

First Day Street Logistics

PEN22-0144

City of Moreno Valley, Riverside County, California

Preliminary Drainage Study

Prepared for:

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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

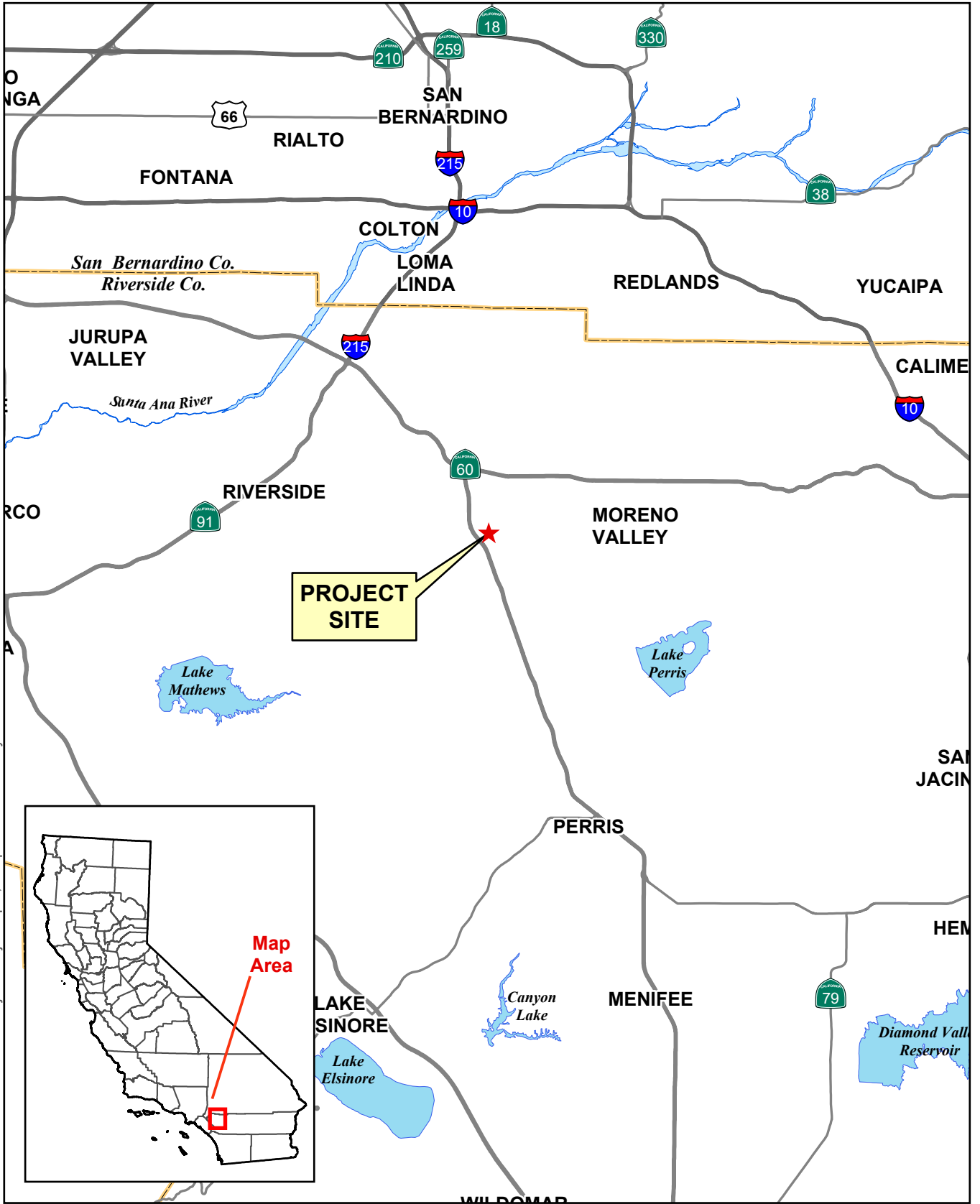
FIG. 2 USGS TOPOGRAPHY MAP

FIG. 3 AERIAL PHOTOGRAPH

FIG. 4 RECEIVING WATERBODIES

FIG. 5 SOILS MAP

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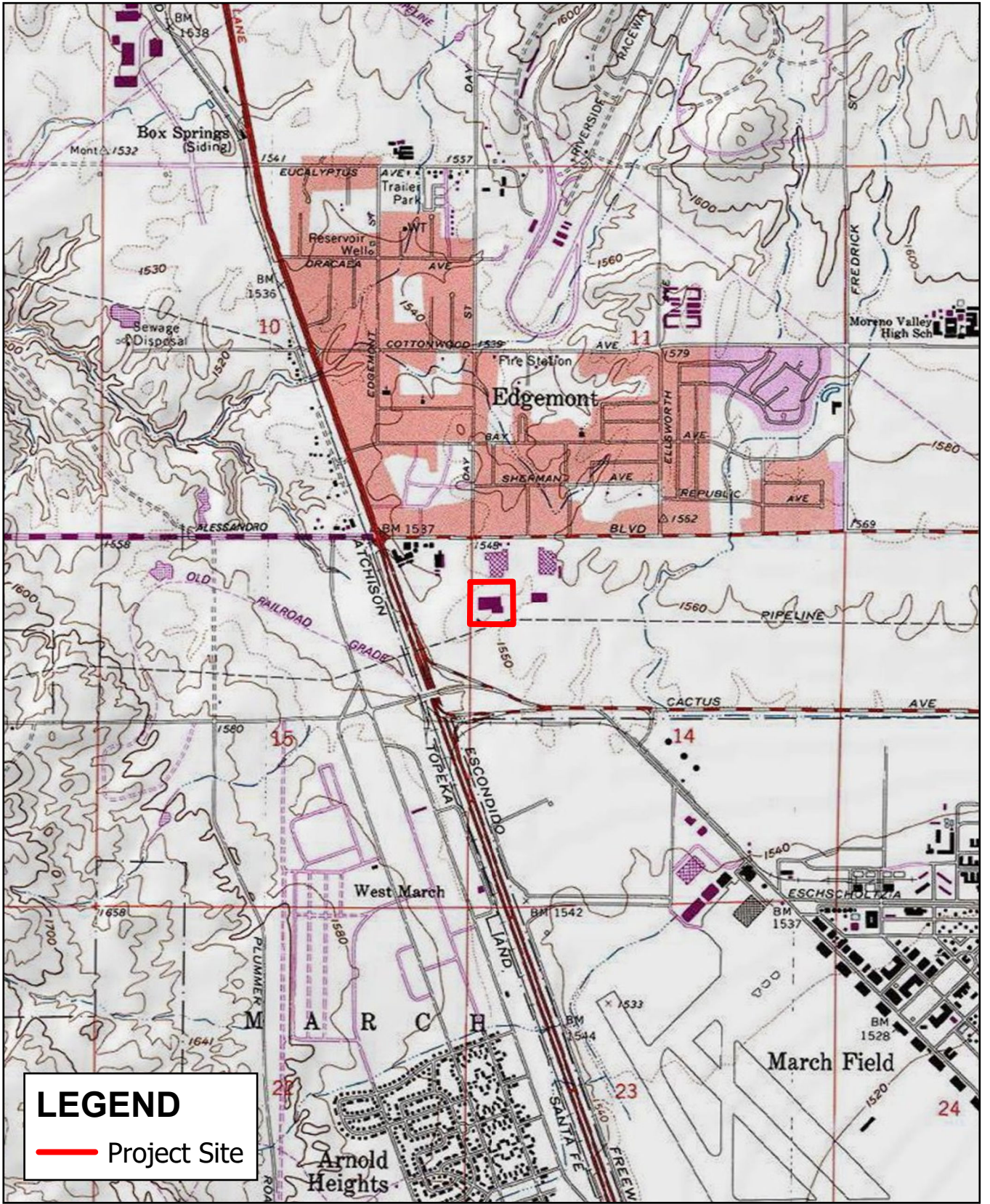
Sources: Riverside Co. GIS, 2021

Vicinity Map

Day Street - Survey Mapping and Entitlement



H:\2022\22-0028\GIS\Pro\Project\Project.aprx; Map created 31 May 2022; jays



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

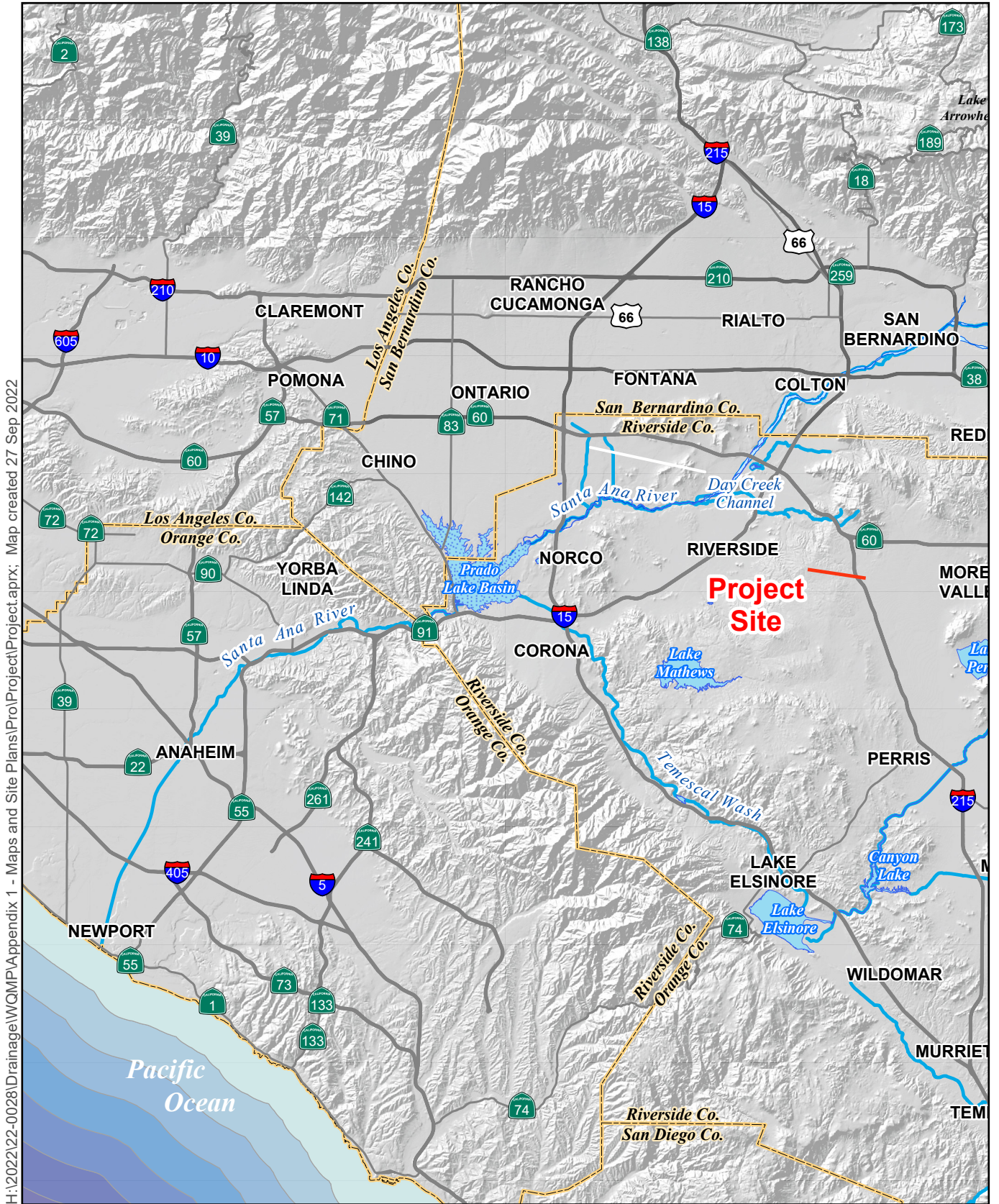


0 1,000 2,000 3,000
 Feet

Aerial Map

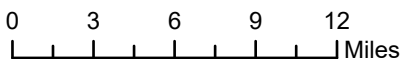
Day Street - Survey Mapping and Entitlement





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

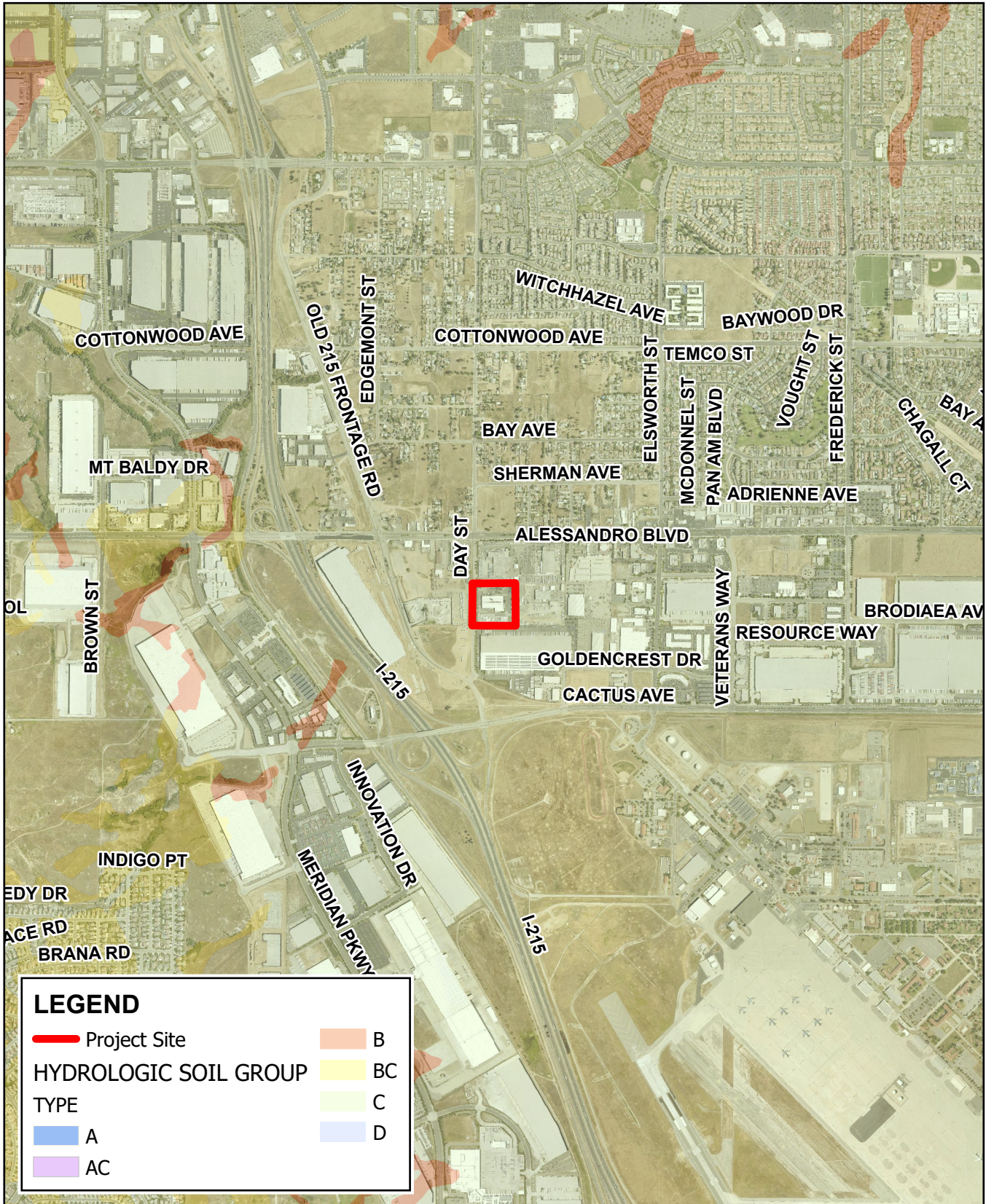


Receiving Waterbodies








Day Street - Survey Mapping and Entitlement



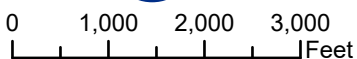
H:\2022\22-0028\GIS\Pro\Project\Project.aprx; Map created 31 May 2022



LEGEND

 Project Site	 B
HYDROLOGIC SOIL GROUP	 BC
TYPE	 C
 A	 D
 AC	

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



Soils Map
Day Street - Survey Mapping and Entitlement



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**.

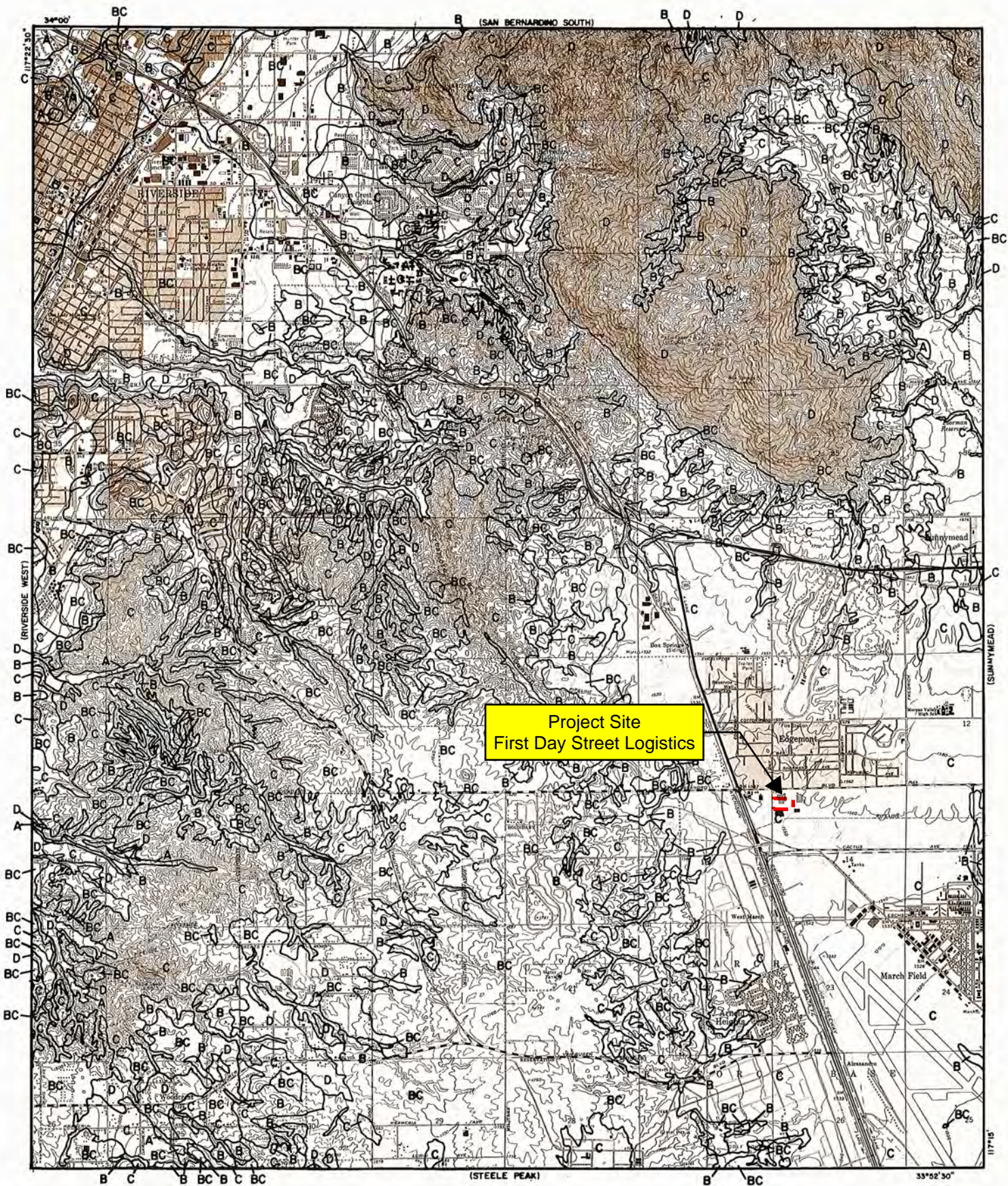
SECTION 5 - CONCLUSION

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

HYDROLOGIC SOILS GROUP MAP (PLATE C-1.16)



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

RAINFALL INTENSITY—INCHES PER HOUR

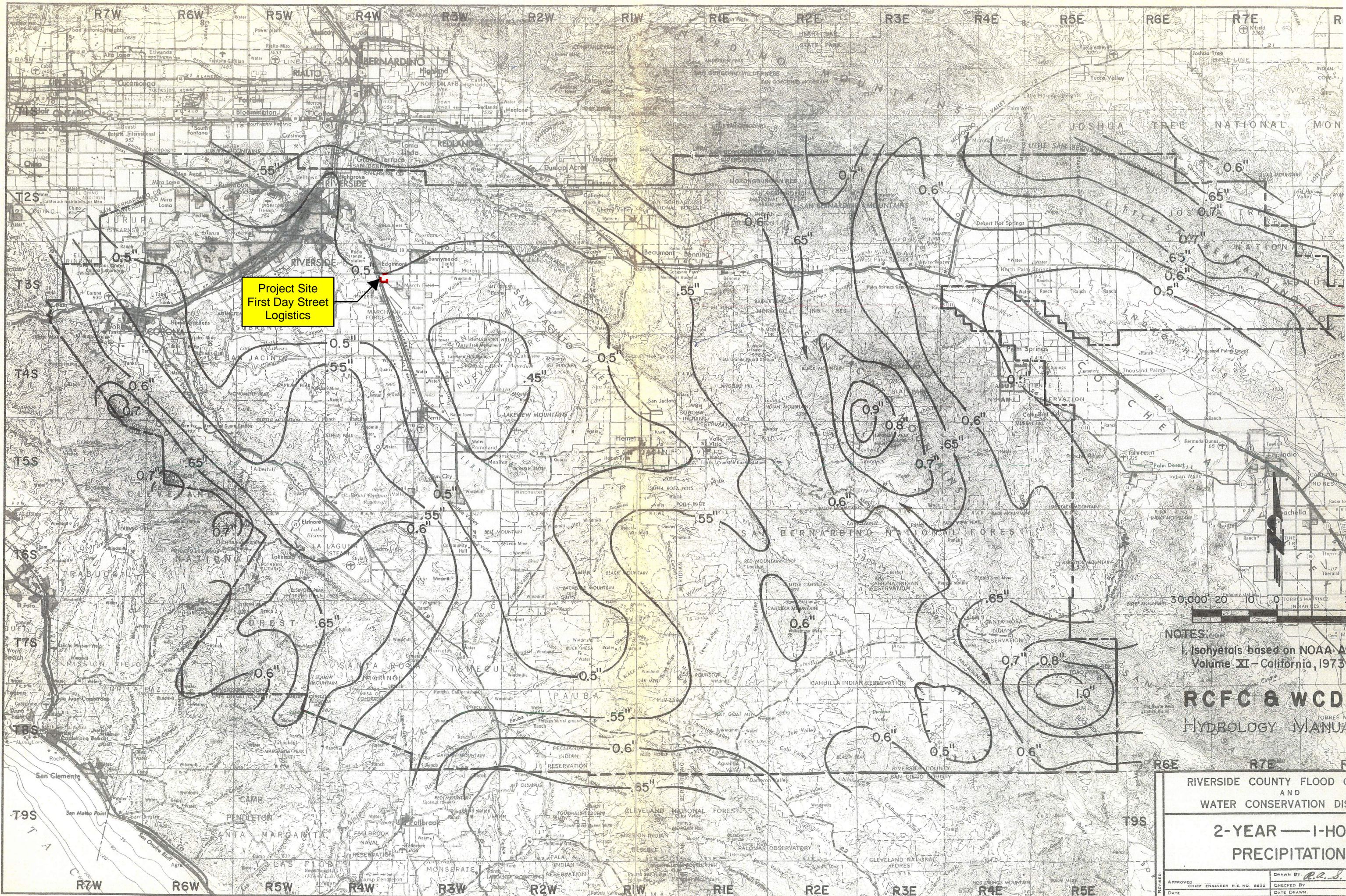
SUNNYMEAD - MORENO			WOODCREST		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.84	4.16	5	3.37	5.30
6	2.59	3.79	6	3.05	4.79
7	2.40	3.51	7	2.80	4.40
8	2.25	3.29	8	2.60	4.09
9	2.12	3.10	9	2.44	3.83
10	2.01	2.94	10	2.30	3.62
11	1.92	2.80	11	2.19	3.43
12	1.83	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



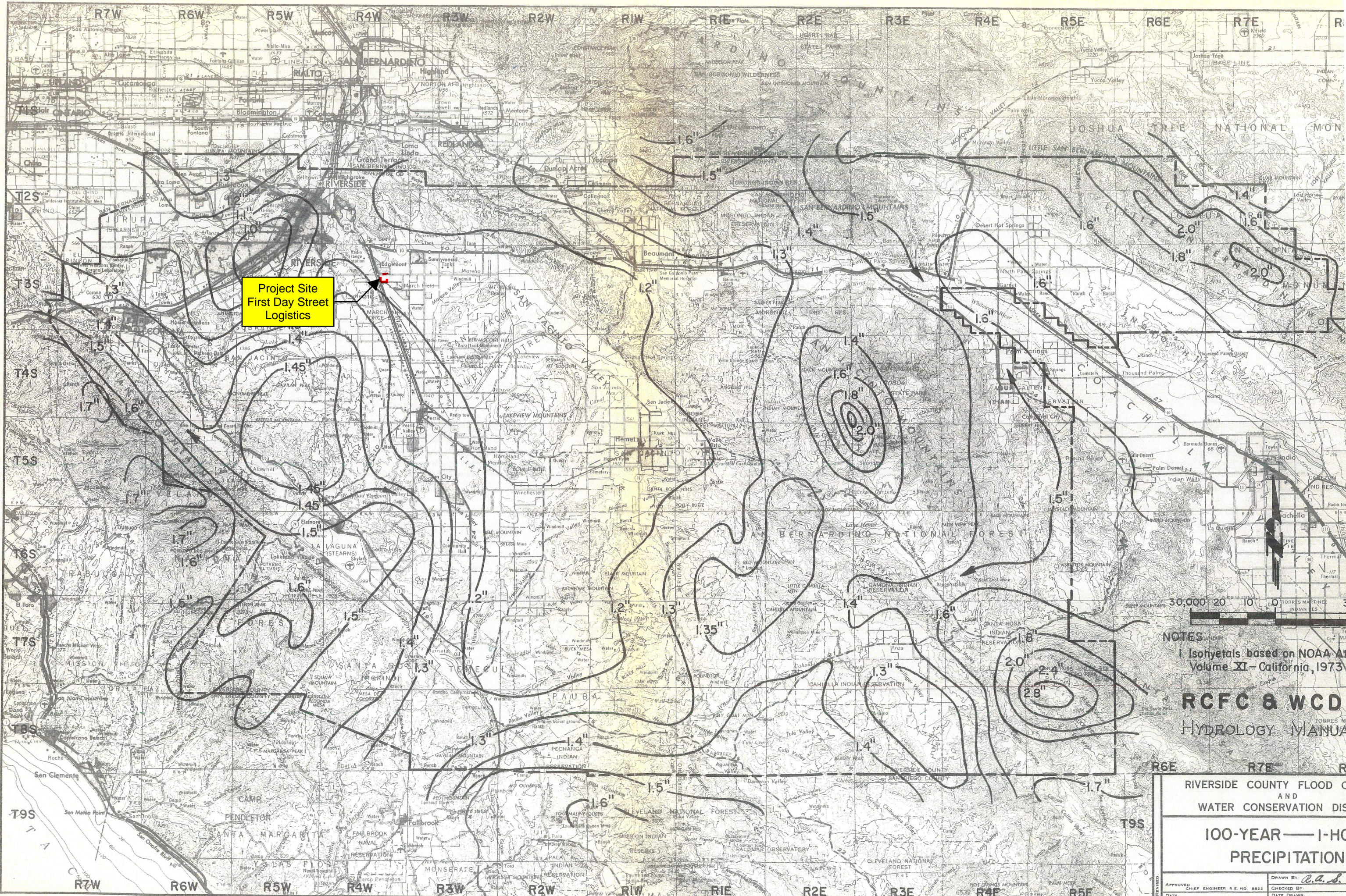
Project Site
First Day Street
Logistics

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**

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



Project Site
First Day Street
Logistics

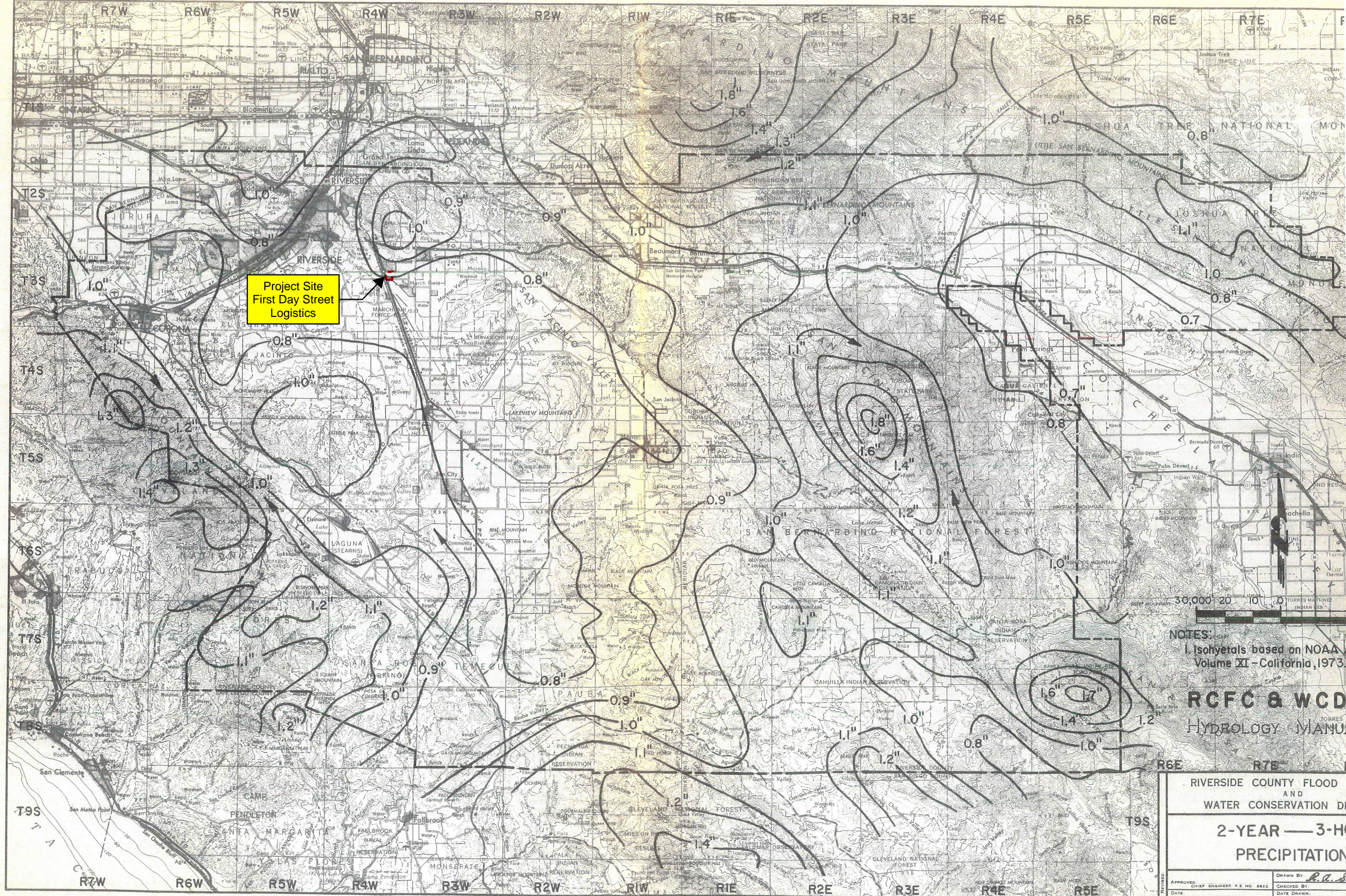


NOTES
1 Isohyets based on NOAA Atlas
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

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

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



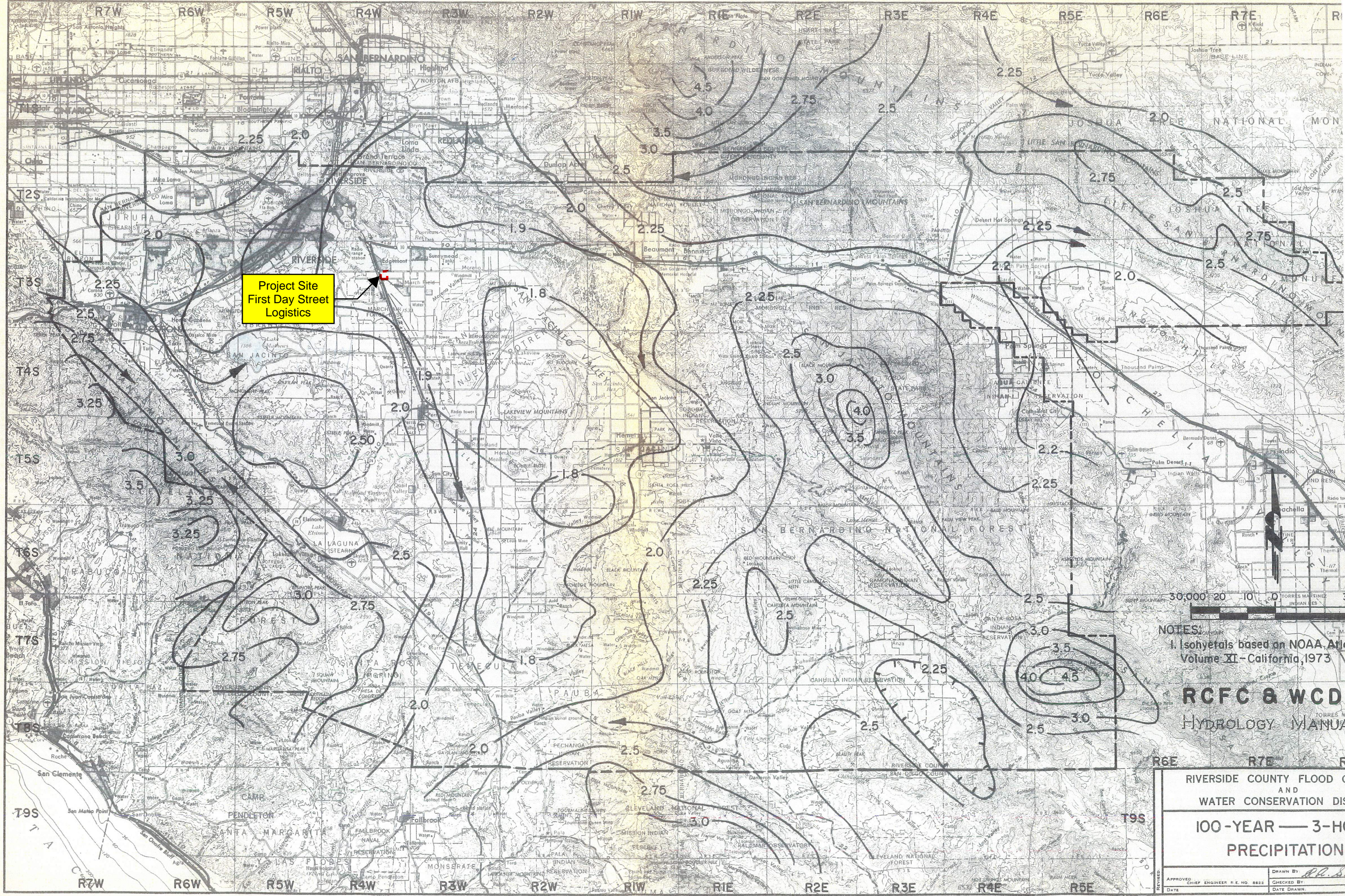
**Project Site
First Day Street
Logistics**

NOTES:
1. Isohyets based on NOAA
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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		DATE DRAWN	



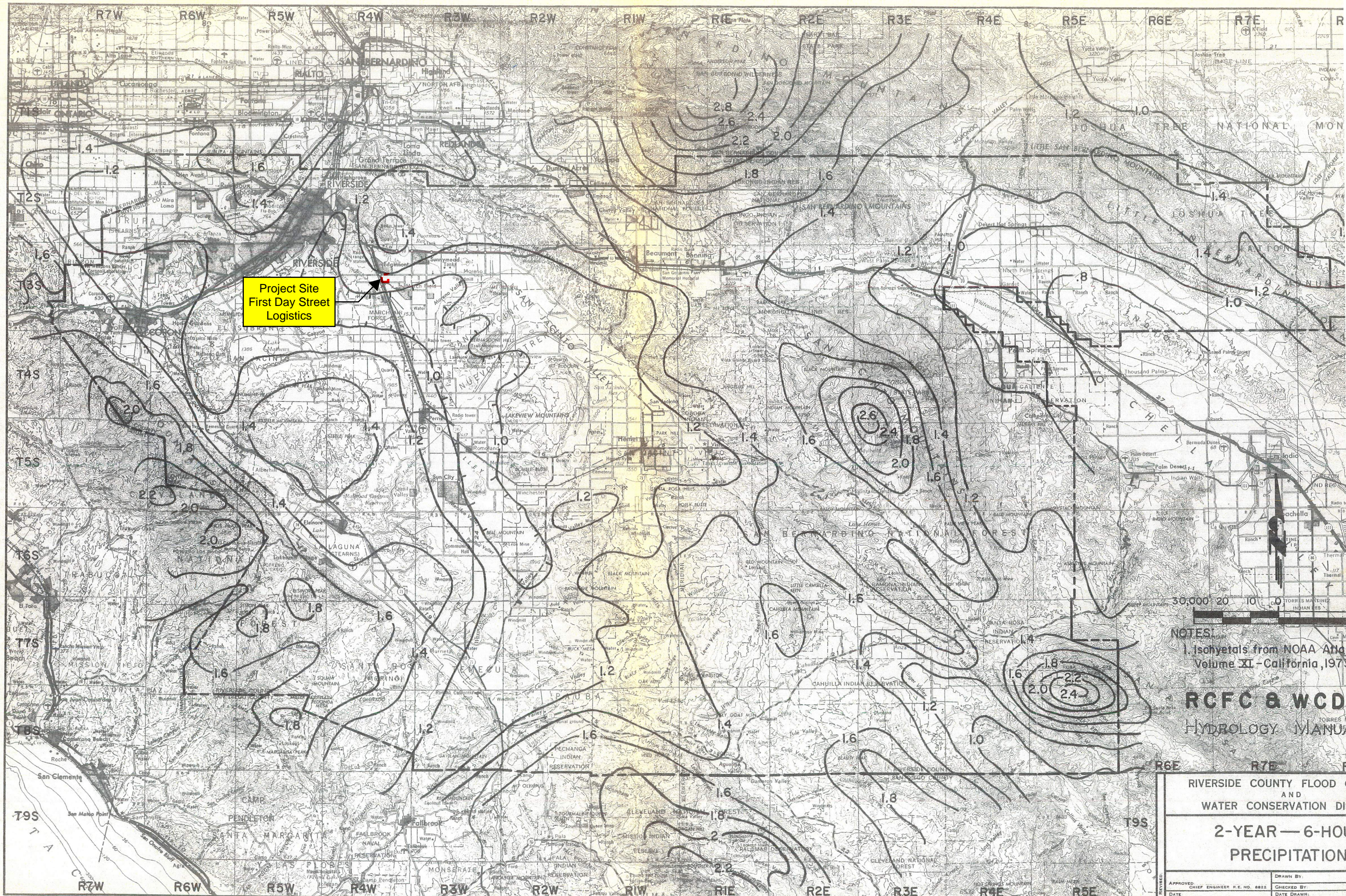
Project Site
First Day Street
Logistics

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

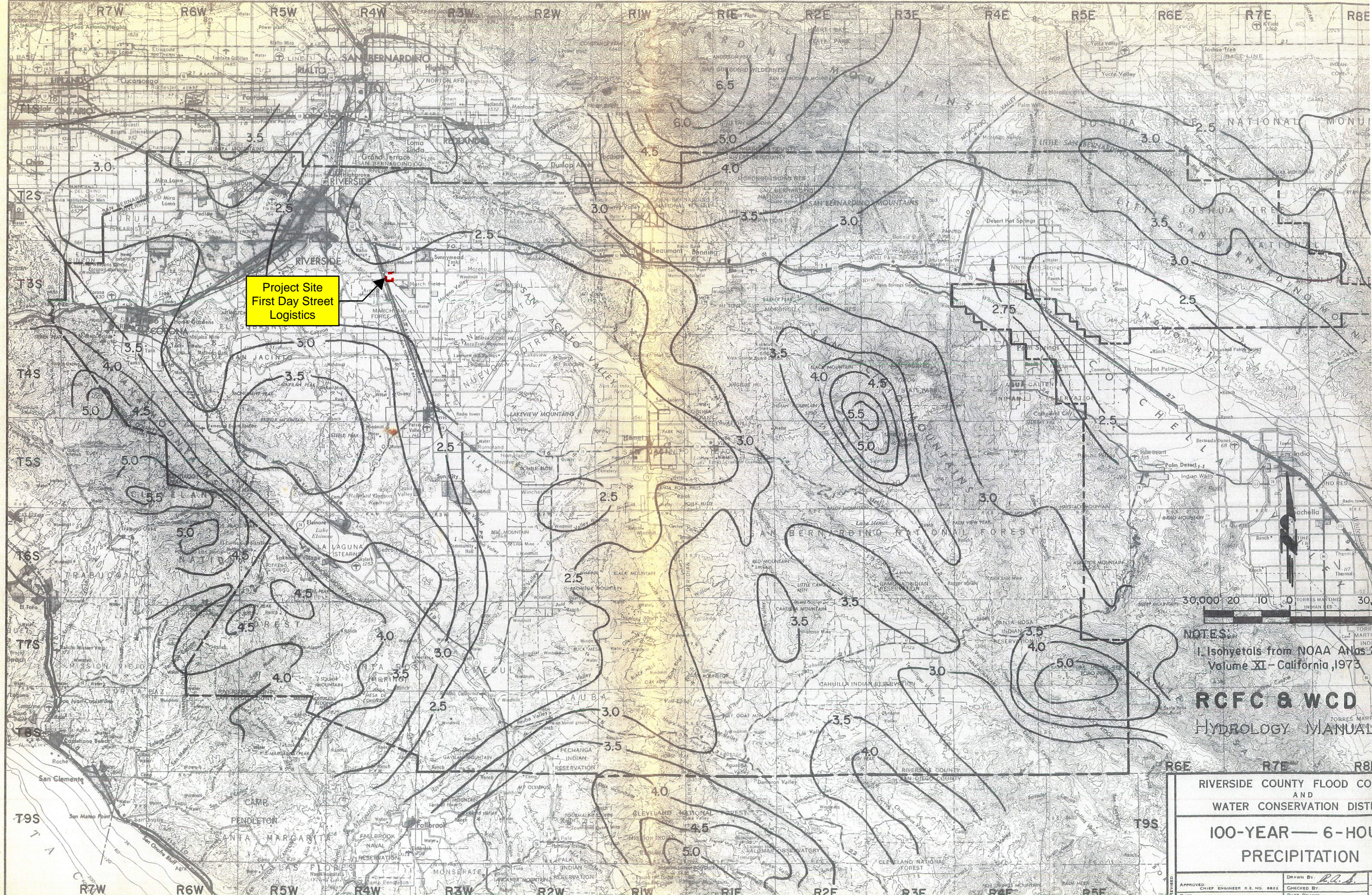


NOTES:
1. Isohyets from NOAA Atlas
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

