

MSI Separator Sheet



MSI2010

FAS 14-A (1)

C-24-A

C-24-C

6/1937

63

H

FED. ROAD DIST. NO.	STATE	F. A. S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	14-A(1)	1	

INDEX OF SHEETS

SHEET NO.	1 SKETCH MAP & TITLE	
	2 TYPICAL SECTION & SUMMARY OF APPROXIMATE QUANTITIES	
	3 LIST OF STRUCTURES, FENCING REQUIREMENTS & R. O. W. MARKERS	
	4 DETAILS OF BRIDGE, STA. 965 +	
	5 DETAILS OF BRIDGE, STA. 1057 +	
	6 STANDARD HEADWALLS FOR C.M.P. CULVERTS	M 102 E
	7 STANDARD TIMBER GUARD POSTS	M 19 A
	8 STANDARD WIRE FENCES WITH STEEL POSTS & MARKER POSTS	M 27 A
	9 STANDARD STRUCTURE NUMBER LETTERING	M 10 A
	10 STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES	M 1 B
	11 TYPICAL SIDE APPROACH ROADS—ROADWAY CONSTRUCTION TRAFFIC SIGNS	M 2 B
12 TO 16	PLAN & PROFILE	
17 TO 46	CROSS SECTIONS	

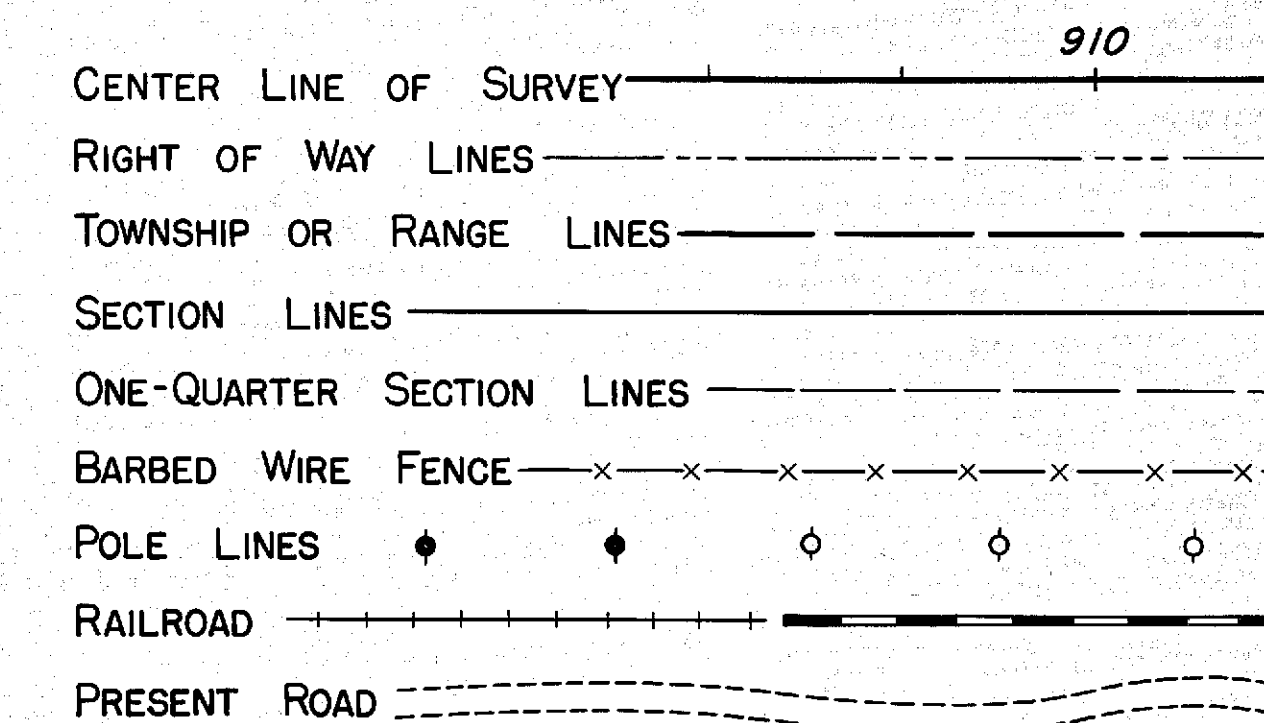
COLORADO

STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED FEDERAL AID SECONDARY PROJECT NO. F.A.S. 14-A (1) STATE HIGHWAY NO. 63 WASHINGTON & LOGAN COUNTIES

SCALES OF ORIGINAL TRACINGS
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 } 13,188.9 FT. = 2.497 MI.

CONVENTIONAL SIGNS



NOTE:

