Appendix 5.5 (Continued)

Hydrology (Part 3 of 15)



SECTION 8

MITIGATED

FLOW CALCS

APPENDIX A

ENTRADA SOUTH

MITIGATED FLOW CALCULATIONS

TABLE 1

INTENSITY - DURATION DATA FOR 0.75-INCHES OF RAINFALL
FOR ALL RAINFALL ZONES

Duration, T_c (min)	Rainfall Intensity, I_x (in/hr)
5	0.447
6	0.411
7	0.382
8	0.359
9	0.339
10	0.323
11	0.309
12	0.297
13	0.286
14	0.276
15	0.267
16	0.259
17	0.252
18	0.245
19	0.239
20	0.233
21	0.228
22	0.223
23	0.218
24	0.214
25	0.210
26	0.206
27	0.203
28	0.199
29	0.196
30	0.193

BASIN: A

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	818.00	Acres
Type of Development	Undeveloped/Residentia	
Predominate Soil Type #	98	
% of Project Impervious	10.9	
% of Project Pervious	8.1	
% of Project Contributing Undeveloped Area	80.97	
A_I	89.16	Acres
A_P	66.50	Acres
A_U	662.33	Acres

BASIN: A

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.19

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.0361

Length = 6000
Slope = 0.01

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 216.93 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: A

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.19	0.03613	216.9	-187
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 29.80 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 416895.3 ft^3

BASIN: B AND Q

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	90.30	Acres
Type of Development	SINGLE FAMILY	
Predominate Soil Type #	98	
% of Project Impervious	52.0	
% of Project Pervious	48.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	46.96	Acres
A_P	43.34	Acres
A_U	0.00	Acres

BASIN: B AND Q

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.52

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.0996

Length = 4300
Slope = 0.065

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 84.75 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: B AND Q

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.52	0.099588	84.8	-55
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 9.07 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 126854.3 ft^3

BASIN: C

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	5.40	Acres
Type of Development	PARK SITE	
Predominate Soil Type #	98	
% of Project Impervious	10.0	
% of Project Pervious	90.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.54	Acres
A_P	4.86	Acres
A_U	0.00	Acres

BASIN: C

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.18

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.0347

Length = 620
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 67.36 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: C

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.18	0.03474	67.4	-37
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.19 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 2646.3 ft^3

BASIN: D

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	14.00	Acres
Type of Development	Multi-Family/Open	
Predominate Soil Type #	98	
% of Project Impervious	61.0	
% of Project Pervious	32.0	
% of Project Contributing Undeveloped Area	7.00	
A_I	8.54	Acres
A_P	4.48	Acres
A_U	0.98	Acres

BASIN: D

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.59

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1135

Length = 1700
Slope = 0.04

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 54.02 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: D

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.59	0.113484	54.0	-24
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 1.60 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 22411.6 ft^3

BASIN: E

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	30.20	Acres
Type of Development	COMMERCIAL	
Predominate Soil Type #	98	
% of Project Impervious	91.0	
% of Project Pervious	9.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	27.48	Acres
A_P	2.72	Acres
A_U	0.00	Acres

BASIN: E

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.83

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1598

Length = 2000
Slope = 0.03

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 50.85 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: E

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.83	0.159804	50.9	-21
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 4.87 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 68077.7 ft^3

BASIN: F

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	6.80	Acres
Type of Development	Multi-Family	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	5.44	Acres
A_P	1.36	Acres
A_U	0.00	Acres

BASIN: F

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1428

Length = 840
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 37.45 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: F

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	37.5	-7
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.98 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 13699.6 ft^3

BASIN: G

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	0.60	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	90.0	
% of Project Pervious	10.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.54	Acres
A_P	0.06	Acres
A_U	0.00	Acres

BASIN: G

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.82

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.1583

Length = 780
Slope = 0.05

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 30.27 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: G

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.82	0.15826	30.3	0
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.10 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 1339.5 ft^3

BASIN: H

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.30	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	70.0	
% of Project Pervious	30.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.91	Acres
A_P	0.39	Acres
A_U	0.00	Acres

BASIN: H

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.66

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.1274

Length = 710
Slope = 0.05

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 32.38 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: H

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.66	0.12738	32.4	-2
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.17 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 2335.9 ft³

BASIN: I

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.90	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	1.52	Acres
A_P	0.38	Acres
A_U	0.00	Acres

BASIN: I

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.1428

Length = 1410
Slope = 0.012

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 51.53 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: I

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	51.5	-22
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.27 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 3827.8 ft³

BASIN: J

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	2.10	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	1.68	Acres
A_P	0.42	Acres
A_U	0.00	Acres

BASIN: J

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.1428

Length = 1330
Slope = 0.012

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 50.10 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: J

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	50.1	-20
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.30 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 4230.8 ft^3

BASIN: K

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	2.30	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	1.84	Acres
A_P	0.46	Acres
A_U	0.00	Acres

BASIN: K

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1428

Length = 1420
Slope = 0.043

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 43.52 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: K

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	43.5	-14
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.33 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 4633.7 ft³

BASIN: L

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	3.20	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	2.56	Acres
A_P	0.64	Acres
A_U	0.00	Acres

BASIN: L

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.1428

Length = 1380
Slope = 0.043

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 42.92 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: L

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	42.9	-13
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.46 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 6446.9 ft^3

BASIN: M

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	2.90	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	90.0	
% of Project Pervious	10.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	2.61	Acres
A_P	0.29	Acres
A_U	0.00	Acres

BASIN: M

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.82

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1583

Length = 1240
Slope = 0.012

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 45.92 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: M

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	C_D*I_X (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.82	0.15826	45.9	-16
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.46 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 6474.1 ft³

BASIN: N

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.10	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.88	Acres
A_P	0.22	Acres
A_U	0.00	Acres

BASIN: N

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 23 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.218 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.1613

Length = 360
Slope = 0.025

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 22.66 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: N

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	23	0.218	0.10	0.74	0.16132	22.7	0
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 23 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.18 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 2216.1 ft³

BASIN: O

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	3.30	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	2.64	Acres
A_P	0.66	Acres
A_U	0.00	Acres

BASIN: O

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1428

Length = 900
Slope = 0.012

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 41.48 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: O

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	41.5	-11
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.48 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 6648.3 ft^3

BASIN: P

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	15.80	Acres
Type of Development	Condominium	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	12.64	Acres
A_P	3.16	Acres
A_U	0.00	Acres

BASIN: P

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1428

Length = 760
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 35.68 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: P

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	35.7	-6
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 2.28 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 31831.5 ft³

BASIN Q

COMBINED WITH BASIN B

SEE BASIN B FOR CALCULATIONS

BASIN: R

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	2.20	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	1.76	Acres
A_P	0.44	Acres
A_U	0.00	Acres

BASIN: R

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1428

Length = 1980
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 56.66 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: R

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	56.7	-27
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.32 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 4432.2 ft^3

BASIN: S

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.50	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	75.0	
% of Project Pervious	25.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	1.13	Acres
A_P	0.38	Acres
A_U	0.00	Acres

BASIN: S

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.70

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1351

Length = 840
Slope = 0.035

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 35.74 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: S

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.70	0.1351	35.7	-6
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.20 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 2858.6 ft³

BASIN: T

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.30	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	70.0	
% of Project Pervious	30.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.91	Acres
A_P	0.39	Acres
A_U	0.00	Acres

BASIN: T

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.66

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1274

Length = 720
Slope = 0.055

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 32.18 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: T

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.66	0.12738	32.2	-2
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.17 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 2335.9 ft³

BASIN: U

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.50	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	90.0	
% of Project Pervious	10.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	1.35	Acres
A_P	0.15	Acres
A_U	0.00	Acres

BASIN: U

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.82

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1583

Length = 1170
Slope = 0.04

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 37.95 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: U

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.82	0.15826	37.9	-8
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.24 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 3348.7 ft^3

BASIN: V

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.10	Acres
Type of Development	Roadway	
Predominate Soil Type #	98	
% of Project Impervious	50.0	
% of Project Pervious	50.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.55	Acres
A_P	0.55	Acres
A_U	0.00	Acres

BASIN: V

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.50

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.0965

Length = 720
Slope = 0.05

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 37.65 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: V

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.50	0.0965	37.6	-8
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.11 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 1497.4 ft³

BASIN: W

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	6.50	Acres
Type of Development	Condominium	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	5.20	Acres
A_P	1.30	Acres
A_U	0.00	Acres

BASIN: W

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 29 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.196 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1450

Length = 490
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 28.64 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: W

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	29	0.196	0.10	0.74	0.14504	28.6	0
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 29 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.95 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 13095.2 ft^3

BASIN: X

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1428

Length = 760
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 35.68 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: X

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.74	0.14282	35.7	-6
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 1.50 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 20952.4 ft^3

BASIN: Y

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	3.40	Acres
Type of Development	Commercial	
Predominate Soil Type #	98	
% of Project Impervious	90.0	
% of Project Pervious	10.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	3.06	Acres
A_P	0.34	Acres
A_U	0.00	Acres

BASIN: Y

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.82

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1583

Length = 700
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 32.51 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: Y

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.82	0.15826	32.5	-3
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.54 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 7590.3 ft^3

BASIN: Z

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	7.60	Acres
Type of Development	Condominium	
Predominate Soil Type #	98	
% of Project Impervious	80.0	
% of Project Pervious	20.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	6.08	Acres
A_P	1.52	Acres
A_U	0.00	Acres

BASIN: Z

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 29 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.196 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.74

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1450

Length = 510
Slope = 0.02

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 29.19 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: Z

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	C_D*I_X (in/hr)	Calculated T_C (min)	Difference (min)
1	29	0.196	0.10	0.74	0.14504	29.2	0
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 29 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 1.11 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 15311.3 ft^3

BASIN: AA

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	0.90	Acres
Type of Development	ROADWAY	
Predominate Soil Type #	98	
% of Project Impervious	78.0	
% of Project Pervious	22.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.70	Acres
A_P	0.20	Acres
A_U	0.00	Acres

BASIN: AA

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 22 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.223 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.72

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1615

Length = 400
Slope = 0.04

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 22.36 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: AA

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	22	0.223	0.10	0.72	0.161452	22.4	0
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 22 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.15 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 1774.0 ft^3

BASIN: BB

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	1.50	Acres
Type of Development	ROADWAY	
Predominate Soil Type #	98	
% of Project Impervious	91.0	
% of Project Pervious	9.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	1.37	Acres
A_P	0.14	Acres
A_U	0.00	Acres

BASIN: BB

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.83

5. Calculate the value for $C_D * I_X$

$C_D * I_X$ 0.1598

Length = 1170
Slope = 0.04

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 37.76 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: BB

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.83	0.159804	37.8	-8
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.24 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 3381.3 ft³

BASIN: CC

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	3.20	Acres
Type of Development	ROADWAY	
Predominate Soil Type #	98	
% of Project Impervious	91.0	
% of Project Pervious	9.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	2.91	Acres
A_P	0.29	Acres
A_U	0.00	Acres

BASIN: CC

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (I_X) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 30 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding I_X intensity in inches/hour.

I_X 0.193 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.83

5. Calculate the value for $C_D * I_X$

Length = 1140
Slope = 0.04

$C_D * I_X$ 0.1598

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * I_X)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 37.29 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: CC

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	30	0.193	0.10	0.83	0.159804	37.3	-7
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 30 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total}$ * (1.008333 ft³-hour/acre-inches-seconds)

Q_{PM} 0.52 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5 \text{ ft}^3 / \text{acre}) * [(A_I) (0.9) + (A_P + A_U)(C_U)]$

V_M 7213.5 ft³

BASIN: DD

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	0.60	Acres
Type of Development	ROADWAY	
Predominate Soil Type #	98	
% of Project Impervious	90.0	
% of Project Pervious	10.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.54	Acres
A_P	0.06	Acres
A_U	0.00	Acres

BASIN: DD

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 24 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.214 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.82

5. Calculate the value for $C_D * Ix$

$C_D * Ix$ 0.1755

Length = 380
Slope = 0.013

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 24.32 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: DD

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	24	0.214	0.10	0.82	0.17548	24.3	0
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 24 minutes

8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.11 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 1339.5 ft^3

BASIN: EE

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

PROVIDE PROPOSED PROJECT CHARACTERISTICS

A_{TOTAL}	0.50	Acres
Type of Development	ROADWAY	
Predominate Soil Type #	98	
% of Project Impervious	90.0	
% of Project Pervious	10.0	
% of Project Contributing Undeveloped Area	0.00	
A_I	0.45	Acres
A_P	0.05	Acres
A_U	0.00	Acres

BASIN: EE

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

DETERMINING THE PEAK MITIGATED FLOW RATE (Q_{PM}):

In order to determine the peak mitigated flow rate (Q_{PM}) from the new development, use the Los Angles County Department of Public Works *Hydrology Manual*. Use the Modified Rational Method for calculating the peak mitigation QPM for compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP). Use attached **Table 1** for all maximum intensity (Ix) values used.

By trial and error, determine the time of concentration (T_C), as shown below:

CALCULATION STEPS:

1. Assume an initial T_C value between 5 and 30 minutes.

T_C 24 minutes

2. Using Table 1, look up the assumed T_C value and select the corresponding Ix intensity in inches/hour.

Ix 0.214 inches/hour

3. Determine the value for the Undeveloped Runoff Coefficient, C_U, using the runoff coefficient curve corresponding to the predominand soil type.

C_U 0.10

4. Calculate the Developed Runoff Coefficient, $C_D = (0.9 * Imp.) + [(1.0 - Imp.) * C_U]$

C_D 0.82

5. Calculate the value for $C_D * Ix$

Length = 380
Slope = 0.013

$C_D * Ix$ 0.1755

6. Calculate the time of concentration, $T_C = 10^{-0.507} * (C_D * Ix)^{-0.519} * Length^{0.483} * Slope^{-0.135}$

Calculated T_C 24.32 minutes

7. Calculate the difference between the initially assumed T_C and the calculated T_C, if the difference is greater than 0.5 minutes, use the calculated T_C as the assumed initial T_C in the second iteration. If the T_C value is within 0.5 minutes, round the acceptable T_C value to the nearest minute.

BASIN: EE

APPENDIX A VOLUME & FLOW RATE CALCULATIONS

TABLE FOR ITERATIONS

Iteration No.	Initial T_C (min)	I_X (in/hr)	C_U	C_D	$C_D * I_X$ (in/hr)	Calculated T_C (min)	Difference (min)
1	24	0.214	0.10	0.82	0.17548	24.3	0
2							
3							
4							
5							
6							
7							
8							
9							
10							

Acceptable T_C value 24 minutes

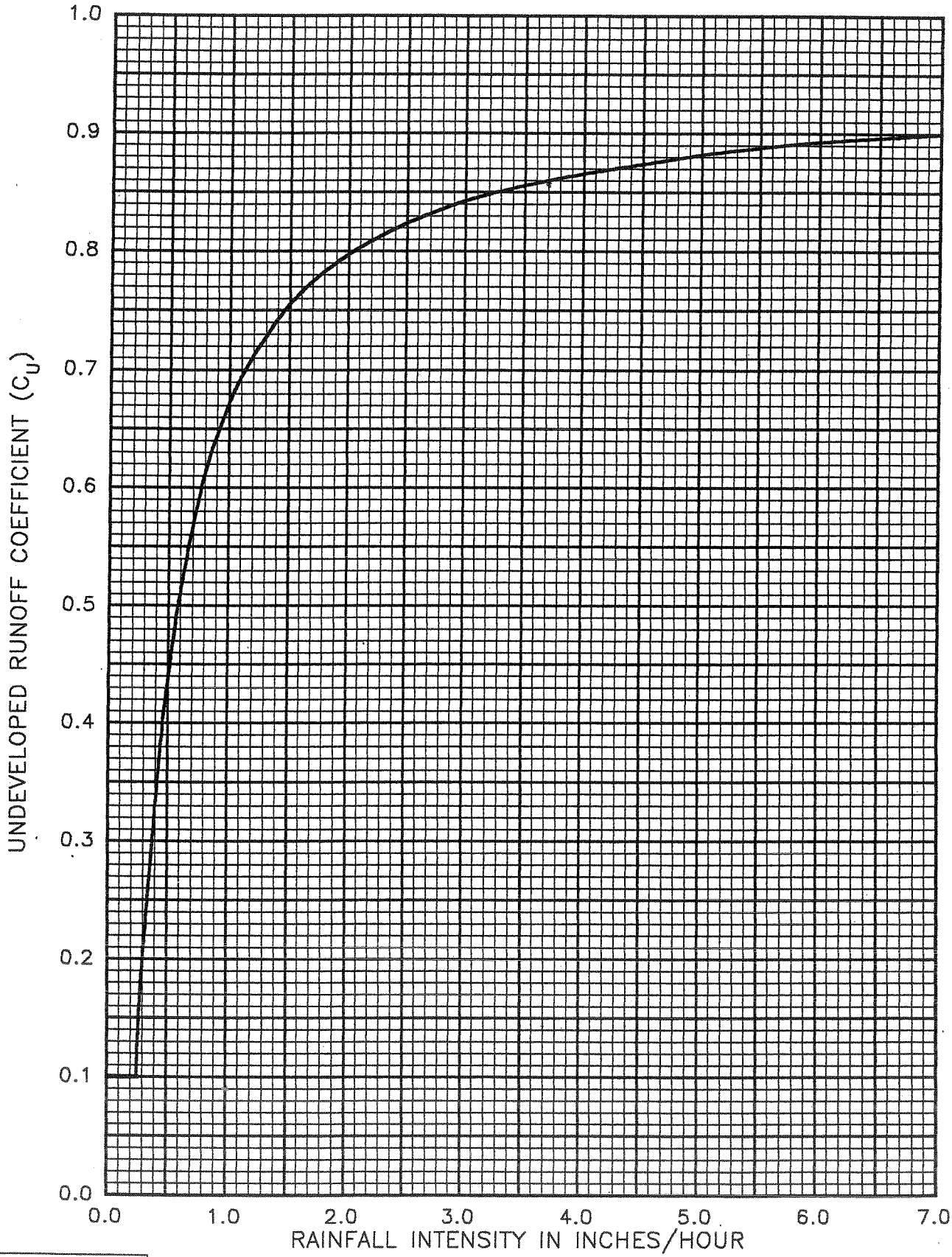
8. Calculate the Peak Mitigation Flow Rate,
$Q_{PM} = C_D * I_X * A_{Total} * (1.008333\ ft^3\text{-hour/acre-inches-seconds})$

Q_{PM} 0.09 cfs

In order to determine the volume (V_M) of stormwater runoff to be mitigated from the new development, use the following equation:

$V_M = (2{,}722.5\ ft^3 / acre) * [(A_I)(0.9) + (A_P + A_U)(C_U)]$

V_M 1116.2 ft^3



Equation:

$C_D = (0.9 * IMP) + (1.0 - IMP)\ C_U$

Where: C_D = Developed runoff coefficient.
IMP = Proportion impervious.
C_U = Undeveloped runoff coefficient.

Los Angeles County
Department of Public Works

RUNOFF COEFFICIENT CURVE

SOIL TYPE NO. 098

DRAINAGE CONCEPT/HYDROLOGY STUDY/SUSMP/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: Adolfo Gallardo DATE: 1/27/2011
CHECKED BY: [signature] DATE: 1/27/2011
LAND DEVELOPMENT DIVISION
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

MAGIC MOUNTAIN PARKWAY

STREET

PARK SITE

(PUBLIC)

EMERGENCY OVERFLOW PATH

EXTENDED DETENTION BASIN

BIO-RETENTION ACCESS ROAD

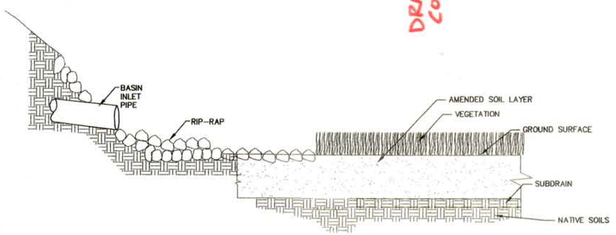
BIO-BASIN

EMERGENCY OVERFLOW PATH

0.50 AC INFILTRATION FOOTPRINT

AREA=7.6 AC.
V_M =15,311.3 ft^3
DESIGN V_M=16,900 ft^3
SEE BIO-RETENTION /INFILTRATION BASIN NOTE 6

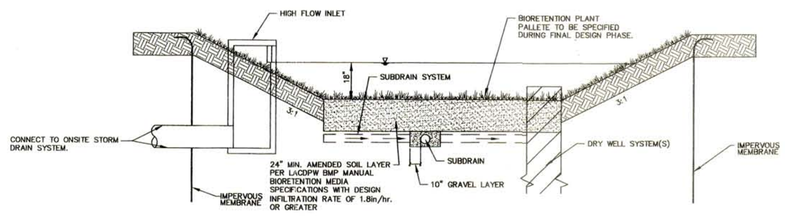
SCALE 1"=60'
FEET
0 60 120
0 1 2
INCHES



OUTLET DETAIL
(NOT TO SCALE)

OUTLET NOTES:

1. RIP-RAP USED SHALL CONSIST OF WELL GRADED STONE CONSISTING OF A MIXTURE OF ROCK SIZES.
2. UNDERDRAINS/SUBDRAINS MUST BE MADE OF SLOTTED, POLYVINYL CHLORIDE(PVC) PIPE CONFORMING TO ASTM STD. D3034, CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE CONFORMING TO AASHTO 252 M OR EQUIVALENT



BIO-RETENTION/INFILTRATION BASIN SECTION
(NOT TO SCALE)

BIO-RETENTION /INFILTRATION BASIN NOTES:

1. BASIN TO BE INSTALLED ON MINIMALLY COMPACTED SOIL, AS FEASIBLE.
2. BASIN TO HAVE UNDERDRAIN SYSTEM DESIGNED PER THE REQUIREMENTS OF THE LACDPW BMP MANUAL WITH CONFIGURATION AND SPACING TO ELIMINATE STANDING WATER FROM ALL PARTS OF THE BASIN.
3. UNDERDRAIN SYSTEM MUST CONNECT TO DRY WELL SYSTEM(S) FOR INFILTRATION.
4. BASIN MAXIMUM PONDING DEPTH OF 18".
5. DRY WELL SYSTEM(S) AND SOIL UNDER BASIN TO BE DESIGNED TO INFILTRATE AT A RATE OF 270 GPM, ASSUMING 7.6 AC OF MULTIFAMILY LAND USE TRIBUTARY.
6. BASIN TO BE DESIGNED TO HOLD AT LEAST 16,900 FT^{3}ABOVE AMENDED SOIL LAYER OR OTHER VOLUME DETERMINED TO ACHIEVE 80% AVERAGE ANNUAL CAPTURE EFFICIENCY ASSUMING 7.6 AC OF MULTI-FAMILY LAND USE TRIBUTARY.
7. THE TOTAL DRY WELL DISCHARGE MUST BE AT LEAST 0.45 cfs.

DEC 01 2010
SEP 15 2010

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE. CARLSBAD, CA 92008 TEL: (760) 431-9896 FAX: (760) 431-8802
27433 TOURNEY ROAD SUITE 250 VALENCIA, CA 91355 TEL: (661) 799-2760 FAX: (661) 254-1929
CIVIL ENGINEERING • LAND PLANNING • WILDSIDE DESIGN • SURVEYING

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTAKER - R.C.E. 51929 — 5-26-10 DATE

REGISTERED PROFESSIONAL ENGINEER — CRAIG M. WHITTAKER — NO. 51929 — EXP 6-30-12 — CIVIL — STATE OF CALIFORNIA

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

NO.	DATE		BY	APPR

1 | COUNTY OF LOS ANGELES | 1 SHEETS

ENTRADA
LID INFILTRATION EXHIBIT
TENTATIVE TRACT 53295

I:\CAD\0930\EXHIBITS\ENTRADA LID Exhibit.dwg

ENTRADA-SOUTH

LID/SUSMP/WATER QUALITY MAINTENANCE MAP PLAN
PORTION OF TENTATIVE TRACT 53295

LEGEND

- BIO-RETENTION: –WHOLE AREA NEEDS TO BE SLOPE < 1%
  – MUST HAVE SUB-DRAIN
- BIO-SWALE: –WHOLE SWALE NEEDS TO BE > 2%
  IF SLOPE < 2% REQUIRES SUBDRAIN
  –100 FT. MIN. LENGTH
- PROPOSED STORM DRAIN
- FLOW AREAS BOUNDARIES
- FLOW DIRECTION

OFFSITE UNDEVELOPED-NORTH
AREA=65.7 AC.

Q_{PM}=28.94 cfs
DESIGN Q_{PM}=?
DESIGN LID V_M=
V_M =404,839.4 ft³

A_T=745.9 AC TO REGIONAL WATER QUALITY BASIN.

BASIN A_{TOTAL}=745.9 AC.

BASIN A2
AREA=18.4 AC.

BASIN I
AREA=1.9 AC.

BASIN J
AREA=2.1 AC.

BASIN A1
AREA=82.0 AC.

BASIN G
AREA=0.6 AC.

BASIN H
AREA=1.3 AC.

BASIN K
AREA=2.3 AC.

BASIN L
AREA=3.2 AC.

BASIN N
AREA=1.1 AC.

BASIN D1
AREA=10.7 AC.

BASIN Q
AREA=1.3 AC.

BASIN E
AREA=30.2 AC
Q_{PM}=4.87 cfs
V_M =68,077.2 ft³
REQUIRED NRSSMP BIORETENTION AREA=46,060 ft²
(OR EQUIVALENT TREATMENT, SEE NOTES 1,2, AND 3)

BASIN F
AREA=6.8 AC.
Q_{PM}=0.98 cfs
V_M =13,899.8 ft³
REQUIRED NRSSMP BIORETENTION AREA=9,660 ft²
(OR EQUIVALENT TREATMENT SEE NOTES 1,2, AND 3)

BASIN C
AREA=8.4 AC.
Q_{PM}=0.19 cfs
V_M =2,646.3 ft³
REQUIRED NRSSMP BIORETENTION AREA=6,420 ft²
(OR EQUIVALENT TREATMENT SEE NOTES 1,2, AND 3)

BASIN B
AREA=60.3 AC.
Q_{PM}=9.07 cfs
V_M =126,854.3 ft³
REQUIRED NRSSMP VOLUME=26,634 ft³

BASIN D2
AREA=3.3 AC.

BASIN W
AREA=6.5 AC.
Q_{PM}=0.95 cfs
V_M =13,095.2 ft³
REQUIRED NRSSMP BIORETENTION AREA=8,510 ft²
(OR EQUIVALENT TREATMENT SEE NOTES 1,2, AND 3)

BASIN D_{TOTAL}=14.0 AC
Q_{PM}=1.80 cfs
V_M =22,411.6 ft³
REQUIRED NRSSMP VOLUME=52,272 ft³

BASIN Z
AREA=7.6 AC.
Q_{PM}=1.11 cfs
DESIGN V_M=16,900 ft³
V_M=15,311.3 ft³

BASIN R
AREA=2.2 AC.

BASIN S
AREA=1.5 AC.

BASIN P
AREA=15.8 AC.
Q_{PM}=2.28 cfs
V_M =31,831.5 ft³
REQUIRED NRSSMP BIORETENTION AREA=23,130 ft²
(OR EQUIVALENT TREATMENT SEE NOTES 1,2, AND 3)

BASIN B AND BASIN D EXTENDED DETENTION BASIN A
9.0 ft. DEEP=48,600 ft² AT MID-DEPTH (4.5ft.)
291,600 ft³ TREATMENT VOLUME
A_T=90.1 AC.
Q_{PM}=9.07 cfs
V_M =126,854.3 ft³

BASIN T
AREA=1.3 AC.

BASIN Y
AREA=3.4 AC.
Q_{PM}=0.54 cfs
V_M =7,590.3 ft³
REQUIRED NRSSMP BIORETENTION AREA=5,290ft²
(OR EQUIVALENT TREATMENT SEE NOTES 1,2, AND 3)

BASIN X
AREA=10.4 AC.
Q_{PM}=1.50 cfs
V_M =20,852.4 ft³
REQUIRED NRSSMP BIORETENTION AREA=15,220ft²
(OR EQUIVALENT TREATMENT SEE NOTES 1,2, AND 3)

BASIN D TOTAL EXTENDED DETENTION BASIN B
10 ft. DEEP=22,400 ft² AT MID-DEPTH (1.5ft.)
67,200 ft³ TREATMENT VOLUME
A_T=14.0 AC.
Q_{PM}=1.60 cfs
V_M=22,411.6 ft³

BASIN EE
AREA=0.5 AC.

BASIN DD
AREA=0.8 AC.

BASIN CC
AREA=3.2 AC.

BASIN AA
AREA=0.9 AC.

BASIN BB
AREA=1.3 AC.

BASIN O
AREA=2.3 AC.

BASIN M
AREA=1.1 AC.

BASIN U
AREA=1.1 AC.

BASIN V
AREA=1.1 AC.

OFFSITE UNDEVELOPED WEST
AREA = 602.5 AC.

OFFSITE -SOUTH
AREA=28.7 AC.

T.M. 61105

MEDIA FILTRATION DESIGN Q_{PM}=0.42 cfs
Q_{PM}=0.27 cfs
V_M =3,827.8 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.47 cfs
Q_{PM}=0.30 cfs
V_M =4,230.8 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.14 cfs
Q_{PM}=0.10 cfs
V_M =1,339.5 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.24 cfs
Q_{PM}=0.17 cfs
V_M =2,339.9 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.51 cfs
Q_{PM}=0.33 cfs
V_M =4,633.7 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.62 cfs
Q_{PM}=0.46 cfs
V_M =6,446.9 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.27 cfs
Q_{PM}=0.19 cfs
V_M =2,216.1 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.72 cfs
Q_{PM}=0.46 cfs
V_M =6,474.1 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.12 cfs
Q_{PM}=0.09 cfs
V_M =1,118.2 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.15 cfs
Q_{PM}=0.11 cfs
V_M =1,339.5 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.82 cfs
Q_{PM}=0.43 cfs
V_M =6,646.3 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.17 cfs
Q_{PM}=0.11 cfs
V_M =1,497.4 ft

MEDIA FILTRATION DESIGN Q_{PM}=0.78 cfs
Q_{PM}=0.62 cfs
V_M =7,213.5 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.37 cfs
Q_{PM}=0.24 cfs
V_M =3,381.3 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.30 cfs
Q_{PM}=0.19 cfs
V_M =1,774.0 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.24 cfs
Q_{PM}=0.24 cfs
V_M =3,348.2 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.30 cfs
Q_{PM}=0.17 cfs
V_M =2,339.9 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.53 cfs
Q_{PM}=0.32 cfs
V_M =4,432.2 ft³

MEDIA FILTRATION DESIGN Q_{PM}=0.35 cfs
Q_{PM}=0.20 cfs
V_M =2,858.4 ft³

ON-SITE STORMWATER TREATMENT TO BE USED TO THE SATISFACTION OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS AND TO MEET THE REQUIREMENTS OF THE NRSP SUB-REGIONAL SWMP. TO BE PRIVATELY MAINTAINED.

ON-SITE STORMWATER TREATMENT TO BE USED TO THE SATISFACTION OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS AND TO MEET THE REQUIREMENTS OF THE NRSP SUB-REGIONAL SWMP. TO BE PRIVATELY MAINTAINED.

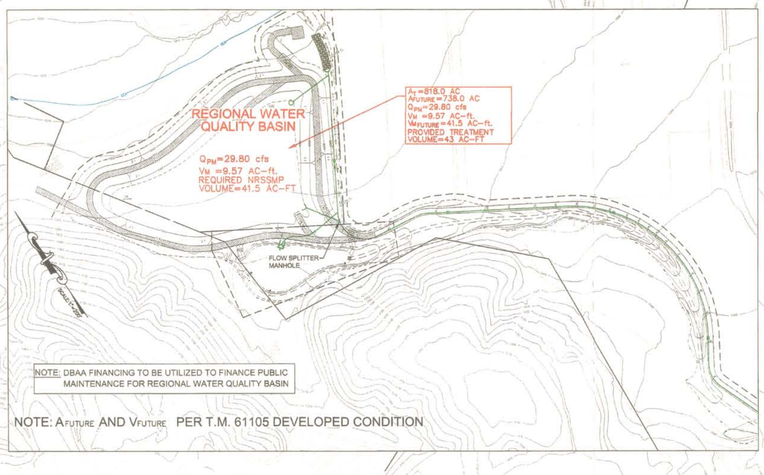
ON-SITE STORMWATER TREATMENT TO BE USED TO THE SATISFACTION OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS AND TO MEET THE REQUIREMENTS OF THE NRSP SUB-REGIONAL SWMP. TO BE PRIVATELY MAINTAINED.

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ON-SITE STORMWATER TREATMENT TO BE USED TO THE SATISFACTION OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS AND TO MEET THE REQUIREMENTS OF THE NRSP SUB-REGIONAL SWMP. TO BE PRIVATELY MAINTAINED.

ON-SITE STORMWATER TREATMENT TO BE USED TO THE SATISFACTION OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS AND TO MEET THE REQUIREMENTS OF THE NRSP SUB-REGIONAL SWMP. TO BE PRIVATELY MAINTAINED.



NOTE: DBAA FINANCING TO BE UTILIZED TO FINANCE PUBLIC MAINTENANCE FOR REGIONAL WATER QUALITY BASIN

NOTE: A_{FUTURE} AND V_{FUTURE} PER T.M. 61105 DEVELOPED CONDITION

DRAINAGE CONCEPT/HYDROLOGY STUDY/SUSMP/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: Joseph Cabrera RCE NO. C68328 DATE: 11/01/2010
CHECKED BY: DATE:
LAND DEVELOPMENT DIVISION
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

NOTE: SEE ENTRADA LID INFILTRATION EXHIBIT FOR LID INFILTRATION FOR BASIN Z

NOTE: DBAA FINANCING TO BE UTILIZED TO FINANCE MAINTENANCE FOR MEDIA FILTRATIONS DEVICES AND EXTENDED DETENTION BASINS

NOTE: DESIGN Qpm AND DESIGN Vm ARE PER NEWHALL RANCH SUB-REGIONAL STORMWATER MITIGATION PLAN SIZING CRITERIA. Qpm AND Vm ARE CALCULATED PER SUSMP APPENDIX A METHODS. ALL BMP's ARE SIZED TO TREAT THE DESIGN Qpm/Vm OR Qpm/Vm, WHICHEVER VALUE IS GREATER.

NRSSMP TREATMENT NOTES

1. STORMWATER TO BE DESIGNED AND PLACED WITHIN THE BASIN WITH FINAL IMPROVEMENT PLANS TO SATISFY LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS AND TO MEET THE REQUIREMENTS OF NEWHALL RANCH SUB-REGIONAL STORMWATER MITIGATION PLAN (NRSSMP) (80 PERCENT CAPTURE OF ANNUAL RUNOFF) FOR ALL DEVELOPED AREAS WITHIN BASIN.
2. EQUIVALENT BIOFILTRATION BMP'S MAY BE SUBSTITUTED WITH IMPROVEMENT PLANS, IF EQUIVALENT BIOFILTRATION BMP'S ARE USED, CALCULATIONS SHALL BE PROVIDED WITH FINAL IMPROVEMENT PLANS TO DEMONSTRATE CAPTURE AND TREATMENT OF 80 PERCENT OF THE AVERAGE ANNUAL RUNOFF VOLUME AND EQUIVALENT AVERAGE ANNUAL VOLUME REDUCTION.
3. REQUIRED SURFACE AREA IS BASED ON 18 INCH PONDING DEPTH. BIO RETENTION SURFACE AREA SHALL BE MEASURED ALONG THE CONTOUR OF THE SIDE SLOPE OF THE BIO RETENTION AREA MIDWAY BETWEEN THE TOE OF THE SLOPE AND THE DESIGN WATER SURFACE ELEVATION CORRESPONDING TO A DEPTH OF 9 INCHES; CALCULATIONS MAY BE SUBMITTED WITH FINAL IMPROVEMENT PLANS TO JUSTIFY OTHER METHODS OF AREA CALCULATION OR SUPPORT OTHER SIZING FACTORS (SEE NOTE 2)

SCALE 1"=200'

FEET
200 100 0 200 400
1 1/2 0 1 2
INCHES

1	COUNTY OF LOS ANGELES	1 SHEETS

LID/SUSMP/WATER QUALITY MAINTENANCE PLAN MAP FOR ENTRADA-SOUTH TENTATIVE TRACT 53295

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE. CARLSBAD, CA. 92008
TEL: (760) 431-9896 FAX:(760) 431-8802
27433 TOURNEY ROAD SUITE 200 VALENCIA, CA. 91355
TEL: (661) 799-2760 FAX: (661) 254-1929
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE. CARLSBAD, CA. 92008
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTAKER R.C.E. 51929 DATE 9-14-10

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTAKER NO. 51929 EXP. 6-30-12 CIVIL STATE OF CALIFORNIA

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

NO.	DATE	BY	APPR

PLAN PREPARATION DATE: DEC 01 2010

0930/HYDROLOGY/0930-WQMP.dwg

HYDROLOGICAL ANALYSIS

FOR

WESTRIDGE AT VALENCIA
TRACT 45433
PD 2514-04

HYDROLOGY CALCULATIONS – FLOW REDUCTION

JOB NO. 93004

PREPARED FOR:
NEWHALL LAND
25124 SPRINGFIELD COURT. SUITE 300
VALENCIA, CA 91355
(661) 255-4000

PREPARED BY:
ALLIANCE LAND PLANNING AND ENGINEERING
2248 FARADAY AVENUE
CARLSBAD, CA 92008
(760) 431-9896

FEBRUARY 2010

Program Package Serial Number: 2084
04/22/10 FILE: 4E04-A INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

WESTRIDGE PD 2514-04 DEVELOPED CONDITION - FLOW REDUCTION STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3004	1A	183.0	627.63	183.0	627.63	4	720.	.02300	6.50	.00	0.	98	5	A32	.89
3004	2A	.0	.00	183.0	594.42	4	1.	.01000	6.50	.00	0.	98	99	A29	.00
3004	3A	1.5	3.83	184.5	598.22	4	21.	.02620	6.50	.00	0.	98	7	A29	.60
3004	4A	1.0	2.79	185.5	600.82	4	420.	.02430	6.50	.00	0.	98	6	A29	.80
3004	5A	1.2	3.08	186.7	596.73	4	43.	.02240	6.50	.00	0.	98	7	A29	.70
3004	6A	1.0	2.79	187.7	598.18	4	591.	.05200	6.50	.00	0.	98	6	A29	.80
3004	7B	.8	2.22	.8	2.22	4	30.	.16000	2.00	.00	0.	98	6	A29	.70
3004	8B	.5	1.40	1.3	3.63	4	524.	.04565	2.00	.00	0.	98	6	A29	.90
3004	9B	1.3	4.46	2.6	7.52	4	34.	.04000	2.00	.00	0.	98	5	A33	.10
3004	10B	1.3	3.34	3.9	10.78	4	1.	.04288	3.50	.00	0.	98	7	A29	.70
3004	11B	.5	1.40	4.4	12.18	4	342.	.04288	3.50	.00	0.	98	6	A29	.90
3004	12C	.0	.00	.0	.00	4	1.	.01000	.00	.00	0.	98	99	A29	.00
3004	13C	.0	.00	.0	.00	4	1.	.01000	.00	.00	0.	98	99	A29	.00
3004	14B	.0	.00	4.4	12.05	4	1.	.03000	2.00	.00	0.	98	99	A29	.00
3004	15B	.6	1.86	5.0	13.70	4	17.	.01100	3.50	.00	0.	98	5	A29	.90
3004	16B	.8	2.46	5.8	15.86	4	44.	.01100	3.50	.00	0.	98	5	A29	.70
3004	17B	1.1	2.85	6.9	18.66	4	1.	.01140	4.50	.00	0.	98	7	A29	.80
3004	18B	1.5	3.60	8.4	22.25	4	107.	.01140	4.50	.00	0.	98	8	A29	.60
3004	19B	.0	.00	8.4	22.13	4	1.	.01000	4.50	.00	0.	98	99	A29	.00
3004	20B	14.4	31.27	22.8	53.39	4	166.	.01000	4.50	.00	0.	98	10	A29	.60
3004	21B	2.4	6.13	25.2	58.99	4	19.	.01000	4.50	.00	0.	98	7	A29	.60
3004	22B	1.5	3.91	26.7	62.83	4	337.	.02925	4.50	.00	0.	98	7	A29	.90

****

CONFLUENCE Q'S

3004 23A TA 1155 QA 586.44 QAB 649.24 QB 62.80 3004 23B TB 1155 QB 62.80 QBA 649.24 QA 586.44

3004 23AB TAB 1155 QAB 649.24 QA 586.44 QB 62.80

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3004	23AB	26.7	62.80	214.4	649.24	4	320.	.05147	6.50	.00	0.	98	0	A29	.00

PD 2514-04

Subarea	Area (Ac)	%imp	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in)	Tc-calculated (min)	Intensity (in/hr)	Cu	Cd
3A	1.5	0.60	98	610	0.035	5.71	7	2.91	0.83	0.87
4A	1.0	0.80	98	500	0.035	5.71	6	3.13	0.84	0.89
5A	1.2	0.70	98	560	0.025	5.71	7	2.91	0.83	0.88
6A	1.0	0.80	98	540	0.025	5.71	6	3.13	0.84	0.89
7B	0.8	0.70	98	530	0.026	5.71	6	3.13	0.84	0.88
8B	0.5	0.90	98	530	0.026	5.71	6	3.13	0.84	0.89
9B	1.3	0.10	98	370	0.015	6.5	5	3.88	0.86	0.86
10B	1.3	0.70	98	680	0.050	5.71	7	2.91	0.83	0.88
11B	0.5	0.90	98	520	0.050	5.71	6	3.13	0.84	0.89
15B	0.6	0.90	98	440	0.050	6.5	5	3.88	0.86	0.90
16B	0.8	0.70	98	375	0.050	6.5	5	3.88	0.86	0.89
17B	1.1	0.80	98	750	0.035	5.71	7	2.91	0.83	0.89
18B	1.5	0.60	98	760	0.035	5.71	8	2.73	0.83	0.87
20B	14.4	0.60	98	1120	0.015	6.5	10	2.80	0.83	0.87
21B	2.4	0.60	98	790	0.044	6.5	7	3.31	0.85	0.88
22B	1.5	0.90	98	790	0.044	6.5	7	3.31	0.85	0.90

COUNTY OF LOS ANGELES
LAND DEVELOPMENT DIVISION
SUBDIVISION PLAN CHECKING SECTION - DRAINAGE AND GRADING UNIT

TO: Alliance

July 12, 2001

Attention Craig Whitteker

REVIEW OF REVISED HYDROLOGY STUDY

TRACT NO. 2514-04 ~~45422-04~~
SUBMITTAL DATE Santa Clarita

We have reviewed your revised hydrology study/flood hazard calculations.

(X) The revised hydrology study has been approved for Area and Q only.

( ) The flood hazard calculations submitted with your hydrology study are approved.

( ) Refer to comments below:

COMMENTS:

REVIEWED BY M. H. Kajbaf DATE 7/12/01
MO HOSSEIN KAJBAF - (626) 458-4921

8HYD REVISED HYDROLOGY STUDY
P:\LDPUB\SUBDIVSN\PLANCHK\MTD1601HYD
07/11/01

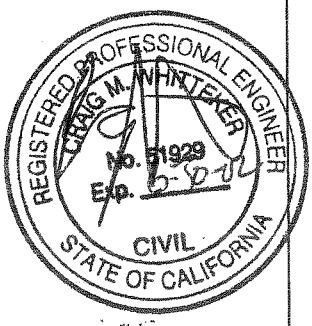
Hydrological Analysis

for

Westridge at Valencia
Tract 45433
PD 2514-04
Hydrology Calculations
Delta No. 1 Revision
Job No. 93004

HYDROLOGY STUDY
APPROVED FOR AREA AND Q ONLY
APPROVED BY: RCE NO. 45854 DATE: 7/12/01
CHECKED BY: DATE:
LAND DEVELOPMENT DIVISION
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

Prepared for:
Valencia Company
28323 Valencia Boulevard
Valencia, CA 91355
(661) 255-4000



Prepared by:
Alliance Land Planning & Engineering
5962 Laplace Court, Suite 130
Carlsbad, CA 92008
(760) 431-9896

MAY 2001

HYDROLOGY DESIGN CRITERIA

- Storm Event = 50 years onsite, offsite and sump condition
- Rainfall Zone = L
- Soil Classification Area = 098
- Debris Potential Area = 8

Time of concentration calculated using County of Los Angeles "T_C" Software.

Flowrates calculated using modified rational method; County of Los Angeles "MORA" software.

Burned Flowrate = $AI(1-K) + KQ_{50}$

A = area in acres
I = rainfall intensity
K = burn factor per Appendix G-2

Bulked Flowrate = Q_{50} x Bulking Factor

Using chart P-5 and assuming the smallest basin:
BF = 1.28

Debris Volume = 50 c.y./acre

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

WESTRIDGE - PD 2514-04 - DEVELOPED CONDITION STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	1A	0.	0.	0.	0.	2	1.	0.01000	0.00	0.00	0.	98	99	L50	0.10
93004	2A	0.	0.	0.	0.	4	1.	0.03500	0.00	0.00	0.	98	99	L50	0.90
93004	3A	2.	11.	2.	11.	4	20.	0.03500	2.00	0.00	0.	98	5	L50	0.60
93004	4A	1.	5.	3.	16.	4	430.	0.03500	2.00	0.00	0.	98	5	L50	0.80
93004	5A	1.	5.	4.	21.	4	40.	0.03500	2.00	0.00	0.	98	5	L50	0.70
93004	6A	1.	5.	5.	26.	4	700.	0.03500	2.00	0.00	0.	98	5	L50	0.80
93004	7B	1.	5.	1.	5.	4	40.	0.02600	2.00	0.00	0.	98	5	L50	0.70
93004	8B	1.	6.	2.	11.	4	520.	0.04000	2.00	0.00	0.	98	5	L50	0.90
93004	9B	1.	5.	3.	15.	2	50.	0.03600	0.00	0.00	0.	98	5	L50	0.10
93004	10B	1.	5.	4.	20.	4	5.	0.04000	2.00	0.00	0.	98	5	L50	0.70
93004	11B	1.	6.	5.	26.	4	350.	0.04000	2.00	0.00	0.	98	5	L50	0.90
93004	12C	15.	71.	15.	71.	4	1020.	0.01000	3.00	0.00	0.	98	6	L50	0.50

****

* CONFLUENCE Q'S *

* 93004 13B TB 1155 QB 25. QBC 86. QC 61. 93004 13C TC 1157 QC 66. QCB 85. QB 18. *

* 93004 13BC TBC 1156 QBC 89. QB 23. QC 66. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	13BC	15.	66.	20.	89.	4	350.	0.04000	2.75	0.00	0.	98	0	L50	0.00
93004	14B	0.	0.	20.	87.	4	1.	0.01000	3.25	0.00	0.	98	99	L50	0.10
93004	15B	1.	6.	21.	91.	4	20.	0.04000	2.75	0.00	0.	98	5	L50	0.90
93004	16B	1.	5.	22.	95.	4	50.	0.04000	2.75	0.00	0.	98	5	L50	0.70
93004	17B	1.	5.	23.	98.	4	60.	0.04000	2.75	0.00	0.	98	5	L50	0.80
93004	18B	2.	11.	25.	105.	4	500.	0.04000	2.75	0.00	0.	98	5	L50	0.60
93004	19B	0.	0.	25.	103.	4	1.	0.01000	3.50	0.00	0.	98	99	L50	0.10
93004	20B	2.	11.	27.	110.	4	20.	0.08000	2.50	0.00	0.	98	5	L50	0.60
93004	21B	2.	11.	29.	118.	4	20.	0.08000	2.50	0.00	0.	98	5	L50	0.90
93004	22B	14.	67.	43.	177.	4	70.	0.03000	3.50	0.00	0.	98	6	L50	0.60

****

* CONFLUENCE Q'S *

* 93004 23A TA 1155 QA 25. QAB 202. QB 177. 93004 23B TB 1155 QB 177. QBA 202. QA 25. *

* 93004 23AB TAB 1155 QAB 202. QA 25. QB 177. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	23AB	43.	177.	48.	202.	4	10.	0.01000	4.50	0.00	0.	98	0	L50	0.00

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY

HYDROGRAPH AT POINT 23AB

HYDROGRAPH AT 93004 23A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	2.	200	4.	300	6.	400	8.
500	10.	600	14.	700	17.	800	22.	900	25.
1000	29.	1050	35.	1100	35.	1110	36.	1120	40.
1130	44.	1131	45.	1132	46.	1133	47.	1134	48.
1135	49.	1136	51.	1137	52.	1138	53.	1139	55.
1140	56.	1141	58.	1142	60.	1143	61.	1144	63.
1145	64.	1146	66.	1147	68.	1148	70.	1149	77.
1150	88.	1151	108.	1152	144.	1153	173.	1154	192.
1155	202.	1156	200.	1157	180.	1158	146.	1159	120.
1160	100.	1161	83.	1162	69.	1163	59.	1164	52.
1165	48.	1166	45.	1167	43.	1168	42.	1169	42.
1170	41.	1171	40.	1172	40.	1173	39.	1174	38.
1175	37.	1176	36.	1177	35.	1178	35.	1179	34.
1180	34.	1181	34.	1182	33.	1183	33.	1184	33.
1185	33.	1186	33.	1187	33.	1188	33.	1189	33.
1190	33.	1191	33.	1192	32.	1193	32.	1194	31.
1195	31.	1196	31.	1197	30.	1198	30.	1199	30.
1200	30.	1201	29.	1202	29.	1203	29.	1204	29.
1205	29.	1206	29.	1207	29.	1208	29.	1209	29.
1210	29.	1211	29.	1212	29.	1213	28.	1214	28.
1215	27.	1216	26.	1217	26.	1218	26.	1219	25.
1220	25.	1221	25.	1222	25.	1223	25.	1224	25.
1225	25.	1226	25.	1227	25.	1228	25.	1229	25.
1230	25.	1231	25.	1232	24.	1233	24.	1234	24.
1235	24.	1236	23.	1237	23.	1238	23.	1239	23.
1240	23.	1241	23.	1242	23.	1243	22.	1244	22.
1245	22.	1246	22.	1247	22.	1248	22.	1249	22.
1250	22.	1251	22.	1252	22.	1253	22.	1254	22.
1255	22.	1256	22.	1257	22.	1258	22.	1259	22.
1260	22.	1261	22.	1262	22.	1263	21.	1264	21.
1265	20.	1266	19.	1267	19.	1268	19.	1269	18.
1270	18.	1271	18.	1272	17.	1273	17.	1274	17.
1275	17.	1276	17.	1277	17.	1278	17.	1279	17.
1280	17.	1281	17.	1282	17.	1283	17.	1284	17.
1285	17.	1286	17.	1287	17.	1288	17.	1289	17.
1290	17.	1291	17.	1292	17.	1293	17.	1294	17.
1295	17.	1296	17.	1297	17.	1298	17.	1299	17.
1300	17.	1310	14.	1320	12.	1330	12.	1340	12.
1350	8.	1360	6.	1370	6.	1380	6.	1390	6.
1400	6.	1420	4.	1440	3.	1460	2.	1500	2.

Total Runoff = 33.713 Acre-Ft.
Peak Q = 202 CFS
Time to Peak Q = 1155 Minutes

WESTRIDGE P.D. 2514-04 HYDROLOGY
BASIN A
DEVELOPED CONDITION

Subarea No. B 22
TIME OF CONCENTRATION = 12. MINUTES **********
Rainfall : Zone = L Frequency = 50 Years
Subarea Area = 14. Acres
Outlet Q = 56. cfs

Travel Time:

Reach No.	Reach Time
Land	9.8
1- 1	2.4
Total	12.2

6/24/80 ALP&E
19:52:58 TIME OF CONCENTRATION calculated by JFV 06/24/80
V 3.1.0

WESTRIDGE P.D. 2514-04 HYDROLOGY
BASIN A
DEVELOPED CONDITION
Input Data:

Rainfall Frequency Zone	(yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
L	50	10.	12	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	98	.100	.034	13.0	1403.8	1377.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
ct No.: Street Cross-Section No. - See Street-Cross-Section Data list.
ict No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1406.5	1403.8	.013	.060	98	.100

WESTRIDGE P.D. 2514-04 HYDROLOGY
BASIN A
DEVELOPED CONDITION

Reach Data:

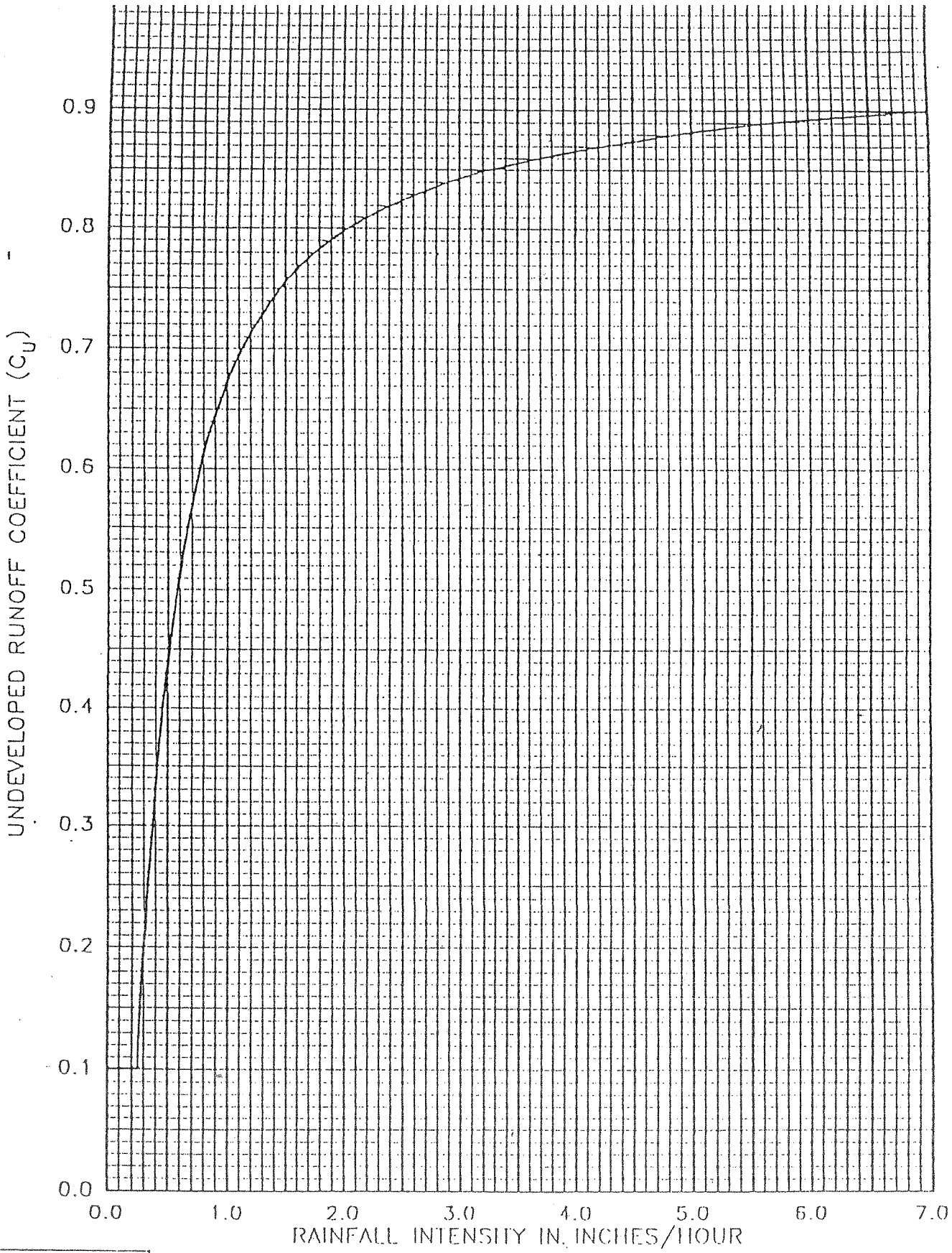
Reach No.	Conveyance Type	(ft) Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	780.0	.0344	1.3	18.9
Outlet								14.3	56.3

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.130	.320	.050	.200	.500	10.	36.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File W4D22B.INP
Output Data File
Runoff Coefficient Data File RUNCOEF.DAT



Equation:

$C_D = (0.9 * IMP) + (1.0 - IMP)\ C_U$

Where:
C_D = Developed runoff coefficient.
IMP = Proportion impervious.
C_U = Undeveloped runoff coefficient.

Los Angeles County
Department of Public Works

RUNOFF COEFFICIENT CURVE

SOIL TYPE NO. 098

NS098.SPC

Burn Factor

Rainfall Intensity (in/hr)	Burn Factor K	Rainfall Intensity (in/hr)	Burn Factor K	Rainfall Intensity (in/hr)	Burn Factor K
.1	.856	3.5	.596	6.8	.557
.2	.798	3.6	.594	6.9	.556
.3	.765	3.7	.592	7.0	.555
.4	.743	3.8	.591	7.1	.554
.5	.727	3.9	.589	7.2	.554
.6	.713	4.0	.588	7.3	.553
.7	.702	4.1	.586	7.4	.552
.8	.693	4.2	.585	7.5	.551
.9	.684	4.3	.583	7.6	.550
1.0	.677	4.4	.582	7.7	.550
1.1	.670	4.5	.581	7.8	.549
1.2	.665	4.6	.579	7.9	.548
1.3	.659	4.7	.578	8.0	.548
1.4	.654	4.8	.577	8.1	.547
1.5	.650	4.9	.576	8.2	.546
1.6	.645	5.0	.575	8.3	.546
1.7	.641	5.1	.573	8.4	.545
1.8	.638	5.2	.572	8.5	.544
1.9	.634	5.3	.571	8.6	.544
2.0	.631	5.4	.570	8.7	.543
2.1	.628	5.5	.569	8.8	.542
2.2	.625	5.6	.568	8.9	.542
2.3	.622	5.7	.567	9.0	.541
2.4	.619	5.8	.566	9.1	.540
2.5	.617	5.9	.565	9.2	.540
2.6	.614	6.0	.564	9.3	.539
2.7	.612	6.1	.563	9.4	.539
2.8	.610	6.2	.562	9.5	.538
2.9	.607	6.3	.561	9.6	.538
3.0	.605	6.4	.560	9.7	.537
3.1	.603	6.5	.559	9.8	.536
3.2	.601	6.6	.558	9.9	.536
3.3	.599	6.7	.558	10.0	.535
3.4	.598				

BURN.TAB

Equation:

$$K = 0.677 * I^{-0.102}$$

Where:

K = The Ratio of Burned to Unburned Infiltration Rates (Burn Factor).
I = The Rainfall Intensity (in/hr).

Los Angeles County
Department of Public Works

BURN FACTOR

STANDARD VALUES TABLES

Overland Manning's N Values

Type of Development	N
Industrial-Commercial	0.014
Residential	0.040
Rural	0.060

Standard Lot Values

Type of Development	Lot Length	Lot Slope Range
Industrial-Commercial	200	0.005-0.02
Residential	100	0.01 -0.05
Rural	200	0.05 -1.00

STANDARD RANGE OF PROPORTION IMPERVIOUS

Type of Development	Proportion Impervious
Single-Family	0.21-0.45
Multi-Family	0.40-0.80
Commercial	0.48-0.92
Industrial	0.60-0.92
Institutional	0.70-0.90

Average Values for Metropolitan Los Angeles County are:
Single-Family=0.42 Multi-Family=0.68 Commercial=0.92
Industrial=0.91 Institutional=0.68
For more detail, see the separate Proportion Impervious Table.

Los Angeles County
Department of Public Works

STANDARD VALUES
TABLES

PROPORTION IMPERVIOUS

Residential

Single-Family	0.418
Two-Unit	0.418
Three-Unit	0.682
Four-Unit	0.819
Five-Unit	0.855

Commercial

Stores, Office Buildings, Manufacturing Outlets	0.909
Shopping Centers (Regional), Restaurants, Service Shops, Auto Equipment, Parking Lots	0.946
Shopping Centers (Neighborhood), Motels, Hotels, Kennels, Professional Buildings, Banks, Service Stations	0.958
Supermarkets	0.976
Department Stores	0.985

Industrial

Mineral Processing	0.473
Open Storage	0.655
Motion Picture, Radio, Television	0.819
Manufacturing, Warehousing, Storage, Parking	0.909
Food Processing Plants, Lumber Yards	0.958

Institutional Property

Colleges, Universities	0.473
Homes for the Aged	0.682
Hospitals, Cemeteries, Mausoleums, Mortuaries	0.744
Churches, Schools	0.819

Los Angeles County
Department of Public Works

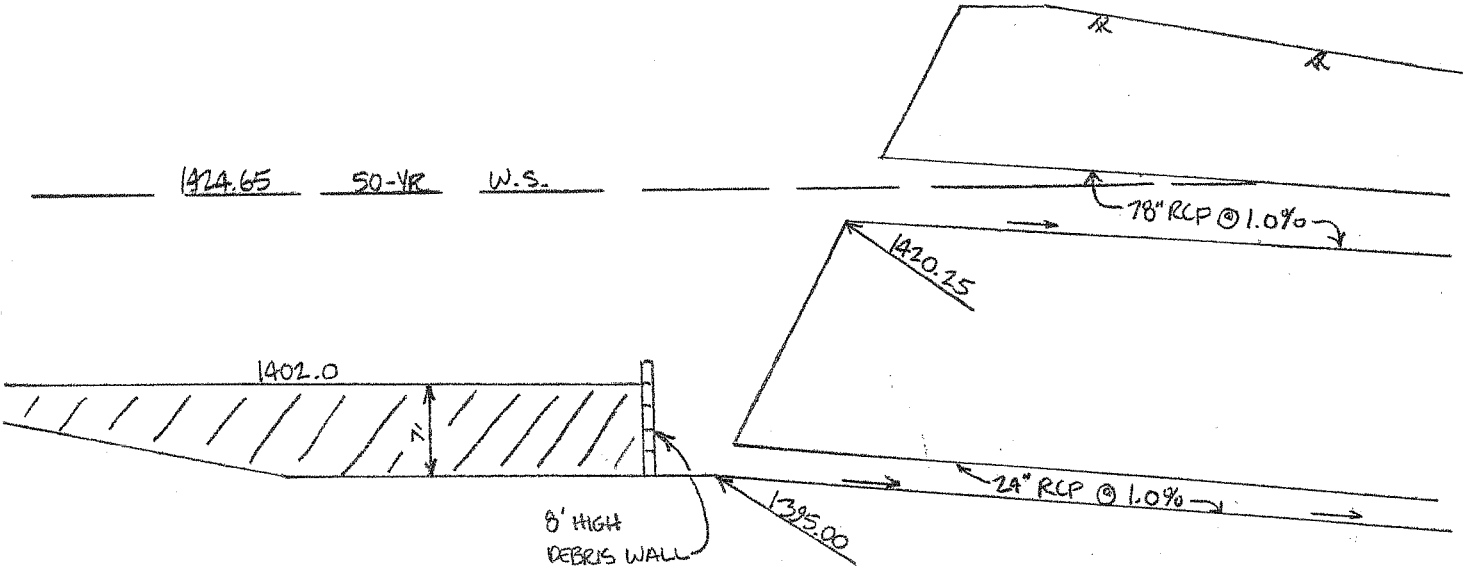
PROPORTION
IMPERVIOUS

DETENTION BASIN CALCULATIONS

INFLOW: 493 CFS

OUTFLOW: 71 CFS IN 24" LOW FLOW PIPE

WESTRIDGE
TRACT 45433
PD 2514-04
ALP&E
5/20/01



DEBRIS CALC.

TOTAL D.V. = 6,730 CY

AREA OF BOTTOM = 26,000 SF

HT. OF DEBRIS = $\frac{6{,}730\ (27)}{26{,}000} = 6.99'$

W.S. CALC

493 CFS INFLOW - 71 CFS OUTFLOW = 422 CFS INTO 78" PIPE

422 CFS
n = 0.013
S = 1.0%
78" DIA

$H_W = 68\% \rightarrow 0.68(6.5') = 4.4'$

$4.4' + 1420.25 = \underline{1424.65\ W.S.}$

STORAGE OUTFLOW TABLE

24" RCP AREA = 3.14 SF

Q	V	S_F	H_F	H_V	H_T	W.S	VOL (AC-FT)
Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
10	3.2	0.0019	0.2	0.2	0.4	1402.4	0.2
25	8.0	0.0122	1.2	1.0	2.4	1404.4	1.4
40	12.7	0.0313	3.1	2.5	6.1	1408.1	4.8
60	19.1	0.0700	7.0	5.6	13.7	1415.7	15.1
80	25.5	0.1253	12.5	10.1	24.6	1426.6	41.8
100	31.8	0.1958	19.6	15.7	38.4	1440.4	103.7

$S_F = \left(\frac{Q}{K}\right)^2$ K = 226 LACFCD MANUAL FIG. G-3

$H_F = S_F(L)$ L = 100'

$H_V = \frac{V^2}{2g}$

$V = \frac{Q}{A}$

$H_T = H_F + 1.2(H_V)$

W.S. = 1402.0 + H_T

WESTRIDGE - TRACT 45433
PD 2514-04
OFFSITE DETENTION BASIN

Basin Rating Table:

Elevation (ft.)	Storage (Ac.ft.)	Outflow (cfs)	Elevation (ft.)	Storage (Ac.ft.)	Outflow (cfs)
1402.00	.00	.00	1415.70	15.10	60.00
1402.40	.20	10.00	1426.60	41.80	80.00
1404.40	1.40	25.00	1440.40	103.70	100.00
1408.10	4.80	40.00			

Location: 11B 0

Area: 199. Acres.

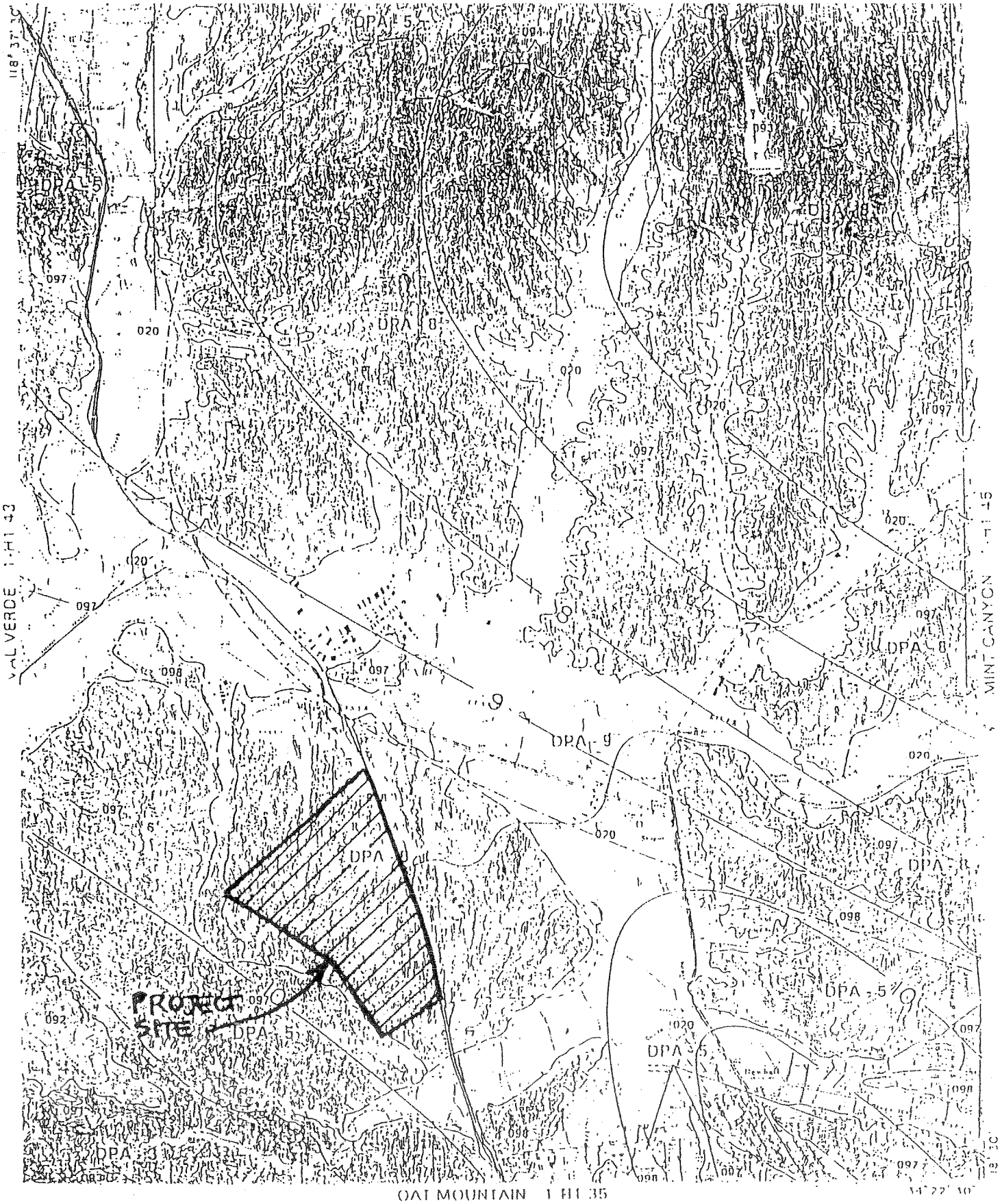
Inflow Peak Data:

Q = 493. cfs at Point No. 44 at Time 1158 Minutes on Day 4
Number of Points in the Hydrograph = 200

Outflow Peak Data:

Q = 71. cfs at Point No. 109 at Time 1223 Minutes.

