

**SUMMARY OF FINDINGS FOR THE  
ANNUAL DRAINAGE CHANNEL FIELD  
ASSESSMENT AND MAINTENANCE  
PRIORITIZATION PROJECT (PHASE 1)  
FOR  
THE CITY OF SAN DIEGO –  
MASTER STORM WATER SYSTEM MAINTENANCE  
PROGRAM (MMP) MAP 69: AUBURN CREEK CHANNEL  
(SECTION 3 OF 4)**

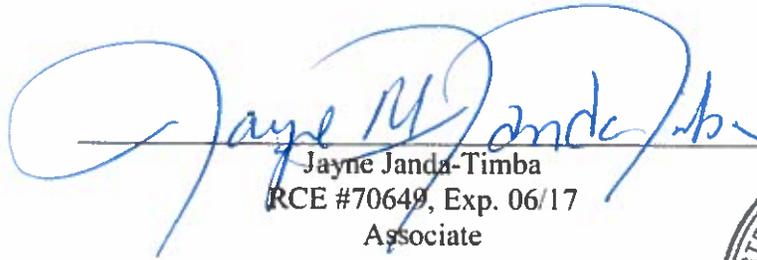
**Job Number 17204-D**

**August 4, 2015**

**RICK**  
RICK ENGINEERING COMPANY  
ENGINEERING COMPANY  
RICK ENGINEERING CO

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ANNUAL DRAINAGE CHANNEL FIELD  
ASSESSMENT AND MAINTENANCE PRIORITIZATION PROJECT (PHASE 1)  
FOR  
THE CITY OF SAN DIEGO – MASTER STORM WATER SYSTEM MAINTENANCE  
PROGRAM (MMP) 69: AUBURN CREEK CHANNEL (SECTION 3 OF 4)**

Job Number 17204-D

  
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**August 4, 2015**

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## **1.0 Executive Summary**

This report and preliminary analyses concludes that the Channel Prioritization Score for the Auburn Creek Channel (Section 3 of 4) (MMP Map 69) is **65.6 out of 100**. This score is at average and indicates the channel is recommended for maintenance. The hydraulic capacity of the channel in the current condition is a 100-year storm event capacity, however maintenance is recommended to preserve the 100-year storm event capacity. Other factors considered in the analysis include water quality, community needs, and aesthetics related to the channel.

The hydraulic portion of this analyses focuses on the channel reach upstream of Euclid Avenue. Based on information provided by the City of San Diego, described further below, the channel reach downstream of Euclid Avenue has little evidence of sediment or vegetation. Therefore, maintaining it for sediment or vegetation would not increase the hydraulic capacity of the reach downstream of Euclid Avenue.

## **2.0 Introduction**

This report summarizes the findings for the Annual Drainage Channel Field Assessment and Maintenance Prioritization Project (Phase 1) for the City of San Diego for Master Storm Water System Maintenance Program (MMP), dated October 2011, Map 69: Auburn Creek Channel (Section 3 of 4). Refer to Appendix A for the MMP Storm Water Facilities Key Map and Map 69.

### **Purpose**

As part of the Master Storm Water System Maintenance Program (MMP), the City of San Diego performed site visits to drainage channels within the MMP and designated several drainage channels as maintenance priorities. The purpose of Phase 1 of this project is to perform a desktop analysis to evaluate the drainage channels identified by the City of San Diego and rank them in order of significance for the purposes of City of San Diego maintenance activities.

## **3.0 Desktop Channel Maintenance Prioritization Analysis**

The desktop channel maintenance prioritization analysis is based on the following items which were reviewed and evaluated to determine the maintenance priority:

- City of San Diego Operations and Maintenance (O&M) Channel Maintenance Inspection Forms completed for the channel by the City of San Diego (Refer to Appendix B)
- Site photos taken by the City of San Diego (Refer to Appendix B)
- Available as-built plans (Refer to Appendix G)
- Hydraulic Analysis (Refer to Section 5.0 and Appendix D for detailed output)

Section 5.1 of the MMP discusses the Annual Maintenance Needs Determination Process. As part of the determination process, the MMP recommends that certain factors be evaluated including flood risk to life and property, water quality, community needs and aesthetics. These four factors were utilized for this channel maintenance prioritization analysis. For the purposes of prioritizing the channel for maintenance activities, each main factor is weighted as follows:

**Table 1**

<b>Channel Prioritization Assessment Factors and Weighting</b>	
<b>Factor</b>	<b>Percent Weighted (%)</b>
Flood Risk	75
Water Quality	10
Community Needs	10
Aesthetics	5

As part of the channel prioritization analysis, each of the main factors has been divided into subfactors. To determine the Flood Risk factor, a basic hydraulic analysis was performed for the channel. The hydraulic analysis is described in more detail in the Hydraulic Analysis section (Section 5.0) of this report. The remaining factors, Water Quality, Community Needs and Aesthetics were assessed based on the site photos and the information provided on the (O&M) Channel Maintenance Inspection Form completed for the channel provided by the City of San Diego. These factors and subfactors and how they relate to the Channel Prioritization Score are shown in more detail on the Channel Prioritization Assessment Sheet located in Appendix E.

The Flood Risk factor of this analyses focuses on the channel reach upstream of Euclid Avenue. Based on information provided by the City of San Diego, the channel reach downstream of Euclid Avenue has little evidence of sediment or vegetation. Therefore, maintaining it for sediment or vegetation would not increase the hydraulic capacity of the reach downstream of Euclid Avenue. The remaining channel prioritization assessment factors were assessed for the entire reach based on the O&M Channel Maintenance Inspection Form completed for the channel by the City of San Diego and the site photos taken by the City of San Diego.

#### **4.0 Hydrologic Summary**

##### Federal Emergency Management Agency (FEMA) Peak Discharges

A drainage study for the channel was not available at the authorship of this report. The drainage channel is a Federal Emergency Management Agency (FEMA) defined channel. Peak flow rates for the channel are based on the FEMA Flood Insurance Study (FIS) for San Diego County dated May 16, 2012 (2012 San Diego FIS). The 10-, 50-, and 100-year storm event peak discharges used for the analysis were taken directly from the 2012 San Diego FIS. Estimates of the 2-, 5-, and 25-year storm event peak discharges were extrapolated from the FEMA discharges using logarithmic plotting paper.

Hydrologic support material including excerpts from the 2012 San Diego FIS and an excerpt of the Flood Insurance Rate Map (FIRMette) showing the channel are located in Appendix C. A summary of the peak discharges are provided in the table below:

**Table 2**

Summary of Peak Discharges						
Drainage Area: 1.1 square miles at Euclid Avenue						
Frequency	2-yr <sup>2</sup>	5-yr <sup>2</sup>	10-yr	25-yr <sup>2</sup>	50-yr	100-yr
<b>Discharge (cfs)<sup>1</sup> at downstream point of channel assessment limit</b>	56	140	220	350	500	630

1. cfs = cubic feet per second

2. Estimated based on extrapolation using logarithmic plotting paper

## 5.0 Hydraulic Analysis

A basic hydraulic analysis of the channel was performed to assess the Flood Risk factor. The channel assessment limits are shown on Map 69 located in Appendix A. This hydraulic portion of the analysis focuses on the channel reach upstream of Euclid Avenue. Based on O&M Channel Maintenance Inspection Form completed for the channel by the City of San Diego and the site photos taken by the City of San Diego, the channel reach downstream of Euclid Avenue has little evidence of sediment or vegetation, Therefore, maintaining it for sediment or vegetation would not increase the hydraulic capacity of the reach downstream of Euclid Avenue. Manning’s equation was utilized to calculate the capacity of the channel reach upstream of Euclid Avenue under two conditions:

1. As-built Conditions: based on the material and geometry as shown on the available as-built plans. (Refer to Appendix G)
2. Current Conditions: based on the vegetation and sediment levels estimated from the site photos taken by the City of San Diego and information provided on the (O&M) Channel Maintenance Inspection Form prepared by the City of San Diego.

Culvert crossings that may exist within the channel reach were not analyzed as part of this hydraulic analysis. Existing culverts may be inefficient or undersized, however the culvert hydraulics were not considered as part of this analysis.

Based on the site photos provided and discussion with the City of San Diego, there are areas where vegetation has grown down from the top of the channel banks over the concrete side slopes. Therefore, for the Current Condition hydraulic model the roughness coefficient used for the side slopes reflects the vegetation.

The multiple storm event peak discharges previously calculated in Section 4.0 were evaluated under each condition to assess the capacity of the channel reach upstream of Euclid Avenue and evaluate the benefit of performing maintenance activities on the channel. See Section 7.0 below for a summary of the hydraulic results and Appendix D for detailed hydraulic output for the reach upstream of Euclid Avenue.

