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FEBRUARY 21, 2012

MASTER DRAINAGE REPORT

FOR

SANTA MONICA PLACE
San Pedro Blvd. and Derickson Ave. NE

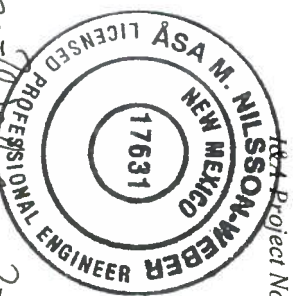
BY

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates

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

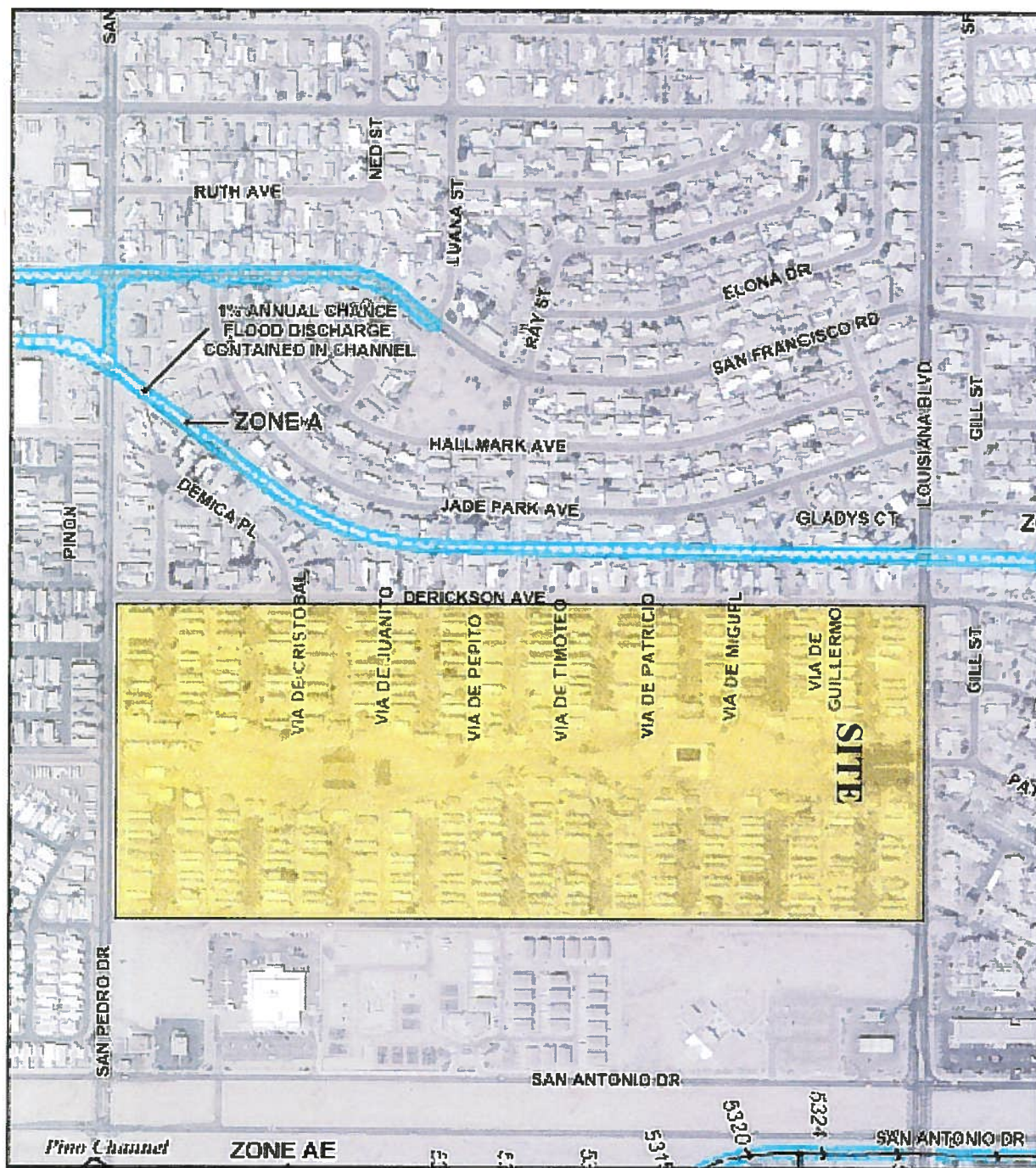


Project No. 1900



Prepared by:

Åsa Nilsson-Weber
Åsa Nilsson-Weber, PE Date 2-21-12



MAP SCALE 1" = 500'



PANEL 0137G

FIRM

FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO
AND INCORPORATED AREAS

PANEL 137 OF 825

(SEE MAP INDEX FOR PANEL LAYOUT)

CONTROLS

COMMUNITY	MAINTENANCE	PAID	SUPPLY
BERNALILLO COUNTY	MAINT	PAID	SUPPLY
INCORPORATED AREAS	MAINT	PAID	SUPPLY

Notes to User: The map number shown below should be used when ordering this map. The map number shown below is for the map shown above. For the latest product information, visit the FEMA Flood Map Service Center website at www.fema.gov.

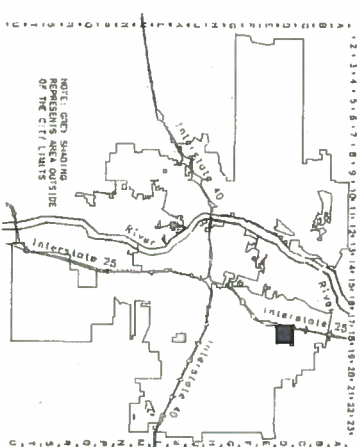
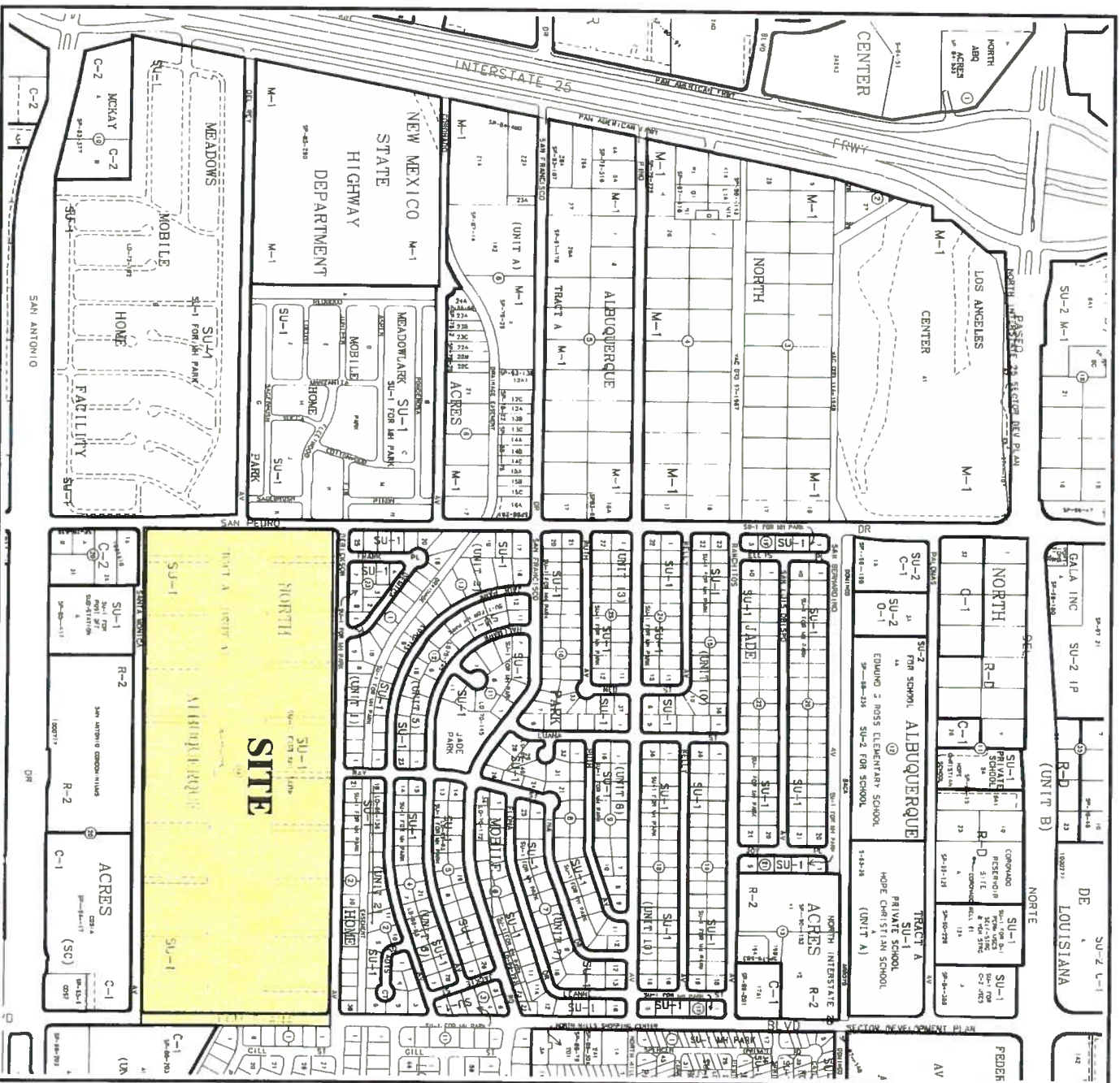


MAP NUMBER
35001C0137G

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using FIRM Online. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information, visit the FEMA Flood Map Service Center website at www.fema.gov.



A-1-S
Planning Department
Copyright 2004



Zone Atlas Page
D-18-Z
Map Amended through February 01, 2015

I. PROJECT INFORMATION

LEGAL DESCRIPTION:

Tracts 1 thru 4, Santa Monica Place

TOTAL AREA:

58.19 Acres

FLOOD PLAIN:

Zone X

This site lies outside the 100-year flood based on FIRM Map No. 35001C0137G
Map Revision date: September 26, 2008

ENGINEER:

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Albuquerque, NM 87108
(505) 268-8828
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(505) 897-3366
Attn: Russ P. Hugg, NMPLS No. 9750

LAND OWNER:

Del Rey Investments
c/o Titan Development
6300 Riverside Plaza Lane NW - #200
Albuquerque, NM 87120-2617
Attn: Kurt Browning

II. INTRODUCTION

This report is a master drainage study for the 58.2-acre Santa Monica Place property and includes analysis of street flow and storm drain capacity to determine allowable runoff from each tract. The site is bound by Derickson Ave. NE to the north, by Louisiana Blvd. NE to the east, by Santa Monica Ave. NE to the south and by San Pedro Blvd. NE to the west. The site was previously developed as a mobile home park and there are existing concrete building pads, paved driving aisles and parking areas, though all mobile home buildings have been relocated.

A zone change was approved in June, 2011, and a re-plat was filed on January 6, 2012, dividing the site into four tracts. The *Conceptual Drainage Report* by Isaacson & Arfman, P.A., dated December 12, 2011, outlined general drainage requirements for each tract. The purpose of this master drainage report is to analyze flow carrying capacity of adjacent streets and storm drains, determine allowable discharge for each tract, and address interim drainage mitigation.

The proposed zoning and acreage of each tract is provided in the following table.

TRACT	ZONED	ACREAGE
Tract 1	R-2	9.2673 Acres
Tract 2	R-2	13.9846 Acres
Tract 3	R-T	19.3638 Acres
Tract 4	R-LT	15.5781 Acres

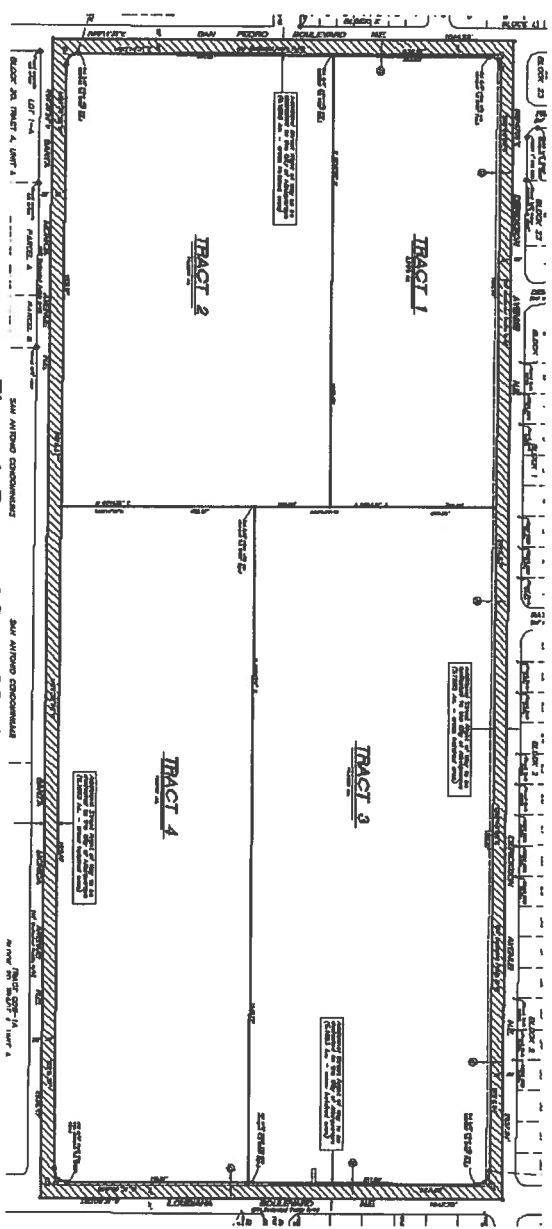


Figure 1: Proposed Santa Monica Place

Tracts 1 & 2 will be developed with apartments, and Tracts 3 & 4 will be developed with residential housing. Tract 2 will be the first tract to be developed and is currently in the design phase as Broadstone Santa Monica Apartments.

III. EXISTING CONDITIONS

The majority of the site discharges to the northwest and enters the existing public storm sewer system inlets near the intersection of Derickson Ave. and San Pedro Blvd. NE.

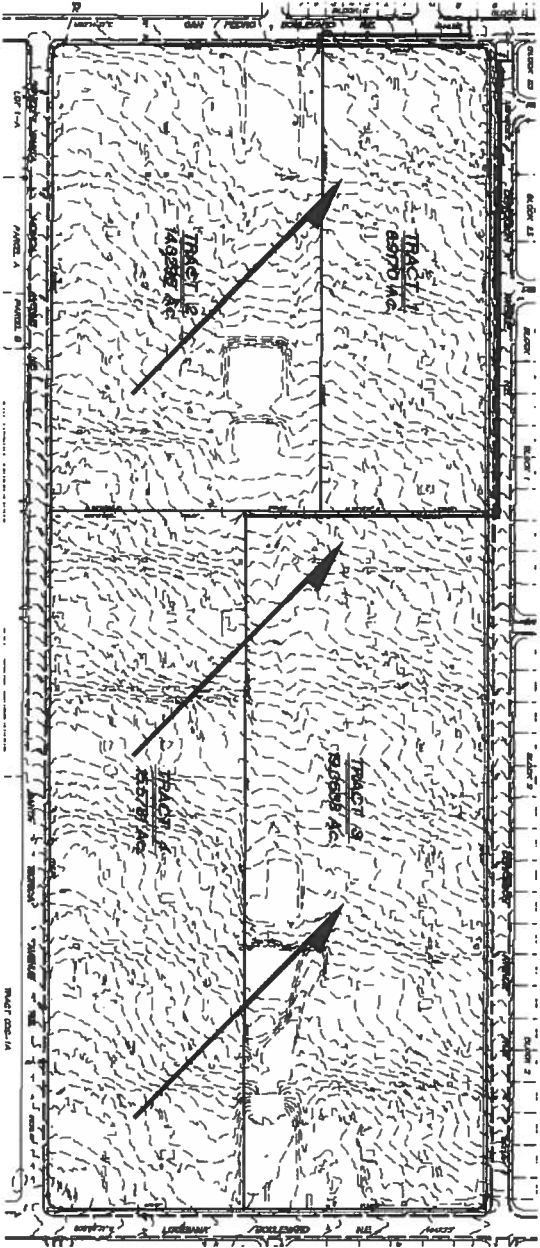


Figure 2: Existing Drainage Patterns

The existing public storm drain system at the intersection of Derickson Ave. and San Pedro Blvd. includes a 48" pipe east to an existing cattle guard inlet in Derickson Ave. and a 36" pipe south to collect street flow from four existing curb inlets in San Pedro Blvd. The flows are conveyed north in a 60" storm drain to the North Pino Arroyo. There are also four additional curb inlets in San Pedro Blvd. between Derickson Ave. and the North Pino Arroyo.

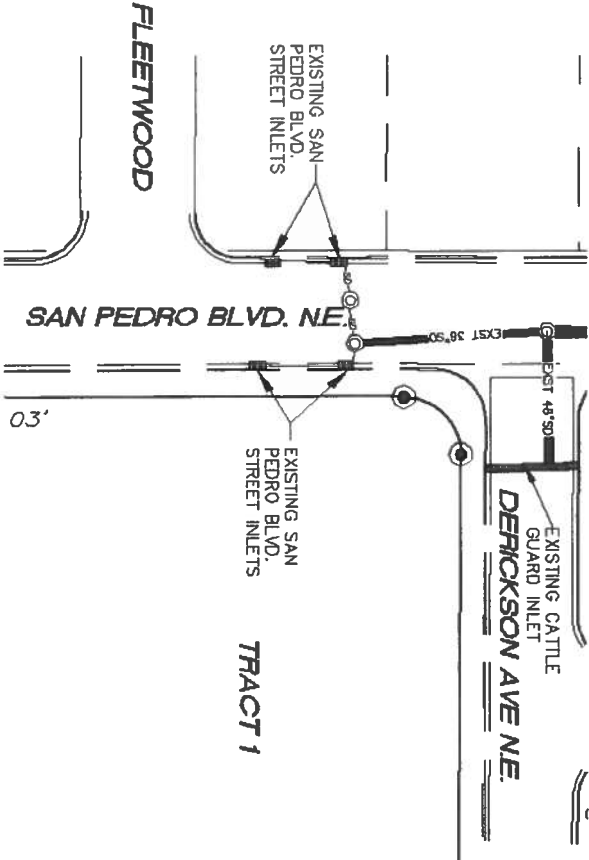


Figure 3: Existing Public Storm Sewer System

Appendix A contains Basin Area and Land Treatment tables. AHYMO was used to calculate flows for the onsite basins (EX-1 thru EX-3) along with the offsite flows (OFF-1 thru OFF-11) contributing to the street flows in Santa Monica Ave., Derickson Ave. and San Pedro Blvd.—see Appendix B.

The site was previously analyzed in 2008, in the Drainage Report for Monterra Del Rey, Units 1-3, by Isaacson & Artman P.A. This report based the offsite flow information on the Study Phase Letter Report for San Pedro Collectors to the North Pino Arroyo, by Thompson Engineering Consultants, Inc., dated April 2004. The Study Phase Report showed offsite flows of 139.7 cfs entering the Santa Monica Ave./San Pedro Blvd. intersection from the adjacent tracts south of Santa Monica Ave., and it appeared to include half-street flows from Louisiana Blvd.

The offsite flows were re-analyzed for this report. Research of approved grading plans on file with City Hydrology shows that portions of the adjacent tracts south of Santa Monica Ave. drain south to a storm drain system in San Antonio Ave. and portions have controlled outflow to Santa Monica Ave. Based on this research, the actual offsite street flow entering Santa Monica Ave. before the San Pedro Blvd. intersection is 37.8 cfs (including the Santa Monica Ave. basin). The topographic survey for the site shows that there are water blocks in both Santa Monica Ave. and Derickson Ave. preventing flows from Louisiana Blvd. from entering.

The Existing Drainage Basin Exhibit in the back pocket lists the onsite flows (EX-1 through EX-3), offsite flows (OFF-1 through OFF-11), along with references to the approved grading plans where this information was gathered, where applicable. Flows were calculated in AHYMO for two undeveloped commercial parcels (OFF-1 and OFF-7), for Santa Monica Ave., Derickson Ave., and San Pedro Blvd. (OFF-2, OFF-9 and OFF-8); and for the offsite basins north of Derickson Ave. (OFF-10 and OFF-11).

The existing street flow upstream of the existing cattle guard inlet in Derickson Ave. is 147.6 cfs, and the street flow upstream of the existing inlets in San Pedro Blvd. is 177.1 cfs. Derickson Ave. has limited capacity since there is mountable curb on the north side of the street and existing flows are not contained within the right-of-way in this location.

IV. PROPOSED CONDITIONS

Tracts 1 & 2 will be developed with apartments, and Tracts 3 & 4, with residential housing. Tract 2 will be the first tract to be developed (currently in the design phase as Broadstone Santa Monica Apartments), and Tract 1 will be the second tract to be developed. Upon development of Tracts 3 and 4, a preliminary plat and infrastructure list shall be processed through the City of Albuquerque Development Review Board (DRB).

With the development of each tract, a grading and drainage plan and any supplemental drainage calculations shall be submitted to the City of Albuquerque.

Land treatments for Tract 2 were calculated based on the site plan for Broadstone Santa Monica Apartments, and for Tract 1 based on a conceptual layout for a potential future phase of the Broadstone Santa Monica Apartments. Tracts 3 & 4 (single-residential development) land treatments were estimated at 20%^B, 20%^C and 60%^D. See Appendix A for Basin Area and Land Treatment tables.

ALLOWABLE DISCHARGE FROM TRACTS 1-4

The Proposed Basin Exhibit in the back pocket shows the proposed flow rates based on the following allowable discharge locations:

- **Tract 1** shall be allowed either to surface discharge max. 10 cfs to Derickson Ave. or discharge 10 cfs to the onsite storm drain system connecting to the existing cattle guard inlet, and the remainder of 31.4 cfs shall surface flow to San Pedro Blvd. 41.4
- **Tract 2** shall be allowed to surface discharge 61.4 cfs to Santa Monica Ave. and San Pedro Blvd. Preliminary grading of the Broadstone Santa Monica Apartments indicates that approximately 20 cfs will discharge to Santa Monica Ave. and the remaining 41.4 cfs to San Pedro Blvd. ?
- **Tract 3** shall be allowed to surface discharge max. 10 cfs to Derickson Ave. and the remainder of 69.2 cfs into the storm drain system connecting to the Derickson Ave. storm drain. 79.2
- **Tract 4** shall be allowed to discharge 63.7 cfs into the storm drain system connecting to the Derickson Ave. storm drain, which is the basis for the calculations in this report. If feasible with grades, a portion may be discharged to Santa Monica Ave. and routed to San Pedro Blvd. since there is excess street capacity available—Santa Monica Ave. has capacity for 101.5 cfs, and San Pedro Blvd., 208 cfs at a flow depth at top of curb.

STREET CAPACITY

The street flows at key locations noted with Sections A through D are listed on the Proposed Basin Exhibit, and street flow capacity calculations are included in Appendix C. San Pedro Blvd. has a 12" curb on the west side, and an 8" curb on the east side, with the east side being higher. The street section at the south inlets 1 & 2 (see Storm Drain Exhibit in Appendix D for inlet numbers and location) was derived from the topographic survey for the project, and the street section at the north inlets 5 & 6 was estimated from the contours shown on the as-built storm drain plans included in Appendix G. The street capacity calculations show that flows are contained within the right-of-way at all locations—see summary below.

*visit by
site filed down
curtis on 3/29/12*

Section A-A Derickson Ave. east of existing cattle guard inlet

60' R/W; 40' F-F; mountable curb north side, standard curb south side
 $Q_{100}=57.1$ cfs, street depth=0.53'

Section B-B San Pedro Blvd. south of existing inlets 1 & 2

64' R/W; 48' F-F; standard curb west side, 12" curb east side
 $Q_{100}=149.4$ cfs, street depth=0.71' west, 0.58' east

see note above

Section C-C Santa Monica Ave. at San Pedro intersection

60' R/W; 40' F-F; standard curb both sides
 $Q_{100}=57.8$ cfs, street depth=0.56'

Section D-D San Pedro Blvd. south of existing inlets 5 & 6

64' R/W; 48' F-F; standard curb both sides
 $Q_{100}=102.0$ cfs, street depth=0.81' west, 0.48' east

typo

EXISTING INLETS

The storm drain exhibit in Appendix D shows the existing inlets curb inlets 1-8 in San Pedro Blvd. The inlet capacities were calculated using DPM Plates 22.3 D-5 and 22.3 D-6 based on street flow depths upstream of each inlet location per Sections B-B and D-D in Appendix C. Since San Pedro Blvd. is higher on the east end, the easterly inlets have less capacity than the westerly inlet.

The capacity of the existing cattle guard inlet in Derickson Ave. was approximated to 66 cfs (20 grates * 3.3 cfs/grate) using DPM Plate 22.3 D-5 based on a street flow depth of 0.3' at a cross slope of 0.4%, longitudinal slope of 2.5%—see Appendix C, Section A-A. The actual peak flow at this location is 57.1 cfs, so the inlet has capacity to capture all flows.

50% blockage?

STORM DRAIN

Derickson Ave. has limited street flow capacity because of mountable curb on north side, so the majority of the flows from the site shall be captured in a new storm drain. The storm drain shall be installed from the existing cattle guard inlet in Derickson Ave. to the north line of Tract 4. The following summarizes the flows entering the storm drain system.

