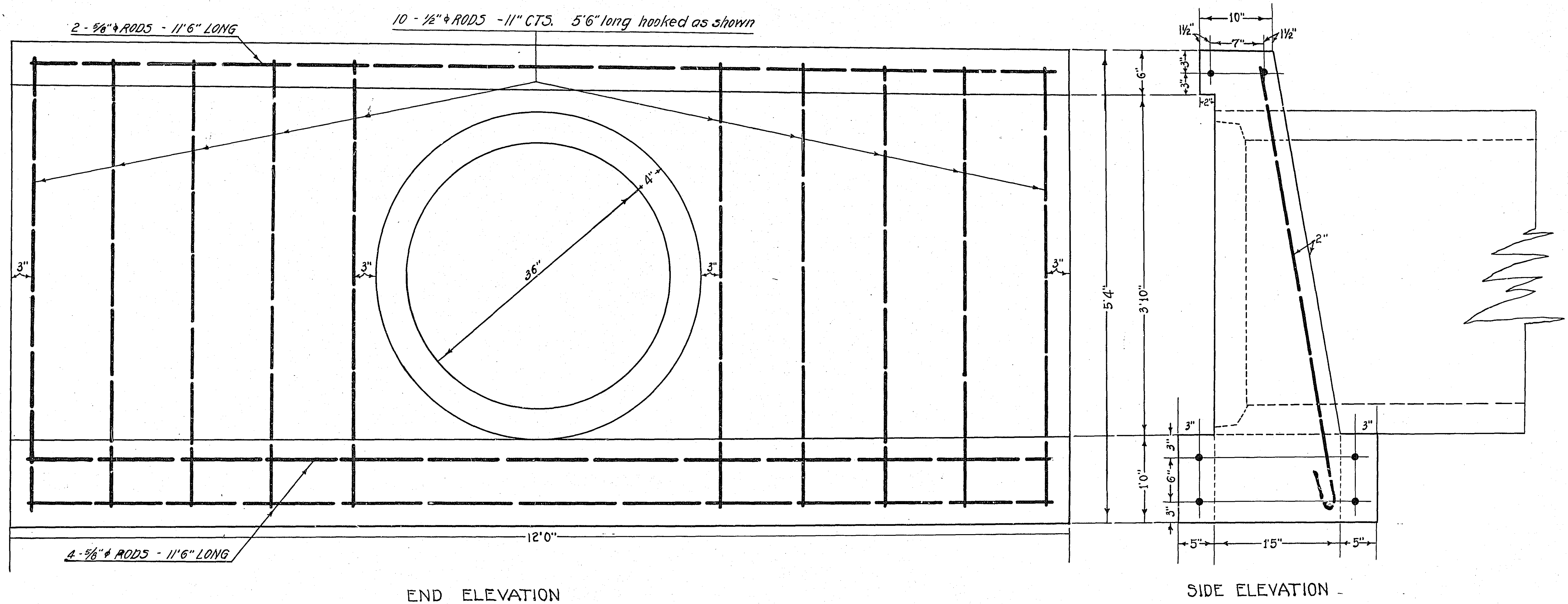


**PLAN OF  
CONC. HEAD WALL  
FOR 36" P<sub>3</sub> CULVERT**  
SCALE 1"=1'



END ELEVATION

SIDE ELEVATION

BILL OF MATERIAL

Steel: 6 - 5/8" Rods 11'6" long - straight  
 10 - 1/2" Rods 5'6" long - hooked  
 TOTAL - 108 LBS.  
 Concrete: 2.65 Cu.Yds.

Note: Exposed edges of concrete to be beveled by 1" V strips

Concrete mix: Class "A" Screened materials Mixed 1:2:4 using 5.7 sacks of cement per Cu. Yd.

