

# STATE DEPARTMENT OF HIGHWAYS DIVISION OF HIGHWAYS—STATE OF COLORADO

ROW PURCHASED UNDER  
PROJECT NO. AA-13 UNIT  
1 & 2 AND PROJECT  
NO. BRS 0072(14)

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
VIII	COLORADO	BRS 0072(14)	1

AS CONSTRUCTED		
NO REVISIONS	REVISED 9-2-87	VOID

REVISIONS		

## PLAN AND PROFILE OF PROPOSED FEDERAL AID PROJECT NO. BRS 0072(14) STATE HIGHWAY NO. 72 JEFFERSON COUNTY

### INDEX OF SHEETS

- SHEET NO.
1. SKETCH MAP, TITLE PAGE, AND TABULATION OF LENGTH AND DESIGN DATA.
  2. STANDARD PLANS LIST
  3. TYPICAL SECTIONS
  - 4-5. SUMMARY OF APPROXIMATE QUANTITIES
  6. GENERAL NOTES, SUMMARY OF EARTHWORK AND TABULATION OF PAVEMENT MARKING
  7. TABULATION OF SURFACING, STRUCTURE QUANTITIES, AND SCHEDULE OF CONSTRUCTION TRAFFIC CONTROL DEVICES
  - 8-19. DETAILS OF STRUCTURE NO. E-16-<sup>LV</sup> ALTERNATE NO. 1
  - 20-30. DETAILS OF STRUCTURE NO. E-16-<sup>LV</sup> ALTERNATE NO. 2
  - 31-32. ALIGNMENT PLAN AND PROFILE
  - 33-34. DETOUR PLAN AND PROFILE
  35. CANAL PLAN AND PROFILE

### REVISED STANDARDS

M 606-12 GUARD RAIL TYPE 4 CONCRETE BARRIER  
(9 SHEETS) 2-18-83

- 2, 3,  
9-12,  
14-19,  
31-35 No REVISIONS
- 20-30 Void By Construction

STA. 16+00 END PROJ. BRS 0072(14)=

STA. 594+09.05 PROJ. AA-13 =  
MP 10.185

MAJOR STRUCTURE NO. E-16-<sup>LV</sup> TO BE CONSTRUCTED  
THIS PROJECT

EXISTING STRUCTURE NO. E-16-AG TO BE  
REMOVED THIS PROJECT

STA. 4+34 BEGIN PROJ. BRS 0072(14)=

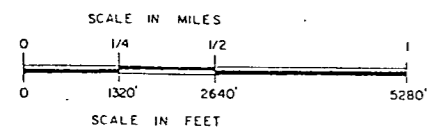
STA. 582+43.05 PROJ. AA-13 =  
MP 10.406

### SCALES OF ORIGINAL DRAWINGS

ON PLAN, 1 IN. = 50 FT.  
ON PROFILE { 1 IN. = 50 FT. HORIZONTAL  
                  1 IN. = 5 FT. VERTICAL  
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD

### TABULATION OF LENGTH AND DESIGN DATA

STATION	ROADWAY		STRUCTURE	
	LIN. FT.	MILES	LIN. FT.	MILES
<b>SH 72</b>				
STA. 4+34 TO STA. 10+32.50	598.5	0.113		
STA. 10+32.50 TO STA. 10+94.50			62.0	0.012
STA. 10+94.50 TO STA. 16+00	505.5	0.096		
<b>TOTAL</b>	<b>1104.0</b>	<b>0.209</b>	<b>62.0</b>	<b>0.012</b>
<b>SUMMARY</b>				
ROADWAY			1104.0	0.209
MAJOR STRUCTURE			62.0	0.012
GROSS AND NET LENGTH OF PROJECT			1166.0	0.221
<b>DESIGN DATA</b>				
MAXIMUM DEGREE OF CURVE				NA
MAXIMUM GRADE				2.267%
MAXIMUM DESIGN SPEED				> 60 MPH
MINIMUM S.S.D. (HORIZONTAL)				NA
MINIMUM S.S.D. (VERTICAL)				1050'
2006 DESIGN TRAFFIC VOLUME				ADT = 4480 DHV = 540



DIVISION OF HIGHWAYS

APPROVED:  
*Robert Z. Changer* 8/26/86  
CHIEF ENGINEER DATE

AS CONSTRUCTED INFORMATION

CONTRACTOR A.L.R. Construction  
Project ENGINEER Rich. Trujillo  
(Project or Resident)

PROJECT STARTED JANUARY 5 1987  
PROJECT COMPLETED SEPTEMBER 2 1987

AS CONSTRUCTED PLANS APPROVED [Signature]  
TITLE Chief Eng. DATE 11/12/87

Plan No.	Title	Page
<input checked="" type="checkbox"/> M-100-1	STANDARD SYMBOLS.....	1
<input type="checkbox"/> M-107-1	TEMPORARY EROSION CONTROL.....	2
<input checked="" type="checkbox"/> M-203-1	APPROACH ROADS, FLARING, CUT SLOPE TREATMENT, BRIDGE & CREST WIDENING.....	3
<input type="checkbox"/> M-203-2	DITCH TYPES.....	4
<input type="checkbox"/> M-203-10	SUPERELEVATION OF CURVES - CROWNED HIGHWAYS.....	5
<input type="checkbox"/> M-203-11	SUPERELEVATION OF CURVES - DIVIDED HIGHWAYS - SHOULDER PIVOT.....	6
<input type="checkbox"/> M-203-12	SUPERELEVATION OF CURVES - STREETS.....	7
<input type="checkbox"/> M-203-13	SUPERELEVATION OF CURVES - DIVIDED HIGHWAYS - CENTER PIVOT.....	8
<input type="checkbox"/> M-206-1	EXCAVATION AND BACKFILL FOR STRUCTURES.....(2 SHEETS)	9
<input checked="" type="checkbox"/> M-206-2	EXCAVATION AND BACKFILL FOR BRIDGES.....	11
<input type="checkbox"/> M-214-1	PLANTING DETAILS.....	12
<input type="checkbox"/> M-412-1	CONCRETE PAVEMENT JOINTS.....	13
<input type="checkbox"/> M-504-1	STEEL CRIBBING.....	14
<input type="checkbox"/> M-506-1	GABIONS AND SLOPE MATRESS.....	15
<input type="checkbox"/> M-510-1	STRUCTURAL PLATE CULVERT PIPE - H-20 LOADING.....(2 SHEETS)	16
<input type="checkbox"/> M-601-1	SINGLE CONCRETE BOX CULVERT.....	18
<input type="checkbox"/> M-601-2	DOUBLE CONCRETE BOX CULVERT.....	19
<input type="checkbox"/> M-601-3	TRIPLE CONCRETE BOX CULVERT.....	20
<input type="checkbox"/> M-601-10	HEADWALL FOR PIPE CULVERTS.....	21
<input type="checkbox"/> M-601-11	TYPE "S" SADDLE HEADWALL FOR PIPE CULVERTS.....	22
<input type="checkbox"/> M-601-12	HEADWALL, INTERCEPTING HEADWALL AND CULVERT OUTLET PAVING.....	23
<input type="checkbox"/> M-601-20	WINGWALLS FOR PIPE OR BOX CULVERTS.....	24
<input type="checkbox"/> M-603-1	METAL CULVERT PIPE - H-20 LOADING.....(2 SHEETS)	25
<input type="checkbox"/> M-603-2	REINFORCED CONCRETE PIPE.....	27
<input type="checkbox"/> M-603-3	PRECAST CONCRETE BOX CULVERT.....	28
<input type="checkbox"/> M-603-10	CONCRETE AND METAL END SECTIONS.....	29
<input type="checkbox"/> M-604-1	PIPE SEWER IN TRENCH.....	30
<input type="checkbox"/> M-604-10	INLET, TYPE C.....	31
<input type="checkbox"/> M-604-11	INLET, TYPE D.....	32
<input type="checkbox"/> M-604-12	CURB INLET, TYPE R.....(2 SHEETS)	33
<input type="checkbox"/> M-604-13	CONCRETE INLET, TYPE 13.....	35
<input type="checkbox"/> M-604-20	MANHOLES.....	36
<input type="checkbox"/> M-604-21	STEPS FOR MANHOLES & INLETS.....	37
<input checked="" type="checkbox"/> M-606-1	GUARD RAIL, TYPE 3, W-BEAM.....(8 SHEETS)	38
<input type="checkbox"/> M-606-2	GUARD RAIL, TYPE 3, W-BEAM FOR LOCAL ROADS & STREETS.....(4 SHEETS)	46
<input type="checkbox"/> M-606-10	GUARD RAIL, TYPE 4, CONCRETE BARRIER, CAST-IN-PLACE.....	50
<input type="checkbox"/> M-606-11	GUARD RAIL, TYPE 4, CONCRETE BARRIER, PRECAST-PORTABLE.....	51

Plan No.	Title	Page
<input checked="" type="checkbox"/> M-607-1	WIRE FENCES AND GATES.....(2 SHEETS)	52
<input type="checkbox"/> M-607-2	CHAIN LINK FENCE.....(3 SHEETS)	54
<input type="checkbox"/> M-607-3	BARRIER FENCE.....	57
<input type="checkbox"/> M-607-4	DEER FENCE AND GATE.....(2 SHEETS)	58
<input type="checkbox"/> M-607-10	PICKET SNOW FENCE.....	60
<input type="checkbox"/> M-608-1	CURB RAMPS.....	61
<input type="checkbox"/> M-609-1	CURBS AND GUTTERS.....	62
<input type="checkbox"/> M-611-1	CATTLE GUARD - WELDED GRILL UNITS - 10' THRU 42' ROADWAYS.....(2 SHEETS)	63
<input type="checkbox"/> M-613-1	HIGHWAY LIGHTING.....(2 SHEETS)	65
<input type="checkbox"/> M-615-1	EMBANKMENT PROTECTOR, TYPES 3 & 4.....	67
<input type="checkbox"/> M-615-2	EMBANKMENT PROTECTOR, TYPE 5.....	68
<input type="checkbox"/> M-616-1	INVERTED SIPHON.....(ALSO USE M-603 OR M-604 AS REQUIRED)	69
<input checked="" type="checkbox"/> M-620-1	FIELD LABORATORY - CLASS 1.....	70
<input type="checkbox"/> M-620-2	FIELD LABORATORY - CLASS 2.....	71
<input checked="" type="checkbox"/> M-620-11	FIELD OFFICE - CLASS 1.....	72
<input type="checkbox"/> M-620-12	FIELD OFFICE - CLASS 2.....	73

Plan No.	Title	Page
<input checked="" type="checkbox"/> S-612-1	TYPICAL DELINEATOR INSTALLATIONS.....(4 SHEETS)	75
<input checked="" type="checkbox"/> S-614-1	TYPICAL GROUND SIGN PLACEMENT.....	79
<input checked="" type="checkbox"/> S-614-2	CLASS I GROUND SIGN INSTALLATIONS.....	80
<input type="checkbox"/> S-614-3	CLASS II GROUND SIGN INSTALLATIONS.....	81
<input type="checkbox"/> S-614-4	CLASS III SIGNS, LAMINATED ALUMINUM PANELS AND POST SPACING TABLE.....(2 SHEETS)	82
<input type="checkbox"/> S-614-5	BREAK-AWAY SIGN SUPPORT DETAILS FOR GROUND SIGNS.....(2 SHEETS)	84
<input type="checkbox"/> S-614-6	CONCRETE FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS.....(2 SHEETS)	86
<input type="checkbox"/> S-614-10	TYPICAL MARKER ASSEMBLY INSTALLATIONS.....	88
<input type="checkbox"/> S-614-11	MILEPOST SIGN AND INSTALLATION.....	89
<input checked="" type="checkbox"/> S-614-12	STRUCTURE NUMBER INSTALLATION (BRIDGE INFORMATION SHEET).....	90
<input type="checkbox"/> S-614-13	STANDARD RAILROAD CROSSING SIGNS AND MARKINGS.....	91
<input type="checkbox"/> S-614-20	TYPICAL POLE MOUNT SIGN INSTALLATION.....	92
<input type="checkbox"/> S-614-21	CONCRETE BARRIER SIGN POST INSTALLATIONS.....	93
<input type="checkbox"/> S-614-22	TYPICAL MULTI-SIGN INSTALLATIONS.....	94
<input type="checkbox"/> S-614-30	INTERSTATE ROUTE MARKERS.....	95
<input type="checkbox"/> S-614-31	U. S. & COLORADO ROUTE MARKERS.....	96
<input type="checkbox"/> S-614-32	AUXILIARY MARKERS.....	97
<input type="checkbox"/> S-614-40	TRAFFIC SIGNAL INSTALLATION DETAILS...(3 SHEETS)	98
<input checked="" type="checkbox"/> S-614-50	TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION.....(4 SHEETS)	101
<input checked="" type="checkbox"/> S-614-51	BARRICADES, DRUMS, CONCRETE BARRIER (TEMP) & VERTICAL PANELS.....	105
<input checked="" type="checkbox"/> S-627-1	TYPICAL PAVEMENT MARKINGS.....(3 SHEETS)	106

THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

DEPARTMENT OF HIGHWAYS  
 STATE OF COLORADO  
 DIVISION OF HIGHWAYS

**STANDARD PLANS LIST**

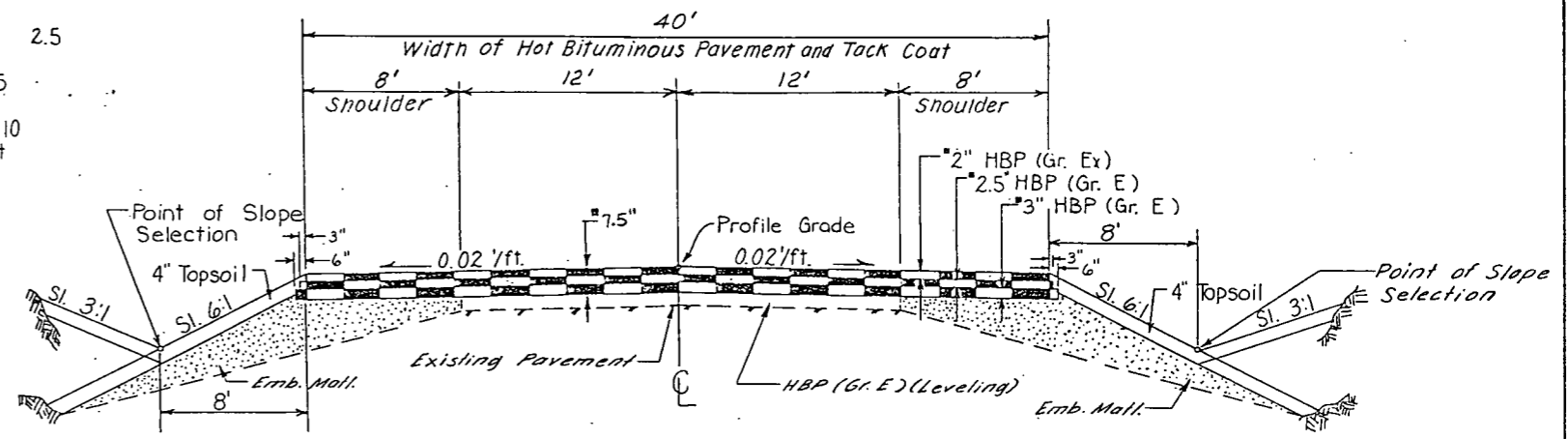
M & S STANDARDS - JANUARY, 1982

# TYPICAL SECTIONS

AS CONSTRUCTED		FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	SHEET TOTALS
NO REVISIONS	9-2-87	REVISED	VOID	VIII	COLO.	BRS 0072(14)
					3	35

## STABILIZATION FLEXIBLE PAVEMENT SH 72 AND DETOUR

Serviceability Index 2.5  
 18k EDLA 42  
 Regional Factor 1.5  
 W.S.N. 32.7  
 Emb. "R" Value = 10  
 Strength Coefficient  
 HBP = 0.44

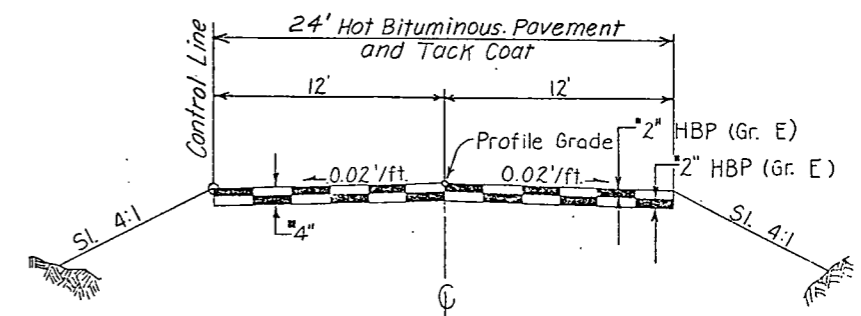


SH 72

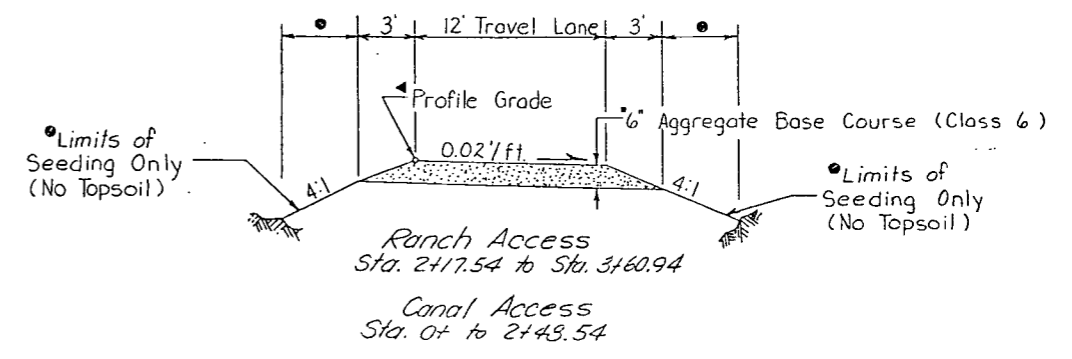
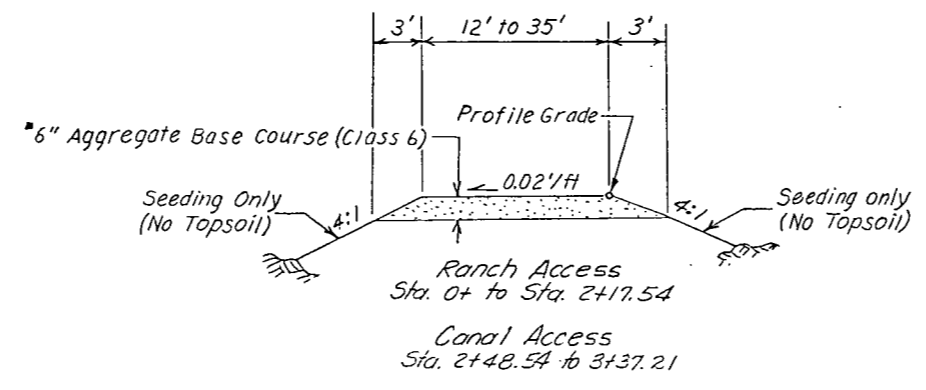
Approximate Thickness

FILL SLOPE	SLOPE
LESS THAN 10'	4:1
10' TO 15'	3:1
OVER 15'	2:1

THE DEPTH AND WIDTH OF SIDE DITCH SHALL BE VARIED WHERE NECESSARY IN ORDER TO PROVIDE PROPER DRAINAGE.  
 BREAK POINT ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE. SEE STANDARDS FOR DETAILS OF CUT SLOPE TREATMENT, FLARING AND WIDENING.



DETOUR



# FINAL SUMMARY OF APPROXIMATE QUANTITIES

AS CONSTRUCTED			FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
NO REVISIONS	REVISED	VOID	VIII	COLO.	BRS 0072 (14)	4	35

INDEX	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY		ALTERNATE NO. 1 STR. NO. E-16-19		ALTERNATE NO. 2 STR. NO. E-16-18LV		ALTERNATE NO. 1 PROJECT TOTALS		ALTERNATE NO. 2 PROJECT TOTALS		DIFF. +/-	% PLAN
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.				
				DOM. REG. FORM	PAGE	SHEET									
305	202	Removal of Asphalt Mat	Sq. Yd.	5125	5133					5125	5133	5125		+8	100
105	202	Removal of Pavement Marking (DELETED)	Sq. Ft.	300	0					300	0	300		-300	0
305	202	Removal of Bridge	Each	1	1	1	1	1	1	1	1	1		0	100
305	202	Removal of Fence	Lin. Ft.	1,455	1,455					1,455	1,455	1,455		0	100
305	202	Removal of Guard Rail Type 3	Lin. Ft.	400	400					400	400	400		0	100
305	203	Embankment Material (Complete in Place)	Cu. Yd.	2,523	2,523					2,523	2,523	2,523		0	100
305	206	Structure Excavation	Cu. Yd.			620	620	639		620	620	639		0	100
305	206	Structure Backfill (Class 1)	Cu. Yd.			540	540	354		540	540	354		0	100
305	207	Topsoil (Haul)	Cu. Yd.	419	419					419	419	419		0	100
105	209	Wetting (DELETED)	M Gal	5	0					5	0	5		-5	0
105	209	Water (Landscaping) (DELETED)	M Gal	20	0					20	0	20		-20	0
305	210	Reset Ground Sign	Each	6	3					6	3	6		-3	50
305	212	Seeding (Native)	Acre	0.8	0.8					0.8	0.8	0.8		0	100
305	213	Mulching	Acre	0.8	0.8					0.8	0.8	0.8		0	100
305	304	Aggregate Base Course (Class 6) (Haul)	Ton	299	299.43					299	299.43	299		+0.43	100
305	403	Hot Bituminous Pavement (Grading E) (Haul and Asphalt)	Ton	2,442	1,858.70					2,442	1,858.70	2,442		-583.3	76
305	403	Hot Bituminous Pavement (Grading EX) (Haul and Asphalt)	Ton	540	703.70	28	28	29		568	731.70	569		+163.7	129
305	411	Emulsified Asphalt (Slow-Setting)	Gal.	621	348.88					621	348.88	621		-272.12	56
305	509	Structural Steel	Lb.			43,250	43,250			43,250	43,250			0	100
305	515	Waterproofing (Membrane)	Sq. Yd.			270	270	276		270	270	276		0	100
305	601	Concrete Class A (Bridge)	Cu. Yd.					50				50			
305	601	Concrete Class D (Bridge)	Cu. Yd.			143	144.26	32		143	144.26	32		+1.26	101
305	602	Reinforcing Steel	Lb.			17,330	17,330	6,230		17,330	17,330	6,230		0	100
305	602	Reinforcing Steel (Epoxy Coated)	Lb.			7,790	7,790			7,790	7,790			0	100
305	606	Guard Rail Type 3 (6-3 Post Spacing)	Lin. Ft.	850	850					850	850	850		0	100
305	606	Guard Rail Type 4 (Precast-Portable)	Lin. Ft.	88	88					88	88	88		0	100
305	606	End Anchorage Type 3E	Each	10	10					10	10	10		0	100
305	606	Bridge Rail Type 3	Lin. Ft.			171	171	164		171	171	164		0	100

# FINAL SUMMARY OF APPROXIMATE QUANTITIES

AS CONSTRUCTED		FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
NO REVISIONS	REVISED 6-2-87	VOID	VIII	COLO.	BRS 0072(14)	5 / 35

INDEX	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY		ALTERNATE NO. 1 STR. NO. E-16- <del>LV</del>		ALTERNATE NO. 2 STR. NO. E-16- <del>LV</del>		ALTERNATE NO. 1 PROJECT TOTALS		ALTERNATE NO. 2 PROJECT TOTALS		DIFF. +/-	% PLAN
				PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.				
305	607	End Post	Each	2	12					2	12	2		+10	600
305	607	Corner and Line Brace Post	Each	13	5					13	5	13		-7	38
305	607	Fence Barbed Wire with Metal Posts	Lin. Ft.	1035	1035					1035	1035	1035		0	100
305	607	16 Foot Gate	Each	1	1					1	1	1		0	100
305	612	Delineator (Type I)	Each	8	8					8	8	8		0	100
305	612	Delineator (Type III)	Each	2	2					2	2	2		0	100
305	613	Conduit (Install only)	Lin. Ft.			122	170	122		122	170	122		+48	139
7	614	Flagging	Hour	700	582.5					700	582.5	700		-1125	83
7	614	Traffic Control Supervisor	Day	80	43					80	43	80		-37	54
305	614	Construction Traffic Sign (Panel Size A)	Each	10	6					10	6	10		-4	60
305	614	Construction Traffic Sign (Panel Size B)	Each	14	16					14	16	14		+2	114
305	614	Vertical Panel	Each	30	10					30	10	30		-20	33
305	614	Vertical Panel (With Light) (Flashing)	Each	15	15					15	15	15		0	100
305	614	Drum Channelizing Device	Each	24	22					24	22	24		-2	92
305	614	Traffic Cone	Each	50	25					50	25	50		-25	50
305	617	15 Inch Culvert Pipe	Lin. Ft.	168	168					168	168	168		0	100
305	620	Field Office (Class 1)	Each	1	1					1	1	1		0	100
305	620	Field Laboratory (Class 1)	Each	1	1					1	1	1		0	100
305	620	Sanitary Facility	Each	1	1					1	1	1		0	100
305	621	Temporary Bridge	L.S.	1	1					1	1	1		0	100
ESTIMATES	626	Mobilization	L.S.	0.5	0.5	0.5	0.5	0.5		1	1	1		0	100
305	627	Pavement Marking Paint	Gal.	45	22					45	22	45		-23	49
305	627	Thermoplastic Pavement Marking	Sq. Ft.	1150	1194					1150	1194	1150		+44	104
305	627	Preformed Plastic Pavement Marking (60 Mils)	Sq. Ft.	120	120					120	120	120		0	100
305	628	Bridge Girder and Deck Unit (60 Feet to 65 Feet)	Each					4				4			
<b>FORCE ACCOUNT</b>															
17	F/A01	Minor Contract Revisions	F.A.	0.5	0	0.5	0	0.5		1	0	1		-1	0
	F/A02	MBE Incentive Payment	F.A.	1	1					1	1	1		0	100
<b>RIGHT OF WAY</b>															
		Right-of-Way	L.S.	1	1					1	1	1		0	100

AS CONSTRUCTED		FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	SHEET TOTALS
NO REVISIONS	9-2-97	REVISED	VOID	VIII	COLO.	BRS 0072(14)
						6 35

## SUMMARY OF EARTHWORK

INDEX			
BOOK	PAGE	SHEET	
			<i>Embankment Material (Complete in Place)</i>
			<i>From Cross Sections</i>
			<i>Roadway</i>
			▶ <i>Detour</i>
			<i>Access Roads (Estimated)</i>
			<i>Project Total.</i>
			<i>Cu. Yds.</i>
			734
			1,447
			342
			2,523
			<i>For Information Only</i>
			<i>Unclassified Excavation</i>
			<i>From Cross Sections</i>
			<i>Roadway</i>
			<i>Detour</i>
			<i>Access Roads (Estimated)</i>
			<i>Total</i>
			32
			2
			96
			130
			<i>Compaction (AASHTO T99)</i>
			<i>Embankment Net</i>
			<i>Base of Cuts and Fills</i>
			<i>Total</i>
			2,523
			1,663
			4,186
			<i>Wetting</i> M Gal.
			167
			<i>Roadway Quantities Balance</i>
			<i>Embankment Net X Factor (1.15)</i>
			2,901
			<i>Unclassified Excavation</i>
			<i>From Undesignated Source</i>
			130
			2,771
			2,901

The minimum R value for borrow shall be 10.

