343(3) structures

BOOK 2

343(3)

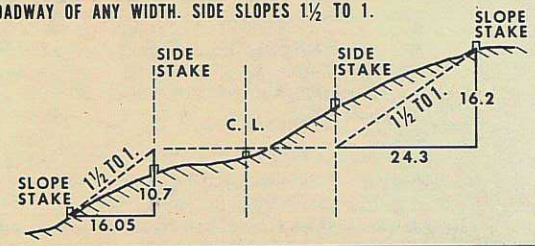
FIELDHOUSE
FREDERICKPOS
FIELDHOUSE
LIBRARY COLLECTION

PLIST

343 (3) STRUCTURES Book 2 1974-1975

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

ROADWAY OF ANY WIDTH. SIDE SLOPES 1½ TO 1.



Cut or Fill	Distance out from Side or Shoulder Stake.										Cut or Fill
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1 65	1 80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3 45	3.60	3 75	3.90	4.05	4.20	4 35	2
3	4.50	4 65	4.80	4.95	5.10	5 25	5 40	5.55	5.70	5.85	3
4	6.00	6 15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7 50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9 00	9 15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10 65	10.80	10.95	11.10	11.25	11.40	11.55	11 70	11.85	7
8	12.00	12 15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13 50	13.65	18 80	13 95	14.10	14.25	14.40	14 55	14.70	14.85	9
10	15.00	15 15	15 30	15 45	15.60	15.75	15.90	16.05	16.20	16 35	10
11	16 50	16 65	16 80	16.95	17 10	17.25	17.40	17.55	17.70	17.85	11
12	18 00	18.15	18.30	18 45	18.60	18 75	18.90	19.05	19.20	19 35	12
13	19 50	19 65	19.80	19.95	20.10	20.25	20 40	20.55	20.70	20.85	13
14	21.00	21 15	21.30	21.45	21 60	21.75	21.90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24 15	24 30	24 45	24.60	24.75	24 90	25 05	25.20	25.35	16
17	25.50	25 65	25.80	25 95	26.10	26 25	26 40	26.55	26.70	26.85	17
18	27.00	27 15	27.30	27 45	27.60	27.75	27.90	28.05	28 20	28.35	18
19	28 50	28 65	28 80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30 00	30 15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.85	20
21	31 50	31 65	31.80	31.95	32 10	32 25	32.40	32.55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33.60	33 75	33.90	34.05	34.20	34.35	22
23	34 50	34 65	34.80	34.95	35.10	35 25	35 40	35.55	35.70	35 85	23
24	36.00	36 15	36.30	36 45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37 80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39 00	39 15	39.30	39 45	39 60	39.75	39.90	40.05	40.20	40.35	26
27	40 50	40 65	40 80	40.95	41.10	41.25	41 40	41.55	41.70	41.85	27
28	42 00	42 15	42.30	42.45	42.60	42 75	42.90	43.05	43.20	43.35	28
29	43 50	43 65	43.80	43 95	44.10	44 25	44 40	44.55	44.70	44 85	29
30	45 00	45 15	45.30	45 45	45.60	45.75	45.90	46.05	46 20	46.35	30
31	46.50	46.65	46.80	46 95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48 00	48.15	48.30	48 45	48.60	48 75	48.90	49.05	49 20	49.35	32
33	49.50	49 65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51 00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52 50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54 00	54.15	54.30	54 45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55 50	55 65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57 45	57.60	57.75	57.90	58.05	58.20	58 35	38
39	58 50	58.65	58 80	58.95	59.10	59 25	59.40	59 55	59.70	59.85	39
40	60 00	60.15	60 30	60 45	60 60	60.75	60 90	61.05	61 20	61.35	40

Property of Cache County Engineer

Address 179 North Main Logan, Utah

Telephone 752-8327

This Book is manufactured of a High Grade 50% Rag Paper having a Water Resisting Surface, and is sewed with Nylon Waterproof Thread.

Index

CR 343(3) Structure book No. 1

Pipe Structures — Pg 2 → 157

for further structures see CR 343(3) Structure book #2

Book summary — P. 158-159

Sta.	Elev	Gr	Cut	Area	AAr	L	cuft
0+27	46.96	47.8	1.9	9.50			
					4.75	11	52.25
0+16	46.96	46.7	0	0			
0+04	46.97						
0+01	46.97	46.8	0	0			
0+00	4446.97	46.97	0	0			
						CUFT	52.25

Grade .05/100'

From Sta 149+87 to 150+11 Parallel 36" CMP 24' Length

Sta 0+44

Sta 0+34

For Connecting Section
See pg 15

(150+14) Sta 0+27 -7.0

45° CMP Elbow w/ Cleanout
for details see pg 7

(150+11) Sta 0+24



(0+16) -8.1

(0+01) -8.0

(149+91) Sta 0+04

(149+87) Sta 0+00 -7.85

Sta 0-10

+0.19 4454.82 4454.63

\+ HI − BM

Pipe Summary

THEY CUT EXISTING PIPE BACK ABOUT 15 AND THEN CONNECTED NEW PIPE WITH WATERTIGHT BAND. ALSO PLACED SEPERATE ELBOW AND FIXED IN PLACE WITH WATERTIGHT BAND. THE CLEAN-OUT NEEDS TO BE RAISED 2 3 FEET TO MATCH ROADWAY. CONCRETE HAS NOT BEEN PLACED YET.

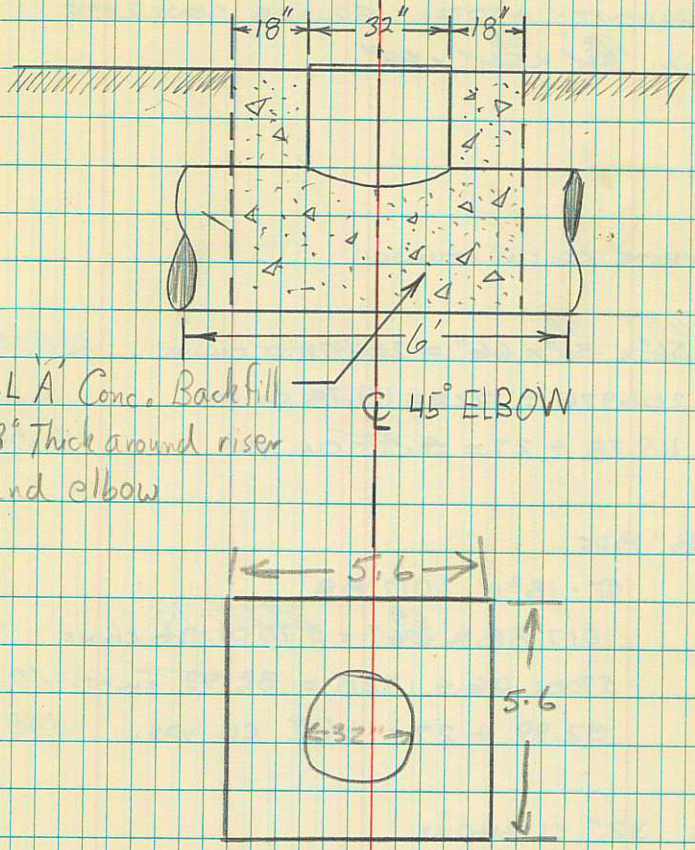
TOTAL EXCAVATION FOR THIS PIECE OF PIPE IS 1.94 cu.yds.

12-12-74
RAB Wall

CHECKED BY NDW 12-13-74

Details for 36" CMP or 45° Elbow w/Cleanout

For Sta. 24



9340-100

STRUCTURE SUMMARY

STRUCTURE WAS POURED 18" AROUND CLEAN-OUT - A TOTAL SQUARE CONCRETE BOX ~~66"~~ 68" x ~~56~~ 68" x 66"

CONCRETE CALCULATIONS:

~~66~~ 68" x ~~56~~ 68" x 66" = ~~206976.0~~ CU.INS. 305184

206976 ÷ 1728 = ~~119.78~~ CU. FT. 176.61

119.78 ÷ 27 = ~~4.44~~ CU. YDS 6.54

LESS 36" PIPE

$\pi \cdot 18^2 = 1017.88$ ✓

1017.88 x ~~56~~ 68" = ~~57001.06~~ 69215.73 CU.INS.

57001.06 ÷ 1728 = ~~32.99~~ CU. FT. 40.06

32.99 ÷ 27 = ~~1.22~~ CU. YDS. 1.48

LESS 32" CLEAN-OUT

$\pi \cdot 16^2 = 804.25$ ✓

804.25 · 27" = 21714.69 ✓ CU.INS.

21714.69 ÷ 1728 = 12.57 ✓ CU. FT.

12.57 ÷ 27 = .47 ✓ CU. YDS.

6.54 - (1.48 + .47) = 4.59 Cu. Yd. Pay

TOTAL CONCRETE = ~~4.44 - (1.22 + .47)~~ = 2.75 CU YDS.

Checked BFK

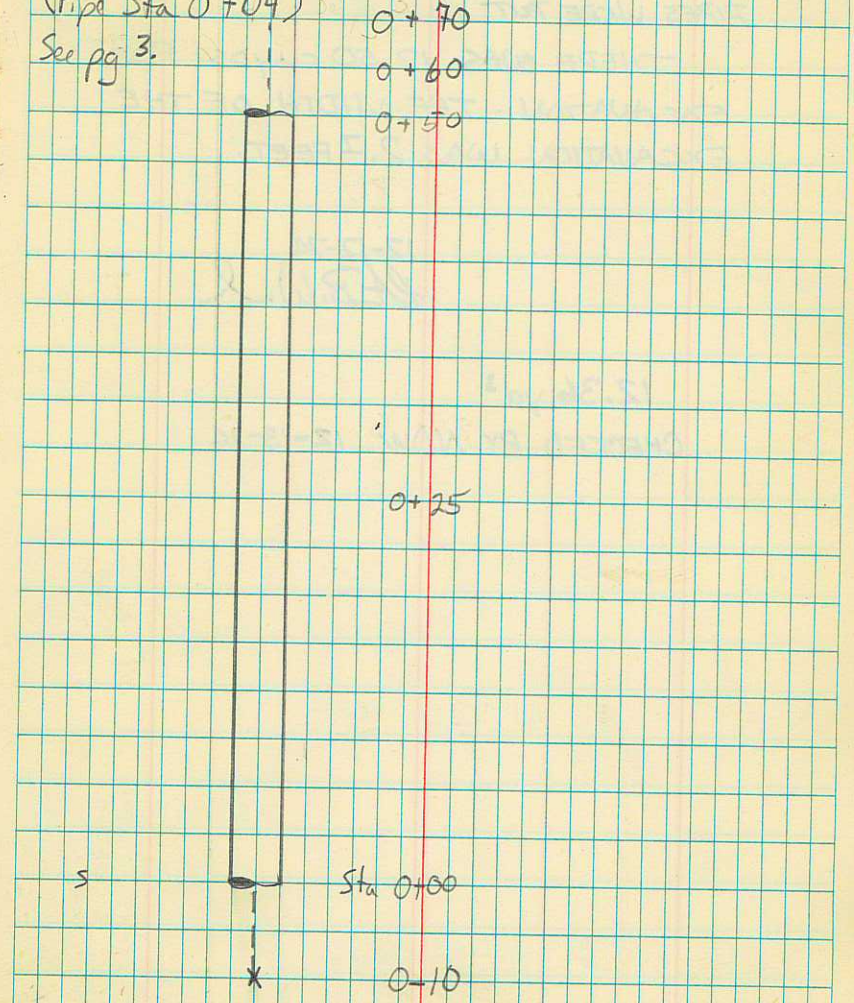
9340-100

10 Sta	Elev.	Gr	Cut	Area (2.7)	Av Area	L	Cuft
0+50	447.8	504	34	~~9.18~~ 9.08			
					8.5	15	~~127.5~~ 126.15
0+35	47.5	504	29	~~7.83~~ 7.74			
					7.3	10	~~73.0~~ 72.10
0+25	479	504	25	~~6.75~~ 6.68			
					6.2	10	~~62.0~~ 61.45
0+15	483	504	21	~~5.67~~ 5.61			
					5.0	15	~~75.0~~ 74.10
							~~337.5~~
0+00	448.8	501	16	~~4.32~~ 4.27			333.80

At Sta 149+91 @ 90° to ℄ of Roadway

11

8" Pipe Culvert 50' in length
To be weld connected to
36" CMP @ Sta 149+91
(Pipe Sta 0+04)
See pg 3.



Pipe Summary

SMALL PIPE WAS WELDED TO BOTTOM OF 36" PIPE BEFORE EITHER OF THE PIPES WERE PUT IN.

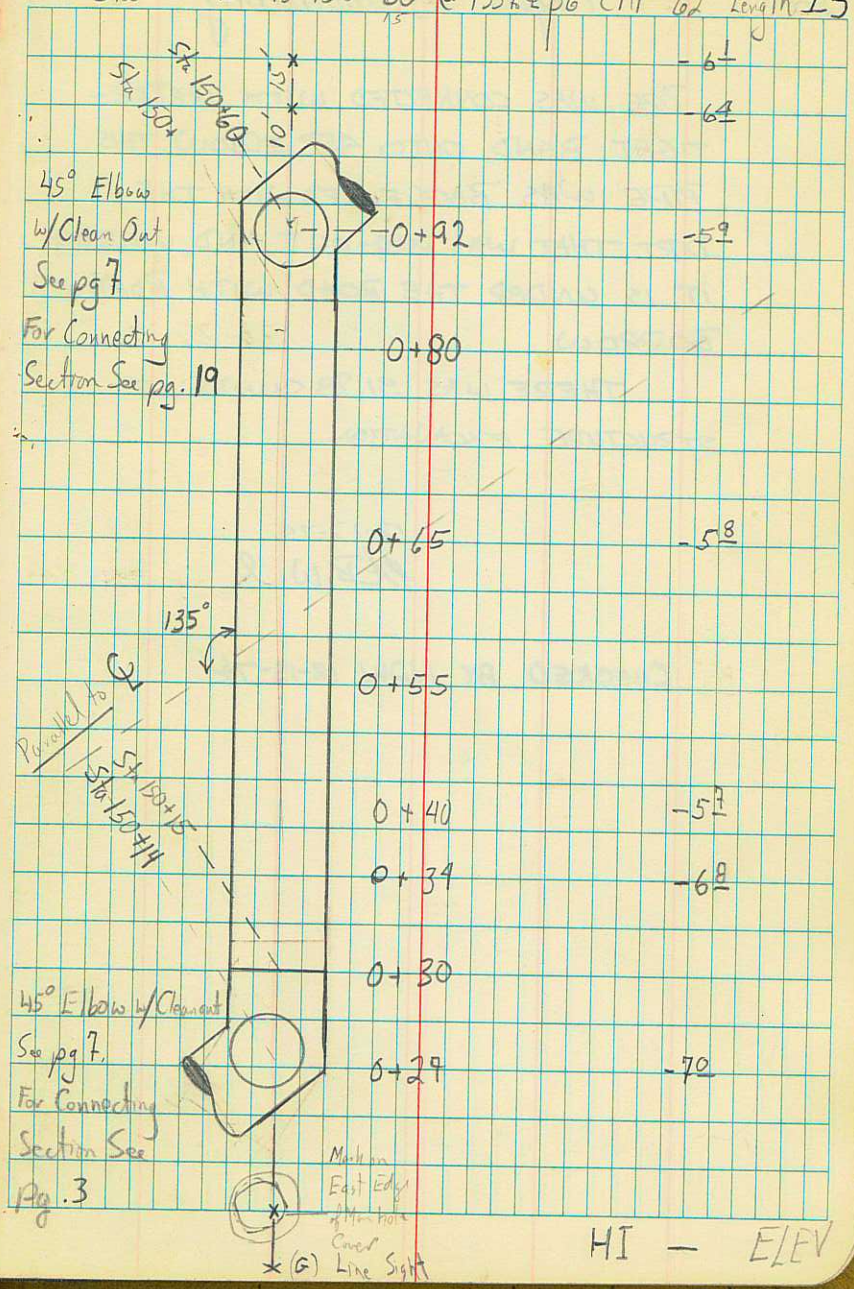
THERE WAS 12.50 cuyds. FOR EXCAVATION. THE WIDTH OF THE EXCAVATION WAS 2.1 FEET.