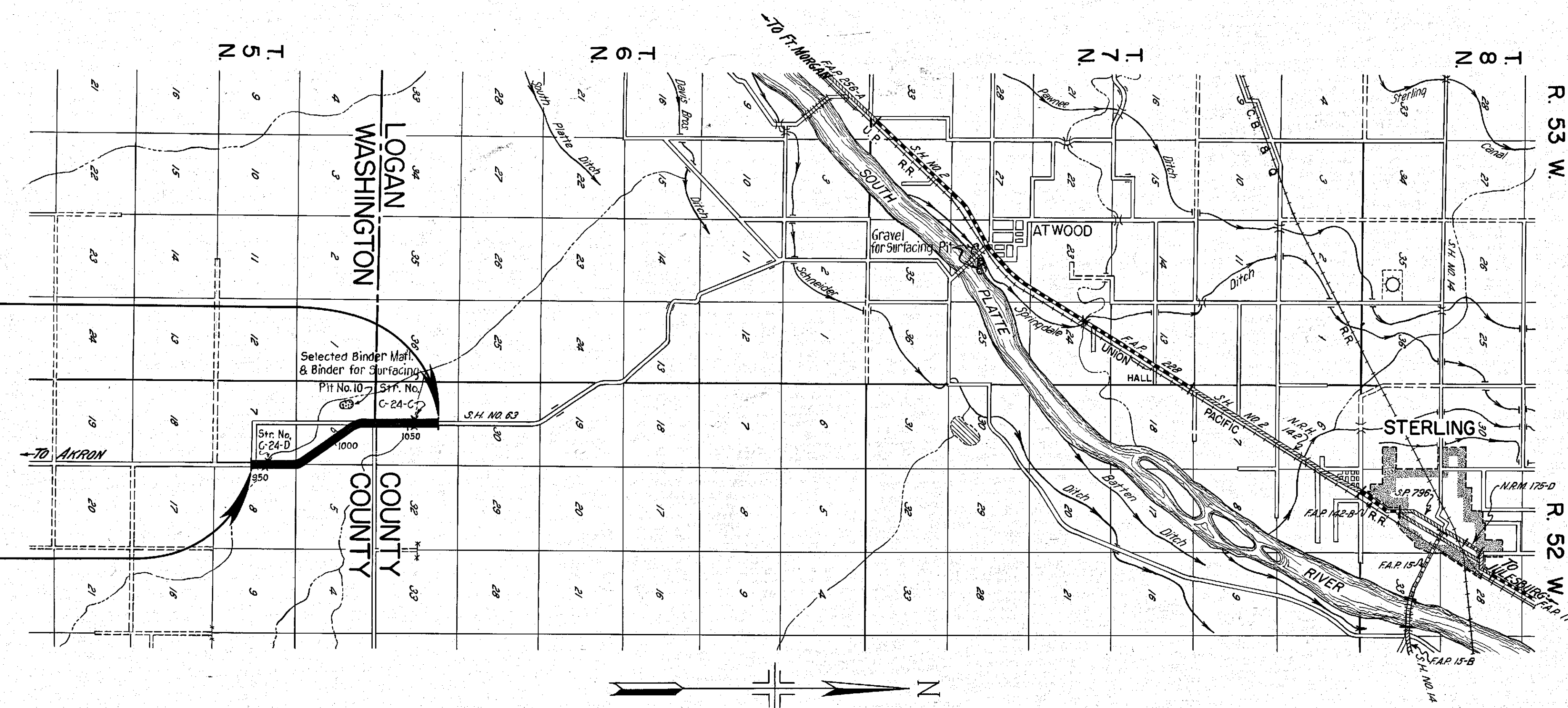
It is recommended that bidders on this project go over the plan details with one of the following field representatives of this department.

Mr. Roy J. Randall, Div. Engr., Greeley, Colo.

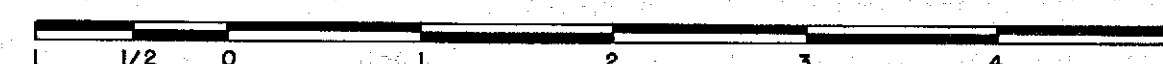
Mr. Dave Moore, Res. Engr., Akron, Colo.

STA. 1071+00 END FEDERAL AID
SECONDARY PROJECT NO. F.A.S. 14-A (1)

STA. 940+00 BEGIN FEDERAL AID
SECONDARY PROJECT NO. F.A.S. 14-A (1)