• Tract 1	10 cfs max. surface flow to Derickson Ave. cattle guard inlet
• Tract 3	10 cfs max. surface flow to Derickson Ave. cattle guard inlet
	69.2 cfs to onsite storm drain
• Tract 4	63.7 cfs to onsite storm drain
• Derickson Ave. & Basin OFF-9	37.1 to Derickson Ave. cattle guard inlet
• Remaining Onsite & Offsite Basins	88 cfs to San Pedro Blvd. inlets
TOTAL:	278 cfs

Appendix D contains a storm drain exhibit, inlet capacity calculations and storm drain calculations. The existing storm drain was modeled from the North Pino Arroyo based on the as-built storm drain plans (included in Appendix G) with added flows at existing inlets per calculated capacities. Inverts and rim elevations shown for the new storm drain system to be installed with the development of Tracts 1, 3 and 4 are approximated based on existing ground elevations.

The storm drain calculations show that the HGL at the cattle guard inlet in Derickson Ave. is slightly above the grate, indicating that some flows may bypass the grate and continue to San Pedro Blvd. This is acceptable since San Pedro Blvd. has ample street flow capacity available (See Section D-D in Appendix C). Also, the AHYMO drainage calculations do not account for routing of flows through Derickson Ave., Santa Monica Ave., San Pedro Blvd, the streets in the future subdivisions (Tract 3 & 4) and through the storm drain, so in reality, the peak flows in the storm drain at the downstream end will be less.

The first portion of the storm drain system shall be installed with the Tract 2 development, including connection to the cattle guard inlet and approximately 300 feet of 48" storm drain that will terminate on Tract 1. A temporary inlet shall be constructed at the terminus of this line to capture interim, undeveloped flows from Tract 1.

Upon development of Tract 1, approximately 750 feet of 42" storm drain shall be extended to the Tract 1/Tract 3 line, and upon development of either Tract 3 or Tract 4 (whichever comes first) the storm drain (42"/36") shall be extended approximately 650 feet to the north line of Tract 4.

V. INTERIM CONDITIONS

Upon development of Tract 2 (Broadstone Santa Monica Apartments), the west half of the site including all of Tracts 1 and 2 and a portion to the east shall be demolished. Interim grading and drainage shall be required to redirect flows around the Tract 2 development. Per an easement noted on Sheet 4 of the filed plat, interim cross-lot surface drainage and interim grading improvements on the adjacent undeveloped tracts are allowed (see Appendix F).

Appendix A shows land treatment and basin area tabulations for onsite Interim Basins INT-1 thru INT-3, and AHYMO calculations are included in Appendix B. The Interim Drainage Basin Exhibit shows the interim grading and drainage improvements that shall be constructed with the development of Tract 2 as listed below.

- A storm water deflection berm shall be constructed to direct the flows to a temporary inlet at the terminus of the new 48" storm drain that shall capture all flows from INT-1 (future Tract 1).
- A berm shall be constructed between Tracts 1 & 2 and Tracts 2 & 4 and the flows from basin INT-2 shall be diverted via a swale to a detention pond with a 10-foot wide weir with overflow to Derickson Ave.

The pond volumes and weir overflow at various depths were calculated (see Appendix E) and used to route the flows through the pond in AHYMO. The maximum storage volume in the pond at a maximum outflow of 26.8 cfs is 1.9 ac-ft.

Basin INT-3 (not demolished) shall be allowed to discharge per historical pattern to Derickson Ave. The total interim street flow in Derickson Ave. east of the cattle guard inlet will be 105.9 cfs, which is less than the existing flows of 147.6 cfs.

Upon development of Tract 1, the temporary inlet shall be removed, and upon development of Tracts 3 or 4 (whichever comes first), the detention pond shall be removed. Should Tract 3 development precede Tract 4, an interim detention pond shall be constructed on Tract 4 to mitigate undeveloped flows.

VI. SUMMARY AND CONCLUSIONS

Santa Monica Place consists of four tracts. Tracts 1 & 2 will be developed with apartments and Tracts 3 & 4 with residential housing. Tract 2 will be the first tract to be developed and is currently in the design phase as Broadstone Santa Monica Apartments, and Tract 1 will be the second tract to develop.

Upon development of each tract, a grading and drainage plan and any supplemental drainage calculations shall be submitted to the City of Albuquerque.

This master drainage study provides a determination of the allowable discharge rates and locations for Tracts 1 through 4 in order to maintain adequate capacity in the Derickson Ave. storm drain system and adequate street flow capacity in all adjacent streets.

The allowable discharge and required drainage improvements for each tract are listed below.

ALLOWABLE DISCHARGE:

- **Tract 1** shall be allowed to surface discharge max. 10 cfs to Derickson Ave. or directly into the onsite storm drain system connecting to the existing cattle guard inlet. The remainder of 31.4 cfs shall surface flow to San Pedro Blvd.
- **Tract 2** shall be allowed to surface discharge 61.4 cfs to Santa Monica Ave. and San Pedro Blvd. Preliminary grading of the Broadstone Santa Monica Apartments indicates that approximately 20 cfs will discharge to Santa Monica Ave. and the remaining 41.4 cfs to San Pedro Blvd.
- **Tract 3** shall be allowed to surface discharge max. 10 cfs to Derickson Ave. and the remainder of 69.2 cfs into the storm drain system connecting to the Derickson Ave. storm drain.
- **Tract 4** shall be allowed to discharge 63.7 cfs into the storm drain system connecting to the Derickson Ave. storm drain, which is the basis for the calculations in this report. If feasible with grades, a portion may also be discharged to Santa Monica since there is excess street capacity available.

REQUIRED DRAINAGE IMPROVEMENTS:

- **Tract 2** (first tract to develop) shall install connection to the cattle guard inlet and approximately 300 LF of 48" storm drain that will terminate on Tract 1. A 20' public storm drain easement for the onsite portion of the 48" storm drain shall be granted to the City and be recorded. A temporary inlet shall be constructed on Tract 1 at the terminus of the 48" storm drain, and a 1.9 ac-ft temporary detention/desiltation pond with a 10-foot overflow weir shall be constructed on Tract 3.
- **Tract 1** (second tract to develop) shall remove the temporary inlet and install 42" storm drain to east line of Tract 1 (approximately 750 LF). A 20' public storm drain easement for the storm drain shall be granted to the City and be recorded.
- **Tract 3** (if preceding Tract 4 development) shall remove temporary detention/desiltation pond and install 42"/36" storm drain from east line of Tract 1 to north line of Tract 4 (approximately 650 LF). A temporary pond shall be constructed on Tract 4 to detain undeveloped flows.
- **Tract 4** (if preceding Tract 3 development) shall install 42"/36" storm drain from east line of Tract 1 to north line of Tract 4 (approximately 650 LF).

APPENDIX A

LAND TREATMENTS & BASIN AREAS

LAND TREATMENT TABLE						
PROJECT NAME		Santa Monica Place				
PROJECT #		1900				
BASIN ID	%A	%B	%C	%D		
Proposed Onsite						
P1 (B.)	0	5	20	75	Tract 1 (apartments)	
P2 (A.)	0	5	25	70	Tract 2 (apartments)	
P3 (G.)	0	20	20	60	Tract 3 (residential)	
P4 (G.)	0	20	20	60	Tract 4 (residential)	
BASIN ID	%A	%B	%C	%D		
Existing Onsite						
EX-1 (C.)	0	23	23	54	To Derickson	
EX-2 (C.)	0	23	23	54	To San Pedro	
EX-3 (C.)	0	23	23	54	To San Pedro	
BASIN ID	%A	%B	%C	%D		
Offsite						
OFF-1 (D.)	0	0	15	85	Undeveloped portion of Grace Lutheran Church	
OFF-2 (E.)	0	0	14	86	Santa Monica	
OFF-3		KNOWN Q			US Postoffice	
OFF-4		KNOWN Q			San Antonio Condos	
OFF-5		KNOWN Q			Family Dollar	
OFF-6		KNOWN Q			Sandia Dog Obedience School	
OFF-7 (D.)	0	0	15	85	Undeveloped tract (commercial)	
OFF-8 (E.)	0	0	14	86	San Pedro	
OFF-9 (E.)	0	0	16	84	Derickson	
OFF-10 (F.)	0	31	32	37	Land north of Derickson draining to Derickson	
OFF-11 (F.)	0	35	35	30	Land north of Derickson draining to San Pedro	
BASIN ID	%A	%B	%C	%D		
Interim Onsite						
INT-1		23	23	54	Demolished Tract 1-A	
INT-2		18	41	41	Partially Demolished Tracts 3-A & 4-A	
INT-3		23	23	54	Un-demolished Portion of Tract 3-A	
LAND TREATMENT NOTES:						

BASIN AREA TABLE						
PROJECT NAME		Santa Monica Place				
PROJECT #		1900				
BASIN ID	AREA (sf)	AREA (Ac)	AREA (sq. mi.)	Q100 (cfs)		
<i>Proposed Onsite</i>						
P1	403,685	9.2673	0.01448	41.4	Tract 1 (apartments)	
P2	609,171	13.9846	0.02185	61.4	Tract 2 (apartments)	
P3	843,489	19.3638	0.03026	79.2	Tract 3 (residential)	
P4	678,582	15.5781	0.02434	63.7	Tract 4 (residential)	
TOTAL AREA =	2,534,925.72	58.1939	0.09093	245.7		
BASIN ID	AREA (sf)	AREA (Ac)	AREA (sq. mi.)	Q100 (cfs)		
<i>Existing Onsite</i>						
EX-1	1,212,909	27.8446	0.04351	110.5	To Derickson	
EX-2	1,206,333	27.6936	0.04327	109.9	To San Pedro	
EX-3	115,683	2.6557	0.00415	10.6	To San Pedro	
TOTAL AREA =	2,534,925.72	58.1939	0.09093	231.0		
BASIN ID	AREA (sf)	AREA (Ac)	AREA (sq. mi.)	Q100 (cfs)		
<i>Offsite</i>						
OFF-1	6,894	0.1583	0.00025	0.8	Undeveloped portion of Grace Lutheran Church	
OFF-2	154,737	3.5523	0.00555	16.6	Santa Monica	
OFF-3	KNOWN Q--SEE NOTE A			8.5	US Postoffice	
OFF-4	KNOWN Q--SEE NOTE B			11.9	San Antonio Condos	
OFF-5	KNOWN Q--SEE NOTE C			3.4	Family Dollar	
OFF-6	KNOWN Q--SEE NOTE D			2.1	Sandia Dog Obedience School	
OFF-7	27,864	0.6397	0.00100	3.0	Undeveloped tract (commercial)	
OFF-8	95,457	2.1914	0.00342	10.3	San Pedro	
OFF-9	153,198	3.5169	0.00550	16.4	Derickson	
OFF-10	248,760	5.7107	0.00892	20.7	Land north of Derickson draining to Derickson	
OFF-11	266,417	6.1161	0.00956	21.3	Land north of Derickson draining to San Pedro	
TOTAL AREA =	953,325.42	21.8853	0.034196	115.0		
BASIN ID	AREA (sf)	AREA (Ac)	AREA (sq. mi.)	Q100 (cfs)		
<i>Interim Onsite</i>						
INT-1	403,685	9.2673	0.01448	30.7	Demolished Tract 1-A	
INT-2	1,060,506	24.3459	0.03804	92.6	Partially Demolished Tracts 3-A & 4-A	
INT-3	461,564	10.5961	0.01656	42.0	Un-demolished Portion of Tract 3-A	
TOTAL AREA =	1,925,755.10	44.2093	0.06908	165.3		
BASIN NOTES						
A. PER GRADING PLAN FOR US POST OFFICE, BY CHAVEZ-GRIEVES, DATED MARCH 1987.						
B. PER DRAINAGE REPORT FOR SAN ANTONIO CONDOS, BY ISAACSON & ARFMAN, DATED APRIL 1999.						
C. PER GRADING PLAN FOR FAMILY DOLLAR, BY MARK GOODWIN & ASSOC., DATED APRIL 2002.						
D. PER GRADING PLAN FOR SANDIA DOG OBEDIENCE SCHOOL, BY MARK GOODWIN & ASSOC., DATED MAY 2002.						

APPENDIX B

DRAINAGE CALCULATIONS

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*****
*S      SANTA MONICA PLACE MASTER DRAINAGE PLAN
*S      UNDEVELOPED, DEVELOPED AND INTERIM CONDITIONS
*S      100-YR, 6-HR STORM
*S      1900.DAT
*S      FEBRUARY 1, 2012
*S      BY ASA NILSSON-WEBER
*S      ISAACSON & AREMAN, P.A.
*****
START      RAINFALL BEGINS AT 0.0 HRS
RAINFALL   TYPE=2 RAIN QUARTER=0 RAIN ONE=2.1
            RAIN SIX=2.45 RAIN DAY=2.85 DT=0.03333HR

*S
*S      ONSITE BASINS-DEVELOPED CONDITION
*S
*S      BASIN P1--TRACT 1
        COMPUTE NM HYD
            ID=1 HYD NO=100 AREA=0.01448 SQ MI
            PER A=0 PER B=5 PER C=20 PER D=75
            TP=-0.1333 HR      MASS RAIN=-1
            ID=1      CODE=1
        PRINT HYD
        *S      BASIN P2--TRACT 2
        COMPUTE NM HYD
            ID=2 HYD NO=200 AREA=0.02185 SQ MI
            PER A=0 PER B=5 PER C=25 PER D=70
            TP=-0.1333 HR      MASS RAIN=-1
            ID=2      CODE=1
        PRINT HYD
        *S      BASIN P3--TRACT 3
        COMPUTE NM HYD
            ID=3 HYD NO=300 AREA=0.03026 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=-0.1333 HR      MASS RAIN=-1
            ID=3      CODE=1
        PRINT HYD
        *S      BASIN P4--TRACT 4
        COMPUTE NM HYD
            ID=4 HYD NO=400 AREA=0.02434 SQ MI
            PER A=0 PER B=20 PER C=20 PER D=60
            TP=-0.1333 HR      MASS RAIN=-1
            ID=4      CODE=1
        PRINT HYD
        *S
        *S      ONSITE BASINS-EXISTING CONDITION
        *S
        *S      BASIN EX1
        COMPUTE NM HYD
            ID=5 HYD NO=500 AREA=0.04351 SQ MI
            PER A=0 PER B=23 PER C=23 PER D=54
            TP=-0.1333 HR      MASS RAIN=-1
            ID=5      CODE=1
        PRINT HYD
        *S      BASIN EX2
        COMPUTE NM HYD
            ID=6 HYD NO=600 AREA=0.04327 SQ MI
            PER A=0 PER B=23 PER C=23 PER D=54
            TP=-0.1333 HR      MASS RAIN=-1
            ID=6      CODE=1
        PRINT HYD
        *S      BASIN EX3
        COMPUTE NM HYD
            ID=7 HYD NO=700 AREA=0.00415 SQ MI
            PER A=0 PER B=23 PER C=23 PER D=54
            TP=-0.1333 HR      MASS RAIN=-1
            ID=7      CODE=1
        PRINT HYD
        *S
```

*S OFFSITE BASINS
*S
*S BASIN OFF-1--PORTION OF GRACE LUTHERAN CHURCH
COMPUTE NM HYD ID=11 HYD NO=110 AREA=0.00025 SQ MI
PER A=0 PER B=0 PER C=15 PER D=85
TP=-0.1333 HR MASS RAIN=-1
ID=11 CODE=1
PRINT HYD
*S BASIN OFF-2--SANTA MONICA
COMPUTE NM HYD ID=12 HYD NO=120 AREA=0.00555 SQ MI
PER A=0 PER B=0 PER C=16 PER D=84
TP=-0.1333 HR MASS RAIN=-1
ID=12 CODE=1
PRINT HYD
*S BASIN OFF-3--US POSTOFFICE
*S KNOWN Q=8.5 CFS
*S BASIN OFF-4--SAN ANTONIO CONDOS
*S KNOWN Q=11.9 CFS
*S BASIN OFF-5--FAMILY DOLLAR
*S KNOWN Q=3.4
*S BASIN OFF-6--SANDIA DOG OBEDIENCE SCHOOL
*S KNOWN Q=2.1 CFS
*S BASIN OFF-7--UNDEVELOPED COMMERCIAL PARCEL *
COMPUTE NM HYD ID=17 HYD NO=170 AREA=0.00100 SQ MI
PER A=0 PER B=0 PER C=15 PER D=85
TP=-0.1333 HR MASS RAIN=-1
ID=17 CODE=1
PRINT HYD
*S BASIN OFF-8--SAN PEDRO
COMPUTE NM HYD ID=18 HYD NO=180 AREA=0.00342 SQ MI
PER A=0 PER B=0 PER C=14 PER D=86
TP=-0.1333 HR MASS RAIN=-1
ID=18 CODE=1
PRINT HYD
*S BASIN OFF-9--DERICKSON
COMPUTE NM HYD ID=19 HYD NO=190 AREA=0.00550 SQ MI
PER A=0 PER B=0 PER C=16 PER D=84
TP=-0.1333 HR MASS RAIN=-1
ID=19 CODE=1
PRINT HYD
*S BASIN OFF-10--LOTS N. OF DERICKSON DRAINING TO DERICKSON
COMPUTE NM HYD ID=20 HYD NO=200 AREA=0.00892 SQ MI
PER A=0 PER B=31 PER C=32 PER D=37
TP=-0.1333 HR MASS RAIN=-1
ID=20 CODE=1
PRINT HYD
*S BASIN OFF-11--LOTS N. OF DERICKSON DRAINING TO SAN PEDRO
COMPUTE NM HYD ID=21 HYD NO=210 AREA=0.00956 SQ MI
PER A=0 PER B=35 PER C=35 PER D=30
TP=-0.1333 HR MASS RAIN=-1
ID=21 CODE=1
PRINT HYD
*S INTERIM BASINS
*S TRACT A-2 DEVELOPED; TRACTS A1, A3 & A-4 UNDEVELOPED
*S
*S BASIN INT-1--TRACT 1 UNDEVELOPED TO TEMPORARY INLET
COMPUTE NM HYD ID=30 HYD NO=310 AREA=0.01448 SQ MI
PER A=0 PER B=0 PER C=100 PER D=0
TP=-0.1333 HR MASS RAIN=-1
ID=30 CODE=1
PRINT HYD

*S BASIN INT-2-PORTION OF TRACTS 3 & 4-PARTIALLY DEMOLISHED
COMPUTE NM HYD ID=31 HYD NO=311 AREA=0.03804 SQ MI

PER A=0 PER B=18 PER C=41 PER D=41
TP=-0.1333 HR MASS RAIN=-1

PRINT HYD ID=31 CODE=1
*S BASIN INT-3-PORTION OF TRACT 3 NOT DEMOLISHED
COMPUTE NM HYD ID=32 HYD NO=312 AREA=0.01656 SQ MI

PER A=0 PER B=23 PER C=23 PER D=54
TP=-0.1333 HR MASS RAIN=-1

PRINT HYD ID=32 CODE=1
*S ROUTE BASIN INT-2 THROUGH POND
ROUTE RESERVOIR ID=33 HYD NO=313 INFLOW ID=31 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.00	0.000	5282.0
0.01	0.9894	5283.0
11.8	1.5152	5283.5
33.3	2.0632	5284.0
61.2	2.6342	5284.5

PRINT HYD ID=33 CODE=1
FINISH

Retention

RUN DATE (MON/DAY/YR) =02/06/2012
USER NO.= AHYMO-S-9702dIsa-Arfman3

