FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C 10-0088-04	1	

Rev. Index — 10-28-58 — G.P.H.

COLORADO DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

STATE **PROJECT NO. C 10-0088-04**

STATE HIGHWAY NO. 88

ARAPAHOE COUNTY

INDEX OF SHEETS

CONVENTIONAL SIGNS

CENTER LINE
RIGHT OF WAY LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
LAND LINES
RAILROAD
BARBED WIRE FENCE
COMBINATION WIRE FENCE
SNOW FENCE
TELEPHONE & TELEGRAPH LINES
POWER LINE
DETOUR
PRESENT ROAD (Plan Sheets)

SCALES OF ORIGINAL DRAWINGS

ON PLAN 1 IN. = 100 FT.
ON PROFILE 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL

GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD

GROSS LENGTH OF PROJECT } = 5387.7 Ft. = 1.020 MI.
NET LENGTH OF PROJECT }

TABULATION OF LENGTH & DESIGN

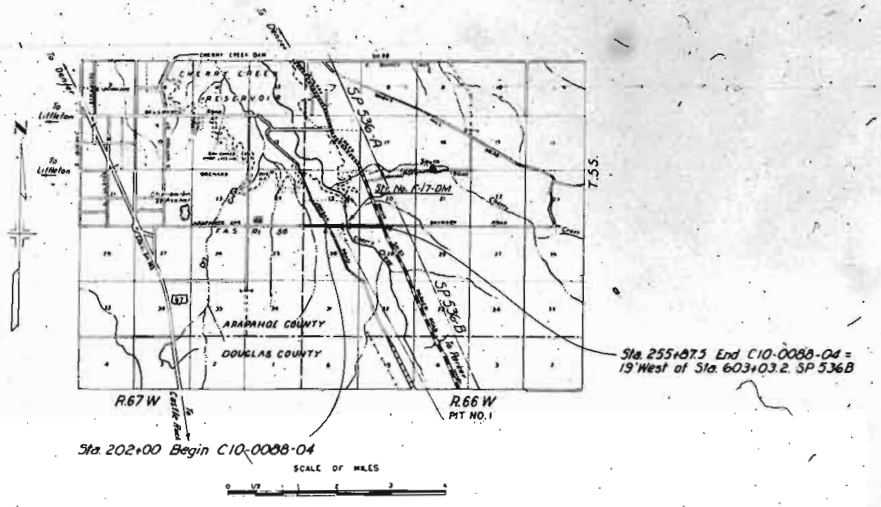
STATION	ROADWAY LIN. FT.	MAJOR STRUCTURE	LOADING
202+00 Begin C-10-0088-04			
	676.6		
208+76.6 Bk. = 208+76.4 Ah.			
	1568.6		
224+45.0 Begin Bridge Cherry Creek			
227+96.9 End Bridge		351.9	H-20-S-16-44
	2790.6		
255+87.5 End C10-0088-04 19' west of Sta. 603+03.2 SP 536-B			
TOTALS	5035.8	351.9	

SUMMARY

	LIN. FT.	MILES
TOTAL C-10-0088-04 ROADWAY	5035.8	0.954
TOTAL C-10-0088-04 STRUCTURE	351.9	0.066
NET & GROSS LENGTH	5387.7	1.020

DESIGN DATA

MAXIMUM GRADE	4.76 %
MAXIMUM DEGREE OF CURVE	1°00'
MINIMUM N.P.S.D. HORIZONTAL	>1300'
MINIMUM N.P.S.D. VERTICAL	365'
MAXIMUM DESIGN SPEED	50 M.P.H.



NOTE:
SEE SPECIAL PROVISIONS FOR NOTICE TO BIDDERS.

COLORADO DEPARTMENT OF HIGHWAYS

APPROVED

CHIEF ENGINEER

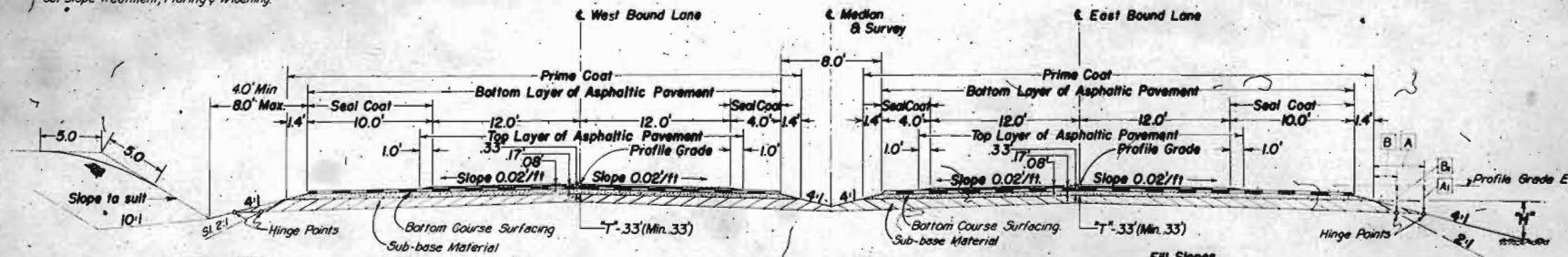
DATE 10-16-58

COLORADO DEPARTMENT OF HIGHWAYS
FORM C. D. H. 125
JUNE 1956

TYPICAL CROSS SECTION OF IMPROVEMENT

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C 10-0083-04	2	

NOTE:
See Standards for Details of Cut Slope Treatment, Flaring & Widening.



GENERAL NOTES

This project is to be Constructed in conformity with the standard specifications of the Colorado Department of Highways, adopted January 1, 1958.

All quantities on preliminary plans are to be considered approximate only.

All poles encroaching on construction are to be moved by the owners.

All Corrugated Metal Pipe Cross Culverts shall be laid with Metal Aprons on each end unless otherwise noted on the plans.

All thicknesses of Surfacing and Asphaltic Processing are approximate.

All curves are to be superelevated and widened as provided by the Standard Superelevation sheet included with the plans.

For preliminary plan quantities of Asphaltic Road Materials, the following rates of application were used:

Prime Coat: Roadway . . . @ 0.40 Gals. per Sq. Yd. (Future Construction)
Prime Coat - Bridge . . . . @ 0.10 Gals. per Sq. Yd.

Rate of application and grade of Asphaltic Material shall be as determined by the Engineer at time of application.

Road approaches are to be covered with 4" of Sub-base Material in lieu of 4" of Gravel or Crushed Rock Surfacing as shown on Standard M-2-EN.

Application methods for liquid asphaltic road material, which result in the discoloration of concrete pavement, curbs or gutters, will not be permitted.

Prime Coat and Asphaltic Surfacing shall be placed over the curbed width of the bridge at Sta. 22+.

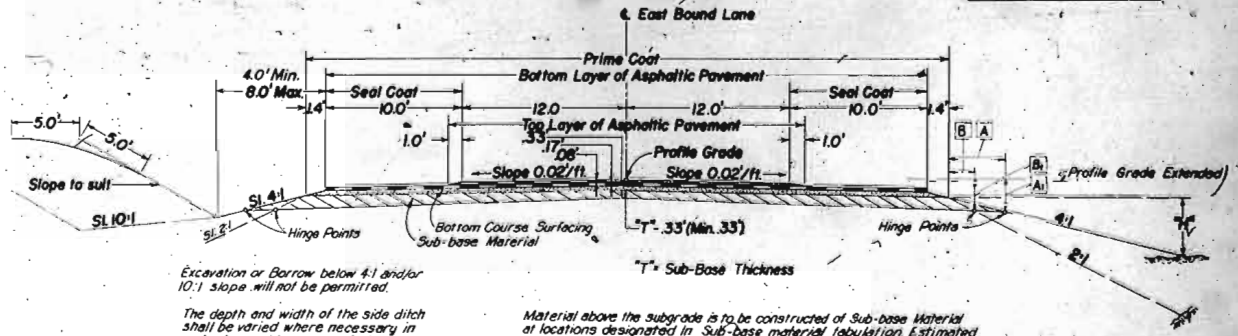
Fill Slopes

On Curves:
Slope 4:1 where "H" is 5' or less
Slope 2:1 where "H" is over 5'

On Tangents:
Slope 4:1 where "H" is 3' or less
Slope 2:1 where "H" is over 3'

East Bound Lane
Table of Side Slope
Hinge Points for Sub-base Mat'l.

"T"	"T"-4"	Sl 4:1		Sl 2:1	
In	Ft.	Ft.	A	A_1	B	B_1
5	4.2	.33	2.2'	-.6'	1.1	-1.3
9	7.5	.42	3.9	2.0	1.6	-.9



Excavation or Borrow below 4:1 and/or 10:1 slope will not be permitted.

The depth and width of the side ditch shall be varied where necessary in order to provide proper drainage and/or entrance to drainage structures.

"T" = Sub-Base Thickness

Material above the subgrade is to be constructed of Sub-base Material at locations designated in Sub-base material tabulation. Estimated quantities involved in this operation and thickness of material required are tabulated in the Sub-base Material plan.

COLORADO DEPARTMENT OF HIGHWAYS
FORM NO. D. H. 139
OCTOBER 1956

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C-10-0088-04	3	

Rev.-Added Tim. Gd. Post Tab-10-28-59-GEC

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT	ROADWAY	BRIDGE STA 224+	PROJECT TOTALS
10	Clearing and Grubbing Entire Project	Lump Sum	•		•
11	Reset Mail Boxes	Lump Sum	•		•
11	Adjust Manhole Ring and Cover	Each	1		1
11	Removing Right-of-Way Markers	Each	1		1
12	Removing Fence	Lin. Ft.	9,700		9,700
13	Unclassified Excavation	Cu. Yd.	33,600	4,400	38,000
13	Unclassified Ditch Excavation	Cu. Yd.	500		500
13	Stripping	Cu. Yd.	500		500
14	Unclassified Structural Excavation-Miscellaneous	Cu. Yd.	260		260
14	Unclassified Structural Excavation-Bridges	Cu. Yd.		326	326
16	Structure Backfill (Class 1)	Cu. Yd.	130	200	330
17	Compaction (Standard)	Cu. Yd.	44,000		44,000
17	Wetting	M. Gal.	2,100		2,100
18	Station Yard Overhaul	Sta. Yd.	143,300	1,700	145,000
18	Yard Mile Overhaul	Yd. Mi.	2,300		2,300
18	Ton Mile Overhaul	Ton Mi.	32,000		32,000
23	Sub-Base Material (Class 3)	Ton	22,900		22,900
30	Asphaltic Road Material R.C. (Prime)	Gal.		200	200
32	Plant Mixed Asphaltic Surfacing	Ton		140	140
42	Treated Bridge Timber	M. Fl. Bm.		0.4	0.4
46	Class "A" Concrete	Cu. Yd.		870	870
47	Reinforcing Steel	Lb.		183,800	183,800
48	Structural Steel	Lb.		30,200	30,200
53	18" Corrugated Metal Culvert Pipe (Nestable)	Lin. Ft.	306		306
53	18" Corrugated Metal Culvert Pipe	Lin. Ft.	130		130
53	24" Corrugated Metal Culvert Pipe	Lin. Ft.	243		243
60	Treated Timber Piling	Lin. Ft.		4,256	4,256
65	Concrete Slope and Ditch Paving	Cu. Yd.		37	37
75	Metal Plate Guard Fence (Beam Type)	Lin. Ft.		50	50
75	Metal Plate Guard Rail (Beam Type)	Lin. Ft.		688	688
76	Barbed Wire Fence with Metal Posts	Lin. Ft.	10,700		10,700
76	Barbed Wire Gates	Each	13		13
76	Walk Gates	Each	1		1
77	Picket Snow Fence	Lin. Ft.	700		700
78	Chain Link Wire Mesh Fence	Lin. Ft.	400		400
78	Double Driveway Gates	Each	1		1
80	Sheet Copper	Lb.		16	16
81	Right of Way Markers	Each	6		6
89	Drain Pipe (4"ø x 1'-6") (Concrete Floor)	Each		12	12
90	1½" Electrical Conduit with Junction Boxes	Lin. Ft.		362	362
95	24" Metal Aprons for Corrugated Metal Pipe Culverts	Each	10		10
92	Timber Guard Posts	Each	56		56
	STATE FORCES				
81	Project Markers	Each	2		2
	Signing Entire Project	Lump Sum	•		•
	FORCE ACCOUNT				
	Relocate Telephone Line (Work by Interstate Gas Co. Forces)	Lump Sum	•		•
	Relocate Gas Line (Work by Public Service Co. Forces)	Lump Sum	•		•
	Relocate Power Line (Work by Colo. Central Power Co. For.)	Lump Sum	•		•
	Relocate Power Line (Work by Inter. Mtn. R.E.A. Forces)	Lump Sum	•		•
	Relocate Telephone Line (Work by M.S.T. & T. Co. Forces)	Lump Sum	•		•
	Adjust Water Lines & Appurtenances. (Work by Aurora Water Co. Forces.)	Lump Sum	•		•
	Right of Way Entire Project	Lump Sum	•		•

TABULATION OF TIMBER GUARD POSTS

STATION	SIDE	SPACING	No.
203+00	Rt. & Lt.	Road Approach	4
204+00	Rt. & Lt.	Culvert	2
206+00	Lt.	Road Approach	2
210+00	Rt. & Lt.	Culvert	2
217+ to 224+	Rt. & Lt.	100 ft.	16
229+ to 232+	Rt. & Lt.	31 ft. ; 1 Rt.	4
228+	Rt.	Road Approach	2
232+20	Rt. & Lt.	Road Approach	4
239+12	Rt. & Lt.	Culvert	2
251+00	Lt.	Road Approach	2
252+86	Rt. & Lt.	Culvert	2
253+22	Rt.	Road Approach	2
254+70	Lt.	Road Approach	2
255+25	Rt.	Road Approach	2
255+73	Rt. & Lt.	Culvert	2
255+87.5	Rt. & Lt.	Intersection	6
TOTAL			56

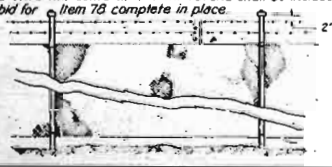
COLORADO DEPARTMENT OF HIGHWAYS
Form C. D. H. 188
OCTOBER 1956

FEDERAL ROAD SYSTEM NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C 10-0088-04	4	

SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION	
*From Cross Sections	24,141 Cu. Yds.
*Borpow	4328
*Estimate for Subsidence	2847
List of Structures as Excavation	1180
*List of Structures as Embankment	560
Estimate of Cut Slope Treatment	208
*Estimate for Covering Ends of Culverts	40
TOTAL	33,344 Cu. Yds.
EMBANKMENT	
From Cross Sections	21,899 Cu. Yds.
EMBANKMENT x FACTOR	28,469 Cu. Yds.
STATION YARD OVERHAUL	
From Mass Diagram	128,251 Sta. Yd
Estimate for Subsidence	12,825
Estimate for Structure Backfill	1,956
TOTAL	143,032 Sta. Yd.
YARD MILE OVERHAUL	
From Mass Diagram	1997 Yd. Mi.
Estimate for Subsidence	200
Estimate for Structure Backfill	7
TOTAL	2204 Yd. Mi.
COMPACTION	
*From Unclassified Excavation	31,916 Cu. Yds.
Base of Cuts and Fills	11,944
TOTAL	43,860 Cu. Yds.
UNCLASSIFIED DITCH EXCAVATION	
From List of Structures	470 Cu. Yds.

● Chain Link Wire Mesh (School) Fence to be constructed as per Standard M-26-D except Posts shall be long enough to accommodate 2 strands of Barbed Wire as shown below. Barbed Wire will conform to Item 76, and shall be included in the price bid for Item 78 complete in place.



SUB-BASE MATERIAL PLAN

STATIONS	SOURCE & AVAILABLE	SUB BASE CLASS 3 THICKNESS	SUB BASE CLASS 3 TONS		TON MILE OVERHAUL	
202+00 to 211+00	18,000+ Cu. Yds.	9"	1908		525	
211+00 to 216+00		5"	675		96	
216+00 to 224+00		5"	1080		184	
224+00 to 224+45.0	PIT NO.1	9"	95		1	
227+96.9 to 238+00	500' Rt.	9"	2127		885	
238+00 to 255+87.5	Sta. 216+00 R=70°	5"	2413		1643	
Estimated for:						
Approach to Project Sta. 202+. Approximately 3¼ Miles.		4"	13,270		28,076	
From List of Structures			425		159	
Irregularities in Sub-Grade			830		333	
TOTALS			22,823		31,902	

Based on Design Curve E

"It is estimated that Sub-Base Material for the Project is available in the vicinity of the Pit indicated in the above tabulation. Estimated quantity involved in this operation is shown above. Alteration of this plan as here outlined will be allowed only on written permission of the Department.