Sheet 1A 086

CONVENTIONAL SIGNS & ABBREVIATIONS

STATE LINE	-----	EXCAVATION	-----	E
COUNTY LINE	-----	EMBANKMENT	-----	F
TOWNSHIP LINE	-----	OVERHAUL	-----	H
SECTION LINE	-----	SURFACING	-----	S
CITY, VILLAGE, OR BOROUGH	-----	GUARD RAIL	-----	GR
FENCE LINE	-----	INTERSECTION ANGLE	-----	A
RIGHT-OF-WAY LINE	-----	RADIUS	-----	R
TRAVELLED WAY	-----	ELEVATION	-----	EI
RAILROADS	-----	VERTICAL CURVE	-----	VC
RETAINING WALL	-----	BECH MARK	-----	B.M.
BASE OR SURVEY LINE	-----	SECTIONAL CONCRETE CULVERT	-----	P.C.
LEVEE	-----	CORRUGATED METAL CULVERT	-----	C.M.
GRAVEL PIT	-----	CULVERT HAUL	-----	P.H.
SAND PIT	-----	TON MILES	-----	T.M.
CLAY PIT	-----	PLACE	-----	P
ROCK QUARRY	-----	IN PLACE	-----	INP.
CULVERTS	-----	REPLACE	-----	REP.
