CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

July 22, 2014

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe St NE
Albuquerque, NM 87108

RE: **Pasadena Office/Warehouse (B18D019)**
Grading and Drainage Plan, Supplemental Information
Engineer's Stamp Date 7-14-2014

Dear Mr. Arfman:

Thank you for your revised Grading Plan and Supplemental Information to support the approval by DRB. Based upon the information provided in your submittal received 7-14-2014, the above referenced plan is approved for Site Plan for Building Permit and Building Permit. Please attach a copy of this approved plan in the construction sets when submitting for a building permit.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf: via Email: Recipient, Tim Sims, Monica Ortiz

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

JULY 14, 2014

SUPPLEMENTAL INFORMATION

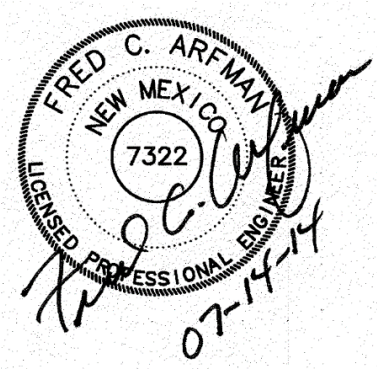
for

PASADENA OFFICE / WAREHOUSE

GRADING AND DRAINAGE PLAN

COA HYDROLOGY B18/D019

by

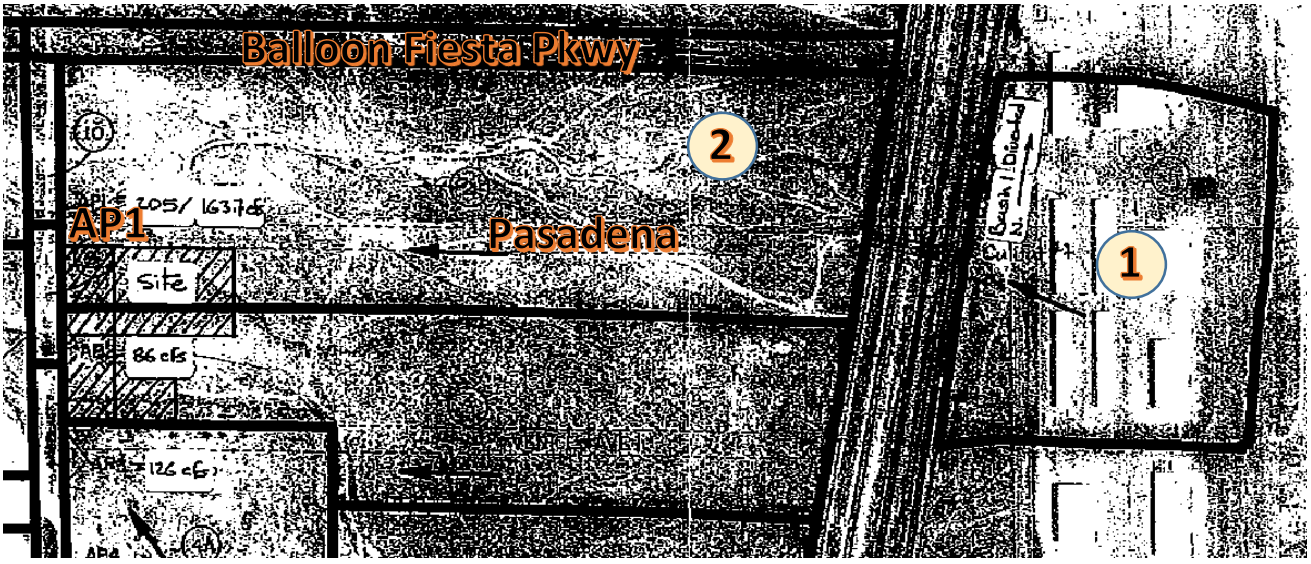


ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates

Thomas O. Isaacson, PE(RET.) & LS(RET.)
Fred C. Arfman, PE
Åsa Nilsson-Weber, PE

PROJECT HISTORY

The portion of Pasadena between San Mateo Blvd. and I-25 was originally analyzed as part of the Drainage Report for Citicorp by BHI (1996). AP1, was identified as the analysis point at the intersection of Pasadena Ave. and San Mateo Blvd. and was shown to accept all flows from Basins 1 and 2 in the fully developed conditions.

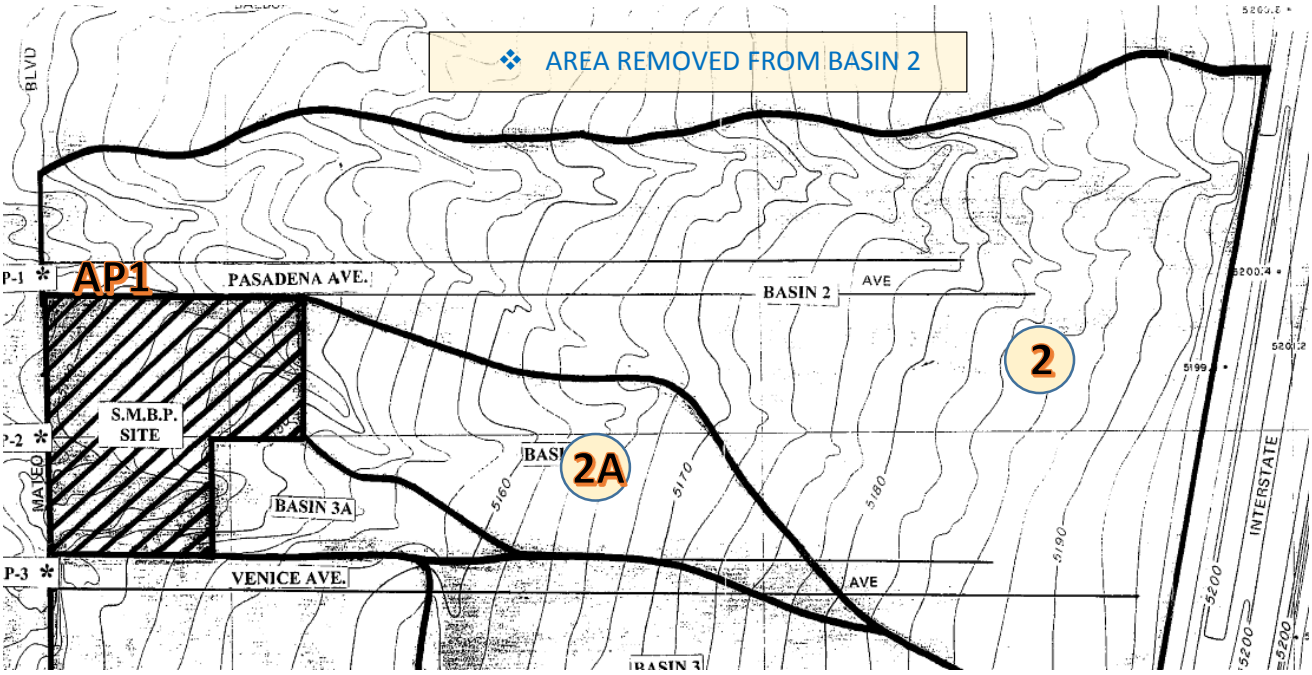


From Plate 3 of BHI Citicorp Report - Developed Conditions – notes added

The C.L. Weiss drainage report for San Mateo Business Park (1999 – provided separately in file) redefined the basins draining to BHI analysis point AP1 using the C.O.A. topographic ortho-photo map and field inspections of the area.

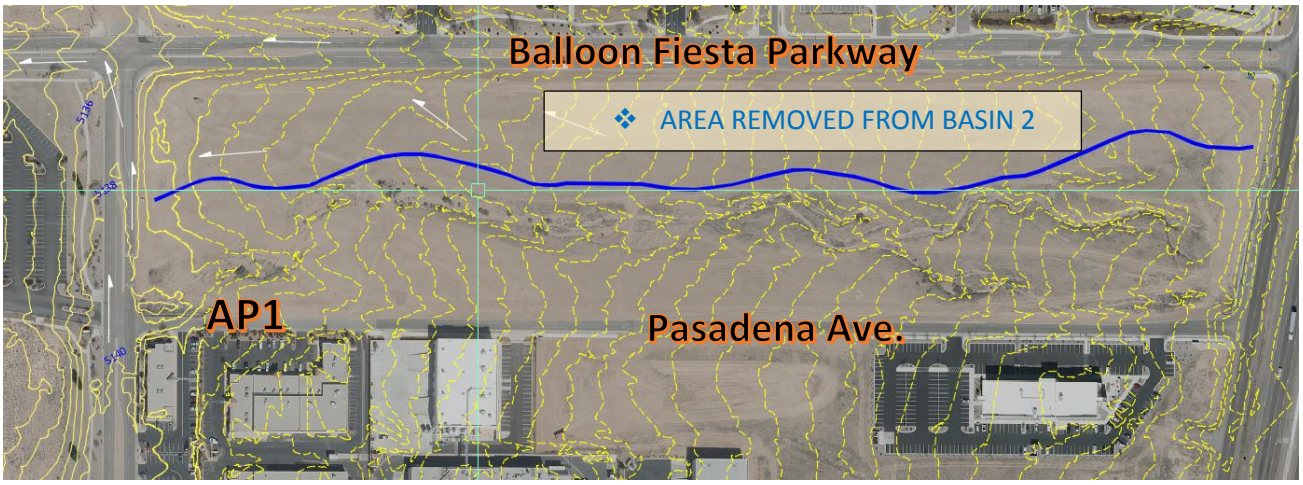
In addition, the C.L. Weiss report noted:

> *One small basin, referred to as Basin 1 in the BH Citicorp Report, comprised as a part of the Coronado Airport, passes under I-25 to join Basin 2 flows. Its runoff will soon be diverted north into the North Camino Arroyo by the SHD as early as the year 2000, or as late as 2002, resulting in a reduction of flows collected at AP-1 (information supplied by Gary Shubert: NMSHD).*



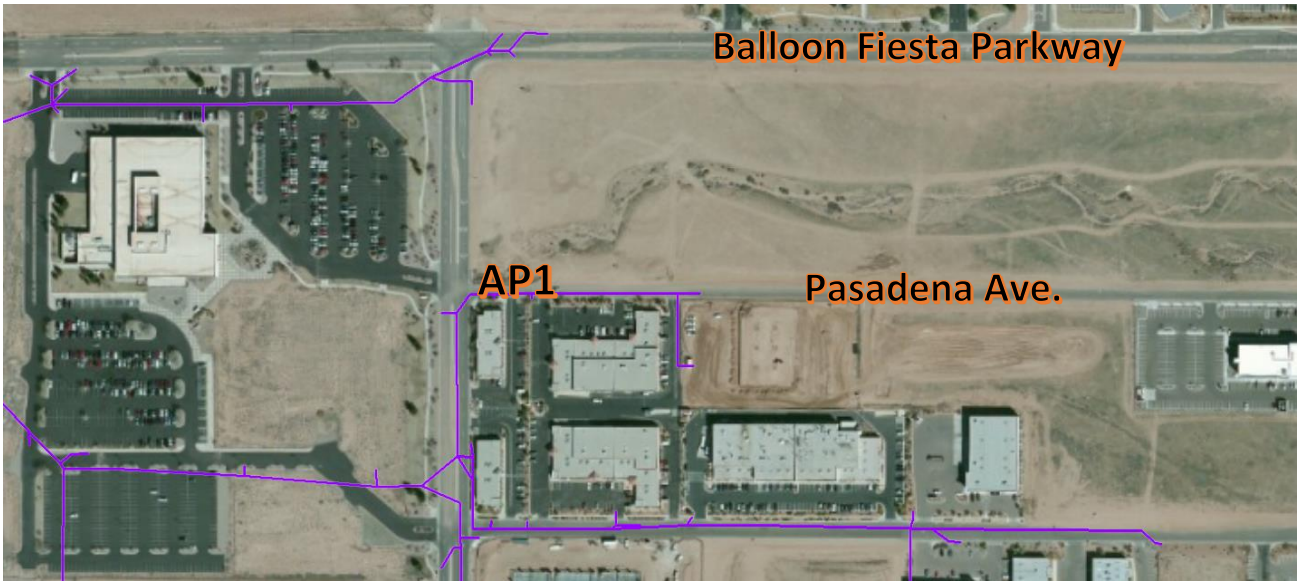
- While The C.L. Weiss drainage report redefined Basin 2 to remove the portion of Citicorp Basin 2 which was shown to be outside of the AP#1 basin limits, it did not explain where this removed portion was actually draining to. Based on a June 2014 meeting with Rita Harmon, P.E. (Drainage Engineer) and Curtis Cherne, P.E. (Hydrology Section Manager) - C.O.A. Hydrology, it was confirmed, upon review of Bernalillo County Contour data and available drainage file information that the eliminated portion of Basin 2 drains north to Balloon Fiesta Parkway (to flow west within the street and in the existing storm drain infrastructure).

- In the fully developed condition, the extent of Basin 2 draining to AP1 was redefined by the C.L. Weiss report as only the properties on both sides of Pasadena between San Mateo Blvd. and I-25 frontage road.



As shown in the exhibit above, the area removed from Citicorp Basin 2 drains north to Balloon Fiesta Parkway.

Additionally, the Bernalillo County Contour data indicates that San Mateo Blvd. drains north.



The existing area storm drain infrastructure shown in the exhibit above (from ARCGIS COA and Bern. Co. data files) shows that the Pasadena Ave. discharge at AP#1 drains to the San Mateo Blvd. storm drain system constructed as part of the Citicorp project. The Balloon Fiesta Parkway discharge which includes the portion of San Mateo Blvd. north of AP#1 is collected in a separate storm drain system.

