



City of Albuquerque

May 18, 2000

Mark Goodwin, P.E.
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199


***RE: Grading and Drainage Certification Plan for Villa Del Norte Subdivision (D16/D6)
Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated
5/5/00.***

Dear Mr. Goodwin:

The above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List dated December 22, 1998, and revised on April 13, 1999, for the release of Financial Guarantees for the Villa Del Norte Subdivision.

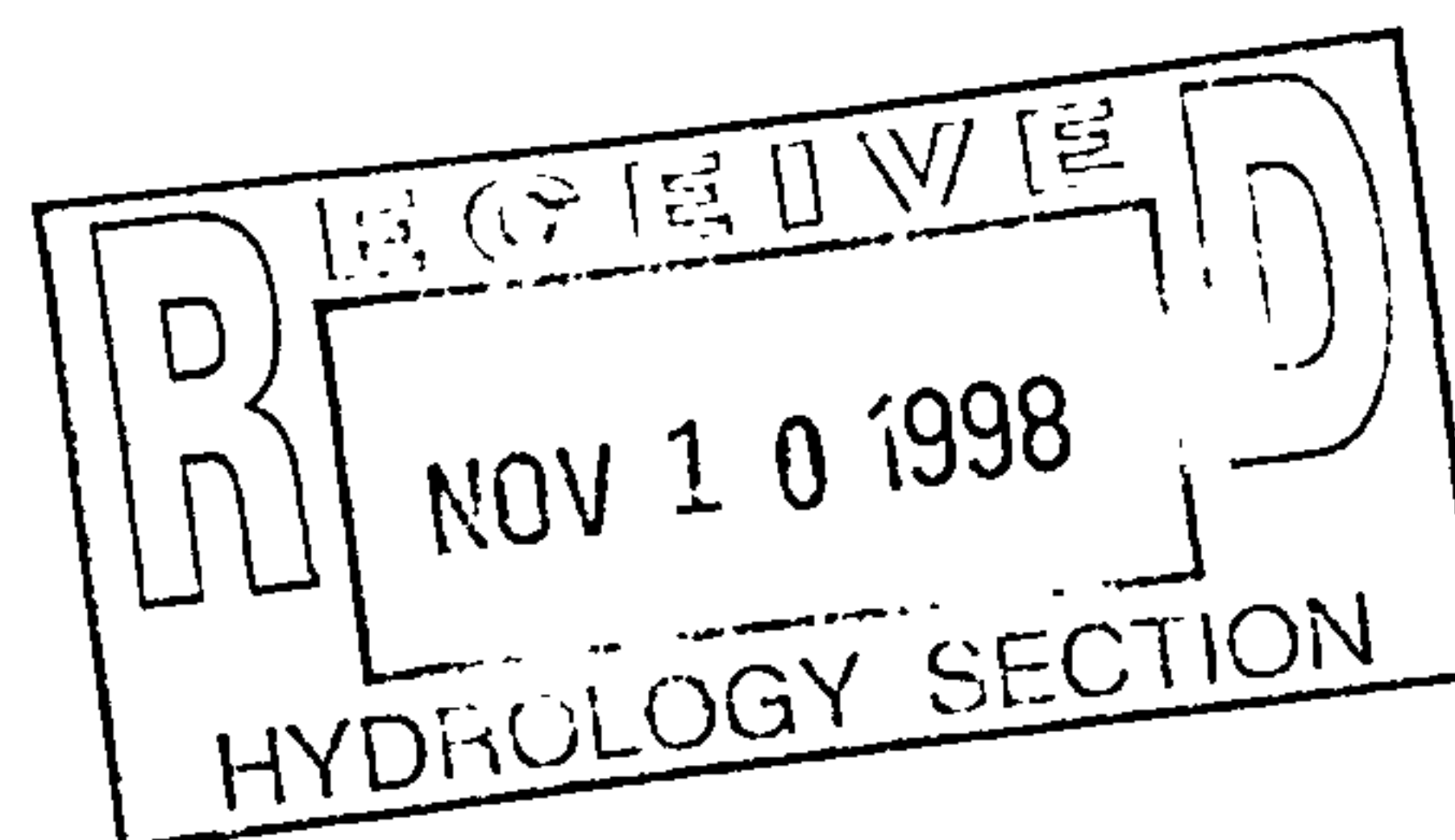
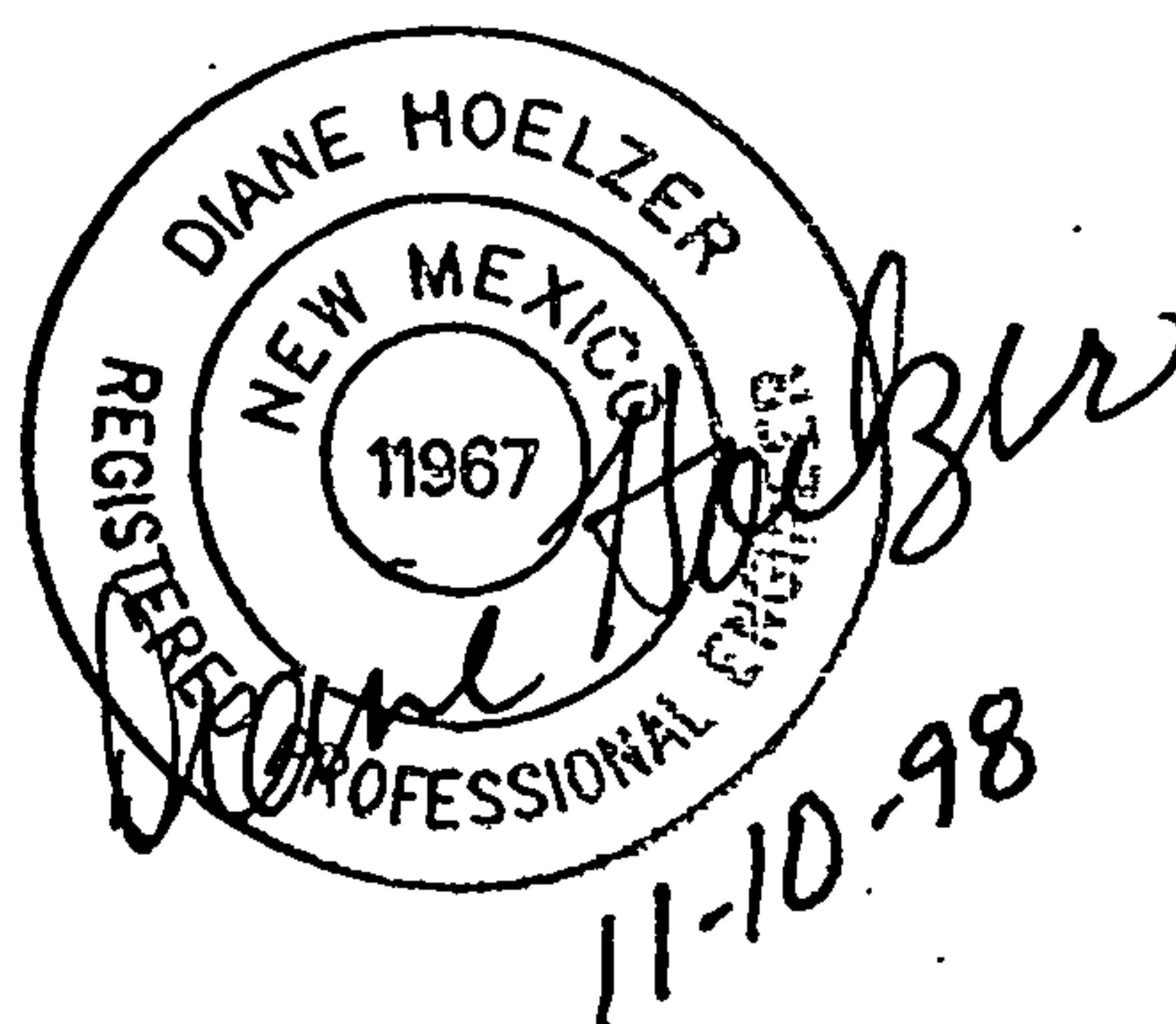
If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,


Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Terri Martin, DRB-98-374, City Project # 613281
Lisa Ann Manwill, P.E., Albuquerque Metropolitan Arroyo Flood Control Authority
File

DRAINAGE REPORT
for
VILLA DEL NORTE
CLUSTER HOME PROJECT



NOVEMBER 1998

I. LOCATION AND DESCRIPTION

The proposed Villa Del Norte subdivision, comprised of approximately 11.3 acres is a cluster home project consisting of 86 detached residential homes. This project is part of the Vista Del Norte Unit 1 Master Planned Community located adjacent to the north side of Osuna Road and west of the AMAFCA North Diversion channel. This site is identified as Tract W on the Bulk Land Plat and as Tract J-3 in the approved drainage report for Vista Del Norte Unit 1.

A master grading and drainage plan (D16/D1) has been approved for the entire site and construction plans for the master waterline, storm drain and sanitary sewer are in the process of being approved.

I. DRAINAGE DESIGN CRITERIA AND PREVIOUS REPORTS

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The 100-year 6-hour storm event was analyzed to determine street capacities and sizing the internal storm drain system using $P(1 \text{ hr}) = 2.05"$, $P(6 \text{ hr}) = 2.30"$ and $P(24 \text{ hr}) = 2.60"$.

The Land Treatment values used for a typical cluster pod were Treatment D=60, Treatment C=20 and Treatment B=20.

This report is based on design criteria and construction plans previously prepared by Parson Brinkerhoff for the Vista Del Norte Unit 1 Master Planned Community, Drainage File (D16/D1) and Project No. 597081. In the approved master drainage management plan for Vista Del Norte Unit 1 dated June 18, 1998 this site was identified as J-3 which had a calculated maximum allowable discharge of 60.3 cfs. Construction plans for this planned community included a storm drain system in Vista Del Norte Drive into which this project site will be discharging.

III. EXISTING DRAINAGE CONDITIONS

In accordance with the approved master drainage plan the project site has been rough graded to an approximate grade of 0.8 percent in a northwest direction.

IV. DEVELOPED DRAINAGE CONDITIONS

The maximum "developed conditions" discharge from the site was determined to be 44.6 cfs. Refer to Appendix A for hydrology calculations and AHYMO runs.

Runoff from the site flows generally in a westward direction toward the storm drain system in Vista Del Norte Drive. Runoff from sub-basins 1, 2, 3 and 4 flows towards inlets in a sump condition in Villa Sonrisa, Villa Chamisa, Villa Celaje and Villa Campo roads. Refer to Exhibit 2 for sub-basin boundaries and summary of calculated discharge values. An internal storm drain system sized for two times the 100-year discharge conveys the runoff to the storm drain system in Vista Del Norte. A double Type "C" inlet will be used at each of the sump locations. The maximum water depth was calculated to be 0.62'. Sump calculations and street capacity calculations can be found in Appendix B - Hydraulics.

A series of inlets in Villa Del Valle at Vista Del Norte Drive intercept runoff from Villa Del Valle road and the homes located on the east side of the project site and convey the runoff to the storm drain in Vista Del Norte Drive. Refer to Appendix C for storm drain calculations.

Use
Type
"A"?

