

***PRELIMINARY
HYDROLOGY STUDY***

***MAJESTIC CHINO
HERITAGE***

BUILDINGS 1 and 2

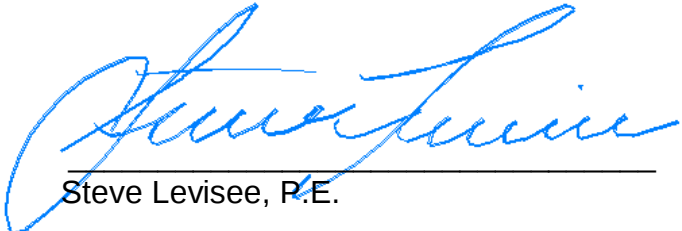
CHINO, CA

PREPARED FOR:

**Majestic Realty Co
13191 Crossroads Parkway North
6th Floor
Industry, California 91746
*Preparation Date: March, 2019***



Prepared under the supervision of:



Steve Levissee, P.E.

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Background and Purpose

Majestic Realty Co. is proposing to develop 2 logistics industrial buildings on approximately 97 acres of land in the City of Chino. The property is located at the southeast corner of Mountain Avenue and Bickmore Avenue in south Chino. The property is formerly dairy land and is unimproved except for some small structures fronting on Mountain Avenue. The site is currently vacant and unused.

The purpose of this report is to establish the basis for final design of flood protection and drainage conveyance elements, ensure that these elements can be sized properly, and to ensure the development can comply with County of San Bernardino requirements when constructed.

Project Scope

This study contemplates the entire project site. Due to the improvements that exist on the perimeter of the site and the existing topography, there are no tributary areas that direct runoff to the site, only onsite areas will be considered. Both the existing pre-developed condition of the site and the post-developed proposed condition are analyzed for comparison to ensure compliance with current drainage policies and regulations.

The Hydrology Maps for both the existing condition and proposed condition are given in Appendix A & B respectively.

Flood Designation

Modifications to Prado Dam were recently completed where the main embankment has been raised from 566 feet, NGVD to elevation 594.4 feet, NGVD. A new outlet works was also constructed to allow for increased release capabilities from the dam.

When the water surface elevation in the reservoir reaches 543.0 feet, NGVD uncontrolled releases from the spillway will commence. The spillway is also planned for modification in the future where it will be raised 20 feet, up to elevation 563 feet, NGVD. The Interim Water Control Plan will be implemented during this time to reflect operation of the dam using the new outlet works features while the spillway remains at elevation 543.0 feet, NGVD.

The property is located within the Prado Dam backwater area below the 566 contour elevation, and as such, the proposed finish floor elevations will be set at an elevation of 567. The current FEMA FIRM map no. 06071C9335H date March of 1996 indicates the Site is in Zone D – “Flood hazards are undetermined, but possible”.

Project Location



Design Criteria and Methods

The runoff calculations presented in this study are produced using the Unit Hydrograph method for developed condition detailed in the current San Bernardino County Hydrology Manual. Unit Hydrograph method was used for the developed condition as it is the input for basin routing to ensure capacity and peak flow attenuation. Because this is a preliminary study to determine feasibility, multiple recurrence interval storms were not produced as would be required on a final report. This study presents the typical worst case storm event; the 24 hr, 100 year storm. Pre-development hydrology was produced with the rational method as detailed in the current San Bernardino County Hydrology Manual.

The County requires that post-development runoff does not exceed pre-development runoff, and the City of Chino requires that a maximum of 80% and the pre-developed runoff rate.

The proposed detention basins are to be sized for the 100 year, 24 hour storm event. No volume reduction is taken for infiltration. The detention basin will also act as a Water Quality basin and will be designed as a Bio-Retention Facility in accordance with State and County standards. Detention basin volume and outflow calculations are produced with a spreadsheet program. Outlet pipe hydraulics is based on the peak outlet Q from the basin and the use of dual wall, HDPE storm drain pipe designed in accordance with City of Chino and County of San Bernardino standards as well as in accordance with EM 1110-2-2902, Chapter 6.

Street flow in Mountain Ave will not exceed curb height in the 100 year storm event.

Hydrology Model Assumptions

Existing Condition:

Soils Type = C – Soil map included.

Rainfall Data – NOAA Atlas 14 per SB County requirements.

AMC = 2 - Typical for studies of this nature.

Base Flow = 0 – There are no existing watercourses in the study catchment.

Proposed Condition:

Soils Type = C – Soil map included.

Rainfall Data – NOAA Atlas 14 per SB County requirements.

AMC = 2 - Typical for studies of this nature.

Unit Hydrograph Lag Time – Calculated by Hydrology program based on physical properties.

Base Flow = 0 – There are no existing watercourses in the study catchment.

Basin Outlet Structure

The proposed structure controlling outlet flows to the Cypress Channel is the interface between the basins and the offsite storm drain. The outlet storm drain will be directed to the east along the southerly property line and will connect to the Cypress Channel outlet structure at it's southerly end.

This structure will limit the flow out of the basin by providing an open orifice at the top of the structure at the proper elevation to ensure proper Water Quality treatment volume, drawdown time, ensure peak inflow attenuation, and safely outlet design storm flows to the outlet storm drain.

Preliminary Hydrology Results

Existing Condition

	100 YR
SUBAREA	CFS
A	137.7
B	39.8
TOTALS	177.5

Developed Condition

Tributary to Detention Basin

	100 YR- INFLOW	OUTLET TO CYPRESS CHANNEL
SUBAREA	CFS	CFS
A	215.8	131.0

Allowable Q based on pre-developed runoff = (177.5 cfs) x (0.8) = 142.0 cfs

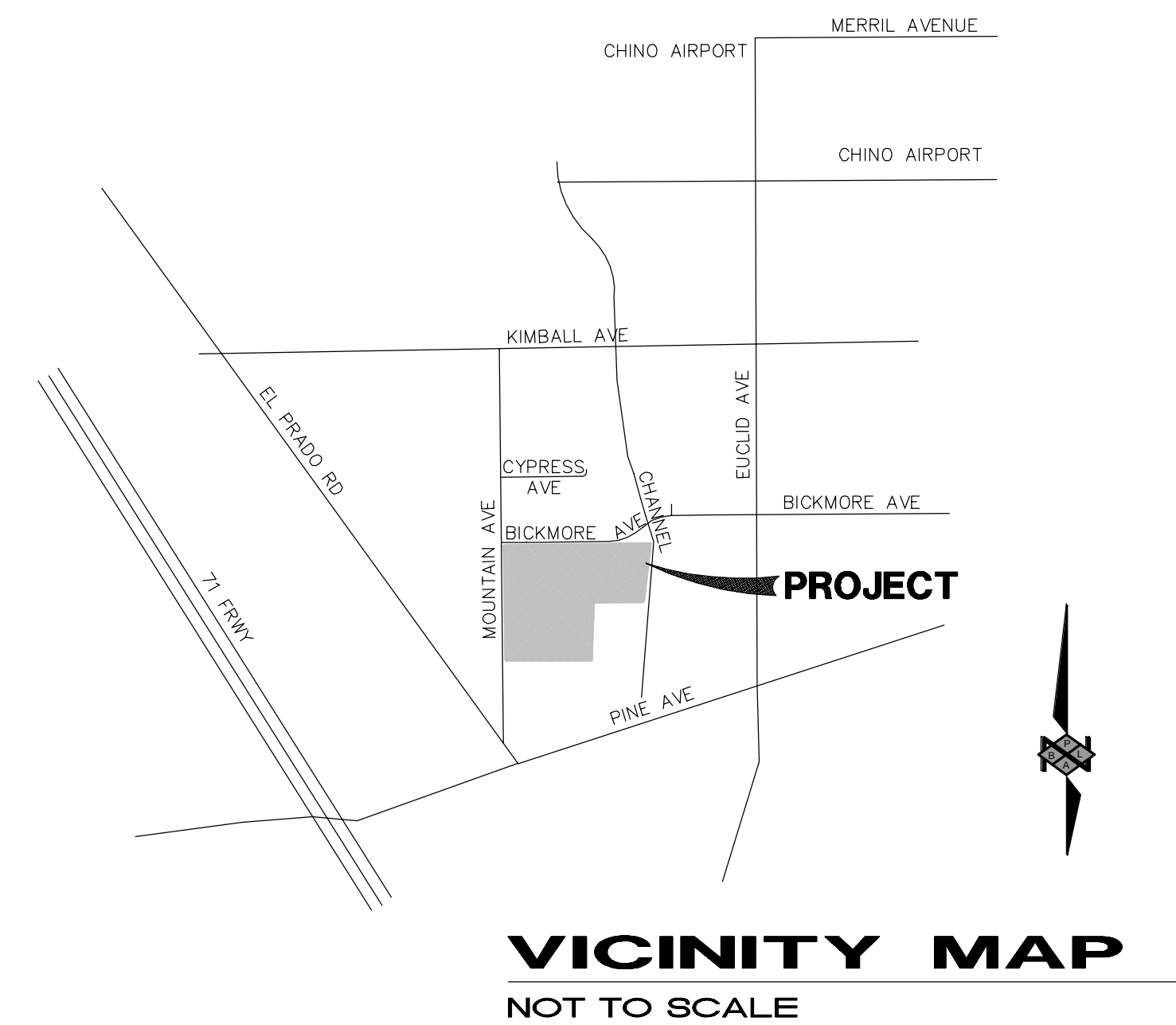
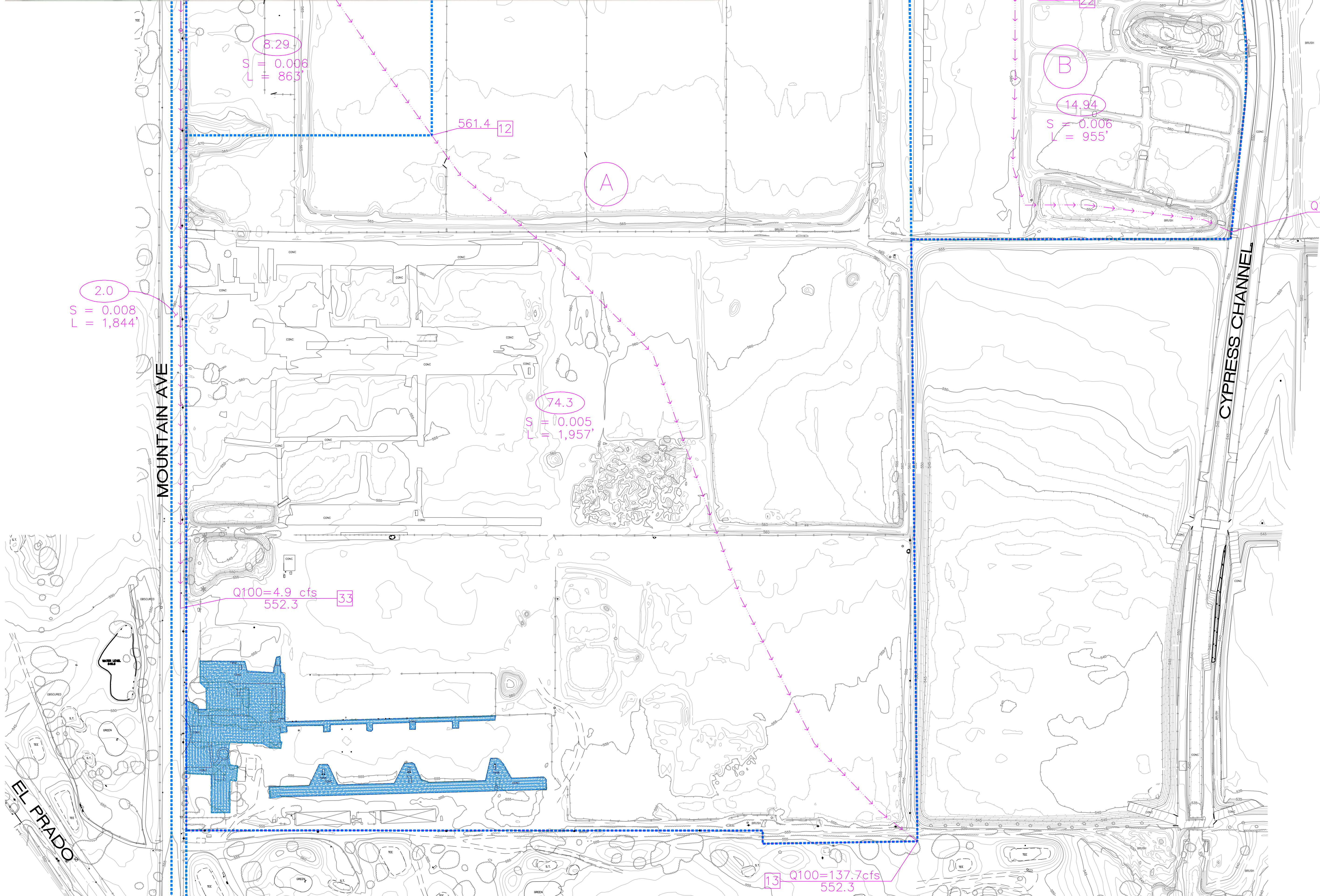
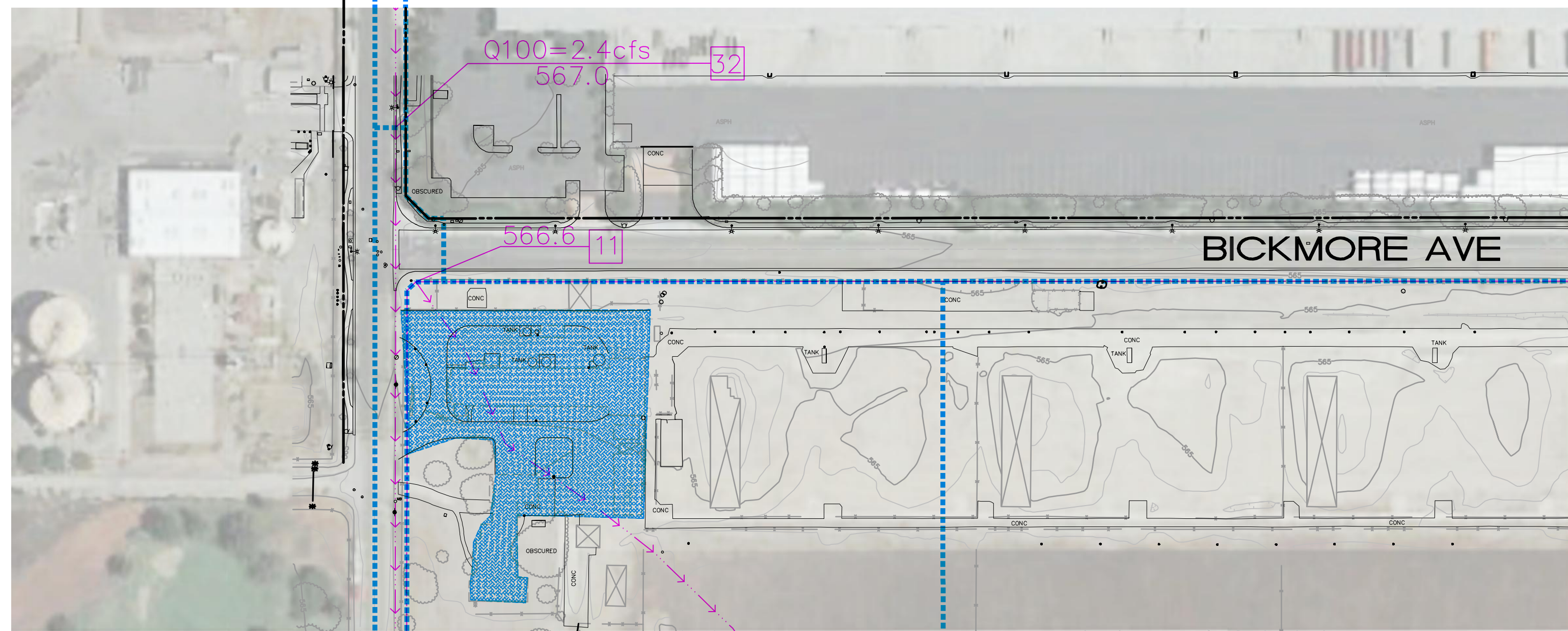
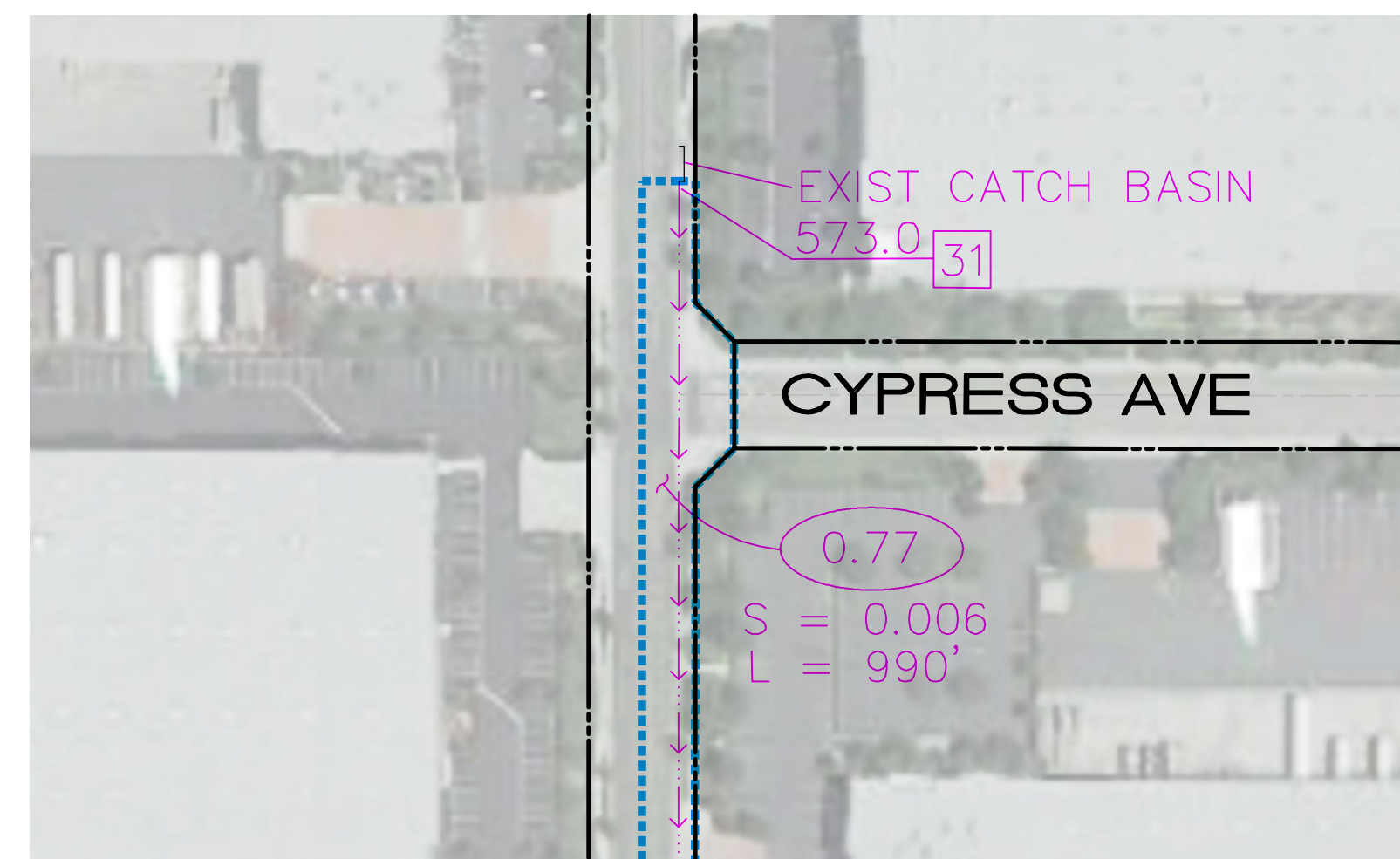
Conclusion

This study and the related calculations indicated that the proposed development design flows can be conveyed to the proposed detention basins without danger of site flooding. Additionally, the detention basins are properly sized to attenuate the difference between pre-development runoff and runoff from the completed development.

Note that a final Hydrology and Hydraulics study will be required to accompany final construction documents to analyze final basin geometry, provide conveyance element hydraulics for proper pipe sizing, surface drainage facilities and energy dissipation.