12-12-74
P.E.B. Wm

12.36 yd^3
CHECKED BY NDW 12-13-74

14 Sta	Elev	Gr.	Cut	Area	Av Area	L	Cuft
0+92	46 92	48 9	2 0	10 0			
					12 5	27	337 5
0+65	46 94	49 0	3 0	15 0			
					15 25	25	381 25
0+40	46 95	49 1	3 1	15 5			
					12 75	6	76 5 ✓
0+34	46 95	48 2	2 0	10 0			
					9 75	7	68.25 ✓
0+29	4446 96	49 80	1 2	9 50			
						CUFT	863.50

From Sta 150+15 to 150+60 @ 135° to ℄ 36" CMP 62' Length 15



Pipe Summary

PIPE WAS CONNECTED WITH WATER-TIGHT BAND ONTO 45° ELBOW. THIS PIPE WAS BACK FILLED WITH THE DIRT THAT WAS DUG-OUT AND WHERE IT IS UNDER THE ROAD WITH ROADWAY BORROW.

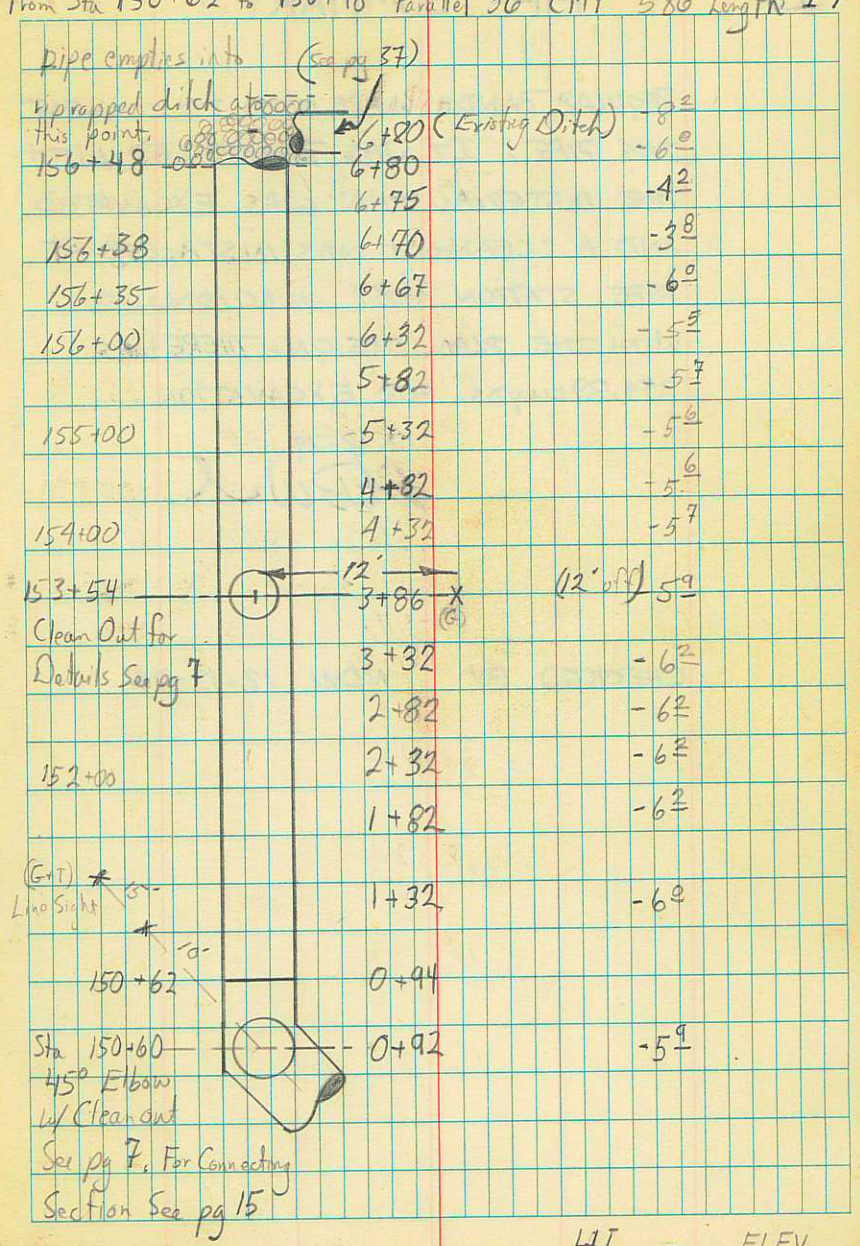
THERE WAS 31.98 CUYDS. OF STRUCTURE EXCAVATION.

12-12-74
P.E.B.W.L

CHECKED BY NDW 12-13-74

18 Sta	Elev.	Gr.	Cut	Area	Av Area	L	Cu ft
6+80 (Ditch)	46 62	46 62					
6+80	46 62	48 8	2 2	11.0			
6+75	46 62	50 6			10 75	13	139 75
6+70	46 63	51 0					
6+67	46 63	48 8	2 1	10 5	12 25	35	428 75
6+32	46 64	49 3	2 8	14.0	14.75	50	737 5
5+82	46 67	49 1	3 1	15.5	14 0	50	700 0
5+32	46 70	49 2	2 5	12.5	12 5	50	625 0
4+82	46 72	49 2	2 5	12.5	12 25	50	612 5
4+32	46 75	49 1	2 4	12.0	11 75	50	~~387 5~~ 540 5
3+86	46 77	48 9	~~X~~ 2 3	11.5	11 75	+6 50 54	~~587 5~~ 634 5
3+32	46 80	48 6	2 4	12 0			
					11 0	50	550 0
2+82	46 82	48 6	2 0	10 0			
					9 75	50	487 5
2+32	46 85	48 6	1 2	9 5			
					9 25	50	462.5
1+82	46 88	48 6	1 8	9 0			
					9 25	50	462 5
1+32	46 90	48 8	1 0	9 5			
					9 75	50	487 5
0+92	4446 92	48 9	2 0	10 0			
				TOTAL CU FT			6868 50

From Sta 150+62 to 156+48 Parallel 36" CMP 586' Length 29



PIPE SUMMARY

REGULAR BANDS WERE USED TO CONNECT THIS PIPE. IT WAS BACKFILLED WITH THE MATERIAL THAT WAS EXCAVATED AND A CLEANOUT WAS INSTALLED AT PIPE STATION 3+87 IN ACCORDANCE WITH THE PLAN DESIGN. THERE WAS 254.39 cu.yds. FOR EXCAVATION.

12-12-74

DEBW L

CHECKED BY NDW 12-13-74

June 4, 1975.

Placed 9 cu. yd. of Concrete
Rip Rap left of Sta 156+48
at outlet of 36" Al. Pipe.

9 yd. Pay by field Measure.
G.H.

No Excavation

24 Sta	Elev.	Gr.	Cut	Area	Av. A.	L	Cuft.
0+40			0°	0°			
					3°	4	12
0+36			2°	6°			
					6°	32	192
0+04			2°	6°			
					3°	4	12
0+00			0°	0°			
							216

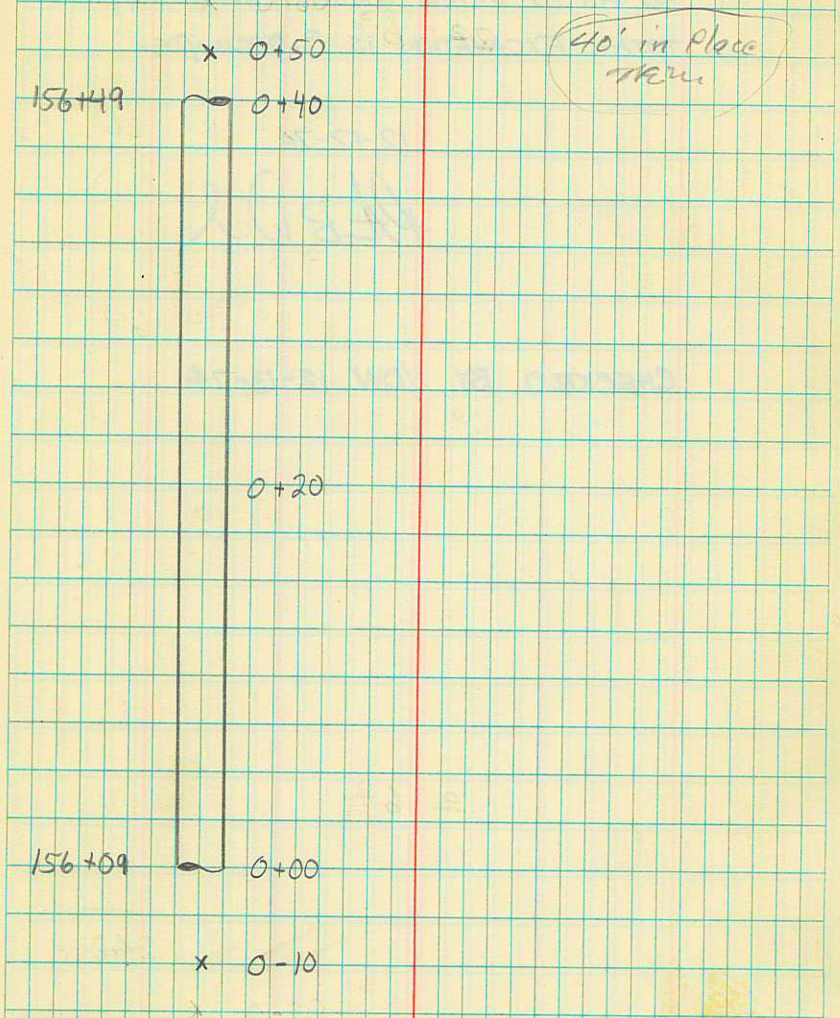
9" 40.100

Sta 156+09 to 156+49 Parallel 12" Pipe 40' Length 25

Drain under intersection for gutter on LEFT of Roadway

(For right side drain see pg 29)

40' in Place



Pipe Summary

PIPE WAS PLACED IN GUTTER SO AS TO DRAIN UNDER PRIVATE APPROACH
TOTAL EXCAVATION IS 8.00 cu.yds.

12-12-74

PEB WL

CHECKED BY NDW 12-13-74

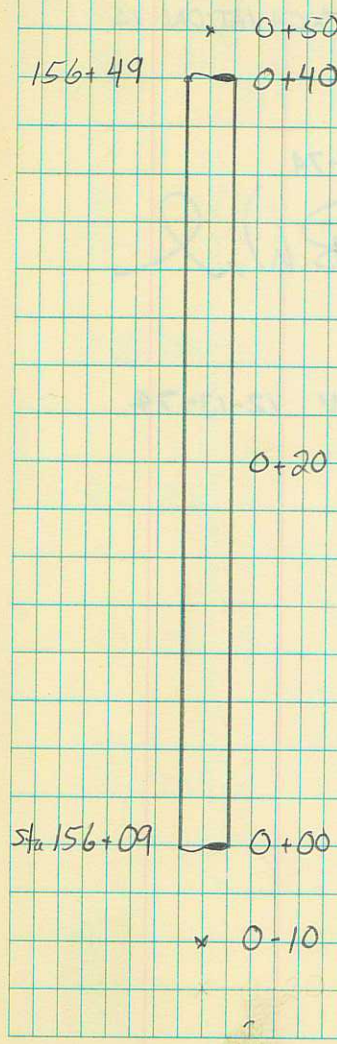
28 Sta	ELEV.	Gr.	Cut	Area	Av A.	L.	Cuft
0+40	4448±		0	0			
					3	4	12
0+36			2	6			
					6	32	192
0+04			2	6			
					3	4	12
0+00	4448±		0	0			
							216

Sta 156+09 to 156+49 Parrallel 12" Pipe 40' Length 29

Drain under intersection for gutter on RIGHT side of Roadway

(For Left side drain see pg 25)

40' in Place



30

Pipe Summary

PIPE WAS PLACED IN GUTTER SO WATER WOULD DRAIN UNDER PRIVATE APPROACH TOTAL EXCAVATION IS 8.00CU.YDS.

12-12-74

P.A.B.W.

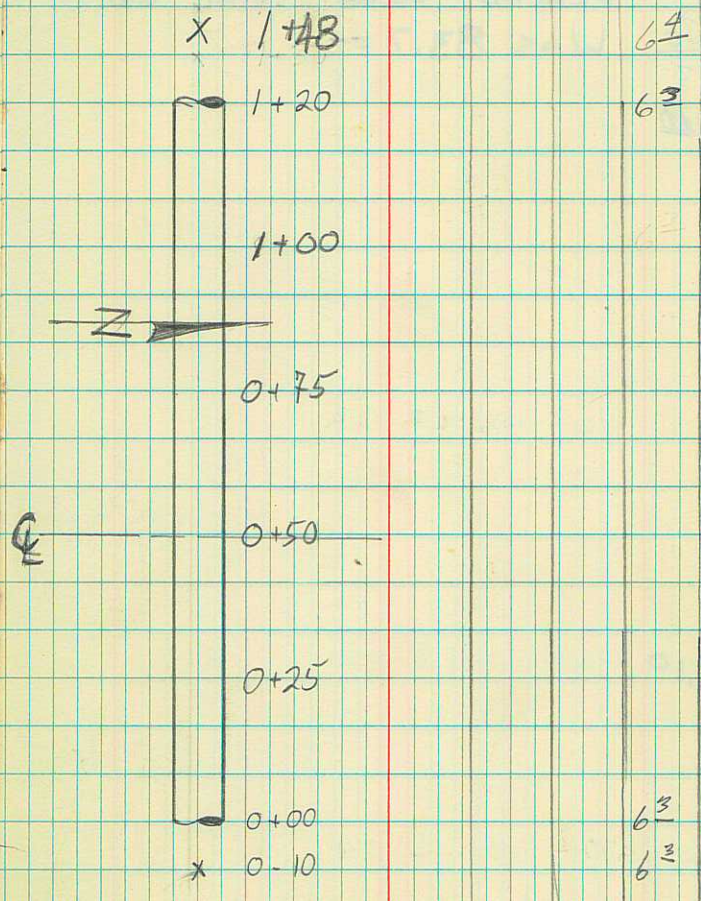
CHECKED BY NDW 12-13-74

31

32 Sta	ELEV.	Gr.	Cut	Area	Avg A.	L	Cuft
1+32		50°					
1+20		50'	0.4	~~1.6~~ 1.53			
					~~1.6~~ 1.53	10	~~16~~ 15.3
1+10	49.7	50'	0.1	~~1.6~~ 1.53			
					~~1.4~~ 1.34	10	~~14~~ 13.4
1+00		50'	0.3	~~1.2~~ 1.15			
					1.0	25	25
0+75		50'	0.3	~~.8~~ .77			
					.6	25	15
0+50		50'	0'	~~.4~~ .38			
					.4	25	10
0+25		50'	0.1	~~.4~~ .38			
					.2	25	5
0+00	50.1	50.1	0	0			
						CUFT	~~85.00~~ 83.7