```
TIME=          .00
RAIN24=        2.850
```

[illegible]

AHYMO PROGRAM (AHYMO_97) -

- Version: 1997.02d

RUN DATE (MON/DAY/YR) = 02/06/2012

START TIME (HR:MIN:SEC) = 08:27:51

USER NO.= AHYMO-S-9702dIsa-Arfman3

INPUT FILE = 1900.DAT

*S*****
*S SANTA MONICA PLACE MASTER DRAINAGE PLAN
*S UNDEVELOPED, DEVELOPED AND INTERIM CONDITIONS
*S 100-YR, 6-HR STORM
*S 1900.DAT
*S FEBRUARY 1, 2012
*S BY ASA NILSSON-WEBER
*S ISAACSON & ARFMAN, P.A.

*S*****

START RAINFALL BEGINS AT 0.0 HRS

RAINFALL TYPE=2 RAIN QUARTER=0 RAIN ONE=2.1

RAIN SIX=2.45 RAIN DAY=2.85 DT=0.03333HR

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 19.964670 HOURS

.0000	.0016	.0033	.0050	.0067	.0085	.0103
.0122	.0141	.0161	.0181	.0202	.0223	.0244
.0267	.0290	.0314	.0338	.0364	.0390	.0417
.0445	.0475	.0505	.0537	.0570	.0605	.0641
.0679	.0720	.0763	.0821	.0883	.0949	.1091
.1410	.1900	.2605	.3566	.4830	.6441	.8447
1.0895	1.3168	1.4117	1.4918	1.5631	1.6279	1.6876
1.7430	1.7948	1.8433	1.8890	1.9321	1.9728	2.0114
2.0479	2.0825	2.1153	2.1465	2.1761	2.1829	2.1892
2.1952	2.2009	2.2063	2.2115	2.2165	2.2213	2.2259
2.2304	2.2347	2.2388	2.2429	2.2468	2.2506	2.2543
2.2580	2.2615	2.2649	2.2683	2.2716	2.2748	2.2779
2.2810	2.2840	2.2869	2.2898	2.2927	2.2955	2.2982
2.3009	2.3035	2.3061	2.3087	2.3112	2.3137	2.3161
2.3185	2.3209	2.3232	2.3255	2.3278	2.3300	2.3322
2.3344	2.3365	2.3387	2.3408	2.3428	2.3449	2.3469
2.3489	2.3509	2.3528	2.3547	2.3567	2.3585	2.3604
2.3623	2.3641	2.3659	2.3677	2.3695	2.3712	2.3729
2.3747	2.3764	2.3781	2.3797	2.3814	2.3830	2.3847
2.3863	2.3879	2.3895	2.3910	2.3926	2.3942	2.3957

2.3972	2.3987	2.4002	2.4017	2.4032	2.4046	2.4061
2.4075	2.4090	2.4104	2.4118	2.4132	2.4146	2.4160
2.4173	2.4187	2.4200	2.4214	2.4227	2.4240	2.4254
2.4267	2.4280	2.4292	2.4305	2.4318	2.4331	2.4343
2.4356	2.4368	2.4380	2.4393	2.4405	2.4417	2.4429
2.4441	2.4453	2.4465	2.4476	2.4488	2.4500	2.4511
2.4523	2.4534	2.4546	2.4557	2.4568	2.4580	2.4591
2.4602	2.4614	2.4625	2.4636	2.4647	2.4658	2.4670
2.4681	2.4692	2.4703	2.4714	2.4725	2.4736	2.4747
2.4758	2.4769	2.4779	2.4790	2.4801	2.4812	2.4823
2.4833	2.4844	2.4855	2.4866	2.4876	2.4887	2.4897
2.4908	2.4919	2.4929	2.4940	2.4950	2.4961	2.4971
2.4981	2.4992	2.5002	2.5013	2.5023	2.5033	2.5043
2.5054	2.5064	2.5074	2.5084	2.5095	2.5105	2.5115
2.5125	2.5135	2.5145	2.5155	2.5165	2.5175	2.5185
2.5195	2.5205	2.5215	2.5225	2.5235	2.5244	2.5254
2.5264	2.5274	2.5284	2.5293	2.5303	2.5313	2.5323
2.5332	2.5342	2.5352	2.5361	2.5371	2.5380	2.5390
2.5399	2.5409	2.5418	2.5428	2.5437	2.5447	2.5456
2.5466	2.5475	2.5484	2.5494	2.5503	2.5512	2.5522
2.5531	2.5540	2.5549	2.5559	2.5568	2.5577	2.5586
2.5595	2.5605	2.5614	2.5623	2.5632	2.5641	2.5650
2.5659	2.5668	2.5677	2.5686	2.5695	2.5704	2.5713
2.5722	2.5731	2.5739	2.5748	2.5757	2.5766	2.5775
2.5784	2.5792	2.5801	2.5810	2.5819	2.5827	2.5836
2.5845	2.5853	2.5862	2.5871	2.5879	2.5888	2.5897
2.5905	2.5914	2.5922	2.5931	2.5939	2.5948	2.5956
2.5965	2.5973	2.5982	2.5990	2.5999	2.6007	2.6015
2.6024	2.6032	2.6040	2.6049	2.6057	2.6065	2.6074
2.6082	2.6090	2.6098	2.6107	2.6115	2.6123	2.6131
2.6140	2.6148	2.6156	2.6164	2.6172	2.6180	2.6188
2.6196	2.6204	2.6212	2.6221	2.6229	2.6237	2.6245
2.6253	2.6261	2.6268	2.6276	2.6284	2.6292	2.6300
2.6308	2.6316	2.6324	2.6332	2.6340	2.6347	2.6355
2.6363	2.6371	2.6379	2.6386	2.6394	2.6402	2.6410
2.6417	2.6425	2.6433	2.6440	2.6448	2.6456	2.6463
2.6471	2.6479	2.6486	2.6494	2.6502	2.6509	2.6517
2.6524	2.6532	2.6539	2.6547	2.6554	2.6562	2.6569
2.6577	2.6584	2.6592	2.6599	2.6607	2.6614	2.6621

2.6629	2.6636	2.6644	2.6651	2.6658	2.6666	2.6673
2.6680	2.6688	2.6695	2.6702	2.6709	2.6717	2.6724
2.6731	2.6738	2.6746	2.6753	2.6760	2.6767	2.6774
2.6782	2.6789	2.6796	2.6803	2.6810	2.6817	2.6824
2.6832	2.6839	2.6846	2.6853	2.6860	2.6867	2.6874
2.6881	2.6888	2.6895	2.6902	2.6909	2.6916	2.6923
2.6930	2.6937	2.6944	2.6951	2.6958	2.6964	2.6971
2.6978	2.6985	2.6992	2.6999	2.7006	2.7013	2.7019
2.7026	2.7033	2.7040	2.7047	2.7053	2.7060	2.7067
2.7074	2.7081	2.7087	2.7094	2.7101	2.7107	2.7114
2.7121	2.7128	2.7134	2.7141	2.7148	2.7154	2.7161
2.7167	2.7174	2.7181	2.7187	2.7194	2.7200	2.7207
2.7214	2.7220	2.7227	2.7233	2.7240	2.7246	2.7253
2.7259	2.7266	2.7272	2.7279	2.7285	2.7292	2.7298
2.7305	2.7311	2.7318	2.7324	2.7331	2.7337	2.7343
2.7350	2.7356	2.7362	2.7369	2.7375	2.7382	2.7388
2.7394	2.7401	2.7407	2.7413	2.7420	2.7426	2.7432
2.7438	2.7445	2.7451	2.7457	2.7463	2.7470	2.7476
2.7482	2.7488	2.7495	2.7501	2.7507	2.7513	2.7519
2.7526	2.7532	2.7538	2.7544	2.7550	2.7556	2.7562
2.7569	2.7575	2.7581	2.7587	2.7593	2.7599	2.7605
2.7611	2.7617	2.7623	2.7629	2.7635	2.7641	2.7648
2.7654	2.7660	2.7666	2.7672	2.7678	2.7684	2.7690
2.7695	2.7701	2.7707	2.7713	2.7719	2.7725	2.7731
2.7737	2.7743	2.7749	2.7755	2.7761	2.7767	2.7772
2.7778	2.7784	2.7790	2.7796	2.7802	2.7808	2.7813
2.7819	2.7825	2.7831	2.7837	2.7843		

*S

*S ONSITE BASINS-DEVELOPED CONDITION

*S

*S BASIN P1--TRACT 1

COMPUTE NM HYD ID=1 HYD NO=100 AREA=0.01448 SQ MI

PER A=0 PER B=5 PER C=20 PER D=75

TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 42.876 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 2.1000

AREA = .010860 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .113404HR TP = .133300HR K/TP RATIO = .850740 SHAPE CONSTANT, N = 4.183841
 UNIT PEAK = 9.9732 CFS UNIT VOLUME = .9989 B = 367.25 P60 = 2.1000
 AREA = .003620 SQ MI IA = .38000 INCHES INF = .91400 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 2.19257 INCHES = 1.6932 ACRE-FEET
 PEAK DISCHARGE RATE = 41.41 CFS AT 1.500 HOURS BASIN AREA = .0145 SQ. MI.

*S BASIN P2--TRACT 2

COMPUTE NM HYD ID=2 HYD NO=200 AREA=0.02185 SQ MI
 PER A=0 PER B=5 PER C=25 PER D=70
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 60.385 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.1000
 AREA = .015295 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .112580HR TP = .133300HR K/TP RATIO = .844560 SHAPE CONSTANT, N = 4.217280
 UNIT PEAK = 18.165 CFS UNIT VOLUME = .9995 B = 369.41 P60 = 2.1000
 AREA = .006555 SQ MI IA = .37500 INCHES INF = .90000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = 2.12594 INCHES = 2.4774 ACRE-FEET
 PEAK DISCHARGE RATE = 61.36 CFS AT 1.500 HOURS BASIN AREA = .0219 SQ. MI.

*S BASIN P3--TRACT 3

COMPUTE NM HYD ID=3 HYD NO=300 AREA=0.03026 SQ MI
 PER A=0 PER B=20 PER C=20 PER D=60
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 71.681 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.1000