C's ok

VILLA DEL NORTE CLUSTER HOME SUBDIVISION

TABLE 1: SUMMARY OF STREET CAPACITY AND INLET CALCULATIONS

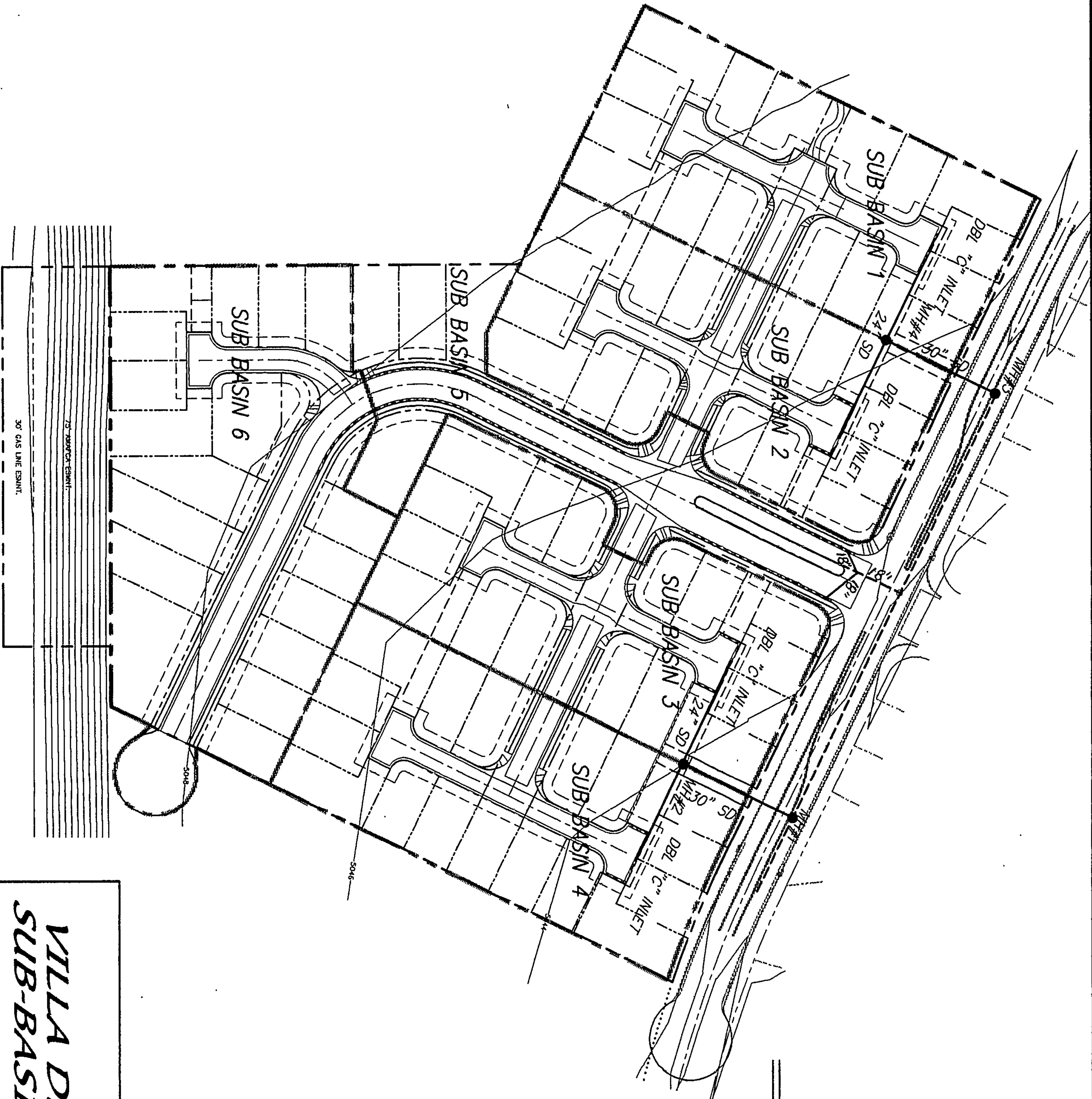
	LOCATION	CURB	WIDTH ft.	CROWN/ CROSS SLOPE	SLOPE %	Q cfs	DEPTH ft	EG ft	Q INLET cfs	#/TYPE of INLETS	REMAIN Q (cfs)
Basin											
3	Villa Celaje	MTB	24' FF	2.0	2.0	7.5	.32	.50			
4	Villa Campo	MTB	24' FF	CR	2.4	7.5	.24	.39			
2	Villa Chamisa (*)	MTB	24' FF	1.0	1.0	7.3	.29	.37			
	Villa Ventosa	MTB	24' FF	0.6	0.6	3.2	.22	.25			
1	Villa Sonrisa	MTB	24' FF	1.0	0.8	7.3	.30	.37			
	Villa Del Valle	MTB	32' FF	CR	0.6	9.0	.33	.38			
6	Villa Del Valle	STD	32' FF	CR	0.6	9.0	.39	.44			
5+6	Villa Del Valle	STD	32' FF	CR	0.6	15.0	.44	.52	3.70	2/SNG A	7.6
	Ville Del Valle	STD	32' FF	CR	0.6	7.6	.36	.42	2.30	2/SNG C	3.0
	Ville Del Valle	STD	32' FF	CR	0.6	3.0	.28	.31	1.35	2/SNG C	0.3