Sta 156+41 @ 90° to ℄
Pipe Arch Culvert 22"x13'
120' Length

122' in Place
ITEM 5-13-75



T.P.
BM

499	56.36	-3.54	51.37	4454.63
+0.28				ELEV.
+	HI	-		

34

Pipe Summary

5491
354
5137
499
5636
63
5010

122 FEET OF PIPE WAS PLACED HERE TOTAL EXC. WAS 83.7 FT.

3.10

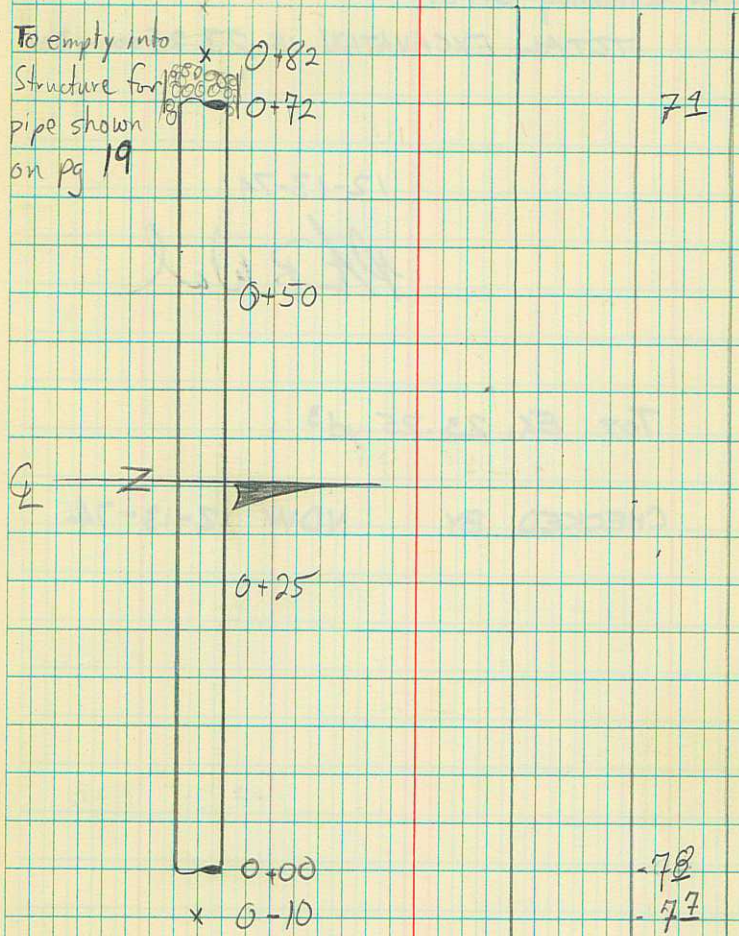
35

Sta	Elev. Gr.	Cut	Area	Av A	L	Cuft
0+72	4446.6 49	2.4	10.8			
				10.35	22	227.7
0+50	46.7 48.2	1.5	9.2			
				9.0	25	225.0
0+25	46.2 48.7	1.8	8.1			
				7.0	25	175.0
0+00	4447.1 48.9	1.3	5.2			
			TOTAL			627.7 ✓

Sta 156+49 @ 90° x-Drain
30" Pipe Culvert 72' Length
Cross drain to conform w/ existing ditch

72' in Place

To empty into Structure for pipe shown on pg 19



4456.36

+ HI − ELEV.

Pipe Summary

Riprap has not yet been placed in existing ditch -

Total excavation is 23.25 ~~cu. yds.~~

12-13-74

P.E.B. Wall

Tot Ex. 23.25 yd^3

Checked by NDW 12-13-74

40

Sta	Elev.	Gr	Cut	Area (4.2)	A+A	L	Cuft
1+12 (RP)		49 1					
102	4449 0	49 3	0 3	1.26			
					1 47	27	39.69
0+75	49 2	49 6	0 4	1 68			
					2 31	25	57 75
0+50	49 3	50 0	0 2	2 94			
					3 57	25	89 25
0+25	49 4	50 4	1 0	4 20			
					~~4 80~~	25	~~120 0~~
0+00	4449 6	50 8	1 2	5 04	4.62		115.5
0+10 (RP)		50 5					
						CUFT	~~306 69~~ 302 19

X-Drain

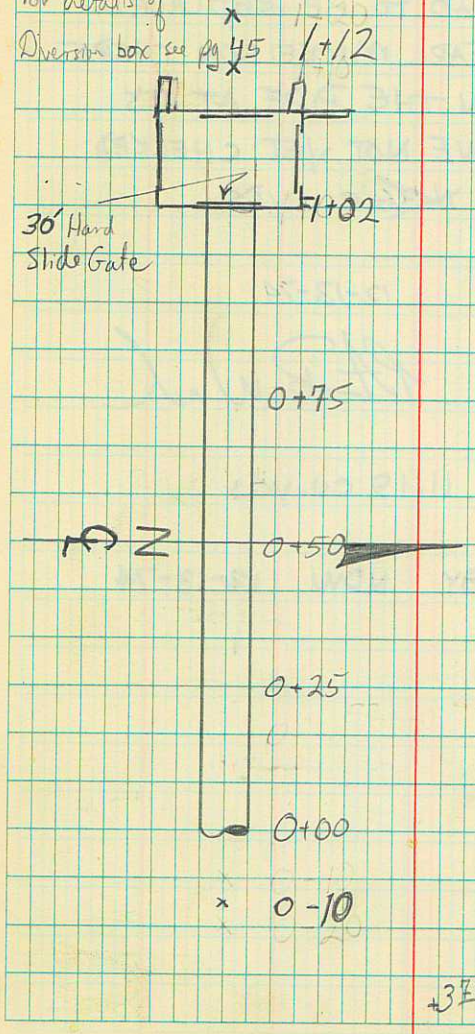
Sta 156+83 @ 90° Pipe Arch Culvert

26" X 15" Culvert

102' Length

102' in place

for details of Diversion box see pg 45



6 0

5 8

6 1 Flowline

4 3

5 5 Flowline

4 6

(Present Ditch)

+3 75 4455 12 4451 37

\+ HI − ELEV.

PIPE SUMMARY

THEY HAD SOME TROUBLE WITH THIS PIPE. THEY SMASHED THE WEST END AND IT HAD TO BE REPLACED. ACCORDING TO EARL MICKELSON THERE IS A BOW IN THE PIPE AT IT'S CENTER. I HAVE NOT YET CHECKED IT - TOTAL EXC. ~~11.36~~ CU. YDS.

12-13-74

P.A.B. W.

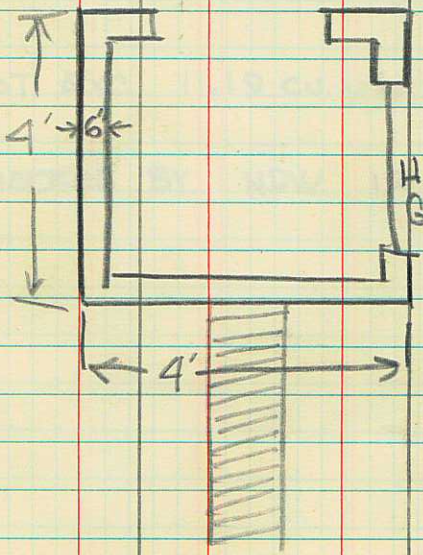
TOT. EXC 11.19 CU. YDS

CHECKED BY NDW 12-13-74

9340-100

44 Sta	Elev	Gr.	Cut	Area	A. Area	L	Cuft
			3°	18			
					18	6	108
			3°	18			

AS BUILT
PBW.



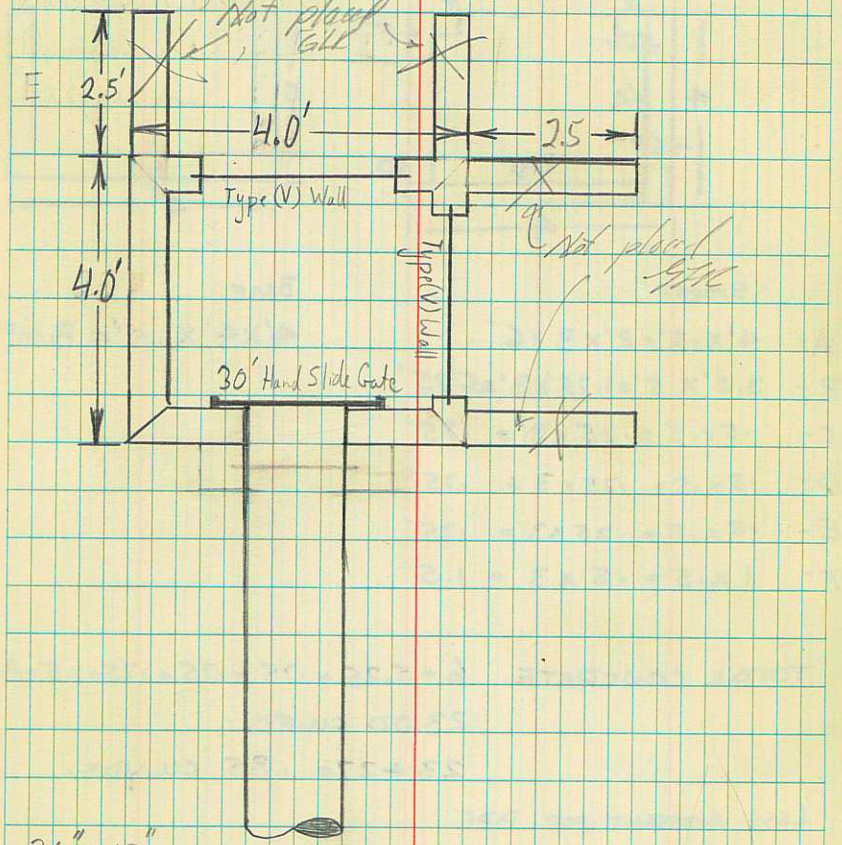
HAND GATE INSTALLED

Sta 156+83
Diversion Box @ 90° to ℄

Designed according to Std. Drawings 650-1, 2, 4

Excavation 4.11 ft³

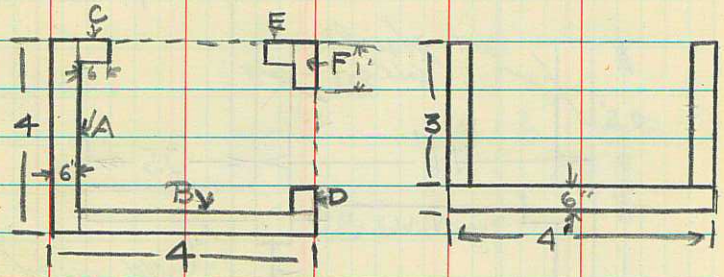
Walls S(W)-R-U(V)-T(V)
A = 2.5 B = 2.5'
Box depth = A + 7"



26" x 15"
Pipe Arch Culvert
for details see pg 41

STRUCTURE SUMMARY

STRUCTURE CONCRETE CALCULATIONS:



SIDES:

A- 4'x.5' = 2'x3 = 6'

B- 3.5'x.5' = 1.75'x3' = 5.25'

C- .5x.5 = .25x3' = .75'

D- .5x.5 = .25x3 = .75'

E- .5x.5 = .25x3 = .75'

F- 1x.5 = .5x3 = 1.5'

BASE

4'x4'x.5' = 8 FT³

TOTAL CONCRETE 6+5.25+.75+.75+.75+1.5+8=

23.00 CU.FT.

23÷27= .85 CU.YDS.

LESS AMOUNT FOR PIPE

(2.2 - .5) 1.7 CU.FT. = .06 CU.YDS

.85 - .06 = .79 CU.YDS TOTAL.

Sta	ELEV.	Gr.	Cut	Area	Av A.	L	Cuft.
0+20	48 ℄		0	0			
					3	4	12
0+16			2	6			
					6	12	72
0+4			2	6			
					3	4	12
0+00	48 ℄		0	0			
							96

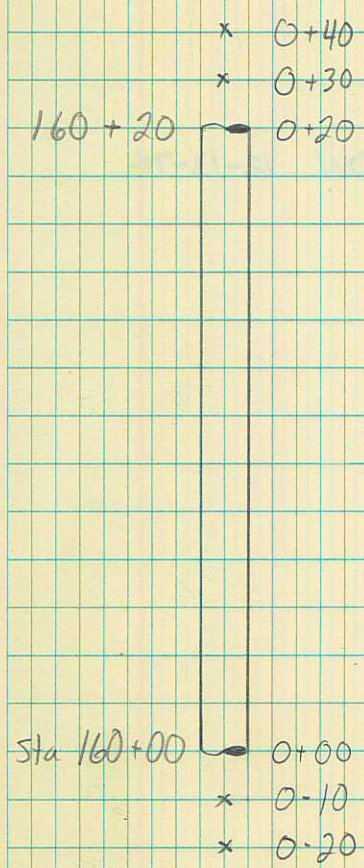
A
B
C
D
E
F

Sta 160+00 to 160+20 Parallel

12" pipe culvert 20' Length
Ditch drain under private approach. Place in Gutter at RIGHT of Roadway.
(for ~~Left~~ gutter see pg 53)

12"x20' in Place

CHECKED PBW



Pipe Summary

Pipe was placed in gutter and backfilled with the same borrow as was the roadway- total cu.yds. borrow is 4.44

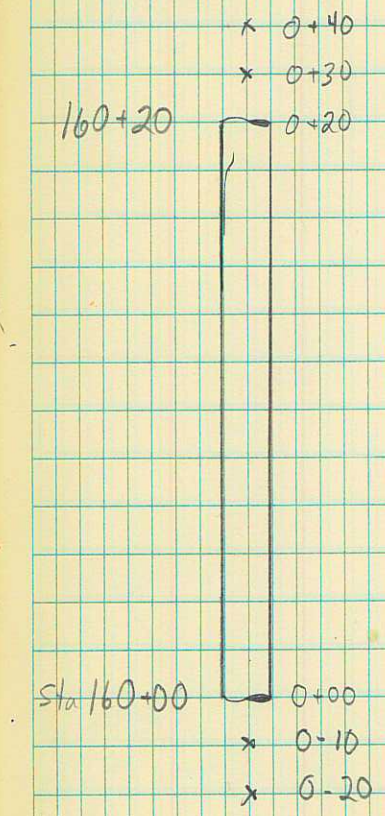
Checked by NDW 12-13-74

Sta	Elev	Gr.	Cut	Area	Av. A	L	Cuft
0+20	48.5		0	0			
					3	4	12
0+16			2	6			
					6	12	72
0+4			2	6			
					3	4	12
0+00	48.5		0	0			
							96

Sta 160+00 to 160+20 Parralled
12" pipe culvert 20' Length
Ditch drain under private
approach. Place in ditch on
LEFT Side of Roadway.
(For ~~Right~~ side see pg 49)

12" x 22' in Place

PBU



PIPE SUMMARY

PIPE PLACED IN EXISTING GUTTER AND THEN BACKFILLED FOR PRIVATE APPROACH.