RIGHT OF WAY MARKERS

STATION	SIDE	NUMBER EACH	REMOVE EACH
P.T. 208+76.6 Bk. (Proj)	Lt. and Rt.	2	
236+00	Lt. and Rt.	2	
252+00	Lt. and Rt.	2	
255+	Lt.		1
TOTALS		6	1

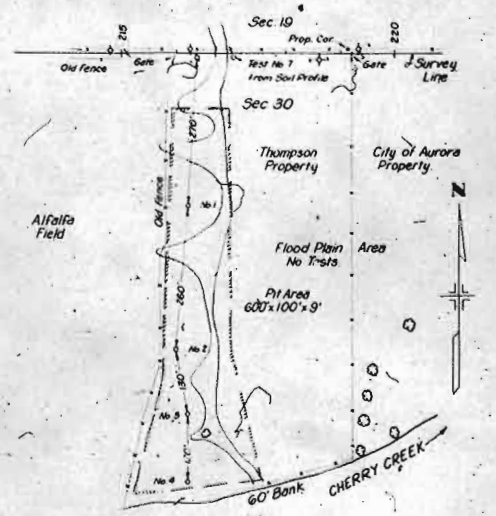
FENCING REQUIREMENTS

STATIONS	SIDE	REMOVE FENCE LIN. FT.	●CHAIN LINK WIRE MESH LIN. FT.	BUILD B.W. FENCE LIN. FT.	BUILD SNOW FENCE LIN. FT.	WALK GATES EACH	DRIVE GATES EACH	B.W. GATES EACH
198+00 to 202+90	Rt.	490						
202+50	x	100						
204+60 to 214+80	Lt.	1020						
204+65	x	60						
204+75 to 213+75	Rt.	900						
215+10 to 228+18	Lt.	1305						
215+35	x	80						
219+20	x	75						
227+70	x	85						
228+40	x	70						
228+40 to 231+90	Lt.	350						
230+55	x	70						
230+						1	1	
230+75 to 231+25	Lt. (Pumphouse)		400					
230+80	x	45						
232+25	x	25						
232+25 to 252+65	Rt.	2040						
232+40 to 255+60	Lt.	2320						
234+60	x	50						
235+25	x	55						
242+85	x	55						
243+65	x	60						
252+85 to 253+10	Rt.	45						
252+70	x	60						
253+50 to 254+75	Rt.	125						
255+60	x	140						
198+00 to 201+95	Lt.			440				
202+85 to 224+45	Lt.			2190				
206+00	Lt.							1
209+50 to 216+50	Lt.				700			
227+97 to 255+00	Lt.			2760				
232+20	Lt.							1
251+00	Lt.							1
254+70	Lt.							1
198+00 to 203+00	Rt.			500				
204+20 to 224+45	Rt.			2055				
227+97 to 254+80	Rt.			2715				
228+00	Rt.							1
232+00	Rt.					1		1
234+59	Rt.							1
234+96	Rt.							1
243+18	Rt.							1
243+47	Rt.							1
252+50	Rt.							1
253+12	Rt.							1
254+73	Rt.							1
TOTALS		9,625	400	10,660	700	1	1	13

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	C 10-0083-04	5	

PIT No. 1

PROPOSED USE	Sub-base Material / Structure Backfill
LOCATION	W½ of NE¼, Sec. 30, T 5 S., R 66 W.
OWNER	A. Roland Thompson, Jr. & Dorothy O. Thompson
QUANTITY AVAILABLE	18,000 Cu. Yds.
HAUL DISTANCE	500 feet to Sta 216+00
ESTIMATED FOR STRIPPING	500 Cu. Yds.



LOG OF PIT SAMPLE No. 2599

Test No.	Depth in feet	Description
1	0'-2'	Top Soil and S. & G.
1A	2'-12'+	S. & G., clean
1B	12'+	S. & G., too clean to lift.
2	0'-4'	Sim. No. 1
2A	4'-12'+	Simp. No. 1A
2B	12'+	S. & G., too clean to lift.
3	0'-3'	Top Soil and S. & G.
3A	3'-12'+	S. & G., and rocks (Rocky zone 6'-12'+) (One 3" streak of gray clay at 7')
4	0'-12'+	S. & G., sticky.

COLORADO STATE HIGHWAY DEPARTMENT
S.H.D. Form 139
JANUARY 1948

LIST OF STRUCTURES

FED. ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
5	COLO.	C10-0088-04	6	

LOCATION	DESCRIPTION	REMOVE STRUCTURE NO.	REMOVE STRUCTURE KIND	EXCAVATION CUBIC YARDS UNCL.	EXCAVATION CUBIC YARDS CONC.	EXCAVATION CUBIC YARDS MISC.	UNCLASSIFIED STRUCTURAL EXCAVATION (MISCELLANEOUS) CUBIC YARDS	STRUCTURE BACKFILL CUBIC YARDS CL. 1	SUB BASE TONS	CONCRETE CUBIC YARDS CL. A	CONCRETE CUBIC YARDS CL. B	REINFORCING STEEL LBS.	CORRUGATED METAL CULVERT PIPE (ASTM A-76) 18"	CORRUGATED METAL CULVERT PIPE LINEAR FEET 18"	CORRUGATED METAL CULVERT PIPE LINEAR FEET 24"	METAL APRONS FOR C.M.P. CULVERTS NO. 18"	METAL APRONS FOR C.M.P. CULVERTS NO. 24"	MISCELLANEOUS
202+									◇									
202+00																		1-Project Marker (Placed by State Forces)
203+00				85					135									
204+00						25	30	13						58		2		
206+00				35					29									
210+00					20	380	25	12						58		2		
217+ to 219+				950														
220+ to 221+				100														
222+50 to 224+45.0				450					36									
224+96.9 to 227+				QUANTITIES IN SUMMARY														
228+					45		5	5	25					26				
228+00							95	27					180					
228+75							65	19					126					
232+20					10		5	5	50					26				
239+12						3	5	7						28+1A 24+1A		2		
244+ to 262+						60												
251+00					5		5	5	25					26				
252+86							5	8						20+1B 18+1A		2		
253+22					20		5	5	25					26				
254+70				5			5	5	25					26				
255+																		1-Adjust Manhole Ring & Cover
255+25				5					25									
255+73							5	11						54+A		2		
255+87.5					10				50									
255+																		1-Project Marker (Placed by State Forces)
	TOTALS			1180	560	470	255	122	425				306	130	243	10		

◇ Quantities in Sub-Base Plan.
▲ Allowance for Connecting Band.

REVISIONS

FED. ROAD PROJ. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
D	COLO.	CAD-0009-04	7	

Revision: Deleted Flow Line Note from General Layout W.E.P. 10-28-58

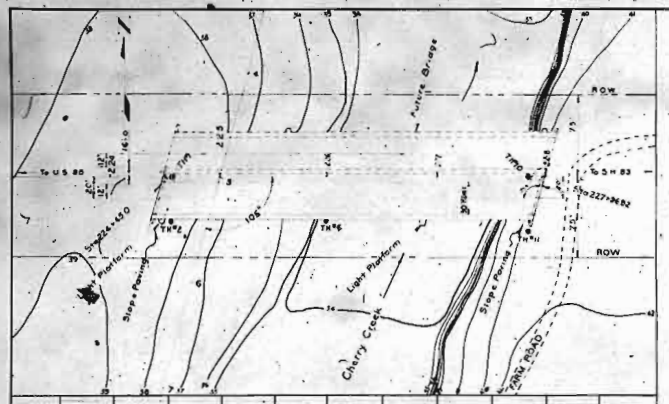
COLO. DEPT. OF HIGHWAYS FORM C.D.H. 159 REV. 1955-306

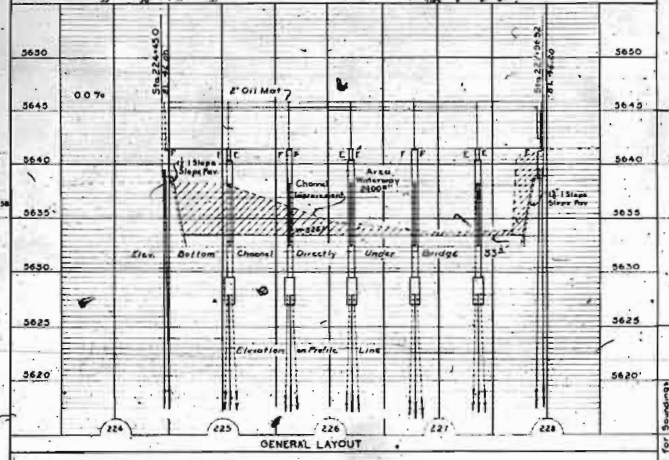
BRIDGE TRACING SHEETS—LOADING DATA AND GENERAL NOTES

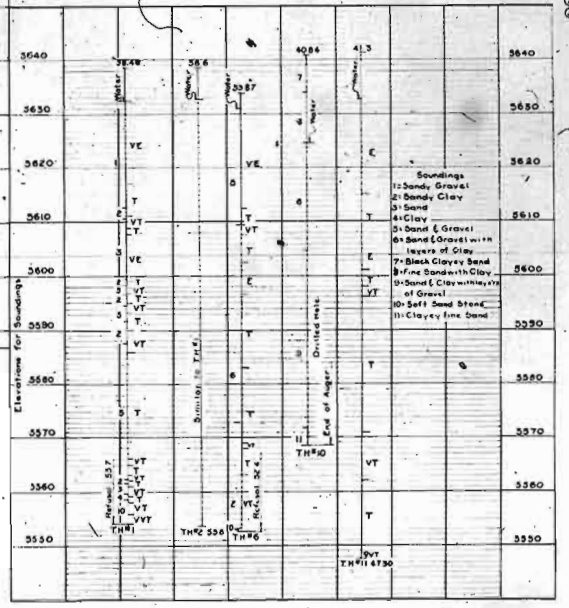
SUMMARY OF QUANTITIES

ITEM NO	DESCRIPTION	UNIT	SUPER STRUCT	ABUT NO 1	PIER NO 2	PIER NO 3	PIER NO 4	PIER NO 5	PIER NO 6	ABUT NO 7	TOTALS
13	Unclassified Excavation	Cu Yd									4390
14	Unclassified Structural Excavation Bridge	Cu Yd		8	62	62	62	62	62	8	326
16	Structure Backfill Class I	Cu Yd			30	30	30	30	30		200
18	Stream Yard Overhaul	Sta Yd									1700
18	Yard Haul Overhaul	Yd mi									
30	Asphaltic Road Material (HC)	Cwt	108								108
32	Plant Mixed Asphaltic Surfacing	Ton	135								135
42	Treated Bridge Timber	Mfbm		0.184						0.184	2.472
46	Class 'A' Concrete	Cu Yd	67.0CY	19.2	31.5	32.4	31.5	31.5	31.5	19.2	266
47	Reinforcing Steel (Includes 12% for Overrun)	Lbs	156870	1905	4575	4720	4575	4720	4575	1905	183,795
48	Structural Steel (Includes 3% for Paint)	Lbs	17443	175	2835	2835	2835	2835	2835	715	30130
60	Treated Timber Piling	Lin Ft		35	140	140	140	140	140	35	770
65	Concrete Slope & Ditch Paving (4" MIN. THICK)	Cu Yd		16						16	16
75	Metal Plate Guard Fence	Lin Ft		25						25	50
75	Metal Plate Guard Rail	Lin Ft	686								686
80	Sheet Copper (32oz)	Lbs	16								16
89	Drain Pipe (Concrete Floor 8"ø x 1'-6")	Each	12								12
90	1" Electrical Conduit With Junction Boxes	Lin Ft	362								362
①	½ Expansion Joint Material (Type I)	Sq Ft	70								70
②	½ Expansion Joint Material (Type III)	Sq Ft	4							4	8

① Includes 20% of approach surface Area
② Includes 4.9 20 lb. of guard rail posts
③ Expansion Joint Material shall be in accordance to AASHO Spec. M 153-54 Tent or Mfr. type Stamp and shall be inserted in the Mfr. Plant for Items







GENERAL NOTES

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

ALL CONCRETE SHALL BE CLASS 'A' AIR ENTRAINED AS SPECIFIED.

ALL CONCRETE SURFACES MARKED WITH FINE SYMBOL "F" AS SHOWN ON SHEET No. 2 SHALL RECEIVE CLASS 1 SURFACE FINISH.

CONCRETE SLABS AND FLOOR SLABS SHALL BE POURED MONOLITHICALLY.

FORMS FOR CONCRETE SURFACES EXPOSED IN THE FINISHED WORK SHALL BE CONSTRUCTED OF PLANED OR SURFACED AND EDGED LUMBER 1 1/2 INCHES FACED WITH PANEL BOARD.

FOOTINGS IN ROCK SHALL BE POURED OUT TO ROCK AND NOT FORMED.

REINFORCING BARS SHALL BE PLACED AS SHOWN ON PLANS WITH THE BEST AVAILABLE CLEARANCES AND SECURELY TIED. SPLICES SHALL BE AS DIRECTED BY THE ENGINEER WHEN NOT SHOWN ON PLANS.

ALL REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A 305 OR THE LATEST REVISION THEREOF AND SHALL BE INTERMEDIATE GRADE STEEL OF A DEFORMED TYPE EACH BAR SHALL BE TAGGED WITH THE NUMBER DESIGNATION AND THE STATION NUMBERS OF THE PROJECT. (DIAMETERS OF THE BAR DESIGNATIONS FOR REINFORCING STEEL NOT SHOWN AS EQUIVALENT TO THE CENTER LINE OF THE BAR. SECONDARY BARS WHEN SPACERS SHALL BE USED SHALL BE SPACED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.)

ALL STRUCTURAL STEEL SHALL BE PAINTED ONE SHOP COAT OF ZINC CHROMATE AND TWO FIELD COATS OF ALUMINUM, UNLESS OTHERWISE NOTED EXCEPT THE UNDERSIDE PORTION OF STEEL RAILING NEED NOT BE PAINTED.

HANDRAIL BOLTS SHALL HAVE HEX HEADS, NUTS AND LOCK WASHERS UNLESS OTHERWISE SPECIFIED AND ALL RIVETS EXCEPT AS NOTED ARE ⅞", DIA AND SHALL BE POWER DRIVEN.

WHEN TREATED TIMBER OR PILING IS SHOWN ON THE DRAWING THE PRESERVATIVE FOR TREATMENT SHALL BE CREOSOTE OIL.

WHEN EXCAVATING FOR FOOTINGS THE FINAL ONE FOOT IN DEPTH SHALL BE DONE BY HAND LABOR METHODS.

FOR DETAILS OF STRUCTURAL EXCAVATION AND STRUCTURE BACKFILL, SEE SECTION 206 OF THE SPECIFICATIONS.

IF BY PERMISSION OF THE ENGINEER REINFORCING BARS ARE SPLICED, THEY SHALL LAP A MIN OF 20 DIAM FOR BARS NEAR TOP OF BEAMS HAVING MORE THAN 12 INCHES OF CONCRETE UNDER THE BARS AND 17 DIAM FOR BARS NEAR BOTTOM OF MEMBERS.

FALSE WORK SHALL REMAIN IN PLACE FOR A LENGTH OF TIME ALL GIRDER POUR HAS REACHED A MINIMUM STRENGTH OF 2500 P.S.I.

LOADING DATA
LIVE LOAD — AASHO (1950-B10-49)

WEARING SURFACE 25 PSF

DESIGNING DATA
AASHO 1953 SHOT STRESS, EXCEPT AS NOTED
Reinforcing Steel fs = 20000 lbs. per sq. in.
Structural Steel fs = 16000 lbs. per sq. in.
fc = 1350 lbs. per sq. in.
n = 10

COLORADO
DEPARTMENT OF HIGHWAYS
6 SPAN @ 57'-0" CONC. SLAB & GIRDER BRIDGE
30' ROWY 2' CURBS 73° SKEW
GEN'L. LAYOUT, NOTES & SUMMARY OF QUANTITIES

Across Cherry Creek
Proj. 2204-B-0 to 227+98.82
Near Littleton Sec. 20 T. 5 S. R. 68 W.

