

1475

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PASTS

LEVEL BOOK

890

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Return to
City Engineer's Office.
San Diego.

ENGINEERING DEPARTMENT
CITY OF SAN DIEGO
CALIFORNIA

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5-909

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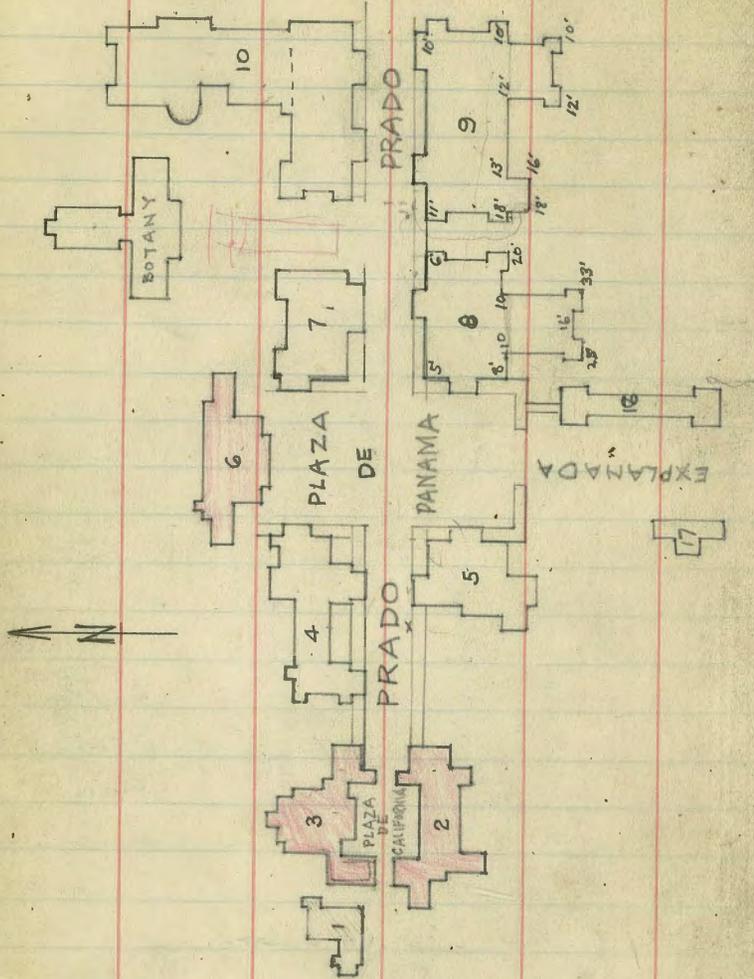
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CALLE CRISTOBAL



Investigation of Physical Condition of 13
Buildings in Balboa Park.

G.R. Hayler 1-4-33

On Jan'y 4, 1932 went with G.D. Kirkpatrick, Acting Building Inspector and E.H. Culver, Assistant Bldg. Inspector, to the office of John G. Morley, Park Superintendent. After a short conference with Mr Morley, he delegated Wm. Benson to accompany us on an inspection tour of the buildings. Mr Kirkpatrick explained that he first wanted to look over in a general way the buildings where there appeared to be danger to the public, particularly from plaster, staff work, etc which might fall off.

We made a rather hurried inspection of the exterior of the buildings along the Prado, going East along the North side to Calle Cristobal and back along the South Side to Plaza de California.

Below are the main items noted on this trip.

BLDG. NO. 4.

This building is occupied by the Visual Education Dept and other schools, art, modelling, etc, Mrs Duval and Mrs Ball. The latter has a school for children in modelling, etc and occupies the South Balconies in the two wings of the building and also has a small room over the center entrance in the South Arcade. There is much loose plaster and staff work which might fall, on this arcade and is dangerous,

particularly that on the tower at the S.E. corner of the building, and the imitative tile work.

The arcade between Bldgs #3 & #4 is in poor shape, the plaster is loose, the columns settling and evidences that the interior structural wood work and foundations are badly decayed.

The staff ornaments on the South side are loose, and falling off in places, to the parking, as is also some of the plaster roof-tile. An attempt is being made to hold some of the ornamental work in place with wires, but this is of rather questionable value.

The same conditions, in regard to the arcades, is true of the East side of the building, and staff work over East Entrance has been wired to hold it in place. The drainage of the roofs of the arcades is in poor shape, the water settling in places and working through, loosening the plastering on the ceiling and columns.

BLDG. NO. 7.

This building is occupied by the American Legion and has had a great deal of repair work done, particularly the roof. The plaster on the North Wall seems to be in fair shape.

The staff work over the West Entrance is in

14
very poor shape and falling off. A great many small window panes are broken. A large area of ceiling plaster has fallen from the West Arcade. Another section of ceiling plaster has fallen off in the arcade near the South Entrance and some of the staff moulding is loose at this point.

Loose staff work is falling off of the south face of the building. Some staff is gone at the East End of the South arcade.

The pergola just North of this building is in very poor shape with loose plaster and staff work.

BLDG. NO. (Botanical Building).

This building has had some repairs and the lath house is in pretty fair shape. There is much rotted wood work in the glass house.

BLDG. NO. 10. (County Fair Bldg.)

The west face is in pretty good shape. The plaster is a little loose, at the west entrance to the south arcade, also in some of the arches in the south arcade. The columns of the south arcade and the south face of the building are settling badly, particularly at the south entrance. Also the staff ornaments on the south face are loose, and the pinnacles are leaning over. The steps at the

South entrance are bowed showing settlement of columns at sides. The staff work over the East face is leaning out, and the plaster is falling off of the east wall near the base. The large bell over the east entrance is turned upside down.

BLDG. NO. 9

Not occupied at present - until recently a museum. The staffwork is falling off of the East face on to a foot path. Some plaster has fallen off of the South wall over the lawn. There is an arcade at the SW Corner of the building, which is settling badly - at least 4 inches and possibly 6" in places. All of the plastering here is in bad shape and is dangerous. The woodwork in the transformer room at this corner is badly rotted.

Some staffwork has fallen off of the West face of building. The arcades on the North are in bad shape, settled and woodwork rotted. The arcades between Buildings 8 & 9 are badly settled and rotted.

BLDG. NO. 8.

The plaster and staffwork at the SE corner are in bad shape. The plaster is falling off of the ceiling of the arcade near the

north entrance. The west arcades are badly settled. The west entrance is in pretty fair shape. This building is not occupied at present.

BLDG. NO. 16. (San Joaquin Valley)

This building is unoccupied except that the gardeners use it as a toolhouse. It is in bad shape, is settling on the east side and the posts are leaning about 4" to the east at the top. The arcade leading to the north entrance is very badly settled and the plaster and staffwork loose and falling off.

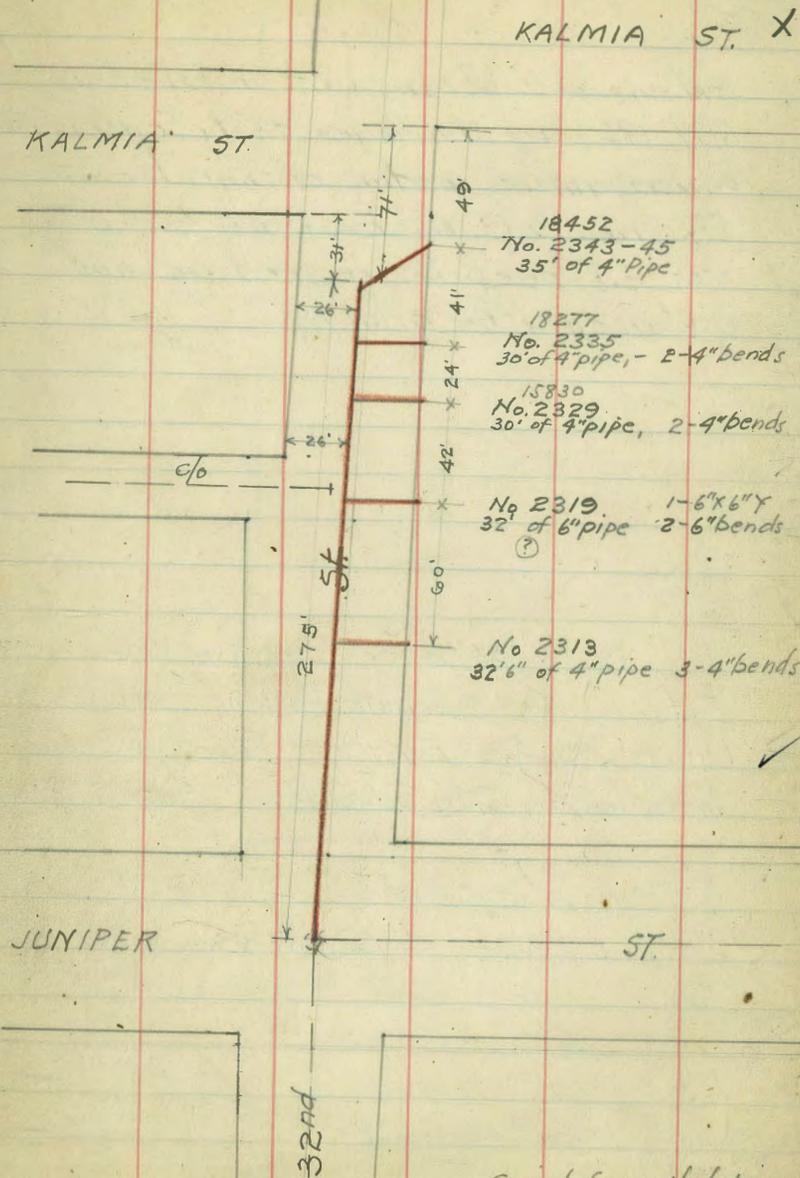
BLDG. NO. 5.

This building is occupied by a lunch room at the Northeast corner and is used by 8 or 10 organizations for band practice, drum corps, etc. The plaster and staffwork is falling off of the east face and is dangerous particularly at the east entrance from the plaza. The same is true to some extent in the east arcade. The roof drainage in the east arcade is bad. The plaster is falling off of the South walls and the wooden foundations are badly rotted here. The plaster and staff is falling off of the west walls

particularly at the tower. The plaster is falling off of the arcade walls at the North east entrance to the Montezuma Gardens, otherwise the arcades between buildings #5 and #2 are in pretty good shape. This was the extent of the investigations on this date. (1-4-33).

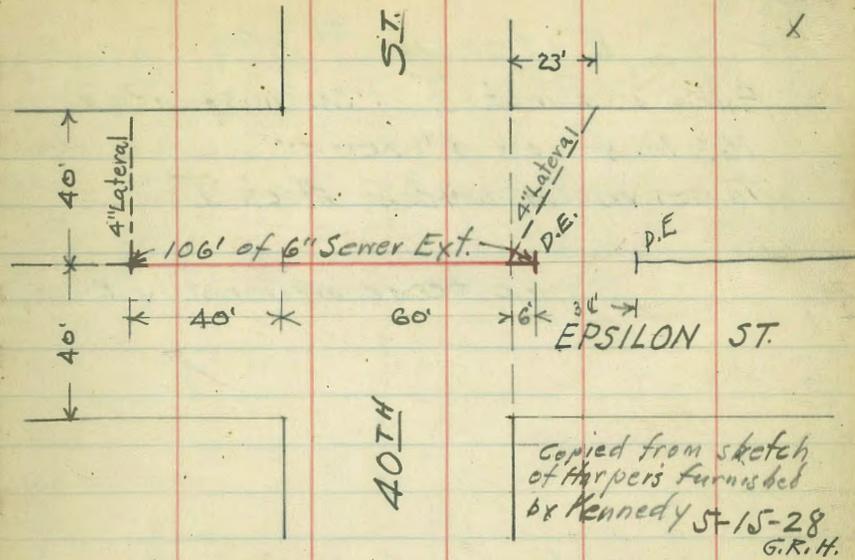
SEWER IN 32ND ST. BETWEEN JUNIPER & KALMIA.

16



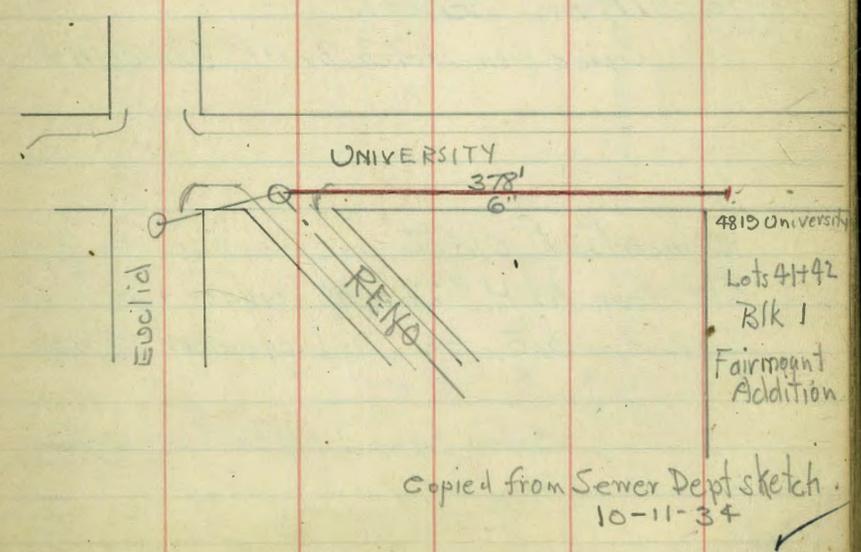
Copied from sketch
of Sewer Dept. 3/3/26
G.R.H.

Extension in Epsilon St. installed in May 1928 by Wm Harper - City Sewer Foreman. on account of grading of Epsilon St. Existing D.E. 40' East of 40th St. was 3.8' deep before grading and 0.6' deep after grading.



W.O. "A-98" Job No. 126.
Extension in Sidewalk Parking space in University Ave East of Reno and Euclid. Installed by City Sewer Dept. August 1934.

- Bill of materials
- 378 lin ft. 6" Cement sewer pipe
 - 1 - 6" Cement pipe bend
 - 4 Sacks Cement
 - 32 sq paving
 - 32 sq sidewalk

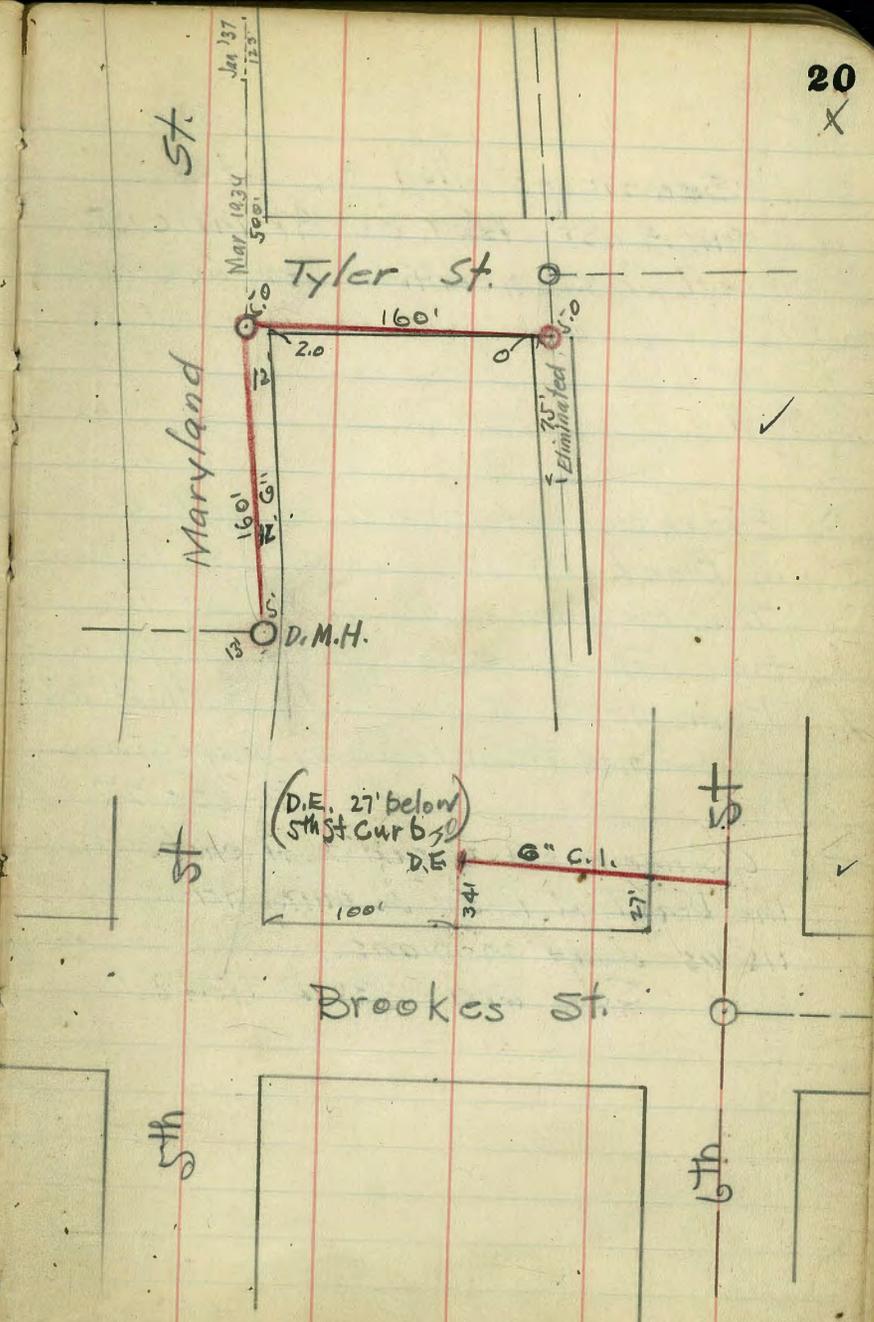


Copied from Sewer Dept sketch 10-11-34

Work Order 1-X 9-5-30
 Extension by City Sewer Dept
 in Maryland and Tyler Sts.
 Copied from Kennedy's sketch
 11-3-30

Note This sewer was extended on Maryland Ave
 in March 1934 and January 1937 - See Dwg. 2-129-B.

Paid extension to serve property
 on North Side of Brookes St
 between 5th St and 6th St.
 Copied from notes taken in field
 at time 6th St was filled.



Server installed by City
 in A St West of Atlantic St.
 Copied from Kennedy's sketch.

Extension of sewer in alley
 in Block 14 Nordica Hts No 2
 This extension was made at the
 time the original sewer was put in.

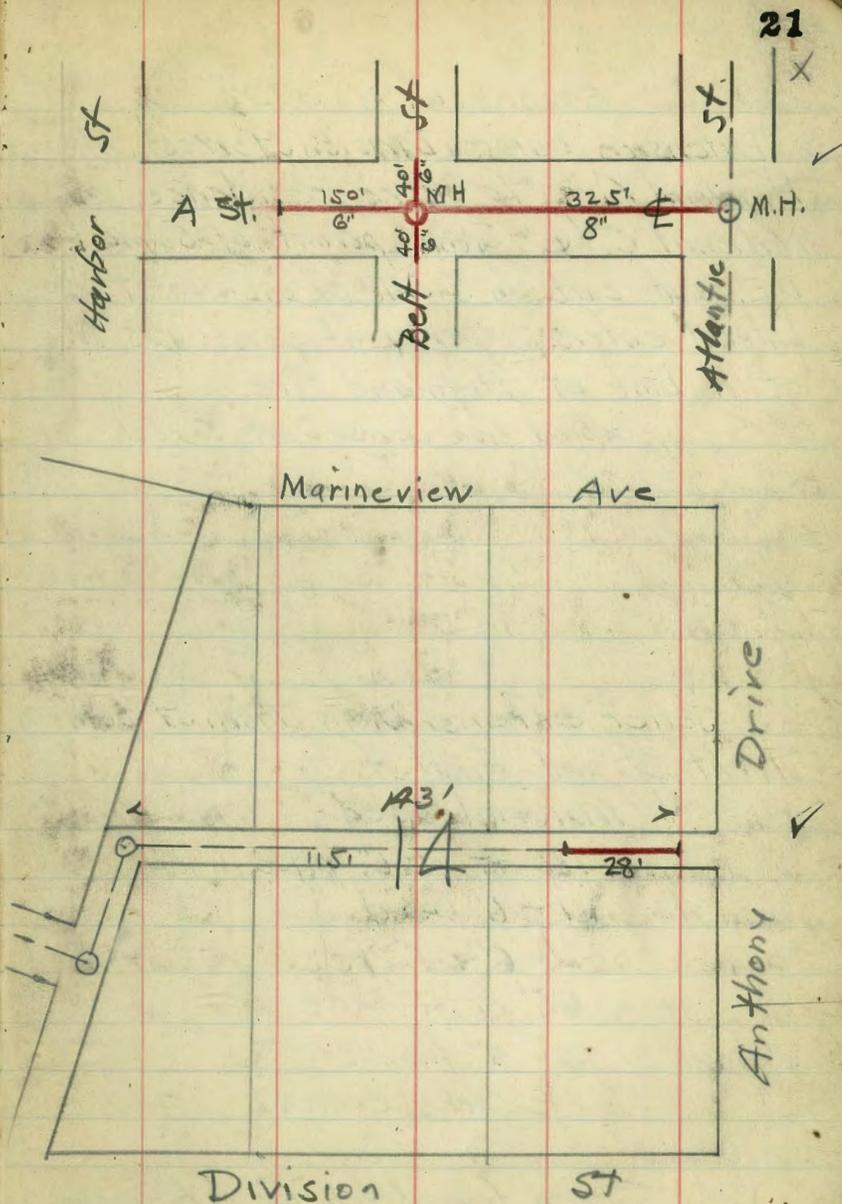
It was approved by R. H. Smith Chf Insp.

Copied from sketch by Inspector

3-30-27

6" sewer was extended 28 ft east making
 the Dead End 143' from M.H. instead of
 115' as shown on plans.

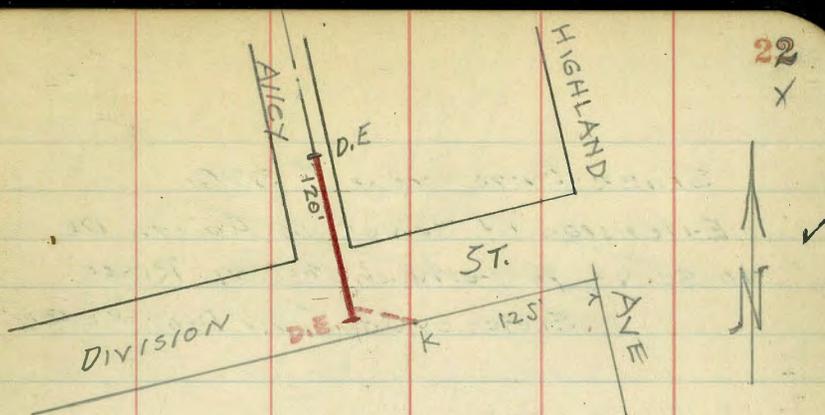
See Drq 330-D + 348-D



Extension No 379

Extension across Division St west of
Highland Ave to serve residence in
National City. - Special permit of Council.
D.E. is at curb on S Side of Division St. (S deep)
Lateral enters property at point 125' W.
of N. Line of Highland Ave.

copied from Sewer Dept. Sketch.



Sewer extension in Thorn St between
Front St and First St.

Material used

180 ft of 6" pipe

1- 6" bend

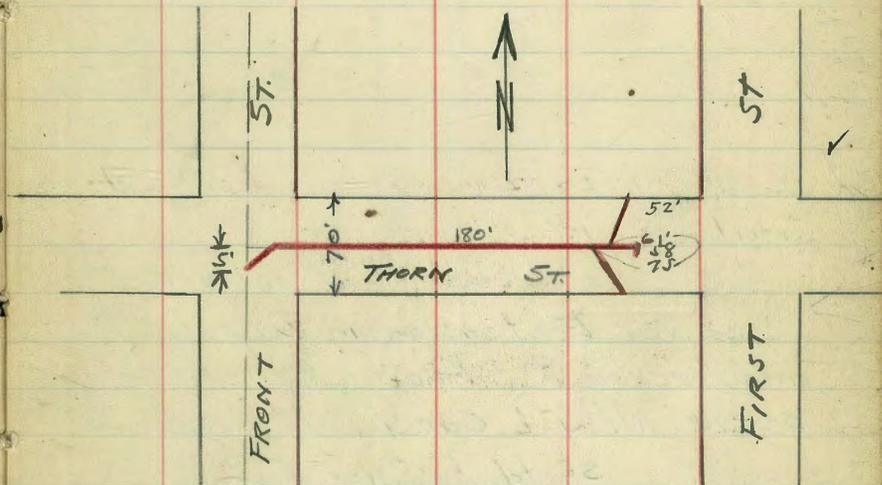
2- 6'44" Y's

65' of 4" pipe

3- 4" bends

1 1/2 sacks cement

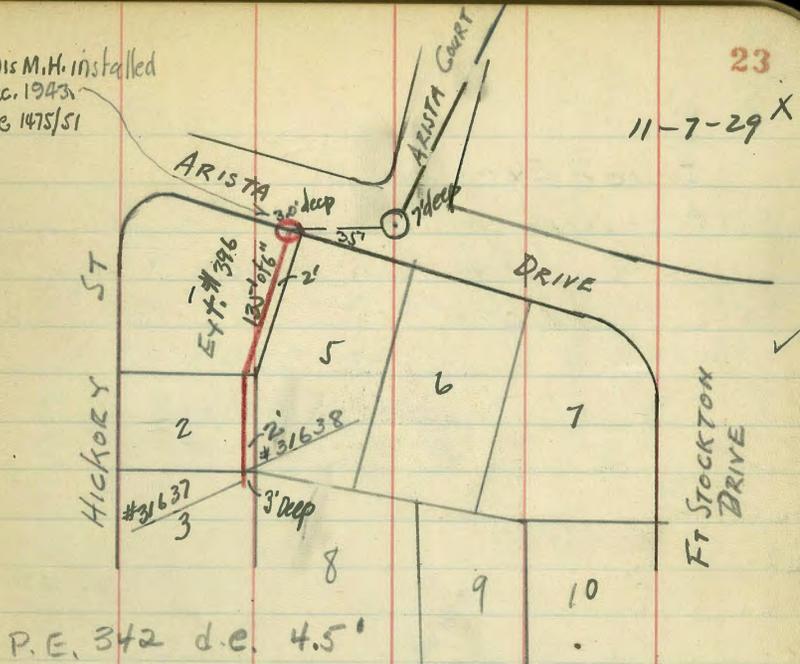
Copied from sketch by A. A. Grasse
City Sewer Dept.



SEWER EXTENSION # 396
 Extension of sewer in ARISTA DR
 to serve property in PRESIDIO RIDGE.
 Sketch by City Sewer Dept. Nov. 1929.

This M.H. installed
 Dec. 1943.
 See 1475/51

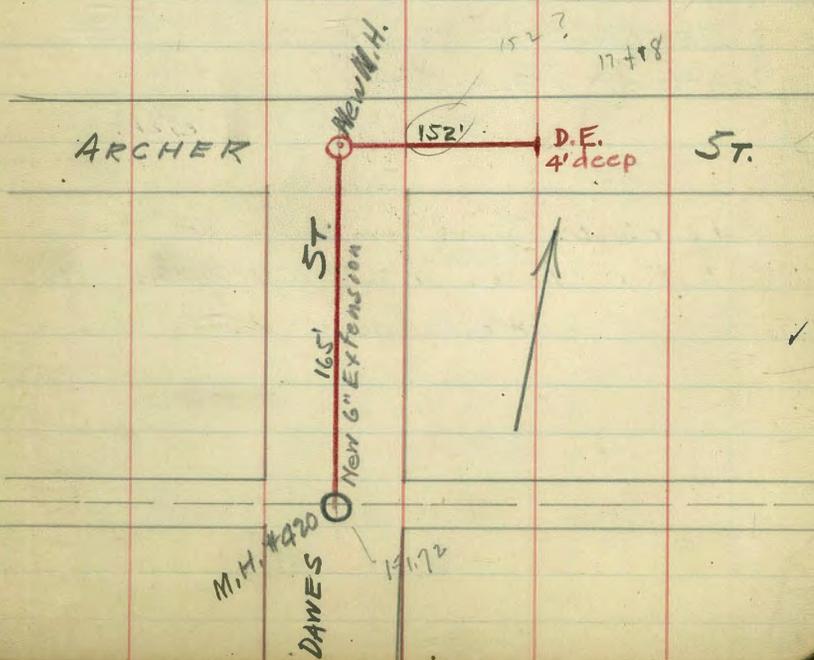
23
 11-7-29^x



P.E. 342 d.e. 4.5'

10-16-30
 Sewer Extension in Dawes St
 and Archer St - Pacific Beach to
 serve Mr. C. L. Curry, 1110 Archer St.
 sketch by Sewer Dept

Lots 20-22 ?

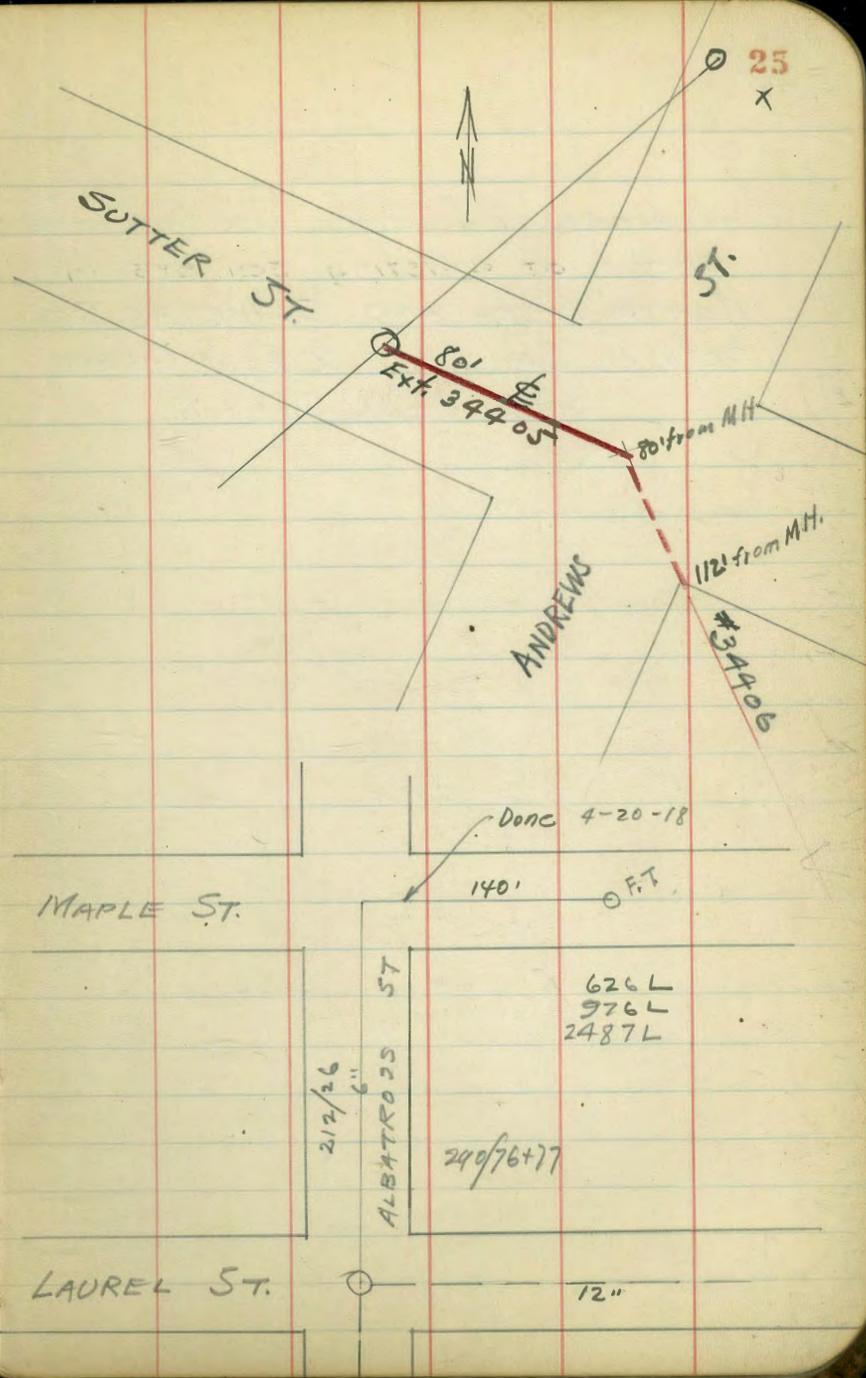


M.H. #420
 DAWES ST
 19192

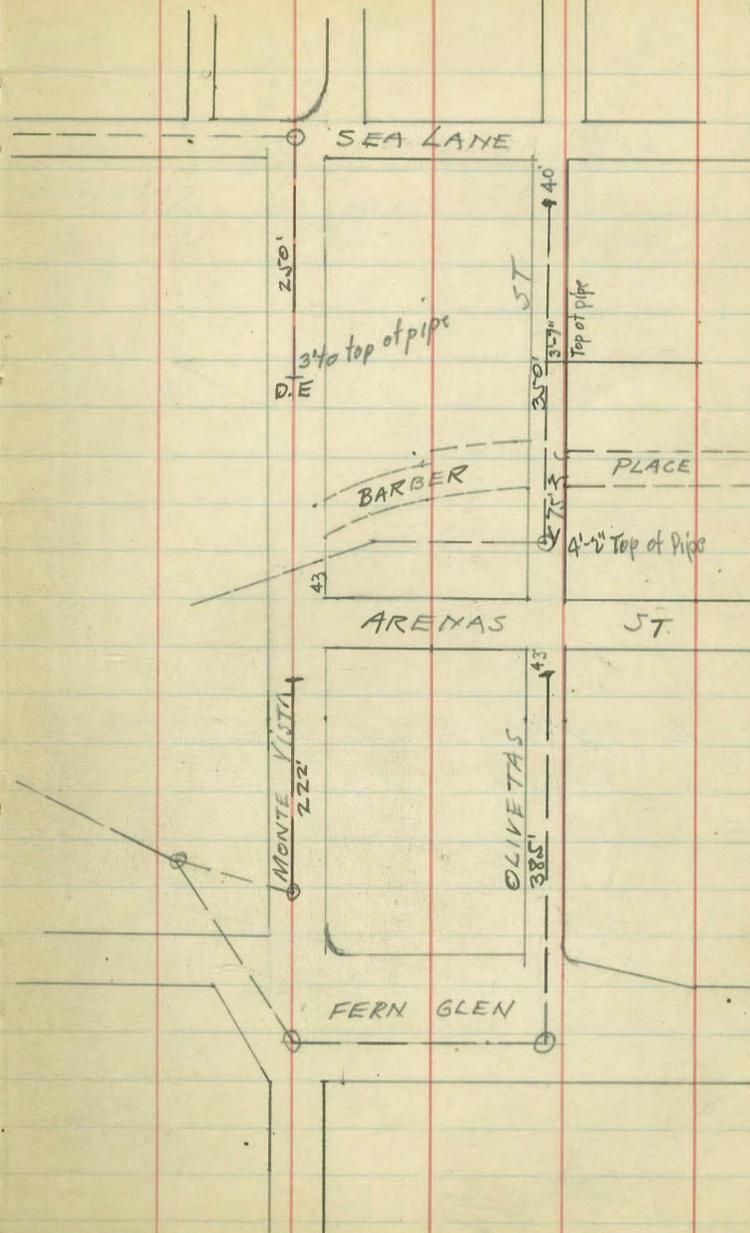
Server Extension in SUTTER ST
at Andrews St.

Server Dept Sketch 9-21-31
Tom Tulloch

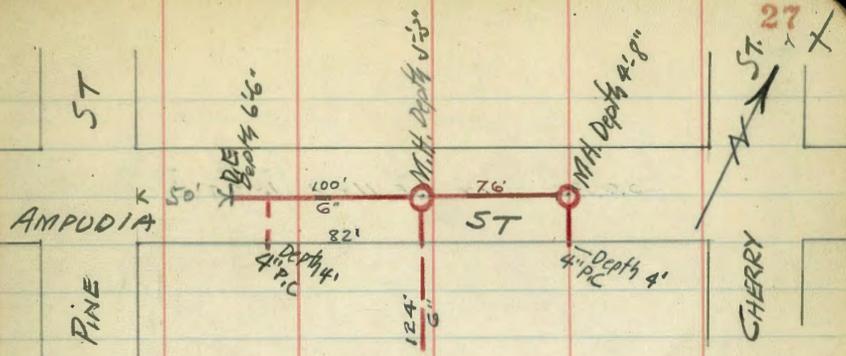
Sketch by Server Dept.
In my opinion it is questionable as
to just how this was installed. GRH,



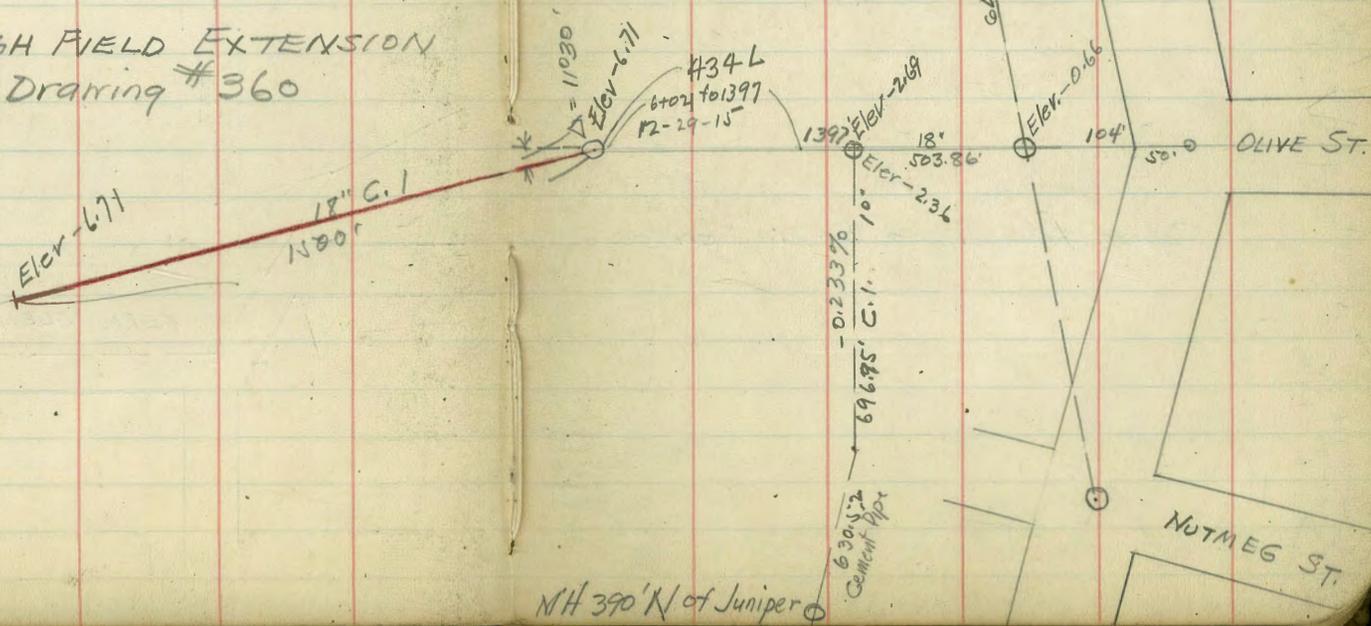
Sketch of existing sewers in
 MONTE VISTA AND OLIVETAS STS
 between SEA LANE & FERN GLEN.
 Sewer Dept Sketch



Sketch by Sewer Dept.

