

First Day Street Logistics

PEN22-0144

City of Moreno Valley, Riverside County, California

## Preliminary Drainage Study

*Prepared for:*

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## TABLE OF CONTENTS

<b>SECTION 1 - SUMMARY .....</b>	<b>1-1</b>
PURPOSE .....	1-1
DESCRIPTION OF WATERSHED .....	1-1
PROPOSED CONDITIONS.....	1-1
METHODOLOGY.....	1-2
FIG. 1 VICINITY MAP	
FIG. 2 USGS TOPOGRAPHY MAP	
FIG. 3 AERIAL PHOTOGRAPH	
FIG. 4 RECEIVING WATERBODIES	
FIG. 5 SOILS MAP	
<b>SECTION 2 - HYDROLOGY ANALYSIS.....</b>	<b>2-1</b>
HYDROLOGY PARAMETERS .....	2-1
ON-SITE AND OFF-SITE RATIONAL METHOD HYDROLOGY.....	2-1
<b>SECTION 3 - HYDRAULIC ANALYSIS.....</b>	<b>3-1</b>
ON-SITE STORM DRAIN FACILITIES .....	3-1
OFF-SITE STORM DRAIN FACILITIES .....	3-1
<b>SECTION 4 - BASIN ANALYSIS .....</b>	<b>4-1</b>
ON-SITE UNIT HYDROGRAPH METHOD HYDROLOGY.....	4-1
<b>SECTION 5 - CONCLUSION .....</b>	<b>5-1</b>
<b>APPENDIX A - HYDROLOGY ANALYSIS .....</b>	<b>A</b>
HYDROLOGIC SOILS GROUP MAP (PLATE C-1.16)	
ISOHYETAL MAPS	
10-YEAR HYDROLOGY (RATIONAL METHOD)	
100-YEAR HYDROLOGY (RATIONAL METHOD)	
RATIONAL METHOD HYDROLOGY MAPS	
<b>APPENDIX B - HYDRAULIC ANALYSIS.....</b>	<b>B</b>
INLET CAPACITY SIZING	
PRELIMINARY PIPE SIZING - LINE-1	
V-DITCHES AND CHANNELS SIZING	
<b>APPENDIX C - UNIT HYDROGRAPH ANALYSIS.....</b>	<b>C</b>
EXISTING CONDITION UNIT HYDROGRAPHS	
EXISTING CONDITION	
2-YEAR, 24-HOUR UNIT HYDROGRAPH	
PROPOSED CONDITION UNIT HYDROGRAPHS	
PROPOSED CONDITION	
2-YEAR, 24-HOUR UNIT HYDROGRAPH	
UNIT HYDROGRAPH HYDROLOGY MAPS	
<b>APPENDIX D - REFERENCES .....</b>	<b>D</b>
STORM DRAIN IMPROVEMENT PLAN - LINE "A" DAY STREET EXTENSION (PA 05-0042)	
PRECISE GRADING PLAN - MARCH COMMERCE CENTER (PA 05-0042)	

## SECTION 1 - SUMMARY

### PURPOSE

The purpose of this report is to document the hydrologic and hydraulic analyses performed in support of the First Day Street Logistics project located in City of Moreno Valley, Riverside County, California. The project site is located at 14050 Day Street, approximately 690 feet south of the intersection of Day Street and Alessandro Boulevard. The project is bounded by Day Street to the west and existing industrial projects to the north, east, and south. The project proposes to remove an existing warehouse and replace it with a new warehouse facility on approximately 8 acres. This report will summarize the hydrologic and hydraulic analyses that were conducted in order to determine the necessary drainage improvements required to provide flood protection for the proposed building and safely convey the runoff through the site.

The scope of this report will include the following:

- Determine the peak 100-year and 10-year flow rates for the developed condition using the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Rational Method.
- Determine the required storm drain facilities, alignment, and sizes required to flood protect the project site.
- Preparation of a preliminary report summarizing the hydrology and hydraulic results.

### DESCRIPTION OF WATERSHED

As previously described, the project is proposing to remove the existing building and replace it with a warehouse facility (approximately 165,000 architectural square feet) on approximately 8 acres of an existing fully developed, light industrial site. Existing elevations across the site vary from 1554 in the northwest to 1548 in the south (NAVD88 datum). The site currently slopes down at approximately 1.1% grade to the south. The existing drainage pattern for the site and the general area is characterized by earthen channels that convey on-site and off-site sheet flows towards the existing catch basin at the southern boundary of the project site.

Off-site flows from adjacent industrial sites enter the site from the north and east. Existing earthen channels convey these flows through the project site towards an inlet through a wall at the southern end of the project. The inlet and associated storm drain line, Line "A" Day Street Extension, were constructed per Storm Drain, PA 05-0042 by Gabel, Cook and Associates (included in **Appendix D**). The storm drain line outlets flows from the existing developed site into an open area south of the project site and north of the I-215 freeway. Secondary overflow is provided by existing 6' wide openings through curb and retaining wall proposed per March Commerce Center Precise Grade, PA 05-0042 by Thienes Engineering, Inc. (included in **Appendix D**).

The project is located within the Santa Ana River watershed area. This project is not within a Specific Plan or Master Drainage Plan area.

### PROPOSED CONDITIONS

As described above, the project site is subject to offsite flows from adjacent developed, industrial properties to the north and east. Off-site flows are proposed to be intercepted by v-ditches and channels along the perimeter of the site, with inlets proposed at existing low spots. These flows will be directed towards an underground detention tank that outlets to the existing storm drain line to the south. This storm drain line is adequately sized to convey the tributary flows. However, there is an elevation gap between the proposed and existing storm drain systems, so a lift station is proposed to outlet the flows.

On-site flows generated by the proposed project will be collected and conveyed using a combination of surface flows, ribbon gutters, inlets, and subsurface storm drains to convey flows to the proposed water quality treatment. This biotreatment device will treat low flows and allow higher storm events to bypass into the storm drain system. These treated or bypassed flows will outlet to the underground detention tank, to the lift station, and ultimately to the existing southerly storm drain line. Secondary overflow is provided by existing 6' wide openings through curb and retaining wall proposed per March Commerce Center Precise Grade, PA 05-0042 by Thienes Engineering, Inc. (included in **Appendix D**).

All proposed on-site and off-site facilities must provide proper clearance, horizontal and vertical, from an existing 30" gas line that cross the SEC of the project site. Channels conveying off-site flows will cross overtop the gas line at an existing earthen mound. On-site subsurface storm drain systems will cross under the gas line, utilizing lift stations to then outlet into existing storm drain facilities.

Proposed flows will follow existing flow paths established per Storm Drain, PA 05-0042 by Gabel, Cook and Associates, which outlet into an open area south of the project site and north of the I-215 freeway. Since the pre-condition and post-condition are both fully developed, light industrial sites, there will be no increase in flows or intensity from historic storm events.

## METHODOLOGY

### HYDROLOGY

Hydrologic calculations were performed in accordance with the RCFC&WCD Hydrology Manual, dated April 1978. The Rational Method was utilized in determining peak flow rates.

The hydrological parameters, including rainfall values and soil types were derived from the RCFC&WCD Hydrology Manual. The isohyetal maps and soil map have been included in **Section 2**.

Rational Method calculations were performed using a computer program developed by CivilDesign Corporation and Joseph E. Bonadiman and Associates Inc. The computer program is commonly referred to as CivilD which incorporates the hydrological parameters outlined in the RCFC&WCD Hydrology Manual.

The Rational Method was used to determine the peak flow rates to size and design the drainage facilities need to convey onsite flows through the site to the proposed basin. The flow rates were computed by generating a hydrologic "link-node" model in which the overall area is divided into separate drainage sub-areas, each tributary to a concentration point (node) determined by the proposed layout and grading.

The Unit Hydrograph Method was used to determine the peak flow rate and volume associated with the 2-year, 24-hour storm event for the site. Calculations were performed for both the existing condition and developed condition to be used in the analysis of HCOC mitigation. See **Section 4** for additional information and results regarding the hydrologic analyses performed for this project.

### HYDRAULICS

Water quality calculations were performed using spreadsheets that were created by RCFC&WCD. Preliminary calculations and additional details can be found in the Preliminary-WQMP.

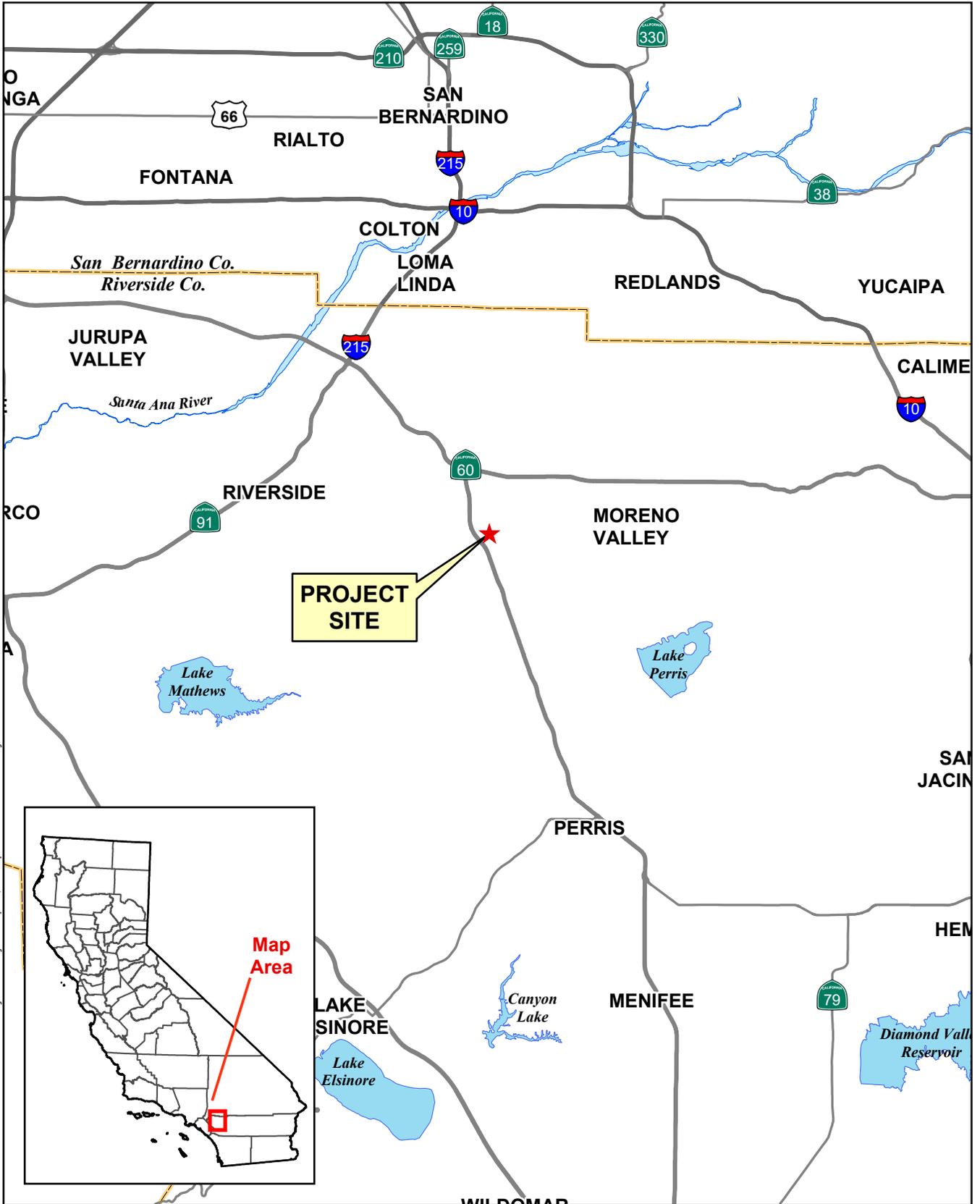
**FIG. 1 VICINITY MAP**

**FIG. 2 USGS TOPOGRAPHY MAP**

**FIG. 3 AERIAL PHOTOGRAPH**

**FIG. 4 RECEIVING WATERBODIES**

**FIG. 5 SOILS MAP**



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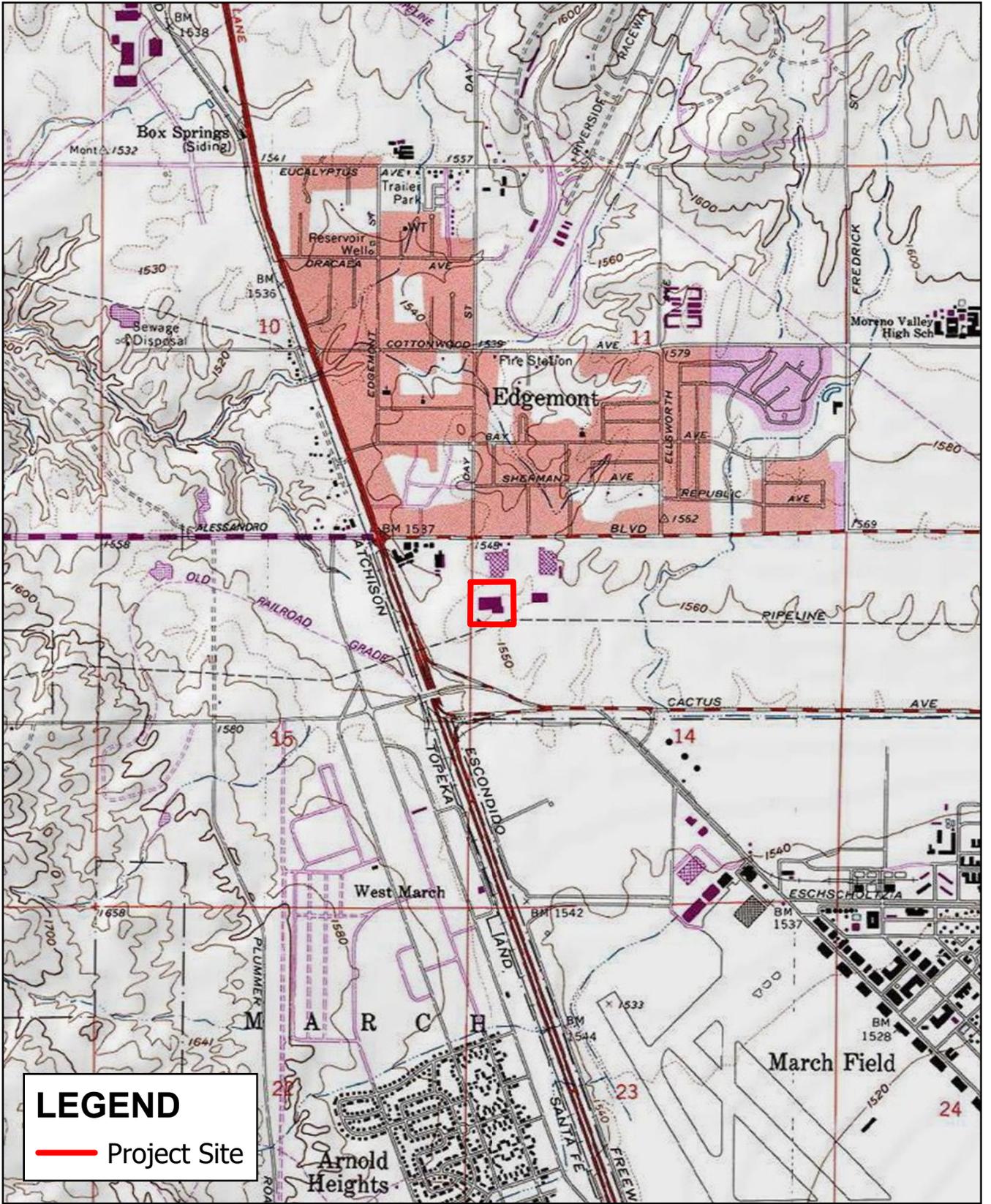
Sources: Riverside Co. GIS, 2021

### Vicinity Map

Day Street - Survey Mapping and Entitlement



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Sources: ESRI / USGS 7.5min Quad  
DRGs: MORENO VALLEY

**LEGEND**

— Project Site

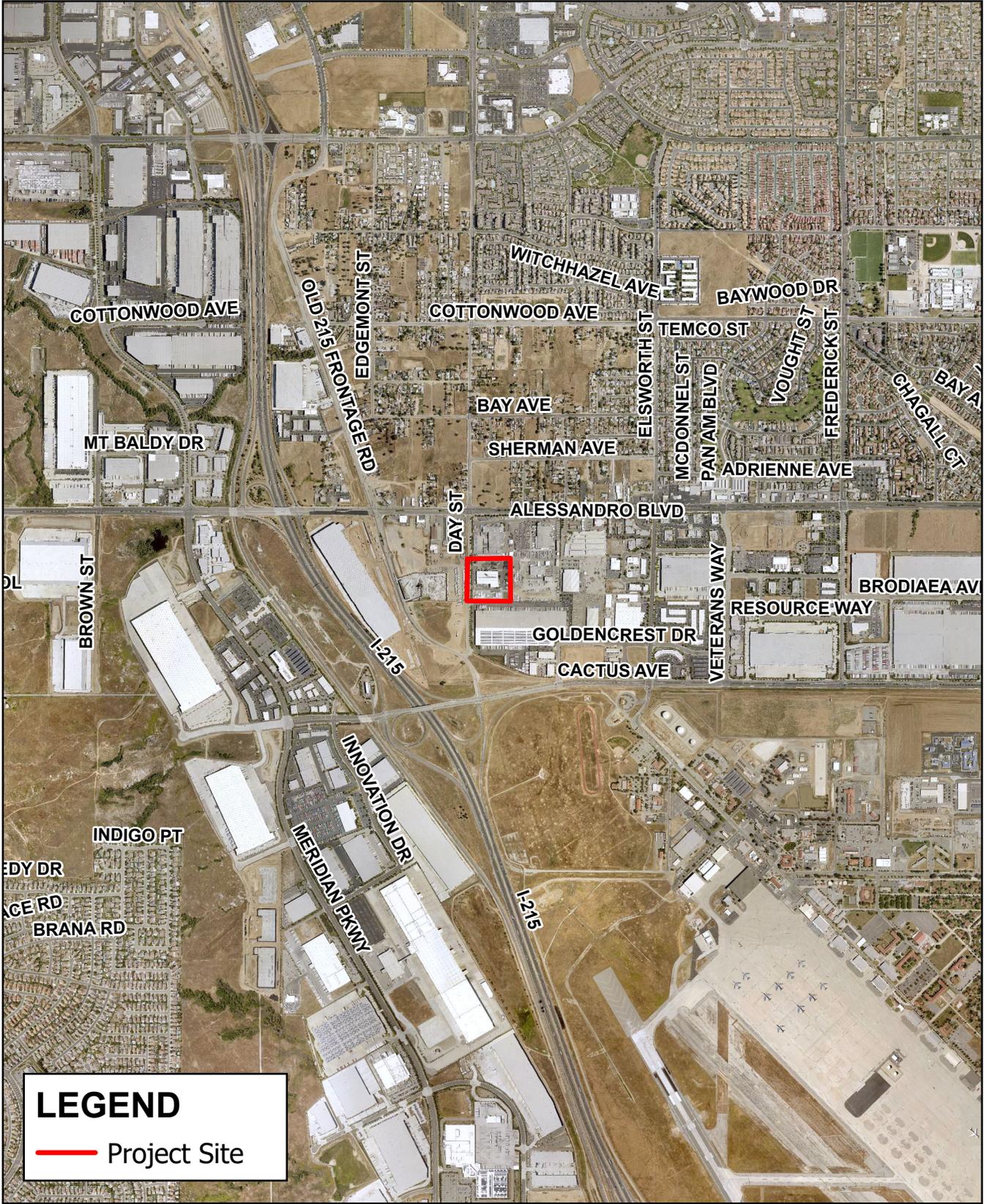


0 1,000 2,000 3,000  
Feet

**USGS Topography Map**  
Day Street - Survey Mapping and Entitlement



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Sources: Riverside Co. GIS, 2021

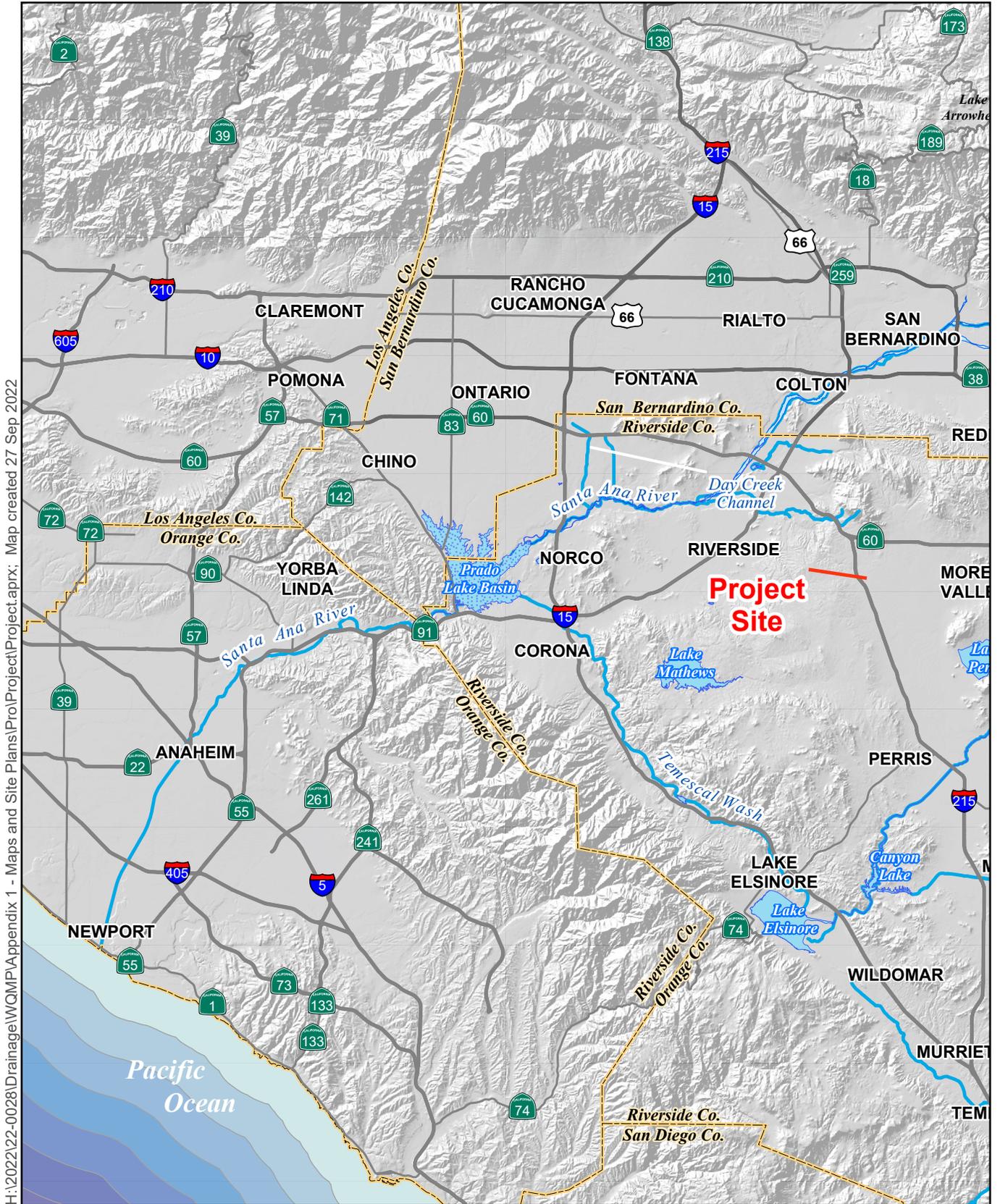


0 1,000 2,000 3,000  
 Feet

## Aerial Map

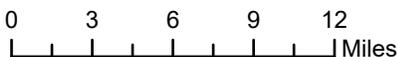
Day Street - Survey Mapping and Entitlement





H:\2022\22-0028\Drainage\WQMP\Appendix 1 - Maps and Site Plans\Project\Project.aprx; Map created 27 Sep 2022

Sources: USGS DLG; USGS 30m DEM

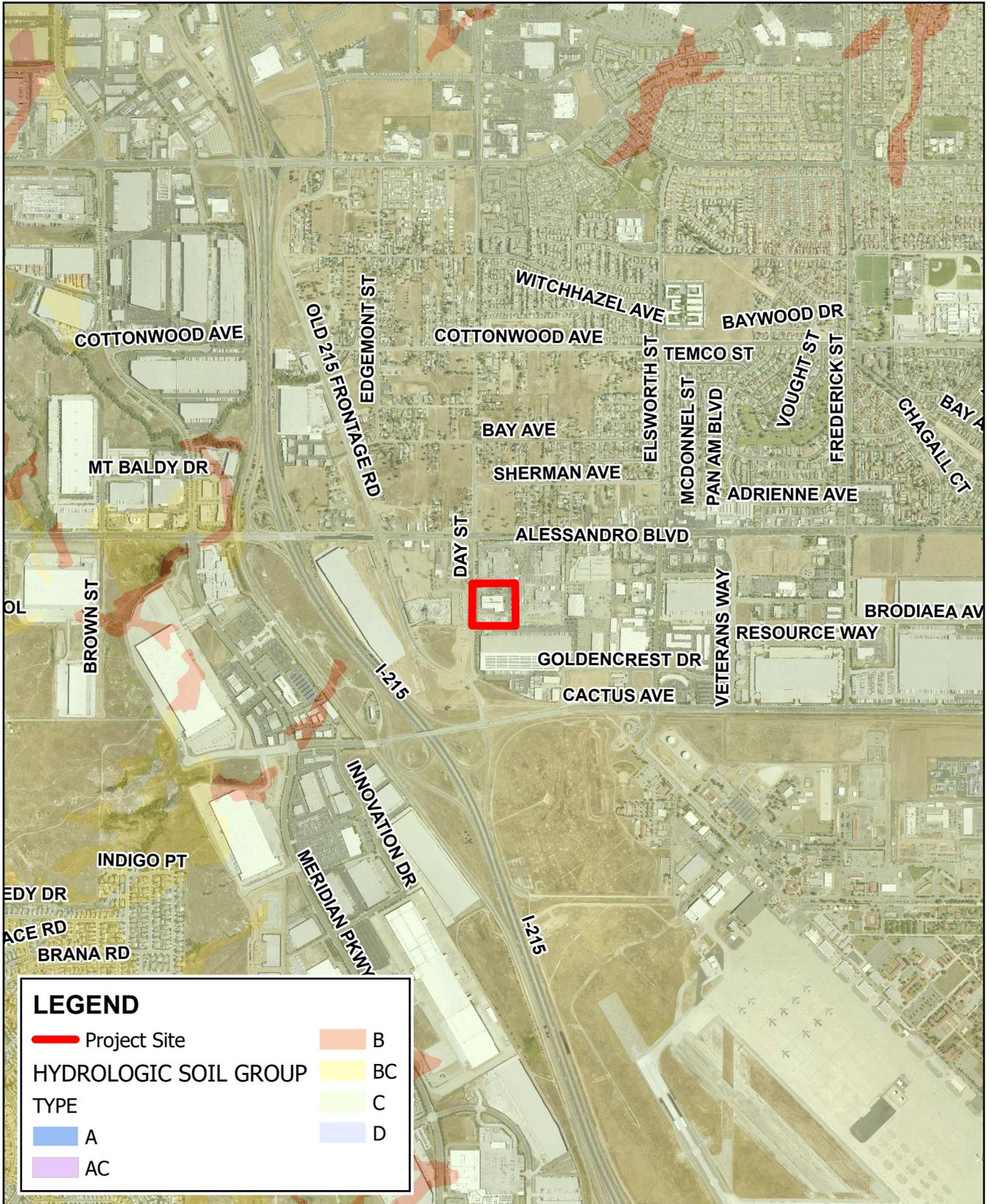


## Receiving Waterbodies

Day Street - Survey Mapping and Entitlement



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Source: Riverside Co. GIS, 2021.  
RCFC&WCD Hydrology Manual Plate C-1.30

### Soils Map

Day Street - Survey Mapping and Entitlement



0 1,000 2,000 3,000 Feet



## SECTION 2 - HYDROLOGY ANALYSIS

### HYDROLOGY PARAMETERS

The RCFC&WCD Hydrology Manual was used to determine several of the hydrological parameters. The following rainfall depths were utilized in the hydrology analyses, which were obtained from the isohyetal maps provided in the RCFC&WCD Hydrology Manual:

Table 1 - Precipitation Values

Storm Event	Duration			
	1-Hour (inches)	3-Hour (inches)	6-Hour (inches)	24-Hour (inches)
2-Year	0.5	0.8	1.2	1.8
10-Year	0.8	-	-	-
100-Year	1.2	1.9	2.5	4.0

The value for slope of intensity was determined to be 0.5 per the Standard Intensity-Duration Curves Data for Sunnymead-Moreno. The isohyetal maps have been included in **Appendix A**.

Based on the Plate C-1.16 (Riverside-East) in the RCFC&WCD Hydrology Manual, the project site is classified as soil type C. The soils map is included in **Appendix A**.

The cover type was determined based on the existing land cover and proposed land use of the site. Hydrological computations for the existing condition were done using 'Urban Covers (Commercial)'. The 'Commercial' cover type was also used to represent the developed condition. The table below summarizes the runoff index values and the recommended values for percentage of impervious cover for that category:

Table 2 - Cover Type

Cover Type	Soil Group A	Soil Group B	Soil Group C	Soil Group D	Percentage of Impervious Cover
Urban Covers (Commercial)	-	-	69	-	90%

### ON-SITE AND OFF-SITE RATIONAL METHOD HYDROLOGY

The rational method was used to determine peak flow rates in order to adequately size the proposed subsurface storm drains and associated inlets used to convey on-site flows. The on-site project site area was small enough to only have one on-site drainage area, which is all treated by a biotreatment water quality device. The off-site tributary area was split into six areas, which all terminate at proposed channel along the project's northern and eastern boundaries. Ultimately, the stormwater runoff will be conveyed to the downstream Line "A" Day Street Extension per PA 05-0042 by Gabel, Cook and Associates.

Secondary overflow is provided by existing 6' wide openings through curb and retaining wall proposed per March Commerce Center Precise Grade, PA 05-0042 by Thienes Engineering, Inc. (included in **Appendix D**).

The following table summarizes the rational method results at key points:

**Table 3 - Rational Method Results**

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)
Node 110 Runoff generated from on-site and off-site areas tributary to Line "A" Day Street Extension (prior to lift station)	47.7	70.3

The rational method output files and hydrology map have been included in **Appendix A**.

## SECTION 3 - HYDRAULIC ANALYSIS

### ON-SITE STORM DRAIN FACILITIES

The project proposes one storm subsurface storm drain system, which will utilize curb and gutter, ribbon gutter, and surface flow to convey on-site flows and v-ditches and channels to convey off-site flows through and around the project site. On-site flows will be kept separate from off-site flows for treatment, but treated and larger flows that bypass treatment will be directed to the same storm drain system of the off-site flows. All flows will outlet towards the existing off-site Line “A” Day Street Extension.

See **Appendix B** for all hydraulic calculations.

#### Line-1 (Proposed)

The proposed storm drain line will intercept on-site flows with inlets after they are conveyed via surface flow, ribbon gutters, and curb and gutter. On-site flows are collected and kept separate from off-site flows to allow for water quality treatment. The proposed storm drain line will intercept off-site flows with inlets in channels at existing low spots along the project boundary. The treated and larger flows that bypass treatment will be conveyed in Line-1. A normal depth calculation from the CivilD rational method output was used to determine the approximate size for Line-1. A proposed lift station will be required to convey flows to the existing downstream line, Line “A” Day Street Extension. A hydraulic model for Line-1 will be provided during final engineering to further assess the storm drain design.

#### High Flow Bypass Structure (Proposed)

On-site flows will be directed towards a water quality biotreatment device. Larger storm events will bypass the device and outlet into Line 1.

#### On-Site Lift Station and Underground Detention Tank (Proposed)

There is an elevation gap between the proposed on-site storm drain system and the existing storm drain system downstream of the project site, so a lift station is proposed to outlet the flows. An underground detention tank is proposed in conjunction with the lift station. The detention tank was sized to contain the volume of the 100 year – 24 hour storm event.

### OFF-SITE STORM DRAIN FACILITIES

#### Line “A” Day Street Extension (Existing)

Line “A” Day Street Extension was constructed per Storm Drain, PA 05-0042 by Gabel, Cook and Associates (included in **Appendix D**). Line “A” is a 48” N-12 pipe sized to convey 73.0 cfs. The storm drain line outlets flows from the existing developed site into an open area south of the project site and north of the I-215 freeway. Secondary overflow is provided by existing 6’ wide openings through curb and retaining wall proposed per March Commerce Center Precise Grade, PA 05-0042 by Thienes Engineering, Inc. (included in **Appendix D**).

#### V-Ditches and Channels (Proposed)

Off-site flows impact the project site along the northern and eastern project boundaries. In order to intercept these flows, the project proposes concrete v-ditches and channels along these perimeters to intercept and separate off-site flows from the on-site storm flows.

## SECTION 4 - BASIN ANALYSIS

### ON-SITE UNIT HYDROGRAPH METHOD HYDROLOGY

The unit hydrograph method was used to determine the peak flow rate and volume in order to confirm there is no requirement for HCOC mitigation. Unit hydrographs were performed for both the existing condition and proposed condition. The existing condition is used to establish a baseline for comparative purposes. The proposed condition is used for design purposes. Both the existing and proposed conditions model fully-developed, industrial project sites. The following table summarizes the results of the unit hydrograph analysis:

Table 4 - Unit Hydrograph Results

Storm Event	Existing Condition		Proposed Condition	
	Volume (Ac-ft)	Peak Flow (cfs)	Volume (Ac-ft)	Peak Flow (cfs)
2-Year, 24-Hour	3.55	5.8	3.55	5.8

The unit hydrograph output files and hydrology map have been included in **Appendix C**.

## SECTION 5 - CONCLUSION

Based on the analyses and results of this report, the following conclusions were derived from the hydrology and hydraulic results:

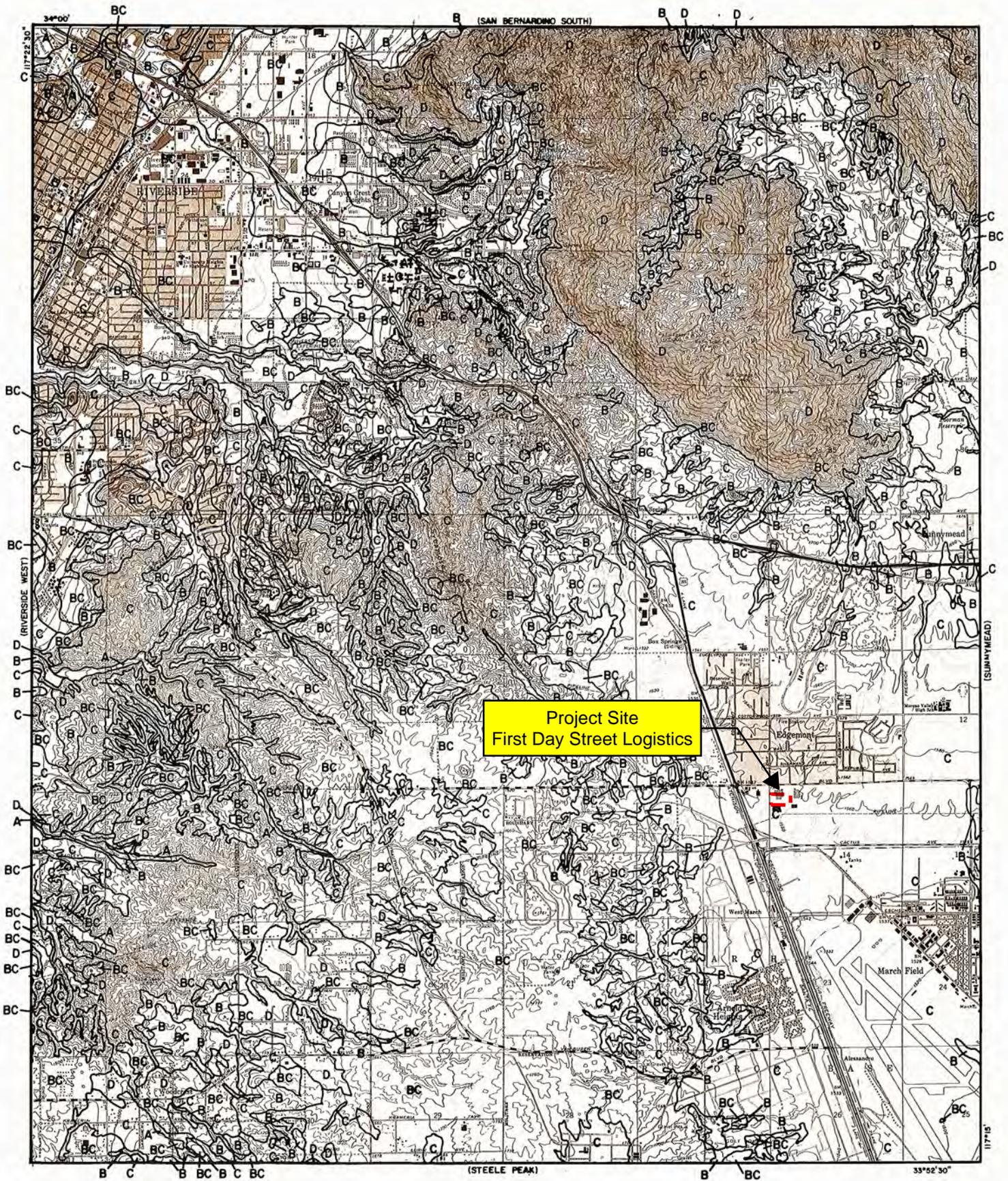
- The proposed on-site subsurface drainage improvements will adequately convey flows to the water quality treatment device and provide flood protection for the 100-year storm event.
- The proposed project will not impact flooding condition to upstream or downstream properties.

## **APPENDIX A – HYDROLOGY ANALYSIS**

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**HYDROLOGIC SOILS GROUP MAP (PLATE C-1.16)**

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Project Site  
First Day Street Logistics

**LEGEND**

— SOILS GROUP BOUNDARY  
 A SOILS GROUP DESIGNATION

**RCFC & WCD**  
 HYDROLOGY MANUAL

0 FEET 5000

**HYDROLOGIC SOILS GROUP MAP**  
 FOR  
**RIVERSIDE-EAST**

**ISOHYETAL MAPS**

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# RAINFALL INTENSITY—INCHES PER HOUR

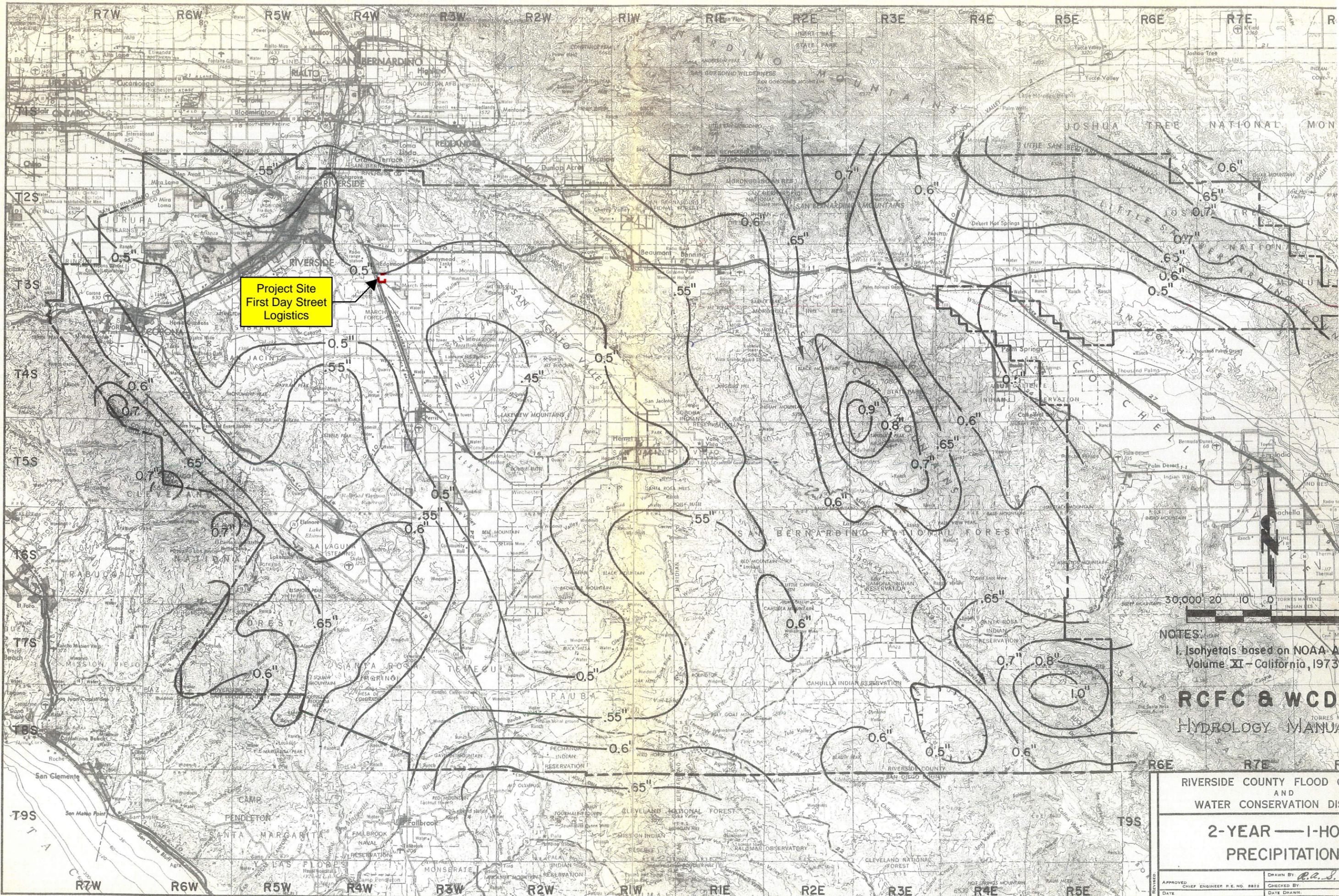
SUNNYMEAD - MORENO			WOODCREST		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.84	4.16	5	3.37	5.30
6	2.59	3.79	6	3.05	4.79
7	2.40	3.51	7	2.80	4.40
8	2.25	3.29	8	2.60	4.09
9	2.12	3.10	9	2.44	3.83
10	2.01	2.94	10	2.30	3.62
11	1.92	2.80	11	2.19	3.43
12	1.83	2.68	12	2.08	3.27
13	1.76	2.58	13	1.99	3.13
14	1.70	2.48	14	1.91	3.01
15	1.64	2.40	15	1.84	2.89
16	1.59	2.32	16	1.78	2.79
17	1.54	2.25	17	1.72	2.70
18	1.50	2.19	18	1.67	2.62
19	1.46	2.13	19	1.62	2.54
20	1.42	2.08	20	1.57	2.47
22	1.35	1.98	22	1.49	2.34
24	1.30	1.90	24	1.42	2.23
26	1.25	1.82	26	1.36	2.14
28	1.20	1.76	28	1.31	2.05
30	1.16	1.70	30	1.26	1.98
32	1.12	1.64	32	1.22	1.91
34	1.09	1.59	34	1.19	1.85
36	1.06	1.55	36	1.14	1.79
38	1.03	1.51	38	1.11	1.74
40	1.00	1.47	40	1.07	1.69
45	.95	1.39	45	1.01	1.58
50	.90	1.31	50	.95	1.49
55	.86	1.25	55	.90	1.42
60	.82	1.20	60	.86	1.35
65	.79	1.15	65	.82	1.29
70	.76	1.11	70	.79	1.24
75	.73	1.07	75	.76	1.19
80	.71	1.04	80	.73	1.15
85	.69	1.01	85	.71	1.11

SLOPE = .550

SLOPE = .500

**RCFC & WCD**  
HYDROLOGY MANUAL

STANDARD  
INTENSITY—DURATION  
CURVES DATA



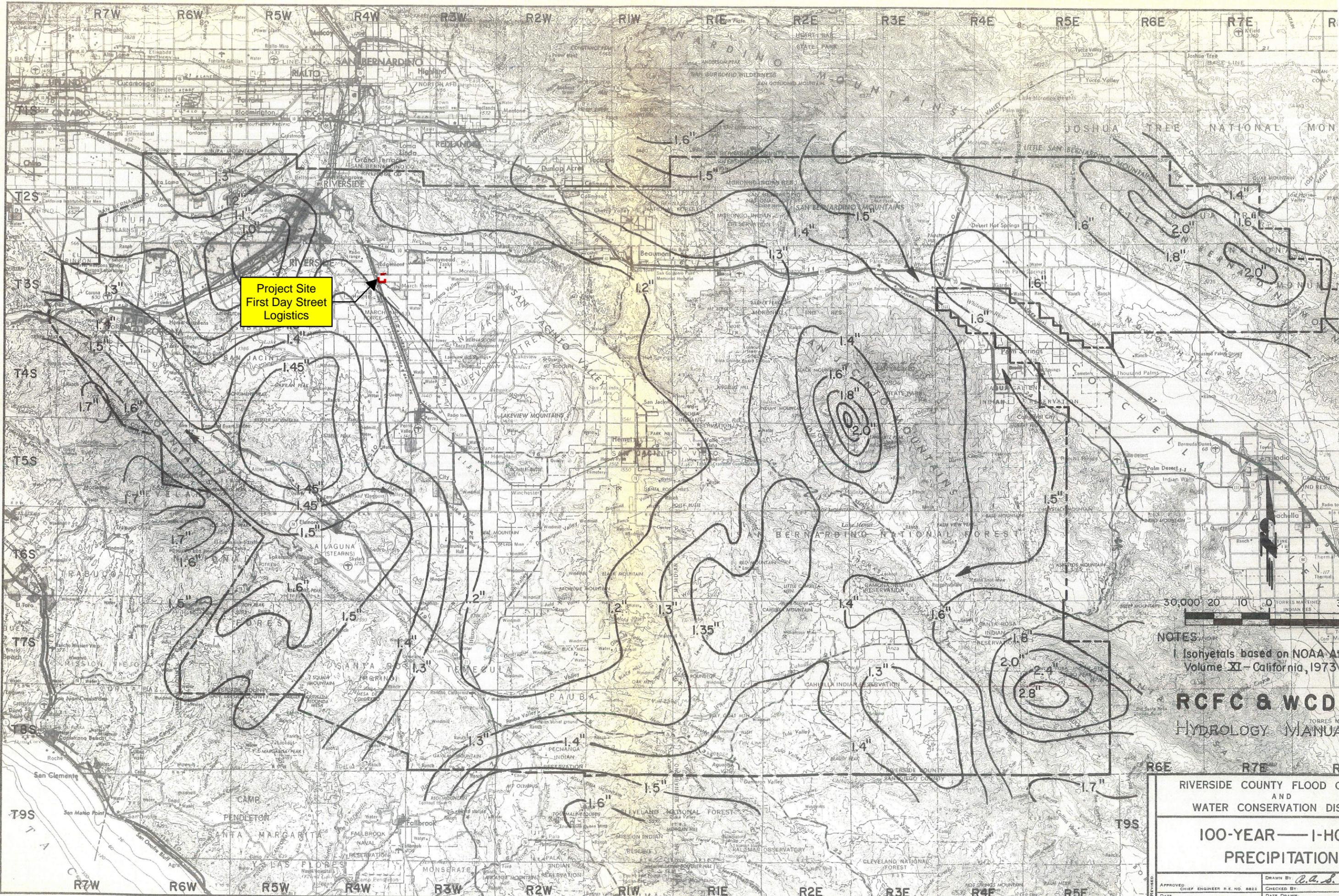
Project Site  
First Day Street  
Logistics

NOTES:  
1. Isohyets based on NOAA Atlas  
Volume XI - California, 1973

**RCFC & WCD**  
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
**2-YEAR — 1-HOUR  
PRECIPITATION**

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			<i>P.A.S.</i>	

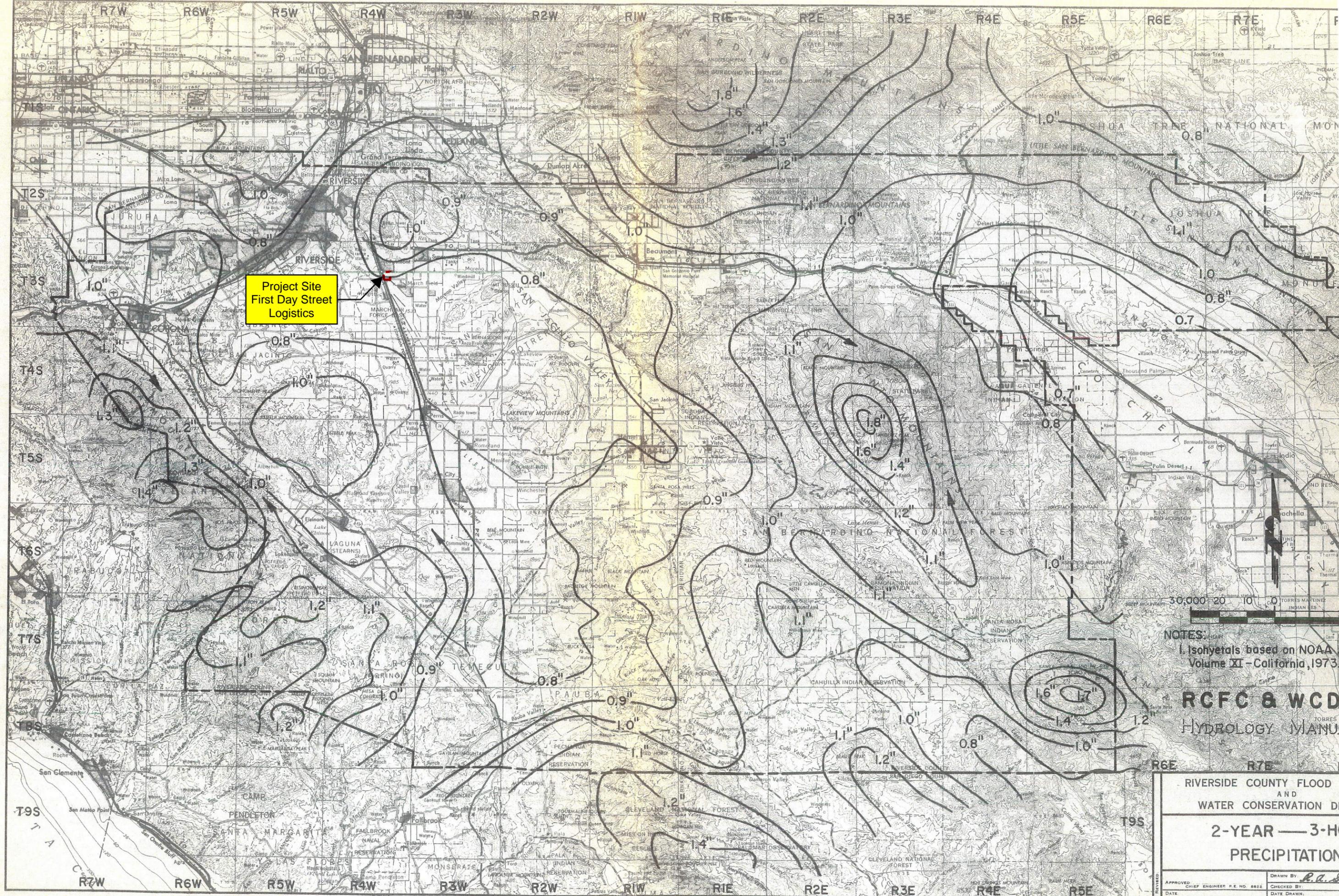


Project Site  
First Day Street  
Logistics

NOTES  
1 Isohyets based on NOAA Atlas  
Volume XI - California, 1973

**RCFC & WCD**  
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
100-YEAR 1-HOUR PRECIPITATION	
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DATE	CHECKED BY:
DATE	DATE DRAWN:



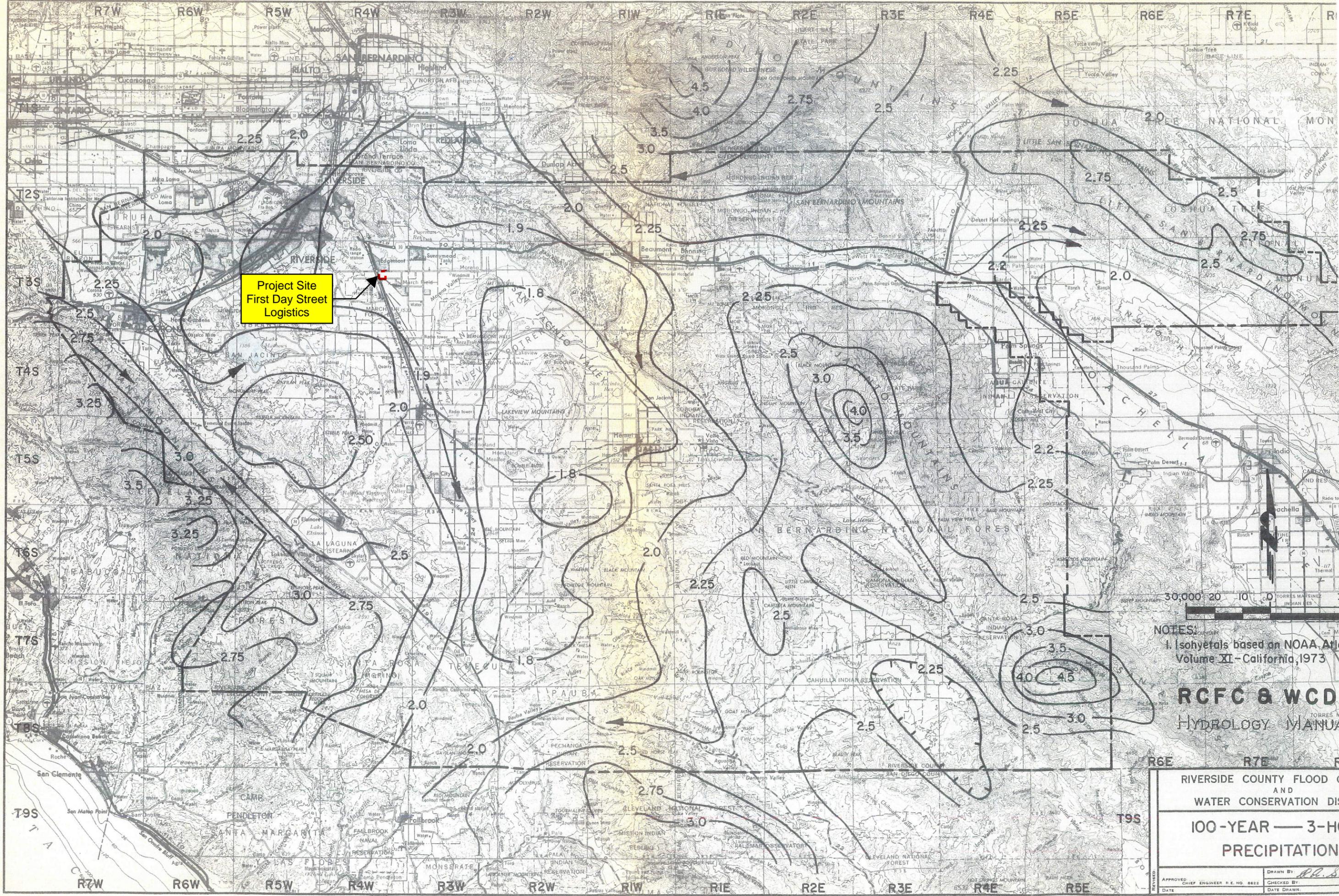
Project Site  
First Day Street  
Logistics

NOTES:  
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Volume XI - California, 1973.