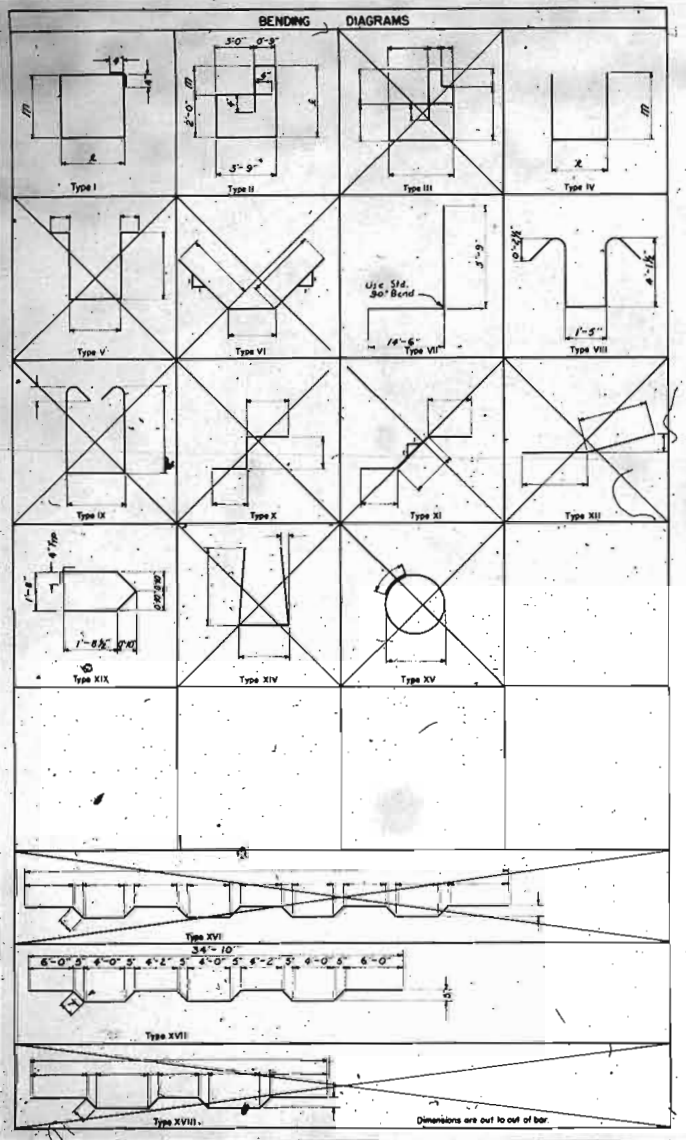
Designed by	Approved by Chief Engineer, Bridge Dept.
Drawn by	
Checked by	Date: 10-6-58

STRUCTURE NO. F-17-DM

REVISIONS

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	COLO.	C 10-0088-04	8	

BENDING DIAGRAMS



BAR LIST SUPERSTRUCTURE

Mark	Size	No Req'd	Length	Type	Dimensions X	Dimensions m
401	½ ø	402	40'-0"	Str		
402	"	402	19'-6"	Str		
403	"	224	3'-10"	I	0'-6"	1'-1"
404	"	700	6'-2"	IX	1'-8"	1'-5"
405	"	1368	10'-5"	VIII		
406	"	288	8'-7"	I	0'-5"	3'-6½"
407	½ ø	36	7'-11"	I	0'-5"	3'-2½"
433	½ ø	14	3'-0"	Str		
501	⅝ ø	586	34'-10"	Str		
502	⅝ ø	264	35'-10"	XIII		
503	⅝ ø	72	27'-6"	Str		
601	¾ ø	8	8'-5"	IX	1'-3"	5'-7"
1101	1¼ ø	120	57'-9"	Str		
1103	"	72	55'-6"	"		
1106	"	48	45'-9"	"		
1105	"	72	39'-0"	"		
1106	"	48	26'-6"	Str		
1107	1¾ ø	16	18'-3"	XII		

BAR SUMMARY

11662	Lin Ft ½ ø @ 0.668 #/Lin Ft	= 23,834 Lb
31783	Lin Ft ⅝ ø @ 1.043 #/Lin Ft	= 33,150 Lb
17550	Lin Ft 1¼ ø @ 5.313 #/Lin Ft	= 92,181 Lb
67	Lin Ft ¾ ø @ 1.502 #/Lin Ft	= 101 Lb
	+1% t For Overrun	1356 Lb
	Total	=156,820 Lb

BAR LIST PIER No 2 (PIER #4, #6 Similar)

Mark	Size	No Req'd	Length	Type	Dimensions X	Dimensions m
410	⅝ ø	10	20'-0"	Str		
611	"	17	16'-6"	IX	0'-9"	6'-10½"
612	"	106	9'-11"	I	1'-10½"	2'-9"
613	"	11	11'-8"	I	2'-9"	2'-9"
616	½ ø	8	7'-4"	I	1'-8"	1'-8"
616	½ ø	8	8'-1"	XIII		
601	¾ ø	24	8'-6"	Str		
602	¾ ø	24	7'-8"	Str		
901	1¼ ø	2	20'-0"	Str		
902	1¼ ø	27	12'-5"	Str		
1001	1½ ø	6	33'-8"	Str		
1002	1½ ø	2	19'-2"	Str		
1003	1½ ø	10	11'-0"	Str		

BAR SUMMARY

1746	Lin Ft ½ ø @ 0.668 #/Lin Ft	= 1166 Lb
388	Lin Ft ⅝ ø @ 1.502 #/Lin Ft	= 583 Lb
375	Lin Ft 1¼ ø @ 3.400 #/Lin Ft	= 1275 Lb
350	Lin Ft 1½ ø @ 4.303 #/Lin Ft	= 1506 Lb
	+1% t For Overrun	= 45 Lb
	Total	= 4575 Lb

BAR LIST ABUT. No 1 (ABUT No 7 Similar)

Mark	Size	No. Req'd	Length	Type	Dimensions X	Dimensions m
420	½ ø	16	19'-6"	II	5'-7"	5'-7"
421	"	16	13'-10"	II	5'-10"	3'-10"
422	"		13'-2"		5'-6"	
Typ		Typ	Typ 6'-6"	I	7'-2"	0'-9"
426			by 10"		by 5"	
427		3	18'-2"	I	8'-0"	0'-9"
428		6	6'-10"	Str.		
429		14	22'-2"	"		
630		4	6'-6"			
631		9	2'-9"	"		
632	½ ø	6	5'-0"	Str		
510	⅝ ø	2	35'-8"	Str		
701	⅝ ø	14	35'-8"	Str		

BAR SUMMARY

1184	Lin Ft ½ ø @ 0.668 #/Lin Ft	= 791 Lb
71	Lin Ft ⅝ ø @ 1.043 #/Lin Ft	= 74 Lb
499	Lin Ft ¾ ø @ 2.046 #/Lin Ft	= 1020 Lb
	+1% t For Overrun	= 20 Lb
	Total	= 1905 Lb

BAR LIST PIER No 3 (PIER No 5 Similar)

Mark	Size	No Req'd	Length	Type	Dimensions X	Dimensions m
610	⅝ ø	12	20'-0"	Str		
612	"	106	9'-11"	I	1'-10½"	2'-9"
613	"	11	11'-8"	I	2'-9"	2'-9"
616	"	9	7'-4"	I	1'-8"	1'-8"
615	"	17	16'-6"	IX	0'-9"	7'-0½"
616	½ ø	9	8'-1"	XIII		
601	¾ ø	24	8'-6"	Str		
602	¾ ø	24	7'-8"	Str		
901	1¼ ø	2	20'-0"	Str		
903	1¼ ø	27	13'-4"	Str		
1001	1½ ø	6	33'-8"	Str		
1002	1½ ø	2	19'-2"	Str		
1003	1½ ø	10	11'-0"	Str		

BAR SUMMARY

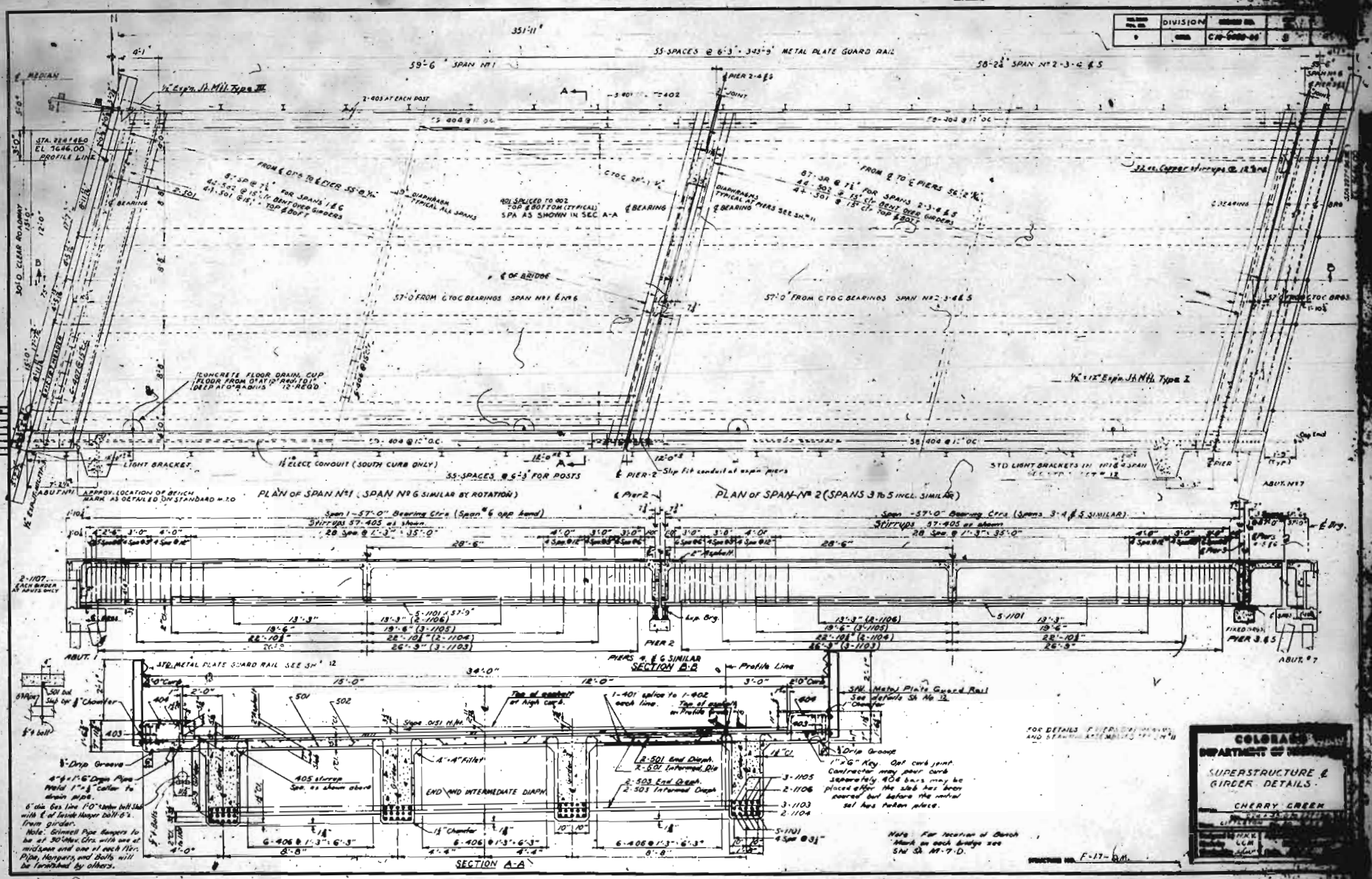
1832	Lin Ft ½ ø @ 0.668 #/Lin Ft	= 1224 Lb
388	Lin Ft ⅝ ø @ 1.502 #/Lin Ft	= 583 Lb
400	Lin Ft 1¼ ø @ 3.400 #/Lin Ft	= 1360 Lb
350	Lin Ft 1½ ø @ 4.303 #/Lin Ft	= 1506 Lb
	+1% t For Overrun	= 97 Lb
	Total	= 4720 Lb

