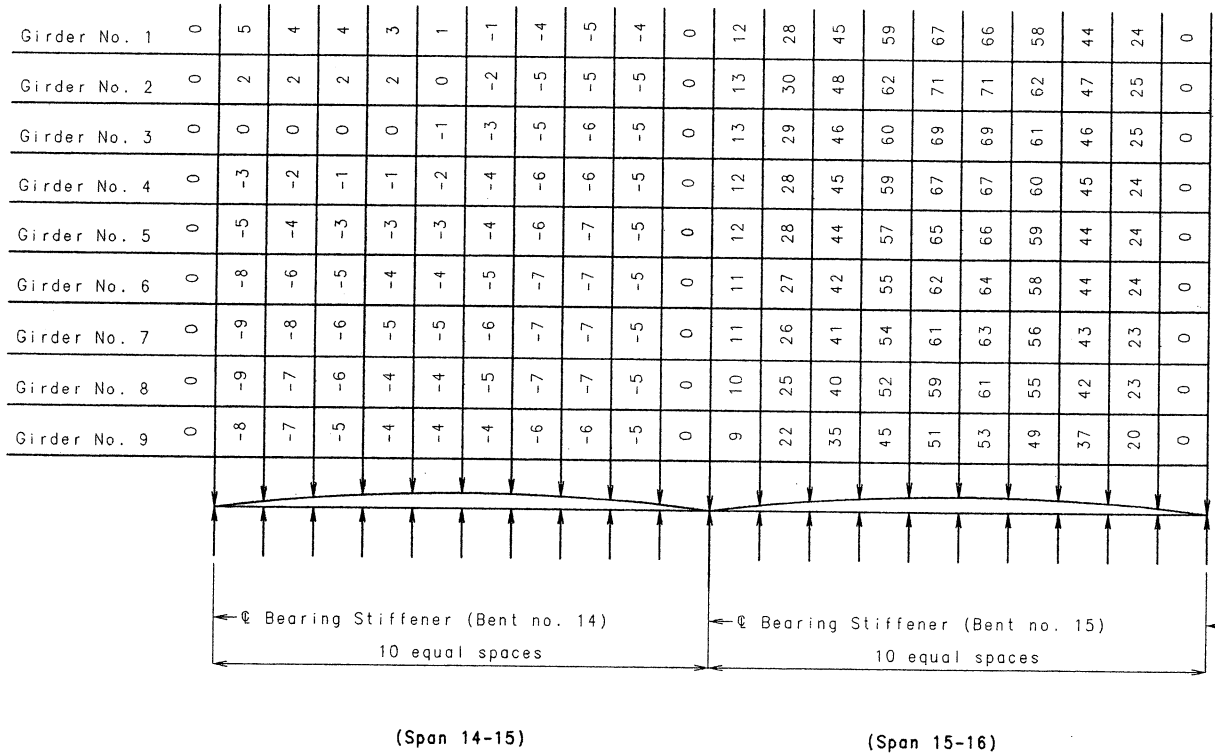
ST. LOUIS COUNTY



UNIT 3
A5682



Note: Camber includes allowance for vertical curve, superelevation transition and for dead load deflection due to mass of concrete slab, curb, and structural steel.



NOTE: * From Bent no. 11 to the Hinge near Bent no. 11 on Girder no. 8, the dimension is 75 mm.
 ** Dimension may vary if the girder camber after erection differs from plan camber by more or less than the % of D.L. deflection due to mass of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

STATE OF MISSOURI
 KURT E. GRIBBLE
 NUMBER E-23576
 DATE 12-4-97

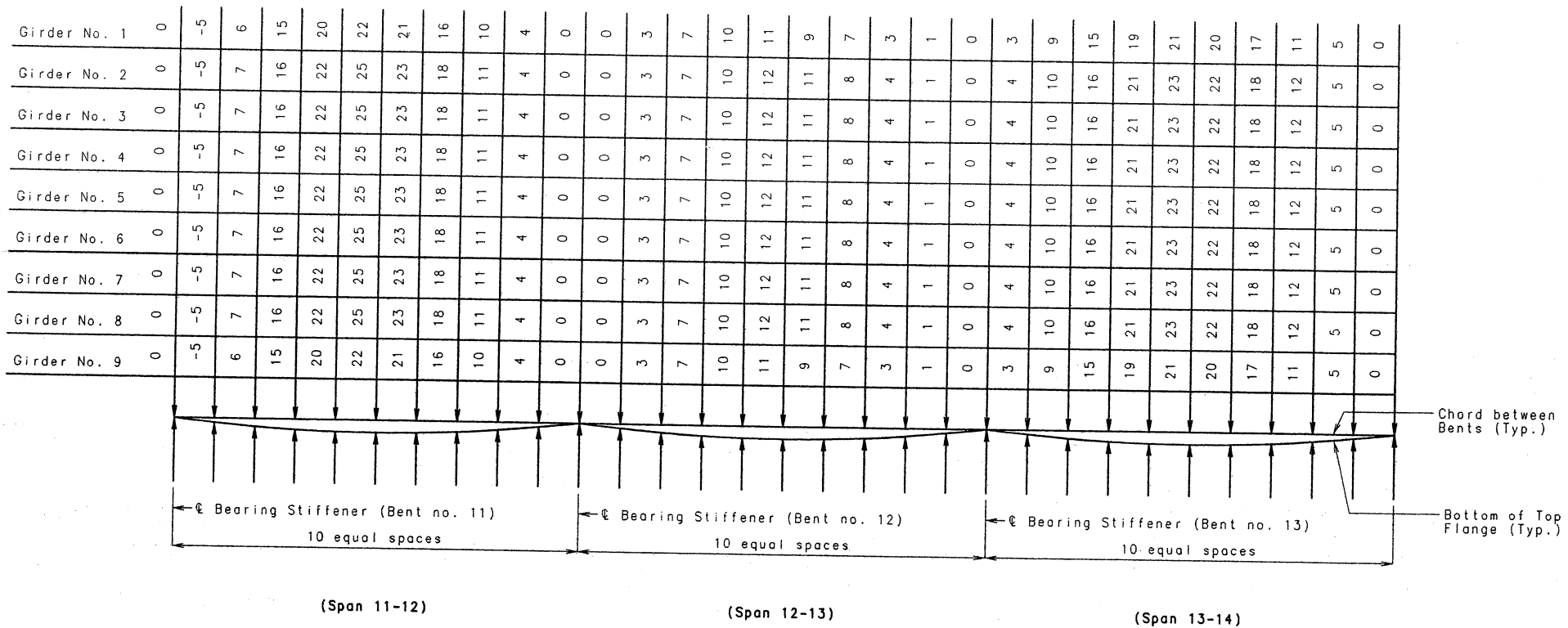
PLATE GIRDER CAMBER DIAGRAM

Detailed Jan. 1997
 Checked Aug. 1997

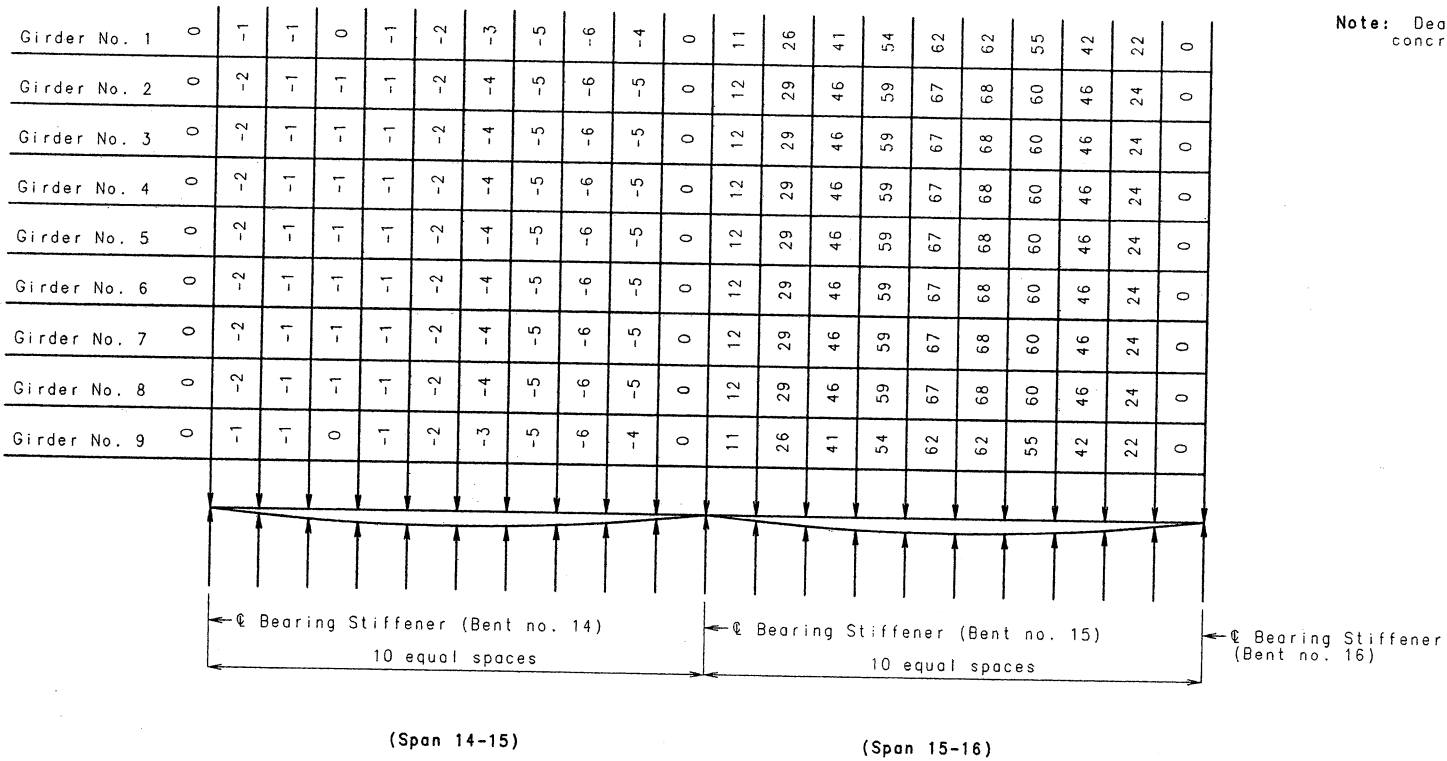
Sheet No.184 of 236

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Note: Dead load deflection includes mass of structural steel, concrete slab, and barrier curb.

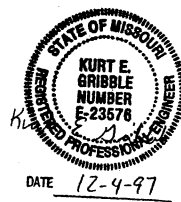


PERCENT OF DEAD LOAD DEFLECTION DUE TO MASS OF STRUCTURAL STEEL		
SPAN NUMBER	INTERIOR GIRDERS	EXTERIOR GIRDERS
(11-12) THRU (13-14)	14.0%	15.4%
(14-15)	17.1%	18.8%
(15-16)	18.6%	20.5%

Detailed Jan. 1997
Checked Aug. 1997

DEAD LOAD DEFLECTION DIAGRAM

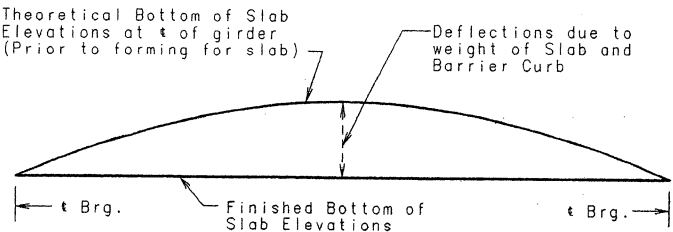
Sheet No.185 of 236



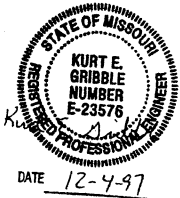
** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT G GIRDER (PRIOR TO FORMING SLAB)																															
	Span (11-12)(G Brg. - G Brg.)										Span (12-13)(G Brg. - G Brg.)										Span (13-14)(G Brg. - G Brg.)										
	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.
Girder No. 1	192.715	192.576	192.450	192.323	192.193	192.059	191.923	191.784	191.644	191.504	191.365	191.231	191.098	190.966	190.834	190.700	190.564	190.426	190.288	190.151	190.015	189.885	189.775	189.665	189.554	189.441	189.326	189.208	189.089	188.969	188.850
Girder No. 2	192.753	192.613	192.488	192.362	192.232	192.099	191.962	191.823	191.682	191.541	191.403	191.268	191.136	191.004	190.872	190.738	190.602	190.464	190.326	190.188	190.053	189.922	189.805	189.688	189.569	189.449	189.325	189.199	189.071	188.943	188.816
Girder No. 3	192.790	192.650	192.525	192.399	192.269	192.136	191.999	191.860	191.719	191.579	191.440	191.305	191.173	191.041	190.909	190.775	190.639	190.501	190.363	190.225	190.090	189.958	189.833	189.708	189.582	189.454	189.323	189.189	189.053	188.917	188.782
Girder No. 4	192.827	192.687	192.563	192.436	192.306	192.173	192.037	191.897	191.756	191.616	191.477	191.342	191.210	191.078	190.946	190.812	190.676	190.538	190.400	190.262	190.127	189.995	189.862	189.729	189.595	189.459	189.320	189.178	189.035	188.891	188.748
Girder No. 5	192.862	192.723	192.598	192.471	192.342	192.209	192.072	191.933	191.792	191.651	191.512	191.378	191.245	191.114	190.981	190.847	190.712	190.574	190.436	190.298	190.162	190.030	189.889	189.749	189.608	189.464	189.317	189.168	189.017	188.865	188.715
Girder No. 6	192.901	192.761	192.637	192.510	192.380	192.247	192.111	191.972	191.831	191.690	191.551	191.416	191.284	191.153	191.020	190.886	190.750	190.613	190.474	190.337	190.201	190.068	189.919	189.771	189.621	189.469	189.315	189.157	188.998	188.838	188.680
Girder No. 7	192.913	192.774	192.649	192.522	192.393	192.260	192.123	191.984	191.843	191.702	191.563	191.429	191.296	191.165	191.032	190.898	190.763	190.625	190.487	190.349	190.213	190.080	189.926	189.772	189.617	189.460	189.300	189.138	188.973	188.808	188.645
Girder No. 8	192.876	192.737	192.612	192.485	192.355	192.222	192.086	191.947	191.806	191.665	191.526	191.392	191.259	191.128	190.995	190.861	190.725	190.588	190.450	190.312	190.176	190.043	189.889	189.735	189.580	189.423	189.263	189.101	188.936	188.771	188.608
Girder No. 9	192.839	192.700	192.574	192.447	192.317	192.183	192.047	191.908	191.768	191.628	191.489	191.354	191.222	191.090	190.957	190.823	190.687	190.550	190.412	190.275	190.139	190.005	189.851	189.697	189.541	189.384	189.224	189.062	188.898	188.734	188.570

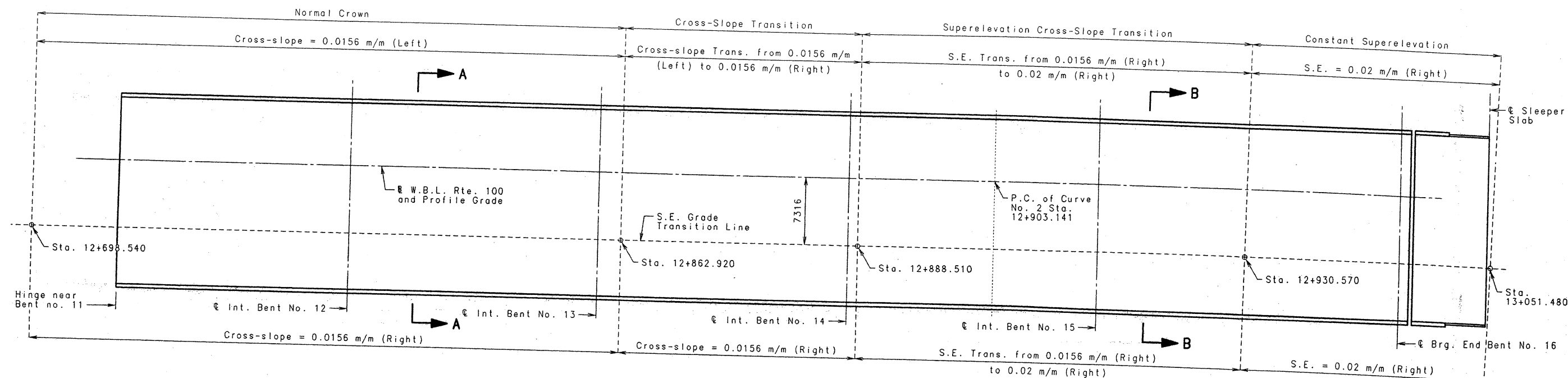
** THEORETICAL BOTTOM OF SLAB ELEVATIONS AT G GIRDER (PRIOR TO FORMING SLAB)																						
	Span (14-15)(G Brg. - G Brg.)											Span (15-16)(G Brg. - G Brg.)										
	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.	.10	.20	.30	.40	.50	.60	.70	.80	.90	G Brg. Stiff.	
Girder No. 1	188.850	188.723	188.590	188.457	188.324	188.190	188.055	187.921	187.788	187.656	187.527	187.373	187.223	187.073	186.921	186.764	186.600	186.430	186.255	186.075	185.893	
Girder No. 2	188.816	188.685	188.551	188.418	188.284	188.149	188.014	187.879	187.745	187.612	187.482	187.329	187.179	187.030	186.877	186.721	186.557	186.386	186.209	186.027	185.842	
Girder No. 3	188.782	188.647	188.513	188.379	188.245	188.109	187.973	187.837	187.702	187.568	187.438	187.284	187.133	186.982	186.829	186.671	186.507	186.336	186.159	185.977	185.792	
Girder No. 4	188.748	188.610	188.475	188.340	188.205	188.069	187.932	187.795	187.659	187.525	187.394	187.238	187.086	186.935	186.780	186.622	186.457	186.286	186.109	185.926	185.741	
Girder No. 5	188.715	188.574	188.438	188.303	188.167	188.030	187.893	187.755	187.618	187.483	187.351	187.195	187.042	186.889	186.734	186.574	186.409	186.238	186.060	185.878	185.692	
Girder No. 6	188.680	188.535	188.399	188.262	188.126	187.988	187.850	187.712	187.574	187.438	187.305	187.147	186.993	186.840	186.683	186.523	186.358	186.186	186.008	185.825	185.640	
Girder No. 7	188.645	188.497	188.360	188.224	188.086	187.948	187.809	187.670	187.531	187.394	187.260	187.102	186.947	186.792	186.635	186.473	186.308	186.136	185.958	185.775	185.589	
Girder No. 8	188.608	188.460	188.322	188.185	188.047	187.908	187.768	187.628	187.489	187.351	187.216	187.057	186.900	186.744	186.586	186.424	186.258	186.086	185.908	185.724	185.538	
Girder No. 9	188.570	188.422	188.284	188.146	188.007	187.868	187.728	187.587	187.446	187.308	187.172	187.010	186.852	186.694	186.533	186.369	186.204	186.032	185.854	185.672	185.488	

** Elevations are based on a constant slab thickness of 220 mm and include allowances for Theoretical Dead Load Deflections due to mass of slab (including Precast Panel) and barrier curb.



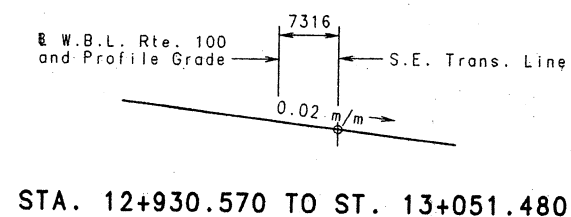
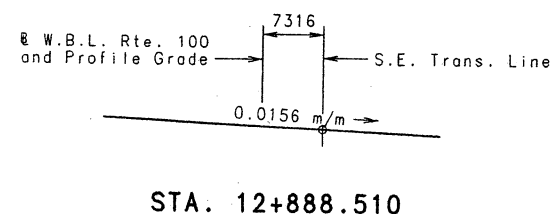
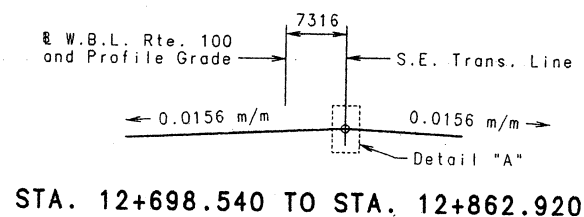
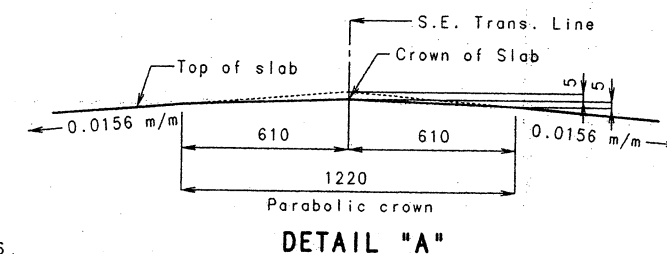
TYPICAL SLAB ELEVATIONS DIAGRAM



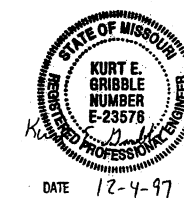


PART PLAN OF SLAB SHOWING SUPERELEVATION TRANSITION

Note: For Section A-A and B-B see sheet no. 182.



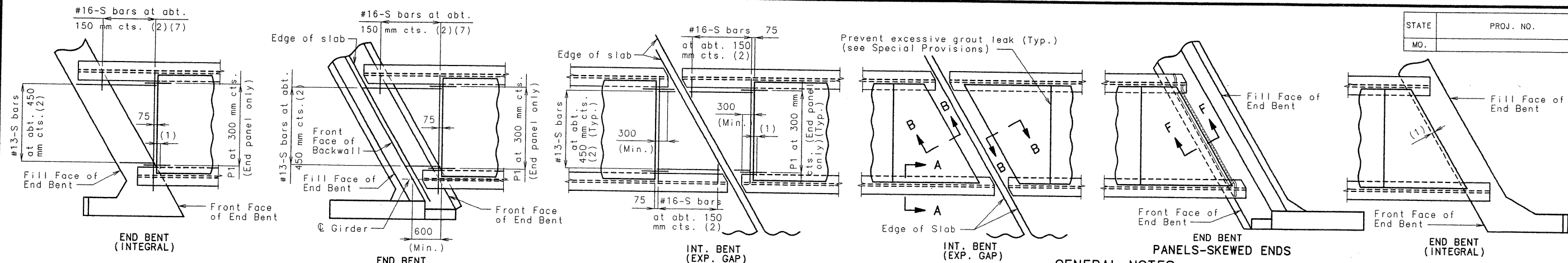
ROADWAY CROSS SLOPES



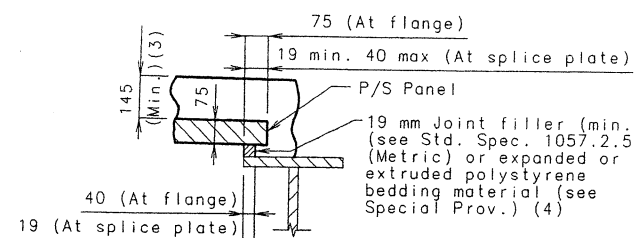
Detailed Mar. 1997
Checked Aug. 1997

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UNIT 3
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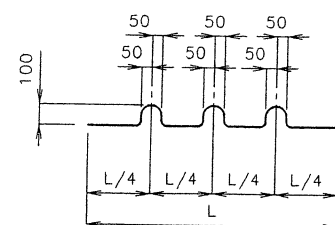
END BENT
PANELS-SQUARED ENDS
PLAN OF PRECAST PRESTRESSED PANEL PLACEMENT



SECTION A-A

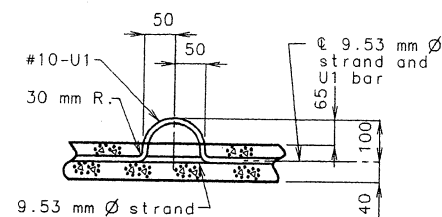
Note:

Use slab haunching diagram on sheet No. 184 for determining thickness of joint filler or polystyrene bedding material within the limits noted in General Notes.

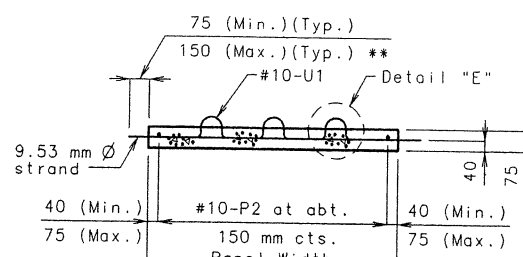


BENDING DIAGRAM FOR U1 BAR

(U1 bars may be oriented at right angles to location and spacing shown. U1 bars shall be placed between P1 bars.)

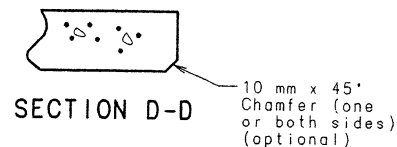


DETAIL "E"



SECTION C-C

** Prestressing strands to extend 150 mm or to within 25 mm of adjacent panel.



SECTION D-D

NOTES:

Cost of S-bars shall be included in price bid for Slab on Steel per square meter.

S-bars are not listed in bill of reinforcing.

(1) End panels shall be dimensioned 25 mm min. to 40 mm max. inside the face of the 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 percent of dead load deflection due to the mass of structural steel. No payment will be made for additional labor or materials for the adjustment.

(4) All panel support pads shall be glued to the girder. When support thickness exceeds 40 mm, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pad's manufacturer.

(5) Use #10-P3 bars if panel is skewed 45° or greater.

(6) The #16-S bars shall extend the width of the slab (785 mm lap if necessary).

(7) Extend S-bars 500 mm beyond the front face of end bents.

(8) S bars shown are used with skewed end panels, or square end panels of square structures only. The #16-S bars shall extend the width of slab (785 mm lap if necessary) or to within 75 mm of expansion device assemblies.

(9) Any strand 600 mm or shorter shall have a #13 reinforcing bar on each side of it centered between strands. Strands 600 mm or shorter may then be debonded at the fabrications option.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

For details of Part Sections B-B and F-F, Precast Panels at Finger Plate and Flat Plate Expansion Devices, and Plan of Precast Prestressed Panel see sheet no. 189.

GENERAL NOTES:

PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A1 with $f'_c = 35$ MPa, $f'_{ci} = 24.5$ MPa.

The top surface of all panels shall receive a scored finish with a depth of scoring of 3 mm perpendicular to the prestressing strands in the panels (see Special Provisions).

Prestressing tendons shall be high-tensile strength uncoated seven (7) wire, low-relaxation strands for prestressed concrete conforming to AASHTO M203, except that nominal diameter of strand = 9.53 mm and nominal area = 54.8389 sq. mm and minimum ultimate strength = 102.3 kN (1860 MPa). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 66.3 kN per 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.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 21 MPa compressive strength.

Minimum joint filler or polystyrene bedding material thickness shall be 19 mm, except over splice plates where minimum thickness shall be 6 mm. When joint filler or polystyrene bedding material is less than 12 mm thick over a splice plate, make the width of material at the 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 50 mm 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 6 mm to correct for variations from girder camber diagram. The polystyrene bedding material may be cut to match haunch height above top of flange.

REINFORCING STEEL:

All dimensions are out to out.

Minimum clearance to reinforcing steel shall be 40 mm unless otherwise shown.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest 10 mm.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Steel Girder.

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 466 sq. mm/m, with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #10-P2 bars, shown. Wire or bar diameter shall not be larger than 10 mm. The above alternative reinforcement criteria may be used in lieu of the #10-P3 bars, when required, and placed over a width of not less than 600 mm.

Tie the #10-U1 bars to the #10-P2 bars, to the welded wire fabric or the welded deformed bar mats at about 900 mm centers.

The reinforcing steel shall be tied securely to the 9.53 mm Ø strands with the following maximum spacing in each direction: #10-P2 bars at 400 mm and welded wire fabric or welded deformed bar mats at 600 mm.

All reinforcement other than prestressing strands shall be epoxy coated.



DATE 12-4-97

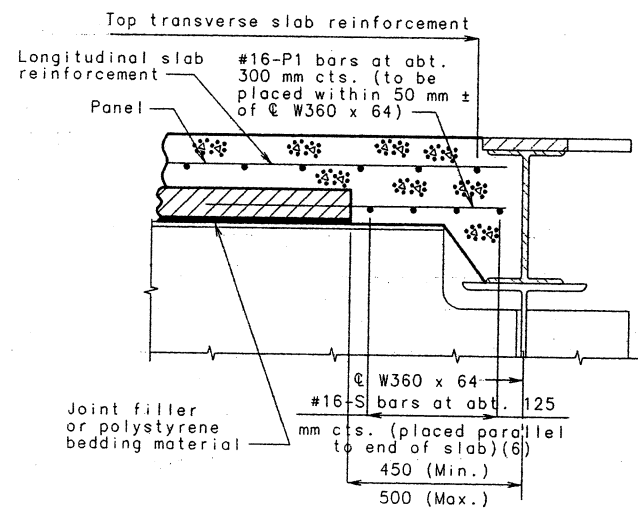
Detailed Mar. 1997
Checked Aug. 1997

DETAILS OF PRECAST PRESTRESSED PANELS

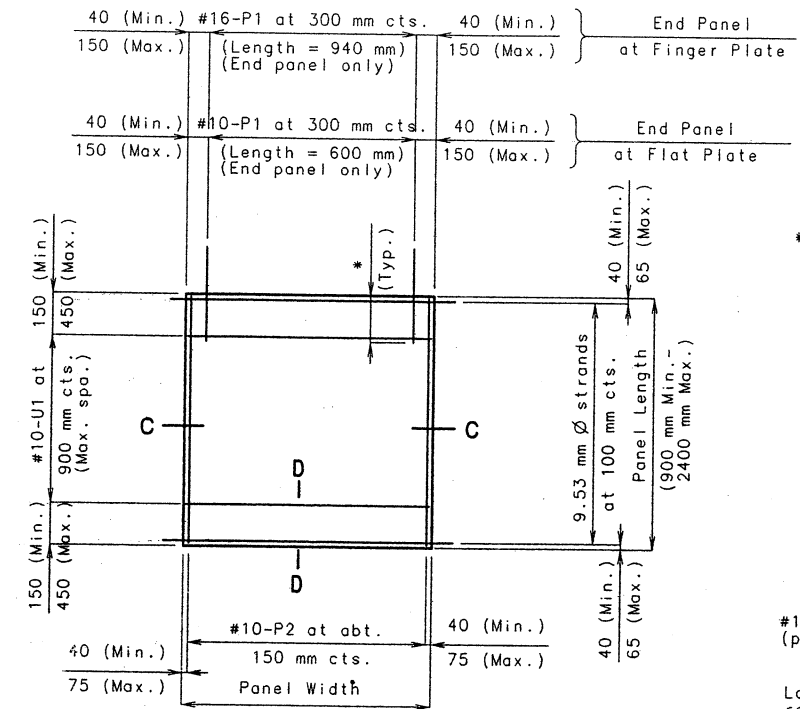
Sheet No. 188 of 236

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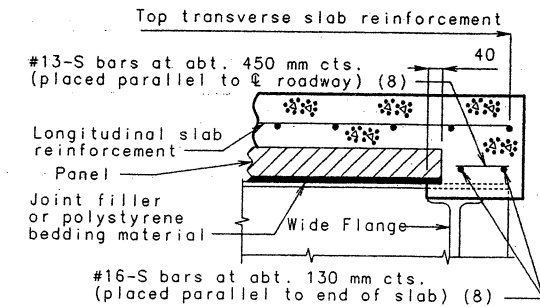
PART SECTION B-B



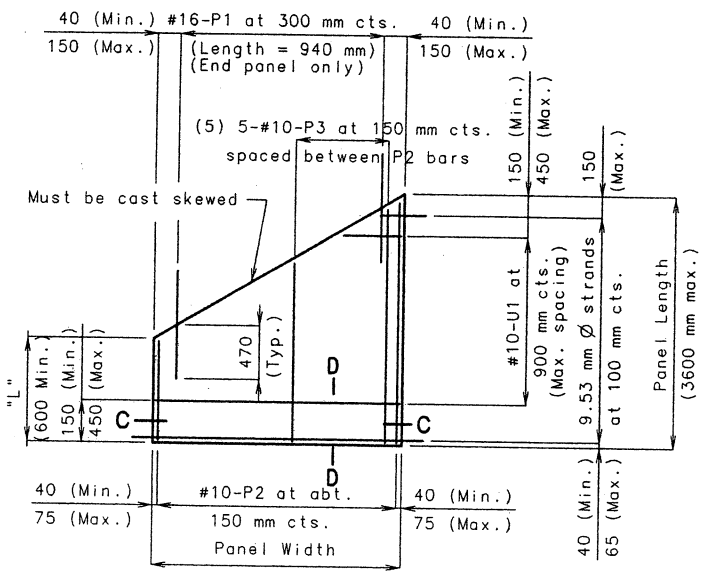
PLAN OF PRECAST PRESTRESSED PANEL

Note: For location of Section B-B and F-F, see sheet no. 188.

* 470 mm on end panel at Finger Plate Expansion Device,
300 mm on end panel at Flat Plate Expansion Device

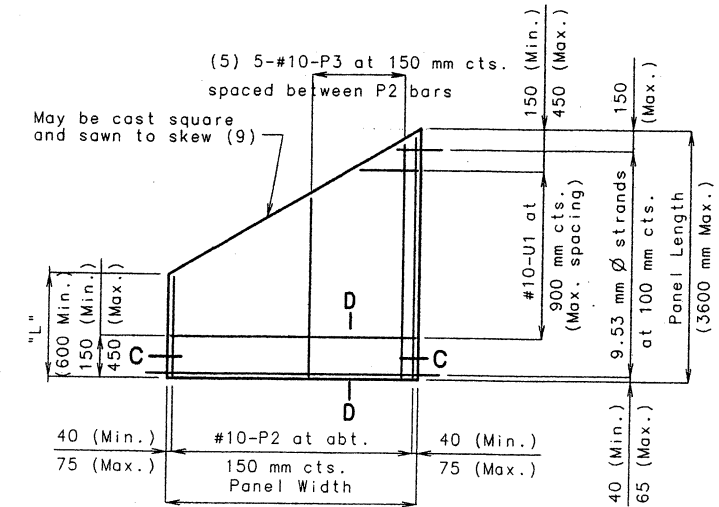


PART SECTION F-F



PLAN OF PRECAST PRESTRESSED PANEL
(SKEWED END-OPTIONAL)

DETAILS OF PRECAST PANELS AT
FINGER PLATE EXPANSION DEVICE



PLAN OF PRECAST PRESTRESSED PANEL
(SKEWED END-OPTIONAL)

DETAILS OF PRECAST PANELS AT
FLAT PLATE EXPANSION DEVICE

Note: For Section C-C and D-D, and notes concerning details of the Precast Prestressed panels, see sheet no. 188.



DATE 12-5-97

Detailed Mar. 1997
Checked Aug. 1997

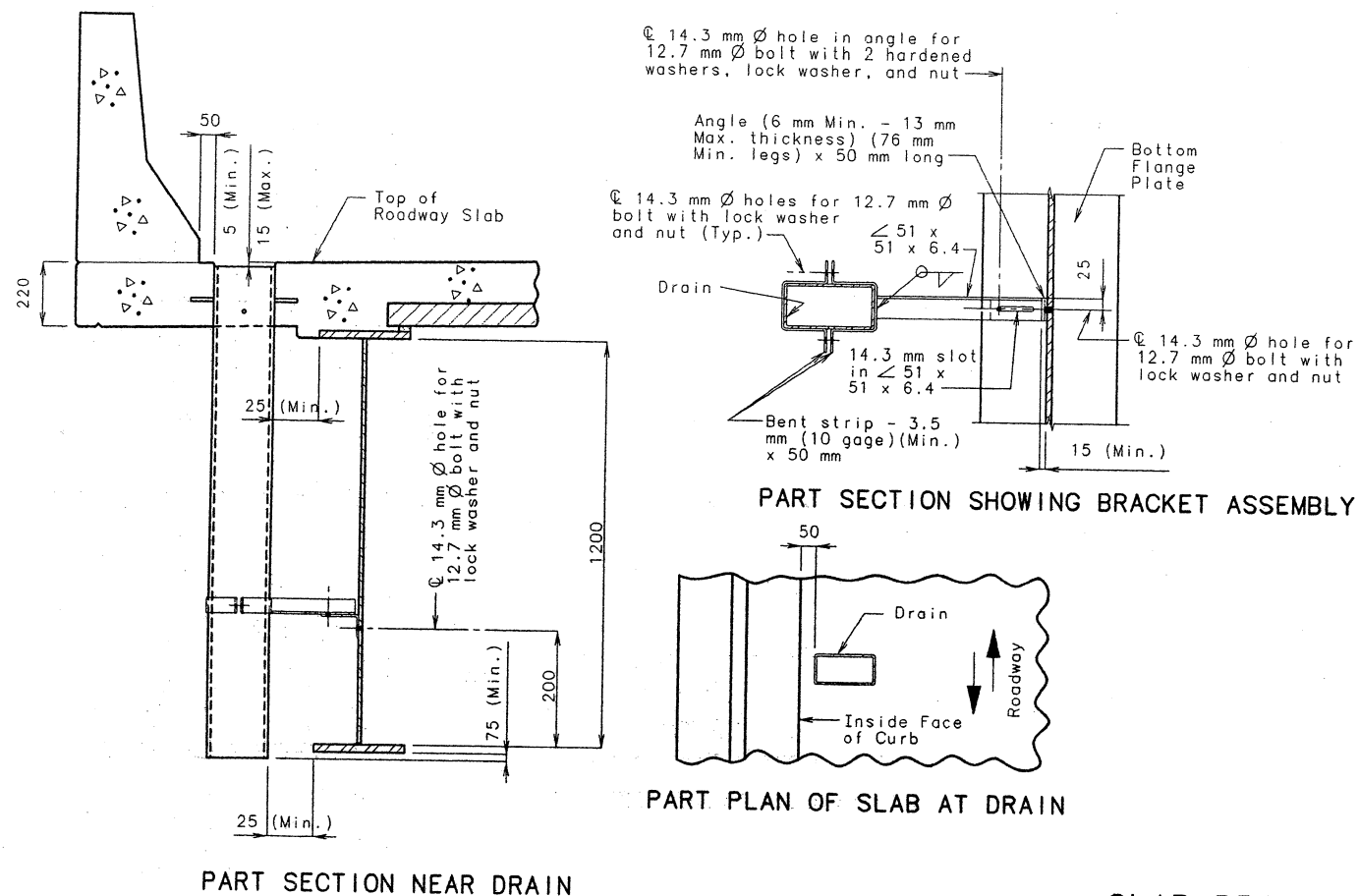
DRAIN 6M, Stl Gdr, Str, A
Steel Girder Drain
March 1996
Revised:
November 1996

NOV. 1997
NOV. 1997
CHECKED

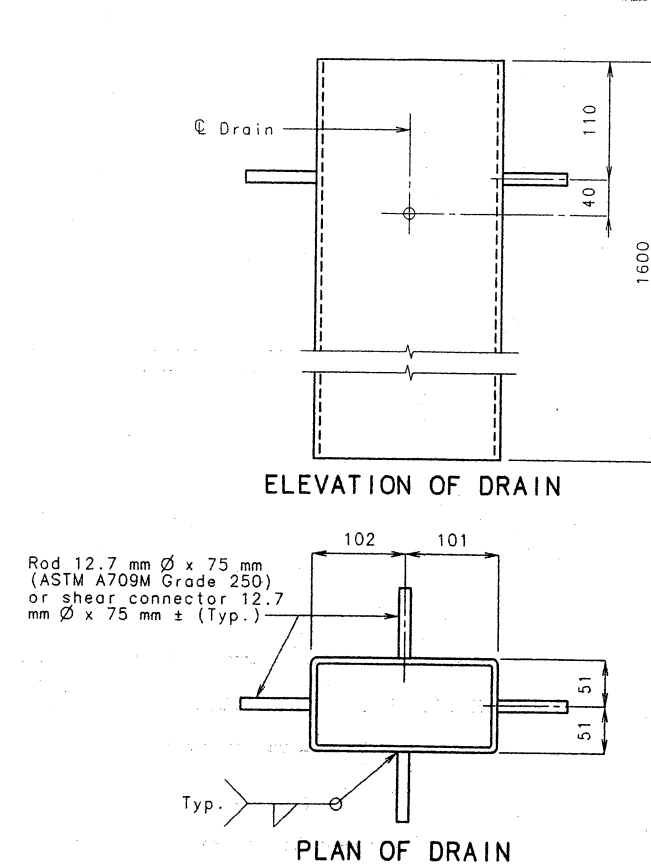
Sheet No. 191 of 236

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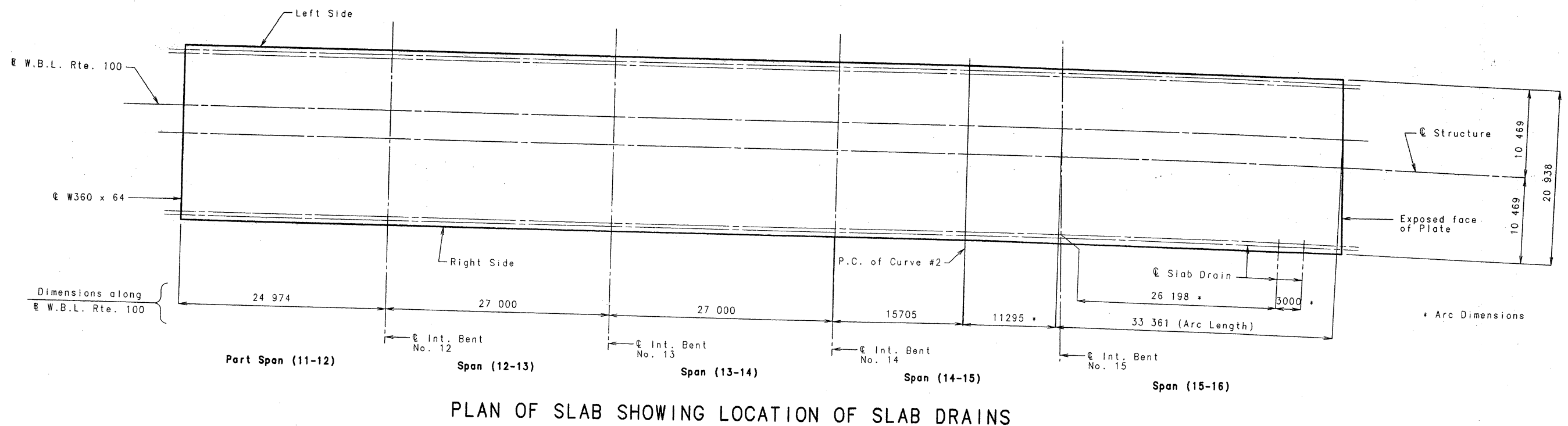
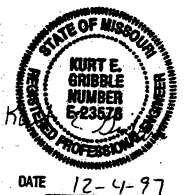


SLAB DRAIN DETAILS

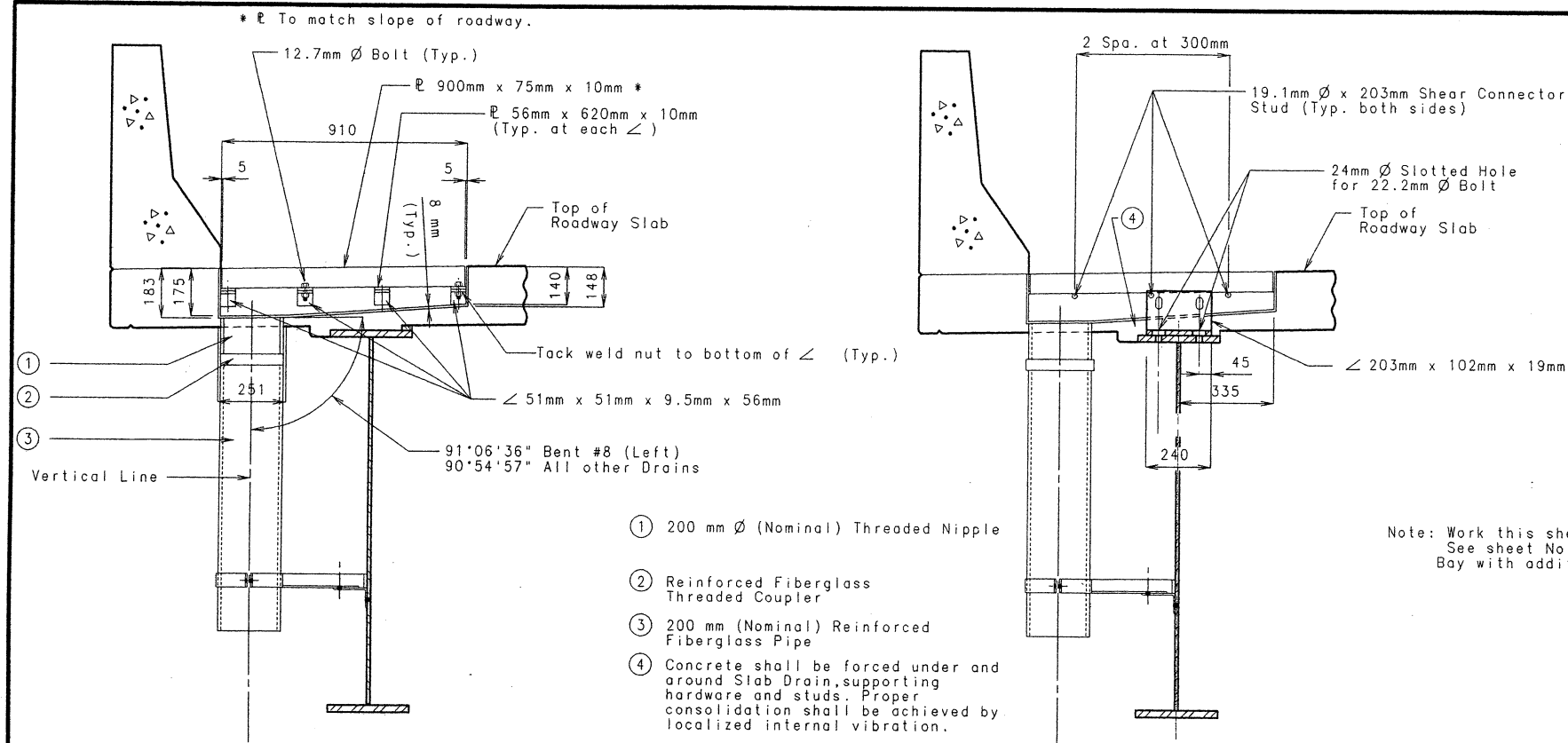


STATE	PROJ. NO.	SHEET NO.
MO.		224

GENERAL NOTES:
 Slab drains may be fabricated of either 6 mm welded sheets of ASTM A709M Grade 250 steel or from 6.4 mm structural steel tubing ASTM A500 or A501.
 Outside dimensions of drains are 203 mm x 102 mm.
 Locate drains in the slab by dimensions shown in Part Section Near Drain.
 Shift reinforcing in field where necessary to clear drains.
 The drains and bracket assembly shall be galvanized in accordance with ASTM A123.
 All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.
 The bolt hole for the bracket assembly attachment shall be located on the plate girder shop drawings.
 Shop drawings will not be required for slab drains and the bracket assembly.



PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

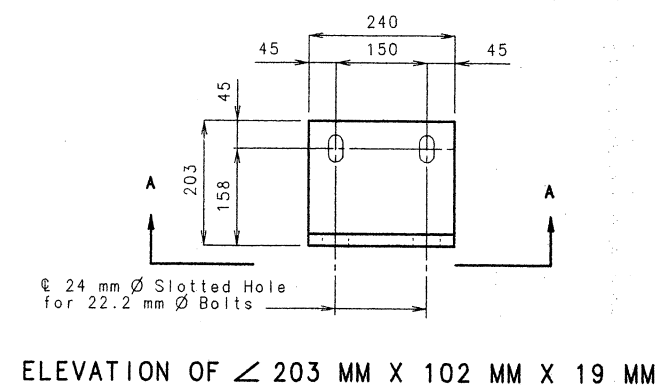


PART SECTION NEAR DRAIN

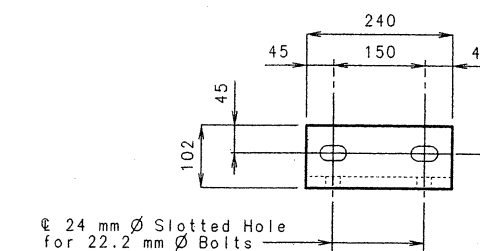
PART SECTION NEAR DRAIN

(Showing connection of drain to girder)

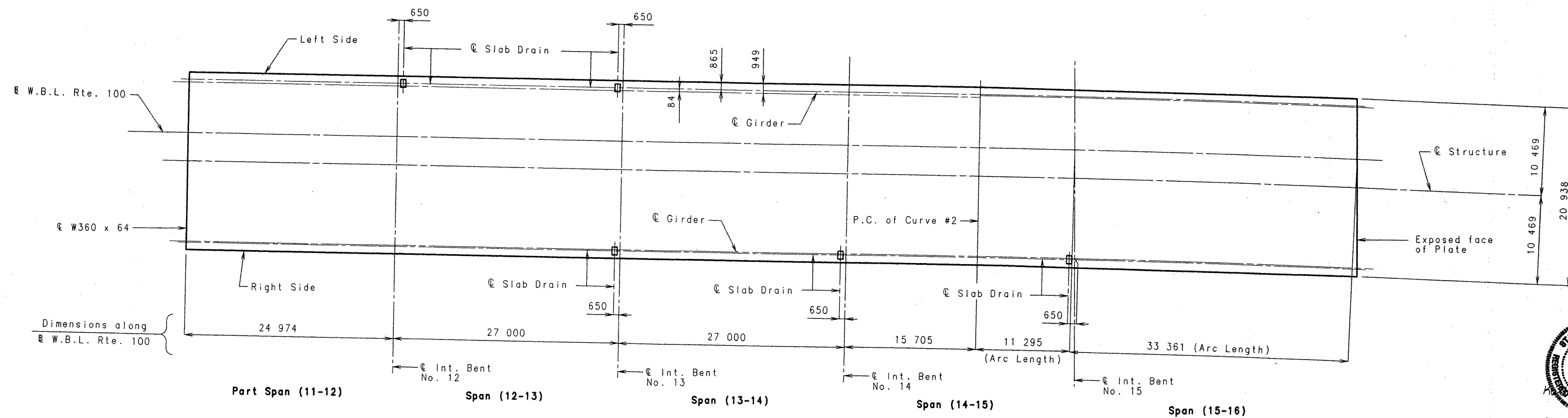
DETAILS OF SLAB DRAIN WITH GRATE



ELEVATION OF 203 MM X 102 MM X 19 MM



SECTION A - A



PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS WITH GRATES

Drain 6M, Stl Gdr, Str., A
Steel Girder Drain
March 1996
Revised: November 1996

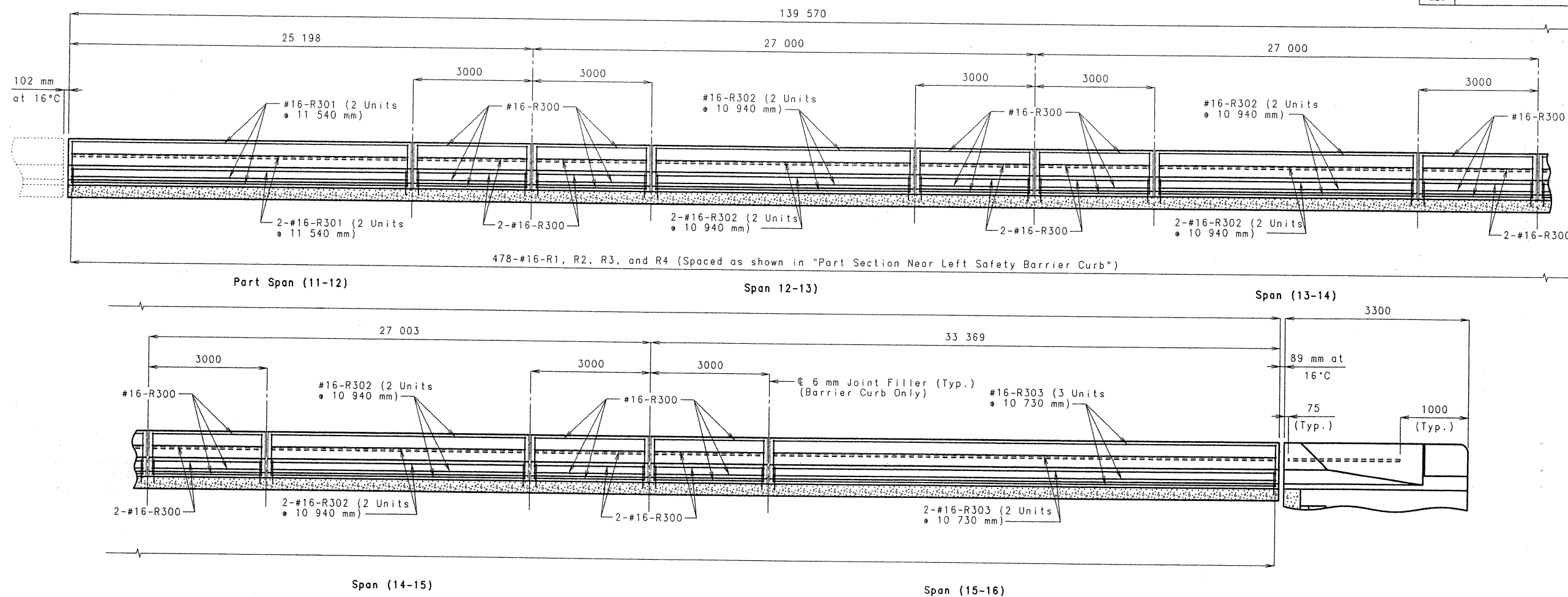
DETAILED NOV. 1997
CHECKED NOV. 1997

Sheet No. 192 of 236

ST. LOUIS COUNTY

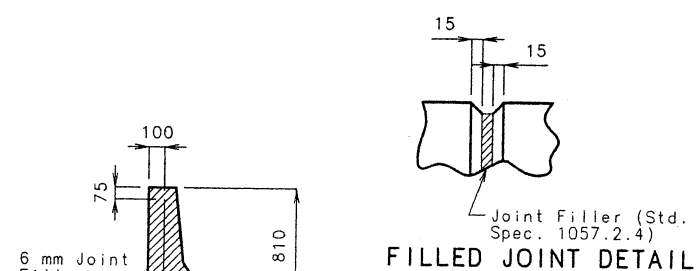
STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23576
Professional Engineer
DATE 12-5-97

UNIT 3
A5682



SECTION NEAR LEFT BARRIER CURB

Note: Longitudinal dimensions are horizontal along top outside edge of Safety Barrier Curb.



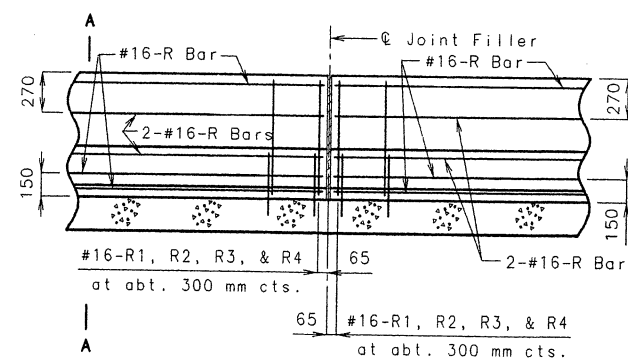
Note: 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Centered on joint)

Plastic waterstop shall be placed in all safety barrier curb filled joints. (Except structures with superelevation, use on all lower safety barrier curb joints only).

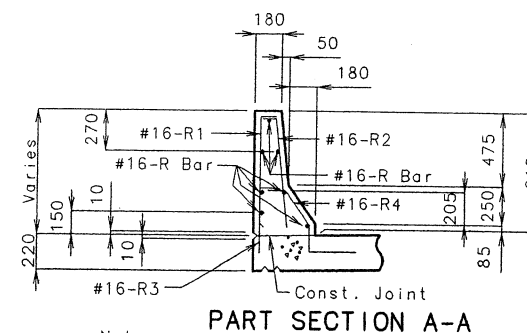
Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

Detailed Mar. 1997
Checked Aug. 1997



PART SECTION NEAR LEFT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

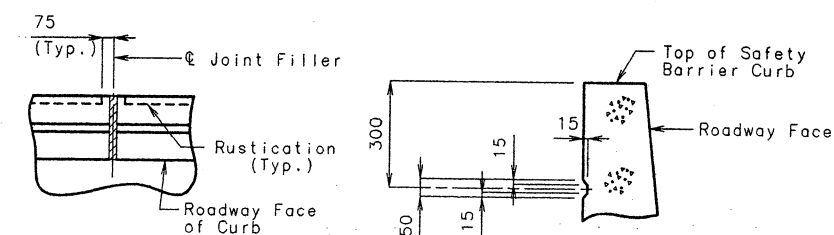


Note:

Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 212 225 sq. mm.

Sheet No. 193 OF 236.



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

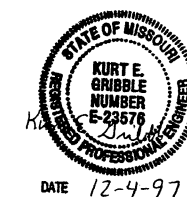
When the safety barrier curb is bid per half meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.

Concrete in the safety barrier curb shall be Class B1.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For Details of Movement Gauge see sheet no. 195.

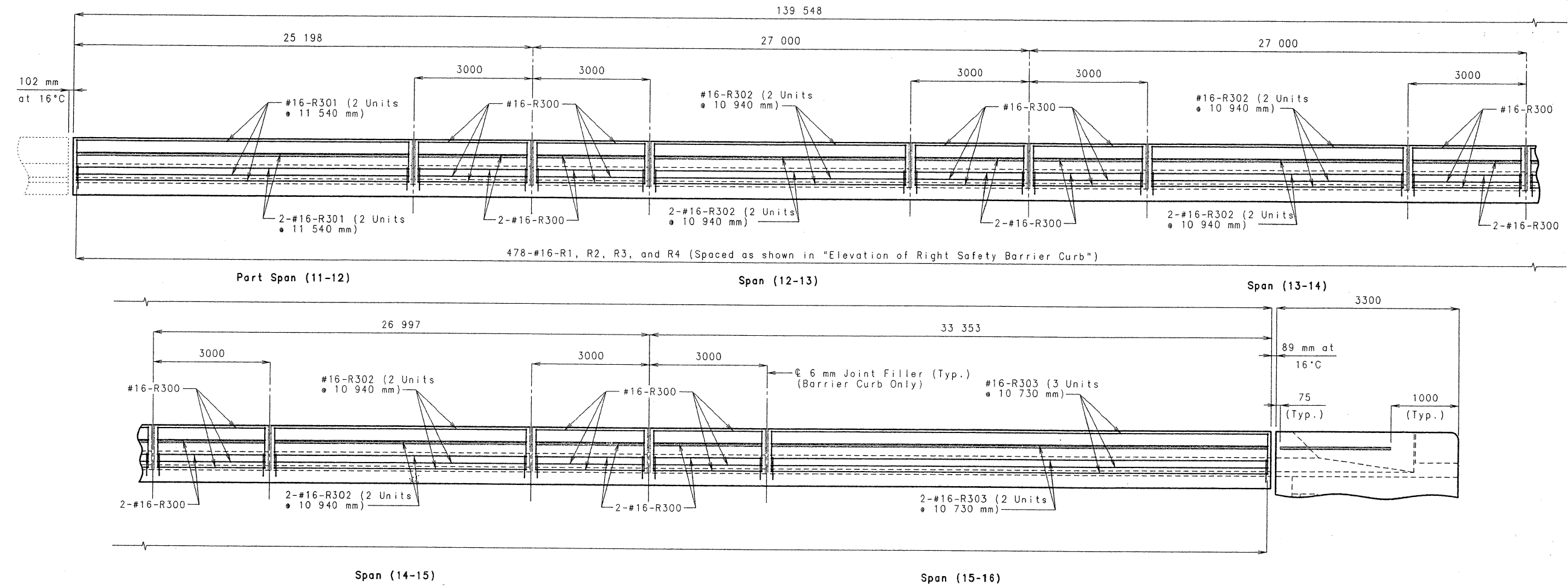
For details of Safety Barrier Curb near expansion devices, see pages 145 and 190.



UNIT 3

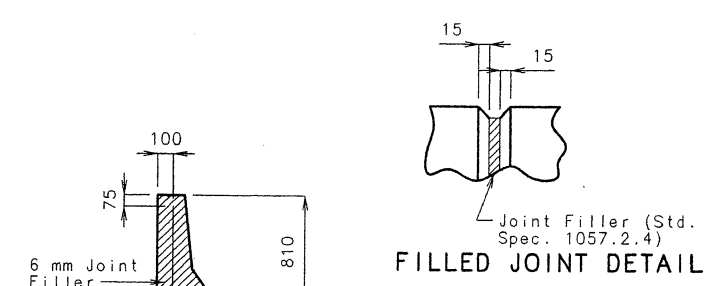
ST. LOUIS COUNTY

A5682



ELEVATION OF RIGHT BARRIER CURB

Note: Longitudinal dimensions are horizontal along top outside edge of Safety Barrier Curb



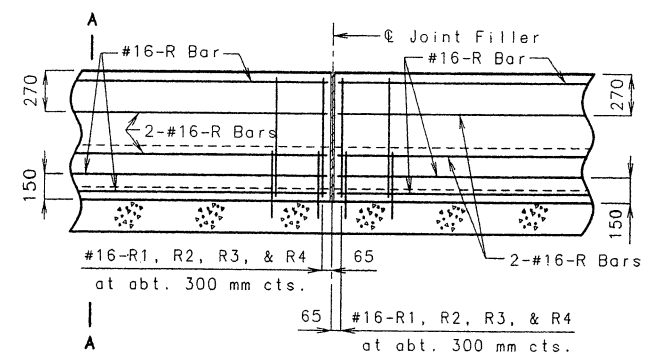
Note: 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Centered on joint)

Plastic waterstop shall be placed in all safety barrier curb filled joints. (Except structures with superelevation, use on all lower safety barrier curb joints only).

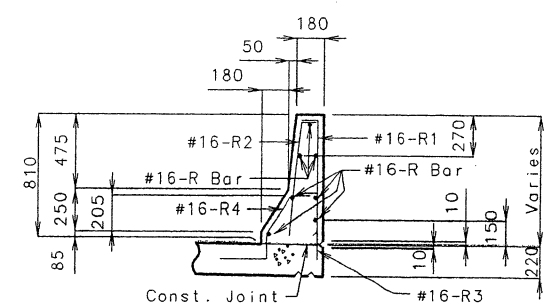
Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

Detailed Mar. 1997
Checked Aug. 1997



PART ELEVATION OF RIGHT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

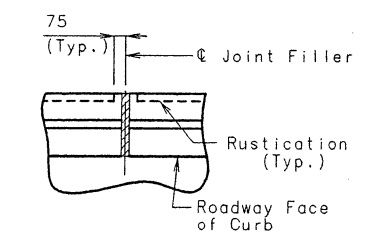


PART SECTION A-A

Note: Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 212 225 sq. mm.

Sheet No. 194 OF 236.



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

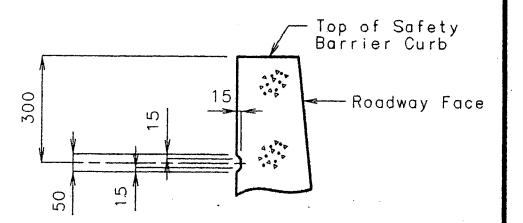
When the safety barrier curb is bid per half meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.

Concrete in the safety barrier curb shall be Class B1.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For Details of Movement Gauge see sheet no. 195.

For details of Safety Barrier Curb near expansion devices, see pages 145 and 190.



PART SECTION SHOWING RUSTICATION DETAILS



DATE 12-4-97

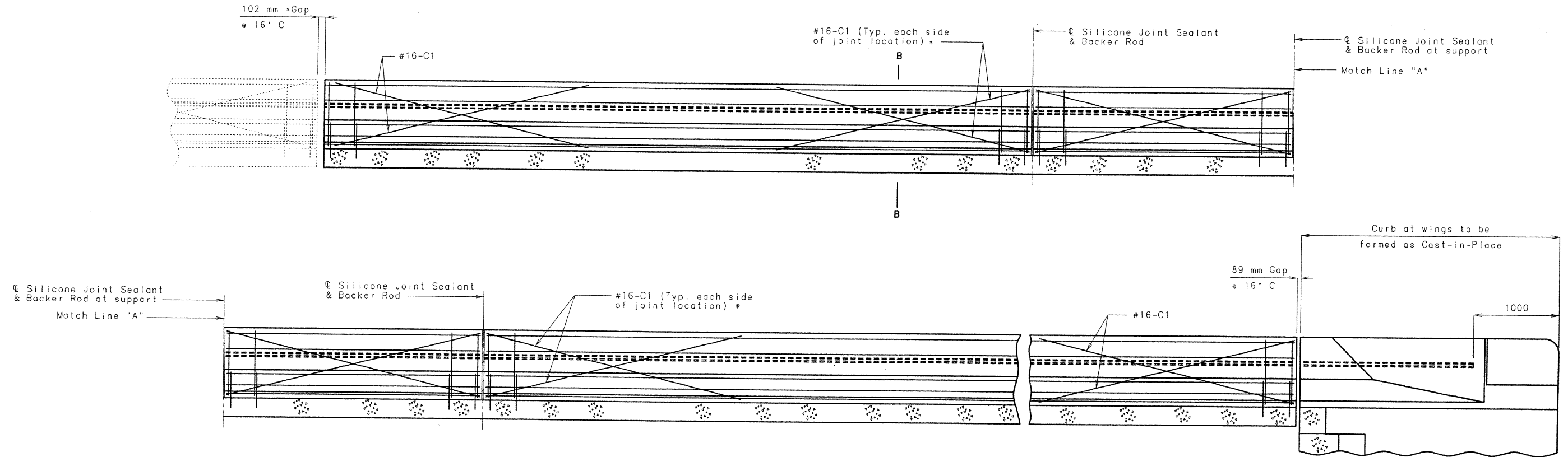
UNIT 3

ST. LOUIS COUNTY

A5682

* Gap Located at Hinge Near Bent No. 11.

STATE	PROJ. NO.	SHEET NO.
MO.		229



Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

When the safety barrier curb is bid per half meter, 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 half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS (OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

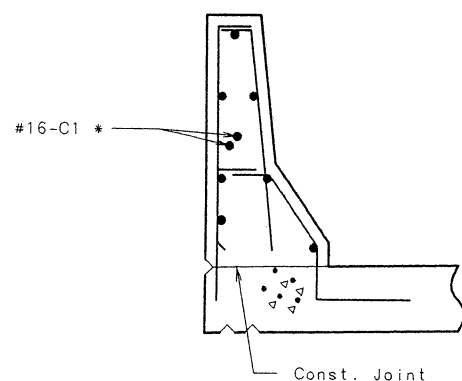
Note:

Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler.

Plastic waterstop shall not be used with slip-form option.

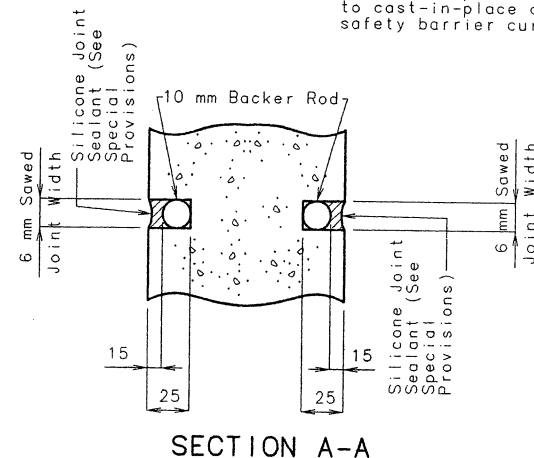
Barrier curbs at end bents shall be cast-in-place, slip form option is not allowed.

C Bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.



PART SECTION B-B

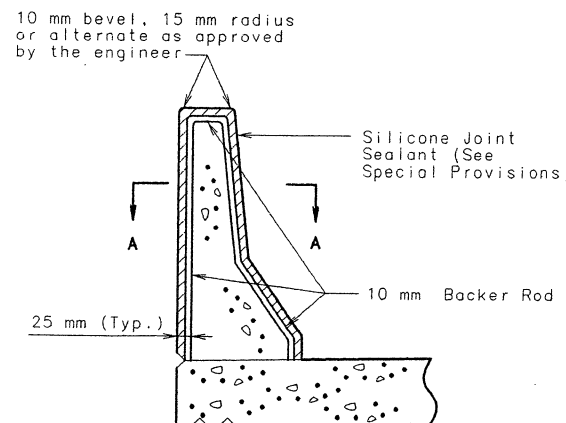
Note: * Each side of joint location.



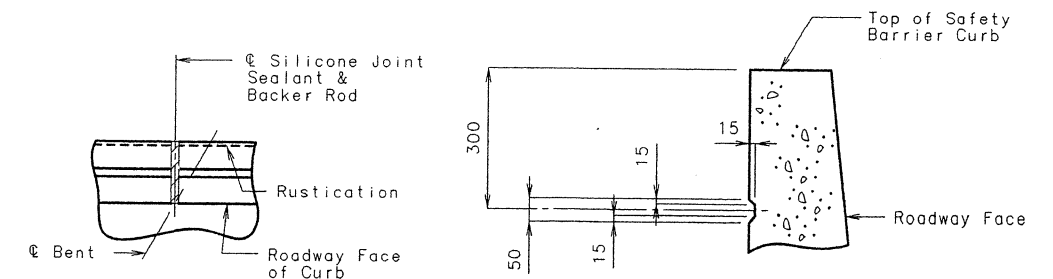
SECTION A-A

Note:

Cost of silicone joint sealant and backer rod complete in place to be included in the contract unit price for safety barrier curb.



SECTION THRU JOINT



PART PLAN SHOWING SAFETY BARRIER CURB JOINT RUSTICATION DETAIL

PART SECTION SHOWING RUSTICATION DETAILS

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

(Left barrier curb shown; right barrier curb similar.)

Sheet No. 196 OF 236

ST. LOUIS COUNTY

UNIT 3
A5682



DETAILED AUG 1997
CHECKED SEPT 1997

STATE	PROJ. NO.	SHEET NO.
MO.		230

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Section 503 (f'c = 28 MPa) of the Missouri Standard Specifications (Metric).

All joint filler shall meet the requirements of Section 1057.2.5 of the Missouri Standard Specifications (Metric), except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 420 with Fy = 420 MPa.

Minimum clearance to reinforcing steel shall be 40 mm, unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #13 & #19 bars 700 mm and 1055 mm respectively.

Mechanical bar splices will be permitted and shall develop at least 125 percent of the specified yield strength of the reinforcing bars being spliced. The contractor shall furnish the Engineer the manufacturer's certification that this requirement is met and is required to follow the manufacturer's recommendation for installation.

Mechanical bar splices shall be epoxy coated in accordance with Mo. Std. Spec. 710.

When a lap splice is required for the use of a mechanical bar splice, the minimum lap length shall be 1055 mm for transverse approach slab bar splices.

At the contractor's option, Grade 300 reinforcement may be substituted for the Grade 420 #16 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 300 reinforcement is substituted for the Grade 420 #16 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 50 mm minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired according to Mo. Std. Spec. 710.3.3 of the Missouri Standard Specifications (Metric).

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge slab before pouring the bridge approach slabs.

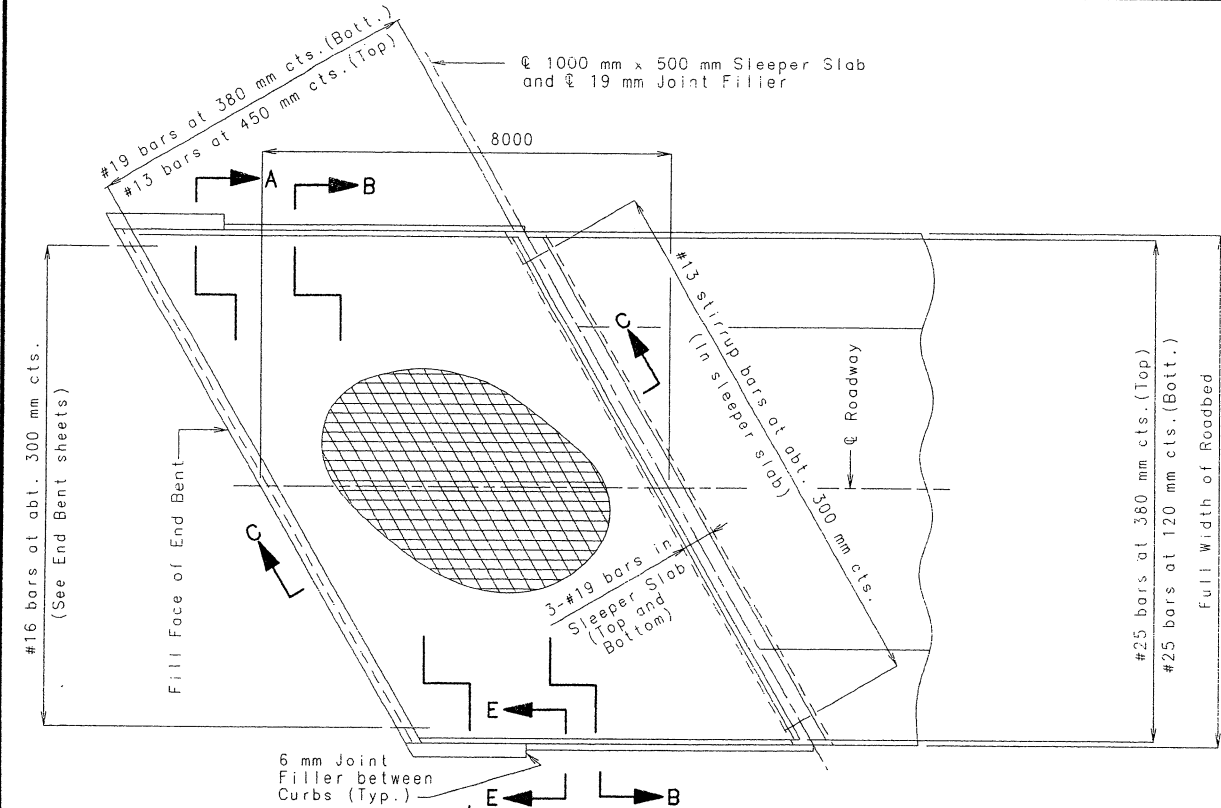
Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, base and all other appurtenances and incidental work as shown on this sheet, complete in place, shall be considered as completely covered under the contract unit price for Bridge Approach Slab (Bridge), per square meter.

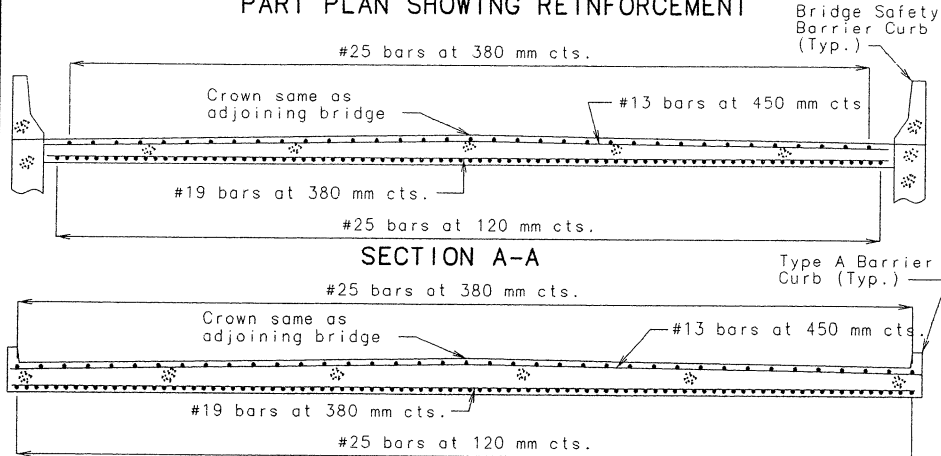
See Missouri Standard Plans Drawing M504.00 for details of Concrete Approach Pavement.

Drain pipe may be either 150 mm diameter corrugated metallic-coated pipe underdrain, 100 mm diameter corrugated polyvinyl chloride (PVC) drain pipe, or 100 mm diameter corrugated polyethylene (PE) drain pipe.

See Missouri Standard Plans Drawing M606.00 or M609.00 for details of Type A Barrier Curb.



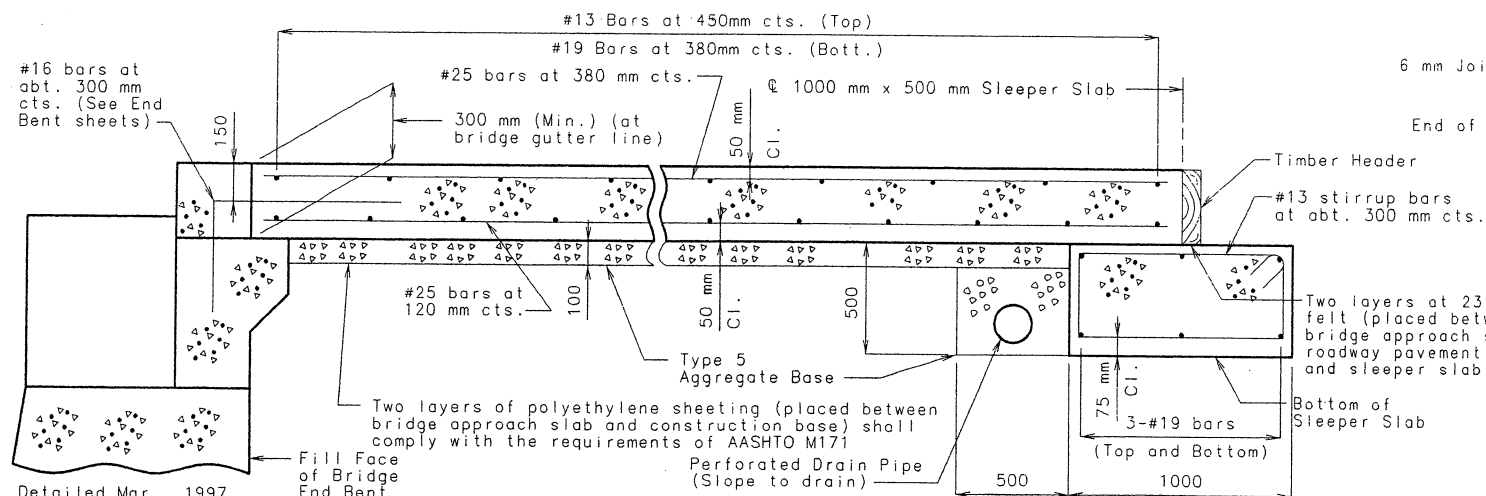
PART PLAN SHOWING REINFORCEMENT



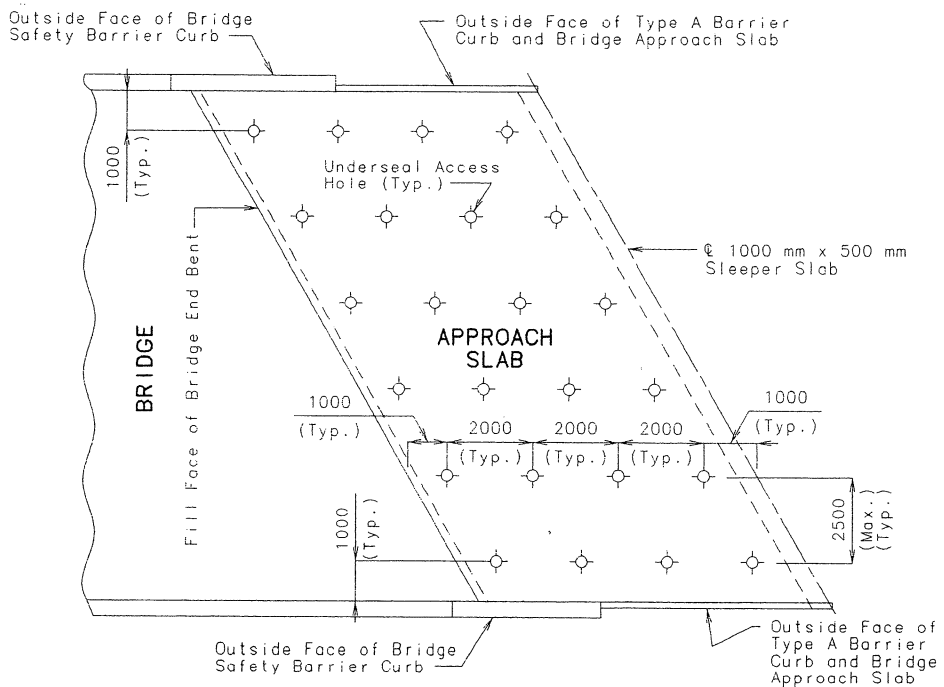
SECTION A-A

SECTION B-B

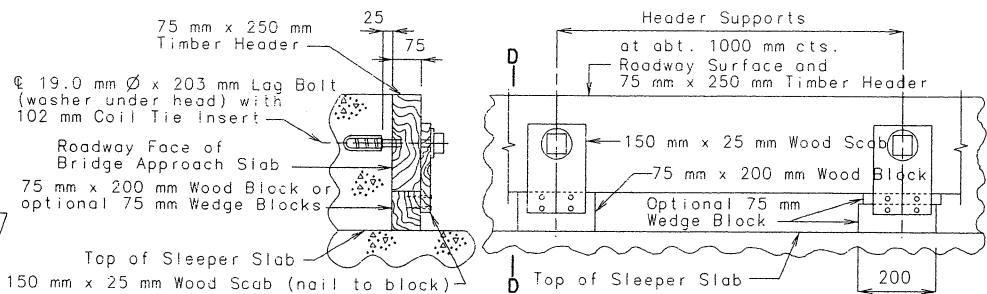
Note: With the approval of the Engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION C-C

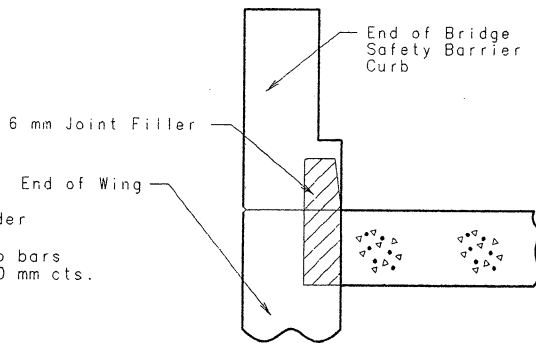


PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

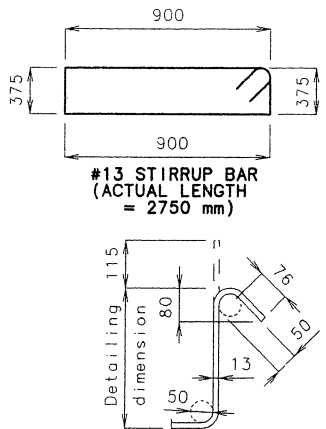


SECTION D-D
Note: Remove timber header when concrete pavement is placed.

DETAILS OF TIMBER HEADER

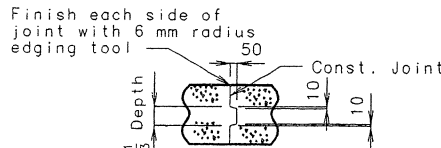


SECTION E-E (BETWEEN CURBS)

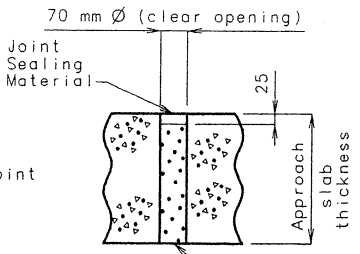


TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest 10 mm).



CONST. JOINT DETAIL (IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL

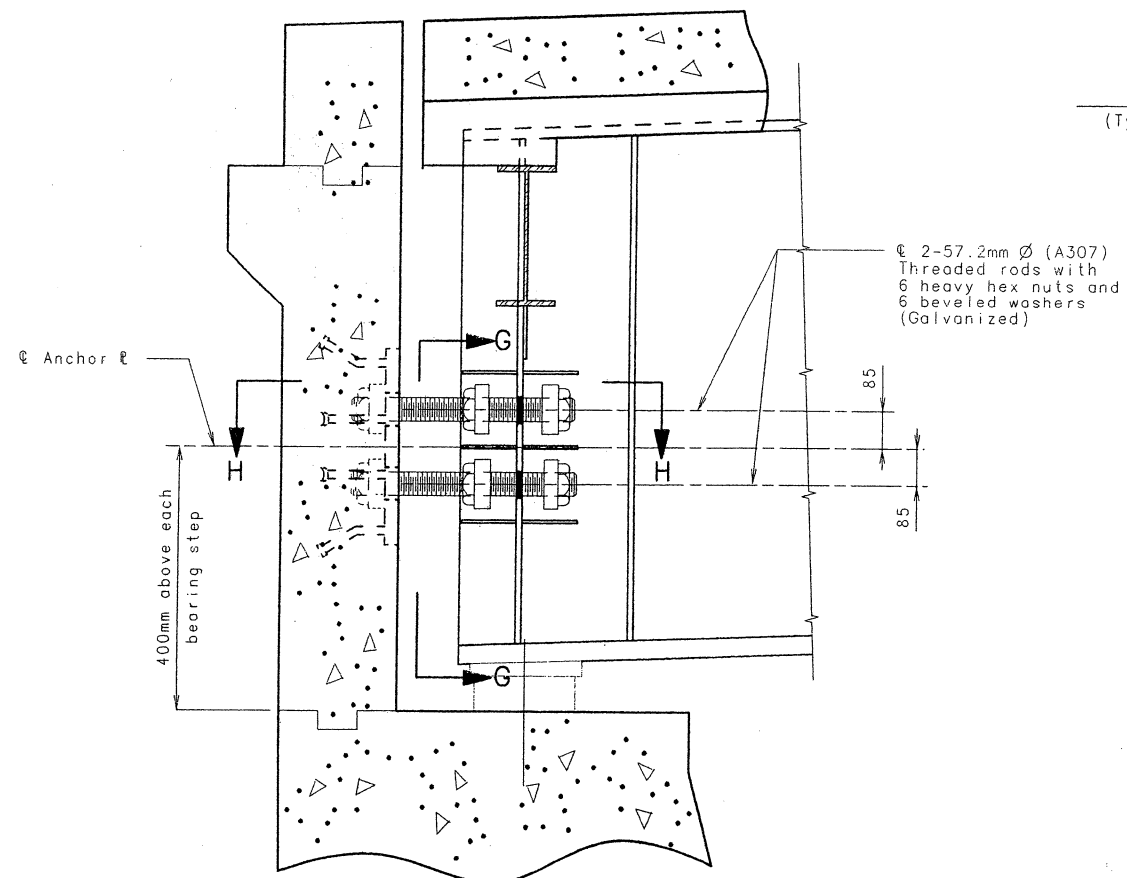


UNIT 3

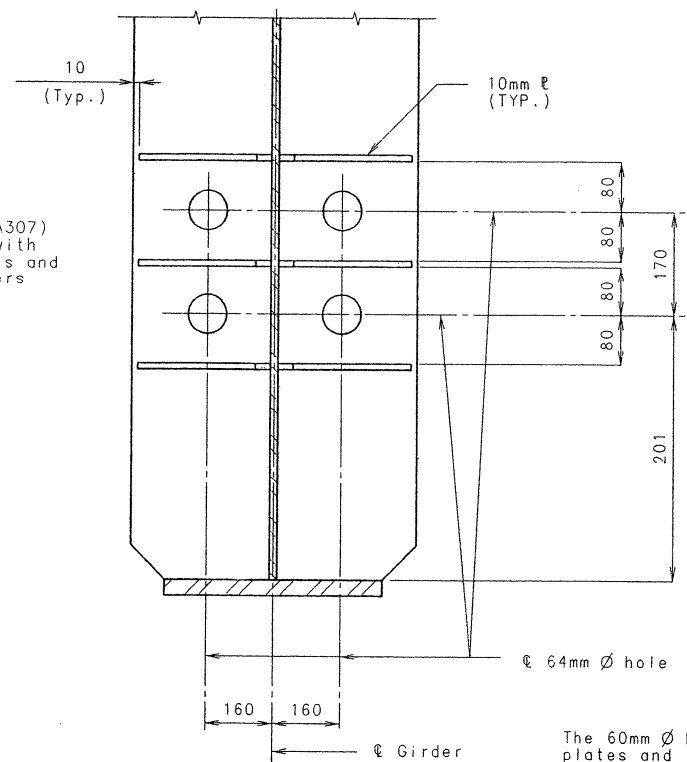
ST. LOUIS COUNTY A5682

BRIDGE APPROACH SLAB

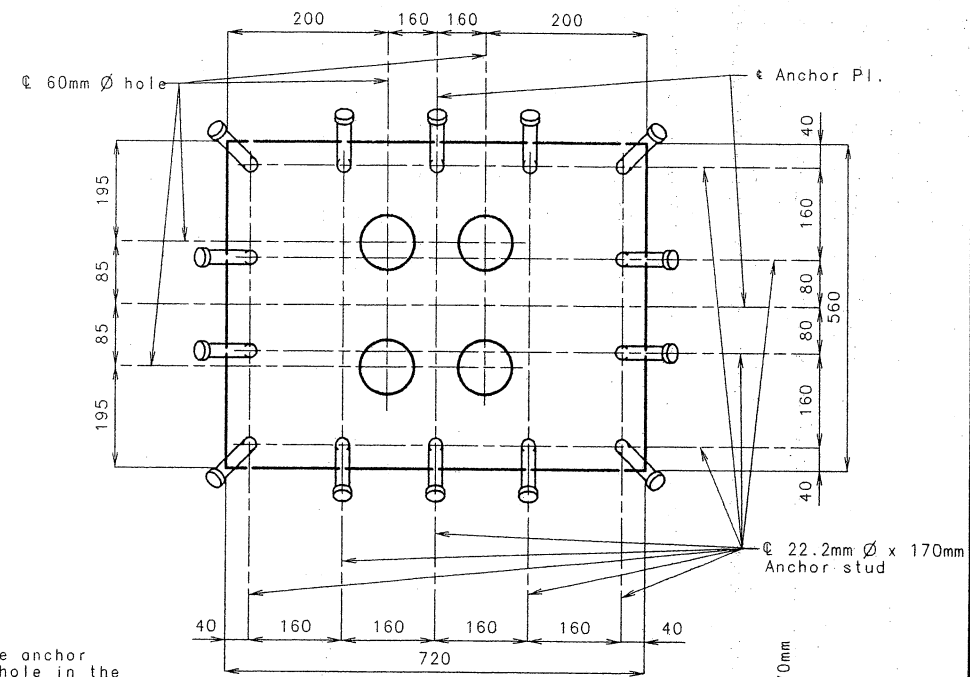
Sheet No. 197 OF 236



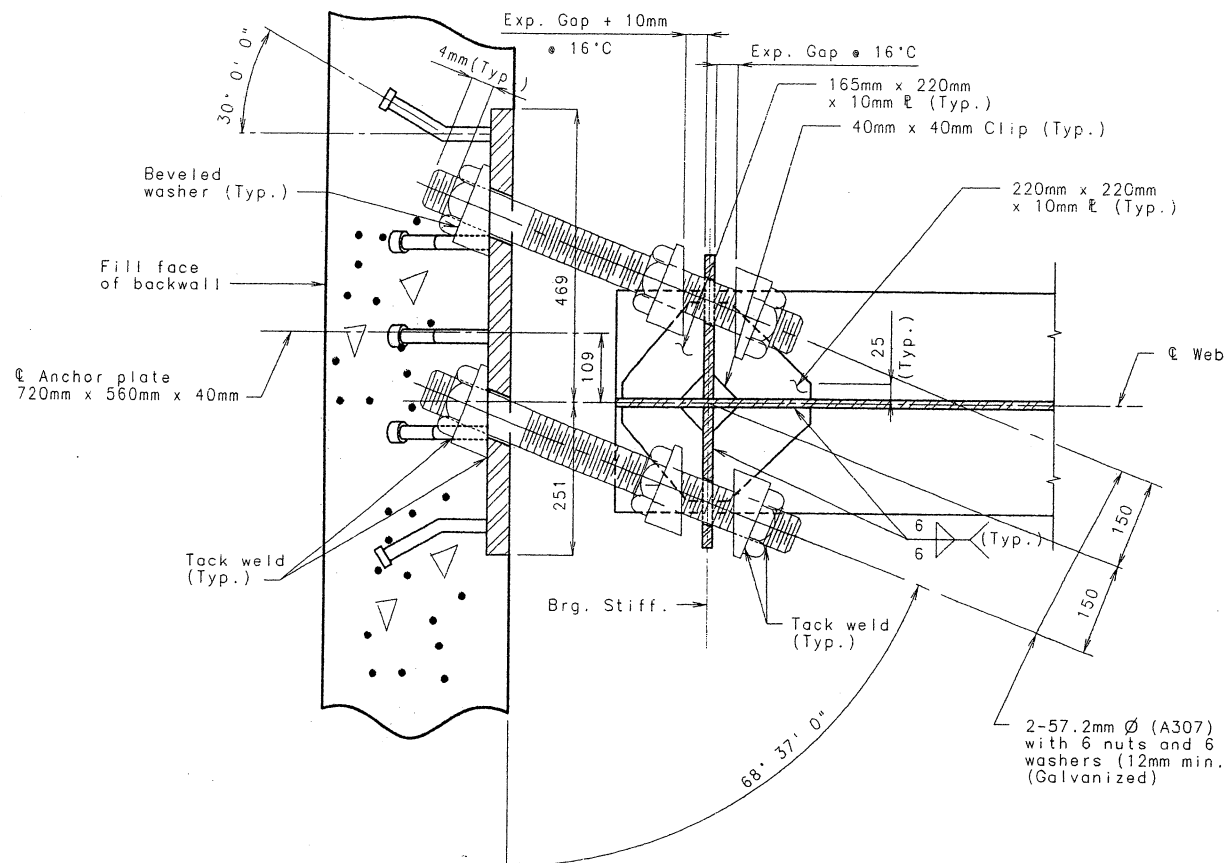
PART SECTION AT END BENT NO. R1



SECTION G-G



DETAIL OF ANCHOR PLATE FOR INTERIOR GIRDER



SECTION H-H

GENERAL NOTES:

A temporary threaded plug shall be inserted into each embedded hex nut in the backwall before concrete is poured. Plugs shall extend 4mm into backwall concrete as shown in Section A-A. Threaded rods shall be horizontal.