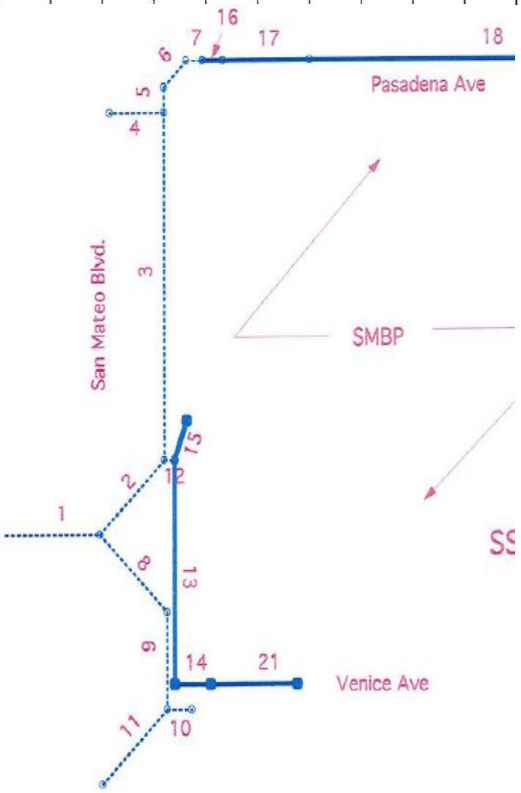
In 2010 as additional lots on the south side of Pasadena were being designed for development, Fred Arfman met with Brad Bingham, PE of C.O.A. Hydrology who confirmed that Basin 1 had been redirected north.

The C.L. Weiss report included Hydroflow analysis of the existing Citicorp storm drain system within San Mateo Blvd. identified as lines 1 thru 7.

Based on this analysis, at AP#1 (see line 7 below), the available capacity within the system is 186.6 cfs. Similarly, the analysis shows that the system, as constructed, has additional capacity available.

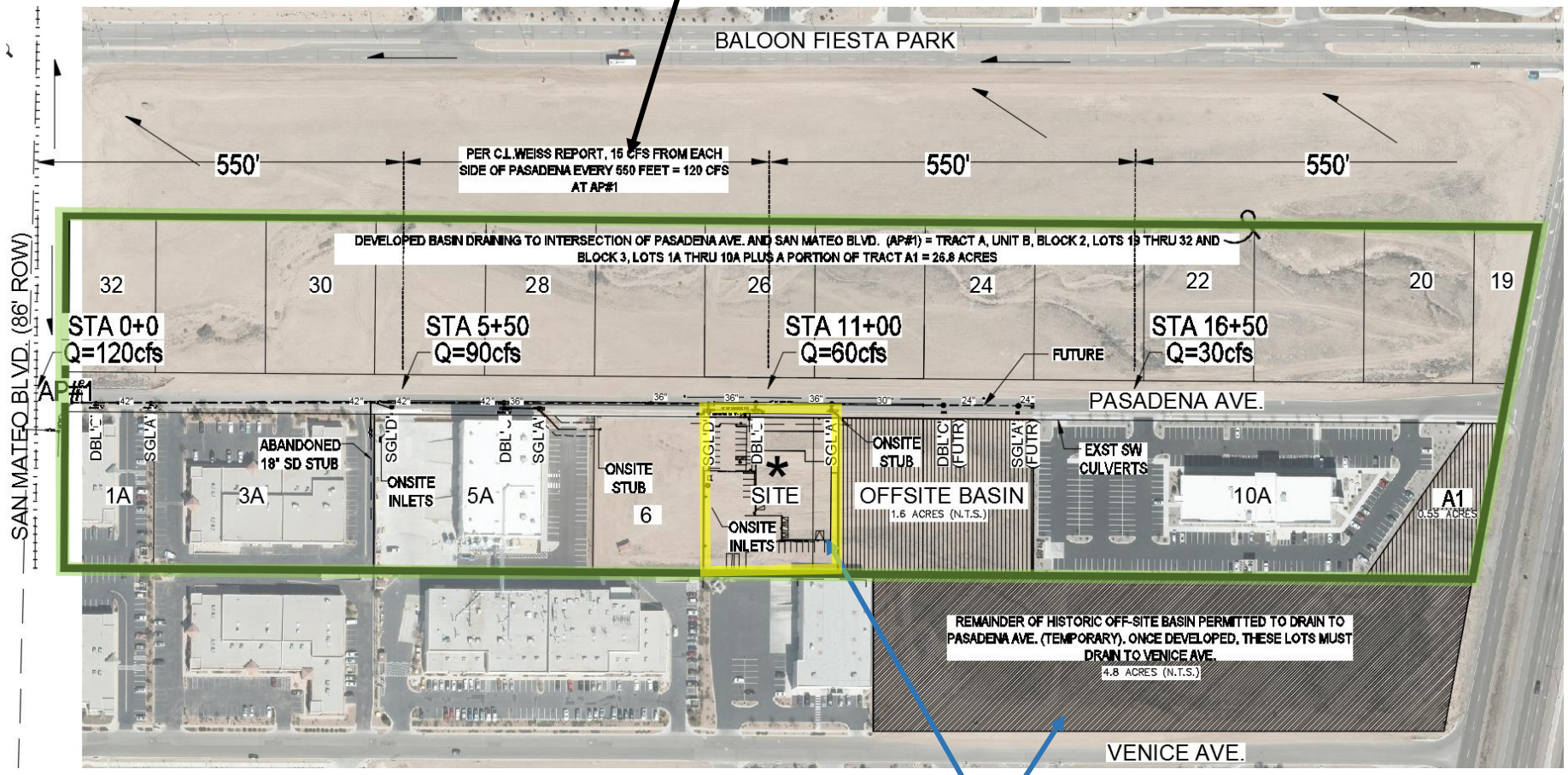
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	92.0	0.00	0.00	0.00	0.00	0.00	0.0	5.9	0.0	157.0	629.3	8.38	66	3.51	5120.84	5117.61	5124.25	5123.11	5134.00	5138.00	66W
2	1	89.5	0.00	0.00	0.00	0.00	0.00	0.0	5.4	0.0	136.3	433.4	6.84	66	1.67	5122.33	5120.84	5126.07	5126.34	5138.00	5138.80	NE 66
3	2	293.6	0.00	0.00	0.00	0.00	0.00	0.0	3.7	0.0	126.1	244.8	9.14	54	1.55	5127.88	5123.33	5131.10	5127.83	5138.80	5137.00	N 54
4	3	53.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.80	20.50	1.15	18	3.81	5132.90	5130.88	5134.01	5134.00	5137.00	5137.00	W Lateral
5	3	21.3	0.00	0.00	0.00	0.00	0.00	0.0	3.6	0.0	124.3	186.8	9.89	48	1.69	5128.74	5128.38	5134.16	5134.00	5137.00	5137.00	N 48
6	5	31.1	0.00	0.00	0.00	0.00	0.00	0.0	3.5	0.0	124.3	185.7	9.89	48	1.67	5129.26	5128.74	5134.42	5134.19	5137.00	5137.00	N 48 Bend
7	6	16.0	0.00	0.00	0.00	0.00	0.00	0.0	3.4	0.0	124.3	186.6	9.89	48	1.69	5129.53	5129.26	5134.64	5134.51	5137.00	5138.00	Pasadena E E

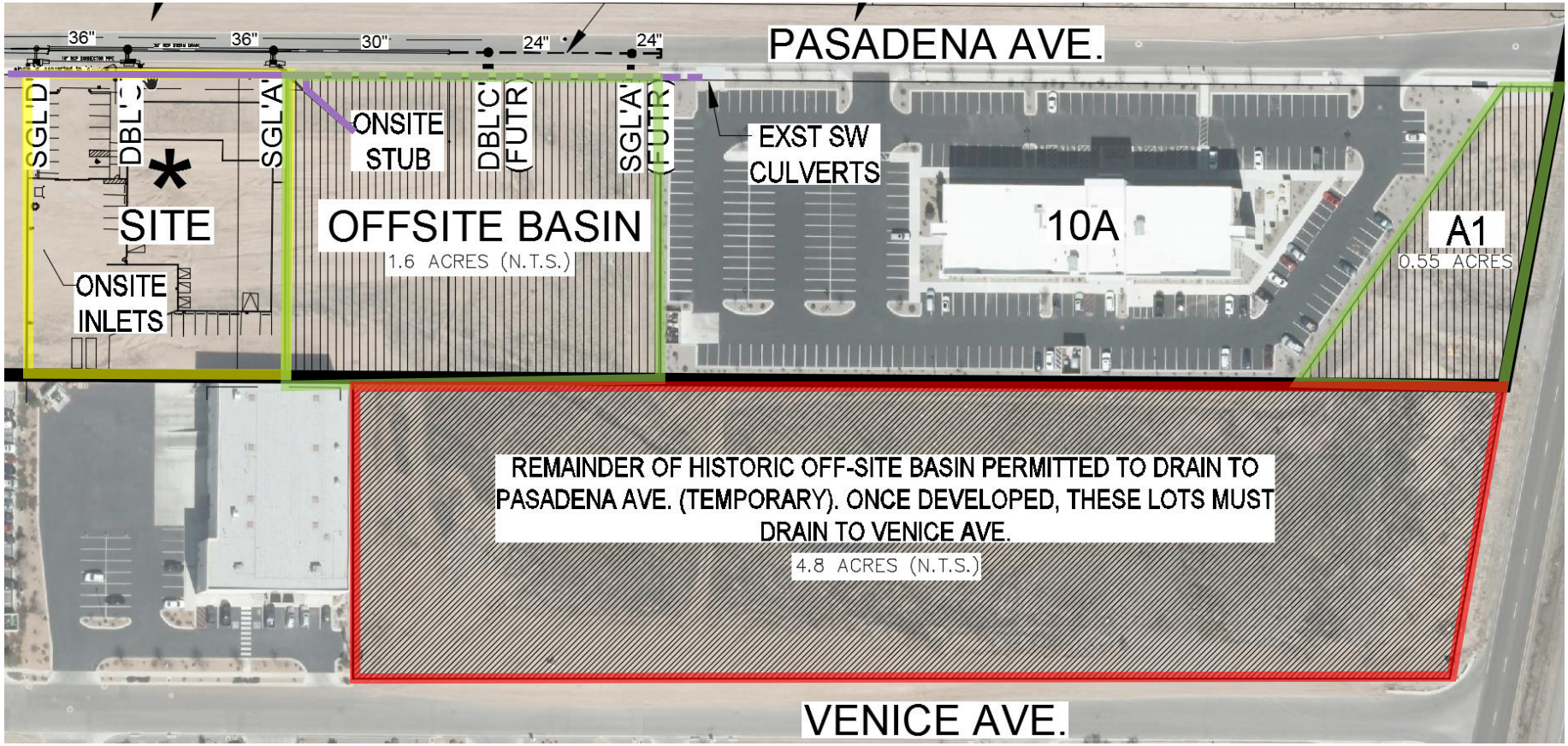


Station		Len	Total flow	Cap full	Vel	Pipe	
Line	To Line	(ft)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)
1	End	92.0	157.0	629.3	8.38	66	3.51
2	1	89.5	136.3	433.4	6.84	66	1.67
3	2	293.6	126.1	244.8	9.14	54	1.55
4	3	53.0	1.80	20.50	1.15	18	3.81
5	3	21.3	124.3	186.8	9.89	48	1.69
6	5	31.1	124.3	185.7	9.89	48	1.67
7	6	16.0	124.3	186.6	9.89	48	1.69

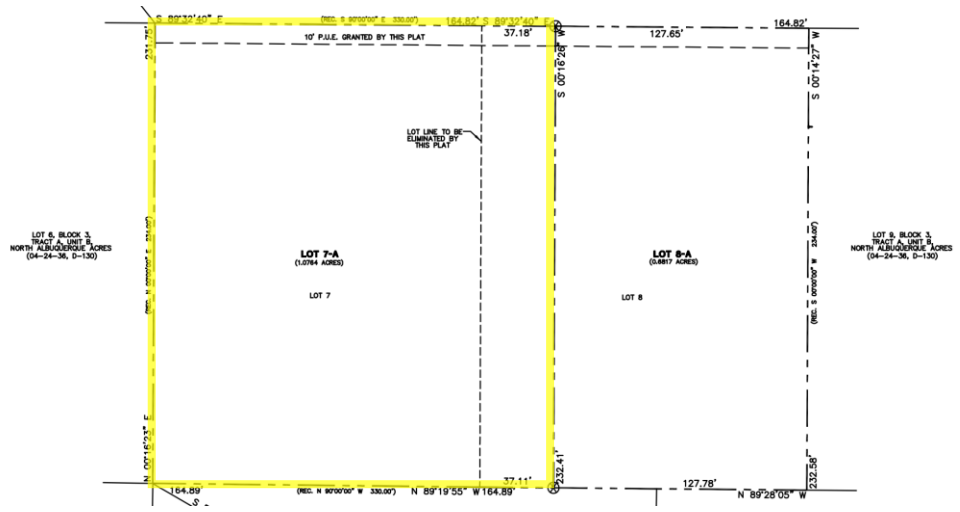
The CLWeiss Report redefined the total developed basin draining to the Pasadena storm drain as 26.8 acres with a total Q100 = 120 cfs at AP#1. It divided this into 550' lengths each picking up 30 cfs (15 cfs each side).



The total area draining to AP#1 would not exceed Basin B (outlined in green) + undeveloped portion of property on the north side of Venice Ave. (shown hatched).


36"
36"
30"
24"
24"
PASADENA AVE.
SGL'D
DBL'C
SGL'A
ONSITE STUB
DBL'C' (FUTR)
SGL'A' (FUTR)
EXST SW CULVERTS
SITE
OFFSITE BASIN
1.6 ACRES (N.T.S.)
10A
A1
0.55 ACRES
ONSITE INLETS
REMAINDER OF HISTORIC OFF-SITE BASIN PERMITTED TO DRAIN TO PASADENA AVE. (TEMPORARY). ONCE DEVELOPED, THESE LOTS MUST DRAIN TO VENICE AVE.
4.8 ACRES (N.T.S.)
VENICE AVE.

PROPOSED SITE



The proposed development consists of Tract A, Unit B, Block 3, Lot 7A (upon completion of replat process), North Albuquerque Acres.