**RCFC & WCD**  
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT  
AND  
WATER CONSERVATION DISTRICT  
**2-YEAR — 3-HOUR  
PRECIPITATION**

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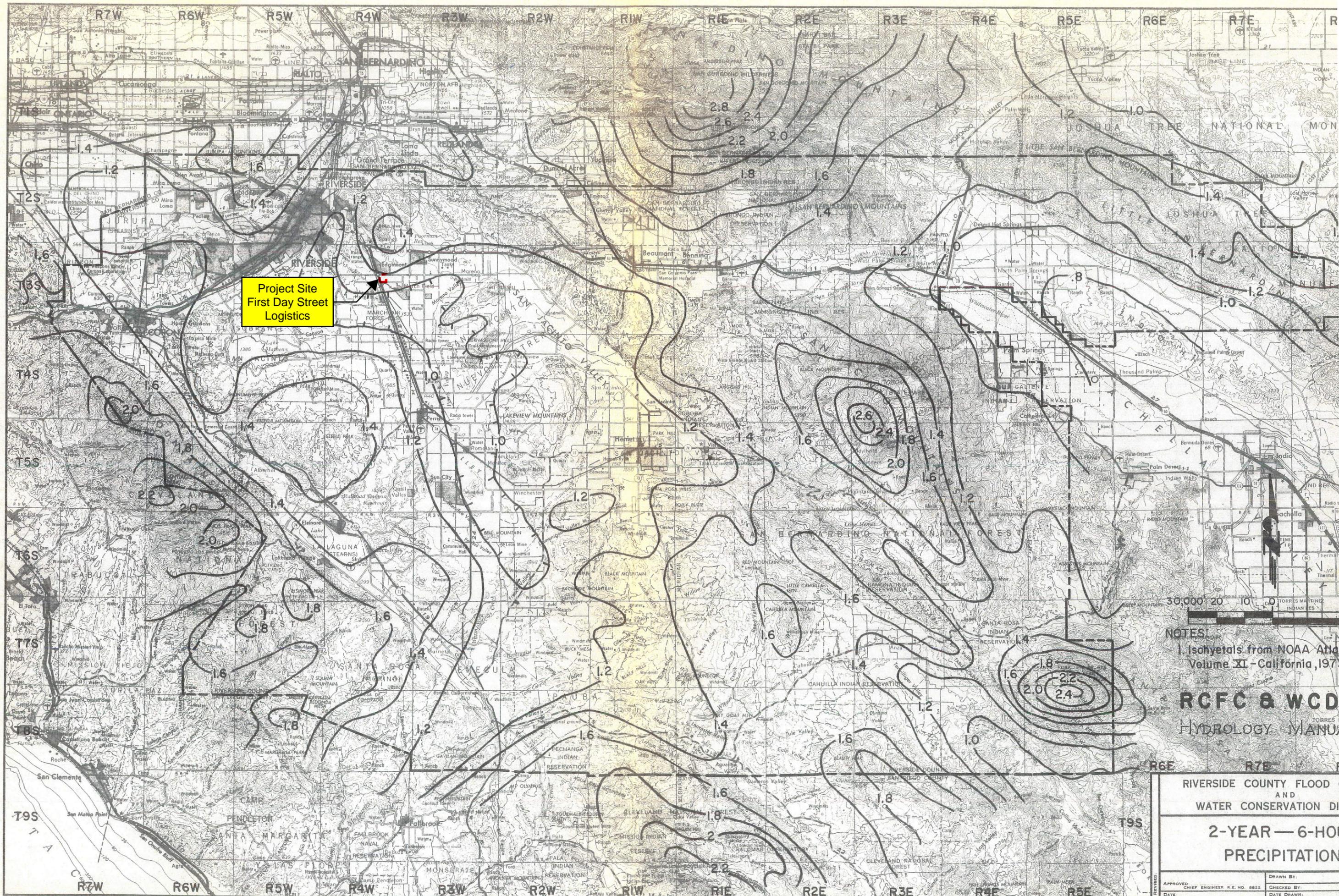
Project Site  
First Day Street  
Logistics

NOTES:  
1. Isohyets based on NOAA Atlas  
Volume XI - California, 1973

**RCFC & WCD**  
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
**100-YEAR — 3-HOUR  
PRECIPITATION**

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DATE	CHECKED BY:
	DATE DRAWN:



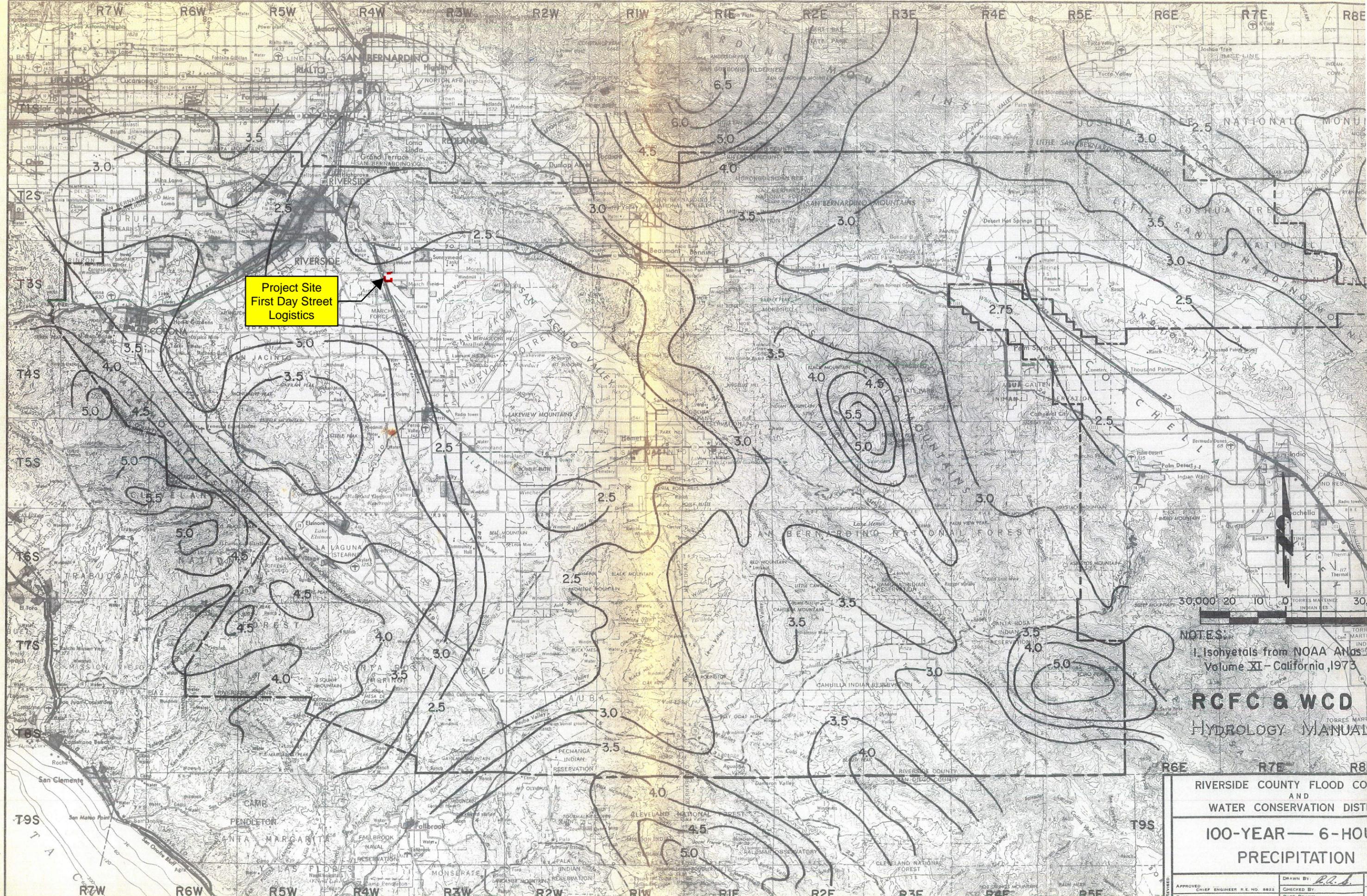
Project Site  
First Day Street  
Logistics

NOTES:  
1. Isohyets from NOAA Atlas  
Volume XI - California, 1973

**RCFC & WCD**  
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT  
AND  
WATER CONSERVATION DISTRICT  
**2-YEAR — 6-HOUR  
PRECIPITATION**

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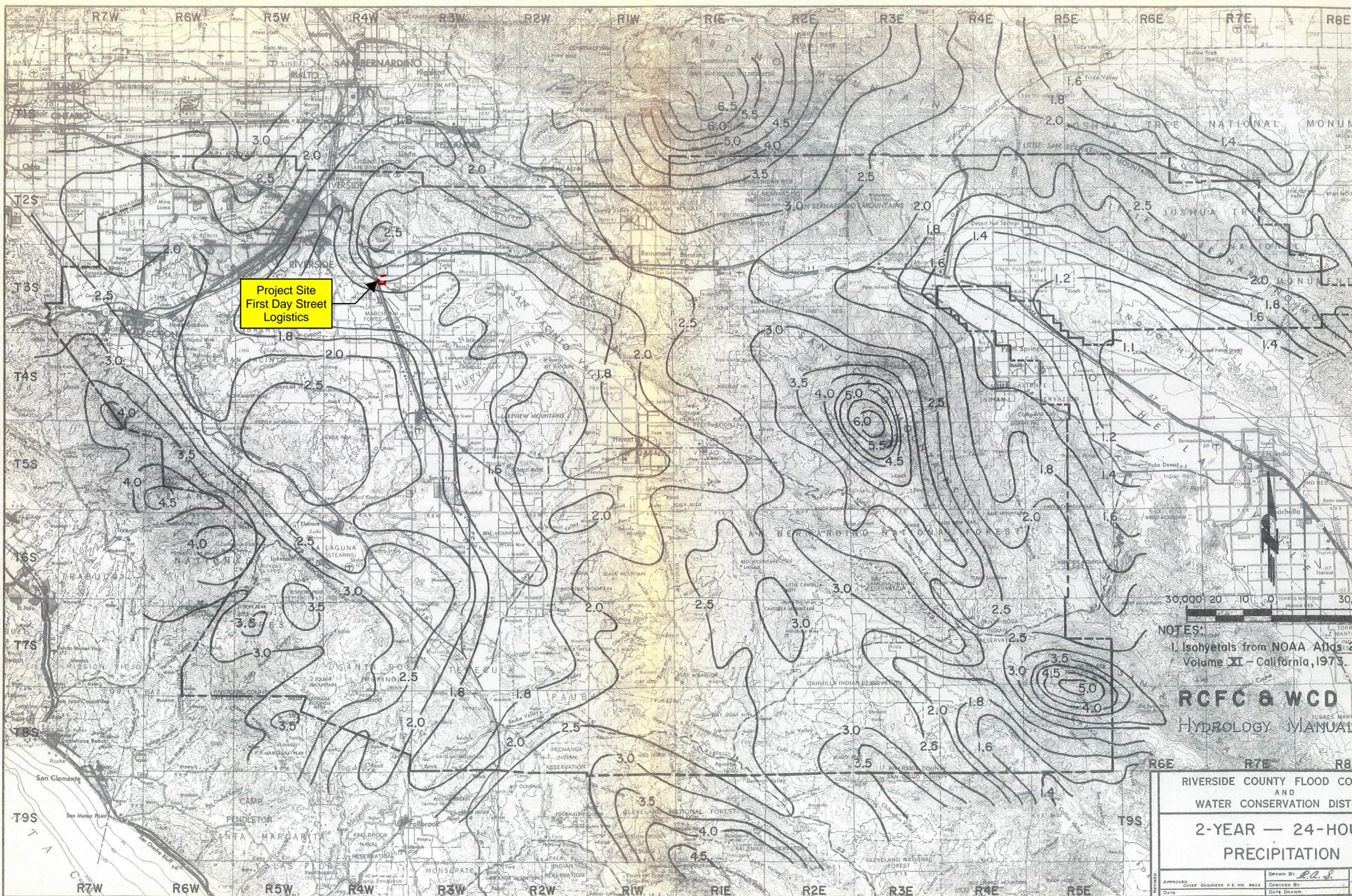
**Project Site  
First Day Street  
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**RCFC & WCD  
HYDROLOGY MANUAL**

RIVERSIDE COUNTY FLOOD CONTROL DISTRICT  
AND  
WATER CONSERVATION DISTRICT  
**100-YEAR — 6-HOUR  
PRECIPITATION**

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DATE	DATE DRAWN:



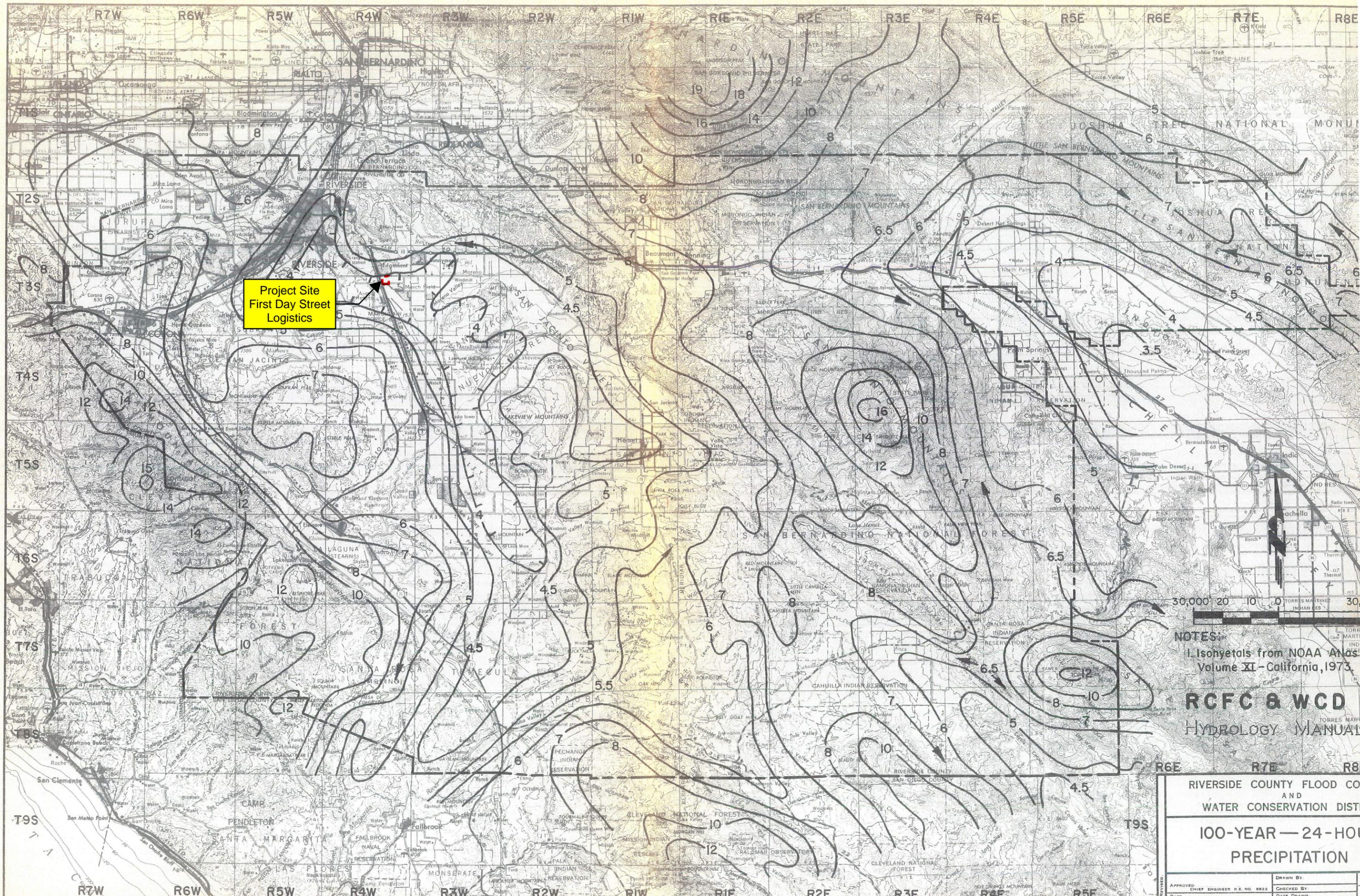
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**RCFC & WCD**  
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
**2-YEAR — 24-HOUR  
PRECIPITATION**

APPROVED:	DATE:	CHIEF ENGINEER R.E. NO. 8822	DRAWN BY:	DATE DRAWN:
			<i>P.A.S.</i>	



**Project Site  
First Day Street  
Logistics**

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**RCFC & WCD  
HYDROLOGY MANUAL**

RIVERSIDE COUNTY FLOOD CONTROL  
AND  
WATER CONSERVATION DISTRICT  
**100-YEAR — 24-HOUR  
PRECIPITATION**

APPROVED	DATE	CHIEF ENGINEER R.E. NO. 8822	DRAWN BY	DATE DRAWN

**10-YEAR HYDROLOGY (RATIONAL METHOD)**

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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0  
Rational Hydrology Study Date: 09/26/22 File:PROP10.out

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22-0028 - FIR DAY STREET  
RATIONAL HYDROLOGY METHOD  
10 YEAR STORM EVENT  
FN: PROP10.OUT ABE 2022-09-26  
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\*\*\*\*\* Hydrology Study Control Information \*\*\*\*\*

English (in-1b) Units used in input data file  
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Program License Serial Number 4010  
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Rational Method Hydrology Program based on  
Riverside County Flood Control & Water Conservation District  
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)  
For the [ Sunnymead-Moreno ] area used.  
10 year storm 10 minute intensity = 2.010(In/Hr)  
10 year storm 60 minute intensity = 0.820(In/Hr)  
100 year storm 10 minute intensity = 2.940(In/Hr)  
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0  
Calculated rainfall intensity data:  
1 hour intensity = 0.820(In/Hr)  
Slope of intensity duration curve = 0.5000

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\*\*\*\*\*  
Process from Point/Station 101.000 to Point/Station 102.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*  
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Initial area flow distance = 741.000(Ft.)  
Top (of initial area) elevation = 1559.000(Ft.)  
Bottom (of initial area) elevation = 1549.700(Ft.)  
Difference in elevation = 9.300(Ft.)  
Slope = 0.01255 s(percent)= 1.26  
TC = k(0.300)\*[(length^3)/(elevation change)]^0.2  
Initial area time of concentration = 10.123 min.  
Rainfall intensity = 1.996(In/Hr) for a 10.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.879  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 13.340(CFS)  
Total initial stream area = 7.600(Ac.)  
Pervious area fraction = 0.100

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\*\*\*\*\*  
Process from Point/Station 103.000 to Point/Station 102.000  
\*\*\*\* SUBAREA FLOW ADDITION \*\*\*\*  
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COMMERCIAL subarea type  
Runoff Coefficient = 0.879  
Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Time of concentration = 10.12 min.  
Rainfall intensity = 1.996(In/Hr) for a 10.0 year storm  
Subarea runoff = 0.351(CFS) for 0.200(Ac.)  
Total runoff = 13.691(CFS) Total area = 7.800(Ac.)

\*\*\*\*\*  
Process from Point/Station 102.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

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Upstream point/station elevation = 1545.700(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 190.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 13.691(CFS)  
Nearest computed pipe diameter = 18.00(In.)  
Calculated individual pipe flow = 13.691(CFS)  
Normal flow depth in pipe = 13.97(In.)  
Flow top width inside pipe = 15.01(In.)  
Critical Depth = 16.47(In.)  
Pipe flow velocity = 9.31(Ft/s)  
Travel time through pipe = 0.34 min.  
Time of concentration (TC) = 10.46 min.

\*\*\*\*\*  
Process from Point/Station 102.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

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Along Main Stream number: 1 in normal stream number 1  
Stream flow area = 7.800(Ac.)  
Runoff from this stream = 13.691(CFS)  
Time of concentration = 10.46 min.  
Rainfall intensity = 1.964(In/Hr)

\*\*\*\*\*  
Process from Point/Station 105.000 to Point/Station 106.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*

---

Initial area flow distance = 987.000(Ft.)  
Top (of initial area) elevation = 1562.000(Ft.)  
Bottom (of initial area) elevation = 1552.300(Ft.)  
Difference in elevation = 9.700(Ft.)  
Slope = 0.00983 s(percent)= 0.98  
TC = k(0.300)\*[(length^3)/(elevation change)]^0.2  
Initial area time of concentration = 11.922 min.  
Rainfall intensity = 1.840(In/Hr) for a 10.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.878  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 6.944(CFS)  
Total initial stream area = 4.300(Ac.)  
Pervious area fraction = 0.100

\*\*\*\*\*  
Process from Point/Station 106.000 to Point/Station 107.000  
\*\*\*\* IMPROVED CHANNEL TRAVEL TIME \*\*\*\*

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Upstream point elevation = 1552.300(Ft.)  
Downstream point elevation = 1547.900(Ft.)  
Channel length thru subarea = 229.000(Ft.)  
Channel base width = 4.000(Ft.)  
Slope or 'Z' of left channel bank = 0.000  
Slope or 'Z' of right channel bank = 0.000

Estimated mean flow rate at midpoint of channel = 7.267(CFS)  
Manning's 'N' = 0.015  
Maximum depth of channel = 1.500(Ft.)  
Flow(q) thru subarea = 7.267(CFS)  
Depth of flow = 0.315(Ft.), Average velocity = 5.767(Ft/s)  
Channel flow top width = 4.000(Ft.)  
Flow velocity = 5.77(Ft/s)  
Travel time = 0.66 min.  
Time of concentration = 12.58 min.

Sub-Channel No. 1 Critical depth = 0.469(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity= 3.876(Ft/s)  
' ' ' Critical flow area = 1.875(Sq.Ft)

Adding area flow to channel  
COMMERCIAL subarea type  
Runoff Coefficient = 0.877  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Rainfall intensity = 1.791(In/Hr) for a 10.0 year storm  
Subarea runoff = 0.628(CFS) for 0.400(Ac.)  
Total runoff = 7.573(CFS) Total area = 4.700(Ac.)  
Depth of flow = 0.323(Ft.), Average velocity = 5.854(Ft/s)

Sub-Channel No. 1 Critical depth = 0.480(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity= 3.940(Ft/s)  
' ' ' Critical flow area = 1.922(Sq.Ft)

\*\*\*\*\*  
Process from Point/Station 107.000 to Point/Station 104.000  
\*\*\* IMPROVED CHANNEL TRAVEL TIME \*\*\*

---

Upstream point elevation = 1547.900(Ft.)  
Downstream point elevation = 1547.300(Ft.)  
Channel length thru subarea = 118.000(Ft.)  
Channel base width = 4.000(Ft.)  
Slope or 'Z' of left channel bank = 0.000  
Slope or 'Z' of right channel bank = 0.000  
Estimated mean flow rate at midpoint of channel = 14.408(CFS)  
Manning's 'N' = 0.015  
Maximum depth of channel = 1.500(Ft.)  
Flow(q) thru subarea = 14.408(CFS)  
Depth of flow = 0.759(Ft.), Average velocity = 4.744(Ft/s)  
Channel flow top width = 4.000(Ft.)  
Flow Velocity = 4.74(Ft/s)  
Travel time = 0.41 min.  
Time of concentration = 13.00 min.

Sub-Channel No. 1 Critical depth = 0.734(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity= 4.905(Ft/s)  
' ' ' Critical flow area = 2.938(Sq.Ft)

Adding area flow to channel  
COMMERCIAL subarea type  
Runoff Coefficient = 0.877  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Rainfall intensity = 1.762(In/Hr) for a 10.0 year storm  
Subarea runoff = 13.599(CFS) for 8.800(Ac.)  
Total runoff = 21.172(CFS) Total area = 13.500(Ac.)  
Depth of flow = 0.987(Ft.), Average velocity = 5.361(Ft/s)

Sub-Channel No. 1 Critical depth = 0.953(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity = 5.553(Ft/s)  
' ' ' Critical flow area = 3.813(Sq.Ft)

\*\*\*\*\*  
Process from Point/Station 107.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

---

Upstream point/station elevation = 1543.900(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 20.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 21.172(CFS)  
Nearest computed pipe diameter = 18.00(In.)  
Calculated individual pipe flow = 21.172(CFS)  
Normal flow depth in pipe = 10.80(In.)  
Flow top width inside pipe = 17.63(In.)  
Critical depth could not be calculated.  
Pipe flow velocity = 19.13(Ft/s)  
Travel time through pipe = 0.02 min.  
Time of concentration (TC) = 13.02 min.

\*\*\*\*\*  
Process from Point/Station 107.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

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Along Main Stream number: 1 in normal stream number 2  
Stream flow area = 13.500(Ac.)  
Runoff from this stream = 21.172(CFS)  
Time of concentration = 13.02 min.  
Rainfall intensity = 1.761(In/Hr)

\*\*\*\*\*  
Process from Point/Station 108.000 to Point/Station 109.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*

---

Initial area flow distance = 228.000(Ft.)  
Top (of initial area) elevation = 1554.000(Ft.)  
Bottom (of initial area) elevation = 1548.400(Ft.)  
Difference in elevation = 5.600(Ft.)  
Slope = 0.02456 s(percent) = 2.46  
TC =  $k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$   
Initial area time of concentration = 5.524 min.  
Rainfall intensity = 2.703(In/Hr) for a 10.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.884  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 0.955(CFS)  
Total initial stream area = 0.400(Ac.)  
Pervious area fraction = 0.100

\*\*\*\*\*  
Process from Point/Station 109.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

---

Upstream point/station elevation = 1544.400(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 20.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 0.955(CFS)  
Nearest computed pipe diameter = 6.00(In.)  
Calculated individual pipe flow = 0.955(CFS)  
Normal flow depth in pipe = 3.01(In.)  
Flow top width inside pipe = 6.00(In.)  
Critical Depth = 5.61(In.)  
Pipe flow velocity = 9.70(Ft/s)

Travel time through pipe = 0.03 min.  
Time of concentration (TC) = 5.56 min.

\*\*\*\*\*  
Process from Point/Station 109.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

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Along Main Stream number: 1 in normal stream number 3  
Stream flow area = 0.400(Ac.)  
Runoff from this stream = 0.955(CFS)  
Time of concentration = 5.56 min.  
Rainfall intensity = 2.694(In/Hr)

\*\*\*\*\*  
Process from Point/Station 201.000 to Point/Station 202.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*

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Initial area flow distance = 470.000(Ft.)  
Top (of initial area) elevation = 1554.400(Ft.)  
Bottom (of initial area) elevation = 1548.800(Ft.)  
Difference in elevation = 5.600(Ft.)  
Slope = 0.01191 s(percent)= 1.19  
TC =  $k(0.300)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$   
Initial area time of concentration = 8.526 min.  
Rainfall intensity = 2.175(In/Hr) for a 10.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.881  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 15.324(CFS)  
Total initial stream area = 8.000(Ac.)  
Pervious area fraction = 0.100

\*\*\*\*\*  
Process from Point/Station 202.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

---

Upstream point/station elevation = 1544.800(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 590.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 15.324(CFS)  
Nearest computed pipe diameter = 24.00(In.)  
Calculated individual pipe flow = 15.324(CFS)  
Normal flow depth in pipe = 19.69(In.)  
Flow top width inside pipe = 18.43(In.)  
Critical Depth = 16.93(In.)  
Pipe flow velocity = 5.55(Ft/s)  
Travel time through pipe = 1.77 min.  
Time of concentration (TC) = 10.30 min.

\*\*\*\*\*  
Process from Point/Station 202.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

---

Along Main Stream number: 1 in normal stream number 4  
Stream flow area = 8.000(Ac.)  
Runoff from this stream = 15.324(CFS)  
Time of concentration = 10.30 min.  
Rainfall intensity = 1.979(In/Hr)  
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	13.691	10.46	1.964
2	21.172	13.02	1.761

3	0.955	5.56	2.694
4	15.324	10.30	1.979

Largest stream flow has longer time of concentration

Qp = 21.172 + sum of

Qb	Ia/Ib		
13.691 *	0.897 =	12.275	
Qb	Ia/Ib		
0.955 *	0.653 =	0.624	
Qb	Ia/Ib		
15.324 *	0.889 =	13.630	

Qp = 47.700

Total of 4 streams to confluence:  
Flow rates before confluence point:  
13.691      21.172      0.955      15.324

Area of streams before confluence:  
7.800      13.500      0.400      8.000

Results of confluence:  
Total flow rate = 47.700(CFS)  
Time of concentration = 13.016 min.  
Effective stream area after confluence = 29.700(Ac.)

+++++  
Process from Point/Station 104.000 to Point/Station 110.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

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Upstream point/station elevation = 1541.100(Ft.)  
Downstream point/station elevation = 1539.600(Ft.)  
Pipe length = 306.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 47.700(CFS)  
Nearest computed pipe diameter = 36.00(In.)  
Calculated individual pipe flow = 47.700(CFS)  
Normal flow depth in pipe = 30.28(In.)  
Flow top width inside pipe = 26.32(In.)  
Critical Depth = 26.97(In.)  
Pipe flow velocity = 7.52(Ft/s)  
Travel time through pipe = 0.68 min.  
Time of concentration (TC) = 13.69 min.  
End of computations, total study area = 29.70 (Ac.)  
The following figures may  
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100  
Area averaged RI index number = 69.0

**100-YEAR HYDROLOGY (RATIONAL METHOD)**

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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0  
Rational Hydrology Study Date: 09/26/22 File:PROP100.out

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22-0028 - FIR DAY STREET  
RATIONAL HYDROLOGY METHOD  
100 YEAR STORM EVENT  
FN: PROP100.OUT ABE 2022-09-26  
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\*\*\*\*\* Hydrology Study Control Information \*\*\*\*\*

English (in-lb) Units used in input data file  
-----

Program License Serial Number 4010  
-----

Rational Method Hydrology Program based on  
Riverside County Flood Control & Water Conservation District  
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)  
For the [ Sunnymead-Moreno ] area used.  
10 year storm 10 minute intensity = 2.010(In/Hr)  
10 year storm 60 minute intensity = 0.820(In/Hr)  
100 year storm 10 minute intensity = 2.940(In/Hr)  
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0  
Calculated rainfall intensity data:  
1 hour intensity = 1.200(In/Hr)  
Slope of intensity duration curve = 0.5000

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\*\*\*\*\*  
Process from Point/Station 101.000 to Point/Station 102.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*  
-----

Initial area flow distance = 741.000(Ft.)  
Top (of initial area) elevation = 1559.000(Ft.)  
Bottom (of initial area) elevation = 1549.700(Ft.)  
Difference in elevation = 9.300(Ft.)  
Slope = 0.01255 s(percent)= 1.26  
TC = k(0.300)\*[(length^3)/(elevation change)]^0.2  
Initial area time of concentration = 10.123 min.  
Rainfall intensity = 2.921(In/Hr) for a 100.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.885  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 19.643(CFS)  
Total initial stream area = 7.600(Ac.)  
Pervious area fraction = 0.100

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\*\*\*\*\*  
Process from Point/Station 103.000 to Point/Station 102.000  
\*\*\*\* SUBAREA FLOW ADDITION \*\*\*\*  
-----

COMMERCIAL subarea type  
Runoff Coefficient = 0.885  
Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Time of concentration = 10.12 min.  
Rainfall intensity = 2.921(In/Hr) for a 100.0 year storm  
Subarea runoff = 0.517(CFS) for 0.200(Ac.)  
Total runoff = 20.160(CFS) Total area = 7.800(Ac.)

\*\*\*\*\*  
Process from Point/Station 102.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

---

Upstream point/station elevation = 1545.700(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 190.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 20.160(CFS)  
Nearest computed pipe diameter = 21.00(In.)  
Calculated individual pipe flow = 20.160(CFS)  
Normal flow depth in pipe = 15.94(In.)  
Flow top width inside pipe = 17.96(In.)  
Critical Depth = 19.21(In.)  
Pipe flow velocity = 10.29(Ft/s)  
Travel time through pipe = 0.31 min.  
Time of concentration (TC) = 10.43 min.

\*\*\*\*\*  
Process from Point/Station 102.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

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Along Main Stream number: 1 in normal stream number 1  
Stream flow area = 7.800(Ac.)  
Runoff from this stream = 20.160(CFS)  
Time of concentration = 10.43 min.  
Rainfall intensity = 2.878(In/Hr)

\*\*\*\*\*  
Process from Point/Station 105.000 to Point/Station 106.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*

---

Initial area flow distance = 987.000(Ft.)  
Top (of initial area) elevation = 1562.000(Ft.)  
Bottom (of initial area) elevation = 1552.300(Ft.)  
Difference in elevation = 9.700(Ft.)  
Slope = 0.00983 s(percent)= 0.98  
TC = k(0.300)\*[(length^3)/(elevation change)]^0.2  
Initial area time of concentration = 11.922 min.  
Rainfall intensity = 2.692(In/Hr) for a 100.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.884  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 10.228(CFS)  
Total initial stream area = 4.300(Ac.)  
Pervious area fraction = 0.100

\*\*\*\*\*  
Process from Point/Station 106.000 to Point/Station 107.000  
\*\*\*\* IMPROVED CHANNEL TRAVEL TIME \*\*\*\*

---

Upstream point elevation = 1552.300(Ft.)  
Downstream point elevation = 1547.900(Ft.)  
Channel length thru subarea = 229.000(Ft.)  
Channel base width = 4.000(Ft.)  
Slope or 'Z' of left channel bank = 0.000  
Slope or 'Z' of right channel bank = 0.000

Estimated mean flow rate at midpoint of channel = 10.704(CFS)  
Manning's 'N' = 0.015  
Maximum depth of channel = 1.500(Ft.)  
Flow(q) thru subarea = 10.704(CFS)  
Depth of flow = 0.403(Ft.), Average velocity = 6.633(Ft/s)  
Channel flow top width = 4.000(Ft.)  
Flow velocity = 6.63(Ft/s)  
Travel time = 0.58 min.  
Time of concentration = 12.50 min.

Sub-Channel No. 1 Critical depth = 0.609(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity= 4.391(Ft/s)  
' ' ' Critical flow area = 2.438(Sq.Ft)

Adding area flow to channel  
COMMERCIAL subarea type  
Runoff Coefficient = 0.883  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Rainfall intensity = 2.629(In/Hr) for a 100.0 year storm  
Subarea runoff = 0.929(CFS) for 0.400(Ac.)  
Total runoff = 11.157(CFS) Total area = 4.700(Ac.)  
Depth of flow = 0.414(Ft.), Average velocity = 6.732(Ft/s)

Sub-Channel No. 1 Critical depth = 0.625(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity= 4.463(Ft/s)  
' ' ' Critical flow area = 2.500(Sq.Ft)

\*\*\*\*\*  
Process from Point/Station 107.000 to Point/Station 104.000  
\*\*\*\* IMPROVED CHANNEL TRAVEL TIME \*\*\*\*

---

Upstream point elevation = 1547.900(Ft.)  
Downstream point elevation = 1547.300(Ft.)  
Channel length thru subarea = 118.000(Ft.)  
Channel base width = 4.000(Ft.)  
Slope or 'Z' of left channel bank = 0.000  
Slope or 'Z' of right channel bank = 0.000  
Estimated mean flow rate at midpoint of channel = 21.275(CFS)  
Manning's 'N' = 0.015  
Maximum depth of channel = 1.500(Ft.)  
Flow(q) thru subarea = 21.275(CFS)  
Depth of flow = 0.991(Ft.), Average velocity = 5.369(Ft/s)  
Channel flow top width = 4.000(Ft.)  
Flow Velocity = 5.37(Ft/s)  
Travel time = 0.37 min.  
Time of concentration = 12.86 min.

Sub-Channel No. 1 Critical depth = 0.953(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity= 5.580(Ft/s)  
' ' ' Critical flow area = 3.813(Sq.Ft)

Adding area flow to channel  
COMMERCIAL subarea type  
Runoff Coefficient = 0.883  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Rainfall intensity = 2.592(In/Hr) for a 100.0 year storm  
Subarea runoff = 20.140(CFS) for 8.800(Ac.)  
Total runoff = 31.298(CFS) Total area = 13.500(Ac.)  
Depth of flow = 1.299(Ft.), Average velocity = 6.024(Ft/s)

Sub-Channel No. 1 Critical depth = 1.234(Ft.)  
' ' ' Critical flow top width = 4.000(Ft.)  
' ' ' Critical flow velocity = 6.339(Ft/s)  
' ' ' Critical flow area = 4.938(Sq.Ft)

\*\*\*\*\*  
Process from Point/Station 107.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

---

Upstream point/station elevation = 1543.900(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 20.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 31.298(CFS)  
Nearest computed pipe diameter = 18.00(In.)  
Calculated individual pipe flow = 31.298(CFS)  
Normal flow depth in pipe = 14.65(In.)  
Flow top width inside pipe = 14.01(In.)  
Critical depth could not be calculated.  
Pipe flow velocity = 20.33(Ft/s)  
Travel time through pipe = 0.02 min.  
Time of concentration (TC) = 12.88 min.

\*\*\*\*\*  
Process from Point/Station 107.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

---

Along Main Stream number: 1 in normal stream number 2  
Stream flow area = 13.500(Ac.)  
Runoff from this stream = 31.298(CFS)  
Time of concentration = 12.88 min.  
Rainfall intensity = 2.590(In/Hr)

\*\*\*\*\*  
Process from Point/Station 108.000 to Point/Station 109.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*

---

Initial area flow distance = 228.000(Ft.)  
Top (of initial area) elevation = 1554.000(Ft.)  
Bottom (of initial area) elevation = 1548.400(Ft.)  
Difference in elevation = 5.600(Ft.)  
Slope = 0.02456 s(percent) = 2.46  
TC =  $k(0.300) * [(length^3) / (elevation\ change)]^{0.2}$   
Initial area time of concentration = 5.524 min.  
Rainfall intensity = 3.955(In/Hr) for a 100.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.888  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 1.405(CFS)  
Total initial stream area = 0.400(Ac.)  
Pervious area fraction = 0.100

\*\*\*\*\*  
Process from Point/Station 109.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

---

Upstream point/station elevation = 1544.400(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 20.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 1.405(CFS)  
Nearest computed pipe diameter = 6.00(In.)  
Calculated individual pipe flow = 1.405(CFS)  
Normal flow depth in pipe = 3.84(In.)  
Flow top width inside pipe = 5.76(In.)  
Critical depth could not be calculated.  
Pipe flow velocity = 10.60(Ft/s)

Travel time through pipe = 0.03 min.  
Time of concentration (TC) = 5.56 min.

\*\*\*\*\*  
Process from Point/Station 109.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

---

Along Main Stream number: 1 in normal stream number 3  
Stream flow area = 0.400(Ac.)  
Runoff from this stream = 1.405(CFS)  
Time of concentration = 5.56 min.  
Rainfall intensity = 3.944(In/Hr)

\*\*\*\*\*  
Process from Point/Station 201.000 to Point/Station 202.000  
\*\*\*\* INITIAL AREA EVALUATION \*\*\*\*

---

Initial area flow distance = 470.000(Ft.)  
Top (of initial area) elevation = 1554.400(Ft.)  
Bottom (of initial area) elevation = 1548.800(Ft.)  
Difference in elevation = 5.600(Ft.)  
Slope = 0.01191 s(percent)= 1.19  
TC =  $k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$   
Initial area time of concentration = 8.526 min.  
Rainfall intensity = 3.183(In/Hr) for a 100.0 year storm  
COMMERCIAL subarea type  
Runoff Coefficient = 0.886  
Decimal fraction soil group A = 0.000  
Decimal fraction soil group B = 0.000  
Decimal fraction soil group C = 1.000  
Decimal fraction soil group D = 0.000  
RI index for soil(AMC 2) = 69.00  
Pervious area fraction = 0.100; Impervious fraction = 0.900  
Initial subarea runoff = 22.557(CFS)  
Total initial stream area = 8.000(Ac.)  
Pervious area fraction = 0.100

\*\*\*\*\*  
Process from Point/Station 202.000 to Point/Station 104.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

---

Upstream point/station elevation = 1544.800(Ft.)  
Downstream point/station elevation = 1542.100(Ft.)  
Pipe length = 590.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 22.557(CFS)  
Nearest computed pipe diameter = 30.00(In.)  
Calculated individual pipe flow = 22.557(CFS)  
Normal flow depth in pipe = 20.53(In.)  
Flow top width inside pipe = 27.89(In.)  
Critical Depth = 19.38(In.)  
Pipe flow velocity = 6.30(Ft/s)  
Travel time through pipe = 1.56 min.  
Time of concentration (TC) = 10.09 min.

\*\*\*\*\*  
Process from Point/Station 202.000 to Point/Station 104.000  
\*\*\*\* CONFLUENCE OF MINOR STREAMS \*\*\*\*

---

Along Main Stream number: 1 in normal stream number 4  
Stream flow area = 8.000(Ac.)  
Runoff from this stream = 22.557(CFS)  
Time of concentration = 10.09 min.  
Rainfall intensity = 2.927(In/Hr)  
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	20.160	10.43	2.878
2	31.298	12.88	2.590

3	1.405	5.56	3.944
4	22.557	10.09	2.927

Largest stream flow has longer time of concentration

Qp = 31.298 + sum of

Qb	Ia/Ib		
20.160 *	0.900 =	18.142	
Qb	Ia/Ib		
1.405 *	0.657 =	0.923	
Qb	Ia/Ib		
22.557 *	0.885 =	19.962	

Qp = 70.324

Total of 4 streams to confluence:  
Flow rates before confluence point:  
20.160      31.298      1.405      22.557

Area of streams before confluence:  
7.800      13.500      0.400      8.000

Results of confluence:  
Total flow rate = 70.324(CFS)  
Time of concentration = 12.880 min.  
Effective stream area after confluence = 29.700(Ac.)

+++++  
Process from Point/Station 104.000 to Point/Station 110.000  
\*\*\*\* PIPEFLOW TRAVEL TIME (Program estimated size) \*\*\*\*

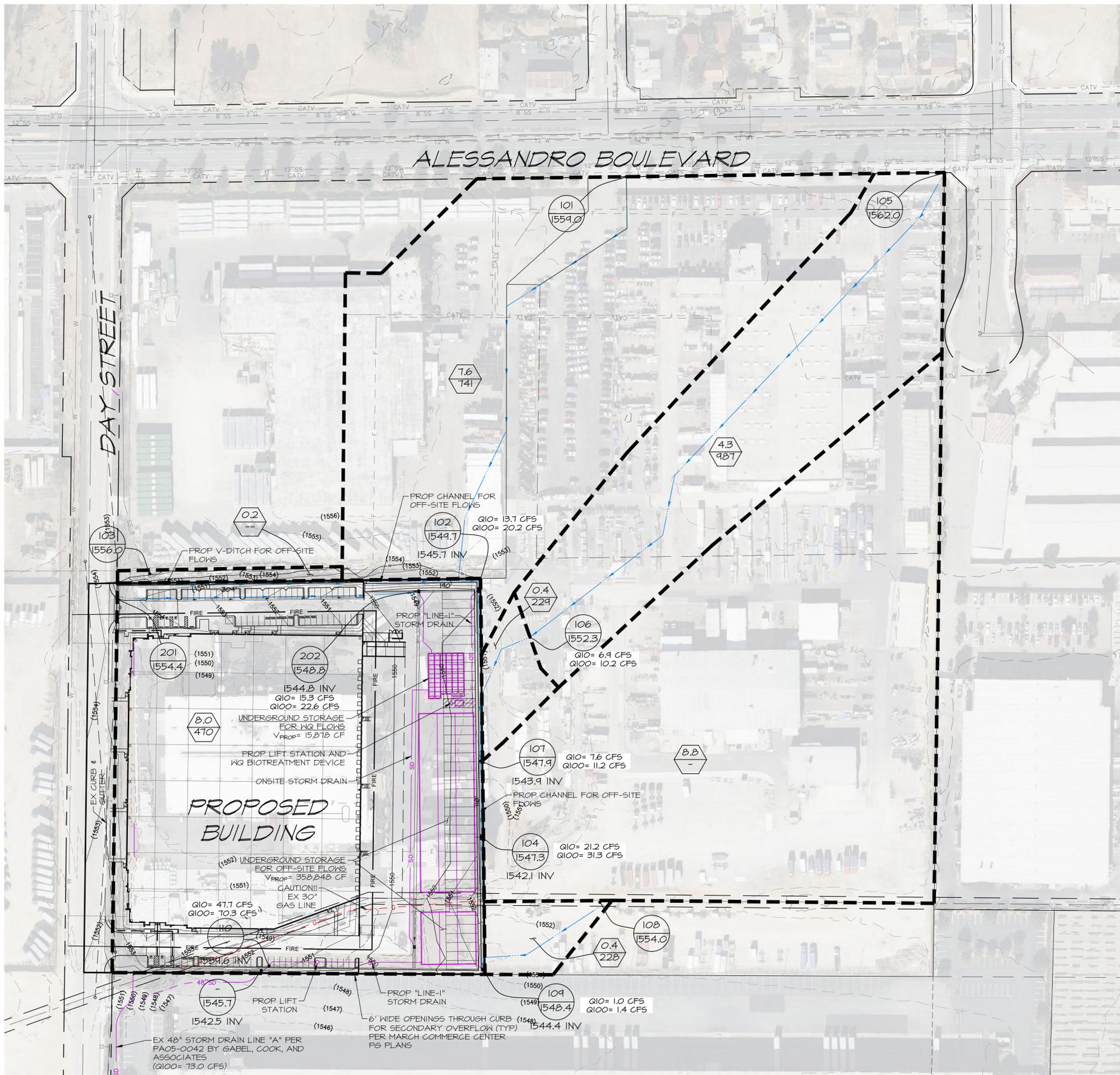
---

Upstream point/station elevation = 1541.100(Ft.)  
Downstream point/station elevation = 1539.600(Ft.)  
Pipe length = 306.00(Ft.) Manning's N = 0.013  
No. of pipes = 1 Required pipe flow = 70.324(CFS)  
Nearest computed pipe diameter = 42.00(In.)  
Calculated individual pipe flow = 70.324(CFS)  
Normal flow depth in pipe = 34.36(In.)  
Flow top width inside pipe = 32.41(In.)  
Critical Depth = 31.53(In.)  
Pipe flow velocity = 8.35(Ft/s)  
Travel time through pipe = 0.61 min.  
Time of concentration (TC) = 13.49 min.  
End of computations, total study area = 29.70 (Ac.)  
The following figures may  
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100  
Area averaged RI index number = 69.0

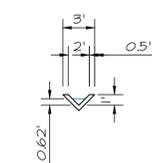
**RATIONAL METHOD HYDROLOGY MAPS**

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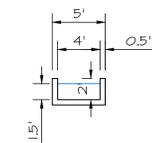


**LEGEND**

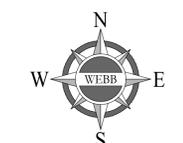
- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- NODE DESIGNATION  
NODE ELEVATION
- \*INVERT ELEVATION
- WATERSHED AREA (ACRES)  
LONGEST WATER PATH (FT)



**PROP V-DITCH FOR OFF-SITE FLOWS**  
 V-DITCH PLACED AT GRADE WITH PROPOSED PARKING LOT. OFF-SITE GRADING TO HIGH POINT REQUIRED TO DIRECT FLOWS INTO V-DITCH.



**PROP CHANNEL FOR OFF-SITE FLOWS**  
 CHANNEL EDGE FOLLOWS EXISTING GRADES AT PROJECT BOUNDARY. GRATED INLETS PLACED AT EXISTING LOW SPOTS TO INTERCEPT FLOWS



**CITY OF MORENO VALLEY**

**RATIONAL METHOD HYDROLOGY MAP  
 FIRST DAY STREET LOGISTICS (PEN22-0144)**

SCALE: 1" = 80'	<b>ALBERTA A. ENGINEERING CONSULTANTS</b> 3788 MCCRAY STREET RIVERSIDE CA 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. 22-0028 SHEET 1 OF 1 SHEETS DWG. NO.
DATE: 2/22/23	<b>WEBB ASSOCIATES</b>	
DESIGNED: ABE		
CHECKED: SKK		
PLN CK REF:		
F.B.		