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

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	DATE DRAWN:



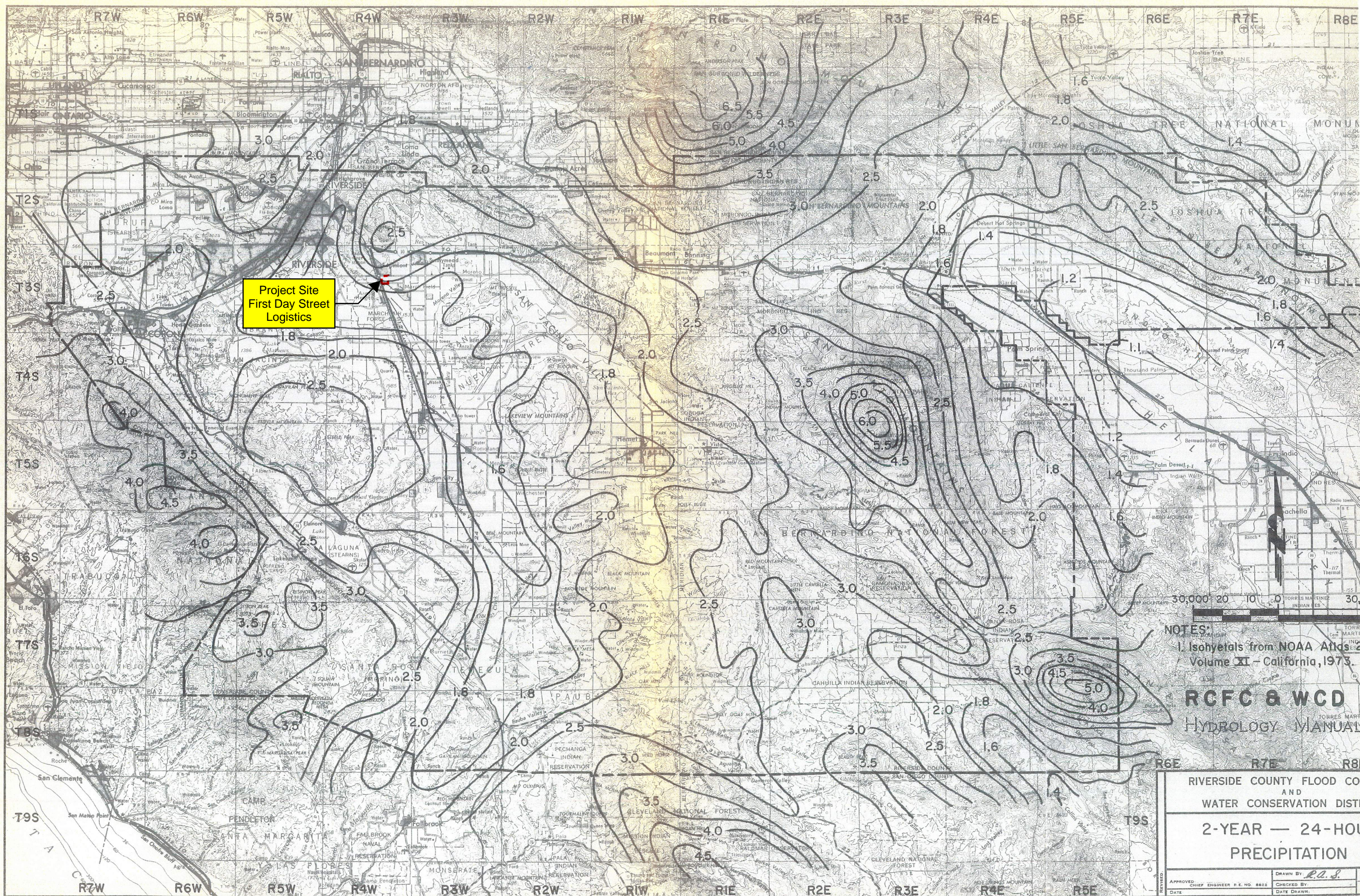
**Project Site
First Day Street
Logistics**

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

RCFC & WCD
HYDROLOGY MANUAL

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

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



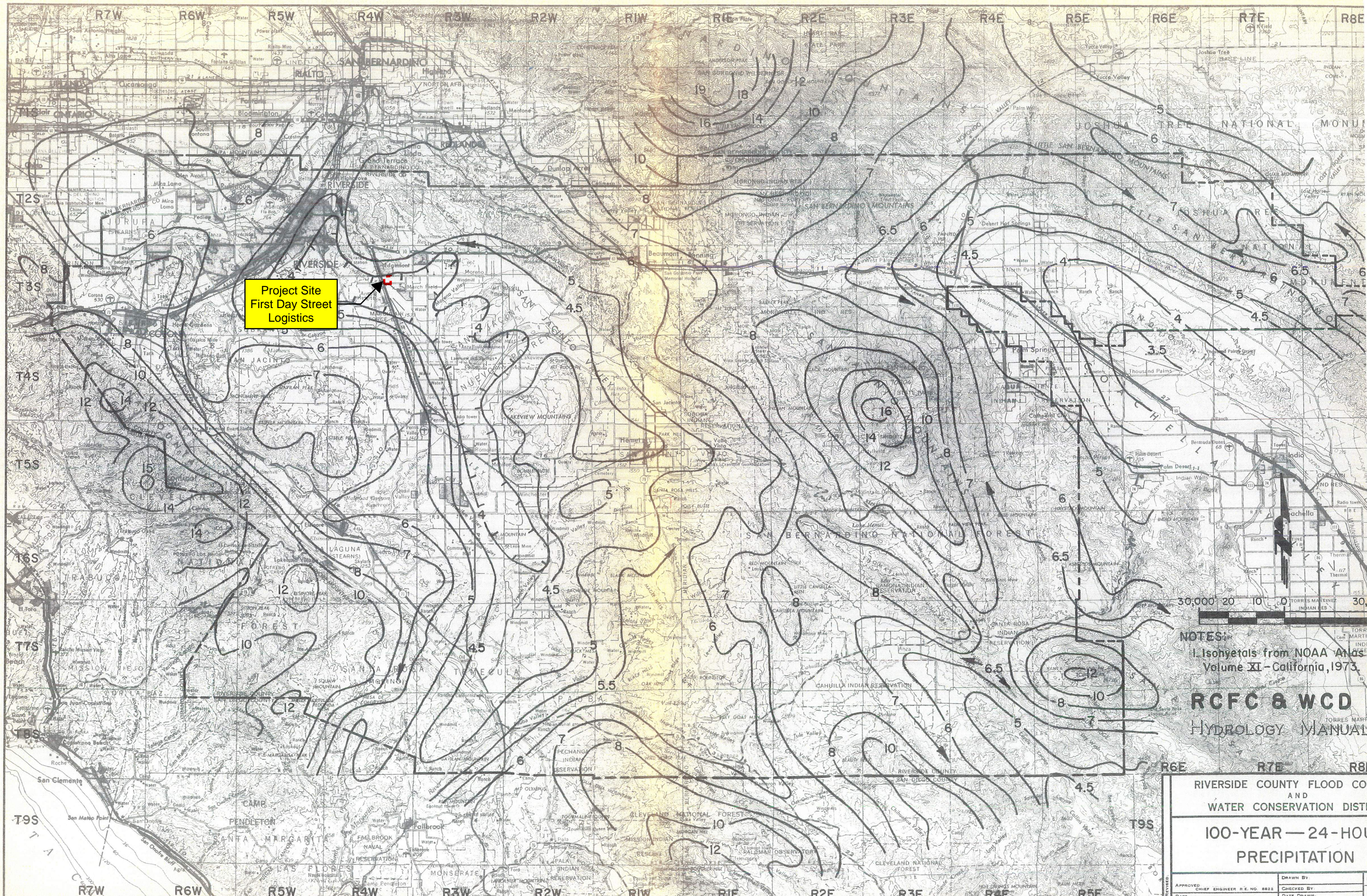
**Project Site
First Day Street
Logistics**

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

RCFC & WCD
HYDROLOGY MANUAL

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

APPROVED:	CHIEF ENGINEER R.E. NO. 8822	DATE:	DRAWN BY: <i>P.A.S.</i>	DATE DRAWN:
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**Project Site
First Day Street
Logistics**

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

**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)

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

22-0028 - FIR DAY STREET
RATIONAL HYDROLOGY METHOD
10 YEAR STORM EVENT
FN: PROP10.OUT ABE 2022-09-26

***** Hydrology Study Control Information *****

English (in-1b) 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) = 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

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 = 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

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

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) ****

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 ****

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 ****

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 ****

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 ****

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 ****

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) ****

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)

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

22-0028 - FIR DAY STREET
RATIONAL HYDROLOGY METHOD
100 YEAR STORM EVENT
FN: PROP100.OUT ABE 2022-09-26

***** 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

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

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 ****

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 = $k(0.300)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
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

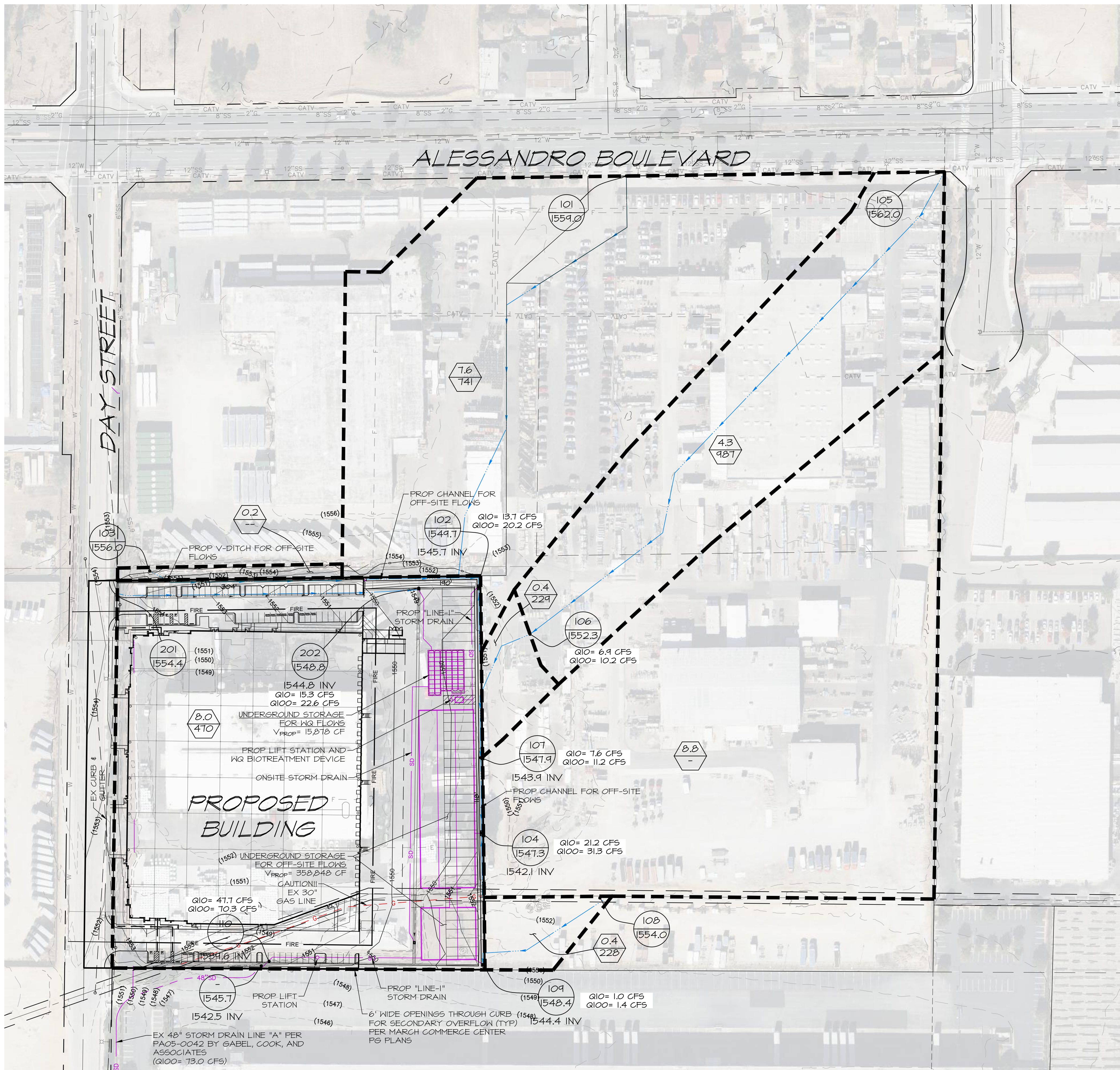
Results of confluence:
Total flow rate = 70.324(CFS)
Time of concentration = 12.880 min.
Effective stream area after confluence = 29.700(Ac.)

+++++
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.

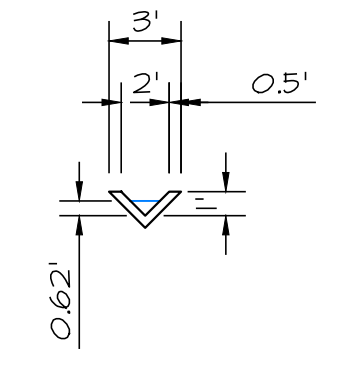
Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number = 69.0

RATIONAL METHOD HYDROLOGY MAPS

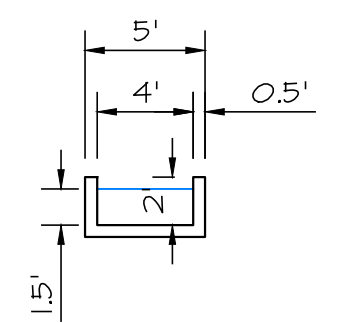


LEGEND

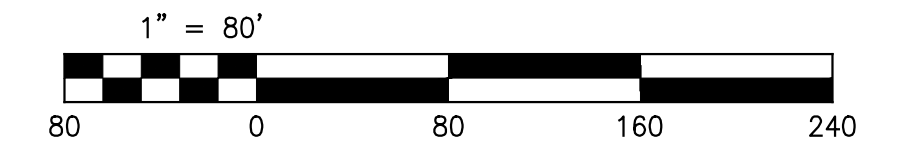
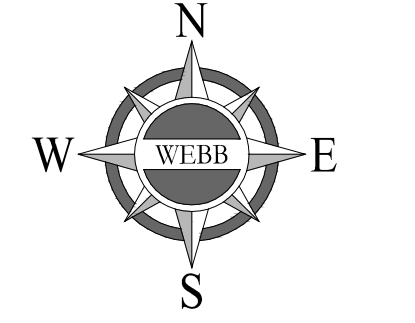
- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- NODE DESIGNATION
NODE ELEVATION
- *INVERT ELEVATION
- WATERSHED AREA (ACRES)
LONGEST WATER PATH (FT)



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)**

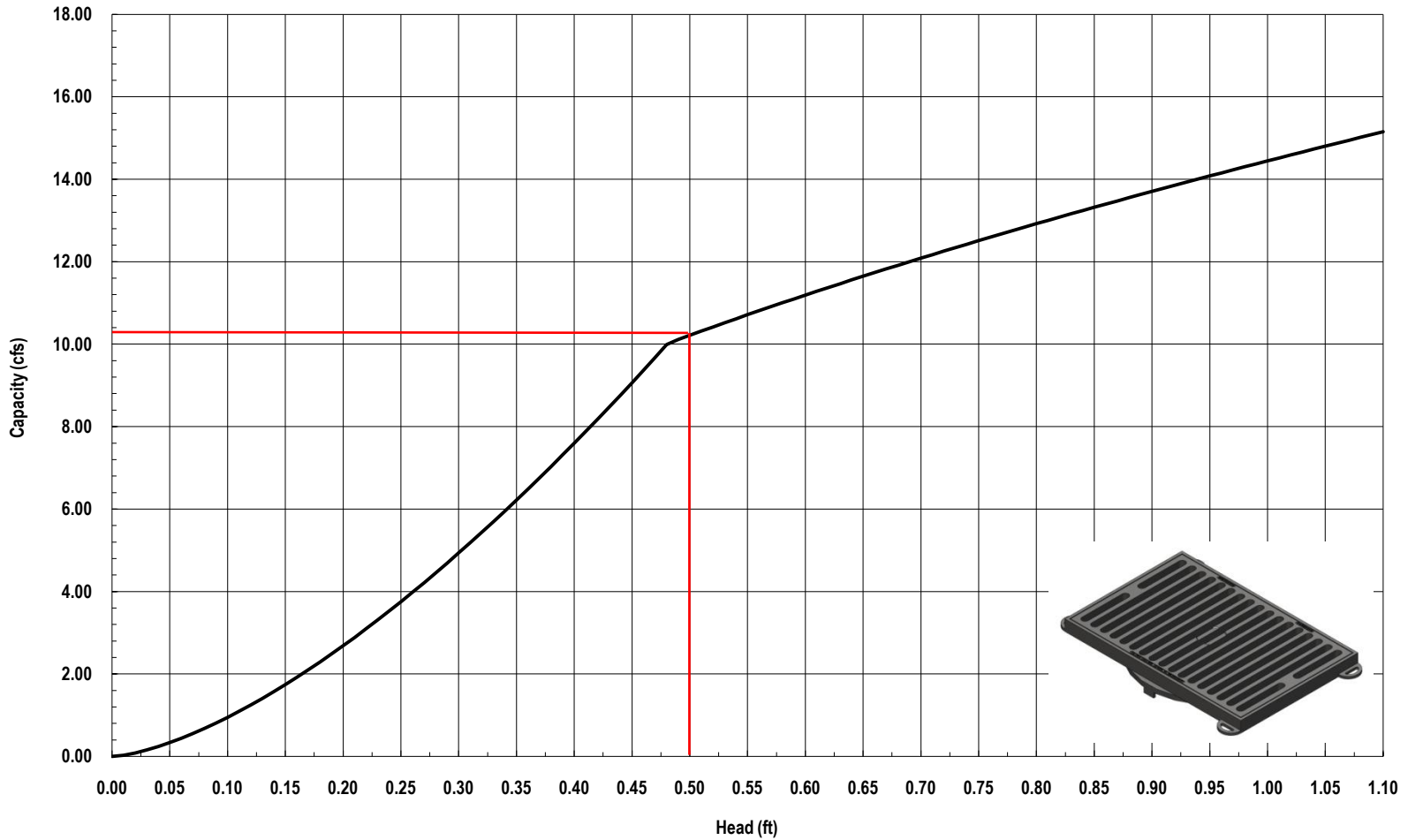
SCALE: 1" = 80'	ALBERTA A. ENGINEERING CONSULTANTS	W.O. 22-0028
DATE: 2/22/23	3788 MCCRAY STREET RIVERSIDE CA 92506	SHEET 1
DESIGNED: ABE	PH. (951) 686-1070	OF 1 SHEETS
CHECKED: SKK	FAX (951) 788-1256	DWG. NO.
PLN CK REF:		
F.B.		

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

APPENDIX B – HYDRAULIC ANALYSIS

INLET CAPACITY SIZING

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

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

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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

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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

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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

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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)

Sum = 100.0 Sum = 17.3
 Flood volume = Effective rainfall 1.44(In)
 times area 29.6(Ac.)/[(In)/(Ft.)] = 3.6(Ac.Ft)
 Total soil loss = 0.36(In)
 Total soil loss = 0.888(Ac.Ft)
 Total rainfall = 1.80(In)
 Flood volume = 154716.2 Cubic Feet
 Total soil loss = 38679.0 Cubic Feet

 Peak flow rate of this hydrograph = 5.845(CFS)

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 24 - H O U R S T O R M
 Runoff Hydrograph

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007	0.10	Q				
0+10	0.0026	0.27	VQ				
0+15	0.0047	0.31	VQ				
0+20	0.0073	0.38	VQ				
0+25	0.0105	0.47	VQ				
0+30	0.0140	0.50	VQ				
0+35	0.0175	0.51	V Q				
0+40	0.0210	0.51	V Q				
0+45	0.0245	0.52	V Q				
0+50	0.0284	0.57	V Q				
0+55	0.0329	0.65	V Q				
1+ 0	0.0375	0.67	V Q				
1+ 5	0.0419	0.63	V Q				
1+10	0.0456	0.55	V Q				
1+15	0.0493	0.53	V Q				
1+20	0.0529	0.52	V Q				
1+25	0.0565	0.52	V Q				
1+30	0.0601	0.52	V Q				
1+35	0.0636	0.52	V Q				
1+40	0.0672	0.52	V Q				
1+45	0.0707	0.52	V Q				
1+50	0.0746	0.57	V Q				
1+55	0.0791	0.65	V Q				
2+ 0	0.0837	0.67	V Q				
2+ 5	0.0884	0.68	V Q				
2+10	0.0931	0.68	VQ				
2+15	0.0978	0.69	VQ				
2+20	0.1026	0.69	VQ				
2+25	0.1073	0.69	VQ				
2+30	0.1120	0.69	VQ				
2+35	0.1171	0.74	VQ				
2+40	0.1228	0.82	V Q				
2+45	0.1286	0.84	V Q				
2+50	0.1344	0.85	V Q				
2+55	0.1403	0.86	V Q				
3+ 0	0.1463	0.86	V Q				
3+ 5	0.1522	0.86	V Q				
3+10	0.1581	0.86	V Q				
3+15	0.1640	0.86	V Q				
3+20	0.1699	0.86	V Q				
3+25	0.1759	0.86	V Q				
3+30	0.1818	0.86	VQ				
3+35	0.1877	0.86	VQ				
3+40	0.1936	0.86	VQ				
3+45	0.1995	0.86	VQ				
3+50	0.2058	0.91	VQ				

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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	V			
12+15	1.8081	4.18	Q	V			
12+20	1.8376	4.29	Q	V			
12+25	1.8680	4.41	Q	V			
12+30	1.8987	4.45	Q	V			
12+35	1.9301	4.56	Q	V			
12+40	1.9627	4.73	Q	V			
12+45	1.9956	4.78	Q	V			
12+50	2.0290	4.85	Q	V			
12+55	2.0630	4.94	Q	V			
13+ 0	2.0972	4.97	Q	V			
13+ 5	2.1333	5.23	Q	V			
13+10	2.1722	5.65	Q	V			
13+15	2.2119	5.76	Q	V			
13+20	2.2518	5.80	Q	V			
13+25	2.2920	5.83	Q	V			
13+30	2.3322	5.84	Q	V			
13+35	2.3686	5.28	Q	V			
13+40	2.3987	4.37	Q	V			
13+45	2.4272	4.15	Q	V			
13+50	2.4551	4.05	Q	V			
13+55	2.4826	3.99	Q	V			
14+ 0	2.5098	3.95	Q	V			
14+ 5	2.5385	4.16	Q	V			
14+10	2.5694	4.49	Q	V			
14+15	2.6009	4.57	Q	V			
14+20	2.6322	4.56	Q	V			
14+25	2.6632	4.49	Q	V			
14+30	2.6941	4.49	Q	V			
14+35	2.7249	4.48	Q	V			
14+40	2.7557	4.47	Q	V			
14+45	2.7865	4.47	Q	V			
14+50	2.8169	4.42	Q	V			

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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

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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

PROPOSED CONDITION
2-YEAR, 24-HOUR UNIT HYDROGRAPH

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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

22-0028 - FIR DAY STREET
UNIT HYDROGRAPH ANALYSIS
PROPOSED CONDITION, 2-YEAR 24-HOUR
FN: ONSITEPROP242.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 = 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

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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

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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

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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)

Sum = 100.0 Sum = 17.3
 Flood volume = Effective rainfall 1.44(In)
 times area 29.6(Ac.)/[(In)/(Ft.)] = 3.6(Ac.Ft)
 Total soil loss = 0.36(In)
 Total soil loss = 0.888(Ac.Ft)
 Total rainfall = 1.80(In)
 Flood volume = 154716.2 Cubic Feet
 Total soil loss = 38679.0 Cubic Feet

 Peak flow rate of this hydrograph = 5.845(CFS)

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 24 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007	0.10	Q				
0+10	0.0025	0.27	VQ				
0+15	0.0047	0.31	VQ				
0+20	0.0072	0.38	VQ				
0+25	0.0105	0.47	VQ				
0+30	0.0139	0.50	VQ				
0+35	0.0174	0.51	V Q				
0+40	0.0209	0.51	V Q				
0+45	0.0245	0.52	V Q				
0+50	0.0284	0.57	V Q				
0+55	0.0328	0.65	V Q				
1+ 0	0.0375	0.67	V Q				
1+ 5	0.0418	0.63	V Q				
1+10	0.0456	0.55	V Q				
1+15	0.0493	0.53	V Q				
1+20	0.0529	0.52	V Q				
1+25	0.0564	0.52	V Q				
1+30	0.0600	0.52	V Q				
1+35	0.0635	0.52	V Q				
1+40	0.0671	0.52	V Q				
1+45	0.0707	0.52	V Q				
1+50	0.0746	0.57	V Q				
1+55	0.0790	0.65	V Q				
2+ 0	0.0836	0.67	V Q				
2+ 5	0.0883	0.68	V Q				
2+10	0.0930	0.68	VQ				
2+15	0.0978	0.69	VQ				
2+20	0.1025	0.69	VQ				
2+25	0.1072	0.69	VQ				
2+30	0.1120	0.69	VQ				
2+35	0.1170	0.74	VQ				
2+40	0.1227	0.82	V Q				
2+45	0.1285	0.84	V Q				
2+50	0.1344	0.85	V Q				
2+55	0.1402	0.86	V Q				
3+ 0	0.1462	0.86	V Q				
3+ 5	0.1521	0.86	V Q				
3+10	0.1580	0.86	V Q				
3+15	0.1639	0.86	V Q				
3+20	0.1698	0.86	V Q				
3+25	0.1758	0.86	V Q				
3+30	0.1817	0.86	VQ				
3+35	0.1876	0.86	VQ				
3+40	0.1935	0.86	VQ				
3+45	0.1994	0.86	VQ				
3+50	0.2057	0.91	VQ				

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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				

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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			

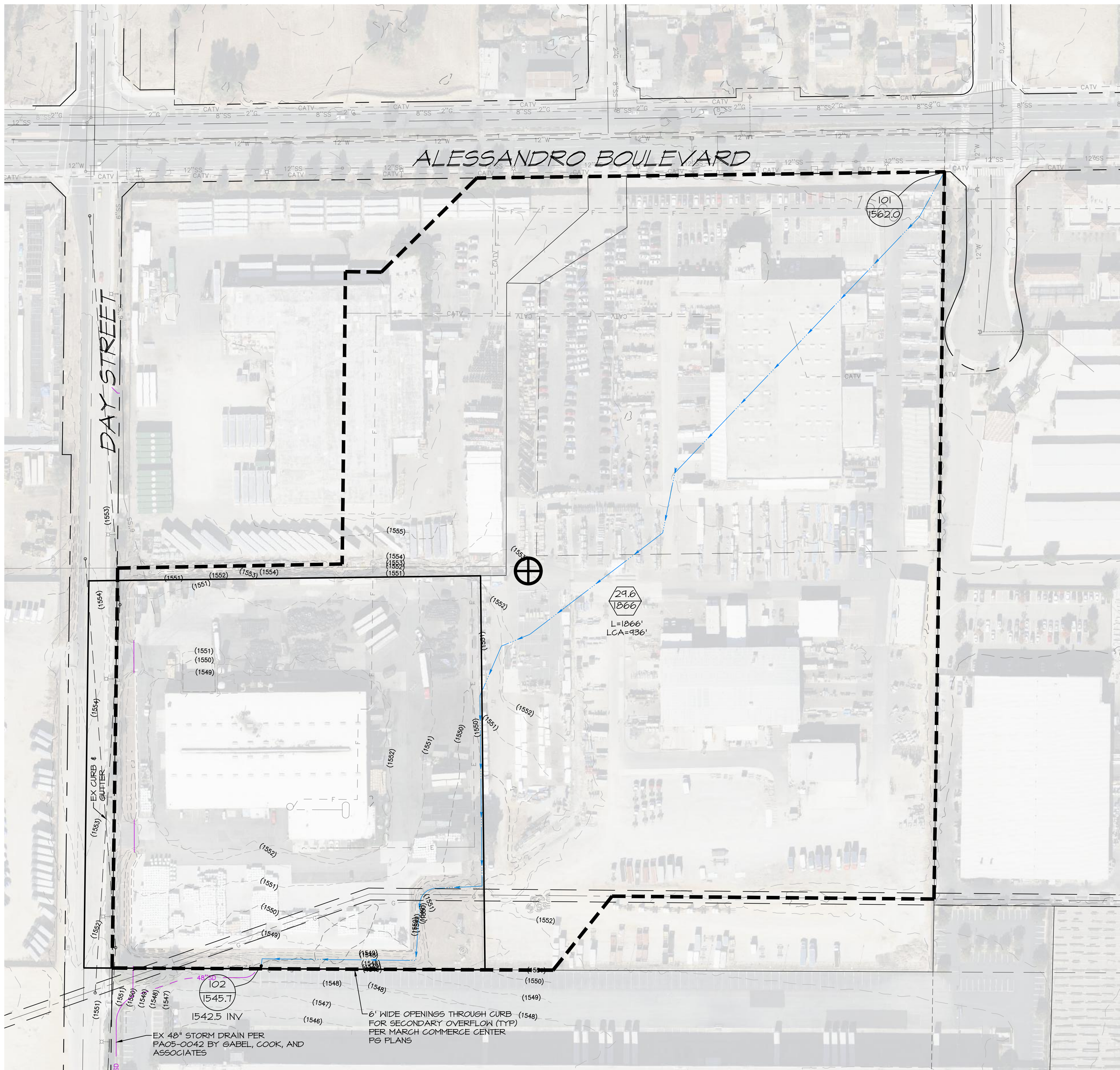
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14+55	2.8463	4.34						V
15+ 0	2.8760	4.32						V
15+ 5	2.9054	4.26						V
15+10	2.9341	4.17						V
15+15	2.9626	4.14						V
15+20	2.9907	4.08						V
15+25	3.0182	4.00						V
15+30	3.0456	3.97						V
15+35	3.0715	3.76						V
15+40	3.0951	3.43						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

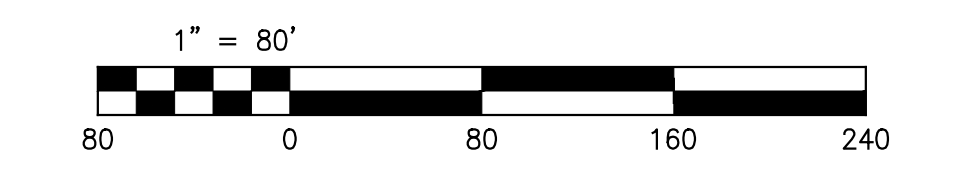
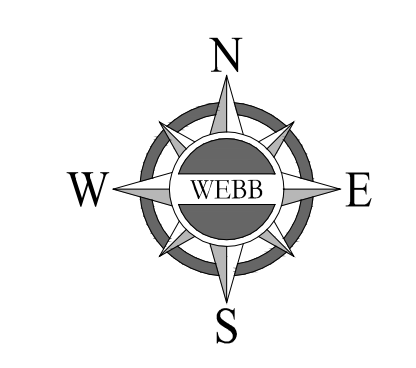
ONSITEPROP242

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



- 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

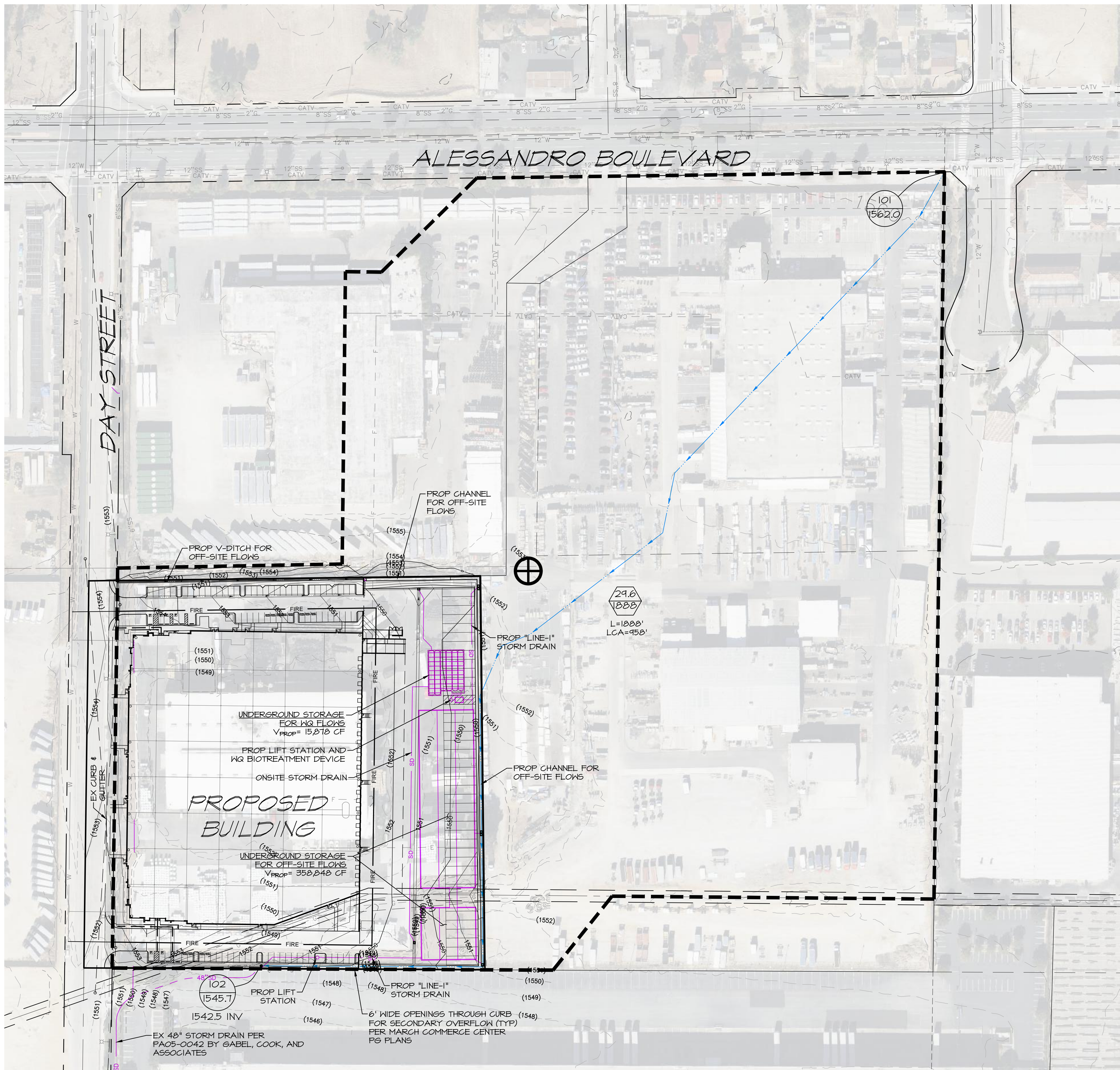


CITY OF MORENO VALLEY

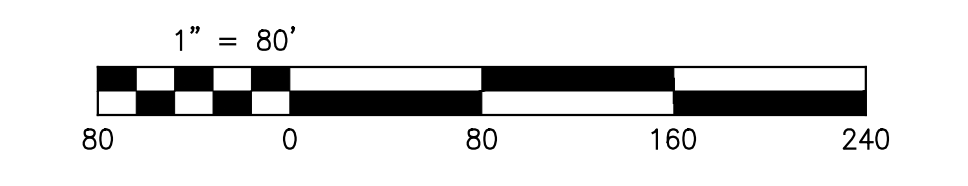
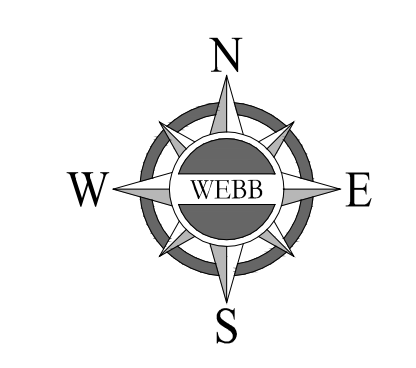
UNIT HYDROGRAPH HYDROLOGY
EXISTING UNIT HYDROGRAPH
FIRST DAY STREET LOGISTICS (PEN22-0144)

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.			

H:\2022\22-0028\DRAINAGE\HYD\DWG FOLDER\22-0028 P-HYD-UHL.DWG 2/22/2023 10:14:10 AM



- 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

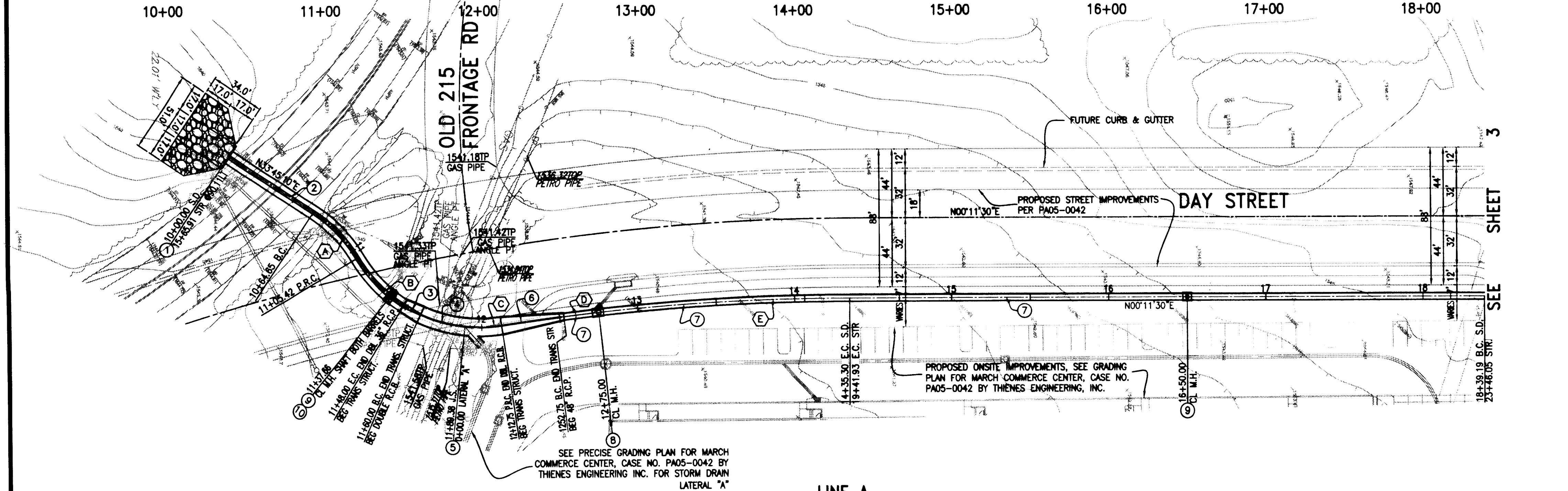
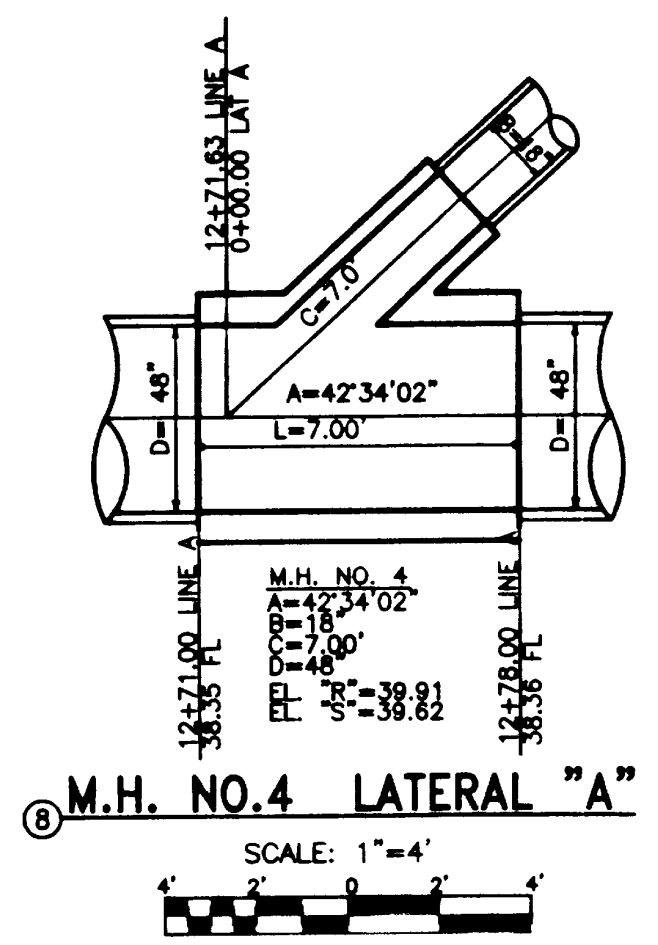
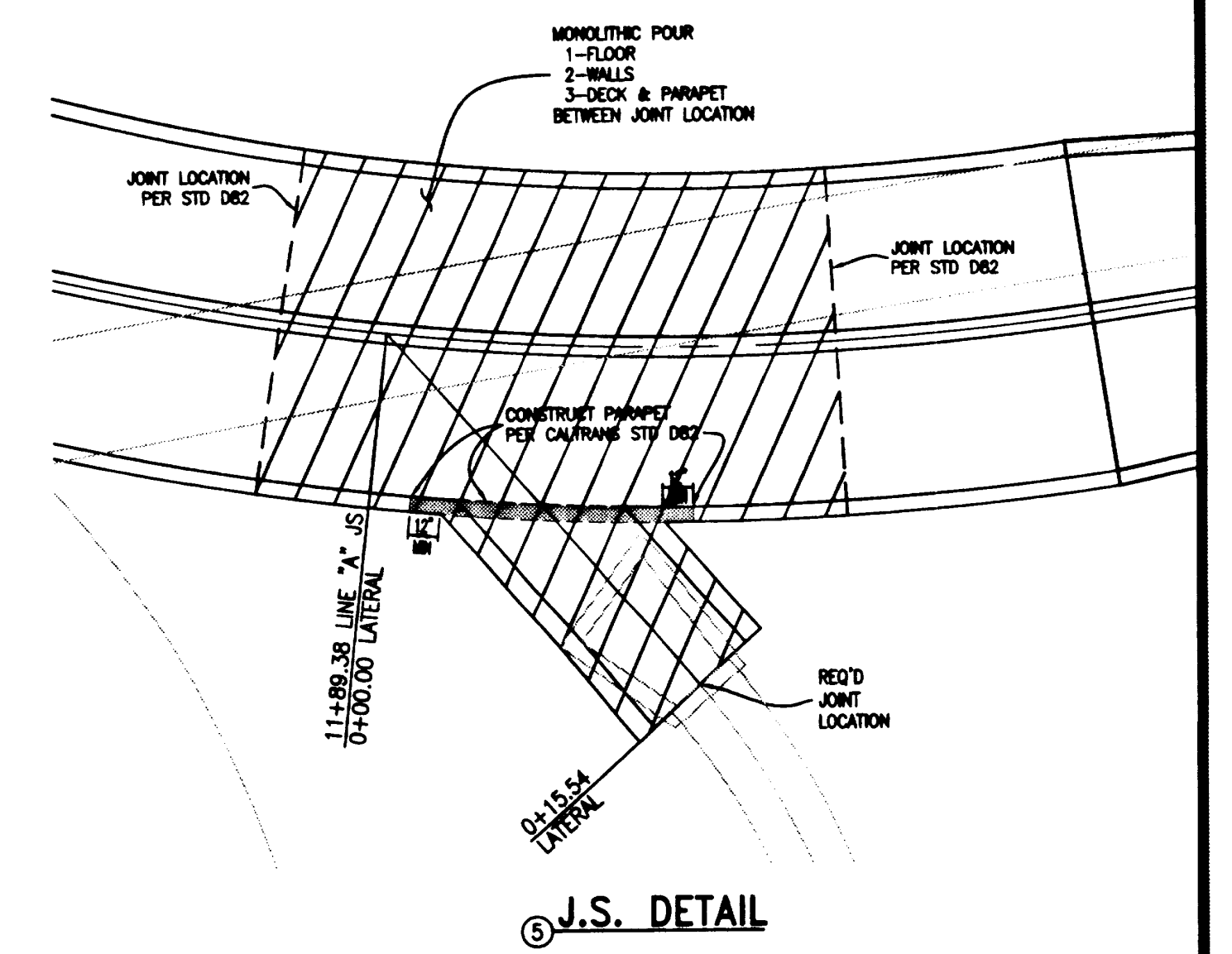
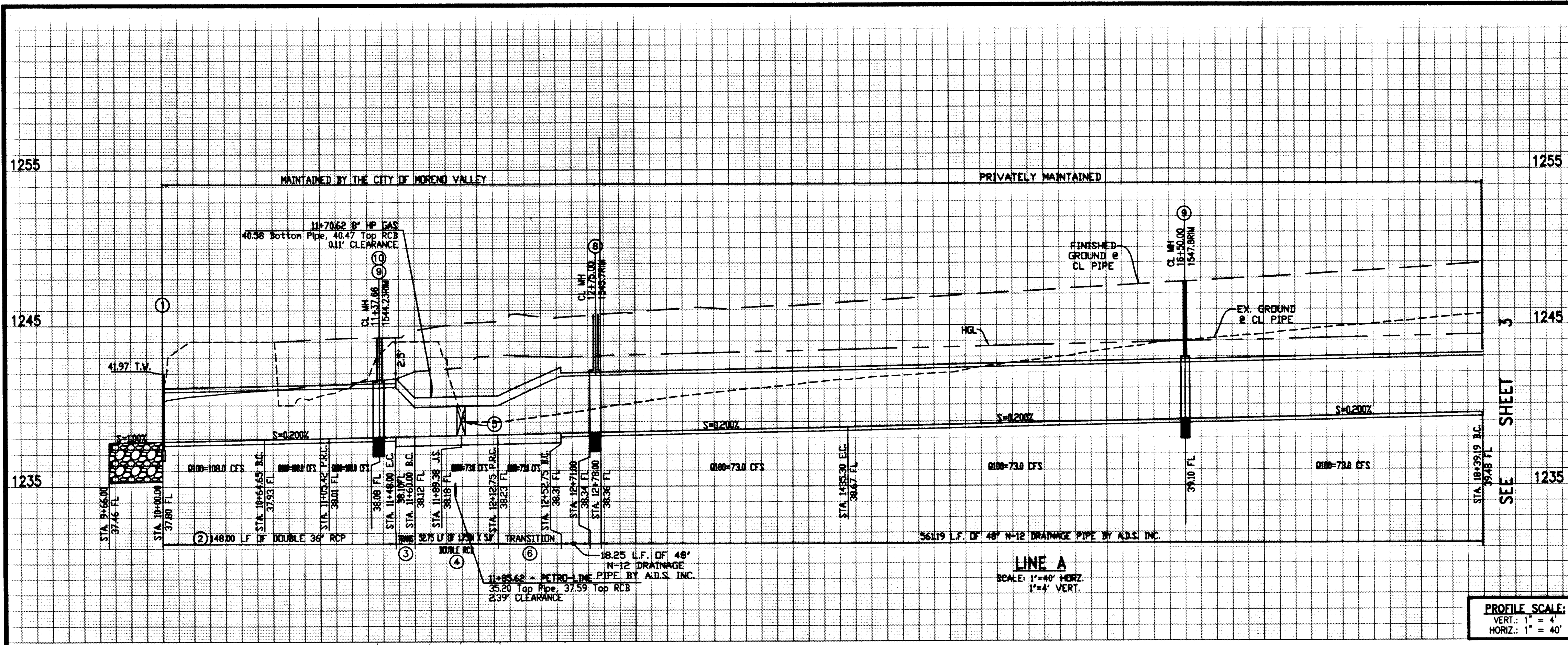


CITY OF MORENO VALLEY			
UNIT HYDROGRAPH HYDROLOGY PROPOSED UNIT HYDROGRAPH FIRST DAY STREET LOGISTICS (PEN22-0144)			
SCALE: 1" = 80'	ALBERT A. ENGINEERING CONSULTANTS	W.O. 22-0028	
DATE: 2/22/23	3788 McCRAY STREET	RIVERSIDE CA 92506	
DESIGNED: ABE	PH. (951) 686-1070	SHEET 2	
CHECKED: SKK	FAX (951) 788-1256	OF 2 SHEETS	
PLN CK REF:		DWG. NO.	
F.B.			