Input Data Set = 51404 .BRT
Output Data Set =
Hydrograph Data Set = 51404 .HYD



LEGEND

——— SOIL CLASSIFICATION AREA

····· DEBRIS POTENTIAL AREA

RAINFALL ZONE

--12-- 50 YEAR ISOLYET (MAX 24 HOUR AMOUNT)

LACDPW

NEWHALL 1988

hydrologic map

WESTRIDGE - TRACT 45433
PD 2514-04
OFFSITE DETENTION BASIN

Hydrograph Data:

Time (min.)	Input Q (cfs)	Output Q (cfs)
.00	.00	.00
100.00	2.00	.00
200.00	3.00	3.87
300.00	6.00	4.84
400.00	9.00	8.96
500.00	13.00	11.27
600.00	23.00	17.50
700.00	34.00	26.35
800.00	49.00	33.41
900.00	62.00	41.88
1000.00	76.00	48.27
1050.00	96.00	53.00
1100.00	100.00	58.64
1110.00	102.00	59.76
1120.00	111.00	60.39
1130.00	124.00	60.97
1131.00	126.00	61.04
1132.00	128.00	61.11
1133.00	130.00	61.18
1134.00	132.00	61.25
1135.00	135.00	61.32
1136.00	138.00	61.40
1137.00	141.00	61.48
1138.00	144.00	61.57
1139.00	147.00	61.65
1140.00	150.00	61.74
1141.00	155.00	61.84
1142.00	159.00	61.93
1143.00	163.00	62.04
1144.00	168.00	62.14
1145.00	172.00	62.25
1146.00	177.00	62.37
1147.00	183.00	62.49
1148.00	190.00	62.62
1149.00	202.00	62.76
1150.00	218.00	62.91
1151.00	248.00	63.08
1152.00	300.00	63.30
1153.00	339.00	63.56
1154.00	379.00	63.87
1155.00	412.00	64.21
1156.00	435.00	64.58
1157.00	453.00	64.97
1158.00	493.00	65.39
1159.00	432.00	65.80
1160.00	422.00	66.18
1161.00	413.00	66.54
1162.00	403.00	66.89
1165.00	336.00	67.84
1166.00	308.00	68.10
1167.00	284.00	68.34
1168.00	264.00	68.55
1169.00	247.00	68.74
1170.00	232.00	68.92
1171.00	219.00	69.08
1172.00	206.00	69.23
1173.00	195.00	69.36
1174.00	185.00	69.49
1175.00	175.00	69.60
1176.00	167.00	69.71
1177.00	158.00	69.80
1178.00	151.00	69.89
1179.00	145.00	69.97
1180.00	139.00	70.05
1181.00	133.00	70.11
1182.00	128.00	70.18
1183.00	124.00	70.23
1184.00	120.00	70.29
1185.00	117.00	70.34
1186.00	114.00	70.38
1187.00	111.00	70.43
1188.00	108.00	70.47
1189.00	106.00	70.50
1190.00	105.00	70.54
1191.00	103.00	70.58
1192.00	101.00	70.61
1193.00	99.00	70.64
1194.00	98.00	70.67
1195.00	96.00	70.69
1196.00	94.00	70.72
1197.00	93.00	70.74
1198.00	92.00	70.76
1199.00	91.00	70.79
1200.00	90.00	70.81
1201.00	89.00	70.83
1202.00	88.00	70.84
1203.00	87.00	70.86
1204.00	86.00	70.88
1205.00	85.00	70.89
1206.00	84.00	70.91
1207.00	84.00	70.92
1208.00	83.00	70.93
1209.00	83.00	70.95
1210.00	82.00	70.96
1211.00	82.00	70.97
1212.00	81.00	70.98

WESTRIDGE - TRACT 45433
PD 2514-04
OFFSITE DETENTION BASIN

Hydrograph Data:

Time (min.)	Input Q (cfs)	Output Q (cfs)
1215.00	78.00	71.01
1216.00	77.00	71.01
1217.00	76.00	71.02
1218.00	75.00	71.02
1219.00	74.00	71.03
1220.00	73.00	71.03
1221.00	72.00	71.03
1222.00	72.00	71.03
1223.00	71.00	71.03
1224.00	70.00	71.03
1225.00	69.00	71.03
1226.00	69.00	71.03
1227.00	68.00	71.03
1228.00	68.00	71.02
1229.00	67.00	71.02
1230.00	67.00	71.01
1231.00	66.00	71.01
1232.00	66.00	71.00
1233.00	65.00	71.00
1234.00	65.00	70.99
1235.00	64.00	70.99
1236.00	63.00	70.98
1237.00	62.00	70.97
1238.00	62.00	70.96
1239.00	61.00	70.95
1240.00	61.00	70.94
1241.00	60.00	70.93
1242.00	60.00	70.92
1243.00	59.00	70.91
1244.00	59.00	70.89
1245.00	58.00	70.88
1246.00	58.00	70.87
1247.00	58.00	70.85
1248.00	57.00	70.84
1249.00	57.00	70.83
1250.00	57.00	70.81
1251.00	57.00	70.80
1252.00	56.00	70.78
1253.00	56.00	70.77
1254.00	56.00	70.75
1255.00	56.00	70.74
1256.00	56.00	70.72
1257.00	56.00	70.71
1258.00	55.00	70.69
1259.00	55.00	70.68
1260.00	55.00	70.66
1261.00	55.00	70.64
1262.00	54.00	70.63
1265.00	52.00	70.57
1266.00	51.00	70.55
1267.00	50.00	70.53
1268.00	49.00	70.51
1269.00	48.00	70.49
1270.00	47.00	70.46
1271.00	47.00	70.44
1272.00	46.00	70.41
1273.00	45.00	70.39
1274.00	44.00	70.36
1275.00	44.00	70.34
1276.00	43.00	70.31
1277.00	43.00	70.28
1278.00	42.00	70.25
1279.00	42.00	70.22
1280.00	41.00	70.19
1281.00	41.00	70.16
1282.00	41.00	70.13
1283.00	40.00	70.10
1284.00	40.00	70.07
1285.00	40.00	70.04
1286.00	39.00	70.01
1287.00	39.00	69.98
1288.00	39.00	69.94
1289.00	39.00	69.91
1290.00	38.00	69.88
1291.00	38.00	69.85
1292.00	38.00	69.81
1293.00	38.00	69.78
1294.00	37.00	69.75
1295.00	37.00	69.71
1296.00	37.00	69.68
1297.00	37.00	69.65
1298.00	37.00	69.61
1299.00	37.00	69.58
1300.00	37.00	69.55
1310.00	30.00	69.18
1320.00	25.00	68.75
1330.00	22.00	68.28
1340.00	21.00	67.80
1350.00	15.00	67.29
1360.00	11.00	66.73
1370.00	9.00	66.15
1380.00	8.00	65.56
1390.00	8.00	64.97
1400.00	7.00	64.38
1420.00	5.00	63.19
1440.00	4.00	61.99

1163.00	389.00	67.23	1213.00	80.00	70.99
1164.00	366.00	67.55	1214.00	79.00	71.00

1263.00	53.00	70.61	1460.00	3.00	60.79
1264.00	53.00	70.59	1500.00	2.00	56.07

WESTRIDGE - BASIN I - DEVELOPED CONDITION STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	1B	19.	71.	19.	71.	1	1000.	0.07000	0.00	0.00	0.	97	7	L50	0.10
93004	2B	24.	98.	43.	139.	1	1150.	0.06500	0.00	0.00	0.	97	6	L50	0.10
93004	3B	26.	97.	69.	197.	1	1050.	0.04800	0.00	0.00	0.	97	7	L50	0.10
93004	4B	32.	101.	101.	260.	0	0.	0.00000	0.00	0.00	0.	97	9	L50	0.10
93004	5C	14.	57.	14.	57.	0	0.	0.00000	0.00	0.00	0.	97	6	L50	0.10

CONFLUENCE Q'S

93004 6B TB 1159 QB 260. QBC 272. QC 13. 93004 6C TC 1154 QC 57. QCB 252. QB 194.
93004 6BC TBC 1157 QBC 284. QB 247. QC 37.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	6BC	14.	57.	115.	284.	2	1700.	0.03200	0.00	0.00	0.	97	0	L50	0.00
93004	7B	34.	105.	149.	363.	0	0.	0.00000	0.00	0.00	0.	98	11	L50	0.10
93004	8D	17.	70.	17.	70.	0	0.	0.00000	0.00	0.00	0.	98	7	L50	0.10
93004	9D	0.	0.	17.	70.	0	0.	0.00000	0.00	0.00	0.	98	99	L50	0.00

CONFLUENCE Q'S

93004 10B TB 1159 QB 363. QBD 388. QD 25. 93004 10D TD 1154 QD 70. QDB 329. QB 259.
93004 10BD TBD 1158 QBD 398. QB 353. QD 45.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	10BD	17.	70.	166.	398.	2	1400.	0.03900	0.00	0.00	0.	98	0	L50	0.00
93004	11B	32.	132.	198.	454.	4	1400.	0.05000	4.50	0.00	0.	98	7	L50	0.10
93004	12C	5.	26.	5.	26.	4	900.	0.03500	2.00	0.00	0.	98	5	L50	0.42
93004	13C	20.	86.	25.	109.	4	700.	0.03500	3.00	0.00	0.	98	7	L50	0.42
93004	14C	5.	26.	30.	131.	0	0.	0.00000	0.00	0.00	0.	98	5	L50	0.42
93004	15BC	30.	131.	228.	537.	4	900.	0.07000	4.50	0.00	0.	98	0	L50	0.00
93004	16B	6.	31.	234.	542.	4	650.	0.07500	4.50	0.00	0.	98	5	L50	0.42
93004	17D	29.	140.	29.	140.	2	2300.	0.03300	0.00	0.00	0.	98	6	L50	0.60
93004	18D	40.	132.	69.	229.	0	0.	0.00000	0.00	0.00	0.	98	10	L50	0.10

CONFLUENCE Q'S

93004 19B TB 1159 QB 540. QBD 764. QD 225. 93004 19D TD 1158 QD 229. QDB 768. QB 539.
93004 19BD TBD 1158 QBD 768. QB 539. QD 229.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	19BD	69.	229.	303.	768.	0	0.	0.00000	0.00	0.00	0.	98	0	L50	0.00

11B

$Q_B = 454/198 = 2.29 \rightarrow I = 2.8$, $K = 0.610$

$Q_B = 198(2.8)(1-0.610) + 0.610(454) = 493$ CFS

ADD 39 CFS TO ALL DOWNSTREAM

Q_{BB} = N/A DEBRIS BASIN

D.V. = 34 CY/AC (198 AC) = 6,732 CY

18D 50% GOLF COURSE

$Q_B = 1.08(132)\,20/40 + 1.0(132)\,20/40 = 137$ CFS

ADD 5 CFS TO ALL DOWNSTREAM

$Q_{BB} = 1.36(71\text{ CFS}) + 66\text{ CFS} = 163$ CFS

ADD 26 CFS TO ALL DOWNSTREAM

D.V. = 20 AC (55 CY/AC) = 1100 CY

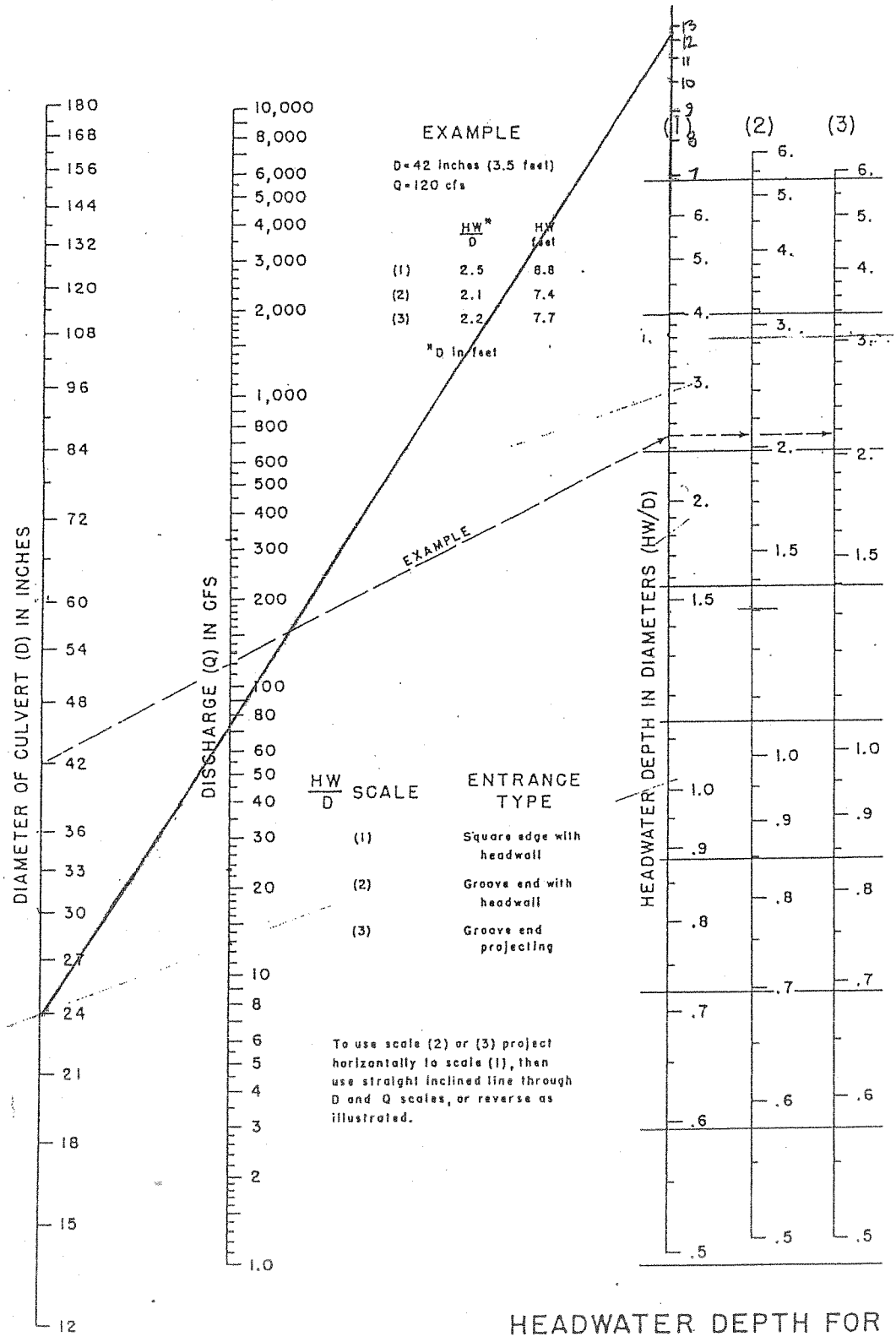
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY

HYDROGRAPH AT POINT 11B

HYDROGRAPH AT 93004 11B STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	2.	200	3.	300	6.	400	9.
500	13.	600	23.	700	34.	800	49.	900	62.
1000	76.	1050	96.	1100	100.	1110	102.	1120	111.
1130	124.	1131	126.	1132	128.	1133	130.	1134	132.
1135	135.	1136	138.	1137	141.	1138	144.	1139	147.
1140	150.	1141	155.	1142	159.	1143	163.	1144	168.
1145	172.	1146	177.	1147	183.	1148	190.	1149	202.
1150	218.	1151	248.	1152	300.	1153	339.	1154	379.
1155	412.	1156	435.	1157	453.	1158	454.	1159	432.
1160	422.	1161	413.	1162	403.	1163	389.	1164	366.
1165	336.	1166	308.	1167	284.	1168	264.	1169	247.
1170	232.	1171	219.	1172	206.	1173	195.	1174	185.
1175	175.	1176	167.	1177	158.	1178	151.	1179	145.
1180	139.	1181	133.	1182	128.	1183	124.	1184	120.
1185	117.	1186	114.	1187	111.	1188	108.	1189	106.
1190	105.	1191	103.	1192	101.	1193	99.	1194	98.
1195	96.	1196	94.	1197	93.	1198	92.	1199	91.
1200	90.	1201	89.	1202	88.	1203	87.	1204	86.
1205	85.	1206	84.	1207	84.	1208	83.	1209	83.
1210	82.	1211	82.	1212	81.	1213	80.	1214	79.
1215	78.	1216	77.	1217	76.	1218	75.	1219	74.
1220	73.	1221	72.	1222	72.	1223	71.	1224	70.
1225	69.	1226	69.	1227	68.	1228	68.	1229	67.
1230	67.	1231	66.	1232	66.	1233	65.	1234	65.
1235	64.	1236	63.	1237	62.	1238	62.	1239	61.
1240	61.	1241	60.	1242	60.	1243	59.	1244	59.
1245	58.	1246	58.	1247	58.	1248	57.	1249	57.
1250	57.	1251	57.	1252	56.	1253	56.	1254	56.
1255	56.	1256	56.	1257	56.	1258	55.	1259	55.
1260	55.	1261	55.	1262	54.	1263	53.	1264	53.
1265	52.	1266	51.	1267	50.	1268	49.	1269	48.
1270	47.	1271	47.	1272	46.	1273	45.	1274	44.
1275	44.	1276	43.	1277	43.	1278	42.	1279	42.
1280	41.	1281	41.	1282	41.	1283	40.	1284	40.
1285	40.	1286	39.	1287	39.	1288	39.	1289	39.
1290	38.	1291	38.	1292	38.	1293	38.	1294	37.
1295	37.	1296	37.	1297	37.	1298	37.	1299	37.
1300	37.	1310	30.	1320	25.	1330	22.	1340	21.
1350	15.	1360	11.	1370	9.	1380	8.	1390	8.
1400	7.	1420	5.	1440	4.	1460	3.	1500	2.

Total Runoff = 80.487 Acre-Ft.
Peak Q = 454 CFS + 39 CFS BURN = 493 CFS
Time to Peak Q = 1158 Minutes



HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

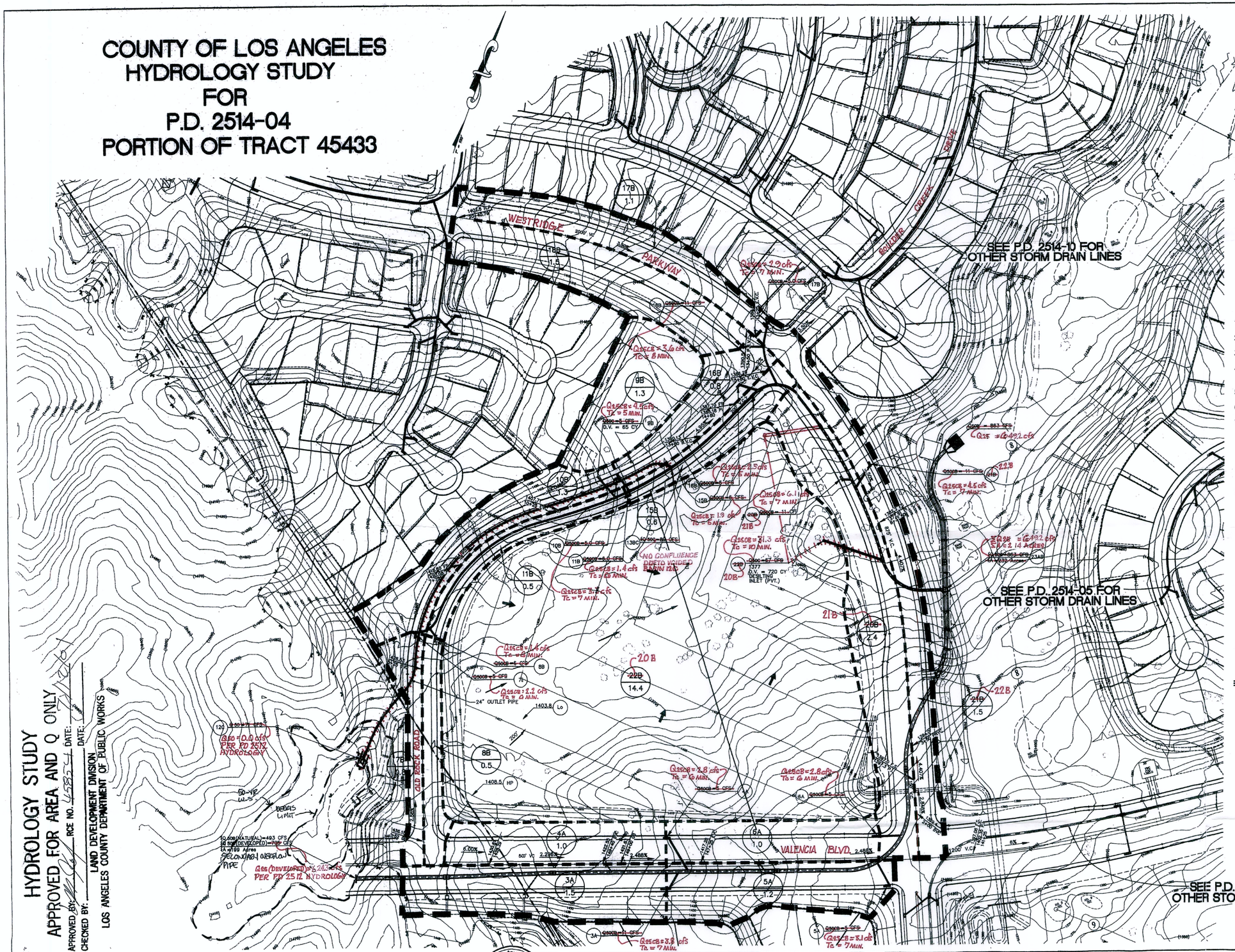
BUREAU OF PUBLIC ROADS JAN. 1963

$H_W = 1420.25 - 1395.00 = 25.25'$

$D = 24''$

$H_W/D = 25.25'/2.0' = 12.6 \longrightarrow Q = 71$ CFS

COUNTY OF LOS ANGELES
HYDROLOGY STUDY
FOR
P.D. 2514-04
PORTION OF TRACT 45433


WESTRIDGE
PARKWAY
BOULDER CREEK
OLD RANCH ROAD
VALENCIA BLVD.
SEE P.D. 2514-10 FOR OTHER STORM DRAIN LINES
SEE P.D. 2514-05 FOR OTHER STORM DRAIN LINES
SEE P.D. 2514-03 FOR OTHER STORM DRAIN LINES
NO CONFLUENCE DUE TO VIDEO BASIN 12B
50-YR W.S.
DEBRIS LIMIT
Q50B (NATURAL)=403 CFS
Q50B (DEVELOPED)=799 CFS
A=799 Acres
SEE 36" RCP
Qes (DEVELOPED)=5.2 cfs
PER FD 25 12 HYDROLOGY
Q50B=2.2 cfs
Tc=7 MIN.
Q50B=3.6 cfs
Tc=8 MIN.
Q25B=4.5 cfs
Tc=5 MIN.
Q50B=1.9 cfs
Tc=6 MIN.
Q50B=6.1 cfs
Tc=7 MIN.
Q50B=31.3 cfs
Tc=10 MIN.
Q50B=1.4 cfs
Tc=6 MIN.
Q50B=3.7 cfs
Tc=7 MIN.
Q50B=1.4 cfs
Tc=6 MIN.
Q50B=2.1 cfs
Tc=6 MIN.
24" OUTLET PIPE
Q50B=2.8 cfs
Tc=6 MIN.
Q50B=2.8 cfs
Tc=6 MIN.
Q50B=3.8 cfs
Tc=7 MIN.
Q50B=3.1 cfs
Tc=7 MIN.
Q25 =6492.6 cfs
A=2.14 Acres
Q50B=863 CFS
Q25 =6492.6 cfs
A=2.14 Acres
Q50B=863 CFS
Q25B=4.5 cfs
Tc=7 MIN.
Q50B=67 CFS
Q=720 CFS
DEBRIS VOLUME
DEBRIS VOLUME
Q50B=11 CFS
Q50B=6 CFS
Q50B=5.0 CFS
Q50B=80 CFS
Q50B=5 CFS
Q50B=11 CFS
Q50B=5.0 CFS
Q50B=5 CFS
Q50B=5 CFS
Q50B=5 CFS
Q50B=11 CFS
Q50B=11 CFS
Q50B=5 CFS
Q50B=11 CFS
Q50B=5 CFS
Q50B=11 CFS
Q50B=5

HYDROLOGICAL ANALYSIS

FOR

WESTRIDGE AT VALENCIA
TRACT 45433
PD 2514-10

HYDROLOGY CALCULATIONS – FLOW REDUCTION

JOB NO. 93004

PREPARED FOR:
NEWHALL LAND
25124 SPRINGFIELD COURT. SUITE 300
VALENCIA, CA 91355
(661) 255-4000

PREPARED BY:
ALLIANCE LAND PLANNING AND ENGINEERING
2248 FARADAY AVENUE
CARLSBAD, CA 92008
(760) 431-9896

FEBRUARY 2010

Program Package Serial Number: 2084
04/21/10 FILE: 4E10-A INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

WESTRIDGE PD 2514-10 BASIN A DEV. CONDITION - FLOW REDUCTION

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
3004	1A	1.0	3.07	1.0	3.07	4	62.	.05400	2.00	.00	0.	98	5	A29	.70
3004	2A	1.4	3.89	2.4	6.90	4	184.	.02804	2.00	.00	0.	98	6	A29	.70
3004	3A	1.0	3.07	3.4	9.60	4	32.	.02260	3.00	.00	0.	98	5	A29	.70
3004	4A	2.6	7.22	6.0	16.74	4	40.	.02260	3.00	.00	0.	98	6	A29	.70
3004	5A	.0	.00	6.0	16.74	4	1.	.01000	2.00	.00	0.	98	99	A29	.00
3004	6A	1.0	2.78	7.0	19.51	4	164.	.02260	3.00	.00	0.	98	6	A29	.70
3004	7A	.0	.00	7.0	19.47	4	1.	.01000	2.00	.00	0.	98	99	A29	.00
3004	8B	1.7	4.72	1.7	4.72	4	28.	.12320	2.00	.00	0.	98	6	A29	.70
3004	9B	.6	1.84	2.3	6.54	4	212.	.04790	2.00	.00	0.	98	5	A29	.70
3004	10B	.7	2.15	3.0	8.36	4	15.	.04790	2.00	.00	0.	98	5	A29	.70
3004	11B	1.7	4.72	4.7	13.04	4	45.	.07370	2.00	.00	0.	98	6	A29	.70
3004	12B	1.1	3.05	5.8	16.08	4	1.	.03820	2.50	.00	0.	98	6	A29	.70
3004	13B	1.3	3.61	7.1	19.69	4	1.	.03820	2.50	.00	0.	98	6	A29	.70
3004	14B	1.8	4.97	8.9	24.66	4	1.	.03820	2.50	.00	0.	98	6	A29	.60
3004	15B	.0	.00	8.9	24.66	4	1.	.01000	2.25	.00	0.	98	99	A29	.00
3004	16B	1.4	3.89	10.3	28.55	4	160.	.03820	2.50	.00	0.	98	6	A29	.70
3004	17B	.3	.93	10.6	29.36	4	23.	.03820	2.50	.00	0.	98	5	A29	.90
3004	18B	.3	.93	10.9	30.17	4	77.	.03820	2.50	.00	0.	98	5	A29	.90

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CONFLUENCE Q'S

3004 19A TA 1154 QA 19.47 QAB 49.59 QB 30.12 3004 19B TB 1154 QB 30.12 QBA 49.59 QA 19.47

3004 19AB TAB 1154 QAB 49.59 QA 19.47 QB 30.12

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LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3004	19AB	10.9	30.12	17.9	49.59	4	396.	.01260	3.50	.00	0.	98	0	A29	.00
3004	20A	1.2	3.37	19.1	51.34	4	1.	.03450	3.50	.00	0.	98	6	A29	.90
3004	21A	.9	2.78	20.0	53.43	4	101.	.03450	3.50	.00	0.	98	5	A29	.80
3004	22A	1.7	5.20	21.7	57.27	4	152.	.03450	3.50	.00	0.	98	5	A29	.60
3004	23A	.4	1.19	22.1	58.11	4	137.	.03450	3.50	.00	0.	98	5	A29	.10
3004	24A	.0	.00	22.1	58.03	4	1.	.01000	3.00	.00	0.	98	99	A29	.00
3004	25A	1.1	3.42	23.2	60.60	4	1.	.05320	3.50	.00	0.	98	5	A29	.90
3004	26A	.7	2.14	23.9	62.19	4	31.	.05320	3.50	.00	0.	98	5	A29	.60
3004	27A	.6	1.79	24.5	63.47	4	244.	.05590	3.50	.00	0.	98	5	A29	.10
3004	28A	.5	1.55	25.0	64.53	4	27.	.05590	3.50	.00	0.	98	5	A29	.80
3004	29A	.8	2.47	25.8	66.36	4	1.	.25620	3.50	.00	0.	98	5	A29	.80
3004	30A	2.9	8.69	28.7	72.76	4	214.	.25620	3.50	.00	0.	98	5	A29	.20

PD 2514-10 Basin A

Subarea	Area (Ac)	%imp	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in)	Tc-calculated (min)	Intensity (in/hr)	Cu	Cd
1A	1.0	0.70	98	350	0.020	5.71	5	3.41	0.85	0.89
2A	1.4	0.70	98	400	0.020	5.71	6	3.13	0.84	0.88
3A	1.0	0.70	98	380	0.023	5.71	5	3.41	0.85	0.89
4A	2.6	0.70	98	460	0.023	5.71	6	3.13	0.84	0.88
6A	1.0	0.70	98	420	0.025	5.71	6	3.13	0.84	0.88
8B	1.7	0.70	98	450	0.020	5.71	6	3.13	0.84	0.88
9B	0.6	0.70	98	300	0.030	5.71	5	3.41	0.85	0.89
10B	0.7	0.70	98	280	0.055	5.71	5	3.41	0.85	0.89
11B	1.7	0.70	98	520	0.035	5.71	6	3.13	0.84	0.88
12B	1.1	0.70	98	470	0.020	5.71	6	3.13	0.84	0.88
13B	1.3	0.70	98	450	0.020	5.71	6	3.13	0.84	0.88
14B	1.8	0.60	98	500	0.020	5.71	6	3.13	0.84	0.88
16B	1.4	0.70	98	470	0.020	5.71	6	3.13	0.84	0.88
17B	0.3	0.90	98	170	0.055	5.71	5	3.41	0.85	0.90
18B	0.3	0.90	98	170	0.055	5.71	5	3.41	0.85	0.90
20A	1.2	0.90	98	620	0.045	5.71	6	3.13	0.84	0.89
21A	0.9	0.80	98	440	0.045	5.71	5	3.41	0.85	0.89
22A	1.7	0.60	98	360	0.020	5.71	5	3.41	0.85	0.88
23A	0.4	0.10	98	240	0.015	5.71	5	3.41	0.85	0.86
25A	1.1	0.90	98	340	0.080	5.71	5	3.41	0.85	0.90
26A	0.7	0.60	98	390	0.080	5.71	5	3.41	0.85	0.88
27A	0.6	0.10	98	160	0.020	5.71	5	3.41	0.85	0.86
28A	0.5	0.80	98	530	0.080	5.71	5	3.41	0.85	0.89
29A	0.8	0.80	98	460	0.080	5.71	5	3.41	0.85	0.89
30A	2.9	0.20	98	500	0.174	5.71	5	3.41	0.85	0.86

Program Package Serial Number: 2084
04/22/10 FILE: 4E10-B INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

WESTRIDGE PD 2514-10 BASIN B DEV. CONDITION - FLOW REDUCTION STORM DAY 4

LOCATION		SUBAREA AREA(AC)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3004	1A	1.0	3.09	1.0	3.09	4	51.	.07193	2.00	.00	0.	98	5	A29	.80
3004	2A	1.0	2.78	2.0	5.82	4	62.	.01390	2.00	.00	0.	98	6	A29	.70
3004	3A	.7	2.15	2.7	7.83	4	1.	.01410	2.00	.00	0.	98	5	A29	.70
3004	4A	.8	2.46	3.5	10.29	4	171.	.01410	2.00	.00	0.	98	5	A29	.70
3004	5A	.6	1.84	4.1	11.60	4	53.	.04371	2.00	.00	0.	98	5	A29	.70
3004	6A	.9	2.77	5.0	14.11	4	1.	.05830	2.00	.00	0.	98	5	A29	.70
3004	7A	.8	2.46	5.8	16.56	4	1.	.05830	2.00	.00	0.	98	5	A29	.70
3004	8A	.8	2.22	6.6	18.78	4	221.	.05830	2.00	.00	0.	98	6	A29	.70
3004	9A	.2	.62	6.8	19.05	4	14.	.05830	2.00	.00	0.	98	5	A29	.90
3004	10A	.2	.62	7.0	19.59	4	261.	.05190	2.00	.00	0.	98	5	A29	.90
3004	11A	.0	.00	7.0	19.47	4	1.	.01000	2.00	.00	0.	98	99	A29	.00
3004	12A	.9	2.77	7.9	21.91	4	52.	.11150	2.00	.00	0.	98	5	A29	.70
3004	13A	.0	.00	7.9	21.88	4	1.	.01000	2.00	.00	0.	98	99	A29	.00
3004	14B	1.4	4.28	1.4	4.28	4	34.	.13062	2.00	.00	0.	98	5	A29	.60
3004	15B	1.0	3.07	2.4	7.32	4	256.	.01900	2.00	.00	0.	98	5	A29	.70
3004	16B	.9	2.77	3.3	9.42	4	1.	.01717	2.00	.00	0.	98	5	A29	.70
3004	17B	.9	2.77	4.2	12.18	4	280.	.01717	2.00	.00	0.	98	5	A29	.70
3004	18B	.9	2.50	5.1	14.37	4	1.	.03500	3.00	.00	0.	98	6	A29	.70
3004	19B	.8	2.46	5.9	16.54	4	45.	.03500	3.00	.00	0.	98	5	A29	.70
3004	20B	.0	.00	5.9	16.52	4	1.	.01000	2.00	.00	0.	98	99	A29	.00

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CONFLUENCE Q'S

3004 21A TA 1154 QA 21.88 QAB 38.39 QB 16.52 3004 21B TB 1154 QB 16.52 QBA 38.39 QA 21.88
3004 21AB TAB 1154 QAB 38.39 QA 21.88 QB 16.52

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LOCATION		SUBAREA AREA(AC)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3004	21AB	5.9	16.52	13.8	38.39	4	248.	.02960	3.00	.00	0.	98	0	A29	.00
3004	22A	1.9	5.27	15.7	42.93	4	18.	.02710	3.50	.00	0.	98	6	A29	.70
3004	23A	.9	2.77	16.6	45.31	4	53.	.02710	3.50	.00	0.	98	5	A29	.70
3004	24A	.8	2.46	17.4	47.33	4	1.	.02710	3.50	.00	0.	98	5	A29	.70
3004	25A	.6	1.84	18.0	48.95	4	314.	.02710	3.50	.00	0.	98	5	A29	.70
3004	26A	.0	.00	18.0	48.20	4	1.	.01000	2.75	.00	0.	98	99	A29	.00
3004	27A	.9	2.77	18.9	50.27	4	1.	.03120	3.50	.00	0.	98	5	A29	.70
3004	28A	.9	2.77	19.8	52.34	4	167.	.03120	3.50	.00	0.	98	5	A29	.70
3004	29A	.3	.92	20.1	53.02	4	140.	.03120	3.50	.00	0.	98	5	A29	.70
3004	30A	1.0	3.07	21.1	55.23	4	174.	.01970	3.50	.00	0.	98	5	A29	.70
3004	31A	1.0	2.78	22.1	57.38	4	41.	.01730	3.50	.00	0.	98	6	A29	.70
3004	32A	.9	2.77	23.0	59.36	4	165.	.03020	3.50	.00	0.	98	5	A29	.70
3004	33A	1.1	3.07	24.1	61.65	4	135.	.05176	3.50	.00	0.	98	6	A29	.80
3004	34A	2.5	8.75	26.6	67.85	4	214.	.18480	4.00	.00	0.	98	5	A33	.60
3004	35A	1.2	3.08	27.8	70.63	4	44.	.03000	4.00	.00	0.	98	7	A29	.70
3004	36C	1.0	3.07	1.0	3.07	4	41.	.18000	2.00	.00	0.	98	5	A29	.70
3004	37C	.5	1.54	1.5	4.58	4	1.	.09270	2.00	.00	0.	98	5	A29	.70
3004	38C	.4	1.24	1.9	5.82	4	210.	.09270	2.00	.00	0.	98	5	A29	.80
3004	39C	.7	2.15	2.6	7.72	4	13.	.06600	2.00	.00	0.	98	5	A29	.70

Program Package Serial Number: 2084
04/22/10 FILE: 4E10-B INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\lasoilx.dat

WESTRIDGE PD 2514-10 BASIN B DEV. CONDITION - FLOW REDUCTION STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3004	40C	.5	1.55	3.1	9.24	4	166.	.06600	2.00	.00	0.	98	5	A29	.80
3004	41C	.5	1.53	3.6	10.45	4	1.	.04350	2.00	.00	0.	98	5	A29	.60
3004	42A	.0	.00	27.8	70.46	4	1.	.01000	2.00	.00	0.	98	99	A29	.00
3004	43C	.4	1.23	4.0	11.68	4	92.	.04350	2.00	.00	0.	98	5	A29	.70

****

CONFLUENCE Q'S

3004 44A TA 1155 QA 70.46 QAC 80.67 QC 10.21 3004 44C TC 1154 QC 11.55 QCA 79.10 QA 67.55
3004 44AC TAC 1155 QAC 80.67 QA 70.46 QC 10.21

****

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
3004	44AC	4.0	11.55	31.8	80.67	4	60.	.05020	4.00	.00	0.	98	0	A29	.00
3004	45A	1.4	4.90	33.2	84.27	4	305.	.16738	4.00	.00	0.	98	5	A33	.60

PD 2514-10 BASIN B

Subarea	Area (Ac)	%imp	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in)	Tc-calculated (min)	Intensity (in/hr)	Cu	Cd
1C	1.0	0.80	98	350	0.013	5.71	5	3.41	0.85	0.89
2C	1.0	0.70	98	400	0.013	5.71	6	3.13	0.84	0.88
3C	0.7	0.70	98	240	0.020	5.71	5	3.41	0.85	0.89
4C	0.8	0.70	98	390	0.020	5.71	5	3.41	0.85	0.89
5C	0.6	0.70	98	270	0.013	5.71	5	3.41	0.85	0.89
6C	0.9	0.70	98	320	0.020	5.71	5	3.41	0.85	0.89
7C	0.8	0.70	98	230	0.020	5.71	5	3.41	0.85	0.89
8C	0.8	0.70	98	420	0.013	5.71	6	3.13	0.84	0.88
9C	0.2	0.90	98	210	0.023	5.71	5	3.41	0.85	0.90
10C	0.2	0.90	98	210	0.023	5.71	5	3.41	0.85	0.90
12C	0.9	0.70	98	390	0.080	5.71	5	3.41	0.85	0.89
14D	1.4	0.60	98	410	0.024	5.71	5	3.41	0.85	0.88
15D	1.0	0.70	98	310	0.024	5.71	5	3.41	0.85	0.89
16D	0.9	0.70	98	390	0.024	5.71	5	3.41	0.85	0.89
17D	0.9	0.70	98	350	0.024	5.71	5	3.41	0.85	0.89
18D	0.9	0.70	98	470	0.024	5.71	6	3.13	0.84	0.88
19D	0.8	0.70	98	400	0.024	5.71	5	3.41	0.85	0.89
22C	1.9	0.70	98	660	0.080	5.71	6	3.13	0.84	0.88
23C	0.9	0.70	98	370	0.080	5.71	5	3.41	0.85	0.89
24C	0.8	0.70	98	220	0.020	5.71	5	3.41	0.85	0.89
25C	0.6	0.70	98	220	0.020	5.71	5	3.41	0.85	0.89
27C	0.9	0.70	98	360	0.025	5.71	5	3.41	0.85	0.89
28C	0.9	0.70	98	350	0.025	5.71	5	3.41	0.85	0.89
29C	0.3	0.70	98	280	0.023	5.71	5	3.41	0.85	0.89
30C	1.0	0.70	98	400	0.022	5.71	5	3.41	0.85	0.89
31C	1.0	0.70	98	410	0.022	5.71	6	3.13	0.84	0.88
32C	0.9	0.70	98	390	0.022	5.71	5	3.41	0.85	0.89
33C	1.1	0.80	98	420	0.022	5.71	6	3.13	0.84	0.89
34C	2.5	0.60	98	340	0.020	6.5	5	3.88	0.86	0.88

PD 2514-10 Basin B - CONT.

Subarea	Area (Ac)	%imp	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in)	Tc-calculated (min)	Intensity (in/hr)	Cu	Cd
35C	1.2	0.80	98	580	0.020	5.71	7	2.91	0.83	0.89
36E	1.0	0.70	98	330	0.030	5.71	5	3.41	0.85	0.89
37E	0.5	0.70	98	270	0.100	5.71	5	3.41	0.85	0.89
38E	0.4	0.80	98	330	0.080	5.71	5	3.41	0.85	0.89
39E	0.7	0.70	98	360	0.100	5.71	5	3.41	0.85	0.89
40E	0.5	0.80	98	300	0.100	5.71	5	3.41	0.85	0.89
41E	0.5	0.60	98	300	0.050	5.71	5	3.41	0.85	0.88
43E	0.4	0.70	98	250	0.050	5.71	5	3.41	0.85	0.89
45C	1.4	0.60	98	240	0.020	6.5	5	3.88	0.86	0.88

DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION
SUBDIVISION PLAN CHECKING SECTION - DRAINAGE UNIT

TO: Alliance Land Planning and Engineering

DATE 11/04/2000

Attention Craig Whitteker

REVIEW OF HYDROLOGY STUDY

PD NO. 2514-10
TR NO. 45433
SUBMITTAL DATE 09/25/2000

We have reviewed your hydrology study/flood hazard calculations.

(X) The hydrology study has been approved for Area and Q only.

( ) The flood hazard calculations submitted with your hydrology study are approved.

( ) Refer to comments below:

COMMENTS:

REVIEWED BY: _____ DATE 11/4/00
MO KAJBAF - (626) 458-4921

8HYD REVISED HYDROLOGY STUDY
P:\LDPUB\SUBDIVSN\PLANCHK\2514-10-8HYDAPPR
11/06/2000

Hydrological Analysis

for

Westridge at Valencia
Tract 45433
PD 2514-10
Hydrology Calculations

Job No.93004

HYDROLOGY STUDY
APPROVED FOR AREA AND Q ONLY

APPROVED BY: Jon Kaji RCE NO. 45854 DATE: 11/4/00
CHECKED BY: _____ DATE: 11/3/00

LAND DEVELOPMENT DIVISION
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

RECEIVED
SEP 25 2000
PROCESSING CENTER
LAND DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
CRAIG M. WHITAKER
No. 51929
Exp. 6-30-02
CIVIL
STATE OF CALIFORNIA

Prepared for:
Valencia Company
23823 Valencia Blvd.
Valencia, CA 91355
(805) 255-4000

Prepared by:
Alliance Land Planning & Engineering, Inc.
5962 Laplace Court, Suite 130
Carlsbad, CA 92008
(760) 431- 9896

August 2000

HYDROLOGY DESIGN CRITERIA

- Storm Event = 50 years onsite, offsite and sump condition
- Rainfall Zone = L
- Soil Classification Area = 098
- Debris Potential Area = 8

Time of concentration calculated using County of Los Angeles "T_C" Software.

Flowrates calculated using modified rational method; County of Los Angeles "MORA" software.

WESTRIDGE - PD 2514-10 - BASIN A STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	1A	1.	5.	1.	5.	4	40.	0.02000	2.00	0.00	0.	98	5	L50	0.70
93004	2A	1.	5.	2.	11.	4	290.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	3A	1.	5.	3.	16.	4	40.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	4A	3.	16.	6.	31.	4	50.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	5A	0.	0.	6.	31.	4	1.	0.04000	2.00	0.00	0.	98	99	L50	0.70
93004	6A	1.	5.	7.	37.	4	180.	0.04000	2.00	0.00	0.	98	5	L50	0.70
93004	7B	0.	0.	0.	0.	4	1.	0.04000	0.00	0.00	0.	98	99	L50	0.70
93004	8B	2.	11.	2.	11.	4	30.	0.06000	2.00	0.00	0.	98	5	L50	0.70
93004	9B	1.	5.	3.	16.	4	210.	0.06000	2.00	0.00	0.	98	5	L50	0.70
93004	10B	1.	5.	4.	21.	4	15.	0.06000	2.00	0.00	0.	98	5	L50	0.70
93004	11B	2.	11.	6.	32.	4	40.	0.06000	2.00	0.00	0.	98	5	L50	0.70
93004	12B	1.	5.	7.	37.	4	50.	0.06000	2.00	0.00	0.	98	5	L50	0.70
93004	13B	1.	5.	8.	42.	4	30.	0.06000	2.00	0.00	0.	98	5	L50	0.70
93004	14B	2.	11.	10.	53.	4	40.	0.06000	2.00	0.00	0.	98	5	L50	0.60
93004	15B	0.	0.	10.	53.	4	1.	0.06000	2.00	0.00	0.	98	99	L50	0.70
93004	16B	2.	11.	12.	63.	4	150.	0.06000	2.25	0.00	0.	98	5	L50	0.70
93004	17B	1.	6.	13.	68.	4	20.	0.06000	2.25	0.00	0.	98	5	L50	0.90
93004	18B	1.	6.	14.	74.	4	90.	0.06000	2.25	0.00	0.	98	5	L50	0.90
93004	19B	0.	0.	14.	73.	4	1.	0.04000	2.50	0.00	0.	98	99	L50	0.70

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CONFLUENCE Q'S

93004 20A TA 1154 QA 37. QAB 110. QB 73. 93004 20B TB 1154 QB 73. QBA 110. QA 37.

93004 20AB TAB 1154 QAB 110. QA 37. QB 73.

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	20AB	14.	73.	21.	110.	4	290.	0.06000	2.75	0.00	0.	98	0	L50	0.00
93004	21A	1.	6.	22.	115.	4	10.	0.06000	2.75	0.00	0.	98	5	L50	0.90
93004	22A	1.	5.	23.	120.	4	140.	0.04000	3.00	0.00	0.	98	5	L50	0.80
93004	23A	2.	11.	25.	129.	4	150.	0.04000	3.00	0.00	0.	98	5	L50	0.60
93004	24A	1.	5.	26.	132.	4	140.	0.04000	3.00	0.00	0.	98	5	L50	0.10
93004	25A	1.	6.	27.	137.	4	10.	0.04000	3.00	0.00	0.	98	5	L50	0.90
93004	26A	1.	5.	28.	142.	4	40.	0.04000	3.00	0.00	0.	98	5	L50	0.80
93004	27A	1.	5.	29.	146.	4	370.	0.04000	3.25	0.00	0.	98	5	L50	0.60
93004	28A	1.	5.	30.	150.	4	10.	0.06000	3.00	0.00	0.	98	5	L50	0.80
93004	29A	1.	5.	31.	155.	4	250.	0.10000	2.75	0.00	0.	98	5	L50	0.80

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

HYDROGRAPH AT POINT 29A

HYDROGRAPH AT 93004 29A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	2.	200	3.	300	4.	400	6.
500	7.	600	10.	700	12.	800	15.	900	17.
1000	20.	1050	24.	1100	23.	1110	24.	1120	27.
1130	30.	1131	30.	1132	31.	1133	31.	1134	32.
1135	33.	1136	34.	1137	35.	1138	36.	1139	37.
1140	38.	1141	39.	1142	40.	1143	41.	1144	42.
1145	43.	1146	44.	1147	45.	1148	47.	1149	51.
1150	57.	1151	70.	1152	95.	1153	124.	1154	147.
1155	155.	1156	148.	1157	124.	1158	92.	1159	65.
1160	48.	1161	38.	1162	33.	1163	31.	1164	30.
1165	29.	1166	28.	1167	28.	1168	27.	1169	27.
1170	27.	1171	27.	1172	27.	1173	26.	1174	25.
1175	24.	1176	24.	1177	23.	1178	23.	1179	23.
1180	22.	1181	22.	1182	22.	1183	22.	1184	22.
1185	22.	1186	22.	1187	22.	1188	22.	1189	22.
1190	22.	1191	22.	1192	22.	1193	22.	1194	21.
1195	21.	1196	20.	1197	20.	1198	20.	1199	20.
1200	20.	1201	20.	1202	20.	1203	20.	1204	20.
1205	20.	1206	20.	1207	20.	1208	20.	1209	20.
1210	20.	1211	20.	1212	19.	1213	19.	1214	19.
1215	18.	1216	18.	1217	17.	1218	17.	1219	17.
1220	17.	1221	17.	1222	17.	1223	17.	1224	17.
1225	17.	1226	17.	1227	17.	1228	17.	1229	17.
1230	17.	1231	17.	1232	17.	1233	17.	1234	16.
1235	16.	1236	16.	1237	16.	1238	15.	1239	15.
1240	15.	1241	15.	1242	15.	1243	15.	1244	15.
1245	15.	1246	15.	1247	15.	1248	15.	1249	15.
1250	15.	1251	15.	1252	15.	1253	15.	1254	15.
1255	15.	1256	15.	1257	15.	1258	15.	1259	15.
1260	15.	1261	15.	1262	15.	1263	15.	1264	14.
1265	14.	1266	13.	1267	13.	1268	12.	1269	12.
1270	12.	1271	12.	1272	12.	1273	12.	1274	12.
1275	12.	1276	12.	1277	12.	1278	12.	1279	12.
1280	12.	1281	12.	1282	12.	1283	12.	1284	12.
1285	12.	1286	12.	1287	12.	1288	12.	1289	12.
1290	12.	1291	12.	1292	12.	1293	12.	1294	12.
1295	12.	1296	12.	1297	12.	1298	12.	1299	12.
1300	12.	1310	10.	1320	8.	1330	9.	1340	8.
1350	6.	1360	4.	1370	4.	1380	4.	1390	4.
1400	4.	1420	3.	1440	2.	1460	2.	1500	2.

Total Runoff = 23.249 Acre-Ft.
Peak Q = 155 CFS
Time to Peak Q = 1155 Minutes

10 Revised Q

$Q = 5.6 \cdot A$ $A = 1.7$ Ac.

$Q = 9.5$ cfs

more $Q = 11$ cfs for $A = 2$ Ac

subtract 1.5 cfs From All Downstream

'B Revised Q

$Q = 5.6 \cdot (0.6)$ $A = 0.6$ Ac

$Q = 3.5$ cfs

subtract 1.5 cfs From All Downstream

10B Revised Q

$Q = 5.6 \cdot (0.7)$ $A = 0.7$ Ac

$Q = 4.0$ cfs

subtract 1 cfs From All Downstrea

'1B Revised Q

$Q = 5.6 \cdot (1.7)$ $A = 1.7$ Ac

$Q = 9.5$ cfs

subtract 1.5 cfs From All Downstream

'B Revised Q

$Q = 5.6 \cdot (0.3)$ $A = 0.3$ Ac

$Q = 2$ cfs

subtract 4 cfs From All Downstream

18B Revised Q

$Q = 5.6 \cdot A$ $A = 0.3$ Ac.

$Q = 2.0$ cfs

more $Q = 6$ cfs for $A = 1$ Ac

subtract 4 cfs From All Downstream

3A Revised Q

$Q = 5.6 \cdot (1.7)$ $A = 1.7$ Ac

$Q = 9.5$ cfs

subtract 1.5 cfs From All Downstream

24A Revised Q

$Q = 5.6 \cdot (0.4)$ $A = 0.4$ Ac

$Q = 2.0$ cfs

subtract 3 cfs From All Downstrea

6A Revised Q

$Q = 5.6 \cdot (0.7)$ $A = 0.7$ Ac

$Q = 4$ cfs

subtract 1 cfs From All Downstream

7A Revised Q

$Q = 5.6 \cdot (0.6)$ $A = 0.6$ Ac

$Q = 3.5$ cfs

subtract 1.5 cfs From All Downstream

'4 A Revised Q

$Q = 5.6 \cdot A$ $A = 0.5$ Ac.

$= 3$ cfs

more $Q = 5$ cfs for $A = 1$ Ac

subtract 2 cfs from All Downstream

$Q_{Total} = 155\ cfs - 9.5 - 11\ cfs - 2\ cfs$

$Q_{Total} = 132.5\ cfs$

WESTRIDGE - PD 2514-10 - BASIN B STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	1C	1.	5.	1.	5.	4	50.	0.02000	2.00	0.00	0.	98	5	L50	0.80
93004	2C	1.	5.	2.	11.	4	60.	0.02000	2.00	0.00	0.	98	5	L50	0.70
93004	3C	1.	5.	3.	16.	4	20.	0.04000	2.00	0.00	0.	98	5	L50	0.70
93004	4C	1.	5.	4.	21.	4	200.	0.02000	2.00	0.00	0.	98	5	L50	0.70
93004	5C	1.	5.	5.	26.	4	50.	0.02000	2.00	0.00	0.	98	5	L50	0.70
93004	6C	1.	5.	6.	32.	4	20.	0.04000	2.00	0.00	0.	98	5	L50	0.70
93004	7C	1.	5.	7.	37.	4	50.	0.02000	2.25	0.00	0.	98	5	L50	0.70
93004	8C	1.	5.	8.	42.	4	200.	0.02000	2.25	0.00	0.	98	5	L50	0.70
93004	9C	1.	6.	9.	47.	4	10.	0.02000	2.25	0.00	0.	98	5	L50	0.90
93004	10C	1.	6.	10.	52.	4	260.	0.07000	2.00	0.00	0.	98	5	L50	0.90
93004	11C	0.	0.	10.	51.	4	1.	0.07000	2.00	0.00	0.	98	99	L50	0.70
93004	12C	1.	5.	11.	56.	4	60.	0.07000	2.00	0.00	0.	98	5	L50	0.70
93004	13C	0.	0.	11.	56.	4	1.	0.04000	2.25	0.00	0.	98	99	L50	0.70
93004	14D	2.	11.	2.	11.	4	40.	0.03000	2.00	0.00	0.	98	5	L50	0.60
93004	15D	1.	5.	3.	16.	4	250.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	16D	1.	5.	4.	21.	4	15.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	17D	1.	5.	5.	26.	4	290.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	18D	1.	5.	6.	31.	4	10.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	19D	1.	5.	7.	36.	4	50.	0.03000	2.00	0.00	0.	98	5	L50	0.70
93004	20D	0.	0.	7.	36.	4	1.	0.04000	2.00	0.00	0.	98	99	L50	0.70

****

* CONFLUENCE Q'S *

* 93004 21C TC 1155 QC 56. QCD 91. QD 35. 93004 21D TD 1154 QD 36. QDC 92. QC 56. *

* 93004 21CD TCD 1154 QCD 92. QC 56. QD 36. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	21CD	7.	36.	18.	92.	4	250.	0.07000	2.50	0.00	0.	98	0	L50	0.00
93004	22C	2.	11.	20.	101.	4	20.	0.07000	2.50	0.00	0.	98	5	L50	0.70
93004	23C	1.	5.	21.	105.	4	50.	0.03000	3.00	0.00	0.	98	5	L50	0.70
93004	24C	1.	5.	22.	110.	4	30.	0.04000	2.75	0.00	0.	98	5	L50	0.70
93004	25C	1.	5.	23.	115.	4	330.	0.03000	3.00	0.00	0.	98	5	L50	0.70
93004	26C	0.	0.	23.	114.	4	1.	0.04000	3.00	0.00	0.	98	99	L50	0.70
93004	27C	1.	5.	24.	119.	4	30.	0.03000	3.00	0.00	0.	98	5	L50	0.70
93004	28C	1.	5.	25.	123.	4	140.	0.03000	3.00	0.00	0.	98	5	L50	0.70
93004	29C	1.	5.	26.	127.	4	120.	0.03000	3.25	0.00	0.	98	5	L50	0.70
93004	30C	1.	5.	27.	130.	4	220.	0.03000	3.25	0.00	0.	98	5	L50	0.70
93004	31C	1.	5.	28.	133.	4	30.	0.03000	3.25	0.00	0.	98	5	L50	0.70
93004	32C	1.	5.	29.	137.	4	190.	0.03000	3.25	0.00	0.	98	5	L50	0.70
93004	33C	1.	5.	30.	140.	4	130.	0.10000	2.75	0.00	0.	98	5	L50	0.80
93004	34C	3.	16.	33.	151.	4	280.	0.20000	2.50	0.00	0.	98	5	L50	0.60
93004	35E	0.	0.	0.	0.	4	1.	0.01000	0.00	0.00	0.	98	99	L50	0.70
93004	36E	1.	5.	1.	5.	4	150.	0.10000	2.00	0.00	0.	98	5	L50	0.70
93004	37E	1.	5.	2.	11.	4	20.	0.10000	2.00	0.00	0.	98	5	L50	0.70
93004	38E	1.	5.	3.	16.	4	220.	0.10000	2.00	0.00	0.	98	5	L50	0.80
93004	39E	1.	5.	4.	21.	4	220.	0.10000	2.00	0.00	0.	98	5	L50	0.70

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY

WESTRIDGE - PD 2514-10 - BASIN B STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
93004	40E	1.	5.	5.	26.	4	180.	0.10000	2.00	0.00	0.	98	5	L50	0.80
93004	41E	1.	5.	6.	31.	4	10.	0.10000	2.00	0.00	0.	98	5	L50	0.60
93004	42E	1.	5.	7.	37.	4	240.	0.06000	2.00	0.00	0.	98	5	L50	0.80
93004	43E	1.	5.	8.	42.	4	90.	0.10000	2.00	0.00	0.	98	5	L50	0.70
93004	44CE	8.	42.	41.	190.	4	80.	0.10000	3.00	0.00	0.	98	0	L50	0.00
93004	45C	2.	11.	43.	199.	4	550.	0.09000	3.00	0.00	0.	98	5	L50	0.60

5C Revised Q

$Q = 5.6 \cdot A$ $A = 0.6$ Ac.

$Q = 3.5$ cfs

more $Q = 5$ cfs for $A = 1$ Ac

subtract 1.5 cfs From All Downstream

: Revised Q

$Q = 5.6 \cdot (0.2)$ $A = 0.2$ Ac

$Q = 1$ cfs

subtract 5 cfs From All Downstream

10C Revised Q

$= 5.6 \cdot (0.2)$ $A = 0.2$ Ac

$= 1$ cfs

subtract 5 cfs From All Downstrea

4D Revised Q

$Q = 5.6 \cdot (1.4)$ $A = 1.4$ Ac

$Q = 8$ cfs

subtract 3 cfs From All Downstream

C Revised Q

$= 5.6 \cdot (0.6)$ $A = 0.6$ Ac

$Q = 3.5$ cfs

subtract 1.5 cfs From All Downstream

47C Revised Q

$Q = 5.6 \cdot A$ $A = 0.3$ Ac.

$Q = 1.5$ cfs

more $Q = 5$ cfs for $A = 1$ Ac

subtract 3.5 cfs From All Downstream

37E Revised Q

$Q = 5.6 \cdot (0.5)$ $A = 0.5$ Ac

$Q = 3$ cfs

subtract 2 cfs From All Downstream

38E Revised Q

$Q = 5.6 \cdot (0.4)$ $A = 0.4$ Ac

$Q = 2$ cfs

subtract 3 cfs From All Downstrea

39E Revised Q

$Q = 5.6 \cdot (0.7)$ $A = 0.7$ Ac

$Q = 4$ cfs

subtract 1 cfs From All Downstream

0E Revised Q

$Q = 5.6 \cdot (0.5)$ $A = 0.5$ Ac

$Q = 3$ cfs

subtract 2 cfs From All Downstream

4IE Revised Q

$Q = 5.6 \cdot A$ $A = 0.5$ Ac.

$= 3$ cfs

more $Q = 5$ cfs for $A = 1$ Ac

subtract 2 cfs From All Downstream

3E Revised Q

$= 5.6 \cdot (0.4)$ $A = 0.4$ Ac

$= 2$ cfs

subtract 3 cfs From All Downstream

5C Revised Q

$= 5.6 \cdot (1.4)$ $A = 1.4$ Ac

$= 8$ cfs

subtract 3 cfs From All Downstream

$Q_{Total} = 199$ cfs $- 16$ cfs $- 11.5$ cfs $- 8$ cfs

$Q_{Total} = 163.5$ cfs

Overland Manning's N Values

Type of Development	N
Industrial-Commercial	0.014
Residential	0.040
Rural	0.060

Standard Lot Values

Type of Development	Lot Length	Lot Slope Range
Industrial-Commercial	200	0.005-0.02
Residential	100	0.01 -0.05
Rural	200	0.05 -1.00

STANDARD RANGE OF PROPORTION IMPERVIOUS

Type of Development	Proportion Impervious
Single-Family	0.21-0.45
Multi-Family	0.40-0.80
Commercial	0.48-0.92
Industrial	0.60-0.92
Institutional	0.70-0.90

Average Values for Metropolitan Los Angeles County are:
Single-Family=0.42 Multi-Family=0.68 Commercial=0.92
Industrial=0.91 Institutional=0.68
For more detail, see the separate Proportion Impervious Table.

Los Angeles County
Department of Public Works

STANDARD VALUES
TABLES

PROPORTION IMPERVIOUS

Residential

Single-Family	0.418
Two-Unit	0.418
Three-Unit	0.682
Four-Unit	0.819
Five-Unit	0.855

Commercial

Stores, Office Buildings, Manufacturing Outlets	0.909
Shopping Centers (Regional), Restaurants, Service Shops, Auto Equipment, Parking Lots	0.946
Shopping Centers (Neighborhood), Motels, Hotels, Kennels, Professional Buildings, Banks, Service Stations	0.958
Supermarkets	0.976
Department Stores	0.985

Industrial

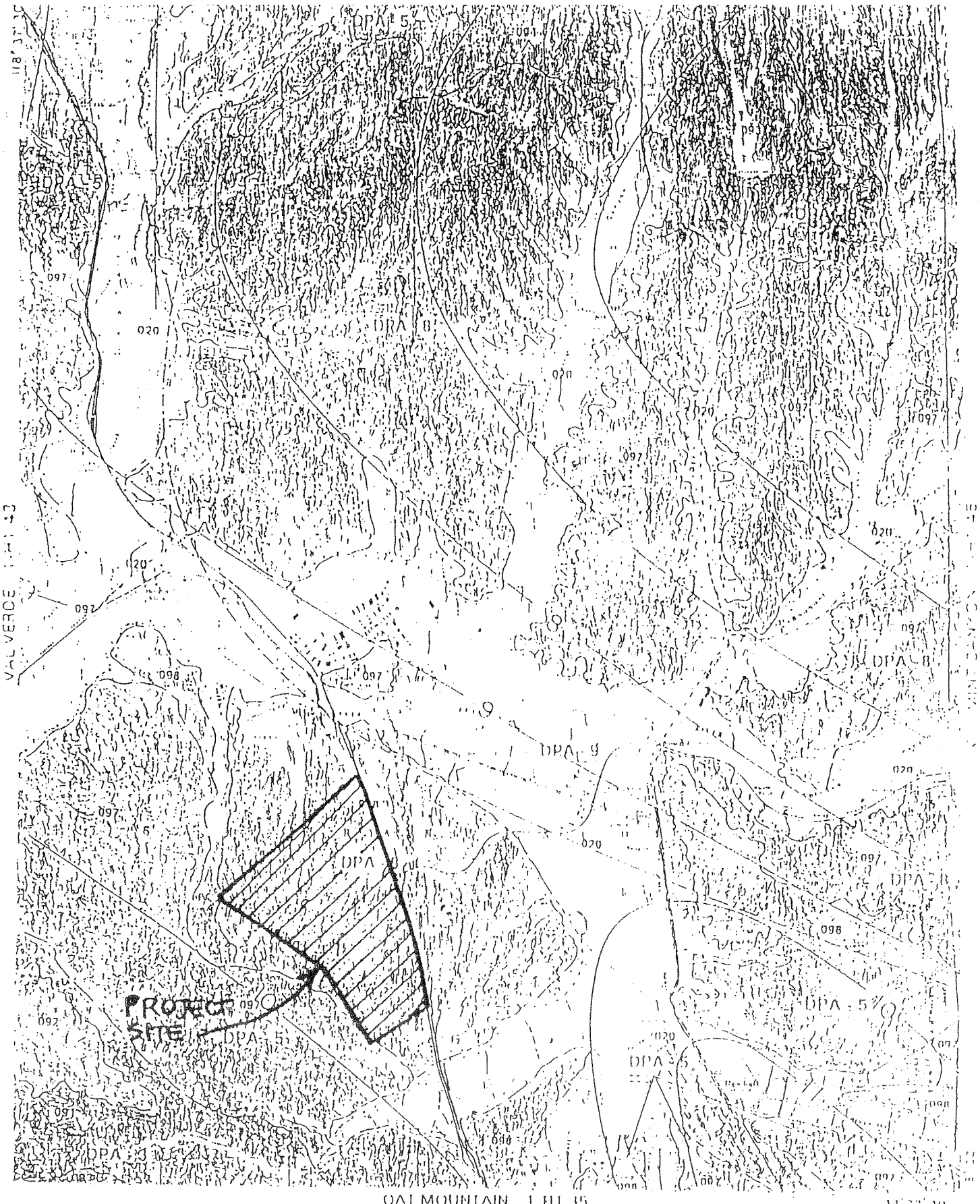
Mineral Processing	0.473
Open Storage	0.655
Motion Picture, Radio, Television	0.819
Manufacturing, Warehousing, Storage, Parking	0.909
Food Processing Plants, Lumber Yards	0.958

Institutional Property

Colleges, Universities	0.473
Homes for the Aged	0.682
Hospitals, Cemeteries, Mausoleums, Mortuaries	0.744
Churches, Schools	0.819

Los Angeles County
Department of Public Works

PROPORTION
IMPERVIOUS


DPA 5
DPA 8
DPA 9
DPA
PROJECT SITE
VALVERDE
OAT MOUNTAIN
SOIL CLASSIFICATION AREA
DEBRIS POTENTIAL AREA
LACDPW

COUNTY OF LOS ANGELES
HYDROLOGY STUDY
PD 2514-10
PORTION OF TRACT 45433

UPDATED HYDROLOGIC DESIGN CRITERIA

STORM EVENT	50 YR.- SUMP LOCATIONS 25 YR.- NON SUMP LOCATIONS
50 YR.- 24 HR. RAINFALL ISOHYET	6.5
SOIL TYPE	D&B
DEBRIS PRODUCTION AREA	DPA 8
DEBRIS VOLUME	50 CU.YD./ACRE

LEGEND

	PRIMARY BASIN LIMITS
	SUB-AREA BASIN LIMITS
Tc	TIME OF CONCENTRATION (MIN.)
A	SUB-AREA IN ACRES
Q25	25 YR. FREQUENCY FLOWRATE
Q50	50 YR. FREQUENCY FLOWRATE
Q50B	50 YR. BURNED FREQUENCY FLOWRATE
Q50BB	50 YR. BURNED AND BULKED FREQUENCY FLOWRATE
QCB	Q CATCH BASIN
HP	HIGH POINT ELEVATION OF SUB-AREA
EL	ELEVATION AT OVERLAND LOCATION
AD DEVELOPED AREA	SUMMATION OF AREA IN ACRES
QC EXISTING AREA	SUMMATION OF FLOW IN CUBIC FEET PER SEC.
30 / 0.5	DRAINAGE AREA DESIGNATION DRAINAGE AREA IN ACRES
	STORM DRAIN LINE
*	PUBLIC OR PRIVATE STUB, SIZE AND MAINTENANCE RESPONSIBILITY TO BE DETERMINED BY CITY DURING FINE GRADING PLAN PROCESSING.
	FLOW DIRECTION

DESIGN CRITERIA:

STORM EVENT	50 YR.
RAINFALL ZONE	5
SOIL TYPE	D&B
DEBRIS PRODUCTION AREA	DPA-8

LEGAL DESCRIPTION

A PORTION OF THE RANCHO SAN FRANCISCO AS SHOWN ON MAP RECORDED IN BOOK A-1, PAGES 521 AND 522 OF PATENTS, IN THE CITY OF SANTA CLARITA IN THE RECORDS OF LOS ANGELES COUNTY, STATE OF CALIFORNIA.

NOTES:

1. COMPLY WITH ALL STREET DRAINAGE REQUIREMENTS TO THE SATISFACTION OF THE CITY OF SANTA CLARITA.
2. DEDICATE THE NECESSARY EASEMENTS FOR THE STORM DRAIN SYSTEM TO THE SATISFACTION OF THE CITY OF SANTA CLARITA.
3. PROVIDE ENCLOSED ACCESS TO ALL INLETS AND OUTLETS TO THE SATISFACTION OF THE CITY OF SANTA CLARITA.
4. APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5.
5. AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OF DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED.
6. PLACE A NOTE OF FLOOD HAZARD AND SHOW THE NATURAL DRAINAGE COURSES ON THE FINAL MAP.
7. AN EASEMENT TO THE CITY OF SANTA CLARITA TO BE GRANTED ON THE FINAL MAP FOR STORM DRAIN INGRESS AND EGRESS AND MAINTENANCE OVER ALL PRIVATE STREETS.

PER APPROVED P.D. 2512 EXHIBIT A HYDROLOGY MAP

$Q_{100} = 285$ CFS
- 16 CFS AREA F-2
- 39 CFS AREA F-5
- 18 CFS AREA F-7

ADJ. $Q_{100} = 201$ CFS

BASIN A

BASIN B

VICINITY MAP
NO SCALE

HYDROLOGY STUDY
APPROVED FOR AREA AND Q ONLY
APPROVED BY: [signature] RCE NO. 45255 DATE: 11/4/00
CHECKED BY: _____ DATE: _____
LAND DEVELOPMENT DIVISION
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

SEP 8 2 2000

SHEET		
1	COUNTY OF LOS ANGELES	1 SHEET

ALLIANCE LAND PLANNING & ENGINEERING INC.
23852 LAPLACE COURT, SUITE 100
LAKE FOREST, CA 92630
TEL: (760) 431-9896

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
23852 LAPLACE COURT, SUITE 100
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG W. HATTEKER, R.C.E. 51829 — 3-22-00 DATE

PLANS PREPARED FOR:
VALENCIA COMPANY
23823 VALENCIA BOULEVARD
VALENCIA, CA. 91355
(805)255-4000

NO.	DATE	BY	APP'D

HYDROLOGY STUDY
FOR
P.D. 2514-10
TRACT 45433

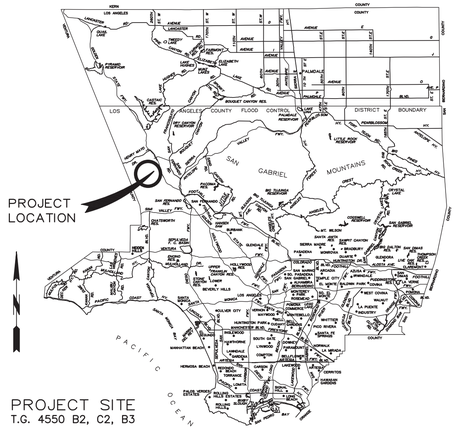
D-2: PD 2637

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

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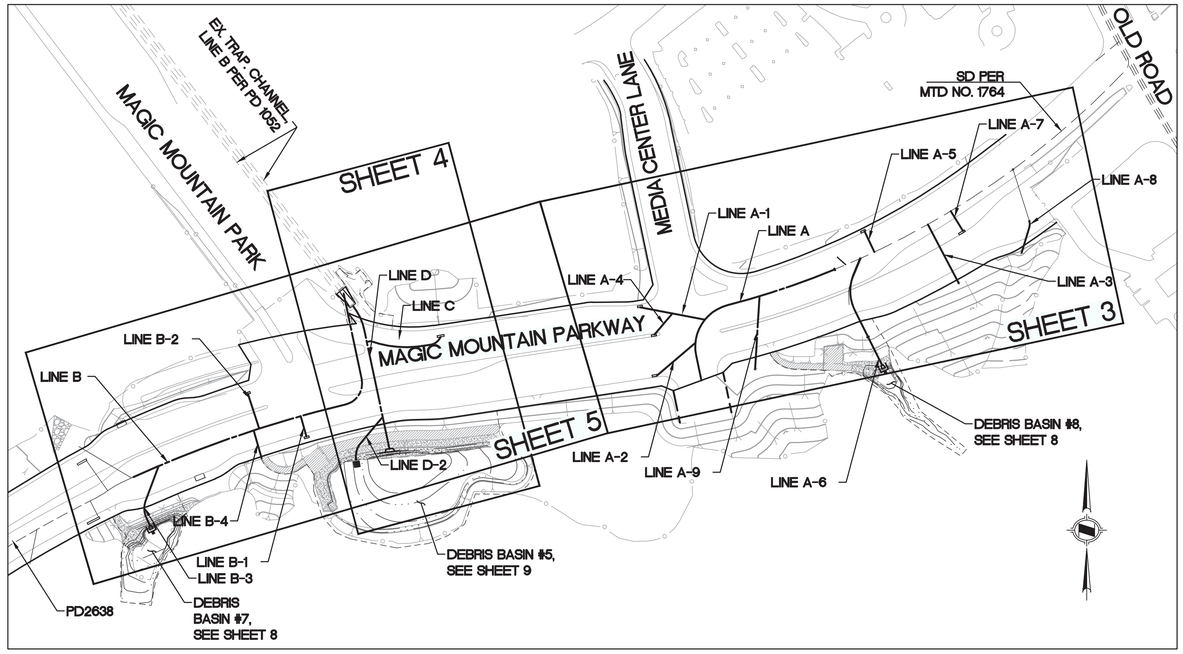
PRIVATE DRAIN NO 2637

DS 542



PROJECT SITE
T.G. 4550 B2, C2, B3

LOCATION MAP



KEY MAP
1" = 150'

CONSTRUCTION NOTES:

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
2. CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
5. CONSTRUCT 42" RCP (D-LOAD PER PROFILE)
6. CONSTRUCT DOUBLE REINFORCED CONCRETE BOX CULVERT PER S.P.P.W.C. 390-1. USE 6'W X 4'H REINFORCED CONCRETE BASE FOR STRUCTURE STEEL, SEE NOTES ON SHEET 4.
7. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER SPPWC STD. 331-3.
8. CONSTRUCT MANHOLE PIPE TO PIPE PER SPPWC STD. 322-2.
9. CONSTRUCT CURB OPENING CATCH BASIN PER SPPWC STD. 300-3 AND LOCAL DEPRESSION PER SPPWC STANDARD PLAN 313-3, PER STREET PLAN. INSTALL AUTOMATIC RETRACTABLE SCREEN (ARS) AND CONNECTOR PIPE SCREEN PER DETAIL SHEET 12.
10. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB PER SPPWC 333-2
10d. CONSTRUCT MODIFIED JUNCTION STRUCTURE PIPE TO RCB PER SPPWC 333-2, SEE SHEET 16 AND 17 FOR DETAIL.
11. CONSTRUCT 54" RCP (D-LOAD PER PROFILE)
12. CONSTRUCT CONCRETE COLLAR FOR RCP PER SPPWC STD. 380-4.
13. CONSTRUCT DESILTING INLET PER DETAIL ON SHEET NO. 8
14. CONSTRUCT 12' WIDE 6" CONCRETE ACCESS ROAD OVER 4" CRUSHED AGGREGATE BASE PER DETAIL 14 ON SHEET 8
15. CONSTRUCT CONC. FACING/SLOPE PROTECTION PER DETAIL ON SHEET 8
16. CONSTRUCT CHAIN LINK FENCE PER SPPWC STD. PLAN NO 600-3.
17. CONSTRUCT DOUBLE DRIVE GATE PER SPPWC STD. PLAN NO 600-3 (W=12' PER LEAF)
18. CONSTRUCT CUT OFF WALL PER DETAIL ON SHEET 8
19. CONSTRUCT ELEVATED INLET PER DETAIL ON SHEET 10
20. CONSTRUCT MODIFIED TRANSITION STRUCTURE PER CALTRANS DETAIL D86A, SEE DETAIL 20 ON SHEET 11.
21. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER SPPWC STD 323-2
22. CONSTRUCT TRANSITION STRUCTURE PIPE PER SPPWC STD. 340-2.
23. PROVIDE RUBBER GASKET JOINTS ON BOTH SIDES OF CUT/FILL TRANSITION (3 JOINTS MIN. EACH SIDE OR 24' MINIMUM EACH SIDE)
25. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER SPPWC STD. 332-3.
28. CONSTRUCT BRICK AND MOTOR PLUG
29. CONSTRUCT CLEANOUT PER DETAIL 29 ON SHEET 11
32. CONSTRUCT RIP-RAP APRON PER DETAIL 32 ON SHEET 11
33. CONSTRUCT MANHOLE PIPE TO PIPE PER SPPWC STD. 320-2.
34. CONSTRUCT VARIABLE WIDTH 3" ASPHALT CONCRETE OVER 4" CRUSHED AGGREGATE BASE PER DETAIL ON SHEET 11
35. CONSTRUCT BACKFILL STABILIZER PER SPPWC STD. 221-2
36. INSTALL SLOPE PROTECTION BARRIER PER SPPWC STD. 360-2, USE 2(TWO) 4'(H) X 6(W), AND MODIFIED TO 3.5'(H) X 6'(W)
37. INSTALL DEBRIS DAMS AND OUTLET WORKS PER LOS ANGELES COUNTY PUBLIC WORKS STANDARD PLAN #3097-0
38. CONSTRUCT CONCRETE BLANKET PER SPPWC 225-2



CATCH BASIN STENCIL DETAIL
NTS

THIS DETAIL SHOULD APPEAR ON TOP OF ALL THE CATCH BASIN

ALL CATCH BASINS AND INLETS THAT DISCHARGE INTO AND EXISTING OR PROPOSED STORM DRAIN MUST BE STENCILED TO DISCOURAGE ILLEGAL DUMPING OF POLLUTANTS. THIS STENCIL SHALL HAVE A MINIMUM DIAMETER OF 30 INCHES

"PD 2637 IS NOT ELIGIBLE FOR TRANSFER TO THE FLOOD CONTROL DISTRICT FOR MAINTENANCE UNTIL PD 1052 IS TRANSFERRED"

"PD 2637 SHALL TRANSFER TO LOS ANGELES COUNTY FLOOD CONTROL DISTRICT FOR MAINTENANCE CONCURRENTLY WITH WQ 061105-01A TRANSFERRING TO LOS ANGELES COUNTY FOR MAINTENANCE"

"PD 2637 MUST BE CONSTRUCTED BEFORE OR CONCURRENT WITH PD 2638"

PRIVATE ENGINEERS NOTICE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES PIPES OR STRUCTURES SHOWN ON THE THSES PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES AND ANY OTHER LINES NOT OF RECORD OR SHOWN ON THIS DRAWING.