PLAIN	-----	RIGHT	-----	R
WITH FACE WALLS	-----	LEFT	-----	L
WITH WING WALLS	-----	HAND DITCHING	-----	H.D.
DROP INLET	-----	POINT OF CURVE	-----	P.C.
POWER POLE LINE	-----	POINT OF TANGENT	-----	P.T.
TELEPHONE OR TELEGRAPH LINE	-----	POINT OF INTERSECTION	-----	P.I.
MARSH	-----	SPECIAL EXCAVATION	-----	SE
HEDGE, BRUSH, OR TIMBER	-----	SPECIAL FLOWING	-----	S.P.
GROUND ELEVATION	-----	TELEPHONE POLE	-----	T.P.
GRADE ELEVATION	-----			

OFFICE OF COUNTY SURVEYOR

RAMSEY COUNTY

Plan and Profile of County Project No. 31-N3

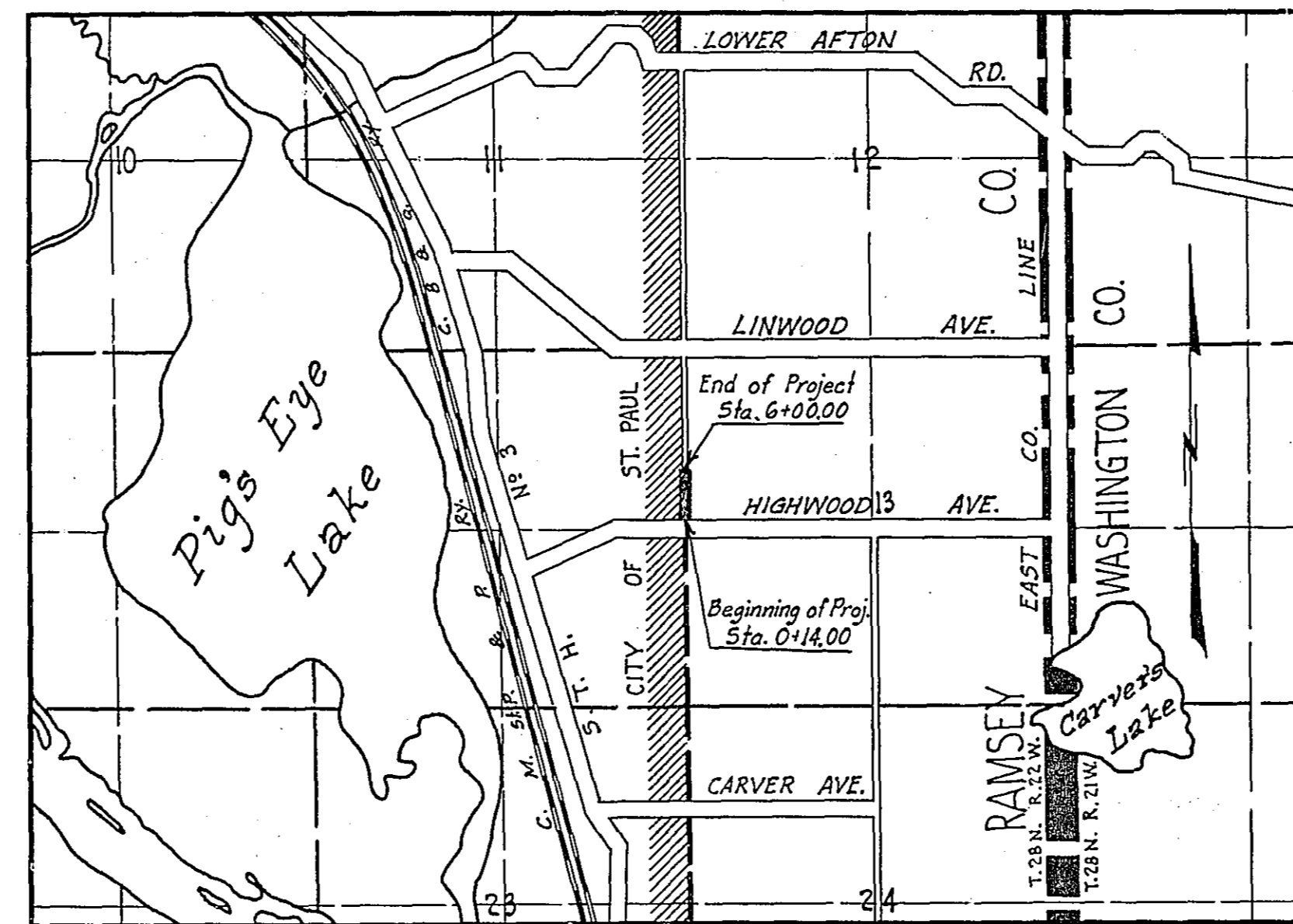
From A point 14' N. of W. 1/4 Cor. of Sec. 13-28-22 To A point 600' N. of W. 1/4 Cor. of Sec. 13-28-22  
Give proper reference to Sections, Township and Range