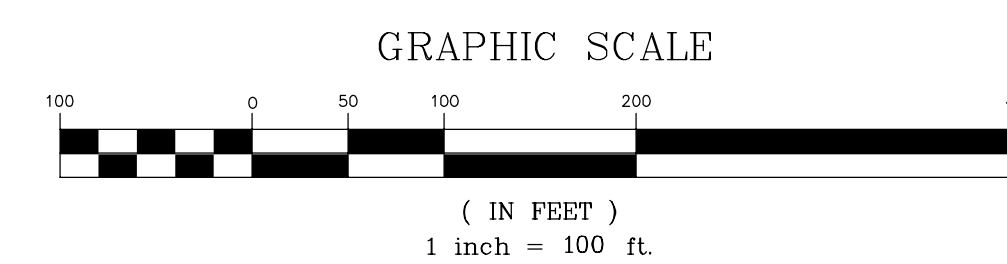
APPENDIX A

HYDROLOGY MAP – EXISTING CONDITION



LEGEND:

- Q=7.39 — 50 YR DISCHARGE
 - [K3] — NODE NUMBER
 - (5.8) — SUB-AREA ACRES
 - (A) — SUB-AREA DESIGNATION
 - L=548 — FLOWPATH LENGTH
 - S=0.005 — FLOWPATH SLOPE
 - SUB-AREA BOUNDARY
 - FLOWPATH
 - EXISTING IMPERVIOUS AREA
- TOTAL EXISTING RUNOFF = 177.5 CFS.
TOTAL ALLOWABLE RUNOFF IN DEVELOPED CONDITION =
(0.8) * (177.5) = 142.0 CFS



May 17 2019

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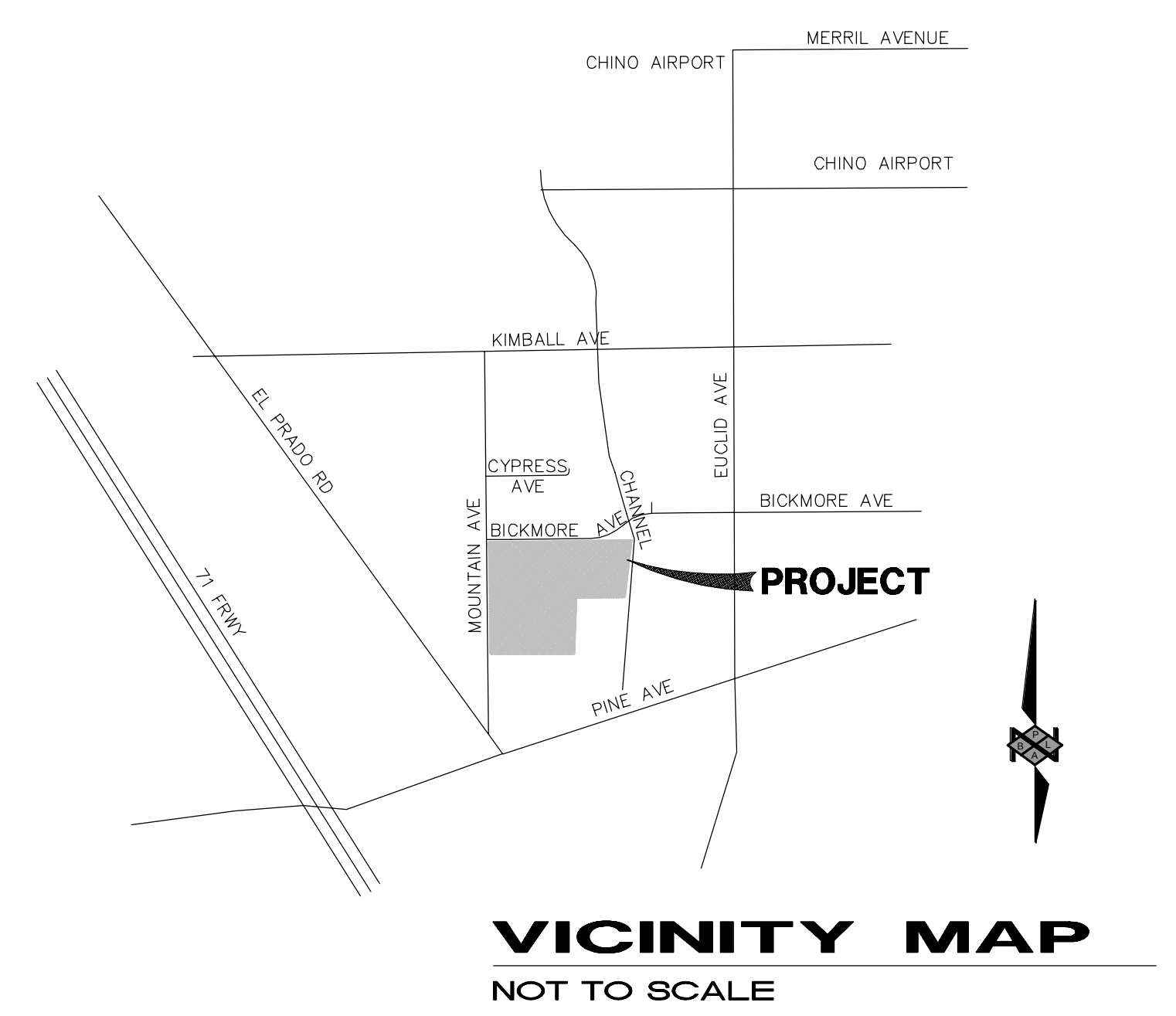
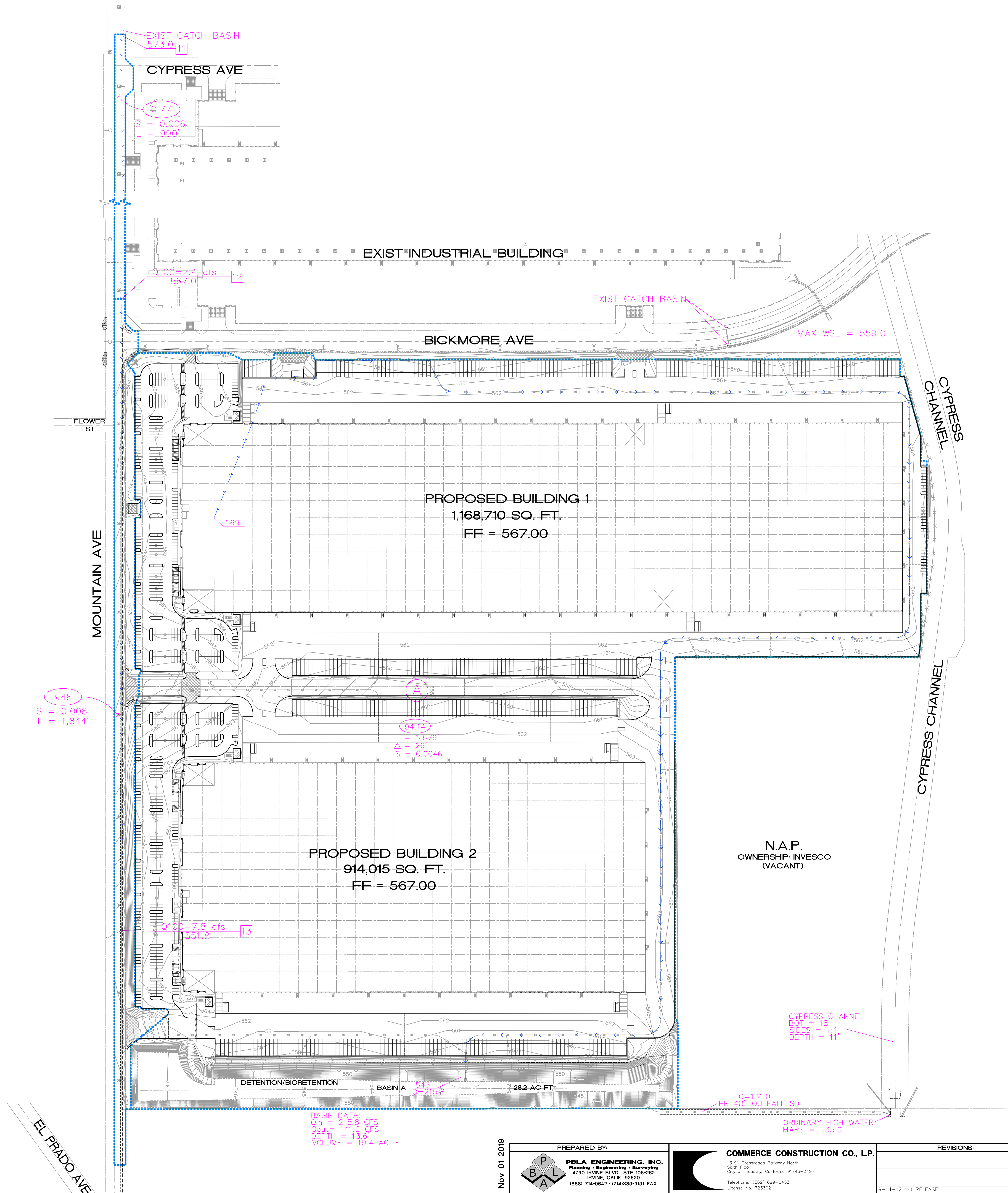
9-14-12 1st RELEASE

**HYDROLOGY MAP
EXISTING CONDITION
MAJESTIC GATEWAY SOUTH
CHINO, CA**

JOB NO.
100-28
SHEET
1 of 1

APPENDIX B

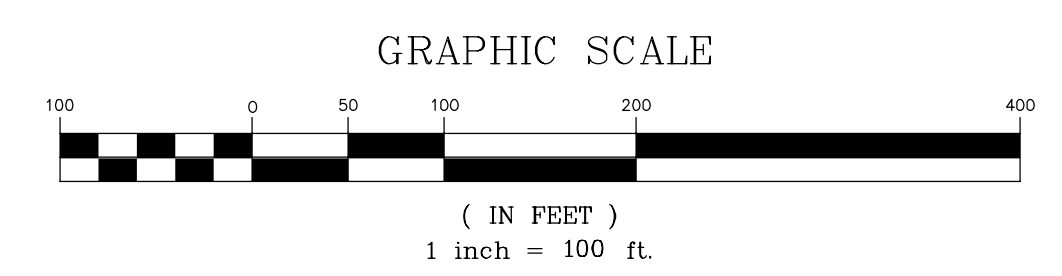
HYDROLOGY MAP – DEVELOPED CONDITION



LEGEND:

Q=7.39—100 YR DISCHARGE
ΣQ=11.39—SUMMATION OF Q AT NODE
P=235—PIPE LENGTH TO NEXT NODE
[13]—NODE NUMBER
④—SUB-AREA DESIGNATION
①.88—SUB-AREA ACRES
L=546—FLOWPATH LENGTH
—SUB-AREA BOUNDARY
—FLOWPATH

TOTAL EXISTING RUNOFF = 177.5 CFS.
TOTAL ALLOWABLE RUNOFF IN DEVELOPED CONDITION =
(0.8) * (177.5) = 142.0 CFS



Nov 01 2019

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**HYDROLOGY MAP
DEVELOPED CONDITION
MAJESTIC GATEWAY SOUTH
CHINO, CA**

APPENDIX C
RATIONAL METHOD HYDROLOGY
EXISTING CONDITION

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 05/17/19

MAJESTIC GATEWAY SOUTH
EXISTING HYDROLOGY STUDY -- 100 YR
10028EXRAT

Program License Serial Number 6262

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.410 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 89.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.211(In/Hr)
Initial subarea data:
Initial area flow distance = 863.000(Ft.)
Top (of initial area) elevation = 566.600(Ft.)
Bottom (of initial area) elevation = 561.400(Ft.)
Difference in elevation = 5.200(Ft.)
Slope = 0.00603 s(%)= 0.60
 $TC = k(0.525)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 21.805 min.
Rainfall intensity = 2.588(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.827
Subarea runoff = 17.737(CFS)
Total initial stream area = 8.290(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.211(In/Hr)

```

+++++
Process from Point/Station      12.000 to Point/Station      13.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

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```

-----
Estimated mean flow rate at midpoint of channel =    77.724(CFS)
Depth of flow =    1.254(Ft.), Average velocity =    3.705(Ft/s)
!!Warning: Water is above left or right bank elevations
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :
Point number      'X' coordinate      'Y' coordinate
      1              0.00              0.00
      2             40.00              3.00
      3             80.00              0.00
Manning's 'N' friction factor =    0.020

```

```

-----
Sub-Channel flow =    77.724(CFS)
'      '      flow top width =    33.448(Ft.)
'      '      velocity=    3.705(Ft/s)
'      '      area =    20.977(Sq.Ft)
'      '      Froude number =    0.825

```

```

Upstream point elevation =    561.400(Ft.)
Downstream point elevation =    552.300(Ft.)
Flow length =    1957.000(Ft.)
Travel time =    8.80 min.
Time of concentration =    30.61 min.
Depth of flow =    1.254(Ft.)
Average velocity =    3.705(Ft/s)
Total irregular channel flow =    77.724(CFS)
Irregular channel normal depth above invert elev. =    1.254(Ft.)
Average velocity of channel(s) =    3.705(Ft/s)
!!Warning: Water is above left or right bank elevations
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000      Max loss rate(Fm)=    0.265(In/Hr)
Rainfall intensity =    2.112(In/Hr) for a    100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.789
Subarea runoff =    119.919(CFS) for    74.300(Ac.)
Total runoff =    137.656(CFS)
Effective area this stream =    82.59(Ac.)
Total Study Area (Main Stream No. 1) =    82.59(Ac.)
Area averaged Fm value =    0.260(In/Hr)
Depth of flow =    1.554(Ft.), Average velocity =    4.274(Ft/s)
!!Warning: Water is above left or right bank elevations

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+++++
Process from Point/Station      21.000 to Point/Station      22.000

```

**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 1.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 86.00
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
 Initial subarea data:
 Initial area flow distance = 430.000(Ft.)
 Top (of initial area) elevation = 565.600(Ft.)
 Bottom (of initial area) elevation = 560.500(Ft.)
 Difference in elevation = 5.100(Ft.)
 Slope = 0.01186 s(%)= 1.19
 $TC = k(0.525)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 14.412 min.
 Rainfall intensity = 3.318(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.828
 Subarea runoff = 7.858(CFS)
 Total initial stream area = 2.860(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.265(In/Hr)

+++++
 Process from Point/Station 22.000 to Point/Station 23.000
 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 23.856(CFS)
 Depth of flow = 0.774(Ft.), Average velocity = 2.988(Ft/s)
 !!Warning: Water is above left or right bank elevations
 ***** Irregular Channel Data *****

 Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.00
2	40.00	3.00
3	80.00	0.00

 Manning's 'N' friction factor = 0.020

Sub-Channel flow = 23.857(CFS)
 ' ' flow top width = 20.634(Ft.)
 ' ' velocity= 2.988(Ft/s)
 ' ' area = 7.983(Sq.Ft)
 ' ' Froude number = 0.847

Upstream point elevation = 560.500(Ft.)
 Downstream point elevation = 555.000(Ft.)
 Flow length = 955.000(Ft.)
 Travel time = 5.33 min.
 Time of concentration = 19.74 min.
 Depth of flow = 0.774(Ft.)
 Average velocity = 2.988(Ft/s)
 Total irregular channel flow = 23.856(CFS)
 Irregular channel normal depth above invert elev. = 0.774(Ft.)
 Average velocity of channel(s) = 2.988(Ft/s)

!!Warning: Water is above left or right bank elevations
 Adding area flow to channel
 UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 1.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 86.00
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
 Rainfall intensity = 2.747(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method)(Q=KCIA) is C = 0.813
 Subarea runoff = 31.908(CFS) for 14.940(Ac.)
 Total runoff = 39.766(CFS)
 Effective area this stream = 17.80(Ac.)
 Total Study Area (Main Stream No. 1) = 100.39(Ac.)
 Area averaged Fm value = 0.265(In/Hr)
 Depth of flow = 0.937(Ft.), Average velocity = 3.395(Ft/s)
 !!Warning: Water is above left or right bank elevations

++++
 Process from Point/Station 31.000 to Point/Station 32.000
 **** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 1.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
 Initial subarea data:
 Initial area flow distance = 990.000(Ft.)
 Top (of initial area) elevation = 573.000(Ft.)
 Bottom (of initial area) elevation = 567.000(Ft.)
 Difference in elevation = 6.000(Ft.)
 Slope = 0.00606 s(%)= 0.61
 $TC = k(0.304)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 13.324 min.
 Rainfall intensity = 3.478(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.886
 Subarea runoff = 2.372(CFS)
 Total initial stream area = 0.770(Ac.)
 Pervious area fraction = 0.100
 Initial area Fm value = 0.055(In/Hr)

++++
 Process from Point/Station 32.000 to Point/Station 33.000
 **** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 567.000(Ft.)
 End of street segment elevation = 552.300(Ft.)
 Length of street segment = 1844.000(Ft.)
 Height of curb above gutter flowline = 2.0(In.)
 Width of half street (curb to crown) = 100.000(Ft.)

Distance from crown to crossfall grade break = 50.000(Ft.)
 Slope from gutter to grade break (v/hz) = 0.005
 Slope from grade break to crown (v/hz) = 0.005
 Street flow is on [1] side(s) of the street
 Distance from curb to property line = 50.000(Ft.)
 Slope from curb to property line (v/hz) = 0.035
 Gutter width = 3.000(Ft.)
 Gutter hike from flowline = 0.150(In.)
 Manning's N in gutter = 0.0150
 Manning's N from gutter to grade break = 0.0150
 Manning's N from grade break to crown = 0.0150
 Estimated mean flow rate at midpoint of street = 3.684(CFS)
 Depth of flow = 0.150(Ft.), Average velocity = 1.584(Ft/s)
 Streetflow hydraulics at midpoint of street travel:
 Halfstreet flow width = 30.521(Ft.)
 Flow velocity = 1.58(Ft/s)
 Travel time = 19.40 min. TC = 32.72 min.
 Adding area flow to street
 COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 1.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
 Rainfall intensity = 2.029(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method)(Q=KCIA) is C = 0.876
 Subarea runoff = 2.548(CFS) for 2.000(Ac.)
 Total runoff = 4.921(CFS)
 Effective area this stream = 2.77(Ac.)
 Total Study Area (Main Stream No. 1) = 103.16(Ac.)
 Area averaged Fm value = 0.055(In/Hr)
 Street flow at end of street = 4.921(CFS)
 Half street flow at end of street = 4.921(CFS)
 Depth of flow = 0.168(Ft.), Average velocity = 1.703(Ft/s)
 Warning: depth of flow exceeds top of curb
 Distance that curb overflow reaches into property = 0.03(Ft.)
 Flow width (from curb towards crown)= 34.022(Ft.)
 End of computations, Total Study Area = 103.16 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.
 Note: These figures do not consider reduced effective area
 effects caused by confluences in the rational equation.

 Area averaged pervious area fraction(Ap) = 0.976
 Area averaged SCS curve number = 85.8

APPENDIX D
UNIT HYDROGRAPH HYDROLOGY
DEVELOPED CONDITION

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0

Study date 02/14/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6262

MAJESTIC CHINO LOGISTICS CENTER
UNIT HYDROGRAPH INPUT
100 YEAR STORM
100105UH

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
94.14	1	0.89

Rainfall data for year 2
94.14 6 1.49

Rainfall data for year 2
94.14 24 2.60

Rainfall data for year 100
94.14 1 1.41

Rainfall data for year 100
94.14 6 3.51

Rainfall data for year 100
94.14 24 6.47

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No.(AMCII)	SCS curve No.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
90.0	90.0	94.14	1.000	0.192	0.093	0.018

Area-averaged adjusted loss rate Fm (In/Hr) = 0.018

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
8.76	0.093	90.0	90.0	1.11	0.820
85.38	0.907	98.0	98.0	0.20	0.963

Area-averaged catchment yield fraction, Y = 0.950

Area-averaged low loss fraction, Yb = 0.050

User entry of time of concentration = 0.430 (hours)

+++++

Watershed area = 94.14(Ac.)