JASON H. FUKUMITSU — 08/10/2018 DATE

REGISTERED PROFESSIONAL ENGINEER — JASON H. FUKUMITSU — No. 40695 — CIVIL — STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST — ANDREW A. PRICE — No. 1705 — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — VINCENT PING-KUEN CHEUNG — No. 2522 — Exp. 6/30 — GEOTECHNICAL — STATE OF CALIFORNIA

APPROVED MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS
BY ASSISTANT DIVISION ENGINEER — 8/14/2018 DATE

RECOMMENDED LAND DEVELOPMENT DIVISION
BY STORM DRAIN SECTION — 8/14/2018 DATE

SUBMITTED
BY STORM DRAIN SECTION — 08/13/2018 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	ADDED STRUCTURE PLANS AND DETAIL PER STRUCTURE REVIEW, REMOVING " NOT A PART OF THIS APPROVAL"			11/15/18
2	REVISED LINE A4 PER RELOCATED CATCH BASIN			5/28/19

REGISTERED PROFESSIONAL ENGINEER — JASON H. FUKUMITSU — No. 40695 — CIVIL — STATE OF CALIFORNIA
JASON H. FUKUMITSU — 8/10/18 DATE

INDEX TO PROJECT DRAWINGS

SHEET NO.	DESCRIPTION
1	TITLE SHEET/DETAILS
2	GENERAL NOTES/HYDRAULIC ELEMENTS
3	STORM DRAIN PLAN & PROFILE – LINE "A" & LINE "A-6"
4	STORM DRAIN PLAN & PROFILE – LINE "D" & LINE "D-2"
5	STORM DRAIN PLAN & PROFILE – LINE "B" & LINE "C"
6	LATERAL PROFILES A-1, A-2, A-3, A-4, A-5, A-7, A-8 AND A-9
7	LATERAL PROFILES B-1, B-2, B-3, B-4
8	DESILTING INLET #7 AND #8, AND DESILTING INLET DETAILS
9	BASIN # 5
10	ELEVATED INLET DETAILS
11	STORM DRAIN DETAILS
12	STORM DRAIN DETAILS
13	CSP DETAIL
14	EASEMENT SHEET
15	STRUCTURAL NOTES
16	STRUCTURAL DETAILS
17	STRUCTURAL DETAILS

INDEX TO STANDARD DRAWINGS

LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS

DWG. NO.	DESCRIPTION
3080-2	PIPE BEDDING
3097-0	DEBRIS DAMS AND BASINS OUTLET WORKS
6008-1	SAFETY REQUIREMENTS FOR OPEN EXCAVATIONS

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

STD. PLAN	TITLE
300-3	CURB OPENING CATCH BASIN
313-3	LOCAL DEPRESSIONS AT CATCH BASINS
320-2	MANHOLE PIPE-TO-PIPE MAIN (36" OR LARGER)
322-2	MANHOLE PIPE-TO-PIPE MAIN (LARGE SIDE INLET)
323-2	MANHOLE CONCRETE BOX
331-3	JUNCTION STRUCTURE-PIPE TO PIPE INLET ID D 600 mm (24") OR OD > 1/2 MAIN LINE
332-3	JUNCTION STRUCTURE-PIPE TO PIPE
333-2	JUNCTION STRUCTURE-PIPE TO RCB
334-2	JUNCTION STRUCTURE-PIPE TO PIPE
340-2	TRANSITION STRUCTURE-PIPE TO PIPE
360-2	SLOPE PROTECTION BARRIER
361-2	TRASH RACK (INCLINED)
380-4	CONCRETE COLLAR
390-1	PRECAST REINFORCED CONCRETE BOX
600-3	CHAIN LINK FENCE AND GATES

CALIFORNIA DEPARTMENT OF TRANSPORTATION

STD. PLAN	TITLE
D86A	PIPE HEADWALLS

PIPE LENGTH CHART

2

SIZE	LENGTH
18"	~~420'~~ 431'
24"	645'
42"	900'
54"	690'
6'WX3.5'H BOX	305'
TOTAL	~~2,960'~~ 2971'

PRIOR TO ORDERING PIPES, CONTACT GEOTECHNICAL AND MATERIALS ENGINEERING AT (626)458-1707 TO SCHEDULE A D-LOAD INSPECTION. INSPECTION FEES PAYABLE AT THE LAND DEVELOPMENT DIVISION PUBLIC COUNTER WILL BE REQUIRED

NEWHALL QUAD (2009) NAVD 88

BENCH MARK: LACDPW L 5402
RND HD SPK IN LOWER OF TWO CONC HDWLS @ N END 24' W/O C/L THE OLD RD (W RDWY) & 0.6MI S/O HENRY MAYO DR @ MI MKR #6.25

ELEV. 1031.831 FEET **ADJUSTMENT** 2009

SURVEYOR'S NOTE: TOPO & DESIGN ELEV ARE BASED ON 1995 ADJUSTMENT. TO ACQUIRE 2009 ADJUSTMENT ELEV, SUBTRACT 0.120 FT FROM ALL ELEVATIONS DEPICTED ON THESE PLANS.

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG | SHEET 1 OF 17

P.D. No. 2637

DDN No. 43-F551

G:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2637\HMV102-01- Sheet 1.dwg Plotted On Jul 18, 2018 - 2:12pm by wallanl

GENERAL NOTES

1. A permit shall be obtained and a deposit paid to the Department of Public Works at the Permit Counter, 900 South Fremont Avenue 3rd Floor, Alhambra at least 72 hours prior to starting work under this contract. Copies of all other required permits, such as Flood Control District and Road Excavation, must be filed with the permit application.

2. Approval of this plan by the County of Los Angeles does not constitute a representation as to the accuracy of the location, or the existence or nonexistence of any underground utility, pipe or structure within the limits of this project. This note applies to all sheets.

3. All work shall be in accordance with the latest adopted edition of the "Standard Specifications for Public Works Construction, " including supplements and shall be prosecuted only in the presence of the Director of Public Works.

4. The contractor's attention is directed to Section 7-10.4.1 of the Standard Specifications for Public Works Construction in regard to safety orders and shall conform to the "Minimum Public Safety Requirements" as shown on Los Angeles County Department of Public Works Standard Plan 6008.

5. Elevations are in feet above U.S.C. & G.S. Mean Sea Level Datum of 1929, unless otherwise indicated.

6. No concrete shall be placed until the forms and reinforcing steel have been placed, inspectedand approved.

7. All structural concrete shall be portland cement concrete with an ultimate 28 day compressive strength of 4000 p.s.i unless otherwise noted.

8. Transverse reinforcement and transverse joints shall be placed at right angles (or radial) to the conduit center line except as otherwise shown on the drawings.

9. All steel adjacent to face of concrete shall have 2-1/2-inch clearance unless otherwise specified.

10. Reinforcement shall be deformed bars of intermediate grade steel per A.S.T.M. A-615-Grade 60.

11. All bar bends and hooks shall conform to the American Concrete Institute "Manual of Standard Practice."

12. Dimensions from face of concrete to steel are to center line of steel unless otherwise noted.

13. All steel that is to be continuous shall have a minimum lap of 30 bar diameters or 18 inches whichever is greater.

14. All construction joints in the footing of slabs and walls shall be in the same plane. No staggering of joints will be permitted.

15. All exposed edges shall be finished with a $\frac{3}{4}$ inch chamfer.

16. Unless otherwise shown, concrete dimensions shall be measured vertically or horizontally and parallel or at right angles (or radial) to the center line of construction.

17. Concrete backfill is required when the pipe has less than one foot of cover. The concrete backfill shall consist of 1:3:5 mix, portland cement concrete poured from wall to wall of trench and from bottom of trench to a minimum of 4 inches over the top of the pipe.

18. All pipes shall be placed in a trench in natural ground and/or compacted fill. The ground level before the trenching shall be at least 3 feet above the top of the pipe elevation, or at finish surface elevation, whichever is less.

19. All backfill dry fills outside of street right of way shall be compacted to a minimum relative compaction of 90 percent of maximum density as determined by ASTM Soil Compaction Test D 1557-91 Method "D" unless otherwise specified. This shall be certified by a soils engineer. This certification shall be submitted to the Director of Public Works prior to acceptance of the work by the County.

20. All backfill dry fills outside of street right of way shall be compacted to a minimum relative compaction of 90 percent of maximum density as determined by ASTM Soil Compaction Test D 1557-91 Method "D" unless otherwise specified. This shall be certified by a soils engineer. This certification shall be submitted to the County Engineer prior to acceptance of the work by the County.

21. Pipe bedding shall be:

In accordance with Los Angeles County Department of Public Works Standard Plan No. 3092 unless otherwise noted.

OR

According to Standard Plan No. 3080, Case III, except bell and spigot pipe which shall be Case II bedding, unless otherwise shown. "W" values shall be as specified on Standard Plan No. 3080 for Case III bedding, Notes 3 (a), 3 (b), and 3 (c). If the "W" value at the top of the pipe is exceeded, the bedding shall be modified, and/or pipe of additional strength shall be provided. The proposed modification shall be approved by the Department of Public Works.

22. Pipe shall be embedded 5 inches into all structures including inlet and outlet headwalls, unless otherwise specified.

23. The minimum concrete cover for reinforcement in precast concrete pipe shall be 1 inch in pipe having a wall thickness of 2 1/2 inches or greater and 3/4 inch in pipe having a wall thickness of less than 2 1/2 inches.

24. All catch basins within the dedicated street right of way shall be constructed per the street plans.

25. All references on this plan to the County Engineer, Road Department, or Flood Control District shall apply to the appropriate elements of the Department of Public Works.

26. Existing utilities shall be maintained in place by the contractor, unless otherwise noted.

27. Where the utilities are indicated on the Drawings to be supported, said supports shall be in accordance with Standard Plans for Public Works Construction No. 224, unless otherwise indicated.

28. Manholes shall use the Standard Plans for Public Works Construction No. 630 for the "Frame and Cover" and No. 635 for the "Standard Drop Step."

29. This water quality system will not be field accepted until the streets have been paved, manholes brought to grade and the system cleaned to satisfaction of the Director of Public Works.

30. The Soils Engineer on record shall inspect and approve the foundation Excavations before steel or concrete is placed.

31. Maintenance covers constructed per S.P.P.W.C standard plans 630, 631, 632, and 633 shall be cast with the letters "L.A.C.D.P.W." The letters shall be 1 inch in height and placed below the letter "D" in the center of the cover.

32. Maintenance covers constructed per S.P.P.W.C standard plan 312 shall be cast with the letters "L.A.C.D.P.W." The letters shall be 1 inch in height and placed below the letter "D" in the center of the cover.

33. All above ground facilities shall be stamped with the WQ Plan Number. The lettering should be 4" black text on a yellow background.

STORMWATER POLLUTION CONTROL REQUIREMENTS FOR STORM DRAIN CONSTRUCTION

A. NOTES:

1. Every effort should be made to eliminate the discharge of non-storm water from the project site at all times.

2. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses, or wind.

3. Stockpiles of earth and other construction related materials must be protected from being transported from the site by the forces of wind or water.

4. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing 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 may not be washed into the drainage system.

5. Excess or waste concrete may not be washed into the public 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.

6. Trash and construction-related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.

7. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.

8. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.

B. The following BMPs as outlined in, but not limited to, the latest edition of the California BMP Handbook (Construction) or Cal Trans Storm Water Quality Handbooks (Construction Site BMP Manual), may apply during the construction for this project (additional measures may be required if deemed appropriate by the project engineer or the building official).

EROSION CONTROL

EC1 - SCHEDULING
EC2 - PRESERVATION OF EXISTING VEGETATION
EC3 - HYDRAULIC MULCH
EC4 - HYDROSEEDING
EC5 - SOIL BINDERS
EC6 - STRAW MULCH
EC7 - GEOTEXTILES & MATS
EC8 - WOOD MULCHING
EC9 - EARTH DIKES AND DRAINAGE SWALES
EC10 - VELOCITY DISSIPATION DEVICES
EC11 - SLOPE DRAINS
EC12 - STREAMBANK STABILIZATION
EC13 - RESERVED
EC14 - COMPOST BLANKETS
EC15 - SOIL PREPARATIONIROUGHENING
EC16 - NON-VEGETATED STABILIZATION

NON-STORMWATER MANAGEMENT

NS1 - WATER CONSERVATION PRACTICES
NS2 - DEWATERING OPERATIONS
NS3 - PAVING AND GRINDING OPERATIONS
NS4 - TEMPORARY STREAM CROSSING
NS5 - CLEAR WATER DIVERSION
NS6 - ILLICIT CONNECTION/DISCHARGE
NS7 - POTABLE WATER/IRRIGATION
NS8 - VEHICLE AND EQUIPMENT CLEANING
NS9 - VEHICLE AND EQUIPMENT FUELING
NS10 - VEHICLE AND EQUIPMENT MAINTENANCE
NS11 - PILE DRIVING OPERATIONS
NS12 - CONCRETE CURING
NS13 - CONCRETE FINISHING
NS14 - MATERIAL AND EQUIPMENT USE
NS15 - DEMOLITION ADJACENT TO WATER
NS16 - TEMPORARY BATCH PLANTS

TEMPORARY SEDIMENT CONTROL

SE1 - SILT FENCE
SE2 - SEDIMENT BASIN
SE3 - SEDIMENT TRAP
SE4 - CHECK DAM
SE5 - FIBER ROLLS
SE6 - GRAVEL BAG BERM
SE7 - STREET SWEEPING AND VACUUMING
SE8 - SANDBAG BARRIER
SE9 - STRAW BALE BARRIER
SE10 - STORM DRAIN INLET PROTECTION
SE11 - ACTIVE TREATMENT SYSTEMS
SE12 - TEMPORARY SILT DIKE
SE13 - COMPOST SOCKS & BERMS
SE14 - BIOFILTER BAGS

WASTE MANAGEMENT & MATERIAL POLLUTION CONTROL

WM1 - MATERIAL DELIVERY AND STORAGE
WM2 - MATERIAL USE
WM3 - STOCKPILE MANAGEMENT
WM4 - SPILL PREVENTION AND CONTROL
WM5 - SOLID WASTE MANAGEMENT
WM6 - HAZARDOUS WASTE MANAGEMENT
WM7 - CONTAMINATION SOIL MANAGEMENT
WM8 - CONCRETE WASTE MANAGEMENT
WM9 - SANITARY/SEPTIC WASTE MANAGEMENT
WM10 - LIQUID WASTE MANAGEMENT

WIND EROSION CONTROL

WE1 - WIND EROSION CONTROL

EQUIPMENT TRACKING CONTROL

TC1 - STABILIZED CONSTRUCTION ENTRANCE EXIT
TC2 - STABILIZED CONSTRUCTION ROADWAY
TC3 - ENTRANCE/OUTLET TIRE WASH

NO DUMPING · THIS DRAINS TO OCEAN ·

CATCH BASIN STENCIL DETAIL

ALL CATCH BASINS AND INLETS THAT DISCHARGE INTO AN EXISTING OR PROPOSED STORM DRAIN MUST BE STENCILED TO DISCOURAGE ILLEGAL DUMPING OF POLLUTANTS. THIS STENCIL SHALL HAVE A MINIMUM DIAMETER OF 30 INCHES.

HYDRAULIC ELEMENTS

LINE	PIPE FROM STA.	REACH TO STA.	Q (CFS)	SIZE	Vmax (FPS)	REMARKS
"A"	0+00.00	3+29.92	56.2	42"	21.4	1
	3+29.92	4+86.81	55.6	42"	19.8	
	4+86.81	5+42.47	53.5	42"	19.4	
	5+42.47	6+68.76	52.5	42"	19.5	
	6+68.76	7+01.56	51.0	42"	19.00	
	7+01.56	9+26.95	51.0	42"	18.8	
	9+26.95	10+53.74	49.9	42"	16.9	
	10+53.74	11+06.90	43.8	42"	12.6	
	11+06.90	11+87.21	38.6	42"	14.7	
"B"	08+54.69	11+85.49	216.6	54"	14.2	
	11+85.49	12+76.54	213.9	54"	13.5	
	12+76.54	12+88.54	212.5	54"	13.4	
	12+88.54	15+01.56	212.0	54"	13.3	
	15+01.56	15+55.98	171.8	54"	10.8	
"C"	10+12.42	11+63.89	3.6	24"	3.4	
"D-2"	10+04.00	10+20.38		42"		
"A-1"	10+03.78	10+69.39	5.8	24"	7.4	
	10+69.39	11+39.54	3.5	24"	8.9	
"A-2"	10+06.35	11+09.54	5.2	18"	12.7	
"A-3"	10+03.75	11+38.71	3.0	24"	10.5	
2 "A-4"	~~10+02.57~~ 10+02.65	~~10+58.30~~ 10+68.48	2.3	18"	~~10.0~~ 8.37	
"A-5"	10+02.87	10+47.93	4.1	18"	6.7	
"A-6"	10+00.00	11+75.97	20.3	42"	23.5	1
	11+75.97	12+42.03	20.3	42"	24.7	1
"A-7"	10+02.80	10+48.82	5.5	18"	13.2	
"A-8"	10+02.00	11+13.38	1.7	18"	10.2	
	11+13.38	11+66.66	1.7	18"	10.7	
"A-9"	10+04.64	11+52.83	2.5	24"	8.9	
"B-1"	10+04.07	10+44.50	2.3	18"	1.5	
"B-2"	10+04.09	10+76.49	1.7	24"	0.8	
"B-3"	10+07.38	11+32.33	40.2	42"	4.2	
"B-4"	10+04.17	10+59.79	0.9	18"	0.3	
"D" RCB	07+00.00	09+86.18	1,121.9	6'Wx3.5'H	26.8	1
	09+86.18	10+00.00	949.2	6'Wx3.5'H	24.5	1
	10+00.00	10+66.14	949.2	6'Wx3.5'H	26.2	1
	10+66.14	12+44.19	945.9	6'Wx3.5'H	29.2	1
	12+44.19	13+03.40	945.9	6'Wx3.5'H	30.7	2
	13+03.40	13+11.63	945.9	6'Wx3.5'H	21.8	1

REMARKS

1 ADD AN ADDITIONAL 0.5" OF CONCRETE COVER OVER THE INVERT STEEL FOR V > 20 FPS.

2 ADD AN ADDITIONAL 1.0" OF CONCRETE COVER OVER THE INVERT STEEL FOR V > 30 FPS.

3 ADD VELOCITY CONTROL RINGS FOR V > 40 FPS.

4 NOT TO BE MAINTAINED BY LACFCD

REGISTERED PROFESSIONAL ENGINEER · VINCENT PING-KUEN IP · No. 2522 · Exp. 6-30 · GEOTECHNICAL · STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST · ANDREW A. PRICE · No. 1705 · STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY STORM DRAIN SECTION 08/13/2018 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
2	REVISED LINE A4 PER RELOCATED CATCH BASIN			5/28/19

REGISTERED PROFESSIONAL ENGINEER · JASON H. FUKUMITSU · No. 40695 · CIVIL · STATE OF CALIFORNIA

JASON H. FUKUMITSU 8/10/18 DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
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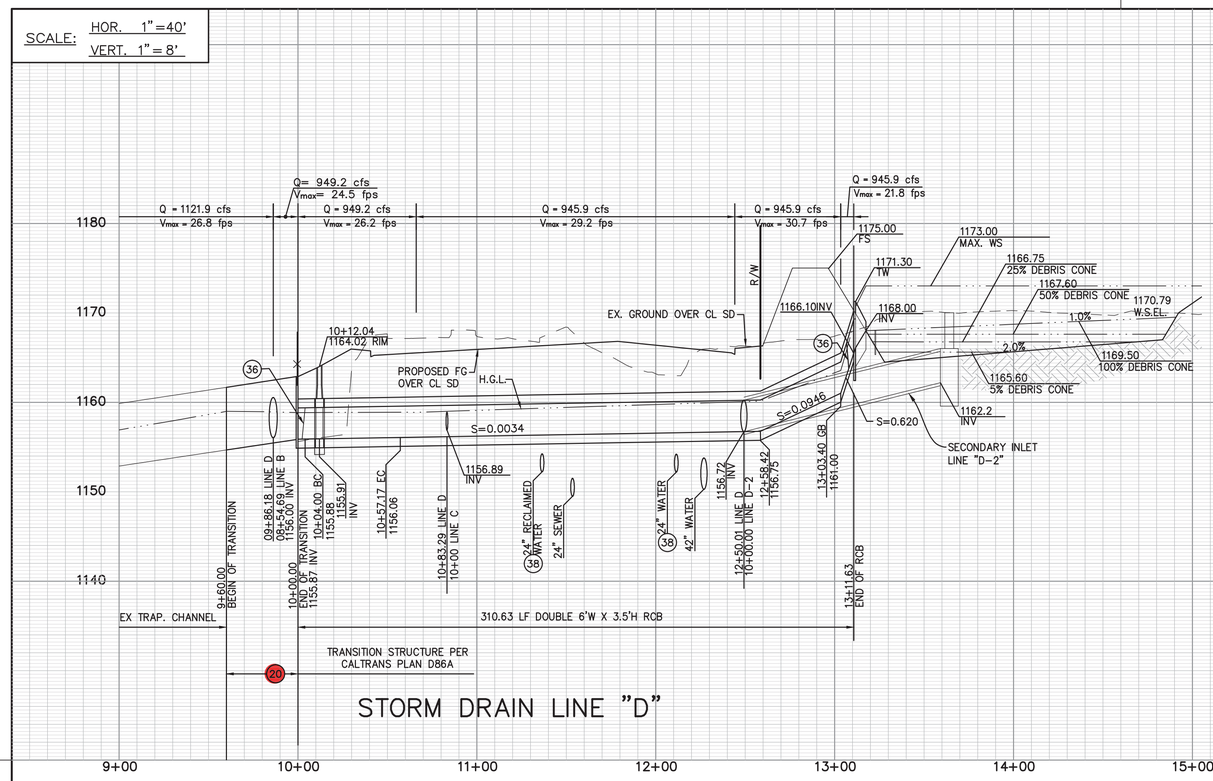
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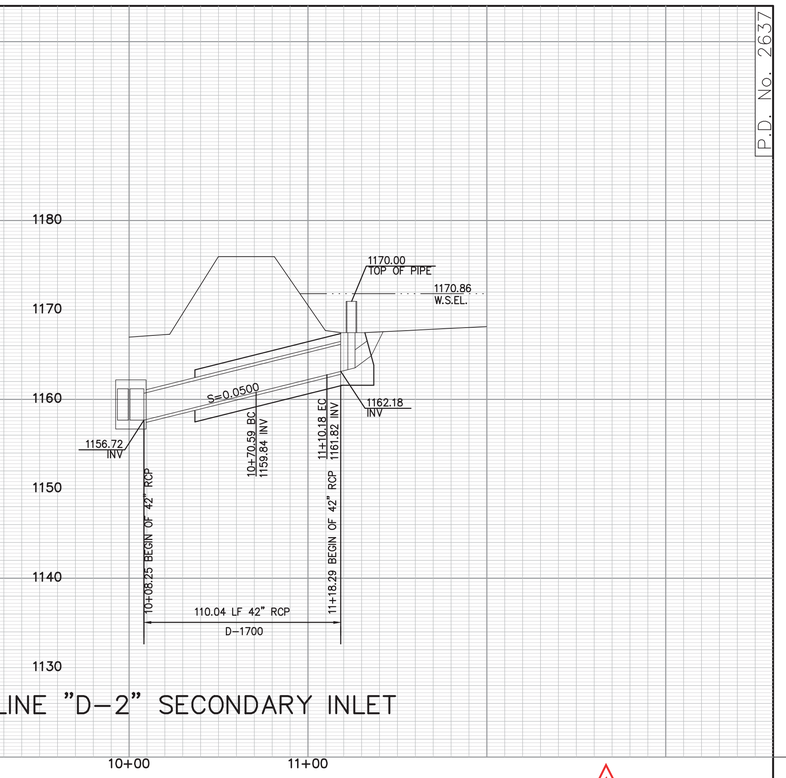
P.D. No. 2637

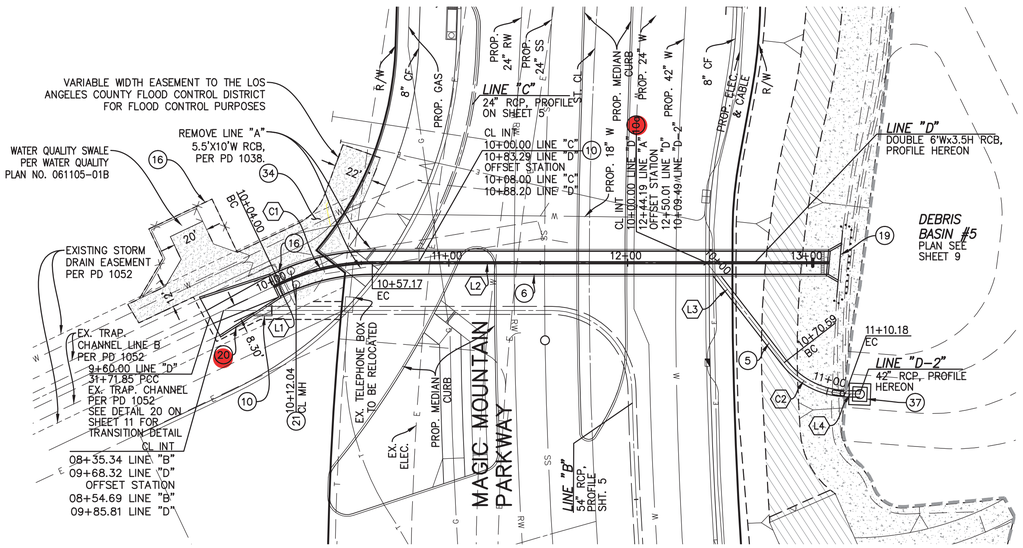
DDN No. 43-F551

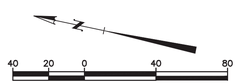
G:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2637\HW102-02 -Sheet 2.dwg Plotted On Jul 18, 2018 - 2:06pm by wohlsni

SCALE: HOR. 1"=40'
VERT. 1"=8'









OUTLET STRUCTURE											INLET STRUCTURE					
A	B	D	H	W	L	M	N	a	ANGLE		H	a	L	M	N	ANGLE
1'	9"	6"	7'	12'-7"	40'	N/A	N/A	1161.67'	4°		6'	1169.0'	5.8'	7.09'	N/A	30°

Not a part of this approval

CONSTRUCT MODIFIED JUNCTION STRUCTURE AT WING WALL WITH PARAPET

Line Table		
Line #	Length	Bearing
L1	4.00'	N37° 19' 36"W
L2	255.47'	N11° 56' 18"W
L3	70.59'	N40° 16' 26"E
L4	8.12'	N10° 07' 55"W

Curve Table				
Curve #	Length	Radius	Delta	Tangent
C1	53.17'	120.00'	025°23'18"	27.03'
C2	39.59'	45.00'	050°24'21"	21.18'

JUNCTION STRUCTURE TABLE						
LINE #	A	B	C	D	EL S	EL R
D-2	52'13'	36"	3.13'	72"	1156.72	1156.72

REGISTERED PROFESSIONAL ENGINEER JASON R. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST ANDREW A. PRICE No. 1705 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER VINCENT PING-HEN No. 2592 Exp. 6/30 CIVIL STATE OF CALIFORNIA

CONSTRUCTION NOTES:

(5) CONSTRUCT 42" RCP (0-LOAD PER PROFILE)
(6) CONSTRUCT DOUBLE REINFORCED CONCRETE BOX CULVERT PER S.P.P.W.C. 390-1. USE 6'W X 4'H REINFORCED CONCRETE BASE FOR STRUCTURE STEEL, SEE NOTES HEREON.
(10) CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB PER SPPWC 333-2
(10a) CONSTRUCT MODIFIED JUNCTION STRUCTURE PIPE TO RCB PER SPPWC 333-2, SEE SHEET 16 AND 17 FOR DETAIL.
(16) CONSTRUCT CHAIN LINK FENCE PER SPPWC STD. PLAN NO 600-3
(19) CONSTRUCT ELEVATED INLET PER DETAIL ON SHEET 10
(20) CONSTRUCT MODIFIED TRANSITION STRUCTURE PER CALTRANS DETAIL D86A, SEE DETAIL 20 ON SHEET 11
(21) CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER SPPWC STD 323-2
(34) CONSTRUCT VARIABLE WIDTH 3" ASPHALT CONCRETE OVER 4" CRUSHED AGGREGATE BASE PER DETAIL ON SHEET 11
(36) INSTALL SLOPE PROTECTION BARRIER PER SPPWC STD. 360-2, USE 2(TWO) 4'(H) X6'(W) AND MODIFIED TO 3.5'(H) X 6'(W)
(37) INSTALL DEBRIS DAMS AND OUTLET WORKS PER LOS ANGELES COUNTY PUBLIC WORKS STANDARD PLAN #3097-0
(38) CONSTRUCT CONCRETE BLANKET PER SPPWC 225-2

STANDARD 390-1 PRECAST REINFORCED CONCRETE BOX NOTES:

1. THE FOLLOWING NOTES REFER TO KEY DETAILS IN THE STANDARD PLAN. THESE NOTES ARE NOT ALL ENCOMPASSING. THE CONTRACTOR SHOULD REVIEW THE STANDARD PLAN IN ITS ENTIRETY.
2. MULTIPLE CELL INSTALLATION PER TYPICAL SECTION DETAIL ON SHEET 6
3. EXCAVATION AND BACKFILL PER DETAIL 2 ON SHEET 8
4. CRUVES CONSTRUCTED PER PRECAST REINFOCED CONCRETE BOX BEVELS DETAIL ON SHEET 11
5. VELOCITY REQUIRES 2.5" STEEL COVER PER NOTE 2 ON SHEET 13

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
08/13/2018 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	ADD INLET AND OUTLET STRUCTURE DIMENSION AND			11/15/18
	REVISE CONSTRUCTION NOTE PER STRUCTURAL REVIEW. REMOVING NOT A PART OF THIS APPROVAL			

REGISTERED PROFESSIONAL ENGINEER JASON R. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA
8/10/18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
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DWG | SHEET 4 OF 17

P.D. No. 2637

DDN No. 43-F551

G:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2637\HW102-04 - Sheet 4.dwg Plotted On Jul 25, 2018-1:13pm by wsilanl

SCALE: HOR. 1"=40'
VERT. 1"=8'

Q = 56.2 cfs
Vmax = 21.4 fps
Q = 55.6 cfs
Vmax = 19.8 fps
Q = 53.5 cfs
Vmax = 19.4 fps
Q = 52.5 cfs
Vmax = 19.5 fps
Q= 51.0 cfs
VMAX= 19.0 fps
Q = 51.0 cfs
Vmax = 18.8 fps
Q = 49.9 cfs
Vmax = 16.9 fps
Q = 43.8 cfs
Vmax = 12.6 fps
Q = 38.6 cfs
Vmax = 14.7 fps

3+29.92 LINE "A"
10+00.00 LINE A-8
4+86.81 LINE "A"
10+00.00 LINE A-7
5+42.47 LINE "A"
10+00.00 LINE A-3
6+68.76 LINE A
10+00.00 LINE A-5
7+01.56 LINE A
10+00.00 LINE A-6
9+27.59 LINE A
10+00.00 LINE A-9
9+94.52 LINE A
10+53.74 LINE "A"
10+00.00 LINE A-1
11+08.93 LINE A
10+40 LINE A-2

EX. GROUND OVER CL SD
PROPOSED FG OVER CL SD
HGL
EX. 18" RCP PER MTD 1764
1107.50 RIM
1101.93 INV.
1109.78 INV.
S=(0.0544)
1112.80 INV.
1119.93 INV.
1120.57 INV.
1120.77 INV.
1121.00 INV.
1128.00 RIM
S=(0.0544)
7+59.62 PCC
(1123.87) INV.
JOIN EX. 42" RCP
MTD NO. 1764
EX. 18" RCP PER MTD 1764
7+59.62 PCC
1123.55 INV.
JOIN EX. 42" RCP
MTD NO. 1764
6" WATER
1134.11 INV.
9+96.85 PRC
1134.37 INV.
1137.64 INV.
S=0.0442
1140.39 INV.
1142.17 RIM
8" RECLAIMED WATER
8" WATER
24" WATER
11+34.04 EC
1140.37 INV.
42" WATER SEWER
1142.66 INV.
S=0.0440
(1100.38) INV.
(1100.63) INV.
42" WATER
EX. 42" RCP
366.98
6+99.06 END EX. RCP
7+06.88 BEGIN EX. RCP
52.74 LF
9+92.19 END RCP
9+96.85 BEGIN RCP-PRC
232.57 LF
42" RCP
D-900
11+87.21 END RCP
190.36 LF
42" RCP
D-900

STORM DRAIN LINE "A"

Q = 20.3 cfs
V max = 23.5 fps
Q = 20.3 cfs
V max = 24.7 cfs
R/W
10.80'
11.8'
EX. GROUND OVER CL SD
PROPOSED FG OVER CL SD
24" WATER
HGL
S=0.0400
S=0.2617
10+00.00 LINE A-6
1120.70INV.
EX. 42" RCP
MTD NO. 1764
10+36.29 BC
1122.16 INV.
11+13.25 EC
1125.24" INV.
11+75.97
1127.74 INV.
12+42.03
1145.00INV.
175.97 LF, 42" RCP
D-1000
66.06 LF
42" RCP
1/2" ADDITIONAL CONC. COVER OVER INVERT STEEL D-1600
1149.30 TW
1149.00 TOP OF WEIR
1151.00 TOP OF WALL
1152.5 MAX DEBRIS CONE
2.5%
1147.02 W.S.EL
5.0%
1146.00
5% DEBRIS CONE
1148.00
25% DEBRIS CONE
1149.00
50% DEBRIS CONE
1145.37INV.
1145.00INV.

STORM DRAIN LINE "A-6"

3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 10+00 11+00 12+00 13+00

MAGIC MOUNTAIN PARKWAY

LINE "A-8"
18" RCP, PROFILE ON SHEET 6, NOT TO BE MAINTAINED BY LACFCD BEYOND R/W
INLET PER GRADING PLAN
WATER VAULT
11+38.71 LINE "A-3"
1120.65 INV.
PROP. CABLE & ELEC.
SIDEWALK
8" CF
PROP. 42" WATER
PROP. 24" WATER.
LINE "A-3"
18" RCP, PROFILE ON SHEET 6, NOT TO BE MAINTAINED BY LACFCD BEYOND R/W
REMOVE EX. 42" RCP AND SD INLET PER MTD 1764
ST. STA 189+59.03
CL CB#1, A=90°
W=14', V=5.11', H=2"
11+13.38 LINE "A-8"
01+13.38 PCC
EX.18" RCP
MTD NO. 1764
EX. ELEC.
EX. 16" WATER
EX. LATERAL "1M"
EX. 18" RCP
PER MTD 1764
LINE "A-7"
18" RCP PROFILE ON SHEET 6
EX. LINE "B"
EX. 48" RCP
PER MTD 1764
EX. ELEC.
EX. TEL.
PROP. 42" WATER
EX. CL MH INT.
10+00.00 LINE "A-8"
0+00.00 LATERAL "1M"
3+29.92 EX. 42" RCP
MTD NO. 1764
PROP. 24" RECLAIMED WATER
PROP. 24" SEWER
R/W
SIDEWALK
11+38.71 LINE "A-3"
1120.65 INV.
EX. 42" RCP
MTD NO. 1764
5+42.47 EX. 42" RCP
MTD NO. 1764
10+00.00 LINE "A-5"
5+42.47 EX. 42" RCP
MTD NO. 1764
CL INT
10+00.00 LINE "A-5"
6+68.75 EX. 42" RCP
MTD NO. 1764
LINE "A-5"
18" RCP PROFILE ON SHEET 6
ST. STA 187+72.80
CL CB#2, A=90°
W=14', V=4.55', H=2'
REMOVE EXISTING JUNCTION STRUCTURE PER MTD 1764
REMOVE EXISTING BULKHEAD
EX. 18" LINE "IL" PER MTD 1764 TO BE REMOVED
EX. 16" WATER
10+00.00 LINE "A"
7+59.62 PCC
EX. 42" RCP MTD NO. 1764
8+00
ST. CL
45.40'
VARIES
9+00
PROP. 24" SS
CL SDMH
9+94.52 LINE "A"
D=42"
CL INT
10+00.00 LINE "A-9"
9+26.95 42" RCP
CL INT
10+00.00 LINE "A-4"
10+69.39 LINE "A-1"
CL INT
10+00.00 LINE "A-2"
11+08.93 LINE "A"
PROP. GAS
CL INT
10+00.00 LINE "A-1"
10+53.74 LINE "A"
9+96.85 PRC
PROP. 24" SS
PROP. ELEC.
PROP. 8" RW
PROP. TEL
INLET PER GRADING PLAN
11+87.21 END OF 42" RCP
11+52.83 LINE "A-9"
1141.00 INV.
PROP. 12" SS
LINE "A-2"
18" RCP PROFILE ON SHEET 6
ST. STA 182+60.92
CL CB#3, A=44°
W=10', V=4.5'
ST. STA 182+56.30
CL CB#4, A=90°
W=10', V=5.0'
ST. STA 182+52.70
CL CB#5, A=62°
W=10', V=5.75'
LINE "A-4"
18" RCP PROFILE ON SHEET 6
LINE "A-1"
24" RCP PROFILE ON SHEET 6
PROP. 24" RW
PROP. 12" WATER
SIDEWALK
MEDIA CENTER LANE

STORM DRAIN LINE "A"

MAGIC MOUNTAIN PARKWAY
EX. ELEC.
EX. 24" WATER
PROP. TEL & ELEC.
8" CF
R/W
LINE "A-6"
42" RCP
PROFILE HEREON
11+13.25 EC
11+00
12+00
11+75.97
1127.74 INV.
PROP. 24" WATER
PROP. 42" WATER
DEBRIS BASIN #8
SEE SHEET 8

STORM DRAIN LINE "A-6"

GRAPHIC SCALE: 1" = 40'

CONSTRUCTION NOTES:

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
2. CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
5. CONSTRUCT 42" RCP (D-LOAD PER PROFILE)
7. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER SPPWC STD. 331-3.
8. CONSTRUCT MANHOLE PIPE TO PIPE PER SPPWC STD. 322-2.
9. CONSTRUCT CURB OPENING CATCH BASIN PER SPPWC STD. 300-3 AND LOCAL DEPRESSION PER SPPWC STANDARD PLAN 313-3, PER STREET PLAN. INSTALL AUTOMATIC RETRACTABLE SCREEN (ARS) AND CONNECTOR PIPE SCREEN PER DETAIL SHEET 12.
12. CONSTRUCT CONCRETE COLLAR FOR RCP PER SPPWC STD. 380-4.
23. PROVIDE RUBBER GASKET JOINTS ON BOTH SIDES OF CUT/FILL TRANSITION (3 JOINTS MIN. EACH SIDE OR 24' MIN EACH SIDE)
28. CONSTRUCT BRICK AND MOTOR PLUG
29. CONSTRUCT CLEANOUT PER DETAIL 29 ON SHEET 11
33. CONSTRUCT MANHOLE PIPE TO PIPE PER SPPWC STD. 320-2.
35. CONSTRUCT BACKFILL STABILIZER PER SPPWC STD. 221-2
38. CONSTRUCT CONCRETE BLANKET PER SPPWC 225-2

GRAPHIC SCALE: 1" = 40'

JUNCTION STRUCTURE TABLE

LINE #	A	B	C	D	EL S	EL R
A-1	65°35'	24"	2.26'	42"	1137.64	1137.75
A-2	44°11'	18"	3.22'	42"	1140.30	1140.70
A-3	90°00'	24"	2.00'	42"	1112.80	1113.02
A-4	60°30'	18"	1.50'	24"	1140.88	1140.95
A-5	90°00'	18"	1.12'	42"	1119.93	1119.99
A-7	90°00'	18"	2.00'	42"	1109.78	1110.12
A-9	69°46'	24"	2.00'	42"	1132.07	1132.20

Line Table

Line #	Length	Bearing
L1	53.17'	N11° 52' 12"W
L2	138.13'	N79° 21' 38"W
L3	105.89'	N49° 35' 06"E
L4	138.71'	N27° 44' 55"W
L5	47.93'	S25° 33' 05"E
L6	~~57.16'~~ 12.30'	N40° 12' 41"E

Line Table

Line #	Length	Bearing
L7	55.61'	N16° 51' 31"E
L8	36.29'	N22° 34' 09"E
L9	128.77'	N26° 25' 37"W
L10	48.82'	N31° 11' 51"W
L11	152.83'	N03° 31' 53"E

Curve Table

Curve #	Length	Radius	Delta	Tangent
C1	237.23'	1754.99'	007°44'42"	118.80'
C2	137.20'	90.00'	087°20'34"	85.92'
C3	13.52'	22.50'	034°25'01"	6.97'
C4	76.96'	90.00'	048°59'46"	41.01'
C5	15.27'	90.00'	09°43'17"	7.65'

Line Table

Line #	Length	Bearing
L12	40.91'	N 49°55'59" E

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
08/13/2018 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
2	REVISED LINE A4 PER RELOCATED CATCH BASIN			5/28/19

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA
8/10/18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

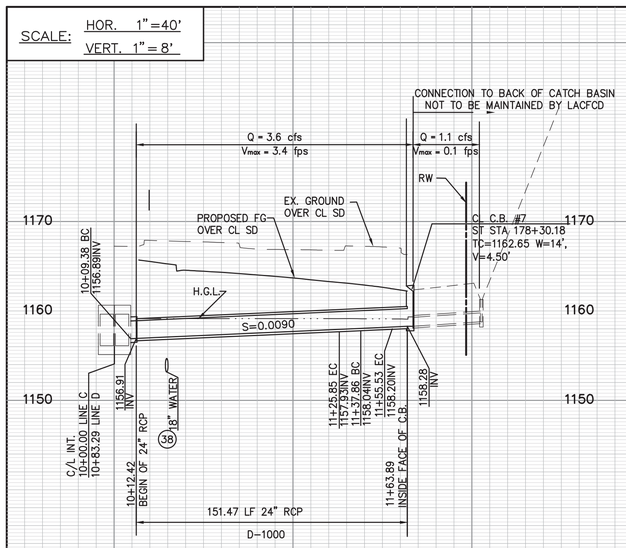
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG
SHEET 3 OF 17

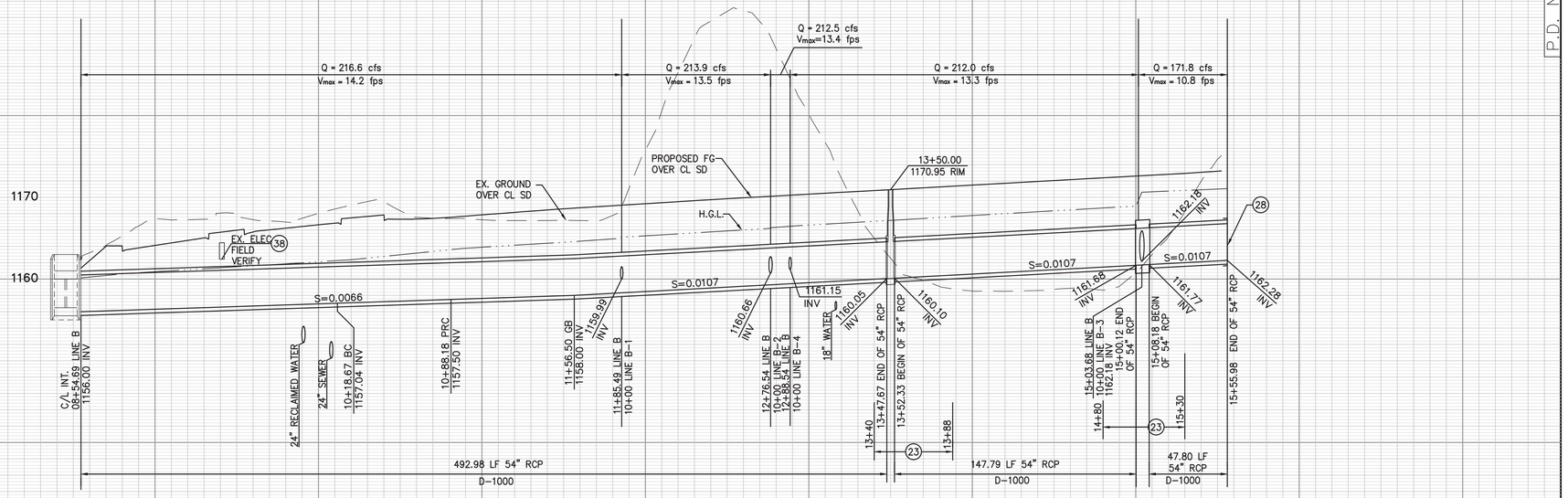
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DDN No. 43-F551

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SCALE: HOR. 1"=40'
VERT. 1"=8'



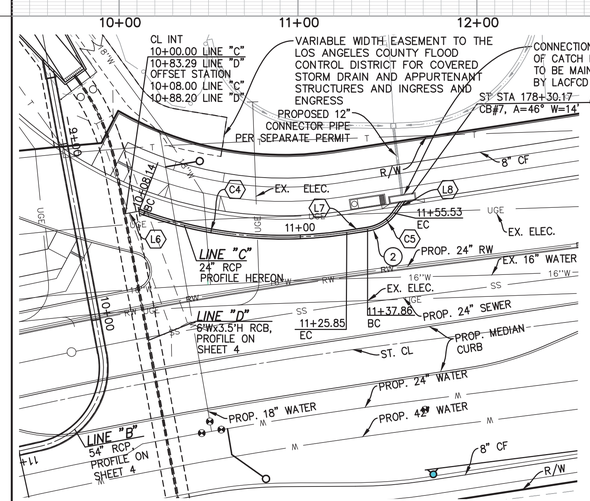
STORM DRAIN "C"



STORM DRAIN LINE "B"

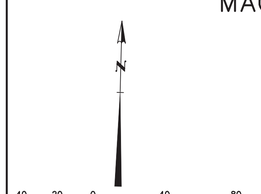
P.D. No. 2637

DDN No. 43-F551



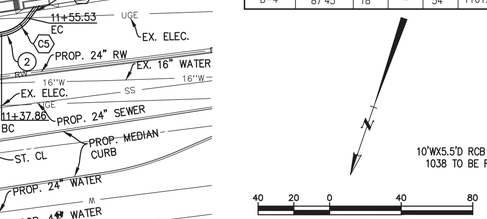
MAGIC MOUNTAIN PARKWAY
STORM DRAIN "C"

JUNCTION STRUCTURE TABLE						
LINE #	A	B	C	D	EL S	EL R
B-1	90°00'	18"	–	54"	1159.81	1160.02
B-2	90°00'	24"	1.75'	54"	1160.71	1160.79
B-3	46°35'	42"	3.98'	54"	1162.18	1162.25
B-4	87°45'	18"	–	54"	1161.00	1161.15



GRAPHIC SCALE: 1" = 40'

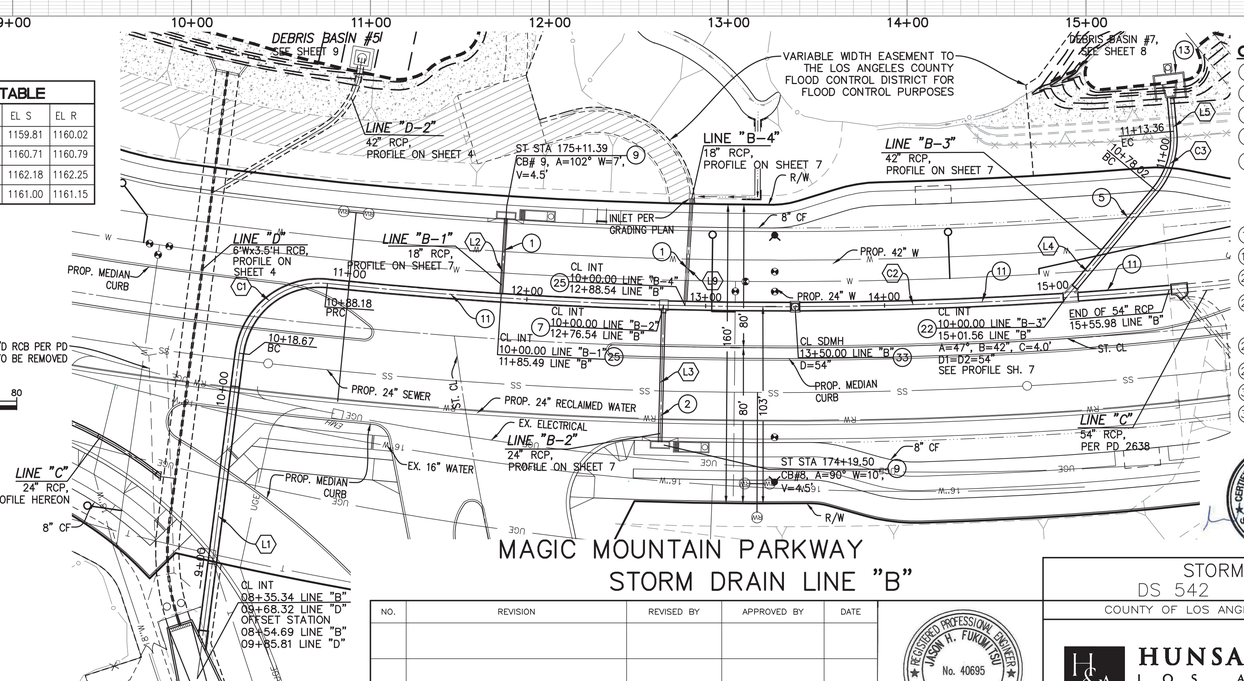
Curve Table				
Curve #	Length	Radius	Delta	Tangent
C1	69.51	45.00	088°29'58"	43.84
C2	361.61	2477.00	007°19'25"	158.52
C3	35.34	45.00	045°00'00"	18.64
C4	117.71	232.00	029°04'11"	60.15
C5	17.67	22.50	045°00'00"	9.32



GRAPHIC SCALE: 1" = 40'

10'WX5.5'D RCB PER PD 1038 TO BE REMOVED

Line Table		
Line #	Length	Bearing
L1	183.34'	N11° 56' 19"W
L2	37.50'	N15° 41' 22"W
L3	76.49'	N17° 47' 43"W
L4	78.02	N20° 25' 05"E
L5	18.97	N24° 34' 55"W
L6	7.64	N78° 03' 42"E
L7	12.01	S79° 55' 59"W
L8	8.36	S34° 55' 59"W
L9	59.79	N15° 49' 00"E



MAGIC MOUNTAIN PARKWAY
STORM DRAIN LINE "B"

CONSTRUCTION NOTES:

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
2. CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
5. CONSTRUCT 42" RCP (D-LOAD PER PROFILE)
7. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER SPPWC STD. 331-3.
9. CONSTRUCT CURB OPENING CATCH BASIN PER SPPWC STD. 300-3 AND LOCAL DEPRESSION PER SPPWC STANDARD PLAN 313-3, PER STREET PLAN. INSTALL AUTOMATIC RETRACTABLE SCREEN (ARS) AND CONNECTOR PIPE SCREEN PER DETAIL SHEET 12.
11. CONSTRUCT 54" RCP (D-LOAD PER PROFILE)
13. CONSTRUCT DESILTING INLET PER DETAIL ON SHEET NO. 8
22. CONSTRUCT TRANSITION STRUCTURE PIPE PER SPPWC STD. 340-2.
23. PROVIDE RUBBER GASKET JOINTS ON BOTH SIDES OF CUT/FILL TRANSITION (3 JOINTS MIN. EACH SIDE OR 24" MIN EACH SIDE)
25. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER SPPWC STD. 332-3.
28. CONSTRUCT BRICK AND MOTOR PLUG
33. CONSTRUCT MANHOLE PIPE TO PIPE PER SPPWC STD. 320-2.
38. CONSTRUCT CONCRETE BLANKET PER SPPWC 225-2

CERTIFIED ENGINEERING GEOLOGIST
ANDREW A. PRICE
No. 1705
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
VINCENT PING-HUEN TSO
No. 2622
Exp. 6-30-19
CIVIL
STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
08/13/2018
DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA
8/10/18
JASON H. FUKUMITSU DATE

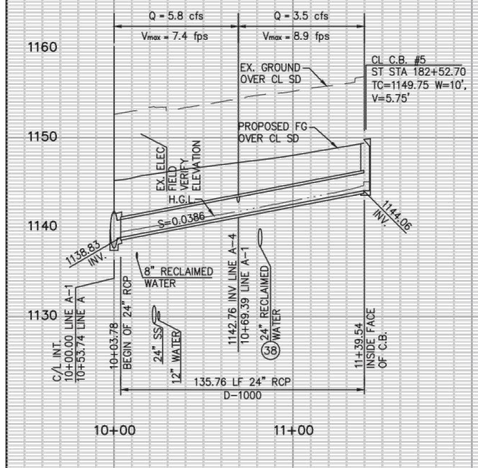
STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

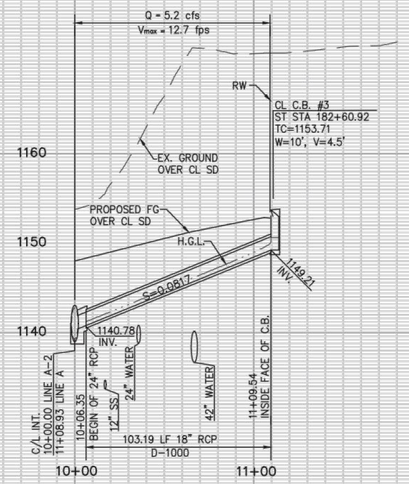
DWG | SHEET 5 OF 17

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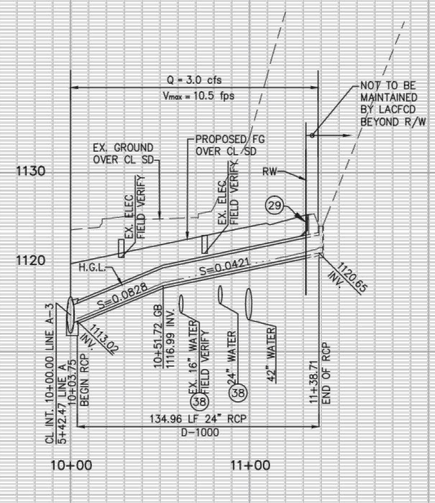
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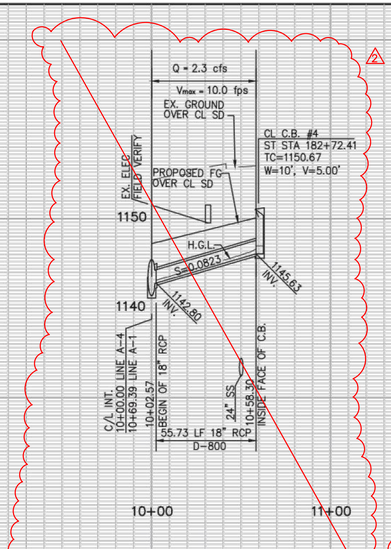
STORM DRAIN LINE "A-1"



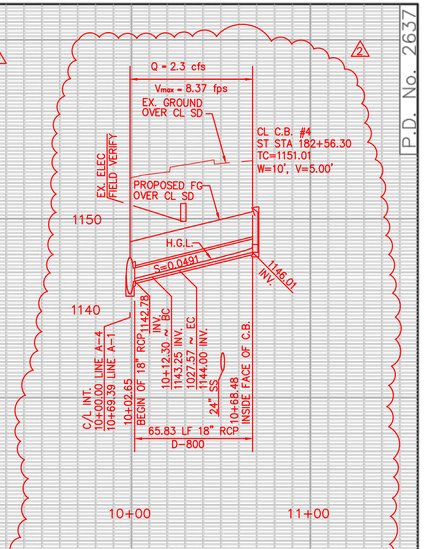
STORM DRAIN LINE "A-2"



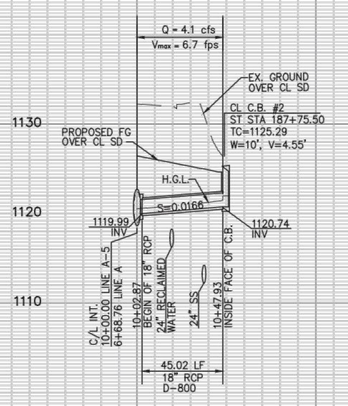
STORM DRAIN LINE "A-3"



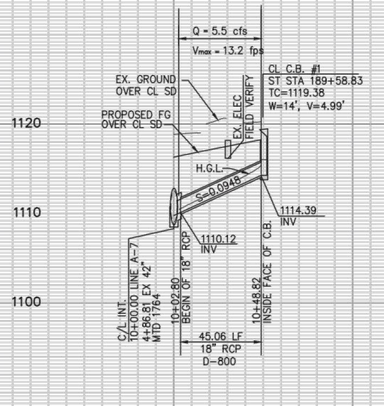
STORM DRAIN LINE "A-4"



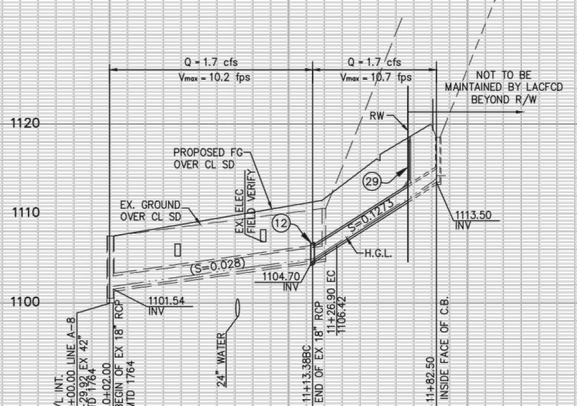
STORM DRAIN LINE "A-4"



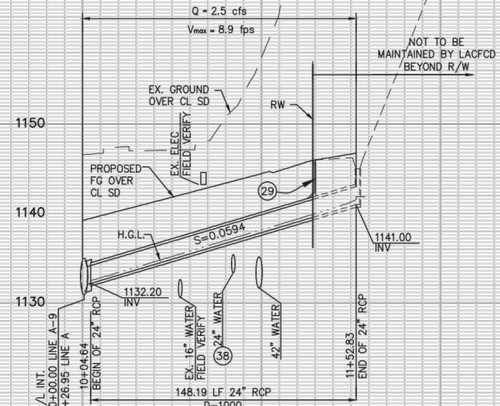
STORM DRAIN LINE "A-5"



STORM DRAIN LINE "A-7"



STORM DRAIN LINE "A-8"



STORM DRAIN LINE "A-9"

CONSTRUCTION NOTES:

(12) CONSTRUCT CONCRETE COLLAR FOR RCP PER SPPWC STD. 380-4
(29) CONSTRUCT CLEANOUT PER DETAIL 29 ON SHEET 11
(38) CONSTRUCT CONCRETE BLANKET PER SPPWC 225-2

CERTIFIED ENGINEERING GEOLOGIST — ANDREW A. PRIDE No. 1705 — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — VINCENT PING-XUEN TU No. 2522 Exp. 6-30-20 — CIVIL — STATE OF CALIFORNIA

NO.	REVISION	REVISED BY	APPROVED BY	DATE
2	REVISED LINE A4 PER RELOCATED CATCH BASIN			5/28/19

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION 08/13/2018 DATE

REGISTERED PROFESSIONAL ENGINEER — JASON H. FUKUMITSU No. 40695 — CIVIL — STATE OF CALIFORNIA
8/10/18 DATE
JASON H. FUKUMITSU

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

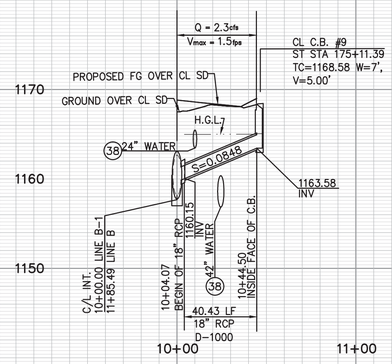
DWG | SHEET 6 OF 17

P.D. No. 2637

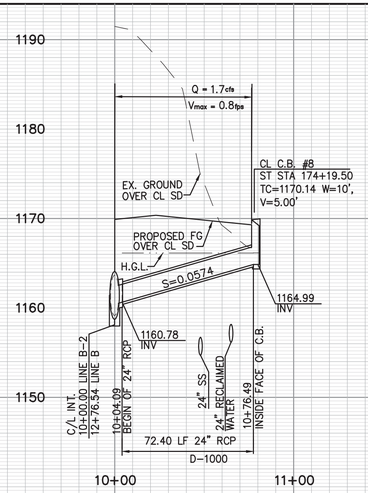
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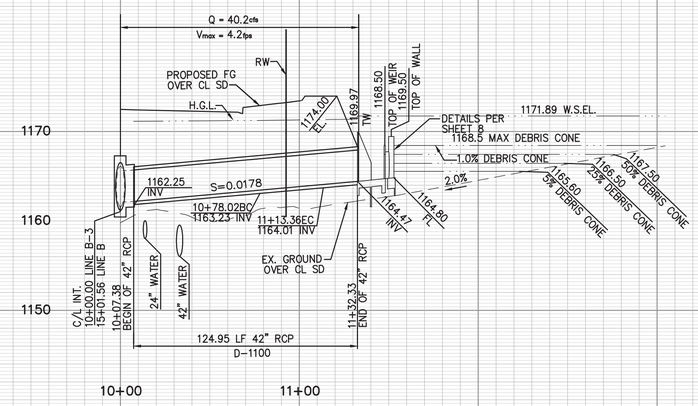
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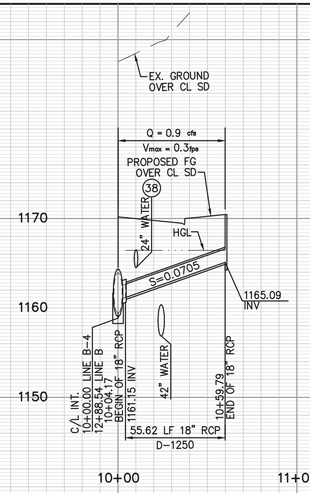
STORM DRAIN LINE "B-1"



STORM DRAIN LINE "B-2"



STORM DRAIN LINE "B-3"



STORM DRAIN LINE "B-4"

P.D. No. 2637

DDN No. 43-F551

ANDREW A. PRICE
No. 1705
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
VINCENT PING-NOEN YU
No. 2522
Exp. 6/20
GEOTECHNICAL
STATE OF CALIFORNIA

CONSTRUCTION NOTES:

(38) CONSTRUCT CONCRETE BLANKET PER SPPWC 225-2

REVIEWED LAND DEVELOPMENT DIVISION

BY _____ 08/13/2018
STORM DRAIN SECTION DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

8/10/18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

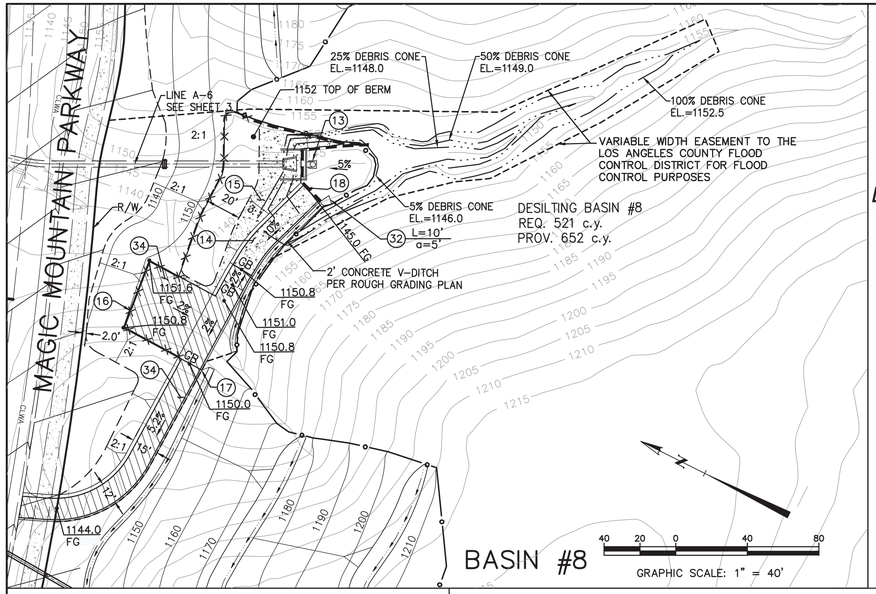
DWG

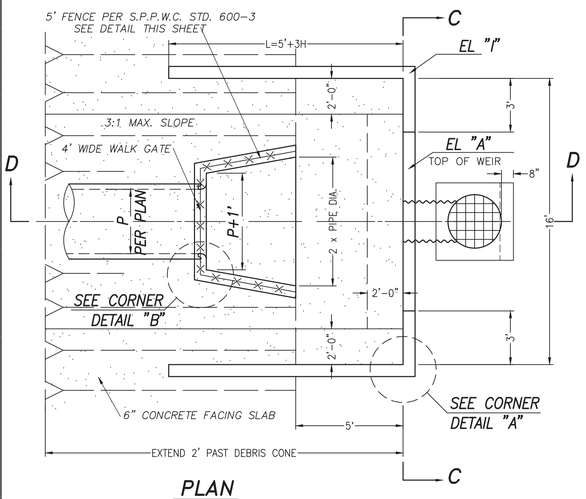
SHEET 7 OF 17

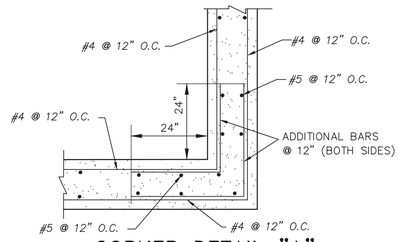
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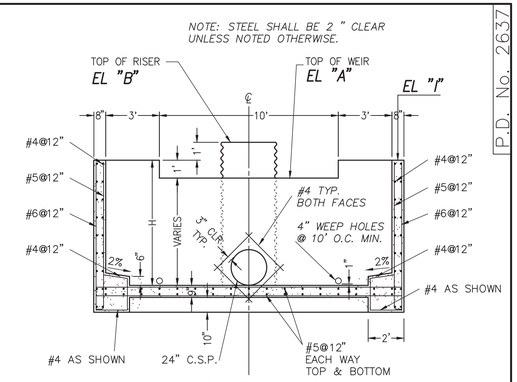
P.D. No. 2637

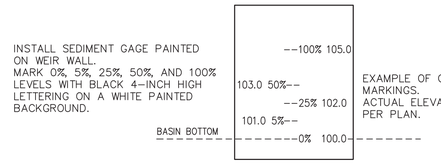
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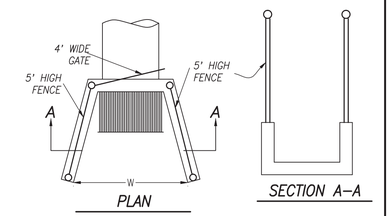


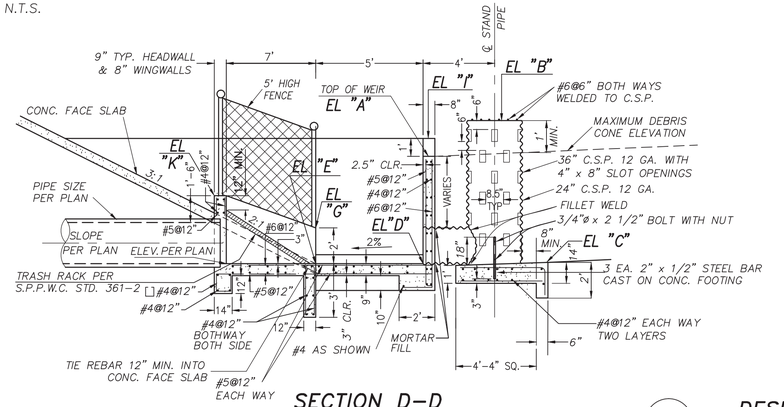


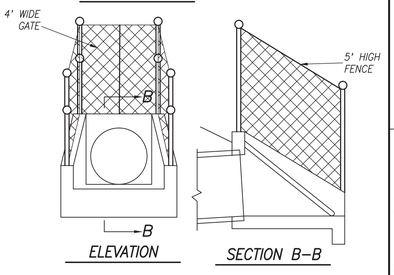


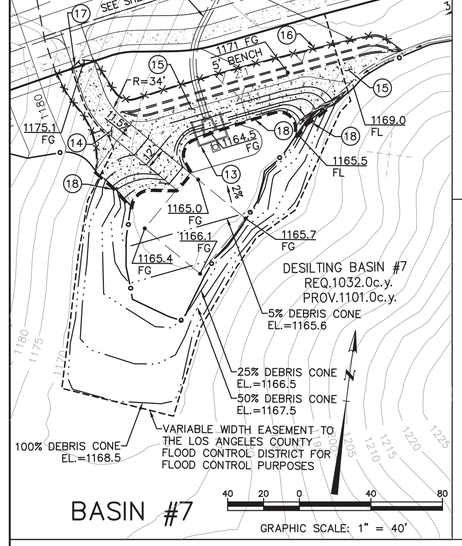


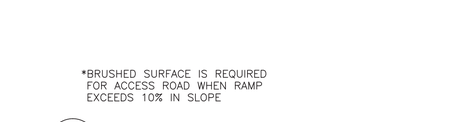






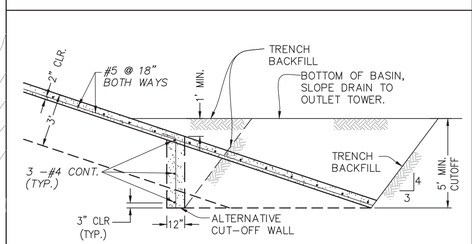




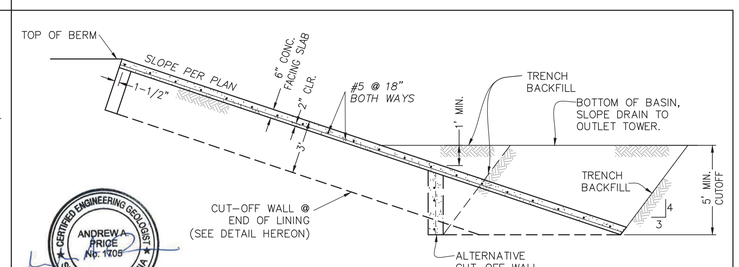


*BRUSHED SURFACE IS REQUIRED FOR ACCESS ROAD WHEN RAMP EXCEEDS 10% IN SLOPE

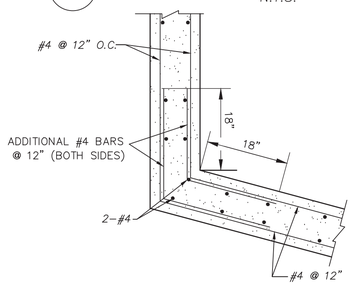
14 CONCRETE ACCESS ROAD
N.T.S.



18 CUTOFF WALL DETAIL
N.T.S.



15 CONCRETE FACING/SLOPE PROTECTION
N.T.S.



13 DESILTING INLET DETAILS
N.T.S.

CONSTRUCTION NOTES:

13. CONSTRUCT DESILTING INLET PER DETAIL 13 HEREON
14. CONSTRUCT 12' WIDE 6" CONCRETE ACCESS ROAD OVER 4" CRUSHED AGGREGATE BASE PER DETAIL 14 HEREON
15. CONSTRUCT CONC. FACING/SLOPE PROTECTION PER DETAIL 15 HEREON
16. CONSTRUCT CHAIN LINK FENCE PER SPPWC STD. PLAN NO 600-3.
17. CONSTRUCT DOUBLE DRIVE GATE PER SPPWC STD. PLAN NO 600-3 (W=12' PER LEAF)
18. CONSTRUCT CUT OFF WALL PER DETAIL 18 HEREON
32. CONSTRUCT RIP-RAP APRON PER DETAIL 32 ON SHEET 11
34. CONSTRUCT VARIABLE WIDTH 3" ASPHALT CONCRETE OVER 4" CRUSHED AGGREGATE BASE PER DETAIL ON SHEET 11.