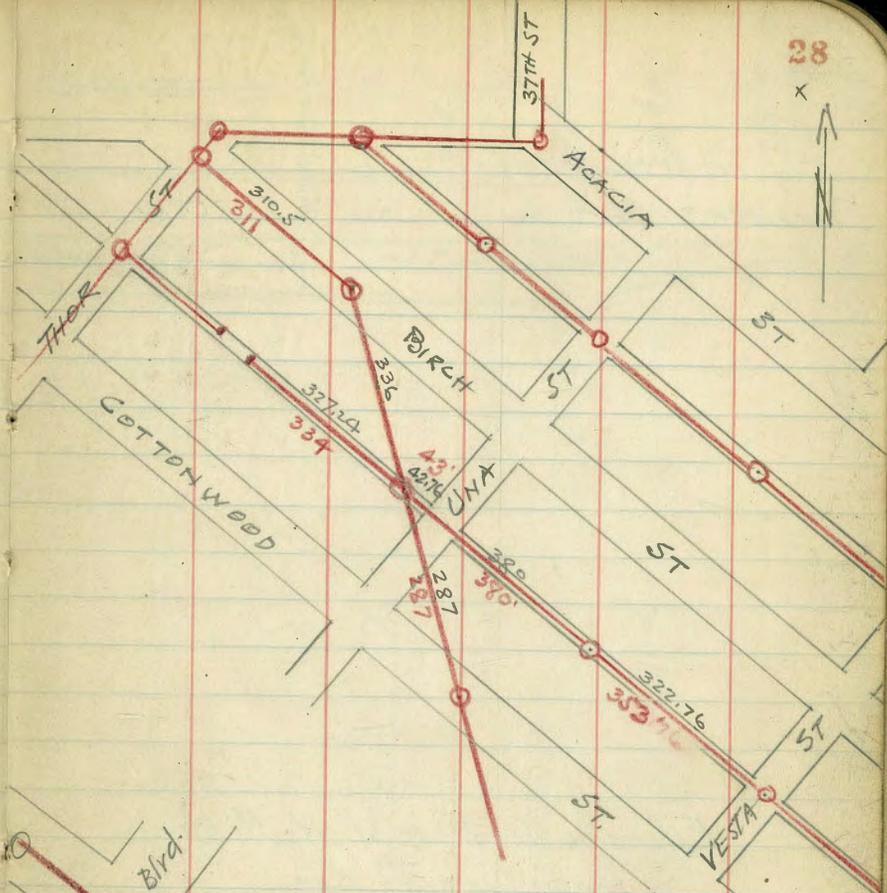


LINDBERGH FIELD EXTENSION
See Drawing #360

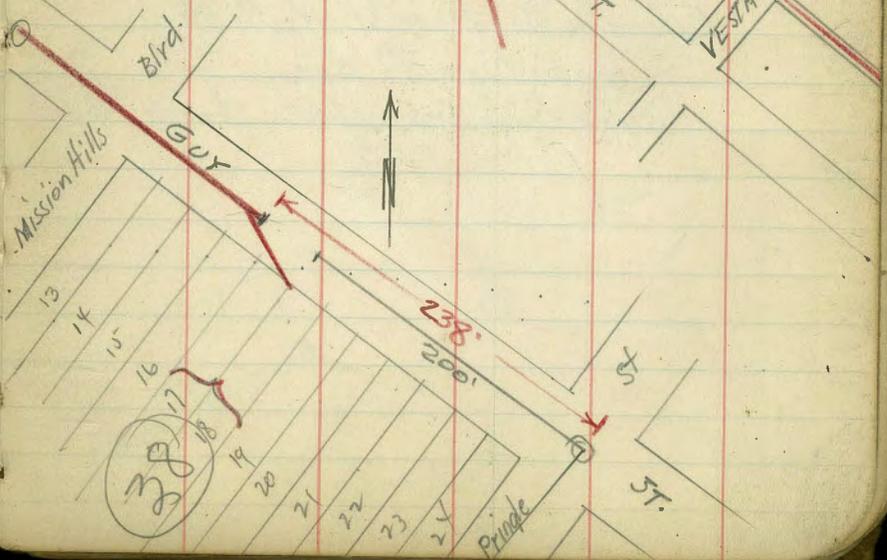


NH 390' N of Juniper

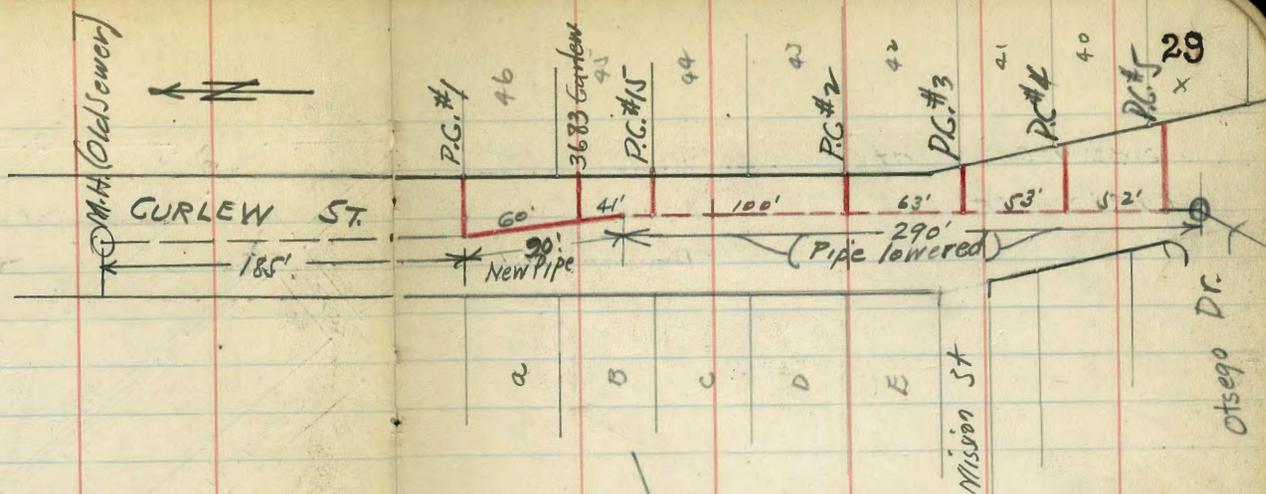
Copied from SEWER DEPT Records.



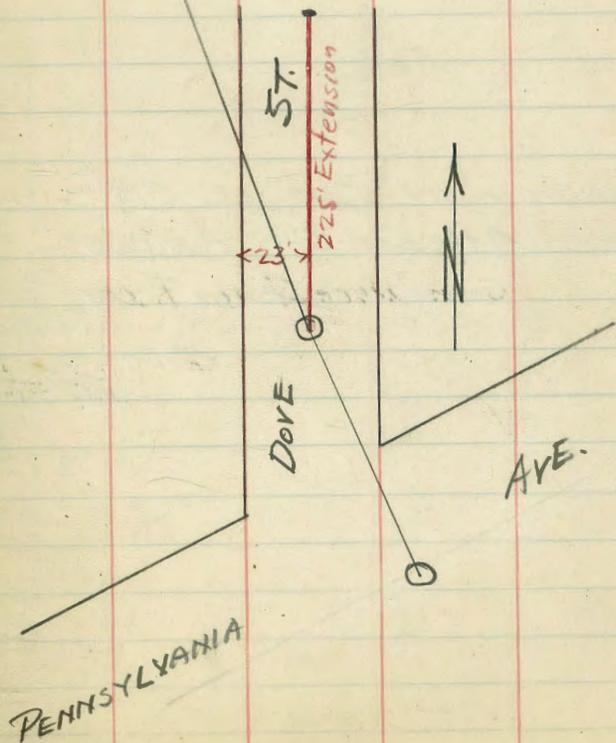
Copied from SEWER DEPT. Records.



Copied from Sener Foreman's Sketch.

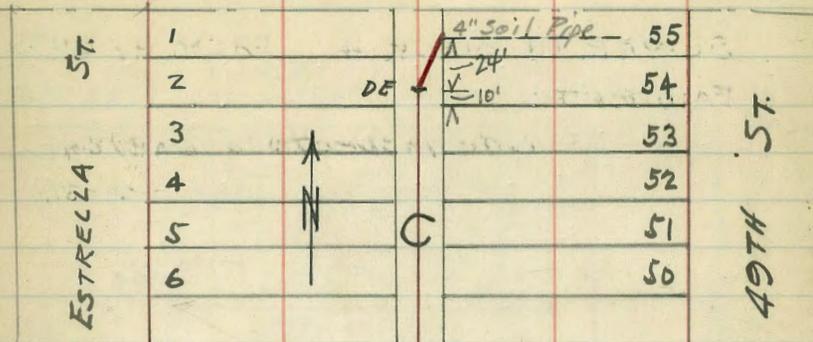


Extension in Dove St North of Pennsylvania Ave.
 Copied from Sener Dept. Sketch 10/24/28



Extension of sewer in Block C
Belmont.

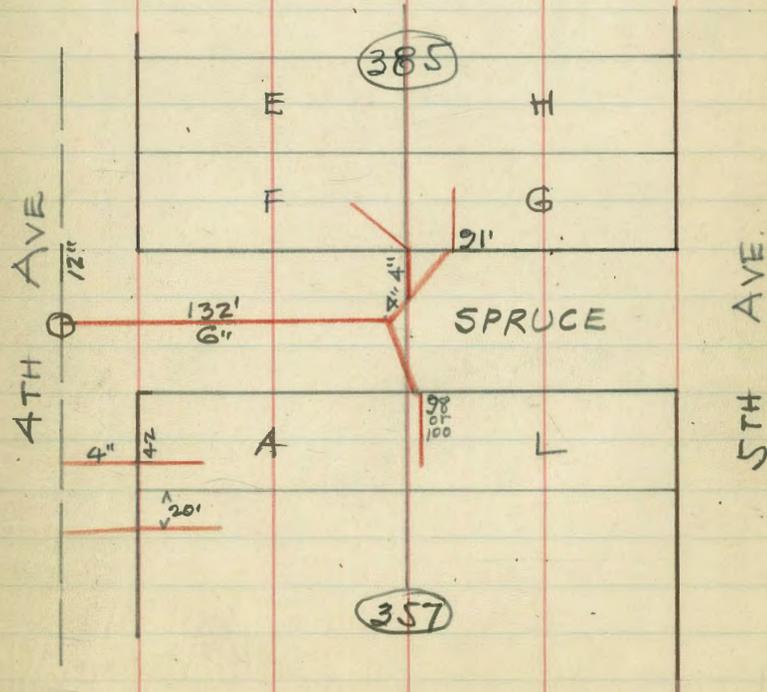
City Inspector's Sketch
1-11-27



EXTENSION IN SPRUCE ST
between 4th and 5th Avenues.

Copied from Sewer Record Book
on First Floor T. Tulloch

GRH (3-22-35)
date copied



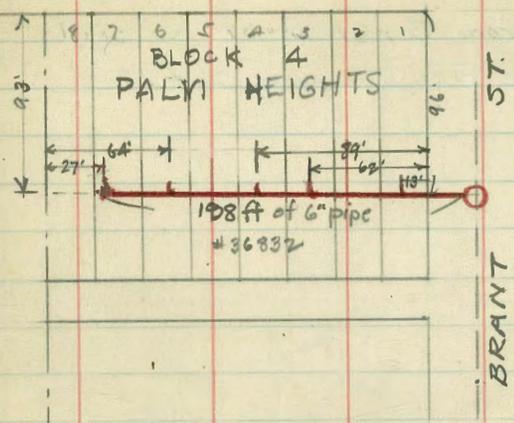
SEWER IN BLOCK 4 PALM HEIGHTS

PAID EXTENSION + CONSTRUCTED FEB. 1937.

Copied from Foreman's sketch furnished by Tom Tulloch.

G.R.H. 2-24-37.

UNIVERSITY AVE

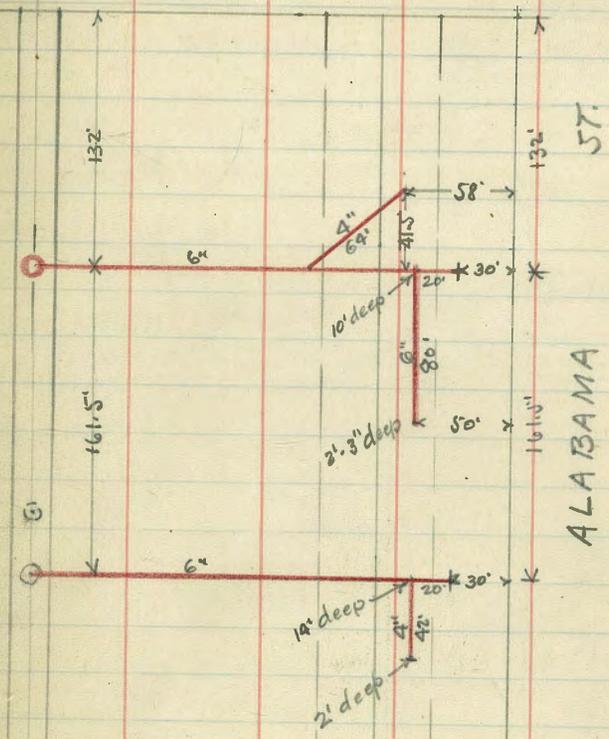


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E 731

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SEWERS IN BLOCK 257 UNIV. HTS.
 Copied from Sewer Dept Sketch
 See also F.B. 872 pages 26 + 27

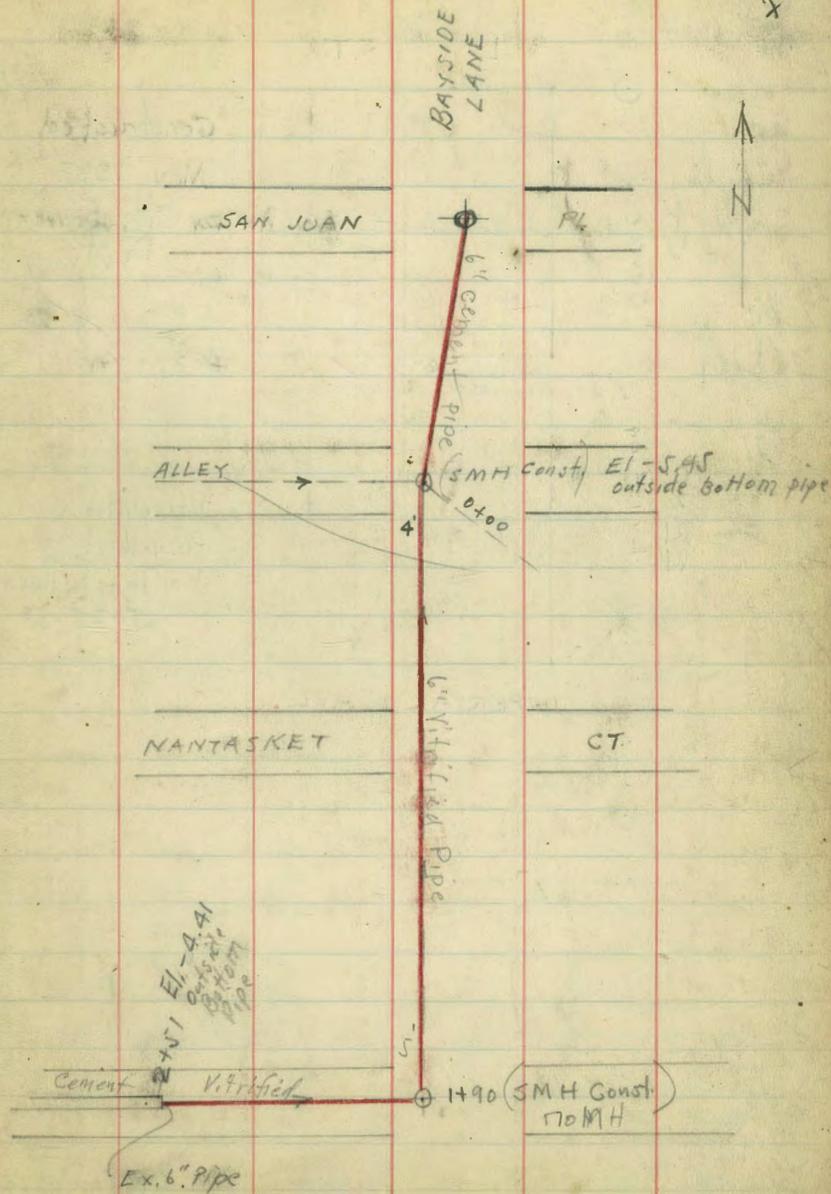
UNIVERSITY AVE.

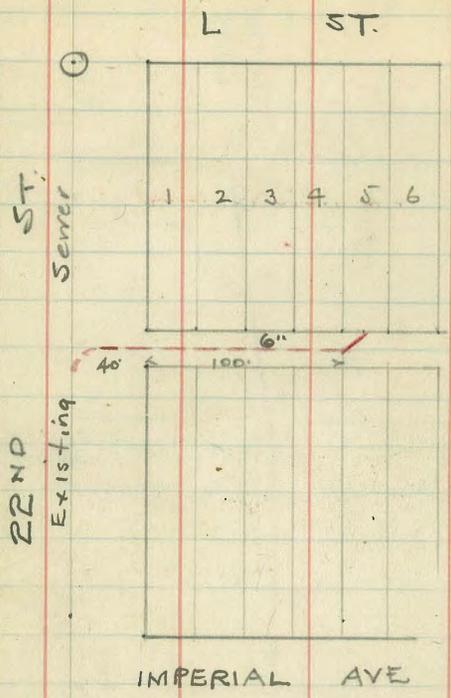


Copied from Grade Book #180, page 30.
G.R.H.

New Const.	El. outside	Bottom Pipe
00 = MH Const.	-5.45	
+50	-5.25	C 3.95
1	-5.04	C 3.0
+50	-4.83	C 2.78
1 + 90 = MH Const.	-4.67	C 3.16
2 + 20	-4.54	C 3.05
2 + 51 = Ex 6" pipe	-4.41	

no manholes constructed at this time.
march 25, 1937



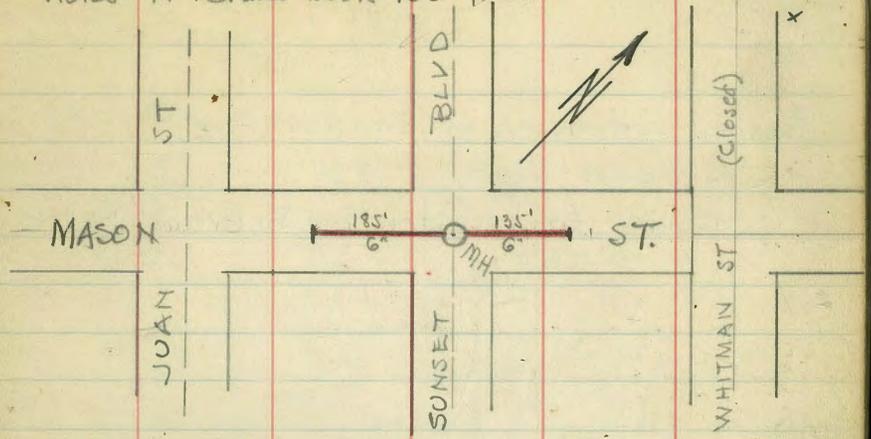


Constructed
May 1937
by City Sewer
Dept.

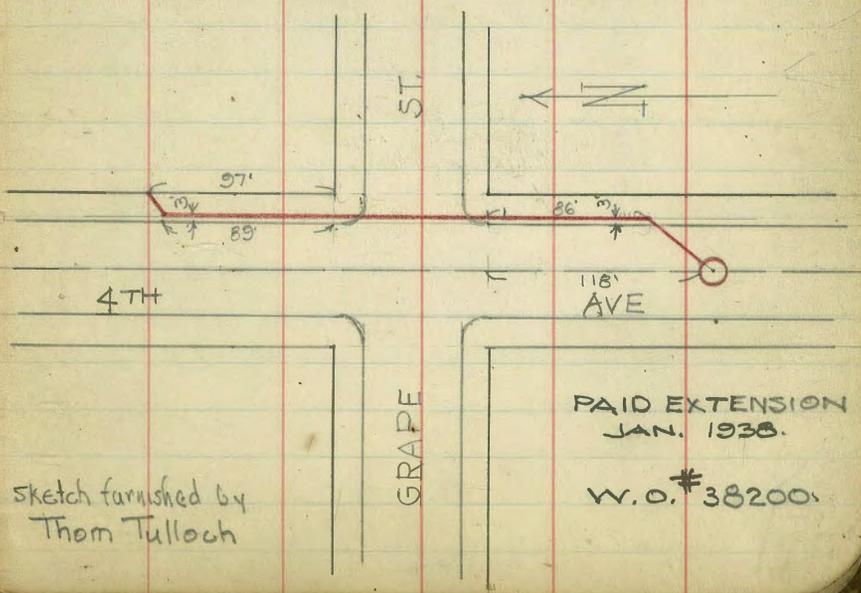
37589

Information
furnished
by Tom Tulloch
5-25-37

Sewer staked 12-21-37 by Fred Miller
Notes in Grade book 186-p. 56.



Flow line at M.H.		17.97
South Inlet	0+00	20.70 See Street grade
Dead End	1+85 South	21.80
North Inlet	0+00	23.00
Dead End	1+35	37.85 About 4' deep



Sketch furnished by
Thom Tulloch

PAID EXTENSION
JAN. 1938.

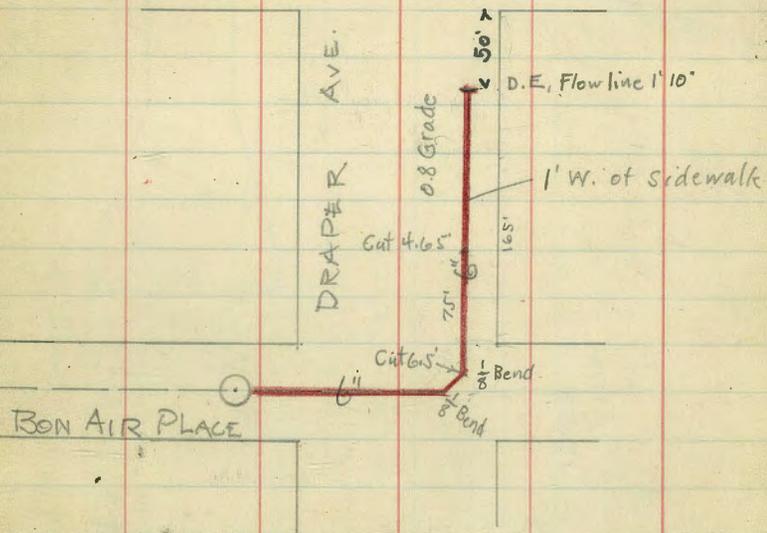
W.O. # 38200.

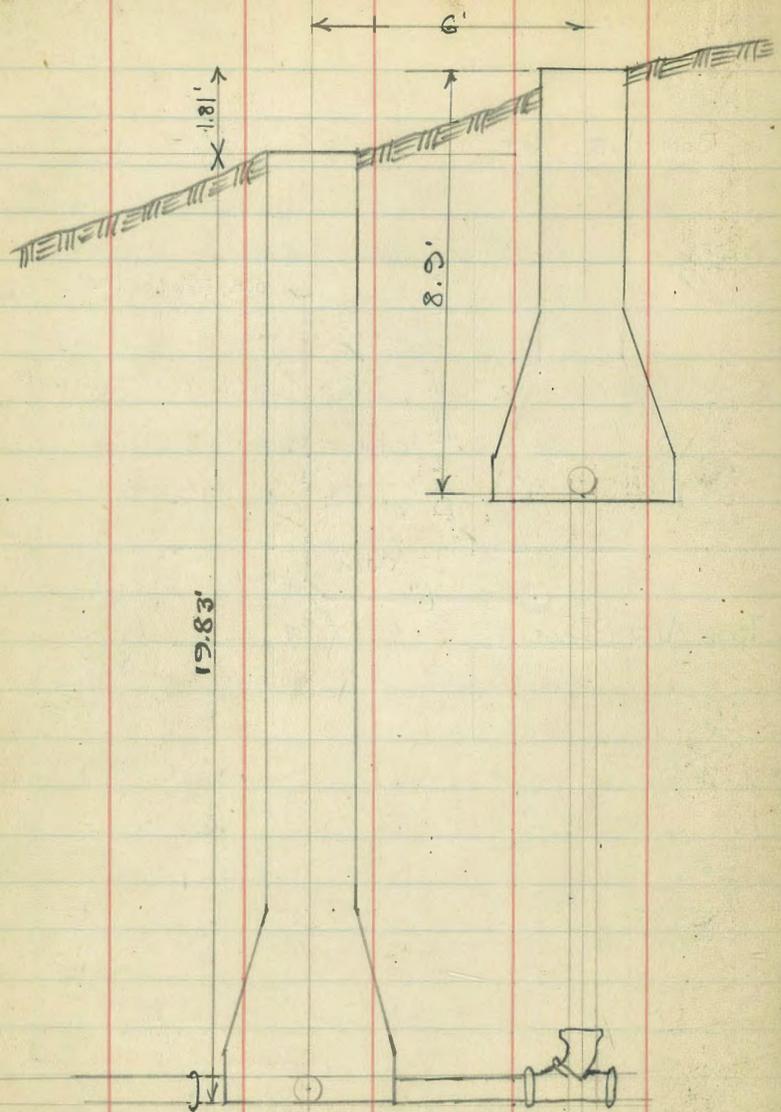
Sewer Extension in Draper Ave

City Sewer Dept. 1938

Copied from sketch by Mr Greear 1-25-39

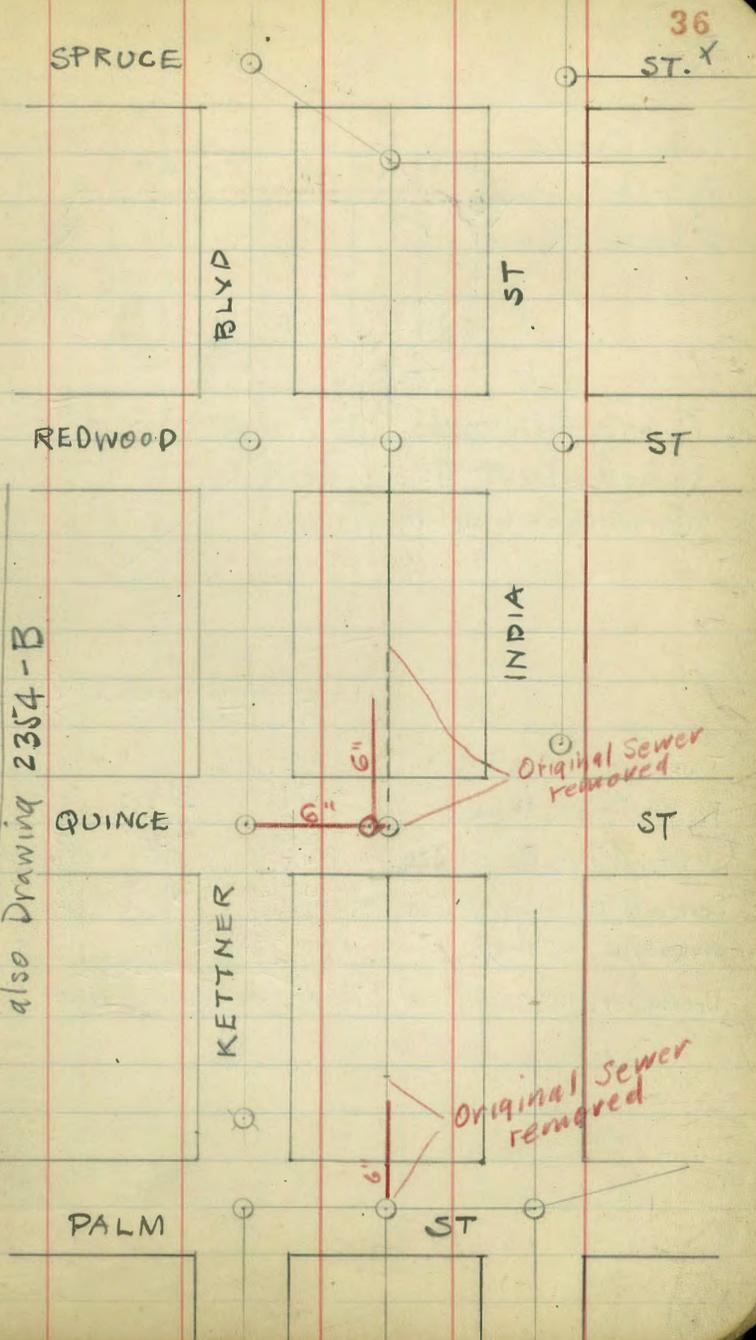
BON AIR ST.



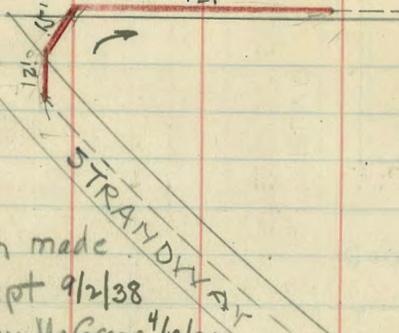


Copied from sketch by Mr Greear
City Sewer Dept March 28, 1939.

See Note book 1570, page 33
also Drawing 2354-B

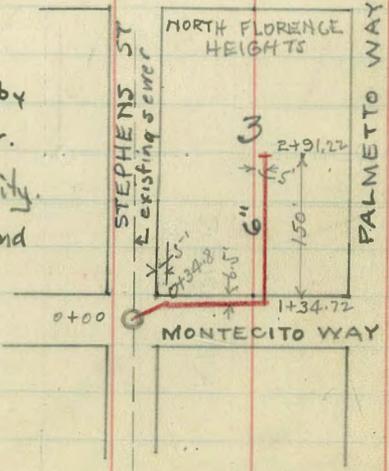


ASBURY 121' COURT



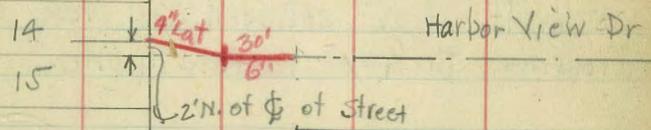
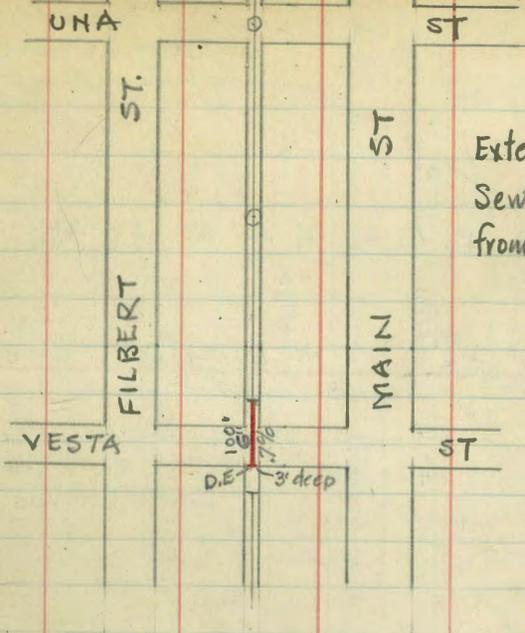
Connection made
by Sewer Dept 9/2/38
Information from Mr Grear 4/19/39

This sewer installed by
Fred Heilbron, Plumber.
*So lateral installed by City.
Sewer is cast iron at end
and about 1.5' deep.
December, 1938



37
X

Extension made by
Sewer Dept. Information
from Mr. Grear 8/30/39



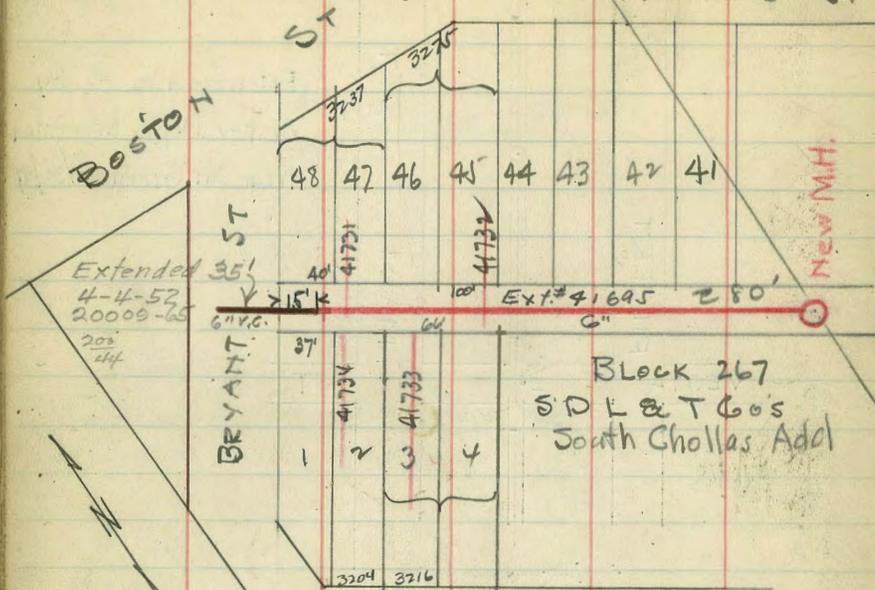
John St

Bangor

Sewer Dept.
Paid Ext
June 26, 1940

Paid Extension

GATTONWOOD ST



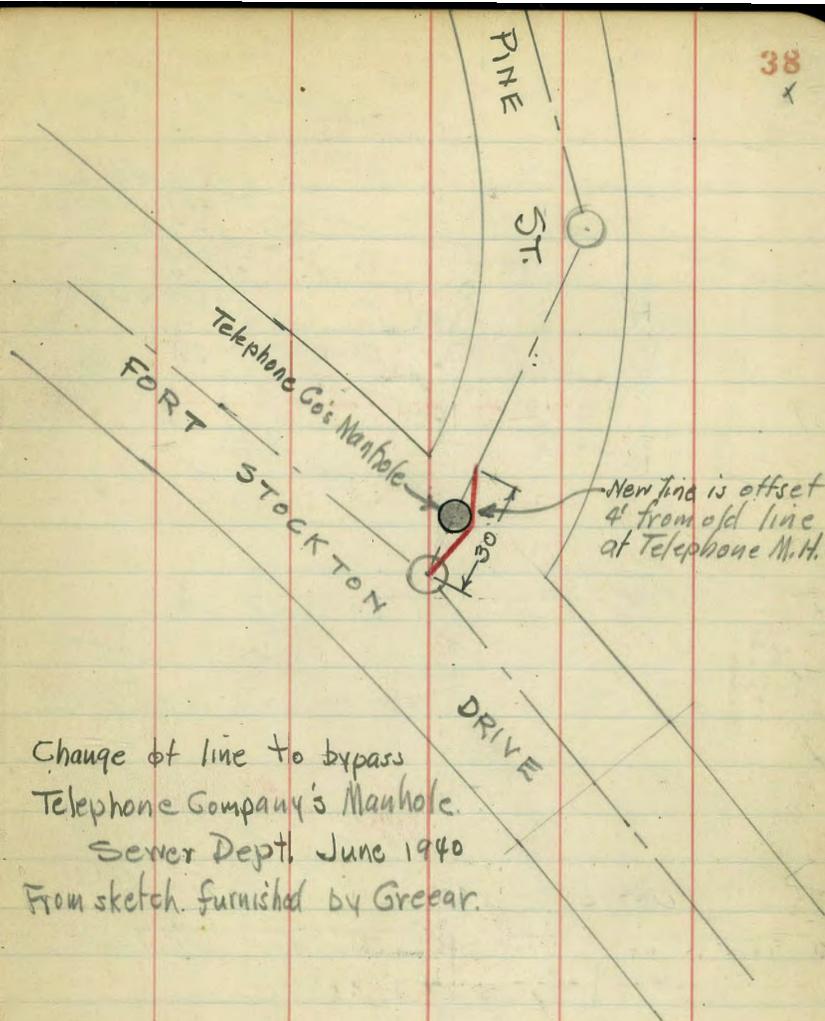
Block 267
S D L & T Co's
South Chollas Add