H:\2022\22-0028\DRAINAGE\HYD\DWG FOLDER\22-0028 P-HYD-UH.DWG 2/22/2023 10:14:10 AM

APPENDIX D – REFERENCES

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

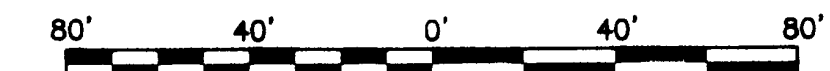


CONSTRUCTION NOTES

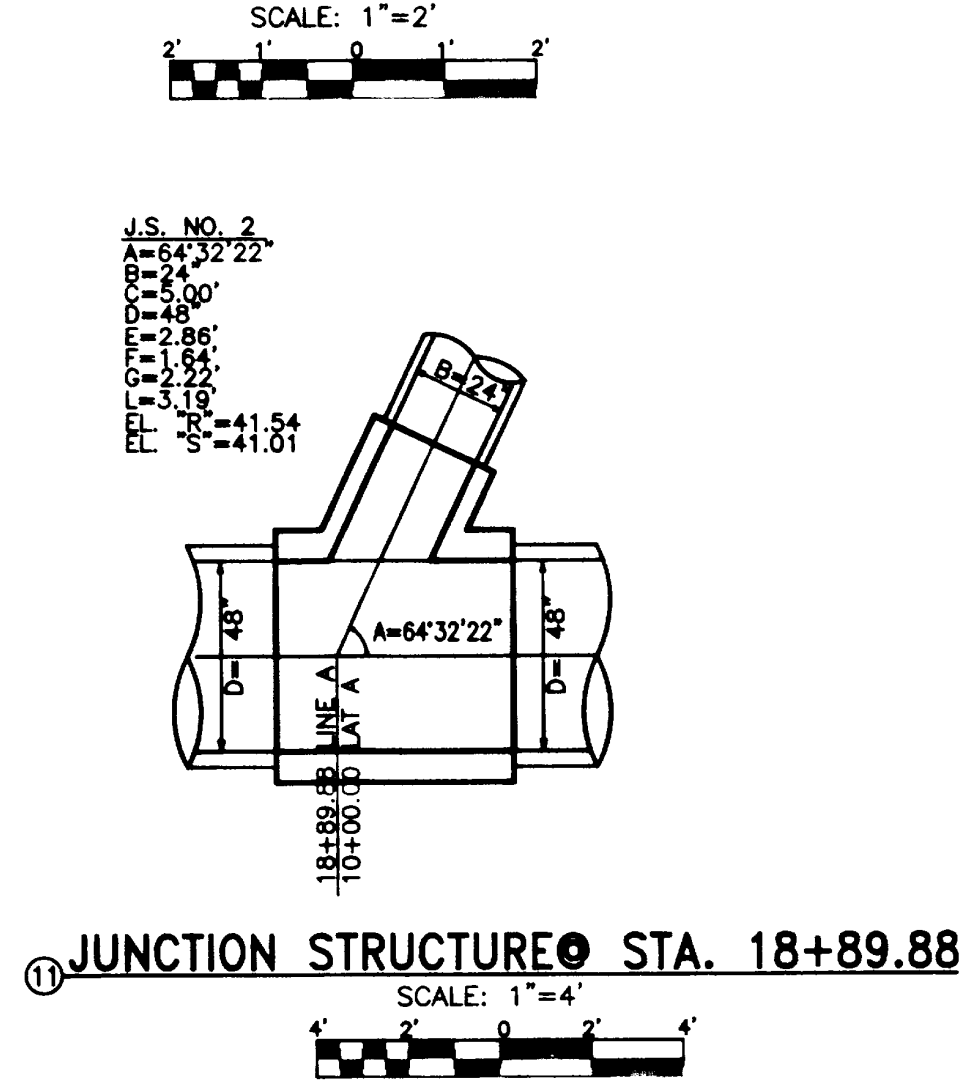
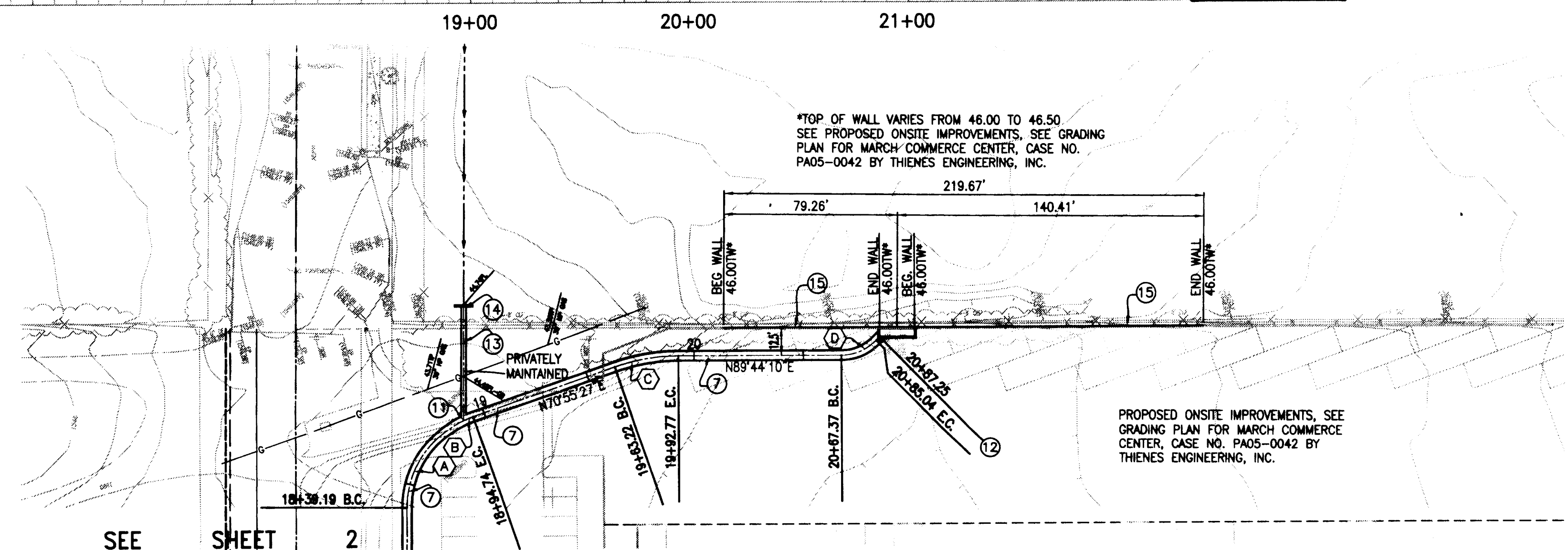
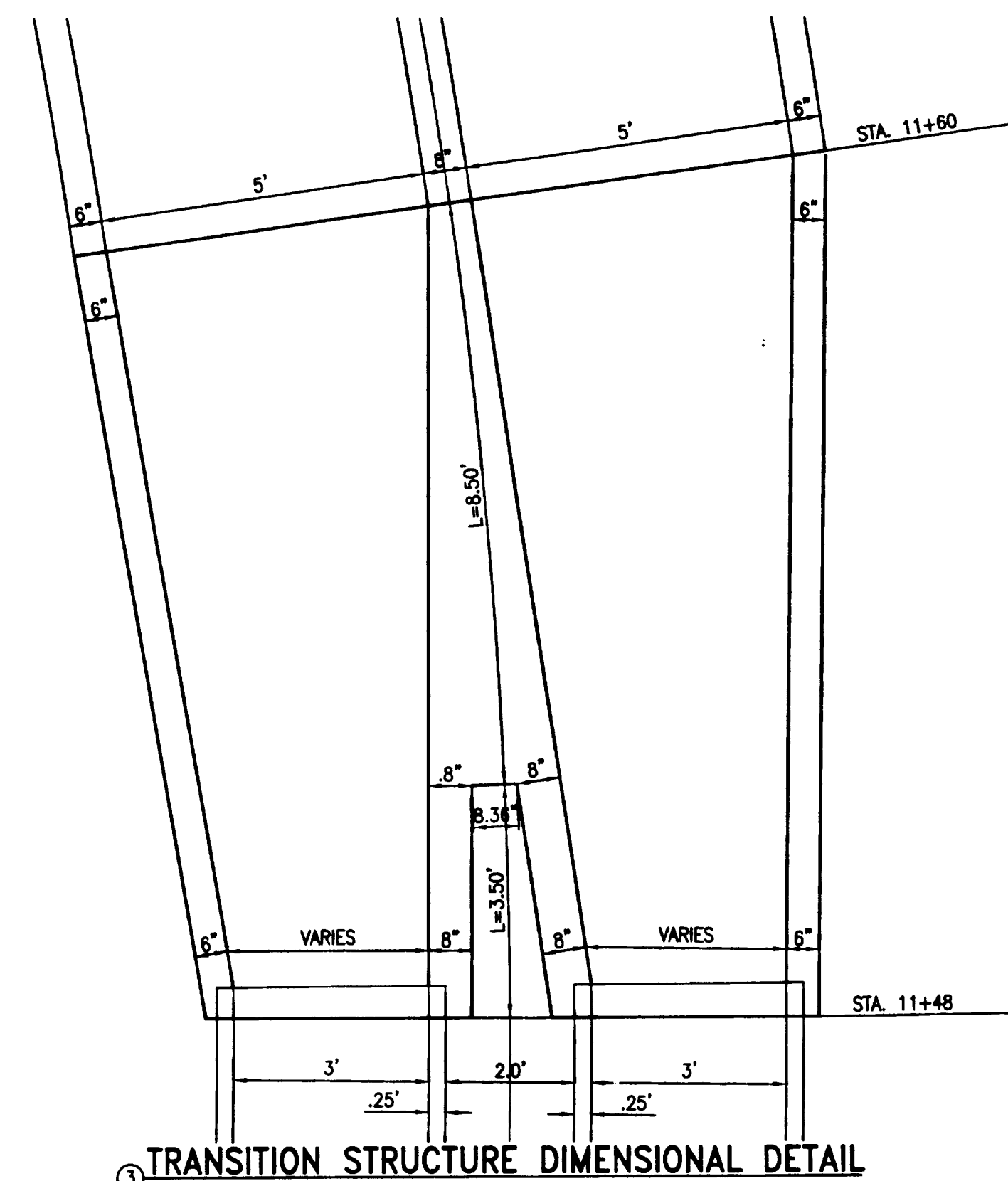
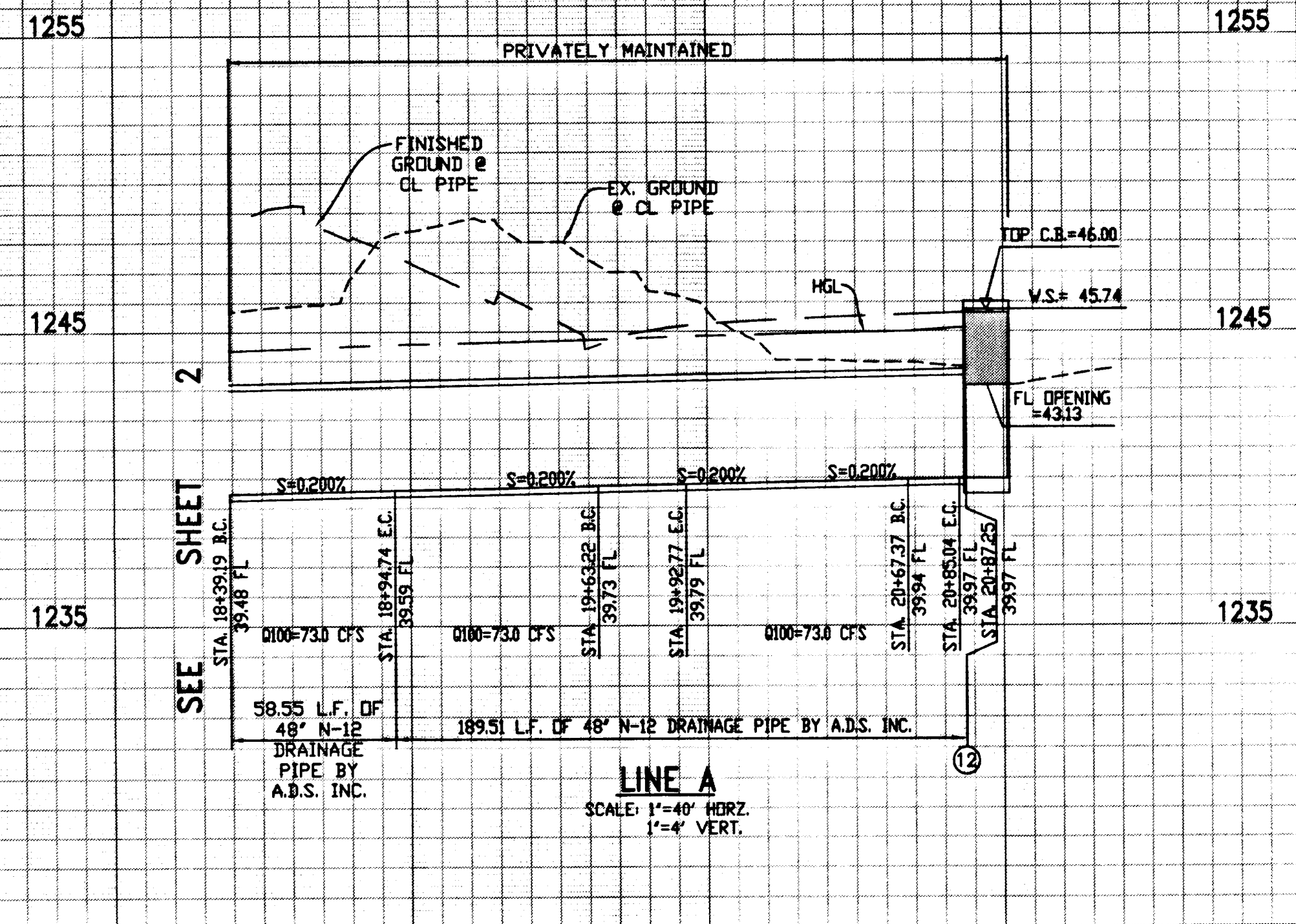
- ① CONSTRUCT HEADWALL PER CALTRANS STD. DWG. D89.
- ② CONSTRUCT DOUBLE 36" RCP, 15000 WITH 5.50' BETWEEN PIPE CL'S.
- ③ CONSTRUCT DOUBLE TRANSITION STRUCTURE PER APWA STD DWG 342 (MODIFIED) SEE DIMENSIONING DETAIL ON SHEET 3.
- ④ CONSTRUCT 1.75' HIGH X 5.00' WIDE DBL. RCB PER CALTRANS STD DWG D81 W/ 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.

CURVE TABLE				
DELTA	R	L	T	
(A) 25°57'40"	90.00'	40.77'	20.75'	
(B) 27°06'15"	90.00'	42.58'	21.69'	
(C) 33°34'43"	90.00'	52.75'	27.15'	
(D) 7°43'18"	1449.00'	18.25'	9.13'	
(E) 6°13'11"	1449.00'	157.30'	78.73'	

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. & IHS AVE. 58.35 FT. S/W OF A CORNER "X" IN A 3" IRON COR. POST. 104.80 FT. N/E OF M.H. & 106' IN THE WEST SIDE OF POWER POLE (R15130) 34.30 FT. N/W OF A M.H. & 106' SET IN 5/4" SIDE TELEPHONE POLE (R15180) 11' IRON PIPE & 106' ANHERSIDE COUNTY SURVEYOR IN A IRONWELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)		BASIS OF BEARING THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CHURNING AVENUE (FORMERLY ANHERSIDE AVENUE) BEING N 08°29'57" W AS PER RECORD OF SURVEY, R.S.B. 87 729-34, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF ANHERSIDE, STATE OF CALIFORNIA.		REVIEW BY CITY STAFF		PREPARED BY DR UNDER THE SUPERVISION OF Craig A. Cook <i>7/10/06</i> CRAIG A. COOK R.C.C. NO. 23323 EXP. 12-31-07 APPROVED: <i>[Signature]</i> DATE: 5/16/06 REC. BY: <i>[Signature]</i> DATE:		DRAWN BY DESIGN BY: <i>[Signature]</i> CHECKED BY:		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	
REVISION		MARK DATE INITIAL DESCRIPTION REC. APPR DATE		PA05-0042		REVISE SEPT. 2004							



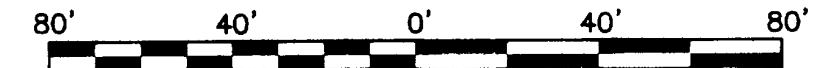
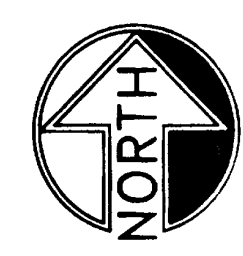
- CONSTRUCTION NOTES**
- CONSTRUCT HEADWALL PER CALTRANS STD. DWG. D89.
 - CONSTRUCT DOUBLE 36" RCP, 15000 WITH 5.50' BETWEEN PIPE CL'S.
 - CONSTRUCT DOUBLE TRANSITION STRUCTURE PER APWA STD DWG 342 (MODIFIED) SEE DIMENSIONING DETAIL ON SHEET 3.
 - CONSTRUCT 1.75' HIGH X 5.00' WIDE DBL RCB PER CALTRANS STD DWG D81 W/ WINDOWS IN CENTER WALL PER APWA STD DWG 382.
 - CONSTRUCT JUNCTION STRUCTURE PER DETAIL HEREON AND CALTRANS STD DWG D81.
 - CONSTRUCT TRANSITION STRUCTURE PER APWA STD DWG 343.
 - CONSTRUCT 48" N-12 DRAINAGE PIPE BY A.D.S. INC.
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 - CONSTRUCT RETAINING WALLS - SEE GRADING PLAN FOR MARCH COMMERCE CENTER, CASE NO. PA05-0042 BY THIENES ENGINEERING, INC.
 - 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		CITY OF MORENO VALLEY	
RIVERSIDE COUNTY SURVEYOR BLM. NO. 74-32" AT THE INTERSECTION OF PERDUE BLVD. & 18th AVE. 58.55 FT. S/W OF A CHECKED 5" IN A 3" IRON CORN. POST. (FORMERLY IMPROVISH AVENUE) BEING N 89°29'57" W AS PER RECORD OF SURVEY, R.S. 87-29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.		THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY IMPROVISH AVENUE) BEING N 89°29'57" W AS PER RECORD OF SURVEY, R.S. 87-29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.		OFFICE	INITIAL	DATE	Craig A. Cook	DATE	7 April 06	GABEL, COOK & ASSOCIATES	ACCT. NO.
LAND DEVELOPMENT	VBC	5/12/06	CRAIG A. COOK	NO. 23323	EXP. 12/31/07	CIVIL	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	SHEET 3 NO. 3
ENTERPRISE SERVICES									CACTUS AVENUE TO 1400' N'LY	CITY I. D. NO. 2830	
PLANNING											
TRANSPORTATION											
CAPITAL PROJECT											
PARK AND RECREATION											
REVISION						PREM KUMAR	DATE	5/16/06			
						INTERIM CITY ENGINEER, CITY OF MORENO VALLEY	R.C.E. NO. 52463 (EXP. 12-31-06)				

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

DRAWING NAME: 09 May 2006 12:12pm

DATE PRINTED: 09 May 2006 12:12pm

REVISE SEPT. 2004

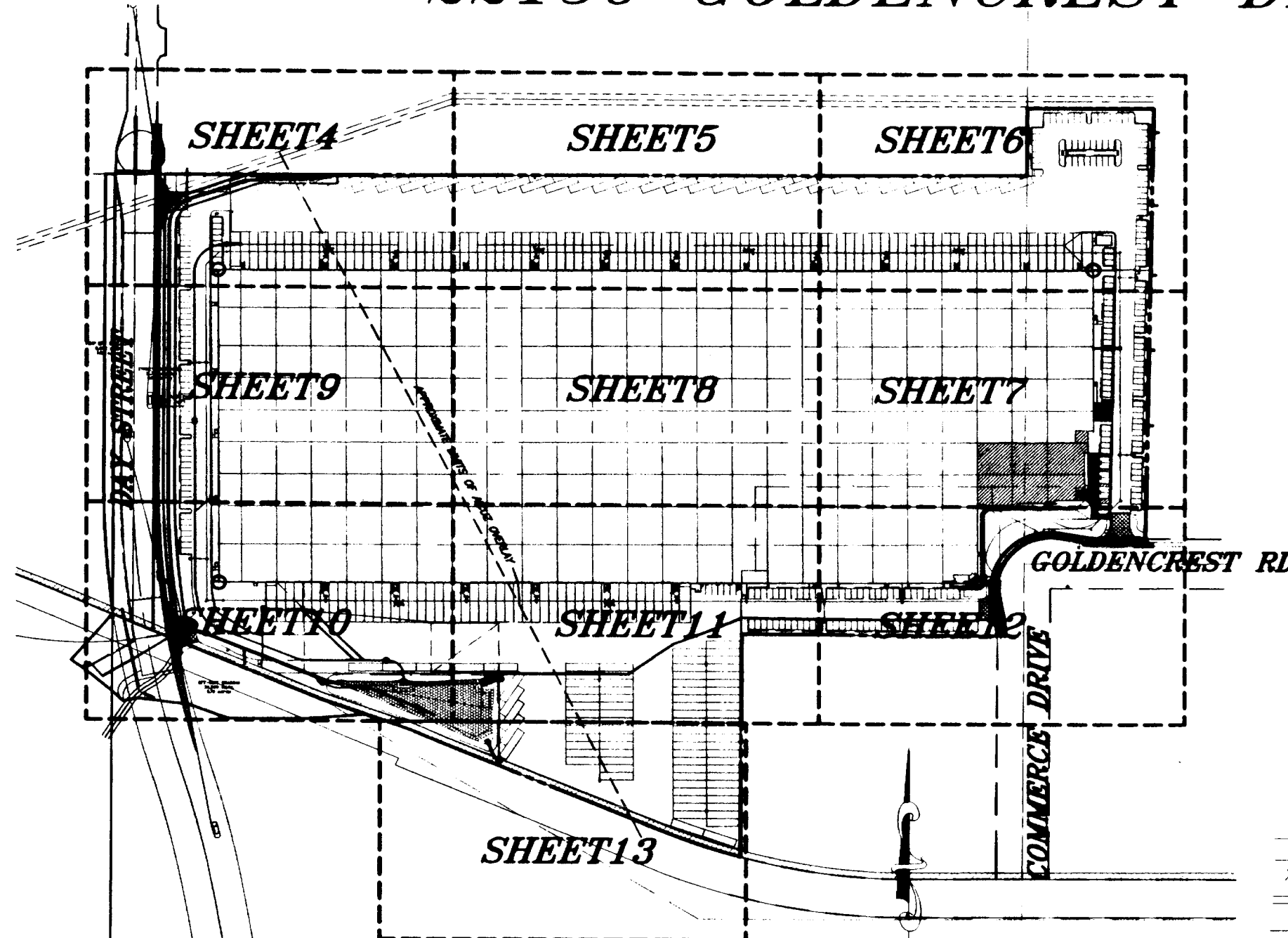
PRECISE GRADING PLAN – MARCH COMMERCE CENTER (PA 05-0042)

GENERAL NOTES:

- 1. ALL WORK CALLED FOR ON THE PLANS SHALL BE IN COMPLIANCE WITH CURRENT CITY STANDARD SPECIFICATIONS...

PRECISE GRADING PLAN FOR

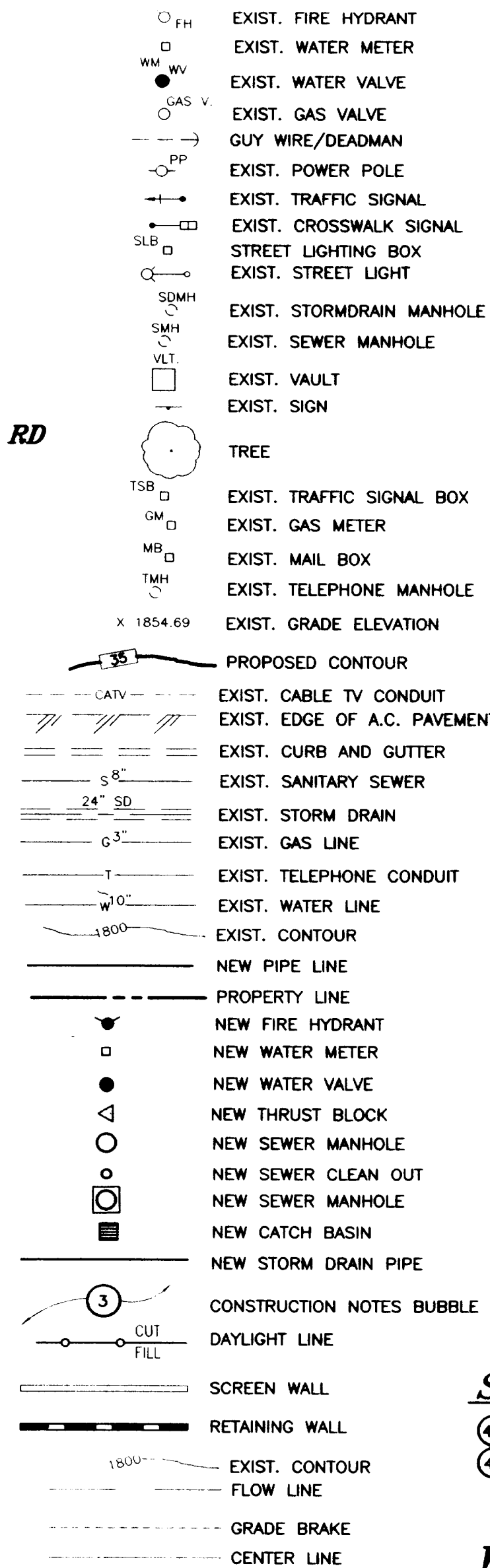
MARCH COMMERCE CENTER 22150 GOLDENCREST DRIVE



STANDARD GRADING NOTES:

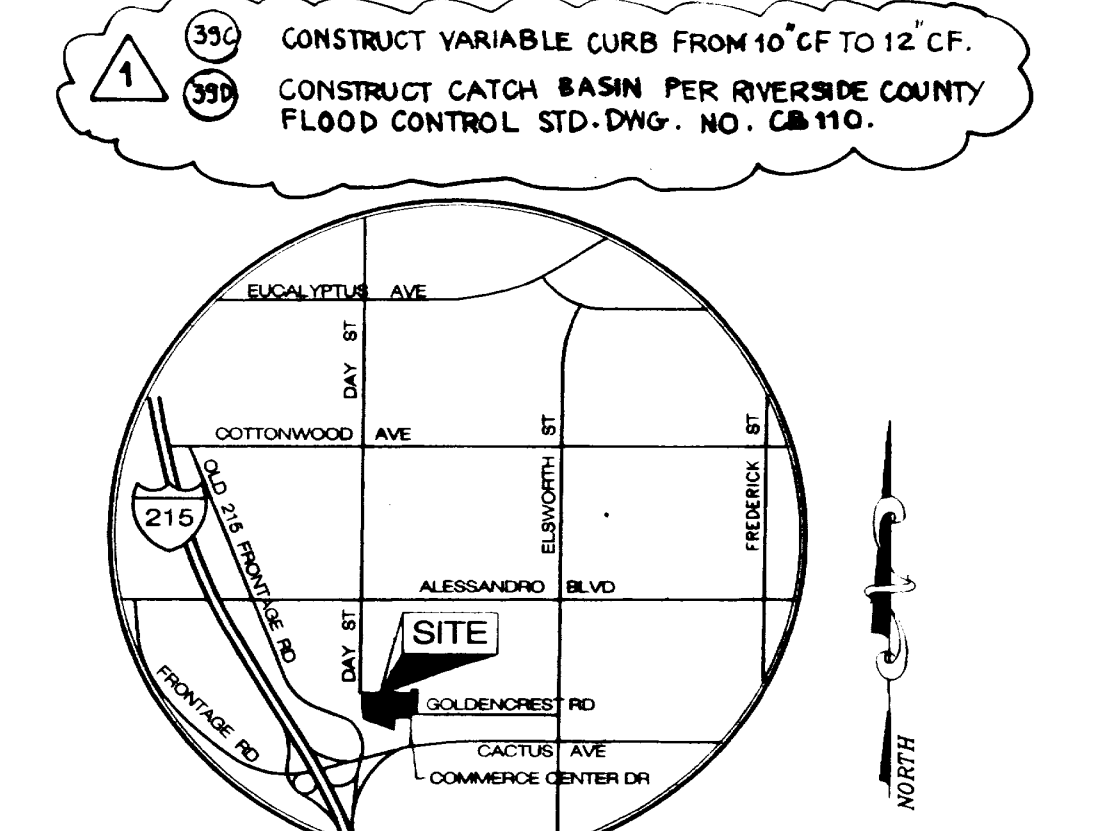
- 1. ALL WORK SHALL CONFORM TO THE CITY OF MORENO VALLEY GRADING ORDINANCE, THE ADOPTED CALIFORNIA BUILDING CODE...

LEGEND



CONSTRUCTION NOTES:

- 1. SAWCUT AND REMOVE EXISTING AC PAVEMENT AND REPLACE WITH FULL DEPTH AC PAVEMENT...



UTILITY COMPANIES EMERGENCY NUMBERS

Table listing utility companies like Adelphia - Riverside and their emergency numbers.

INDEX

INDEX table with columns for DESCRIPTION and SHEET NO., listing items like TITLE SHEET, DETAIL SHEET, etc.

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...

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...

ABBREVIATIONS

Table of abbreviations including A.B. for AGGREGATE BASE, S.F. for SQUARE FEET, etc.

FINAL RECOMMENDATION OF WQMP

THE SAND AND GRAVEL BED IN THE TREATMENT BASIN SHALL NOT BE INSTALLED UNTIL THE FOLLOWING CONDITIONS ARE MET:

EARTHWORK ANALYSIS:

Table for Earthwork Analysis showing MATERIAL AVAILABLE (OVER EXCAVATION, CALCULATED CUT) and MATERIAL REQUIRED (FILL, SHRINKAGE).

1-24/06 DATE

REVISION NO. 1 04/25/06

REDUCED RETAINING WALL AT NORTH PROPERTY LINE. REVISED RET. WALL PROFILE TO MATCH NATURAL GROUND AND W.S.E. ON GABEL CREEK STORM DRAIN PLANS...

SEWER CONSTRUCTION NOTES:

- 40. CONSTRUCT 6" PVC SDR-35 SEWER LATERAL

WATER CONSTRUCTION NOTES:

- 50. INSTALL 2" COPPER BRASS PIPE

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.

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE. Underground Service Alert Call: 1-800-227-2600