SCALE OF MILES



RECOMMENDED FOR APPROVAL

J. E. Maloney
ASSISTANT ENGINEER

APPROVED
Charles H. Davis
STATE HIGHWAY ENGINEER

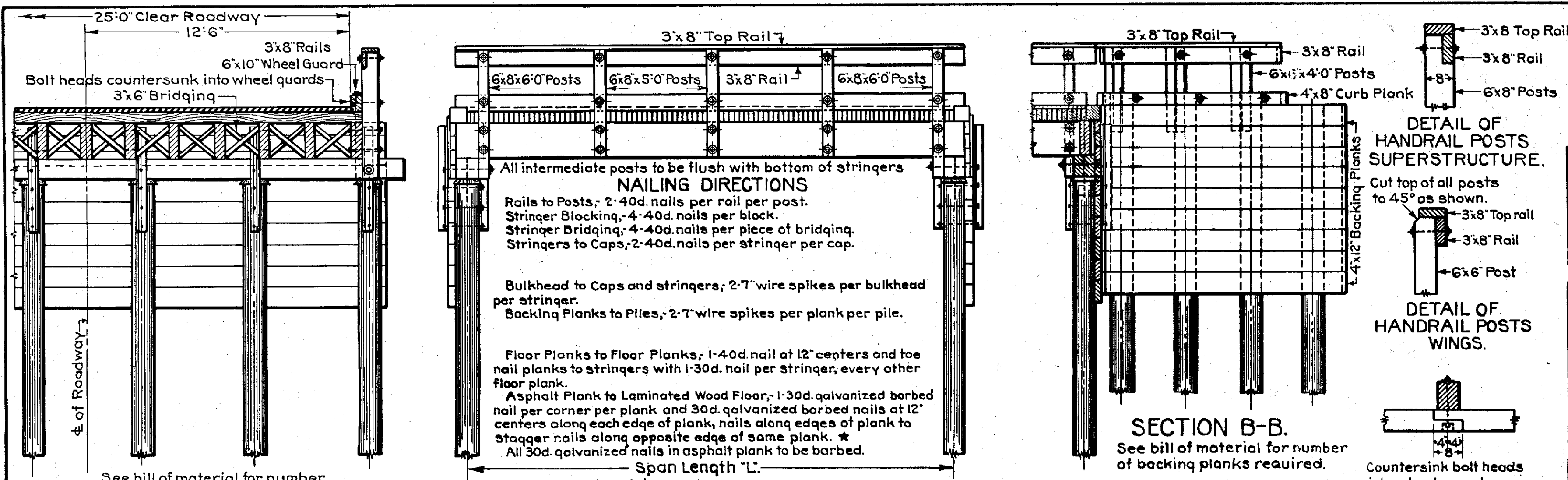
RECOMMENDED FOR APPROVAL

DIST. ENG. BUREAU PUBLIC ROADS

RECOMMENDED FOR APPROVAL

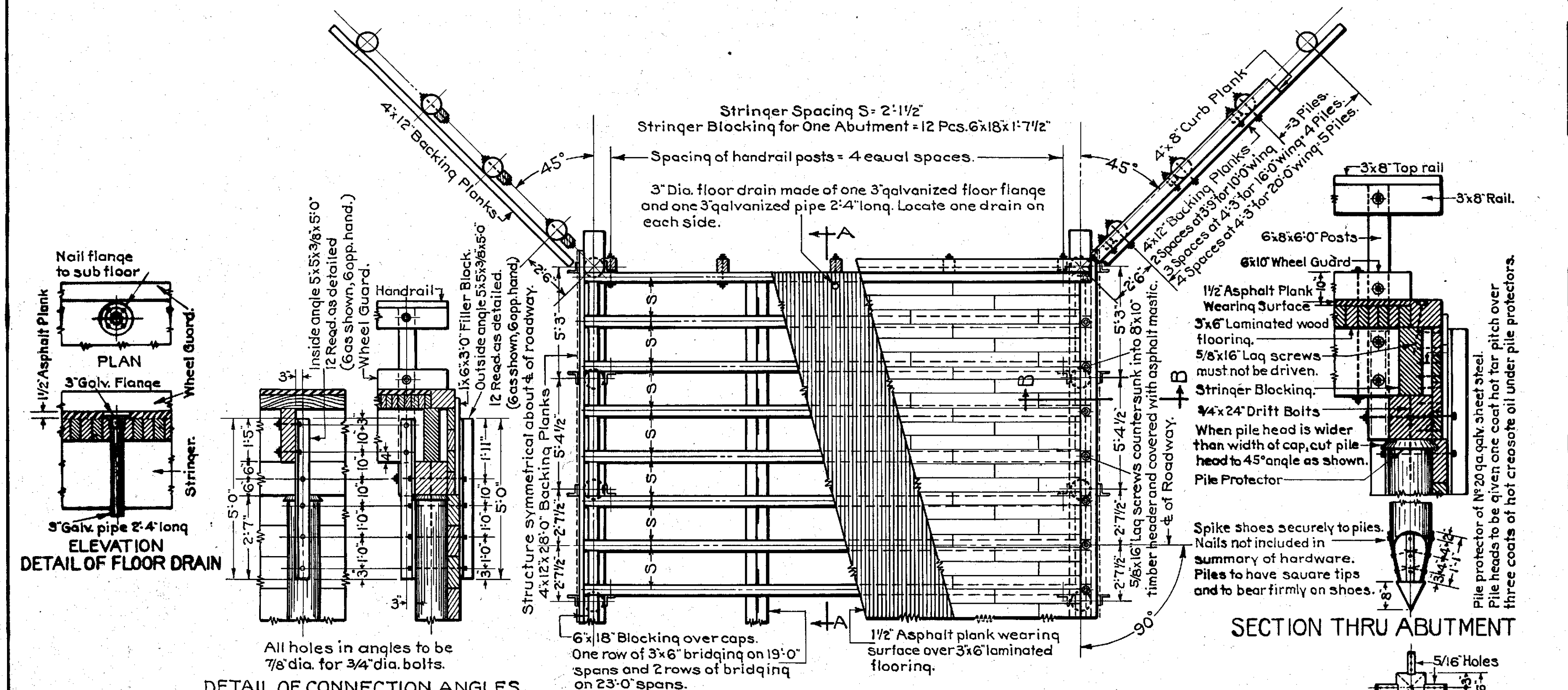
CHIEF ENG. BUREAU PUBLIC ROADS

APPROVED
DIRECTOR BUREAU PUBLIC ROADS



See bill of material for number
of backing planks required.

TYPICAL ELEVATION OF SPAN



SECTION THRU ABUTMENT

SECTIONAL PLAN

GENERAL NOTES.

All work shall be done according to the Standard Specifications of The Colorado State Highway Department. Adopted June 1-1937.

All timber and piling to be treated or untreated as shown in bills of material.

All timber and piling shall be dense southern yellow pine or west coast Douglas fir.

All caps shall be edged to an even depth before treatment. The ends of all stringers shall be surfaced on one edge before treatment, to obtain an even depth over caps.

All cut surfaces or bored holes in treated timber or piles shall be thoroly saturated with hot creosote oil.

All piling supporting caps shall be covered with galvanized pile protectors as specified, all other piling tops shall be saturated with hot creosote oil and covered with a thick layer of heavy asphalt or tar.

Joints in top handrail must be staggered with joints in side rail.

All handrailing and posts above the wheel guards shall be painted white and all handrail posts below the top of wheel guards shall be pointed black as specified.

All bolts more than 12" long must be threaded not less than 4 inches.

Bolts in the finished structure shall not project more than one half inch beyond the nut.

All bolts must have Std C.I.O.G. or Malleable Cast Washers under each head and nut.

Bolt lengths are calculated assuming Std C.I.O.G. washers will be used.

The contractor is cautioned to check bolt lengths before ordering because of variations in thickness of lumber and piling.

The entire exposed surface of all untreated timber shall be painted one coat as specified immediately after the material is delivered to the project.

Before placing handrailing the contact surfacing shall receive the second coat of paint.