 AREA = .018156 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .120817HR TP = .133300HR K/TP RATIO = .906356 SHAPE CONSTANT, N = 3.908546
UNIT PEAK = 31.692 CFS UNIT VOLUME = 1.000 B = 349.03 P60 = 2.1000
AREA = .012104 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.93466 INCHES = 3.1223 ACRE-FEET
PEAK DISCHARGE RATE = 79.22 CFS AT 1.500 HOURS BASIN AREA = .0303 SQ. MI.

*S BASIN P4--TRACT 4

COMPUTE NM HYD ID=4 HYD NO=400 AREA=0.02434 SQ MI
PER A=0 PER B=20 PER C=20 PER D=60
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 57.657 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.1000
AREA = .014604 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .120817HR TP = .133300HR K/TP RATIO = .906356 SHAPE CONSTANT, N = 3.908546
UNIT PEAK = 25.492 CFS UNIT VOLUME = .9999 B = 349.03 P60 = 2.1000
AREA = .009736 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA 400.00

RUNOFF VOLUME = 1.93466 INCHES = 2.5114 ACRE-FEET
PEAK DISCHARGE RATE = 63.73 CFS AT 1.500 HOURS BASIN AREA = .0243 SQ. MI.

*S

*S ONSITE BASINS-EXISTING CONDITION

*S

*S BASIN EX1

COMPUTE NM HYD ID=5 HYD NO=500 AREA=0.04351 SQ MI
PER A=0 PER B=23 PER C=23 PER D=54
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 92.761 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.1000
AREA = .023495 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .120817HR TP = .133300HR K/TP RATIO = .906356 SHAPE CONSTANT, N = 3.908546
 UNIT PEAK = 52.405 CFS UNIT VOLUME = 1.000 B = 349.03 P60 = 2.1000
 AREA = .020015 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=5 CODE=1
 OUTFLOW HYDROGRAPH RESERVOIR 500.00

RUNOFF VOLUME = 1.84296 INCHES = 4.2766 ACRE-FEET
 PEAK DISCHARGE RATE = 110.46 CFS AT 1.500 HOURS BASIN AREA = .0435 SQ. MI.

*S BASIN EX2
 COMPUTE NM HYD

ID=6 HYD NO=600 AREA=0.04327 SQ MI
 PER A=0 PER B=23 PER C=23 PER D=54
 TP=-0.1333 HR MASS RAIN=-1
 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 92.249 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.1000
 AREA = .023366 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .120817HR TP = .133300HR K/TP RATIO = .906356 SHAPE CONSTANT, N = 3.908546
 UNIT PEAK = 52.116 CFS UNIT VOLUME = 1.000 B = 349.03 P60 = 2.1000
 AREA = .019904 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=6 CODE=1
 HYDROGRAPH FROM AREA 600.00

RUNOFF VOLUME = 1.84296 INCHES = 4.2530 ACRE-FEET
 PEAK DISCHARGE RATE = 109.85 CFS AT 1.500 HOURS BASIN AREA = .0433 SQ. MI.

*S BASIN EX3
 COMPUTE NM HYD

ID=7 HYD NO=700 AREA=0.00415 SQ MI
 PER A=0 PER B=23 PER C=23 PER D=54
 TP=-0.1333 HR MASS RAIN=-1
 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 8.8476 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 2.1000
 AREA = .002241 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .120817HR TP = .133300HR K/TP RATIO = .906356 SHAPE CONSTANT, N = 3.908546
 UNIT PEAK = 4.9984 CFS UNIT VOLUME = .9978 B = 349.03 P60 = 2.1000
 AREA = .001909 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=7 CODE=1

HYDROGRAPH FROM AREA 700.00

RUNOFF VOLUME = 1.84298 INCHES = .4079 ACRE-FEET
 PEAK DISCHARGE RATE = 10.55 CFS ~ AT 1.500 HOURS ^ BASIN AREA = .0042 SQ. MI.

*S

*S OFFSITE BASINS

*S

*S BASIN OFF-1-PORION OF GRACE LUTHERAN CHURCH

COMPUTE NM HYD ID=11 HYD NO=110 AREA=0.00025 SQ MI
 PER A=0 PER B=0 PER C=15 PER D=85
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = .83896 CFS UNIT VOLUME = .9862 B = 526.28 P60 = 2.1000
 AREA = .000213 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108461HR TP = .133300HR K/TP RATIO = .813662 SHAPE CONSTANT, N = 4.394154
 UNIT PEAK = .10708 CFS UNIT VOLUME = .8768 B = 380.65 P60 = 2.1000
 AREA = .000038 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 2.34656 INCHES = .0313 ACRE-FEET
 PEAK DISCHARGE RATE = .77 CFS ~ AT 1.500 HOURS ^ BASIN AREA = .0003 SQ. MI.

*S BASIN OFF-2-SANTA MONICA

COMPUTE NM HYD ID=12 HYD NO=120 AREA=0.00555 SQ MI
 PER A=0 PER B=0 PER C=16 PER D=84
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 18.406 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 2.1000
 AREA = .004662 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

 K = .108461HR TP = .133300HR K/TP RATIO = .813662 SHAPE CONSTANT, N = 4.394154
 UNIT PEAK = 2.5357 CFS UNIT VOLUME = .9953 B = 380.65 P60 = 2.1000
 AREA = .000888 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 120.00

RUNOFF VOLUME = 2.33310 INCHES = .6906 ACRE-FEET
 PEAK DISCHARGE RATE = 16.56 CFS AT 1.500 HOURS BASIN AREA = .0056 SQ. MI.

*S BASIN OFF-3-US POSTOFFICE
 *S KNOWN Q=8.5 CFS
 *S BASIN OFF-4-SAN ANTONIO CONDOS
 *S KNOWN Q=11.9 CFS
 *S BASIN OFF-5-FAMILY DOLLAR
 *S KNOWN Q=3.4
 *S BASIN OFF-6-SANDIA DOG OBEDIENCE SCHOOL
 *S KNOWN Q=2.1 CFS
 *S BASIN OFF-7-UNDEVELOPED COMMERCIAL PARCEL

COMPUTE NM HYD ID=17 HYD NO=170 AREA=0.00100 SQ MI
 PER A=0 PER B=0 PER C=15 PER D=85
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 3.3558 CFS UNIT VOLUME = .9961 B = 526.28 P60 = 2.1000
 AREA = .000850 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108461HR TP = .133300HR K/TP RATIO = .813662 SHAPE CONSTANT, N = 4.394154
 UNIT PEAK = .42833 CFS UNIT VOLUME = .9710 B = 380.65 P60 = 2.1000
 AREA = .000150 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=17 CODE=1

PARTIAL HYDROGRAPH 170.00

RUNOFF VOLUME = 2.34645 INCHES = .1251 ACRE-FEET

PEAK DISCHARGE RATE = 3.01 CFS -AT 1.500 HOURS - BASIN AREA = .0010 SQ. MI.

*S BASIN OFF-8-SAN PEDRO

COMPUTE NM HYD ID=18 HYD NO=180 AREA=0.00342 SQ MI

PER A=0 PER B=0 PER C=14 PER D=86

TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 11.612 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 2.1000

AREA = .002941 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108461HR TP = .133300HR K/TP RATIO = .813662 SHAPE CONSTANT, N = 4.394154

UNIT PEAK = 1.3672 CFS UNIT VOLUME = .9909 B = 380.65 P60 = 2.1000

AREA = .000479 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 180.00

RUNOFF VOLUME = 2.35972 INCHES = .4304 ACRE-FEET

PEAK DISCHARGE RATE = 10.28 CFS -AT 1.500 HOURS - BASIN AREA = .0034 SQ. MI.

*S BASIN OFF-9-DERICKSON

COMPUTE NM HYD ID=19 HYD NO=190 AREA=0.00550 SQ MI

PER A=0 PER B=0 PER C=16 PER D=84

TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 18.240 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 2.1000

AREA = .004620 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .108461HR TP = .133300HR K/TP RATIO = .813662 SHAPE CONSTANT, N = 4.394154