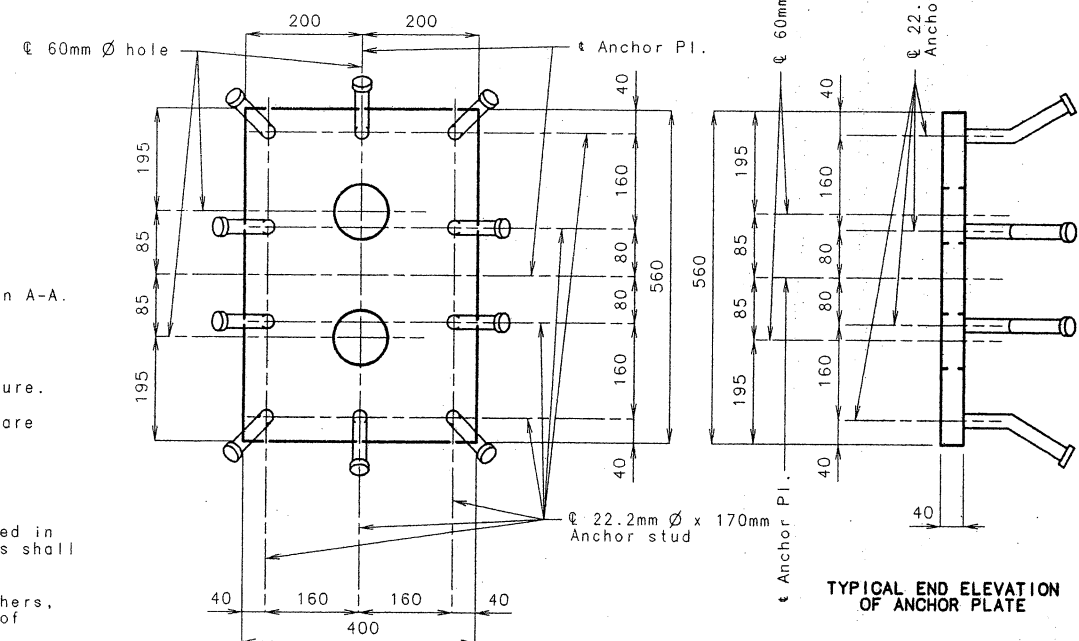
Use beveled washers and plates as required to allow for skew, curvature and grade of structure.

Interior Girders are shown, exterior girders are similar. Omit earthquake restrainer assembly on exterior side of exterior girders.

All plates, anchor studs and washers shall be ASTM A709M grade 250 steel.

All bolts, nuts and washers shall be galvanized in accordance with ASTM A153. All plates and studs shall be galvanized in accordance with ASTM A123.

Mass of 10mm plates, threaded rods, nuts, washers, anchor plates and studs are included in Mass of Fabricated Structural Carbon Steel.



DETAIL OF ANCHOR PLATE FOR EXTERIOR GIRDER

TYPICAL END ELEVATION OF ANCHOR PLATE

DETAILS OF ANCHOR PLATES FOR EARTHQUAKE RESTRAINERS AT END BENTS NO. R1



12-3-97

ST. LOUIS COUNTY

UNIT 4

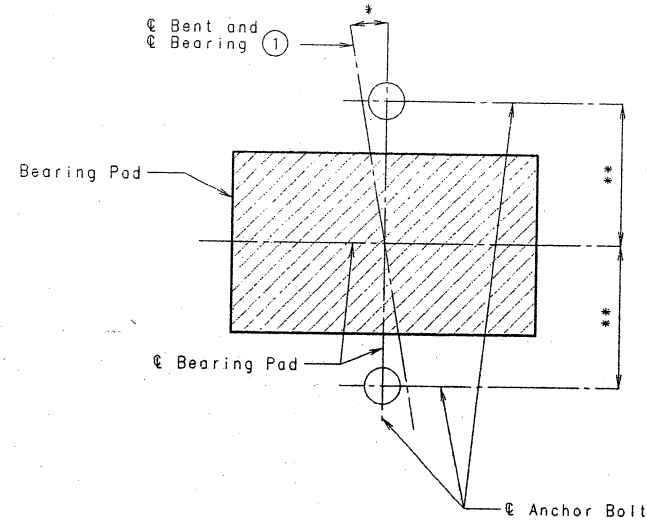
A5682

DETAILS OF EARTHQUAKE RESTRAINERS AT END BENT NO. R1

Sheet No.198 of 236

Detailed Oct. 1997
Checked Nov. 1997

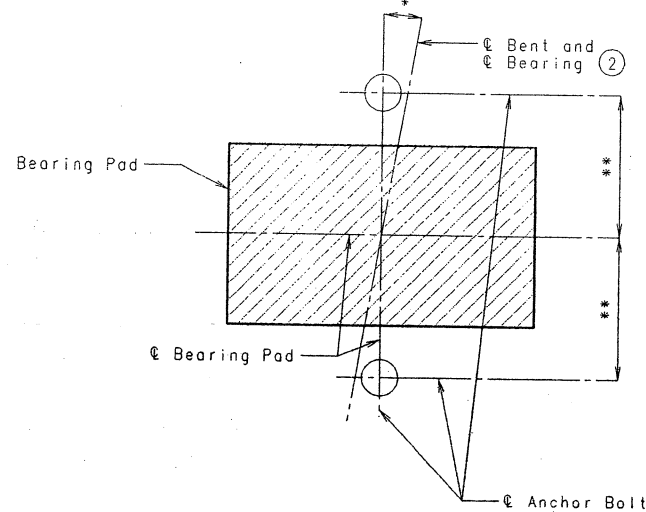
① \odot Bent applies only to intermediate bents no. R2 & R3



PLAN SHOWING ANCHOR BOLT AND BEARING PAD ALIGNMENT AT BENTS NO. R1, R2 AND R3

② \odot Bent applies only to intermediate bent no. R4.

\odot Bearing at intermediate bent no. R5 is offset parallel to the left of \odot Bent R5.

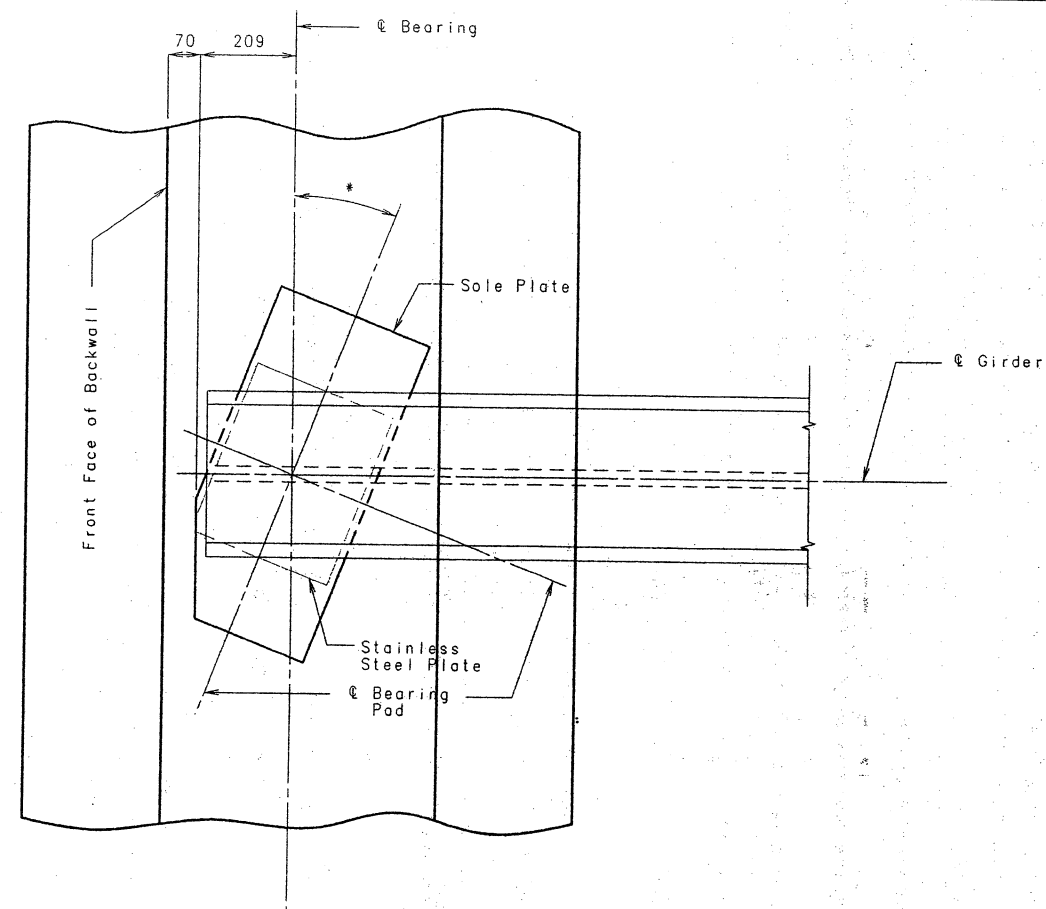


PLAN SHOWING ANCHOR BOLT AND BEARING PAD ALIGNMENT AT BENTS NO. R4 AND R5

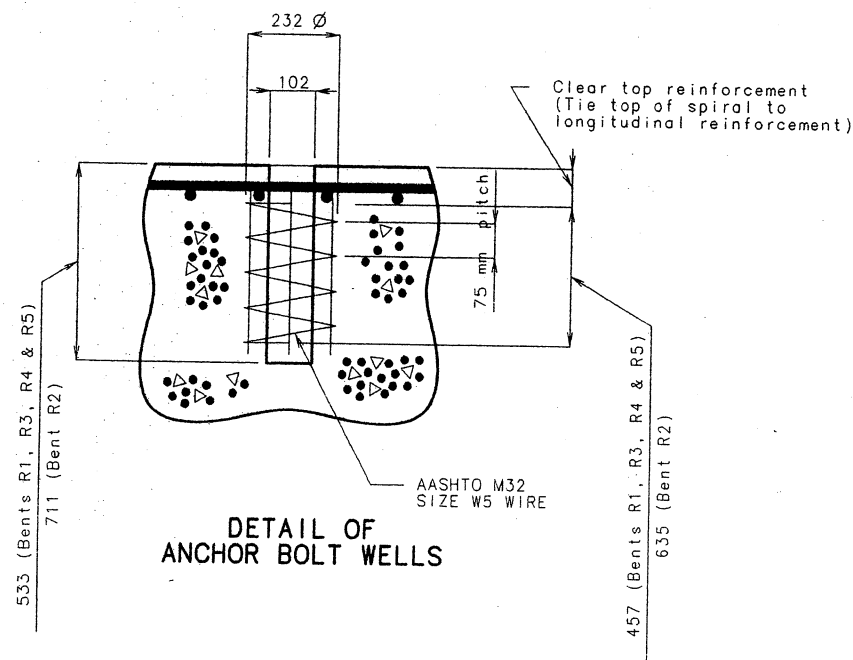
Note: For details of Swedge Anchor Bolts see sheet no. 200.

	*				
	BENT NO. R1	BENT NO. R2	BENT NO. R3	BENT NO. R4	BENT NO. R5
Girder No. R1	21° 26' 53"	15° 50' 9"	7° 55' 5"	00° 00' 00"	8° 9' 10"
Girder No. R2	21° 24' 50"	15° 50' 9"	7° 55' 5"	00° 00' 00"	8° 9' 28"
Girder No. R3	21° 22' 39"	15° 50' 9"	7° 55' 5"	00° 00' 00"	8° 9' 47"
Girder No. R4	21° 20' 20"	15° 50' 9"	7° 55' 5"	00° 00' 00"	8° 10' 8"

	**
Bent No. R1	275
Bent No. R2	305
Bent No. R3	290
Bent No. R4	299
Bent No. R5	250



SOLE PLATE AND STAINLESS STEEL PLATE CLIPPING DETAIL FOR END BENT NO. R1



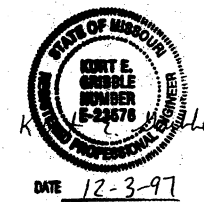
Detailed Sept. 1997
Checked Oct. 1997

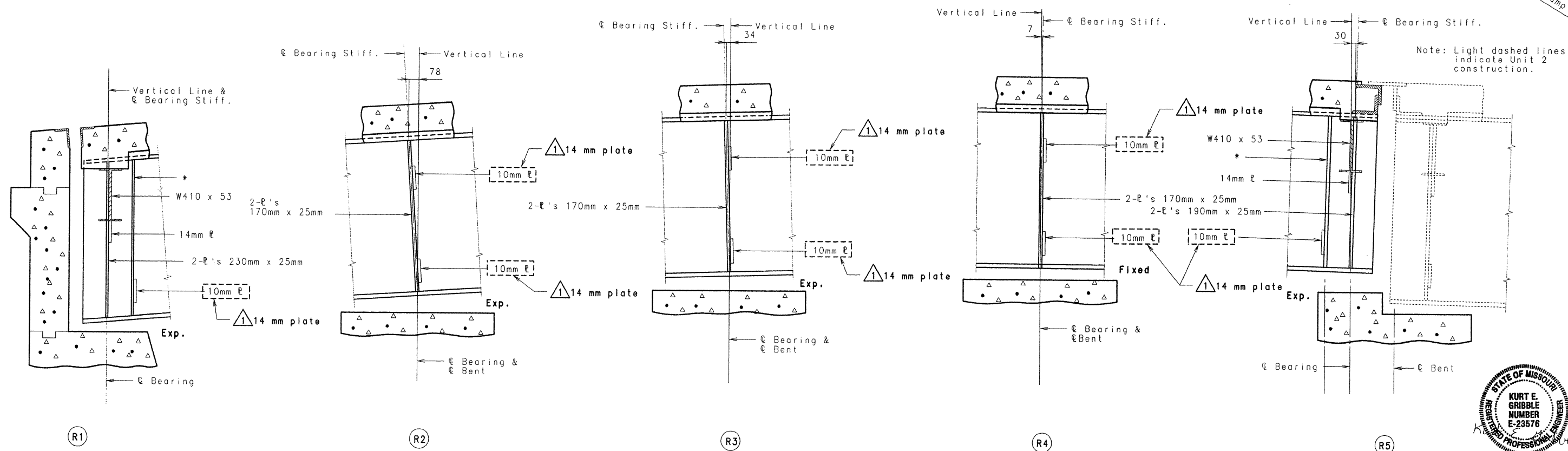
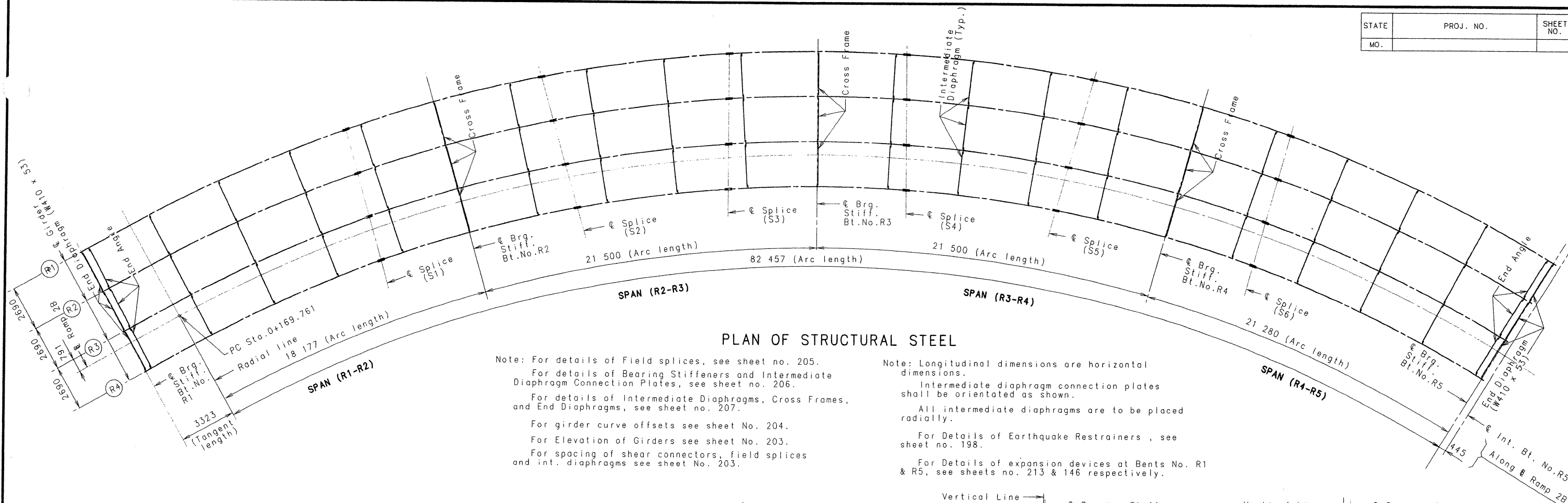
Sheet No. 201 of 236

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* 2-L's 115mm x 10mm Girders R2 & R3
 1-L 115mm x 10mm Girders R1 & R4

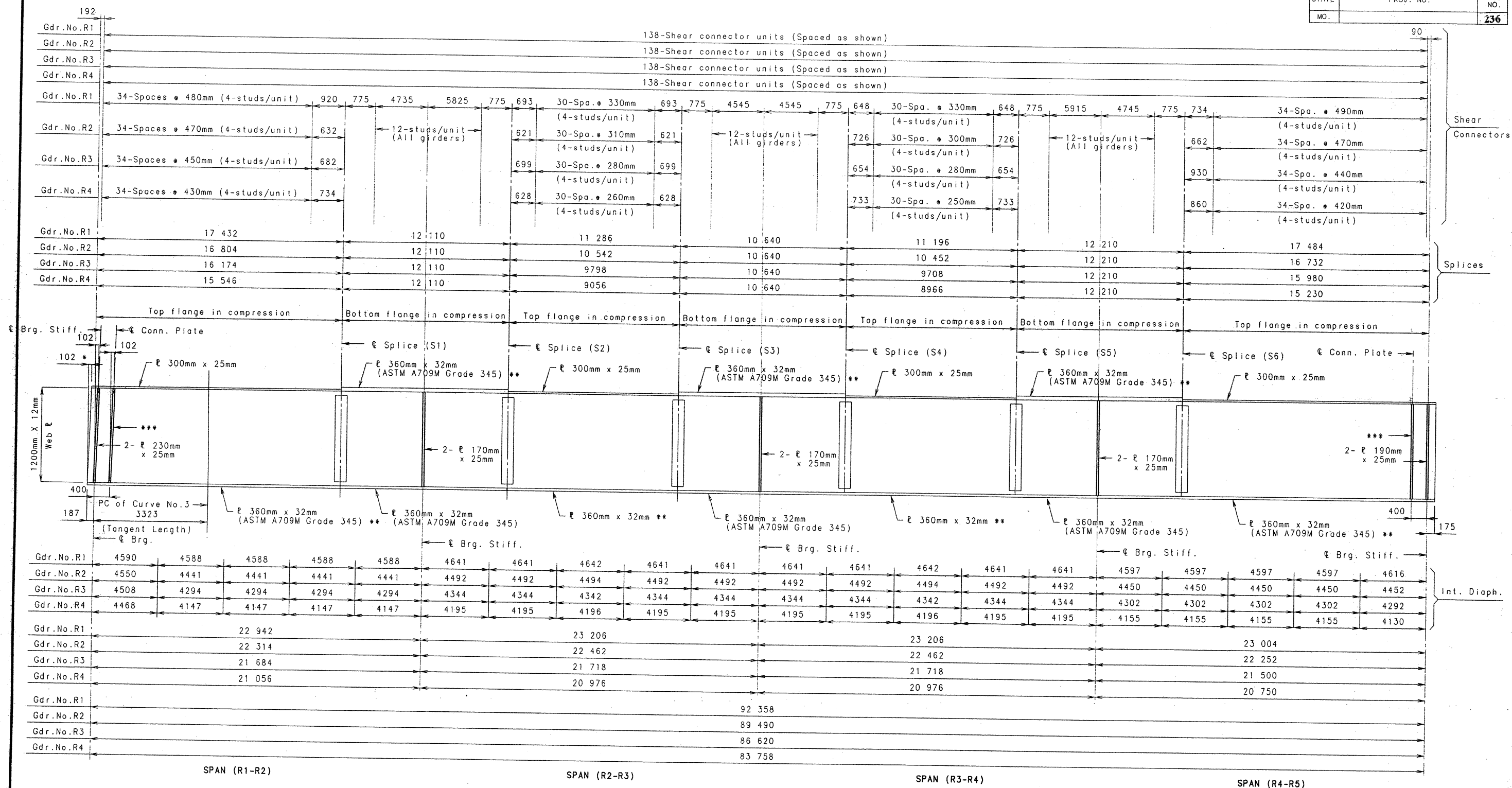
STATE OF MISSOURI
 KURT E. GRIBBLE
 NUMBER E-23576
 PROFESSIONAL ENGINEER
 DATE 9-29-98

Detailed July 1997
 Checked Nov. 1997

REVISED SEPT. 25, 1998

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UNIT 4
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ELEVATION OF GIRDERS

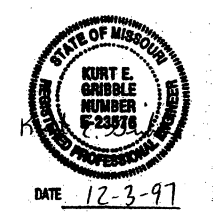
* From top of top flange to bottom of bottom flange.
 *** 2- $\frac{1}{2}$ "s 115mm x 10mm Girders R2 & R3
 1- $\frac{1}{2}$ " 115mm x 10mm Girders R1 & R4

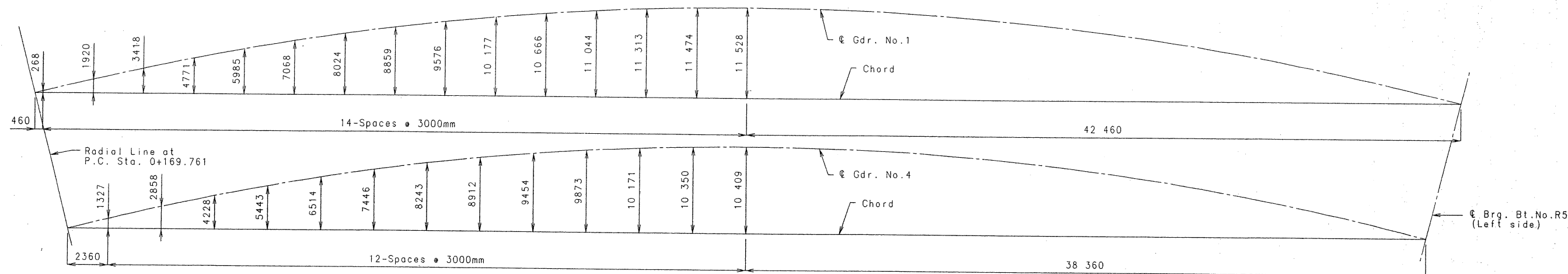
Note: All web plates shall be subject to notch toughness requirements.
 ** Indicates flange plates subject to notch toughness requirements.

Note: Plate girders shall be fabricated to conform with Camber Diagram shown on sheet No. 211.
 Fabricated structural steel shall be ASTM A709M Grade 250, except as noted.
 Longitudinal dimensions are horizontal arc dimensions along @ Girder (except as noted). See Part Longitudinal Section, sheet No. 202.
 For details of shear connectors, see sheet no. 206.
 For Plan of Structural Steel, see sheet no. 202.
 For details of Earthquake Restrainers, see sheet no 198.

Detailed July 1997
 Checked Oct. 1997

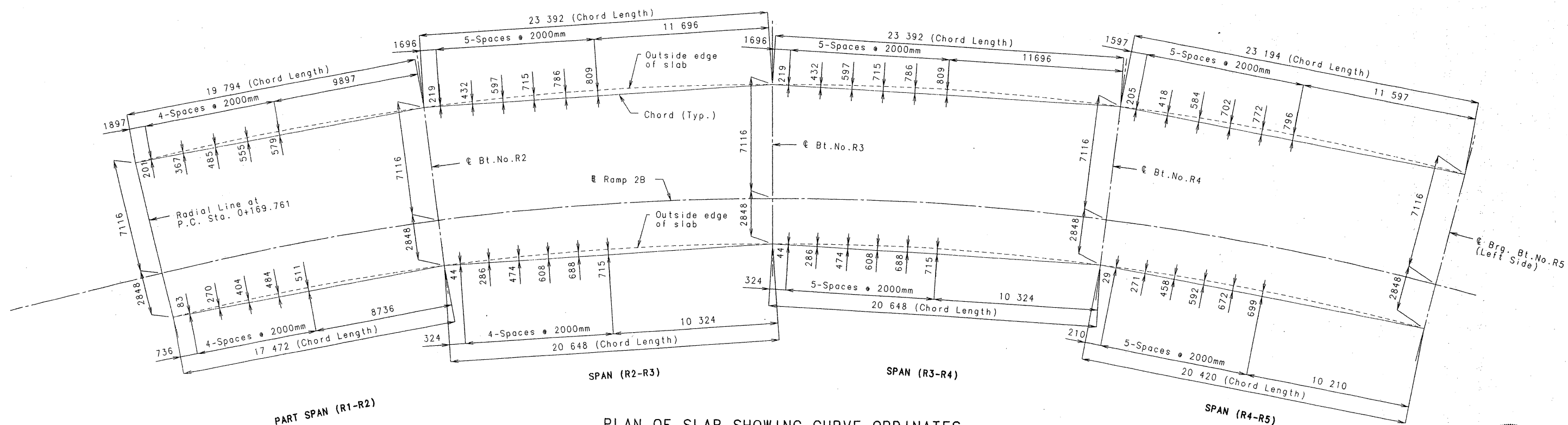
Sheet No.203 of 236





PLAN SHOWING EXTERIOR GIRDER CURVE OFFSETS

Note: Dimensions shown are horizontal.



PLAN OF SLAB SHOWING CURVE ORDINATES

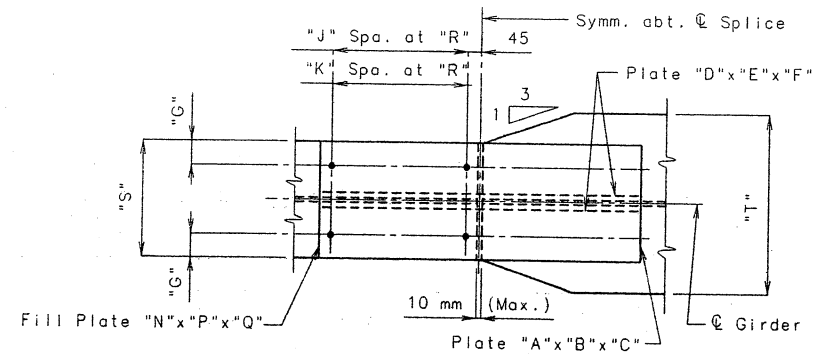


DATE 12-3-97

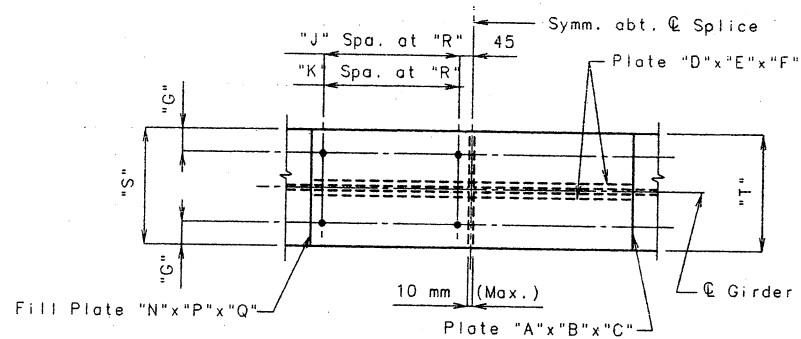
Detailed Aug. 1997
Checked Oct. 1997

Sheet No. 204 of 236

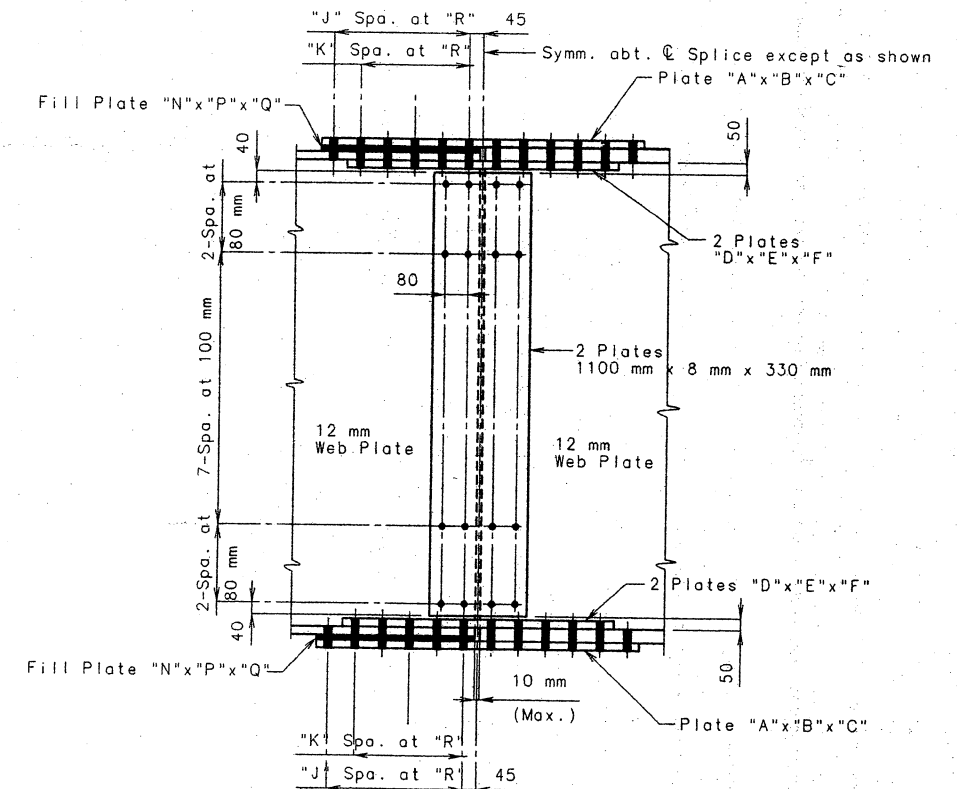
UNIT 4
ST. LOUIS COUNTY A5682



PLAN OF FLANGE SPLICE
S1 THRU S6 (Top)



PLAN OF FLANGE SPLICE
S1 THRU S6 (Bottom)



DETAIL OF BOLTED FIELD SPLICE

Note:
Use 22.2 mm ϕ high strength bolts with 23.8 mm ϕ holes.
Contact surfaces are to be blast cleaned in accordance with Section 712.12.2.1 of the Missouri Standard Specifications (Metric).

For location of splices, see sheet no. 203.

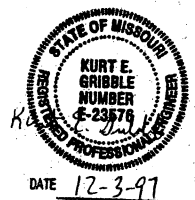
SPlice LOCATION	SPlice LOCATION	TABLE OF DIMENSIONS-FIELD SPLICE											
		"A"	"B"	"C"	"D"	"E"	"F"	"G"	"J"	"K"	"N"	"P"	"Q"
S1 - S6	Top	300	14	970	120	14	810	60	5	4	300	7	480
S1 & S6	Bottom	360	25	1770	150	25	1770	75	10	10	-	-	80
S2 - S5	Bottom	360	18	1290	150	18	1290	75	7	7	-	-	80

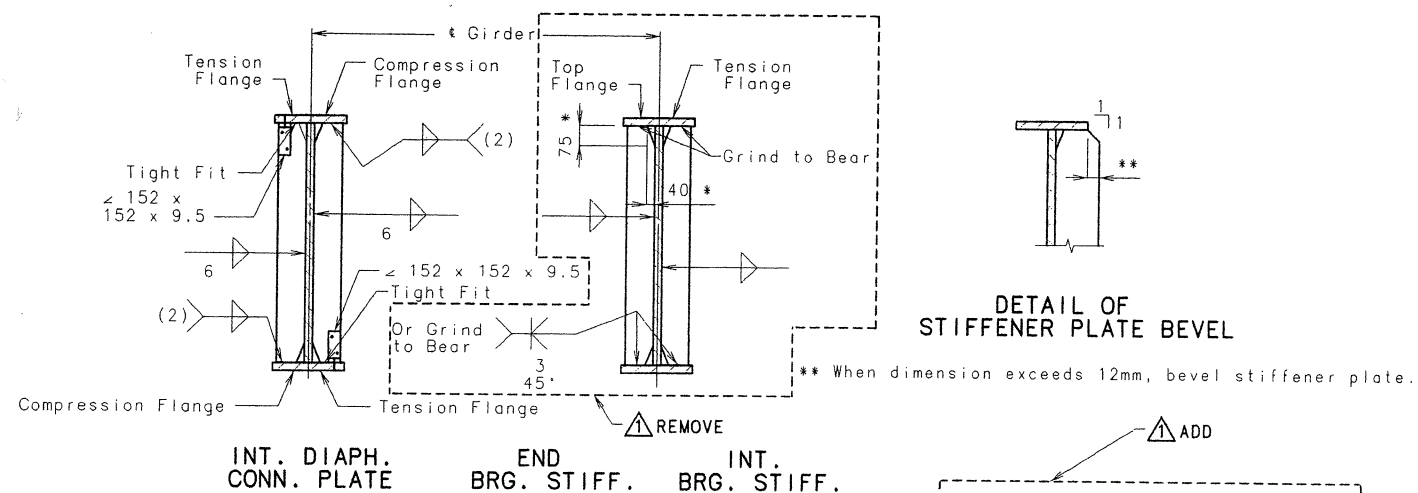
FIELD SPLICE

Detailed Aug. 1997
Checked Oct. 1997

SHEET NO. 205 OF 236.

ST. LOUIS COUNTY UNIT 4 A5682



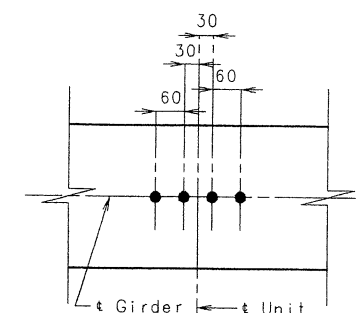
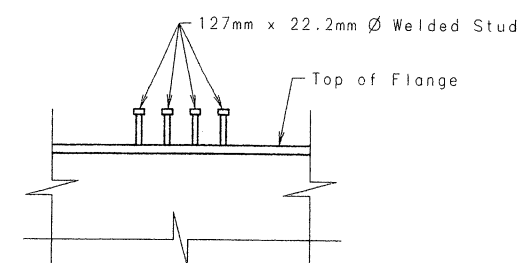
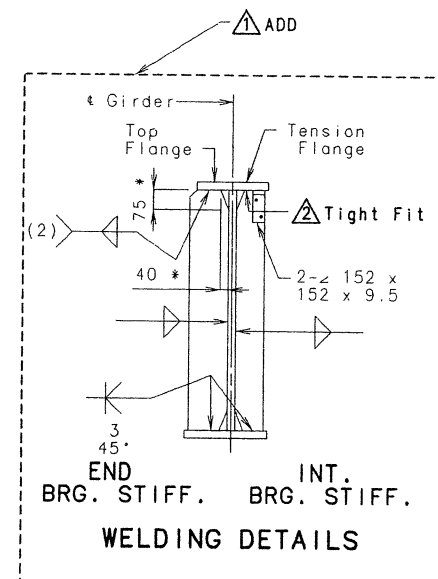


(2) Weld to compression flange as located on Elevation of Girder.
* Typical for all Int. Diaph. Conn. Pl. and Brg. Stiff.

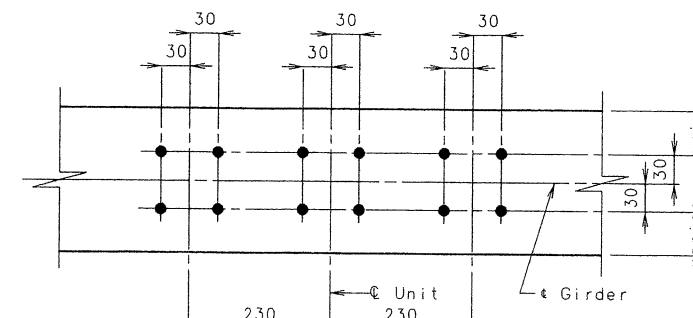
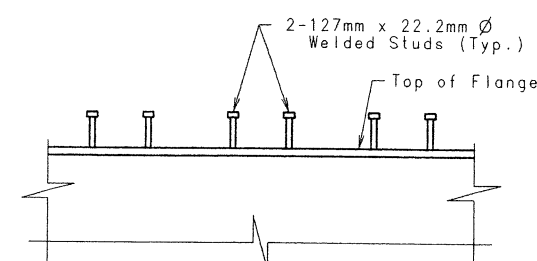
WELDING DETAILS

Note: For details of Flange Connection Angles, see sheet No. 207.

For sizes of Bearing Stiffener Plates and Diaphragm Connection Plates, see sheet No. 207.



4 SHEAR CONN. PER UNIT

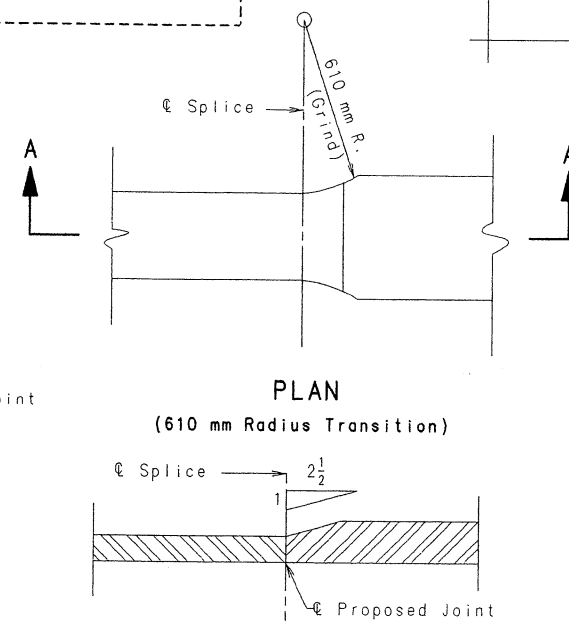
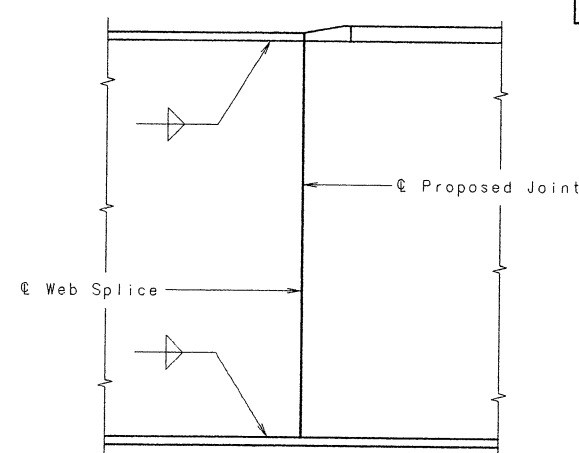
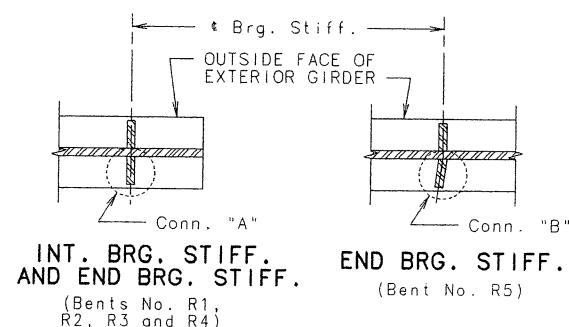


12 SHEAR CONN. PER UNIT

DETAILS OF SHEAR CONNECTOR UNITS

Note: Mass of 1025 kg of shear connectors is included in the mass of Fabricated Structural Carbon Steel.

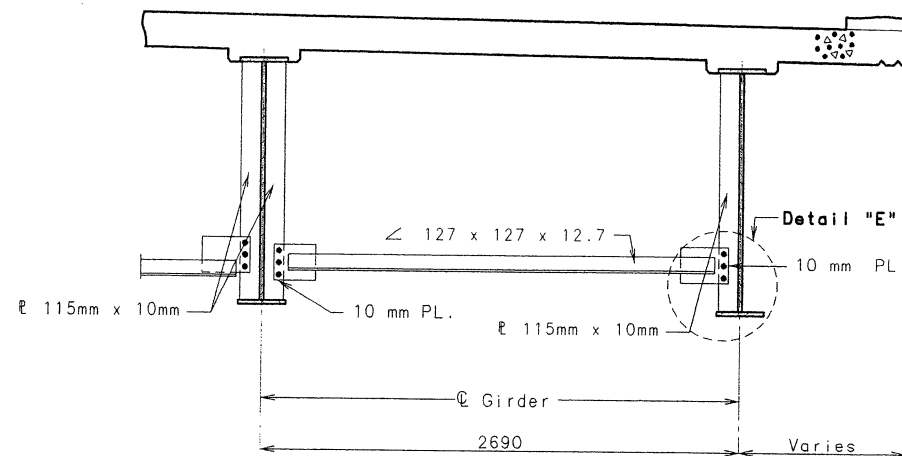
For location of shear connector units, see sheet No. 203.



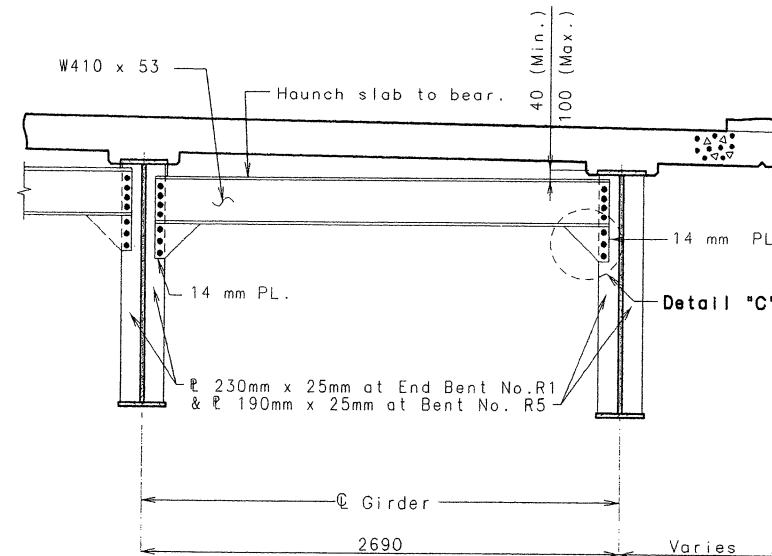
WELDED SHOP WEB SPLICE

WELDED SHOP FLANGE SPLICE

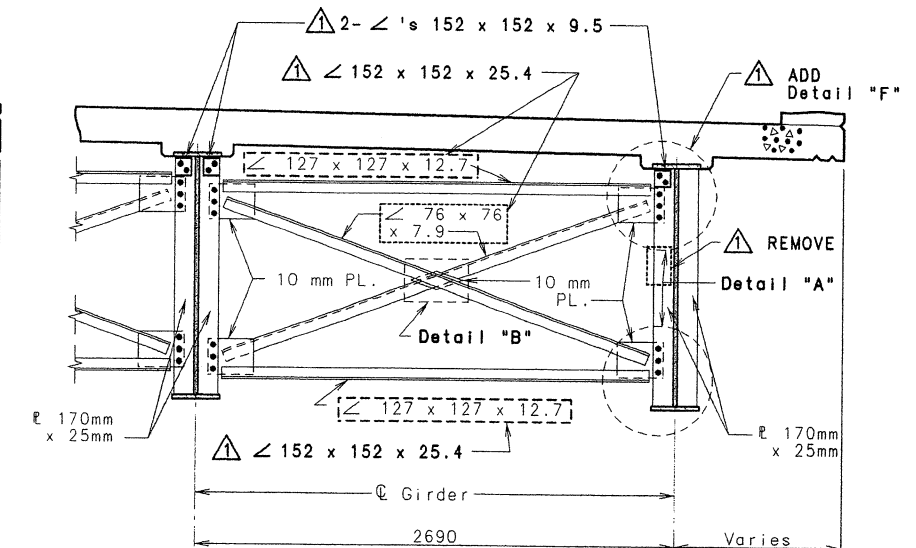
Note: Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



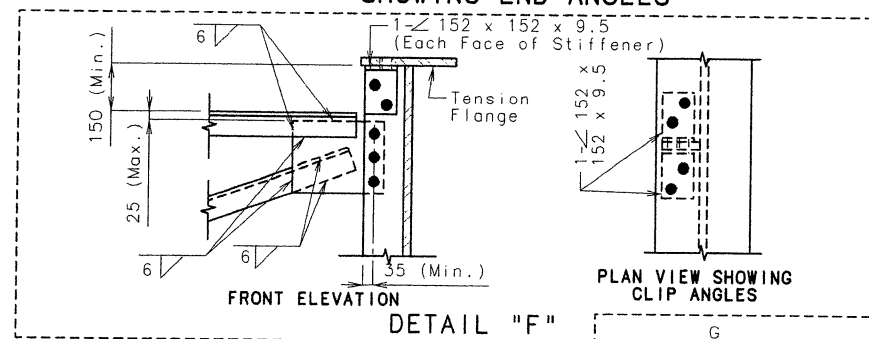
TYPICAL PART SECTION
SHOWING END ANGLES



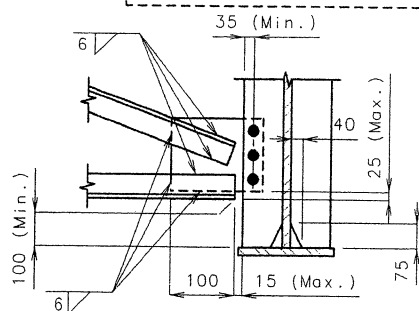
TYPICAL PART SECTION
SHOWING END DIAPHRAGMS



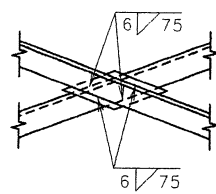
TYPICAL PART SECTION
SHOWING CROSS FRAMES
AT INTERMEDIATE BENTS



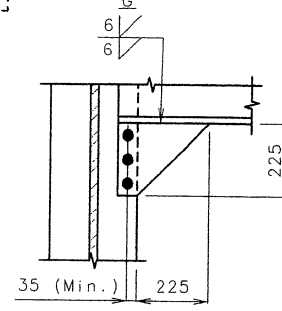
PLAN VIEW SHOWING
CLIP ANGLES



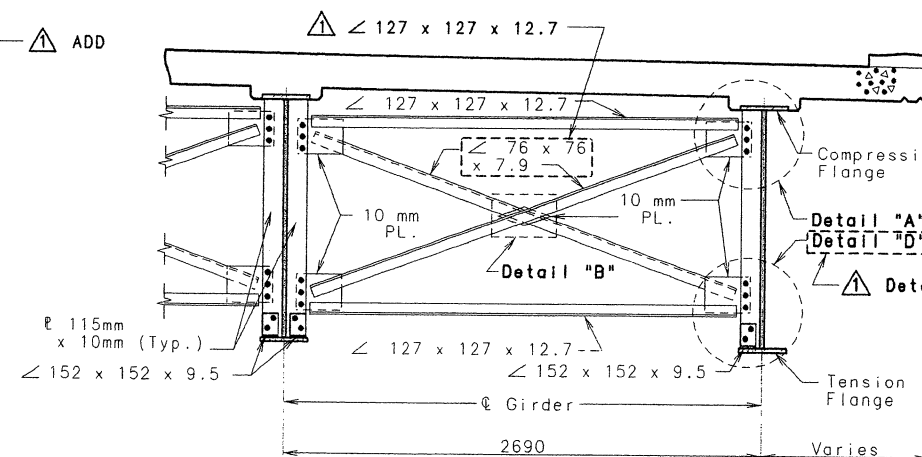
DETAIL "A"



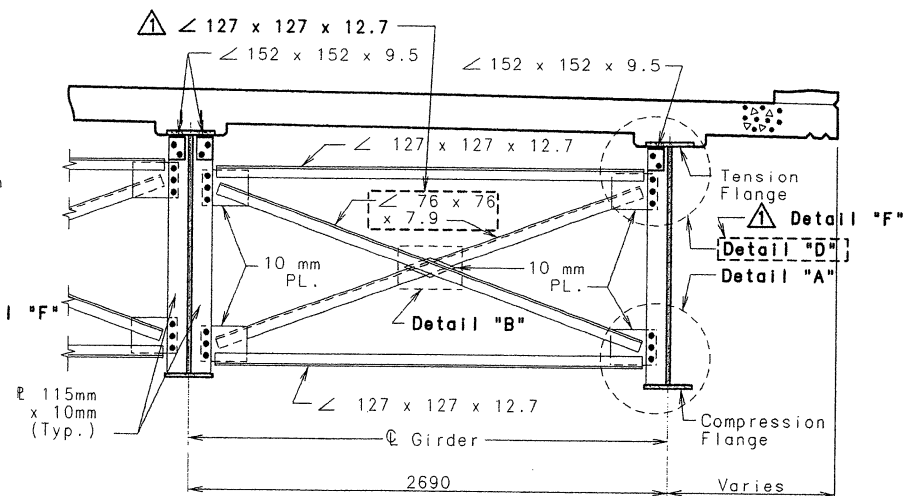
DETAIL "B"



DETAIL "C"

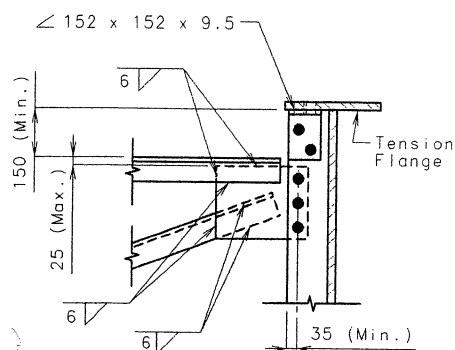


TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION

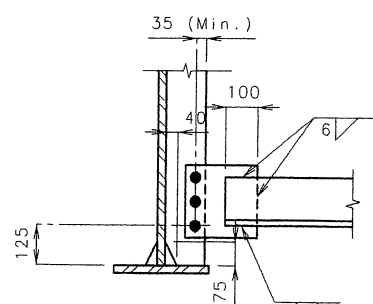


TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION

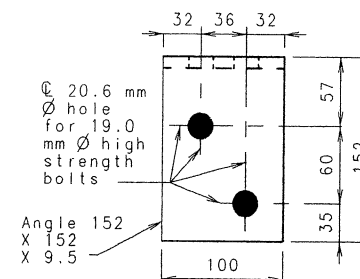
Note:
The two 19.0 mm ϕ high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.



