

BONITA PIPE LINE

PIPE <sup>AND</sup> SPECIALS

Department of Water

San Diego Calif.

=====  
FIELD BOOK

1303

W77

MICROFILMED

JAN X 6 1965



Index

24th St National City  
Car at " " 354/1  
30th & N Sts. San Diego  
Pearl Heights Station  
Div. A Bonita Pipe line  
" B " " "  
" C " " "  
" D " " "  
" E " " "  
" F " " "  
" G " " "  
Fire and Arctic Sts

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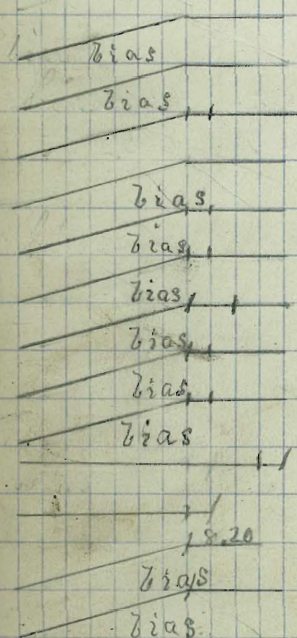
Sta.	angle	length	Special	
206+00	Δ 3.30	24.75	1.06	26.41
239+25 B	Δ 16.05	37.06		37.06
	Δ ?	24.75	3.43	28.18
250+ A	Δ "	24.75	2.61	27.36
227	Δ "	24.75	2.32	27.07
231	Δ "	24.75	1.95	26.70
	Δ "	37.06		37.06
120+00	Δ 3.35	37.06		37.06
242+00	Δ "	24.75	5.55	30.10
207+25	Δ 8.00	37.06		37.06
222+50	Δ 6.50	24.75	2.43	27.18
242+50	Δ 1.20	37.06	1.23	38.29
137+00	Δ 2.55	24.75	2.90	27.65
231+00	Δ 6.45	24.75	1.60	26.35
221	Δ	24.75	2.28	27.03
212+00	Δ 5.50	24.75	2.10	26.85
215+00	Δ 6.25	24.75	1.05	25.80
1054+00	Δ 4.05	24.75	8.20	32.95
102+00	Δ 4.00	37.06		37.06
221+75	Δ 9.00	24.75	1.24	25.99
		37.06		
219+50		37.06		37.06
168+50	Δ 6.45	37.06		37.06
231+75		37.06		37.06
231+00	Δ 8.45	24.75	1.52	26.27
		404.89	41.89	746.66

May 4, 1915

2

Special  
 bias  
 special bend  
 bias both ends  
 special bend

239+25 B  
 242+00  
 242+50  
 124+1' 249



24th St National City

May 5, 1915

bias  
 bias  
 bias  
 bias







Station

Bill of April 30, 1915  
13-28" dia x 1/4" 7  
35 1/2" Angles  
4-28" Angle Brackets  
55 1/2 ft. 28" pipe Spiral wrapped  
angles marked as follows:

133+50

66+00

129+50 C

205+00

203+75

117+56 B

81+73+

67+53.5 A

129+50 B

39+50 B

118+50 A

194+25

39+50 A

Remarks

car at National City.

4







Sta

A

Pearl Heights Station

6




Sta. angles  $\frac{\text{Lengths}}{\text{ft. and ins}}$   $\frac{\text{Lengths}}{\text{ft. to 100}}$   $\frac{\text{Lengths}}{\text{Straight}}$  Total

0+1.25 Standard 28" 2 Way Wye

0+11.35 Standard 28" Gate Valve

0+13.55 Flange 28" Flange Joint

0+35.23	3.11 $\frac{7}{16}$	3.9427
3+00	7.1.00	7.1000
7+75	4.200	4.1667
11+50	2.5 $\frac{1}{2}$	2.4583
11+80	6.0 $\frac{1}{2}$	6.0417
13+50	1.5 $\frac{1}{2}$	1.4583
16+00	5.7 $\frac{1}{2}$	5.6250
16+75	0.11 $\frac{1}{2}$	0.9583
17+50	1.10 $\frac{1}{2}$	1.8750
19+00	3.6 $\frac{1}{4}$	3.5208
21+00	2.6 $\frac{1}{4}$	5.5208
24+57.2	2.4 $\frac{3}{4}$	2.3958
30+00	6.5 $\frac{1}{2}$	6.4583
31+90	4.600	4.5000
34+00	4.10 $\frac{3}{4}$	4.8958
34+50	4.8 $\frac{1}{2}$	4.7083
36+25	1.4 $\frac{3}{4}$	1.9782

Remarks  
 Estimate for April 1915  
 on Bonita Pipe Line  
 Division A

Vertical angles in place.