CALCULATIONS: 2052: 5656 PASADENA N.E. : May 8, 2014

Based on Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993

ON-SITE

AREA OF SITE: 46879 SF = 1.1

100-year, 6-hour

ALLOWABLE DISCHARGE:

		Treatment SF	%
Area A	=	0	0%
Area B	=	46879	100%
Area C	=	0	0%
Area D	=	0	0%
Total Area	=	46879	100%

DEVELOPED FLOWS:

		Treatment SF	%
Area A	=	0	0%
Area B	=	0	0%
Area C	=	4688	10%
Area D	=	42191	90%
Total Area	=	46879	100%

EXCESS PRECIP:

Precip. Zone 3

E_A = 0.66

E_B = 0.92

E_C = 1.29

E_D = 2.36

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{E_A A_A + E_B A_B + E_C A_C + E_D A_D}{A_A + A_B + A_C + A_D}$$

Allowable E	=	0.92	in.	Developed E	=	2.25	in.

On-Site Volume of Runoff: V360 = E*A / 12

Allowable V_{360}	=	3594	CF	Developed V_{360}	=	8802	CF

On-Site Peak Discharge Rate: $Qp = Q_{pA}A_A + Q_{pB}A_B + Q_{pC}A_C + Q_{pD}A_D / 43{,}560$

For Precipitation Zone 3

Q_{pA} = 1.87

Q_{pB} = 2.60

Q_{pC} = 3.45

Q_{pD} = 5.02

Allowable Q_p	=	2.8	CFS	Developed Q_p	=	5.2	CFS

OFFSITE FLOWS IMPACTING PROPOSED SITE

The undeveloped area draining to the east side of the proposed site consists of two distinct basins (see image on previous page).

- The undeveloped property fronting Pasadena (Lot 8A + Lot 9 + the Pasadena portion of Tract A1) = a 2.15 acre OFFSITE BASIN.

In the undeveloped condition, the Pasadena fronting OFFSITE BASIN will generate 5.6 cfs.

BASIN NO.	OFFSITE				UNDEVELOPED CONDITION		
Area of basin flows =	93654	SF	=	2.15	Ac.		
The following calculations are based on Treatment areas as shown in table to the right					LAND TREATMENT		
Sub-basin Weighted Excess Precipitation (see formula above)					A =	0%	
Weighted E	=	0.92	in.		B =	100%	
Sub-basin Volume of Runoff (see formula above)					C =	0%	
V_{360}	=	7180	CF		D =	0%	
Sub-basin Peak Discharge Rate: (see formula above)							
Q_P	=	5.6	cfs				

- The TEMPORARY OFFSITE BASIN consisting of the undeveloped property fronting the north side of Venice will continue to discharge historic flow of 9.5 cfs through the OFFSITE BASIN to Pasadena per the C.L. Weiss master plan. As these Venice fronting lots develop, the discharge will be redirected to Venice Ave.

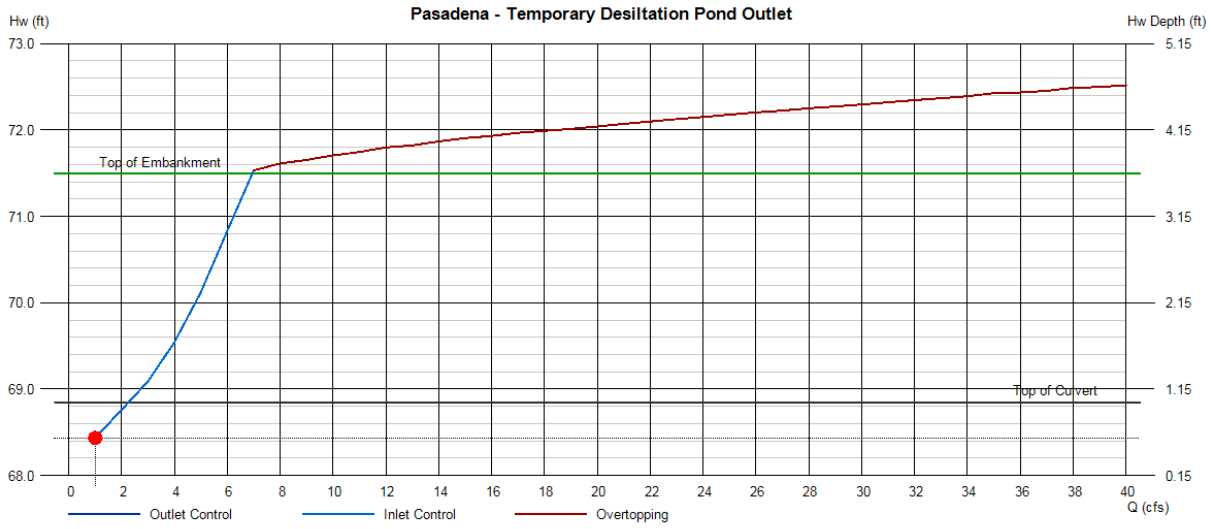
BASIN NO.	TEMPORARY OFFSITE				UNDEVELOPED CONDITION		
Area of basin flows =	209088	SF	=	4.8	Ac.		
The following calculations are based on Treatment areas as shown in table to the right					LAND TREATMENT		
Sub-basin Weighted Excess Precipitation (see formula above)					A =	85%	
Weighted E	=	0.70	in.		B =	15%	
Sub-basin Volume of Runoff (see formula above)					C =	0%	
V_{360}	=	12179	CF		D =	0%	
Sub-basin Peak Discharge Rate: (see formula above)							
Q_P	=	9.5	cfs				

CONCLUSION:

- The OFFSITE BASIN along Pasadena (5.6 cfs) and the TEMPORARY OFFSITE BASIN from the south (9.5 cfs) will drain to the temporary desiltation / deflection pond. A temporary standpipe will be installed at the end of the 12" stub provided for the future development of Lots 8A and 9 with excess passing to Pasadena via the proposed rock rundown. If development of these final Pasadena fronting lots occur prior to the development of the TEMPORARY OFFSITE BASIN, the historic discharge must be permitted to continue to pass to Pasadena.

The 30’ long 12” diameter ONSITE STUB to be extended into Lot 8A for the future development will be utilized as a temporary standpipe inlet for the desiltation pond. The proposed rim of 70.5 is raised 6” above the proposed basin bottom to permit sediment to settle.

Based on the Hydraflow calculations, the 12” dia. pipe has a maximum capacity (inlet control) of approximately 7 cfs.



Once the desiltation basin fills and the pipe is flowing at full capacity (7.0 cfs), excess flow will be passed to Pasadena at the provided rock lined overflow.

With the storm drain at full capacity (7.0 cfs), the desiltation pond will overflow at the proposed rock rundown.

PASADENA AVENUE STORM DRAIN REANALYSIS

As mentioned in the introduction, the C.L. Weiss design of the storm drain within Pasadena defined the total Q within the system in the fully developed condition as 120 cfs but showed that the pipe had capacity available to continue to accept the temporary Basin 1 flow which has since been redirected.

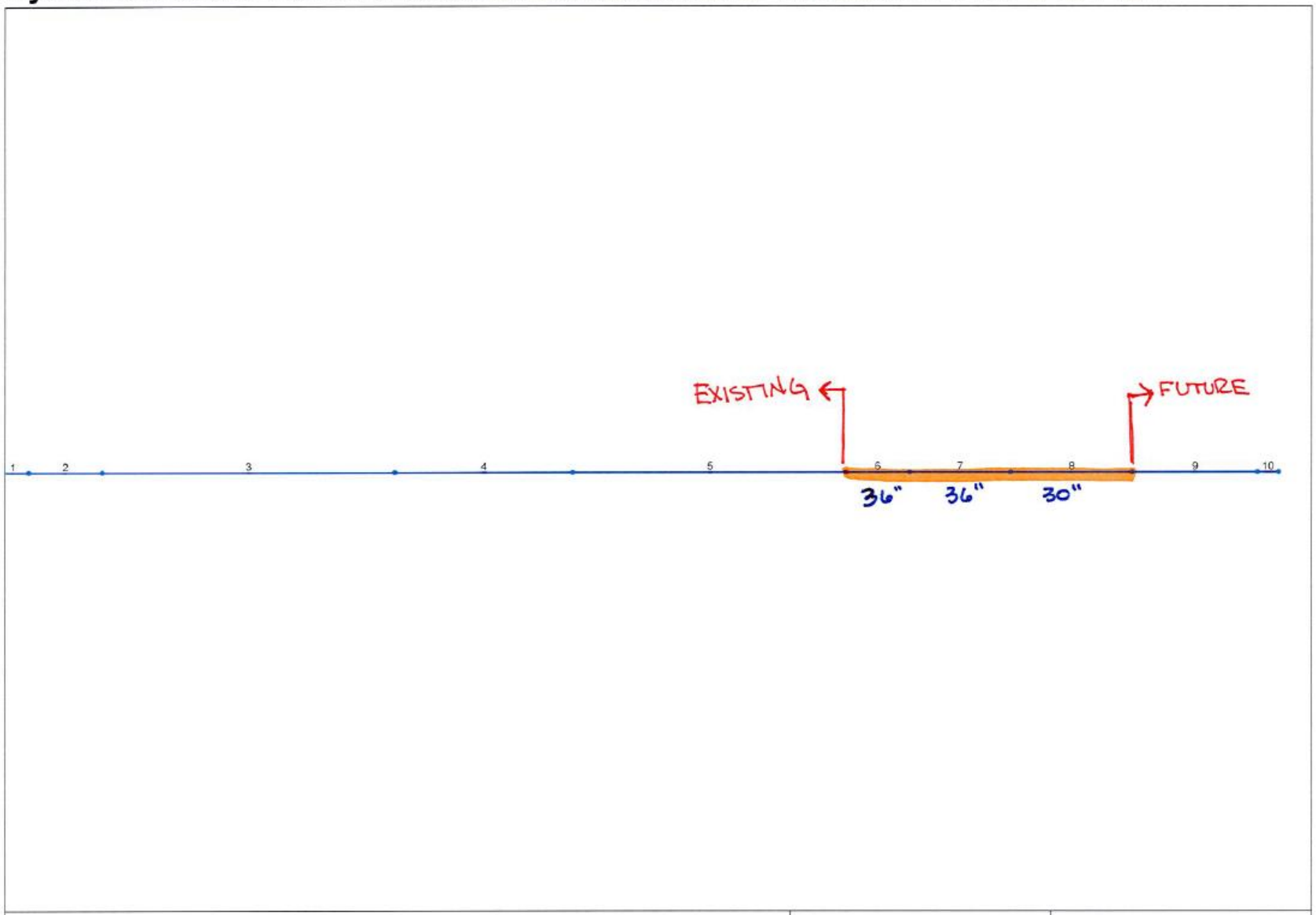
Based on calculations, if the 26.8 acres of Basin 2 were developed at 90% Treatment 'D' and 10 Treatment 'C', the total discharge would be 130.3 cfs to AP1.

BASIN NO.	**2**			**DESCRIPTION**		Worst Case Situation			
Area of basin flows =		1167408	SF		=	26.8	Ac.		
The following calculations are based on Treatment areas as shown in table to the right								LAND TREATMENT	
		Sub-basin Weighted Excess Precipitation (see formula above)						A =	0%
		Weighted E	=	2.25	in.			B =	0%
		Sub-basin Volume of Runoff (see formula above)						C =	10%
		V_{360}	=	219181	CF			D =	90%
		Sub-basin Peak Discharge Rate: (see formula above)							
		Q_P	=	130.3	cfs				

If the entirety of Basin 2 (both sides of Pasadena Ave) develop prior to the TEMPORARY OFFSITE BASIN from the north side of Venice Ave., the discharge to AP#1 would be no more than 140 cfs < the design Q which accomodated Basin 1 as well as Basin 2. OK

Following is a reanalysis of the not yet constructed portion of Pasadena storm drain adjacent to Lots 7A-10A in order to show that previous C.L. Weiss pipe sizes may be downsized.