UNIT PEAK = 2.5129 CFS UNIT VOLUME = .9953 B = 380.65 P60 = 2.1000

AREA = .000880 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=19 CODE=1

PARTIAL HYDROGRAPH 190.00

RUNOFF VOLUME = 2.33310 INCHES = .6844 ACRE-FEET

PEAK DISCHARGE RATE = 16.41 CFS - AT 1.500 HOURS - BASIN AREA = .0055 SQ. MI.

*S BASIN OFF-10--LOTS N. OF DERICKSON DRAINING TO DERICKSON
 COMPUTE NM HYD ID=20 HYD NO=200 AREA=0.00892 SQ MI
 PER A=0 PER B=31 PER C=32 PER D=37
 TP=-0.1333 HR MASS RAIN=-1
 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 13.030 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 2.1000
 AREA = .003300 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 K = .120621HR TP = .133300HR K/TP RATIO = .904885 SHAPE CONSTANT, N = 3.915279
 UNIT PEAK = 14.733 CFS UNIT VOLUME = .9996 B = 349.48 P60 = 2.1000
 AREA = .005620 SQ MI IA = .42381 INCHES INF = 1.03667 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=20 CODE=1
 PARTIAL HYDROGRAPH 200.00
 RUNOFF VOLUME = 1.58497 INCHES = .7540 ACRE-FEET
 PEAK DISCHARGE RATE = 20.69 CFS -AT 1.500 HOURS - BASIN AREA = .0089 SQ. MI.

*S BASIN OFF-11--LOTS N. OF DERICKSON DRAINING TO SAN PEDRO
 COMPUTE NM HYD ID=21 HYD NO=210 AREA=0.00956 SQ MI
 PER A=0 PER B=35 PER C=35 PER D=30
 TP=-0.1333 HR MASS RAIN=-1
 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 11.323 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 2.1000
 AREA = .002868 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 K = .120817HR TP = .133300HR K/TP RATIO = .906356 SHAPE CONSTANT, N = 3.908546
 UNIT PEAK = 17.522 CFS UNIT VOLUME = .9997 B = 349.03 P60 = 2.1000
 AREA = .006692 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=21 CODE=1
 PARTIAL HYDROGRAPH 210.00
 RUNOFF VOLUME = 1.47619 INCHES = .7527 ACRE-FEET
 PEAK DISCHARGE RATE = 21.26 CFS AT 1.500 HOURS - BASIN AREA = .0096 SQ. MI.

*S INTERIM BASINS
 *S TRACT A-2 DEVELOPED; TRACTS A1, A3 & A-4 UNDEVELOPED
 *S
 *S BASIN INT-1--TRACT 1 UNDEVELOPED TO TEMPORARY INLET
 COMPUTE NM HYD ID=30 HYD NO=310 AREA=0.01448 SQ MI
 PER A=0 PER B=0 PER C=100 PER D=0
 TP=-0.1333 HR MASS RAIN=-1
 K = .108461HR TP = .133300HR K/TP RATIO = .813662 SHAPE CONSTANT, N = 4.394154
 UNIT PEAK = 41.349 CFS UNIT VOLUME = 1.000 B = 380.65 P60 = 2.1000
 AREA = .014480 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=30 CODE=1
 HYDROGRAPH FROM AREA 310.00

 RUNOFF VOLUME = 1.21559 INCHES = .9388 ACRE-FEET
 PEAK DISCHARGE RATE = 30.72 CFS AT 1.500 HOURS BASIN AREA = .0145 SQ. MI.

 *S BASIN INT-2--PORTION OF TRACTS 3 & 4--PARTIALLY DEMOLISHED
 COMPUTE NM HYD ID=31 HYD NO=311 AREA=0.03804 SQ MI
 PER A=0 PER B=18 PER C=41 PER D=41
 TP=-0.1333 HR MASS RAIN=-1
 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 61.575 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.1000
 AREA = .015596 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

 K = .116000HR TP = .133300HR K/TP RATIO = .870221 SHAPE CONSTANT, N = 4.082343
 UNIT PEAK = 60.718 CFS UNIT VOLUME = 1.000 B = 360.62 P60 = 2.1000
 AREA = .022444 SQ MI IA = .39576 INCHES INF = .95814 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
 PRINT HYD ID=31 CODE=1
 HYDROGRAPH FROM AREA 311.00

 RUNOFF VOLUME = 1.68737 INCHES = 3.4233 ACRE-FEET
 PEAK DISCHARGE RATE = 92.56 CFS AT 1.500 HOURS BASIN AREA = .0380 SQ. MI.

 *S BASIN INT-3--PORTION OF TRACT 3 NOT DEMOLISHED
 COMPUTE NM HYD ID=32 HYD NO=312 AREA=0.01656 SQ MI
 PER A=0 PER B=23 PER C=23 PER D=54

TP=-0.1333 HR MASS RAIN=-1
 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 35.305 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 2.1000
 AREA = .008942 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .120817HR TP = .133300HR K/TP RATIO = .906356 SHAPE CONSTANT, N = 3.908546
 UNIT PEAK = 19.946 CFS UNIT VOLUME = .9998 B = 349.03 P60 = 2.1000
 AREA = .007618 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=32 CODE=1

HYDROGRAPH FROM AREA 312.00

RUNOFF VOLUME = 1.84297 INCHES = 1.6277 ACRE-FEET
 PEAK DISCHARGE RATE = 42.05 CFS - AT 1.500 HOURS BASIN AREA = .0166 SQ. MI.

*S ROUTE BASIN INT-2 THROUGH POND

ROUTE RESERVOIR ID=33 HYD NO=313 INFLOW ID=31 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.00	0.000	5282.0
0.01	0.9894	5283.0
11.8	1.5152	5283.5
33.3	2.0632	5284.0
61.2	2.6342	5284.5

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	5282.00	.000	.00
.80	.00	5282.00	.000	.00
1.60	67.37	5283.49	1.504	11.55
2.40	3.46	5283.50	1.519	11.96
3.20	.59	5283.15	1.151	3.63
4.00	.31	5283.05	1.039	1.11
4.80	.28	5283.02	1.010	.47
5.60	.31	5283.01	1.004	.34
6.40	.34	5283.01	1.004	.34
7.20	.32	5283.01	1.004	.33
8.00	.31	5283.01	1.003	.32
8.80	.29	5283.01	1.002	.30

9.60	.28	5283.01	1.002	.29
10.40	.26	5283.01	1.001	.27
11.20	.25	5283.01	1.001	.26
12.00	.24	5283.01	1.000	.25
12.80	.23	5283.01	1.000	.24
13.60	.23	5283.01	.999	.23
14.40	.22	5283.01	.999	.22
15.20	.21	5283.01	.999	.22
16.00	.20	5283.01	.998	.21
16.80	.20	5283.01	.998	.20
17.60	.19	5283.01	.998	.20
18.40	.18	5283.01	.997	.19
19.20	.18	5283.01	.997	.18

PEAK DISCHARGE = 26.820 CFS - PEAK OCCURS AT HOUR 1.83
 MAXIMUM WATER SURFACE ELEVATION = 5283.849
 MAXIMUM STORAGE = 1.8980 AC-FT INCREMENTAL TIME= .033330HRS
 PRINT HYD ID=33 CODE=1

HYDROGRAPH FROM AREA 313.00

RUNOFF VOLUME = 1.19598 INCHES = 2.4264 ACRE-FEET
 PEAK DISCHARGE RATE = 26.82 CFS \AT 1.833 HOURS BASIN AREA = .0380 SQ. MI.

FINISH
 NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:27:52

APPENDIX C

STREET FLOW CAPACITY CALCULATIONS

Channel Report

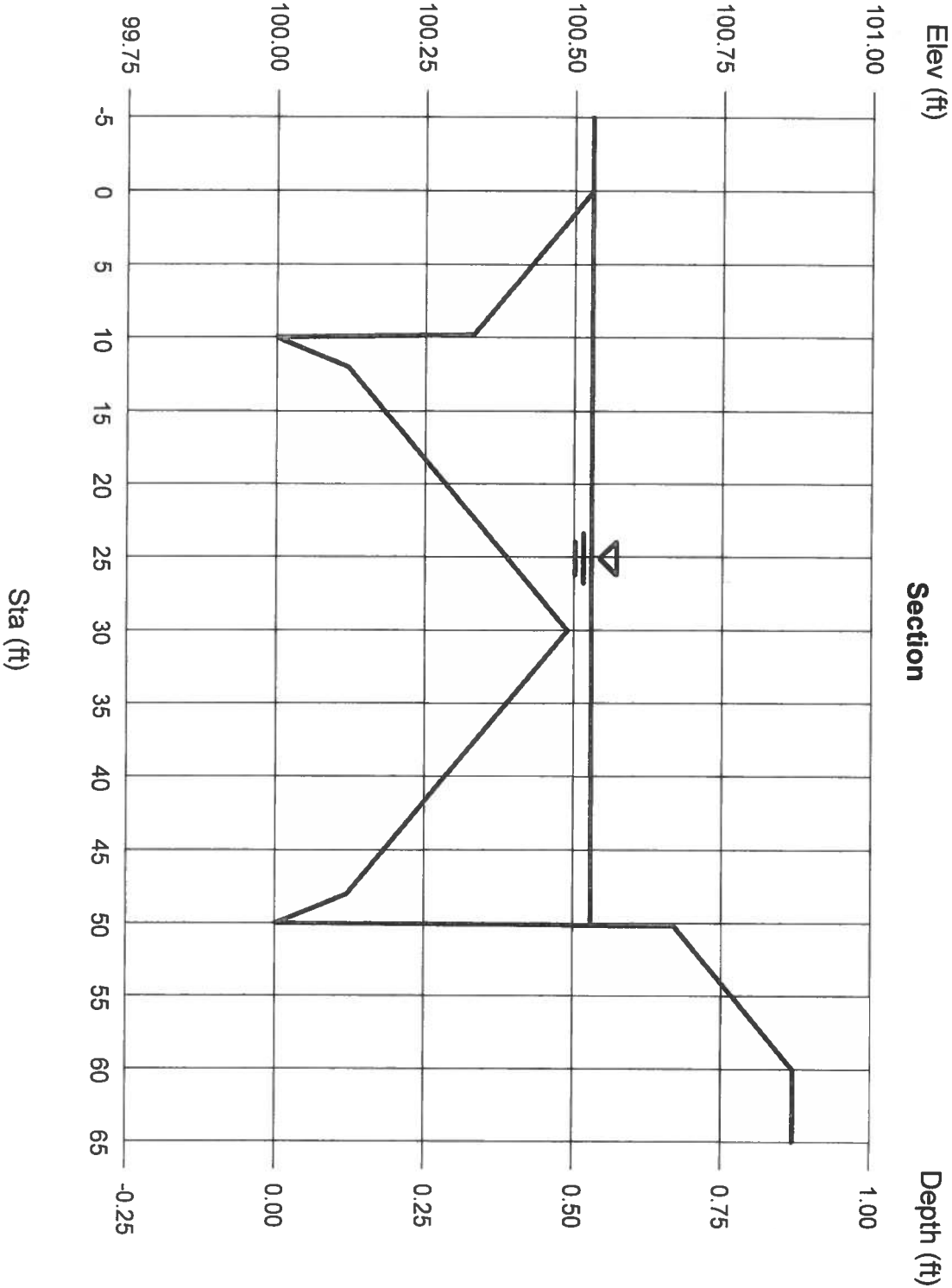
Hydraflow Express Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc.

Wednesday, Feb 15 2012

Santa Monica Place--DERICKSON UPSTREAM OF CATTLE GUARD INLET SECTION

User-defined		Highlighted	
Invert Elev (ft)	= 100.00	Depth (ft)	= 0.53
Slope (%)	= 2.50	Q (cfs)	= 57.10
N-Value	= 0.016	Area (sqft)	= 11.06
Calculations		Velocity (ft/s)	= 5.16
Compute by:	Known Q	Wetted Perim (ft)	= 50.76
Known Q (cfs)	= 57.10	Crit Depth, Yc (ft)	= 0.66
		Top Width (ft)	= 50.13
		EGL (ft)	= 0.94

(Sta, Elev, Q, Slope, N, EGL) = (10.00, 100.00, 0.013)-(12.00, 100.12, 0.017)-(30.00, 100.49, 0.017)-(48.00, 100.12, 0.017)-(50.00, 100.00, 0.013)
(-50.17, 100.67, 0.013)-(60.00, 100.87, 0.017)



Channel Report

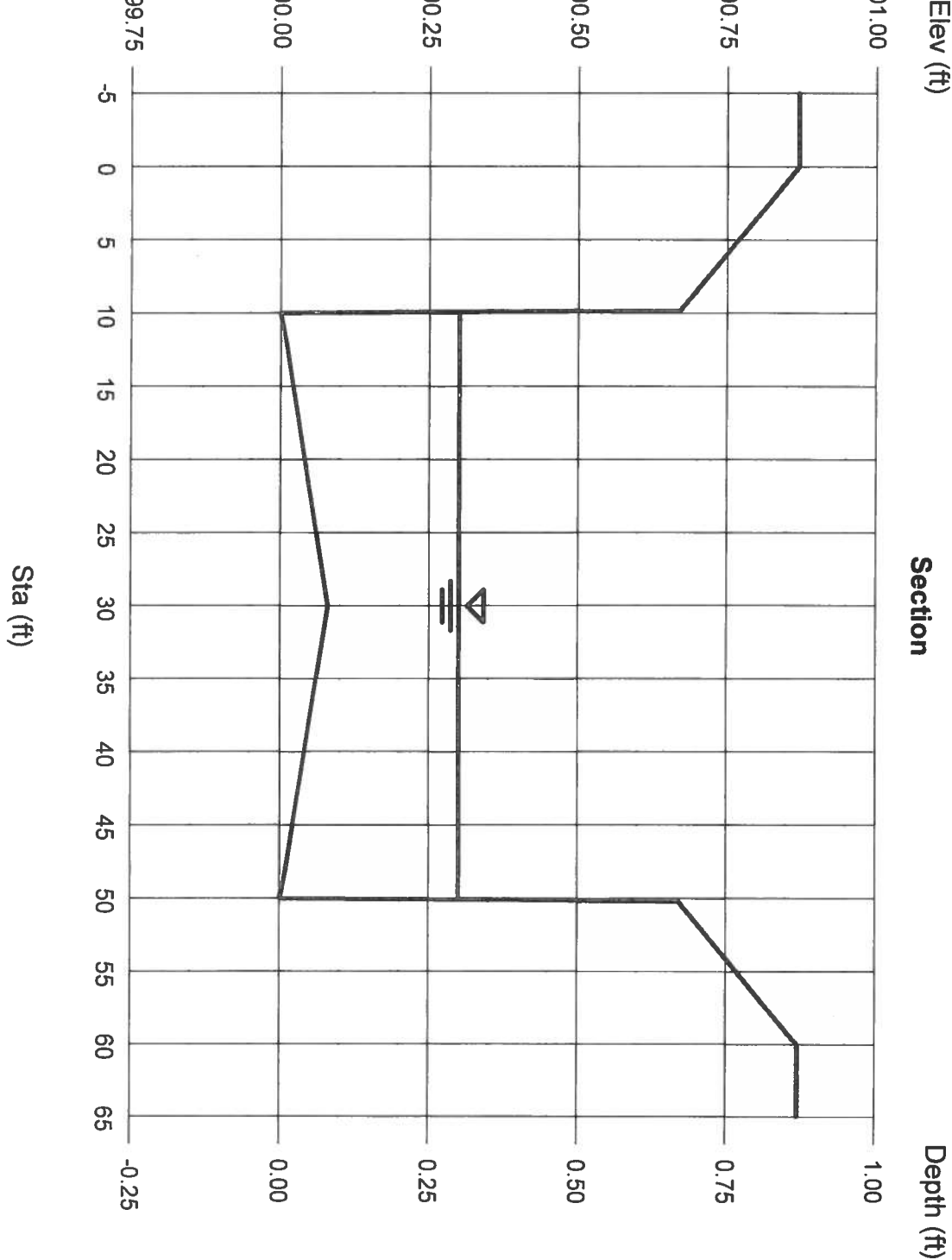
Santa Monica Place--DERICKSON AT CATTLE GUARD SECTION A-A

User-defined	
Invert Elev (ft)	= 100.00
Slope (%)	= 2.50
N-Value	= 0.017

Highlighted	