▶ After the detour is no longer required, the 1447 cu.yds. of detour embankment shall be removed and disposed of by the contractor, and shall not be paid for separately but shall be included in bid item 203-Embankment Material (C.I.P.).

### TABULATION OF PAVEMENT MARKING

LOCATION	THERMOPLASTIC PVMNT. MRKG.		PREF. PLASTIC PVMNT. MRKG. (60 MILS)
	WHITE	YELLOW	
	SQ. FT.	SQ. FT.	
ENTIRE PROJECT	941 <del>800</del>	253 <del>350</del>	120
PROJECT TOTALS	<del>800</del> 1,194	<del>350</del> 1,194	120

• PREFORMED PLASTIC PAVEMENT MARKING (60 MILS) IS FOR:  
1- RAILROAD CROSSING SYMBOL 24 FOOT OF 24" STOP BAR

### GENERAL NOTES

FOR PRELIMINARY PLAN QUANTITIES OF BITUMINOUS MATERIALS, THE FOLLOWING RATES OF APPLICATION WERE USED:

TACK COAT DILUTED EMULSIFIED ASPHALT (SLOW SETTING) AT 0.10 GALLONS/SQUARE YARD.

BITUMINOUS PAVEMENT GRADING E AT 110 LBS/SQUARE YARD/INCH

BITUMINOUS PAVEMENT GRADING EX AT 110 LBS/SQUARE YARD/INCH

AGGREGATE BASE COURSE CLASS 6 AT 133 LBS/CUBIC FOOT

WHEN ORDERED BY THE ENGINEER A TACK COAT OF EMULSIFIED ASPHALT (SLOW SETTING) IS TO BE APPLIED BETWEEN PAVEMENT COURSES TO IMPROVE THE BOND.

DILUTED EMULSIFIED ASPHALT FOR TACK COAT SHALL CONSIST OF 1 PART EMULSIFIED ASPHALT AND 1 PART WATER.

RATE OF APPLICATION SHALL BE AS DETERMINED BY THE ENGINEER AT THE TIME OF APPLICATION.

WATER SHALL BE USED AS DUST PALLIATIVE WHERE REQUIRED. LOCATIONS SHALL BE AS ORDERED BY THE ENGINEER AND SHALL BE INCLUDED IN THE COST OF WORK.

THE FOLLOWING SHALL BE FURNISHED WITH EACH BITUMINOUS PAVEMENT.

1. A SKI TYPE DEVICE AT LEAST 30 FEET IN LENGTH
2. SHORT SKI OR SHOE
3. 1500 FT. OF CONTROL LINE AND STAKES

ANY LAYER OF BITUMINOUS PAVEMENT THAT IS TO HAVE A SUCCEEDING LAYER PLACED THEREON SHALL BE COMPLETED FULL WIDTH BEFORE SUCCEEDING LAYER IS PLACED.

DEPTH OF MOISTURE-DENSITY CONTROL FOR THIS PROJECT SHALL BE AS FOLLOWS:

FULL DEPTH OF ALL EMBANKMENTS  
BASE OF CUTS AND FILLS 0.5 FOOT

THE TYPE OF COMPACTION FOR EMBANKMENT SHALL BE AASHTO T99

EXCAVATION REQUIRED FOR COMPACTION OF BASE OF CUTS AND FILLS WILL BE CONSIDERED SUBSIDIARY TO THAT OPERATION AND WILL NOT BE PAID FOR SEPARATELY.

WETTING (EARTHWORK) 0.049 M GAL. PER CU. YD. (FOR INFORMATION ONLY)

WETTING (AGGREGATE BASE COURSE) 0.015 M GAL PER TON

THE UTILITIES SHOWN ON DRAWINGS HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

IT IS SUGGESTED THAT THE CONTRACTOR INITIATE A REQUEST TO PUBLIC SERVICE COMPANY FOR CONSTRUCTION RELATED TEMPORARY ELECTRICAL POWER SOURCES AS SOON AS POSSIBLE. IN SOME INSTANCES UP TO 30 DAYS MAY BE REQUIRED TO PROVIDE THE SOURCES. THE REQUEST IS TO BE PROCESSED THROUGH: PUBLIC SERVICE COMPANY OF COLORADO; LIGHTING UTILIZATION AT (303) 571-7537.

THE MINIMUM THICKNESS OF TOPSOIL SHALL BE 4 INCHES. IT IS ESTIMATED THAT 419 CU. YDS. WILL BE REQUIRED AND WILL BE OBTAINED FROM THE CONTRACTOR'S SOURCE. SEE TYPICAL SECTION FOR TOPSOIL LIMITS. TOPSOIL WILL NOT BE REQUIRED FOR DETOUR, RANCH ACCESS ROAD AND CANAL ACCESS ROAD.

ALL DIMENSIONS AND RADII ARE SHOWN FROM THE EDGE OF TRAVEL LANE UNLESS OTHERWISE SHOWN.

IT IS ESTIMATED THAT 8 TYPE I AND 2 TYPE III DELINEATORS WILL BE REQUIRED FOR THIS PROJECT (8 CRYSTAL AND 6 YELLOW REFLECTORS).

TEMPORARY FENCE WILL BE REQUIRED DURING CONSTRUCTION OF THIS PROJECT AS DIRECTED BY THE ENGINEER. TEMPORARY FENCE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE FENCING ITEMS.

IT IS ESTIMATED THAT 5 M GAL OF WETTING (AGGREGATE BASE COURSE) WILL BE REQUIRED FOR THIS PROJECT.

SEEDING (NATIVE), FERTILIZING AND MULCHING SHALL BE REQUIRED FOR APPROXIMATELY 0.6 ACRE FOR ROADWAY SLOPES, 0.1 ACRE FOR RANCH ACCESS ROAD AND 0.1 ACRE FOR CANAL ACCESS ROAD THIS PROJECT.

LANDSCAPING WATER FOR SEEDING AND MULCHING AT 25 M GAL PER ACRE.

#### NATIVE SEEDING:

COMMON NAME	BOTANICAL NAME	RATE: PLS/ACRE
WESTERN WHEATGRASS (BARTON)	AGROPYRON SMITHII	10
BUFFALO GRASS (TREATED)	BUCHLOELODACTYLOIDES	14
FAIRWAY WHEATGRASS	AGROPYRON CRISTATUM	3
STODATS GRAMA	BOUTELOUA CURTIPENDULA	4
WHITE CLOVER	TRIFOLIUM REPENS	1
LITTLE BLUESTEM	SCHIZACHRIM SCOPRIUM	5
	TOTAL POUNDS PURE LIVE SEED (PLS/ACRE)	37

#### MULCHING MATERIAL:

2 TONS PER ACRE, NATIVE HAY, MECHANICALLY CRIMPED INTO SOIL

FERTILIZER REQUIREMENTS: (FOR INFORMATION ONLY)

LOCATION	COMMERCIAL FERTILIZER	AVAILABLE NITROGEN		AVAILABLE PHOSPHORUS		TOTAL LBS/ACRE
		%	LBS/ACRE	%	LBS/ACRE	
NATIVE SEEDING AREA	18-46-0	18	45	46	115	250

• NOT TO BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK. SEE STANDARD SPEC., REVISION OF SECTIONS 212 AND 213 SEEDING, SODDING AND MULCHING.

#### TABULATION OF SEEDING QUANTITIES

ITEM NO.	CONTRACT ITEM	UNIT	QUANTITY
207	TOPSOIL (HAUL)	CU. YD.	419
209	WATERING (LANDSCAPE)	M GAL	20
212	SEEDING (NATIVE)	ACRE	0.8
•212	FERT. (AVAILABLE N)	LB.	36
•212	FERT. (AVAILABLE P)	LB.	92
213	MULCHING	ACRE	0.8

• FOR INFORMATION ONLY



ALTERNATE NO. 1  
PAGES B1 THRU B12

AS CONSTRUCTED  
NO REVISIONS  REVISED  9-2-87 VOID

FED. ROAD REGION	DIVISION	PROJECT NUMBER	SHEET NUMBER
VIII	COLO.	BRS 0072(14)	6

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE DIVISION OF HIGHWAYS, STATE OF COLORADO, APPLICABLE TO THE PROJECT.

STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH STANDARD M-206-2.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.

ALL STRUCTURAL STEEL SHALL BE AASHTO M-223 (ASTM A-572) UNLESS OTHERWISE NOTED.

THE FOLLOWING STRUCTURAL STEEL MAY BE AASHTO M-183 (ASTM A-36): DIAPHRAGMS AND CROSS-BRACING.

ALL STRUCTURAL STEEL EXCEPT CROSS-BRACING SHALL BE PAINTED IN ACCORDANCE WITH SECTION 509 OF THE STANDARD SPECIFICATIONS. THE COLOR SHALL BE MOCHA BROWN.

ALL BOLTS SHALL BE 7/8 INCH DIAMETER, HIGH STRENGTH, UNLESS OTHERWISE NOTED.

NO WELDING OF ANY KIND SHALL BE PERMITTED ON THE FLANGES OF STEEL GRIDERS UNLESS SPECIFICALLY CALLED FOR ON THE PLANS.

GRADE 60 REINFORCING STEEL IS REQUIRED.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR REINFORCING BARS:

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS D CONCRETE	1'-0"	1'-3"	1'-6"	2'-0"	2'-7"	3'-4"	4'-2"	5'-1"

APPLIED WIND LOADS AND EARTHQUAKE LOADS WERE NOT CONSIDERED IN ANALYZING THE STRUCTURE FOR STABILITY DURING THE CONSTRUCTION STAGES.

FOR STRUCTURE NUMBER INSTALLATION, SEE STANDARD S-614-12.

(E) DESIGNATES EPOXY COATED REINFORCING.

AN ACRYLIC CONCRETE COATING SHALL BE USED IN LIEU OF CLASS 5 FINISH. THE COLOR SHALL BE LIGHT BUFF.

SUMMARY OF QUANTITIES

ITEM No.	DESCRIPTION	UNIT	SUPER-STRUCTURE	ABUT. 1	ABUT. 2	TOTAL
202	REMOVAL OF BRIDGE	EACH				1
206	STRUCTURE EXCAVATION	CU YD		310	310	620
206	STRUCTURE BACKFILL (CLASS 1)	CU YD		270	270	540
403	HOT BITUMINOUS PAVEMENT (GRADING EX) (H & A)	TON	28			28
509	STRUCTURAL STEEL	LB	43,250			43,250
515	WATERPROOFING (MEMBRANE)	SQ YD	270			270
601	CONCRETE CLASS D (BRIDGE)	CU YD	<del>63.26</del> 63.26	40.5	40.5	<del>143</del> 144.26
602	REINFORCING STEEL	LB	9,790	3,770	3,770	17,330
602	REINFORCING STEEL (EPOXY COATED)	LB	7,790			7,790
606	BRIDGE RAIL TYPE 3	LIN FT	171			171
613	CONDUIT (INSTALL ONLY)	LIN FT	<del>170</del> 170			<del>170</del> 170
626	MOBILIZATION	L S				0.5

REVISIONS


BRIDGE STANDARD 0

INDEX OF DRAWINGS

- DWG. NO. B 1 GENERAL INFORMATION-SUMMARY OF QUANTITIES
- DWG. NO. B 2 GENERAL LAYOUT
- DWG. NO. B 3 ENGINEERING GEOLOGY-NORTH OF ARVADA-BOULDER DIVERSION CANAL
- DWG. NO. B 4 CONSTRUCTION LAYOUT-FOOTING LAYOUT
- DWG. NO. B 5 ABUTMENT DETAILS
- DWG. NO. B 6 ABUTMENT DETAILS
- DWG. NO. B 7 FRAMING PLAN-GIRDER DETAILS
- DWG. NO. B 8 SUPERSTRUCTURE DETAILS
- DWG. NO. B 9 SUPERSTRUCTURE DETAILS
- DWG. NO. B 10 BRIDGE RAIL TYPE 3
- DWG. NO. B 11 BRIDGE DECK ELEVATIONS
- DWG. NO. B 12 ROADWAY APPROACH ELEVATIONS

DESIGNED BY	DATE	CHECKED BY	DATE

DESIGN DATA

CURRENT AASHTO SPECIFICATIONS. LOAD FACTOR DESIGN.

LIVE LOAD: AASHTO HS-20-44 AND INTERSTATE ALTERNATE

DEAD LOAD: ASSUMES 48 LBS. PER SQ. FT. FOR BITUMINOUS PAVEMENT

REINFORCED CONCRETE:

CLASS D CONCRETE:  $f'_c = 4,500$  psi

REINFORCING STEEL:  $f_y = 60,000$  psi

STRUCTURAL STEEL: AASHTO M-183 (ASTM A-36)

$f_y = 36,000$  psi

AASHTO M-223 (ASTM A-572)

$f_y = 50,000$  psi

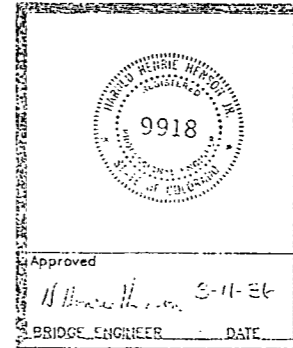
BRIDGE DESCRIPTION

1 SPAN (59'-6") BRIDGE, CONCRETE ON I-BEAM, COMPOSITE.

OVER BOULDER DIVERSION CANAL.

40'-0" ROADWAY, CURB TO CURB. 84° 25' 30" SKEW

1'-3" CURBS. TYPE 3 BRIDGE RAIL.



DIVISION OF HIGHWAYS

GENERAL INFORMATION SUMMARY OF QUANTITIES

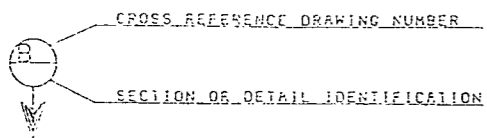
Station 10+32.50 to 10+94.50

Near ARVADA Sec 21 T 25 R 70W

DESIGNER T. FISCHER STRUCTURE NUMBER E-16-1B LV

DETAILER S. LERE

DRAWING NUMBER B 1 OF 12 DRAWINGS

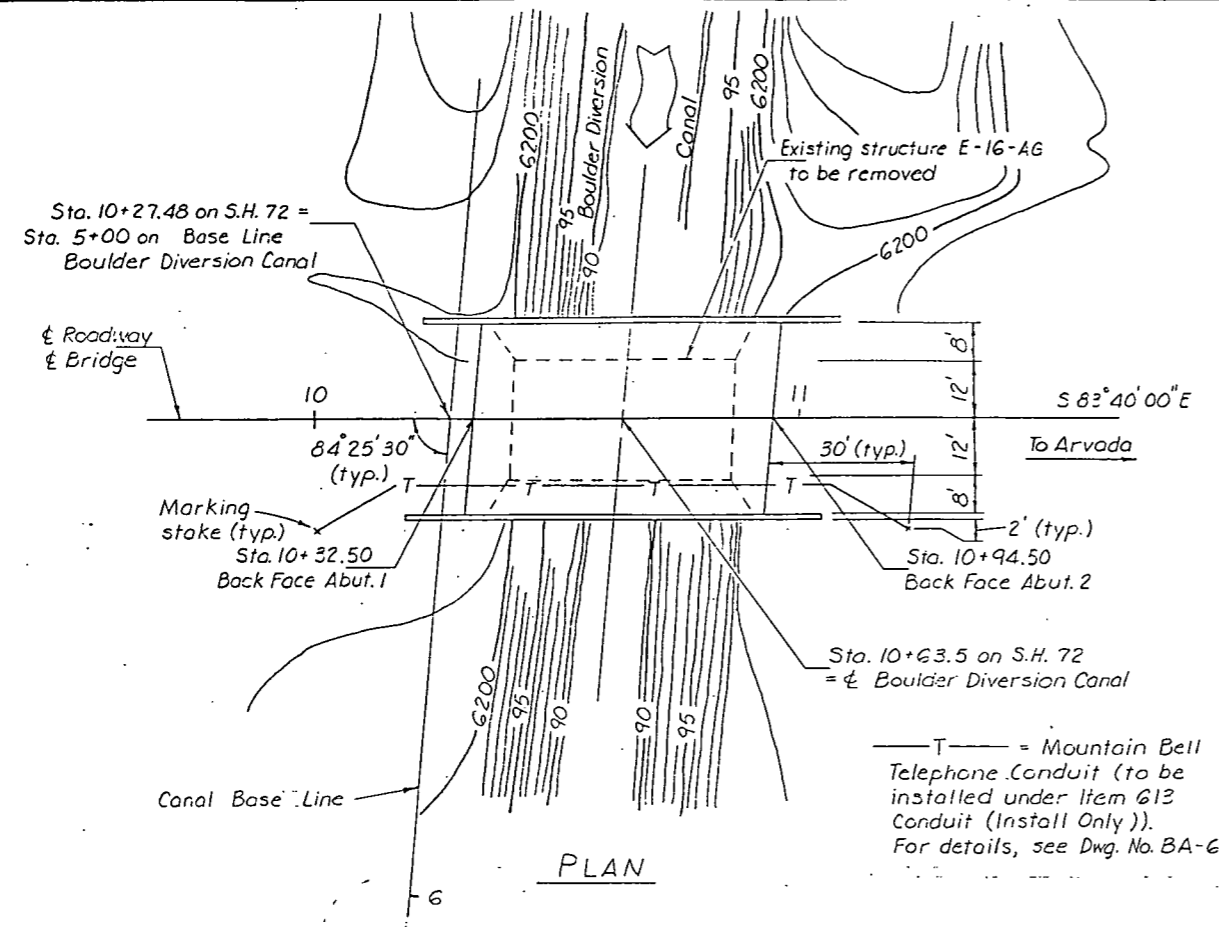
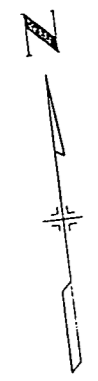


01/08/86 DUAL 100 P. 85107 BROG. H088 SUMMARY BRO85107

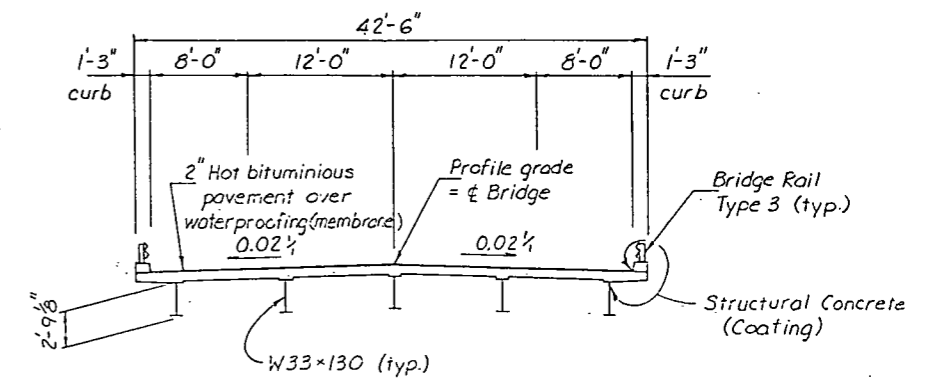
AS CONSTRUCTED		
NO REVISIONS	REVISED	VOID
2		

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072 (14)	9	35

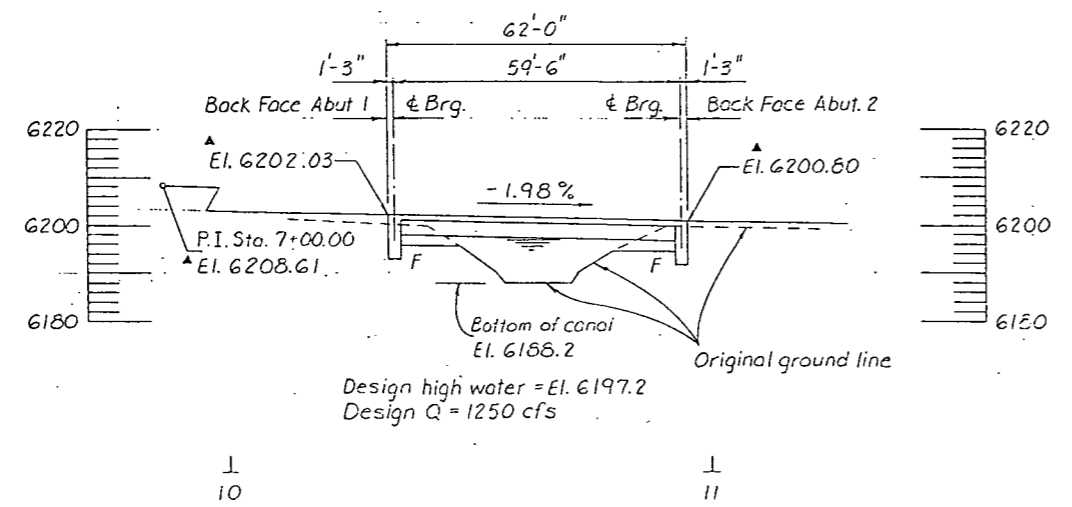
REVISIONS	



PLAN



TYPICAL SECTION



SECTION

Taken at  $\epsilon$  Bridge  
 Finished roadway elevations

DESIGNED BY	DATE	CHECKED BY
T.C.F.	9-85	B.S.L.
CHECKED BY	DATE	QUANTITIES BY
M.I.M.	10-85	J.S.V.
DETAILED BY	DATE	CHECKED BY
	11-85	J.S.V.
	12-85	J.S.V.
	1-86	J.S.V.
	2-86	J.S.V.