GROSS LENGTH- 586 FEET 0.11 MILES  
 LENGTH OF EXCEPTIONS- FEET MILES  
 NET LENGTH- 586 FEET 0.11 MILES  
 PLAN, 1 Inch = 100 Feet  
 PROFILE, Horz. 1 Inch = 100 Feet. Vert. 1 Inch = 10 Feet  
 WORKING PLANS { Horz. 1 Inch = 100 Feet  
 Vert. 1 Inch = 10 Feet  
 Cross-Sections, 1 Inch = 10 Feet

LAYOUT  
 SCALE, 1 Inch = 2640 Feet

INDEX OF SHEETS

Sheet No. 1. Title Sheet and Layout Map  
 " No. 2. Typical Cross-Sections and Statement  
 " No. 3. Plan and Profile, Sta. 0+14.00 to Sta. 6+00.00  
 " No. 4-5. Cross Sections



Date of Resolution for Preparation of Plans October 19 1931

Planned by M. W. Cooper ASSISTANT ENGINEER

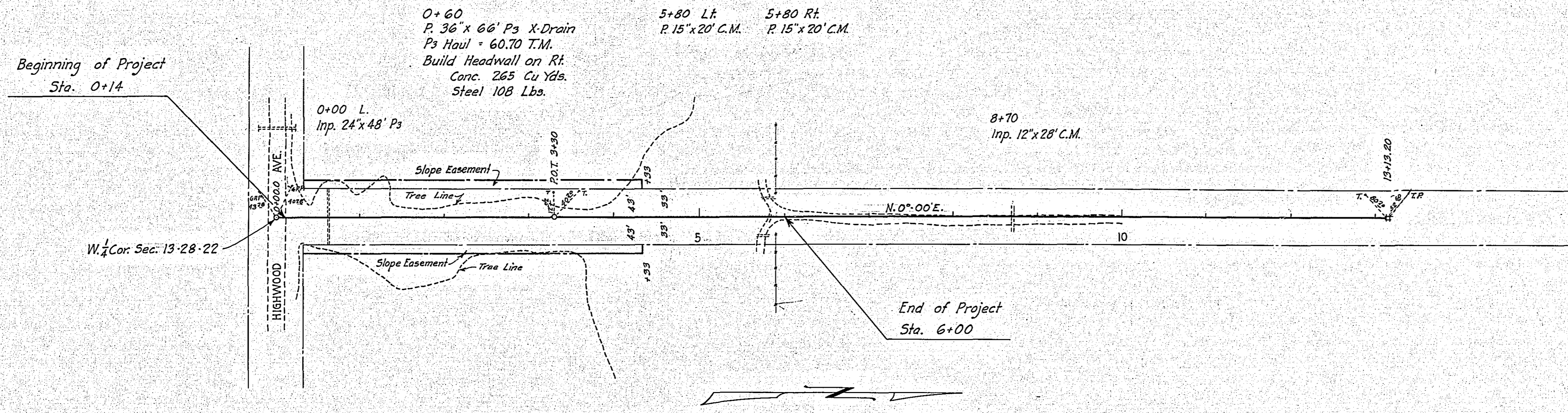
Recommended for Approval [Signature] ASSISTANT ENGINEER

