STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO

R.O.W., UTILITIES AND P.E. OBLIGATED TO PROJ. NO. U034-1 (11)

FEDERAL HIGHWAY REGION NO.	STATE	PROJECT NO	SHEET NO
VIII	COLORADO	U 034-1 (12)	1

(R-1) 12-13-72 — C.K.M., Date & As Constr. Infor.

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

PLAN AND PROFILE OF ~~PROPOSED~~

FEDERAL AID PROJECT NO. U 034-1 (12)

STATE HIGHWAY NO. 34

WELD COUNTY

CONVENTIONAL SIGNS

CENTER LINE (PLAN SHEET)
COUNTY LINE
TOWNSHIP OR RANGE LINE
LAND LINES — SECTION LINE, ¼ SECTION LINE, ⅛ SECTION LINE
CITY LIMITS
RAILROAD — PLAN SHEET, TITLE SHEET
BARBED WIRE FENCE
WOVEN WIRE - COMBINATION FENCE — TO BE REMOVED
TELE & TELEG LINE
POWER LINE — RELOCATED
PRESENT ROAD (PLAN SHEETS)
RIGHT OF WAY LINE — R.O.W. MARKER
ACCESS POINTS (FREEWAYS)
C OF A LINE (CONTROL OF ACCESS)
ACCESS DENIED BY DEED — 24' OP, OP OPENING, 16' OP
TOP OF CUTS
TOE OF FILLS
DETOUR

INDEX OF SHEETS

SHEET NO.	
1	SKETCH MAP, TITLE PAGE AND TABULATION OF LENGTH AND DESIGN DATA
2 - 3	TYPICAL SECTIONS AND GENERAL NOTES
4 - 6	SUMMARY OF APPROXIMATE QUANTITIES
7	SURFACE COURSE PLAN
8	DELINEATORS AND SUMMARY OF EARTHWORK QUANTITIES
9	TABULATION OF CURB, GUTTER AND SIDEWALK, FENCING REQUIREMENTS AND TABULATION OF GUARD RAIL
10	STRUCTURE QUANTITIES
11 - 26	DETAILS OF BRIDGE STR. NO. C-18-ER
27 - 33	DETAILS OF RETAINING WALL
34	DETAILS OF MANHOLES
35 - 37	ALIGNMENT, INTERCHANGE AND LIGHTING LAYOUTS
38 - 42	PROFILE
43 - 59	SIGNING PLANS
~~60 - 105~~	CROSS SECTIONS
~~106~~ - 114	STRUCTURE ~~CROSS SECTIONS~~

	M-203-SC	SUPERELEVATION & WIDENING OF CURVES - CROWNED HIGHWAYS	10-22-71
	M-203-SD	SUPERELEVATION OF CURVES - DIVIDED HIGHWAYS	10-22-71
(R-1)	M-203-B	APPROACH ROADS, FLARING, CUT SLOPE TREATMENT, BRIDGE & CREST WIDENING	12-11-72
	M-203-C	DITCH TYPES	7-23-68
	M-206-AA	EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	2-16-72
	M-603-CA	CONCRETE AND METAL END SECTIONS	6-25-71
	M-603-M	METAL CULVERT PIPE - H-20 LOADING	2-11-71
	M-603-RC	REINFORCED CONCRETE PIPE	8-29-72
	M-604-BA	INLET, TYPE C	5-24-71
	M-604-D	STEPS FOR MANHOLES AND INLETS	7-23-68
	M-604-R	CURB INLET, TYPE 3 (2 SHEETS)	9-27-72
	M-606-B	GUARD RAIL, TYPE 5, BOX BEAM MEDIAN BARRIER - STEEL (3 SHEETS)	6-27-72
	M-607-A	WIRE FENCES AND GATES (2 SHEETS)	8-19-71
	M-607-B	CHAIN LINK FENCE (2 SHEETS)	4-20-71
	M-609-A	CURBS AND GUTTERS	5-7-71
	M-612-A	MARKER POSTS AND BENCH MARKS	6-30-71
	M-614-TB	TRAFFIC SIGNING FOR HIGHWAY CONSTRUCTION (3 SHEETS)	11-22-71
	M-615-A	EMBANKMENT PROTECTOR - TYPES 3 & 4 (SHEET 1)	7-30-68
	M-615-A	EMBANKMENT PROTECTOR - TYPE 5 (SHEET 2)	7-30-68
	S-614-18A	TYPICAL POLE MOUNT SIGN INSTALLATION	1-14-71
	S-614-19B	TYPICAL GROUND SIGN PLACEMENT	11-17-71
	S-614-20B	CLASS I GROUND SIGN INSTALLATIONS	10-6-72
	S-614-21B	CLASS II GROUND SIGN INSTALLATIONS	12-2-69
	S-614-22C	TYPICAL MARKER ASSEMBLY INSTALLATIONS	6-16-71
	S-614-23C	LAMINATED ALUMINUM PANELS AND POST SPACING TABLE FOR CLASS III SIGNS (2 SHEETS)	10-20-69
	S-614-26B	BREAK-AWAY SIGN SUPPORT DETAILS FOR GROUND SIGNS (2 SHEETS)	12-9-68
	S-614-27B	PEDESTALS, FOOTINGS AND SIGN ISLANDS FOR CLASS III SIGNS (2 SHEETS)	5-16-69
	S-614-29B	TYPICAL PAVEMENT MARKINGS (2 SHEETS)	4-11-72
	S-614-31C	U. S. & COLORADO ROUTE MARKERS	11-16-71
	S-614-32B	AUXILIARY MARKERS	11-16-71
	S-614-35A	TYPICAL MULTI-SIGN INSTALLATIONS	11-17-71
	S-614-40A	STANDARD CONSTRUCTION IDENTIFICATION SIGNS (2 SHEETS)	4-12-72
	S-614-49A	ALTERNATE SIGN POST MATERIALS	6-23-72
	S-612-51A	TYPICAL DELINEATOR INSTALLATION (2 SHEETS)	10-26-72
	S-614-52A	BARRICADES AND VERTICAL PANEL CHANNELIZING DEVICES	3-1-72

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

AS CONSTRUCTED PLANS
RETURN TO DIST. 4 DESIGN

TABULATION OF LENGTH & DESIGN DATA

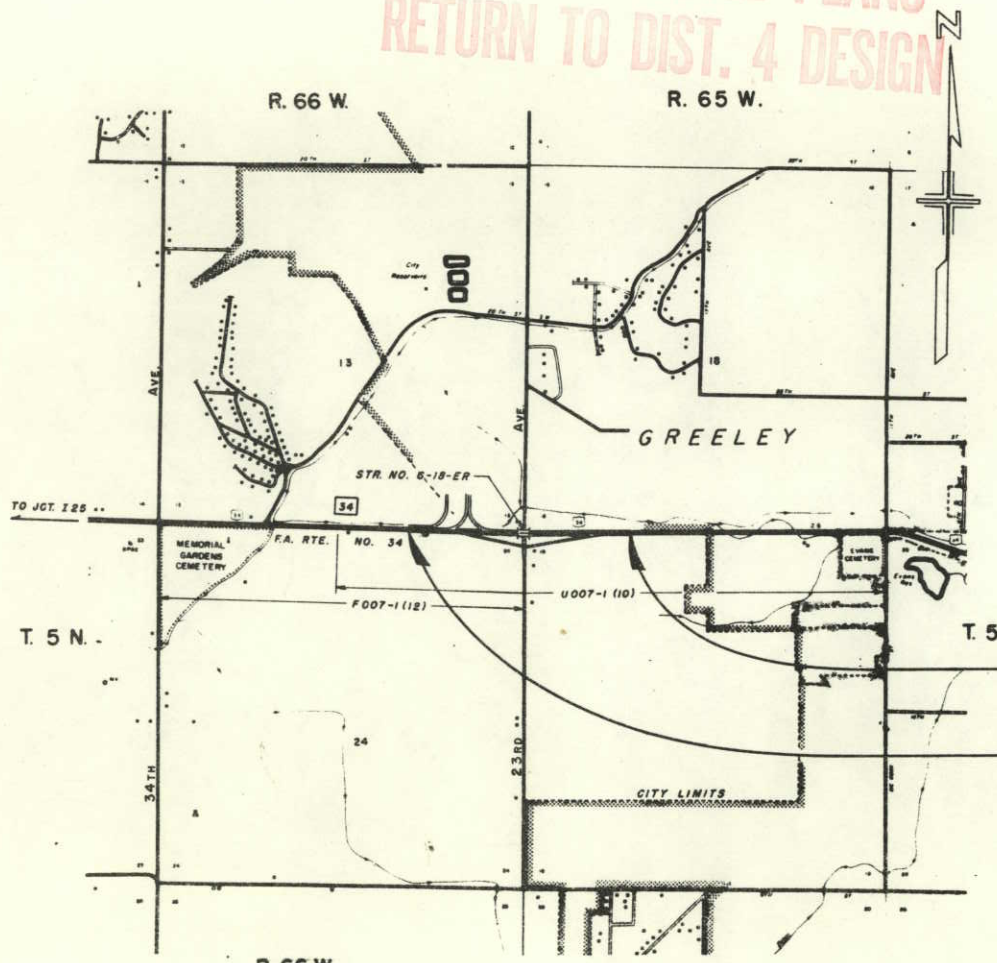
STATION	ROADWAY LIN. FT.	MAJOR STRUCTURE LIN. FT.
330+00.0 BEGIN U034-1(12) = 330+00.0 ON U007-1(10)		
	1,232.5	
342+32.5 } STR. NO. C-18-ER 343+95.0		162.5
	1,155.0	
355+50.0 END U034-1(12) = 355+50.0 ON F007-1(12)		
TOTAL	2,387.5	162.5

SUMMARY	LIN. FT.	MILES
TOTAL ROADWAY	2,387.5	0.452
TOTAL MAJOR STRUCTURE	162.5	0.031
PROJECT TOTAL (NET & GROSS LENGTH)	2,550.0	0.483

DESIGN DATA

MAXIMUM DEGREE OF CURVE	0° 30'
MAXIMUM GRADE	4.00%
MINIMUM S.S.D. — HORIZONTAL	> 900 FT.
MINIMUM S.S.D. — VERTICAL	475 FT.
MAXIMUM DESIGN SPEED	60 M.P.H.

1992 DESIGN TRAFFIC VOLUME { 11,500 A.D.T., 1,265 D.H.V.



DIVISION OF HIGHWAYS

APPROVED L. L. Brown 11-30-72
CHIEF ENGINEER DATE

(R-1) AS CONSTRUCTED INFORMATION

CONTRACTOR MOUNTAIN AGGREGATES, INC.
RESIDENT ENGINEER M.K. GRICE
(Project or Resident)
PROJECT STARTED JANUARY 22, 1973
PROJECT COMPLETED JUNE 3, 1974
AS CONSTRUCTED PLANS APPROVED J.B. Peterson
DIST. CONST. ENG. 3/26/74
TITLE DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED DATE

DIVISION ENGINEER

C. K. M.

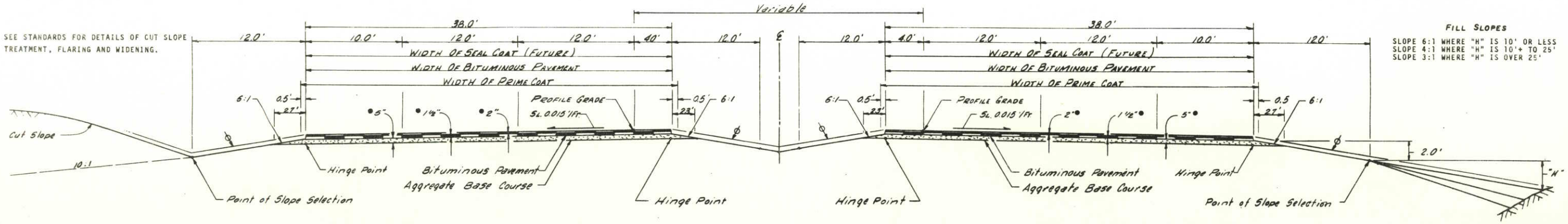
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	2	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

TYPICAL CROSS SECTIONS

SECTION A

STA 355+50 To STA. 357+00
(APPR. To PROJ.)



FILL SLOPES
SLOPE 6:1 WHERE "H" IS 10' OR LESS
SLOPE 4:1 WHERE "H" IS 10'+ TO 25'
SLOPE 3:1 WHERE "H" IS OVER 25'

● APPROXIMATE THICKNESS (THICKNESS OF DIFFERENT LAYERS MAY BE ADJUSTED AT THE DISCRETION OF THE ENGINEER)

Ø THE CONTRACTOR WILL BE REQUIRED TO PLACE TOPSOIL TO THIS LINE AFTER COMPLETION OF PAVING OPERATION.

THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY IN ORDER TO PROVIDE PROPER DRAINAGE.

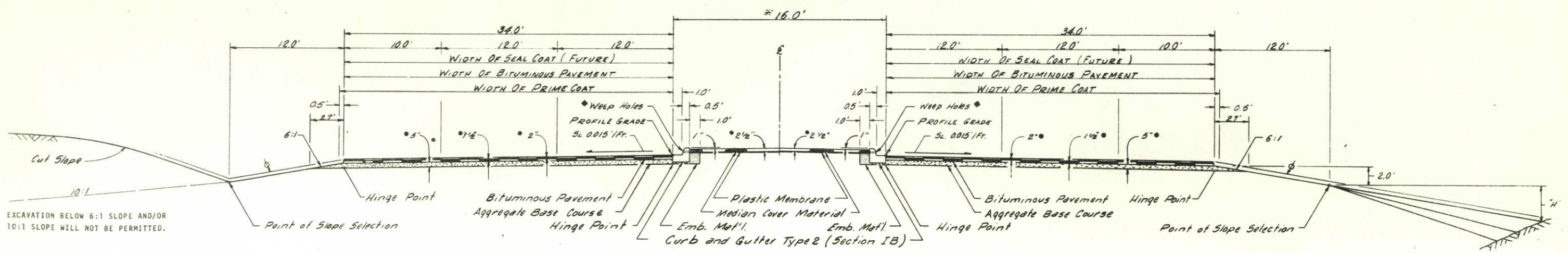
BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED ON CONSTRUCTION FOR A PLEASING APPEARANCE.

MATERIAL SHALL BE PLACED IN SEPARATE COURSES AT THE FOLLOWING RATES PER 100 LIN. FT. OF ROADWAY:

BITUMINOUS PAVEMENT TOP LAYER . . . . 90 TON
BOTTOM LAYER . . . . 70 TON
AGGREGATE BASE COURSE. . . . . 225 TON

SECTION B

STA. 330+00 To STA. 355+50



EXCAVATION BELOW 6:1 SLOPE AND/OR 10:1 SLOPE WILL NOT BE PERMITTED.

* Variable from Sta. 351+25 To 355+50

◆ Spacing at 20' Intervals.

MATERIAL SHALL BE PLACED IN SEPARATE COURSES AT THE FOLLOWING RATES PER 100 LIN. FT. OF ROADWAY:

BITUMINOUS PAVEMENT TOP LAYER . . . . 83 TON
BOTTOM LAYER . . . . 63 TON
AGGREGATE BASE COURSE. . . . . 197 TON

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1(12)	3	110

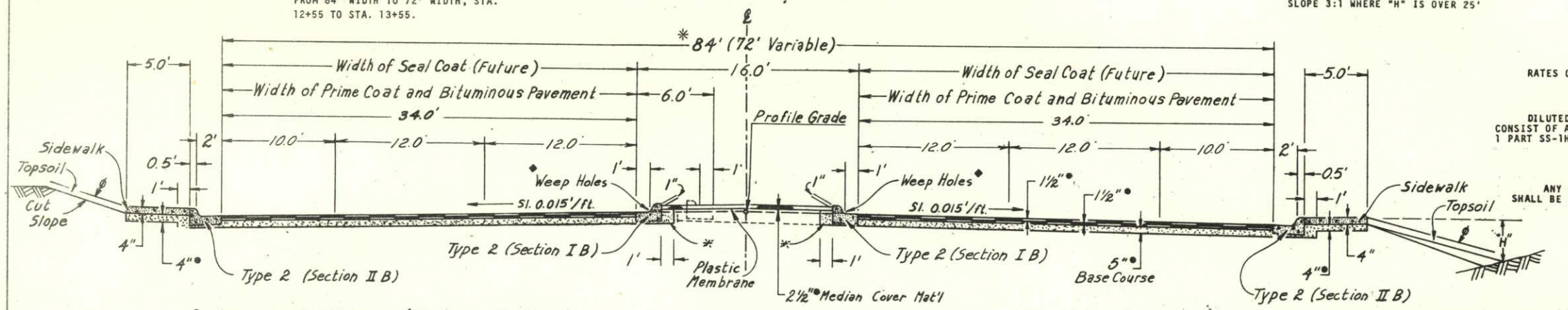
AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

TYPICAL SECTIONS

*23RD. AVE. TRANSITIONS FROM WIDTH OF EXISTING STREET AT STA. 8+75 TO 84' WIDE AT STA. 9+35. 100' TRANSITION FROM 84' WIDTH TO 72' WIDTH, STA. 12+55 TO STA. 13+55.

23 RD. AVE.

STA 9+35 TO STA. 12+55



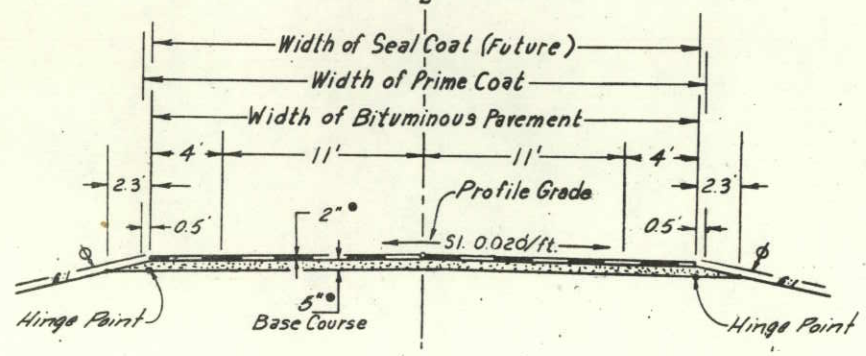
• Approximate Thickness (Thickness of different Layers may be adjusted at the discretion of the Eng.).

* Embankment material

◆ Spacing at 20' intervals

FRONTAGE ROAD

STA. 5+28 TO STA. 10+00

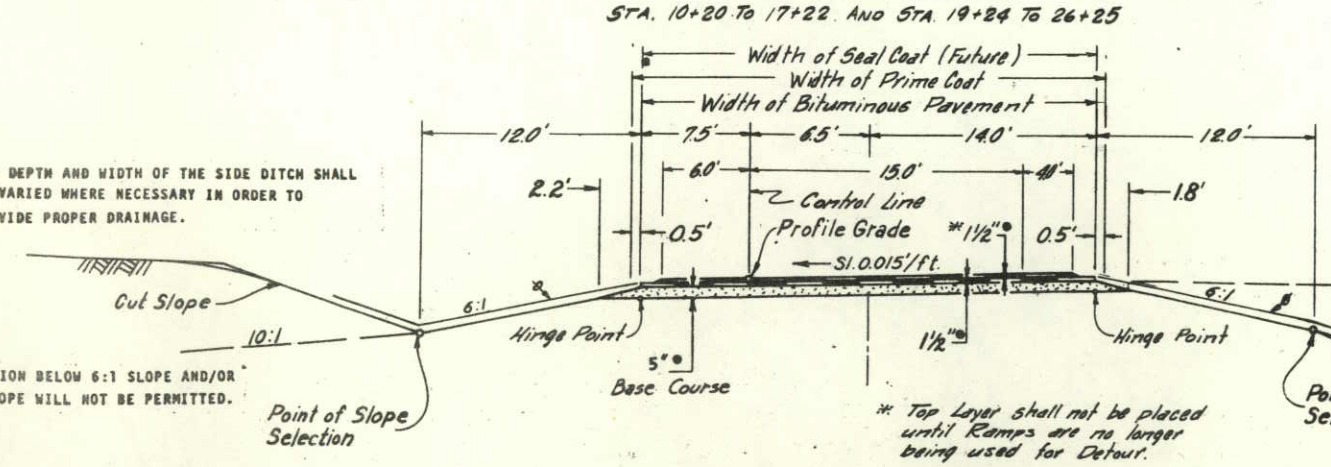


SEE STANDARDS FOR DETAILS OF CUT SLOPE TREATMENT, FLARING AND WIDENING.

BREAK POINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED ON CONSTRUCTION FOR A PLEASING APPEARANCE.

SOUTH RAMPS (DETOUR)

STA. 10+20 TO 17+22 AND STA. 19+24 TO 26+25



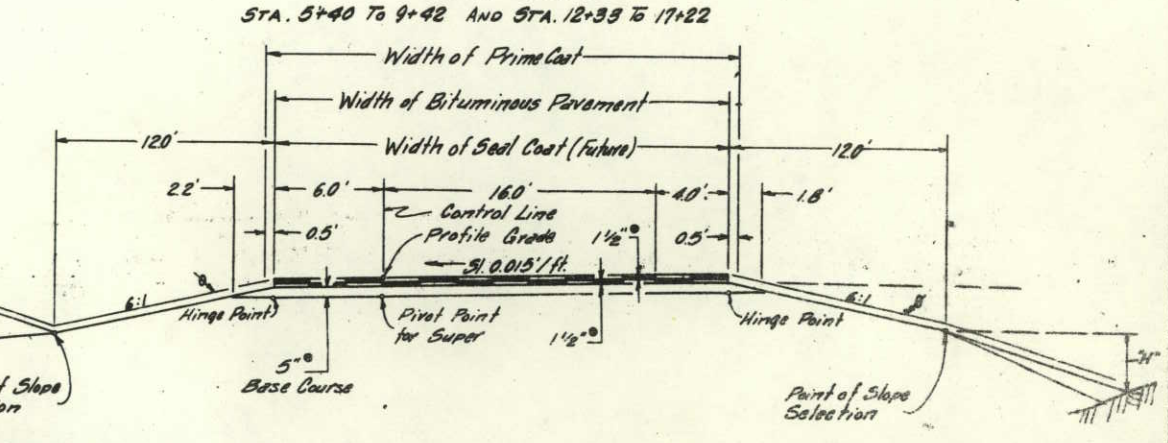
THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY IN ORDER TO PROVIDE PROPER DRAINAGE.

EXCAVATION BELOW 6:1 SLOPE AND/OR 10:1 SLOPE WILL NOT BE PERMITTED.

* Top Layer shall not be placed until Ramps are no longer being used for Detour.

NORTH RAMPS

STA. 5+40 TO 9+42 AND STA. 12+33 TO 17+22



FILL SLOPES:

SLOPE 6:1 WHERE "H" IS 10' OR LESS
SLOPE 4:1 WHERE "H" IS 10'+ TO 25'
SLOPE 3:1 WHERE "H" IS OVER 25'

MATERIAL SHALL BE PLACED IN SEPARATE COURSES AT THE FOLLOWING RATES PER 100 LIN. FT. OF ROADWAY:

BITUMINOUS PAVEMENT	TOP LAYER	63 TONS
	BOTTOM LAYER	63 TONS
BASE COURSE		189 TONS

THE CONTRACTOR WILL BE REQUIRED TO PLACE TOPSOIL TO THIS LINE AFTER COMPLETION OF PAVING OPERATION.

MATERIAL SHALL BE PLACED IN SEPARATE COURSES AT THE FOLLOWING RATES PER 100 LIN. FT. OF ROADWAY:

BITUMINOUS PAVEMENT		37 TONS
BASE COURSE		90 TONS

MATERIAL SHALL BE PLACED IN SEPARATE COURSES AT THE FOLLOWING RATES PER 100 LIN. FT. OF ROADWAY:

		SO. RAMPS	NO. RAMPS
BITUMINOUS PAVEMENT	TOP LAYER	23 TONS	24 TONS
	BOTTOM LAYER	26 TONS	24 TONS
BASE COURSE		84 TONS	78 TONS

GENERAL NOTES

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

PRIME COAT MC @ 0.40 GALS. PER SQ. YD.

TACK COAT SS-1H @ 0.10 GAL. OF MIXTURE PER. SQ. YD.

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

DILUTED EMULSIFIED ASPHALT SHALL BE USED AS A DUST PALLIATIVE WHERE REQUIRED AND SHALL CONSIST OF A DILUTION OF SS-1H AND WATER, THE PORTIONS OF WHICH SHALL BE 9 PARTS WATER AND 1 PART SS-1H, BASED ON VOLUME MEASUREMENT. LOCATIONS SHALL BE AS ORDERED.

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.
BASES OF CUTS & FILLS 6 INCHES.

A SKI TYPE DEVICE AT LEAST 30 FEET IN LENGTH AND SHORT SKI OR SHOE SHALL BE FURNISHED WITH EACH BITUMINOUS PAVER EQUIPPED WITH AN AUTOMATIC CONTROL SYSTEM.

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

THE MINIMUM THICKNESS OF TOPSOIL SHALL BE 4 INCHES.

EARTH SLOPES SHALL BE DISCED OR ROUGHENED BY OTHER APPROVED METHODS FOR MULCHING OR EROSION PROTECTION.

IT IS ESTIMATED THAT 5,000 HOURS OF FLAGGING FOR CONTROLLING TRAFFIC WILL BE REQUIRED FOR THIS PROJECT.

TONAGES SHOWN IN RATES PER STATION ARE APPROXIMATE ONLY AND SHALL BE ADJUSTED WHERE NECESSARY TO INSURE OVERALL DESIGN THICKNESS.

SUMMARY OF ~~APPROXIMATE~~ FINAL QUANTITIES

AS CONSTRUCTED
~~REVISED~~ DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	4	110

INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT				PLAN ROADWAY	FINAL ROADWAY			PLAN MAJOR STR. No. C-18-ER	FINAL MAJOR STR. NO. C-18-ER			PLAN PROJECT TOTALS	FINAL PROJECT TOTALS		
		10	202	Removal of Structure	Each				6	5							6	5		
		10	202	Removal of Slope & Ditch Paving	Sq. Yd.				600	1,282.5							600	1,282.5		
		9	202	Removal of Curb	Lin. Ft.				650	665							650	665		
		9	202	Removal of Curb & Gutter	Lin. Ft.				1,500	1,515							1500	1,515		
Form 266		78	202	Removal of Ground Sign	Each				13	13							13	13		
		9	202	Removal of Fence	Lin. Ft.				2,400	2,017							2,400	2,017		
1	36		202	Plug Structure	Each.				1	1							1	1		
		10	202	Plug Culvert	Each				2	1							2	1		
		8	203	Unclassified Excavation (Haul)	Cu. Yd.				111,000	91,618 ~~91,619~~	Pd. Field Quantity						111,000	91,618 ~~91,619~~		
		8	203	Borrow (Haul) c.o. 08252	Cu. Yd.				119,000	76,822 ~~76,804~~	Pd Field Quantity						119,000	76,822 ~~76,804~~		
		8	203	Compaction (AASHO T180)	Cu. Yd.				172,000	169,391							172,000	169,391		
		10,11	206	Structure Excavation c.o. 04785	Cu. Yd.				4,160	2,825			140	140			4,300	2,965		
		10,11	206	Structure Backfill (Class 2) c.o. 04785	Cu. Yd.				4,855	4,794			135	135			4,990	4,929		
		10	206	Filter Material (Class C) c.o. 08252	Cu. Yd.				190	0							190	0		
		108, 109	207	Topsoil (Haul)	Cu. Yd.				3,300	4023 ~~4,042~~	Pd. Field Quantity						3,300	4023 ~~4,042~~		
Form 7			209	Wetting	M Gal.				5,250	2,282							5,250	2,282		
Form 266 186, 205, 232			210	Reset Ground Sign	Each				4	4							4	4		
1	36	10	210	Relay Pipe (12 Inch) c.o. 08252	Lin. Ft.				8	0							8	0		
3	23-26		217	Soil Sterilization	Sq. Yd.				9,430	4,370							4,430	4,370		
Form 87			304	Aggregate Base Course (Class 6) (Haul)	Ton				11,000	9,300.25							11,000	9,300.25		
Form 87			403	Hot Bituminous Pavement (Grading ~~D-X~~ E) (Haul & Asphalt) c.o. 06260	Ton								107	107			107	107		
Form 87			403	Hot Bituminous Pavement (Grading E) (Haul & Asphalt)	Ton				7,600	8,153.90							7,600	8,153.90		
Form 49			411	Emulsified Asphalt (SS-1H)	Gal.				400	590							400	590		
Form 49			411	Liquid Asphaltic Material (MC-70)	Gal.				14,700	5,603							14,700	5,603		
Form 266			502	Drilling Hole to Facilitate Pile Driving	Lin. Ft.				275	0			294	569			569	569		
Form 266			502	Steel Piling (HP 10x42) c.o. 04788	Lin. Ft.				3,255	4,512.63							3,255	4,512.63		
Form 266			502	Steel Piling (HP 10x42) Cut-off	Lin. Ft.				0	100.00							0	100.00		
Form 266			502	Steel Piling (HP 12x74) c.o. 04788	Lin. Ft.								1,449	1,428.83			1,449	1,428.83		
Form 266			502	Steel Piling (HP 12x74) Cut-off	Lin. Ft.								0	14.42			0	14.42		
Form 266			507	Concrete Slope & Ditch Paving (Reinforced)	Cu. Yd.				12	9.10			95	95.00			107	104.10		
Form 87			507	Bituminous Slope & Ditch Paving	Ton				18	6.00							18	6.00		

SUMMARY OF ~~APPROXIMATE~~ FINAL QUANTITIES

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	5	110

INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT				PLAN ROADWAY	FINAL ROADWAY			PLAN MAJOR STR. No. C-18-ER	FINAL MAJOR STR. No. C-18-ER			PLAN PROJECT TOTALS	FINAL PROJECT TOTALS		
Form	266		509	Structural Steel (Galvanized)	Lb.				32,410	32,410			14,068	14,068			46,478	46,478		
Form	266		515	Waterproofing (Membrane)	Sq. Yd.								1,364	1,364			1,364	1,364		
Form	266		518	Waterstop (6 Inch)	Lin. Ft.				212	212							212	212		
Form	266		601	Concrete Class A (Miscellaneous)	Cu. Yd.				1,275	1,281.23							1,275	1,281.23		
Form	266		601	Concrete Class A (Bridge)	Cu. Yd.								121	121.00			121	121.00		
Form	266		601	Concrete Class S (Bridge)	Cu. Yd.								1,086	1,086.00			1,086	1,086.00		
Form	266		602	Reinforcing Steel	Lb.				163,546	163,546			190,577	190,577			354,123	354,123		
		10	603	18 Inch Reinforced Concrete Pipe	Lin. Ft.				632	578.5							632	578.5		
		10	603	24 Inch Reinforced Concrete Pipe C.O. 04785	Lin. Ft.				478	302							478	302		
		10	603	36 Inch Reinforced Concrete Pipe	Lin. Ft.				1,294	1,294							1,294	1,294		
		10	603	24 Inch Reinforced Concrete End Section	Each				1	1							1	1		
		10	603	36 Inch Reinforced Concrete End Section C.O. 08252	Each				1	0							1	0		
		10	603	6 Inch Corrugated Steel Pipe	Lin. Ft.				134	134							134	134		
		10	603	12 Inch Corrugated Steel Pipe	Lin. Ft.				40	40							40	40		
		10	604	Inlet Type C (5 foot)	Each				9	8							9	8		
		10	604	Inlet Type R L5 (5 foot)	Each				1	1							1	1		
		10	604	Inlet Type R L5 (10 foot)	Each				1	1							1	1		
		10	604	Manhole Box Base (10 foot)	Each				3	2							3	2		
		10	605	8 Inch Perforated Corrugated Steel Pipe	Lin. Ft.				368	4.5							368	4.5		
		9	606	Guard Rail Type 5	Lin. Ft.				834	834							834	834		
		9	606	End Anchorage Type 5A	Each				4	4							4	4		
		9	607	End Post	Each				2	2							2	2		
		9	607	Corner and Line Brace Post	Each				9	8							9	8		
		9	607	Fence Barbed Wire with Metal Posts	Lin. Ft.				1,700	1,759.5							1,700	1,759.5		
		9	607	End Post (Chain Link)	Each				5	4							5	4		
		9	607	Corner & Line Brace Post (Chain Link)	Each				10	10							10	10		
		9	607	Fence Chain Link (42 Inch)	Lin. Ft.				2,460	2,451							2,460	2,451		
		9	608	Concrete Sidewalk	Sq. Yd.				553	516							553	516		