DESILTING INLET STRUCTURE

		ELEVATIONS								LENGTH	
SHT. NO.	LINE	A	B	C	D	E	I	G	K	P	W
3	A-6	1149.00	1151.00	1145.37	1145.15	1145.00	1150.00	1147.05	1149.30	3.5'	7'
7	B-3	1168.50	1170.50	1164.80	1164.60	1164.50	1169.50	1166.50	1169.97	3.5'	7'

CERTIFIED ENGINEERING GEOLOGIST ANDREW A. PRIOE No. 1205 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER ROBERT PING-KUEN LEE No. 2522 Exp. 12/20 CIVIL STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
08/13/2018 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

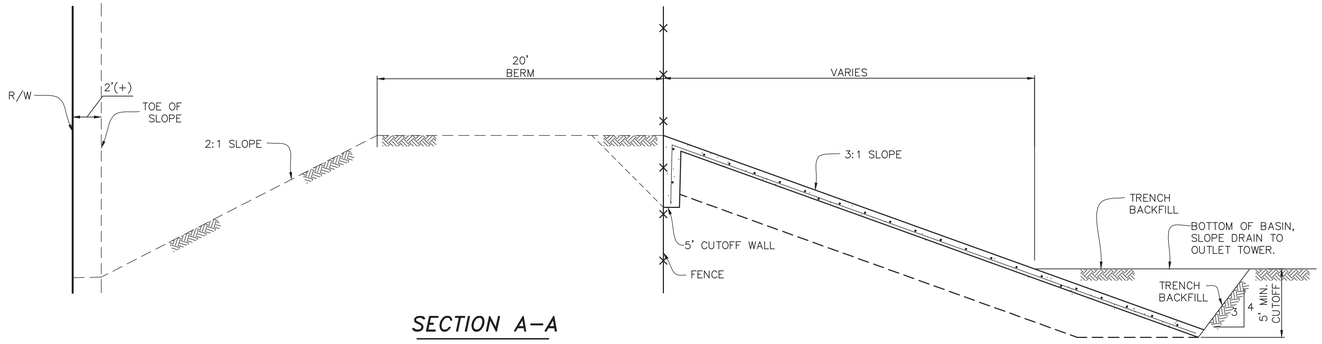
REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA
8/10/18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 • Valencia, CA 91355 • PH: (661) 294-2211 • FX: (661) 294-9890

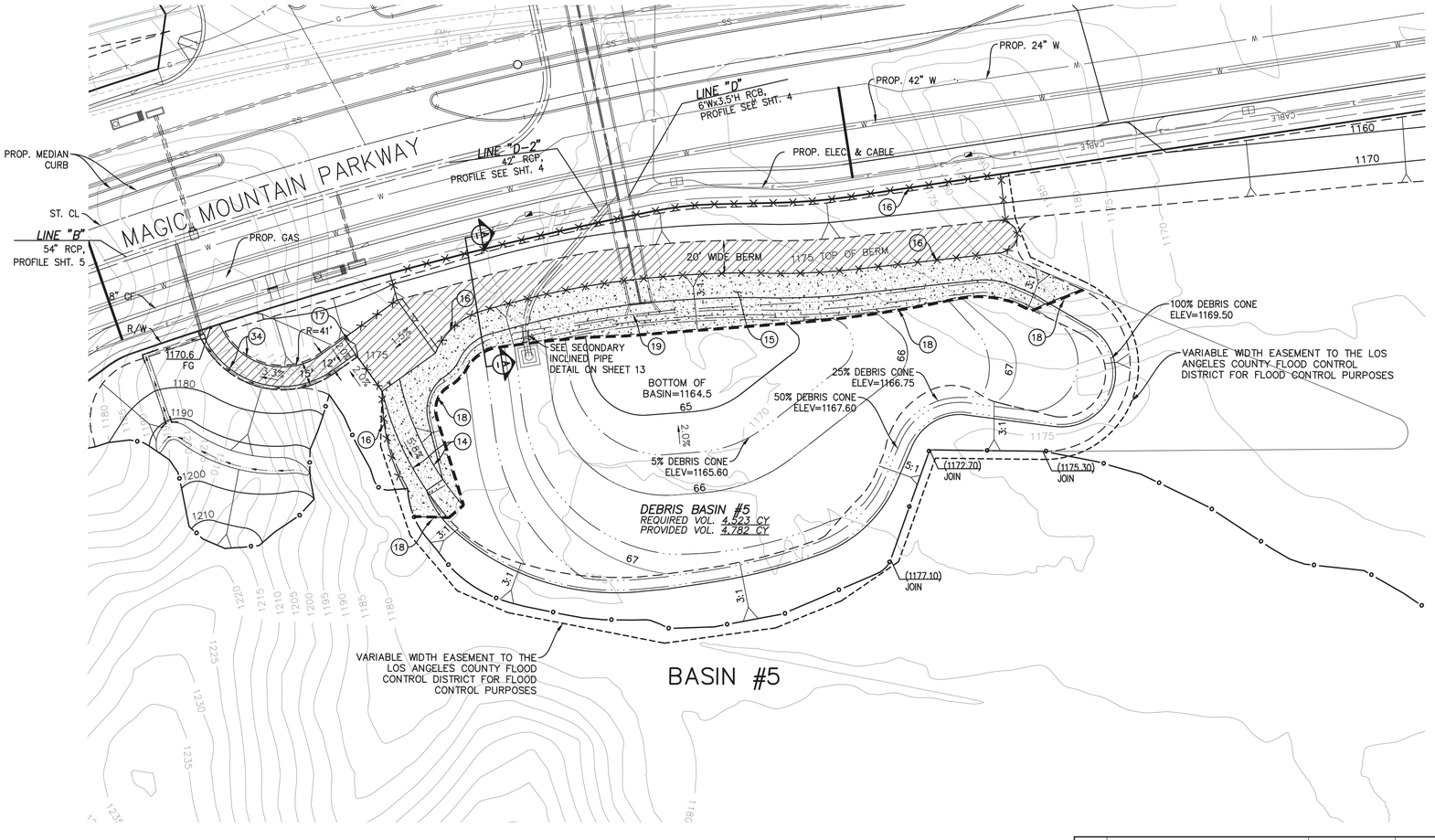
DWG | SHEET 8 OF 17

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SECTION A–A

N.T.S.



BASIN #5

CONSTRUCTION NOTES:

(14) CONSTRUCT 12' WIDE 6" CONCRETE ACCESS ROAD OVER 4" CRUSHED AGGREGATE BASE PER DETAIL 14 ON SHEET 8

(15) CONSTRUCT CONC. FACING/SLOPE PROTECTION PER DETAIL ON SHEET 8

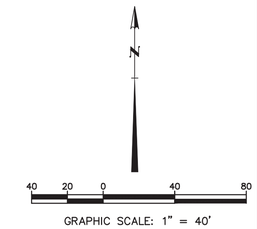
(16) CONSTRUCT CHAIN LINK FENCE PER SPPWC STD. PLAN NO 600-3.

(17) CONSTRUCT DOUBLE DRIVE GATE PER SPPWC STD. PLAN NO 600-3 (W=12' PER LEAF)

(18) CONSTRUCT CUT OFF WALL PER DETAIL ON SHEET 8

(19) CONSTRUCT ELEVATED INLET PER DETAIL ON SHEET 10

(34) CONSTRUCT VARIABLE WIDTH 3" ASPHALT CONCRETE OVER 4" CRUSHED AGGREGATE BASE PER DETAIL ON SHEET 11



GRAPHIC SCALE: 1" = 40'

CERTIFIED ENGINEERING GEOLOGIST
ANDREW A. PRICE
No. 1705
STATE OF CALIFORNIA

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VINCENT PING-KUO LI
No. 2522
Exp. 9/30
GEOTECHNICAL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REVIEWED LAND DEVELOPMENT DIVISION

BY _____ 08/13/2018
STORM DRAIN SECTION — DATE

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

8/10/18
JASON H. FUKUMITSU — DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

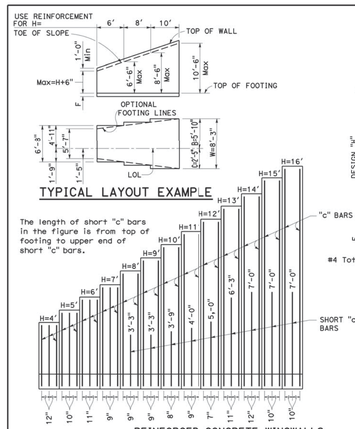
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
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26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG

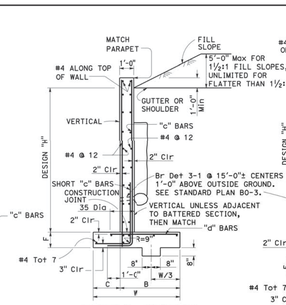
P.D. No. 2637

DDN No. 43-F551

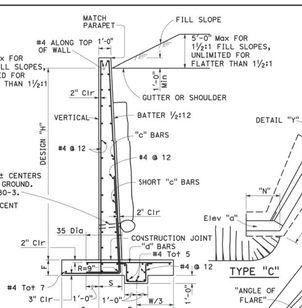
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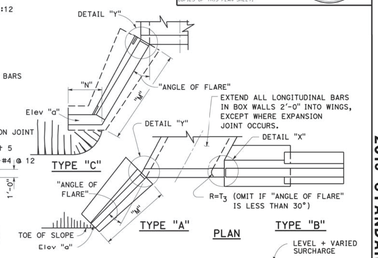
TYPICAL LAYOUT EXAMPLE



TYPICAL SECTION H=4' THRU 12'



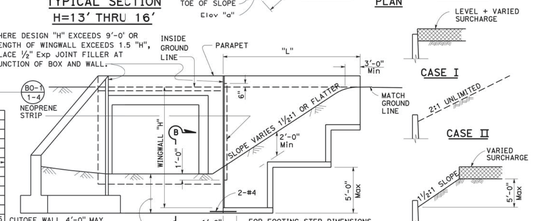
TYPICAL SECTION H=13' THRU 16'





DETAIL "X"

WHERE DESIGN "H" EXCEEDS 9'-0" OR LENGTH OF WINGWALL EXCEEDS 1.5 "H", PLACE ½" Exp JOINT FILLER AT JUNCTION OF BOX AND WALL.



TYPE "A"

FOR FOOTING STEP DIMENSIONS AND REINFORCEMENT, SEE "FOOTING STEP" ON Std PLAN B3-5.

TYPE "B"

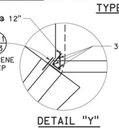
DETAIL OF DESIGN LOADING CASES

"H"	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
W	5'-7"	6'-2"	6'-8"	7'-1"	7'-6"	7'-10"	8'-3"	8'-8"	9'-2"	9'-7"	10'-2"	10'-6"	11'-1"
C	1'-5"	1'-7"	1'-9"	1'-11"	2'-1"	2'-3"	2'-5"	2'-8"	2'-10"	3'-1"	3'-4"	3'-6"	3'-8"
B	4'-2"	4'-7"	4'-11"	5'-2"	5'-5"	5'-7"	5'-10"	6'-0"	6'-4"	6'-5"	6'-10"	7'-0"	7'-5"
F	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-3"	1'-5"	1'-5"	1'-6"	1'-6"	1'-8"
BATTER	← None →							← ½:12 →					
S	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6½"	1'-7"	1'-7½"	1'-8"
"c" BARS	#4@12	#4@10	#5@11	#5@9	#6@9	#7@9	#7@8	#8@9	#7@7	#8@11	#9@12	#10@10	#10@10
"d" BARS	#5@12	#5@10	#6@11	#6@9	#6@9	#6@9	#6@8	#7@9	#6@7	#7@11	#8@12	#8@10	#9@10
* Conc CY/LF	0.46	0.52	0.58	0.64	0.69	0.74	0.80	0.88	1.00	1.25	1.37	1.45	1.61
* Reinf LB/LF	26	32	41	50	59	70	81	95	102	99	120	156	171
** CASE I (a) (kef), ß' (ft)	3.75,2.24	3.66,2.69	3.59,3.11	3.56,3.49	3.52,3.89	3.52,4.21	3.69,4.46	3.71,4.77	3.89,5.17	3.92,5.61	3.92,6.18	4.04,6.40	4.13,6.95
** CASE II (a) (kef), ß' (ft)	1.16,5.58	1.33,6.13	1.51,6.55	1.69,6.86	1.88,7.16	2.08,7.33	2.29,7.60	2.50,7.86	2.77,8.14	2.97,8.47	3.18,8.93	3.41,9.05	3.70,9.43
** CASE III (a) (kef), ß' (ft)	1.26,5.46	1.36,5.97	1.49,6.31	1.64,6.66	1.79,6.93	1.95,7.08	2.11,7.33	2.28,7.55	2.50,7.84	2.66,8.12	2.81,8.59	3.00,8.69	3.22,9.10

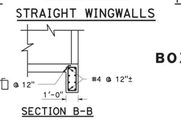
ß'=B-(2) eccentricity, ß' is the effective footing width.
* Quantities include 1'-0" extension above the design "H" limit.
** Soil bearing pressure shown in the table is the equivalent uniform pressure per AASHTO LRFD - 11.6.3.2

NOTES:

Unit Stresses: f'c=3,600 psi, fy=60,000 psi
Earth density: 120 pcf
Equivalent fluid pressure: 36 pcf
Elevations, length and angle of flare of wings may be varied by the Engineer to suit conditions encountered in the field.
Dimensions "H","L","M","N", Elevation "a" and "Angle of flare" (as applicable) are shown on the plans.
Wall height may be exceeded by 6" before going to next greater "H".
Eliminate cutoff wall if adjacent channel is paved and skew is 20° maximum.
For wall offset values, see Standard Plan B3-5.



DETAIL "Y"



SECTION B-B

STRAIGHT WINGWALLS

END ELEVATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BOX CULVERT WINGWALLS TYPES A, B AND C

NO SCALE

D84

2015 STANDARD PLAN D84

DESIGN NOTES:

Specifications:
AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments.

Earth load:
Earth pressures for two conditions:
140 pcf Vert, 42 pcf Horiz
140 pcf Vert, 140 pcf Horiz

Unit stresses:
f'c = 5.0 ksi
fy = 65.0 ksi for weld wire fabric
n = 7

Shear:
Based on
$V_c = (2.14\sqrt{f'_c}+4600\ \frac{A_s}{bd}\frac{V_u d_e}{M_u}) b.d_e \le 4.0\sqrt{f'_c}b.d_e$ (Pounds)
V_c shall not be less than $3.00\sqrt{f'_c}b.d_e$
for frame members and $2.5\sqrt{f'_c}b.d_e$
for simply supported members.

Exclusion:
Axial loading on the members has not been considered.

GENERAL NOTES:

Designation:
Standard single or multiple precast box culverts are shown on the plans as span times height with maximum cover over roof thusl 8' x 5' RCB with 10'-0" or double 10' x 5' RCB with 20'-0", followed by alternatives.

Alternatives:
Single cell:
Standard dimensions of AASHTO Material Specification 'M259' or 'M273'.
Multiple cell:
Constructed by placing single cells adjacent to each other. Inlet and outlet ends of culvert will be rounded unless square ends are designated. Parapet will be shown unless designated in plans. Such designation may be different for inlet and outlet ends.

Limitations:
Where the overfill is less than 12", Precast RCB culverts are not to be used. Precast RCB culverts are not to be used in siphon or pressurized installations unless appropriate 'watertight' jointing is provided.

Special reinforcement coverage:
Precast RCB culvert standard plans are not to be used in a corrosive environment or where there is a severe abrasive flow condition or freeze-thaw locations.

Special design:
Required for culvert with different conditions, loads or design bearing pressures greater than those given on these plans. Required for culverts where end details need higher skew angles, higher parapets or barrier sections.

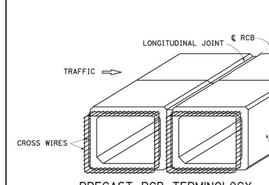
CONSTRUCTION NOTES:

Cutoff walls:
4'-0" Cutoff walls are to be provided at inlet and/or outlet unless channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant. See Standard Plans D84, D85 and D86A.

Wingwalls:
Wingwalls shall be cast-in-place and shall conform to standard plan details for box culvert wingwalls. See Standard Plans D84, D85 and D86A.

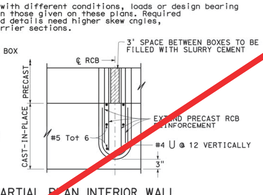
Earthwork:
See Standard Plan A62G.

Construction loads:
Strutting may be required near temporary loads. For construction loads on culverts, See Standard Plan D88.



PRECAST RCB TERMINOLOGY

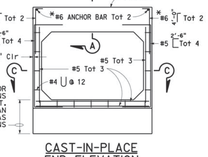
NOTE: Inner and outer reinforcement to be exposed as required to tie to cast-in-place construction. A minimum of two cross wires shall be exposed on all sides.



PARTIAL PLAN INTERIOR WALL MULTICELL CULVERT

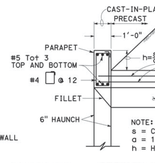
PARAPET "P" BARS			
SKEW ANGLE / SPAN	0° TO 15°	16° TO 30°	31° TO 45°
4'-0"	#5	#5	#5
5'-0"	#5	#5	#6
6'-0"	#6	#6	#6
7'-0"	#7	#7	#7
8'-0"	#7	#7	#8
10'-0"	#8	#8	#9
12'-0"	#9	#9	#10

BARRIER PARAPET REINFORCEMENT

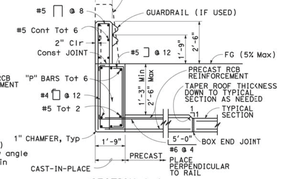


CAST-IN-PLACE END ELEVATION

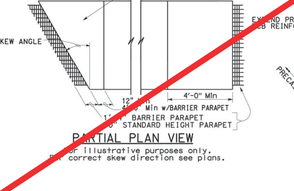
* Reinforcing required for barrier parapet application only.



SECTION A-A
(Standard Height Parapet)

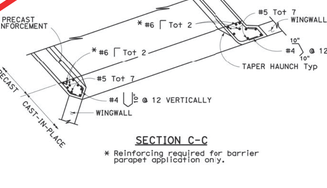


SECTION A-A
(Barrier Parapet)



PARTIAL PLAN VIEW

* For illustrative purposes only. For correct skew direction see plans.



SECTION C-C

* Reinforcing required for barrier parapet application only.

TYPICAL CULVERT END DETAILS

For wall and invert reinforcement not shown, See "End Elevation" detail.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS

NO SCALE

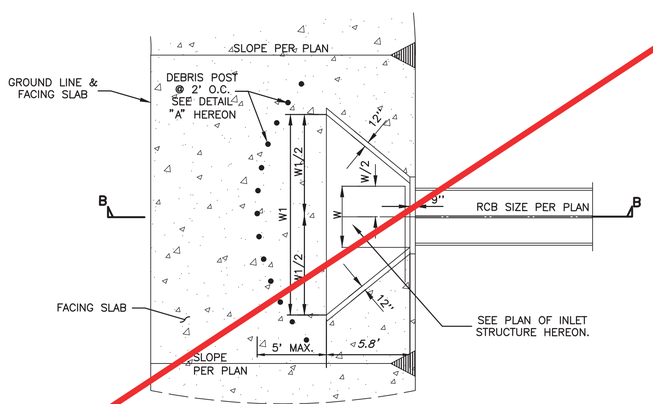
D83B

2015 STANDARD PLAN D83B

P.D. No. 2637

DDN No. 43-F551

VOID



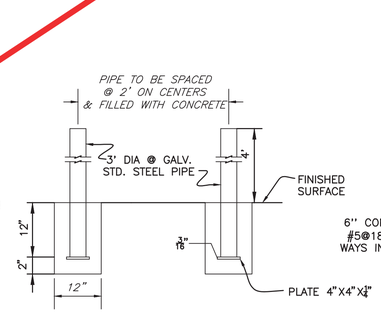
PLAN OF ELEVATED INLET

19 PLAN OF ELEVATED INLET STRUCTURE

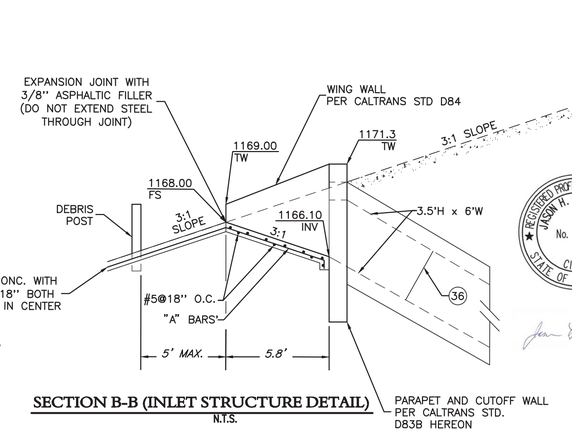
N.T.S.

DIMENSIONS TABLE

	W	W2	H	L
LINE B	13.00'	36.00'	5.20'	5.80'



DETAIL "A"
N.T.S.



SECTION B-B (INLET STRUCTURE DETAIL)
N.T.S.

CONSTRUCTION NOTES:

16 CONSTRUCT CHAIN LINK FENCE PER SPPWC STD. PLAN NO 600-3.

36 INSTALL SLOPE PROTECTION BARRIER PER SPPWC STD. 360-2, USE 2(TWO) 4'(H) X6'(W) AND MODIFIED TO 3.5'(H) X 6'(W)

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	VOID SHEET 10 SEE SHEET 10A FOR REVISION			11/15/18

REVIEWED LAND DEVELOPMENT DIVISION
BY STORM DRAIN SECTION 08/13/2018 DATE

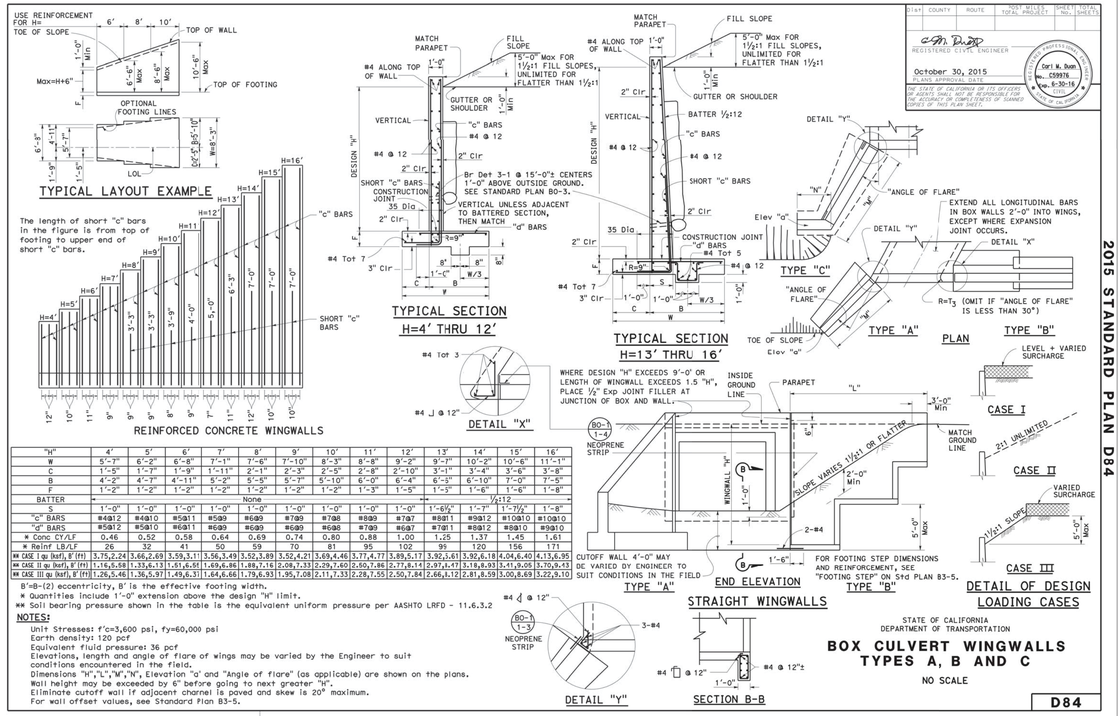
JASON H. FUKUMITSU 8/10/18 DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG | SHEET 10 OF 17

G:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2637\HW102-10 - Sheet 10.dwg Plotted On Jul 18, 2018 - 3:44pm by wallonl



"H"	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
W	5'-7"	6'-2"	6'-8"	7'-1"	7'-6"	7'-10"	8'-3"	8'-8"	9'-2"	9'-7"	10'-2"	10'-6"	11'-1"
C	1'-5"	1'-7"	1'-9"	1'-11"	2'-1"	2'-3"	2'-5"	2'-8"	2'-10"	3'-1"	3'-4"	3'-6"	3'-8"
B	4'-2"	4'-7"	4'-11"	5'-2"	5'-5"	5'-7"	5'-10"	6'-0"	6'-4"	6'-5"	6'-10"	7'-0"	7'-5"
F	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-3"	1'-5"	1'-5"	1'-6"	1'-6"	1'-8"
BATTER	None							½:12					
S	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6½"	1'-7"	1'-7½"	1'-8"
"c" BARS	#4@12	#4@10	#5@11	#5@9	#6@9	#7@9	#7@8	#8@9	#7@7	#8@11	#9@12	#10@10	#10@10
"d" BARS	#5@12	#5@10	#6@11	#6@9	#6@9	#6@9	#6@8	#7@9	#6@7	#7@11	#8@12	#8@10	#9@10
* Conc CY/LF	0.46	0.52	0.58	0.64	0.69	0.74	0.80	0.88	1.00	1.25	1.37	1.45	1.61
* Reinf LB/LF	26	32	41	50	59	70	81	95	102	99	120	156	171
** CASE I (a) (kef), ß' (ft)	3.75,2.24	3.66,2.69	3.59,3.11	3.56,3.49	3.52,3.89	3.52,4.21	3.69,4.46	3.71,4.77	3.89,5.17	3.92,5.61	3.92,6.18	4.04,6.40	4.13,6.95
** CASE II (a) (kef), ß' (ft)	1.16,5.58	1.33,6.13	1.51,6.55	1.69,6.86	1.88,7.16	2.08,7.33	2.29,7.60	2.50,7.86	2.77,8.14	2.97,8.47	3.18,8.93	3.41,9.05	3.70,9.43
** CASE III (a) (kef), ß' (ft)	1.26,5.46	1.36,5.97	1.49,6.31	1.64,6.66	1.79,6.93	1.95,7.08	2.11,7.33	2.28,7.55	2.50,7.84	2.66,8.12	2.81,8.59	3.00,8.69	3.22,9.10

ß'=B-(2) eccentricity, ß' is the effective footing width.
* Quantities include 1'-0" extension above the design "H" limit.
** Soil bearing pressure shown in the table is the equivalent uniform pressure per AASHTO LRFD - 11.6.3.2

NOTES:

Unit Stresses: f'c=3,600 psi, fy=60,000 psi
Earth density: 120 pcf
Equivalent fluid pressure: 36 pcf
Elevations, length and angle of flare of wings may be varied by the Engineer to suit conditions encountered in the field.
Dimensions "H","L","W","N", Elevation "a" and "Angle of flare" (as applicable) are shown on the plans.
Wall height may be exceeded by 6" before going to next greater "H".
Eliminate cutoff wall if adjacent channel is paved and skew is 20° maximum.
For wall offset values, see Standard Plan B3-5.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — October 30, 2015 — PLANS APPROVAL DATE

Carl W. Dunn, No. C59976, Exp. 6-30-16

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BOX CULVERT WINGWALLS TYPES A, B AND C

NO SCALE

D84

9-22-15

2015 STANDARD PLAN D84

DESIGN NOTES:

Specifications:
AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments.

Earth load:
Earth pressures for two conditions:
140 pcf Vert, 42 pcf Horiz
140 pcf Vert, 140 pcf Horiz

Unit stresses:
f'c = 5.0 ksi
fy = 65.0 ksi for weld wire fabric
n = 7

Shear:
Based on
$V_e = (2.14\sqrt{f'_c}+4600\ \frac{A_s}{b_d d_e}\frac{V_u d_e}{M_u}) b_d d_e \le 4.0\sqrt{f'_c} b_d d_e$ (Pounds)
V_e shall not be less than $3.00\sqrt{f'_c} b_d d_e$
for frame members and $2.5\sqrt{f'_c} b_d d_e$
for simply supported members.

Exclusion:
Axial loading on the members has not been considered.

GENERAL NOTES:

Designation:
Standard single or multiple precast box culverts are shown on the plans as span times height with maximum cover over roof thusi 8' x 5' RCB with 10'-0" or double 10' x 5' RCB with 20'-0", followed by alternatives.

Alternatives:
Single cell:
Standard dimensions of AASHTO Material Specification 'M259' or 'M273'.
Multiple cell:
Constructed by placing single cells adjacent to each other. Inlet and outlet ends of culvert will be rounded unless square ends are designated. Parapet will be shown unless designated in plans. Such designation may be different for inlet and outlet ends.

Limitations:
Where the overfill is less than 12", Precast RCB culverts are not to be used. Precast RCB culverts are not to be used in siphon or pressurized installations unless appropriate 'watertight' jointing is provided.

Special reinforcement coverage:
Precast RCB culvert standard plans are not to be used in a corrosive environment or where there is a severe abrasive flow condition or freeze-thaw locations.

Special design:
Required for culvert with different conditions, loads or design bearing pressures greater than those given on these plans. Required for culverts where end details need higher skew angles, higher parapets or barrier sections.

CONSTRUCTION NOTES:

Cutoff walls:
4'-0" Cutoff walls are to be provided at inlet and/or outlet unless channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant. See Standard Plans D84, D85 and D86A.

Wingwalls:
Wingwalls shall be cast-in-place and shall conform to standard plan details for box culvert wingwalls. See Standard Plans D84, D85 and D86A.

Earthwork:
See Standard Plan A62G.

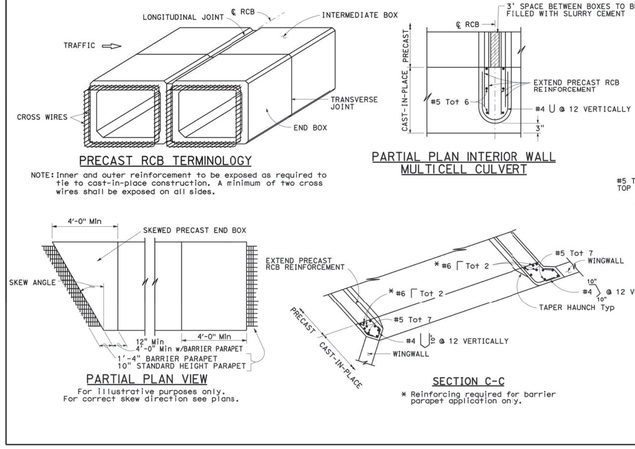
Construction loads:
Strutting may be required near temporary ends. For construction loads on culverts, See Standard Plan D88.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — October 30, 2015 — PLANS APPROVAL DATE

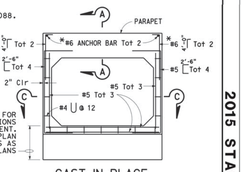
Carl W. Dunn, No. C59976, Exp. 6-30-16

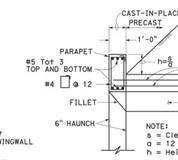
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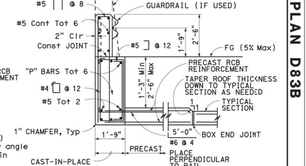


PARAPET "P" BARS			
SPAN \ SKEW ANGLE	0° TO 15°	16° TO 30°	31° TO 45°
4'-0"	#5	#5	#5
5'-0"	#5	#5	#6
6'-0"	#6	#6	#6
7'-0"	#7	#7	#7
8'-0"	#7	#7	#8
10'-0"	#8	#8	#9
12'-0"	#9	#9	#10

BARRIER PARAPET REINFORCEMENT







TYPICAL CULVERT END DETAILS

For wall and invert reinforcement not shown, See "End Elevation" detail.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS

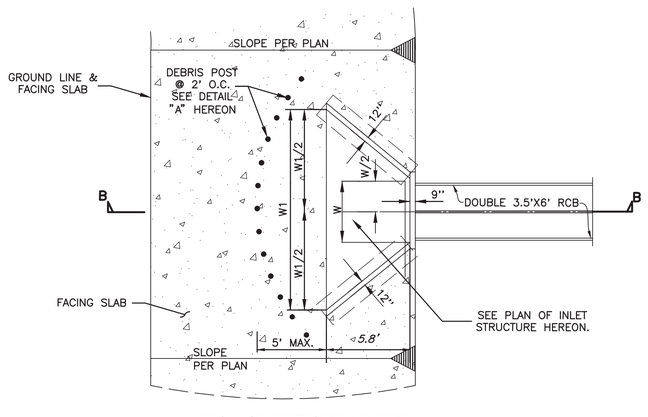
NO SCALE

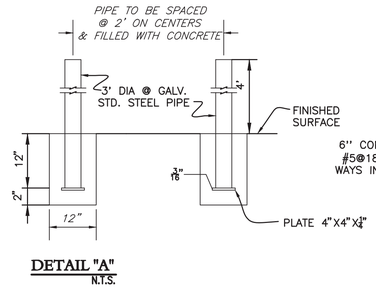
D83B

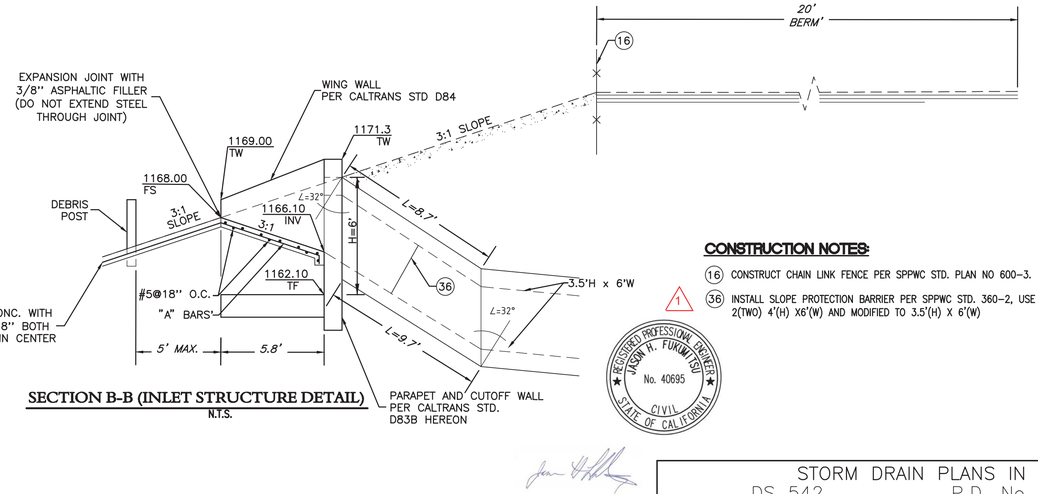
9-22-15

2015 STANDARD PLAN D83B

P.D. No. 2637







CONSTRUCTION NOTES:

16 CONSTRUCT CHAIN LINK FENCE PER SPPWC STD. PLAN NO 600-3.

36 INSTALL SLOPE PROTECTION BARRIER PER SPPWC STD. 360-2, USE 2(TWO) 4'(H) X6'(W) AND MODIFIED TO 3.5'(H) X 6'(W)

1

REGISTERED PROFESSIONAL ENGINEER — JASON H. FUKUMITSU — No. 40695 — CIVIL — STATE OF CALIFORNIA

DIMENSIONS TABLE

	W	W2	H	L
LINE D	13.00'	36.00'	5.20'	5.80'

19 PLAN OF ELEVATED INLET STRUCTURE
N.T.S.

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION _____ DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	ADDED SHEET PER STRUCTUAL REVIEW			11/15/18

REGISTERED PROFESSIONAL ENGINEER — JASON H. FUKUMITSU — No. 40695 — CIVIL — STATE OF CALIFORNIA

JASON H. FUKUMITSU — 10/23/18 — DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

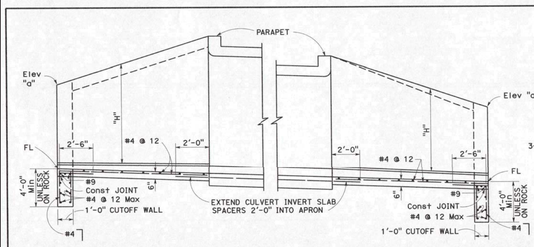
HUNSAKER & ASSOCIATES
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DWG

SHEET 10A OF 17

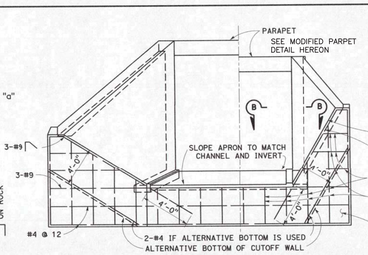
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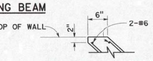


TYPICAL WITH STIFFENING BEAM TYPICAL WITHOUT STIFFENING BEAM

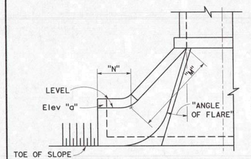
PART LONGITUDAL SECTION



END ELEVATION

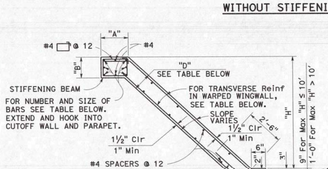


WITHOUT STIFFENING BEAM

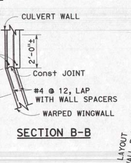


ALTERNATIVE WARPED WINGWALL

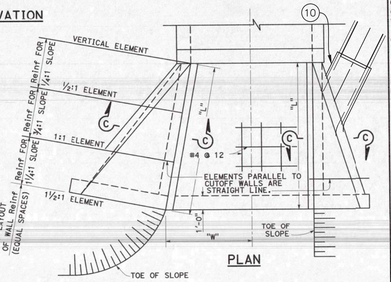
Use where additional protection to toe of embankment is required.



SECTION C-C



SECTION B-B



PLAN

WARPED WINGWALLS																
		WALL DIMENSIONS AND REINFORCING							STIFFENING BEAM DIMENSIONS AND REINFORCING							
ELEMENT SLOPE	"H"	8' OR LESS	10'	12'	14'	16'	18'	20'	"H" Max	12'	14'	16'	18'	20'	25'	30'	35'	40'
½:1	FRONT FACE Reinf	#4 @ 12	#4 @ 7	#5 @ 7	#5 @ 5	#6 @ 6	#7 @ 7	#7 @ 6	6'	NO BEAM, PLACE 2-#6 IN EACH FACE ALONG TOP OF WALL.								
	REAR FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	8'									
¾:1	FRONT FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 8	#4 @ 8	#4 @ 8	#4 @ 6	#4 @ 6	10'	"A"= 1'-0"								
	REAR FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 8	#4 @ 10	#4 @ 7	#4 @ 6	#5 @ 8	12'	"B"= 9"					"A"= 1'-6"			
1¼:1	FRONT FACE Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	14'	TOTAL 6-#6				"B"= 1'-0"		"B"= 1'-3"	"A"= 1'-10"	
	REAR FACE Reinf	#4 @ 8	#4 @ 8	#4 @ 5	#5 @ 6	#6 @ 7	#6 @ 6	#7 @ 6	16'									"A"= 2'-2"
"D" AT CUTOFF WALL		6"	6"	6"	8"	7½"	8"	9½"	18'	TOTAL 6-#7				TOTAL 8-#8				"B"= 1'-6"
"D" AT BASE		6"	6"	6"	8"	9½"	11"	1'-1"	20'					TOTAL 8-#9				

NOTES: Walls designed for 2'-0" surcharge; earth density = 120 pcf; equivalent fluid pressure = 36 pcf.
Vary "D" of warped wall uniformly from that at cutoff wall to that at culvert, for maximum "H" > 12'-0".
Where abrasion is anticipated increase apron thickness to 7" minimum to provide 2" minimum reinforcement coverage.
Dimensions "L", "W", "H", "M", "N", Elevation "a", " Angle of flare", and end "Slope" (as applicable) are shown on the plans.

CONSTRUCTION NOTES:
(10) CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB PER SPPWC 333-2

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BOX CULVERT WARPED WINGWALLS

NO SCALE

D86A

10-15-15

2015 STANDARD PLAN D86A

DESIGN NOTES:

Specifications:
AASHTO LRFD Bridge Design Specifications, 4th Edition with California Amendments.

Earth load:
Earth pressures for two conditions:
140 pcf Vert, 42 pcf Horiz
140 pcf Vert, 140 pcf Horiz

Unit stresses:
f'c = 5.0 ksi
fy = 65.0 ksi for weld wire fabric
n = 7

Shear:
Based on
$V_c = (2.14\sqrt{f'_c}+4600\ \frac{A_s}{bd}\ \frac{V_u d_e}{M_u})\ b.d_e \le 4.0\sqrt{f'_c}.b.d_e$ (Pounds)
V_c shall not be less than $3.00\sqrt{f'_c}.b.d_e$
for frame members and $2.5\sqrt{f'_c}.b.d_e$
for simply supported members.

Exclusion:
Axial loading on the members has not been considered.

GENERAL NOTES:

Designation:
Standard single or multiple precast box culverts are shown on the plans as span x rise height with maximum cover over roof thus: 8' x 5' RCB with 10'-0" or double 10' x 5' RCB with 20'-0", followed by alternatives.

Alternatives:
Single cell:
Standard dimensions of AASHTO Material Specification 'M259' or 'M273'.
Multiple cell:
Constructed by placing single cells adjacent to each other. Inlet and outlet ends of culvert will be rounded unless square ends are designated. Parapet will be shown unless designated in plans. Such designation may be different for inlet and outlet ends.

Limitations:
Where the overfill is less than 12", Precast RCB culverts are not to be used. Precast RCB culverts are not to be used in siphon or pressurized installations unless appropriate "watertight" jointing is provided.

Special reinforcement coverage:
Precast RCB culvert standard plans are not to be used in a corrosive environment or where there is a severe abrasive flow condition or freeze-thaw locations.

Special design:
Required for culvert with different conditions, loads or design bearing pressures greater than those given on these plans. Required for culverts where end details need higher skew angles, higher parapets or barrier sections.

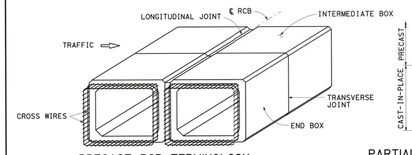
CONSTRUCTION NOTES:

Cutoff walls:
4'-0" Cutoff walls are to be provided at inlet and/or outlet unless channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant. See Standard Plans D84, D85 and D86A.

Wingwalls:
Wingwalls shall be cast-in-place and shall conform to standard plan details for box culvert wingwalls. See Standard Plans D84, D85 and D86A.

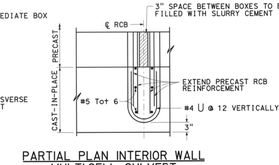
Earthwork:
See Standard Plan A62G.

Construction loads:
Strutting may be required near temporary ends. For construction loads on culverts, See Standard Plan D88.

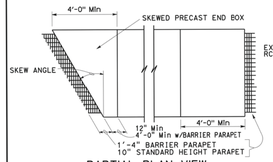


PRECAST RCB TERMINOLOGY

NOTE: Inner and outer reinforcement to be exposed as required to tie to cast-in-place construction. A minimum of two cross wires shall be exposed on all sides.

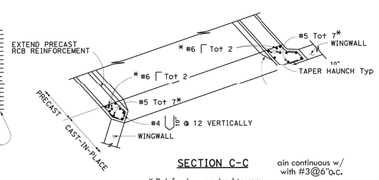


PARTIAL PLAN INTERIOR WALL MULTICELL CULVERT



PARTIAL PLAN VIEW

For illustrative purposes only.
For correct skew direction see plans.



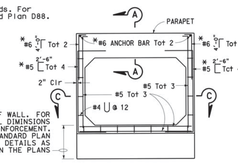
SECTION C-C

* Reinforcing required to rem
std. hook at top of parapet
closed ties above RCB

ain continuous w/
with #3@6"o.c.

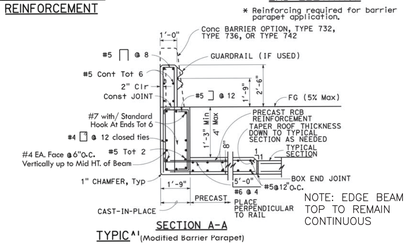
PARAPET "P" BARS			
SKEW ANGLE / SPAN	0° TO 15°	16° TO 30°	31° TO 45°
4'-0"	#5	#5	#5
5'-0"	#5	#5	#6
6'-0"	#6	#6	#6
7'-0"	#7	#7	#7
8'-0"	#7	#7	#8
10'-0"	#8	#8	#9
12'-0"	#9	#9	#10

BARRIER PARAPET REINFORCEMENT



CAST-IN-PLACE END ELEVATION

* Reinforcing required for barrier parapet application.



SECTION A-A

TYPIC A1 (Modified Barrier Parapet)

For wall and invert r CULVERT END DETAILS

forcement not shown, See "End Elevation" detail.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS MODIFIED

NO SCALE

D83B

2015 STANDARD PLAN D83B MODIFIED

NOTE: EDGE BEAM AT TOP TO REMAIN CONTINUOUS

P.D. No. 2637

DDN No. 43-F551

WARPED WINGWALL

SHT. NO.	LINE	DIMENSIONS A	B	D	LENGTH H	L	W	ANGLE Z
4	D	1'-0"	9"	6"	7'-6"	40'-0"	11'-6"	-4°

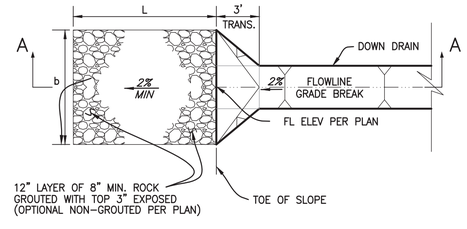
20 MODIFIED TRANSITION STRUCTURE WITH JUNCTION STRUCTURE AT WING WALL

N.T.S.

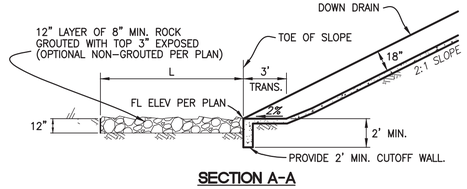
Not a part of the approval

1 MODIFIED JUNCTION STRUCTURE AT WING WALL WITH PARAPET

1



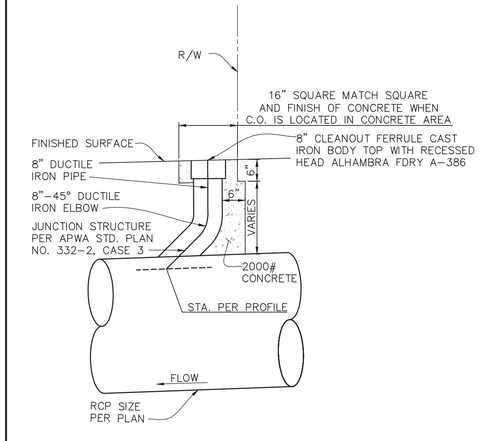
DOWNDRAIN TO RIPRAP APRON



SECTION A-A

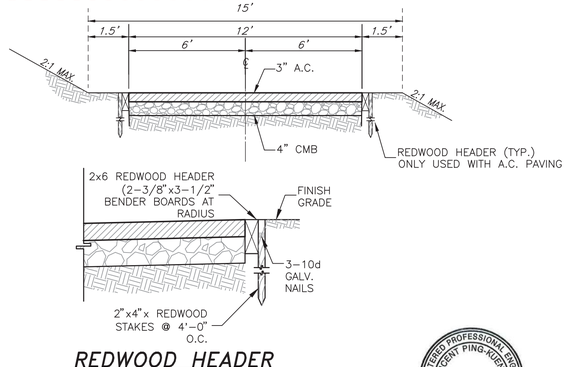
32 RIP-RAP APRON

N.T.S.



29 CLEANOUT

N.T.S.



REDWOOD HEADER

N.T.S.

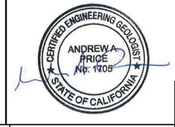
34 A.C. ACCESS ROAD

N.T.S.



NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED DETAIL NAME, REMOVING NOT A PART OF THE APPROVAL			11/15/18

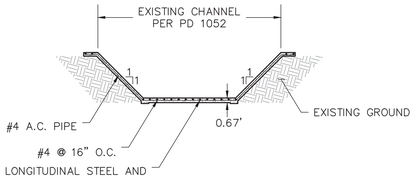
REVIEWED LAND DEVELOPMENT DIVISION
BY STORM DRAIN SECTION 08/13/2018 DATE



8/10/18
JASON H. FUKUMITSU DATE

1





EXISTING CHANNEL TRANSITION

N.T.S.

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

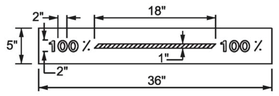
HUNSAKER & ASSOCIATES
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26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG | SHEET 11 OF 17

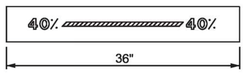
C:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2637\HMV102-11 - Sheet 11.dwg Plotted On Jul 18, 2018-1:27pm by wallont

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

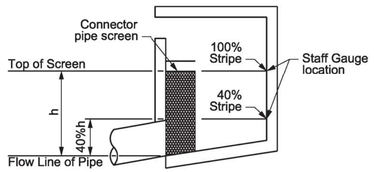
APPENDIX A-2: STAFF GAUGE



100% STRIPE
(Red Stripe and Numbers on White Background)



40% STRIPE
(Red Stripe and Numbers on White Background)



EXAMPLE LAYOUT

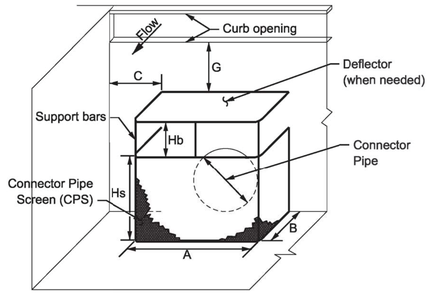
"THE PAINT TYPE AND SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL PRIOR TO USE."

1. The Contractor shall paint a staff gauge as shown on an externally visible interior wall of each catch basin.
2. The Contractor shall paint red stripes and numbers on white background labeling 40% and 100% screen height as shown above.
3. Surfaces must be clean, dry and free from all contaminants including rust that may impair adhesion.

Revised 07/21/2010

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

APPENDIX A-1: CPS CONFIGURATION



CATCH BASIN INTERIOR VIEW
(Not to scale)

CPS Length	L = A + 2B
CPS Height	Hs
Bypass Height	Hb
Minimum Wall Clearance	C = 4 inches
Minimum Interior Spacing	B = 10 inches
Minimum Distance from Street Flow Line	G

NOTES

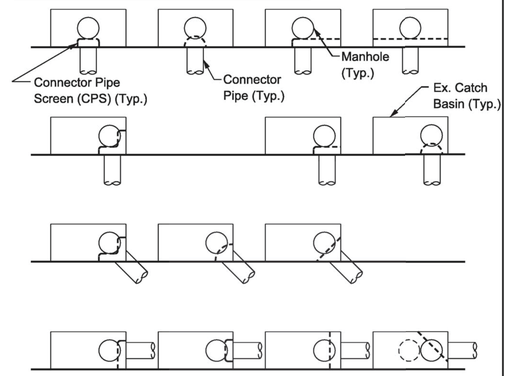
1. The CPS shown above is for illustrative purposes only. The catch basin connector pipe location and the shape and design of the CPS may deviate from the above example.
2. For L, Hs, Hb, and G values see attached CPS sizing Table 1.

Revised 07/21/2010

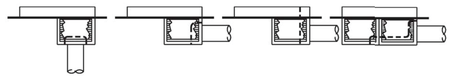
COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

APPENDIX A-3: EXAMPLE CPS LAYOUTS

CURB OPENING CATCH BASINS (TYPES 300, 306)



CURB OPENING CATCH BASINS WITH GRATES (TYPES 301, 302)



NOTES: 1. The CPS configurations shown above are for illustrative purposes only. This is not a comprehensive list.

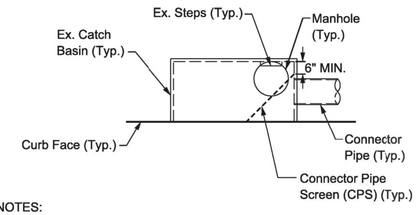
2. When the CPS unit enchoaches more than 4 inches into the manhole opening, the Contractor shall install a Removable CPS unit per Attachment A, CPS Requirements, item 8.

Revised 07/21/2010

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

APPENDIX A-3: EXAMPLE CPS LAYOUTS (CONT.)

CURB OPENING CATCH BASINS (TYPES 300)



NOTES:

3. The CPS configurations shown above are for illustrative purposes only. This is not a comprehensive list.

Revised 09/09/2010

TABLE 1
CPS SIZING TABLE FOR CBs IN NON-SUMP CONDITIONS WITH NO ARS

*V-depth (ft)	CB Width (ft)	Bypass Height H_b (in)	Screen Height H_s (in)	Screen Length L (ft)	G (in)
3.0	3.5	8	14	3.0	6
	7			4.0	
	10			5.0	
	14			6.0	
	21			8.0	
	28			9.0	
3.5	3.5	10	16	3.0	8
	7			4.0	
	10			5.0	
	14			6.0	
	21			8.0	
	28			9.0	
4.0	3.5	12	20	3.0	8
	7			4.0	
	10			5.0	
	14			6.0	
	21			7.0	
	28			8.0	
4.5 or greater	3.5	12	22	3.0	10 or greater
	7			4.0	
	10			5.0	
	14			6.0	
	21			7.0	
	28			8.0	

* for CBs with v-depth less than 3 feet, contact the District for H_b, H_s, L, and G values.

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ 08/13/2018
STORM DRAIN SECTION DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA
8/10/18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

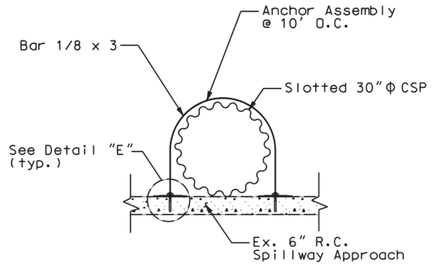
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DWG | SHEET 12 OF 17

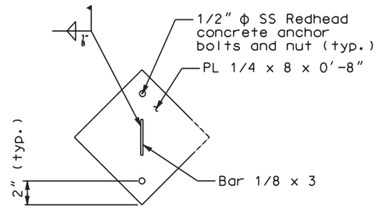
P.D. No. 2637

DDN No. 43-F551

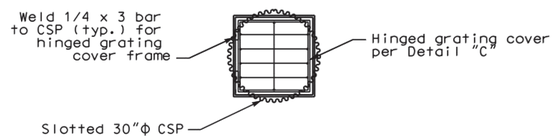
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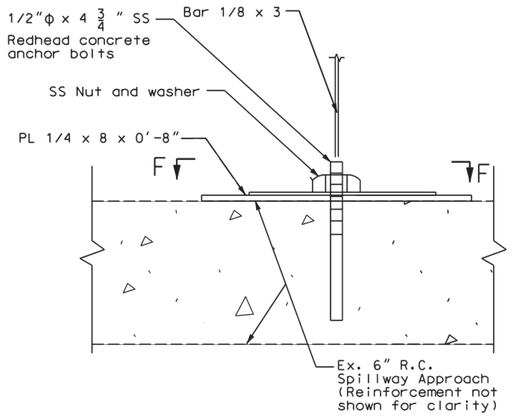
Section D-D
Scale: 1/2" = 1'-0"



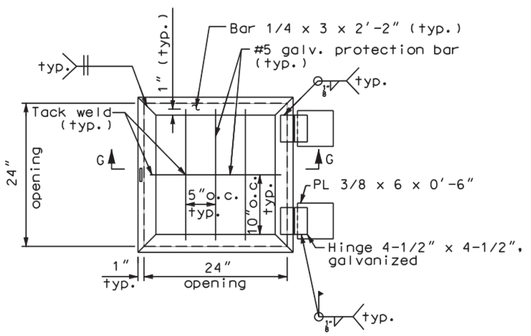
Section F-F
Scale: 2" = 1'-0"



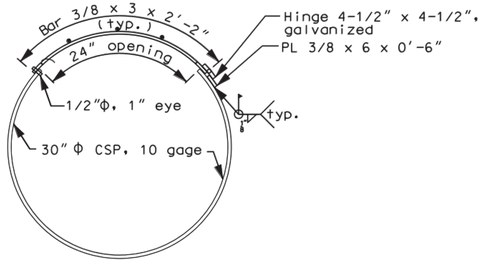
Detail "B"
Scale: 1/2" = 1'-0"



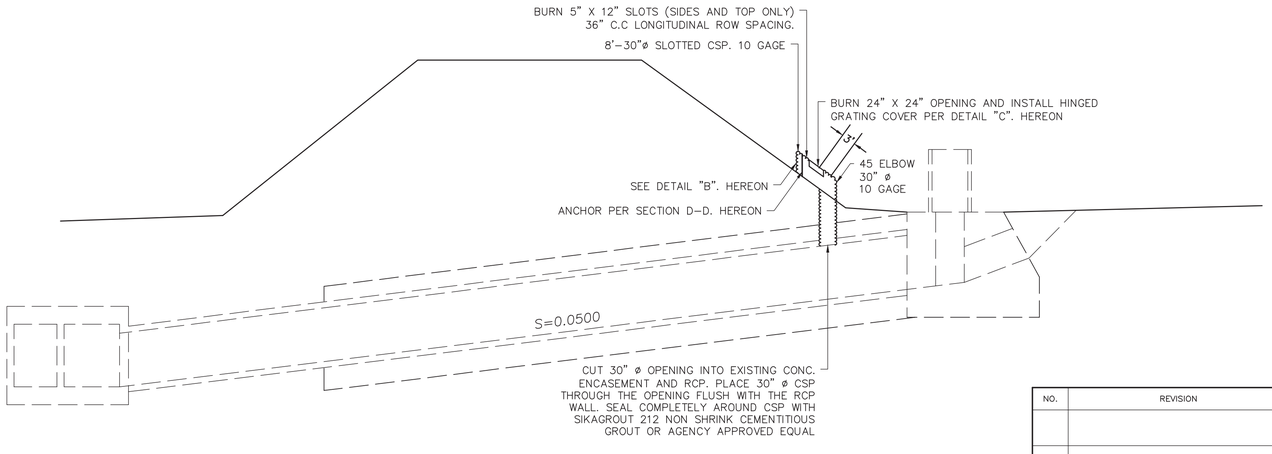
Detail "E"
Scale: 4"=1'-0"



Detail "C"
Scale: 1" = 1'-0"



Section G-G
Not to Scale



SECONDARY INCLINED PIPE DETAIL

N.T.S.

STRUCTURAL NOTES

1. EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE ROUNDED OR BEVELED.
2. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A 615, GRADE 60.
3. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH ASTM A 36.
4. BOLTS SHALL BE IN ACCORDANCE WITH ASTM A 325.

GENERAL NOTES

1. ALL HARDWARE TO BE GALVANIZED BEFORE FABRICATION.
   TORCHED AREAS WILL BE APPLIED WITH POST FABRICATED GALVANIZATION.
2. FMD SHALL VERIFY ALL LIMITING FIELD
   DIMENSIONS BEFORE ORDERING OR FABRICATING MATERIAL
3. CONNECT CSP SECTIONS WITH STANDARD BAND COUPLER

CONCRETE REMOVAL NOTES

1. MAKE A 1 1/2" SAWCUT ON THE EXPOSED FACES OF THE CONCRETE AT THE REMOVAL LIMITS.
2. AFTER MAKING SAWCUTS, THE CONCRETE SHALL BE REMOVED WITH HAND-HELD EQUIPMENT
3. CARE SHALL BE EXERCISED IN SAWING AT THE REMOVAL LIMITS SO AS NOT TO DAMAGE OR CUT THE REINFORCEMENT IN THE EXISTING CONCRETE.
4. CARE SHALL BE EXERCISED SO THAT DRILLING AND INSTALLING OF ANCHORS BOLTS INTO THE SPILLWAY APPROACH CONCRETE SLAB WILL NOT DAMAGE THE EXISTING STEEL REINFORCEMENT.

REFRENCE

AS BUILT DRAWING	CORPS. OF ENG. DRAWING DWG NO. 205/43-49

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ 08/13/2018
STORM DRAIN SECTION DATE

JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER
8/10/18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

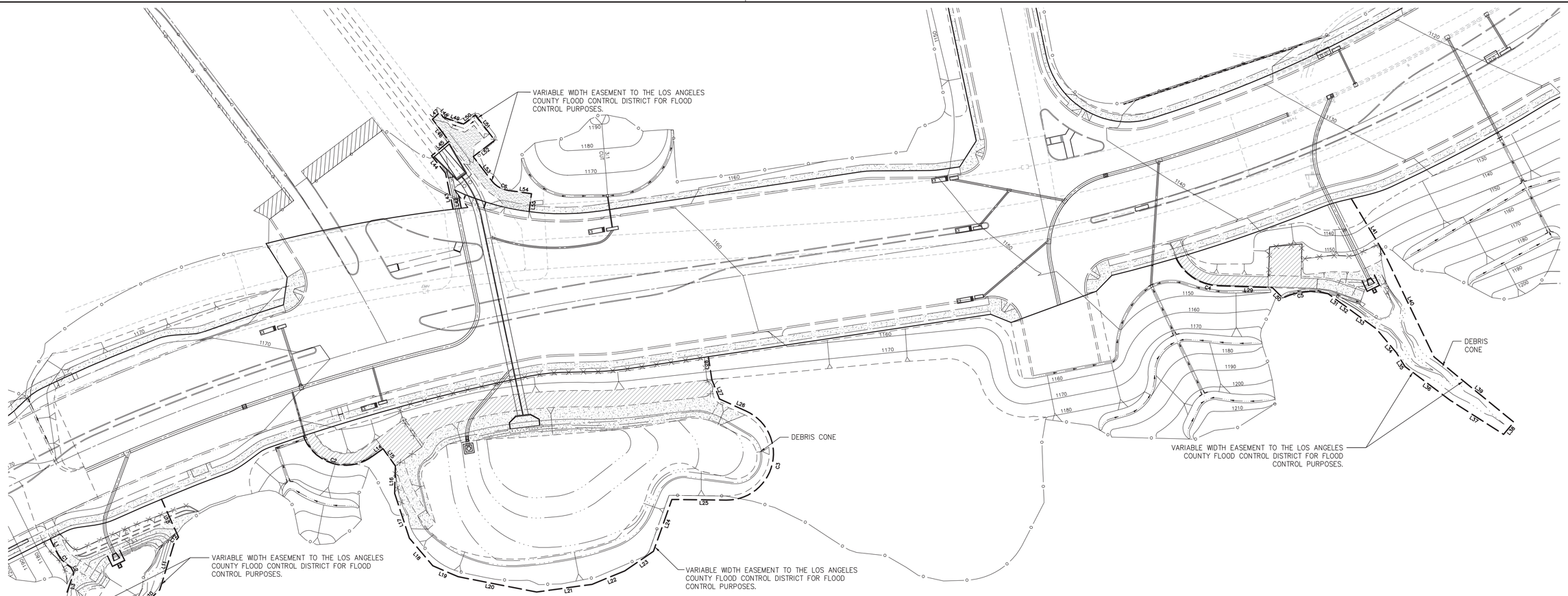
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DWG | SHEET 13 OF 17

P.D. No. 2637

DDN No. 43-F551

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Line Table		
Line #	Length	Bearing
L1	17.29'	S26°18'38"E
L2	7.34'	S28°05'29"E
L3	32.05'	S19°25'18"W
L4	29.95'	S02°28'17"W
L5	76.33'	S00°18'37"E
L6	64.23'	S83°23'10"E
L7	52.64'	N09°49'17"E
L8	38.38'	N23°28'43"E
L9	19.36'	N26°33'36"E
L10	27.24'	N46°43'15"E
L11	60.59'	N17°11'04"E
L12	8.21'	N37°40'00"E
L13	50.88'	N24°07'57"W
L14	15.96'	N54°21'14"E
L15	26.00'	S35°39'24"E
L16	33.58'	S01°36'13"W
L17	57.59'	S18°19'15"E
L18	44.29'	S40°20'11"E
L19	33.81'	S66°38'41"E
L20	97.68'	S78°58'08"E

Line Table		
Line #	Length	Bearing
L21	68.46'	N82°07'46"E
L22	43.37'	N67°43'59"E
L23	42.52'	N55°37'54"E
L24	67.21'	N19°33'47"E
L25	66.60'	S89°20'33"E
L26	35.83'	N65°34'24"W
L27	25.51'	N21°24'26"W
L28	28.12'	N08°31'56"W
L29	65.50'	N88°01'15"W
L30	17.96'	N44°59'39"W
L31	18.31'	N53°55'16"W
L32	18.31'	N53°55'16"W
L33	36.62'	N53°55'16"W
L34	37.82'	N40°04'32"W
L35	20.11'	N31°50'57"W
L36	69.19'	N53°17'53"W
L37	77.17'	N57°28'03"W
L38	19.53'	S40°38'58"W
L39	126.05'	S50°45'56"E
L40	140.01'	S25°43'37"E

Line Table		
Line #	Length	Bearing
L41	78.71'	S31°00'05"E
L42	16.16'	N11°56'19"W
L43	44.89'	N11°56'19"W
L44	27.29'	N38°46'58"W
L45	28.06'	N50°25'21"E
L46	26.62'	N37°19'16"W
L47	12.10'	N47°22'09"E
L48	7.04'	S37°19'37"E
L49	26.17'	S71°21'04"E
L50	18.31'	N52°39'02"E
L51	39.01'	S37°20'58"E
L52	33.00'	S52°40'26"W
L53	37.41'	S37°20'58"E
L54	29.08'	S81°58'56"E
L55	22.13'	S07°25'10"W

Curve Table				
Curve #	Length	Radius	Delta	Tangent
C1	26.85'	47.00'	032°43'52"	13.80'
C2	102.22'	55.00'	106°29'28"	73.64'
C3	155.42'	57.00'	156°13'51"	270.85'
C4	65.83'	60.00'	062°51'38"	36.67'
C5	56.83'	77.17'	042°11'32"	29.77'
C6	23.37'	30.00'	044°37'57"	12.31'

*NOTE: ACCESS ROAD AND STORM DRAIN EASEMENTS TO LACFCD TOTAL AREA = 155,203 S.F.

N

60' 30' 0 60' 120'

GRAPHIC SCALE: 1" = 60'

REVIEWED LAND DEVELOPMENT DIVISION

BY _____ 08/13/2018

STORM DRAIN SECTION — DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER — JASON H. FUKUMITSU — No. 40695 — CIVIL — STATE OF CALIFORNIA

8/10/18

JASON H. FUKUMITSU — DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 • Valencia, CA 91355 • PH: (661) 294-2211 • FX: (661) 294-9890

DWG — SHEET 14 OF 17

P.D. No. 2637

DDN No. 43-F551

G:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2637\MM7102-14 – Sheet 14.dwg Plotted On May 21, 2018 - 6:55pm by jongs

FOUNDATION NOTES:

1. FOUNDATION DESIGN IS BASED ON THE SOIL INVESTIGATION REPORT BY:
   LEIGHTON AND ASSOC. INC.
   DATE: DECEMBER 11, 2017
   PROJECT NO.: 11688.006
2. FOOTINGS ARE DESIGNED FOR A BEARING PRESSURE OF 3000 PSF AND RETAINING SRTRUCTURES AS FOLLOWS:

Condition	Level Backfill	2:1 Back Slope
Active (K_a)	0.28	0.44
At-Rest (K_o)	0.44	0.68
Passive (K_p)	3.25	
Coefficient of Friction	0.35	
Unit Weight (pcf)	120	

3. THE CONTRACTOR SHALL SUBMIT TO THE CITY OR COUNTY FOUNDATION EXCAVATIONS AND RECOMPACTION REPORTS PRIOR TO PLACING ANY STRUCTURAL AND NON-STRUCTURAL CONCRETE AND REBAR AT THE SUBJECT AREAS.
4. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM EITHER SURFACE WATER, GROUND WATER OR SEEPAGE.
5. FOOTING AND UTILITY TRENCH BACK FILL WITHIN BUILDING AREA SHALL BE MECHANICALLY COMPACTED IN LAYERS. FLOODING WILL NOT BE PERMITTED.
6. ALL FOOTINGS SHALL BE FOUNDED IN UNDISTURBED NATURAL SOIL PER CODE.
7. IF SOIL IS FOUND TO BE EXPANSIVE, THE FOOTINGS MUST MEET THE FOLLOWING MINIMUM REQUIREMENTS.
   A. DEPTH OF FOOTINGS BELOW THE NATURAL AND FINISH GRADES SHALL NOT BE LESS THAN 27 INCHES FOR EXTERIOR AND 18 INCHES FOR INTERIOR FOOTINGS.
   B. EXTERIOR WALLS AND INTERIOR BEARING WALLS SHALL BE SUPPORTED ON CONTINUOUS FOOTINGS.
   C. FOOTINGS SHALL BE REINFORCED WITH MINIMUM (4) #4 DEFORMED REINFORCING BARS. TWO BARS SHALL BE PLACED 4 INCHES OF THE BOTTOM OF THE FOOTING AND TWO BARS WITHIN 4 INCHES OF THE TOP OF THE FOOTINGS.
   D. THE SOIL BELOW AN INTERIOR CONCRETE SLAB SHALL BE SATURATED WITH MOISTURE TO A DEPTH OF 18 INCHES PRIOR TO PLACING THE CONCRETE.
9. IN THE EVENT EXCAVATIONS REVEAL UNFAVORABLE CONDITIONS, THE SERVICES OF A SOILS ENGINEER AND/OR GEOLOGIST MAY BE REQUIRED.
10. EXCAVATION FOR ANY PURPOSE SHALL NOT REMOVE LATERAL SUPPORT FROM ANY FOUNDATION WITHOUT FIRST UNDERPINNING OR PROTECTING THE FOUNDATION AGAINST SETTLEMENT OR LATERAL TRANSLATION.
11. THE EXCAVATION OUTSIDE THE FOUNDATION SHALL BE BACKFILLED WITH SOIL THAT IS FREE OF ORGANIC MATERIAL, CONSTRUCTION DEBRIS, COBBLES AND BOULDERS OR WITH A CONTROLLED LOW-STRENGTH MATERIAL (CLSM). THE BACKFILL SHALL BE PLACED IN LIFTS AND COMPACTED IN A MANOR THAT DOES NOT DAMAGE THE FOUNDATION OR THE WATERPROOFING OR DAMPPROOFING MATERIAL.
    EXCEPTION: CLSM NEED NOT BE COMPACTED.
12. THE GROUND IMMEDIATELY ADJACENT TO THE FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE) FOR A MINIMUM DISTANCE OF 10 FEET (3048 MM) MEASURED PERPENDICULAR TO THE FACE OF THE WALL. IF PHYSICAL OBSTRUCTIONS OR LOT LINES PROHIBIT 10 FEET (3048 MM) OF HORIZONTAL DISTANCE, A 5-PERCENT SLOPE SHALL BE PROVIDED TO AN APPROVED ALTERNATIVE METHOD OF DIVERTING WATER AWAY FROM FOUNDATION. SWALES USED FOR THIS PURPOSE SHALL BE SLOPED A MINIMUM OF 2 PERCENT WHERE LOCATED WITHIN 10 FEET (3048 MM) OF THE BUILDING FOUNDATION. IMPERVIOUS SURFACES WITHIN 10 FEET (3048 MM) OF THE BUILDING FOUNDATION SHALL BE SLOPED A MINIMUM OF 2 PERCENT AWAY FROM THE BUILDING.
    EXCEPTION: WHERE CLIMATIC OR SOIL CONDITIONS WARRANT, THE SLOPE OF THE GROUND AWAY FROM THE BUILDING FOUNDATION SHALL BE PERMITTED TO BE REDUCED TO NOT LESS THAN ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2-PERCENT SLOPE).
    THE PROCEDURE USED TO ESTABLISH THE FINAL GROUND LEVEL ADJACENT TO THE FOUNDATION SHALL ACCOUNT FOR ADDITIONAL SETTLEMENT OF THE BACKFILL.