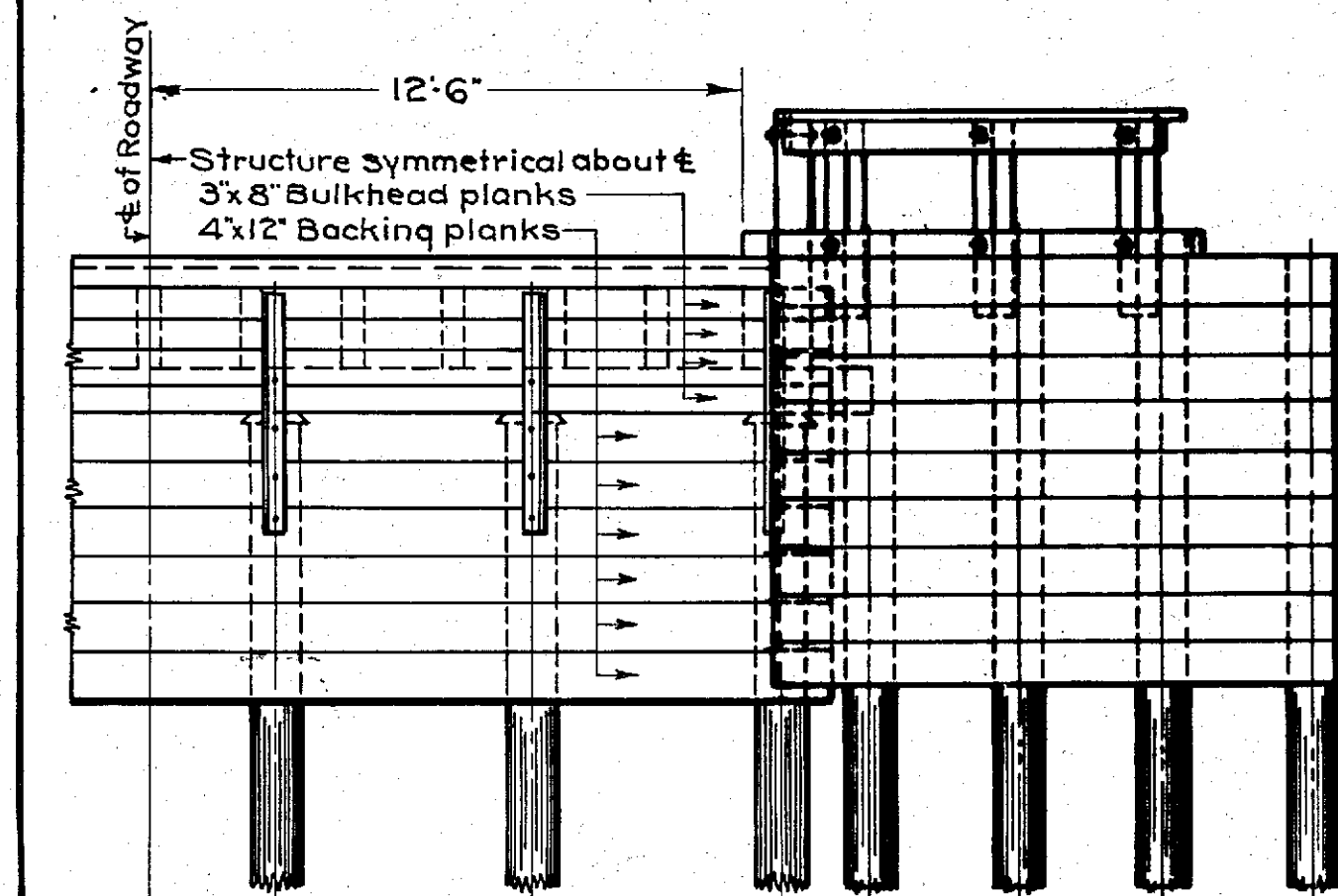
When contractor is permitted to drill holes to facilitate pile driving, these holes must be drilled so piling will stand in vertical position after final driving.

Bid price for asphalt plank shall include galvanized barbed nails and necessary asphalt mop.

All hardware to be galvanized. Weights of hardware as shown are for ungalvanized material.

All necessary blocking for swaybracing shall be treated timber.

All caps must be surfaced on vertical grain face.



HALF END ELEVATION

	INITIAL	DATE
ORIGINAL BY	P.D.W.	8-3-38
CHECKED BY	A.D.N.	8-3-38
VANDYKE BY	P.D.W.	8-3-38
CHECKED BY	A.D.N.	8-3-38

of backing planks required.

STANDARD P-116 B-H.C.P.

STANDARD P-116 B-H CP.

FED. ROAD DIST. NO.	STATE	F.A.S.	SHEET NO.	TOTAL SHEETS
3	COLO.	14-A(1)	5	

BOLTS AND WASHERS FOR ONE SPAN OF SUPERSTRUCTURE

LOCATION	SIZE	19'-0" SPAN		23'-0" SPAN				
		NO	LENGTH TOTAL	NO	LENGTH TOTAL			
POSTS TO RAILS	5/8"	6	10	6	10			
POSTS TO WHEEL GUARDS	3/4"	6	14	6	14			
POSTS TO STRINGERS	3/4"	12	16	12	16			
WHEEL GUARDS TO STRINGERS	3/4"	6	36	6	38			
WASHERS - STD. C.I.O.G.	5/8 & 3/4"	12/48	69.0 LBS	12/48	69.0 LBS			
TOTAL WEIGHT			146.0 LBS		147.0 LBS			

BOLTS AND WASHERS FOR ONE ABUTMENT

LOCATION	ITEM	SIZE	NO.	LENGTH	WT. EACH	TOTAL WT.
POSTS TO RAILS	BOLTS	5/8" x 2	10"		1.08 LBS.	2.2 LBS.
POST TO BULKHEAD TO CAP	BOLTS	3/4" x 2	24"		3.32 LBS.	6.7 LBS.
POSTS TO STRINGERS	BOLTS	3/4" x 4	16"		2.36 LBS.	9.5 LBS.
POSTS TO WHEEL GUARDS	BOLTS	3/4" x 2	14"		2.12 LBS.	4.3 LBS.
WHEEL GUARDS TO STRINGERS	BOLTS	3/4" x 2	38"		5.00 LBS.	10.0 LBS.
TIMBER HEDGER TO STRINGERS	LAG SCREWS	5/8" x 13	16"		1.36 LBS.	17.8 LBS.
WASHERS: STD. C.I.O.G.	WASHERS	5/8" x 17	1/8	0.76"	1.25 LBS.	35.5 LBS.
CAP TO PILES	DRIFT BOLTS	3/4" x 6	1"	24"	3.00 LBS.	18.0 LBS.
TOTAL WEIGHT						104.0 LBS.