SUMMARY OF ~~APPROXIMATE~~ FINAL QUANTITIES

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

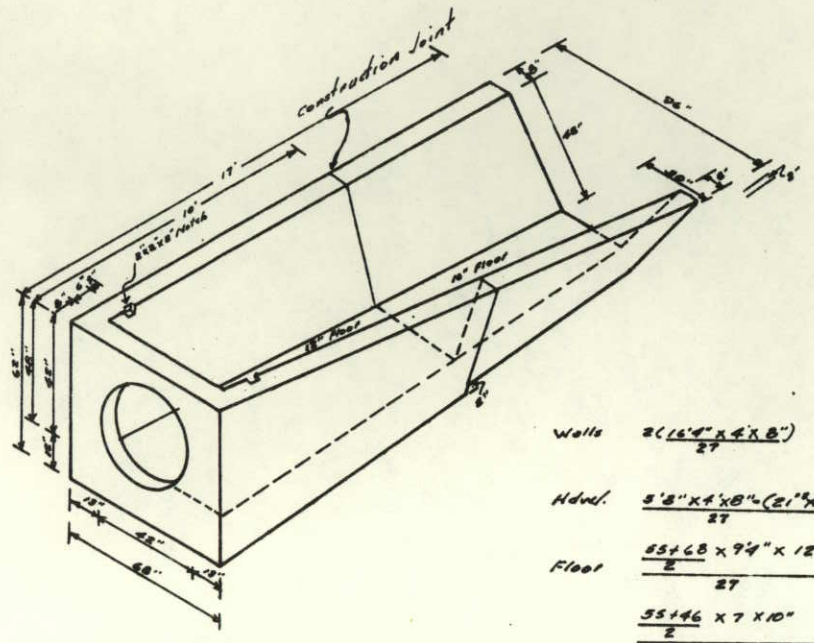
(R-1) 12-13-72 - C.K.M. Non Federal Aid

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1(12)	6	110

INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT				PLAN ROADWAY	FINAL ROADWAY			PLAN MAJOR STR. NO. C-18-ER	FINAL MAJOR STR. NO. C-18-ER			PLAN PROJECT TOTALS	FINAL PROJECT TOTALS		
		9	609	Gutter Type 2 (4 Foot) C.O. 06253	Lin. Ft.				0	190							0	190		
		9	609	Curb & Gutter Type 2 (Section I-B)	Lin. Ft.				6,415	6,483							6,415	6,483		
		9	609	Curb & Gutter Type 2 (Section I-M)	Lin. Ft.				96	106							96	106		
		9	609	Curb & Gutter Type 2 (Section II-B)	Lin. Ft.				1,309	2,122							1,309	2,122		
		9	609	Curb Type 6 (Section M)	Lin. Ft.				965	3,467							965	3,467		
		9	610	Median Cover Material	Ton				590	560.45							590	560.45		
		8	612	Delineator (Type I)	Each				14	15							14	15		
		8	612	Delineator (Type II)	Each				36	35							36	35		
		8	612	Delineator (Type III)	Each				4	4							4	4		
		8	612	Delineator (Type V)	Each				8	8							8	8		
		11	613	3/4 Inch Electrical Conduit	Lin. Ft.								90	80			90	80		
		11	613	1 1/2 Inch Electrical Conduit	Lin. Ft.								198	147			198	147		
Form 7			614	Flagging	Hour				3,000	3,248.5			2,000	1,270			5,000	4,518.5		
Form 266			614	Sign Panel (Class I)	Sq. Ft.				139	139							139	139		
Form 266			614	Sign Panel (Class II)	Sq. Ft.				377	377							377	377		
Form 266			614	Sign Panel (Class III)	Sq. Ft.				329	329							329	329		
Form 266			614	Timber Sign Post 4x4 Inch	Lin. Ft.				294	294							294	294		
Form 266			614	Timber Sign Post 6x6 Inch	Lin. Ft.				485	485							485	485		
Form 266			614	Steel Sign Post (WG x 20)	Lin. Ft.				136	136							136	136		
Form 266			614	Concrete Footing (Type I-C)	Each				10	10							10	10		
Form 266			614	Modification of Timber Sign Post	Each				4	4							4	4		
		10	615	Embankment Protector Type 3	Each				1	1							1	1		
Form 266			618	Prestressing Steel Wire or Strand	Lb.								93,502	93,502			93,502	93,502		
Form 266			620	Field Laboratory	Each				1	1							1	1		
Form 266			620	Sanitary Facility	Each				1	1							1	1		
			626	Mobilization	L.S.				Prorated				Prorated				●	●		
				FORCE ACCOUNT																
Form 10				Removal of Temporary Asphalt Pavement W.O. 04878	L.S.					●								●		
Form 10				Dampproofing & Sandblasting Str. Deck W.O. 07176	L.S.									●				●		
				On the Job Training W.O. 04778	Each				1	1							1	1		
Form 10		87		Furnishing & Applying Manure on Slopes W.O. 04877	Ton				0	239.10							0	239.10		
(R-1)				◆ Interchange Lighting (Work by Home Light and Power Co.)	L.S.				●	●							●	●		
				STATE FORCES																
(R-1) Form 266				◆ Striping Entire Project	L.S.				●	●							●	●		
(R-1) Form 266				◆ Seeding	L.S.				●	●							●	●		
(R-1)				◆ Non Federal Aid																

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1 (12)	7	110



Walls $\frac{2(16'4" \times 4' \times 8")}{27}$ = 3.23

Hdwl. $\frac{5'8" \times 4' \times 8" + (21" \times 7" \times 8")}{27}$ = .32

Floor $\frac{\frac{65+68}{2} \times 9'4" \times 12"}{27}$ 1.77

$\frac{\frac{55+46}{2} \times 7 \times 10"}{27}$ .91

6.23 Cu Yd.

SPECIAL INLET STA. 359+ Rt.

BASE COURSE AND SURFACE COURSE PLAN

STATION TO STATION	SOURCE	QUANTITY - TONS					
		BASE COURSE		SURFACE COURSE - HOT BITUMINOUS PAVEMENT			
		AGGREGATE BASE COURSE CLASS 6		BOTTOM LAYER GRADING E		TOP LAYER GRADING E	
		PLAN	FINAL	PLAN	FINAL	PLAN	FINAL
MAINLINE:			4,883.75		2,595.30		2,329.35
328+50 To 330+00		49		48		105	
•330+00 To 342+32.5		2504		784		1029	
343+95.0 To 355+50		2330		728		959	
355+50 To 357+00		56		53		117	
SE ACCEL. LANE		245		77		172	
NE DECEL. LANE		140		47		62	
SW DECEL. LANE		240		79		106	
NW ACCEL. LANE		304		90		222	
RAMPS:							
SE - 10+20 To 17+22	SOURCE	654	681.45	204	362.70	182	196.00
SW - 19+24 To 26+25		645	900.90	200	240.20	179	195.60
NE - 5+40 To 9+42	UNDESIGNATED	403	366.60	121	181.80	121	133.75
NW - 12+33 To 17+22		436	484.70	135	184.05	135	176.30
23RD AVENUE			1,451.70		513.90		352.45
8+75 To 9+35		138		46		46	
9+35 To 12+55		605		202		202	
12+55 To 13+55		201		66		66	
Miscellaneous (Mod. Cross.)		239		20	14.50	20	
FRONTAGE ROAD							
5+28 To 10+00		455	531.15	184	195.15	—	
From List of Structures		340		200		—	
Est. for Correcting Irreg. in Subgrade		997		—	542.85	▪500	
PROJECT TOTALS		10,981	9,300.25	3284	4,770.45	4223	3,383.45

Documentation Source - Form 87

• Includes widening for Guard Rail Sta. 331+ to 333+ Rt.

▪ Est. for Correcting Irreg. in bottom layer of pavement used for Detour.

STABILIZATION BASED ON:

18k E.D.L.A. : 58
Regional Factor : 1.0
Serviceability Index : 2.5

STRENGTH COEFFICIENTS:

H.B.P. (Rt. 92) : 0.40
A.B.C. (Rt. 78) : 0.12
Borrow (R = 50 Min)

DEPARTMENT OF HIGHWAYS, STATE OF COLORADO
OFFICE FORM NO. 126

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	8	110

TABULATION OF DELINEATORS

STATION	SIDE	SPACING	TYPE I EACH PLAN	TYPE I EACH FINAL	TYPE II EACH PLAN	TYPE II EACH FINAL	TYPE IV EACH PLAN	TYPE IV EACH FINAL	TYPE V EACH PLAN	TYPE V EACH FINAL
South East Ramp										
323+ to 331+(M.L. Sta.)	Lt.	Accel. Lane			5	3				
6+ to 17+	Lt.	Ramp			6	6				
10+	Rt.	Gore	1	1						
South West Ramp										
19± to 21±	Lt. & Rt.	Ramp					4	4	8	8
22+ to 31+	Lt.	Ramp			5	5				
26+	Rt.	Gore	1	1						
North East Ramp										
345+ (M.L. Sta.)	Rt.	Decel. Lane			1	1				
3+	Rt.	Ramp			1	1				
5+	Lt.	Gore	1	1						
5+ to 7+	Lt.	25° Curve			5	6				
10±	Lt.	Island	3	4						
8+ to 10+	Lt.	Median	4	4						
North West Ramp										
12+ to 17+	Rt.	Ramp			7	7				
355 to 365+(M.L. Sta.)	Rt.	Accel Lane			6	6				
350+ (M.L. Sta.)	Rt.		1	1						
23 RD. Avenue										
10+ to 11+	Lt. & Rt.	Median	3	3						
PROJECT TOTALS			14	15	36	35	4	4	8	8

Documentation Source - Book No. 3 p. 30 & 31

SUMMARY OF EARTHWORK QUANTITIES

INDEX BOOK	INDEX PAGE	INDEX SHEET		CUBIC YARD PLAN	CUBIC YARD FINAL	
			UNCLASSIFIED EXCAVATION (HAUL)			
		60~86 60~86 89~105	Roadway (From Cross Sections) Sub-Exc. SE Ramp; Mainline, N. Ramp, Fr. Rd. 23rd Ave.	107,233	2,712 ~~21,305~~ ~~63,048~~	20,562 63,584
		10	Structure Quantities as Excavation	250	265	
Form 266		10	Structure Quantities as Ditch (Sub-Exc. Soft Spots)	45	889 32	
		109	*Excavation for Topsoil	3,284	3,398	
			TOTAL FOR PAY QUANTITY	110,812	~~91,619~~	91,618
			BORROW (HAUL)			
		110	For Topsoil		~~644~~	625
		110	For Roadway Embankment	114,103	~~75,160~~	76,197
		110	Structure Quantities as Embankment	150	~	
		110	For Embankment to Replace Topsoil	4,598	~	
			TOTAL FOR PAY QUANTITY (C.O. 08252)	118,851	~~76,804~~	76,822
			COMPACTION (AASHO T 180) (Moisture and Density Control)			
		60~88 & 106	Embankment (Net)	158,097	151,979	
			Replacement of Sub-Exc.		3,601	
			Base of Cuts and Fills	10,413	10,413	
			Embankment to Replace Topsoil (Net) (Exc. From Roadway)	3,284	3,398	
			TOTAL FOR PAY QUANTITY	171,794	168,391	
			ROADWAY QUANTITIES BALANCE (For Information Only)			
			Excavation			
			Unclassified	107,233	91,619	
			Borrow	114,103	76,804	
			TOTAL	221,336	168,423	
			Embankment Net (Roadway from Cross Sections) (Replacement of Sub-Exc.)	158,097	151,979	
			TOTAL	158,097	155,580	
			Embankment x Factor (~~1.40~~ 1.08255)	221,336	168,423	

* To be obtained from S.W. and North Ramp areas and stockpiled as directed by the Engineer.

DIVISION OF HIGHWAYS, STATE OF COLORADO
D. H. FORM NO. 126

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1(12)	9	110

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

(R-1) 2-20-72 CKM ADDED POST NOTE

TABULATION OF CURB, GUTTER & SIDEWALK

BOOK	PAGE	STATION	SIDE	MEDIAN COVER MATERIAL * TON	MEDIAN COVER MATERIAL * FINAL	REMOVAL OF CURB Lin. Ft.	REMOVAL OF CURB FINAL	REMOVAL OF CURB & GUTTER Lin. Ft.	REMOVAL OF CURB & GUTTER FINAL	TYPE 2 SEC. IB Lin. Ft.	TYPE 2 SEC. IB FINAL	TYPE 2 SEC. IIB Lin. Ft.	TYPE 2 SEC. IIB FINAL	TYPE 2 SEC. IM Lin. Ft.	TYPE 2 SEC. IM FINAL	TYPE 6 SEC. M Lin. Ft.	TYPE 6 SEC. M FINAL	SIDEWALK (5 Foot) Sq. Yd.	SIDEWALK (5 Foot) FINAL	GUTTER TYPE 4 4 FOOT Lin. Ft.
		MAINLINE																		
3	26	328+00 to 334+50	Rt.			650	665													
3	27	335+50 to 342+16	Lt.																	
3	26	327+00 to 334+50	Median					1,500	1,500							0	666			
3	27	328+00 to 333+00	Rt.													500	519			
3	27	326+95 ~~327+00~~ to 342+32.5	Median	277	267.45					3,065	3,073									
3	27	352+02 to 355+80																		
		343+95 to 355+59	Median	250						2,344						0	368			W.O. 06253
		23rd AVE.																		
3	28	8+75 to 11+65	Rt.									325	314					181	172	
3	26	8+85																		
3	28	9+37 to 11+63	Lt.					0	15			275	256					153	134	
3	28	9+40 to 11+13	Median	17						344	337									
3	28	11+84 to 13+55	Rt.		33.20							200	189					111	105	
3	28	11+90 to 13+55	Lt.									194	176					108	98	
3	28	11+90 to 12+95	Median	14						210	246									
		N.E. RAMP																		
3	24	0+95 to ~~5+60~~ 9+43	Rt.													465	820			
3	24	7+88 to 10+06	Median	26	19.25					452	466									
3	24	9+43 to 10+20	Rt.									118	118							
3	24	9+70 to 10+17	Island	6	7.45									96	106					
3	24	10+																		190
		N.W. RAMP																		
3	24, 28	11+58 to 12+33	Rt.																	
		S.E. RAMP																		
3	27	330+10 to 10+34										118	118			0	524	0	7	
		FRONTAGE ROAD																		
		5+28 to 10+00 ~~4+92 to 5+28~~	Rt.									43	418							
		4+99 to ~~5+28~~ 10+00	Lt.									36	533							
		331+20 to 342+60 (So. Side 28th)															570			
		PROJECT TOTALS		590	560.45	650	665	1,500	1,515	6,415	6,483	1,309	2,122	96	106	965	3,467	553	516	190

* ~~4,425~~ 4,362 Sq. Yds. Soil Sterilization (Book No. 3 p. 24, 25, 26)

FENCING REQUIREMENTS

BOOK	PAGE	STATION	SIDE	REMOVE FENCE Lin. Ft.	REMOVE FENCE FINAL	BUILD FENCE B. WIRE Lin. Ft.	BUILD FENCE B. WIRE FINAL	BUILD FENCE Ø CH. LINK (42") Lin. Ft.	BUILD FENCE Ø CH. LINK (42") FINAL
		MAINLINE							
3	9	328+00 to 333+34	Lt.					535	536
3	7	338+20 to 342+65	Rt.	445	0				
3	7	343+95 to 353+30	Lt.	935	1,011				
		350+	Rt.		525				
3	7	348+50 to 353+32	Rt.	930	481				
3	9	SOUTHEAST RAMP 328+00 Mainline ~~8+35~~ to 13+55 (23rd Ave)	Lt.					1050	1,042.5
3	8	SOUTHWEST RAMP 13+55 (23rd Ave.) to ~~353+30~~ 354+17.5 (Mainline)	Lt.			1095	1,179.5		
3	9	NORTHEAST RAMP 343+65 (Mainline) to 10+03 (N.E. Ramp)	Rt.					870	872.5
3	8	NORTHWEST RAMP 11+73 to 18+04	Rt.			580	580		
		PROJECT TOTALS		2,310	2,017	1,675	1,759.5	2,455	2,451

Est. End Posts Req'd. PLAN {5 CH. Link, 2 B. Wire} — FINAL: 4 CH. Link, 2 B. Wire

Est. C. & L.B. Post Req'd. {10 CH. Link, 9 B. Wire} — 10 CH. Link, 9 B. Wire

Ø Use Top Rail

B.W. Book 3 p. 8
C.L. Book 3 p. 9

TABULATION OF GUARDRAIL

Book 3 p. 32

STATION	SIDE	TYPE 5 Lin. Ft.	TYPE 5 FINAL	FLARE LENGTH Lin. Ft.	FLARE LENGTH FINAL	END ANCHOR Each	END ANCHOR FINAL
331+44.5 to 333+00	Rt.	144	144	83'6"	83'6"	1-5A	1-5A
340+77 to 342+32.5	Lt.	144	144	83'6"	83'6"	1-5A	1-5A
343+95 to 345+50.5	Lt.	144	144	83'6"	83'6"	1-5A	1-5A
343+95 to 348+04	Rt.	402	402	83'6"	83'6"	1-5A	1-5A
PROJECT TOTALS		834	834			4	4

(R-1) All Posts shall be driven on this project.

THE STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
FORM D.O.H. 125 (MYLAR)
REV. SEPT. 1970

FINAL STRUCTURE QUANTITIES

AS CONSTRUCTED
REVISED DATE *JUNE 3, 1974*

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
XIII	COLORADO	U 034-1(12)	10

INDEX BOOK	INDEX PAGE	INDEX SHEET	LOCATION	UNCLASSIFIED EXCAVATION CUBIC YARD EXCAV.	EMB.	DITCH	STRUCTURE EXCAVATION CUBIC YARD PLAN	FINAL	STRUCTURE BACKFILL CUBIC YARD CL. 2	FINAL	REMOVAL OF STRUCTURE EACH	AGGREGATE BASE COURSE SURFACING (CLASS 6) TON	HOT BITUMINOUS PAVEMENT (GRADING E) TON	INLET TYPE C EACH (5 FT.)	INLET TYPE C EACH	INLET TYPE R L=5 EACH (5 FT.)	INLET TYPE R EACH (10 FT.)	MANHOLE BOX BASE EACH	MANHOLE BOX BASE EACH (10 FT.)	CONC. SLOPE & DITCH PAVING (REINF) CU. YD.	BIT. SLOPE & DITCH PAVING TON	REINFORCED CONCRETE PIPE LIN. FT. 18"	24"	36"	CORRUGATED STEEL PIPE LIN. FT. 6"	48"	12"	PERF. C.S.P. LIN. FT. 8"		RELAY PIPE LIN. FT. 12"	"H" OVER CULV. FT.	REMOVAL OF CONC. SLOPE AND DITCH PAVING SQ. YARD	REINF. CONC. END SECTION EACH 24"	36"	PLUG CULVERT EACH	EMBANK. PROTECTOR TYPE 3 EACH	FILTER MATERIAL CLASS C CU. YD.	INLET F.L.	OUTLET F.L.	REMARKS
1	7		328+ to 332+ 330±	96 ~~100~~	0 ~~100~~ ∅							0 ~~178~~ Δ	0 ~~180~~ Δ																											
1	10		331+																		3 ~~2~~																			
			333+ to 342+	(FOR QUANTITIES SEE SHEET NO. 11)																																				
			343±	(QUANTITIES IN SUMMARY)																																				
1	13		343+50				182	162	59	52	3						•1		•1				160 ~~180~~								5							74.3	72.8	From Inlet No.③ to Manhole No.⑥ •Actual H=6'-6" •Actual H=7'-8"
1	16		9+15 (23rd Ave.)				72	66	25	23						▪1						92 ~~100~~									4							75.5	72.6	From Inlet No.⑦ to Manhole No.⑥ ▪Actual H=4'-6"
1	19		11+04 (23rd Ave.)				127	127	36	36				*1						1.3		142									4							75.0	74.3	From Inlet No.② to Inlet No.③ *Actual H=3'-0"
1	22		16+50 (S.E. Ramp)				12	12	5	5															46						2									
1	24		17+04 (S.E. Ramp)	(Deleted)			48	0	16	0				0 ~~*1~~						0 ~~1.3~~	0 ~~7~~	0 ~~64~~									~~4~~							75.7	75.0	From Inlet No.① to Inlet No.② *Actual H=3'-0"
1	27		19+25 (S.W. Ramp)				105	108	33	34				*1 ▲1						2.6	2 ~~7~~	57.5 ~~46~~ ~~84~~ 81.5									4 4							75.8 75.1	75.1 74.3	From Inlet No.④ to Inlet No.⑤ From Inlet No.⑤ to Inlet No.③ *Actual H=3'-0" ▲Actual H=4'-0"
1	31		20+00 (S.W. Ramp)				11	11	5	5															44						2									
1	33 34	107	346+ to 359+	69			1,299	440	607	607														1294							3			0 ~~1~~				94.5	75.5	From Rt. of Sta. 359+ to Manhole No.⑧ 1-12"x36" Tee and 2-18"x36" Tee's Req'd. 1-Plug Structure
1	36		346+45				1	0	1	0	0 ~~1~~																			0 ~~8~~										
1	38		350+ to 359+ 347+ to 349+ Rt																													1,282.5 ~~600~~								
1	39		6+25 (N.E. Ramp)				12	12	5	5															44						2									
1 1 1	49 53 55		347+02 347+ 350+43				415 1 8	0 0 22	37 1 3	0 0 8				*1					0 ~~*1~~	1.3		22.5 ~~8~~	0 ~~156~~			156		4.5 ~~368~~			26 ~~19~~ 4.				0 ~~1~~		0 ~~183~~	82.8 84.0	75.6 82.9	Inlet ⑧ to Exist. 48" R.C.P. *Act. H=3'-0" From Lt. of Sta. 352+ to Manhole No.⑧ *Actual H=7'-3" From Inlet No.⑨ to Storm Sewer ∠ 9°
1	43	38 109	15+34 (N.W. Ramp)				38	38	20	20				*2						2.6		82									5							84.7	84.0	From Inlet No.⑩ to Inlet No.⑨ *Actual H=3'-0"
1	58		352+10																																1					
1	41		5+60 (N.E. Ramp)				5	5													1 ~~2~~						40				1					1				
2	7		352+85				87	87	47	47									•1				142								4		1					87.6	86.1	From Lt. of Sta. 352+ to Manhole No.⑪ •Actual H=6'-8"
2	10		354+03								1																													
2 2	12 14		354+ to 357+ 355+75	0 ~~50~~	0 ~~50~~		42	42	17	17	•	0 ~~170~~	0 ~~100~~	*1						0 ~~1.3~~		66									3							90.0	89.5	From Inlet No.⑬ to Storm Sewer *Actual H=3'-0"
2	17		356+60	100							1																													
1	46		8+50 (Front. Road)			32 ~~45~~	13	13	10	10				*1						1.3		40									1							87.6	87.4	From Inlet No.⑭ to Outlet Ditch *Actual H=3'-0"
2	19		355+		∅							Δ	Δ																											
				263 ~~250~~	0 ~~150~~	32 ~~45~~	2,478	1,145	927	869	3 ~~8~~	Δ ~~340~~	Δ ~~200~~	8 ~~9~~		1	1		2 ~~3~~	9.1 ~~11.7~~	6.0 ~~18~~	578.5 ~~632~~	302 ~~478~~	1,294	134	156	40	4.5 ~~368~~		0 ~~8~~		1,282.5 ~~600~~	1	0 ~~1~~	1 ~~2~~	1	0 ~~183~~			

∅ Included in Profile Quantities
Δ Included in Surfacing Plan

* Requires Concrete Collar

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF INDUSTRIES — STATE OF COLORADO
ZOM FORM NO. 177
JULY 1968

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VII	COLORADO	U 034-1 (12)	11	110

REVISIONS			
R-1	12-27-72	Removed Note	MLM

GENERAL NOTES

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

USE GRADE 60 FOR ALL REINFORCING STEEL, EXCEPT TIES AND STIRRUPS UNLESS OTHERWISE NOTED. ALL TIES AND STIRRUPS ARE GRADE 40.

ALL CONCRETE SURFACES MARKED WITH THE SYMBOL f AS SHOWN ON DRAWING NO. B-13 SHALL RECEIVE A CLASS 2 SURFACE FINISH.

ALL CONCRETE CHAMFERS SHALL BE 3/4 INCH UNLESS OTHERWISE NOTED.

EXPANSION JOINT MATERIAL SHALL MEET A.A.S.H.O. SPECIFICATION M 213-65 UNLESS OTHERWISE NOTED.

SOUNDINGS AND DEPTH OF FOOTINGS ARE IN ACCORDANCE WITH THE BEST AVAILABLE DATA. WHEN DIFFERENT CONDITIONS ARE ENCOUNTERED, THE BRIDGE ENGINEER WILL INSPECT AND DETERMINE IF REDESIGN IS NECESSARY.

WHEN EXCAVATING FOR FOOTINGS, THE FINAL SIX INCHES IN DEPTH SHALL BE DONE BY HAND LABOR METHODS.

FOOTINGS IN ROCK SHALL NOT BE FORMED BUT SHALL BE PLACED AGAINST UNDISTURBED ROCK.

FOR DETAILS OF STRUCTURE EXCAVATION AND STRUCTURE BACKFILL, SEE STANDARD M-206-AA.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE A.A.S.H.O. SPECIFICATION M-183.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE PAINTED IN ACCORDANCE WITH SECTION 509 FOR (Aluminum) PAINT.

ALL BOLTS SHALL BE 3/4" DIAMETER, HIGH STRENGTH, UNLESS OTHERWISE NOTED.

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

EACH REINFORCING BAR SHALL BE TAGGED WITH BAR DESIGNATION, STRUCTURE NUMBER, AND STATION OF THE PROJECT. THE FIRST DIGIT OR DIGITS: 4-11 OF THE BAR DESIGNATION INDICATES THE BAR SIZE, EXAMPLE: 406 = #4 BAR, 1103 = #11 BAR, ETC. ALL DIMENSIONS ON BAR BENDING DIAGRAMS ARE OUT TO OUT. DIMENSIONS FOR REINFORCING BARS NOT SHOWN AS CLEAR SHALL BE TO THE CENTERLINE OF THE BAR.

THE FOLLOWING TABLE SHOWS THE MINIMUM LAP FOR COMMON BAR SIZES:

BAR SIZE NUMBER		4	5	6	7	8	9	10	11
SPLICE	GRADE 40	1'-0"	1'-3"	1'-6"	1'-9"	2'-2"	2'-8"	3'-5"	4'-3"
LENGTH	GRADE 60	1'-6"	1'-11"	2'-3"	2'-8"	3'-0"	3'-5"	4'-2"	5'-0"

E.F. = EACH FACE
N.F. = NEAR FACE
F.F. = FAR FACE
B.E.I. = BY EQUAL INCREMENTS

B — CROSS REFERENCE DRAWING NUMBER
B — SECTION OR DETAIL IDENTIFICATION

WHERE SPLICES CONTAIN BARS OF DIFFERENT DIAMETERS, THE SPLICE LENGTH SHALL BE GOVERNED BY THE SMALLEST BAR.

UNLESS OTHERWISE SHOWN ON THE PLANS OR APPROVED BY THE ENGINEER, SPLICES IN ADJACENT REINFORCING BARS SHALL BE STAGGERED. NO LAPPED SPLICES WILL BE PERMITTED AT LOCATIONS WHERE THE CONCRETE SECTION IS NOT SUFFICIENT TO PROVIDE A MINIMUM CLEAR DISTANCE OF 2 INCHES BETWEEN THE SPLICE AND THE NEAREST ADJACENT BAR.

HOOKS SHALL CONFORM TO THE PROVISIONS OF THE BUILDING CODE REQUIREMENTS FOR REINFORCING CONCRETE OF THE AMERICAN CONCRETE INSTITUTE UNLESS OTHERWISE NOTED. CLEARANCE FROM END OF BARS TO FORMED FACE SHALL BE 2" AND CLEARANCE TO ROUGH FACE SHALL BE 3".

LOADING DATA

LIVELOAD: A.A.S.H.O. HS-20-44 OR INTERSTATE ALTERNATE.
DEADLOAD: ASSUMES 25 LBS. PER SQ. FT. FOR BITUMINOUS PAVEMENT.

DESIGN DATA

A.A.S.H.O. UNIT STRESSES, EXCEPT AS NOTED.

REINFORCING STEEL: Fs = 24,000 LBS. PER SQ. IN. EXCEPT
Fs = 20,000 LBS. PER SQ. IN. IN TRANSVERSE DECK SLAB, STIRRUPS AND TIES.

STRUCTURAL STEEL: A36 Fs = 20,000 LBS. PER SQ. IN.
A572, GRADE 50 Fs = 27,000 LBS. PER SQ. IN.

CONCRETE: Fc = 1,200 LBS. PER SQ. IN.
n = 10

Item No.	Description	Unit	Structure No. C-18-ER Super-struct.	Abut. 1	Abut. 2	Total	Retaining Wall *
206	Structure Excavation	Cu. Yd.		65	75	140	1,680
206	Structure Backfill (Class 2)	Cu. Yd.		63	72	135	3,925
403	Hot Bituminous Pavement (Grading ~~DX~~ E) (C.O. 06260) (Haul and Asphalt)	Ton	107			107	
① 502	Steel Piling (HP 10x42) C.O. 04788	Lin. Ft.		764.66	666.17	1,428.83	4,512.63
502	Steel Piling (HP 12x74) C.O. 04788	Lin. Ft.		~~735~~	~~714~~	~~1,449~~	~~3,255~~
502	Drilling Hole to Facilitate Pile Driving	Lin. Ft.		285.5 ~~147~~	285.5 ~~147~~	569 ~~294~~	~~275~~
507	Concrete Slope & Ditch Paving (Reinforced)	Cu. Yd.		45	50	95	
509	Structural Steel (Galvanized)	Lb.	14,068			14,068	32,410
515	Waterproofing (Membrane)	Sq. Yd.	1,364			1,364	
518	Waterstop (6 Inch)	Lin. Ft.					212
601	Concrete Class A (Bridge)	Cu. Yd.	36	41	44	121	
601	Concrete Class A (Miscellaneous)	Cu. Yd.					628.23 ~~1,275~~
601	Concrete Class S (Bridge)	Cu. Yd.	972.2	56.9	56.9	1,086	
602	Reinforcing Steel	Lb.	179,916	4,917	5,752	190,577	163,546
613	3/4 Inch Electrical Conduit	Lin. Ft.	80 ~~90~~			80 ~~90~~	
613	1 1/2 Inch Electrical Conduit	Lin. Ft.	147 ~~198~~			147 ~~198~~	
③ 618	Prestressing Steel Wire or Strand	Lb.	93,502			93,502	
④	1/2 Inch Expansion Joint Material	Sq. Ft.					270
④	1 Inch Expansion Joint Material	Sq. Ft.					65
502	Steel Piling (HP 10x42) Cut-off	Lin. Ft.					100.00
502	Steel Piling (HP 12x74) Cut-off	Lin. Ft.				14.42	

R-1

① W10x45 or HPS 10x42 may be used in lieu of the HP 10x42

③ This item includes furnishing, placing in the concrete and post-tensioning the prestressing steel. The Contractor shall furnish all stressing equipment and accessories required for installation and stressing operations. Weight shall not be remeasured, but shall be the quantity shown.

④ To be included in the bid price for Item No. 601 Concrete Class A (Miscellaneous)

* To be included in Roadway Quantities.

INDEX OF DRAWINGS

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DWG. NO. B-17 ENGINEERING GEOLOGY
DWG. NO. B-18 PILING LAYOUT - RETAINING WALL
DWG. NO. B-19 RETAINING WALL H=6'-0" TO 24'-0"
DWG. NO. B-20 RETAINING WALL DETAILS
DWG. NO. B-21 RETAINING WALL DETAILS
DWG. NO. B-22 RETAINING WALL DETAILS
DWG. NO. B-23 RETAINING WALL DETAILS

BRIDGE DESCRIPTION

1- Simple span (160'-0") Concrete Box Girder (Post-Tensioned) Bridge.
US 34 Bypass over 23rd Ave.
88'-0" Roadway, curb to curb 89°-0" Skew.
1'-3" curbs. Bridge Rail Type 5.