Sta	ELEV.	GR.	Ct	Area (4°)	Av A.	L	Cuft.
0+79	4445⁶	45⁶	~~3°~~	12			
					12	24	288
0+50			3°	12			
					12	25	300
0+25			3°	12			
					12	25	300
0+00	4446⁶	47¹	0⁵				
			3°	12			888
0+00	4446⁶	46⁶	Flow line		.5×74= 37		+~~37~~ 148
					5 TENTHS EXC FOR GRADE		~~925~~
0-10		47¹					1036.00

x-Drain

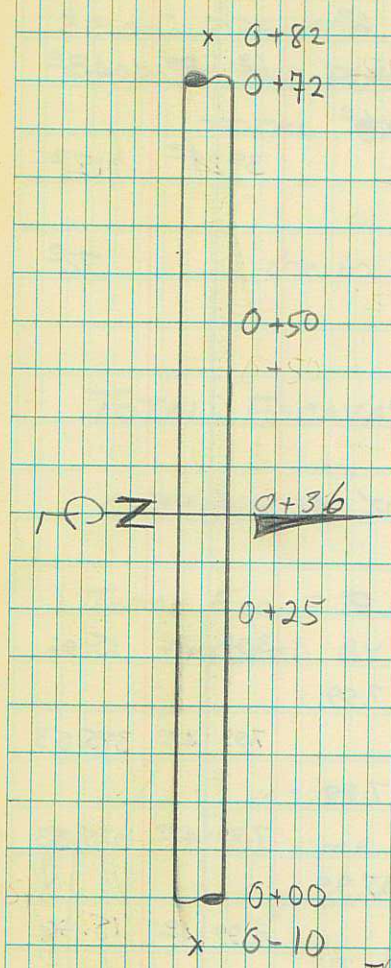
Sta 163+00 pipe culvert @ 90° to ℄

24" pipe ~~742~~ Length

Conforming to existing ditch

24" x 74' in Place

PBW



			7⁸		
			7⁶		
			8⁵ FL		
			7⁵ (FL)		
			7²		
			7⁰		
TP	+4⁷⁸	4454¹¹	-5⁸⁴	4449³³	
	+3⁸⁰	4455¹⁷		4451³⁷	
	+	HI	-	ELEV	

58 12" x 16' CMP

STA	EL	OR	CUT	AREA	AAv	L	Cu Ft
0+16			0	0			
					3°	4°	12°
0+12			2°	6°			
					6°	8°	48°
0+04			2°	6°			
					3°	4°	12°
0+00			0	0			
	TOTAL	=	2.67 cu. yds.				72°

STA 163+11 13"x22" x102' ARCH PIPE

1+02			0	0			
					3.99	4°	15.96
0+98			2.08	7.99			
					7.99	47°	375.53
0+51			2.08	7.99			
					7.99	47°	375.53
0+04			2.08	7.99			
					3.99	4°	15.96
0+00			0	0			
	TOTAL	=	29.00 cu yds.				782.96

59

PIPE SUMMARY

PIPE WAS PLACED IN FLOWLINE OF EXISTING DITCH. 5 TENTHS WERE CUT OUT BELOW PIPE FOR BACKFILL BORROW TO SUPPORT THE PIPE.

TOTAL EXC. ~~34.26~~ cu yds.

12-13-74

PEBW

TOTAL EXCAVATION 38.37 yd^3 P56.

CHECKED BY NOW 12-13-74

TOTAL EXC. = 31.67 cu yds FOR PG. 58

CHECKED BY DDW 6-9-75

PAGE 58

163+05 to 163+21

12" x 16 CMP under for Pipe on 12'

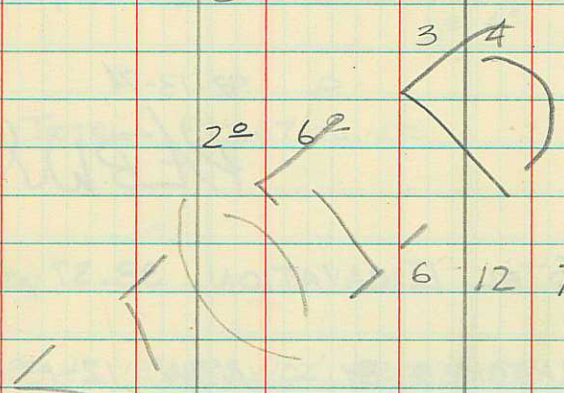
Avg Cut 3°.

163+11 13" x 22" Arch Pipe 102' long

TOTAL CU. YDS. 29.63

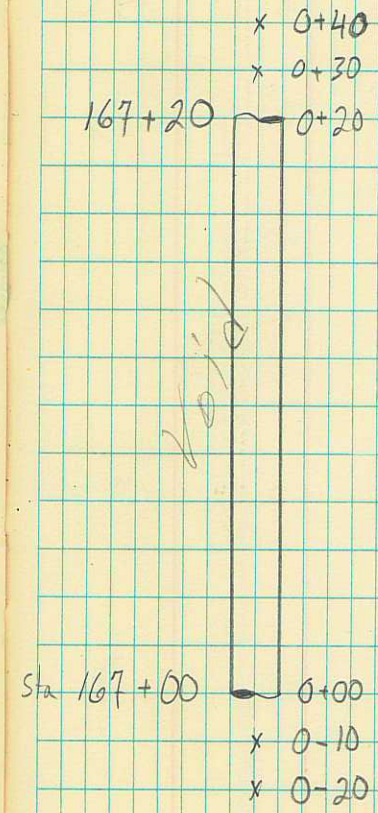
PBW

Sta	ELEV. GR.	Cut	Area	AA	L	Cuft
0+20		0	0			
				3	4	12
0+16		2	6			
				6	12	72
0+4		2	6			
				3	4	12
0+00		0	0			
						96



Sta 167+00 to 167+20 Paralled 12" pipe culvert 20' Length Ditch Drain under private approach. Placed in gutter on LEFT side of roadway.

(For right side see pg 65)



169+35 ℄ Approach ℄ Gate ℄. No pipe

PBW

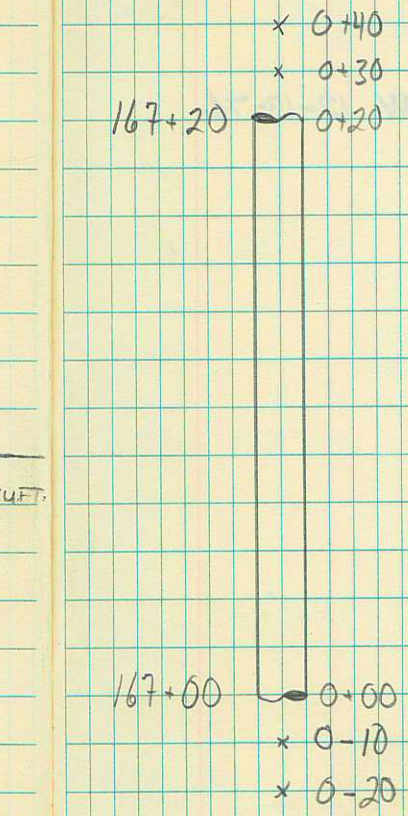
PIPE SUMMARY

Sta	ELEV.	Gr.	Cut	Area	A-A	L	Cuft
0+20			0	0			
					3°	4	12
0+16			2°	6°			
					6°	12	72
0+04			2°	6°			
					3°	4	12
0+00			0	0			
							96 CUFT.

Sta 167+00 to 167+20 Parallel

12" pipe culvert 20' Length Ditch Drain under private approach. Place in gutter on RIGHT side of roadway (for Left side see pg 61)

169+05 to 169+25
12" x 20' Ct.
PBW



PIPE SUMMARY

PIPE FOR PRIVATE APPROACH-
LAID IN GUTTER.
TOTAL EXCAVATION 3.56 cu.yds.

CHECKED BY NDW 12-13-74

Sta	ELEV.	Gr	Cut	Area (35)	A.Ar.	L	Cuft
			2 5	~~8 75~~			
0+78	4447 6	47 9	CO 3	1.05			
					~~8 75~~ 4.90	3	~~26 25~~ 14.70
0+75	47 6	48 0	2 5	8 75			
					8 75	25	218 75
0+50	47 7	48 4	2 5	8 75			
					8 75	25	218 75
0+25	47 8	48 8	2 5	8 75			
					~~8 75~~ 6.83	25	~~218 75~~ 170.63
			2 5	~~8 75~~			
0+00	44478	49 2	1 4	4.9			
							622.83
							~~682.5~~
				:5 FOR GRAVEL	.5x78=39		~~+39~~ 136.50
							~~721.5~~
							759.33

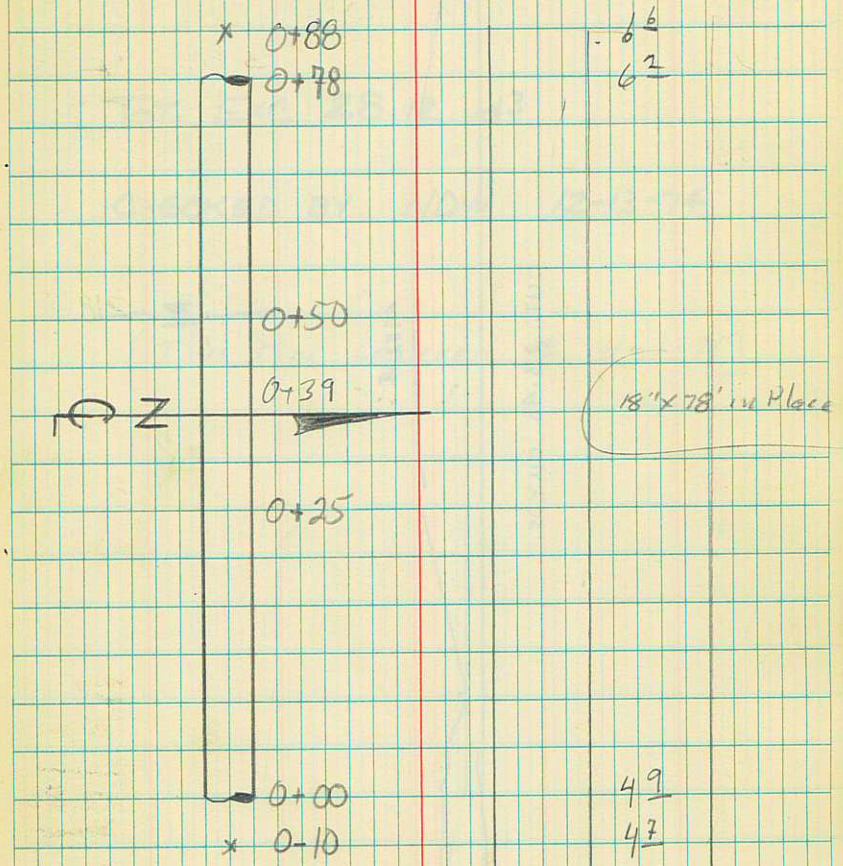
Sta 169+66 x-drain pipe culvert @ 90° to ℄

18" pipe culvert 78' Length

(note: existing drain at 169+40 to be cut off at intersection w/ right gutter)

170+60

Note Existing drain @ Sta 169+40 to be cut off @ gutter @ right

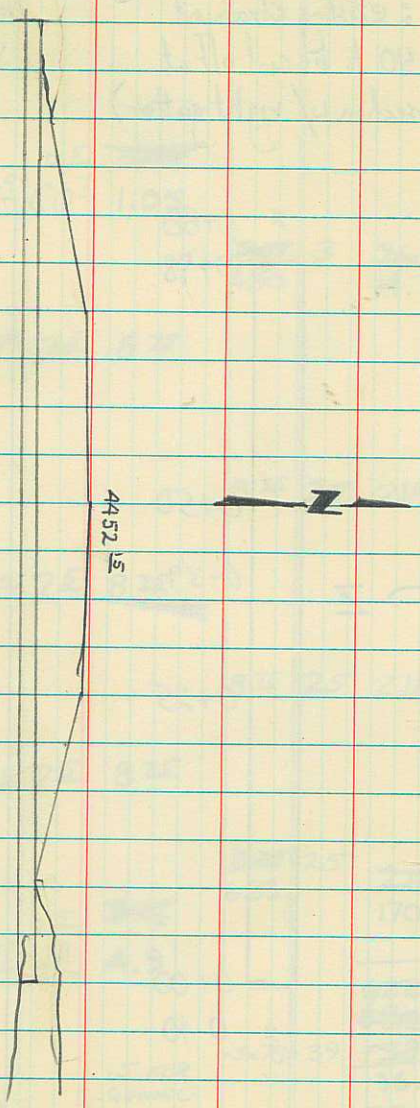


6 6
6 7

4 9
4 7

4459 11

+ HI − ELEV



PIPE SUMMARY

PIPE LAID IN EXISTING DITCH. A CUT WAS MADE TO CLEANOUT DITCH TOTAL EXCAVATION IS ~~36.72~~ CU.YDS.

TOT. EXC 28.12 yd^3

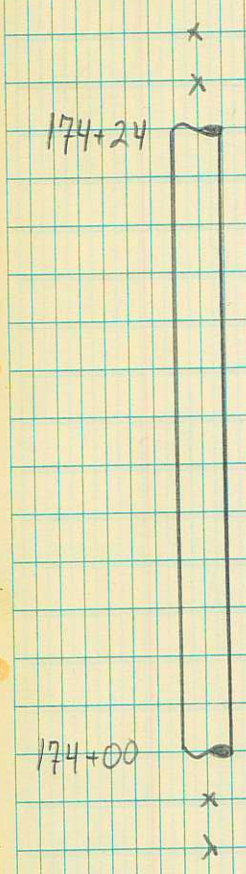
CHECKED BY NDW 12-13-74

(This Pipe Lowered 12 4-3-75)

72 Sta	ELEV.	Gr	Cut	Area	Av Ar.	L	Cuft
0+24			0	0			
					3	4	12
0+20			2⁰	6⁰			
					6⁰	16	96
0+04			2⁰	6⁰			
					3	4	12
0+00				0			
							120

VOID

Sta 174+00 to 174+24 Parallel 12" pipe culvert 24' Length Ditch Drain under private approach. Place in gutter on RIGHT side of Roadway (note: existing drain at sta. 174+60 to be cut off at intersection w/ right gutter)



Note:
No pipe Required

174+40 outlet 10"
Field Drain 40' Rt

74

Pipe Summary

75

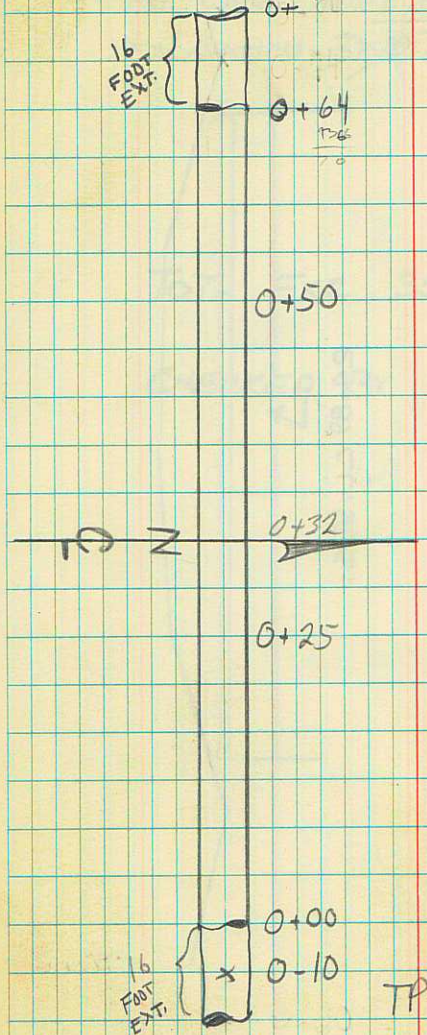
76 Sta	ELEV.	Gr	Cut	Area	AvA	L	Cuft.
0+96	472	481	0	0			
					53	26	1378
0+70	4473	503	30	105			
					105	20	2100
0+50			30	105			
					105	34	3570
0+16			32	105			
~~0+00~~	4448 7	495	08				
					53	16	84.8
							789.6
							~~810 8~~
0+00	488	495	0	0			
				.5 FOR GRAVEL	.5×96 =		~~48~~ 168.0
							~~858 8~~
							957.6

77

Sta 176+49 x drain pipe culvert @ 90° to ℄

18" pipe culvert 64' Length.