BOLTS AND WASHERS FOR ONE WING

POSTS TO RAILS	BOLTS	5/8"	3	11"	1.16 LBS	3.4 LBS
POSTS TO PILES	BOLTS	3/4"	6	20"	2.84 LBS	17.0 LBS
PILES TO CURB PLANK	BOLTS	5/8"	3	18"	1.74 LBS	5.2 LBS
					LBS	LBS
WASHERS - STD. C.I.O.G.	WASHERS	5/8"	12/12	0.75	1.25 LBS	24.4 LBS
TOTAL WEIGHT						50.0 LBS

STRUCTURAL STEEL FOR ONE ABUTMENT

OUTSIDE CONNECTION ANGLES	6 PCS.	5'x5'x6"x5'0"	369 LBS.
INSIDE CONNECTION ANGLES	6 PCS.	5'x5'x9"x5'0"	369 LBS.
BOLTS FOR CONNECTION ANGLES	22 PCS.	3/4"x19" GALV.	60 LBS.
BOLTS FOR CONNECTION ANGLES	8PCS.	3/4"x3" GALV.	13 LBS.
WASHERS STD.C.I.O.G.	8PCS.	3/4" Dia. GALV.	10 LBS.
		1 1/2% ADDITIONAL FOR OVERRUN	14 LBS.
TOTAL WEIGHT			835 LBS.

NAILS

LOCATION	ITEM	19'-0" SPAN	23'-0" SPAN
ONE SPAN OF SUPERSTRUCTURE	300.D.COMMON	25 LBS.	30 LBS.
	300.GALV. BARBED	105 LBS.	130 LBS.
	40.D.COMMON	135 LBS.	165 LBS.
ONE ABUTMENT	40.D.COMMON	5 LBS.	5 LBS.
	7 WIRE SPIKES	29 LBS.	35 LBS.
	40.D.COMMON	1 LB.	1 LB.
ONE WING	7 WIRE SPIKES	16 LBS.	18 LBS.
	40.D.COMMON	1 LB.	1 LB.
	7 WIRE SPIKES	18 LBS.	20 LBS.

SUMMARY OF HARDWARE

BOLTS AND WASHERS	1 SPAN		AT	146	LBS.	PER SPAN	146	LBS.		
	2 ABUTMENTS		AT	104	LBS.	PER ABUTMENT	208	LBS.		
	4 WINGS		AT	50	LBS.	PER WING	200	LBS.		
			AT		LBS.			LBS.		
			AT		LBS.			LBS.		
TOTAL WEIGHT							554	LBS.		
NAILS	LOCATION	UNIT	300 COMMON		300 GALV BARBED		400 COMMON		T WIRE SPIRAL	
			EACH	TOTAL	EACH	TOTAL	EACH	TOTAL	EACH	TOTAL
	1 SPAN	LBS.	25	25	105	105	15	15		
	2 ABUTMENTS	LBS.					5	10	29	58
	4 WINGS	LBS.					1	4	16	64
		LBS.								
TOTAL WEIGHT		LBS.	25		105		149		122	

SUMMARY OF QUANTITIES

STRUCTURAL EXCAVATION				
ITEM 14a. DRY ROCK				CU. YDS.
ITEM 14b. DRY COMMON			50	CU. YDS.
ITEM 14c. WET ROCK				CU. YDS.
ITEM 14d. WET COMMON				CU. YDS.
ITEM 42a. UNTREATED BRIDGE TIMBER				
1 SPAN	AT	280	BD. FT. EACH =	280 BD. FT.
2 ABUTMENTS	AT	48	BD. FT. EACH =	96 BD. FT.
4 WINGS	AT	84	BD. FT. EACH =	336 BD. FT.
	AT		BD. FT. EACH =	BD. FT.
TOTAL =				712 BD. FT.
ITEM 42b. TREATED BRIDGE TIMBER				
1 SPAN	AT	6017	BD. FT. EACH =	6017 BD. FT.
	AT		BD. FT. EACH =	BD. FT.
2 ABUTMENTS	AT	1843	BD. FT. EACH =	3686 BD. FT.
4 WINGS	AT	912	BD. FT. EACH =	3648 BD. FT.
	AT		BD. FT. EACH =	BD. FT.
TOTAL =				13,351 BD. FT.
ITEM 43 ASPHALT PLANK WEARING SURFACE				
1 SPAN	AT	475	SQ. FT. EACH =	475 SQ. FT.
ITEM 48 STRUCTURAL STEEL				
2 ABUTMENTS	AT	835	LBS. EACH =	1670 LBS.
ITEM 60a. PILING - TREATED				
2 ABUTMENTS	AT	180	LIN. FT. EACH =	360 LIN. FT.
4 WINGS	AT	160	LIN. FT. EACH =	640 LIN. FT.
	AT		LIN. FT. EACH =	LIN. FT.
TOTAL =				1000 LIN. FT.
ITEM 60e. METAL PILE SHOES				
SHOES	AT		35 LBS. EACH =	SHOES
ITEM 85b. DRAIN PIPE				
2 PIECES 3" DIA. GALV. PIPE 2'-4" LONG WITH ONE 3" GALV. FLANGE ON EACH PIPE				
1 SPAN	AT	2	COMPLETE PER SPAN =	2 PIECES

ONE SPAN OF SUPERSTRUCTURE

[illegible]