MTB = Mountable Curb

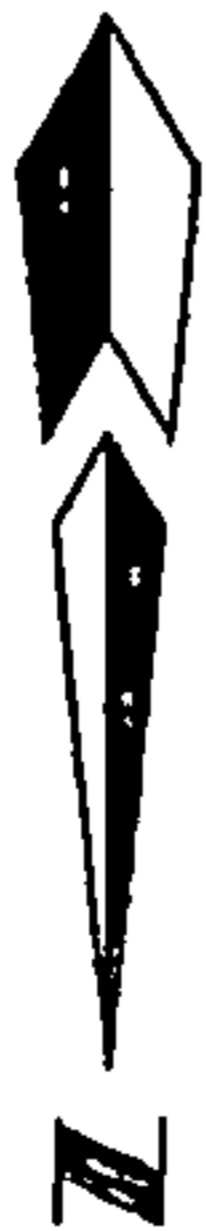
STD = Standard Curb

(*) = same as Villa Montana, Los Ranchos only Q=3.2 cfs.

f:\eaglerck\inlet3.cal



ID	AREA	DISCHARGE
SUB BASIN 1	1.862 acres	100 YR, 24 HR 7.3 cfs
SUB BASIN 2	1.856 acres	7.3 cfs
SUB BASIN 3	2.045 acres	7.5 cfs
SUB BASIN 4	1.924 acres	7.5 cfs
SUB BASIN 5	1.118 acres	5.1 cfs
SUB BASIN 6	2.666 acres	9.9 cfs



ZONE MAP NO.
D16

**VILLA DEL NORTE SUBDIVISION
SUB-BASIN BOUNDARY EXHIBIT 2**

75' PROPERTY EASMENT
30' GAS LINE EASMENT



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

PROJECT Villa Del Norte
SUBJECT Land Treatment
BY DLH DATE 11-8-98
CHECKED _____ DATE _____
SHEET 1 OF 2

LAND TREATMENT CALCS

	Area	Acres	Sq. mi
Sub Basin 1, 2, 3, 4	SB 1	1.862	.002909
	SB 2	1.856	.002900
Impervious Area	SB 3	1.909	.002983
(2 clusters)(21089 SF) = 42178	SB 4	1.924	.003006
(200 LF)(28' FF) = 5600			
(70+70+80+80) 4' = 1200			
48978 SF \Rightarrow USE	Tr. D = 60		
	Tr. C = 20		
	Tr. B = 20		

Subbasin 5 1.254 acres = 0.001959 sq. mi.

PADS (36x45) 4	6480	Tr. D 69.00
Rd's 188 LF (41' FF)	7708	Tr. C 15.5
53 LF ($\frac{53+32}{2}$)	2252.5	Tr. B 15.5
300 LF (32' FF)	9600	
SDWK (270+180) 2(4')	3600	
Pads (32x45) 1	1440	
(36x45) 3	4860	
Driveways (20x16) 3	960	
(50x16) 1	800	
	<u>37,700.5</u>	



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PROJECT Villa Del Norte
SUBJECT Land Treatment
BY DLH DATE 11-8-98
CHECKED _____ DATE _____
SHEET 2 OF 2

LAND TREATMENT CALCS. (CONTINUED)

Sub Basin 6 2.666 acres = 0.004166 sq.mi

Pads (36x45) 14 = 22680

(38x40) 2 = 3040.

(34x60) 2 = 4080.

Driveways (20x16) 16 = 5120.

(60x16) 2 = 1920.

Rds 275 (32'FF) = 8800.