**Table 3**

<b>Summary of Hydraulic Analysis Results</b>			
<b>CURRENT CHANNEL CAPACITY</b>		<b>AS-BUILT CHANNEL CAPACITY</b>	
<b>Current Condition (cfs)</b>	<b>Equivalent Storm Event (year)</b>	<b>As-built Condition (cfs)</b>	<b>Equivalent Storm Event (year)</b>
630	100	630	100

cfs = cubic feet per second

### **6.0 Other Channel Prioritization Factors**

Sections 4.0 and 5.0 above discuss the determination process for the Flood Risk factor. For more information on the assessment of the Water Quality, Community Needs, and Aesthetics factors please refer to the Channel Prioritization Assessment Sheet in Attachment E. The Channel Prioritization Assessment Sheet lists and describes the subfactors that are considered in the determination of the four main channel assessment factors.

### **7.0 Summary of Findings and Recommendations**

A summary of the hydraulic portion of the analysis for the channel reach upstream of Euclid Avenue is shown in the table below.

**Table 4**

<b>Channel Prioritization Assessment Scoring Summary</b>		
<b>Factor</b>	<b>Percent Weighted (%)</b>	<b>Weighted Factor Score/Maximum Possible Score</b>
Flood Risk	75	56.3/75
Water Quality	10	3/10
Community Needs	10	5/10
Aesthetics	5	1.3/5
<b>Overall Channel Score:</b>		<b>65.6/100</b>

Additionally, the following items should be noted:

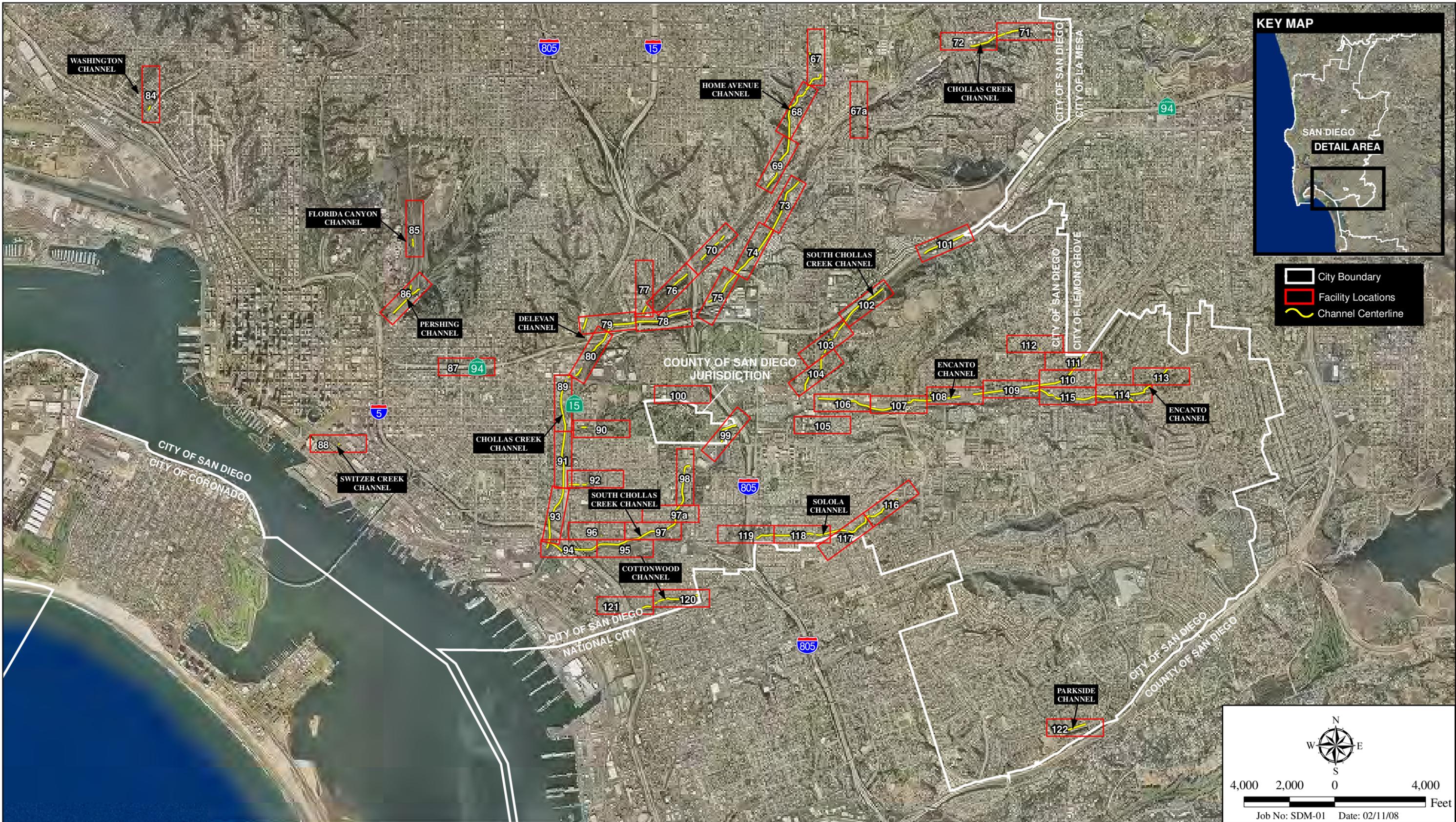
- Based on the site photos taken by the City of San Diego, vegetation has grown down from the top of the channel banks over the concrete side slopes. A high risk of vegetation flowing downstream and clogging the culvert exists.
- Based on O&M Channel Maintenance Inspection Form completed for the channel by the City of San Diego there is evidence of transient encampments. A high risk of debris, such as trash and mattresses, flowing downstream and clogging the culvert exists.
- Based on O&M Channel Maintenance Inspection Form completed for the channel by the City of San Diego and the site photos taken by the City of San Diego, the channel reach downstream of Euclid Avenue does not require maintenance of sediment or vegetation. However, it was noted on the O&M Channel Maintenance Inspection Form that trash clean up and fence repair is needed in the lower section of the channel reach downstream of Euclid Avenue.

Based on the evaluation of the four weighted channel prioritization factors described in Section 3.0 of this report, the Channel Prioritization Score for MMP Map 69: Auburn Creek Channel (Section 3 of 4) is **65.6**. Refer to the Channel Prioritization Assessment Sheet located in Appendix E for details on the evaluation of the weighted factors and resulting score for this channel.

It is recommended that this drainage channel be maintained to preserve the 100-year storm event capacity. Although the channel currently has 100-year storm event capacity, maintaining it will preserve the 100-year storm event capacity by preventing vegetation from flowing downstream and clogging the culvert.

A summary of the channel including an aerial map, channel prioritization score, and other pertinent information is shown on the exhibit titled “Channel Maintenance Prioritization Summary Sheet” located in Appendix F.

**Appendix A**  
**Master Storm Water System Maintenance Program (MMP),**  
**dated October 2011, Storm Water Facilities**  
**Key Map and Map 69: Auburn Creek Channel (Section 3 of 4)**