Live loading: HS 20-44 and Interstate Alternate

DIVISION OF HIGHWAYS		
GENERAL LAYOUT		
DESIGNER T. Fischer	STRUCTURE E-16-24V	
DETAILER T. Fischer	NUMBERS	
DRAWING NUMBER B 2		OF 12 DRAWINGS

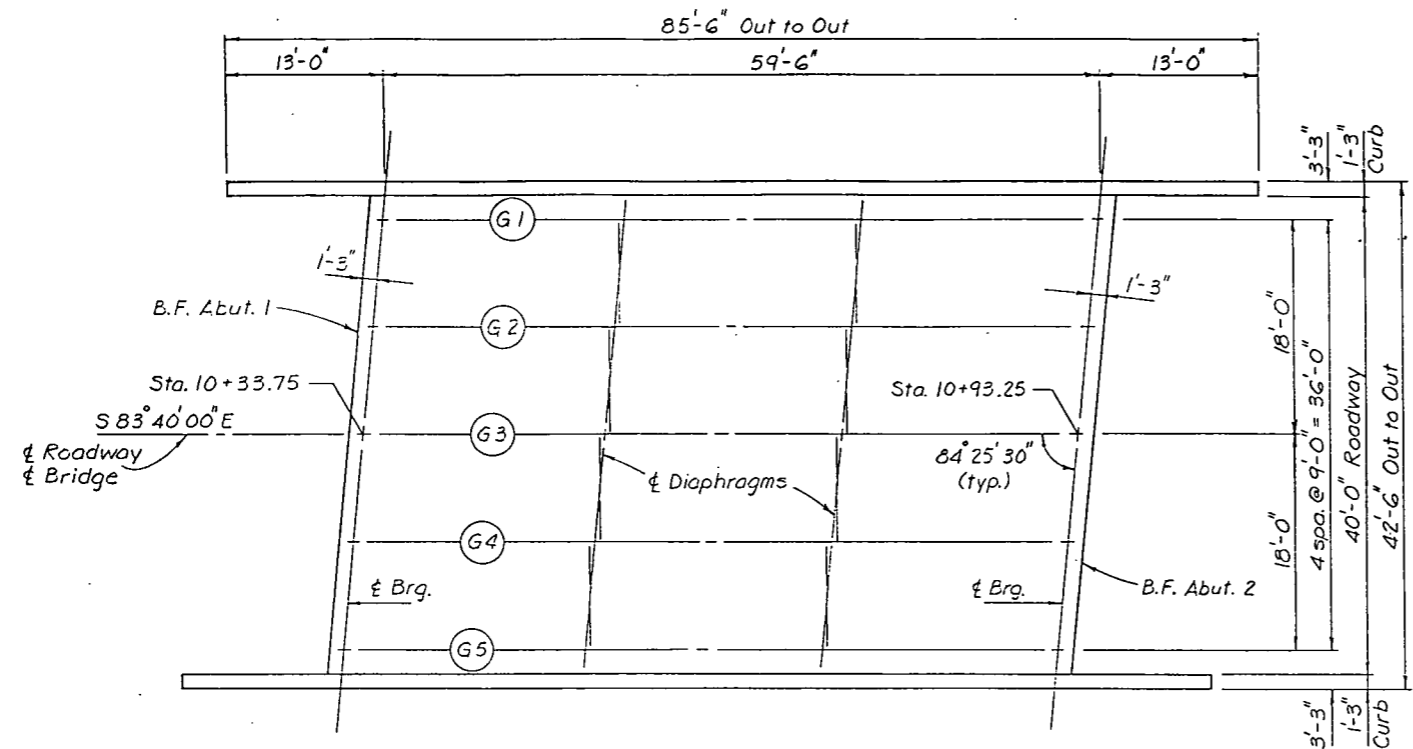
REVISION DATES	(PRELIMINARY STAGE ONLY)



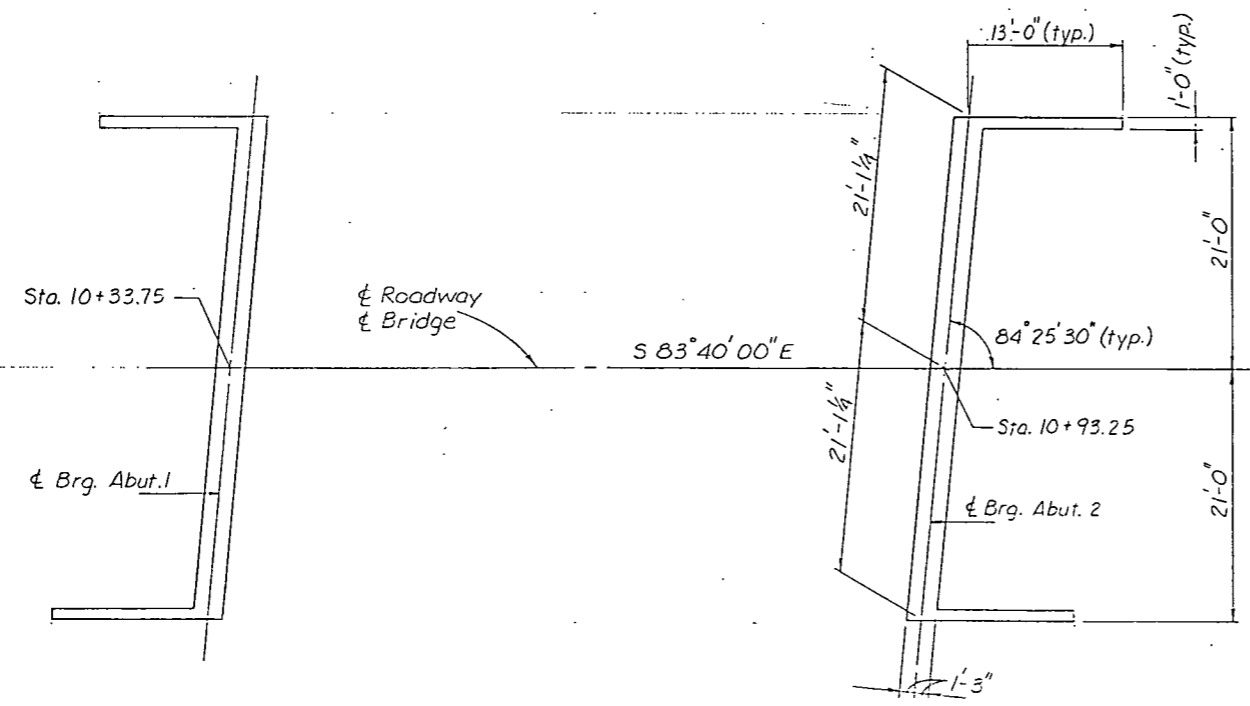
AS CONSTRUCTED			
NO REVISIONS	3-2-84	REVISED	VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072 (14)	11	35

REVISIONS			



CONSTRUCTION LAYOUT



FOOTING LAYOUT

Notes:  
 The footing dimensions shown are at the bottom of concrete.  
 Maximum footing pressure = 2.5 tons/sq. ft.  
 Abutment footing dimensions are typical.

DESIGNED BY	DATE	INITIALS	CHECKED BY	DATE	INITIALS
CHECKED BY	10/85	T.C.F.	QUANTITIES BY	11/85	J.S.V.
DETAILED BY	10/85	T.C.F.	CHECKED BY	11/85	J.S.V.

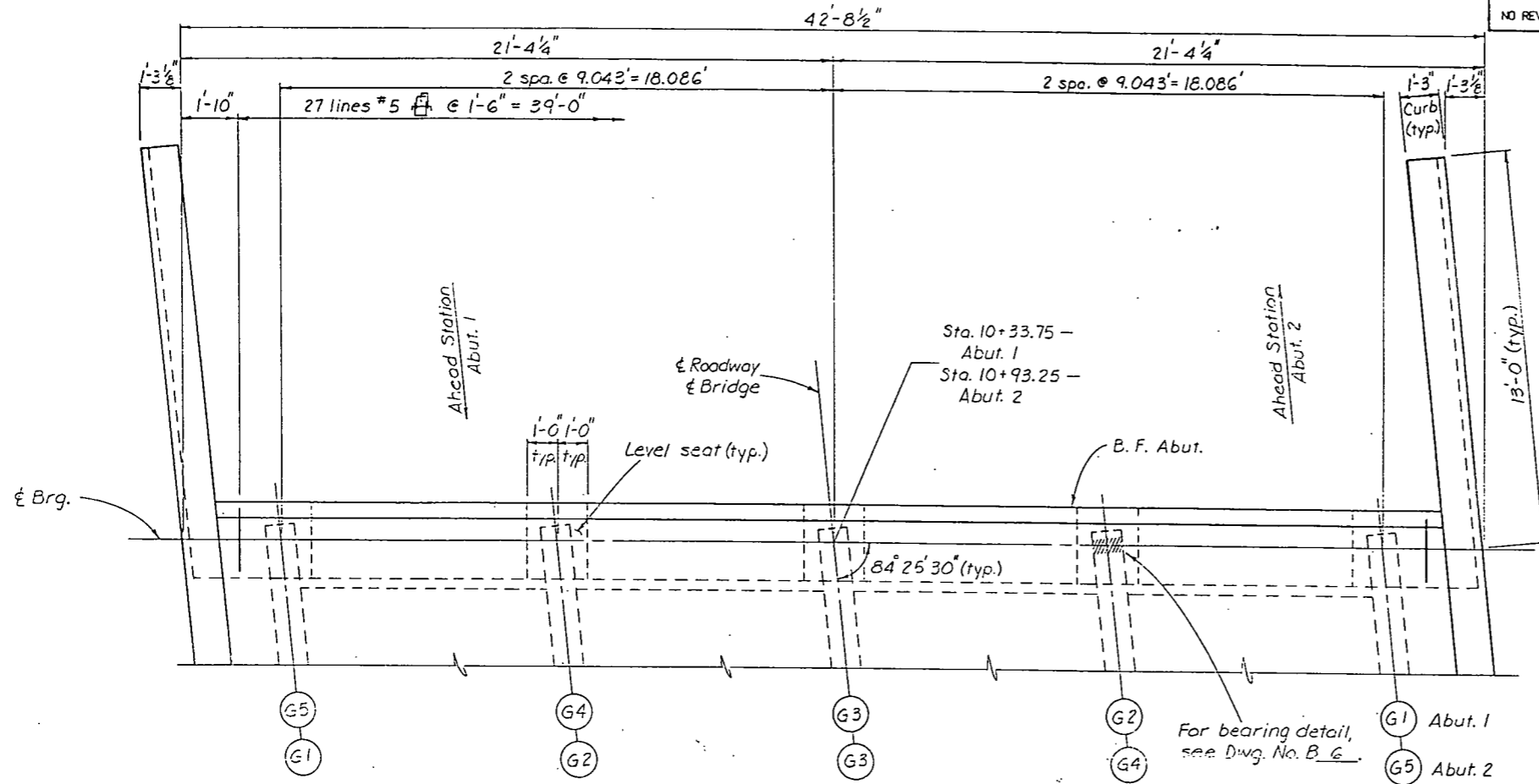
DIVISION OF HIGHWAYS		
CONSTRUCTION LAYOUT FOOTING LAYOUT		
DESIGNER T. Fischer	STRUCTURE NUMBERS	E-16- <del>LV</del> LV
DETAILER T. Fischer	DRAWING NUMBER B 4 OF 12 DRAWINGS	

REVISION DATES	(PRELIMINARY STAGE ONLY)
----------------	--------------------------

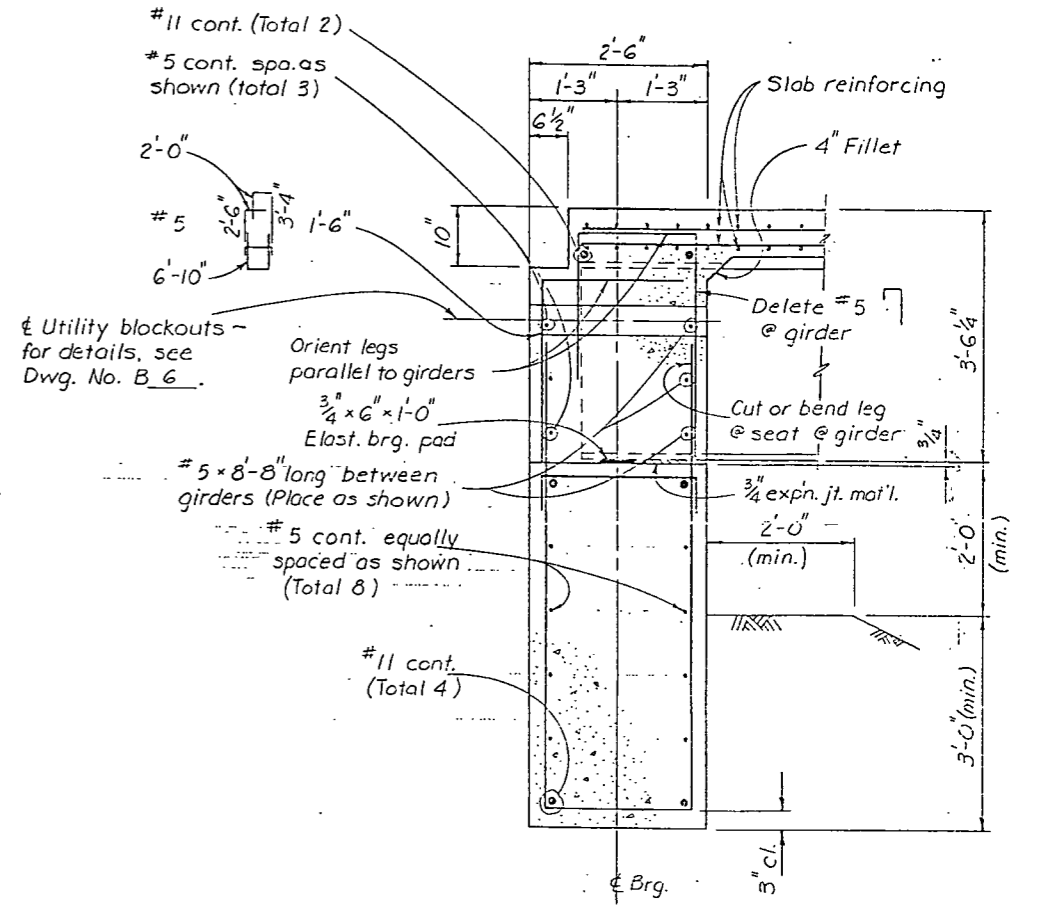
AS CONSTRUCTED			
NO REVISIONS	9-2-67	REVISED	VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLO.	BRS 0072(14)	12	35

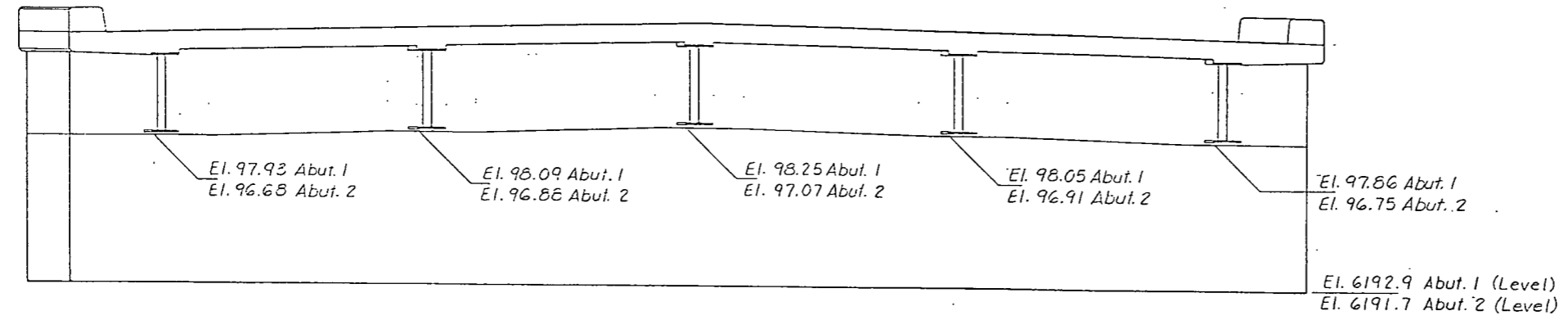
REVISIONS	



PLAN



TYPICAL SECTION



ELEVATION

For wingwall details, see Dwg. No. B\_6.  
 For utility blockout locations and details, see Dwg. No. B\_6.

DESIGNED BY	DATE	CHECKED BY	DATE
T.C.F.	10/66	J.S.V.	12/66
CHECKED BY	DATE	QUANTITIES BY	DATE
T.C.F.	10/66	J.S.V.	11/66
DETAILED BY	DATE	CHECKED BY	DATE
T.C.F.	10/66	J.S.V.	11/66

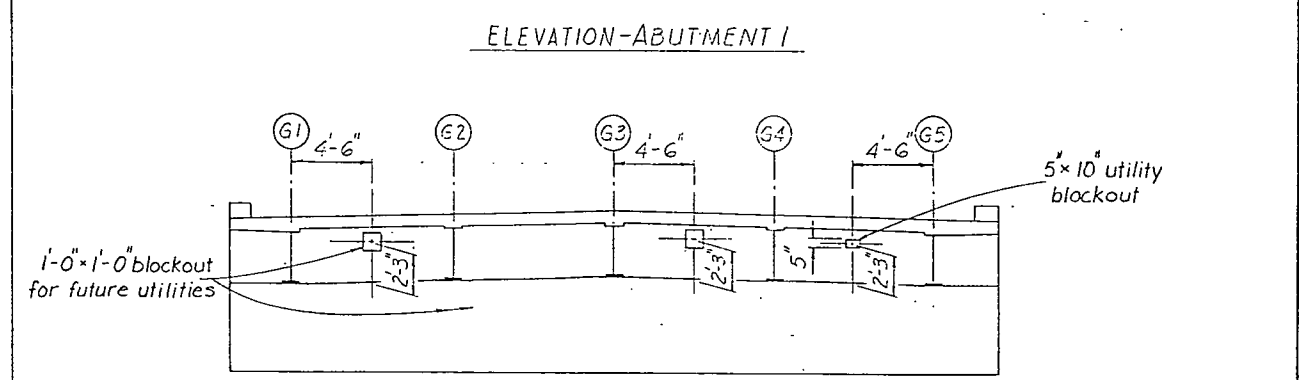
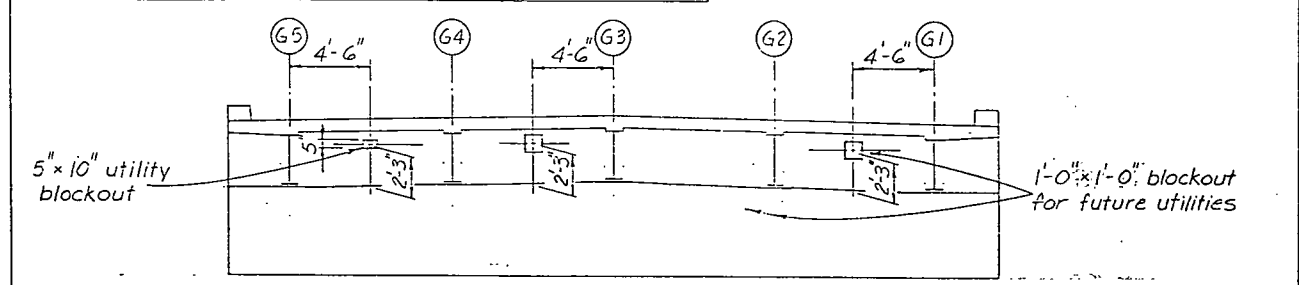
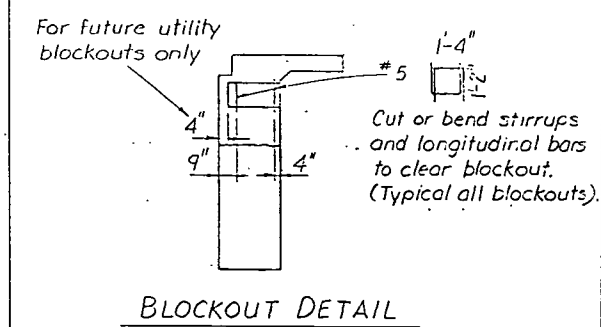
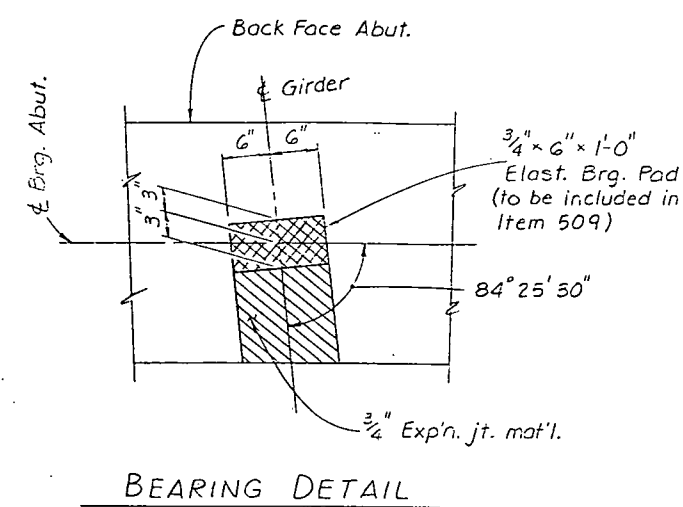
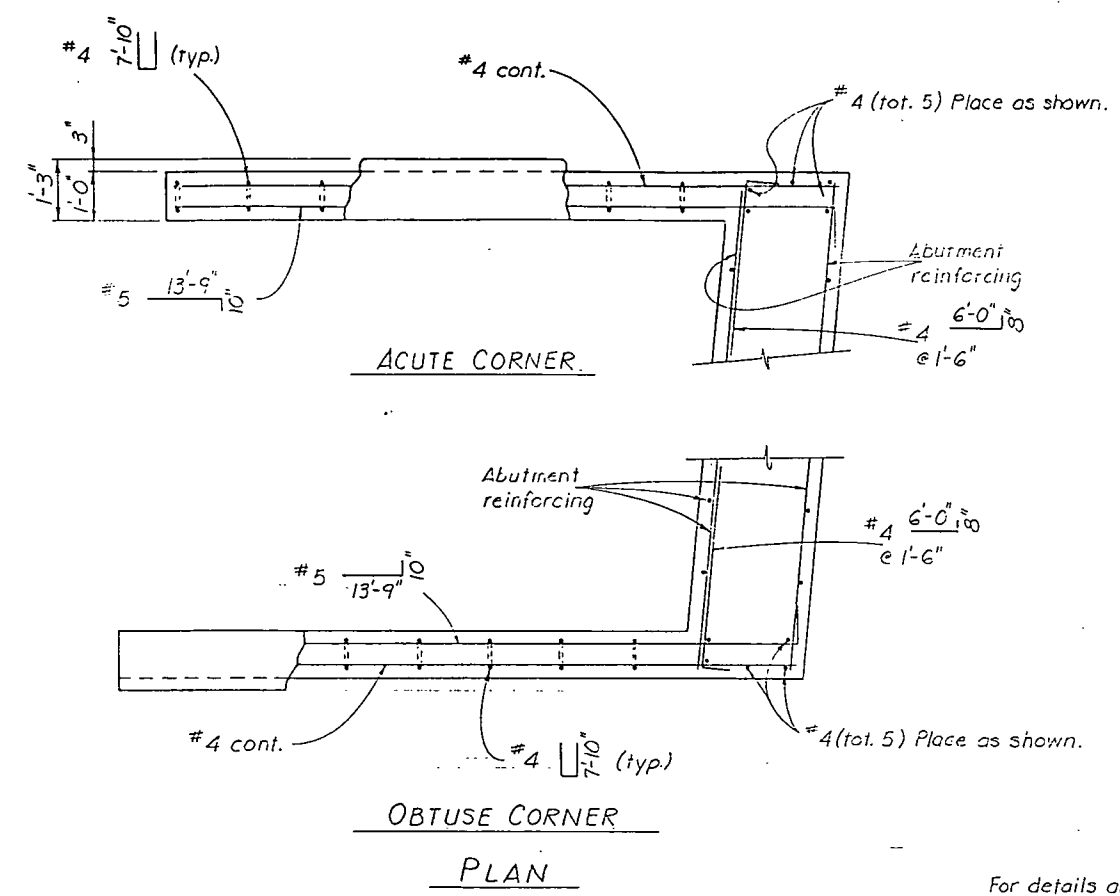
DIVISION OF HIGHWAYS		
ABUTMENT DETAILS		
DESIGNER T. Fischer	STRUCTURE NUMBERS	E-16 - LV
DETAILER T. Fischer	DRAWING NUMBER B 5 OF 12 DRAWINGS	

REVISION DATES	(PRELIMINARY STAGE ONLY)

AS CONSTRUCTED		
NO REVISIONS	REVISED <b>3-2-57</b>	VOID

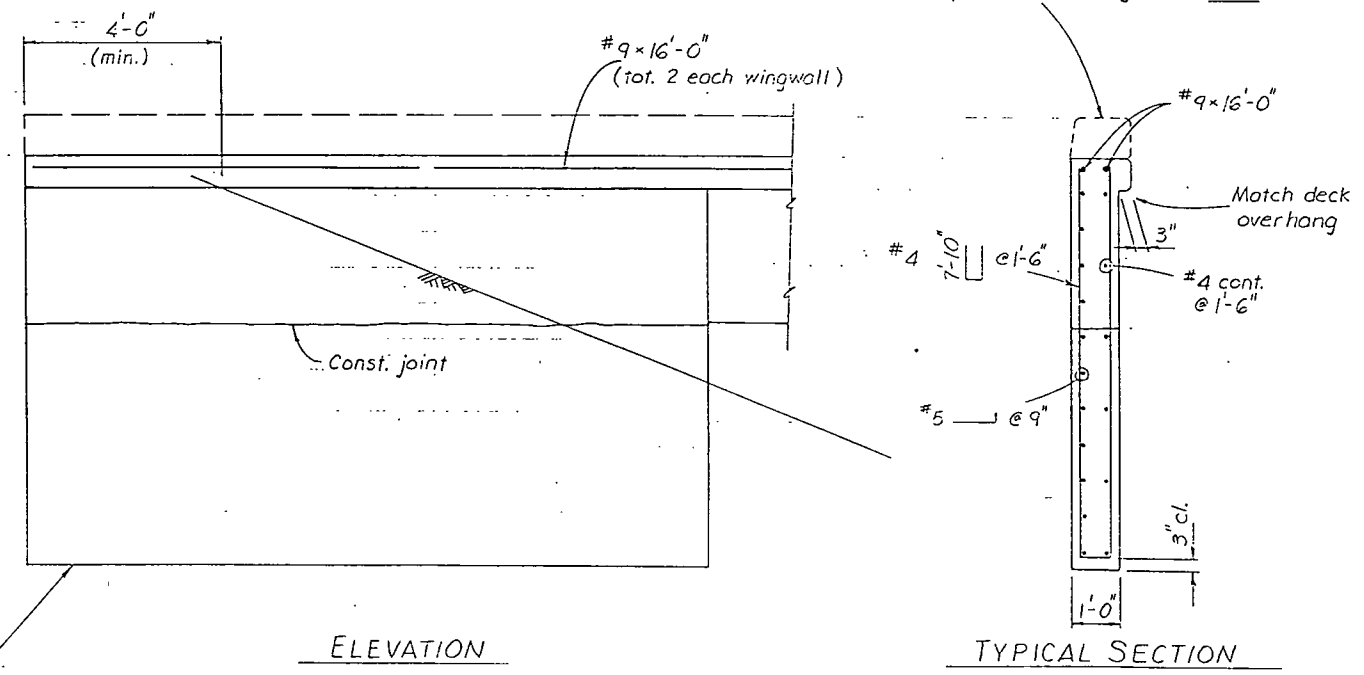
FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072(14)	13	35

REVISIONS	



**UTILITY BLOCKOUT DETAILS**

NOTE: 18 FT OF ADDITIONAL CONDUIT WAS NEEDED TO EXTEND PAST WINGWALLS



**WINGWALL DETAILS**

El. 6192.9 Abut. 1  
 El. 6191.7 Abut. 2

INITIAL	DATE	DESIGNED BY	CHECKED BY
J.S.V.	11-25	J.S.V.	J.S.V.
B.R.L.	12-85	J.S.V.	J.S.V.
J.S.V.	11-85	J.S.V.	J.S.V.
P.R.L.	12-85	J.S.V.	J.S.V.