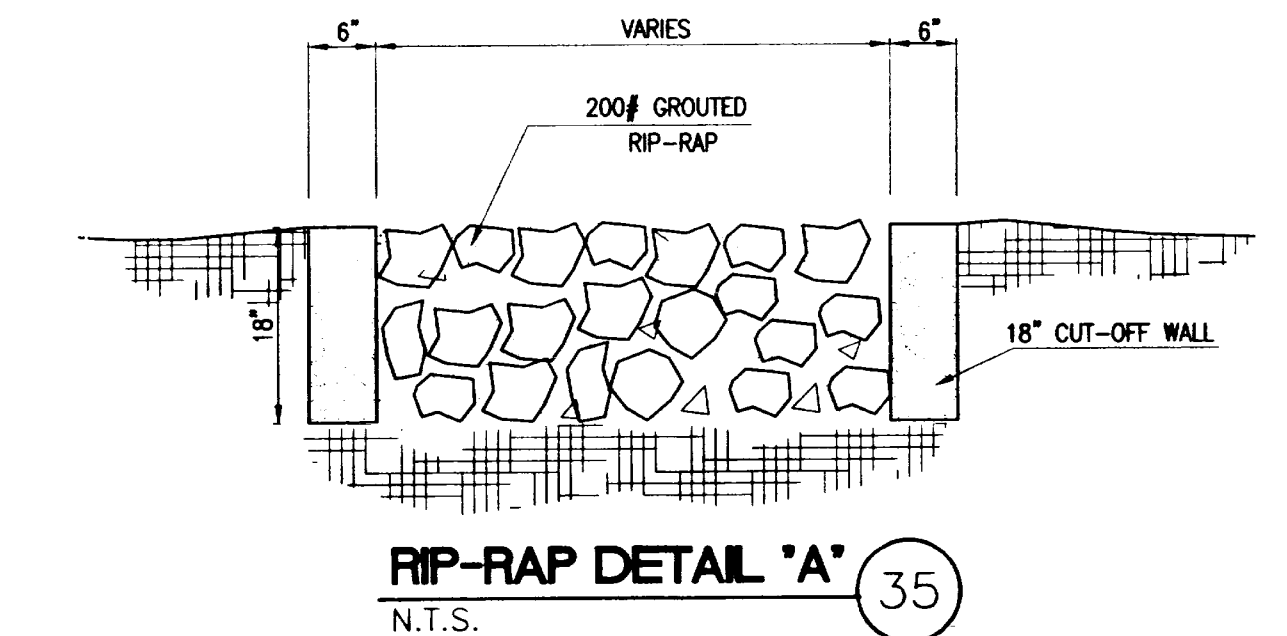
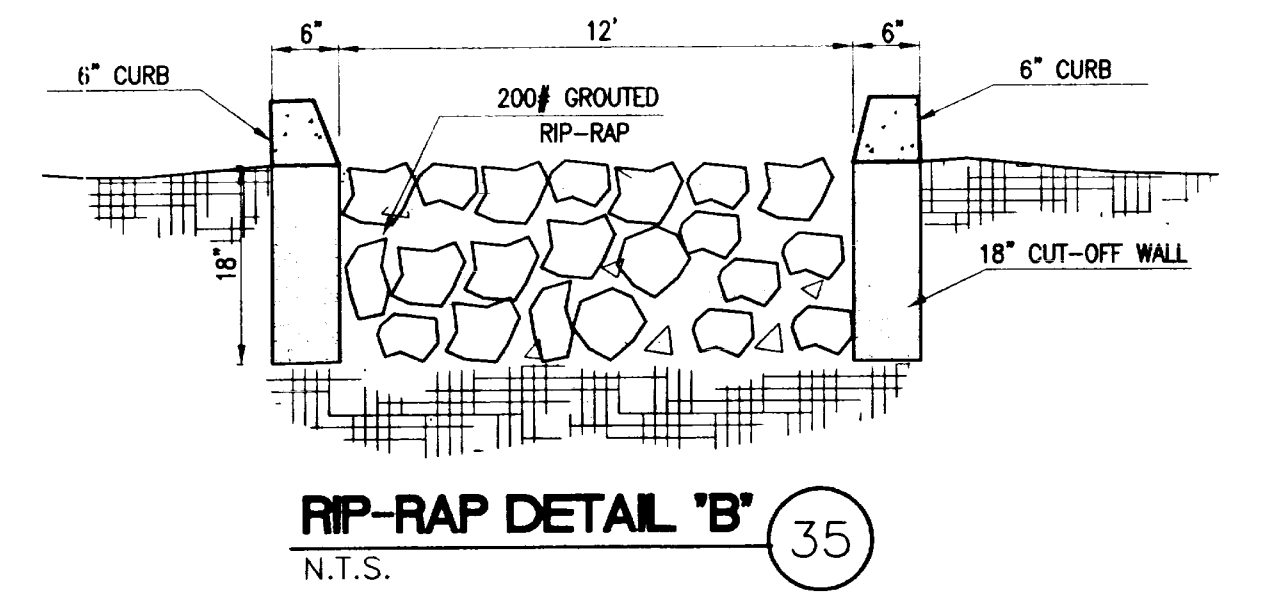
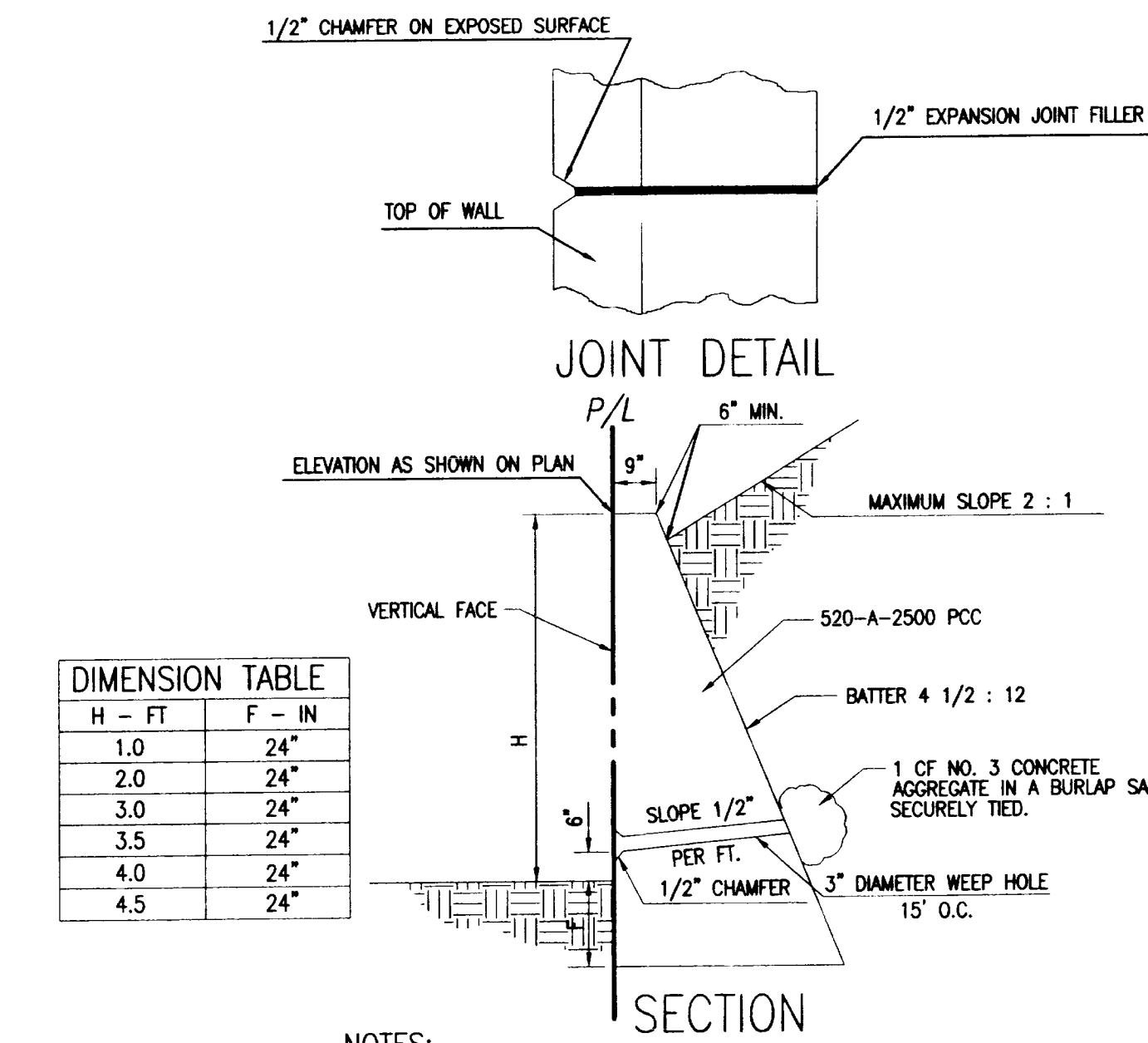
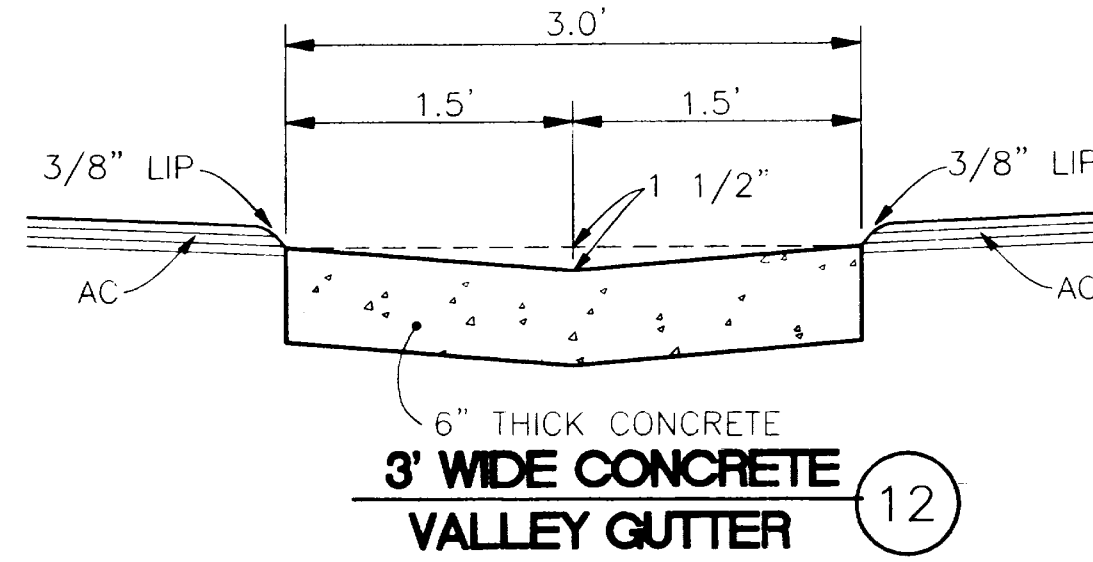
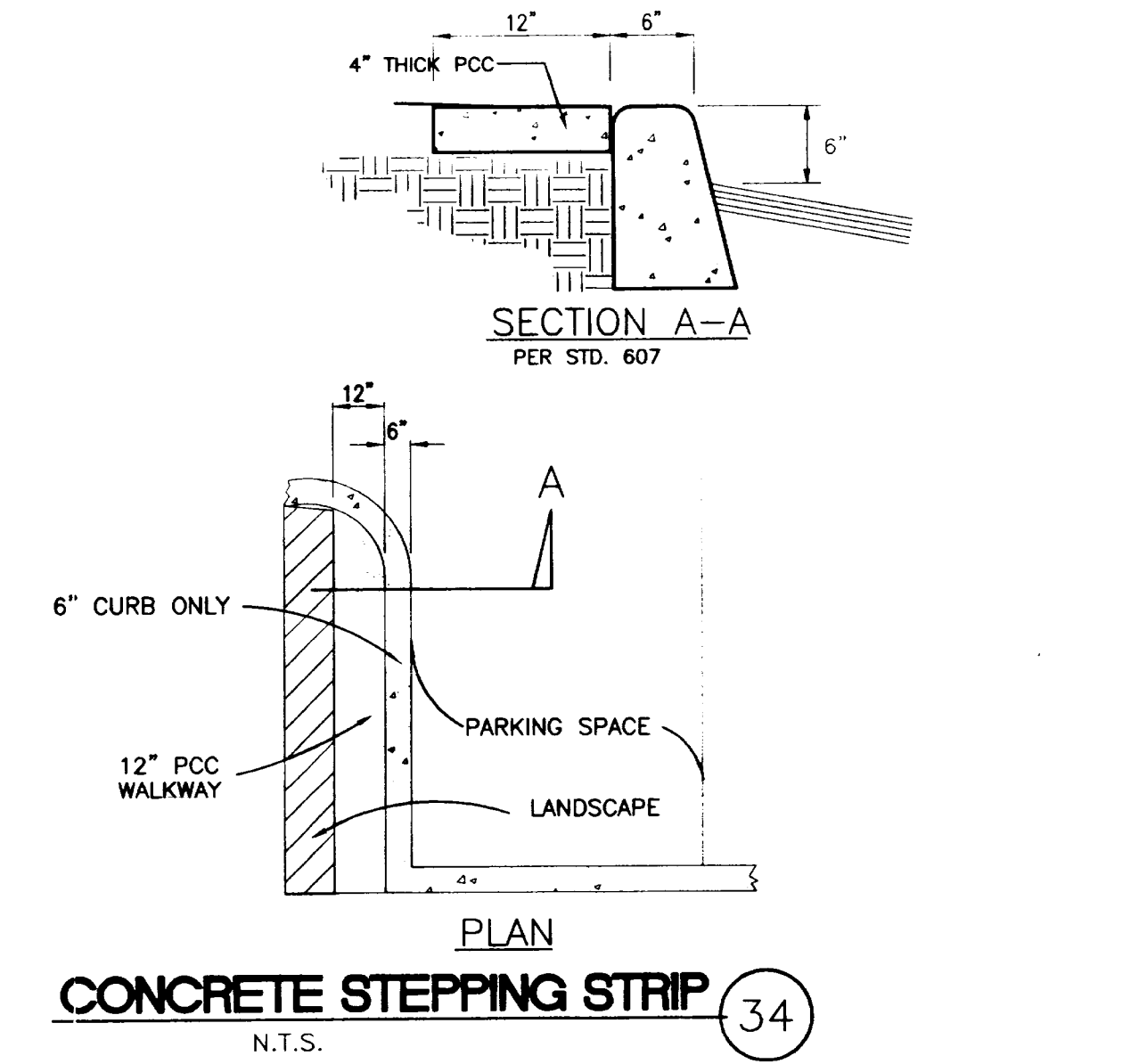
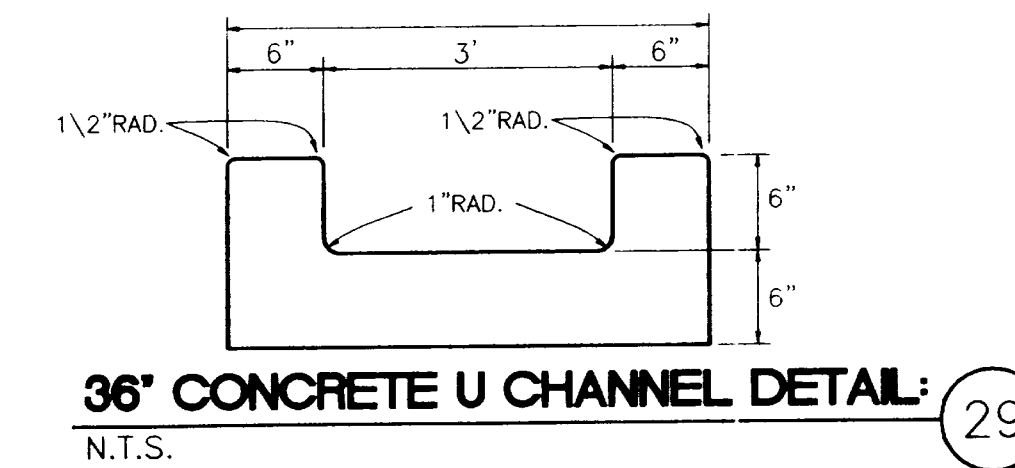
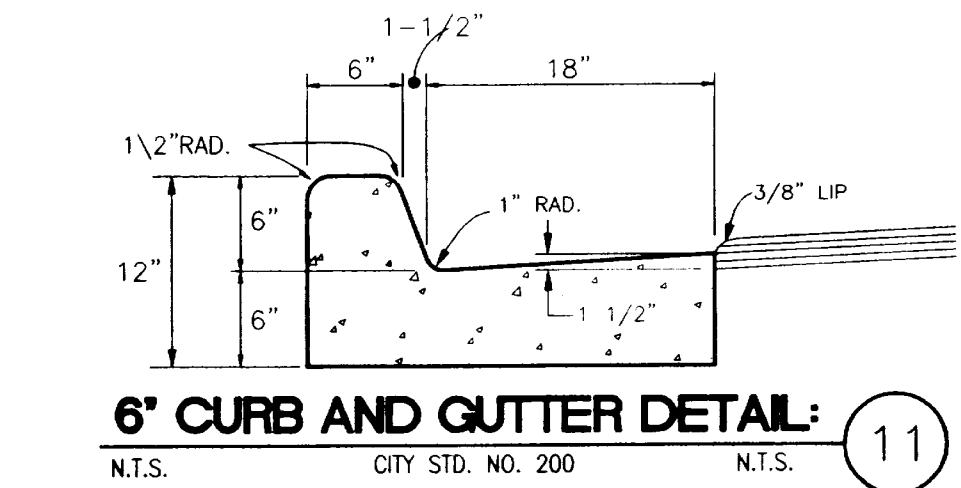
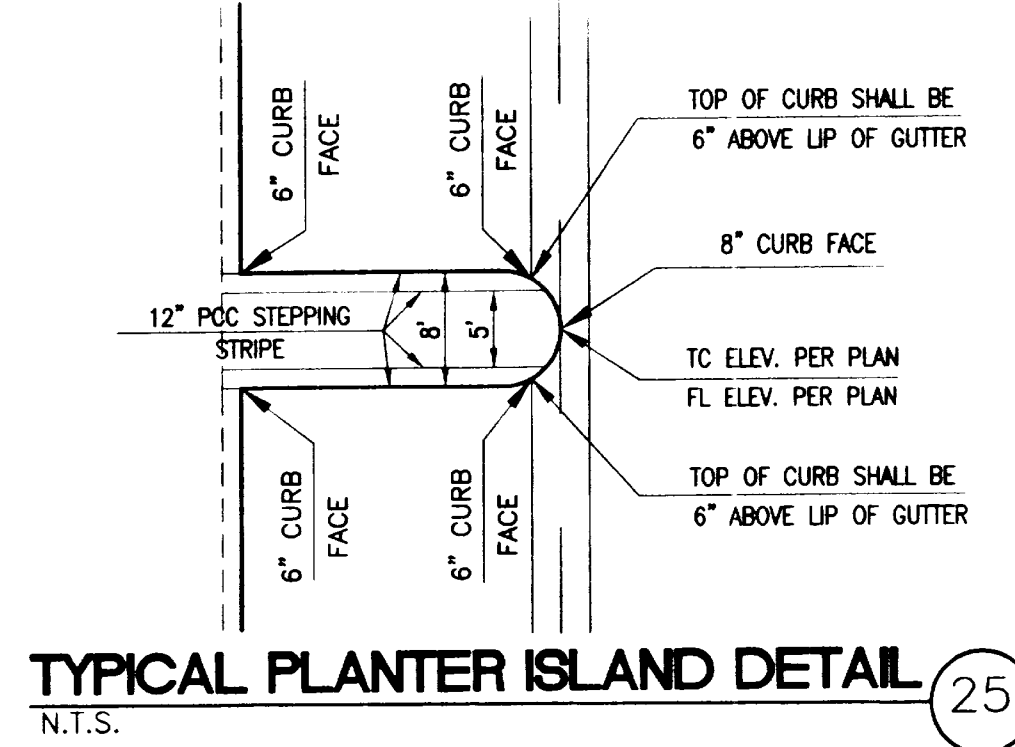
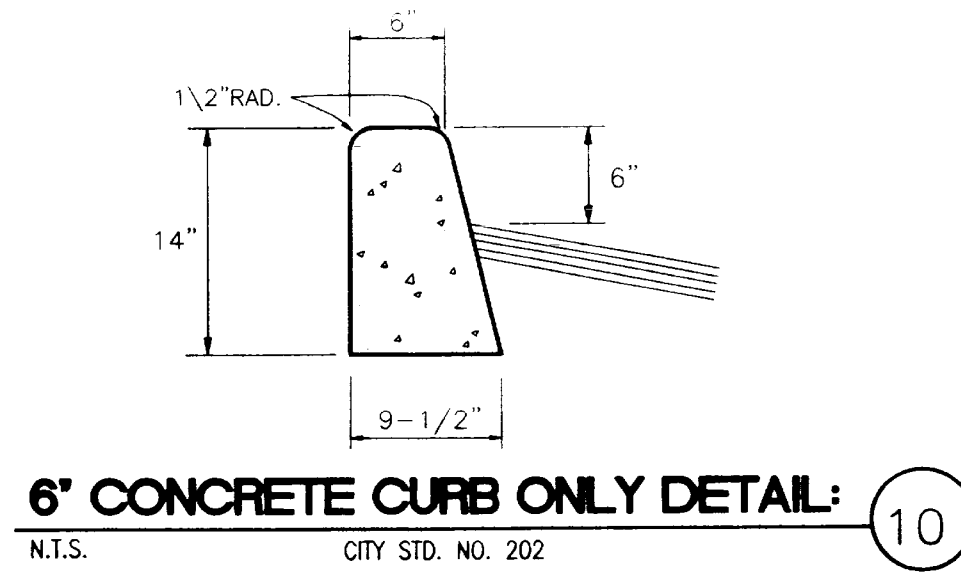
Construction permit application form with fields for BENCH MARK, BASIS OF BEARING, REVIEW BY CITY STAFF, DESIGNED BY, CHECKED BY, and CITY OF MORENO VALLEY stamps.

PA05-0042 - 15, 16

MAY 27 2006

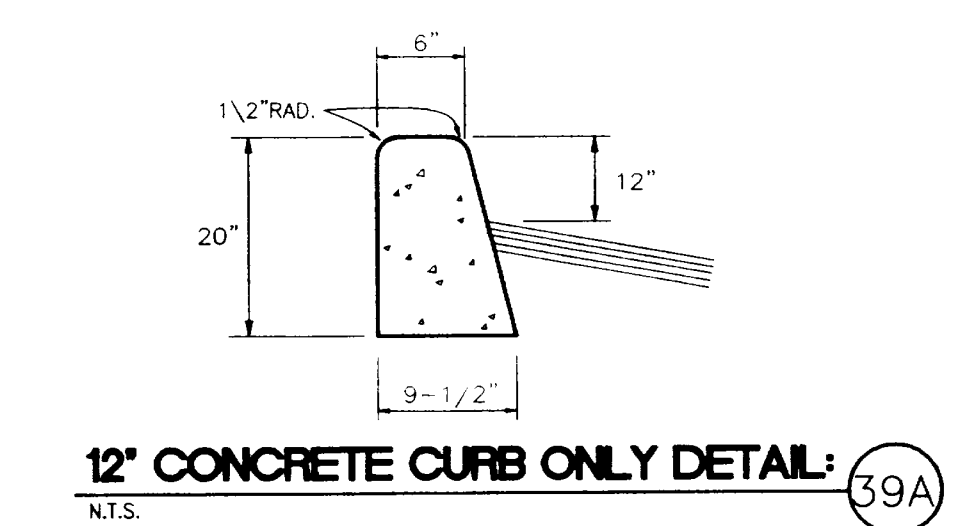
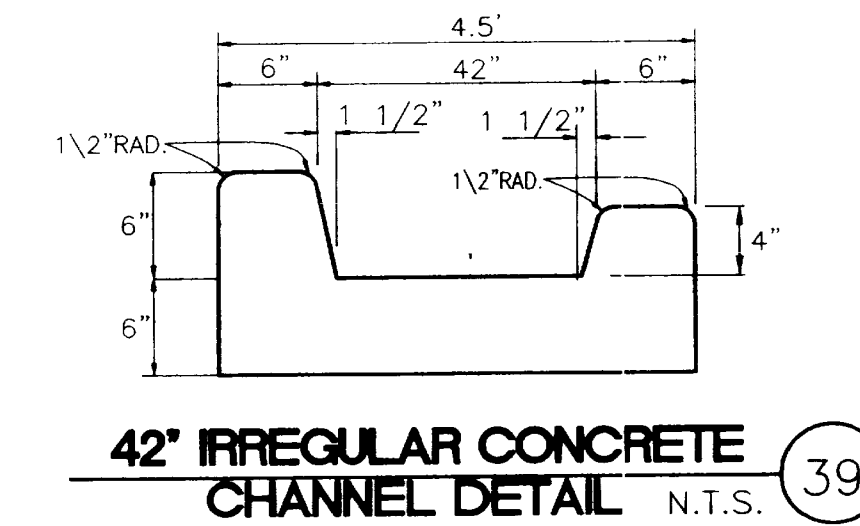
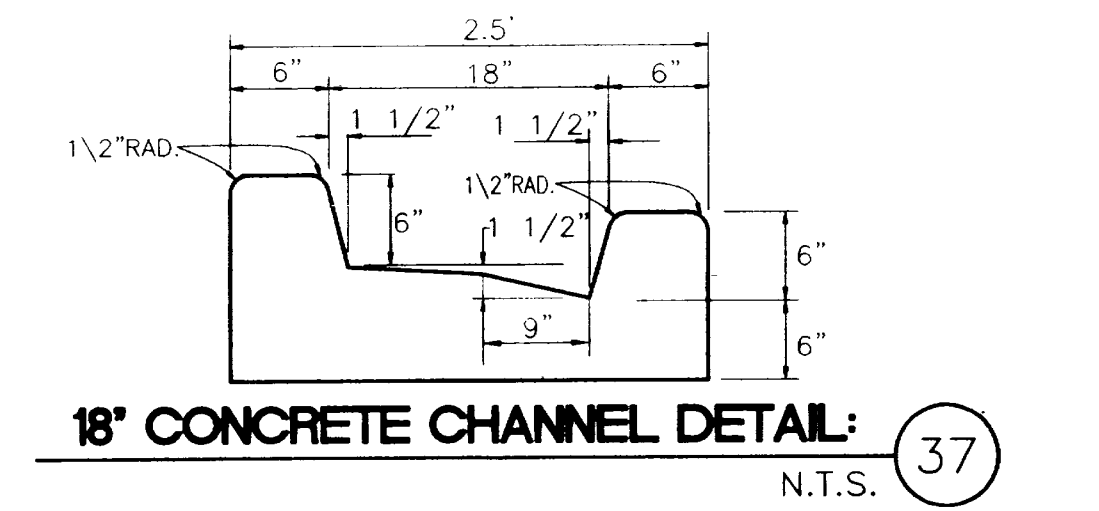
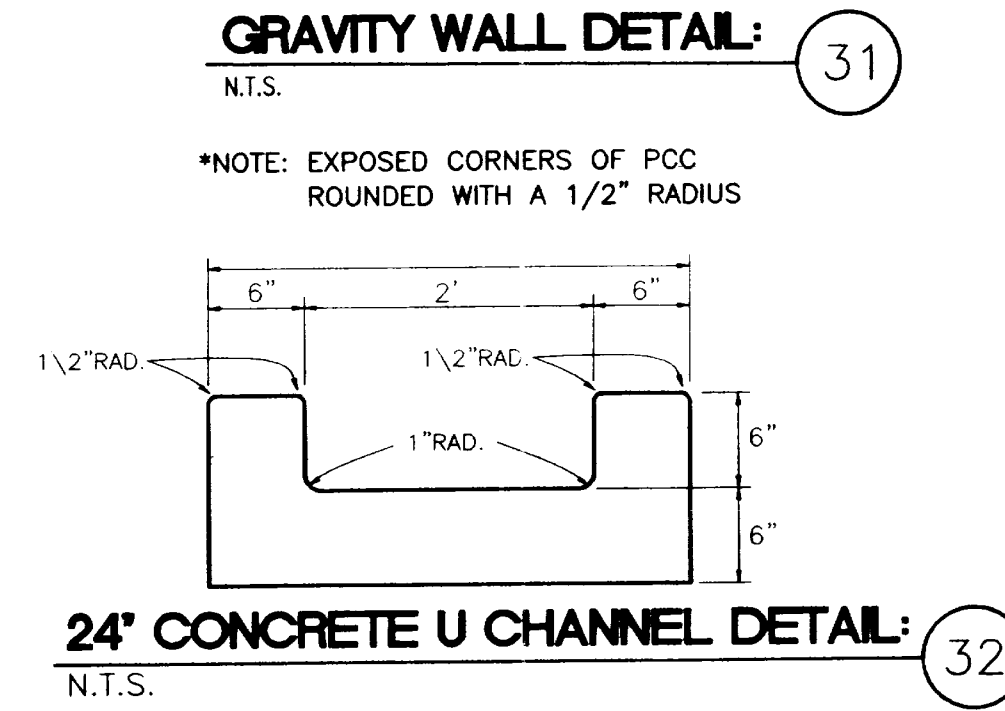
CONSTRUCTION NOTES:

- 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); T₁=5.0 (VERIFY WITH SOILS REPORT)
- 14- CONSTRUCT 0.35" ASPHALT CONCRETE OVER 0.40" AGGREGATE BASE (HEAVY TRUCK AREAS); T₁=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 GROUNDED 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" CURB PER DETAIL ON SHEET NO. 2.
- 39B- CONSTRUCT CURB TRANSITION FROM 6" CURB TO 12" CURB.
- * PER SEPARATE PERMIT

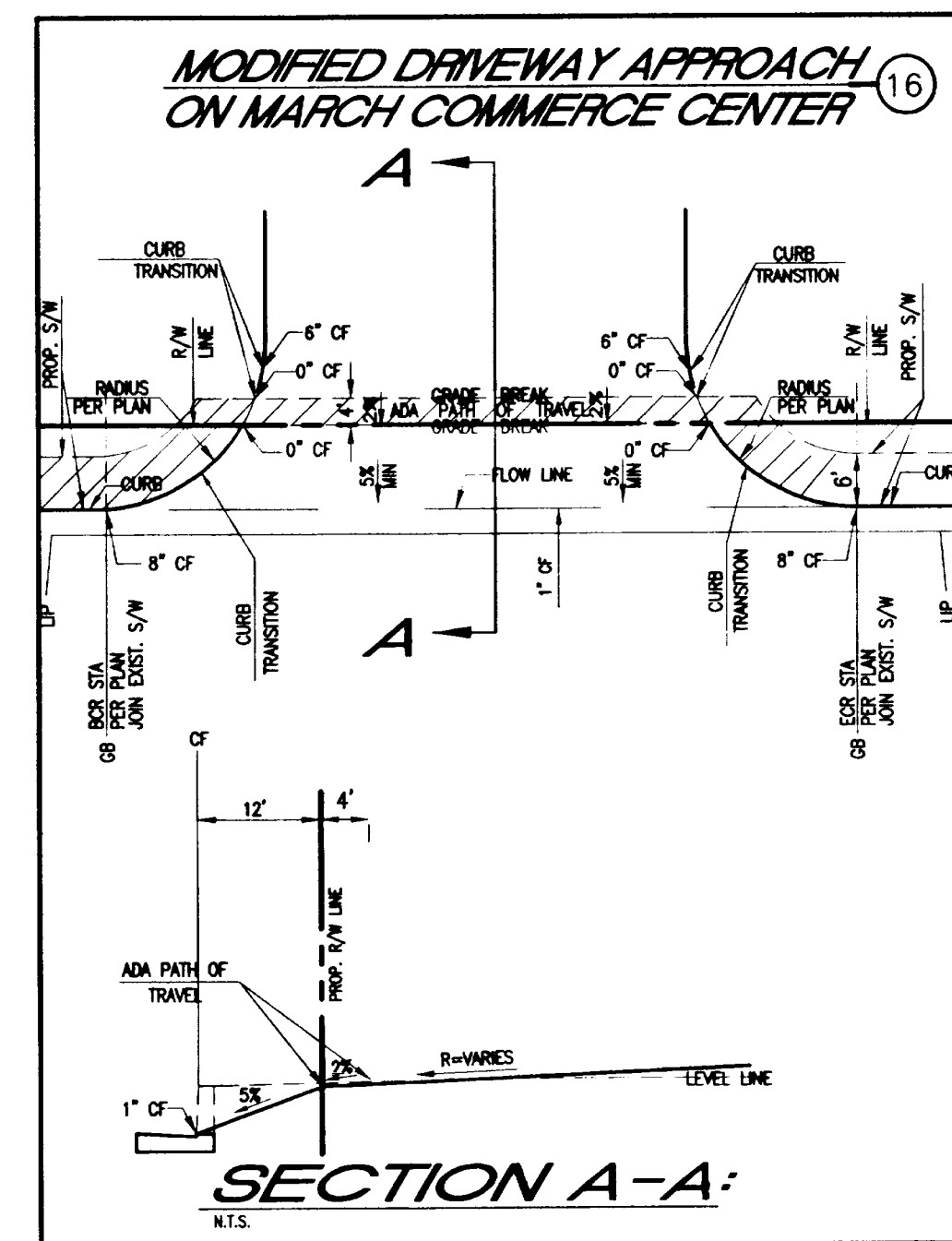
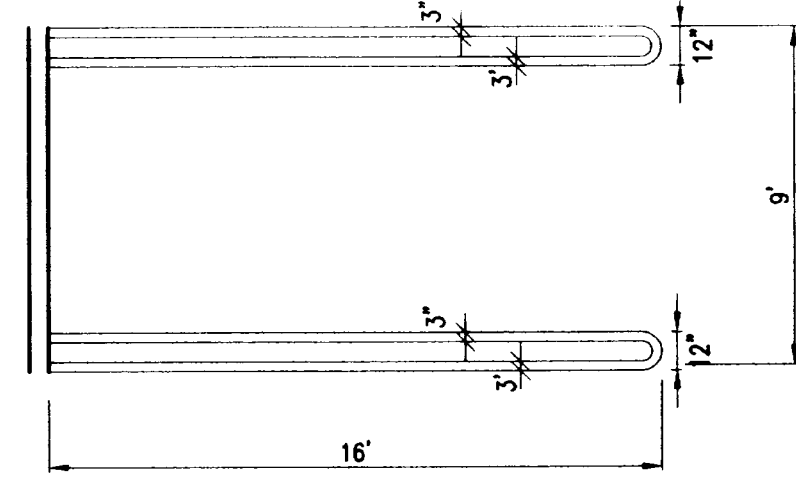


DIMENSION TABLE	
H - FT	F - IN
1.0	24"
2.0	24"
3.0	24"
3.5	24"
4.0	24"
4.5	24"

- 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.