ABBREVIATIONS

AB	ANCHOR BOLT	FH	FULL HEIGHT	R&R	REMOVE & REPLACE
ABV	ABOVE	FN	FIELD NAILING	SCHED	SCHEDULE
ADDL	ADDITIONAL	FL	FLOOR	SF	SQUARE FOOT
ADHES	ADHESIVE	FS	FAR SIDE	SHT	SHEET
ALT	ALTERNATE	FDN	FOUNDATION	SIM	SIMILAR
ARCH	ARCHITECT, ARCHITECTURAL	FOC	FACE OF CONCRETE	SN	SOLE ℄ NAILING
BTWN	BETWEEN	FOS	FACE OF STUD	SPEC	SPECIFICATION
BLW	BELOW	FT	FOOT, FEET	SQ	SQUARE
BLDG	BUILDING	FTG	FOOTING	STD	STANDARD
BLKG	BLOCKING	GA	GAGE	STL	STEEL
BM	BEAM	GALV	GALVANIZED	STRUCT	STRUCTURAL
BN	BOUNDARY NAILING	GND	GROUND	SYM	SYMMETRICAL
BOT	BOTTOM	GRD	GRADE	THK	THICK
BS	BOTH SIDES	GT	GIRDER TRUSS	THRD	THREADED
BSMT	BASEMENT	HT	HEIGHT	T&B	TOP & BOTTOM
CF	CUBIC FOOT	HORIZ	HORIZONTAL	TN	TOE NAIL
CJ	CONTROL JOINT, CEILING JOIST	HS	HIGH STRENGTH	TOF	TOP OF FOOTING
CLG	CEILING	INFO	INFORMATION	TOS	TOP OF STEEL
CLR	CLEAR	INT	INTERIOR	TL	TOP OF LEDGER
CMU	CONCRETE MASONRY UNIT	JT	JACK TRUSS	TOW	TOP OF WALL
CNTRSNK	COUNTERSINK/COUNTERSUNK	KP	KING POST	TRANSV	TRANSVERSE
COL	COLUMN	KSI	KIPS PER SQUARE INCH	TS	TUBE STEEL
CONC	CONCRETE	LBS	POUNDS	TYP	TYPICAL
CONN	CONNECTION	LG	LONG	UNO	UNLESS NOTED OTHERWISE
CONST	CONSTRUCTION	LOC'S	LOCATIONS	VERT	VERTICAL
CONT	CONTINUOUS	LONG	LONGITUDINAL	WF	WIDE FLANGE BEAM
CONTR	CONTRACTOR	LT WT	LIGHT WEIGHT	W/	WITH
CVR	COVER	MAX	MAXIMUM	W/O	WITHOUT
DIA	DIAMETER	MB	MACHINE BOLT	WT	WEIGHT
DIR	DIRECTION	MD	METAL DECK	WP	WORKING POINT
D.O.	DO OVER	MECH	MECHANICAL	WWF	WELDED WIRE FABRIC
DSA	DEPARTMENT OF STATE ARCHITECTS	MANUF	MANUFACTURER	WWO	WALL W/ OPENING AND/OR PERFORATED S.W.
DWG	DRAWING	MIN	MINIMUM		
(E)	EXISTING	MISC	MISCELLANEOUS		
EA	EACH	MTL	METAL		
EF	EACH FACE	(N)	NEW		
ELEC	ELECTRICAL	NS	NEAR SIDE, NELSON STUD		
EL	ELEVATION	NW	NORMAL WEIGHT		
EN	EDGE NAILING	OC	ON CENTER		
ENGR	ENGINEER	OH	OPPOSITE HAND		
ES	EDGE SCREW	OPP	OPPOSITE		
EXP JT	EXPANSION JOINT	PSF	POUNDS PER SQUARE FOOT		
EQ	EQUAL	PSI	POUNDS PER SQUARE INCH		
EXT	EXTERIOR	PT	PLATE TRUSS		
FF	FINISHED FLOOR	REINF	REINFORCEMENT		
FG	FINISHED GRADE	REQ	REQUIRE		

SYMBOLS

∠	ANGLE
@	AT
℄	CENTERLINE
ℙ	PLATE / PROPERTY LINE
#	POUNDS
ø	DIAMETER
⊥	PERPENDICULAR
//	PARALLEL

REINFORCED CONCRETE NOTES CONT.:

27. MAXIMUM CHLORIDE ION CONTENT FOR CORROSION PROTECTION OF REINFORCEMENT:

TYPE OF MEMBER	MAXIMUM WATER SOLUBLE CHLORIDE ION (Cl⁻) IN CONCRETE, PERCENT BY WEIGHT OF CEMENT
PRESTRESSED CONCRETE	0.06
REINFORCED CONCRETE EXPOSED TO CHLORIDE IN SERVICE	0.15
REINFORCED CONCRETE THAT WILL BE DRY OR PROTECTED FROM MOISTURE IN SERVICE	1.00
OTHER REINFORCED CONCRETE CONSTRUCTION	0.30

28. TOLERANCE FOR LONGITUDINAL LOCATION OF BEND AND ENDS OF REINFORCEMENT SHALL BE ± 2 IN., EXCEPT THE TOLERANCE SHALL BE ± ½ IN. AT THE DISCONTINUOUS ENDS OF BRACKETS AND CORBELS, AND ± 1 IN. AT THE DISCONTINUOUS ENDS OF OTHER MEMBERS.
29. REINFORCEMENT RESISTING EARTHQUAKE-INDUCED FLEXURAL AND AXIAL FORCES IN FRAME MEMBERS AND IN STRUCTURAL WALL BOUNDARY ELEMENTS SHALL COMPLY WITH ASTM A 706. ASTM A 615 GRADES 40 AND 60 REINFORCEMENT SHALL BE PERMITTED IN THESE MEMBERS IF:
    A. THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED f_y BY MORE THAN 18,000 PSI (RETESTS SHALL NOT EXCEED THIS VALUE BY MORE THAN AN ADDITIONAL 3000 PSI): AND
    B. THE RATION OF THE ACTUAL TENSILE STRENGTH TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.THE VALUE OF f_y FOR TRANSVERSE REINFORCEMENT INCLUDING SPIRAL REINFORCEMENT SHALL NOT EXCEED 60,000 PSI.
30. CONCRETE FLOOR FLATNESS SHALL BE A MINIMUM OF ¾" : 10 FT. TYP. U.N.O.
31. WHERE CORROSION-RESISTANT REINFORCEMENT (CRR) IS SPECIFIED, USE MMFX2 REBAR ASTM A1035 GRADES 690 AND 830.
32. WELDING OF ELECTRICAL CONDUCTORS TO REINFORCING STEEL IS PROHIBITED WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
33. PERFORMANCE OF SHOTCRETE SHALL BE PER ACI 506.2 SPECIFICATIONS.
34. ACI 318 TABLE 26.4.1.1.1(a) – SPECIFICATIONS FOR CEMENTITIOUS MATERIALS

CEMENTITIOUS MATERIALS	SPECIFICATION
PORTLAND CEMENT	ASTM C150
BLENDED HYDRAULIC CEMENTS	ASTM C595, EXCLUDING TYPE IS (≥70) AND TYPE IT (S≥70)
EXPANSIVE HYDRAULIC CEMENTS	ASTM C845
HYDRAULIC CEMENT	ASTM C1157
FLY ASH AND NATURAL POZZOLAN	ASTM C618
SLAG CEMENT	ASTM C989
SILICA FUME	ASTM C1240

35. AGGREGATES – COMPLIANCE REQUIREMENTS;
    A. AGGREGATES SHALL CONFORM TO (1) OR (2):
       1. NORMALWEIGHT AGGREGATE: ASTM C33.
       2. LIGHTWEIGHT AGGREGATE: ASTM C330
    B. AGGREGATES NOT CONFORMING TO ASTM C33 OR ASTM C330 ARE PERMITTED IF THEY HAVE BEEN SHOWN BY TEST OF ACTUAL SERVICE TO PRODUCE CONCRETE OF ADEQUATE STRENGTH AND DURABILITY AND ARE APPROVED BY THE BUILDING OFFICIAL.
    C. MAXIMUM AGGREGATE SIZE ⅜" MAX.
36. WATER – COMPLIANCE REQUIREMENTS:
    A. MIXING WATER SHALL CONFORM TO ASTM C1602.
    B. MIXING WATER, INCLUDING THAT PORTION OF MIXING WATER CONTRIBUTED IN THE FORM OF FREE MOISTURE ON AGGREGATES, SHALL NOT CONTAIN DELETERIOUS AMOUNTS OF CHLORIDE ION WHEN USED FOR PRESTRESSED CONCRETE, FOR CONCRETE THAT WILL CONTAIN ALUMINUM EMBEDMENTS, OR FOR CONCRETE CAST AGAINST STAY-IN-PLACE GALVANIZED STEEL FORMS.
37. ADMIXTURES – COMPLIANCE REQUIREMENTS:
    A. ADMIXTURES SHALL CONFORM TO (1) THROUGH (4):
       1. WATER REDUCTION AND SETTING TIME MODIFICATION: ASTM C494.
       2. PRODUCING FLOWING CONCRETE: ASTM C1017.
       3. AIR ENTRAINMENT: ASTM C260.
       4. INHIBITING CHLORIDE-INDUCED CORROSION: ASTM C1582.
    B. ADMIXTURES THAT DO NOT CONFORM TO THESE SPECIFICATIONS SHALL BE SUBJECT TO PRIOR REVIEW BY THE LICENSED DESIGN PROFESSIONAL.
    C. CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CHLORIDE FROM SOURCES OTHER THAN IMPURITIES IN ADMIXTURE INGREDIENTS SHALL NOT BE USED IN PRESTRESSED CONCRETE, IN CONCRETE CONTAINING EMBEDDED ALUMINUM, OR IN CONCRETE CAST AGAINST STAY-IN-PLACE GALVANIZED STEEL FORMS.
    D. ADMIXTURES USED IN CONCRETE CONTAINING EXPANSIVE CEMENTS CONFORMING TO ASTM C845 SHALL BE COMPATIBLE WITH THE CEMENT AND PRODUCE NO DELETERIOUS EFFECTS.
38. STEEL FIBER REINFORCEMENT – COMPLIANCE REQUIREMENTS:
    A. STEEL FIBER REINFORCEMENT USED FOR SHEAR RESISTANCE SHALL SATISFY (1) AND (2):
       1. BE DEFORMED AND CONFORM TO ASTM A820.
       2. HAVE A LENGTH-TO-DIAMETER RATIO OF AT LEAST 50 AND NOT EXCEEDING 100.

1

REGISTERED PROFESSIONAL ENGINEER
JASON H. FURUKAWA
No. 40695
CIVIL
STATE OF CALIFORNIA

REINFORCED CONCRETE NOTES:

1. CONCRETE MIXES SHALL BE DESIGNED BY A RECOGNIZED TESTING LABORATORY AND COPIES OF THE DESIGN SHALL BE SENT TO THE ARCHITECT AND THE ENGINEER. COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND THE ARCHITECT. ALL CONCRETE EXCEPT FOUNDATION CONCRETE SHALL CONTAIN POLYMER BASED WATER REDUCING ADMIXTURE.
2. ALL REINFORCING BARS, ANCHOR BOLTS, PRE STRESSING TENDONS, AND ALL OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
3. THE MAXIMUM SLUMP SHALL NOT EXCEED 4" +/- 1" FOR FOOTINGS, SLABS ON EARTH, AND MASS CONCRETE, AND 5" +/- 1" FOR OTHER CONCRETE. SLUMP MAY BE INCREASED WHEN CHEMICAL ADMIXTURES ARE USED, PROVIDED THAT ADMIXTURE-TREATED CONCRETE HAS THE SAME OR LOWER WATER: CEMENT OR WATER: CEMENTITIOUS MATERIAL RATIO℄ (ACI 211 TABLE 6.3.1)
4. MINIMUM COMPRESSIVE STRENGTH:
   PROVIDE CONCRETE WITH THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH (f'_c) AT 28 DAYS UNLESS NOTED OTHERWISE (MINIMUM 5 SACKS OF CEMENT PER CUBIC YARD) (MAXIMUM WATER/CEMENT RATIO BY WEIGHT SHALL BE .45):
   A. ALL.....5000 P.S.I. (HARDROCK)
6. THE COMPRESSIVE STRENGTH OF EXTERIOR SLABS AND FLAT WORK SHALL BE INCREASED FOR MODERATE AND SEVERE WEATHERING EXPOSURE PER TABLE 1904.2.2 OF THE CBC.
7. ALL STRUCTURAL CONCRETE IS TO BE REINFORCED.
8. CONTRACTOR SHALL SUBMIT SLAB CONSTRUCTION JOINT LAYOUT DRAWINGS TO THE ARCHITECT AND ENGINEER FOR REVIEW. THE MAXIMUM SPACING OF CONTROL JOINTS IN SLAB ON GRADE EACH WAY SHALL BE 30X THE SLAB THICKNESS BEFORE 7 DAYS OF CURING. SLABS REQUIRE AT LEAST 7 DAYS CURING (14 DAYS WHERE FLY ASH OR POZOLAN IS USED), AND THE ENVIRONMENT (HUMIDITY AND TEMPERATURE) OF ROOM SHALL BE ACCLIMATED TO LONG TERM CLIMATE CONDITIONS PRIOR TO INSTALLATION OF FLOORING. THE SLAB TEMPERATURE SHALL BE WITHIN 5 DEGREES OF DEW POINT DURING CURING. NO CURING COMPOUND SHALL BE USED, ONLY WET CURED. MOISTURE AND HUMIDITY TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY HIRED BY THE OWNER, AND TESTS RESULTS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION OF FLOORING.
9. PROJECTING CORNERS OF BEAMS, COLUMNS, WALLS, ETC.. SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS DETAILED OTHERWISE.
10. IF EXPOSURE TO SULFATES, OR SPECIAL EXPOSURE CONDITIONS OCCUR, THE CONCRETE STRENGTH, WATER CEMENT RATIOS, AND OTHER PROPERTIES OF THE CONCRETE MIX SHALL BE IN ACCORDANCE WITH ACI 318 SECTION 4.3. VERIFY WITH SOILS REPORT FOR CORROSIVE CHEMICALS IN THE SOILS.
11. DO NOT POUR CONCRETE WHEN THE TEMPERATURE EXCEEDS 90°F OR 80°F WHEN THE WIND EXCEEDS 12MPH. START CURING AS SOON AS HARD TRAWLING IS DONE. ALL CURING SHALL BE WET CURING BY USING BURLAP FOR A MINIMUM OF 7 DAYS. BURLAP MUST BE PLACED WITHIN 2 HOURS OF POURING (NO SPRAY CURING). WHEN WIND, TEMPERATURE AND HUMIDITY CONDITIONS CAUSE EARLY DISAPPEARANCE OF BLEED WATER, STEPS SHALL BE TAKEN TO USE A FOG SPRAY. CURING SHALL COMMENCE IMMEDIATELY AFTER FINISHING TRAWLING.
12. WHERE AIR ENTRAINED CONCRETE IS SPECIFIED, THE VOLUME OF AIR IN THE MORTAR FRACTION OF CONCRETE MIX DESIGN SHALL BE 9% ±1%.
13. ALL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-615 GRADE 60 FOR NO.5 AND LARGER, ASTM A-615 GRADE 60 FOR NO.4 AND SMALLER. AT GRADE BEAMS & CONCRETE FRAMES ALL REINF. SHALL CONFORM TO ASTM A706 REBAR. U.N.O.
14. ALL REINFORCING BAR BEND'S SHALL BE MADE COLD.
15. REINFORCING STEEL SHALL BE SPLICED WITH CLASS B SPLICES UNLESS NOTED OTHERWISE ON THE DRAWINGS.
16. LOW HYDROGEN ELECTRODES SHALL BE USED WHEREVER REINFORCING STEEL IS WELDED. BARS SHALL BE A706 GRD. 60 MIN. FOR WELD ABILITY.
17. AT THE TIME CONCRETE IS PLACED, REINFORCEMENT SHALL BE FREE FROM MUD, OIL, OR OTHER NONMETALLIC COATINGS THAT DECREASE BOND. WHERE SPECIFIED IN THE DETAILS, EPOXY-COATING OF STEEL REINFORCEMENT IN ACCORDANCE WITH ACI STANDARDS. EXCEPT FOR PRESTRESSING STEEL, STEEL REINFORCEMENT WITH RUST, MILL SCALE, OR A COMBINATION OF BOTH SHALL BE CONSIDERED SATISFACTORY, PROVIDED THE MINIMUM DIMENSIONS (INCLUDING HEIGHT OF DEFORMATIONS) AND WEIGHT OF A HAND-WIRE-BRUSHED TEST SPECIMEN COMPLY WITH APPLICABLE ASTM SPECIFICATIONS.
18. THE MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS IN A LAYER SHALL BE ⌀ BUT NOT LESS THAN 1 IN. WHERE PARALLEL REINFORCEMENT IS PLACED IN TWO OR MORE LAYERS, BARS IN THE UPPER LAYERS SHALL BE PLACED DIRECTLY ABOVE BARS IN THE BOTTOM LAYER WITH CLEAR DISTANCE BETWEEN LAYERS NOT LESS THAN 1 IN. 21. CLEAR DISTANCE LIMITATION BETWEEN BARS SHALL APPLY ALSO TO THE CLEAR DISTANCE BETWEEN A CONTACT LAP SPLICE AND ADJACENT SPLICES OR BARS.
19. IN SPIRALLY REINFORCED OR TIED REINFORCED COMPRESSION MEMBERS, CLEAR DISTANCE BETWEEN LONGITUDINAL BARS SHALL BE NOT LESS THAN 1.5⌀ NOR LESS THAN 1½ IN.
20. IN WALLS AND SLABS OTHER THAN CONCRETE JOIST CONSTRUCTION, PRIMARY FLEXURAL REINFORCEMENT SHALL NOT BE SPACED FARTHER APART THAN THREE TIMES THE WALL OR SLAB THICKNESS, NOR FARTHER APART THAN 18 IN.
21. WHERE CONCRETE MUST BE INSTALLED AND CURED IN COLD WEATHER, THE GENERAL REQUIREMENTS AND SPECIFICATIONS OF ASTM STD C-31 SHALL BE IMPLEMENTED.
22. CAST-IN-PLACE CONCRETE (NON-PRESTRESSED)
    THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT (CONTRACTOR TO FULLY COORDINATE WITH CLEAR COVER REQUIREMENTS PER SPPWC 333-2 & 390-1.):
    A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3" MIN.
    B. CONCRETE EXPOSED TO EARTH OR WEATHER:
       - NO.6 THROUGH NO.18 BARS.....2" MIN.
       - NO.5 BAR, W31 OR D31 WIRE, AND SMALLER.....1½" MIN.
    C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
       SLABS, WALLS, JOISTS:
       - NO.14 AND NO.18 BARS.....1½" MIN.
       - NO.11 BAR AND SMALLER.....¾" MIN.

       BEAMS, COLUMNS:
       - PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS.....1½" MIN.

       SHELLS, FOLDED PLATE MEMBERS:
       - NO.6 BAR AND LARGER.....¾" MIN.
       - NO.5 BAR, W31 OR D31 WIRE, AND SMALLER.....½" MIN.
23. BUNDLED BARS:
    FOR BUNDLED BARS, MINIMUM CONCRETE COVER SHALL BE EQUAL TO THE EQUIVALENT DIAMETER OF THE BUNDLE, BUT NEED NOT TO BE GREATER THAN 2 IN.; EXCEPT FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH, WHERE MINIMUM COVER SHALL BE 3 IN. GROUPS OF PARALLEL REINFORCING BARS BUNDLED IN CONTACT TO ACT AS A UNIT SHALL BE LIMITED TO FOUR IN ANY ONE BUNDLE. BUNDLED BARS SHALL BE ENCLOSED WITHIN STIRRUPS OR TIES. BARS LARGER THAN NO. 11 SHALL NOT BE BUNDLED IN BEAMS. INDIVIDUAL BARS WITHIN A BUNDLE TERMINATED WITHIN THE SPAN OF FLEXURAL MEMBERS SHALL TERMINATE AT DIFFERENT POINTS WITH AT LEAST 40⌀ STAGGER.
24. CORROSIVE ENVIRONMENTS:
    IN CORROSIVE ENVIRONMENTS OR OTHER SEVERE EXPOSURE CONDITIONS, AMOUNT OF CONCRETE PROTECTION SHALL BE SUITABLY INCREASED, AND DENSENESS AND NONPOROSITY OF PROTECTING CONCRETE SHALL BE CONSIDERED, OR OTHER PROTECTION SHALL BE PROVIDED. "COVER" WHERE NOTED ON PLANS AND DETAILS IS NOT A MINIMUM, UNLESS NOTED AS "MIN." THE COVER SHALL BE AS NOTED WITH TOLERANCE.
25. MINIMUM DIAMETER OF BEND:

MINIMUM DIAMETERS OF BEND	
BAR SIZE	MINIMUM DIAMETER
NO.3 THROUGH NO.8	6db
NO.9, NO.10, AND NO.11	8db
NO.14 AND NO.18	10db

26. TOLERANCE FOR d AND MINIMUM CONCRETE COVER IN FLEXURAL MEMBERS, WALLS, AND COMPRESSION MEMBERS SHALL BE AS FOLLOWS:

	TOLERANCE ON d	TOLERANCE ON MINIMUM CONCRETE COVER
d ≤ 8 IN.	±⅜ IN.	-⅜ IN.
d > 8 IN.	±½ IN.	-½ IN.

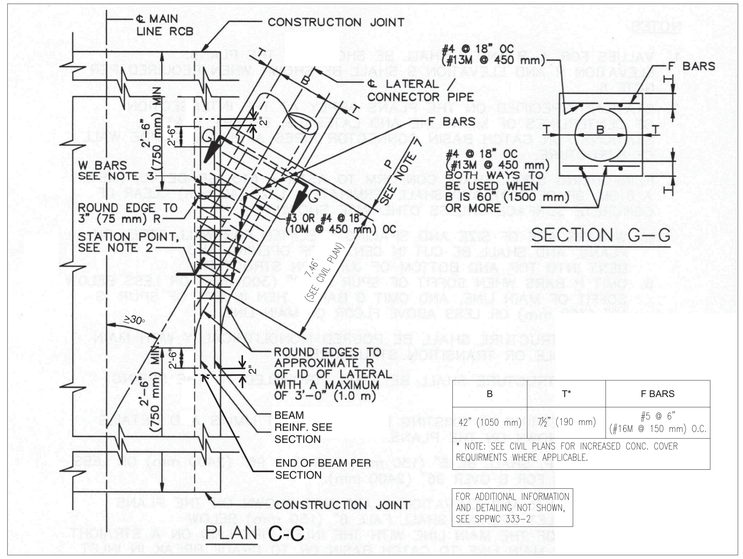
EXCEPT THAT TOLERANCE FOR THE CLEAR DISTANCE TO FORMED SOFFITS SHALL BE MINUS ¼ IN. AND TOLERANCE FOR COVER SHALL NOT EXCEED MINUS ½ THE MINIMUM CONCRETE COVER REQUIRED IN THE DESIGN DRAWINGS AND SPECIFICATIONS.

GENERAL STRUCTURAL NOTES:

1. THIS DOCUMENT IS AN INSTRUMENT OF PROFESSIONAL SERVICE PREPARED BY RGSE INC. ALTERATION OF THIS DOCUMENT BY ANY PARTY OTHER THAN RGSE INC. IS A VIOLATION OF LAW THAT WILL BE PROSECUTED TO ITS FULLEST EXTENT.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS & CONDITIONS AT THE JOB SITE PRIOR TO STARTING CONSTRUCTION AND THE ARCHITECT/ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
3. AT ANY DISCREPANCIES OR CONFLICTS BETWEEN PLAN AND ELEVATION DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWINGS AND THE STRUCTURAL DRAWINGS, THE ARCHITECTURAL DIMENSIONS SHALL GOVERN. IF ANY OF THESE DIMENSIONS DIFFER BY MORE THAN 5%, THE ENGINEER SHALL BE NOTIFIED OF THE CONFLICT, AND THE CONTRACTOR SHALL WAIT FOR INSTRUCTIONS.
4. ALL PHASES OF WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE LATEST LOCALLY ADOPTED CODE AND ALL RELEASED ADDENDUMS.
5. THE CONTRACT CONSTRUCTION DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE NOTED, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKMEN, AND OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT LIMITED TO: BRACING, ALL SHORING, FORMS, AND SCAFFOLDING.
6. OPENINGS, POCKETS, ETC. SHALL NOT BE PLACED IN SLABS BEAMS, COLUMNS, WALLS, ETC., UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS.
7. ALL ASTM SPECIFICATIONS NOTED ON THESE DRAWINGS SHALL BE OF THE LATEST REVISION.
8. IN THE EVENT THAT CERTAIN FEATURES OF CONSTRUCTION ARE NOT FULLY SHOWN ON THE DRAWINGS OR CALLED FOR IN THE NOTES OR SPECIFICATIONS. NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY & WAIT FOR INSTRUCTIONS.
9. COST OF ADDITIONAL DESIGN WORK NECESSITATED BY SELECTION OF AN OPTION OR DUE TO ERRORS OR OMISSIONS IN CONSTRUCTION, SHALL BE BORN BY THE CONTRACTOR.
10. WHERE DESIGN AND DETAILS OF PLATE GIRDERS, TRUSSES, ETC., IS TO BE PROVIDED BY FABRICATOR, CONTRACTOR SHALL SUBMIT CALCULATIONS PREPARED BY A CIVIL OR STRUCTURAL ENGINEER, TO THE ENGINEER AND TO THE BUILDING DEPARTMENT FOR REVIEW PRIOR TO FABRICATION.
11. UNLESS AN ITEM ON THE PLANS OR DETAILS IS SPECIFICALLY MARKED AS AN EXISTING ITEM, THE CONTRACTOR IS TO ASSUME THAT IT IS NEW, AND INCLUDE IT IN THE CONSTRUCTION BUDGET.
12. WHERE SOIL REPORT IS CITED, ITS REQUIREMENTS ADOPTED HEREIN.
13. ALL MANUFACTURED PRODUCTS MUST BE INSTALLED PER MANUFACTURER'S RECOMMENDATION.
14. WHILE EVERY REASONABLE EFFORT HAS BEEN MADE TO PROVIDE A BUILDABLE SET ON CONTRACT DOCUMENTS WITH MINIMAL ERRORS OR OMISSIONS, THE CONTRACTOR ACKNOWLEDGES AND UNDERSTANDS THAT THE CONTRACT DOCUMENTS MAY REPRESENT IMPERFECT DATA AND MAY CONTAIN ERRORS, OMISSIONS, CONFLICTS, INCONSISTENCIES, CODE VIOLATIONS AND IMPROPER USE OF MATERIALS. SUCH DEFICIENCIES WILL BE CORRECTED BY THE ARCHITECT OR HIS CONSULTANTS WHEN IDENTIFIED. THE CONTRACTOR AGREES TO CAREFULLY STUDY AND COMPARE THE INDIVIDUAL CONTRACT DOCUMENTS AND REPORT AT ONCE IN WRITING TO THE ARCHITECT ANY DEFICIENCIES THE CONTRACTOR MAY DISCOVER. THE CONTRACTOR FURTHER AGREES TO REQUIRE EACH SUBCONTRACTOR TO LIKEWISE STUDY THE DOCUMENTS AND TO REPORT AT ONCE ANY DEFICIENCIES DISCOVERED. THE CONSULTANT AND ARCHITECT, TOGETHER WITH CONTRACTOR SHALL RESOLVE ALL REPORTED DEFICIENCIES PRIOR TO STARTING ANY WORK. ANY QUESTIONABLE WORK PERFORMED PRIOR TO RESOLUTION OF CONFLICTS OR ERRORS OR FURTHER CLARIFICATION FROM THE ARCHITECT WILL BE DONE AT THE CONTRACTOR'S RISK.
15. OPTIONS, IF PROVIDED HEREIN, ARE FOR CONTRACTOR'S CONVENIENCE. HE SHALL BE RESPONSIBLE FOR ALL CHANGES NECESSARY, SHALL COORDINATE ALL DETAILS, AND SHALL OBTAIN ALL REQUIRED APPROVALS.
16. ANY MECHANICAL AND ELECTRICAL EQUIPMENT, STORAGE RACKS, SAFES, AND ANY OBJECT EXPECTED TO BE IN THE BUILDING THAT HAS AN OPERATIONAL WEIGHT (FULLY LOADED) GREATER THEN 400 LB. FLOOR OR ROOF MOUNTED, OR GREATER THEN 200 LB. SUSPENDED FROM A FLOOR, CEILING OR WALL SHALL BE SHOWN ON THESE DRAWINGS. IF THEY ARE NOT SHOWN ON THESE DRAWINGS, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER, AND A CUT SHEET FOR THE SPECIFIC ITEM SHALL BE MADE AVAILABLE.
17. CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE LATEST ADOPTED CALIFORNIA GREEN BUILDING CODE.
18. CONTRACTOR IS TO VERIFY THAT NO EXISTING STEEL REINFORCING, OR TENSION CABLES ARE DAMAGED WHEN INSTALLING POST INSTALLED WEDGE OR CHEMICAL ANCHORS. MECHANICAL ANCHORS ARE ONLY APPROVED FOR INTERIOR DRY USE, OTHERWISE CHEMICAL ANCHORS MUST BE USED.

SPECIAL INSPECTIONS:

1. SPECIAL INSPECTION U.N.O. BY A REGISTERED DEPUTY INSPECTOR APPROVED BY THE ARCHITECT AND/OR ENGINEER AND THE BUILDING DEPARTMENT SHALL BE EMPLOYED BY THE OWNER FOR THE FOLLOWING TYPES OF WORK:
   A. FOUNDATION CONCRETE INVOLVING CONCRETE STRENGTH GREATER THAN 2500 P.S.I.
   B. SEE C.B.C. VOL.II, SECTION 1704 FOR ADDITIONAL REQUIREMENTS. DEPUTY INSPECTION MAY BE WAIVED FOR WORK THAT IS MINOR IN NATURE AS INTERPRETED BY THE BUILDING OFFICIAL.
2. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE TO THE APPROVED DESIGN DRAWINGS AND SPECIFICATIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE ENGINEER OR ARCHITECT OF RECORD, AND OTHER DESIGNATED PERSONS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF UNCORRECTED, TO THE PROPER DESIGN AUTHORITY AND



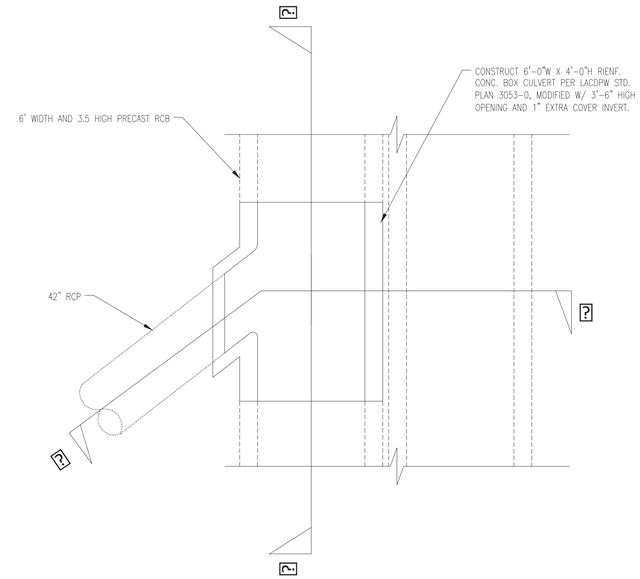
PLAN C-C

SECTION G-G

B	T*	F BARS
42" (1050 mm)	7½" (190 mm)	#5 @ 6" (#16M @ 150 mm) O.C.

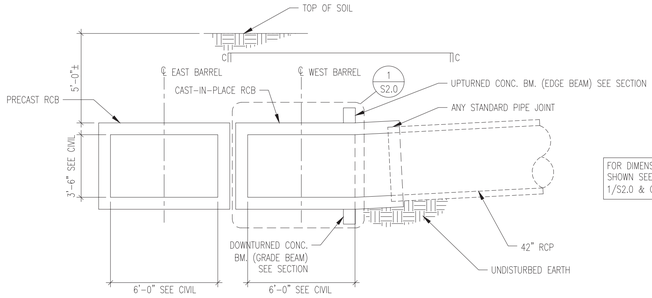
* NOTE: SEE CIVIL PLANS FOR INCREASED CONC. COVER REQUIRMENTS WHERE APPLICABLE.

FOR ADDITIONAL INFORMATION AND DETAILING NOT SHOWN, SEE SPPWC 333-2

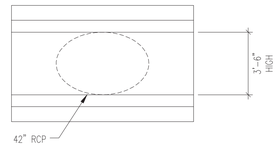


PLAN VIEW

SCALE: 1/4"=1'-0"



FOR DIMENSIONS NOT SHOWN SEE DETAIL 1/S2.0 & CIVIL PLANS



?????? ? ??

?????? ? ??

SECTIONS

SCALE: 1/4"=1'-0"

1

REGISTERED PROFESSIONAL ENGINEER JASON R. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
11/15/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	ADD STRUCTURAL SHEETS			11/15/18

REGISTERED PROFESSIONAL ENGINEER JASON GARCIA No. 45865 STRUCTURAL STATE OF CALIFORNIA

10/23/18 DATE

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

RGSE inc. Structural
2720 Cochran St. Suite 8B
Simi Valley, CA 93065
P: 805.522.3379
F: 805.378.7137
info@rgseinc.com
www.rgseinc.com

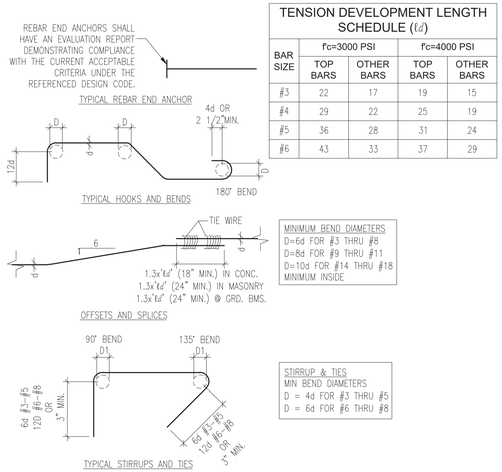
1

RGSE INC PROJECT #18078

DWG S1.0

SHEET 16 OF 17

10/3/2018 5:30:10 PM



TENSION DEVELOPMENT LENGTH SCHEDULE (ℓd)				
BAR SIZE	f'c=3000 PSI		f'c=4000 PSI	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	22	17	19	15
#4	29	22	25	19
#5	36	28	31	24
#6	43	33	37	29

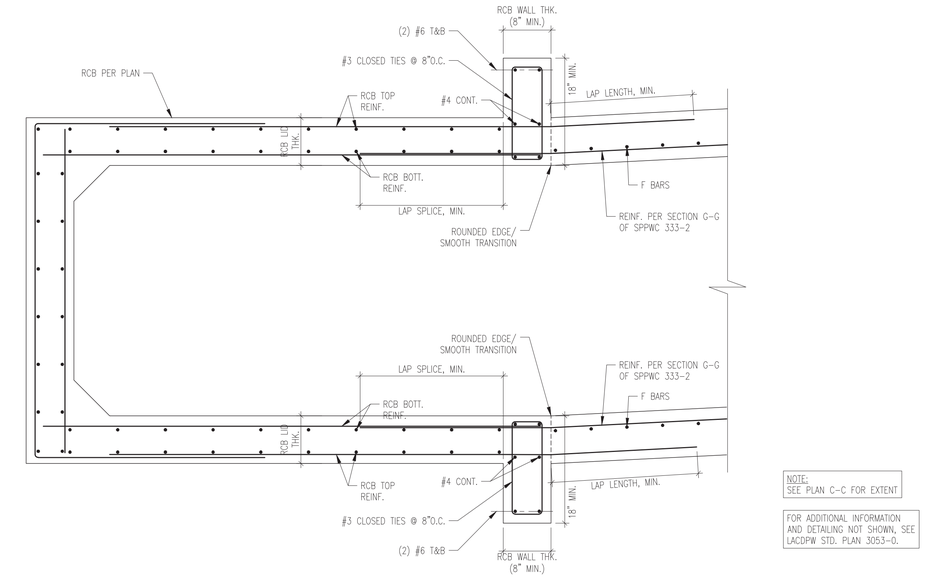
MINIMUM BEND DIAMETERS
D=6d FOR #3 THRU #8
D=8d FOR #9 THRU #11
D=10d FOR #14 THRU #18
MINIMUM INSIDE

STIRRUP & TIES
MIN BEND DIAMETERS
D = 4d FOR #3 THRU #5
D = 6d FOR #6 THRU #8

-	SCALE: 1"=1'-0"	5

REINFORCING DETAIL

SCALE: 1"=1'-0" | 3

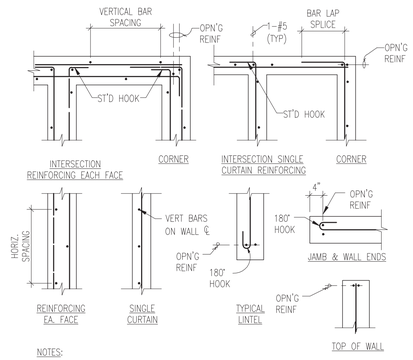


NOTE:
SEE PLAN C-C FOR EXTENT

FOR ADDITIONAL INFORMATION AND DETAILING NOT SHOWN, SEE LACDPW STD. PLAN 3053-0.

SECTION AT UPTURNED BM.

SCALE: 1"=1'-0" | 1



NOTES:

1. REFER TO TYPICAL CONC. WALL REINFORCING SCHEDULE.
2. AT DOUBLE CURTAIN REINFORCING STAGGER VERTICAL AND HORIZONTAL BARS. PLACE VERTICAL REBAR AS CLOSE TO CONC. SURFACE AS THE MINIMUM CLEARANCES WILL PERMIT

-	SCALE: 1"=1'-0"	6

TYPICAL CONC. WALL DETAIL

SCALE: 1"=1'-0" | 4

1

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

-	SCALE: 1"=1'-0"	2

STORM DRAIN PLANS IN
DS 542 P.D. No. 2637
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	ADD STRUCTURAL SHEETS			11/15/18

REVIEWED LAND DEVELOPMENT DIVISION
BY STORM DRAIN SECTION 11/15/18 DATE

REGISTERED PROFESSIONAL ENGINEER
AARON GARCIA
No. 45855
STRUCTURAL
STATE OF CALIFORNIA
10/23/18 DATE

RGSE inc. Structural
2720 Cochran St. Suite 8B
Simi Valley, CA 93065
P: 805.522.3379
F: 805.378.7137
info@rgseinc.com
www.rgseinc.com

RGSE INC PROJECT #18078

DWG S2.0

1

SHEET 17 OF 17

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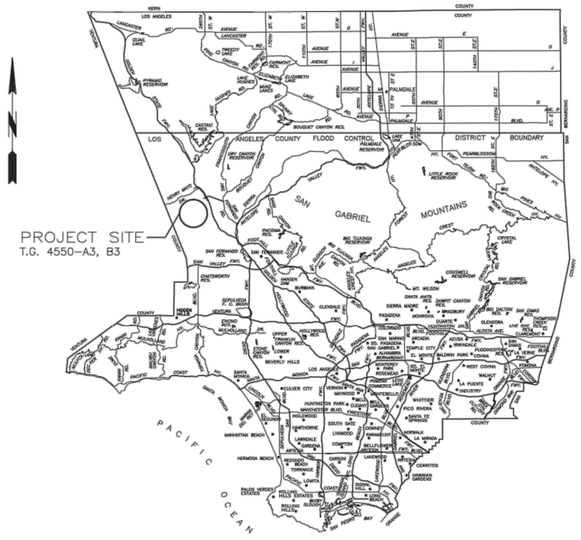
D-3: PD 2638

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

EIMP2014000239

PRIVATE DRAIN NO 2638

TRACT NO 61105–01



LOCATION MAP

INDEX TO PROJECT DRAWINGS

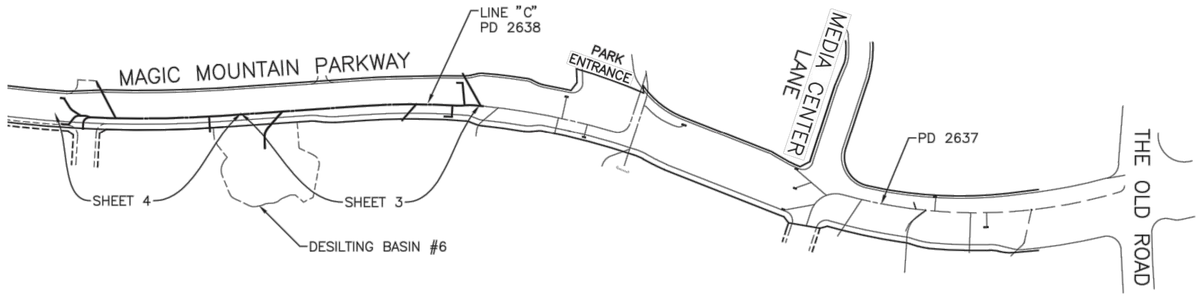
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES, WATER QUALITY NOTES, AND HYDRAULIC ELEMENTS
3	STORM DRAIN PLAN AND PROFILE – LINE "C" FROM STA. 15+55.98 TO 24+00.00
4	STORM DRAIN PLAN AND PROFILE – LINE "C" FROM STA. 24+00.00 TO 29+76.57
5	DETAILS
6	CATCH BASIN LATERAL PROFILES
7	STORM DRAIN EASEMENTS
8	DESILTING BASIN # 6 PLAN
9	DESILTING BASIN DETAILS

PD 2638 IS NOT ELIGIBLE FOR TRANSFER TO THE FLOOD CONTROL DISTRICT FOR MAINTENANCE UNTIL PD 2637 IS TRANSFERRED

PD 2638 MUST BE CONSTRUCTED AFTER OR CONCURRENT WITH PD 2637

WQ 061105–01B IS NOT ELIGIBLE FOR TRANSFER TO THE FLOOD CONTROL DISTRICT FOR MAINTENANCE UNTIL PD 2638 IS TRANSFERRED

PD 2638 MUST BE CONSTRUCTED BEFORE OF CONCURRENT WITH WQ 061105–01B



KEY MAP
SCALE: 1"=250'

CONSTRUCTION NOTES:

(1) INSTALL 18" R.C.P. (SEE PROFILE FOR D–LOAD)
(3) INSTALL 30" R.C.P. (SEE PROFILE FOR D–LOAD)
(5) INSTALL 42" R.C.P. (SEE PROFILE FOR D–LOAD)
(7) INSTALL 54" R.C.P. (SEE PROFILE FOR D–LOAD)
(13) CONSTRUCT DESILTING INLET PER DETAILS ON SHEET 9.
(14) CONSTRUCT 6" THICK CONC. ACCESS ROAD OVER 4" CRUSHED AGGREGATE BASE PER DETAIL ON SHEET 9 (WIDTH PER PLAN)
(15) CONSTRUCT CONC. FACING/SLOPE PROTECTION PER DETAILS ON SHEET 9
(16) CONSTRUCT CHAIN LINK FENCE PER S.P.P.W.C. STD. PLAN NO 600–3 (H=5')
(17) INSTALL DOUBLE DRIVE GATE PER S.P.P.W.C. STD. PLAN NO 600–3 (W=12' PER LEAF)
(18) CONSTRUCT CUTOFF WALL PER DETAIL 18 ON SHEET 9
(20) CONSTRUCT M.H. PER S.P.P.W.C. STD. PLAN 320–2
(21) CONSTRUCT M.H. PER S.P.P.W.C. STD. PLAN 321–2
(22) CONSTRUCT M.H. PER S.P.P.W.C. STD. PLAN 322–2
(24) CONSTRUCT MODIFIED CURB OPENING CATCH BASIN PER S.P.P.W.C. STD. PLAN NO. 300–3 LD PER S.P.P.W.C. 313–3 CASE E, H=2"(TYP.)
(26) CONSTRUCT T.S. PER S.P.P.W.C. STD. PLAN 340–2
(29) CONSTRUCT CLEANOUT PER DETAIL 29 ON SHEET 5
(32) CONSTRUCT J.S. PER S.P.P.W.C. STD. PLAN 332–2
(37) CONSTRUCT 8" BRICK AND MORTAR PLUG

INDEX TO STANDARD DRAWINGS

LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS

STD. PLAN	TITLE
2032–2	CRADLING AND ENCASEMENT
3080–2	PIPE BEDDING
6008–1	MINIMUM PUBLIC SAFETY REQUIREMENTS FOR OPEN EXCAVATIONS

STANDARD PLANS FOR PUBLIC WORK CONSTRUCTION

STD. PLAN	TITLE
300–3	CURB OPENING CATCH BASIN
313–3	LOCAL DEPRESSIONS AT CATCH BASINS
320–2	MANHOLE – PIPE TO PIPE (36" OR LARGE)
321–2	MANHOLE – PIPE TO PIPE (33" OR SMALLER)
322–2	MANHOLE – PIPE TO PIPE (LARGE INSIDE INLET)
332–2	JUNCTION STRUCTURE – PIPE TO PIPE (ID < 24")
340–2	TRANSITION STRUCTURE – PIPE TO PIPE
600–3	CHAIN LINK FENCE AND GATES

REGISTERED PROFESSIONAL ENGINEER VINCENT PING-KUEN IP No. 2522 Exp. 9/30 GEOTECHNICAL STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST ANDREW A. PRICE No. 1205 STATE OF CALIFORNIA

NO DUMPING THIS DRAINS TO OCEAN

CATCH BASIN STENCIL DETAIL

NTS

THIS DETAIL SHOULD APPEAR ON TOP OF ALL CATCH BASINS

ALL CATCH BASINS AND INLETS THAT DISCHARGE INTO AN EXISTING OR PROPOSED STORM DRAIN MUST BE STENCILED TO DISCOURAGE ILLEGAL DUMPING OFPOLLUTANTS. THIS STENCIL SHALL HAVE A MINIMUM DIAMETER OF 30 INCHES.

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

1

BENCH MARK: NEWHALL QUAD (2009) NAVD88
LADPW L 5210
DPW BM TAG IN E CB 3' N/O END @ SE COR RYE CYN RD & THE OLD ROAD 85' S & 55' E/O C/L INT.

ELEV. 1061.448 FEET **ADJUSTMENT** 2009

APPROVED MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS		
BY ASSISTANT DIVISION ENGINEER	8/20/2018 DATE	
RECOMMENDED LAND DEVELOPMENT DIVISION		
BY STORM DRAIN SECTION	8/20/2018 DATE	
SUBMITTED		
BY STORM DRAIN SECTION	08/20/18 DATE	

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED MAINTENANCE RESPONSIBILITY NOTE ON LINES C.3, C.5 AND C.6			12/21/20

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA 8-16-18
JASON H. FUKUMITSU DATE

PRIVATE ENGINEERS NOTICE TO CONTRACTORS

The existence and location of any underground utility pipes or structures shown on these plans are obtained by a search of the available records. To the best of our knowledge, there are no existing utilities except as shown on this map. The contractor is required to take due precautionary measures to protect the utility lines shown and any other lines not of record or shown on this drawing.

JASON H. FUKUMITSU — 08-16-2018 DATE

STORM DRAIN PLANS IN
TRACT No. 61105–1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG | SHEET 1 OF 9

FOR PLAN CHECK ONLY

DDN 43-F552

G:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2638\HM0077-01_TitleSheet.dwg Plotted on May 23, 2018–9:02am by jpithuoy

GENERAL NOTES:

1. A PERMIT SHALL BE OBTAINED AND A DEPOSIT PAID TO THE DEPARTMENT OF PUBLIC WORKS AT THE PERMIT COUNTER, 900 SOUTH FREMONT AVENUE 3RD FLOOR, ALHAMBRA, AT LEAST 72 HOURS PRIOR TO STARTING WORK UNDER THIS CONTRACT. ALL OTHER REQUIRED PERMITS, SUCH AS ROAD EXCAVATION PERMITS, MUST BE OBTAINED PRIOR TO STARTING WORK.

2. THE CONTRACTOR SHALL CONTACT THE DISTRICT OFFICE LISTED ON THE "APPLICATION FOR STORM DRAIN CONSTRUCTION INSPECTION FORM I" TO ARRANGE FOR AN ACCEPTABLE CONSTRUCTION START DATE.

3. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION, OR THE EXISTENCE OR NONEXISTENCE OF ANY UNDERGROUND UTILITY, PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL SHEETS.

4. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," INCLUDING SUPPLEMENTS AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE DIRECTOR OF PUBLIC WORKS.

5. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 7-10.4.1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION IN REGARD TO SAFETY ORDERS AND SHALL CONFORM TO THE "MINIMUM PUBLIC SAFETY REQUIREMENTS" AS SHOWN ON LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD PLAN 6008.

6. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. MEAN SEA LEVEL DATUM OF 1929, UNLESS OTHERWISE INDICATED.

7. NO CONCRETE SHALL BE PLACED UNTIL THE FORMS AND REINFORCING STEEL HAVE BEEN PLACED, INSPECTED AND APPROVED.

8. ALL STRUCTURAL CONCRETE SHALL BE PORTLAND CEMENT CONCRETE WITH AN ULTIMATE 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. UNLESS OTHERWISE NOTED.

9. TRANSVERSE REINFORCEMENT AND TRANSVERSE JOINTS SHALL BE PLACED AT RIGHT ANGLES (OR RADIAL) TO THE CONDUIT CENTERLINE EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS.

10. ALL STEEL ADJACENT TO FACE OF CONCRETE SHALL HAVE 2-1/2 INCH CLEARANCE UNLESS OTHERWISE SPECIFIED.

11. REINFORCEMENT SHALL BE DEFORMED BARS OF INTERMEDIATE GRADE STEEL PER A.S.T.M. A-615-GRADE 60.

12. ALL BAR BENDS AND HOOKS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "MANUAL OF STANDARD PRACTICE."

13. DIMENSIONS FROM FACE OF CONCRETE TO STEEL ARE TO CENTER LINE OF STEEL UNLESS OTHERWISE NOTED.

14. ALL STEEL THAT IS TO BE CONTINUOUS SHALL HAVE A MINIMUM LAP OF 30 BAR DIAMETERS OR 18 INCHES WHICHEVER IS GREATER.

15. ALL CONSTRUCTION JOINTS IN THE FOOTING OF SLABS AND WALLS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED.

16. ALL EXPOSED EDGES SHALL BE FINISHED WITH A 3/4 INCH CHAMFER.

17. UNLESS OTHERWISE SHOWN, CONCRETE DIMENSIONS SHALL BE MEASURED VERTICALLY OR HORIZONTALLY AND PARALLEL OR AT RIGHT ANGLES (OR RADIAL) TO THE CENTER LINE OF CONSTRUCTION.

18. CONCRETE BACKFILL IS REQUIRED WHEN THE PIPE HAS LESS THAN ONE FOOT OF COVER. THE CONCRETE BACKFILL SHALL CONSIST OF 1:3:5 MIX, PORTLAND CEMENT CONCRETE POURED FROM WALL TO WALL OF TRENCH AND FROM BOTTOM OF TRENCH TO A MINIMUM OF 4 INCHES OVER THE TOP OF THE PIPE.

19. ALL PIPES SHALL BE PLACED IN TRENCH IN NATURAL GROUND AND/OR COMPACTED FILL. THE GROUND LEVEL BEFORE THE TRENCHING SHALL BE AT LEAST 3 FEET ABOVE THE TOP OF THE PIPE ELEVATION, OR AT FINISH SURFACE ELEVATION, WHICHEVER IS LESS.

20. ALL BACKFILL AND FILLS OUTSIDE OF STREET RIGHT-OF-WAY SHALL BE COMPACTED TO MIN. 90 PERCENT OF MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D 1557-91 METHOD "D" UNLESS OTHERWISE SPECIFIED. THIS SHALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER. THIS CERTIFICATION SHALL BE SUBMITTED TO THE CITY ENGINEER PRIOR TO ACCEPTANCE OF THE WORK BY THE COUNTY.

21. ALL BACKFILL AND FILLS WITHIN STREET RIGHT-OF-WAY SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 306-1.3.4 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED AND INSPECTED BY THE CITY. CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 24 HOURS IN ADVANCE FOR SOIL TESTING AS REQUIRED BY THE INSPECTOR.

22. PIPE BEDDING SHALL BE:

    IN ACCORDANCE WITH THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS STANDARD PLAN NO. 3092 UNLESS OTHERWISE NOTED.

    OR

    ACCORDING TO STANDARD PLAN NO. 3080-0, CASE 3, EXCEPT BELL AND SPIGOT PIPE WHICH SHALL BE CASE 2 BEDDING, UNLESS OTHERWISE SHOWN. "W" VALUES SHALL BE AS SPECIFIED ON STANDARD PLAN 3080-0 FOR CASE 3 BEDDING, NOTES 3 (A), 3 (B), AND 3 (C). IF THE "W" VALUE AT THE TOP OF THE PIPE IS EXCEEDED, THE BEDDING SHALL BE MODIFIED, AND/OR PIPE OF ADDITIONAL STRENGTH SHALL BE PROVIDED. THE PROPOSED MODIFICATION SHALL BE APPROVED BY THE DEPARTMENT.

23. PIPE SHALL BE EMBEDDED 5 INCHES INTO ALL STRUCTURES INCLUDING INLET AND OUTLET HEADWALLS, UNLESS OTHERWISE SPECIFIED.

24. UNLESS OTHERWISE SPECIFIED IN THE PROFILE ON THESE PLANS, THE PIPE SHALL BE MANUFACTURED WITH A MINIMUM CONCRETE COVER OVER THE STEEL IN THE INVERT OF 0.75 INCHES FOR RCP UP TO 96 INCHES IN DIAMETER AND 1.25 INCHES FOR PIPE GREATER THAN 96 INCHES IN DIAMETER.

25. ALL CATCH BASINS WITHIN THE DEDICATED STREET RIGHT-OF-WAY SHALL BE CONSTRUCTED PER THE STREET PLANS.

26. THE CONTRACTOR SHALL PROVIDE TO THE SATISFACTION OF THE CITY ENGINEER AND THE DIRECTOR OF PUBLIC WORKS A DRAINAGE SYSTEM FOR CONTRIBUTARY FLOWS TO BE OPERABLE AT ALL TIMES UNTIL THIS STORM DRAIN SYSTEM IS ACCEPTED FOR MAINTENANCE. THE DESIGN OF THE DRAINAGE SYSTEM MUST BE PREPARED UNDER THE DIRECTION OF A CIVIL ENGINEER.

GENERAL NOTES (Cont'd)

27. ALL REFERENCES ON THIS PLAN TO THE COUNTY ENGINEER, ROAD DEPARTMENT, OR FLOOD CONTROL DISTRICT SHALL APPLY TO THE APPROPRIATE ELEMENTS OF THE DEPARTMENT OF PUBLIC WORKS.

28. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.

29. UNLESS OTHERWISE INDICATED CROSSING UTILITIES ARE TO BE SUPPORTED IN ACCORDANCE WITH STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION NO. 224-2

30. ALL OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES SHALL BE SEALED WITH 8 INCHES OF BRICK AND MORTAR OR 6 INCHES OF CONCRETE, UNLESS OTHERWISE SHOWN.

31. MANHOLES SHALL USE THE STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION 630-2 FOR THE "FRAME AND COVER" AND 635-2 FOR THE "STANDARD DROP STEP."

32. THIS STORM DRAIN WILL NOT BE FIELD ACCEPTED FOR MAINTENANCE UNTIL THE STREETS HAVE BEEN PAVED, MANHOLES BROUGHT TO GRADE AND THE SYSTEM CLEANED TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS.

33. AN NPDES PERMIT FROM THE REGIONAL WATER QUALITY CONTROL BOARD IS REQUIRED BEFORE ANY DISCHARGE OF NON-STORM WATER INTO THE STORM DRAIN IS ALLOWED.

34. THE LATEST REVISED STANDARD PLAN OR DRAWING SHALL BE USED UNLESS OTHERWISE NOTED.

35. THE SOILS ENGINEER OF RECORD SHALL INSPECT AND APPROVE THE FOUNDATION EXCAVATIONS BEFORE STEEL OR CONCRETE IS PLACED.

36. STORM DRAIN MANHOLE COVERS CONSTRUCTED PER S.P.P.W.C. STANDARD PLANS 630, 631, 632 AND 633 SHALL BE CAST WITH THE LETTERS "L.A.C.F.C.D.". THE LETTERS SHALL BE 1 INCH IN HEIGHT AND PLACED BELOW THE LETTER "D" IN THE CENTER OF THE COVER.

37. STORM DRAIN MANHOLE COVERS CONSTRUCTED PER S.P.P.W.C. STANDARD PLANS 312 SHALL BE CAST WITH THE LETTERS "L.A.C.F.C.D.". THE LETTERS SHALL BE 1 INCH IN HEIGHT AND PLACED BELOW THE LETTER "D" IN THE CENTER OF THE COVER.

38. ALL ABOVE GROUND FACILITIES SHALL BE STAMPED WITH THE DRAIN AND LINE NAME. THE LETTERING SHOULD BE 4" BLACK TEXT ON A YELLOW BACKGROUND.

39. EVERY 100 FEET STATIONS SHALL BE LABELED ON THE INSIDE OF ALL STORM DRAINS AND WALL OF OPEN CHANNELS. THE LETTERING SHOULD BE 4" BLACK TEXT ON A YELLOW BACKGROUND AND SHOULD BE PLACED IN THE SOFFIT OF PIPES AND THE TOP 2 FEET OF A CHANNEL WALL.

40. FOR ALL DEBRIS BASINS, THE 0%, 5% AND 25% DEBRIS CONE ELEVATIONS SHALL BE LABELED ON THE CONCRETE FACING SLAB AND THE STAND PIPE.

41. PRIOR TO ORDERING PIPES, CONTACT GEOTECHNICAL & MATERIALS DIVISION AT (626) 458-1707 TO SCHEDULE FOR D-LOAD INSPECTION. FEES PAYABLE AT LAND DEVELOPMENT DIVISION PUBLIC COUNTER WILL BE REQUIRED.

STORMWATER POLLUTION CONTROL REQUIREMENTS FOR STORM DRAIN CONSTRUCTION

A. NOTES:

1. EVERY EFFORT SHOULD BE MADE TO ELIMINATE THE DISCHARGE OF NON-STORM WATER FROM THE PROJECT SITE AT ALL TIMES.
2. ERODED SEDIMENTS AND OTHER POLLUTANTS MUST BE RETAINED ON SITE AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEETFLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES, OR WIND.
3. STOCKPILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIALS MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND OR WATER.
4. FUELS, OILS, SOLVENTS, AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR LISTING 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 MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM.
5. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC 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.
6. TRASH AND CONSTRUCTION RELATED SOLID WASTES MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.
7. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC WAY. ACCIDENTAL DEPOSITIONS MUST BE SWEPT UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.
8. ANY SLOPES WITH DISTURBED SOILS OR DENUDED OF VEGETATION MUST BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.

B. THE FOLLOWING BMPs AS OUTLINED IN, BUT NOT LIMITED TO, THE LATEST EDITION OF THE CALIFORNIA BMP HANDBOOK (CONSTRUCTION) OR CALTRANS STORMWATER QUALITY HANDBOOKS (CONSTRUCTION SITE BMP MANUAL), MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY THE PROJECT ENGINEER OR THE BUILDING OFFICIAL):

EROSION CONTROL
- EC1 – SCHEDULING
- EC2 – PRESERVATION OF EXISTING VEGETATION
- EC3 – HYDRAULIC MULCH
- EC4 – HYDROSEEDING
- EC5 – SOIL BINDERS
- EC6 – STRAW MULCH
- EC7 – GEOTEXTILES & MATS
- EC8 – WOOD MULCHING
- EC9 – EARTH DIKES & DRAINAGE SWALES
- EC10 – VELOCITY DISSIPATION DEVICES
- EC11 – SLOPE DRAINS
- EC12 – STREAMBANK STABILIZATION
- EC13 – RESERVED
- EC14 – COMPOST BLANKETS
- EC15 – SOIL PREPARATION/ROUGHENING
- EC16 – NON-VEGETATED STABILIZATION

TEMPORARY SEDIMENT CONTROL
- SE1 – SILT FENCE
- SE2 – SEDIMENT BASIN
- SE3 – SEDIMENT TRAP
- SE4 – CHECK DAM
- SE5 – FIBER ROLLS
- SE6 – GRAVEL BAG BERM
- SE7 – STREET SWEEPING AND VACUUMING
- SE8 – SAND BAG BARRIER
- SE9 – STRAW BALE BARRIERS
- SE10 – STORM DRAIN INLET PROTECTION
- SE11 – ACTIVE TREATMENT SYSTEMS
- SE12 – TEMPORARY SILT DIKE
- SE13 – COMPOST SOCKS & BERMS
- SE14 – BIOFILTER BAGS

WIND EROSION CONTROL
- WE1 – WIND EROSION CONTROL

EQUIPMENT TRACKING CONTROL
- TC1 – STABILIZED CONSTRUCTION ENTRANCE/EXIT
- TC2 – STABILIZATION CONSTRUCTION ROADWAY
- TC3 – ENTRANCE/OUTLET TIRE WASH

NON-STORMWATER MANAGEMENT
- NS1 – WATER CONSERVATION PRACTICES
- NS2 – DEWATERING OPERATIONS
- NS3 – PAVING AND GRINDING OPERATIONS
- NS4 – TEMPORARY STREAM CROSSING
- NS5 – CLEAR WATER DIVERSION
- NS6 – ILLICIT CONNECTION/DISCHARGE
- NS7 – POTABLE WATER/IRRIGATION
- NS8 – VEHICLE AND EQUIPMENT CLEANING
- NS9 – VEHICLE AND EQUIPMENT FUELING
- NS10 – VEHICLE AND EQUIPMENT MAINTENANCE
- NS11 – PILE DRIVING OPERATIONS
- NS12 – CONCRETE CURING
- NS13 – CONCRETE FINISHING
- NS14 – MATERIAL AND EQUIPMENT USE
- NS15 – DEMOLITION ADJACENT TO WATER
- NS16 – TEMPORARY BATCH PLANTS

WASTE MANAGEMENT AND MATERIAL POLUTION CONTROL
- WM-1 – MATERIAL DELIVERY AND STORAGE
- WM-2 – MATERIAL USE
- WM-3 – STOCKPILE MANAGEMENT
- WM-4 – SPILL PREVENTION AND CONTROL
- WM-5 – SOLID WASTE MANAGEMENT
- WM-6 – HAZARDOUS WASTE MANAGEMENT
- WM-7 – CONTAMINATION SOIL MANAGEMENT
- WM-8 – CONCRETE WASTE MANAGEMENT
- WM-9 – SANITARY/SEPTIC WASTE MANAGEMENT
- WM-10 – LIQUID WASTE MANAGEMENT

HYDRAULIC ELEMENTS

LINE	PIPE FROM STA.	REACH TO STA.	Q (CFS)	DIA	Vmax (FPS)	REMARKS
"C"	15+55	15+61	171.8	54"	10.8	
	15+61	16+50	171.8	54"	10.8	
	16+50	16+83	166.7	54"	10.5	
	16+83	17+91	157.5	54"	9.9	
	17+91	22+63	156.6	54"	22.8	1
	22+63	24+00	48.3	42"	17.3	
	24+00	25+14	48.3	42"	16.6	
	25+14	26+03	48.3	42"	18.2	
	26+03	28+41	48.3	30"	16.0	
	28+41	29+34	48.3	30"	14.4	
	29+34	29+83	30.8	30"	9.7	
"C.1"	10+00	10+77	6.9	18"	3.9	
"C.2"	10+00	10+39	9.2	18"	5.2	
"C.3"	10+00	10+68	0.9	18"	0.5	
"C.4"	10+00	11+51	136.3	42"	31.1	2
"C.5"	10+00	10+43	0.2	18"	5.3	
"C.6"	10+00	11+19	0.5	18"	5.1	
"C.7"	10+00	10+34	17.5	18"	15.8	
"C.7"	10+34	10+86	13.8	18"	15.6	
"C.7.1"	10+00	10+84	3.7	18"	10.1	
"C.8"	10+00	11+20	59.3	42"	6.2	

REMARKS

1 ADD AN ADDITIONAL 0.5" OF CONCRETE COVER OVER THE INVERT STEEL FOR V > 20 FPS.

2 ADD AN ADDITIONAL 1.0" OF CONCRETE COVER OVER THE INVERT STEEL FOR V > 30 FPS.

PIPE LENGTHS CHART:

PIPE SIZE	TOTAL LENGTHS
18"	485'
30"	372'
42"	590'
54"	680'

TOTAL SQ. FT. OF EASEMENT ACQUIRED = 82,054 SQ.FT.

FOR PLAN CHECK ONLY

DDN 43-F552

REGISTERED PROFESSIONAL ENGINEER VINCENT PING-KUEN IP No. 2522 Exp. 9/30/20 GEOTECHNICAL STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST ANDREW A. PRICE No. 1709 STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
08/20/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA
JASON H. FUKUMITSU 8-16-18 DATE

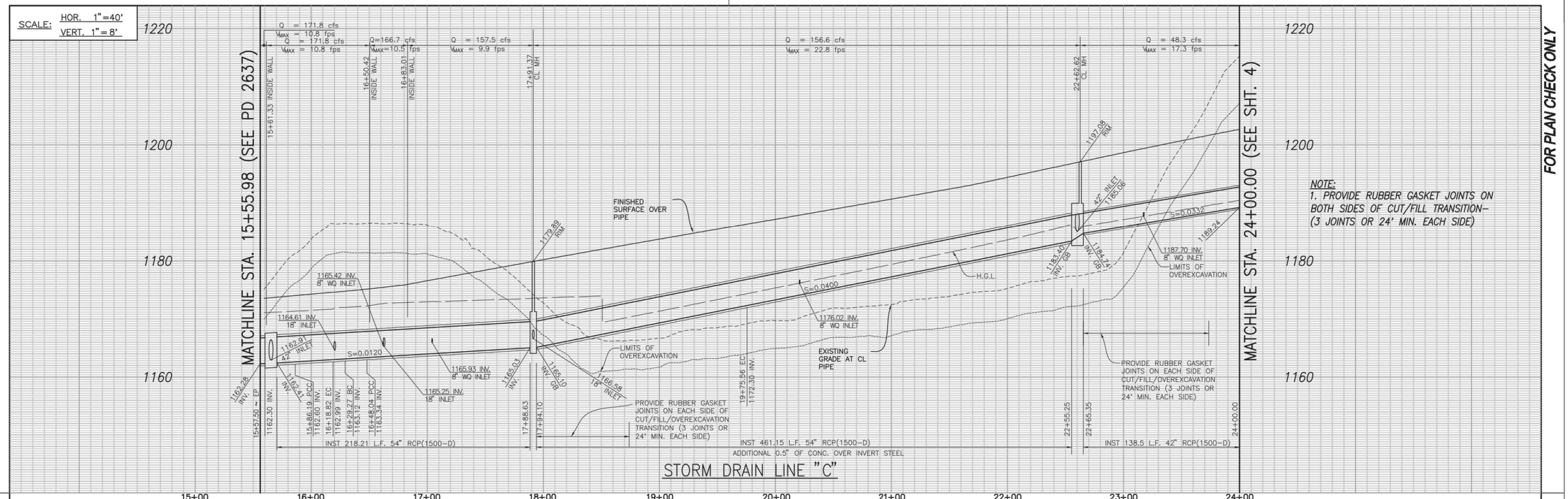
STORM DRAIN PLANS IN
TRACT No. 61105-1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG

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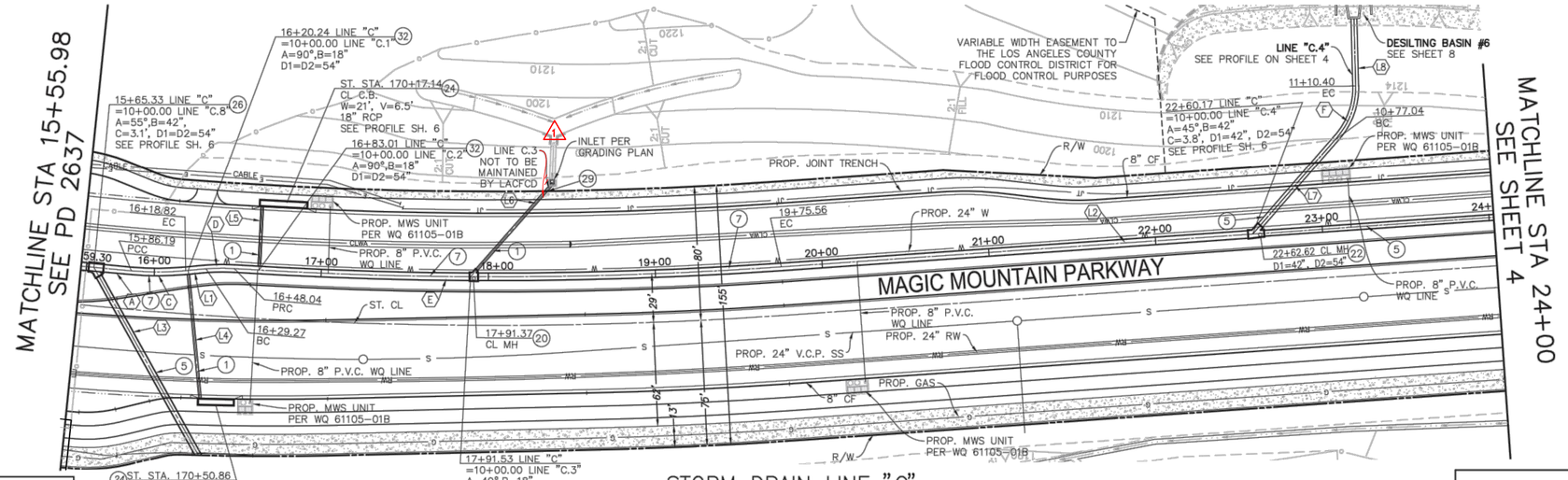
SCALE: HOR. 1"=40'
VERT. 1"=8'



STORM DRAIN LINE "C"

FOR PLAN CHECK ONLY

NOTE:
1. PROVIDE RUBBER GASKET JOINTS ON BOTH SIDES OF CUT/FILL TRANSITION– (3 JOINTS OR 24' MIN. EACH SIDE)



STORM DRAIN LINE "C"

SD LINE "C" LINE TABLE		
LINE	LENGTH	BEARING
L1	10.46'	N54°39'21"E
L2	428.44'	N56°01'25"E
L3	120.20'	S59°05'27"E
L4	77.14'	N35°20'39"W
L5	38.51'	N27°11'34"W
L6	68.78'	S11°27'02"W
L7	77.04'	S11°01'25"W
L8	40.16'	S31°27'00"E

SD LINE "C" CURVE TABLE				
LINE	DELTA	RADIUS	LENGTH	TANGENT
A	00°41'56"	2477.00'	30.21'	5.11'
C	10°23'08"	180.00'	32.63'	16.36'
D	08°57'43"	120.00'	18.77'	9.40'
E	07°35'39"	2471.00'	327.51'	164.00'
F	42°28'26"	45.00'	33.36'	17.49'

CONSTRUCTION NOTES:

1. INSTALL 18" R.C.P. (SEE PROFILE FOR D-LOAD)
5. INSTALL 42" R.C.P. (SEE PROFILE FOR D-LOAD)
7. INSTALL 54" R.C.P. (SEE PROFILE FOR D-LOAD)
20. CONSTRUCT M.H. PER S.P.P.W.C. STD. PLAN 320-2
22. CONSTRUCT M.H. PER S.P.P.W.C. STD. PLAN 322-2
24. CONSTRUCT MODIFIED CURB OPENING CATCH BASIN PER S.P.P.W.C. STD. PLAN NO. 300-3 LD PER S.P.P.W.C. 313-3 CASE E, H=2'(TYP.)
26. CONSTRUCT T.S. PER S.P.P.W.C. STD. PLAN 340-2
29. CONSTRUCT CLEANOUT PER DETAIL 29 ON SHEET 5
32. CONSTRUCT J.S. PER S.P.P.W.C. STD. PLAN 332-2

REGISTERED PROFESSIONAL ENGINEER VINCENT PING-KUEN TO No. 2522 Exp. 6/30 GEOTECHNICAL STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST ANDREW A. PRICE No. 1709 STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY STORM DRAIN SECTION 08/20/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED MAINTENANCE RESPONSIBILITY NOTE ON LINE C.3			12/21/20

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA
JASON H. FUKUMITSU DATE 8-6-18

GRAPHIC SCALE: 1" = 40'

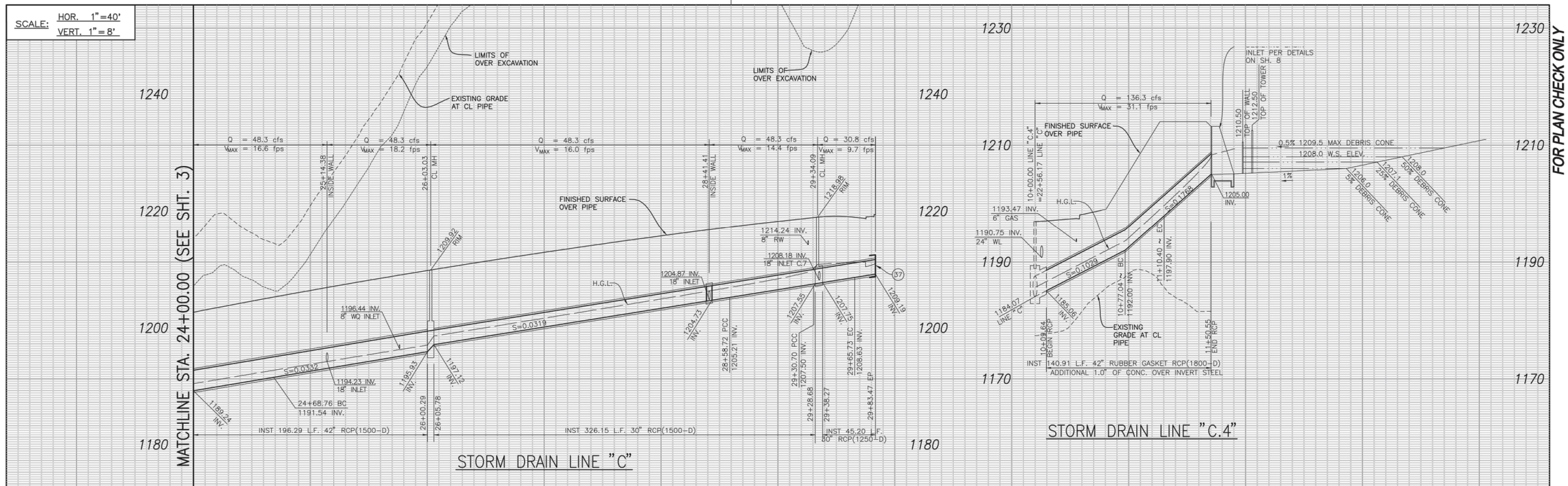
STORM DRAIN PLANS IN
TRACT No. 61105-1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

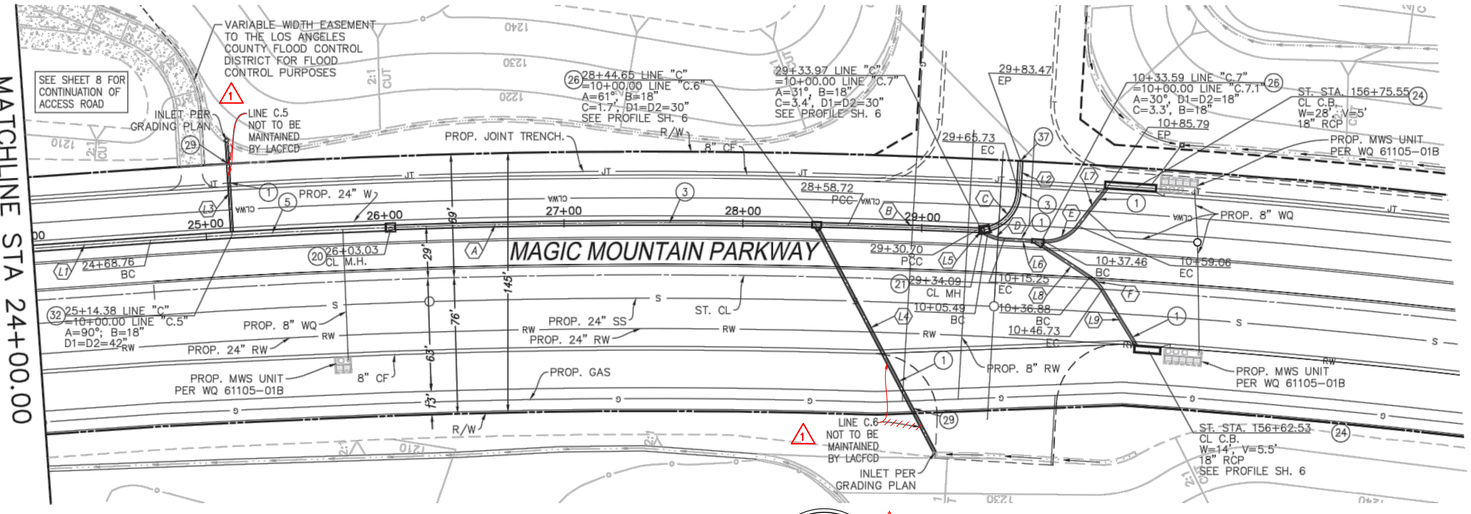
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DWG | SHEET 3 OF 9

DDN 43-F552

SCALE: HOR. 1"=40'
VERT. 1"=8'





STORM DRAIN LINE "C"

SD LINE "C" LINE TABLE		
LINE	LENGTH	BEARING
L1	64.76'	N56°01'25"E
L2	17.74'	N26°37'46"W
L3	52.15'	N33°191'39"W
L4	143.33'	S57°39'51"E
L5	5.49'	S87°39'58"W
L6	22.21'	S62°49'18"W
L7	26.73'	S07°48'38"W
L8	36.99'	S61°37'45"E
L9	36.88'	S86°42'51"E

SD LINE "C" CURVE TABLE				
LINE	DELTA	RADIUS	LENGTH	TANGENT
A	05°32'42"	4029.46'	389.96'	195.13'
B	01°01'24"	4029.46'	71.98'	35.99'
C	89°13'18"	22.50'	35.04'	22.20'
D	24°50'39"	22.50'	9.76'	4.96'
E	55°00'40"	22.50'	21.60'	11.72'
F	25°05'06"	22.50'	9.85'	5.01'

CONSTRUCTION NOTES:

1. INSTALL 18" R.C.P. (SEE PROFILE FOR D-LOAD)
3. INSTALL 30" R.C.P. (SEE PROFILE FOR D-LOAD)
5. INSTALL 42" R.C.P. (SEE PROFILE FOR D-LOAD)
20. CONSTRUCT M.H. PER S.P.P.W.C. STD. PLAN 320-2
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29. CONSTRUCT CLEANOUT PER DETAIL 29 ON SHEET 5
32. CONSTRUCT J.S. PER S.P.P.W.C. STD. PLAN 332-2
37. CONSTRUCT 8" BRICK AND MORTAR PLUG

40 20 0 40 80
GRAPHIC SCALE: 1" = 40'

REGISTERED PROFESSIONAL ENGINEER VINCENT PING-KUEN P. No. 2522 Exp. 9/20 GEOTECHNICAL STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST ANDREW A. PRICE No. 1705 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY STORM DRAIN SECTION 08/20/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	ADDED MAINTENANCE RESPONSIBILITY NOTE			12/21/20

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA 8-16-18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
TRACT No. 61105-1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

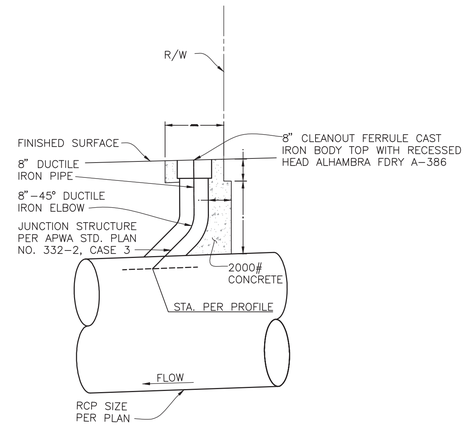
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DWG | SHEET 4 OF 9

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FOR PLAN CHECK ONLY

DDN 43-F552



29 **CLEANOUT**
N.T.S.