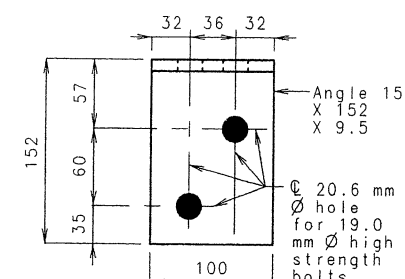
DETAIL "D"



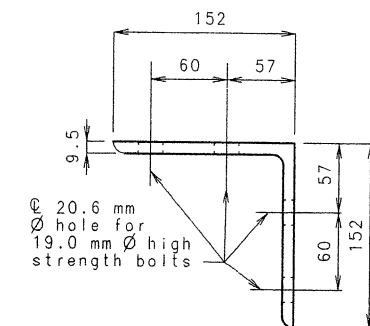
DETAIL "E"



PLAN



FRONT ELEVATION



SECTION THRU ANGLE

DETAIL OF FLANGE CONNECTION ANGLE



DATE 9-29-98

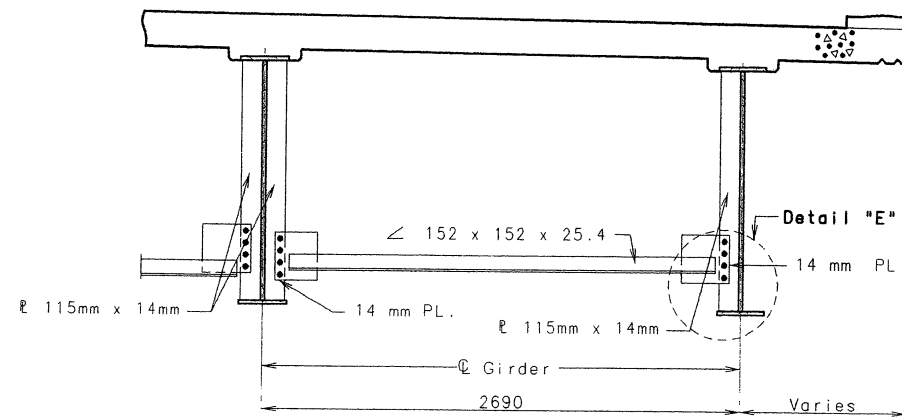
Detailed Aug. 1997
Checked Oct. 1997

REVISD JUNE 8, 1998

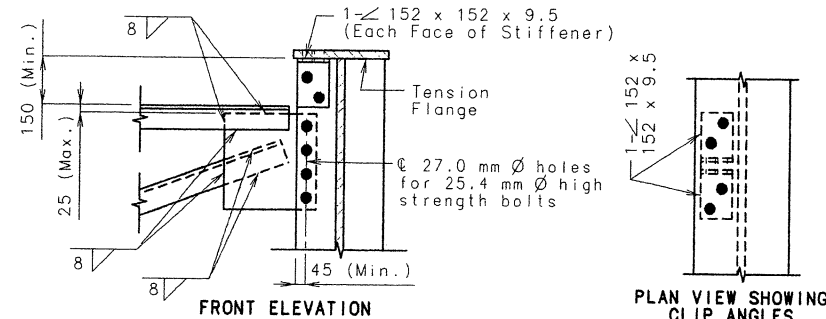
REVISD SEPT 25, 1998
VOID THIS SHEET, SEE SHEET NO. 207A

Sheet No.207 of 236

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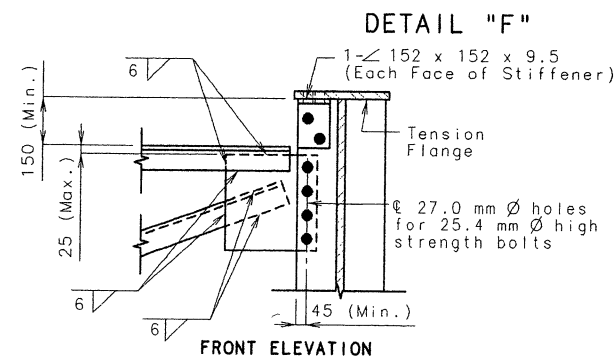


TYPICAL PART SECTION
SHOWING END ANGLES



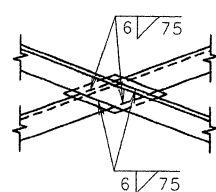
FRONT ELEVATION

PLAN VIEW SHOWING
CLIP ANGLES

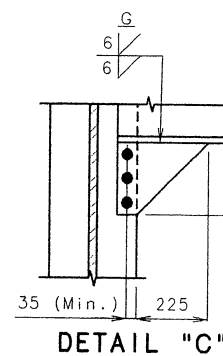


FRONT ELEVATION

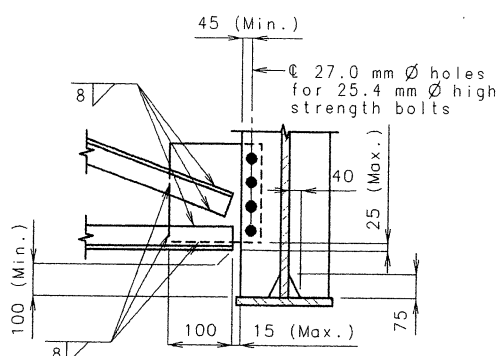
DETAIL "H"



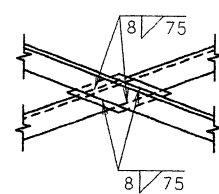
DETAIL "B"



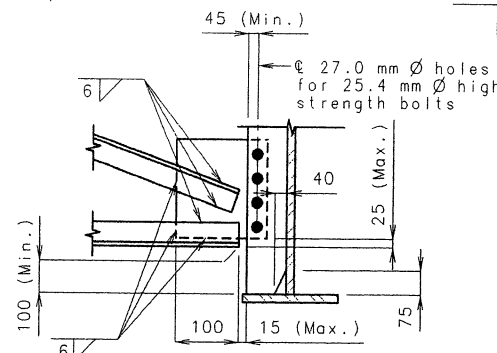
DETAIL "C"



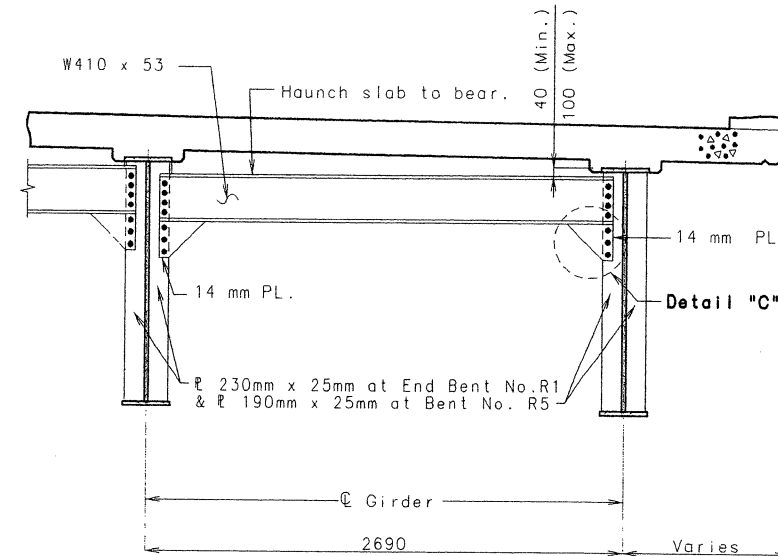
DETAIL "A"



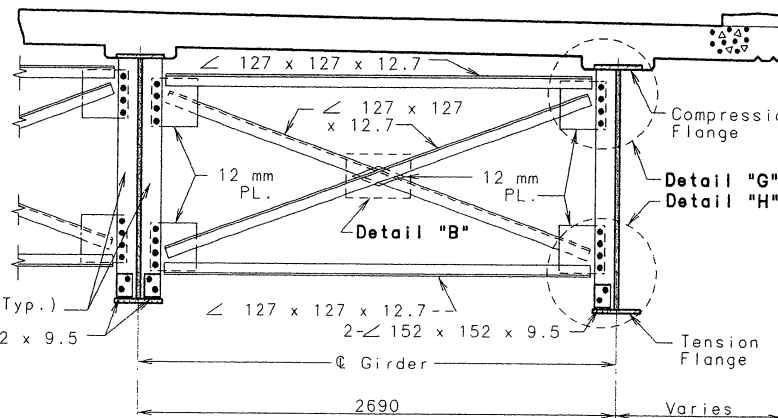
DETAIL "I"



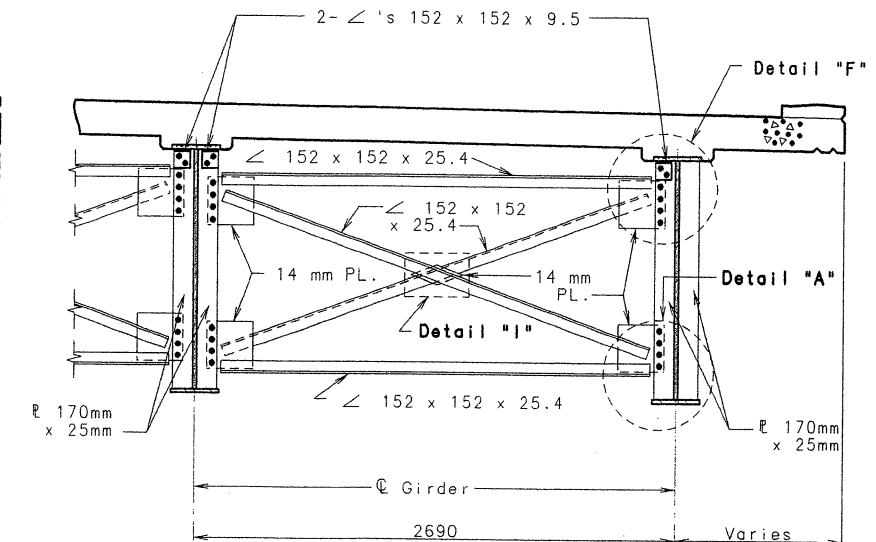
DETAIL "G"



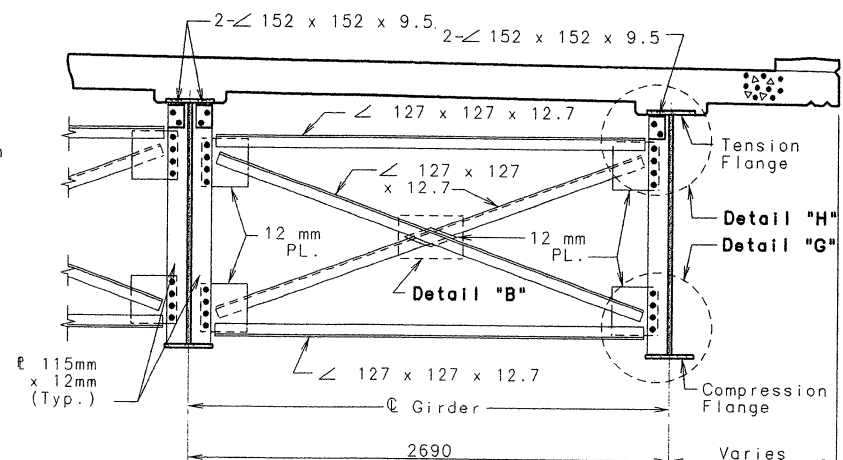
TYPICAL PART SECTION
SHOWING END DIAPHRAGMS



TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION

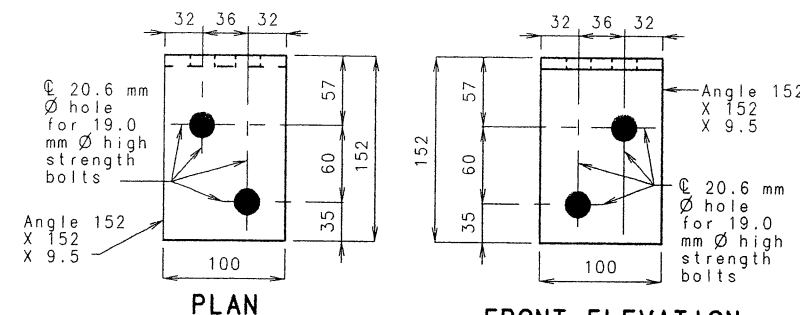


TYPICAL PART SECTION
SHOWING CROSS FRAMES
AT INTERMEDIATE BENTS



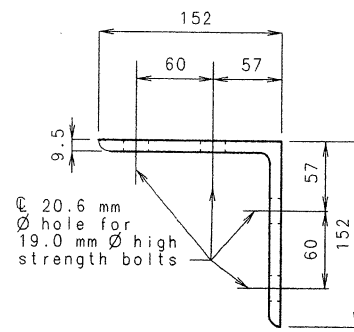
TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION

Note:
The two 19.0 mm \varnothing high strength bolts that connect the 152 x 152 x 9.5 angle to the top flange shall be placed so the nut is on the inside of flange toward the web.



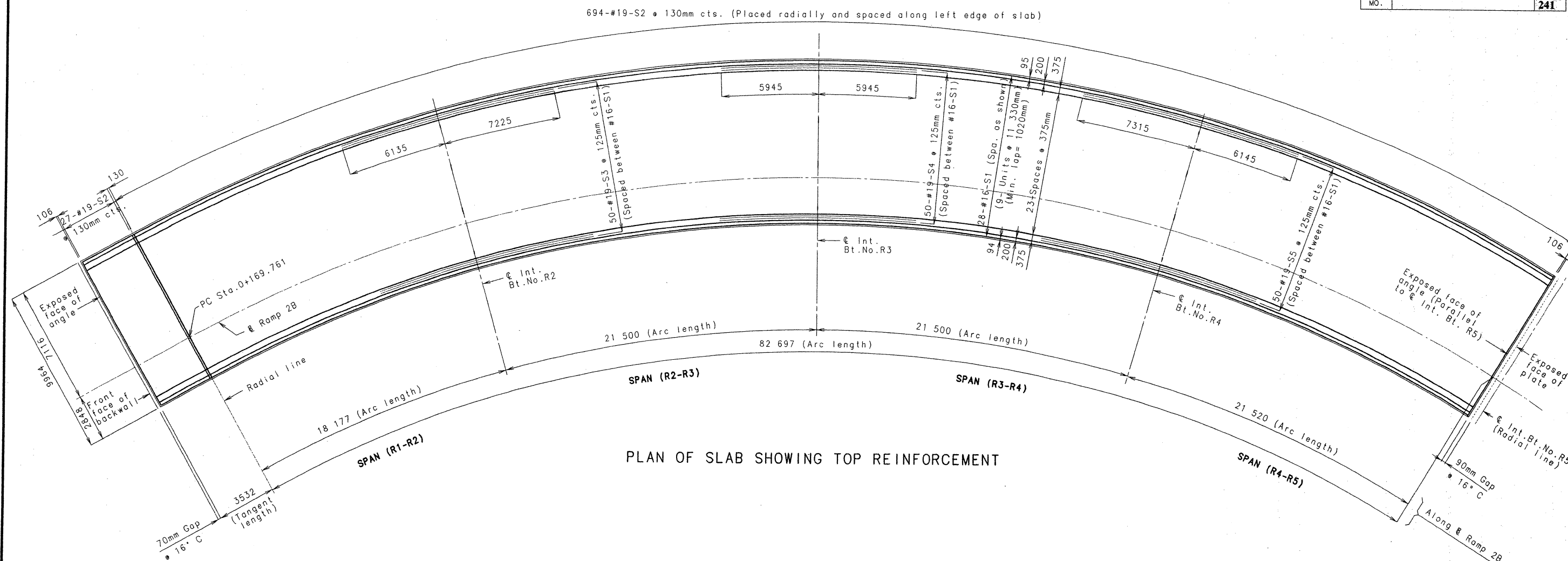
PLAN

FRONT ELEVATION
DETAIL OF FLANGE CONNECTION ANGLE



SECTION THRU ANGLE





PLAN OF SLAB SHOWING TOP REINFORCEMENT

Note: Longitudinal dimensions are horizontal dimensions.

Longitudinal reinforcement shall be placed parallel to Ramp 2B.

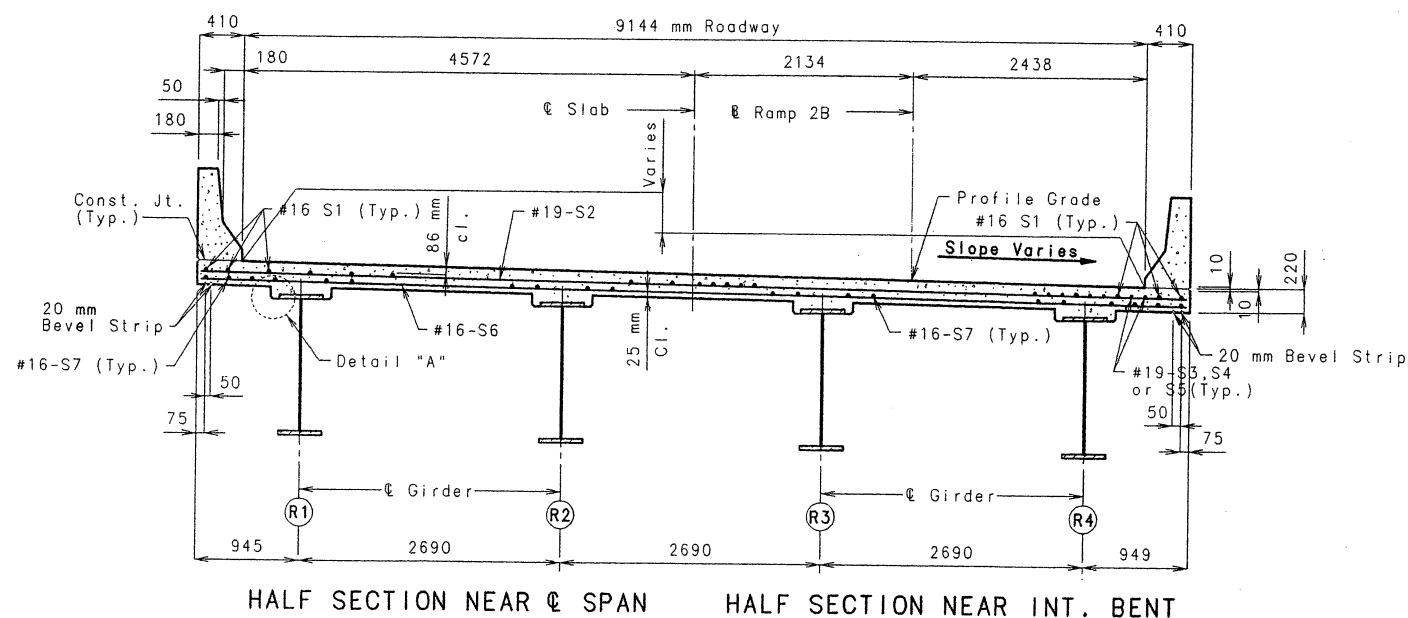
Transverse reinforcement shall be placed perpendicular to Ramp 2B.

For slab curve ordinates see sheet No. 204.

For details of superelevation transitions see sheet No. 212.

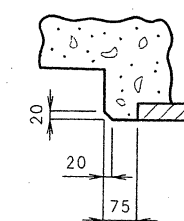
For Slab Pouring Sequence and Plan of Slab Showing Bottom Reinforcement, see sheet No. 209.

For Dead Load Deflection, Plate Girder Camber Diagram, Theoretical Slab Haunch and Theoretical Bottom of Slab Elevations, see sheet No. 210 & 211 respectively.

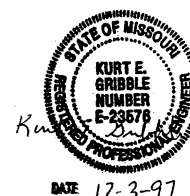


HALF SECTION NEAR G SPAN HALF SECTION NEAR INT. BENT

Note: For details and reinforcement of safety barrier curb see sheets no. 214, 215, 216 & 217.



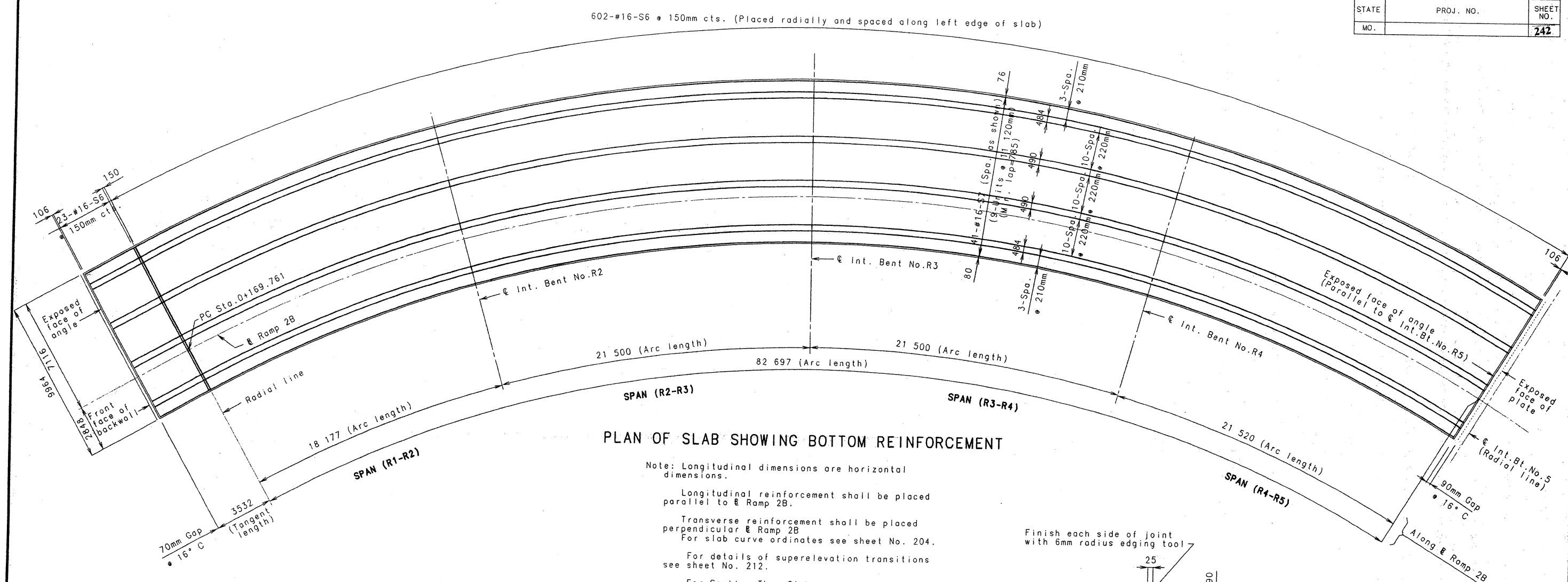
DETAIL "A"



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PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Note: Longitudinal dimensions are horizontal dimensions.

Longitudinal reinforcement shall be placed parallel to Ramp 2B.

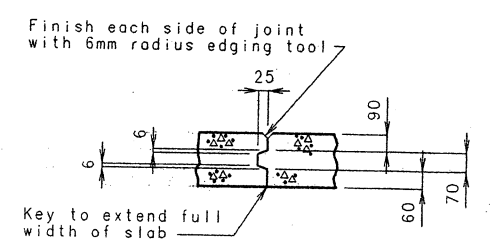
Transverse reinforcement shall be placed perpendicular to Ramp 2B.

For slab curve ordinates see sheet No. 204.

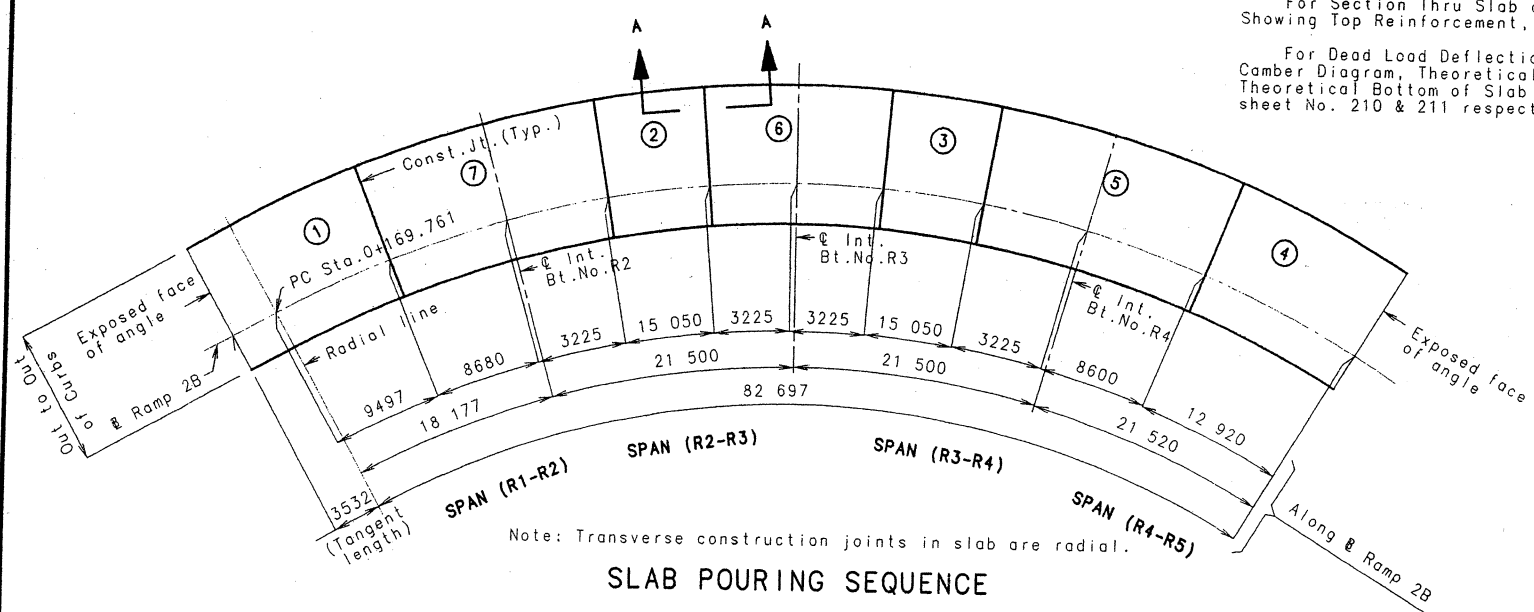
For details of superelevation transitions see sheet No. 212.

For Section Thru Slab and Plan of Slab Showing Top Reinforcement, see sheet No. 208.

For Dead Load Deflection, Plate Girder Camber Diagram, Theoretical Slab Haunch and Theoretical Bottom of Slab Elevations, see sheet No. 210 & 211 respectively.



SECTION A-A



SLAB POURING SEQUENCE

Note: Transverse construction joints in slab are radial.

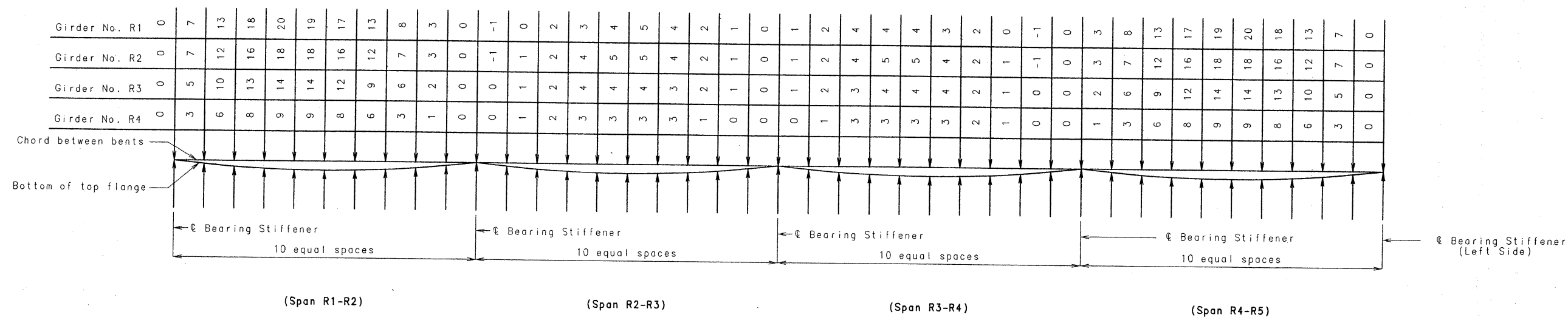
BASIC SEQUENCE	SEQUENCE OF POURS							MIN. RATE OF POUR CU. METERS/HR.	
	DIRECTION							WITH RETARDER	NO RETARDER
	1	2	3	4	5	6	7	20	20
EITHER DIRECTION									
ALTERNATE POURS TO THE BASIC SKIP SEQUENCE ARE SUBJECT TO THE APPROVAL OF THE ENGINEER IN ACCORDANCE WITH SECTION 703.3.12.4 OF MISSOURI STANDARD SPECS. (METRIC)									
ALTERNATE "A" POURS	1	7 + 2	6 + 3	5 + 4				20	24
	END TO 7	1 TO 6	2 TO 5	3 TO END					
ALTERNATE "B" POURS	1 + 7 + 2	6 + 3	5 + 4					20	24
	END TO 6	2 TO 5	3 TO END						
ALTERNATE "C" POURS	1 + 7 + 2	6 + 3 + 5 + 4						20	24
	END TO 6	2 TO END							
ALTERNATE "D" POURS	1 + 7 + 2 + 6 + 3 + 5 + 4							20	24
	END TO END								

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 concrete to 2.5 hours.



DATE 12-3-97

Detailed Aug. 1997
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DEAD LOAD DEFLECTION DIAGRAM

Note: Dead load deflection includes mass of structural steel, concrete slab, and barrier curb.

17.9% of dead load deflection on exterior girders is due to mass of structural steel.

15.0% of dead load deflection on interior girders is due to mass of structural steel.

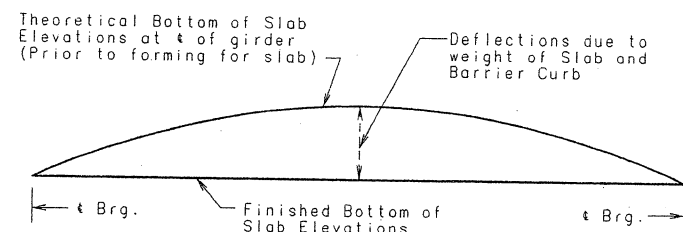
Detailed Sept. 1997
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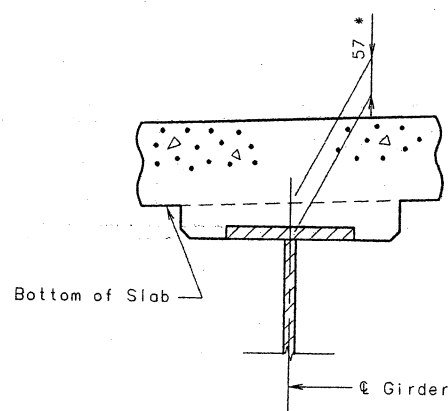
UNIT 4
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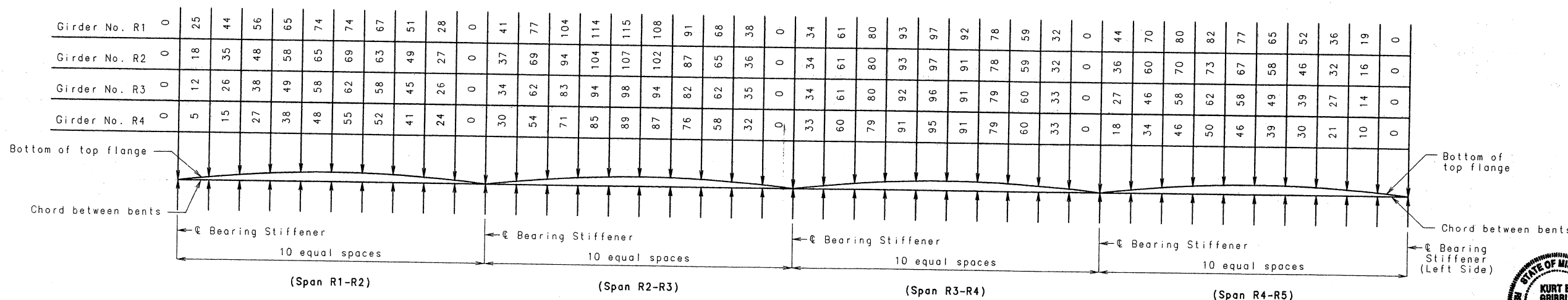
TYPICAL SLAB ELEVATIONS DIAGRAM

** Elevations are based on a constant slab thickness of 220 mm and include allowances for Theoretical Dead Load Deflections due to mass of slab and barrier curb.



THEORETICAL SLAB HAUNCH

* Dimension may vary if the girder camber after erection differs from plan camber by more or less than the % of D.L. deflection due to mass of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.



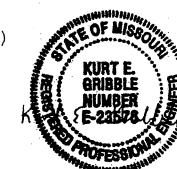
Note: Camber includes allowance for vertical curve, superelevation transition and for dead load deflection due to mass of concrete slab, curb, and structural steel.

PLATE GIRDER CAMBER DIAGRAM

Detailed Sept. 1997
Checked Oct. 1997

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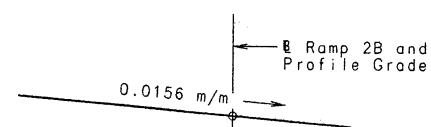
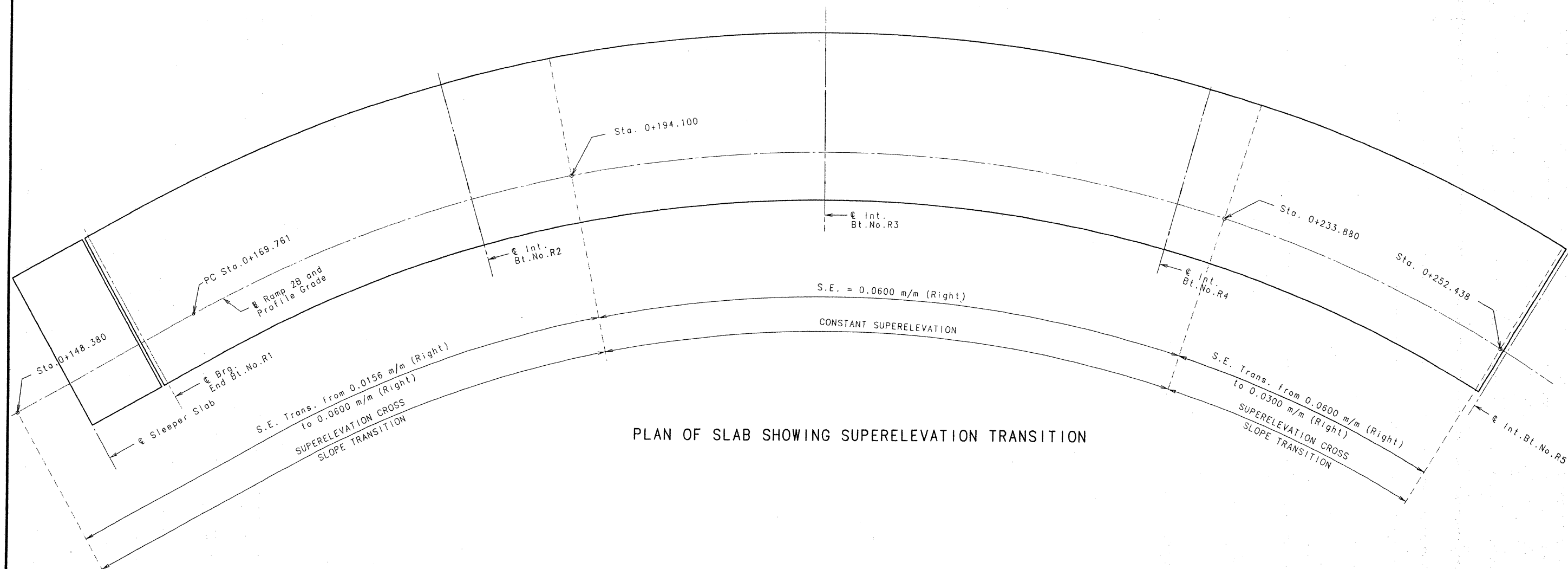


DATE

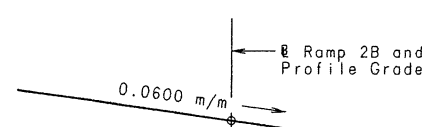
UNIT 4

A5682

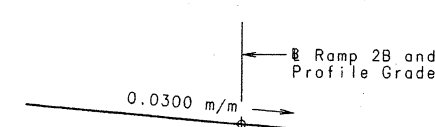
STATE	PROJ. NO.	SHEET NO.
MO.		245



STA. 0+148.380



STA. 0+194.100 TO STA. 0+233.880

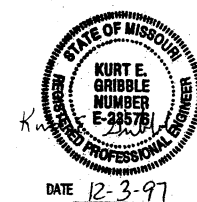


STA. 0+252.438

ROADWAY CROSS SLOPES

Detailed Sept. 1997
Checked Oct. 1997

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UNIT 4

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GENERAL NOTES:

Structural steel for expansion device shall be fabricated in one section, except for stage construction and when the length is over 15 meters, a complete joint penetration groove welded splice is permissible.

The expansion device shall be bent to conform to crown and grade of roadway.

Structural steel for the armored joint shall be ASTM A709M Grade 250.

Plan dimensions are based on installation at 16 degree Celcius.

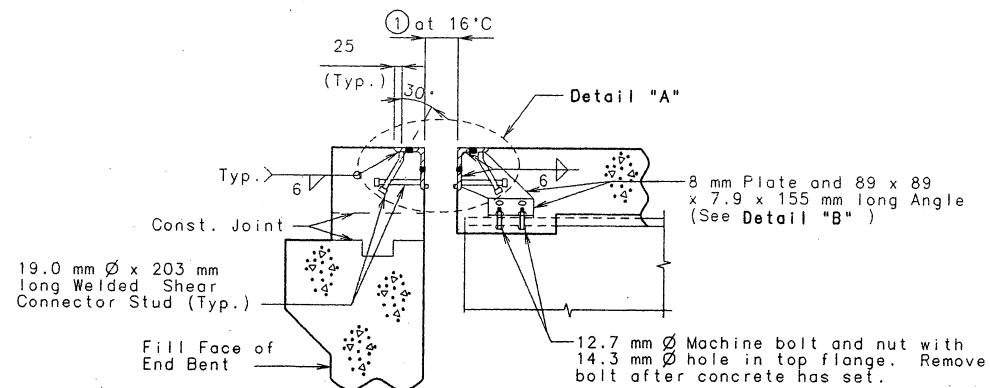
Dimension ① shall be increased 6mm for each 10 degree Celcius fall in temperature and decreased 6mm for each 10 degree Celcius rise in temperature at installation.

See Special Provisions for the requirements of compression joint seal.

Structural steel for the expansion device and curb plate shall be coated with a minimum of two coats of inorganic zinc primer (125 micrometers minimum thickness) or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

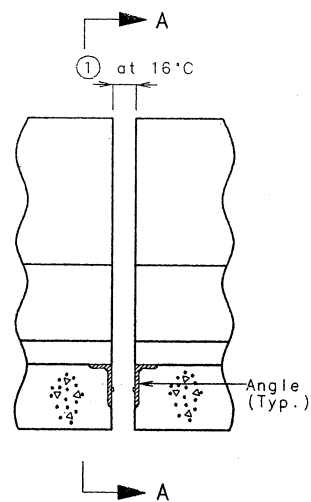
Furnishing, coating or galvanizing and installing the structural steel armored joint and curb plates shall be included in contract unit price for Preformed Compression Expansion Joint Seal.

Neoprene extrusions shall meet ASTM D3542.

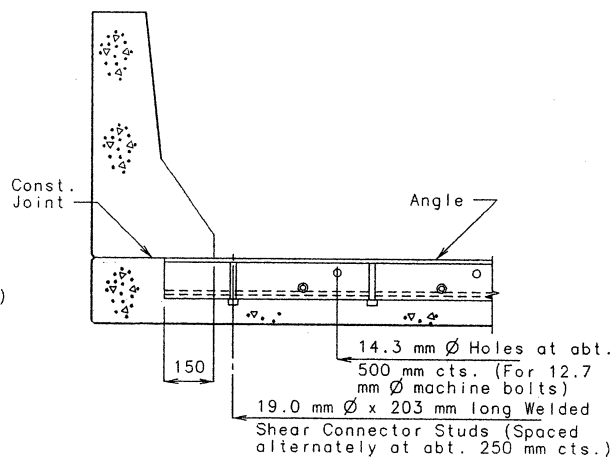


PART SECTION D-D

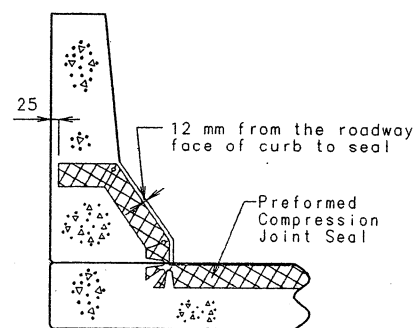
Note: Concrete shall be forced under armor angle and around studs. Proper consolidation of the concrete shall be achieved by localized internal vibration.