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: 2052-SD TRUNK LINE - CURRENT.stm	Number of lines: 10	Date: 7/10/2014

Storm Sewers v10.40

Storm Sewer Tabulation

EXISTING

FUTURE

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	35.500	0.00	0.00	0.00	0.00	0.00	0.0	2.2	0.0	120.0	152.9	13.84	42	2.31	29.20	30.02	31.95	33.27	0.00	38.06	
2	1	82.600	0.00	0.00	0.00	0.00	0.00	0.0	2.1	0.0	120.0	165.3	12.89	42	2.70	30.02	32.25	33.27	35.50	38.06	40.00	
3	2	330.000	0.00	0.00	0.00	0.00	0.00	0.0	1.6	0.0	108.0	171.6	11.72	42	2.91	32.25	41.85	35.50	45.00	40.00	48.25	
4	3	201.000	0.00	0.00	0.00	0.00	0.00	0.0	1.2	0.0	90.00	168.4	10.15	42	2.80	41.85	47.48	45.00	50.42	48.25	0.00	
5	4	307.000	0.00	0.00	0.00	0.00	0.00	0.0	0.8	0.0	84.00	111.0	12.18	36	2.77	47.58	56.08	50.42	58.88	0.00	65.70	
6	5	72.000	0.00	0.00	0.00	0.00	0.00	0.0	0.7	0.0	72.00	112.0	10.77	36	2.82	56.18	58.21	58.88	60.89	65.70	68.15	
7	6	114.000	0.00	0.00	0.00	0.00	0.00	0.0	0.5	0.0	60.00	115.5	9.40	36	3.00	58.31	61.73	60.89	64.23	68.15	71.32	
8	7	137.800	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	54.00	71.00	11.22	30	3.00	61.83	65.96	64.23	68.30	71.32	76.00	
9	8	141.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	36.00	39.18	11.46	24	3.00	66.06	70.29	69.30	72.87	76.00	79.08	
10	9	24.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	30.00	39.18	9.55	24	3.00	70.39	71.11	73.89	74.31	79.08	79.74	

Project File: 2052-SD TRUNK LINE - CURRENT.stm

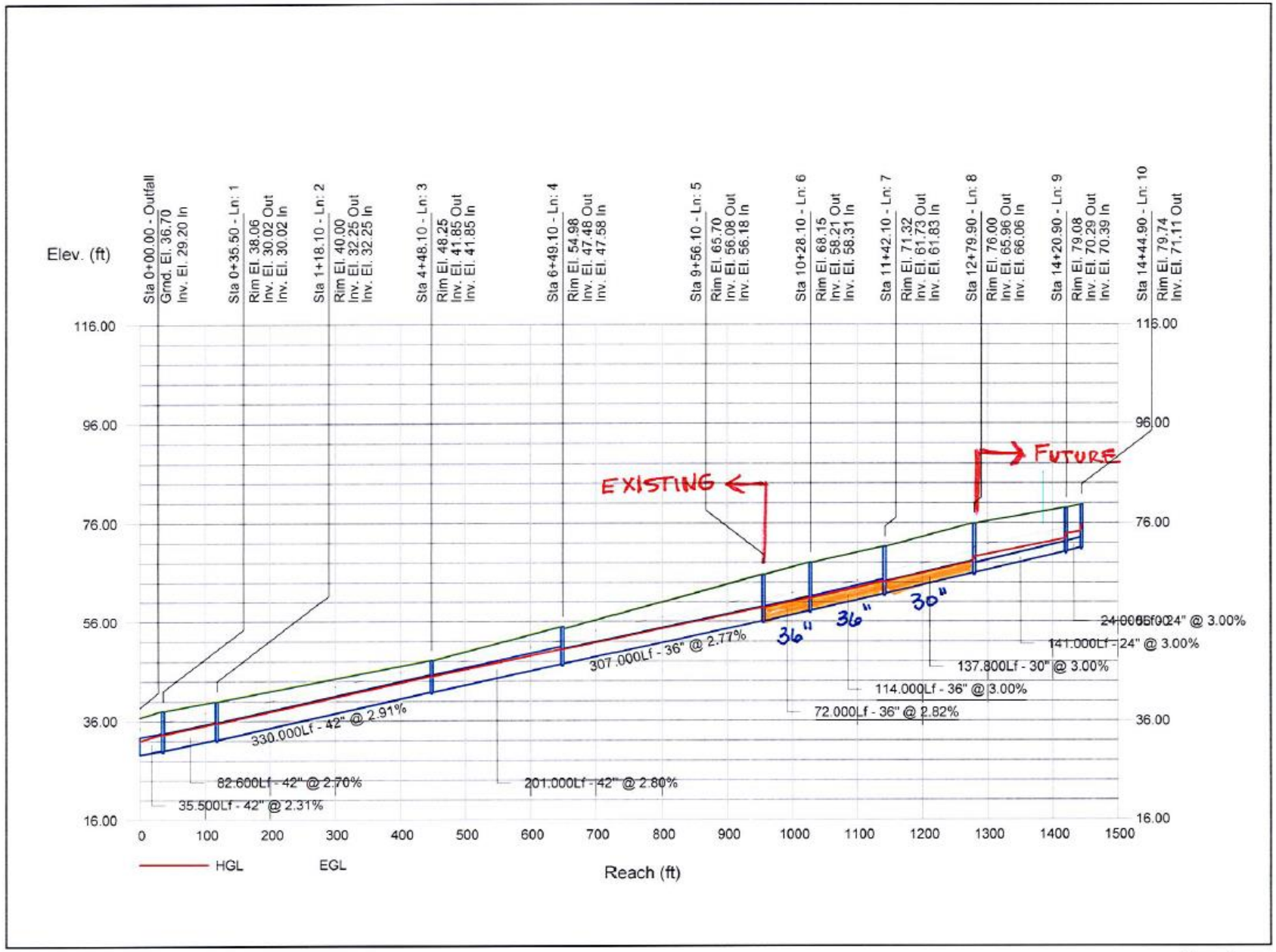
Number of lines: 10

Run Date: 7/10/2014

NOTES:Intensity = 69.87 / (Inlet time + 13.10) ^ 0.87 ; Return period =Yrs. 2 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: 2052-SD TRUNK LINE - CURRENT.stm



JUNE 24, 2014

SUPPLEMENTAL INFORMATION

for

PASADENA OFFICE / WAREHOUSE

GRADING AND DRAINAGE PLAN

COA HYDROLOGY B18/D019

by

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates

Thomas O. Isaacson, PE(RET.) & LS(RET.)
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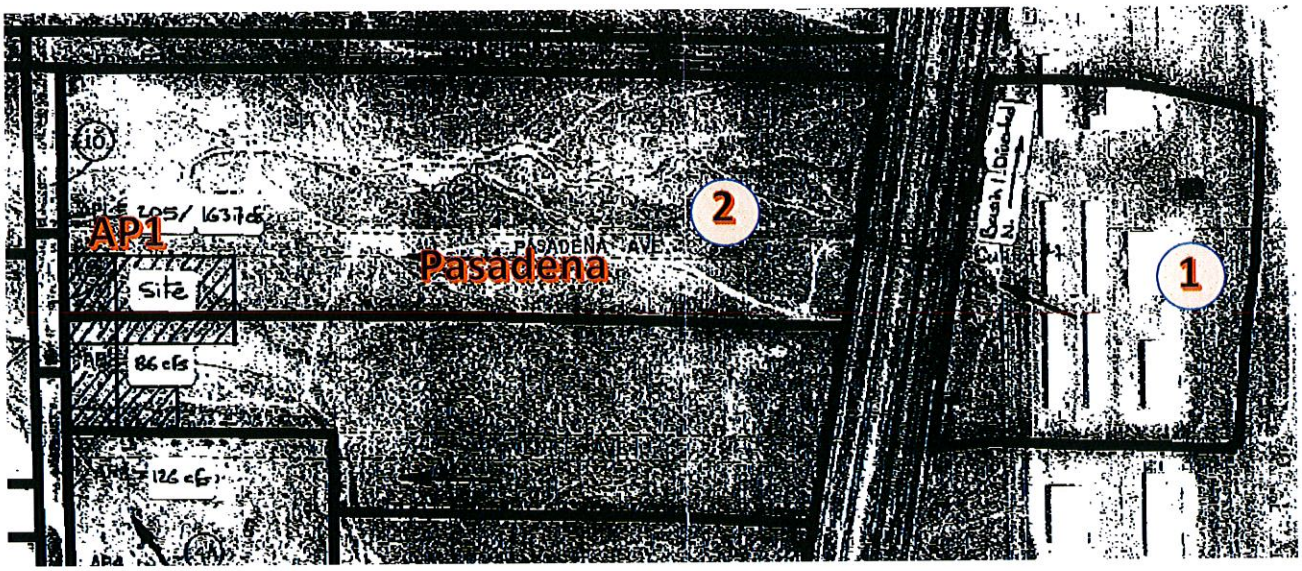
INTRODUCTION

The portion of Pasadena between San Mateo Blvd. and I-25 was originally analyzed as part of the Drainage Report for Citicorp by BHI (1996). AP1, was identified as the analysis point at intersection of Pasadena Ave. and San Mateo Blvd. and was shown to accept all flows from basins 1 and 2 in the fully developed conditions.



From Plate 3 of BHI Citicorp Report - Developed Conditions

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In addition, the CLWeiss report noted:

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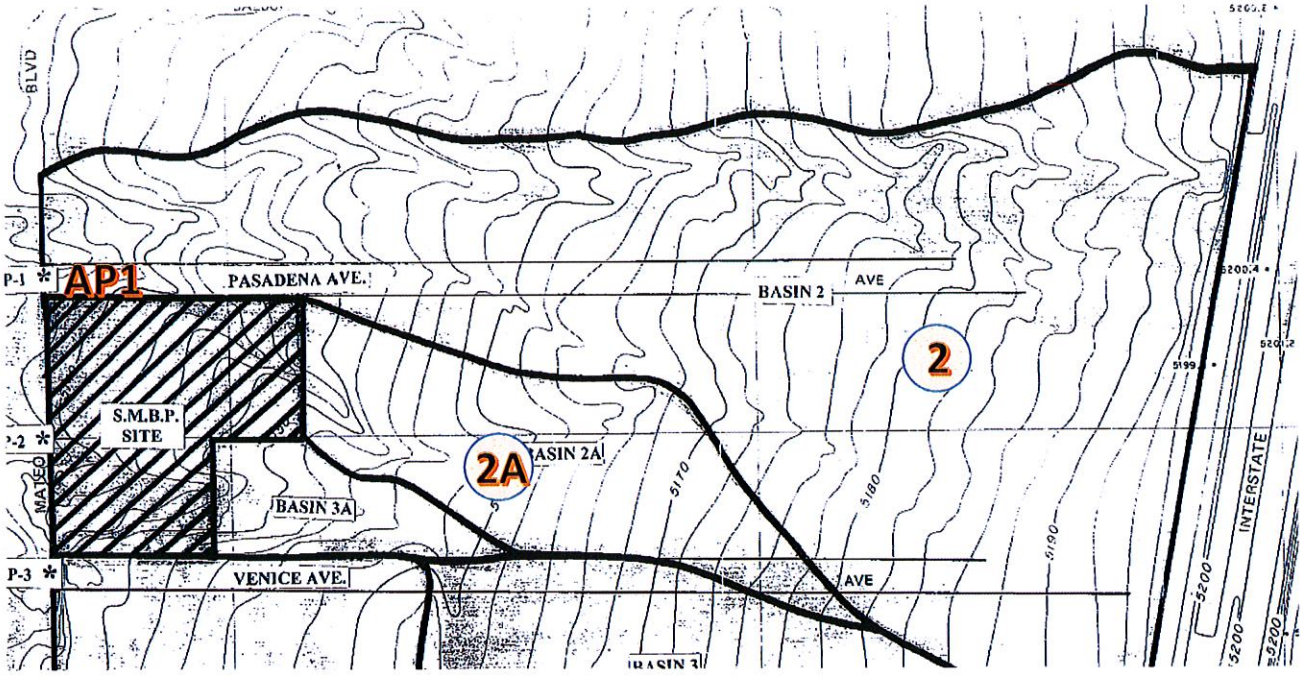


In the fully developed condition, the extent of Basin 2 draining to AP1 was redefined by the CLWeiss report as the properties on both sides of Pasadena between San Mateo Blvd. and I-25 frontage road.

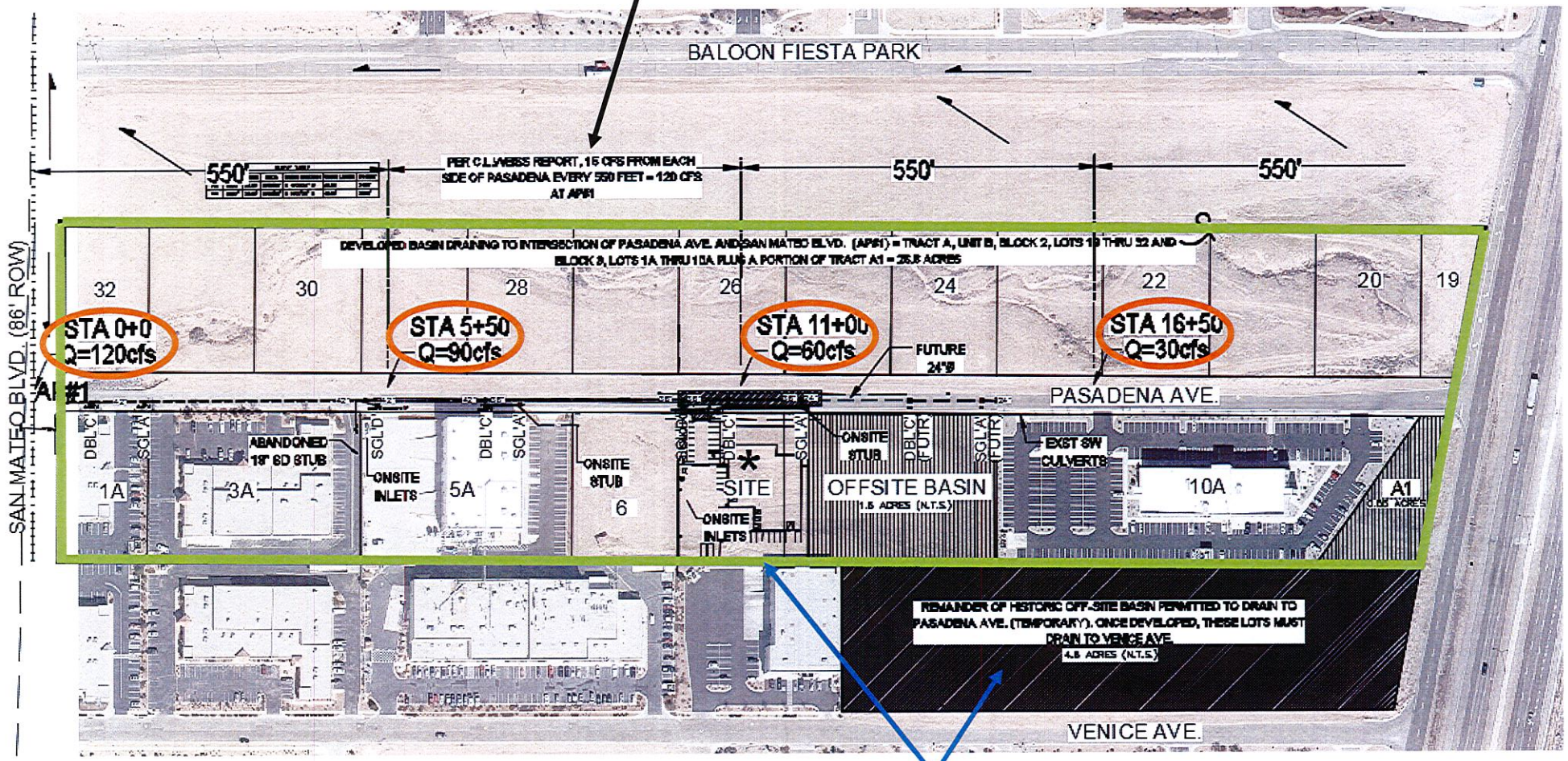
This basin reanalysis was approved as part of the submittal for building permit for San Mateo Business Park.