To conform w/ existing ditch



88 FL
5 8

18" x 96' in Place

TBW

74 FL
6 6
6 6

TP+42 4456 05 405
+ 5 50 4455 26 435
+ 4454 11 - ELEV

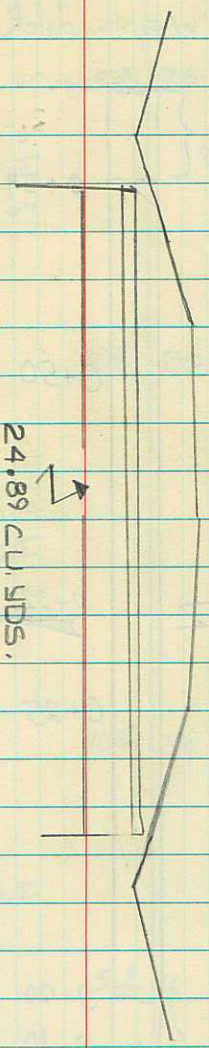
546

55 20/79

56.05

5 46

50.59



24.89 CU. YDS.

3.5 x 2.5 x 64 x 1/27 = 20.74 + 4.15 = 24.89

1.5 x 3.5 x 64 x 1/27 = 4.15

PIPE SUMMARY

THIS PIPE WAS TO SHORT SO 2, 16 FOOT EXT. WERE ADDED TO EACH END. TOTAL EXCAVATION - 31.81 CU. YDS.

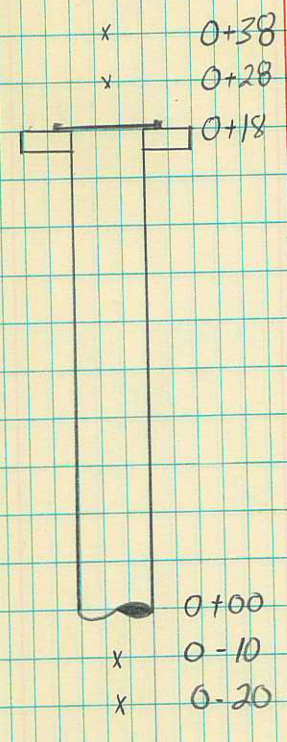
TOT. EXC 35.47 yd 3

CHECKED BY NDW 12-13-74

Sta	ELEV.	Gr	Cut	Area	Av. A.	L	Cuft
0+18			0	0			
					4.9	1	4.9
0+17			2.5	8.75			
					8.75	7	61.25
0+10			2.5	8.75			
					8.75	6	52.5
0+04			2.5	8.75			
					4.9	4	17.5
0+00			0	0			
							135.65

Sta 176+49 pipe culvert @ 90° to ℄

18" pipe culvert 18' Length to be placed in existing ditch to left and ⊥ to roadway. Pipe is to have 30" hand slide gate (std drawing 650-4)



18" x 20.5' including Metal H Gate

PTBJ

PIPE SUMMARY

THIS PIPE WAS LAID IN EXISTING DITCH AND COVERED WITH ROAD-WAY GRAVEL. USE IS FOR A PRIVATE APPROACH.

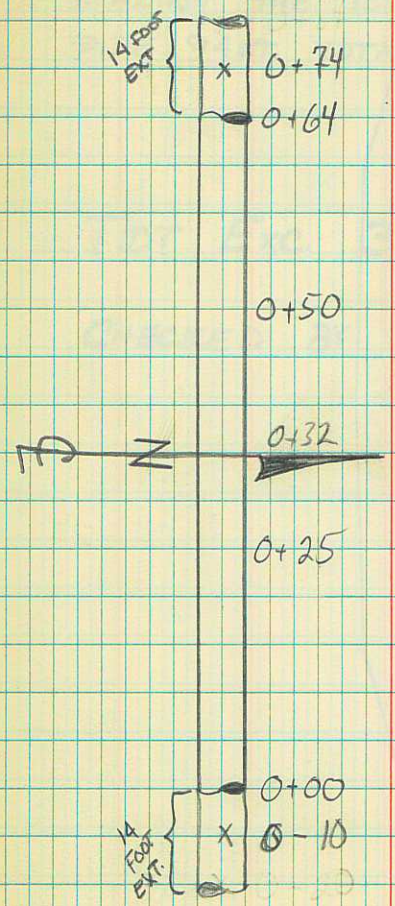
Sta	ELEV.	Gr	Cut	AREA	AvAr	L	Cuft
0+94	48+		0	0			
0+~~64~~ 66	4448 2/5	50 5/5	~~2~~ 3 0/5	9 5/5	48	28	1344
					95	16	1520
0+50			3 0/5	9 5/5			
					95	25	2375
0+25			3 0/5	9 5/5			
					95	11	1045
0+~~00~~ 14	4449'	49 2/5	~~6~~ 3 0/5	9 5/5			
					48	14	672
							6956
0+00	49 2/5		0	0			.5XM=~~47~~ 164.5
					.5 FOR GRADEC		~~7426~~ 860.10

X-Drain

Sta 176+97 pipe culvert @ 90° to ℄

18" pipe culvert ~~64'~~ 66' length

Culvert to conform to existing ditch



18" x 94' in Place

PBW

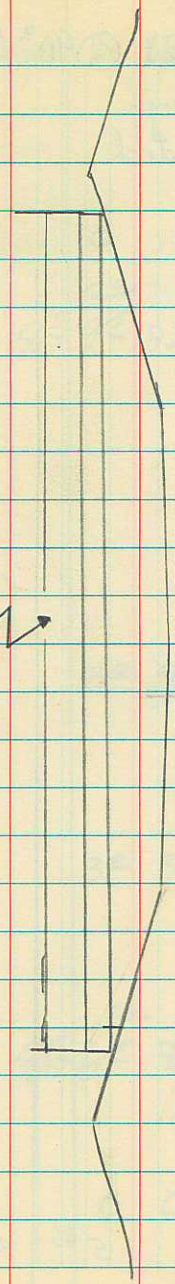
79 FL
6 8/5
5 6/5

7 0 FL
6 4/5
6 2/5

5 46 4456 12/5 4450 66/5

Use BM on 6th N 4450 66/5

BM



CUT 25.67 CU.YDS.

3.5x2.5x66x$\frac{1}{27}$ = 21.39 + 4.28 = 25.67

1.5x3.5x66x$\frac{1}{27}$ = 4.28

PIPE SUMMARY

THIS PIPE WAS TO SHORT SO 14 FOOT EXT. WERE PLACED ON EITHER END MAKING THE TOTAL LENGTH OF THE PIPE 94 FT. TOTAL EXC. ~~27.50~~ CU.YDS.

TOT EXC. 31.86

CHECKED BY NOW 12-13-74

Sta	ELEV.	Gr	Cut	Area	AA	L	Cuft
0+18			0	0			
					3°	4	12
0+14			2°	6°			
					6°	10	60
0+04			20	6°			
					3°	4	12
0+00			0	0			
							84

Sta 178+00 to 178+18 Parralled to ℄

12" pipe culvert 18' Length Ditch drain under private approach, To be placed in gutter at LEFT of Roadway

× 0+48
× 0+38
Sta 178+18 — 0+18

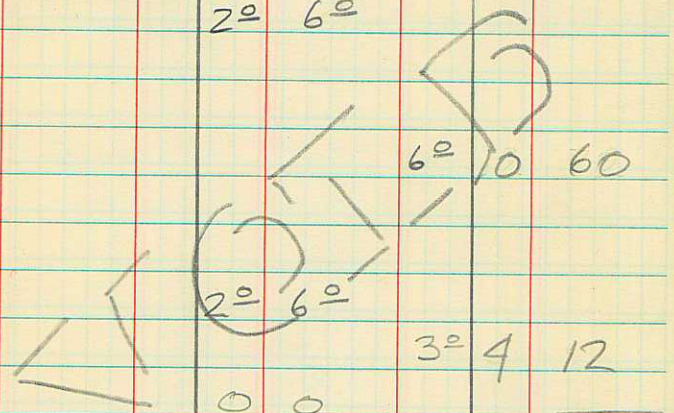
178+00 ℄ 12" x 18' Pipe ⟨t

Sta 178+00 — 0+00
× 0-10
× 0-20

Pipe Summary

9340-100

Sta	ELEV.	Gr	Cut	Area	AvAr	L	Cuft
0+18			0	0			
					3°	4	12
0+14			2°	6°			
					6°	10	60
0+04			2°	6°			
					3°	4	12
0+00			0	0			
							84

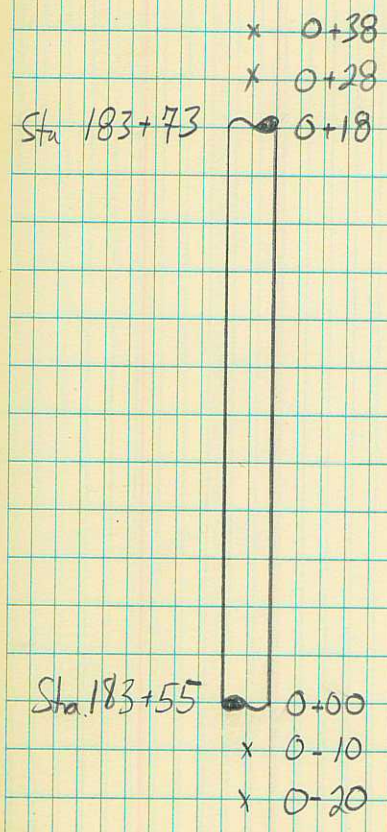


Sta 183+55 to 183+73 Parrallel

12" pipe culvert 18' Length Drith Drain under private approach. Place in gutter at LEFT of road way.

Not placed. 9/11

(For right gutter drain see pg 101)



PIPE SUMMARY

Sta	ELEV.	Gr	Cut	Area	Avr	L.	Cuft
0+20			0	0			
					3°	4	12
0+16			2°	6°			
					6°	12	72
0+04			2°	6°			
					3°	4	12
0+00			0	0			
							96

Sta 183+55 to 183+75 Parrallel to ℄

18" pipe culvert 20' Lenght
Irrigation ditch drain
under private roadway at
LEFT edge of project.

183+75 — 0+20
× 0+30
× 0+40

Sta 183+55 — 0+00
× 0-10
× 0-20

PLACED 6 FT. OUTSIDE R/W

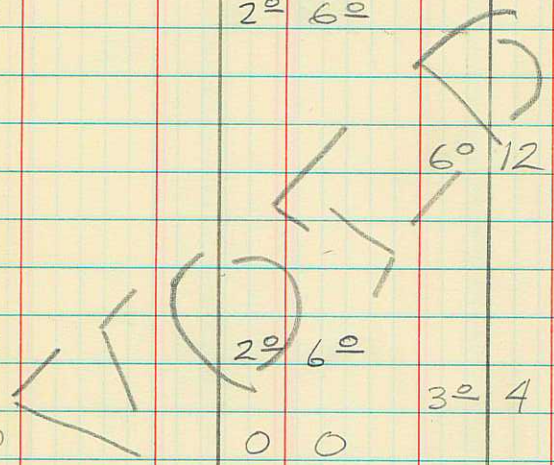
PBW

98

PIPE SUMMARY

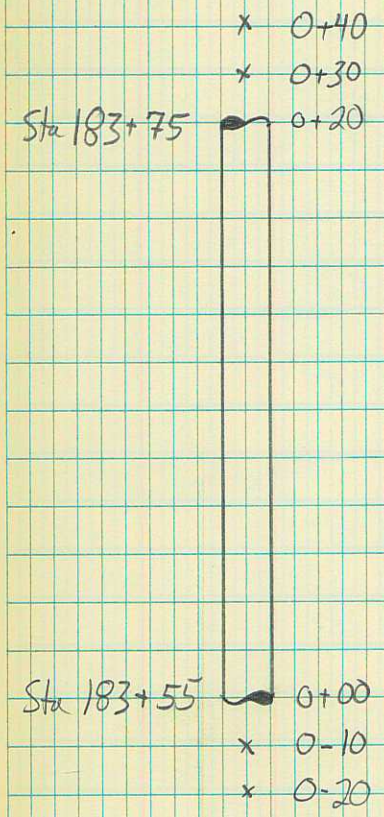
99

Sta	ELEV. Gr.	Cut	Area	AA	L	Cuft.
0+20		0	0			
				3°	4	12
0+16		2°	6°			
				6°	12	72
0+04		2°	6°			
				3°	4	12
0+00		0	0			
						96



Sta 183+55 to 183+75 Parrallel to ℄
12" pipe culvert 20' Length
Ditch Drain under private
approach. Place in gutter at
RIGHT of road way.
(For Left ditch see pg 93)

Not placed. GPL



102

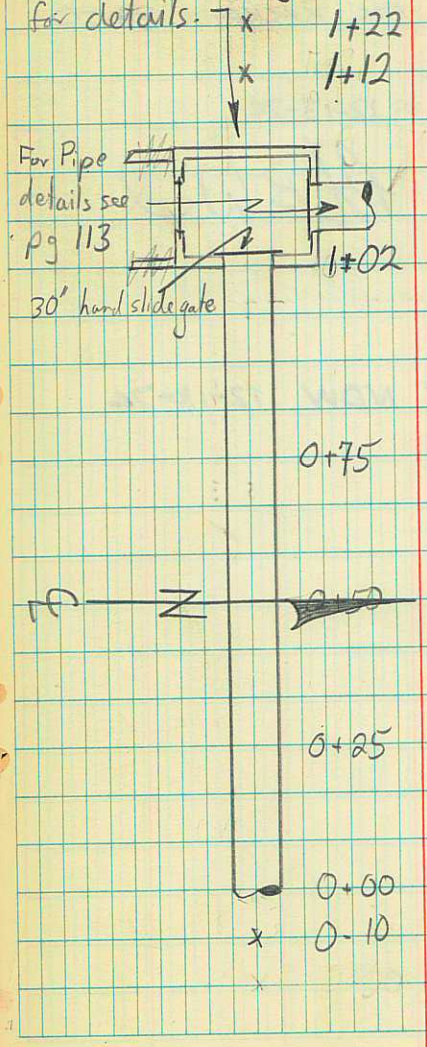
PIPE SUMMARY

103

Sta	ELEV.	Gr	Cut	Area	Avg Ar	L	Cuft
1+							
1+02	~~4458.5~~	~~54.0~~	~~1.5~~				
	4451.2		C 2.1	7.35	5.43	11	59.73
0+91			1.0	3.50			
					6.13	11	67.43
0+80			2.5	8.75			
					8.75	30	262.50
0+50			2.5	8.75			
					8.75	29	253.75
0+21			2.5	8.75			
0					5.95	10	59.50
0+11			.9	3.15			
0+00	~~4453.1~~	~~53.8~~	~~0.7~~		4.55	11	50.05
	4452.4		C 1.7	5.95			
					TOTAL		752.96
			.5	EXC. FOR GRADE			178.50
					TOTAL CUFT		931.46
					TOTA cuYds.		34.50

Sta 183+67.5 X-Drain pipe culvert @ 90° to ℄

18" pipe culvert 102' Length x-drain w/ diversion box on Left end. See pg 109 for details.