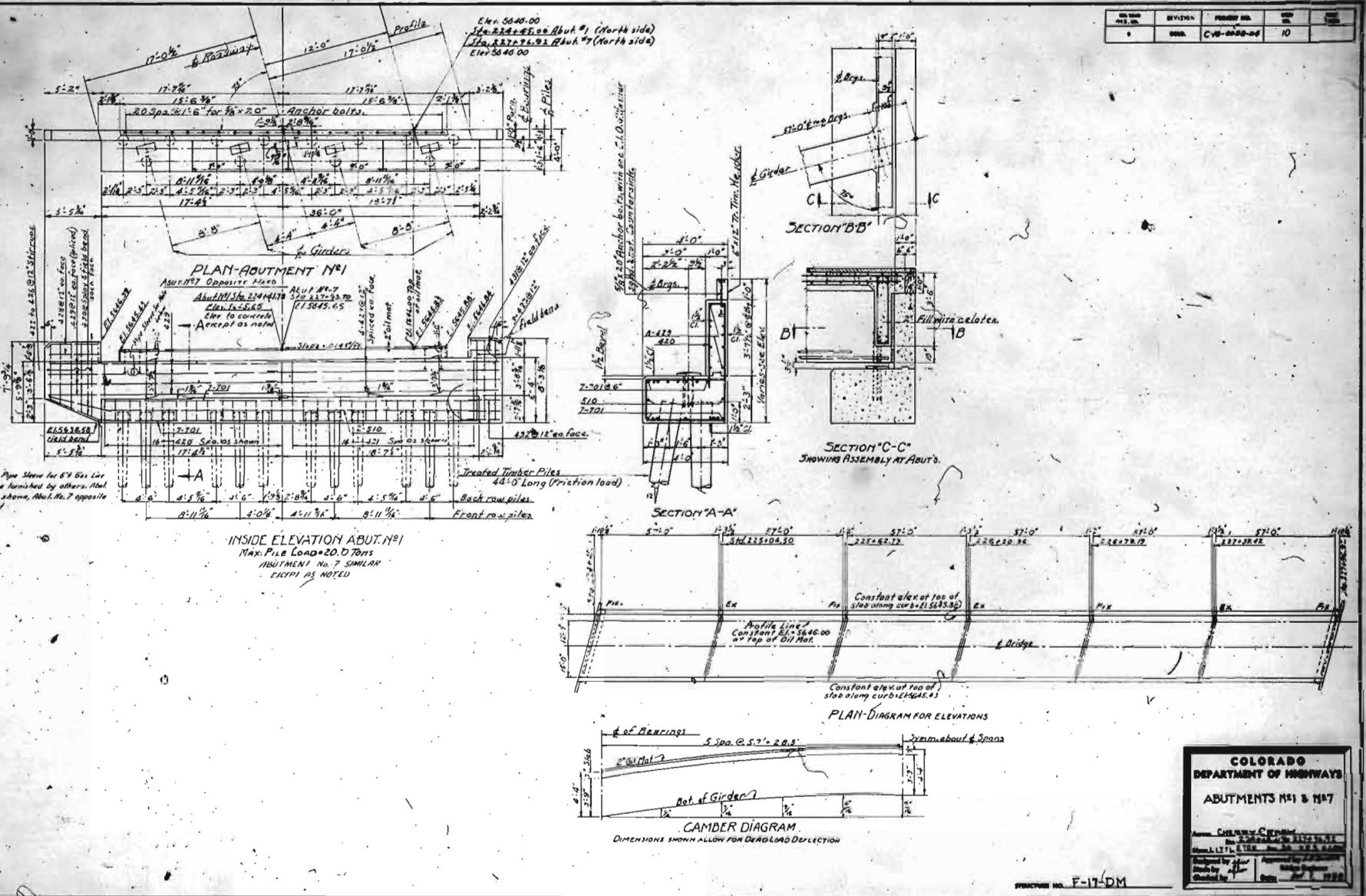
COLORADO
DEPARTMENT OF HIGHWAYS

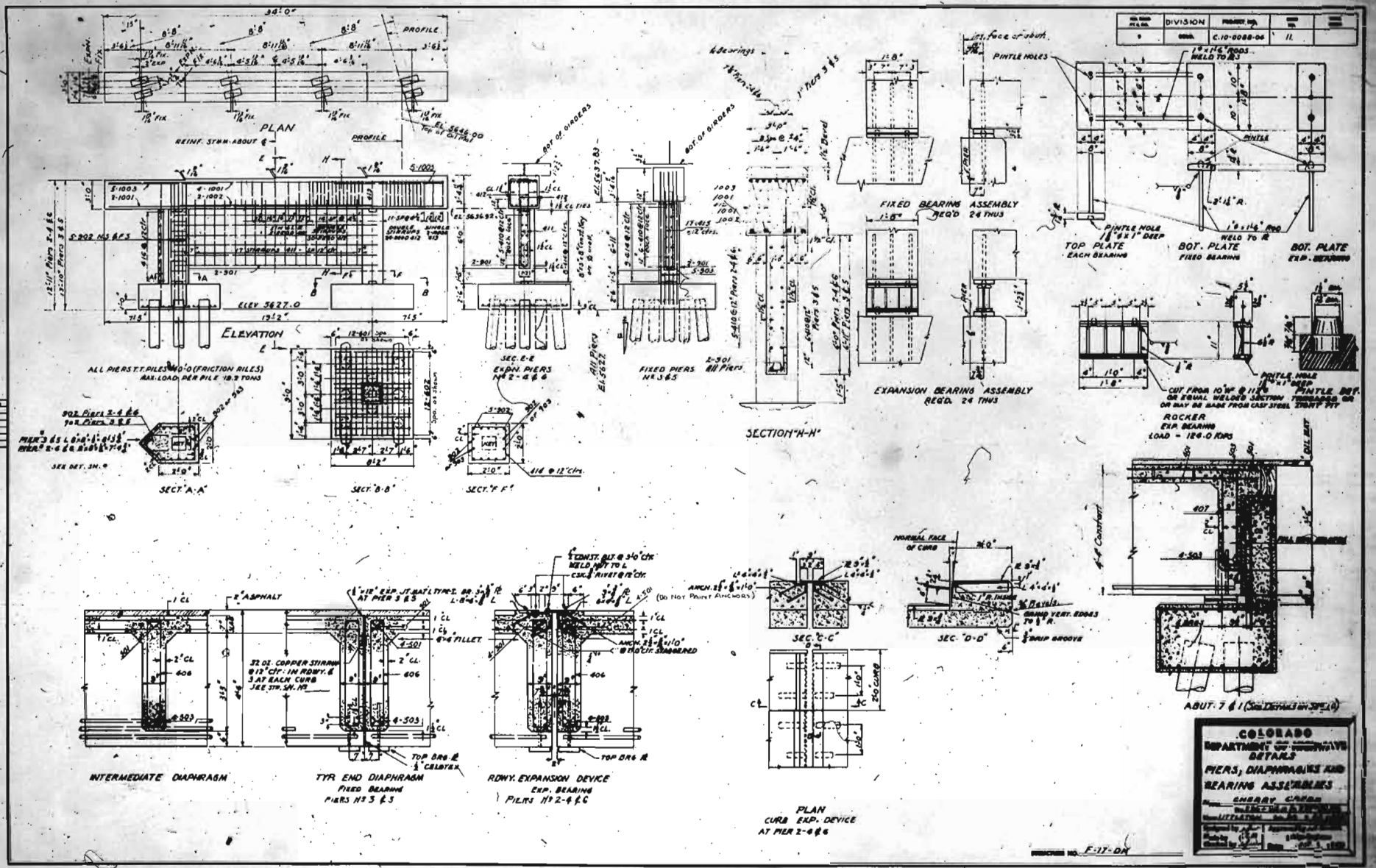
BENDING DIAGRAMS & BAR LIST

Prepared by: Cheney Cobb
Checked by: J.B.
Approved by: [illegible]
Bridge Engineer
Date: 8-1-64

STRUCTURE NO. F-17-DM

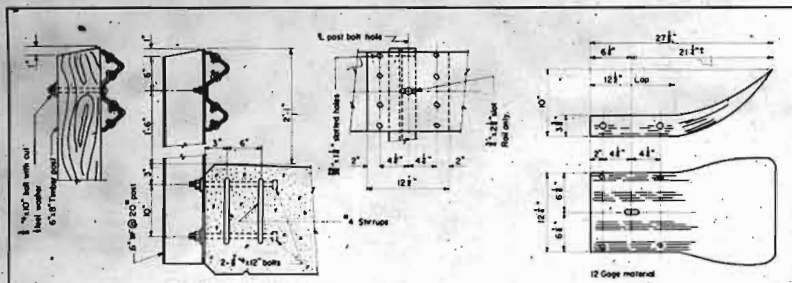

351'-11"
55 SPACES @ 6'-3" = 343'-9" METAL PLATE GUARD RAIL
59'-6" SPAN No 1
58'-2½" SPAN No 2-3-4 & 5
PIER 2-4 & 5
SPAN No 6 & PIER No 1
½" Exp'n. Jt. Mtl. Type III
2-405 AT EACH POST
STA. 338+460
EL 7646.00
PROFILE LINE
30'-0" CLEAR ROADWAY
8'-3" SP @ 1'-6" FOR SPANS 1 & 6
44-502 @ 12"
41-501 @ 18"
TOP & BOTT. GIRDERS
FROM ℄ Opp. TO ℄ PIER 55 @ ½"
9" DIAPHRAGM TYPICAL ALL SPANS
401 SPLICED TO 402 TOP & BOTTOM (TYPICAL) SPA AS SHOWN IN SEC. A-A
℄ BEARING
℄ OF BRIDGE
57'-0" FROM C TO C BEARINGS SPAN No 1 & No 6
57'-0" FROM C TO C BEARINGS SPAN No 2-3-4 & 5
67-3R @ 7½"
44-502 @ 12"
41-501 @ 18" Ctr.
TOP & BOT. GIRDERS
FOR SPANS 2-3-4 & 5
FROM ℄ TO ℄ PIERS 56'-2½"
DIAPHRAGMS TYPICAL ALL SPANS SEE SH. No 11
32 ea. Copper Stirrups @ 18" c-c
CONCRETE FLOOR DRAIN, CUP FLOOR FROM GRATE RED 12" DEEP AT 0" RADIUS 12" RADIUS
½" EXP. JT. TYP.
ABUT. No 1
APPROX. LOCATION OF BENCH MARK AS DETAILED ON STANDARD M 7.0
59-404 @ 12" O.C.
12½" ELECT. CONDUIT (SOUTH CURB ONLY)
55 SPACES @ 6'-3" FOR POSTS
PIER 2
Slip fit conduit at expn. piers
STD. LIGHT BRACKETS (1) 1111 & 3 SPAN
½" x 12" Exp'n. Jt. Mtl. Type I
PIER No 5
ABUT. No 7
PLAN OF SPAN No 1 (SPAN No 6 SIMILAR BY ROTATION)
PLAN OF SPAN No 2 (SPANS 3 TO 5 INCL. SIMILAR)
Span 1 - 57'-0" Bearing Ctrs (Span No 6 opp hand)
Span - 57'-0" Bearing Ctrs (Spans 3-4 & 5 SIMILAR)
Stirrups 57-405 as shown
28 Spa @ 1'-3" = 35'-0"
28'-6"
2-1107 EACH GIRDER AT JOINTS ONLY
5-1101 @ 57'-9"
18'-3" (2-1106)
18'-6" (3-1105)
22'-10½" (2-1104)
26'-3" (3-1103)
Exp. Brg.
Fixed Brg.
PIER 2
PIER 3 & 5
ABUT. No 7
SECTION B-B
PIERS 4 & 6 SIMILAR
STD. METAL PLATE GUARD RAIL SEE SH. No 12
34'-0"
15'-0"
12'-0"
3'-0"
2'-0" Curb
Profile Line
6" Min.
501 bol. Std typ. ¾" Chamfer
¾" bolt
403
404
501
502
Stirrup .051 in./ft.
Top of concrete at high curb.
1-401 splice to 1-402 each line.
Top of concrete as Profile
S&W Metal Plate Guard Rail See details Sh No 12
Chamfer
Drip Groove
4"ø x 1'-6" Drain Pipe Weld 1" ø collar to drain pipe.
6" dia Gas line 1'-0" below bott Std with ℄ of Inside Hanger bolt 6'-6" from girder.
Note: Grinnell Pipe Hangers to be at 30' inter. Ctrs. with one at midspan and one of each Str. Pipe, Hangers, and Bolts will be furnished by others.
A-A Fillet
405 stirrup See as shown above
END AND INTERMEDIATE DIAPH.
2-501 End Diaph. 2-501 Intermed. Dia
2-503 End Diaph. 2-503 Intermed. Diaph
15" Chamfer
6-406 @ 1'-3" = 6'-3"
8'-8"
4'-4"
10" 10"
18" Cl.
3-1105
2-1106
3-1103
2-1104
5-1101
4 Spa @ 3½"
1" "G" Key Cpl. curb joint. Contractor may pour curb separately 404 bars may be placed after the slab has been poured but before the initial set has taken place.
SECTION A-A
Note For location of Bench Mark on each bridge see Std Sh M-7.0.
FOR DETAILS
AND STANDARD
DIVISION
COLORADO DEPARTMENT OF
SUPERSTRUCTURE & GIRDER DETAILS
CHERRY CREEK
STRUCTURE NO. F-17-BM


PLAN-ABUTMENT Nº1
Abut Nº1 Opposite Hand
Abut Nº7
Sta 227+93.70
El 5645.65
Elev to face 5645.65
Elev to concrete except as noted
Anchor bolts
20 Spa @ 1'-6" for ⅞" x 7'-0"
Field bend
Spliced on face
2" roll mat.
Treated Timber Piles
44'-0" Long (Friction load)
Back row piles
Front row piles
INSIDE ELEVATION ABUT. Nº1
Max. Pile Load = 20.0 Tons
ABUTMENT No. 7 SIMILAR
EXCEPT AS NOTED
Note: Pipe Sleeve for 6" Gas Line to be furnished by others. Abut. No. 1 shown, Abut. No. 7 opposite hand
Elev. 5640.00
Sta. 224+65.00 Abut. #1 (North side)
Sta. 227+74.92 Abut. #7 (North side)
Elev. 5640.00
SECTION "B-B"
SECTION "C-C"
SHOWING ASSEMBLY AT ABUT'S.
SECTION "A-A"
Fill with celotex.
PLAN-DIAGRAM FOR ELEVATIONS
Constant elev. at top of slab along curb = El 5645.38
Profile Line Constant El = 5646.00 at Top of Oil Mat.
℄ Bridge
CAMBER DIAGRAM
DIMENSIONS SHOWN ALLOW FOR DEAD LOAD DEFLECTION
COLORADO DEPARTMENT OF HIGHWAYS
ABUTMENTS Nº1 & Nº7
STRUCTURE NO. F-17-DM

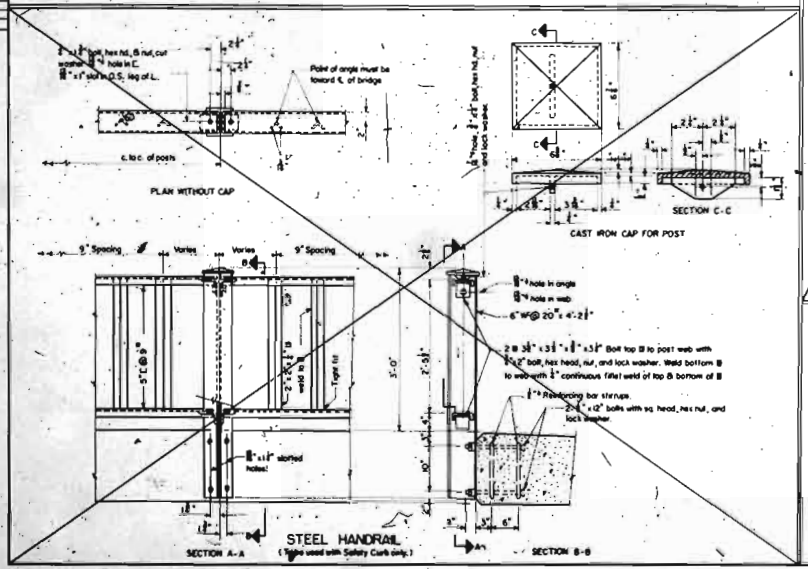

PLAN
PROFILE
ELEVATION
SECT. A-A
SECT. B-B
SECT. F-F
SECT. E-E
EXPN. PIERS NO 2-4 & 6
FIXED PIERS NO 3 & 5
SECTION "H-H"
FIXED BEARING ASSEMBLY REQ'D 24 THUS
EXPANSION BEARING ASSEMBLY REQ'D. 24 THUS
TOP PLATE EACH BEARING
BOT. PLATE FIXED BEARING
BOT. PLATE EXP. BEARING
ROCKER EXP. BEARING
LOAD = 124.0 Kips
ABUT. 7 # 1
INTERMEDIATE DIAPHRAGM
TYP. END DIAPHRAGM
FIXED BEARING PIERS NO 3 & 5
RDWY. EXPANSION DEVICE
EXP. BEARING PIERS NO 2-4 & 6
PLAN
CURB EXP. DEVICE AT PIER 2-4 & 6
SEC. "C-C"
SEC. "D-D"
COLORADO
DEPARTMENT OF HIGHWAYS
DETAILS
PIERS, DIAPHRAGMS AND BEARING ASSEMBLIES
CHERRY CREEK
DIVISION NO. F-17-DR

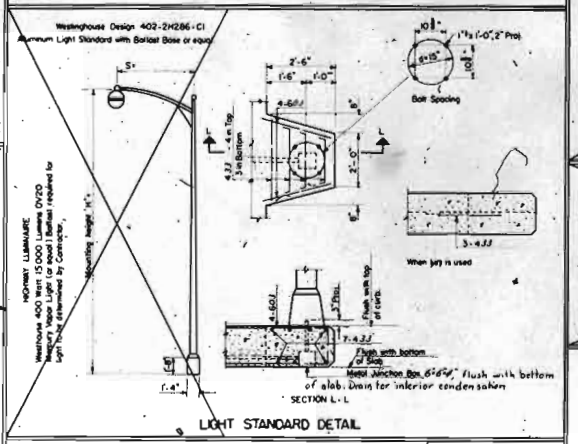
REVISIONS

FED. ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	CA-0068-04	12	

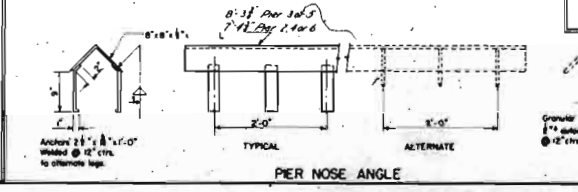


METAL PLATE GUARD RAIL



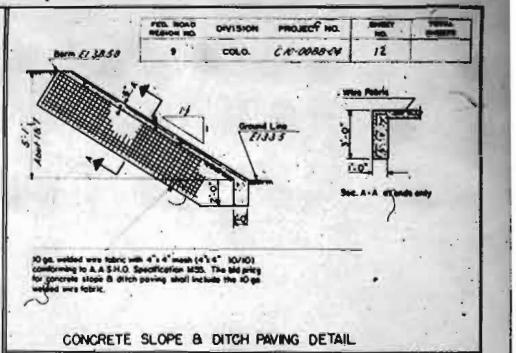


LIGHT STANDARD DETAIL

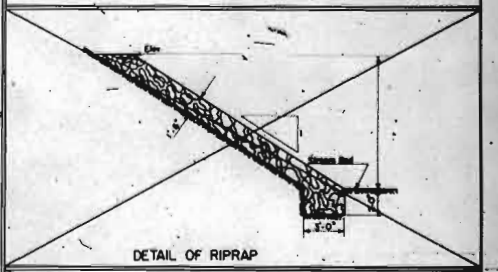


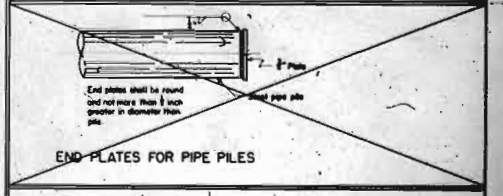
PIER NOSE ANGLE

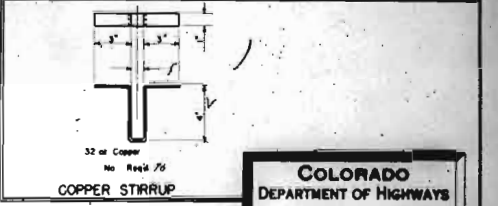
STRUCTURE NO. F-17-HY



CONCRETE SLOPE & DITCH PAVING DETAIL







COLORADO
DEPARTMENT OF HIGHWAYS

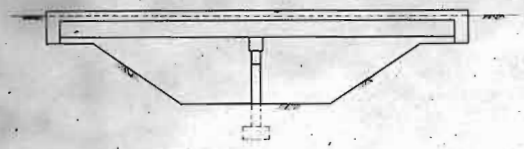
MISCELLANEOUS BRIDGE DETAILS

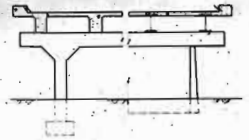
Bridge Creek
Sta. 226+58.0 Lt. 22.0 Rt.
Near Littleton Dept. of T. & D. Hwy.