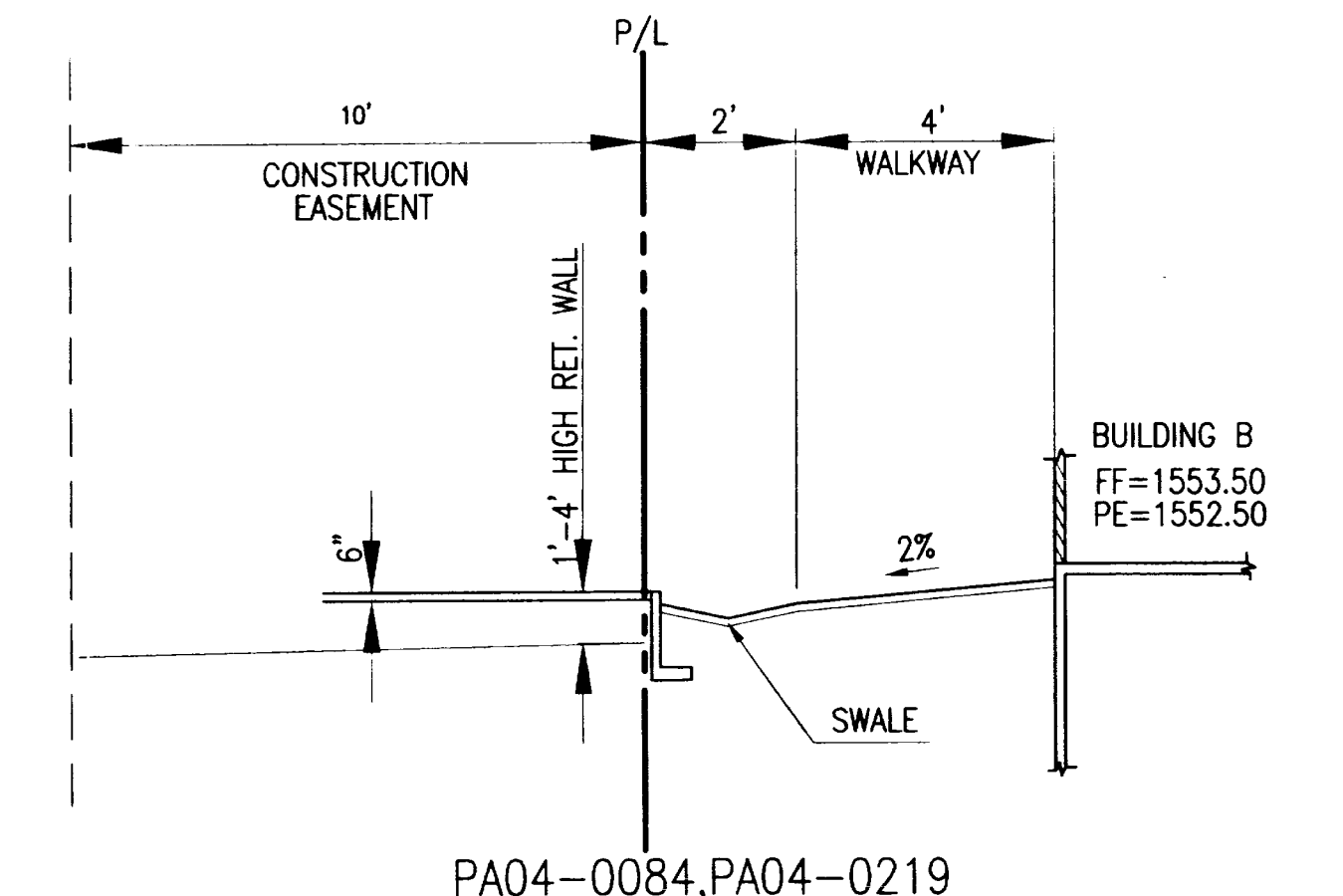
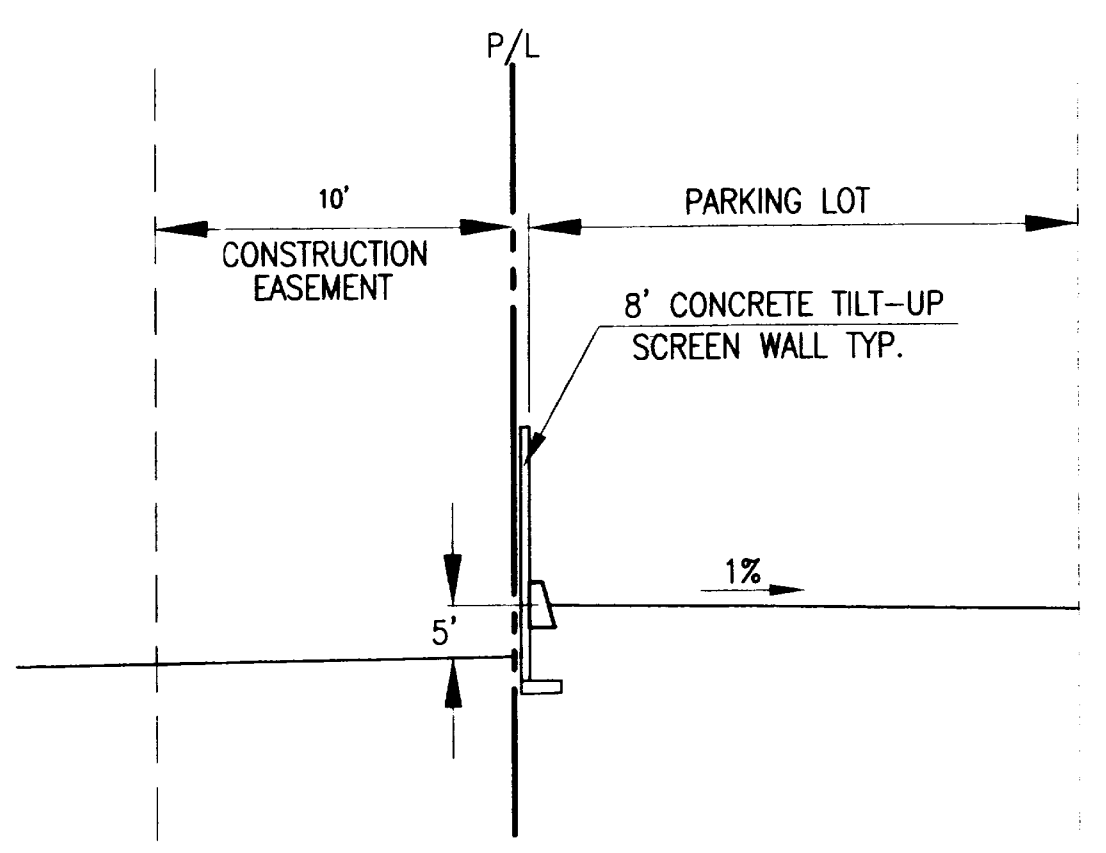
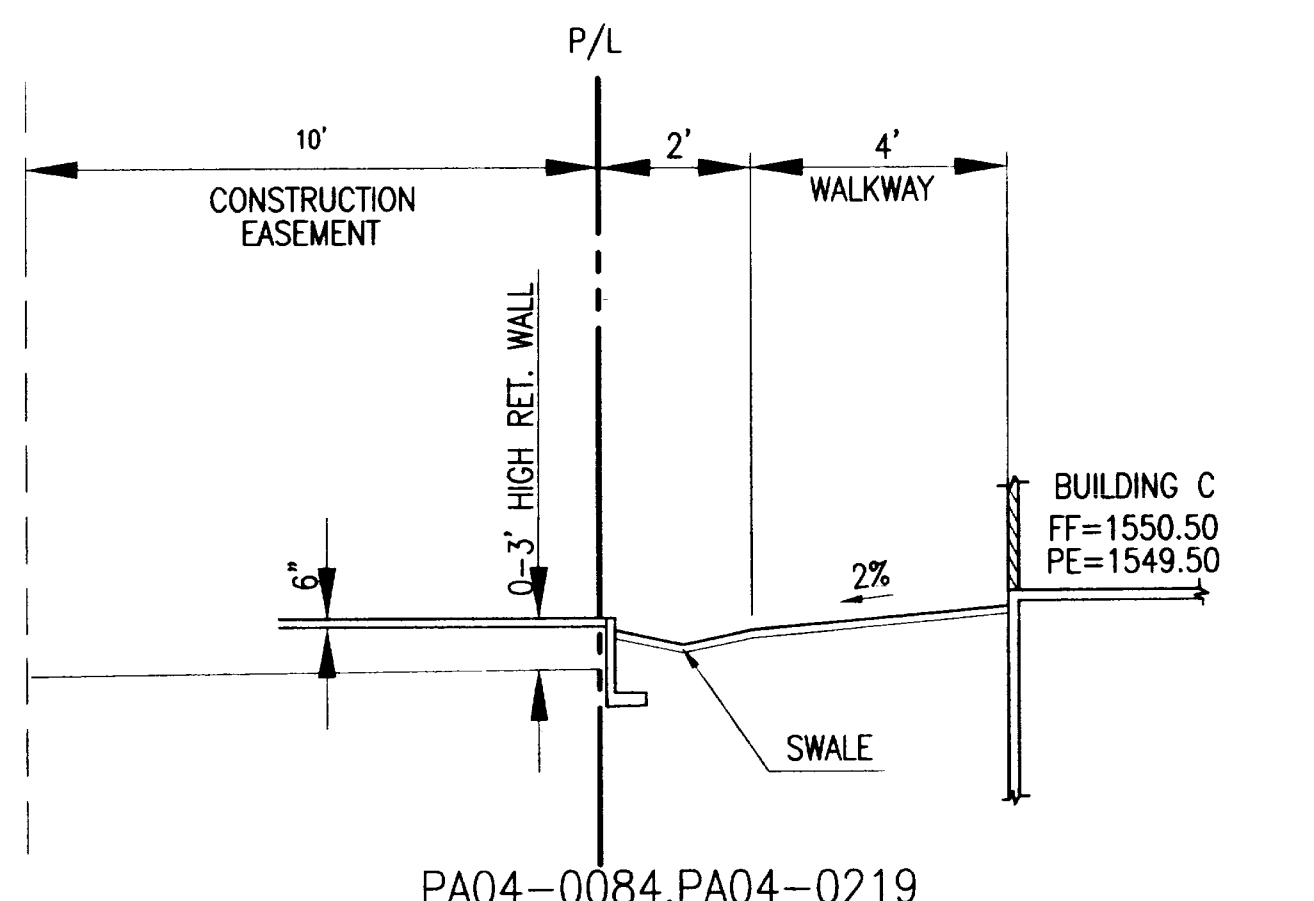
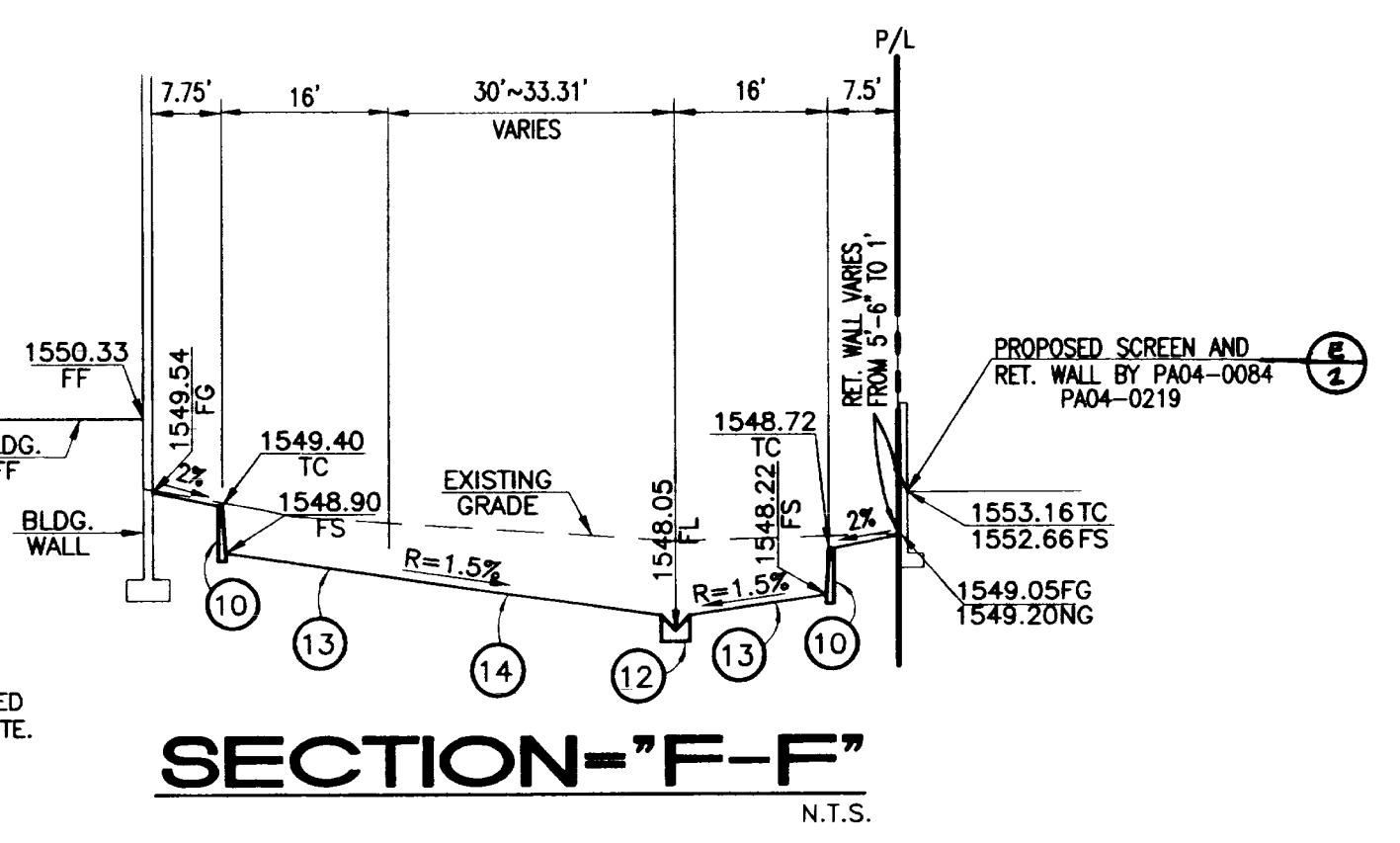
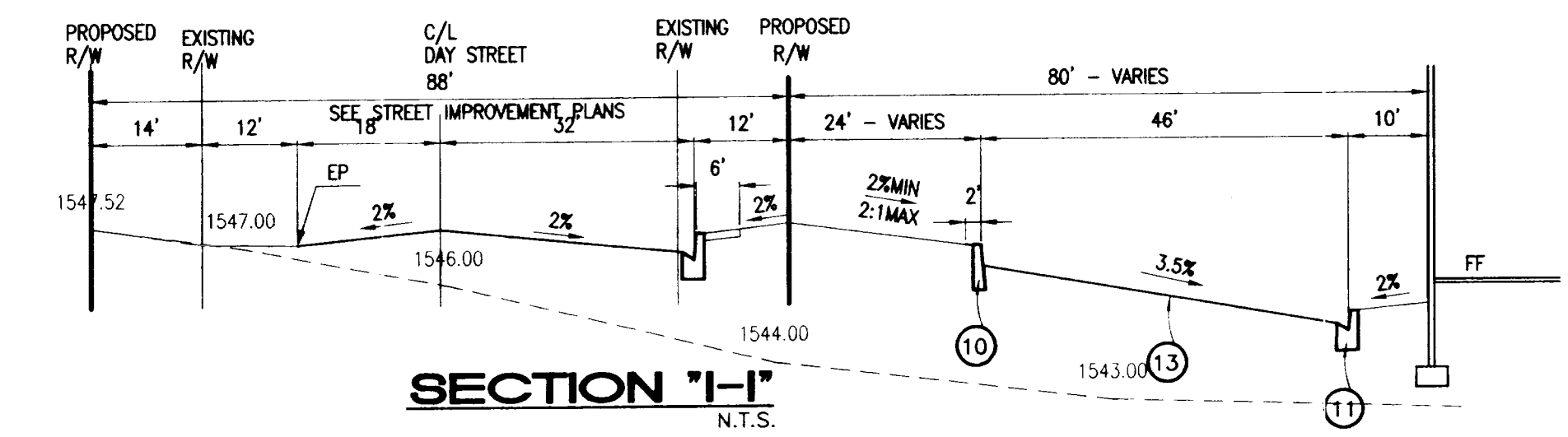
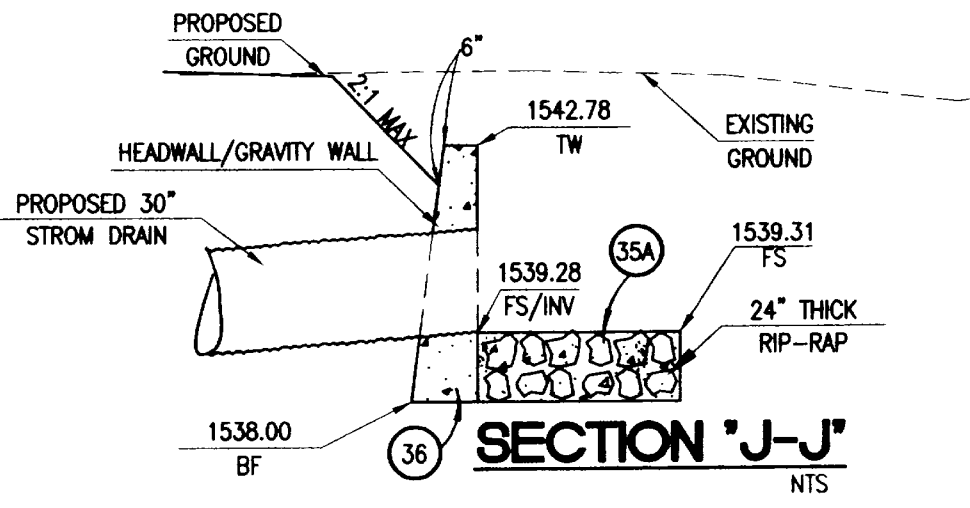
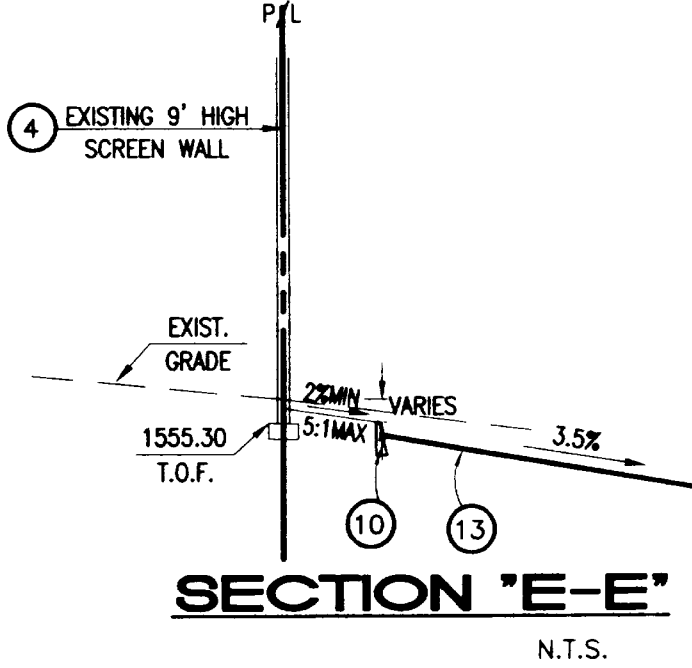
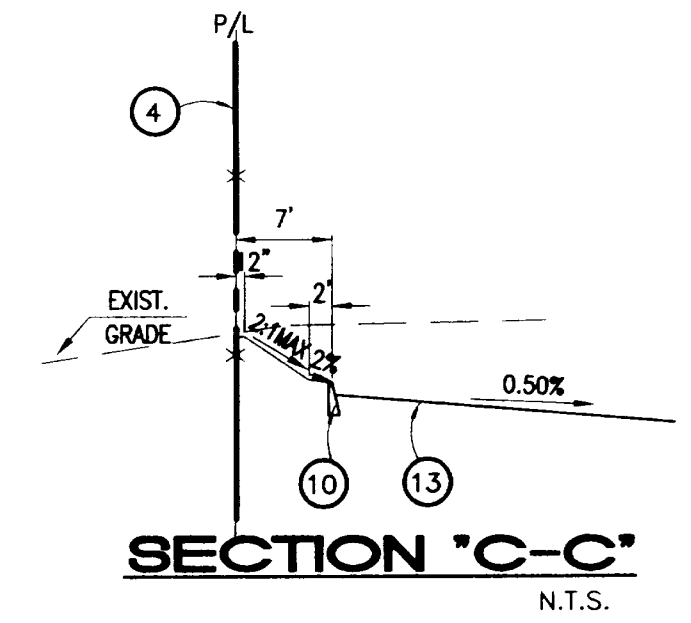
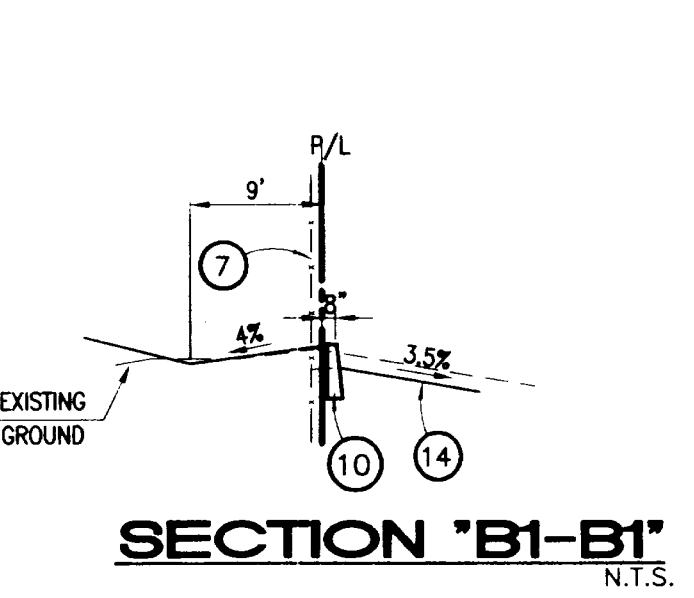
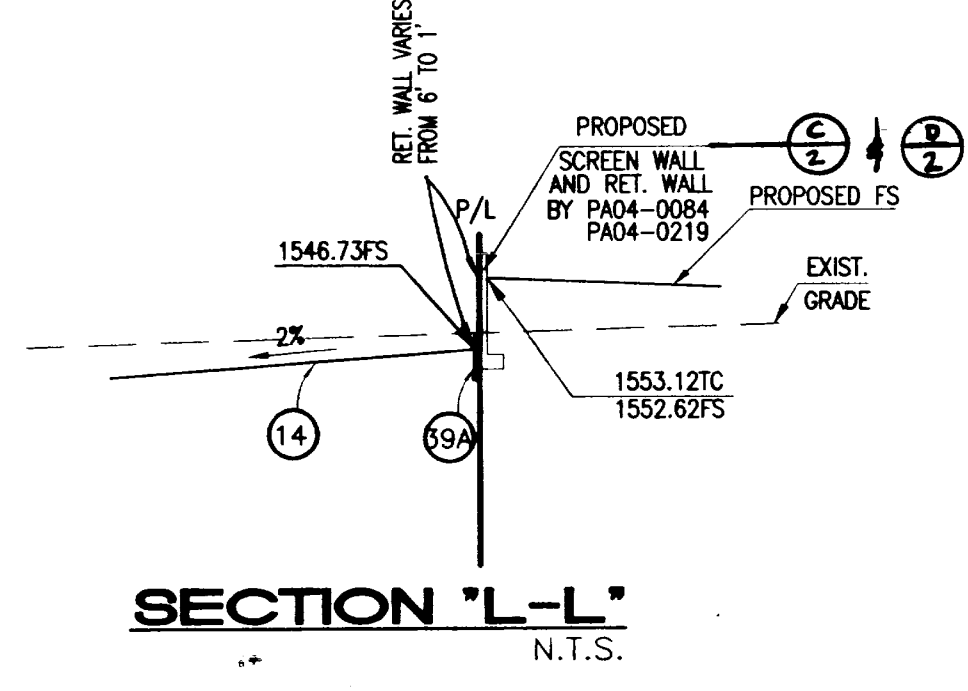
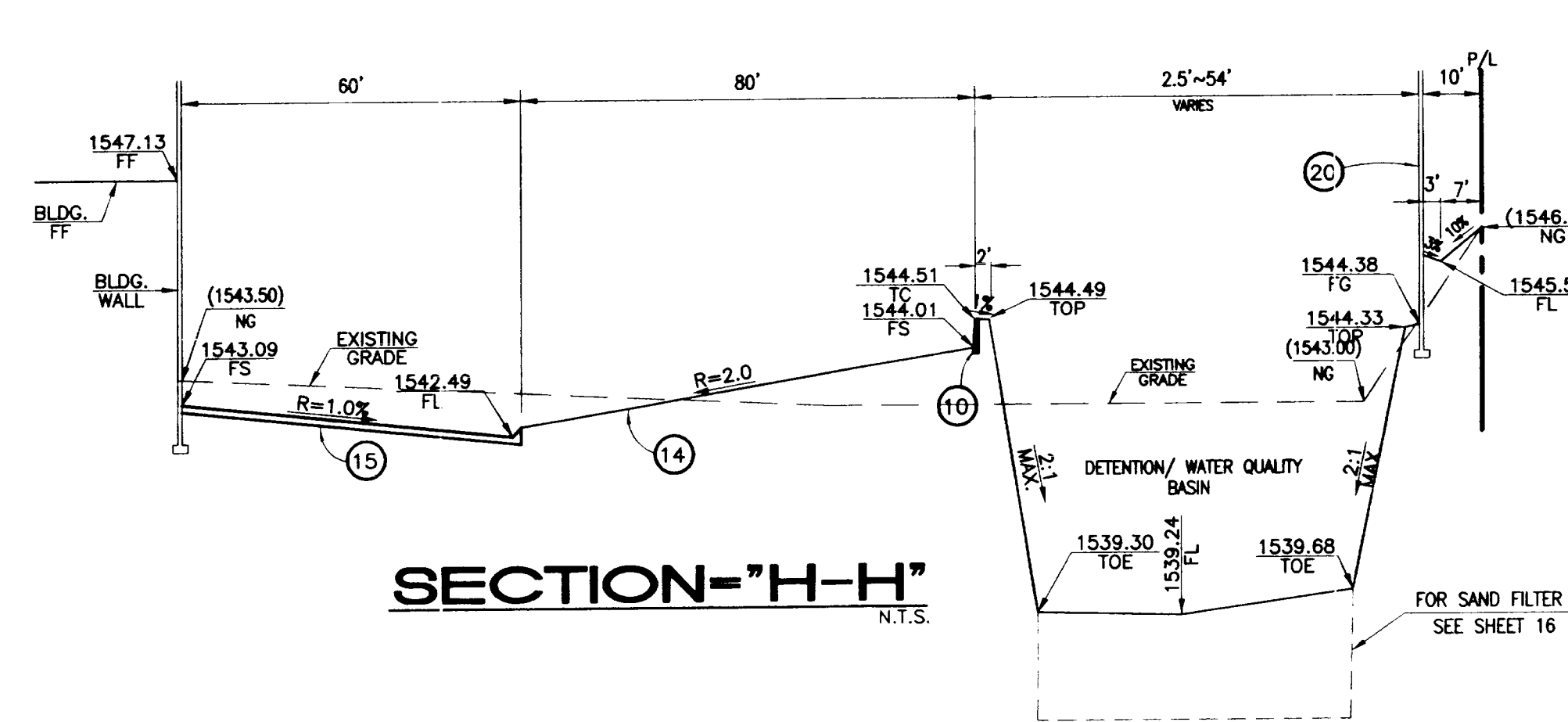
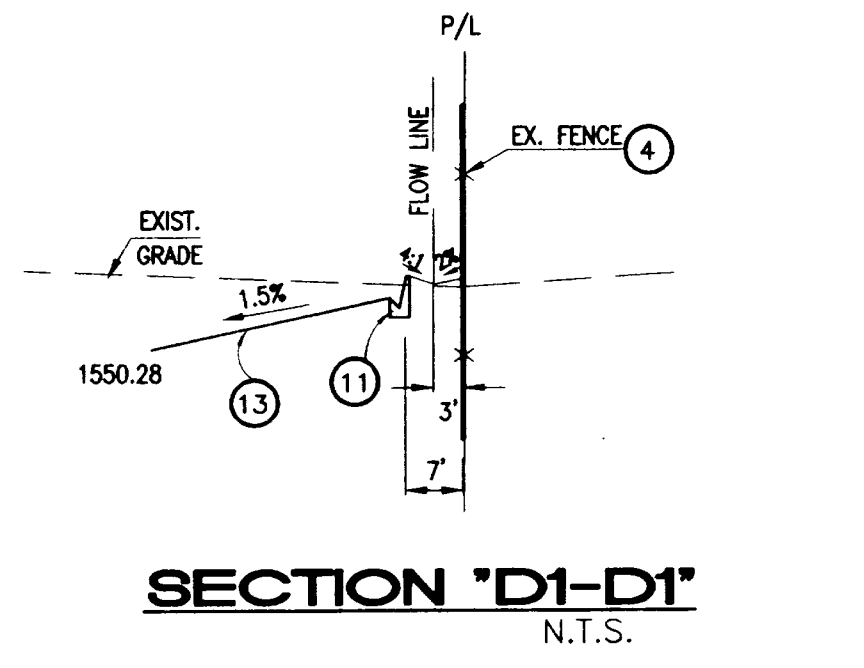
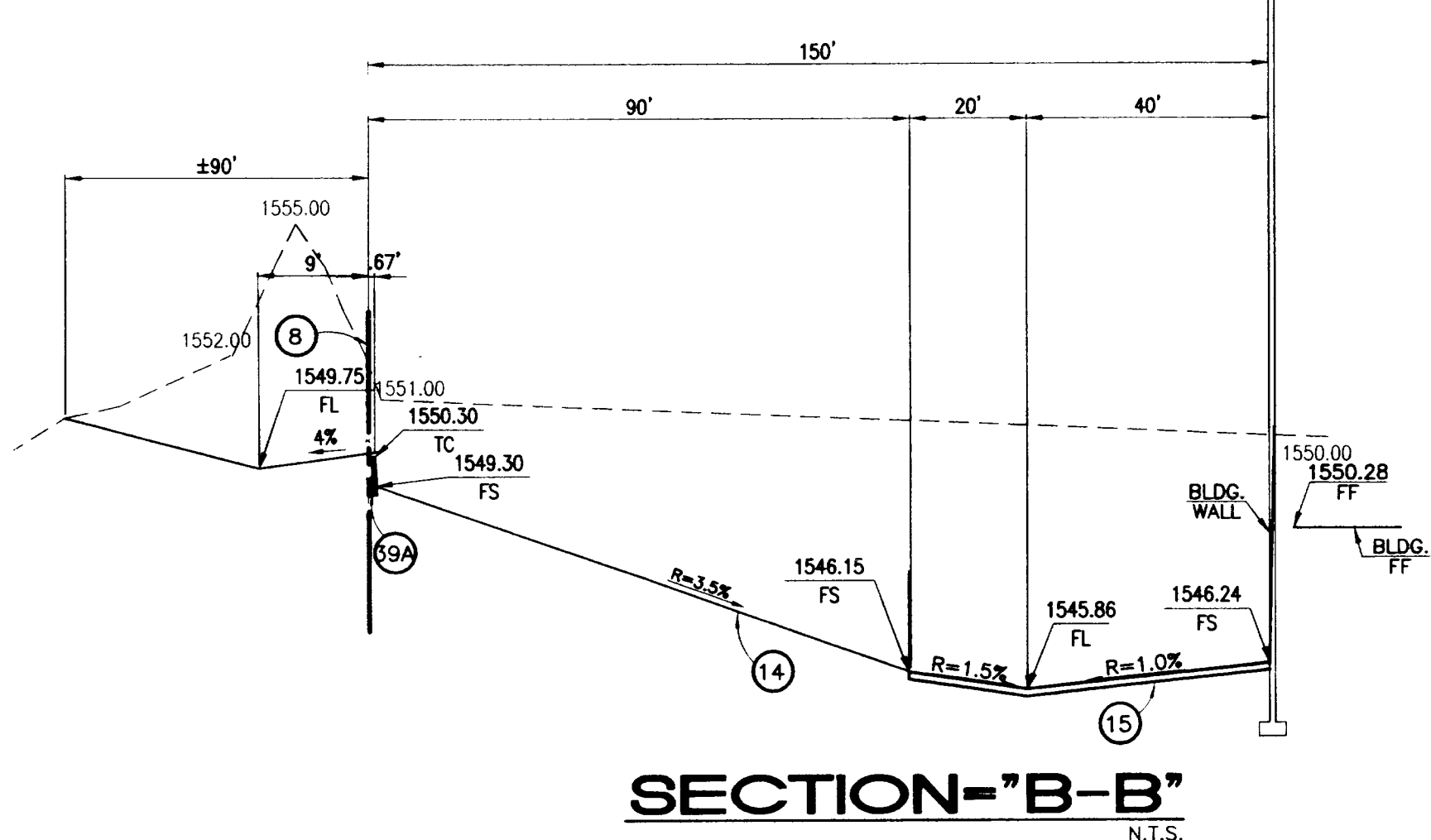
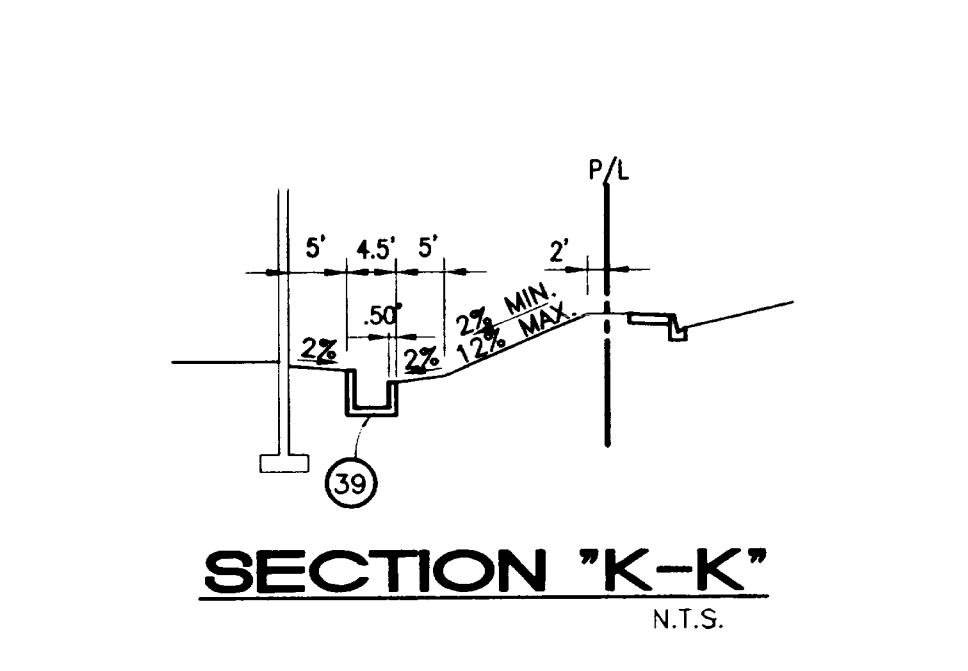
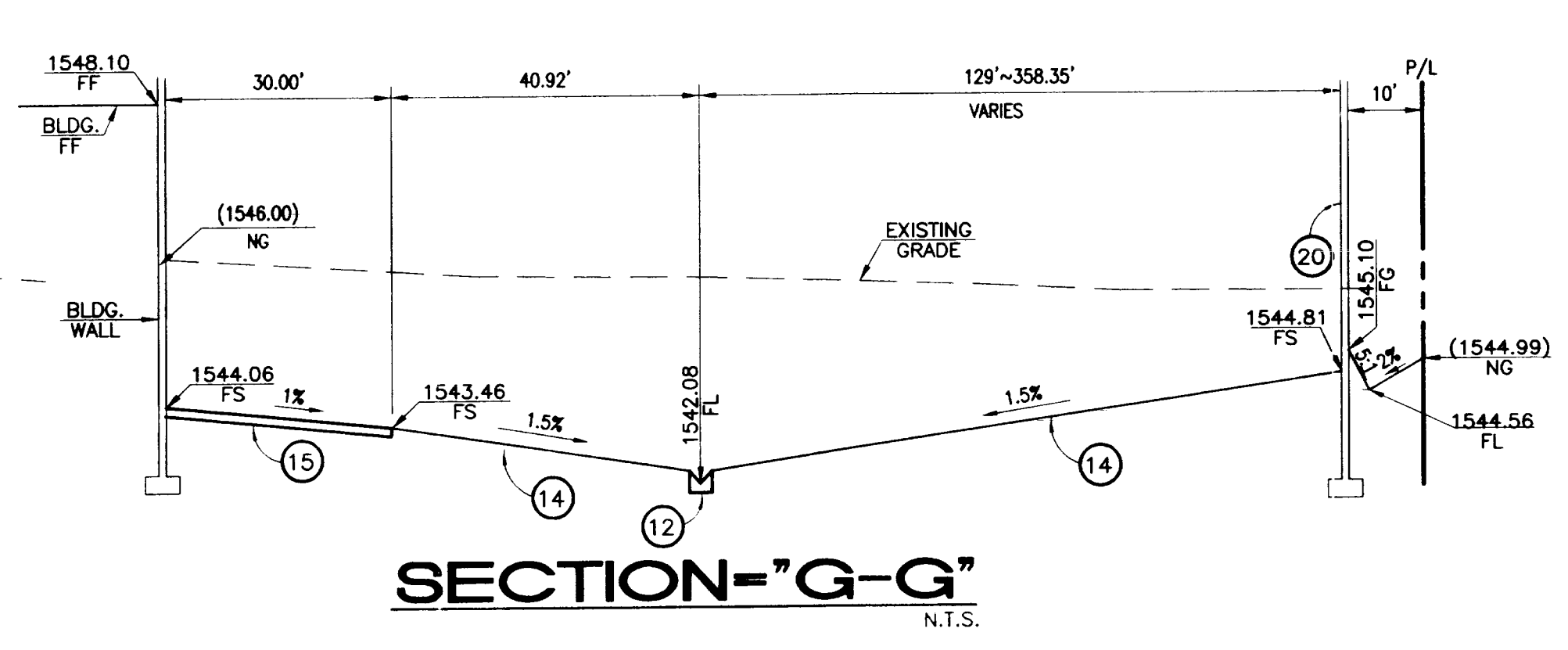
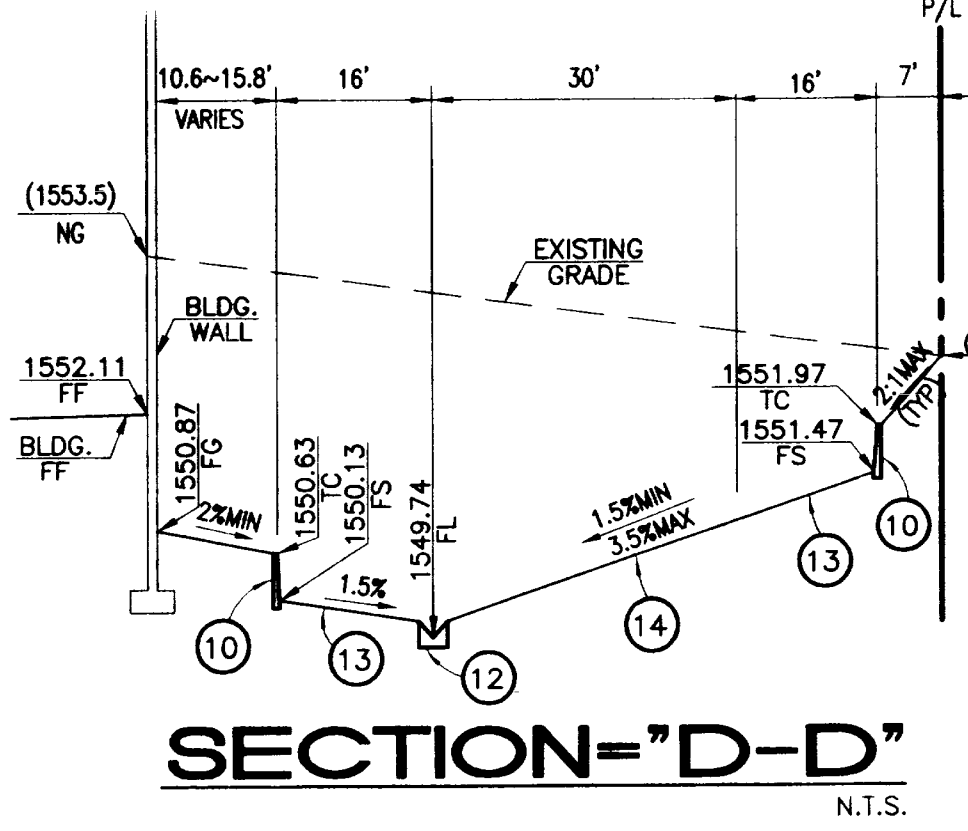
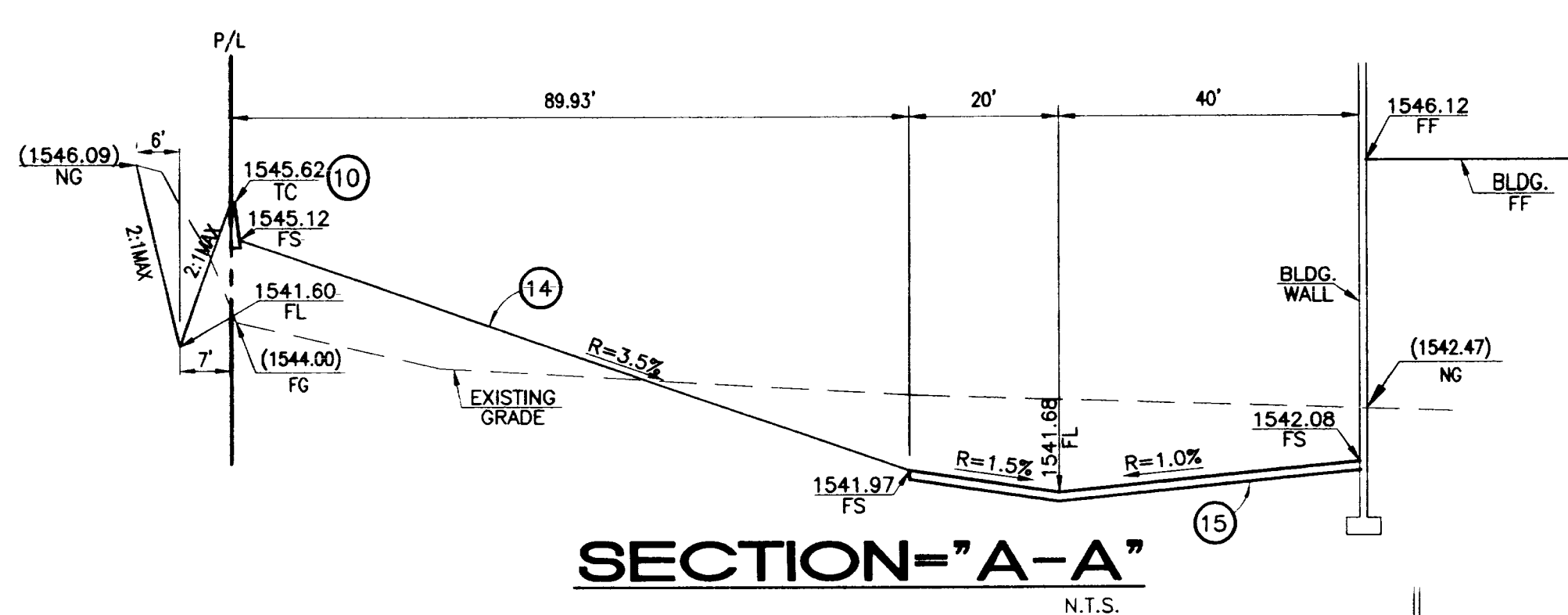
PARKING SPACE STRIPING REQUIREMENTS



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

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BENCH MARK	BASIS OF BEARING	REVIEW BY CITY STAFF				PREPARED BY DR UNDER THE SUPERVISION OF	DRAWN BY	CITY OF MORENO VALLEY		ACC'T. NO.
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & 105 AVE., 58.55 FT. S/WM OF A CIRCLED "M" IN A 3" IRON COR. POST; 40.85 FT. N/E OF MAIL & TAG IN THE WEST SIDE OF POWER POLE #213136; 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 HANDELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963).	THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARPOSA 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.	OFFICE	INITIAL	DATE	DATE	DATE	DATE	PRECISE GRADING PLAN		SHEET 2 NO. 18
		LAND DEVELOPMENT	V&G	1/30/06				DETAILS		CITY I. D. NO. 2564
		ENTERPRISE SERVICES						PA05-0042 WDDID: 833C335284 "CONSTRUCTION SET 01-16-06"		
		PLANNING						THIENES ENGINEERING, INC.		
		TRANSPORTATION						CIVIL ENGINEERING • LAND SURVEYING		
		CAPITAL PROJECT						14349 FIRESTONE BOULEVARD		
		PARK AND RECREATION						LA HABRA, CALIFORNIA 90638		
								REG. PRO. ENGINEER		
								HAZROOK I. AGHAJANI		
								R.C.E. NO. 43293		
								Exp. 3-31-06		
								STATE OF CALIFORNIA		
								PREM KUMAR		
								INTERIM CITY ENGINEER, CITY OF MORENO VALLEY		
								R.C.E. NO. 52463 (EXP. 12/31/2006)		
								NO 53013 ERA 6-20-07		



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SECTION "F-F"
N.T.S.

PA04-0084, PA04-0219
C SECTION (SECTION L-L)
N.T.S.

PA04-0084, PA04-0219
D SECTION (SECTION L-L)
N.T.S.

PA04-0084, PA04-0219
E SECTION (SECTION F-F)
N.T.S.

PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06"

BENCH MARK		BASIS OF BEARING		REVIEW BY CITY STAFF		PREPARED BY OR UNDER THE SUPERVISION OF		DRAWN BY		DESIGN BY		CHECKED BY		Thienes Engineering, Inc. CIVIL ENGINEERING & LAND SURVEYING 14349 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH: (714) 821-4011 FAX: (714) 821-4173		CITY OF MORENO VALLEY PRECISE GRADING PLAN SECTIONS		ACCT. NO.	
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IHS AVE., 58.55 FT. S/W OF A CHISELED "T" IN A 3" IRON COR. POST, 40.89 FT. W/E OF WALL & TAG IN THE WEST SIDE OF POWER POLE #213136, 34.39 FT. N/W OF A WALL & TAG SET IN S/W SIDE TELEPHONE POLE #15160, A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDWELL MONUMENT. ELEV. = 1503.526' (MVD 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	INITIAL	DATE	HAIDDOCK I. AGHAIAN	DATE	HAIDDOCK I. AGHAIAN	DATE	HAIDDOCK I. AGHAIAN	DATE	HAIDDOCK I. AGHAIAN	DATE	REGISTERED PROFESSIONAL ENGINEER HAIDDOCK I. AGHAIAN R.C.E. NO. 43293 Exp. 3-31-06 CIVIL STATE OF CALIFORNIA	CITY OF MORENO VALLEY PRECISE GRADING PLAN SECTIONS		SHEET 3 NO. 18	
LAND DEVELOPMENT		ENTERPRISE SERVICES		PLANNING		TRANSPORTATION		CAPITAL PROJECT		PARK AND RECREATION		REVISION		INTERIM CITY ENGINEER, CITY OF MORENO VALLEY R.C.E. NO. 52463 (EXP. 12/31/2006) M. S. 53013 Exp. 6-30-07		CITY OF CALIFORNIA		CITY I. D. NO. 2564	

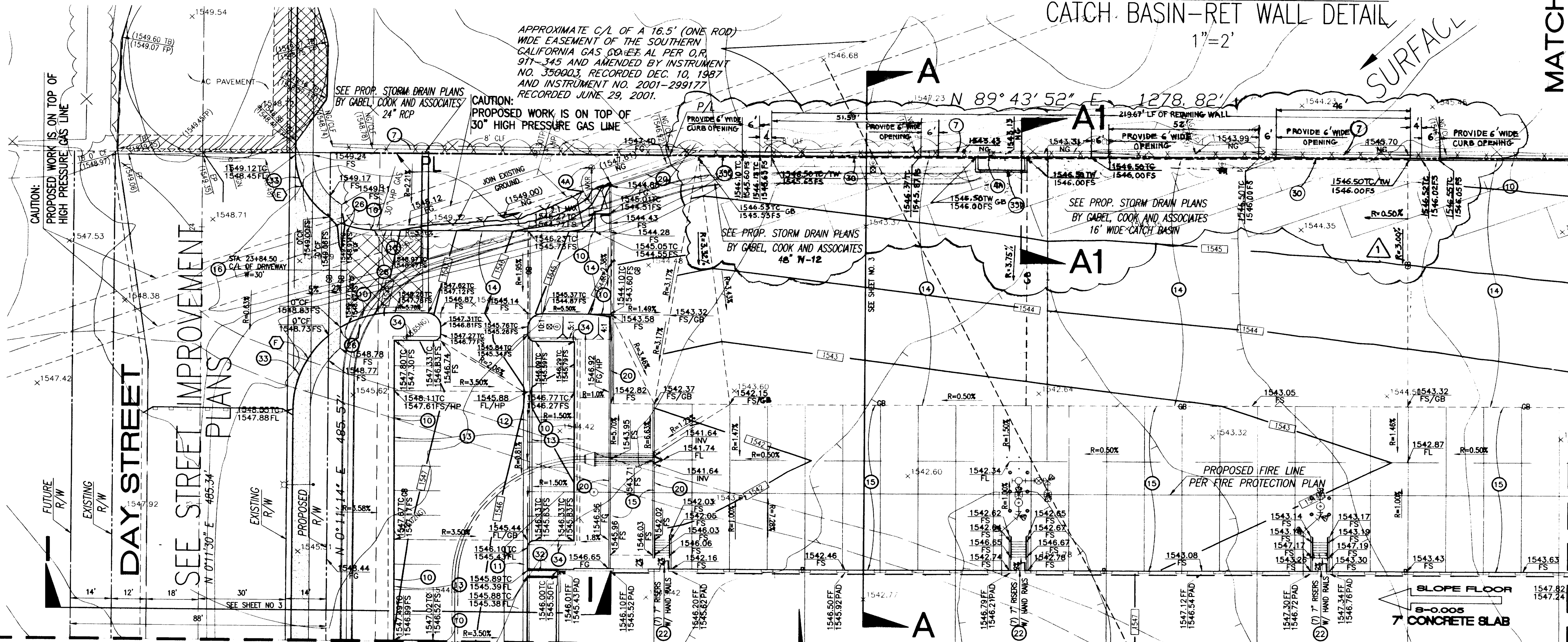
PROPOSED RETAINING WALL AND HEAD WALL PROFILE @ NORTH PL
LOOKING NORTH

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

CONSTRUCTION NOTES:

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- 3 SAWCUT AND REMOVE EXISTING SIDEWALK.
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- 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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- 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).
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- 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.
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- 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.
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- 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

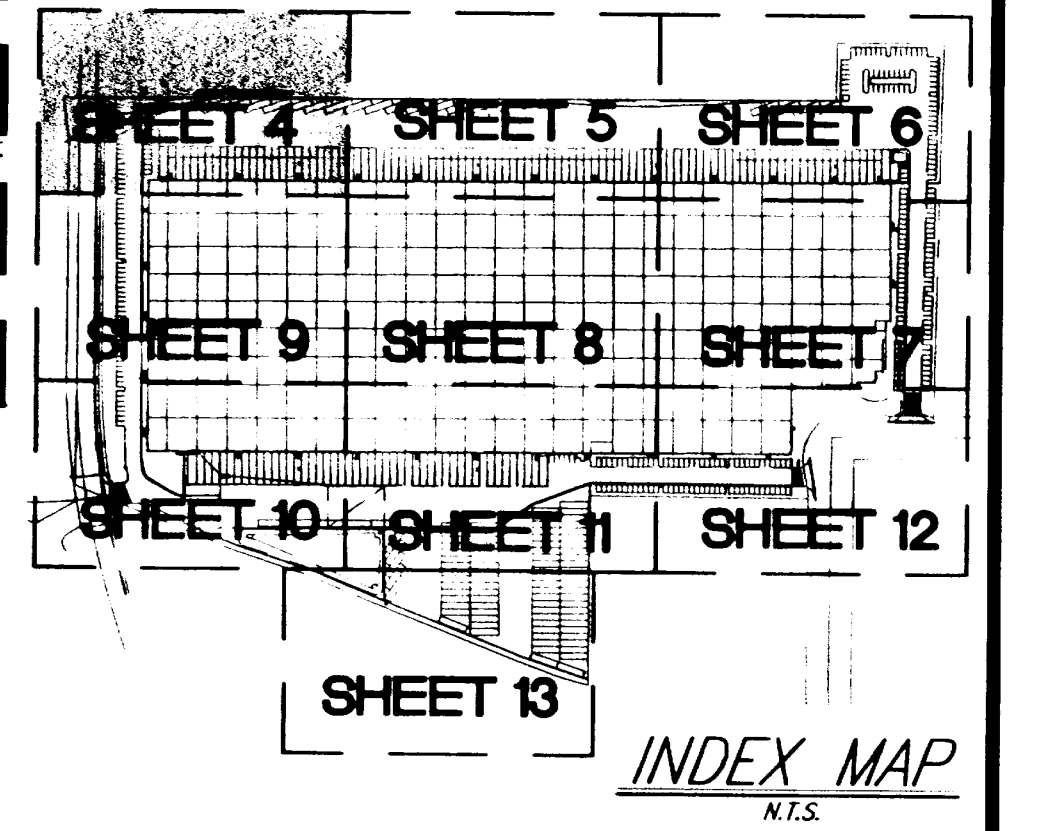


CURVE TABLE

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'

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

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 GABEL 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.

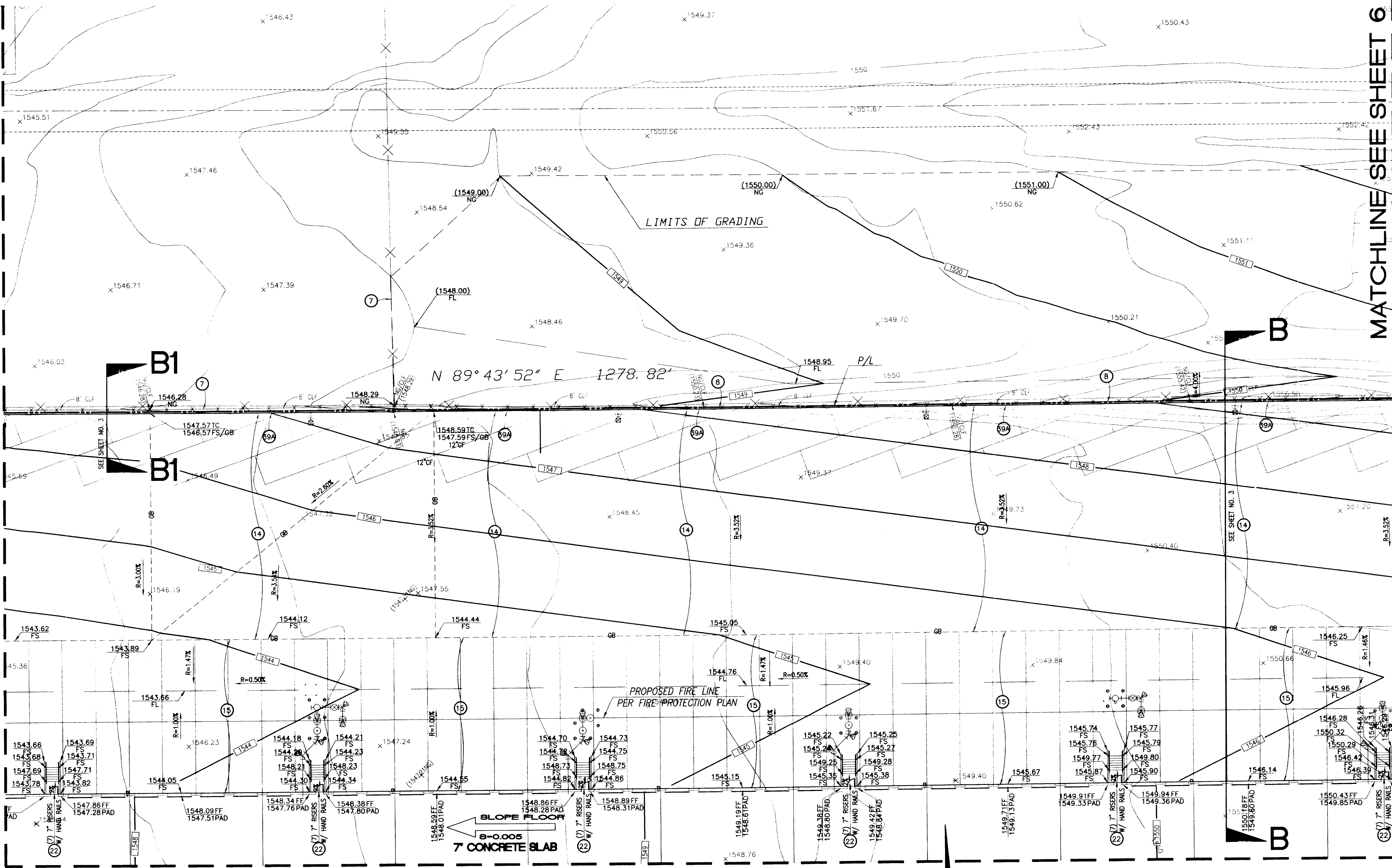


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<p>BENCH MARK</p> <p>RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRLS AVE., 58.55 FT. S/W OF A CHISELED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #113136, 34.39 FT. N/W OF A NAIL & TAG SET IN S/W SIDE TELEPHONE POLE #15160, A 1" IRON PIPE & 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. AGHAJIAN 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 & LAND SURVEYING 14349 FIRESTONE BOULEVARD LA HABRA, CALIFORNIA 90838 PH: (714) 521-4011 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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MATCHLINE SEE SHEET 4

MATCHLINE SEE SHEET 6



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- 39 CONSTRUCT 42" IRREGULAR CONCRETE U CHANNEL PER DETAIL ON SHEET NO. 2.
- 40 CONSTRUCT 12" CURB PER DETAIL ON SHEET NO. 2.
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- * PER SEPARATE PERMIT

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. & IRIS AVE., 58.55 FT. S/W OF A CHISELED "X" IN A 3" IRON COR. POST; NO.89 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #21136; 14.39 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

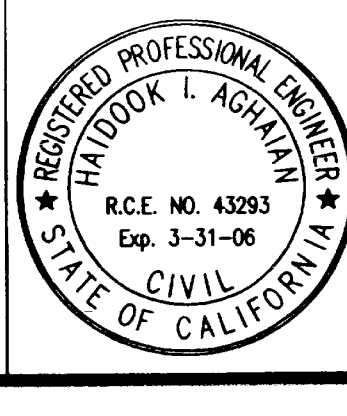
MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE
			REVISION			

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
MAH 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
Thienes Engineering, Inc.
ONE ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH:(714)521-4011 FAX:(714)521-4173

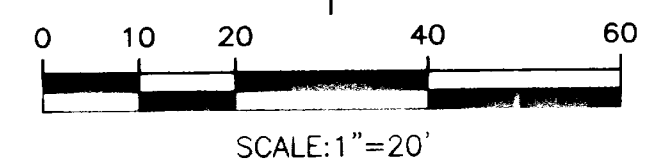
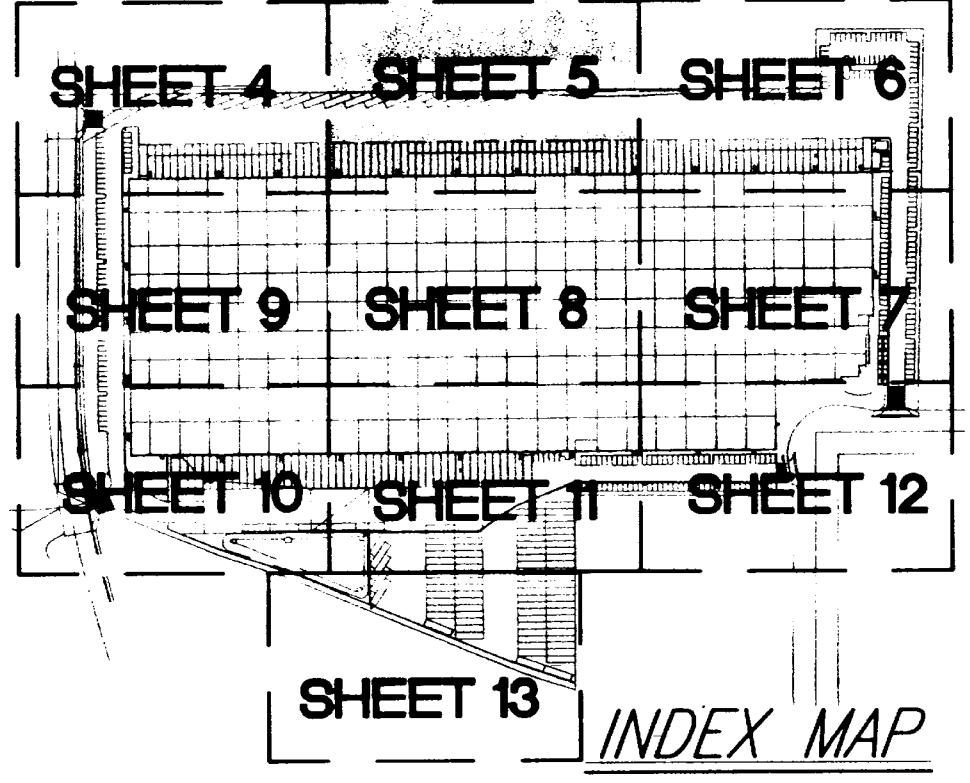


CITY OF MORENO VALLEY ACCT. NO.

PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER 22150 GOLDEN CREST DRIVE

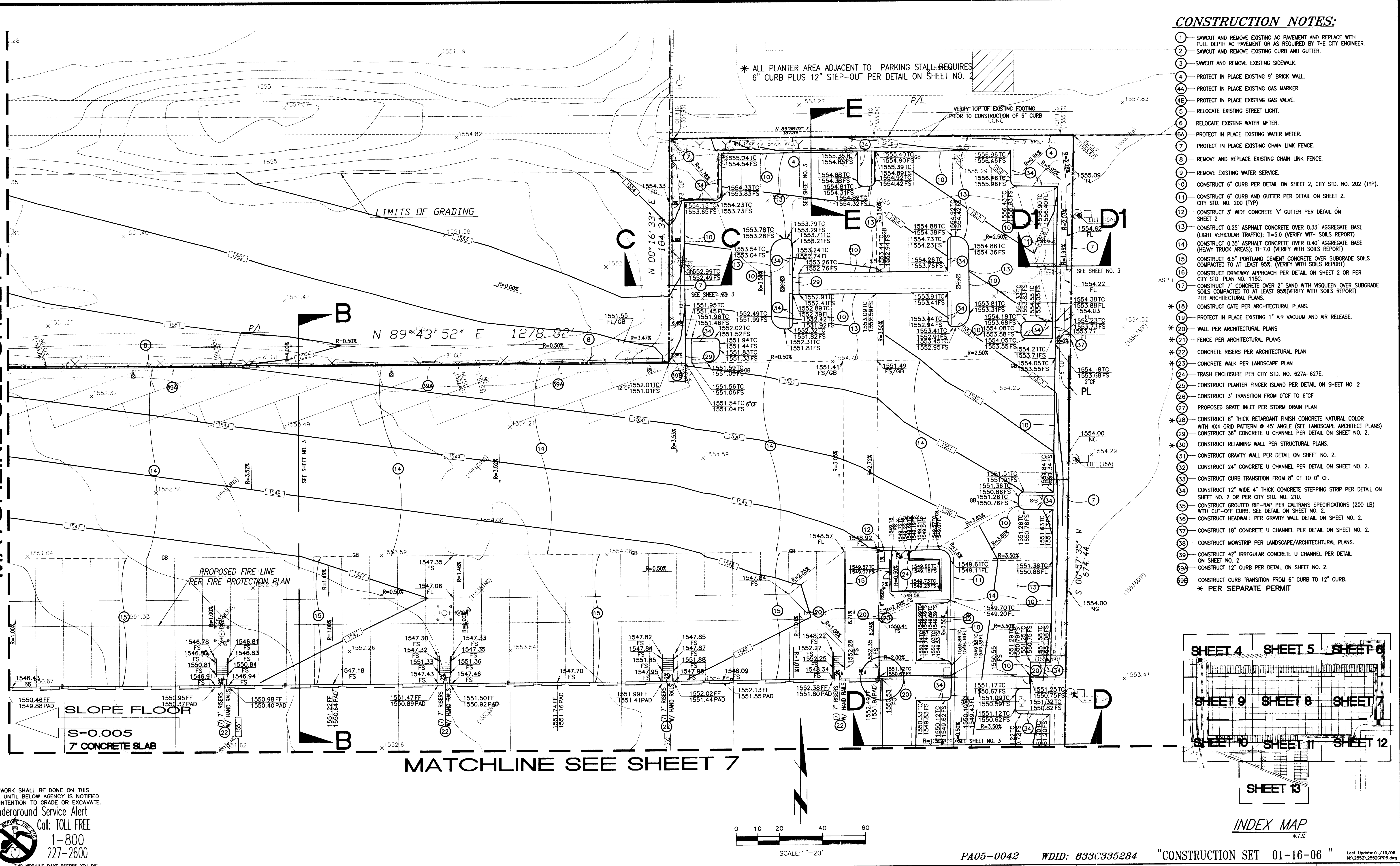
SHEET 5 NO. 18 CITY I. D. NO. 2564

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



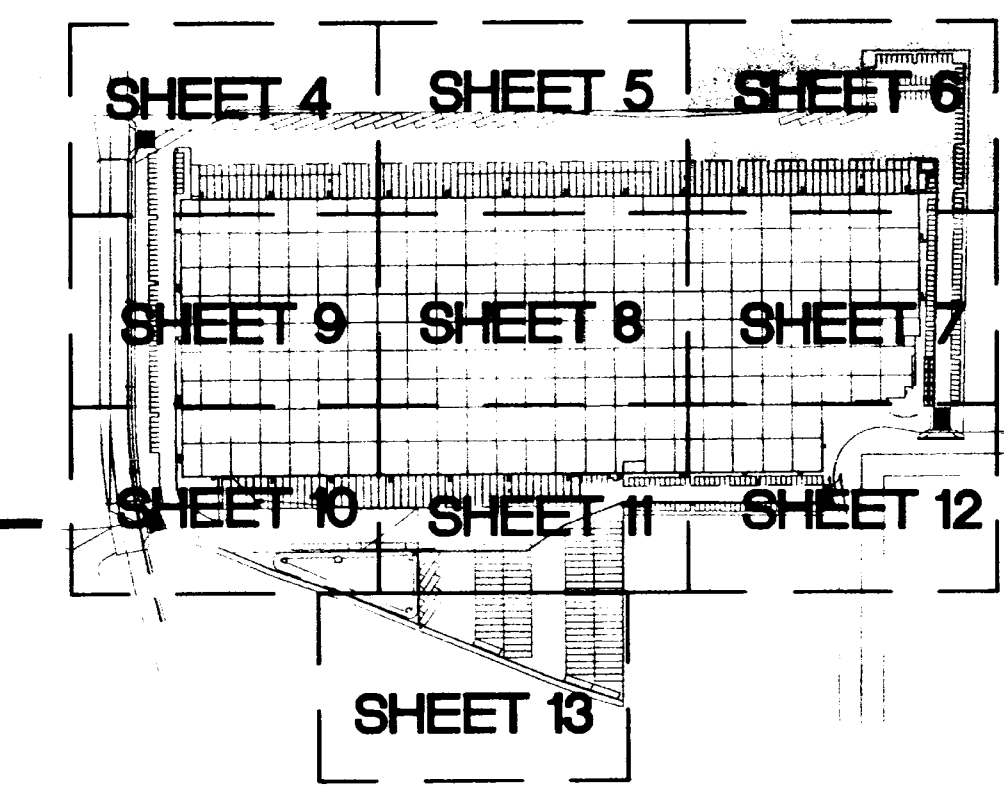
MATCHLINE SEE SHEET 5

MATCHLINE SEE SHEET 7



CONSTRUCTION NOTES:

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Underground Service Alert
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TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
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REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
LAND DEVELOPMENT	V/G	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 R.C.E. No. 43293 DATE 1/20/06
 APPROVED BY
Madu Jambor REC. BY: 2/2/06
 PREP. KUMAR DATE
 INTERIM CITY ENGINEER, CITY OF MORENO VALLEY
 R.C.E. NO. 52463 (EXP. 12/31/2006)
 No. 53613 EXA 6-30-07

DRAWN BY
Haidook I. Aghaian 1/20/06
 DESIGN BY
 CHECKED BY

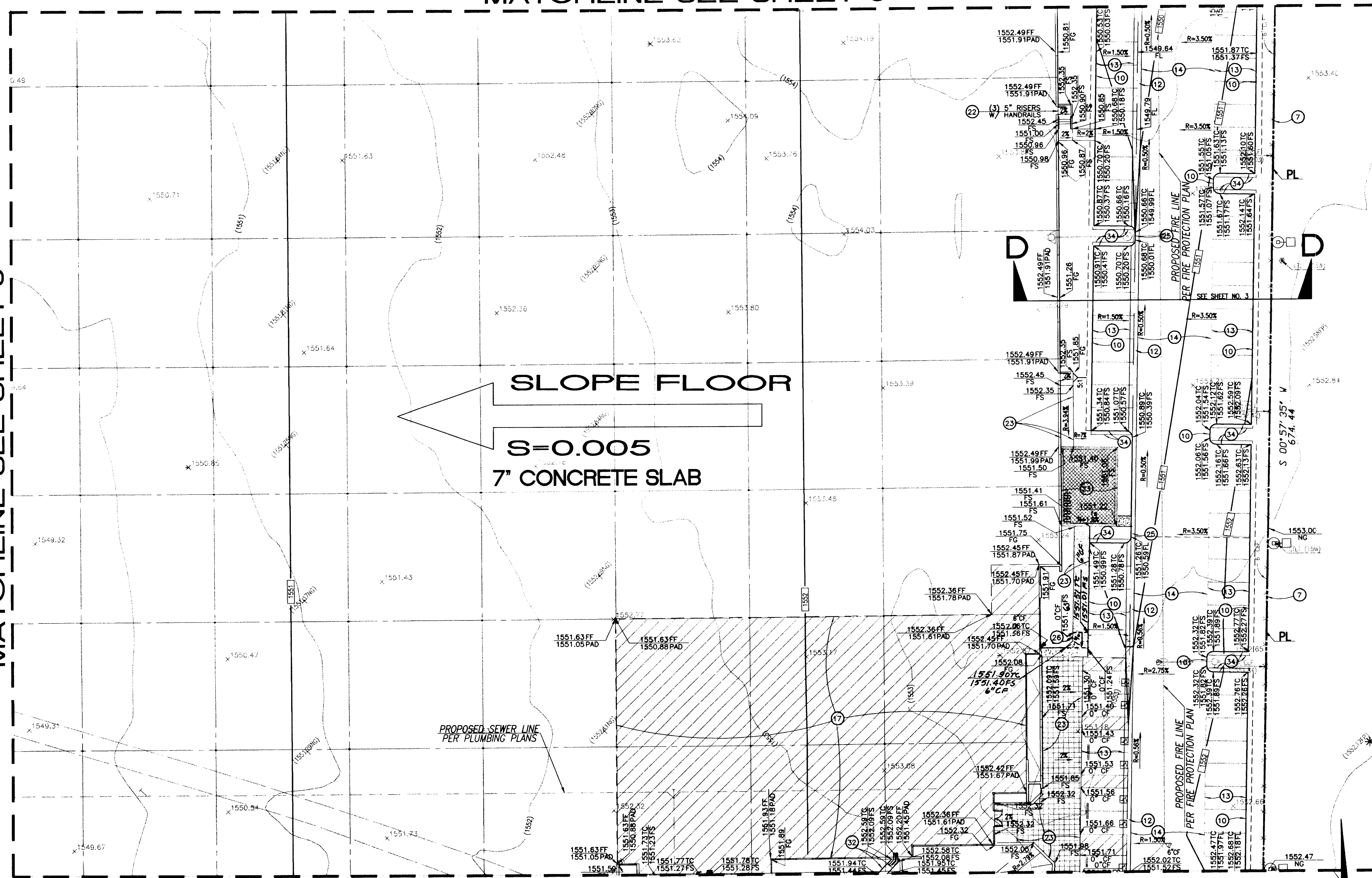


CITY OF MORENO VALLEY
 PRECISE GRADING PLAN
 FOR
 MARCH COMMERCE CENTER
 22150 GOLDEN CREST DRIVE

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

MATCHLINE SEE SHEET 6

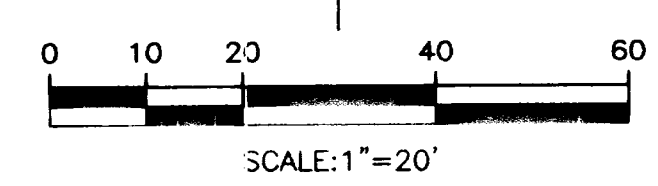
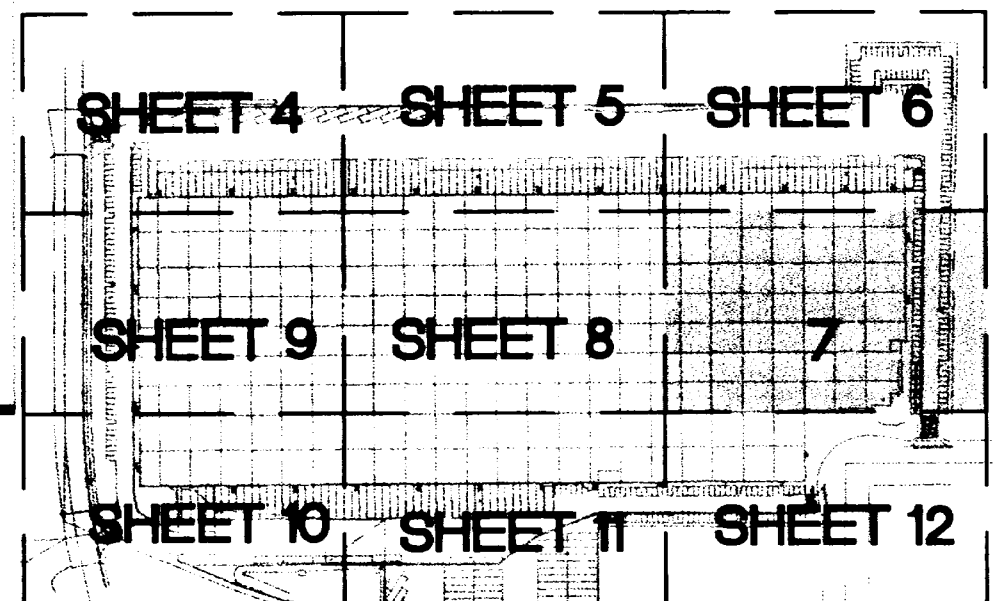
MATCHLINE SEE SHEET 8



CONSTRUCTION NOTES:

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



PA05-0042 WDD: 833C335284

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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

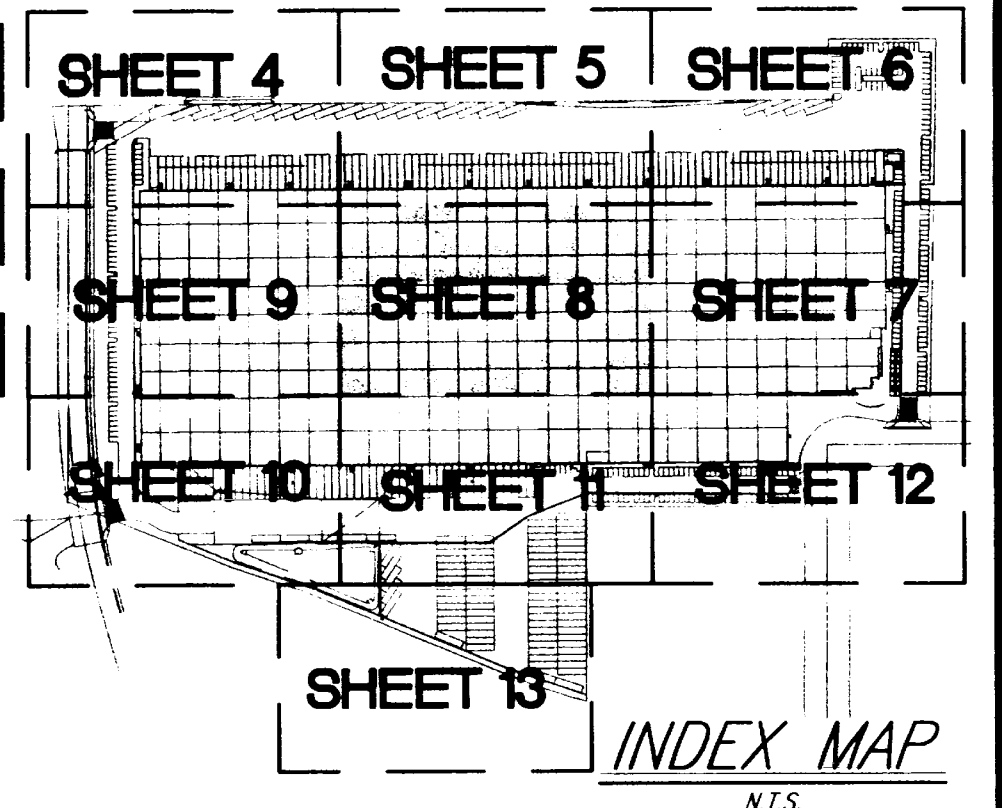
MATCHLINE SEE SHEET 7

MATCHLINE SEE SHEET 11

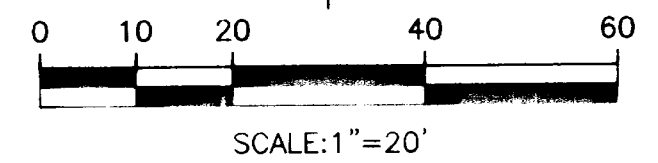
SLOPE FLOOR
 $S=0.005$
7" CONCRETE SLAB

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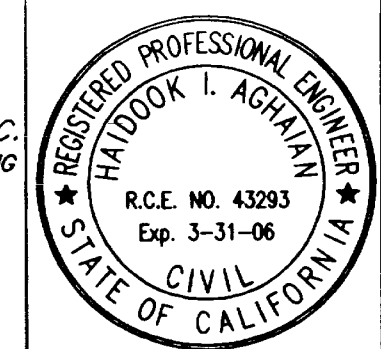


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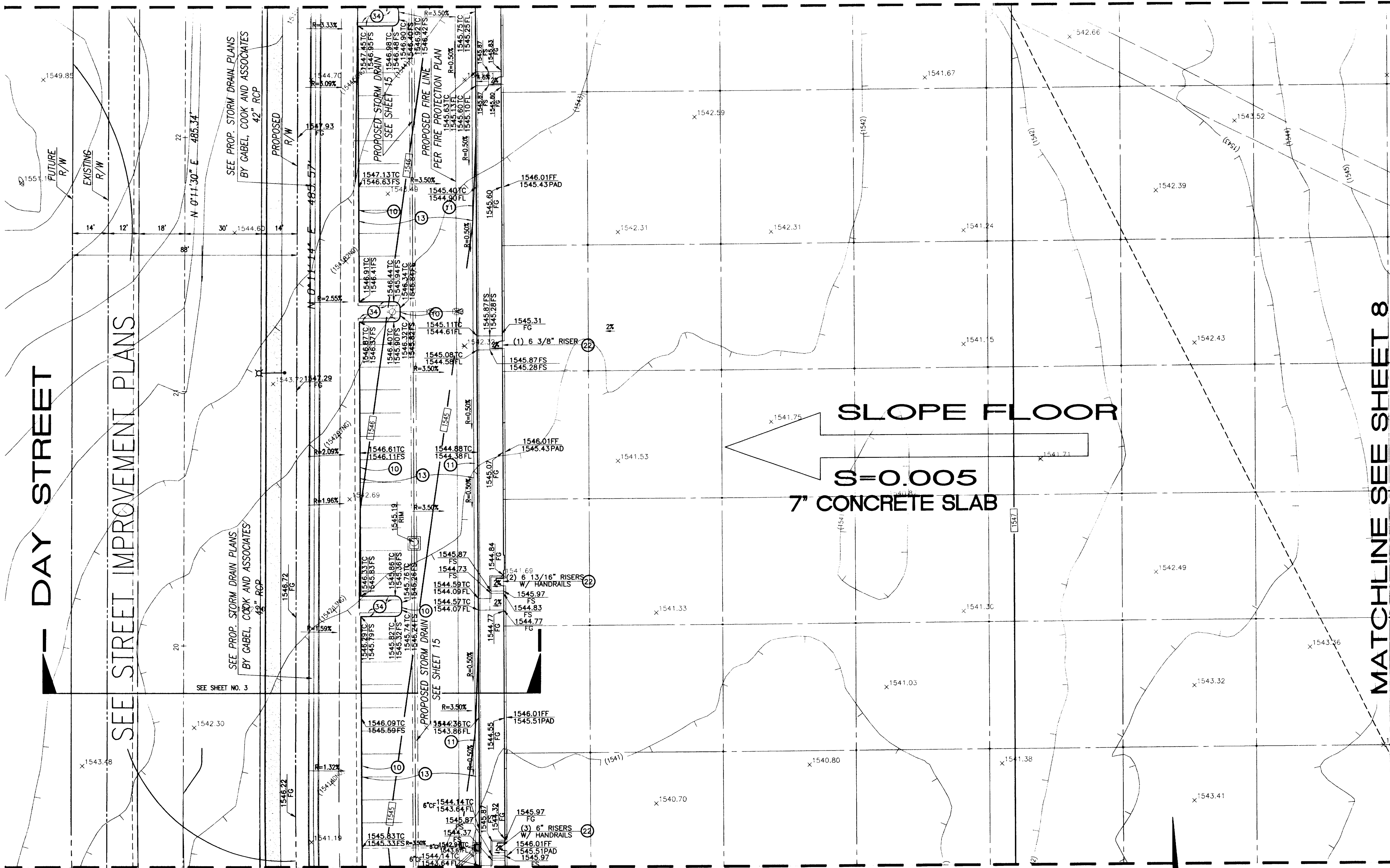
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BENCH MARK		BASIS OF BEARING		REVIEW BY CITY STAFF		PREPARED BY OR UNDER THE SUPERVISION OF		DRAWN BY		DESIGN BY		CITY OF MORENO VALLEY		ACCT. NO.	
RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERROS BLVD. & IRS AVE., 58.55 FT. S/W OF A CHISELED 5" IN A 3" IRON CORN 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 SIDE TELEPHONE POLE #15180, A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDWELL MONUMENT. ELEV. = 1503.526' (NGVD '29 / ESTABLISHED 1963)		THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MANIPOSA 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	INITIAL	DATE	HAIDOOK I. AGHAIAN	1/24/06	HAIDOOK I. AGHAIAN	1/24/06	HAIDOOK I. AGHAIAN	1/24/06	PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER 22150 GOLDEN CREST DRIVE		SHEET 8 NO. 18
LAND DEVELOPMENT		ENTERPRISE SERVICES		PLANNING		TRANSPORTATION		CAPITAL PROJECT		PARK AND RECREATION		REVISION		CITY I. D. NO. 2564	
MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR	DATE	PREM KUMAR		INTERIM CITY ENGINEER, CITY OF MORENO VALLEY		R.C.E. NO. 52463 (EXP. 12/31/2006)		N.C. 53613 EXP. 6-30-07		



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 14349 FIRESTONE BOULEVARD
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MATCHLINE SEE SHEET 4



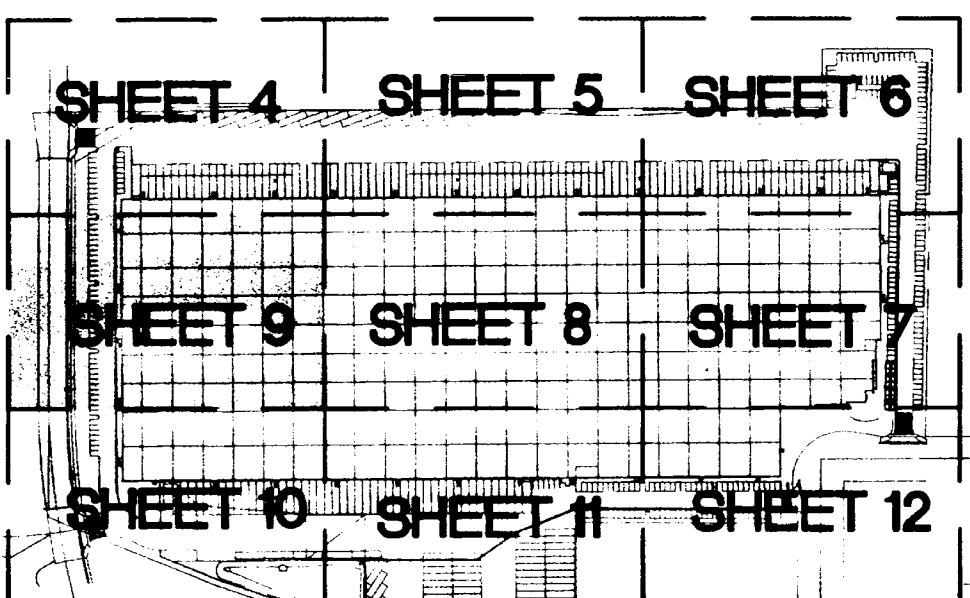
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MATCHLINE SEE SHEET 8

DAY STREET

SEE STREET IMPROVEMENT PLANS

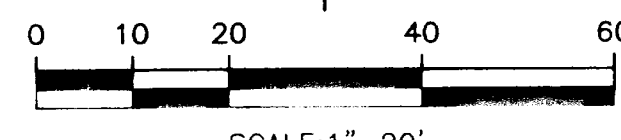
MATCHLINE SEE SHEET 10



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SCALE: 1"=20'
PA05-0042

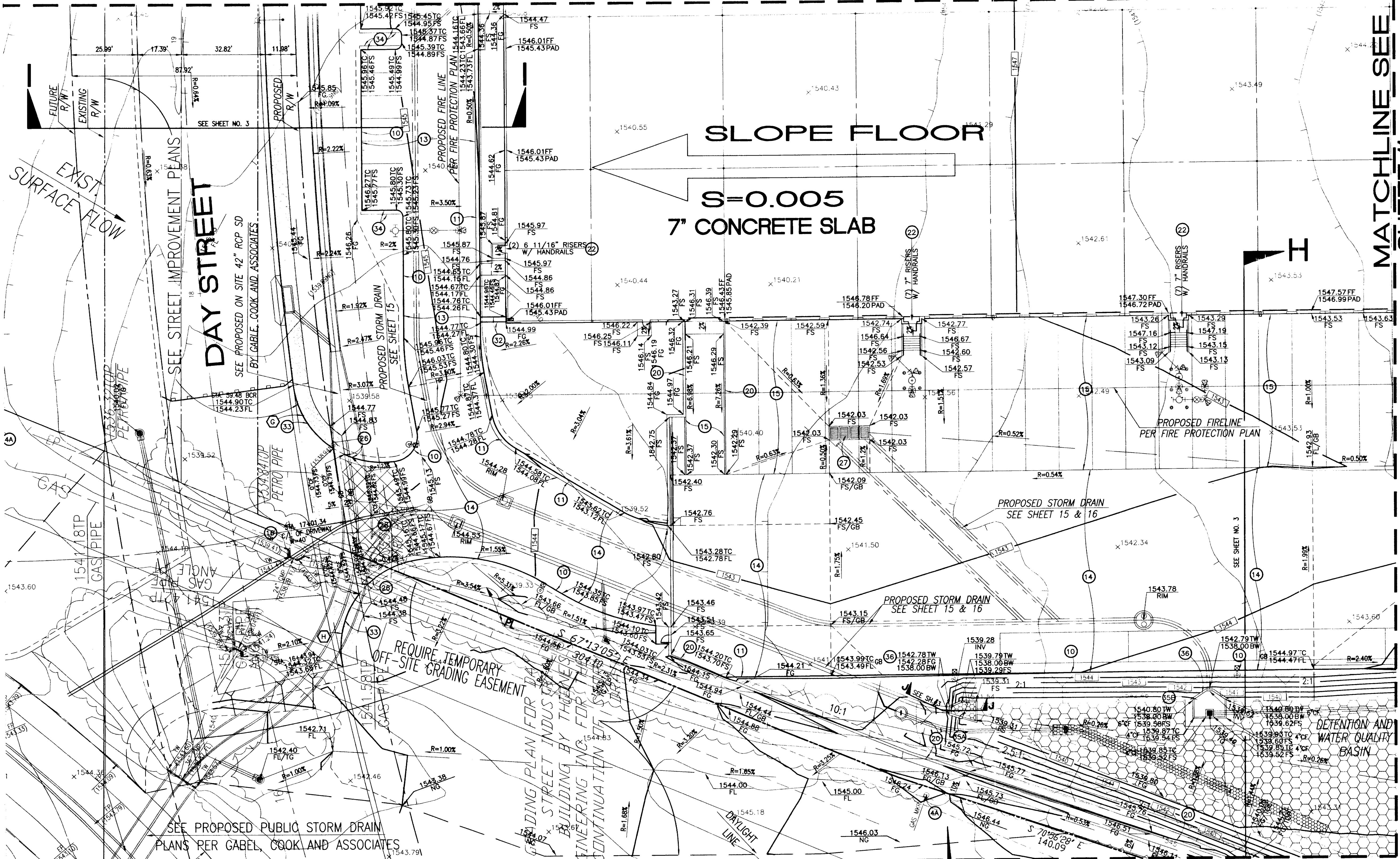
WDID: 833C335284 "CONSTRUCTION SET 01-16-06" Last Update: 01/19/06 N:\2552\2552009.dwg

<p>BENCH MARK</p> <p>RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IROS 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. SIDE TELEPHONE POLE #151802, 41" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANDWELL MONUMENT. ELEV. = 1503.526' (N.C.V.D. 29 / ESTABLISHED 1963)</p>		<p>BASIS OF BEARING</p> <p>THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARRIPOSA 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>UG6</td> <td>1/20/06</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	UG6	1/20/06	ENTERPRISE SERVICES			PLANNING			TRANSPORTATION			CAPITAL PROJECT			PARK AND RECREATION			<p>PREPARED BY OR UNDER THE SUPERVISION OF</p> <p><i>Handbook I. Aguiar</i> 1/20/06</p> <p>DESIGN BY</p> <p>HAIDOOK I. AGUIAR R.C.E. No. 43293 DATE</p> <p>APPROVED</p> <p><i>Manoj K. Kulkarni</i> 1/20/06</p> <p>REC. BY</p> <p>PREM KUMAR DATE</p> <p>INTERIM CITY ENGINEER, CITY OF MORENO VALLEY R.C.E. NO. 32463 (EXP. 12/31/2006)</p> <p>NO. 53613 EXR 6-30-07</p>		<p>DRAWN BY</p> <p>DESIGN BY</p> <p>CHECKED BY</p> <p>Thienes Engineering, Inc. CIVIL ENGINEERING • LAND SURVEYING 14349 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH:(714)352-4811 FAX:(714)352-4173</p>		<p>CITY OF MORENO VALLEY</p> <p>PRECISE GRADING PLAN</p> <p>ACCT. NO.</p> <p>SHEET 9 NO. 18</p> <p>CITY I. D. NO. 2564</p>	
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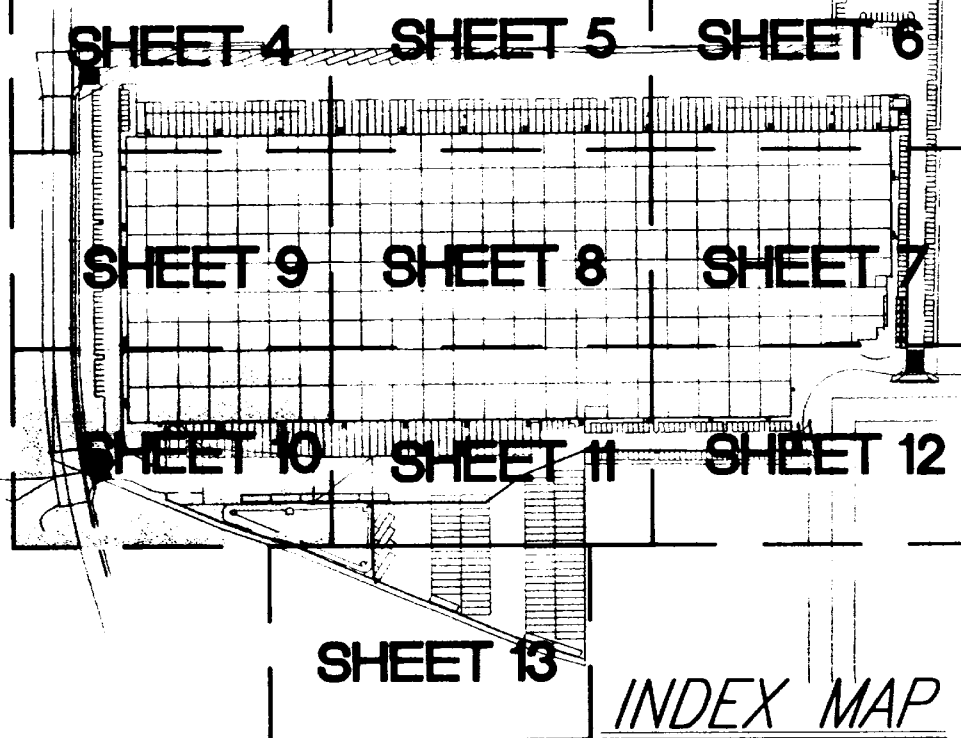
MATCHLINE SEE SHEET 9

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.
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- 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).
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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); 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. 1182
- 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 REDUCANT FINISH CONCRETE NATURAL COLOR WITH 4X4 GRID PATTERN @ 45° ANGLE (SEE LANDSCAPE ARCHITECT PLANS)
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- 31 CONSTRUCT GRAVITY WALL PER DETAIL ON SHEET NO. 2.
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- 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.
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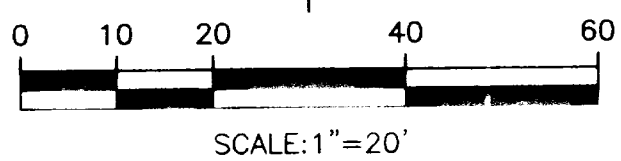
MATCHLINE SEE SHEET 13



CURVE TABLE

NUMBER	DELTA	RADIUS	LENGTH	TANGENT
(G)	48°22'39"	35.00'	29.55'	15.72'
(H)	49°28'56"	35.00'	30.23'	16.13'

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



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. 74-32" 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 WALL & 100 IN THE WEST SIDE OF POWER POLE #113136, 34.59 FT. W/W OF A WALL & T&G SET IN S/W SIDE TELEPHONE POLE #15160, 4.1" IRON PIPE & T&G MARKED COUNTY SURVEYOR IN A HANWELL MONUMENT, ELEV. = 1503.526' (NGVD 29 / ESTABLISHED 1963)

BASIS OF BEARING
THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL 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.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
LAND DEVELOPMENT	VGC	3/20/06
ENTERPRISE SERVICES	PK	11/9/06
PLANNING		
TRANSPORTATION		
CAPITAL PROJECT		
PARK AND RECREATION		

REVISION

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE

PREPARED BY OR UNDER THE SUPERVISION OF
Haideek Reyhan
 HAIDEEK I. AGHAJAN R.C.E. NO. 43293 DATE: 2/16/07
 APPROVED BY: **Haideek Reyhan** 2/16/07
 PREM. KUMAR DATE: 2/16/07
 INTERIM CITY ENGINEER, CITY OF MORENO VALLEY
 R.C.E. NO. 52463 (EXP. 12/31/2008)
 No. 5363 Exp. 6-30-07

DESIGN BY: **Thienes Engineering, Inc.**
 CIVIL ENGINEERING - LAND SURVEYING
 14349 FIRESTONE BOULEVARD
 LA MIRADA, CALIFORNIA 90638
 PH: (714) 821-4811 FAX: (714) 821-4173

CHECKED BY: _____

CITY OF MORENO VALLEY ACCT. NO. _____

PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER 22150 GOLDEN CREST DRIVE

SHEET 10, NO. 18 CITY I. D. NO. 2564

PA05-0042 WDD: 833C335284 "CONSTRUCTION SET 01-16-06" Last Update: 01/19/06 N:\2552\2552010.dwg

MATCHLINE SEE SHEET 8

CONSTRUCTION NOTES:

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SLOPE FLOOR

S=0.005
7" CONCRETE SLAB

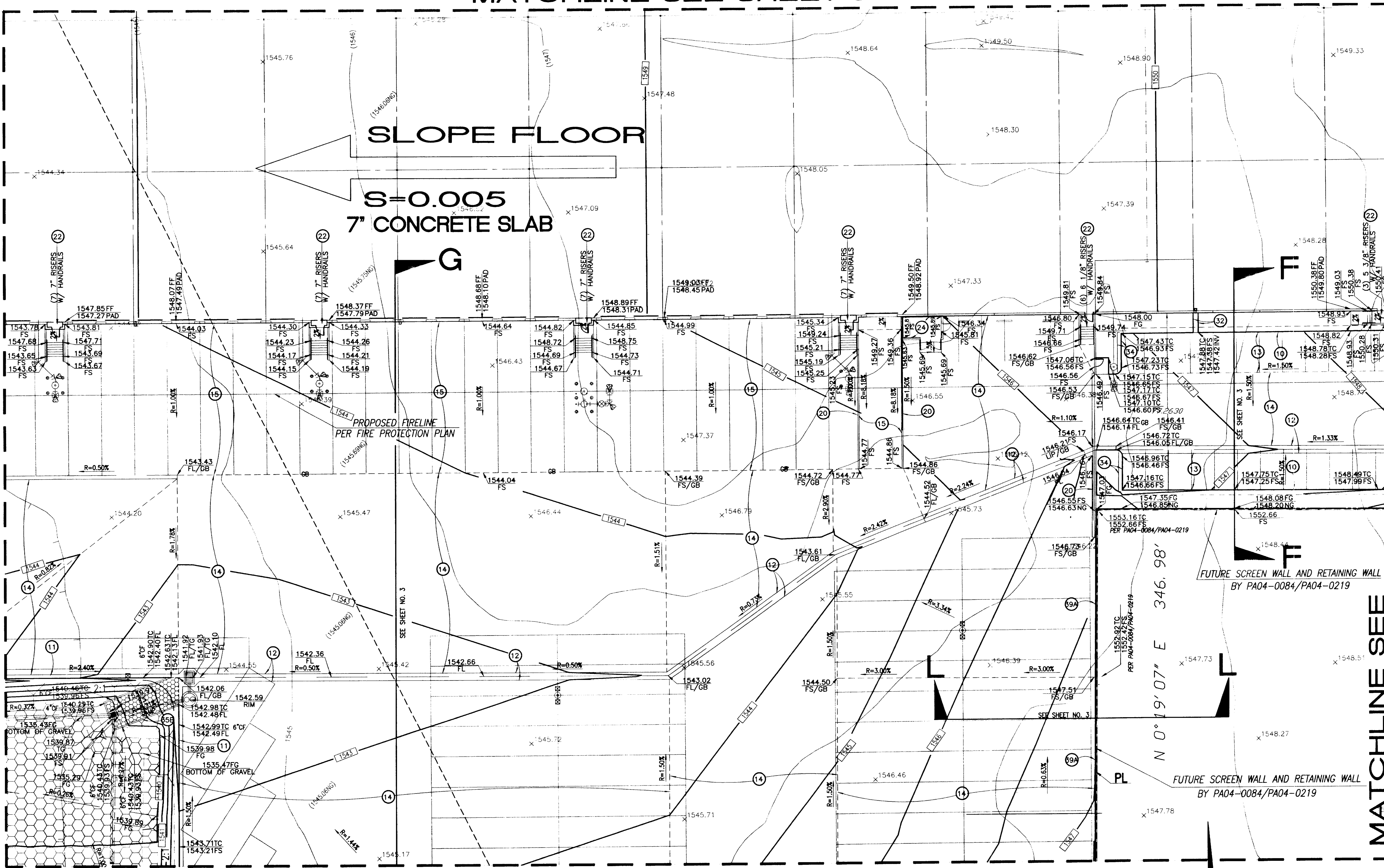
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T

MATCHLINE SEE SHEET 10

MATCHLINE SEE SHEET 12

MATCHLINE SEE SHEET 13



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

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

<p>BENCH MARK</p> <p>RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRLS AVE., 58.55 FT. S/W OF A CHASELED "X" IN A 3" IRON COR. POST, 40.89 FT. N/E OF WALL & TAG IN THE WEST SIDE OF POWER POLE #13138, 34.39 FT. N/W OF A WALL & TAG SET IN S/W SIDE TELEPHONE POLE #15180; A 1" IRON PIPE & 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 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.</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>YBG</td> <td>1/30/06</td> </tr> <tr> <td>ENTERPRISE SERVICES</td> <td>PH</td> <td>1/31/06</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	YBG	1/30/06	ENTERPRISE SERVICES	PH	1/31/06	PLANNING			TRANSPORTATION			CAPITAL PROJECT			PARK AND RECREATION			<p>PREPARED BY OR UNDER THE SUPERVISION OF</p> <p><i>Haideck L. Aghaian</i> 1/29/06 HAIDOCK L. AGHAIAN R.C.E. No. 43293 DATE</p> <p>DESIGN BY</p> <p><i>Thienes Engineering, Inc.</i> 14349 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH: (714) 821-4811 FAX: (714) 821-4173</p>		<p>CITY OF MORENO VALLEY ACCT. NO.</p> <p>PRECISE GRADING PLAN FOR MARCH COMMERCE CENTER 22150 GOLDEN CREST DRIVE</p>		<p>SHEET 11 OF 18 CITY I. D. NO. 2564</p>	
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MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE																										

MATCHLINE SEE SHEET 7

SLOPE FLOOR

S=0.005
7" CONCRETE SLAB

GOLDENCREST

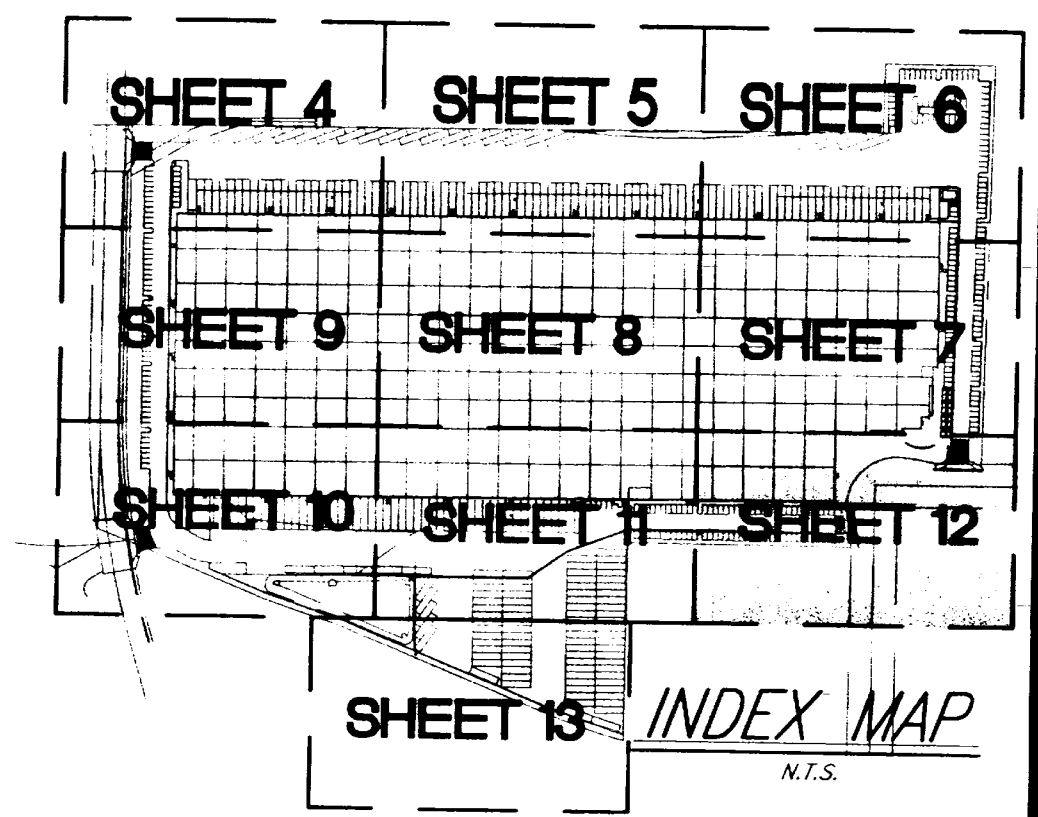
COMMERCE CENTER DR.