Catchment Lag time = 0.344 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 24.2248

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.018(In/Hr)

Average low loss rate fraction (Yb) = 0.050 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.522(In)

Computed peak 30-minute rainfall = 1.069(In)

Specified peak 1-hour rainfall = 1.410(In)

Computed peak 3-hour rainfall = 2.466(In)

Specified peak 6-hour rainfall = 3.510(In)

Specified peak 24-hour rainfall = 6.470(In)

Rainfall depth area reduction factors:

Using a total area of 94.14(Ac.) (Ref: fig. E-4)

5-minute factor = 0.996 Adjusted rainfall = 0.520(In)

30-minute factor = 0.996 Adjusted rainfall = 1.064(In)

1-hour factor = 0.996 Adjusted rainfall = 1.404(In)

3-hour factor = 0.999 Adjusted rainfall = 2.465(In)

6-hour factor = 1.000 Adjusted rainfall = 3.509(In)

24-hour factor = 1.000 Adjusted rainfall = 6.469(In)

Unit Hydrograph

+++++

Interval Number	'S' Graph Mean values	Unit Hydrograph (CFS)
--------------------	--------------------------	--------------------------

(K = 1138.51 (CFS))

1	1.490	16.967
2	7.132	64.228
3	19.657	142.604
4	36.486	191.601
5	57.662	241.083
6	74.911	196.386
7	85.519	120.770
8	91.570	68.891
9	95.431	43.957
10	97.520	23.788
11	98.378	9.771
12	98.815	4.965
13	99.251	4.964
14	99.687	4.964
15	100.000	3.568

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5195	0.5195
2	0.6855	0.1660
3	0.8063	0.1207
4	0.9046	0.0983
5	0.9890	0.0845
6	1.0639	0.0748
7	1.1315	0.0677
8	1.1936	0.0621
9	1.2512	0.0576
10	1.3050	0.0539

11	1.3558	0.0507
12	1.4038	0.0480
13	1.4626	0.0588
14	1.5192	0.0566
15	1.5739	0.0547
16	1.6268	0.0529
17	1.6781	0.0513
18	1.7280	0.0499
19	1.7766	0.0486
20	1.8239	0.0473
21	1.8701	0.0462
22	1.9152	0.0451
23	1.9593	0.0441
24	2.0026	0.0432
25	2.0449	0.0423
26	2.0864	0.0415
27	2.1272	0.0408
28	2.1672	0.0400
29	2.2065	0.0393
30	2.2452	0.0387
31	2.2832	0.0381
32	2.3207	0.0375
33	2.3576	0.0369
34	2.3939	0.0363
35	2.4298	0.0358
36	2.4651	0.0353
37	2.4998	0.0346
38	2.5339	0.0342
39	2.5677	0.0338
40	2.6010	0.0333
41	2.6340	0.0329
42	2.6665	0.0325
43	2.6986	0.0322
44	2.7304	0.0318
45	2.7619	0.0314
46	2.7930	0.0311
47	2.8237	0.0308
48	2.8542	0.0304
49	2.8843	0.0301
50	2.9141	0.0298
51	2.9437	0.0295
52	2.9729	0.0293
53	3.0019	0.0290
54	3.0307	0.0287
55	3.0591	0.0285
56	3.0873	0.0282
57	3.1153	0.0280
58	3.1430	0.0277
59	3.1705	0.0275
60	3.1978	0.0273
61	3.2248	0.0270
62	3.2516	0.0268
63	3.2782	0.0266
64	3.3046	0.0264
65	3.3308	0.0262
66	3.3568	0.0260
67	3.3826	0.0258
68	3.4083	0.0256
69	3.4337	0.0254
70	3.4590	0.0253
71	3.4841	0.0251
72	3.5090	0.0249
73	3.5304	0.0214
74	3.5516	0.0213
75	3.5727	0.0211
76	3.5937	0.0209
77	3.6145	0.0208
78	3.6351	0.0206
79	3.6556	0.0205
80	3.6760	0.0203
81	3.6962	0.0202

82	3.7162	0.0201
83	3.7362	0.0199
84	3.7560	0.0198
85	3.7756	0.0197
86	3.7952	0.0195
87	3.8146	0.0194
88	3.8339	0.0193
89	3.8530	0.0192
90	3.8721	0.0190
91	3.8910	0.0189
92	3.9098	0.0188
93	3.9285	0.0187
94	3.9471	0.0186
95	3.9656	0.0185
96	3.9839	0.0184
97	4.0022	0.0183
98	4.0203	0.0182
99	4.0384	0.0181
100	4.0563	0.0179
101	4.0742	0.0178
102	4.0919	0.0178
103	4.1096	0.0177
104	4.1272	0.0176
105	4.1446	0.0175
106	4.1620	0.0174
107	4.1793	0.0173
108	4.1965	0.0172
109	4.2136	0.0171
110	4.2306	0.0170
111	4.2475	0.0169
112	4.2644	0.0168
113	4.2811	0.0168
114	4.2978	0.0167
115	4.3144	0.0166
116	4.3309	0.0165
117	4.3473	0.0164
118	4.3637	0.0164
119	4.3800	0.0163
120	4.3962	0.0162
121	4.4123	0.0161
122	4.4284	0.0161
123	4.4443	0.0160
124	4.4603	0.0159
125	4.4761	0.0158
126	4.4919	0.0158
127	4.5076	0.0157
128	4.5232	0.0156
129	4.5387	0.0156
130	4.5542	0.0155
131	4.5697	0.0154
132	4.5850	0.0154
133	4.6003	0.0153
134	4.6155	0.0152
135	4.6307	0.0152
136	4.6458	0.0151
137	4.6609	0.0150
138	4.6758	0.0150
139	4.6908	0.0149
140	4.7056	0.0149
141	4.7204	0.0148
142	4.7352	0.0147
143	4.7499	0.0147
144	4.7645	0.0146
145	4.7791	0.0146
146	4.7936	0.0145
147	4.8080	0.0145
148	4.8224	0.0144
149	4.8368	0.0144
150	4.8511	0.0143
151	4.8653	0.0142
152	4.8795	0.0142

153	4.8937	0.0141
154	4.9078	0.0141
155	4.9218	0.0140
156	4.9358	0.0140
157	4.9497	0.0139
158	4.9636	0.0139
159	4.9774	0.0138
160	4.9912	0.0138
161	5.0050	0.0137
162	5.0187	0.0137
163	5.0323	0.0136
164	5.0459	0.0136
165	5.0595	0.0136
166	5.0730	0.0135
167	5.0864	0.0135
168	5.0999	0.0134
169	5.1132	0.0134
170	5.1266	0.0133
171	5.1398	0.0133
172	5.1531	0.0132
173	5.1663	0.0132
174	5.1794	0.0132
175	5.1926	0.0131
176	5.2056	0.0131
177	5.2187	0.0130
178	5.2317	0.0130
179	5.2446	0.0129
180	5.2575	0.0129
181	5.2704	0.0129
182	5.2832	0.0128
183	5.2960	0.0128
184	5.3088	0.0128
185	5.3215	0.0127
186	5.3341	0.0127
187	5.3468	0.0126
188	5.3594	0.0126
189	5.3719	0.0126
190	5.3845	0.0125
191	5.3969	0.0125
192	5.4094	0.0125
193	5.4218	0.0124
194	5.4342	0.0124
195	5.4465	0.0123
196	5.4588	0.0123
197	5.4711	0.0123
198	5.4833	0.0122
199	5.4956	0.0122
200	5.5077	0.0122
201	5.5199	0.0121
202	5.5320	0.0121
203	5.5440	0.0121
204	5.5561	0.0120
205	5.5681	0.0120
206	5.5800	0.0120
207	5.5920	0.0119
208	5.6039	0.0119
209	5.6157	0.0119
210	5.6276	0.0118
211	5.6394	0.0118
212	5.6512	0.0118
213	5.6629	0.0117
214	5.6746	0.0117
215	5.6863	0.0117
216	5.6980	0.0117
217	5.7096	0.0116
218	5.7212	0.0116
219	5.7328	0.0116
220	5.7443	0.0115
221	5.7558	0.0115
222	5.7673	0.0115
223	5.7787	0.0114

224	5.7902	0.0114
225	5.8016	0.0114
226	5.8129	0.0114
227	5.8243	0.0113
228	5.8356	0.0113
229	5.8468	0.0113
230	5.8581	0.0113
231	5.8693	0.0112
232	5.8805	0.0112
233	5.8917	0.0112
234	5.9028	0.0111
235	5.9140	0.0111
236	5.9250	0.0111
237	5.9361	0.0111
238	5.9471	0.0110
239	5.9582	0.0110
240	5.9691	0.0110
241	5.9801	0.0110
242	5.9910	0.0109
243	6.0020	0.0109
244	6.0128	0.0109
245	6.0237	0.0109
246	6.0345	0.0108
247	6.0454	0.0108
248	6.0561	0.0108
249	6.0669	0.0108
250	6.0777	0.0107
251	6.0884	0.0107
252	6.0991	0.0107
253	6.1097	0.0107
254	6.1204	0.0106
255	6.1310	0.0106
256	6.1416	0.0106
257	6.1522	0.0106
258	6.1627	0.0106
259	6.1732	0.0105
260	6.1838	0.0105
261	6.1942	0.0105
262	6.2047	0.0105
263	6.2151	0.0104
264	6.2256	0.0104
265	6.2359	0.0104
266	6.2463	0.0104
267	6.2567	0.0104
268	6.2670	0.0103
269	6.2773	0.0103
270	6.2876	0.0103
271	6.2979	0.0103
272	6.3081	0.0102
273	6.3183	0.0102
274	6.3285	0.0102
275	6.3387	0.0102
276	6.3489	0.0102
277	6.3590	0.0101
278	6.3691	0.0101
279	6.3792	0.0101
280	6.3893	0.0101
281	6.3994	0.0101
282	6.4094	0.0100
283	6.4194	0.0100
284	6.4294	0.0100
285	6.4394	0.0100
286	6.4494	0.0100
287	6.4593	0.0099
288	6.4692	0.0099

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0099	0.0005	0.0094

2	0.0099	0.0005	0.0094
3	0.0100	0.0005	0.0095
4	0.0100	0.0005	0.0095
5	0.0100	0.0005	0.0095
6	0.0101	0.0005	0.0096
7	0.0101	0.0005	0.0096
8	0.0101	0.0005	0.0096
9	0.0102	0.0005	0.0097
10	0.0102	0.0005	0.0097
11	0.0102	0.0005	0.0097
12	0.0102	0.0005	0.0097
13	0.0103	0.0005	0.0098
14	0.0103	0.0005	0.0098
15	0.0104	0.0005	0.0098
16	0.0104	0.0005	0.0099
17	0.0104	0.0005	0.0099
18	0.0104	0.0005	0.0099
19	0.0105	0.0005	0.0100
20	0.0105	0.0005	0.0100
21	0.0106	0.0005	0.0100
22	0.0106	0.0005	0.0100
23	0.0106	0.0005	0.0101
24	0.0106	0.0005	0.0101
25	0.0107	0.0005	0.0102
26	0.0107	0.0005	0.0102
27	0.0108	0.0005	0.0102
28	0.0108	0.0005	0.0102
29	0.0108	0.0005	0.0103
30	0.0109	0.0005	0.0103
31	0.0109	0.0005	0.0104
32	0.0109	0.0005	0.0104
33	0.0110	0.0006	0.0104
34	0.0110	0.0006	0.0105
35	0.0111	0.0006	0.0105
36	0.0111	0.0006	0.0105
37	0.0111	0.0006	0.0106
38	0.0112	0.0006	0.0106
39	0.0112	0.0006	0.0107
40	0.0113	0.0006	0.0107
41	0.0113	0.0006	0.0107
42	0.0113	0.0006	0.0108
43	0.0114	0.0006	0.0108
44	0.0114	0.0006	0.0108
45	0.0115	0.0006	0.0109
46	0.0115	0.0006	0.0109
47	0.0116	0.0006	0.0110
48	0.0116	0.0006	0.0110
49	0.0117	0.0006	0.0111
50	0.0117	0.0006	0.0111
51	0.0117	0.0006	0.0112
52	0.0118	0.0006	0.0112
53	0.0118	0.0006	0.0112
54	0.0119	0.0006	0.0113
55	0.0119	0.0006	0.0113
56	0.0120	0.0006	0.0114
57	0.0120	0.0006	0.0114
58	0.0121	0.0006	0.0115
59	0.0121	0.0006	0.0115
60	0.0122	0.0006	0.0116
61	0.0122	0.0006	0.0116
62	0.0123	0.0006	0.0117
63	0.0123	0.0006	0.0117
64	0.0124	0.0006	0.0118
65	0.0125	0.0006	0.0118
66	0.0125	0.0006	0.0119
67	0.0126	0.0006	0.0119
68	0.0126	0.0006	0.0120
69	0.0127	0.0006	0.0120
70	0.0127	0.0006	0.0121
71	0.0128	0.0006	0.0121
72	0.0128	0.0006	0.0122

73	0.0129	0.0006	0.0123
74	0.0129	0.0007	0.0123
75	0.0130	0.0007	0.0124
76	0.0131	0.0007	0.0124
77	0.0132	0.0007	0.0125
78	0.0132	0.0007	0.0125
79	0.0133	0.0007	0.0126
80	0.0133	0.0007	0.0127
81	0.0134	0.0007	0.0127
82	0.0135	0.0007	0.0128
83	0.0136	0.0007	0.0129
84	0.0136	0.0007	0.0129
85	0.0137	0.0007	0.0130
86	0.0137	0.0007	0.0131
87	0.0138	0.0007	0.0131
88	0.0139	0.0007	0.0132
89	0.0140	0.0007	0.0133
90	0.0140	0.0007	0.0133
91	0.0141	0.0007	0.0134
92	0.0142	0.0007	0.0135
93	0.0143	0.0007	0.0136
94	0.0144	0.0007	0.0136
95	0.0145	0.0007	0.0137
96	0.0145	0.0007	0.0138
97	0.0146	0.0007	0.0139
98	0.0147	0.0007	0.0139
99	0.0148	0.0007	0.0141
100	0.0149	0.0007	0.0141
101	0.0150	0.0008	0.0142
102	0.0150	0.0008	0.0143
103	0.0152	0.0008	0.0144
104	0.0152	0.0008	0.0145
105	0.0154	0.0008	0.0146
106	0.0154	0.0008	0.0147
107	0.0156	0.0008	0.0148
108	0.0156	0.0008	0.0148
109	0.0158	0.0008	0.0150
110	0.0158	0.0008	0.0150
111	0.0160	0.0008	0.0152
112	0.0161	0.0008	0.0152
113	0.0162	0.0008	0.0154
114	0.0163	0.0008	0.0155
115	0.0164	0.0008	0.0156
116	0.0165	0.0008	0.0157
117	0.0167	0.0008	0.0158
118	0.0168	0.0008	0.0159
119	0.0169	0.0008	0.0161
120	0.0170	0.0009	0.0162
121	0.0172	0.0009	0.0163
122	0.0173	0.0009	0.0164
123	0.0175	0.0009	0.0166
124	0.0176	0.0009	0.0167
125	0.0178	0.0009	0.0169
126	0.0178	0.0009	0.0170
127	0.0181	0.0009	0.0171
128	0.0182	0.0009	0.0172
129	0.0184	0.0009	0.0174
130	0.0185	0.0009	0.0175
131	0.0187	0.0009	0.0178
132	0.0188	0.0009	0.0179
133	0.0190	0.0010	0.0181
134	0.0192	0.0010	0.0182
135	0.0194	0.0010	0.0184
136	0.0195	0.0010	0.0186
137	0.0198	0.0010	0.0188
138	0.0199	0.0010	0.0189
139	0.0202	0.0010	0.0192
140	0.0203	0.0010	0.0193
141	0.0206	0.0010	0.0196
142	0.0208	0.0010	0.0197
143	0.0211	0.0011	0.0200

144	0.0213	0.0011	0.0202
145	0.0249	0.0013	0.0237
146	0.0251	0.0013	0.0238
147	0.0254	0.0013	0.0242
148	0.0256	0.0013	0.0243
149	0.0260	0.0013	0.0247
150	0.0262	0.0013	0.0249
151	0.0266	0.0013	0.0253
152	0.0268	0.0013	0.0255
153	0.0273	0.0014	0.0259
154	0.0275	0.0014	0.0261
155	0.0280	0.0014	0.0266
156	0.0282	0.0014	0.0268
157	0.0287	0.0014	0.0273
158	0.0290	0.0015	0.0275
159	0.0295	0.0015	0.0281
160	0.0298	0.0015	0.0283
161	0.0304	0.0015	0.0290
162	0.0308	0.0015	0.0293
163	0.0314	0.0015	0.0299
164	0.0318	0.0015	0.0303
165	0.0325	0.0015	0.0310
166	0.0329	0.0015	0.0314
167	0.0338	0.0015	0.0323
168	0.0342	0.0015	0.0327
169	0.0353	0.0015	0.0338
170	0.0358	0.0015	0.0343
171	0.0369	0.0015	0.0354
172	0.0375	0.0015	0.0360
173	0.0387	0.0015	0.0372
174	0.0393	0.0015	0.0378
175	0.0408	0.0015	0.0393
176	0.0415	0.0015	0.0400
177	0.0432	0.0015	0.0417
178	0.0441	0.0015	0.0426
179	0.0462	0.0015	0.0447
180	0.0473	0.0015	0.0458
181	0.0499	0.0015	0.0484
182	0.0513	0.0015	0.0499
183	0.0547	0.0015	0.0532
184	0.0566	0.0015	0.0551
185	0.0480	0.0015	0.0465
186	0.0507	0.0015	0.0492
187	0.0576	0.0015	0.0561
188	0.0621	0.0015	0.0606
189	0.0748	0.0015	0.0733
190	0.0845	0.0015	0.0830
191	0.1207	0.0015	0.1192
192	0.1660	0.0015	0.1645
193	0.5195	0.0015	0.5181
194	0.0983	0.0015	0.0968
195	0.0677	0.0015	0.0662
196	0.0539	0.0015	0.0524
197	0.0588	0.0015	0.0573
198	0.0529	0.0015	0.0514
199	0.0486	0.0015	0.0471
200	0.0451	0.0015	0.0436
201	0.0423	0.0015	0.0408
202	0.0400	0.0015	0.0385
203	0.0381	0.0015	0.0366
204	0.0363	0.0015	0.0349
205	0.0346	0.0015	0.0332
206	0.0333	0.0015	0.0318
207	0.0322	0.0015	0.0307
208	0.0311	0.0015	0.0296
209	0.0301	0.0015	0.0286
210	0.0293	0.0015	0.0278
211	0.0285	0.0014	0.0270
212	0.0277	0.0014	0.0263
213	0.0270	0.0014	0.0257
214	0.0264	0.0013	0.0251

215	0.0258	0.0013	0.0245
216	0.0253	0.0013	0.0240
217	0.0214	0.0011	0.0203
218	0.0209	0.0011	0.0199
219	0.0205	0.0010	0.0195
220	0.0201	0.0010	0.0191
221	0.0197	0.0010	0.0187
222	0.0193	0.0010	0.0183
223	0.0189	0.0010	0.0180
224	0.0186	0.0009	0.0177
225	0.0183	0.0009	0.0173
226	0.0179	0.0009	0.0170
227	0.0177	0.0009	0.0168
228	0.0174	0.0009	0.0165
229	0.0171	0.0009	0.0162
230	0.0168	0.0008	0.0160
231	0.0166	0.0008	0.0158
232	0.0164	0.0008	0.0155
233	0.0161	0.0008	0.0153
234	0.0159	0.0008	0.0151
235	0.0157	0.0008	0.0149
236	0.0155	0.0008	0.0147
237	0.0153	0.0008	0.0145
238	0.0151	0.0008	0.0143
239	0.0149	0.0007	0.0142
240	0.0147	0.0007	0.0140
241	0.0146	0.0007	0.0138
242	0.0144	0.0007	0.0137
243	0.0142	0.0007	0.0135
244	0.0141	0.0007	0.0134
245	0.0139	0.0007	0.0132
246	0.0138	0.0007	0.0131
247	0.0136	0.0007	0.0130
248	0.0135	0.0007	0.0128
249	0.0134	0.0007	0.0127
250	0.0132	0.0007	0.0126
251	0.0131	0.0007	0.0125
252	0.0130	0.0007	0.0123
253	0.0129	0.0006	0.0122
254	0.0128	0.0006	0.0121
255	0.0126	0.0006	0.0120
256	0.0125	0.0006	0.0119
257	0.0124	0.0006	0.0118
258	0.0123	0.0006	0.0117
259	0.0122	0.0006	0.0116
260	0.0121	0.0006	0.0115
261	0.0120	0.0006	0.0114
262	0.0119	0.0006	0.0113
263	0.0118	0.0006	0.0112
264	0.0117	0.0006	0.0111
265	0.0116	0.0006	0.0110
266	0.0115	0.0006	0.0110
267	0.0114	0.0006	0.0109
268	0.0114	0.0006	0.0108
269	0.0113	0.0006	0.0107
270	0.0112	0.0006	0.0106
271	0.0111	0.0006	0.0106
272	0.0110	0.0006	0.0105
273	0.0110	0.0006	0.0104
274	0.0109	0.0005	0.0103
275	0.0108	0.0005	0.0103
276	0.0107	0.0005	0.0102
277	0.0107	0.0005	0.0101
278	0.0106	0.0005	0.0101
279	0.0105	0.0005	0.0100
280	0.0105	0.0005	0.0099
281	0.0104	0.0005	0.0099
282	0.0103	0.0005	0.0098
283	0.0103	0.0005	0.0098
284	0.0102	0.0005	0.0097
285	0.0101	0.0005	0.0096