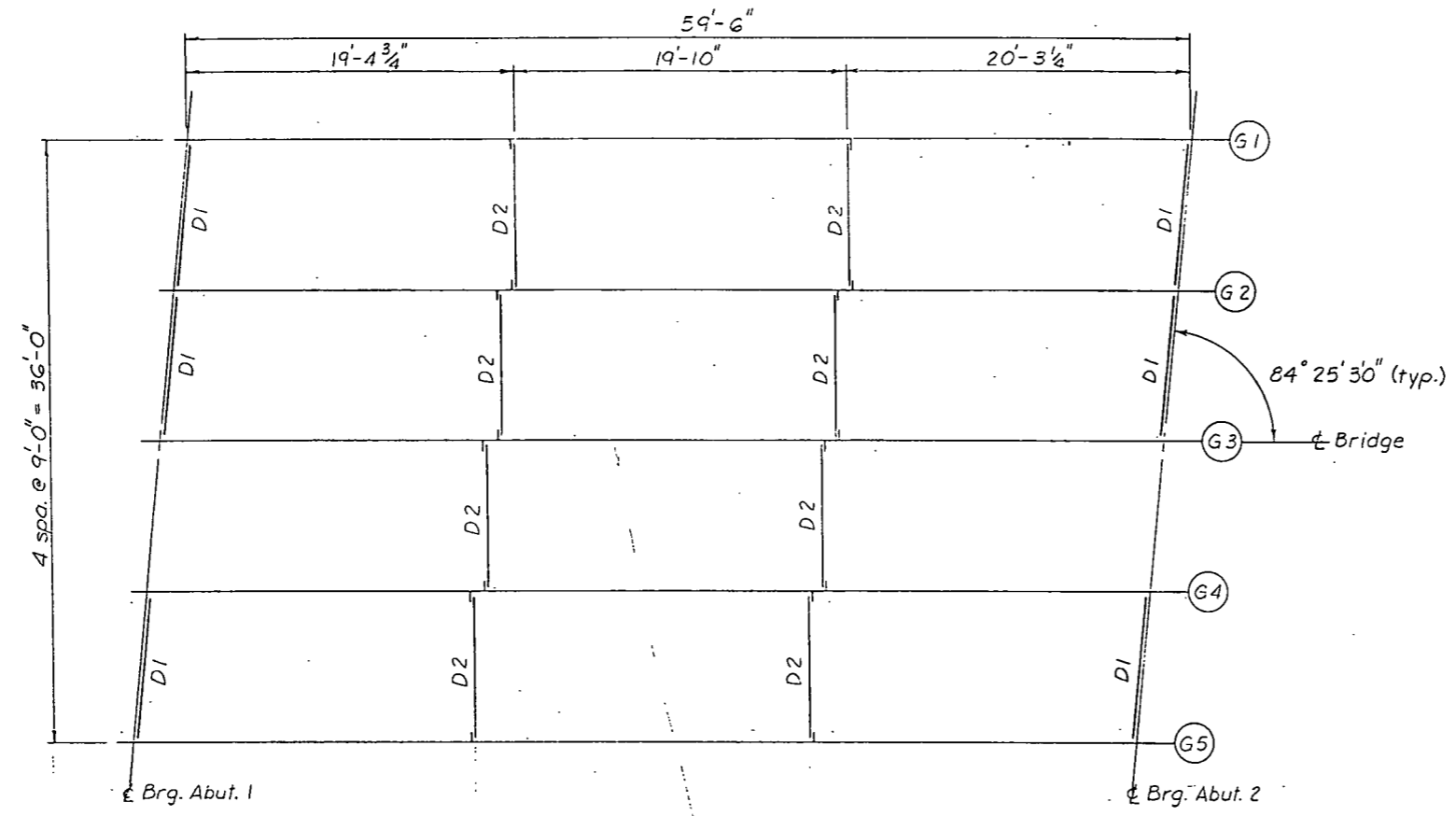
DIVISION OF HIGHWAYS		
ABUTMENT DETAILS		
DESIGNER T. Fischer	STRUCTURE NUMBER	E-16-LV
DETAILER T. Fischer		
DRAWING NUMBER B 6	OF 12	DRAWINGS

REVISION DATES	(PRELIMINARY STAGE ONLY)

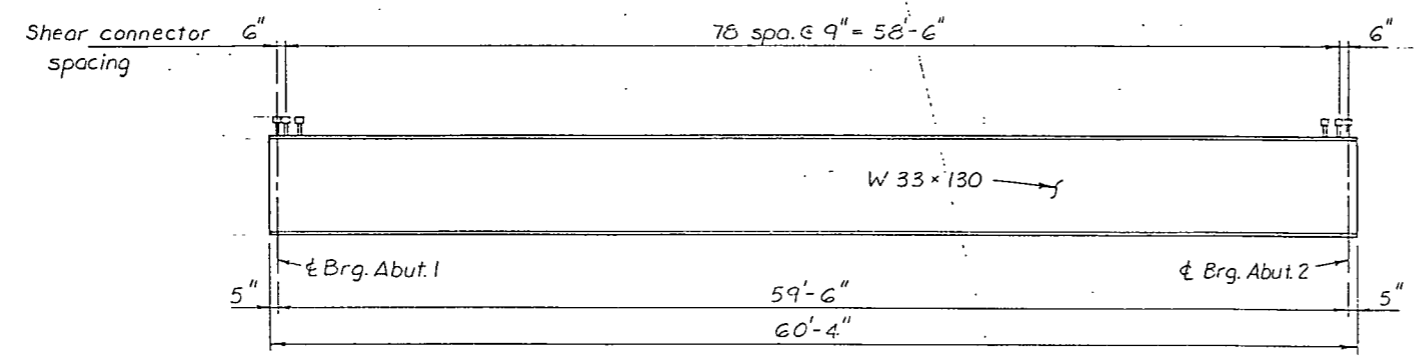
AS CONSTRUCTED		
NO REVISIONS	2-2-97	REVISOR
		VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072 (14)	14	35

REVISIONS	



FRAMING PLAN



GIRDER ELEVATION

DESIGNED BY	
CHECKED BY	
DATE	
INITIAL	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	
INITIAL	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	
INITIAL	
DATE	

DIVISION OF HIGHWAYS

FRAMING PLAN  
GIRDER DETAILS

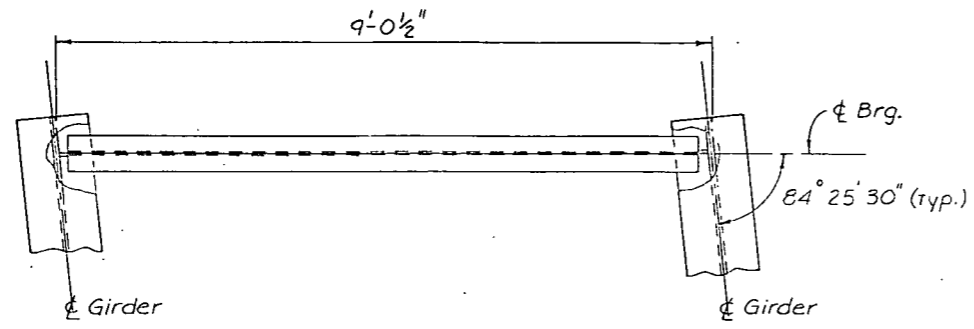
DESIGNER	T. Fischer	STRUCTURE NUMBER	E-16-134V
DETAILER	T. Fischer		
DRAWING NUMBER	B 7	OF	12 DRAWINGS

REVISION	DATE	DESCRIPTION

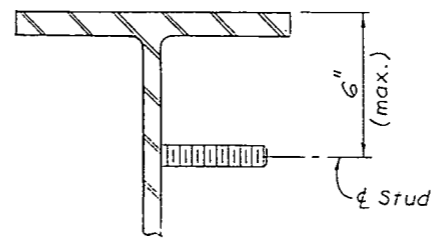
AS CONSTRUCTED			
NO REVISIONS	2-2-85	REVISED	VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072(14)	15	35

REVISIONS	

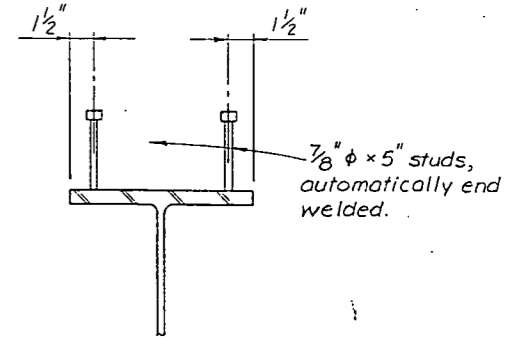


PLAN

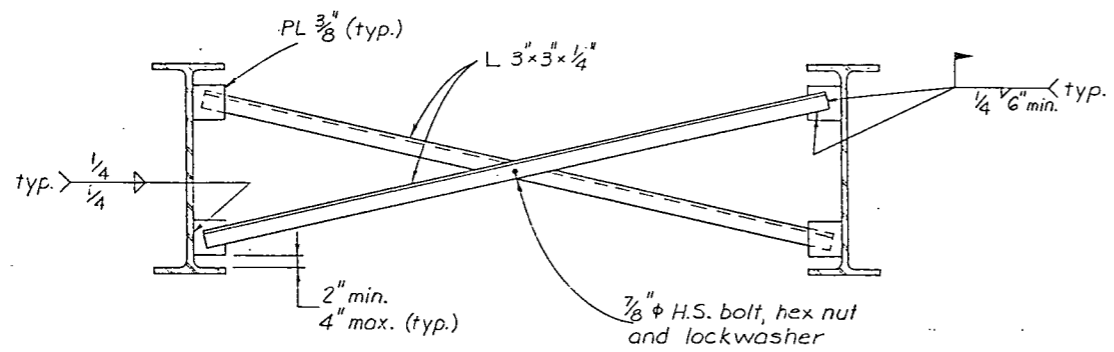


7/8"  $\phi$  (max.) studs @ 4'  $\pm$  min. spa. to be used for falsework support when specified by the Contractor. Contractor to determine size and spacing. Studs shall be removed and web ground flush upon removal of falsework.

FALSEWORK SUPPORT DETAIL

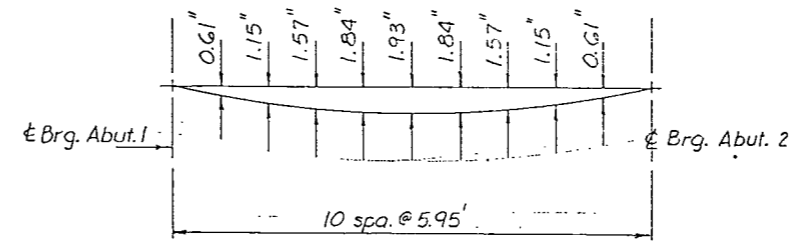


SHEAR CONNECTOR DETAIL

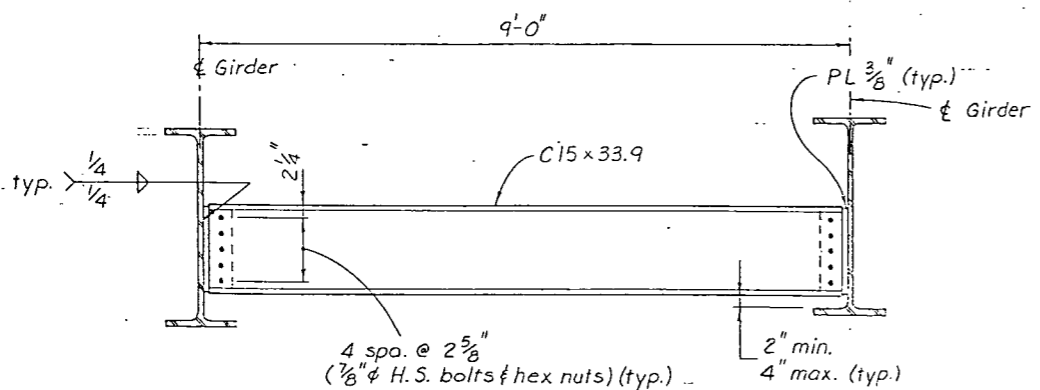


ELEVATION

DI DIAPHRAGM DETAIL  
(6 Req'd.)



DEAD LOAD DEFLECTIONS



D2 DIAPHRAGM DETAIL  
(8 Req'd.)

- Notes:
- Girder ends shall be normal to flanges.
  - Camber and blocking diagram is available from the Engineer upon request.

DIVISION OF HIGHWAYS	
SUPERSTRUCTURE DETAILS	
DESIGNER T. Fischer	STRUCTURE E-16- <del>11</del> LV
DETAILER T. Fischer	NUMBERS
DRAWING NUMBER B 8	OF 12 DRAWINGS

DESIGNED BY	DATE	CHECKED BY	DATE
CHECKED BY	DATE	QUANTITIES BY	DATE



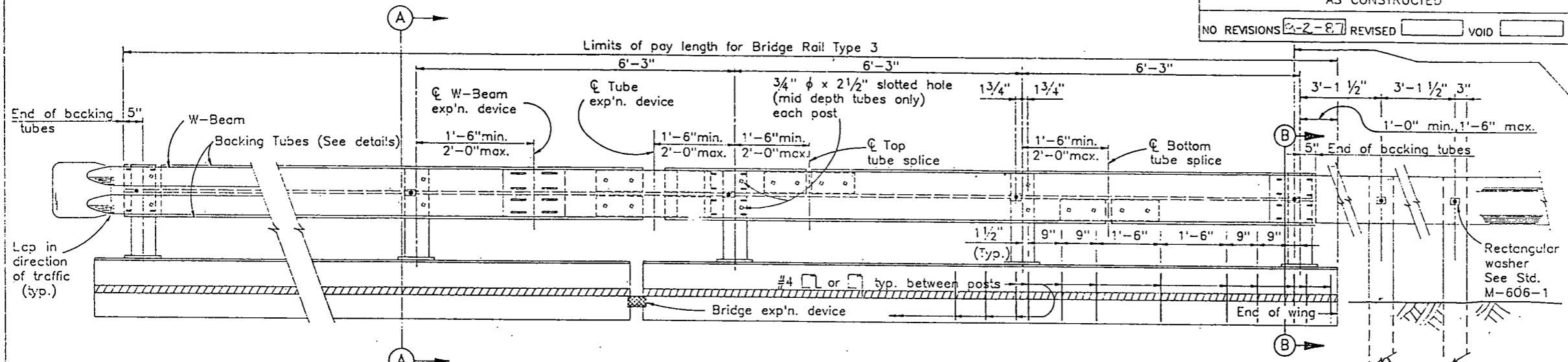
AS CONSTRUCTED

NO REVISIONS	2-2-87	REVISED		VOID	
--------------	--------	---------	--	------	--

FED. ROAD REGION	DMSION	PROJ. NO.	SHEET NO.	SHEET TOTALS
VIII	COLO.	BRS 0072 (14)	17	35

REVISIONS

--	--	--	--	--



Limits of pay length for Guard Rail Type 3  
 See Std. M-606-1

BRIDGE STANDARD 12

NOTES  
 ALL TUBES SHALL BE FABRICATED FROM ASTM A-500 GRADE B. ALL POSTS SHALL BE FABRICATED FROM ASTM A-36 STEEL. ALL SPLICES AND EXPANSION DEVICES FOR TUBES SHALL BE FABRICATED FROM ASTM A-572, GRADE 50. THE ABOVE MATERIAL, W-BEAM, AND ALL ANCHOR BOLTS AND MISCELLANEOUS BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE SPECIFICATIONS.

POST ANCHOR, ENCASED IN CONCRETE, SHALL BE ASTM A-36 OR AASHTO M-169 STEEL, AS NOTED, AND NEED NOT BE GALVANIZED.

POSTS, POST ANCHORS, BASE PLATES, ANCHOR BOLTS, MISCELLANEOUS BOLTS, NUTS, WASHERS, TUBES, TUBE EXPANSION DEVICES, TUBE SPLICES, END PLATES, W-BEAM, W-BEAM EXPANSION DEVICES, CURB CONCRETE (CLASS D), AND CURB REINFORCING STEEL SHALL BE INCLUDED IN ITEM 606 - BRIDGE RAIL TYPE 3.

THE BACKING TUBES SHALL BE SHOP BENT OR FABRICATED TO FIT HORIZONTAL CURVE WHEN THE RADIUS IS LESS THAN 1500 FEET.

TUBES SHALL BE CONTINUOUS OVER NOT LESS THAN TWO POSTS.

THE CENTERLINE OF THE POSTS AT THE BRIDGE EXPANSION DEVICE SHALL BE A MINIMUM OF 3'-0" FROM THE CENTERLINE OF THE BRIDGE EXPANSION DEVICE, MEASURED ALONG THE CENTERLINE OF POSTS.

POSTS SHALL BE PERPENDICULAR TO THE GRADE OF DECK. ONE OR MORE 6'-3" POST SPACINGS MAY BE REDUCED (5'-0" MIN.) IN ORDER TO MAINTAIN DIMENSIONS FROM THE END OF WINGS AND EXPANSION JOINTS.

CONTRACTOR SHALL PROVIDE TERMINAL SECTION (FLARED) WHEN NO APPROACH GUARD RAIL IS USED WITH THE COST INCLUDED IN ITEM 606 - BRIDGE RAIL, TYPE 3. FOR DETAILS SEE STD. M-606-1.

FOR ADDITIONAL DETAILS, SEE STD. M-606-1.

OPTIONAL DRAIN HOLE FOR GALVANIZING MAY BE DRILLED, PUNCHED, OR CLIPPED LEAVING SMOOTH SURFACES AND TRANSITIONS. NO FLAME CUTTING OR AIR CARBON ARC GOUGING IS ALLOWED.

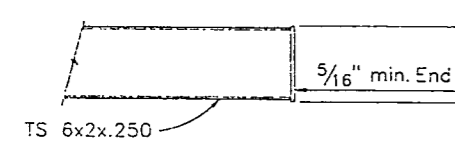
THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS SPECIFIED IN THE REVISION OF SECTION 105 OF THE STANDARD SPECIFICATIONS.

STRUCTURAL STEEL:

AASHTO M-183 (ASTM A-36)	$f_s = 20,000$ psi
AASHTO M-223 (ASTM A-572)	$f_s = 37,500$ psi
GRADE 50	
COLD FORMED ASTM A-500	$f_s = 27,600$ psi
GRADE B	

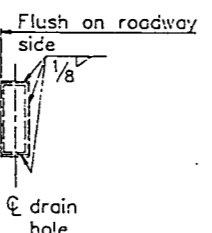
RAIL PANEL @ TERMINAL SECTION

(See roadway plans for ends requiring terminal section.)

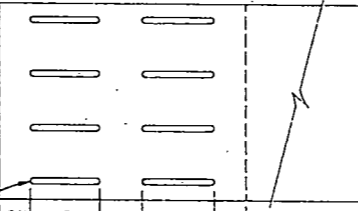


END DETAIL - BACKING TUBES

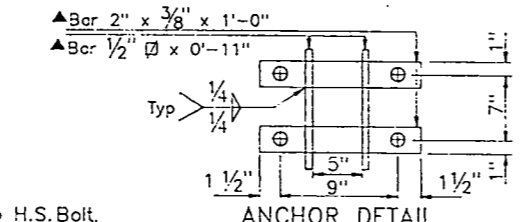
RAIL PANEL @ EXP'N. DEVICE



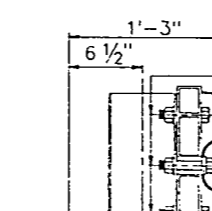
ELEVATION - BRIDGE RAIL



EXP'N. DEVICE (W-BEAM)



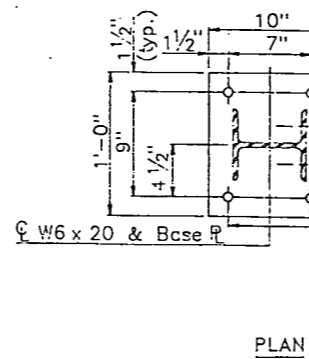
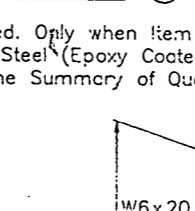
ANCHOR DETAIL



RAIL PANEL @ END OF WING

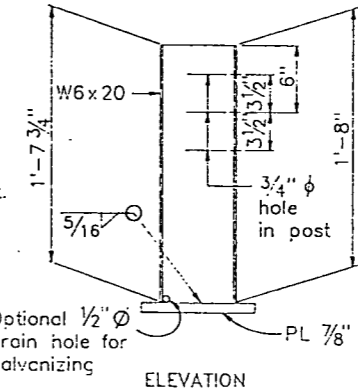


SECTION (B)



PLAN

POST DETAIL



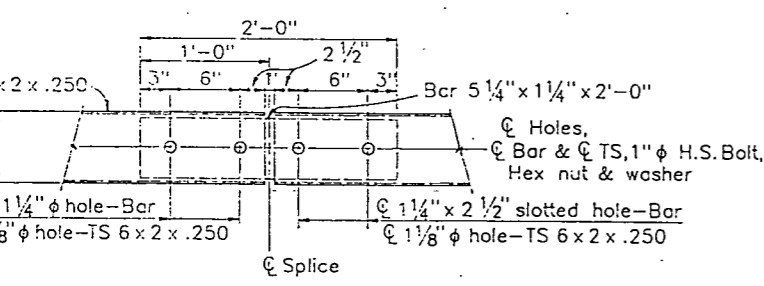
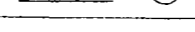
ELEVATION

INFORMATION ONLY

Description	Unit	Per Lin. Ft.
Structural Steel (Galvanized)	Lb.	45.4
Concrete Class D	Cu.Yd.	0.04
Reinforcing Steel	Lb.	4.8
Bridge Rail Type 3 - W Beam	Lin.Ft.	1.0

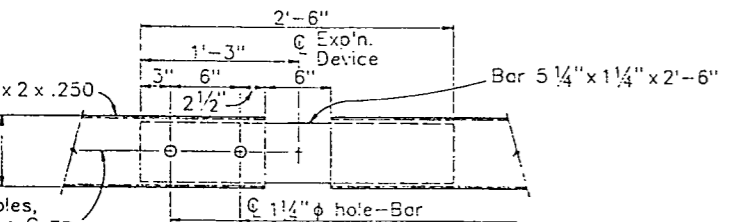
Note: At each expansion device add 235 lb. of Structural Steel (Galvanized)

SECTION (A)



TUBE SPLICE

Top and bottom tube splices shall not be located together but staggered as shown.



BACKING TUBE @ EXP'N. DEVICE

Req'd. near all bridge exp'n. joints as shown on the plans.