PAUL CHUVARSKY JR. REGISTERED 4687 PROFESSIONAL ENGINEER STATE OF COLORADO

Approved P. Chuvarsky P.E. 10/24/72
Bridge Engineer Date

DIVISION OF HIGHWAYS

GENERAL INFORMATION SUMMARY OF QUANTITIES

Station 342+32.450 To 343+94.950
Station
Near Greeley Sec 18, 19, 24 & 18 T 5N R 65, 66 W

Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	M. McMullen		
Drawing Number B		of 23	Drawings

DESIGNED	K.G.S.	9-72
CHECKED BY	H.H.M.	
QUANTITIES BY	H.H.M.	9-72
CHECKED BY	J.J.W.	

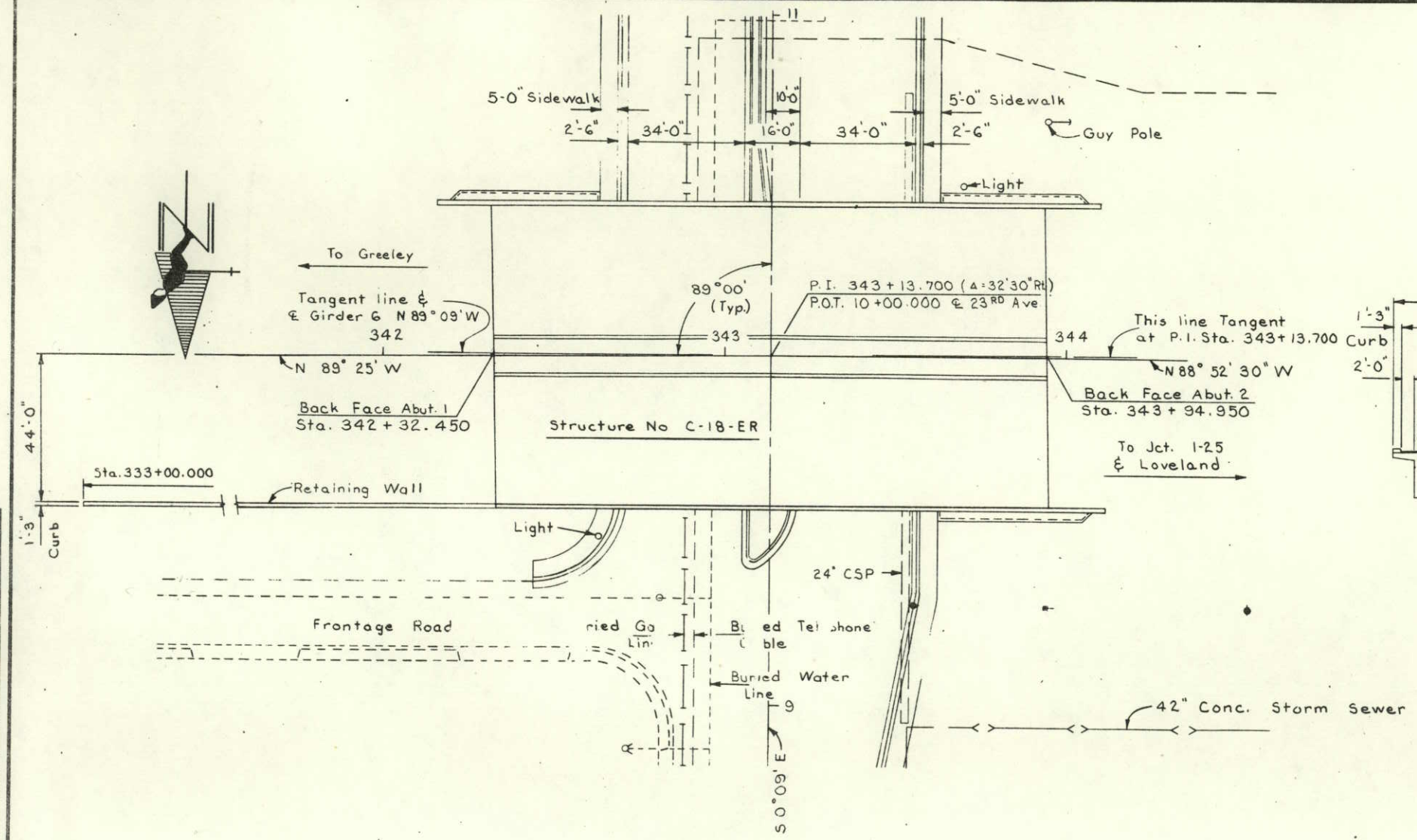
	INITIAL	DATE
DESIGNED	R.W.S.	5-72
CHECKED BY		
DETAILED BY	M.M.	4-72

O(5-1-72)

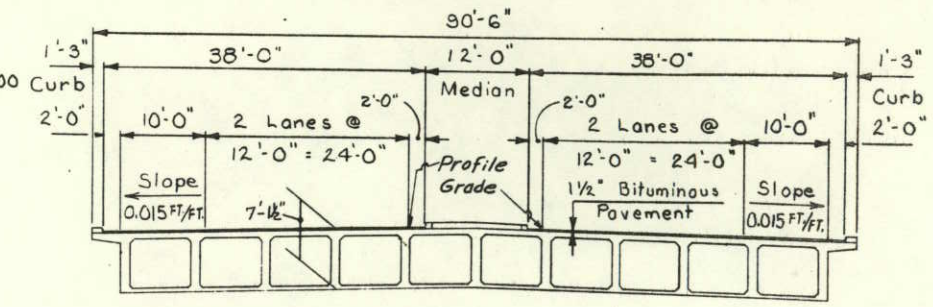
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1 (12)	12	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

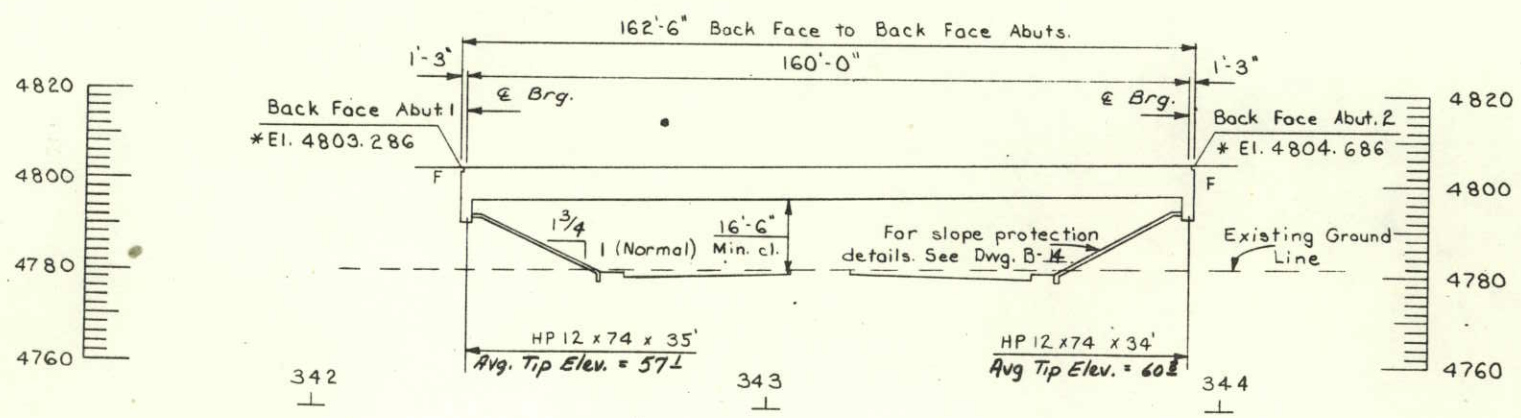
REVISIONS		



PLAN



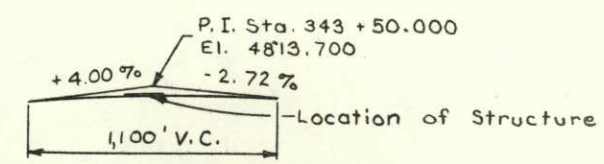
TYPICAL SECTION



SECTION TAKEN @ ℄ GIRDER 6

Note: All piling are end bearing. Pile lengths are estimated.

* Finished Roadway Elevations



PROFILE GRADE

DIVISION OF HIGHWAYS

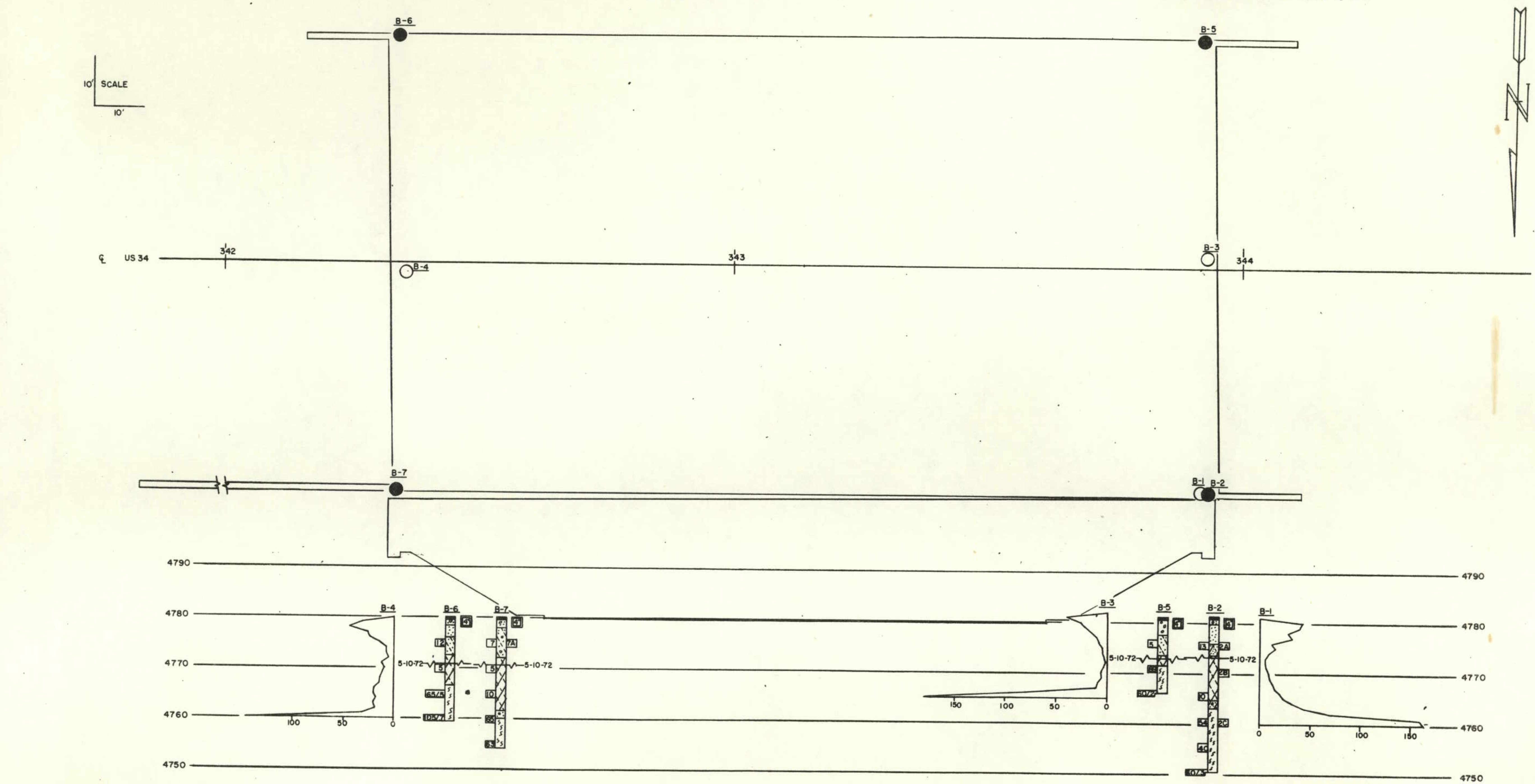
GENERAL LAYOUT

Designer R. Struckman		Structure Numbers	C-18-ER
Detailer K. Sharpley			
Drawing Number 8 2	of 23	Drawings	

DESIGNED BY	R.W.S.	7-72
CHECKED BY	M.E.M.	7-72
DETAILED BY	K.G.S.	8-72
QUANTITIES BY	H.H.M.	9-72
CHECKED BY	R.W.	

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	U 034-1(12)	13	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



SUMMARY OF TEST RESULTS

Sample No.	Depth	Classification: Corps of Engrs. or Visual	Classification: AASHO	Grading Analysis Percent: Gravel	Coarse Sand	Fine Sand	Silt and Clay	Atterberg Limits: Liquid Limit L_w	Plastic Limit P_w	Plastic Index I_w	Water Cont. W %	Wet Unit Weight γ P.C.F.	Unconfined Strength Q_u T.S.F.	Triaxial Shear Strength Unconsolidated: ø°	C T.S.F.	Consolidated: ø°	C T.S.F.	Time hrs.	Press P.S.I.	Dia. Of Sample (Inches)
2A	5.0- 6.5	SANDY CLAY	A-4-(0)	0	6	50	44	26	19	7	17.2									
2B	10.0-11.5	SANDY CLAY	A-4(4)	0	4	19	77	32	16	6	25.0									
2C	20.0-21.5	SANDSTONE	A-2-4(0)	0	0	69	31	NV	NP	NP	26.4									
7A	4.5- 6.0	SILTY SAND	A-2-4(0)	2	8	59	31	NV	NP	NP	10.7									

TYPE OF MATERIAL

- ASPHALT
- SAND & GRAVEL
- SAND
- SANDY SILTY CLAY
- SILTY CLAY
- GRAVEL
- SANDY CLAY & GRAVEL
- SILTY SAND
- SILTY SAND & GRAVEL
- SANDSTONE

LEGEND

TEST BORING

Hole Size
Sample No.
Blows Per Foot (Standard Penetration Test)
Water Table 2/16/67
*2 in. O.D. Split-Tube Sampler
140 Lb. Hammer
30 in. Free Fall
Core Size

CONTINUOUS PENETRATION TEST

2 in. Dia. Drive Point
140 Lb. Hammer
30 in. Free Fall.
0 50 100
Blows per Foot

- Location of Test Boring
- Location of Continuous Penetration Test
- Rotary Boring
- Auger Boring
- Core Boring

STRUCTURE NO. C-18-ER
DWG. NO. B 3 OF 23

DIVISION OF HIGHWAYS
STATE OF COLORADO

ENGINEERING GEOLOGY

Across 23rd AVE
Sta. 343 + 13.700
Near GREELEY Sec. 18,19,13 & 24 T. 5 N. R. 65, 66 W
Geologist K.W.B.
Made by J.J.K.
Checked by G.C.P.
Approved by Bridge Engineer
Date: 19

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1(12)	14	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

REVISIONS		

PROJECT NO. U034-1( )
STR. NO. C-18-ER
U.S. 34 BY-PASS
OVER 23RD AVENUE
NEAR GREELEY-SOUTHWEST PORTION
DESIGNED BY R.W.S.
INPUT BY B.D.E.
ELEVATIONS ARE AT THE TOP OF
CONCRETE DECK

INPUT DATA FOR BRIDGE C-18-ER

POT = 343 + 13.7000 ALPHA = -1 0 0.00 RDWY = 88.0000 GB = 4.0000
PI = 343 + 50.0000 EPI = 4813.5750 VC = 1100 GAH = -2.7200
TYPE = 2 SLOPE = .0150

CL BRGS.-ABUT. 1
CL BRGS.-ABUT. 2

	STATION	ELEVATION
SOUTH OUT		
STA BACK	342 + 32.9100	4802.4881
1 20TH	342 + 40.9100	4802.5946
2 20TH	342 + 48.9100	4802.6971
3 20TH	342 + 56.9100	4802.7958
4 20TH	342 + 64.9100	4802.8905
5 20TH	342 + 72.9101	4802.9813
6 20TH	342 + 80.9101	4803.0683
7 20TH	342 + 88.9101	4803.1513
8 20TH	342 + 96.9101	4803.2304
9 20TH	343 + 4.9101	4803.3056
10 20TH	343 + 12.9102	4803.3769
11 20TH	343 + 20.9102	4803.4442
12 20TH	343 + 28.9102	4803.5077
13 20TH	343 + 36.9102	4803.5672
14 20TH	343 + 44.9102	4803.6229
15 20TH	343 + 52.9103	4803.6746
16 20TH	343 + 60.9103	4803.7224
17 20TH	343 + 68.9103	4803.7664
18 20TH	343 + 76.9103	4803.8064
19 20TH	343 + 84.9103	4803.8424
STA AHEAD	343 + 92.9103	4803.8746
CL GIRDER G1		
STA BACK	342 + 32.9798	4802.5490
1 20TH	342 + 40.9798	4802.6555
2 20TH	342 + 48.9798	4802.7580
3 20TH	342 + 56.9798	4802.8566
4 20TH	342 + 64.9799	4802.9513
5 20TH	342 + 72.9799	4803.0421
6 20TH	342 + 80.9799	4803.1290
7 20TH	342 + 88.9799	4803.2120
8 20TH	342 + 96.9799	4803.2911
9 20TH	343 + 4.9800	4803.3662
10 20TH	343 + 12.9800	4803.4375
11 20TH	343 + 20.9800	4803.5048
12 20TH	343 + 28.9800	4803.5682
13 20TH	343 + 36.9800	4803.6277
14 20TH	343 + 44.9801	4803.6834
15 20TH	343 + 52.9801	4803.7351
16 20TH	343 + 60.9801	4803.7828
17 20TH	343 + 68.9801	4803.8267
18 20TH	343 + 76.9801	4803.8667
19 20TH	343 + 84.9801	4803.9027
STA AHEAD	343 + 92.9802	4803.9349
CL GIRDER G2		
STA BACK	342 + 33.1238	4802.6747
1 20TH	342 + 41.1238	4802.7811
2 20TH	342 + 49.1238	4802.8836
3 20TH	342 + 57.1239	4802.9821
4 20TH	342 + 65.1239	4803.0767
5 20TH	342 + 73.1239	4803.1675
6 20TH	342 + 81.1239	4803.2543
7 20TH	342 + 89.1239	4803.3372
8 20TH	342 + 97.1239	4803.4162
9 20TH	343 + 5.1240	4803.4913
10 20TH	343 + 13.1240	4803.5625
11 20TH	343 + 21.1240	4803.6297
12 20TH	343 + 29.1240	4803.6931
13 20TH	343 + 37.1240	4803.7525
14 20TH	343 + 45.1241	4803.8081
15 20TH	343 + 53.1241	4803.8597
16 20TH	343 + 61.1241	4803.9074
17 20TH	343 + 69.1241	4803.9512
18 20TH	343 + 77.1241	4803.9911
19 20TH	343 + 85.1241	4804.0271
STA AHEAD	343 + 93.1242	4804.0592
CL GIRDER G3		
STA BACK	342 + 33.2678	4802.8804
1 20TH	342 + 41.2678	4802.9067
2 20TH	342 + 49.2678	4803.0891
3 20TH	342 + 57.2679	4803.1076
4 20TH	342 + 65.2679	4803.2022
5 20TH	342 + 73.2679	4803.2928
6 20TH	342 + 81.2679	4803.3796
7 20TH	342 + 89.2679	4803.4624
8 20TH	342 + 97.2680	4803.5413
9 20TH	343 + 5.2680	4803.6163
10 20TH	343 + 13.2680	4803.6875
11 20TH	343 + 21.2680	4803.7546
12 20TH	343 + 29.2680	4803.8179
13 20TH	343 + 37.2680	4803.8773
14 20TH	343 + 45.2681	4803.9328
15 20TH	343 + 53.2681	4803.9843
16 20TH	343 + 61.2681	4804.0320
17 20TH	343 + 69.2681	4804.0757
18 20TH	343 + 77.2681	4804.1156
19 20TH	343 + 85.2682	4804.1515
STA AHEAD	343 + 93.2682	4804.1835
CL GIRDER G4		
STA BACK	342 + 33.4118	4802.9261
1 20TH	342 + 41.4118	4803.0324
2 20TH	342 + 49.4118	4803.1347
3 20TH	342 + 57.4119	4803.2331
4 20TH	342 + 65.4119	4803.3276
5 20TH	342 + 73.4119	4803.4182
6 20TH	342 + 81.4119	4803.5048
7 20TH	342 + 89.4119	4803.5876
8 20TH	342 + 97.4120	4803.6665
9 20TH	343 + 5.4120	4803.7414
10 20TH	343 + 13.4120	4803.8124
11 20TH	343 + 21.4120	4803.8796
12 20TH	343 + 29.4120	4803.9428
13 20TH	343 + 37.4120	4804.0021
14 20TH	343 + 45.4121	4804.0575
15 20TH	343 + 53.4121	4804.1090
16 20TH	343 + 61.4121	4804.1566
17 20TH	343 + 69.4121	4804.2002
18 20TH	343 + 77.4121	4804.2400
19 20TH	343 + 85.4122	4804.2758
STA AHEAD	343 + 93.4122	4804.3078
CL GIRDER G5		
STA BACK	342 + 33.5558	4803.0518
1 20TH	342 + 41.5558	4803.1500
2 20TH	342 + 49.5558	4803.2402
3 20TH	342 + 57.5559	4803.3586
4 20TH	342 + 65.5559	4803.4530
5 20TH	342 + 73.5559	4803.5435
6 20TH	342 + 81.5559	4803.6301
7 20TH	342 + 89.5559	4803.7128
8 20TH	342 + 97.5560	4803.7916
9 20TH	343 + 5.5560	4803.8665
10 20TH	343 + 13.5560	4803.9374
11 20TH	343 + 21.5560	4804.0045
12 20TH	343 + 29.5560	4804.0676
13 20TH	343 + 37.5561	4804.1269
14 20TH	343 + 45.5561	4804.1822
15 20TH	343 + 53.5561	4804.2336
16 20TH	343 + 61.5561	4804.2811
17 20TH	343 + 69.5561	4804.3247
18 20TH	343 + 77.5561	4804.3644
19 20TH	343 + 85.5562	4804.4002
STA AHEAD	343 + 93.5562	4804.4321
CL GIRDER G6		
STA BACK	342 + 33.6998	4803.1775
1 20TH	342 + 41.6998	4803.2836
2 20TH	342 + 49.6999	4803.3858
3 20TH	342 + 57.6999	4803.4841
4 20TH	342 + 65.6999	4803.5784
5 20TH	342 + 73.6999	4803.6689
6 20TH	342 + 81.6999	4803.7554
7 20TH	342 + 89.6999	4803.8380
8 20TH	342 + 97.7000	4803.9167
9 20TH	343 + 5.7000	4803.9915
10 20TH	343 + 13.7000	4804.0624
11 20TH	343 + 21.7000	4804.1294
12 20TH	343 + 29.7000	4804.1925
13 20TH	343 + 37.7001	4804.2517
14 20TH	343 + 45.7001	4804.3069
15 20TH	343 + 53.7001	4804.3583
16 20TH	343 + 61.7001	4804.4057
17 20TH	343 + 69.7001	4804.4492
18 20TH	343 + 77.7001	4804.4888
19 20TH	343 + 85.7002	4804.5246
STA AHEAD	343 + 93.7002	4804.5563
CL GIRDER G7		
STA BACK	342 + 33.8438	4803.0557
1 20TH	342 + 41.8438	4803.1617
2 20TH	342 + 49.8439	4803.2638
3 20TH	342 + 57.8439	4803.3620
4 20TH	342 + 65.8439	4803.4563
5 20TH	342 + 73.8439	4803.5467
6 20TH	342 + 81.8439	4803.6332
7 20TH	342 + 89.8439	4803.7157
8 20TH	342 + 97.8440	4803.7944
9 20TH	343 + 5.8440	4803.8691
10 20TH	343 + 13.8440	4803.9399
11 20TH	343 + 21.8440	4804.0068
12 20TH	343 + 29.8440	4804.0698
13 20TH	343 + 37.8441	4804.1289
14 20TH	343 + 45.8441	4804.1841
15 20TH	343 + 53.8441	4804.2354
16 20TH	343 + 61.8441	4804.2828
17 20TH	343 + 69.8441	4804.3262
18 20TH	343 + 77.8442	4804.3658
19 20TH	343 + 85.8442	4804.4014
STA AHEAD	343 + 93.8442	4804.4331
CL GIRDER G8		
STA BACK	342 + 33.9878	4802.9339
1 20TH	342 + 41.9878	4803.0399
2 20TH	342 + 49.9879	4803.1419
3 20TH	342 + 57.9879	4803.2400
4 20TH	342 + 65.9879	4803.3342
5 20TH	342 + 73.9879	4803.4245
6 20TH	342 + 81.9879	4803.5109
7 20TH	342 + 89.9880	4803.5934
8 20TH	342 + 97.9880	4803.6720
9 20TH	343 + 5.9880	4803.7467
10 20TH	343 + 13.9880	4803.8174
11 20TH	343 + 21.9880	4803.8843
12 20TH	343 + 29.9880	4803.9472
13 20TH	343 + 37.9881	4804.0062
14 20TH	343 + 45.9881	4804.0613
15 20TH	343 + 53.9881	4804.1125
16 20TH	343 + 61.9881	4804.1598
17 20TH	343 + 69.9881	4804.2032
18 20TH	343 + 77.9882	4804.2427
19 20TH	343 + 85.9882	4804.2783
STA AHEAD	343 + 93.9882	4804.3099
CL GIRDER G9		
STA BACK	342 + 34.1318	4802.8121
1 20TH	342 + 42.1318	4802.9180
2 20TH	342 + 50.1319	4803.0199
3 20TH	342 + 58.1319	4803.1180
4 20TH	342 + 66.1319	4803.2121
5 20TH	342 + 74.1319	4803.3024
6 20TH	342 + 82.1319	4803.3887
7 20TH	342 + 90.1320	4803.4711
8 20TH	342 + 98.1320	4803.5496
9 20TH	343 + 6.1320	4803.6242
10 20TH	343 + 14.1320	4803.6949
11 20TH	343 + 22.1320	4803.7617
12 20TH	343 + 30.1320	4803.8245
13 20TH	343 + 38.1321	4803.8835
14 20TH	343 + 46.1321	4803.9385
15 20TH	343 + 54.1321	4803.9897
16 20TH	343 + 62.1321	4804.0369
17 20TH	343 + 70.1321	4804.0802
18 20TH	343 + 78.1322	4804.1196
19 20TH	343 + 86.1322	4804.1551
STA AHEAD	343 + 94.1322	4804.1867
CL GIRDER G10		
STA BACK	342 + 34.2758	4802.6903
1 20TH	342 + 42.2759	4802.7961
2 20TH	342 + 50.2759	4802.8980
3 20TH	342 + 58.2759	4802.9960
4 20TH	342 + 66.2759	4803.0901
5 20TH	342 + 74.2759	4803.1802
6 20TH	342 + 82.2759	4803.2665
7 20TH	342 + 90.2760	4803.3488
8 20TH	342 + 98.2760	4803.4272
9 20TH	343 + 6.2760	4803.5018
10 20TH	343 + 14.2760	4803.5724
11 20TH	343 + 22.2760	4803.6391
12 20TH	343 + 30.2761	4803.7019
13 20TH	343 + 38.2761	4803.7608
14 20TH	343 + 46.2761	4803.8157
15 20TH	343 + 54.2761	4803.8668
16 20TH	343 + 62.2761	4803.9140
17 20TH	343 + 70.2761	4803.9572
18 20TH	343 + 78.2762	4803.9965
19 20TH	343 + 86.2762	4804.0320
STA AHEAD	343 + 94.2762	4804.0635
CL GIRDER G11		
STA BACK	342 + 34.4198	4802.5685
1 20TH	342 + 42.4199	4802.6742
2 20TH	342 + 50.4199	4802.7760
3 20TH	342 + 58.4199	4802.8740
4 20TH	342 + 66.4199	4802.9680
5 20TH	342 + 74.4199	4803.0581
6 20TH	342 + 82.4199	4803.1442
7 20TH	342 + 90.4200	4803.2265
8 20TH	342 + 98.4200	4803.3049
9 20TH	343 + 6.4200	4803.3793
10 20TH	343 + 14.4200	4803.4499
11 20TH	343 + 22.4200	4803.5165
12 20TH	343 + 30.4201	4803.5792
13 20TH	343 + 38.4201	4803.6380
14 20TH	343 + 46.4201	4803.6929
15 20TH	343 + 54.4201	4803.7439
16 20TH	343 + 62.4201	4803.7910
17 20TH	343 + 70.4202	4803.8342
18 20TH	343 + 78.4202	4803.8735
19 20TH	343 + 86.4202	4803.9088
STA AHEAD	343 + 94.4202	4803.9403
NORTH OUT		
STA BACK	342 + 34.4897	4802.5094
1 20TH	342 + 42.4897	4802.6151
2 20TH	342 + 50.4897	4802.7169
3 20TH	342 + 58.4897	4802.8148
4 20TH	342 + 66.4897	4802.9088
5 20TH	342 + 74.4897	4802.9988
6 20TH	342 + 82.4898	4803.0850
7 20TH	342 + 90.4898	4803.1672
8 20TH	342 + 98.4898	4803.2455
9 20TH	343 + 6.4898	4803.3200
10 20TH	343 + 14.4898	4803.3905
11 20TH	343 + 22.4899	4803.4571
12 20TH	343 + 30.4899	4803.5198
13 20TH	343 + 38.4899	4803.5785
14 20TH	343 + 46.4899	4803.6334
15 20TH	343 + 54.4899	4803.6844
16 20TH	343 + 62.4900	4803.7314
17 20TH	343 + 70.4900	4803.7746
18 20TH	343 + 78.4900	4803.8138
19 20TH	343 + 86.4900	4803.8491
STA AHEAD	343 + 94.4900	4803.8805

DESIGNED BY	R.W.S.	6-72	M.L.M. 9-72
CHECKED BY			
DETAILED BY	K.G.S.	8-72	X.X.W. 9-72
QUANTITIES BY			
CHECKED BY			

DIVISION OF HIGHWAYS

ELEVATIONS

Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	K. Sharpley		
Drawing Number B 4 of 23 Drawings			

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	15	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

REVISIONS		

BAR LIST – ABUTMENTS 1 AND 2

Mark	No. Req'd. Abut 1	No. Req'd. Abut 2	Length	Type	Dimensions h	Dimensions v
404	11	22	2-9	II	0-11	0-11
410	2	4	19-9	XI		
411			6-2			2-9
to	1 ea.	2 ea	BEI	II	0-8	BEI
421			21-2			10-3
423	5	10	10-7	Str.		
424	2	4	17-6	Str.		
425	220	220	3-0	Str.		
510	15	15	40-0	Str.		
511	14		51-0	Str.		
512	4	4	24-7	V	10-7½	9-8½
513	6	6	24-8½	V	10-8¼	9-9¼
514	6	6	24-10	V	10-9	9-10
515	6	6	24-11½	V	10-9¾	9-10¾
516	6	6	25-1	V	10-10½	9-11½
517	6	6	25-2½	V	10-11¼	10-0¼
518	6	6	25-4	V	11-0	10-1
519	6	6	25-5½	V	11-0¾	10-1¾
520	6	6	25-7	V	11-1½	10-2½
521	6	6	25-8½	V	11-2¼	10-3¼
522	6	6	25-10	V	11-3	10-4
523	1	2	18-2	Str.		
524			17-0			
to	1 ea.	2 ea	BEI	Str.		
528			5-0			
529	1	15	52-4	Str		
530	6	12	7-0	VII	6-0	1-0
610	2	2	40-0	Str.		
611	2	2	52-6	Str.		
612	4		45-9	Str.		
613		4	46-5	Str		
710	3	6	19-2	VII	18-2	1-0
711			18-0		17-0	
to	1 ea.	2 ea	BEI	VII	BEI	1-0
720			4-8		3-8	
901	2	4	20-4	Str.		