DALBERGIA ST

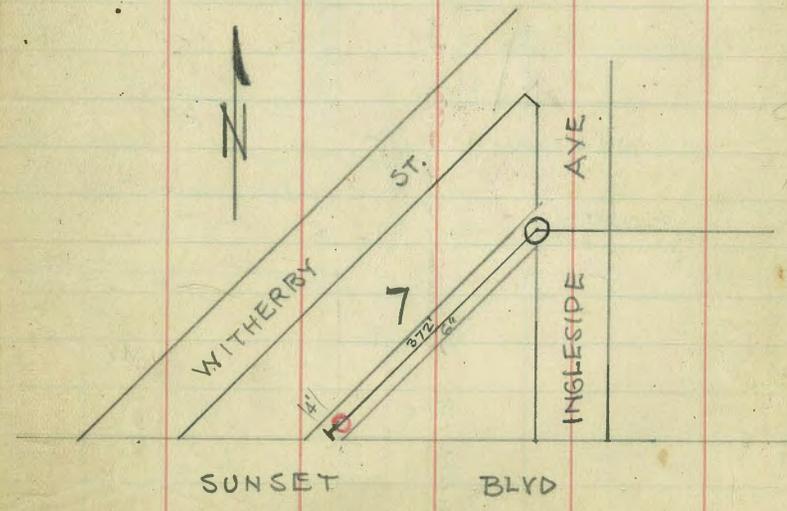
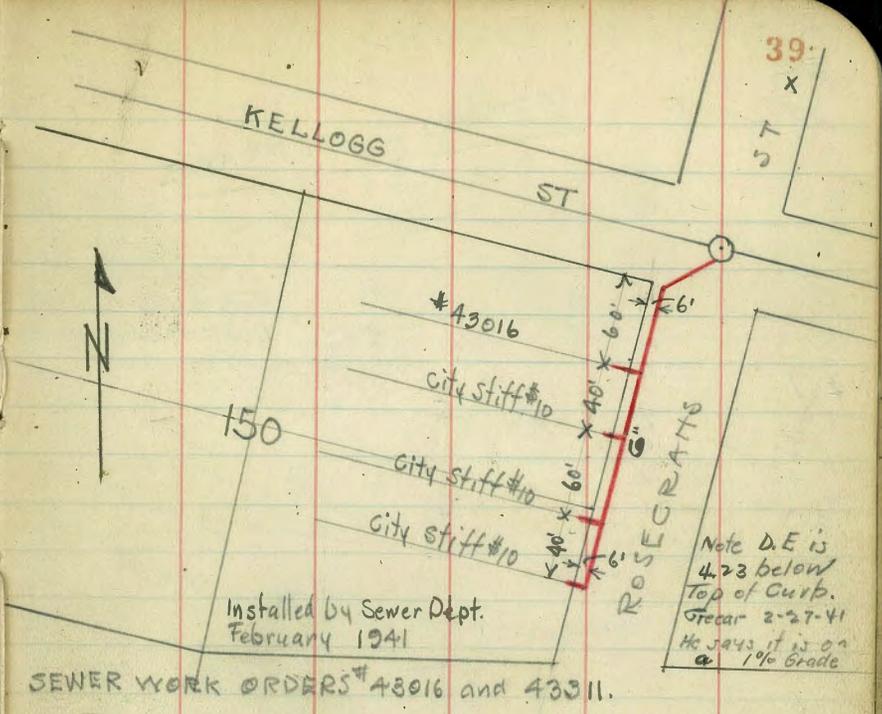
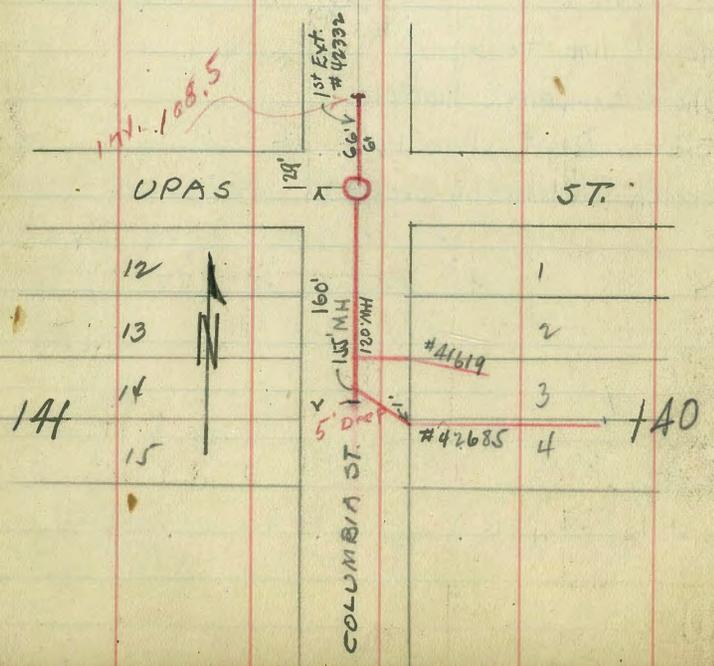
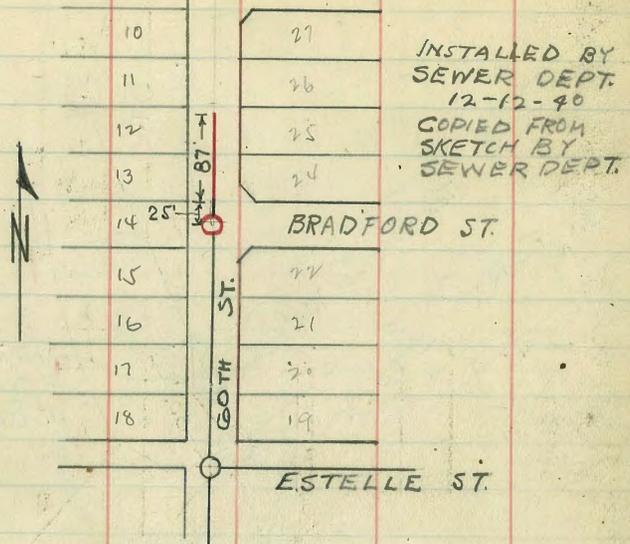
From Sewer Dept 6-18-40

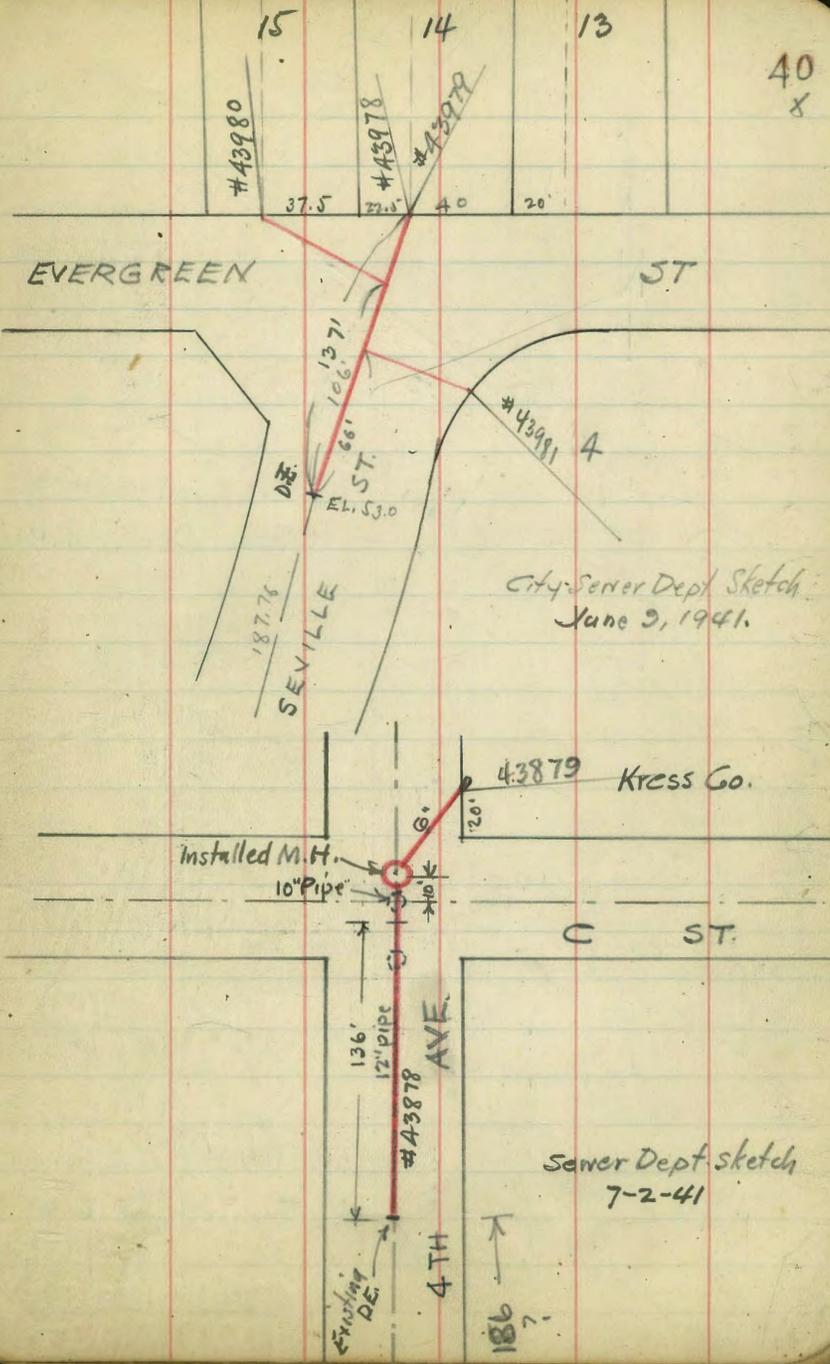
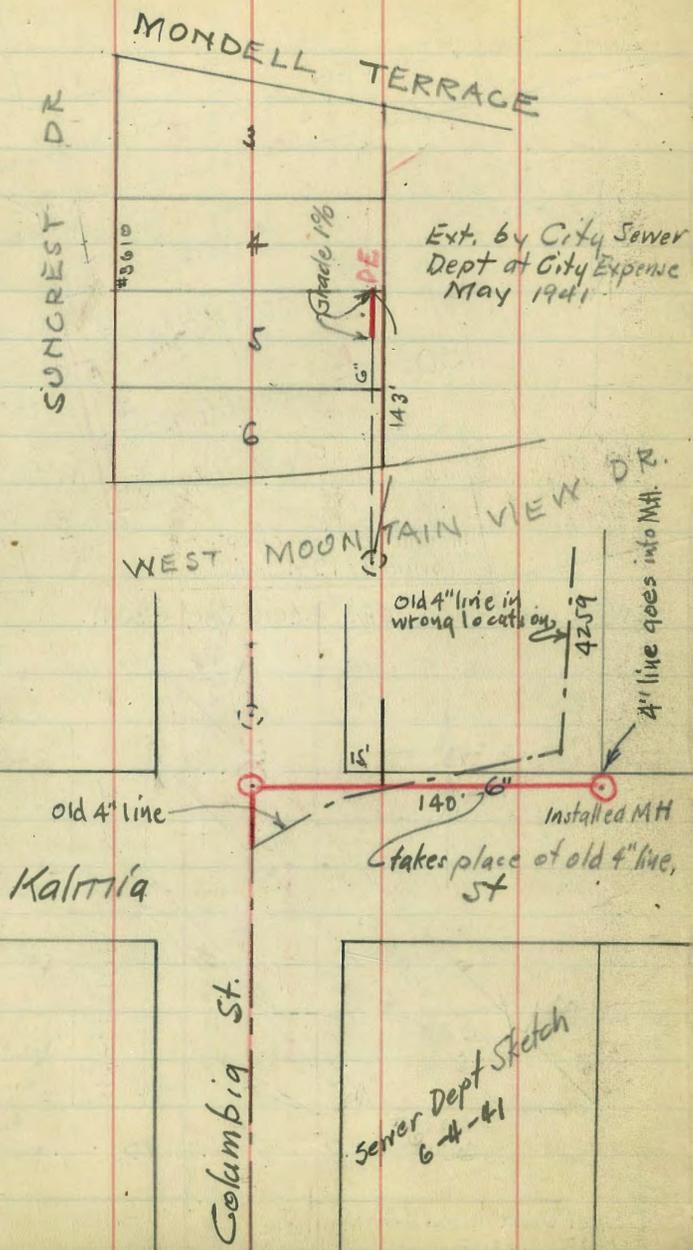
Mr Greear Says there was approximately
35 lin. ft. of 6" salvaged cast iron pipe used
crossing the old railroad grade.

38

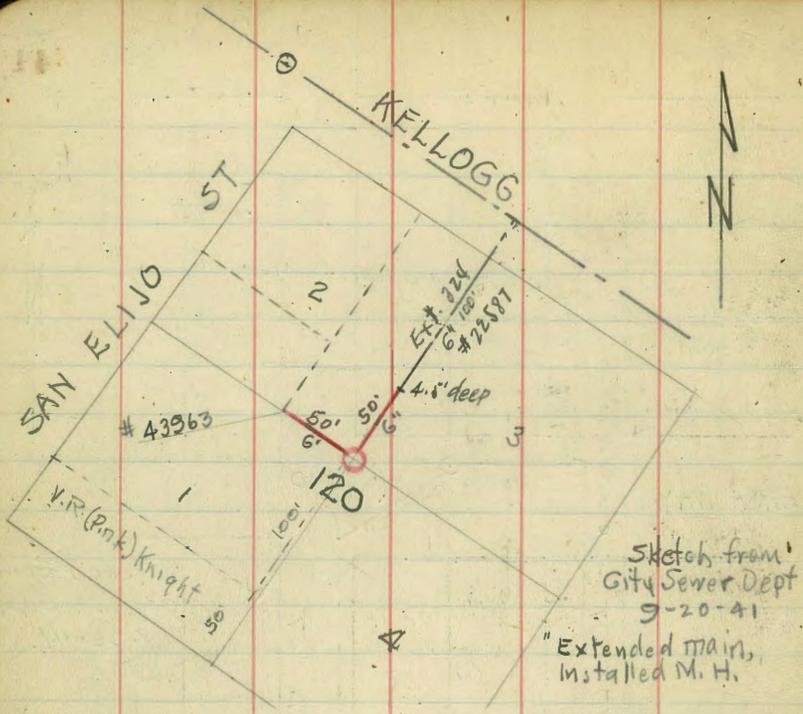


Change of line to bypass
Telephone Company's Manhole.
Sewer Dept. June 1940
From sketch furnished by Greear.





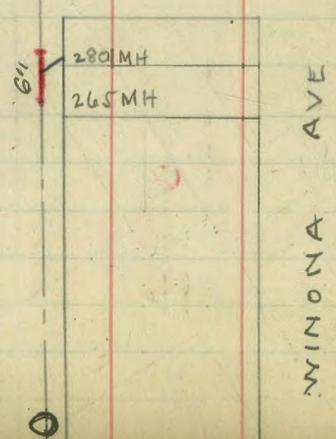
40
8



Sketch from
City Sewer Dept
9-20-41
"Extended main,
Installed M. H.

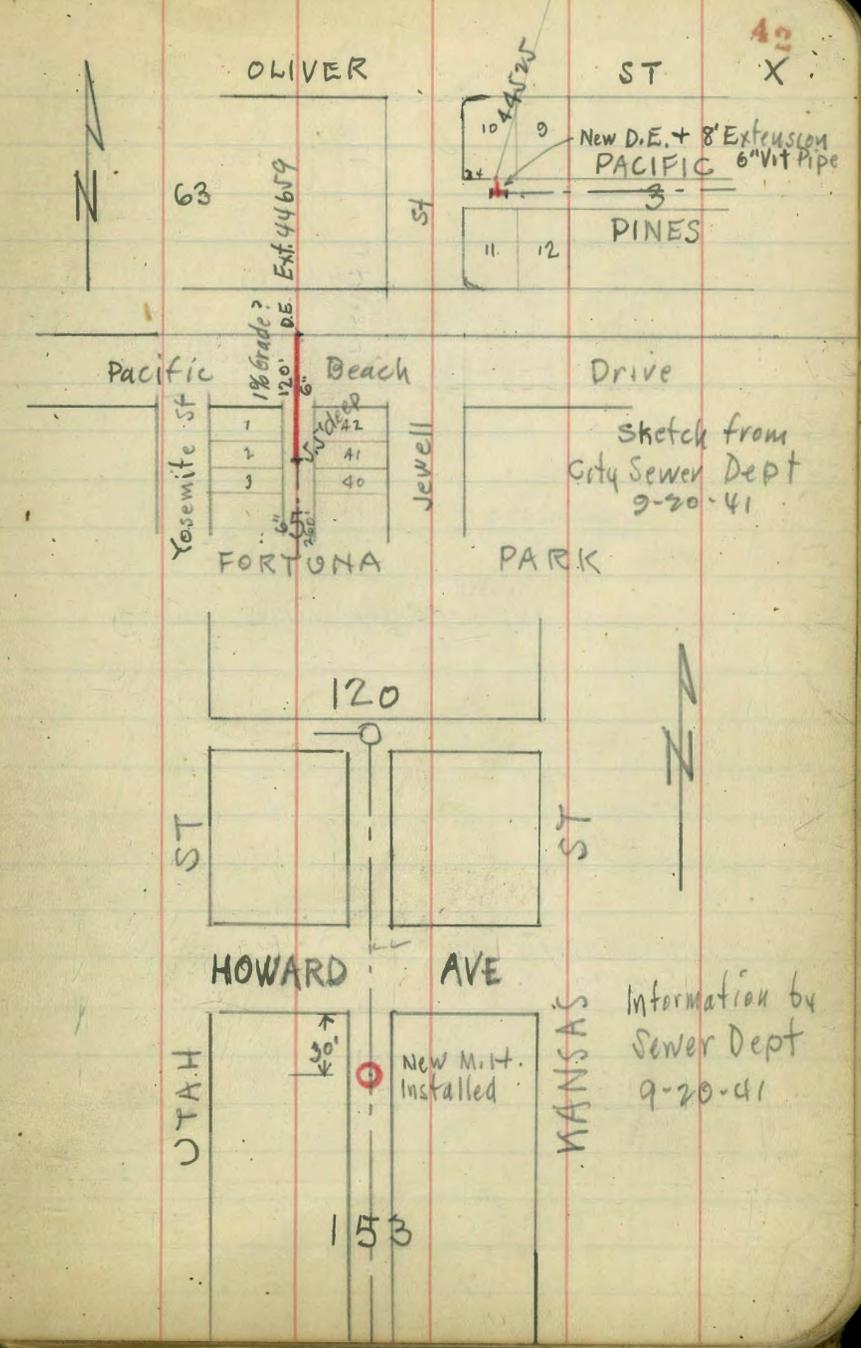
GOLLIER AVE

17' Extension
from Dead End



WINONA AVE

Information by
Sewer Dept.
9-20-41

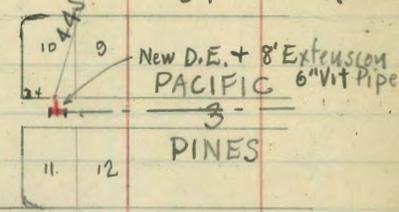


OLIVER

ST X 42

63

Ext. 44659



Pacific

Beach

Drive

Sketch from
City Sewer Dept
9-20-41

Yosemite St

FORTUNA

PARK

120

ST

ST

HOWARD

AVE

UTAH

New M.H.
Installed

KANSAS

Information by
Sewer Dept
9-20-41

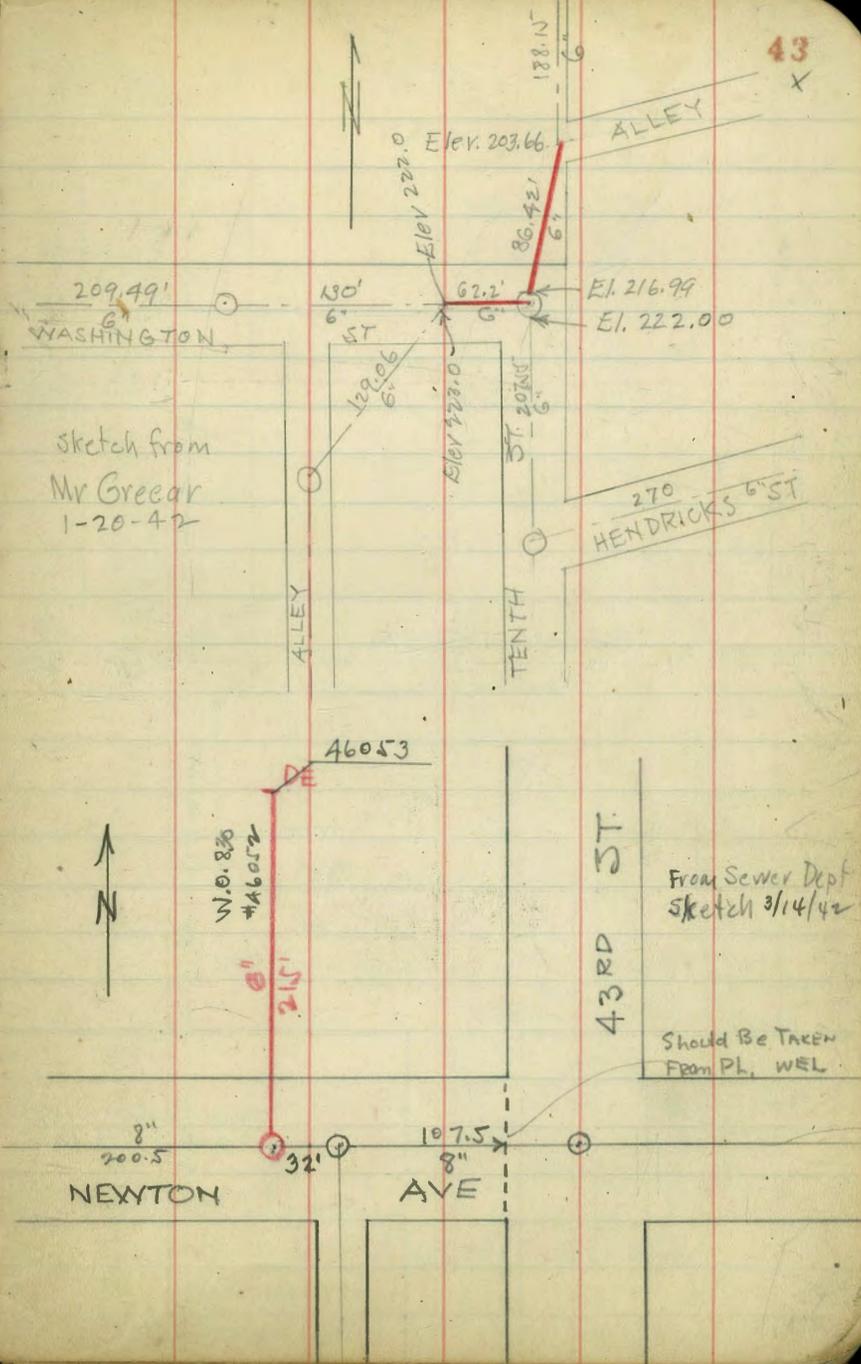
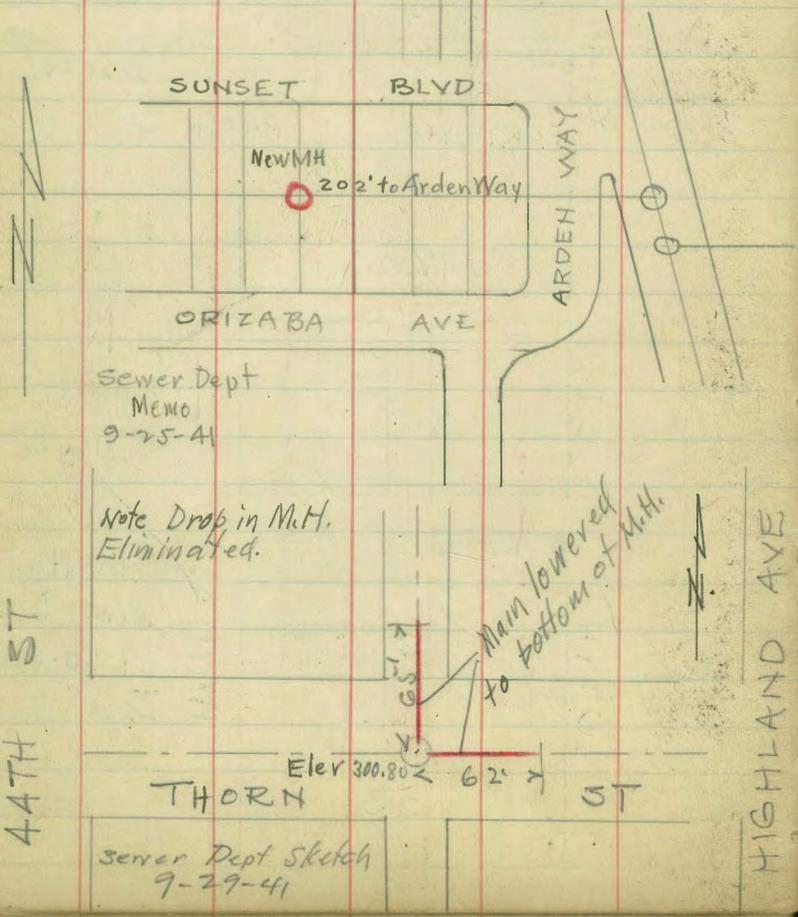
153

4	PENNSYLVANIA	
47	LANE	48
46		49
45		50
44	GODSAL	51
43		52
42		53

BRANT ST.

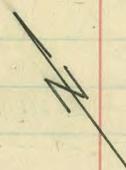
Sewer Dept
Memo
9-25-41

New MH 313'S. of S.L. of
Pennsylvania
3'S. of Pavement on Brant



CAPE MAY

2+80
Gr. +1.04



Gr. -4.10

0+00
Sewer
ST.

1.55%

Gr. -3.72

Gr. -3.30
Existing
ABBOTT
ST.

This portion
washed out
Main plugged at
81' W of MH

SARATOGA

81'

Gr. -3.34

43rd St.

A581

W.O. 721

150'

Easement

52'

6'

D.E.

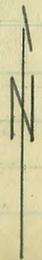
DR.

HILLTOP

8"

W.O. 715

114.93'



From Sewer Dept
sketch 3/14/42

(See also Book 1394
pages 59+60
for details.
Also Dwg 429-S

Staked by Chas. Moore
See Grade Book 179 page 79

Feb 26, 1942

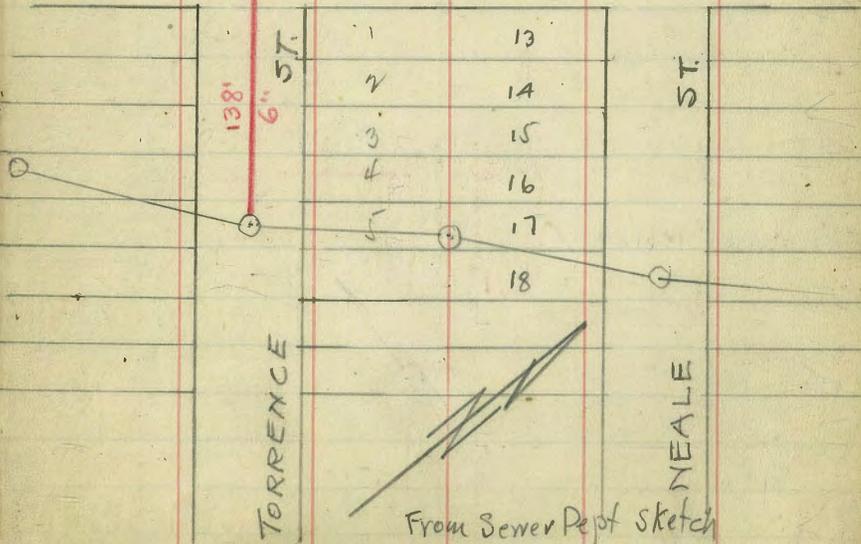
44
x

	Grade	Cut
0+00 = M.H.	-3.72	Flow Line existing
"	-3.30	10.23
0+50	-2.52	10.23
1+00	-1.75	10.66
+50	-0.97	10.48
2+00	-0.20	7.81
+50	+0.57	5.84
+80 D.E.	+1.04	5.17

D.E.

KEATING

ST.



138'

6" ST.

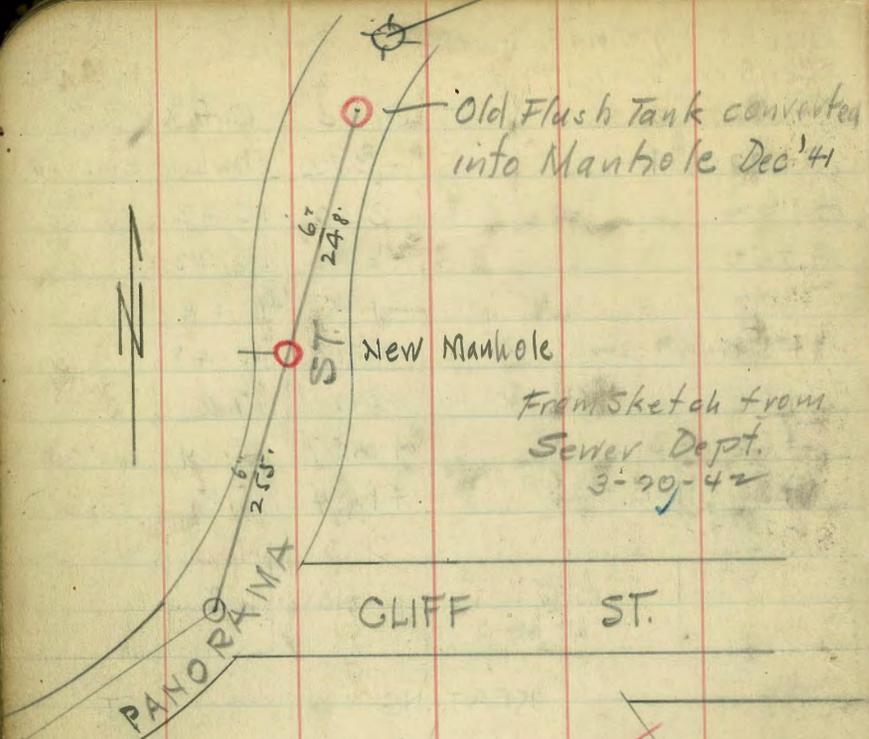
1
2
3
4
5
13
14
15
16
17
18

ST.

From Sewer Dept sketch

See Dwg. 2536-B
Book 481-77

3-20-42
G.R.H.



Old Flush Tank converted into Manhole Dec '41

New Manhole

From Sketch from Sewer Dept. 3-20-42

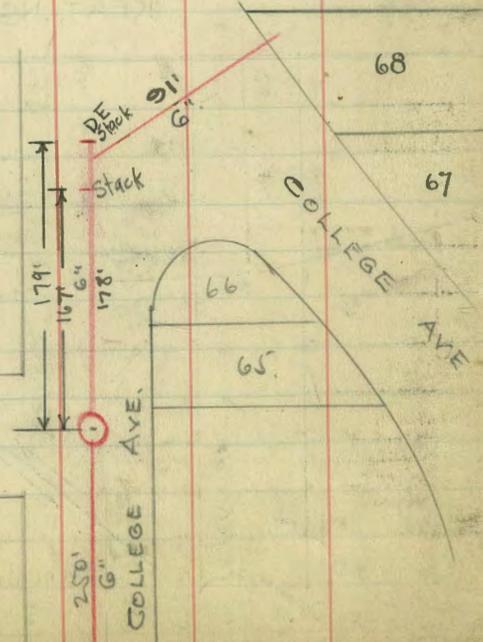
CLIFF ST.

PANORAMA

Sketch from Sewer Dept. 4-1-42

See also 6139+6143 L

CAROL ST.



250' 6"

COLLEGE AVE.

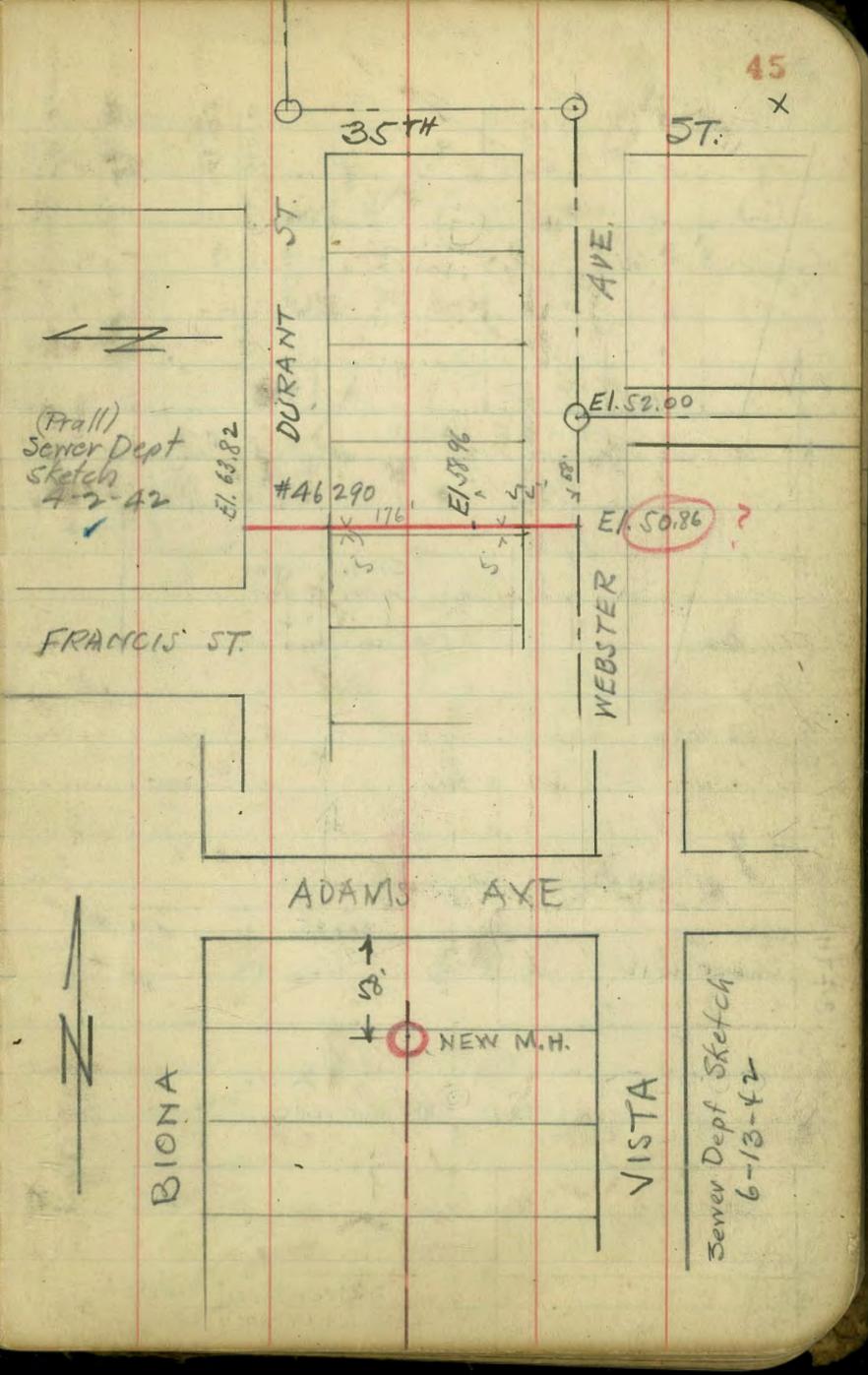
COLLEGE AVE

68

67

66

65



(Fall) Sewer Dept sketch 4-2-42

El. 63.82

#46290

El. 50.86

El. 52.00

El. 50.86 ?

35TH ST.

ST.

DURANT ST.

AVE.

WEBSTER

FRANCIS ST.

ADAMS AVE

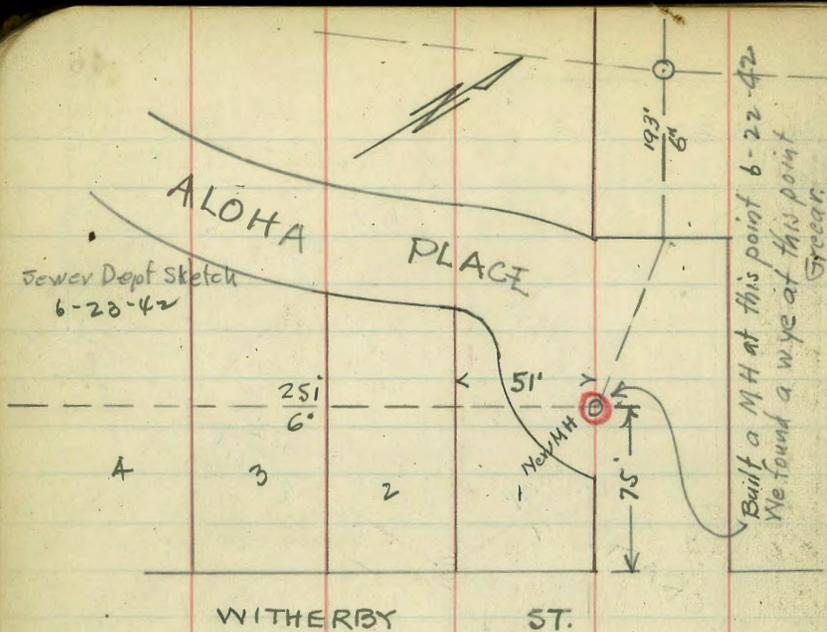
BIONA

VISTA

NEW M.H.

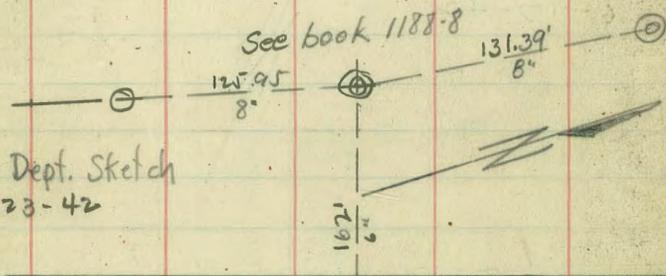
Sewer Dept Sketch 6-13-42

Sewer Dept Sketch
6-28-42

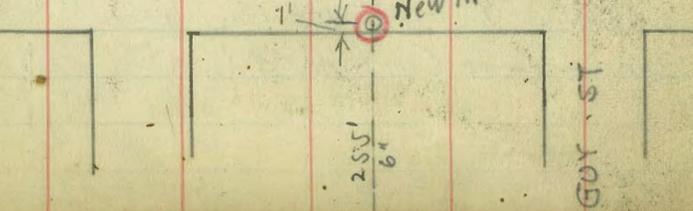


Built a M.H. at this point 6-22-42
We found a wye at this point
Greear.

Sewer Dept. Sketch
6-28-42

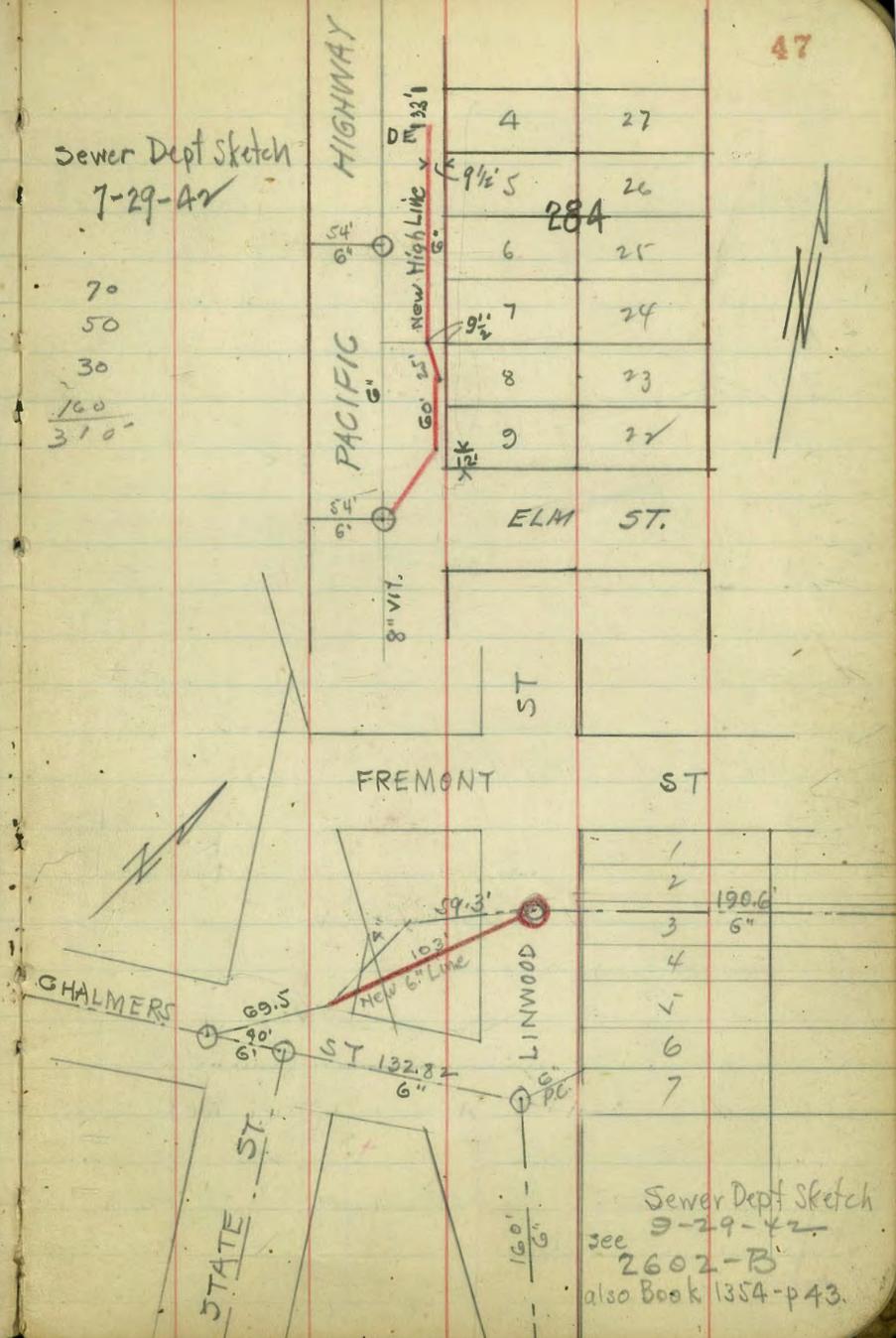


ALAMEDA
New M.H. PLACE



Sewer Dept Sketch
7-29-42

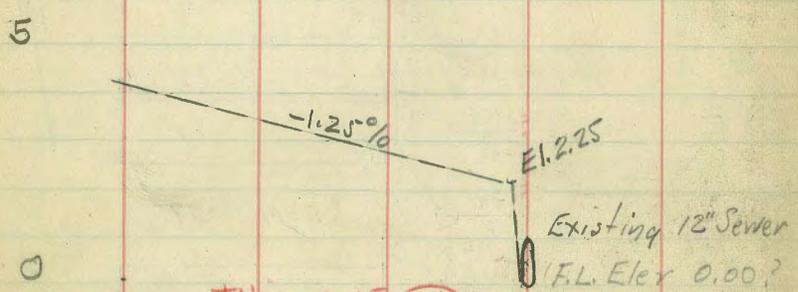
70
50
30
100
370



4	27
6	25
7	24
8	23
9	22

Sewer Dept Sketch
see 9-29-42
2602-B
also Book 1354-p43.