286	0.0101	0.0005	0.0096
287	0.0100	0.0005	0.0095
288	0.0100	0.0005	0.0095

Total soil rain loss = 0.25(In)
Total effective rainfall = 6.22(In)
Peak flow rate in flood hydrograph = 215.79(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	75.0	150.0	225.0	300.0
0+ 5	0.0011	0.16	Q				
0+10	0.0064	0.77	Q				
0+15	0.0209	2.11	Q				
0+20	0.0479	3.92	Q				
0+25	0.0907	6.20	Q				
0+30	0.1462	8.07	VQ				
0+35	0.2098	9.23	VQ				
0+40	0.2781	9.91	VQ				
0+45	0.3494	10.35	VQ				
0+50	0.4224	10.61	VQ				
0+55	0.4964	10.73	VQ				
1+ 0	0.5708	10.81	VQ				
1+ 5	0.6458	10.89	VQ				
1+10	0.7214	10.97	VQ				
1+15	0.7974	11.04	VQ				
1+20	0.8736	11.07	VQ				
1+25	0.9501	11.11	VQ				
1+30	1.0269	11.14	VQ				
1+35	1.1038	11.18	VQ				
1+40	1.1810	11.21	VQ				
1+45	1.2585	11.25	Q				
1+50	1.3362	11.28	Q				
1+55	1.4141	11.32	Q				
2+ 0	1.4923	11.35	Q				
2+ 5	1.5708	11.39	Q				
2+10	1.6495	11.43	Q				
2+15	1.7285	11.47	Q				
2+20	1.8077	11.50	Q				
2+25	1.8872	11.54	Q				
2+30	1.9669	11.58	Q				
2+35	2.0470	11.62	Q				
2+40	2.1273	11.66	Q				
2+45	2.2078	11.70	Q				
2+50	2.2887	11.74	Q				
2+55	2.3698	11.78	Q				
3+ 0	2.4512	11.82	QV				
3+ 5	2.5329	11.86	QV				
3+10	2.6148	11.90	QV				
3+15	2.6971	11.94	QV				
3+20	2.7797	11.99	QV				
3+25	2.8625	12.03	QV				
3+30	2.9457	12.07	QV				
3+35	3.0291	12.12	QV				
3+40	3.1129	12.16	QV				
3+45	3.1969	12.21	QV				
3+50	3.2813	12.25	QV				
3+55	3.3660	12.30	QV				
4+ 0	3.4510	12.34	QV				
4+ 5	3.5363	12.39	QV				
4+10	3.6219	12.44	QV				
4+15	3.7079	12.48	Q V				
4+20	3.7942	12.53	Q V				
4+25	3.8808	12.58	Q V				

4+30	3.9678	12.63	Q V				
4+35	4.0551	12.68	Q V				
4+40	4.1428	12.73	Q V				
4+45	4.2308	12.78	Q V				
4+50	4.3191	12.83	Q V				
4+55	4.4079	12.88	Q V				
5+ 0	4.4969	12.93	Q V				
5+ 5	4.5864	12.99	Q V				
5+10	4.6762	13.04	Q V				
5+15	4.7664	13.10	Q V				
5+20	4.8569	13.15	Q V				
5+25	4.9479	13.21	Q V				
5+30	5.0392	13.26	Q V				
5+35	5.1309	13.32	Q V				
5+40	5.2230	13.38	Q V				
5+45	5.3156	13.43	Q V				
5+50	5.4085	13.49	Q V				
5+55	5.5018	13.55	Q V				
6+ 0	5.5956	13.61	Q V				
6+ 5	5.6898	13.67	Q V				
6+10	5.7844	13.74	Q V				
6+15	5.8794	13.80	Q V				
6+20	5.9749	13.86	Q V				
6+25	6.0708	13.93	Q V				
6+30	6.1671	13.99	Q V				
6+35	6.2640	14.06	Q V				
6+40	6.3612	14.12	Q V				
6+45	6.4590	14.19	Q V				
6+50	6.5572	14.26	Q V				
6+55	6.6559	14.33	Q V				
7+ 0	6.7551	14.40	Q V				
7+ 5	6.8548	14.47	Q V				
7+10	6.9549	14.55	Q V				
7+15	7.0556	14.62	Q V				
7+20	7.1568	14.69	Q V				
7+25	7.2586	14.77	Q V				
7+30	7.3608	14.85	Q V				
7+35	7.4636	14.93	Q V				
7+40	7.5669	15.00	Q V				
7+45	7.6708	15.08	Q V				
7+50	7.7753	15.17	Q V				
7+55	7.8803	15.25	Q V				
8+ 0	7.9859	15.33	Q V				
8+ 5	8.0921	15.42	Q V				
8+10	8.1989	15.50	Q V				
8+15	8.3062	15.59	Q V				
8+20	8.4142	15.68	Q V				
8+25	8.5229	15.77	Q V				
8+30	8.6322	15.87	Q V				
8+35	8.7421	15.96	Q V				
8+40	8.8526	16.06	Q V				
8+45	8.9639	16.15	Q V				
8+50	9.0758	16.25	Q V				
8+55	9.1884	16.35	Q V				
9+ 0	9.3018	16.45	Q V				
9+ 5	9.4158	16.56	Q V				
9+10	9.5306	16.66	Q V				
9+15	9.6461	16.77	Q V				
9+20	9.7623	16.88	Q V				
9+25	9.8794	16.99	Q V				
9+30	9.9972	17.11	Q V				
9+35	10.1158	17.22	Q V				
9+40	10.2353	17.34	Q V				
9+45	10.3555	17.46	Q V				
9+50	10.4766	17.59	Q V				
9+55	10.5986	17.71	Q V				
10+ 0	10.7215	17.84	Q V				
10+ 5	10.8452	17.97	Q V				
10+10	10.9699	18.10	Q V				
10+15	11.0955	18.24	Q V				
10+20	11.2221	18.38	Q V				

10+25	11.3497	18.52	Q	V					
10+30	11.4782	18.66	Q	V					
10+35	11.6078	18.81	Q	V					
10+40	11.7384	18.96	Q	V					
10+45	11.8701	19.12	Q	V					
10+50	12.0028	19.28	Q	V					
10+55	12.1367	19.44	Q	V					
11+ 0	12.2718	19.61	Q	V					
11+ 5	12.4080	19.78	Q	V					
11+10	12.5454	19.95	Q	V					
11+15	12.6841	20.13	Q	V					
11+20	12.8240	20.31	Q	V					
11+25	12.9652	20.50	Q	V					
11+30	13.1077	20.70	Q	V					
11+35	13.2516	20.90	Q	V					
11+40	13.3970	21.10	Q	V					
11+45	13.5437	21.31	Q	V					
11+50	13.6919	21.52	Q	V					
11+55	13.8417	21.75	Q	V					
12+ 0	13.9930	21.97	Q	V					
12+ 5	14.1464	22.26	Q	V					
12+10	14.3027	22.71	Q	V					
12+15	14.4639	23.41	Q	V					
12+20	14.6311	24.27	Q	V					
12+25	14.8053	25.30	Q	V					
12+30	14.9857	26.19	Q	V					
12+35	15.1707	26.86	Q	V					
12+40	15.3592	27.37	Q	V					
12+45	15.5507	27.82	Q	V					
12+50	15.7450	28.21	Q	V					
12+55	15.9418	28.57	Q	V					
13+ 0	16.1409	28.92	Q	V					
13+ 5	16.3427	29.29	Q	V					
13+10	16.5470	29.67	Q	V					
13+15	16.7541	30.07	Q	V					
13+20	16.9639	30.46	Q	V					
13+25	17.1765	30.88	Q	V					
13+30	17.3921	31.31	Q	V					
13+35	17.6109	31.77	Q	V					
13+40	17.8330	32.24	Q	V					
13+45	18.0586	32.76	Q	V					
13+50	18.2878	33.29	Q	V					
13+55	18.5210	33.86	Q	V					
14+ 0	18.7582	34.45	Q	V					
14+ 5	18.9999	35.09	Q	V					
14+10	19.2461	35.76	Q	V					
14+15	19.4975	36.49	Q	V					
14+20	19.7542	37.27	Q	V					
14+25	20.0167	38.12	Q	V					
14+30	20.2852	38.99	Q	V					
14+35	20.5602	39.93	Q	V					
14+40	20.8418	40.89	Q	V					
14+45	21.1307	41.94	Q	V					
14+50	21.4272	43.05	Q	V					
14+55	21.7321	44.27	Q	V					
15+ 0	22.0460	45.58	Q	V					
15+ 5	22.3699	47.03	Q	V					
15+10	22.7046	48.60	Q	V					
15+15	23.0515	50.37	Q	V					
15+20	23.4117	52.31	Q	V					
15+25	23.7858	54.32	Q	V					
15+30	24.1713	55.97	Q	V					
15+35	24.5640	57.03	Q	V					
15+40	24.9627	57.89	Q	V					
15+45	25.3682	58.88	Q	V					
15+50	25.7911	61.41	Q	V					
15+55	26.2514	66.83	Q	V					
16+ 0	26.7756	76.12	Q	V					
16+ 5	27.4419	96.75	Q	V					
16+10	28.3478	131.53		Q					
16+15	29.5589	175.85							

16+20	30.9485	201.78					VQ	
16+25	32.4347	215.79					V Q	
16+30	33.7074	184.80					Q V	
16+35	34.6723	140.10			Q		V	
16+40	35.4097	107.08			Q		V	
16+45	36.0154	87.95			Q		V	
16+50	36.5170	72.82			Q		V	
16+55	36.9413	61.61			Q		V	
17+ 0	37.3220	55.28			Q		V	
17+ 5	37.6784	51.75			Q		V	
17+10	38.0129	48.57			Q		V	
17+15	38.3233	45.06			Q		V	
17+20	38.6069	41.17			Q		V	
17+25	38.8761	39.10			Q		V	
17+30	39.1335	37.38			Q		V	
17+35	39.3807	35.88			Q		V	
17+40	39.6185	34.54			Q		V	
17+45	39.8482	33.35			Q		V	
17+50	40.0705	32.28			Q		V	
17+55	40.2863	31.33			Q		V	
18+ 0	40.4961	30.46			Q		V	
18+ 5	40.7001	29.62			Q		V	
18+10	40.8976	28.69			Q		V	
18+15	41.0875	27.56			Q		V	
18+20	41.2688	26.33			Q		V	
18+25	41.4409	24.99			Q		V	
18+30	41.6050	23.83			Q		V	
18+35	41.7630	22.94			Q		V	
18+40	41.9161	22.24			Q		V	
18+45	42.0653	21.65			Q		V	
18+50	42.2109	21.15			Q		V	
18+55	42.3536	20.72			Q		V	
19+ 0	42.4936	20.32			Q		V	
19+ 5	42.6310	19.94			Q		V	
19+10	42.7658	19.58			Q		V	
19+15	42.8984	19.24			Q		V	
19+20	43.0288	18.93			Q		V	
19+25	43.1571	18.63			Q		V	
19+30	43.2834	18.35			Q		V	
19+35	43.4079	18.07			Q		V	
19+40	43.5305	17.81			Q		V	
19+45	43.6514	17.56			Q		V	
19+50	43.7707	17.31			Q		V	
19+55	43.8883	17.08			Q		V	
20+ 0	44.0044	16.85			Q		V	
20+ 5	44.1189	16.64			Q		V	
20+10	44.2321	16.43			Q		V	
20+15	44.3438	16.22			Q		V	
20+20	44.4542	16.03			Q		V	
20+25	44.5633	15.84			Q		V	
20+30	44.6711	15.66			Q		V	
20+35	44.7777	15.48			Q		V	
20+40	44.8832	15.31			Q		V	
20+45	44.9875	15.14			Q		V	
20+50	45.0906	14.98			Q		V	
20+55	45.1927	14.82			Q		V	
21+ 0	45.2938	14.67			Q		V	
21+ 5	45.3938	14.52			Q		V	
21+10	45.4929	14.38			Q		V	
21+15	45.5909	14.24			Q		V	
21+20	45.6881	14.10			Q		V	
21+25	45.7843	13.97			Q		V	
21+30	45.8796	13.84			Q		V	
21+35	45.9741	13.72			Q		V	
21+40	46.0677	13.59			Q		V	
21+45	46.1605	13.47			Q		V	
21+50	46.2525	13.36			Q		V	
21+55	46.3437	13.24			Q		V	
22+ 0	46.4342	13.13			Q		V	
22+ 5	46.5239	13.02			Q		V	
22+10	46.6128	12.92			Q		V	

22+15	46.7011	12.81	Q				V	
22+20	46.7886	12.71	Q				V	
22+25	46.8755	12.61	Q				V	
22+30	46.9617	12.52	Q				V	
22+35	47.0472	12.42	Q				V	
22+40	47.1321	12.33	Q				V	
22+45	47.2164	12.24	Q				V	
22+50	47.3001	12.15	Q				V	
22+55	47.3831	12.06	Q				V	
23+ 0	47.4656	11.97	Q				V	
23+ 5	47.5474	11.89	Q				V	
23+10	47.6287	11.81	Q				V	
23+15	47.7095	11.73	Q				V	
23+20	47.7897	11.65	Q				V	
23+25	47.8694	11.57	Q				V	
23+30	47.9485	11.49	Q				V	
23+35	48.0271	11.42	Q				V	
23+40	48.1052	11.34	Q				V	
23+45	48.1829	11.27	Q				V	
23+50	48.2600	11.20	Q				V	
23+55	48.3366	11.13	Q				V	
24+ 0	48.4128	11.06	Q				V	
24+ 5	48.4874	10.83	Q				V	
24+10	48.5574	10.16	Q				V	
24+15	48.6177	8.76	Q				V	
24+20	48.6653	6.91	Q				V	
24+25	48.6970	4.60	Q				V	
24+30	48.7158	2.72	Q				V	
24+35	48.7266	1.57	Q				V	
24+40	48.7329	0.92	Q				V	
24+45	48.7363	0.50	Q				V	
24+50	48.7382	0.27	Q				V	
24+55	48.7394	0.18	Q				V	
25+ 0	48.7403	0.13	Q				V	
25+ 5	48.7408	0.08	Q				V	
25+10	48.7410	0.03	Q				V	

APPENDIX D-1
RATIONAL METHOD HYDROLOGY
DEVELOPED CONDITION
MOUNTAIN AVENUE

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 05/17/19

MAJESTIC CHINO HERITAGE
PROPOSED STREET HYDROLOGY
MOUNTAIN AVE - 100 YR
100105PRSTREET

Program License Serial Number 6262

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.410 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 990.000(Ft.)
Top (of initial area) elevation = 573.000(Ft.)
Bottom (of initial area) elevation = 567.000(Ft.)
Difference in elevation = 6.000(Ft.)
Slope = 0.00606 s(%)= 0.61
 $TC = k(0.304)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 13.324 min.
Rainfall intensity = 3.478(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.886
Subarea runoff = 2.372(CFS)
Total initial stream area = 0.770(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

Process from Point/Station 12.000 to Point/Station 13.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 567.000(Ft.)
End of street segment elevation = 551.800(Ft.)
Length of street segment = 1844.000(Ft.)
Height of curb above gutter flowline = 2.0(In.)
Width of half street (curb to crown) = 100.000(Ft.)
Distance from crown to crossfall grade break = 50.000(Ft.)
Slope from gutter to grade break (v/hz) = 0.005
Slope from grade break to crown (v/hz) = 0.005
Street flow is on [1] side(s) of the street
Distance from curb to property line = 50.000(Ft.)
Slope from curb to property line (v/hz) = 0.020
Gutter width = 2.000(Ft.)

Gutter hike from flowline = 0.150(In.)
 Manning's N in gutter = 0.0150
 Manning's N from gutter to grade break = 0.0150
 Manning's N from grade break to crown = 0.0150
 Estimated mean flow rate at midpoint of street = 5.113(CFS)
 Depth of flow = 0.174(Ft.), Average velocity = 1.733(Ft/s)
 Warning: depth of flow exceeds top of curb
 Distance that curb overflow reaches into property = 0.37(Ft.)
 Streetflow hydraulics at midpoint of street travel:
 Halfstreet flow width = 34.327(Ft.)
 Flow velocity = 1.73(Ft/s)
 Travel time = 17.73 min. TC = 31.05 min.
 Adding area flow to street
 COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 1.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
 Rainfall intensity = 2.093(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method)(Q=KCIA) is C = 0.876
 Subarea runoff = 5.425(CFS) for 3.480(Ac.)
 Total runoff = 7.797(CFS)
 Effective area this stream = 4.25(Ac.)
 Total Study Area (Main Stream No. 1) = 4.25(Ac.)
 Area averaged Fm value = 0.055(In/Hr)
 Street flow at end of street = 7.797(CFS)
 Half street flow at end of street = 7.797(CFS)
 Depth of flow = 0.204(Ft.), Average velocity = 1.898(Ft/s)
 Warning: depth of flow exceeds top of curb
 Distance that curb overflow reaches into property = 1.88(Ft.)
 Flow width (from curb towards crown)= 40.355(Ft.)
 End of computations, Total Study Area = 4.25 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.
 Note: These figures do not consider reduced effective area
 effects caused by confluences in the rational equation.