Designed by	Approved by Chief Engineer
Drawn by D.A.B.	Design Engineer
Checked by	Date: 1-8-69

REVISIONS

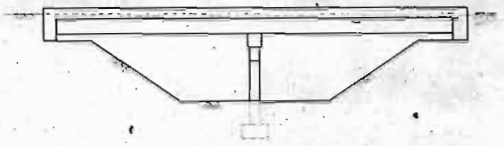
FED. ROAD REGION NO.	DIVISION	PROJECT NO	SHEET NO	TOTAL SHEETS
9	COLO	C.D.-0088-04	13	

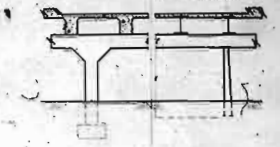




PIER AND SUPERSTRUCTURE

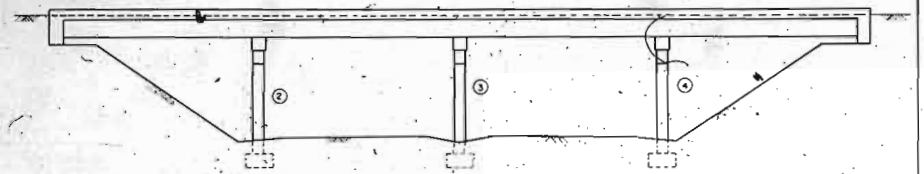
RURAL STREAM CROSSING

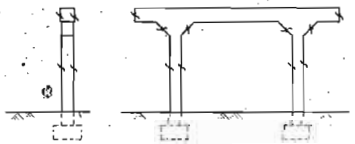




PIER AND SUPERSTRUCTURE

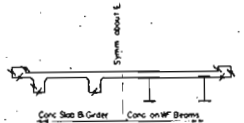
URBAN STREAM CROSSING OR NEAR URBAN AREA





Piers 2,3 & 4

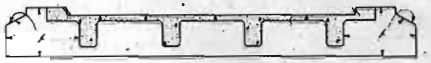
All Piers



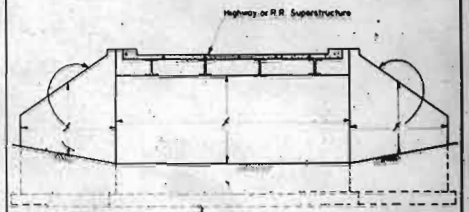
Superstructure

In case of round columns the whole column shall receive Class "1" finish on all Piers

UNDERPASS



STUB ABUTMENTS
(Underpass Only)



CANTILEVER ABUTMENTS
(Underpass Only)

STRUCTURE NO. F-17-GH

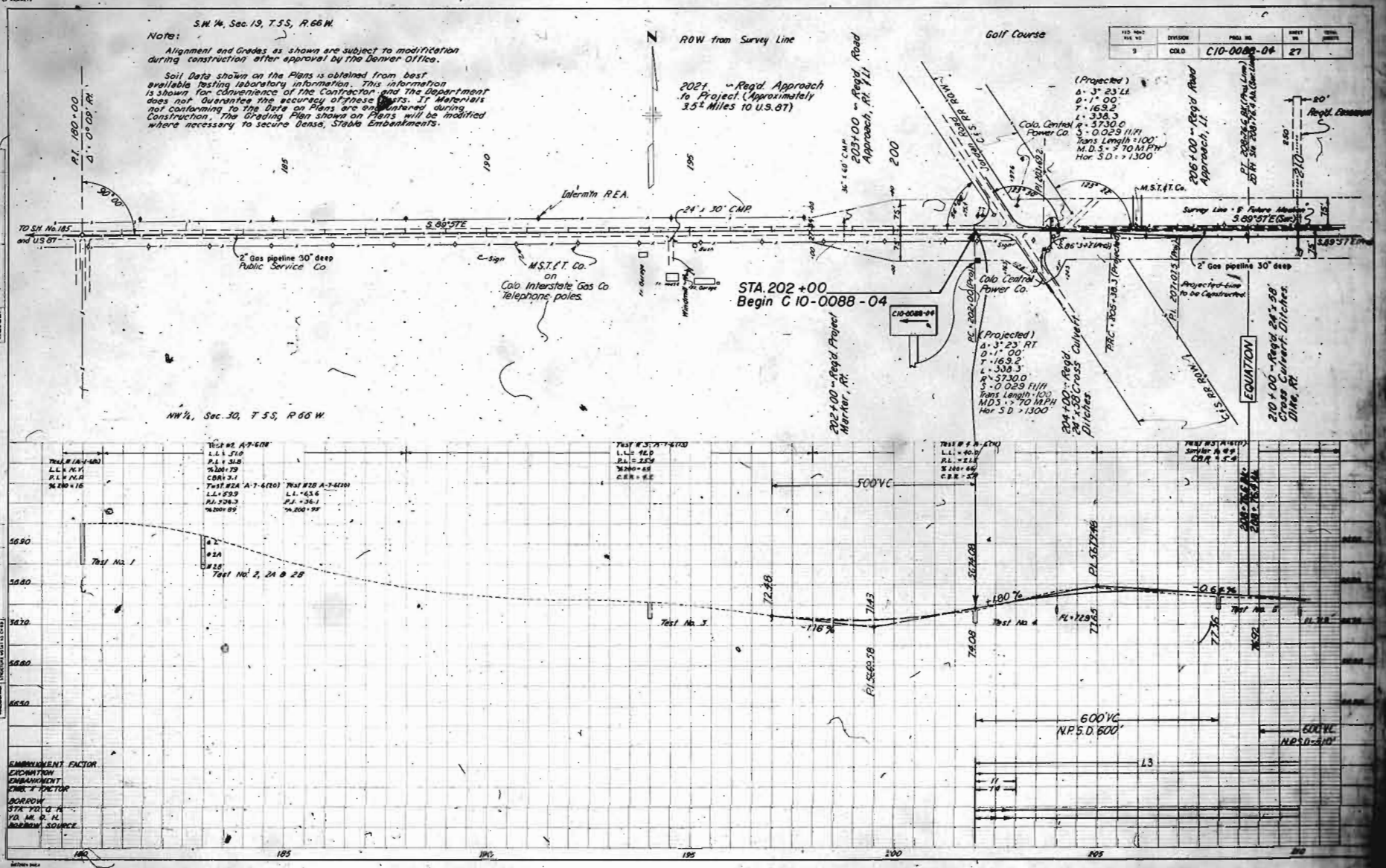
COLORADO
DEPARTMENT OF HIGHWAYS

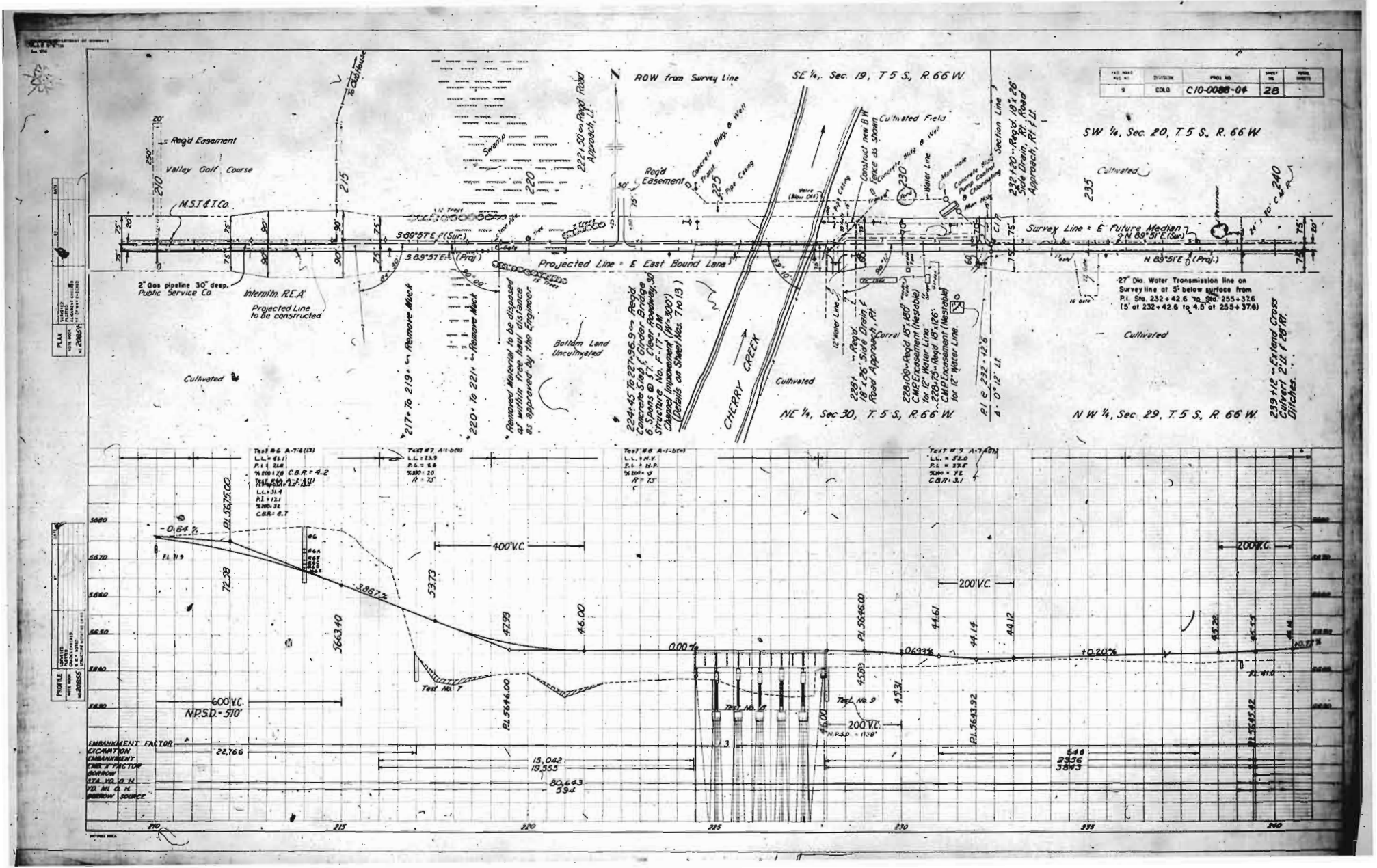
DETAILS SHOWING PORTIONS OF STRUCTURE TO RECEIVE CLASS "1" SURFACE FINISH.

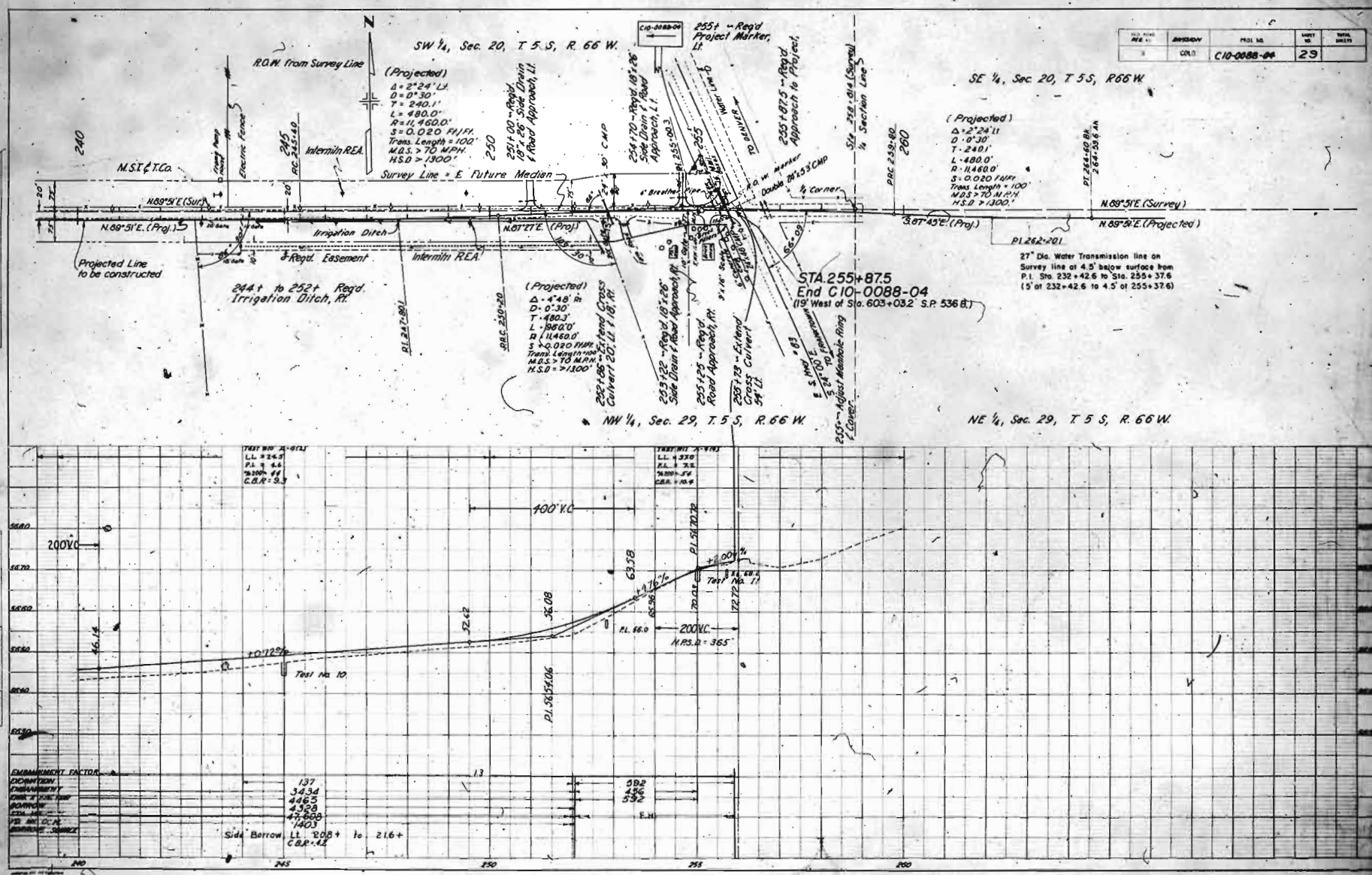
Across Cherry Creek
Sta. 224+50 to 227+36.82
Near Littleton Sec. 34 T.5S R.68W 6P

Designed by P.A.D.H.
Made by R.R.A.-J.B.
Checked by

Approved
Bridge Engineer
Date: Sept. 7, 1965 P


S.W. ¼, Sec. 19, T 5 S, R 66 W.
Note:
Alignment and Grades as shown are subject to modification during construction after approval by the Denver Office.
Soil Data shown on the Plans is obtained from best available testing laboratory information. This information is shown for convenience of the Contractor and the Department does not Guarantee the accuracy of these tests. If Materials not conforming to the Data on Plans are encountered during Construction. The Grading Plan shown on Plans will be modified where necessary to secure Dense, Stable Embankments.
N
ROW from Survey Line
2021. ± Reg'd. Approach to Project. (Approximately 3.5± Miles to U.S. 87)
Golf Course
C10-0088-04
P.I. 180+00
Δ 0°00' Rt.
90°00'
TO S.H. No. 185 and U.S. 87
S.89°57'E
Intermtn. R.E.A.
24" x 30" C.M.P.
2" Gas pipeline 30" deep Public Service Co.
Sign
M.S.T. & T. Co. on Colo. Interstate Gas Co. Telephone poles.
Colo. Central Power Co.
STA. 202+00
Begin C 10-0088-04
202+00 ± Reg'd. Project Marker, Rt.
203+00 ± Reg'd. Approach, Rt. 121
C.S.P. Culvert
Road R.O.W.
(Projected)
Δ 3° 23' Lt.
D 1° 00'
T 169.2
L 338.3
R 5730.0
S 0.029 ft/ft
Trans Length 100'
M.D.S. ± 70 M.P.H.
Hor. S.D. ± 1300'
206+00 ± Reg'd. Approach, Lt.
Reg'd. Easement
M.S.T. & T. Co.
Survey Line & Future Alignment
S.89°57'E (Surv.)
S.86°39'E (Proj.)
2" Gas pipeline 30" deep
Projected Line to be Constructed
P.I. 207+15 (Proj.)
P.R.C. 205+38.3 (Projected)
EQUATION
210+00 ± Reg'd. 24"x58' Cross Culvert. Ditches. Rt.
204+00 ± Reg'd. 24"x58' Cross Culvert. Ditches.
NW ¼, Sec. 30, T 5 S, R 66 W.
Test No. 1
Test No. 2, 2A & 2B
Test No. 3
Test No. 4
Test No. 5
500' V.C.
600' V.C.
N.P. S.D. 600'
+1.80%
-1.16%
-0.65%
EMBANKMENT FACTOR
EXCAVATION
EMBANKMENT
CONV. FACTOR
BORROW
STA. YD. C. H.
YD. MI. D. H.
BORROW SOURCE


ROW from Survey Line
SE ¼, Sec. 19, T 5 S., R. 66 W.
SW ¼, Sec. 20, T. 5 S., R. 66 W.
NE ¼, Sec. 30, T. 5 S., R. 66 W.
NW ¼, Sec. 29, T. 5 S., R. 66 W.
Valley Golf Course
Cultivated Field
Cultivated
Rigid Easement
M.S.T.&T.Co.
Survey Line = E. Future Median
Projected Line = E. East Bound Lane
CHERRY CREEK
Bottom Land Uncultivated
2" Gas pipeline 30" deep. Public Service Co.
Intermitn. R.E.A.
Projected Line to be constructed
Remove Mack
Removed material to be disposed of within free haul distance as approved by the Engineer.
Concrete Bridge
Structure No. F-17-DM
Channel improvement (W=300')
(Details on Sheet No. 7 to 13)
Construct new B.W. Fence as shown
Concrete Bldg. & Well
Concrete Stock Tank & Well
Water Line
Section Line
27" Dia. Water Transmission line on Survey line at 5' below surface from P.I. Sta. 232+42.6 to Sta. 255+37.6 (5' at 232+42.6 to 4.0' at 255+37.6)
Test No. 7
Test No. 8
Test No. 9
-0.64%
+3.867%
0.00%
+0.693%
+0.20%
400' V.C.
200' V.C.
600' V.C.
N.P.S.D.-510'
EMBANKMENT FACTOR
EXCAVATION
EMBANKMENT
SHR. & FACTOR
BORROW
STA. YD. O. H.
YD. MI. O. H.
BORROW SOURCE
22,766
15,042
19,355
80,643
594
646
2936
3843



SHEET NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	C10-0088-04	29	

TITLE SHEET

JUN 18

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C 10-0088-04	1	

Rev Index - 10-28-58 - G.R.L.