Plans Approved and Recommended for Consideration [Signature] COUNTY SURVEYOR

Approved by Town Board 1179 1931 Louis Quercher CHAIRMAN OF TOWN BOARD

Approved by County Board Nov. 19 1931 [Signature] CHAIRMAN OF COUNTY BOARD

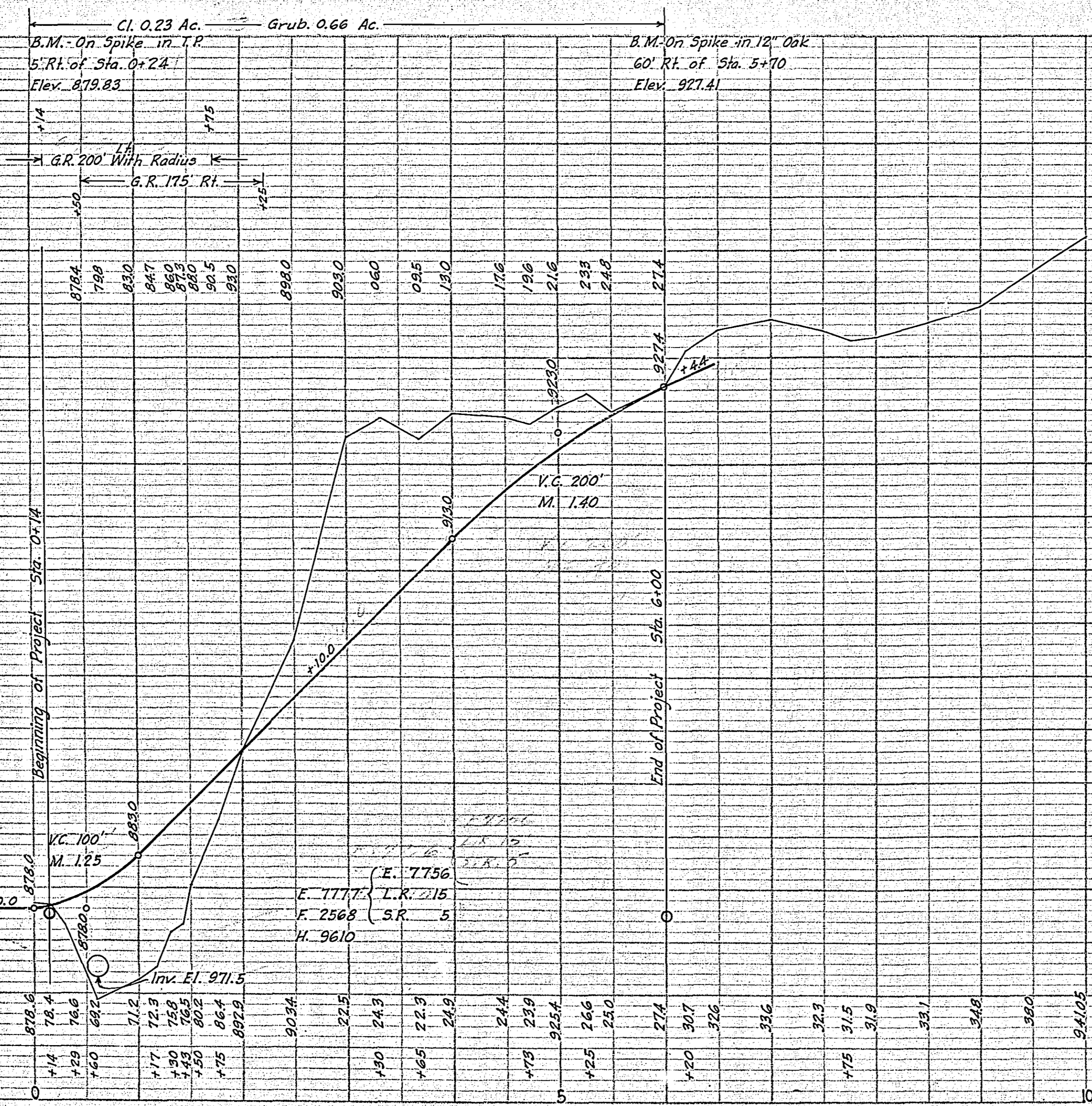
PLAN	SURVEYED	BY	DATE
	ALIGNED		
	PLOTTED		
	NOTE BOOK		
	NO.		
	NO.		
	NO.		
	NO.		
	NO.		
	NO.		