H:\2022\22-0028\DRAINAGE\HYD.DWG FOLDER\22-0028 P-HYD.DWG 2/22/2023 10:06:36 AM

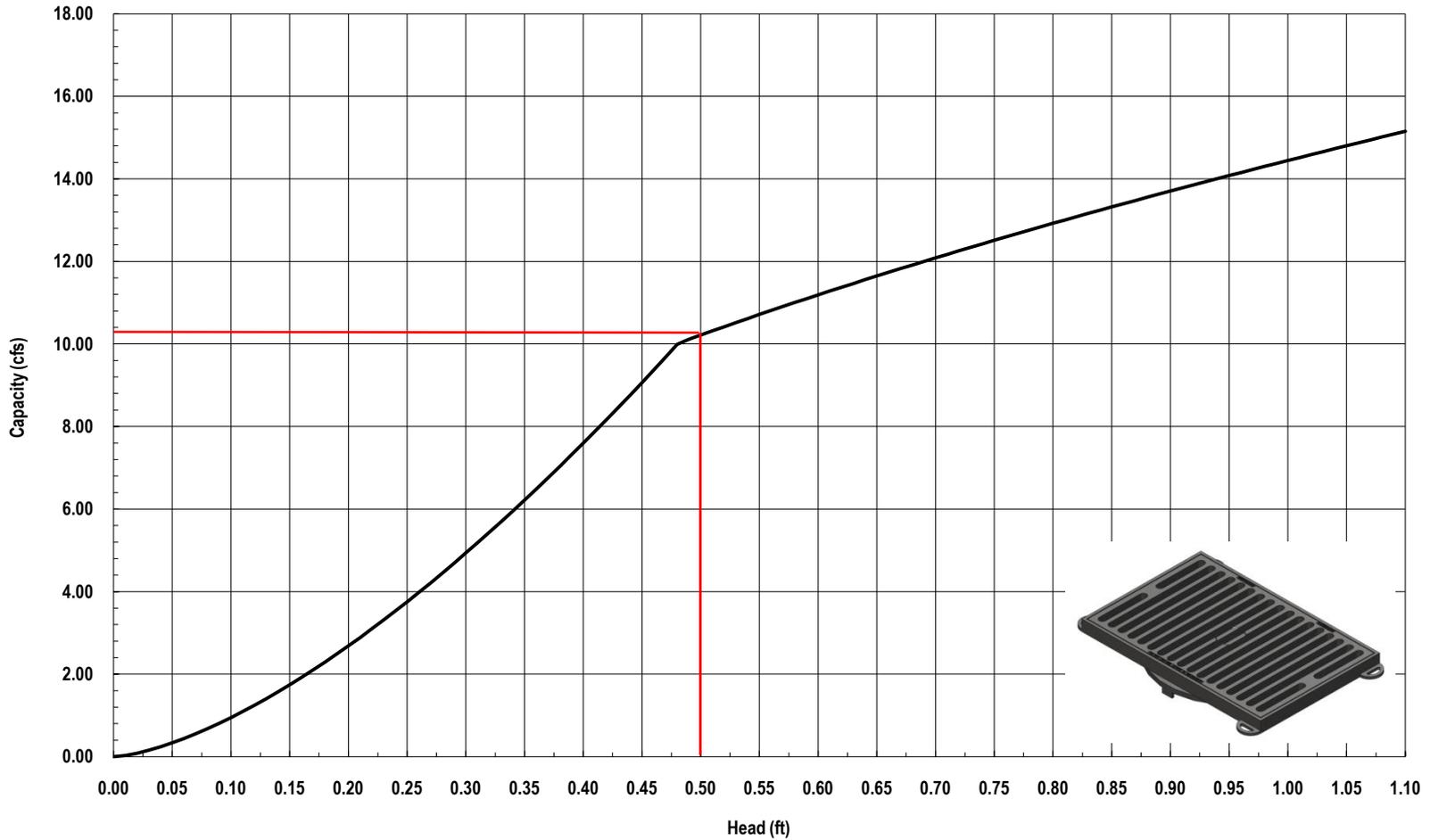
## **APPENDIX B – HYDRAULIC ANALYSIS**

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**INLET CAPACITY SIZING**

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# Nyloplast 2' x 3' Road & Highway Grate Inlet Capacity Chart



3130 Verona Avenue • Buford, GA 30518  
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490  
© Nyloplast Inlet Capacity Charts June 2012

**PRELIMINARY PIPE SIZING – LINE-1**

---

\*\*\*\*\*

HYDRAULIC ELEMENTS - I PROGRAM PACKAGE  
(C) Copyright 1982-2013 Advanced Engineering Software (aes)  
Ver. 20.0 Release Date: 06/01/2013 License ID 1238

Analysis prepared by:

-----  
TIME/DATE OF STUDY: 10:15 06/03/2022  
=====

Problem Descriptions:  
22-0028 FIR Day Street  
Preliminary Pipe Sizing - Line-1  
2022-06-03 ABE

\*\*\*\*\*

>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<

-----  
PIPE SLOPE (FEET/FEET) = 0.0050  
PIPEFLOW (CFS) = 70.80  
MANNINGS FRICTION FACTOR = 0.015000  
>>>>SOFFIT-FLOW PIPE DIAMETER (FEET) = 3.686  
=====

**V-DITCHES AND CHANNELS SIZING**

---

Problem Descriptions:

FIR DAY STREET WO 22-0028  
Channel for Offsite Flows (4' wide)  
2022-05-25 ABE

\*\*\*\*\*

>>>>CHANNEL INPUT INFORMATION<<<<

-----  
NORMAL DEPTH(FEET) = 1.50  
CHANNEL Z1 (HORIZONTAL/VERTICAL) = 0.00  
Z2 (HORIZONTAL/VERTICAL) = 0.00  
BASEWIDTH(FEET) = 4.00  
CONSTANT CHANNEL SLOPE(FEET/FEET) = 0.005000  
MANNINGS FRICTION FACTOR = 0.0150  
=====

NORMAL-DEPTH FLOW INFORMATION:

-----  
>>>>> NORMAL DEPTH FLOW(CFS) = 37.93  
FLOW TOP-WIDTH(FEET) = 4.00  
FLOW AREA(SQUARE FEET) = 6.00  
HYDRAULIC DEPTH(FEET) = 1.50  
FLOW AVERAGE VELOCITY(FEET/SEC.) = 6.32  
UNIFORM FROUDE NUMBER = 0.910  
PRESSURE + MOMENTUM(POUNDS) = 745.36  
AVERAGED VELOCITY HEAD(FEET) = 0.620  
SPECIFIC ENERGY(FEET) = 2.120  
=====

CRITICAL-DEPTH FLOW INFORMATION:

-----  
CRITICAL FLOW TOP-WIDTH(FEET) = 4.00  
CRITICAL FLOW AREA(SQUARE FEET) = 5.63  
CRITICAL FLOW HYDRAULIC DEPTH(FEET) = 1.41  
CRITICAL FLOW AVERAGE VELOCITY(FEET/SEC.) = 6.73  
CRITICAL DEPTH(FEET) = 1.41  
CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) = 742.33  
AVERAGED CRITICAL FLOW VELOCITY HEAD(FEET) = 0.704  
CRITICAL FLOW SPECIFIC ENERGY(FEET) = 2.112  
=====

Problem Descriptions:

FIR DAY STREET WO 22-0028  
Channel for Offsite Flows (V-DITCH)  
2022-05-25 ABE

\*\*\*\*\*

>>>>CHANNEL INPUT INFORMATION<<<<

-----  
CHANNEL Z1 (HORIZONTAL/VERTICAL) = 1.00  
          Z2 (HORIZONTAL/VERTICAL) = 1.00  
BASEWIDTH (FEET) = 0.00  
CONSTANT CHANNEL SLOPE (FEET/FEET) = 0.005000  
UNIFORM FLOW (CFS) = 1.00  
MANNINGS FRICTION FACTOR = 0.0150  
=====

NORMAL-DEPTH FLOW INFORMATION:

-----  
>>>>> NORMAL DEPTH (FEET) = 0.62  
FLOW TOP-WIDTH (FEET) = 1.25  
FLOW AREA (SQUARE FEET) = 0.39  
HYDRAULIC DEPTH (FEET) = 0.31  
FLOW AVERAGE VELOCITY (FEET/SEC.) = 2.57  
UNIFORM FROUDE NUMBER = 0.811  
PRESSURE + MOMENTUM (POUNDS) = 10.03  
AVERAGED VELOCITY HEAD (FEET) = 0.103  
SPECIFIC ENERGY (FEET) = 0.726  
=====

CRITICAL-DEPTH FLOW INFORMATION:

-----  
CRITICAL FLOW TOP-WIDTH (FEET) = 1.15  
CRITICAL FLOW AREA (SQUARE FEET) = 0.33  
CRITICAL FLOW HYDRAULIC DEPTH (FEET) = 0.29  
CRITICAL FLOW AVERAGE VELOCITY (FEET/SEC.) = 3.04  
CRITICAL DEPTH (FEET) = 0.57  
CRITICAL FLOW PRESSURE + MOMENTUM (POUNDS) = 9.82  
AVERAGED CRITICAL FLOW VELOCITY HEAD (FEET) = 0.144  
CRITICAL FLOW SPECIFIC ENERGY (FEET) = 0.717  
=====

## **APPENDIX C – UNIT HYDROGRAPH ANALYSIS**

---

**EXISTING CONDITION UNIT HYDROGRAPHS**

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**EXISTING CONDITION**  
**2-YEAR, 24-HOUR UNIT HYDROGRAPH**

---

ONSITEPRE242

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1  
Study date 05/31/22 File: ONSITEPRE242.out

+++++-----

Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used

English Units used in output format

-----  
22-0028 - FIR DAY STREET  
UNIT HYDROGRAPH ANALYSIS  
EXISTING CONDITION, 2-YEAR 24-HOUR  
FN: ONSITEPRE242.OUT- ABE

-----  
Drainage Area = 29.60(Ac.) = 0.046 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 29.60(Ac.) = 0.046 Sq. Mi.  
Length along longest watercourse = 1866.00(Ft.)  
Length along longest watercourse measured to centroid = 936.00(Ft.)  
Length along longest watercourse = 0.353 Mi.  
Length along longest watercourse measured to centroid = 0.177 Mi.  
Difference in elevation = 16.30(Ft.)  
Slope along watercourse = 46.1222 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.061 Hr.  
Lag time = 3.64 Min.  
25% of lag time = 0.91 Min.  
40% of lag time = 1.46 Min.  
Unit time = 5.00 Min.  
Duration of storm = 24 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.60	1.80	53.28

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.60	4.00	118.40

STORM EVENT (YEAR) = 2.00  
Area Averaged 2-Year Rainfall = 1.800(In)  
Area Averaged 100-Year Rainfall = 4.000(In)

Point rain (area averaged) = 1.800(In)  
Areal adjustment factor = 99.99 %

Adjusted average point rain = 1.800(In)

Sub-Area Data:

Area(Ac.)      Runoff Index      Impervious %  
 29.600          69.00          0.900  
 Total Area Entered = 29.60(Ac.)

RI    RI    Infil. Rate    Impervious    Adj. Infil. Rate    Area%    F  
 AMC2 AMC-1    (In/Hr)    (Dec.%)    (In/Hr)    (Dec.)    (In/Hr)  
 69.0 49.8    0.574    0.900    0.109    1.000    0.109

Sum (F) = 0.109

Area averaged mean soil loss (F) (In/Hr) = 0.109

Minimum soil loss rate ((In/Hr)) = 0.055

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.200

Unit Hydrograph  
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period    Time % of lag    Distribution    Unit Hydrograph  
 (hrs)                      Graph %                      (CFS)

1	0.083	137.350	29.988	8.946
2	0.167	274.701	47.875	14.282
3	0.250	412.051	11.981	3.574
4	0.333	549.401	5.296	1.580
5	0.417	686.752	2.856	0.852
6	0.500	824.102	2.004	0.598
Sum = 100.000			Sum=	29.831

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)	
			Max	Low		
1	0.08	0.07	0.014	( 0.193)	0.003	0.012
2	0.17	0.07	0.014	( 0.193)	0.003	0.012
3	0.25	0.07	0.014	( 0.192)	0.003	0.012
4	0.33	0.10	0.022	( 0.191)	0.004	0.017
5	0.42	0.10	0.022	( 0.190)	0.004	0.017
6	0.50	0.10	0.022	( 0.190)	0.004	0.017
7	0.58	0.10	0.022	( 0.189)	0.004	0.017
8	0.67	0.10	0.022	( 0.188)	0.004	0.017
9	0.75	0.10	0.022	( 0.187)	0.004	0.017
10	0.83	0.13	0.029	( 0.187)	0.006	0.023
11	0.92	0.13	0.029	( 0.186)	0.006	0.023
12	1.00	0.13	0.029	( 0.185)	0.006	0.023
13	1.08	0.10	0.022	( 0.184)	0.004	0.017
14	1.17	0.10	0.022	( 0.184)	0.004	0.017
15	1.25	0.10	0.022	( 0.183)	0.004	0.017
16	1.33	0.10	0.022	( 0.182)	0.004	0.017
17	1.42	0.10	0.022	( 0.182)	0.004	0.017
18	1.50	0.10	0.022	( 0.181)	0.004	0.017
19	1.58	0.10	0.022	( 0.180)	0.004	0.017
20	1.67	0.10	0.022	( 0.179)	0.004	0.017
21	1.75	0.10	0.022	( 0.179)	0.004	0.017
22	1.83	0.13	0.029	( 0.178)	0.006	0.023
23	1.92	0.13	0.029	( 0.177)	0.006	0.023
24	2.00	0.13	0.029	( 0.176)	0.006	0.023
25	2.08	0.13	0.029	( 0.176)	0.006	0.023

ONSITEPRE242

26	2.17	0.13	0.029	( 0.175)	0.006	0.023
27	2.25	0.13	0.029	( 0.174)	0.006	0.023
28	2.33	0.13	0.029	( 0.174)	0.006	0.023
29	2.42	0.13	0.029	( 0.173)	0.006	0.023
30	2.50	0.13	0.029	( 0.172)	0.006	0.023
31	2.58	0.17	0.036	( 0.172)	0.007	0.029
32	2.67	0.17	0.036	( 0.171)	0.007	0.029
33	2.75	0.17	0.036	( 0.170)	0.007	0.029
34	2.83	0.17	0.036	( 0.169)	0.007	0.029
35	2.92	0.17	0.036	( 0.169)	0.007	0.029
36	3.00	0.17	0.036	( 0.168)	0.007	0.029
37	3.08	0.17	0.036	( 0.167)	0.007	0.029
38	3.17	0.17	0.036	( 0.167)	0.007	0.029
39	3.25	0.17	0.036	( 0.166)	0.007	0.029
40	3.33	0.17	0.036	( 0.165)	0.007	0.029
41	3.42	0.17	0.036	( 0.165)	0.007	0.029
42	3.50	0.17	0.036	( 0.164)	0.007	0.029
43	3.58	0.17	0.036	( 0.163)	0.007	0.029
44	3.67	0.17	0.036	( 0.162)	0.007	0.029
45	3.75	0.17	0.036	( 0.162)	0.007	0.029
46	3.83	0.20	0.043	( 0.161)	0.009	0.035
47	3.92	0.20	0.043	( 0.160)	0.009	0.035
48	4.00	0.20	0.043	( 0.160)	0.009	0.035
49	4.08	0.20	0.043	( 0.159)	0.009	0.035
50	4.17	0.20	0.043	( 0.158)	0.009	0.035
51	4.25	0.20	0.043	( 0.158)	0.009	0.035
52	4.33	0.23	0.050	( 0.157)	0.010	0.040
53	4.42	0.23	0.050	( 0.156)	0.010	0.040
54	4.50	0.23	0.050	( 0.156)	0.010	0.040
55	4.58	0.23	0.050	( 0.155)	0.010	0.040
56	4.67	0.23	0.050	( 0.154)	0.010	0.040
57	4.75	0.23	0.050	( 0.154)	0.010	0.040
58	4.83	0.27	0.058	( 0.153)	0.012	0.046
59	4.92	0.27	0.058	( 0.152)	0.012	0.046
60	5.00	0.27	0.058	( 0.152)	0.012	0.046
61	5.08	0.20	0.043	( 0.151)	0.009	0.035
62	5.17	0.20	0.043	( 0.150)	0.009	0.035
63	5.25	0.20	0.043	( 0.150)	0.009	0.035
64	5.33	0.23	0.050	( 0.149)	0.010	0.040
65	5.42	0.23	0.050	( 0.148)	0.010	0.040
66	5.50	0.23	0.050	( 0.148)	0.010	0.040
67	5.58	0.27	0.058	( 0.147)	0.012	0.046
68	5.67	0.27	0.058	( 0.147)	0.012	0.046
69	5.75	0.27	0.058	( 0.146)	0.012	0.046
70	5.83	0.27	0.058	( 0.145)	0.012	0.046
71	5.92	0.27	0.058	( 0.145)	0.012	0.046
72	6.00	0.27	0.058	( 0.144)	0.012	0.046
73	6.08	0.30	0.065	( 0.143)	0.013	0.052
74	6.17	0.30	0.065	( 0.143)	0.013	0.052
75	6.25	0.30	0.065	( 0.142)	0.013	0.052
76	6.33	0.30	0.065	( 0.141)	0.013	0.052
77	6.42	0.30	0.065	( 0.141)	0.013	0.052
78	6.50	0.30	0.065	( 0.140)	0.013	0.052
79	6.58	0.33	0.072	( 0.140)	0.014	0.058
80	6.67	0.33	0.072	( 0.139)	0.014	0.058
81	6.75	0.33	0.072	( 0.138)	0.014	0.058
82	6.83	0.33	0.072	( 0.138)	0.014	0.058
83	6.92	0.33	0.072	( 0.137)	0.014	0.058
84	7.00	0.33	0.072	( 0.136)	0.014	0.058
85	7.08	0.33	0.072	( 0.136)	0.014	0.058
86	7.17	0.33	0.072	( 0.135)	0.014	0.058
87	7.25	0.33	0.072	( 0.135)	0.014	0.058
88	7.33	0.37	0.079	( 0.134)	0.016	0.063
89	7.42	0.37	0.079	( 0.133)	0.016	0.063
90	7.50	0.37	0.079	( 0.133)	0.016	0.063
91	7.58	0.40	0.086	( 0.132)	0.017	0.069

ONSITEPRE242

92	7.67	0.40	0.086	( 0.131)	0.017	0.069
93	7.75	0.40	0.086	( 0.131)	0.017	0.069
94	7.83	0.43	0.094	( 0.130)	0.019	0.075
95	7.92	0.43	0.094	( 0.130)	0.019	0.075
96	8.00	0.43	0.094	( 0.129)	0.019	0.075
97	8.08	0.50	0.108	( 0.128)	0.022	0.086
98	8.17	0.50	0.108	( 0.128)	0.022	0.086
99	8.25	0.50	0.108	( 0.127)	0.022	0.086
100	8.33	0.50	0.108	( 0.127)	0.022	0.086
101	8.42	0.50	0.108	( 0.126)	0.022	0.086
102	8.50	0.50	0.108	( 0.125)	0.022	0.086
103	8.58	0.53	0.115	( 0.125)	0.023	0.092
104	8.67	0.53	0.115	( 0.124)	0.023	0.092
105	8.75	0.53	0.115	( 0.124)	0.023	0.092
106	8.83	0.57	0.122	( 0.123)	0.024	0.098
107	8.92	0.57	0.122	( 0.123)	0.024	0.098
108	9.00	0.57	0.122	( 0.122)	0.024	0.098
109	9.08	0.63	0.137	( 0.121)	0.027	0.109
110	9.17	0.63	0.137	( 0.121)	0.027	0.109
111	9.25	0.63	0.137	( 0.120)	0.027	0.109
112	9.33	0.67	0.144	( 0.120)	0.029	0.115
113	9.42	0.67	0.144	( 0.119)	0.029	0.115
114	9.50	0.67	0.144	( 0.119)	0.029	0.115
115	9.58	0.70	0.151	( 0.118)	0.030	0.121
116	9.67	0.70	0.151	( 0.117)	0.030	0.121
117	9.75	0.70	0.151	( 0.117)	0.030	0.121
118	9.83	0.73	0.158	( 0.116)	0.032	0.127
119	9.92	0.73	0.158	( 0.116)	0.032	0.127
120	10.00	0.73	0.158	( 0.115)	0.032	0.127
121	10.08	0.50	0.108	( 0.115)	0.022	0.086
122	10.17	0.50	0.108	( 0.114)	0.022	0.086
123	10.25	0.50	0.108	( 0.113)	0.022	0.086
124	10.33	0.50	0.108	( 0.113)	0.022	0.086
125	10.42	0.50	0.108	( 0.112)	0.022	0.086
126	10.50	0.50	0.108	( 0.112)	0.022	0.086
127	10.58	0.67	0.144	( 0.111)	0.029	0.115
128	10.67	0.67	0.144	( 0.111)	0.029	0.115
129	10.75	0.67	0.144	( 0.110)	0.029	0.115
130	10.83	0.67	0.144	( 0.110)	0.029	0.115
131	10.92	0.67	0.144	( 0.109)	0.029	0.115
132	11.00	0.67	0.144	( 0.109)	0.029	0.115
133	11.08	0.63	0.137	( 0.108)	0.027	0.109
134	11.17	0.63	0.137	( 0.108)	0.027	0.109
135	11.25	0.63	0.137	( 0.107)	0.027	0.109
136	11.33	0.63	0.137	( 0.106)	0.027	0.109
137	11.42	0.63	0.137	( 0.106)	0.027	0.109
138	11.50	0.63	0.137	( 0.105)	0.027	0.109
139	11.58	0.57	0.122	( 0.105)	0.024	0.098
140	11.67	0.57	0.122	( 0.104)	0.024	0.098
141	11.75	0.57	0.122	( 0.104)	0.024	0.098
142	11.83	0.60	0.130	( 0.103)	0.026	0.104
143	11.92	0.60	0.130	( 0.103)	0.026	0.104
144	12.00	0.60	0.130	( 0.102)	0.026	0.104
145	12.08	0.83	0.180	( 0.102)	0.036	0.144
146	12.17	0.83	0.180	( 0.101)	0.036	0.144
147	12.25	0.83	0.180	( 0.101)	0.036	0.144
148	12.33	0.87	0.187	( 0.100)	0.037	0.150
149	12.42	0.87	0.187	( 0.100)	0.037	0.150
150	12.50	0.87	0.187	( 0.099)	0.037	0.150
151	12.58	0.93	0.202	( 0.099)	0.040	0.161
152	12.67	0.93	0.202	( 0.098)	0.040	0.161
153	12.75	0.93	0.202	( 0.098)	0.040	0.161
154	12.83	0.97	0.209	( 0.097)	0.042	0.167
155	12.92	0.97	0.209	( 0.097)	0.042	0.167
156	13.00	0.97	0.209	( 0.096)	0.042	0.167
157	13.08	1.13	0.245	( 0.096)	0.049	0.196

ONSITEPRE242

158	13.17	1.13	0.245	( 0.095)	0.049	0.196
159	13.25	1.13	0.245	( 0.095)	0.049	0.196
160	13.33	1.13	0.245	( 0.094)	0.049	0.196
161	13.42	1.13	0.245	( 0.094)	0.049	0.196
162	13.50	1.13	0.245	( 0.093)	0.049	0.196
163	13.58	0.77	0.166	( 0.093)	0.033	0.132
164	13.67	0.77	0.166	( 0.092)	0.033	0.132
165	13.75	0.77	0.166	( 0.092)	0.033	0.132
166	13.83	0.77	0.166	( 0.092)	0.033	0.132
167	13.92	0.77	0.166	( 0.091)	0.033	0.132
168	14.00	0.77	0.166	( 0.091)	0.033	0.132
169	14.08	0.90	0.194	( 0.090)	0.039	0.156
170	14.17	0.90	0.194	( 0.090)	0.039	0.156
171	14.25	0.90	0.194	( 0.089)	0.039	0.156
172	14.33	0.87	0.187	( 0.089)	0.037	0.150
173	14.42	0.87	0.187	( 0.088)	0.037	0.150
174	14.50	0.87	0.187	( 0.088)	0.037	0.150
175	14.58	0.87	0.187	( 0.087)	0.037	0.150
176	14.67	0.87	0.187	( 0.087)	0.037	0.150
177	14.75	0.87	0.187	( 0.086)	0.037	0.150
178	14.83	0.83	0.180	( 0.086)	0.036	0.144
179	14.92	0.83	0.180	( 0.086)	0.036	0.144
180	15.00	0.83	0.180	( 0.085)	0.036	0.144
181	15.08	0.80	0.173	( 0.085)	0.035	0.138
182	15.17	0.80	0.173	( 0.084)	0.035	0.138
183	15.25	0.80	0.173	( 0.084)	0.035	0.138
184	15.33	0.77	0.166	( 0.083)	0.033	0.132
185	15.42	0.77	0.166	( 0.083)	0.033	0.132
186	15.50	0.77	0.166	( 0.083)	0.033	0.132
187	15.58	0.63	0.137	( 0.082)	0.027	0.109
188	15.67	0.63	0.137	( 0.082)	0.027	0.109
189	15.75	0.63	0.137	( 0.081)	0.027	0.109
190	15.83	0.63	0.137	( 0.081)	0.027	0.109
191	15.92	0.63	0.137	( 0.080)	0.027	0.109
192	16.00	0.63	0.137	( 0.080)	0.027	0.109
193	16.08	0.13	0.029	( 0.080)	0.006	0.023
194	16.17	0.13	0.029	( 0.079)	0.006	0.023
195	16.25	0.13	0.029	( 0.079)	0.006	0.023
196	16.33	0.13	0.029	( 0.078)	0.006	0.023
197	16.42	0.13	0.029	( 0.078)	0.006	0.023
198	16.50	0.13	0.029	( 0.078)	0.006	0.023
199	16.58	0.10	0.022	( 0.077)	0.004	0.017
200	16.67	0.10	0.022	( 0.077)	0.004	0.017
201	16.75	0.10	0.022	( 0.076)	0.004	0.017
202	16.83	0.10	0.022	( 0.076)	0.004	0.017
203	16.92	0.10	0.022	( 0.076)	0.004	0.017
204	17.00	0.10	0.022	( 0.075)	0.004	0.017
205	17.08	0.17	0.036	( 0.075)	0.007	0.029
206	17.17	0.17	0.036	( 0.075)	0.007	0.029
207	17.25	0.17	0.036	( 0.074)	0.007	0.029
208	17.33	0.17	0.036	( 0.074)	0.007	0.029
209	17.42	0.17	0.036	( 0.073)	0.007	0.029
210	17.50	0.17	0.036	( 0.073)	0.007	0.029
211	17.58	0.17	0.036	( 0.073)	0.007	0.029
212	17.67	0.17	0.036	( 0.072)	0.007	0.029
213	17.75	0.17	0.036	( 0.072)	0.007	0.029
214	17.83	0.13	0.029	( 0.072)	0.006	0.023
215	17.92	0.13	0.029	( 0.071)	0.006	0.023
216	18.00	0.13	0.029	( 0.071)	0.006	0.023
217	18.08	0.13	0.029	( 0.071)	0.006	0.023
218	18.17	0.13	0.029	( 0.070)	0.006	0.023
219	18.25	0.13	0.029	( 0.070)	0.006	0.023
220	18.33	0.13	0.029	( 0.070)	0.006	0.023
221	18.42	0.13	0.029	( 0.069)	0.006	0.023
222	18.50	0.13	0.029	( 0.069)	0.006	0.023
223	18.58	0.10	0.022	( 0.069)	0.004	0.017

ONSITEPRE242

224	18.67	0.10	0.022	( 0.068)	0.004	0.017
225	18.75	0.10	0.022	( 0.068)	0.004	0.017
226	18.83	0.07	0.014	( 0.068)	0.003	0.012
227	18.92	0.07	0.014	( 0.067)	0.003	0.012
228	19.00	0.07	0.014	( 0.067)	0.003	0.012
229	19.08	0.10	0.022	( 0.067)	0.004	0.017
230	19.17	0.10	0.022	( 0.066)	0.004	0.017
231	19.25	0.10	0.022	( 0.066)	0.004	0.017
232	19.33	0.13	0.029	( 0.066)	0.006	0.023
233	19.42	0.13	0.029	( 0.065)	0.006	0.023
234	19.50	0.13	0.029	( 0.065)	0.006	0.023
235	19.58	0.10	0.022	( 0.065)	0.004	0.017
236	19.67	0.10	0.022	( 0.064)	0.004	0.017
237	19.75	0.10	0.022	( 0.064)	0.004	0.017
238	19.83	0.07	0.014	( 0.064)	0.003	0.012
239	19.92	0.07	0.014	( 0.064)	0.003	0.012
240	20.00	0.07	0.014	( 0.063)	0.003	0.012
241	20.08	0.10	0.022	( 0.063)	0.004	0.017
242	20.17	0.10	0.022	( 0.063)	0.004	0.017
243	20.25	0.10	0.022	( 0.062)	0.004	0.017
244	20.33	0.10	0.022	( 0.062)	0.004	0.017
245	20.42	0.10	0.022	( 0.062)	0.004	0.017
246	20.50	0.10	0.022	( 0.062)	0.004	0.017
247	20.58	0.10	0.022	( 0.061)	0.004	0.017
248	20.67	0.10	0.022	( 0.061)	0.004	0.017
249	20.75	0.10	0.022	( 0.061)	0.004	0.017
250	20.83	0.07	0.014	( 0.061)	0.003	0.012
251	20.92	0.07	0.014	( 0.060)	0.003	0.012
252	21.00	0.07	0.014	( 0.060)	0.003	0.012
253	21.08	0.10	0.022	( 0.060)	0.004	0.017
254	21.17	0.10	0.022	( 0.060)	0.004	0.017
255	21.25	0.10	0.022	( 0.059)	0.004	0.017
256	21.33	0.07	0.014	( 0.059)	0.003	0.012
257	21.42	0.07	0.014	( 0.059)	0.003	0.012
258	21.50	0.07	0.014	( 0.059)	0.003	0.012
259	21.58	0.10	0.022	( 0.059)	0.004	0.017
260	21.67	0.10	0.022	( 0.058)	0.004	0.017
261	21.75	0.10	0.022	( 0.058)	0.004	0.017
262	21.83	0.07	0.014	( 0.058)	0.003	0.012
263	21.92	0.07	0.014	( 0.058)	0.003	0.012
264	22.00	0.07	0.014	( 0.058)	0.003	0.012
265	22.08	0.10	0.022	( 0.057)	0.004	0.017
266	22.17	0.10	0.022	( 0.057)	0.004	0.017
267	22.25	0.10	0.022	( 0.057)	0.004	0.017
268	22.33	0.07	0.014	( 0.057)	0.003	0.012
269	22.42	0.07	0.014	( 0.057)	0.003	0.012
270	22.50	0.07	0.014	( 0.057)	0.003	0.012
271	22.58	0.07	0.014	( 0.056)	0.003	0.012
272	22.67	0.07	0.014	( 0.056)	0.003	0.012
273	22.75	0.07	0.014	( 0.056)	0.003	0.012
274	22.83	0.07	0.014	( 0.056)	0.003	0.012
275	22.92	0.07	0.014	( 0.056)	0.003	0.012
276	23.00	0.07	0.014	( 0.056)	0.003	0.012
277	23.08	0.07	0.014	( 0.055)	0.003	0.012
278	23.17	0.07	0.014	( 0.055)	0.003	0.012
279	23.25	0.07	0.014	( 0.055)	0.003	0.012
280	23.33	0.07	0.014	( 0.055)	0.003	0.012
281	23.42	0.07	0.014	( 0.055)	0.003	0.012
282	23.50	0.07	0.014	( 0.055)	0.003	0.012
283	23.58	0.07	0.014	( 0.055)	0.003	0.012
284	23.67	0.07	0.014	( 0.055)	0.003	0.012
285	23.75	0.07	0.014	( 0.055)	0.003	0.012
286	23.83	0.07	0.014	( 0.055)	0.003	0.012
287	23.92	0.07	0.014	( 0.055)	0.003	0.012
288	24.00	0.07	0.014	( 0.055)	0.003	0.012

(Loss Rate Not Used)



ONSITEPRE242

3+55	0.2127	0.99	VQ				
4+ 0	0.2196	1.01	V Q				
4+ 5	0.2267	1.02	V Q				
4+10	0.2338	1.03	V Q				
4+15	0.2409	1.03	V Q				
4+20	0.2483	1.08	V Q				
4+25	0.2564	1.17	V Q				
4+30	0.2645	1.19	V Q				
4+35	0.2728	1.19	VQ				
4+40	0.2810	1.20	VQ				
4+45	0.2893	1.20	VQ				
4+50	0.2979	1.25	V Q				
4+55	0.3072	1.34	V Q				
5+ 0	0.3165	1.36	V Q				
5+ 5	0.3252	1.26	V Q				
5+10	0.3328	1.10	VQ				
5+15	0.3402	1.07	VQ				
5+20	0.3477	1.10	VQ				
5+25	0.3558	1.17	Q				
5+30	0.3640	1.19	Q				
5+35	0.3726	1.25	Q				
5+40	0.3817	1.33	VQ				
5+45	0.3911	1.36	VQ				
5+50	0.4005	1.37	VQ				
5+55	0.4100	1.37	VQ				
6+ 0	0.4194	1.38	VQ				
6+ 5	0.4293	1.43	VQ				
6+10	0.4396	1.51	V Q				
6+15	0.4502	1.53	VQ				
6+20	0.4608	1.54	VQ				
6+25	0.4714	1.54	VQ				
6+30	0.4821	1.55	VQ				
6+35	0.4931	1.60	VQ				
6+40	0.5047	1.68	VQ				
6+45	0.5164	1.70	VQ				
6+50	0.5282	1.71	VQ				
6+55	0.5400	1.72	Q				
7+ 0	0.5518	1.72	Q				
7+ 5	0.5636	1.72	Q				
7+10	0.5755	1.72	Q				
7+15	0.5873	1.72	Q				
7+20	0.5995	1.77	VQ				
7+25	0.6123	1.85	VQ				
7+30	0.6252	1.87	Q				
7+35	0.6385	1.93	Q				
7+40	0.6524	2.02	VQ				
7+45	0.6665	2.05	VQ				
7+50	0.6810	2.11	VQ				
7+55	0.6961	2.19	VQ				
8+ 0	0.7114	2.22	Q				
8+ 5	0.7274	2.33	VQ				
8+10	0.7447	2.50	VQ				
8+15	0.7622	2.54	V Q				
8+20	0.7798	2.56	V Q				
8+25	0.7975	2.57	V Q				
8+30	0.8153	2.58	VQ				
8+35	0.8334	2.63	VQ				
8+40	0.8521	2.71	VQ				
8+45	0.8709	2.73	VQ				
8+50	0.8901	2.79	VQ				
8+55	0.9100	2.88	VQ				
9+ 0	0.9300	2.90	VQ				
9+ 5	0.9508	3.02	V Q				
9+10	0.9727	3.19	V Q				
9+15	0.9950	3.23	VQ				
9+20	1.0177	3.30	V Q				

9+25	1.0411	3.39	V	Q			
9+30	1.0646	3.42	V	Q			
9+35	1.0886	3.48	V	Q			
9+40	1.1132	3.57	V	Q			
9+45	1.1379	3.59	V	Q			
9+50	1.1631	3.65	V	Q			
9+55	1.1888	3.74	V	Q			
10+ 0	1.2148	3.76	V	Q			
10+ 5	1.2383	3.41	Q				
10+10	1.2578	2.84	Q	V			
10+15	1.2764	2.70	Q	V			
10+20	1.2946	2.64	Q	V			
10+25	1.3125	2.60	Q	V			
10+30	1.3303	2.58	Q	V			
10+35	1.3498	2.84	Q	V			
10+40	1.3722	3.25	Q	V			
10+45	1.3953	3.35	Q	V			
10+50	1.4187	3.40	Q	V			
10+55	1.4422	3.42	Q	V			
11+ 0	1.4659	3.44	Q	V			
11+ 5	1.4892	3.39	Q	V			
11+10	1.5120	3.30	Q	V			
11+15	1.5346	3.28	Q	V			
11+20	1.5572	3.27	Q	V			
11+25	1.5797	3.27	Q	V			
11+30	1.6022	3.27	Q	V			
11+35	1.6239	3.16	Q	V			
11+40	1.6446	3.00	Q	V			
11+45	1.6650	2.96	Q	V			
11+50	1.6856	2.99	Q	V			
11+55	1.7067	3.06	Q	V			
12+ 0	1.7279	3.08	Q	V			
12+ 5	1.7516	3.45	Q	V			
12+10	1.7793	4.03	Q	Q	V		
12+15	1.8081	4.18	Q	Q	V		
12+20	1.8376	4.29	Q	Q	V		
12+25	1.8680	4.41	Q	Q	V		
12+30	1.8987	4.45	Q	Q	V		
12+35	1.9301	4.56	Q	Q	V		
12+40	1.9627	4.73	Q	Q	V		
12+45	1.9956	4.78	Q	Q	V		
12+50	2.0290	4.85	Q	Q	V		
12+55	2.0630	4.94	Q	Q	V		
13+ 0	2.0972	4.97	Q	Q	V		
13+ 5	2.1333	5.23	Q	Q	V		
13+10	2.1722	5.65	Q	Q	V		
13+15	2.2119	5.76	Q	Q	V		
13+20	2.2518	5.80	Q	Q	V		
13+25	2.2920	5.83	Q	Q	V		
13+30	2.3322	5.84	Q	Q	V		
13+35	2.3686	5.28	Q	Q	V		
13+40	2.3987	4.37	Q	Q	V		
13+45	2.4272	4.15	Q	Q	V		
13+50	2.4551	4.05	Q	Q	V		
13+55	2.4826	3.99	Q	Q	V		
14+ 0	2.5098	3.95	Q	Q	V		
14+ 5	2.5385	4.16	Q	Q	V		
14+10	2.5694	4.49	Q	Q	V		
14+15	2.6009	4.57	Q	Q	V		
14+20	2.6322	4.56	Q	Q	V		
14+25	2.6632	4.49	Q	Q	V		
14+30	2.6941	4.49	Q	Q	V		
14+35	2.7249	4.48	Q	Q	V		
14+40	2.7557	4.47	Q	Q	V		
14+45	2.7865	4.47	Q	Q	V		
14+50	2.8169	4.42	Q	Q	V		

ONSITEPRE242

14+55	2.8468	4.34				V
15+ 0	2.8765	4.32				V
15+ 5	2.9058	4.25				V
15+10	2.9345	4.17				V
15+15	2.9631	4.14				V
15+20	2.9912	4.08				V
15+25	3.0187	4.00				V
15+30	3.0460	3.97				V
15+35	3.0719	3.76				V
15+40	3.0955	3.42				V
15+45	3.1185	3.34				V
15+50	3.1412	3.30				V
15+55	3.1638	3.28				V
16+ 0	3.1863	3.27				V
16+ 5	3.2034	2.49				V
16+10	3.2121	1.26				V
16+15	3.2186	0.95				V
16+20	3.2242	0.81				V
16+25	3.2293	0.74				V
16+30	3.2341	0.69				V
16+35	3.2384	0.64				V
16+40	3.2423	0.55				V
16+45	3.2459	0.53				V
16+50	3.2495	0.52				V
16+55	3.2531	0.52				V
17+ 0	3.2567	0.52				V
17+ 5	3.2609	0.62				V
17+10	3.2663	0.78				V
17+15	3.2720	0.82				V
17+20	3.2778	0.84				V
17+25	3.2837	0.85				V
17+30	3.2896	0.86				V
17+35	3.2955	0.86				V
17+40	3.3014	0.86				V
17+45	3.3074	0.86				V
17+50	3.3129	0.81				V
17+55	3.3179	0.73				V
18+ 0	3.3228	0.71				V
18+ 5	3.3276	0.70				V
18+10	3.3323	0.69				V
18+15	3.3371	0.69				V
18+20	3.3418	0.69				V
18+25	3.3465	0.69				V
18+30	3.3513	0.69				V
18+35	3.3557	0.64				V
18+40	3.3595	0.55				V
18+45	3.3631	0.53				V
18+50	3.3664	0.47				V
18+55	3.3691	0.39				V
19+ 0	3.3715	0.36				V
19+ 5	3.3743	0.40				V
19+10	3.3776	0.48				V
19+15	3.3811	0.50				V
19+20	3.3849	0.56				V
19+25	3.3894	0.65				V
19+30	3.3940	0.67				V
19+35	3.3983	0.63				V
19+40	3.4021	0.55				V
19+45	3.4058	0.53				V
19+50	3.4090	0.47				V
19+55	3.4117	0.39				V
20+ 0	3.4142	0.36				V
20+ 5	3.4169	0.40				V
20+10	3.4203	0.48				V
20+15	3.4237	0.50				V
20+20	3.4272	0.51				V

ONSITEPRE242

20+25	3.4307	0.51	Q				V	
20+30	3.4343	0.52	Q				V	
20+35	3.4378	0.52	Q				V	
20+40	3.4414	0.52	Q				V	
20+45	3.4449	0.52	Q				V	
20+50	3.4481	0.46	Q				V	
20+55	3.4507	0.38	Q				V	
21+ 0	3.4532	0.36	Q				V	
21+ 5	3.4560	0.40	Q				V	
21+10	3.4593	0.48	Q				V	
21+15	3.4628	0.50	Q				V	
21+20	3.4659	0.46	Q				V	
21+25	3.4685	0.38	Q				V	
21+30	3.4710	0.36	Q				V	
21+35	3.4738	0.40	Q				V	
21+40	3.4771	0.48	Q				V	
21+45	3.4805	0.50	Q				V	
21+50	3.4837	0.46	Q				V	
21+55	3.4863	0.38	Q				V	
22+ 0	3.4887	0.36	Q				V	
22+ 5	3.4915	0.40	Q				V	
22+10	3.4948	0.48	Q				V	
22+15	3.4983	0.50	Q				V	
22+20	3.5014	0.46	Q				V	
22+25	3.5040	0.38	Q				V	
22+30	3.5065	0.36	Q				V	
22+35	3.5089	0.35	Q				V	
22+40	3.5113	0.35	Q				V	
22+45	3.5137	0.34	Q				V	
22+50	3.5161	0.34	Q				V	
22+55	3.5184	0.34	Q				V	
23+ 0	3.5208	0.34	Q				V	
23+ 5	3.5232	0.34	Q				V	
23+10	3.5255	0.34	Q				V	
23+15	3.5279	0.34	Q				V	
23+20	3.5303	0.34	Q				V	
23+25	3.5326	0.34	Q				V	
23+30	3.5350	0.34	Q				V	
23+35	3.5374	0.34	Q				V	
23+40	3.5397	0.34	Q				V	
23+45	3.5421	0.34	Q				V	
23+50	3.5445	0.34	Q				V	
23+55	3.5468	0.34	Q				V	
24+ 0	3.5492	0.34	Q				V	
24+ 5	3.5509	0.24	Q				V	
24+10	3.5514	0.08	Q				V	
24+15	3.5516	0.03	Q				V	
24+20	3.5517	0.02	Q				V	
24+25	3.5518	0.01	Q				V	

**PROPOSED CONDITION UNIT HYDROGRAPHS**

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**PROPOSED CONDITION**  
**2-YEAR, 24-HOUR UNIT HYDROGRAPH**

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ONSITEPROP242

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2008, Version 8.1  
Study date 05/31/22 File: ONSITEPROP242.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used

English Units used in output format

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22-0028 - FIR DAY STREET  
UNIT HYDROGRAPH ANALYSIS  
PROPOSED CONDITION, 2-YEAR 24-HOUR  
FN: ONSITEPROP242.OUT- ABE  
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Drainage Area = 29.60(Ac.) = 0.046 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 29.60(Ac.) = 0.046 Sq. Mi.  
Length along longest watercourse = 1888.00(Ft.)  
Length along longest watercourse measured to centroid = 958.00(Ft.)  
Length along longest watercourse = 0.358 Mi.  
Length along longest watercourse measured to centroid = 0.181 Mi.  
Difference in elevation = 16.30(Ft.)  
Slope along watercourse = 45.5847 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.062 Hr.  
Lag time = 3.70 Min.  
25% of lag time = 0.92 Min.  
40% of lag time = 1.48 Min.  
Unit time = 5.00 Min.  
Duration of storm = 24 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.60	1.80	53.28

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.60	4.00	118.40

STORM EVENT (YEAR) = 2.00  
Area Averaged 2-Year Rainfall = 1.800(In)  
Area Averaged 100-Year Rainfall = 4.000(In)

Point rain (area averaged) = 1.800(In)  
Areal adjustment factor = 99.99 %

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Adjusted average point rain = 1.800(In)

Sub-Area Data:

Area(Ac.)      Runoff Index      Impervious %  
 29.600          69.00          0.900  
 Total Area Entered = 29.60(Ac.)

RI    RI    Infil. Rate    Impervious    Adj. Infil. Rate    Area%    F  
 AMC2 AMC-1    (In/Hr)    (Dec.%)    (In/Hr)    (Dec.)    (In/Hr)  
 69.0 49.8    0.574    0.900    0.109    1.000    0.109

Sum (F) = 0.109

Area averaged mean soil loss (F) (In/Hr) = 0.109

Minimum soil loss rate ((In/Hr)) = 0.055

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.200

Unit Hydrograph  
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period    Time % of lag    Distribution    Unit Hydrograph  
 (hrs)                      Graph %                      (CFS)

1	0.083	135.237	29.431	8.780
2	0.167	270.473	48.002	14.320
3	0.250	405.710	12.128	3.618
4	0.333	540.946	5.375	1.603
5	0.417	676.183	2.921	0.871
6	0.500	811.419	2.143	0.639
Sum = 100.000			Sum=	29.831

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)	
			Max	Low		
1	0.08	0.07	0.014	( 0.193)	0.003	0.012
2	0.17	0.07	0.014	( 0.193)	0.003	0.012
3	0.25	0.07	0.014	( 0.192)	0.003	0.012
4	0.33	0.10	0.022	( 0.191)	0.004	0.017
5	0.42	0.10	0.022	( 0.190)	0.004	0.017
6	0.50	0.10	0.022	( 0.190)	0.004	0.017
7	0.58	0.10	0.022	( 0.189)	0.004	0.017
8	0.67	0.10	0.022	( 0.188)	0.004	0.017
9	0.75	0.10	0.022	( 0.187)	0.004	0.017
10	0.83	0.13	0.029	( 0.187)	0.006	0.023
11	0.92	0.13	0.029	( 0.186)	0.006	0.023
12	1.00	0.13	0.029	( 0.185)	0.006	0.023
13	1.08	0.10	0.022	( 0.184)	0.004	0.017
14	1.17	0.10	0.022	( 0.184)	0.004	0.017
15	1.25	0.10	0.022	( 0.183)	0.004	0.017
16	1.33	0.10	0.022	( 0.182)	0.004	0.017
17	1.42	0.10	0.022	( 0.182)	0.004	0.017
18	1.50	0.10	0.022	( 0.181)	0.004	0.017
19	1.58	0.10	0.022	( 0.180)	0.004	0.017
20	1.67	0.10	0.022	( 0.179)	0.004	0.017
21	1.75	0.10	0.022	( 0.179)	0.004	0.017
22	1.83	0.13	0.029	( 0.178)	0.006	0.023
23	1.92	0.13	0.029	( 0.177)	0.006	0.023
24	2.00	0.13	0.029	( 0.176)	0.006	0.023
25	2.08	0.13	0.029	( 0.176)	0.006	0.023

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26	2.17	0.13	0.029	( 0.175)	0.006	0.023
27	2.25	0.13	0.029	( 0.174)	0.006	0.023
28	2.33	0.13	0.029	( 0.174)	0.006	0.023
29	2.42	0.13	0.029	( 0.173)	0.006	0.023
30	2.50	0.13	0.029	( 0.172)	0.006	0.023
31	2.58	0.17	0.036	( 0.172)	0.007	0.029
32	2.67	0.17	0.036	( 0.171)	0.007	0.029
33	2.75	0.17	0.036	( 0.170)	0.007	0.029
34	2.83	0.17	0.036	( 0.169)	0.007	0.029
35	2.92	0.17	0.036	( 0.169)	0.007	0.029
36	3.00	0.17	0.036	( 0.168)	0.007	0.029
37	3.08	0.17	0.036	( 0.167)	0.007	0.029
38	3.17	0.17	0.036	( 0.167)	0.007	0.029
39	3.25	0.17	0.036	( 0.166)	0.007	0.029
40	3.33	0.17	0.036	( 0.165)	0.007	0.029
41	3.42	0.17	0.036	( 0.165)	0.007	0.029
42	3.50	0.17	0.036	( 0.164)	0.007	0.029
43	3.58	0.17	0.036	( 0.163)	0.007	0.029
44	3.67	0.17	0.036	( 0.162)	0.007	0.029
45	3.75	0.17	0.036	( 0.162)	0.007	0.029
46	3.83	0.20	0.043	( 0.161)	0.009	0.035
47	3.92	0.20	0.043	( 0.160)	0.009	0.035
48	4.00	0.20	0.043	( 0.160)	0.009	0.035
49	4.08	0.20	0.043	( 0.159)	0.009	0.035
50	4.17	0.20	0.043	( 0.158)	0.009	0.035
51	4.25	0.20	0.043	( 0.158)	0.009	0.035
52	4.33	0.23	0.050	( 0.157)	0.010	0.040
53	4.42	0.23	0.050	( 0.156)	0.010	0.040
54	4.50	0.23	0.050	( 0.156)	0.010	0.040
55	4.58	0.23	0.050	( 0.155)	0.010	0.040
56	4.67	0.23	0.050	( 0.154)	0.010	0.040
57	4.75	0.23	0.050	( 0.154)	0.010	0.040
58	4.83	0.27	0.058	( 0.153)	0.012	0.046
59	4.92	0.27	0.058	( 0.152)	0.012	0.046
60	5.00	0.27	0.058	( 0.152)	0.012	0.046
61	5.08	0.20	0.043	( 0.151)	0.009	0.035
62	5.17	0.20	0.043	( 0.150)	0.009	0.035
63	5.25	0.20	0.043	( 0.150)	0.009	0.035
64	5.33	0.23	0.050	( 0.149)	0.010	0.040
65	5.42	0.23	0.050	( 0.148)	0.010	0.040
66	5.50	0.23	0.050	( 0.148)	0.010	0.040
67	5.58	0.27	0.058	( 0.147)	0.012	0.046
68	5.67	0.27	0.058	( 0.147)	0.012	0.046
69	5.75	0.27	0.058	( 0.146)	0.012	0.046
70	5.83	0.27	0.058	( 0.145)	0.012	0.046
71	5.92	0.27	0.058	( 0.145)	0.012	0.046
72	6.00	0.27	0.058	( 0.144)	0.012	0.046
73	6.08	0.30	0.065	( 0.143)	0.013	0.052
74	6.17	0.30	0.065	( 0.143)	0.013	0.052
75	6.25	0.30	0.065	( 0.142)	0.013	0.052
76	6.33	0.30	0.065	( 0.141)	0.013	0.052
77	6.42	0.30	0.065	( 0.141)	0.013	0.052
78	6.50	0.30	0.065	( 0.140)	0.013	0.052
79	6.58	0.33	0.072	( 0.140)	0.014	0.058
80	6.67	0.33	0.072	( 0.139)	0.014	0.058
81	6.75	0.33	0.072	( 0.138)	0.014	0.058
82	6.83	0.33	0.072	( 0.138)	0.014	0.058
83	6.92	0.33	0.072	( 0.137)	0.014	0.058
84	7.00	0.33	0.072	( 0.136)	0.014	0.058
85	7.08	0.33	0.072	( 0.136)	0.014	0.058
86	7.17	0.33	0.072	( 0.135)	0.014	0.058
87	7.25	0.33	0.072	( 0.135)	0.014	0.058
88	7.33	0.37	0.079	( 0.134)	0.016	0.063
89	7.42	0.37	0.079	( 0.133)	0.016	0.063
90	7.50	0.37	0.079	( 0.133)	0.016	0.063
91	7.58	0.40	0.086	( 0.132)	0.017	0.069