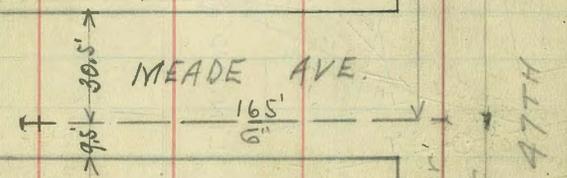
10 Ground Line 349



THIS ONE

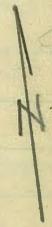
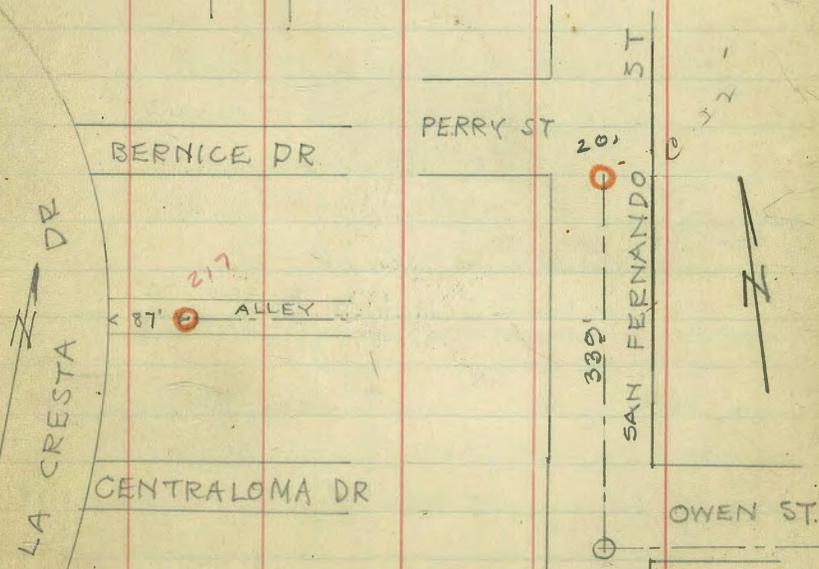
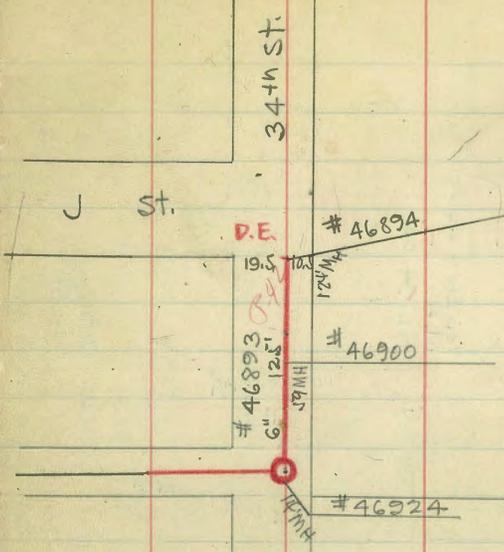
Copied from Sewer Dept. Sketch 10-9-42

El. 0.26 = 337.76

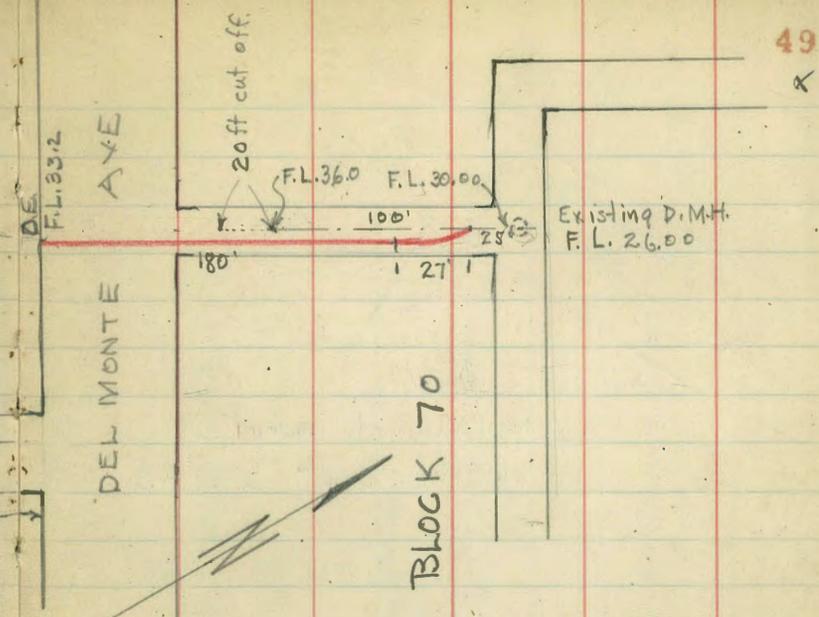
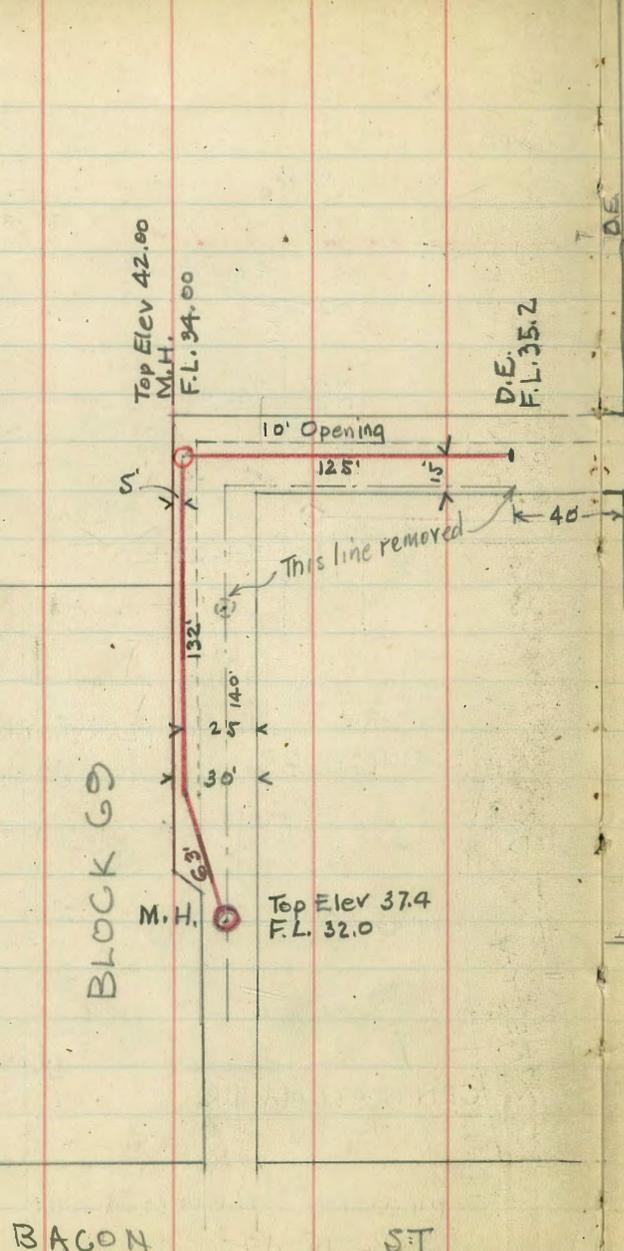


X

Copied from Sewer Dept. Sketch 12/9/42 G.R.H.



Copied from Sewer Dept Sketches 12-15-42 G.R.H.

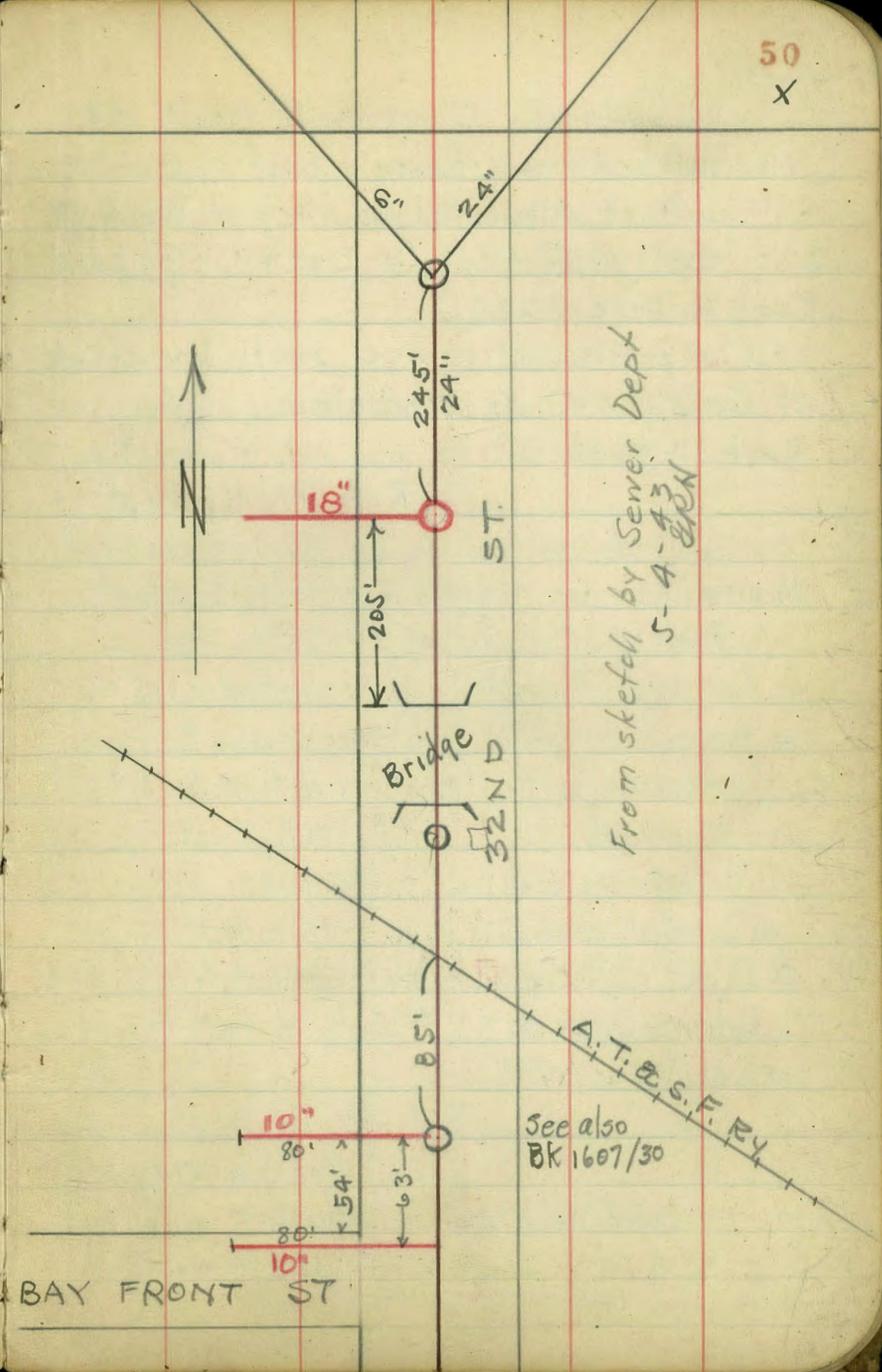
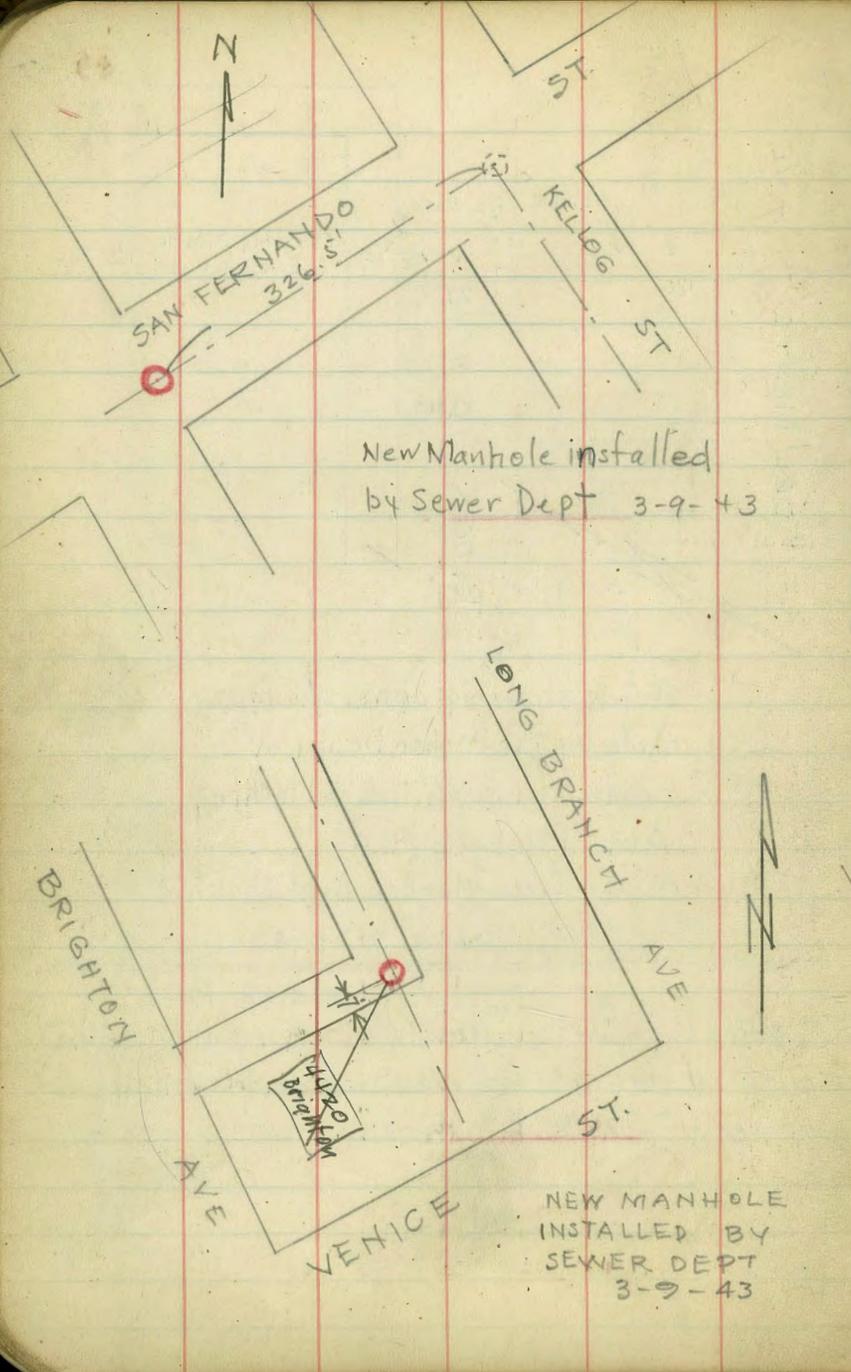


Sketch showing sewer changes
made by the Harbor Dept in
connection with the Del Monte
Ave. Pleasure Pier.
Copied from Harbor Dept sketch
3-23-43.

Oct. 22, 1943
R.A. Prall reports, "New Manhole installed 142.5'
South of manhole on Washington, in alley
between Front & Albatross."

BACON

ST



Sewer Division Nov. 4, 1943.

We installed a new manhole east of Guizot and South of Alhambra in alley of Block 18, 250' east of Guizot, (250' E of MH in Guizot).

Book 6, page 823.

Changed inspection wye, south line of Cedar at California, into manhole.

Book 1, page 4.

R. A. Prall, Supt.

Sewer Division Nov. 29, 1943.

We installed a new manhole in the alley South of Logan Ave 177.5 feet east of 31st St.

We find the 6" main in this alley was extended 125' west from this new manhole at some time, passing the flush tank and paralleling the 6" main flowing towards 31st St.

R. A. Prall, Supt.

Sewer Division Dec. 4, 1943.

We installed 2 manholes at the locations below.

- (1) 90 ft. east of Richmond in alley South of Pennsylvania.
- (2) On Redlands Drive 327.5 ft south of first manhole north of Adams Ave.

R. A. Prall, Supt.

Dec 8, 1943.

We extended the 6" main from the D.E. in Alley east of 32nd St & South of F 123 ft west across 32nd St.

R. A. Prall, Supt. Sewers

Dec. 23, 1943

✓ We installed a new manhole on the dead end in the alley south of Valk St. and east of 30th 30.5'

R. A. Prall, Supt. Division of Sewers

Dec 31, 1943

We installed a new manhole on Florida Court 78' west from the west line of Florida Street.

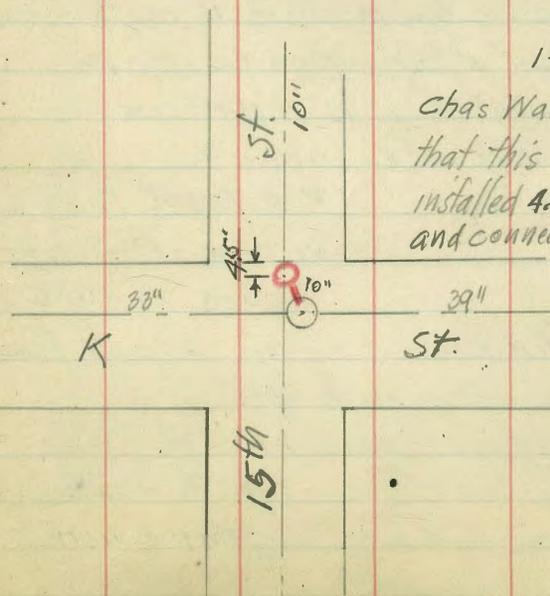
(S.W. 2nd)

Also a new manhole on west line of Arista Drive 125' north of Hickory St. where easement sewer enters property

R. A. Prall, Supt. Sewer Division.

1-8-AA

Chas Walker reports that this manhole was installed 4.5' of street line and connection made to 39" sewer.

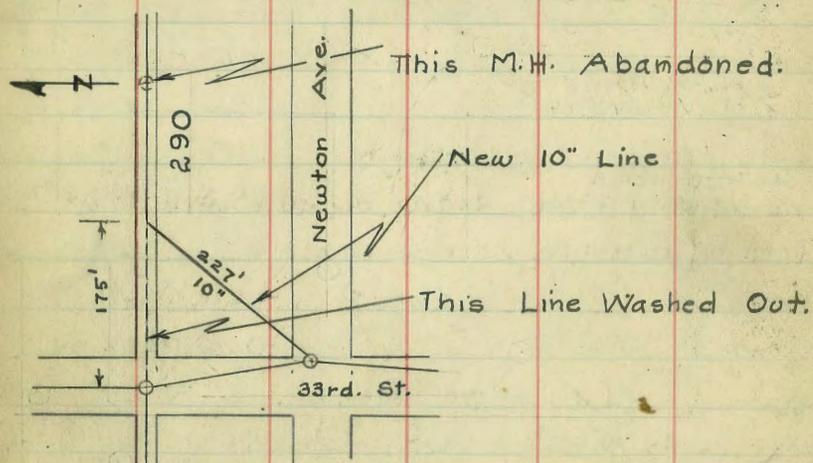


Feb 16, 1944

We installed a new manhole in the alley west of St. James Place 285' South of the manhole in Sheridan St.

And one (at the anglepoint) 103' East of the dead end on the 6" main, north of Court Way & East of Hawk St. (See G. B. 137 p 60)

R. A. Prall Supt.



Sketch from information furnished by R. A. Prall

4-6-44 c.e.b.

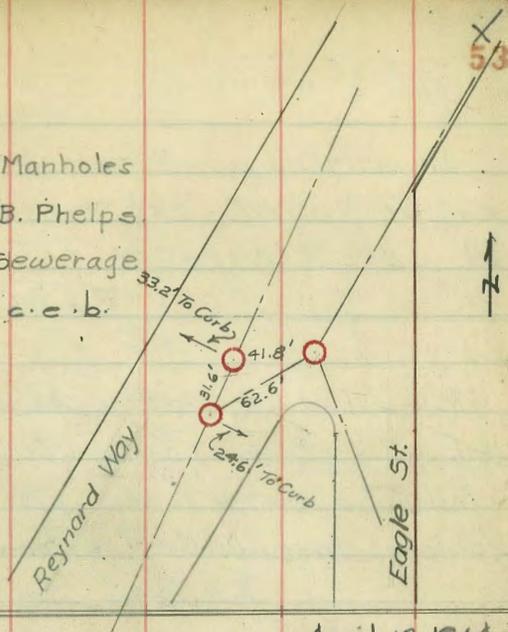
June 13, 1944

We installed a new manhole on the end of the 18" Vit. line on San Antonio St 183' south of the manhole at Kellogg, and connected to the manhole just inside of the fence at Fort Rosecrans with 12' of 12" Vit. Pipe

R. A. Prall, Supt.

March 18, 1944

Location of Manholes from Sketch of B. Phelps. For location of Sewerage see 3636-L c.e.b.



April 12, 1944

We installed a new manhole on Violet St 182' South from the drop manhole in Sycamore.

R. A. Prall, Supt.

April 18, 1944

We installed a new manhole in alley 175' S fr. the S.L. of Thorn, west of 30th St.

R. A. Prall, Supt.

April 21, 1944

We installed a new manhole at intersection of Harbor View Drive & Runnymede Lane

R. A. Prall, Supt. Sewer Division

May 5th 1944

We installed a new manhole on South Crescent Court, 200' west from Manhole in Pennsylvania St.

R. A. Prall Supt Sewer Divn.

June 20, 1944
 We installed a new manhole on the 6" line on 54th Street, 240' north of the manhole at 54th & Narayja Sts.

R.A. Prall, Supt. Sewer Divn.

Aug 19, 1944
 We installed a manhole in the alley 200' W. of M.H. in Santa Barbara, between Del Mar & Coronado.

Installed a manhole in alley 250' W. of M.H. in Venice, between Del Monte & Marraquansett.

R.A. Prall, Supt. of Sewers.

Sept. 1, 1944

We installed a new manhole in alley between Lincoln & Hayes, 155' W. fr MH in center of Vermont.

We extended the 6" main on 60th St, just South of El Cajon Blvd. to the center line of Carol St.

R.A. Prall, Supt.

Sept 12, 1944

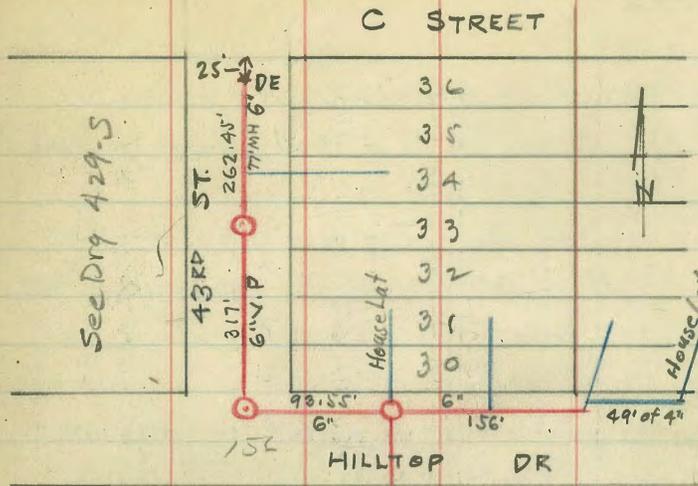
We built a new manhole in alley between 6th & 7th streets, 150' south from the south line of University.

R.A. Prall, Supt Sewer Division

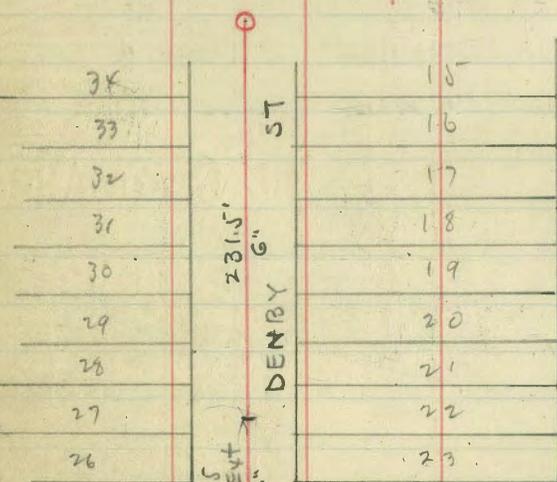
Oct. 2, 1944

We installed a new manhole at 8th & Pennsylvania, 105' N from MH at 8th & Pa 125' South of South D.E. on 8th.

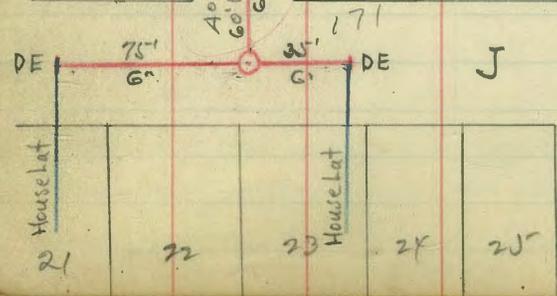
R.A. Prall, Supt.



x
54
 Copied from Sewer Dept Sketch 9-20-44



Copied from Sewer Dept Sketch 9-20-44

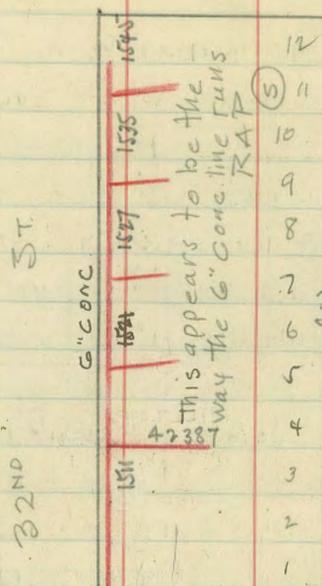


J-22
 St.

CEDAR

ST.

18

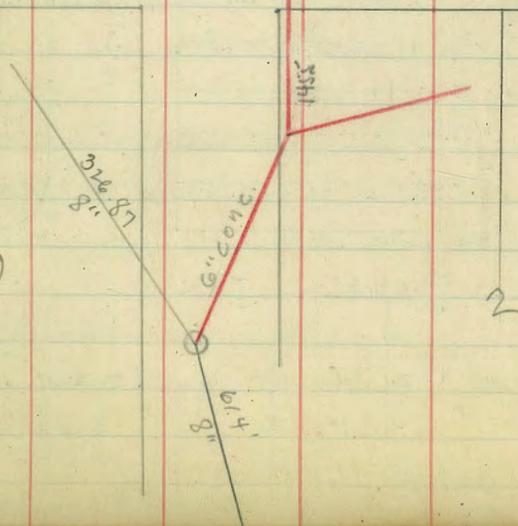


Copied from Sewer Dept Sketch
9-23-44 R.P.H.

BEECH

ST.

19



55

Oct. 6, 1944

- ✓ We installed a new manhole at the north property line of K St., at center of 6th Ave., on the 8" sewer.
R.A. Prall, Supt.

Oct. 30, 1944

- ✓ We installed a new manhole between 32nd St. and Edgemont, 151' N from N.L. of B St.
We also installed a new manhole 100' S. from University, at the center line of Brant where extension of block 4, connects with main in Brant St. (see p. 81) R.A. Prall, Supt

Nov. 22, 1944

- ✓ We installed a new manhole where the inspection Wye was at the south property line of Beech St. at India St.
R.A. Prall, Supt

Dec. 18, 1944

- We installed a new manhole on the 6" lateral run up on Broadway for Swift Packing, at a point 11.5' E from the E.L. of Pacific Blvd and 24.6' N. from the S.L. of Broadway.
(See next note below) R.A. Prall, Supt

John Smith says the existing lateral on Broadway is 24.6' N of the S.L. and extends 150 ft. E from the E. line of Pacific Highway. GRH 12-19-44

Dec. 29, 1944

- We installed a new manhole on Alameda Terrace, 226' south of the MH at Henry St.

R.A. Prall Supt.
Sewer Division

Mar. 6, 1945

✓ We installed a new manhole at the south property line of F St, in India (changed inspection Wye to M.H.)

R.A. Prall, Supt. Sewer Divn.

Mar. 23, 1945

✓ We installed a new manhole in the alley north of Palm St., 51' West of 32nd St.

R.A. Prall, Supt. Sewer Divn.

Apr. 6 - 1945

At 45th & Ocean View Blvd.

✓ We installed a 6" vit. Sewer main from the manhole at 45th & O.V., to a point 115' straight north on 45th St, to a D.E.

R.A. Prall, Supt. Sewers

April 25, 1945

✓ We installed a new manhole in place of the inspection Wye on 3rd Ave, at the South line of Ash

R.A. Prall, Supt. Division of Sewers

May 2nd 1945

✓ We installed a new manhole at the west property line of Cable on the sewer main in the center line of Orchard St.

R.A. Prall Supt. Divn of Sewers

Sewer Division May 4, 1945

✓ We installed a new manhole on 3rd St, 10' South of the North property line of B St.

R.A. Prall Supt.

June 1, 1945

For your information the 6" sewer main in 5th Ave. between Brookes Ave and Ivy Lane, lies on the West side of 5th Ave, 5' out from the curb on 19' East of the West Line of 5th.

O.A. Moen, Sewer Divn.

June 11, 1945

✓ We installed a new manhole on the 6" line on the East side of Columbia St, 316' north of manhole in Nutmeg St.

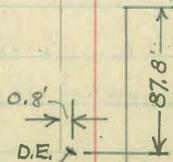
R.A. Prall, Supt. Sewer Divn

D.E. 84.8'S
3
87.8'S of
J.L. Commercial
.80 E of 19th
Sisson's Notes
7-24-45

COMMERCIAL

F of 19th St

Note:
This D.E. was located on the ground by Sisson 7-24-45. The sewer was not constructed as shown on Drawing 2309-L, but approximately as here shown.
G.R.H. 7/25/45



Probably this should
 be a MH at north curb line
 SRH 7/27/45

July 27, 1945

→ We installed a manhole in the center line of
 Cornish at the North property line of Ladera St.
 1 and extended the 6" sewer main to the southeast
 corner of Ladera and Cornish.

R.A. Prall, Supt Sewer Division

Aug 25, 1945

✓ We installed 2 manholes on the sewer main on the east
 side of Park Blvd south of University. 1 at 19' S. from the
 S. line of University at G.O. 1 at 26' N from MH
 at Robinson & Park R.A. Prall Supt Sewer Division

Notes for 4" sewer installed by Sewer Dept 9/4/45
 in 34th St to serve Block E, Home Gardens

Levels taken by Ole Moon.

Station	Elev	Grade	Cut
0+00	15.60	10.10	5.50
0+27	14.44	10.70	3.74
0+54	13.30	11.30	2.00
0+81	15.54	11.90	3.64
1+08	17.02	12.50	4.52

2.29%

Taps 30" sewer at 181' S of manhole in Webster

Lot 3
 Lot 6
 Elev 12.04

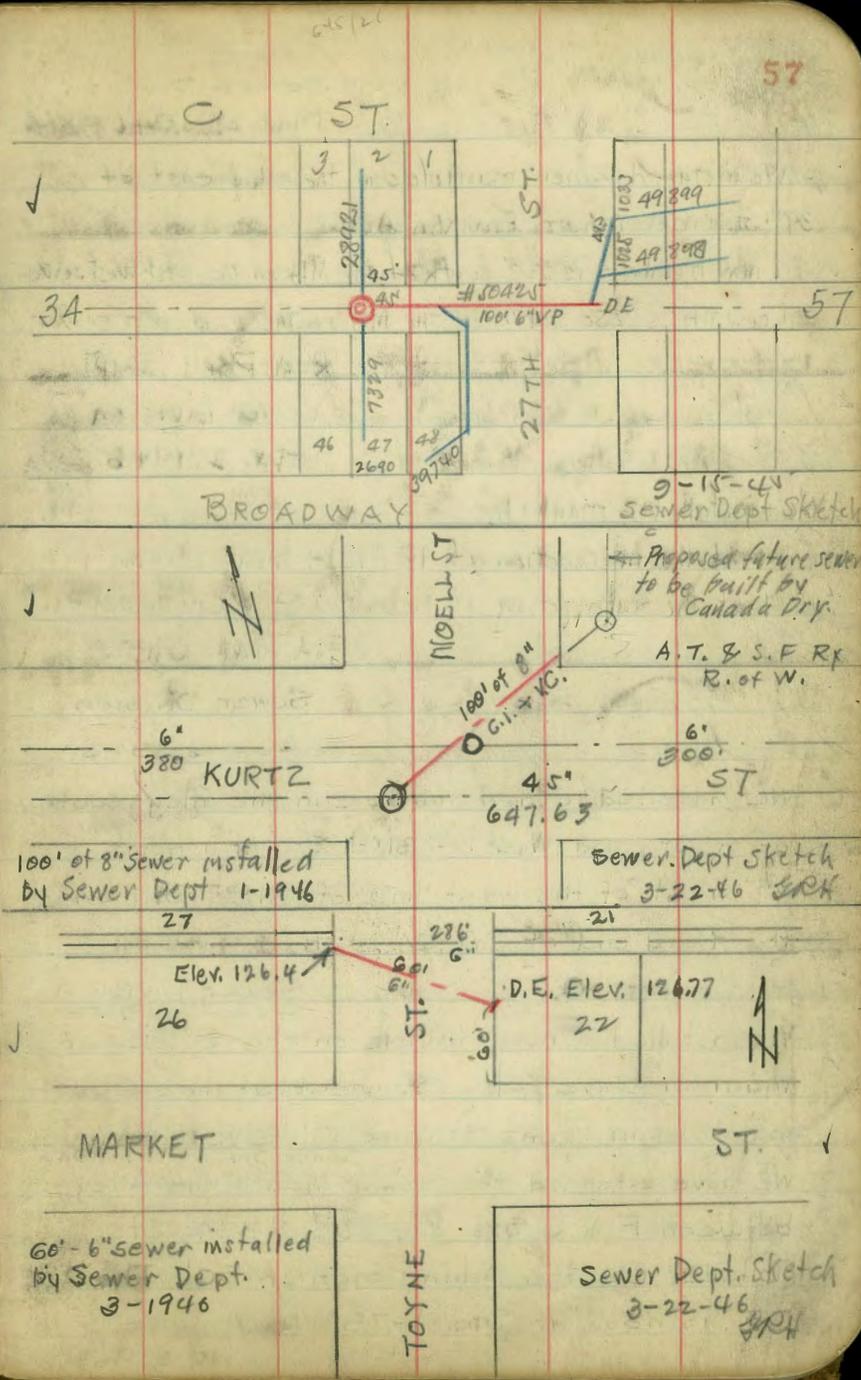
4" V.C.

El. 10.10

Existing
 30" sewer

El. 8.38

110'



9-15-45
 Sewer Dept Sketch

Proposed future sewer
 to be built by
 Canada Dry.
 A.T. & S.F. Ry
 R. of W.

100' of 8" sewer installed
 by Sewer Dept 1-1946

Sewer Dept Sketch
 3-22-46 SRH

60' - 6" sewer installed
 by Sewer Dept.
 3-1946

Sewer Dept. Sketch
 3-22-46
 SRH

Sewer Division

Mar. 28, 1946

We installed 2 new manholes in the alley east of 39th St. and north of Franklin Ave.

- ✓ 1 new manhole is 208' south of the MH on the east-west sewer
- 1 new MH is .250' north of the MH on the east west sewer.

R.A. Prall, Supt

Sewer Division

Apr. 2, 1946

We installed 2 manholes

- ✓ 1 at the intersection of 1st Ave + Montecito.
- 1 at the intersection of Robinson St & Crestwood Pl.

R.A. Prall Supt.

Sewer Division

Aug. 16, 1946

- ✓ We installed a new manhole in the alley south of A St., and West of 31st St., at a point 27' west of the west line of 31st St., on the dead end of the 6" main. R.A. Prall

Sewer Division
Aug 16 1946

- ✓ We installed a new manhole on the 6" sewer main in Olive St., 135' west of the manhole in Front St. and Olive St. R.A. Prall

Sewer Div Nov. 1946

- ✓ We have extended the Sewer Main in the Alley between F & G Sts. and 32nd & 33rd Sts. (Blk. 127 Choates Addn) another 50'. The D.E. is now at Sta. 1+75

R.A. Prall

Sewer Division 58

Dec. 18, 1946

✓ We installed a new manhole on the end of the 6" sewer main in the alley south of K St., 133' East of the east line of 29th St. The old sewer stopped at that point and there was no flush tank installed. R.A. Prall Supt. DIV. OF SEWER

Sewer Div. Dec 23 1946

✓ We installed a new manhole on the Dead End of the 6" Sewer in the Alley east of Dale St. 48.5 feet North of the North Line of Redwood St.

R.A. Prall Supt.