At the time San Mateo Business Park developed, off-site Basin 1 was still (temporarily) draining into Basin 2 and thus to AP1. The CLWeiss report provided Q100 flows (120 cfs) within the storm drain based only on the fully developed Basin 2, but it showed that the full capacity of the proposed Pasadena / San Mateo storm drain system could also accommodate the off-site Basin 1.

In 2010 as additional lots on the south side of Pasadena were being designed for development, Fred Arfman met with Brad Bingham, PE of COA Hydrology who confirmed that Basin 1 had been redirected north.

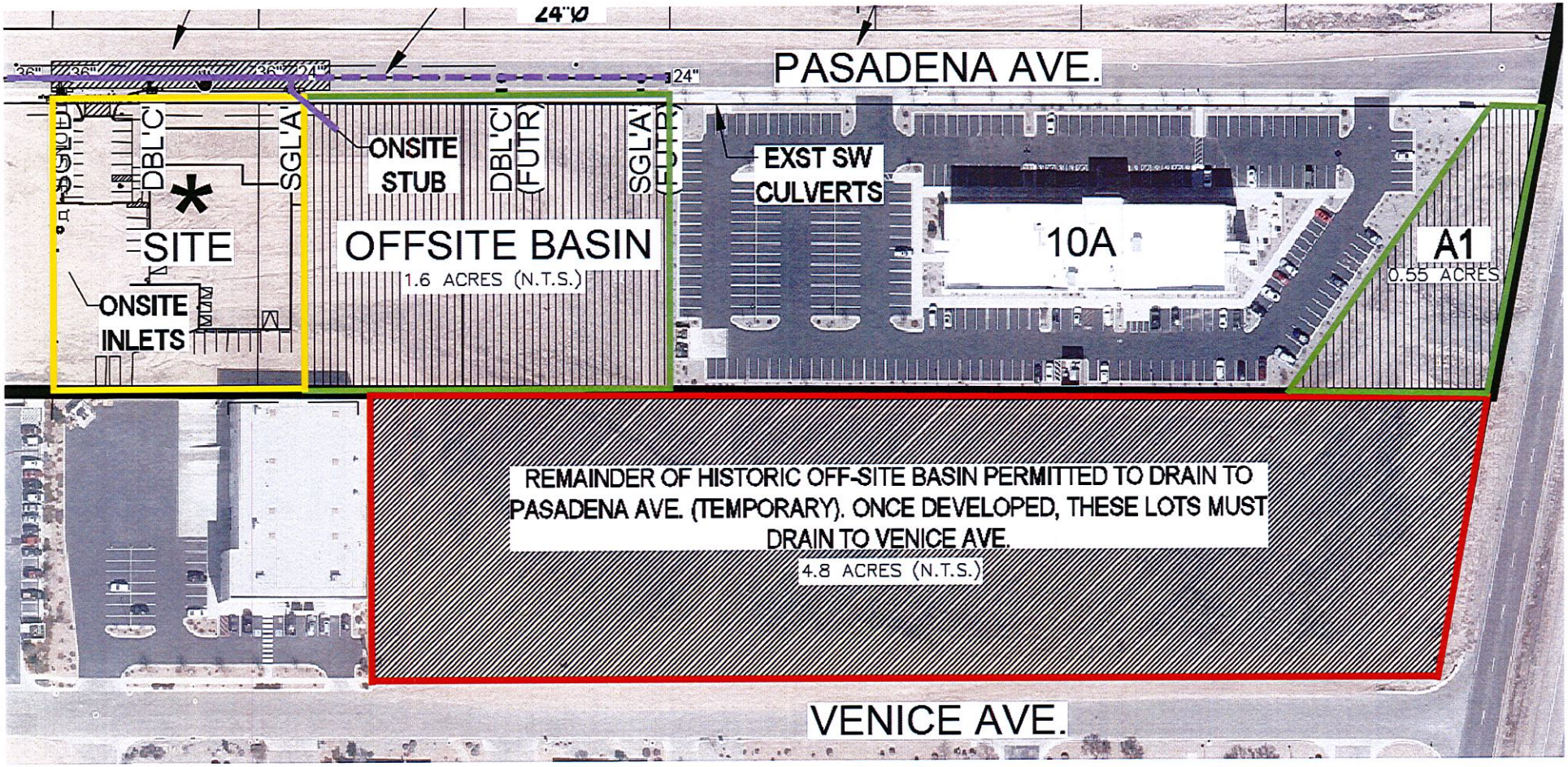
This report includes a reanalysis of the not yet constructed Pasadena storm drain system adjacent to Lots 7-10A in order to prove that the previous CLWeiss pipe sizes could be downsized due to the elimination of Basin 1.

The CLWeiss Report redefined the total developed basin draining to the Pasadena storm drain as 26.8 acres with a total Q100 = 120 cfs at AP#1. It divided this into 550' lengths each picking up 30 cfs (15 cfs each side).



See full 24x36 exhibit in back pocket.

The total area draining to AP#1 would not exceed Basin B (outlined in green) + undeveloped portion of property on the north side of Venice Ave. (shown hatched).


24"Ø
PASADENA AVE.
36"
36"
36"
24"
24"
DBL'C'
SGL'A'
*
SITE
ONSITE INLETS
ONSITE STUB
DBL'C' (FUTR)
SGL'A' (FUTR)
OFFSITE BASIN
1.6 ACRES (N.T.S.)
EXST SW CULVERTS
10A
A1
0.55 ACRES
REMAINDER OF HISTORIC OFF-SITE BASIN PERMITTED TO DRAIN TO PASADENA AVE. (TEMPORARY). ONCE DEVELOPED, THESE LOTS MUST DRAIN TO VENICE AVE.
4.8 ACRES (N.T.S.)
VENICE AVE.

PROPOSED SITE

The proposed development consists of Tract A, Unit B, Block 3, Lot 7 and a portion of Lot 8, North Albuquerque Acres.

CALCULATIONS: 2052: 5656 PASADENA N.E. : May 8, 2014

Based on Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993

ON-SITE

AREA OF SITE: 46879 SF = 1.1

100-year, 6-hour

ALLOWABLE DISCHARGE:

		Treatment SF	%
Area A	=	0	0%
Area B	=	46879	100%
Area C	=	0	0%
Area D	=	0	0%
Total Area	=	46879	100%

DEVELOPED FLOWS:

		Treatment SF	%
Area A	=	0	0%
Area B	=	0	0%
Area C	=	4688	10%
Area D	=	42191	90%
Total Area	=	46879	100%

EXCESS PRECIP:

Precip. Zone 3

E_A = 0.66

E_B = 0.92

E_C = 1.29

E_D = 2.36

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

$$\text{Weighted E} = \frac{E_A A_A + E_B A_B + E_C A_C + E_D A_D}{A_A + A_B + A_C + A_D}$$

Allowable E	=	0.92 in.	Developed E	=	2.25 in.

On-Site Volume of Runoff: V360 = E*A / 12

Allowable V_{360}	=	3594 CF	Developed V_{360}	=	8802 CF

On-Site Peak Discharge Rate: $Qp = Q_{pA}A_A + Q_{pB}A_B + Q_{pC}A_C + Q_{pD}A_D / 43{,}560$

For Precipitation Zone 3

Q_{pA} = 1.87

Q_{pB} = 2.60

Q_{pC} = 3.45

Q_{pD} = 5.02

Allowable Q_p	=	2.8 CFS	Developed Q_p	=	5.2 CFS

OFFSITE FLOWS IMPACTING PROPOSED SITE

The undeveloped area draining to the east side of the proposed site consists of two distinct basins (see image on previous page).

- The undeveloped property fronting Pasadena (the remainder of Lot 8 + all of Lot 9 + the Pasadena portion of Tract A1) = a 2.15 acre OFFSITE BASIN.

In the undeveloped condition, the Pasadena fronting OFFSITE BASIN will generate 5.6 cfs.

BASIN NO. OFFSITE			UNDEVELOPED CONDITION
Area of basin flows =	93654 SF	=	2.15 Ac.
The following calculations are based on Treatment areas as shown in table to the right			LAND TREATMENT
Sub-basin Weighted Excess Precipitation (see formula above)			A = 0%
Weighted E =	0.92 in.		B = 100%
Sub-basin Volume of Runoff (see formula above)			C = 0%
V_{360} =	7180 CF		D = 0%
Sub-basin Peak Discharge Rate: (see formula above)			
Q_P =	5.6 cfs		

- The TEMPORARY OFFSITE BASIN consisting of the undeveloped property fronting the north side of Venice will continue to discharge historic flow of 9.5 cfs through the OFFSITE BASIN to Pasadena per the CLWeiss master plan. As these Venice fronting lots develop, the basin will be redirected to Venice Ave.

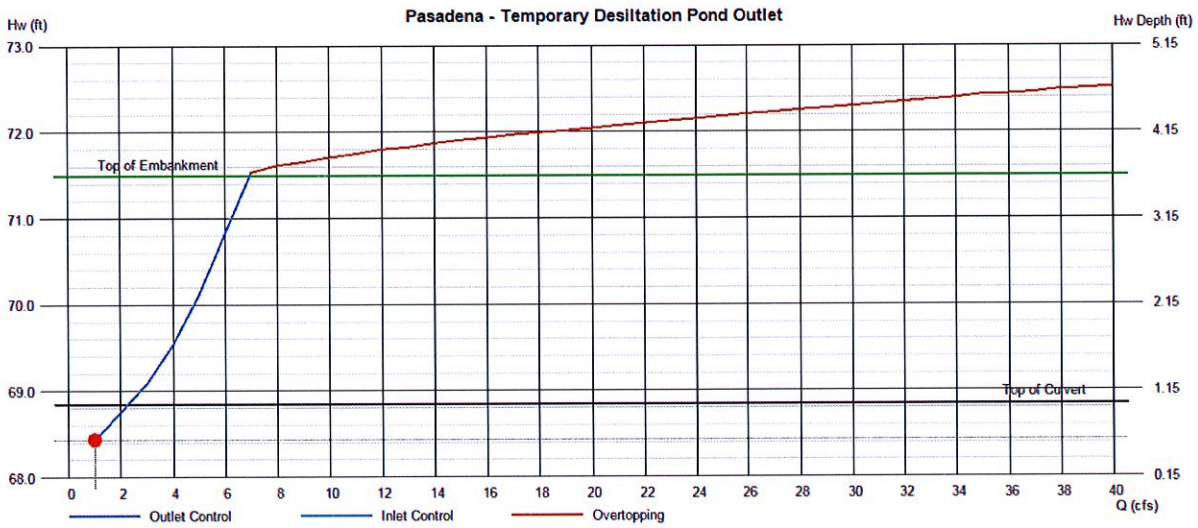
BASIN NO. TEMPORARY OFFSITE			UNDEVELOPED CONDITION
Area of basin flows =	209088 SF	=	4.8 Ac.
The following calculations are based on Treatment areas as shown in table to the right			LAND TREATMENT
Sub-basin Weighted Excess Precipitation (see formula above)			A = 85%
Weighted E =	0.70 in.		B = 15%
Sub-basin Volume of Runoff (see formula above)			C = 0%
V_{360} =	12179 CF		D = 0%
Sub-basin Peak Discharge Rate: (see formula above)			
Q_P =	9.5 cfs		

CONCLUSION:

- The OFFSITE BASIN along Pasadena (5.6 cfs) and the TEMPORARY OFFSITE BASIN from the south (9.5 cfs) will drain to the temporary desiltation / deflection pond. A temporary standpipe will be installed at the end of the 12" stub provided for the future development of Lots 8 and 9 with excess passing to Pasadena via the proposed rock rundown. If development of these final Pasadena fronting lots occur prior to the development of the TEMPORARY OFFSITE BASIN, the historic discharge must be permitted to continue to pass to Pasadena.

The 30' long 12" diameter ONSITE STUB to be extended into Lot 8 for the future development will be utilized as a temporary standpipe inlet for the desiltation pond. The proposed rim of 70.5 is raised 6" above the proposed basin bottom to permit sediment to settle.

Based on the Hydraflow calculations, the 12" dia. pipe has a maximum capacity (inlet control) of approximately 7 cfs.