ONSITEPROP242

92	7.67	0.40	0.086	( 0.131)	0.017	0.069
93	7.75	0.40	0.086	( 0.131)	0.017	0.069
94	7.83	0.43	0.094	( 0.130)	0.019	0.075
95	7.92	0.43	0.094	( 0.130)	0.019	0.075
96	8.00	0.43	0.094	( 0.129)	0.019	0.075
97	8.08	0.50	0.108	( 0.128)	0.022	0.086
98	8.17	0.50	0.108	( 0.128)	0.022	0.086
99	8.25	0.50	0.108	( 0.127)	0.022	0.086
100	8.33	0.50	0.108	( 0.127)	0.022	0.086
101	8.42	0.50	0.108	( 0.126)	0.022	0.086
102	8.50	0.50	0.108	( 0.125)	0.022	0.086
103	8.58	0.53	0.115	( 0.125)	0.023	0.092
104	8.67	0.53	0.115	( 0.124)	0.023	0.092
105	8.75	0.53	0.115	( 0.124)	0.023	0.092
106	8.83	0.57	0.122	( 0.123)	0.024	0.098
107	8.92	0.57	0.122	( 0.123)	0.024	0.098
108	9.00	0.57	0.122	( 0.122)	0.024	0.098
109	9.08	0.63	0.137	( 0.121)	0.027	0.109
110	9.17	0.63	0.137	( 0.121)	0.027	0.109
111	9.25	0.63	0.137	( 0.120)	0.027	0.109
112	9.33	0.67	0.144	( 0.120)	0.029	0.115
113	9.42	0.67	0.144	( 0.119)	0.029	0.115
114	9.50	0.67	0.144	( 0.119)	0.029	0.115
115	9.58	0.70	0.151	( 0.118)	0.030	0.121
116	9.67	0.70	0.151	( 0.117)	0.030	0.121
117	9.75	0.70	0.151	( 0.117)	0.030	0.121
118	9.83	0.73	0.158	( 0.116)	0.032	0.127
119	9.92	0.73	0.158	( 0.116)	0.032	0.127
120	10.00	0.73	0.158	( 0.115)	0.032	0.127
121	10.08	0.50	0.108	( 0.115)	0.022	0.086
122	10.17	0.50	0.108	( 0.114)	0.022	0.086
123	10.25	0.50	0.108	( 0.113)	0.022	0.086
124	10.33	0.50	0.108	( 0.113)	0.022	0.086
125	10.42	0.50	0.108	( 0.112)	0.022	0.086
126	10.50	0.50	0.108	( 0.112)	0.022	0.086
127	10.58	0.67	0.144	( 0.111)	0.029	0.115
128	10.67	0.67	0.144	( 0.111)	0.029	0.115
129	10.75	0.67	0.144	( 0.110)	0.029	0.115
130	10.83	0.67	0.144	( 0.110)	0.029	0.115
131	10.92	0.67	0.144	( 0.109)	0.029	0.115
132	11.00	0.67	0.144	( 0.109)	0.029	0.115
133	11.08	0.63	0.137	( 0.108)	0.027	0.109
134	11.17	0.63	0.137	( 0.108)	0.027	0.109
135	11.25	0.63	0.137	( 0.107)	0.027	0.109
136	11.33	0.63	0.137	( 0.106)	0.027	0.109
137	11.42	0.63	0.137	( 0.106)	0.027	0.109
138	11.50	0.63	0.137	( 0.105)	0.027	0.109
139	11.58	0.57	0.122	( 0.105)	0.024	0.098
140	11.67	0.57	0.122	( 0.104)	0.024	0.098
141	11.75	0.57	0.122	( 0.104)	0.024	0.098
142	11.83	0.60	0.130	( 0.103)	0.026	0.104
143	11.92	0.60	0.130	( 0.103)	0.026	0.104
144	12.00	0.60	0.130	( 0.102)	0.026	0.104
145	12.08	0.83	0.180	( 0.102)	0.036	0.144
146	12.17	0.83	0.180	( 0.101)	0.036	0.144
147	12.25	0.83	0.180	( 0.101)	0.036	0.144
148	12.33	0.87	0.187	( 0.100)	0.037	0.150
149	12.42	0.87	0.187	( 0.100)	0.037	0.150
150	12.50	0.87	0.187	( 0.099)	0.037	0.150
151	12.58	0.93	0.202	( 0.099)	0.040	0.161
152	12.67	0.93	0.202	( 0.098)	0.040	0.161
153	12.75	0.93	0.202	( 0.098)	0.040	0.161
154	12.83	0.97	0.209	( 0.097)	0.042	0.167
155	12.92	0.97	0.209	( 0.097)	0.042	0.167
156	13.00	0.97	0.209	( 0.096)	0.042	0.167
157	13.08	1.13	0.245	( 0.096)	0.049	0.196

ONSITEPROP242

158	13.17	1.13	0.245	( 0.095)	0.049	0.196
159	13.25	1.13	0.245	( 0.095)	0.049	0.196
160	13.33	1.13	0.245	( 0.094)	0.049	0.196
161	13.42	1.13	0.245	( 0.094)	0.049	0.196
162	13.50	1.13	0.245	( 0.093)	0.049	0.196
163	13.58	0.77	0.166	( 0.093)	0.033	0.132
164	13.67	0.77	0.166	( 0.092)	0.033	0.132
165	13.75	0.77	0.166	( 0.092)	0.033	0.132
166	13.83	0.77	0.166	( 0.092)	0.033	0.132
167	13.92	0.77	0.166	( 0.091)	0.033	0.132
168	14.00	0.77	0.166	( 0.091)	0.033	0.132
169	14.08	0.90	0.194	( 0.090)	0.039	0.156
170	14.17	0.90	0.194	( 0.090)	0.039	0.156
171	14.25	0.90	0.194	( 0.089)	0.039	0.156
172	14.33	0.87	0.187	( 0.089)	0.037	0.150
173	14.42	0.87	0.187	( 0.088)	0.037	0.150
174	14.50	0.87	0.187	( 0.088)	0.037	0.150
175	14.58	0.87	0.187	( 0.087)	0.037	0.150
176	14.67	0.87	0.187	( 0.087)	0.037	0.150
177	14.75	0.87	0.187	( 0.086)	0.037	0.150
178	14.83	0.83	0.180	( 0.086)	0.036	0.144
179	14.92	0.83	0.180	( 0.086)	0.036	0.144
180	15.00	0.83	0.180	( 0.085)	0.036	0.144
181	15.08	0.80	0.173	( 0.085)	0.035	0.138
182	15.17	0.80	0.173	( 0.084)	0.035	0.138
183	15.25	0.80	0.173	( 0.084)	0.035	0.138
184	15.33	0.77	0.166	( 0.083)	0.033	0.132
185	15.42	0.77	0.166	( 0.083)	0.033	0.132
186	15.50	0.77	0.166	( 0.083)	0.033	0.132
187	15.58	0.63	0.137	( 0.082)	0.027	0.109
188	15.67	0.63	0.137	( 0.082)	0.027	0.109
189	15.75	0.63	0.137	( 0.081)	0.027	0.109
190	15.83	0.63	0.137	( 0.081)	0.027	0.109
191	15.92	0.63	0.137	( 0.080)	0.027	0.109
192	16.00	0.63	0.137	( 0.080)	0.027	0.109
193	16.08	0.13	0.029	( 0.080)	0.006	0.023
194	16.17	0.13	0.029	( 0.079)	0.006	0.023
195	16.25	0.13	0.029	( 0.079)	0.006	0.023
196	16.33	0.13	0.029	( 0.078)	0.006	0.023
197	16.42	0.13	0.029	( 0.078)	0.006	0.023
198	16.50	0.13	0.029	( 0.078)	0.006	0.023
199	16.58	0.10	0.022	( 0.077)	0.004	0.017
200	16.67	0.10	0.022	( 0.077)	0.004	0.017
201	16.75	0.10	0.022	( 0.076)	0.004	0.017
202	16.83	0.10	0.022	( 0.076)	0.004	0.017
203	16.92	0.10	0.022	( 0.076)	0.004	0.017
204	17.00	0.10	0.022	( 0.075)	0.004	0.017
205	17.08	0.17	0.036	( 0.075)	0.007	0.029
206	17.17	0.17	0.036	( 0.075)	0.007	0.029
207	17.25	0.17	0.036	( 0.074)	0.007	0.029
208	17.33	0.17	0.036	( 0.074)	0.007	0.029
209	17.42	0.17	0.036	( 0.073)	0.007	0.029
210	17.50	0.17	0.036	( 0.073)	0.007	0.029
211	17.58	0.17	0.036	( 0.073)	0.007	0.029
212	17.67	0.17	0.036	( 0.072)	0.007	0.029
213	17.75	0.17	0.036	( 0.072)	0.007	0.029
214	17.83	0.13	0.029	( 0.072)	0.006	0.023
215	17.92	0.13	0.029	( 0.071)	0.006	0.023
216	18.00	0.13	0.029	( 0.071)	0.006	0.023
217	18.08	0.13	0.029	( 0.071)	0.006	0.023
218	18.17	0.13	0.029	( 0.070)	0.006	0.023
219	18.25	0.13	0.029	( 0.070)	0.006	0.023
220	18.33	0.13	0.029	( 0.070)	0.006	0.023
221	18.42	0.13	0.029	( 0.069)	0.006	0.023
222	18.50	0.13	0.029	( 0.069)	0.006	0.023
223	18.58	0.10	0.022	( 0.069)	0.004	0.017

ONSITEPROP242

224	18.67	0.10	0.022	( 0.068)	0.004	0.017
225	18.75	0.10	0.022	( 0.068)	0.004	0.017
226	18.83	0.07	0.014	( 0.068)	0.003	0.012
227	18.92	0.07	0.014	( 0.067)	0.003	0.012
228	19.00	0.07	0.014	( 0.067)	0.003	0.012
229	19.08	0.10	0.022	( 0.067)	0.004	0.017
230	19.17	0.10	0.022	( 0.066)	0.004	0.017
231	19.25	0.10	0.022	( 0.066)	0.004	0.017
232	19.33	0.13	0.029	( 0.066)	0.006	0.023
233	19.42	0.13	0.029	( 0.065)	0.006	0.023
234	19.50	0.13	0.029	( 0.065)	0.006	0.023
235	19.58	0.10	0.022	( 0.065)	0.004	0.017
236	19.67	0.10	0.022	( 0.064)	0.004	0.017
237	19.75	0.10	0.022	( 0.064)	0.004	0.017
238	19.83	0.07	0.014	( 0.064)	0.003	0.012
239	19.92	0.07	0.014	( 0.064)	0.003	0.012
240	20.00	0.07	0.014	( 0.063)	0.003	0.012
241	20.08	0.10	0.022	( 0.063)	0.004	0.017
242	20.17	0.10	0.022	( 0.063)	0.004	0.017
243	20.25	0.10	0.022	( 0.062)	0.004	0.017
244	20.33	0.10	0.022	( 0.062)	0.004	0.017
245	20.42	0.10	0.022	( 0.062)	0.004	0.017
246	20.50	0.10	0.022	( 0.062)	0.004	0.017
247	20.58	0.10	0.022	( 0.061)	0.004	0.017
248	20.67	0.10	0.022	( 0.061)	0.004	0.017
249	20.75	0.10	0.022	( 0.061)	0.004	0.017
250	20.83	0.07	0.014	( 0.061)	0.003	0.012
251	20.92	0.07	0.014	( 0.060)	0.003	0.012
252	21.00	0.07	0.014	( 0.060)	0.003	0.012
253	21.08	0.10	0.022	( 0.060)	0.004	0.017
254	21.17	0.10	0.022	( 0.060)	0.004	0.017
255	21.25	0.10	0.022	( 0.059)	0.004	0.017
256	21.33	0.07	0.014	( 0.059)	0.003	0.012
257	21.42	0.07	0.014	( 0.059)	0.003	0.012
258	21.50	0.07	0.014	( 0.059)	0.003	0.012
259	21.58	0.10	0.022	( 0.059)	0.004	0.017
260	21.67	0.10	0.022	( 0.058)	0.004	0.017
261	21.75	0.10	0.022	( 0.058)	0.004	0.017
262	21.83	0.07	0.014	( 0.058)	0.003	0.012
263	21.92	0.07	0.014	( 0.058)	0.003	0.012
264	22.00	0.07	0.014	( 0.058)	0.003	0.012
265	22.08	0.10	0.022	( 0.057)	0.004	0.017
266	22.17	0.10	0.022	( 0.057)	0.004	0.017
267	22.25	0.10	0.022	( 0.057)	0.004	0.017
268	22.33	0.07	0.014	( 0.057)	0.003	0.012
269	22.42	0.07	0.014	( 0.057)	0.003	0.012
270	22.50	0.07	0.014	( 0.057)	0.003	0.012
271	22.58	0.07	0.014	( 0.056)	0.003	0.012
272	22.67	0.07	0.014	( 0.056)	0.003	0.012
273	22.75	0.07	0.014	( 0.056)	0.003	0.012
274	22.83	0.07	0.014	( 0.056)	0.003	0.012
275	22.92	0.07	0.014	( 0.056)	0.003	0.012
276	23.00	0.07	0.014	( 0.056)	0.003	0.012
277	23.08	0.07	0.014	( 0.055)	0.003	0.012
278	23.17	0.07	0.014	( 0.055)	0.003	0.012
279	23.25	0.07	0.014	( 0.055)	0.003	0.012
280	23.33	0.07	0.014	( 0.055)	0.003	0.012
281	23.42	0.07	0.014	( 0.055)	0.003	0.012
282	23.50	0.07	0.014	( 0.055)	0.003	0.012
283	23.58	0.07	0.014	( 0.055)	0.003	0.012
284	23.67	0.07	0.014	( 0.055)	0.003	0.012
285	23.75	0.07	0.014	( 0.055)	0.003	0.012
286	23.83	0.07	0.014	( 0.055)	0.003	0.012
287	23.92	0.07	0.014	( 0.055)	0.003	0.012
288	24.00	0.07	0.014	( 0.055)	0.003	0.012

(Loss Rate Not Used)



ONSITEPROP242

3+55	0.2126	0.99	VQ				
4+ 0	0.2195	1.01	V Q				
4+ 5	0.2266	1.02	V Q				
4+10	0.2337	1.03	V Q				
4+15	0.2408	1.03	V Q				
4+20	0.2482	1.08	V Q				
4+25	0.2562	1.16	V Q				
4+30	0.2644	1.19	V Q				
4+35	0.2726	1.19	VQ				
4+40	0.2809	1.20	VQ				
4+45	0.2892	1.20	VQ				
4+50	0.2978	1.25	V Q				
4+55	0.3070	1.34	V Q				
5+ 0	0.3164	1.36	V Q				
5+ 5	0.3251	1.27	V Q				
5+10	0.3327	1.11	VQ				
5+15	0.3400	1.07	VQ				
5+20	0.3476	1.10	VQ				
5+25	0.3557	1.17	Q				
5+30	0.3638	1.19	Q				
5+35	0.3724	1.25	Q				
5+40	0.3816	1.33	VQ				
5+45	0.3909	1.36	VQ				
5+50	0.4004	1.37	VQ				
5+55	0.4098	1.37	VQ				
6+ 0	0.4193	1.38	VQ				
6+ 5	0.4291	1.43	VQ				
6+10	0.4395	1.51	V Q				
6+15	0.4500	1.53	VQ				
6+20	0.4606	1.54	VQ				
6+25	0.4712	1.54	VQ				
6+30	0.4819	1.55	VQ				
6+35	0.4929	1.60	VQ				
6+40	0.5045	1.68	VQ				
6+45	0.5162	1.70	VQ				
6+50	0.5280	1.71	VQ				
6+55	0.5398	1.72	Q				
7+ 0	0.5516	1.72	Q				
7+ 5	0.5635	1.72	Q				
7+10	0.5753	1.72	Q				
7+15	0.5871	1.72	Q				
7+20	0.5993	1.77	VQ				
7+25	0.6121	1.85	VQ				
7+30	0.6250	1.87	Q				
7+35	0.6383	1.93	Q				
7+40	0.6522	2.02	VQ				
7+45	0.6663	2.04	VQ				
7+50	0.6808	2.10	VQ				
7+55	0.6959	2.19	VQ				
8+ 0	0.7112	2.22	Q				
8+ 5	0.7272	2.33	VQ				
8+10	0.7444	2.50	VQ				
8+15	0.7619	2.54	V Q				
8+20	0.7795	2.56	V Q				
8+25	0.7972	2.57	V Q				
8+30	0.8150	2.58	VQ				
8+35	0.8331	2.63	VQ				
8+40	0.8518	2.71	VQ				
8+45	0.8706	2.73	VQ				
8+50	0.8898	2.79	VQ				
8+55	0.9097	2.88	VQ				
9+ 0	0.9297	2.90	VQ				
9+ 5	0.9504	3.01	V Q				
9+10	0.9724	3.18	V Q				
9+15	0.9946	3.23	VQ				
9+20	1.0173	3.30	V Q				

ONSITEPROP242

9+25	1.0407	3.39	V	Q			
9+30	1.0643	3.42	V	Q			
9+35	1.0882	3.48	V	Q			
9+40	1.1128	3.57	V	Q			
9+45	1.1375	3.59	V	Q			
9+50	1.1627	3.65	V	Q			
9+55	1.1884	3.74	V	Q			
10+ 0	1.2144	3.76	V	Q			
10+ 5	1.2379	3.42	Q				
10+10	1.2575	2.85	Q	V			
10+15	1.2761	2.70	Q	V			
10+20	1.2943	2.64	Q	V			
10+25	1.3122	2.60	Q	V			
10+30	1.3300	2.58	Q	V			
10+35	1.3495	2.83	Q	V			
10+40	1.3719	3.24	Q	V			
10+45	1.3949	3.35	Q	V			
10+50	1.4183	3.39	Q	V			
10+55	1.4418	3.42	Q	V			
11+ 0	1.4655	3.44	Q	V			
11+ 5	1.4889	3.39	Q	V			
11+10	1.5116	3.31	Q	V			
11+15	1.5342	3.28	Q	V			
11+20	1.5568	3.27	Q	V			
11+25	1.5793	3.27	Q	V			
11+30	1.6018	3.27	Q	V			
11+35	1.6236	3.17	Q	V			
11+40	1.6443	3.00	Q	V			
11+45	1.6646	2.96	Q	V			
11+50	1.6852	2.99	Q	V			
11+55	1.7063	3.06	Q	V			
12+ 0	1.7275	3.08	Q	V			
12+ 5	1.7512	3.44	Q	V			
12+10	1.7789	4.02	Q	V			
12+15	1.8076	4.17	Q	V			
12+20	1.8372	4.29	Q	V			
12+25	1.8675	4.40	Q	V			
12+30	1.8982	4.45	Q	V			
12+35	1.9296	4.56	Q	V			
12+40	1.9622	4.73	Q	V			
12+45	1.9951	4.78	Q	V			
12+50	2.0285	4.85	Q	V			
12+55	2.0625	4.94	Q	V			
13+ 0	2.0967	4.97	Q	V			
13+ 5	2.1327	5.23	Q	V			
13+10	2.1716	5.65	Q	V			
13+15	2.2112	5.76	Q	V			
13+20	2.2512	5.80	Q	V			
13+25	2.2913	5.83	Q	V			
13+30	2.3316	5.84	Q	V			
13+35	2.3680	5.29	Q	V			
13+40	2.3981	4.38	Q	V			
13+45	2.4267	4.15	Q	V			
13+50	2.4546	4.05	Q	V			
13+55	2.4821	3.99	Q	V			
14+ 0	2.5094	3.95	Q	V			
14+ 5	2.5380	4.16	Q	V			
14+10	2.5689	4.49	Q	V			
14+15	2.6004	4.57	Q	V			
14+20	2.6317	4.56	Q	V			
14+25	2.6627	4.49	Q	V			
14+30	2.6936	4.49	Q	V			
14+35	2.7244	4.48	Q	V			
14+40	2.7552	4.47	Q	V			
14+45	2.7860	4.47	Q	V			
14+50	2.8165	4.42	Q	V			

ONSITEPROP242

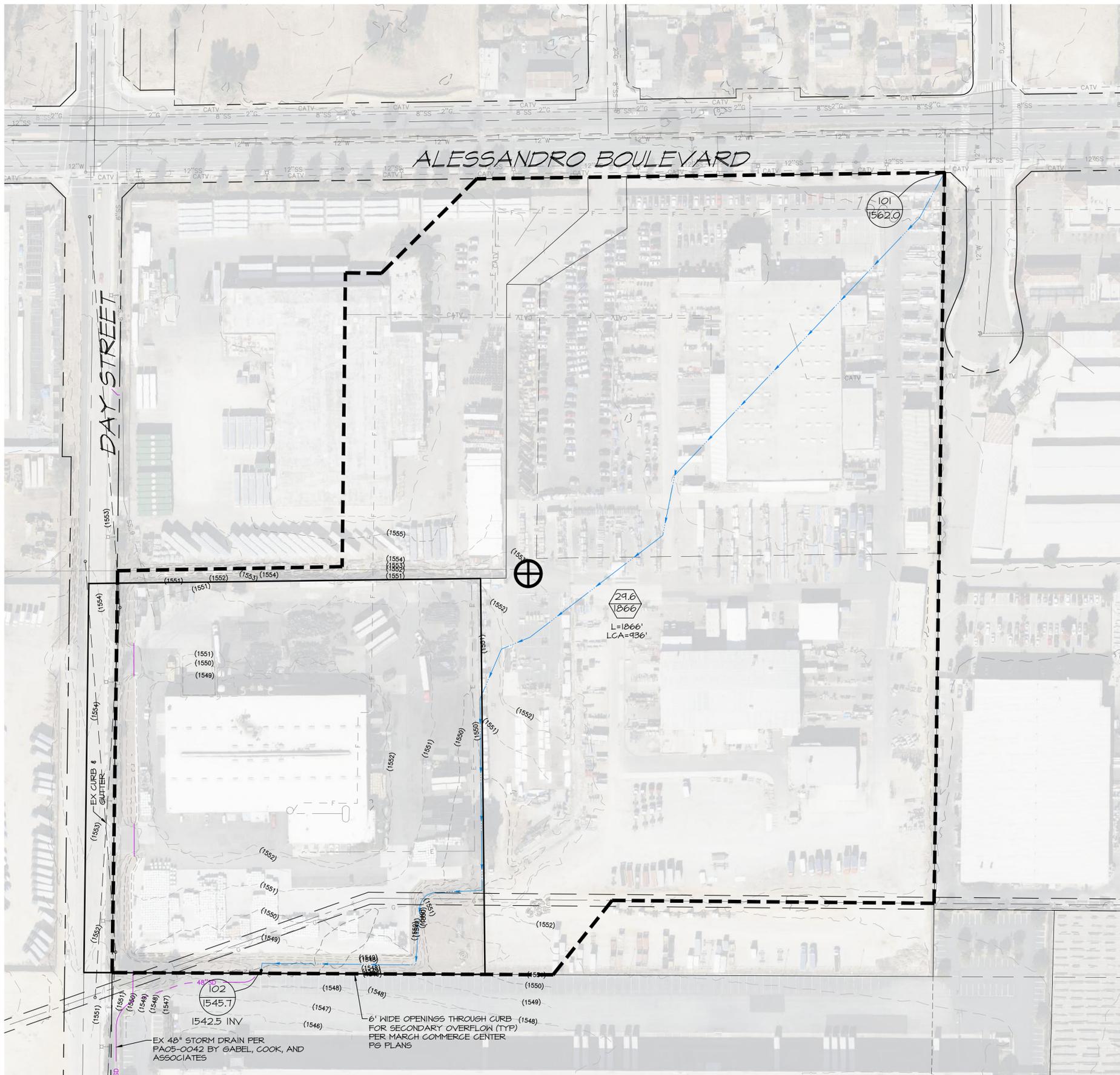
14+55	2.8463	4.34							V
15+ 0	2.8760	4.32							V
15+ 5	2.9054	4.26							V
15+10	2.9341	4.17							V
15+15	2.9626	4.14							V
15+20	2.9907	4.08							V
15+25	3.0182	4.00							V
15+30	3.0456	3.97							V
15+35	3.0715	3.76							V
15+40	3.0951	3.43							V
15+45	3.1181	3.34							V
15+50	3.1408	3.30							V
15+55	3.1634	3.28							V
16+ 0	3.1859	3.27							V
16+ 5	3.2032	2.51							V
16+10	3.2119	1.27							V
16+15	3.2185	0.96							V
16+20	3.2241	0.82							V
16+25	3.2293	0.74							V
16+30	3.2340	0.69							V
16+35	3.2384	0.64							V
16+40	3.2422	0.55							V
16+45	3.2459	0.53							V
16+50	3.2495	0.52							V
16+55	3.2531	0.52							V
17+ 0	3.2566	0.52							V
17+ 5	3.2609	0.62							V
17+10	3.2662	0.78							V
17+15	3.2719	0.82							V
17+20	3.2777	0.84							V
17+25	3.2836	0.85							V
17+30	3.2895	0.86							V
17+35	3.2954	0.86							V
17+40	3.3013	0.86							V
17+45	3.3073	0.86							V
17+50	3.3128	0.81							V
17+55	3.3178	0.73							V
18+ 0	3.3227	0.71							V
18+ 5	3.3275	0.70							V
18+10	3.3323	0.69							V
18+15	3.3370	0.69							V
18+20	3.3417	0.69							V
18+25	3.3465	0.69							V
18+30	3.3512	0.69							V
18+35	3.3556	0.64							V
18+40	3.3594	0.55							V
18+45	3.3631	0.53							V
18+50	3.3663	0.47							V
18+55	3.3690	0.39							V
19+ 0	3.3715	0.36							V
19+ 5	3.3743	0.40							V
19+10	3.3776	0.48							V
19+15	3.3810	0.50							V
19+20	3.3849	0.56							V
19+25	3.3893	0.65							V
19+30	3.3939	0.67							V
19+35	3.3982	0.63							V
19+40	3.4020	0.55							V
19+45	3.4057	0.53							V
19+50	3.4090	0.47							V
19+55	3.4116	0.39							V
20+ 0	3.4141	0.36							V
20+ 5	3.4169	0.40							V
20+10	3.4202	0.48							V
20+15	3.4236	0.50							V
20+20	3.4271	0.51							V

ONSITEPROP242

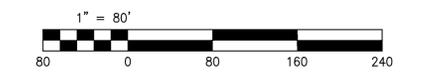
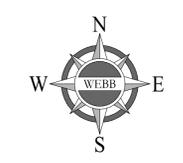
20+25	3.4307	0.51	Q				V	
20+30	3.4342	0.52	Q				V	
20+35	3.4378	0.52	Q				V	
20+40	3.4413	0.52	Q				V	
20+45	3.4449	0.52	Q				V	
20+50	3.4481	0.47	Q				V	
20+55	3.4507	0.38	Q				V	
21+ 0	3.4532	0.36	Q				V	
21+ 5	3.4560	0.40	Q				V	
21+10	3.4593	0.48	Q				V	
21+15	3.4627	0.50	Q				V	
21+20	3.4658	0.46	Q				V	
21+25	3.4685	0.38	Q				V	
21+30	3.4709	0.36	Q				V	
21+35	3.4737	0.40	Q				V	
21+40	3.4770	0.48	Q				V	
21+45	3.4805	0.50	Q				V	
21+50	3.4836	0.46	Q				V	
21+55	3.4862	0.38	Q				V	
22+ 0	3.4887	0.36	Q				V	
22+ 5	3.4915	0.40	Q				V	
22+10	3.4948	0.48	Q				V	
22+15	3.4982	0.50	Q				V	
22+20	3.5014	0.46	Q				V	
22+25	3.5040	0.38	Q				V	
22+30	3.5065	0.36	Q				V	
22+35	3.5089	0.35	Q				V	
22+40	3.5113	0.35	Q				V	
22+45	3.5137	0.34	Q				V	
22+50	3.5160	0.34	Q				V	
22+55	3.5184	0.34	Q				V	
23+ 0	3.5208	0.34	Q				V	
23+ 5	3.5231	0.34	Q				V	
23+10	3.5255	0.34	Q				V	
23+15	3.5279	0.34	Q				V	
23+20	3.5302	0.34	Q				V	
23+25	3.5326	0.34	Q				V	
23+30	3.5350	0.34	Q				V	
23+35	3.5373	0.34	Q				V	
23+40	3.5397	0.34	Q				V	
23+45	3.5421	0.34	Q				V	
23+50	3.5444	0.34	Q				V	
23+55	3.5468	0.34	Q				V	
24+ 0	3.5492	0.34	Q				V	
24+ 5	3.5508	0.24	Q				V	
24+10	3.5514	0.08	Q				V	
24+15	3.5516	0.04	Q				V	
24+20	3.5517	0.02	Q				V	
24+25	3.5518	0.01	Q				V	

**UNIT HYDROGRAPH HYDROLOGY MAPS**

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- LEGEND**
- DRAINAGE MANAGEMENT BOUNDARY
  - FLOW DIRECTION
  - LONGEST FLOW PATH  
CENTROIDAL LENGTH
  - NODE DESIGNATION  
NODE ELEVATION
  - INVERT ELEVATION
  - WATERSHED AREA (ACRES)  
LONGEST WATER PATH (FT)
  - CENTROID

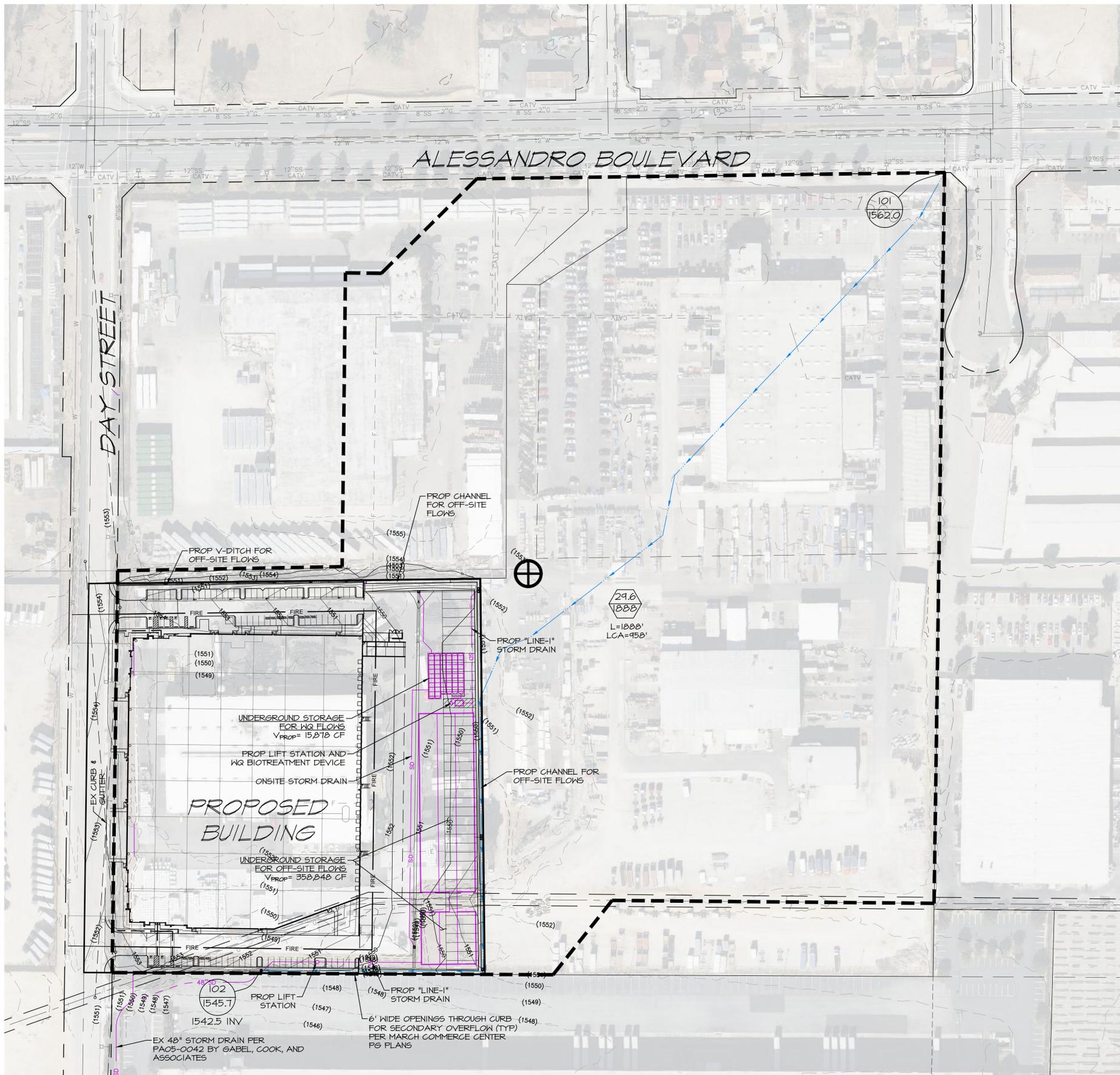


CITY OF MORENO VALLEY

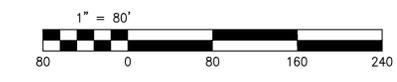
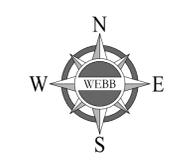
UNIT HYDROGRAPH HYDROLOGY  
EXISTING UNIT HYDROGRAPH  
FIRST DAY STREET LOGISTICS (PEN22-0144)

SCALE: 1" = 80'		ENGINEERING CONSULTANTS	W.O. 22-0028
DATE: 2/22/23		3788 McCRAY STREET	SHEET 1
DESIGNED: ABE		RIVERSIDE CA 92506	OF 2 SHEETS
CHECKED: SKK		PH. (951) 686-1070	DWG. NO.
PLN CK REF:		FAX (951) 788-1256	
F.B.			

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- LEGEND**
- DRAINAGE MANAGEMENT BOUNDARY
  - FLOW DIRECTION
  - LONGEST FLOW PATH CENTROIDAL LENGTH
  - NODE DESIGNATION NODE ELEVATION
  - INVERT ELEVATION
  - WATERSHED AREA (ACRES) LONGEST WATER PATH (FT)
  - CENTROID



CITY OF MORENO VALLEY

UNIT HYDROGRAPH HYDROLOGY  
 PROPOSED UNIT HYDROGRAPH  
 FIRST DAY STREET LOGISTICS (PEN22-0144)

SCALE: 1" = 80'		ENGINEERING CONSULTANTS	W.O. 22-0028
DATE: 2/22/23		3788 McCRAY STREET	SHEET 2
DESIGNED: ABE		RIVERSIDE CA 92506	OF 2 SHEETS
CHECKED: SKK		PH. (951) 686-1070	DWG. NO.
PLN CK REF:		FAX (951) 788-1256	
F.B.			

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## **APPENDIX D – REFERENCES**

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**STORM DRAIN IMPROVEMENT PLAN – LINE “A” DAY STREET EXTENSION (PA 05-0042)**

**STANDARD STREET IMPROVEMENT NOTES:**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEARING OF THE PROPOSED WORK AREA, AND RELOCATION COSTS OF ALL EXISTING UTILITIES. PERMITTEE MUST INFORM CITY OF CONSTRUCTION SCHEDULE AT LEAST 48 HOURS PRIOR TO BEGINNING OF CONSTRUCTION. INSPECTION TELEPHONE - 951-413-3120.
- THE DEVELOPER SHALL INSTALL STREET NAME SIGNS CONFORMING TO THE APPROPRIATE CITY STANDARDS.
- ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH THE CITY STANDARDS, RIVERSIDE COUNTY STANDARDS, THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION, INCLUDING SUPPLEMENTS, EXCEPT AS OTHERWISE NOTED ON THE PROJECT PLANS OR AS OTHERWISE APPROVED BY THE CITY ENGINEER.
- IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO NOTIFY THE ENGINEER TO INSTALL STREET CENTERLINE MONUMENTS AS REQUIRED BY THE CITY ORDINANCE FOR NEW DEVELOPMENT AND REPLACEMENT OF DISTURBED OR COVERED EXISTING MONUMENTS.
- IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER OR CONTRACTOR TO APPLY TO THE CITY ENGINEER'S OFFICE, PERMIT SECTION, PRIOR TO CONSTRUCTION FOR A PERMIT FOR ALL WORK WITHIN CURRENT OR FUTURE DEDICATED PUBLIC RIGHT-OF-WAY.
- A.C. PAVING OF CITY STREETS SHALL BE THE MINIMUM REQUIRED ON THE TYPICAL CROSS SECTION OF EACH CLASSIFICATION SUBJECT TO R VALUE TESTING AND STRUCTURAL SECTIONS DETERMINED BASED ON R VALUE TEST RESULTS AND TRAFFIC INDEX OF STREET CLASSIFICATION.
- CURB DEPRESSIONS AND DRIVEWAY APPROACHES SHALL BE CONSTRUCTED ACCORDING TO THE APPROPRIATE CITY STANDARDS AND AS DIRECTED IN THE FIELD.
- ALL UNDERGROUND FACILITIES, WITH LATERAL SHALL BE IN PLACE PRIOR TO PAVING THE STREET SECTION INCLUDING, BUT NOT LIMITED TO THE FOLLOWING: SEWER, WATER, ELECTRIC, GAS AND DRAINAGE.
- ALL STREET SECTIONS ARE TENTATIVE. ADDITIONAL SOIL TESTS SHALL BE TAKEN AFTER ROUGH GRADING TO DETERMINE THE EXACT STREET SECTION REQUIREMENTS.
- EMULSION-AGGREGATE SLURRY, TYPE 1, AS DEFINED IN SECTION 203-5 OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SHALL BE APPLIED TO ALL A.C. SURFACES ONE YEAR AFTER ACCEPTANCE OF PUBLIC IMPROVEMENTS BY CITY AND PRIOR TO THE 10% BOND RELEASE. ALL STRIPING SHALL BE REPLACED AS PER APPROVED SIGNING/STRIPING PLAN.
- INSTALL STREET TREES IN ACCORDANCE WITH THE APPROPRIATE CITY OF MORENO VALLEY ORDINANCE.
- BLUE DOTS SHALL BE INSTALLED ADJACENT TO ANY REQUIRED FIRE HYDRANT, AND APPROVED BY THE FIRE DEPARTMENT.
- NO PUBLIC STREET SHALL BE CLOSED TO TRAFFIC WITHOUT PRIOR CITY COUNCIL APPROVAL.
- CITY APPROVAL OF PLANS DOES NOT RELIEVE THE DEVELOPER OR CONSULTANT FROM RESPONSIBILITY FOR THE CORRECTION OF ERROR AND OMISSION DISCOVERED DURING CONSTRUCTION. UPON REQUEST, THE PLAN REVISIONS SHALL BE PROMPTLY SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
- THE QUANTITY, THICKNESS AND LIMITS OF AREAS NOTED FOR ASPHALT OVERLAY ARE FOR ESTIMATION PURPOSES ONLY. THE EXACT THICKNESS OF ANY ASPHALT OVERLAY SHALL BE DETERMINED BY A COMBINATION OF SOILS TESTING FOR STRUCTURAL SOUNDNESS OF THE EXISTING ROADWAY SECTION, CONFORMANCE WITH SECTION 8 (EARTHWORK) OF THE RIVERSIDE COUNTY ROAD IMPROVEMENT STANDARDS AND SPECIFICATIONS, CONFORMANCE TO THE LATEST TRAFFIC INDEX RATING AND TO THE DIRECTION OF THE CITY ENGINEER FOR REMOVAL OR REPAIR OF UNSUITABLE PAVED SECTIONS. PAVEMENT AREAS WHICH HAVE BEEN DETERMINED TO BE UNSUITABLE FOR OVERLAY DUE TO CRACKING, SUBSIDENCE, IRREGULAR SURFACE, AGE, MATERIAL COMPOSITION, OR WATER DAMAGE, SHALL BE REMOVED OR REPAIRED AT THE DIRECTION OF THE CITY ENGINEER. THE CIVIL ENGINEER SHALL REVISE THE STREET IMPROVEMENT PLANS IN THE AFFECTED AREA UPON NOTIFICATION BY THE CITY ENGINEER.
- UTILITY TRENCH BACKFILL SHALL BE CONSTRUCTED TO 90% RELATIVE COMPACTION UNLESS OTHERWISE SPECIFIED, AND SHALL BE CERTIFIED BY THE DEVELOPER'S SOILS ENGINEER PRIOR TO THE INSTALLATION OF AGGREGATE BASE AND PAVING OF THE NEW STREET. PLEASE REFER TO STANDARD PLAN 602 A, B & C FOR TRENCH BACKFILL WITHIN AN EXISTING STREET.
- SEWER AND WATER LATERALS SHALL BE MARKED ON THE CURB ACCORDING TO LOCAL WATER PURVEYOR STANDARDS.
- ALL WATER VALVES OR SEWER MANHOLES SHALL BE RAISED TO GRADE IN ACCORDANCE WITH LOCAL WATER PURVEYOR STANDARDS.
- NO TRENCHES MAY BE LEFT OPEN OVERNIGHT UNLESS APPROVED BY THE CITY ENGINEER.
- IF ANY UTILITIES OR FACILITIES CONFLICT WITH PROPOSED IMPROVEMENTS, WORK SHALL STOP AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
- ALL UTILITIES SHALL BE INSTALLED, TESTED AND APPROVED BY THE APPROPRIATE UTILITY COMPANY PRIOR TO PAVING.
- ALL TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE IN PLACE PRIOR TO PAVING. STREET MARKINGS AND STRIPING SHALL BE COMPLETED PRIOR TO STREET OPENING.
- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTORS, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
- TRAFFIC CONTROL, SIGNING AND STRIPING MUST BE IN CONFORMANCE TO THE LATEST VERSION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICE (M.U.T.C.D.) AND M.U.T.C.D. CALIFORNIA SUPPLEMENT.
- AN "AS BUILT STREET IMPROVEMENT PLAN" SHALL BE SUBMITTED AT THE COMPLETION OF WORK.

**STANDARD GENERAL IMPROVEMENT NOTES**

- ALL WORK CALLED FOR ON THE PLANS SHALL BE IN COMPLIANCE WITH CURRENT CITY STANDARD SPECIFICATIONS, ADOPTED BY THE CITY COUNCIL, UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIAL PROVISIONS FOR THE SUBJECT PROJECT.
- A CONSTRUCTION PERMIT MUST BE OBTAINED FROM THE LAND DEVELOPMENT DIVISION OF THE PUBLIC WORKS DEPARTMENT COUNTER BY THE CONTRACTOR PRIOR TO GRADING AND/OR CONSTRUCTION WORK OF ANY TYPE WITHIN THE PUBLIC RIGHT OF WAY.
- A TEMPORARY STREET CLOSURE PERMIT IS REQUIRED IN ALL CASES WHERE WORK WILL INTERFERE WITH EITHER VEHICULAR OR PEDESTRIAN TRAFFIC.
- CITY INSPECTION OF THE WORK CALLED FOR ON THE PLANS SHALL NOT, IN ANY WAY, RELIEVE THE CONTRACTOR AND/OR THE DEVELOPER OF THEIR OBLIGATION TO PERFORM THE WORK IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS.
- ANY ALTERATIONS OR VARIANCES FROM THE PLANS, EXCEPT MINOR ADJUSTMENTS IN THE FIELD TO MEET EXISTING CONDITIONS, SHALL BE REQUESTED IN WRITING AND MAY NOT BE INSTITUTED UNTIL APPROVED BY THE CITY ENGINEER OR HIS REPRESENTATIVES ACTING SPECIFICALLY ON HIS/HER INSTRUCTIONS.
- ALL ELEVATIONS SHOWN ON THE PLAN ARE ESTABLISHED BY LOCAL BENCH MARK. SURVEY MONUMENTS SHALL BE PROTECTED IN PLACE.
- QUANTITIES AS SHOWN ON THE PLANS ARE ESTIMATED AND THE CONTRACTOR IS ADVISED THAT ALL FINAL QUANTITIES OF MATERIAL AND WORK IN PLACE MAY BE SOMEWHAT GREATER OR LESS THAN THOSE INDICATED ON THE PLANS.
- CONCRETE GUTTERS, ALLEY APPROACHES, DRIVEWAYS OR OTHER CONCRETE ITEMS SUBJECT TO VEHICULAR TRAFFIC SHALL BE BARRICADED, AND NO VEHICULAR TRAFFIC PERMITTED FOR A PERIOD OF NO LESS THAN SEVEN DAYS FOLLOWING THE PLACEMENT OF SAID CONCRETE ITEM(S). WHEN THE GENERAL PROVISIONS CALL FOR USE OF A CONCRETE ITEM(S) FOR VEHICULAR TRAFFIC EARLIER THAN THE SEVENTH DAY FOR COMMENCEMENT OF OPERATION OR WHEN THE CONTRACTOR SO DESIRES, CONCRETE CONTAINING EIGHT SACKS OF CEMENT PER CUBIC YARD SHALL BE USED UNDER THE DIRECTION OF THE CITY ENGINEER TO ALLOW TRAFFIC AFTER 72 HOURS OF PLACEMENT OF CONCRETE.
- IRRIGATION LINES WITHIN ANY CITY STREET SHALL HAVE A THIRTY INCH MINIMUM COVER FROM FINISH SURFACE UNLESS SAID IRRIGATION LINE IS ENCASED IN CONCRETE OR BEDDED IN A SPECIAL CONCRETE CRADLE.
- THE CONTRACTOR SHALL OPERATE IN A MANNER COMPLIANT WITH ALL APPLICABLE SECTIONS OF THE MUNICIPAL CODE AND COMPLIANT WITH ALL APPLICABLE CITY COUNCIL RESOLUTIONS.
- THE LOCATION OF UNDERGROUND UTILITY OR IRRIGATION LINES, AS SHOWN ON THE PLANS, IS APPROXIMATE, AND SINCE THE ACTUAL LOCATION MAY BE SOMEWHAT DIFFERENT FROM THAT SHOWN, THE CONTRACTOR IS REQUIRED TO CONTACT THE INTERESTED UTILITY OR WATER COMPANY BEFORE EXCAVATING IN THE VICINITY OF ANY SUCH LINES.
- PARKWAY TREES, INSTALLED BY THE DEVELOPER, SHALL BE PLANTED AND MAINTAINED IN COMPLIANCE WITH THE APPROPRIATE CITY STANDARD.
- ALL STREET NAME AND TRAFFIC REGULATORY SIGNS INDICATED ON THE PLANS WILL BE INSTALLED BY THE DEVELOPER IN ACCORDANCE WITH THE APPROPRIATE CITY STANDARDS.
- ALL STREET LIGHTS INDICATED ON THE PLANS SHALL BE INSTALLED BY THE LOCAL ELECTRIC UTILITY COMPANY. THE DEVELOPER SHALL WORK DIRECTLY WITH THE COMPANY WHEN THE LIGHTS ARE TO BE SERVED FROM AN UNDERGROUND SYSTEM.
- AN APPROVED WEED KILLER SHALL BE APPLIED TO THE PREPARED BASE PRIOR TO ASPHALT PAVING IN ALL AREAS WHERE THERE IS ANY EVIDENCE OF HUMUS OR ORGANIC MATERIAL PRESENT IN THE BASE (EITHER NATIVE OR IMPORTED) MATERIAL. ALL WEED KILLERS SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.
- PROVISIONS SHALL BE MADE BY THE CONTRACTOR FOR CONTRIBUTORY DRAINAGE AT ALL TIMES.
- WHEN APPLICABLE, ALL ANTI-GRAFFITI COATING SHALL BE VITROCROM HI-BUILD GRAFFITI GLAZED COATING FOR CONCRETE BLOCK OR AN EQUAL APPROVED BY THE CITY ENGINEER.

# STORM DRAIN IMPROVEMENT PLAN

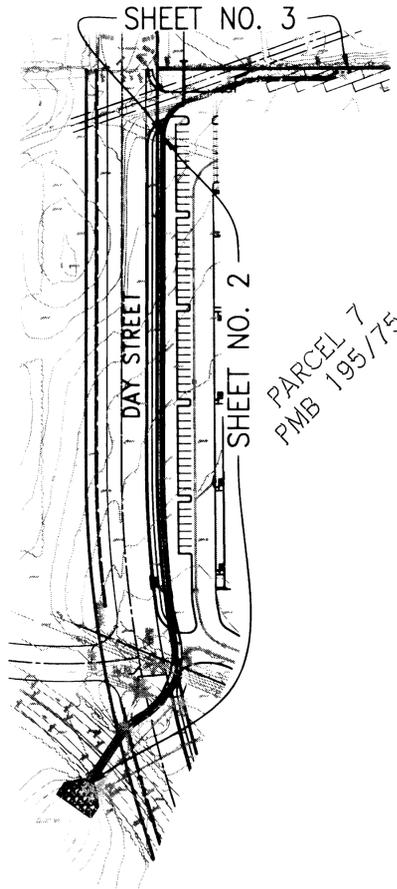
## CACTUS AVENUE TO 1400' N'LY

### PM 27732, LOT 7

### APN 297-130-050



VICINITY MAP  
N.T.S.



UTILITY COMPANIES	EMERGENCY NUMBERS
MORENO VALLEY UTILITIES	877-811-8700
SOUTHERN CALIF EDISON	800-684-8123
SOUTHERN CALIF GAS	800-427-2200
VERIZON	800-483-4000
SBC	800-310-2355
WASTE MANAGEMENT OF INLAND VALLEY	800-423-9986
EASTERN MUNICIPAL WATER DISTRICT	800-426-3693

**STORM DRAIN PLANS**

INDEX	
DESCRIPTION	SHEET NO.
TITLE SHEET.....	1
STORM DRAIN PLAN & PROFILE.....	2
STORM DRAIN PLAN & PROFILE.....	3

**DECLARATION OF ENGINEER OF RECORD**

I HEREBY DECLARE THAT THE DESIGN OF THE IMPROVEMENTS AS SHOWN ON THESE PLANS COMPLIES WITH PROFESSIONAL ENGINEERING STANDARD AND PRACTICES. AS THE ENGINEER IN RESPONSIBLE CHARGE OF DESIGN OF THESE IMPROVEMENTS, I ASSUME FULL RESPONSIBLE CHARGE FOR SUCH DESIGN. I UNDERSTAND AND ACKNOWLEDGE THAT THE PLAN CHECK OF THESE PLANS BY THE CITY OF MORENO VALLEY IS A REVIEW FOR THE LIMITED PURPOSE OF ENSURING THAT THE PLANS COMPLY WITH CITY PROCEDURES, APPLICABLE POLICIES AND ORDINANCES. THE PLAN CHECK IS NOT A DETERMINATION OF THE TECHNICAL ADEQUACY OF THE DESIGN OF THE IMPROVEMENTS. SUCH PLAN CHECK DOES NOT, THEREFORE, RELIEVE ME OF MY RESPONSIBILITY FOR THE DESIGN OF THESE IMPROVEMENTS. AS ENGINEER OF RECORD, (E.O.R.), I AGREE TO INDEMNIFY AND HOLD THE CITY OF MORENO VALLEY, THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY (RDA), AND THE MORENO VALLEY COMMUNITY SERVICES DISTRICT (CSD), ITS OFFICERS, AGENTS AND EMPLOYEES HARMLESS FROM ANY AND ALL LIABILITY OF CLAIMS, DAMAGES OR INJURIES TO ANY PERSON OR PROPERTY WHICH MIGHT ARISE FROM THE NEGLIGENCE ACTS, ERRORS OR OMISSIONS OF THE ENGINEER OF RECORD, ANY EMPLOYEES, AGENTS OR CONSULTANTS.