SUMMARY – ABUTMENT 1

No. Lin. Ft.	Bar Size	Lbs./Lin. Ft	Weight
968	4	0.668	647
3,096	5	1.043	3,229
368	6	1.502	553
171	7	2.044	349
41	9	3.400	139
	Total		4,917

SUMMARY – ABUTMENT 2

No. Lin. Ft.	Bar Size	Lbs./Lin. Ft	Weight
1,276	4	0.668	852
3,230	5	1.043	3,369
371	6	1.502	557
342	7	2.044	699
81	9	3.400	275
	Total		5,752

BAR LIST – SUPERSTRUCTURE

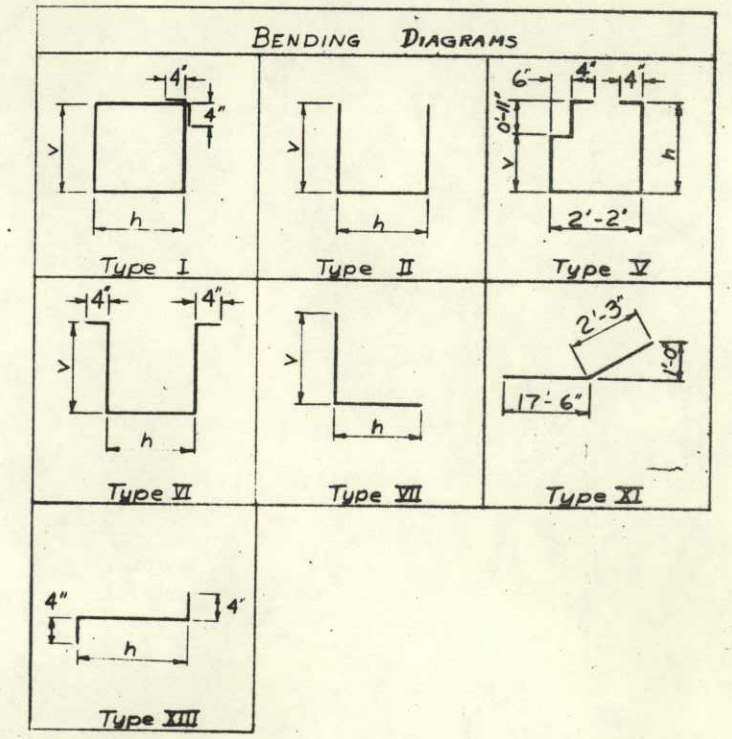
Mark	No Req'd.	Length	Type	Dimensions h	Dimensions v
401	295	60-0	Str		
402	287	24-11	Str.		
403	4	45-6	Str.		
404	218	2-9	II	0-11	0-11
405	48	4-8	I	1-2	0-10
406	140	14-8	VI	0-6	6-9
407	238	1-0	Str.		
501	814	60-0	Str.		
502	378	32-4	Str.		
503	218	45-8	Str.		
504	2940	7-5	II	6-9	0-4
505	294	7-5	XIII	6-9	
506	378	52-4	Str.		
507	378	40-0	Str.		
601	124	60-0	Str.		
602	62	47-2	Str.		
603	12	8-0	Str		
801	44	60-0	Str.		
802	22	48-10	Str.		

SUMMARY

No Lin. Ft.	Bar Size	Lbs/Lin. Ft.	Weight
28,140	4	0.668	18,798
129,905	5	1.043	135,491
10,460	6	1.502	15,711
3,714	8	2.670	9 916
		Total	179,916

Note: Bar List for bridge only.
No bar list provided for Retaining wall.

BENDING DIAGRAMS



INITIAL	DATE	
DESIGNED BY	R.W.	9-72
CHECKED BY	R.G.S.	9-72
DETAILED BY	J.J.W.	8-72
CHECKED BY	J.J.W.	8-72
QUANTITIES BY	J.J.W.	9-72
CHECKED BY	H.H.M.	9-72

DIVISION OF HIGHWAYS

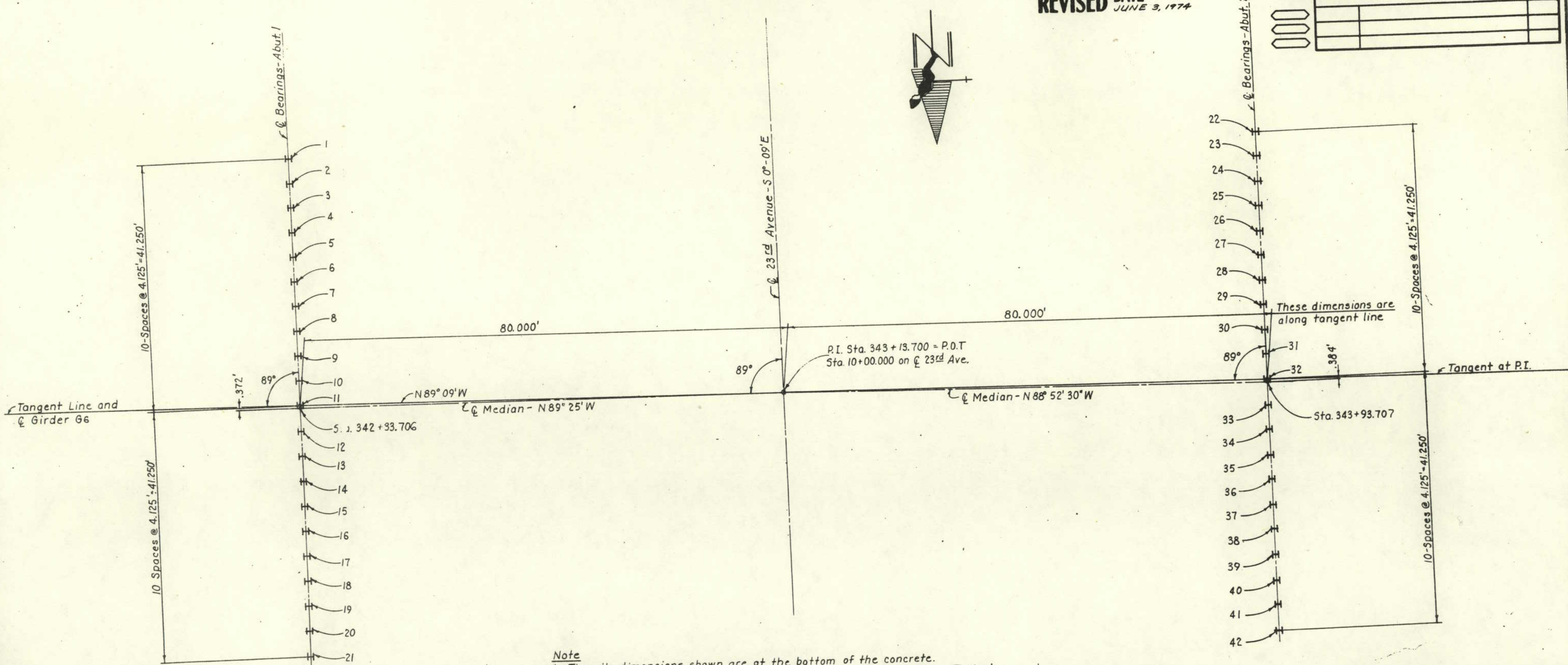
BAR LIST

Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	J. Watson		
Drawing Number B 5		of 23	Drawings

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1(12)	16	110

REVISIONS

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974



Note
1. The pile dimensions shown are at the bottom of the concrete.
2. All piling shall be HP12x74 with a Maximum Pile Load = 94 Tons. - Typical
3. The cut off elevations of the piling are as follows:
   Abut. 1 (Piles No. 1 thru 21) - El. 4792.50
   Abut. 2 (Piles No. 22 thru 42) - El. 4793.90
4. All piles to be driven in predrilled 18" diameter holes through the compacted fill. Holes to be filled with sand after pile driving is completed. All work necessary to accomplish this shall be included in the bid price for Item No. 502 Drilling Hole to Facilitate Pile Driving.

PILING LAYOUT

AVERAGE PILING TIP ELEVATIONS

ABUT. 1 - 4756.09

ABUT. 2 - 4762.27

	INITIAL	DATE			
DESIGNED BY	R.W.S.	6-72	CHECKED BY	KGS	7-72
CHECKED BY			QUANTITIES BY	J.W.	
DETAILED BY	B.D.E.	7-72	CHECKED BY	HHM	9-72

DIVISION OF HIGHWAYS

PILING LAYOUT

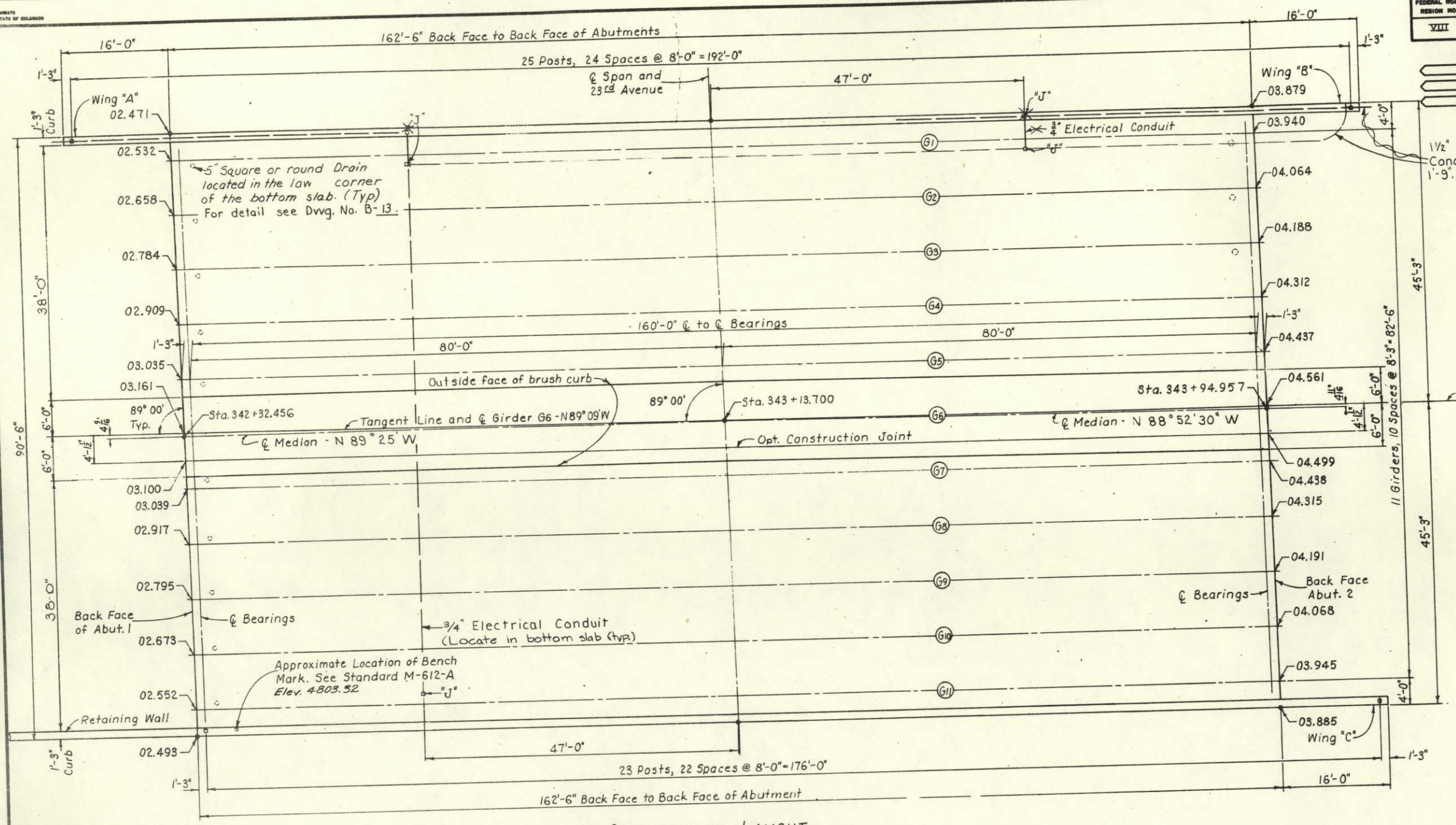
Designer R. Struckman		Structure Numbers	C-18-ER
Detailer B. Einspahr			
Drawing Number B 7	of 23	Drawings	

STATE DEPARTMENT OF HIGHWAYS DIVISION OF HIGHWAYS — STATE OF COLORADO D-H FORM NO. 117 JULY 1955

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO
HDR FORM NO. 179
JULY 1969

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	17	110

REVISIONS



CONSTRUCTION LAYOUT

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

Note~
All elevations shown are at top of concrete deck.
"J" = 6" x 6" x 4" Junction Box flush with bottom of slab. Drain for interior condensation. Typ.

INITIAL	DATE		INITIAL	DATE
DESIGNED BY	R.W.S.	5-72	CHECKED BY	9-72
CHECKED BY			QUANTITIES BY	T.J.W.
DETAILED BY	B.D.E.	7-72	CHECKED BY	H.H.H.

DIVISION OF HIGHWAYS

CONSTRUCTION LAYOUT

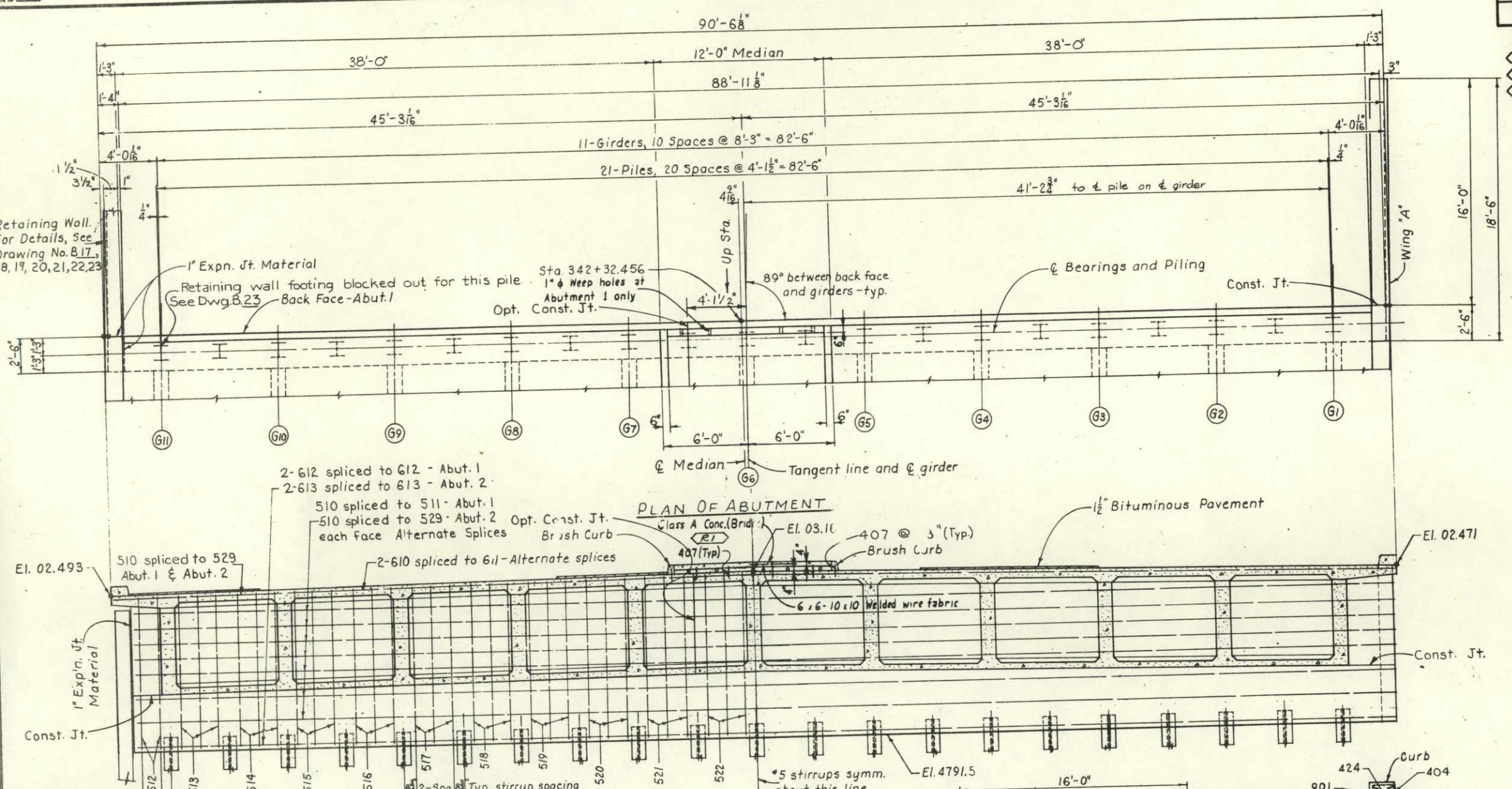
Designer R. Struckman
Detailer B. Einspahr
Structure Numbers C-18-ER
Drawing Number B 6 of 23 Drawings

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO
FORM NO. 119
JULY 1962

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	18	110

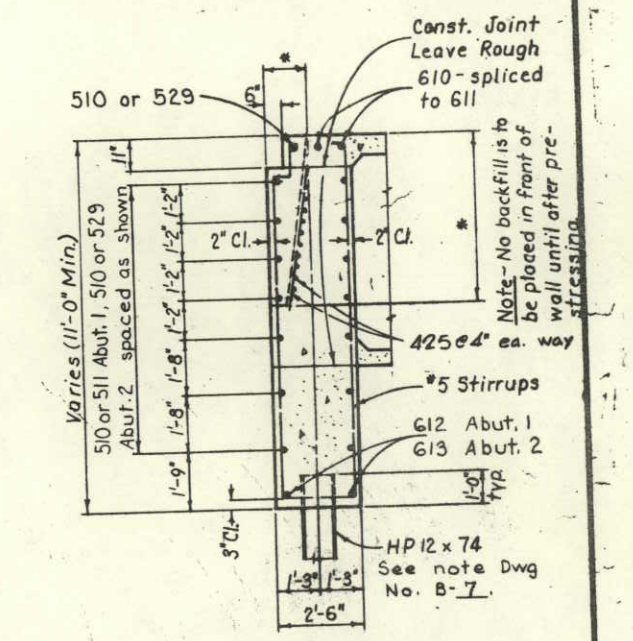
REVISIONS			
R1	12-13-72	Removed word "Gravel"	JRE

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



PLAN OF ABUTMENT

ELEVATION-ABUTMENT 1

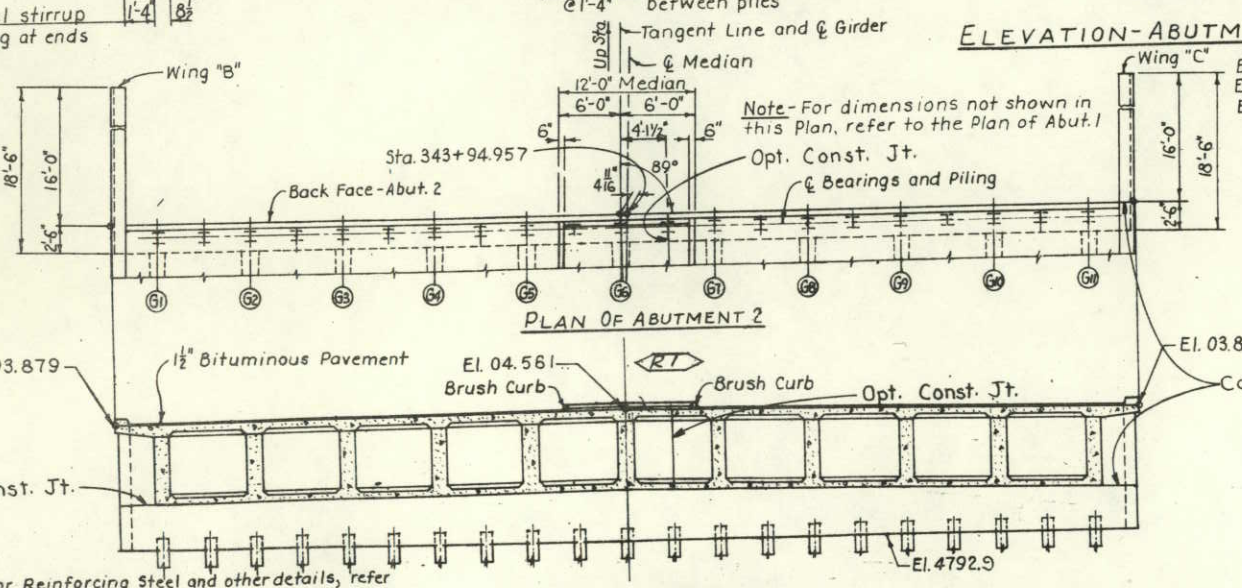


Note - Dimensions and elevations are at the back face of abutment, unless otherwise noted. Abutments, girders, and slabs shall be poured monolithically up to construction joints.

After tensioning, pockets shall be filled with concrete. Edge distance of bearing plates shall be 1 1/2" min.

* See Manufacters Shop Plans for these dimensions. Bar reinforcing interfering with the anchorage shall be adjusted as directed by the engineer.

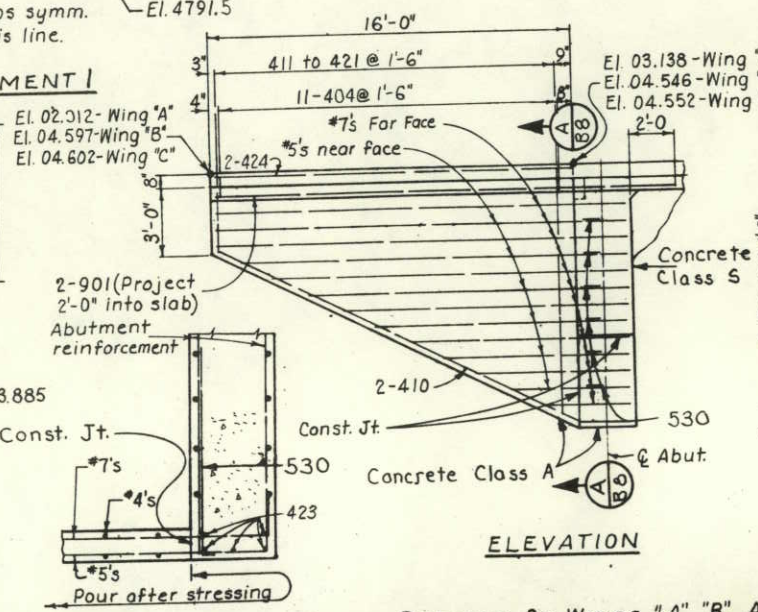
TYPICAL ABUTMENT SECTION



PLAN OF ABUTMENT 2

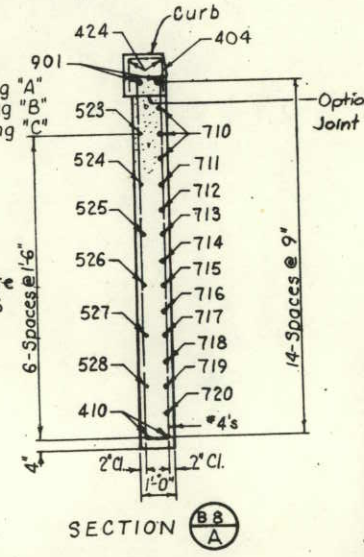
ELEVATION-ABUTMENT 2

Note - For Reinforcing Steel and other details, refer to "ELEVATION-ABUTMENT 1" and "TYPICAL ABUTMENT SECTION", shown on this drawing.



CORNER DETAIL

ELEVATION



SECTION

DETAILS OF WINGS "A", "B", AND "C"

INITIAL	DATE	DESIGNED BY	CHECKED BY	DETAILED BY	CHECKED BY	QUANTITIES BY	CHECKED BY
R.W.S.	6-72						
B.D.E.	7-72	KGS	JJW	HHM			
		9-72		9-72			

DIVISION OF HIGHWAYS

ABUTMENT 1 AND 2 DETAILS

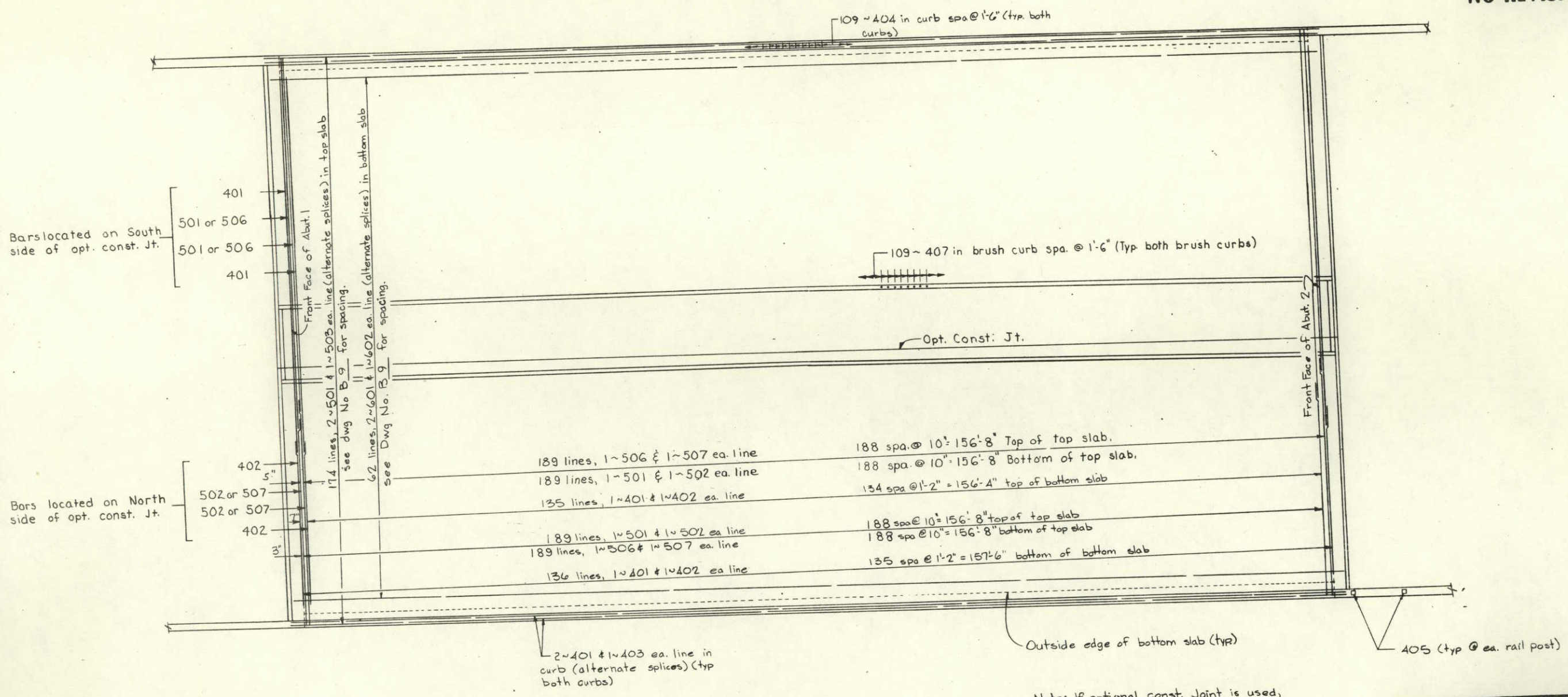
Designer R. Struckman		Structure Numbers	C-18-ER
Detailer B. Einspahr			
Drawing Number B 8	of 23	Drawings	

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO
PROJ. FORM NO. 119
JULY 1958

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1 (12)	18	110

REVISIONS		

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



SLAB REINFORCING

Note: If optional const. Joint is used, south side of structure shall be constructed first.

	INITIAL	DATE		
DESIGNED BY	R.W.S.	5-72	CHECKED BY	KGS 7-72
CHECKED BY			QUANTITIES BY	HHM 9-72
DETAILED BY	T.D.B.	7-72	CHECKED BY	JJW 9-72

DIVISION OF HIGHWAYS

SLAB REINFORCING

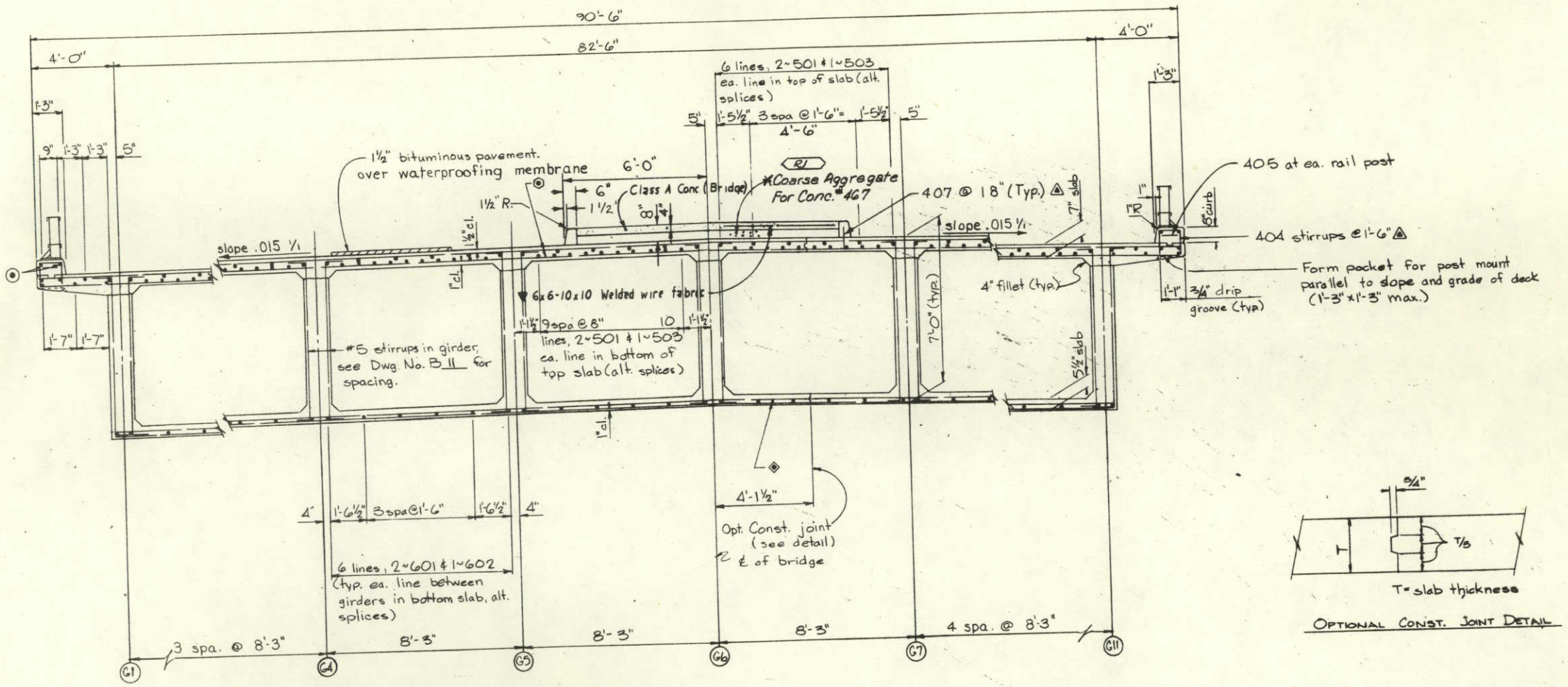
Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	T. Breder		
Drawing Number B 10	of 23	Drawings	

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1 (12)	20	110

REVISIONS			
R1	12-13-72	Added "Coarse Agg. For Conc." #467	JKE

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

NOTE: Asphalt Roll Roofing was placed over the Membrane. C.O. No. 06260



TYPICAL SECTION AT ℄ OF SPAN

OPTIONAL CONST. JOINT DETAIL

NOTES

For girder details see Dwg. No. B 11.
For diaphragm details see Dwg. No. B 12.
▲ 404 & 407 bars may be placed after slab is poured, but before initial set takes place.
◉ 189 lines top of slab & 189 lines bottom of slab, 1~501 & 1~502, or 1~506 & 1~507 ea. line, spa @ 5".
⊙ 2~401 & 1~403 ea. line, typ. in curb, alternate splices.
◈ 1~401 & 1~402 ea line, spa @ 1'-2".
* To be included in bid price for Concrete, Class A (Bridge).
▼ To be included in bid price for Concrete, Class A (Bridge)

DIVISION OF HIGHWAYS

TYPICAL SECTION

Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	T. Breder		
Drawing Number B 9		of 23	Drawings

	INITIAL	DATE	
DESIGNED BY	R.W.	5-72	CHECKED BY
CHECKED BY			QUANTITIES BY
DETAILED BY	T.D.B.	7-72	CHECKED BY

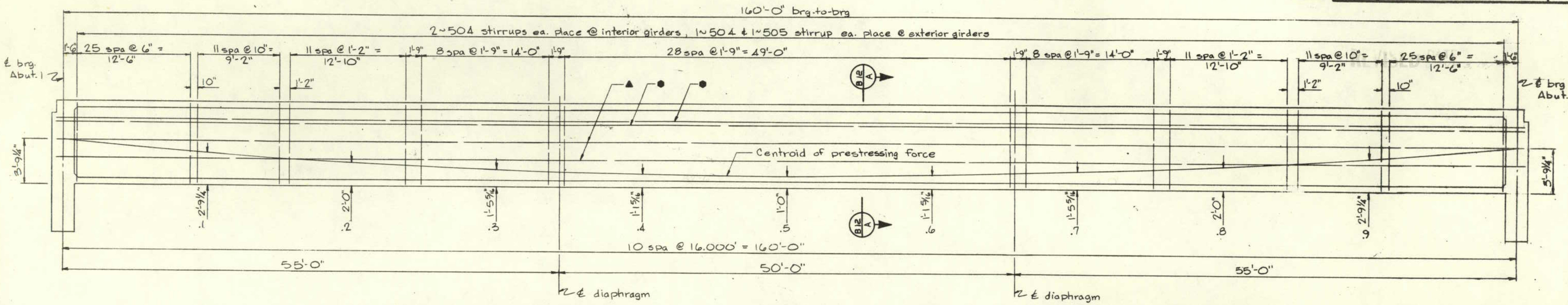
KGS 9-72
HHM
JJV 9-72

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

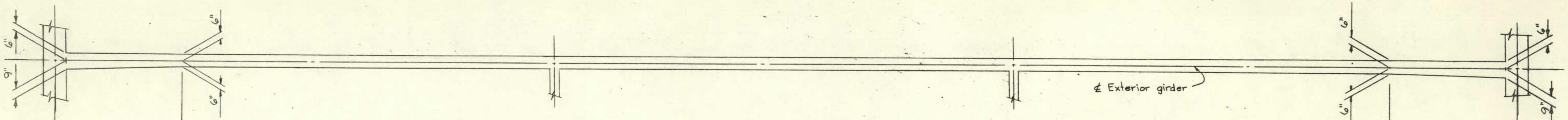
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1 (12)	21	110

REVISIONS

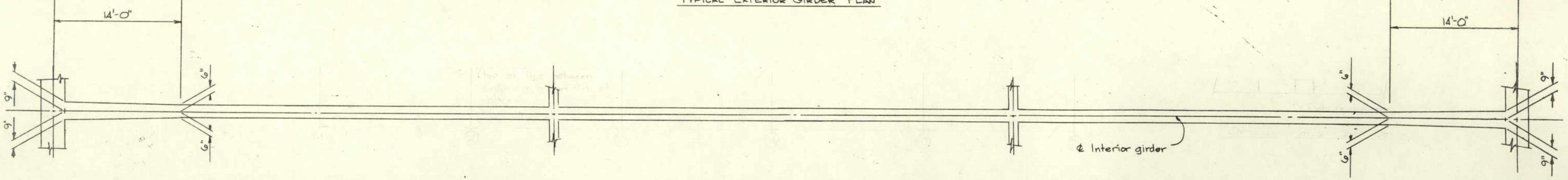


TYPICAL GIRDER ELEVATION

▲ 2~501 & 1~503 E.F.
● 2~801 & 1~802 per line



TYPICAL EXTERIOR GIRDER PLAN



TYPICAL INTERIOR GIRDER PLAN

PRESTRESSING NOTES

Working force (P_f) = the total force per bridge at ℄ span remaining after all losses, including those due to creep and shrinkage of concrete and creep of steel have occured = 24,618^k.