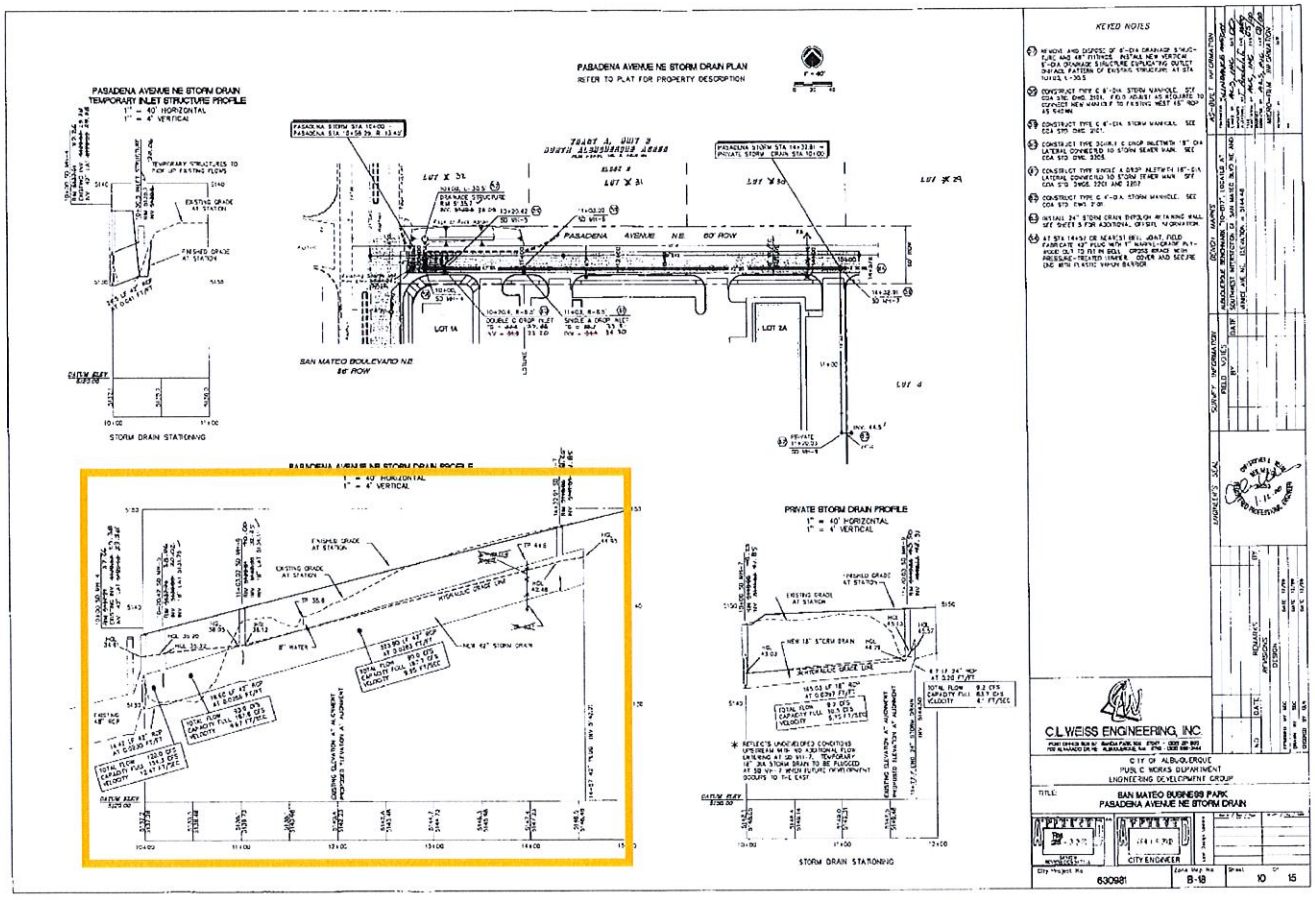


Once the desiltation basin fills and the pipe is flowing at full capacity (7.0 cfs), excess flow will be passed to Pasadena at the provided rock lined overflow.

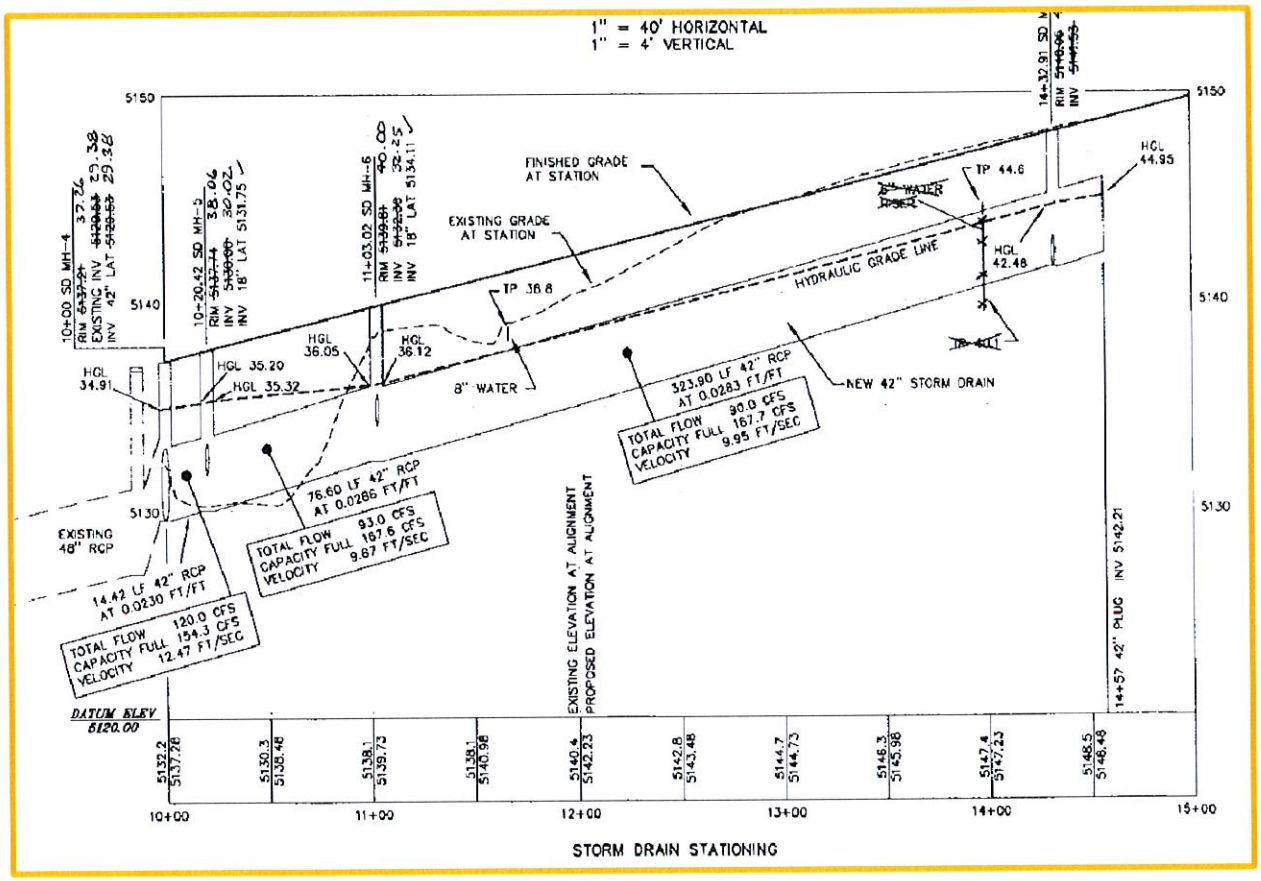
With the storm drain at full capacity (7.0 cfs), the desiltation pond will overflow at the proposed rock rundown.

PASADENA AVENUE STORM DRAIN REANALYSIS

As mentioned in the introduction, the CLWeiss design of the storm drain within Pasadena defined the total Q within the system in the fully developed condition as 120 cfs but showed that the pipe had capacity available to continue to accept the temporary Basin 1 flow which has since been redirected.



See image next page for enlarged profile.



Based on calculations, even if the entire 26.8 acres of Basin 2 were developed at 90% Treatment 'D' and 10 Treatment 'C', the discharge would be 130.3 cfs to AP1.

BASIN NO. 2		DESCRIPTION	Worst Case Situation
Area of basin flows =	1167408	SF =	26.8 Ac.

The following calculations are based on Treatment areas as shown in table to the right

LAND TREATMENT	
A =	0%
B =	0%
C =	10%
D =	90%

Sub-basin Weighted Excess Precipitation (see formula above)

Weighted E = 2.25 in.

Sub-basin Volume of Runoff (see formula above)

V_{360} = 219181 CF

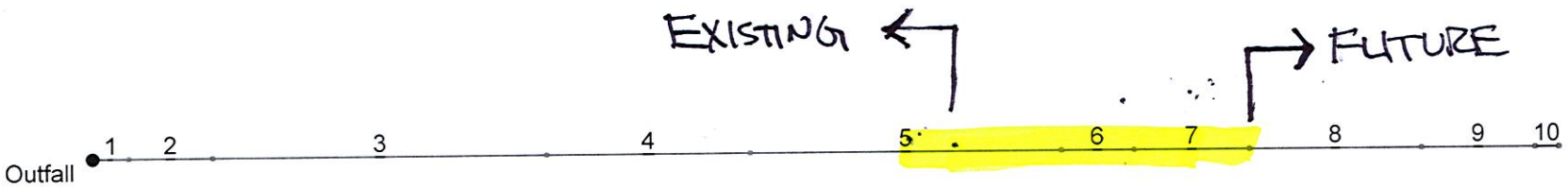
Sub-basin Peak Discharge Rate: (see formula above)

Q_P = 130.3 cfs

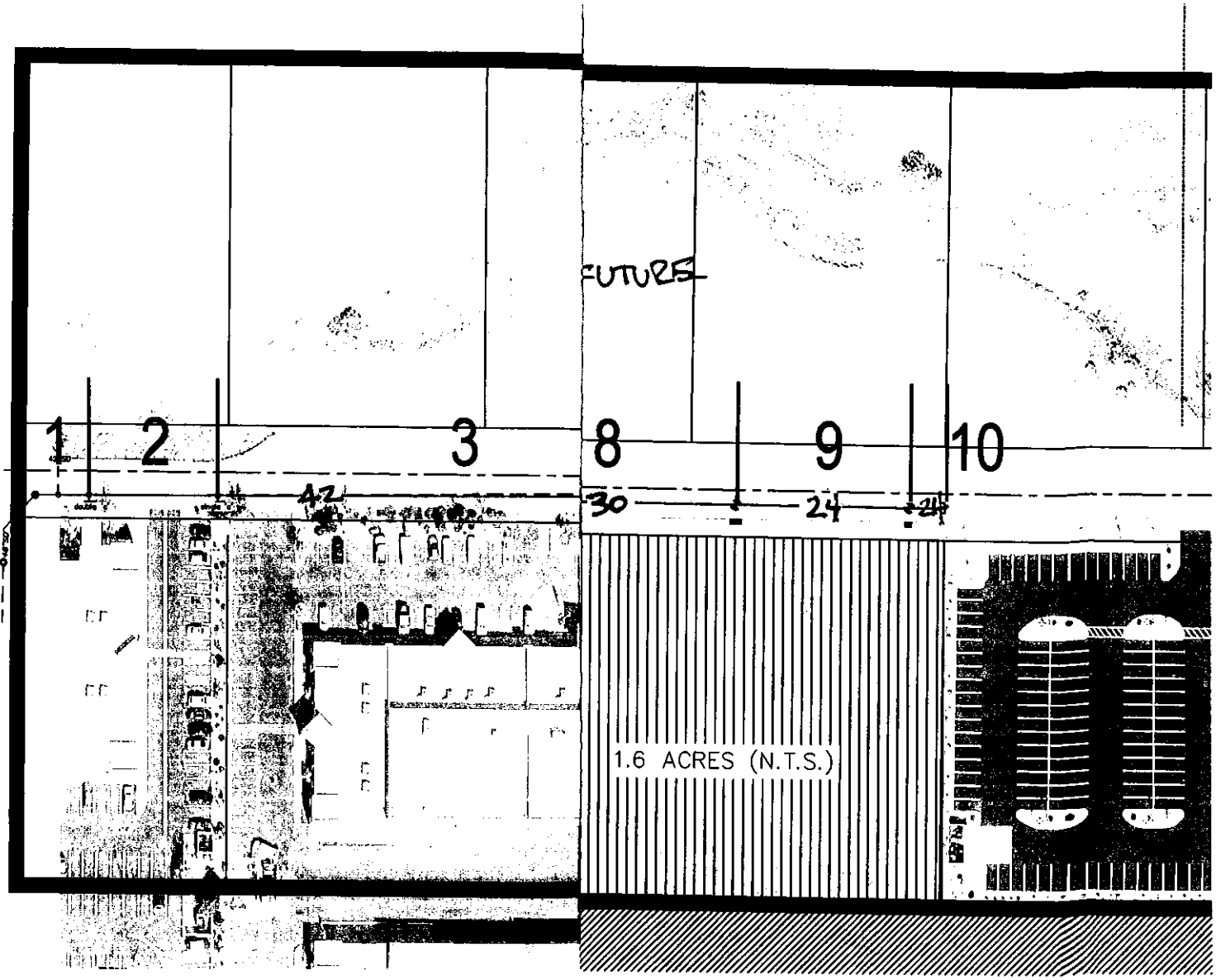
If the entirety of Basin 2 (both sides of Pasadena Ave) develop prior to the TEMPORARY OFFSITE BASIN from the north side of Venice Ave., the discharge to AP#1 would be no more than 140 cfs < 154.3 cfs. (the design Q which accomodated Basin 1 as well as Basin 2). OK

The following pages reanalyze the Pasadena storm drain system based on the CLWeiss approved Q's with 30 cfs introduced into the system @ 550' intervals with a total of 120 cfs in the system at AP1.

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: 2052-SD TRUNK LINE - CURRENT.stm	Number of lines: 10	Date: 6/24/2014


FUTURE
1
2
3
8
9
10
42
30
24
1.6 ACRES (N.T.S.)