**ENGINEER'S NOTICE TO CONTRACTORS**

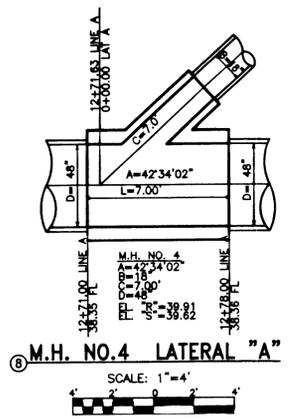
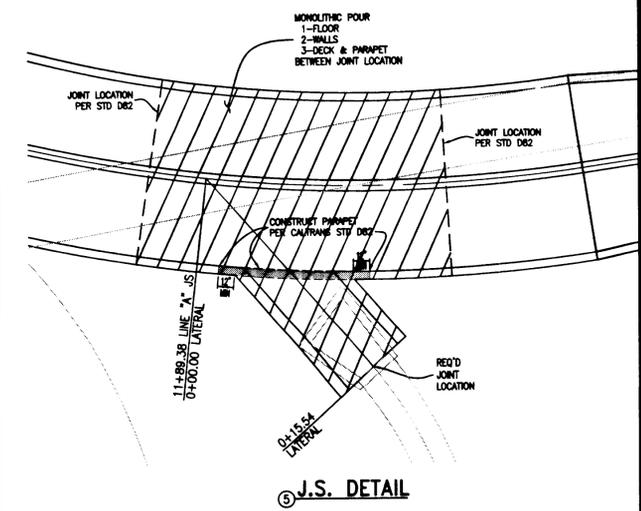
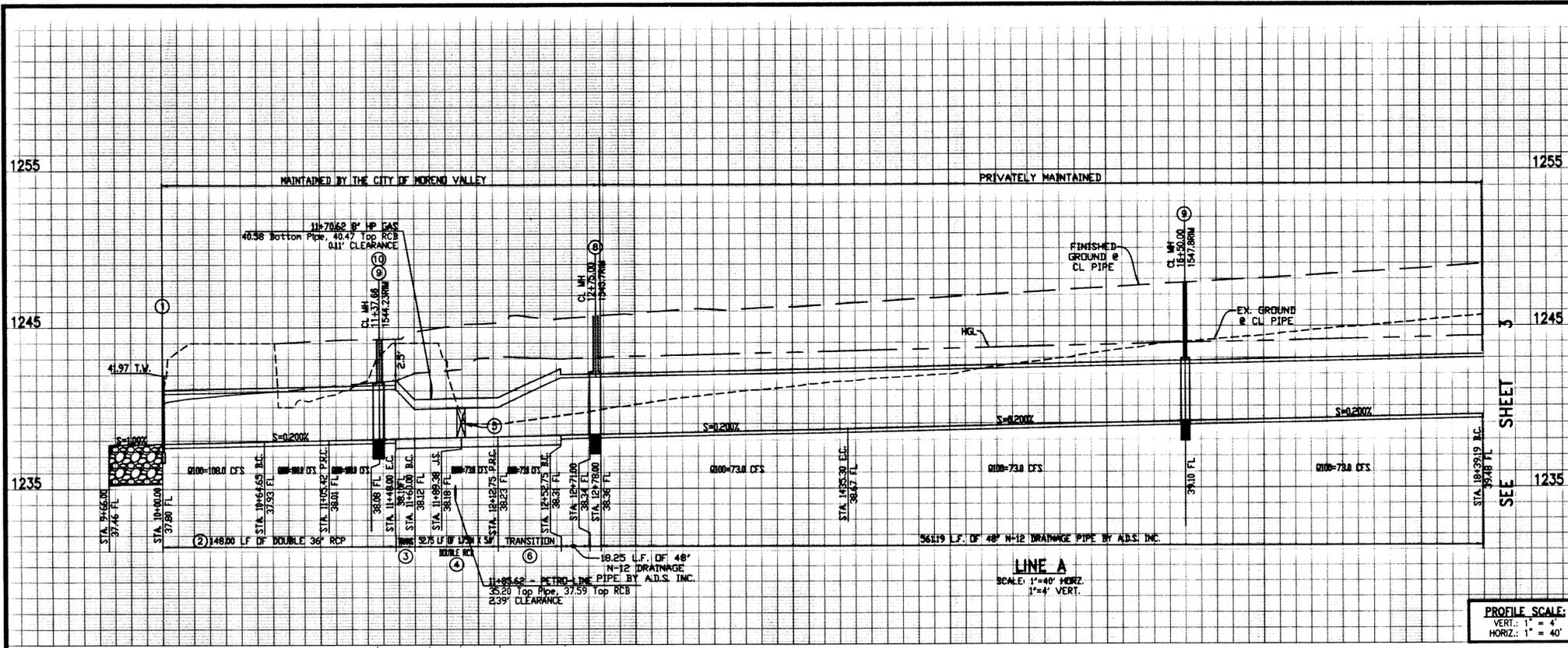
THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURE TO PROTECT ANY UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.



NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
**Underground Service Alert**  
 Call: TOLL FREE  
 1-800-227-2600  
 TWO WORKING DAYS BEFORE YOU DIG

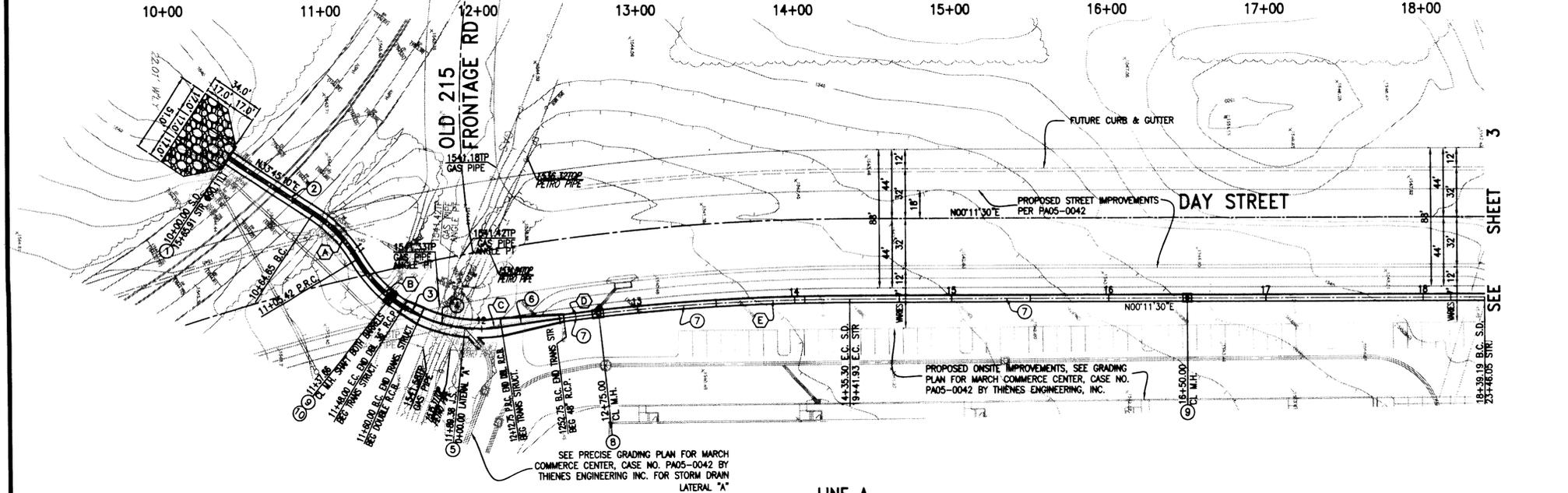
BENCH MARK		BASIS OF BEARING		REVIEW BY CITY STAFF		PREPARED BY OR UNDER THE SUPERVISION OF		DRAWN BY		GABEL, COOK & ASSOCIATES		CITY OF MORENO VALLEY	
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PETERS BLVD & 10th AVE, 38.05 FT. S/W OF A CHISELED "I" IN A 3" IRON COR. POST, 10.00 FT. W/E OF V.H. & 100 IN THE WEST SIDE OF POWER POLE #15136, 34.00 FT. N/W OF A NAIL & 106 SET IN S/W SIDE TELEPHONE POLE #15106; A 1" IRON PIPE & 106 MARKED COUNTY SURVEYOR IN A HANDELL MONUMENT. ELEV. = 1303.586' (MVD 29 / ESTABLISHED 1963)		THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CACTUS AVENUE (FORMERLY AMPOSA AVENUE) BEING N 02°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 29-36 IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.		OFFICE	INITIAL	DATE	Craig A. Cook	7/14/06	DESIGN BY	DATE	CIVIL ENGINEERS	LAND SURVEYORS	ACCT. NO.
LAND DEVELOPMENT	U66	5/12/06	ORAG A COOK R.C.E. NO 23323 EXP. 12-31-07	DATE	LAND PLANNERS								
ENTERPRISE SERVICES			APPROVED	DATE	125 West La Cadenita Drive, Suite A, Riverside, CA 92501	Telephone (909) 788-8092 Facsimile (909) 788-5184							
PLANNING			REC. BY	DATE	TITLE SHEET								
TRANSPORTATION			CHECKED BY	DATE	LINE "A" DAY STREET EXTENSION								
CAPITAL PROJECT					CACTUS AVENUE TO 1400' N'LY								
PARK AND RECREATION					SHEET 1 NO. 3								
					CITY I. D. NO. 2830								

JOB FOLDER: N:\20062\Land Development\dwg  
 DRAWING NAME: SD-SHT1.dwg  
 DATE PRINTED: Friday, 07 April 2006 11:25am  
 P.A. 05-0442-50  
 REVISE SEPT. 2004



**CONSTRUCTION NOTES**

- ① CONSTRUCT HEADWALL PER CALTRANS STD. DWG. D89.
- ② CONSTRUCT DOUBLE 36" RCP, 15000 WITH 5.50' BETWEEN PIPE CL'S.
- ③ CONSTRUCT DOUBLE TRANSITION STRUCTURE PER APWA STD DWG 342 (MODIFIED) SEE DIMENSIONING DETAIL ON SHEET 3.
- ④ CONSTRUCT 1.75' HIGH X 5.00' WIDE DBL. RCB PER CALTRANS STD DWG D81 W/ WINDOWS IN CENTER WALL PER APWA STD DWG 382.
- ⑤ CONSTRUCT JUNCTION STRUCTURE PER PER DETAIL HEREON AND CALTRANS STD DWG D81.
- ⑥ CONSTRUCT TRANSITION STRUCTURE PER APWA STD DWG 343.
- ⑦ CONSTRUCT 48" N-12 DRAINAGE PIPE BY A.D.S. INC.
- ⑧ CONSTRUCT MANHOLE STRUCTURE PER APWA STD DWG 322 W/ 36" MH SHAFT WITHOUT REDUCER PER APWA STD DWG 326 AND DETAIL HEREON.
- ⑨ CONSTRUCT MANHOLE STRUCTURE PER APWA STD DWG 320.
- ⑩ CONSTRUCT MANHOLE SHAFT WITHOUT REDUCER PER APWA STD DWG 326.
- ⑪ CONSTRUCT JUNCTION STRUCTURE PER RCFC STD DWG. JS227 AND DETAIL HEREON.
- ⑫ CONSTRUCT CONCRETE DROP INLET PER RCFC STD DWG. CB110. W=16.00'; V=6.03'; A=42'; T=8'; D=48'; H=30'
- ⑬ CONSTRUCT 24" N-12 DRAINAGE PIPE BY A.D.S. INC.
- ⑭ CONSTRUCT HEADWALL PER CALTRANS STD. DWG. D89.
- ⑮ CONSTRUCT RETAINING WALLS - SEE GRADING PLAN FOR MARCH COMMERCE CENTER, CASE NO. PA05-0042 BY THIENES ENGINEERING, INC.
- ⑯ CONSTRUCT 2.5" THICK 1/4 TON RIP RAP.



NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
**Underground Service Alert**  
 Call: TOLL FREE  
 1-800-227-2600  
 TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**  
 ANHERSIDE COUNTY SURVEYOR B.M. NO. "34-32" AT THE INTERSECTION OF PERRIS BLVD. & IRLS AVE. 58.35 FT. S/W OF A CORNER "X" IN A 3" IRON COR. POST. 104.80 FT. N/E OF NAIL & 106 IN THE WEST SIDE OF POWER POLE (R151236) 34.30 FT. N/W OF A NAIL & 106 SET IN 5/4" SIDE TELEPHONE POLE (R15184) 11' IRON PIPE & 106 BARRED COUNTY SURVEYOR IN A IRONWELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)

OFFICE	INITIAL	DATE
LAND DEVELOPMENT	VBC	5/14/06
ENTERPRISE SERVICES		
PLANNING		
TRANSPORTATION		
CAPITAL PROJECT		
PARK AND RECREATION		

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE

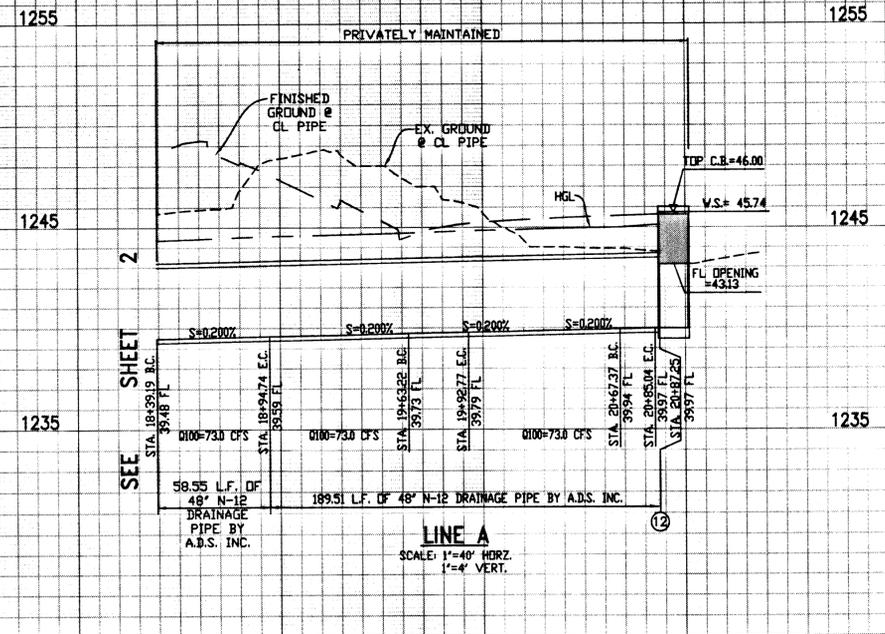
PREPARED BY DR UNDER THE SUPERVISION OF  
**Craig A. Cook** 7/10/06  
 CRAIG A. COOK R.C.S. NO. 23323 EXP. 12-31-07  
 APPROVED: [Signature] DATE: 5/16/06  
 PREM KUMAR INTERIM CITY ENGINEER, CITY OF MORENO VALLEY R.C.E. NO. 58463 (EXP. 12-31-06)

**GABEL, COOK & ASSOCIATES**  
 CIVIL ENGINEERS LAND SURVEYORS  
 LAND PLANNERS  
 125 West La Cadenita Drive, Suite A, Riverside, CA 92501  
 Telephone (909) 788-8092 Facsimile (909) 788-5184

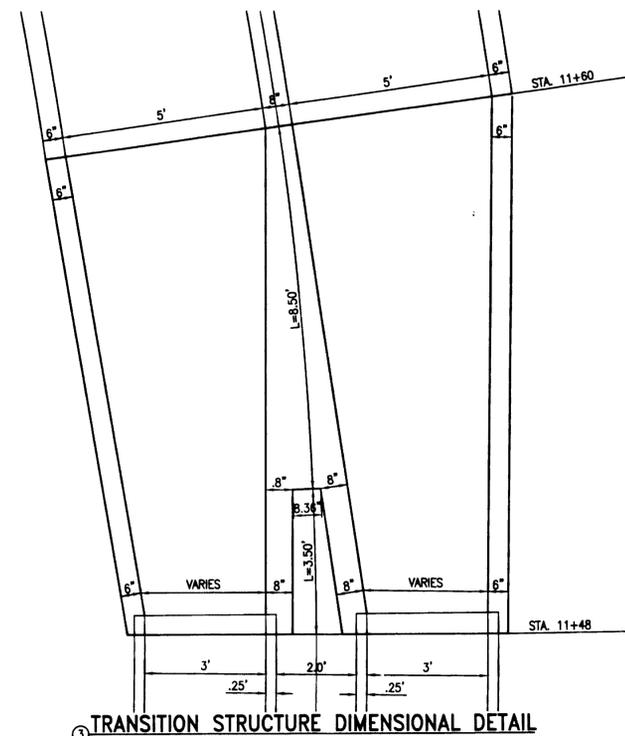
**CITY OF MORENO VALLEY**  
 STA 10+00.00 TO STA 18+39.19  
**LINE "A" DAY STREET EXTENTION**  
 CACTUS AVENUE TO 1400' N'LY  
 ACCT. NO.  
 SHEET 2 NO. 3  
 CITY I. D. NO. 2830

JOB FOLDER: N:\20052\Land Development\dwg  
 DRAWING NAME: SD-SHT2.dwg  
 DATE PRINTED: Tuesday, May 2006 12:11 pm

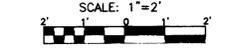
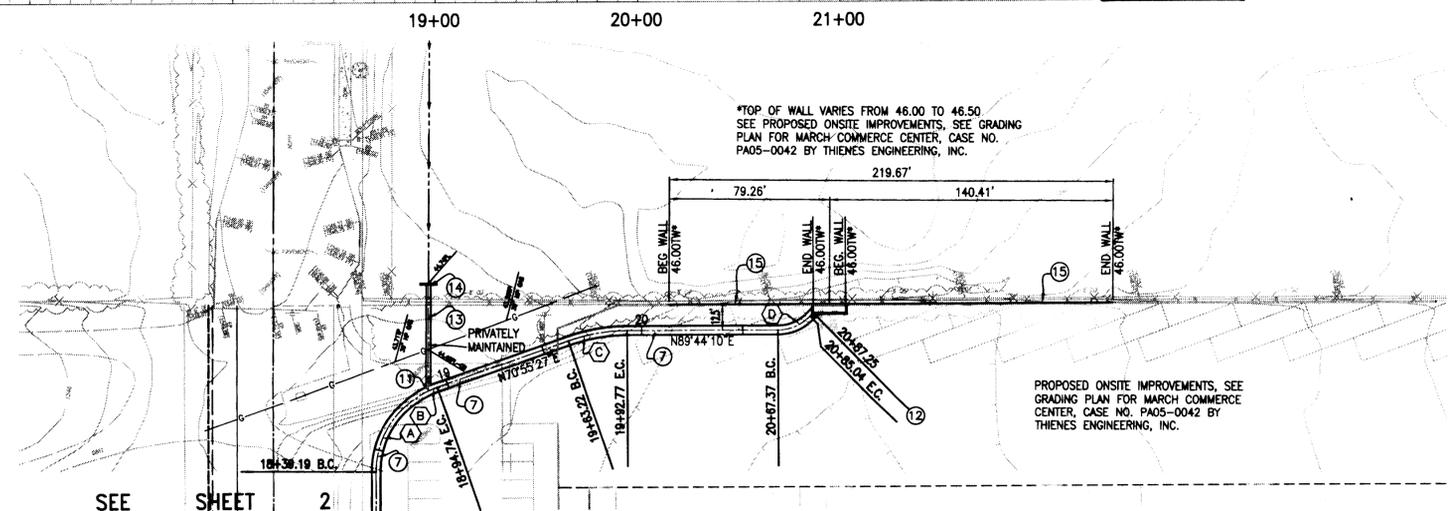
REVISE SEPT. 2004



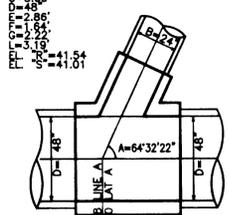
PROFILE SCALE:  
VERT.: 1" = 4'  
HORIZ.: 1" = 40'



③ TRANSITION STRUCTURE DIMENSIONAL DETAIL  
SCALE: 1"=2'



J.S. NO. 2  
A=64'32"22"  
B=6'0"  
C=4'8"  
D=2'8"  
E=1'8"  
F=3'10"  
G=4'11"  
H=4'11"



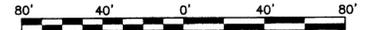
④ JUNCTION STRUCTURE @ STA. 18+89.88  
SCALE: 1"=4'

**CONSTRUCTION NOTES**

- ① CONSTRUCT HEADWALL PER CALTRANS STD. DWG. D89.
- ② CONSTRUCT DOUBLE 36" RCP, 15000 WITH 5.50' BETWEEN PIPE CL'S.
- ③ CONSTRUCT DOUBLE TRANSITION STRUCTURE PER APWA STD DWG 342 (MODIFIED) SEE DIMENSIONING DETAIL ON SHEET 3.
- ④ CONSTRUCT 1.75' HIGH X 5.00' WIDE DBL RCB PER CALTRANS STD DWG D81 W/ WINDOWS IN CENTER WALL PER APWA STD DWG 382.
- ⑤ CONSTRUCT JUNCTION STRUCTURE PER DETAIL HEREON AND CALTRANS STD DWG D81.
- ⑥ CONSTRUCT TRANSITION STRUCTURE PER APWA STD DWG 343.
- ⑦ CONSTRUCT 48" N-12 DRAINAGE PIPE BY A.D.S. INC.
- ⑧ CONSTRUCT MANHOLE STRUCTURE PER APWA STD DWG 322 W/ 36" MH SHAFT WITHOUT REDUCER PER APWA STD DWG 326 AND DETAIL HEREON.
- ⑨ CONSTRUCT MANHOLE STRUCTURE PER APWA STD DWG 320.
- ⑩ CONSTRUCT MANHOLE SHAFT WITHOUT REDUCER PER APWA STD DWG 326.
- ⑪ CONSTRUCT JUNCTION STRUCTURE PER RCFC STD DWG. JS227 AND DETAIL HEREON.
- ⑫ CONSTRUCT CONCRETE DROP INLET PER RCFC STD DWG. CB110. W=16.00'; V=6.03'; A=42'; T=8'; D=48"; H=30"
- ⑬ CONSTRUCT 24" N-12 DRAINAGE PIPE BY A.D.S. INC.
- ⑭ CONSTRUCT HEADWALL PER CALTRANS STD DWG. D89.
- ⑮ CONSTRUCT RETAINING WALLS - SEE GRADING PLAN FOR MARCH COMMERCE CENTER, CASE NO. PA05-0042 BY THIENES ENGINEERING, INC.
- ⑯ CONSTRUCT 2.5' THICK 1/4 TON RIP RAP.

CURVE TABLE			
DELTA	R	L	T
(A) 64°32'36"	45.00'	50.69'	28.42'
(B) 6°11'20"	45.00'	4.86'	2.43'
(C) 18°48'44"	90.00'	29.55'	14.91'
(D) 45°00'00"	22.50'	17.67'	9.32'

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
**Underground Service Alert**  
Call: TOLL FREE  
1-800-227-2600  
TWO WORKING DAYS BEFORE YOU DIG



BENCH MARK		BASIS OF BEARING		REVIEW BY CITY STAFF		PREPARED BY OR UNDER THE SUPERVISION OF		DRAWN BY		GABEL, COOK & ASSOCIATES		CITY OF MORENO VALLEY		ACCT. NO.		
RIVERSIDE COUNTY SURVEYOR BLM. NO. 74-32" AT THE INTERSECTION OF PEROS BLVD. & 185 AVE. 58.55 FT. S/W OF A CHECKED 5" IN A 3" IRON CORN. POST; 14.00 FT. N/E. OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #213126 34.30 FT. N/W OF A NAIL & TAG SET IN S/W SIDE TELEPHONE POLE #15180; A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANWELL MONUMENT. ELEV. = 1503.526' (NOV 29 / ESTABLISHED 1963)		THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY IMPROSH AVENUE) BEING N 02°20'57" W AS PER RECORD OF SURVEY, R.S. 87 20-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.		OFFICE	INITIAL	DATE	Craig A. Cook	DATE	7 April 06	DESIGN BY	DATE	125 West La Cadenas Drive, Suite A, Riverside, CA 92501 Telephone (909) 788-8092 Facsimile (909) 788-5184	STA 18+39.19 TO STA 20+87.50 LINE "A" DAY STREET EXTENTION CACTUS AVENUE TO 1400' N'LY		SHEET 3 NO. 3 CITY I. D. NO. 2830	
REVISION		REVISION		REVISION		REVISION		REVISION		REVISION		REVISION		REVISION		

JOB FOLDER: N:\0065\Land Development\dwg\ SD-SHETS\09 May 2006 12:12pm Tuesday, 09 May 2006 12:12pm

REVISE SEPT. 2004

**PRECISE GRADING PLAN – MARCH COMMERCE CENTER (PA 05-0042)**

**GENERAL NOTES:**

- ALL WORK CALLED FOR ON THE PLANS SHALL BE IN COMPLIANCE WITH CURRENT CITY STANDARD SPECIFICATIONS ADOPTED BY THE CITY COUNCIL, UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIAL PROVISIONS FOR THE SUBJECT PROJECT.
- A CONSTRUCTION PERMIT MUST BE OBTAINED FROM THE LAND DEVELOPMENT DIVISION OF THE PUBLIC WORKS DEPARTMENT COUNTER BY THE CONTRACTOR PRIOR TO GRADING AND/OR CONSTRUCTION WORK OF ANY TYPE WITHIN THE PUBLIC RIGHT OF WAY.
- A TEMPORARY STREET CLOSURE PERMIT IS REQUIRED IN ALL CASES WHERE WORK WILL INTERFERE WITH EITHER VEHICULAR OR PEDESTRIAN TRAFFIC.
- CITY INSPECTION OF THE WORK CALLED FOR ON THE PLANS SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR AND/OR THE DEVELOPER OF THEIR OBLIGATION TO PERFORM THE WORK IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS.
- ANY ALTERATIONS OR VARIANCES FROM THE PLANS, EXCEPT MINOR ADJUSTMENTS IN THE FIELD TO MEET EXISTING CONDITIONS, SHALL BE REQUESTED IN WRITING AND MAY NOT BE INSTITUTED UNTIL APPROVED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE ACTING SPECIFICALLY ON HIS/HER INSTRUCTIONS.
- ALL ELEVATIONS SHOWN ON THE PLAN ARE ESTABLISHED BY LOCAL BENCH MARK. SURVEY MONUMENTS SHALL BE PROTECTED IN PLACE.
- QUANTITIES, AS SHOWN ON THE PLAN ARE ESTIMATED, AND THE CONTRACTOR IS ADVISED THAT ALL FINAL QUANTITIES OF MATERIAL AND WORK IN PLACE MAY BE SOMEWHAT GREATER OR LESS THAN THOSE INDICATED ON THE PLANS.
- CONCRETE GUTTERS, ALLEY APPROACHES, DRIVEWAYS OR OTHER CONCRETE ITEMS SUBJECT TO VEHICULAR TRAFFIC SHALL BE BARRICADED WITH NO VEHICULAR TRAFFIC PERMITTED FOR A PERIOD OF NO LESS THAN SEVEN DAYS FOLLOWING THE PLACEMENT OF SAID CONCRETE ITEM(S). WHEN THE GENERAL PROVISIONS CALL FOR USE OF SAID CONCRETE ITEM(S) BEFORE VEHICULAR TRAFFIC EARLIER THAN SEVEN DAYS FOR CONVENIENCE OF OPERATION OR WHEN THE CONTRACTOR SO DESIRES, CONCRETE CONTAINING EIGHT BAGS OF CEMENT PER CUBIC YARD SHALL BE USED UNDER THE DIRECTION OF THE CITY ENGINEER TO ALLOW TRAFFIC AFTER SEVENTY TWO HOURS OF PLACEMENT OF CONCRETE.
- IRRIGATION LINE WITHIN ANY CITY STREET SHALL HAVE A THIRTY INCH MINIMUM COVER FROM FINISH SURFACE, UNLESS SAID IRRIGATION LINE IS ENCASED IN CONCRETE OR BEDDED IN A SPECIAL CONCRETE CRADLE.
- THE CONTRACTOR SHALL OPERATE IN A MANNER COMPLIANT WITH ALL APPLICABLE SECTIONS OF THE MUNICIPAL CODE AND COMPLIANT WITH ALL APPLICABLE CITY COUNCIL RESOLUTIONS.
- THE LOCATION OF UNDERGROUND UTILITY OR IRRIGATION LINES AS SHOWN ON THE PLANS, IS APPROXIMATE, AND SINCE THE ACTUAL LOCATIONS MAY BE SOMEWHAT DIFFERENT FROM THAT SHOWN, THE CONTRACTOR IS REQUIRED TO CONTACT THE INTERESTED UTILITY OR WATER COMPANY BEFORE EXCAVATING IN THE VICINITY OF ANY SUCH LINES.
- PAVING TREES INSTALLED BY THE DEVELOPER SHALL BE PLANTED AND MAINTAINED IN COMPLIANCE WITH THE APPROPRIATE CITY STANDARD.
- ALL STREET NAME AND TRAFFIC REGULATORY SIGNS INDICATED ON THE PLANS WILL BE INSTALLED BY THE DEVELOPER IN ACCORDANCE WITH THE APPROPRIATE CITY STANDARDS.
- ALL STREET LIGHTS INDICATED ON THE PLANS SHALL BE INSTALLED BY THE LOCAL ELECTRIC UTILITY COMPANY. THE DEVELOPER SHALL WORK DIRECTLY WITH THE COMPANY WHEN THE LIGHTS ARE TO BE SERVED FROM AN UNDERGROUND SYSTEM.
- AN APPROVED WEED KILLER SHALL BE APPLIED TO THE PREPARED BASE PRIOR TO ASPHALT PAVING IN ALL AREAS WHERE THERE IS ANY EVIDENCE OF HUMUS OR ORGANIC MATERIAL PRESENT IN THE BASE (EITHER NATIVE OR IMPORTED) MATERIAL. ALL WEED KILLERS SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.
- PROVISIONS SHALL BE MADE BY THE CONTRACTOR FOR CONTRIBUTORY DRAINAGE AT ALL TIMES.
- WHEN APPLICABLE, ALL ANTI GRAFFITI COATING SHALL BE SHALL BE VITROCEM HI-BUILD GRAFFITI GLAZED COATING FOR CONCRETE BLOCK OR AN EQUAL APPROVED BY THE CITY ENGINEER.

**DECLARATION OF ENGINEER OF RECORD**

I HEREBY DECLARE THAT THE DESIGN OF THE IMPROVEMENTS AS SHOWN ON THESE PLANS COMPLIES WITH PROFESSIONAL ENGINEERING STANDARDS AND PRACTICES. AS THE ENGINEER IN RESPONSIBLE CHARGE OF DESIGN OF THESE IMPROVEMENTS, I ASSUME FULL RESPONSIBLE CHARGE FOR SUCH DESIGN. I UNDERSTAND AND ACKNOWLEDGE THAT THE PLAN CHECK OF THESE PLANS BY THE CITY OF MORENO VALLEY IS A REVIEW FOR THE LIMITED PURPOSE OF ENSURING THAT THE PLANS COMPLY WITH CITY PROCEDURES, APPLICABLE POLICIES AND ORDINANCES. THE PLAN CHECK IS NOT A DETERMINATION OF THE TECHNICAL ADEQUACY OF THE DESIGN OF THE IMPROVEMENTS. SUCH PLAN CHECK DOES NOT, THEREFORE, RELIEVE ME OF MY RESPONSIBILITY FOR THE DESIGN OF THESE IMPROVEMENTS. AS ENGINEER OF RECORD, (E.O.R.), I AGREE TO INDEMNIFY AND HOLD THE CITY OF MORENO VALLEY, THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY (CRA), AND THE MORENO VALLEY COMMUNITY SERVICES DISTRICT (CSD), ITS OFFICERS, AGENTS AND EMPLOYEES HARMLESS FROM ANY AND ALL LIABILITY OF CLAIMS, DAMAGES OR INJURIES TO ANY PERSON OR PROPERTY WHICH MIGHT ARISE FROM THE NEGLIGENT ACTS, ERRORS OR OMISSIONS OF THE ENGINEER OF RECORDS, ANY EMPLOYEES, AGENTS OR CONSULTANTS.

**ENGINEER'S NOTICE TO CONTRACTORS**

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OF STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURE TO PROTECT ANY UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

**ABBREVIATIONS**

A.B.	AGGREGATE BASE	L.S.	LANDSCAPING
ARCH.	ARCHITECTURAL	L.P.	LOW POINT
A.C.	ASPHALT CONCRETE	M.H.	MANHOLE
B.W.	BACK OF WALK	N.G.	NATURAL GRADE
B.C.R.	BEGINNING OF CURVE	P.K.WY DRAIN	PARKWAY DRAIN
B.O.P.	BOTTOM OF PIPE	P.P.	POWER POLE
B.O.W.	BOTTOM OF WALL	P.V.C.	PROPERTY LINE
BLDG	BUILDING	R	RATE OF GRADE
C.I.P.	CAST IRON PIPE	R.C.P.	REINFORCED CONCRETE PIPE
C.B.	CATCH BASIN	R.D.	ROOF DRAIN
C.L.F.	CHAIN LINK FENCE	R/W	RIGHT OF WAY
CONC.	CONCRETE	S	SLOPE
C.M.B.	CRUSHED MISC. BASE	S.F.	SQUARE FEET
C.F.	CURB FACE	S.D.	STREET DRAIN
E.P.	EDGE OF PAVEMENT	T.B.	TOP OF BERM
E.C.R.	END OF CURVE	T.C.	TOP OF CURB
EXIST.	EXISTING	T.S.	TOP OF CONCRETE SLAB
(O.O.)	EXISTING ELEVATION	T.E.	TRASH ENCLOSURE
F.F.	FINISH FLOOR	T.P.	TRANSFORMER PAD
F.G.	FINISH GRADE	T.F.	TOP OF FOOTING
F.S.	FINISH SURFACE	T.G.	TOP OF GRATE
F.H.	FIRE HYDRANT	T.O.	TOP OF SLOPE
F.L.	FLOW LINE	T.P.	TOP OF PIPE
G.B.	GRADE BREAK	T.R.	TOP OF RAIL
H.C.	HANDICAP	T.W.	TOP OF WALL
H.	HEIGHT OF RETAINING		
H.P.	HIGH POINT		
INV.	INVERT		

**FINAL RECOMMENDATION OF WQMP**

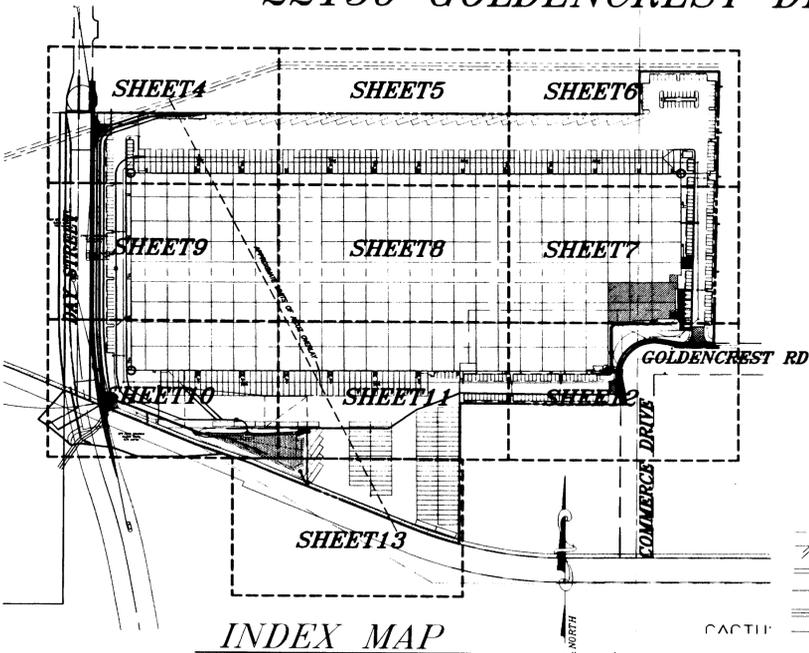
THE SAND AND GRAVEL BED IN THE TREATMENT BASIN SHALL NOT BE INSTALLED UNTIL THE FOLLOWING CONDITIONS ARE MET:  
 a. GRADING IS COMPLETE.  
 b. THE BUILDING SLOTT IS COMPLETE.  
 c. THE PARKING LOT AND DRIVE AISLES ARE PAVED.  
 d. THE CDS UNITS ARE INSTALLED, INCLUDING ALL INTERNAL SEPARATION SCREENS.

**EARTHWORK ANALYSIS:**

<b>MATERIAL AVAILABLE:</b>	<b>MATERIAL REQUIRED:</b>
OVER EXCAVATION 0 C.Y.	FILL SUBSIDENCE (0.00) 8,024 C.Y.
CALCULATED CUT 7,896 C.Y.	SHRINKAGE (2%) 158 C.Y.
SITE AREA: 27.17 ACRES	OVEREXCAVATION SHRINKAGE 158 C.Y.
APPROXIMATE IMPORT 288 C.Y.	TOTAL FILL 8,182 C.Y.

NOTE: EARTHWORK FIGURES SHOWN ARE APPROXIMATE FIGURES, AND ARE TO BE USED BY BUILDING DEPARTMENT ONLY. CONTRACTOR SHALL CALCULATE HIS OWN EARTHWORK QUANTITIES AND BID A COMPLETE JOB.

**PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER 22150 GOLDENCREST DRIVE**



**STANDARD GRADING NOTES:**

- ALL WORK SHALL CONFORM TO THE CITY OF MORENO VALLEY GRADING ORDINANCE, THE ADOPTED CALIFORNIA BUILDING CODE, AND THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES OR STRUCTURES ABOVE OR BELOW GROUND, SHOWN OR NOT SHOWN ON THESE PLANS. HE WILL BE HELD RESPONSIBLE FOR ALL DAMAGE TO ANY UTILITIES OR STRUCTURES CAUSED BY HIS OPERATION.
- ADJACENT STREETS ARE TO BE CLEANED DAILY OF ALL DIRT AND DEBRIS THAT ARE THE RESULT OF OPERATION.
- DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
- HOURS OF OPERATION ARE 7 A.M. TO 6 P.M. MONDAY THROUGH FRIDAY.
- THE CITY ENGINEERING DEPARTMENT SHALL BE CONTACTED AT (951) 413-3120. TO SCHEDULE A PRE-GRADING MEETING 48 HOURS PRIOR TO BEGINNING OF GRADING.
- ALL GRADING SHALL BE COMPLETED UNDER THE SUPERVISION OF A REGISTERED SOILS ENGINEER IN CONFORMANCE WITH RECOMMENDATIONS OF THE PRELIMINARY SOILS INVESTIGATION BY C.H.J. INC. DATED 2/27/06.
- TWO SETS OF THE FINAL SOILS REPORT SHALL BE SUBMITTED TO THE ENGINEERING DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. THE SOILS REPORT SHALL REFLECT THE FACT THAT ADEQUATE COMPACTION HAS BEEN OBTAINED NOT ONLY IN THE BUILDING PAD LOCATIONS, BUT IN THE REMAINDER OF THE SITE, INCLUDING THE SLOPES. FINAL SOILS GRADING CERTIFICATION SHALL BE SUBMITTED BY THE SOILS ENGINEER OF RECORD THAT THE FINAL GRADING CONFORMS TO BOTH CHAPTER 33 OF THE CALIFORNIA BUILDING CODE (C.B.C.) AND THE APPROVED GRADING PLAN.
- ALL SLOPES SHALL BE A MAXIMUM OF 2:1, CUT OR FILL, UNLESS RECOMMENDED BY REGISTERED SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.
- ALL PADS AND SWALES SHALL SLOPE A MINIMUM OF 1% TO STREET OR DRIVES.
- ALL TRENCH BACKFILLS SHALL BE TESTED AND CERTIFIED BY THE SOILS ENGINEER OF RECORD TO NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D1557. THE TOP 1.5 FT. OF SUBGRADE BELOW THE STREET PAVEMENT STRUCTURAL SECTION SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
- SEPARATE PERMITS SHALL BE REQUIRED FOR ANY IMPROVEMENT WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
- CUT SLOPES GREATER THAN 5 FEET IN VERTICAL HEIGHT, AND FILL SLOPES GREATER THAN 3 FEET IN VERTICAL HEIGHT SHALL BE PLANTED WITH APPROVED GROUND COVER TO PROTECT THE SLOPE FROM EROSION AND INSTABILITY IN ACCORDANCE WITH ORDINANCE NO. 568.
- SEPARATE PERMITS FROM THE BUILDING DEPARTMENT SHALL BE REQUIRED FOR ALL WALLS.
- ALL SLOPES ADJACENT TO THE PUBLIC RIGHT-OF-WAY SHALL BE SET BACK 2 FEET IF HEIGHT IS LESS THAN 10 FEET, AND 3 FEET IF HEIGHT IS GREATER THAN 10 FEET.
- DAMAGED OR ALTERED PUBLIC IMPROVEMENTS SHALL BE REPAIRED OR REPLACED BY THE CITY ENGINEER.
- AN "AS-BUILT GRADING PLAN" SHALL BE SUBMITTED AT THE COMPLETION OF WORK, AND PRIOR TO THE ISSUANCE OF THE OCCUPANCY PERMIT.
- CERTIFICATION BY THE R.C.E. OF RECORD THAT THE SITE CONFORMS TO THIS PLAN AS TO LINE AND GRADE SHALL BE REQUIRED PRIOR TO ISSUANCE OF BUILDING PERMIT.
- THE R.C.E. OF RECORD SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE DESIGN HEREON. IN THE EVENT OF DISCREPANCIES ARISING DURING CONSTRUCTION, THE R.C.E. OF RECORD SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY ENGINEER.

I HEREBY STATE THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT IT CONFORMS TO THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE (C.B.C.) AS MODIFIED BY CITY OF MORENO VALLEY ORDINANCES, THE INTERIM GUIDELINES, AND THE PRELIMINARY SOIL REPORT PREPARED FOR THIS PROJECT.

*Handwritten signature: David J. Agahan*  
 HAIKOOK I. AGAHAN 1-24/06 DATE

**NOTE TO CONTRACTOR (FOR EXISTING GAS LINE):**

CONTRACTOR SHALL NOTIFY SOUTHERN CALIFORNIA GAS COMPANY FOR STAND BY INSPECTOR DURING GRADING OPERATION, 48 HOURS PRIOR TO THE START OF CONSTRUCTION @ (951) 845-0712.  
 RE: CONSENT TO GRADE - DAY STREET PLAN FILE 35-05-2000.

**LEGEND**

- EXIST. FIRE HYDRANT
- EXIST. WATER METER
- EXIST. WATER VALVE
- EXIST. GAS VALVE
- GUY WIRE/DEADMAN
- EXIST. POWER POLE
- EXIST. TRAFFIC SIGNAL
- EXIST. CROSSWALK SIGNAL
- STREET LIGHTING BOX
- EXIST. STREET LIGHT
- EXIST. STORMDRAIN MANHOLE
- EXIST. SEWER MANHOLE
- EXIST. VAULT
- EXIST. SIGN
- TREE
- EXIST. TRAFFIC SIGNAL BOX
- EXIST. GAS METER
- EXIST. MAIL BOX
- EXIST. TELEPHONE MANHOLE
- EXIST. GRADE ELEVATION
- PROPOSED CONTOUR
- EXIST. CABLE TV CONDUIT
- EXIST. EDGE OF A.C. PAVEMENT
- EXIST. CURB AND GUTTER
- EXIST. SANITARY SEWER
- EXIST. STORM DRAIN
- EXIST. GAS LINE
- EXIST. TELEPHONE CONDUIT
- EXIST. WATER LINE
- EXIST. CONTOUR
- NEW PIPE LINE
- PROPERTY LINE
- NEW FIRE HYDRANT
- NEW WATER METER
- NEW WATER VALVE
- NEW THRUST BLOCK
- NEW SEWER MANHOLE
- NEW SEWER CLEAN OUT
- NEW SEWER MANHOLE
- NEW CATCH BASIN
- NEW STORM DRAIN PIPE
- CONSTRUCTION NOTES BUBBLE
- DAYLIGHT LINE
- SCREEN WALL
- RETAINING WALL
- EXIST. CONTOUR
- FLOW LINE
- GRADE BRAKE
- CENTER LINE

**CONSTRUCTION NOTES:**

- SAWCUT AND REMOVE EXISTING AC PAVEMENT AND REPLACE WITH FULL DEPTH AC PAVEMENT OR AS REQUIRED BY THE CITY ENGINEER.
- SAWCUT AND REMOVE EXISTING CURB AND GUTTER.
- SAWCUT AND REMOVE EXISTING SIDEWALK.
- PROTECT IN PLACE EXISTING 9" BRICK WALL.
- PROTECT IN PLACE EXISTING GAS MARKER.
- PROTECT IN PLACE EXISTING GAS VALVE.
- RELOCATE EXISTING STREET LIGHT.
- RELOCATE EXISTING WATER METER.
- PROTECT IN PLACE EXISTING WATER METER.
- PROTECT IN PLACE EXISTING CHAIN LINK FENCE.
- REMOVE AND REPLACE EXISTING CHAIN LINK FENCE.
- REMOVE EXISTING WATER SERVICE.
- CONSTRUCT 6" CURB PER DETAIL ON SHEET 2, CITY STD. NO. 202 (TYP).
- CONSTRUCT 6" CURB AND GUTTER PER DETAIL ON SHEET 2, CITY STD. NO. 200 (TYP).
- CONSTRUCT 3" WIDE CONCRETE 'Y' GUTTER PER DETAIL ON SHEET 2.
- CONSTRUCT 0.25" ASPHALT CONCRETE OVER 0.33" AGGREGATE BASE (LIGHT VEHICULAR TRAFFIC); T=5.0 (VERIFY WITH SOILS REPORT)
- CONSTRUCT 0.35" ASPHALT CONCRETE OVER 0.40" AGGREGATE BASE (HEAVY TRUCK AREAS); T=7.0 (VERIFY WITH SOILS REPORT)
- CONSTRUCT 6.5" PORTLAND CEMENT CONCRETE OVER SUBGRADE SOILS COMPACTED TO AT LEAST 95%. (VERIFY WITH SOILS REPORT)
- CONSTRUCT DRIVEWAY APPROACH PER DETAIL ON SHEET 2 OR PER CITY STD. PLAN NO. 118C.
- CONSTRUCT 7" CONCRETE OVER 2" SAND WITH VISQUEEN OVER SUBGRADE SOILS COMPACTED TO AT LEAST 95% (VERIFY WITH SOILS REPORT) PER ARCHITECTURAL PLANS.
- CONSTRUCT GATE PER ARCHITECTURAL PLANS.
- PROTECT IN PLACE EXISTING 1" AIR VACUUM AND AIR RELEASE.
- FENCE PER ARCHITECTURAL PLANS
- WALL PER ARCHITECTURAL PLANS
- CONCRETE RISERS PER ARCHITECTURAL PLAN
- CONCRETE WALK PER LANDSCAPE PLAN
- TRASH ENCLOSURE PER CITY STD. NO. 627A-627E.
- CONSTRUCT PLANTER FINGER ISLAND PER DETAIL ON SHEET NO. 2
- CONSTRUCT 3" TRANSITION FROM 0'CF TO 6'CF
- PROPOSED GRADE INLET PER STORM DRAIN PLAN
- CONSTRUCT 6" THICK RETARDANT FINISH CONCRETE NATURAL COLOR WITH 4X4 GRID PATTERN @ 45° ANGLE (SEE LANDSCAPE ARCHITECT PLANS)
- CONSTRUCT 36" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2
- CONSTRUCT RETAINING WALL PER STRUCTURAL PLANS.
- CONSTRUCT GRAVITY WALL PER DETAIL ON SHEET NO. 2.
- CONSTRUCT 24" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- CONSTRUCT CURB TRANSITION FROM 8" CF TO 0" CF.
- CONSTRUCT 12" WIDE 4" THICK CONCRETE STEPPING STRIP PER DETAIL ON SHEET NO. 2 OR PER CITY STD. NO. 210.
- CONSTRUCT GROUTED RIP-RAP PER CALTRANS SPECIFICATIONS (200 LB) WITH CUT-OFF CURB. SEE DETAIL ON SHEET NO. 2.
- CONSTRUCT HEADWALL PER GRAVITY WALL DETAIL ON SHEET NO. 2.
- CONSTRUCT 18" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- CONSTRUCT MONSTRIP PER LANDSCAPE/ARCHITECTURAL PLANS.
- CONSTRUCT 42" IRREGULAR CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2
- CONSTRUCT 12" CURB PER DETAIL ON SHEET NO. 2.
- CONSTRUCT CURB TRANSITION FROM 6" CURB TO 12" CURB.
- PER SEPARATE PERMIT

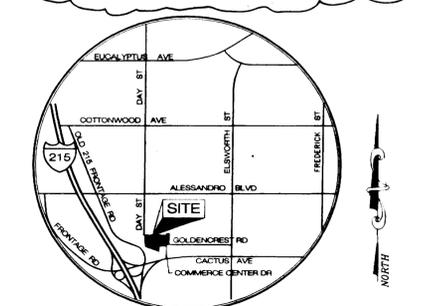
**SEWER CONSTRUCTION NOTES:**

- CONSTRUCT 6" PVC SDR-35 SEWER LATERAL
- CONSTRUCT 6" SEWER CLEAN-OUT

**WATER CONSTRUCTION NOTES:**

- INSTALL 2" COPPER BRASS PIPE.
- INSTALL 2" METER SERVICE CONNECTION PER EMWD STD. DWG. NO. B-344.
- INSTALL 2" BACKFLOW PREVENTION ASSEMBLY PER EMWD STD. DWG. NO. B-597.
- INSTALL 2 1/2" PVC PIPE SCH.80.
- SAWCUT EXISTING AC PAVEMENT AND BACKFILL PER CITY STD. 602A-602C OR AS REQUIRED BY THE CITY ENGINEER.
- INSTALL 1 1/2" BACKFLOW PREVENTOR ASSEMBLY PER EMWD STD. DWG. NO. B-597
- INSTALL 1 1/2" METER SERVICE CONNECTION PER EMWD STD. DWG. NO. B-344.
- INSTALL 1 1/2" COPPER BRASS PIPE.
- INSTALL 1 1/2" PVC PIPE SCH.80.
- INSTALL FIRE HYDRANT PER EMWD STD. DWG. NO. B-356.
- INSTALL 10" DOUBLE DETECTOR CHECK VALVE.
- INSTALL 10" PVC WATER LINE.
- ABANDONED EXISTING WATER METER AT MAN.

390 CONSTRUCT VARIABLE CURB FROM 10" CF TO 12" CF.  
 391 CONSTRUCT CATCH BASIN PER RIVERSIDE COUNTY FLOOD CONTROL STD. DWG. NO. CB-110.



**UTILITY COMPANIES EMERGENCY NUMBERS**

Adelphia - Riverside	(951) 975-3402
City of Moreno Valley	(951) 413-3400
Eastern Municipal Water District	(951) 928-3777
March Joint Powers Authority	(951) 656-7000
Southern California Edison - Moreno Valley	(951) 928-8323
Southern California Gas Co. - Moreno Valley	(951) 928-2801
Verizon - Moreno Valley	(951) 929-9412
Western Municipal Water District	(951) 780-9764 x21

**INDEX**

DESCRIPTION	SHEET NO.
TITLE SHEET.....	1
DETAIL SHEET .....	2
SECTION SHEET .....	3
GRADING PLAN.....	4-13
SEWER & WATER PLAN.....	14
STORM DRAIN PLAN/PROF.....	15-16
EROSION CONTROL PLAN.....	17
DIMENSION CONTROL PLAN .....	18

**SOILS AND GEOLOGIST CERTIFICATION:**

THIS GRADING PLAN HAS BEEN REVIEWED BY THE UNDERSIGNED AND FOUND TO BE IN CONFORMANCE WITH THE RECOMMENDATIONS AS OUTLINED IN THE FOLLOWING SOILS AND GEOLOGICAL REPORT FOR THIS PROJECT.