FOR PLAN CHECK ONLY

DDN 43-F552

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
08/20/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA
8-16-18
JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
TRACT No. 61105–1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

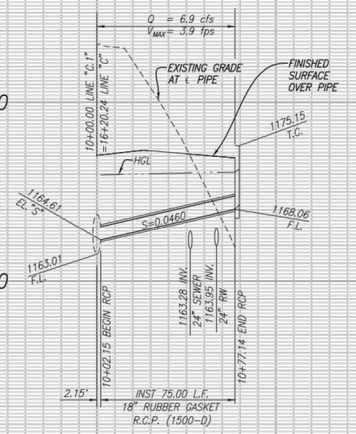
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SHEET 5 OF 9

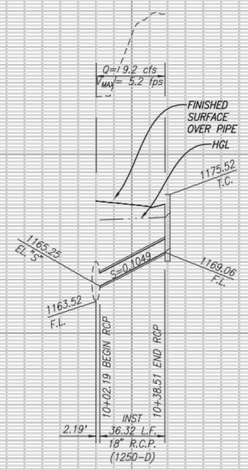
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VERT. 1"=8'



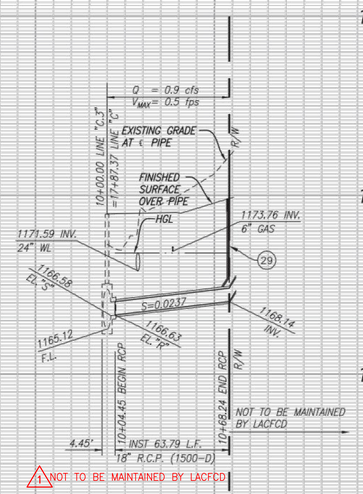
SD LINE "C.1"

SEE SHEET 3 FOR PLAN VIEW



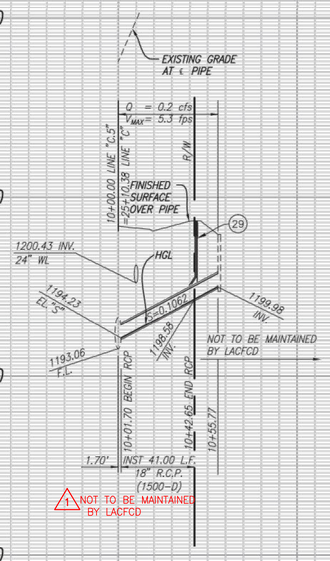
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SEE SHEET 3 FOR PLAN VIEW



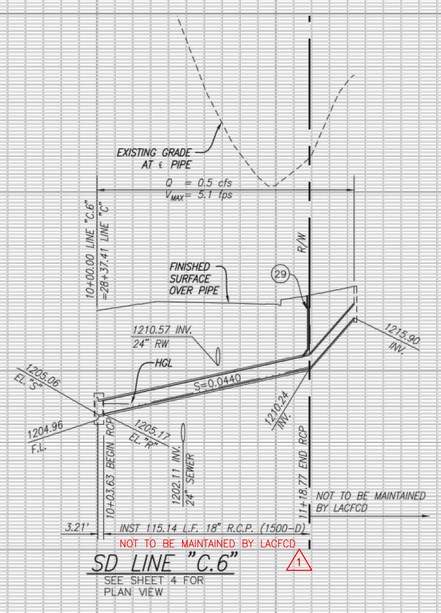
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SEE SHEET 3 FOR PLAN VIEW



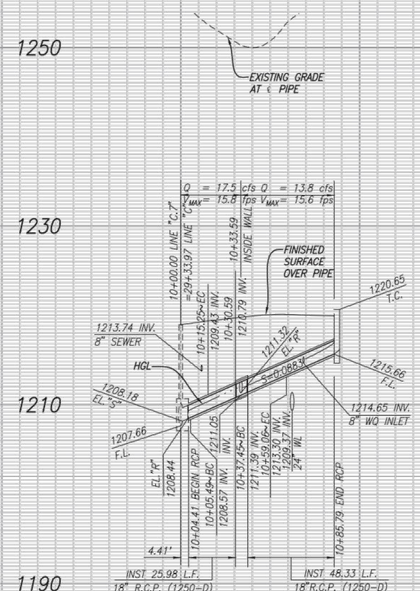
SD LINE "C.5"

SEE SHEET 4 FOR PLAN VIEW



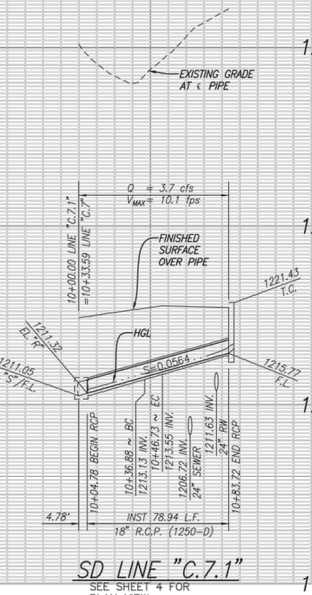
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SEE SHEET 4 FOR PLAN VIEW



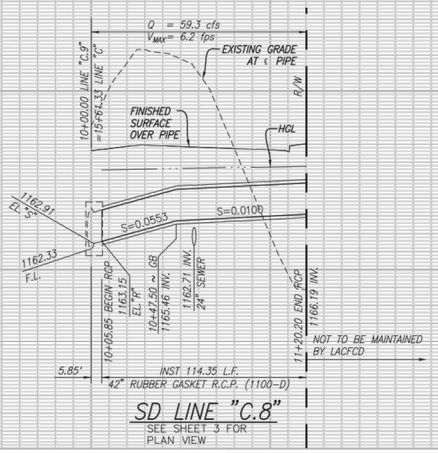
SD LINE "C.7"

SEE SHEET 4 FOR PLAN VIEW



SD LINE "C.7.1"

SEE SHEET 4 FOR PLAN VIEW



SD LINE "C.8"

SEE SHEET 3 FOR PLAN VIEW

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA
1

CONSTRUCTION NOTES:

(29) CONSTRUCT CLEANOUT PER DETAIL 29 ON SHEET 5

(37) CONSTRUCT 8" BRICK AND MORTAR PLUG

REGISTERED PROFESSIONAL ENGINEER
VINCENT PING-KUEN LEE
No. 2522
Exp. 6-30-20
GEOTECHNICAL
STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST
ANDREW A. PRICE
No. 1705
STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION
BY _____ STORM DRAIN SECTION
08/20/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	ADDED MAINTENANCE RESPONSIBILITIES			12/21/20

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA
JASON H. FUKUMITSU B-16-18 DATE

STORM DRAIN PLANS IN
TRACT No. 61105-1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
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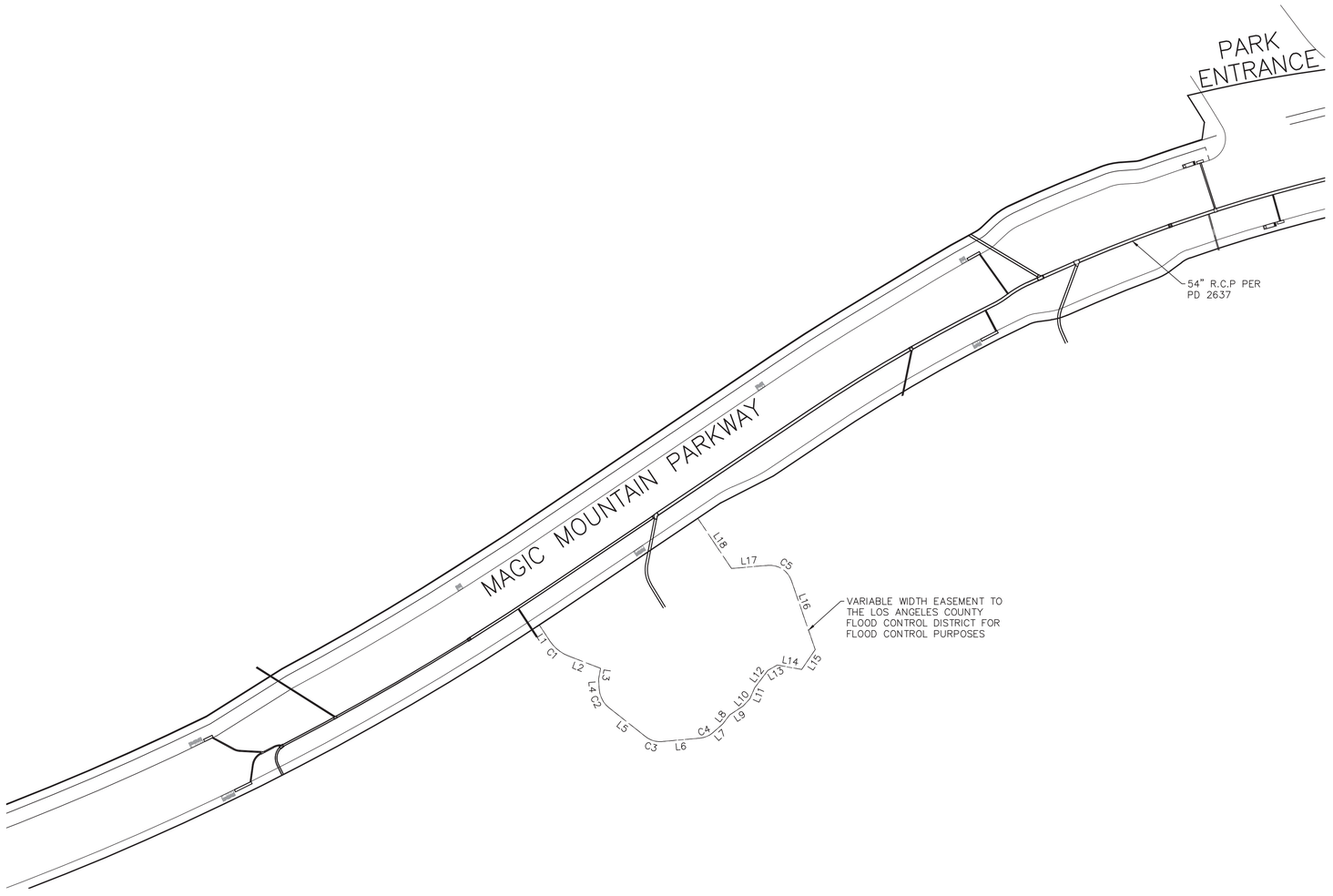
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SHEET 6 OF 9

FOR PLAN CHECK ONLY

DDN 43-F552

G:\Newhall Ranch\61105 Mission Village\61105-01\Storm\PD 2638\WM0077-06_SD Profile.dwg Plotted on May 23, 2018--10:12am by jpatoury



EASEMENT LINE TABLE		
LINE	LENGTH	BEARING
L1	29.54'	N33° 28' 13"W
L2	52.78'	N68° 50' 01"W
L3	17.01'	N09° 41' 07"E
L4	15.29'	N03° 57' 32"W
L5	71.40'	N51° 45' 09"W
L6	58.71'	S84° 59' 18"W
L7	19.79'	S48° 33' 52"W
L8	17.57'	S37° 35' 59"W
L9	24.65'	S56° 39' 16"W
L10	15.37'	S42° 55' 23"W
L11	18.19'	S23° 34' 05"W
L12	33.64'	S37° 08' 04"E
L13	16.66'	S60° 17' 12"E
L14	37.94'	N79° 43' 55"E
L15	36.93'	S34° 30' 24"E
L16	112.11'	S19° 05' 38"W
L17	55.96'	N85° 04' 12"W
L18	92.78'	S33° 58' 35"W

EASEMENT CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	37.03'	60.00'	35°21'48"	19.13'
C2	33.37'	40.00'	47°47'37"	17.72'
C3	26.43'	35.00'	43°15'33"	13.88'
C4	22.25'	35.00'	36°25'26"	11.52'
C5	46.33'	35.00'	75°50'10"	27.26'

N

100 50 0 100 200

GRAPHIC SCALE: 1" = 100'

REVIEWED LAND DEVELOPMENT DIVISION

BY _____ 08/20/18

STORM DRAIN SECTION DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

JASON H. FUKUMITSU 8-16-18 DATE

STORM DRAIN PLANS IN
TRACT No. 61105-1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 ▪ Valencia, CA 91355 ▪ PH: (661) 294-2211 ▪ FX: (661) 294-9890

DWG

SHEET 7 OF 9

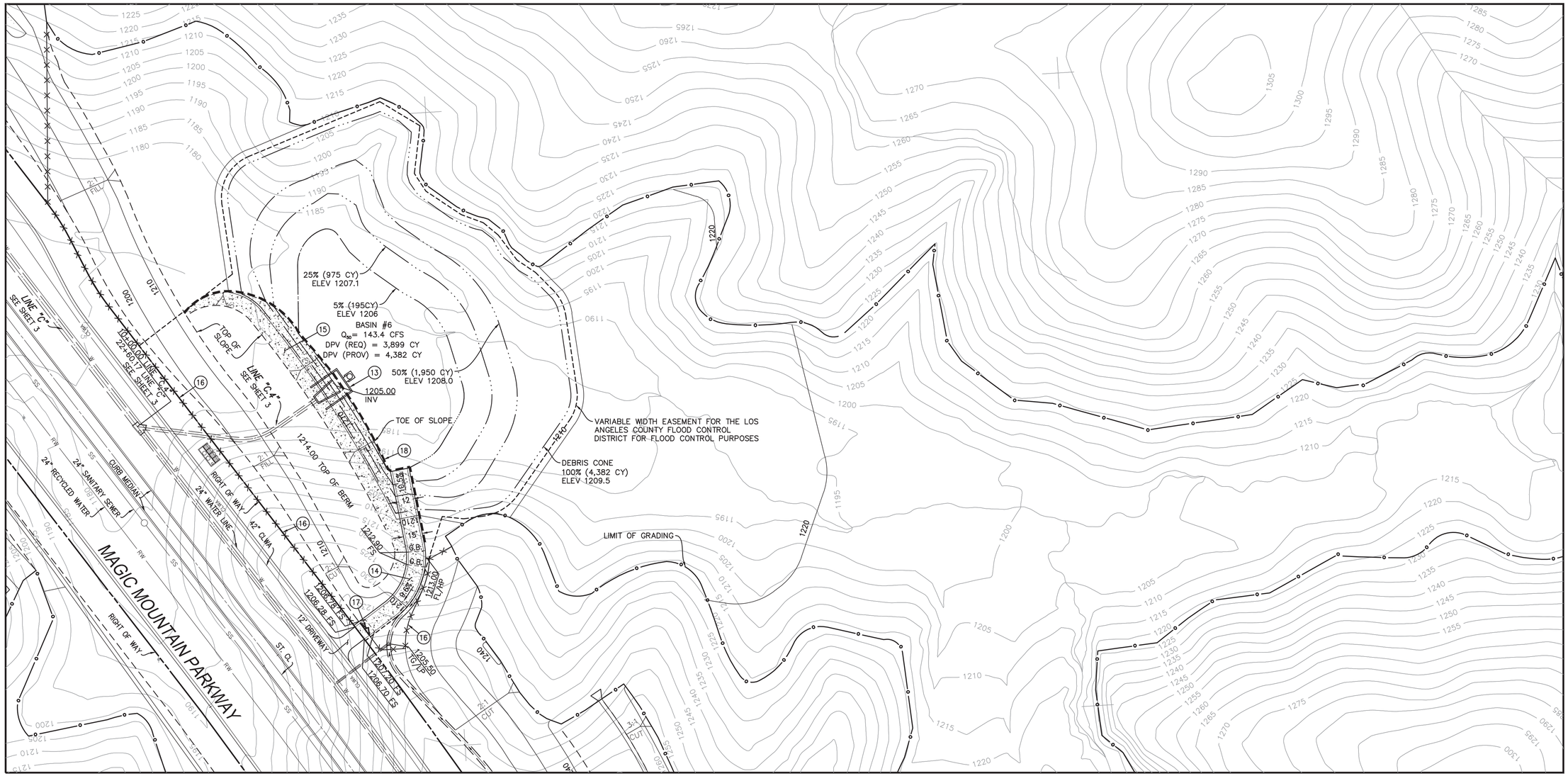
FOR PLAN CHECK ONLY

DDN 43-F552

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FOR PLAN CHECK ONLY

DDN 43-F552



DESILTING BASIN #6

SEE SHEET 3

NOTES:

1. SEE GRADING PLANS FOR GRADING DETAILS OF BASIN.

CONSTRUCTION NOTES:

(13) CONSTRUCT DESILTING INLET PER DETAILS ON SHEET 9

(14) CONSTRUCT 6" THICK CONC. ACCESS ROAD OVER 4" CRUSHED AGGREGATE BASE PER DETAIL ON SHEET 9 (WIDTH PER PLAN)

(15) CONSTRUCT CONC. FACING/SLOPE PROTECTION PER DETAILS ON SHEET 9

(16) CONSTRUCT CHAIN LINK FENCE PER S.P.P.W.C. STD. PLAN NO 600-3 (H=5')

(17) INSTALL DOUBLE DRIVE GATE PER S.P.P.W.C. STD. PLAN NO 600-3 (W=12' PER LEAF)

(18) CONSTRUCT CUTOFF WALL PER DETAIL 18 ON SHEET 9

N

40 20 0 40 80

GRAPHIC SCALE: 1" = 40'

REGISTERED PROFESSIONAL ENGINEER VINCENT PING-NUEN YU No. 2522 Exp. 6/30 GEOTECHNICAL STATE OF CALIFORNIA

CERTIFIED ENGINEERING GEOLOGIST ANDREW A. PRICE No. 1709 STATE OF CALIFORNIA

REVIEWED LAND DEVELOPMENT DIVISION

BY _____ STORM DRAIN SECTION

08/20/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER JASON R. FUKUMITSU No. 40695 CIVIL STATE OF CALIFORNIA

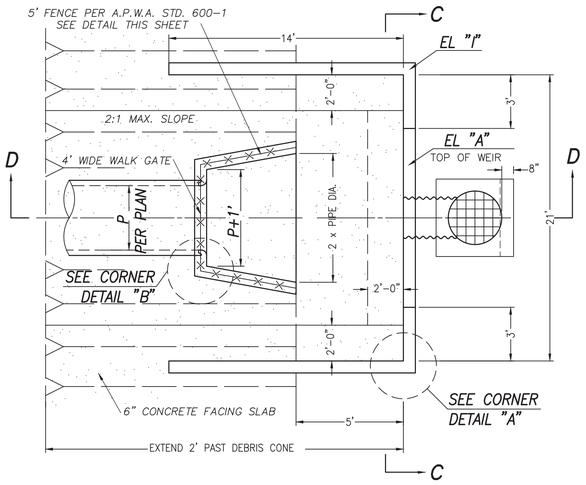
8-16-18

JASON H. FUKUMITSU DATE

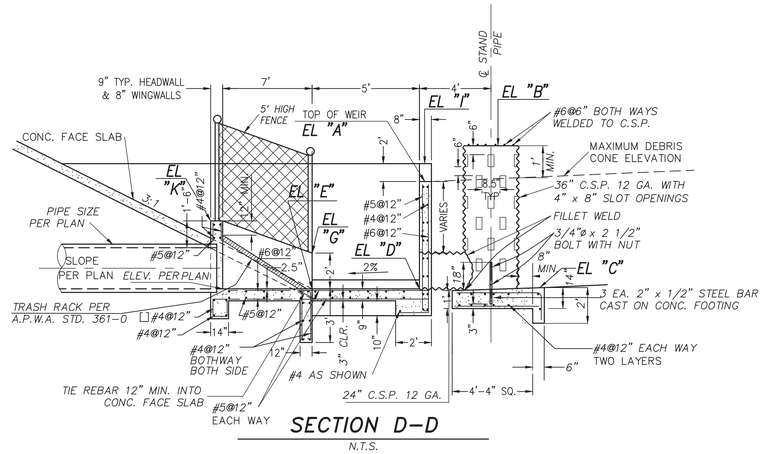
STORM DRAIN PLANS IN
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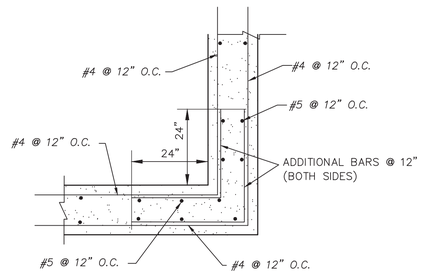


PLAN



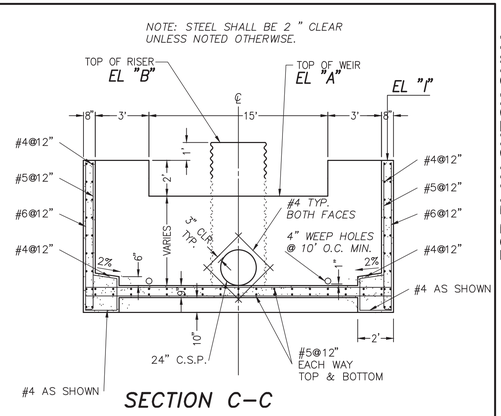
SECTION D-D

N.T.S.



CORNER DETAIL "A"

N.T.S.



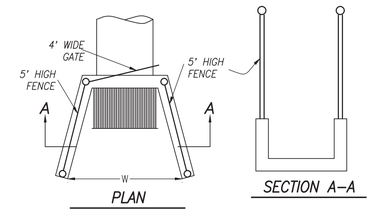
SECTION C-C

DESILTING INLET STRUCTURE

		ELEVATIONS					
SHT. NO.	LINE	A	B	C	D	E	I
4	C-4	1209.50	1212.50	1205.50	1205.25	1205.15	1211.50

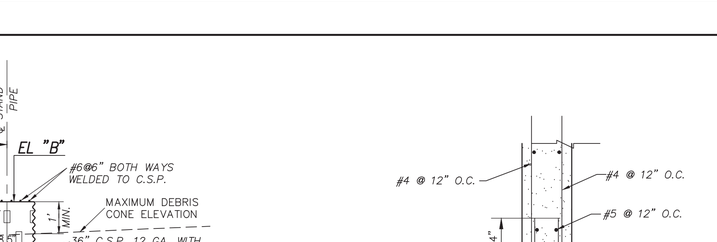
13 DESILTING INLET DETAILS

N.T.S.



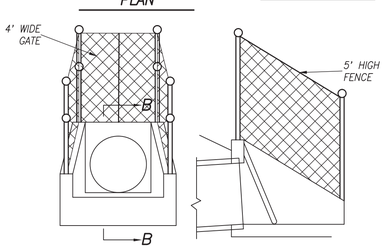
PLAN

SECTION A-A



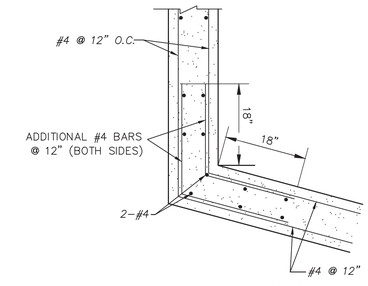
15 CONCRETE FACING SLAB

N.T.S.



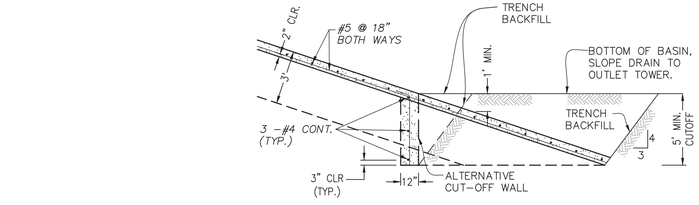
ELEVATION SECTION B-B

CHAIN LINK FENCE, GATE
NOT TO SCALE



CORNER DETAIL "B"

N.T.S.

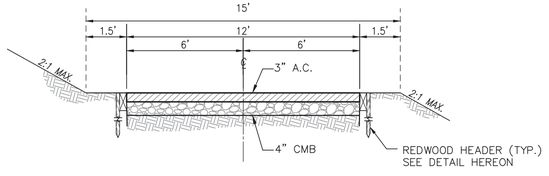


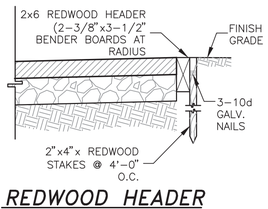
18 CUTOFF WALL DETAIL

N.T.S.

GEOTECHNICAL NOTES:

1. ALL RECOMMENDED MITIGATION MEASURES, PER THE GEOTECHNICAL ENGINEER.
2. THE SOIL ENGINEER OF RECORD SHALL INSPECT AND APPROVE THE FOUNDATION EXCAVATIONS BEFORE STEEL OR CONCRETE IS PLACED.





REDWOOD HEADER

N.T.S.

14 A.C. ACCESS ROAD

N.T.S.

REVIEWED LAND DEVELOPMENT DIVISION

BY STORM DRAIN SECTION 08/20/18 DATE

NO.	REVISION	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

8-16-18

JASON H. FUKUMITSU DATE

STORM DRAIN PLANS IN
TRACT No. 61105-1 P.D. No. 2638
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

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DWG

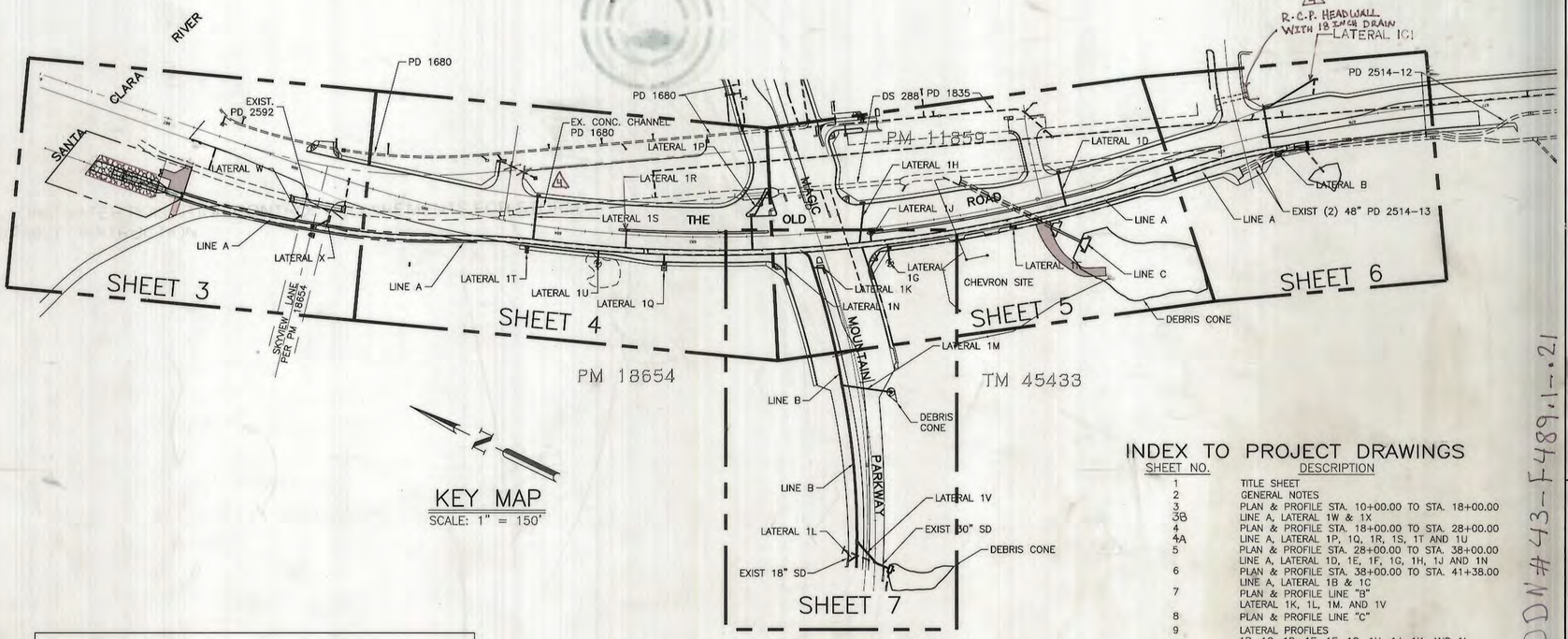
SHEET 9 OF 9

FOR PLAN CHECK ONLY

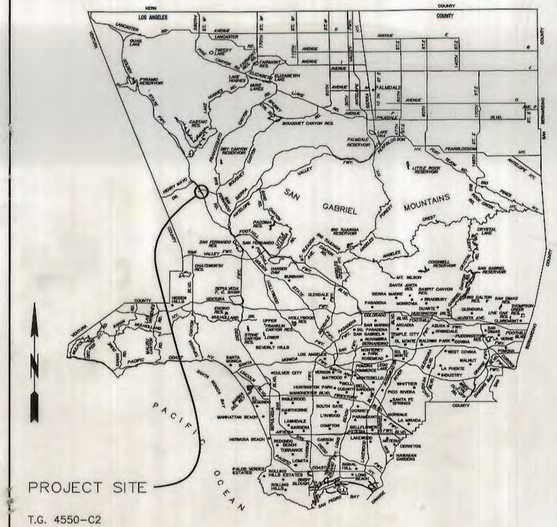
DDN 43-F552

D-4: MTD 1764

CITY OF SANTA CLARITA
MTD NO. 1764



KEY MAP
SCALE: 1" = 150'



LOCATION MAP
N.T.S.

INDEX TO STANDARD DRAWINGS

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

DWG. NO.	DESCRIPTION
3080-2, CASE 6	PIPE BEDDING
6008-1	SAFETY REQUIREMENTS FOR OPEN EXCAVATIONS

AMERICAN PUBLIC WORKS ASSOCIATION

STD. PLAN	TITLE
224-1	SUPPORT FOR CONDUITS ACROSS TRENCHES
320-1	MANHOLE
321-1	MANHOLE
323-1	MANHOLE
322-1	MANHOLE
300-2	CURB OPENING CATCH BASIN
324-1	STANDARD MANHOLE SHAFT
630-2	MANHOLE FRAME AND COVER
635-2	STEEL STEP
309-1	CATCH BASIN REINFORCEMENT
308-1	MONOLITHIC CATCH BASIN CONNECTION
310-1	CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
311-1	FRAME AND GRATING FOR CATCH BASIN
313-1	LOCAL DEPRESSION AT CATCH BASIN
340-1	TRANSITION STRUCTURE
342-1	TRANSITION STRUCTURE
331-2	JUNCTION STRUCTURE
332-1	JUNCTION STRUCTURE
380-2	CONCRETE COLLAR
600-1	CHAIN LINK FENCE
361-0	INCLINED TRASH RACK
221-1	PIPE ANCHORS
383-1	VELOCITY CONTROL RING
341-1	TRANSITION STRUCTURE
334-1	JUCTION STRUCTURE
333-1	JUCTION STRUCTURE
343-1	TRANSITION STRUCTURE

CALTRANS STANDARD PLAN

D80A	CAST-IN-PLACE RCB
D80C	CAST-IN-PLACE RCB
D82	CAST-IN-PLACE RCB MISC. DETAILS
D81A	CAST-IN-PLACE DOUBLE RCB
D81C	CAST-IN-PLACE DOUBLE RCB
D86A	BOX CULVERT WARPED WINGWALLS

NOTE:
MTD 1764 MUST BE CONSTRUCTED CONCURRENTLY WITH OR AFTER PD 2592

As of 7-31-2013
AS BUILT

INDEX TO PROJECT DRAWINGS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES
3	PLAN & PROFILE STA. 10+00.00 TO STA. 18+00.00
3B	LINE A, LATERAL 1W & 1X
4	PLAN & PROFILE STA. 18+00.00 TO STA. 28+00.00
4A	LINE A, LATERAL 1P, 1Q, 1R, 1S, 1T AND 1U
5	PLAN & PROFILE STA. 28+00.00 TO STA. 38+00.00
	LINE A, LATERAL 1D, 1E, 1F, 1G, 1H, 1J AND 1N
6	PLAN & PROFILE STA. 38+00.00 TO STA. 41+38.00
	LINE A, LATERAL 1B & 1C
7	PLAN & PROFILE LINE "B"
	LATERAL 1K, 1L, 1M. AND 1V
8	PLAN & PROFILE LINE "C"
9	LATERAL PROFILES 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1J, 1K, AND 1L
10	LATERAL PROFILES
10A	1M, 1N, 1P, 1Q, 1R, 1S, 1T, 1U, AND 1V
11	LATERAL PROFILES 1M, 1N, 1P, 1Q, 1R, 1S, 1T, 1U, AND 1V
12	RIPRAP OUTLET STRUCTURE, CMP RISER, AND STORM DRAIN
12B	TRANSITION DETAILS.
13	DESILTING INLET STRUCTURE
14	DESILTING INLET STRUCTURE
15	CALTRANS CAST-IN-PLACE RCB STD. D80A
16	CALTRANS CAST-IN-PLACE RCB STD. D80C
17	CALTRANS CAST-IN-PLACE DOUBLE RCB STD. D81A
18	CALTRANS CAST-IN-PLACE DOUBLE RCB STD. D81C
19	CALTRANS CAST-IN-PLACE RCB MISC. DETAILS STD. D82
20	CALTRANS BOX CULVERT WARPED WINGWALLS STD. D86A
21	EASEMENT EXHIBIT

RIPRAP NOTES

1. ROCKS FOR GROUTED RIPRAP SHALL BE GOOD QUALITY BROKEN CONCRETE AND/OR RIVER RUN ROCK. THE SMALLEST DIMENSIONS SHALL EXCEED 6 INCHES AND THE LARGEST DIMENSION SHALL NOT EXCEED 24 INCHES. THE LARGEST DIMENSION SHALL NOT EXCEED 4 TIMES THE SMALLEST DIMENSION.
2. THERE SHALL BE A GROUT BED OF AT LEAST 2 INCHES BENEATH THE FIRST LAYER OF ROCKS. ALL THE VOIDS BETWEEN THE ROCKS SHALL BE FILLED WITH GROUT. MAXIMUM SPACING BETWEEN ROCKS SHALL BE 2 INCHES.
3. SURFACE ROCKS SHALL BE IMBEDED FROM 1/2 TO 2/3 OF THEIR MAXIMUM DIMENSION.

NOTE: CONCRETE MAY BE SUBSTITUTED FOR GROUT.

GEOTECHNICAL ENGINEER

These Plans Have Been Reviewed By and Conform to Recommendations of Reports Dated 6/21/05. 3/20/06, and 3/29/06.

Prepared By Arroyo Geotechnical

REGISTERED PROFESSIONAL ENGINEER ROSS KHIABANI No. 2202 Exp. 6-30-06 GEOTECHNICAL STATE OF CALIFORNIA

Ross Khiabani, PE, GE — DATE 6/6/06
Project Geotechnical Engineer

PRIVATE ENGINEERS NOTICE TO CONTRACTORS

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR SHOWN ON THIS DRAWING.

Jon M. Austin — 5-31-06
RCE SIGNATURE — DATE

APPROVED FOR CONSTRUCTION BY:

HH for RCN 6-7-06
ROBERT G. NEWMAN, P.E., L.S. — DATE
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	OUTLET STRUCTURE REVISED PER SHEETS 3A AND 12A.	Jon M. Austin 9/19/06		9-5-07
2	LACSD 24" VCP SEWER CROSSING	Jon M. Austin 8/29/07		9-12-07
3	REVISIONS DUE TO REVISED F.S.	Jon M. Austin 8/29/07		9-12-07
4	REVISED KEY MAP	Jon T-O 2/22/10		2-23-10

REGISTERED PROFESSIONAL ENGINEER JOHN M. AUSTIN RCE 58726 Exp. 03/31/07 CIVIL STATE OF CALIFORNIA

Jon M. Austin 5-31-06
PROJECT ENGINEER — DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA — MTD. No. 1764
CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE

TITLE SHEET
MTD NO. 1764

DWG | SHEET 1 OF 21

DO'S #43-1489.1-21

DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6552
Storm Drain - MTD 1764
Sheet 1 of 21
01986
10/25/11

GENERAL NOTES

1. A permit shall be obtained and all fees and deposits for construction inspection shall be paid to the Department of Public Works at the Permit Counter, 900 South Fremont Avenue, 8th Floor, prior to starting work under this contract. Also, all other required permits, such as Road Excavation Permits, must be obtained prior to starting work.
2. The contractor shall contact the District Office listed on the "Application for Storm Drain Construction Inspection Form I" to arrange for an acceptable construction start date.
3. Approval of this plan by the County of Los Angeles does not constitute a representation to the accuracy of the location, or the existence or nonexistence of any underground utility, pipe or structure within the limits of this project. This note applies to all sheets.
4. All work shall be in accordance with the latest adopted edition of the "Standard Specifications for Public Works Construction," including supplements, and shall be prosecuted only in the presence of the Director of Public Works/City Engineer.
5. The contractor's attention is directed to Section 7-10.4.1 of the Standard Specifications for Public Works Construction in regard to safety orders.
6. Elevations are in feet above U.S.C. & G.S. Mean Sea Level Datum of 1929, unless otherwise indicated.
7. No concrete shall be placed until the forms and reinforcing steel have been placed, inspected and approved.
8. All structural concrete shall be Type II Portland cement concrete with an ultimate 28 day compressive strength of 4000 psi unless otherwise noted.
9. Transverse reinforcement and transverse joints shall be placed at right angles (or radial) to the conduit centerline except as otherwise shown on the drawings.
10. All steel adjacent to face of concrete shall have a 2-1/2-inch clearance unless otherwise specified.
11. Reinforcement shall be deformed bars of intermediate grade steel, per ASTM A-615-Grade 60.
12. All bar bends and hooks shall conform to the American Concrete Institute "Manual of Standard practice."
13. Dimensions from face of concrete to steel are to centerline of steel unless otherwise noted.
14. All steel that is to be continuous shall have a minimum lap of 30 bar diameters or 18 inches, whichever is greater.
15. All construction joints in the footing or slabs and walls shall be in the same plane. No staggering of joints will be permitted.
16. All exposed edges shall be finished with a 3/4-inch chamfer.
17. Unless otherwise shown, concrete dimensions shall be measured vertically or horizontally and parallel or at right angles (or radial) to the center line of construction.
18. Concrete backfill is required when the pipe has less than one foot of cover. The concrete backfill shall consist of 1:3:5 mix, Portland cement concrete poured from wall to wall of trench and from bottom of trench to a minimum of 4 inches over the top of the pipe.
19. All pipes shall be placed in trench in natural ground and/or compacted fill. The ground level before the trenching shall be at least 3 feet above the top of the pipe elevation, or at finish surface elevation, whichever is less.
20. All backfill and fills outside of street right of way shall be compacted to 90 percent of maximum density as determined by ASTM Soil Compaction Test D 1557-78 Method "D" unless otherwise specified. This shall be certified by a geotechnical engineer. This certification shall be submitted to the City Engineer prior to acceptance of the work by the County.
21. All backfill and fills within street rights of way shall be compacted in accordance with City requirements unless otherwise noted and inspected by the City. The soil compaction shall be certified by a geotechnical engineer.
22. Pipe bedding shall be:

    In accordance with Los Angeles County Department of Public Works Standard Plan No. 3092 unless otherwise noted.
23. Pipe shall be embedded 5 inches into all structures including inlet and head walls, unless otherwise specified.
24. "Unless otherwise specified in the profile on these plans, the pipe shall be manufactured with a minimum concrete cover over the steel in the invert of 0.75 inches for RCP up to 96 inches in diameter and 1.25 inches for pipe greater than 96 inches in diameter."
25. All catch basins within the dedicated street right of way shall be constructed per Standard Plans for Public Works Construction.
26. The contractor shall provide to the satisfaction of the City Engineer and the Director of Public Works a drainage system for contributory flows to be operable at all times until this storm drain system is accepted for maintenance. The design of the drainage system must be prepared under the direction of a Civil Engineer.
27. All references on this plan to the County Engineer, Road Department, or Flood Control District shall apply to the appropriate elements of the Department of Public Works.
28. Existing utilities shall be maintained in place by the contractor, unless otherwise noted.
29. Where the utilities are indicated on the Drawings to be supported, said supports shall be in accordance with Standard Plans for Public Works Construction No. 224 unless otherwise indicated.
30. All openings resulting from the cutting or partial removal of existing culverts, pipes or similar structures shall be sealed with 8 inches of Brick and Mortar or 6 inches of concrete, unless otherwise shown.
31. Manholes shall use the Standard Plans for Public Works Construction No. 630 for the "Frame and Cover" and No. 635 for the "Standard Drop Step."
32. This storm drain will not be field accepted until the streets have been paved, manholes brought to grade, and the system cleaned to the satisfaction of the Director of Public Works.
33. A NPDES Permit from the Regional Water Quality Control Board is required before any discharge of non-storm water into the storm drain is allowed.
34. The latest revised standard plan or drawing shall be used unless otherwise noted.

STORMWATER POLLUTION CONTROL REQUIREMENTS FOR STORM DRAIN CONSTRUCTION

A. NOTES:

1. Eroded sediments and other pollutants must be retained on site and may 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 must be protected from being transported from the site by the forces of wind or water.
3. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing 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 may not be washed into the drainage system.
4. Excess or waste concrete may not be washed into the public 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.
5. Trash and construction-related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
6. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.
7. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.

B. The following BMPs as outlined in, but not limited to, the Best Management Practice Handbook, California Stormwater Quality Task Force, Sacramento, California 2003, or the latest revised edition, may apply during construction (additional measures may be required if deemed appropriate by inspector):

EC-1 SCHEDULING	WE-1 WIND EROSION CONTROL
EC-10 VELOCITY DISSIPATION DEVICES	NS-1 WATER CONSERVATION PRACTICES
EC-11 SLOPE DRAINS	NS-10 VEHICLE & EQUIPMENT MAINTENANCE
EC-12 STREAMBANK STABILIZATION	NS-11 PILE DRIVING OPERATIONS
EC-13 POLYACRYLAMIDE	NS-12 CONCRETE CURING
EC-2 PRESERVATION OF EXISTING VEGETATION	NS-13 CONCRETE FINISHING
EC-3 HYDRAULIC MULCH	NS-14 MATERIAL OVER WATER
EC-4 HYDROSEEDING	NS-15 DEMOLTION ADJACENT TO WATER
EC-5 SOIL BINDERS	NS-16 TEMPORARY BATCH PLANTS
EC-6 STRAW MULCH	NS-2 DEWATERING OPERATIONS
EC-7 GEOTEXTILES AND MATS	NS-3 PAVING AND GRINDING OPERATIONS
EC-8 WOOD MULCHING	NS-4 TEMPORARY STREAM CROSSING
EC-9 EARTH DIKES AND DRAINAGE SWALES	NS-5 CLEAR WATER DIVERSION
SE-1 SILT FENCE	NS-6 ILLICIT CONNECTION/DISCHARGE
SE-10 STORM DRAIN INLET PROTECTION	NS-7 POTABLE WATER/IRRIGATION
SE-11 CHEMICAL TREATMENT	NS-8 VEHICLE AND EQUIPMENT CLEANING
SE-2 SEDIMENT BASIN	NS-9 VEHICLE AND EQUIPMENT FUELING
SE-3 SEDIMENT TRAP	WM-1 MATERIAL DELIVERY AND STORAGE
SE-4 CHECK DAMS	WM-10 LIQUID WASTE MANAGEMENT
SE-5 FIBER ROLLS	WM-2 MATERIAL USE
SE-6 GRAVEL BAG BERM	WM-3 STOCKPILE MANAGEMENT
SE-7 STREET SWEEPING AND VACUUMING	WM-4 SPILL PREVENTION AND CONTROL
SE-8 SANDBAG BARRIER	WM-5 SOLID WASTE MANAGEMENT
SE-9 STRAW BALE BARRIER	WM-6 HAZARDOUS WASTE MANAGEMENT
TR-1 STABILIZED CONSTRUCTION ENTRANCE/EXIT	WM-7 CONTAMINATED SOIL MANGEMENT
TR-2 STABILIZED CONSTRUCTION ROADWAY	WM-8 CONCRETE WASTE MANAGEMENT
TR-3 ENTRANCE/OUTLET TIRE WASH	WM-9 SANITARY/SEPTIC WASTE MANAGEMENT

NO DUMPING • DRAINS TO OCEAN •

CATCH BASIN STENCILING

"NO DUMPING, DRAINS TO OCEAN" STENCIL TO BE PLACED ON ALL CATCH BASINS/INLETS.

AS OF 7-31-2013
AS BUILT

HYDRAULIC ELEMENTS
50 YR. FREQUENCY

LINE	PIPE FROM STA.	REACH TO STA.	Q (CFS)	SECTION	VELOCITY (FPS)	REMARKS
A	11+22.28	11+74.41	1180	Trap. Channel	32.56	*
A	12+00.00	12+88.68	1180	Trap. Channel	31.88	
A	13+08.69	16+83.83	1180	10'Wx8'H RCB	15.63	
A	16+83.83	18+00.00	1132	10'Wx8'H RCB	14.19	***
A	18+00.00	21+92.40	1132	10'Wx8'H RCB	24.18	***
A	21+92.40	24+86.22	1132	10'Wx8'H RCB	26.94	***
A	24+90.06	27+51.13	1132	10'Wx7'H RCB	28.51	***
A	27+51.13	28+00.00	1126	10'Wx7'H RCB	27.24	***
A	28+00.00	28+84.76	1126	10'Wx7'H RCB	27.16	***
A	28+84.76	34+41.09	1077	10'Wx7'H RCB	27.61	***
A	34+41.09	38+00.00	1016	10'Wx7'H RCB	18.96	
A	38+00.00	40+44.68	1016	10'Wx7'H RCB	18.50	
A	40+44.68	40+84.00	1006	10'Wx7'H RCB	15.54	
B	0+05.00	0+37.62	50	42" RCP	19.70	
B	0+37.62	03+27.54	47	42" RCP	20.41	
B	03+32.33	06+96.13	42	42" RCP	18.38	
B	07+00.91	07+59.62	3	42" RCP	9.11	
C	0+05.00	1+20.26	75	54" RCP	6.37	
D	10+00.00	14+15.00	6	30" PVC	10.7	
D	14+36.00	14+59.90	12	30" PVC	13.1	
LATERAL 1B	0+05.00	0+11.27	4	18" RCP	15.7	
LATERAL 1C	0+05.00	0+93.00	8	18" RCP	4.5	
LATERAL 1C	0+97.48	1+24.48	5	18" RCP	2.8	**
LATERAL 1C1	0+97.48	2+36.68	3	18" RCP	7.9	**
LATERAL 1D	0+05.00	0+80.00	2	18" RCP	7.5	
LATERAL 1F	0+05.00	0+11.00	3	18" RCP	12.60	
LATERAL 1G	0+05.00	0+12.00	3	18" RCP	17.9	
LATERAL 1G	0+14.00	0+49.62	1	18" RCP	1.0	
LATERAL 1H	0+05.00	0+11.00	4	18" RCP	17.4	
LATERAL 1J	0+05.00	0+99.00	1	18" RCP	1.0	
LATERAL 1K	0+01.75	0+20.57	4	18" RCP	19.4	
LATERAL 1L	0+02.67	0+23.53	6	18" RCP	13.9	
LATERAL 1M	0+02.00	01+19.67	5	18" RCP	9.4	**
LATERAL 1N	0+05.00	0+56.00	4	18" RCP	15.4	
LATERAL 1P	0+05.00	0+85.00	2	24" RCP	1.1	
LATERAL 1P	0+88.00	01+53.95	1	24" RCP	0.6	
LATERAL 1Q	0+05.00	0+20.00	6	18" RCP	12.0	
LATERAL 1Q	0+23.00	0+27.00	1	12" PVC	1.7	**
LATERAL 1R	0+05.00	0+45.00	1	18" RCP	9.7	
LATERAL 1S	0+05.00	1+07.00	3	24" RCP	8.4	
LATERAL 1T	0+05.00	0+13.00	4	18" RCP	2.3	
LATERAL 1T	0+18.00	0+45.00	1	12" PVC	9.4	**
LATERAL 1U	0+05.00	0+35.55	1	24" RCP	0.6	
LATERAL 1V	0+03.66	0+78.24	36	30" RCP	22.6	
LATERAL 1V	0+83.02	1+01.02	24	30" RCP	20.2	
LATERAL 1W	0+05.00	0+24.80	2	18" RCP	14.5	
LATERAL 1X	0+05.00	0+32.65	3	18" RCP	12.5	
LATERAL 1Y	0+05.00	0+68.99	3	18" RCP	12.5	
LATERAL 1Z	0+05.00	0+23.29	2	18" RCP	27.2	

* Discharges into a Natural Drainage Course (Santa Clara River) *** Steel clearance=3.5", Concrete mix=680-B-5,000
** Not to be maintained by LACFCD

OCEAN-Pro CATCH BASIN INSERT SCHEDULE

Catch Basin width	3.5'	7'	10'	14'	21'	28'
OCEAN-Pro Debris Gate	1	2	2	3	5	6
Pollutant Filters	3	5	5	10	14	18
Filter Tray	2	3	3	5	7	9

CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
2. CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
3. CONSTRUCT 36" RCP (D-LOAD PER PROFILE)
4. CONSTRUCT 42" RCP (D-LOAD PER PROFILE)
5. CONSTRUCT 54" RCP (D-LOAD PER PROFILE)
6. CONSTRUCT 10' x 8' RCB PER CALTRANS STD D80A ON SHEET 16.
7. CONSTRUCT 10' x 7' RCB PER CALTRANS STD D80A ON SHEET 16.
8. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER APWA STD 323-1.
9. CONSTRUCT TRANSITION STRUCTURE PER CALTRANS DETAIL D86A ON SHEET 20.
10. CONSTRUCT TRANSITION STRUCTURE SINGLE RCB TO SINGLE RCB PER APWA STD 341-1.
11. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
12. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET > 30" PER APWA STD 333-1.
13. CONSTRUCT TRANSITION STRUCTURE DOUBLE RCP TO SINGLE RCB PER MODIFIED APWA STD 342-1 & 343-1 PER DETAIL 1 SHEET 12.
14. CONSTRUCT RIPRAP OUTLET STRUCTURE PER DETAIL 2 ON SHEET 12.
15. CONSTRUCT CONCRETE BULKHEAD PER DETAIL 4 ON SHEET 12.
16. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER APWA STD. 332-1.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2 B=3'-8", Vupstream ≥2'-6". (WxV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT. DEBRIS GATES, FILTER TRAY, AND POLLUTANT FILTERS PER SCHEDULE ON SHEET 2.
18. GRATING CATCH BASIN PER STREET PLANS. NOT TO BE MAINTAINED BY LACFCD.
19. 24" DIA. PERFORATED CMP RISER WITH ASPHALT APRON PER GRADING PLANS.
20. CONSTRUCT DESILTING INLET STRUCTURE PER DETAIL H ON SHEETS 13 & 14.
21. CONSTRUCT CONCRETE COLLAR FOR RCP PER APWA STD. 380-2.
22. CONSTRUCT MANHOLE PIPE TO PIPE PER APWA STD. 320-1.
23. CONSTRUCT 78" RCP (D-LOAD PER PROFILE)
24. CONSTRUCT 30" RCP (D-LOAD PER PROFILE)
25. CONSTRUCT 4' WIDE, 4" THICK PCC PEDESTRIAN ACCESS TO MANHOLE PER DETAIL 3, SHEET 12.
26. CONSTRUCT CHAIN LINK FENCE AND GATE PER APWA STD. 600-2.
27. CONSTRUCT 16' WIDE DRIVEWAY APPROACH PER APWA 110-1, TYPE A. W=16', X=3', Y=4'. DRIVEWAY SHALL BE 6" THICK PCC.
28. 12" PVC, SCH40 PER GRADING PLANS. NOT TO BE MAINTAINED BY LACFCD.
29. CONSTRUCT MANHOLE PIPE TO PIPE PER APWA STD. 322-1.
30. CONSTRUCT 6" THICK PCC ACCESS ROAD.
31. CURBSIDE GRATING CATCH BASIN PER CHEVRON GRADING PLANS. NOT TO BE MAINTAINED BY LACFCD.
32. ⚠1 CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER APWA STD. 331-2.

LEGEND

(A / 10) — A = SECTION, 10 = SHEET

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

6-7-00
DATE

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
⚠1	REVISED CONSTRUCTION NOTES	8/29/07		9-12-07

REGISTERED PROFESSIONAL ENGINEER — JON M. AUSTIN — RCE 58726 — Exp. 03/31/07 — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER — DATE 5-31-07

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD No. 1764

CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
NOTES

DWG | SHEET 2 OF 21

DRAWING NUMBER

Storm Drain - MTD 1764
Sheet 2 of 21

01986

10/25/11

SCALE: HOR. 1"= 40'
VERT. 1"= 8'

Q_{50} = 1180 cfs
V_{MAX} = 32.56 fps

Q_{50} = 1160 cfs
V_{MAX} = 15.63 fps

Q_{50} = 1132 cfs
V_{MAX} = 14.19 fps

SANTA CLARA RIVER

CL SKYVIEW LANE STA. 16+77.64

CL MH NO. 1 STA. 17+58.69 RIM=1075.48

EXISTING GROUND (FINISHED GROUND)

PROVIDE SUPPORT PER APWA STD. 224-1

H.G.L.

EXISTING GROUND

HGL

FLOW LINE

14.57%

1.00% MIN.

5'-6"

14'

4'-6"

2:1

1:1

STA. 11+24.41 1037.82 FL. TOP OF RIPRAP

STA. 11+74.41 BEGIN TRANSITION 1038.32 FL. TOP OF RIPRAP

STA. 12+00 END TRANSITION

CONSTRUCT 166.4 LF RIPRAP OUTLET STRUCTURE PER DETAILS ON SHEET 12

STA. 12+88.68 1055.31 INV. BEGIN TRANS.

STA. 13+08.68 1059.06 END TRANS.

EXIST. 18"SS 1048.12 INV.

13+39.89 BC 1059.21 INV. RELOCATE 24" GAS (SO. CAL. GAS)

EXIST. 8" GAS (SO. CAL. GAS)

RELOCATE ELEC. CONDUIT (FIELD VERIFY)

16+16.55 EC 1060.59 INV.

LATERAL "1W" 16+22.98 1062.59 INV.

36" STORM DRAIN 16+83.83 1063.37 INV.

LATERAL "1X" 16+83.31 1062.89 INV.

17+20.12 BC 1061.11 INV.

RELOCATED PROPOSED 16"OIL EXXONMOBIL 1064.20 INV.

1061.51 INV.

S=0.50%

CONSTRUCT 375.14 LF 10'W x 8'H RCB
SEE DETAILS ON SHEETS 15 & 16
USE CONC & REINF FOR 20' MAX. EARTH COVER
PER CALTRANS STANDARD PLAN D80C ON SHEET 16.

CONSTRUCT 116.17 LF 10'W x 8'H RCB
SEE DETAILS ON SHEETS 15 & 16

TRANSITION STRUCTURE PER CALTRANS STD. PLAN D86A
SEE SHEET 13.

LINE 'A'

MATCHLINE SEE SHEET 4
STA. 18+00.00

1070
1050
1030

10 11 12 13 14 15 16 17 18

NJ OF 7-31-2013
AS BUILT

LEGEND

A — SECTION
10 — SHEET

REMOVE EXIST. SD

EXISTING 18" SD TO BE REMOVED

PROPOSED 24" SD PER CALTRANS EA 07-187014

PROPOSED CL "THE OLD ROAD"

CL MH NO. 1 STA. 17+58.69 RIM=1074.33

EXISTING PVC PER GRADING PLAN 1865-4

REMOVE EX. SD

END REMOVE EX. SD

EXISTING CONC. CHANNEL PER PD 1680 TO REMAIN

R/W

CL INTERSECTION STA. 16+77.64

REMOVE EXIST. SD

EXIST. CATCH BASIN WITH INSERT TO REMAIN

EXIST. C&G

HORZ. N60°37'32"W 30.41'
LATERAL "1W" SEE SHEET 11

N16°09'05"W

CL CB NO. 1X5 STA.685+65.327 TOP TC=1074.0 INV=1067.44 W=14', V=6.56'

HORZ. N51°52'44"E 36.22'
LATERAL "1X" SEE SHEET 10

CL INT 16+83.31= 0+00.00 — LATERAL "1X"

CL INT 16+22.98= 0+00.00 — LATERAL "1W"

CONNECT EXIST 36" SD STA. 16+84.04

REMOVE EX. CATCH BASIN

RELOCATE CDS UNIT

EXIST SEWER PC. 11819

EXIST 36" RCP PER PD 2592 TO REMAIN

FUTURE, PUBLIC ENTRANCE

SKYVIEW LANE (PUBLIC ROAD)

R/W

PROPOSED 20' WIDE EASEMENT TO LACFCD FOR COVERED STORM DRAIN, APPURTENANT STRUCTURES, AND INGRESS AND EGRESS PURPOSES. SEE SHEET 21 FOR DATA.

REMOVE EX. A.C. ROAD

JOIN EXISTING A.C. ACCESS ROAD

EASEMENT TO LACFCD FOR FLOOD CONTROL PURPOSES SEE SHEET 21 FOR DATA.

EASEMENT TO THE CITY OF SANTA CLARITA FOR INGRESS AND EGRESS PURPOSES. SEE SHEET 21 FOR DATA.

DAYLIGHT

50'

N06°29'17"W 339.86'

BEDDING MATERIAL BELOW BOTTOM OF RCB SHALL BE 12" C.A.B.

TYPICAL SECTION — RCB
No Scale
STA 12+88.68 — (SEE SHEET 16 FOR RCB DETAILS)

BOTTOM OF CUT-OFF WALL

FLOW

6" AC ON 4" CAB

S=2% S=2%

AC PAVEMENT DETAIL
No Scale

STA. 11+22.28 BEGIN TRAP CHANNEL

STA. 11+74.41 BEGIN TRANSITION

STA. 12+00.00 END TRANSITION

STA. 12+88.68 BEGIN TRANS.

STA. 13+08.68 END TRANS.

B 12

A 12

S=5%

13+39.89 BC

1059.21

1059.06

1065.00

LINE 'A'

40'X40' TURNAROUND

PLAN
SCALE: 1" = 40'

40' 20' 0 40' 80'
GRAPHIC SCALE

CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
6. CONSTRUCT 10' x 8' RCB PER CALTRANS STD D80A ON SHEET 16.
8. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER APWA STD 323-1.
9. CONSTRUCT TRANSITION STRUCTURE PER CALTRANS DETAIL D86A ON SHEET 20.
11. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
12. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET > 30" PER APWA STD 333-1.
14. CONSTRUCT RIPRAP OUTLET STRUCTURE PER DETAIL 2 ON SHEET 12.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2 B=3'-8", Wupstream 2'-6". (WwV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT, 3 DEBRIS GATES, 5 FILTER TRAYS, AND 10 POLLUTANT FILTERS.
25. CONSTRUCT 4' WIDE, 4" THICK PCC PEDESTRIAN ACCESS TO MANHOLE PER DETAIL 3 ON SHEET 12. CONSTRUCT MINIMUM 5'X5' CONCRETE PAD AROUND MANHOLE LID.
26. CONSTRUCT CHAIN LINK FENCE AND GATE PER APWA STD. 600-2.
27. CONSTRUCT 16' WIDE DRIVEWAY APPROACH PER APWA STD. 110-1, TYPE A. W=16', X=3', Y=4'. DRIVEWAY SHALL BE 6" THICK PCC.
30. CONSTRUCT 6" THICK A.C. ACCESS ROAD PER SECTION HEREIN.

Curve Data				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
A	1640.36'	276.67'	138.67'	09°39'48"
B	1640.36'	263.28'	131.92'	09°11'46"

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

DATE 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	OUTLET STRUCTURE REVISED PER SHEET 3A. (VOID SHEET 3)	9/19/06		4-5-07

REGISTERED PROFESSIONAL ENGINEER — JON M. AUSTIN — RCE 58726 — Exp. 03/31/07 — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER 4/4/06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD.. No. 1764
CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM A
FROM STA. 10+00 TO STA. 18+00

DWG | SHEET 3 OF 21

DRAWING NUMBER

Storm Drain - MTD 1764
Sheet 3 of 21

01986

10/25/11

SCALE: HOR. 1"= 40'
VERT. 1"= 8'

Q_{50} = 1180 cfs
V_{MAX} = 32.56 fps

Q_{50} = 1180 cfs
V_{MAX} = 15.63 fps

Q_{50} = 1132 cfs
V_{MAX} = 14.19 fps

CL SKYVIEW LANE
STA. 16+77.64

CL MH NO. 1
STA. 17+58.69
RIM=1075.48

EXISTING GROUND
(FINISHED GROUND)

PROVIDE SUPPORT PER
APWA STD. 224-1

HGL
SANTA CLARA RIVER

1070

SANTA CLARA RIVER

EXISTING
GROUND

ELEV 1055.31'

HGL

H.G.L.

H.G.L.

S=0.50%

1050

HGL

ELEV 1037.27'

ELEV 1038.32'

2.00% MIN.

4'-6"

EXISTING
ARMORFLEX

14'

2

1

1.5

1030

4'-6"

EXIST 30" R.C.
PIPE @ LEFT

EXIST 6" DIP
FORCE MAIN
@LEFT

STA. 12+88.68
BEGIN TRANS.
1055.31

STA. 13+08.69
END TRANS.
1059.06

13+39.89 BC
1059.21' INV.

EXIST. 18"SS
1048.12' INV.

RELOCATE 24" GAS
(SO. CAL. GAS)

EXIST. 8" GAS
(SO. CAL. GAS)

RELOCATE ELEC. CONDUIT
(FIELD VERIFY)

16+16.55 EC
1060.59 INV.

LATERAL "1W" 16+22.98
1062.59 INV.

36" STORM DRAIN 16+83.83
1063.37 INV.

LATERAL "1X" 16+83.31
1062.89 INV.
17+03.11 BC
1061.11 INV.

RELOCATED PROPOSED
18"OIL EXXONMOBIL
1064.20 INV.

1061.51 INV.

TRANSITION STRUCTURE PER CALTRANS STD. PLAN D86A
SEE SHEET 13.

CONSTRUCT 375.14 LF 10'W x 8'H RCB
SEE DETAILS ON SHEETS 15 & 16
USE CONC & REINF FOR 20' MAX. EARTH COVER
PER CALTRANS STANDARD PLAN D80C ON SHEET 16.

CONSTRUCT 116.17 LF 10'W x 8'H RCB
SEE DETAILS ON SHEETS 15 & 16

LINE 'A'

STA 11+22.28
1037.27

BOTTOM OF
CUT-OFF WALL

STA 11+74.41
1038.32'
BEGIN TRANSITION

STA 12+00
END
TRANSITION

CONSTRUCT 166.4 LF
RIPRAP OUTLET STRUCTURE
PER DETAILS ON
SHEET 12 AND 12A

MATCHLINE SEE SHEET 4
STA. 18+00.00

AS BUILT
As of 7-31-2013

10 11 12 13 14 15 16 17 18

LEGEND

- A / 10 — SECTION / SHEET
- BEDDING MATERIAL BELOW BOTTOM OF RCB SHALL BE 12" C.A.B.
- EXISTING ARMORFLEX NOT TO BE MAINTAINED BY LACFCD
- TYPICAL SECTION – RCB No Scale
  STA 12+88.68 – (SEE SHEET 16 FOR RCB DETAILS)
- 6" AC ON 4" CAB, S=2% S=2%
  AC PAVEMENT DETAIL No Scale

SANTA CLARA RIVER

BEGIN TRAP CHANNEL STA 11+22.28

STA 11+74.41 BEGIN TRANSITION

STA 12+00.00 END TRANSITION

STA 12+88.68 BEGIN TRANS.

STA 13+08.89 END TRANS.

C 12 | B 12 | A 12

EXISTING CONC. CHANNEL PER PD 1680 TO REMAIN

PROPOSED 24" SD PER CALTRANS EA 07-187014 PROPOSED CL "THE OLD ROAD"

REMOVE EXISTING SD

EXISTING 18" SD TO BE REMOVED

CL MH NO. 2
STA. 17+56.69
RIM=1074.33

REMOVE EX. SD

END REMOVE EX. SD

EXISTING PVC PER GRADING PLAN 18654

CL INTERSECTION STA. 16+77.64

REMOVE EXIST. SD
EXIST. CATCH BASIN
TO BE REMOVED

CB WITH INSERT TO REMAIN
EXIST. C&G

HORZ. N60°37'32"W 30.41'
LATERAL "1W" SEE SHEET 11

CL INT 16+22.98=
0+00.00 = LATERAL "1W"

CONNECT EXIST 36" SD
STA. 16+84.04

REMOVE EX. CATCH BASIN

RELOCATE CDS UNIT

EXIST SEWER PC 11819

CL CB NO.10RX5
STA.685+65.327 TOR
TC=1074.0
INV=1067.44
W=14', V=5.56'

HORZ. N51°52'44"E 36.22'
LATERAL "1X" SEE SHEET 10

CL INT 16+83.31=
0+00.00 – LATERAL "1X"

EXIST 36" RCP
PER PD 2592 TO REMAIN
FUTURE, PUBLIC ENTRANCE

SKYVIEW LANE
(PRIVATE AND FUTURE)

MATCHLINE SEE SHEET 4
STA. 18+00.00

PROPOSED 20' WIDE EASEMENT TO LACFCD FOR COVERED STORM DRAIN, APPURTENANT STRUCTURES, AND INGRESS AND EGRESS PURPOSES. SEE SHEET 21 FOR DATA.

REMOVE EX. A.C. ROAD

JOIN EXISTING A.C. ACCESS ROAD

EASEMENT TO LACFCD FOR FLOOD CONTROL PURPOSES SEE SHEET 21 FOR DATA.

EASEMENT TO THE CITY OF SANTA CLARITA FOR INGRESS AND EGRESS PURPOSES. SEE SHEET 21 FOR DATA.

DAYLIGHT PROTECT EXISTING ARMOR FLEX

N06°29'17"W 339.89'

40'X40' TURNAROUND

BOTTOM OF CUT-OFF WALL

FLOW

PLAN

SCALE: 1" = 40'

40' 20' 0' 40' 80'
GRAPHIC SCALE

CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
6. CONSTRUCT 10' x 8' RCB PER CALTRANS STD D80A ON SHEET 16.
8. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER APWA STD 323-1.
9. CONSTRUCT TRANSITION STRUCTURE PER CALTRANS DETAIL D86A ON SHEET 20.
11. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
12. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET > 30" PER APWA STD STD 333-1.
14. CONSTRUCT RIPRAP OUTLET STRUCTURE PER DETAIL 2 ON SHEET 12A.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2 B=3'-8", Vupstream 2'-6". (WxV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT, 3 DEBRIS GATES, 5 FILTER TRAYS, AND 10 POLLUTANT FILTERS.
25. CONSTRUCT 4' WIDE, 4" THICK PCC PEDESTRIAN ACCESS TO MANHOLE PER DETAIL 3 ON SHEET 12. CONSTRUCT MINIMUM 5'X5' CONCRETE PAD AROUND MANHOLE LID.
26. CONSTRUCT CHAIN LINK FENCE AND GATE PER APWA STD. 600-2.
27. CONSTRUCT 16' WIDE DRIVEWAY APPROACH PER APWA STD. 110-1, TYPE A. W=16', X=3', Y=4'. DRIVEWAY SHALL BE 6" THICK PCC.
30. CONSTRUCT 6" THICK A.C. ACCESS ROAD PER SECTION HEREIN.

Curve Data

CURVE	RADIUS	LENGTH	TANGENT	DELTA
A	1640.36'	276.67'	138.67'	09°39'48"
B	1640.36'	263.28'	131.92'	09°11'46"

APPROVED FOR CONSTRUCTION BY:

ROBERT C. NORMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

DATE 4-5-07

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	Outlet Structure Revised per sheet 3A (Void Sheet 3)	9-19-06		4-5-07

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER 9/19/06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

CITY OF SANTA CLARITA

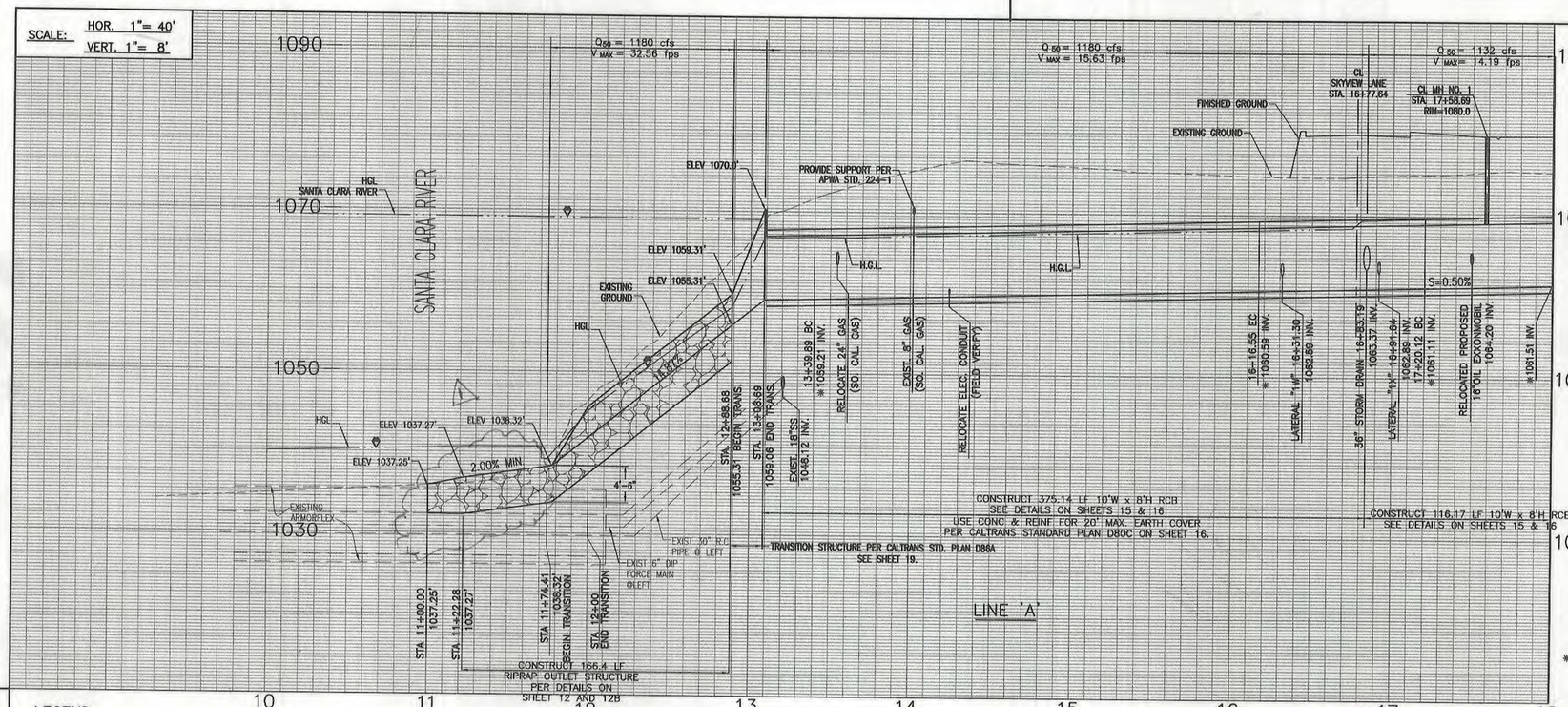
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM A
FROM STA. 10+00 TO STA. 18+00

DWG | SHEET 3A OF 21

DRAWING NUMBER
Storm Drain - MTD 1764
Sheet 3A of 21
3A
01986
10/25/11

DRAWING
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
DESIGNED BY PART NUMBER 6582
DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
DESIGNED BY PART NUMBER 6582
NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
DESIGNED BY PART NUMBER 6582
01986
10/2/11
Storm Drain - MTD 1764
Sheet 3B of 21

SCALE: HOR. 1"= 40'
VERT. 1"= 8'



AS OF 7-31-2013
AS BUILT

REGISTERED PROFESSIONAL ENGINEER JEFFREY D. MCCAIG NO. C30059 10/30/2010 CIVIL STATE OF CALIFORNIA

* ALL RCB INVERT ELEVATIONS TO BE 1" HIGHER THAN DESIGN INVERT.
** NOT TO BE MAINTAINED BY LACFCD.