ONE ABUTMENT

UNTREATED TIMBER			
HANDRAIL POSTS S4S	2 PC5	6" x 8" x 6'-0"	48.00 F
TOTAL UNTREATED TIMBER			48.00 F
TREATED TIMBER			
FILLER BLOCKS	6 PCS.	1" x 6" x 3'-0"	9.00 F
TIMBER HEADER	1 PC	8" x 10" x 26'-0" FINISH TO T19"	174.00 F
CAP	1 PC.	12" x 12" x 3'-0"	36.00 F
BULKHEAD PLANKS	4 PCS.	3" x 8" x 28'-0"	224.00 F
BACKING PLANKS	8 PCS.	4" x 12" x 28'-0"	896.00 F
STRINGER BLOCKING	1 PC.	6" x 18" x 2'-0"	18.00 F
Cut before treatment	15' @ 25 SPANS		50.00 F
TOTAL TREATED TIMBER			1843.00 F
PILING - TREATED		6 PIECES AT 3.0 LINEAL FT. EACH	18.00 L

ONE WING

UNTREATED TIMBER													
DESCRIPTION	SIZE	10'-0" WING			16'-0" WING			20'-0" WING			TOTAL		
		NO.	LENGTH	TOTAL	NO.	LENGTH	TOTAL	NO.	LENGTH	TOTAL			
HANDRAILS S4S.	3"x8	1	10'-0"	20 BD.FT.	1	12'-0"	24 BD.FT.	1	12'-0"	24 BD.FT.	24 BD.FT.		
	3"x8	1	10'-0"	20 BD.FT.	1	12'-0"	24 BD.FT.	1	12'-0"	24 BD.FT.	24 BD.FT.		
HANDRAIL POSTS S4S.	6"x6	3	4'-0"	36 BD.FT.	3	4'-0"	36 BD.FT.	3	4'-0"	36 BD.FT.	36 BD.FT.		
TOTAL UNTREATED TIMBER				76 BD.FT.			84 BD.FT.			84 BD.FT.			
TREATED TIMBER													
CURB PLANK	4"x8	1	10'-0"	27 BD.FT.	1	12'-0"	32 BD.FT.	1	12'-0"	32 BD.FT.	32 BD.FT.		
BACKING PLANKS	4"x12		10'-0"	5D.FT.		16'-0"	8D.FT.		20'-0"	88 BD.FT.	88 BD.FT.		
TOTAL TREATED TIMBER				8D.FT.			8D.FT.			912 BD.FT.			
PILING		NO.	LENGTH	TOTAL	NO.	LENGTH	TOTAL	NO.	LENGTH	TOTAL	NO.	LENGTH	TOTAL
TREATED		3		UN.FT.	4		UN.FT.	5	32'-0"	160 UN.FT.	16		UN.FT.

Note!
This standard to be used on 19'-0" and 23'-0" Single Spans Only.

STRUCTURE REQUIRED
SPAN AT 19'-0"

LOADING DATA

LIVE LOAD-A.A.S.H.O. 1935 CLASS "A" (H:15)
DEAD LOAD-Assumes 25 lbs. per sq. ft. additional
wearing surface. This includes 1/2" asphalt plank wearing
surface.

COLORADO

STATE HIGHWAY DEPARTMENT
TREATED TIMBER PILE TRESTLE
WITH 6" LAMINATED FLOOR AND 1/2"
ASPHALT PLANK WEARING SURFACE
25 FT. CLEAR ROADWAY

Across A DRAW

Sta. 1052+70.0 to 1053+70.5

Near ATWOOD Sec. 31 T. 6 N. R. 52 W

Designed by A.G.K.	Approved by <i>Chas. Bailey</i> Bridge Engineer Date: June 23-1937
Made by A.G.K.	
Check Design	
Check Detail	

STRUCTURE NO. C-24-C

N.E. 1/4 SEC. 7
T. 5 N. R. 52 W.

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	14-A(1)	13	

Sta. 964 + 36 to 964 + 97⁰⁰ Req'd. 5 Timber Guard Posts Rt. & Lt.

Sta. 965 + 00 to 965 + 20.5⁰⁰ Req'd. 1 span @ 19' Treated Timber Bridge (DETAILS ON SHEET No. 4)

Sta. 965 + 23.5 to 967 + 34.5⁰⁰ Req'd. 8 Timber Guard Posts Rt. & Lt.

Δ 37°02' L
D 1°
T 1919.1
L 3703.3
R 5730.0

NW 1/4 SEC. 8
T. 5 N. R. 52 W.

Sta. 985 + 00⁰⁰ Req'd. 24"x 52' C.M.P. cross culvert and 10 cu. yds. of uncl. excav. for ditches.

S.E. 1/4 SEC. 6
T. 5 N. R. 52 W.

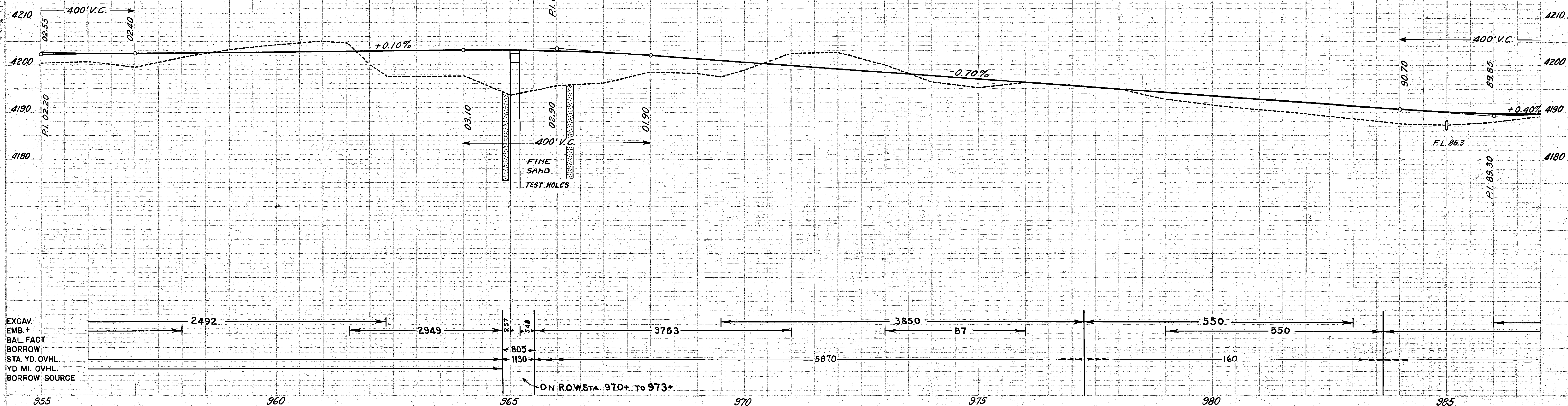
(MINOR STRUCTURE)
STRUCTURE NOTES FOR BRIDGE STA. 965 + 00 TO 965 + 20.5 STRUCTURE NO. C-24-D