 Area averaged pervious area fraction(Ap) = 0.100
 Area averaged SCS curve number = 69.0

APPENDIX E

DETENTION BASIN VOLUME CALCULATIONS

DETENTION BASIN DESIGN

MAJESTIC CHINO LOGISTICS CENTER

BASIN VOLUMES BY ELEVATION

BASIN A

NOTE: BIO-RETENTION LAYERS HAVE POROSITY OF 0.4

<u>ELEVATION</u> (FT)	<u>AREA</u> (SF)	<u>AREA</u> (AC)	<u>%VOLUME</u> IN BIO LAYER	<u>VOLUME</u> (ACRE-FT)	<u>CUMULATIVE</u> (ACRE-FT)	BIO- RETENTION LAYERS
537	75,898	1.74	100%	0.00	0	
538	75,898	1.74	100%	0.70	0.70	
539	75,898	1.74	100%	0.70	1.39	
540	75,898	1.74	100%	0.70	2.09	
541	7,938	0.18	86%	1.56	3.65	
542	14,405	0.33	75%	0.78	4.43	
543	25,406	0.58	67%	0.92	5.36	
544	35,511	0.82	60%	1.12	6.47	
545	54,750	1.26	54%	1.41	7.89	
546	73,770	1.69	50%	1.82	9.71	
547	97,276	2.23	46%	2.28	11.99	
548	119,884	2.75	0%	2.49	14.49	
549	130,409	2.99	0%	2.87	17.36	
550	141,011	3.24	0%	3.12	20.47	
551	151,705	3.48	0%	3.36	23.83	
552	162,479	3.73	0%	3.61	27.44	
553	173,703	3.99	0%	3.86	31.30	

APPENDIX F

DETENTION BASIN OUTFLOW CALCULATIONS

BASIN OUTFLOW CALCULATIONS

DETENTION BASIN DESIGN - MAJESTIC CHINO LOGISTIC CENTER

BASIN A

OUTFLOW PER WATER SURFACE ELEVATION

BIOTREATMENT FLOW = BOTTOM AREA x 4 IN/HR

75,898 SF x 4"/HR = 7.03 CFS

W/S ELEV	DEPTH	SUBDRAIN Q (cfs)	BIO- RETENTION LAYERS
537	0	0	
538	1	7.03	
539	2	7.03	
540	3	7.03	
541	4	7.03	
542	5	7.03	
543	6	7.03	
544	7	7.03	
545	8	7.03	
546	9	7.03	
547	10	7.03	
548	11	7.03	
549	12	7.03	
550	13	7.03	
551	14	7.03	

OUTFLOW THROUGH TOP OF STRUCTURE

SHARP EDGED WEIR ABOVE WATER QUALITY SCREEN

$$Q = CLH^{3/2}$$

WHERE:

C=WEIR COEFFICIENT (3.087)

L=WEIR LENGTH (21.34' FOR THIS STRUCTURE)

H=HEAD (FT)

W/S ELEV	DEPTH	HEAD (h)	Q (cfs)
549	9.00	0.00	0.00
549.5	9.50	0.50	23.29
550	10.00	1.00	65.88
550.5	10.50	1.50	121.02
551	11.00	2.00	186.33

TIME REQUIRED TO EMPTY BASIN

ASSUMES CONSTANT HEAD BETWEEN STAGE ELEVATIONS

BASIN DEPTH	DELTA W/S ELEVS	VOL (AC-FT)	VOLUME (C.F.)	Q (CFS)	TIME (HRS)	CUMULATIVE (HRS)
11	551.00	20.78	905,177	186.33	0.22	0.22
10	550.00	17.42	758,815	65.88	0.57	0.79
9	549.00	14.31	623,344	7.03	4.96	5.75
8	548.00	11.43	497,891	7.03	4.29	10.03
7	547.00	8.94	389,426	7.03	3.37	13.41
6	546.00	6.98	304,049	7.03	2.55	15.95
5	545.00	5.50	239,580	7.03	1.77	17.73
4	544.00	4.47	194,713	7.03	1.20	18.93
3	543.00	3.77	164,221	7.03	0.79	19.72
2	542.00	3.31	144,184	7.03	0.45	20.17
1	541.00	3.05	132,858	7.03	1.65	21.82
0	540.00	2.09	91,040	7.03	3.60	25.42

OUTFLOW OVER EMERGENCY SPILLWAY

BROAD CRESTED WEIR EQUATION

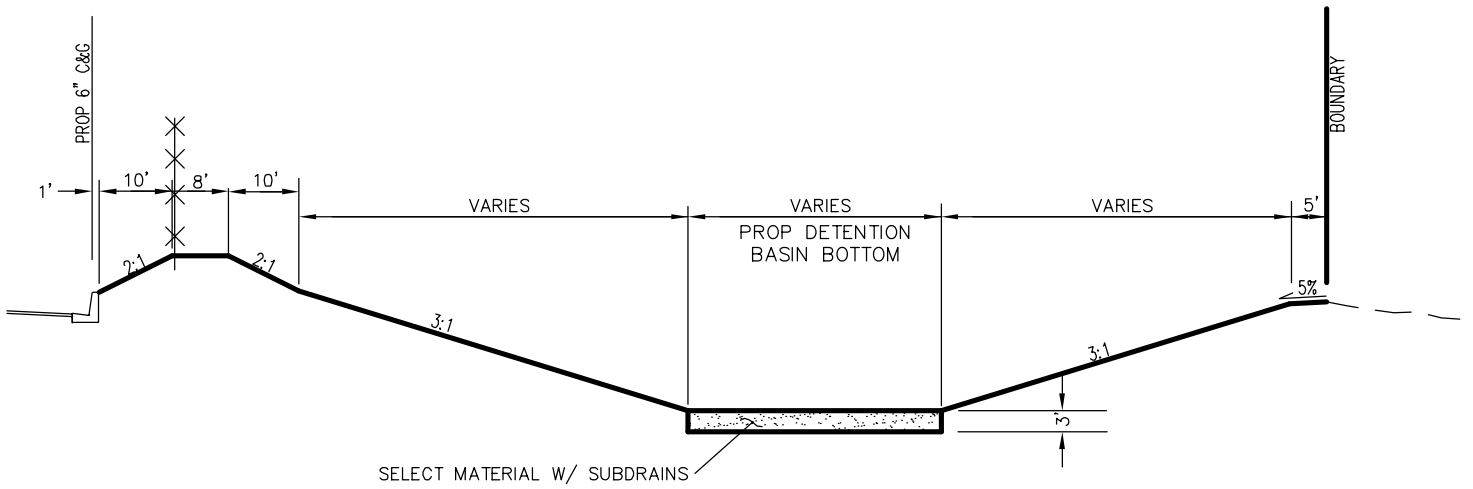
$$Q = 1.6LH^{3/2}$$

WHERE:

L=WEIR LENGTH (188' FOR THIS STRUCTURE)

H=HEAD (FT)

W/S ELEV	DEPTH	HEAD (h)	Q (cfs)
554	13.00	0.20	26.90



DETENTION BASIN CROSS-SECTION

SCALE: 1" = 20'

APPENDIX G
DETENTION BASIN
FLOOD ROUTING CALCULATIONS

BASIN ROUTING INPUT

BASIN A

ELEV	DEPTH	VOL	OUTFLOW
537	0	0	0
538	1	0.7	7.03
539	2	1.39	7.03
540	3	2.09	7.03
541	4	3.65	7.03
542	5	4.43	7.03
543	6	5.36	7.03
544	7	6.47	7.03
545	8	7.89	7.03
546	9	9.71	7.03
547	10	11.99	7.03
548	11	14.49	7.03
549	12	17.36	7.03
550	13	20.47	72.91
551	14	23.83	193.36

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 11/01/19

MAJESTIC CHINO LOGISTICS CENTER
100 YEAR, 24 HR FLOOD ROUTING
BASIN A
100105RTE

Program License Serial Number 6262

***** HYDROGRAPH INFORMATION *****

From study/file name: 100105uh.rte
*****HYDROGRAPH DATA*****
Number of intervals = 302
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 215.793 (CFS)
Total volume = 48.741 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 302
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:
Basin Depth Storage Outflow (S-0*dt/2) (S+0*dt/2)
(Ft.) (Ac.Ft) (CFS) (Ac.Ft) (Ac.Ft)

0.000	0.000	0.000	0.000	0.000
1.000	0.700	7.030	0.676	0.724
2.000	1.390	7.030	1.366	1.414
3.000	2.090	7.030	2.066	2.114
4.000	3.650	7.030	3.626	3.674
5.000	4.430	7.030	4.406	4.454
6.000	5.360	7.030	5.336	5.384
7.000	6.470	7.030	6.446	6.494
8.000	7.890	7.030	7.866	7.914
9.000	9.710	7.030	9.686	9.734
10.000	11.990	7.030	11.966	12.014
11.000	14.490	7.030	14.466	14.514
12.000	17.360	7.030	17.336	17.384
13.000	20.470	72.910	20.219	20.721
14.000	23.830	193.360	23.164	24.496

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	53.9	107.90	161.84	215.79	Depth (Ft.)
0.083	0.16	0.01	0.001	0					0.00
0.167	0.77	0.04	0.004	0					0.01
0.250	2.11	0.13	0.013	0					0.02
0.333	3.92	0.32	0.032	0					0.05
0.417	6.20	0.64	0.064	0					0.09
0.500	8.07	1.07	0.107	0I					0.15
0.583	9.23	1.58	0.157	0I					0.22
0.667	9.91	2.11	0.211	0I					0.30
0.750	10.35	2.65	0.264	0I					0.38
0.833	10.61	3.17	0.316	0I					0.45
0.917	10.73	3.68	0.366	0I					0.52
1.000	10.81	4.15	0.413	0I					0.59
1.083	10.89	4.60	0.458	0I					0.65
1.167	10.97	5.02	0.500	0I					0.71
1.250	11.04	5.42	0.540	0I					0.77
1.333	11.07	5.80	0.577	0I					0.82
1.417	11.11	6.15	0.613	0I					0.88
1.500	11.14	6.48	0.646	0I					0.92
1.583	11.18	6.80	0.677	0					0.97
1.667	11.21	7.03	0.706	0					1.01
1.750	11.25	7.03	0.735	0					1.05
1.833	11.28	7.03	0.764	0					1.09
1.917	11.32	7.03	0.794	0					1.14
2.000	11.35	7.03	0.823	0					1.18
2.083	11.39	7.03	0.853	0					1.22
2.167	11.43	7.03	0.883	0					1.27
2.250	11.47	7.03	0.914	0					1.31
2.333	11.50	7.03	0.945	0					1.35
2.417	11.54	7.03	0.975	0					1.40
2.500	11.58	7.03	1.007	0					1.44
2.583	11.62	7.03	1.038	0					1.49
2.667	11.66	7.03	1.070	0					1.54
2.750	11.70	7.03	1.102	0					1.58
2.833	11.74	7.03	1.134	0					1.63
2.917	11.78	7.03	1.167	0					1.68
3.000	11.82	7.03	1.200	0					1.72
3.083	11.86	7.03	1.233	0					1.77
3.167	11.90	7.03	1.266	0					1.82
3.250	11.94	7.03	1.300	0					1.87
3.333	11.99	7.03	1.334	0					1.92
3.417	12.03	7.03	1.368	0					1.97
3.500	12.07	7.03	1.403	0					2.02
3.583	12.12	7.03	1.438	0					2.07
3.667	12.16	7.03	1.473	0					2.12
3.750	12.21	7.03	1.508	0					2.17
3.833	12.25	7.03	1.544	0					2.22
3.917	12.30	7.03	1.580	0					2.27
4.000	12.34	7.03	1.617	0					2.32
4.083	12.39	7.03	1.653	0					2.38
4.167	12.44	7.03	1.690	0					2.43
4.250	12.48	7.03	1.728	0					2.48
4.333	12.53	7.03	1.766	0					2.54
4.417	12.58	7.03	1.804	0					2.59
4.500	12.63	7.03	1.842	0					2.65
4.583	12.68	7.03	1.881	0					2.70
4.667	12.73	7.03	1.920	0					2.76
4.750	12.78	7.03	1.959	0					2.81
4.833	12.83	7.03	1.999	0					2.87
4.917	12.88	7.03	2.039	0					2.93
5.000	12.93	7.03	2.080	0					2.99
5.083	12.99	7.03	2.120	0					3.02
5.167	13.04	7.03	2.162	0					3.05
5.250	13.10	7.03	2.203	0					3.07

5.333	13.15	7.03	2.245	0						3.10
5.417	13.21	7.03	2.287	0						3.13
5.500	13.26	7.03	2.330	0						3.15
5.583	13.32	7.03	2.373	0						3.18
5.667	13.38	7.03	2.417	0						3.21
5.750	13.43	7.03	2.461	0						3.24
5.833	13.49	7.03	2.505	0I						3.27
5.917	13.55	7.03	2.550	0I						3.29
6.000	13.61	7.03	2.595	0I						3.32
6.083	13.67	7.03	2.640	0I						3.35
6.167	13.74	7.03	2.686	0I						3.38
6.250	13.80	7.03	2.733	0I						3.41
6.333	13.86	7.03	2.780	0I						3.44
6.417	13.93	7.03	2.827	0I						3.47
6.500	13.99	7.03	2.875	0I						3.50
6.583	14.06	7.03	2.923	0I						3.53
6.667	14.12	7.03	2.971	0I						3.57
6.750	14.19	7.03	3.021	0I						3.60
6.833	14.26	7.03	3.070	0I						3.63
6.917	14.33	7.03	3.120	0I						3.66
7.000	14.40	7.03	3.171	0I						3.69
7.083	14.47	7.03	3.222	0I						3.73
7.167	14.55	7.03	3.273	0I						3.76
7.250	14.62	7.03	3.325	0I						3.79
7.333	14.69	7.03	3.378	0I						3.83
7.417	14.77	7.03	3.431	0I						3.86
7.500	14.85	7.03	3.484	0I						3.89
7.583	14.93	7.03	3.538	0I						3.93
7.667	15.00	7.03	3.593	0I						3.96
7.750	15.08	7.03	3.648	0I						4.00
7.833	15.17	7.03	3.704	0I						4.07
7.917	15.25	7.03	3.760	0I						4.14
8.000	15.33	7.03	3.817	0I						4.21
8.083	15.42	7.03	3.875	0I						4.29
8.167	15.50	7.03	3.933	0I						4.36
8.250	15.59	7.03	3.991	0I						4.44
8.333	15.68	7.03	4.051	0I						4.51
8.417	15.77	7.03	4.111	0I						4.59
8.500	15.87	7.03	4.171	0I						4.67
8.583	15.96	7.03	4.232	0I						4.75
8.667	16.06	7.03	4.294	0I						4.83
8.750	16.15	7.03	4.357	0I						4.91
8.833	16.25	7.03	4.420	0I						4.99
8.917	16.35	7.03	4.484	0I						5.06
9.000	16.45	7.03	4.548	0I						5.13
9.083	16.56	7.03	4.614	0I						5.20
9.167	16.66	7.03	4.680	0I						5.27
9.250	16.77	7.03	4.746	0I						5.34
9.333	16.88	7.03	4.814	0I						5.41
9.417	16.99	7.03	4.882	0I						5.49
9.500	17.11	7.03	4.951	0I						5.56
9.583	17.22	7.03	5.021	0I						5.64
9.667	17.34	7.03	5.091	0I						5.71
9.750	17.46	7.03	5.163	0I						5.79
9.833	17.59	7.03	5.235	0I						5.87
9.917	17.71	7.03	5.308	0I						5.94
10.000	17.84	7.03	5.382	0I						6.02
10.083	17.97	7.03	5.457	0I						6.09
10.167	18.10	7.03	5.533	0I						6.16
10.250	18.24	7.03	5.610	0I						6.22
10.333	18.38	7.03	5.687	0I						6.29
10.417	18.52	7.03	5.766	0I						6.37
10.500	18.66	7.03	5.846	0I						6.44
10.583	18.81	7.03	5.926	0I						6.51
10.667	18.96	7.03	6.008	0I						6.58
10.750	19.12	7.03	6.091	0I						6.66
10.833	19.28	7.03	6.174	0I						6.73
10.917	19.44	7.03	6.259	0I						6.81
11.000	19.61	7.03	6.345	0I						6.89
11.083	19.78	7.03	6.433	0I						6.97
11.167	19.95	7.03	6.521	0I						7.04

11.250	20.13	7.03	6.611	0I						7.10
11.333	20.31	7.03	6.702	0 I						7.16
11.417	20.50	7.03	6.794	0 I						7.23
11.500	20.70	7.03	6.887	0 I						7.29
11.583	20.90	7.03	6.982	0 I						7.36
11.667	21.10	7.03	7.078	0 I						7.43
11.750	21.31	7.03	7.176	0 I						7.50
11.833	21.52	7.03	7.275	0 I						7.57
11.917	21.75	7.03	7.375	0 I						7.64
12.000	21.97	7.03	7.478	0 I						7.71
12.083	22.26	7.03	7.581	0 I						7.78
12.167	22.71	7.03	7.688	0 I						7.86
12.250	23.41	7.03	7.798	0 I						7.94
12.333	24.27	7.03	7.914	0 I						8.01
12.417	25.30	7.03	8.036	0 I						8.08
12.500	26.19	7.03	8.165	0 I						8.15
12.583	26.86	7.03	8.299	0 I						8.22
12.667	27.37	7.03	8.438	0 I						8.30
12.750	27.82	7.03	8.579	0 I						8.38
12.833	28.21	7.03	8.724	0 I						8.46
12.917	28.57	7.03	8.871	0 I						8.54
13.000	28.92	7.03	9.021	0 I						8.62
13.083	29.29	7.03	9.173	0 I						8.70
13.167	29.67	7.03	9.327	0 I						8.79
13.250	30.07	7.03	9.485	0 I						8.88
13.333	30.46	7.03	9.645	0 I						8.96
13.417	30.88	7.03	9.807	0 I						9.04
13.500	31.31	7.03	9.973	0 I						9.12
13.583	31.77	7.03	10.142	0 I						9.19
13.667	32.24	7.03	10.314	0 I						9.26
13.750	32.76	7.03	10.489	0 I						9.34
13.833	33.29	7.03	10.668	0 I						9.42
13.917	33.86	7.03	10.851	0 I						9.50
14.000	34.45	7.03	11.038	0 I						9.58
14.083	35.09	7.03	11.229	0 I						9.67
14.167	35.76	7.03	11.424	0 I						9.75
14.250	36.49	7.03	11.625	0 I						9.84
14.333	37.27	7.03	11.830	0 I						9.93
14.417	38.12	7.03	12.042	0 I						10.02
14.500	38.99	7.03	12.259	0 I						10.11
14.583	39.93	7.03	12.482	0 I						10.20
14.667	40.89	7.03	12.712	0 I						10.29
14.750	41.94	7.03	12.949	0 I						10.38
14.833	43.05	7.03	13.193	0 I						10.48
14.917	44.27	7.03	13.445	0 I						10.58
15.000	45.58	7.03	13.706	0 I						10.69
15.083	47.03	7.03	13.977	0 I						10.79
15.167	48.60	7.03	14.258	0 I						10.91
15.250	50.37	7.03	14.550	0 I						11.02
15.333	52.31	7.03	14.855	0 I						11.13
15.417	54.32	7.03	15.174	0 I						11.24
15.500	55.97	7.03	15.505	0 I						11.35
15.583	57.03	7.03	15.846	0 I						11.47
15.667	57.89	7.03	16.193	0 I						11.59
15.750	58.88	7.03	16.547	0 I						11.72
15.833	61.41	7.03	16.913	0 I						11.84
15.917	66.83	7.03	17.306	0 I						11.98
16.000	76.12	14.72	17.723	0 I						12.12
16.083	96.75	24.47	18.184	0 I						12.26
16.167	131.53	36.67	18.759	0 I						12.45
16.250	175.85	52.58	19.510	0 I						12.69
16.333	201.78	71.10	20.385	0 I						12.97
16.417	215.79	100.25	21.233	0 I						13.23
16.500	184.80	122.23	21.846	0 I						13.41
16.583	140.10	131.07	22.092	0 I						13.48
16.667	107.08	129.43	22.047	0 I						13.47
16.750	87.95	122.41	21.851	0 I						13.41
16.833	72.82	113.18	21.593	0 I						13.33
16.917	61.61	103.08	21.312	0 I						13.25
17.000	55.28	93.27	21.038	0 I						13.17
17.083	51.75	84.53	20.794	0 I						13.10

17.167	48.57	76.98	20.584	I	0				13.03
17.250	45.06	71.33	20.395	I	0				12.98
17.333	41.17	67.49	20.214	I	0				12.92
17.417	39.10	63.77	20.039	I	0				12.86
17.500	37.38	60.30	19.875	I	0				12.81
17.583	35.88	57.08	19.723	I	0				12.76
17.667	34.54	54.11	19.582	I	0				12.71
17.750	33.35	51.37	19.453	I	0				12.67
17.833	32.28	48.84	19.334	I	0				12.63
17.917	31.33	46.53	19.225	I	0				12.60
18.000	30.46	44.40	19.124	I	0				12.57
18.083	29.62	42.45	19.032	I	0				12.54
18.167	28.69	40.64	18.947	I	0				12.51
18.250	27.56	38.94	18.866	IO					12.48
18.333	26.33	37.31	18.789	I	0				12.46
18.417	24.99	35.72	18.715	I	0				12.44
18.500	23.83	34.19	18.642	I	0				12.41
18.583	22.94	32.72	18.573	IO					12.39
18.667	22.24	31.34	18.508	IO					12.37
18.750	21.65	30.06	18.447	IO					12.35
18.833	21.15	28.88	18.392	IO					12.33
18.917	20.72	27.80	18.341	IO					12.32
19.000	20.32	26.81	18.294	0					12.30
19.083	19.94	25.91	18.251	IO					12.29
19.167	19.58	25.07	18.212	IO					12.27
19.250	19.24	24.30	18.175	IO					12.26
19.333	18.93	23.59	18.142	IO					12.25
19.417	18.63	22.94	18.111	IO					12.24
19.500	18.35	22.33	18.082	IO					12.23
19.583	18.07	21.77	18.056	IO					12.22
19.667	17.81	21.25	18.031	IO					12.22
19.750	17.56	20.77	18.008	IO					12.21
19.833	17.31	20.31	17.987	IO					12.20
19.917	17.08	19.89	17.967	0					12.20
20.000	16.85	19.49	17.948	0					12.19
20.083	16.64	19.12	17.931	0					12.18
20.167	16.43	18.77	17.914	0					12.18
20.250	16.22	18.43	17.898	0					12.17
20.333	16.03	18.12	17.884	0					12.17
20.417	15.84	17.82	17.870	0					12.16
20.500	15.66	17.54	17.856	0					12.16
20.583	15.48	17.27	17.844	0					12.16
20.667	15.31	17.02	17.832	0					12.15
20.750	15.14	16.77	17.820	0					12.15
20.833	14.98	16.54	17.809	0					12.14
20.917	14.82	16.32	17.798	0					12.14
21.000	14.67	16.11	17.788	0					12.14
21.083	14.52	15.90	17.779	0					12.13
21.167	14.38	15.70	17.769	0					12.13
21.250	14.24	15.51	17.761	0					12.13
21.333	14.10	15.33	17.752	0					12.13
21.417	13.97	15.16	17.744	0					12.12
21.500	13.84	14.99	17.736	0					12.12
21.583	13.72	14.82	17.728	0					12.12
21.667	13.59	14.66	17.720	0					12.12
21.750	13.47	14.51	17.713	IO					12.11
21.833	13.36	14.36	17.706	IO					12.11
21.917	13.24	14.22	17.699	IO					12.11
22.000	13.13	14.08	17.693	IO					12.11
22.083	13.02	13.94	17.686	IO					12.10
22.167	12.92	13.81	17.680	IO					12.10
22.250	12.81	13.68	17.674	IO					12.10
22.333	12.71	13.56	17.668	IO					12.10
22.417	12.61	13.43	17.662	0					12.10
22.500	12.52	13.32	17.657	0					12.10
22.583	12.42	13.20	17.651	0					12.09
22.667	12.33	13.09	17.646	0					12.09
22.750	12.24	12.98	17.641	0					12.09
22.833	12.15	12.87	17.636	0					12.09
22.917	12.06	12.77	17.631	0					12.09
23.000	11.97	12.66	17.626	0					12.09