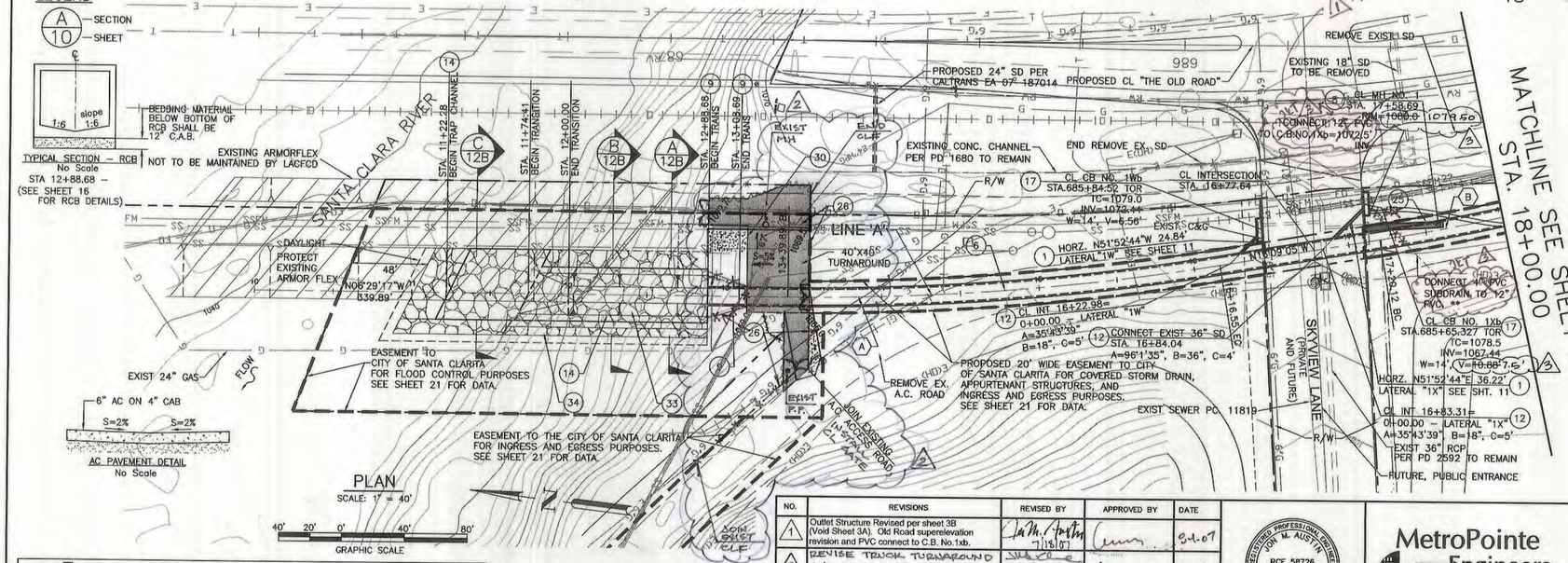
CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
6. CONSTRUCT 10' x 8' RCB PER CALTRANS STD D80A ON SHEET 16.
8. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER APWA STD 323-1.
9. CONSTRUCT TRANSITION STRUCTURE PER CALTRANS DETAIL D86A ON SHEET 20.
11. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
12. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET > 30" PER APWA STD STD 333-1.
14. CONSTRUCT RIPRAP OUTLET STRUCTURE PER DETAIL 2 ON SHEET 12A.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2 MINIMUM B=3'-8", MINIMUM Vupstream 2'-6". (WxV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT, 3 DEBRIS GATES, 5 FILTER TRAYS, AND 10 POLLUTANT FILTERS.
25. CONSTRUCT 4' WIDE, 4" THICK PCC PEDESTRIAN ACCESS TO MANHOLE PER DETAIL 3 ON SHEET 12. CONSTRUCT MINIMUM 5'X5' CONCRETE PAD AROUND MANHOLE LID.
26. CONSTRUCT CHAIN LINK FENCE AND GATE PER APWA STD. 600-2.
27. CONSTRUCT 16' WIDE DRIVEWAY APPROACH PER APWA STD. 110-1, TYPE A. W=16', X=3', Y=4'. DRIVEWAY SHALL BE 6" THICK PCC.
30. CONSTRUCT 6" THICK A.C. ACCESS ROAD PER SECTION HEREIN.
33. CONSTRUCT 1-TON GROUTED RIPRAP PAD PER DETAIL ON SHEET 12B.
34. CONSTRUCT 1-TON UN-GROUTED RIPRAP PAD PER DETAIL ON SHEET 12B.

LEGEND

A/10 — SECTION / SHEET

TYPICAL SECTION — RCB (No Scale)
STA 12+88.68 — (SEE SHEET 16 FOR RCB DETAILS)
BEDDING MATERIAL BELOW BOTTOM OF RCB SHALL BE 12" C.A.B.
slope 1:6 slope 1:6
EXISTING ARMORFLEX NOT TO BE MAINTAINED BY LACFCD



Curve Data				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
A	1640.36'	276.67'	138.67'	09°39'48"
B	1640.36'	263.28'	131.92'	09°11'46"

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
for RGN 7-26-07
DATE

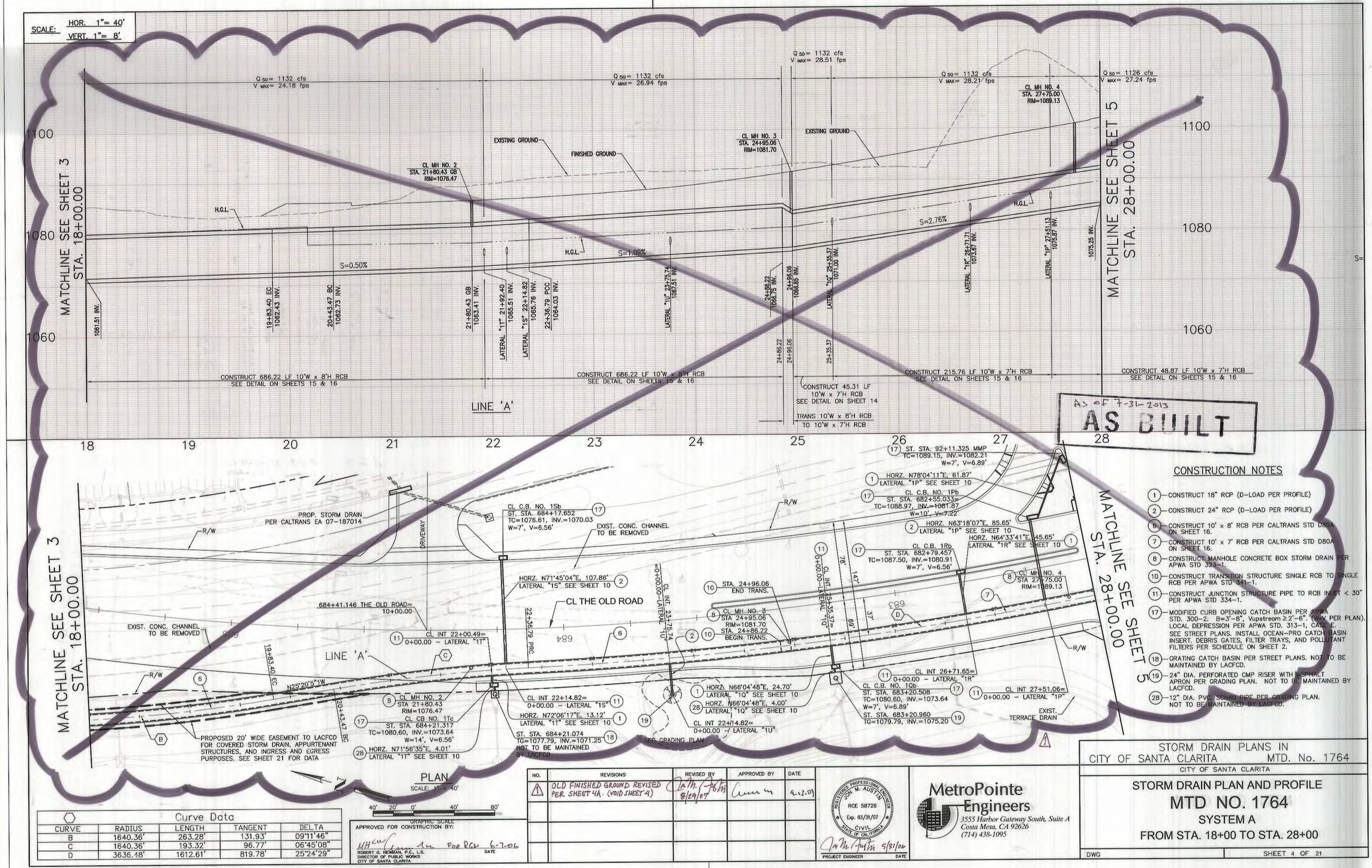
NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	Outlet Structure Revised per sheet 3B (Void Sheet 3A). Old Road superelevation revision and PVC connect to C.B. No.1xb.	JMA 7/18/07		8-1-07
2	REVISE TRUCK TURNAROUND AND ADJACENT FENCING.	JMA 9/8/2009		9-25-09
3	AS-BUILT REVISIONS FROM INSPECTOR FIELD NOTES	JMA 1/19/2010		2-23-10

REGISTERED PROFESSIONAL ENGINEER JUAN M. AUSTIN RCE 58726 Exp. 03/31/09 CIVIL STATE OF CALIFORNIA
JMA 7/18/07
PROJECT ENGINEER DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM A
FROM STA. 10+00 TO STA. 18+00
DWG
SHEET 3B OF 21

SCALE: HOR. 1"= 40'
VERT. 1"= 8'



Curve Data				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
B	1640.36'	263.28'	131.93'	09°11'46"
C	1640.36'	193.32'	96.77'	06°45'08"
D	3636.48'	1612.61'	819.78'	25°24'29"

PLAN
SCALE: 1" = 40'
40' 20' 0' 40' 80'
GRAPHIC SCALE

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	OLD FINISHED GROUND REVISED PER SHEET 4A. (VOID SHEET 4)	8/29/07		9-12-07

REGISTERED PROFESSIONAL ENGINEER
JOHN M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER 5/31/06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

As of 7-31-2013
AS BUILT

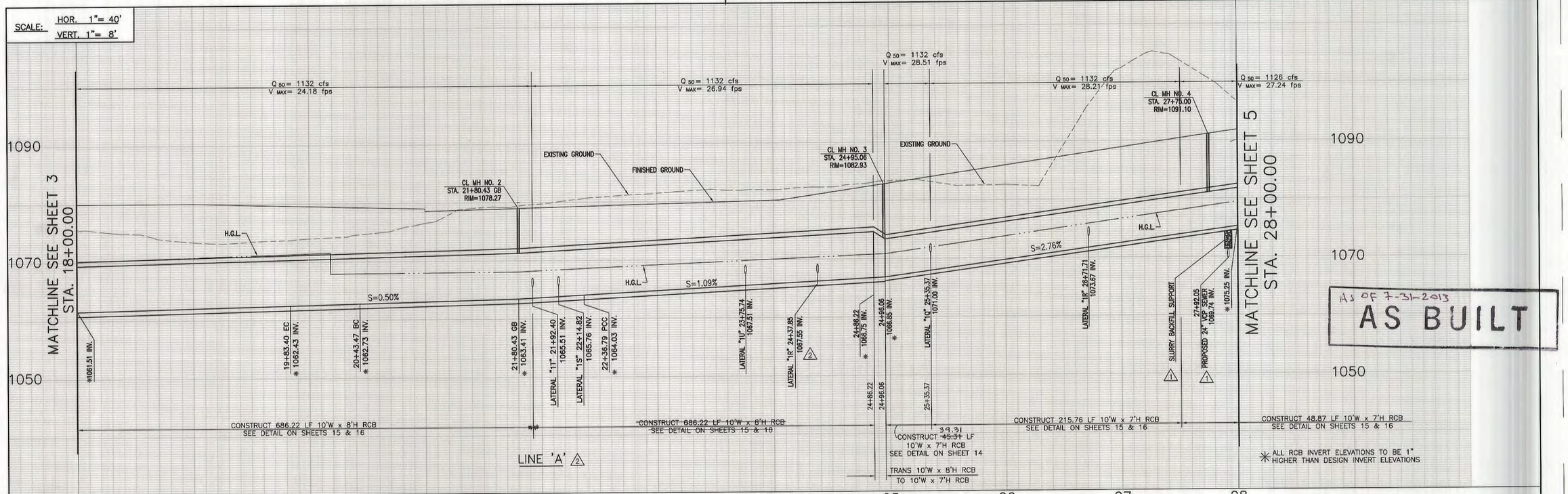
CONSTRUCTION NOTES

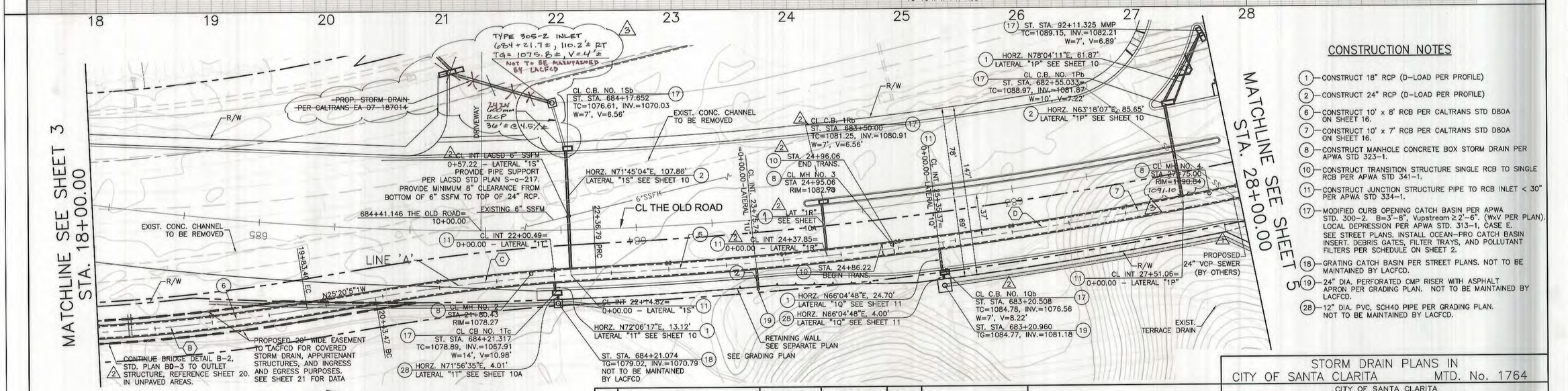
1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
2. CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
6. CONSTRUCT 10' x 8' RCB PER CALTRANS STD D80A ON SHEET 16.
7. CONSTRUCT 10' x 7' RCB PER CALTRANS STD D80A ON SHEET 16.
8. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER APWA STD 323-1.
10. CONSTRUCT TRANSITION STRUCTURE SINGLE RCB TO SINGLE RCB PER APWA STD 341-1.
11. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2. B=3'-8", Vupstream ≥ 2'-6", (NOW PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT. DEBRIS GATES, FILTER TRAYS, AND POLLUTANT FILTERS PER SCHEDULE ON SHEET 2.
18. GRATING CATCH BASIN PER STREET PLANS. NOT TO BE MAINTAINED BY LACFCD.
19. 24" DIA. PERFORATED CMP RISER WITH ASPHALT APRON PER GRADING PLAN. NOT TO BE MAINTAINED BY LACFCD.
28. 12" DIA. PVC, SCH40 PIPE PER GRADING PLAN. NOT TO BE MAINTAINED BY LACFCD.

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM A
FROM STA. 18+00 TO STA. 28+00
DWG SHEET 4 OF 21

DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 8582
Storm Drain - MTD 1764
Sheet 4 of 21
10/25/11
01986
NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
NUMBER 03581

SCALE: HOR. 1"= 40'
VERT. 1"= 8'





CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
2. CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
6. CONSTRUCT 10' x 8' RCB PER CALTRANS STD D80A ON SHEET 16.
7. CONSTRUCT 10' x 7' RCB PER CALTRANS STD D80A ON SHEET 16.
8. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER APWA STD 323-1.
10. CONSTRUCT TRANSITION STRUCTURE SINGLE RCB TO SINGLE RCB PER APWA STD 341-1.
11. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2. B=3'-8", Upstream ≥ 2'-6". (WxV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT, DEBRIS GATES, FILTER TRAYS, AND POLLUTANT FILTERS PER SCHEDULE ON SHEET 2.
18. GRATING CATCH BASIN PER STREET PLANS. NOT TO BE MAINTAINED BY LACFCD.
19. 24" DIA. PERFORATED CMP RISER WITH ASPHALT APRON PER GRADING PLAN. NOT TO BE MAINTAINED BY LACFCD.
28. 12" DIA. PVC, SCH40 PIPE PER GRADING PLAN. NOT TO BE MAINTAINED BY LACFCD.

PLAN
SCALE: 1" = 40'
40' 20' 0' 40' 80'
GRAPHIC SCALE

Curve Data				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
B	1640.36'	263.28'	131.93'	09°11'46"
C	1640.36'	193.32'	96.77'	06°45'08"
D	3636.48'	1612.61'	819.78'	25°24'29"

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	LACSD 24" VCP SEWER CROSSING	8/29/07		9-17-07
2	OLD ROAD SUPERELEVATION REVISION, SEE CALTRANS PLAN SET SHEET P-8. RELOCATED LATERAL "1R"	8/29/07		9-17-07
3	AS-BUILT REVISION FROM INSPECTOR FIELD NOTES	1/19/2010		2-22-10

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/10
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER 8/29/07 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

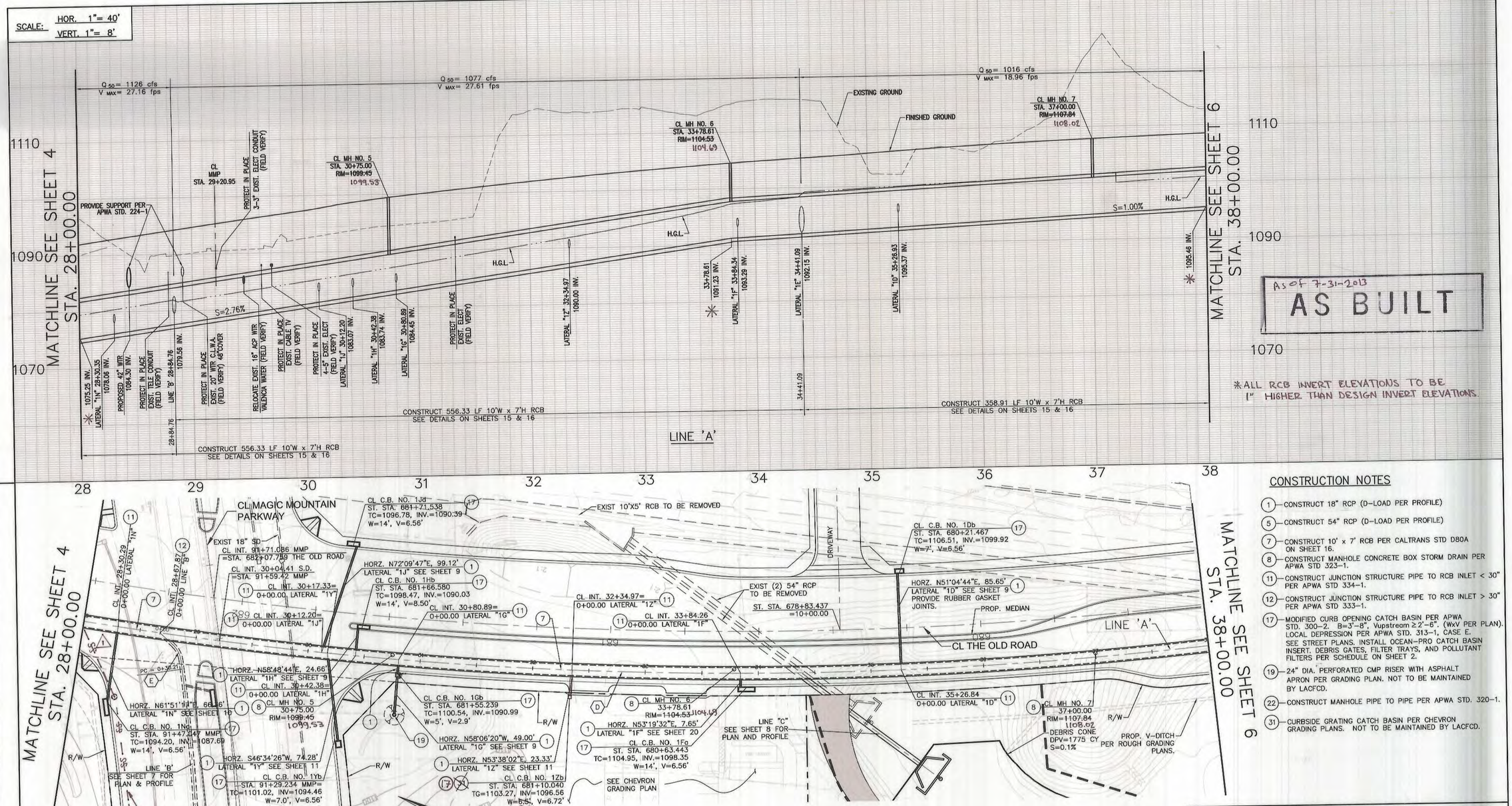
CITY OF SANTA CLARITA

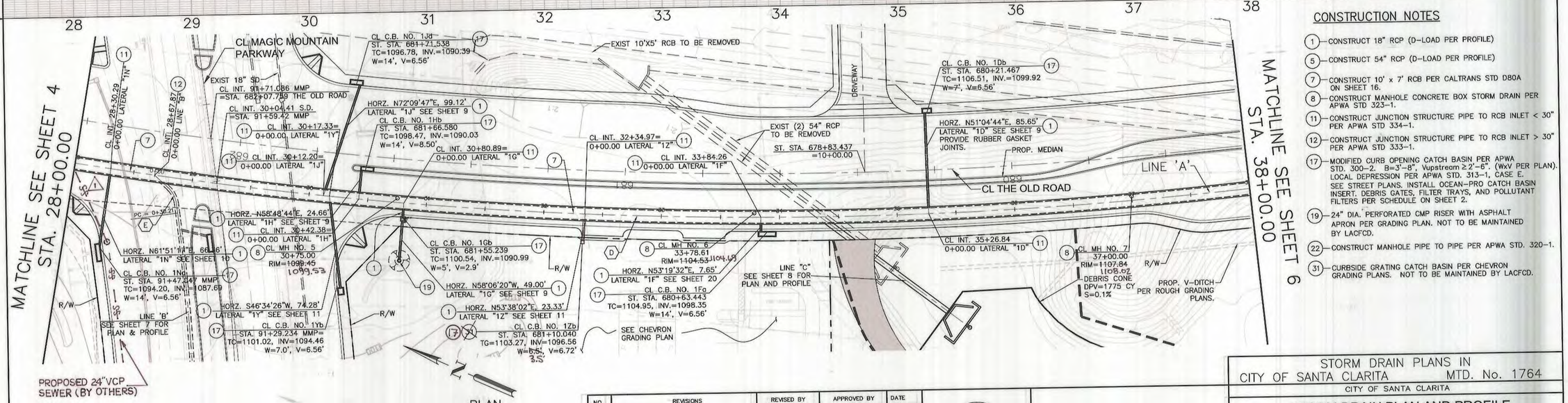
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM A
FROM STA. 18+00 TO STA. 28+00

DWG | SHEET 4A OF 21

Storm Drain - MTD 1764
Sheet 4A of 21
10/25/11
01986

SCALE: HOR. 1"= 40'
VERT. 1"= 8'





Curve Data			
CURVE	RADIUS	LENGTH	TANGENT	DELTA
D	3636.46'	1612.61'	819.78'	25°24'29"
E	22.50'	15.46'	8.05'	39°22'14"

PLAN
SCALE: 1" = 40'
GRAPHIC SCALE

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	LACSD 24"VCP SEWER CROSSING	8/29/07		9-12-07

REGISTERED PROFESSIONAL ENGINEER JON M. AUSTIN RCE 58726 Exp. 03/31/07 CIVIL STATE OF CALIFORNIA
PROJECT ENGINEER 5-31-06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

As of 7-31-2013
AS BUILT

*ALL RCB INVERT ELEVATIONS TO BE 1" HIGHER THAN DESIGN INVERT ELEVATIONS.

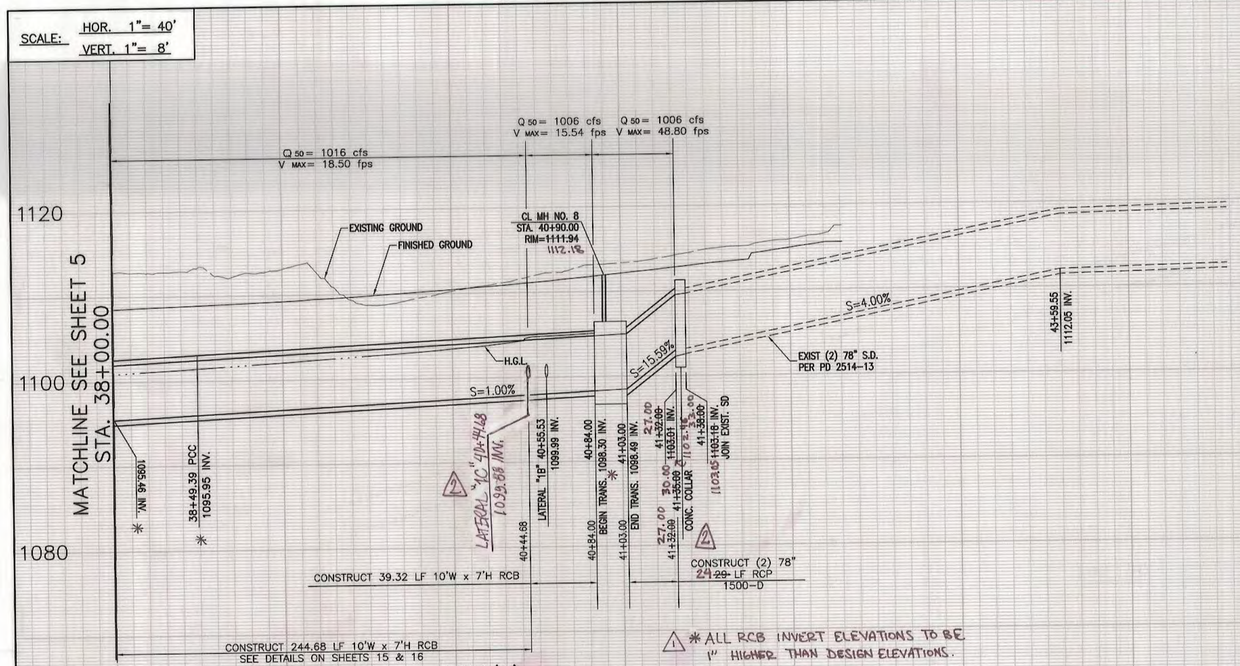
CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
5. CONSTRUCT 54" RCP (D-LOAD PER PROFILE)
7. CONSTRUCT 10' x 7' RCB PER CALTRANS STD D80A ON SHEET 16.
8. CONSTRUCT MANHOLE CONCRETE BOX STORM DRAIN PER APWA STD 323-1.
11. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
12. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET > 30" PER APWA STD 333-1.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2. B=3'-8", Vupstream ≥ 2'-6". (WxV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT. DEBRIS GATES, FILTER TRAYS, AND POLLUTANT FILTERS PER SCHEDULE ON SHEET 2.
19. 24" DIA. PERFORATED CMP RISER WITH ASPHALT APRON PER GRADING PLAN. NOT TO BE MAINTAINED BY LACFCD.
22. CONSTRUCT MANHOLE PIPE TO PIPE PER APWA STD. 320-1.
31. CURBSIDE GRATING CATCH BASIN PER CHEVRON GRADING PLANS. NOT TO BE MAINTAINED BY LACFCD.

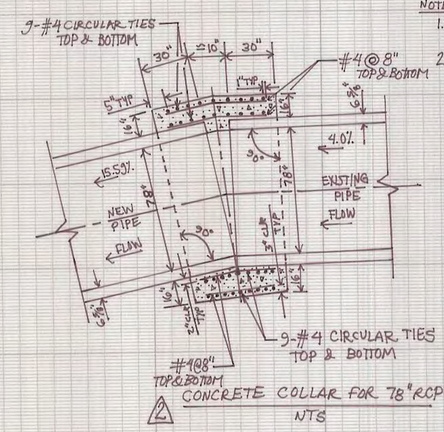
STORM DRAIN PLANS IN CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM A
FROM STA. 28+00 TO STA. 38+00
DWG SHEET 5 OF 21

DRAWING NUMBER
Storm Drain - MTD 1764 10/25/11
Sheet 5 of 21
01986

SCALE: HOR. 1"= 40'
VERT. 1"= 8'

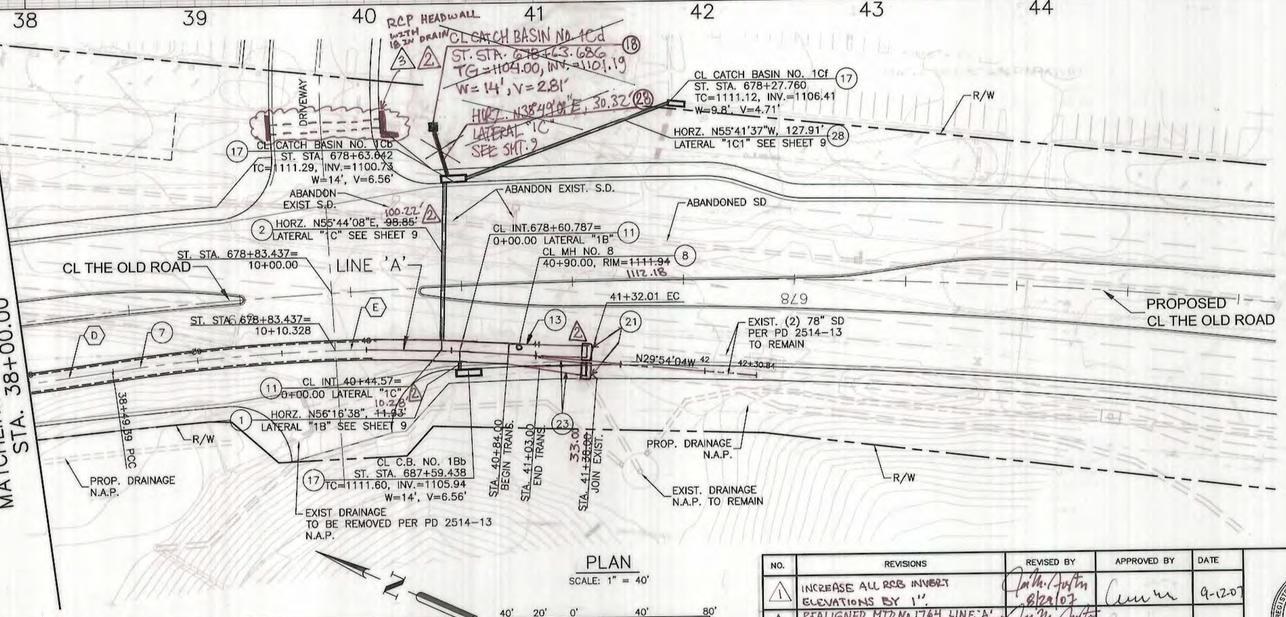


1 * ALL RCB INVERT ELEVATIONS TO BE 1' HIGHER THAN DESIGN ELEVATIONS.



2 CONCRETE COLLAR FOR 78" RCP
NTS

NOTES:
1. REINFORCEMENT SHALL CONFORM TO ASTM A 615 GRADE 40.
2. CONCRETE: 560-C-3250



PLAN
SCALE: 1" = 40'

GRAPHIC SCALE
40' 20' 0' 40' 80'

Curve Data				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
D	3636.48'	1612.61'	819.78'	25°24'29"
E	~~1148.25'~~	~~282.61'~~	~~142.02'~~	~~14°06'07"~~
2	1000.00'	245.81'	123.53'	14°05'02"

APPROVED FOR CONSTRUCTION BY:

MH for RGN 6-7-06

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	INCREASE ALL RCB INVERT ELEVATIONS BY 1'.	8/28/07		9-12-07
2	REALIGNED MTD No. 1764 LINE 'A' TO MEET FIELD VERIFIED EXIST. 2-78" CONCRETE COLLAR. DETAIL FOR 78" RCP	11-6-07		11-8-07
3	AS-BUILT REVISION. LAT 1C EXT. NOT CONSTRUCTED.		1/19/2010	2-23-10

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER 5-31-06
DATE

As of 7-31-2013
AS BUILT

CONSTRUCTION NOTES

(1) CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
(2) CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
(7) CONSTRUCT 10' x 7' RCB PER CALTRANS STD D80A ON SHEET 16.
(11) CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET < 30" PER APWA STD 334-1.
(13) CONSTRUCT TRANSITION STRUCTURE DOUBLE RCP TO SINGLE RCB PER MODIFIED APWA STD 342-1 & 343-1 PER DETAIL 1 SHEET 12.
(17) MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2, B=3'-8", Vupstream ≥ 2'-6". (WxV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT. DEBRIS GATES, FILTER TRAYS, AND POLLUTANT FILTERS PER SCHEDULE ON SHEET 2.
(18) GRATING CATCH BASIN PER STREET PLANS. NOT TO BE MAINTAINED BY LACFCD.
(21) CONSTRUCT CONCRETE COLLAR FOR RCP PER APWA ~~STD. 380-2~~: DETAIL HEREON. 2
(23) CONSTRUCT 78" RCP (D-LOAD PER PROFILE)
(28) 12" PVC, SCH40 PER GRADING PLANS. NOT TO BE MAINTAINED BY LACFCD.

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA

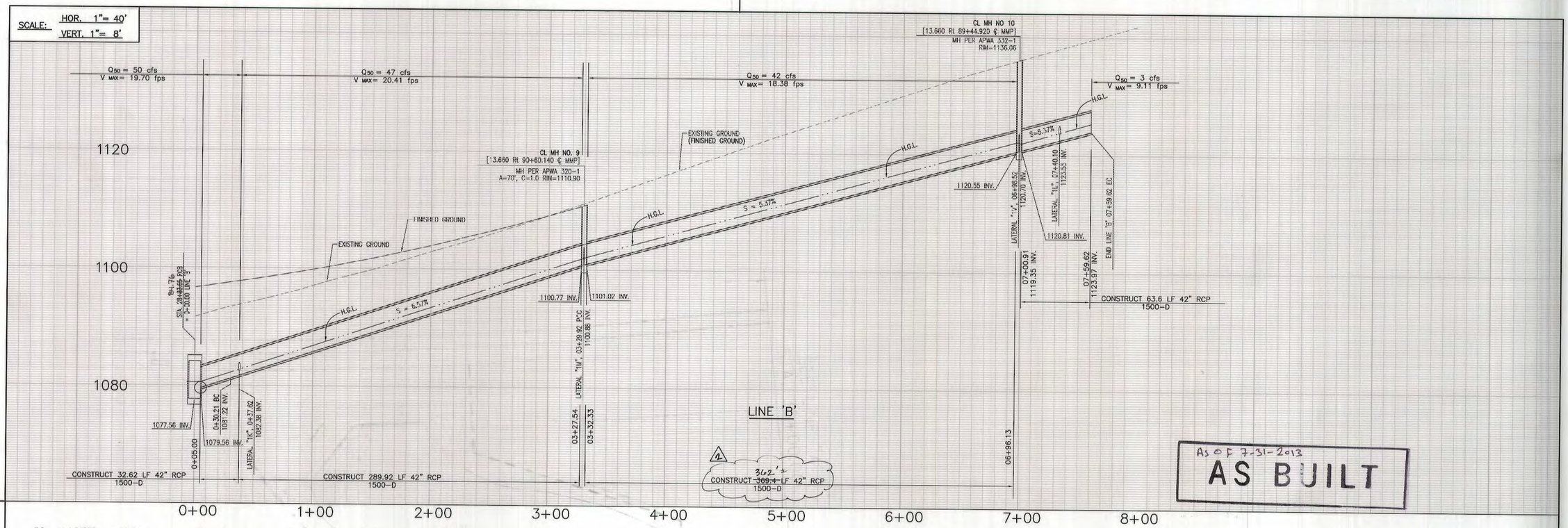
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM A
FROM STA. 38+00 TO 41+38.00

DWG | SHEET 6 OF 21

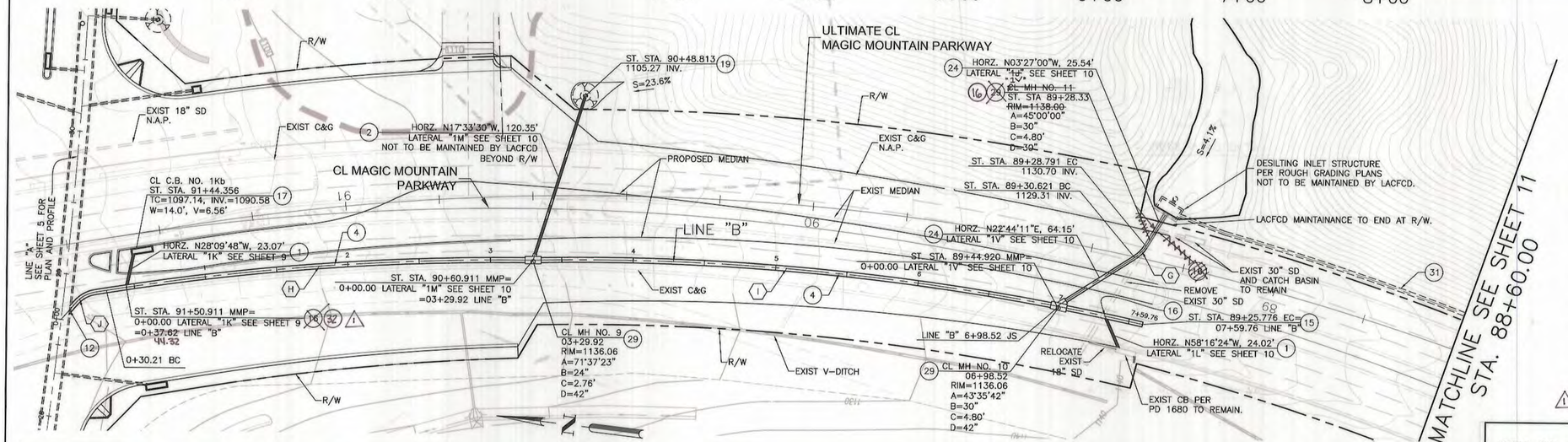
MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

DRAWING NUMBER
Storm Drain - MTD 1764
Sheet 6 of 21
01986

SCALE: HOR. 1"= 40'
VERT. 1"= 8'



AS OF 7-31-2013
AS BUILT



PLAN
SCALE: 1" = 40'

40' 20' 0' 40' 80'
GRAPHIC SCALE

Curve Data				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
G	25.00'	11.330'	5.764'	25°58'01"
H	1764.00'	299.715'	150.219'	09°44'06"
I	1754.929'	429.836'	215.999'	14°02'01"
J	22.50'	15.46'	8.05'	39°22'14"
K	11.25'	5.63'	2.87'	28°39'21"
L	1830.24'	414.77'	208.28'	12°59'04"

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

6-7-06
DATE

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	REVISED JUNCTION STRUCTURE	8/29/07		9-12-07
2	AS-BUILT REVISION FROM INSPECTOR FIELD NOTES	1/20/2010		2-22-10

RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA

5-31-06
PROJECT ENGINEER DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

CONSTRUCTION NOTES

1. CONSTRUCT 18" RCP (D-LOAD PER PROFILE)
2. CONSTRUCT 24" RCP (D-LOAD PER PROFILE)
4. CONSTRUCT 42" RCP (D-LOAD PER PROFILE)
12. CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET > 30" PER APWA STD 333-1.
15. CONSTRUCT CONCRETE BULKHEAD PER DETAIL 4 ON SHEET 12.
16. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER APWA STD. 332-1.
17. MODIFIED CURB OPENING CATCH BASIN PER APWA STD. 300-2. B=3'-8", Vupstream 2'-6". (WxV PER PLAN). LOCAL DEPRESSION PER APWA STD. 313-1, CASE E. SEE STREET PLANS. INSTALL OCEAN-PRO CATCH BASIN INSERT, DEBRIS GATES, FILTER TRAYS, AND POLLUTANT FILTERS PER SCHEDULE ON SHEET 2.
19. 24" DIA. PERFORATED CMP RISER WITH ASPHALT APRON PER GRADING PLAN. NOT TO ME MAINTAINED BY LACFCD.
20. DESILTING INLET STRUCTURE PER GRADING PLANS.
24. CONSTRUCT 30" RCP (D-LOAD PER PROFILE)
29. CONSTRUCT MANHOLE PIPE TO PIPE PER APWA STD. 322-1.
31. 30" PVC, SCH40 PER GRADING PLANS. NOT TO BE MAINTAINED BY LACFCD.
1 32. CONSTRUCT JUNCTION STRUCTURE PIPE TO PIPE PER APWA STD. 331-2.

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

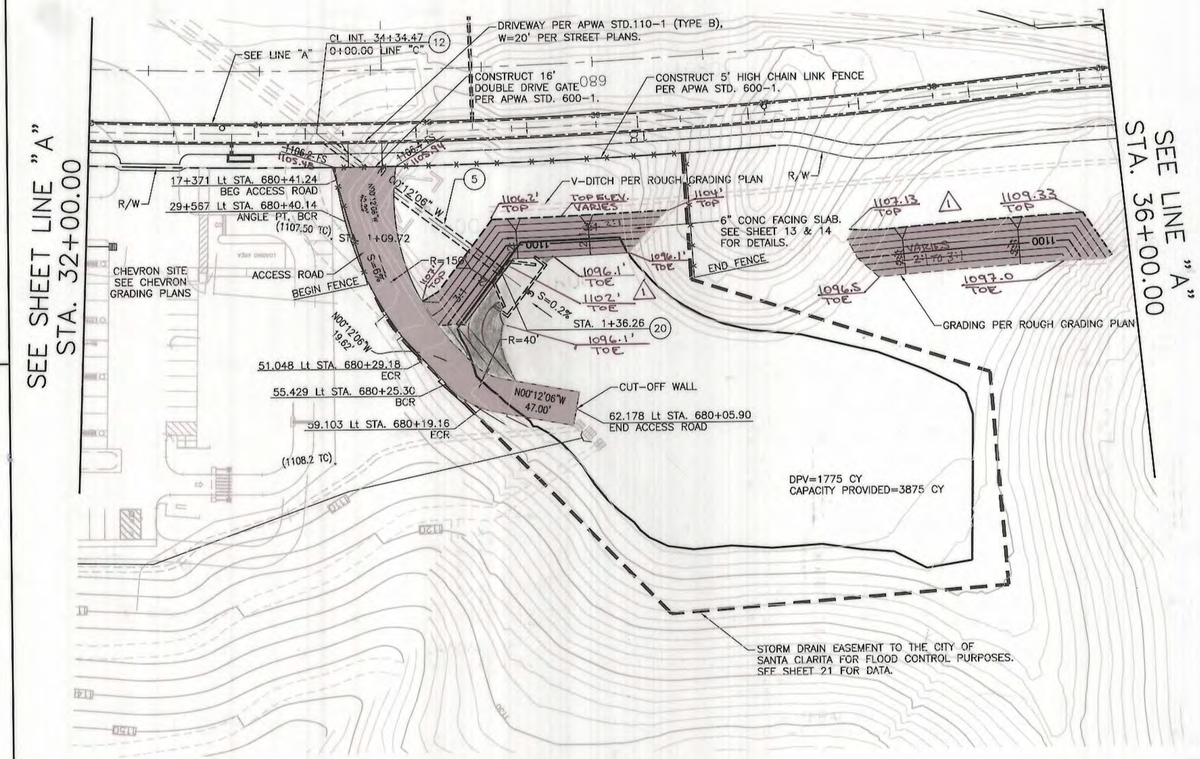
CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM "B"

DWG | SHEET 7 OF 21

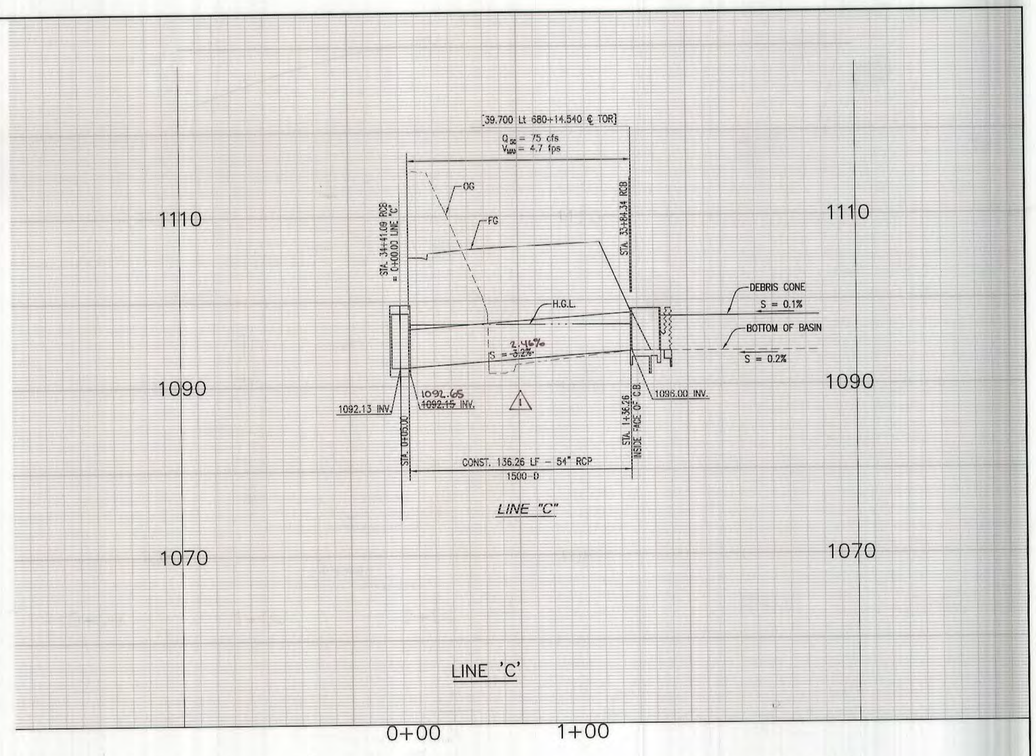
DRAWING
DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6002
Storm Drain - MTD 1764
Sheet 7 of 21
01986
10/25/11
NUMBER

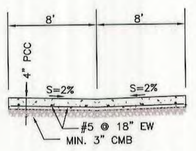
SCALE: HOR. 1"= 40'
VERT. 1"= 8'



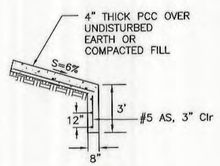
PLAN
SCALE: 1" = 40'

GRAPHIC SCALE 40' 20' 0' 40' 80'





ACCESS ROAD DETAIL
NO SCALE



ACCESS ROAD CUT-OFF WALL
NO SCALE

CONSTRUCTION NOTES

(5) — CONSTRUCT 54" RCP (D-LOAD PER PROFILE)

(12) — CONSTRUCT JUNCTION STRUCTURE PIPE TO RCB INLET > 30" PER APWA STD 333-1.

(20) — CONSTRUCT DESILTING INLET STRUCTURE PER DETAIL H ON SHEETS 13 & 14.

AS OF 7-31-2013
AS BUILT

Curve Data				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
D	3636.46'	1612.61'	819.78'	25°24'29"
E	22.50'	15.46'	8.05'	39°22'14"

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	CORRECTIONS DUE TO FIELD VERIFIED ELEVATIONS.	8/22/07		9-17-07

REGISTERED PROFESSIONAL ENGINEER JON M. AUSTIN RCE 58726 Exp. 03/31/07 CIVIL STATE OF CALIFORNIA

PROJECT ENGINEER 5-31-06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

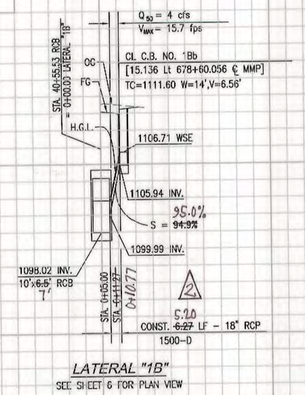
STORM DRAIN PLANS IN CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
SYSTEM C
FROM STA. 00+00 TO STA. 00+00

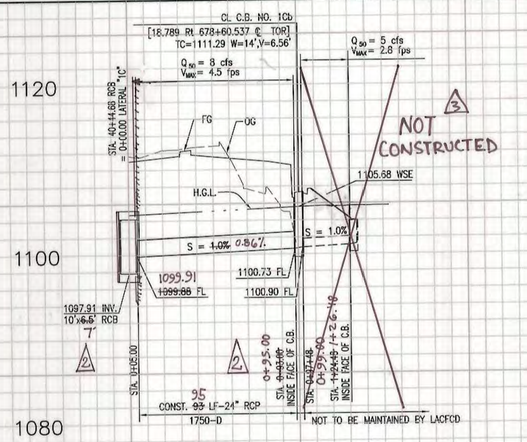
DWG | SHEET 8 OF 21

DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6562
Storm Drain - MTD 1764
Sheet 8 of 21
01986
10/25/11
NUMBER

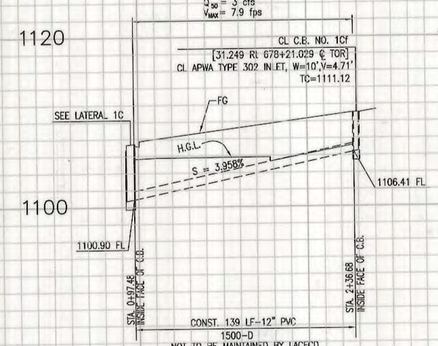
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VERT. 1"= 8'



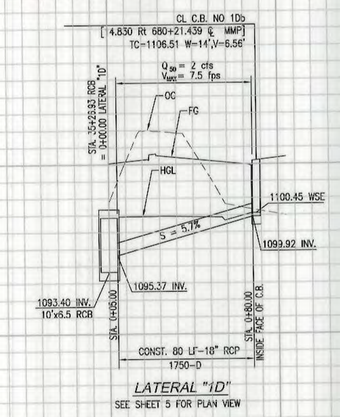
LATERAL "1B"
SEE SHEET 6 FOR PLAN VIEW



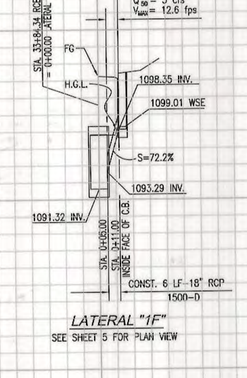
LATERAL "1C"
SEE SHEET 6 FOR PLAN VIEW



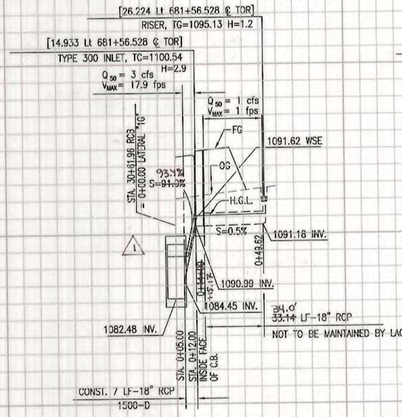
LATERAL "1C1"
SEE SHEET 6 FOR PLAN VIEW



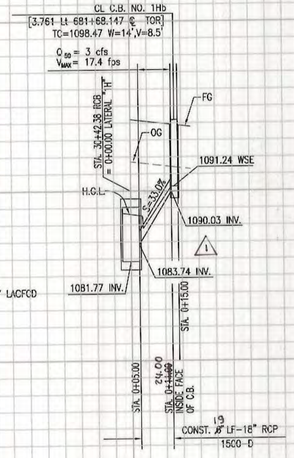
LATERAL "1D"
SEE SHEET 5 FOR PLAN VIEW



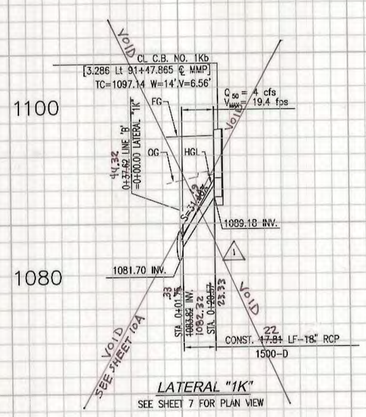
LATERAL "1F"
SEE SHEET 5 FOR PLAN VIEW



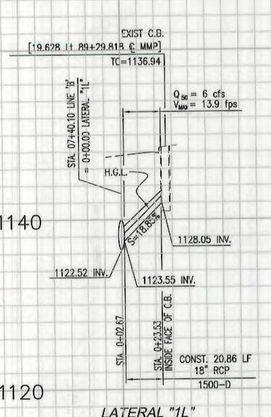
LATERAL "1G"
SEE SHEET 5 FOR PLAN VIEW



LATERAL "1H"
SEE SHEET 5 FOR PLAN VIEW



LATERAL "1K"
SEE SHEET 7 FOR PLAN VIEW



LATERAL "1L"
SEE SHEET 7 FOR PLAN VIEW

0+00 1+00 0+00 1+00 0+00 1+00 0+00 1+00

As of 7-31-2013
AS BUILT

APPROVED FOR CONSTRUCTION BY:

MH for RGN 6-7-06
ROBERT G. NEWMAN, P.E., L.S. DATE
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	REVISED LATERALS	6/29/07		9-12-07
2	REALIGNED MTD NO. 1764 TO MEET FIELD VERIFIED LOCATIONS OF 2-78" RCPS.	11-6-07		11-9-07
3	REVISED LAT "1C" - BACK OF CONNECTION - NOT CONSTRUCTED	2/22/10		2-23-10

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER 5-31-06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD NO. 1764

CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE

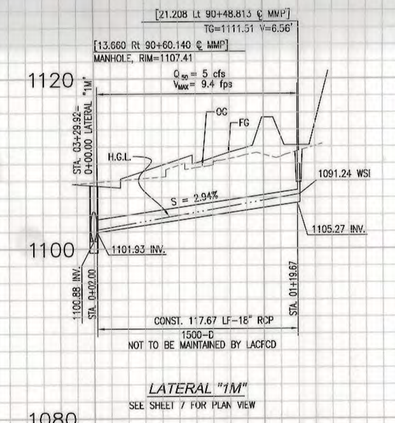
MTD NO. 1764

LATERALS

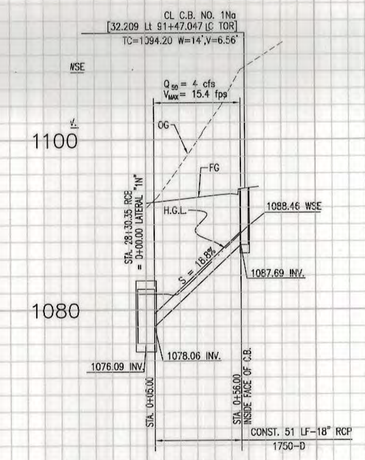
DWG | SHEET 9 OF 21

DRAWING
DRAWING NUMBER
BAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 55552
NUMBER
Storm Drain - MTD 1764
Sheet 9 of 21
10/25/11
01986

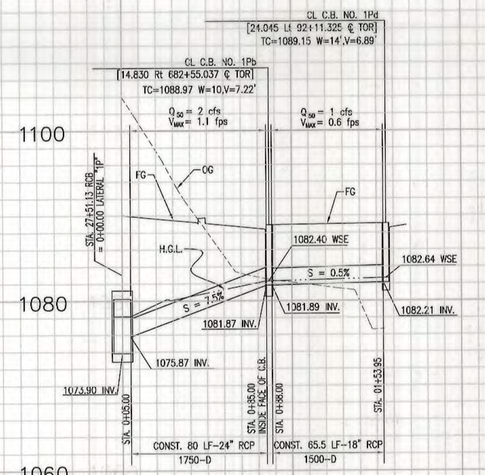
SCALE: HOR. 1"= 40'
VERT. 1"= 8'



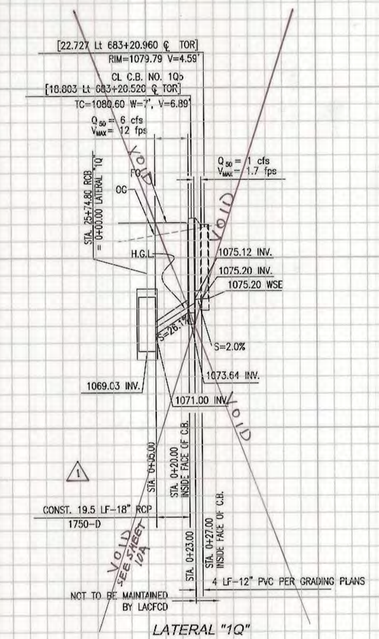
LATERAL "1M"
SEE SHEET 7 FOR PLAN VIEW



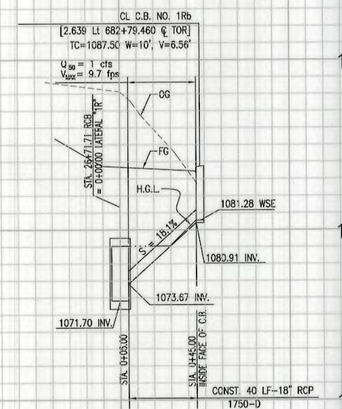
LATERAL "1N"
SEE SHEET 5 FOR PLAN VIEW



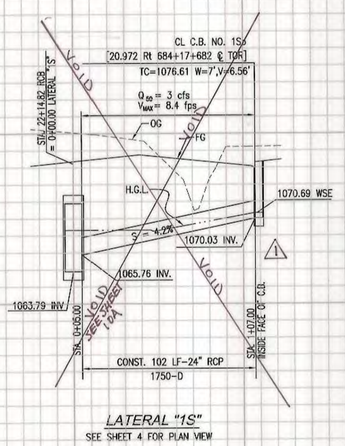
LATERAL "1P"
SEE SHEET 4 FOR PLAN VIEW



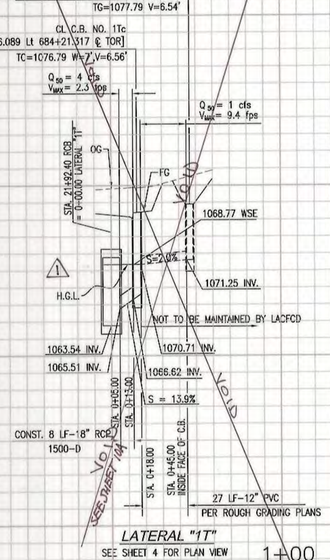
LATERAL "1Q"
SEE SHEET 4 FOR PLAN VIEW



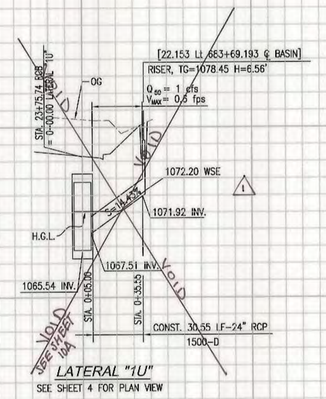
LATERAL "1R"
SEE SHEET 4 FOR PLAN VIEW



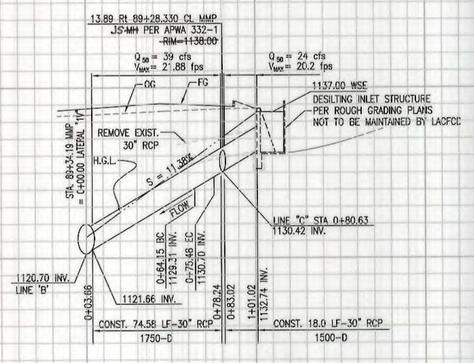
LATERAL "1S"
SEE SHEET 4 FOR PLAN VIEW



LATERAL "1T"
SEE SHEET 4 FOR PLAN VIEW



LATERAL "1U"
SEE SHEET 4 FOR PLAN VIEW



LATERAL "1V"
SEE SHEET 4 FOR PLAN VIEW

As of 7-31-2013
AS BUILT

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	REVISED LATERALS	8/29/07		9-12-07

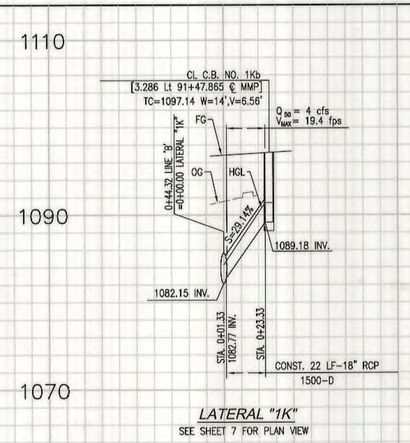
REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER 5-31-06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

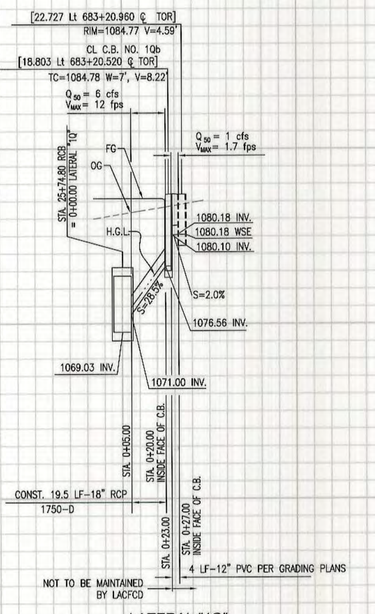
STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD NO. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
LATERALS
DWG
SHEET 10 OF 21

DRAWING NUMBER
SWCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6592
Storm Drain - MTD 1764
Sheet 10 of 21
01986
10/25/11
NUMBER
NEW HOPE, MINNESOTA
IT NUMBER 6592

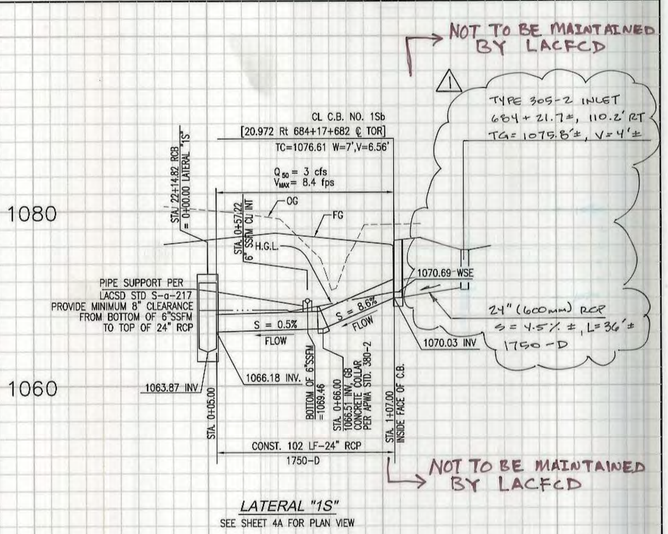
SCALE: HOR. 1"= 40'
VERT. 1"= 8'



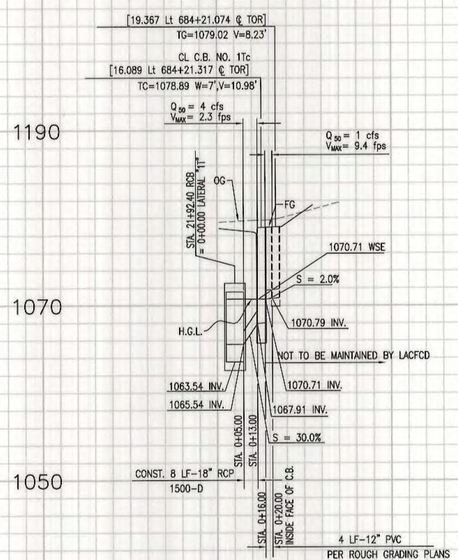
LATERAL "1K"
SEE SHEET 7 FOR PLAN VIEW



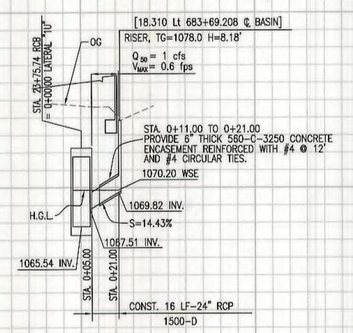
LATERAL "1Q"
SEE SHEET 4A FOR PLAN VIEW



LATERAL "1S"
SEE SHEET 4A FOR PLAN VIEW



LATERAL "1T"
SEE SHEET 4A FOR PLAN VIEW



LATERAL "1U"
SEE SHEET 4A FOR PLAN VIEW

AS of 7-31-2013
AS BUILT

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	AS-BUILT REVISION FROM INSPECTOR FIELD NOTES	McClure 1/19/2010		2-23-10

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/10
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

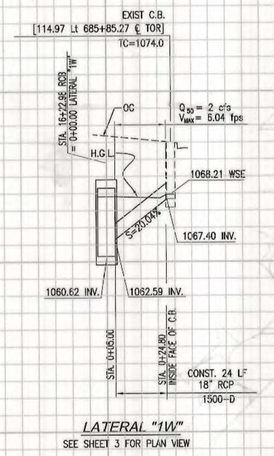
STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD NO. 1764
CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
LATERALS

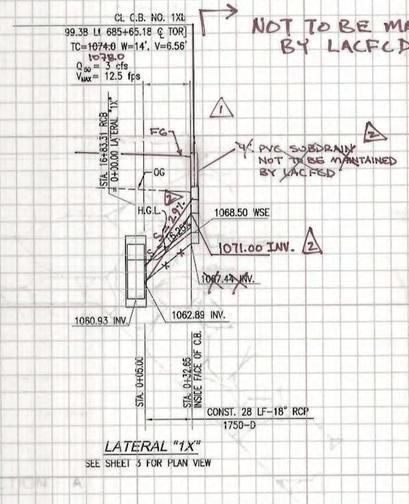
DWG | SHEET 10A OF 21

DRAWING
DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6558
Storm Drain - MTD 1764
Sheet 10A of 21
10/25/11
01986
NUMBER

SCALE: HOR. 1"= 40'
VERT. 1"= 8'

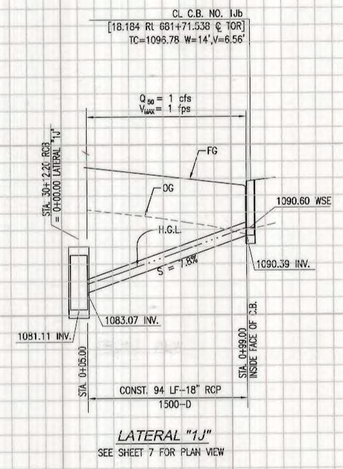


LATERAL "1W"
SEE SHEET 3 FOR PLAN VIEW

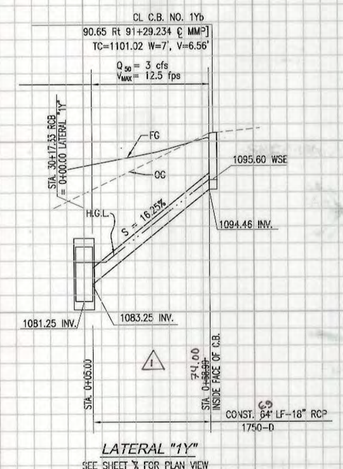


1/4" PVC SUBDRAIN NOT TO BE MAINTAINED BY LACFCD

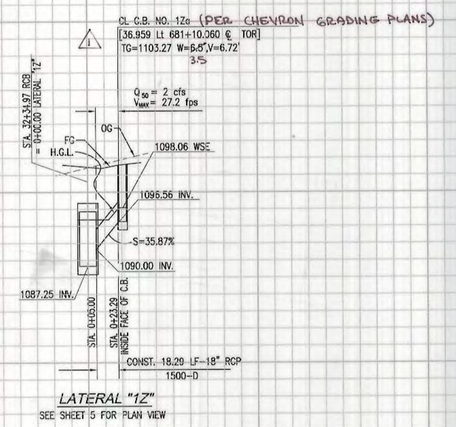
LATERAL "1X"
SEE SHEET 3 FOR PLAN VIEW



LATERAL "1J"
SEE SHEET 7 FOR PLAN VIEW



LATERAL "1Y"
SEE SHEET 5 FOR PLAN VIEW



LATERAL "1Z"
SEE SHEET 5 FOR PLAN VIEW

AS BUILT
As of 7-31-2013

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	REVISED LATERALS	8/29/02		9-12-01
2	REVISED LAT "1X"	2/22/10		2-23-10

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-00

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER
DATE 5-31-06

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD NO. 1764

CITY OF SANTA CLARITA

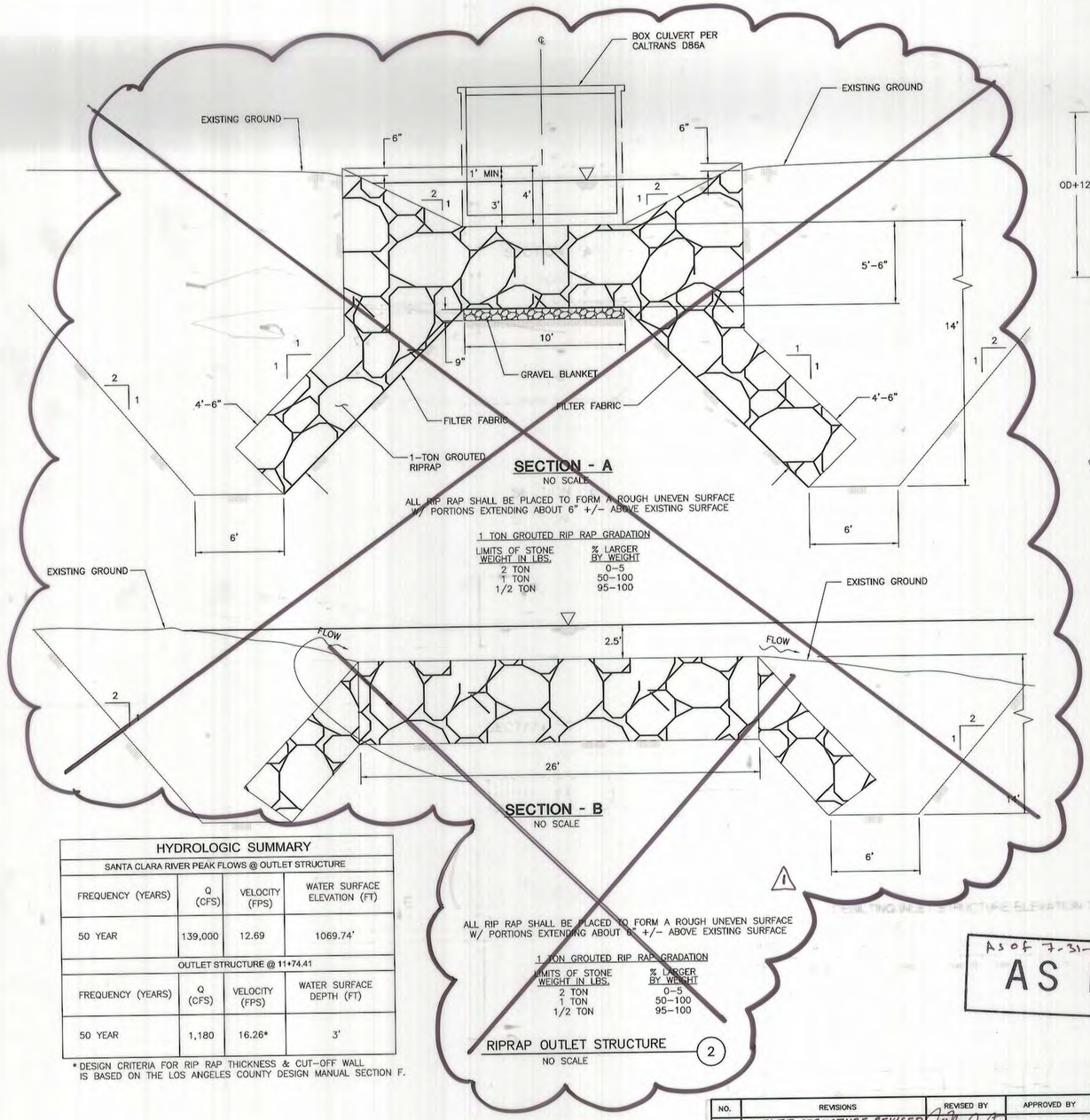
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
LATERALS

DWG

SHEET 11 OF 21

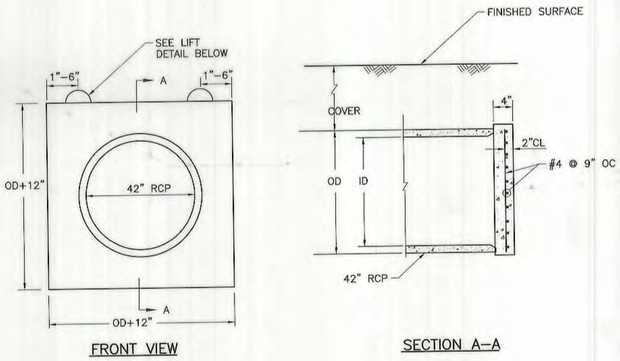
DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6552

Storm Drain - MTD 1764
Sheet 11 of 21
10/25/11
01986



HYDROLOGIC SUMMARY			
SANTA CLARA RIVER PEAK FLOWS @ OUTLET STRUCTURE			
FREQUENCY (YEARS)	Q (CFS)	VELOCITY (FPS)	WATER SURFACE ELEVATION (FT)
50 YEAR	139,000	12.69	1069.74'
OUTLET STRUCTURE @ 11+74.41			
FREQUENCY (YEARS)	Q (CFS)	VELOCITY (FPS)	WATER SURFACE DEPTH (FT)
50 YEAR	1,180	16.26*	3'

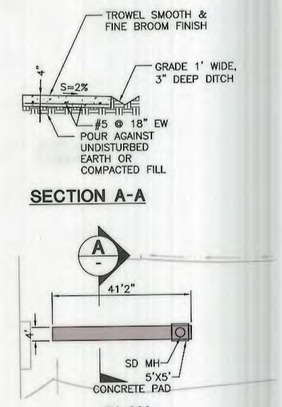
* DESIGN CRITERIA FOR RIP RAP THICKNESS & CUT-OFF WALL IS BASED ON THE LOS ANGELES COUNTY DESIGN MANUAL SECTION F.



LIFT DETAIL

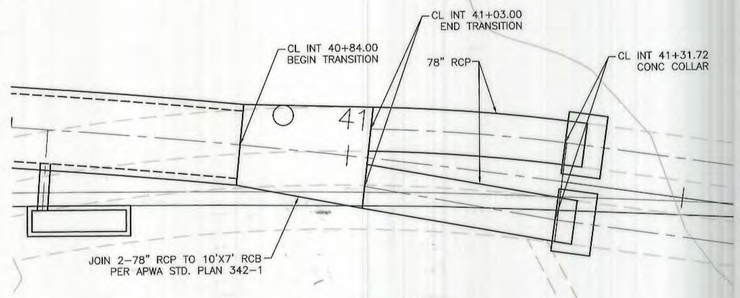
NOTES: 1. ALL REINFORCING STEEL SHALL BE CENTERED IN BULKHEAD. HORIZONTAL #4 BARS SHALL BE PLACED TOWARDS OUTSIDE FACE OF BULKHEAD PER DETAIL.
2. CONCRETE SHALL BE CLASS 520-C-2500 PER SECTION 201 STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURED WITH TYPE 1-D CURING COMPOUND.
3. LIFTS SHALL BE WOVEN STEEL CABLE WITH MINIMUM 4" DIAMETER. WEAVE CABLE THROUGH HORIZONTAL #4 BARS. COAT EXPOSED PORTION OF CABLE WITH BITUMINOUS PAINT PRIOR TO BACKFILLING TRENCH.