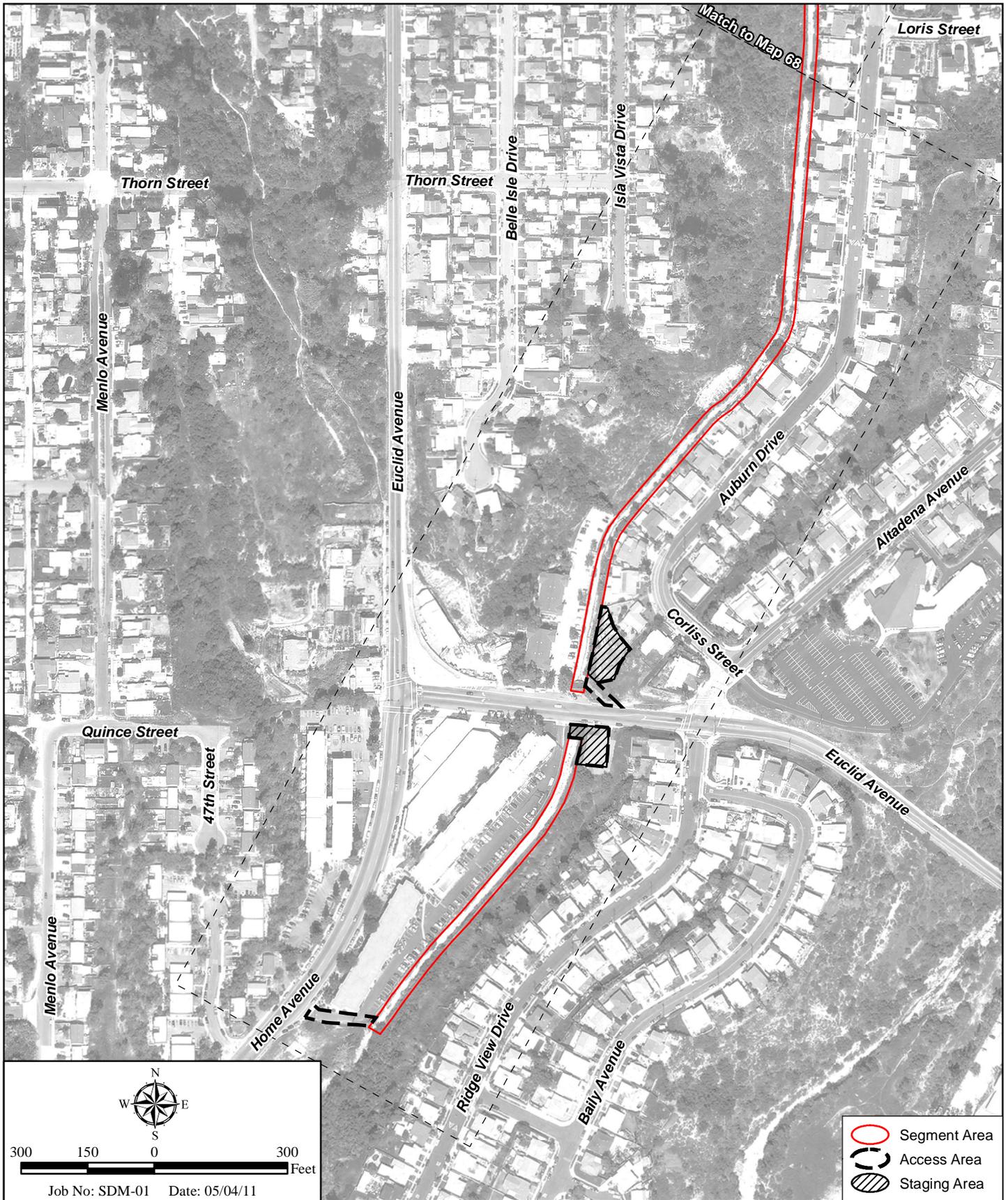


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## Stormwater Facilities - Central San Diego Area

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

Figure 2d



E:\ArcGIS\SDM-01 StormDrainMaintenance\Map\ENV\MasterPlan\Map69.mxd -RK

## Access and Staging Areas

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

**Appendix B**  
**City of San Diego Operations and Maintenance (O&M)**  
**Channel Maintenance Inspection Forms completed**  
**for the channel and Site photos taken by the City of San Diego**

#69

# Operations and Maintenance

## Channel Maintenance Inspection Form

Date: 5-4-2015 Time: 11:30 AM - 12:45 PM

Channel Map No.: #69

Watershed: Pueblo San Diego

Inspector: E. Rodriguez

Weather: Partly Cloudy

Initial Inspection

Follow Up Inspection

Item	Condition	Comments
<b>A. Channel Condition</b> 1= Poor Condition / Needs Immediate Attention 2= Moderate Condition ③= Good Condition		
1. Structure Condition	1 2 ③ N/A	Good
2. Erosion	1 2 3 ④ N/A	
3. Trash/Debris	1 ② 3 N/A	Type of trash and source: Bagged Trash, Clothes, assorted trash & debris from Homeless Camp
4. Water Conveyance	1 2 ③ N/A	
4. Standing Water	Y ④ N	
A. Ponding	Y ④ N	
B. Noticeable odors	Y ④ N	
C. Algae	Y ④ N	
5. Vegetation	1 2 ③ N/A	Approx. Coverage/Density of Vegetation: 2%
A. Invasive (Arundo)	1 ② 3 N/A	5%
B. Native	1 2 ③ N/A	None
6. Sediment	1 2 ③ N/A	Approx. Depth/Coverage of Sediment: 0%
7. Transients/ encampments	④ N	2 camps behind Home Ave park.

**B. Culverts and Outfalls**

1= Good Condition

2= Moderate Condition

3= Poor Condition/Needs Immediate Attention

Item	Condition	Comments
1. Structure Condition	1 2 3 N/A	
2. Trash/Debris/Sediment	1 2 3 N/A	
3. Clogging	1 2 3 N/A	needs trash clean up (alpha project)

**C. See Map Attached**

-Identify Key Issues on Map

-Inspect and take photographs from vantage points identified on Map

Other Comments: upper section of channel has some holes in floor of concrete channel. Trash fence repair needed down stream of lower channel.

**D. To Be Completed by Management**

**Follow Up Actions**

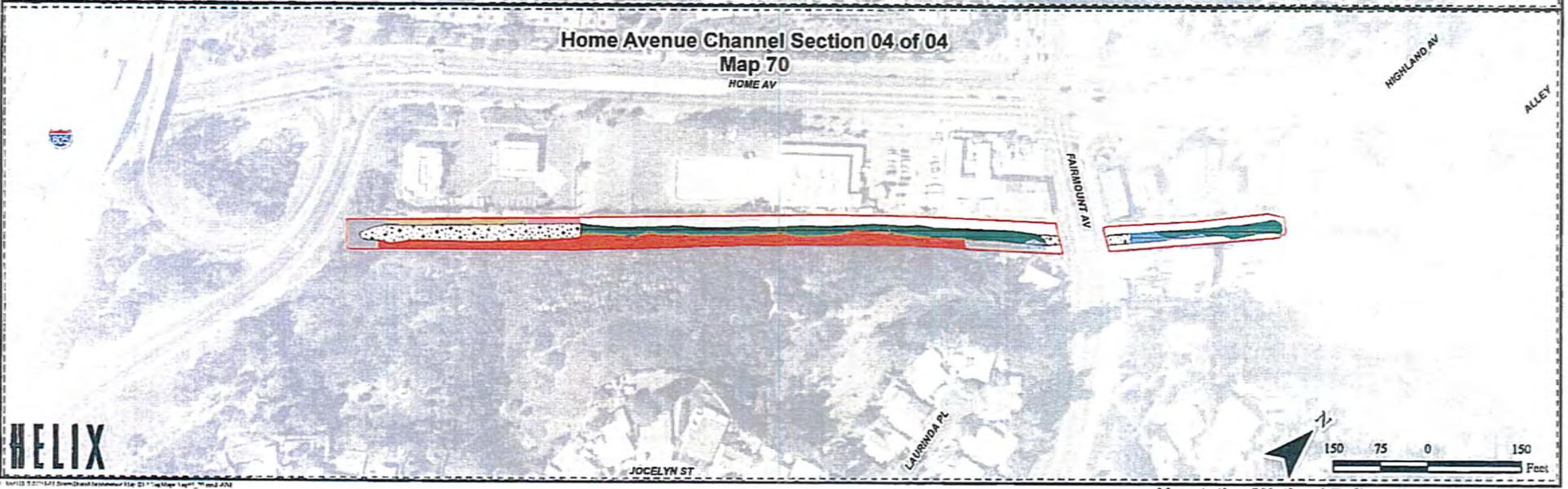
- 1.
- 2.
- 3.

**E. Infrastructure Failure Issues**

Item	Condition	Comments
1. Broken Concrete/Gunite?	(Y) N	holes in concrete floor.
2. Broken/Missing Trash Fence?	(Y) N	Broken fence and poles missing.
3. Broken/Missing Poles/Supports?	(Y) N	
4. Exposed Rebar?	Y (N)	
5. Rock/Debris Accumulation?	Y (N)	
6. Potential Flooding/Litigation?	Y (N)	
7. Slope Failure?	Y (N)	