PROFILE	SURVEYED	BY	DATE
	ALIGNED		
	PLOTTED		
	NOTE BOOK		
	NO.		
	NO.		
	NO.		
	NO.		
	NO.		
	NO.		

NOTE: Ps Culverts to be hauled from C.B. & Q. Siding at Fish Hatchery 3.6 miles from Sta. 0+00

NOTE: Excess material to be placed between Highwood Ave and a point approximately 400' south. Haul quantity is included in quantities as shown. See Sheet No. 6



### PROJ. 31-N3

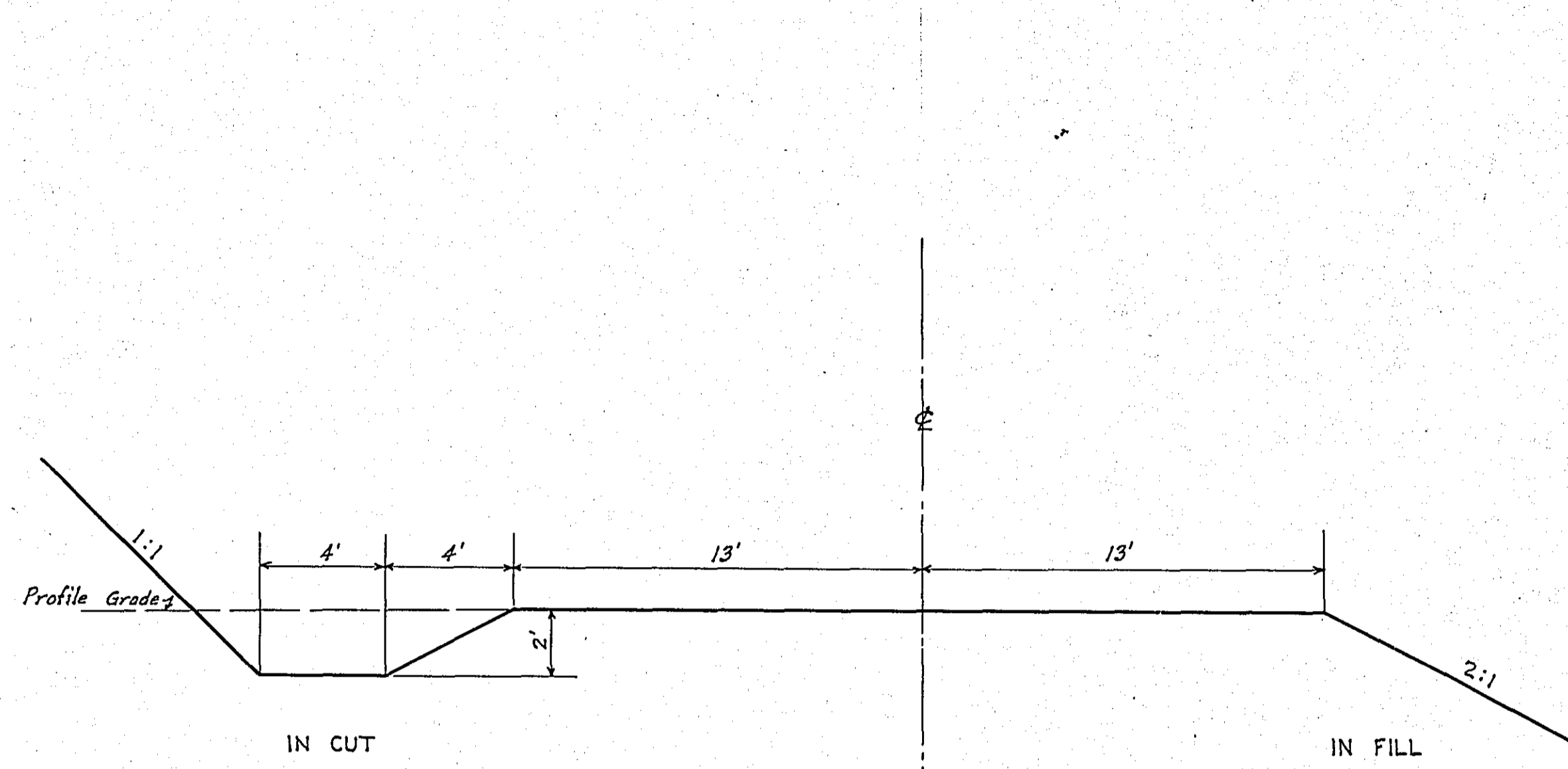
ESTIMATED	QUANTITIES
Clearing	Acres 0.23
Grubbing	Acres 0.66
Exc. Earth	Cu. Yds 7756
" L.R.	" 15
" S.R.	" 5
" O.H.	" 5610
Install 15" C.M.	Lin. Ft. 40
" 36" Ps	" 66
Ps Culv. Haul	T.M. 60.70
Conc. Headwall	"
Steel Lbs.	108
Conc. Cu. Yds.	2.65
Guard Rail - Cable	Lin. Ft. 375
" Anchors	Each 4

STATEMENT OF ESTIMATED QUANTITIES AND COSTS.