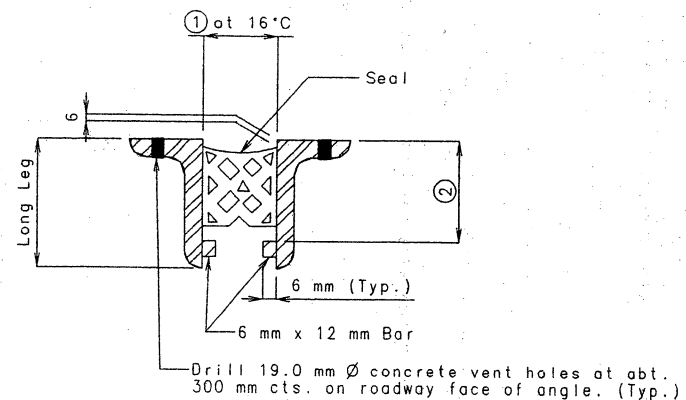
PART ELEVATION OF BARRIER CURB



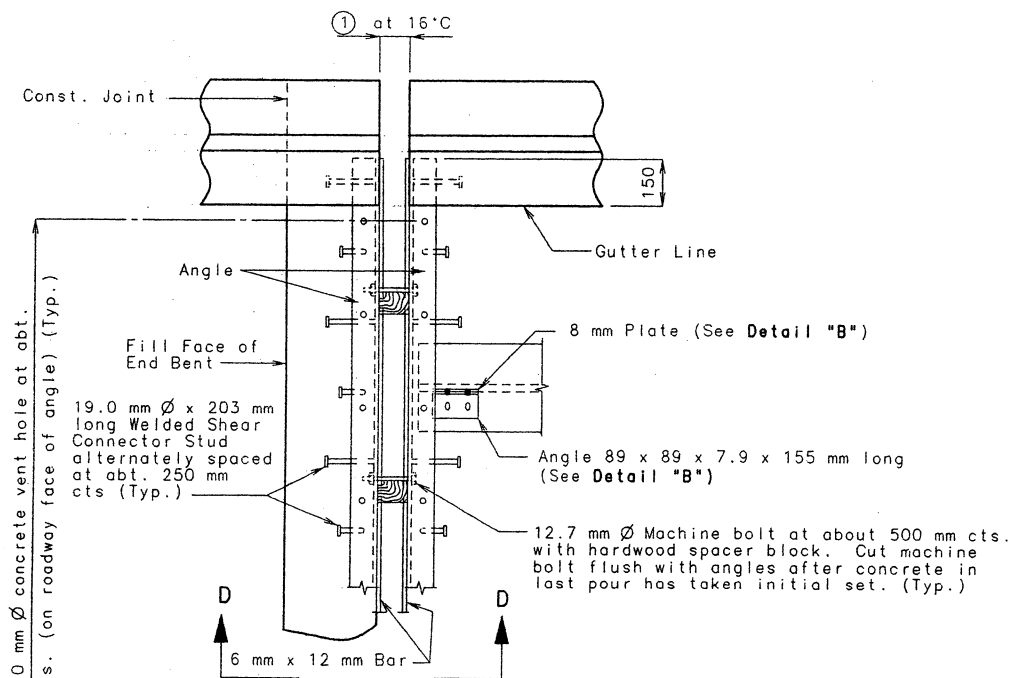
PART SECTION A-A



PART SECTION THRU JOINT SEAL



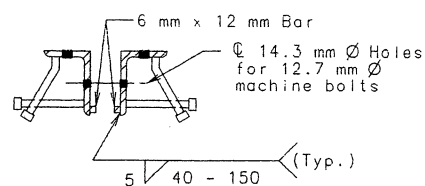
PART CROSS SECTION THRU EXPANSION JOINT



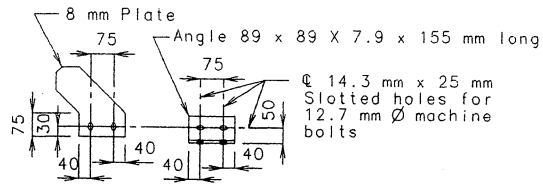
PART PLAN

TABLE OF TRANSVERSE BRIDGE SEAL DIMENSIONS			
Seal (Width)	①	②	Required Movement Range
64	41	Manufacturer's Recommended Height	23
76	48	Manufacturer's Recommended Height	25
89	57	Manufacturer's Recommended Height	33
102	67	Manufacturer's Recommended Height	41
114	70	Manufacturer's Recommended Height	48
127	73	Manufacturer's Recommended Height	51

Note: Depth of seal shall not be less than width of seal.



DETAIL "A"



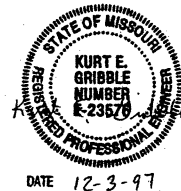
DETAIL "B"

DETAILS OF PREFORMED COMPRESSION JOINT SEAL AT END BENT NO. R1

SIZE OF ARMOR JOINT

Vertical leg of angle shall be a minimum of ② + 20 mm. Horizontal leg of angle shall be a minimum of 75 mm. Minimum thickness of angle shall be 12.7 mm.

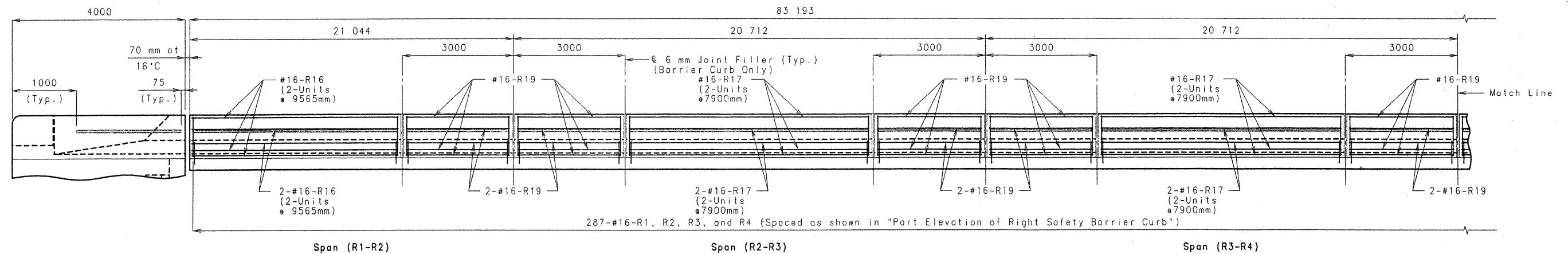
If a seal size larger than that indicated on the plans is used, the movement range, the opening at 16 degree Celcius and all dimensions for the armor angles shall be shown on the shop drawings.



UNIT 4

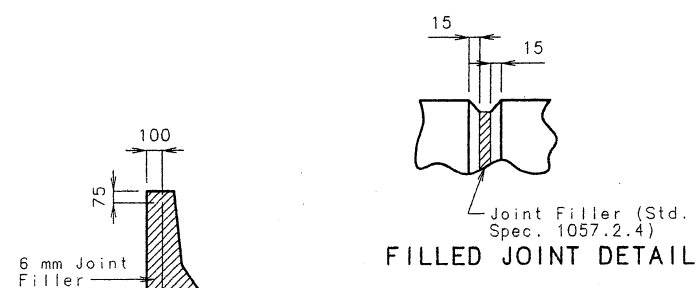
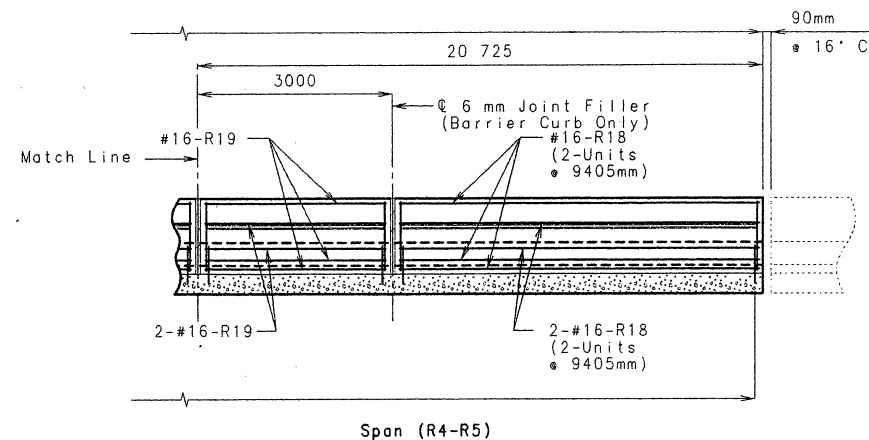
ST. LOUIS COUNTY

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ELEVATION OF RIGHT BARRIER CURB

Note: Longitudinal dimensions are horizontal along outside edge of Safety Barrier Curb.



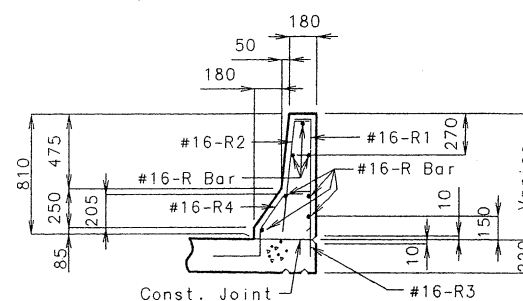
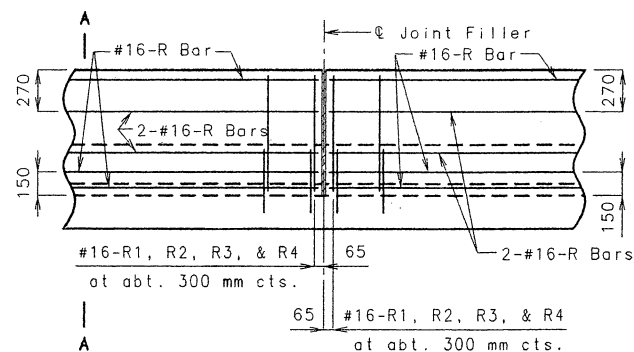
Note: 100 mm Plastic waterstop Std. Spec. 1057.2.1 (Centered on joint)

Plastic waterstop shall be placed in all safety barrier curb filled joints. (Except structures with superelevation, use on all lower safety barrier curb joints only).

Cost of plastic waterstop complete in place to be included in contract unit price for Safety Barrier Curb.

DETAILS OF PLASTIC WATERSTOP

Detailed Sept. 1997
Checked Oct. 1997



Note:

Use a minimum lap of 925 mm for #16 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 212 225 sq. mm.

Sheet No. 215 OF 236.

PART PLAN SHOWING SAFETY BARRIER CURB JOINT

Note:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 15 mm radius or a 10 mm bevel, unless otherwise noted.

When the safety barrier curb is bid per half meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.

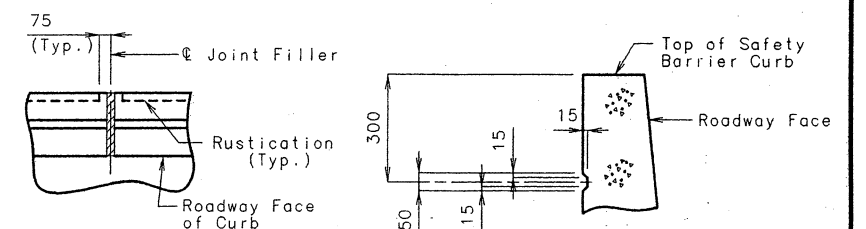
Concrete in the safety barrier curb shall be Class B1.

Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

For Details of Movement Gauge see sheet no. 214.

For Details of Safety Barrier Curb near expansion devices, see sheets no. 146 and 213.

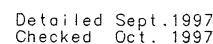
PART SECTION SHOWING RUSTICATION DETAILS

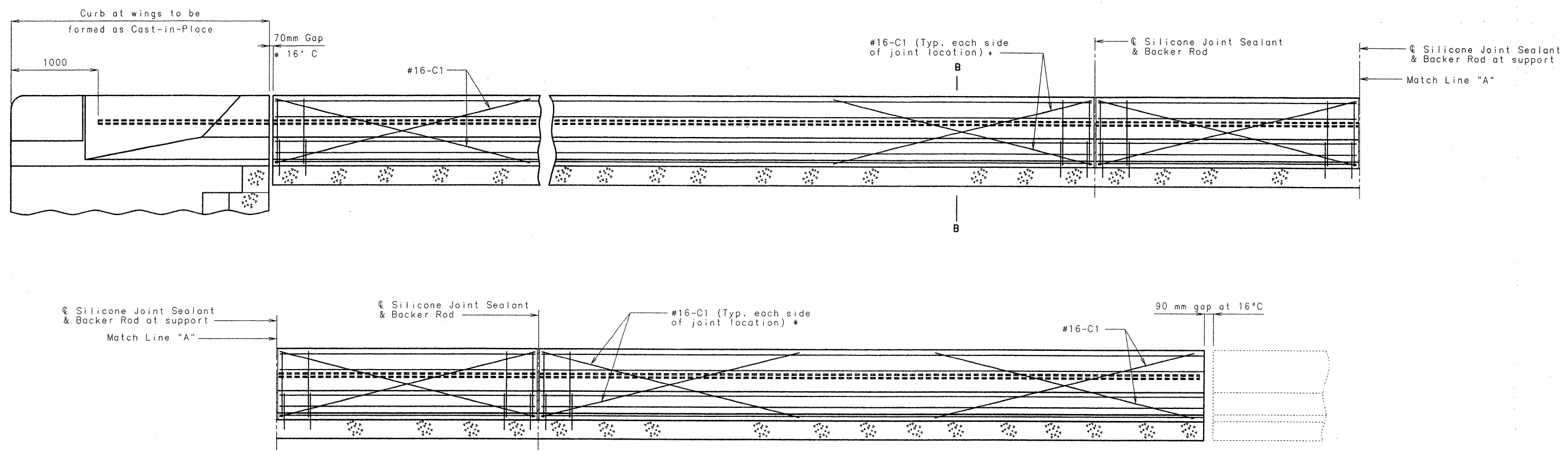


DATE 12-3-97

UNIT 4

ST. LOUIS COUNTY A5682

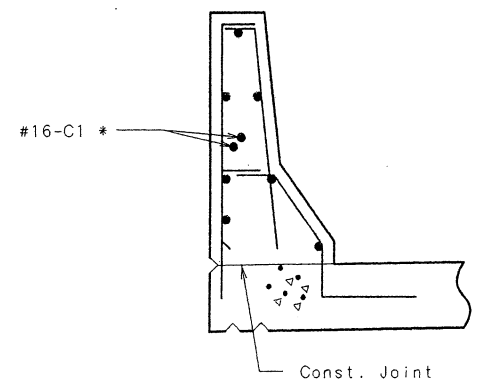




Note:
 Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.
 When the safety barrier curb is bid per half meter, the contract unit price shall include the cost of all concrete and reinforcement, complete-in-place.
 Concrete in the safety barrier curb shall be Class B1.
 Measurement of safety barrier curb is to the nearest half meter for each structure, measured along the outside top of slab from end of wing to end of wing.

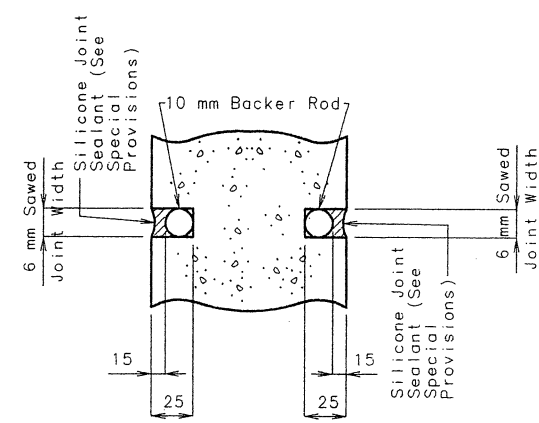
TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS (OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note:
 Joint sealant and backer rods shall be used on all slip-form bridge safety barrier curbs instead of joint filler.
 Plastic waterstop shall not be used with slip-form option.
 Barrier curbs at end bents shall be cast-in-place, slip form option is not allowed.
 C Bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.



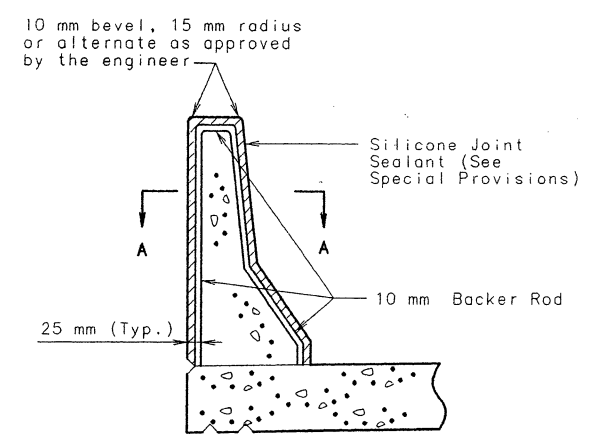
PART SECTION B-B

Note: * Each side of joint location.

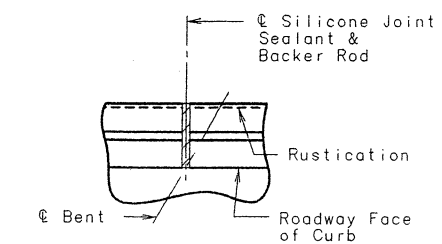


SECTION A-A

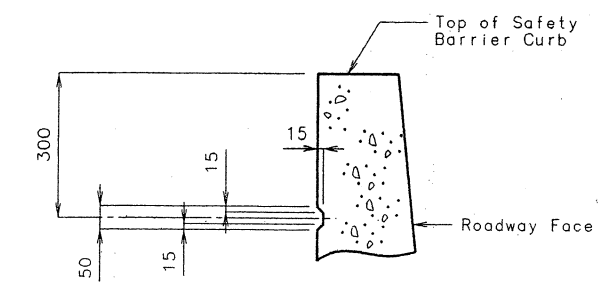
Note:
 Cost of silicone joint sealant and backer rod complete in place to be included in the contract unit price for safety barrier curb.



SECTION THRU JOINT



PART PLAN SHOWING SAFETY BARRIER CURB JOINT RUSTICATION DETAIL



PART SECTION SHOWING RUSTICATION DETAILS

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB (Left barrier curb shown; right barrier curb similar.)

Sheet No. 217 OF 236



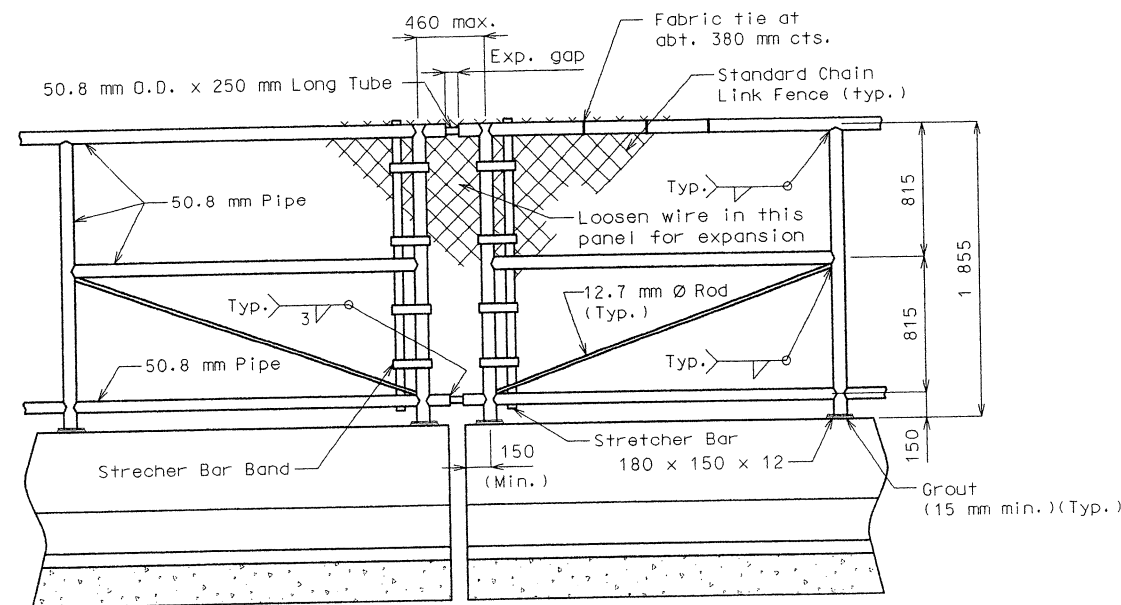
DATE 12-3-97

UNIT 4

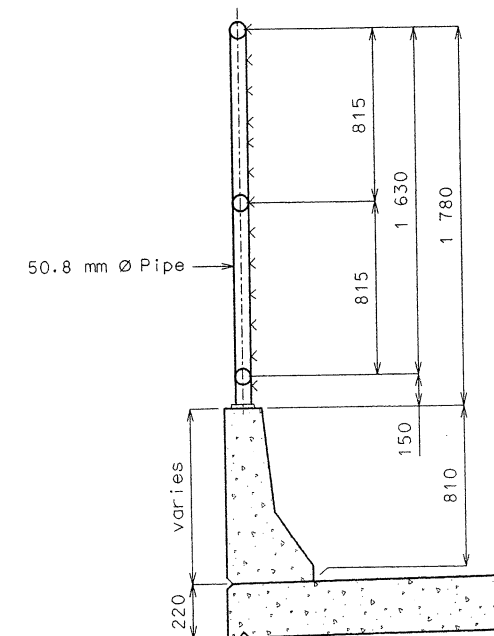
ST. LOUIS COUNTY A5682

Detailed Sept. 1997
 Checked Oct. 1997

State	Proj. No.	Sheet No.
MO		



PART ELEVATION OF PEDESTRIAN CHAIN LINK FENCE
(GALV. STEEL) ON BARRIER CURBS AT EXPANSION DEVICE GAP



SECTION A-A

Note:

Pedestrian guard fence (Chain link type) shall be in accordance with Section 1043 of the Missouri Standard Specification (Metric), except all fabric shall have the top and bottom edges knuckled.

All rail posts shall be vertical. Grout 15 mm minimum thickness shall be placed under floor plates to provide for vertical alignment of rail posts.

The contract unit price per meter for (1 830 mm) Pedestrian Fence (Structures) - Metric shall include furnishing, galvanizing and erecting the fence and frame complete with threaded rod resin anchor systems and washers.

Dimensions of Pedestrian guard fence are measured horizontally.

The maximum spacing allowed for braced panels (Pull Posts) is 30 meters.

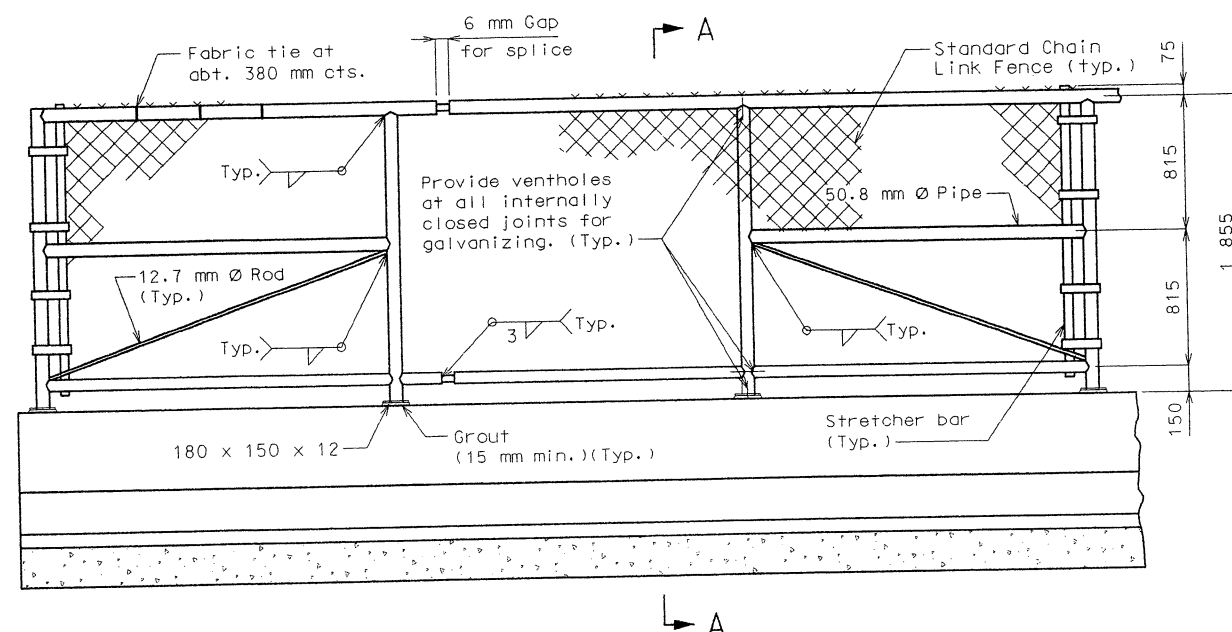
Connect the lower end of the 12.7 mm Ø rod to the end of the braced panel to which the stretcher bar is attached.

Splice gaps in the rails shall be at about 9 meters with at least one splice gap between pull posts.

The contractor shall use one of the threaded rod resin anchor systems listed in the job special provisions. These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the job special provisions.

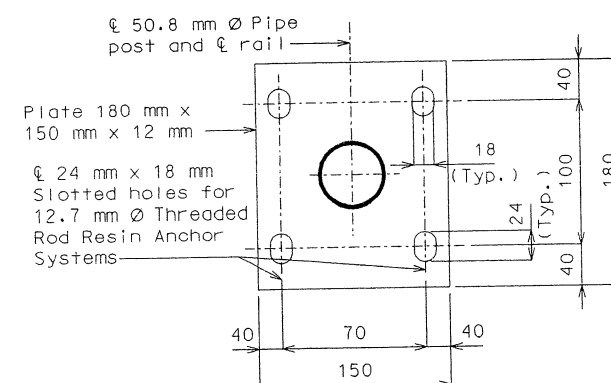
Cost of furnishing and installing the threaded rod anchor system complete in place shall be included in the price bid for (1830 mm) Pedestrian fence (Structures) - Metric.

The 12.7 mm Ø threaded rod resin anchor systems shall have a minimum ultimate pullout strength of 43.5 kN in concrete with $f'_c = 28$ MPa, see Special Provisions.

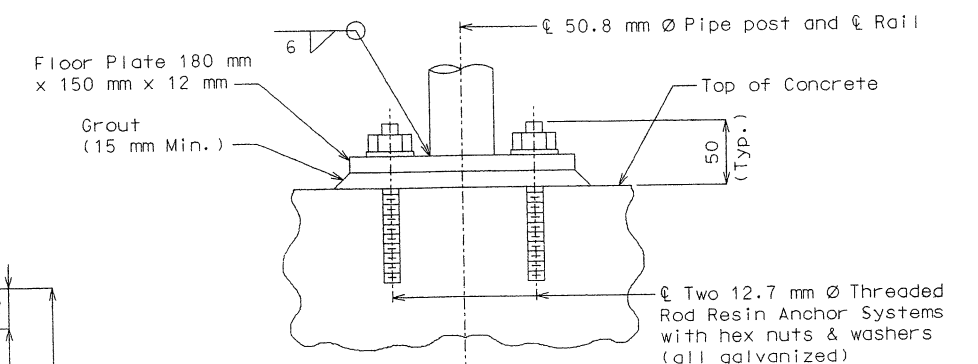


PART ELEVATION OF PEDESTRIAN CHAIN LINK FENCE
(GALV. STEEL) ON BARRIER CURBS

NOTE:
Pedestrian Chain Link Fence and Rail Post shall be used at locations specified by the Engineer. Maximum post spacing is 2.5 meters.



PLAN OF FLOOR PLATE



RAIL POST CONNECTION
(TYPICAL)



DATE 7-14-99

Added sheet 217A
June 1999

Sheet No. 217A of 236

ST. LOUIS

COUNTY

A5682

STATE	PROJ. NO.	SHEET NO.
MO.		251

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Section 503 (f'c = 28 MPa) of the Mo. Std. Specs. (Metric).

All joint filler shall meet the requirements of Section 1057.2.5 of the Mo. Std. Specs. (Metric), except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 420 with Fy = 420 MPa.

Minimum clearance to reinforcing steel shall be 40 mm, unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #13 & #19 bars 700 mm and 1055 mm respectively.

Mechanical bar splices will be permitted and shall develop at least 125 percent of the specified yield strength of the reinforcing bars being spliced. The contractor shall furnish the Engineer the manufacturer's certification that this requirement is met and is required to follow the manufacturer's recommendation for installation.

Mechanical bar splices shall be epoxy coated in accordance with Mo. Std. Spec. 710.

When a lap splice is required for the use of a mechanical bar splice, the minimum lap length shall be 1055 mm for transverse approach slab bar splices.

At the contractor's option, Grade 300 reinforcement may be substituted for the Grade 420 #16 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 300 reinforcement is substituted for the Grade 420 #16 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 50 mm minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired according to Mo. Std. Spec. 710.3.3 (Metric).

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge slab before pouring the bridge approach slabs.

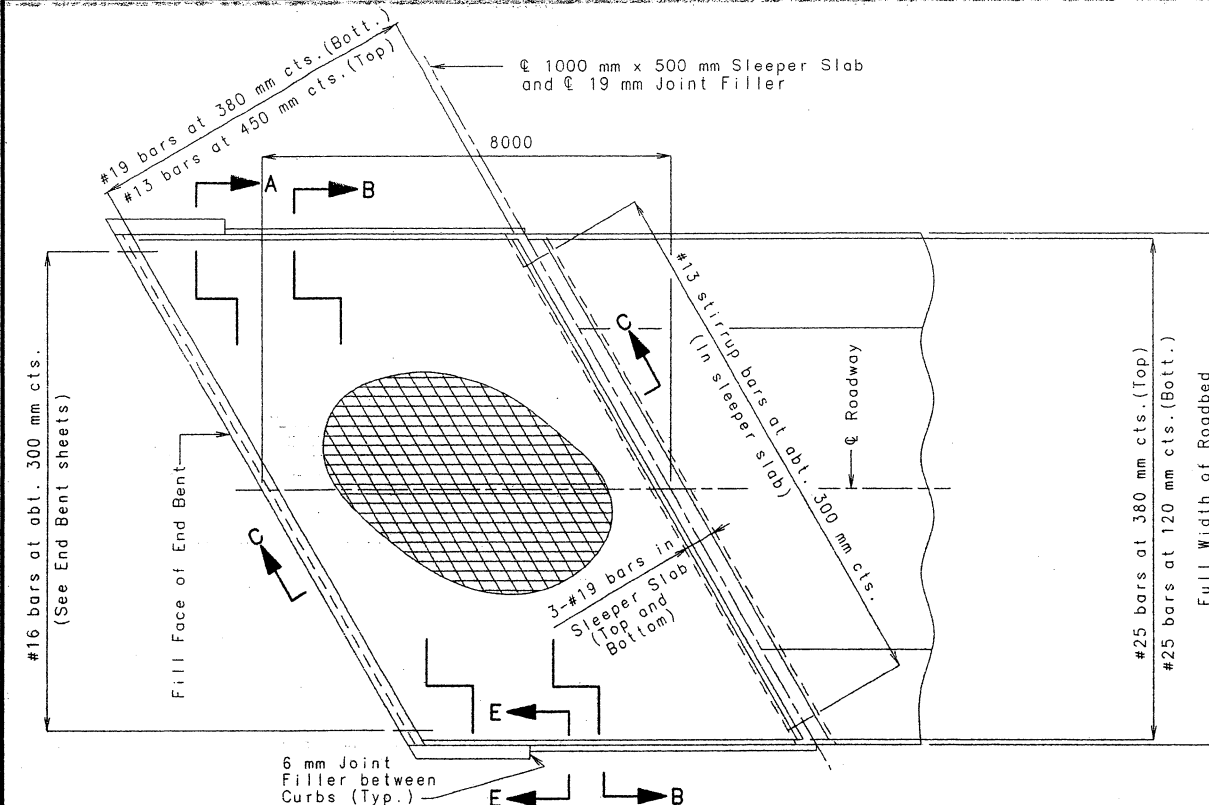
Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, base and all other appurtenances and incidental work as shown on this sheet, complete in place, shall be considered as completely covered under the contract unit price for Bridge Approach Slab (Bridge), per square meter.

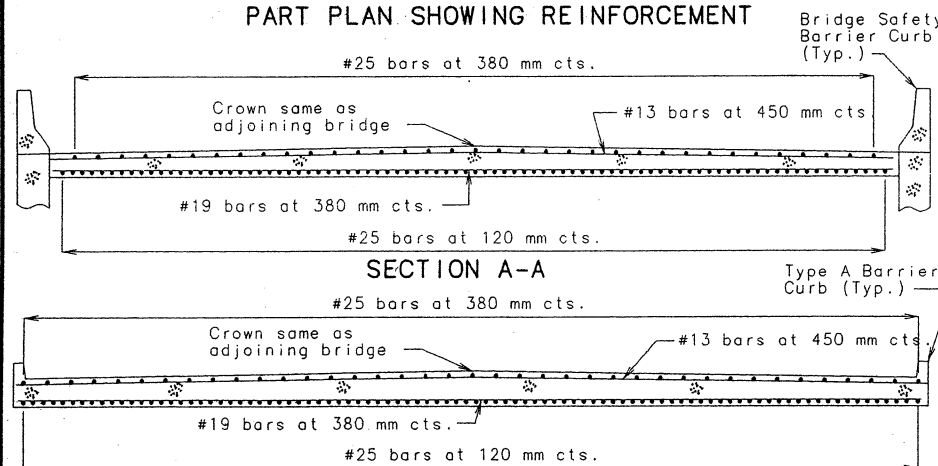
See Missouri Standard Plans Drawing M504.00 for details of Concrete Approach Pavement.

Drain pipe may be either 150 mm diameter corrugated metallic-coated pipe underdrain, 100 mm diameter corrugated polyvinyl chloride (PVC) drain pipe, or 100 mm diameter corrugated polyethylene (PE) drain pipe.

See Missouri Standard Plans Drawing M606.00 or M609.00 for details of Type A Barrier Curb.



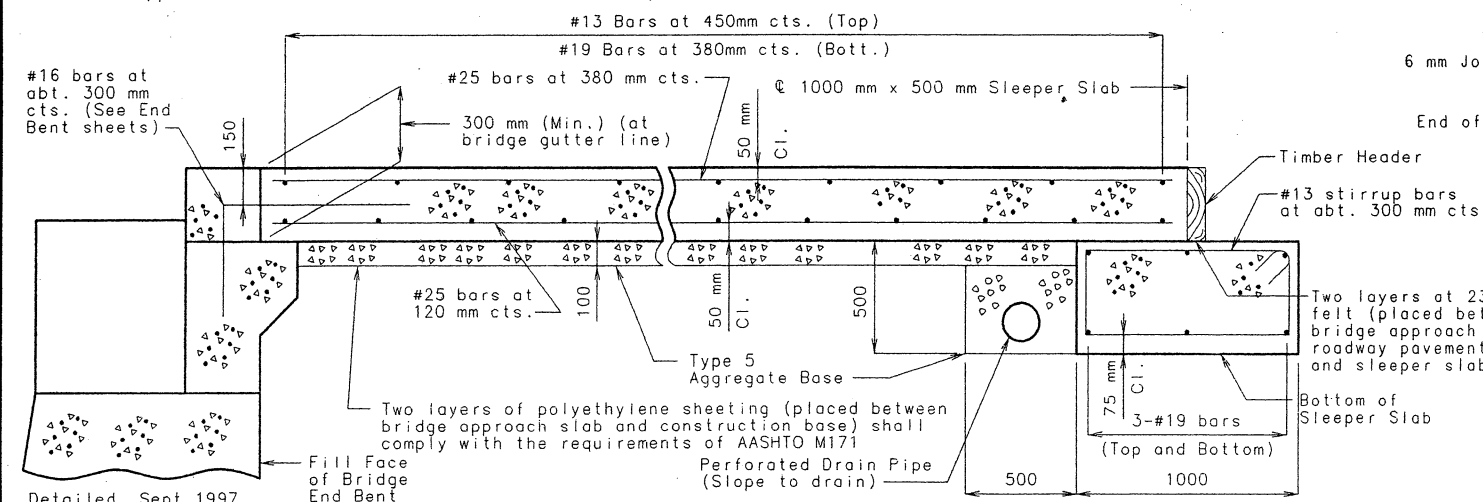
PART PLAN SHOWING REINFORCEMENT



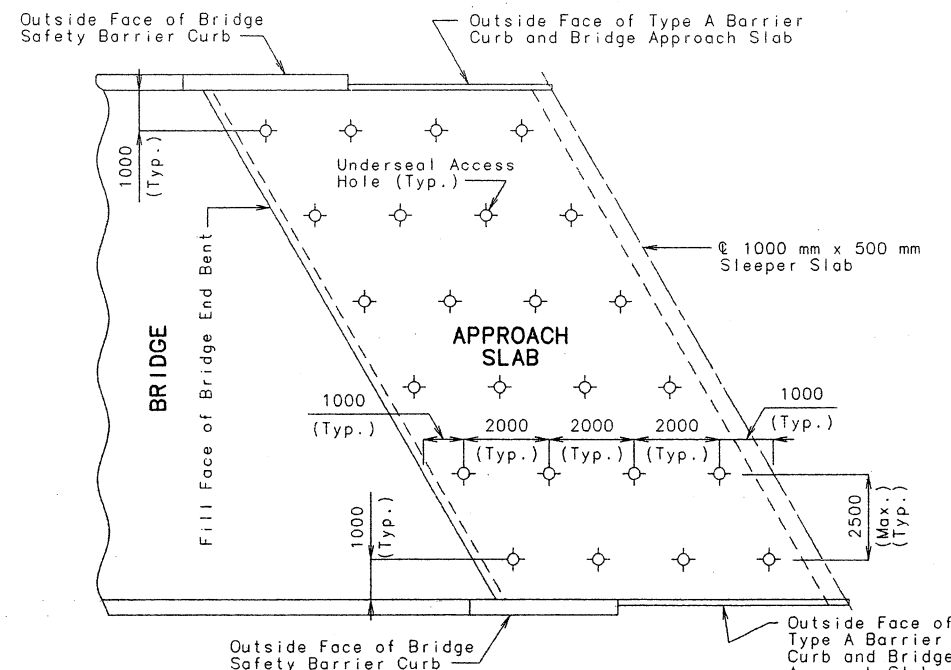
SECTION A-A

SECTION B-B

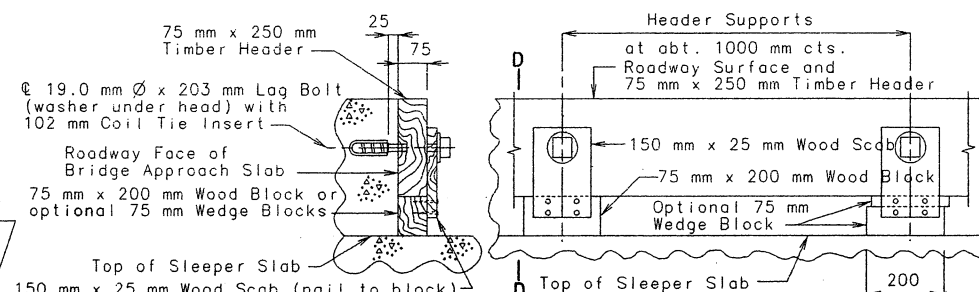
Note: With the approval of the Engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



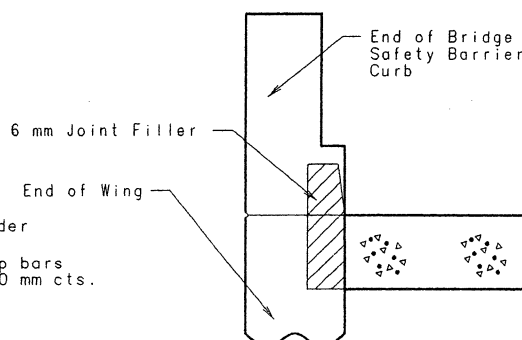
SECTION C-C



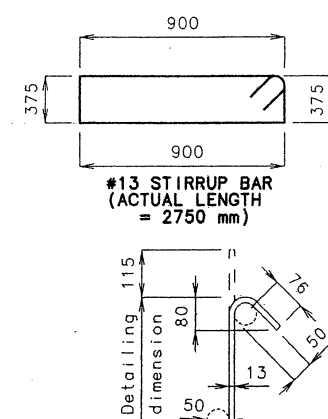
PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



SECTION D-D
Note: Remove timber header when concrete pavement is placed.
DETAILS OF TIMBER HEADER

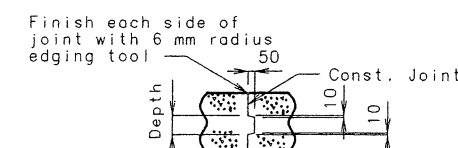


SECTION E-E (BETWEEN CURBS)

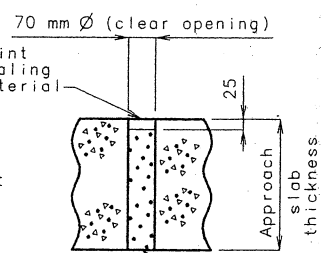


TYPICAL 135° STIRRUP BAR BENDING DIAGRAM

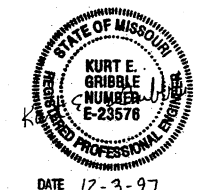
Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest 10 mm).



CONST. JOINT DETAIL (IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL



BRIDGE APPROACH SLAB
Sheet No. 218 OF 236

UNIT 4
ST. LOUIS COUNTY
A5682

BILL OF REINFORCING STEEL														Nominal Length	Actual Length	Mass				
No.	Req'd.	Size	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions									
											B	C	D				E	F	H	K
												mm	mm	mm	mm	mm	mm	mm	mm	kg
				UNIT NO. 1																
				SUBSTRUCT.																
				END BENT NO. 1																
4	19	F1		WING BRACE	E 15		X				360	1211	360	287	218	287	218	1930	1905	17
4	19	F2		WING BRACE	E 15		X				360	1630	360	203	297	203	297	2350	2335	27
4	29	H1		BEAM	E 17		X				14915							15290	15290	309
4	29	H2		BEAM	E 17		X				14590							14965	14965	303
2	19	H3		BEAM	E 20		X				13380							13380	13380	60
10	29	H4		BEAM	E 17		X				9380							9755	9755	494
8	16	H5		BACKWALL	E 20		X				13095							13095	13095	163
2	19	H6		BEAM	E 20		X				9380							9380	9380	47
4	19	H7		BEAM	E 20		X				2635							2635	2635	24
6	19	H8		BEAM	E 20		X				3560							3560	3560	41
69	16	H9		APP. HAUNCH	E 19		X				610	610						1220	1180	124
10	16	H10		BACKWALL	E 20		X				9355							9355	9355	144
1	13	H11		CORBEL	E 20		X				12190							12190	12395	17
3	13	H12		CORBEL	E 20		X				8945							8945	8945	27
28	19	H13		WING	E 20		X				3920							3920	3920	24
2	19	H14		BACKWALL	E 20		X V		1		12925							12925	12925	24
				INCREMENT =							12840							12840	12840	50
				85 mm																
2	19	H15		BACKWALL	E 20		X V		1		8955							8955	8955	24
				INCREMENT =							9015							9015	9015	47
				60 mm																
2	13	T1		WING	E 19		X				1220	1730						2950	2915	19
2	13	T2		WING	E 19		X				1220	1730						2950	2915	19
38	16	U1		BEAM	E 13 S		X				680	845	680	845				3330	3230	19
38	16	U2		BEAM	E 13 S		X				680	890	960	845				3655	3545	20
11	13	U3		BEAM	E 10 S		X				230	1020	1020					1480	1430	1
5	13	U4		BEAM	E 14 S		X				845	1020	890		845	280		2755	2715	1

6d for #10, #13, & #16
12d for #19

Detailing Dimension

d

A or G

Hook

90° Stirrup

6d

d

A or G

Hook

Detailing Dimension

H

135° Stirrup

6d

d

A or G

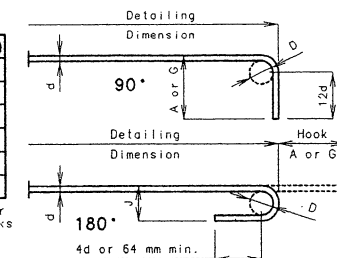
Hook

Detailing Dimension

H

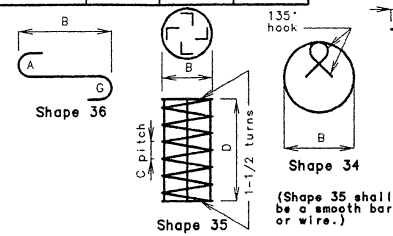
Grades 300 & 420 MPa				
Bar Size	D	90° Hook A or G	135° Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

Note: Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.