**Other Comments/Observations:**

#69 Completed 5-4-2015

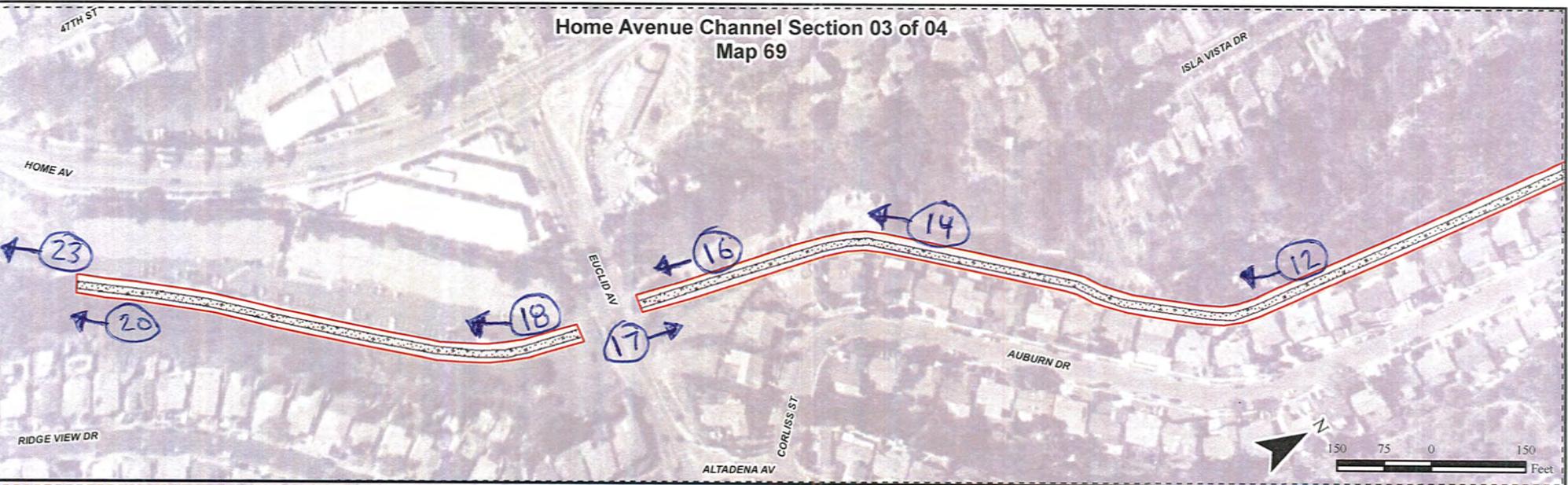


**HELIX**

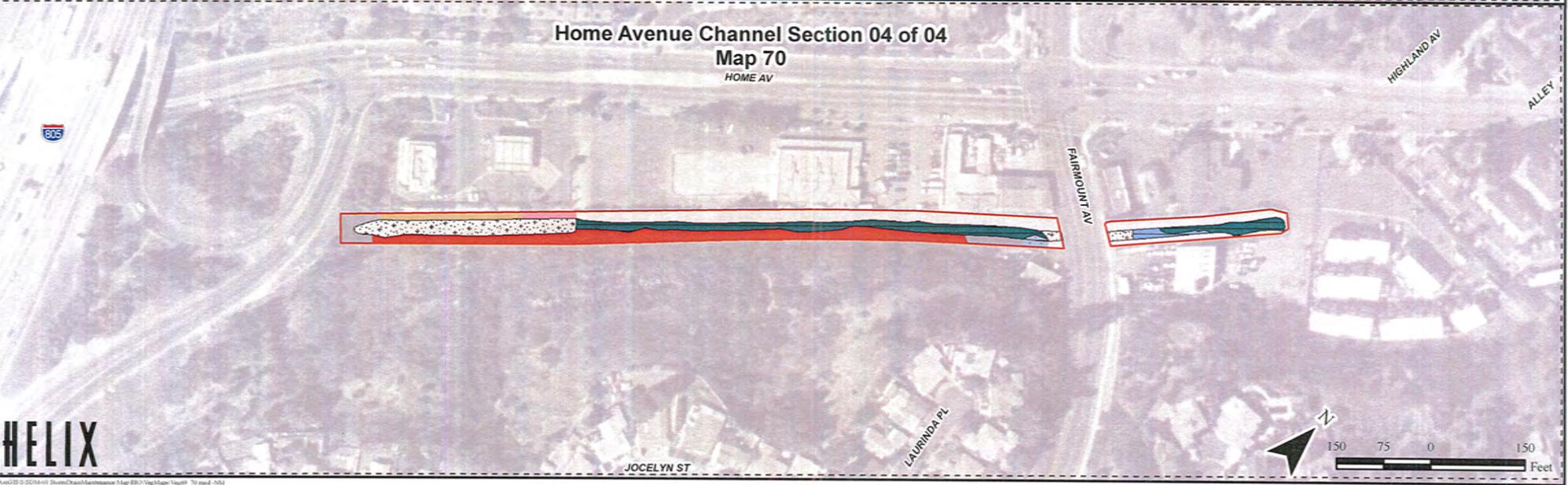
**Vegetation/Wetland Delineation - Maps 69 & 70**

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

Home Avenue Channel Section 03 of 04  
Map 69



Home Avenue Channel Section 04 of 04  
Map 70



HELIX

Vegetation/Wetland Delineation - Maps 69 & 70

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM



Home Avenue Channel.12 (5-4-2015).JPG



Home Avenue Channel.14 (5-4-2015).JPG



Home Avenue Channel.16 (5-4-2015).JPG



Home Avenue Channel.17 (5-4-2015).JPG



Home Avenue Channel.18 (5-4-2015).JPG



Home Avenue Channel.20 (5-4-2015).JPG



Home Avenue Channel.23 (5-4-2015).JPG

**Appendix C**  
**Hydrologic Support Material**

# FLOOD INSURANCE STUDY



## SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

VOLUME 1 OF 11

Community Name	Community Number
SAN DIEGO COUNTY, UNINCORPORATED AREAS	060284
CARLSBAD, CITY OF	060285
CHULA VISTA, CITY OF	065021
CORONADO, CITY OF	060287
DEL MAR, CITY OF	060288
EL CAJON, CITY OF	060289
ENCINITAS, CITY OF	060726
ESCONDIDO, CITY OF	060290
IMPERIAL BEACH, CITY OF	060291
LA MESA, CITY OF	060292
LEMON GROVE, CITY OF	060723
NATIONAL CITY, CITY OF	060293
OCEANSIDE, CITY OF	060294
POWAY, CITY OF	060702
SAN DIEGO, CITY OF	060295
SAN MARCOS, CITY OF	060296
SANTEE, CITY OF	060703
SOLANA BEACH, CITY OF	060725
VISTA, CITY OF	060297



REVISED  
May 16, 2012



**Federal Emergency Management Agency**  
FLOOD INSURANCE STUDY NUMBER  
06073CV001C

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**TABLE 8: SUMMARY OF PEAK DISCHARGES**

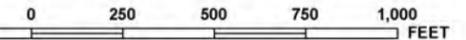
Flooding Source and Location	Drainage Area (sq. miles)	Peak Discharges (cubic feet per second)			
		10% Annual- Chance	2% Annual- Chance	1% Annual- Chance	0.2% Annual- Chance
Henderson Canyon					
At Apex of Alluvial Fan	4.8	750	2,100	3,500	5,650
Home Avenue Branch					
At Confluence with Las Chollas Creek	2.1	430	950	1,200	2,200
0.8 Mile Above Fairmont Avenue	1.3	260	580	730	1,340
At Euclid Avenue	1.1	220	500	630	1,200
At Auburn Drive	0.8	160	360	450	830
Jesmond Dene Tributary					
Approximately 200 feet upstream of North Broadway	2.32	--	--	1,746	--
Keys Canyon Creek					
Just upstream of Keys Canyon Creek Tributary 2	14.62	--	--	13,044	--
Just upstream of Keys Canyon Creek Tributary 1	14.98	--	--	13,120	--
Just downstream of Keys Canyon Creek Tributary 1	31.58	--	--	22,911	--
Keys Canyon Creek Tributary 1					

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– Data Not Available



MAP SCALE 1" = 500'



**NFIP** PANEL 1902G

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**SAN DIEGO COUNTY,**  
**CALIFORNIA**  
**AND INCORPORATED AREAS**

PANEL 1902 OF 2375  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEMON GROVE, CITY OF	060723	1902	G
SAN DIEGO COUNTY	060284	1902	G
SAN DIEGO, CITY OF	060295	1902	G

Notice to User: The Map Number shown below should be used when placing map orders, the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
06073C1902G

**MAP REVISED**  
MAY 16, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

**Appendix D**  
**Hydraulic Analysis Output**

# Hydraulic Analysis Report

## Project Data

Project Title: Home Ave Map 69  
Designer: Rick Engineering Company J-17204-D  
Project Date: Wednesday, June 10, 2015  
Project Units: U.S. Customary Units

## Channel Analysis: US\_Euclid\_asbuilt\_100

Notes: The cross-section of the channel on the as-built plans show an 8-foot wide concrete bottom, 3.8 feet high with 1.5:1 concrete side slopes. Pursuant to Table 1-104.14A of the City of San Diego Drainage Design Manual, dated April 1984, the roughness coefficients used for the channel side slopes and channel bottom are 0.015.

## Input Parameters

Channel Type: Custom Cross Section

## Cross Section Data

Station (ft)	Elevation (ft)	Manning's n
0.00	3.80	0.0150
5.70	0.00	0.0150
13.70	0.00	0.0150
19.40	3.80	-----

Longitudinal Slope: 0.0090 (ft/ft)

Flow: 630.0000 (cfs)

## Result Parameters

Depth: 3.1985 (ft)

Area of Flow: 40.9333 (ft<sup>2</sup>)

Wetted Perimeter: 19.5323 (ft)

Hydraulic Radius: 2.0957 (ft)

Average Velocity: 15.3909 (ft/s)

Top Width: 17.5954 (ft)

Froude Number: 1.7783

Critical Depth: 4.3149 (ft)

Critical Velocity: 10.1533 (ft/s)

Critical Slope: 0.0026 (ft/ft)

Critical Top Width: 19.4000 (ft)

Calculated Max Shear Stress: 1.7963 (lb/ft<sup>2</sup>)

Calculated Avg Shear Stress: 1.1769 (lb/ft<sup>2</sup>)

Composite Manning's n Equation: Lotter method

Manning's n: 0.0150

## Channel Analysis: US\_Euclid\_current\_100

Notes: The cross-section of the channel on the as-built plans show an 8-foot wide concrete bottom, 3.8 feet high with 1.5:1 concrete side slopes. Based on the site photos provided to us and discussion with City of San Diego, there are areas of vegetation that have grown down over the side slopes from the top of the channel banks. Pursuant to Table 1-104.14A of the City of San Diego Drainage Design Manual, dated April 1984, the roughness coefficients used for each of the channel side slopes and channel bottom are  $n = 0.06$  and  $0.015$ , respectively. The roughness coefficient used for the side slopes is based on some weeds, heavy brush on banks.