Storm Sewer Tabulation

FUTURE

EXISTING

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
10	9	24.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	30.00	39.18	9.55	24	3.00	70.39	71.11	74.12	74.55	79.08	79.74	
9	8	112.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	36.00	39.18	11.46	24	3.00	66.93	70.29	70.27	73.10	76.00	79.08	
8	7	170.000	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	54.00	71.03	11.22	30	3.00	61.83	66.93	64.23	69.27	71.32	76.00	
7	6	114.000	0.00	0.00	0.00	0.00	0.00	0.0	0.5	0.0	60.00	115.5	9.40	36	3.00	58.31	61.73	60.89	64.23	68.15	71.32	
6	5	72.000	0.00	0.00	0.00	0.00	0.00	0.0	0.7	0.0	72.00	112.0	10.77	36	2.82	56.18	58.21	58.88	60.89	65.70	68.15	
5	4	307.000	0.00	0.00	0.00	0.00	0.00	0.0	0.8	0.0	84.00	111.0	12.18	36	2.77	47.58	56.08	50.42	58.88	0.00	65.70	
4	3	201.000	0.00	0.00	0.00	0.00	0.00	0.0	1.2	0.0	90.00	168.4	10.15	42	2.80	41.85	47.48	45.00	50.42	48.25	0.00	
3	2	330.000	0.00	0.00	0.00	0.00	0.00	0.0	1.6	0.0	108.0	171.6	11.72	42	2.91	32.25	41.85	35.50	45.00	40.00	48.25	
2	1	82.600	0.00	0.00	0.00	0.00	0.00	0.0	2.1	0.0	120.0	165.3	12.89	42	2.70	30.02	32.25	33.27	35.50	38.06	40.00	
1	End	35.500	0.00	0.00	0.00	0.00	0.00	0.0	2.2	0.0	120.0	152.9	13.84	42	2.31	29.20	30.02	31.95	33.27	0.00	38.06	

Project File: 2052-SD TRUNK LINE - CURRENT.stm

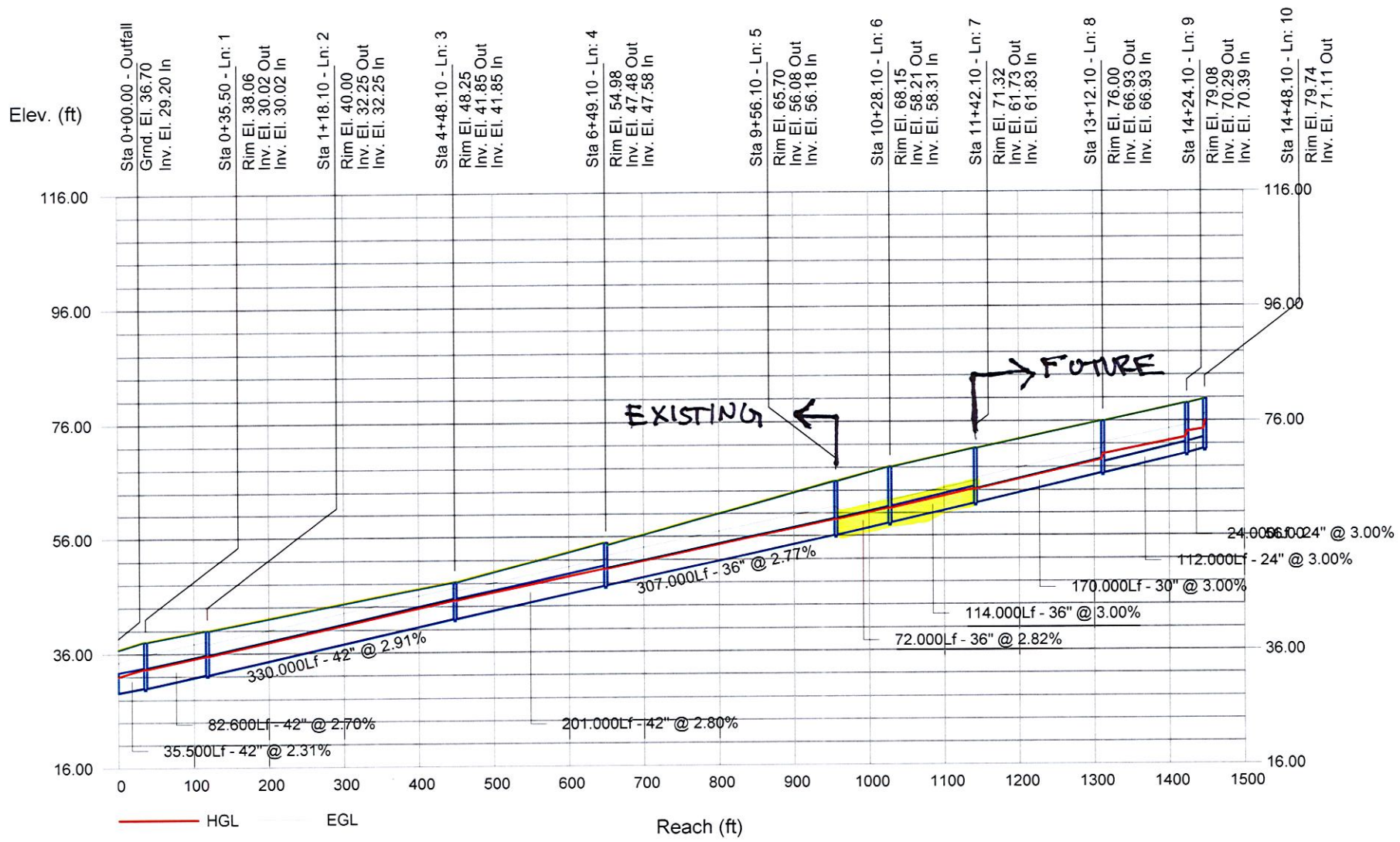
Number of lines: 10

Run Date: 6/24/2014

NOTES:Intensity = 69.87 / (Inlet time + 13.10) ^ 0.87 ; Return period =Yrs. 2 ; c = cir e = ellip b = box

Storm Sewer Profile

Proj. file: 2052-SD TRUNK LINE - CURRENT.stm



APPENDIX A

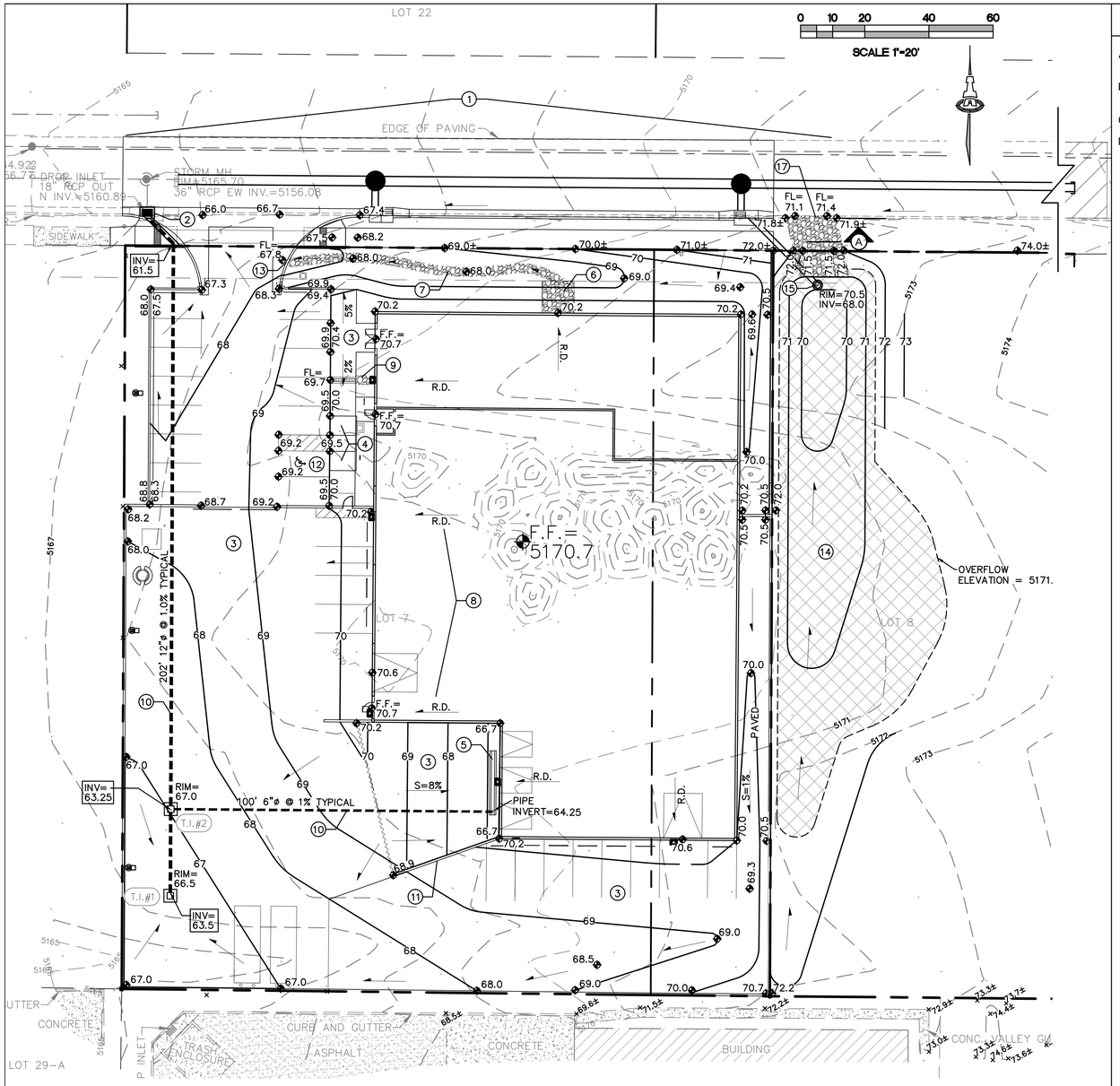
APPROVED

DRAINAGE REPORT FOR

SAN MATEO BUSINESS PARK

INCLUDING

RE-EVALUATION OF CITICORP EXISTING AND PROPOSED BASINS DRAINING TO AP#1 AT THE INTERSECTION OF SAN MATEO BLVD. AND PASADENA AVE. N.E.



STORM DRAIN NOTES

A. ALL STORM DRAIN LINES AND FITTINGS TO BE ADS N-12WT WATERTIGHT UNLESS NOTED.

B. INSTALL ALL STORM DRAIN INLETS AND PIPE PER MANUFACTURER'S SPECIFICATIONS.

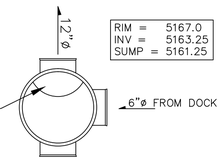
C. SEE DIAGRAMS THIS SHEET FOR INLET INFORMATION.

D. STORM DRAIN SYSTEM WILL REQUIRE REGULAR MAINTENANCE TO ENSURE PROPER FUNCTIONING DURING STORM EVENTS. ENGINEER RECOMMENDS THAT PROPERTY OWNER PUT IN PLACE INSPECTION AND MAINTENANCE CRITERIA SCHEDULED TO OCCUR MONTHLY AND AFTER EACH STORM EVENT.

T.I. #2

24" DIA. NYLOPLAST BASIN WITH LOCKING 2'X2' ROAD AND HIGHWAY GRATE AND CONCRETE COLLAR

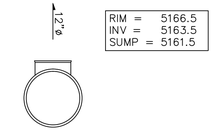
ADS ENVIROHOOD WATER QUALITY STRUCTURE



RIM = 5167.0
INV = 5163.25
SUMP = 5161.25

T.I. #1

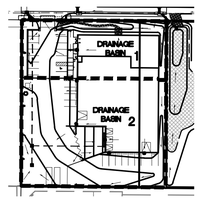
18" DIA. NYLOPLAST BASIN WITH LOCKING 2'X2' ROAD AND HIGHWAY GRATE AND CONCRETE COLLAR



RIM = 5166.5
INV = 5163.5
SUMP = 5161.5

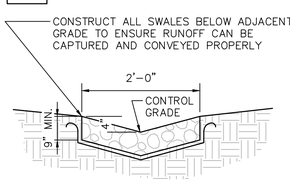
DRAINAGE INLETS

SCALE: N.T.S.



DRAINAGE BASINS

SCALE: N.T.S.



- VARY ANGULAR FACE ROCK SIZE BETWEEN 4" AND 8" DIA. (AVG.=6")
- PLACE GEOTEX 501 NON-WOVEN GEOTEXTILE (O.E.) BENEATH ALL EROSION PROTECTION

ROCK SWALE

SCALE: N.T.S.

GENERAL NOTES

A. COORDINATE WORK WITH SITE PLAN, UTILITY PLAN,

B. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. REPORT ALL DISCREPANCIES TO THE ENGINEER AND VERIFY THE ENGINEER'S INTENT BEFORE PROCEEDING.

C. PAVEMENT GRADES IN MARKED HANDICAPPED PARKING AREAS SHALL NOT EXCEED 2.0% IN ANY DIRECTION. DESIGN GRADES ARE APPROX. 1.8% TO ALLOW FOR CONSTRUCTION TOLERANCES.

D. FOR ALL ACCESSIBLE ROUTES, MAXIMUM ALLOWABLE CROSS SLOPE IS 2.0% AND MAXIMUM LONGITUDINAL SLOPE WITHOUT RAMP IS 5.0%. FOLLOW ALL ADA ACCESSIBILITY GUIDELINES OR CITY CODES, WHICHEVER IS MORE STRINGENT.

E. ALL TRASH, DEBRIS, & SURFACE VEGETATION SHALL BE CLEARED AND LEGALLY DISPOSED OF OFFSITE.

F. PROPOSED SPOT AND CONTOUR ELEVATIONS SHOWN REPRESENT TOP OF FINISH MATERIAL (I.E. TOP OF CONCRETE, TOP OF CONCRETE BUILDING PAD, TOP OF PAVEMENT MATERIAL, TOP OF LANDSCAPING MATERIAL, ETC.). CONTRACTOR SHALL GRADE, COMPACT SUBGRADE AND DETERMINE EARTHWORK ESTIMATES BASED ON ELEVATIONS SHOWN MINUS FINISH MATERIAL THICKNESSES.

G. IF FIELD GRADE ADJUSTMENTS ARE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER.

H. EXISTING UTILITY LINES ARE SHOWN IN AN APPROXIMATE MANNER ONLY AND MAY BE INCOMPLETE OR OBSOLETE. SUCH LINES MAY OR MAY NOT EXIST WHERE SHOWN OR NOT SHOWN. CONTRACTOR SHALL CONTACT NM-811 FOR UTILITY LINE SPOTS TWO WORKING DAYS PRIOR TO CONDUCTING SITE FIELD WORK. CONTRACTOR SHALL FIELD VERIFY AND LOCATE ALL UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES.

I. A CURRENT STORMWATER CONTROL PERMIT, INCLUDING AN EROSION SEDIMENT CONTROL PLAN (E.S.C.) FOR EROSION AND SEDIMENT CONTROL IS REQUIRED FOR ALL CONSTRUCTION, DEMOLITION CLEARING, AND GRADING OPERATIONS THAT DISTURB THE SOIL ON ONE ACRE OR MORE OF LAND. OWNER WILL COORDINATE.