= Horizontal angle  $12^{\circ} 55'$  L.



Sta.	angle	Length ins.	Length # 10-100	Length Straight	Total	Remarks.
------	-------	-------------	--------------------	--------------------	-------	----------

8

37+00		3.00	3.0000			
-------	--	------	--------	--	--	--

		67.7%	67.5885			
--	--	-------	---------	--	--	--

87 lengths 28" pipe @ 37.06 =

3224.22

Odd lengths 407.67

6 " Special

Coated @ 37.06 222.36

Specials 67.59

37+21.83	Total		3921.84			
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37+45

= North end Division A



Sta.

9

10 pieces 3x4" galvanized iron  
pipe for air valves. 30.0

7 4x4 " " " 28.0

2 4.6x4 " " " 9.2

1 3.6x4 " " " 3.6

8 2.7x4 " " " 21.6

1 2.9x4 " " " 2.9

1 5.0x4 " " " 5.0

1 2.0x4 " " " 2.0

2 4.7x4 " " " 9.4

2 3.7x4 " " " 7.4

3 2.6x4 " " " 7.8

2 6.0x4 " " " 12.0

1 7.0x4 " " " 7.0

3 6.7x4 " " " 20.1

1 5.7x4 " " " 5.7

Total 167.7

55 4" Gate valves for air valves  
not standard (4 holes)

1 6" " " " "

50 4"x6" nipples

48 4" flanges for air valves

9 4" flange extensions for  
blow offs.



✓  
 Sta. 1 6" flange extension for blow off  
 7 8" " " " " "  
 7 2" " " " " "  
 39+40.54 1 28" High Pressure Gate Valve  
 angle  
 11+80 18.30' not special (should be)  
 12+90 18.30' " " " "  
 34+50 22.00' " " " "

Remarks.

All the above 28" pipe is laid  
 except the special coated and all  
 the material specified is on or  
 near Division A

39+4.3 = North end of Division "A"



Sta.					
40+20	1	length 28"	pipe special coated	37.00	
40+50	1	" 28"	" plain	24.55	
40+50 to 54+75 <sup>3</sup>		28"	" " laid	1423.20	
54+75 <sup>3</sup> to 67+25		28"	" " "	1185.92	
		Odd length 28	" "	24.00	
		Total		2694.83	

In the above there is special cuts as follows:-

40+20	2.20	18° 30'	not special (should be)
40+50	(4.85	18° 30'	special (O.K.)
	and 2.50		
50+16 <sup>2</sup>	1.50	29° 04'	horizontal not special
67+25			28" High Pressure Gate Valve.
67+25			North end Division "B"

Remarks  
Division "B"



Sta.

Remarks "C"  
Division "C"

12

65 lengths 28" Steel Pipe 2408.90  
Odd " 28" " " 215.05  
2623.95

To which add specials as follows:

67+53.5  $\Delta$  28.56' horizontal not special  
69+00 1.50  
70+50 3.20  
75+13.5  $\Delta$  31.17' horizontal not special 2.45  
78+06  $\Delta$  23' 6.00  
87+73.5  $\Delta$  22.10' horizontal not on ground  
91+50 2.25  
92+50 1.15  
93+50 1.50  
94+50 2.50  
21.45

Total

2645.40

95+25 28" High Pressure Gate

North end Division "C"



Station

45 lengths Steel Pipe

@ 39.06. =

Old lengths " "

Specials

1667.70

198.00

1865.70

97+00

2.10

98+50

1.75

102+00

7.40

105+00

4.00

107+00

2.50

108+15

7.85

113+50

3.35

114+50

7.60

3625

Total

1902.25

115+00

28" Gate Valve No. 5

End of Division "D"

Remarks  
Division "D"

13



Station

55 lengths 28" Steel Pipe.