### Input Parameters

Channel Type: Custom Cross Section

### Cross Section Data

Station (ft)	Elevation (ft)	Manning's n
0.00	3.80	0.0600
5.70	0.00	0.0150
13.70	0.00	0.0600
19.40	3.80	-----

Longitudinal Slope: 0.0090 (ft/ft)

Flow: 630.0000 (cfs)

### Result Parameters

Depth: 3.4020 (ft)

Area of Flow: 44.5766 (ft<sup>2</sup>)

Wetted Perimeter: 20.2661 (ft)

Hydraulic Radius: 2.1996 (ft)

Average Velocity: 14.1330 (ft/s)

Top Width: 18.2060 (ft)

Froude Number: 1.5917

Critical Depth: 4.3149 (ft)

Critical Velocity: 10.1533 (ft/s)

Critical Slope: 0.0039 (ft/ft)

Critical Top Width: 19.4000 (ft)

Calculated Max Shear Stress: 1.9106 (lb/ft<sup>2</sup>)

Calculated Avg Shear Stress: 1.2353 (lb/ft<sup>2</sup>)

Composite Manning's n Equation: Lotter method

Manning's n: 0.0169

**CITY OF SAN DIEGO**



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**DRAINAGE DESIGN  
MANUAL**

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APRIL • 1984

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TABLE 1-104.14A

## DESIGN VALUES FOR MANNINGS ROUGHNESS COEFFICIENT (n)

<u>TYPE OF CHANNEL</u>	<u>N VALUE</u>
Unlined Channels:	
Clay Loam;	0.023
Sand	0.020
Gravel	0.030
Rock	0.040
Lined Channels:	
Portland Cement Concrete	0.015
Air Blown Mortar	0.018
Asphalt Concrete	0.018
Grass Lined Channels: (Shallow depths)	
2 inch length	0.050
4 - 6 inch length	0.060
6 - 12 inch length	0.120
12 - 24 inch + length	0.200
Pavement and Gutters:	
Concrete	0.015
Asphalt Concrete	0.018
Natural Streams: (Less than 100 feet wide at flood stage)	
1. Regular section	
a. Some grass and weeds, little or no brush	0.030
b. Dense growth of weeds, depth of flow substantially greater than weed height	0.040
c. Some weeds, light brush on bank	0.040
d. Some weeds, heavy brush on banks	0.060
e. With trees in channel, branches submerged at flood stage, increase above values by	0.015

TABLE 1-104.14A (Continued)

2.	Irregular section, with pools, slight channel meander increase all values listed in 1. Regular Section, by	0.015
----	--	-------

## Flood Plains: (adjacent to natural streams)

1.	Pasture, no brush	
	a. Short grass	0.030
	b. High grass	0.040
2.	Cultivated areas	
	a. No crop	0.040
	b. Mature row crops	0.040
	c. Mature field crops	0.050
3.	Heavy weeds, scattered brush	0.050
4.	Light brush and trees	0.060
5.	Medium to dense brush	0.090
6.	Dense willows	0.170
7.	Cleared land with tree stumps, 100-150 per acre	0.060
8.	Heavy stand of timer, little undergrowth	
	a. Flood depth below branches	0.110
	b. Flood depth reaches branches	0.140

**Appendix E**  
**Channel Prioritization Assessment Sheet**

**Channel Prioritization Assessment Sheet for Auburn Creek Channel (Section 3 of 4) MMP Map 69**

**Total Channel Score: 65.6 /100**

Flood Hazard (75% of total weight)				Score	factor weight	Weighted Points
<i>Δ capacity</i>				<b>Sum of sub-factor a-c scores:</b>	<b>0</b>	25%
a. Risk of flooding	Current Channel Normal depth capacity <sup>1</sup> :	630 cfs	100 -yr. storm event	2-yr.=score of 5; 5-yr.=score of 4; 10-yr.=score of 3; 25-yr.=score of 2; 50-yr.=score of 1; 100-yr.=score of 0	(out of 15)	0
b. Increase in storm event capacity	Channel As-Built normal depth capacity <sup>1</sup> :	630 cfs	100 -yr. storm event	1 point given for every level increase in -year storm event capacity, post-maintenance		
c. Net percent increase in channel capacity post-maintenance		0%		Less than 100% = score of 0; 100%-199% = score of 1; 200%-299% = score of 2; 300%-399% = score of 3; 400%-500%= score of 4; Over 500% = score of 5		
<i>Consequence of flooding adjacent areas</i>						
	Surrounding area land use: (area within 100 feet of the channel or area in which more than 10,000 ft <sup>2</sup> is impacted from flooding.)	Residential		Residential = score of 4; Commercial = score of 4; Roads = score of 2; Agriculture = score of 1; Other = score of 1		
	Is there open space surrounding the channel?	No		If yes, subtract land use score by 1		
<i>Clogging Potential</i>						
	Are there trees/large debris that have potential to flow D/S and clog culverts/the channel?	Yes			25%	18.75
<b>Total Weighted Flood Hazard Points</b>						<b>56.3</b>

Water Quality/Channel Condition (10% of total weight)				Score	factor weight	Weighted Points
<i>Trash/Debris</i>				0 1 2 3 4	20%	1
	Type of trash and Source:					
<i>Standing water</i>				0 1 2 3 4	15%	0
	Ponding?	No				
	Noticeable odors?	No				
	Algae?	No				
<i>Sediment</i>				0 1 2 3 4	35%	0
	Approx. sediment coverage: (Based on information provided on City of San Diego O&M Channel Maintenance Inspection Form)	0%				
	Rock/debris Accumulation?	No				
<i>Transients/encampments</i>				0 1 2 3 4	10%	1
<i>Culverts and Outfalls</i>				0 1 2 3 4	10%	0
<i>Infrastructure Issues</i>				0 1 2 3 4	10%	1
	Culvert structure condition	Good				
	Broken concrete/gunite?	Yes				
	Broken or missing trash fence/fence poles/supports?	Yes				
	Slope failure?	No				
<b>Total Weighted Water Quality Points</b>						<b>3.0</b>

Community Input (10% of total weight)				Score	factor weight	Weighted Points
<i>Community Complaints Received</i>				YES NO	50%	5
<i>Community Outreach Input</i>				0 1 2 3 4	50%	0
<b>Total Weighted Community Input Points</b>						<b>5.0</b>

Aesthetics (5% of total weight)				Score	factor weight	Weighted Points
<i>Aesthetics</i>				0 1 2 3 4	100%	1.25
	Are the aesthetics of the channel compromised?	Slightly				
<b>Total Weighted Aesthetics Points</b>						<b>1.3</b>

1. See appendix D for geometry parameters

Scoring Legend	
0	Factor is in good condition and does not need attention
1	Factor is in good condition, but will eventually need attention
2	Factor needs attention
3	Factor is in bad condition and needs attention
4	Factor is in severe condition and needs immediate attention

**Appendix F**  
**Channel Maintenance Prioritization Summary Sheet**



**Legend**

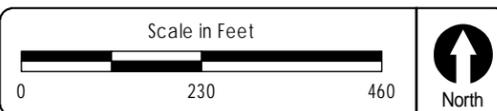
- Photo Location
- Channel Survey
- City Storm Drain Structure
- City Storm Drain

**Photos:**



**Assessment Results**

- **Channel Prioritization Score:**  
*65.6 out of 100*
  - **Flood Hazard Score:**  
*56.3 out of 75*
  - **Water Quality Score:**  
*3 out of 10*
  - **Community Input Score:**  
*5 out of 10*
  - **Aesthetics Score:**  
*1.3 out of 5*
- **Capacity Prior to Maintenance:**  
*100-year storm event*
- **Capacity After Maintenance (As-built Capacity) :**  
*100-year storm event*
- **Clogging Potential:** *HIGH*
- **Approximate Vegetation Coverage:** *MEDIUM*
- **Surrounding Area:** *Residential*
- **Infrastructure Failures:**  
*Broken concrete in channel bottom, Broken fence*
- **Site Evaluation Date:**  
*May 4, 2015*
- **Notes/Comments:**  
*Based on the site photos taken by the City of San Diego, vegetation has grown down over the concrete side slopes. Also there is evidence of transient encampments. A high risk of debris, such as mattresses, clogging the culvert exists*