Sewer Division

Jan. 28, 1947

- ✓ We installed 2 new Manholes. One on Bachman Place 30' N of the N. Line of Montecito Way.
- ✓ One on 3rd Ave 542' N of the M.H. at 3rd and Arbor Drive

R.A. Prall

Div. of Sewers

Sewer Division 2-6-47

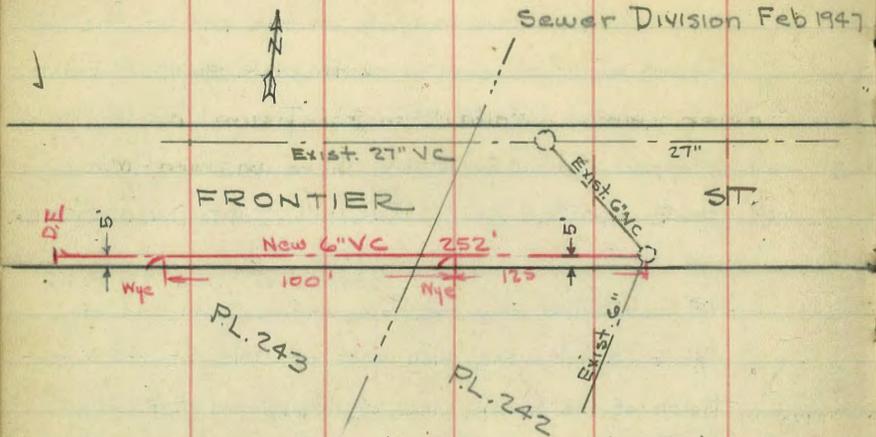
✓ We installed a new manhole on the 6" Sewer 37' N. of the N. line of Beech St. and 75' east of the E line of 10th St.

Also a new Manhole on the South line of Walnut St. 148' east of the East line of India St.

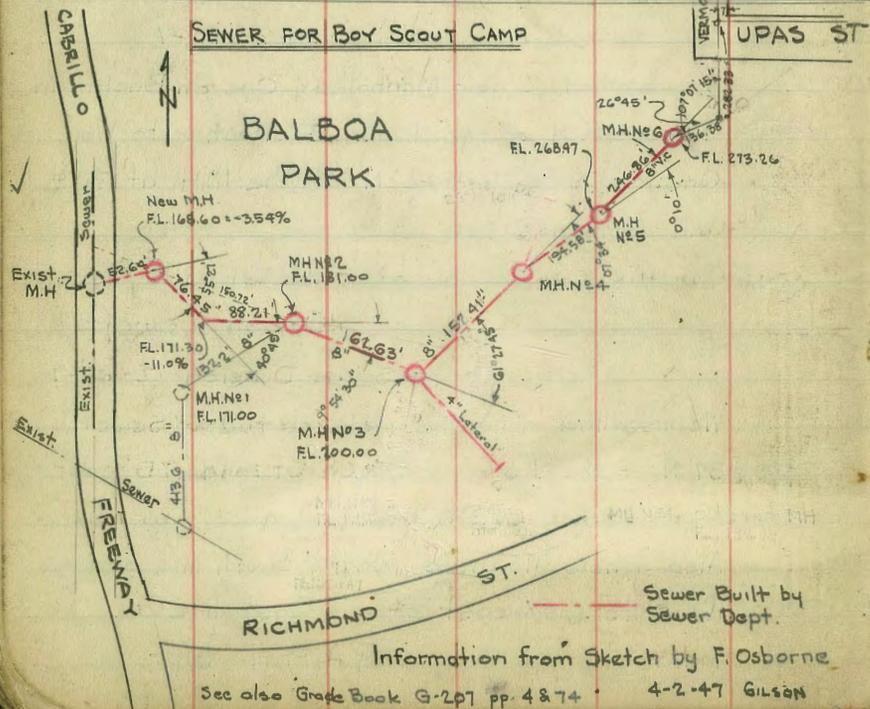
R.A. Prall Supt.

not on map

Sewer Division Feb 1947



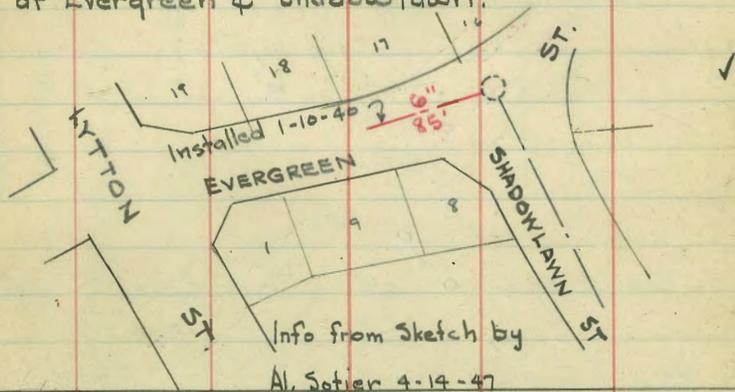
Sketch from information furnished by Sotier
Sewer INSTALLED FEB. 1947



Sewer Division

APRIL 14 1947

Sewer Dept. installed an extension in
Evergreen St 85' SW.ly from existing M.H.
at Evergreen & Shadowlawn.



Sewer Division

May 7 1947

We installed a new manhole on the easement sewer
in Block 10 10: 148 feet south of Wightman and 100'
east of the East line of 30th St.

R.A. Prall

Supt. Sewer Division

Sewer Division

May 15 1947

We installed a new manhole on 10th St. at the
north property line of B St.

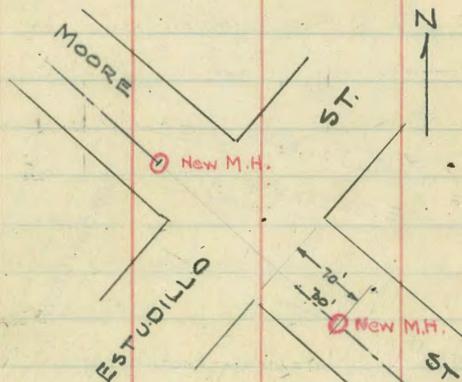
R.A. Prall

Supt. Sewer Div.

Sewer Division

June 4 1947

We installed 2 new Manholes. (See sketch below)



Al Sotier
Sewer Dept.

Sewer Division

June 5 1947

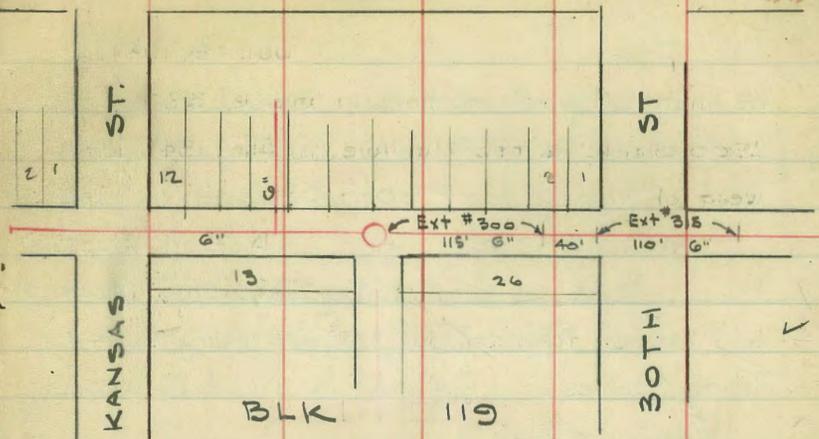
We had 2 Extension Permits. #300 extend sewer 115' E in Alley Blk 119 to serve 5 40' lots 1 & 2.

#315 Extend Sewer from 25' E. of E.L. of 30th to a point on W.L. of 30th at Alley. These two extensions left a gap of about 40', so the Sewer Dept. at sometime joined the two lines together.

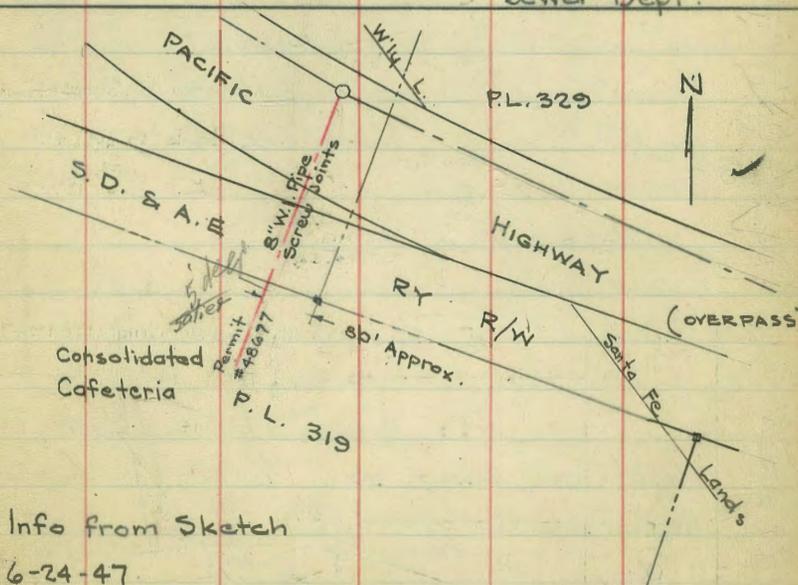
(See Sketch next page.)

EL CAJON BLVD.

60



Al. Sotier
Sewer Dept.



Info from Sketch

6-24-47

Geo. Gilson

July 9, 1947

We installed a new manhole in Block 323,
2900 block in Franklin Ave, in Alleg 342 LF
west of west line of 30th St.

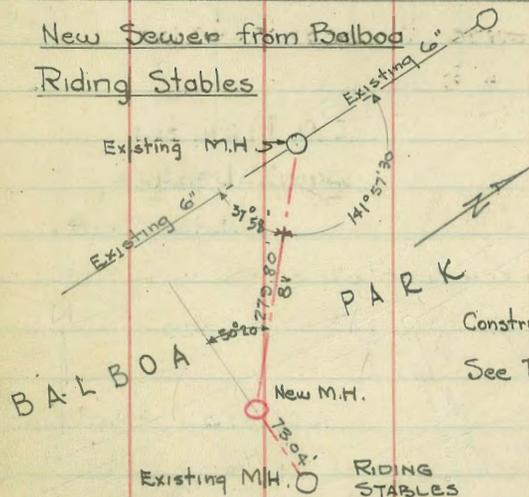
R.A. Prall Supt.

Division of Sewers

New Sewer from Balboa

Riding Stables

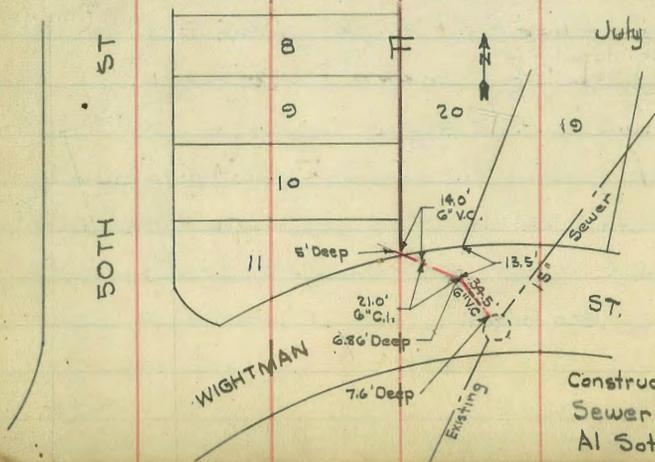
July 15, 1947



Constructed by Sewer Dept.

See Book G207-4

July 17, 1947



Constructed 7-17-47
Sewer Dept.
Al Sotier

July 28, 1947

We installed a new manhole on the sewer main
294 feet south of the south line of Landis St,
west of Euclid Ave.

R.A. Prall, Supt.

Sewer Division

We installed a Manhole on D.E.
West of 70th Street, between El Cajon
and Mohawk in block 8

R.A. Prall, Supt.

Sewer Dept.

Recd 9-4-47

July 28, 1947

We installed a new manhole on the sewer main
294 feet south of the south line of Landis
St, west of Euclid Ave.

R.A. Prall Supt.

Sewer Dept.

Sept. 4, 1947

We installed a Manhole on D.E. west
of 70th St, between El Cajon and
Mohawk in Block 8.

R.A. Prall Supt.

Sewer Dept.

Sept. 11, 1947

We have installed a new Manhole in Block 2, Morston Hills, at a point 263' West of MH (El. 231.01) This is a block south of Cypress St. and W. of what would be Vermont if Vermont were extended across Cypress

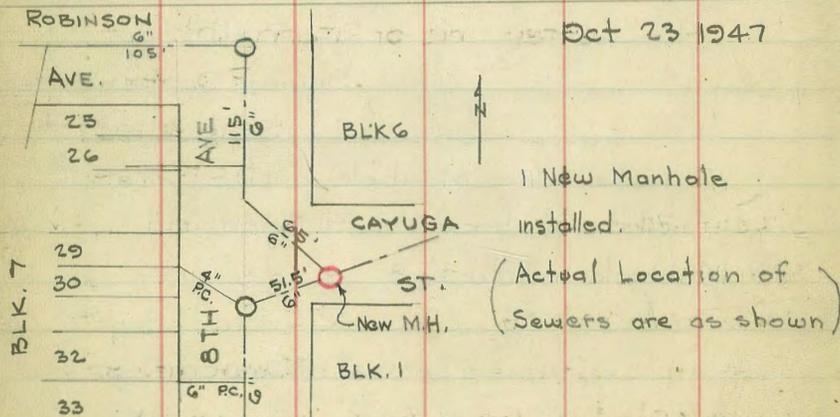
R.A. Prall Supt.
Sewer Dept.

Oct 2, 1947

We have installed a new manhole 200' South from Manhole in Hilldale and Bristol Rd.

Supt.
Sewer Division

Oct 23 1947



1 New Manhole installed.
(Actual Location of Sewers are as shown)

1-M.H & 65'-6" VC Ext. N. in Alley and Imperial Ave Between Ada St & 40th St Sewer Dept.

200/50 W.O. 20376 F.B. 896 p. 79
3-10-48

Oct 31 1947

We have installed a new manhole on 3rd Ave, at the South line of Island, at the location of the inspection wye.

We also installed a new manhole on the D.E. of the sewer in Hastings St., north of Hilldale Road.

R.A. Prall
Sewer Div.

Mar. 11, 1948

We installed a new manhole in the alley between Grape and Hawthorn St, 25' E of the E. L. of Fern St., and extended the 6" sewer main from the new manhole to the center line of Fern St.

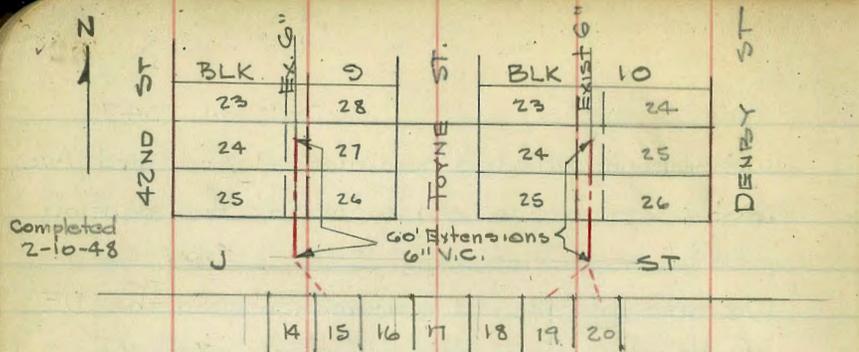
R.A. Prall
Sewer Dept.

Mar. 15 1948

We installed a new manhole on 39th St., on the Dead End 125' S.E. of the M.H. in the intersection of Belmont & 39th St.

We extended the sewer main in the alley between Ada & 40th Sts. 63' N to center line of Imperial Ave. (See W.O. 60248)

R.A. Prall
Sewer Dept.



Info. from Sketch Al. Sotier
Sewer Dept.

We extended D.E. in ALLEY between 4-30-48
Osprey and Granger at Novara St
S.E. lly 50'

Memo from Al. Sotier
Sewer Dept.

4-30-48

We extended Sewer in ALLEY BLK 46
CHESTER PARK betw Estrella and 49th St
50' N'lly

(Compl. 4-22-47) Memo from Al Sotier
Sewer Dept.

4-30-48

We extended D.E. 54' S on easement BLK 2
Bonita Vista

(Compl. 6-23-47) Memo from Al. Sotier
Sewer Dept.

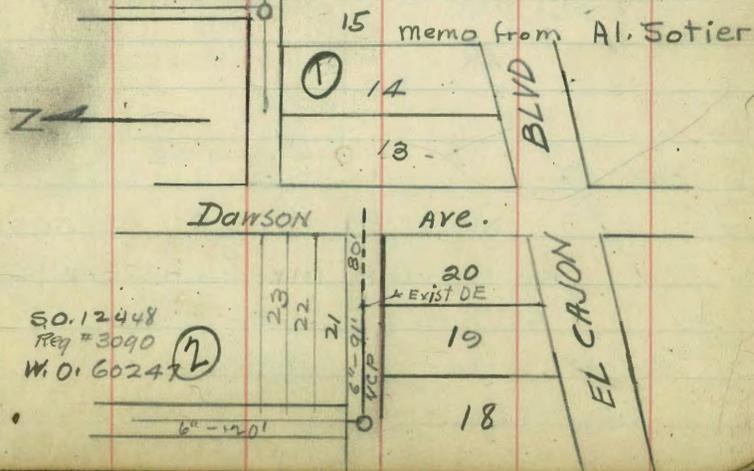
4-30-48
We extended D.E. on Wunderlin St 21' W'lly
(Compl. 2-27-48) memo from Al. Sotier
Sewer Dept.

4-30-48
We extended D.E. on Thrush St 21' W'lly
(Compl. 3-8-48) Memo from Al Sotier
Sewer Dept.

4-30-48
We extended sewer 100' N in Felton St
from M.H. in Adams Ave.
Compl. 2-10-48. Memo from Al. Sotier
Sewer Dept.

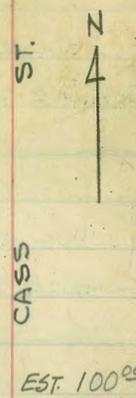
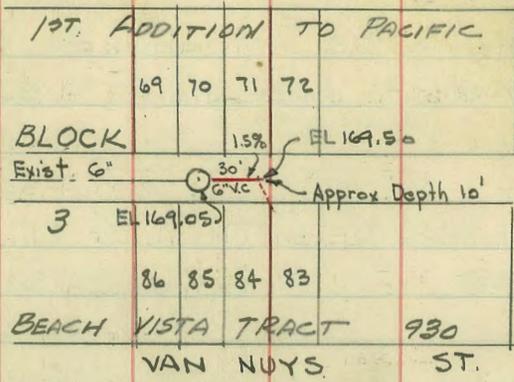
5-4-48

We have completed 6" main extension to serve
5252 El Cajon Blvd. From D.E. in Alley, BLK 2
Alhambra Park to C.L. of Dawson St

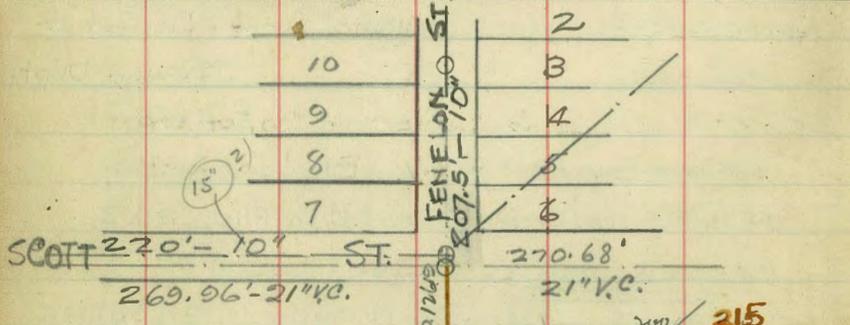


SO. 12448
Reg # 3090
W.O. 60247

5-30-48 - 90' Extension S Ely on Horton Ave
at Redwood Street to serve B-342
W.O. 20403 - 200-18



Installed by City Sewer Dept. 9-21-48
Sewer Dept - Al Sotier



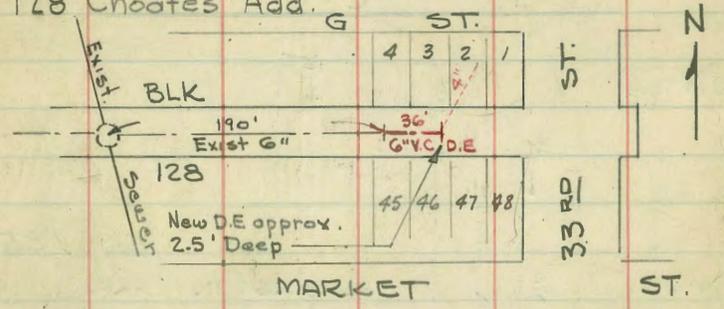
Book 6
Page 708

MAIN EXTENSION - INSTALLED
BY SEWER DIV. FOR HARBOR DEPT
AL. SOTIER - 9-15-48

256' 6" @ 3⁰⁰ 768.00
1 MH 175.00
ESTIMATE 943.00

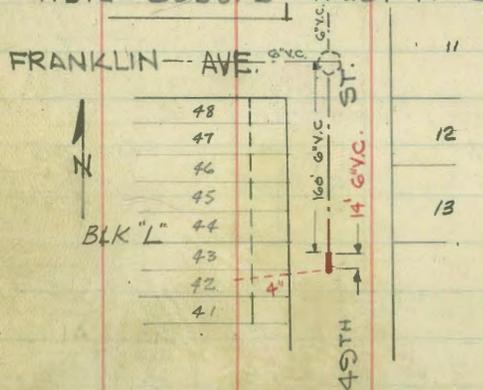
SEE 490-S

We extended 6" Sewer Main in Alley
between Market and G Sts W. of 33rd
St. 36' East to serve Lots 1 & 2 in Blk
128 Choates Add.



Installed By City Sewer Dept. 1-3-49
EST. 125⁰⁰ Al. Sotier

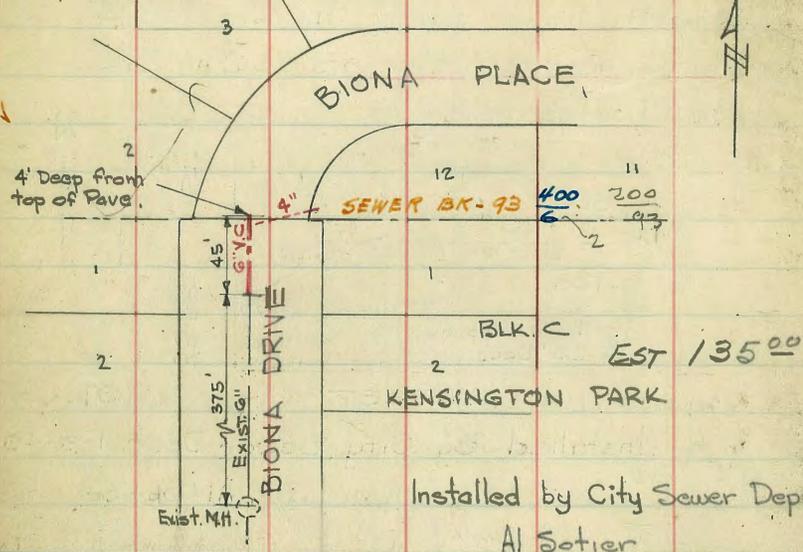
We extended 6" Sewer 14' Sp. of Exist.
D.E. to serve lot 42 Blk "L" Alta
Vista Suburb, Tract No 2



EST. 75⁰⁰

Installed by Sewer Dept. 1-3-49
Al Sotier

Port LOT 24 EX-MISSION 3-29-49
LANDS

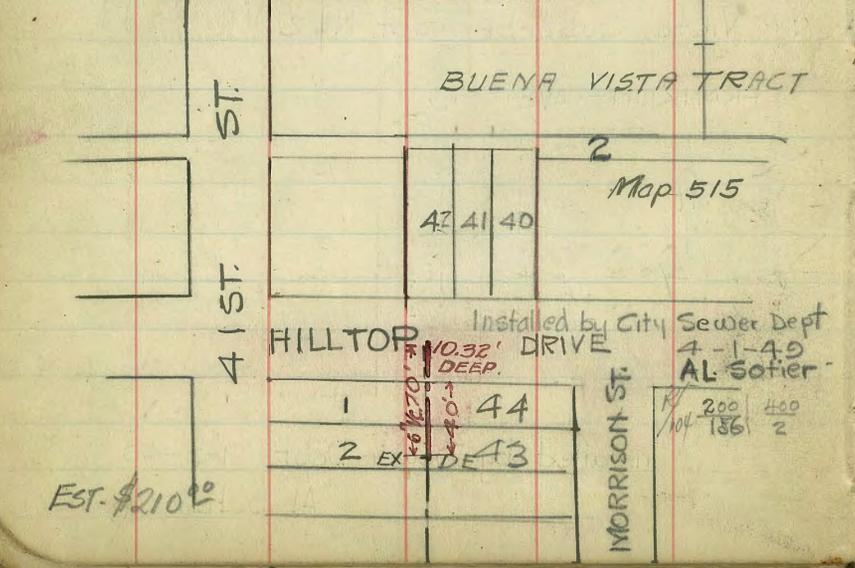


SEWER BK-93 400 200
6 93

BLK. C EST 135⁰⁰
KENSINGTON PARK

Installed by City Sewer Dept
Al Sotier

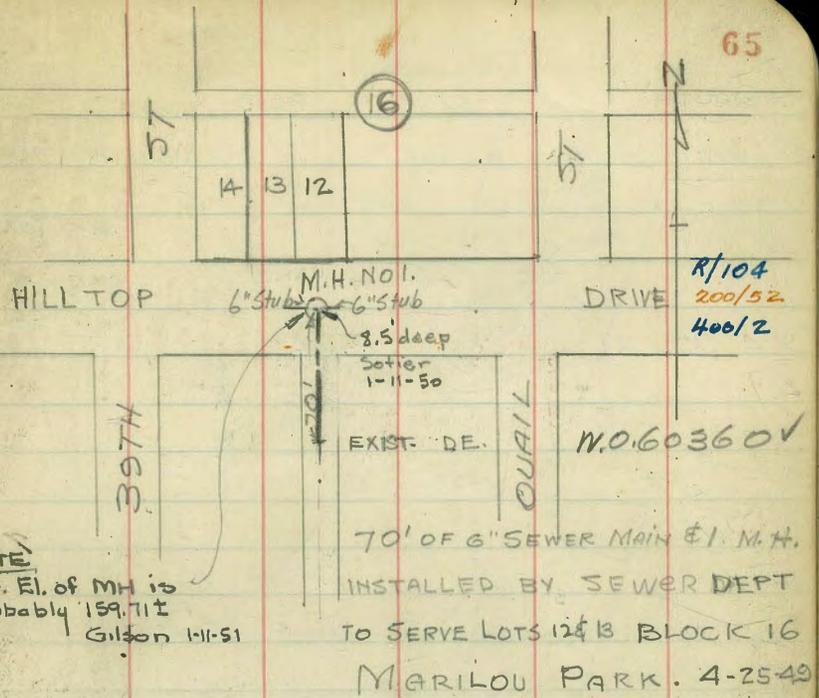
SEWER TO SERVE LOTS 40-41 & 42
BLOCK-2 BUENA VISTA TRACT.



HILLTOP DRIVE Installed by City Sewer Dept
4-1-49 AL Sotier

1	44	200	400
2 EX	43	100	136

EST. \$210⁰⁰



HILLTOP

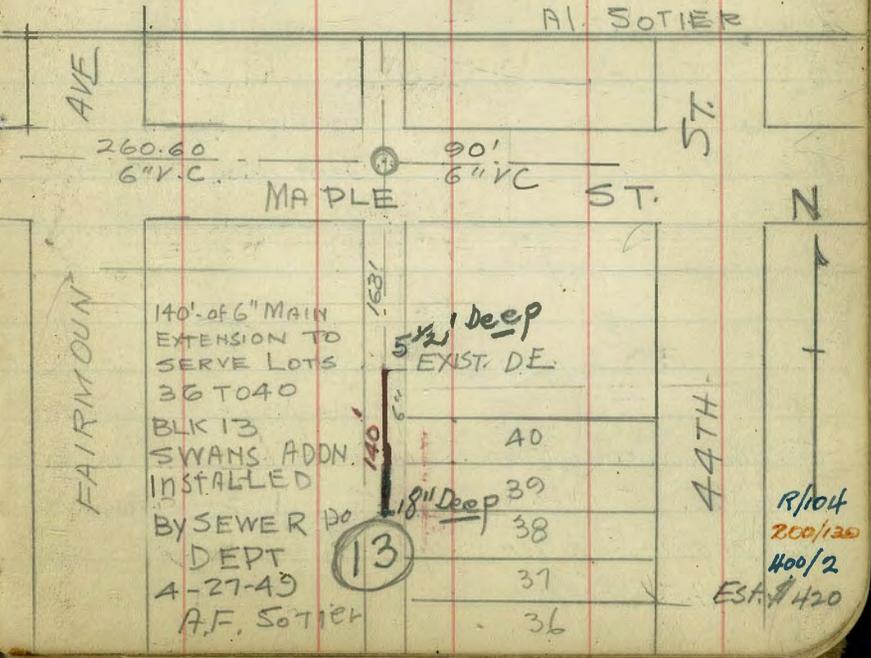
M.H. NO. 1
6" stub 6" stub
8.5' deep
Sotier 1-11-50

DRIVE R/104
200/52
400/2

N.O. 60360 ✓

70' OF 6" SEWER MAIN #1 M.H.
INSTALLED BY SEWER DEPT
TO SERVE LOTS 12 & 13 BLOCK 16
MARILOU PARK. 4-25-49
AL SOTIER

NOTE
Inv. El. of MH is
probably 159.71 ±
Gilson 1-11-51



140' of 6" MAIN
EXTENSION TO
SERVE LOTS
36 TO 40

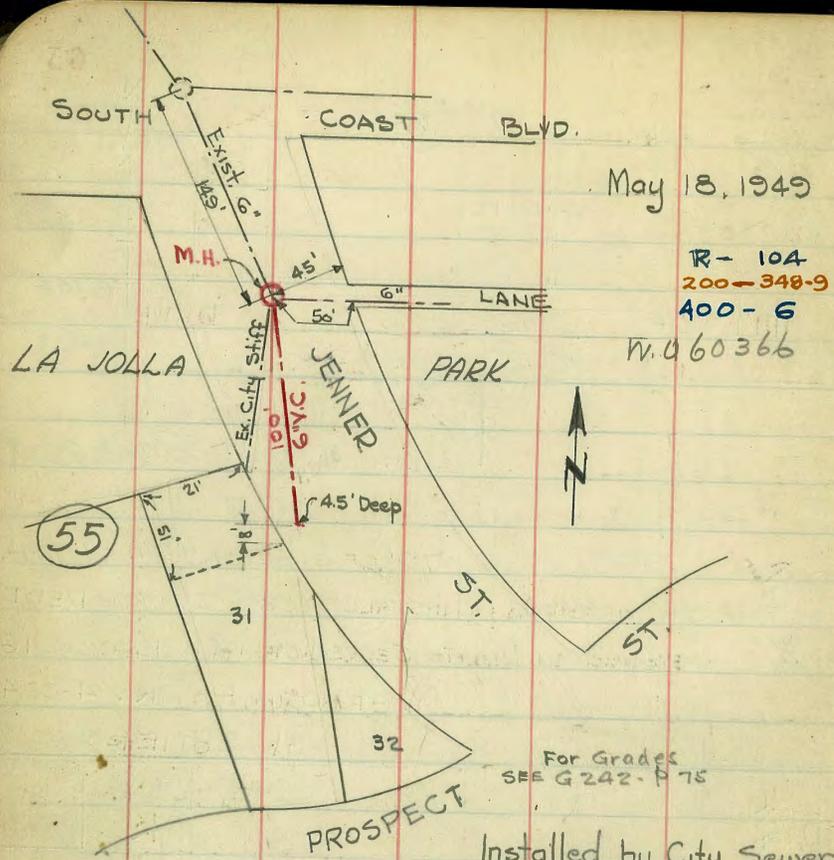
BLK 13
SWANS ADDN.
INSTALLED
BY SEWER DEPT
4-27-49
A.F. Sotier

5 1/2' Deep
EXIST. DE.

18" Deep

13

R/104
200/130
400/2
EST. 420

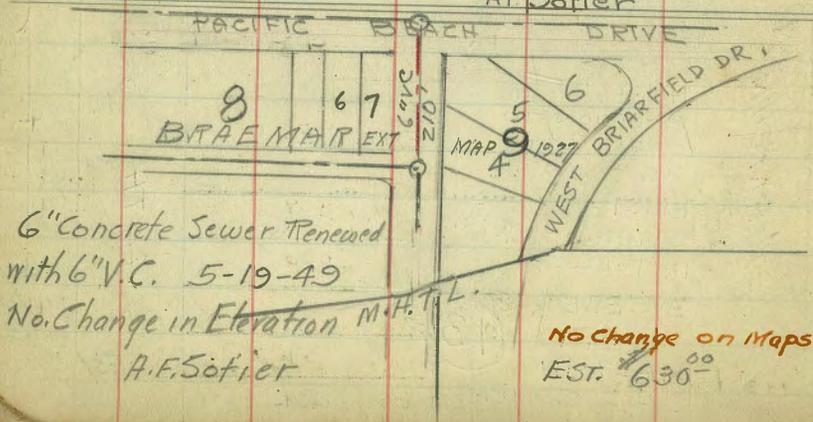


May 18, 1949

R-104
200-348-9
400-6
W.O. 60366

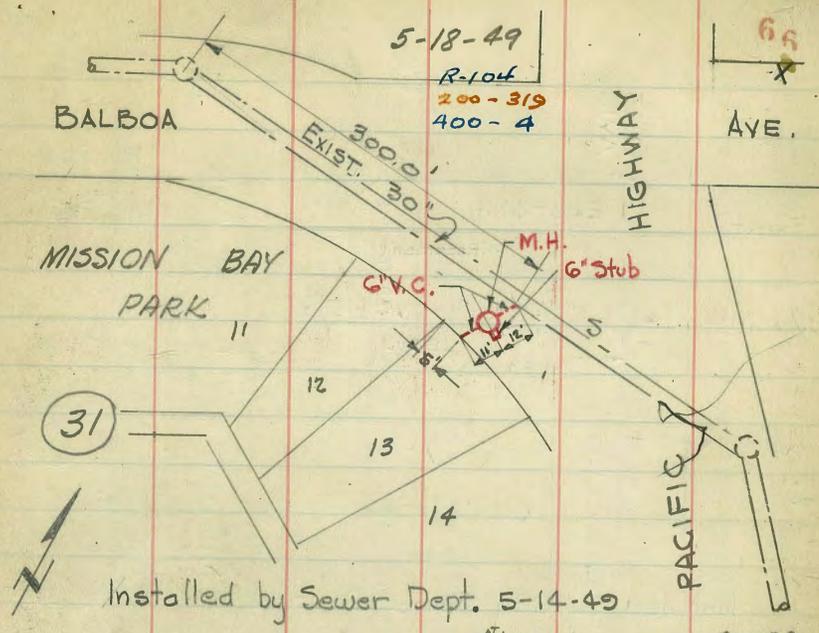
For Grades
SEE G 242-P 75

Installed by City Sewer
Dept. May 17 1949
A.I. Sotier



6" Concrete Sewer Renewed
with 6" V.C. 5-19-49
No Change in Elevation M.H. to L.
A.F. Sotier

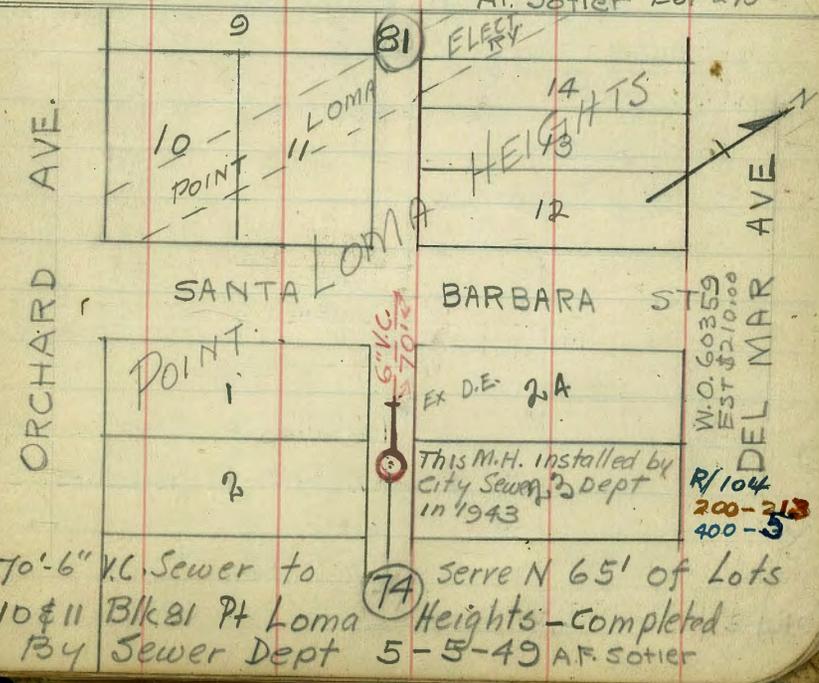
No Change on Maps
EST. 630⁰⁰



5-18-49
R-104
200-319
400-4

Installed by Sewer Dept. 5-14-49

A.I. Sotier EST 275⁰⁰

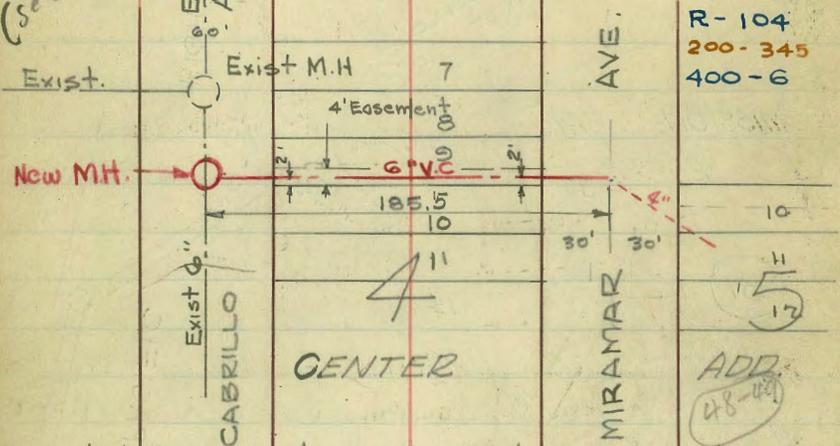


70'-6" V.C. Sewer to serve N 65' of Lots
10 & 11 Blk 81 Pt Loma
By Sewer Dept 5-5-49 A.F. Sotier

W.O. 60359
EST \$210,00
R/104
200-319
400-6

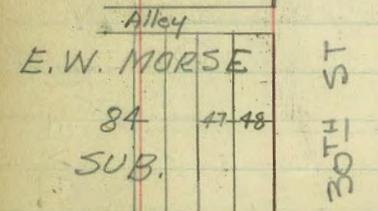
(See W.O. 20601)

July 5 1949



R-104
200-345
400-6

Installed by City Sewer Dept. 6-30-49 to serve Lots 12, 11, and 1/2 of 10 Genter Add. A.F. Sotier