(102' PLACED PBW)

5.3

5.8 FL

4.3

5.2 FL

4.5

4.4

6.81	4458.27	-4.66	4456.12
+	HI	-	ELEV

PIPE SUMMARY

EXISTING DITCH WATER WAS DIVERTED ALONG GUTTER AND THROUGH PIPE AT STATION 188+58.

TOTAL CUBIC YDS. BACKFILL 34.50

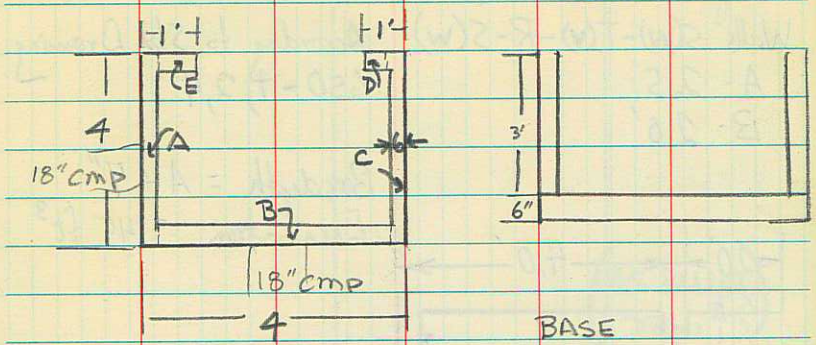
12-13-74

HBWL

CHECKED BY NDW 12-13-74

Sta	ELEV	Gr	Cut	Area	Av Ar	L	Cuft

STRUCTURE SUMMARY



BASE

4x4 = 16 x .5 = 8 FT.

A = 4x.5 = 2x3 = 6

B = 3x.5 = 1.5x3 = 4.5

C = 4x.5 = 2x3 = 6

D = .5x.5 = .25x3 = .75

E = .5x.5 = .25x3 = .75

TOTAL CONCRETE = 6+4.5+6+.75+.75+8 = 26 CU FT.

LESS AMOUNT FOR PIPES: 26 - (.30) = 25.70 CU FT

TOTAL .96 CU. YDS.

$\pi \cdot 9^2 = 254.47 \times .5 = 127.24$

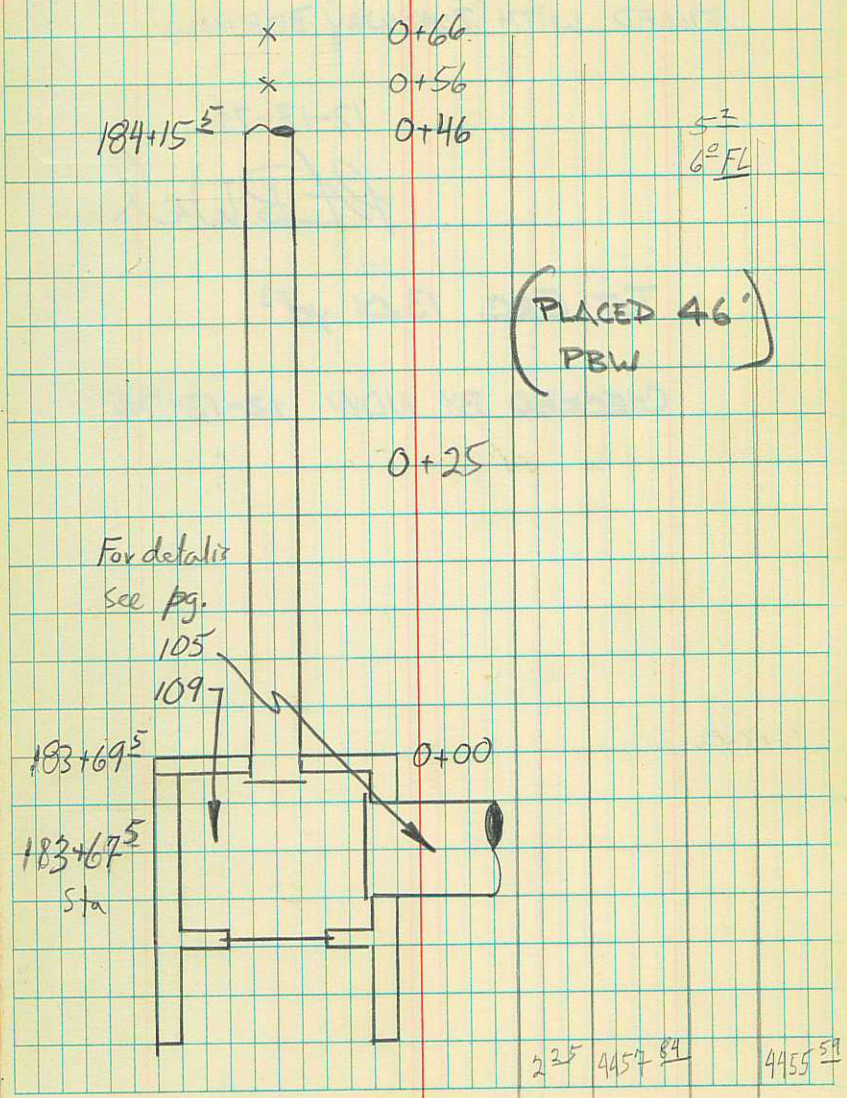
$.075 \times 2 = .15$

HAND SLIDE GATE INSTALLED

Sta	ELEV.	Gr	Cut	Area	Av Ar	L	Cuft
0+46	4457.8	57.6	0.8	2.8			
					4.38	21	91.98
0+25	51.8	53.3	1.7	5.85			
					6.65	25	166.25
0+00	51.2	54.0	2.1	7.35			
							258.23
							9.56 yd³

Sta 183-69.5 to 184+15.5 Parrallel

Irrigation pipe culvert 18" pipe culvert 46' Lenth



PIPE SUMMARY

PIPE WAS LAID INSIDE HOWARD SKABLUND'S CORRAL, AND WAS COMPACTED AND BACK-FILLED WITH ROADWAY BORROW

12-13-74

P.A.B.W.L

TOT EXC. 13.01 yd^3

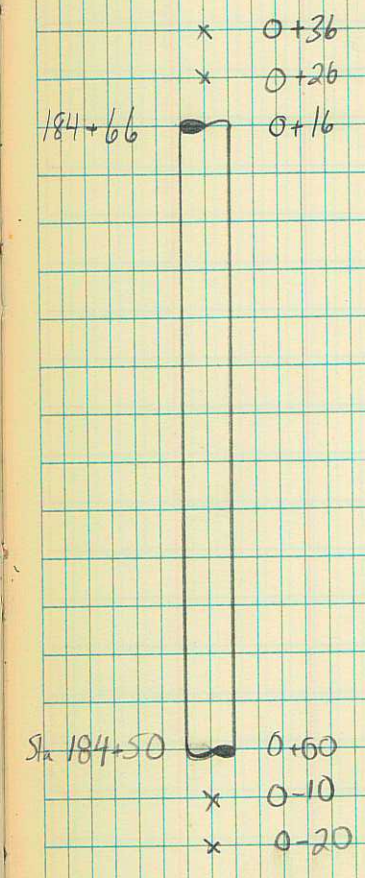
CHECKED BY NOW 12-13-74

Sta	ELEV	Gr	Cut	Area	Avtr	L	Cuft
0+16			0	0			
					3	4	12
0+12			2	6			
					6	8	48
0+04			2	6			
					3	4	12
0+00			0	0			
							72

Sta 184+50 to 184+66 Parallel to ℄

12" pipe culvert 16' length
Ditch Drain Under Private
Approach. Placed in Gutter
@ LEFT of Roadway
for Right side see pg 121

Not placed GSP



118

PIPE SUMMARY

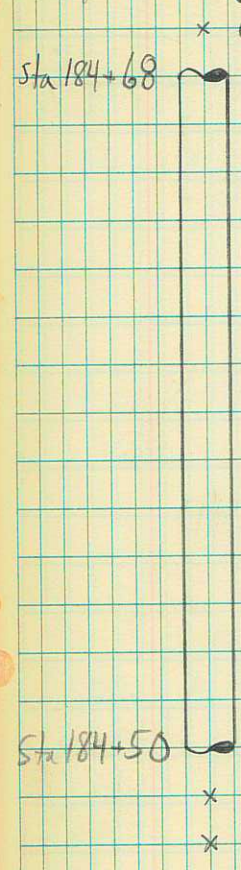
119

1.20

Sta	ELEV. Gr	Cut	Area	Av Ar	L	Cu ft
0+18		0	0			
				3	4	12
0+14		2°	6°			
				6°	10°	60
0+04		2°	6°			
				3	4	12
0+00		0	0			
						84
						3.11 cu yds.

Sta 184+50 to 184+68 Parallel to ℄

12" pipe culvert 18' Length Ditch Drain under private approach. To be placed in Gutter @ RIGHT of Roadway (for left side see pg 117)



~~18' plated - Gtr~~

122 PIPE SUMMARY

123

Sta	ELEV, Gr	Cut	Area	Av	L	Cuft
0+20	4451.9	52.5 ~~56~~	0			
				3.0	4	12
0+16		2.0	6.0			
				6.0	12	72
0+04		2.0	6.0			
				3.0	4	12
0+00	4452.1	53.4 ~~53~~	0			
						96
						3.56 cu yd.

Sta 184+50 to 184+70 Parallel to ℄

18" Pipe Culvert 20' Length

Irrigation Ditch under private approach. Place in Irrigation ditch at left of Roadway. (56')

× 0+40

× 0+30

Sta 184+70 — 0+20

5.3
5.9 =L

5.7 FL

4.4

Sta 184+50 — 0+00

× 0-10

× 0-20

2 | 4457.89

+ | HI | −

126

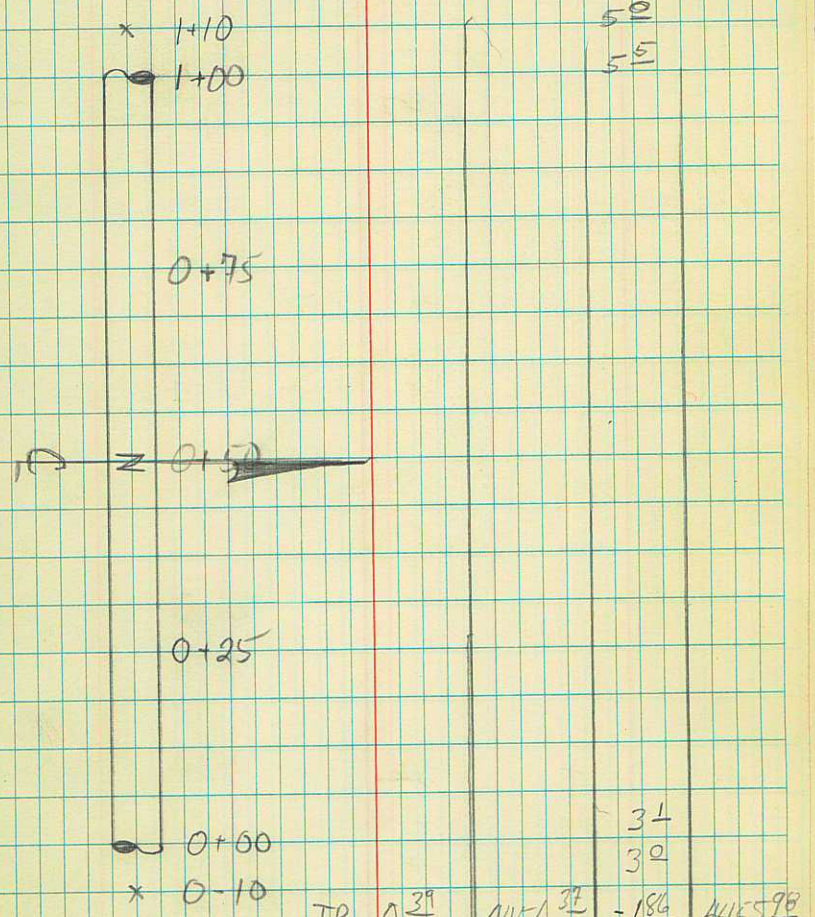
PIPE SUMMARY

127

Sta	ELEV. ℄	Grd.	Cut	Area	A.A.	L	Cuft
	~~5221~~		~~F12~~				
1+00	~~4449.5~~	50.9	~~C14~~				
	495.		C14	4.2	245	10	245
0+90			0	0			
0+75			25	8.75	438	15	657
					8.75	25	218.75
0+50			25	8.75			
					8.75	25	218.75
0+25			25	8.75			
					438	15	657
0+10	51.2		0	0			
	~~52.5~~		~~C05~~		5.95	10	59.5
0+00	~~4449.2~~	53.3	~~C25~~				
	49.2		C34	11.2			
							652.2
				TOTAL =			24.18 cu. yd.

Sta 186+35 X-Drain Pipe Culvert @ 90° to ℄

18" pipe culvert ~~100'~~ length 102'



		+	HI	−	ELEV
TP	0.39		4456.37	-1.86	4455.98
TP	2.25		4457.84	-2.68	4455.59
			4458.27		

PIPE SUMMARY

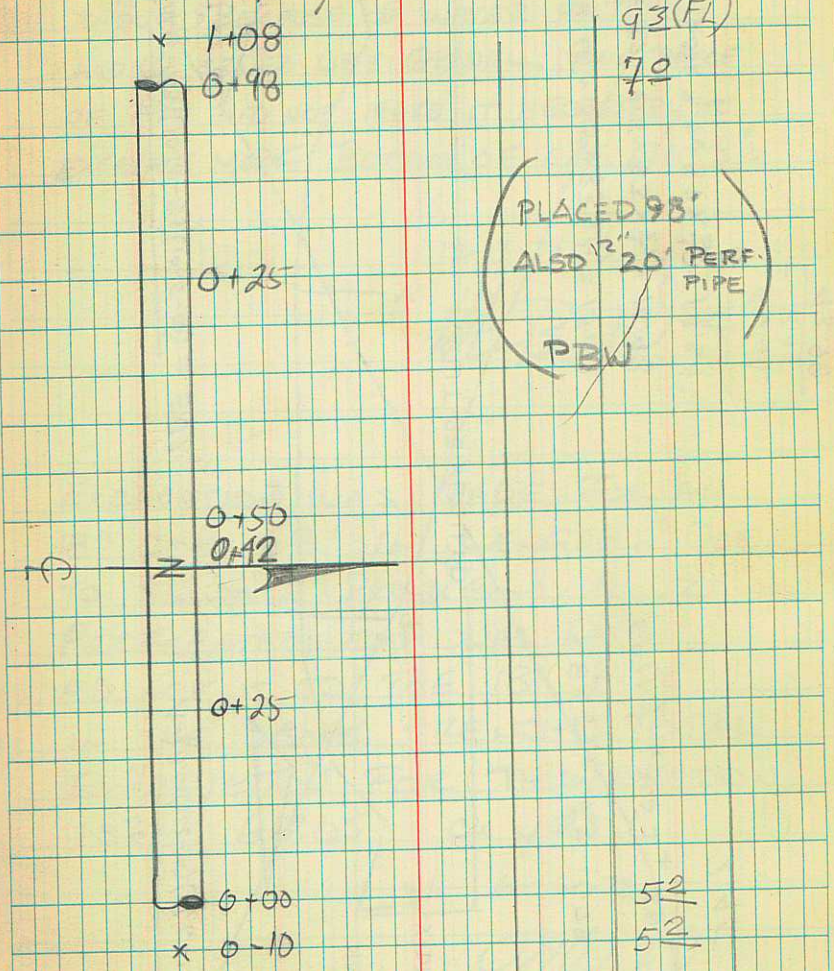
Add - 15"x12" pipe in ditch parallel to ℄ on right.