23.083	11.89	12.56	17.621	0					12.08
23.167	11.81	12.47	17.617	0					12.08
23.250	11.73	12.37	17.612	0					12.08
23.333	11.65	12.28	17.608	0					12.08
23.417	11.57	12.19	17.603	0					12.08
23.500	11.49	12.10	17.599	0					12.08
23.583	11.42	12.01	17.595	0					12.08
23.667	11.34	11.92	17.591	0					12.07
23.750	11.27	11.84	17.587	0					12.07
23.833	11.20	11.76	17.583	0					12.07
23.917	11.13	11.68	17.579	0					12.07
24.000	11.06	11.60	17.576	0					12.07
24.083	10.83	11.51	17.571	0					12.07
24.167	10.16	11.37	17.565	0					12.07
24.250	8.76	11.11	17.553	0					12.06
24.333	6.91	10.67	17.532	0					12.06
24.417	4.60	10.00	17.500	IO					12.05
24.500	2.72	9.14	17.459	IO					12.03
24.583	1.57	8.19	17.415	IO					12.02
24.667	0.92	7.24	17.370	IO					12.00
24.750	0.50	7.03	17.326	IO					11.99
24.833	0.27	7.03	17.280	IO					11.97
24.917	0.18	7.03	17.233	IO					11.96
25.000	0.13	7.03	17.186	IO					11.94
25.083	0.08	7.03	17.138	IO					11.92
25.167	0.03	7.03	17.090	IO					11.91
25.250	0.00	7.03	17.042	IO					11.89
25.333	0.00	7.03	16.993	IO					11.87
25.417	0.00	7.03	16.945	IO					11.86
25.500	0.00	7.03	16.896	IO					11.84
25.583	0.00	7.03	16.848	IO					11.82
25.667	0.00	7.03	16.800	IO					11.80
25.750	0.00	7.03	16.751	IO					11.79
25.833	0.00	7.03	16.703	IO					11.77
25.917	0.00	7.03	16.654	IO					11.75
26.000	0.00	7.03	16.606	IO					11.74
26.083	0.00	7.03	16.558	IO					11.72
26.167	0.00	7.03	16.509	IO					11.70
26.250	0.00	7.03	16.461	IO					11.69
26.333	0.00	7.03	16.412	IO					11.67
26.417	0.00	7.03	16.364	IO					11.65
26.500	0.00	7.03	16.315	IO					11.64
26.583	0.00	7.03	16.267	IO					11.62
26.667	0.00	7.03	16.219	IO					11.60
26.750	0.00	7.03	16.170	IO					11.59
26.833	0.00	7.03	16.122	IO					11.57
26.917	0.00	7.03	16.073	IO					11.55
27.000	0.00	7.03	16.025	IO					11.53
27.083	0.00	7.03	15.977	IO					11.52
27.167	0.00	7.03	15.928	IO					11.50
27.250	0.00	7.03	15.880	IO					11.48
27.333	0.00	7.03	15.831	IO					11.47
27.417	0.00	7.03	15.783	IO					11.45
27.500	0.00	7.03	15.734	IO					11.43
27.583	0.00	7.03	15.686	IO					11.42
27.667	0.00	7.03	15.638	IO					11.40
27.750	0.00	7.03	15.589	IO					11.38
27.833	0.00	7.03	15.541	IO					11.37
27.917	0.00	7.03	15.492	IO					11.35
28.000	0.00	7.03	15.444	IO					11.33
28.083	0.00	7.03	15.396	IO					11.32
28.167	0.00	7.03	15.347	IO					11.30
28.250	0.00	7.03	15.299	IO					11.28
28.333	0.00	7.03	15.250	IO					11.26
28.417	0.00	7.03	15.202	IO					11.25
28.500	0.00	7.03	15.153	IO					11.23
28.583	0.00	7.03	15.105	IO					11.21
28.667	0.00	7.03	15.057	IO					11.20
28.750	0.00	7.03	15.008	IO					11.18
28.833	0.00	7.03	14.960	IO					11.16
28.917	0.00	7.03	14.911	IO					11.15

29.000	0.00	7.03	14.863	IO						11.13
29.083	0.00	7.03	14.815	IO						11.11
29.167	0.00	7.03	14.766	IO						11.10
29.250	0.00	7.03	14.718	IO						11.08
29.333	0.00	7.03	14.669	IO						11.06
29.417	0.00	7.03	14.621	IO						11.05
29.500	0.00	7.03	14.572	IO						11.03
29.583	0.00	7.03	14.524	IO						11.01
29.667	0.00	7.03	14.476	IO						10.99
29.750	0.00	7.03	14.427	IO						10.97
29.833	0.00	7.03	14.379	IO						10.96
29.917	0.00	7.03	14.330	IO						10.94
30.000	0.00	7.03	14.282	IO						10.92
30.083	0.00	7.03	14.234	IO						10.90
30.167	0.00	7.03	14.185	IO						10.88
30.250	0.00	7.03	14.137	IO						10.86
30.333	0.00	7.03	14.088	IO						10.84
30.417	0.00	7.03	14.040	IO						10.82
30.500	0.00	7.03	13.991	IO						10.80
30.583	0.00	7.03	13.943	IO						10.78
30.667	0.00	7.03	13.895	IO						10.76
30.750	0.00	7.03	13.846	IO						10.74
30.833	0.00	7.03	13.798	IO						10.72
30.917	0.00	7.03	13.749	IO						10.70
31.000	0.00	7.03	13.701	IO						10.68
31.083	0.00	7.03	13.653	IO						10.67
31.167	0.00	7.03	13.604	IO						10.65
31.250	0.00	7.03	13.556	IO						10.63
31.333	0.00	7.03	13.507	IO						10.61
31.417	0.00	7.03	13.459	IO						10.59
31.500	0.00	7.03	13.411	IO						10.57
31.583	0.00	7.03	13.362	IO						10.55
31.667	0.00	7.03	13.314	IO						10.53
31.750	0.00	7.03	13.265	IO						10.51
31.833	0.00	7.03	13.217	IO						10.49
31.917	0.00	7.03	13.168	IO						10.47
32.000	0.00	7.03	13.120	IO						10.45
32.083	0.00	7.03	13.072	IO						10.43
32.167	0.00	7.03	13.023	IO						10.41
32.250	0.00	7.03	12.975	IO						10.39
32.333	0.00	7.03	12.926	IO						10.37
32.417	0.00	7.03	12.878	IO						10.36
32.500	0.00	7.03	12.830	IO						10.34
32.583	0.00	7.03	12.781	IO						10.32
32.667	0.00	7.03	12.733	IO						10.30
32.750	0.00	7.03	12.684	IO						10.28
32.833	0.00	7.03	12.636	IO						10.26
32.917	0.00	7.03	12.587	IO						10.24
33.000	0.00	7.03	12.539	IO						10.22
33.083	0.00	7.03	12.491	IO						10.20
33.167	0.00	7.03	12.442	IO						10.18
33.250	0.00	7.03	12.394	IO						10.16
33.333	0.00	7.03	12.345	IO						10.14
33.417	0.00	7.03	12.297	IO						10.12
33.500	0.00	7.03	12.249	IO						10.10
33.583	0.00	7.03	12.200	IO						10.08
33.667	0.00	7.03	12.152	IO						10.06
33.750	0.00	7.03	12.103	IO						10.05
33.833	0.00	7.03	12.055	IO						10.03
33.917	0.00	7.03	12.006	IO						10.01
34.000	0.00	7.03	11.958	IO						9.99
34.083	0.00	7.03	11.910	IO						9.96
34.167	0.00	7.03	11.861	IO						9.94
34.250	0.00	7.03	11.813	IO						9.92
34.333	0.00	7.03	11.764	IO						9.90
34.417	0.00	7.03	11.716	IO						9.88
34.500	0.00	7.03	11.668	IO						9.86
34.583	0.00	7.03	11.619	IO						9.84
34.667	0.00	7.03	11.571	IO						9.82
34.750	0.00	7.03	11.522	IO						9.79
34.833	0.00	7.03	11.474	IO						9.77

34.917	0.00	7.03	11.425	IO					9.75
35.000	0.00	7.03	11.377	IO					9.73
35.083	0.00	7.03	11.329	IO					9.71
35.167	0.00	7.03	11.280	IO					9.69
35.250	0.00	7.03	11.232	IO					9.67
35.333	0.00	7.03	11.183	IO					9.65
35.417	0.00	7.03	11.135	IO					9.62
35.500	0.00	7.03	11.087	IO					9.60
35.583	0.00	7.03	11.038	IO					9.58
35.667	0.00	7.03	10.990	IO					9.56
35.750	0.00	7.03	10.941	IO					9.54
35.833	0.00	7.03	10.893	IO					9.52
35.917	0.00	7.03	10.844	IO					9.50
36.000	0.00	7.03	10.796	IO					9.48
36.083	0.00	7.03	10.748	IO					9.46
36.167	0.00	7.03	10.699	IO					9.43
36.250	0.00	7.03	10.651	IO					9.41
36.333	0.00	7.03	10.602	IO					9.39
36.417	0.00	7.03	10.554	IO					9.37
36.500	0.00	7.03	10.506	IO					9.35
36.583	0.00	7.03	10.457	IO					9.33
36.667	0.00	7.03	10.409	IO					9.31
36.750	0.00	7.03	10.360	IO					9.29
36.833	0.00	7.03	10.312	IO					9.26
36.917	0.00	7.03	10.263	IO					9.24
37.000	0.00	7.03	10.215	IO					9.22
37.083	0.00	7.03	10.167	IO					9.20
37.167	0.00	7.03	10.118	IO					9.18
37.250	0.00	7.03	10.070	IO					9.16
37.333	0.00	7.03	10.021	IO					9.14
37.417	0.00	7.03	9.973	IO					9.12
37.500	0.00	7.03	9.925	IO					9.09
37.583	0.00	7.03	9.876	IO					9.07
37.667	0.00	7.03	9.828	IO					9.05
37.750	0.00	7.03	9.779	IO					9.03
37.833	0.00	7.03	9.731	IO					9.01
37.917	0.00	7.03	9.682	IO					8.98
38.000	0.00	7.03	9.634	IO					8.96
38.083	0.00	7.03	9.586	IO					8.93
38.167	0.00	7.03	9.537	IO					8.91
38.250	0.00	7.03	9.489	IO					8.88
38.333	0.00	7.03	9.440	IO					8.85
38.417	0.00	7.03	9.392	IO					8.83
38.500	0.00	7.03	9.344	IO					8.80
38.583	0.00	7.03	9.295	IO					8.77
38.667	0.00	7.03	9.247	IO					8.75
38.750	0.00	7.03	9.198	IO					8.72
38.833	0.00	7.03	9.150	IO					8.69
38.917	0.00	7.03	9.101	IO					8.67
39.000	0.00	7.03	9.053	IO					8.64
39.083	0.00	7.03	9.005	IO					8.61
39.167	0.00	7.03	8.956	IO					8.59
39.250	0.00	7.03	8.908	IO					8.56
39.333	0.00	7.03	8.859	IO					8.53
39.417	0.00	7.03	8.811	IO					8.51
39.500	0.00	7.03	8.763	IO					8.48
39.583	0.00	7.03	8.714	IO					8.45
39.667	0.00	7.03	8.666	IO					8.43
39.750	0.00	7.03	8.617	IO					8.40
39.833	0.00	7.03	8.569	IO					8.37
39.917	0.00	7.03	8.520	IO					8.35
40.000	0.00	7.03	8.472	IO					8.32
40.083	0.00	7.03	8.424	IO					8.29
40.167	0.00	7.03	8.375	IO					8.27
40.250	0.00	7.03	8.327	IO					8.24
40.333	0.00	7.03	8.278	IO					8.21
40.417	0.00	7.03	8.230	IO					8.19
40.500	0.00	7.03	8.182	IO					8.16
40.583	0.00	7.03	8.133	IO					8.13
40.667	0.00	7.03	8.085	IO					8.11
40.750	0.00	7.03	8.036	IO					8.08

40.833	0.00	7.03	7.988	IO						8.05
40.917	0.00	7.03	7.939	IO						8.03
41.000	0.00	7.03	7.891	IO						8.00
41.083	0.00	7.03	7.843	IO						7.97
41.167	0.00	7.03	7.794	IO						7.93
41.250	0.00	7.03	7.746	IO						7.90
41.333	0.00	7.03	7.697	IO						7.86
41.417	0.00	7.03	7.649	IO						7.83
41.500	0.00	7.03	7.601	IO						7.80
41.583	0.00	7.03	7.552	IO						7.76
41.667	0.00	7.03	7.504	IO						7.73
41.750	0.00	7.03	7.455	IO						7.69
41.833	0.00	7.03	7.407	IO						7.66
41.917	0.00	7.03	7.359	IO						7.63
42.000	0.00	7.03	7.310	IO						7.59
42.083	0.00	7.03	7.262	IO						7.56
42.167	0.00	7.03	7.213	IO						7.52
42.250	0.00	7.03	7.165	IO						7.49
42.333	0.00	7.03	7.116	IO						7.46
42.417	0.00	7.03	7.068	IO						7.42
42.500	0.00	7.03	7.020	IO						7.39
42.583	0.00	7.03	6.971	IO						7.35
42.667	0.00	7.03	6.923	IO						7.32
42.750	0.00	7.03	6.874	IO						7.28
42.833	0.00	7.03	6.826	IO						7.25
42.917	0.00	7.03	6.778	IO						7.22
43.000	0.00	7.03	6.729	IO						7.18
43.083	0.00	7.03	6.681	IO						7.15
43.167	0.00	7.03	6.632	IO						7.11
43.250	0.00	7.03	6.584	IO						7.08
43.333	0.00	7.03	6.535	IO						7.05
43.417	0.00	7.03	6.487	IO						7.01
43.500	0.00	7.03	6.439	IO						6.97
43.583	0.00	7.03	6.390	IO						6.93
43.667	0.00	7.03	6.342	IO						6.88
43.750	0.00	7.03	6.293	IO						6.84
43.833	0.00	7.03	6.245	IO						6.80
43.917	0.00	7.03	6.197	IO						6.75
44.000	0.00	7.03	6.148	IO						6.71
44.083	0.00	7.03	6.100	IO						6.67
44.167	0.00	7.03	6.051	IO						6.62
44.250	0.00	7.03	6.003	IO						6.58
44.333	0.00	7.03	5.954	IO						6.54
44.417	0.00	7.03	5.906	IO						6.49
44.500	0.00	7.03	5.858	IO						6.45
44.583	0.00	7.03	5.809	IO						6.40
44.667	0.00	7.03	5.761	IO						6.36
44.750	0.00	7.03	5.712	IO						6.32
44.833	0.00	7.03	5.664	IO						6.27
44.917	0.00	7.03	5.616	IO						6.23
45.000	0.00	7.03	5.567	IO						6.19
45.083	0.00	7.03	5.519	IO						6.14
45.167	0.00	7.03	5.470	IO						6.10
45.250	0.00	7.03	5.422	IO						6.06
45.333	0.00	7.03	5.373	IO						6.01
45.417	0.00	7.03	5.325	IO						5.96
45.500	0.00	7.03	5.277	IO						5.91
45.583	0.00	7.03	5.228	IO						5.86
45.667	0.00	7.03	5.180	IO						5.81
45.750	0.00	7.03	5.131	IO						5.75
45.833	0.00	7.03	5.083	IO						5.70
45.917	0.00	7.03	5.035	IO						5.65
46.000	0.00	7.03	4.986	IO						5.60
46.083	0.00	7.03	4.938	IO						5.55
46.167	0.00	7.03	4.889	IO						5.49
46.250	0.00	7.03	4.841	IO						5.44
46.333	0.00	7.03	4.792	IO						5.39
46.417	0.00	7.03	4.744	IO						5.34
46.500	0.00	7.03	4.696	IO						5.29
46.583	0.00	7.03	4.647	IO						5.23
46.667	0.00	7.03	4.599	IO						5.18

46.750	0.00	7.03	4.550	IO					5.13
46.833	0.00	7.03	4.502	IO					5.08
46.917	0.00	7.03	4.454	IO					5.03
47.000	0.00	7.03	4.405	IO					4.97
47.083	0.00	7.03	4.357	IO					4.91
47.167	0.00	7.03	4.308	IO					4.84
47.250	0.00	7.03	4.260	IO					4.78
47.333	0.00	7.03	4.211	IO					4.72
47.417	0.00	7.03	4.163	IO					4.66
47.500	0.00	7.03	4.115	IO					4.60
47.583	0.00	7.03	4.066	IO					4.53
47.667	0.00	7.03	4.018	IO					4.47
47.750	0.00	7.03	3.969	IO					4.41
47.833	0.00	7.03	3.921	IO					4.35
47.917	0.00	7.03	3.873	IO					4.29
48.000	0.00	7.03	3.824	IO					4.22
48.083	0.00	7.03	3.776	IO					4.16
48.167	0.00	7.03	3.727	IO					4.10
48.250	0.00	7.03	3.679	IO					4.04
48.333	0.00	7.03	3.630	IO					3.99
48.417	0.00	7.03	3.582	IO					3.96
48.500	0.00	7.03	3.534	IO					3.93
48.583	0.00	7.03	3.485	IO					3.89
48.667	0.00	7.03	3.437	IO					3.86
48.750	0.00	7.03	3.388	IO					3.83
48.833	0.00	7.03	3.340	IO					3.80
48.917	0.00	7.03	3.292	IO					3.77
49.000	0.00	7.03	3.243	IO					3.74
49.083	0.00	7.03	3.195	IO					3.71
49.167	0.00	7.03	3.146	IO					3.68
49.250	0.00	7.03	3.098	IO					3.65
49.333	0.00	7.03	3.049	IO					3.62
49.417	0.00	7.03	3.001	IO					3.58
49.500	0.00	7.03	2.953	IO					3.55
49.583	0.00	7.03	2.904	IO					3.52
49.667	0.00	7.03	2.856	IO					3.49
49.750	0.00	7.03	2.807	IO					3.46
49.833	0.00	7.03	2.759	IO					3.43
49.917	0.00	7.03	2.711	IO					3.40
50.000	0.00	7.03	2.662	IO					3.37
50.083	0.00	7.03	2.614	IO					3.34
50.167	0.00	7.03	2.565	IO					3.30
50.250	0.00	7.03	2.517	IO					3.27
50.333	0.00	7.03	2.468	IO					3.24
50.417	0.00	7.03	2.420	IO					3.21
50.500	0.00	7.03	2.372	IO					3.18
50.583	0.00	7.03	2.323	IO					3.15
50.667	0.00	7.03	2.275	IO					3.12
50.750	0.00	7.03	2.226	IO					3.09
50.833	0.00	7.03	2.178	IO					3.06
50.917	0.00	7.03	2.130	IO					3.03
51.000	0.00	7.03	2.081	IO					2.99
51.083	0.00	7.03	2.033	IO					2.92
51.167	0.00	7.03	1.984	IO					2.85
51.250	0.00	7.03	1.936	IO					2.78
51.333	0.00	7.03	1.887	IO					2.71
51.417	0.00	7.03	1.839	IO					2.64
51.500	0.00	7.03	1.791	IO					2.57
51.583	0.00	7.03	1.742	IO					2.50
51.667	0.00	7.03	1.694	IO					2.43
51.750	0.00	7.03	1.645	IO					2.36
51.833	0.00	7.03	1.597	IO					2.30
51.917	0.00	7.03	1.549	IO					2.23
52.000	0.00	7.03	1.500	IO					2.16
52.083	0.00	7.03	1.452	IO					2.09
52.167	0.00	7.03	1.403	IO					2.02
52.250	0.00	7.03	1.355	IO					1.95
52.333	0.00	7.03	1.307	IO					1.88
52.417	0.00	7.03	1.258	IO					1.81
52.500	0.00	7.03	1.210	IO					1.74
52.583	0.00	7.03	1.161	IO					1.67