END HOOK DIMENSIONS (mm)					
Bar Size	D	All Grades			
		180° Hook		90° Hook	
		A or E	J	A or G	J
#10	60	125	80	150	150
#13	80	150	105	200	200
#16	95	175	130	250	250
#19	115	200	155	300	300
#22	135	250	180	375	375
#25	155	275	205	425	425
#29	240	375	300	475	475
#32	275	425	335	550	550
#36	305	475	375	600	600
#43	465	675	550	775	775

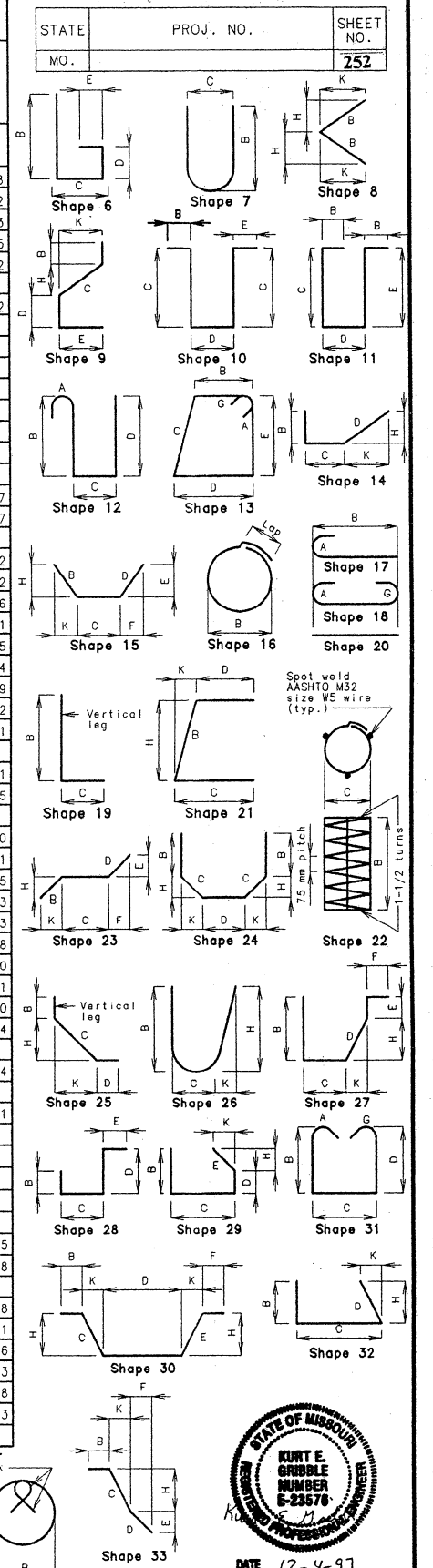
Note:
 All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
 Hooks and bends shall be in accordance with the procedures as shown on this sheet.
 E = epoxy coated reinforcement
 S = stirrup
 X = bar is included in substructure quantities
 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
 Nomin. lengths are based on out to out dimensions shown in bending diagrams and are listed for fabricators use (nearest 5 mm).
 Actual lengths are measured along centerline bar to the nearest 5 mm.
 Payweights are based on actual lengths.
 Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and mass of column spirals do not include splices or spacers.
 Reinforcing steel, (Grade 420) = FY 420 Mpa

[illegible]

BENDING DIAGRAMS

UNIT 1

A5682



DATE 12-4-97

DATE 12-4-97

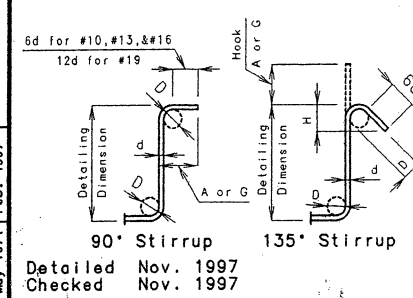
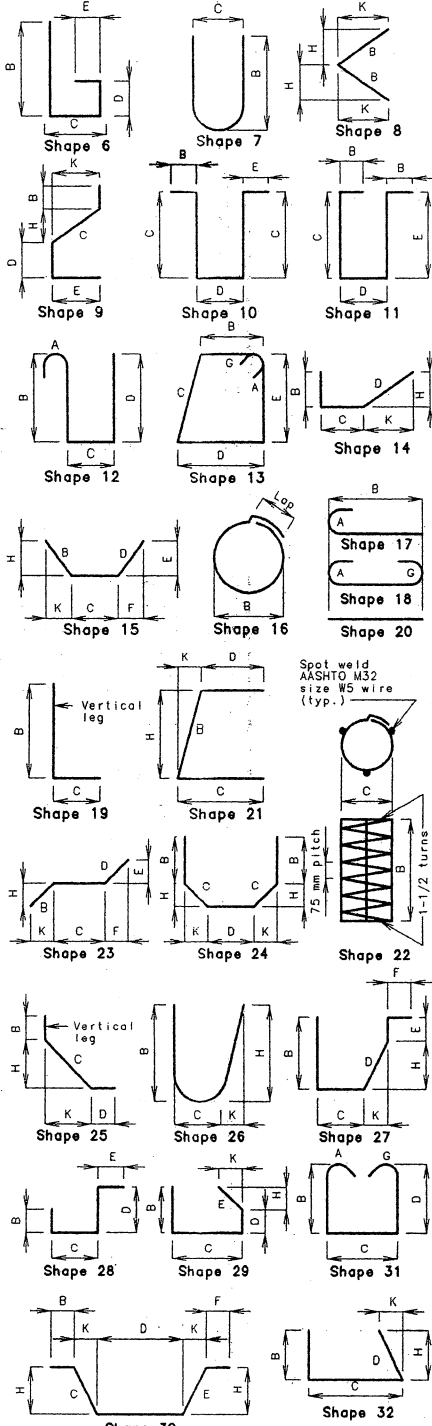
BILL OF REINFORCING STEEL

No.	Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
										B	C	D	E	F	H	K			
										mm	mm	mm	mm	mm	mm	mm			
1	13	P31	COLUMN		35		X			970	75	5610					234050	234050	233
32	13	P32	BEAM		34	S	X			970							3315	3315	105
1	13	P33	COLUMN		35		X			970	75	5700					237660	237660	236
1	13	P34	COLUMN		35		X			970	75	5790					241270	241270	240
1	13	P35	COLUMN		35		X			970	75	5880					244880	244880	243
8	19	U30	BEAM		10		X				560	1080					2200	2105	38
116	19	U31	BEAM		13	S	X			750	970	750	970				3850	3705	961
32	19	U32	BEAM		10	S	X				970	750					2690	2595	186
24	19	U33	BEAM		13	S	X			1120	970	1120	970				4590	4445	238
14	29	V30	COLUMN		36		X			7045							7795	7795	552
14	29	V31	COLUMN		36		X			7135							7885	7885	559
14	29	V32	COLUMN		36		X			7225							7975	7975	565
14	29	V33	COLUMN		36		X			7310							8060	8060	571
16	W5	W31	BEAM		22		X			635	230						10110	10110	41
			INTERMED.																
			BENT NO. 4																
256	25	D42	FOOTING		20		X			3900							3900	3900	3967
16	19	D43	FOOTING		10		X				2345	3700					8390	8295	297
8	25	H41	BEAM		17		X			11055							11330	11330	360
8	25	H42	BEAM		17		X			10650							10925	10925	347
2	19	H43	BEAM		20		X			10265							10265	10265	46
8	25	H44	BEAM		20		X			10545							10545	10545	335
2	19	H45	BEAM		20		X			10650							10650	10650	48
8	25	H46	BEAM		20		X			10650							10650	10650	338
1	13	P41	COLUMN		35		X			970	75	5830					242875	242875	241
32	13	P42	BEAM		34	S	X			970							3315	3315	105
1	13	P43	COLUMN		35		X			970	75	5965					248290	248290	247
1	13	P44	COLUMN		35		X			970	75	6100					253705	253705	252
1	13	P45	COLUMN		35		X			970	75	6235					259120	259120	258
8	19	U40	BEAM		10		X				560	1080					2200	2105	38
148	19	U41	BEAM		13	S	X			750	970	750	970				3850	3705	1226
32	19	U42	BEAM		10	S	X				970	750					2690	2595	186
15	19	U43	BEAM		13	S	X			1120	970	1120	970				4590	4445	149
14	29	V40	COLUMN		36		X			7265							8015	8015	568
14	29	V41	COLUMN		36		X			7400							8150	8150	577
14	29	V42	COLUMN		36		X			7535							8285	8285	587
14	29	V43	COLUMN		36		X			7670							8420	8420	596
16	W5	W40	BEAM		22		X			457	230						7950	7950	32
			INTERMED.																
			BENT NO. 5																
256	25	D52	FOOTING		20		X			3900							3900	3900	3967
16	19	D53	FOOTING		10		X				2345	3700					8390	8295	297
8	25	H51	BEAM		17		X			10650							10925	10925	347
8	25	H52	BEAM		17		X			10310							10585	10585	336
2	19	H53	BEAM		20		X			9860							9860	9860	44

BILL OF REINFORCING STEEL

No.	Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
		Size	Mark								B	C	D	E	F	H	K			
8	25	H54	BEAM		20	X					10140							10140	10140	322
2	19	H55	BEAM		20	X					10310							10310	10310	46
8	25	H56	BEAM		20	X					10310							10310	10310	328
1	13	P51	COLUMN		35	X					970	75	6120					254505	254505	253
32	13	P52	BEAM		34	S	X				970							3315	3315	105
1	13	P53	COLUMN		35	X					970	75	6280					260925	260925	259
1	13	P54	COLUMN		35	X					970	75	6440					267340	267340	266
1	13	P55	COLUMN		35	X					970	75	6600					273760	273760	272
8	19	U50	BEAM		10	X						560	1080					2200	2105	38
122	19	U51	BEAM		13	S	X				750	970	750	970				3850	3705	1010
32	19	U52	BEAM		10	S	X					970	750					2690	2595	186
18	19	U53	BEAM		13	S	X				1120	970	1120	970				4590	4445	179
14	29	V50	COLUMN		36	X					7555							8305	8305	588
14	29	V51	COLUMN		36	X					7715							8465	8465	600
14	29	V52	COLUMN		36	X					7875							8625	8625	611
14	29	V53	COLUMN		36	X					8035							8785	8785	622
16	W5	W51	BEAM		22	X					635	230						10110	10110	41
				INTERMED. BENT NO. 6																
288	25	D62	FOOTING		20	X					4200							4200	4200	4806
16	19	D63	FOOTING		10	X						2495	4000					8990	8895	318
8	25	H61	BEAM		17	X					10650							10925	10925	347
8	25	H62	BEAM		17	X					10310							10585	10585	336
2	19	H63	BEAM		20	X					9860							9860	9860	44
8	25	H64	BEAM		20	X					10140							10140	10140	322
2	19	H65	BEAM		20	X					10310							10310	10310	46
8	25	H66	BEAM		20	X					10310							10310	10310	328
1	13	P61	COLUMN		35	X					970	75	7975					328915	328915	327
32	13	P62	BEAM		34	S	X				970							3315	3315	105
1	13	P63	COLUMN		35	X					970	75	8130					335130	335130	333
1	13	P64	COLUMN		35	X					970	75	8285					341350	341350	339
1	13	P65	COLUMN		35	X					970	75	8440					347565	347565	345
8	19	U60	BEAM		10	X						560	1080					2200	2105	38
122	19	U61	BEAM		13	S	X				750	970	750	970				3850	3705	1010
32	19	U62	BEAM		10	S	X					970	750					2690	2595	186
18	19	U63	BEAM		13	S	X				1120	970	1120	970				4590	4445	179
18	29	V60	COLUMN		17	X	V	6			6220							6595	6595	
				INCREMENT = 610 mm							5000							5375	5375	545
72	29	V61	COLUMN		17	X	V	24			6420							6795	6795	
				INCREMENT = 610 mm							5200							5575	5575	2253
18	29	V62	COLUMN		17	X	V	6			6375							6750	6750	
				INCREMENT = 610 mm							5155							5530	5530	559
18	29	V63	COLUMN		17	X	V	6			6530							6905	6905	
				INCREMENT = 610 mm							5310							5685	5685	573

STATE	PROJ. NO.	SHEET NO.
MO.		253



STIRRUP HOOK DIMENSIONS (mm)			
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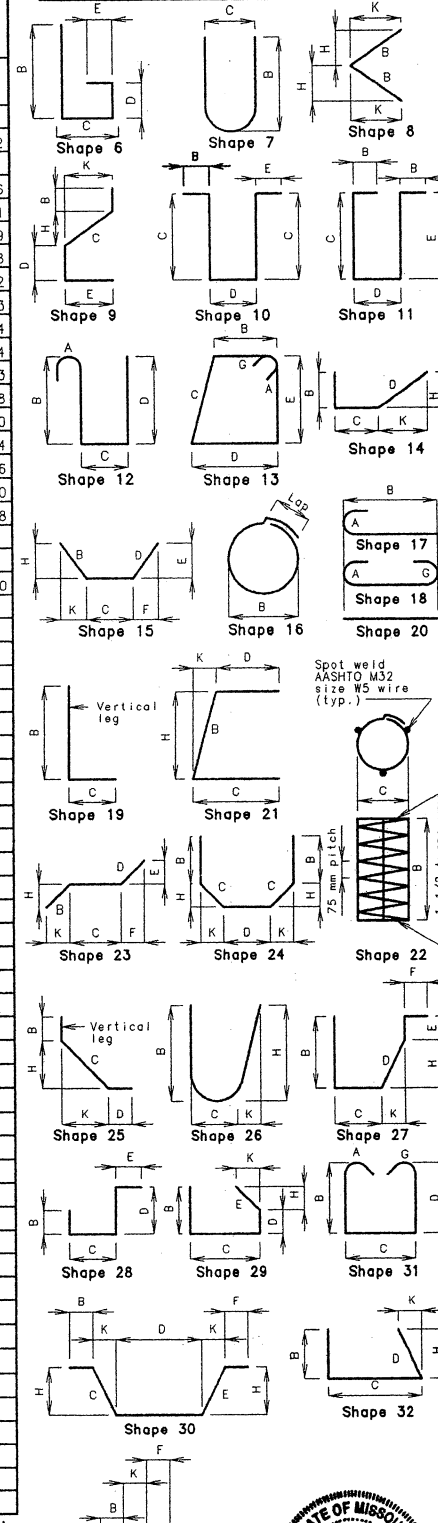
BILL OF REINFORCING STEEL

No.	Req'd.	Size	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions						Nominal Length	Actual Length	Mass	
											B	C	D	E	F	H				K
											mm	mm	mm	mm	mm	mm				mm
18	29	V64	COLUMN		17			X	V	6	6690						7065	7065		
			INCREMENT =								5470						5845	5845	588	
			610 mm																	
16	W5	W61	BEAM		22			X			635	230					10110	10110	41	
			SUPERSTRUC.																	
			CONC. DIAPH																	
			AT END BENT																	
			NO. 1																	
12	19	H100	DIAPHRAGM	E	20						10045						10045	10045	269	
12	19	H101	DIAPHRAGM	E	20						10415						10415	10415	279	
15	19	H102	DIAPHRAGM	E	20						2615						2615	2615	88	
6	19	H103	DIAPHRAGM	E	20						2830						2830	2830	38	
49	13	U100	DIAPHRAGM	E	10	S					705	1120					2530	2480	121	
49	13	U101	DIAPHRAGM	E	28	S					655	1225	305				2185	2135	104	
14	13	U102	DIAPHRAGM	E	10	S					705	1210					2620	2570	36	
14	13	U103	DIAPHRAGM	E	28	S					655	1315	305				2275	2225	31	
784	16	S100	SLAB	E	20						11990						11990	11990	14589	
106	19	S101	SLAB	E	20						14200						14200	14200	3364	
106	19	S102	SLAB	E	20						16900						16900	16900	4004	
106	19	S103	SLAB	E	20						14400						14400	14400	3412	
106	19	S104	SLAB	E	20						15800						15800	15800	3743	
106	19	S105	SLAB	E	20						14100						14100	14100	3340	
1	16	S106	SLAB	E	20						5550						5550	5550	9	
1	16	S107	SLAB	E	20						11605						11605	11605	18	
23	19	S108	SLAB	E	20				V	1	735						735	735		
			INCREMENT =								10815						10815	10815	297	
			460 mm																	
58	19	S109	SLAB	E	20						11010						11010	11010	1427	
889	19	S110	SLAB	E	20						10780						10780	10780	21419	
228	19	S111	SLAB	E	20						14440						14440	14440	7358	
19	19	S112	SLAB	E	20				V	1	1450						1450	1450		
			INCREMENT =								9875						9875	9875	240	
			470 mm																	
928	19	S113	SLAB	E	20						10690						10690	10690	22172	
230	19	S114	SLAB	E	20						7035						7035	7035	3616	
112	16	S115	SLAB	E	20						11990						11990	11990	2084	
1030	13	S116	SLAB	E	20						980						980	980	1003	
1059	16	R1	BAR. CURB	E	19	S					740	100					840	805	1361	
1067	16	R2	BAR. CURB	E	15	S					745	100			740	80	845	815	1350	
1059	16	R3	BAR. CURB	E	19	S					440	150					590	555	912	
1059	16	R4	BAR. CURB	E	27	S					150	270	175	300	220	155	895	845	1389	
30	16	R5	BAR. CURB	E	19	S					470	150					620	585	27	
30	16	R6	BAR. CURB	E	27	S					330	240	270	150		155	220	990	940	44

BILL OF REINFORCING STEEL

No.	Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
		Size	Mark								B	C	D	E	F	H	K			
22	16	R7	BAR. CURB	E 19	S		V		2	740	115						855	820		
			INCREMENT =							740	330						1070	1035	32	
			20 mm																	
4	16	R8	BAR. CURB	E 19	S					700	230						930	895	6	
28	16	R9	BAR. CURB	E 19	S					740	230						970	935	41	
16	16	R10	BAR. CURB	E 10	S						860	330					2050	1985	49	
14	16	R11	BAR. CURB	E 20						3125							3125	3125	68	
22	16	R12	BAR. CURB	E 20						1530							1530	1530	52	
2	16	R13	BAR. CURB	E 20						990							990	990	3	
4	16	R14	BAR. CURB	E 20						3925							3925	3925	24	
140	16	R100	BAR. CURB	E 20						2920							2920	2920	634	
28	16	R101	BAR. CURB	E 20						7200							7200	7200	313	
105	16	R102	BAR. CURB	E 20						8700							8700	8700	1418	
21	16	R103	BAR. CURB	E 20						9200							9200	9200	300	
14	16	R104	BAR. CURB	E 20						8000							8000	8000	174	
14	16	R105	BAR. CURB	E 20						10400							10400	10400	226	
21	16	R106	BAR. CURB	E 20						9500							9500	9500	310	
14	16	R107	BAR. CURB	E 20						8200							8200	8200	178	
88	16	C1	SLIP FORM	E 20						3000							3000	3000	41	
			CURB OPTION ONLY																	

STATE	PROJ. NO.	SHEET NO.
MO.		254



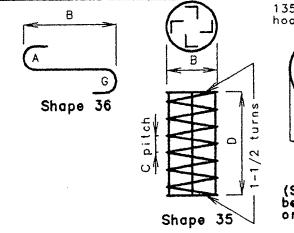
DATE 12-4-97

BENDING DIAGRAMS

UNIT 1

A5682

Two additional #16-R11, #19-S114 and #13-S116 are included in the bar bill for testing.



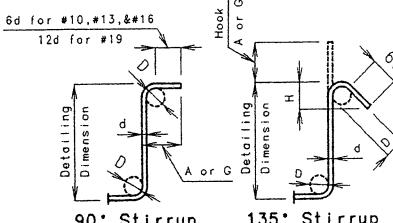
Bar Size	D	END HOOK DIMENSIONS (mm)			
		All Grades			
		180° Hook	90° Hook	135° Hook	Approx. H
#10	60	125	80	150	
#13	80	150	105	200	
#16	95	175	130	250	
#19	115	200	155	300	
#22	135	250	180	375	
#25	165	275	205	425	
#29	240	375	300	475	
#32	275	425	335	550	
#36	305	475	375	600	
#43	465	675	550	775	

Note:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard 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 5 mm).
Payweights are based on actual lengths.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa

Sheet No. 221 of 236

ST. LOUIS

COUNTY



Detailed Nov. 1997
Checked Nov. 1997

Std 90.8 Revised
May 1974 Feb. 1997

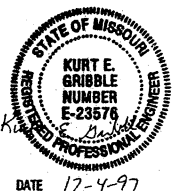
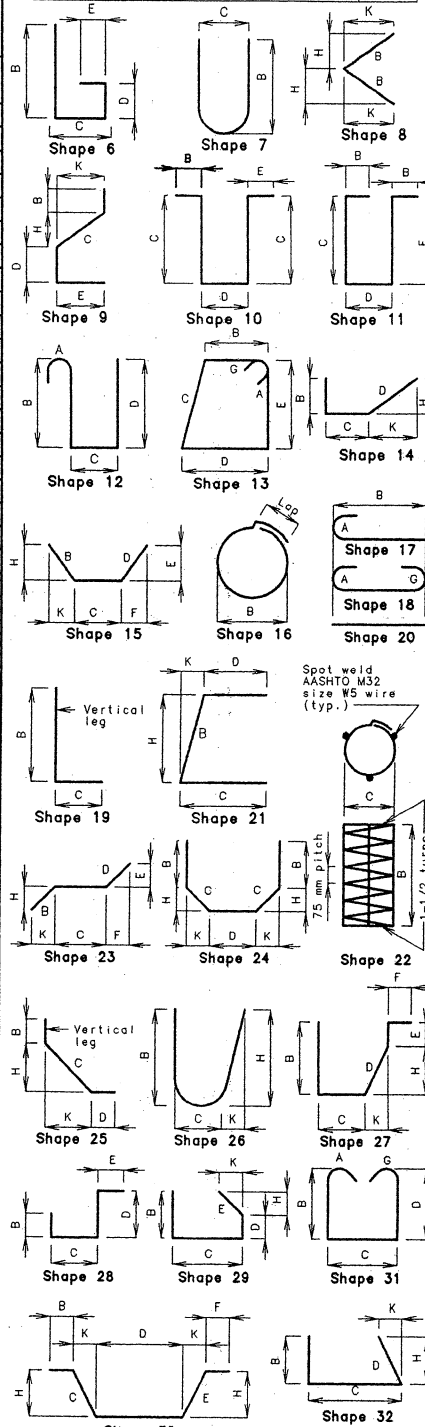
BILL OF REINFORCING STEEL

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	Dimensions							Nominal Length	Actual Length	Mass
								B	C	D	E	F	H	K			
								mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
		UNIT NO. 2															
		SUBSTRUCT.															
		INTERMED.															
		BENT NO. 7															
224	25	D72	FOOTING	20	X			3900							3900	3900	3471
16	19	D73	FOOTING	10	X				2345	3700					8390	8295	297
6	25	H71	BEAM	17	X			10710							10985	10985	262
6	25	H72	BEAM	17	X			10500							10775	10775	257
4	19	H73	BEAM	20	X			9920							9920	9920	89
8	25	H74	BEAM	20	X			10200							10200	10200	324
4	19	H75	BEAM	20	X			10500							10500	10500	94
8	25	H76	BEAM	20	X			10500							10500	10500	334
24	19	H77	BEAM	20	X			920							920	920	49
1	13	P71	COLUMN	35	X			970	75	7145					295620	295620	294
32	13	P72	BEAM	34	S	X		970							3315	3315	105
1	13	P73	COLUMN	35	X			970	75	7280					301035	301035	299
1	13	P74	COLUMN	35	X			970	75	7425					306850	306850	305
1	13	P75	COLUMN	35	X			970	75	7560					312265	312265	310
154	19	U71	BEAM	13	S	X		750	1215	750	1215				4340	4195	1444
24	19	U72	BEAM	10	S	X			1215	750					3180	3085	165
14	19	U73	BEAM	13	S	X		1120	1215	1120	1215				5080	4935	154
36	13	U74	BEAM	10	S	X			230	1120					1580	1530	55
10	19	U75	BEAM	10	X				560	1080					2200	2105	47
18	25	V70	COLUMN	17	X	V	6	5975							6250	6250	
		INCREMENT =						4755							5030	5030	403
		610 mm															
72	25	V71	COLUMN	17	X	V	24	5660							5935	5935	
		INCREMENT =						4440							4715	4715	1523
		610 mm															
18	25	V72	COLUMN	17	X	V	6	6110							6385	6385	
		INCREMENT =						4890							5165	5165	413
		610 mm															
18	25	V73	COLUMN	17	X	V	6	6255							6530	6530	
		INCREMENT =						5035							5310	5310	423
		610 mm															
18	25	V74	COLUMN	17	X	V	6	6390							6665	6665	
		INCREMENT =						5170							5445	5445	433
		610 mm															
16	W5	W71	BEAM	22	X			457	230						7950	7950	32
		INTERMED.															
		BENT NO. 8															
384	25	D82	FOOTING	20	X			4500							4500	4500	6865
16	19	D83	FOOTING	10	X				2645	4300					9590	9495	340
6	32	H81	BEAM	17	X			9175							9600	9600	369
6	32	H82	BEAM	20	X			7695							7695	7695	296
6	32	H83	BEAM	17	X			11870							12295	12295	472

BILL OF REINFORCING STEEL

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	Dimensions							Nominal Length	Actual Length	Mass
								B	C	D	E	F	H	K			
								mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
6	19	H84	BEAM	20	X			12140							12140	12140	163
6	19	H85	BEAM	20	X			11870							11870	11870	159
8	32	H86	BEAM	20	X			13195							13195	13195	676
8	32	H87	BEAM	20	X			11870							11870	11870	608
4	19	H88	BEAM	20	X			920							920	920	8
4	13	P81	COLUMN	35	X			1120	75	7430					355140	355140	1412
36	13	P82	BEAM	34	S	X		1120							3785	3785	135
12	13	U80	BEAM	10	X				790	1270					2850	2785	33
34	19	U81	BEAM	13	S	X		850	1420	850	1420				4950	4805	365
10	19	U82	BEAM	10	S	X			1420	850					3690	3595	80
6	19	U83	BEAM	13	S	X		1270	1420	1270	1420				5790	5645	76
48	19	U84	BEAM	13	S	X		850	1520	850	1520				5150	5005	537
8	19	U85	BEAM	10	S	X			1520	850					3890	3795	68
13	19	U86	BEAM	13	S	X		1270	1625	1270	1625				6200	6055	176
80	19	U87	BEAM	13	S	X		850	1625	850	1625				5360	5215	932
20	19	U88	BEAM	10	S	X			1625	850					4100	4005	179
14	19	U89	BEAM	13	S	X		850	1790	850	1790				5690	5545	174
6	19	U180	BEAM	10	S	X			560	1230					2350	2255	30
9	13	U181	BEAM	10	S	X			150	1270					1570	1520	14
96	29	V80	COLUMN	17	X	V	32	6360							6735	6735	
		INCREMENT =						5140							5515	5515	2975
		610 mm															
96	29	V81	COLUMN	17	X	V	32	6310							6685	6685	
		INCREMENT =						5090							5465	5465	2951
		610 mm															
36	W5	W81	BEAM	22	X			635	230						10110	10110	92
		INTERMED.															
		BENT NO. 9															
320	25	D92	FOOTING	20	X			4500							4500	4500	5721
16	19	D93	FOOTING	10	X				2645	4300					9590	9495	340
6	32	H91	BEAM	17	X			7730							8155	8155	313
6	32	H92	BEAM	20	X			7265							7265	7265	279
6	32	H93	BEAM	17	X			11050							11475	11475	441
4	19	H94	BEAM	20	X			10260							10260	10260	92
4	19	H95	BEAM	20	X			11050							11050	11050	99
8	32	H96	BEAM	20	X			11315							11315	11315	580
8	32	H97	BEAM	20	X			11050							11050	11050	566
4	13	P91	COLUMN	35	X			970	75	7590					313470	313470	1246
32	13	P92	BEAM	34	S	X		970							3315	3315	105
10	19	U90	BEAM	10	X				560	1080					2200	2105	47
26	19	U91	BEAM	13	S	X		750	1220	750	1220				4350	4205	244
8	19	U92	BEAM	10	S	X			1220	750					3190	3095	55
7	19	U93	BEAM	13	S	X		1120	1220	1120	1220				5090	4945	77
40	19	U94	BEAM	13	S	X		750	1295	750	1295				4500	4355	389
10	19	U95	BEAM	10	S	X			1295	750					3340	3245	73
66	19	U96	BEAM	13	S	X		750	1350	750	1350				4610	4465	659
18	19	U97	BEAM	10	S	X			1350	750					3450	3355	135
13	19	U98	BEAM	13	S	X		1120	1350	1120	1350				5350	5205	151
1	13	U99	BEAM	10	S	X			150	1120					1420	1370	1

STATE _____ PROJ. NO. _____ SHEET NO. 255



BENDING DIAGRAMS

UNIT 2

COUNTY

A5682

Sheet No.222 of 236

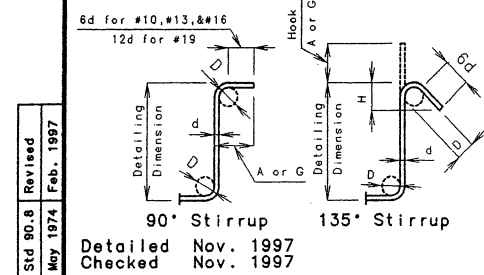
ST. LOUIS

STIRRUP HOOK DIMENSIONS (mm)				
Grades 300 & 420 MPa				
Bar Size	D	90° Hook	135° Hook	
		Hook A or G	Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

BILL OF REINFORCING STEEL																				
No.	Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions						Nominal Length	Actual Length	Mass	
		Size	Mark								B	C	D	E	F	H				K
72	25	V90		COLUMN		17	X	V	24		4850						5125	5125		
				INCREMENT =							6070						6345	6345	1641	
				610 mm																
72	25	V91		COLUMN		17	X	V	24		4800						5075	5075		
				INCREMENT =							6020						6295	6295	1626	
				610 mm																
18	W5	W91		BEAM		22	X				635	230					10110	10110	46	
				INTERMED.																
				BENT NO. 10																
352	25	D102		FOOTING		20	X				4500						4500	4500	6293	
16	19	D104		FOOTING		10	X					2770	4300				9840	9745	348	
6	32	H101		BEAM		17	X				7625						8050	8050	309	
6	32	H102		BEAM		20	X				7140						7140	7140	274	
6	32	H103		BEAM		17	X				10825						11250	11250	432	
4	19	H104		BEAM		20	X				10035						10035	10035	90	
4	19	H105		BEAM		20	X				10825						10825	10825	97	
8	32	H106		BEAM		20	X				11090						11090	11090	568	
8	32	H107		BEAM		20	X				10825						10825	10825	555	
4	13	P101		COLUMN		35	X				970	75	6755				279975	279975	1113	
32	13	P102		BEAM		34	S	X			970						3315	3315	105	
10	19	U100		BEAM		10	X					560	1080				2200	2105	47	
24	19	U101		BEAM		13	S	X			750	1220	750	1220			4350	4205	226	
10	19	U102		BEAM		10	S	X				1220	750				3190	3095	69	
6	19	U103		BEAM		13	S	X			1120	1220	1120	1220			5090	4945	66	
40	19	U104		BEAM		13	S	X			750	1295	750	1295			4500	4355	389	
8	19	U105		BEAM		10	S	X				1295	750				3340	3245	58	
12	19	U106		BEAM		13	S	X			1120	1345	1120	1345			5340	5195	139	
66	19	U107		BEAM		13	S	X			750	1345	750	1345			4600	4455	657	
18	19	U108		BEAM		10	S	X				1345	750				3440	3345	135	
3	13	U109		BEAM		10	S	X				150	1120				1420	1370	4	
80	32	V100		COLUMN		36	X				8540						9390	9390	4811	
36	W5	W101		BEAM		22	X				635	230					10110	10110	92	
				INTERMED.																
				BENT NO. 11																
16	19	D111		FOOTING		10	X					2345	3700				8390	8295	297	
224	25	D112		FOOTING		20	X				3900						3900	3900	3471	
8	29	H111		BEAM		17	X				7580						7955	7955	322	
8	29	H112		BEAM		20	X				6850						6850	6850	277	
8	29	H113		BEAM		17	X				12120						12495	12495	506	
4	19	H114		BEAM		20	X				9790						9790	9790	88	
4	19	H115		BEAM		20	X				12120						12120	12120	108	
10	29	H116		BEAM		20	X				10810						10810	10810	547	
10	29	H117		BEAM		20	X				12120						12120	12120	613	
3	13	P111		COLUMN		35	X				820	75	5445				191820	191820	572	
1	13	P112		COLUMN		35	X				820	75	6845				239180	239180	238	
28	13	P113		BEAM		34	S	X			820						2840	2840	79	

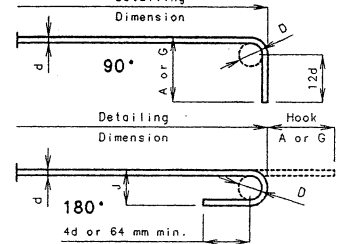
BILL OF REINFORCING STEEL																			
No. Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
	Size	Mark								B	C	D	E	F	H	K			
10	13	U110	BEAM		10		X					790	970				2550	2485	25
5	19	U111	BEAM		10		X					560	930				2050	1955	22
52	19	U112	BEAM		13	S	X			650	1070	650	1070				3850	3705	431
10	19	U113	BEAM		10	S	X				1070	650					2790	2695	60
6	19	U114	BEAM		13	S	X			970	1070	970	1070				4490	4345	58
18	19	U115	BEAM		13	S	X			650	1145	650	1145				4000	3855	155
8	19	U116	BEAM		10	S	X				1195	650					3040	2945	53
8	19	U117	BEAM		13	S	X			970	1195	970	1195				4740	4595	82
14	19	U118	BEAM		13	S	X			630	1530	630	1530				4730	4585	143
70	19	U119	BEAM		13	S	X			650	1195	650	1195				4100	3955	619
6	19	U210	BEAM		13	S	X			970	1195	970	1195				4740	4595	62
1	13	U211	BEAM		10	S	X				150	970					1270	1220	1
39	25	V111	COLUMN		36		X			7050							7600	7600	1178
13	25	V112	COLUMN		36		X			8575							9125	9125	471
18	W5	W111	BEAM		22		X			457	230						7950	7950	36
			SUPERSTRUC.																
			CONC. DIA.																
			NEAR INT.																
			BENT NO. R5																
18	19	H54	DIAPHRAGM	E	20					2595							2595	2595	104
3	19	H55	DIAPHRAGM	E	20					2595							2595	2595	17
7	13	U55	DIAPHRAGM	E	10	S					680	1435					2795	2745	19
9	13	U56	DIAPHRAGM	E	28	S					655	1525	305				2485	2435	22
1	13	U57	DIAPHRAGM	E	10	S					680	1600					2960	2910	3
1	13	U58	DIAPHRAGM	E	28	S					655	1690	305				2650	2600	3
1	13	U59	DIAPHRAGM	E	10	S					680	1635					2995	2945	3
1	13	U60	DIAPHRAGM	E	28	S					655	1725	305				2685	2635	3
165	16	S200	SLAB	E	20					9600							9600	9600	2458
384	16	S201	SLAB	E	20					12100							12100	12100	7211
399	16	S202	SLAB	E	20					10600							10600	10600	6564
3	16	S203	SLAB	E	20					8800							8800	8800	41
110	19	S204	SLAB	E	20					4000							4000	4000	983
123	19	S205	SLAB	E	20					18050							18050	18050	4962
123	19	S206	SLAB	E	20					6975							6975	6975	1917
123	19	S207	SLAB	E	20					15050							15050	15050	4137
123	19	S208	SLAB	E	20					7075							7075	7075	1945
110	19	S209	SLAB	E	20					16000							16000	16000	3934
110	19	S210	SLAB	E	20					6425							6425	6425	1580
110	19	S211	SLAB	E	20					4280							4280	4280	1052
9	16	S212	SLAB	E	20			V	1	4010							4010	4010	
			INCREMENT =							11400							11400	11400	108
			925 mm																
4	16	S213	SLAB	E	20					11400							11400	11400	71
8	16	S214	SLAB	E	20					12150							12150	12150	151
24	16	S215	SLAB	E	20					9200							9200	9200	343
3	16	S216	SLAB	E	20					10500							10500	10500	49
3	16	S217	SLAB	E	20					11500							11500	11500	54

Two additional #13-U56 and #19-S204 are included in the bar bill for testing.



STIRRUP HOOK DIMENSIONS (mm)				
Grades 300 & 420 MPa				
Bar Size	D	90° Hook A or G	135° Hook A or G	Approx. J
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

Note: Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.



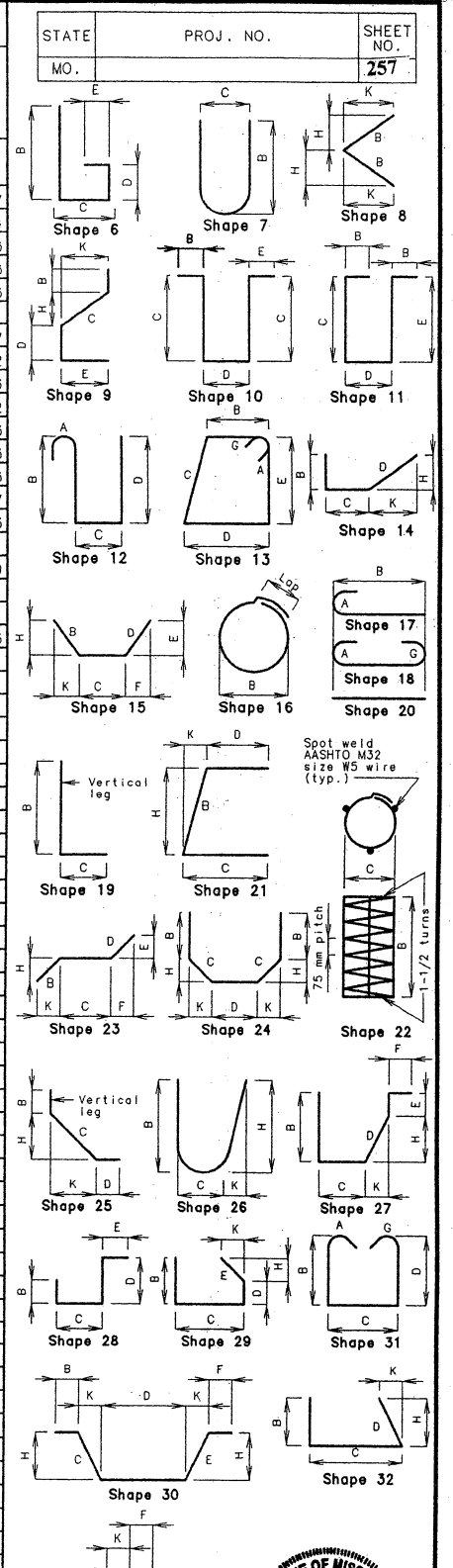
END HOOK DIMENSIONS (mm)				
Bar Size	D	All Grades		
		180° Hooks		90° Hook
		A or G	J	A or G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

BILL OF REINFORCING STEEL

No. Req'd.	Size	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
										B	C	D	E	F	H	K			
										mm	mm	mm	mm	mm	mm	mm			
1	16	S218	SLAB	E 20						3580							3580	3580	
268	19	S219	SLAB	E 20						14700							14700	14700	8805
4	16	S220	SLAB	E 20				V	1	2120							2120	2120	
			INCREMENT =							5840							5840	5840	25
			1240 mm																
83	19	S221	SLAB	E 20						14445							14445	14445	2680
84	19	S222	SLAB	E 20						14015							14015	14015	2631
84	19	S223	SLAB	E 20						13575							13575	13575	2549
84	19	S224	SLAB	E 20						13135							13135	13135	2466
84	19	S225	SLAB	E 20						12695							12695	12695	2383
463	19	S226	SLAB	E 20						12260							12260	12260	12687
20	19	S227	SLAB	E 20						6775							6775	6775	303
248	19	S228	SLAB	E 20						6990							6990	6990	3874
27	19	S229	SLAB	E 20						9880							9880	9880	596
187	19	S230	SLAB	E 20				V	1	11140							11140	11140	
			INCREMENT =							4550							4550	4550	3279
			35 mm																
70	19	S231	SLAB	E 20						4550							4550	4550	712
882	19	S232	SLAB	E 20						9820							9820	9820	19358
60	16	S240	SLAB	E 20						11600							11600	11600	1080
40	16	S241	SLAB	E 20						12000							12000	12000	745
4	16	S242	SLAB	E 20				V	1	3540							3540	3540	
			INCREMENT =							4920							4920	4920	26
			460 mm																
11	16	S243	SLAB	E 20				V	1	6020							6020	6020	
			INCREMENT =							11680							11680	11680	151
			565 mm																
22	16	S244	SLAB	E 20						11500							11500	11500	393
9	16	S245	SLAB	E 20						10600							10600	10600	148
40	16	S246	SLAB	E 20						10500							10500	10500	652
20	16	S247	SLAB	E 20						10500							10500	10500	326
55	16	S248	SLAB	E 20						10900							10900	10900	930
5	16	S249	SLAB	E 20						10900							10900	10900	85
3	16	S250	SLAB	E 20						10400							10400	10400	48
2	16	S251	SLAB	E 20						10800							10800	10800	34
5	16	S252	SLAB	E 20						10300							10300	10300	80
893	13	S253	SLAB	E 20						910							910	910	808
18	16	S254	SLAB	E 20						3670							3670	3670	103
66	16	S255	SLAB	E 20						3840							3840	3840	393
50	16	S256	SLAB	E 20						3720							3720	3720	289
35	16	S257	SLAB	E 20						3600							3600	3600	196
68	16	S258	SLAB	E 20						3480							3480	3480	367
23	16	S259	SLAB	E 20						9880							9880	9880	353
166	16	S260	SLAB	E 20				V	1	10940							10940	10940	
			INCREMENT =							4340							4340	4340	1968
			40 mm																
61	16	S261	SLAB	E 20						4340							4340	4340	411
98	16	S262	SLAB	E 20						6160							6160	6160	937
80	16	S263	SLAB	E 20						3575							3575	3575	444
40	16	S264	SLAB	E 20						2920							2920	2920	181
20	16	S265	SLAB	E 20						1700							1700	1700	53
42	16	S266	SLAB	E 20						3000							3000	3000	186
1097	16	R1	BAR. CURB	E 19	S					740	100						840	805	1371
1097	16	R2	BAR. CURB	E 15	S					745	100				740	80	845	815	1388
1097	16	R3	BAR. CURB	E 19	S					440	150						590	555	945
1097	16	R4	BAR. CURB	E 27	S						150	270	175	300	220	155	895	845	1439
105	16	R200	BAR. CURB	E 20						2920							2920	2920	476

BILL OF REINFORCING STEEL

No. Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass	
	Size	Mark								B	C	D	E	F	H	K				
																				mm
7	16	R201	BAR. CURB	E 20						1550							1550	1550	17	
14	16	R202	BAR. CURB	E 20						1575							1575	1575	34	
21	16	R203	BAR. CURB	E 20						10830							10830	10830	353	
112	16	R204	BAR. CURB	E 20						9450							9450	9450	1643	
42	16	R205	BAR. CURB	E 20						10940							10940	10940	713	
21	16	R206	BAR. CURB	E 20						11700							11700	11700	381	
7	16	R207	BAR. CURB	E 20						1560							1560	1560	17	
7	16	R208	BAR. CURB	E 20						1105							1105	1105	12	
7	16	R209	BAR. CURB	E 20						3350							3350	3350	36	
6	16	R210	BAR. CURB	E 23 S						480	575	240	236	42	472	83	1295	1245	12	
1	16	R211	BAR. CURB	E 10 S							710	675					2095	2030	3	
1	16	R212	BAR. CURB	E 10 S							710	575					1995	1930	3	
1	16	R213	BAR. CURB	E 10 S							710	475					1895	1830	3	
3	16	R214	BAR. CURB	E 10 S							710	150					1570	1505	7	
3	16	R215	BAR. CURB	E 10 S						150	420	150	150				1290	1155	5	
62	16	C1	SLIP FORM	E 20						3000							3000	3000	289	
			CURB OPTION ONLY																	
6	16	C2	SLIP FORM	E 20						1630							1630	1630	15	
			CURB OPTION ONLY																	



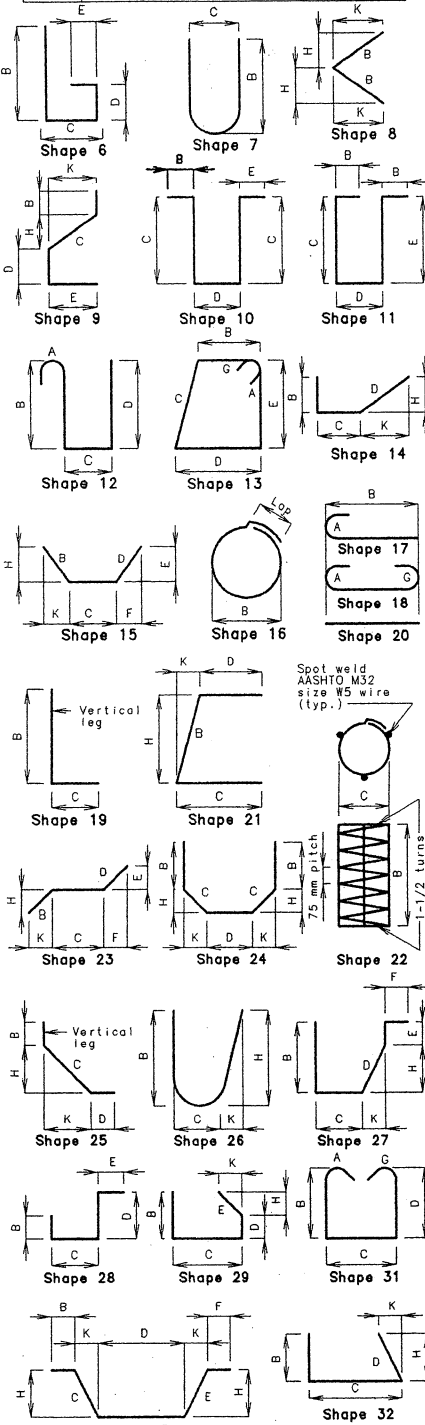
BILL OF REINFORCING STEEL

No. Req'd.	Size	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
										B	C	D	E	F	H	K			
										mm	mm	mm	mm	mm	mm	mm			
			UNIT NO. 3																
			SUBSTRUCT.																
			INTERMED.																
			BENT NO. 12																
16	19	D121	FOOTING	10		X					2445	3900				8790	8695	311	
288	25	D122	FOOTING	20		X				4100						4100	4100	4691	
8	29	H121	BEAM	17		X				7580						7955	7955	322	
8	29	H122	BEAM	20		X				6405						6405	6405	259	
8	29	H123	BEAM	17		X				11515						11890	11890	481	
4	19	H124	BEAM	20		X				11170						11170	11170	100	
4	19	H125	BEAM	20		X				9690						9690	9690	87	
9	29	H126	BEAM	20		X				11170						11170	11170	509	
9	29	H127	BEAM	20		X				10710						10710	10710	488	
2	13	P121	COLUMN	35		X				820	75	4560				161875	161875	322	
2	13	P122	COLUMN	35		X				820	75	5260				185560	185560	369	
28	13	P123	BEAM	34	S	X				820						2840	2840	79	
10	19	U120	BEAM	10		X					560	930				2050	1955	44	
30	19	U121	BEAM	13	S	X				650	1070	650	1070			3850	3705	248	
4	19	U122	BEAM	10	S	X					1070	650				2790	2695	24	
6	19	U123	BEAM	13	S	X				970	1070	970	1070			4490	4345	58	
40	19	U124	BEAM	13	S	X				650	1145	650	1145			4000	3855	345	
4	19	U125	BEAM	10	S	X					1145	650				2940	2845	25	
9	19	U126	BEAM	13	S	X				970	1145	970	1145			4640	4495	90	
70	19	U127	BEAM	13	S	X				650	1195	650	1195			4100	3955	619	
8	19	U128	BEAM	10	S	X					1195	650				3040	2945	53	
6	19	U129	BEAM	13	S	X				970	1195	970	1195			4740	4595	62	
2	13	U221	BEAM	10	S	X					150	970				1270	1220	2	
32	32	V121	COLUMN	36		X				6170						7020	7020	1439	
32	32	V122	COLUMN	36		X				6990						7840	7840	1607	
18	W5	W121	BEAM	22		X				635	230					10110	10110	46	
			INTERMED.																
			BENT NO. 13																
16	19	D131	FOOTING	10		X					2645	4300				9590	9495	340	
352	25	D132	FOOTING	20		X				4500						4500	4500	6293	
8	32	H131	BEAM	17		X				10720						11145	11145	571	
8	32	H132	BEAM	20		X				4150						4150	4150	213	
8	32	H133	BEAM	17		X				12150						12575	12575	644	
4	19	H134	BEAM	20		X				11295						11295	11295	101	
4	19	H135	BEAM	20		X				9565						9565	9565	86	
8	32	H136	BEAM	20		X				11295						11295	11295	579	
8	32	H137	BEAM	20		X				11130						11130	11130	570	
4	19	H138	BEAM	20		X				820						820	820	7	
4	13	P131	COLUMN	35		X				820	75	3855				138025	138025	549	
28	13	P132	BEAM	34	S	X				820						2840	2840	79	
10	19	U130	BEAM	10		X					560	930				2050	1955	44	

BILL OF REINFORCING STEEL

No. Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
	Size	Mark								B	C	D	E	F	H	K			
40	19	U131	BEAM	13	S	X				650	1070	650	1070				3850	3705	331
10	19	U132	BEAM	10	S	X					1070	650					2790	2695	60
9	19	U133	BEAM	13	S	X				970	1070	970	1070				4490	4345	87
18	19	U134	BEAM	13	S	X				650	1180	650	1180				4070	3925	158
9	19	U135	BEAM	13	S	X				970	1180	970	1180				4710	4565	92
56	19	U136	BEAM	13	S	X				650	1180	650	1180				4070	3925	491
10	19	U137	BEAM	10	S	X					1180	650					3010	2915	65
9	19	U138	BEAM	13	S	X				970	1180	970	1180				4710	4565	92
4	13	U139	BEAM	10	S	X					150	970					1270	1220	5
60	32	V131	COLUMN	36		X				5565							6415	6415	2465
18	W5	W131	BEAM	22		X				457	230						7950	7950	36
			INTERMED.																
			BENT NO. 14																
16	19	D141	FOOTING	10		X					2345	3700					8390	8295	297
256	25	D142	FOOTING	20		X				3900							3900	3900	3967
8	32	H141	BEAM	17		X				5585							6010	6010	308
8	32	H142	BEAM	20		X				8815							8815	8815	452
8	32	H143	BEAM	20		X				7855							7855	7855	402
8	32	H144	BEAM	17		X				8340							8765	8765	449
4	19	H145	BEAM	20		X				10825							10825	10825	97
4	19	H146	BEAM	20		X				10035							10035	10035	90
8	32	H147	BEAM	20		X				10825							10825	10825	555
8	32	H148	BEAM	20		X				11600							11600	11600	594
4	13	P141	COLUMN	35		X				820	75	2515					92695	92695	369
28	13	P142	BEAM	34	S	X				820							2840	2840	79
9	19	U140	BEAM	10		X					560	930					2050	1955	39
32	19	U141	BEAM	13	S	X				650	1280	650	1280				4270	4125	295
4	19	U142	BEAM	10	S	X					1280	650					3210	3115	28
7	19	U143	BEAM	13	S	X				970	1280	970	1280				4910	4765	75
32	19	U144	BEAM	13	S	X				650	1215	650	1215				4140	3995	286
6	19	U145	BEAM	10	S	X					1215	650					3080	2985	40
7	19	U146	BEAM	13	S	X				970	1215	970	1215				4780	4635	73
40	19	U147	BEAM	13	S	X				650	1145	650	1145				4000	3855	345
6	19	U148	BEAM	10	S	X					1145	650					2940	2845	38
7	19	U149	BEAM	13	S	X				970	1070	970	1070				4490	4345	68
28	19	U241	BEAM	13	S	X				650	1070	650	1070				3850	3705	232
4	19	U242	BEAM	10	S	X					1070	650					2790	2695	24
3	13	U243	BEAM	10	S	X					150	970					1270	1220	4
60	29	V141	COLUMN	36		X				4220							4970	4970	1509
18	W5	W141	BEAM	22		X				457	230						7950	7950	36
			BENT NO. 15																
208	22	D151	FOOTING	18		X				4300							4800	4800	3037
208	22	D152	FOOTING	18		X				4400							4900	4900	3100
8	32	H150	BEAM	20		X				7335							7335	7335	376
8	32	H151	BEAM	20		X				3205							3205	3205	164
8	32	H152	BEAM	17		X				8965							9390	9390	481

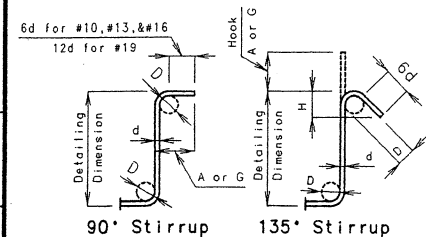
STATE: MO. PROJ. NO. SHEET NO. 258



BILL OF REINFORCING STEEL

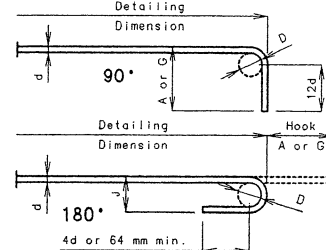
No.	Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	Dimensions							Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K			
									mm	mm	mm	mm	mm	mm	mm			
8	32	H153	BEAM		20	X			5955							5955	5955	305
4	19	H154	BEAM		20	X			10035							10035	10035	90
4	19	H155	BEAM		20	X			10825							10825	10825	97
8	32	H156	BEAM		20	X			11600							11600	11600	594
8	32	H157	BEAM		20	X			10825							10825	10825	555
8	32	H158	BEAM		17	X			8340							8765	8765	449
4	13	P151	COLUMN		35	X			820	75	5055					178625	178625	710
28	13	P152	BEAM		34	S	X		820							2840	2840	79
10	19	U151	BEAM		10	X				560	930					2050	1955	44
26	19	U152	BEAM		13	S	X		650	1380	650	1380				4470	4325	251
8	19	U153	BEAM		10	S	X			1380	650					3410	3315	59
6	19	U154	BEAM		13	S	X		970	1290	970	1290				4930	4785	64
40	19	U155	BEAM		13	S	X		650	1290	650	1290				4290	4145	371
8	19	U156	BEAM		10	S	X			1290	650					3230	3135	56
6	19	U157	BEAM		13	S	X		970	1205	970	1205				4760	4615	62
22	19	U158	BEAM		13	S	X		650	1205	650	1205				4120	3975	195
6	19	U159	BEAM		10	S	X			1160	650					2970	2875	39
20	19	U250	BEAM		13	S	X		650	1160	650	1160				4030	3885	174
6	19	U251	BEAM		13	S	X		970	1070	970	1070				4490	4345	58
28	19	U252	BEAM		13	S	X		650	1070	650	1070				3850	3705	232
8	19	U253	BEAM		10	S	X			1070	650					2790	2695	48
1	13	U254	BEAM		10	S	X			150	970					1270	1220	1
64	36	V151	COLUMN		36	X			6765							7715	7715	3904
18	W5	W151	BEAM		22	X			635	230						10110	10110	46
			END BENT															
			NO. 16															
4	19	F161	WING BRACE		E 15	X			355	1395	355	255	248	255	248	2105	2085	19
4	19	F162	WING BRACE		E 15	X			355	1430	355	248	255	248	255	2140	2120	19
8	29	H161	BEAM		E 17	X			13825							14200	14200	575
2	19	H163	BEAM		E 20	X			12290							12290	12290	55
8	13	H164	BACKWALL		E 20	X			12015							12015	12015	96
2	19	H165	APP. HAUNCH		E 20	X			12105							12105	12105	54
66	16	H166	APP. HAUNCH		E 19	X			610	610						1220	1180	121
12	19	H167	WING		E 20	X			3210							3210	3210	86
2	19	H168	WING		E 20	X			3210							3210	3210	14
10	19	H169	WING		E 20	X			3210							3210	3210	72
2	19	H170	WING		E 20	X			3210							3210	3210	14
1	13	H171	CORBEL		E 20	X			11100							11100	11100	11
10	29	H172	BEAM		E 17	X			9585							9960	9960	504
2	19	H174	BEAM		E 20	X			9585							9585	9585	43
2	19	H175	APP. HAUNCH		E 20	X			9175							9175	9175	41
8	13	H176	BACKWALL		E 20	X			9585							9585	9585	76
3	13	H177	CORBEL		E 20	X			8755							8755	8755	26
2	13	T161	WING		E 21	X			1320	1820				1320	65	3140	3105	6
2	13	T162	WING		E 21	X			1300	1780				1300	65	3080	3045	6
61	16	U161	BEAM		E 13	S	X		745	895	1035	845				3800	3690	349
61	16	U162	BEAM		E 13	S	X		745	845	745	845				3460	3360	318
18	13	U163	BEAM		E 10	S	X			150	1120					1420	1370	25
9	16	U164	BEAM		E 14	S	X		845	745	895			845	290	2485	2430	34
9	16	U165	BEAM		E 10	S	X			845	745					2435	2370	33

Two additional #13-H177, #13-S310, #16-V161, #19-H167, #19-S306, #22-U166 and #29-H172 are included in the bar bill for testing.