CONCRETE BULKHEAD (4)
NO SCALE



NOTES: 1. WEAKENED PLANE JOINTS SHALL BE INSTALLED AT A MAXIMUM SPACING OF 10 FT ON CENTER.
2. CONCRETE SHALL BE CLASS 520-C-2500 PER SECTION 201 STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURED WITH TYPE 1-D CURING COMPOUND.

CONCRETE ACCESS WALKWAY (3)
SCALE: 1:20



CONSTRUCTION NOTES:

1. CONCRETE THICKNESS SHALL BE OF DOUBLE RCB PER CALTRANS STD. PLAN D80C AND D81 SEE SHEETS 16 AND 17.
SNAP - 7'
HEIGHT = 7'

STORM DRAIN TRANSITION (1)
SCALE: 1:20

As of 7-31-2013
AS BUILT

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	OUTLET STRUCTURE REVISED PER SHEET 12A. (VOID DETAIL 2)	9-19-06		2-50

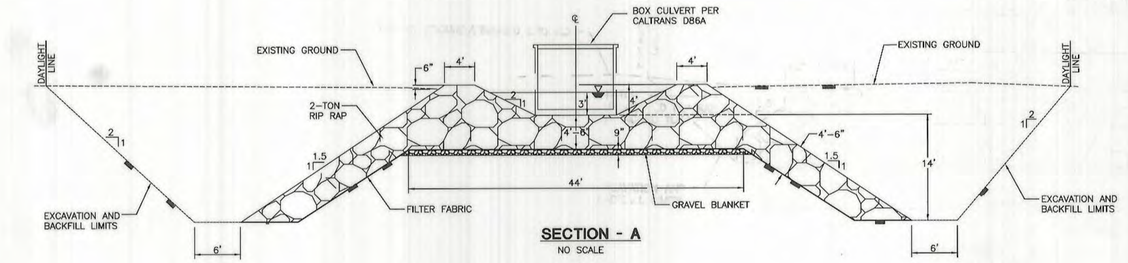
APPROVED FOR CONSTRUCTION BY:
FOR RGN 6-7-06
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE

REGISTERED PROFESSIONAL ENGINEER JON M. AUSTIN RCE 58726 Exp. 03/31/07 CIVIL STATE OF CALIFORNIA
PROJECT ENGINEER 5-31-06 DATE

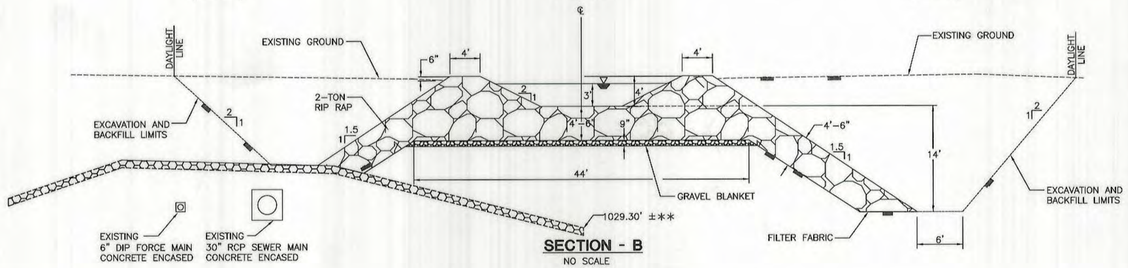
MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
DETAILS
DWG | SHEET 12 OF 21

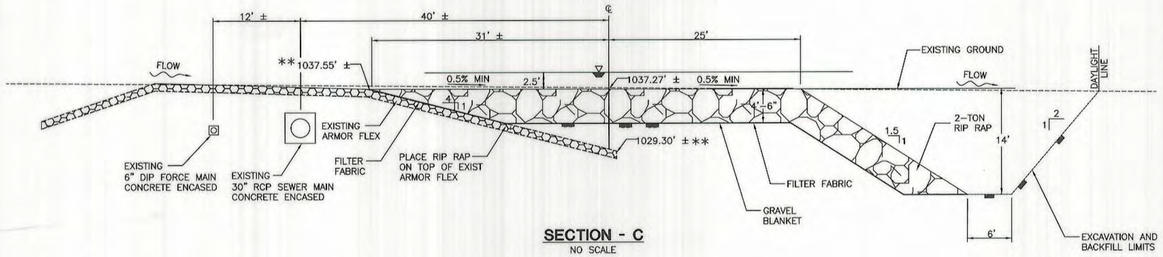
DRAWING NUMBER
Storm Drain - MTD 1764
Sheet 12 of 21
10/25/11
01986



SECTION - A
NO SCALE



SECTION - B
NO SCALE



SECTION - C
NO SCALE

ALL GROUTED RIP RAP SHALL BE PLACED TO FORM A ROUGH UNEVEN SURFACE
W/ PORTIONS EXTENDING ABOUT 6" +/- ABOVE EXISTING SURFACE

RIPRAP OUTLET STRUCTURE (2)
NO SCALE

AS BUILT
AS OF 7-31-2008

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	Outlet Structure Revised per sheet 12A.	9-19-06		4-5-07

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 4-5-07

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER 9-19-06 DATE

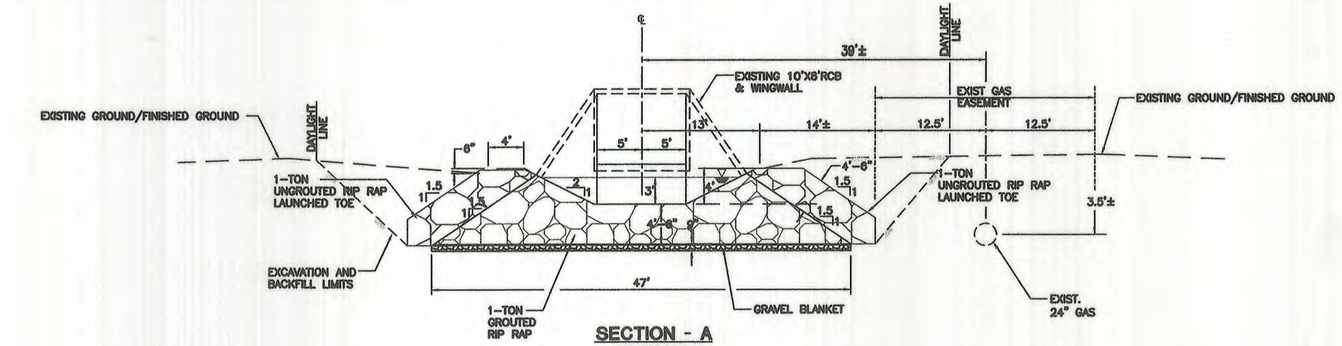
MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA

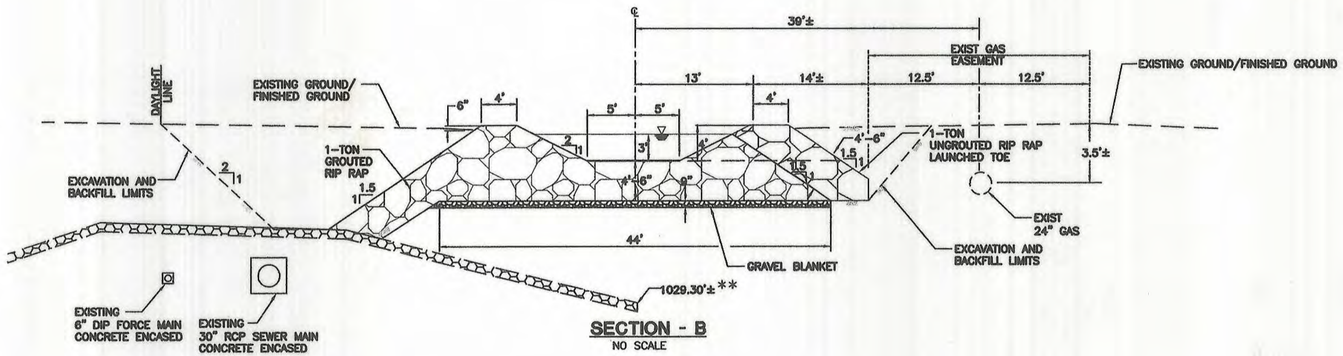
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
DETAILS

DWG | SHEET 12A OF 21

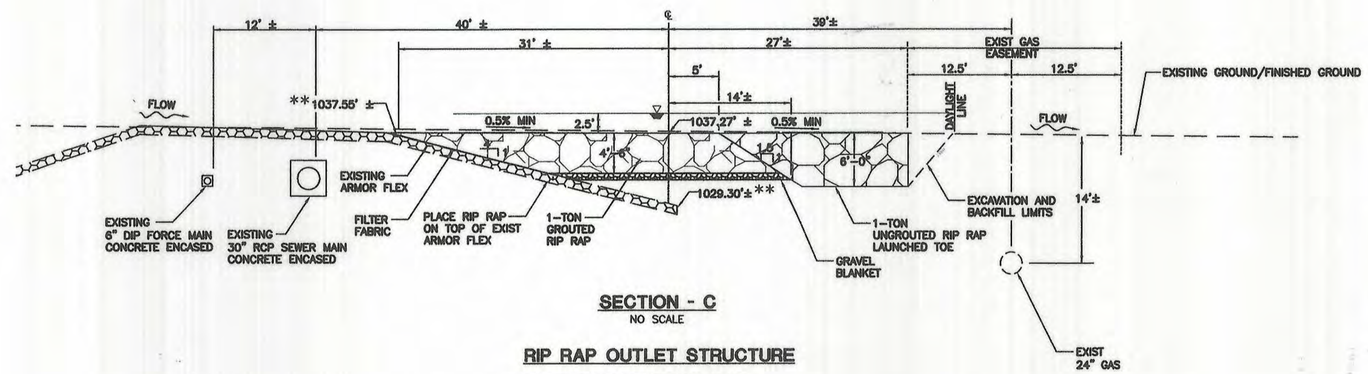
DRAWING
DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 65552
Storm Drain - MTD 1764
Sheet 12A of 21
10/25/11
01986



SECTION - A
NO SCALE



SECTION - B
NO SCALE



SECTION - C
NO SCALE

RIP RAP OUTLET STRUCTURE

**CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL ELEVATION PRIOR TO CONSTRUCTION.

ALL GROUTED RIP RAP SHALL BE PLACED TO FORM A ROUGH UNEVEN SURFACE W/ PORTIONS EXTENDING ABOUT 6" +/- ABOVE EXISTING SURFACE

1 TON GROUTED AND UNGROUTED RIP RAP GRADATION

LIMITS OF STONE WEIGHT IN LBS.	% LARGER BY WEIGHT
2 TON	0–5
1 TON	50–100
1/2 TON	95–100

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	OUTLET STRUCTURE REVISED PER SHEET 12B (VOID SHEET 12A)	7/19/07	For RGN	7-26-07

APPROVED FOR CONSTRUCTION BY:

For RGN 7-26-07

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

DATE

REGISTERED PROFESSIONAL ENGINEER KENNETH C. TALANIAN RCE 56185 Exp. 12/31/08 CIVIL ENGINEER STATE OF CALIFORNIA

6/27/07

PROJECT ENGINEER DATE

WILLDAN
Serving Public Agencies
2401 EAST KATELLA AVENUE, SUITE 450, ANAHEIM CA 92806
PHONE (714) 978-8200 FAX (714) 978-8299

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

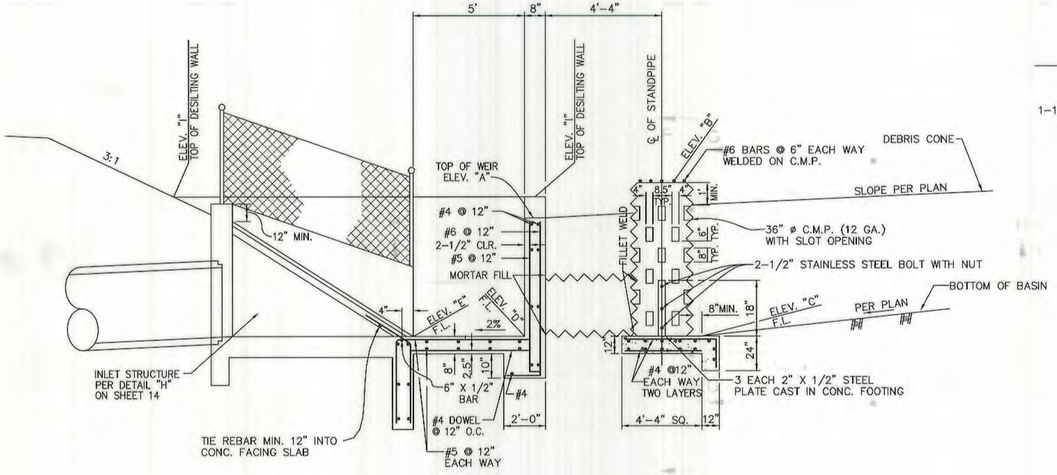
CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
DETAILS

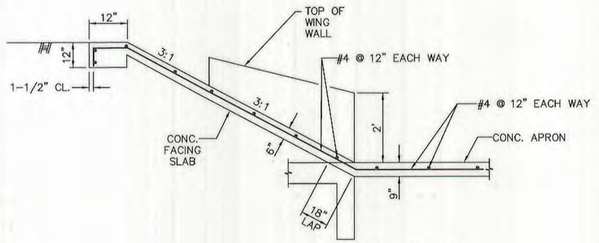
DWG | SHEET 12B OF 21

AS OF 7-31-2013
AS BUILT

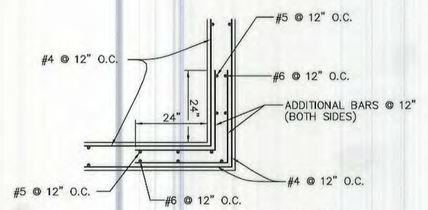
DRAWING
DRAWING NUMBER
NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
Storm Drain - MTD 1764
Sheet 12B of 21
01986
10/25/11



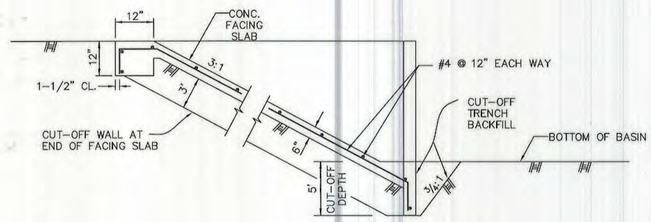
SECTION C-C
N.T.S.



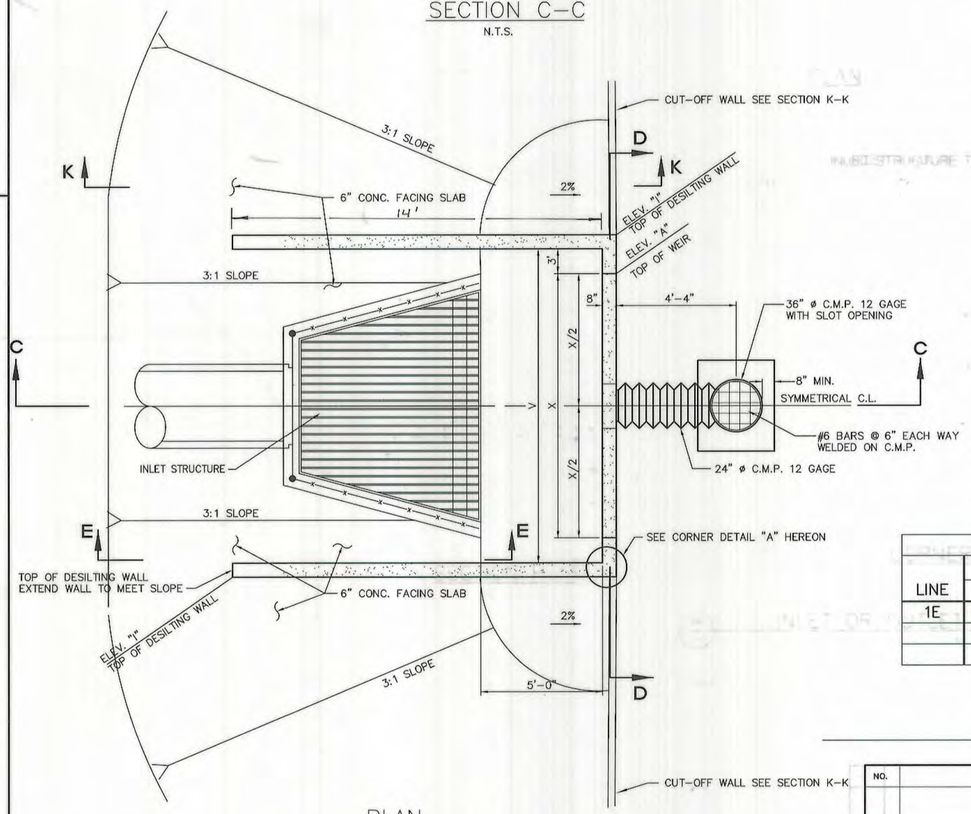
SECTION E-E
N.T.S.



CORNER DETAIL "A"
N.T.S.



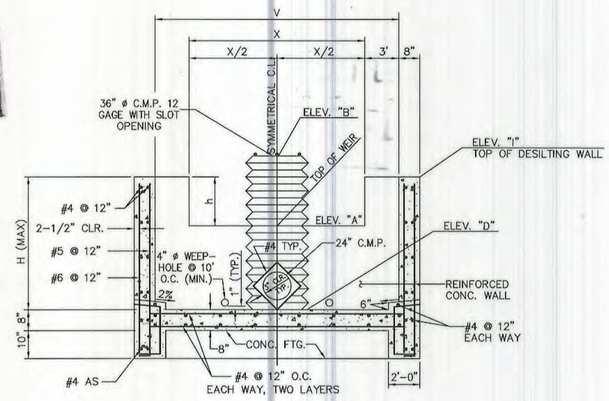
SECTION K-K (FACING SLAB)
N.T.S.



PLAN
N.T.S.

DESILTING INLET STRUCTURE ELEVATION TABLE										
	ELEV									
LINE	A	B	C	D	E	I	X	h	H	V
1E	1100.00	1101.00	1095.50	1096.10	1096.00	1101.00	30.00'	1.00	4.90	36.0

AS of 7-31-2013
AS BUILT



SECTION D-D
N.T.S.

DESILTING INLET DETAIL
N.T.S.

H

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-06

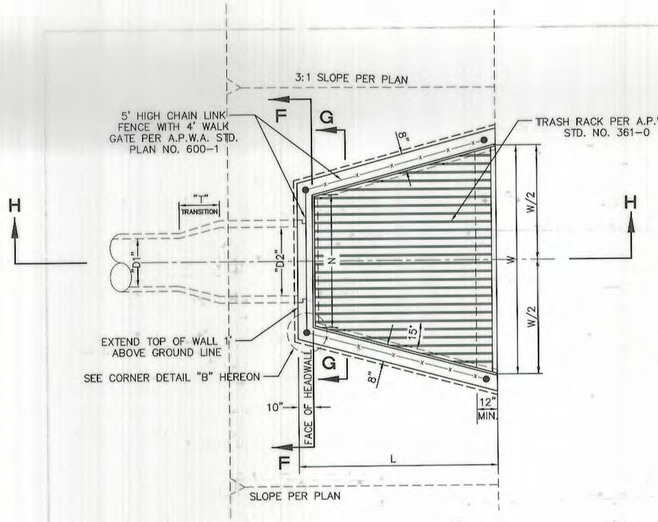
REGISTERED PROFESSIONAL ENGINEER JON M. AUSTIN RCE 58726 Exp. 03/31/07 CIVIL STATE OF CALIFORNIA
PROJECT ENGINEER
DATE 5-31-06

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

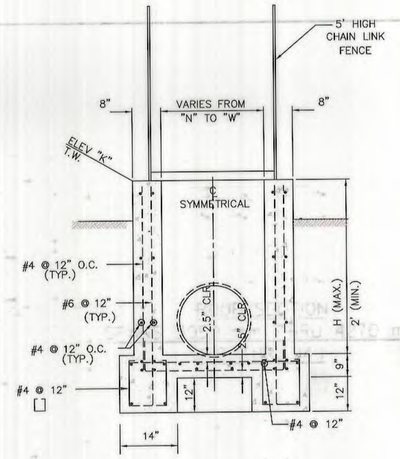
STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
DETAILS

DWG
SHEET 13 OF 21

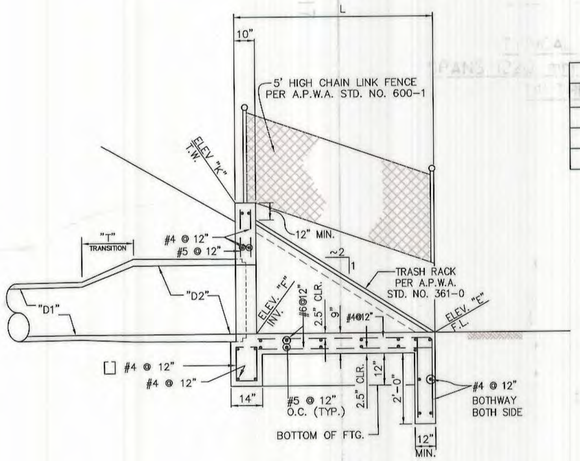
DRAWING
DRAWING NUMBER
NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 0886
Storm Drain - MTD 1764
Sheet 13 of 21
01886
10-25-11



PLAN
N.T.S.

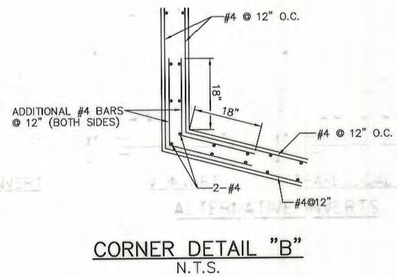


SECTION G-G
N.T.S.

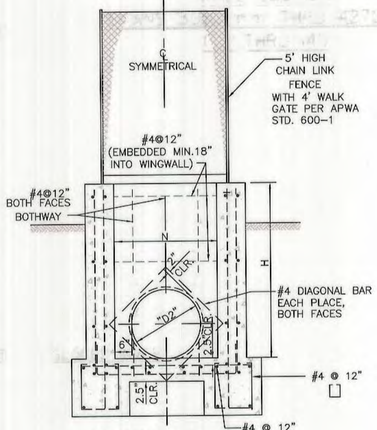


SECTION H-H
N.T.S.

INLET STRUCTURE TABLE										
LINE	ELEV "E"	ELEV "F"	ELEV "K"	D1	D2	W	L	H	N	T
1E	1096.10	1096.00	1103.00	54"	54"	25'	12'	4.9'	10.5'	–



CORNER DETAIL "B"
N.T.S.



SECTION F-F
N.T.S.

H INLET OR OUTLET STRUCTURE DETAIL
N.T.S.

As of 7-31-2013
AS BUILT

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

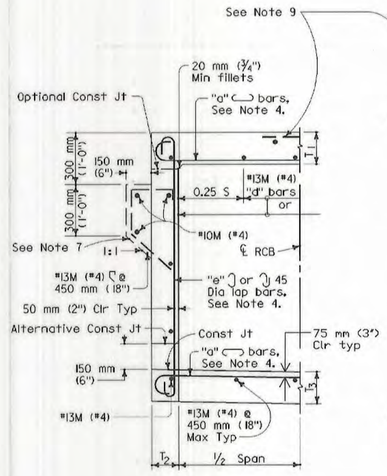
APPROVED FOR CONSTRUCTION BY:
MH for RGN 6-7-06
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE

REGISTERED PROFESSIONAL ENGINEER JON M. AUSTIN RCE 58726 Exp. 03/31/07 CIVIL STATE OF CALIFORNIA
PROJECT ENGINEER 5-31-06 DATE

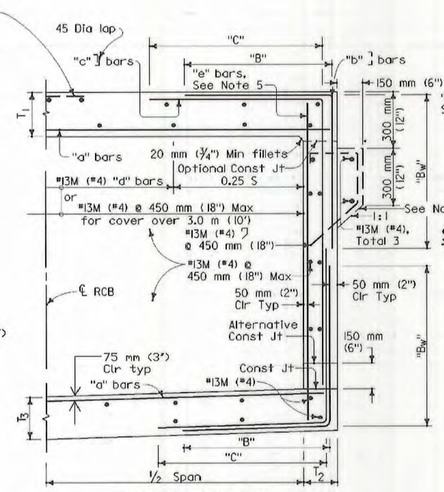
MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
DETAILS
DWG
SHEET 14 OF 21

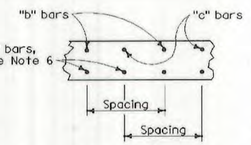
DRAWING NUMBER
BARCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6552
Storm Drain - MTD 1764
Sheet 14 of 21
01986
NUMBER



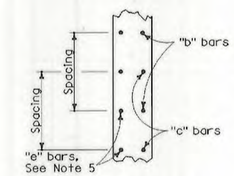
TYPICAL SECTION
SPANS 1220 mm THRU 2440 mm
(4' THRU 8')



TYPICAL SECTION
SPANS 3050 mm THRU 4270 mm
(10' THRU 14')



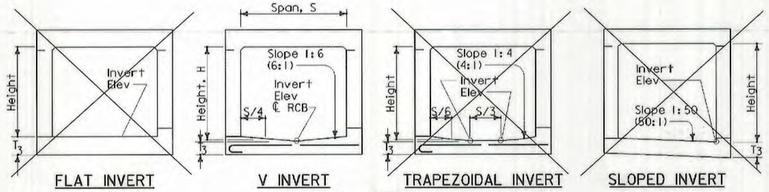
ROOF SECTION
SPANS 3050 mm THRU 4270 mm
(10' THRU 14')
(invert similar)



WALL SECTION
SPANS 3050 mm THRU 4270 mm
(10' THRU 14')

NOTES

1. For boxes with span or height less than any of those shown in table, use next greater size box concrete dimensions and reinforcement. Make necessary changes in bar lengths and quantities.
2. Quantities are approximate and for design purposes only.
3. For boxes with span or height or cover greater than those shown in tables, a special design is required.
4. It is permissable to eliminate the 180° hooks on every other bar.
5. "e" bars are at half spacing, spans 3050 mm - 4270 mm (10' - 14') only.
6. "a" bars are at half spacing, spans 3050 mm - 4270 mm (10' - 14') only.
7. Provide paving notch when top is exposed and when pavement is portland cement concrete, and adjust quantities.
8. For design and details not shown, see Standard Plan D82.
9. For exposed top, provide #13M (#4) @ 450 mm (18") each way, 600 mm (2') lap "c" cars of full span and adjust.



FLAT INVERT | V INVERT | TRAPEZOIDAL INVERT | SLOPED INVERT

ALTERNATIVE INVERTS

LINE	STA	TO STA	RC BOX SIZE	TOP OF INVERT SLAB REQUIREMENTS
A	13+08.69	16+83.83	10'W x 8'H	CONCRETE MIX = 610-B-4,000
A	16+83.83	24+86.22	10'W x 8'H	STEEL CLEARANCE=3.5", CONCRETE MIX=680-B-5,000
A	24+86.22	24+96.06	TRANSITION	TRANSITION 10'WX8'H TO 10'WX7'H RCB STEEL CLEARANCE=3.5", CONCRETE MIX=680-B-5,000
A	24+96.06	34+41.09	10'W x 7'H	STEEL CLEARANCE=3.5", CONCRETE MIX=680-B-5,000
A	34+41.09	40+84.00	10'W x 7'H	CONCRETE MIX = 610-B-4,000

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

DATE 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER 5-31-06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
CALTRANS STANDARD PLAN
D80A

DWG | SHEET 15 OF 21

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET TOTAL NO. SHEETS

Paul Cotter
REGISTERED CIVIL ENGINEER

July 1, 2002
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Paul Cotter
No. C34509
Exp. 9-30-03
CIVIL
STATE OF CALIFORNIA

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AS OF 7-31-2013
AS BUILT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CAST-IN-PLACE
REINFORCED CONCRETE
SINGLE BOX CULVERT

These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses ( ). The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

D80A

2002 DUAL UNITS STD PLAN D80A

117

DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 55502

DRAWING
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 55502

Storm Drain - MTD 1764
Sheet 15 of 21
10/25/11
01986

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Paul Cotter
REGISTERED CIVIL ENGINEER

July 1, 2002
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Paul Cotter — No. C34509 — EXP. 9-30-03 — CIVIL — STATE OF CALIFORNIA

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2002 DUAL UNITS STD PLAN D80C

SPAN			3050 mm (10')									
HEIGHT			1520 mm (5')		1830 mm (6')		2135 mm (7')		2440 mm (8')		2745 mm (9')		3050 mm (10')	
Maximum Earth Cover			3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')
Conc	Roof	T_1	205 mm (8")	270 mm (10½")	205 mm (8")	270 mm (10½")	205 mm (8")	270 mm (10½")	205 mm (8")	270 mm (10½")	205 mm (8")	270 mm (10½")	215 mm (8½")	280 mm (11")
Conc	Walls	T_2	205 mm (8")	205 mm (8")	205 mm (8")	230 mm (9")	205 mm (8")	230 mm (9")	205 mm (8")	255 mm (10")	215 mm (8½")	290 mm (11½")	240 mm (9½")	320 mm (12½")
Conc	Invert	T_3	205 mm (8")	280 mm (11")	205 mm (8")	280 mm (11")	205 mm (8")	280 mm (11")	205 mm (8")	280 mm (11")	205 mm (8")	280 mm (11")	215 mm (8½")	280 mm (11")
Reinf	Spacing		325 mm (13")	300 mm (12")	300 mm (12")	300 mm (12")	275 mm (11")	275 mm (11")	250 mm (10")	275 mm (11")	275 mm (11")	250 mm (10")	275 mm (11")	250 mm (10")
Reinf	** "a"	Size Bar #	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	19M (#6)	19M (#6)	19M (#6)
Reinf	** "a"	Size Bar #	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	19M (#6)	22M (#7)	22M (#7)
Reinf	"b"	Dimension "B"	900 mm (2'-11")	900 mm (2'-11")	900 mm (2'-11")	925 mm (3'-0")	900 mm (2'-11")	1150 mm (3'-9")	900 mm (2'-11")	1150 mm (3'-9")	900 mm (2'-11")	1150 mm (3'-9")	900 mm (2'-11")	1150 mm (3'-9")
Reinf	"b"	Dimension "B_W"	1475 mm (4'-10")	1525 mm (5'-0")	1475 mm (4'-10")	1525 mm (5'-0")	1475 mm (4'-10")	1525 mm (5'-0")	1475 mm (4'-10")	1525 mm (5'-0")	1475 mm (4'-10")	1525 mm (5'-0")	1400 mm (4'-7")	1400 mm (4'-7")
Reinf	"c"	Size Bar #	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)
Reinf	"c"	Dimension "C"	1025 mm (3'-4")	1025 mm (3'-4")	2250 mm (7'-4")	1425 mm (4'-8")	2325 mm (7'-7")	1425 mm (4'-8")	2500 mm (8'-2")	1425 mm (4'-8")	2325 mm (7'-7")	1425 mm (4'-8")	2325 mm (7'-7")	1425 mm (4'-8")
Reinf	* "e"	Size Bar #	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	16M (#5)	16M (#5)
Quantities	Concrete		2.01 m³/m (21.6 CF/LF)	2.50 m³/m (26.8 CF/LF)	2.14 m³/m (23.0 CF/LF)	2.74 m³/m (29.5 CF/LF)	2.26 m³/m (24.3 CF/LF)	2.88 m³/m (31.0 CF/LF)	2.38 m³/m (25.6 CF/LF)	3.17 m³/m (34.1 CF/LF)	2.58 m³/m (27.8 CF/LF)	3.50 m³/m (37.7 CF/LF)	2.98 m³/m (32.1 CF/LF)	3.93 m³/m (42.3 CF/LF)
Quantities	Reinforcement		284 kg/m (191 LB/LF)	397 kg/m (267 LB/LF)	347 kg/m (233 LB/LF)	424 kg/m (285 LB/LF)	387 kg/m (260 LB/LF)	484 kg/m (325 LB/LF)	446 kg/m (300 LB/LF)	504 kg/m (339 LB/LF)	467 kg/m (314 LB/LF)	487 kg/m (327 LB/LF)	536 kg/m (360 LB/LF)	555 kg/m (373 LB/LF)

SPAN			3660 mm (12')											
HEIGHT			1830 mm (6')		2135 mm (7')		2440 mm (8')		2745 mm (9')		3050 mm (10')		3350 mm (11')		3660 mm (12')	
Maximum Earth Cover			3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')
Conc	Roof	T_1	215 mm (8½")	305 mm (12 ")	215 mm (8½")	305 mm (12 ")	215 mm (8½")	305 mm (12")	215 mm (8½")	305 mm (12")	215 mm (8½")	305 mm (12")	240 mm (9½")	305 mm (12")	240 mm (9½")	305 mm (12")
Conc	Walls	T_2	205 mm (8")	255 mm (10")	215 mm (8½")	270 mm (10½")	215 mm (8½")	270 mm (10½")	215 mm (8½")	290 mm (11½")	230 mm (9")	320 mm (12½")	270 mm (10½")	345 mm (13½")	290 mm (11½")	380 mm (15")
Conc	Invert	T_3	215 mm (8½")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	240 mm (9½")	330 mm (13")	255 mm (10")	330 mm (13")
Reinf	Spacing		225 mm (9")	250 mm (10")	225 mm (9")	250 mm (10")	225 mm (9")	250 mm (10")	200 mm (8")	250 mm (10")	200 mm (8")	250 mm (10")	250 mm (10")	225 mm (9")	225 mm (9")	200 mm (8")
Reinf	** "a"	Size Bar #	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	19M (#6)	19M (#6)	19M (#6)
Reinf	** "a"	Size Bar #	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	22M (#7)	22M (#7)	19M (#6)	22M (#7)
Reinf	"b"	Dimension "B"	950 mm (3'-1")	975 mm (3'-2")	1150 mm (3'-9")	1150 mm (3'-9")	1150 mm (3'-9")	1150 mm (3'-9")	1100 mm (3'-7")	1150 mm (3'-9")	1100 mm (3'-7")	1325 mm (4'-4")	1100 mm (3'-7")	1325 mm (4'-4")	1325 mm (4'-4")	1325 mm (4'-4")
Reinf	"b"	Dimension "B_W"	1850 mm (6'-0")	1800 mm (5'-10")	1900 mm (6'-2")	2025 mm (6'-7")	1900 mm (6'-2")	2025 mm (6'-7")	1500 mm (4'-11")	1500 mm (4'-11")	1500 mm (4'-11")	1500 mm (4'-11")	1500 mm (4'-11")	1500 mm (4'-11")	1325 mm (4'-4")	1325 mm (4'-4")
Reinf	"c"	Size Bar #	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)
Reinf	"c"	Dimension "C"	1325 mm (4'-4")	1100 mm (3'-7")	2475 mm (8'-1")	1700 mm (5'-7")	2475 mm (8'-1")	1700 mm (5'-7")	2475 mm (8'-1")	1700 mm (5'-7")	2475 mm (8'-1")	1700 mm (5'-7")	2475 mm (8'-1")	1700 mm (5'-7")	2475 mm (8'-1")	1700 mm (5'-7")
Reinf	* "e"	Size Bar #	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	16M (#5)	16M (#5)	16M (#5)	16M (#5)
Quantities	Concrete		2.49 m³/m (26.8 CF/LF)	3.50 m³/m (37.7 CF/LF)	2.72 m³/m (29.3 CF/LF)	3.73 m³/m (40.1 CF/LF)	2.81 m³/m (30.3 CF/LF)	3.89 m³/m (41.9 CF/LF)	3.00 m³/m (32.2 CF/LF)	4.22 m³/m (45.4 CF/LF)	3.21 m³/m (34.5 CF/LF)	4.63 m³/m (49.8 CF/LF)	3.78 m³/m (40.7 CF/LF)	5.04 m³/m (54.2 CF/LF)	4.22 m³/m (45.4 CF/LF)	5.56 m³/m (59.9 CF/LF)
Quantities	Reinforcement		439 kg/m (295 LB/LF)	539 kg/m (362 LB/LF)	525 kg/m (353 LB/LF)	609 kg/m (409 LB/LF)	543 kg/m (365 LB/LF)	625 kg/m (420 LB/LF)	598 kg/m (402 LB/LF)	615 kg/m (413 LB/LF)	618 kg/m (415 LB/LF)	631 kg/m (424 LB/LF)	655 kg/m (440 LB/LF)	701 kg/m (471 LB/LF)	696 kg/m (468 LB/LF)	795 kg/m (534 LB/LF)

* See Note 5, on Standard Plan D80A.
** See Note 6, on Standard Plan D80A.

As of 7-31-2013
AS BUILT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CAST-IN-PLACE REINFORCED CONCRETE SINGLE BOX CULVERT

These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses ( ). The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

D80C

LINE	STA	TO STA	RC BOX SIZE	CONC & REINF REQUIREMENTS
A	13+08.69	16+83.83	10'W x 8'H	USE 6m (20') MAX EARTH COVER CRITERIA

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA

For R.G.N. 6-7-06
DATE

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER — JON M. AUSTIN — RCE 58726 — Exp. 03/31/07 — CIVIL — STATE OF CALIFORNIA

Jon M. Austin 5-31-06
PROJECT ENGINEER DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

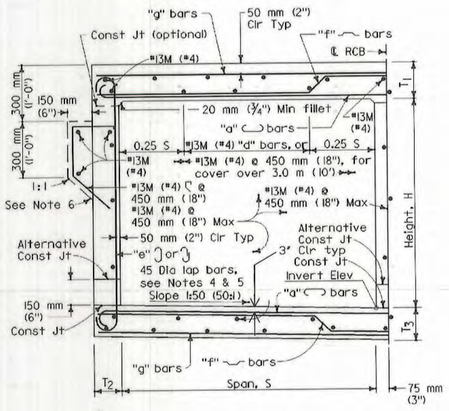
STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

CITY OF SANTA CLARITA

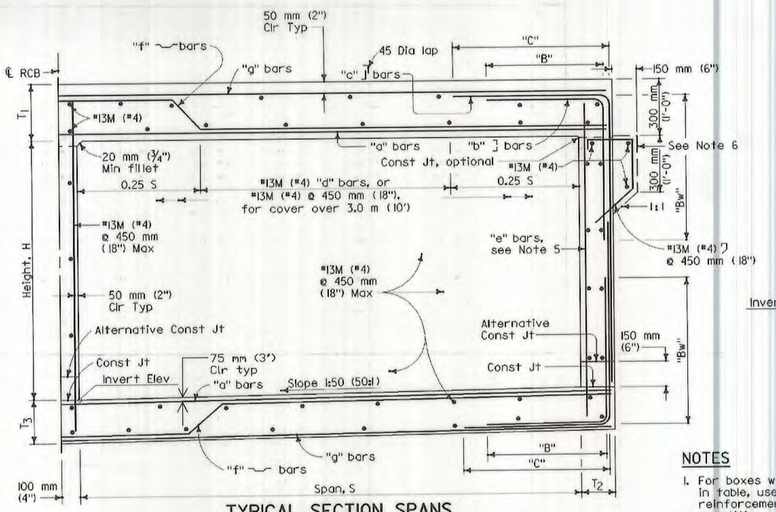
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
CALTRANS STANDARD PLAN
D80C

DWG | SHEET 16 OF 21

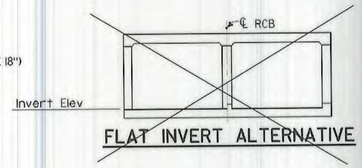
DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6552
Storm Drain - MTD 1764
Sheet 16 of 21
01986
NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
NUMBER 6552



TYPICAL SECTION SPANS
1220 mm THRU 2440 mm
(4' THRU 8')



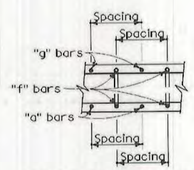
TYPICAL SECTION SPANS
3050 mm THRU 4270 mm
(10' THRU 14')



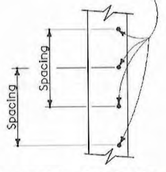
FLAT INVERT ALTERNATIVE

NOTES

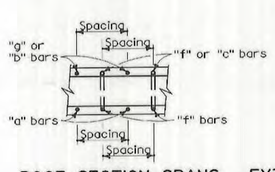
1. For boxes with span or height less than any of those shown in table, use next greater size box concrete dimensions and reinforcement. Make necessary changes in bar lengths and quantities.
2. For boxes with span or height or cover greater than those shown in tables, a special design is required.
3. Quantities are approximate and for design purposes only.
4. It is permissable to eliminate the 180° hooks on every other "e" bar.
5. "e" bars are at half spacing.
6. Provide paving notch when top is exposed and when pavement is portland cement concrete, and adjust quantities.
7. For design and details not shown, see Standard Plan D82.
8. This plan sheet may be used for multiple cell culverts by making necessary adjustments.



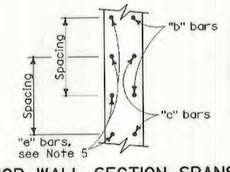
ROOF SECTION SPANS
1220 mm THRU 2440 mm
(4' THRU 8')
Invert Similar



EXTERIOR WALL SECTION SPANS
1220 mm THRU 2440 mm
(4' THRU 8')



ROOF SECTION SPANS
3050 mm THRU 4270 mm
(10' THRU 14')
Invert Similar



EXTERIOR WALL SECTION SPANS
3050 mm THRU 4270 mm
(10' THRU 14')

"d" bars, for earth covers up to and including 3.0 m (10')								
Span	1220 mm (4')	1520 mm (5')	1830 mm (6')	2135 mm (7')	2440 mm (8')	3050 mm (10')	3660 mm (12')	4270 mm (14')
Number	5	6	8	10	13	14	16	19

AS BUILT
As of 7-31-2013

LINE	STA	TO STA	RC BOX SIZE	COMMENT
A	40+84.00	41+03.00	10'W x 7'H	CONCRETE THICKNESS PER CALTRANS STD. PLAN D81A

APPROVED FOR CONSTRUCTION BY:
ROBERT Q. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER
JON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER 5-31-06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
CALTRANS STANDARD PLAN
D81A

DWG | SHEET 17 OF 21

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Paul Cotter
REGISTERED CIVIL ENGINEER
July 1, 2002
PLANS APPROVAL DATE
REGISTERED PROFESSIONAL ENGINEER Paul Cotter C34509 Exp. 9-30-03 CIVIL STATE OF CALIFORNIA

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Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CAST-IN-PLACE REINFORCED CONCRETE DOUBLE BOX CULVERT

These "Standard Plans for Construction of Local Streets and Roads" contain units in two systems of measurement: International System of Units (SI or "metric") and United States Standard Measures shown in the parentheses ( ). The measurements expressed in the two systems are not necessarily equal or interchangeable. See the "Foreword" at the beginning of this publication.

NO SCALE

D81A

2002 DUAL UNITS STD PLAN D81A

121

DRAWING NUMBER

SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6562

Storm Drain - MTD 1764
Sheet 17 of 21

10/25/11 01986

NUMBER

SPAN			3050 mm (10')											
HEIGHT			1520 mm (5')		1830 mm (6')		2135 mm (7')		2440 mm (8')		2745 mm (9')		3050 mm (10')	
Maximum Earth Cover			3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')
Conc	Roof	T_1	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	240 mm (9½")	320 mm (12½")	240 mm (9½")	320 mm (12½")
	Walls	T_2	205 mm (8")	205 mm (8")	205 mm (8")	215 mm (8½")	205 mm (8")	240 mm (9½")	205 mm (8")	270 mm (10½")	215 mm (8½")	290 mm (11½")	240 mm (9½")	320 mm (12½")
	Invert	T_3	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")	230 mm (9")	320 mm (12½")
Reinf	Spacing		275 mm (11")	190 mm (7½")	265 mm (10½")	190 mm (7½")	250 mm (10")	200 mm (8")	250 mm (10")	200 mm (8")	265 mm (10½")	200 mm (8")	265 mm (10½")	215 mm (8½")
	"a"	Size Bar #	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)
	"f"	Size Bar #	22M (#7)	16M (#5)	19M (#6)	16M (#5)	19M (#6)	16M (#5)	19M (#6)	16M (#5)	19M (#6)	16M (#5)	19M (#6)	16M (#5)
	"d"	Size Bar #	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)
		Size Bar #	16M (#5)	16M (#5)	13M (#4)	16M (#5)	16M (#5)	16M (#5)	19M (#6)	16M (#5)	19M (#6)	19M (#6)	19M (#6)	19M (#6)
	"b"	Dim "B"	1550 mm (1'-9")	800 mm (2'-7")	625 mm (2'-0")	850 mm (2'-9")	700 mm (2'-3")	850 mm (2'-9")	800 mm (2'-7")	950 mm (3'-1")	800 mm (2'-7")	950 mm (3'-1")	800 mm (2'-7")	950 mm (3'-1")
		Dim "Bw"	1225 mm (4'-0")	1500 mm (4'-11")	1225 mm (4'-0")	1500 mm (4'-11")	1225 mm (4'-0")	1500 mm (4'-11")	1225 mm (4'-0")	1500 mm (4'-11")	1225 mm (4'-0")	1500 mm (4'-11")	1225 mm (4'-0")	1500 mm (4'-11")
		Size Bar #	16M (#5)	16M (#5)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	22M (#7)	19M (#6)	22M (#7)	19M (#6)
	"c"	Dim "C"	950 mm (3'-1")	850 mm (2'-9")	1150 mm (3'-9")	1000 mm (3'-3")	1375 mm (4'-6")	1300 mm (4'-3")	1675 mm (5'-6")	1375 mm (4'-6")	1850 mm (6'-0")	1450 mm (4'-9")	1850 mm (6'-0")	1450 mm (4'-9")
	"e"	Size Bar #	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	16M (#5)	16M (#5)
Quantities	Concrete		3.97 m³/m (42.7 CF/LF)	5.17 m³/m (55.6 CF/LF)	4.15 m³/m (44.7 CF/LF)	5.41 m³/m (58.2 CF/LF)	4.34 m³/m (46.7 CF/LF)	5.74 m³/m (61.8 CF/LF)	4.52 m³/m (48.7 CF/LF)	6.09 m³/m (65.6 CF/LF)	4.88 m³/m (52.5 CF/LF)	6.50 m³/m (70.0 CF/LF)	5.23 m³/m (56.3 CF/LF)	6.92 m³/m (74.5 CF/LF)
	Reinforcement		551 kg/m (370 LB/LF)	676 kg/m (454 LB/LF)	567 kg/m (381 LB/LF)	735 kg/m (494 LB/LF)	622 kg/m (418 LB/LF)	735 kg/m (494 LB/LF)	684 kg/m (460 LB/LF)	759 kg/m (510 LB/LF)	723 kg/m (486 LB/LF)	818 kg/m (550 LB/LF)	771 kg/m (518 LB/LF)	845 kg/m (568 LB/LF)

SPAN			3660 mm (12')													
HEIGHT			1830 mm (6')		2135 mm (7')		2440 mm (8')		2745 mm (9')		3050 mm (10')		3350 mm (11')		3660 mm (12')	
Maximum Earth Cover			3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')	3.0 m (10')	6.0 m (20')
Conc	Roof	T_1	255 mm (10")	370 mm (14½")	255 mm (10")	370 mm (14½")	255 mm (10")	370 mm (14½")	255 mm (10")	370 mm (14½")	255 mm (10")	370 mm (14½")	255 mm (10")	370 mm (14½")	255 mm (10")	370 mm (14½")
	Walls	T_2	205 mm (8")	215 mm (8½")	205 mm (8")	230 mm (9")	215 mm (8½")	270 mm (10½")	230 mm (9")	290 mm (11½")	240 mm (9½")	320 mm (12½")	255 mm (10")	355 mm (14")	280 mm (11")	380 mm (15")
	Invert	T_3	255 mm (10")	380 mm (15")	255 mm (10")	380 mm (15")	255 mm (10")	380 mm (15")	255 mm (10")	380 mm (15")	255 mm (10")	380 mm (15")	255 mm (10")	380 mm (15")	255 mm (10")	380 mm (15")
Reinf	Spacing		225 mm (9")	200 mm (8")	225 mm (9")	200 mm (8")	200 mm (8")	190 mm (7½")	200 mm (8")	190 mm (7½")	215 mm (8½")	190 mm (7½")	215 mm (8½")	200 mm (8")	215 mm (8½")	200 mm (8")
	"a"	Size Bar #	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)	22M (#7)
	"f"	Size Bar #	22M (#7)	22M (#7)	22M (#7)	22M (#7)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)
	"d"	Size Bar #	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)
		Size Bar #	16M (#5)	16M (#5)	16M (#5)	19M (#6)	16M (#5)	19M (#6)	16M (#5)	19M (#6)	19M (#6)	19M (#6)	16M (#5)	19M (#6)	19M (#6)	19M (#6)
	"b"	Dim "B"	800 mm (2'-7")	950 mm (3'-1")	925 mm (3'-0")	975 mm (3'-2")	1075 mm (3'-6")	975 mm (3'-2")	1075 mm (3'-6")	1025 mm (3'-4")	1150 mm (3'-9")	1025 mm (3'-4")	1150 mm (3'-9")	1025 mm (3'-4")	1150 mm (3'-9")	1025 mm (3'-4")
		Dim "Bw"	1250 mm (4'-1")	975 mm (3'-2")	1250 mm (4'-1")	1025 mm (3'-4")	1250 mm (4'-1")	1025 mm (3'-4")	1250 mm (4'-1")	1100 mm (3'-7")	1150 mm (3'-9")	1100 mm (3'-7")	1150 mm (3'-9")	1100 mm (3'-7")	1100 mm (3'-7")	1100 mm (3'-7")
		Size Bar #	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	19M (#6)	22M (#7)	22M (#7)	22M (#7)	22M (#7)
	"c"	Dim "C"	1175 mm (3'-10")	1100 mm (3'-7")	1375 mm (4'-6")	1325 mm (4'-4")	1700 mm (5'-7")	1525 mm (5'-0")	2000 mm (6'-6")	1575 mm (5'-2")	2200 mm (7'-2")	1625 mm (5'-4")	2275 mm (7'-5")	1700 mm (5'-7")	2275 mm (7'-5")	1700 mm (5'-7")
	"e"	Size Bar #	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	13M (#4)	16M (#5)	16M (#5)	16M (#5)	16M (#5)
Quantities	Concrete		5.11 m³/m (55.0 CF/LF)	7.09 m³/m (76.3 CF/LF)	5.30 m³/m (57.0 CF/LF)	7.35 m³/m (79.1 CF/LF)	5.56 m³/m (59.8 CF/LF)	7.79 m³/m (83.8 CF/LF)	5.82 m³/m (62.7 CF/LF)	8.18 m³/m (88.1 CF/LF)	6.12 m³/m (65.9 CF/LF)	8.61 m³/m (92.7 CF/LF)	6.42 m³/m (69.1 CF/LF)	9.18 m³/m (98.8 CF/LF)	6.85 m³/m (73.7 CF/LF)	9.66 m³/m (104.0 CF/LF)
	Reinforcement		808 kg/m (543 LB/LF)	899 kg/m (604 LB/LF)	838 kg/m (563 LB/LF)	961 kg/m (646 LB/LF)	892 kg/m (600 LB/LF)	987 kg/m (663 LB/LF)	914 kg/m (614 LB/LF)	1024 kg/m (688 LB/LF)	933 kg/m (627 LB/LF)	1028 kg/m (691 LB/LF)	1043 kg/m (701 LB/LF)	1115 kg/m (749 LB/LF)	1091 kg/m (733 LB/LF)	1137 kg/m (764 LB/LF)

* See Note 5, on Standard Plan D81A

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Paul Cotter
REGISTERED CIVIL ENGINEER

July 1, 2002
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Paul Cotter — No. C34509 — Exp. 9-30-03 — CIVIL — STATE OF CALIFORNIA

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2002 DUAL UNITS STD PLAN D81C

AS OF 7-31-2013
AS BUILT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE DOUBLE BOX CULVERT

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NO SCALE — D81C

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-06

REGISTERED PROFESSIONAL ENGINEER — JON M. AUSTIN — RCE 58726 — Exp. 03/31/07 — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER — DATE 5-31-06

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

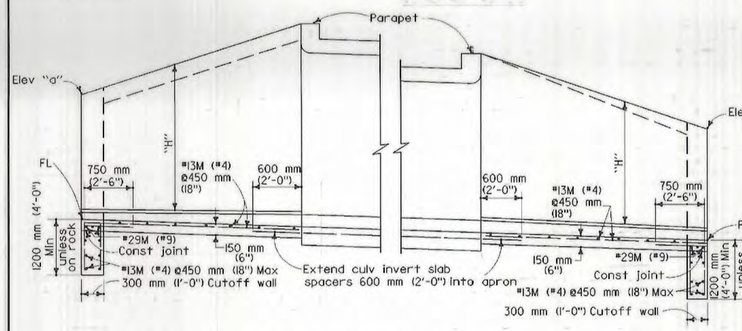
CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
CALTRANS STANDARD PLAN
D81C

DWG | SHEET 18 OF 21

123

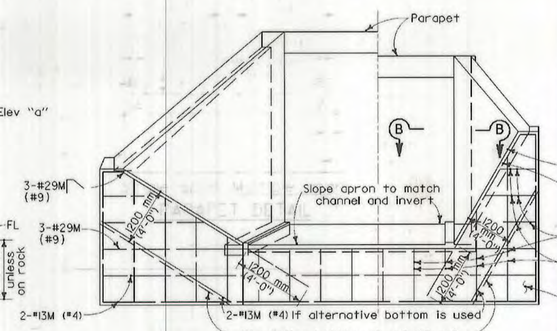
DRAWING NUMBER
SHOP PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 9550
Storm Drain - MTD 1764
Sheet 18 of 21
10/25/11
01886
NUMBER
NEW HOPE, MINNESOTA



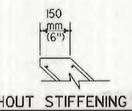
TYPICAL WITH STIFFENING BEAM

TYPICAL WITHOUT STIFFENING BEAM

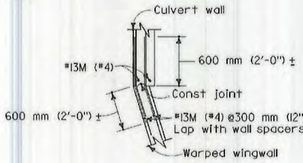
PART LONGITUDAL SECTION



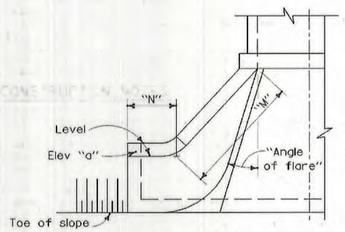
END ELEVATION



WITHOUT STIFFENING BEAM

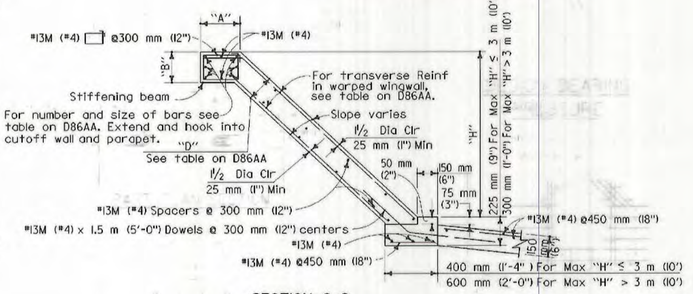


SECTION B-B



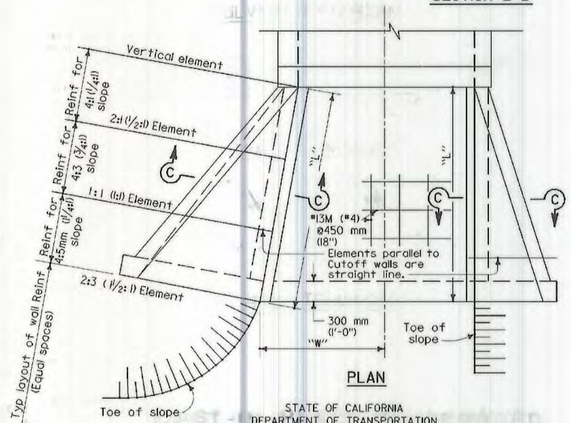
ALTERNATIVE WARPED WINGWALL

Use where additional protection to toe of embankment is required.



SECTION C-C

Where abrasion is anticipated increase apron thickness to 175 mm (7") minimum to provide 50 mm (2") minimum reinforcement coverage.



PLAN

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BOX CULVERT WARPED WINGWALLS

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NO SCALE

D86A

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Paul Cotter
REGISTERED CIVIL ENGINEER

July 1, 2002
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Paul Cotter — No. C34509 — Exp. 9-30-03 CIVIL — STATE OF CALIFORNIA

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AS OF 7-31-2013
AS BUILT

APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE 6-7-00

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

REGISTERED PROFESSIONAL ENGINEER — JON M. AUSTIN — RCE 58726 — Exp. 03/31/07 CIVIL — STATE OF CALIFORNIA
PROJECT ENGINEER 5-31-06 DATE

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN CITY OF SANTA CLARITA MTD. No. 1764

CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
CALTRANS STANDARD PLAN
D86A

DWG | SHEET 19 OF 21

2002 DUAL UNITS STD PLAN D86A

128

DRAWING NUMBER
SMED PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 6552
Storm Drain - MTD 1764
Sheet 19 of 21
10/25/11
01986
REORDER BY PART NUMBER 6552
NUMBER
REV • HOPE, MINNESOTA
T NUMBER 6552

DRAWING NUMBER
SAFCO PRODUCTS • NEW HOPE, MINNESOTA
Storm Drain - MTD 1764 (01251) 01986
Sheet 20 of 21
NUMBER

125

DESIGN NOTES

Specifications:
Design:
Bridge Design Specification (1983 AASHTO Specifications with revisions by Caltrans)
Load Factors: 1.5 D + 1.5 E + 2.5 (L + I)
Where D=Dead Load
E=Earth Load
L=Live Load
I=Impact
Capacity reduction factor is included.

Loading:
Live load:
HS20-44 truck
Apply impact only to the roof slab.

Earth Cover	Impact (%)
Up to 300 mm (1.0')	30
301mm to 600 mm (1.1' to 2.0')	20
601mm to 900 mm (2.1' to 3.0')	10
Over 900 mm (3.0')	0

No surcharge on walls due to live load.
Earth load:
Earth pressures for two conditions:
22.0 kPa/m (140 lbs/CF) vertical, 6.6 kPa/m (42 lbs/CF) horizontal.
22.0 kPa/m (140 lbs/CF) vertical, 22.0 kPa/m (140 lbs/CF) horizontal.

Unit stresses:
f'_c = 25 MPa (3600 psi)
f_y = 400 MPa (60,000 psi)

Distribution "d" bars:
Up to and including 3.0 m (10') cover
Expressed as a percent of main positive reinforcement required: $\frac{100}{0.0572\sqrt{S}}$, $\left(\frac{100}{\sqrt{S}}\right)$ Max 50%.
Over 3.0 m (10') cover
#13M (#4) @ 450 mm (18") maximum.

Shear:
maximum allowable shear, $v_c = 0.29\sqrt{f'_c}$, MPa, ($v_c = \sqrt{3.5 f'_c}$, psi)

Exclusions:
Compressive reinforcement and negative-moment reduction (for continuity) do not apply.
Axial loading on members has not been considered.

CONSTRUCTION NOTES

Construction loads:
Strutting required as shown on Standard Plan D88.
Strutting may be required on culvert extensions when existing parapet is removed.

Expansion joints:
Invert:
No expansion joints shall be permitted.

Roof and Walls:
When cover is less than span length-
Place 13 mm (½") expansion joint filler at 9 m (30') ± centers outside the paved roadway lanes and place Bridge Detail 3-2, Standard Plan B0-3, at 9 m (30') centers under paved roadway lanes.
When cover is more than span length-
Place 13 mm (½") expansion joint filler at 9 m (30') ± centers and additional 13 mm (½") expansion joints at locations of change in foundation character, as directed by the Engineer.

Construction joints:
Temporary joints may be permitted if normal (or radial) to ℄ of RCB. Otherwise, the contractor is to submit a proposal for consideration.

Cutoff walls:
1.2 m (4') cutoff walls are to be provided at inlet and/or outlet unless adjacent channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant.

Earthwork:
See Standard Plan A62E.

Backfill:
See Standard Specifications, except that the difference in level of backfill (against outside walls) shall not exceed 600 mm (2').

GENERAL NOTES

Designation:
Standard single or multiple box culverts are shown on plans as span times height with maximum cover over roof thus: 2440 mm x 1520 mm (8' X 5') RCB with 3 m (10') or DBL 3050 mm x 1520 mm (10' x 5') RCB with 6 m (20'), followed by alternatives.

Alternatives:
Single cell: Invert will be sloped unless "trapezoidal invert", "flat invert" or "V invert" is included in designation
Multiple cell: Invert will be vee unless "flat invert" is specified. Ends of culvert will be rounded unless "square ends" are designated. Parapets will be as shown unless designated in plans. Such designations may be different for inlet and outlet ends.

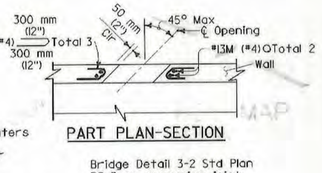
Quantities:
Quantities are for the sloped or vee invert and do not include "d" bars, nor splices in longitudinal bars, nor temperature reinforcement for exposed roof, nor concrete or reinforcement for parapets, cutoff walls or paving notches.

Reinforcement placement:
Main reinforcement is to be placed transverse or, for curved culverts, radial. When radial, reinforcing spacing of the "a", "f" and "g" bars is measured along the centerline. Stagger splices not shown. Hooks may be rotated or tilted, as necessary, for clearance.

Special reinforcement coverage:
Box standard plans are not to be used for culverts in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

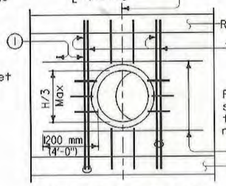
Special design:
Required for culverts with conditions, loads, design bearing pressures or sizes greater than those given on this plan or Standard Plans D80 & D81. Also required for multiple cell culverts with unequal spans. For culverts with railroad loading, see the current AREA design specification.

3 or more cells:
For culverts with more than two cells, use dimensions and reinforcement for the standard "double box culvert" and adjust quantities accordingly.



PART PLAN-SECTION

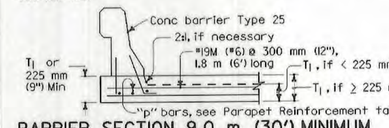
Bridge Detail 3-2 Std Plan B0-3, no expansion joint within 1.2 m (4') of ℄ opening



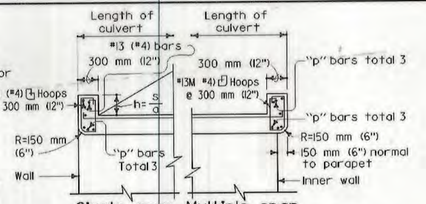
For spans > 2440 mm (8') spread "b" & "c" bar tails or cut, as necessary, to fit.

LONGITUDINAL SECTION
UTILITY OPENING-WALL
H= Height of box

① Adjacent to each side of the opening, place additional bars aquivalent to half the interrupted main reinforcement.



BARRIER SECTION 9.0 m (30') MINIMUM



Single span Multiple span

PARAPET DETAIL

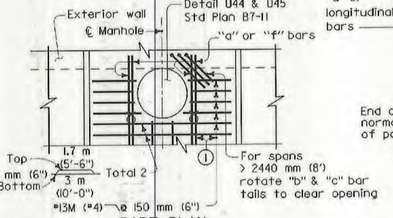
s = Clear span (mm)
a = 12 cosine skew angle

Parapet "p" bars			
Span \ Skew Angle	0° TO 15°	16° TO 30°	31° TO 45°
1220 mm (4')	#13M (#4)	#13M (#4)	#13M (#4)
1830 mm (6')	#13M (#4)	#13M (#4)	#16M (#5)
2440 mm (8')	#13M (#4)	#16M (#5)	#19M (#6)
3050 mm (10')	#16M (#5)	#19M (#6)	#22M (#7)
3660 mm (12')	#19M (#6)	#22M (#7)	#25M (#8)
4270 mm (14')	#22M (#7)	#25M (#8)	#29M (#9)

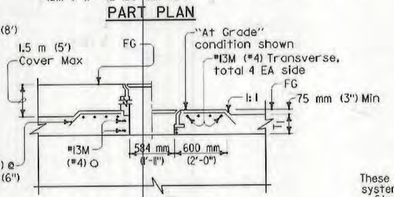
PARAPET REINFORCEMENT

Height \ Cover	3 m (10')	6 m (20')
1830 mm (6')	95 kPa (1.0 TSF)	150 kPa (1.6 TSF)
2440 mm (8')	105 kPa (1.1 TSF)	160 kPa (1.7 TSF)
3050 mm (10')	115 kPa (1.2 TSF)	170 kPa (1.8 TSF)
3660 mm (12')	125 kPa (1.3 TSF)	180 kPa (1.9 TSF)
4270 mm (14')	135 kPa (1.4 TSF)	190 kPa (2.0 TSF)

DESIGN BEARING PRESSURE

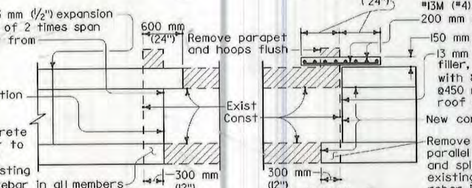


PART PLAN



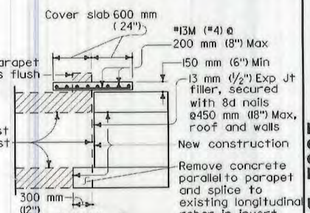
PART LONGITUDINAL SECTION

MANHOLE



DETAIL A

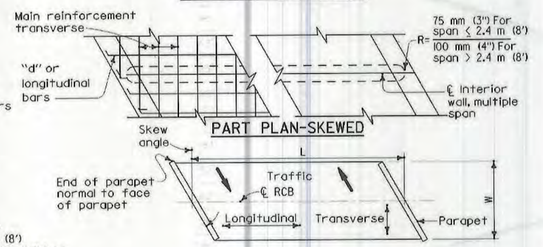
(20° maximun skew as shown. If existing longitudinal and transverse reinforcing bars in top slab are lap spliced with new longitudinal and transverse reinforcing bars, the 20° skew may be exceeded. Lap splicing may require removal of top slab in excess of 600 mm (24") shown.



DETAIL B

(Single cell only, no skew allowed, 300 mm (12") minimum cover.)

CULVERT EXTENSION



PART PLAN-SKEWED

RCB TERMINOLOGY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE CULVERT MISCELLANEOUS DETAILS

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NO SCALE

D82

THIS STANDARD PLAN D82 INCLUDES CHANGES THAT WERE INCORPORATED IN REVISED STANDARD PLAN RSP D82, DATED OCTOBER 26, 2000, AND ISSUED AS A PART OF ERRATUM NO. 99-1 FOR THE 1999 METRIC STANDARD PLANS.

2002 DUAL UNITS STD PLAN D82

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Paul Cotter
REGISTERED CIVIL ENGINEER
July 1, 2002
PLANS APPROVAL DATE
Paul Cotter No. C34509 Exp. 9-30-03 CIVIL STATE OF CALIFORNIA
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As of 7.31-2013

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

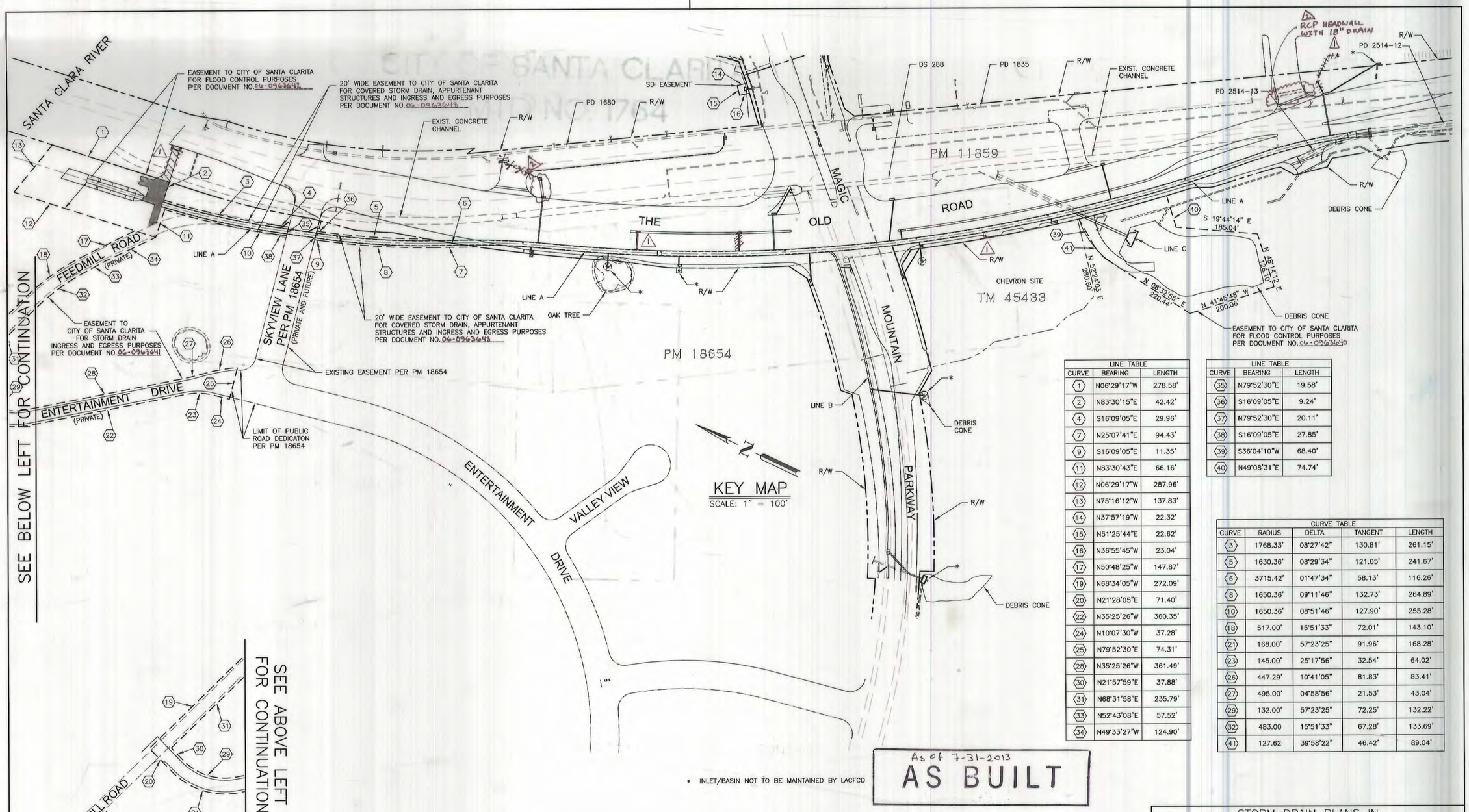
APPROVED FOR CONSTRUCTION BY:
ROBERT G. NEWMAN, P.E., L.S.
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STORM DRAIN PLANS IN CITY OF SANTA CLARITA MTD. No. 1764
CITY OF SANTA CLARITA
STORM DRAIN PLAN AND PROFILE
MTD NO. 1764
CALTRANS STANDARD PLAN D82

DWG | SHEET 18 OF 21 (20)



LINE TABLE		
CURVE	BEARING	LENGTH
1	N06°29'17"W	278.58'
2	N83°30'15"E	42.42'
4	S16°09'05"E	29.96'
7	N25°07'41"E	94.43'
9	S16°09'05"E	11.35'
11	N83°30'43"E	66.16'
12	N06°29'17"W	287.96'
13	N75°16'12"W	137.83'
14	N37°57'19"W	22.32'
15	N51°25'44"E	22.62'
16	N36°55'45"W	23.04'
17	N50°48'25"W	147.87'
19	N68°34'05"W	272.09'
20	N21°28'05"E	71.40'
22	N35°25'26"W	360.35'
24	N10°07'30"W	37.28'
25	N79°52'30"E	74.31'
28	N35°25'26"W	361.49'
30	N21°57'59"E	37.88'
31	N68°31'58"E	235.79'
33	N52°43'08"E	57.52'
34	N49°33'27"W	124.90'

LINE TABLE		
CURVE	BEARING	LENGTH
35	N79°52'30"E	19.58'
36	S16°09'05"E	9.24'
37	N79°52'30"E	20.11'
38	S16°09'05"E	27.85'
39	S36°04'10"W	68.40'
40	N49°08'31"E	74.74'

CURVE TABLE				
CURVE	RADIUS	DELTA	TANGENT	LENGTH
3	1768.33'	08°27'42"	130.81'	261.15'
5	1630.36'	08°29'34"	121.05'	241.67'
6	3715.42'	01°47'34"	58.13'	116.26'
8	1650.36'	09°11'46"	132.73'	264.89'
10	1650.36'	08°51'46"	127.90'	255.28'
18	517.00'	15°51'33"	72.01'	143.10'
21	168.00'	57°23'25"	91.96'	168.28'
23	145.00'	25°17'56"	32.54'	64.02'
26	447.29'	10°41'05"	81.83'	83.41'
27	495.00'	04°58'56"	21.53'	43.04'
29	132.00'	57°23'25"	72.25'	132.22'
32	483.00	15°51'33"	67.28'	133.69'
41	127.62	39°58'22"	46.42'	89.04'

APPROVED FOR CONSTRUCTION BY:

ROBERT G. NEWMAN, P.E., L.S.
DIRECTOR OF PUBLIC WORKS
CITY OF SANTA CLARITA
DATE: 6-7-06

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE
1	UPDATED LATERALS AND TURNAROUND	8/22/07		9-17-07
2	UPDATED LATERALS	2/22/10		2-23-10

REGISTERED PROFESSIONAL ENGINEER
JOON M. AUSTIN
RCE 58726
Exp. 03/31/07
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER
DATE: 5-31-06

MetroPointe Engineers
3555 Harbor Gateway South, Suite A
Costa Mesa, CA 92626
(714) 438-1095

STORM DRAIN PLANS IN
CITY OF SANTA CLARITA MTD. No. 1764

CITY OF SANTA CLARITA

STORM DRAIN PLAN AND PROFILE

EASEMENT EXHIBIT

DWG

SHEET 21 OF 21

DRAWING NUMBER
Storm Drain - MTD 1764
Sheet 21 of 21
01986
10/25/11
NUMBER