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.

CONSTRUCTION NOTES:

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- * PER SEPARATE PERMIT



MATCHLINE SEE SHEET 11

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BASIS OF BEARING	REVIEW BY CITY STAFF
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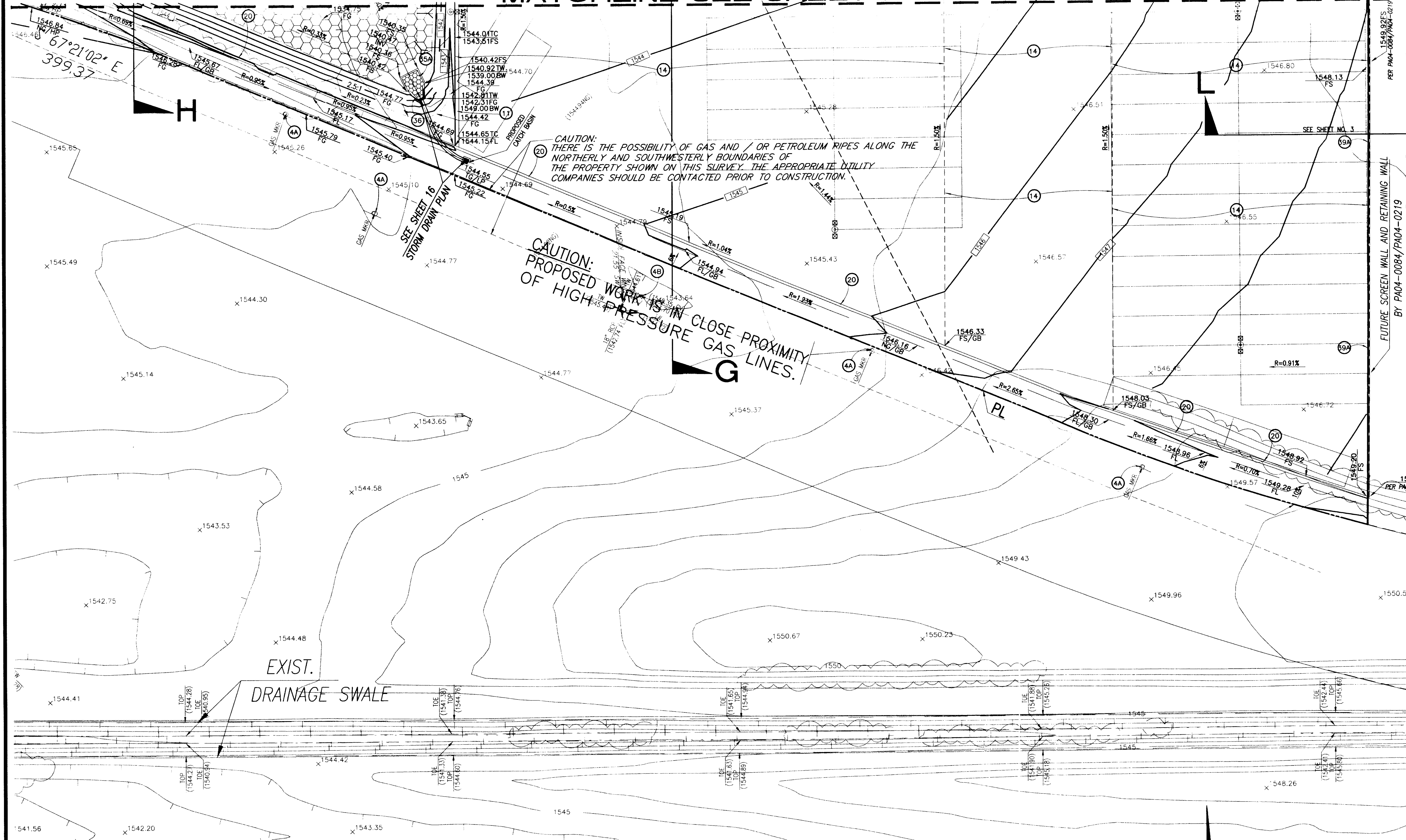
REVISION	DATE	INITIAL	DESCRIPTION
1	1/24/06	VKS	PREPARED BY DR UNDER THE SUPERVISION OF

PREPARED BY DR UNDER THE SUPERVISION OF
Heideck Ogles
HAIDOCK I. AGHAIAN R.C.E. No. 43293 DATE: 1/24/06
DESIGN BY: *Heideck Ogles*
DRAWN BY: *Heideck Ogles*
CHECKED BY: *Heideck Ogles*
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"
Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH: (714) 821-4811 FAX: (714) 821-4173
REGISTERED PROFESSIONAL ENGINEER
HAIDOCK I. AGHAIAN
R.C.E. No. 43293
Exp. 3-31-06
CIVIL ENGINEER
STATE OF CALIFORNIA

CITY OF MORENO VALLEY
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

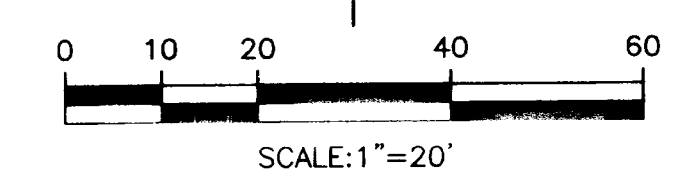
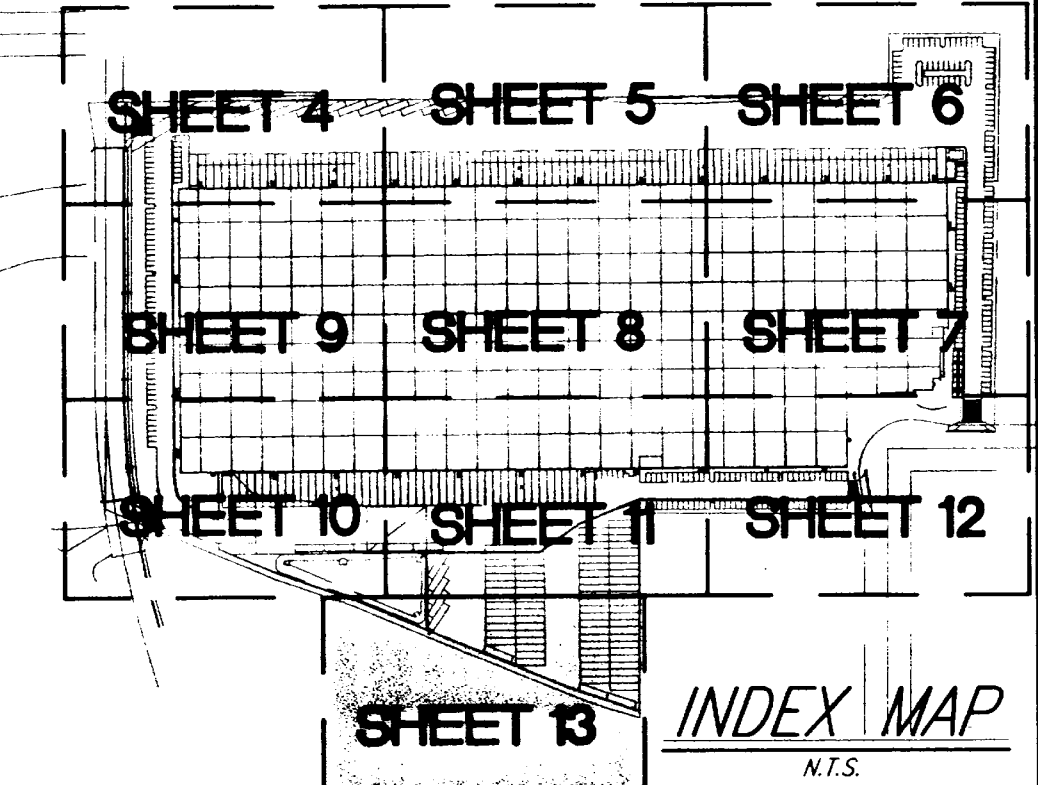


- CONSTRUCTION NOTES:**
- 1 SAWCUT AND REMOVE EXISTING AC PAVEMENT AND REPLACE WITH FULL DEPTH AC PAVEMENT OR AS REQUIRED BY THE CITY ENGINEER.
 - 2 SAWCUT AND REMOVE EXISTING CURB AND GUTTER.
 - 3 SAWCUT AND REMOVE EXISTING SIDEWALK.
 - 4 PROTECT IN PLACE EXISTING 9" BRICK WALL.
 - 4A PROTECT IN PLACE 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)
 - 12 CONSTRUCT 3" WIDE CONCRETE 'Y' GUTTER PER DETAIL ON SHEET 2
 - 13 CONSTRUCT 0.25" ASPHALT CONCRETE OVER 0.35" 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 GROUTED 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" CURB PER DETAIL ON SHEET NO. 2.
 - 39B CONSTRUCT CURB TRANSITION FROM 6" CURB TO 12" CURB.
- * PER SEPARATE PERMIT

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

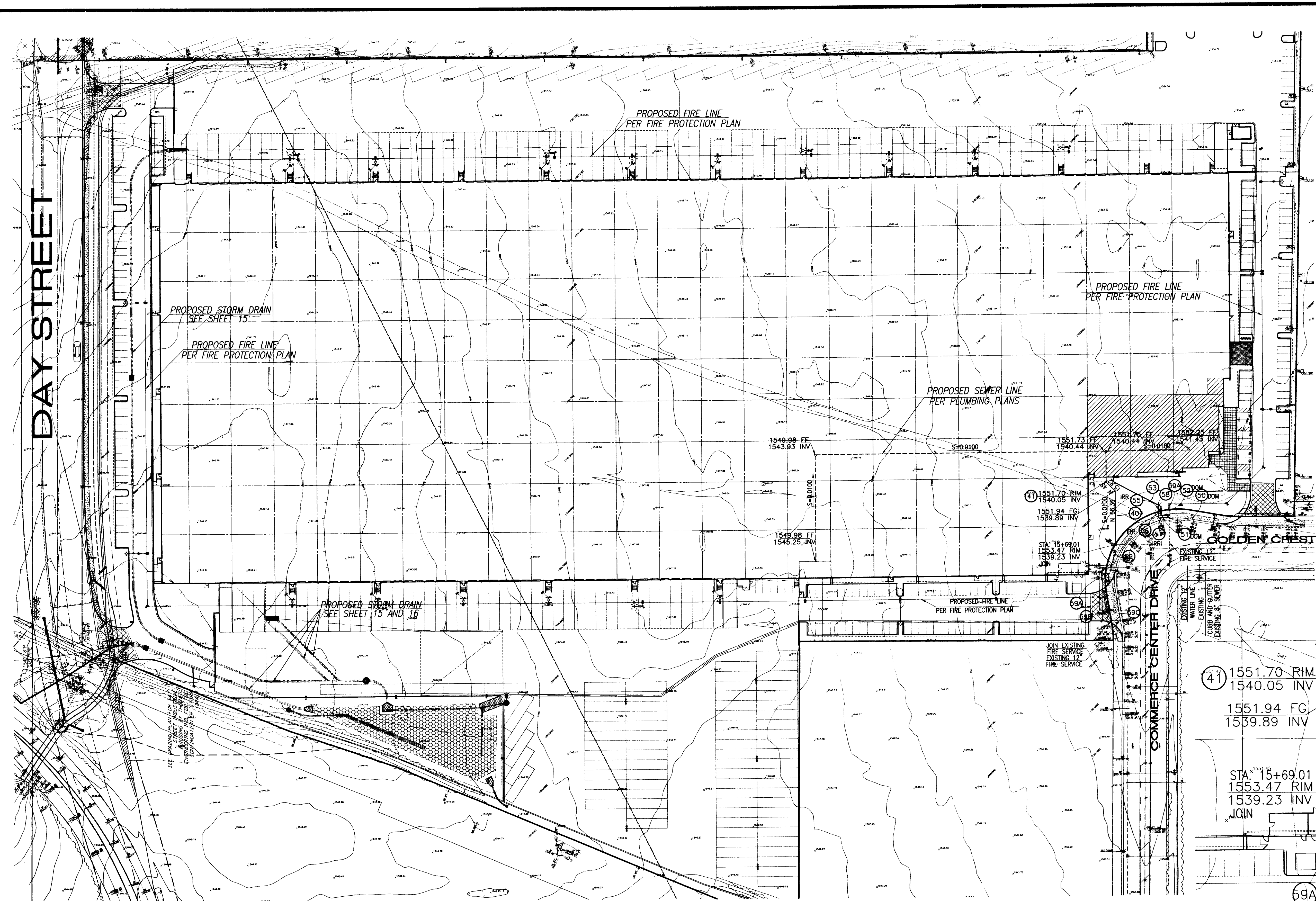
Underground Service Alert
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1-800-227-2600

TWO WORKING DAYS BEFORE YOU DIG



PA05-0042 WDDID: 833C335284 "CONSTRUCTION SET 01-16-06" Last Update: 01/18/06 N:\2552\25520113.dwg

<p>BENCH MARK</p> <p>RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IRLS AVE., 58.55 FT. S/WM OF A CHISELED "X" IN A 3" IRON COR. POST, 40.80 FT. N/E OF NAIL & TAG IN THE WEST SIDE OF POWER POLE #213136, 34.39 FT. N/WM 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' (MVD '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. 87 / 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>1/20/06</td> </tr> <tr> <td>ENTERPRISE SERVICES</td> <td>PH</td> <td>1/31/06</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	1/20/06	ENTERPRISE SERVICES	PH	1/31/06	PLANNING			TRANSPORTATION			CAPITAL PROJECT			PARK AND RECREATION			<p>PREPARED BY OR UNDER THE SUPERVISION OF</p> <p><i>Haideak Aghaian</i> 1/20/06</p> <p>HAIDOOK I. AGHAIAN R.C.E. No. 43293 DATE</p> <p>DESIGN BY</p> <p><i>Walter Jambato</i> 1/20/06</p> <p>WALTER JAMBATO R.C.E. No. 43293 DATE</p> <p>REC. BY</p> <p>PREM KUMAR DATE</p> <p>INTERIM CITY ENGINEER, CITY OF MORENO VALLEY R.C.E. NO. 52463 (EXP. 12/31/2006) No. 57613 Exp. 6-30-07</p>		<p>DRAWN BY</p> <p>DESIGN BY</p> <p>CHECKED BY</p> <p>Thienes Engineering, Inc. CIVIL ENGINEERING & LAND SURVEYING 14349 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH(714)321-4811 FAX(714)321-4173</p> <p>REGISTERED PROFESSIONAL ENGINEER HAIDOOK I. AGHAIAN R.C.E. NO. 43293 Exp. 3-31-06 STATE OF CALIFORNIA CIVIL ENGINEER</p>		<p>CITY OF MORENO VALLEY ACCT. NO.</p> <p>PRECISE GRADING PLAN</p> <p>SHEET 13 NO. 18</p> <p>CITY I. D. NO. 2564</p>	
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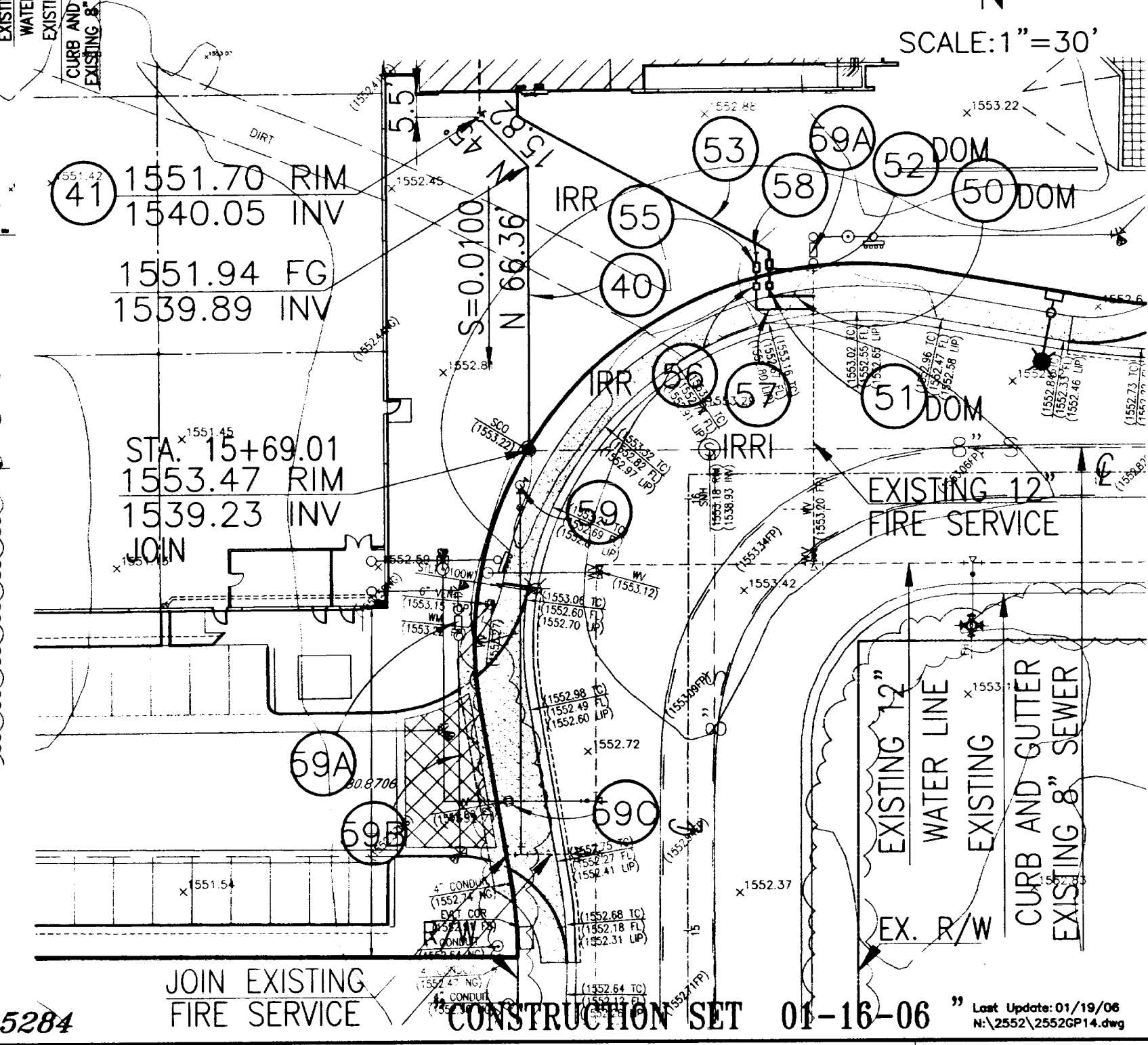
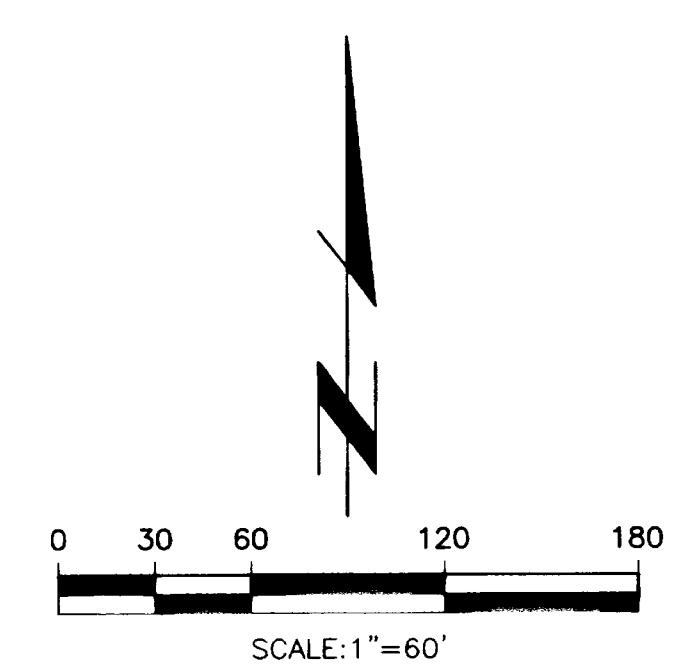


SEWER CONSTRUCTION NOTES:

- 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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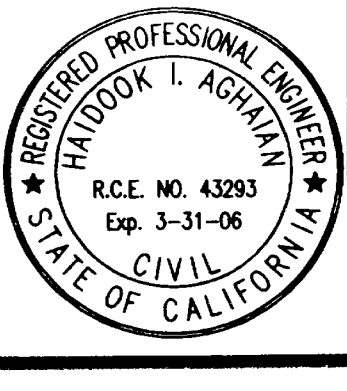
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BASIS OF BEARING
 THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF CARDINAL AVENUE (FORMERLY MARIPOSA AVENUE) BEING N 89°29'57" W AS PER RECORD OF SURVEY, R.S.B. 97 / 29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE 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
Haidook I. Aghaian
 HAIIDOK I. AGHAIAN R.C.E. No. 43293 DATE 1/22/06
 APPROVED
Mark J. Smith
 MARK J. SMITH 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

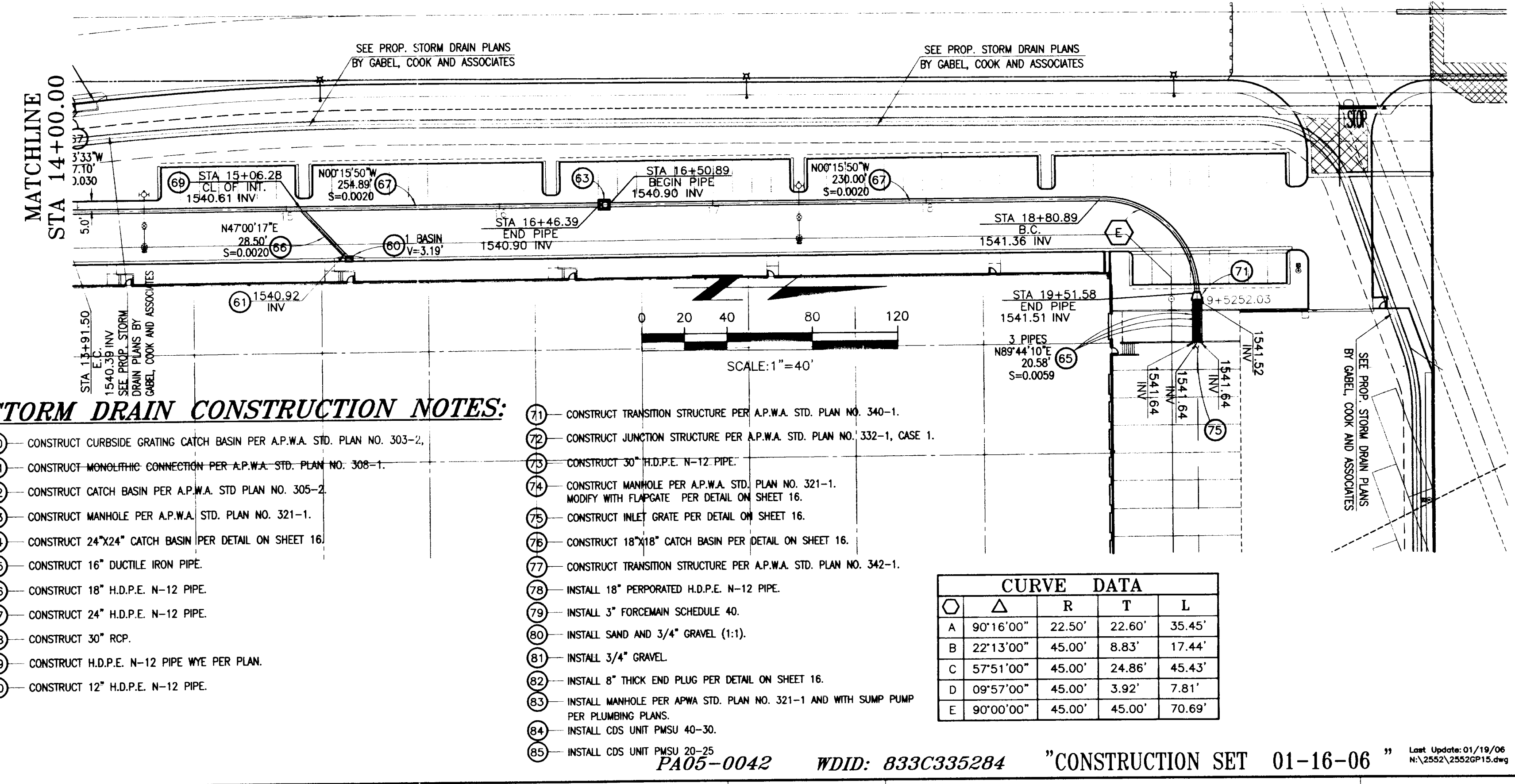
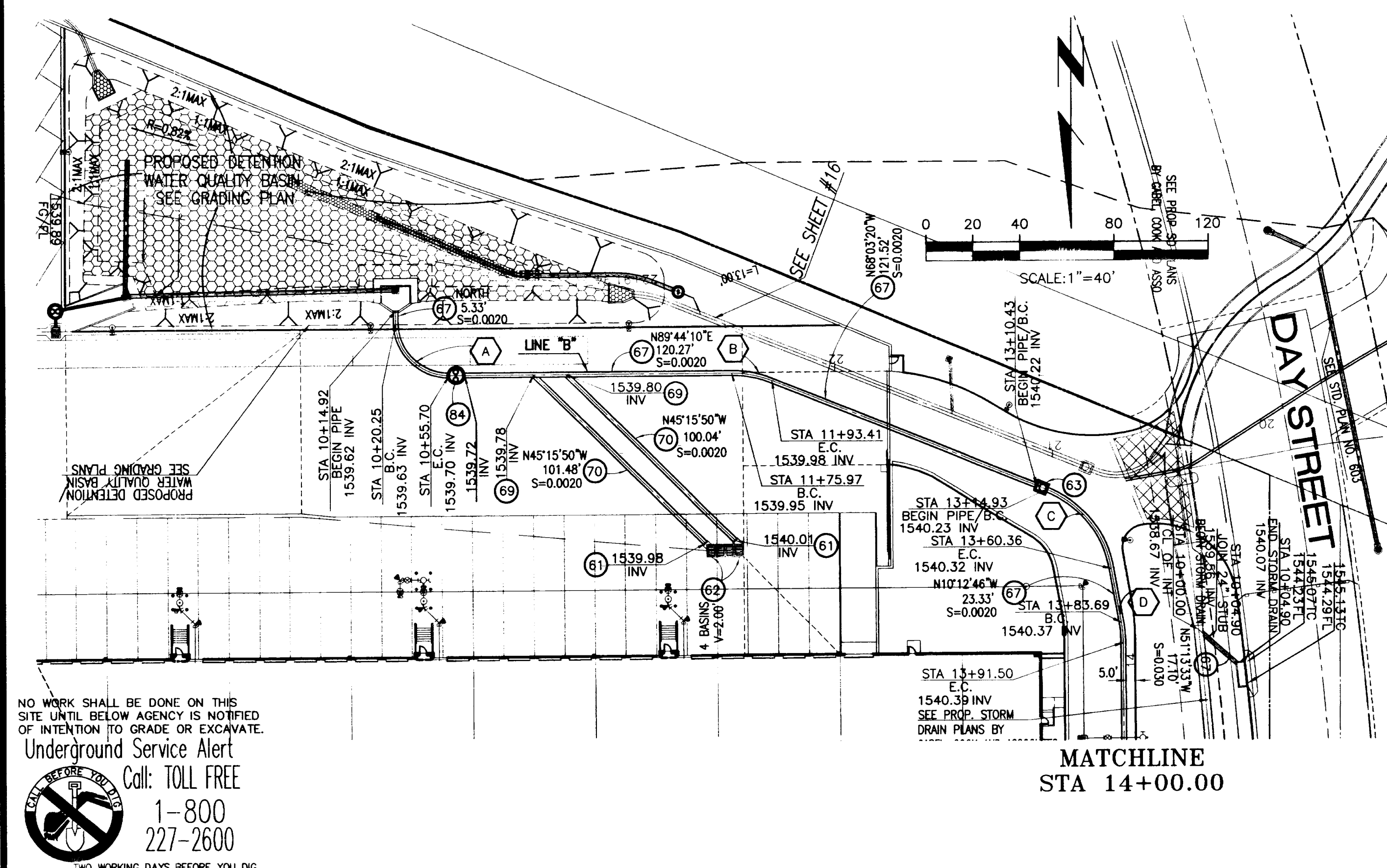
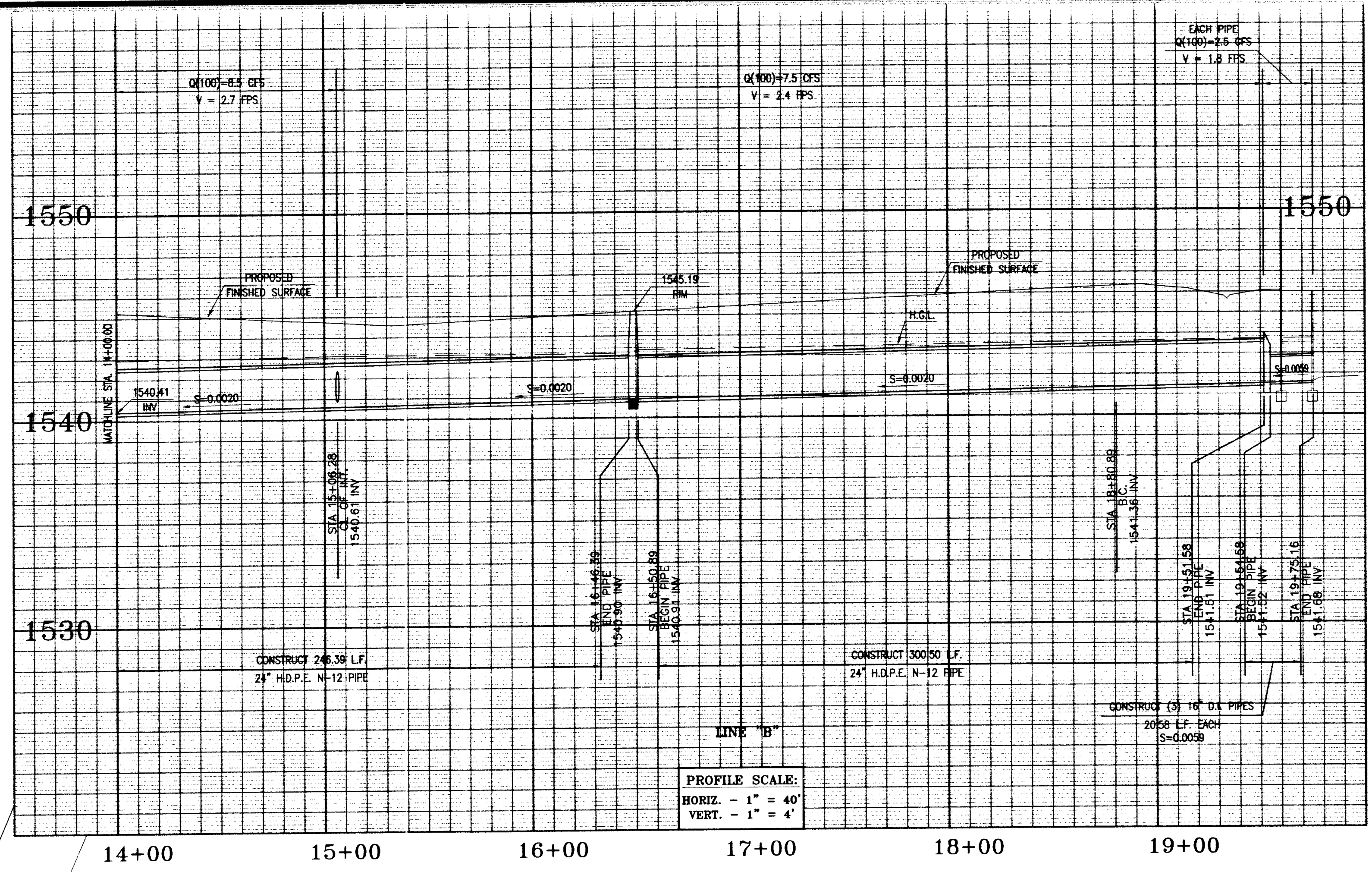
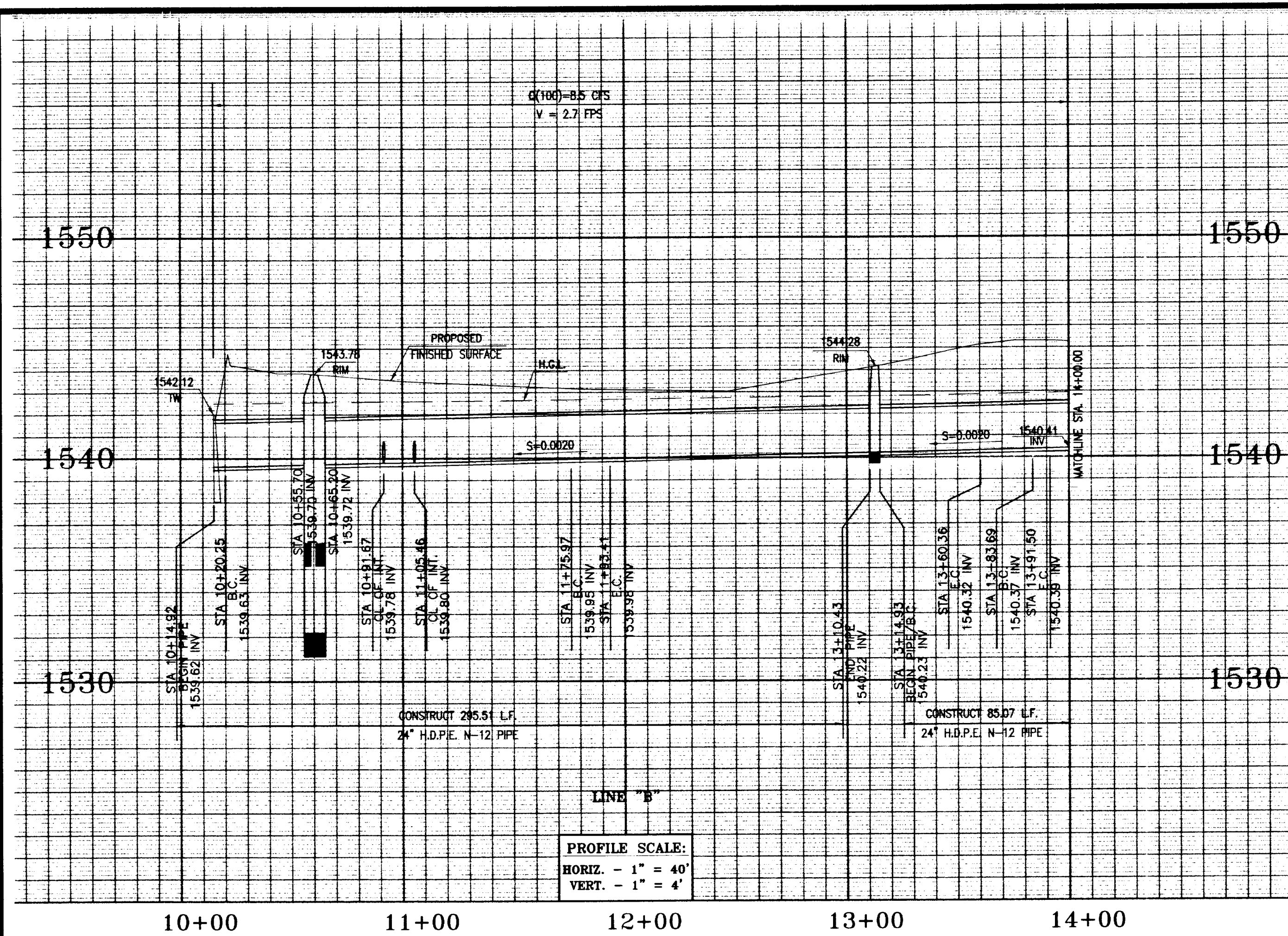
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 CIVIL ENGINEERING & LAND SURVEYING
 14349 FIRESTONE BOULEVARD
 LA MIRADA, CALIFORNIA 90638
 PH (714) 521-4811 FAX (714) 521-4173



CITY OF MORENO VALLEY
SEWER AND WATER PLAN
 FOR
MARCH COMMERCE CENTER
 22150 GOLDEN CREST DRIVE
 CONSTRUCTION SET 01-18-06
 ACCT. NO.
 SHEET 14 NO. 18
 CITY I. D. NO. 2564

PA05-0042 WDID: 335284

JOIN EXISTING FIRE SERVICE
 CONSTRUCTION SET 01-18-06
 Last Update: 01/19/06
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STORM DRAIN CONSTRUCTION NOTES:

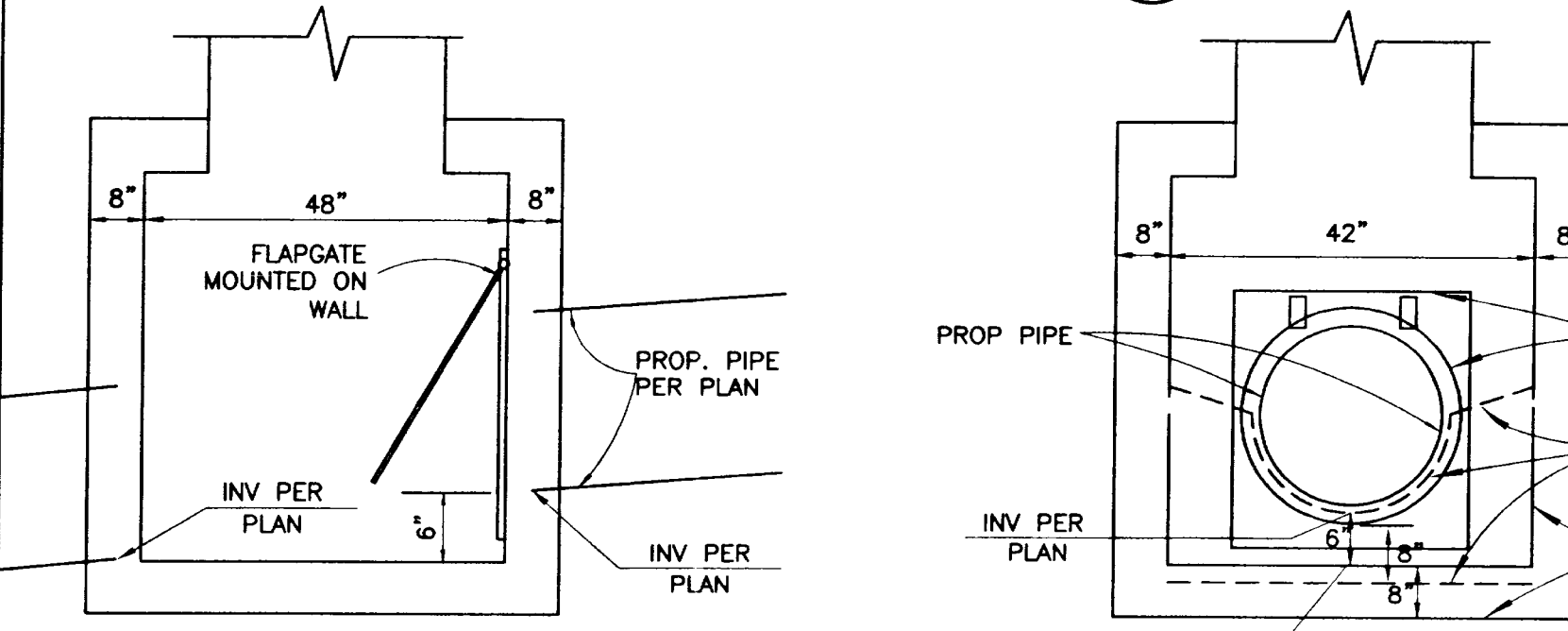
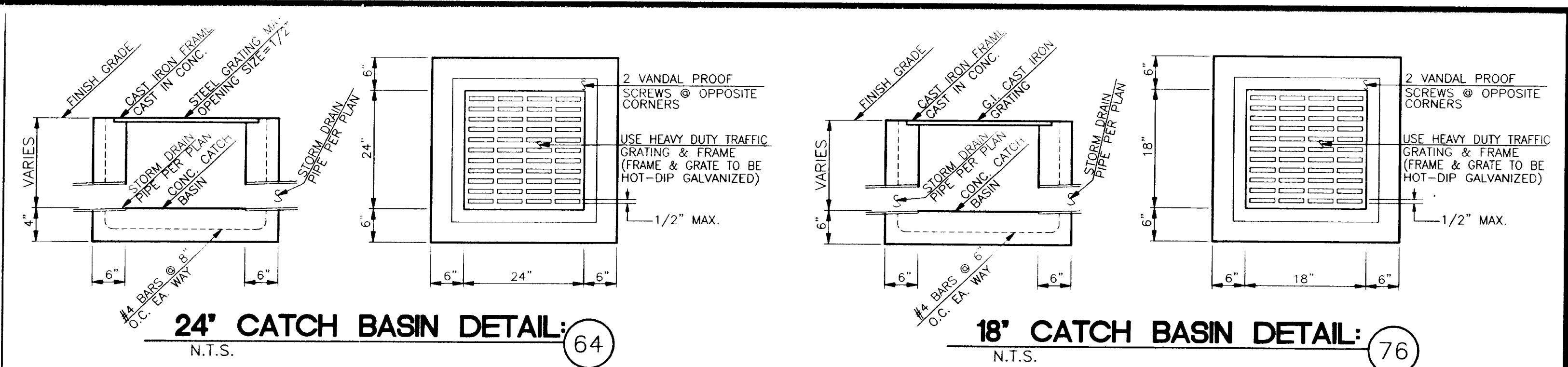
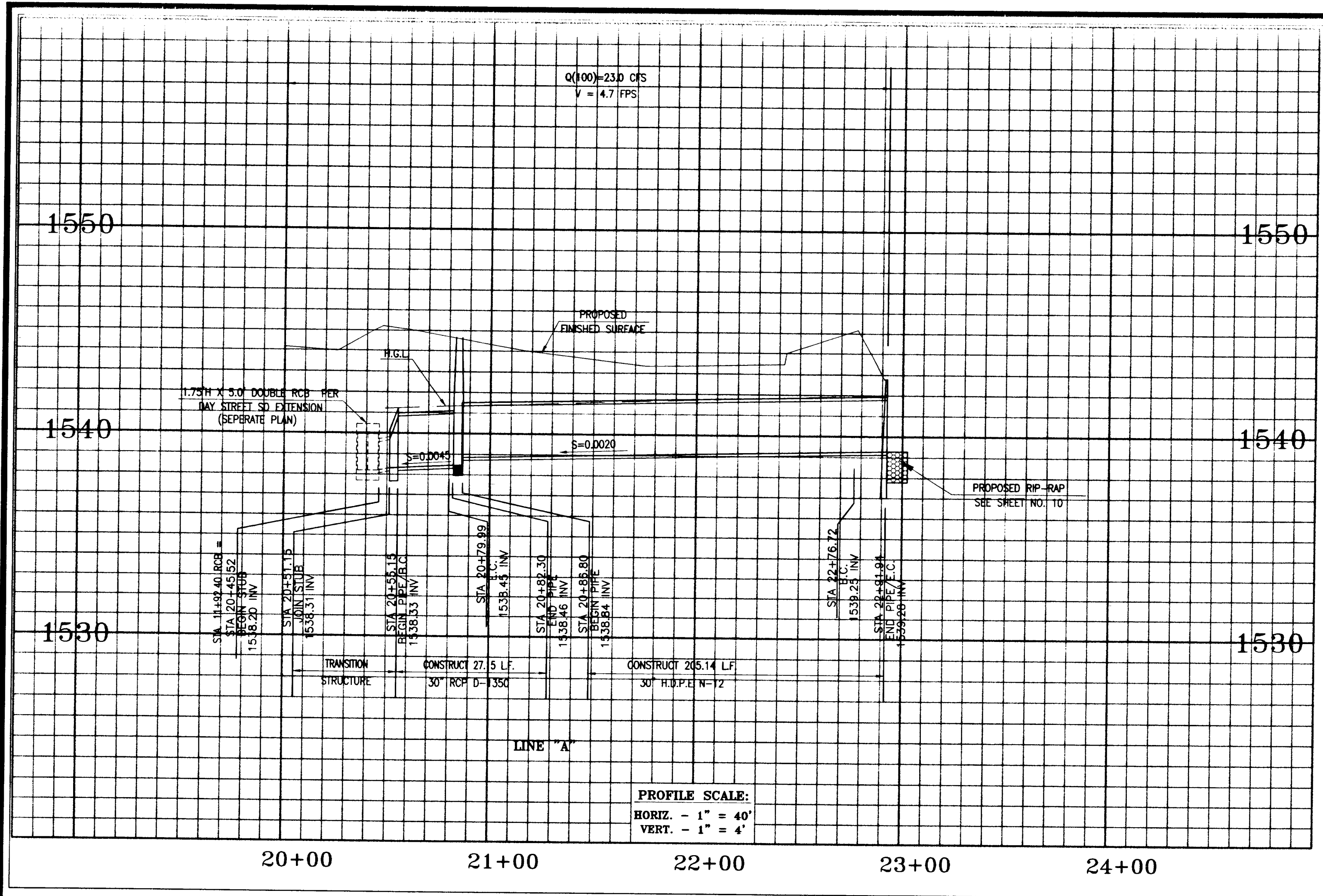
- (60) CONSTRUCT CURBSIDE GRATING CATCH BASIN PER A.P.W.A. STD. PLAN NO. 303-2.
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- (63) CONSTRUCT MANHOLE PER A.P.W.A. STD. PLAN NO. 321-1.
- (64) CONSTRUCT 24"x24" CATCH BASIN PER DETAIL ON SHEET 16.
- (65) CONSTRUCT 16" DUCTILE IRON PIPE.
- (66) CONSTRUCT 18" H.D.P.E. N-12 PIPE.
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- (68) CONSTRUCT 30" RCP.
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- (70) CONSTRUCT 12" H.D.P.E. N-12 PIPE.
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- (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'	45.00'

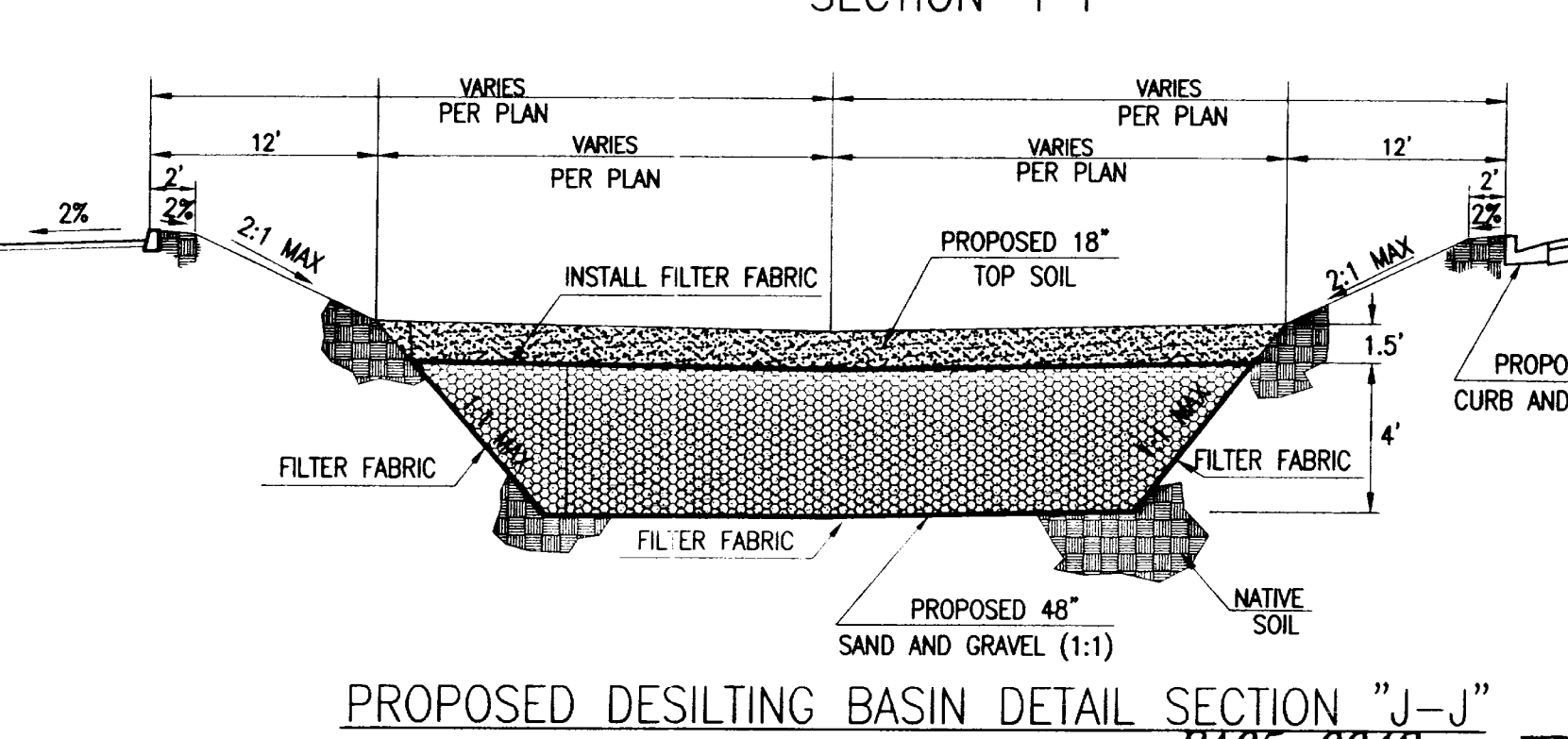
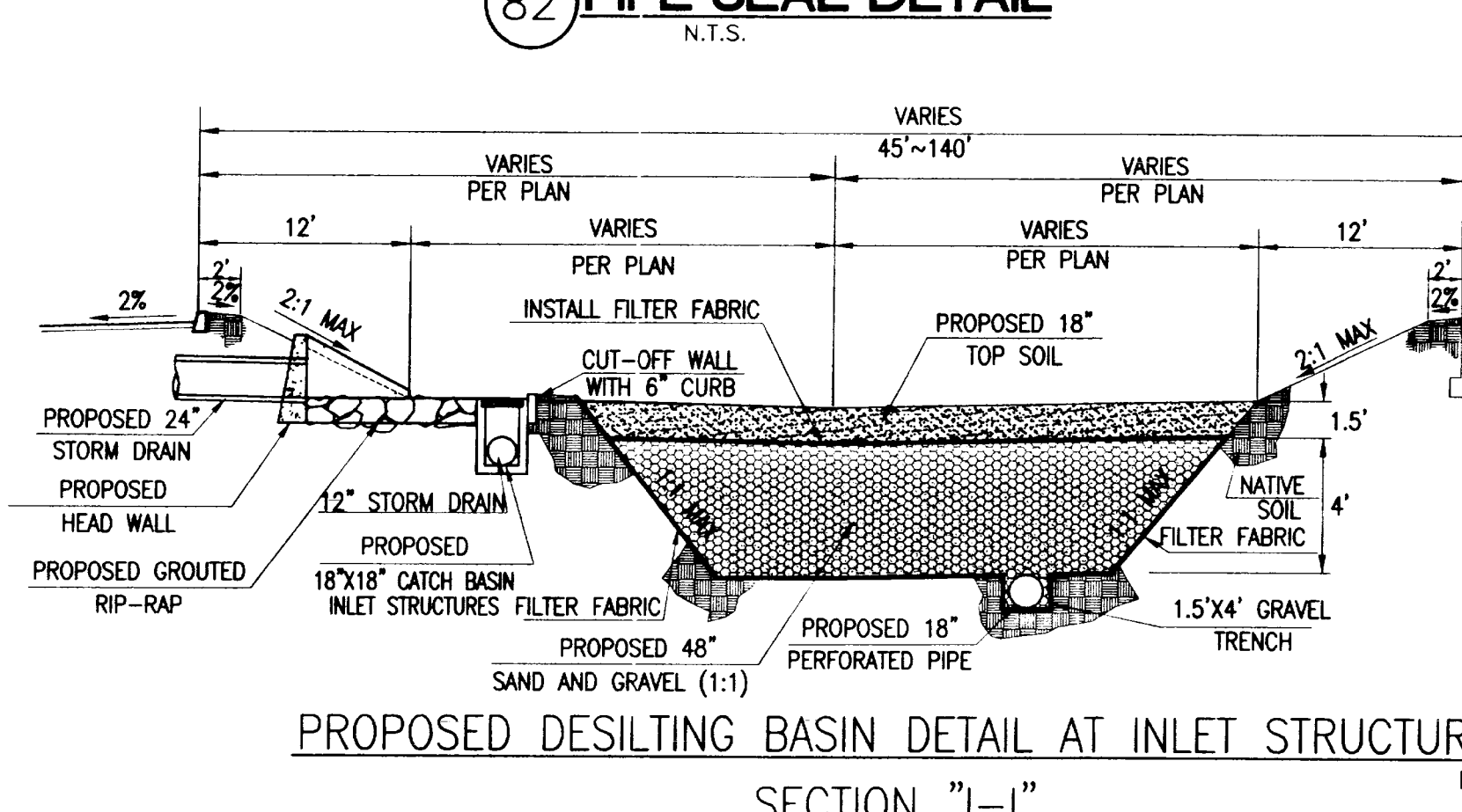
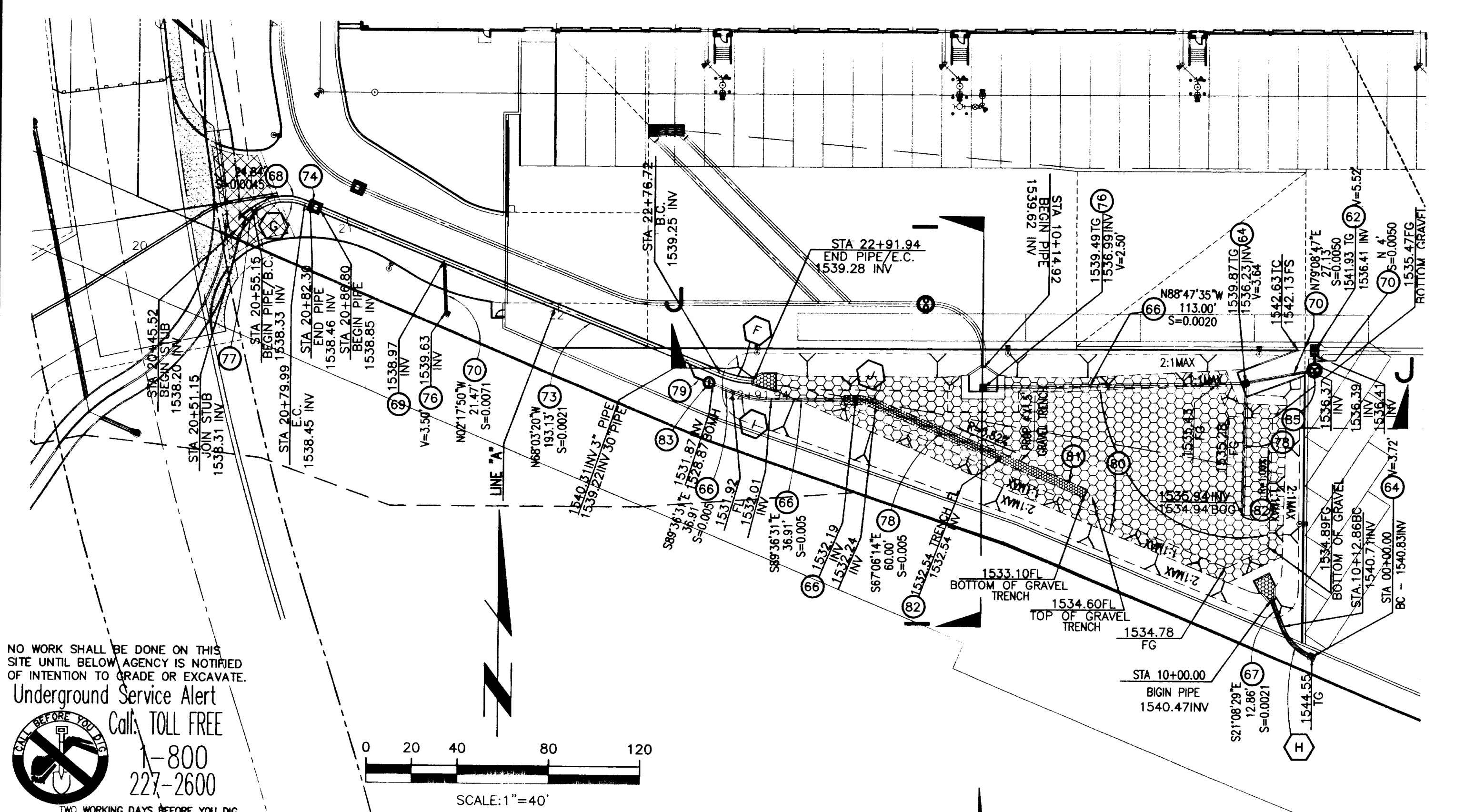
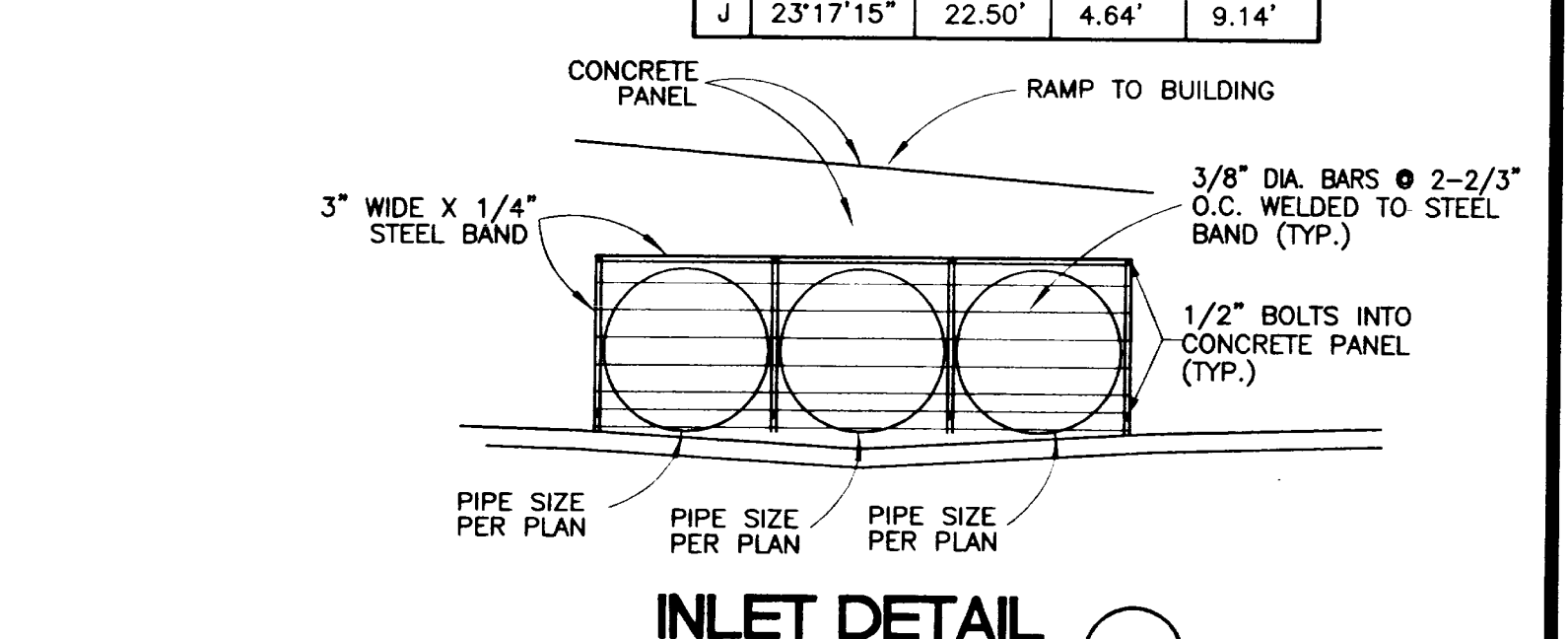
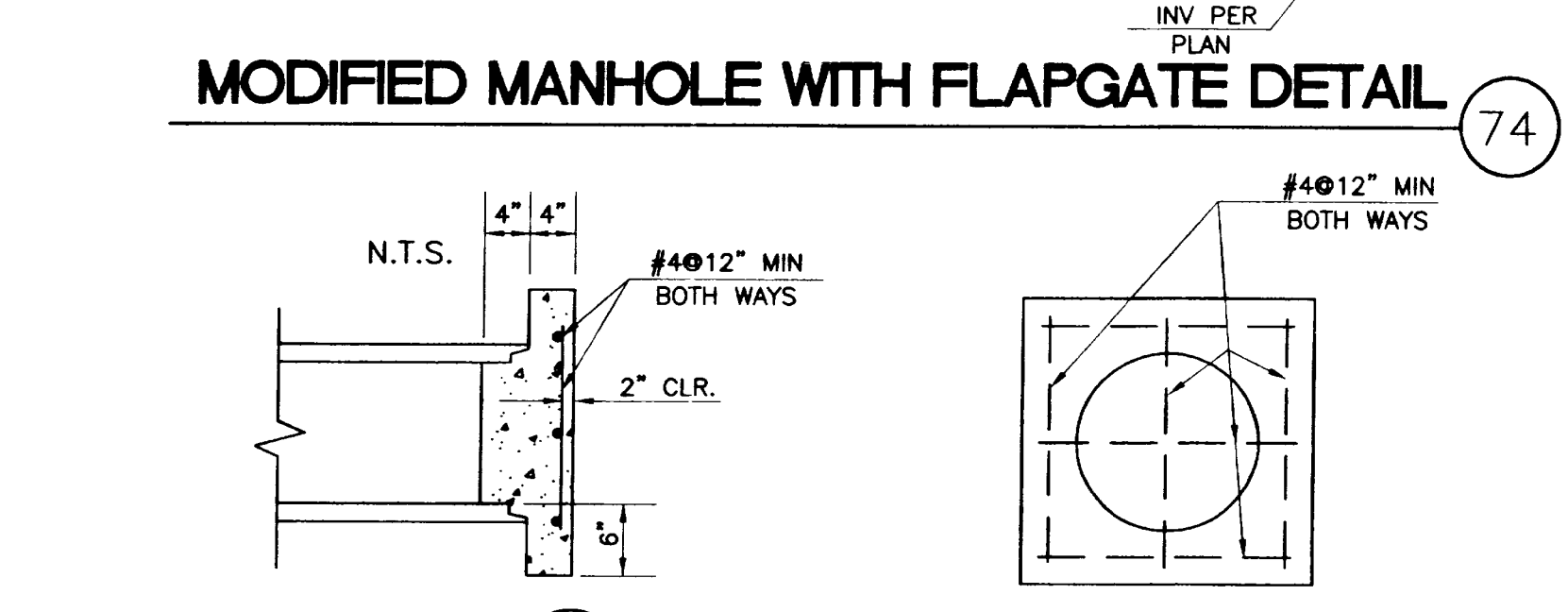
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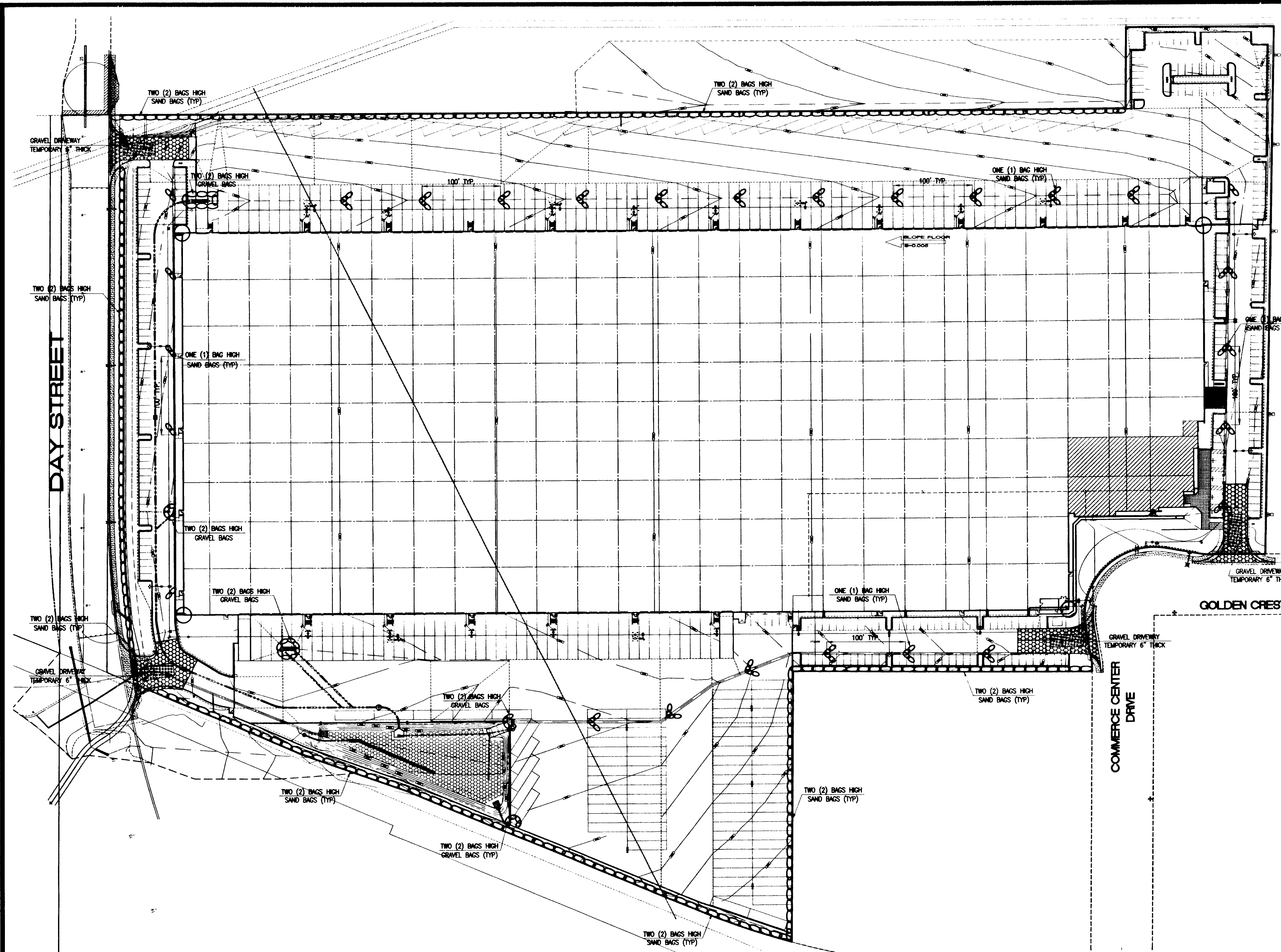


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D	09°57'00"	45.00'	3.92'	7.81'
E	90°00'00"	45.00'	45.00'	70.69'
F	19°23'00"	45.00'	7.69'	15.22'
G	63°15'40"	22.50'	13.86'	24.84'
H	46°12'14"	22.50'	9.60'	18.14'
I	22°20'09"	45.00'	8.88'	17.54'
J	23°17'15"	22.50'	4.64'	9.14'



- STORM DRAIN CONSTRUCTION NOTES:**
- (60) CONSTRUCT CURBSIDE GRATING CATCH BASIN PER A.P.W.A. STD. PLAN NO. 303-2.
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 - (84) INSTALL CDS UNIT PMSU 40-30.
 - (85) INSTALL CDS UNIT PMSU 20-25.

BENCH MARK RIVERSIDE COUNTY SURVEYOR B.M. NO. "M-32" AT THE INTERSECTION OF PERRIS BLVD. & IHS 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 SIDE TELEPHONE POLE #15180, A 1" IRON PIPE & TAG MARKED COUNTY SURVEYOR IN A HANWELL MONUMENT. ELEV. = 1503.526' (NGVD '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.R. 97 / 29-36, IN THE CITY OF MORENO VALLEY, RECORDS OF COUNTY OF RIVERSIDE, STATE OF CALIFORNIA		REVIEW BY CITY STAFF <table border="1"> <tr> <th>OFFICE</th> <th>INITIAL</th> <th>DATE</th> </tr> <tr> <td>LAND DEVELOPMENT</td> <td>VBC</td> <td>1/29/06</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	1/29/06	ENTERPRISE SERVICES			PLANNING			TRANSPORTATION			CAPITAL PROJECT			PARK AND RECREATION			REVISION <table border="1"> <tr> <th>MARK</th> <th>DATE</th> <th>INITIAL</th> <th>DESCRIPTION</th> <th>REC.</th> <th>APPR.</th> <th>DATE</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR.	DATE								PREPARED BY DR UNDER THE SUPERVISION OF Haidook I. Aghaian R.C.E. No. 43293 DRAWN BY Prakash Kulkarni DESIGN BY Prakash Kulkarni CHECKED BY Prakash Kulkarni DATE 1/29/06 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 14349 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH (714) 521-8811 FAX (714) 521-8723		CITY OF MORENO VALLEY STORM DRAIN PLAN ACCT. NO. SHEET 16 OF 18 CITY I. D. NO. 2564	
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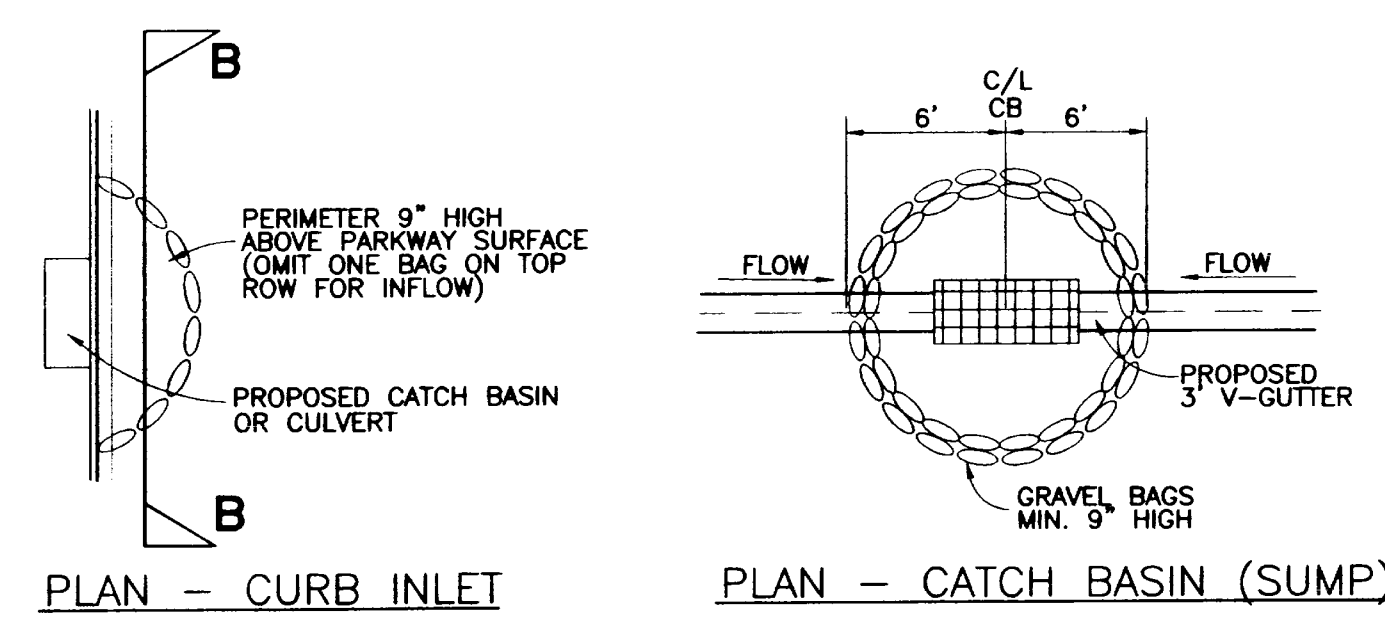
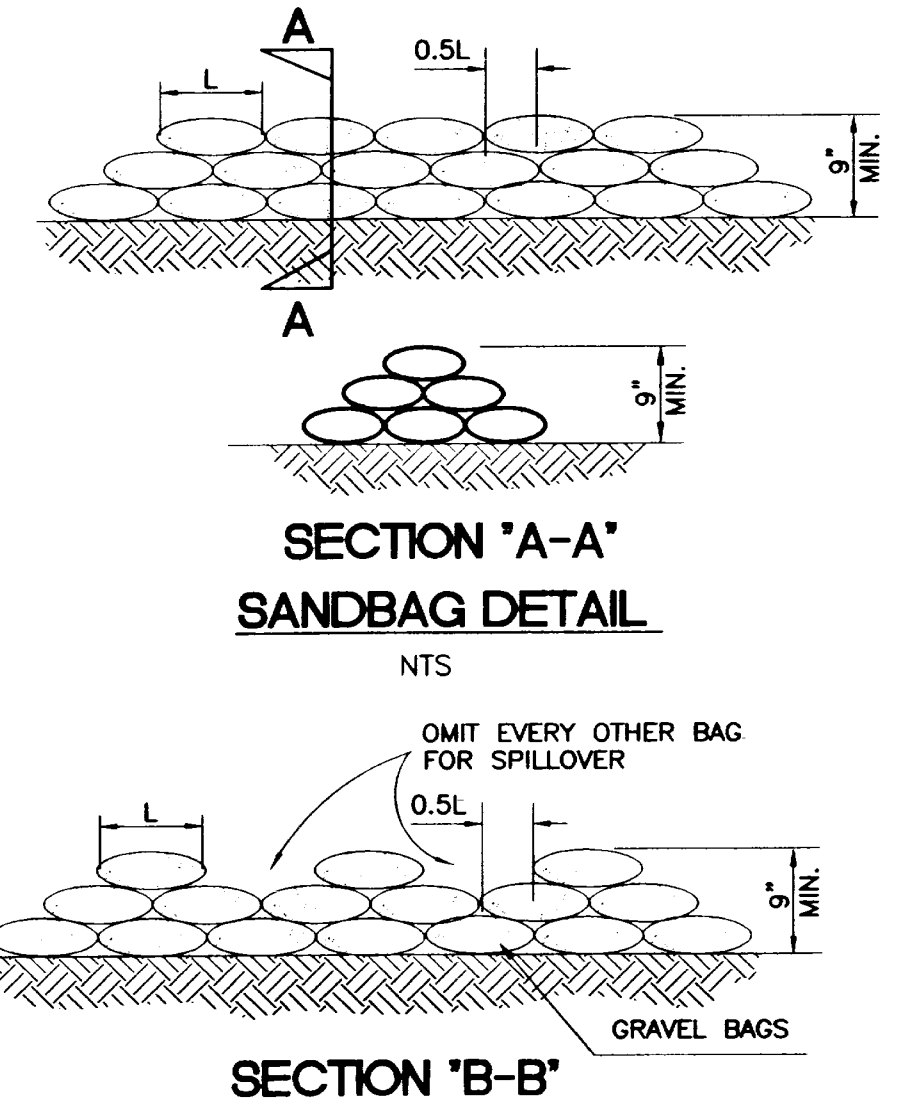
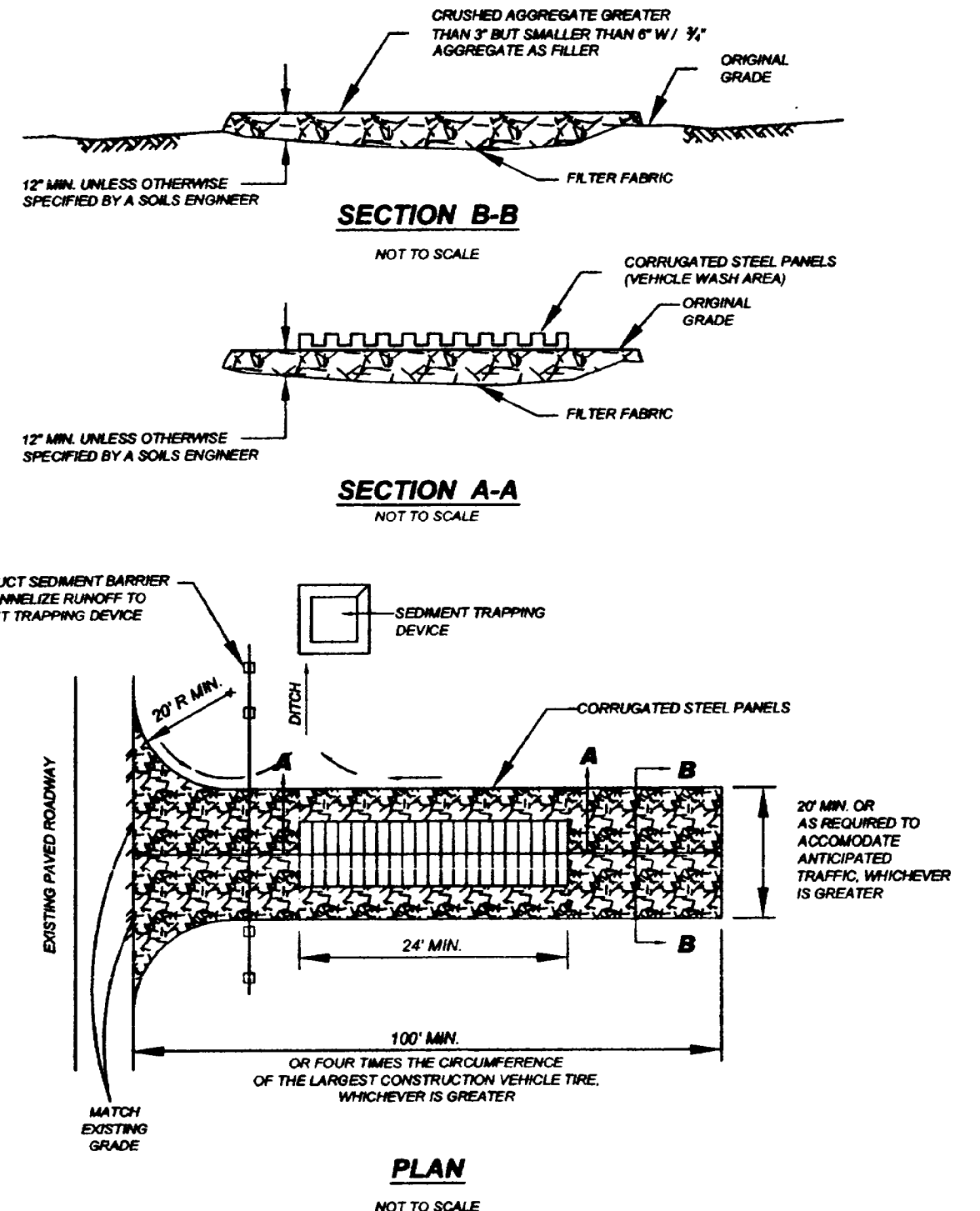
STORM WATER POLLUTION CONTROL REQUIREMENTS FOR STORM DRAIN CONSTRUCTION

1. 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.
2. 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.
3. 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.
4. TRASH AND CONSTRUCTION RELATED SOLID WASTES SHALL BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATIONS OF RAINWATER AND DISPERSAL BY WIND.
5. 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.
6. ANY SLOPES WITH DISTURBED SOILS OR DENIED OF VEGETATION SHALL BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.
7. 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	ESC20 - EARTH DIKE
CA021 - HAZARDOUS WASTE MANAGEMENT	ESC31 - TEMPORARY DRAINS AND SWALES
CA023 - CONCRETE WASTE MANAGEMENT	ESC32 - SLOPE DRAIN
CA030 - VEHICLE AND EQUIPMENT CLEANING	ESC40 - OUTLET PROTECTION
CA031 - VEHICLE AND EQUIPMENT FUELING	ESC41 - CHECK DAMS
CA032 - VEHICLE AND EQUIPMENT MAINTENANCE	ESC50 - SILT FENCE
CA040 - EMPLOYEE/SUBCONTRACTOR TRAINING	ESC21 - STRAW BALE BARRIERS
ESC01 - SCHEDULING	ESC02 - SAND BAG BARRIER
ESC02 - PRESERVATION OF EXISTING VEGETATION	ESC03 - BRUSH OR ROCK FILTER
ESC10 - SEEDING AND PLANTING	ESC04 - STORM DRAIN INLET PROTECTION
ESC11 - MULCHING	

EROSION CONTROL NOTES

- CURB INLET SEDIMENT BARRIERS CONSTRUCTION SPECIFICATIONS:**
1. BARRIERS SHALL BE PLACED ON GENTLY SLOPING STREETS WHERE WATER CAN POND PER M.V. STD PLAN 611
 2. 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.
 3. SANDBAGS SHOULD BE OF WOVEN-TYPE GEOTEXTILE FABRIC.
 4. SANDBAGS SHALL BE FILLED WITH 3/4 INCH (19 mm) DRAIN ROCK OR 1/4 INCH (6 mm) PEA GRAVEL.
 5. 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.
 6. LAYERS OF BAGS SHALL BE OVER LAPPED AND PACKED TIGHTLY.
 7. LEAVE ONE SANDBAG GAP IN THE TOP ROW TO ACT AS A SPILLWAY.
- INSPECTION AND MAINTENANCE:**
1. THE CONTRACTOR SHALL INSPECT AND CLEAN BARRIER DURING AND AFTER EACH STORM AND REMOVE SEDIMENT FROM BEHIND SANDBAG STRUCTURE AFTER EACH STORM.
 2. ANY SEDIMENT AND GRAVEL SHALL BE IMMEDIATELY REMOVED FROM THE TRAVELED WAY OF ROADS.
 3. THE REMOVED SEDIMENT SHALL BE PLACED WHERE IT CANNOT ENTER A STORM DRAIN, STREAM OR BE TRANSPORTED OFF SITE.
 4. IF THE GRAVEL BECOMES CLOGGED WITH SEDIMENT, IT MUST BE REMOVED FROM THE INLET AND OR REPLACED WITH NEW GRAVEL.

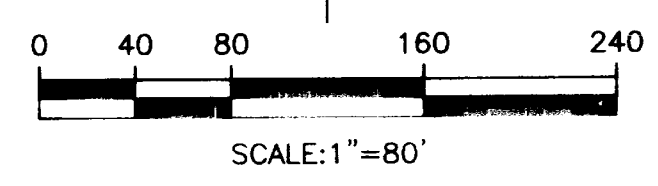


- NOTES:**
1. ALL CONSTRUCTION EQUIPMENT / PERSONNEL VEHICLE LEAVING THE CONSTRUCTION SITE SHALL BE WASHED DOWN TO REMOVE ALL MUD FROM VEHICLE PRIOR TO ENTERING THE PUBLIC RIGHT-OF-WAY.

EROSION CONTROL NOTES

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

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



STORM DRAIN INLET PROTECTION

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

BENCH MARK		BASIS OF BEARING		REVIEW BY CITY STAFF		PREPARED BY DR 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 #13136; 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 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		INITIAL DATE VBC 1/24/06		HAIDOOK I. AGHAJAN R.C.E. No. 43293 DATE 1/29/06		Thienes Engineering, Inc. CIVIL ENGINEERING & LAND SURVEYING 14345 PRESTON BOULEVARD LA MIRADA, CALIFORNIA 90638 PH: (714) 821-4811 FAX: (714) 821-4173		CITY OF MORENO VALLEY EROSION CONTROL PLAN FOR MARCH COMMERCE CENTER 22150 GOLDEN CREST DRIVE		SHEET 17 OF 18 CITY I. D. NO. 2564	
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