DESIGNED BY	DATE	CHECKED BY	DATE
JSV	11-85	BRL	12-85
QUANTITIES BY	DATE	QUANTITIES BY	DATE
JSV	11-85	BRL	12-85
DESIGNED BY	DATE	CHECKED BY	DATE
JSV	11-85	BRL	12-85

NO NUMBER 087 17:42:06 DUAL : (DRAW. STDS. MSTD). BRSTD12

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
LONGITUDINAL LINE: LEFT OUT			
END WING	10+22.6242	-21.2500	6201.6264
BF ABUT 1	10+34.5742	-21.2500	6201.3938
CL BRG A1	10+35.5242	-21.2500	6201.3690
F-1	10+41.7742	-21.2500	6201.2512
F-2	10+47.7242	-21.2500	6201.1334
F-3	10+53.6742	-21.2500	6201.0156
F-4	10+59.6242	-21.2500	6200.8978
*REF LINE*	10+65.5742	-21.2500	6200.7800
F-5	10+71.5242	-21.2500	6200.6622
F-6	10+77.4742	-21.2500	6200.5443
F-7	10+83.4242	-21.2500	6200.4265
F-8	10+89.3742	-21.2500	6200.3087
F-9	10+95.3242	-21.2500	6200.1909
CL BRG A2	10+96.5742	-21.2500	6200.1662
BF ABUT 2	10+96.5742	-21.2500	6200.1662
END WING	11+08.3242	-21.2500	6199.9335
LONGITUDINAL LINE: LEFT IN			
BF ABUT 1	10+34.4522	+20.0000	6201.4212
CL BRG A1	10+35.7022	+20.0000	6201.3964
F-1	10+41.6522	+20.0000	6201.2786
F-2	10+47.6022	+20.0000	6201.1608
F-3	10+53.5522	+20.0000	6201.0430
F-4	10+59.5022	+20.0000	6200.9252
*REF LINE*	10+65.4522	+20.0000	6200.8074
F-5	10+71.4022	+20.0000	6200.6896
F-6	10+77.3522	+20.0000	6200.5718
F-7	10+83.3022	+20.0000	6200.4539
F-8	10+89.2522	+20.0000	6200.3361
F-9	10+95.2022	+20.0000	6200.2183
CL BRG A2	10+96.4522	+20.0000	6200.1936
BF ABUT 2	10+96.4522	+20.0000	6200.1936
LONGITUDINAL LINE: CL GIRDER 1			
BF ABUT 1	10+34.2570	-18.0000	6201.4650
CL BRG A1	10+35.5070	-18.0000	6201.4403
F-1	10+41.4570	-18.0000	6201.3225
F-2	10+47.4070	-18.0000	6201.2047
F-3	10+53.3570	-18.0000	6201.0869
F-4	10+59.3070	-18.0000	6200.9691
*REF LINE*	10+65.2570	-18.0000	6200.8512
F-5	10+71.2070	-18.0000	6200.7334
F-6	10+77.1570	-18.0000	6200.6156
F-7	10+83.1070	-18.0000	6200.4978
F-8	10+89.0570	-18.0000	6200.3800
F-9	10+95.0070	-18.0000	6200.2622
CL BRG A2	10+96.2570	-18.0000	6200.2374
BF ABUT 2	10+96.2570	-18.0000	6200.2374

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
LONGITUDINAL LINE: CL GIRDER 2			
BF ABUT 1	10+33.3785	+9.0000	6201.6624
CL BRG A1	10+34.6285	+9.0000	6201.6377
F-1	10+40.5785	+9.0000	6201.5199
F-2	10+46.5285	+9.0000	6201.4021
F-3	10+52.4785	+9.0000	6201.2843
F-4	10+58.4285	+9.0000	6201.1664
*REF LINE*	10+64.3785	+9.0000	6201.0486
F-5	10+70.3285	+9.0000	6200.9308
F-6	10+76.2785	+9.0000	6200.8130
F-7	10+82.2285	+9.0000	6200.6952
F-8	10+88.1785	+9.0000	6200.5774
F-9	10+94.1285	+9.0000	6200.4596
CL BRG A2	10+95.3785	+9.0000	6200.4348
BF ABUT 2	10+95.3785	+9.0000	6200.4348
LONGITUDINAL LINE: CL ROWY, CL GIRDER 3			
BF ABUT 1	10+32.5000	0.0000	6201.8596
CL BRG A1	10+33.7500	0.0000	6201.8351
F-1	10+39.7000	0.0000	6201.7173
F-2	10+45.6500	0.0000	6201.5995
F-3	10+51.6000	0.0000	6201.4817
F-4	10+57.5500	0.0000	6201.3638
*REF LINE*	10+63.5000	0.0000	6201.2460
F-5	10+69.4500	0.0000	6201.1282
F-6	10+75.4000	0.0000	6201.0104
F-7	10+81.3500	0.0000	6200.8926
F-8	10+87.3000	0.0000	6200.7748
F-9	10+93.2500	0.0000	6200.6570
CL BRG A2	10+94.5000	0.0000	6200.6322
BF ABUT 2	10+94.5000	0.0000	6200.6322
LONGITUDINAL LINE: CL GIRDER 4			
BF ABUT 1	10+31.6215	9.0000	6201.6972
CL BRG A1	10+32.8715	9.0000	6201.6725
F-1	10+38.8215	9.0000	6201.5547
F-2	10+44.7715	9.0000	6201.4369
F-3	10+50.7215	9.0000	6201.3191
F-4	10+56.6715	9.0000	6201.2012
*REF LINE*	10+62.6215	9.0000	6201.0834
F-5	10+68.5715	9.0000	6200.9656
F-6	10+74.5215	9.0000	6200.8478
F-7	10+80.4715	9.0000	6200.7300
F-8	10+86.4215	9.0000	6200.6122
F-9	10+92.3715	9.0000	6200.4944
CL BRG A2	10+93.6215	9.0000	6200.4696
BF ABUT 2	10+93.6215	9.0000	6200.4696

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
LONGITUDINAL LINE: CL GIRDER 5			
BF ABUT 1	10+30.7430	18.0000	6201.5346
CL BRG A1	10+31.9930	18.0000	6201.5099
F-1	10+37.9430	18.0000	6201.3921
F-2	10+43.8930	18.0000	6201.2743
F-3	10+49.8430	18.0000	6201.1564
F-4	10+55.7930	18.0000	6201.0386
*REF LINE*	10+61.7430	18.0000	6200.9208
F-5	10+67.6930	18.0000	6200.8030
F-6	10+73.6430	18.0000	6200.6852
F-7	10+79.5930	18.0000	6200.5674
F-8	10+85.5430	18.0000	6200.4496
F-9	10+91.4930	18.0000	6200.3318
CL BRG A2	10+92.7430	18.0000	6200.3070
BF ABUT 2	10+92.7430	18.0000	6200.3070
LONGITUDINAL LINE: RIGHT IN			
BF ABUT 1	10+30.5478	20.0000	6201.4985
CL BRG A1	10+31.7978	20.0000	6201.4737
F-1	10+37.7478	20.0000	6201.3559
F-2	10+43.6978	20.0000	6201.2381
F-3	10+49.6478	20.0000	6201.1203
F-4	10+55.5978	20.0000	6201.0025
*REF LINE*	10+61.5478	20.0000	6200.8847
F-5	10+67.4978	20.0000	6200.7669
F-6	10+73.4478	20.0000	6200.6491
F-7	10+79.3978	20.0000	6200.5313
F-8	10+85.3478	20.0000	6200.4134
F-9	10+91.2978	20.0000	6200.2956
CL BRG A2	10+92.5478	20.0000	6200.2709
BF ABUT 2	10+92.5478	20.0000	6200.2709
LONGITUDINAL LINE: RIGHT OUT			
END WING	10+19.6758	21.2500	6201.7086
BF ABUT 1	10+30.4258	21.2500	6201.4759
CL BRG A1	10+31.6758	21.2500	6201.4512
F-1	10+37.6258	21.2500	6201.3333
F-2	10+43.5758	21.2500	6201.2155
F-3	10+49.5258	21.2500	6201.0977
F-4	10+55.4758	21.2500	6200.9799
*REF LINE*	10+61.4258	21.2500	6200.8621
F-5	10+67.3758	21.2500	6200.7443
F-6	10+73.3258	21.2500	6200.6265
F-7	10+79.2758	21.2500	6200.5087
F-8	10+85.2258	21.2500	6200.3909
F-9	10+91.1758	21.2500	6200.2731
CL BRG A2	10+92.4258	21.2500	6200.2483
BF ABUT 2	10+92.4258	21.2500	6200.2483
END WING	11+04.1758	21.2500	6200.0157

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
---	---------	--------	-----------

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	BRS 0072 (14)	18	35

REVISIONS	

AS CONSTRUCTED	
NO REVISIONS	REVISED
5-2-57	

BRIDGE STANDARD 2

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
---	---------	--------	-----------

NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.1667 FEET BELOW FINISHED GRADE.

DIVISION OF HIGHWAYS

BRIDGE DECK ELEVATIONS

Designer	I. Fischer	Structure Numbers	E-16-22 LV
Detailer	I. Fischer	Drawing Number	B 11 of 12 Drawings

AS CONSTRUCTED  
 NO REVISIONS  REVISED  VOID

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	BRS 0072(14)	19	35

# ROADWAY APPROACHES

ELEVATIONS ARE AT FINISHED GRADE

REVISIONS	

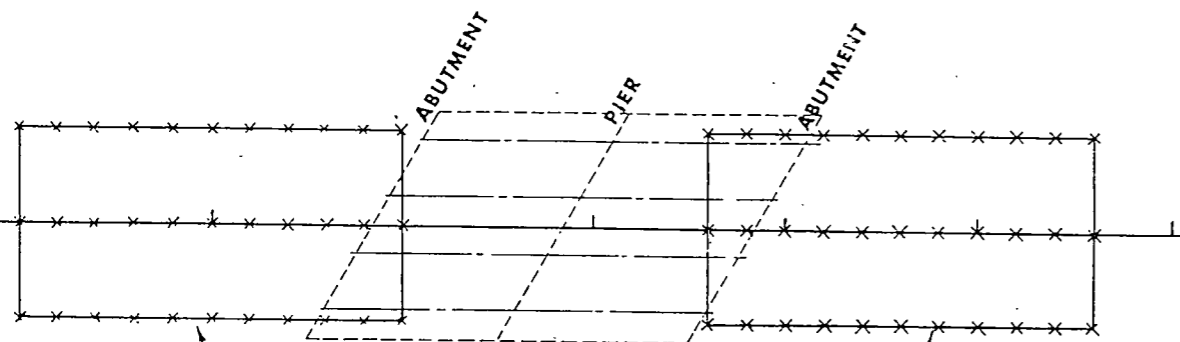
BRIDGE STANDARD 1

ELEVATIONS ON ROADWAY APPROACHES (AT FINISHED GRADE)

STATION	OFFSETS				
	-20.0000	-12.0000	0.0000	12.0000	20.0000
8+90.0	6204.45	6204.61	6204.25	6204.61	6204.45
9+00.0	04.25	04.41	04.65	04.41	04.25
+10.0	04.05	04.21	04.45	04.21	04.05
+20.0	03.85	04.01	04.25	04.01	03.85
9+30.0	6203.66	6203.82	6204.06	6203.82	6203.66
+40.0	03.46	03.62	03.36	03.62	03.46
+50.0	03.26	03.42	03.66	03.42	03.26
+60.0	03.06	03.22	03.46	03.22	03.06
9+70.0	6202.86	6203.02	6203.26	6203.02	6202.86
+80.0	02.67	02.83	03.07	02.83	02.67
+90.0	02.47	02.63	02.87	02.63	02.47
10+00.0	02.27	02.43	02.67	02.43	02.27
10+10.0	6202.07	6202.23	6202.47	6202.23	6202.07
+20.0	01.87	02.03	02.27	02.03	01.87
+30.0	01.68	01.84	02.08	01.84	01.68
+40.0	01.48	01.64	01.88	01.64	01.48

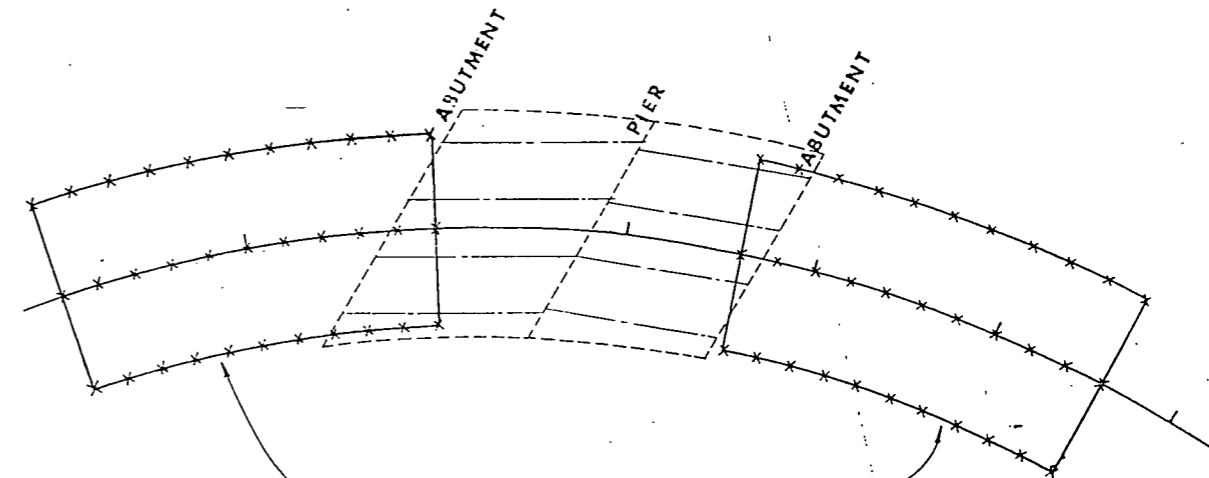
ELEVATIONS ON ROADWAY APPROACHES (AT FINISHED GRADE)

STATION	OFFSETS				
	-20.0000	-12.0000	0.0000	12.0000	20.0000
10+90.0	6200.49	6200.65	6200.89	6200.65	6200.49
11+00.0	00.29	00.45	00.69	00.45	00.29
+10.0	00.09	00.25	00.49	00.25	00.09
+20.0	99.89	00.05	00.29	00.05	99.89
11+30.0	6199.70	6199.86	6200.10	6199.86	6199.70
+40.0	99.50	99.66	99.90	99.66	99.50
+50.0	99.30	99.46	99.70	99.46	99.30
+60.0	99.10	99.26	99.50	99.26	99.10
11+70.0	6198.90	6199.06	6199.30	6199.06	6198.90
+80.0	98.71	98.87	99.11	98.87	98.71
+90.0	98.51	98.67	98.91	98.67	98.51
12+00.0	98.31	98.47	98.71	98.47	98.31
12+10.0	6198.11	6198.27	6198.51	6198.27	6198.11
+20.0	97.91	98.07	98.31	98.07	97.91
+30.0	97.72	97.88	98.12	97.88	97.72
+40.0	97.52	97.68	97.92	97.68	97.52



ROADWAY APPROACHES

\* TANGENT ALIGNMENT



ROADWAY APPROACHES

\* HORIZONTAL CURVE ALIGNMENT

\* THESE DRAWINGS ARE SCHEMATICS ONLY AND DO NOT NECESSARILY REFLECT THE ACTUAL BRIDGE LAYOUT.

DIVISION OF HIGHWAYS		
ROADWAY APPROACHES		
Designer <i>T. Fischer</i>	Structure Numbers	E-16- <del>LV</del> LV
Drawing Number B 12 of 12 Drawings		

ALTERNATE NO. 2  
PAGES BA-1 THRU BA-12

AS CONSTRUCTED		FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
NO REVISIONS	REVISED	VOID	VII	COLO.	ERS 0072 (14)	20
						35

REVISIONS	

GENERAL NOTES

All work shall be done according to the Standard Specifications of the Division of Highways, State of Colorado, applicable to the Project.

Structure excavation and backfill shall be in accordance with Standard M-206-2.  
Expansion Joint Material shall meet AASHTO Specification M-213.  
All Structural Steel shall be AASHTO M-183 (ASTM A-36) unless otherwise noted.

All AASHTO M-183 (ASTM A-36) steel not otherwise noted shall be painted in accordance with Section 509 of the Standard Specifications. The color shall be Mocha Brown.

All bolts shall be 3/8 inch diameter, high strength, unless otherwise noted.

No welding of any kind shall be permitted on the flanges of steel girders unless specifically called for on the plans.

Grade 60 reinforcing steel is required for #4 bars and larger. All reinforcing steel with the symbol (E) shall be epoxy coated.

The following table gives the minimum lap splice length for reinforcing bars:

Bar Size	#4	#5	#6	#7	#8	#9	#10	#11
Splice Length for Class A Concrete	1'-0"	1'-3"	1'-8"	2'-3"	3'-0"	3'-10"	4'-10"	5'-11"
Splice Length for Class D Concrete	1'-0"	1'-3"	1'-6"	2'-0"	2'-7"	3'-4"	4'-2"	5'-1"
Class S Concrete								

Applied wind loads and earthquake loads were not considered in analyzing the structure for stability during the construction stages.

N.F. = Near Face      F.F. = Far Face

For structure number installation, see Standard S-614-12.  
An acrylic concrete coating shall be used in lieu of class 5 finish. The color shall be light buff.

DESIGN DATA

Current AASHTO Specifications:

Live Load: AASHTO HS-20-44 and Interstate Alternate  
Dead Load: Assumes 48 lbs. per sq. ft. for bituminous pavement

Reinforced Concrete:

Class A Concrete:  $f_c = 1200$  psi,  $n = 9$   
Class D Concrete:  $f_c = 1800$  psi,  $n = 8$   
Class S Concrete: See Details

Reinforcing Steel: #4 Bars and larger:  $f_s = 24,000$  psi

Structural Steel: AASHTO M-183 (ASTM A-36)  $f_s = 20,000$  psi  
Temporary prestress allowable  $f_s = 25,200$  psi

SUMMARY OF QUANTITIES

Item No.	Description	Unit	STRUCTURE			
			Super-structure	Abut. 1	Abut. 2	Total
202	Removal of Bridge	Ea.				1
206	Structure Excavation	Cu. Yd.		288	351	639
206	Structure Backfill (Class 1)	Cu. Yd.		176	178	354
403	Hot Bituminous Pavement (Gr. EX)(H. & A)	Ton.	29			29
515	Waterproofing (Membrane)	Sq. Yd.	276			276
601	Concrete Class A (Bridge)	Cu. Yd.		25.0	25.0	50
601	Concrete Class D (Bridge)	Cu. Yd.		16.2	15.8	32
602	Reinforcing Steel	Lbs.		3100	3130	6230
606	Bridge Rail Type 3	Lin. Ft.	164			164
613	Conduit (Install Only)	Lin. Ft.	122			122
626	Mobilization	L.S.				0.5
628	Bridge Girder and Deck Unit (60 Feet to 65 Feet)	Ea.	4			4

① 620 Lbs reinforcing steel, 472 Lbs. reinforcing steel (Epoxy Coated), 7.5 Cu. Yd. Concrete Class S (Bridge), 1100 lbs. of Structural Steel in deck closure pours shall be included in the Bid Price for Item 628.

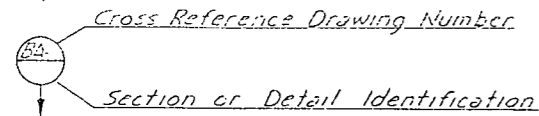
INDEX OF DRAWINGS

Dwg. No.	Title
BA-1	General Information - Summary of Quantities
BA-2	General Layout
BA-3	Engineering Geology
BA-4	Construction Layout and Foundation Layout
BA-5	Abutment Details
BA-6	Wingwall and Utility Details
BA-7	Superstructure Details
BA-8	Steel Details
BA-9	Bridge Rail Type 3
BA-10	Bridge Deck Elevations
BA-11	Roadway Approaches

BRIDGE DESCRIPTION

1-Span (59'-6") Bridge, Welded Girder Composite Prestressed Over the Boulder Diversion Canal  
40'-0" Roadway Curb to Curb  
84° 25' 30" Skew  
1'-3" Curbs Type 3 Bridge Rail

DESIGNED BY	DATE	INITIALS
CHECKED BY	DATE	INITIALS
QUANTITIES BY	DATE	INITIALS
CHECKED BY	DATE	INITIALS



STEEL TEE, Inc.  
P.O. Box 5033  
Englewood, Co. 80155

Professional Engineer Seal for John W. Stiles, No. 13947, State of Colorado, expires 6-15-86.

Reviewed  
John W. Stiles  
3-11-86  
Bridge Engineer-Date

DIVISION OF HIGHWAYS

GENERAL INFORMATION  
SUMMARY OF QUANTITIES

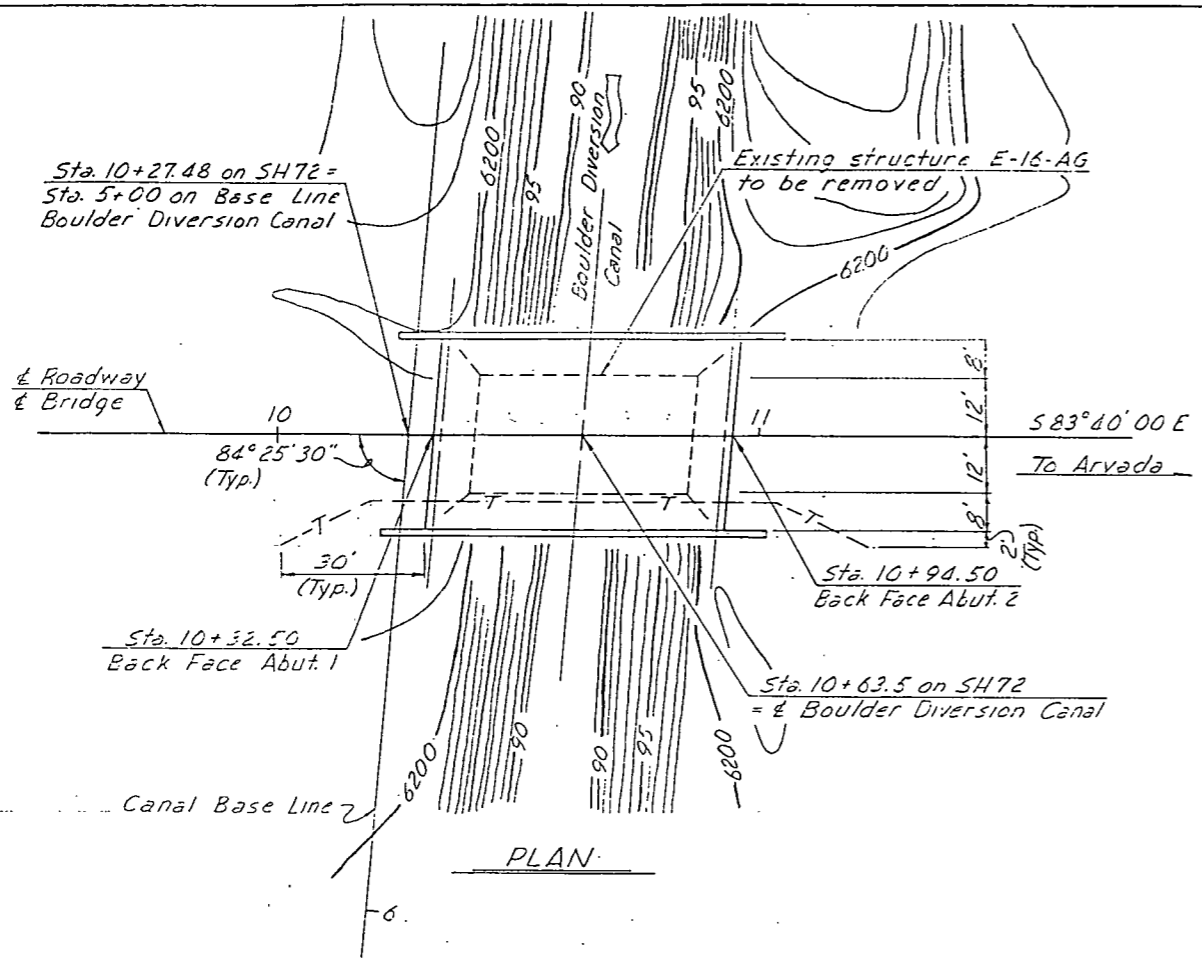
Station 10+32.50 to Station 10+94.50  
Near Arvada Sec 21 T2S R70W

DESIGNER J Stiles      STRUCTURE E-16-~~LV~~ LV  
DETAILER J Stiles      NUMBERS

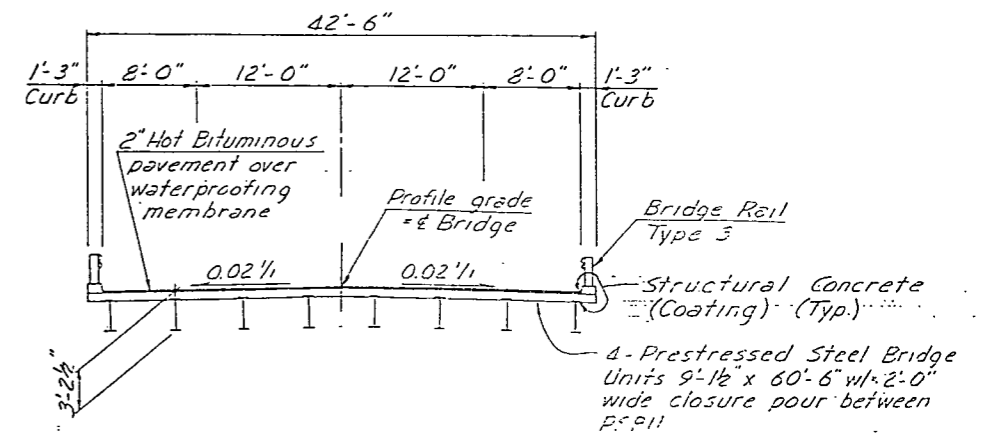
DRAWING NUMBER B.4-1 OF 11 DRAWINGS

AS CONSTRUCTED		FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
NO REVISIONS	REVISED	VOID	VII	COLO.	BRS-0072(14)	21
						35