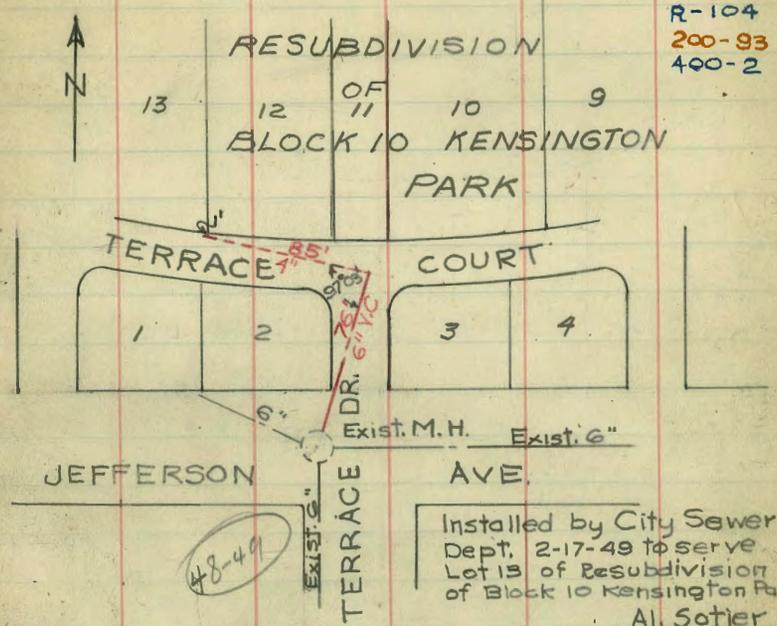


July 5 1949

R-104
200-40
400-2

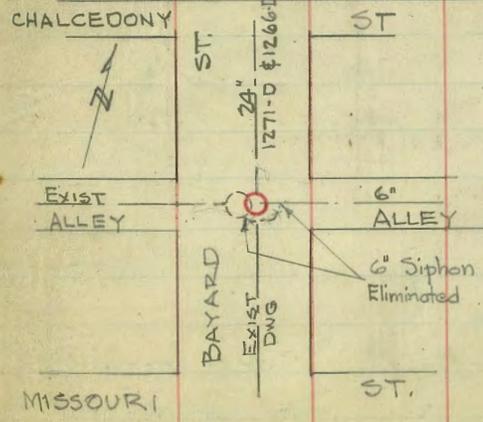
Installed by City Sewer Div. 6-29-49 to serve S 1/4 portion of Lots 47 & 48 E.W. Morses Sub. A.F. Sotier

July 25, 1949



R-104
200-93
400-2

Installed by City Sewer Dept. 2-17-49 to serve Lot 13 of Resubdivision of Block 10 Kensington Park A.F. Sotier

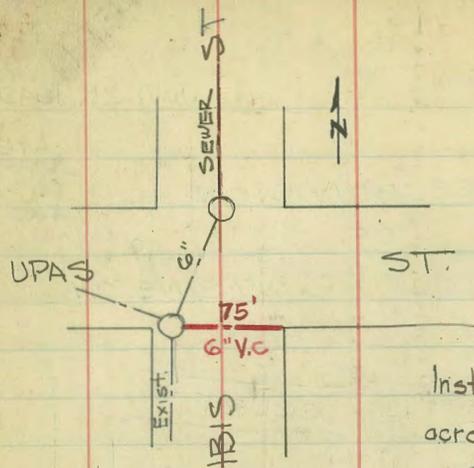


Sept. 23, 1949

Installed by Sewer Dept. 1 new Manhole on the 24" Sewer and connected 6" Line from E into it. 6" Siphon was removed. A.F. Sotier R-106 200-400-

1271-0
1266-0

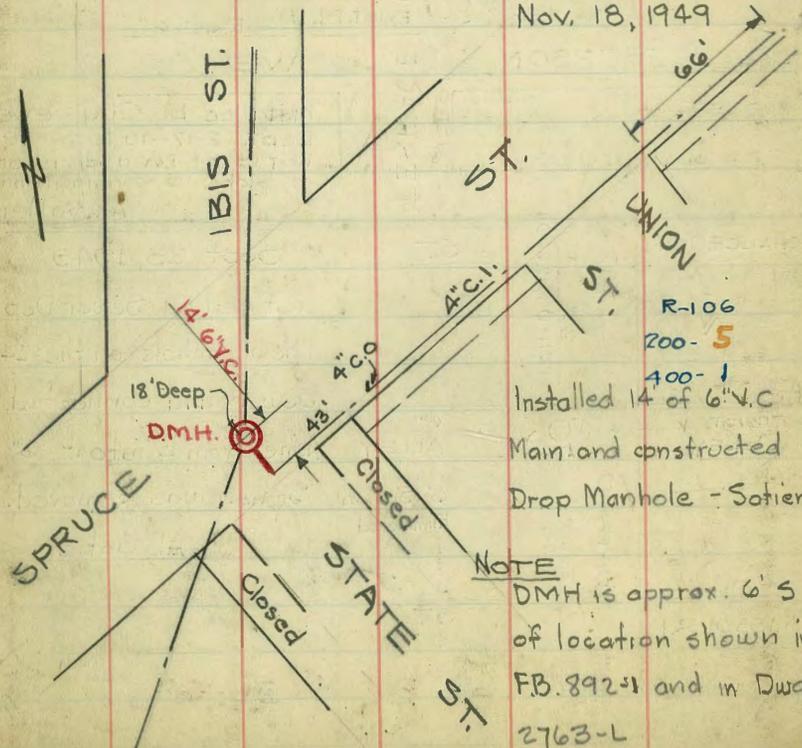
200-400-



OCT. 18, 1949

R-106
200-18
400-1

Installed 75' Sewer
across Ibis St at Upas
in Sept. 1949, Info from
Al Sotier

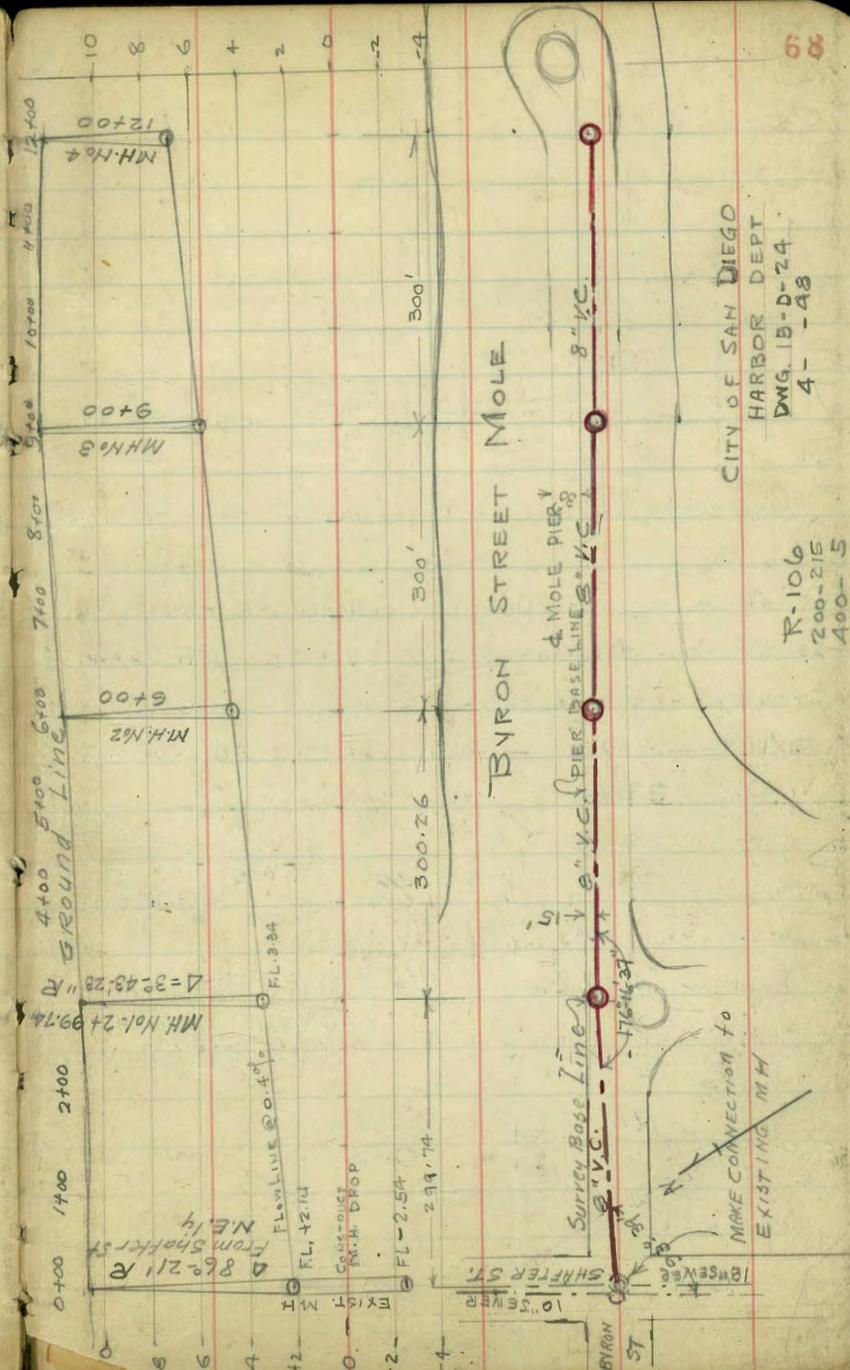


Nov. 18, 1949

R-106
200-5
400-1

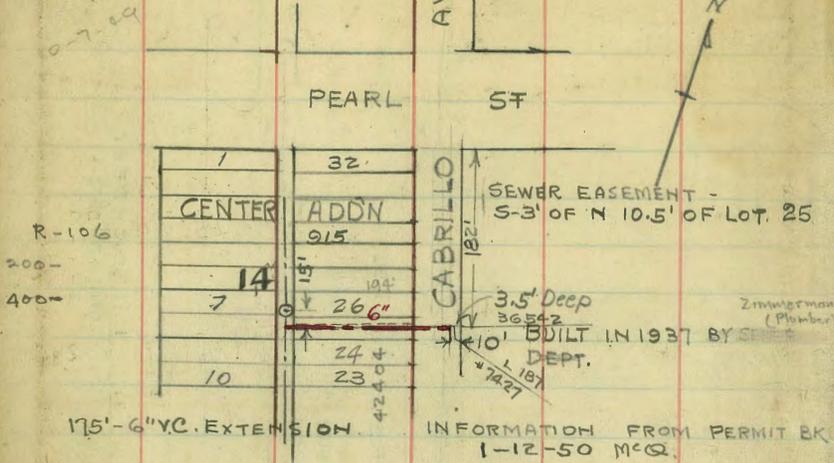
Installed 14' of 6" V.C.
Main and constructed
Drop Manhole - Sotier

NOTE
DMH is approx. 6' S
of location shown in
FB. 892-1 and in Dwg
2763-L

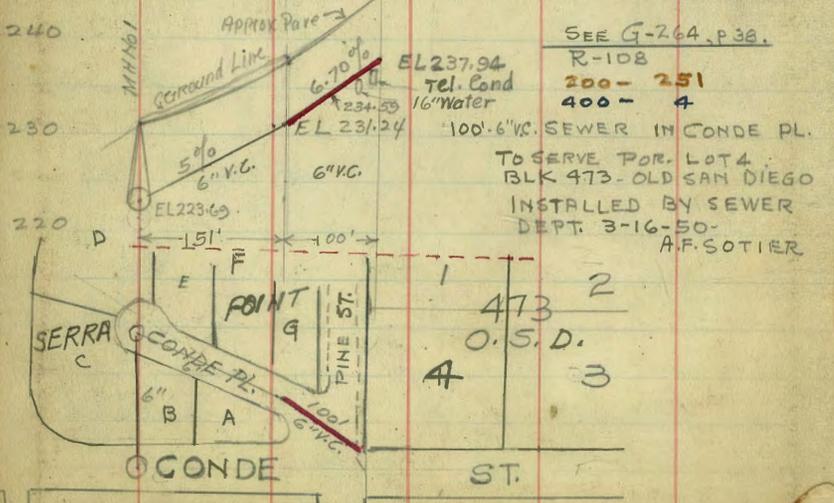


CITY OF SAN DIEGO
HARBOR DEPT
DWG. 15-D-24
4-1-48

R-106
200-215
400-5



SEWER DEPT. INSTALLED 1 MANHOLE ON TRUNK
 SEWER NO. 11 (DIAMOND AVE TO LAW ST.) ON BAYARD
 STREET BET. CHALCEDONY & LAW STS - DWG 271-D
 R/108 - 200/315 - 400/6 - 1-13-50. SOTIER
 W.O. 20336

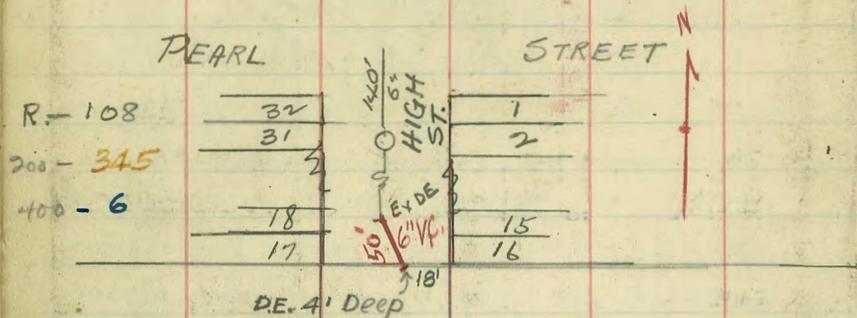


WE HAVE COMPLETED INSTALLATION OF:

R. 108
200-82 1 M.H. IN ALLEY BLK 227 MANNASSE &
400-1 SCHILLER SUBDIVISION - 99' SE FROM SE LINE
OF BEARDSLEY ST -

SEWER DEPT. 9 - 23-49

A.F. SOTIER



50' of 6" V.C. Sewer Main
ON HIGH ST. To Serve
portion of P.L. 1262
Completed 5-29-50 - A.F. Sotier Gen. Foreman

P.L. 1262

N.O. 20009

100' 6" Main - Rosecrans St To Serve Br. P.L. 178

R-108

See 5590-5591-L W.O. 20009

200

400 5

JUNE - 1950 - A.F. Sotier

240' 6" MAIN of Scott & EMERSON FOR HARBOUR

R-108

Dept. (271-MB) W.O. 20009

200-215

6-7-50 - A.F. Sotier

400 5

SCOTT ST

Tunnel under 21" Sewer &
Connect to 15"

70

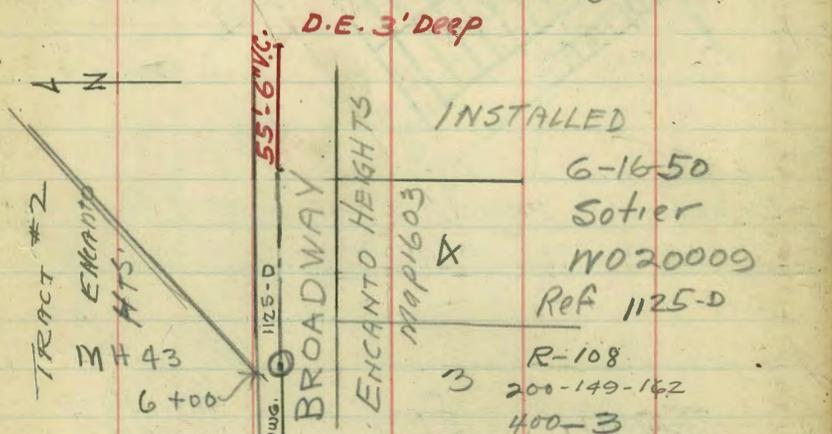
S-537 - 36'-8" C.I. - installed to Serve
114'-8" V.C. - Naval Electronics Laboratory
150'

2 M.H. Record-108 W.O. 20009

Ref. 7306-7307-L

200' - 20V } 6-13-50 M^{SR}

400' - 5



INSTALLED

6-16-50

Sotier

W.O. 20009

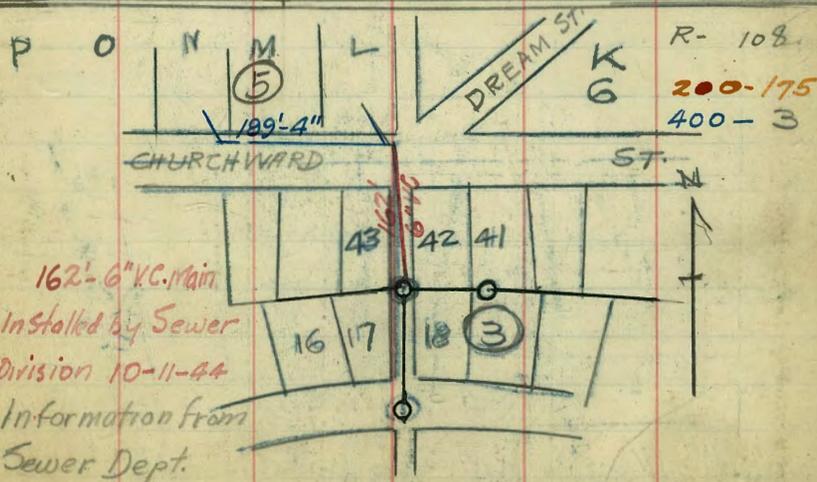
Ref. 1125-D

R-108

3

200-149-162

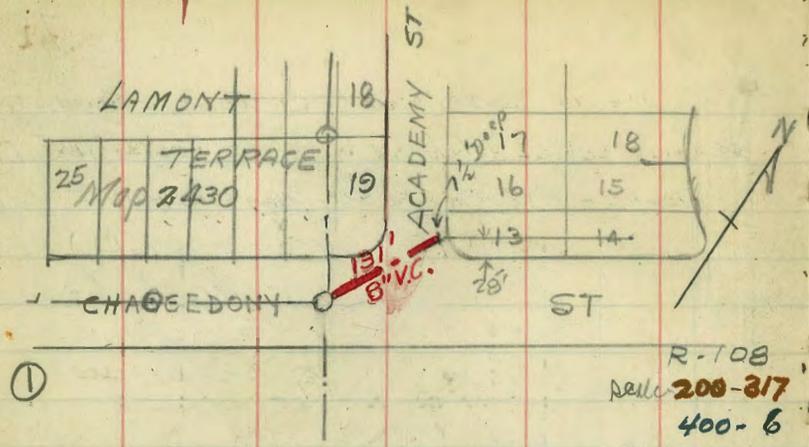
400-3



162'-6" V.C. Main
Installed by Sewer
Division 10-11-44

Information from
Sewer Dept.

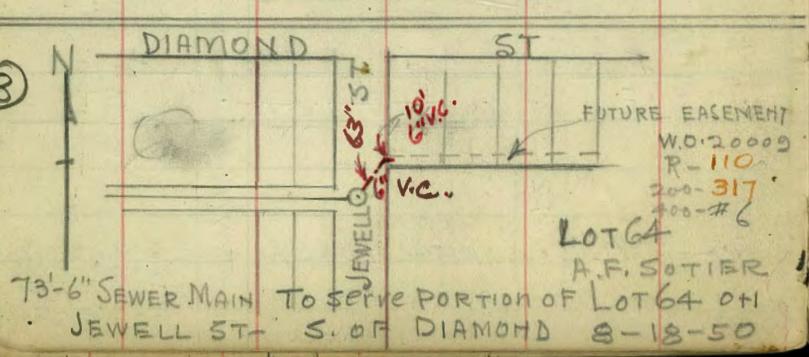
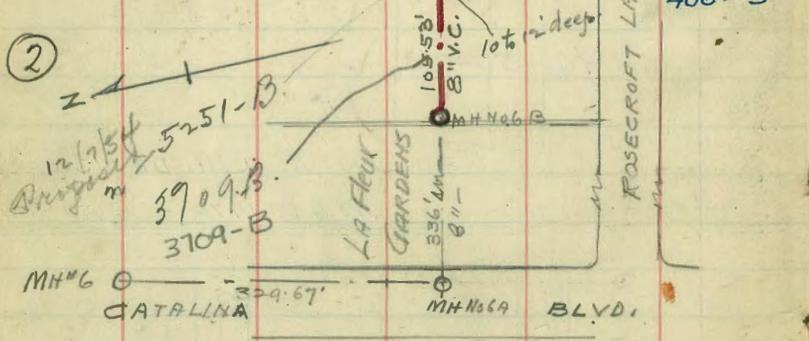
July X.
88-72



①
131'-8" V.C. Main at intersection of
Academy & Chalcedony Sts - 7-7-50 - A.F. Sotier

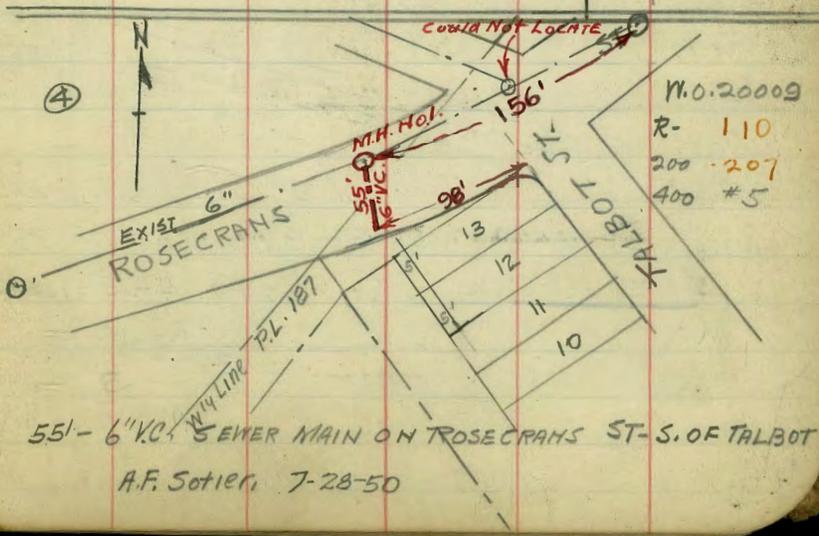
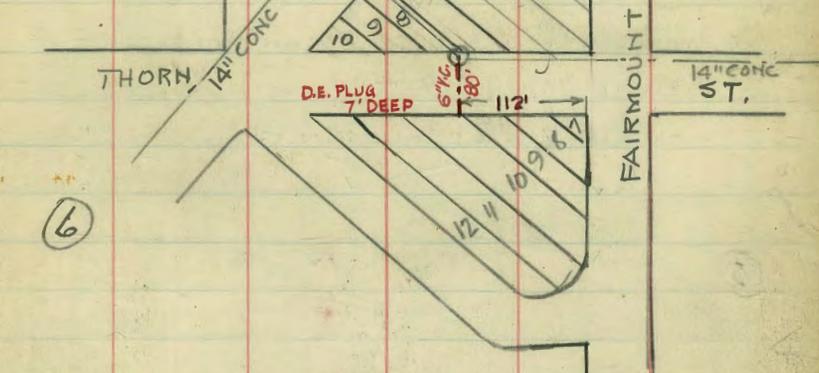
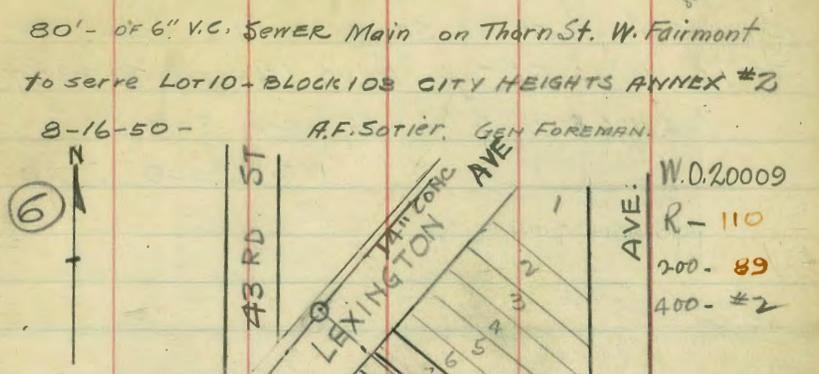
R-108
Relle 200-317
400-6
W.O.20009

EXTENSION PL. 143 IN EASEMENT
339' South of WARNER VILLA TRACT
REF. 1403 & 1405-D - 105.53'-8" V.C.
R-108
200-202
400-5



③
73'-6" SEWER MAIN To serve PORTION OF LOT 64 ON
JEWELL ST - S. OF DIAMOND 8-18-50

FUTURE EASEMENT
W.O.20009
R-110
200-317
400-#6
LOT 64
A.F. SOTIER



④
55'-6" V.C. SEWER MAIN ON ROSECRANS ST - S. OF TALBOT
A.F. Sotier, 7-28-50

W.O.20009
R-110
200-89
400-#2

W.O.20009
R-110
200-207
400-#5

⑤ 60' of 8" VC. SEWER MAIN IN ALLEY
North of El Cajon Blvd. & West of 73rd St

Ref. 476 #1178-D - A.F. Sotier 8-10-50

5	6	7	8	9	10	11	12
20	19	18	17	16	15	14	13

X-C
OVER

W.O. 20009

R 110

200 128

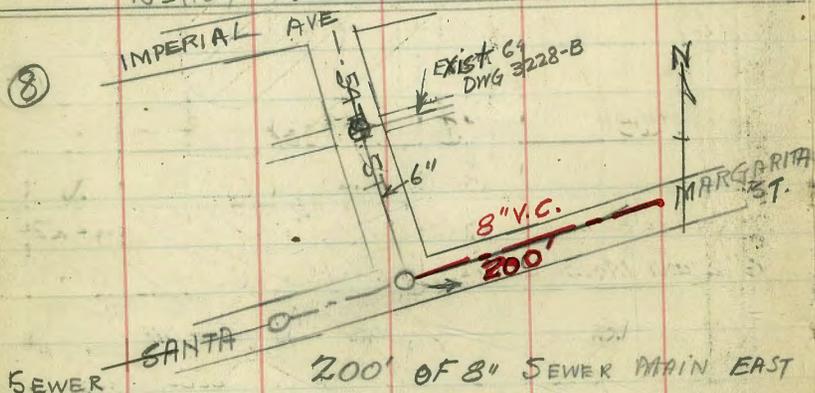
400 #3

EL CAJON BLVD

9-21-50

⑦ We have installed a new MAN HOLE ON THE
6" SEWER MAIN at the intersection of
5th AVE & FIR ST - R.A. PRALL, SUPT.

R-110 / 200 21 / 400 1 / W.O. 20009

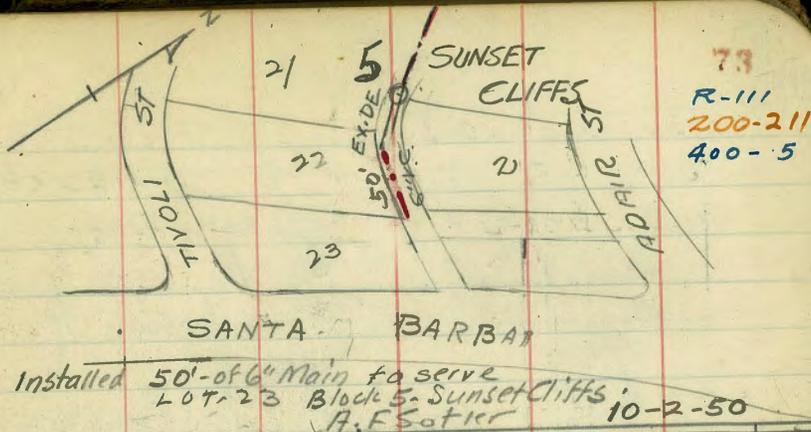


⑧ 200' OF 8" SEWER MAIN EAST
OF 54TH ST ON SANTA MARGARITA ST
SEE 1425-D 9-20-50 A.F. SOTIER

W.O.

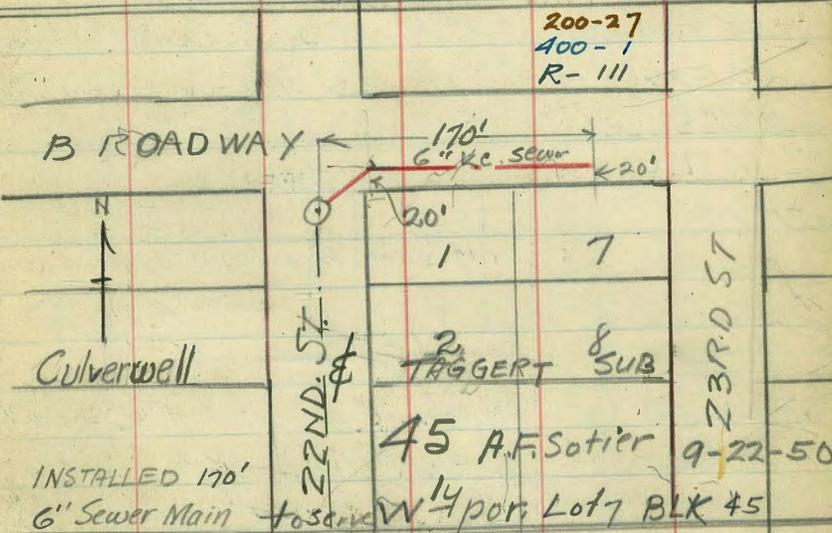
R-110
200-168
400-3

W.O. 20009



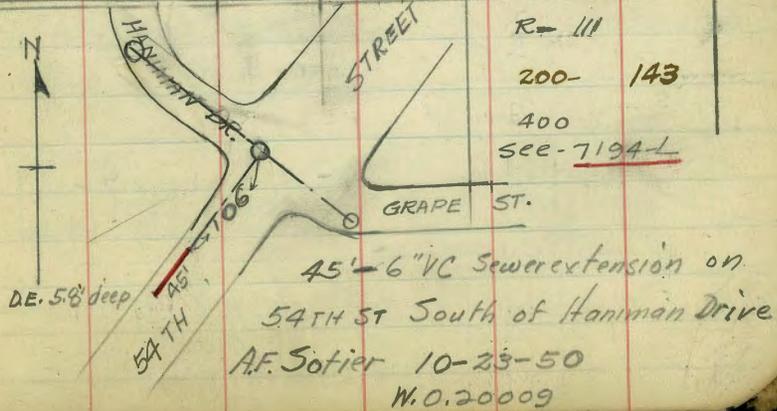
Installed 50' of 6" Main to serve
LOT 23 Block 5, Sunset Cliffs
A.F. Sotier 10-2-50

73
R-111
200-211
400-5



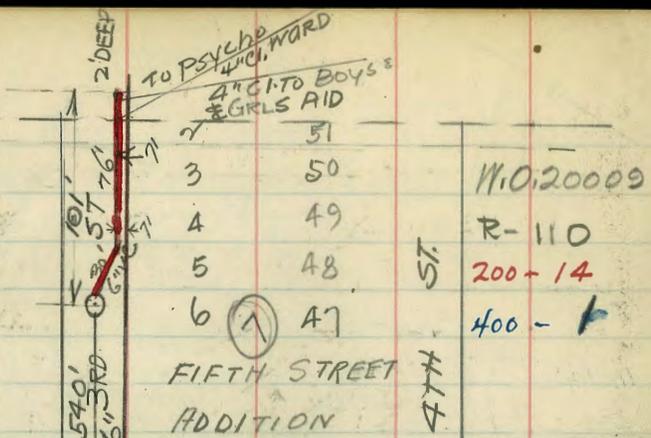
INSTALLED 170'
6" Sewer Main to serve W 1/4 por Lot 7 BLK 45

45 A.F. Sotier 9-22-50

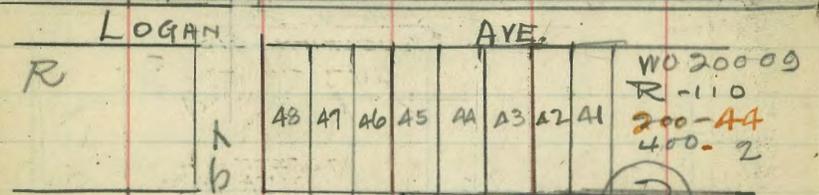


45'-6" VC Sewer extension on
54TH ST South of Haniman Drive
A.F. Sotier 10-23-50
W.O. 20009

R-111
200-143
400
see-7194-L

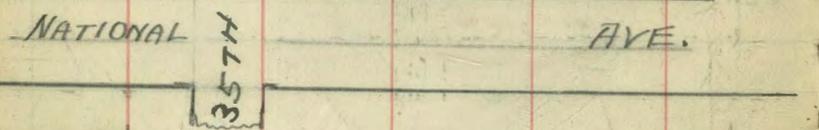


WE CHANGED A 4" LATERAL SERVICING THE COUNTY PSYCHO WARD INTO A 6" MAIN AT N. END 3RD ST. WORK COMPLETED 11-3-50 A.F. SOTIER - 11-9-50

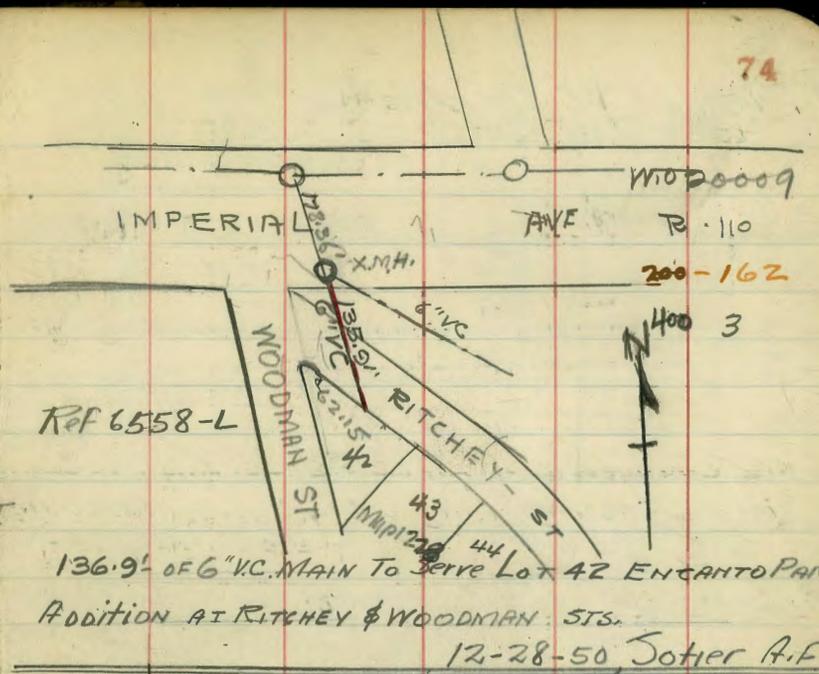


12-4-50
Sotier

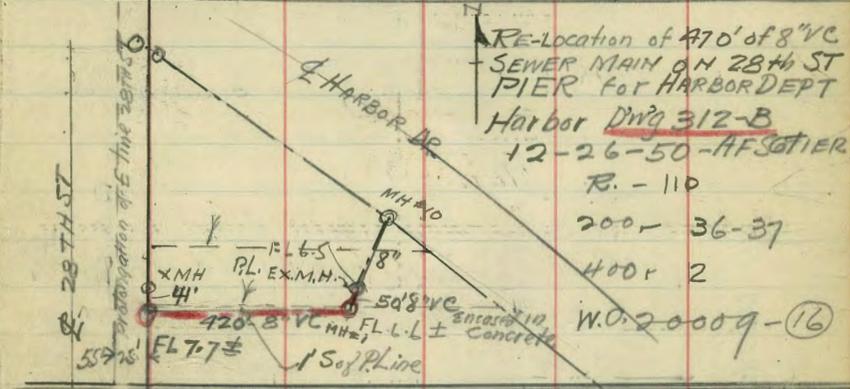
We have Completed 135' of 6" VC Sewer Main And 1 M.H. Block (3) South COLLAS ADD.



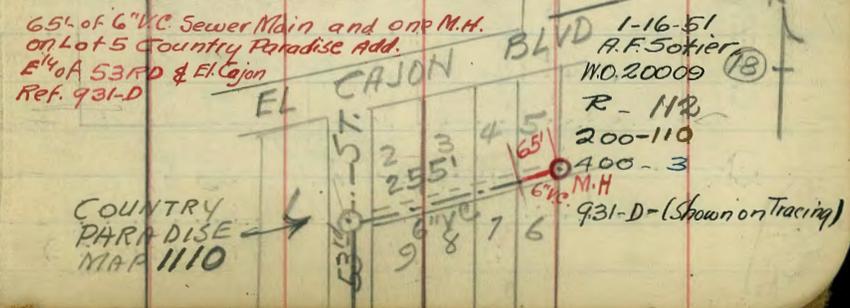
Replaced with 175x6" Ceramic WELD PIPE CONC. ENCASED. **BLOCK 143** UNIVERSITY HEIGHTS



136-9' OF 6" VC MAIN TO SERVE LOT 42 ENCHANTO PARK ADDITION AT RITCHEY & WOODMAN STS. 12-28-50, Sotier A.F.



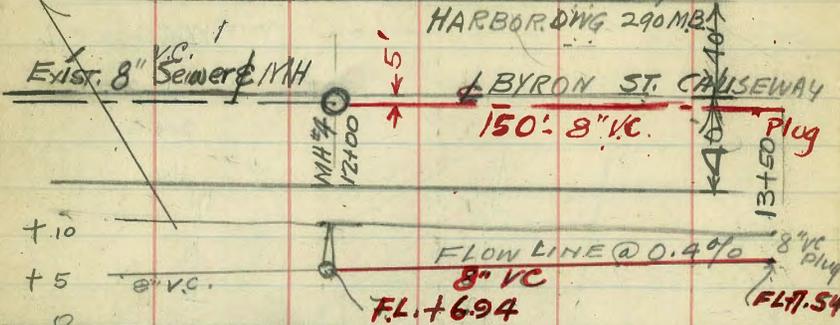
RE-LOCATION OF 7'8" VC SEWER MAIN ON 28th ST PIER FOR HARBOR DEPT Harbor Dig 312-B 12-26-50 - A.F. SOTIER R. - 110 200-36-37 400-2 W.O. 20009-16



65' OF 6" VC SEWER MAIN AND ONE M.H. ON LOT 5 COUNTRY PARADISE ADD. E1/4 A 53RD & EL CAJON Ref. 931-D 1-16-51 A.F. Sotier W.O. 20009 R-110 200-110 400-3 931-D (Shown on Tracing)

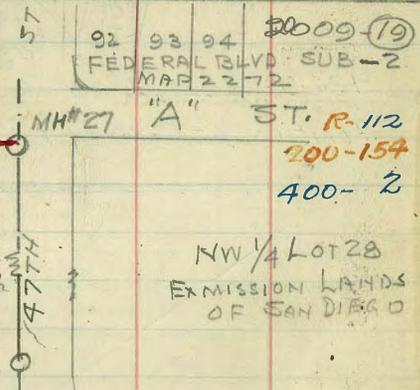
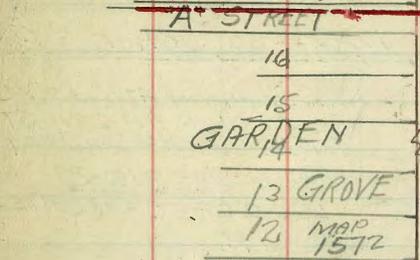
150' of 8" V.C. Sewer Main
1-22-51 A.F. Sotier

20009-17
R
200 / 215
400



200' of 6" Sewer Main in
"A" Street W of 97th St.
1- -51 0.7% grade
A.F. Sotier 200'-6" V.C.