GEO TECHNICAL REPORT FOR DISTRIBUTION CENTER/WAREHOUSE DEVELOPMENT  
 ENTITLED: GEO TECHNICAL INVESTIGATION REPORT DISTRIBUTION CENTER/WAREHOUSE NORTHWEST OF COMMERCE CENTER DRIVE AND GOLDEN CREST DRIVE MORENO VALLEY, CALIFORNIA  
 DATE: FEBRUARY 7, 2005  
 FIRM NAME: C.H.J. INCORPORATED  
 BY: *Handwritten signature: David J. Agahan* 1-24-06 DATE  
 GEO TECHNICAL ENGINEER



NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
**Underground Service Alert**  
 Call: Toll FREE 1-800-227-2600  
 TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**  
 RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRLS AVE., 58.55 FT. S/W OF A CHASED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #213186, 34.39 FT. N/W OF A NAIL & TAG SET IN S/W SIDE TELEPHONE POLE #15160, A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDBOOK MONUMENT. ELEV. = 1503.526' (NOV 29 / ESTABLISHED 1963)

**REVIEW BY CITY STAFF**

OFFICE	INITIAL	DATE
LAND DEVELOPMENT	186	1/20/06
ENTERPRISE SERVICES	186	1/20/06
PLANNING	186	1/20/06
TRANSPORTATION	186	1/20/06
CAPITAL PROJECT	186	1/20/06
PARK AND RECREATION	186	1/20/06

**REVISION**

MARK	DATE	INITIAL	DESCRIPTION
1	04/25/06	DA	REVISION NO. 1, HEREON, SHT. 4

PREPARED BY OR UNDER THE SUPERVISION OF  
*Handwritten signature: David J. Agahan* 1/24/06  
 HAIKOOK I. AGAHAN R.C.E. NO. 43293 DATE  
 APPROVED BY  
*Handwritten signature: David J. Agahan* 2/6/06  
 PREM. KUMAR DATE  
 INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
 R.C.E. NO. 52463 (EXP. 12/31/2006)  
 16 53613 Exp. 6-30-07

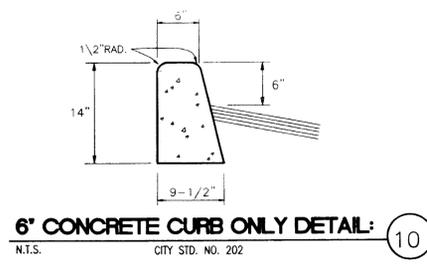
DESIGN BY  
*Handwritten signature: David J. Agahan* 1/24/06  
 CHECKED BY  
*Handwritten signature: David J. Agahan* 2/6/06  
**Thienes Engineering, Inc.**  
 CIVIL ENGINEERING & LAND SURVEYING  
 14340 FIRESTONE BOULEVARD  
 LA BREA, CALIFORNIA 90009  
 PH: (310) 321-4811 FAX: (714) 321-4173

PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06"  
**CITY OF MORENO VALLEY**  
 TITLE SHEET  
**PRECISE GRADING PLAN**  
 PA05-0042  
 SHEET 1 NO. 18  
 CITY I. D. NO. 2564

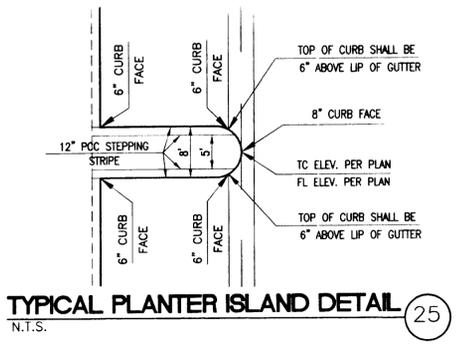
1-24-06 - 15 100  
 MAY 27 2006

**CONSTRUCTION NOTES:**

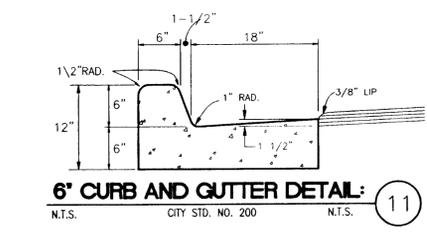
- 1 - SAWCUT AND REMOVE EXISTING AC PAVEMENT AND REPLACE WITH FULL DEPTH AC PAVEMENT OR AS REQUIRED BY THE CITY ENGINEER.
- 2 - SAWCUT AND REMOVE EXISTING CURB AND GUTTER.
- 3 - SAWCUT AND REMOVE EXISTING SIDEWALK.
- 4 - PROTECT IN PLACE EXISTING 9" BRICK WALL.
- 4A - PROTECT IN PLACE EXISTING GAS MARKER.
- 4B - PROTECT IN PLACE EXISTING GAS VALVE.
- 5 - RELOCATE EXISTING STREET LIGHT.
- 6 - RELOCATE EXISTING WATER METER.
- 6A - PROTECT IN PLACE EXISTING WATER METER.
- 7 - PROTECT IN PLACE EXISTING CHAIN LINK FENCE.
- 8 - REMOVE AND REPLACE EXISTING CHAIN LINK FENCE.
- 9 - REMOVE EXISTING WATER SERVICE.
- 10 - CONSTRUCT 6" CURB PER DETAIL ON SHEET 2, CITY STD. NO. 202 (TYP).
- 11 - CONSTRUCT 6" CURB AND GUTTER PER DETAIL ON SHEET 2, CITY STD. NO. 200 (TYP).
- 12 - CONSTRUCT 3" WIDE CONCRETE 'Y' GUTTER PER DETAIL ON SHEET 2.
- 13 - CONSTRUCT 0.25" ASPHALT CONCRETE OVER 0.33" AGGREGATE BASE (LIGHT VEHICULAR TRAFFIC); TI=5.0 (VERIFY WITH SOILS REPORT).
- 14 - CONSTRUCT 0.35" ASPHALT CONCRETE OVER 0.40" AGGREGATE BASE (HEAVY TRUCK AREAS); TI=7.0 (VERIFY WITH SOILS REPORT).
- 15 - CONSTRUCT 6.5" PORTLAND CEMENT CONCRETE OVER SUBGRADE SOILS COMPACTED TO AT LEAST 95% (VERIFY WITH SOILS REPORT).
- 16 - CONSTRUCT DRIVEWAY APPROACH PER DETAIL ON SHEET 2 OR PER CITY STD. PLAN NO. 118C.
- 17 - CONSTRUCT 7" CONCRETE OVER 2" SAND WITH VISQUEEN OVER SUBGRADE SOILS COMPACTED TO AT LEAST 95% (VERIFY WITH SOILS REPORT) PER ARCHITECTURAL PLANS.
- 18 - CONSTRUCT GATE PER ARCHITECTURAL PLANS.
- 19 - PROTECT IN PLACE EXISTING 1" AIR VACUUM AND AIR RELEASE.
- 20 - WALL PER ARCHITECTURAL PLANS.
- 21 - FENCE PER ARCHITECTURAL PLANS.
- 22 - CONCRETE RISERS PER ARCHITECTURAL PLAN.
- 23 - CONCRETE WALK PER LANDSCAPE PLAN.
- 24 - TRASH ENCLOSURE PER CITY STD. NO. 627A-627E.
- 25 - CONSTRUCT PLANTER FINGER ISLAND PER DETAIL ON SHEET NO. 2.
- 26 - CONSTRUCT 3" TRANSITION FROM 0"CF TO 6"CF.
- 27 - PROPOSED GRATE INLET PER STORM DRAIN PLAN.
- 28 - CONSTRUCT 6" THICK RETARDANT FINISH CONCRETE NATURAL COLOR WITH 4X4 GRID PATTERN @ 45° ANGLE (SEE LANDSCAPE ARCHITECT PLANS).
- 29 - CONSTRUCT 36" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 30 - CONSTRUCT RETAINING WALL PER STRUCTURAL PLANS.
- 31 - CONSTRUCT GRAVITY WALL PER DETAIL ON SHEET NO. 2.
- 32 - CONSTRUCT 24" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 33 - CONSTRUCT CURB TRANSITION FROM 8" CF TO 0" CF.
- 34 - CONSTRUCT 12" WIDE 4" THICK CONCRETE STEPPING STRIP PER DETAIL ON SHEET NO. 2 OR PER CITY STD. NO. 210.
- 35 - CONSTRUCT GROUDED RIP-RAP PER CALTRANS SPECIFICATIONS (200 LB) WITH CUT-OFF CURB, SEE DETAIL ON SHEET NO. 2.
- 36 - CONSTRUCT HEADWALL PER GRAVITY WALL DETAIL ON SHEET NO. 2.
- 37 - CONSTRUCT 18" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 38 - CONSTRUCT MOWSTRIP PER LANDSCAPE/ARCHITECTURAL PLANS.
- 39 - CONSTRUCT 42" IRREGULAR CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 39A - CONSTRUCT 12" CONCRETE CURB ONLY PER DETAIL ON SHEET NO. 2.
- 39B - CONSTRUCT CURB TRANSITION FROM 6" CURB TO 12" CURB. \* PER SEPARATE PERMIT



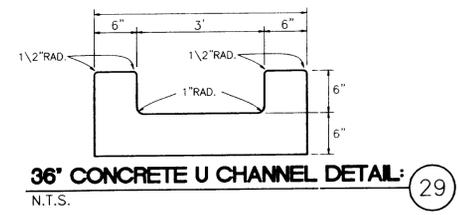
**6" CONCRETE CURB ONLY DETAIL:** 10  
N.T.S. CITY STD. NO. 202



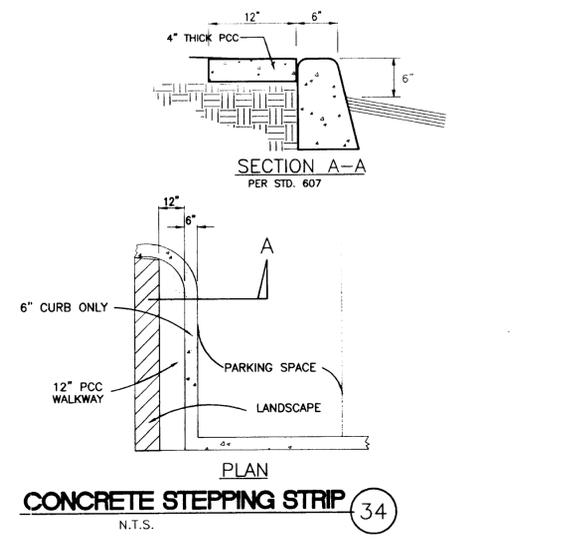
**TYPICAL PLANTER ISLAND DETAIL:** 25  
N.T.S.



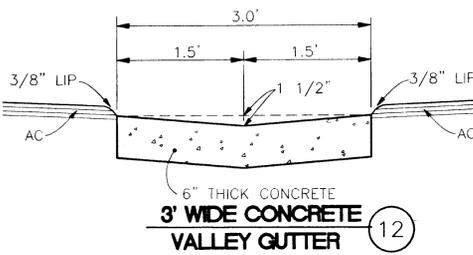
**6" CURB AND GUTTER DETAIL:** 11  
N.T.S. CITY STD. NO. 200



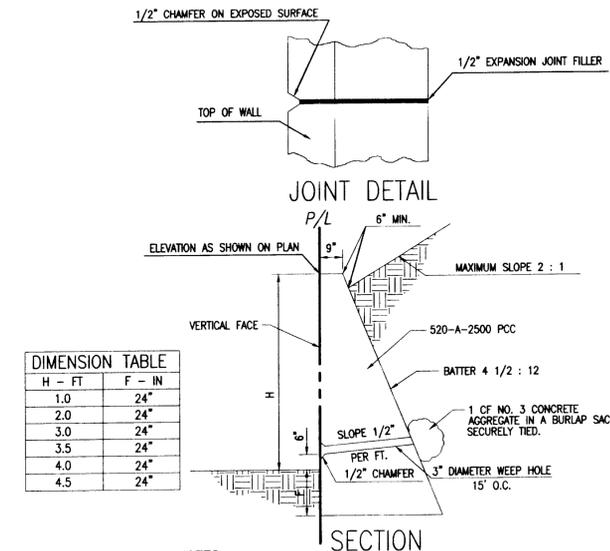
**36" CONCRETE U CHANNEL DETAIL:** 29  
N.T.S.



**CONCRETE STEPPING STRIP:** 34  
N.T.S.



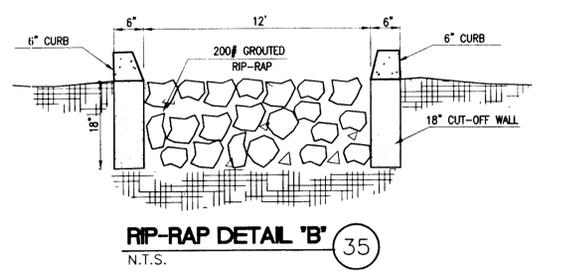
**3" WIDE CONCRETE VALLEY GUTTER:** 12  
N.T.S.



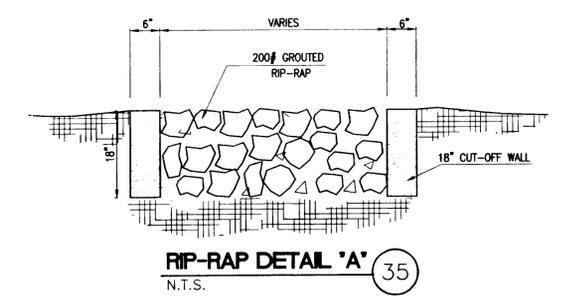
DIMENSION TABLE	
H - FT	F - IN
1.0	24"
2.0	24"
3.0	24"
3.5	24"
4.0	24"
4.5	24"

- NOTES:**
1. EXPANSION JOINTS SHALL EXTEND THROUGH THE ENTIRE HEIGHT OF WALL AND BE SPACED AT A MAXIMUM DISTANCE OF 40' OR AS DIRECTED BY THE ENGINEER.
  2. F=24" MINIMUM WHEN RETAINING WALL IS USED AS A CULVERT END WALL.

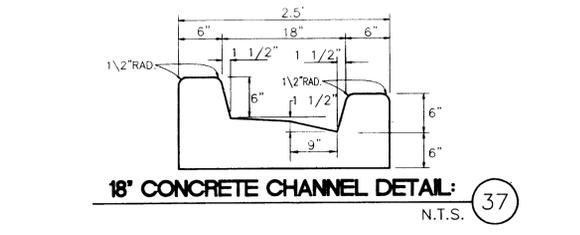
**GRAVITY WALL DETAIL:** 31  
N.T.S.



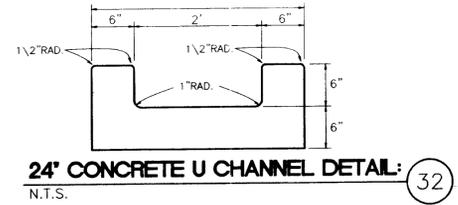
**RIP-RAP DETAIL 'B':** 35  
N.T.S.



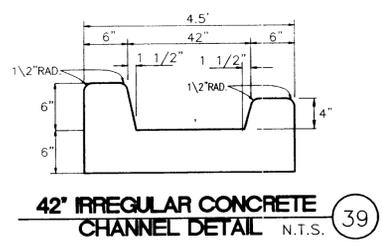
**RIP-RAP DETAIL 'A':** 35  
N.T.S.



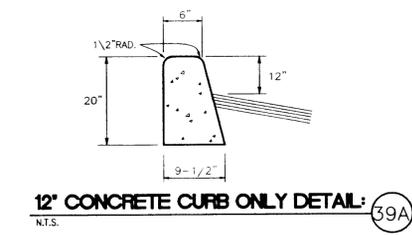
**18" CONCRETE CHANNEL DETAIL:** 37  
N.T.S.



**24" CONCRETE U CHANNEL DETAIL:** 32  
N.T.S.

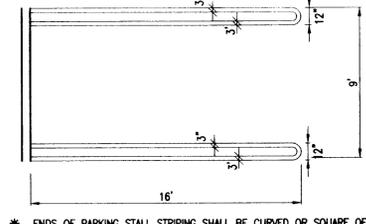


**42" IRREGULAR CONCRETE CHANNEL DETAIL:** 39  
N.T.S.

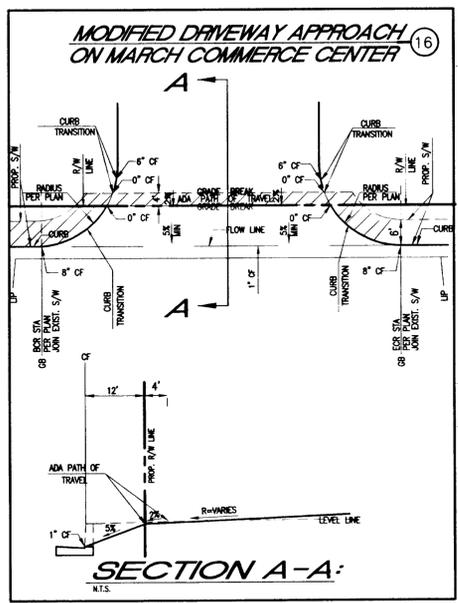


**12" CONCRETE CURB ONLY DETAIL:** 39A  
N.T.S.

**PARKING SPACE STRIPING REQUIREMENTS**



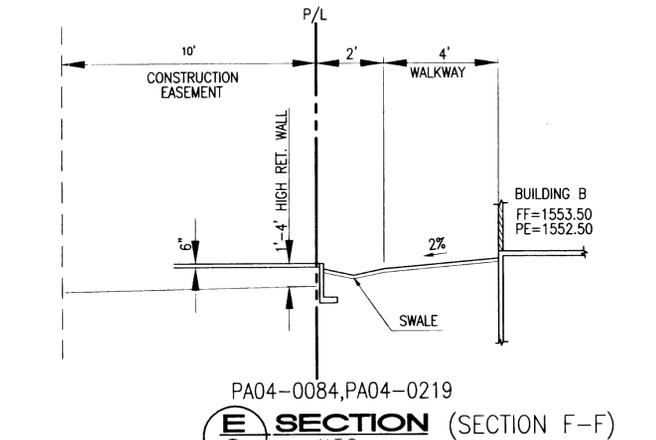
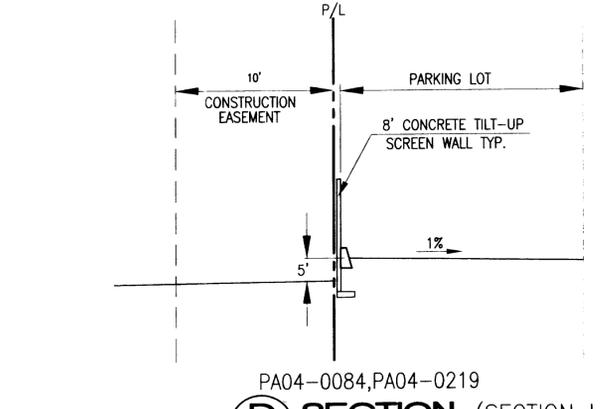
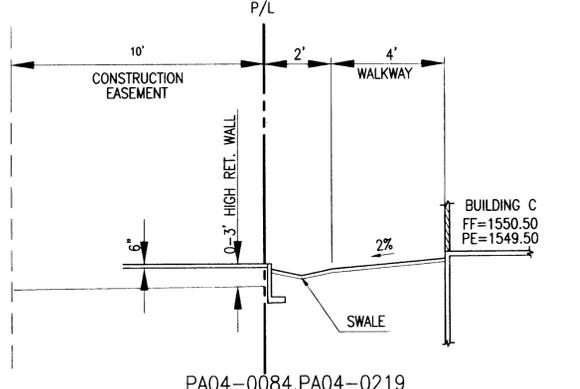
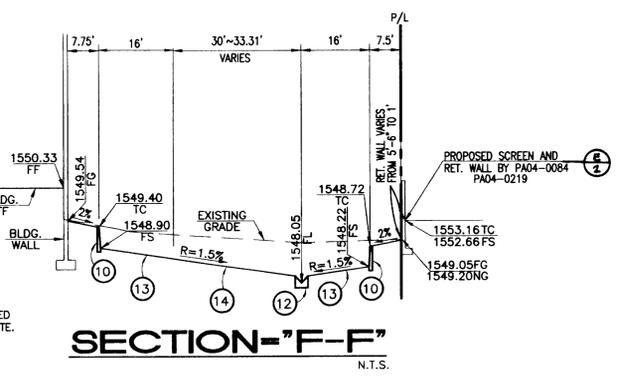
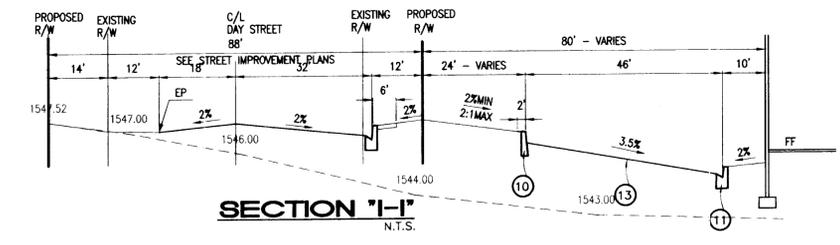
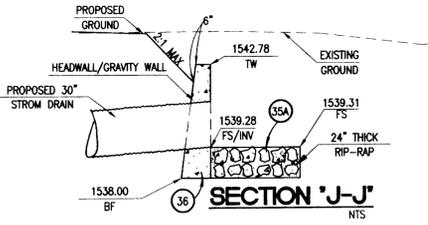
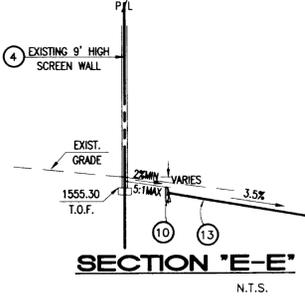
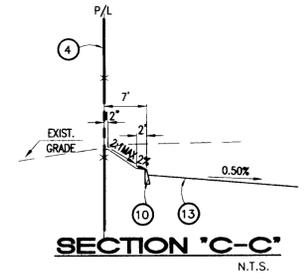
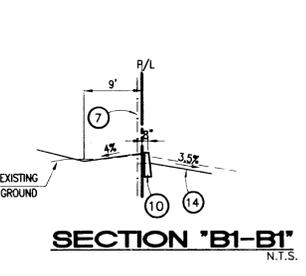
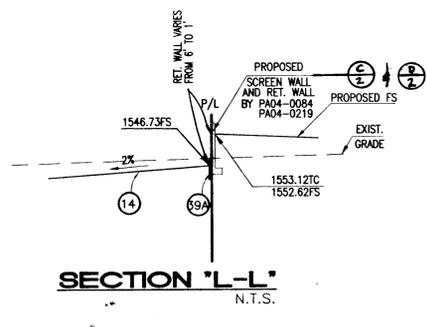
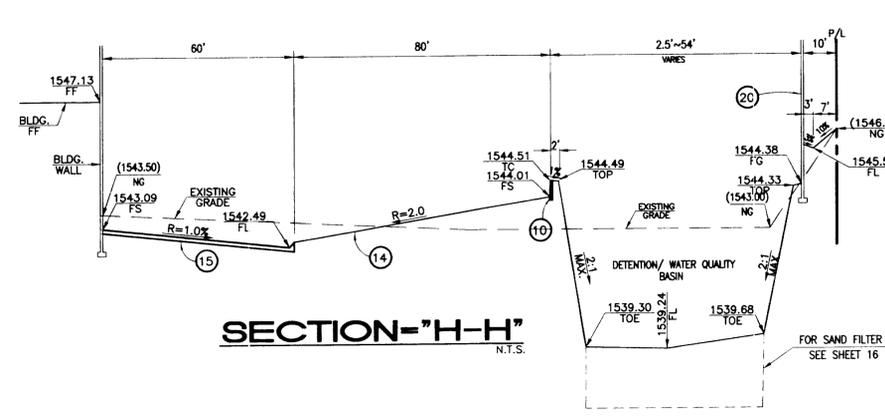
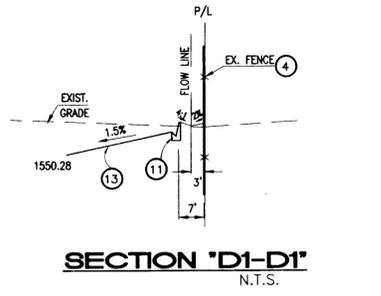
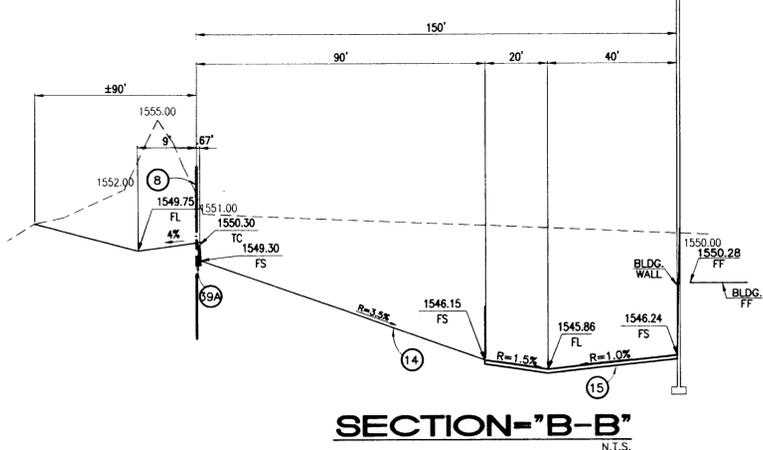
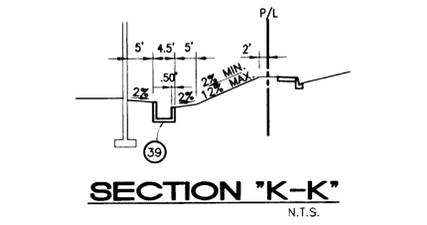
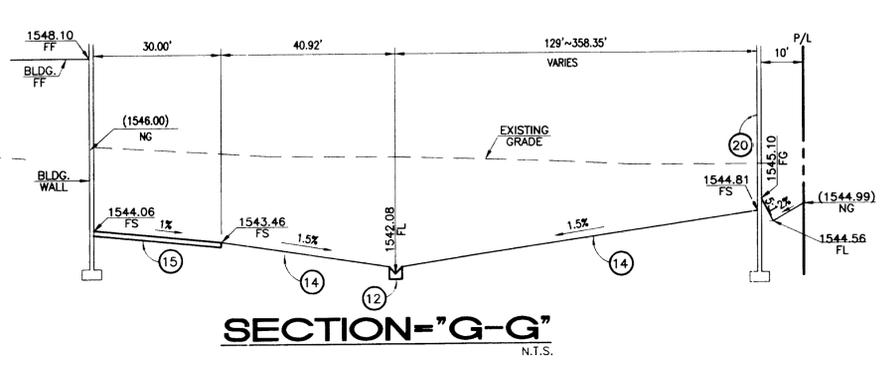
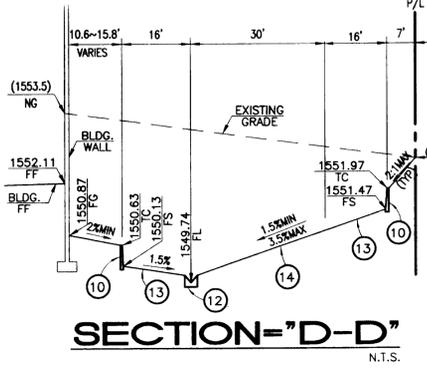
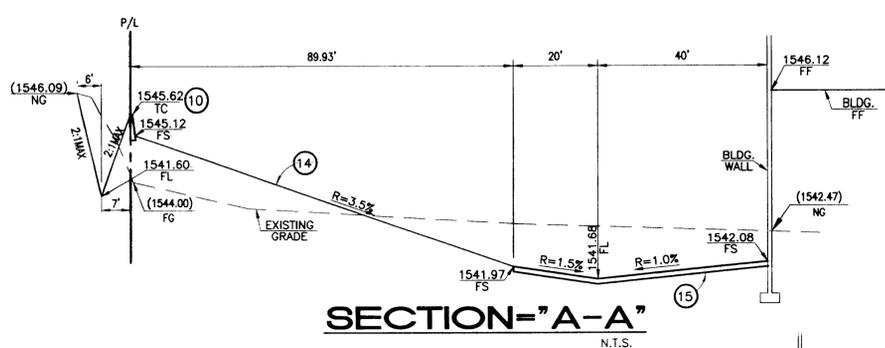
\* ENDS OF PARKING STALL STRIPING SHALL BE CURVED OR SQUARE OFF.



**SECTION A-A:** N.T.S.

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
Underground Service Alert  
Call: TOLL FREE  
1-800-227-2600  
TWO WORKING DAYS BEFORE YOU DIG

<p>PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06" Last Update: 1/19/06 M:\25527\25527020.dwg</p>		<p>REVISION</p>		<p>PREPARED BY DR UNDER THE SUPERVISION OF HAIDDOUK I. AGHAIAN R.C.E. NO. 43293 DATE 1/20/06 APPROVED: Prem Kumar PREM KUMAR INTERIM CITY ENGINEER, CITY OF MORENO VALLEY R.C.E. NO. 52463 (EXP. 12/31/2006) N6 53013 ERA 6-20-07</p>		<p>DESIGN BY: Thienes Engineering, Inc. CIVIL ENGINEERING • LAND SURVEYING 14349 FIRESTONE BOULEVARD LA BIRDAKA, CALIFORNIA 92538 (91)714321-4911 FAX(91)4321-4173</p>		<p>CITY OF MORENO VALLEY PRECISE GRADING PLAN DETAILS</p>		<p>ACC'T. NO. SHEET 2 NO. 18 CITY I. D. NO. 2564</p>	
<p>BENCH MARK</p>		<p>BASIS OF BEARING</p>		<p>REVIEW BY CITY STAFF</p>		<p>OFFICE</p>		<p>REGISTERED PROFESSIONAL ENGINEER HAIDDOUK I. AGHAIAN R.C.E. NO. 43293 Exp. 3-31-06 STATE OF CALIFORNIA</p>		<p>REVISION</p>	
<p>RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERROS BLVD. &amp; 195 AVE., 58.55 FT. S/W OF A CHISELED "M" IN A 3" IRON COR. POST; 40.85 FT. N/E OF MAIL &amp; TAG IN THE WEST SIDE OF POWER POLE #213136; 34.39 FT. N/W OF A MAIL &amp; TAG SET IN S/W SIDE TELEPHONE POLE #15160; A 1" IRON PIPE &amp; TAG MARKED COUNTY SURVEYOR IN A HANDELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963).</p>		<p>THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARPOSA AVENUE) BEING IN 89°29'57" W AS PER RECORDS OF SURVEY, R.S.B. 97 /29-36 IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.</p>		<p>OFFICE</p>		<p>LAND DEVELOPMENT</p>		<p>ENTERPRISE SERVICES</p>		<p>PLANNING</p>	
<p>MARK</p>		<p>DATE</p>		<p>INITIAL</p>		<p>DESCRIPTION</p>		<p>REC.</p>		<p>APPR</p>	
<p>DATE</p>		<p>INITIAL</p>		<p>DESCRIPTION</p>		<p>REC.</p>		<p>APPR</p>		<p>DATE</p>	
<p>MARK</p>		<p>DATE</p>		<p>INITIAL</p>		<p>DESCRIPTION</p>		<p>REC.</p>		<p>APPR</p>	
<p>DATE</p>		<p>INITIAL</p>		<p>DESCRIPTION</p>		<p>REC.</p>		<p>APPR</p>		<p>DATE</p>	



NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
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 Call: TOLL FREE  
 1-800-227-2600  
 TWO WORKING DAYS BEFORE YOU DIG

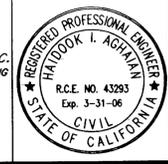
BENCH MARK  
 BASIS OF BEARING  
 REVIEW BY CITY STAFF

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR	DATE
			REVISION			

PREPARED BY DR UNDER THE SUPERVISION OF  
 HAIDDOCK I. AGHAIAN R.C.E. No. 43293 DATE 1/22/06  
 DESIGN BY  
 MAHESH KUMAR R.C.E. No. 43293 DATE 1/22/06  
 CHECKED BY  
 MAHESH KUMAR R.C.E. No. 43293 DATE 1/22/06  
 INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
 R.C.E. NO. 52463 (EXP. 12/31/2006)  
 No. 53013 Exp. 6-30-07

PA04-0084, PA04-0219  
 PA04-0084, PA04-0219  
 PA05-0042 WDDID: 833C335284 "CONSTRUCTION SET 01-16-06"

CITY OF MORENO VALLEY  
 PRECISE GRADING PLAN  
 SECTIONS  
 SHEET 3 NO. 18  
 CITY I. D. NO. 2564



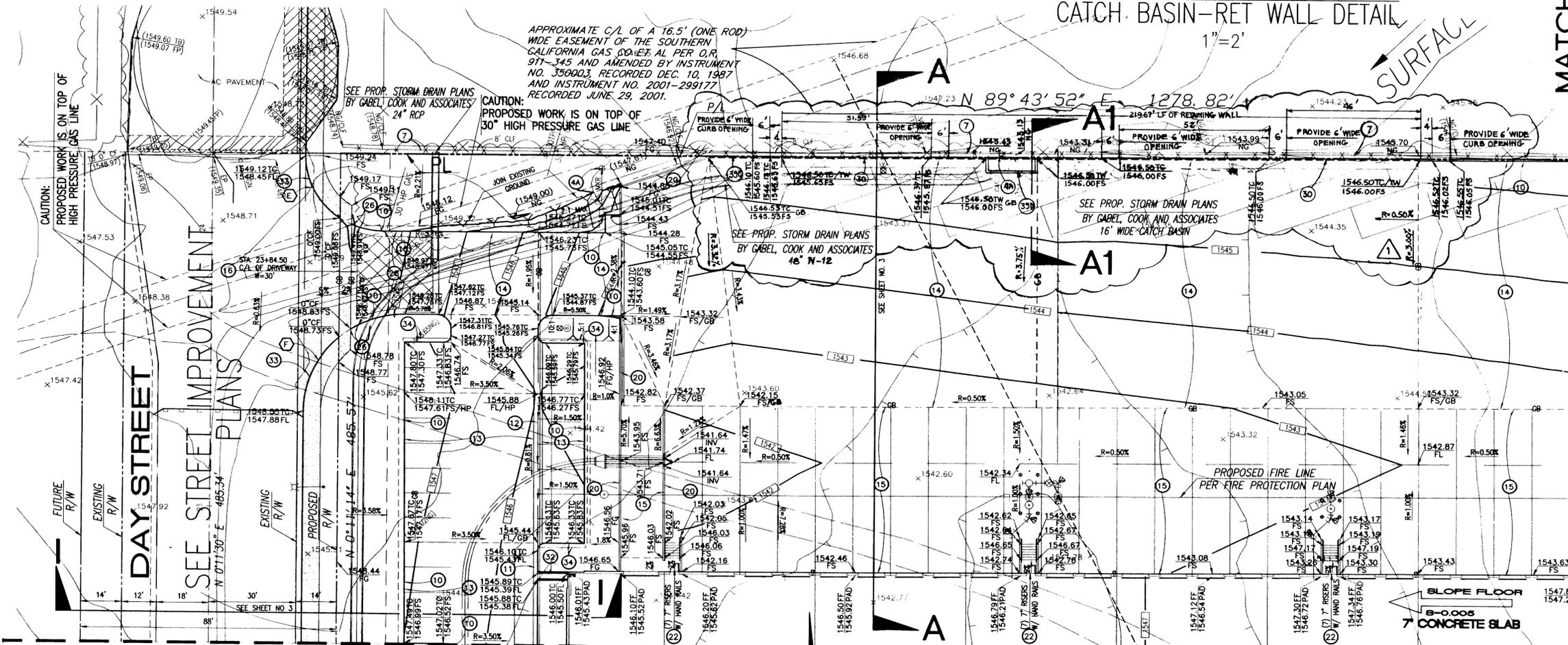
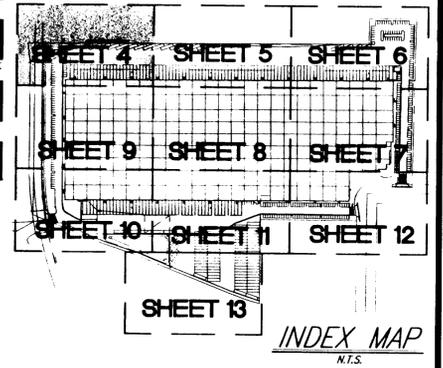
PROPOSED RETAINING WALL AND HEAD WALL PROFILE @ NORTH PL  
LOOKING NORTH

SECTION "A-A"  
CATCH BASIN-RET WALL DETAIL  
1"=2'

CONSTRUCTION NOTES:

- 1 SAWCUT AND REMOVE EXISTING AC PAVEMENT AND REPLACE WITH FULL DEPTH AC PAVEMENT OR AS REQUIRED BY THE CITY ENGINEER.
- 2 SAWCUT AND REMOVE EXISTING CURB AND GUTTER.
- 3 SAWCUT AND REMOVE EXISTING SIDEWALK.
- 4 PROTECT IN PLACE EXISTING 9" BRICK WALL.
- 4A PROTECT IN PLACE EXISTING GAS MARKER.
- 4B PROTECT IN PLACE EXISTING GAS VALVE.
- 5 RELOCATE EXISTING STREET LIGHT.
- 6 RELOCATE EXISTING WATER METER.
- 6A PROTECT IN PLACE EXISTING WATER METER.
- 7 PROTECT IN PLACE EXISTING CHAIN LINK FENCE.
- 8 REMOVE AND REPLACE EXISTING CHAIN LINK FENCE.
- 9 REMOVE EXISTING WATER SERVICE.
- 10 CONSTRUCT 6" CURB PER DETAIL ON SHEET 2, CITY STD. NO. 202 (TYP).
- 11 CONSTRUCT 6" CURB AND GUTTER PER DETAIL ON SHEET 2, CITY STD. NO. 200 (TYP).
- 12 CONSTRUCT 3" WIDE CONCRETE V GUTTER PER DETAIL ON SHEET 2.
- 13 CONSTRUCT 0.25" ASPHALT CONCRETE OVER 0.33" AGGREGATE BASE (LIGHT VEHICULAR TRAFFIC); TI=5.0 (VERIFY WITH SOILS REPORT).
- 14 CONSTRUCT 0.35" ASPHALT CONCRETE OVER 0.40" AGGREGATE BASE (HEAVY TRUCK AREAS); TI=7.0 (VERIFY WITH SOILS REPORT).
- 15 CONSTRUCT 6.5" PORTLAND CEMENT CONCRETE OVER SUBGRADE SOILS COMPACTED TO AT LEAST 95% (VERIFY WITH SOILS REPORT).
- 16 CONSTRUCT DRIVEWAY APPROACH PER DETAIL ON SHEET 2 OR PER CITY STD. PLAN NO. 118.
- 17 CONSTRUCT 7" CONCRETE OVER 2" SAND WITH VISQUEEN OVER SUBGRADE SOILS COMPACTED TO AT LEAST 95% (VERIFY WITH SOILS REPORT) PER ARCHITECTURAL PLANS.
- 18 CONSTRUCT GATE PER ARCHITECTURAL PLANS.
- 19 PROTECT IN PLACE EXISTING 1" AIR VACUUM AND AIR RELEASE.
- 20 WALL PER ARCHITECTURAL PLANS.
- 21 FENCE PER ARCHITECTURAL PLANS.
- 22 CONCRETE RISERS PER ARCHITECTURAL PLAN.
- 23 CONCRETE WALK PER LANDSCAPE PLAN.
- 24 TRASH ENCLOSURE PER CITY STD. NO. 627A-627E.
- 25 CONSTRUCT PLANTER FINGER ISLAND PER DETAIL ON SHEET NO. 2.
- 26 CONSTRUCT 3" TRANSITION FROM 0"CF TO 6"CF.
- 27 PROPOSED GRATE INLET PER STORM DRAIN PLAN.
- 28 CONSTRUCT 6" THICK RETARDANT FINISH CONCRETE NATURAL COLOR WITH 4X4 GRID PATTERN @ 45° ANGLE (SEE LANDSCAPE ARCHITECT PLANS).
- 29 CONSTRUCT 36" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 30 CONSTRUCT RETAINING WALL PER STRUCTURAL PLANS.
- 31 CONSTRUCT GRAVITY WALL PER DETAIL ON SHEET NO. 2.
- 32 CONSTRUCT 24" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 33 CONSTRUCT CURB TRANSITION FROM 8" CF TO 0" CF.
- 34 CONSTRUCT 12" WIDE 4" THICK CONCRETE STEPPING STRIP PER DETAIL ON SHEET NO. 2 OR PER CITY STD. NO. 210.
- 35 CONSTRUCT GROUDED RIP-RAP PER CALTRANS SPECIFICATIONS (200 LB) WITH CUT-OFF CURB, SEE DETAIL ON SHEET NO. 2.
- 36 CONSTRUCT HEADWALL PER GRAVITY WALL DETAIL ON SHEET NO. 2.
- 37 CONSTRUCT 18" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 38 CONSTRUCT MONSTRIP PER LANDSCAPE/ARCHITECTURAL PLANS.
- 39 CONSTRUCT 42" IRREGULAR CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 39A CONSTRUCT 12" CURB PER DETAIL ON SHEET NO. 2.
- 39B CONSTRUCT CURB TRANSITION FROM 6" CURB TO 12" CURB.
- 39C CONSTRUCT VARIABLE CURBS FROM 10" CF TO 12" CF.
- 39D CONSTRUCT CATCH BASIN PER RIVERSIDE COUNTY FLOOD CONTROL STD. DWG. NO. CB110.
- \* PER SEPARATE PERMIT

MATCHLINE SEE SHEET 5



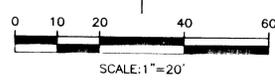
CURVE TABLE

NUMBER	DELTA	RADIUS	LENGTH	TANGENT
(E)	56°15'04"	27.00'	26.51'	14.43'
(F)	48°55'17"	35.00'	29.88'	15.92'

REVISION NO. 1 04/25/06  
 1 REDUCED RETAINING WALL AT NORTH PROPERTY LINE.  
 REVISED RET. WALL PROFILE TO MATCH NATURAL GROUND AND W.S.E. ON GABLE COOK STORM DRAIN PLANS.  
 RELOCATED AND MODIFIED CATCH BASIN PER "GABEL, COOK AND ASSOCIATES" STORM DRAIN PLAN.  
 ADDED VARIABLE CURBS FROM 10" TO 12" CF AND CONSTRUCTION NOTE 39C.  
 PROVIDED 6" WIDE OPENINGS THROUGH CURB AND RETAINING WALL FOR SECONDARY OVER FLOW.  
 ADDED CONSTRUCTION NOTE 39D FOR CATCH BASIN.

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
 Underground Service Alert  
 Call: TOLL FREE 1-800-227-2600  
 TWO WORKING DAYS BEFORE YOU DIG

\* ALL PLANTER AREA ADJACENT TO PARKING STALL REQUIRES 6" CURB PLUS 12" STEP-OUT PER DETAIL ON SHEET NO. 2.

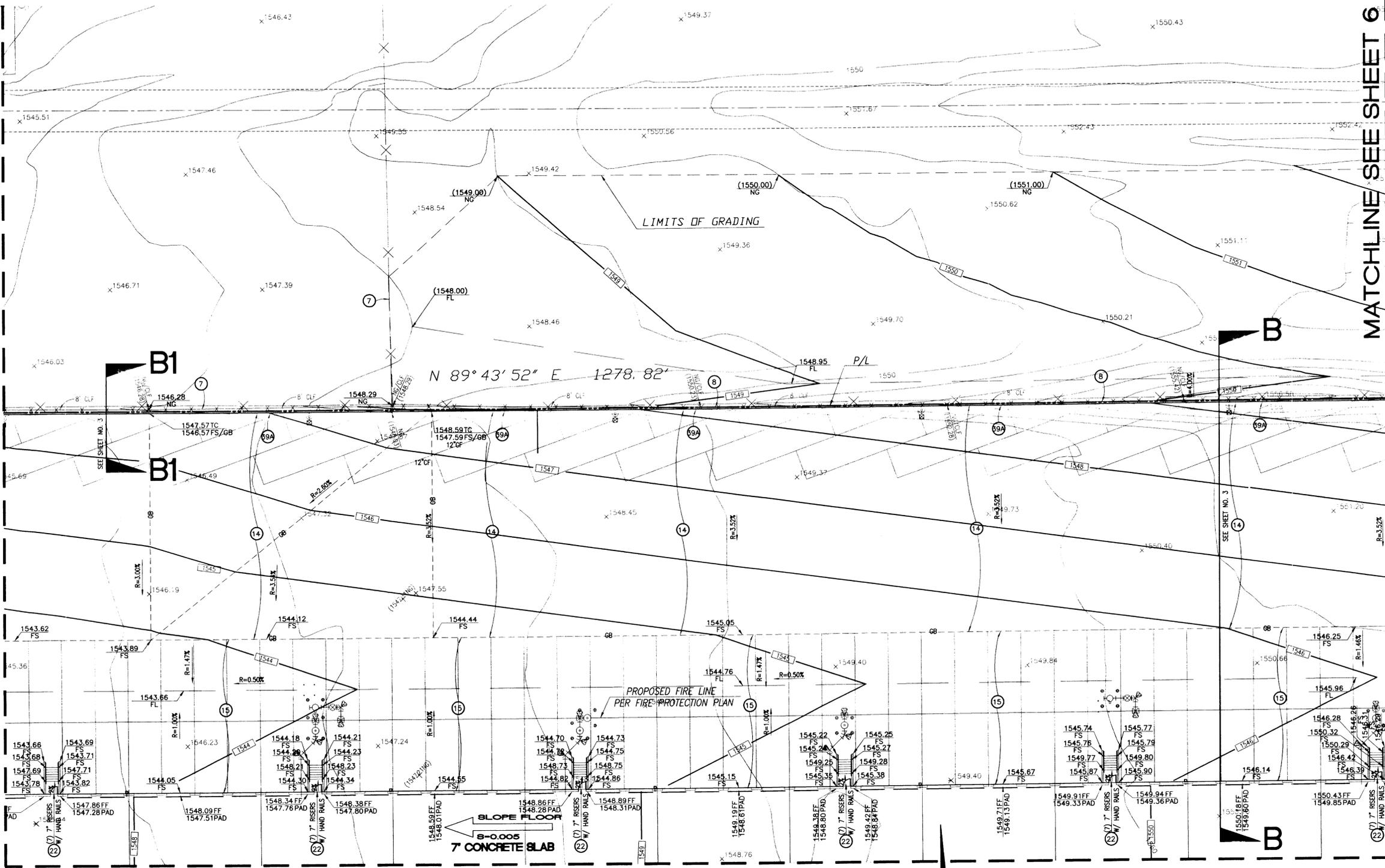


<p>BENCH MARK</p> <p>RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. &amp; IRLS AVE., 58.55 FT. S/WM OF A CHISELED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E OF NAIL &amp; TAG IN THE WEST SIDE OF POWER POLE #113136, 34.39 FT. N/WM OF A NAIL &amp; TAG SET IN S/WM SIDE TELEPHONE POLE #15160, A 1" IRON PIPE &amp; TAG MARKED COUNTY SURVEYOR IN A HANDWELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)</p>		<p>BASIS OF BEARING</p> <p>THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARIPOSA AVENUE) BEING N 89°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 / 29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA</p>		<p>REVIEW BY CITY STAFF</p> <table border="1"> <tr> <th>OFFICE</th> <th>INITIAL</th> <th>DATE</th> </tr> <tr> <td>LAND DEVELOPMENT</td> <td>VBC</td> <td>1/24/06</td> </tr> <tr> <td>ENTERPRISE SERVICES</td> <td></td> <td></td> </tr> <tr> <td>PLANNING</td> <td></td> <td></td> </tr> <tr> <td>TRANSPORTATION</td> <td></td> <td></td> </tr> <tr> <td>CAPITAL PROJECT</td> <td></td> <td></td> </tr> <tr> <td>PARK AND RECREATION</td> <td></td> <td></td> </tr> </table>		OFFICE	INITIAL	DATE	LAND DEVELOPMENT	VBC	1/24/06	ENTERPRISE SERVICES			PLANNING			TRANSPORTATION			CAPITAL PROJECT			PARK AND RECREATION			<p>PREPARED BY DR UNDER THE SUPERVISION OF</p> <p><i>David J. Miller</i> <i>Heidi</i></p> <p>HAIDOOK I. AGHAJAN R.C.E. No. 43293 DATE</p> <p>APPROVED BY</p> <p><i>Wah Jambhale</i> <i>elble</i></p> <p>PREM KUMAR INTERIM CITY ENGINEER, CITY OF MORENO VALLEY R.C.E. NO. 52463 EXP. 12/31/2006 1/6 5/36/13 BSA 6-30-07</p>		<p>DRAWN BY</p> <p>DESIGN BY</p> <p>CHECKED BY</p> <p>Thienes Engineering, Inc.          CIVIL ENGINEERING &amp; LAND SURVEYING          14349 FIRESTONE BOULEVARD          LA HABRA, CALIFORNIA 90638          PH: (714) 521-4111 FAX: (714) 521-4173</p>		<p>PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06"</p> <p>CITY OF MORENO VALLEY ACCT. NO.</p> <p>PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER 22150 GOLDEN CREST DRIVE</p> <p>SHEET 4 NO. 18 CITY I. D. NO. 2564</p>		<p>REVISION</p> <table border="1"> <tr> <th>MARK</th> <th>DATE</th> <th>INITIAL</th> <th>DESCRIPTION</th> </tr> <tr> <td>1</td> <td>04/25/06</td> <td></td> <td>SEE REVISION NO. 1 HEREON, SHT. 4</td> </tr> </table>		MARK	DATE	INITIAL	DESCRIPTION	1	04/25/06		SEE REVISION NO. 1 HEREON, SHT. 4
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MAY 31 2006

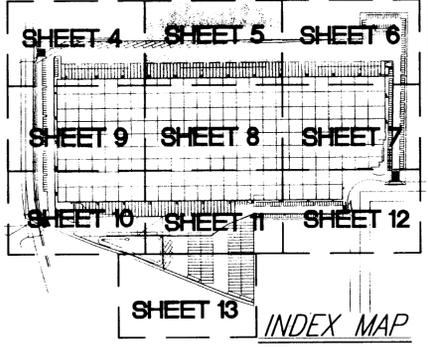
MATCHLINE SEE SHEET 4

MATCHLINE SEE SHEET 6



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**BENCH MARK**  
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRIS AVE., 58.55 FT. S/W OF A CHISELED "X" IN A 3" IRON COR. POST; 40.89 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #21136; 34.39 FT. W/W OF A NAIL & TAG SET IN S/W SIDE TELEPHONE POLE #15160; A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDWELL MONUMENT. ELEV. = 1503.526' (NVD '29 / ESTABLISHED 1963)

BASIS OF BEARING	REVIEW BY CITY STAFF
THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARIPOSA AVENUE) BEING IN 89°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 729-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.	OFFICE: LAND DEVELOPMENT ENTERPRISE SERVICES PLANNING TRANSPORTATION CAPITAL PROJECT PARK AND RECREATION
DATE: 1/30/06	INITIAL: VGC

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE
			REVISION			

PREPARED BY OR UNDER THE SUPERVISION OF  
*Haidook I. Aghaian*  
HAIDOOK I. AGHAIAN R.C.E. No. 43293 DATE 1/16/06

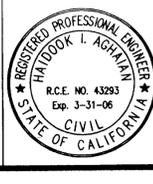
DESIGN BY  
*Mah Santhosha*  
M. SANTHOSHA R.C.E. No. 43293 DATE 2/16/06

APPROVED  
*Prem Kumar*  
PREM KUMAR DATE 2/16/06  
INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
R.C.E. NO. 52463 (EXP. 12/31/2006)  
No. 53613 Exp. 6-30-07

DRAWN BY  
*Haidook I. Aghaian*

CHECKED BY  
*Mah Santhosha*

Checked by: *Mah Santhosha*



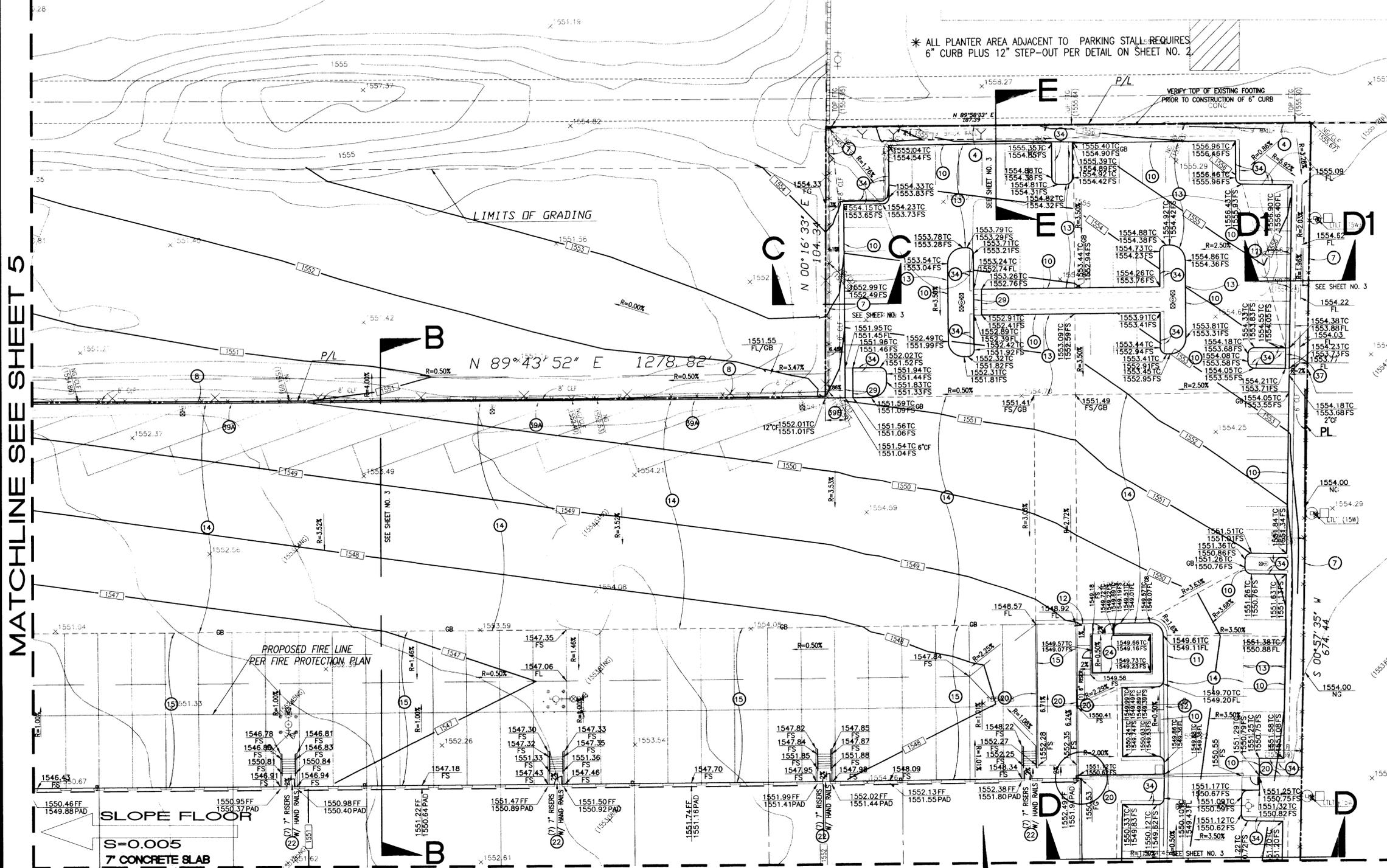
PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06" Last Update: 01/19/06, N:\23502\23502P05.dwg