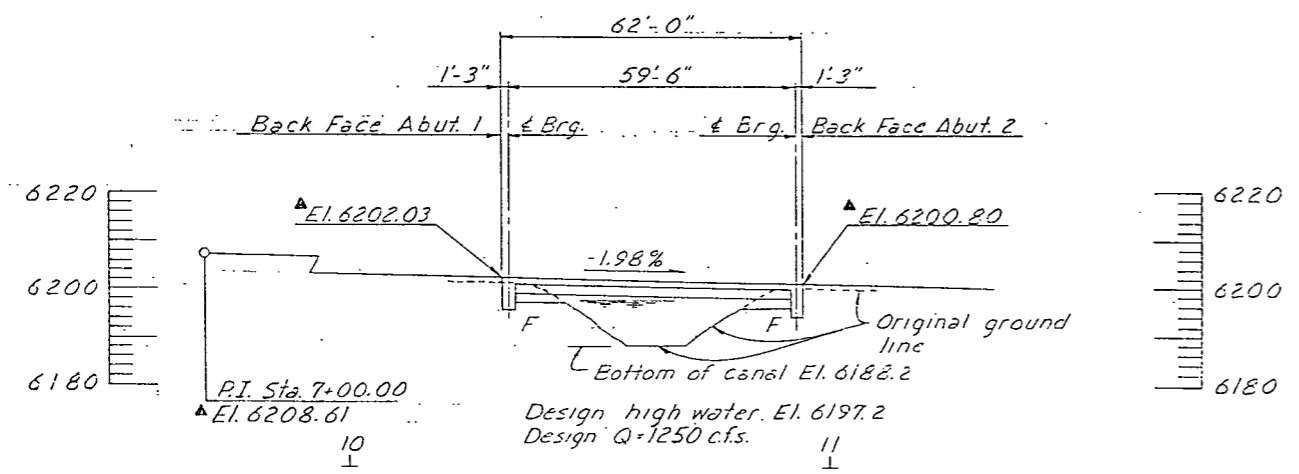
REVISIONS	



DESIGNED BY	INITIAL	DATE	CHECKED BY	DATE
CHECKED BY	QUANTITIES BY	DATE	CHECKED BY	DATE



TYPICAL SECTION



SECTION  
 Taken at E Bridge  
 ▲ Finished Roadway Elevations

Live Loading: HS20-44 and Interstate Alternate

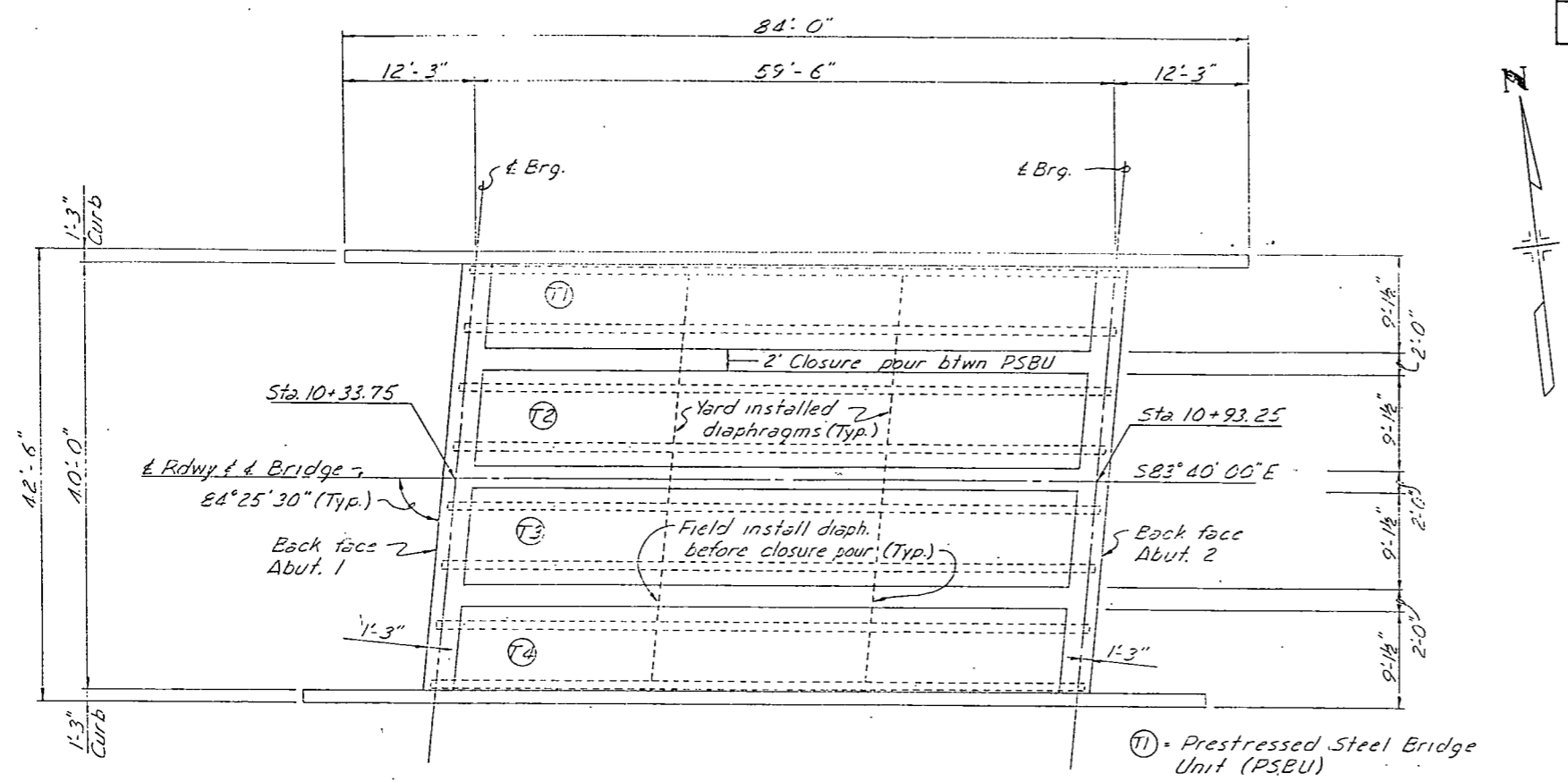
DIVISION OF HIGHWAYS		
GENERAL LAYOUT		
DESIGNER J. Stiles	STRUCTURE NUMBERS	E-16- <del>LV</del> LV
DETAILER J. Stiles	DRAWING NUMBER	B.A-2 OF 11 DRAWINGS



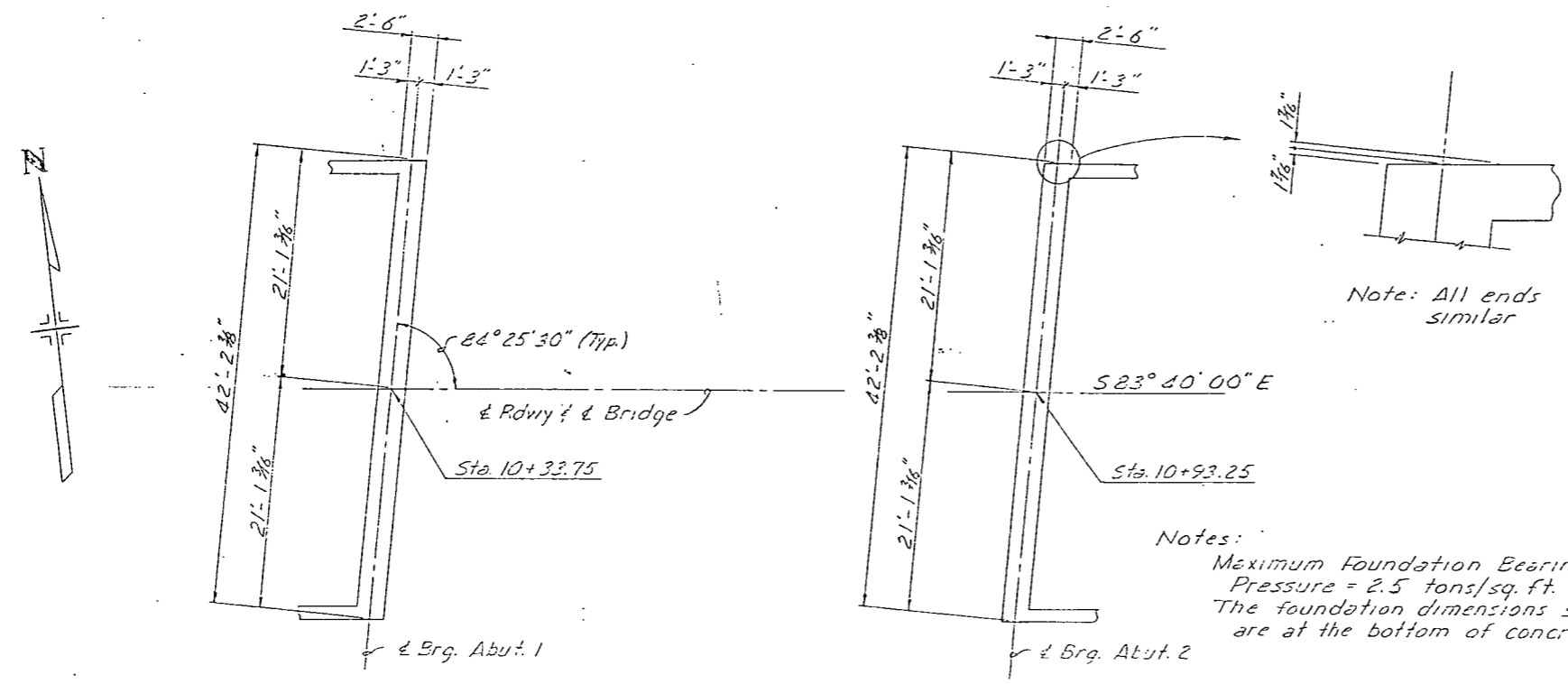
AS CONSTRUCTED		
NO REVISIONS	REVISED	VOID
		13-2-87

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VII	COLO.	BRS 0072 (14)	23	35

REVISIONS	



CONSTRUCTION LAYOUT



FOUNDATION LAYOUT

Notes:  
 Maximum Foundation Bearing Pressure = 2.5 tons/sq. ft.  
 The foundation dimensions shown are at the bottom of concrete.

DESIGNED BY	DATE	CHECKED BY
	12-85	
CHECKED BY	DATE	QUANTITIES BY
	1-86	
DETAILED BY	DATE	CHECKED BY

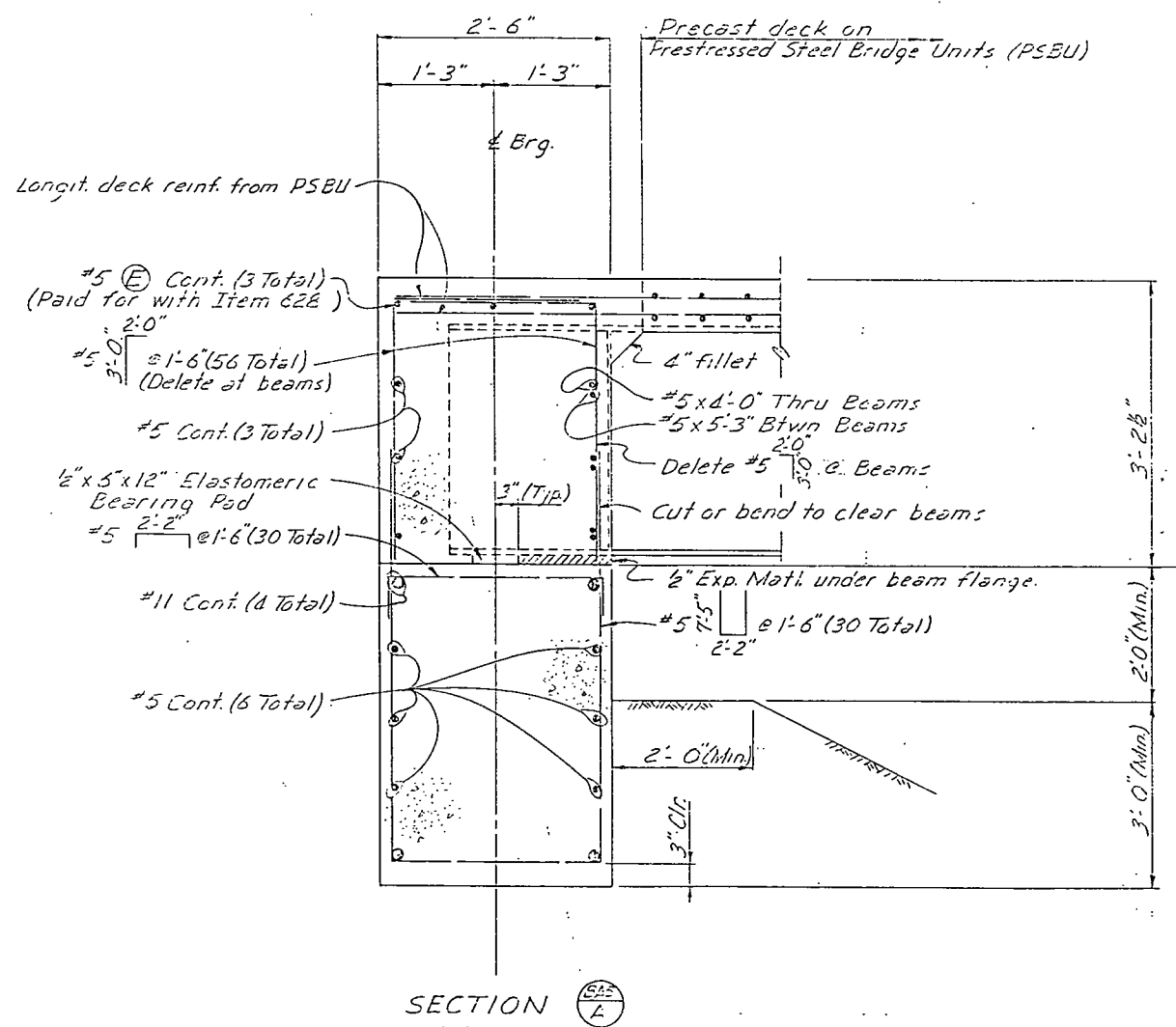
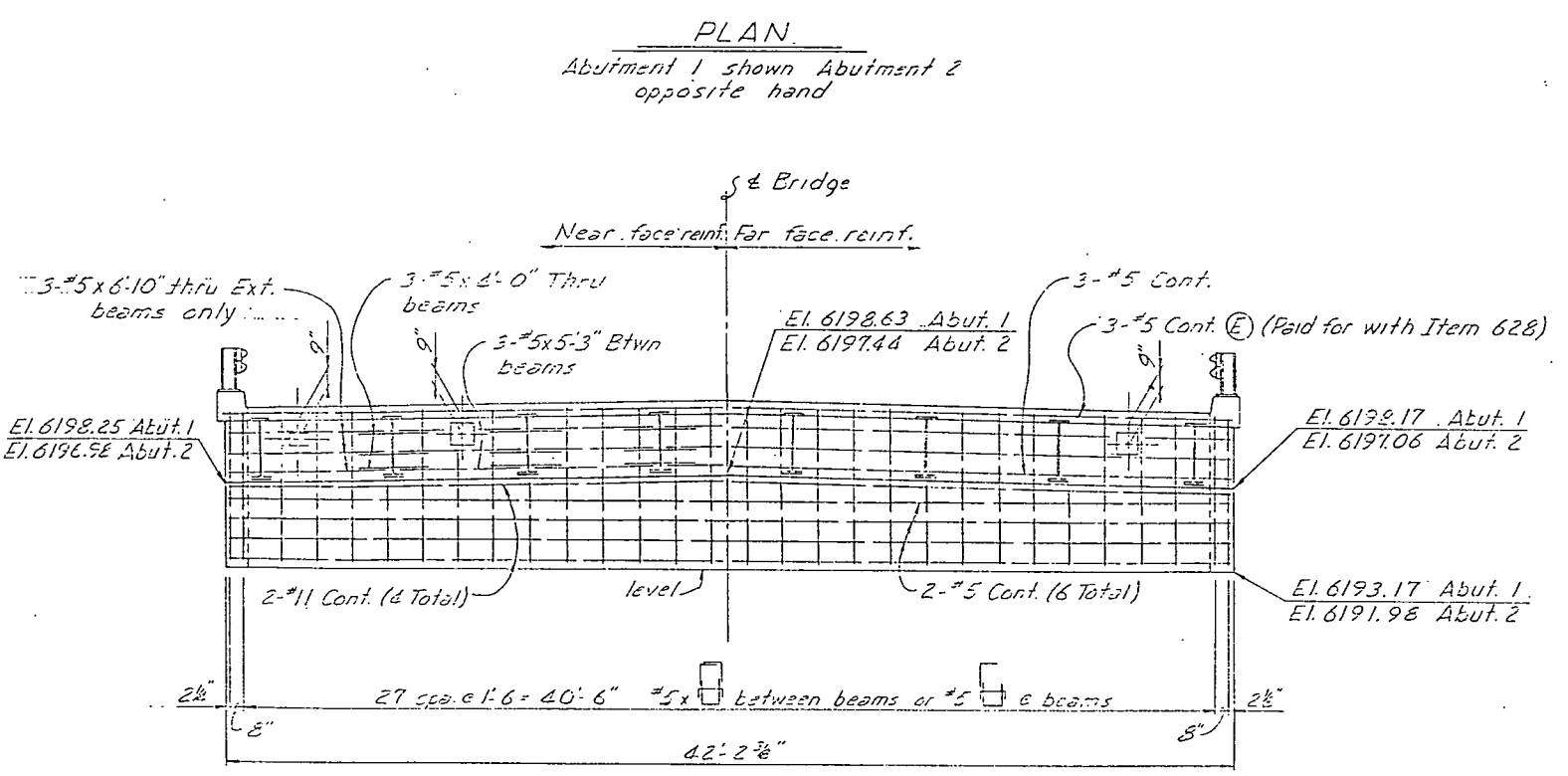
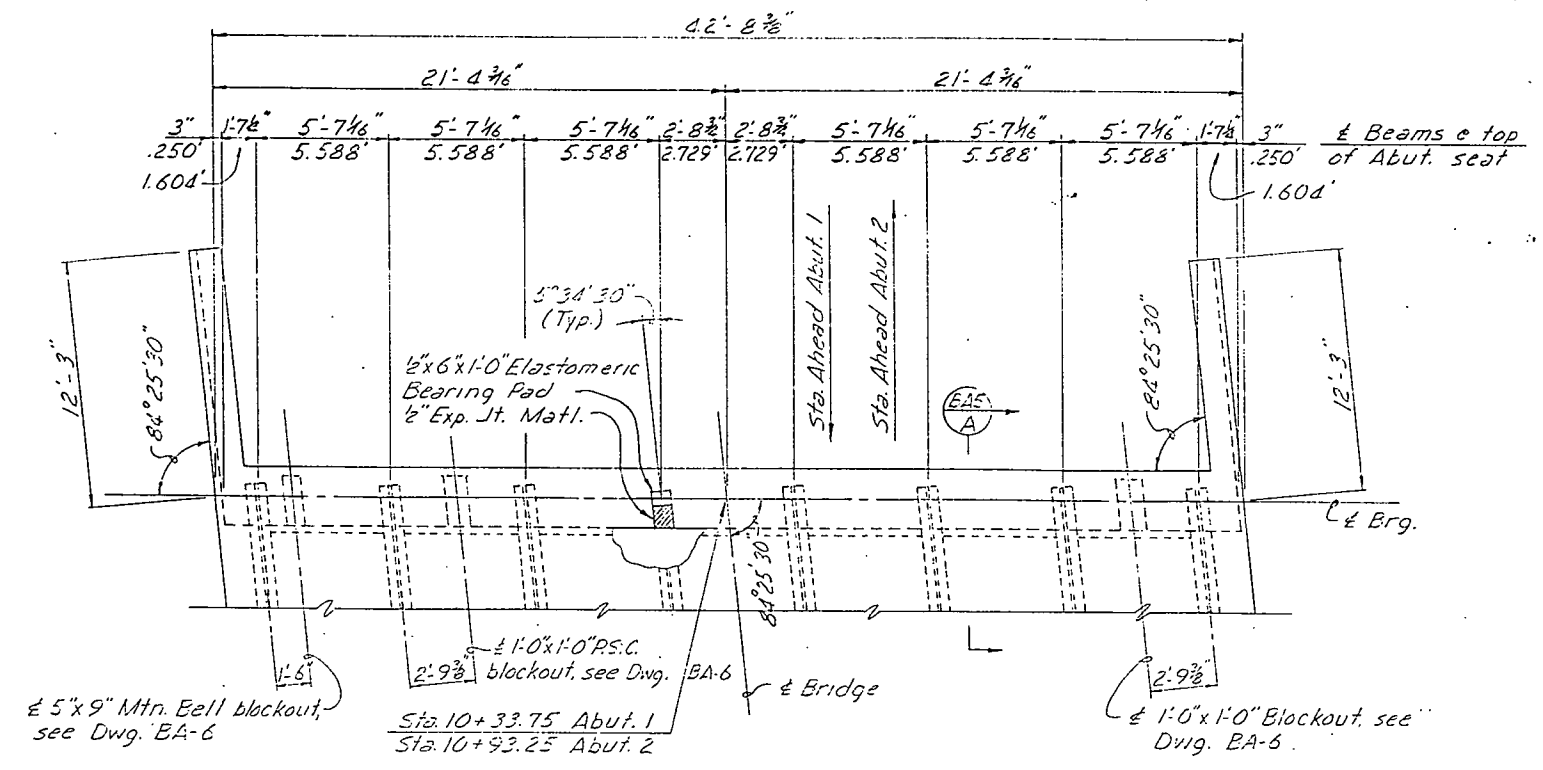
DIVISION OF HIGHWAYS		
CONSTRUCTION LAYOUT AND FOUNDATION LAYOUT		
DESIGNER	J Stiles	STRUCTURE NUMBERS
DETAILER	J Stiles	E-16- <del>10</del> LV
DRAWING NUMBER B4-d		OF 11 DRAWINGS

REVISION DATES	(PRELIMINARY STAGE ONLY)

AS CONSTRUCTED		
NO REVISIONS	REVISED	VOID
		2-2-83

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072 (14)	24	35

REVISIONS	



Notes:  
 Portion of Abutment and slab above bearing seat to be poured monolithically.  
 Contractor may use holes in beam stiffeners to form end diaphragm.  
 Quantities shown are for one Abutment. For Wingwall Details, see Dwg. BA-6.