92 93 94 20009-19
FEDERAL BLVD SUB-2
MAP 2272



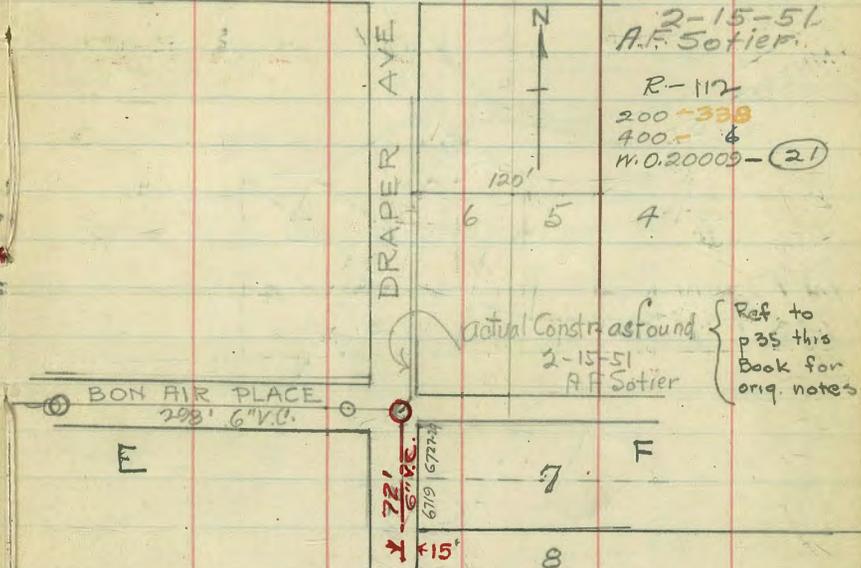
115'-0" 6" V.C. Sewer main & 1 M.H. in Alley
Bet. Riley & Greenwood Sts E of Kurtz.
See G298-L
w.o. 20009 21
R = 112



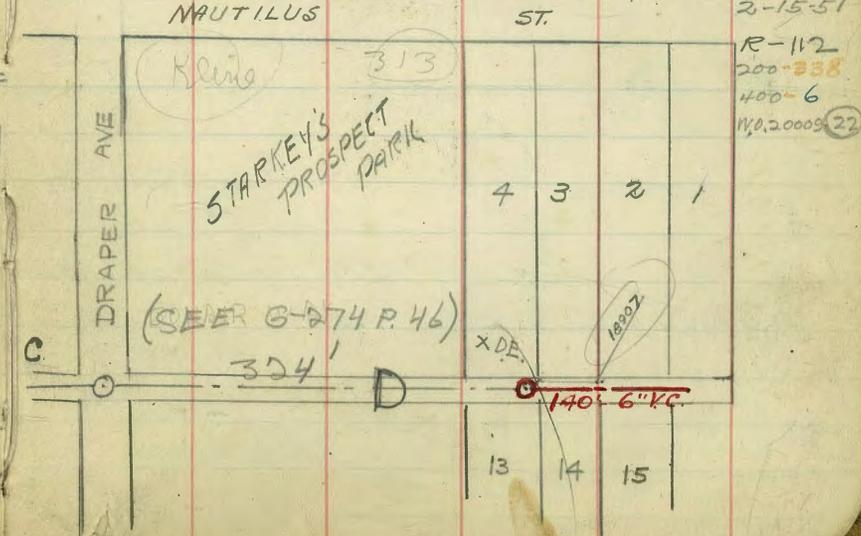
SPECIAL M.H.
KURTZ ST.
2-3-51 ± W.O. 20009-20

72' 46" V.C. Main &
BON AIR

1-M.H. on DRAPER South of
AIR Street



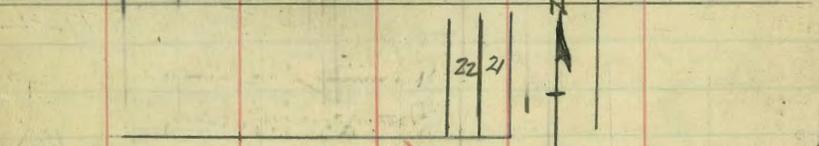
140' of 6" V.C. Main in Alley S. of Nautilus & E of Draper
A.F. Sotier





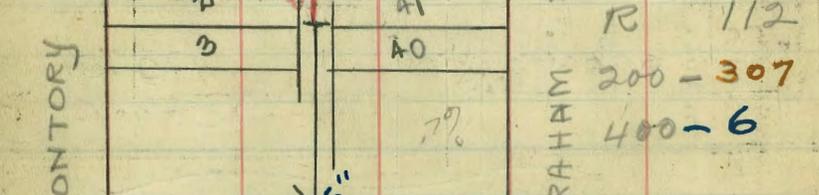
122.5' 6" Sewer Main to Sewer
Lots & toll - Block 16 Marilou Park

Sotier: 4-5-51

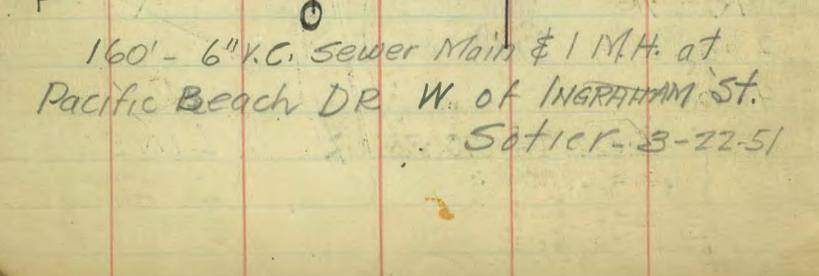


160' 6" V.C. Sewer Main & 1 M.H. at
Pacific Beach DR W. of INGRAHAM ST.

Sotier: 3-22-51



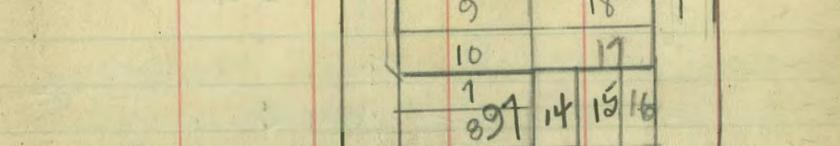
230' 6" V.C. Sewer Main
in JARVIS ST Ely of Scott St.



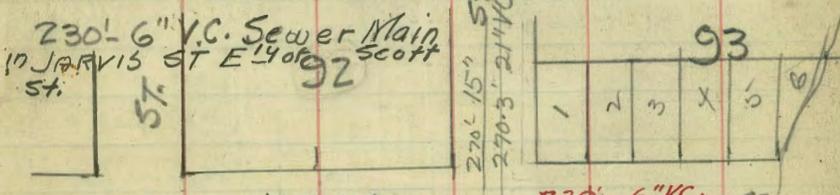
This part of Line
Renewed & Two M.H.s
installed
of Storm Drain



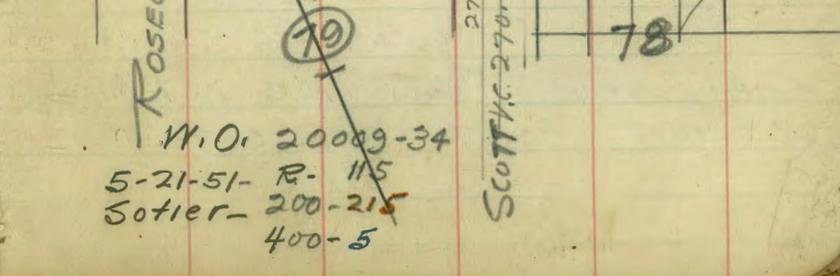
W.O. 20009-28
R 112
200-52
400-2



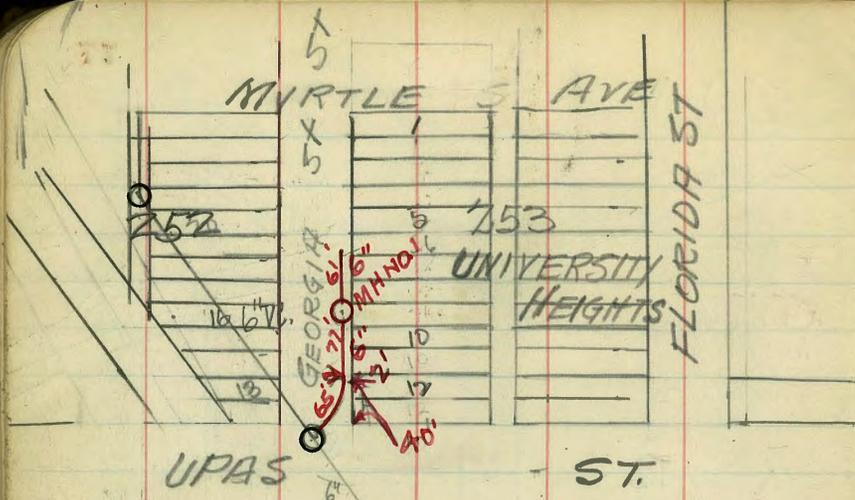
W.O. 20009-29
R 112
200-307
400-6



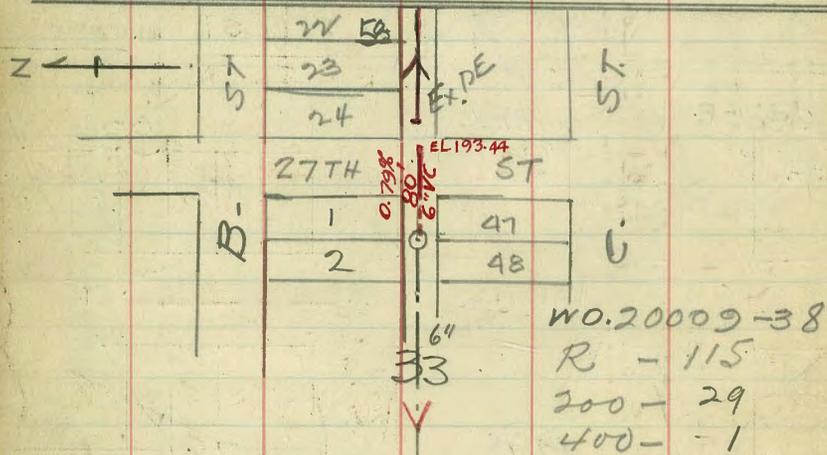
W.O. 20009-34
5-21-51 R- 115
Sotier- 200-215
400-5



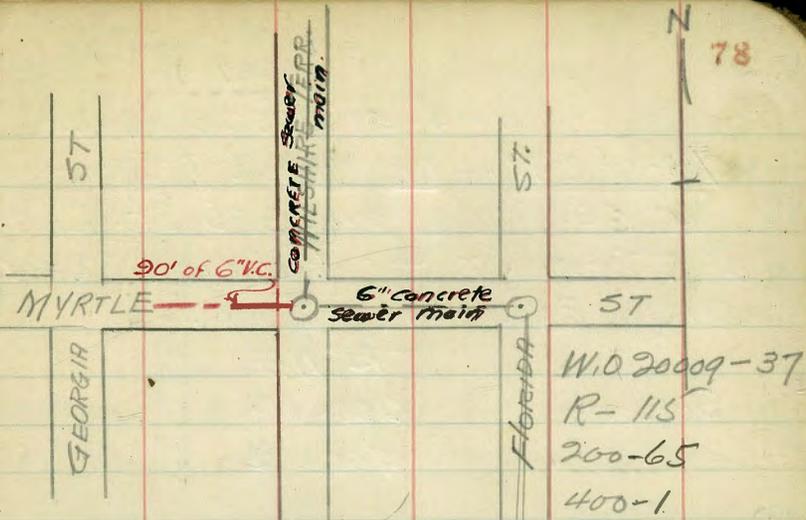
200-221
400-5
20009-



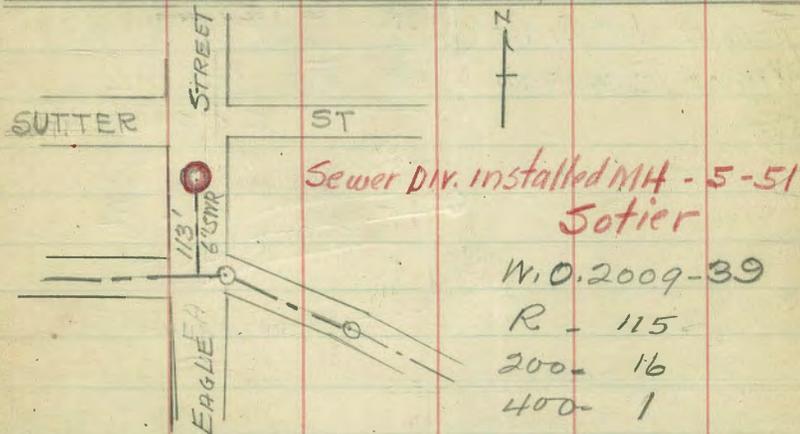
203' of 6" V.C. Sewer Main & 1 Manhole on
 GEORGIA ST. N. of UPAS ST. 200-115
 5-16-51 - A.F. Sotier - 400-1
 20009-35



80' of 6" V.C. Sewer Main in Alley S of
 B-Street on 27TH ST - 6-7-51
 A.F. Sotier.



90' of 6" V.C. Sewer Main on Myrtle W of Wilshire Terrace
 See 2504-L - 6-5-51
 A.F. Sotier



Sewer Div. installed MH - 5-51
 Sotier
 W.O. 2009-39
 R - 115
 200-16
 400-1

Extended 155' to MH #46' -3-6-52

4-4-51 N.O. 20009-40

18' of 8" V.C. - One ManHole @ 75' of

6" V.C. Main on 63RD St. South
of Tipton St. - Plotted on 8299-L
S Nly of BROCKBANK MANOR.

R-115

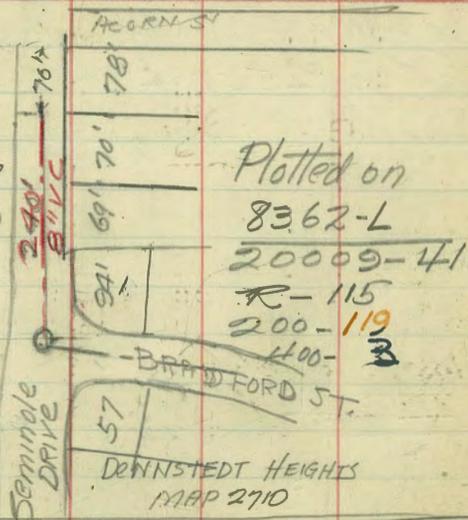
Sotier-

200-118

400-3

240' of 8" V.C.
Sewer Main on
Seminole Drive
Nly of BRADFORD
St.

Sotier - 6-29-51

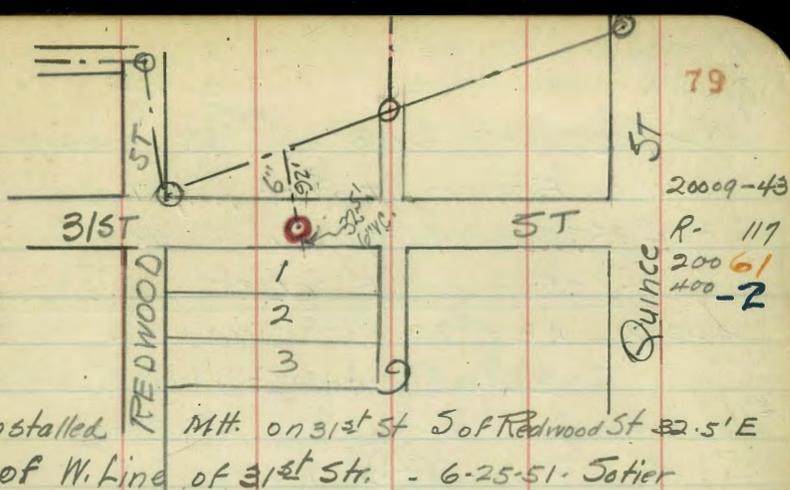


Plotted on
8362-L
20009-41
R-115
200-119
400-3

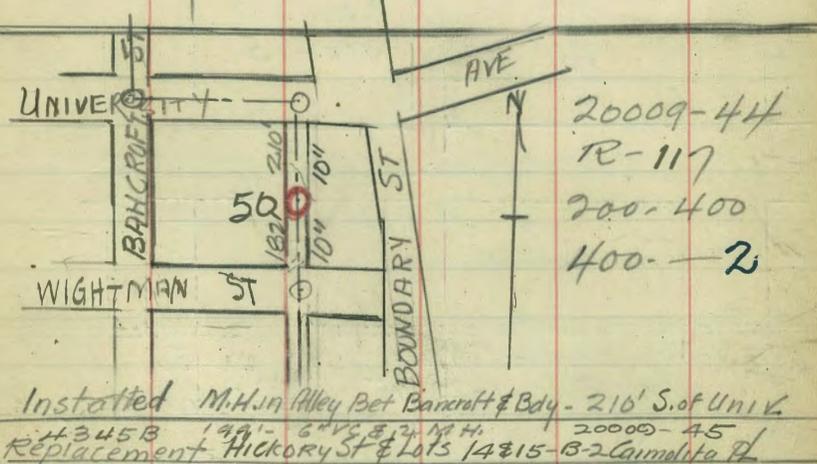
27' of 6" V.C. Sewer Main in Redwood St W 1/4 of Alley Bet. 39th & 40th



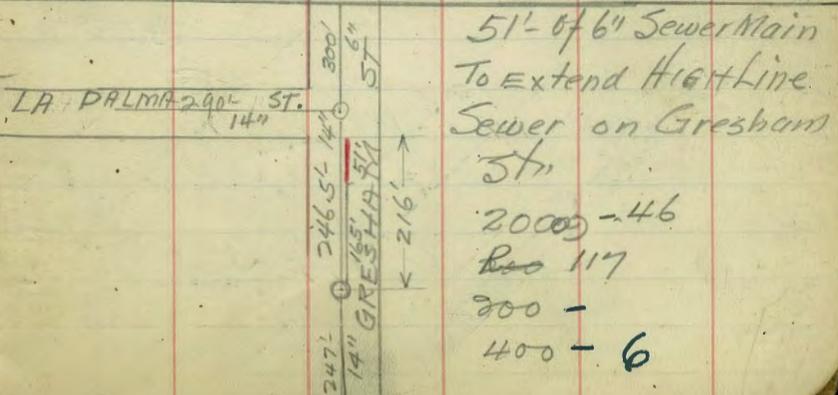
20009-42
R-115
200-86
400-2



Installed M.H. on 31st St S of Redwood St 32.5' E
of W. Line of 31st St. - 6-25-51. Sotier



Installed M.H. in Alley Bet Bancroft & Bdy - 216' S. of UNIV.
#345B 1991-6" V.C. 32' M.H. 20009-45
Replacement Hickory St & Lots 14215-32 Carmelita Pl



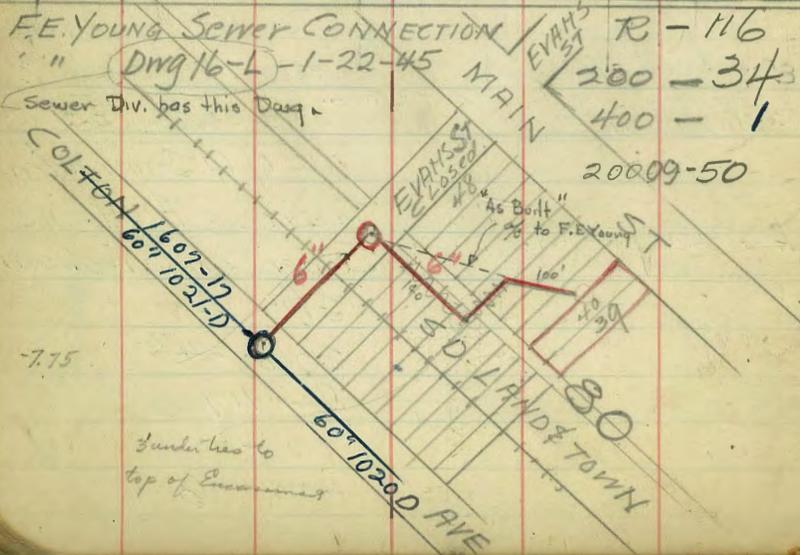
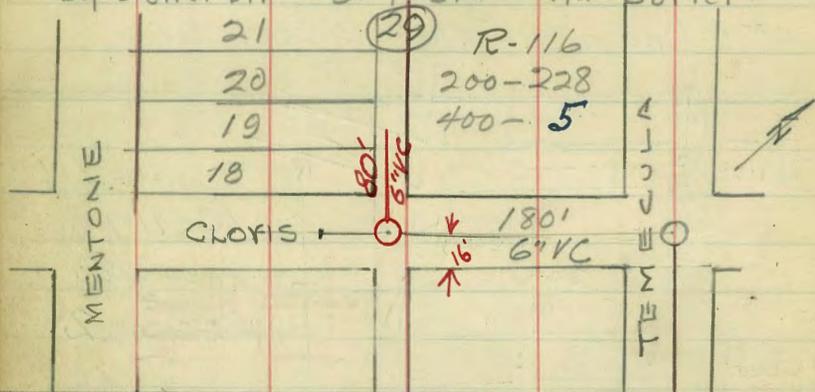
51' of 6" Sewer Main
To extend High Line
Sewer on Gresham
St
20009-46
R-117
200-
400-6

See GB 277-65
for Constr. Notes

R-116
200-42
400-2

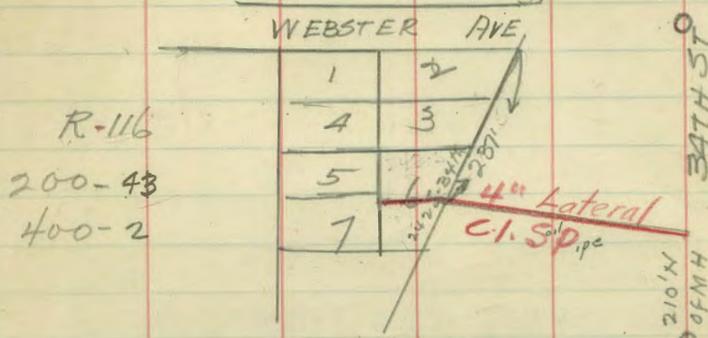
NO. 20009-47 - 100' of 6" V.C. Sewer
Main on Francis St S of Imperial Ave.
Ref. 3722-L & 3724-L - By Sewer Div
9-7-51 - A.F. Sotier

NO. 20009-48 - 80' of 6" Sewer & 1 M.H. in ALLEY
between Mentone & Cloris St W^{1/4} from Cloris St
by Sewer Div - 9-7-51 - A.F. Sotier.

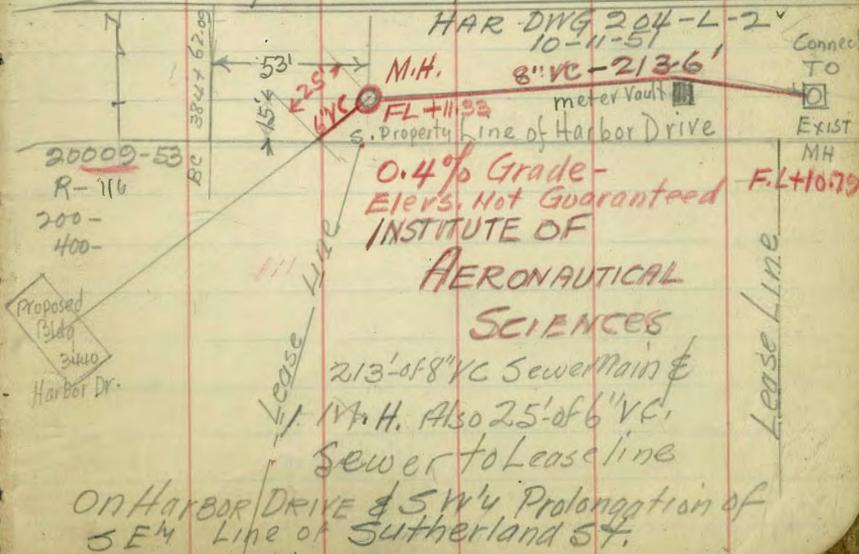


RO
X

20009-51 At 245 S. 34th St installed a 4"
C.I. S.P. Lateral - Information in connection
with Kabash Blvd Freeway - 10-4-51 - Sotier



20009-52 - Extension 6" V.C. 95' in Olive St E of
Fairmount Ave - See G900L - 10-5-51
R 116 200/139 400/2 Sotier



New Book 2175

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope $1\frac{1}{2}$ to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body

**IMPROVED TABLES
AND
INFORMATION**

TABLE No. 2.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections. Degree of curve with a given T may be found by dividing tangent (or external), opposite T by given tangent (or external). The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

TABLE II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

- Given a, b, C; to find c, B, A.
Use Law of Tangents.
Given A, B, c; to find a, b, C.
Use Law of Sines.
Given a, b, c; to find A, B, C.

$$\text{Let } \frac{a+b+c}{2} = s, \sqrt{\frac{(s-a)(s-b)(s-c)}{s}} = r$$

$$\cos \frac{1}{2} A = \sqrt{\frac{s(s-a)}{bc}}$$

$$\tan \frac{1}{2} A = \frac{r}{s-a}$$

$$\tan \frac{1}{2} B = \frac{r}{s-b}$$

$$\tan \frac{1}{2} C = \frac{r}{s-c}$$

Area of a triangle:

$$\text{Area} = \frac{1}{2} ab \sin C$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

PRISMOIDAL FORMULA.

$$\text{Vol.} = \frac{h}{6} (B+b+4M)$$

h = altitude; b, B = bases; M = midsection

TABLE III
INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

	0	1	2	3	4	5	6	7	8	9	10	11
$\frac{1}{16}$	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219
$\frac{1}{8}$	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271
$\frac{3}{16}$	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323
$\frac{1}{4}$	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375
$\frac{5}{16}$	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594	.9427
$\frac{3}{8}$	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479
$\frac{7}{16}$	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531
$\frac{1}{2}$	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583
$\frac{9}{16}$	.0469	.1302	.2135	.2969	.3803	.4635	.5469	.6302	.7135	.7969	.8802	.9635
$\frac{5}{8}$	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688
$\frac{11}{16}$	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740
$\frac{3}{4}$	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792
$\frac{13}{16}$	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844
$\frac{7}{8}$	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896
$\frac{15}{16}$	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948
1	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.0000
	0	1	2	3	4	5	6	7	8	9	10	11

TABLE IV
USEFUL RELATIONS.

- Lineal feet $\times .00019$ = miles
Lineal yards $\times .0006$ = miles
Square inches $\times .007$ = square feet
Square feet $\times .111$ = square yards
Square yards $\times .0002067$ = acres
Acres $\times 4840$ = square yards
Cubic inches $\times .00058$ = cubic feet
Cubic feet $\times .03704$ = cubic yards
Links $\times .22$ = yards
Links $\times .66$ = feet
Feet $\times 1.5$ = links
360° = 21600' = 1296000"
Radius = arc of 57.2957790°
Arc of 1° (radius = 1) = .017453292
Arc of 1' (radius = 1) = .000290888
Arc of 1" (radius = 1) = .000004848

$$\pi = 3.141592654 \quad \sqrt{\frac{1}{4}} = 0.564190$$

$$\frac{\pi}{4} = 0.785398163 \quad \sqrt[3]{\frac{6}{\pi}} = 1.240700982$$

$$\frac{\pi}{6} = 0.523598776 \quad \pi^2 = 9.869604401$$

$$\sqrt{\frac{4}{\pi}} = 1.128379167 \quad \frac{1}{\pi^2} = 0.101321184$$

$$\frac{\pi}{6} = 0.523598776 \quad \sqrt{\pi} = 1.772453851$$

$$\frac{4\pi}{3} = 4.188790205 \quad \frac{1}{\pi} = 0.3183099$$

Curvature of Earth's surface = about 0.7 feet in 1 mile

Curvature in feet = 0.667 (Dist. in miles)²

Difference between arc and chord length, 0.05 feet in 11 1/2 miles

$$\text{Probable error of a single observation} = 0.6754 \sqrt{\frac{\sum v^2}{n-1}}$$

Error in chaining of 0.01 feet in 100 feet:

Due to—

1. Length of tape error of 0.01 feet.
2. Alignment. One end 1.4 feet out of line
3. Sag of tape at centre of 0.61 feet.
4. Temperature difference of 15°
5. Difference of pull of 15 lbs.

STADIA REDUCTION FORMULAE.

Horizontal Distance = R — R sin² a + C cos a

Vertical Distance = R 1/2 sin 2 a + C sin a

R = Reading $\times \frac{\text{distance from Object glass to cross hairs}}{\text{distance between cross hairs}}$

C = distance from Object glass to cross hairs + distance from Object glass to center of instrument.

a = angle of elevation for mid Reading

TABLE VI (continued)
SINES, COSINES, TANGENTS, COTANGENTS (continued)

deg.	sin 0'	tan 0'	sin 10'	tan 10'	sin 20'	tan 20'	sin 30'	tan 30'	sin 40'	tan 40'	sin 50'	tan 50'	deg.
46	7193	1.0355	7214	1.0416	7234	1.0477	7254	1.0533	7274	1.0599	7294	1.0661	43
47	314	.0724	333	.0786	353	.0850	373	.0913	392	.0977	412	.1041	42
48	431	.1106	451	.1171	470	.1237	490	.1303	509	.1369	528	.1436	41
49	547	.1504	566	.1571	585	.1640	604	.1708	623	.1778	642	.1847	40
50	660	1.1918	7679	1.1988	7698	1.2059	7716	1.2131	7735	1.2203	7753	1.2276	39
51	771	.2349	790	.2423	808	.2497	826	.2572	844	.2647	862	.2723	38
52	880	.2799	898	.2876	916	.2954	934	.3032	951	.3111	969	.3190	37
53	986	.3270	8004	.3351	8021	.3452	8039	.3514	8056	.3597	8073	.3680	36
54	8090	.3764	107	.3848	124	.3934	141	.4019	158	.4106	175	.4193	35
55	192	.4281	208	.4370	225	.4460	241	.4550	258	.4641	274	.4733	34
56	290	.4826	307	.4919	323	.5013	339	.5108	355	.5204	371	.5301	33
57	387	.5399	403	.5497	418	.5597	434	.5697	450	.5798	465	.5900	32
58	480	.6003	496	.6107	511	.6212	526	.6319	542	.6426	557	.6534	31
59	572	.6643	587	.6753	601	.6864	616	.6977	631	.7090	646	.7205	30
60	660	1.7321	8675	1.7437	8689	1.7556	8704	1.7675	8718	1.7797	8732	1.7917	29
61	746	.8040	760	.8165	774	.8291	788	.8418	802	.8546	816	.8676	28
62	829	.8807	843	.8940	857	.9074	870	.9210	884	.9347	897	.9486	27
63	910	.9626	923	.9768	936	.9912	949	2.0057	962	2.0204	975	2.0353	26
64	988	2.0503	9001	2.0655	9013	2.0809	9026	.0965	9038	.1123	9051	.1283	25
65	9063	.1445	075	.1609	088	.1775	100	.1943	112	.2113	124	.2286	24
66	135	.2460	147	.2637	159	.2817	171	.2998	182	.3183	194	.3369	23
67	205	.3559	216	.3750	228	.3945	239	.4142	250	.4342	261	.4545	22
68	272	.4751	283	.4960	293	.5172	304	.5386	315	.5605	325	.5826	21
69	336	.6051	346	.6279	356	.6511	367	.6746	377	.6985	387	.7228	20
70	397	2.7475	9407	2.7725	9417	2.7980	9426	2.8239	9436	2.8502	9446	2.8770	19
71	455	.9042	465	.9319	474	.9600	483	.9887	492	3.0178	502	3.0475	18
72	511	3.0777	520	3.1084	528	3.1397	537	3.1716	546	.2041	555	.2371	17
73	563	.2709	572	.3052	580	.3402	588	.3759	596	.4124	605	.4495	16
74	613	.4874	621	.5261	628	.5656	636	.6059	644	.6470	652	.6891	15
75	659	.7321	667	.7760	674	.8208	681	.8657	689	.9136	696	.9617	14
76	703	4.0108	710	4.0611	717	4.1126	724	4.1653	730	4.2193	737	4.2747	13
77	744	.3315	750	.3897	757	.4494	763	.5107	769	.5736	775	.6382	12
78	781	.7046	787	.7729	793	.8430	799	.9152	805	.9894	811	5.0658	11
79	816	.1446	822	5.2257	827	5.3093	833	5.3955	838	5.4845	843	.5764	10
80	9848	5.6713	9853	5.7694	9858	5.8708	9863	5.9758	9868	6.0844	9872	6.1970	9
81	877	6.3138	881	6.4348	886	6.5606	890	6.6912	894	.8269	899	.9682	8
82	903	7.1154	907	7.2687	911	7.4287	914	7.5958	918	7.7704	922	7.9530	7
83	925	8.1443	929	8.3450	932	8.5555	936	8.7769	939	9.0098	942	9.2553	6
84	945	9.5144	948	9.7882	951	10.078	954	10.385	957	10.711	959	11.059	5
85	962	11.430	964	11.826	967	12.250	969	12.706	971	13.197	974	13.727	4
86	976	14.300	978	14.924	980	15.605	981	16.350	983	17.169	985	18.075	3
87	986	19.081	988	20.206	989	21.470	990	22.903	992	24.542	993	26.432	2
88	994	28.636	995	31.242	996	34.368	997	38.189	997	42.964	998	49.104	1
89	9998	57.290	9999	68.750	9999	85.940	9999	114.58	1.000	171.88	1.000	343.77	0
deg.	cos 60'	cot 60'	cos 50'	cot 50'	cos 40'	cot 40'	cos 30'	cot 30'	cos 20'	cot 20'	cos 10'	cot 10'	deg.