**CITY OF MORENO VALLEY** ACCT. NO.

**PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER**  
22150 GOLDEN CREST DRIVE

SHEET 5 NO. 18  
CITY I. D. NO. 2564

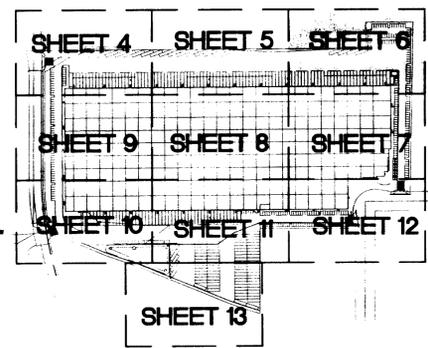
MATCHLINE SEE SHEET 5



\* ALL PLANTER AREA ADJACENT TO PARKING STALL REQUIRES 6" CURB PLUS 12" STEP-OUT PER DETAIL ON SHEET NO. 2

**CONSTRUCTION NOTES:**

- 1 SAWCUT AND REMOVE EXISTING AC PAVEMENT AND REPLACE WITH FULL DEPTH AC PAVEMENT OR AS REQUIRED BY THE CITY ENGINEER. SAWCUT AND REMOVE EXISTING CURB AND GUTTER.
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  - 69A CONSTRUCT 12" CURB PER DETAIL ON SHEET NO. 2.
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- \* PER SEPARATE PERMIT



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Call: TOLL FREE 1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**  
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRS AVE., 58.55 FT. S/W OF A CHASELED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E OF MAIL & TAG IN THE WEST SIDE OF POWER POLE #215386, 54.35 FT. W/W OF A MAIL & TAG SET IN S/W COR. TELEPHONE POLE #15186, A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDWELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)

**BASIS OF BEARING**  
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**REVIEW BY CITY STAFF**

OFFICE	INITIAL	DATE
LAND DEVELOPMENT	VGG	1/20/06
ENTERPRISE SERVICES		
PLANNING		
TRANSPORTATION		
CAPITAL PROJECT		
PARK AND RECREATION		

**REVISION**

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE

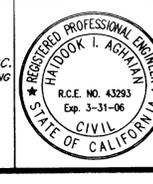
PREPARED BY DR UNDER THE SUPERVISION OF  
*Haidook I. Aghaian*  
HAIDOOK I. AGHAIAN R.C.E. No. 43293 DATE 1/20/06

DESIGN BY  
*Madu Jambhree*  
REC. BY: M. JAMBHREE DATE 2/16/06

CHECKED BY  
INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
R.C.E. NO. 52463 (EXP. 12/31/2006)  
No. 53613 EXA 6-30-07

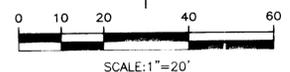
DRAWN BY  
DATE

Thienes Engineering, Inc.  
CIVIL ENGINEERING & LAND SURVEYING  
14349 FIRESTONE BOULEVARD  
LA MIRADA, CALIFORNIA 90638  
PH: (714) 221-4811 FAX: (714) 221-4173



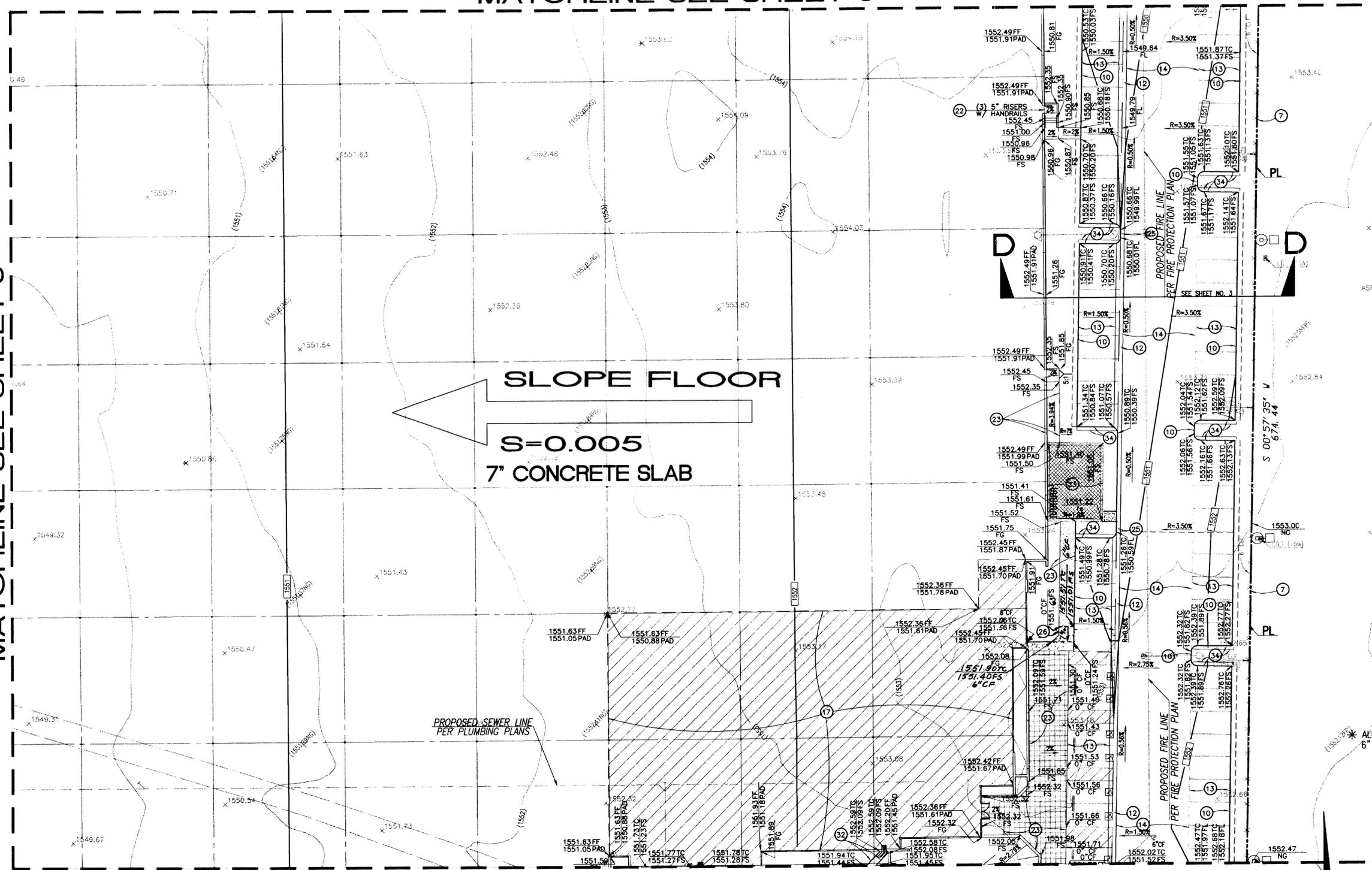
CITY OF MORENO VALLEY  
PRECISE GRADING PLAN  
FOR  
MARCH COMMERCE CENTER  
22150 GOLDEN CREST DRIVE

ACCT. NO.  
SHEET 6 NO. 18  
CITY I. D. NO. 2564



MATCHLINE SEE SHEET 6

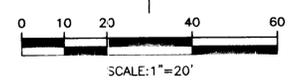
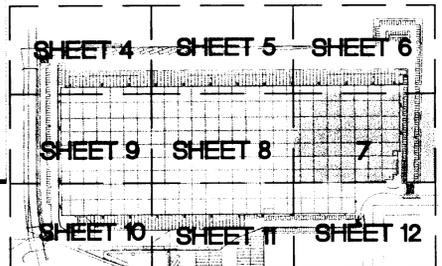
MATCHLINE SEE SHEET 8



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- 4 PROTECT IN PLACE EXISTING 9\"/>

\* ALL PLANTER AREA ADJACENT TO PARKING STALL REQUIRES 6\"/>



PA05-0042 WDD: 833C335284

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**Underground Service Alert**  
 Call: TOLL FREE  
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 TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**  
 RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRIS AVE., 58.55 FT. S/M OF A CHISELED "X" IN A 3\"/>

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			<b>REVISION</b>			

PREPARED BY OR UNDER THE SUPERVISION OF  
*Haidook I. Aghaian*  
 HAIDOOK I. AGHAIAN R.C.E. No. 43293 DATE 1/20/06  
 DESIGN BY  
 DRAWN BY  
 CHECKED BY  
 Thienes Engineering, Inc.  
 CIVIL ENGINEERING & LAND SURVEYING  
 14349 FIRESTONE BOULEVARD  
 LA MIRADA, CALIFORNIA 90638  
 PH: (714) 821-4911 FAX: (714) 821-4173

PA05-0042 WDD: 833C335284

**CITY OF MORENO VALLEY**  
 ACCT. NO.  
 PRECISE GRADING PLAN  
 FOR  
 MARCH COMMERCE CENTER  
 22150 GOLDEN CREST DRIVE

SHEET 7 NO. 18  
 CITY I. D. NO. 2564

MATCHLINE SEE SHEET 5

MATCHLINE SEE SHEET 9

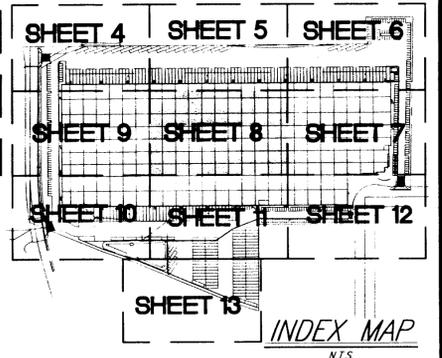
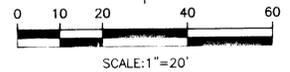
MATCHLINE SEE SHEET 7

**SLOPE FLOOR**  
 $S=0.005$   
**7" CONCRETE SLAB**

**CONSTRUCTION NOTES:**

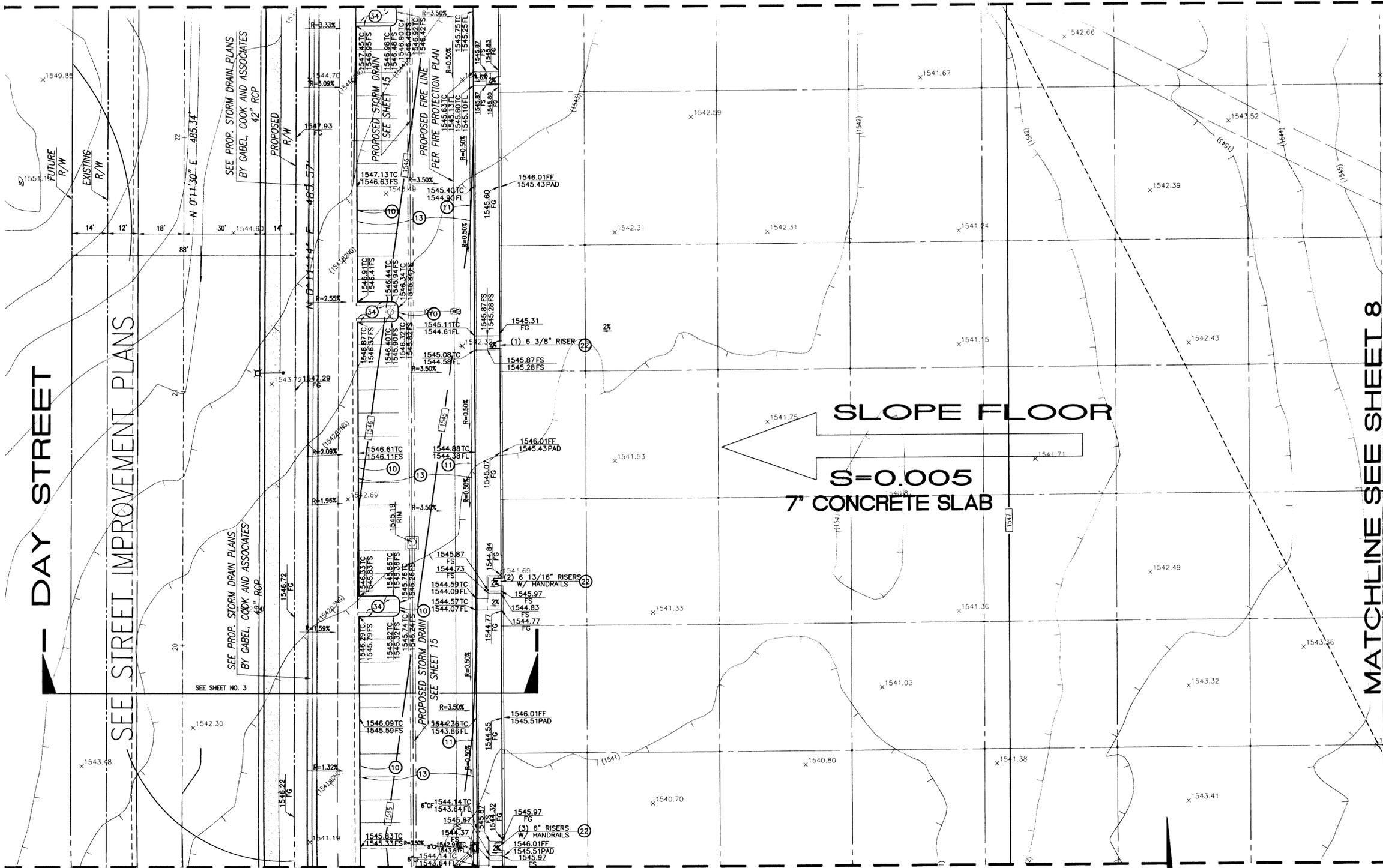
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- 4A - PROTECT IN PLACE EXISTING GAS MARKER.
- 4B - PROTECT IN PLACE EXISTING GAS VALVE.
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- 6A - PROTECT IN PLACE EXISTING WATER METER.
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 TWO WORKING DAYS BEFORE YOU DIG



<p>PA05-0042    WDID: 833C335284    "CONSTRUCTION SET 01-16-06"    Last Update: 1/19/06</p>		<p>REGISTERED PROFESSIONAL ENGINEER                  HAI DOOK I. AGHAIAN                  R.C.E. NO. 43293                  Exp. 3-31-06                  STATE OF CALIFORNIA</p>		<p>CITY OF MORENO VALLEY                  PRECISE GRADING PLAN                  FOR                  MARCH COMMERCE CENTER                  22150 GOLDEN CREST DRIVE</p>		<p>ACCT. NO.                  SHEET <u>8</u> NO. <u>18</u>                  CITY I. D. NO. 2564</p>															
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MATCHLINE SEE SHEET 4



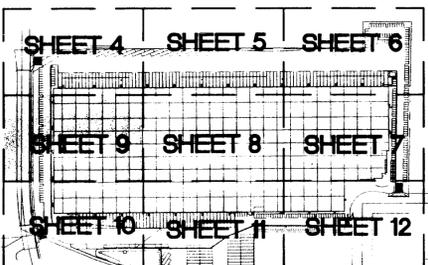
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MATCHLINE SEE SHEET 8

DAY STREET

SEE STREET IMPROVEMENT PLANS

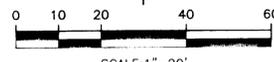
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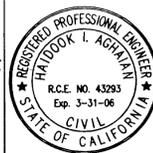


SCALE: 1"=20'  
PA05-0042 WJID: 833C335284

"CONSTRUCTION SET 01-16-06"

Let Update: 01/19/06  
N:\2552\2552P09.dwg

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MATCHLINE SEE SHEET 8

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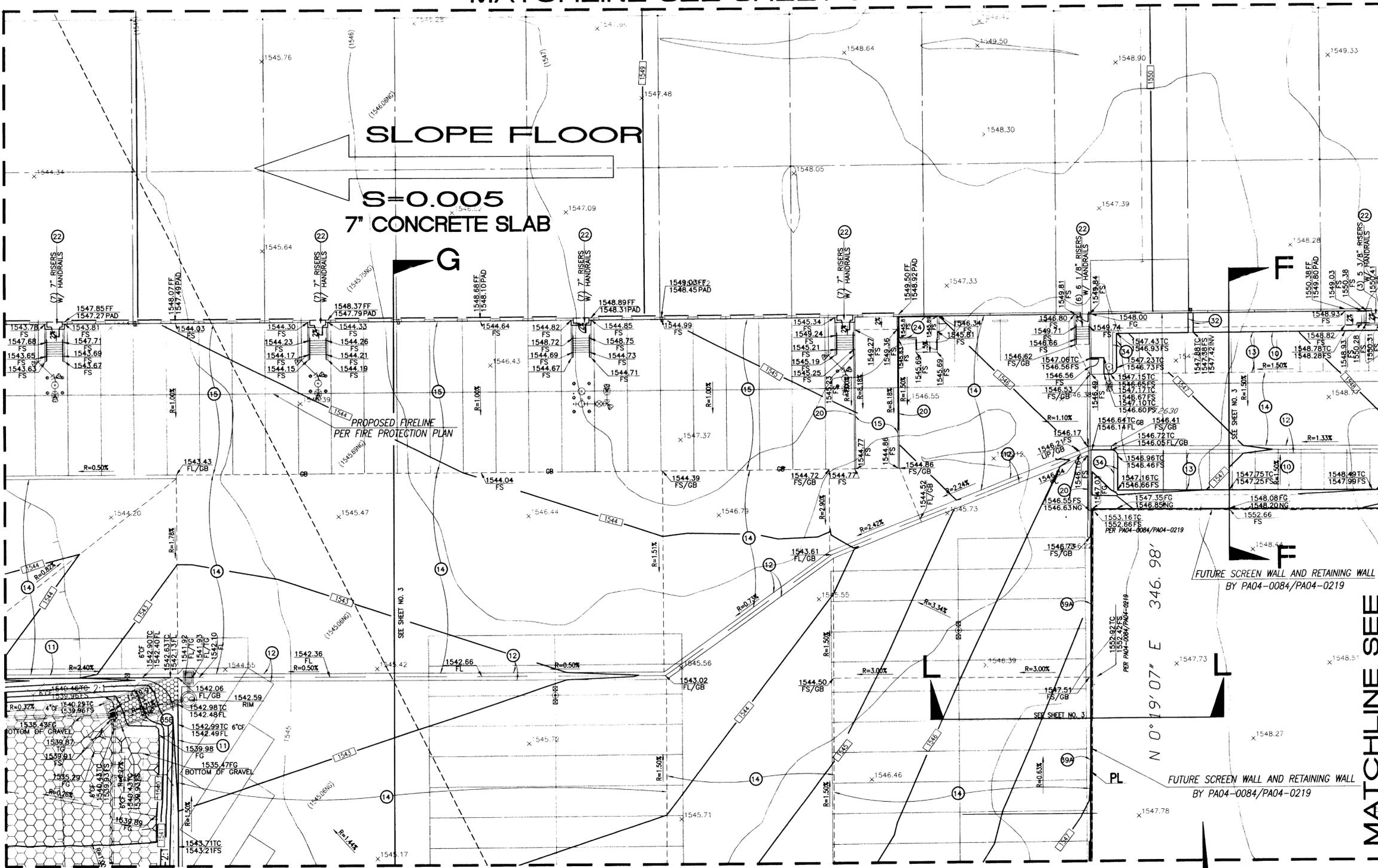
G

F

MATCHLINE SEE SHEET 10

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7" CONCRETE SLAB

GOLDENCREST

COMMERCE CENTER DR.

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  - 12 CONSTRUCT 3" WIDE CONCRETE 'Y' GUTTER PER DETAIL ON SHEET 2.
  - 13 CONSTRUCT 0.25" ASPHALT CONCRETE OVER 0.33" AGGREGATE BASE (LIGHT VEHICULAR TRAFFIC); II-5.0 (VERIFY WITH SOILS REPORT)
  - 14 CONSTRUCT 0.35" ASPHALT CONCRETE OVER 0.40" AGGREGATE BASE (HEAVY TRUCK AREAS); II-7.0 (VERIFY WITH SOILS REPORT)
  - 15 CONSTRUCT 6.5" PORTLAND CEMENT CONCRETE OVER SUBGRADE SOILS COMPACTED TO AT LEAST 95% (VERIFY WITH SOILS REPORT)
  - 16 CONSTRUCT DRIVEWAY APPROACH PER DETAIL ON SHEET 2 OR PER CITY STD. PLAN NO. 118C.
  - 17 CONSTRUCT 7" CONCRETE OVER 2" SAND WITH VISQUEEN OVER SUBGRADE PER ARCHITECTURAL PLANS.
  - 18 CONSTRUCT GATE PER ARCHITECTURAL PLANS.
  - 19 PROTECT IN PLACE EXISTING 1" AIR VACUUM AND AIR RELEASE.
  - 20 WALL PER ARCHITECTURAL PLANS.
  - 21 FENCE PER ARCHITECTURAL PLANS.
  - 22 CONCRETE RISERS PER ARCHITECTURAL PLAN.
  - 23 CONCRETE WALK PER LANDSCAPE PLAN.
  - 24 TRASH ENCLOSURE PER CITY STD. NO. 627A-627E.
  - 25 CONSTRUCT PLANTER FINGER ISLAND PER DETAIL ON SHEET NO. 2.
  - 26 CONSTRUCT 3" TRANSITION FROM 0"CF TO 6"CF.
  - 27 PROPOSED GRATE INLET PER STORM DRAIN PLAN.
  - 28 CONSTRUCT 6" THICK RETARDANT FINISH CONCRETE NATURAL COLOR WITH 4X4 GRID PATTERN @ 45° ANGLE (SEE LANDSCAPE ARCHITECT PLANS)
  - 29 CONSTRUCT 36" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
  - 30 CONSTRUCT RETAINING WALL PER STRUCTURAL PLANS.
  - 31 CONSTRUCT GRAVITY WALL PER DETAIL ON SHEET NO. 2.
  - 32 CONSTRUCT 24" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
  - 33 CONSTRUCT CURB TRANSITION FROM 8" CF TO 0" CF.
  - 34 CONSTRUCT 12" WIDE 4" THICK CONCRETE STEPPING STRIP PER DETAIL ON SHEET NO. 2 OR PER CITY STD. NO. 210.
  - 35 CONSTRUCT GROUNDED RRP-RAP PER CALTRANS SPECIFICATIONS (200 LB) WITH CUT-OFF CURB, SEE DETAIL ON SHEET NO. 2.
  - 36 CONSTRUCT HEADWALL PER GRAVITY WALL DETAIL ON SHEET NO. 2.
  - 37 CONSTRUCT 18" CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
  - 38 CONSTRUCT MOWSTRIP PER LANDSCAPE/ARCHITECTURAL PLANS.
  - 39 CONSTRUCT 42" IRREGULAR CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
  - 39A CONSTRUCT 12" CURB PER DETAIL ON SHEET NO. 2.
  - 39B CONSTRUCT CURB TRANSITION FROM 6" CURB TO 12" CURB.
- \* PER SEPARATE PERMIT

NUMBER	DELTA	RADIUS	LENGTH	TANGENT
A	46°54'05"	35.00'	28.65'	15.18'
B	49°38'01"	35.00'	30.32'	16.18'
C	40°03'31"	35.00'	24.47'	12.76'
D	61°29'59"	25.00'	26.83'	14.87'

ALL PLANTER AREA ADJACENT TO PARKING STALL REQUIRES 6" CURB PLUS 12" STEP-OUT PER DETAIL ON SHEET NO. 2.

MATCHLINE SEE SHEET 11

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

**Underground Service Alert**  
Call: TOLL FREE  
1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**  
RIVERSIDE COUNTY SURVEYOR B.M. NO. "4-32" AT THE INTERSECTION OF PERROS BLVD. & IRIS AVE., 58.55 FT. S/W OF A CHISELED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #213136, 34.39 FT. N/W OF A NAIL & TAG SET IN S/W COR. TELEPHONE POLE #15180, A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANWELL MONUMENT, ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)

REVISION	DATE	INITIAL	DESCRIPTION

REVIEW BY CITY STAFF	DATE	INITIAL	DESCRIPTION

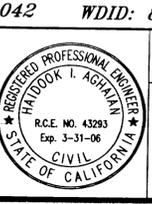
PREPARED BY DR UNDER THE SUPERVISION OF  
*Heideck Ogden*  
HAIDOCK I. AGHAIAN R.C.E. No. 43293 DATE: 1/24/06

DESIGN BY  
*Heideck Ogden*

CHECKED BY  
*Walter J. ...*

DATE: 2/1/06

PREM. KUMAR  
INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
R.C.E. NO. 52463 (EXP. 12/31/2006)  
No. 53613 EA 6-30-07

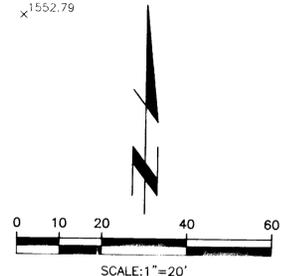
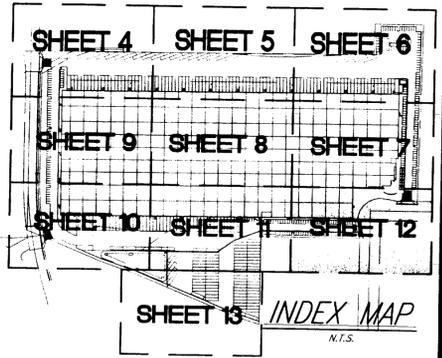


PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06" Last Update: 01/19/06  
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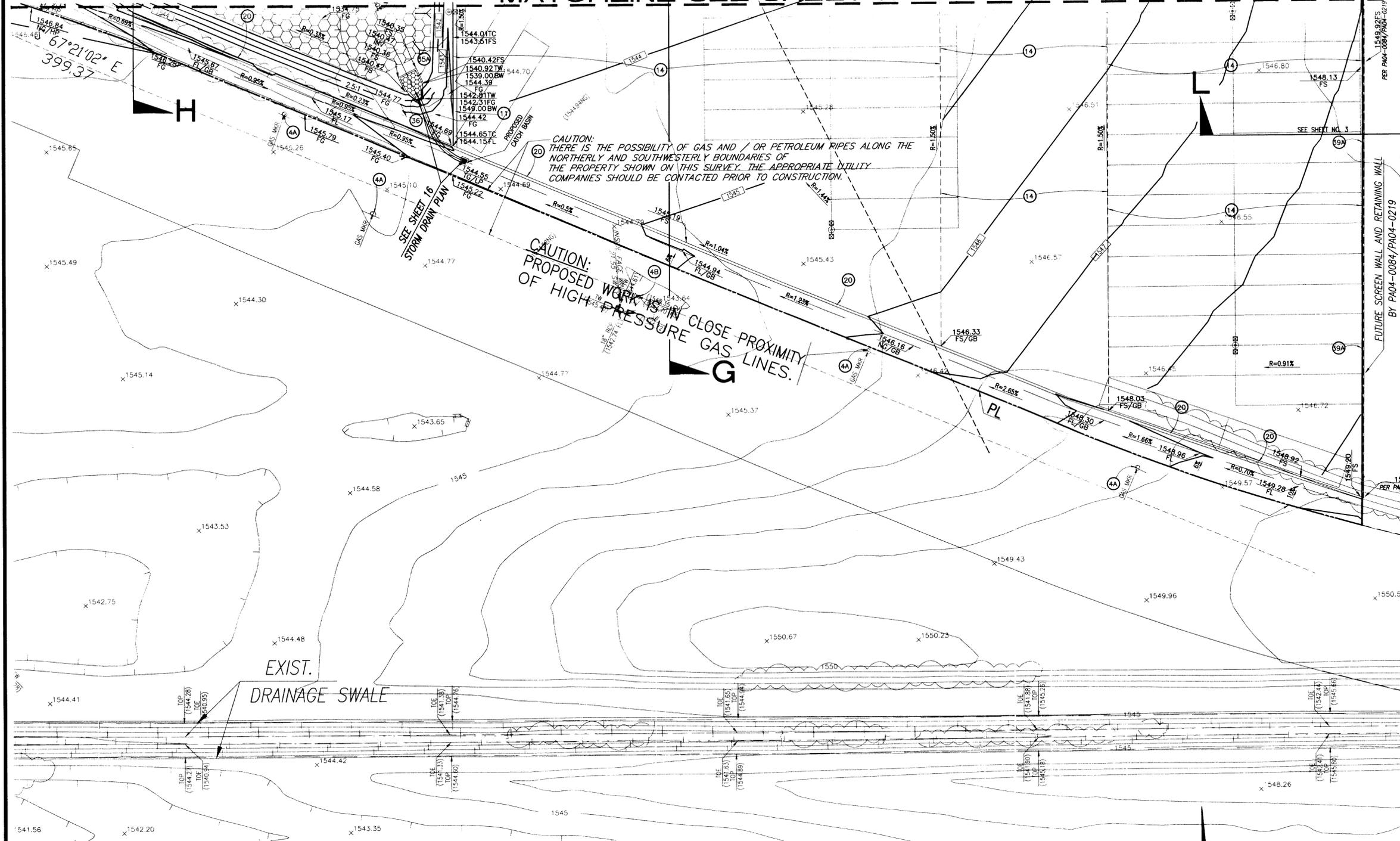
**CITY OF MORENO VALLEY** ACCT. NO.

PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER  
22150 GOLDEN CREST DRIVE

SHEET 12 NO. 18  
CITY I. D. NO. 2564

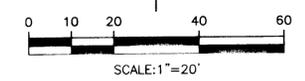
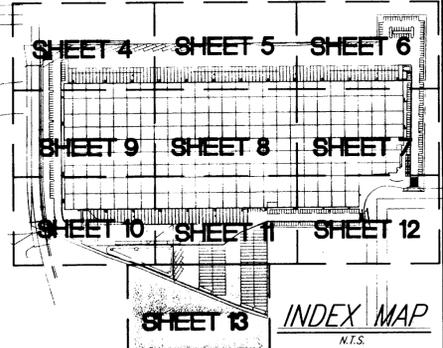


MATCHLINE SEE SHEET 10 AND 11

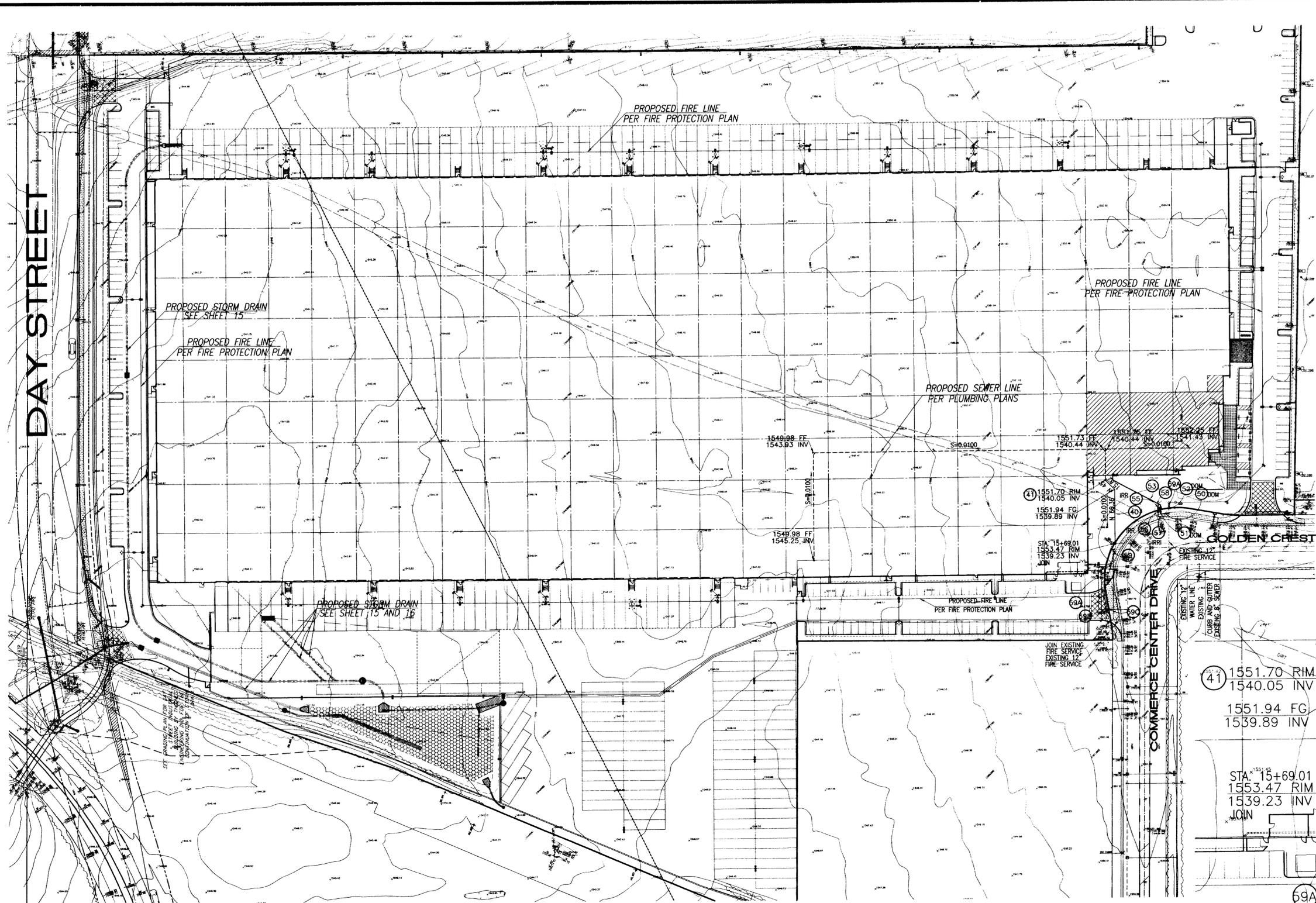


- CONSTRUCTION NOTES:**
- 1 SAWCUT AND REMOVE EXISTING AC PAVEMENT AND REPLACE WITH FULL DEPTH AC PAVEMENT OR AS REQUIRED BY THE CITY ENGINEER.
  - 2 SAWCUT AND REMOVE EXISTING CURB AND GUTTER.
  - 3 SAWCUT AND REMOVE EXISTING SIDEWALK.
  - 4 PROTECT IN PLACE EXISTING 9" BRICK WALL.
  - 4A PROTECT IN PLACE EXISTING GAS MARKER.
  - 4B PROTECT IN PLACE EXISTING GAS VALVE.
  - 5 RELOCATE EXISTING STREET LIGHT.
  - 6 RELOCATE EXISTING WATER METER.
  - 6A PROTECT IN PLACE EXISTING WATER METER.
  - 7 PROTECT IN PLACE EXISTING CHAIN LINK FENCE.
  - 8 REMOVE AND REPLACE EXISTING CHAIN LINK FENCE.
  - 9 REMOVE EXISTING WATER SERVICE.
  - 10 CONSTRUCT 6" CURB PER DETAIL ON SHEET 2, CITY STD. NO. 202 (TYP).
  - 11 CONSTRUCT 6" CURB AND GUTTER PER DETAIL ON SHEET 2, CITY STD. NO. 200 (TYP).
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 Underground Service Alert  
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 TWO WORKING DAYS BEFORE YOU DIG



<p>PA05-0042    WDID: 833C335284    "CONSTRUCTION SET 01-16-06"</p>		<p>REVISION</p>		<p>PREPARED BY DR UNDER THE SUPERVISION OF                  HAIDOOK I. AGHAIAN    R.C.E. No. 43293    DATE 1/20/06</p>		<p>DRAWN BY                  DESIGN BY                  CHECKED BY</p>		<p>Thienes Engineering, Inc.                  CIVIL ENGINEERING &amp; LAND SURVEYING                  14349 FIRESTONE BOULEVARD                  LA MIRADA, CALIFORNIA 90638                  PH:(714)321-4811 FAX:(714)321-4173</p>		<p>CITY OF MORENO VALLEY                  ACCY. NO.                  PRECISE GRADING PLAN                  SHEET 13 NO. 18                  CITY I. D. NO. 2564</p>	
<p>REVISION</p>		<p>REVISION</p>		<p>PREM KUMAR    DATE</p>		<p>INTERIM CITY ENGINEER, CITY OF MORENO VALLEY                  R.C.E. NO. 52463 (EXP. 12/31/2006)                  No. 57673    Exp. 6-30-07</p>		<p>REGISTERED PROFESSIONAL ENGINEER                  HAIDOOK I. AGHAIAN                  R.C.E. NO. 43293                  Exp. 3-31-06                  CIVIL                  STATE OF CALIFORNIA</p>		<p>REVISION</p>	

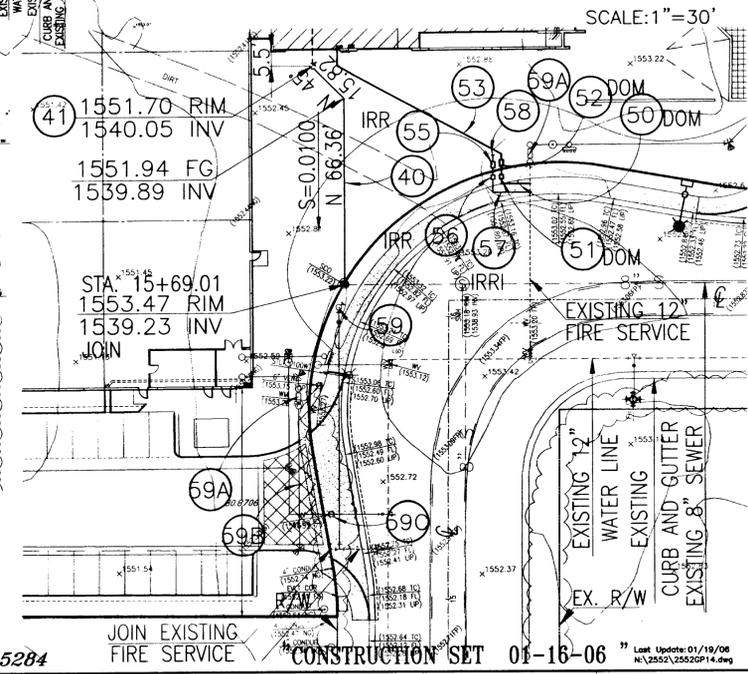
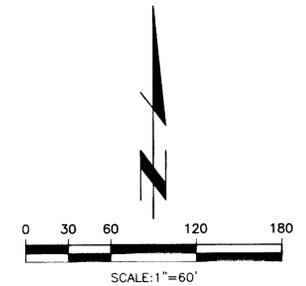


**SEWER CONSTRUCTION NOTES:**

- 40 - CONSTRUCT 6" PVC SDR-35 SEWER LATERAL
- 41 - CONSTRUCT 6" SEWER CLEAN-OUT

**WATER CONSTRUCTION NOTES:**

- 50 - INSTALL 2" COPPER BRASS PIPE.
- 51 - INSTALL 2" METER SERVICE CONNECTION PER EMDD STD. DWG. NO. B-344.
- 52 - INSTALL 2" BACKFLOW PREVENTION ASSEMBLY PER EMDD STD. DWG. NO. B-597.
- 53 - INSTALL 2 1/2" PVC PIPE SCH.80.
- 54 - SAWCUT EXISTING AC PAVEMENT AND BACKFILL PER CITY STD. 602A-602C OR AS REQUIRED BY THE CITY ENGINEER.
- 55 - INSTALL 1 1/2" BACKFLOW PREVENTOR ASSEMBLY PER EMDD STD. DWG. NO. B-597.
- 56 - INSTALL 1 1/2" METER SERVICE CONNECTION PER EMDD STD. DWG. NO. B-344.
- 57 - INSTALL 1 1/2" COPPER BRASS PIPE.
- 58 - INSTALL 1 1/2" PVC PIPE SCH.80.
- 59 - INSTALL FIRE HYDRANT PER EMDD STD. DWG. NO. B-356.
- 59A - INSTALL 10" DOUBLE DETECTOR CHECK VALVE.
- 59B - INSTALL 10" PVC WATER LINE.
- 59C - ABANDONED EXISTING WATER METER AT MAIN.



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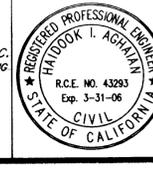
**BENCH MARK**  
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRIS AVE.; 58.55 FT. S/M OF A CHISELED "X" IN A 3" IRON COR. POST; 40.89 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #21536; 34.39 FT. N/W OF A NAIL & TAG SET IN S/W SIDE TELEPHONE POLE #15160; A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDWELL MONUMENT. ELEV. = 1503.526' (NVD '29 / ESTABLISHED 1963)

**BASIS OF BEARING**  
THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARIPOSA AVENUE) BEING N 89°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 / 29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

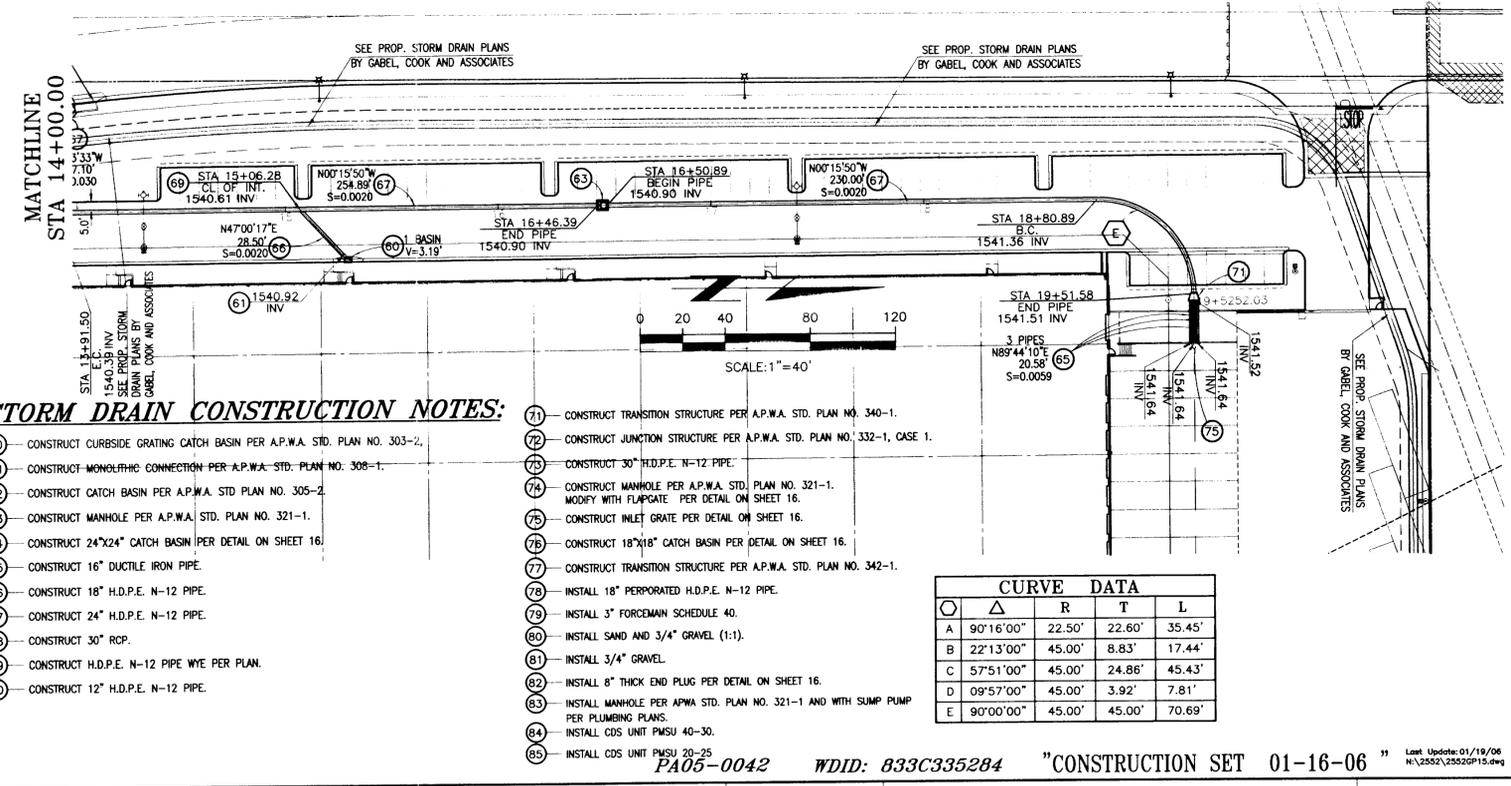
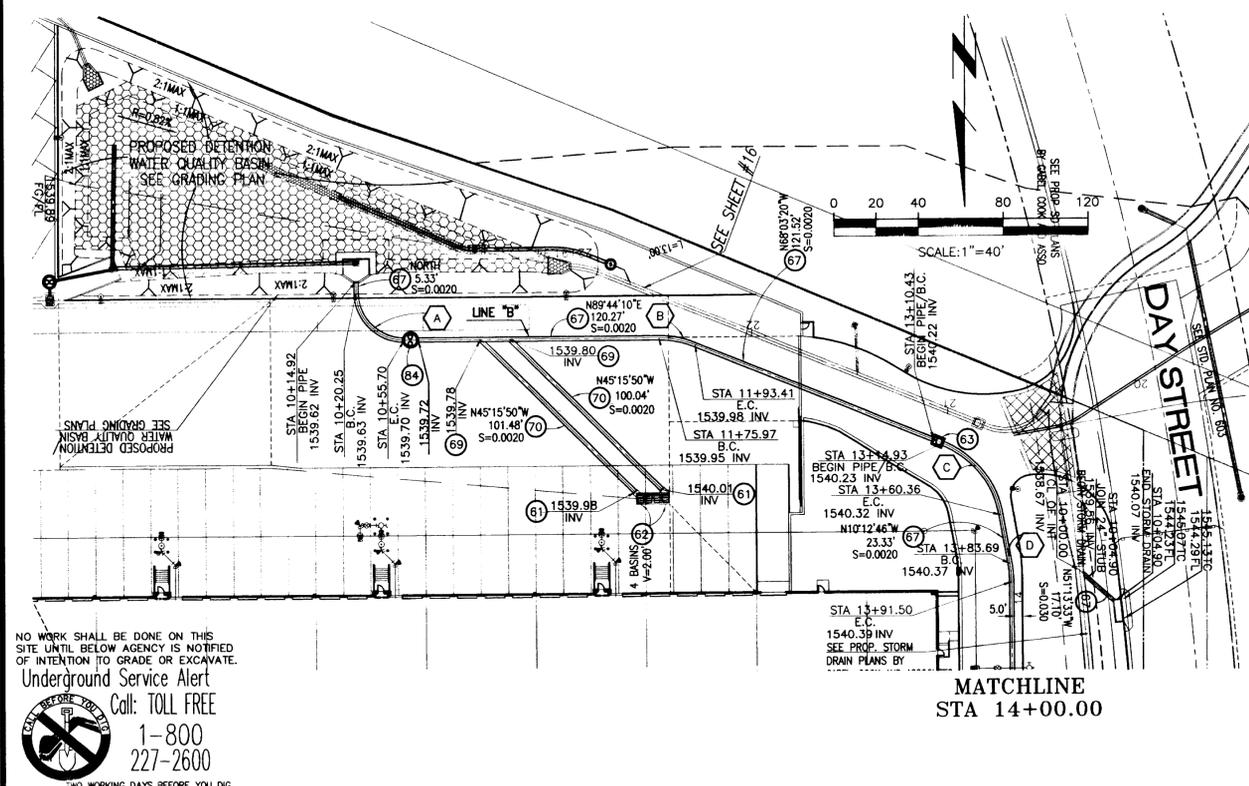
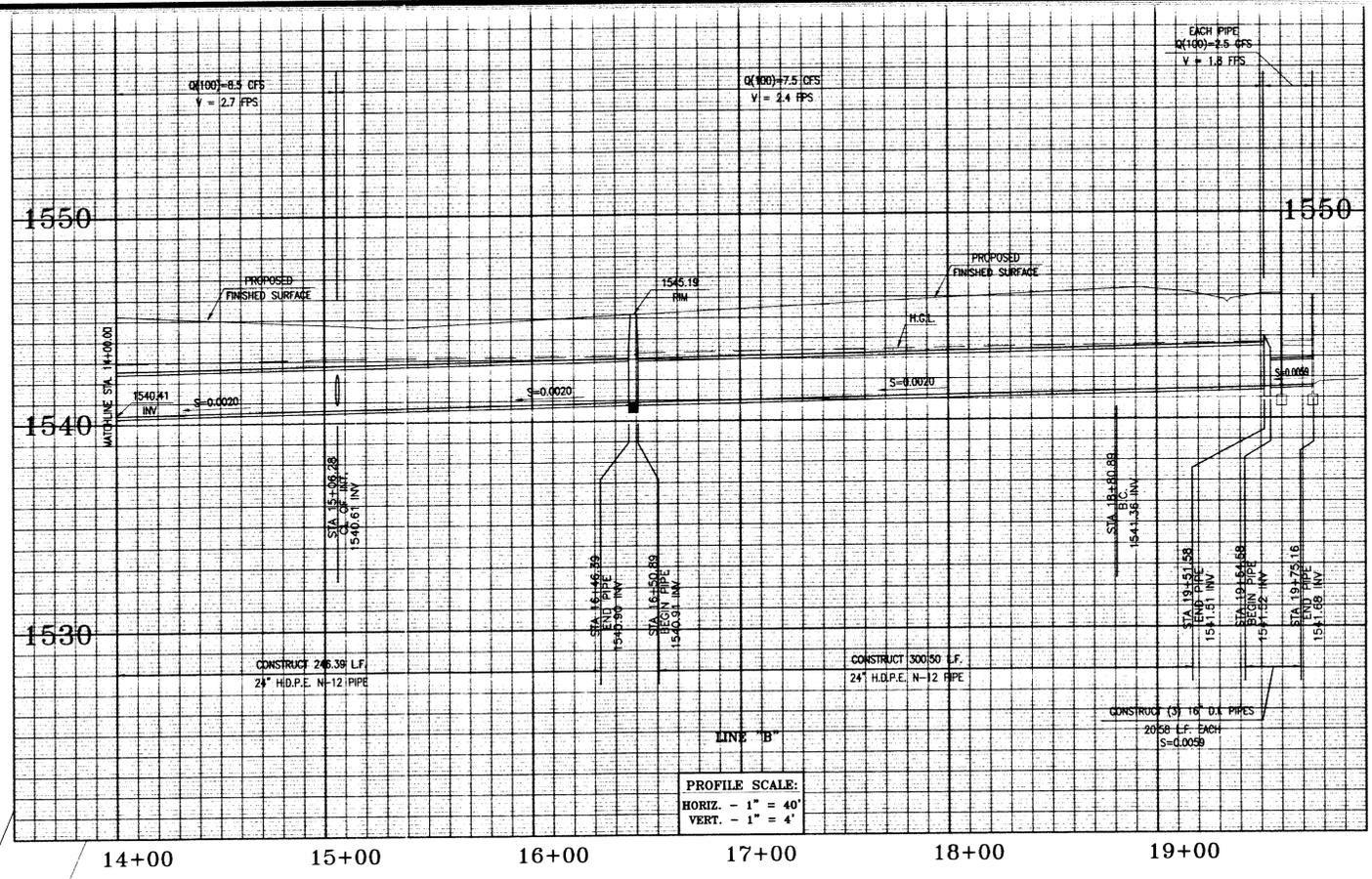
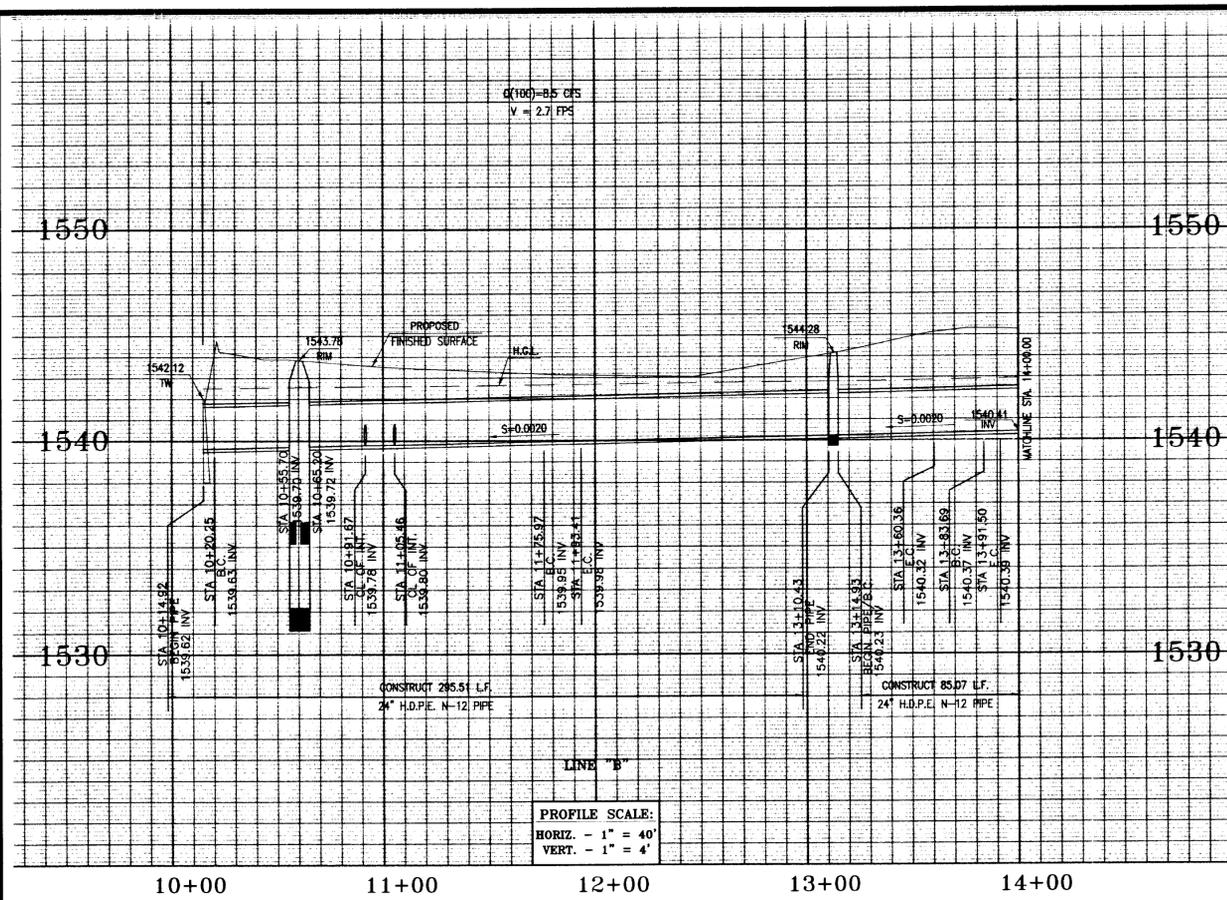
REVIEW BY CITY STAFF	INITIAL	DATE
OFFICE		
LAND DEVELOPMENT		
ENTERPRISE SERVICES		
PLANNING		
TRANSPORTATION		
CAPITAL PROJECT		
PARK AND RECREATION		

PREPARED BY OR UNDER THE SUPERVISION OF  
*Haidouk I. Aghaian*  
HAIDOUK I. AGHAIAN R.C.E. No. 43293 DATE 1/22/06  
APPROVED BY  
*M. K. Kumbhar*  
M. K. KUMBHAR R.C.E. No. 52463 DATE 12/31/2006  
INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
R.C.E. NO. 52463 EXP. 12/31/2006  
No. 5303 Exp. 6-30-07

DESIGN BY  
*Haidouk I. Aghaian*  
CHECKED BY  
*M. K. Kumbhar*



PA05-0042 WDID: 335284  
CITY OF MORENO VALLEY  
SEWER AND WATER PLAN  
FOR  
MARCH COMMERCE CENTER  
22150 GOLDEN CREST DRIVE  
SHEET 14 NO. 18  
CITY I. D. NO. 2564



**STORM DRAIN CONSTRUCTION NOTES:**

- (60) CONSTRUCT CURBSIDE GRATING CATCH BASIN PER A.P.W.A. STD. PLAN NO. 303-2.
- (61) CONSTRUCT MONORHIC CONNECTION PER A.P.W.A. STD. PLAN NO. 308-1.
- (62) CONSTRUCT CATCH BASIN PER A.P.W.A. STD. PLAN NO. 305-2.
- (63) CONSTRUCT MANHOLE PER A.P.W.A. STD. PLAN NO. 321-1.
- (64) CONSTRUCT 24"x24" CATCH BASIN PER DETAIL ON SHEET 16.
- (65) CONSTRUCT 16" DUCTILE IRON PIPE.
- (66) CONSTRUCT 18" H.D.P.E. N-12 PIPE.
- (67) CONSTRUCT 24" H.D.P.E. N-12 PIPE.
- (68) CONSTRUCT 30" RCP.
- (69) CONSTRUCT H.D.P.E. N-12 PIPE WYE PER PLAN.
- (70) CONSTRUCT 12" H.D.P.E. N-12 PIPE.
- (71) CONSTRUCT TRANSITION STRUCTURE PER A.P.W.A. STD. PLAN NO. 340-1.
- (72) CONSTRUCT JUNCTION STRUCTURE PER A.P.W.A. STD. PLAN NO. 332-1, CASE 1.
- (73) CONSTRUCT 30" H.D.P.E. N-12 PIPE.
- (74) CONSTRUCT MANHOLE PER A.P.W.A. STD. PLAN NO. 321-1. MODIFY WITH FLAPGATE PER DETAIL ON SHEET 16.
- (75) CONSTRUCT INLET GRATE PER DETAIL ON SHEET 16.
- (76) CONSTRUCT 18"x18" CATCH BASIN PER DETAIL ON SHEET 16.
- (77) CONSTRUCT TRANSITION STRUCTURE PER A.P.W.A. STD. PLAN NO. 342-1.
- (78) INSTALL 18" PERFORATED H.D.P.E. N-12 PIPE.
- (79) INSTALL 3" FORCEMAIN SCHEDULE 40.
- (80) INSTALL SAND AND 3/4" GRAVEL (1:1).
- (81) INSTALL 3/4" GRAVEL.
- (82) INSTALL 8" THICK END PLUG PER DETAIL ON SHEET 16.
- (83) INSTALL MANHOLE PER APWA STD. PLAN NO. 321-1 AND WITH SLUMP PLANS PER PLUMBING PLANS.
- (84) INSTALL CDS UNIT PMSU 40-30.
- (85) INSTALL CDS UNIT PMSU 30-25.