52.667	0.00	7.03	1.113	IO						1.60
52.750	0.00	7.03	1.064	IO						1.53
52.833	0.00	7.03	1.016	IO						1.46
52.917	0.00	7.03	0.968	IO						1.39
53.000	0.00	7.03	0.919	IO						1.32
53.083	0.00	7.03	0.871	IO						1.25
53.167	0.00	7.03	0.822	IO						1.18
53.250	0.00	7.03	0.774	IO						1.11
53.333	0.00	7.03	0.726	IO						1.04
53.417	0.00	6.81	0.678	IO						0.97
53.500	0.00	6.35	0.633	0						0.90
53.583	0.00	5.93	0.590	0						0.84
53.667	0.00	5.53	0.551	0						0.79
53.750	0.00	5.16	0.514	0						0.73
53.833	0.00	4.82	0.480	0						0.69
53.917	0.00	4.49	0.448	0						0.64
54.000	0.00	4.19	0.418	0						0.60
54.083	0.00	3.91	0.390	0						0.56
54.167	0.00	3.65	0.364	0						0.52
54.250	0.00	3.41	0.339	0						0.48
54.333	0.00	3.18	0.317	0						0.45
54.417	0.00	2.97	0.295	0						0.42
54.500	0.00	2.77	0.276	0						0.39
54.583	0.00	2.58	0.257	0						0.37
54.667	0.00	2.41	0.240	0						0.34
54.750	0.00	2.25	0.224	0						0.32
54.833	0.00	2.10	0.209	0						0.30
54.917	0.00	1.96	0.195	0						0.28
55.000	0.00	1.83	0.182	0						0.26
55.083	0.00	1.71	0.170	0						0.24
55.167	0.00	1.59	0.159	0						0.23
55.250	0.00	1.49	0.148	0						0.21
55.333	0.00	1.39	0.138	0						0.20
55.417	0.00	1.29	0.129	0						0.18
55.500	0.00	1.21	0.120	0						0.17
55.583	0.00	1.13	0.112	0						0.16
55.667	0.00	1.05	0.105	0						0.15
55.750	0.00	0.98	0.098	0						0.14
55.833	0.00	0.92	0.091	0						0.13
55.917	0.00	0.85	0.085	0						0.12
56.000	0.00	0.80	0.079	0						0.11
56.083	0.00	0.74	0.074	0						0.11
56.167	0.00	0.69	0.069	0						0.10
56.250	0.00	0.65	0.064	0						0.09
56.333	0.00	0.60	0.060	0						0.09
56.417	0.00	0.56	0.056	0						0.08
56.500	0.00	0.53	0.052	0						0.07
56.583	0.00	0.49	0.049	0						0.07
56.667	0.00	0.46	0.046	0						0.07
56.750	0.00	0.43	0.043	0						0.06
56.833	0.00	0.40	0.040	0						0.06
56.917	0.00	0.37	0.037	0						0.05
57.000	0.00	0.35	0.035	0						0.05
57.083	0.00	0.32	0.032	0						0.05
57.167	0.00	0.30	0.030	0						0.04
57.250	0.00	0.28	0.028	0						0.04
57.333	0.00	0.26	0.026	0						0.04
57.417	0.00	0.25	0.024	0						0.03
57.500	0.00	0.23	0.023	0						0.03
57.583	0.00	0.21	0.021	0						0.03
57.667	0.00	0.20	0.020	0						0.03
57.750	0.00	0.19	0.019	0						0.03
57.833	0.00	0.17	0.017	0						0.02
57.917	0.00	0.16	0.016	0						0.02
58.000	0.00	0.15	0.015	0						0.02
58.083	0.00	0.14	0.014	0						0.02
58.167	0.00	0.13	0.013	0						0.02
58.250	0.00	0.12	0.012	0						0.02
58.333	0.00	0.11	0.011	0						0.02
58.417	0.00	0.11	0.011	0						0.02
58.500	0.00	0.10	0.010	0						0.01

58.583	0.00	0.09	0.009	0					0.01
58.667	0.00	0.09	0.009	0					0.01
58.750	0.00	0.08	0.008	0					0.01
58.833	0.00	0.08	0.008	0					0.01
58.917	0.00	0.07	0.007	0					0.01
59.000	0.00	0.07	0.007	0					0.01
59.083	0.00	0.06	0.006	0					0.01
59.167	0.00	0.06	0.006	0					0.01
59.250	0.00	0.05	0.005	0					0.01
59.333	0.00	0.05	0.005	0					0.01
59.417	0.00	0.05	0.005	0					0.01
59.500	0.00	0.04	0.004	0					0.01
59.583	0.00	0.04	0.004	0					0.01
59.667	0.00	0.04	0.004	0					0.01
59.750	0.00	0.04	0.004	0					0.01
59.833	0.00	0.03	0.003	0					0.00
59.917	0.00	0.03	0.003	0					0.00
60.000	0.00	0.03	0.003	0					0.00
60.083	0.00	0.03	0.003	0					0.00
60.167	0.00	0.03	0.002	0					0.00
60.250	0.00	0.02	0.002	0					0.00
60.333	0.00	0.02	0.002	0					0.00
60.417	0.00	0.02	0.002	0					0.00
60.500	0.00	0.02	0.002	0					0.00
60.583	0.00	0.02	0.002	0					0.00
60.667	0.00	0.02	0.002	0					0.00
60.750	0.00	0.02	0.002	0					0.00
60.833	0.00	0.01	0.001	0					0.00
60.917	0.00	0.01	0.001	0					0.00
61.000	0.00	0.01	0.001	0					0.00
61.083	0.00	0.01	0.001	0					0.00
61.167	0.00	0.01	0.001	0					0.00
61.250	0.00	0.01	0.001	0					0.00
61.333	0.00	0.01	0.001	0					0.00
61.417	0.00	0.01	0.001	0					0.00
61.500	0.00	0.01	0.001	0					0.00
61.583	0.00	0.01	0.001	0					0.00
61.667	0.00	0.01	0.001	0					0.00
61.750	0.00	0.01	0.001	0					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 741

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 131.071 (CFS)

Total volume = 48.740 (Ac.Ft)

Status of hydrographs being held in storage

Stream 1 Stream 2 Stream 3 Stream 4 Stream 5

Peak (CFS) 0.000 0.000 0.000 0.000 0.000

Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

APPENDIX H
PRELIMINARY OUTLET PROFILE
AND HYDRAULIC CALCULATIONS

T1 MAJESTIC CHINO HERITAGE

0

T2

T3

S0 100.000 534.000 1 538.000
 R 852.780 537.000 1 .013 90.000 .000 1
 WE 852.780 537.000 2 .200
 SH 852.780 537.000 2 537.000
 CD 1 4 1 .000 4.000 .000 .000 .000 .00
 CD 2 3 0 .000 7.000 8.000 .000 .000 .00
 Q 131.000 .0

FILE: 100105conn.WSW

W S P G W - CIVILDESIGN Version 14.06
 Program Package Serial Number: 7014
 WATER SURFACE PROFILE LISTING

PAGE 1

Date:11-27-2019 Time: 8:50:17

MAJESTIC CHINO HERITAGE

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
         | Elev   | (FT)  | Elev   | (CFS) | (FPS) | Head | Grd.El. | Elev  | Depth  | Width  | Dia.-FT | or I.D. | ZL | Prs/Pip
L/Elem  | Ch Slope |      |      |      |      |      | HF      | SE Dpth | Froude N | Norm Dp | "N"     | X-Fall | ZR | Type Ch
***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | ***** | *****
100.000 | 534.000 | 4.000 | 538.000 | 131.00 | 10.42 | 1.69 | 539.69 | 4.00 | 3.42 | .00 | 4.000 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
752.780 | .0040 |      |      |      |      | .0083 | 6.26 | 4.00 | .00 | 4.00 | .013 | .00 | .00 | PIPE
         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
852.780 | 537.000 | 7.683 | 544.683 | 131.00 | 10.42 | 1.69 | 546.37 | .00 | 3.42 | .00 | 4.000 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
WALL ENTRANCE
852.780 | 537.000 | 9.606 | 546.606 | 131.00 | 2.34 | .08 | 546.69 | .00 | 2.03 | 8.00 | 7.000 | 8.000 | .00 | 0 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -

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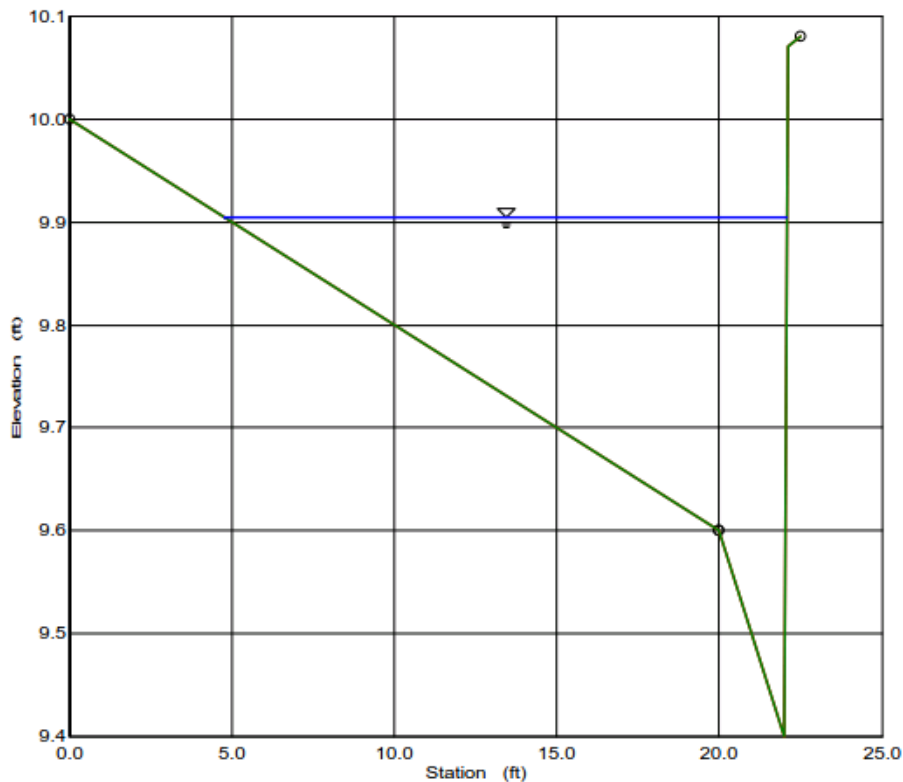
APPENDIX I

STREET FLOW CALCULATION – MOUNTAIN AVENUE

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	c:\output\100-105 .fm2
Worksheet	Mountain Ave Street flow
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.013
Channel Slope	0.005000 ft/ft
Water Surface Elevation	9.90 ft
Discharge	7.80 cfs



APPENDIX J

HYDROLOGY REFERENCE DATA



NOAA Atlas 14, Volume 6, Version 2
 Location name: Chino, California, US*
 Latitude: 33.9579°, Longitude: -117.6648°
 Elevation: 560 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.118 (0.098–0.142)	0.154 (0.129–0.187)	0.203 (0.169–0.246)	0.243 (0.200–0.297)	0.297 (0.237–0.377)	0.340 (0.265–0.441)	0.385 (0.292–0.511)	0.431 (0.318–0.590)	0.495 (0.349–0.707)	0.545 (0.371–0.808)
10-min	0.169 (0.141–0.204)	0.221 (0.185–0.268)	0.291 (0.242–0.353)	0.348 (0.287–0.426)	0.426 (0.340–0.541)	0.488 (0.380–0.632)	0.551 (0.419–0.733)	0.617 (0.455–0.846)	0.709 (0.500–1.01)	0.781 (0.532–1.16)
15-min	0.204 (0.171–0.247)	0.268 (0.223–0.324)	0.351 (0.292–0.426)	0.420 (0.347–0.515)	0.516 (0.411–0.654)	0.590 (0.460–0.765)	0.667 (0.506–0.887)	0.747 (0.551–1.02)	0.857 (0.605–1.23)	0.945 (0.643–1.40)
30-min	0.296 (0.247–0.357)	0.387 (0.323–0.469)	0.508 (0.423–0.617)	0.608 (0.502–0.745)	0.746 (0.594–0.946)	0.854 (0.665–1.11)	0.965 (0.733–1.28)	1.08 (0.797–1.48)	1.24 (0.876–1.78)	1.37 (0.931–2.03)
60-min	0.432 (0.361–0.523)	0.566 (0.473–0.685)	0.744 (0.619–0.902)	0.890 (0.734–1.09)	1.09 (0.869–1.38)	1.25 (0.973–1.62)	1.41 (1.07–1.88)	1.58 (1.17–2.16)	1.81 (1.28–2.60)	2.00 (1.36–2.97)
2-hr	0.646 (0.540–0.781)	0.846 (0.706–1.02)	1.11 (0.920–1.34)	1.32 (1.09–1.61)	1.60 (1.27–2.03)	1.82 (1.41–2.35)	2.03 (1.55–2.71)	2.26 (1.67–3.10)	2.57 (1.81–3.67)	2.80 (1.91–4.16)
3-hr	0.810 (0.677–0.979)	1.06 (0.884–1.28)	1.38 (1.15–1.68)	1.64 (1.35–2.01)	1.99 (1.58–2.52)	2.25 (1.76–2.92)	2.52 (1.91–3.35)	2.79 (2.06–3.83)	3.16 (2.23–4.52)	3.45 (2.35–5.11)
6-hr	1.14 (0.950–1.37)	1.49 (1.24–1.80)	1.94 (1.61–2.35)	2.30 (1.90–2.81)	2.78 (2.22–3.53)	3.15 (2.45–4.08)	3.51 (2.67–4.67)	3.89 (2.87–5.32)	4.39 (3.10–6.28)	4.77 (3.25–7.08)
12-hr	1.49 (1.25–1.80)	1.96 (1.64–2.37)	2.57 (2.14–3.12)	3.06 (2.52–3.74)	3.71 (2.96–4.70)	4.21 (3.28–5.46)	4.71 (3.58–6.27)	5.22 (3.85–7.16)	5.92 (4.18–8.46)	6.45 (4.39–9.56)
24-hr	1.96 (1.74–2.26)	2.60 (2.30–3.00)	3.44 (3.03–3.98)	4.12 (3.60–4.80)	5.04 (4.27–6.07)	5.75 (4.77–7.07)	6.47 (5.24–8.15)	7.21 (5.68–9.33)	8.21 (6.21–11.1)	8.99 (6.58–12.5)
2-day	2.39 (2.12–2.76)	3.23 (2.85–3.73)	4.33 (3.82–5.01)	5.24 (4.58–6.11)	6.49 (5.49–7.82)	7.46 (6.19–9.18)	8.46 (6.85–10.7)	9.49 (7.48–12.3)	10.9 (8.26–14.7)	12.0 (8.81–16.8)
3-day	2.58 (2.28–2.97)	3.52 (3.11–4.06)	4.78 (4.21–5.53)	5.82 (5.09–6.79)	7.25 (6.14–8.75)	8.38 (6.95–10.3)	9.55 (7.73–12.0)	10.8 (8.49–13.9)	12.5 (9.43–16.8)	13.8 (10.1–19.2)
4-day	2.80 (2.47–3.22)	3.84 (3.40–4.44)	5.24 (4.62–6.06)	6.40 (5.59–7.46)	8.00 (6.77–9.64)	9.26 (7.68–11.4)	10.6 (8.55–13.3)	11.9 (9.40–15.4)	13.8 (10.5–18.6)	15.3 (11.2–21.4)
7-day	3.20 (2.84–3.70)	4.41 (3.90–5.09)	6.01 (5.30–6.96)	7.34 (6.42–8.57)	9.18 (7.77–11.1)	10.6 (8.80–13.1)	12.1 (9.80–15.2)	13.6 (10.8–17.7)	15.8 (11.9–21.3)	17.5 (12.8–24.4)
10-day	3.49 (3.09–4.03)	4.81 (4.25–5.55)	6.56 (5.78–7.60)	8.02 (7.01–9.35)	10.0 (8.49–12.1)	11.6 (9.62–14.3)	13.2 (10.7–16.7)	14.9 (11.8–19.3)	17.3 (13.1–23.3)	19.1 (14.0–26.7)
20-day	4.17 (3.69–4.81)	5.79 (5.12–6.68)	7.97 (7.02–9.23)	9.79 (8.56–11.4)	12.3 (10.4–14.9)	14.4 (11.9–17.7)	16.5 (13.3–20.7)	18.7 (14.7–24.2)	21.8 (16.5–29.4)	24.3 (17.7–33.8)
30-day	4.96 (4.38–5.71)	6.90 (6.10–7.96)	9.55 (8.42–11.1)	11.8 (10.3–13.8)	15.0 (12.7–18.0)	17.5 (14.5–21.6)	20.2 (16.4–25.5)	23.1 (18.2–29.9)	27.1 (20.5–36.6)	30.4 (22.2–42.4)
45-day	5.85 (5.17–6.74)	8.13 (7.18–9.38)	11.3 (9.96–13.1)	14.0 (12.3–16.4)	17.9 (15.2–21.6)	21.1 (17.5–26.0)	24.5 (19.9–30.9)	28.2 (22.2–36.5)	33.5 (25.3–45.2)	37.8 (27.7–52.8)
60-day	6.73 (5.96–7.76)	9.31 (8.23–10.7)	12.9 (11.4–15.0)	16.1 (14.1–18.8)	20.7 (17.5–24.9)	24.5 (20.3–30.1)	28.6 (23.1–36.0)	33.0 (26.0–42.8)	39.5 (29.9–53.3)	44.9 (32.9–62.7)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical



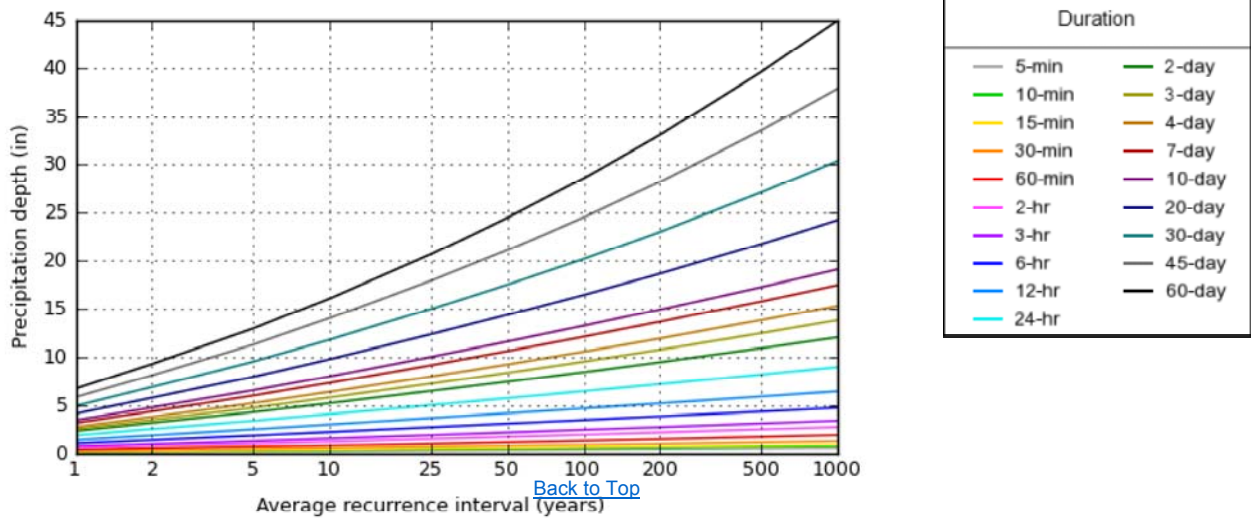
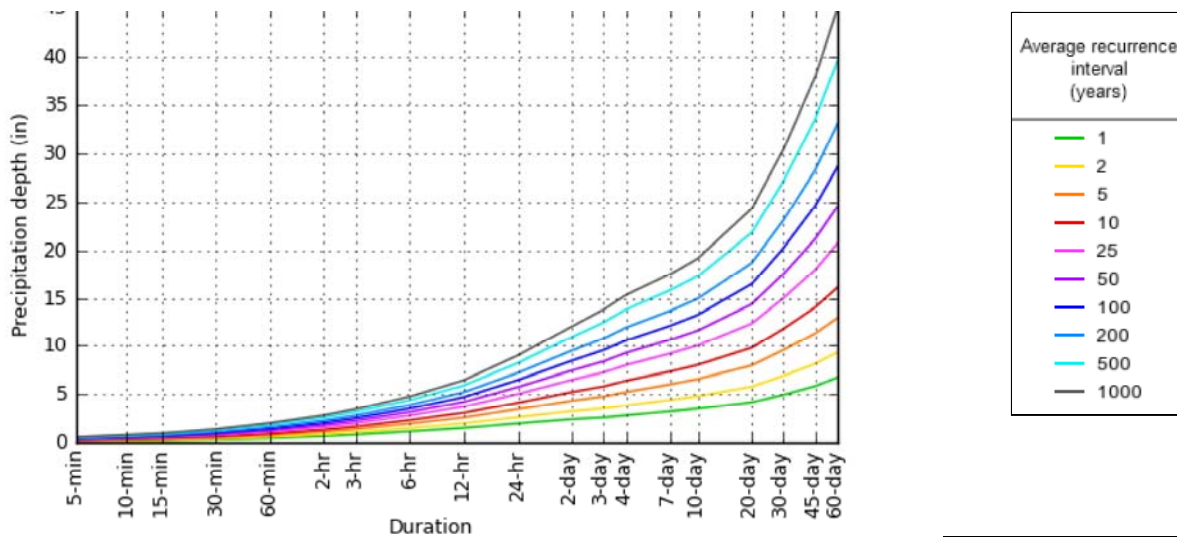
Warning: Soil Ratings Map may not be valid at this scale.