Concrete: $F'c$ = 5,000 psi @ 28 days
$F'ci$ = 4,000 psi @ time of stressing

Clearances for post tensioned units:
1. Horiz. clearance between units = 2½" min.
2. Units may be bundled vertically in groups of 3 max.
3. Vertical clearance between bundled units = 3" min.

GENERAL NOTES

At the contractors option the prestressing force may vary ±5% from the theoretical force per girder provided the total force is obtained and is distributed symmetrical about the ℄ of the typical section.

Units are to be tensioned a few at a time in each girder to minimize stress differentials. Stressing sequence subject to approval by the engineer.

Bar reinforcing interfering with tendon alignment shall be adjusted as directed by the engineer.

DIVISION OF HIGHWAYS

GIRDER DETAILS

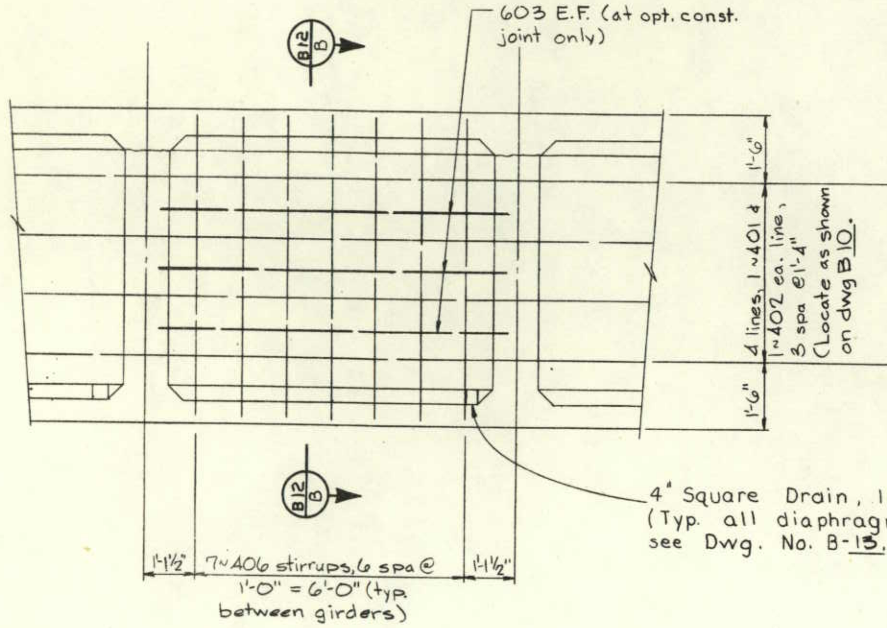
Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	T. Breder		
Drawing Number B	11	of 23	Drawings

	INITIAL	DATE			
DESIGNED BY	RWS	5-72	CHECKED BY	KGS	9-72
CHECKED BY			QUANTITIES BY	HHM	
DETAILED BY	TDB	7-72	CHECKED BY	JJW	9-72

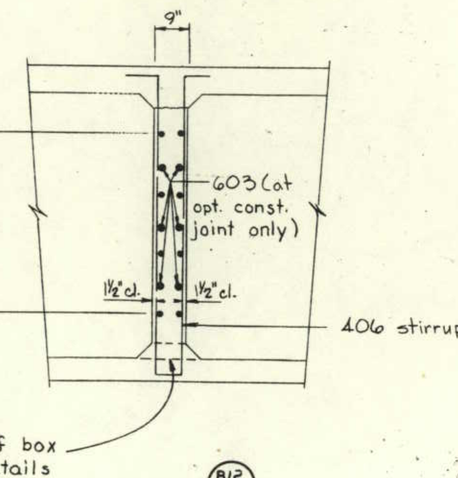
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1(12)	22	110

REVISIONS

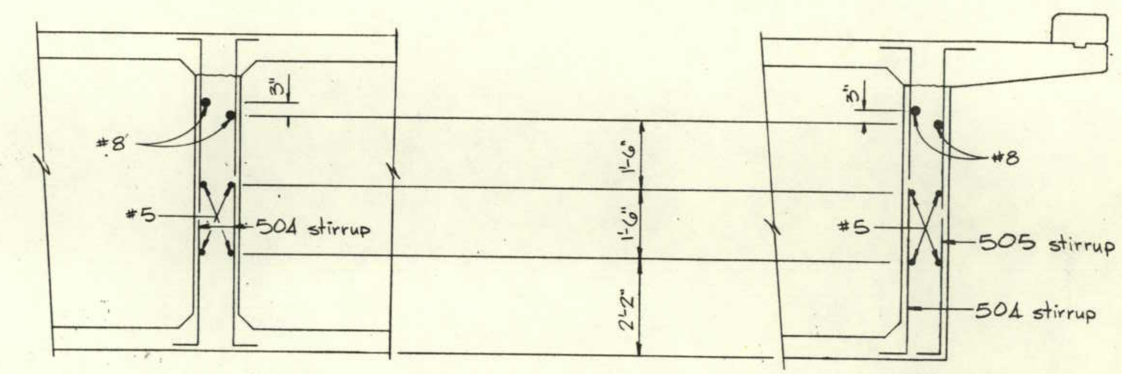
AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



Typical Diaphragm Elevation

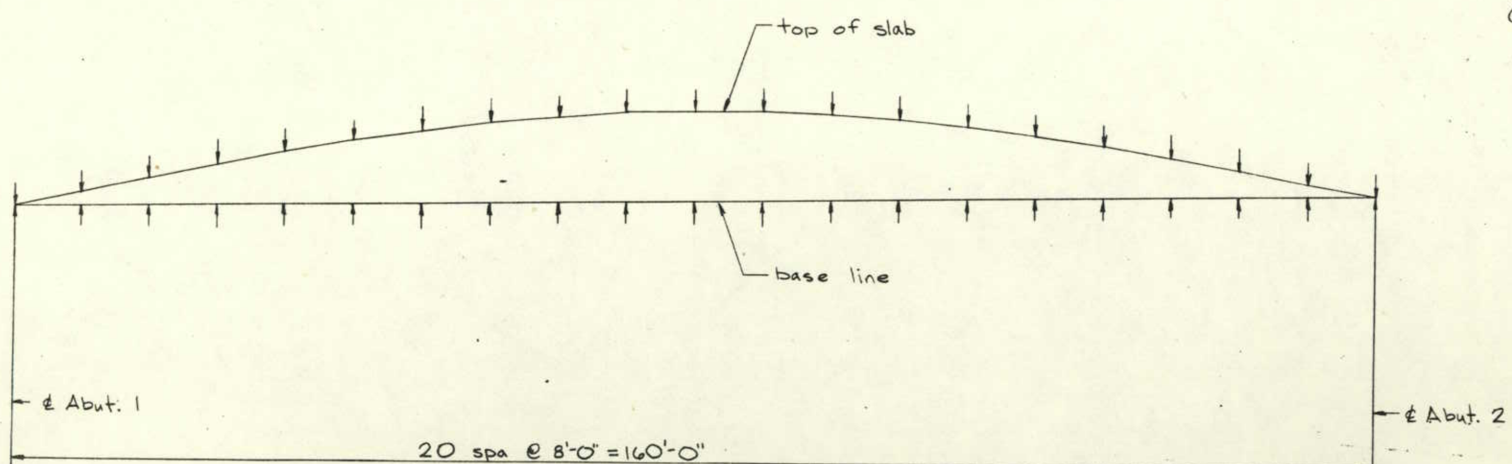


Section B12/B



Section B11/A (at interior girder)

Section B11/A (at exterior girder)



	.0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.00
V. C. Correction	.000	.037	.070	.099	.124	.146	.163	.177	.187	.193	.194	.192	.187	.177	.163	.145	.124	.098	.069	.036	.000
D.L. Deflection + Prestressing Camber	.000	.011	.028	.047	.067	.087	.105	.120	.132	.139	.141	.139	.132	.120	.105	.087	.067	.047	.028	.011	.000
Total Camber	.000	.048	.098	.146	.191	.233	.268	.297	.319	.332	.335	.331	.319	.297	.268	.232	.191	.145	.097	.047	.000

Camber Diagram
(Given in decimals of a foot)

DIVISION OF HIGHWAYS

DIAPHRAGM DETAILS
GIRDER SECTIONS
CAMBER DIAGRAM

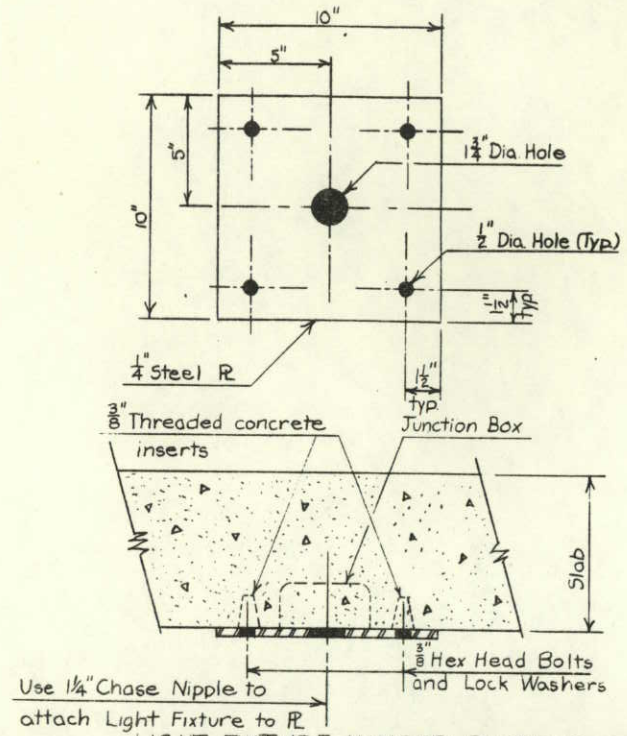
Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	T. Breder		
Drawing Number B	12	of 23	Drawings

	INITIAL	DATE			
DESIGNED BY	R.W.S.	5-72	CHECKED BY	R.F.S.	7-72
CHECKED BY			QUANTITIES BY	HHM	
DETAILED BY	T.D.B.	7-72	CHECKED BY	J.W.	9-72

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	23	110

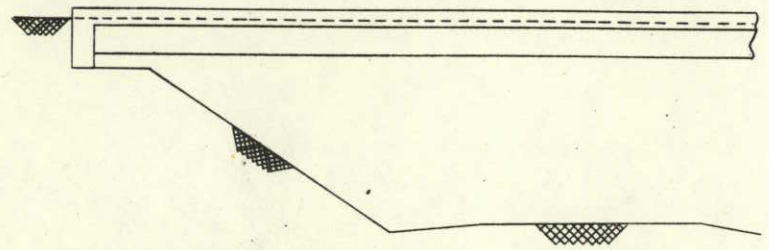
REVISIONS		

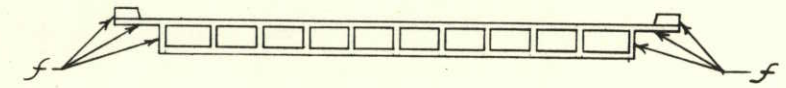
AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



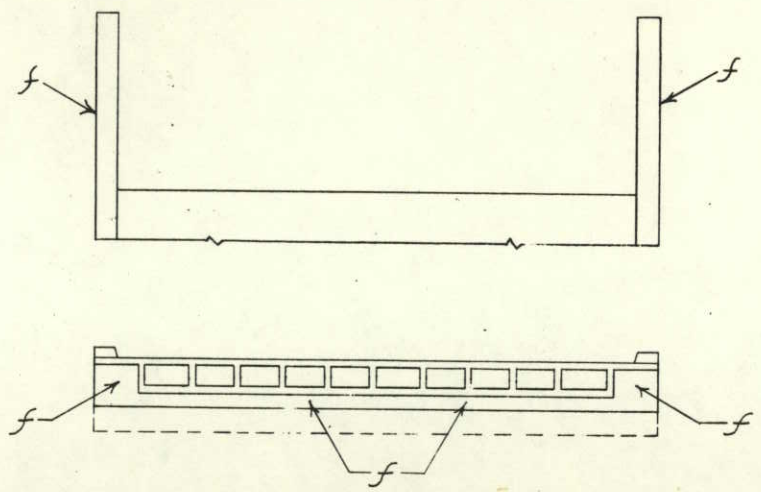
LIGHT FIXTURE HANGER PLATE 2 Req'd

All work necessary to accomplish the above shall be included in the bid price of Item No. 613 Electrical Conduit.
"J" = 6" x 6" x 4" Junction Box flush with bottom of slab.
Drain for interior condensation.

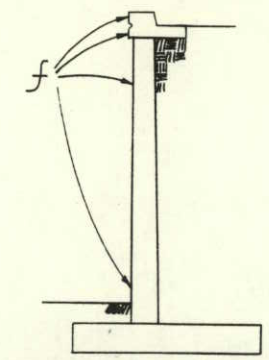




SUPERSTRUCTURE

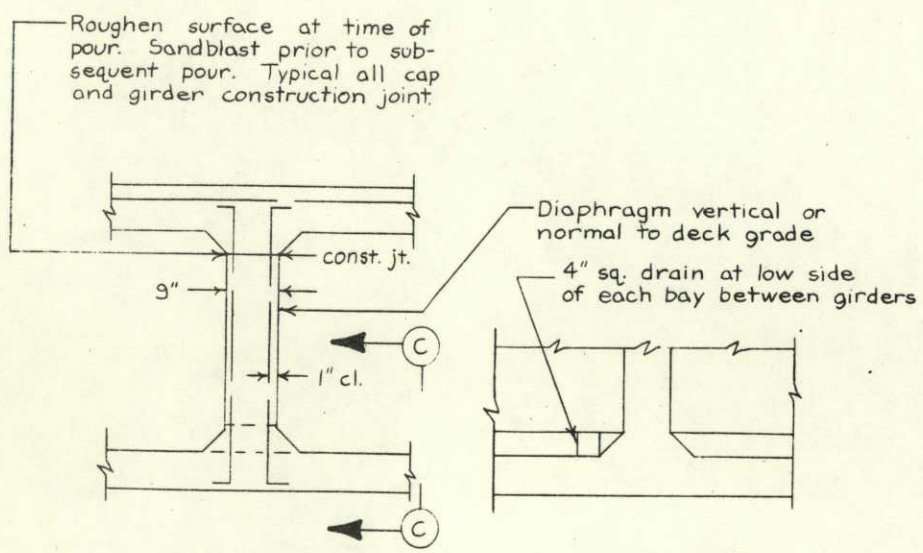


ABUTMENTS



RETAINING WALL

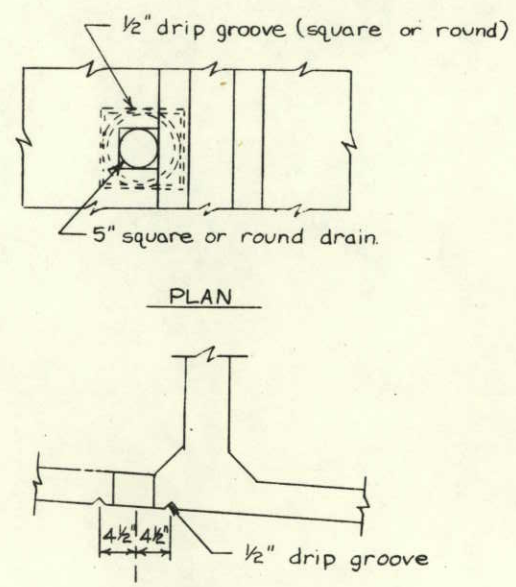
DETAILS SHOWING PORTIONS OF STRUCTURE TO RECEIVE CLASS 2 SURFACE FINISH



ELEVATION

SECTION (C)

INTERMEDIATE DIAPHRAGM SECTION



PLAN

ELEVATION

BOTTOM SLAB DRAIN DETAIL

DIVISION OF HIGHWAYS

MISCELLANEOUS DETAILS

Designer R. Struckman		Structure Numbers	C-18-ER
Detailer M. Roseberry			
Drawing Number B 13	of 23	Drawings	

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO
BDM FORM NO. 117
JULY 1958

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1(12)	24	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

REVISIONS		

NOTES

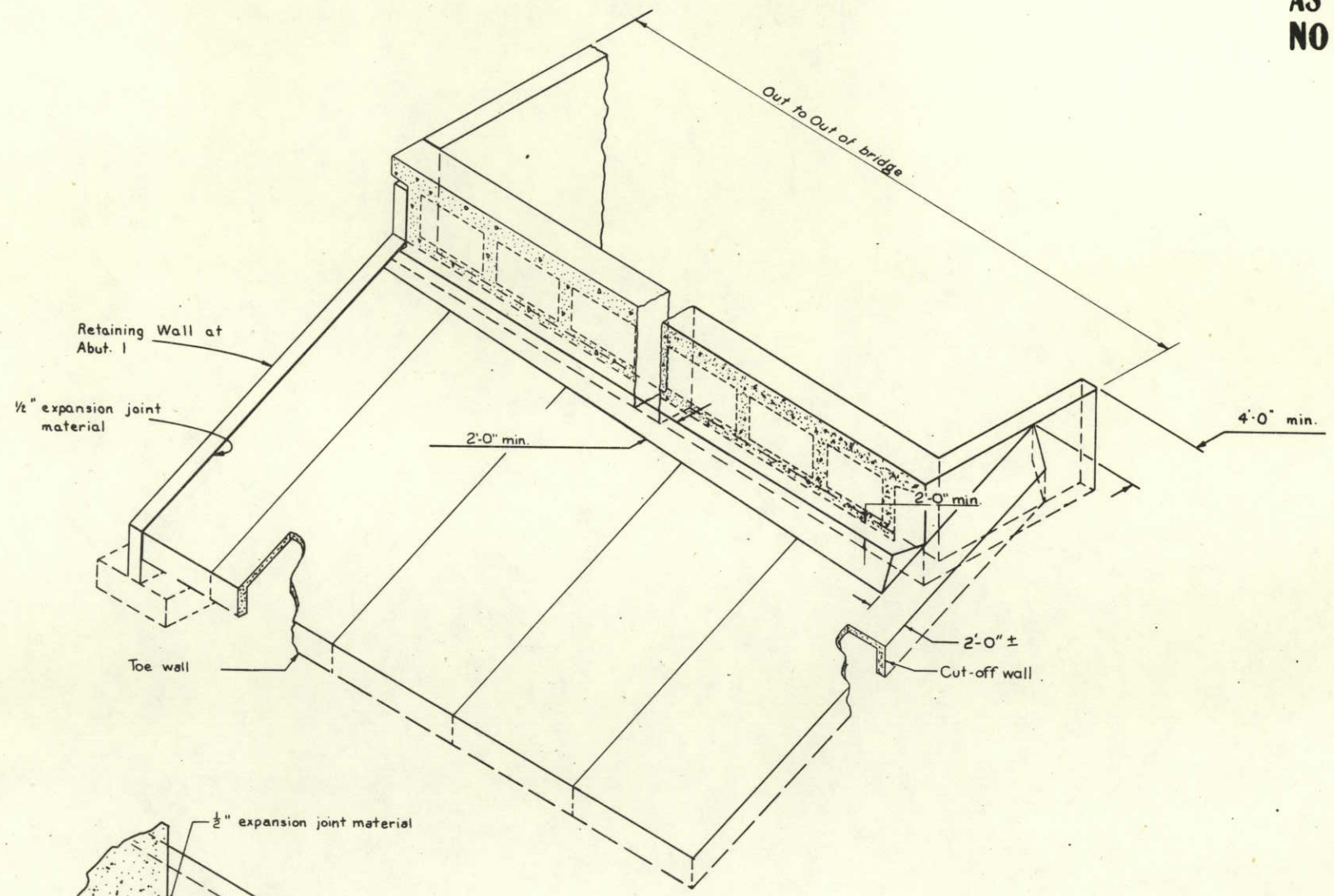
SLOPE PAVING SHALL BE POURED IN 10-FT. TRANSVERSE SECTIONS WITH A TOOLED CONSTRUCTION JOINT AT EACH SECTION.

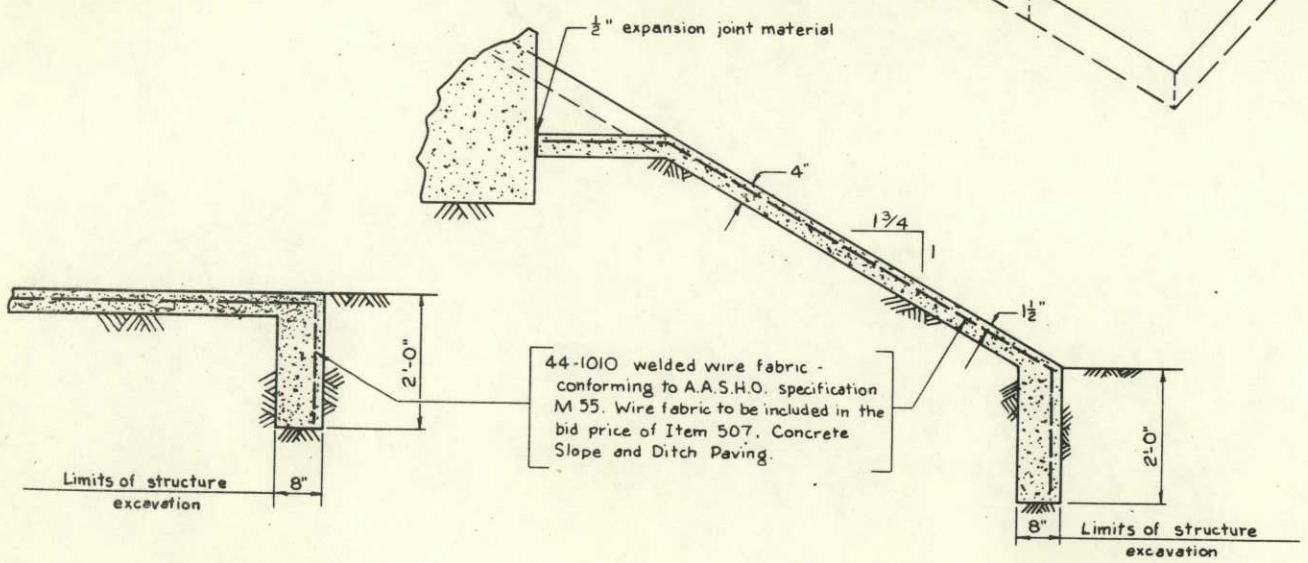
WIRE FABRIC SHALL BE 2" FROM THE END OF JOINTS AND SHALL LAP 4" AT SPLICES.

WHERE SLOPE OR BERM PAVING BUTTS AGAINST STRUCTURAL CONCRETE, SEPARATE WITH 1/2" EXPANSION JOINT MATERIAL. (INCLUDE IN BID PRICE FOR ITEM 507).

TRANSITION ENDS OF SLOPE PAVING MAY BE MODIFIED BY THE ENGINEER TO FIT CONDITIONS ENCOUNTERED IN THE FIELD.

ALL WORK NECESSARY BY THESE REQUIREMENTS SHALL BE INCLUDED IN THE BID PRICE FOR ITEM NUMBER 507.





SECTION THRU CUT-OFF WALL

SECTION THRU SLOPE PAVING

DESIGNED BY	R.W.S.	3-72	
CHECKED BY			
DETAILED BY	K.J.S.	3-72	
CHECKED BY			
QUANTITIES BY			
CHECKED BY			

DIVISION OF HIGHWAYS

SLOPE PAVING DETAILS

Approved:
Bridge Engineer
Date:

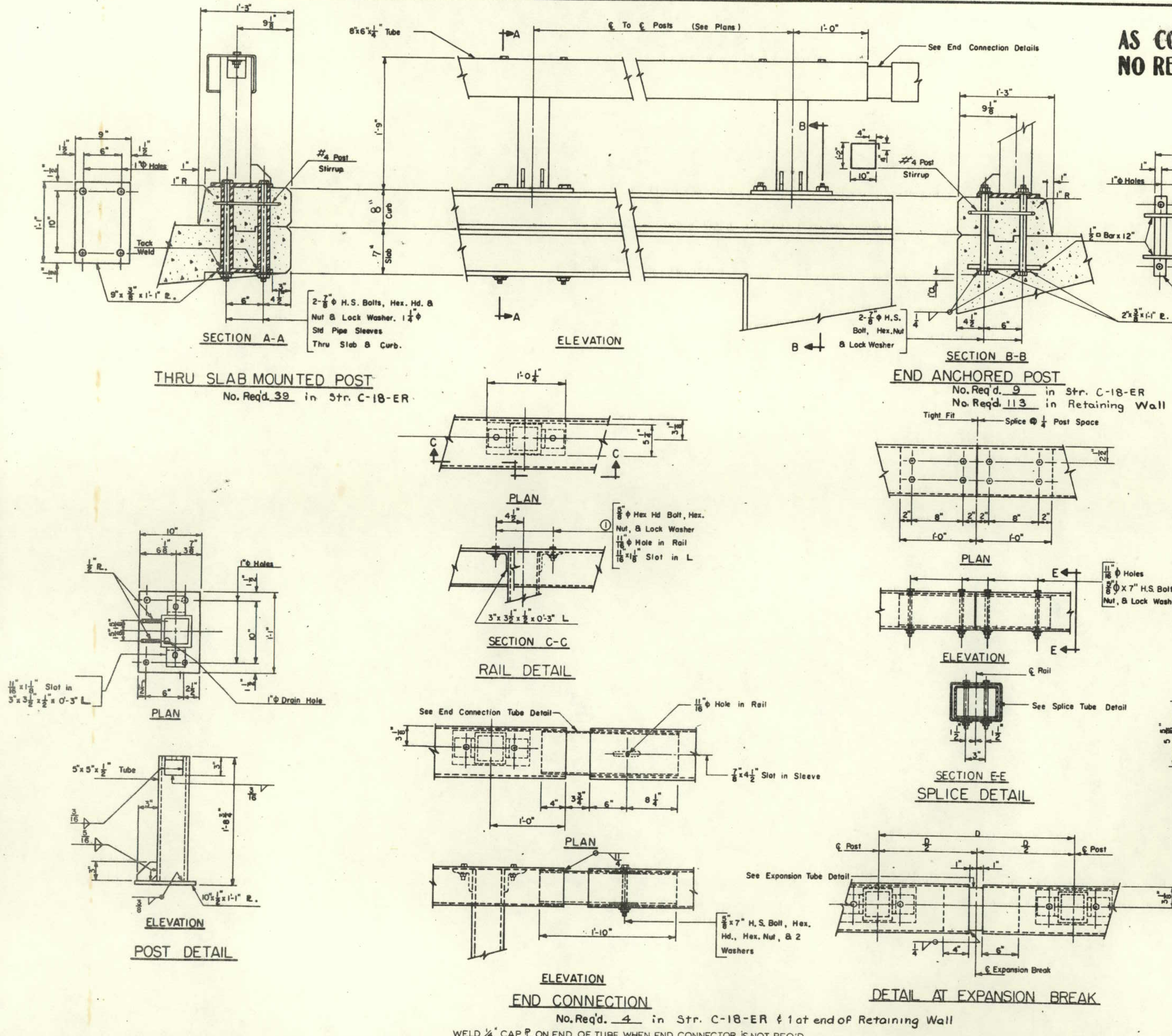
Designer: R. Struckman | Detailer: K. Sharpley
Structure Numbers: C-18-ER
DWG. No. B 14 OF 23

41 (7-1-71)

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1 (12)	25	110

REVISIONS

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



NOTES:

POSTS SHALL BE PERPENDICULAR TO GRADE AND SLOPE OF THE DECK.