CURVE DATA			
	Δ	R	T
A	90°16'00"	22.50'	22.60'
B	22°13'00"	45.00'	8.83'
C	57°51'00"	45.00'	24.86'
D	09°57'00"	45.00'	3.92'
E	90°00'00"	45.00'	70.69'

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

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TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK	BASIS OF BEARING	REVIEW BY CITY STAFF
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRLS AVE., 58.55 FT. S.W. OF A CHISELED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E OF MAIL & TAG IN THE WEST SIDE OF POWER POLE #13136, 34.39 FT. N/W OF A MAIL & TAG SET IN S.W. SIDE TELEPHONE POLE #15160, A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANWELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)	THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CAROLINA AVENUE (FORMERLY MARIPOSA AVENUE) BEING N 89°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 / 29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.	OFFICE: LAND DEVELOPMENT ENTERPRISE SERVICES PLANNING TRANSPORTATION CAPITAL PROJECT PARK AND RECREATION

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE
			REVISION			

PREPARED BY DR UNDER THE SUPERVISION OF  
*Haidook I. Aghaian*  
HAIDOOK I. AGHAIAN R.C.E. No. 43293 DATE 1/24/06

DESIGN BY  
*Haidook I. Aghaian*  
HAIDOOK I. AGHAIAN R.C.E. No. 43293 DATE 1/24/06

APPROVED BY  
*Haidook I. Aghaian*  
HAIDOOK I. AGHAIAN R.C.E. No. 43293 DATE 1/24/06

INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
R.C.E. NO. 52463 (EXP. 12/31/2006)  
No. 53613 Exp. 6-30-07

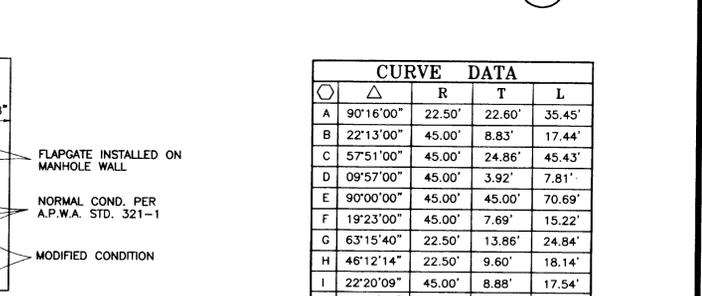
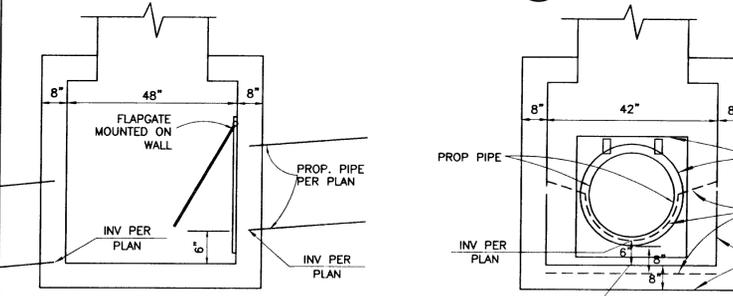
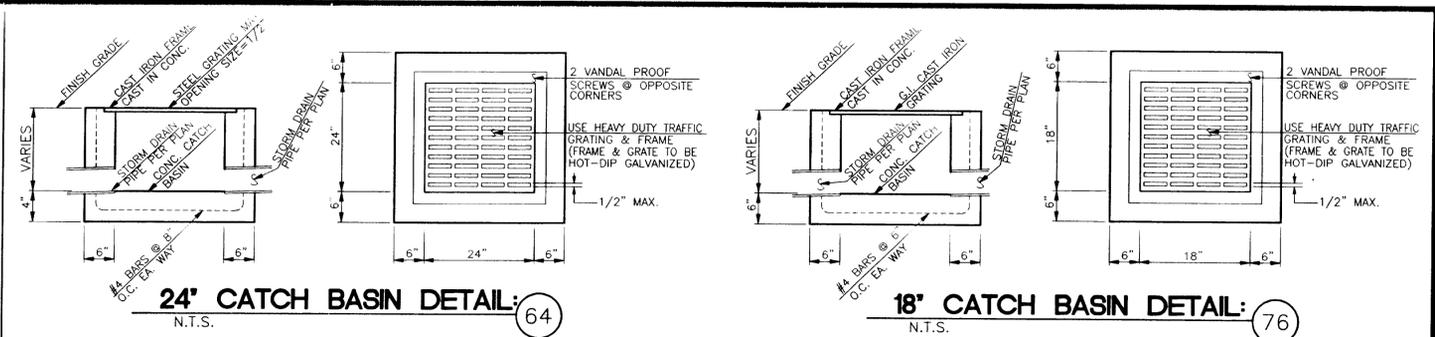
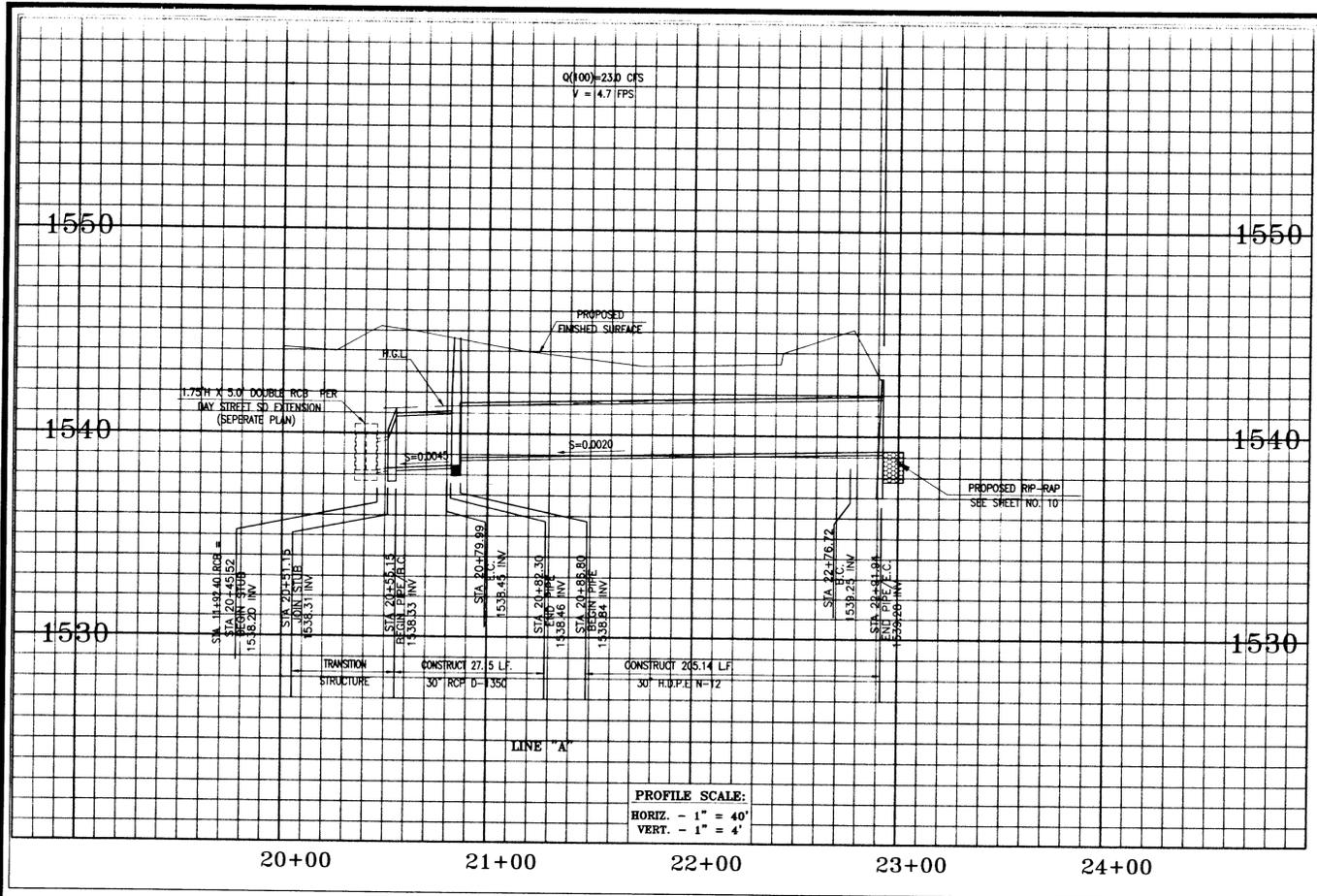
THIENES ENGINEERING, INC.  
CIVIL ENGINEERING & LAND SURVEYING  
14340 FIRESTONE BOULEVARD  
LA MIRADA, CALIFORNIA 90638  
PH: (714) 211-4811 FAX: (714) 211-4173

REGISTERED PROFESSIONAL ENGINEER  
HAIDOOK I. AGHAIAN  
R.C.E. NO. 43293  
Exp. 3-31-06  
CIVIL  
STATE OF CALIFORNIA

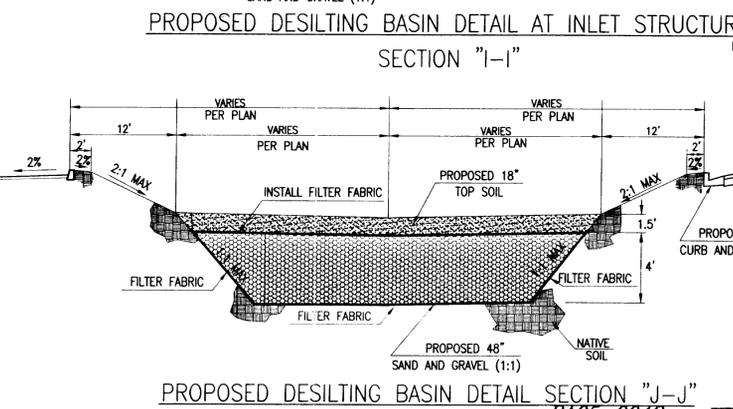
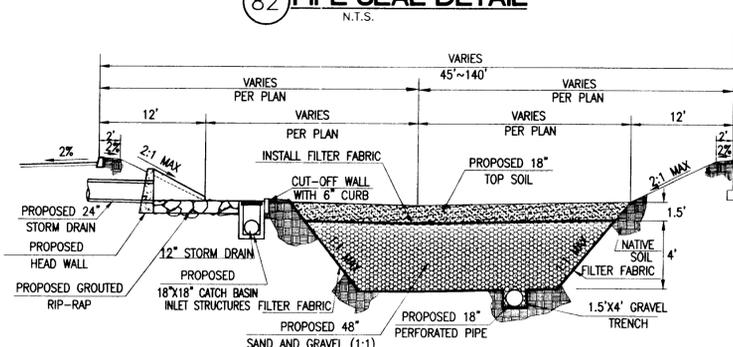
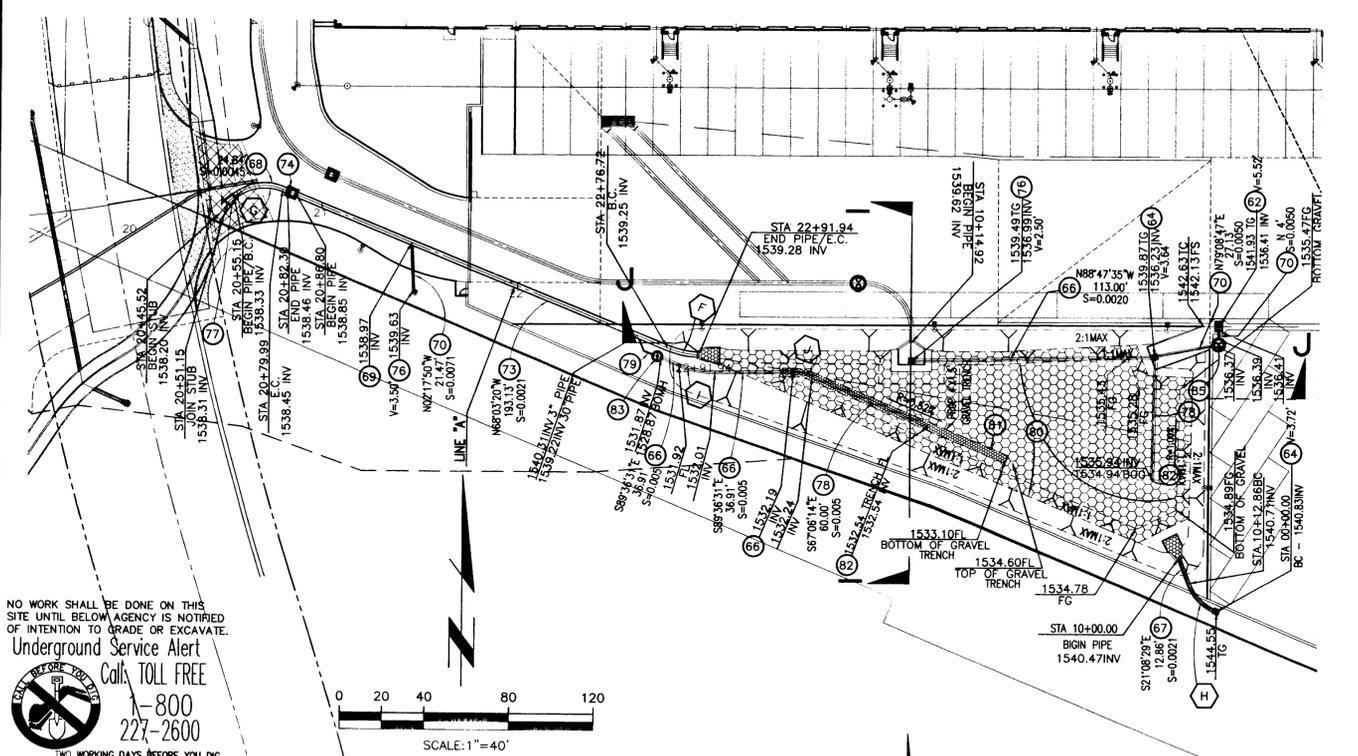
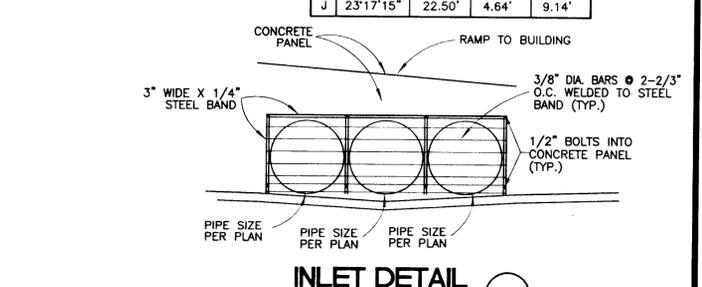
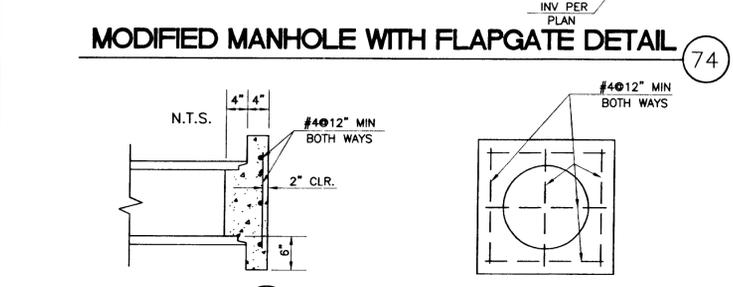
**CITY OF MORENO VALLEY**  
STORM DRAIN PLAN  
FOR  
MARCH COMMERCE CENTER  
22150 GOLDEN CREST DRIVE

CONSTRUCTION SET 01-16-06  
PA05-0042 WDID: 833C335284

ACCT. NO.  
SHEET 15 NO. 18  
CITY I. D. NO. 2564



CURVE DATA				
Curve	Δ	R	T	L
A	90°16'00"	22.50'	22.60'	35.45'
B	22°13'00"	45.00'	8.83'	17.44'
C	57°51'00"	45.00'	24.86'	45.43'
D	09°57'00"	45.00'	3.92'	7.81'
E	90°00'00"	45.00'	45.00'	70.69'
F	19°23'00"	45.00'	7.69'	15.22'
G	63°15'40"	22.50'	13.86'	24.84'
H	46°12'14"	22.50'	9.60'	18.14'
I	22°20'09"	45.00'	8.88'	17.54'
J	23°17'15"	22.50'	4.64'	9.14'



**STORM DRAIN CONSTRUCTION NOTES:**

- (60) CONSTRUCT CURBSIDE GRATING CATCH BASIN PER A.P.W.A. STD. PLAN NO. 303-2.
- (61) CONSTRUCT MONOLITHIC CONNECTION PER A.P.W.A. STD. PLAN NO. 308-1.
- (62) CONSTRUCT CATCH BASIN PER A.P.W.A. STD. PLAN NO. 305-2.
- (63) CONSTRUCT MANHOLE PER A.P.W.A. STD. PLAN NO. 321-1.
- (64) CONSTRUCT 24"x24" CATCH BASIN PER DETAIL ON SHEET 16.
- (65) CONSTRUCT 18" DUCTILE IRON PIPE.
- (66) CONSTRUCT 18" H.D.P.E. N-12 PIPE.
- (67) CONSTRUCT 24" H.D.P.E. N-12 PIPE.
- (68) CONSTRUCT 30" RCP.
- (69) CONSTRUCT H.D.P.E. N-12 PIPE WYE PER PLAN.
- (70) CONSTRUCT 12" H.D.P.E. N-12 PIPE.
- (71) CONSTRUCT TRANSITION STRUCTURE PER A.P.W.A. STD. PLAN NO. 340-1.
- (72) CONSTRUCT JUNCTION STRUCTURE PER A.P.W.A. STD. PLAN NO. 332-1, CASE 1.
- (73) CONSTRUCT 30" H.D.P.E. N-12 PIPE.
- (74) CONSTRUCT MANHOLE PER A.P.W.A. STD. PLAN NO. 321-1. MODIFY WITH FLAPGATE PER DETAIL ON SHEET 16.
- (75) CONSTRUCT INLET GRATE PER DETAIL ON SHEET 16.
- (76) CONSTRUCT 18"x18" CATCH BASIN PER DETAIL ON SHEET 16.
- (77) CONSTRUCT TRANSITION STRUCTURE PER A.P.W.A. STD. PLAN NO. 342-1.
- (78) INSTALL 18" PERFORATED H.D.P.E. N-12 PIPE.
- (79) INSTALL 3" FORCEMAIN SCHEDULE 40.
- (80) INSTALL SAND AND 3/4" GRAVEL (1:1).
- (81) INSTALL 3/4" GRAVEL.
- (82) INSTALL 8" THICK END PLUG PER DETAIL ON SHEET 16.
- (83) INSTALL MANHOLE PER APWA STD. PLAN NO. 321-1 AND WITH SUMP PUMP PER PLUMBING PLANS.
- (84) INSTALL CDS UNIT PMSU 40-30.
- (85) INSTALL CDS UNIT PMSU 20-25.

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.  
**Underground Service Alert**  
 Call TOLL FREE 1-800-227-2600  
 TWO WORKING DAYS BEFORE YOU DIG

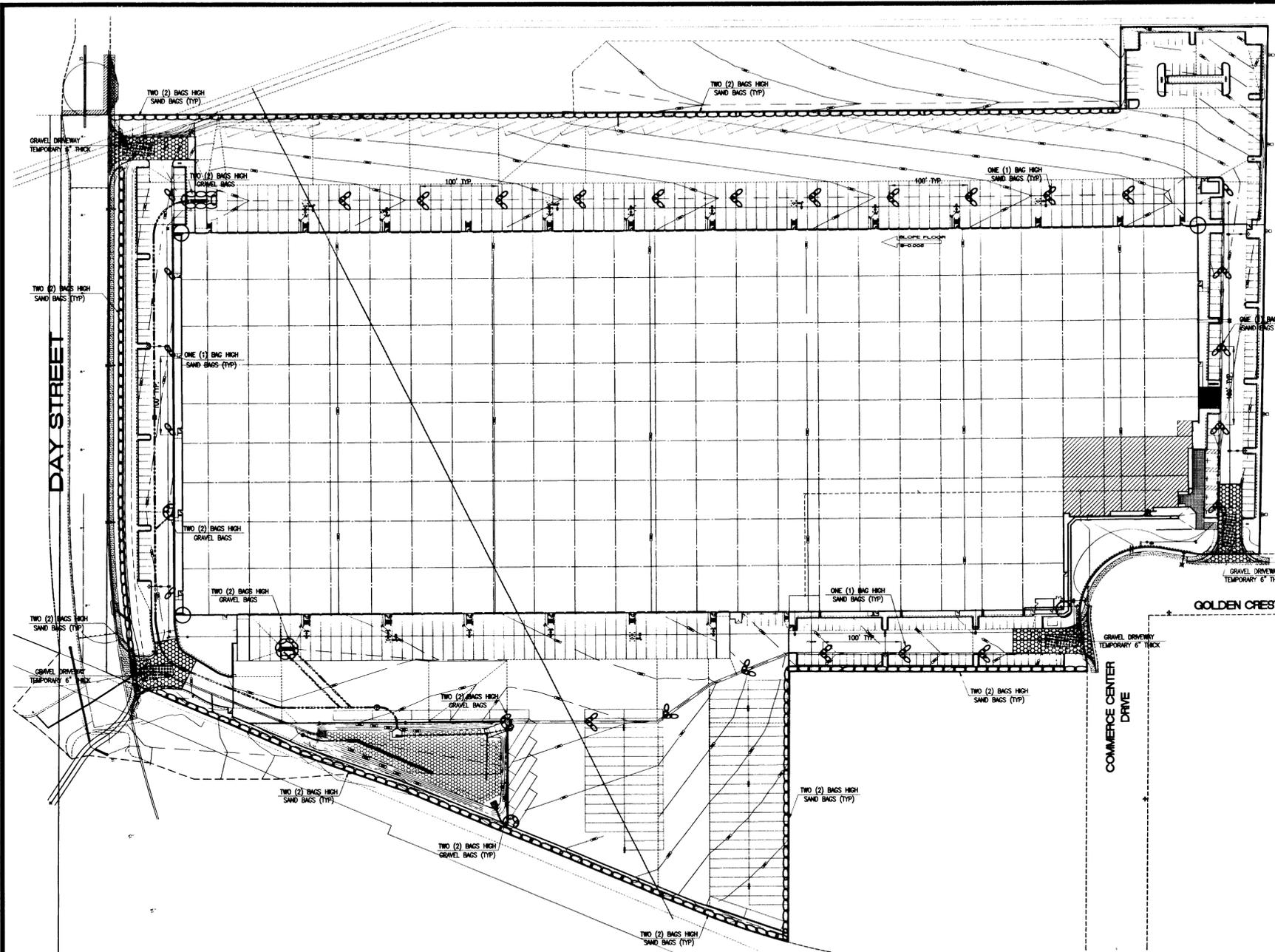
REVISION

REVISION	REC.	APPR.	DATE

PREPARED BY DR UNDER THE SUPERVISION OF  
**Haideck I. Aghaian**  
 HAIDOCK I. AGHAIAN R.C.E. NO. 43293  
 APPROVED: **Mark S. Smith** FOR 2/2/06  
 PREM KUMAR DATE 12/31/2006  
 INTERIM CITY ENGINEER, CITY OF MORENO VALLEY  
 R.C.E. NO. 52463 (EXP. 12/31/2006)  
 No. 53613 Exp. 6-30-07

DESIGN BY  
**Thienes Engineering, Inc.**  
 CIVIL ENGINEERING & LAND SURVEYING  
 14349 FIRESTONE BOULEVARD  
 LA MIRADA, CALIFORNIA 90638  
 PH (714) 521-8811 FAX (714) 521-8723

CITY OF MORENO VALLEY  
 STORM DRAIN PLAN  
 CONSTRUCTION SET 01-16-06  
 SHEET 16 OF 18  
 CITY I. D. NO. 2564

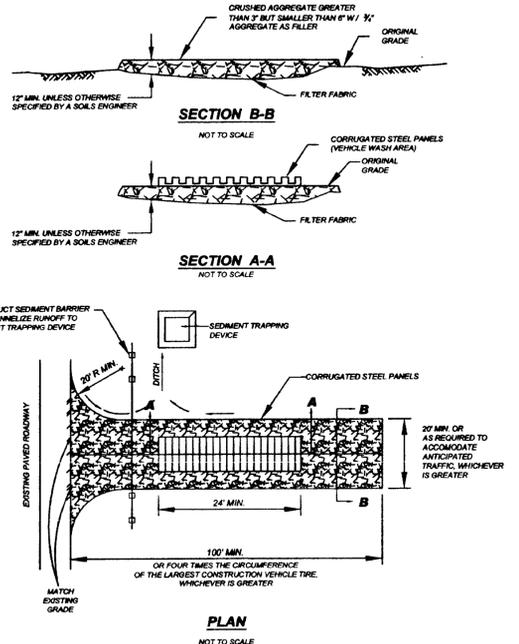


**STORM WATER POLLUTION CONTROL REQUIREMENTS FOR STORM DRAIN CONSTRUCTION**

- ERODED SEDIMENTS AND OTHER POLLUTANTS SHALL BE RETAINED ON SITE AND SHALL NOT BE TRANSPORTED FROM THE SITE VIA SHEET FLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES OR WIND.
  - STOCKPILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIALS SHALL BE PROTECTED FROM FUELS, OILS, SOLVENTS, AND OTHER TOXIC MATERIALS SHALL BE STORED IN ACCORDANCE WITH THEIR LISTINGS AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS SHALL NOT BE WASHED INTO THE DRAINAGE SYSTEM.
  - EXCESS OR WASTE CONCRETE SHALL NOT BE WASHED INTO THE PUBLIC RIGHT-OF-WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.
  - TRASH AND CONSTRUCTION RELATED SOLID WASTES SHALL BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATIONS OF RAINWATER AND DISPERSAL BY WIND.
  - SEDIMENTS AND OTHER MATERIALS SHALL NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS SHALL BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC RIGHT-OF-WAY. ACCIDENTAL DEPOSITIONS SHALL BE SWEEP UP IMMEDIATELY AND SHALL NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.
  - ANY SLOPES WITH DISTURBED SOILS OR DENIED OF VEGETATION SHALL BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.
  - THE BEST MANAGEMENT PRACTICE HANDBOOK, LATEST REVISED EDITION, SHALL APPLY DURING CONSTRUCTION (ADDITIONAL MEASURES AS OUTLINED BELOW SHALL BE REQUIRED IF DEEMED APPROPRIATE BY THE CITY):
- |   |  |
|---|--|
| CA001 - Dewatering Operations               | ESC20 - GEOTEXTILES AND MATS             |
| CA002 - PAVING OPERATIONS                   | ESC21 - DUST CONTROLS                    |
| CA003 - STRUCTURE CONSTRUCTION AND PAINTING | ESC22 - TEMPORARY STREAM CROSSING        |
| CA010 - MATERIAL DELIVERY AND STORAGE       | ESC23 - CONSTRUCTION ROAD STABILIZATION  |
| CA012 - SPILL PREVENTION AND CONTROL        | ESC24 - STABILIZED CONSTRUCTION ENTRANCE |
| CA020 - SOLID WASTE MANAGEMENT              | ESC25 - EARTH DIKE                       |
| CA021 - HAZARDOUS WASTE MANAGEMENT          | ESC26 - TEMPORARY DRAINS AND SWALES      |
| CA022 - CONCRETE WASTE MANAGEMENT           | ESC27 - SLOPE DRAIN                      |
| CA030 - VEHICLE AND EQUIPMENT CLEANING      | ESC28 - OUTLET PROTECTION                |
| CA031 - VEHICLE AND EQUIPMENT FUELING       | ESC29 - CHECK DAMS                       |
| CA032 - VEHICLE AND EQUIPMENT MAINTENANCE   | ESC30 - SILT FENCE                       |
| CA040 - EMPLOYEES/CONTRACTOR TRAINING       | ESC31 - STRAW BALE BARRIERS              |
| ESC01 - SCHEDULING                          | ESC32 - SAND BAG BARRIER                 |
| ESC02 - PRESERVATION OF EXISTING VEGETATION | ESC33 - BRUSH OR ROCK FILTER             |
| ESC10 - SEEDING AND PLANTING                | ESC34 - STORM DRAIN INLET PROTECTION     |
| ESC11 - MULCHING                            |  |

**EROSION CONTROL NOTES**

- CURB INLET SEDIMENT BARRIERS CONSTRUCTION SPECIFICATIONS:**
- BARRIERS SHALL BE PLACED ON GENTLY SLOPING STREETS WHERE WATER CAN POND PER M.V. STD PLAN 611
  - THE BARRIERS SHALL ALLOW FOR OVERFLOW FROM A SEVERE STORM EVENT. SLOPE RUNOFF SHALL BE CONTROLLED USING M.V. STD PLAN NOS 613 OR 614. A SPILLWAY SHALL BE CONSTRUCTED WITH THE SANDBAG STRUCTURES TO ALLOW OVERFLOW.
  - SANDBAGS SHOULD BE OF WOVEN-TYPE GEOTEXTILE FABRIC.
  - SANDBAGS SHALL BE FILLED WITH 3/4 INCH (19 mm) DRAIN ROCK OR 1/4 INCH (6 mm) PEA GRAVEL.
  - SANDBAGS SHALL BE PLACED IN A CURVED ROW FROM THE TOP OF CURB AT LEAST 4 FEET (1.22 m) INTO THE STREET. THE ROW SHOULD BE CURVED AT THE ENDS, POINTING UPHILL.
  - LAYERS OF BAGS SHALL BE OVER LAPPED AND PACKED TIGHTLY.
  - LEAVE ONE SANDBAG GAP IN THE TOP ROW TO ACT AS A SPILLWAY.
- INSPECTION AND MAINTENANCE:**
- THE CONTRACTOR SHALL INSPECT AND CLEAN BARRIER DURING AND AFTER EACH STORM AND REMOVE SEDIMENT FROM BEHIND SANDBAG STRUCTURE AFTER EACH STORM.
  - ANY SEDIMENT AND GRAVEL SHALL BE IMMEDIATELY REMOVED FROM THE TRAVELED WAY OF ROADS.
  - THE REMOVED SEDIMENT SHALL BE PLACED WHERE IT CANNOT ENTER A STORM DRAIN, STREAM OR BE TRANSPORTED OFF SITE.
  - IF THE GRAVEL BECOMES CLOGGED WITH SEDIMENT, IT MUST BE REMOVED FROM THE INLET AND OR REPLACED WITH NEW GRAVEL.

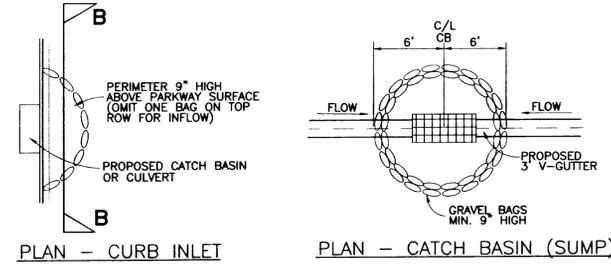
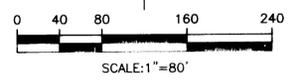


**NOTES:**  
1.) ALL CONSTRUCTION EQUIPMENT / PERSONNEL VEHICLE LEAVING THE CONSTRUCTION SITE SHALL BE WASHED DOWN TO REMOVE ALL MUD FROM VEHICLE PRIOR TO ENTERING THE PUBLIC RIGHT-OF-WAY.

**EROSION CONTROL NOTES**

ITEM	QTY.
ONE BAG HIGH GRAVEL BAGS	700 LF
ONE BAG HIGH SAND BAGS	3,600 LF
6" THICK TEMPORARY GRAVEL DRIVEWAY	13,677 SF

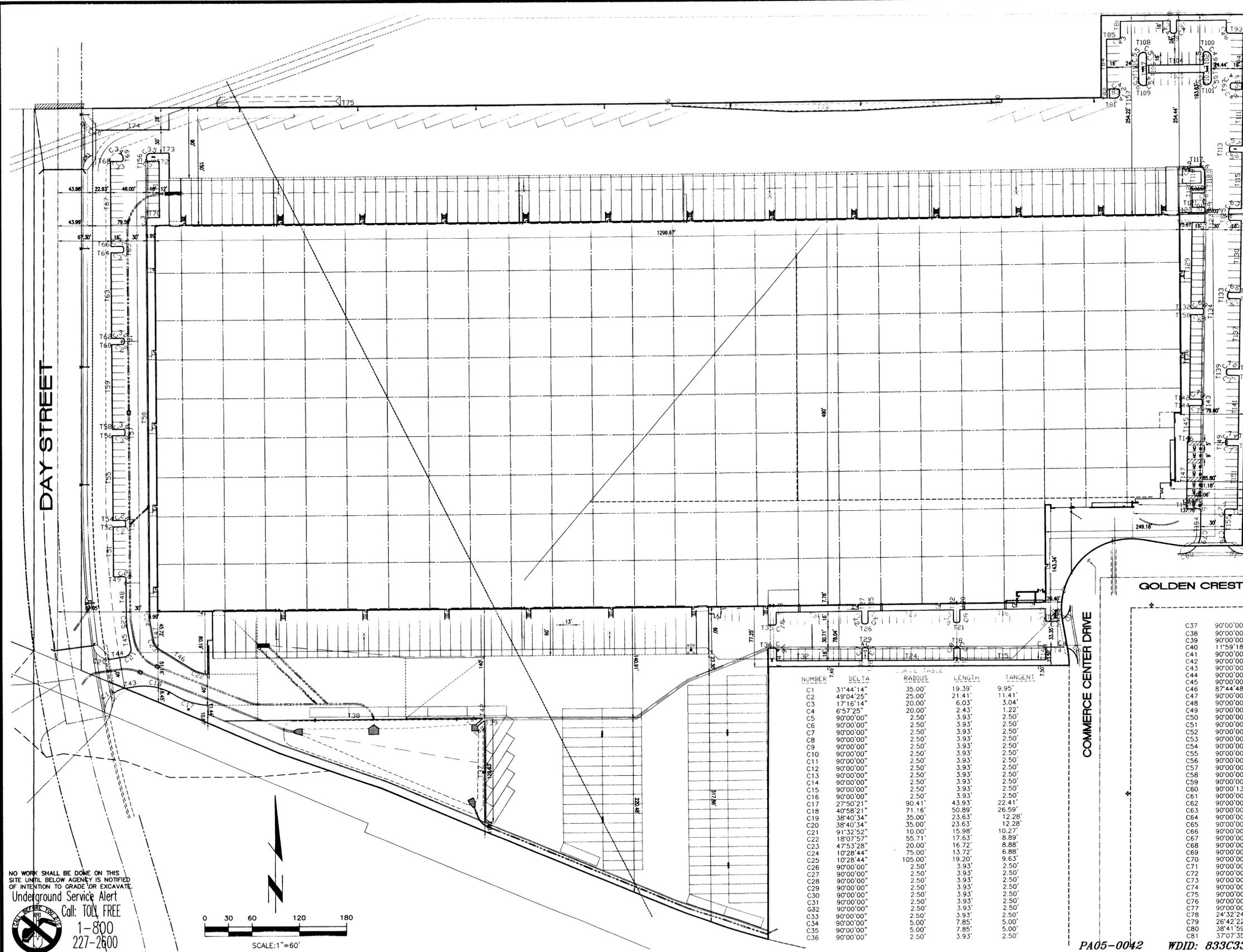
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**STORM DRAIN INLET PROTECTION**

PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06" Last Update: 01/19/06

BENCH MARK	BASIS OF BEARING	REVIEW BY CITY STAFF	PREPARED BY OR UNDER THE SUPERVISION OF	DRAWN BY	DESIGN BY	CITY OF MORENO VALLEY	ACCT. NO.
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRIS AVE., 58.55 FT. S/W OF A CHISELED "X" IN A 3" IRON CURB POST; 40.89 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #113136; 34.39 FT. N/W OF A NAIL & TAG SET IN S/W SIDE TELEPHONE POLE #15180; A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)	THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARONAL AVENUE (FORMERLY MARPOSA AVENUE) BEING N 89°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 /29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.	OFFICE: LAND DEVELOPMENT ENTERPRISE SERVICES PLANNING TRANSPORTATION CAPITAL PROJECT PARK AND RECREATION	HAIDOOK I. AGHAJAN R.C.E. No. 43293 DATE: 1/24/06	HAIDOOK I. AGHAJAN R.C.E. No. 43293 DATE: 1/24/06	HAIDOOK I. AGHAJAN R.C.E. No. 43293 DATE: 1/24/06	<b>CITY OF MORENO VALLEY</b> EROSION CONTROL PLAN FOR MARCH COMMERCE CENTER 22150 GOLDEN CREST DRIVE	SHEET 17 OF 18 CITY I. D. NO. 2564

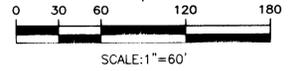


NUMBER	DISTANCE	BEARING
T1	67.70'	S 44°44'10" W
T2	9.09'	S 89°44'10" W
T3	8.09'	S 89°44'10" W
T4	18.20'	S 89°43'34" E
T5	13.50'	N 00°15'50" W
T6	108.00'	S 89°43'34" E
T7	108.00'	S 89°44'10" W
T8	13.50'	N 00°16'26" W
T9	3.00'	S 89°43'34" E
T10	13.50'	N 00°16'26" W
T11	3.00'	S 89°44'10" W
T12	108.00'	S 89°43'34" E
T13	108.00'	S 89°44'10" W
T14	13.50'	N 00°15'50" W
T15	13.50'	N 00°16'26" W
T16	3.00'	S 89°43'34" E
T17	3.00'	S 89°44'10" W
T18	108.00'	S 89°43'34" E
T19	108.00'	S 89°44'10" W
T20	13.50'	N 00°15'50" W
T21	3.00'	S 89°44'10" W
T22	13.50'	N 00°15'50" W
T23	108.00'	S 89°44'10" W
T24	108.00'	S 89°43'34" E
T25	13.50'	S 89°44'10" W
T26	3.00'	S 89°44'10" W
T27	13.50'	N 00°15'50" W
T28	13.50'	N 00°16'26" W
T29	3.00'	S 89°43'34" E
T30	13.50'	S 89°44'10" W
T31	108.00'	S 89°44'10" W
T32	108.00'	S 89°43'34" E
T33	13.50'	S 00°15'50" E
T34	13.50'	S 00°16'26" W
T35	7.50'	S 89°44'10" W
T36	7.66'	S 89°43'34" E
T37	126.63'	S 00°00'00" E
T38	326.30'	N 89°44'10" E
T39	1.23'	N 89°44'10" E
T40	10.20'	S 49°46'09" W
T41	10.97'	S 49°46'09" W
T42	0.56'	S 00°00'00" W
T43	15.83'	N 80°53'11" E
T44	16.39'	S 80°53'11" W
T45	23.51'	S 101°12'46" E
T46	49.79'	N 58°38'02" W
T47	16.76'	N 10°44'34" W
T48	47.92'	S 00°15'50" E
T49	13.50'	N 89°44'10" E
T50	502.92'	N 00°15'50" W
T51	63.00'	S 00°15'50" E
T52	13.50'	S 89°44'10" W
T53	3.00'	N 00°15'50" E
T54	13.50'	N 89°44'10" E
T55	108.00'	S 00°15'50" E
T56	13.50'	S 89°44'10" W
T57	3.00'	S 00°15'50" E
T58	13.50'	N 89°44'10" E
T59	108.00'	S 00°15'50" E
T60	13.50'	S 89°44'10" W
T61	3.00'	S 00°15'50" E
T62	13.50'	N 89°44'10" E
T63	108.00'	S 00°15'50" E
T64	13.50'	S 89°44'10" W
T65	3.00'	S 00°15'50" E
T66	13.50'	N 89°44'10" E
T67	108.00'	S 00°15'50" E
T68	13.50'	S 89°44'10" W
T69	2.50'	S 00°15'50" E
T70	13.50'	N 89°44'10" E
T71	72.00'	N 00°15'50" W
T72	13.50'	S 89°44'10" W
T73	22.99'	N 89°44'10" E
T74	88.63'	S 89°44'10" W
T75	413.22'	S 89°44'10" W
T76	2.50'	S 00°00'00" E
T77	149.52'	N 86°44'37" W
T78	84.45'	N 89°44'10" E
T79	184.43'	N 87°11'11" E
T80	3.48'	S 00°15'50" E
T81	7.00'	S 89°44'10" W
T82	11.58'	S 00°15'50" E
T83	10.50'	N 89°44'10" E
T84	63.00'	S 00°15'50" E
T85	14.99'	S 89°44'10" W
T86	20.29'	S 00°15'50" E
T87	63.00'	S 89°44'10" W
T88	13.50'	N 00°15'50" W
T89	3.00'	S 89°44'10" W
T90	13.50'	S 00°15'50" E

NUMBER	DELTA	RADIUS	LENGTH	TANGENT
C1	31°44'14"	35.00'	19.39'	9.95'
C2	49°04'25"	25.00'	21.41'	11.41'
C3	17°16'14"	20.00'	6.03'	3.04'
C4	6°57'25"	20.00'	2.43'	1.22'
C5	90°00'00"	2.50'	3.93'	2.50'
C6	90°00'00"	2.50'	3.93'	2.50'
C7	90°00'00"	2.50'	3.93'	2.50'
C8	90°00'00"	2.50'	3.93'	2.50'
C9	90°00'00"	2.50'	3.93'	2.50'
C10	90°00'00"	2.50'	3.93'	2.50'
C11	90°00'00"	2.50'	3.93'	2.50'
C12	90°00'00"	2.50'	3.93'	2.50'
C13	90°00'00"	2.50'	3.93'	2.50'
C14	90°00'00"	2.50'	3.93'	2.50'
C15	90°00'00"	2.50'	3.93'	2.50'
C16	90°00'00"	2.50'	3.93'	2.50'
C17	27°50'21"	90.41'	43.93'	22.41'
C18	40°58'21"	71.16'	50.89'	26.59'
C19	38°40'34"	35.00'	23.63'	12.28'
C20	38°40'34"	35.00'	23.63'	12.28'
C21	91°32'52"	10.00'	15.98'	10.27'
C22	18°07'57"	55.71'	17.63'	8.89'
C23	47°53'28"	20.00'	16.72'	8.88'
C24	10°28'44"	75.00'	13.72'	6.88'
C25	10°28'44"	105.00'	19.20'	9.63'
C26	90°00'00"	2.50'	3.93'	2.50'
C27	90°00'00"	2.50'	3.93'	2.50'
C28	90°00'00"	2.50'	3.93'	2.50'
C29	90°00'00"	2.50'	3.93'	2.50'
C30	90°00'00"	2.50'	3.93'	2.50'
C31	90°00'00"	2.50'	3.93'	2.50'
C32	90°00'00"	2.50'	3.93'	2.50'
C33	90°00'00"	2.50'	3.93'	2.50'
C34	90°00'00"	5.00'	7.85'	5.00'
C35	90°00'00"	5.00'	7.85'	5.00'
C36	90°00'00"	2.50'	3.93'	2.50'

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PA05-0042    WDD: 833C335284    "CONSTRUCTION SET 01-16-06"    Last Update: 01/19/06 N:\2552\2552D18.dwg

<b>BENCH MARK</b> RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRIS AVE., 58.55 FT. S/W OF A CHISELED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E. OF WAL. & TAG IN THE WEST SIDE OF POWER POLE #113186, 34.59 FT. W/W OF A WAL. & TAG SET IN S/W SIDE TELEPHONE POLE #15180, 11" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDELL MONUMENT. ELEV. = 1503.526' (NOV. 29 / ESTABLISHED 1963)		<b>BASIS OF BEARING</b> THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARIPOSA AVENUE) BEING IN 89°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 /29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.		<b>REVIEW BY CITY STAFF</b> <table border="1"> <thead> <tr> <th>OFFICE</th> <th>INITIAL</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>LAND DEVELOPMENT</td> <td>VKG</td> <td>1/24/06</td> </tr> <tr> <td>ENTERPRISE SERVICES</td> <td></td> <td></td> </tr> <tr> <td>PLANNING</td> <td></td> <td></td> </tr> <tr> <td>TRANSPORTATION</td> <td></td> <td></td> </tr> <tr> <td>CAPITAL PROJECT</td> <td></td> <td></td> </tr> <tr> <td>PARK AND RECREATION</td> <td></td> <td></td> </tr> </tbody> </table>		OFFICE	INITIAL	DATE	LAND DEVELOPMENT	VKG	1/24/06	ENTERPRISE SERVICES			PLANNING			TRANSPORTATION			CAPITAL PROJECT			PARK AND RECREATION			PREPARED BY DR UNDER THE SUPERVISION OF <b>Haidook L. Aghaian</b> R.C.E. No. 43293 DATE 1/24/06 DESIGN BY <b>Thienes Engineering, Inc.</b> 1430 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH: (714) 821-4811 FAX: (714) 821-4173		<b>CITY OF MORENO VALLEY</b> HORIZONTAL CONTROL PLAN FOR <b>MARCH COMMERCE CENTER</b> 22150 GOLDEN CREST DRIVE SHEET 18 OF 18 CITY I. D. NO. 2564	
OFFICE	INITIAL	DATE																												
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<b>REVISION</b> <table border="1"> <thead> <tr> <th>MARK</th> <th>DATE</th> <th>INITIAL</th> <th>DESCRIPTION</th> <th>REC.</th> <th>APPR.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE								APPROVED <b>PREM. KUMAR</b> DATE 2/6/06 INTERIM CITY ENGINEER, CITY OF MORENO VALLEY R.C.E. NO. 52463 (EXP. 12/31/2006) No. 53613 EXP. 6-30-07		CHECKED BY <b>Thienes Engineering, Inc.</b> 1430 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH: (714) 821-4811 FAX: (714) 821-4173		ACC'T. NO. SHEET 18 OF 18 CITY I. D. NO. 2564										
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