STIRRUP HOOK DIMENSIONS (mm)				
Grades 300 & 420 MPa				
Bar Size	D	90° Hook A or G	135° Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

Note: Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.



END HOOK DIMENSIONS (mm)				
All Grades				
Bar Size	D	180° Hook A or G	90° Hook A or G	
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

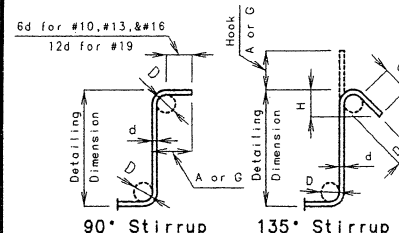
Note:
All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = epoxy coated reinforcement
S = stirrup
X = bar is included in substructure quantities
V = 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 5 mm).
Actual lengths are measured along centerline bar to the nearest 5 mm.
Payweights are based on actual lengths.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and mass of column spirals do not include splices or spacers.
Reinforcing steel (Grade 420) = FY 420 MPa

BILL OF REINFORCING STEEL

No.	Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass	
										B	C	D	E	F	H	K				
										mm	mm	mm	mm	mm	mm	mm				
7	22	U166	BEAM	E 14	X					1495	615	2005				1380	1455	4115	4050	86
5	22	U167	BEAM	E 14	X					1495	640	1905				1380	1310	4040	3970	60
8	13	U169	MUD WALL	E 20	X					1175								1175	1175	9
8	13	U170	MUD WALL	E 20	X					1160								1160	1160	9
66	13	U172	BACKWALL	E 10	X						380	150						910	845	55
67	19	V160	BACKWALL	E 20	X					2210								2210	2210	331
69	16	V161	BACKWALL	E 20	X					2065								2065	2065	221
4	19	V162	WING	E 20	X					1130								1130	1130	10
10	19	V163	WING	E 17	X	V	1			1460								1660	1660	
			INCREMENT =							1530								1730	1730	38
			10 mm																	
10	19	V164	WING	E 20	X	V	1			1510								1510	1510	
			INCREMENT =							1580								1580	1580	35
			10 mm																	
5	19	V165	WING	E 17	X	V	1			1955								2155	2155	
			INCREMENT =							2015								2215	2215	24
			15 mm																	
5	19	V166	WING	E 20	X	V	1			2005								2005	2005	
			INCREMENT =							2065								2065	2065	23
			15 mm																	
2	13	V167	MUD WALL	E 20	X					1705								1705	1705	3
4	19	V168	WING	E 20	X					1105								1105	1105	10
10	19	V169	WING	E 17	X	V	1			1435								1635	1635	
			INCREMENT =							1505								1705	1705	37
			10 mm																	
10	19	V170	WING	E 20	X	V	1			1485								1485	1485	
			INCREMENT =							1555								1555	1555	34
			10 mm																	
5	19	V171	WING	E 17	X	V	1			1930								2130	2130	
			INCREMENT =							1990								2190	2190	24
			15 mm																	
5	19	V172	WING	E 20	X	V	1			1980								1980	1980	
			INCREMENT =							2040								2040	2040	22
			15 mm																	
2	13	V173	MUD WALL	E 20	X					1675								1675	1675	3
2	19	V174	BEAM	E 20	X					925								925	925	4
2	19	V175	BEAM	E 20	X					895								895	895	4
18	W5	W161	BEAM	E 22	X					457	230							7950	7950	36
			SUPERSTRUC.																	
741	16	S300	SLAB	E 20						11670								11670	11670	13421
110	19	S301	SLAB	E 20						13800								13800	13800	3393
110	19	S302	SLAB	E 20						13900								13900	13900	3417
110	19	S303	SLAB	E 20						12000								12000	12000	2950
220	19	S304	SLAB	E 20						10715								10715	10715	5269
929	19	S305	SLAB	E 20						12260								12260	12260	25456
933	19	S306	SLAB	E 20						9820								9820	9820	20477
1	19	S307	SLAB	E 20						7525								7525	7525	17
1	19	S308	SLAB	E 20						4475								4475	4475	10
104	16	S309	SLAB	E 20						11670								11670	11670	1884
928	13	S310	SLAB	E 20						910								910	910	839
100	16	S311	SLAB	E 20						3575								3575	3575	555
50	16	S312	SLAB	E 20						2920								2920	2920	27

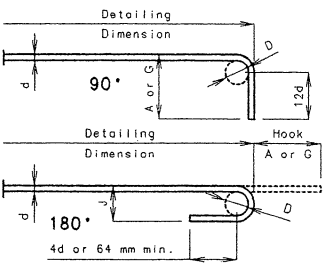
Std 90.8 Revised
May 1974 Feb. 1997

Detailed Nov. 1997
Checked Nov. 1997



STIRRUP HOOK DIMENSIONS (mm)				
Grades 300 & 420 MPa				
Bar Size	D	90° Hook A or G	135° Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

Note: Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.



END HOOK DIMENSIONS (mm)				
All Grades				
Bar Size	D	180° Hook A or G	90° Hook J A or G	90° Hook A or G
#10	80	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

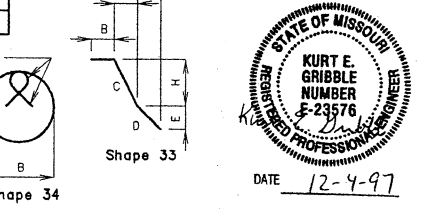
Note: All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard hooks. Hooks and bends shall be in accordance with the procedures as shown on this sheet. X = stirrup. X = bar is included in substructure quantities. V = bar dimensions vary in equal 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 5 mm). Actual lengths are measured along centerline bar to the nearest 5 mm. Payweights are based on actual lengths. Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and mass of column spirals do not include splices or spacers. Reinforcing steel (Grade 420) = FY 420 MPa

Sheet No. 227 of 236

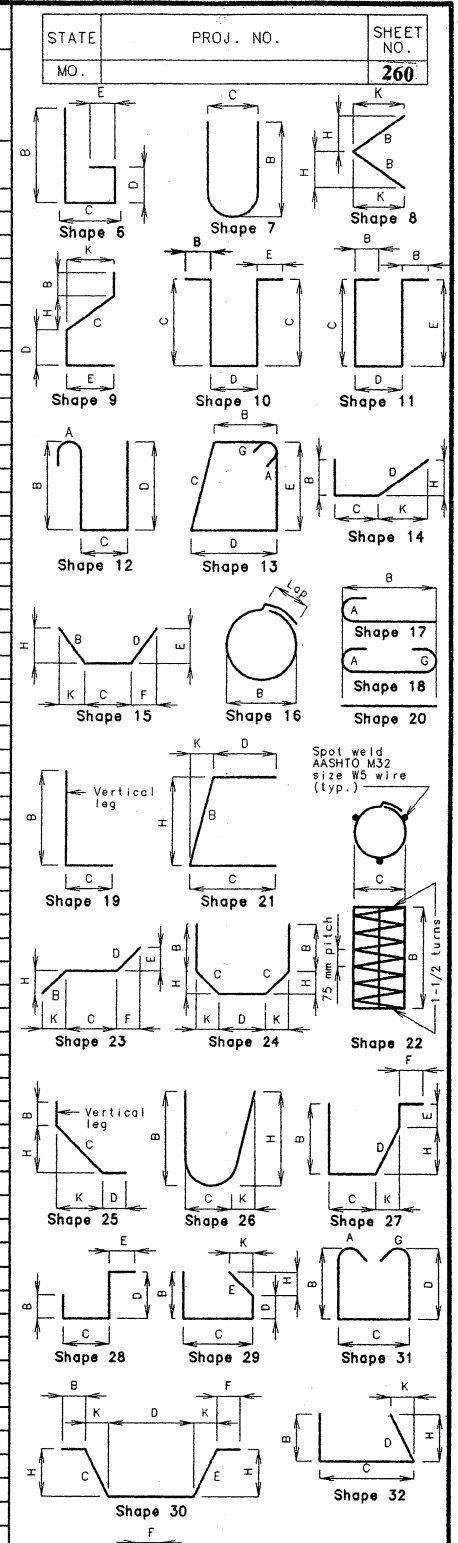
ST. LOUIS

COUNTY

A5682



BENDING DIAGRAMS



BILL OF REINFORCING STEEL																			
No. Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
	Size	Mark								B	C	D	E	F	H	K			
20	19	S313	SLAB	E	20					1700							1700	1700	76
42	19	S314	SLAB	E	20					3000							3000	3000	268
982	16	R1	BAR. CURB	E	19	S				740	100						840	805	1227
960	16	R2	BAR. CURB	E	15	S				745	100				740	80	845	815	1214
956	16	R3	BAR. CURB	E	19	S				440	150						590	555	823
956	16	R4	BAR. CURB	E	27	S					150	270	175	300	220	155	895	845	1254
26	16	R5	BAR. CURB	E	19	S				470	150						620	585	24
26	16	R6	BAR. CURB	E	27	S				330	240	270	150		155	220	990	940	38
22	16	R7	BAR. CURB	E	19	S		V	2	740	115						855	820	
			INCREMENT = 20 mm							740	330						1070	1035	32
4	16	R8	BAR. CURB	E	19	S				700	230						930	895	6
28	16	R9	BAR. CURB	E	19	S				740	230						970	935	41
16	16	R10	BAR. CURB	E	10	S					860	330					2050	1985	49
22	16	R12	BAR. CURB	E	20					1530							1530	1530	52
2	16	R13	BAR. CURB	E	20					990							990	990	3
12	16	R15	BAR. CURB	E	20					2420							2420	2420	45
6	16	R16	BAR. CURB	E	20					3220							3220	3220	30
112	16	R300	BAR. CURB	E	20					2920							2920	2920	508
28	16	R301	BAR. CURB	E	20					11540							11540	11540	501
84	16	R302	BAR. CURB	E	20					10940							10940	10940	1426
42	16	R303	BAR. CURB	E	20					10730							10730	10730	699

BILL OF REINFORCING STEEL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
No. Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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STATE	PROJ. NO.	SHEET NO.
MO.		260

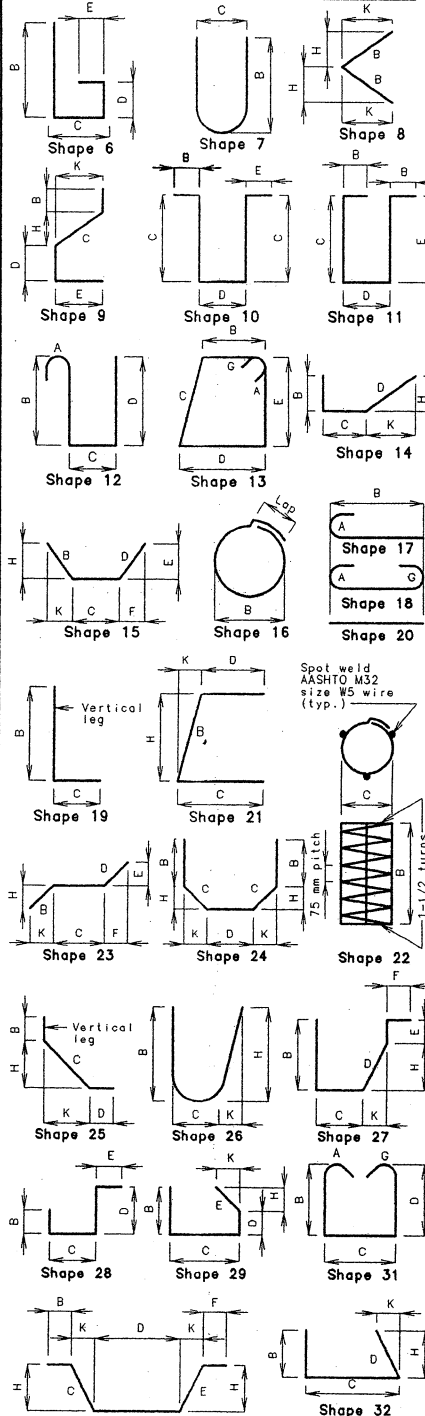
BILL OF REINFORCING STEEL

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K			
									mm	mm	mm	mm	mm	mm	mm			
		UNIT NO. 4																
		SUBSTRUCT.																
		END BENT NO. R1																
8	19	F2 WING BRACE	E	15	X				360	1370	360	255	255	255	255	2090	2070	37
8	19	H1 WING	E	20	X				3920							3920	3920	70
6	19	H3 WING	E	20	X				3920							3920	3920	53
12	19	H4 WING	E	20	X	V	4		3720							3720	3720	
		INCREMENT = 1120 mm							1480							1480	1480	70
2	19	H5 APP. HAUNCH	E	20	X				9065							9065	9065	41
8	16	H6 BACKWALL	E	20	X				9890							9890	9890	123
10	22	H7 BEAM	E	18	X				9885							10385	10385	316
2	19	H8 BEAM	E	20	X				9885							9885	9885	44
3	13	H9 CORBEL	E	20	X				9145							9145	9145	27
16	13	H10 MUD WALL	E	20	X				865							865	865	14
31	16	H11 APP. HAUNCH	E	19	X				610	610						1220	1180	57
2	13	T1 WING	E	21	X				1025	1735				1020	75	2760	2720	5
2	13	T2 WING	E	21	X				1025	1800				1020	85	2825	2785	6
2	19	T3 WING	E	25	X				380	2560	740			505	2510	3680	3645	16
2	19	T4 WING	E	25	X				380	2595	710			530	2540	3685	3650	16
34	16	U1 BEAM	E	13	S	X			850	865	1120	820				3935	3825	202
7	16	U2 BEAM	E	14	S	X			820	850	865			820	270	2535	2480	27
10	22	U3 BEAM	E	14	S	X			1365	570	1710			1210	1210	3645	3580	109
6	13	U4 BEAM	E	10	S	X				150	850					1150	1100	7
28	13	U5 BACKWALL	E	10	X					370	150					890	825	23
62	19	V1 BACKWALL	E	20	X				2210							2210	2210	306
2	19	V3 WING	E	20	X				460							460	460	2
15	19	V4 WING	E	17	X	V	1		835							1035	1035	
		INCREMENT = 40 mm							1405							1605	1605	44
15	19	V5 WING	E	20	X	V	1		885							885	885	
		INCREMENT = 40 mm							1455							1455	1455	39
4	19	V6 WING	E	17	X	V	1		1880							2080	2080	
		INCREMENT = 20 mm							1945							2145	2145	19
4	19	V7 WING	E	20	X	V	1		1930							1930	1930	
		INCREMENT = 20 mm							1995							1995	1995	18
2	19	V8 WING	E	20	X				465							465	465	2
15	19	V10 WING	E	17	X	V	1		845							1045	1045	
		INCREMENT = 45 mm							1455							1655	1655	45
15	19	V11 WING	E	20	X	V	1		895							895	895	
		INCREMENT = 45 mm							1505							1505	1505	40
4	19	V12 WING	E	17	X	V	1		1930							2130	2130	
		INCREMENT = 25 mm							2000							2200	2200	19

BILL OF REINFORCING STEEL

No. Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
									B	C	D	E	F	H	K			
									mm	mm	mm	mm	mm	mm	mm			
4	19	V13 WING	E	20	X	V	1		1980							1980	1980	
		INCREMENT = 25 mm							2050							2050	2050	18
2	19	V14 BEAM	E	20	X				915							915	915	4
2	13	V15 MUD WALL	E	20	X				1630							1630	1630	3
2	13	V16 MUD WALL	E	20	X				1690							1690	1690	3
2	19	V17 BEAM	E	20	X				870							870	870	4
8	W5	W1 BEAM	E	22	X				457	230						7950	7950	16
		INTERMED. BENT NO. R2																
138	25	D21 FOOTING		20	X				3900							3900	3900	2138
8	22	D22 FOOTING		10	X					2525	3700					8750	8640	210
6	32	H20 BEAM		18	X				8980							9830	9830	378
4	19	H21 BEAM		20	X				8980							8980	8980	80
6	32	H22 BEAM		20	X				8980							8980	8980	345
16	19	H23 BEAM		20	X				900							900	900	32
1	13	P20 COLUMN		35	X				970	75	5390					225225	225225	224
1	13	P21 COLUMN		35	X				970	75	5080					212790	212790	212
16	13	P22 BEAM		34	S	X			970							3315	3315	53
8	19	U20 BEAM		10	X					560	1080					2200	2105	38
68	19	U21 BEAM		13	S	X			750	1020	750	1020				3950	3805	578
7	19	U22 BEAM		13	S	X			1120	1020	1120	1020				4690	4545	71
20	19	U23 BEAM		10	S	X				1020	750					2790	2695	120
28	13	U24 BEAM		10	S	X				150	1120					1420	1370	38
12	32	V20 COLUMN		36	X				6875							7725	7725	594
12	32	V21 COLUMN		36	X				6565							7415	7415	570
8	W5	W20 BEAM		22	X				635	230						10110	10110	20
		INTERMED. BENT NO. R3																
138	25	D31 FOOTING		20	X				3900							3900	3900	2138
8	22	D32 FOOTING		10	X					2525	3700					8750	8640	210
6	32	H30 BEAM		18	X				8985							9835	9835	378
4	19	H31 BEAM		20	X				8985							8985	8985	80
6	32	H32 BEAM		20	X				8985							8985	8985	345
16	19	H33 BEAM		20	X				900							900	900	32
1	13	P30 COLUMN		35	X				970	75	7010					290205	290205	288
1	13	P31 COLUMN		35	X				970	75	6665					276365	276365	275
16	13	P32 BEAM		34	S	X			970							3315	3315	53
8	19	U30 BEAM		10	X					560	1080					2200	2105	38
68	19	U31 BEAM		13	S	X			750	1020	750	1020				3950	3805	578
7	19	U32 BEAM		13	S	X			1120	1020	1120	1020				4690	4545	71
20	19	U33 BEAM		10	S	X				1120	750					2990	2895	129
28	13	U34 BEAM		10	S	X				150	1120					1420	1370	38
12	32	V30 COLUMN		36	X				8490							9340	9340	718

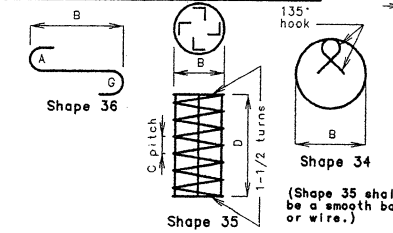
STATE: MO. PROJ. NO. SHEET NO. 261



Two additional #13-H9, #16-H6, #19-H1 and #22-H7 are included in the bar bill for testing.

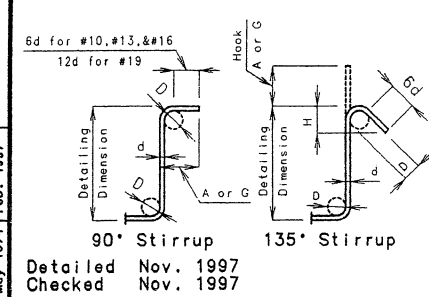
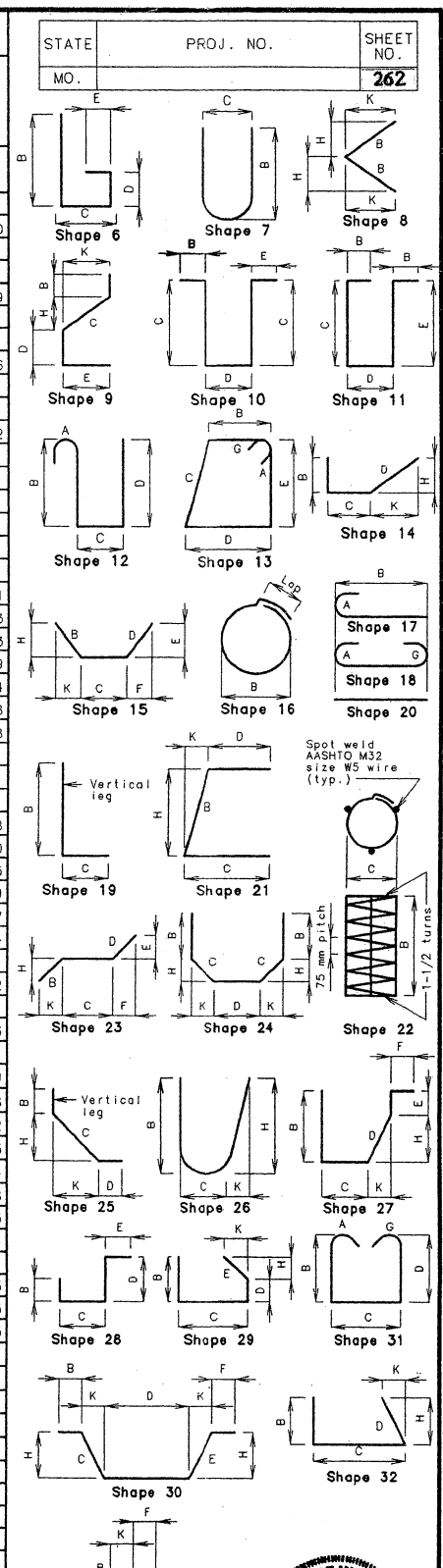
END HOOK DIMENSIONS (mm)				
Bar Size	D	180° Hook	90° Hook	135° Hook
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775

Note: All standard hooks and bends other than 180 degree to be bent with the same procedure as for 90 degree standard 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 5 mm). Actual lengths are measured along centerline bar to the nearest 5 mm. Payweights are based on actual lengths. Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and mass of column spirals do not include splices or spacers. Reinforcing steel (Grade 420) = FY 420 MPa



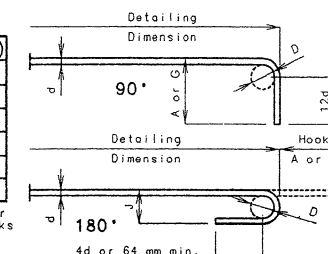
BILL OF REINFORCING STEEL																				
No.	Req'd.	Mark No.		Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
		Size	Mark								B	C	D	E	F	H	K			
12	32	V32		COLUMN		36		X				8145						8995	8995	691
8	W5	W30		BEAM		22		X				457	230					7950	7950	16
				INTERMED.																
				BENT NO. R4																
138	25	D41		FOOTING		20		X				3900						3900	3900	2138
8	22	D42		FOOTING		10		X					2525	3700				8750	8640	210
6	36	H40		BEAM		18		X				8985						9935	9935	471
4	19	H41		BEAM		20		X				8985						8985	8985	80
6	36	H42		BEAM		20		X				8985						8985	8985	426
16	19	H43		BEAM		20		X				900						900	900	32
1	13	P40		COLUMN		35		X				970	75	8475				348970	348970	347
1	13	P41		COLUMN		35		X				970	75	8265				340545	340545	339
16	13	P42		BEAM		34	S	X				970						3315	3315	53
8	19	U40		BEAM		10		X					560	1080				2200	2105	38
68	19	U41		BEAM		13	S	X				750	1020	750	1020			3950	3805	578
7	19	U42		BEAM		13	S	X				1120	1020	1120	1020			4690	4545	71
20	19	U43		BEAM		10	S	X					1020	750				2790	2695	120
28	13	U44		BEAM		10	S	X					150	1120				1420	1370	38
24	32	V40		COLUMN		17		X	V	8		6585						7010	7010	
				INCREMENT =								5365						5790	5790	984
				610 mm																
12	32	V41		COLUMN		17		X	V	4		6435						6860	6860	
				INCREMENT =								5215						5640	5640	480
				610 mm																
12	32	V42		COLUMN		17		X	V	4		6645						7070	7070	
				INCREMENT =								5425						5850	5850	496
				610 mm																
8	W5	W40		BEAM		22		X				457	230					7950	7950	16
				INTERMED.																
				BENT NO. R5																
138	25	D51		FOOTING		20		X				3900						3900	3900	2138
8	22	D52		FOOTING		10		X					2525	3700				8750	8640	210
8	32	H50		BEAM	E	18		X				9275						10125	10125	519
4	19	H51		BEAM	E	20		X				9275						9275	9275	83
10	32	H52		BEAM	E	20		X				9275						9275	9275	594
4	19	H53		BEAM	E	20		X				9275						9275	9275	83
1	13	P50		COLUMN	E	35		X				970	75	7630				315075	315075	313
1	13	P51		COLUMN	E	35		X				970	75	7425				306850	306850	305
16	13	P52		BEAM	E	34	S	X				970						3315	3315	53
8	19	U50		BEAM	E	10		X					560	1280				2400	2305	41
58	19	U51		BEAM	E	13	S	X				880	1295	880	1295			4760	4615	598
47	16	U52		BEAM	E	10	S	X					730	395				1855	1790	131
10	19	U53		BEAM	E	13	S	X				1320	1295	1320	1295			5640	5495	123
16	19	U54		BEAM	E	10	S	X					1295	880				3470	3375	121

BILL OF REINFORCING STEEL																			
No.	Req'd.	Mark No.	Location	Epoxy (E)	Shape No.	Stirrup (S)	Substr. (X)	Varies (V)	No. Each	Dimensions							Nominal Length	Actual Length	Mass
										B	C	D	E	F	H	K			
										mm	mm	mm	mm	mm	mm	mm			
12	32	V51	COLUMN	E	17		X	V	4	6300							6725	6725	
			INCREMENT =							5080							5505	5505	470
			610 mm																
24	32	V52	COLUMN		17		X	V	8	6165							6590	6590	
			INCREMENT =							4945							5370	5370	919
			610 mm																
12	32	V53	COLUMN	E	17		X	V	4	6505							6930	6930	
			INCREMENT =							5285							5710	5710	486
			610 mm																
16	W5	W50	BEAM	E	22		X			457	230						7950	7950	32
			SUPERSTRUC.																
252	16	S1	SLAB	E	20					11330							11330	11330	4431
723	19	S2	SLAB	E	20					9885							9885	9885	15973
50	19	S3	SLAB	E	20					13360							13360	13360	1493
50	19	S4	SLAB	E	20					11890							11890	11890	1329
50	19	S5	SLAB	E	20					13460							13460	13460	1504
625	16	S6	SLAB	E	20					9885							9885	9885	9588
369	16	S7	SLAB	E	20					11120							11120	11120	6368
639	16	R1	BAR. CURB	E	19	S				740	100						840	805	798
617	16	R2	BAR. CURB	E	15	S				745	100				740	80	845	815	780
609	16	R3	BAR. CURB	E	19	S				440	150						590	555	525
609	16	R4	BAR. CURB	E	27	S					150	270	175	300	220	155	895	845	799
30	16	R5	BAR. CURB	E	19	S				470	150						620	585	27
30	16	R6	BAR. CURB	E	27	S				330	240	270	150		155	220	990	940	44
22	16	R7	BAR. CURB	E	19	S	V	2		740	115						855	820	
			INCREMENT =							740	330						1070	1035	32
			20 mm																
4	16	R8	BAR. CURB	E	19	S				700	230						930	895	6
28	16	R9	BAR. CURB	E	19	S				740	230						970	935	41
16	16	R10	BAR. CURB	E	10	S					860	330					2050	1985	49
14	16	R11	BAR. CURB	E	20					3120							3120	3120	68
22	16	R12	BAR. CURB	E	20					1530							1530	1530	52
2	16	R13	BAR. CURB	E	20					990							990	990	3
4	16	R14	BAR. CURB	E	20					3920							3920	3920	24
14	16	R16	BAR. CURB	E	20					9565							9565	9565	208
28	16	R17	BAR. CURB	E	20					7900							7900	7900	343
14	16	R18	BAR. CURB	E	20					9405							9405	9405	204
84	16	R19	BAR. CURB	E	20					2920							2920	2920	381
14	16	R20	BAR. CURB	E	20					10730							10730	10730	233
28	16	R21	BAR. CURB	E	20					9275							9275	9275	403
14	16	R22	BAR. CURB	E	20					10835							10835	10835	235
56	16	C1	SLIP FORM	E	20					3000							3000	3000	261
			CURB OPTION ONLY																



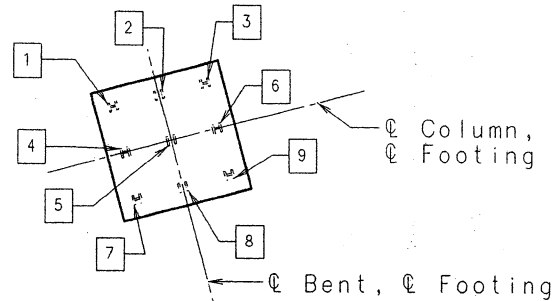
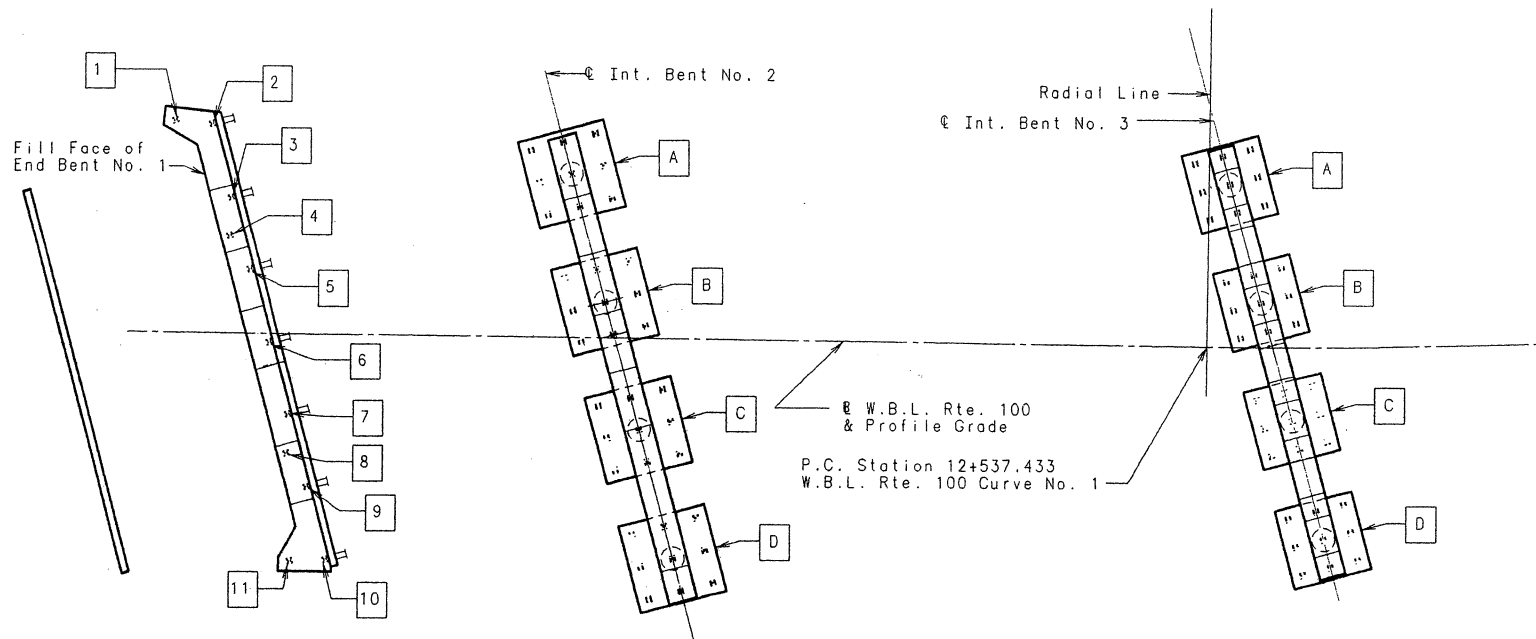
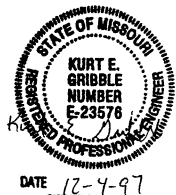
STIRRUP HOOK DIMENSIONS (mm)				
Grades 300 & 420 MPa				
Bar Size	D	90° Hook A or G	135° Hook A or G	Approx. H
#13	50	115	115	80
#16	65	155	140	95
#19	115	305	205	115

Note: Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.



Two addition

END HOOK DIMENSIONS (mm)					
Bar Size	D	All Grades			
		180° Hooks		90° Hooks	
		A or G	J	A or G	J
#10	60	125	80	150	
#13	80	150	105	200	
#16	95	175	130	250	
#19	115	200	155	300	
#22	135	250	180	375	
#25	155	275	205	425	
#28	240	375	300	475	
#32	275	425	335	550	
#36	305	475	375	600	
#43	465	675	550	775	



DETAIL OF FOOTING SHOWING
TYPICAL PILE ORIENTATION
FOR FOOTINGS A, B, C, & D

NOTE: INDICATE IN REMARK COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

PART PLAN SHOWING
PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
END BENT NO. 1			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
INTERMEDIATE BENT NO. 2			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			
INTERMEDIATE BENT NO. 3			
A1			
A2			
A3			
A4			
A5			
A6			

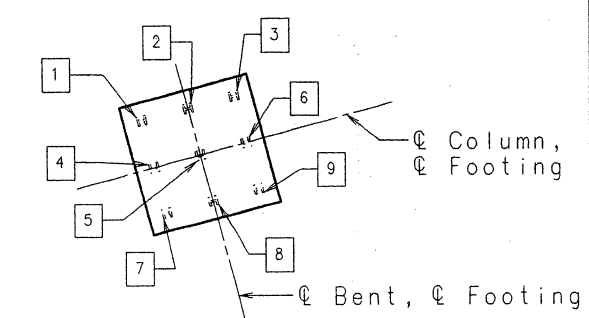
"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			

DETAILED OCT 1997
CHECKED OCT 1997

NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.

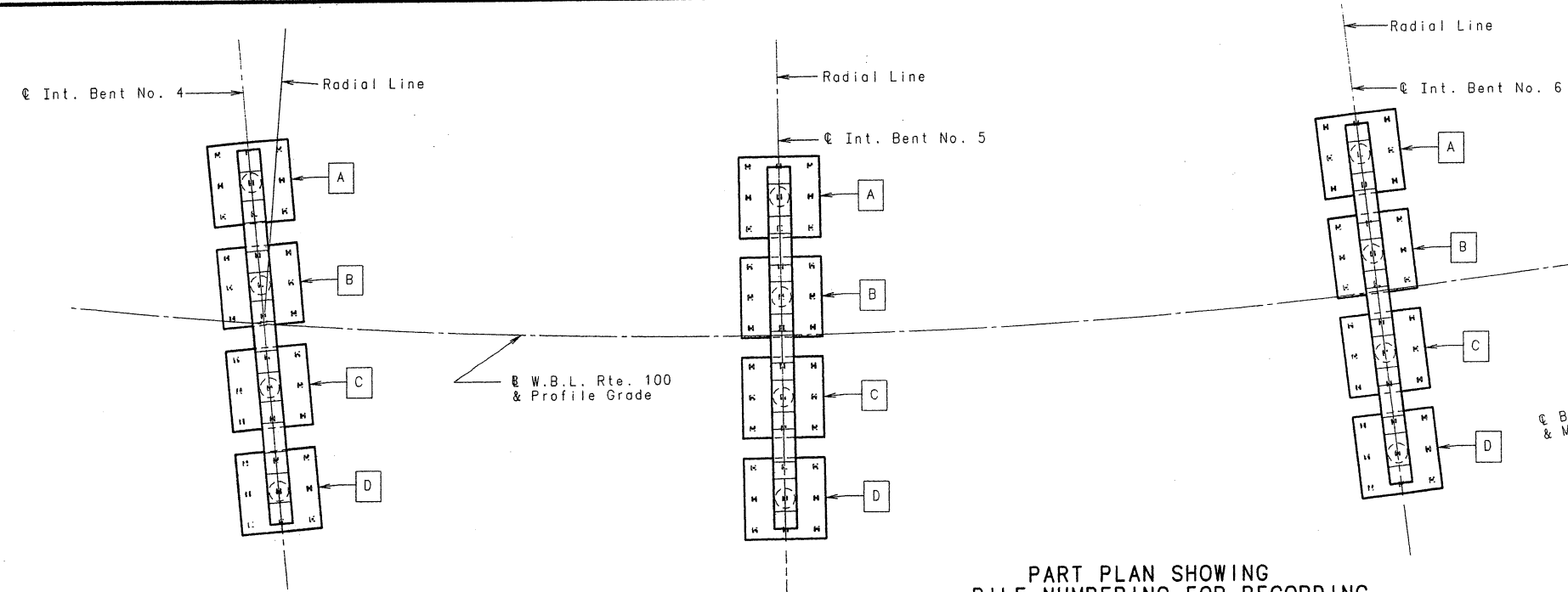
SHEET NO.230 OF 236

STATE OF MISSOURI
KURT E. GRIBBLE
REGISTERED PROFESSIONAL ENGINEER
E-23576
DATE 12-4-97



DETAIL OF FOOTING SHOWING
TYPICAL PILE ORIENTATION
FOR FOOTINGS A, B, C, & D

NOTE: INDICATE IN REMARK COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.



PART PLAN SHOWING
PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 4			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 5			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 6			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			

DETAILED OCT 1997
CHECKED OCT 1997

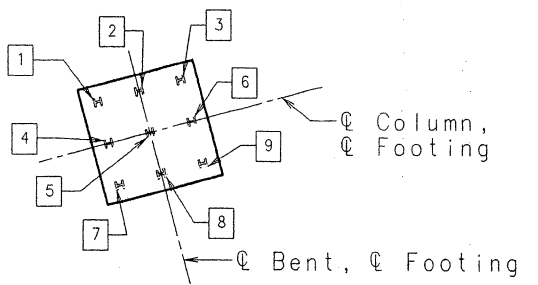
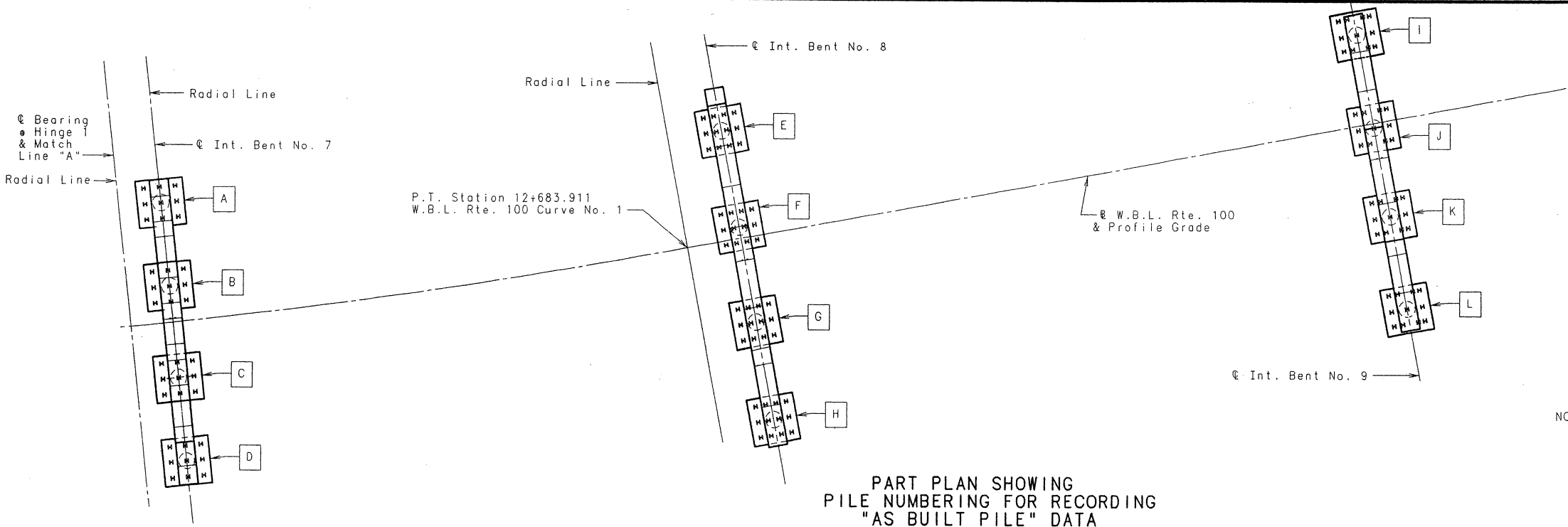
NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.