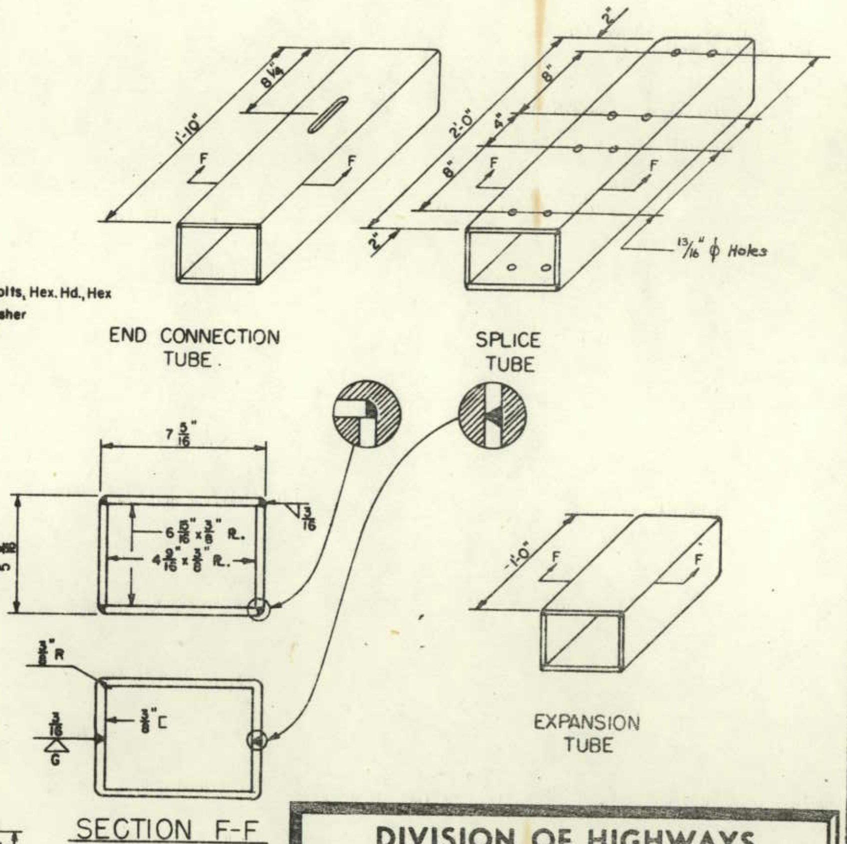
ALL RAIL ELEMENTS, ANCHOR ASSEMBLIES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE SPECIFICATIONS.

A.I.S.I. 1144 STEEL RODS MAY BE USED IN LIEU OF H.S. BOLTS SHOWN. 10° WEDGE TEST NOT REQ. FOR EITHER BOLTS OR RODS USED IN RAIL ASSEMBLY.

(1) 5/8" ø STANDARD FULL THREADED STUDS WELDED TO THE TUBE MAY BE USED. INCREASE SIZE OF SLOT IN THE ANGLE TO 13/16" x 1 1/4"

RAIL SHALL BE CONTINUOUS OVER 3 OR 4 POSTS BEFORE SPLICING.

WHEN THRU SLAB MOUNTED POSTS ARE USED, PRIOR TO SETTING THE POSTS AND TIGHTENING THE NUTS A PERIMETER BEAD OF CAULKING GRADE, POLYURETHANE JOINT SEALER, SHALL BE PLACED ON THE CONCRETE 1" INSIDE THE EDGES OF THE POST BASE PLATE.



DIVISION OF HIGHWAYS

BRIDGE RAIL TYPE 5

Approved:	Designer: R. Struckman	Detailer: K. Sharpley
Bridge Engineer	Structure Numbers	C-18-ER
Date:	DWG. No. B 15	OF 23

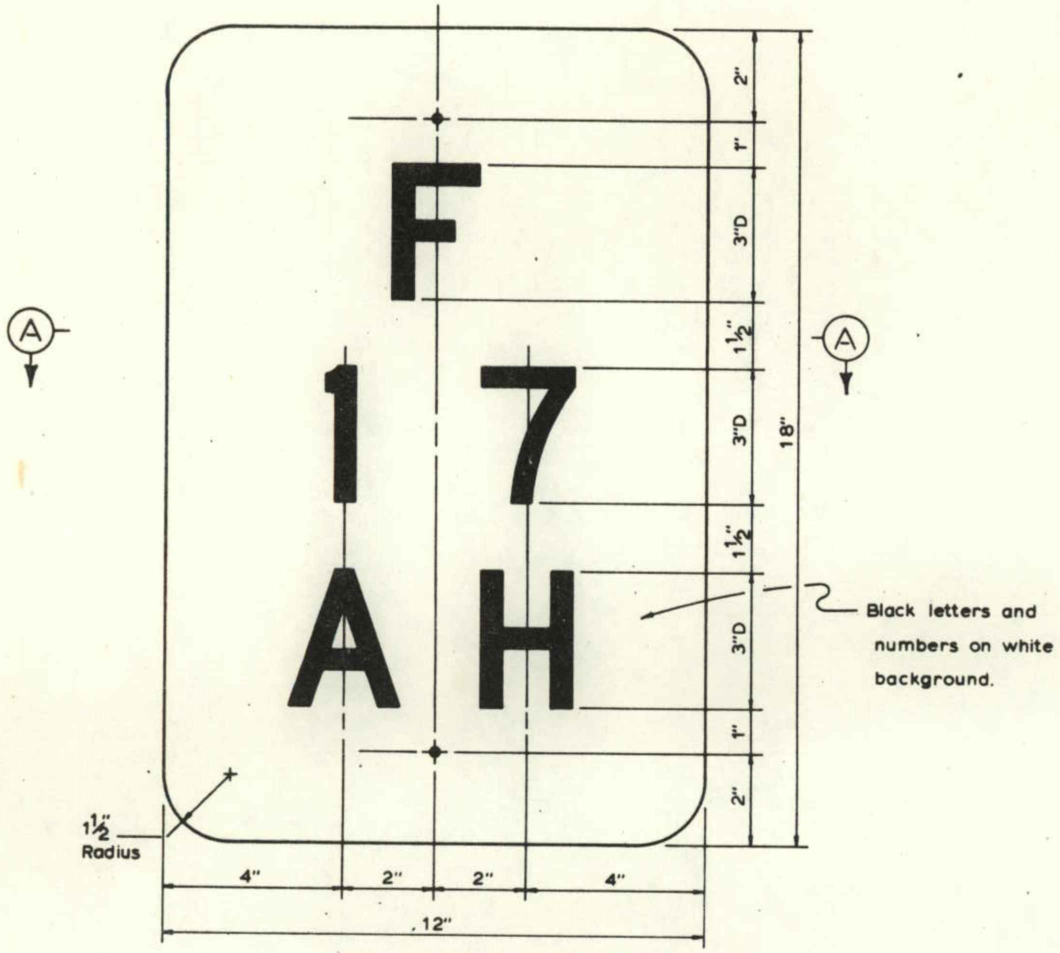
	INITIAL	DATE			
DESIGNED BY	R.W.S.	6-72	CHECKED BY	HLM	9-72
CHECKED BY			QUANTITIES BY	HHM	
DETAILED BY	DLR	4-70	CHECKED BY	JJW	9-72

14(9-1-71)

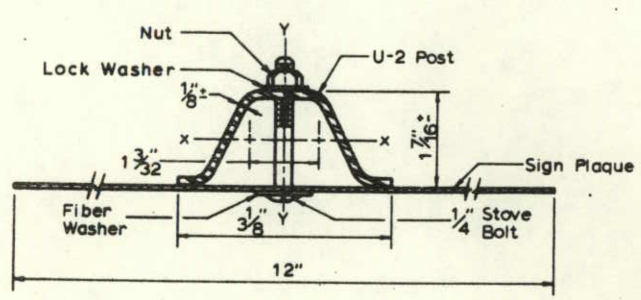
AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1 (12)	26	110

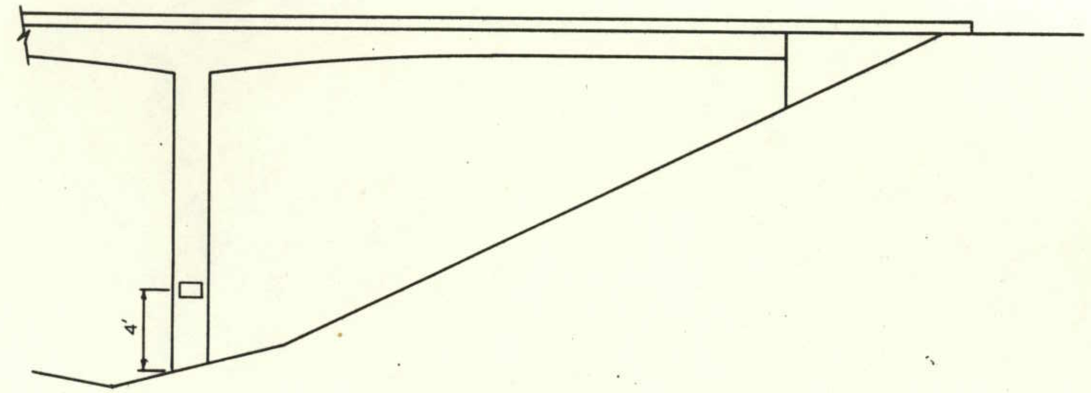
REVISIONS



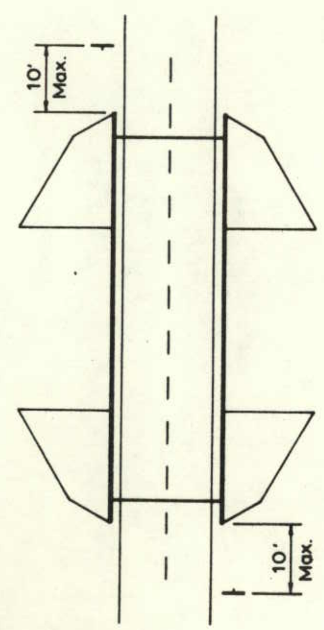
STRUCTURE IDENTIFICATION PANEL
(SAMPLE NUMBERS & LETTERS)



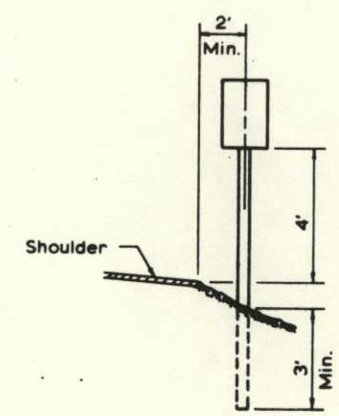
SECTION (A)



STRUCTURE NUMBER LOCATION ON PIERS



(1) STANDARD LOCATION DETAIL



U-2 POST IN GROUND

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.

SIGN PANEL SHALL BE FABRICATED FROM EITHER SHEET STEEL 0.0598 MIN. THICKNESS OR SHEET ALUMINUM 0.080 MIN. THICKNESS.

SIGN PANEL SHALL BE GROUND MOUNTED.

U-2 POST SHALL MEET REQUIREMENTS OF PAR. 4.5 U.S. DEPT. OF COMMERCE, COMMERCIAL STANDARD 184-51. ACCEPTABLE MATERIAL INCLUDES REROLLED RAILROAD RAILS. U-2 POST SHALL WEIGH 2 LBS. PER FT. EXCEPT THAT A MILL TOLERANCE OF MINUS 3-1/2% OF THE WEIGHT OF ANY ONE POST WILL BE ALLOWED. ALTERNATE METAL POST WILL BE ACCEPTABLE IF SECTION MODULUS IS AT LEAST 0.200 $IN.^3$ ABOUT THE X-X AXIS AND AT LEAST 0.250 $IN.^3$ ABOUT THE Y-Y AXIS.

SIGN PANEL SHALL BE FASTENED DIRECTLY TO THE POST WITH TWO 1/4" GALVANIZED OR CADMIUM PLATED STOVE BOLTS. A PLASTIC FIBER WASHER SHALL BE PLACED BETWEEN THE BOLTS HEAD AND THE FACE OF THE PANEL. A GALVANIZED OR CADMIUM PLATED LOCK WASHER SHALL BE PLACED UNDER THE NUT ON THE BACK OF THE POST. EXPOSED BOLT HEADS AND FIBER WASHERS ON THE FACE OF THE SIGN PANEL SHALL BE PAINTED TO MATCH THE SURROUNDING COLOR.

LETTERS AND NUMBERS SHALL BE SERIES "D". THEY SHALL BE 3" HIGH.

THE CORRECT STRUCTURE NUMBER IS SHOWN ON THE PLANS.

(1) OMIT STRUCTURE NUMBER STANDARDS WHERE A RAILROAD TRACK CROSSES OVER THE ROADWAY.

STRUCTURE NUMBER STANDARD SHALL NOT BE PAID FOR SEPARATELY BUT INCLUDED IN THE WORK.

IN ADDITION TO THE REQUIREMENTS STATED ABOVE, STRUCTURE NUMBERS FOR HIGHWAYS PASSING UNDER CROSSROADS ARE TO BE PLACED AT THE FOLLOWING POINTS:

(A) FOR STRUCTURES OF THREE OR MORE SPANS, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF THE END COLUMN OF THE RIGHT HAND PIER.

(B) FOR TWO SPAN STRUCTURES, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUT-SIDE FACE OF EACH END COLUMN OF THE CENTER PIER.

	INITIAL	DATE			
DESIGNED BY	RWS	6-72	CHECKED BY	MLM	9-72
CHECKED BY			QUANTITIES BY	HHH	
DETAILED BY	BRL	1-72	CHECKED BY	JJW	9-72

DIVISION OF HIGHWAYS

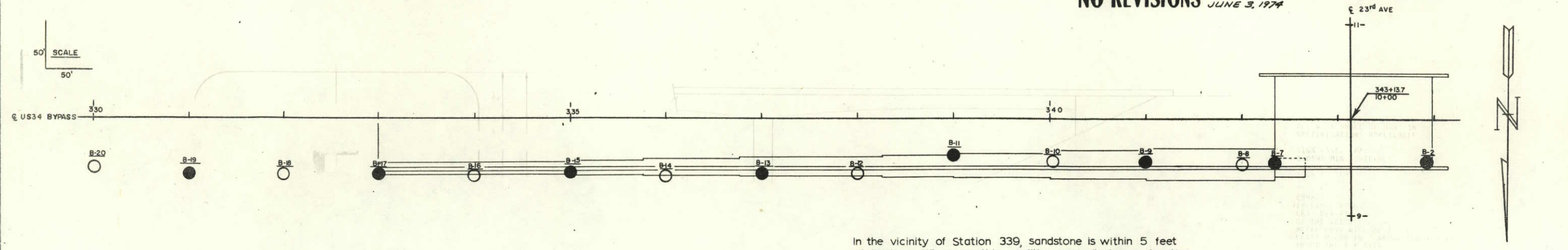
STRUCTURE NUMBER STANDARD

Designer	R. Struckman	Structure Numbers	C-18-ER
Detailer	K. Sharpley		
Drawing Number B 16		of 23	Drawings

70(2-1-72)

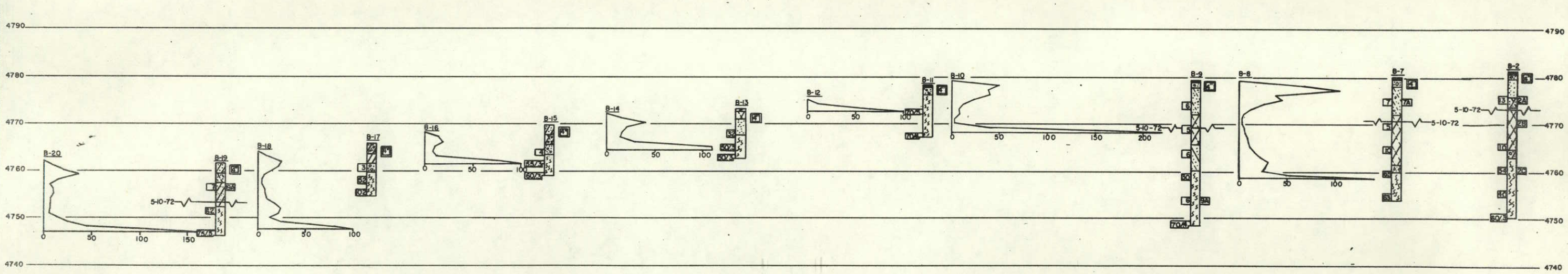
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLO.	U034-1(12)	27	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



In the vicinity of Station 339, sandstone is within 5 feet of footing. Whenever this condition prevails in any location of the wall, drill hole 5 feet below established bottom of footing in order that all piles will be a minimum length of 5'-6" and obtains maximum pile load as established. The pay item will be "502 Drilling hole to facilitate pile driving."

Estimated Pile Lengths	7'-0"	7'-0"	8'-0"	7'-0"	6'-0"	6'-0"	6'-0"	10'-0"	22'-0"	19'-0"
Station	333	334	335	336	337	338	339	340	341	342



SUMMARY OF TEST RESULTS

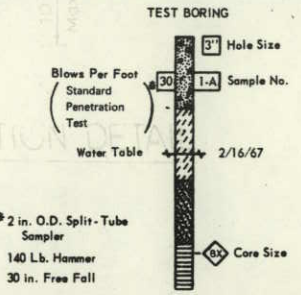
Sample No.	Depth	Classification: Corps of Engrs. or Visual	Classification: AASHO	Grading Analysis (Percent): Gravel	Coarse Sand	Fine Sand	Silt and Clay	Atterberg Limits: Liquid Limit L_w	Plastic Limit P_w	Plastic Index I_w	Water Cont. W %	Wet Unit Weight T P.C.F.	Unconfined Strength Q_u T.S.F.	Triaxial Shear Strength: Unconsolidated ϕ'	C T.S.F.	Consolidated ϕ'	C T.S.F.	Time hrs.	Press P.S.I.	Dia. Of Sample (Inches)
2A	5.0'-6.5'	SANDY CLAY	A-4(0)	0	6	50	44	26	19	7	17.2									
2B	10.0'-11.5'	SANDY CLAY	A-4(4)	0	4	19	77	32	16	6	25.0									
2C	20.0'-21.5'	SANDSTONE	A-2-4(0)	0	0	69	31	NV	NP	NP	26.4									
7A	4.5'-6.0'	SILTY SAND	A-2-4(0)	2	8	59	31	NV	NP	NP	10.7									
9A	24.5'-26.0'	SANDY CLAY	A-7-6(11)	6	2	35	57	44	20	24	32.0									
19A	5.0-6.0	SANDY CLAY	A-6(6)	1	4	29	66	31	18	13	21.4									

TYPE OF MATERIAL

- ASPHALT
- SAND & GRAVEL
- SILTY SAND
- SILTY CLAY
- SILTY CLAYEY SAND
- CLAY
- CLAYEY SILT
- SAND
- SANDY CLAY
- SILTY CLAY & GRAVEL
- SANDY CLAY & GRAVEL
- SILTY SANDY CLAY
- SILTY SAND & GRAVEL
- SANDSTONE

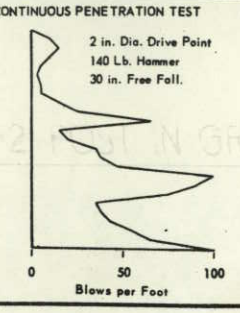
LEGEND

TEST BORING



*2 in. O.D. Split-Tube Sampler
140 Lb. Hammer
30 in. Free Fall

CONTINUOUS PENETRATION TEST



- Location of Test Boring
- Location of Continuous Penetration Test
- Rotary Boring
- Auger Boring
- Core Boring

DIVISION OF HIGHWAYS STATE OF COLORADO

ENGINEERING GEOLOGY

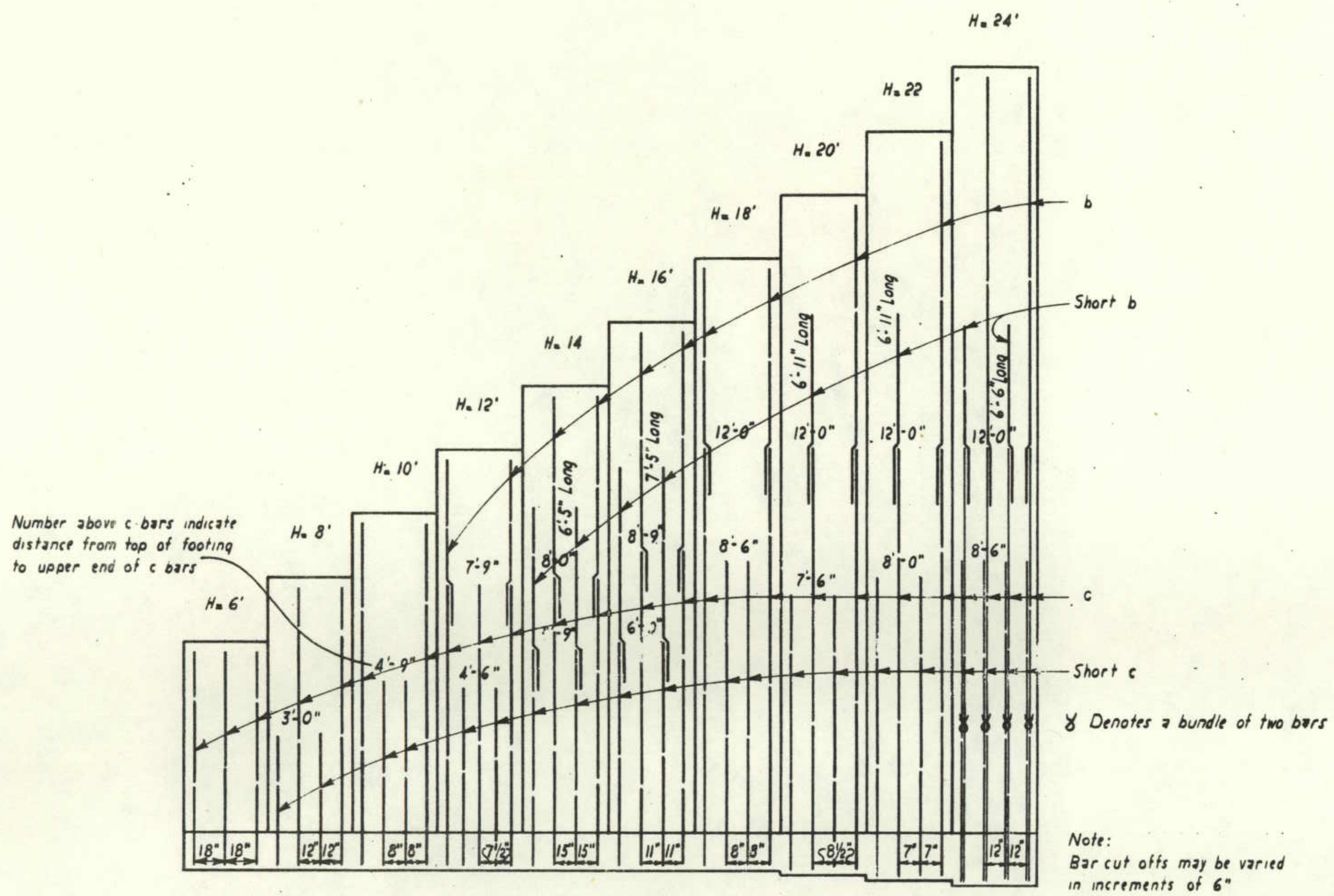
RETAINING WALL
Sta.
Near GREELEY Sec. T. R.
Geologist KWB
Made by JJK
Checked by GCP
Approved by Bridge Engineer
Date: 19

STRUCTURE NO.
DWG. NO. B 17 OF 23

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	28	110

REVISIONS



ELEVATION

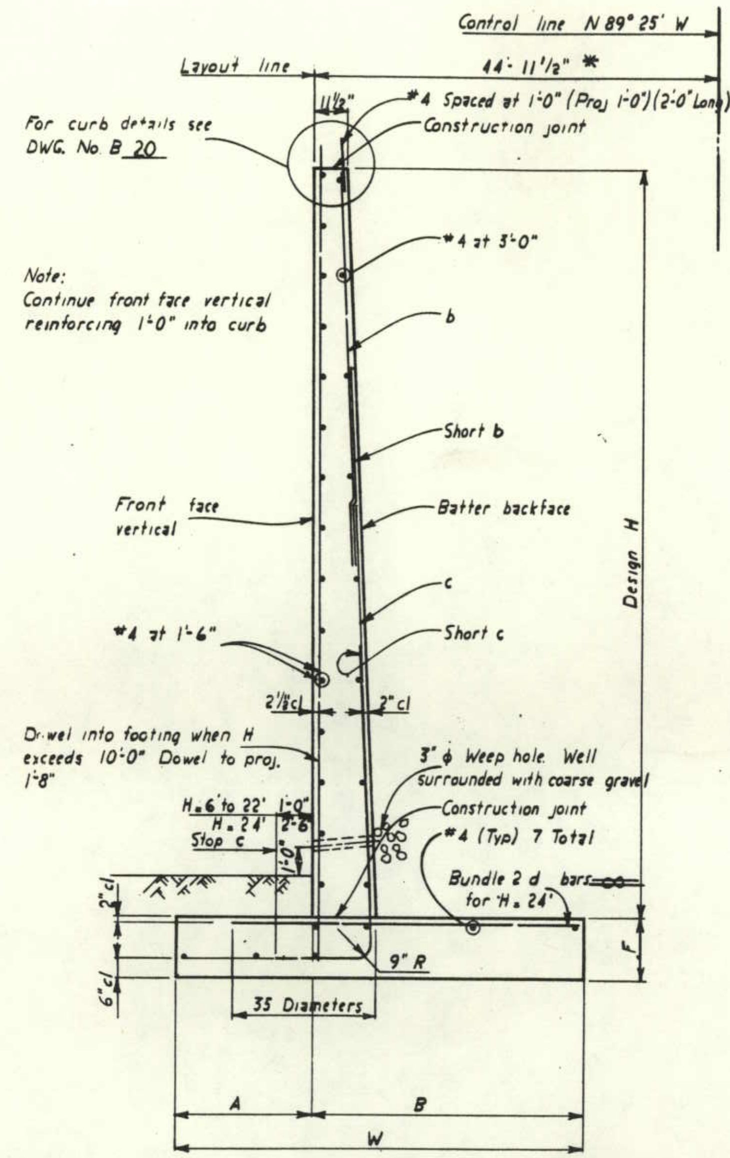
ɣ Denotes a bundle of two bars

Note:
Bar cut offs may be varied in increments of 6"

TABLE OF REINFORCING STEEL DIMENSIONS AND DATA											
Design H		6'	8'	10'	12'	14'	16'	18'	20'	22'	24'
W		5'-2"	5'-2"	6'-2"	7'-2"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-3"
A		1'-8"	1'-8"	2'-0"	2'-4"	2'-8"	3'-0"	3'-4"	3'-8"	4'-0"	4'-5"
B		3'-6"	3'-6"	4'-2"	4'-10"	5'-4"	6'-0"	6'-8"	7'-4"	8'-0"	8'-10"
F Spread footing		1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-8"	1'-10"	2'-0"
Batter		1/2 : 12	1/2 : 12	1/2 : 12	1/2 : 12	1/2 : 12	1/2 : 12	1/2 : 12	1/2 : 12	1/2 : 12	5/8 : 12
b bars					#5 at 30"	#5 at 15"	#5 at 11"	#6 at 24"	#7 at 17"	#7 at 14"	#8 at 12"
c bars		#5 at 18"	#5 at 12"	#5 at 8"	#6 at 7½"	#10 at 15"	#10 at 11"	#10 at 8"	#11 at 8½"	#11 at 7"	#11 at 12"ɣ
d bars		#5 at 18"	#4 at 12"	#4 at 8"	#5 at 7½"	#9 at 15"	#9 at 11"	#9 at 8"	#10 at 8½"	#10 at 7"	#10 at 12"ɣ
Total e bars		6-#6	6-#6	10-#7	10-#7	10-#7	10-#7	8-#7	8-#7	8-#7	4-#7
Total f bars				6-#7	6-#7	6-#7	6-#7	4-#7	4-#7	4-#7	2-#7

The following table shows the minimum lap for common bar sizes

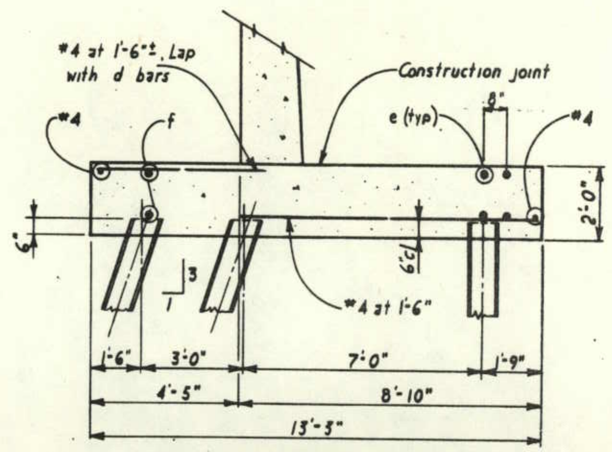
Bar size #	4	5	6	7	8	9	10	11
Splice length	1'-6"	1'-11"	2'-3"	2'-8"	3'-0"	3'-5"	4'-2"	5'-0"



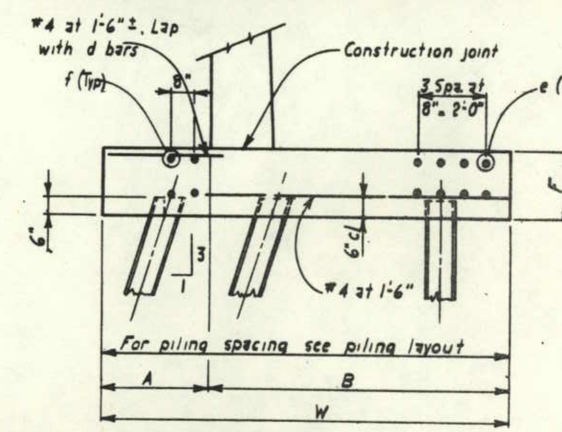
TYPICAL FOOTING SECTION
See other sections for additional reinforcing

Note: Use grade 60 for all reinforcing steel
Design stresses
fc = 1200 psi   f'c = 3000 psi
fs = 24,000 psi   n = 10   Earth = 120 pcf
Fluid pressure = 36 pcf
Clearance to reinforcing steel shall be 2" unless otherwise noted.

* 44'-11½" is to be tapered to 44'-6⅞" at back face of abutment.

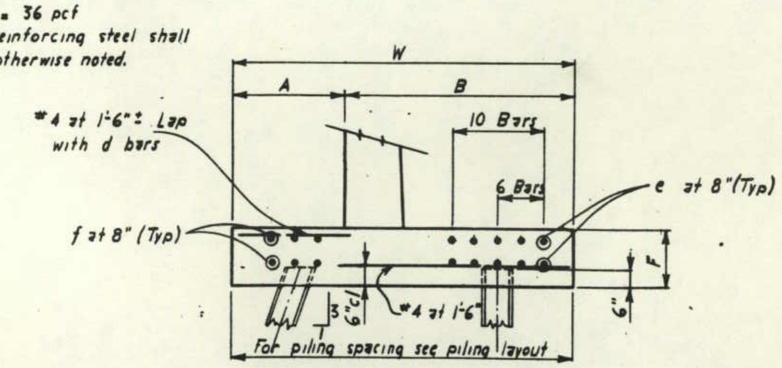


PILE FOOTING SECTION H= 24'-0"



PILE FOOTING SECTION H= 18'-0" TO H= 22'-0"

Note:
Reinforcement detailed in pile footing section to be placed in addition to that shown for typical footing.
All piles are HP 10x42.