COLORADO DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

STATE **PROJECT NO. C 10-0088-04**

STATE HIGHWAY NO. 88

ARAPAHOE COUNTY

AS CONSTRUCTED

INDEX OF SHEETS

SCALES OF ORIGINAL DRAWINGS

ON PLAN. 1 IN. = 100 FT.

ON PROFILE. 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL

GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD

GROSS LENGTH OF PROJECT
NET LENGTH OF PROJECT } = 5387.7' Ft = 1.020 MI.

CONVENTIONAL SIGNS

CENTER LINE
RIGHT OF WAY LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
LAND LINES
RAILROAD
BARBED WIRE FENCE
COMBINATION WIRE FENCE
SNOW FENCE
TELEPHONE & TELEGRAPH LINES
POWER LINE
DETOUR
PRESENT ROAD (Plan Sheets)

FINAL CONSTRUCTION SURVEY

LEON K. SUHM INC. - CONTRACTOR

COMPLETED JUNE 27, 1959

TABULATION OF LENGTH & DESIGN

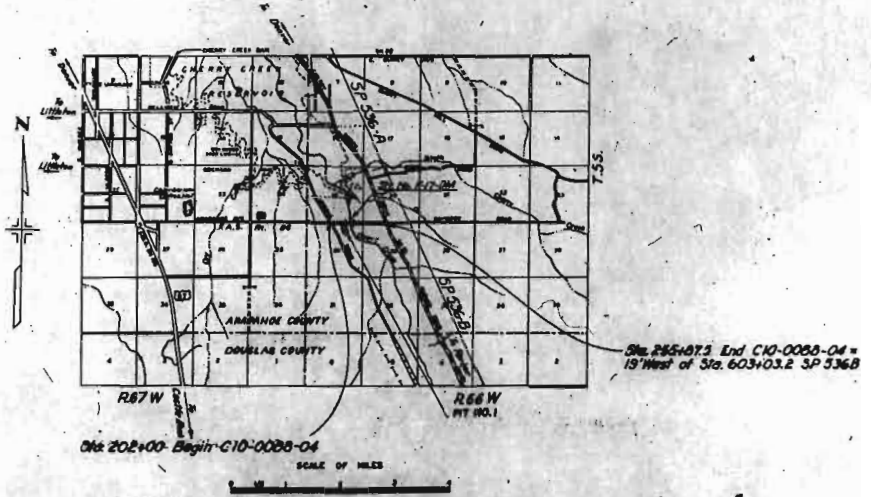
STATION	ROADWAY LIN. FT.	MAJOR STRUCTURE	LOADING
202+00 Begin C-10-0088-04			
208+76.6 Bk.	676.6		
208+76.4 Ah.			
224+46.0 Begin Bridge	1568.6		
Cherry Creek		351.9	H-20-S-16-44
227+96.9 End Bridge	2790.6		
255+87.5 End C10-0088-04 19' west of Sta. 603+03.2 SP 5368			
TOTALS	5036.8	351.9	

SUMMARY

	LIN. FT.	MILES
TOTAL C-10-0088-04 ROADWAY	5036.6	0.954
TOTAL C-10-0088-04 STRUCTURE	351.9	0.068
NET & GROSS LENGTH	5387.7	1.020

DESIGN DATA

MAXIMUM GRADE	4.76 %
MAXIMUM DEGREE OF CURVE	1°00'
MINIMUM H.P.S.D. HORIZONTAL	>1300'
MINIMUM H.P.S.D. VERTICAL	368'
MAXIMUM DESIGN SPEED	50 M.P.H.



NOTE:
SEE SPECIAL PROVISIONS FOR NOTICE TO BIDDERS.

COLORADO
DEPARTMENT OF HIGHWAYS

APPROVED:

CHIEF ENGINEER — DATE 10-16-59

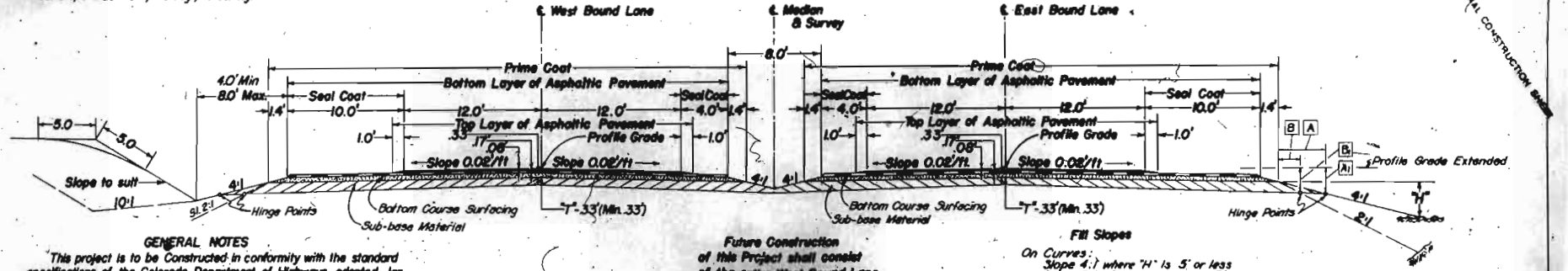
COLORADO DEPARTMENT OF HIGHWAYS
FORM C. D. H. 135
JUNE 1958

JUN 18 1962

TYPICAL CROSS SECTION OF IMPROVEMENT

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C 10-0068-04	2	

NOTE:
See Standards for Details of
Cut Slope Treatment, Flaring & Widening.



GENERAL NOTES

This project is to be Constructed in conformity with the standard specifications of the Colorado Department of Highways, adopted January 1, 1958.

All quantities on preliminary plans are to be considered approximate only.

All poles encroaching on construction are to be moved by the owners.

All Corrugated Metal Pipe Cross Culverts shall be laid with Metal Aprons on each end unless otherwise noted on the plans.

All thicknesses of Surfacing and Asphaltic Processing are approximate.

All curves are to be superelevated and widened, as provided by the Standard Superelevation sheet included with the plans.

For preliminary plan quantities of Asphaltic Road Materials, the following rates of application were used:

Prime Coat - Roadway . . . @ 0.40 Gals. per Sq. Yd. (Future Construction)
Prime Coat - Bridge . . . . . @ 0.10 Gals. per Sq. Yd.

Rate of application and grade of Asphaltic Material shall be as determined by the Engineer at time of application.

Road approaches are to be covered with 4" of Sub-base Material in lieu of 4" of Gravel or Crushed Rock Surfacing as shown on Standard M-2-EN.

Application methods for liquid asphaltic road material, which result in the discoloration of concrete pavement, curbs or gutters, will not be permitted.

Prime Coat and Asphaltic Surfacing shall be placed over the curbed width of the bridge at Sta. 224+.

Future Construction of this Project shall consist of the entire West Bound Lane and the Base Course and Asphaltic Surfacing of the East Bound Lane.

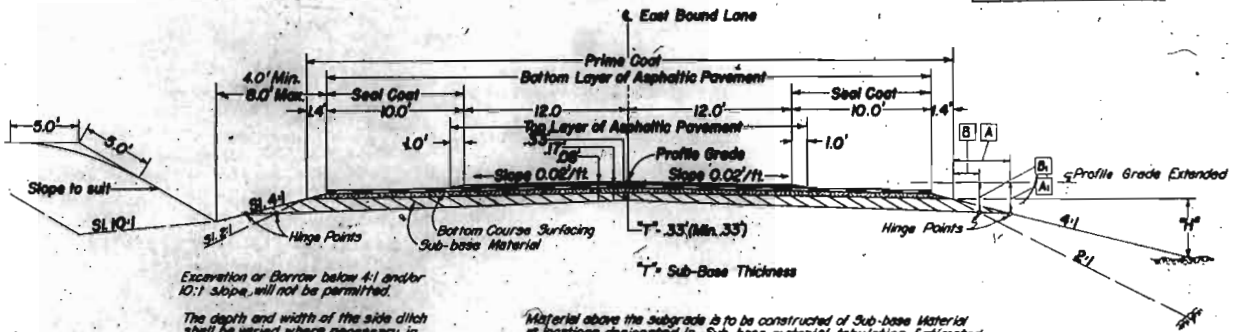
Fill Slopes

On Curves:
Slope 4:1 where "H" is 5' or less
Slope 2:1 where "H" is over 5'

On Tangents:
Slope 4:1 where "H" is 3' or less
Slope 2:1 where "H" is over 3'

East Bound Lane
Table of Side Slope
Hinge Points for Sub-base Mat'l.

"T"	"T-4"	Sl. 4:1		Sl. 2:1	
In.	Ft.	Ft.	A	A_1	B	B_1
3	42	.33	2.2'	-.6	1.1	-.5
9	75	.42	3.9	-2.0	1.6	-1.9



Excavation or Borrow below 4:1 and/or 10:1 slope, will not be permitted.

The depth and width of the side ditch shall be varied where necessary in order to provide proper drainage and/or entrance to drainage structures.

Material above the subgrade is to be constructed of Sub-base Material at locations designated in Sub-base material Tabulation. Estimated quantities involved in this operation and thickness of material required are tabulated in the Sub-base Material plan.

TYPICAL CONSTRUCTION SHEET

JAN 18 1962

PROJECT NO. C10-0088-04

FINAL SUMMARY OF QUANTITIES

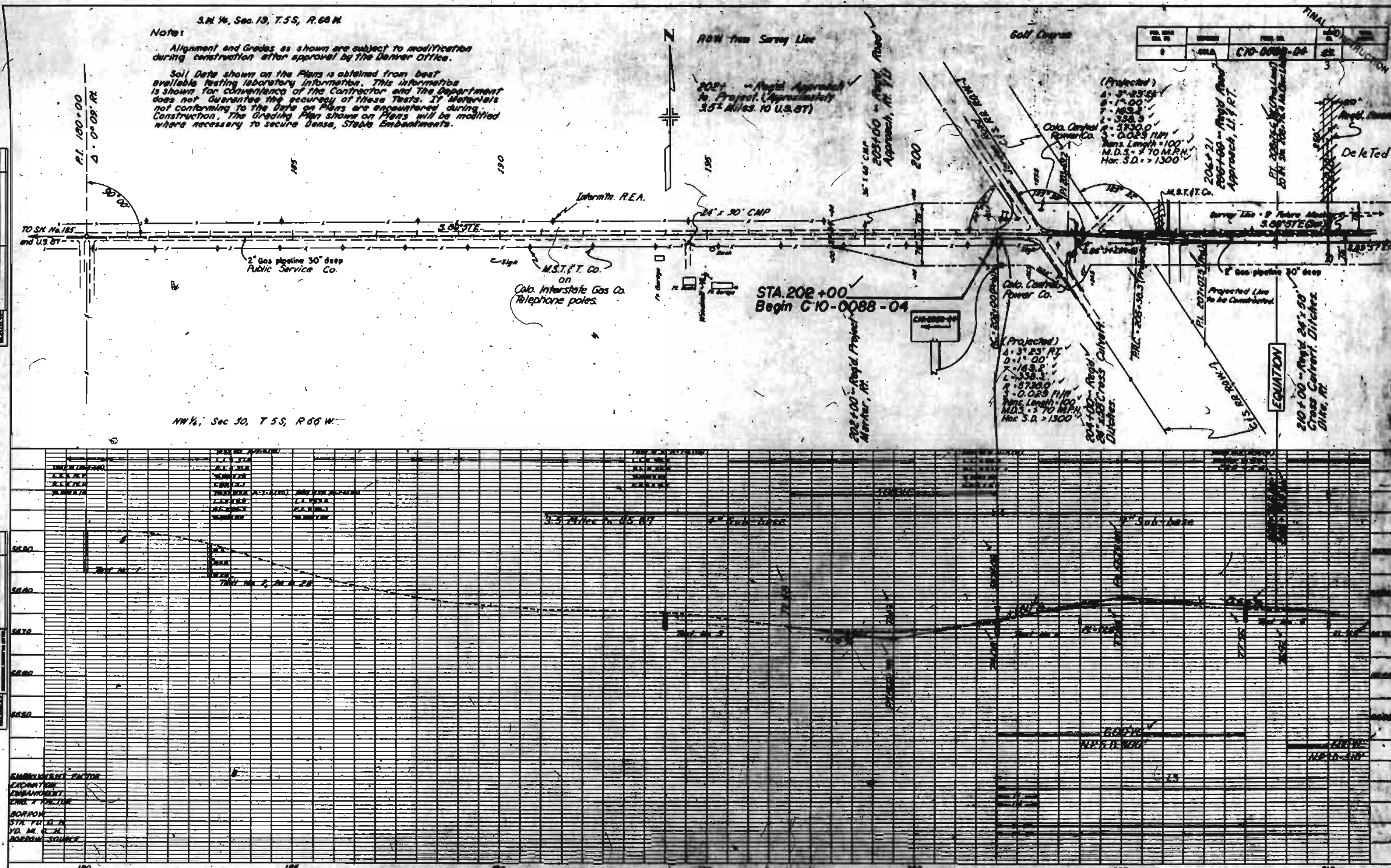
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	GU.O	C10-0088-04	2X	32