J. POST-CONSTRUCTION MAINTENANCE FOR PRIVATE STORMWATER FACILITIES WILL BE THE RESPONSIBILITY OF THE FACILITIES OWNER. PERIODIC INSPECTION AND CERTIFICATIONS OF THE FACILITIES MAY BE REQUIRED BY THE CITY ENGINEER.

K. STORMWATER CONTROL MEASURES SHOWN ON THIS PLAN ARE REQUIRED TO PROVIDE MANAGEMENT OF 'FIRST FLUSH' (DEFINED AS THE 90TH PERCENTILE STORM EVENT OR 0.44" OF STORMWATER WHICH DISCHARGES DIRECTLY TO A PUBLIC STORM DRAINAGE SYSTEM).

L. ADJUST RIMS OF EXISTING UTILITY FEATURES AS NECESSARY TO MATCH NEW GRADES.

M. UTILITIES IN PAVED AREAS SHALL BE HS-25 TRAFFIC RATED..

N. TRANSITIONS BETWEEN NEW AND EXISTING SHALL BE SMOOTH.

O. ALL EROSION PROTECTION SHALL BE (F.F. ROCK) 6" AVG. DIA. ANGULAR FACED ROCK PLACED OVER GEOTEX 501 NON-WOVEN GEOTEXTILE (O.E.).

P. ENGINEER RECOMMENDS THAT OWNER MAINTAIN EROSION PROTECTION ELEMENTS. ENGINEER RECOMMENDS THAT OWNER INSPECT SITE YEARLY AND AFTER EACH RAINFALL TO IDENTIFY NEW AREAS OF EROSION AND INSTALL ADDITIONAL EROSION PROTECTION AS NEEDED BASED ON ACTUAL OCCURRENCES.

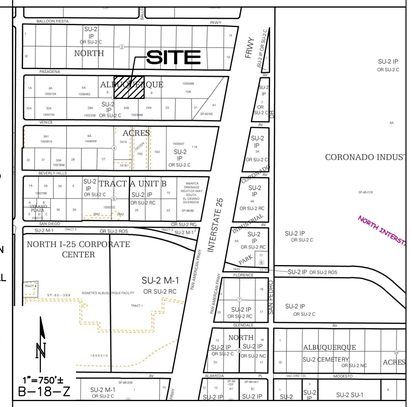
KEYED NOTES

1. CONSTRUCTION WITHIN THE R.O.W INCLUDING SITE ENTRANCE, CONCRETE VALLEY GUTTER, STREET PAVEMENT, HANDICAP RAMPS, PUBLIC SIDEWALK, PUBLIC STORM DRAIN EXTENSION AND INLETS AND PRIVATE STORM DRAIN STUB TO PROPERTY TO BE CONSTRUCTED UNDER PUBLIC WORK ORDER #630983.
2. EXISTING WEST TYPE 'A' INLET TO BE CONVERTED TO A TYPE 'D' INLET BY PUBLIC WORK ORDER #630983.
3. PROPOSED PAVING. SEE ARCHITECTURAL FOR PAVEMENT MATERIAL, JOINT INFORMATION, SECTIONS, PARKING LAYOUT, DIMENSIONS, STRIPING, ETC.
4. CONSTRUCT ADA ACCESS RAMP(S) AT MAX. 1:12 SLOPE. SEE ARCHITECTURAL FOR RAMP DIMENSIONS AND ADDITIONAL INFORMATION.
5. INSTALL 20 LF DOCK TRENCH DRAIN (ACO K100S KLASSIKDRAIN WITH CLASS E GRATE) WITH BUILT-IN SLOPE. RIM=66.6 TYPICAL. EXTEND OUTLET PIPE TO STORM DRAIN AS SHOWN.
6. ROOF FLOW TO SURFACE DISCHARGE TO THE NORTH. CONSTRUCT 10'X10'X1' DEEP F.F. ROCK EROSION PROTECTION AT OUTLET.
7. CONSTRUCT 3' WIDE X 1' DEEP X 6" DEPRESSED F.F. ROCK SWALE TO PASS ROOF DISCHARGE TO 2' WIDE CURB OPENING.
8. ROOF FLOW TO SURFACE DISCHARGE TO THE WEST.
9. CONSTRUCT F.F. ROCK SWALE (SEE DETAIL) AND 12" WIDE SIDEWALK TRENCH DRAIN WITH PEDESTRIAN RATED GRATE TO PASS ROOF DISCHARGE.
10. CONSTRUCT PRIVATE STORM DRAIN SYSTEM. SEE STORM DRAIN NOTES AND DETAILS THIS SHEET FOR ADDITIONAL INFORMATION.
11. CONSTRUCT DOCK RETAINING WALL TO ACHIEVE GRADES SHOWN. DESIGN BY OTHERS.
12. CONSTRUCT HC PARKING PAVEMENT TO ADA STANDARDS. MAX. 2% SLOPE IN ANY DIRECTION.
13. 2' WIDE CURB CUT TO BE CONSTRUCTED AS PART OF PUBLIC WORK ORDER.
14. GRADE ADJACENT PROPERTY TO PROVIDE SHALLOW DESILTATION BASIN AT ELEVATIONS SHOWN.
15. CONSTRUCT TEMPORARY POND INLET (24" DIA. ADS INLINE DRAIN WITH 12" OUTLET AND 24" DIA. DOMED GRATE) AT RIM / INVERT ELEVATIONS SHOWN. MAKE WATERTIGHT CONNECTION TO STORM DRAIN STUB PROVIDED BY PUBLIC WORK ORDER.
16. CONSTRUCT 0.5' DEEP F.F. ROCK OVERFLOW TO PASS FLOW TO PASADENA PAVEMENT. SEE SECTION THIS SHEET.
17. CUT 15' WIDE OPENING IN TEMPORARY ASPHALT CURB.

LEGEND

—5167—	EXISTING CONTOUR
67	PROPOSED CONTOUR
◆66.7	PROPOSED SPOT ELEVATION
→	FLOW ARROW
FF = 5170.70	FINISH FLOOR ELEVATION
INV=	INVERT ELEVATION
- - - -	STORM DRAIN
	FRACTURED FACE ROCK EROSION CONTROL. SEE GENERAL NOTE 'O'.

VICINITY MAP



PROJECT DATA

PROPERTY: THE SITE IS AN UNDEVELOPED PROPERTY LOCATED WITHIN C.O.A. VICINITY MAP C-17. THE SITE IS BOUND TO THE EAST AND WEST BY UNDEVELOPED COMMERCIAL PROPERTY, TO THE NORTH BY PASADENA N.E. AND TO THE SOUTH BY DEVELOPED COMMERCIAL PROPERTY.

SITE AREA: 46,879 SF = 1.076 AC

PROPOSED IMPROVEMENTS: THE PROPOSED IMPROVEMENTS INCLUDE A 17,256 SF OFFICE / WAREHOUSE BUILDING WITH ASSOCIATED ASPHALT PAVED ACCESS, PARKING, AND LANDSCAPING.

LEGAL: LOT 7 AND A PORTION OF LOT 8, BLOCK 3, TRACT A, UNIT B, NORTH ALBUQUERQUE ACRES BERNALILLO COUNTY, NEW MEXICO

ADDRESS: 5656 PASADENA N.E, 87113

BENCHMARK: CC_EG_11_12_11N_R3E NAVD 1988 ELEVATION 5135.56

OFF-SITE: OFF-SITE FLOW BASED ON NATURAL GRADES ON UNDEVELOPED PROPERTIES WILL BE ACCEPTED INTO A TEMPORARY SEDIMENT POND LOCATED ON LOT 8 (SAME OWNER) WITH OVERFLOW TO PASADENA VIA A 2' WIDE COVERED SIDEWALK CULVERT.

FLOOD HAZARD: PER BERNALILLO COUNTY FIRM MAP 35001C0129H, THE SITE IS LOCATED WITHIN FLOODZONE 'X' DESIGNATED AS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.

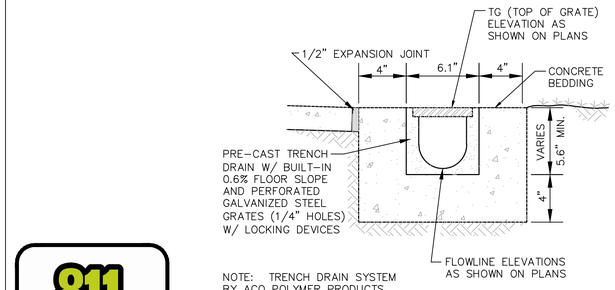
ON-SITE DRAINAGE PLAN CONCEPT: A PORTION OF THE SITE (BASIN 1) WILL SURFACE DISCHARGE VIA THE PROPOSED ENTRANCE DRIVE TO PASADENA NE. A PRIVATE ON-SITE STORM DRAIN SYSTEM WILL BE INSTALLED TO COLLECT ON-SITE RUNOFF FROM THE DOCK AND SOUTHERN PORTION OF THE PROPERTY (BASIN 2) AND TIE TO THE BACK OF THE EXISTING PUBLIC STORM DRAIN INLET LOCATED AT THE NORTHWEST CORNER OF THE PROPERTY. SEE SUPPLEMENTAL INFORMATION PACKET FOR ADDITIONAL INFORMATION.

OFF-SITE: THE SUPPLEMENTAL INFORMATION AND CALCULATION PACKAGE PREPARED FOR THIS PROJECT BY ISAACSON & ARFMAN DATED JUNE 24, 2014 WAS APPROVED AS PART OF THE DRB PROCESS. THIS INCLUDED AN ANALYSIS OF THE PASADENA AVE. STORM DRAIN SYSTEM USING THE ORIGINAL 'CITICORP' DRAINAGE REPORT (1996) BY BOHANNAN-HUSTON, INC. AND THE SUBSEQUENT 'SAN MATEO BUSINESS PARK' DRAINAGE REPORT (1999) BY C.L.WEISS ENGINEERING AS WELL AS THE AS-BUILT INFRASTRUCTURE INSTALLED WITHIN PASADENA VIA EARLIER DEVELOPMENT PROJECTS.

BASED ON MEETINGS, COORDINATION AND REVIEW OF THE SUPPLEMENTAL INFORMATION WITH C.O.A. HYDROLOGY STAFF (RITA HARMON, P.E. AND CURTIS CHERNE, P.E.) THIS SITE AND ALL PROPERTIES FRONTING PASADEA AVE. BETWEEN SAN MATEO BLVD. AND I-25 (26.8 ACRES) IS PERMITTED FREE DISCHARGE TO THE PUBLIC STORM DRAIN WITHIN PASADENA AVE.

ENGINEER: FRED C. ARFMAN, P.E.
ISAACSON & ARFMAN, PA
128 MONROE NE 87111
505-268-8828

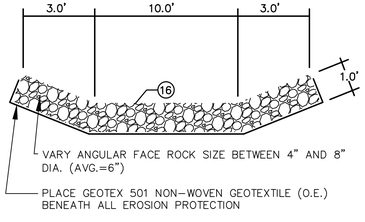
SURVEYOR: ANDREW S. MEDINA N.M.P.S. #12649
SANDIA LAND SURVEYING
15 CASA TERRENOS, PLACITAS, N.M. 87043
505-867-1241



NOTE: TRENCH DRAIN SYSTEM BY ACO POLYMER PRODUCTS, OR APPROVED EQUAL.

TRENCH DRAIN THROUGH SIDEWALK

SCALE: N.T.S.



SECTION 'A'

TEMPORARY DESILTATION POND OVERFLOW

SCALE: N.T.S.

CALCULATIONS: 2052: 5656 PASADENA N.E. : May 8, 2014

Based on Drainage Design Criteria for City of Albuquerque Section 22.2, DPM, Vol 2, dated Jan., 1993

ON-SITE

AREA OF SITE: 46879 SF = 1.1

100-year, 6-hour

ALLOWABLE DISCHARGE:		Treatment SF	%
Area A	=	0	0%
Area B	=	46879	100%
Area C	=	0	0%
Area D	=	0	0%
Total Area	=	46879	100%

DEVELOPED FLOWS:		Treatment SF	%
Area A	=	0	0%
Area B	=	0	0%
Area C	=	4688	10%
Area D	=	42191	90%
Total Area	=	46879	100%

EXCESS PRECIP:	Precip. Zone 3
E_A =	0.66
E_B =	0.92
E_C =	1.29
E_D =	2.36

On-Site Weighted Excess Precipitation (100-Year, 6-Hour Storm)

Weighted $E = \frac{E_A A_A + E_B A_B + E_C A_C + E_D A_D}{A_A + A_B + A_C + A_D}$

Allowable E	=	0.92 in.	Developed E	=	2.25 in.

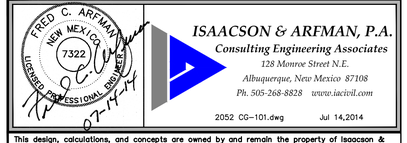
On-Site Volume of Runoff: V360 = E*A / 12

Allowable V_{360}	=	3594 CF	Developed V_{360}	=	8802 CF

On-Site Peak Discharge Rate: $Qp = Q_{pA}A_A + Q_{pB}A_B + Q_{pC}A_C + Q_{pD}A_D / 43{,}560$

For Precipitation Zone 3

Q_{pA}	=	1.87	Q_{pC}	=	3.45
Q_{pB}	=	2.60	Q_{pD}	=	5.02
Allowable Q_p	=	2.8 CFS	Developed Q_p	=	5.2 CFS



ISAACSON & ARFMAN, P.A.
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128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 www.iacivil.com

2052 CG-101.dwg Jul 14,2014

811 Know what's below. Call before you dig.

5656 PASADENA N.E.

MECHENBIER CONSTRUCTION

GRADING & DRAINAGE PLAN

Date: 7/14/14	No.	Revision:	Date:	Job No. 2052	
Drawn By: BJB				CG-101	
Ckd By: FCA				SH. OF	