Tables — Hydrologic Soil Group — Summary By Map Unit

Summary by Map Unit — San Bernardino County Southwestern Part, California (CA677)

Map unit symbol	Map unit name	Rating
Cb	Chino silt loam	C
CkA	Chualar clay loam, 0 to 2 percent slopes	C
CkC	Chualar clay loam, 2 to 9 percent slopes	C
CkD	Chualar clay loam, 9 to 15 percent slopes	C

Totals for Area of Interest

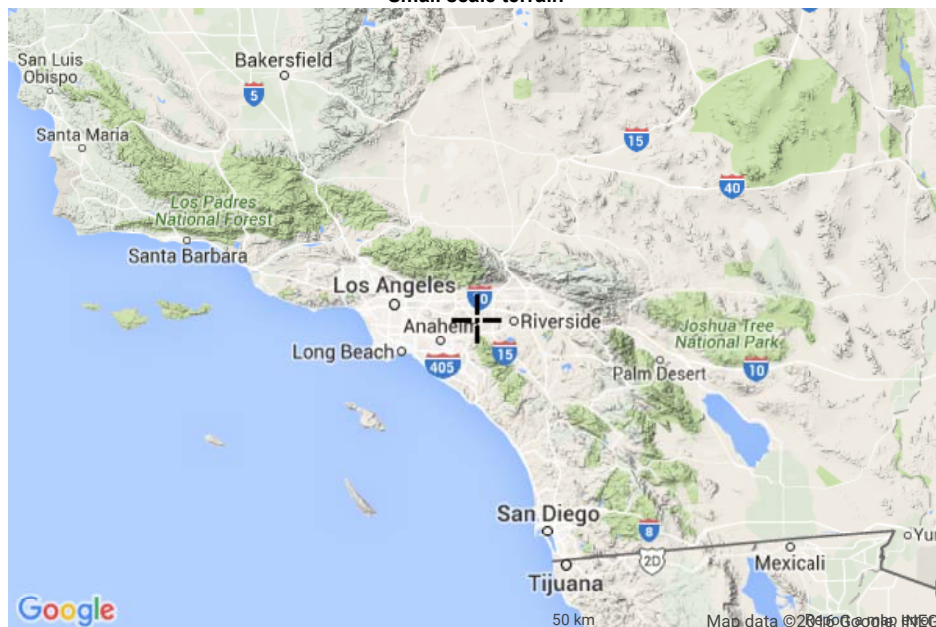

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Maps & aerials

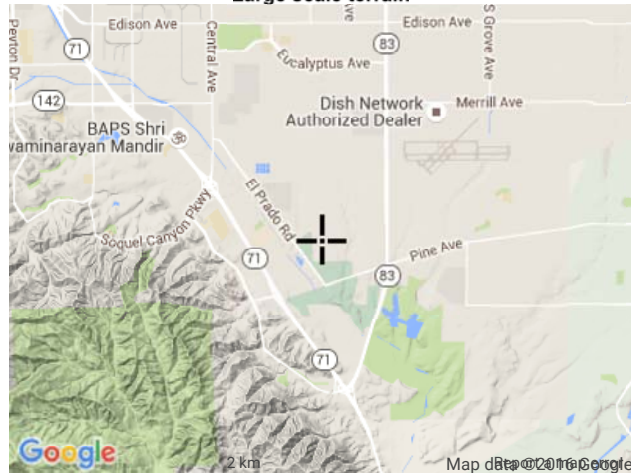
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Sat Jun 4 17:55:36 2016

Small scale terrain



Large scale terrain



Large scale map



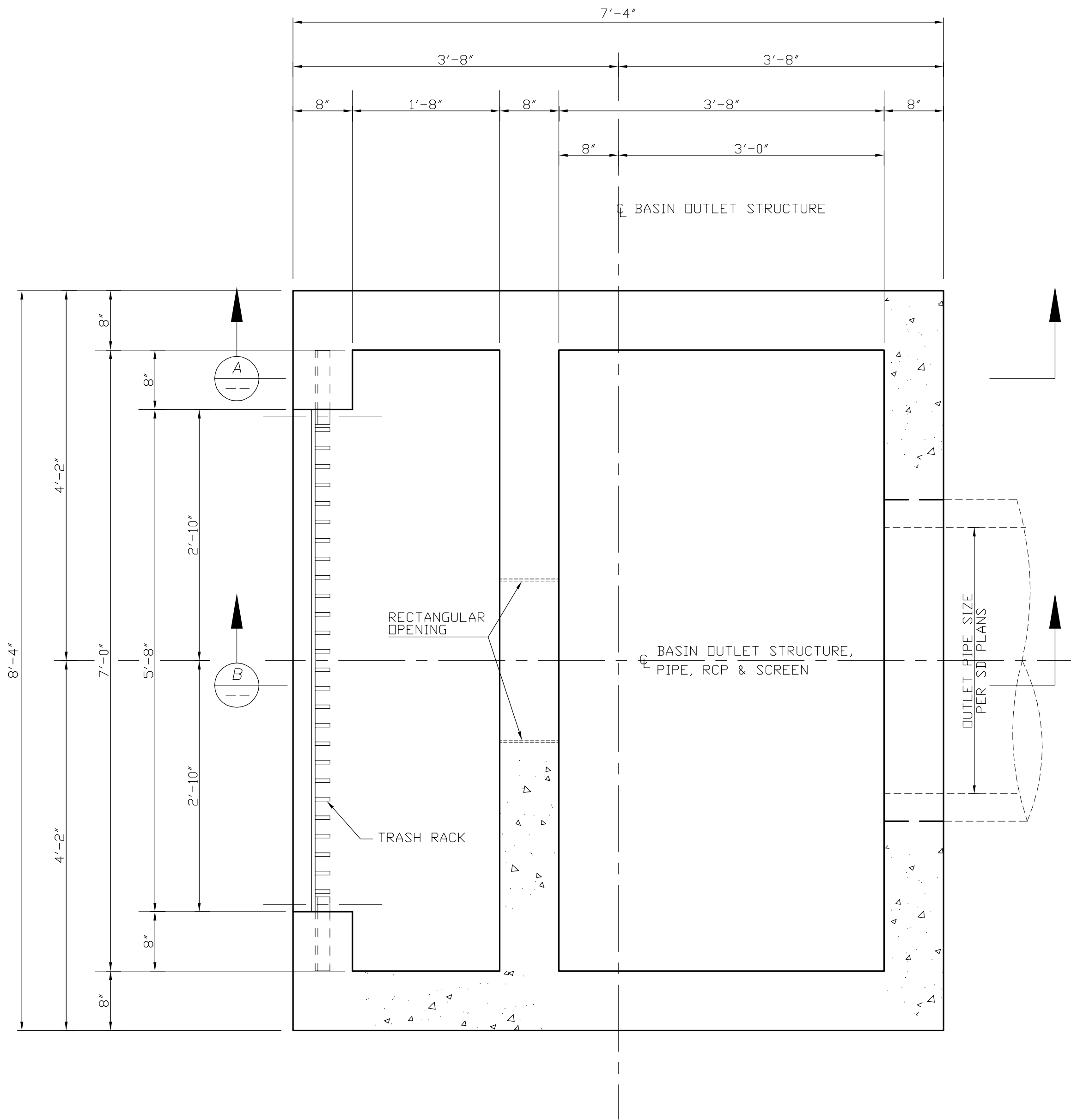
Large scale aerial

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1325 East West Highway
Silver Spring, MD 20910

APPENDIX K

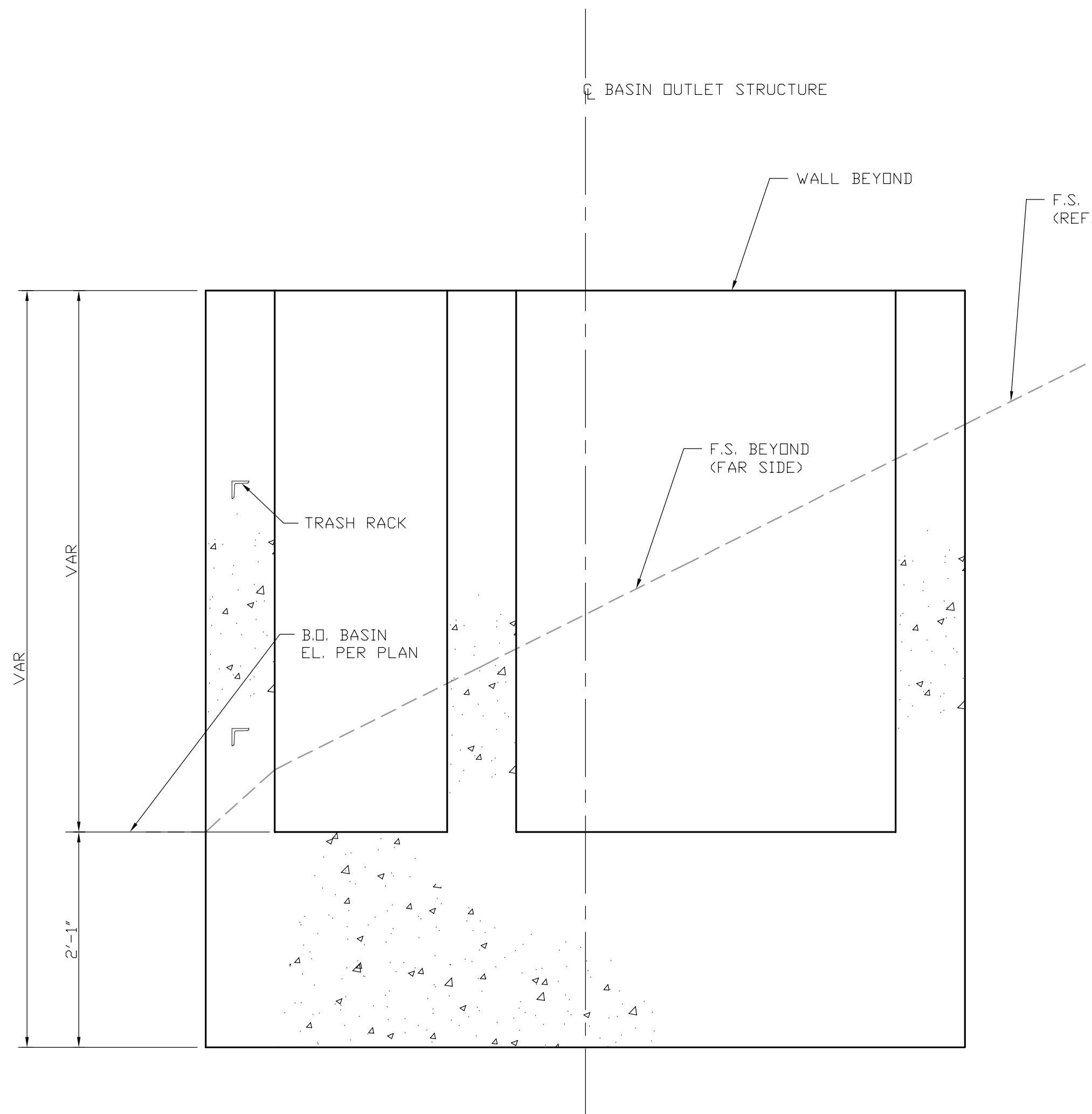
SAMPLE BASIN OUTLET STRUCTURE



PLAN

BASIN OUTLET STRUCTURE DETAIL

1"=1'-0"

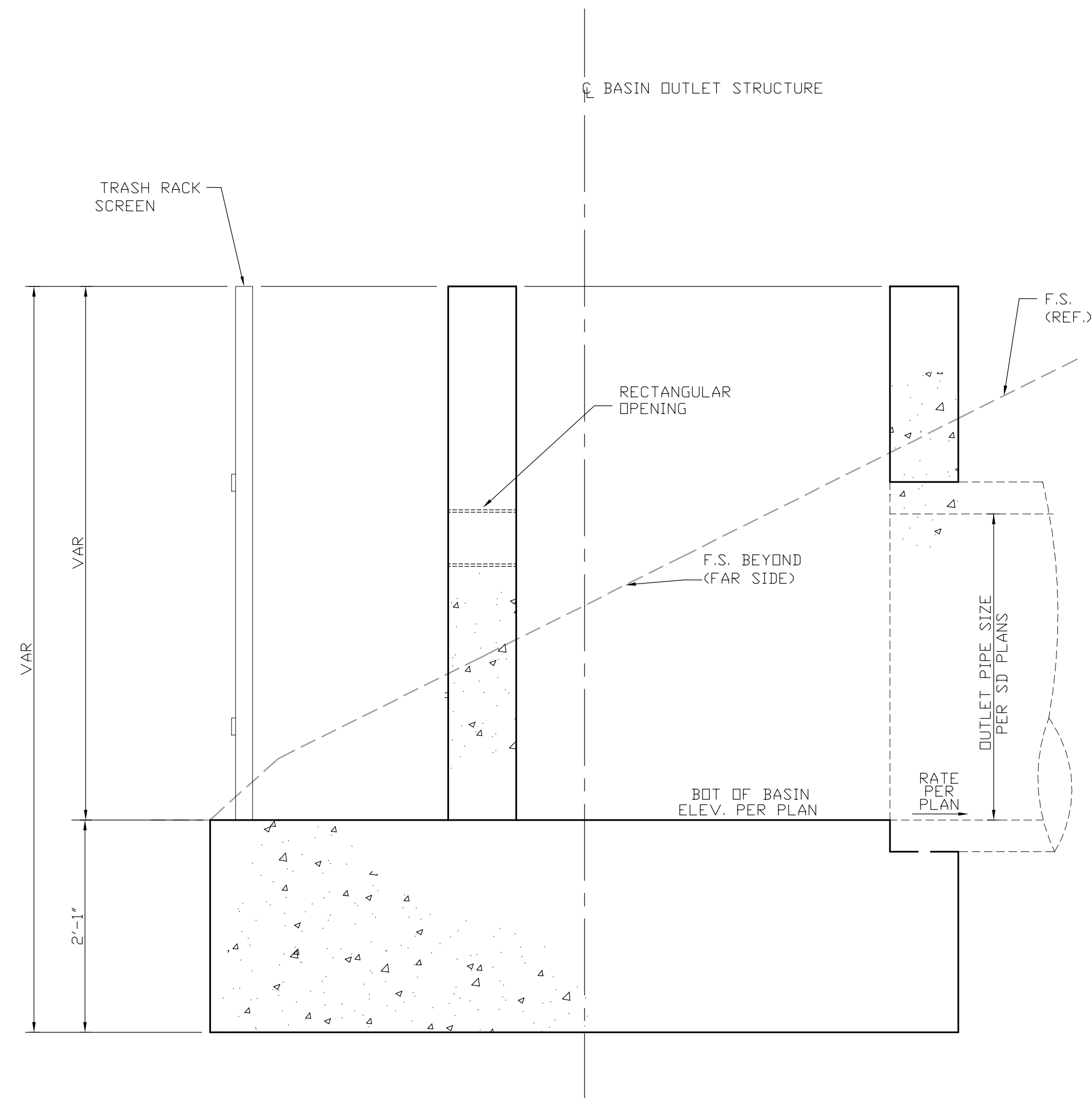


BASIN OUTLET STRUCTURE

NOTE:
FOR DETAILS & DIMENSIONS NOT
SHOWN SEE PLAN, THIS SHEET

A SECTION

1"=1'-0"



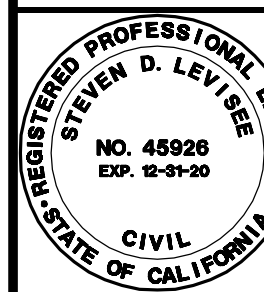
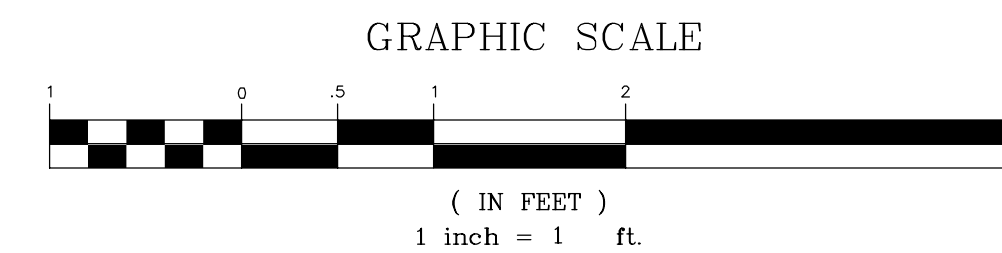
BASIN OUTLET STRUCTURE

NOTE:
FOR DETAILS & DIMENSIONS NOT
SHOWN SEE PLAN, THIS SHEET

B SECTION

1"=1'-0"

- NOTES:
1. ALL STRUCTURAL CONCRETE SHALL BE 3250 psi COMPRESSIVE STRENGTH CONCRETE.
 2. ALL STRUCTURAL STEEL SHALL BE GRADE 60 AND SHALL HAVE 3" OF COVER MIN. IN FOOTING, 2" ELSEWHERE
 3. ALL EXPOSED STEEL SHALL BE STAINLESS STEEL.



PREPARED BY
PBLA ENGINEERING, INC.
1809 E. DYER ROAD, STE 301
SANTA ANA, CALIFORNIA 92705
(888) 714-9642 • (714)389-9191 FAX

SIGNATURE _____ DATE 5/19/14

REVISIONS		MADE BY	DATE	APPROVED BY	DATE
1					
2					
3					
4					

BENCH MARK DATA

REFERENCE DRAWINGS

REVIEWED BY STAFF	BY	DATE
WATER:		
SEWER:		
FIRE:		
PLANNING:		
TRAFFIC:		
SERVICES:		

CITY ENGINEER'S STAFF	BY	DATE
DRAWN:		
DESIGNED:		
CHECKED:		
RECOMMENDED:		

APPROVED BY:
DIRECTOR OF PUBLIC WORKS/CITY ENGINEER
DATE: _____

CITY OF CHINO ENGINEERING DIVISION
STORM DRAIN OUTLET STRUCTURE
MAJESTIC CHINO HERITAGE
CHINO, CA

PROJECT NO.
100-105
SHEET **1** OF **1**
DRAWING NO.

L:\100-105 OC PRADO BLDG SITE\HYDRO\OUTLET STRUCTURE.DWG