$\pi (40)^2 = 5026.5$

160 (24'FF) = 3840.

31 (27) = 837.

SDWK (340+365) 4 = 2820.

58163.5

Tr. D = 50

Tr. C = 25

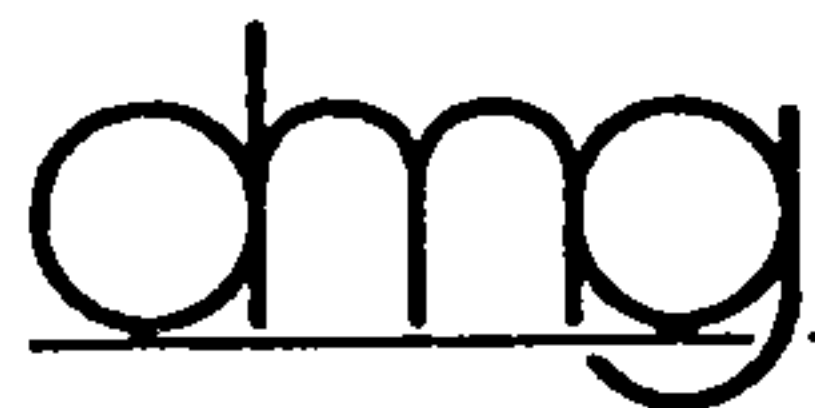
Tr. B = 25

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE
(MON/DAY/YR) =11/09/1998
INPUT FILE = NORTE.DAT USER NO.= M_GOODWN.I01

COMMAND	FROM TO HYDROGRAPH ID ID IDENTIFICATION	PEAK AREA NO. NO.	RUNOFF DISCHARGE (SQ MI) (CFS)	TIME TO VOLUME (AC-FT)	CFS RUNOFF (INCHES)	PAGE = 1 PEAK (HOURS)	PER ACRE
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NOTATION

START				TIME=	.00		
RAINFALL TYPE= 1				RAIN6=	2.300		
COMPUTE NM HYD	101.00 - 1	.00291	7.28 .251	1.62049	1.500	3.911	PER IMP= 60.00
COMPUTE NM HYD	102.00 - 1	.00290	7.26 .251	1.62049	1.500	3.911	PER IMP= 60.00
COMPUTE NM HYD	103.00 - 1	.00298	7.47 .258	1.62049	1.500	3.911	PER IMP= 60.00
COMPUTE NM HYD	104.00 - 1	.00301	7.52 .260	1.62049	1.500	3.911	PER IMP= 60.00
COMPUTE NM HYD	105.00 - 1	.00196	5.13 .180	1.72150	1.500	4.095	PER IMP= 69.00
COMPUTE NM HYD	106.00 - 1	.00417	9.89 .335	1.50826	1.500	3.708	PER IMP= 50.00
FINISH		<i>TOTAL</i>	<i>44.55 cfs</i>				



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PROJECT Villa Del Norte
SUBJECT Sump Inlets
BY DLH DATE 11-5-98
CHECKED _____ DATE _____
SHEET _____ OF _____

Sump Inlet $Q = 7.5 \text{ cfs (typical)} (x2) = 15.0 \text{ cfs}$

Use (1) double C Inlet

$$Q = 15.0 \text{ cfs}$$

$$P = 6.45 + 2 + 2 = 10.45'$$

$$Q/P = \frac{15.0}{10.45} = 1.44 \rightarrow \text{chart} \rightarrow \text{depth} = \underline{\underline{.62}} < .67 \checkmark$$