@ 37.00

2038.50

Odd lengths 28" " "

99.00

2137.50

Special lengths.

123+00

6.50

129+50

6.90

132+00

3.10

133+50

2.20

18.70

2156.05

Total

138+00 28" Standard Gate Valve

End of Division "E"

124+25

Remarks  
Division "E"

14



Station

Remarks "F"  
Division "F"

15

60 lengths 28" Steel pipe

@ 37.06 =

2223.60

Odd lengths 28" " "

583.63

2607.235

Special lengths

148+00

9.30

149+35

10.85

150+00

3.80

153+50

3.85

155+00

2.10

156+00

1.90

156+50

2.45

158+00

1.80

158+50

1.65

160+25

2.25

161+50

2.10

162+25

4.55

166+08 19° 32' Horizontal

4.65

8.85

3.10

170+00

2.00

171+00

2.50

172+25

7.57

74.55

2681.775

End of Division "F"



Station

30 lengths 28" Steel Pipe  
@ 37.06 1111.80

Remarks  
Division "G"

16

Recapitulation.

Totals

Division	A	3921.84
"	B	2694.83
"	C	2645.40
"	D	1902.25
"	E	2156.05
"	F	2681.77
"	G	1111.80

24<sup>th</sup> St National City 3257.28

Car of April 30.

30th and N Streets 5410.76

Pearl Heights Station 9339.12

33116

Fir and Arctic

3- 28" High Pressure Gate Valves

3- 28" Standard " "

1- 8" " " "

1- 12" " " "



Suggestions for additional work on Bonita  
Pipe Line.

May 13-15 17  
Geo. Cromwell

x North End of Trestle #2. Sweetwater  
Put in small timber bulkhead to  
protect last bent and fill under unsupported  
length of pipe (clear span 14' at present)

South End of Trestle #2

Place extra sill under pipe to bring up to  
grade. Extra length of pipe should be wrapped with  
paper as per remainder.

North End of Trestle #1

x Put in two more extra 16' spans with  
concrete footings. Present arrangement of temp.  
bulkhead and backfill very poor. Backfill not  
satisfactory here.

Blow off on this trestle should be extended  
by the addition of 1-8" x 18'-0" length of pipe with  
90° Ell and flange connection on valve and

1-8" x 16'-0" length of pipe. the 18' vertical  
section to be supported by concrete pier at Ell.

Y at junction with 36" Wood stave line.

~~By pass on gate could not be placed because of  
present location of gate near Y. Gate should be placed  
farther away from Y. Location of Venturi Tube  
should be at least 12' from Y.~~



Trestle #3 O.K.

hook up grade at sta. 119+50 to 120.

— Trestle #4 —

South end Trestle #4

Put in an extra 12' bank.

Trestle #5 O.K.

" #6 -

Dig out at N. end

- Trestle #7 - O.K.

" #8 - O.K.

" #9 North end backfill under

pipe

Trestle #10 O.K.

" #11 Grade locate almost 18' below  
street. (?)

See about location of blowoffs on  
side instead of bottom of pipe.

See about Culverts at R.R. Xings. Pipe or Concs.

" " Drain at stas. 167+82 Gr. 162.4 8" Pipe (?)

" " " " " 219± " 172.0 12" (?)



Notes in regard to Changes on Bonita Pipe

19

Line From Bruener

1. Question in regard to location of Venturi Meter.
- x 2. Addition of extra Bents to #1 Trestle
3. Valve chamber for #2 Gate to be changed
4. Lowering of grade to avoid water pipe.
- x 5. Support necessary under pipe at N. end of Trestle #2
- x 6. Blowoff at 81+80 Question about position of outlet
- x 7. Pipe unsupported for 8' at S. end of #4 Trestle.

(Pipe Co. at fault) 39+40.45 (not 39+38.45) Grade 44.23  
Sta 39+00 Drop 2' to pass under Sweetwater Line

Grade Sta 37	=	47.00	
" 38	=	45.85	BM. on Tel. Pole
" 39	=	43.99	W. of Ditch Elev. 53.74
" 40+20	=	43.31	U.S. Datum

- Note -

8. Ditch dug at angle  $166+23'$  should angle at  $\frac{166+08.7}{166+15}$  Hor. Angle  $19^{\circ} 32'$  It will be necessary to take 8' from forward tangent + insert in back tang.