FINAL CONSTRUCTION SHEET

ITEM NO.	ITEM	UNIT	ROADWAY PLAN	ROADWAY FINAL	ROADWAY DIFF.	BRIDGE STA. 224+ PLAN	BRIDGE STA. 224+ FINAL	BRIDGE STA. 224+ DIFF.	PROJECT TOTAL PLAN	PROJECT TOTAL FINAL	PROJECT TOTAL DIFF.	PROJ. TOTALS
10	Clearing and Grubbing Entire Project	L.S.	1	$3000.00					1	$3000.00		
11	Road Mail Boxes	L.S.	1	$ 95.00					1	$ 95.00		
11	Relocate Manhole Piling and Cover	Each	1	0	-1				1	0	-1	
11	Reconstruct Highway Markers	Each	1	1	0				1	1	0	
12	Excavation	Un. Ft.	9726	9265	-461				9726	9265	-461	
13	Unclassified Excavation	Un. Yd.	33,699	33,636		4,800	4,555		38,499	38,191	-1116	
13	Unclassified Ditch Excavation	Cu. Yd.	458	221	-237				458	221	-237	
13	Stripping	Cu. Yd.	5,206	2,994	-2212				5,206	2,994	-2212	
14	Unclassified Structural Excavation Foundations Abutments	Cu. Yd.	216	334	+118				216	334	+118	
14	Unclassified Structural Excavation Bridge	Cu. Yd.				376	630	+254	376	630	+254	
16	Structural Backfill (Class I)	Cu. Yd.	162	162	0	200	200	0	362	362	0	
17	Compaction (Standard)	Cu. Yd.	89,000	89,818	+818				89,000	89,818	+818	
17	Watering	M. Gal.	1,180	2,357	+1				1,180	2,179	-1	
18	North Yard Overhaul	Sta. Yd.	285,306	116,208	-169,098	7,700	Complete in subject to Survey Overhaul		193,006	116,208	-76,798	
18	Yard Mile Overhaul	Yd. Mile	2,304	1,203	-1101				2,304	1,203	-1101	
18	Ton Mile Overhaul	Ton M.	92,000	92,611	+611				92,000	92,611	+611	
29	Sub-Base Material (Class I) (15th Limit of Water)	Ton	22,908	24,028	+1124				22,908	24,028	+1124	
30	Asphaltic Road Material MC-70 (Prime)	Gal.				700	811	+111	700	811	+111	
31	Plant Mixed Asphaltic Surfacing	Ton				740	629	-111	740	1,869	+1129	
42	Treated Bridge Timber	M.F.B.M.				0.4	0.373	-0.027	0.4	0.373	-0.027	
46	Class "A" Concrete	Cu. Yd.				870	870	0	870	870	0	
47	Reinforcing Steel	Lb.				168,100	123,795	-44305	168,100	123,795	-44305	
48	Structural Steel	Lb.				30,200	29,895	-305	30,200	29,895	-305	
51	18" Corrugated Metal Culvert Pipe (Bituminized)	Un. Ft.	306	240	-66				306	240	-66	
52	18" Corrugated Metal Culvert Pipe	Un. Ft.	130	130	0				130	130	0	
54	24" Corrugated Metal Culvert Pipe	Un. Ft.	243	243	0				243	243	0	
60	Treated Timber Piling	Un. Ft.				2236	2236	-1665	2236	2236	-1665	
65	Concrete Slope and Ditch Paving	Cu. Yd.				37	41	+4	37	41	+4	
70	Metal Plate Beam Fence (Bean Type)	Un. Ft.				50	50	0	50	50	0	
70	Metal Plate Guard Rail (Beam Type)	Un. Ft.				488	488	0	488	488	0	
76	Barbed Wire Fence with Metal Posts	Un. Ft.	16,700	16,953	+253				16,700	16,953	+253	
76	Barbed Wire Gates	Each	13	11	-2				13	11	-2	
77	Metal Snow Fence	Each	1	1	0				1	1	0	
78	Chain Link Wire Mesh Fence	Un. Ft.	700	Deleted	-700				700	Deleted	-700	
78		Un. Ft.	420	390	-30				420	390	-30	
78	Double Driveway Gates	Each	1	1	0				1	1	0	
80	Sheet Copper	Lb.							1	1	0	
81	Right of Way Markers	Each	5	5	0	16	16	0	21	21	0	
82	Mile Posts (Concrete)	Each				1	1	0	1	1	0	
90	Ornamental Handsmith Location Marker	Un. Ft.				362	362	0	362	362	0	
95	24" Metal Apron for Corrugated Metal Pipe Culvert	Each	10	10	0				10	10	0	
98	Timber Guard Posts	Each	36	42	+6				36	42	+6	
80	Treated Timber Piling Cut-off	Lin. Ft.					Taken			Taken		
	STATE FORCES											
81	Project Markers	Each	2						2	2	0	
	Striping Entire Project	L.S.	1						1	1	0	
	FORCE ACCOUNT											
	Relocate Telephone Lines (Work by Interstate Gen. Co. Forces)	L.S.	1	1	0							
	Relocate Gas Lines (Work by Public Service Co. Forces)	L.S.	1	1	0							
	Relocate Power Lines (Work by Lo. Central Power Co. Forces)	L.S.	1	1	0							
	Relocate Power Lines (Work by Union Mills R.E.A. Forces)	L.S.	1	1	0							
	Relocate Telephone Lines (Work by M.S. Tel Co. Forces)	L.S.	1	1	0							
	Relocate Water Lines & Repair Hydrants (Work by Kincara Water Co. Forces)	L.S.	1	1	0							
	Right of Way Fence Project	L.S.	1	1	0							

"DELETED CHAIN LINK MESH FENCE Dept. May 21, 19 693.6 Ft. = 100' = 20 Rods"

15


S.W. ¼, Sec. 19, T.5S, R.66 W.
Note:
Alignment and Grades as shown are subject to modification during construction after approval by the Denver Office.
Soil Data shown on the Plans is obtained from best available testing laboratory information. This information is shown for convenience of the Contractor and The Department does not Guarantee the accuracy of these Tests. If Materials not conforming to the Data on Plans are encountered during Construction, The Grading Plan shown on Plans will be modified where necessary to secure Dense, Stable Embankments.
JAN 18 1962
P.I. 180+00
Δ = 0°09' Rt.
TO S.H. No. 185 and U.S. 87
2" Gas pipeline 30" deep Public Service Co.
Interm'tn. R.E.A.
S.66°57'E.
M.S.T.&T. Co. on Colo. Interstate Gas Co. Telephone poles.
24" x 30' CMP
N
ROW from Survey Line
202± - Reg'd Approach to Project. (Approximately 3.5± Miles to U.S. 87)
203+00 - Reg'd Road Approach, Rt.
200
STA. 202+00
Begin C 10-0088-04
202+00 - Reg'd Project Marker, Rt.
Golf Course
COLO. C10-0088-04
3
FINAL CONSTRUCTION SHEET
(Projected)
Δ = 3°23'51"
D = 1°00'
T = 169.2
L = 338.3
R = 5730.0
S = 0.029 Ft/Ft
Trans. Length = 100'
M.D.S. = 70 M.P.H.
Hor. S.D. = > 1300
Colo. Central Power Co.
206+21 - Reg'd Road Approach, Lt. & Rt.
M.S.T.&T. Co.
Deleted
Survey Line = Future Median
S.69°57'E.
2" Gas pipeline 30" deep
Projected Line to be Constructed
Colo. Central Power Co.
(Projected)
Δ = 3°23' RT.
D = 1°00'
T = 169.2
L = 338.3
R = 5730.0
S = 0.029 Ft/Ft
Trans. Length = 100
M.D.S. = 70 M.P.H.
Hor. S.D. > 1300
204+00 - Reg'd Cross Culvert, Ditches.
P.I. 207+07.5
C&S R.R. R.O.W.
EQUATION
210+00 - Reg'd 24" x 56' Cross Culvert, Ditches, Dike, Rt.
NW ¼, Sec 30, T 5S, R 66 W.
PLAN
PROFILE
5890
5880
5870
5860
5850
3.5 Miles to US 87
Test No. 1
Test No. 2
4" Sub-base
9" Sub-base
EMBANKMENT FACTOR
EXCAVATION
EMBANKMENT
EMB. x FACTOR
BORROW
STA. FU. D. H.
YD. MI. O. H.
BORROW SOURCE
180
185
190
195
200
205
210

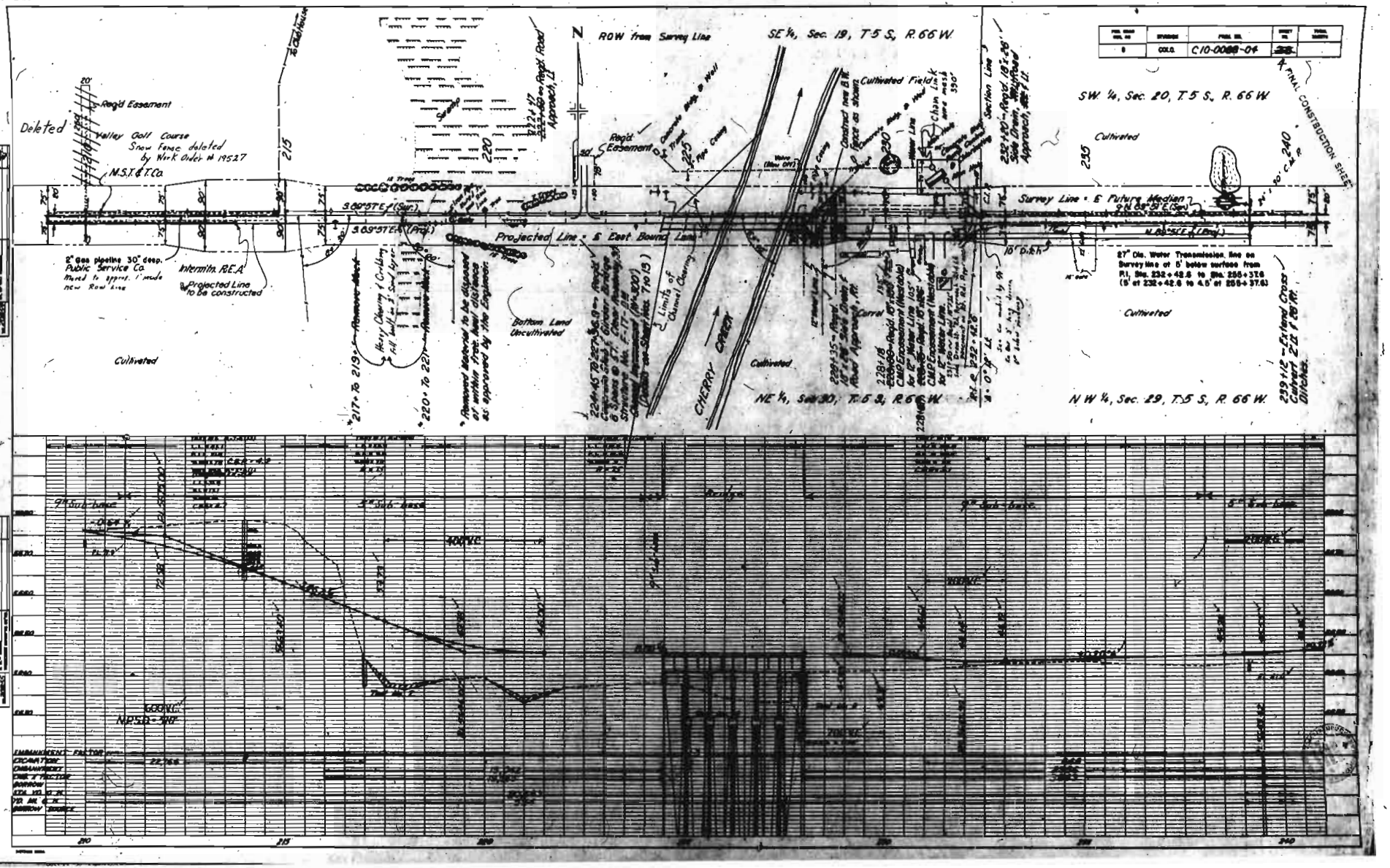
JUN 18 1982

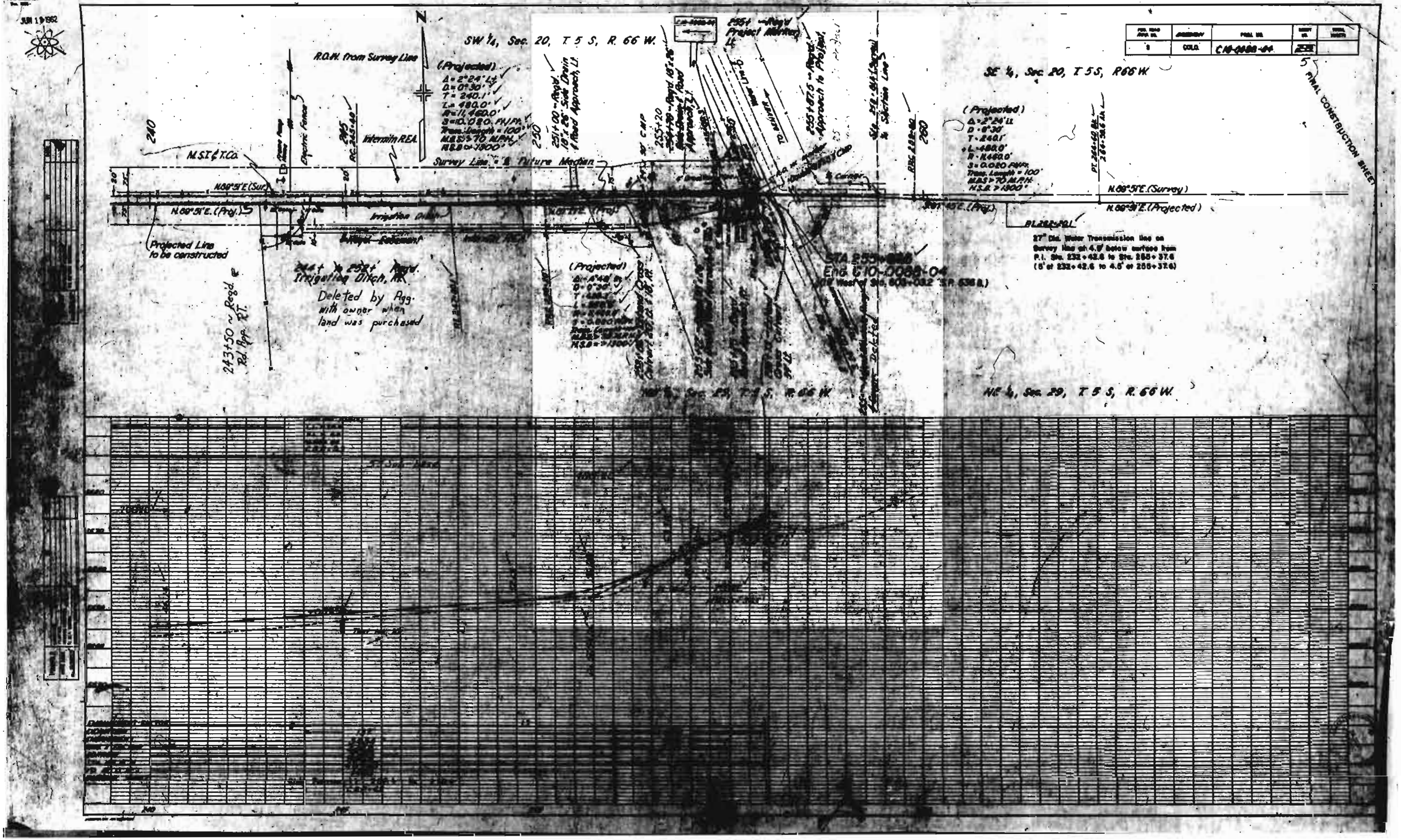
COLORADO STATE HIGHWAY DEPARTMENT
S H D FORM 129
NOVEMBER 1951

FINAL LIST OF STRUCTURES

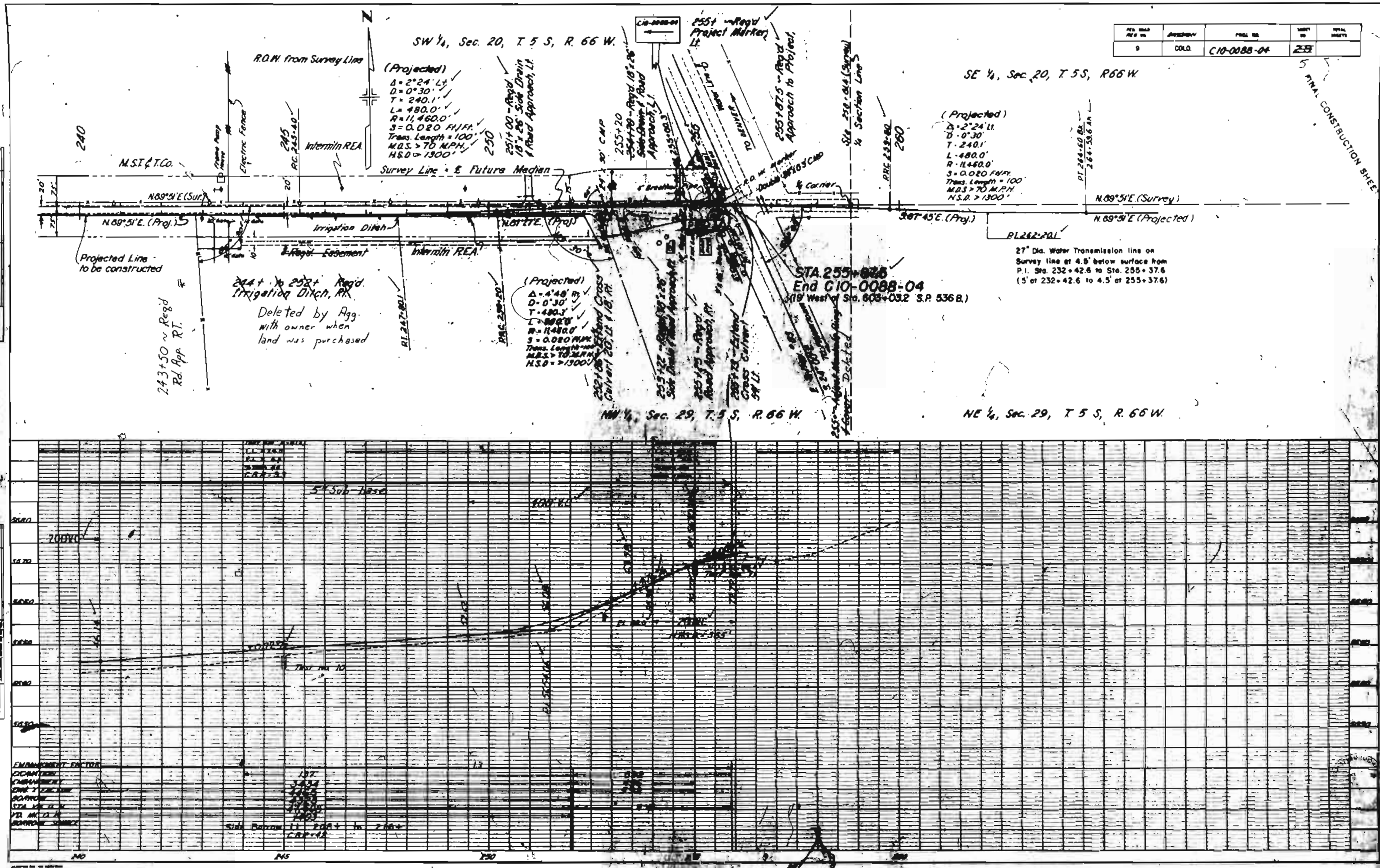
FED. ROAD DIVISION NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	COLO.	CD-0088-04	3X	5?