SHEET NO.231 OF 236

ST. LOUIS

COUNTY

UNIT 1
A5682



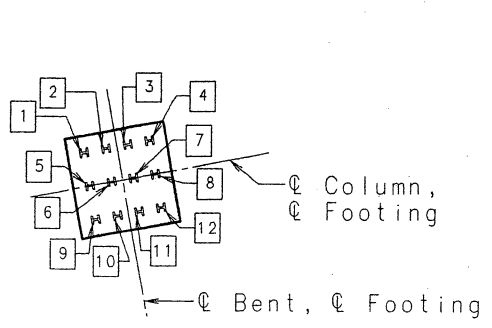
DETAIL OF FOOTING SHOWING TYPICAL PILE ORIENTATION FOR FOOTINGS A, B, C, & D

NOTE: INDICATE IN REMARK COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

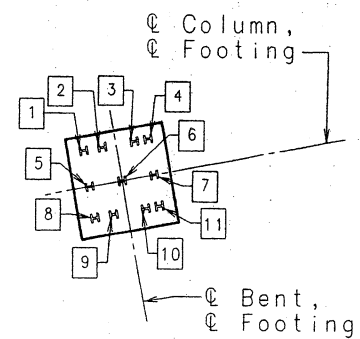
"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 7			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 8			
E1			
E2			
E3			
E4			
E5			
E6			
E7			
E8			
E9			
E10			
E11			
E12			
F1			
F2			
F3			
F4			
F5			
F6			
F7			
F8			
F9			
F10			
F11			
F12			
G1			
G2			
G3			
G4			
G5			
G6			
G7			
G8			
G9			
G10			
G11			
G12			
H1			
H2			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 8			
H3			
H4			
H5			
H6			
H7			
H8			
H9			
H10			
H11			
H12			



DETAIL OF FOOTING SHOWING TYPICAL PILE ORIENTATION FOR FOOTINGS E, F, G, & H

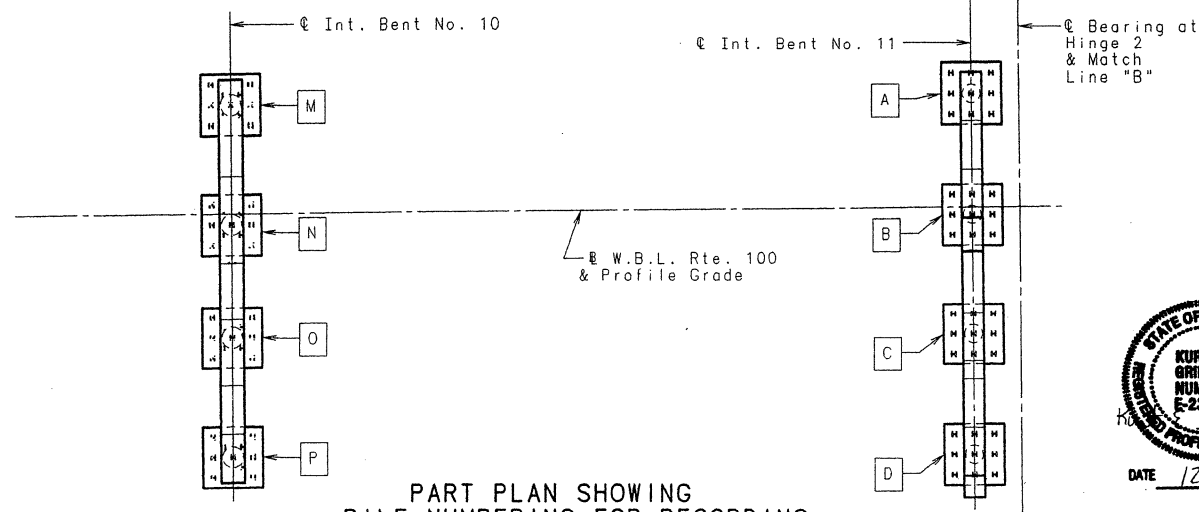


DETAIL OF FOOTING SHOWING TYPICAL PILE ORIENTATION FOR FOOTINGS I, J, K, & L

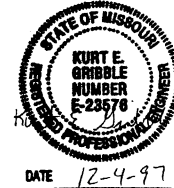
STATE OF MISSOURI
KURT E. GRIBBLE
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-23576
DATE 12-4-97

DETAILED OCT 1997
CHECKED OCT 1997

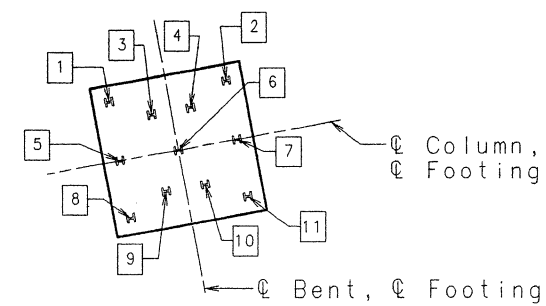
NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.



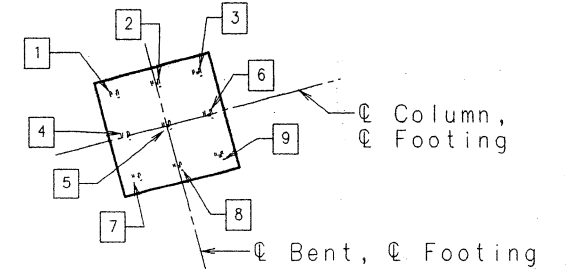
PART PLAN SHOWING
PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA



NOTE: INDICATE IN REMARK COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.



DETAIL OF FOOTING SHOWING
TYPICAL PILE ORIENTATION
FOR FOOTINGS M, N, O, & P



DETAIL OF FOOTING SHOWING
TYPICAL PILE ORIENTATION
FOR FOOTINGS A, B, C, & D

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (mm)	COMPUTED BEARINGS (kN)	REMARKS
INTERMEDIATE BENT NO. 9			
I1			
I2			
I3			
I4			
I5			
I6			
I7			
I8			
I9			
I10			
I11			
J1			
J2			
J3			
J4			
J5			
J6			
J7			
J8			
J9			
J10			
J11			
K1			
K2			
K3			
K4			
K5			
K6			
K7			
K8			
K9			
K10			
K11			
L1			
L2			
L3			
L4			
L5			
L6			
L7			
L8			
L9			
L10			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
L11			
INTERMEDIATE BENT NO. 10			
M1			
M2			
M3			
M4			
M5			
M6			
M7			
M8			
M9			
M10			
M11			
N1			
N2			
N3			
N4			
N5			
N6			
N7			
N8			
N9			
N10			
N11			
O1			
O2			
O3			
O4			
O5			
O6			
O7			
O8			
O9			
O10			
O11			
P1			
P2			
P3			
P4			
P5			
P6			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
P7			
P8			
P9			
P10			
P11			
INTERMEDIATE BENT NO. 11			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			

DETAILED OCT 1997
CHECKED OCT 1997

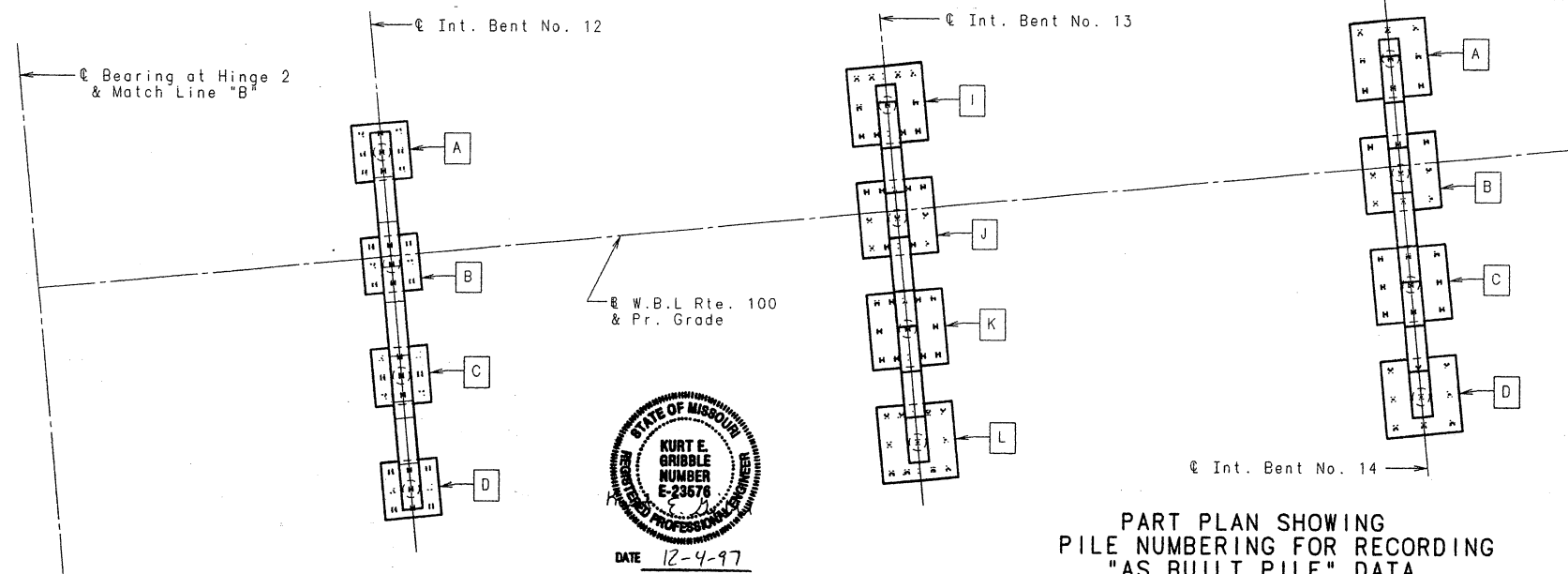
NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.

SHEET NO.233 OF 236

ST. LOUIS

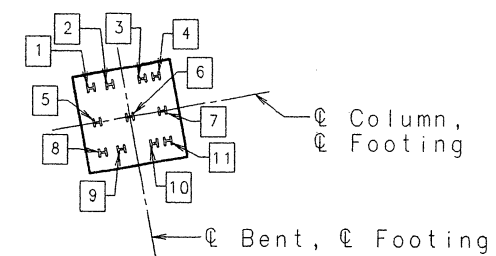
COUNTY

UNIT 2
A5682

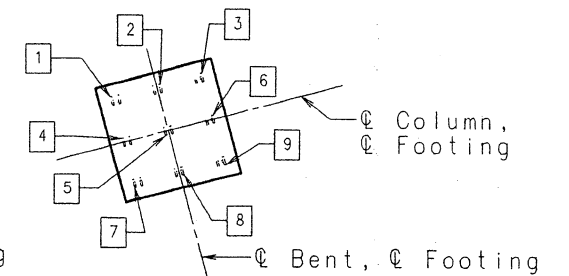


NOTE: INDICATE IN REMARK COLUMN:
 A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
 B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
 C.) TYPE OF PILING USED.

STATE	PROJ. NO.	SHEET NO.
MO.		267



DETAIL OF FOOTING SHOWING
 TYPICAL PILE ORIENTATION
 FOR FOOTINGS I, J, K, & L



DETAIL OF FOOTING SHOWING
 TYPICAL PILE ORIENTATION
 FOR FOOTINGS A, B, C, & D

PART PLAN SHOWING
 PILE NUMBERING FOR RECORDING
 "AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 12			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			
INTERMEDIATE BENT NO. 13			
I1			
I2			
I3			
I4			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
I5			
I6			
I7			
I8			
I9			
I10			
I11			
J1			
J2			
J3			
J4			
J5			
J6			
J7			
J8			
J9			
J10			
J11			
K1			
K2			
K3			
K4			
K5			
K6			
K7			
K8			
K9			
K10			
K11			
L1			
L2			
L3			
L4			
L5			
L6			
L7			
L8			
L9			
L10			
L11			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. 14			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8			
C9			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			

DETAILED OCT 1997
 CHECKED OCT 1997

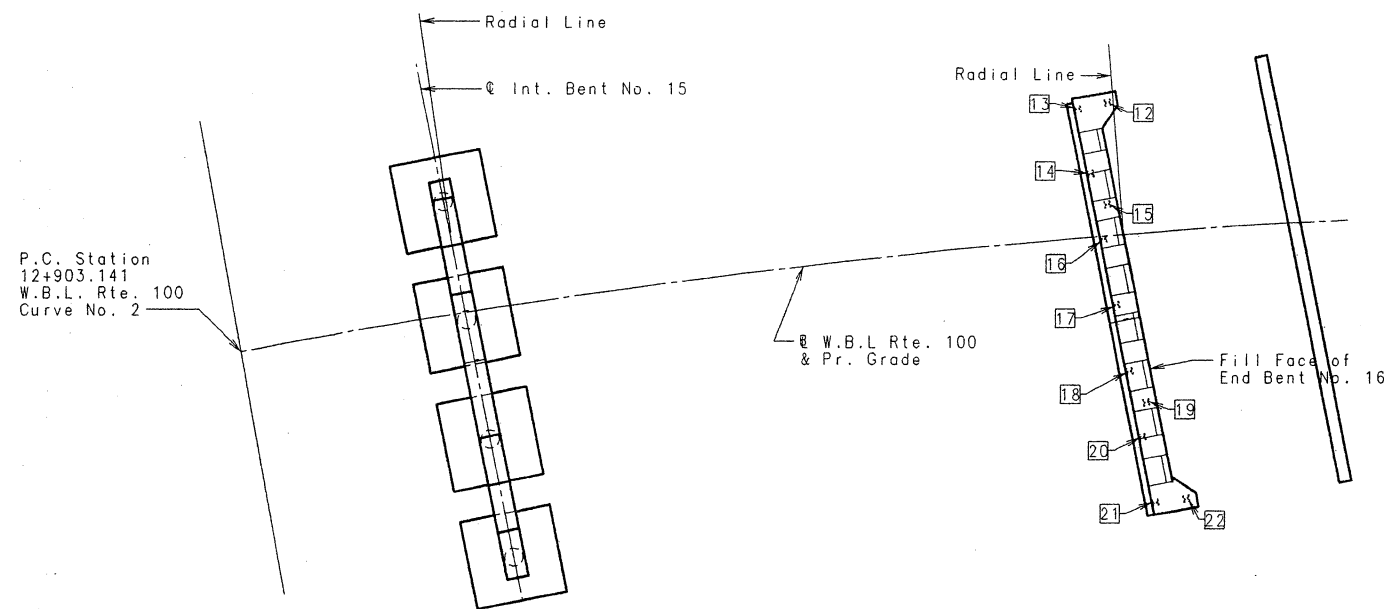
NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.

SHEET NO.234 OF 236

ST. LOUIS

COUNTY

UNIT 3
 A5682



NOTE: INDICATE IN REMARK COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

PART PLAN SHOWING
PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
END BENT NO. 16			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

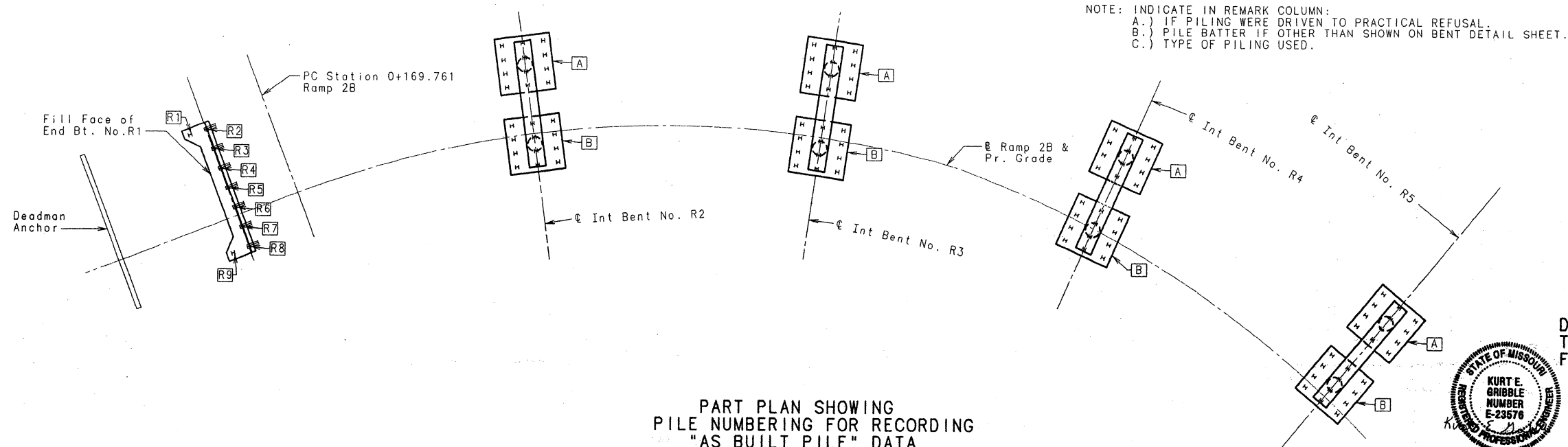
STATE OF MISSOURI
KURT E. GRIBBLE
NUMBER E-23578
REGISTERED PROFESSIONAL ENGINEER
DATE 12-4-97

DETAILED OCT 1997
CHECKED OCT 1997

NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.

SHEET NO.235 OF 236

ST. LOUIS COUNTY UNIT 3 A5682



PART PLAN SHOWING
 PILE NUMBERING FOR RECORDING
 "AS BUILT PILE" DATA

STATE OF MISSOURI
 KURT E. GRIBBLE
 NUMBER E-23576
 REGISTERED PROFESSIONAL ENGINEER
 DATE 12-4-97

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
END BENT NO. R1			
R1			
R2			
R3			
R4			
R5			
R6			
R7			
R8			
R9			
INTERMEDIATE BENT NO. R2			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
A10			
A11			
A12			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
B10			
B11			
B12			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. R3			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
A10			
A11			
A12			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
B10			
B11			
B12			
INTERMEDIATE BENT NO. R4			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
A10			
A11			
A12			
B1			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (meter)	COMPUTED BEARING (kN)	REMARKS
INTERMEDIATE BENT NO. R5			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
B10			
B11			
B12			
INTERMEDIATE BENT NO. R5			
A1			
A2			
A3			
A4			
A5			
A6			
A7			
A8			
A9			
A10			
A11			
A12			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
B10			
B11			
B12			

DETAILED NOV 1997
 CHECKED NOV 1997

NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.

SHEET NO. 236 OF 236

ST. LOUIS

COUNTY

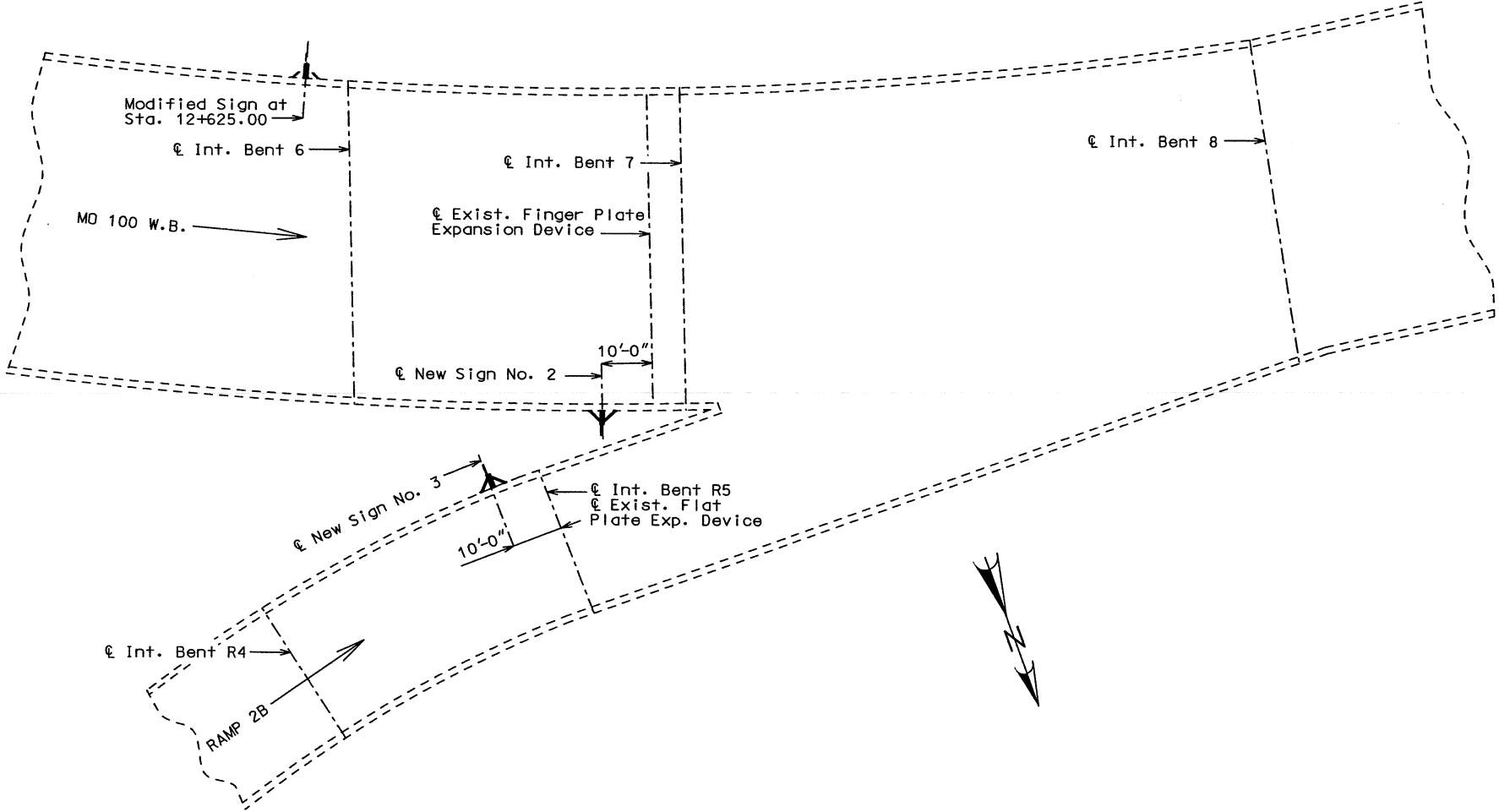
UNIT 4
 A5682

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

State	Proj. No.	Sheet No.
MO		
SEC/SUR 33 & 34 TWP 45N RGE 5E		

GENERAL NOTES:

- Center and level signs on brackets.
- All bolts, nuts and washers shall be galvanized.
- All structural steel shall be A.S.T.M. A709 Grade 36, galvanized.
- Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.
- The contractor shall verify all dimensions in field before ordering new steel.
- The cost of furnishing and erecting the sign supports, complete in place, shall be paid for as "Fabricated Sign Support Brackets", per lump sum.
- Shift sign supports to minimum extent necessary to allow for installation of anchors into existing safety barrier curb and slab to clear existing fence anchors or other obstructions.
- For details of modified sign support bracket at Sta. 12+625.00, see sheet no. 2.
- For details of new sign nos. 2 & 3, see sheet no. 3.
- All dimensions are shown in feet and inches unless otherwise specified.
- All stations are shown in kilometer units with accuracy to the nearest millimeter.



LOCATION SKETCH

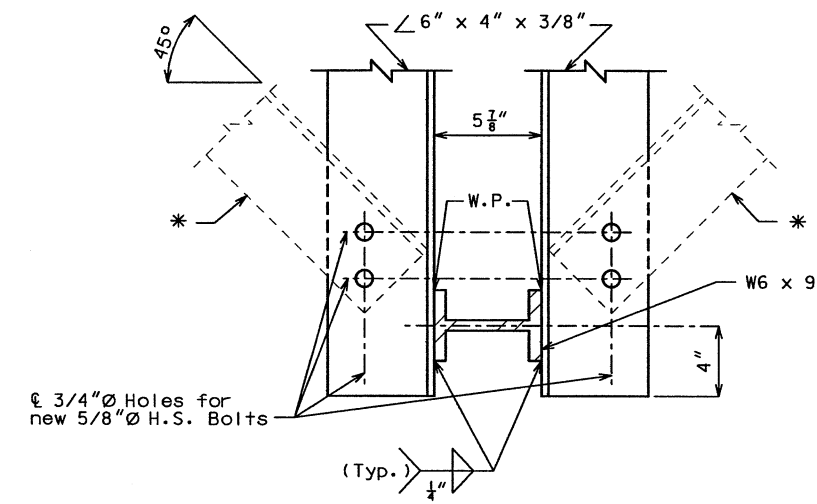
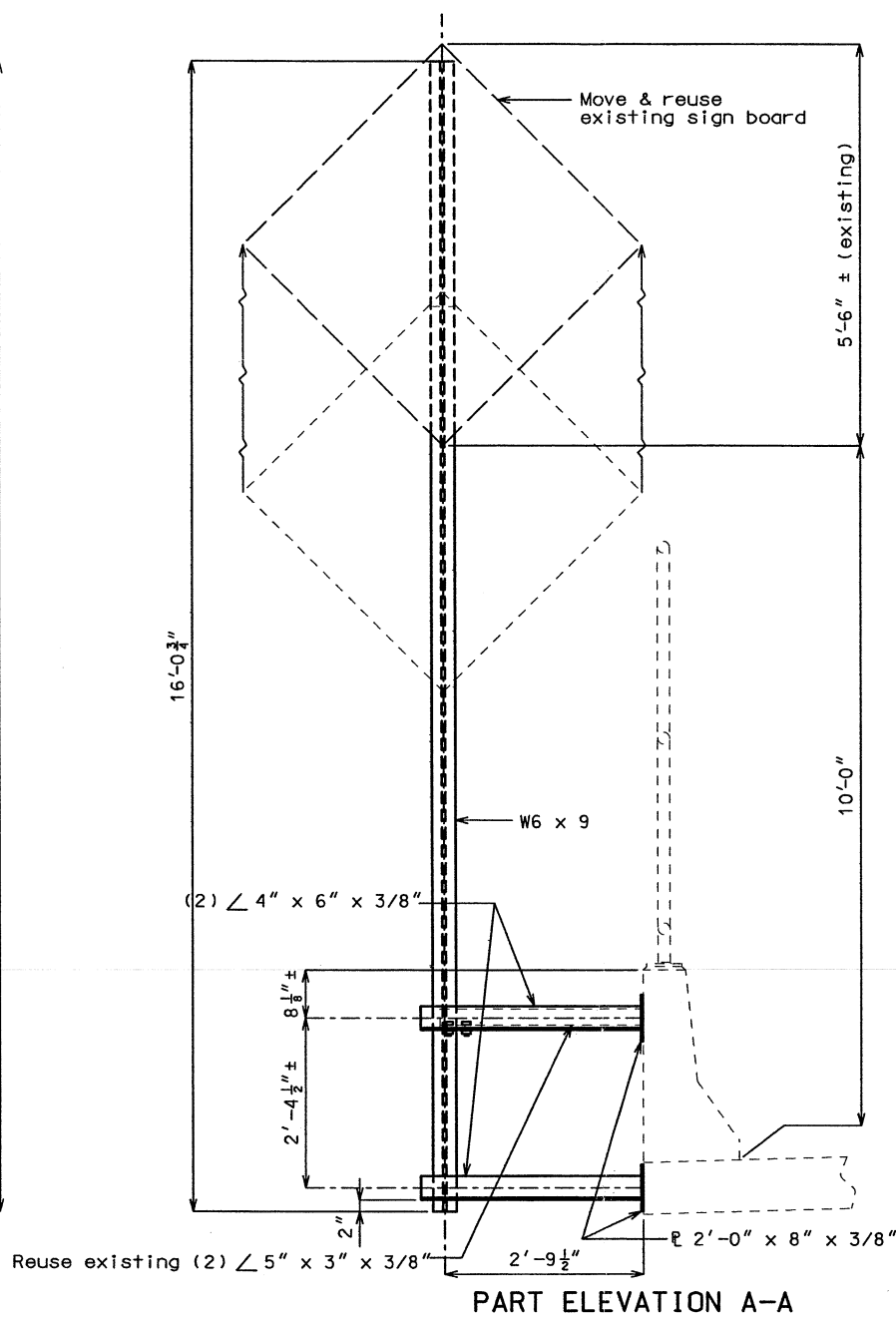
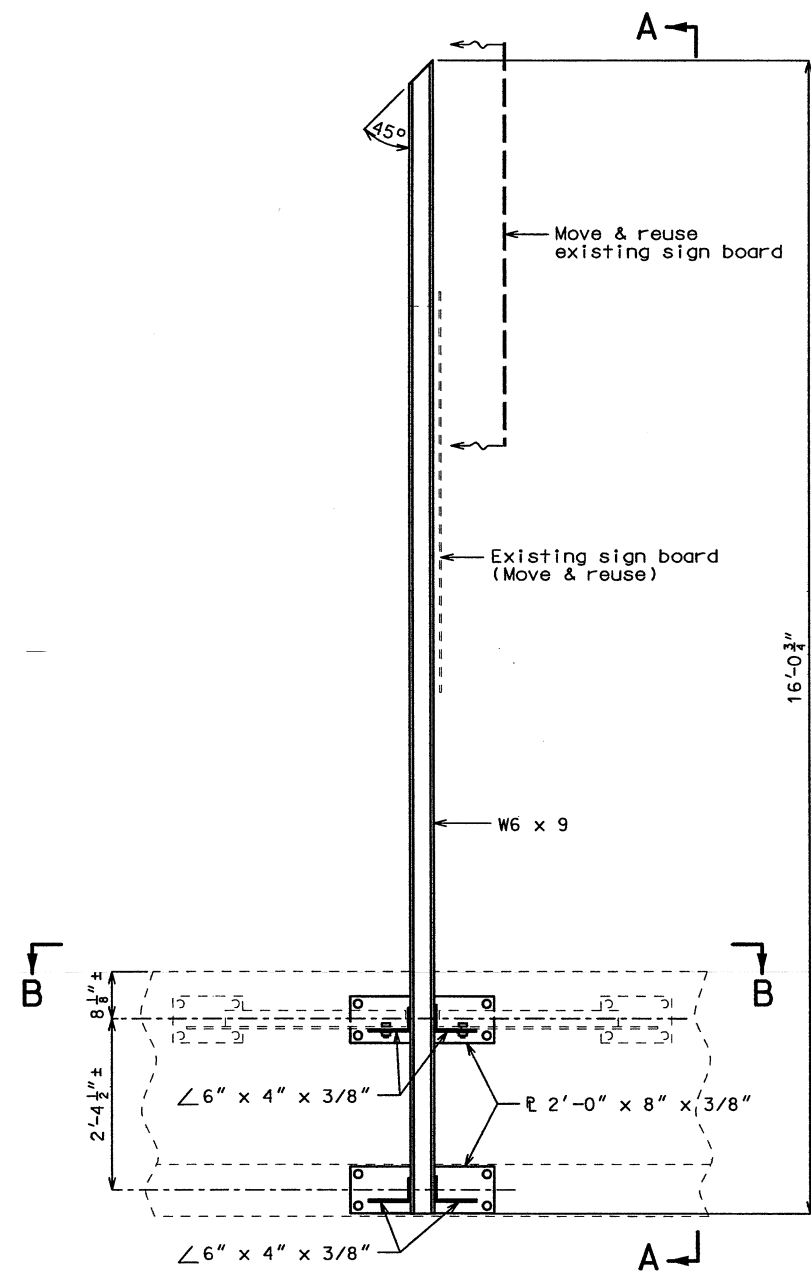
BRIDGE OVER RTE. I-270, RAMP 2A & DES PERES RD.
STATE ROAD AT RTE. I-270 & RTE. 100 INTERCHANGE
IN DES PERES
PROJECT NO. STA. 12+493.694 (RTE. 100)
JOB NO. RTE. I-270

ST. LOUIS COUNTY A56821

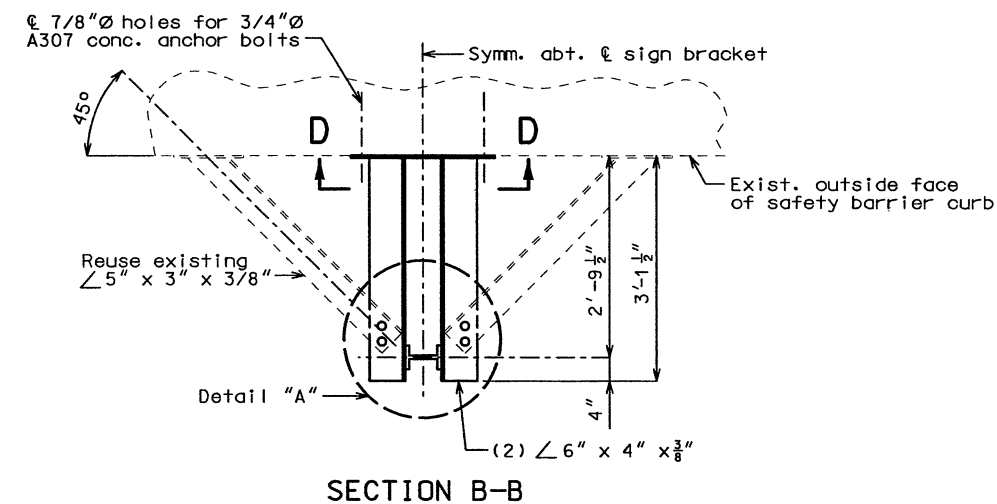
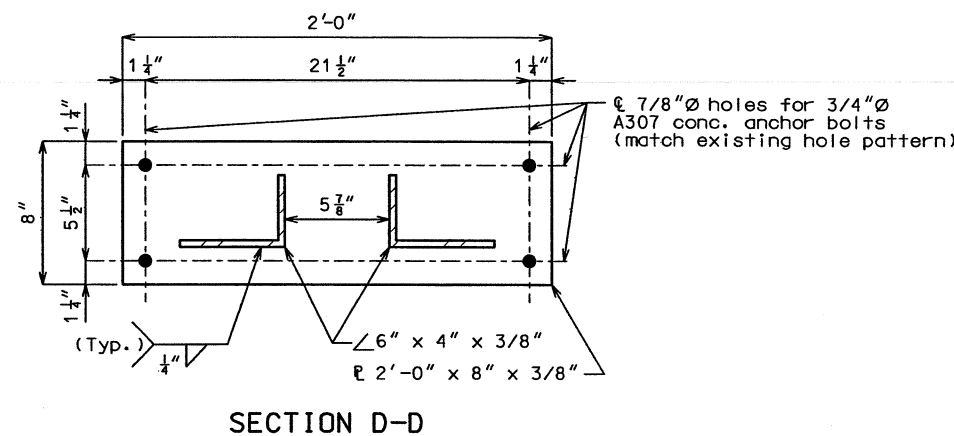
Designed April 2004
Detailed April 2004
Checked April 2004

Note: This drawing is not to scale. Follow dimensions. Sheet No. 1 of 3

State	Proj. No.	Sheet No.
MO		



* Reuse existing ∠ 5" x 3" x 3/8" (match existing hole pattern)



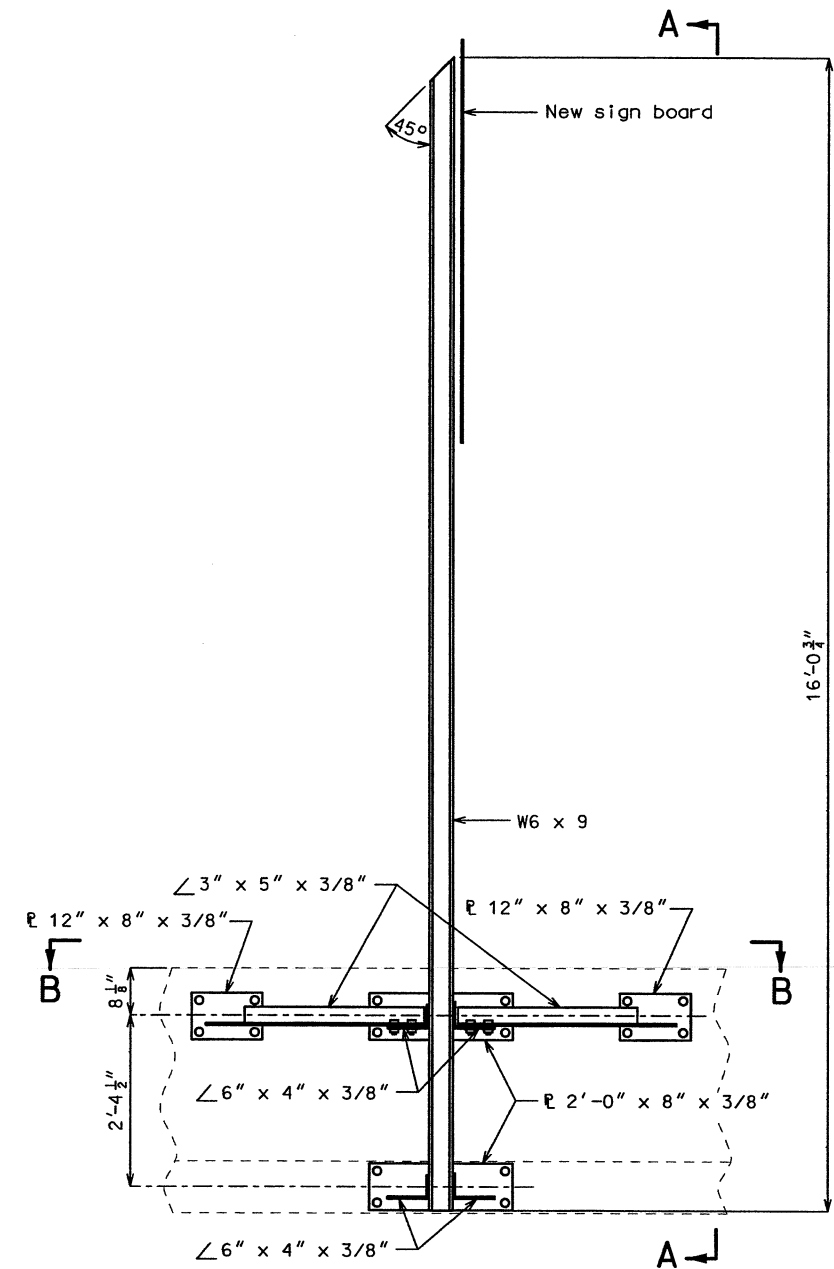
NOTES:

For location of modified sign at Sta. 12+625.00, see sheet no. 1.

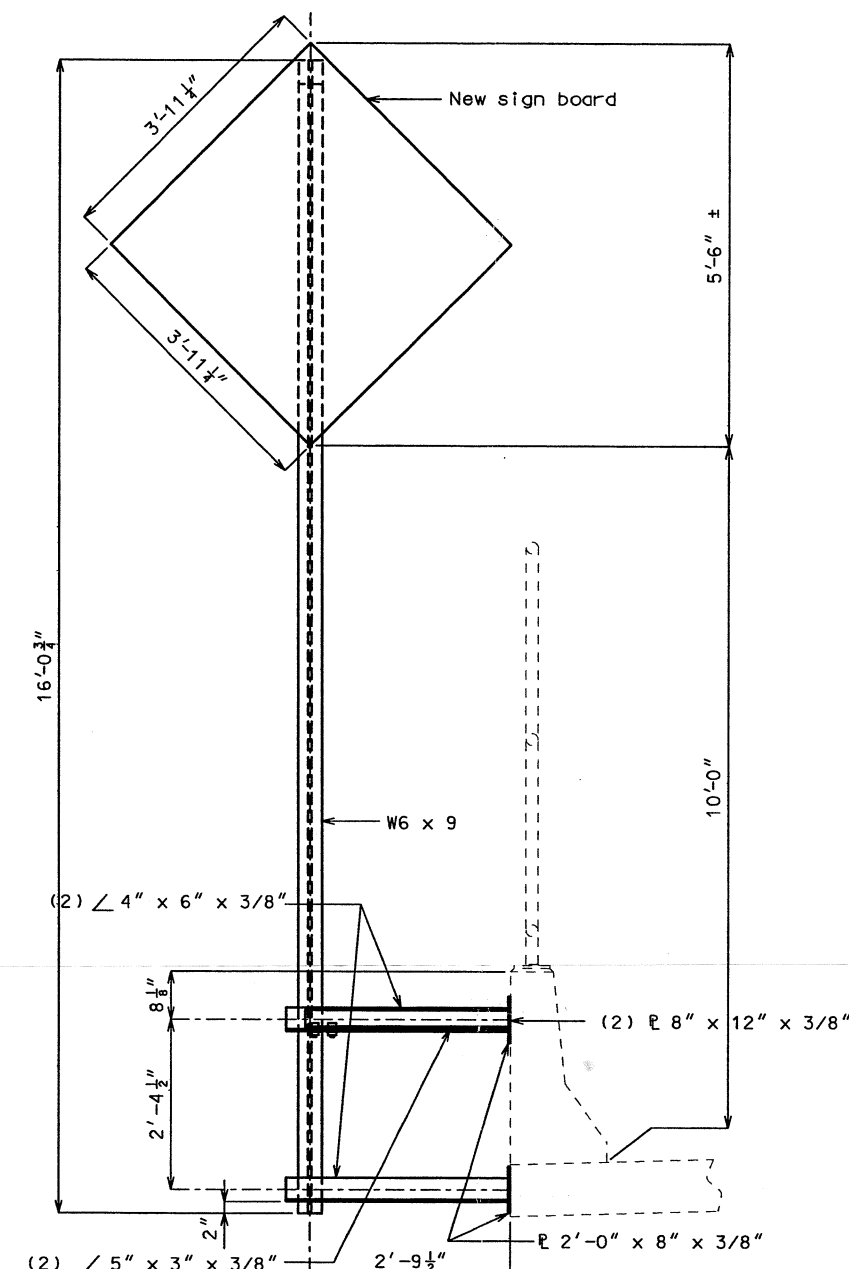
DETAILS OF MODIFICATIONS TO EXISTING SIGN SUPPORT BRACKET

(South Side of Bridge A5682 at Station 12+625.00)

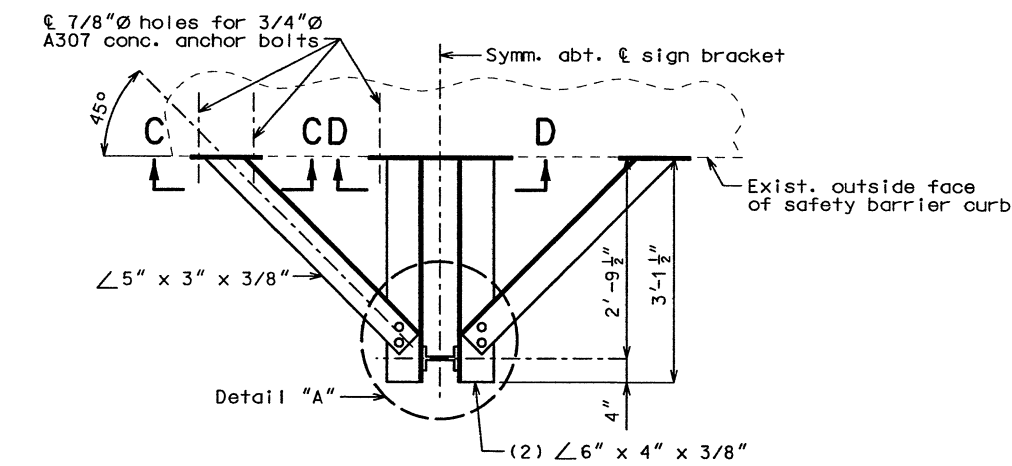
State	Proj. No.	Sheet No.
MO		



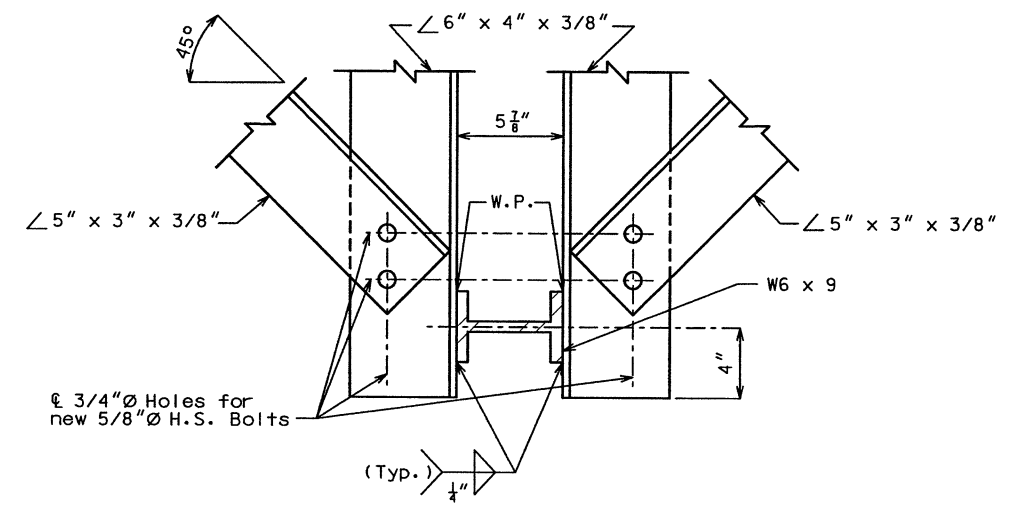
ELEVATION



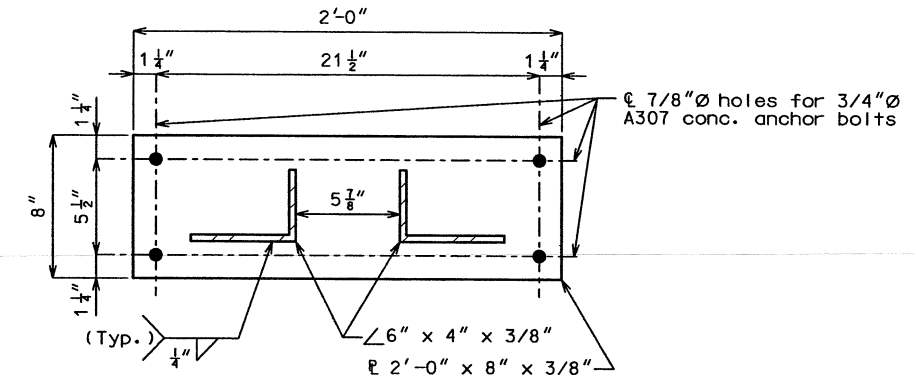
PART ELEVATION A-A



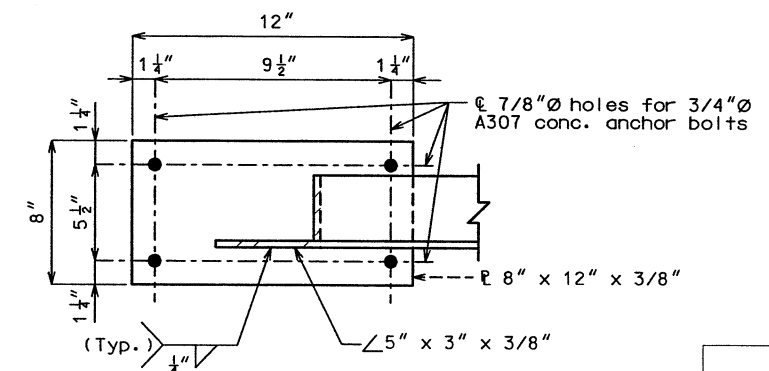
SECTION B-B



DETAIL "A"



SECTION D-D



SECTION C-C

NOTES:
For location of new sign nos. 2 & 3, see sheet no. 1.

DETAILS OF NEW SIGN SUPPORTS

Sign 3 shown (South Side of Ramp 2B, Span R4-R5)
Sign 2 similar but opposite hand (North side of A5682, Span 6-7)