PRESENT STRUCTURE
SPAN 36" C.M.P.
CLEAR ROADWAY
CLEAR WATERWAY
TYPE OF SUPERSTRUCTURE
TYPE OF SUBSTRUCTURE
REQUIREMENTS AS TO REMOVAL

PROPOSED STRUCTURE
POSITION REFERRED TO PRESENT STRUCTURE
SPAN 19'-0" P-116-B-H-C.P.
CLEAR ROADWAY 25'-0"
CLEAR WATERWAY 120"
TYPE OF SUPERSTRUCTURE TIMBER
TYPE OF SUBSTRUCTURE TIMBER PILES
DETOUR STRUCTURE REQUIREMENTS NONE
R.R. SIDING ATWOOD HAUL TO BRIDGE SITE 9 MILES

STREAM DATA
DRAINAGE AREA IN SQ. MILES 15
VELOCITY DURING HIGH WATER LOW
ELEVATION OF:
MAXIMUM HIGH WATER 4197.0 LOW WATER 4192.0
NORMAL STAGE STREAM BED 4192.0
DRIFT LIGHT
SCOUR NONE

LOCATION
WATERWAY
RECORD DURING FLOODS



FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	14-A(1)	14	

N.W. 1/4 SEC. 6
T. 5 N. R. 52 W.

A 37°02' L
D 1°
T 1919.1
L 3703.3
R 5730.0

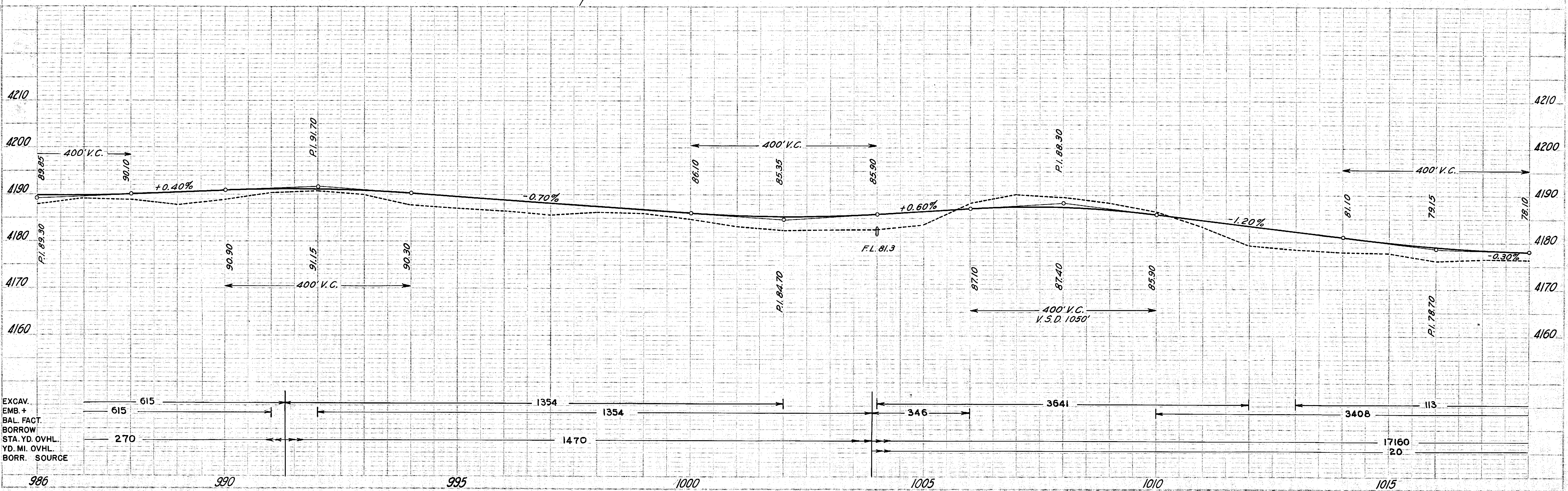
Sta. 1004+00 Reg'd. 24' x 56' C.M.P. cross culvert and 10 cu. yds. of uncl. excav. for ditches.

Sta. 1005+00 Reg'd. 180 cu. yds. of embank. for road approaches Rt. & Lt.

A 35°50' R
D 1°
T 1852.6
L 3583.3
R 5730.0

S.E. 1/4 SEC. 6
T. 5 N. R. 52 W.

N.E. 1/4 SEC. 6
T. 5 N. R. 52 W.



EXCAV.
EMB. +
BAL. FACT.
BORROW
STA. YD. OVHL.
YD. MI. OVHL.
BORR. SOURCE

615	615	1354	1354	346	3641	3408	113
270		1470				17160	20

PLATE - PLAN-PROFILE OF R. & N. 1/4 SEC. 6
R. 52 W. T. 5 N.

N.W. 1/4 SEC. 6
T. 5 N. R. 52 W.

S.W. 1/4 SEC. 31
T. 6 N. R. 52 W.

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	14-A(1)	15	

Sta. 1020+00 ~ Req'd. 24'x52' C.M.P. cross culvert and
10 cu. yds. of uncl. excav. for ditches.

Sta. 1035+00 ~ Req'd. 24'x52' C.M.P. cross culvert
& 20 cu. yds. uncl. excav. for ditches.

Sta. 1030+36 ~ Req'd. 100 cu. yds. of embank. for road approach
and 18'x44' C.M.P. side drain Rt.