DESIGNED BY	INITIAL	DATE	CHECKED BY
BY	MS	12-28-82	BY
CHECKED BY	MS	1-25-83	CHECKED BY
BY	MS	1-25-83	BY

DIVISION OF HIGHWAYS

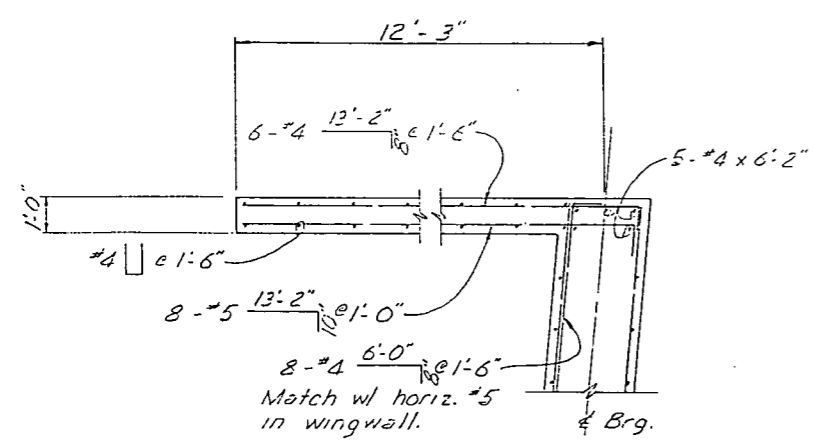
ABUTMENT DETAILS

DESIGNER J. Stiles	STRUCTURE NUMBERS	E-10- <del>LV</del>
DETAILER J. Stiles	DRAWING NUMBER B-4-5 OF 11 DRAWINGS	

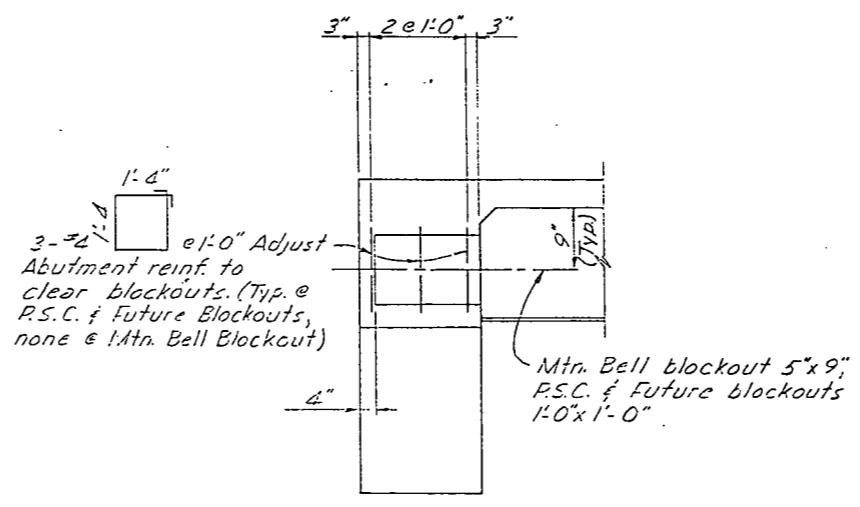
REVISION DATES	(PRELIMINARY STAGE ONLY)

AS CONSTRUCTED		FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
NO REVISIONS	REVISED	VIII	COLO.	SPS 0072(14)	25	35

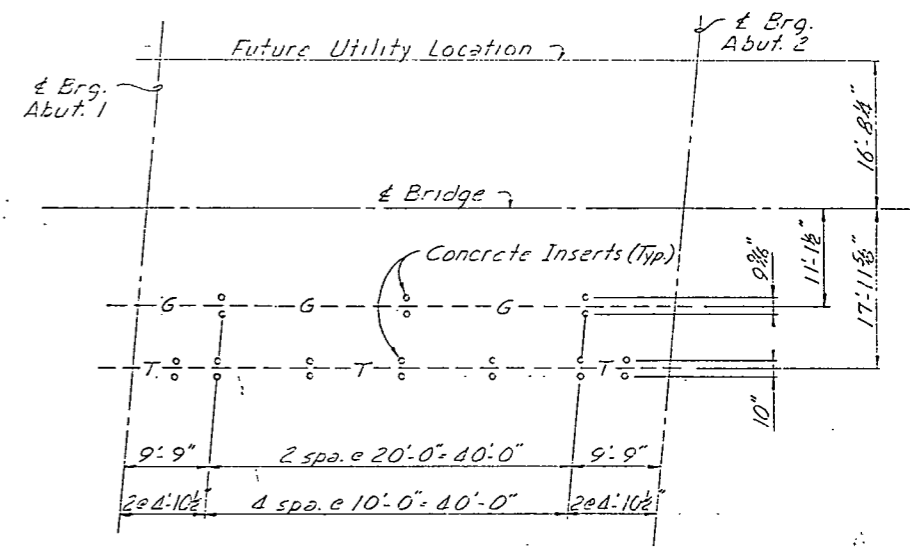
REVISIONS	



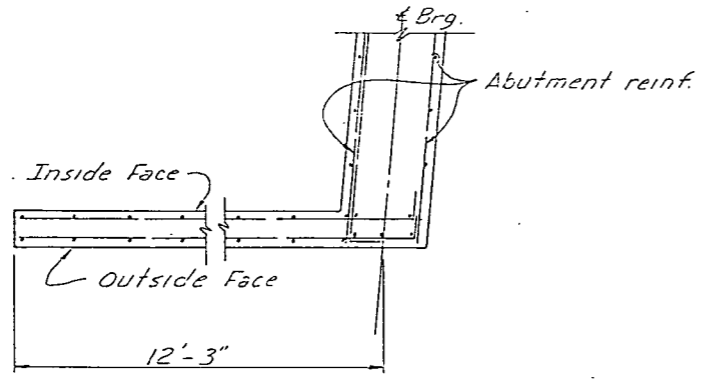
Reinforcing shown is typ each wingwall



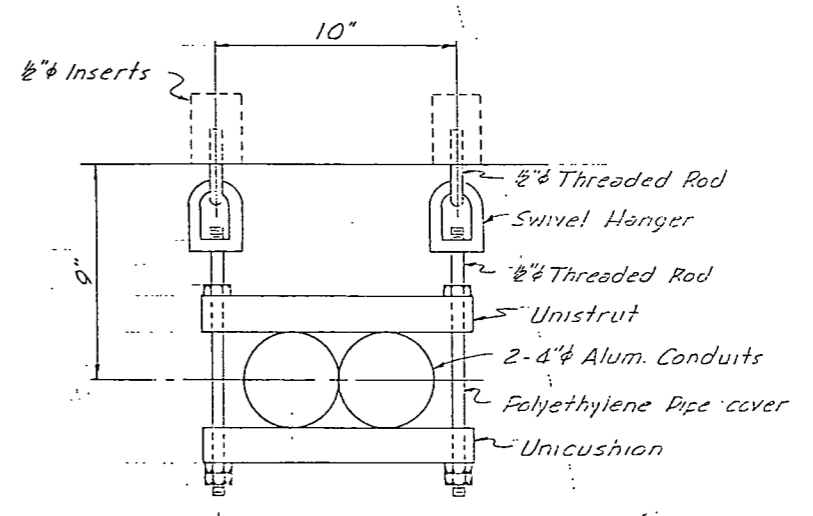
BLOCKOUT DETAIL



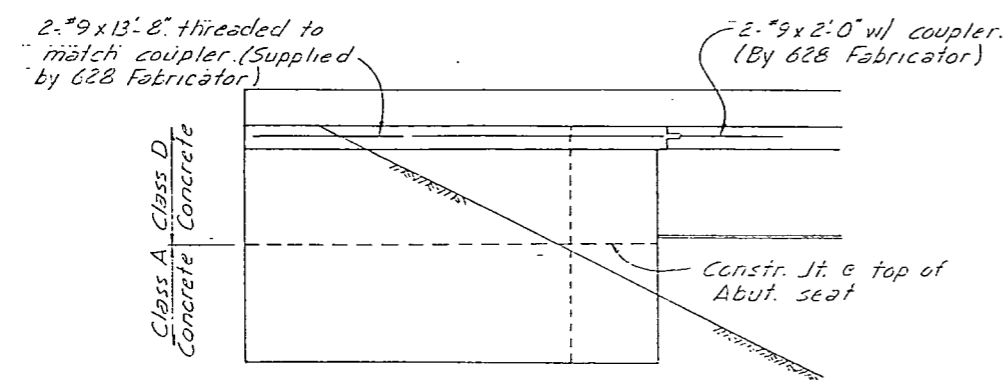
UTILITY LOCATIONS



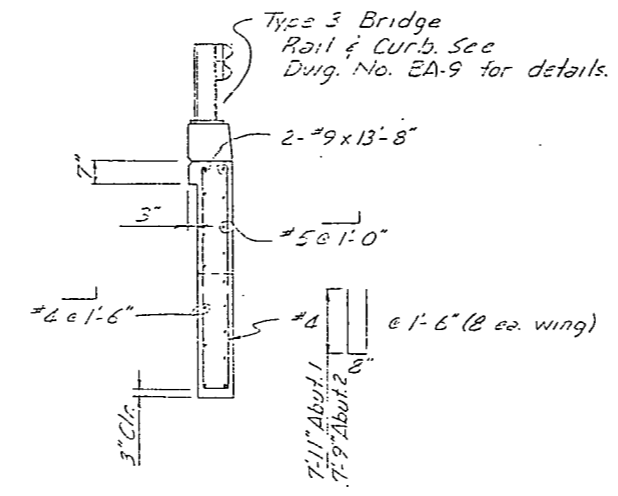
PLAN



TELEPHONE CONDUIT DETAIL



ELEVATION



TYPICAL SECTION

Note:  
 Concrete inserts for #4 threaded rods will be furnished by P.S.C., installation of concrete inserts will not be paid for separately but will be included in the work.  
 All materials for hangers and conduit will be supplied by Mountain Bell and installed under Item 613, Conduit (Install Only).

DIVISION OF HIGHWAYS		
WINGWALL & UTILITY DETAILS		
DESIGNER J. Stiles	STRUCTURE NUMBERS	E-16- <del>11</del> LV
DETAILER J. Stiles	DRAWING NUMBER BA-6 OF 11 DRAWINGS	

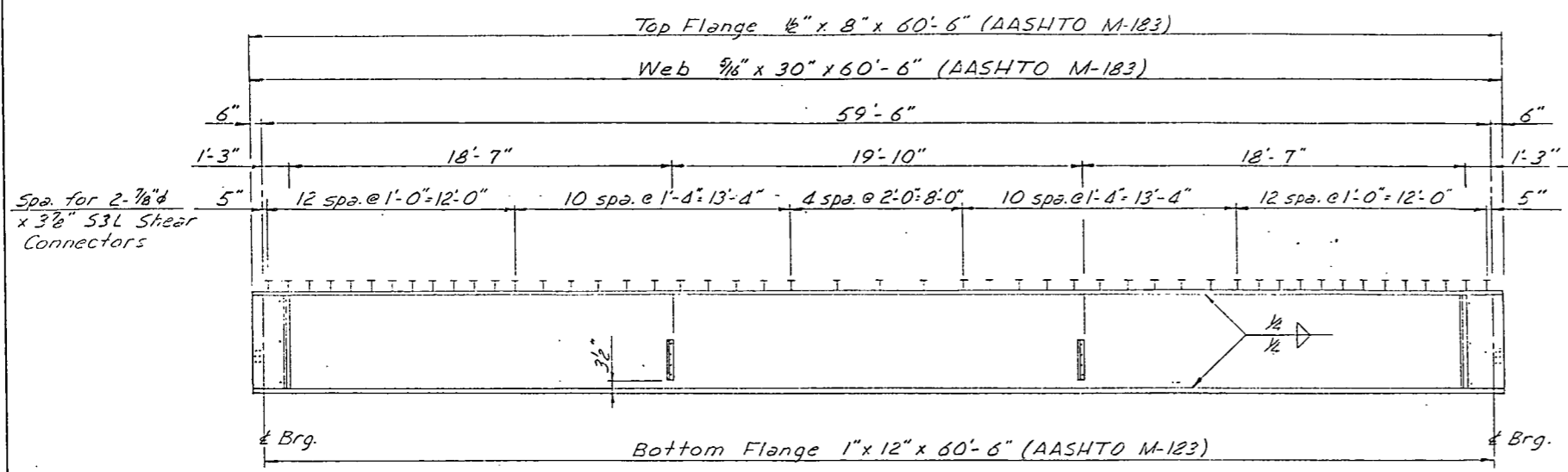
DESIGNED BY	DATE	CHECKED BY	DATE
CHECKED BY	1/25/85	QUANTITIES BY	1/25/85
DETAILER BY	1/25/85	CHECKED BY	1/25/85



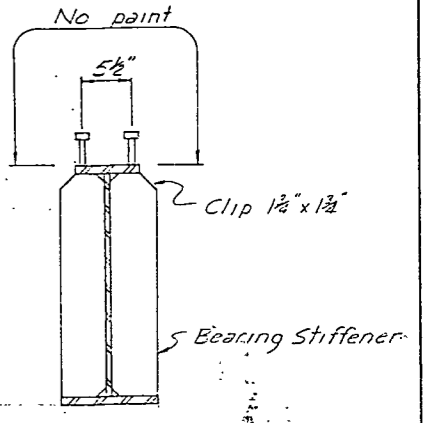
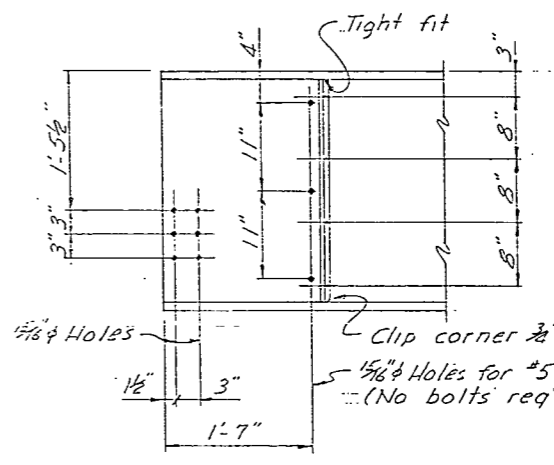
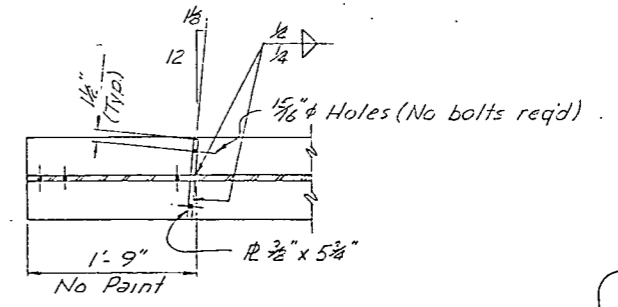
AS CONSTRUCTED		
NO REVISIONS	REVISED	VOID
		9-2-01

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS-0072(14)	27	35

REVISIONS	

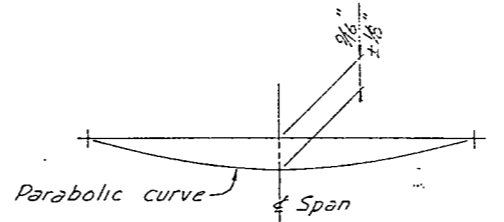
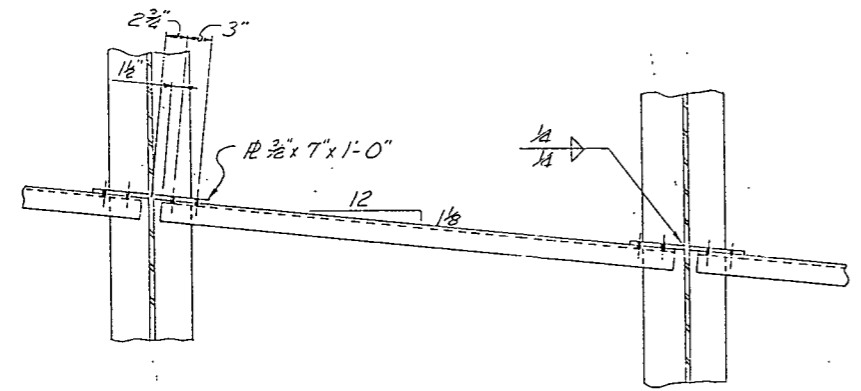


**BEAM DETAILS**  
 (8 Beams Req'd)



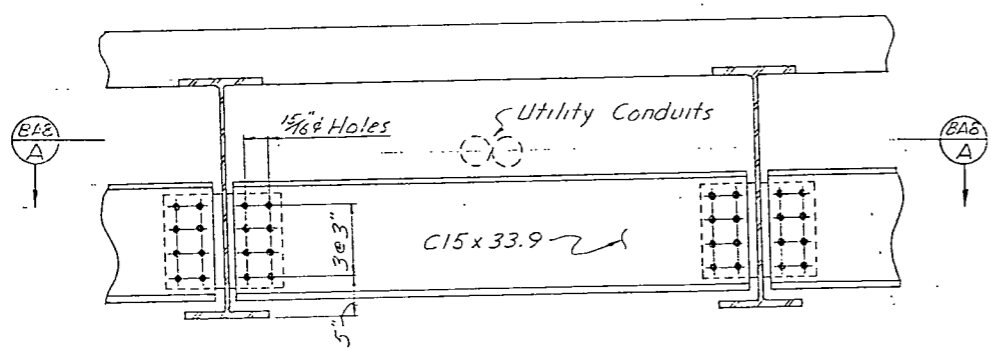
**BEAM END DETAILS**

**SHEAR CONNECTOR DETAIL**

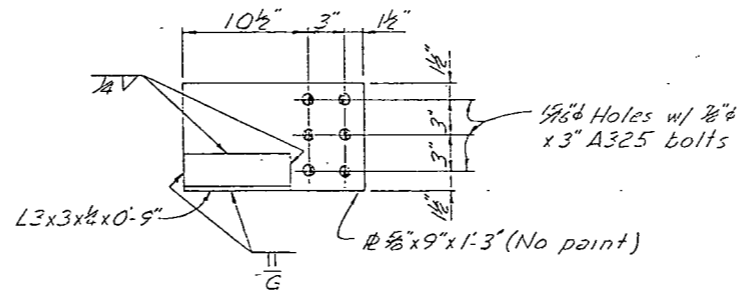


**CAMBER DIAGRAM**

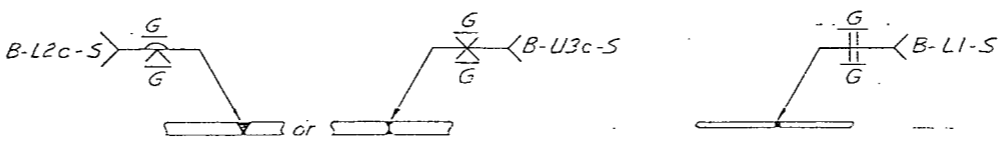
Note: Both flanges and web are to be considered subject to tensile stress for inspection criteria.



**DIAPHRAGM DETAILS**



**BEAM EXTENSION PLATES**  
 (8 Req'd as shown, 8 Req'd opp. hand)  
 (Removed by 628 Fabricator prior to shipment)



**FLANGE SPLICE**

**WEB SPLICE**

Welded flange and web splices are suggested joints only. Fabricator may suggest alternate procedures.

DIVISION OF HIGHWAYS	
STEEL DETAILS	
DESIGNER J Stiles	STRUCTURE E-16- <del>LV</del>
DETAILER J Stiles	NUMBERS
DRAWING NUMBER B-A-E OF 11 DRAWINGS	

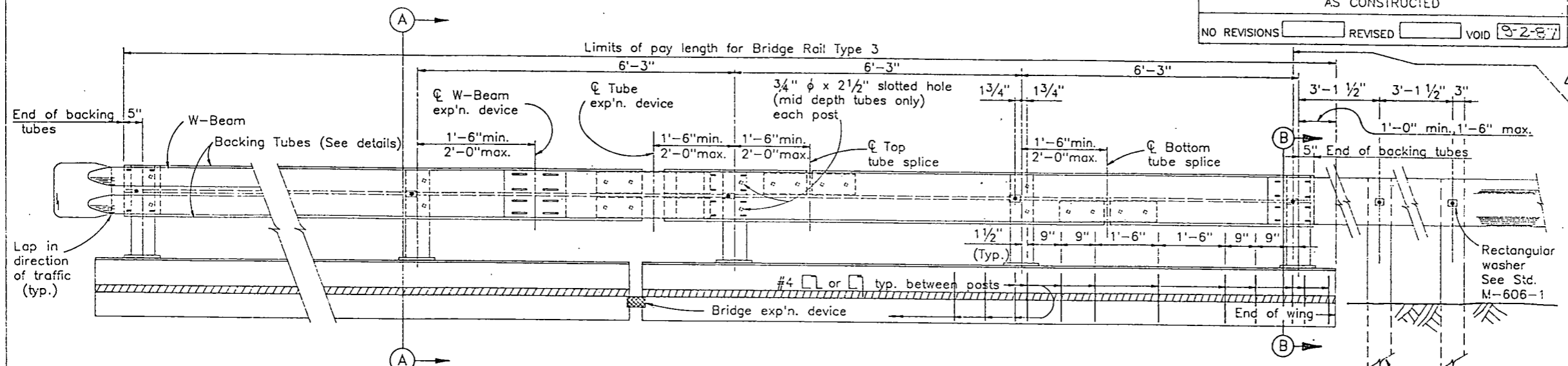
REVISION DATES	PRELIMINARY STAGE ONLY

DESIGNED BY	DATE	CHECKED BY	DATE
CHECKED BY	DATE	QUANTITIES BY	DATE

AS CONSTRUCTED	
NO REVISIONS	REVISED
VOID	9-2-87

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	SHEET TOTALS
VIII	COLO.	BRS 0072(14)	28	35

REVISIONS		
1-21-86	Curb bars placed in foam strips	JWS



Limits of pay length for Guard Rail Type 3  
 See Std. M-606-1

**BRIDGE STANDARD 12 (SPECIAL THIS PROJ.)**

**NOTES**  
 ALL TUBES SHALL BE FABRICATED FROM ASTM A-500 GRADE B. ALL POSTS SHALL BE FABRICATED FROM ASTM A-36 STEEL. ALL SPLICES, AND EXPANSION DEVICES FOR TUBES SHALL BE FABRICATED FROM ASTM A-572, GRADE 50. THE ABOVE MATERIAL, W-BEAM, AND ALL ANCHOR BOLTS AND MISCELLANEOUS BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE SPECIFICATIONS.

POST ANCHOR, ENCASED IN CONCRETE, SHALL BE ASTM A-36 OR AASHTO M-169 STEEL, AS NOTED, AND NEED NOT BE GALVANIZED.

POSTS, POST ANCHORS, BASE PLATES, ANCHOR BOLTS, MISCELLANEOUS BOLTS, NUTS, WASHERS, TUBES, TUBE EXPANSION DEVICES, TUBE SPLICES, END PLATES, W-BEAM, W-BEAM EXPANSION DEVICES, CURB CONCRETE (CLASS D), AND CURB REINFORCING STEEL SHALL BE INCLUDED IN ITEM 606 - BRIDGE RAIL TYPE 3.

THE BACKING TUBES SHALL BE SHOP BENT OR FABRICATED TO FIT HORIZONTAL CURVE WHEN THE RADIUS IS LESS THAN 1500 FEET.

TUBES SHALL BE CONTINUOUS OVER NOT LESS THAN TWO POSTS.

THE CENTERLINE OF THE POSTS AT THE BRIDGE EXPANSION DEVICE SHALL BE A MINIMUM OF 3'-0" FROM THE CENTERLINE OF THE BRIDGE EXPANSION DEVICES MEASURED ALONG THE CENTERLINE OF POSTS.

POSTS SHALL BE PERPENDICULAR TO THE GRADE OF DECK.

ONE OR MORE 6'-3" POST SPACINGS MAY BE REDUCED (5'-0" MIN.) IN ORDER TO MAINTAIN DIMENSIONS FROM THE END OF WINGS AND EXPANSION JOINTS.

CONTRACTOR SHALL PROVIDE TERMINAL SECTION (FLARED) WHEN NO APPROACH GUARD RAIL IS USED WITH THE COST INCLUDED IN ITEM 606 - BRIDGE RAIL, TYPE 3. FOR DETAILS SEE STD. M-606-1.

FOR ADDITIONAL DETAILS, SEE STD. M-606-1.

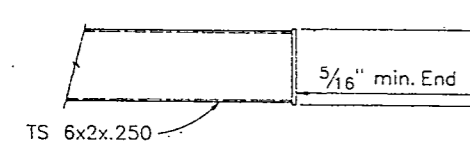
OPTIONAL DRAIN HOLE FOR GALVANIZING MAY BE DRILLED, PUNCHED, OR CLIPPED LEAVING SMOOTH SURFACES AND TRANSITIONS. NO FLAME CUTTING OR AIR CARBON ARC GOUGING IS ALLOWED.

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS SPECIFIED IN THE REVISION OF SECTION 105 OF THE STANDARD SPECIFICATIONS. **CONTRACTOR TO FURNISH PSBU MANUFACTURER WITH RAIL POST SPACING PRIOR TO SUBMITTAL OF PSBU SHOP DRAWINGS.**

**STRUCTURAL STEEL:**  
 AASHTO M-183(ASTM A-36)  $f_s = 20,000$  psi  
 AASHTO M-223(ASTM A-572)  $f_s = 37,500$  psi  
 GRADE 50  
 COLD FORMED ASTM A-500 -  $f_s = 27,600$  psi  
 GRADE B

**RAIL PANEL @ TERMINAL SECTION**

(See roadway plans for ends requiring terminal section.)



**END DETAIL - BACKING TUBES**

**RAIL PANEL @ EXP'N. DEVICE**

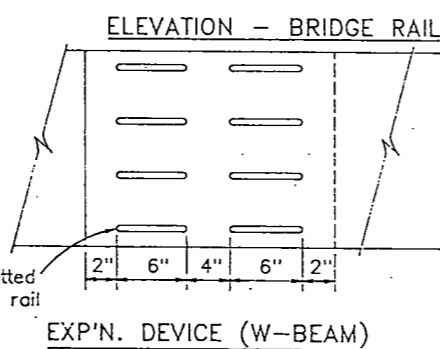
Flush on roadway side



**ELEVATION - BRIDGE RAIL**

1/16" Plastic sheet, full length & width of expansion joint.  
 5/8"  $\phi$  splice bolts, nuts and flat washers. Snug, do not tighten. Peen thread.

**EXP'N. DEVICE (W-BEAM)**

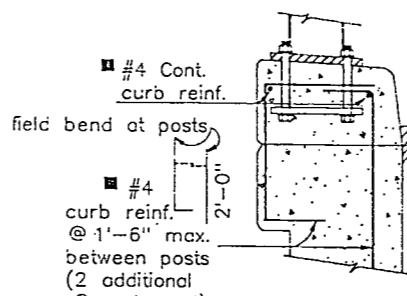


**ANCHOR DETAIL**

▲ A.A.S.H.T.O. M169 Steel may be used in lieu of A.S.T.M. A36 Steel.

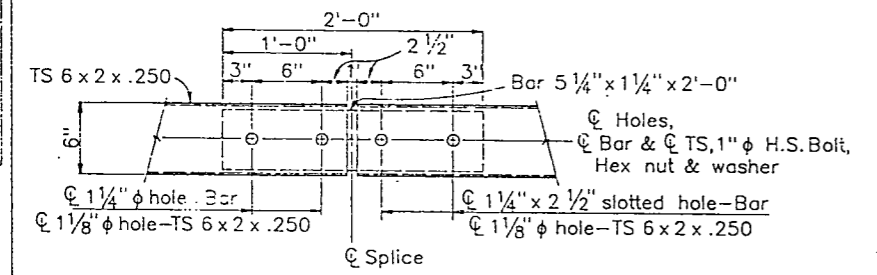
**RAIL PANEL @ END OF WING**

Posts beyond end of wing or bridge installed in ground shall be included in the price of Guard Rail Type 3.