TABLE VII
RODS IN FEET AND INCHES

Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches
1	16-6	21	346-6	41	676-6	61	1006-6	81	1336-6
2	33-0	22	363-0	42	693-0	62	1023-0	82	1353-0
3	49-6	23	379-6	43	709-6	63	1039-6	83	1369-6
4	66-0	24	396-0	44	726-0	64	1056-0	84	1386-0
5	82-6	25	412-6	45	742-6	65	1072-6	85	1402-6
6	99-0	26	429-0	46	759-0	66	1089-0	86	1419-0
7	115-6	27	445-6	47	775-6	67	1105-6	87	1435-6
8	132-0	28	462-0	48	792-0	68	1122-0	88	1452-0
9	148-6	29	478-6	49	808-6	69	1138-6	89	1468-6
10	165-0	30	495-0	50	825-0	70	1155-0	90	1485-0
11	181-6	31	511-6	51	841-6	71	1171-6	91	1501-6
12	198-0	32	528-0	52	858-0	72	1188-0	92	1518-0
13	214-6	33	544-6	53	874-6	73	1204-6	93	1534-6
14	231-0	34	561-0	54	891-0	74	1221-0	94	1551-0
15	247-6	35	577-6	55	907-6	75	1237-6	95	1567-6
16	264-0	36	594-0	56	924-0	76	1254-0	96	1584-0
17	280-6	37	610-6	57	940-6	77	1270-6	97	1600-6
18	297-0	38	627-0	58	957-0	78	1287-0	98	1617-0
19	313-6	39	643-6	59	973-6	79	1303-6	99	1633-6
20	330-0	40	660-0	60	990-0	80	1320-0	100	1650-0

TABLE VIII
LINKS IN FEET AND INCHES

Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches
1	0-7.92	18	11-10.56	35	23-1.20	52	34-3.84	69	45-6.48
2	1-3.84	19	12-6.48	36	23-9.12	53	34-11.76	70	46-2.40
3	1-11.76	20	13-2.40	37	24-5.04	54	35-7.68	71	46-10.32
4	2-7.68	21	13-10.32	38	25-0.96	55	36-3.60	72	47-6.24
5	3-3.60	22	14-6.24	39	25-8.88	56	36-11.52	73	48-2.16
6	3-11.52	23	15-2.16	40	26-4.80	57	37-7.44	74	48-10.08
7	4-7.44	24	15-10.08	41	27-0.72	58	38-3.36	75	49-6.00
8	5-3.36	25	16-6.00	42	27-8.64	59	38-11.28	76	50-1.92
9	5-11.28	26	17-1.92	43	28-4.56	60	39-7.20	77	50-9.84
10	6-7.20	27	17-9.84	44	29-0.48	61	40-3.12	78	51-5.76
11	7-3.12	28	18-5.76	45	29-8.40	62	40-11.04	79	52-1.68
12	7-11.04	29	19-1.68	46	30-4.32	63	41-6.96	80	52-9.60
13	8-6.96	30	19-9.60	47	31-0.24	64	42-2.88	81	53-5.52
14	9-2.88	31	20-5.52	48	31-8.16	65	42-10.80	82	54-1.44
15	9-10.80	32	21-1.44	49	32-4.08	66	43-6.72	83	54-9.36
16	10-6.72	33	21-9.36	50	33-0.00	67	44-2.64	84	55-5.28
17	11-2.64	34	22-5.28	51	33-7.92	68	44-10.56	85	56-1.20
								102	67-3.84

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

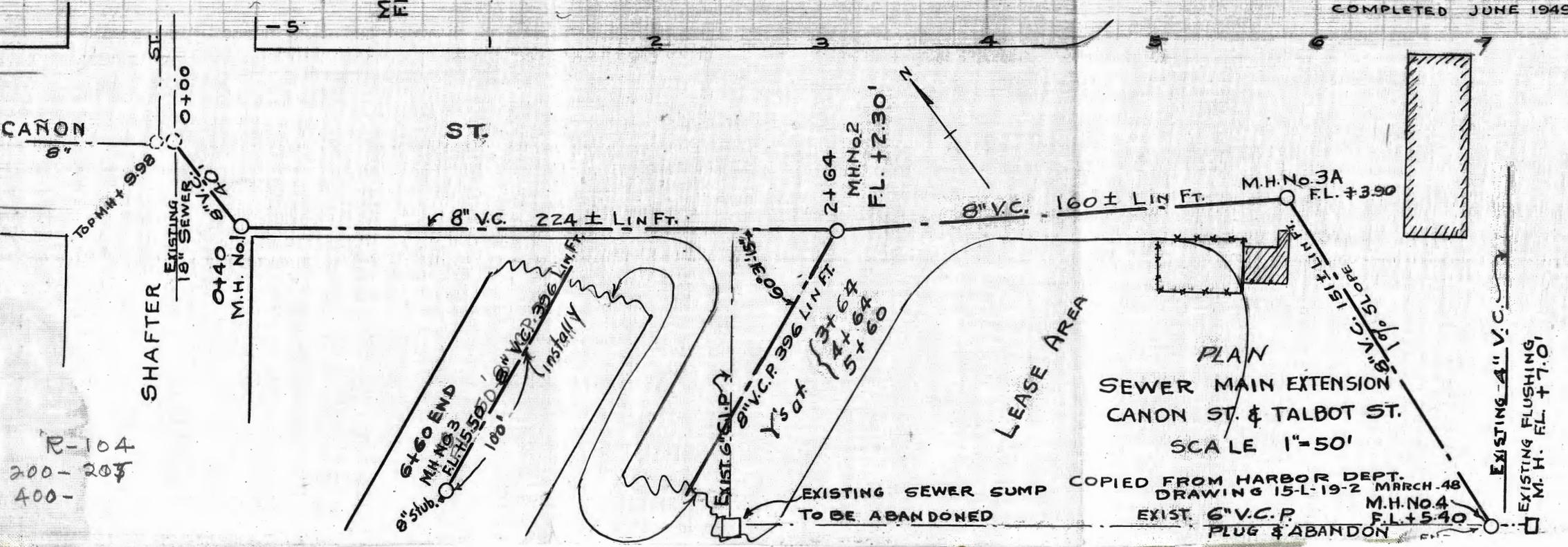
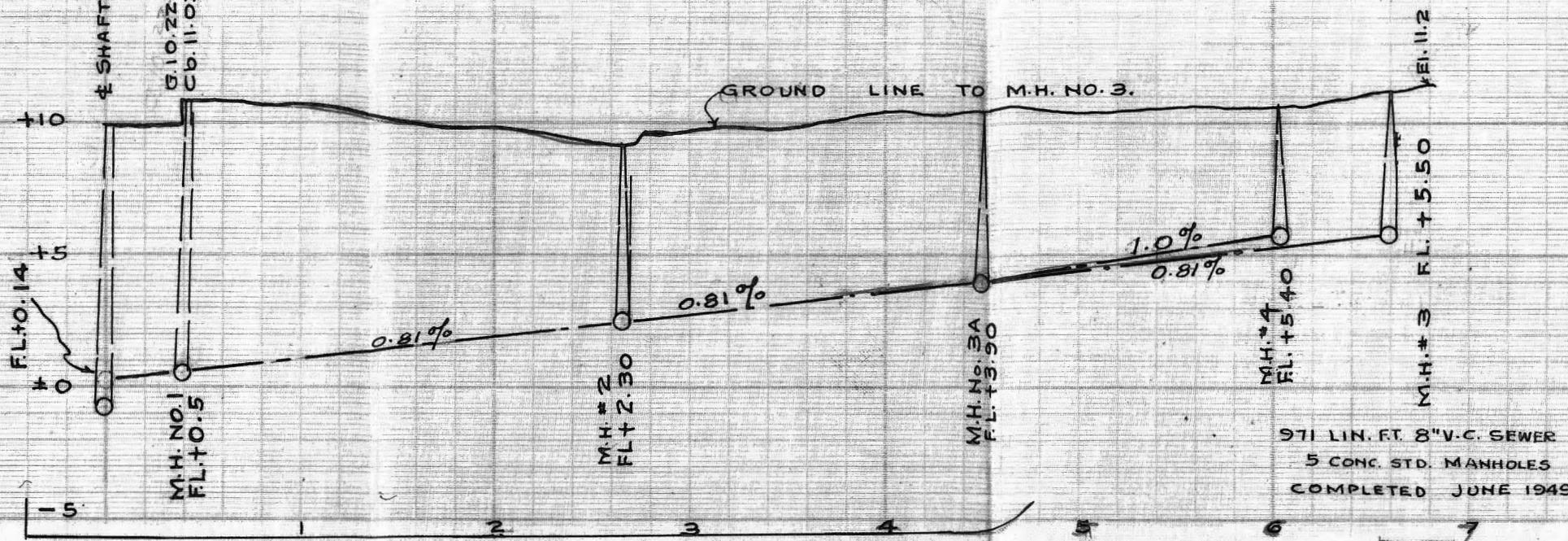
I	T	E	I=10°	I	T	E	I=20°	I	T	E	I=30°
1°	50.00	.218	+	11°	551.70	26.500	+	21°	1061.97	97.577	+
10'	58.34	.297	5° C.	10'	560.11	27.313	5° C.	10'	1070.69	99.155	5° C.
20'	66.67	.388	T	20'	568.53	28.137	T	20'	1079.2	100.75	T
30'	75.01	.491	.03	30'	576.95	28.974	.06	30'	1087.8	102.35	.10
40'	83.34	.606	E	40'	585.36	29.824	E	40'	1096.4	103.97	E
50'	91.68	.733	.001	50'	593.79	30.686	.006	50'	1105.1	105.60	.013
2°	100.01	.873	10° C.	12°	602.21	31.561	10° C.	22°	1113.7	107.24	10° C.
10'	108.35	1.024	T	10'	610.64	32.447	T	10'	1122.4	108.90	T
20'	116.68	1.188	.06	20'	619.07	33.347	.13	20'	1131.0	110.57	.19
30'	125.02	1.364	E	30'	627.50	34.259	E	30'	1139.7	112.25	E
40'	133.36	1.552	.003	40'	635.93	35.183	.011	40'	1148.4	113.95	.025
50'	141.70	1.752	15° C.	50'	644.37	36.120	15° C.	50'	1157.0	115.66	15° C.
3°	150.04	1.964	T	13°	652.81	37.070	T	23°	1165.7	117.38	T
10'	158.38	2.188	.09	10'	661.25	38.031	.19	10'	1174.4	119.12	.29
20'	166.72	2.425	.004	20'	669.70	39.006	.017	20'	1183.1	120.87	.40
30'	175.06	2.674	E	30'	678.15	39.993	E	30'	1191.8	122.63	.070
40'	183.40	2.934	.003	40'	686.60	40.992	.026	40'	1200.5	124.41	.116
50'	191.74	3.207	15° C.	50'	695.06	42.004	15° C.	50'	1209.2	126.20	.189
4°	200.08	3.492	T	14°	703.51	43.029	T	24°	1217.9	128.00	T
10'	208.43	3.790	.09	10'	711.97	44.066	.19	10'	1226.6	129.82	.29
20'	216.77	4.099	.004	20'	720.44	45.116	.017	20'	1235.3	131.65	.40
30'	225.12	4.421	E	30'	728.90	46.178	E	30'	1244.0	133.50	.070
40'	233.47	4.755	.003	40'	737.37	47.253	.026	40'	1252.8	135.35	.116
50'	241.81	5.100	15° C.	50'	745.85	48.341	15° C.	50'	1261.5	137.23	.189
5°	250.16	5.459	T	15°	754.32	49.441	T	25°	1270.2	139.11	T
10'	258.51	5.829	.09	10'	762.80	50.554	.19	10'	1279.0	141.01	.29
20'	266.86	6.211	.004	20'	771.29	51.679	.017	20'	1287.7	142.93	.40
30'	275.21	6.606	E	30'	779.77	52.818	E	30'	1296.5	144.85	.070
40'	283.57	7.013	.003	40'	788.26	53.969	.026	40'	1305.3	146.79	.116
50'	291.92	7.432	15° C.	50'	796.75	55.132	15° C.	50'	1314.0	148.75	.189
6°	300.28	7.863	T	16°	805.25	56.309	T	26°	1322.8	150.71	T
10'	308.64	8.307	.09	10'	813.75	57.498	.19	10'	1331.6	152.69	.29
20'	316.99	8.762	.004	20'	822.25	58.699	.017	20'	1340.4	154.69	.40
30'	325.35	9.230	E	30'	830.76	59.914	E	30'	1349.2	156.70	.070
40'	333.71	9.710	.003	40'	839.27	61.141	.026	40'	1358.0	158.72	.116
50'	342.08	10.202	15° C.	50'	847.78	62.381	15° C.	50'	1366.8	160.76	.189
7°	350.44	10.707	T	17°	856.30	63.634	T	27°	1375.6	162.81	T
10'	358.81	11.224	.09	10'	864.82	64.900	.19	10'	1384.4	164.86	.29
20'	367.17	11.753	.004	20'	873.35	66.178	.017	20'	1393.2	166.95	.40
30'	375.54	12.294	E	30'	881.88	67.470	E	30'	1402.0	169.04	.070
40'	383.91	12.847	.003	40'	890.41	68.774	.026	40'	1410.9	171.15	.116
50'	392.28	13.413	15° C.	50'	898.95	70.091	15° C.	50'	1419.7	173.27	.189
8°	400.66	13.991	T	18°	907.49	71.421	T	28°	1428.6	175.41	T
10'	409.03	14.582	.09	10'	916.03	72.764	.19	10'	1437.4	177.55	.29
20'	417.41	15.184	.004	20'	924.58	74.119	.017	20'	1446.3	179.72	.40
30'	425.79	15.799	E	30'	933.13	75.488	E	30'	1455.1	181.89	.070
40'	434.17	16.426	.003	40'	941.69	76.869	.026	40'	1464.0	184.08	.116
50'	442.55	17.065	15° C.	50'	950.25	78.264	15° C.	50'	1472.9	186.29	.189
9°	450.93	17.717	T	19°	958.81	79.671	T	29°	1481.8	188.51	T
10'	459.32	18.381	.09	10'	967.38	81.092	.19	10'	1490.7	190.74	.29
20'	467.71	19.058	.004	20'	975.96	82.525	.017	20'	1499.6	192.99	.40
30'	476.10	19.746	E	30'	984.53	83.972	E	30'	1508.5	195.25	.070
40'	484.49	20.447	.003	40'	993.12	85.431	.026	40'	1517.4	197.53	.116
50'	492.88	21.161	15° C.	50'	1001.7	86.904	15° C.	50'	1526.3	199.82	.189
10°	501.28	21.887	T	20°	1010.3	88.389	T	30°	1535.3	202.12	T
10'	509.68	22.624	.09	10'	1018.9	89.888	.19	10'	1544.2	204.44	.29
20'	518.08	23.375	.004	20'	1027.5	91.399	.017	20'	1553.1	206.77	.40
30'	526.48	24.138	E	30'	1036.1	92.924	E	30'	1562.1	209.12	.070
40'	534.89	24.913	.003	40'	1044.7	94.462	.026	40'	1571.0	211.48	.116
50'	543.29	25.700	15° C.	50'	1053.3	96.013	15° C.	50'	1580.0	213.86	.189

T = R tan ½ I

E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=40°	I	T	E	I=50°	I	T	E	I=60°
31°	1589.0	216.3	+	41°	2142.2	387.4	+	51°	2732.9	618.4	+
10'	1598.0	218.7	5° C.	10'	2151.7	390.7	5° C.	10'	2743.1	622.8	5° C.
20'	1606.9	221.1	T	20'	2161.2	394.1	T	20'	2753.4	627.2	T
30'	1615.9	223.5	.13	30'	2170.8	397.4	.17	30'	2763.7	631.7	.21
40'	1624.9	226.0	E	40'	2180.3	400.8	E	40'	2773.9	636.2	E
50'	1633.9	228.4	.023	50'	2189.9	404.2	.037	50'	2784.2	640.7	.056
32°	1643.0	230.9	10° C.	42°	2199.4	407.6	10° C.	52°	2794.0	645.2	10° C.
10'	1652.0	233.4	T	10'	2209.0	411.1	T	10'	2804.9	649.7	T
20'	1661.0	235.9	.06	20'	2218.6	414.5	.34	20'	2815.2	654.3	.42
30'	1670.0	238.4	E	30'	2228.1	418.0	E	30'	2825.6	658.8	E
40'	1679.1	241.0	.013	40'	2237.7	421.4	.075	40'	2835.9	663.4	.112
50'	1688.1	243.5	10° C.	50'	2247.3	425.0	10° C.	50'	2846.3	668.0	10° C.
33°	1697.2	246.1	T	43°	2257.0	428.5	T	53°	2856.7	672.7	T
10'	1706.3	248.7	.26	10'	2266.6	432.0	.34	10'	2867.1	677.3	.42
20'	1715.3	251.3	E	20'	2276.2	435.6	E	20'	2877.5	682.0	E
30'	1724.4	253.9	.046	30'	2285.9	439.2	.075	30'	2888.0	686.7	.112
40'	1733.5	256.5	15° C.	40'	2295.6	442.8	15° C.	40'	2898.4	691.4	15° C.
50'	1742.6	259.1	T	50'	2305.2	446.4	T	50'	2908.9	696.1	T
34°	1751.7	261.8	10° C.	44°	2314.9	450.0	10° C.	54°	2919.4	700.9	10° C.
10'	1760.8	264.5	T	10'	2324.6	453.6	T	10'	2929.9	705.7	T
20'	1770.0	267.2	.06	20'	2334.3	457.3	.34	20'	2940.4	710.5	.42
30'	1779.1	269.9	E	30'	2344.1	461.0	E	30'	2951.0	715.3	E
40'	1788.2	272.6	.013	40'	2353.8	464.6	.075	40'	2961.5	720.1	.112
50'	1797.4	275.3	15° C.	50'	2363.5	468.4	15° C.	50'	2972.1	725.0	15° C.
35°	1806.6	278.1	T	45°	2373.3	472.1	T	55°	2982.7	729.9	T
10'	1815.7	280.8	.40	10'	2383.1	475.8	.51	10'	2993.3	734.8	.63
20'	1824.9	283.6	E	20'	2392.8	479.6	E	20'	3003.9	739.7	E
30'	1834.1	286.4	.070	30'	2402.6	483.4	.116	30'	3014.5	744.6	.168
40'	1843.3	289.2	15° C.	40'	2412.4	487.2	15° C.	40'	3025.2	749.6	15° C.
50'	1852.5	292.0	T	50'	2422.3	491.0	T	50'	3035.8	754.6	T
36°	1861.7	294.9	10° C.	46°	2432.1	494.8	10° C.	56°	3046.5	759.6	10° C.
10'	1870.9	297.7	T	10'	2441.9	498.7	T	10'	3057.2	764.6	T
20'	1880.1	300.6	.06	20'	2451.8	502.5	.34	20'	3067.9	769.7	.42
30'	1889.4	303.5	E	30'	2461.7	506.4	E	30'	3078.7	774.7	E
40'	1898.6	306.4	.013	40'	2471.5	510.3	.075	40'	3089.4	779.8	.112
50'	1907.9	309.3	15° C.	50'	2481.4	514.3	15° C.	50'	3100.2	784.9	15° C.
37°	1917.1	312.2	T	47°	2491.3	518.2	T	57°	3110.9	790.1	T
10'	1926.4	315.2	.093	10'	2501.2	522.2	.151	10'	3121.7	795.2	.63
20'	1935.7	318.1	E	20'	2511.2	526.1	E	20'	3132.6	800.4	E
30'	1945.0	321.1	.070	30'	2521.1	530.1	.116	30'	3143.4	805.6	.168
40'	1954.3	324.1	15° C.	40'	2531.1	534.2	15° C.	40'	3154.2	810.9	15° C.
50'	1963.6	327.1	T	50'	2541.0	538.2	T	50'	3165.1	816.1	T
38°	1972.9	330.2	10° C.	48°	2551.0	542.2	10° C.	58°	3176.0	821.4	10° C.
10'	1982.2	333.2	T	10'	2561.0	546.3	T	10'	3186.9	826.7	T
20'	1991.5	336.3	.06	20'	2571.0	550.4	.34	20'	3197.8	832.0	.42
30'	2000.9	339.3	E	30'	2581.0	554.5	E	30'	3208.8	837.3	E
40'	2010.2	342.4	.013	40'	2591.0	558.6	.075	40'	3219.7	842.7	.112
50'	2019.6										



PLAN
SEWER MAIN EXTENSION
CANON ST. & TALBOT ST.
SCALE 1"=50'

EXISTING SEWER SUMP TO BE ABANDONED
COPIED FROM HARBOR DEPT. DRAWING 15-L-19-2 MARCH 48
EXIST. 6" V.C.P. PLUG & ABANDON
M.H. No. 4 FL. +5.40

W.M. 11' 0" + 1.0'
EXISTING LIGHTING

PLUG & ABANDON

EXIST. S.V.C.R. E.L. 12.40
M.H. NO. 4
DRAWING 12-1-12-2 MARCH 48
CORIED FROM HARBOR DEPT.

SCALE 1"=50'
CANON ST. & TALBOT ST.
SEWER MAIN EXTENSION
PLAN

M.H. NO. 3A
E.L. 13.30

LEASE AREA

TO BE ABANDONED

EXISTING SEWER PUMP

40MM DIA.
108 ST. 19

4" DIA.
E.L. 12.80

4" DIA.
E.L. 12.80

S.V.C.R. 100' DIA. 11.11

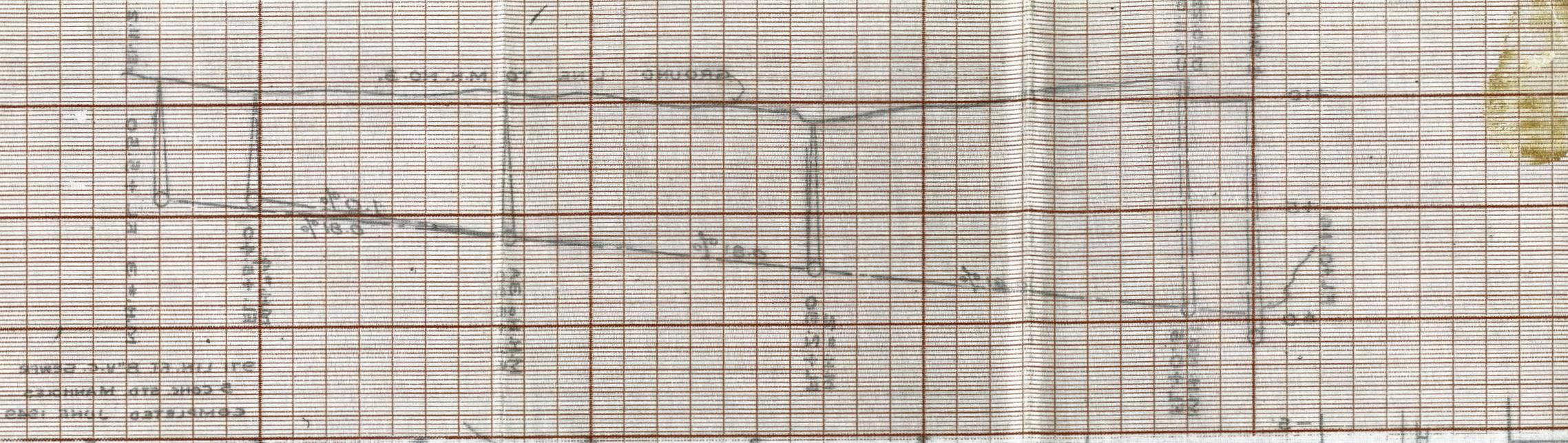
100' DIA. 11.11
E.L. 12.80

3" DIA. 11.11

4" DIA. 11.11

10" DIA. 11.11

400-
900-
104



COMPLETED POINTS
CONC. AND MARKERS
SET TO THE E.L. 13.30

ST.

CANON ST.

10" DIA. 11.11

4" DIA. 11.11

4" DIA. 11.11

10" DIA. 11.11

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=70°	I	T	E	I=80°	I	T	E	I=90°
61°	3375.0	920.2	+	71°	4086.9	1308.2	+	81°	4893.6	1805.3	+
10'	3386.3	925.9	5° C.	10'	4099.5	1315.6	5° C.	10'	4908.0	1814.7	5° C.
20'	3397.5	931.6	T	20'	4112.1	1322.9	T	20'	4922.5	1824.1	T
30'	3408.8	937.3	.25	30'	4124.8	1330.3	.25	30'	4937.0	1833.6	.25
40'	3420.1	943.1	E	40'	4137.4	1337.7	E	40'	4951.5	1843.1	E
50'	3431.4	948.9	.080	50'	4150.1	1345.1	.080	50'	4966.1	1852.6	.080
62°	3442.7	954.8	10° C.	72°	4162.8	1352.6	10° C.	82°	4980.7	1862.2	10° C.
10'	3454.1	960.6	T	10'	4175.6	1360.1	T	10'	4995.4	1871.8	T
20'	3465.4	966.5	.51	20'	4188.5	1367.6	.51	20'	5010.0	1881.5	.51
30'	3476.8	972.4	E	30'	4201.2	1375.2	E	30'	5024.8	1891.2	E
40'	3488.3	978.3	.159	40'	4214.0	1382.8	.159	40'	5039.5	1900.9	.159
50'	3499.7	984.3	15° C.	50'	4226.8	1390.4	15° C.	50'	5054.3	1910.7	15° C.
63°	3511.1	990.2	10° C.	73°	4239.7	1398.0	10° C.	83°	5069.2	1920.5	10° C.
10'	3522.6	996.2	T	10'	4252.6	1405.7	T	10'	5084.0	1930.4	T
20'	3534.1	1002.3	.51	20'	4265.6	1413.5	.51	20'	5099.0	1940.3	.51
30'	3545.6	1008.3	E	30'	4278.5	1421.2	E	30'	5113.9	1950.3	E
40'	3557.2	1014.4	.159	40'	4291.5	1429.0	.159	40'	5128.9	1960.2	.159
50'	3568.7	1020.5	15° C.	50'	4304.6	1436.8	15° C.	50'	5143.9	1970.3	15° C.
64°	3580.3	1026.6	10° C.	74°	4317.6	1444.6	10° C.	84°	5159.0	1980.4	10° C.
10'	3591.9	1032.8	T	10'	4330.7	1452.5	T	10'	5174.1	1990.6	T
20'	3603.5	1039.0	.51	20'	4343.8	1460.4	.51	20'	5189.3	2000.6	.51
30'	3615.1	1045.2	E	30'	4356.9	1468.4	E	30'	5204.4	2010.8	E
40'	3626.8	1051.4	.159	40'	4370.1	1476.4	.159	40'	5219.7	2021.1	.159
50'	3638.5	1057.7	15° C.	50'	4383.3	1484.4	15° C.	50'	5234.9	2031.4	15° C.
65°	3650.2	1063.9	10° C.	75°	4396.5	1492.4	10° C.	85°	5250.3	2041.7	10° C.
10'	3661.9	1070.2	T	10'	4409.8	1500.5	T	10'	5265.6	2052.1	T
20'	3673.7	1076.6	.51	20'	4423.1	1508.6	.51	20'	5281.0	2062.5	.51
30'	3685.4	1082.9	E	30'	4436.4	1516.7	E	30'	5296.4	2073.0	E
40'	3697.2	1089.3	.240	40'	4449.7	1524.9	.240	40'	5311.9	2083.5	.240
50'	3709.0	1095.7	15° C.	50'	4463.1	1533.1	15° C.	50'	5327.4	2094.1	15° C.
66°	3720.9	1102.2	10° C.	76°	4476.5	1541.4	10° C.	86°	5343.0	2104.7	10° C.
10'	3732.7	1108.6	T	10'	4489.9	1549.7	T	10'	5358.6	2115.3	T
20'	3744.6	1115.1	.51	20'	4503.4	1558.0	.51	20'	5374.2	2126.0	.51
30'	3756.5	1121.7	E	30'	4516.9	1566.3	E	30'	5389.9	2136.7	E
40'	3768.5	1128.2	.159	40'	4530.4	1574.7	.159	40'	5405.6	2147.5	.159
50'	3780.4	1134.8	15° C.	50'	4544.0	1583.1	15° C.	50'	5421.4	2158.4	15° C.
67°	3792.4	1141.4	10° C.	77°	4557.6	1591.6	10° C.	87°	5437.2	2169.2	10° C.
10'	3804.4	1148.0	T	10'	4571.2	1600.1	T	10'	5453.1	2180.2	T
20'	3816.4	1154.7	.321	20'	4584.8	1608.6	.321	20'	5469.0	2191.1	.321
30'	3828.4	1161.3	E	30'	4598.5	1617.1	E	30'	5484.9	2202.2	E
40'	3840.5	1168.1	.159	40'	4612.2	1625.7	.159	40'	5500.9	2213.2	.159
50'	3852.6	1174.8	15° C.	50'	4626.0	1634.4	15° C.	50'	5517.0	2224.3	15° C.
68°	3864.7	1181.6	10° C.	78°	4639.8	1643.0	10° C.	88°	5533.1	2235.5	10° C.
10'	3876.8	1188.4	T	10'	4653.6	1651.7	T	10'	5549.2	2246.7	T
20'	3889.0	1195.2	.51	20'	4667.4	1660.5	.51	20'	5565.4	2258.0	.51
30'	3901.2	1202.0	E	30'	4681.3	1669.2	E	30'	5581.6	2269.3	E
40'	3913.4	1208.9	.159	40'	4695.2	1678.1	.159	40'	5597.8	2280.6	.159
50'	3925.6	1215.8	15° C.	50'	4709.2	1686.9	15° C.	50'	5614.2	2292.0	15° C.
69°	3937.9	1222.7	10° C.	79°	4723.2	1695.8	10° C.	89°	5630.5	2303.5	10° C.
10'	3950.2	1229.7	T	10'	4737.2	1704.7	T	10'	5646.9	2315.0	T
20'	3962.5	1236.7	.51	20'	4751.2	1713.7	.51	20'	5663.4	2326.6	.51
30'	3974.8	1243.7	E	30'	4765.3	1722.7	E	30'	5679.9	2338.2	E
40'	3987.2	1250.8	.159	40'	4779.4	1731.7	.159	40'	5696.4	2349.8	.159
50'	3999.5	1257.9	15° C.	50'	4793.6	1740.8	15° C.	50'	5713.0	2361.5	15° C.
70°	4011.9	1265.0	10° C.	80°	4807.7	1749.9	10° C.	90°	5729.7	2373.3	10° C.
10'	4024.4	1272.1	T	10'	4822.0	1759.0	T	10'	5746.3	2385.1	T
20'	4036.8	1279.3	.51	20'	4836.2	1768.2	.51	20'	5763.1	2397.0	.51
30'	4049.3	1286.5	E	30'	4850.5	1777.4	E	30'	5779.9	2408.9	E
40'	4061.8	1293.6	.159	40'	4864.8	1786.7	.159	40'	5796.7	2420.9	.159
50'	4074.4	1300.9	15° C.	50'	4879.2	1796.0	15° C.	50'	5813.6	2432.9	15° C.

T = R tan ½ I E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=100°	I	T	E	I=110°	I	T	E	I=120°
91°	5830.5	2444.9	+	101°	6950.6	3278.1	+	111°	8336.7	4386.1	+
10'	5847.5	2457.1	5° C.	10'	6971.3	3294.1	5° C.	10'	8362.7	4407.6	5° C.
20'	5864.6	2469.3	T	20'	6992.0	3310.1	T	20'	8388.9	4429.2	T
30'	5881.7	2481.5	.43	30'	7012.7	3326.1	.43	30'	8415.1	4450.9	.43
40'	5898.8	2493.8	E	40'	7033.6	3342.3	E	40'	8441.5	4472.7	E
50'	5916.0	2506.1	.200	50'	7054.5	3358.5	.200	50'	8468.0	4494.6	.200
92°	5933.2	2518.5	10° C.	102°	7075.5	3374.9	10° C.	112°	8494.6	4516.6	10° C.
10'	5950.5	2531.0	T	10'	7096.6	3391.2	T	10'	8521.3	4538.8	T
20'	5967.9	2543.5	.86	20'	7117.8	3407.7	.86	20'	8548.1	4561.1	.86
30'	5985.3	2556.0	E	30'	7139.0	3424.3	E	30'	8575.0	4583.4	E
40'	6002.7	2568.6	.401	40'	7160.3	3440.9	.401	40'	8602.1	4605.8	.401
50'	6020.2	2581.3	15° C.	50'	7181.7	3457.6	15° C.	50'	8629.3	4628.6	15° C.
93°	6037.8	2594.0	10° C.	103°	7203.2	3474.4	10° C.	113°	8656.6	4651.3	10° C.
10'	6055.4	2606.8	T	10'	7224.7	3491.3	T	10'	8684.0	4674.2	T
20'	6073.1	2619.7	.86	20'	7246.3	3508.2	.86	20'	8711.5	4697.2	.86
30'	6090.8	2632.6	E	30'	7268.0	3525.2	E	30'	8739.2	4720.3	E
40'	6108.6	2645.5	.401	40'	7289.8	3542.4	.401	40'	8767.0	4743.6	.401
50'	6126.4	2658.5	15° C.	50'	7311.7	3559.6	15° C.	50'	8794.9	4766.9	15° C.
94°	6144.3	2671.6	10° C.	104°	7333.6	3576.8	10° C.	114°	8822.9	4790.4	10° C.
10'	6162.2	2684.7	T	10'	7355.6	3594.2	T	10'	8851.0	4814.1	T
20'	6180.2	2697.9	.86	20'	7377.8	3611.7	.86	20'	8879.3	4837.8	.86
30'	6198.3	2711.2	E	30'	7399.9	3629.2	E	30'	8907.7	4861.7	E
40'	6216.4	2724.5	.401	40'	7422.2	3646.8	.401	40'	8936.3	4885.7	.401
50'	6234.6	2737.9	15° C.	50'	7444.6	3664.5	15° C.	50'	8965.0	4909.9	15° C.
95°	6252.8	2751.3	10° C.	105°	7467.0	3682.3	10° C.	115°	8993.8	4934.1	10° C.
10'	6271.1	2764.8	T	10'	7489.6	3700.2	T	10'	9022.7	4958.6	T
20'	6289.4	2778.3	.86	20'	7512.2	3718.2	.86	20'	9051.7	4983.1	.86
30'	6307.9	2792.0	E	30'	7534.9	3736.2	E	30'	9080.9	5007.8	E
40'	6326.3	2805.6	.401	40'	7557.7	3754.4	.401	40'	9110.3	5032.6	.401
50'	6344.8	2819.4	15° C.	50'	7580.5	3772.6	15° C.	50'	9139.8	5057.6	15° C.
96°	6363.4	2833.2	10° C.	106°	7603.5	3791.0	10° C.	116°	9169.4	5082.7	10° C.
10'	6382.1	2847.0	T	10'	7626.6	3809.4	T	10'	9199.1	5107.9	T
20'	6400.8	2861.0	.86	20'	7649.7	3827.9	.86	20'	9229.0	5133.3	.86
30'	6419.5	2875.0	E	30'	7672.9	3846.5	E	30'	9259.0	5158.8	E
40'	6438.4	2889.0	.401	40'	7696.3	3865.2	.401	40'	9289.2	5184.5	.401
50'	6457.3	2903.1	15° C.	50'	7719.7	3884.0	15° C.	50'	9319.5	5210.3	15° C.
97°	6476.2	2917.3	10° C.	107°	7743.2	3902.9	10° C.	117°	9349.9	5236.2	10° C.
10'	6495.2	2931.6	T	10'	7766.8	3921.9	T	10'	9380.5	5262.3	T
20'	6514.3	2946.3	.86	20'	7790.5	3940.9	.86	20'	9411.3	5288.6	.86
30'	6533.4	2961.0	E	30'	7814.3	3960.1	E	30'	9442.2	5315.0	E
40'	6552.6	2974.7	.401	40'	7838.1	3979.4	.401	40'	9473.2	5341.5	.401
50'	6571.9	2989.2	15° C.	50'	7862.1	3998.7	15° C.	50'	9504.4	5368.2	15° C.
98°	6591.2	3003.8	10° C.	108°	7886.2	4018.2	10° C.	118°	9535.7	5395.1	10° C.
10'	6610.6	3018.4	T	10'	7910.4	4037.8	T	10'	9567.2	5422.1	T
20'	6630.1	3033.1									

TABLE X.
MIDDLE ORDINATES OF RAILS
Length of Rail (feet)

C	R	30	28	26	24	22	20	C	R	30	28	26	24	22	20
o /	Feet	Inch	Inch	Inch	Inch	Inch	Inch	o	Feet	Inch	Inch	Inch	Inch	Inch	Inch
0-20	17189	.08	.07	.06	.05	.04	.03	8	716.8	1.88	1.64	1.42	1.20	1.01	.84
0-40	8594	.16	.14	.12	.10	.08	.07	9	637.3	2.12	1.84	1.60	1.35	1.14	.94
1-0	5730	.24	.20	.18	.15	.13	.10	10	573.7	2.36	2.05	1.78	1.50	1.27	1.04
1-20	4297	.31	.27	.23	.20	.17	.13	11	521.7	2.59	2.26	1.95	1.65	1.39	1.15
1-40	3438	.39	.34	.29	.25	.21	.17	12	478.3	3.83	2.47	2.15	1.81	1.54	1.26
2-0	2865	.47	.41	.35	.30	.25	.20	13	441.7	3.05	2.66	2.30	1.96	1.66	1.36
2-20	2456	.55	.48	.41	.35	.29	.23	14	410.3	3.30	2.87	2.48	2.10	1.78	1.46
2-40	2149	.63	.55	.47	.40	.33	.27	15	383.1	3.54	3.08	2.68	2.26	1.91	1.57
3-0	1910	.71	.62	.53	.45	.38	.31	16	359.3	3.76	3.28	2.83	2.40	2.04	1.67
3-20	1719	.78	.68	.59	.50	.42	.35	17	338.3	4.00	3.48	3.02	2.57	2.16	1.78
3-40	1563	.86	.75	.65	.55	.46	.38	18	319.6	4.21	3.67	3.18	2.70	2.28	1.87
4-0	1433	.94	.82	.71	.60	.50	.42	19	302.9	4.45	3.89	3.36	2.86	2.41	1.98
4-20	1323	1.02	.89	.77	.65	.55	.45	20	287.9	4.70	4.09	3.55	3.00	2.54	2.09
4-40	1228	1.10	.96	.83	.70	.59	.48	22	262.0	5.16	4.44	3.84	3.30	2.80	2.29
5	1146	1.18	1.03	.89	.75	.63	.52	24	240.5	5.64	4.92	4.20	3.59	3.04	2.50
6	955.3	1.41	1.23	1.06	.90	.76	.62	26	222.3	6.07	5.29	4.58	3.88	3.29	2.70
7	819.0	1.65	1.44	1.24	1.05	.89	.73								

TABLE XI.
SHORT RADIUS CURVES

Radius Feet	Chord Feet	Central Angle	Deflection Angle	Deflection for 1 Foot
35	10	16-26	8-13	49.3
45	10	12-46	6-23	38.3
50	15	17-16	8-38	34.5
60	15	14-22	7-11	28.8
75	15	11-30	5-45	23.0
100	20	11-30	5-45	17.3
120	20	9-34	4-47	14.3
150	20	7-39	3-49	11.5
190	25	7-32	3-46	9.15
200	25	7-10	3-35	8.6
225	25	6-25	3-12	7.7
240	25	5-58	2-59	7.2
250	25	5-44	2-52	6.9
275	25	5-12	2-36	6.2
288	50	9-58	4-59	6.0
300	50	9-32	4-46	5.7
350	50	8-12	4-06	4.9
376	50	7-40	3-50	4.6
400	50	7-10	3-35	4.3
410	50	7-00	3-30	4.2

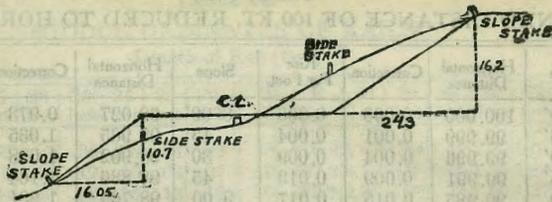
To find length of curve divide angle from P. C. to P. T. by central angle of chord, and multiply by length of chord.

TABLE XII.
INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

Slope	Horizontal Distance	Correction	Rise Per Foot	Slope	Horizontal Distance	Correction	Rise Per Foot
0°00'	100.000	0.000	0.000	8°00'	99.027	0.973	0.139
15'	99.999	0.001	0.004	15'	98.965	1.035	0.143
30'	99.996	0.004	0.009	30'	98.902	1.098	0.148
45'	99.991	0.009	0.013	45'	98.836	1.164	0.152
1 00	99.985	0.015	0.017	9 00	98.769	1.231	0.156
15	99.976	0.024	0.022	15	98.700	1.300	0.161
30	99.966	0.034	0.026	30	98.629	1.371	0.165
45	99.953	0.047	0.031	45	98.556	1.444	0.169
2 00	99.939	0.061	0.035	10 00	98.481	1.519	0.174
15	99.923	0.077	0.039	15	98.404	1.596	0.178
30	99.905	0.095	0.044	30	98.325	1.675	0.182
45	99.885	0.115	0.048	45	98.245	1.755	0.187
3 00	99.863	0.137	0.052	11 00	98.163	1.837	0.191
15	99.839	0.161	0.057	15	98.079	1.921	0.195
30	99.813	0.187	0.061	30	97.992	2.008	0.199
45	99.786	0.214	0.065	45	97.905	2.095	0.204
4 00	99.756	0.244	0.070	12 00	97.815	2.185	0.208
15	99.725	0.275	0.074	15	97.723	2.277	0.212
30	99.692	0.308	0.078	30	97.630	2.370	0.216
45	99.657	0.343	0.083	45	97.534	2.466	0.221
5 00	99.619	0.381	0.087	13 00	97.437	2.563	0.225
15	99.580	0.420	0.092	15	97.338	2.662	0.229
30	99.540	0.460	0.096	30	97.237	2.763	0.233
45	99.497	0.503	0.100	45	97.134	2.866	0.238
6 00	99.452	0.548	0.105	14 00	97.030	2.970	0.242
15	99.406	0.594	0.109	15	96.923	3.077	0.246
30	99.357	0.643	0.113	30	96.815	3.185	0.250
45	99.307	0.693	0.118	45	96.705	3.295	0.255
7 00	99.255	0.745	0.122	15 00	96.593	3.407	0.259
15	99.200	0.800	0.126	15	96.479	3.521	0.263
30	99.144	0.856	0.131	30	96.363	3.637	0.267
45	99.087	0.913	0.135	45	96.246	3.754	0.271

TABLE XIII.
MINUTES IN DECIMALS OF A DEGREE.

0 30"	.00833	10' 30"	.17500	20' 30"	.34167	30' 10"	.50833	40' 30"	.67500	50' 10"	.84167
1 00	.01667	11 00	.18333	21 00	.35000	31 00	.51667	41 00	.68333	51 00	.85000
30	.02500	30	.19167	30	.35833	30	.52500	30	.69167	30	.85833
2 00	.03333	12 00	.20000	22 00	.36667	32 00	.53333	42 00	.70000	52 00	.86667
30	.04167	30	.20833	30	.37500	30	.54167	30	.70833	30	.87500
3 00	.05000	13 00	.21667	23 00	.38333	33 00	.55000	43 00	.71667	53 00	.88333
30	.05833	30	.22500	30	.39167	30	.55833	30	.72500	30	.89167
4 00	.06667	14 00	.23333	24 00	.40000	34 00	.56667	44 00	.73333	54 00	.90000
30	.07500	30	.24167	30	.40833	30	.57500	30	.74167	30	.90833
5 00	.08333	15 00	.25000	25 00	.41667	35 00	.58333	45 00	.75000	55 00	.91667
30	.09167	30	.25833	30	.42500	30	.59167	30	.75833	30	.92500
6 00	.10000	16 00	.26667	26 00	.43333	36 00	.60000	46 00	.76667	56 00	.93333
30	.10833	30	.27500	30	.44167	30	.60833	30	.77500	30	.94167
7 00	.11667	17 00	.28333	27 00	.45000	37 00	.61667	47 00	.78333	57 00	.95000
30	.12500	30	.29167	30	.45833	30	.62500	30	.79167	30	.95833
8 00	.13333	18 00	.30000	28 00	.46667	38 00	.63333	48 00	.80000	58 00	.96667
30	.14167	30	.30833	30	.47500	30	.64167	30	.80833	30	.97500
9 00	.15000	19 00	.31667	29 00	.48333	39 00	.65000	49 00	.81667	59 00	.98333
30	.15833	30	.32500	30	.49167	30	.65833	30	.82500	30	.99167
10 00	.16667	20 00	.33333	30 00	.50000	40 00	.66667	50 00	.83333	60 00	1.00000



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
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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.