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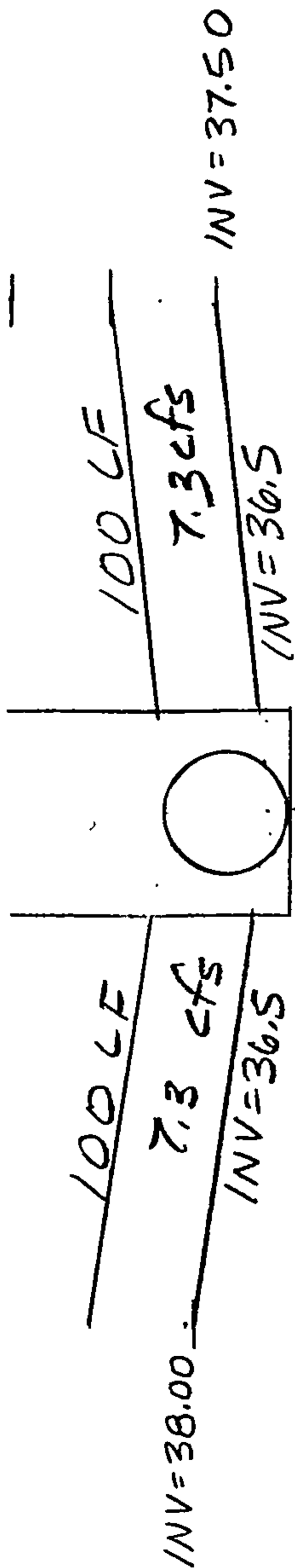
e-mail: dmgs@swcp.com

PROJECT Villa Del Norte
SUBJECT Storm Drain Schematic
BY DLH DATE 11-10
CHECKED _____ DATE _____
SHEET _____ OF _____

Celaje - Campo
Storm Drain

Double Q = 14.6 cfs

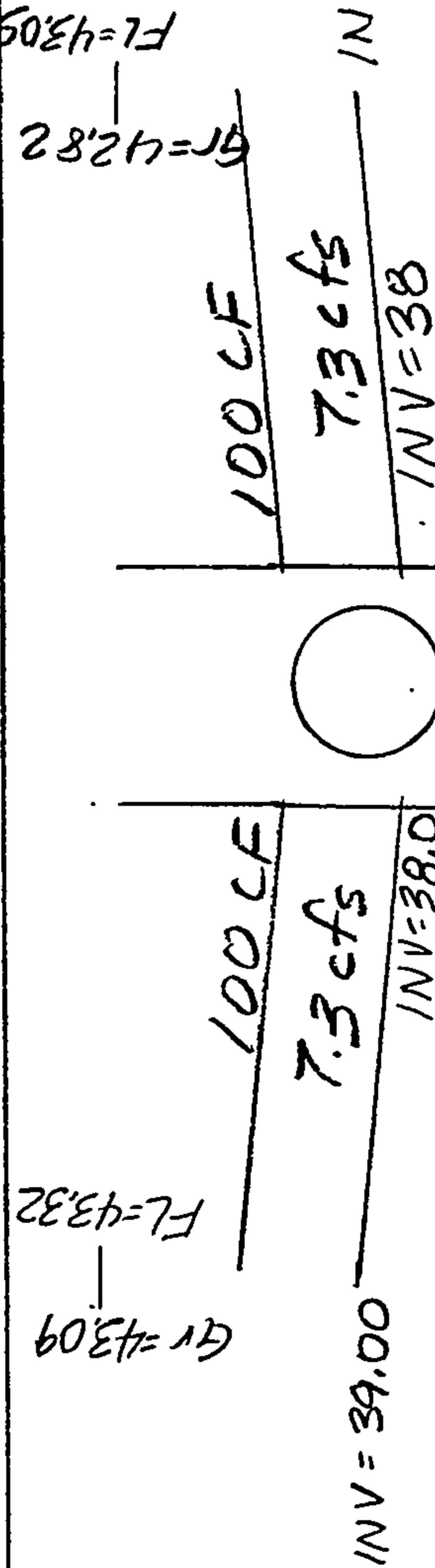
Grate 41.23
FL = 41.46



30" SD INV = 36.0 120 LF @ .5% slope INV = 35.40'
14.6 cfs Double Q = 29.2 cfs

Sonrisa - Chamisa
Storm Drain

Double Q = 14.6 cfs



30" SD INV = 37.5 120 LF @ .5% slope - INV = 36.90
14.6 cfs

Double Q = 29.2 cfs

40

35

30

40

35

30



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Villa Del Norte
SUBJECT Storm Drain Schematic
BY DLH DATE 11-10
CHECKED _____ DATE _____
SHEET _____ OF _____