LOCATION	DESCRIPTION	REMOVE STRUCTURE	EXCAVATION (CUBIC YARDS)	STRUCTURAL EXCAVATION (CUBIC YARDS)	STRUCTURAL BACKFILL (CUBIC YARDS)	RIVER TREATED	CHANNEL OR EMBANKMENT Subsize	Subsize cl 3	CONCRETE Class A (CUBIC YARDS)	REINFORCING STEEL	CORRUGATED METAL CULVERT PIPE HEADWALLS OR ENDS	CORRUGATED METAL CULVERT PIPE (LINEAR FEET)	Treated bridge Timber	Struc Steel	METAL APRONS FOR C.M.P. CULVERTS (NO.)	FINAL CONSTRUCTION SHEET
		No. Units	Unclass. Comm. Solid.	Foundation	Backfill Subsize cl 3	Foundation	Subsize	Cubic Feet	Bridge Slope Paving	Lbs.	18"	18" 24"	Mill. Bd.	Lbs.	18" 24"	
202+																1 Project Marker Placed By State Forces
202+00																
203+00							396	6400'								
204+00					35	17						58			2	
206+21							89	1350'								
210+00					30	17						58			2	
217'to 219'																
220'to 221'																
222+47							66	1000'								
224+830 to 227+960				130		200			869	6t 183,795		4	0.372	29,895		
227+963 to 232+93	Unclassified Stock excavation under New Fence for facility diversion in prime Grid. Width = 331 angle.		331													
228+35 Rt.				6	6		33	500'				26				
228+78				140	35						13.5					
228+68				136	27						10.5					
231+50				6	6		66	1000'				24				
232+20				6	6		33	500'				26				
239+12				4	8							Extra Rib			2	
243+50							32	450'								
249'to 252'																
251+00 Lt.				6	6		53	800'				26				
252+86	Unclassified Excavation from Ditch and Stock to Road. Width = 5 on W.		5	13	11							Extra Rib			2	
259+22 Rt.				6	6		33	500'				26				
256+20 Lt.							44	670'								
255+																
255+25							13	200'								
255+73				2	17							544			2	
255+87.5							66	1000'								
255+																1 Project Marker Placed By State Forces
			336	430	390	182	210	924	14,400	869 6t	183,795	240	130	288		
															10	


ROW from Survey Line
SE ¼, Sec. 19, T.5 S., R.66 W.
SW ¼, Sec. 20, T.5 S., R.66 W.
NE ¼, Sec. 30, T.5 S., R.66 W.
NW ¼, Sec. 29, T.5 S., R.66 W.
Deleted
Valley Golf Course
Snow Fence deleted by Work Order # 19527
M.S.T.&T.Co.
Rigid Easement
Cultivated
Cultivated Field
Survey Line = S. Future Median
Projected Line = S. East Bound Lane
2" Gas pipeline 30" deep. Public Service Co. Found to appr. 1' inside new Row Line
Intermitt. R.E.A. Projected Line to be constructed
Bottom Land Uncultivated
CHERRY CREEK
Limits of Channel Clearing
27" Dia. Water Transmission line on Survey line at 5' below surface from P.I. Sta. 232+42.8 to Sta. 256+37.6 (5' at 232+42.8 to 4.5' at 256+37.6)
FINAL CONSTRUCTION SHEET
Section Line
Chain Link
Barbed Wire
Fence as shown
Remove Abandoned Road Approach, Rt.
Remove Abandoned Road Approach, Lt.
Extend Cross Culvert 2'-2" Rt. & Lt. Ditches
Bridge
Profile
Plan
Typical Section


JUN 19 1962
COLO. C10-0088-04
SW 1/4, Sec. 20, T 5 S, R. 66 W.
SE 1/4, Sec. 20, T 5 S, R 66 W.
NE 1/4, Sec. 29, T 5 S, R. 66 W.
R.O.W. from Survey Line
(Projected)
Δ = 2°24' Lt.
D = 0°30'
T = 240.1'
L = 480.0'
R = 11,460.0'
S = 0.020 Ft/Ft.
Trans. Length = 100'
M.S.S. > 70 M.P.H.
M.S.D. > 1300'
Interim R.E.A.
Electric Fence
M.S.T. & T. Co.
Survey Line = Future Median
N.88°51'E. (Sur.)
N.88°51'E. (Proj.)
Irrigation Ditch
Projected Line to be constructed
244± to 252± Reqd. Irrigation Ditch, Rt.
Deleted by Agg. with owner when land was purchased
243+50 ~ Reqd. Rd. App. Rt.
251+00 ~ Reqd. 18" x 26' Side Drain & Road Approach, Lt.
255± ~ Reqd. Project Marker Lt.
255+67.5 ~ Reqd. Approach to Project
Sta. 258+94.8 (Survey) 1/2 Section Line
STA. 255+
End C10-0088-04
N.88°51'E. (Survey)
N.88°51'E. (Projected)
27" Dia. Water Transmission line on Survey line at 4.5' below surface from P.I. Sta. 232+42.6 to Sta. 265+37.6 (5' at 232+42.6 to 4.5' at 255+37.6)
FINAL CONSTRUCTION SHEET
240
245
250
260

JUN 18 1962



FED. ROAD REG. NO. 9 | DIVISION COLO. | PROJ. NO. C10-0088-04 | SHEET NO. 25 | TOTAL SHEETS
5
FINAL CONSTRUCTION SHEET
SW 1/4, Sec. 20, T. 5 S, R. 66 W.
SE 1/4, Sec. 20, T. 5 S, R 66 W.
NW 1/4, Sec. 29, T. 5 S, R. 66 W.
NE 1/4, Sec. 29, T. 5 S, R. 66 W.
N
R.O.W. from Survey Line
(Projected)
Δ = 2°24' Lt.
D = 0°30'
T = 240.1'
L = 480.0'
R = 11,460.0'
S = 0.020 Ft/Ft.
Trans. Length = 100'
M.D.S. > 70 M.P.H.
H.S.D. > 1300'
240
245
250
260
P.C. 245+40.0
M.S.T.&T.Co.
Electric Fence
Intermtn REA
Survey Line = ℄ Future Median
N.89°51'E. (Sur.)
N.89°51'E. (Proj.)
Irrigation Ditch
Req'd. Easement
Projected Line to be constructed
244+ to 252+ Req'd. Irrigation Ditch, Rt.
Deleted by Agg. with owner when land was purchased
243+50 ~ Req'd Rd. App. RT.
P.T. 247+80.1
P.R.C. 250+20
251+00 ~ Req'd. 18"x 26' Side Drain & Road Approach, Lt.
30' CMP
255+20
254+70 ~ Req'd 18"x 26' Side Drain & Road Approach, Lt.
255+00.3
255+ ~ Req'd Project Marker, Lt.
C10-0088-04
Water Line
TO DENVER
255+87.5 ~ Req'd Approach to Project
Sta. 258+81.4 (Survey) 1/4 Section Line
Double 36"x 105' CMP
1/4 Corner
P.R.C. 259+60
S.87°45'E. (Proj.)
(Projected)
Δ = 4°48' Rt.
D = 0°30'
T = 480.3'
R = 11,460.0'
S = 0.020 Ft/Ft.
Trans. Length = 100'
M.D.S. > 70 M.P.H.
H.S.D. > 1300'
252+08 ~ Extend Cross Culvert 20' Lt. & 18' Rt.
255+22 ~ Req'd. Double Road Approach, Rt.
255+75 ~ Req'd. Road Approach, Rt.
255+78 ~ Extend Cross Culvert 9' Lt.
255+ ~ Adjust Section Corner Deleted
STA. 255+87.6
End C10-0088-04
(19' West of Sta. 603+03.2 S.P. 536 B.)
(Projected)
Δ = 2°24' Lt.
D = 0°30'
T = 240.1'
L = 480.0'
R = 11,460.0'
S = 0.020 Ft/Ft.
Trans. Length = 100'
M.D.S. > 70 M.P.H.
H.S.D. > 1300'
P.T. 264+60 Bk. = 264+39.6 Ah.
N.89°51'E. (Survey)
N.89°51'E. (Projected)
P.I. 262+20.1
27" Dia. Water Transmission line on Survey line at 4.5' below surface from P.I. Sta. 232+42.6 to Sta. 255+37.6 (5' at 232+42.6 to 4.5' at 255+37.6)
5" Sub base
700' V.C.
1000' V.C.
Test No. 10
EMBANKMENT FACTOR
EXCAVATION
EMBANKMENT
BORROW
Side Borrow Lt. 208+ to 216+
CBR = 42
PROFILE

Excavation Cu. Yds.	Embankment Area	Excavation Area	Embankment Cu. Yds.	Excavation Cu. Yds.	Embankment Area	Excavation Area	Embankment Cu. Yds.

PRD. ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO	C 13-[illegible]-71	4X	

Unclassified Structural Excavation for
Toe Walls & Slope Paving

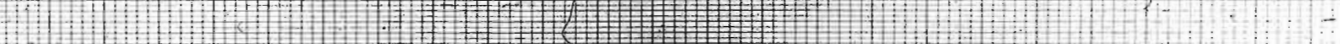
Sept. 5, 1972 Final Construction Sheet

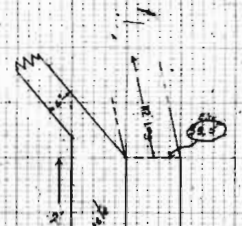
About 11 Structural Excavation 102' X 2' X 2' = 17 Cu Yds.
for Slope Paving Footers 27

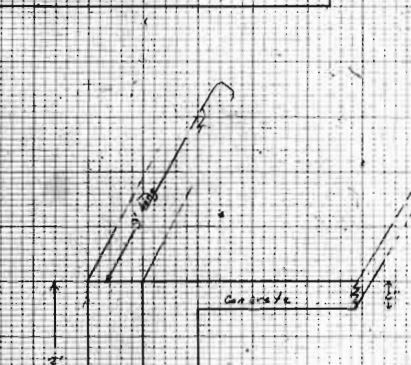
About 9 SAME 17/27 Cu Yds.

About 21 Structural Excavation for toe walls at each end of paving 2 X 2 X 3.5' = 4 Cu Yds.
27

About 7 same 4 Cu Yds / 8 Cu Yds.







FED. ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	C 39-1288-34	5X	

TABULATION OF TIMBER GUARD POSTS

STATION	SIDE	SPACING	NO.
203+00	Rt. & Lt.	Intersection	13
204+00	Rt. & Lt.	Culvert	2
208+36	Rt. & Lt.	Road Approach	4
210+00	Rt. & Lt.	Culvert	2
217+16 to 224+	Rt. & Lt.	100 ft.	17
229+16 to 232+	Rt. & Lt.	3Lt & 1Rt.	3
228+	Rt.	Road Approach	3
237+70	Rt. & Lt.	Road Approach	6
239+12	Rt. & Lt.	Culvert	2
251+00	Lt.	Road Approach	2
252+86	Rt. & Lt.	Culvert	2
253+22	Rt.	Road Approach	3
255+73	Rt. & Lt.	Culvert	2
255+87E	Rt. & Lt.	Intersection	1
TOTAL			62 X

SUMMARY OF EARTHWORK QUANTITIES

Excavation	
From Cross Sections	34,886
Embankment	
From Cross Sections	26,029
Embankment x Factor	34,886
Station Yard Overhaul	166,004
Yd. Mile Overhaul	1,203
Compaction	
From Unclassified Excavation	34,886
Base of Cuts & Fills	12,526
Total	49,412
Unclassified Ditch Excavation	
From list of Structures	231

RIGHT OF WAY MARKERS

STATION	SIDE	NUMBER EACH	REMOVE EACH
P.I. 208+36 Proj.	Lt. & Rt.	2	
236+00	Lt. & Rt.	2	
282+00	Lt. & Rt.	2	
238+	Lt.		1
TOTALS		6	1

SUB-BASE MATERIAL PLAN

STATIONS	SOURCE	SUB-BASE CLASS 3 Thickness	Cubic Yds.	Field Measure Tons	TON MILE Distance
202+80 to 211+00	P.I. No. 1	8"	28,457	2951	636
211+00 to 216+00		5"	10,440	708	99
216+00 to 224+00		5"	16,704	1413	242
224+00 to 224+80		9"	1,423	106	27
227+80 to 238+00	500' Rt.	9"	30,725	2581	1,068
238+00 to 255+87E	Sta. 216+00	5"	37,332	2975	2,026
Approach to Project Sta. 202 Westbound for 3.1 miles.		4"	22,760	1,948	31,540
From List of Structures		6"	14,000	Quantities included within stationing above.	
Irregularities on Sub-Grade (mostly around bridge where subbase grade had to be made to match deck of bridge)		Variable	15,000		
TOTALS			376,852	25044	35,638

Density of Subbase calculated from total tonnage and total Cubic feet of volume occupied by subbase: $\frac{25044 \times 2000}{376,852} = 132$ lb per Cu. Ft.

Subbase tonnage kept by daily tally of loads as per Item 23.4.3. Written approval granted by Department on April 1963 in response to formal written request by the Contractor. See Blank #3.

FENCING REQUIREMENTS

STATIONS	SIDE	REMOVE FENCE Lin. Ft.	CHAIN LINK WIRE MESH Lin. Ft.	BUILD B.W. FENCE Lin. Ft.	BUILD SNOW FENCE Lin. Ft.	WILDLIFE GATES Each	B.W. GATES Each
190+00~202+90	Rt.	450					
202+80	Rt. X	100					
206+60~214+80	Lt.	1020					
204+65	Lt. X	60					1
206+21	Lt.						1
206+21	Rt.						1
204+75~213+75	Rt.	900					
215+10~228+15	Lt.	1305					
215+35	Rt. X	80					
219+20	Rt. X	75					
222+47	Lt.						1
228+35	Rt.						1
227+70	Rt. X	85					
228+40	Rt. X	70					
228+40~231+90	Lt.	350					1
230+55	Rt. X	70					
231+58	Lt.						
230+25~231+25	Lt. Westbound		390			1	1
230+80	Rt. X	45					
232+25	Rt. X	25					
232+25~252+65	Rt.	2040					
232+40~255+60	Lt.	2340					
232+28	Lt.						1
234+60	Rt. X	50					
235+25	Rt. X	55					
242+85	Rt. X	55					
248+65	Lt. X	60	Electric Fence				
252+65~253+10	Rt.	45					
252+70	Rt. X	60					
253+50~254+75	Rt.	125					
255+60	Lt. X	140					
198+00~201+85	Lt.			478			
202+85~224+45	Lt.			2442			
209+50~216+50	Lt.				Deleted by Mod. Order #1227		
227+97~255+00	Lt.			2668			
251+00	Lt.						1
255+20	Lt.						1
198+00~203+00	Rt.			674			
204+26~224+45	Rt.			2193			
227+97~253+00	Rt.			2574			
231+50	Rt.						1
243+50	Rt.						1
253+22	Rt.						1
TOTALS		9695	390	18853		1	11

FINAL CONSTRUCTION SHEET