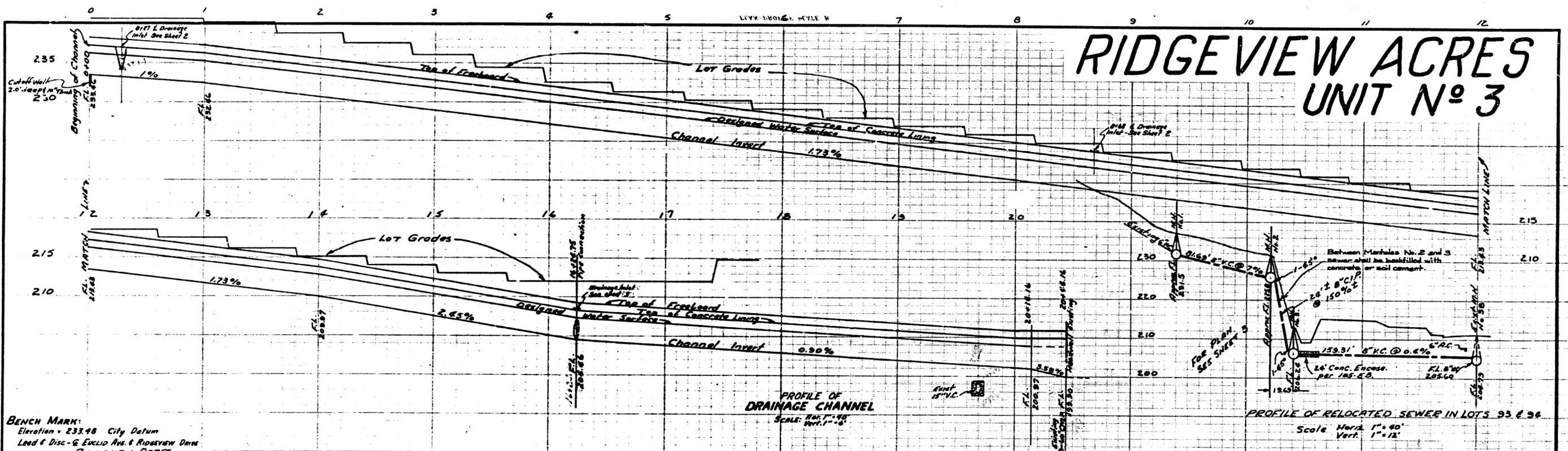


**Channel: Auburn Creek (Section 3 of 4) MMP Map # 69**

**Channel Maintenance Prioritization Summary Sheet**

**Appendix G**  
**Available As-built plans**

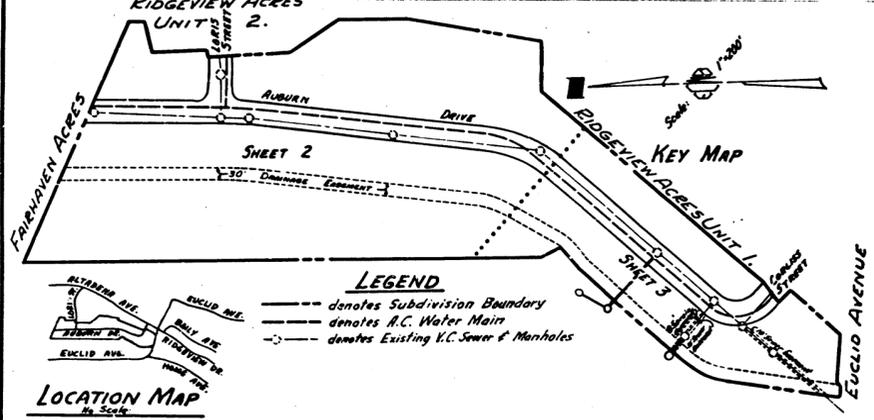
# RIDGEVIEW ACRES UNIT No 3



**BENCH MARK:**  
Elevation = 233.98 City Datum  
Lead & Disc - G. EUCLID AVE. & RIDGEVIEW DRIVE  
RIDGEVIEW ACRES

**PROFILE OF DRAINAGE CHANNEL**  
Scale: Horz. 1" = 40'  
Vert. 1" = 5'

**PROFILE OF RELOCATED SEWER IN LOTS 93 & 94**  
Scale: Horz. 1" = 40'  
Vert. 1" = 12'



**LEGEND**  
--- denotes Subdivision Boundary  
--- denotes A.C. Water Main  
--- denotes Existing V.C. Sewer & Manholes

**REFERENCE DRAWINGS**  
891-D, 892-D, 3704-D, 7674-D, 6229-D, 1836-L

### NOTES

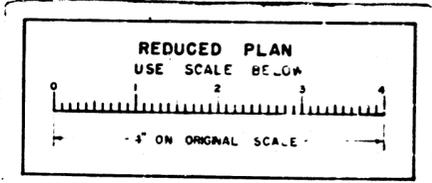
- Backfill for trenches in public easements shall be compacted to a density of 90% or better and shall comply with trench backfill specifications for streets and alleys in the City of San Diego.
- Sewer mains and laterals placed in cut shall be encased in concrete reinforced with 3 continuous #4 steel bars unless compacted to bottom of trench is 90% or more.
- Gas mains & services shall be installed prior to paving to eliminate pavement cutting.
- All water mains shall have a minimum of 3' of cover above top of pipe.
- Site grading and erosion control shall comply with Resolution No. 15437D.
- All water services shall be constructed clear of all driveways.
- Permanent Street Name Signs to be installed by the City of San Diego.
- Existing Sewer Manholes shall be adjusted to finish grade.

City Forces will excavate, backfill, and furnish and install all material except paving for approximately 100 feet adjacent to the point of connection to each existing main.  
The contractor shall excavate the location of each required connection to an existing main to determine the elevation and location of the main of the connection. Immediately after such determination has been made, the above exploratory excavation shall be backfilled in accordance with City Standard Specifications.  
All pipe line work by Contractor shall terminate approximately ten (10) feet from points of connections to the existing water mains and no excavation shall be made within the aforesaid ten (10) feet except the above exploratory excavation.  
The connections to all existing water mains will be made by the City of San Diego Water Department. Charges will be collected only on connections actually made. Where no connection is made the contractor shall install a blowoff of the size as shown on the plans. Any connection not shown will be made of prices in effect as of this date.  
The costs of connections shown on these plans are as follows:  
Conn. No. 1 - \$137.82 Conn. No. 2 - \$202.50 Conn. No. 3 - \$157.82

Contractor shall include the furnishing and installing of a #12 gage copper wire laid with the pipe. It shall be attached by looping the wire around the band of gate valves other than those on fire hydrant laterals.

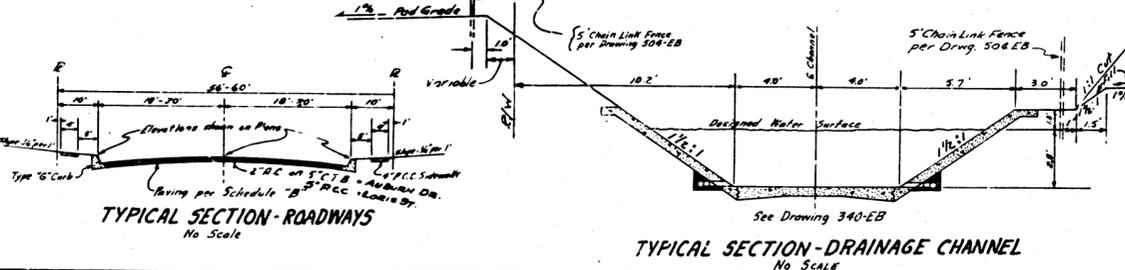
### WORK TO BE DONE

- The improvements consist of the following work to be done according to these plans and specifications of the City of San Diego.
- The grading of the portions of the streets shown thus: [Symbol]
  - The preparation of subgrade and paving of the portions of the streets shown thus: [Symbol]
  - The construction of 4" R.C.C. sidewalk shown thus: [Symbol]
  - The construction of Type 'G' curb shown thus: [Symbol]
  - The construction of Vitrified Clay pipe sewer main shown thus: [Symbol]
  - The construction of concrete drop manholes shown thus: [Symbol]
  - The construction of 4" V.C. sewer laterals shown thus: [Symbol]
  - The construction of A.C. Water Main shown thus: [Symbol]
  - The construction of 1/2" Copper Water Laterals shown thus: [Symbol]
  - The construction of Cast Iron Gate Valves & 8" Steel Boxes with cast iron covers.
  - The construction of Fire Hydrants & services complete shown thus: [Symbol]
  - The construction of 6" Concrete Control Monuments shown thus: [Symbol]
  - The construction of Drain Channel with fence shown thus: [Symbol]
  - Temporary Street Name Signs shall be installed by the Subdivider prior to occupancy of any of the houses.
  - The preparation of subgrade & paving of the portions of the streets with 3" R.C.C. pavement shown thus: [Symbol]
  - The construction of R.C.P. Storm Drain shown thus: [Symbol]
  - The construction of concrete encasement of existing sewer main shown thus: [Symbol]
  - The construction of concrete manholes shown thus: [Symbol]
  - The construction of concrete encasement shown thus: [Symbol]
  - The construction of 5' chain link fence shown thus: [Symbol]
  - The construction of standard curb outlets as shown on these plans.
  - The construction of drainage inlets as shown on these plans.