S.E. 1/4 SEC. 31
T. 6 N. R. 52 W.

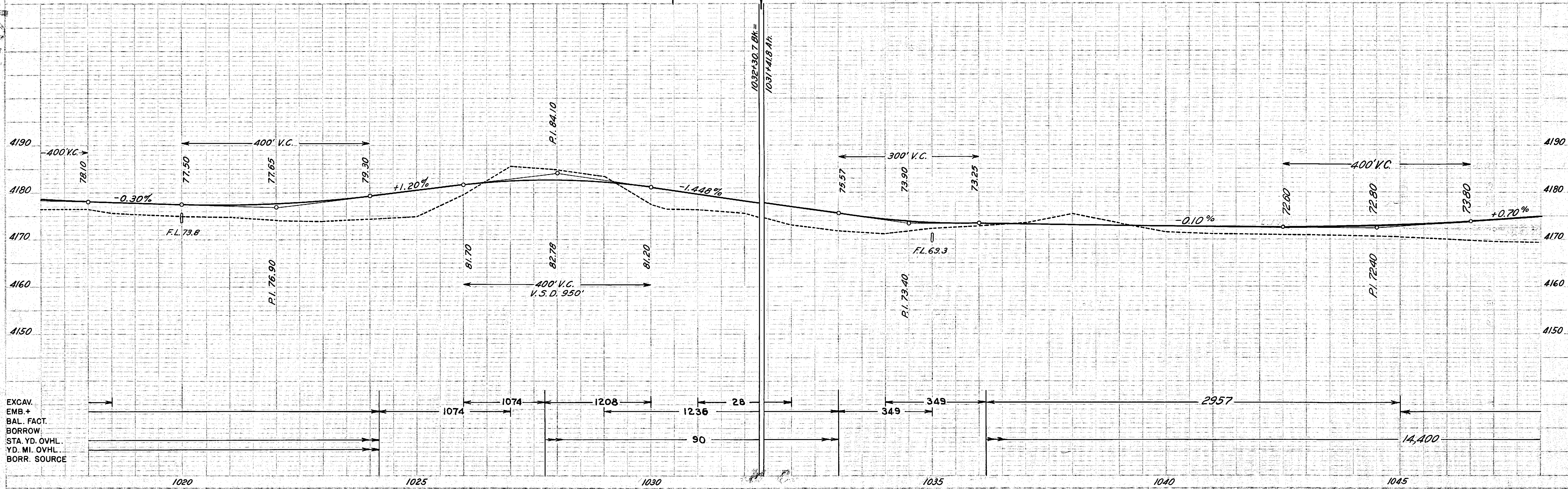
A 35°50'R
D 1°
T 1852.6
L 3583.3
R 5730.0

N.E. 1/4 SEC. 6
T. 5 N. R. 52 W.

WASHINGTON CO.
LOGAN CO.

P.T. 1032+30.7 Bk. =
1031+41.8 A/R.

EQUATION



MICROFILMED

S.W. 1/4 SEC. 31
T. 6 N. R. 52 W.

N.W. 1/4 SEC. 31
T. 6 N. R. 52 W.

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	14-A(1)	16	

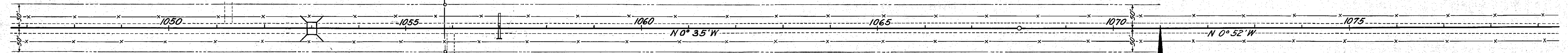
Sta. 1051+25⁰⁰ Req'd. 50 cu. yds. of embank. for road approach Lt.

Sta. 1057+00⁰⁰ Req'd. 30"x54' C.M.P. cross culvert and 10 cu. yds. of uncl. excav. for ditches.

Sta. 1052+90 to 1053+10.5⁰⁰ Req'd. 1 span @19' Treated Timber Bridge (DETAILS ON SHEET No. 5)

Sta. 1053+13.5 to 1053+74.5⁰⁰ Req'd. 10 Timber Guard Posts Rt. & Lt.

Sta. 1071+00⁰⁰ Req'd. 1 Project Marker & 200 cu. yds. of embank. for approach to project.



Sta. 1052+26 to 1052+87⁰⁰ Req'd. 10 Timber Guard Posts Rt. & Lt.

Sta. 1055+94⁰⁰ Req'd. 250 cu. yds. of embank. for road approach Rt.

P.I. 1068+00
Δ 0°17' L

S.E. 1/4 SEC. 31
T. 6 N. R. 52 W.

N.E. 1/4 SEC. 31
T. 6 N. R. 52 W.

(MINOR STRUCTURE)
STRUCTURE NOTES FOR BRIDGE STA. 1052+90.0 TO 1053+10.5 STRUCTURE NO. C-24-C

PRESENT STRUCTURE NONE

SPAN
CLEAR ROADWAY
CLEAR WATERWAY
TYPE OF SUPERSTRUCTURE
TYPE OF SUBSTRUCTURE
REQUIREMENTS AS TO REMOVAL

PROPOSED STRUCTURE

POSITION REFERRED TO PRESENT STRUCTURE
SPAN 19'-0"
CLEAR ROADWAY 25'-0"
CLEAR WATERWAY 100'-0"

TYPE OF SUPERSTRUCTURE P-116-B-H-C.P.
TYPE OF SUBSTRUCTURE TIMBER

DETOUR STRUCTURE REQUIREMENTS NONE

R.R. SIDING AT WOOD HAUL TO BRIDGE SITE 7 MILES

NEARBY STRUCTURES ON SAME STREAM:

STREAM DATA

DRAINAGE AREA IN SQ. MILES 15

VELOCITY DURING HIGH WATER LOW

ELEVATION OF:

MAXIMUM HIGH WATER

NORMAL STAGE 41690

DRIFT LIGHT

SCOUR NONE

LOW WATER 41690

STREAM BED 41690

LOCATION

WATERWAY

RECORD DURING FLOODS