Depth (ft)	= 0.30
Q (cfs)	= 57.10
Area (sqft)	= 10.38
Velocity (ft/s)	= 5.50
Wetted Perim (ft)	= 40.62
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 40.15
EGL (ft)	= 0.77

Calculations	
Compute by:	Known Q
Known Q (cfs)	= 57.10

(Sta, Elev, Q)	(-30.17, 100.87, 0.013)-(10.00, 100.00, 0.013)-(12.00, 100.01, 0.017)-(30.00, 100.08, 0.017)-(48.00, 100.01, 0.017)-(50.00, 100.00, 0.013)
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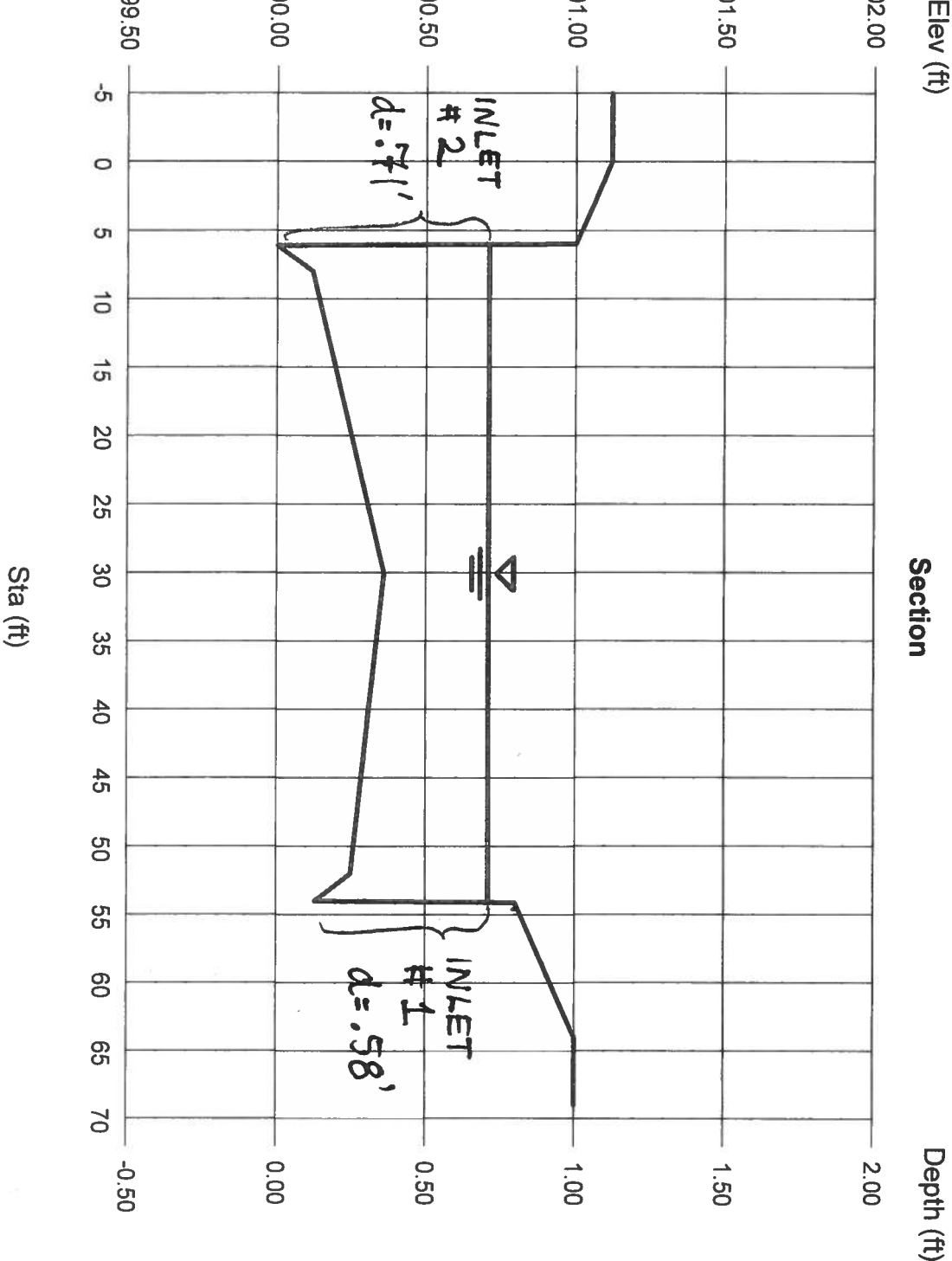
Channel Report

Santa Monica Place--SAN PEDRO BLVD SECTION B-B AT INLETS 1 & 2

User-defined	Highlighted
Invert Elev (ft)	= 100.00
Slope (%)	= 2.00
N-Value	= 0.017

Calculations	
Compute by:	Known Q
Known Q (cfs)	= 149.40
Depth (ft)	= 0.71
Q (cfs)	= 149.40
Area (sqft)	= 21.58
Velocity (ft/s)	= 6.92
Wetted Perim (ft)	= 49.21
Crit Depth, Yc (ft)	= 0.96
Top Width (ft)	= 48.06
EGL (ft)	= 1.46

(Sta: 0, 100.00, 0.017)-(6.10, 100.00, 0.017)-(8.00, 100.12, 0.017)-(30.00, 100.36, 0.017)-(52.00, 100.25, 0.017)-(54.00, 100.13, 0.017)
(Sta: 0, 100.80, 0.017)-(64.00, 101.00, 0.017)



Channel Report

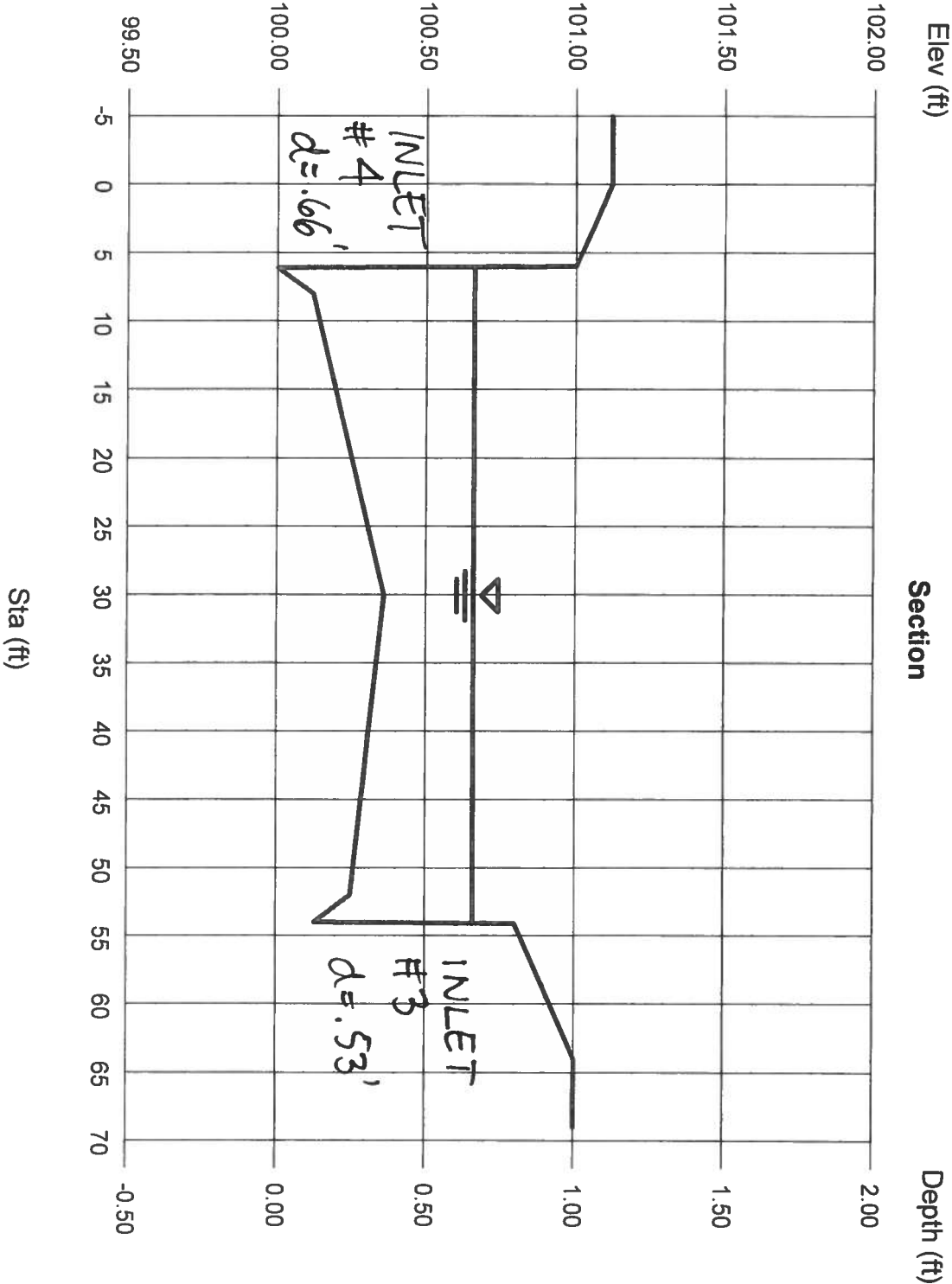
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Wednesday, Feb 15 2012

Santa Monica Place--SAN PEDRO BLVD SECTION B-B AT INLETS 3 & 4

User-defined		Highlighted	
Invert Elev (ft)	= 100.00	Depth (ft)	= 0.66
Slope (%)	= 2.00	Q (cfs)	= 123.90
N-Value	= 0.017	Area (sqft)	= 19.17
Calculations		Velocity (ft/s)	= 6.46
Compute by:	Known Q	Wetted Perim (ft)	= 49.11
Known Q (cfs)	= 123.90	Crit Depth, Yc (ft)	= 0.87
		Top Width (ft)	= 48.05
		EGL (ft)	= 1.31

(Sta, Elev, Q, Slope, N-Value, Depth, Area, Velocity, Wetted Perim, Crit Depth, Top Width, EGL)
(-34.10, 100.80, 0.017, 64.00, 101.00, 0.017, 6.10, 100.00, 0.017, 8.00, 100.12, 0.017, 30.00, 100.36, 0.017, 52.00, 100.25, 0.017, 54.00, 100.13, 0.017)



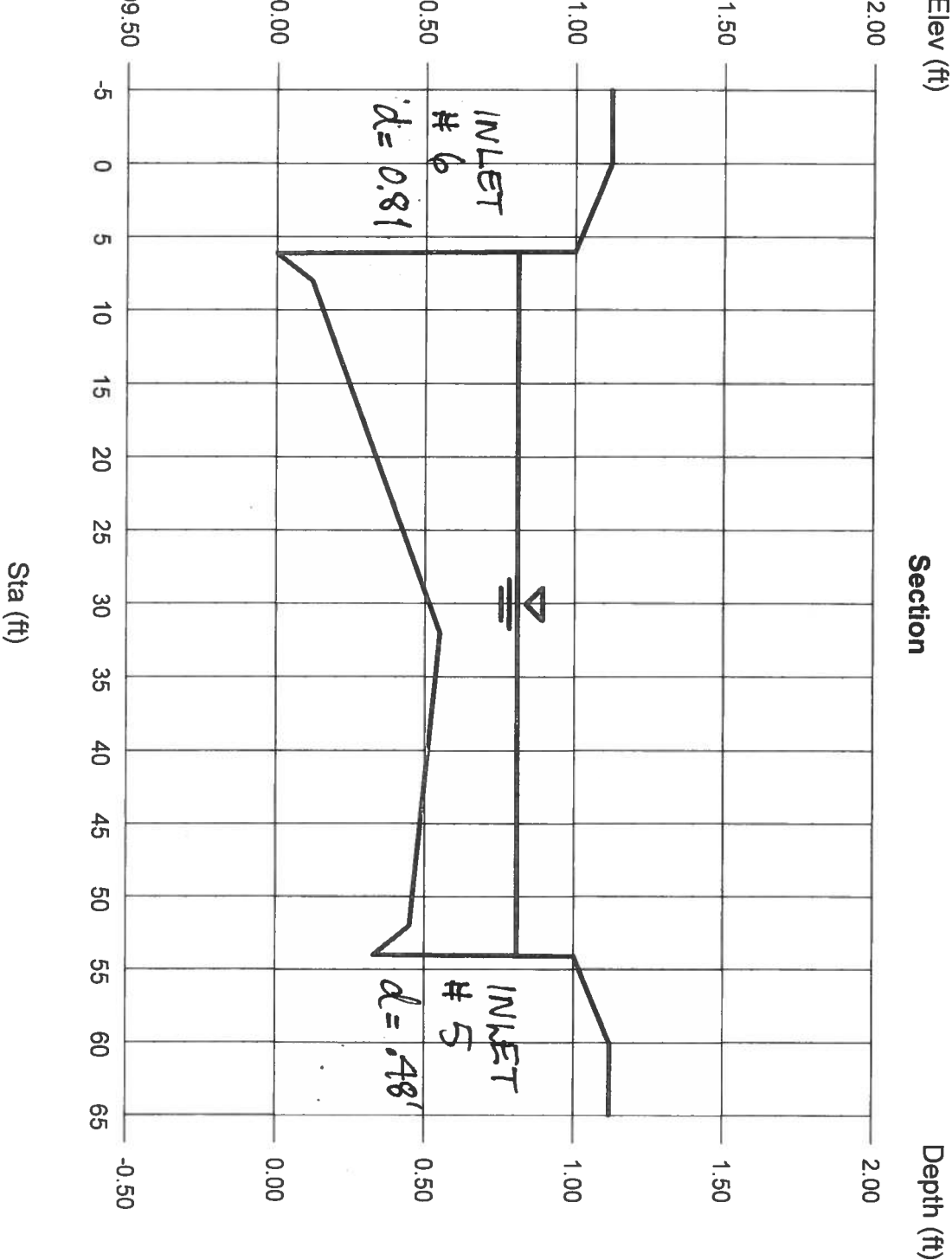
Channel Report

Santa Monica Place--SAN PEDRO BLVD SECTION D-D AT INLETS 5 & 6

User-defined	Highlighted
Invert Elev (ft)	= 100.00
Slope (%)	= 1.20
N-Value	= 0.017

Calculations	
Compute by:	Known Q
Known Q (cfs)	= 102.00
Depth (ft)	= 0.81
Q (cfs)	= 102.00
Area (sqft)	= 19.91
Velocity (ft/s)	= 5.12
Wetted Perim (ft)	= 49.21
Crit Depth, Yc (ft)	= 0.92
Top Width (ft)	= 48.05
EGL (ft)	= 1.22

(Sta, Elev, Slope, N-Value, EGL, Depth, Q, Area, Velocity, Wetted Perim, Crit Depth, Top Width)
(-5, 101.20, 1.20, 0.017, 101.12, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(0, 101.00, 0.017, 0.017, 101.00, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(5, 100.80, 0.017, 0.017, 100.72, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(10, 100.60, 0.017, 0.017, 100.52, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(15, 100.40, 0.017, 0.017, 100.33, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(20, 100.20, 0.017, 0.017, 100.15, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(25, 100.00, 0.017, 0.017, 99.97, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(30, 99.80, 0.017, 0.017, 99.79, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(35, 99.60, 0.017, 0.017, 99.61, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(40, 99.40, 0.017, 0.017, 99.43, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
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(50, 99.00, 0.017, 0.017, 99.07, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(55, 98.80, 0.017, 0.017, 98.89, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(60, 98.60, 0.017, 0.017, 98.71, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)
(65, 98.40, 0.017, 0.017, 98.53, 0.017, 102.00, 19.91, 5.12, 49.21, 0.92, 48.05)



Channel Report

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Wednesday, Feb 15 2012

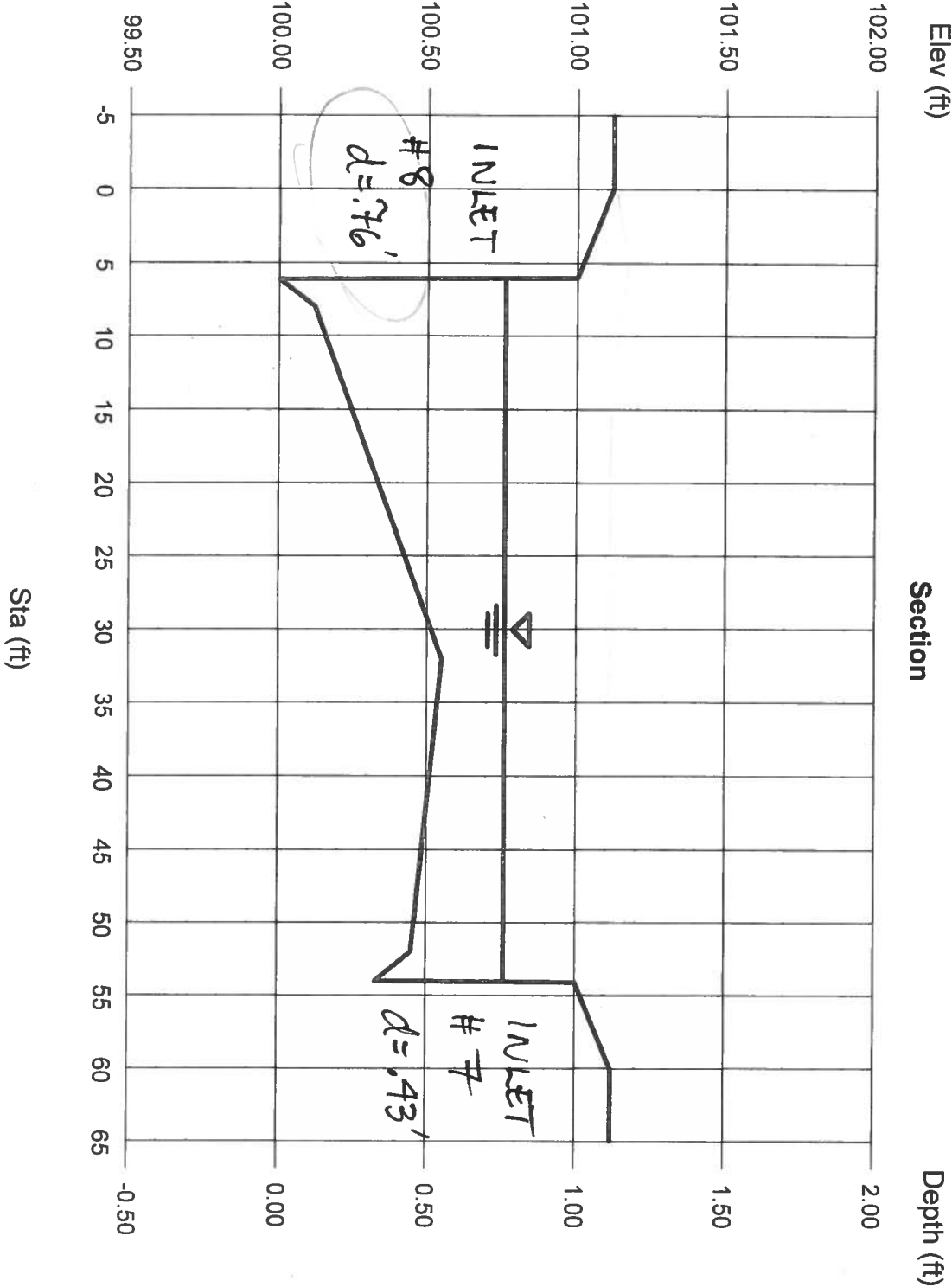
Santa Monica Place--SAN PEDRO BLVD SECTION D-D AT INLETS 7 & 8

User-defined
Invert Elev (ft) = 100.00
Slope (%) = 1.20
N-Value = 0.017

Calculations
Compute by: Known Q
Known Q (cfs) = 83.00

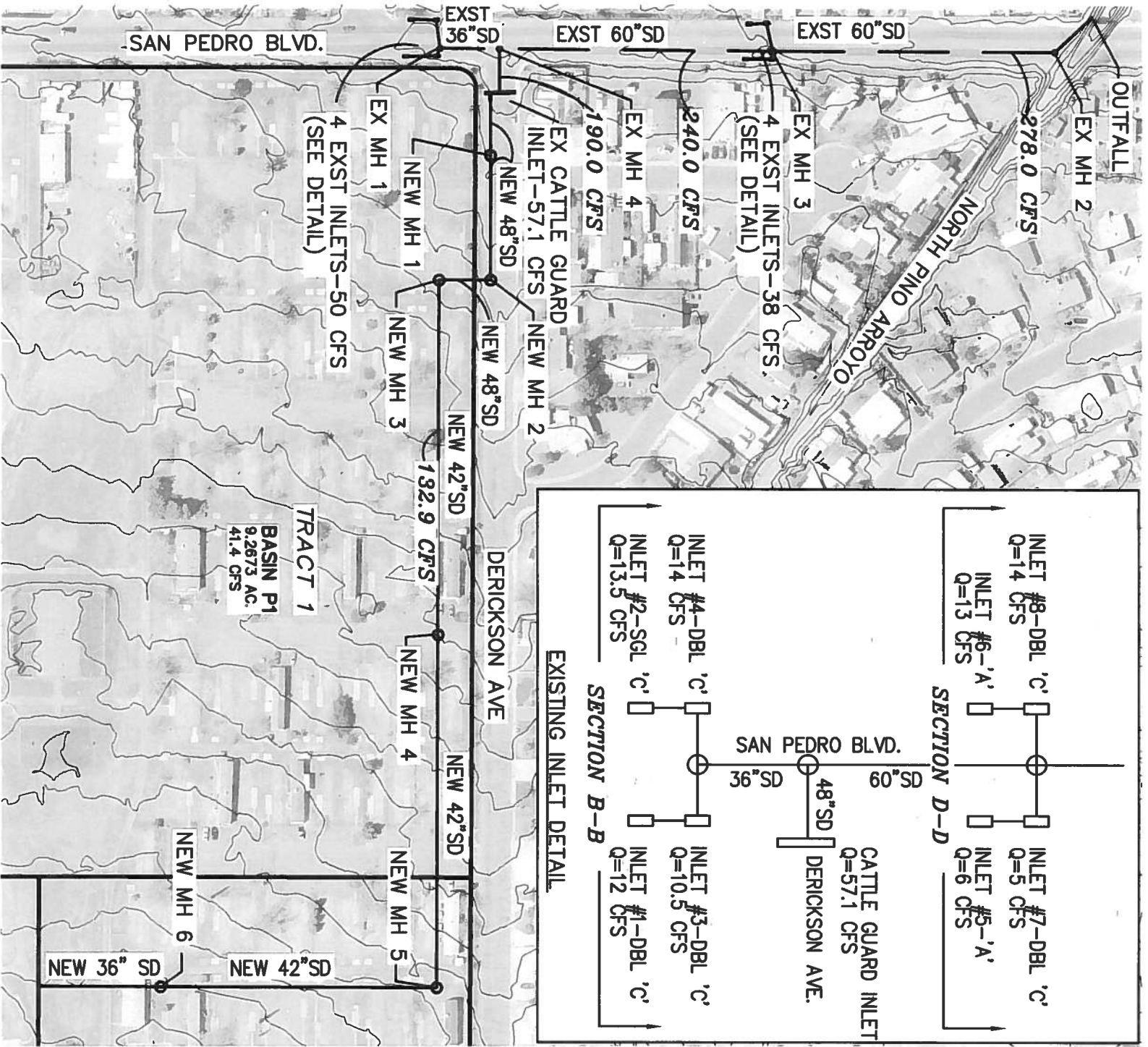
Highlighted
Depth (ft) = 0.76
Q (cfs) = 83.00
Area (sqft) = 17.51
Velocity (ft/s) = 4.74
Wetted Perim (ft) = 49.11
Crit Depth, Yc (ft) = 0.85
Top Width (ft) = 48.04
EGL (ft) = 1.11

Stationing: 1+00.00 to 1+65.00
Elevations: 100.00 to 101.12
Slopes: 0.017 to 0.017



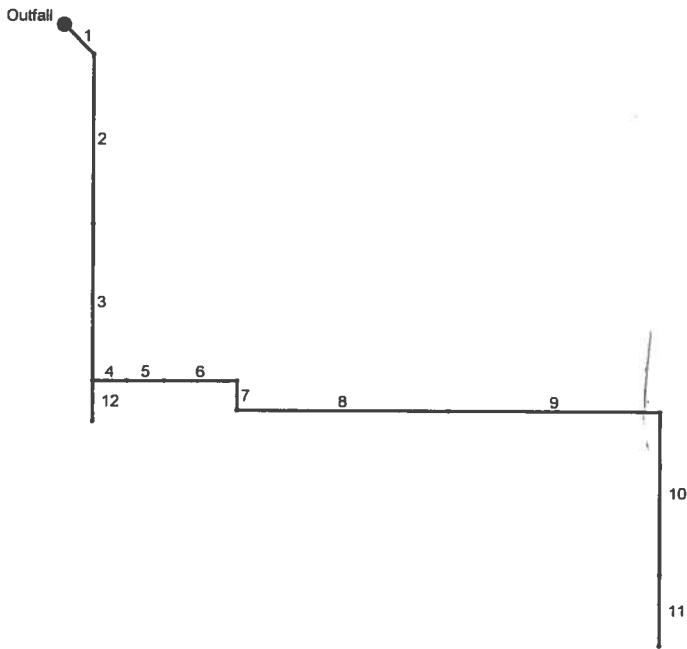
APPENDIX D

STORM DRAIN CALCULATIONS

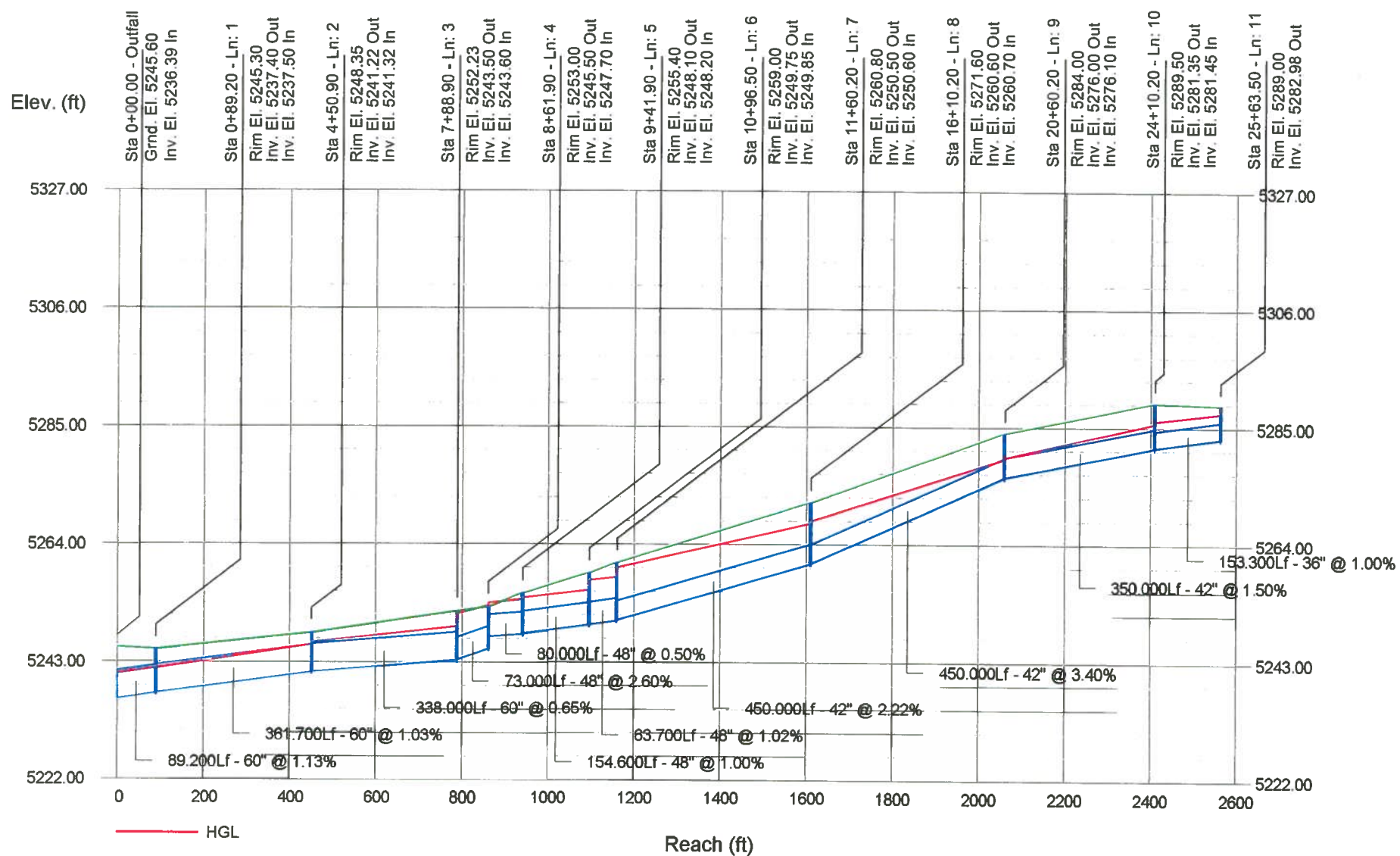


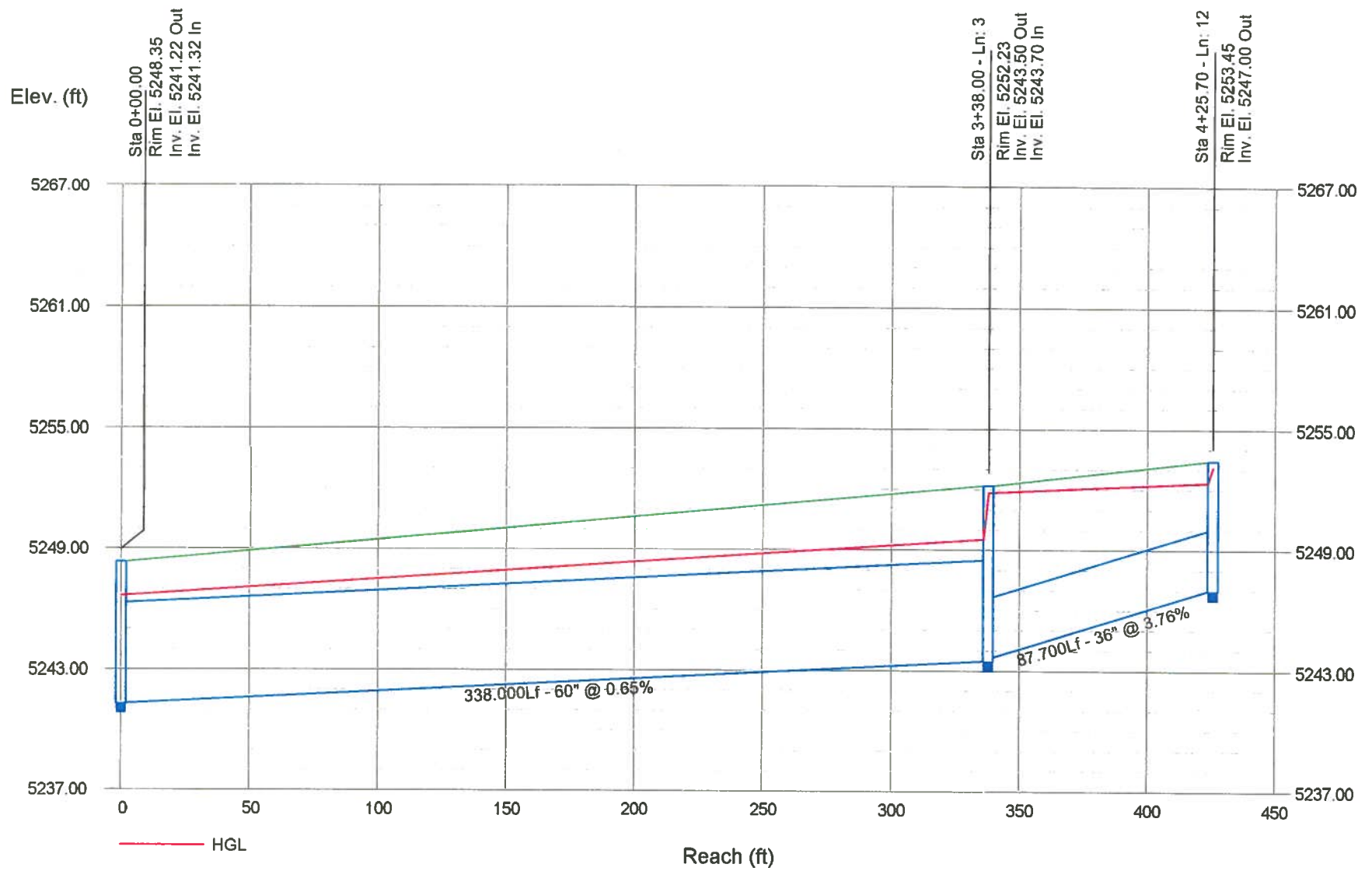
SANTA MONICA PLACE - STORM DRAIN EXHIBIT
N.T.S.

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2012 Plan



Project File: 1900 SD STUDY.stm	Number of lines: 12	Date: 2/18/2012
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Storm Sewer Inventory Report

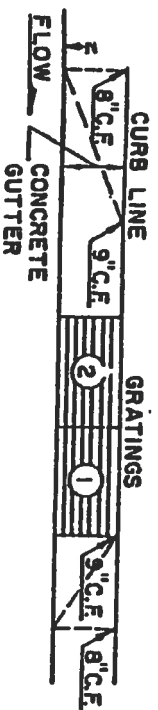
Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	89.200	45.000	MH	0.00	0.00	0.00	0.0	5236.39	1.13	5237.40	60	Cir	0.013	0.75	5245.30	OUT-EXMH2
2	1	361.700	45.000	MH	38.00	0.00	0.00	0.0	5237.50	1.03	5241.22	60	Cir	0.013	0.15	5248.35	EXMH2-EXMH3
3	2	338.000	0.000	MH	0.00	0.00	0.00	0.0	5241.32	0.65	5243.50	60	Cir	0.013	1.00	5252.23	EXMH3-EXMH4
4	3	73.000	-90.000	MH	57.10	0.00	0.00	0.0	5243.60	2.60	5245.50	48	Cir	0.013	0.15	5253.00	EXMH4-C-GRD
5	4	80.000	0.000	MH	0.00	0.00	0.00	0.0	5247.70	0.50	5248.10	48	Cir	0.013	0.15	5255.40	C-GRD-MH1
6	5	154.600	0.000	MH	0.00	0.00	0.00	0.0	5248.20	1.00	5249.75	48	Cir	0.013	1.00	5259.00	MH1-MH2
7	6	63.700	90.000	MH	0.00	0.00	0.00	0.0	5249.85	1.02	5250.50	48	Cir	0.013	1.00	5260.80	MH2-MH3
8	7	450.000	-90.000	MH	0.00	0.00	0.00	0.0	5250.60	2.22	5260.60	42	Cir	0.013	0.15	5271.60	MH3-MH4
9	8	450.000	0.000	MH	0.00	0.00	0.00	0.0	5260.70	3.40	5276.00	42	Cir	0.013	1.00	5284.00	MH4-MH5
10	9	350.000	90.000	MH	69.20	0.00	0.00	0.0	5276.10	1.50	5281.35	42	Cir	0.013	0.15	5289.50	MH5-MH6
11	10	153.300	0.000	MH	63.70	0.00	0.00	0.0	5281.45	1.00	5282.98	36	Cir	0.013	1.00	5289.00	MH6-MH7
12	3	87.700	-0.018	MH	50.00	0.00	0.00	0.0	5243.70	3.76	5247.00	36	Cir	0.013	1.00	5253.45	EXMH1-EXMH4
Project File: 1900 SD STUDY.stm												Number of lines: 12				Date: 2/15/2012	

Storm Sewer Tabulation

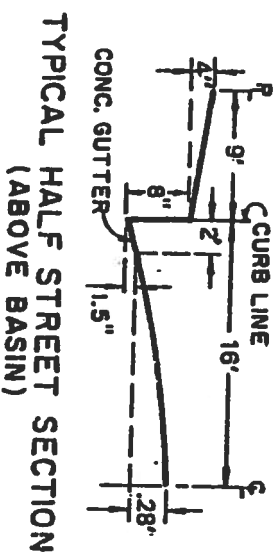
Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	89.200	0.00	0.00	0.00	0.00	0.00	0.0	3.2	0.0	278.0	277.1	14.62	60	1.13	5236.39	5237.40	5241.10	5241.98	5245.60	5245.30	OUT-EXMH2
2	1	361.700	0.00	0.00	0.00	0.00	0.00	0.0	2.8	0.0	278.0	264.2	14.57	60	1.03	5237.50	5241.22	5241.98	5246.22	5245.30	5248.35	EXMH2-EXMH3