### SPECIFICATIONS

Standard Specifications Part 2, filed April 3, 1958, including amendment filed April 9, 1959, Part 2, filed May 9, 1958.  
General Conditions for Private Contract Work.  
16" Gate Valves shall be horizontal, geared, and have by-passes.



SEWER & WATER LATERAL DATA TABLE																	
Lot No.	Invert at main to main	Drop	Length	Invert at R	Curb Elev.	Depth of R	Ch. Elev. Water	Remarks	Lot No.	Invert at main to main	Drop	Length	Invert at R	Curb Elev.	Depth of R	Ch. Elev. Water	Remarks
40	229.2	0.9	35'	231.6	234.08	5.0	234.58		80				219.22			219.22	Sewer in lot.
41	228.2		60'	230.2	232.22		234.54		81				219.76			219.76	"
42	227.7		68'	228.9	232.24		234.46		82				219.26			219.26	"
43	225.9		68'	227.7	230.42	5.0	232.54		83	203.6	0.5	40'	204.8	209.35	5.0	209.86	"
44	224.8		67'	225.9	230.47	6.8	230.74		84				218.88			218.88	Sewer in lot.
45	224.5		67'	224.2	229.19	5.0	229.27		85				218.97			218.97	"
46	224.4		67'	223.7	228.16		228.23		86	206.1	0.5	60'	207.9	212.88	5.0	212.97	"
47	223.2		67'	222.2	227.10		227.19		87	208.0		60'	208.9	213.95		214.01	"
48	218.2		67'	217.1	226.06		226.15		88	208.9		60'	210.0	214.92		215.04	"
49	217.0		67'	216.0	225.01		225.10		89	209.9		60'	211.0	215.92		216.10	"
50	217.0		67'	216.0	225.01		225.10		90	209.9		60'	211.0	215.92		216.10	"
51	215.9		67'	214.9	223.97		224.07		91	211.6		27'	213.6	218.40		218.54	"
52	214.8		67'	213.8	222.92		223.02		92	212.7		13'	215.0	219.97		220.07	"
53	213.6		67'	212.6	221.88		221.97		93	213.9		18'	216.7	221.05		221.17	"
54	212.6		67'	211.6	220.84		220.94		94	215.0		13'	217.1	222.12		222.27	"
55	211.6		67'	210.6	219.80		219.90		95	216.1		13'	218.2	223.17		223.26	"
56	210.7		22'	209.7	218.76		218.86		96	217.3		15'	219.2	224.21		224.30	"
57	210.0		20'	209.0	217.80		217.95		97	218.4		15'	220.3	225.26		225.34	"
58	209.1		20'	208.1	216.84		216.92		98	219.6		15'	221.3	226.30		226.38	"
59	208.2		20'	207.2	215.88		215.93		99	220.5		15'	222.3	227.34		227.43	"
60	207.3		20'	206.3	214.92		215.00		100	221.4		13'	223.4	228.39		228.47	"
61	206.3		20'	205.3	213.96		214.04		101	222.3		13'	224.4	229.43		229.52	"
62	205.3		20'	204.3	213.00		213.08		102	223.3		13'	225.5	230.48		230.54	"
63	204.5		20'	203.5	212.04		212.10		103	224.3		13'	226.5	231.52		231.53	"
64	203.6		20'	202.6	211.08		211.16		104	225.3		15'	227.5	232.57		232.61	"
65	202.6		20'	201.6	210.12		210.20		105	226.1		18'	228.0	233.64		233.74	"
66	201.6		20'	200.6	209.16		209.24		106	227.1		21'	229.0	234.64		234.74	"
67	200.6		20'	199.6	208.20		208.28		107	228.1		21'	230.0	235.64		235.74	"
68	199.6		20'	198.6	207.24		207.32		108	229.2		21'	231.0	236.64		236.74	"
69	198.6		20'	197.6	206.28		206.36		109	230.2		21'	232.0	237.64		237.74	"
70	197.6		20'	196.6	205.32		205.40		110	231.2		21'	233.0	238.64		238.74	"
71	196.6		20'	195.6	204.36		204.44		111	232.2		21'	234.0	239.64		239.74	"
72	195.6		20'	194.6	203.40		203.48		112	233.2		21'	235.0	240.64		240.74	"
73	194.6		20'	193.6	202.44		202.52		113	234.2		21'	236.0	241.64		241.74	"
74	193.6		20'	192.6	201.48		201.56		114	235.2		21'	237.0	242.64		242.74	"
75	192.6		20'	191.6	200.52		200.60		115	236.2		21'	238.0	243.64		243.74	"
76	191.6		20'	190.6	199.56		199.64		116	237.2		21'	239.0	244.64		244.74	"
77	190.6		20'	189.6	198.60		198.68		117	238.2		21'	240.0	245.64		245.74	"

**STANDARD DRAWINGS**  
100-EB, 124-EB, 4-EB, 9-EB, 23-EB, 40-EB, 41-EB, 53-EB, 101-EB, 119-EB, 122-EB, 200-WB, 121-EB, 107-5B, 201-WB, 204-WB, 205-WB, 206-WB, 208-WB, 212-WB, 214-WB, 218-WB, 509-EB, 504-EB, 335-EB, 108-EB, 523-EB, 753-EB, 702-EB, 521-EB, 754-EB, 21-EB, 500-EB, 340-EB Modified (See De. 41)

**PLANS FOR THE IMPROVEMENT OF:**  
**AUBURN DRIVE, LORIS STREET, CORLISS STREET & DRAINAGE CHANNEL**  
all in RIDGEVIEW ACRES - UNIT No 3.

**PRIVATE CONTRACT**

ENGINEER OF WORK: *James H. Bartels* R.C.E. No. 9136 DATE: 8-14-59  
EDWARDS, CRAIG WELSH & BARTELS 4378 30th STREET SAN DIEGO, CALIFORNIA

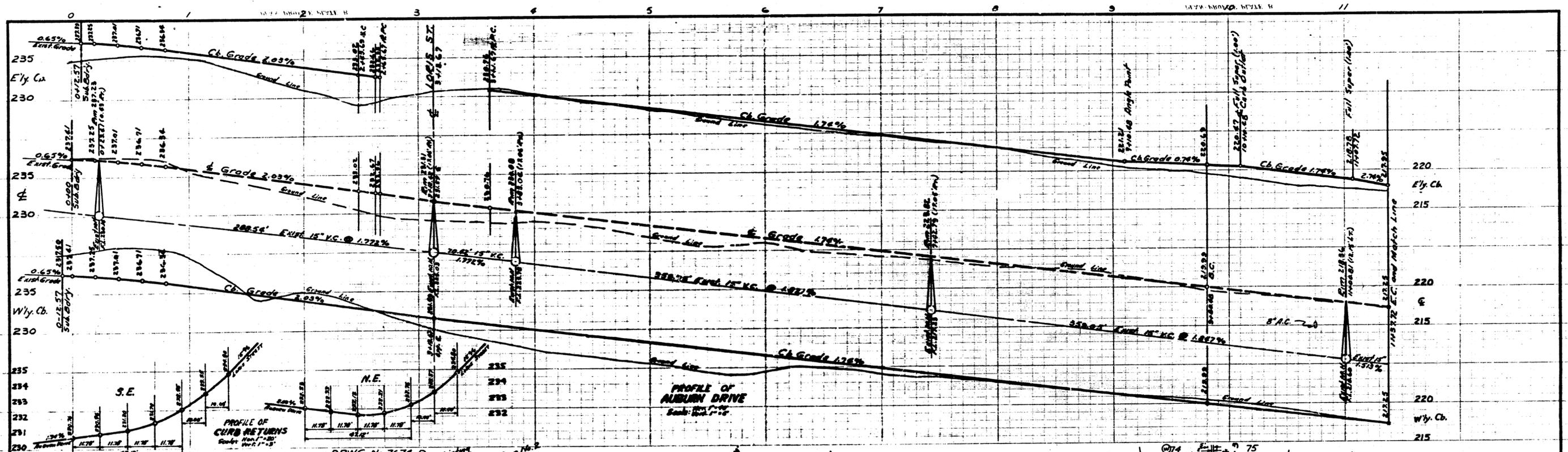
**CITY OF SAN DIEGO** SHEET 1 OF 3 SHEETS  
ENGINEERING DEPARTMENT