ITEM	UNIT	MILE														TOTAL ESTIMATED QUANTITIES	ESTIMATED UNIT PRICES	AMOUNTS	TOTALS	
		Sta. 0+10 to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100	to Sta. 0+100					
1	Clearing	Acre	0.23															0.23		
2	Clearing	Tree																		
3	Grubbing	Acre	0.66															0.66		
4	Grubbing	Tree																		
5	Excavation - Earth	Cu. Yd.	7756															7756		
6	Excavation - Loose Rock	Cu. Yd.	15															15		
7	Excavation - Solid Rock	Cu. Yd.	5															5		
8	Excavation - Overhaul	Cu. Yd.	9610															9610		
9	Special Excavation	Lin. Ft.																		
10	Hand Ditching	Cu. Yd.																		
11	Tile Drain	in. Lin. Ft.																		
12	Tile Drain	in. Lin. Ft.																		
13	Tile Drain	in. Lin. Ft.																		
14	Porous Back Fill Material	Cu. Yd.																		
15	Stone Rip - Rap	Cu. Yd.																		
16	Stone Rip - Rap	Cu. Yd. mile																		
17	Install 15" C.M.	Lin. Ft.	40															40		
18	Install	Lin. Ft.																		
19	Install	Lin. Ft.																		
20	Install	Lin. Ft.																		
21	Install	Lin. Ft.																		
22	Install	Lin. Ft.																		
23	Install	Lin. Ft.																		
24	Install	Lin. Ft.																		
25	Install 24" P <sub>3</sub>	Lin. Ft.																		
26	Install 30" P <sub>3</sub>	Lin. Ft.																		
27	Install 36" P <sub>3</sub>	Lin. Ft.	66															66		
28	P <sub>1</sub> Culvert Haul	Ton Mile																		
29	P <sub>3</sub> Culvert Haul	Ton Mile	60.70															60.70		
30	Headwall - Conc.	Cu. Yds.	2.65															2.65		
31	Headwall - Steel	Lbs.	108															108		
32	TOTAL ESTIMATED COST OF GRADING (IN 'TOTALS' COLUMN)																			
33	Culv. Material	Lin. Ft.																		
34	Culv. Material	Lin. Ft.																		
35	Culv. Material	Lin. Ft.																		
36	Culv. Material	Lin. Ft.																		
37	C.M. Culv. Material 15"	Lin. Ft.	40															40		
38	Culv. Material	Lin. Ft.																		
39	P <sub>3</sub> Culv. Material 24"	Lin. Ft.																		
40	P <sub>3</sub> Culv. Material 30"	Lin. Ft.																		
41	P <sub>3</sub> Culv. Material 36"	Lin. Ft.	66															66		
42	TOTAL ESTIMATED COST OF PORTABLE CULVERT MATERIAL (IN 'TOTALS' COLUMN)																			
42	Gravel Pit Stripping	Cu. Yd.																		
43	Screening	Cu. Yd.																		
44	Loading	Cu. Yd.																		
45	Hauling	Cu. Yd. Mile																		
46	Shaping & Compacting	Man Hour																		
47	Shaping & Compacting	Man & Team Hour																		
48																				
49																				
50																				
51	TOTAL ESTIMATED COST OF GRAVEL HAUL (IN 'TOTALS' COLUMN)																			
52	Gravel Material F. O. B. Pit	Cu. Yd.																		
53	Freight (If any)	Cu. Yd.																		
54	Unloading from Cars	Cu. Yd.																		
55	TOTAL ESTIMATED COST OF GRAVEL MATERIAL (IN 'TOTALS' COLUMN)																			
55	Fine Grading - Exc. & Emb.	Cu. Yd.																		
56	Shoulders - Earth	Cu. Yd.																		
57																				
58																				
59	Pavement	Sq. Yd.																		
60	Integral Curb (One Course Concrete)	Lin. Ft.																		
61	Sloping Curb	Lin. Ft.																		
62	Surface Drain	Lin. Ft.																		
63	Surface Drain Basins	Basin																		
64	Bridge Approach Slabs (square)	Slab																		
65	Bridge Approach Slabs (square)	Slab																		
66																				
67																				
68	TOTAL ESTIMATED COST OF PAVEMENT CONSTRUCTION (IN 'TOTALS' COLUMN)																			
69	Concrete	Cu. Yd.																		
70	Reinforcing Steel	Lb.																		
71	Excavation - Earth	Cu. Yd.																		
72	Excavation - Loose Rock	Cu. Yd.																		
73	Excavation - Solid Rock	Cu. Yd.																		
74	Bridge	Br. No.																		
75	Station																			
76	Concrete	Cu. Yd.																		
77	Reinforcing Steel	Lb.																		
78	Structural Steel	Lb.																		
79	Piling	Lin. Ft.																		
80	Temporary Crossing	Lump Sum																		
81	Removing old Bridge	Lump Sum																		
82	Bituminous Surface	Sq. Yd.																		
83																				
84	TOTAL ESTIMATED COST OF STRUCTURES (IN 'TOTALS' COLUMN)																			
85	Guard Rail - Cable	Lin. Ft.	375															375		
86	Anchor	Each	4															4		
87	Excavation for Gutter	Cu. Yd.																		
88	TOTAL ESTIMATED COST OF MISCELLANEOUS ITEMS (IN 'TOTALS' COLUMN)																			

TYPICAL CROSS SECTIONS AND DETAILS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SEC.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	MINN.					



NOTE: All slopes to conform to 86' R.O.W

\* NOTE: BRIDGE ITEMS LISTED UNDER BRIDGE NUMBERS IN MILE COLUMNS REGARDLESS OF LOCATION