PILE FOOTING SECTION H= 6'-0" THRU H= 16'-0"

DIVISION OF HIGHWAYS

RETAINING WALL H= 6'-0" TO 24'-0"

Designer J. Gravina	Structure Numbers
Detailer R. Seylhouwer	
Drawing Number B 19 of 23 Drawings	

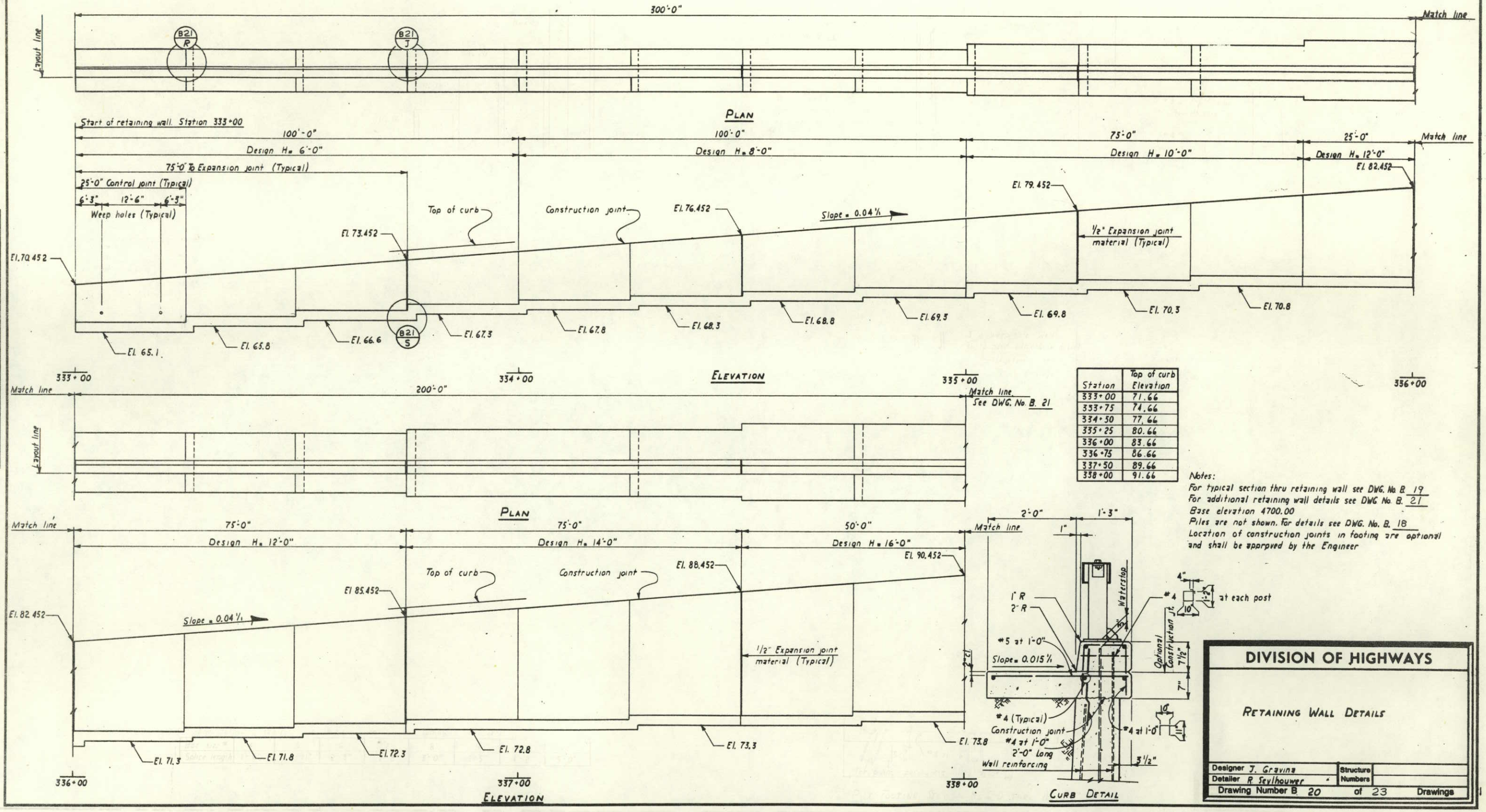
	INITIAL	DATE		
DETAILED BY	RJS	8-10-72	CHECKED BY	KGS 9-72
CHECKED BY	?.?.	7-72	QUANTITIES BY	MLM 9-72
			CHECKED BY	?.?. 9-72

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO
FOR FORM NO. 119
JULY 1955

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	29	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

REVISIONS		



Station	Top of curb Elevation
333+00	71.66
333+75	74.66
334+50	77.66
335+25	80.66
336+00	83.66
336+75	86.66
337+50	89.66
338+00	91.66

Notes:
For typical section thru retaining wall see DWG. No. B. 19
For additional retaining wall details see DWG. No. B. 21
Base elevation 4700.00
Piles are not shown. For details see DWG. No. B. 18
Location of construction joints in footing are optional and shall be approved by the Engineer

	INITIAL	DATE	
DESIGNED BY			
CHECKED BY			
DETAILED BY	R.J.S.	8-11-72	CHECKED BY
CHECKED BY		7-72	QUANTITIES BY
	M.L.M.	9-72	
	M.G.S.		
	H.L.M.	9-72	
	H.P.S.		

DIVISION OF HIGHWAYS

RETAINING WALL DETAILS

Designer J. Gravina		Structure Numbers	
Detailer R. Seylhouwer			
Drawing Number B 20	of 23	Drawings	

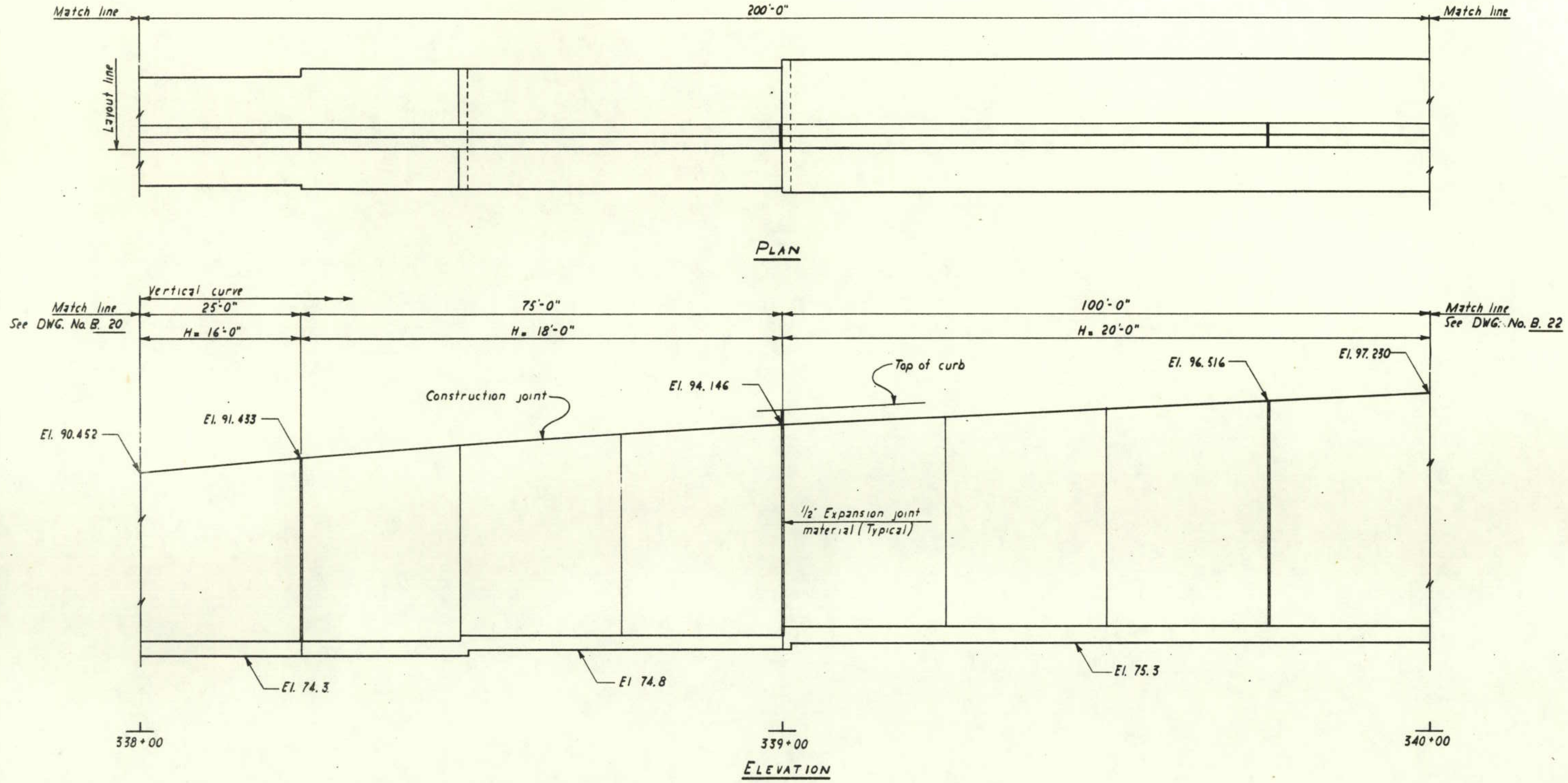
HGRE 10 7180 10-21 42900

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	30	110

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

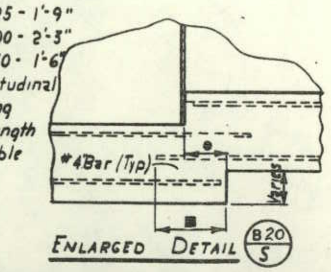
REVISIONS

Notes:
For typical section thru retaining wall see DWG. No. B 19
For additional retaining wall details see DWG. No. B 19 & 23
For curb details see DWG. No. B 20
Base elevation 4700.00
Piles are not shown. For details see DWG. No. B 18 & 19

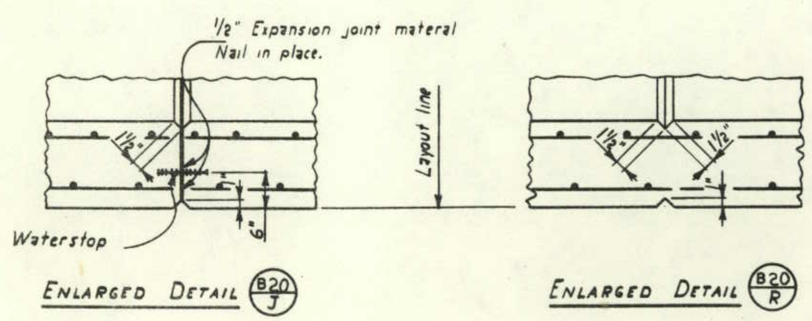


Station	Top of retaining wall Elevation	Top of curb Elevation
338+00	90.452	91.660
338+10	90.849	92.057
338+20	91.240	92.448
338+30	91.624	92.833
338+40	92.003	93.211
338+50	92.375	93.584
338+60	92.742	93.950
338+70	93.102	94.310
338+80	93.456	94.665
338+90	93.804	95.013
339+00	94.146	95.355
339+10	94.482	95.690
339+20	94.812	96.020
339+30	95.136	96.344
339+40	95.453	96.661
339+50	95.764	96.973
339+60	96.070	97.278
339+70	96.369	97.577
339+80	96.662	97.870
339+90	96.949	98.157
340+00	97.230	98.438

Notes:
● 1'-3" Typical except Stations 333+75 - 2'-3", 335+25 - 1'-9", 336+50 - 3'-3", 337+00 - 2'-3", 338+00 - 2'-3", 338+50 - 1'-6"
■ Extend all longitudinal reinforcing in the footing the minimum splice length given whenever possible

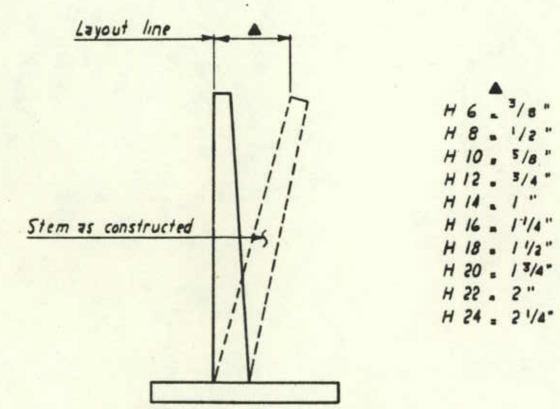


ENLARGED DETAIL (B20/S)



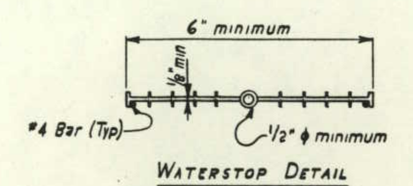
ENLARGED DETAIL (B20/J)

ENLARGED DETAIL (B20/R)



H 6	▲ 3/8"
H 8	1/2"
H 10	5/8"
H 12	3/4"
H 14	1"
H 16	1 1/4"
H 18	1 1/2"
H 20	1 3/4"
H 22	2"
H 24	2 1/4"

RETAINING WALL OFFSETS



WATERSTOP DETAIL

Note:
Waterstop to have 5 or more pairs of raised ribs each half of waterstop. Height of ribs to be 3/32" minimum. Holes will be permitted in the outer 1/2" of the web for wire, rings, ect. Tie web to #4 bar at 12" maximum spacing to support the waterstop in proper position during concrete placement. Alternative details may be submitted for approval by the engineer.

DIVISION OF HIGHWAYS

RETAINING WALL DETAILS

Designer J Gravina
Detailer R Seylhouwer
Structure Numbers
Drawing Number B 21 of 23 Drawings

DESIGNED BY	CHECKED BY	DETAILED BY	CHECKED BY	QUANTITIES BY	CHECKED BY
		RJS 8-18-72		MLM	KJS 9-72

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	31	110

REVISIONS

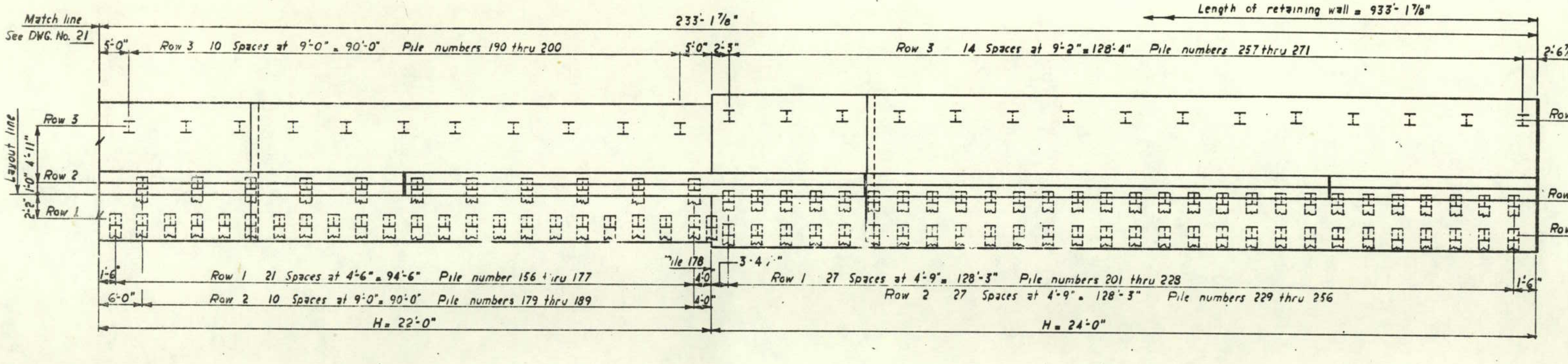
AVERAGE PILING TIP ELEVATIONS

PILES 156 THRU 200 - 4761.44

PILES 201 THRU 271 - 4750.33

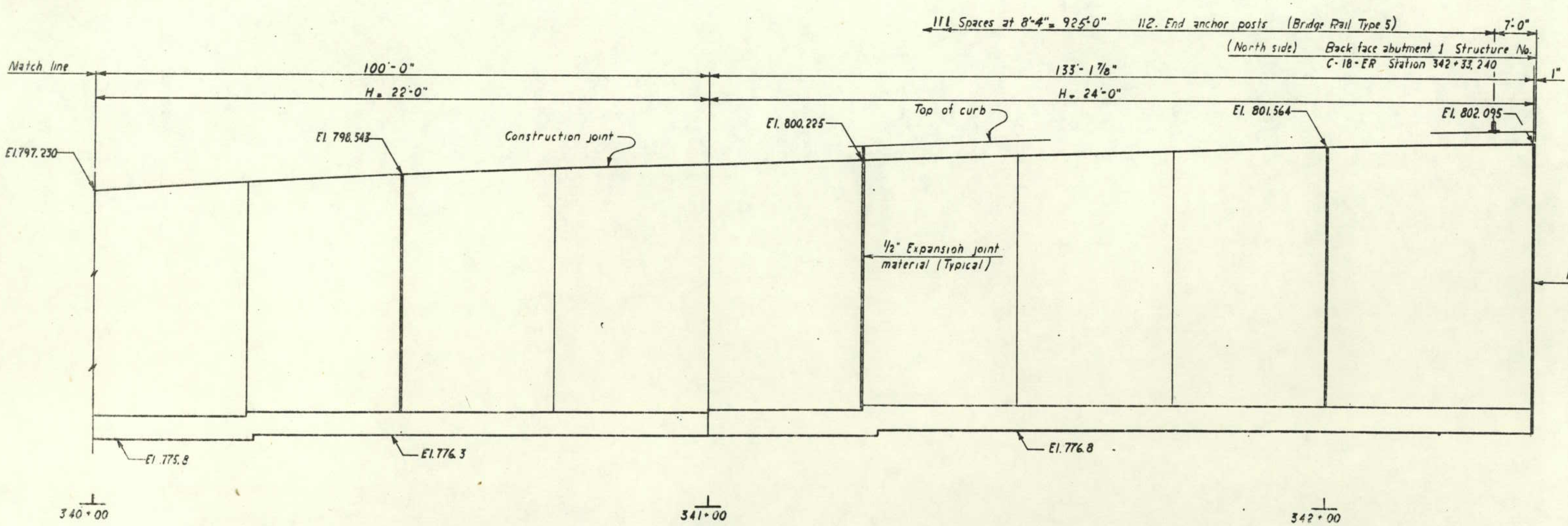
Notes:
For typical section thru retaining wall see DWG. No. B 19
For additional retaining wall details see DWG. No. B 19 & 23
For curb details see DWG. No. B 20
Piles are not shown in Elevation
Piles 156 thru 271 are HP 10 x 42 with a maximum pile load of 46.0 t

Piles 156 thru 161, 179, 180, 181, 190, 191, 192 have a cutoff elevation 776.3
Piles 162 thru 178, 182 thru 189, 193 thru 206, 229 thru 234 and 257 thru 259 have a cuttoff elevation 776.8
Piles 207 thru 228, 235 thru 256 and 260 thru 271 have a cutoff elevation 777.3
Base elevation = 4000.00
Piles in row 1 and 2 are battered 3:1
For additional pile details see DWG. No. B 18 & B 19



PLAN

Station	Top of curb Elevation	Top of retaining wall Elevation
340 + 00	798.458	797.230
340 + 10	798.713	797.505
340 + 20	798.982	797.773
340 + 30	799.244	798.036
340 + 40	799.501	798.292
340 + 50	799.751	798.543
340 + 60	799.995	798.787
340 + 70	800.233	799.025
340 + 80	800.465	799.257
340 + 90	800.691	799.483
341 + 00	800.911	799.703
341 + 10	801.125	799.916
341 + 20	801.332	800.124
341 + 30	801.534	800.325
341 + 40	801.729	800.521
341 + 50	801.918	800.710
341 + 60	802.101	800.893
341 + 70	802.278	801.070
341 + 80	802.449	801.241
341 + 90	802.614	801.406
342 + 00	802.773	801.564
342 + 10	802.925	801.717
342 + 20	803.072	801.864
342 + 30	803.212	802.004



ELEVATION

DIVISION OF HIGHWAYS

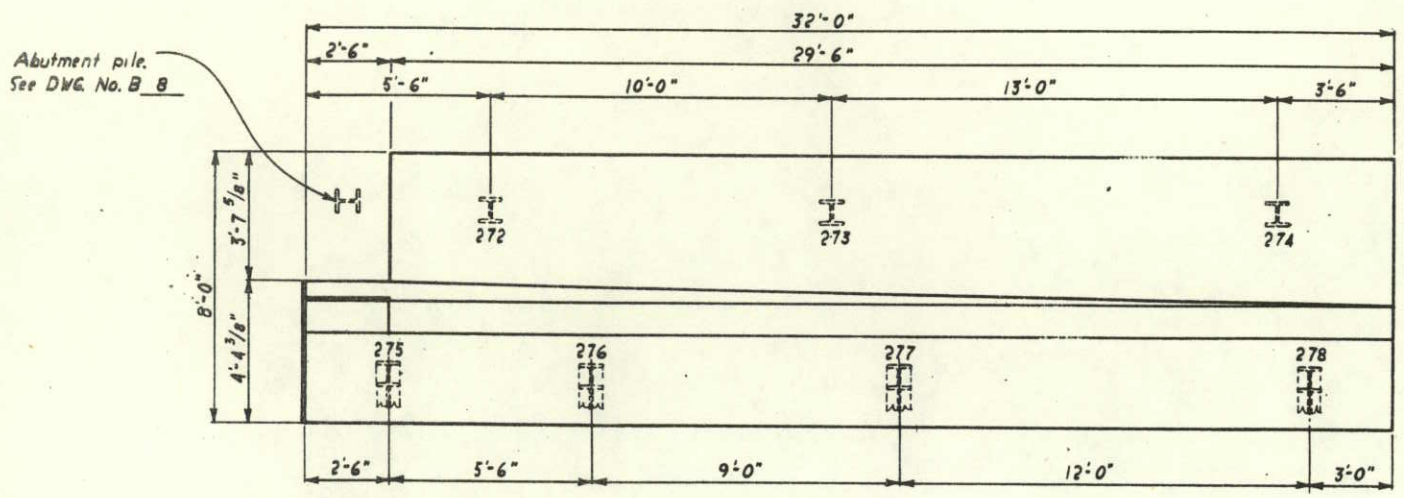
RETAINING WALL DETAILS

Designer J. Gravina
Detailer R. Seylhouwer
Structure Numbers
Drawing Number B 22 of 23 Drawings

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	32	110

REVISIONS			
R-1	2-7-73	Changed bar size	HHH

AS CONSTRUCTED
REVISED DATE

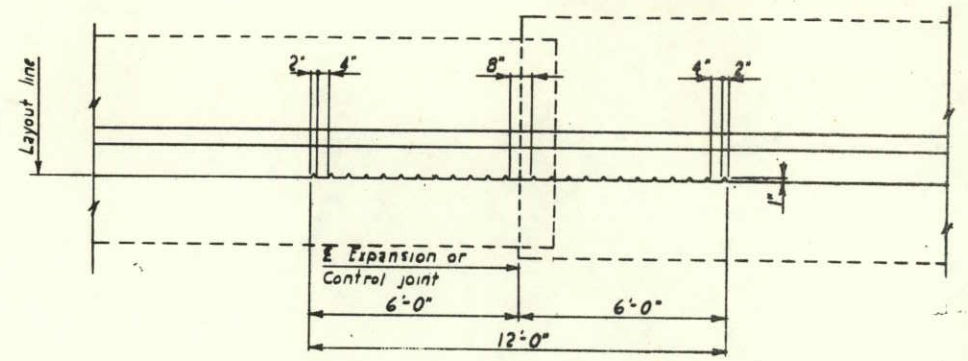


PLAN

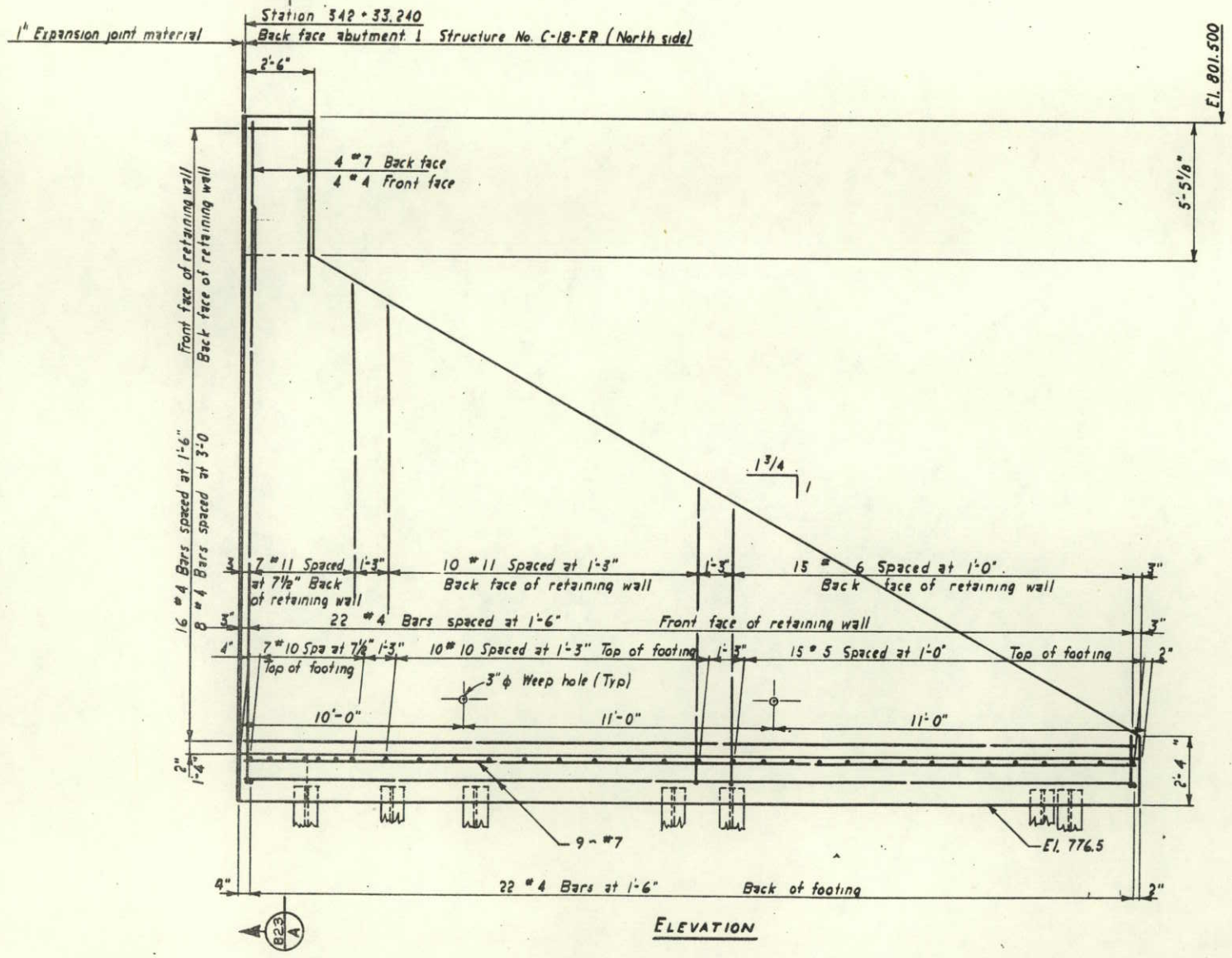
AVERAGE PILING TIP ELEVATION

PILES 272 THRU 278 - 4752.46

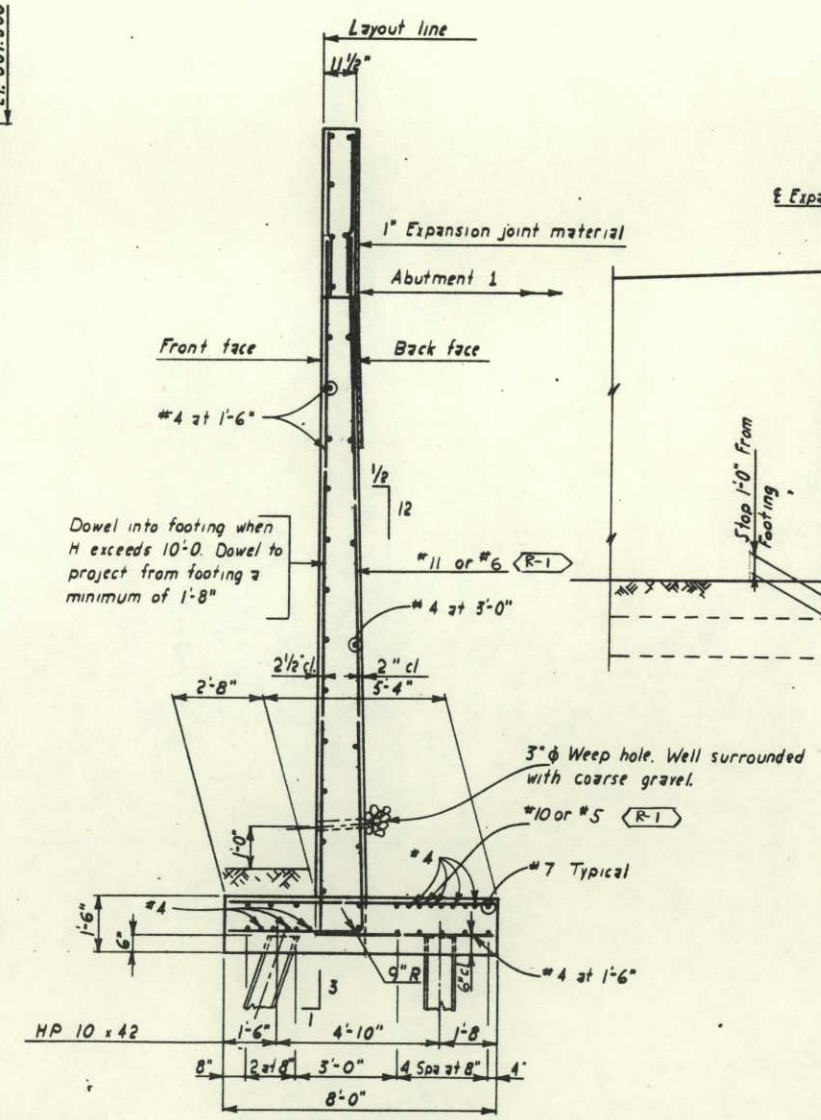
Notes:
Piles 272 thru 278 are HP 10x42 with a maximum pile load of 46 tons
Piles 272 thru 278 have a cutoff elevation 4777.0
Piles 275 thru 278 are battered 3:1
For additional pile details see DWG. No B 18 & B 19



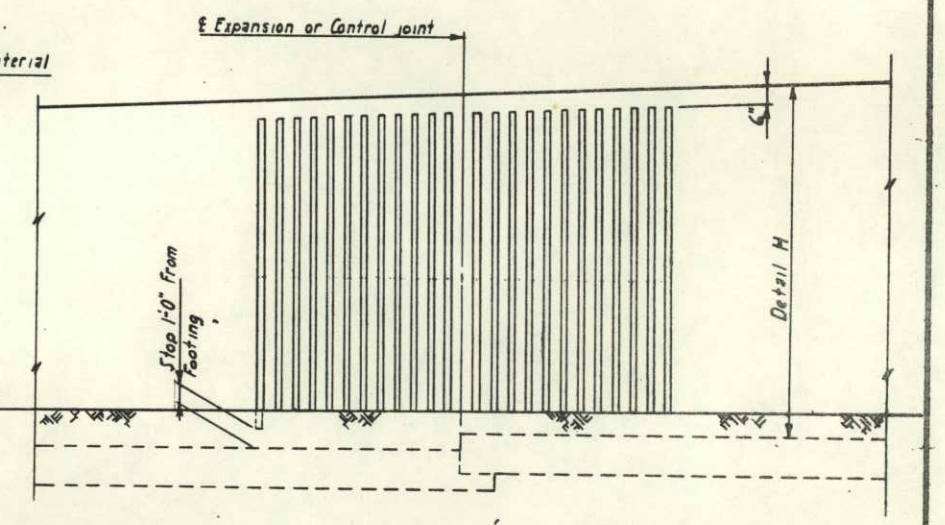
PLAN



ELEVATION



SECTION B23 A



ELEVATION

ARCHITECTURAL EFFECT

Note:
Architectural effect every 50'-0" starting at station 333+50

DIVISION OF HIGHWAYS

RETAINING WALL DETAILS

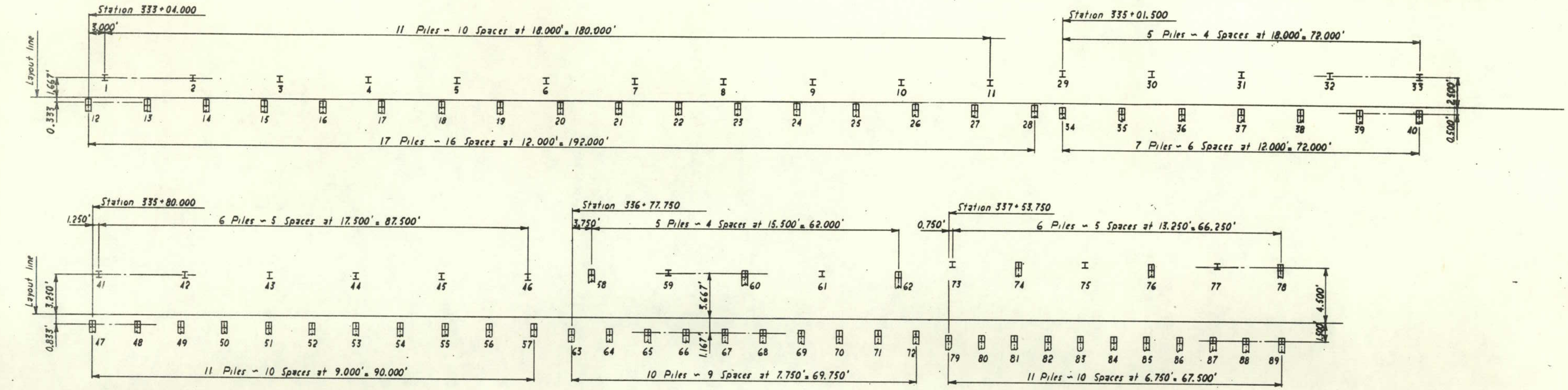
Designer	J. Gravina	Structure Numbers	
Detailer	R. Stylhouwer		
Drawing Number B 23		of 23	Drawings