3	2	338.000	0.00	0.00	0.00	0.00	0.00	0.0	2.3	0.0	240.0	209.2	12.22	60	0.65	5241.32	5243.50	5246.69	5249.56	5248.35	5252.23	EXMH3-EXMH4
4	3	73.000	0.00	0.00	0.00	0.00	0.00	0.0	2.3	0.0	190.0	231.7	15.12	48	2.60	5243.60	5245.50	5251.88	5253.16	5252.23	5253.00	EXMH4-C-GRD
5	4	80.000	0.00	0.00	0.00	0.00	0.00	0.0	2.1	0.0	132.9	101.6	10.58	48	0.50	5247.70	5248.10	5253.69	5254.38	5253.00	5255.40	C-GRD-MH1
6	5	154.600	0.00	0.00	0.00	0.00	0.00	0.0	1.9	0.0	132.9	143.8	10.58	48	1.00	5248.20	5249.75	5254.64	5255.96	5255.40	5259.00	MH1-MH2
7	6	63.700	0.00	0.00	0.00	0.00	0.00	0.0	1.8	0.0	132.9	145.1	10.58	48	1.02	5249.85	5250.50	5257.70	5258.25	5259.00	5260.80	MH2-MH3
8	7	450.000	0.00	0.00	0.00	0.00	0.00	0.0	1.2	0.0	132.9	150.0	13.81	42	2.22	5250.60	5260.60	5259.99	5267.84	5260.80	5271.60	MH3-MH4
9	8	450.000	0.00	0.00	0.00	0.00	0.00	0.0	0.7	0.0	132.9	185.5	13.94	42	3.40	5260.70	5276.00	5268.29	5279.33	5271.60	5284.00	MH4-MH5
10	9	350.000	0.00	0.00	0.00	0.00	0.00	0.0	0.3	0.0	132.9	123.2	13.81	42	1.50	5276.10	5281.35	5279.60	5285.71	5284.00	5289.50	MH5-MH6
11	10	153.300	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	83.70	66.62	9.01	36	1.00	5281.45	5282.98	5286.16	5287.56	5289.50	5289.00	MH6-MH7
12	3	87.700	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	50.00	129.4	7.07	36	3.76	5243.70	5247.00	5251.88	5252.38	5252.23	5253.45	EXMH1-EXMH4
																Number of lines: 12				Run Date: 2/15/2012		
NOTES: Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = Yrs. 100 ; c = cir e = ellip b = box																						

why is HGL
above top of pipe ?

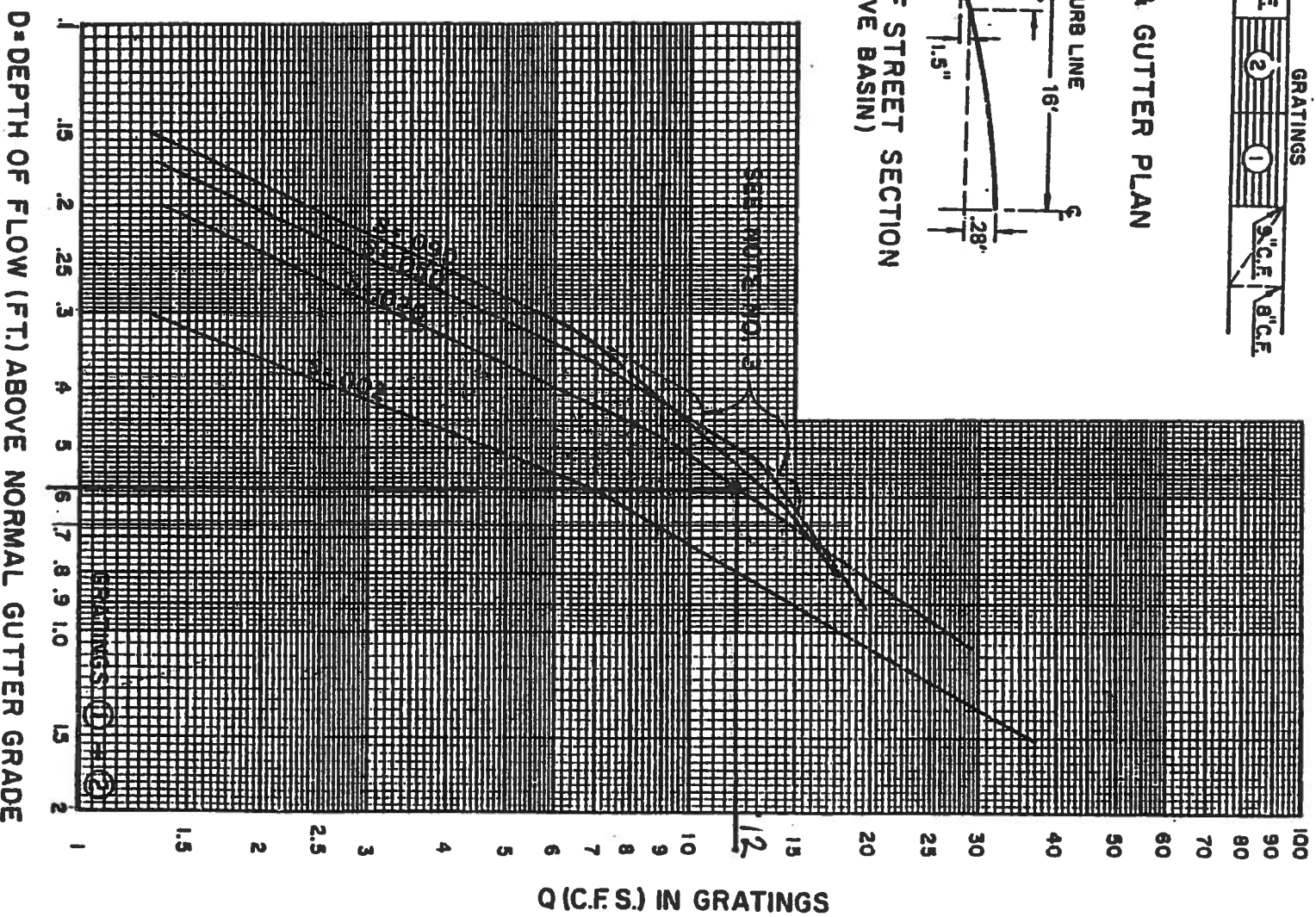
GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

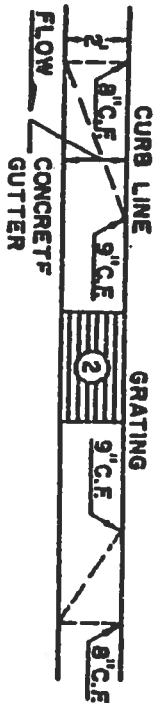


INLET #1 - DBLC

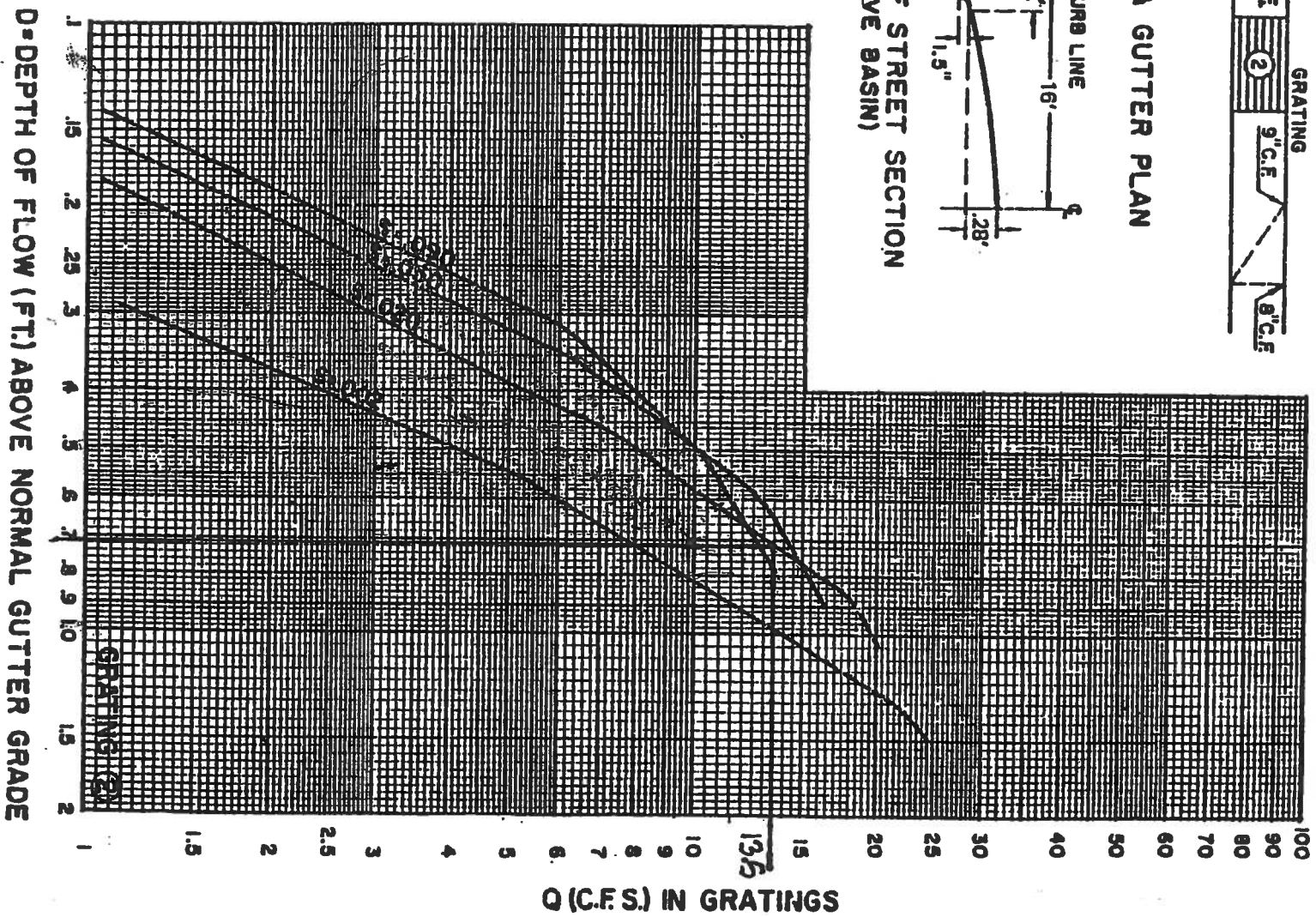
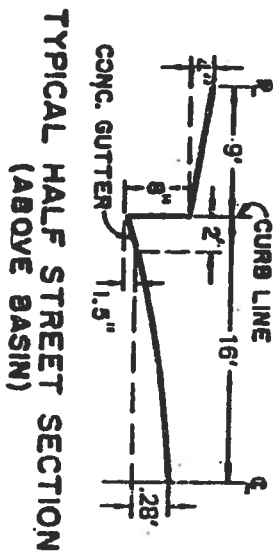
d = .58'

S = 2.0%

GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

INLET #2 - SGL 'C'

d = .71'

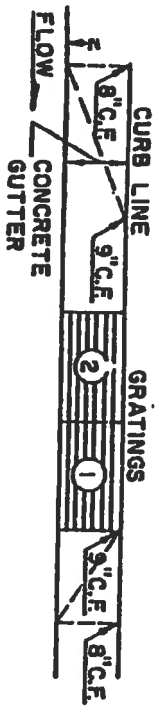
S = 2.10%

REV. 3-83

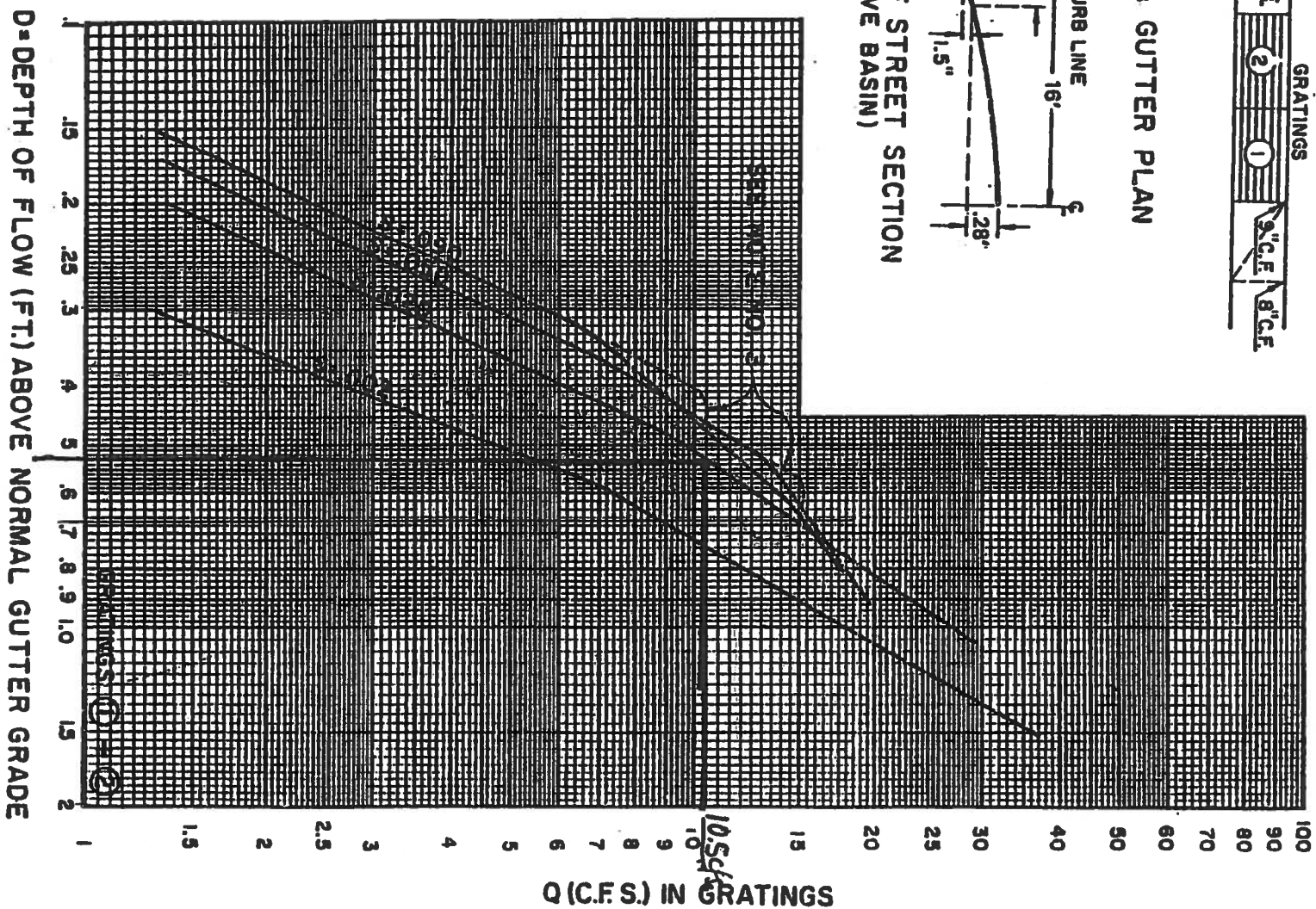
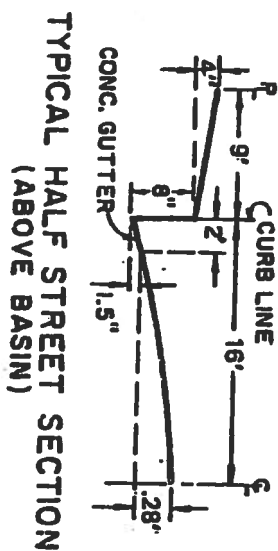
74

PLATE 22.3 D-5.

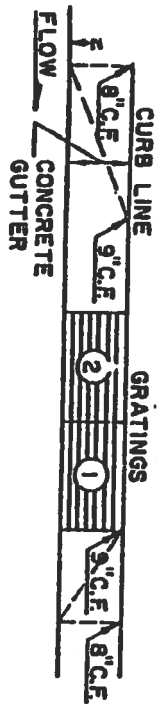
GRATING CAPACITIES FOR TYPE DOUBLE "C" AND "D"



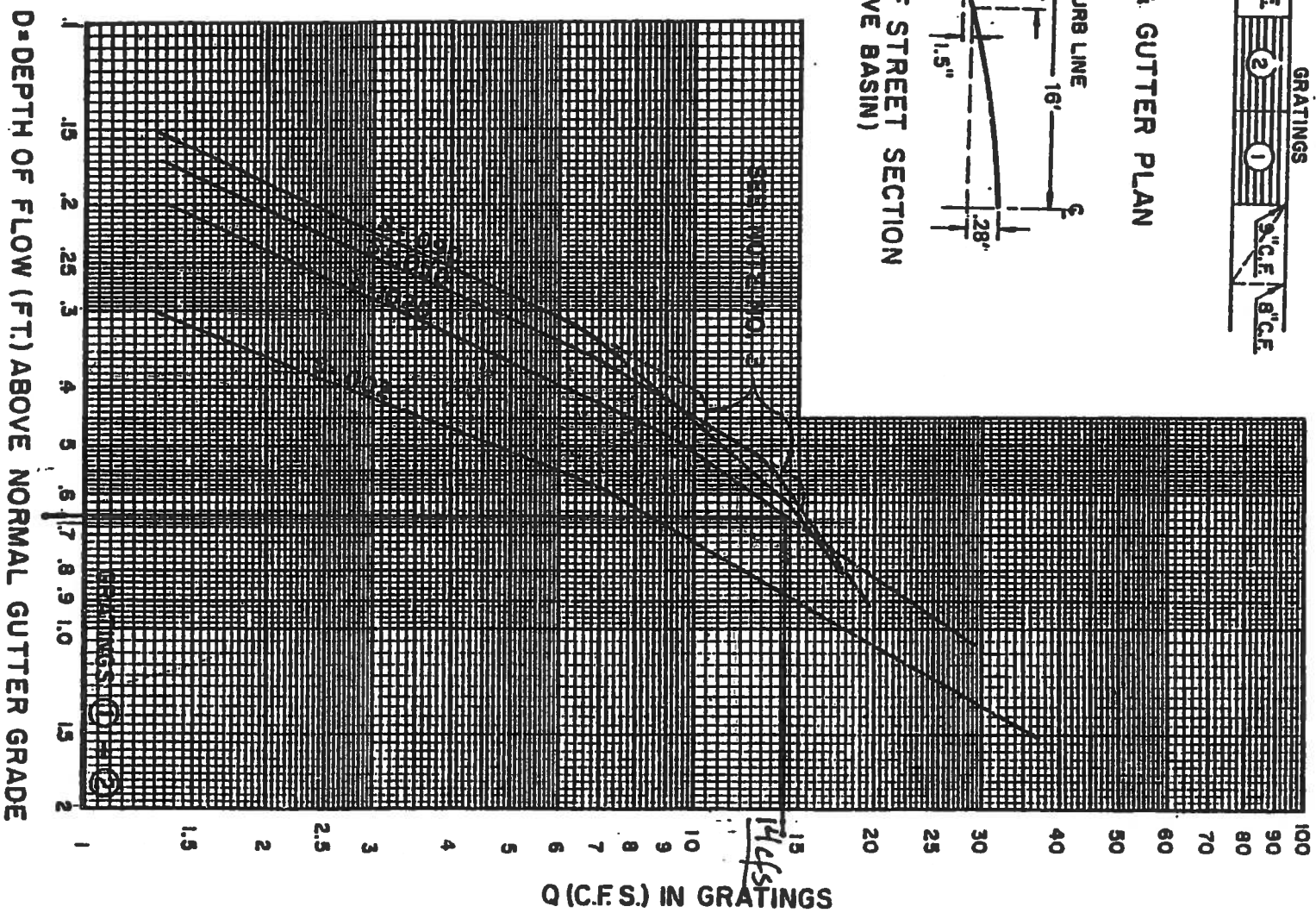
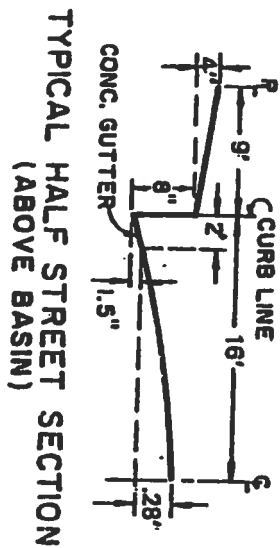
GRATING & GUTTER PLAN



GRATING CAPACITIES FOR TYPE DOUBLE "C" AND "D"



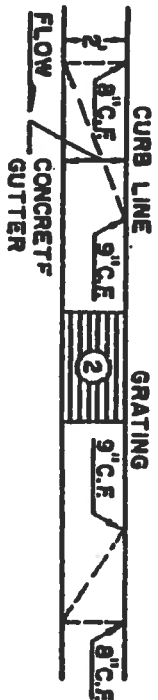
GRATING & GUTTER PLAN



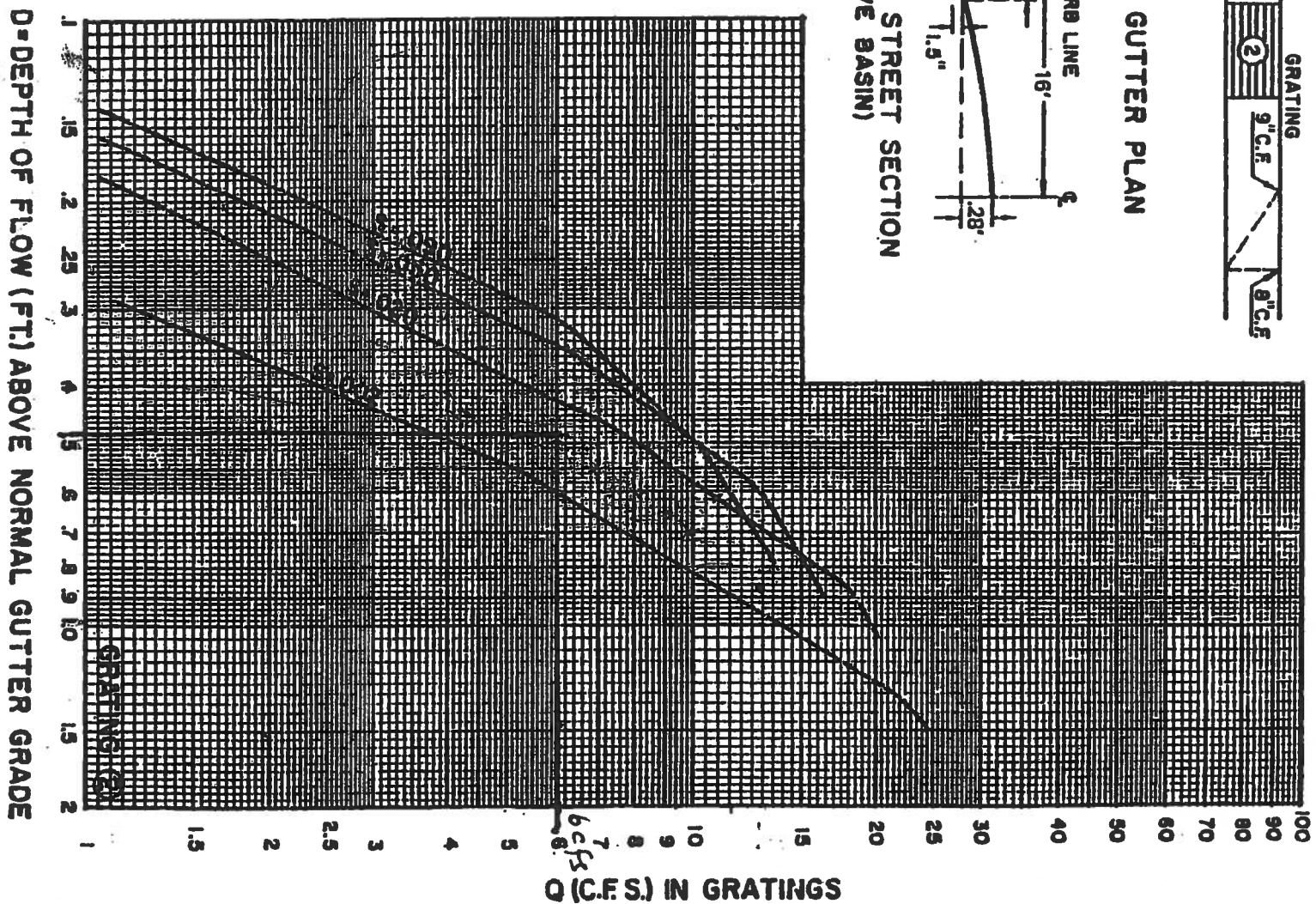
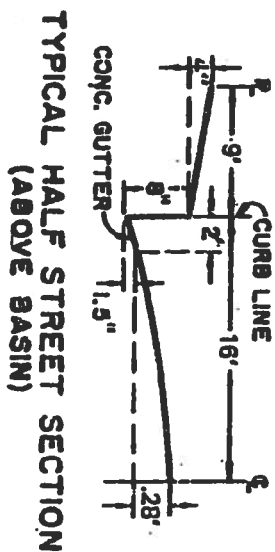
INLET #4 - DBL 'C'

$d = .66'$
 $S = 2.0\%$

GRATING CAPACITIES FOR TYPE 'A', 'C' and 'D'



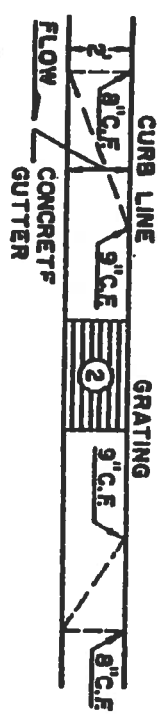
GRATING & GUTTER PLAN



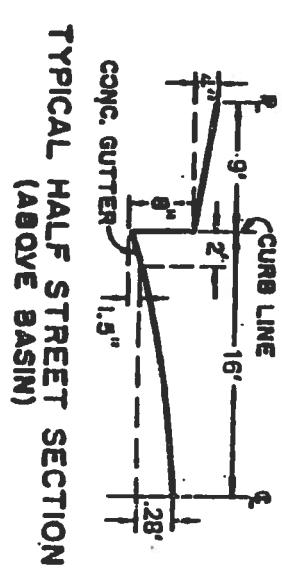
REV. 3-83

INLET #5 - A'
d = .48'
74 S = 1.2%
19 PLATE 22.3 D-5.

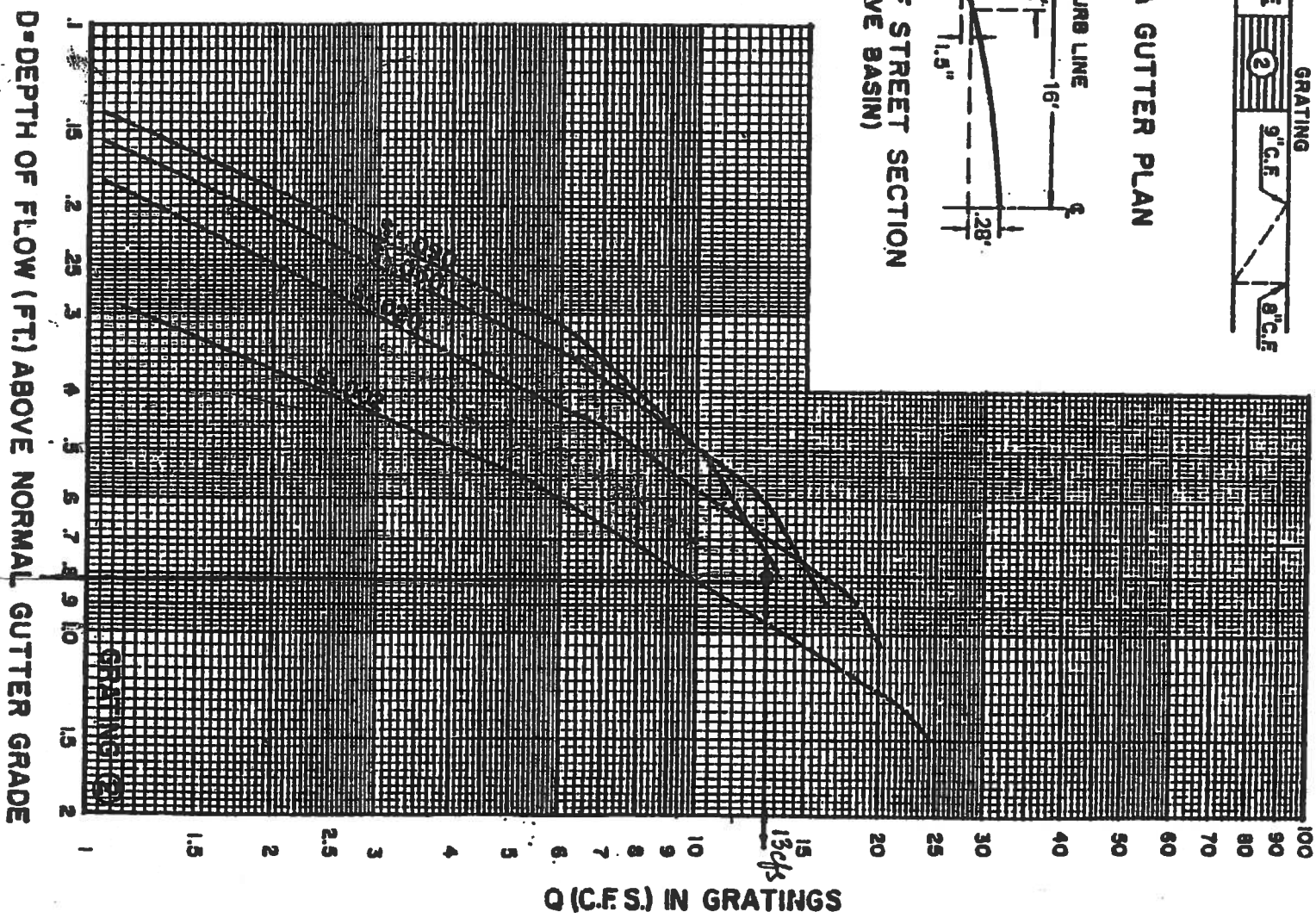
GRATING CAPACITIES FOR TYPE 'A', 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

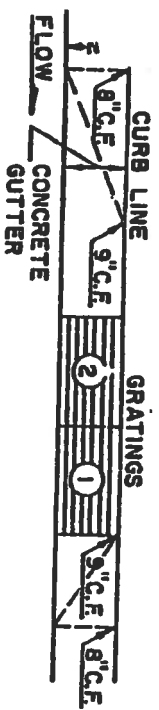


D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

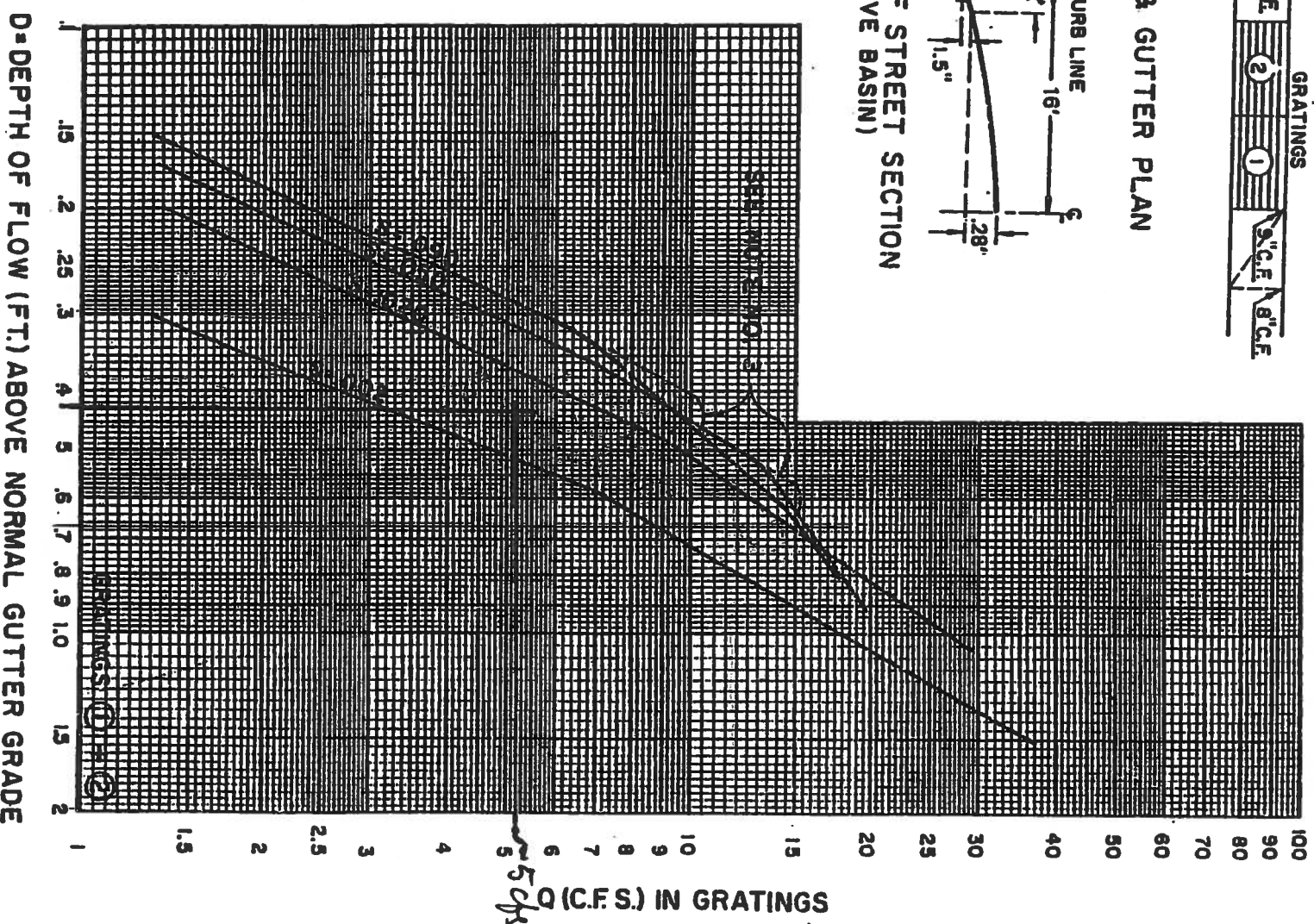
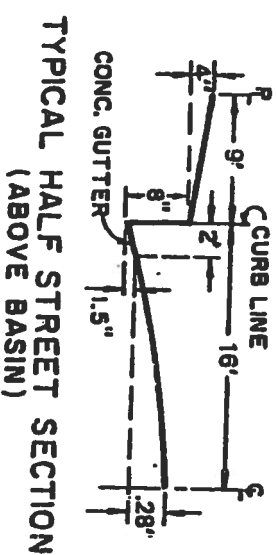
INLET #6 - 'A'

d=0.81'

S=1.2%



GRATING & GUTTER PLAN

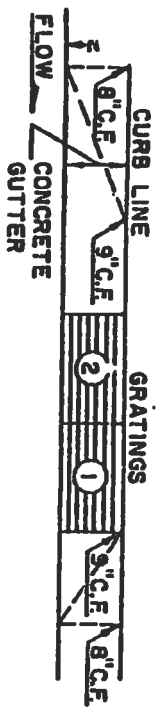


INLET #7 - PBL'C

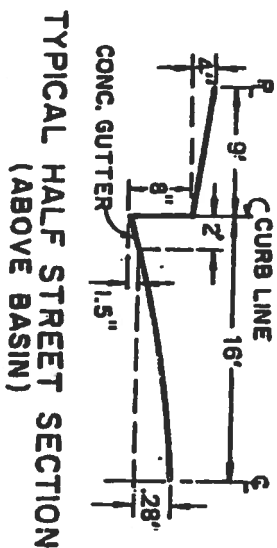
$$\alpha = .43'$$

$$S = 1.2\%$$

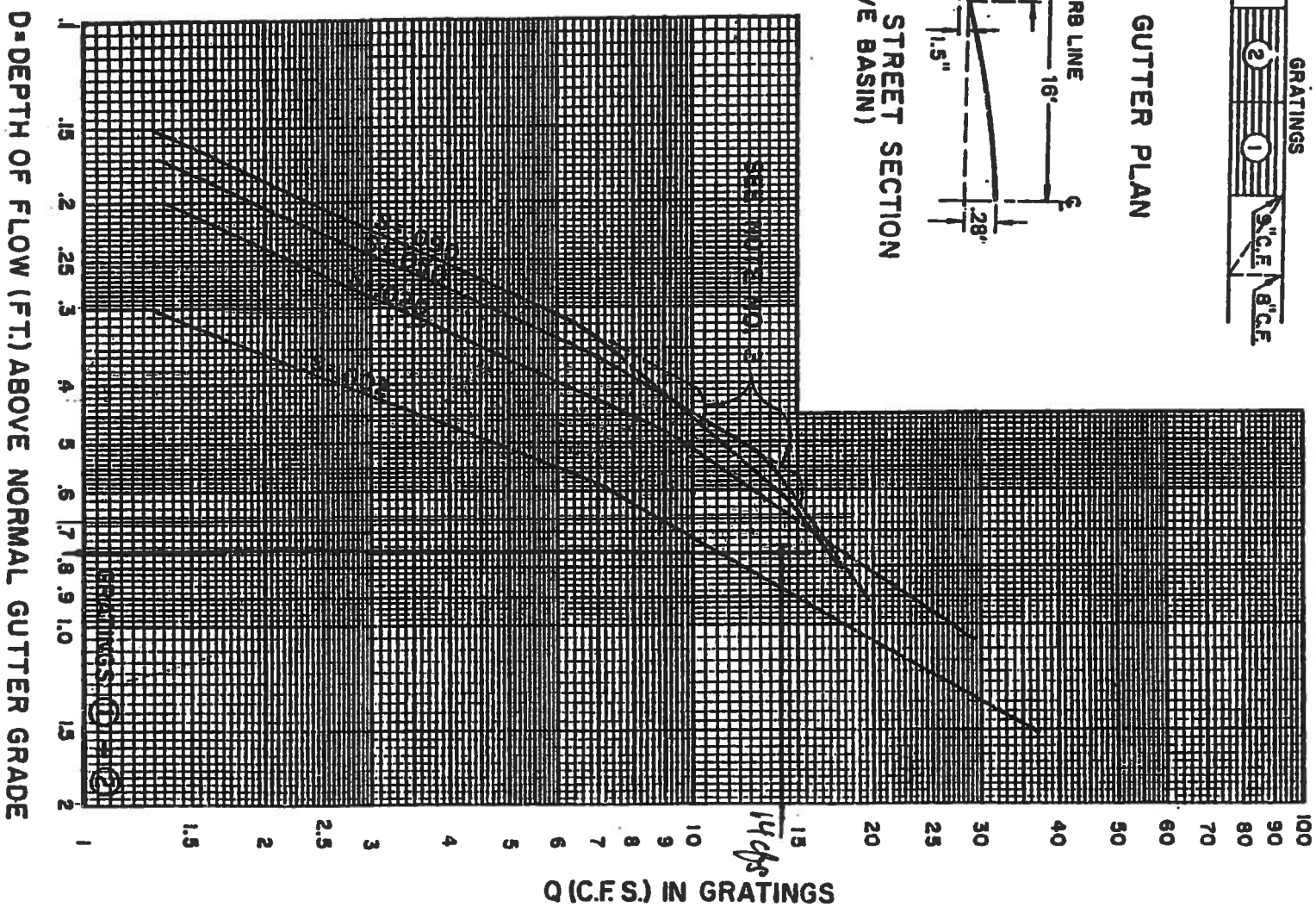
GRATING CAPACITIES FOR TYPE DOUBLE "C" AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

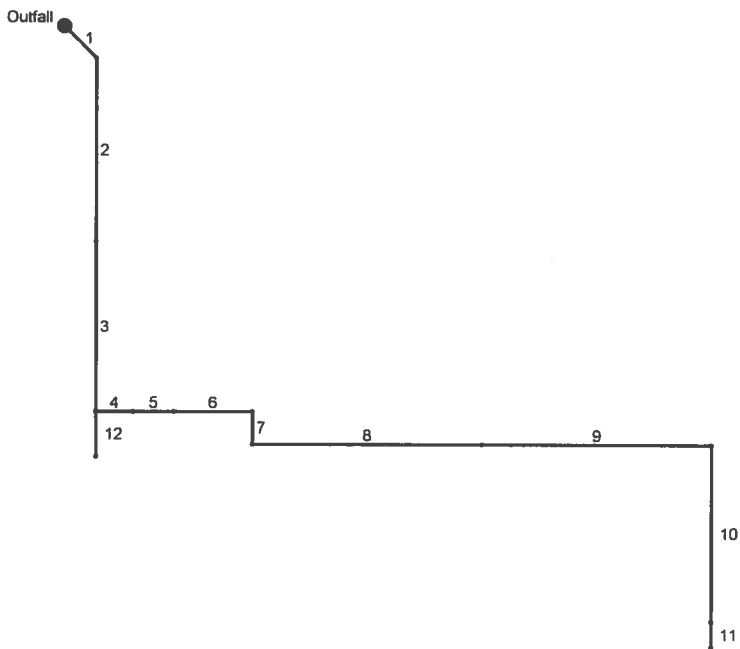


D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

INLET #8 - DBL 'C'

d = .76'
S = 1.2%

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2012 Plan

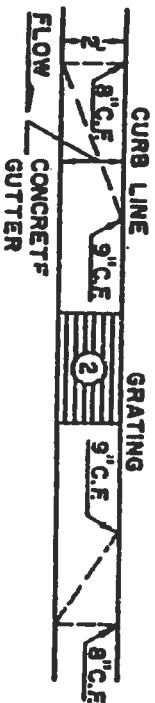


Project File: 1900 SD STUDY.stm

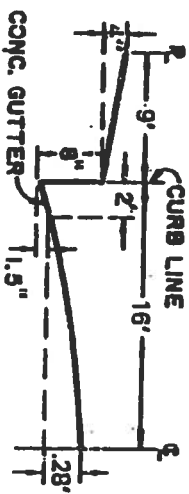
Number of lines: 12

Date: 2/15/2012

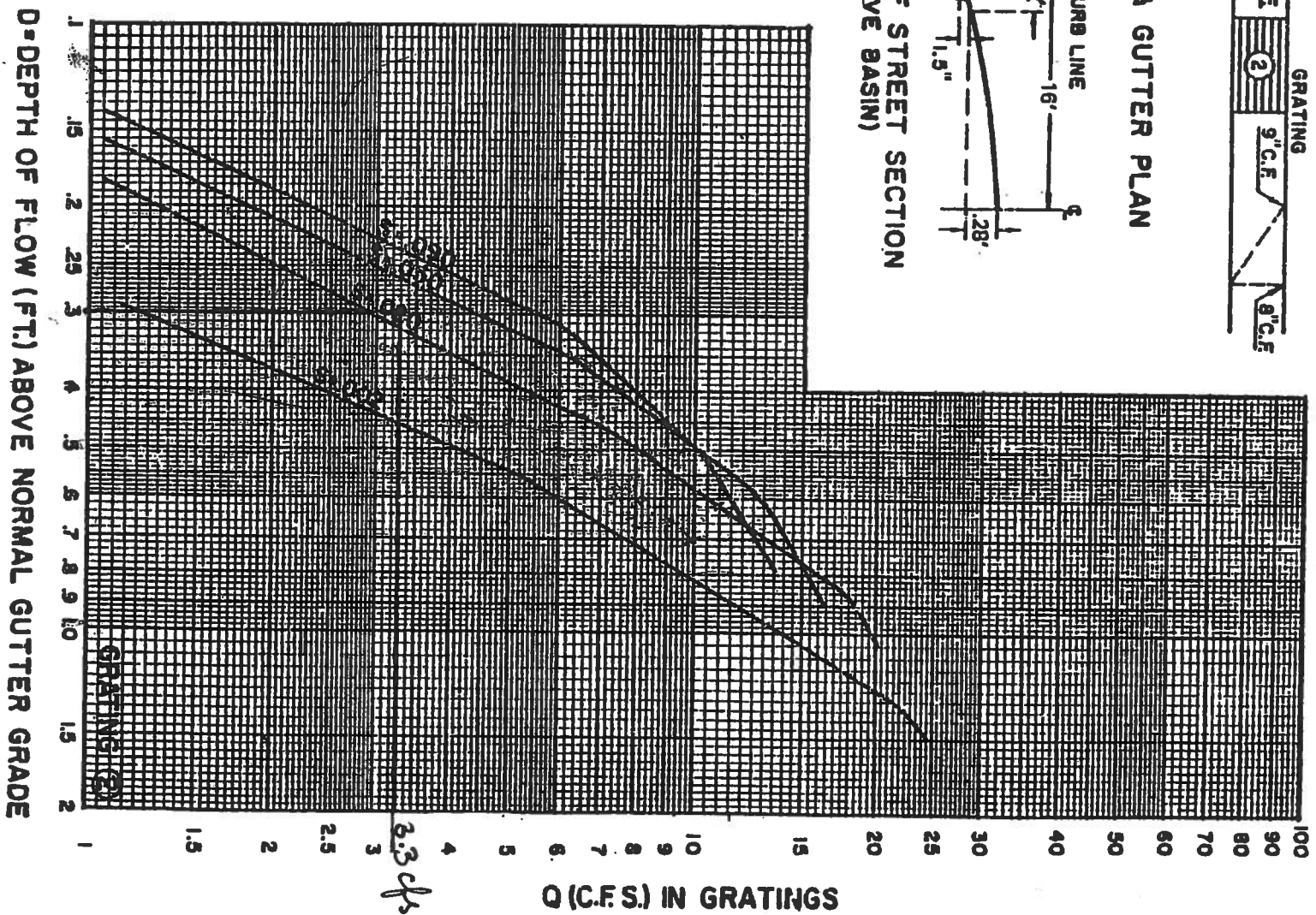
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



CATTLE GUARD INLET
d=0.3'
S=2.5%/4

APPENDIX E

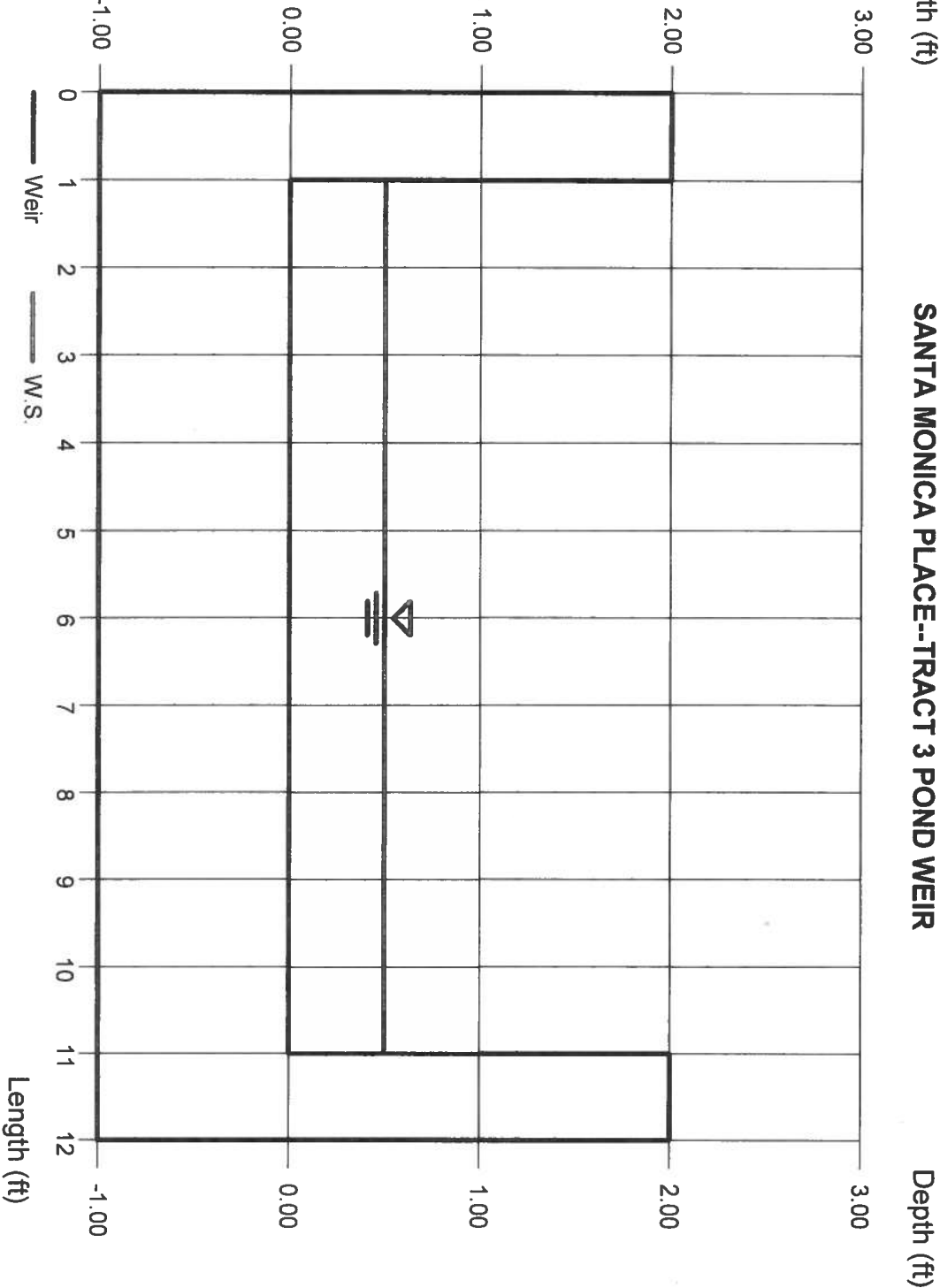
INTERIM POND AND WEIR CALCULATIONS

[illegible]

Weir Report

SANTA MONICA PLACE--TRACT 3 POND WEIR

Rectangular Weir		Highlighted	
Crest	= Sharp	Depth (ft)	= 0.50
Bottom Length (ft)	= 10.00	Q (cfs)	= 11.77
Total Depth (ft)	= 2.00	Area (sqft)	= 5.00
Calculations		Velocity (ft/s)	= 2.35
Weir Coeff. Cw	= 3.33	Top Width (ft)	= 10.00
Compute by:	Known Depth		
Known Depth (ft)	= 0.50		



Weir Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc.

Thursday, Feb 2 2012

SANTA MONICA PLACE--TRACT 3 POND WEIR

Rectangular Weir

Crest = Sharp
Bottom Length (ft) = 10.00
Total Depth (ft) = 2.00

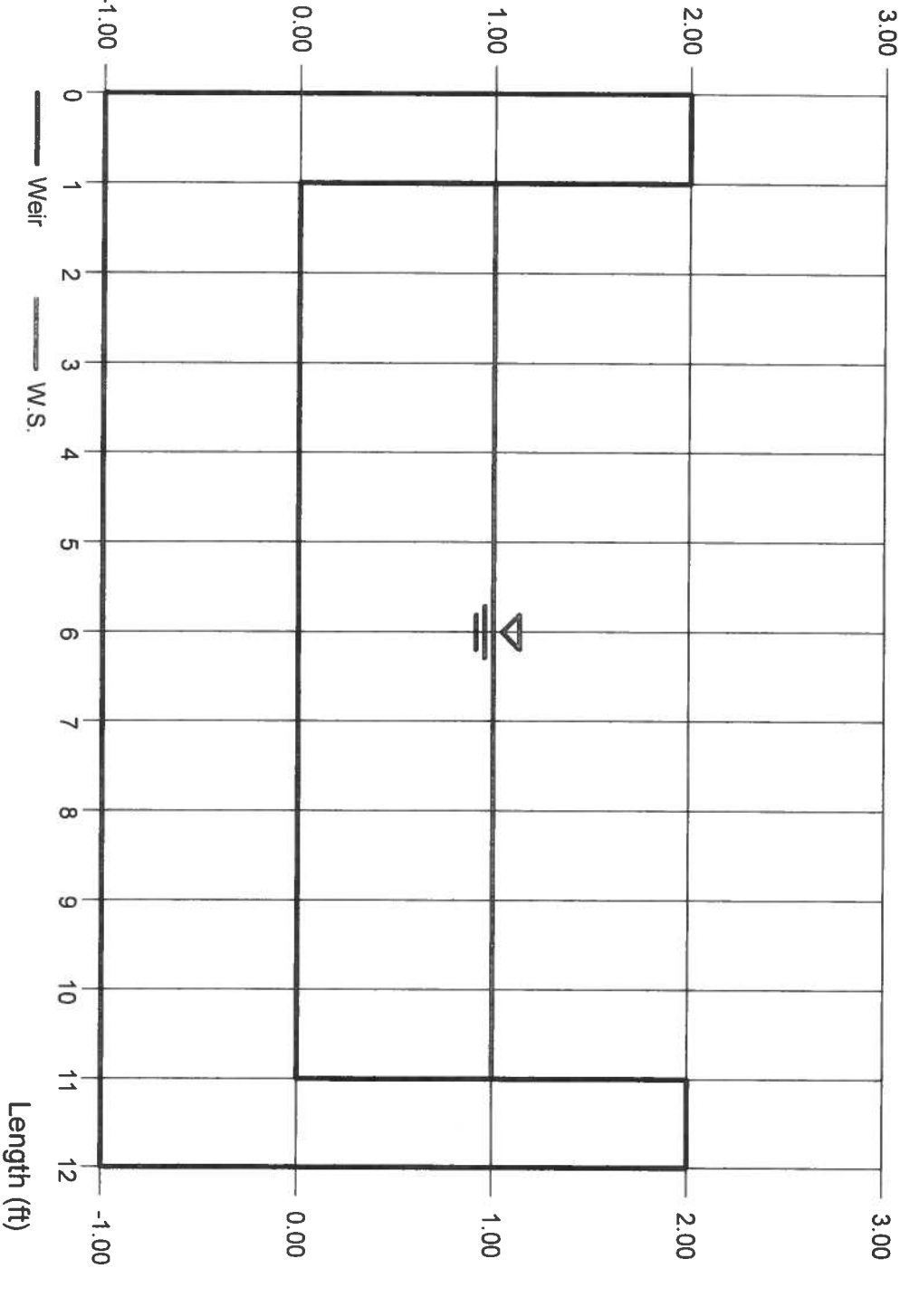
Calculations

Weir Coeff. C_w = 3.33
Compute by: Known Depth
Known Depth (ft) = 1.00

Highlighted

Depth (ft) = 1.00
 Q (cfs) = 33.30
Area (sqft) = 10.00
Velocity (ft/s) = 3.33
Top Width (ft) = 10.00

SANTA MONICA PLACE--TRACT 3 POND WEIR



Weir Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2012 by Autodesk, Inc.

Thursday, Feb 2 2012

SANTA MONICA PLACE--TRACT 3 POND WEIR

Rectangular Weir

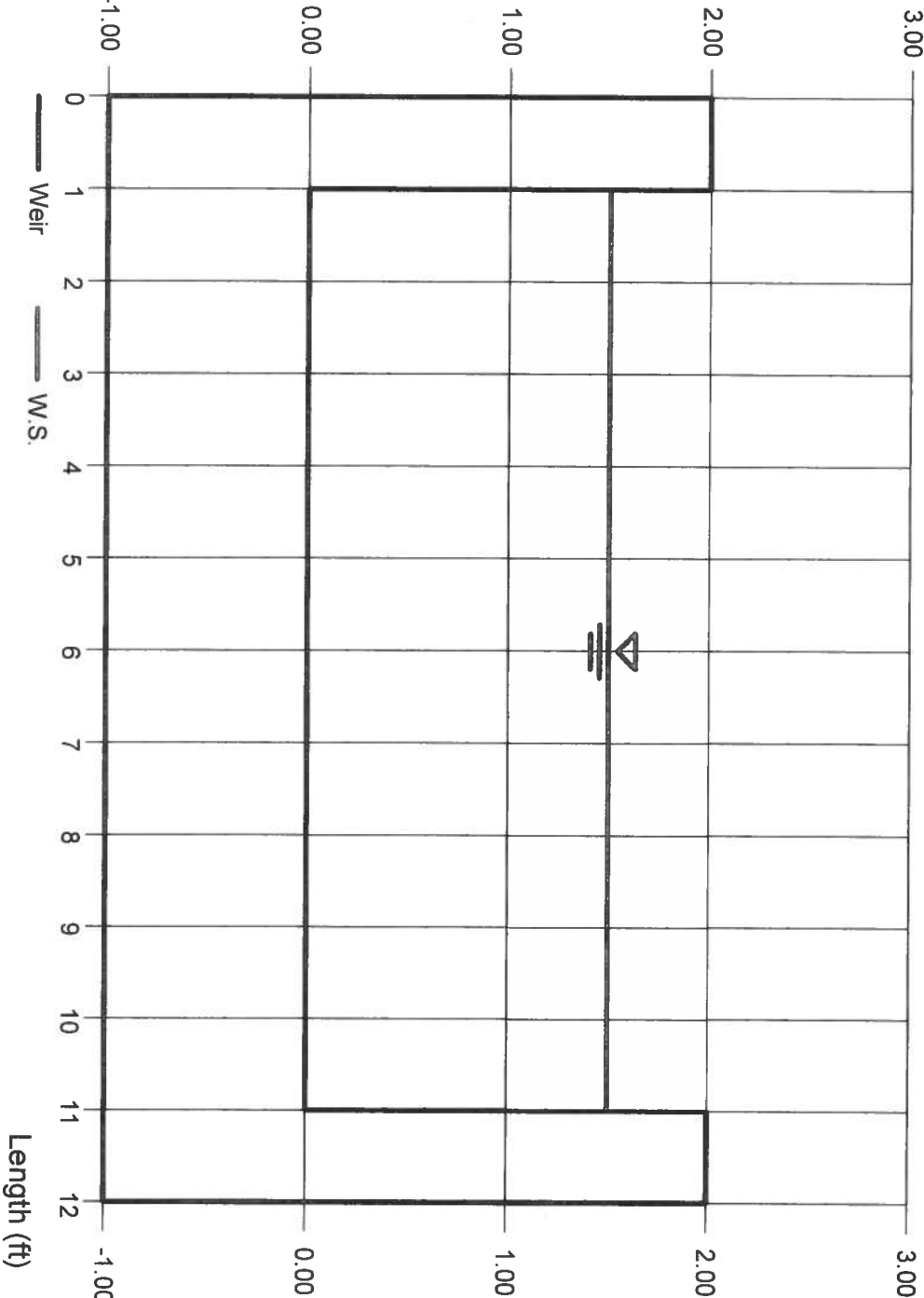
Crest = Sharp
Bottom Length (ft) = 10.00
Total Depth (ft) = 2.00

Calculations

Weir Coeff. Cw = 3.33
Compute by: Known Depth
Known Depth (ft) = 1.50

Highlighted
Depth (ft) = 1.50
Q (cfs) = 61.18
Area (sqft) = 15.00
Velocity (ft/s) = 4.08
Top Width (ft) = 10.00

SANTA MONICA PLACE--TRACT 3 POND WEIR



APPENDIX F

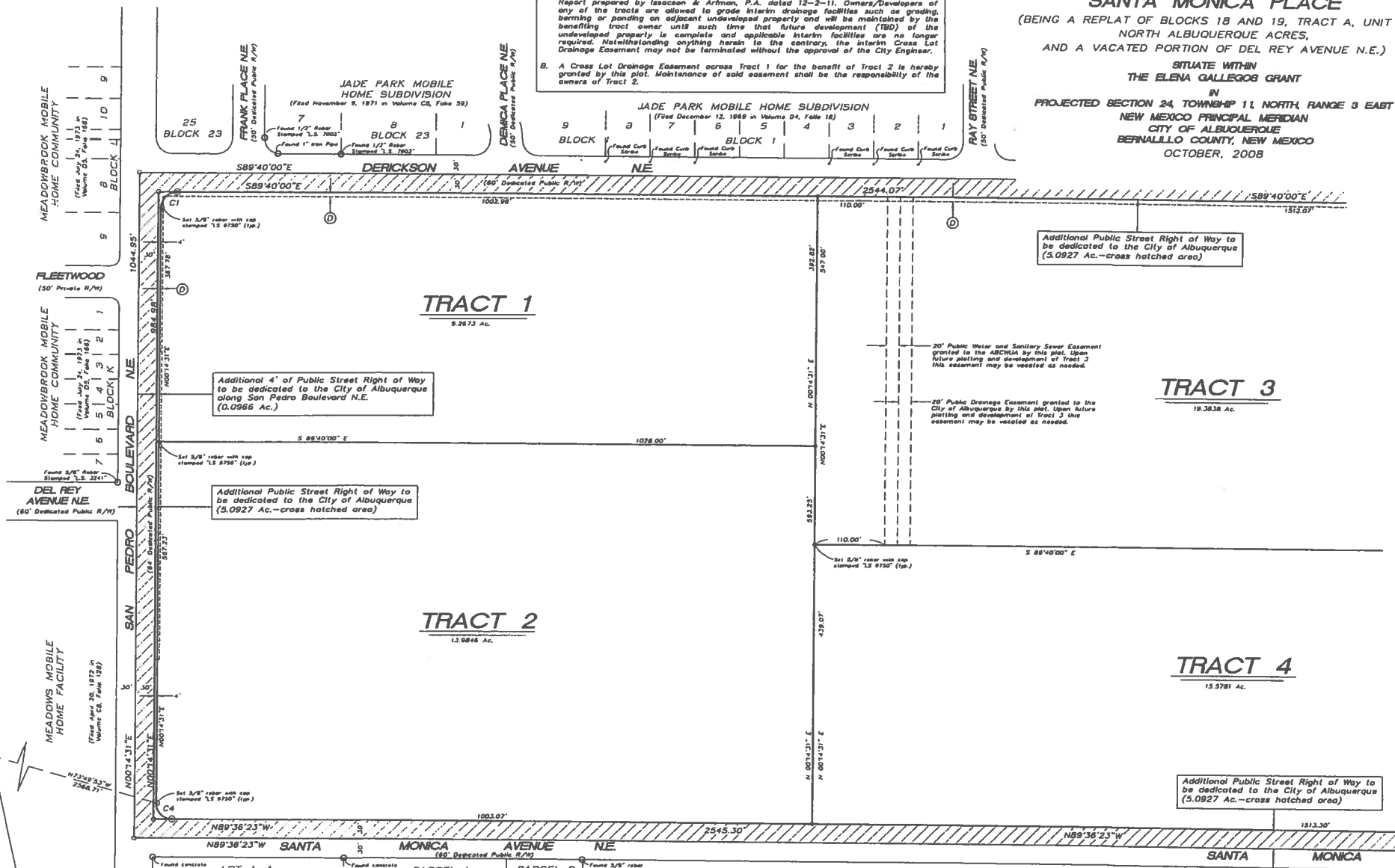
PLAT SHEET 4-

INTERIM DRAINAGE EASEMENT NOTE

**BULK LAND PLAT OF
TRACTS 1 THRU 4
SANTA MONICA PLACE**
(BEING A REPLAT OF BLOCKS 18 AND 19, TRACT A, UNIT A,
NORTH ALBUQUERQUE ACRES,
AND A VACATED PORTION OF DEL REY AVENUE N.E.)
SITUATE WITHIN
THE ELENA GALLEGOS GRANT
IN
PROJECTED SECTION 24, TOWNSHIP 11, NORTH, RANGE 3 EAST
NEW MEXICO PRINCIPAL MERIDIAN
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO
OCTOBER, 2008

DRAINAGE EASEMENT NOTES

- An Interim Cross Lot Drainage Easement is granted by this plat for the mutual benefit of the owners of Tracts 1 thru 4 until future development occurs. Tracts 1 thru 4 will discharge drainage to the existing drainage facilities/outfalls located at the intersection of Derickson and San Pedro as outlined in the Conceptual Drainage Report prepared by Isaacson & Artman, P.A. dated 12-2-11. Owners/Developers of any of the tracts are allowed to grade interim drainage facilities such as grading, berming or ponding on adjacent undeveloped property and will be maintained by the benefiting tract owner until such time that future development (FID) of the undeveloped property is complete and applicable interim facilities are no longer required. Notwithstanding anything herein to the contrary, the Interim Cross Lot Drainage Easement may not be terminated without the approval of the City Engineer.