Sta	ELEV	Gr	Cut	Area	Av A.	L	Cu ft
					4⁰		28⁰
0+98	47¹	49⁴	C2³	~~9²~~ 8⁰⁵	~~4⁶~~	7	~~32²~~
0+91		0	0	0 9⁴⁵	4⁷		75²
0+75			27	~~10 8~~	~~5⁴~~	16	~~86 4~~
					11⁷		175.5
					~~13⁴~~	15	~~201⁰~~
				1 14⁰⁰			
0+60			4⁰	~~16 8~~			
					13⁵		337.5
					~~15 4~~	25	~~385 0~~
				12⁹⁵			
0+35	35		3²	~~14 8~~			
					12⁸		256⁰
					~~14 6~~	20	~~282 0~~
				12⁶⁰	6³		50⁴
0+15	15		3⁶	~~14 4~~	~~7 2~~	8	~~57 6~~
0+07			0	0			
0+00	4449⁰	~~5²~~	~~C3~~	7.7	3⁹		27³
		51³	2²	~~8 2~~	~~4 4~~	7	~~30 8~~
							~~1603 4~~
	TOTAL =	949²	cu ft.	or	~~59 4~~	Cu Yd.	
	PAY —	35²	cu yd.		Pay		

x-Dram

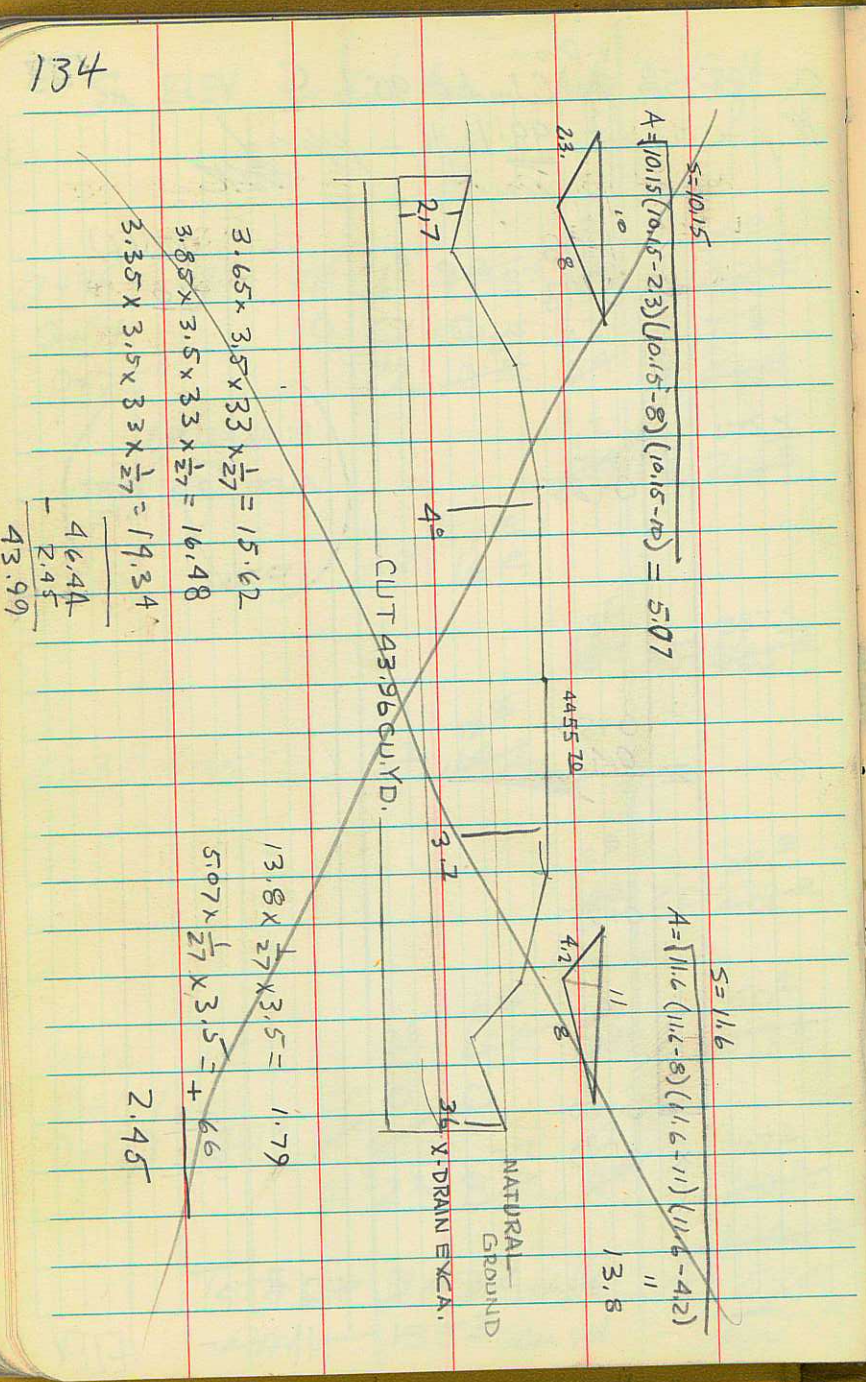
Sta 188+58 Pipe Culvert @ 90° to ℄

18" pipe culvert 98' Length — placed ~~5.1K~~ Pay



4456 37

+ HI - ELEV



PIPE SUMMARY

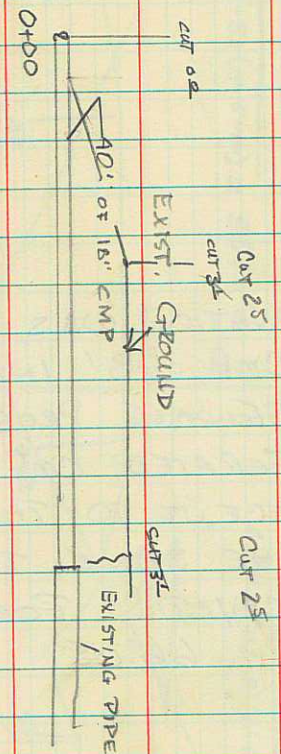
A 12" PERF. CMP. WAS LAID IN THE EXC. DITCH BECAUSE OF WATER FILTERING ALONG SEWER LINE GRAVEL. THIS PIECE OF PIPE DID NOT MAKE IT NECESSARY TO EXCAVATE MORE. BOTTOM OF EXC. WAS 4'.

12-13-74

EXCAVATION WAS MADE FOR AN 18" CMP, 98' IN LENGTH. DUE TO SEWAGE PROBLEMS, A 12" PERFERATED CMP WAS LAID ADJACENT TO THE 18" PIPE, IN THE SAME TRENCH. TOTAL EXCAVATION FOR THIS SECTION IS: 66.05 cu yds.

6-6-75

(PLACED 40' PBW)



TOTAL EXC. 12.05 CU.YDS.

Sta 188+75

Cut off existing underdrain to be cut of at intersection with gutter at right

UNDERDRAIN TO LOW FOR GUTTER.

PLACE 18"x40' CMP ON END OF EXIST PIPE

PIPE SUMMARY

PIPE CALLED FOR ~~12.05~~ 11.53 CU.YDS. OF EXCAVATION.

IT DRAINS INTO EXISTING DITCH.

12-13-74

P.A.B.W.

STA	CUT	AREA	AC AC	L	Cu ft
0+00	0	0			
			4.38	10	48.8
0+10	2.5	8.75			
			8.75	30	262.50
0+40	2.5	8.75			

TOTAL = 311.3 ft^3 = 11.53 yd^3

TOTAL EXCAVATION = 11.53 cu yd.

6-6-75

D.W.

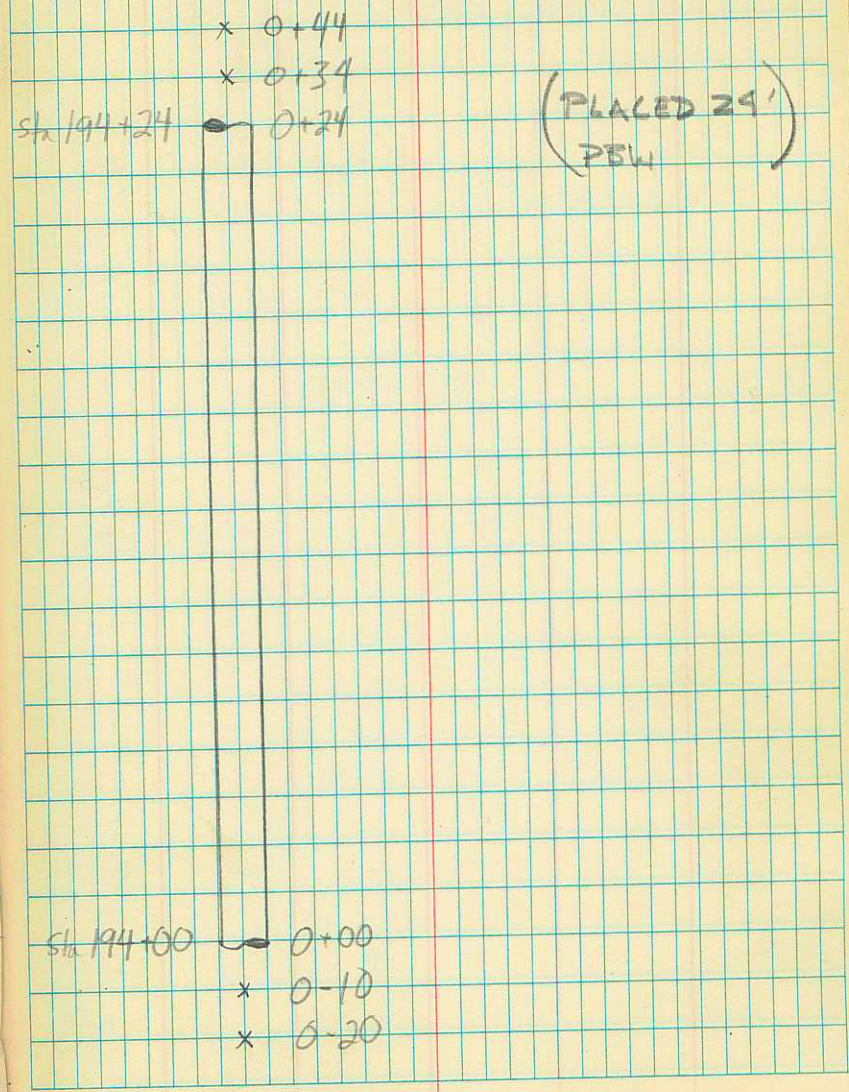
Sta	ELEV	Gr.	Cut	Area	Av Ar.	L	Cuft
0+24			0	0			
					3	4	12
0+20			2°	6°			
					6°	16	96
0+04			2°	6°			
					3	4	12
0+00			0	0			
							120

TOTAL = 4.44 cu yd.

Sta 196+00 to 190+24 Parallel to ℄

12' Pipe Culvert 24' length

Drain Under Private Road Approach Place in Gutter @ LEFT



140

PIPE SUMMARY

141

		CUT	AREA	AV. AREA	L	CU. FT.
0+24		0	0			
				4.38		21.9
				~~4.4~~ 5		~~22.0~~
0+19		2.5	8.75			
				8.75	14	122.50
0+05		2.5	8.75			
				4.38		21.9
				~~4.4~~ 5		~~22.0~~
0+00		0	0			166.30
						~~166.50~~

TOTAL = 6.16 cu yd.

Sta 190+00 to 190+24 Paralled to ℄

18" pipe culvert 24' lenght

Irrigation drain under private road approach. Place in irrigation ditch at ~~LEFT~~ RIGHT

x	0+44
x	0+34
Sta 194+24	0+24

(PLACED 24' TBW)

Sta 194+00	0+00
x	0-10
x	0-20

144

PIPE SUMMARY

145

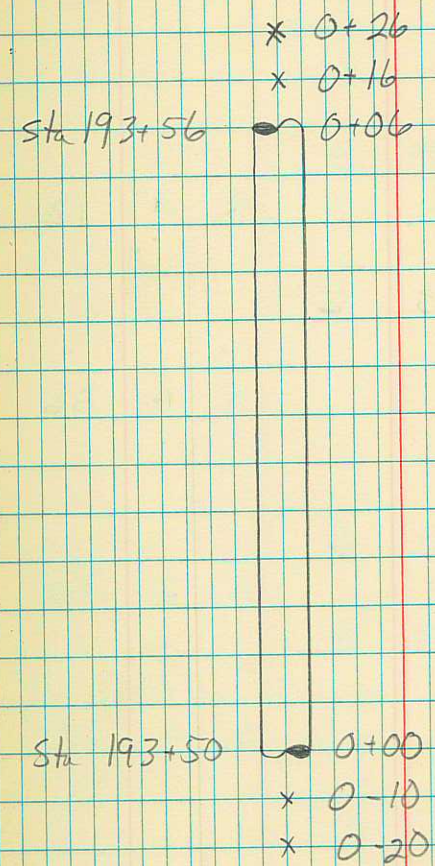
Sta	ELEV	Gr.	Cut	Area	Av Ar.	L	Cuft.
0+40			0	0			
					3	4	12
0+36			2	6			
					6	11	66
0+25			2	6			
					6	21	126
0+04			2	6			
					3	4	12
0+00			0	0			
							216

TOTAL = 8.00 cu yd.