CHANGE NO. 1 BY DATE APPROVAL  
As BUILT 8-23-60

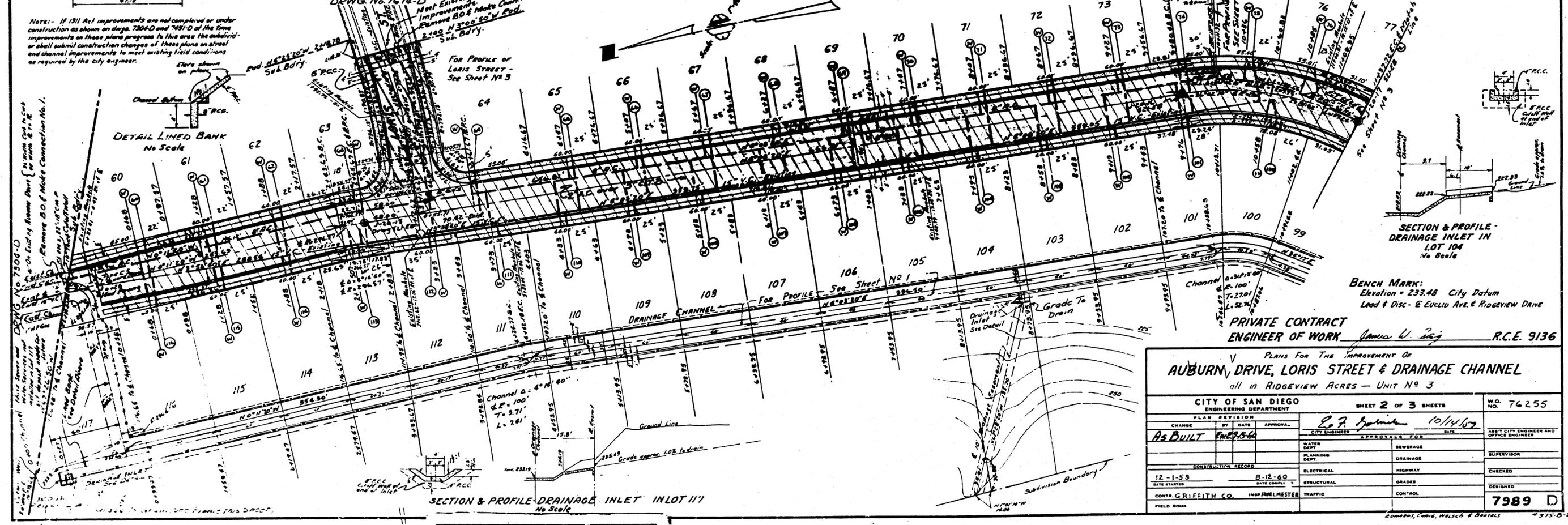
CONSTRUCTION RECORD  
12-11-59 DATE STARTED 8-12-60  
CONTR. GRIFFITH CO. INSUP. MUELMESTER TRAFFIC CONTROL  
FIELD BOOK J-20

NO. 76255  
DATE COMPLETED 8-30-59  
SUPERVISOR  
CHECKED  
DESIGNED  
MONUMENTS

**7988 D**  
EDWARDS, CRAIG WELSH & BARTELS 375-B-2B



NOTE: - If 1911 Act improvements are not completed or under construction as shown on drawings 7304-D and 7481-D of this program in these plans, the contractor shall submit construction changes of these plans on street and channel improvements to meet existing field conditions as required by the city engineer.

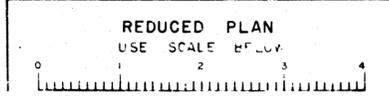


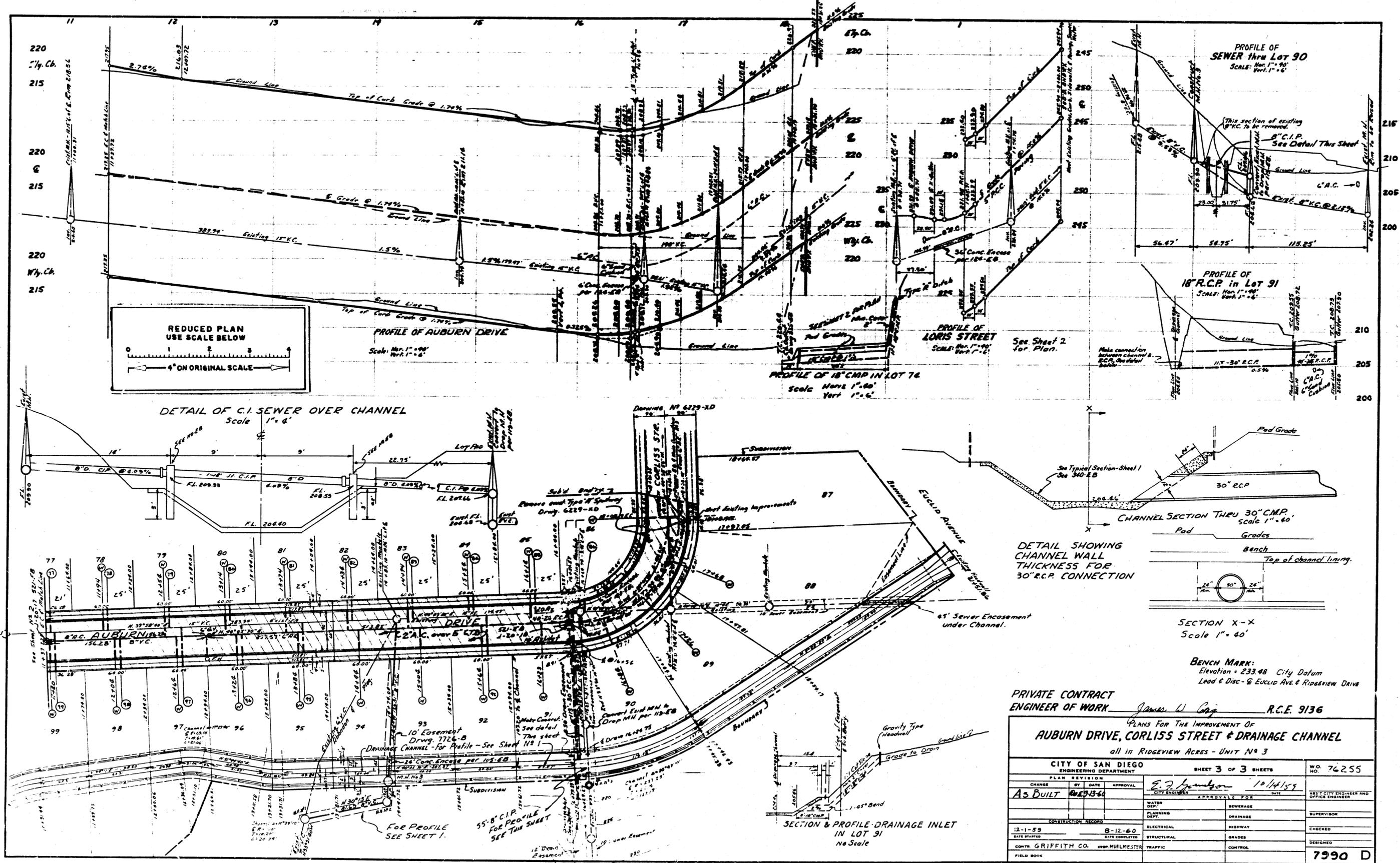
**PRIVATE CONTRACT**  
**ENGINEER OF WORK** James V. [Signature] R.C.E. 9136

PLANS FOR THE IMPROVEMENT OF  
**AUBURN DRIVE, LORIS STREET & DRAINAGE CHANNEL**  
all in RIDGEVIEW ACRES - UNIT No 3

CITY OF SAN DIEGO ENGINEERING DEPARTMENT		SHEET 2 OF 3 SHEETS		W.D. NO. 76255
PLAN REVISION				
CHANGE	BY	DATE	APPROVAL	
As BUILT	ENG 9/5/64		[Signature]	10/14/67
CONSTRUCTION RECORD		APPROVALS FOR SITE		
DATE STARTED	DATE COMPLETED	WATER DEPT.	SEWERAGE	ASST. CITY ENGINEER AND OFFICE ENGINEER
12-1-59	8-12-60	PLANNING DEPT.	HIGHWAY	SUPERVISOR
CONTR. GRIFFITH CO.		ELECTRICAL	GRADES	CHECKED
INSP. PHIL MESTER		STRUCTURAL	TRAFFIC	DESIGNED
FIELD BOOK		CONTROL		<b>7989</b> D

LOWERY, CURRIE, WELLS & BARTLES 4375-B-28





PRIVATE CONTRACT  
 ENGINEER OF WORK *James W. Gray* R.C.E. 9136

PLANS FOR THE IMPROVEMENT OF  
**AUBURN DRIVE, CORLISS STREET & DRAINAGE CHANNEL**  
 all in RIDGEVIEW ACRES - UNIT NO 3

CITY OF SAN DIEGO ENGINEERING DEPARTMENT		SHEET 3 OF 3 SHEETS		W.O. NO. 76255
CHANGE	BY	DATE	APPROVAL	
As BUILT		08-13-60	<i>E. J. Henderson</i>	10/14/59
CONSTRUCTION RECORD		APPROVALS FOR		ASST. CITY ENGINEER AND OFFICE ENGINEER
12-1-59	8-12-60	ELECTRICAL	BEVERAGE	SUPERVISOR
		STRUCTURAL	GRADES	CHECKED
CONTR. GRIFFITH CO.	INSP. MUELMEISTER	TRAFFIC	CONTROL	DESIGNED
FIELD BOOK				<b>7990 D</b>

**Appendix H**  
**Compact Disc**  
**PDF Version of Full Report**