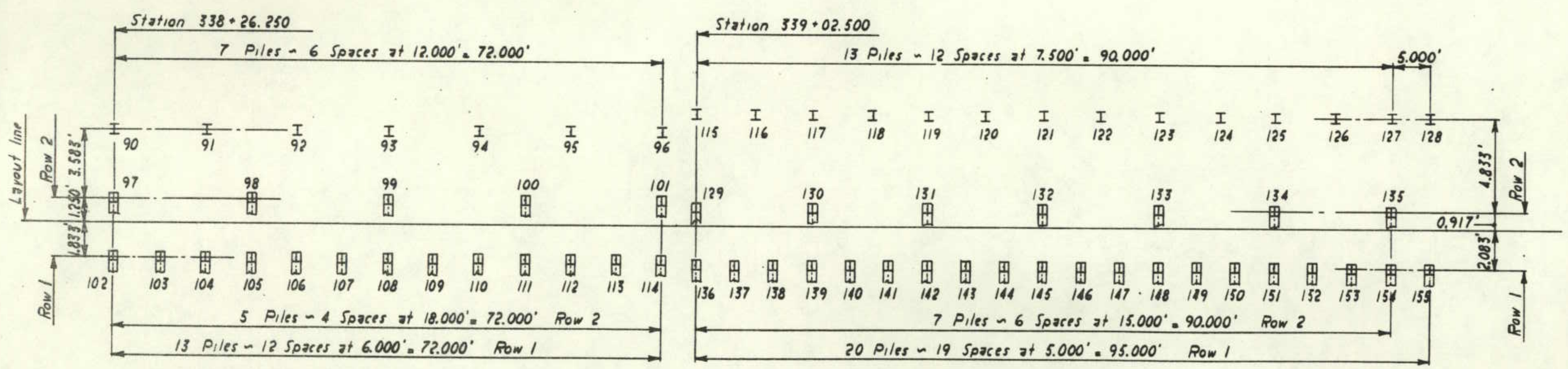
DESIGNED BY	R.W.	DATE 7-72	CHECKED BY KGS
CHECKED BY			QUANTITIES BY MLH
DETAILED BY	R.T.S.	8-29-72	CHECKED BY HGS

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	33	110

REVISIONS

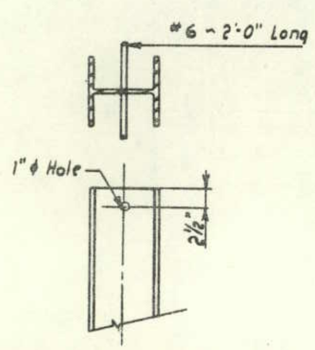




Piling Cutoff Elevations			
Number	Elevation	Number	Elevation
1, 2, 12, 13	4765.6	61, 62, 70, 71, 72	4773.8
3, 14, 15	4766.3	73, 74, 79, 80, 81, 82	
4, 16, 17, 18	4767.1	75, 76, 83, 84, 85, 86	4774.3
5, 6, 19, 20	4767.8	77, 78, 87, 88, 89, 90	4774.8
7, 21, 22	4768.3	91, 92, 97, 98, 102, 103, 104, 105, 106	
8, 9, 23, 24	4768.8	93, 94, 95, 96, 99, 100	4775.3
10, 25, 26	4769.3	101, 107, 108, 109, 110, 111	
11, 27, 28	4769.8	112, 113, 114	
29, 30, 34, 35, 36	4770.3	115 thru 155	4775.8
31, 37, 38	4770.8		
32, 33, 39, 40	4771.3		
41, 42, 47, 48, 49			
43, 50, 51, 52	4771.8		
44, 45, 53, 54, 55	4772.3		
46, 56, 57	4772.8		
58, 59, 60, 63, 64	4773.3		
65, 66, 67, 68, 69			

AVERAGE PILING TIP ELEVATIONS

PILES 1 THRU 28 - 4757.97
PILES 29 THRU 40 - 4760.19
PILES 41 THRU 57 - 4761.53
PILES 58 THRU 72 - 4762.69
PILES 73 THRU 89 - 4764.33
PILES 90 THRU 114 - 4765.34
PILES 115 THRU 155 - 4763.92



VERTICAL PILE DETAIL

PILING LAYOUT - RETAINING WALL

Note: For additional piling layout see Drawing No B22 & B23
I Piles to be vertical
⊞ Piles to be batted 3:1
To locate layout line see Drawing No. B 2 & B 19.
All piles are HP 10x42 with maximum pile load of 46 tons
Pile dimensions shown are at the bottom of the concrete.

DIVISION OF HIGHWAYS

PILING LAYOUT - RETAINING WALL

Designer T. Graving
Detailer R. Seylhouwer
Structure Numbers
Drawing Number B 18 of 23 Drawings

DETAILED BY	R.T.J.	1/28/72	CHECKED BY	K.G.S.	9-72
QUANTITIES BY	M.L.M.				

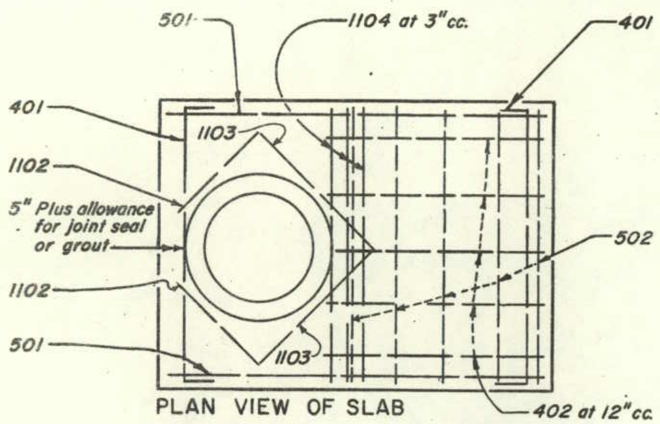
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
XIII	COLORADO	U 034-1(12)	34	110

REVISIONS			
R-1	7-24-68	Dept. Name.	M.R.H.
R-2	4-20-71	Concrete in Gen. Note.	M.R.H.
	11-2-72	Special this Project Only	C.K.M.

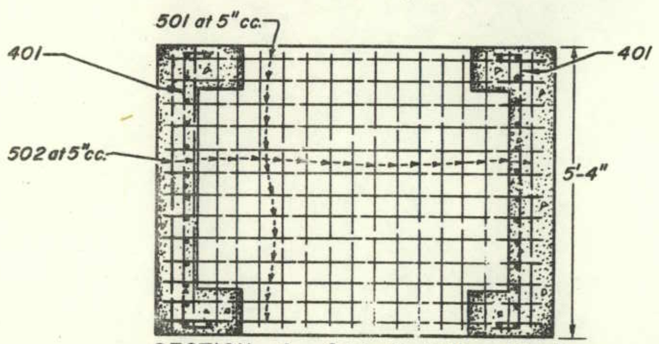
~~STANDARD M-604-E~~

(OCTOBER 11, 1967)

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974

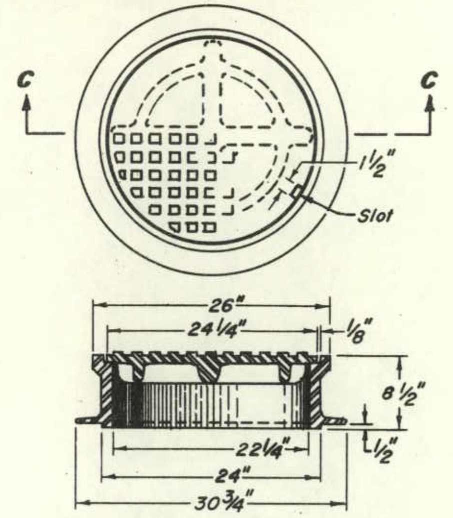


PLAN VIEW OF SLAB



SECTION A – A (Steel in Bottom of Base)

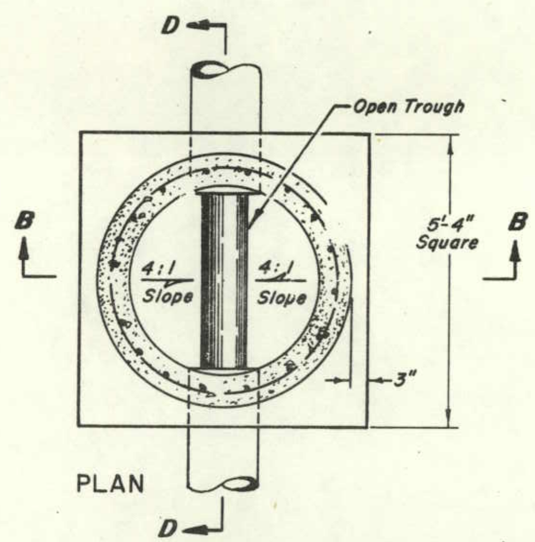
NOTE: Manhole Ring and Cover shall be dipped or painted with Ashpalt or Coal Tar and Oil.



TOTAL WEIGHT: Approximately 400 lbs.

SECTION C – C

MANHOLE RING AND COVER



PLAN

QUANTITIES FOR CONCRETE MANHOLE BOX BASE

MARK	SIZE	TYPE	Lb./Ft.	BARS	I.D. ⇨ 36"	42"	60"	72"	84"	96"
401	4	II	0.67	NO. REQ'D. LENGTH WEIGHT, lbs.	16 6'-7" 70.4	17 6'-7" 75.0	20 6'-7" 88.0	22 6'-7" 96.8	25 6'-7" 110.0	27 6'-7" 118.8
402	4	III	0.67	NO. REQ'D. LENGTH WEIGHT, lbs.	0 0 0	5 7'-0" 23.5	5 6'-0" 20.0	5 7'-2" 23.9	5 8'-4" 27.8	5 9'-6" 31.7
501	5	I	1.04	NO. REQ'D. LENGTH WEIGHT, lbs.	17 5'-8" 100.5	17 6'-10" 121.2	17 8'-0" 141.9	17 9'-2" 162.5	17 10'-4" 183.2	17 11'-6" 203.9
502	5	I	1.04	NO. REQ'D. LENGTH WEIGHT, lbs.	15 5'-0" 78.2	19 5'-0" 99.1	23 5'-0" 120.0	27 5'-0" 140.8	31 5'-0" 161.7	34 5'-0" 177.3
503	5	I	1.04	NO. REQ'D. LENGTH WEIGHT, lbs.	30 6'-2" 193.0	30 7'-4" 229.5	30 8'-6 266.0	30 9'-8" 302.5	30 10'-10" 339.5	30 12'-0" 375.5
1101	11	I	5.31	NO. REQ'D. LENGTH WEIGHT, lbs.	4 5'-8" 120.5	4 6'-10" 145.2	4 8'-0" 170.0	4 9'-2" 194.8	4 10'-4" 219.6	4 11'-6" 244.4
1102	11	I	5.31	NO. REQ'D. LENGTH WEIGHT, lbs.	2 2'-0" 21.2	2 2'-0" 21.2	2 2'-6" 26.6	2 2'-6" 26.6	2 2'-6" 26.6	2 2'-6" 26.6
1103	11	I	5.31	NO. REQ'D. LENGTH WEIGHT, lbs.	2 3'-0" 31.9	2 3'-0" 31.9	2 3'-6" 37.2	2 3'-6" 37.2	2 3'-6" 37.2	2 3'-6" 37.2
1104	11	I	5.31	NO. REQ'D. LENGTH WEIGHT, lbs.	3 5'-0" 79.7	3 5'-0" 79.7	3 5'-0" 79.7	3 5'-0" 79.7	3 5'-0" 79.7	3 5'-0" 79.7
REINFORCING STEEL – Pounds – Total					695.4	826.3	949.1	1064.8	1185.3	1295.1
CONCRETE – Cubic Yards – Total					4.2	5.4	6.6	8.0	9.5	11.1

NOTE: Quantities are based on same size pipe entrance to and exit from base and a 4 ft. manhole entrance into top slab of base.

FORMULAS

401 Number Bars Required = $\left(\frac{12 + I.D. + 2W}{6}\right) + 6$

402 Bar Length = I.D. + 2W + 2'-9"

501 Bar Length = 24" + I.D. + 2W

502 Number Bars Req'd. = $\left(\frac{17 + I.D. + 2W}{5}\right) + \left(\frac{I.D. - 36}{12}\right) + 3$

503 Bar Length = 30" + I.D. + 2W

1101 Bar Length = 24" + I.D. + 2W

BENDING

TYPE I — Straight

TYPE II — 59", 10"

TYPE III — 3'-10"–8", 7", 12", 12"

GENERAL NOTES (R-2)

All work shall be done in accordance with the Standard Specifications applicable to the project.

Since all pipe entries into the base are variable, the dimensions shown are typical. Actual dimensions and quantities for concrete and reinforcement shall be as required in the work.

Design is based on straight runs of conduit or change in direction under 45°.

All bars shall be a minimum 2" clear.

Precast Manholes shall conform to ASTM Designation C 478.

Cast in place Manholes shall be Class A, B or D concrete.

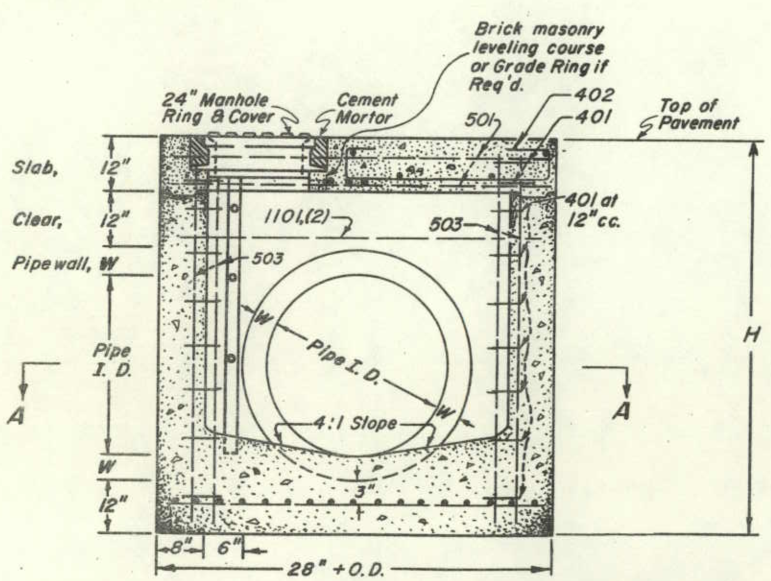
The following alternate materials for Manholes may be used when design details for construction are included in the plans:

MATERIAL	CONFORMANCE·DESIGNATION	
Clay or Shale Brick	AASHO	M 91
Concrete Brick	ASTM	C 55, Grade P-I or P-II
Concrete Masonry Block	ASTM	C 139
Corrugated Steel Unit	AASHO	M 36

All pipe entries into the base of Manhole shall be connected by open gutter adjusted for pipe size, shape, slope and direction of flow.

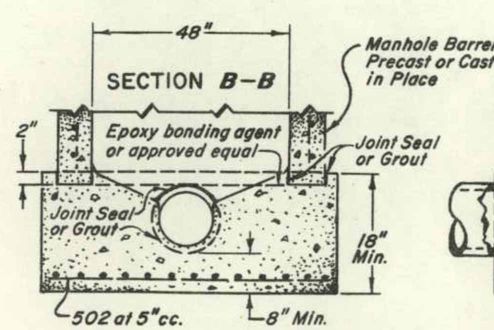
Alternate designs will be permitted after approval by the Division

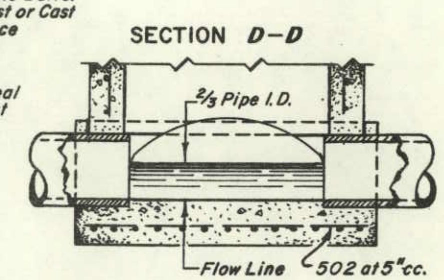
Steps or Ladder will be required when Manhole depth exceeds 3'-6".



CONCRETE MANHOLE AND BOX BASE

(Typical for Conduit 36" I.D. and Larger.)





CONCRETE SLAB BASE

(Typical for Conduit Smaller than 36" I.D.)

R-1

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

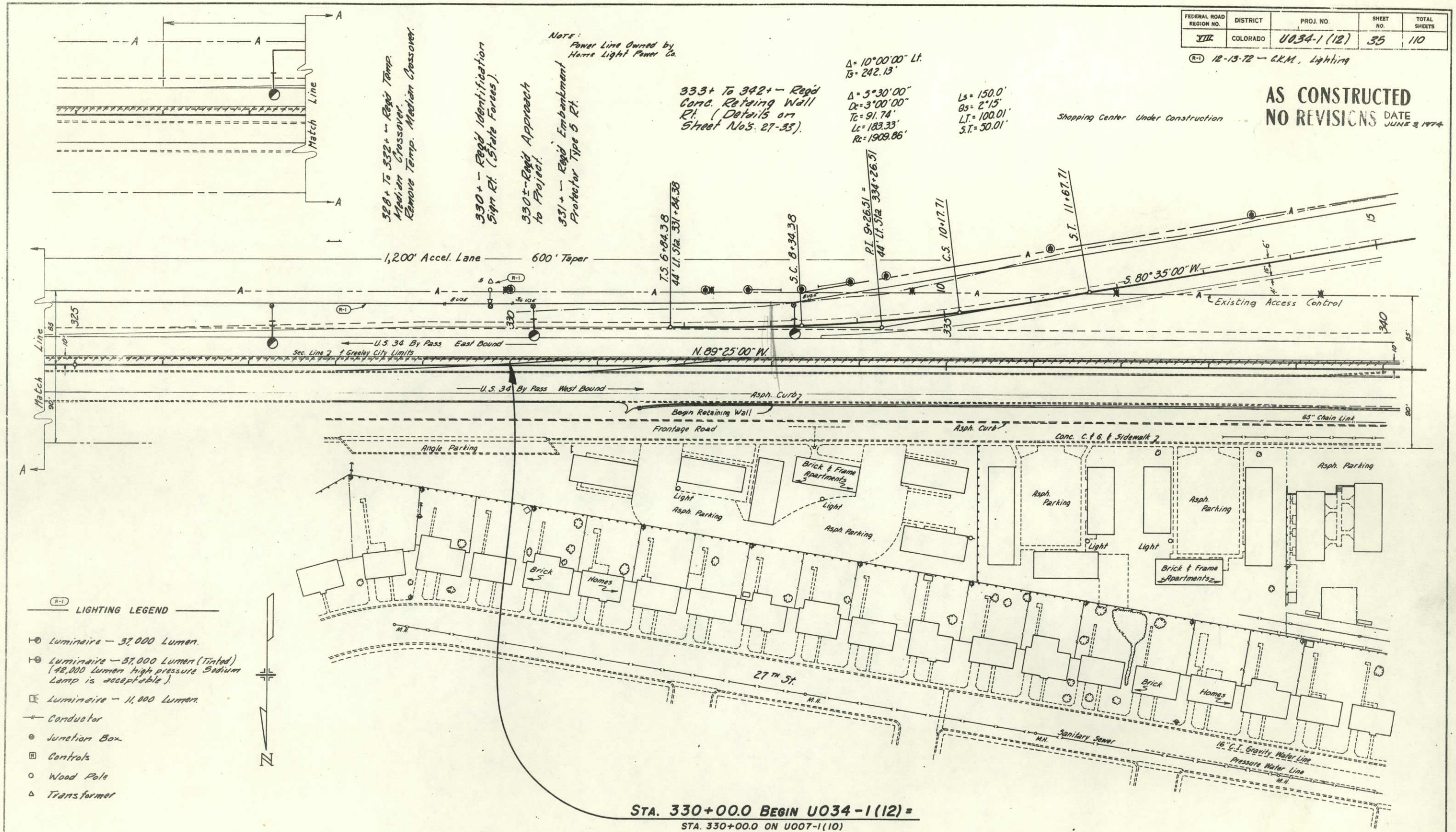
MANHOLES

Designed by M.R.H.	Approved by
Made by J.R.B.	Staff Design Engineer
Checked by R.S.M.	Date: October 11, 1967

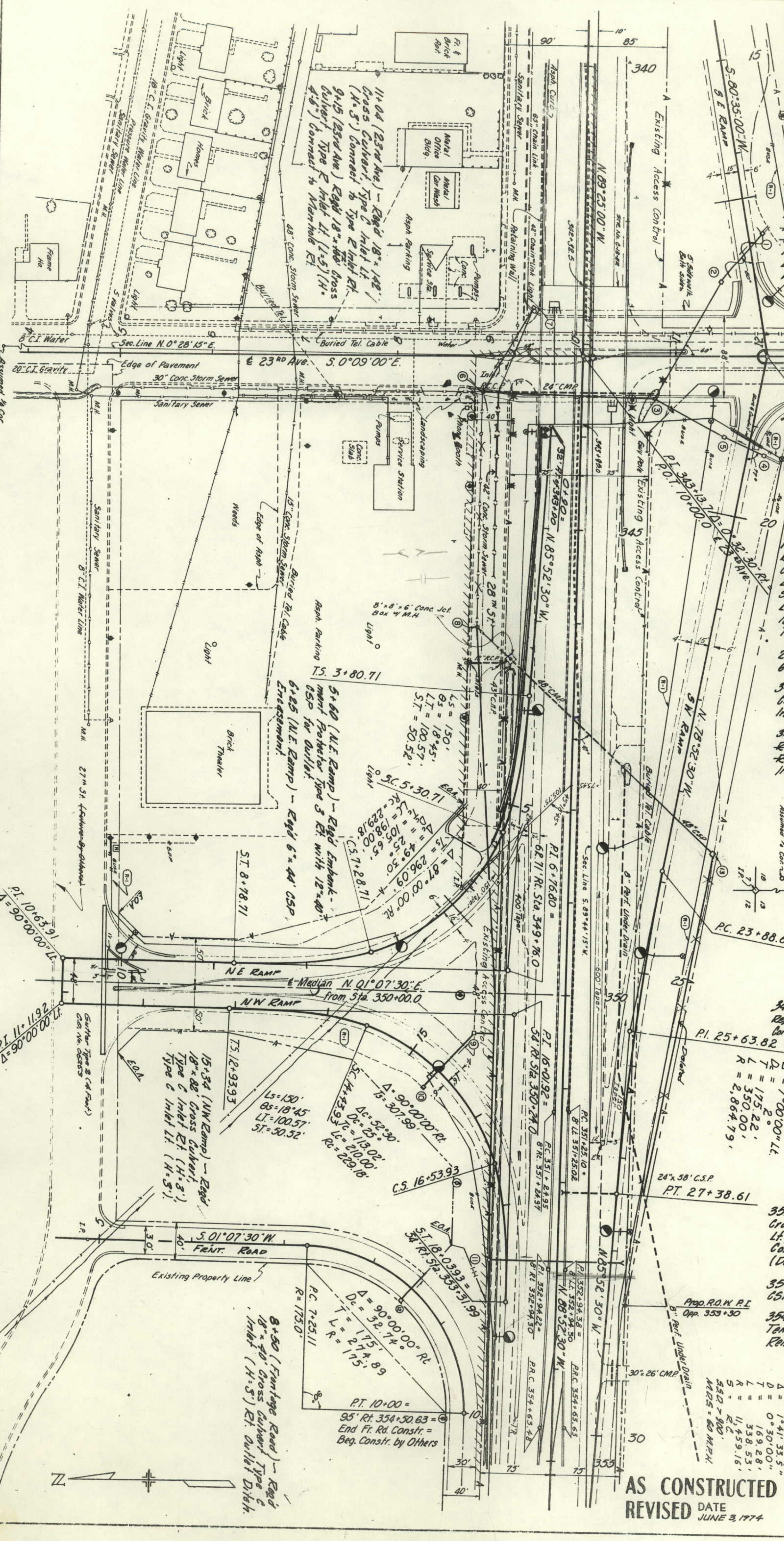
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U034-1 (12)	35	110

(R-1) 12-13-72 — C.R.M., Lighting

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974



STA. 330+00.0 BEGIN U034-1(12) =
STA. 330+00.0 ON U007-1(10)



343+ — Reqd Bridge Str. No. C-18-ER (Details on Sheet No's 11-26).

343+50 — Remove 24" CSP with End Section Lt. Conc. Inlet Rt. 24" RCP Rt. Reqd 24" x 184' RCP Cross Culvert, Type R Inlet Lt. (L=5') (H=6'-6"), Manhole Rt. (H=7'-8") (Details on Sheet No. 34).

16+50 (SE Ramp) — Reqd 6" x 46' CSP Encasement.

~~17+04 (SE Ramp) — Reqd 18" x 64' Cross Culvert Type C Inlet Lt. (H=3'),~~ Bituminous Slope and Ditch Paving Lt. Connect to Type C Inlet Rt.

19+25 (SW Ramp) — Reqd 18" x 48' Cross Culvert, Type C Inlet Lt. (H=3') Bituminous Slope and Ditch Paving Lt., Type C Inlet Rt. (H=4') 18" x 84' Culvert, Connect to Type R Inlet Rt.

20+00 (SW Ramp) — Reqd 6" x 44' CSP Encasement.

346+ to 359+ — Reqd 36" x 1294' Culvert with End Section at Inlet.

346+45 — ~~Remove Portion of 12" RCP Rt. Reqd Connect 12" RCP into 36" RCP.~~ Plug Inlet Rt.

347+02 — ~~Plug 43" CSP Rt.~~ Reqd ~~24"~~ 48" x 156' Cross Culv. to Conn. to Exist. 48" C.S.P., Type C Inlet Lt. (H=5') 8" x ~~366'~~ 45' Perforated CSP Underdrain Lt.

~~Manhole (Box Base) (H=7'-8") Rt.~~ (Details on Sheet No. 34).

350+ to 359+ — Remove Conc. Slope and Ditch Paving Rt.

350+45 — Reqd 18" x 22.5' Culvert Rt., Connect to 36" RCP and Inlet Rt.

352+10 — Plug 24" x 58' CSP Lt.

352+85 — Reqd 24" x 142' Cross Culvert with End Section Lt., Manhole, Box Base Rt. (H=6'-8") Connect to 36" R.C.P. Rt. (Details on Sheet No. 34).

354+03 — Remove 30" CSP Side Drain Lt.

354+ to 357+ — Reqd Temp. Median Crossover. Remove Temp. Median Crossover.

347+ — ~~Reqd 8" x 14' C.S.P. (To conn. Existing 8" Underdrain to 24" RCP Cross Culvert.)~~

15+34 (NW Ramp) — Reqd 18" x 82' Cross Culvert, Type C Inlet Rt. (H=3'), Type C Inlet Lt. (H=3').

8+50 (Frontage Road) — Reqd 18" x 40' Cross Culvert Type C Inlet (H=3') Rt. Outlet Ditch.

5+60 (N.E. Ramp) — Reqd Embankment Protector Type 3 Rt. with 12" x 40' CSP for Outlet.

6+25 (N.E. Ramp) — Reqd 6" x 44' CSP Encasement.

11+04 (23rd Ave.) — Reqd 18" x 142' Cross Culvert, Type C Inlet Lt. (H=3') Connect to Type R Inlet Rt.

9+15 (23rd Ave.) Reqd 18" x 72' Cross Culvert, Type R Inlet Lt. (L=5') (H=4'-6") Connect to Manhole Rt.

AS CONSTRUCTED
REVISED DATE JUNE 3, 1974

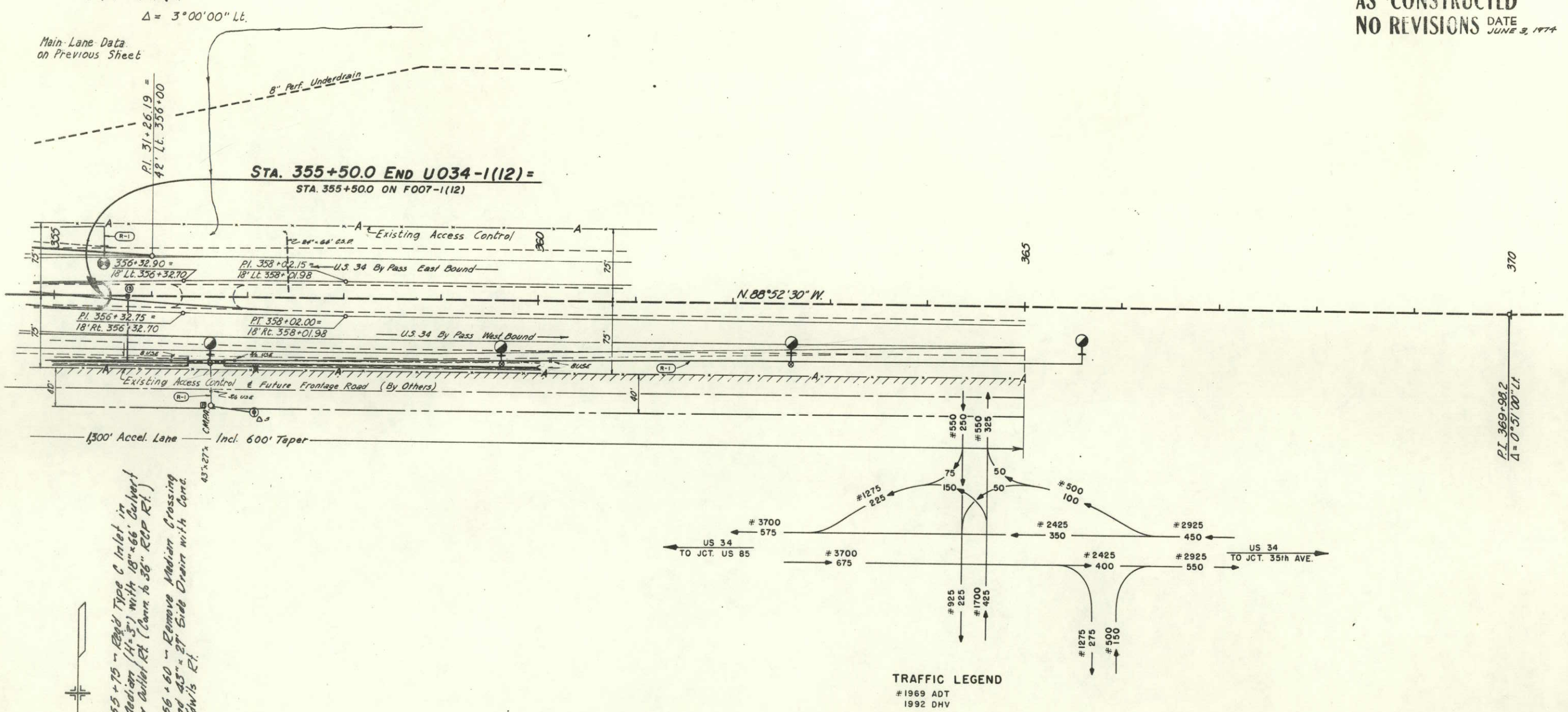
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	U 034-1(12)	36	110

(R-1) 12-13-72 ~LKM Lighting

12

DEPARTMENT OF HIGHWAYS—STATE OF COLORADO
S.O. H. 129
1-1954

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS NO.
VIII	COLORADO	U034-1(12)	37	110

(R-1) 12-13-72 – C.K.M., Lighting

AS CONSTRUCTED
NO REVISIONS DATE JUNE 3, 1974