- A Cross Lot Drainage Easement across Tract 1 for the benefit of Tract 2 is hereby granted by this plat. Maintenance of said easement shall be the responsibility of the owners of Tract 2.

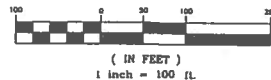


ALBUQUERQUE SURVEY CONTROL
New Mexico State Plane Coordinates
Central Zone (NAD 83)
N = 1,514,923.410
E = 1,540,074.230
Delta Alpha = -0°11'38.03"
Ground to Grid Factor = 0.999866707

San Antonio Condominiums
BLOCK 20, TRACT A, UNIT A
NORTH ALBUQUERQUE ACRES
(Filed November 8, 2000 in Volume 2000C, Folio 288)

Block 20, Tract A, Unit A
NORTH ALBUQUERQUE ACRES
(Filed February 6, 2003 in Volume 2003C, Folio 44)

Block 20, Tract A, Unit A
NORTH ALBUQUERQUE ACRES
(Filed September 27, 1985 in Volume C28, Folio 92)



SHEET 4 OF 5

SURV TEK, INC.

Consulting Surveyors
6384 Valley View Drive, N.W. Albuquerque, New Mexico 87114
Phone: 505-897-3384 Fax: 505-897-3377

110517 BULKPLAT.dwg

SEE SHEET 5

DRAINAGE EASEMENT NOTES

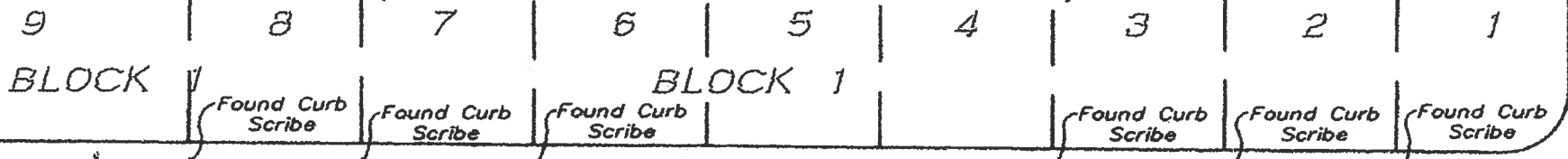
- A. An interim Cross Lot Drainage Easement is granted by this plat for the mutual benefit of the owners of Tracts 1 thru 4 until future development occurs. Tracts 1 thru 4 will discharge drainage to the existing drainage facilities/outfalls located at the intersection of Derickson and San Pedro as outlined in the Conceptual Drainage Report prepared by Issacson & Arfman, P.A. dated 12-2-11. Owners/Developers of any of the tracts are allowed to grade interim drainage facilities such as grading, berming or ponding on adjacent undeveloped property and will be maintained by the benefiting tract owner until such time that future development (TBD) of the undeveloped property is complete and applicable interim facilities are no longer required. Notwithstanding anything herein to the contrary, the interim Cross Lot Drainage Easement may not be terminated without the approval of the City Engineer.
- B. A Cross Lot Drainage Easement across Tract 1 for the benefit of Tract 2 is hereby granted by this plat. Maintenance of said easement shall be the responsibility of the owners of Tract 2.

DEMICA PLACE NE.
(50' Dedicated Public R/W)

DAY STREET NE

JADE PARK MOBILE HOME SUBDIVISION

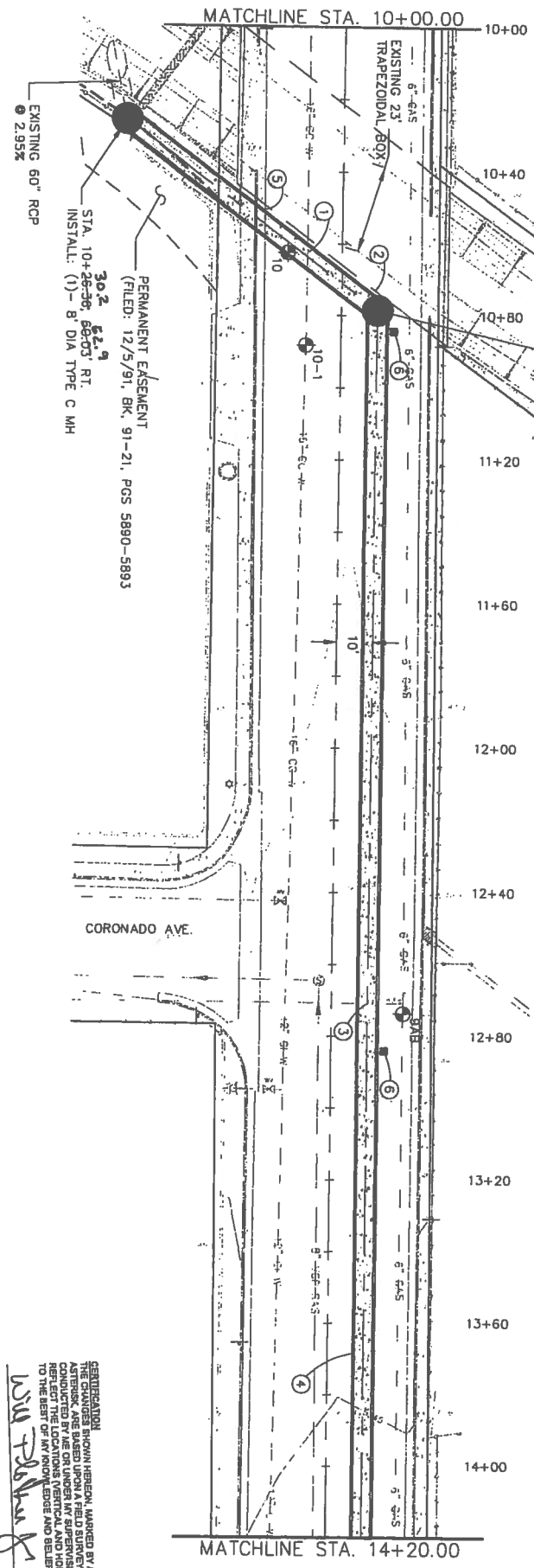
(Filed December 12, 1969 in Volume D4, Folio 18)



APPENDIX G

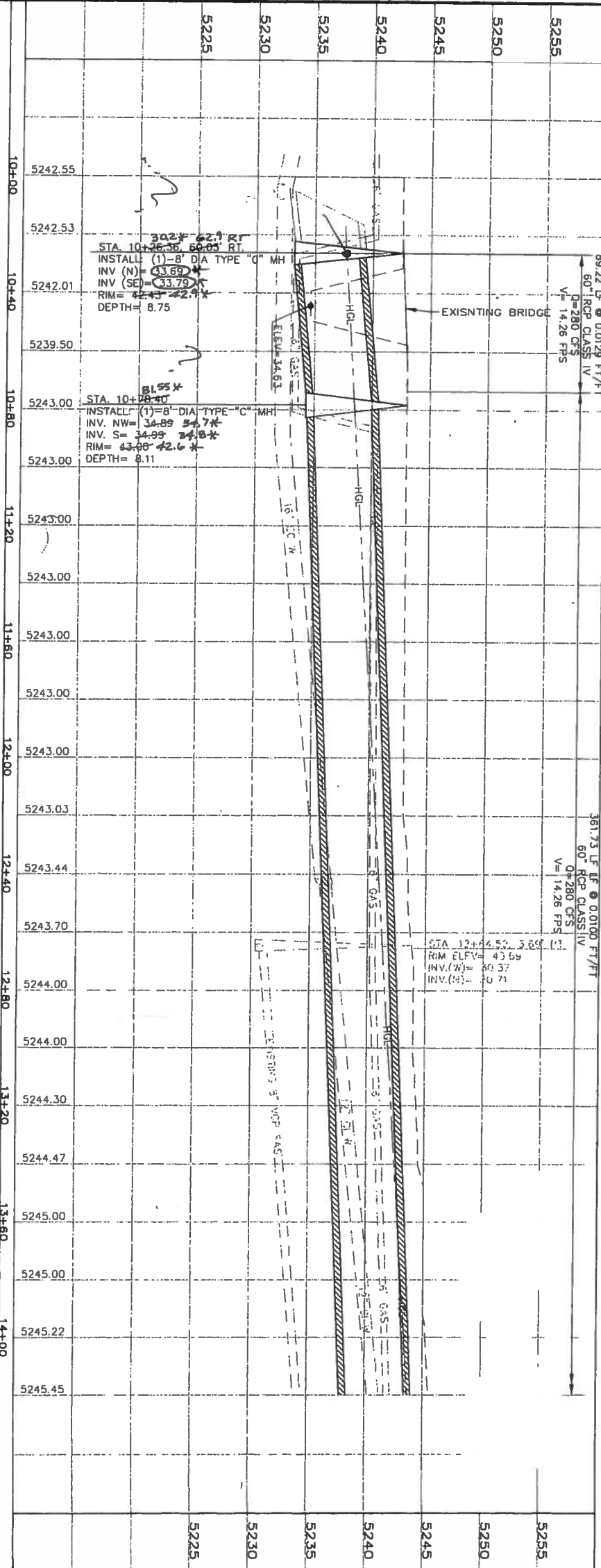
STORM DRAIN AS-BUILT DRAWINGS

POT-HOLE INFORMATION			
NO.	BURY TO TOP OF PIPE	ELEV. AT TOP OF PIPE	DESCRIPTION
9A	2'-10"	40.962	UTILITY MATERIAL DIAMETER 2'
9B	3'-1"	40.712	GAS METALLIC 6"
10	10'-0"	NO LOCATION	GAS METALLIC 6"
10-1	9'-5"	32.992	WATER METALLIC 18"



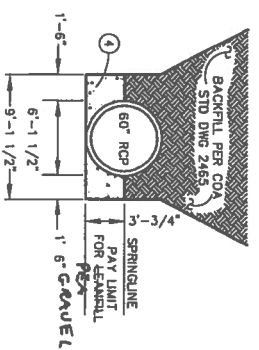
SAN PEDRO DRIVE
STA. 10+26.36 TO STA. 14+20.00

SCALE:
HOR.: 1"=20'
VER.: 1"=5'



NOTES

- CONTRACTOR TO PROTECT EXISTING 18" C.C. WL.
- CONTRACTOR TO PROTECT EXISTING CONCRETE CHANNEL AND CONCRETE TRAPEZOIDAL BOX AND RELOCATED BY PM.
- EXISTING 2" GAS LINE TO BE REMOVED.
- CONTRACTOR TO PLACE LEAN FILL 90% COMP.
- SEE SHEET 16 FOR PROFILE OF 60" RCP AT CENTERLINE OF PIPE.
- MONITORING WELL TO BE INSTALLED BY CONTRACTOR AND ASSOCIATES AFTER REMOVAL OF TRAFFIC CONTROL.



60" RCP INSTALLATION
PAY LIMIT FOR 60" RCP PLACED = 0.49 CV/LF
LINEAL FOOT OF 60" RCP PLACED = 0.49 CV/LF

NOTES

- ALL 8" DIA TYPE "C" MANHOLES SHALL BE INSTALLED PER COA STD DWG 2101.
- ALL TYPE "A" STORM INLETS SHALL BE INSTALLED PER COA STD DWG 2201.
- ALL DOUBLE TYPE "C" STORM INLETS SHALL BE INSTALLED PER COA STD DWG 2205.

ENGINEERS SEAL
9877

SURVEY INFORMATION		
NO.	BY	DATE

BENCH MARKS	
NMSHC BRASS TABLET STAMPED "125-14, 1969"	LOCATED AT THE NMDOT DISTRICT 3 OFFICES DRIVEWAY ON THE I-25 EAST FRONTAGE ROAD
X= 399,828.26	Y= 1,514,860.92
G-C= 0.99966298	ΔX= 0'11'35"
(NAD 1927/SLD 1929)	ELEVATION= 5196.73

AS BUILT INFORMATION	
CONTRACTOR	DATE
INSPECTOR	DATE
VERIFICATION BY	DATE
DRAWING CORRECTED BY	DATE
MICRO-FILM INFORMATION	
RECORDED BY	DATE
NO.	

THE CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
STORM DRAIN DESIGN DIVISION

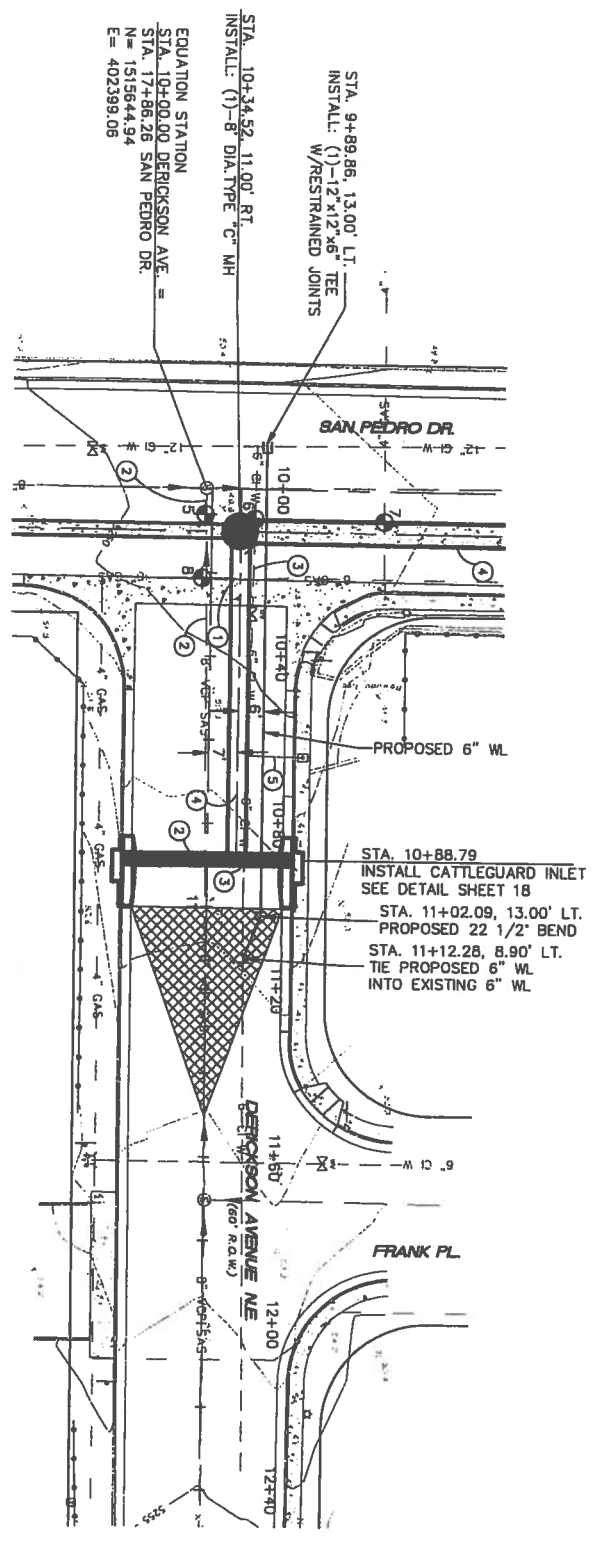
San Pedro Collectors to the North Pino Arroyo
San Pedro Boulevard - STA. B.O.P. 14+20.00

DESIGNED BY: DBT DATE: 10/1/04
DRAWN BY: DEM DATE: 10/1/04
CHECKED BY: DBT DATE: 10/1/04

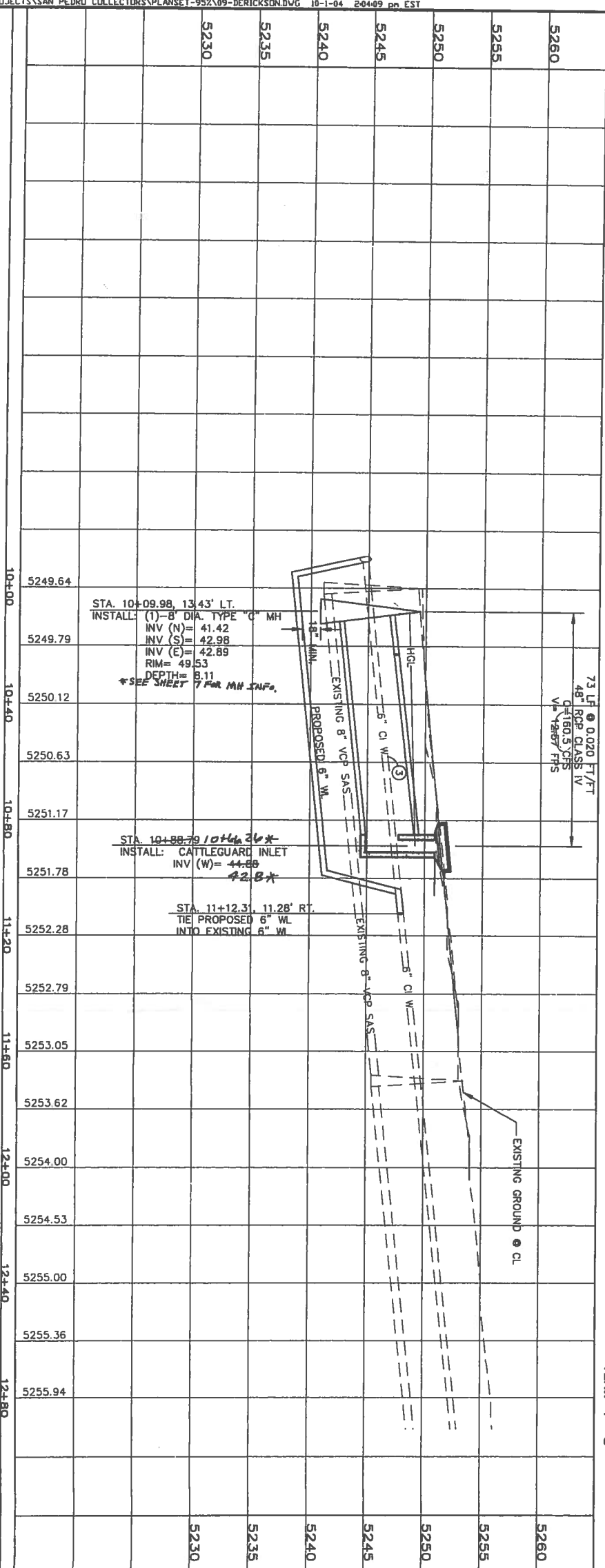
THE CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
STORM DRAIN DESIGN DIVISION

San Pedro Collectors to the North Pino Arroyo
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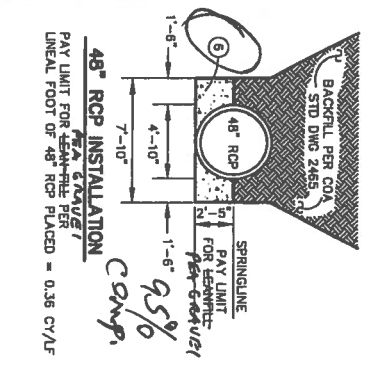
POT-HOLE INFORMATION			
NO.	BURY TO TOP OF PIPE	ELEV. TO TOP OF PIPE	DESCRIPTION
5	7'-6"	42.27±	SAS
6	3'-2"	46.34±	WATER
7	3'-5"	15.78±	GAS
8	2'-0"	47.70±	METALLIC
11	7'-4"	44.44±	SAS
12	3'-9"	47.79±	WATER



SCALE:
HOR.: 1"=20'
VER.: 1"=5'

CERTIFICATION
THE CHANGES SHOWN HEREON WERE MADE BY AN
EXPERIENCED PROFESSIONAL ENGINEER AND
CONDUCTED BY ME OR UNDER MY SUPERVISION AND
I CERTIFY THAT THE LOCATION, DEPTH, AND HORIZONTAL
TO THE BEST OF MY KNOWLEDGE AND BELIEF.

- KEYED NOTES**
- EXISTING 6" GAS LINE TO BE REMOVED AND RELOCATED BY PNM
 - CONTRACTOR TO PROTECT EXISTING 8" VCP SAS LINE
 - STA. 10+88.79 TO STA. 11+12.28 BEND. CONTRACTOR TO PLACE LEAN FILL AND INSTALL 6" GATE VALVE W/ VALVE BOX AND AIR RELEASE VALVE PER COA STD DWG 2350.
 - CONTRACTOR TO PLACE LEAN FILL TO SPRING LINE OF 48" RCP
 - REMOVE AND RELOCATE EXISTING 3/4" WATER SERVICE



- NOTES**
- ALL 8" DIA TYPE "C" MANHOLES SHALL BE INSTALLED PER COA STD DWG 2101
 - ALL TYPE "A" STORM INLETS SHALL BE INSTALLED PER COA STD DWG 2201
 - ALL DOUBLE TYPE "C" STORM INLETS SHALL BE INSTALLED PER COA STD DWG 2205

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ALBUQUERQUE, NEW MEXICO 87111
PHONE: (505) 271-2199
FAX: (505) 237-4432
www.thompson-engineering.com

SAN PEDRO COLLECTORS TO THE NORTH PINO ARROYO
UTILITY PLAN AND PROFILE DERICKSON AVE
SOUTH OF NORTH PINO ARROYO - STA. 10+0000 TO STA. 12+8000

APPROVED
CITY ENGINEER
Last Design Update

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CITY ENGINEER
Last Design Update

DESIGNED BY DBT **DATE** 10/1/04
DRAWN BY DBM **DATE** 10/1/04
CHECKED BY DBT **DATE** 10/1/04