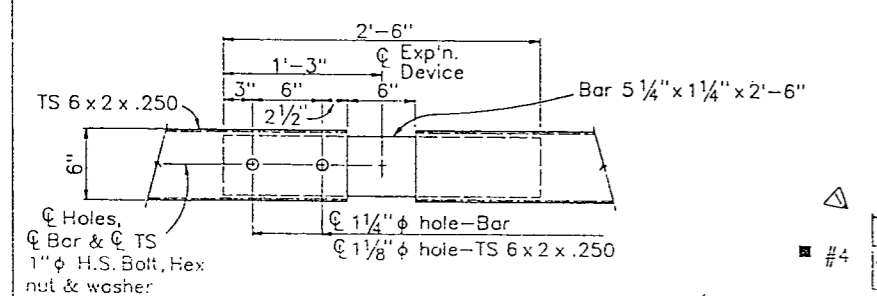
**SECTION B**

▲ Epoxy Coated. Only when Item 602, Reinforcing Steel (Epoxy Coated) is shown on the Summary of Quantities.



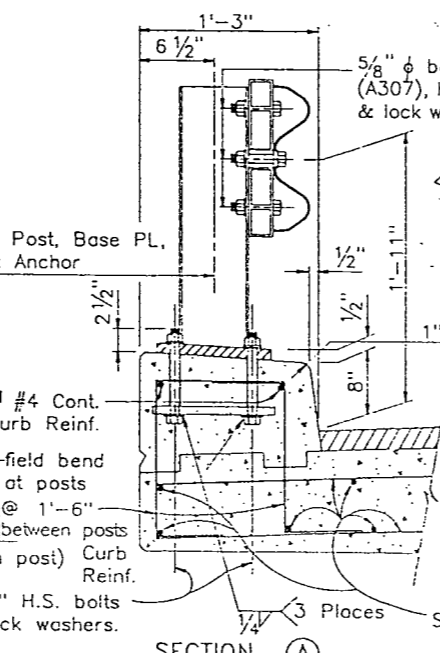
**TUBE SPLICE**

Top and bottom tube splices shall not be located together but staggered as shown.



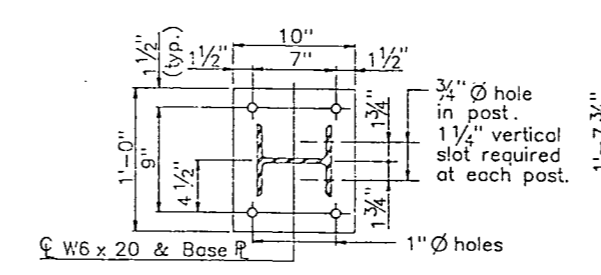
**BACKING TUBE @ EXP'N DEVICE**

Req'd. near all bridge exp'n. joints as shown on the plans.



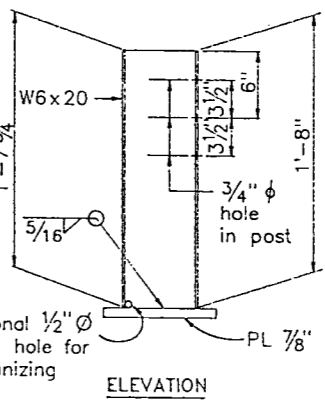
**SECTION A**

2 - 7/8"  $\phi$  x 0'-9" H.S. bolts hex. nuts & lock washers. (Proj. 2 1/2")



**PLAN**

▲ 4" CURB REINFORCING WILL BE PLACED IN BRIDGE DECK IN FOAM STRIPS (1/2" x 3/2"). EMBEDDED FOAM REMOVED BY STEEL TEE, FIELD BENDS BY CONTRACTOR.



**ELEVATION**

**POST DETAIL**

Optional 1/2"  $\phi$  drain hole for galvanizing

**INFORMATION ONLY**

Description	Unit	Per Lin. Ft.
Structural Steel (Galvanized)	Lb.	45.4
Concrete Class D	Cu.Yd.	0.04
Reinforcing Steel	Lb.	4.8
Bridge Rail Type 3 - W Beam	Lin.Ft.	1.0

Note: At each expansion device add 235 lb. of Structural Steel (Galvanized)

DESIGNED BY	DATE	CHECKED BY	DATE
JWS	7/84	JWS	7/84
DETAILED BY		CHECKED BY	
JWS		JWS	

NO NUMBER 09/20/85 17:42:06 \_DUAL\_ (DRAW, STDS, MSTD) BRSTD12

REVISION DATES	IPPEL (MINOR STAGE ONLY)
5/85 6/85 8/85	

**DIVISION OF HIGHWAYS**

**BRIDGE RAIL TYPE 3**

DESIGNER	J. Stiles	STRUCTURE NUMBER	E-16-15-LV
DETAILER	J. Stiles		
DRAWING NUMBER BA - 9 OF 11		DRAWN 25	

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
Longitudinal Line: Left Outside Deck			
End Wing	10+25.57	-21.25	6201.62
BF Abut. 1	10+34.57	-21.25	6201.39
± Brg	10+35.82	-21.25	6201.37
F-1	10+41.77	-21.25	6201.25
F-2	10+47.72	-21.25	6201.13
F-3	10+53.67	-21.25	6201.02
F-4	10+59.62	-21.25	6200.90
F-5	10+65.57	-21.25	6200.78
F-6	10+71.52	-21.25	6200.66
F-7	10+77.47	-21.25	6200.54
F-8	10+83.42	-21.25	6200.43
F-9	10+89.37	-21.25	6200.31
± Brg	10+95.32	-21.25	6200.19
BF Abut. 2	10+96.57	-21.25	6200.17
End Wing	11+05.57	-21.25	6199.95

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
Longitudinal Line: Left Face Curb			
BF Abut. 1	10+34.45	-20.00	6201.42
± Brg	10+35.70	-20.00	6201.40
F-1	10+41.65	-20.00	6201.28
F-2	10+47.60	-20.00	6201.16
F-3	10+53.55	-20.00	6201.05
F-4	10+59.50	-20.00	6200.93
F-5	10+65.45	-20.00	6200.81
F-6	10+71.40	-20.00	6200.69
F-7	10+77.35	-20.00	6200.58
F-8	10+83.30	-20.00	6200.46
F-9	10+89.25	-20.00	6200.34
± Brg	10+95.20	-20.00	6200.22
BF Abut. 2	10+96.45	-20.00	6200.19

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
Longitudinal Line: ± Bridge			
BF Abut. 1	10+32.50	0.00	6201.86
± Brg	10+33.75	0.00	6201.84
F-1	10+39.70	0.00	6201.72
F-2	10+45.65	0.00	6201.60
F-3	10+51.60	0.00	6201.49
F-4	10+57.55	0.00	6201.37
F-5	10+63.50	0.00	6201.25
F-6	10+69.45	0.00	6201.13
F-7	10+75.40	0.00	6201.01
F-8	10+81.35	0.00	6200.90
F-9	10+87.30	0.00	6200.78
± Brg	10+93.25	0.00	6200.65
BF Abut. 2	10+94.50	0.00	6200.63

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
Longitudinal Line: Right Face Curb			
BF Abut. 1	10+30.55	20.00	6201.50
± Brg	10+31.80	20.00	6201.47
F-1	10+37.75	20.00	6201.35
F-2	10+43.70	20.00	6201.23
F-3	10+49.65	20.00	6201.12
F-4	10+55.60	20.00	6201.00
F-5	10+61.55	20.00	6200.88
F-6	10+67.50	20.00	6200.76
F-7	10+73.45	20.00	6200.65
F-8	10+79.40	20.00	6200.53
F-9	10+85.35	20.00	6200.41
± Brg	10+91.30	20.00	6200.30
BF Abut. 2	10+92.55	20.00	6200.27

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION
Longitudinal Line: Right Outside Deck			
End Wing	10+21.43	21.25	6201.69
BF Abut. 1	10+30.43	21.25	6201.48
± Brg	10+31.68	21.25	6201.45
F-1	10+37.63	21.25	6201.33
F-2	10+43.58	21.25	6201.22
F-3	10+49.53	21.25	6201.10
F-4	10+55.48	21.25	6200.98
F-5	10+61.43	21.25	6200.86
F-6	10+67.38	21.25	6200.74
F-7	10+73.33	21.25	6200.63
F-8	10+79.28	21.25	6200.51
F-9	10+85.23	21.25	6200.39
± Brg	10+91.18	21.25	6200.27
BF Abut. 2	10+92.43	21.25	6200.25
End Wing	11+01.43	21.25	6200.03

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	ERS 0072 (14)	29	35

REVISIONS	

AS CONSTRUCTED	
NO REVISIONS	REVISED
VOID	9-2-87

BRIDGE STANDARD 2

BENT LINE DESCRIPTION OR FRACTIONAL POINT DESIGNATION	STATION	OFFSET	ELEVATION

NOTE: ELEVATIONS ARE AT TOP OF CONCRETE DECK 0.17 FEET BELOW FINISHED GRADE.

<b>DIVISION OF HIGHWAYS</b>	
BRIDGE DECK ELEVATIONS	
Designer <i>J. Stiles</i>	Structure Numbers <i>E-16-EE-LV</i>
Detailer <i>J. Stiles</i>	
Drawing Number <i>B A-10</i>	of <i>11</i> Drawings

AS CONSTRUCTED  
 NO REVISIONS  REVISED  VOID  9-2-87

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	BRS 0072 (14)	30	35

# ROADWAY APPROACHES

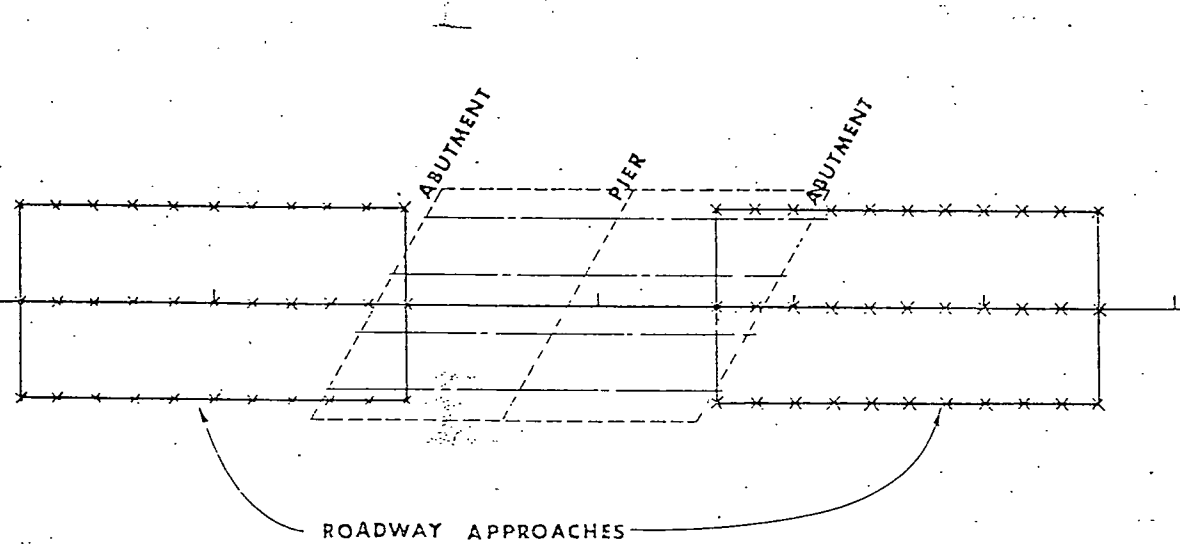
ELEVATIONS ARE AT FINISHED GRADE

REVISIONS		

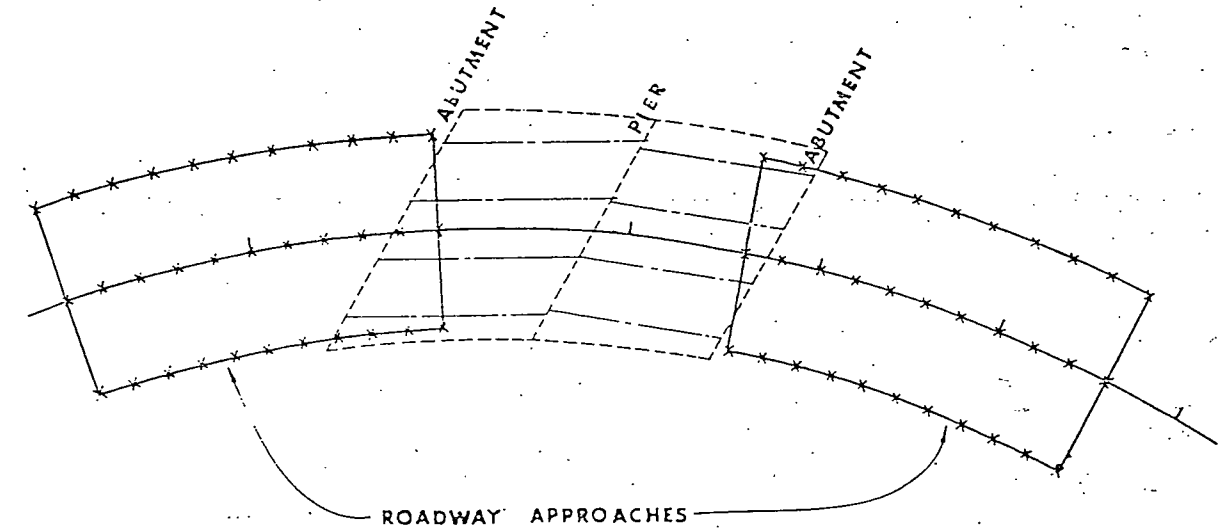
BRIDGE STANDARD 1

Station	Offsets				
	-20.00	-12.00	0.00	12.00	20.00
8+90.0	6204.45	6204.61	6204.85	6204.61	6204.45
9+00.0	6204.25	6204.41	6204.65	6204.41	6204.25
9+10.0	6204.06	6204.22	6204.46	6204.22	6204.06
9+20.0	6203.86	6204.02	6204.26	6204.02	6203.86
9+30.0	6203.66	6203.82	6204.06	6203.82	6203.66
9+40.0	6203.46	6203.62	6203.86	6203.62	6203.46
9+50.0	6203.26	6203.42	6203.66	6203.42	6203.26
9+60.0	6203.07	6203.23	6203.47	6203.23	6203.07
9+70.0	6202.87	6203.03	6203.27	6203.03	6202.87
9+80.0	6202.67	6202.83	6203.07	6202.83	6202.67
9+90.0	6202.47	6202.63	6202.87	6202.63	6202.47
10+00.0	6202.27	6202.43	6202.67	6202.43	6202.27
10+10.0	6202.08	6202.24	6202.48	6202.24	6202.08
10+20.0	6201.88	6202.04	6202.28	6202.04	6201.88
10+30.0	6201.68	6201.84	6202.08	6201.84	6201.68
10+40.0	6201.48	6201.64	6201.88	6201.64	6201.48

Station	Offsets				
	-20.00	-12.00	0.00	12.00	20.00
10+90.0	6200.49	6200.65	6200.89	6200.65	6200.49
11+00.0	6200.29	6200.45	6200.69	6200.45	6200.29
11+10.0	6200.10	6200.26	6200.50	6200.26	6200.10
11+20.0	6199.90	6200.06	6200.30	6200.06	6199.90
11+30.0	6199.70	6199.86	6200.10	6199.86	6199.70
11+40.0	6199.50	6199.66	6199.90	6199.66	6199.50
11+50.0	6199.30	6199.46	6199.70	6199.46	6199.30
11+60.0	6199.11	6199.27	6199.51	6199.27	6199.11
11+70.0	6198.91	6199.07	6199.31	6199.07	6198.91
11+80.0	6198.71	6198.87	6199.11	6198.87	6198.71
11+90.0	6198.51	6198.67	6198.91	6198.67	6198.51
12+00.0	6198.31	6198.47	6198.71	6198.47	6198.31
12+10.0	6198.12	6198.28	6198.52	6198.28	6198.12
12+20.0	6197.92	6198.08	6198.32	6198.08	6197.92
12+30.0	6197.72	6197.88	6198.12	6197.88	6197.72
12+40.0	6197.52	6197.68	6197.92	6197.68	6197.52



\* TANGENT ALIGNMENT



\* HORIZONTAL CURVE ALIGNMENT

\* THESE DRAWINGS ARE SCHEMATICS ONLY AND DO NOT NECESSARILY REFLECT THE ACTUAL BRIDGE LAYOUT.

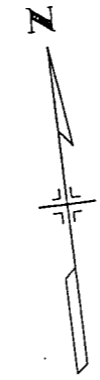
DIVISION OF HIGHWAYS			
ROADWAY APPROACHES			
Designer	J. Stiles	Structure	E-16-EB-LV
Detailer	J. Stiles	Numbers	
Drawing Number BA-11		of	11 Drawings



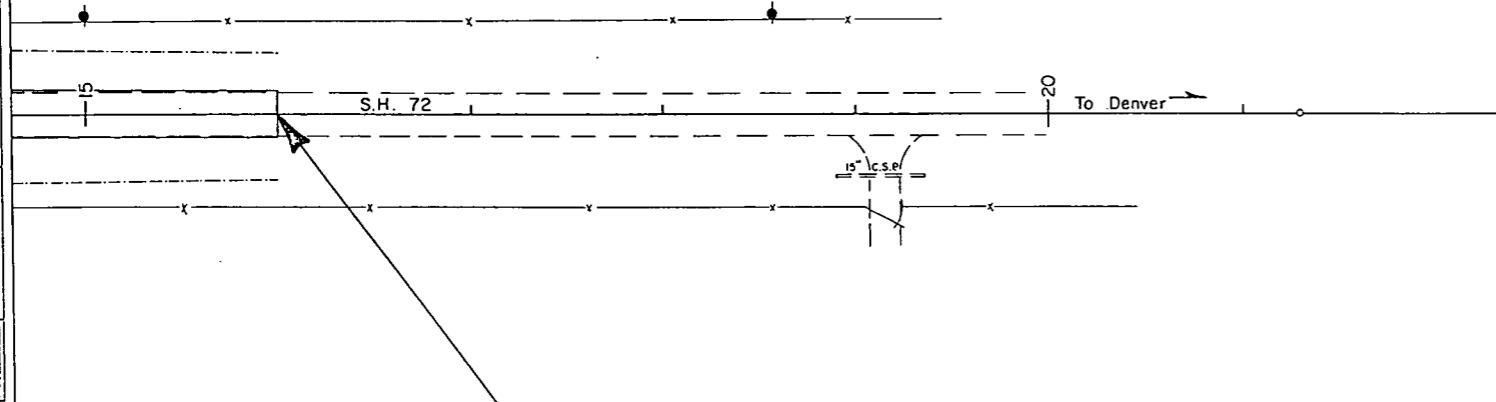
AS CONSTRUCTED		
NO REVISIONS	9-2-87	VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS-0072(14)	32	35

UTILITY OWNERSHIP  
 Public Service Company - Elect.  
 Mountain Bell



PLAN	DATE
SURVEYED	
ALIGNED	
CHECKED	
BY	
NOTE BOOK	
NO.	



STA. 16+00 END PROJ. BRS 0072(14)  
 STA. 594+0905 PROJ. AA-13-  
 MP 10.185

BM 6196.50  
 BRASS DISC SET IN NW CORNER  
 OF FLUME (APPROXIMATE 27' RT. OF  
 STA. 2+50 CANAL BASE LINE)

PROF. ILE	DATE
SURVEYED	
ALIGNED	
CHECKED	
BY	
NOTE BOOK	
NO.	





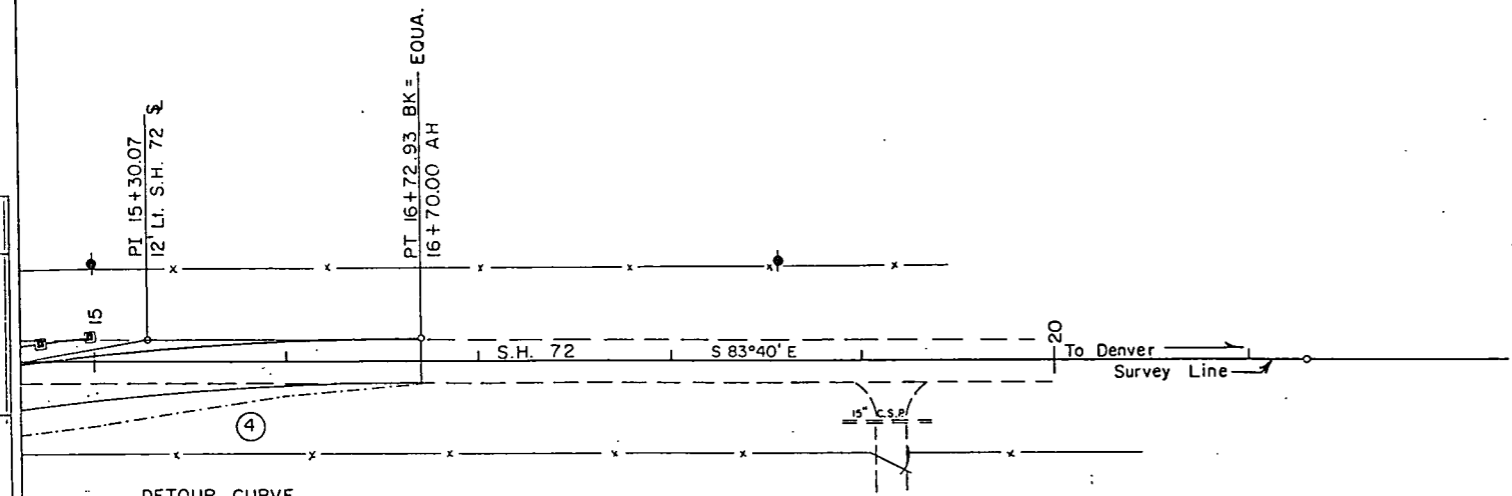
AS CONSTRUCTED  
 NO REVISIONS 9-2-87 REVISED  VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072(14)	34	35

DETOUR PLAN

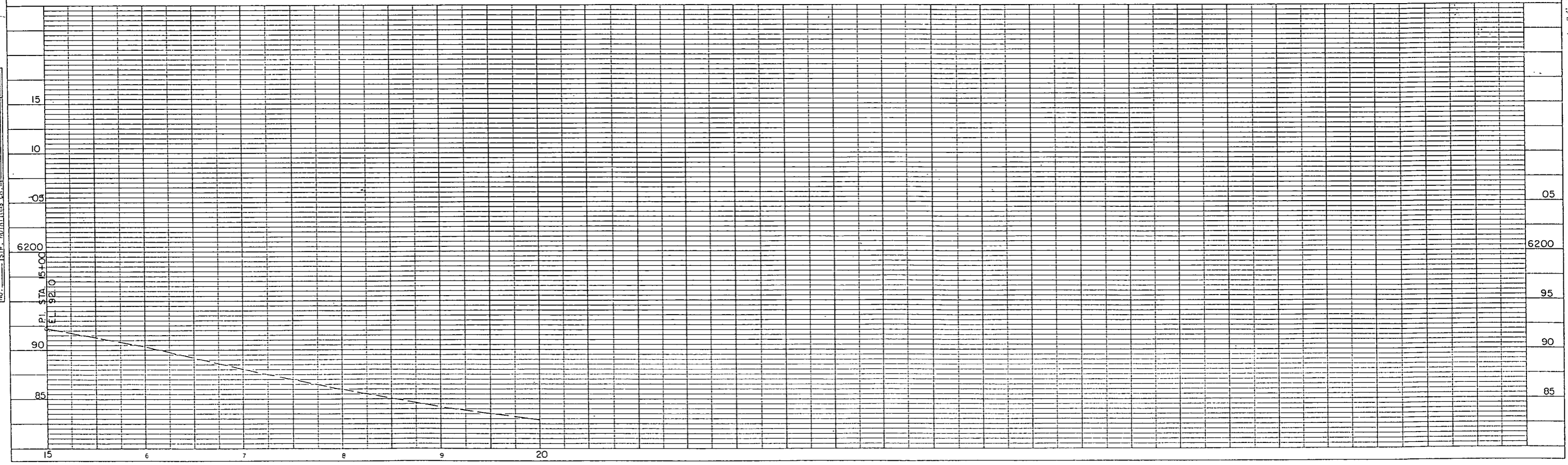


PLN	BY	DATE
SURVEYED		
PLOTTED		
ALIGNMENT CHECKED		
RT. OF WAY CHECKED		
NO.		



DETOUR CURVE  
 ④  
 $\Delta = 10^{\circ}01'34.80''$   
 $D = 3^{\circ}30'00''$   
 $T = 143.60'$   
 $L = 286.467'$   
 $R = 1637.02'$   
 $MDS > 45MPH$

PROF	BY	DATE
SURVEYED		
PLOTTED		
ALIGNMENT CHECKED		
VERT. CURV. CHECKED		
NO.		



CANAL PLAN AND PROFILE

AS CONSTRUCTED  
 NO REVISIONS 9-2-87 REVISED  VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	BRS 0072(14)	35	35

PLAN	BY	DATE
NO. _____	_____	_____
NO. _____	_____	_____
NO. _____	_____	_____
NO. _____	_____	_____
NO. _____	_____	_____

PROFILE	BY	DATE
NO. _____	_____	_____
NO. _____	_____	_____
NO. _____	_____	_____
NO. _____	_____	_____
NO. _____	_____	_____