Sta 193+50 to 193+56 Parallel to ℄

12" pipe culvert 6' Length
Side drain place in
gutter at LEFT.
(for right side drain see pg 151)

40' stand to allow for drive



148

PIPE SUMMARY

149

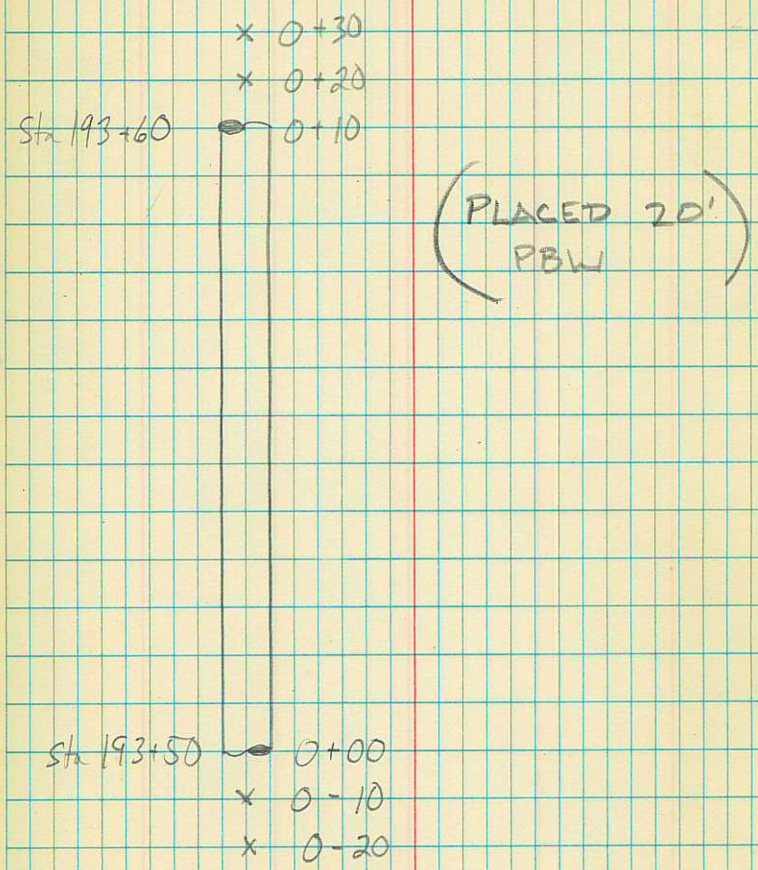
Sta	ELEV	Gr	Cut	Area	Av	L	Cuft
0+20			0	0			
					3	4	12
0+16			3	6			
					6	6	36
0+10			3	6			
					6	6	36
0+04			3	6			
					3	4	12
							42
0+00			0	0			
							96
			TOTAL = 3.56		cu yds		

Sta 193+50 to 193+60 Parallel to ℄

12" pipe culvert 10' Length

Side drain place in gutter at RIGHT

(See pg 147 for left side)



152

PIPE SUMMARY

153

154

Sta	ELEV	Gr	Cut	Area	AAr	L	Cuft
1+00	~~4449.2~~ 4451.2	~~51.8~~	~~.6~~				
1+00			.1	.35	3.5	2	.70
0+98			.1	.35	~~1.75~~ .175	2	~~3.50~~ 3.35
0+96			0	0	0	9	0
0+87			0	0			
					4.38	7	30.66
0+80			2.5	8.75			
					8.75	30	262.50
0+50			2.5	8.75			
					8.75	28	245.00
0+22			2.5	8.75	4.38	7	30.66
0+15			0	0	0	10	0
0+05			0	0	2.28	3	6.84
0+02			1.3	4.55			
0+00	~~4449.5~~ 4452	~~53.3~~	~~3.8~~ 1.3	4.55	4.55	2	9.10
							175.00

.5 GRAVEL BASE EXCAVATION

TOTAL CF ~~763.96~~ 760.81

TOTAL CU YD ~~28.29~~ 28.18

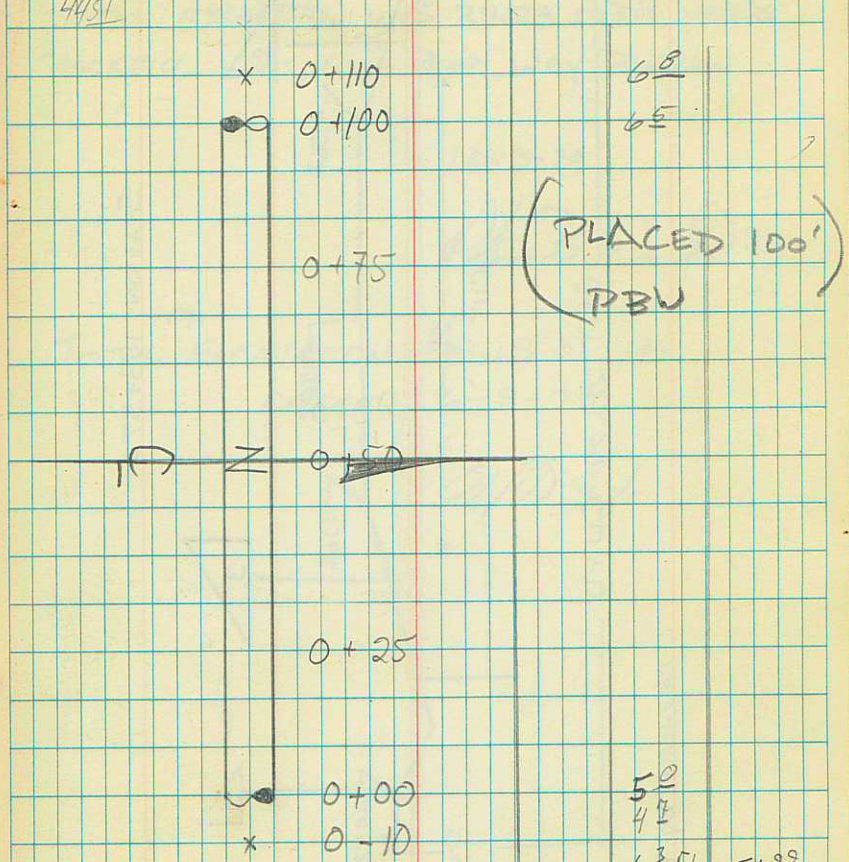
Irrigation Cross Drain

155

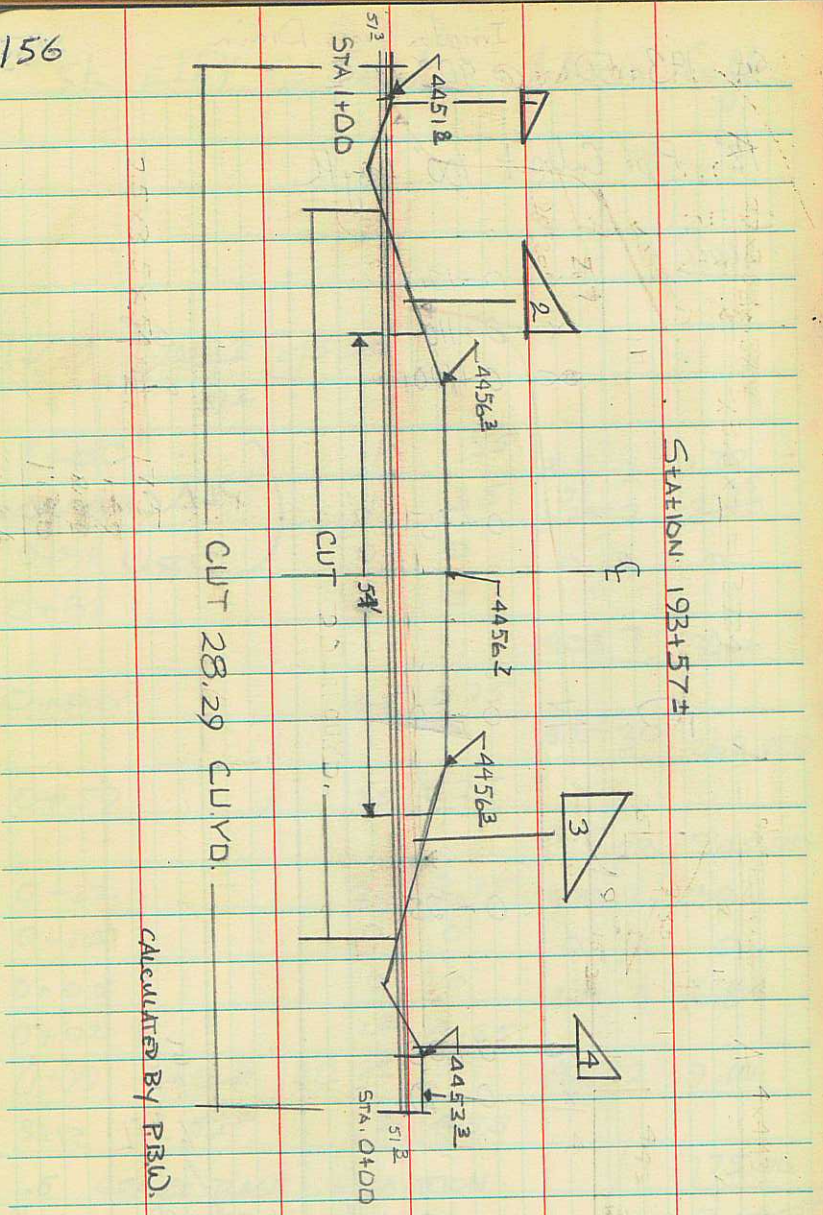
Sta 193+50 @ 90° to ℄

18" Pipe Culvert 100' Length

4451



	6.8 6.5		
	5.0 4.7		
TP 6.19	6.3 FL	4458.29 4456.39	51.99 4452.10
+	-	HI	ELEV



PIPE SUMMARY

THIS PIPE WAS MOVED NORTH 8 FEET SO THE EXISTING DITCH COULD BE STRAIGTHENED OUT TOTAL EXCAVATION WAS 29.28 CUBIC YARDS BACKFILL WAS WITH ROAD WAY BORROW

12-13-74

P.B. Wall

TOTAL EXCAVATION = 28.18 cu. yds.

CHECKED 6-9-75

D.D.W.

PAGE	8"	12"	18"	24"	30"	36"	22/13	24/15	CU.YDS.
2						27'			1.94 ✓
10	50'								12.36 ✓
14						65'			31.98 ✓
18						588'			254.39 ✓
24		40							8.00 ✓
28		40							8.00 ✓
32							120		3.10 ✓
36					72				~~23.36~~ 23.25 ✓
40								102	11.12 ✓
48		20							~~4.44~~ 3.56 ✓
52		20							3.56 ✓
56				74					38.37 ✓
~~58~~ 60		16 20	NO PIPE PLACED				102		~~29.63~~ 31.67 ✓
64		20							3.56 ✓
68			78						28.12 ✓
72		24	NO PIPE PLACED						
76			96						~~31.81~~ 35.47 ✓
80			18						5.02 ✓
84			94						~~27.50~~ 31.86 ✓
88		18							3.11 ✓
92		18	NO PIPE PLACED						
96		20							3.56 ✓
100		20	NO PIPE PLACED						
104			102						34.50 ✓
112			46						9.56 ✓

For further Structures information

Please See

CR 343(3) Structures Book No. 2

Pipes located @

Sta 202+50 → 202+72

202+50 → 202+74

203+27

are to be found in book No 2.

	PAGE	8	12	18	24	30	36	22/13	24/15	CU.YDS.
	116		16	NO PIPE PLACED						
	120		18							3.11 ✓
TOTALS ARE	124			20						3.56 ✓
ON PAGE	128			102						24.18 ✓
160, BOTTOM.	132		20	98						~~46.43~~ 3.5.29 ✓
	136			40						~~12.05~~ 11.53 ✓
	138		24							4.44 ✓
	142			24						6.16 ✓
	146		~~40~~ ~~48~~							8.00 ✓
	150		20							3.56 ✓
	154			100						~~28.29~~ 28.18

STRUCTURES	PAGE	DESCRIPTION	CU.YDS.
	6	36" 45° ELBOW	
	44	DIVERSION BOX	4 ✓
	108	DIVERSION BOX	4 ✓

Book Summary

TOTAL CUBIC YARDS EXC.

STARTING PIPE STATION	SIZE OF PIPE	PIPE LENGTH	TOTAL PIPE EXCAVATION	ANGLE OF PIPE TO CENTER LINE	PAGE
149+87	36"	27 FT.	1.94 cuyd	PARALLEL	2
149+91	8"	50 FT	12.5 cuyd.	90°	10
150+15	36"	45 FT	31.98 cuyd	45°	14
150+60	36"	586 FT	254.39	PARALLEL	18
156+09	12"	40 FT	8.89 cuyd	PARALLEL	24
156+09	12"	40 FT	8.89 cuyd	PARALLEL	28
156+41	22"x13"	120 FT		90°	32
156+49	30"	72 FT		90°	36
156+83	26"x15"	102 FT		90°	40
160+00	12"	20 FT		PARALLEL	48
160+00	12"	20 FT.		PARALLEL	52
163+00	24"	72 FT	34.26 cuyds	90°	56
167+00	12"	20 FT			

	8"	12"	18"	24"	30"	36"	22/13	26/15	
TOTAL	50	~~300~~ 414	~~718~~ 818	74	72	680	222	102	~~721.89~~ 714.05

INDEX OF CURVE AND REDUCTION TABLES

Table I—SLOPE STAKE

Table II—STADIA CORRECTION AND HORIZONTAL DISTANCES

Table III—TRIGONOMETRIC FORMULAE

Table IV—NATURAL TRIGONOMETRICAL FUNCTIONS

CURVE FORMULAE

Table V—TANGENTS AND EXTERNALS TO A 1° CURVE

USEFUL RELATIONS

Table VI—INCHES TO DECIMALS OF A FOOT

Table VII—MINUTES IN DECIMALS OF A DEGREE

Table VIII—MIDDLE ORDINATES OF RAILS

Table IX—SHORT RADIUS CURVES

Table X—RODS IN FEET, 10THS AND 100THS OF FEET

Table XI—LINKS IN FEET, 10THS AND 100THS OF FEET

TABLE X. RODS IN FEET, TENTHS AND HUNDREDTHS OF FEET

No. Rods	Feet	No. Rods	Feet	No. Rods	Feet	No. Rods	Feet	No. Rods	Feet
1	16.50	21	346.50	41	676.50	61	1006.50	81	1336.50
2	33.00	22	363.00	42	693.00	62	1023.00	82	1353.00
3	49.50	23	379.50	43	709.50	63	1039.50	83	1369.50
4	66.00	24	396.00	44	726.00	64	1056.00	84	1386.00
5	82.50	25	412.50	45	742.50	65	1072.50	85	1402.50
6	99.00	26	429.00	46	759.00	66	1089.00	86	1419.00
7	115.50	27	445.50	47	775.50	67	1105.50	87	1435.50
8	132.00	28	462.00	48	792.00	68	1122.00	88	1452.00
9	148.50	29	478.50	49	808.50	69	1138.50	89	1468.50
10	165.00	30	495.00	50	825.00	70	1155.00	90	1485.00
11	181.50	31	511.50	51	841.50	71	1171.50	91	1501.50
12	198.00	32	528.00	52	858.00	72	1188.00	92	1518.00
13	214.50	33	544.50	53	874.50	73	1204.50	93	1534.50
14	231.00	34	561.00	54	891.00	74	1221.00	94	1551.00
15	247.50	35	577.50	55	907.50	75	1237.50	95	1567.50
16	264.00	36	594.00	56	924.00	76	1254.00	96	1584.00
17	280.50	37	610.50	57	940.50	77	1270.50	97	1600.50
18	297.00	38	627.00	58	957.00	78	1287.00	98	1617.00
19	313.50	39	643.50	59	973.50	79	1303.50	99	1633.50
20	330.00	40	660.00	60	990.00	80	1320.00	100	1650.00

TABLE XI. LINKS IN FEET, TENTHS AND HUNDREDTHS OF FEET

No. Links	Feet	No. Links	Feet	No. Links	Feet	No. Links	Feet	No. Links	Feet	No. Links	Feet
1	0.66	18	11.88	35	23.10	52	34.32	69	45.54	86	56.76
2	1.32	19	12.54	36	23.76	53	34.98	70	46.20	87	57.42
3	1.98	20	13.20	37	24.42	54	35.64	71	46.86	88	58.08
4	2.64	21	13.86	38	25.08	55	36.30	72	47.52	89	58.74
5	3.30	22	14.52	39	25.74	56	36.96	73	48.18	90	59.40
6	3.96	23	15.18	40	26.40	57	37.62	74	48.84	91	60.06
7	4.62	24	15.84	41	27.06	58	38.28	75	49.50	92	60.72
8	5.28	25	16.50	42	27.72	59	38.94	76	50.16	93	61.38
9	5.94	26	17.16	43	28.38	60	39.60	77	50.82	94	62.04
10	6.60	27	17.82	44	29.04	61	40.26	78	51.48	95	62.70
11	7.26	28	18.48	45	29.70	62	40.92	79	52.14	96	63.36
12	7.92	29	19.14	46	30.36	63	41.58	80	52.80	97	64.02
13	8.58	30	19.80	47	31.02	64	42.24	81	53.46	98	64.68
14	9.24	31	20.46	48	31.68	65	42.90	82	54.12	99	65.34
15	9.90	32	21.12	49	32.34	66	43.56	83	54.78	100	66.00
16	10.56	33	21.78	50	33.00	67	44.22	84	55.44	101	66.66
17	11.22	34	22.44	51	33.66	68	44.88	85	56.10	102	67.32