The Sta. Press. Gate Valve for Sta. 179+10 to be taken to end of Line 30<sup>th</sup> & Broadway. Will be replaced by H.P. on extra order.

9. Grade of 24" Main at 30<sup>th</sup> & Broadway found to be 190.8 instead of 190.0 as estab.

The Sta. Press. Gate Valve for Sta. 218+00 to be hauled to Otay Filter Plant. Will be replaced by H.P. on extra order.

Bonita Line on Broadway is 15' S. of  $\perp$  and Cross is located 8' S. of  $\perp$  of Broadway and 10' E. of  $\perp$  of 30<sup>th</sup> St.

The following changes have been made:

Grade Change Sta 113+50 - 114+20

" " " 117+56 - 118+50

" " " 130+50 - 133+50

Angle Point changed from 170+93.1 to 170+73.1

Grade change Sta 239+25 - 242+00.



May 28 Arrived

Car  
#93454

204+50

191+00

209+00

209+75

Two Flanged pieces

179+75 < 82 Flanges

1  
Straight Sections

Mar 30 - 5

" " - 12

Angles Billed #

Mar. 3

372'

#

895.32

" 3

383 1/2

921.89

" 5

(12) 339 5/8

858.09

" 17

(6) 183 5/8

1051.24

" 26

(12) 370 1/4

891.28

" 26

(12) 337

807.54

" 26

(12) 416

996.96

" 26

(12) 381 1/2

917.27

" 30

(7) 227 1/3 etc

990.22

" 31

(12) 368 3/4

887.82

" "

(12) 385 3/4

927.08

Apr. 25

(12) 327 etc

826.37

" 30

(13) 357 1/8 etc

935.39



Bonita PL. - Change of Grade  
in Paradise Valley - Acct County's  
Channel Modification.

P. Bearman  
R.E. Wueste  
6/2/37

21

BM	4.69		100.0	= Top Gate Chamber Cover
0+00		4.75	99.94	= S edge Rd
0+30		4.63	100.06	top S Bank = N edge road
0+33		8.26	96.43	top pipe
0+50		8.07	96.62	= top pipe at bend
0+57		8.00	96.69	= top pipe at N bank
0+58.5		6.16	98.53	top bank
0+85		4.58	100.11	on line of pipe
0+50		10.33	94.36	= streambed
0+43		11.07	93.62	= streambed
0+37		10.53	94.16	= streambed

at 0+50 = 26°40' angle

0+48<sup>s</sup> 8" Blow off



22



23



24



25



26



27



28



29



30



31



39



33



34



35



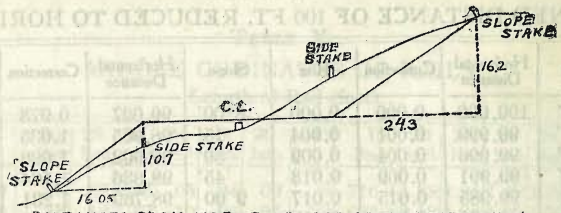








195.077



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH.

	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	13 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 35	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
41	61 50	61 65	61 80	61 95	62 10	62 25	62 40	62 55	62 70	62 85	41
42	63 00	63 15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64 35	42
43	64 50	64 65	64 80	64 95	65 10	65 25	65 40	65 55	65 70	65 85	43
44	66 00	66 15	66 30	66 45	66 60	66 75	66 90	67 05	67 20	67 35	44
45	67 50	67 65	67 80	67 95	68 10	68 25	68 40	68 55	68 70	68 85	45
46	69 00	69 15	69 30	69 45	69 60	69 75	69 90	70 05	70 20	70 35	46
47	70 50	70 65	70 80	70 95	71 10	71 25	71 40	71 55	71 70	71 85	47
48	72 00	72 15	72 30	72 45	72 60	72 75	72 90	73 05	73 20	73 35	48
49	73 50	73 65	73 80	73 95	74 10	74 25	74 40	74 55	74 70	74 85	49
50	75 00	75 15	75 30	75 45	75 60	75 75	75 90	76 05	76 20	76 35	50

Computed by L. Leland Locke.