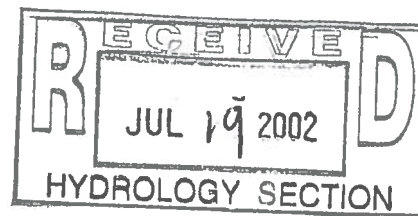


Drainage Report
for
ESCONDIDO SUBDIVISION
@ Vista del Norte



Mark Goodwin & Associates, PA
July 2002
DLH



I. PROJECT DESCRIPTION

This project site is identified as Tract T-1 on the Vista del Norte Plat. The site is located north of the developing Bernardo Trails subdivision, east of the proposed Las Lomitas Drive, west of the AMAFCA North Diversion channel. The tract of land is proposed to be developed into a 74 lot residential subdivision. Adjacent to the north property boundary is vacant land and the east half of the north property line is partially encumbered by a 25 foot slope.

II. 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 using $P(1 \text{ hr}) = 2.00"$, $P(6 \text{ hr}) = 2.30"$. The onsite Land Treatment values were determined using "Table A-5 Percent Treatment D" in the DPM. AHYMO printouts are provided in Appendix A.

III. EXISTING DRAINAGE CONDITIONS

This site was rough graded as part of the approved master grading plan for Vista del Norte Unit 1 several years ago. The site is relatively flat with a gentle fall towards the west. Immediately east of the property is a 35' high embankment constructed with 3:1 side slopes as part of the AMAFCA North Diversion channel. The east half of the north property line is partially encumbered by a 25' high embankment at side slope of 3:1.

IV. DEVELOPED DRAINAGE CONDITIONS

This project site is part of the Vista del Norte Master Drainage Plan for the North Detention Pond. All of the runoff from this site will discharge into the storm sewer in Las Lomitas Drive. The construction plans for all the infrastructure in Las Lomitas Drive which includes storm sewer, water, sanitary sewer stubs to this site, curb and gutter, paving and sidewalk are presently at the City awaiting final sign-off and approval for work order. Most of the runoff (35.0 cfs) from this site will be intercepted by inlets located at the west end of Sepulveda Avenue. A small amount of runoff (5.95 cfs) will be allowed to free discharge into Las Lomitas Drive where it will be conveyed east to two sump inlets located in Las Lomitas Drive adjacent to the North Pond. Each of the sump inlets will intercept a total of 12.7 cfs. Runoff from the AMAFCA North Diversion channel slope will be conveyed in a swale along the east property line and then discharged into Sepulveda Avenue through a 4.5' wide sidewalk culvert through the perimeter garden wall. A 15' wide maintenance road for AMAFCA will be graded east of the east property line as shown on the G&D plan. AMAFCA will have vehicular access at the east end of El Segundo Avenue as shown on the G&D plan.

For a summary of hydrology on the Master Drainage Plan for Vista del Norte North Detention Pond refer to Table 1 and the Overview drawing in Pocket 2. A schematic of the onsite subasin boundaries and the associated peak discharge values can be found in Figure 2.

For a summary of the storm sewer in Las Lomitas Drive and within the project site, refer to Appendix C for storm sewer analysis and schematic of the storm sewer layout.

TRACT T-4-A	22.66460		90	10.0	46.52	4.169
TRACT U-1	3.43270		0	0/100	10.53	0.316
TRACT U-2	3.92930		90	10.0	17.13	0.723
TRACT U-3	2.15080		90	10.0	9.38	0.396
TRACT U-4	0.49860		90	10.0	2.19	0.092
TRACT U-5	2.93510		90	10.0	12.80	0.540
TRACT U-6	23.44330		90	10.0	52.00	4.312
LL	4.73000		80	0/20.4	19.45	0.804
SUB TOTAL	194.79808	609			650.68	29.673

7-12-02 f:\escondido\hydr_t1

* LL = Las Lomitas runoff to sump inlets #1 (31+10) + #2 (31+10)

Total Q in sump inlets = 25.4 cfs (12.7 cfs each)

19.45 cfs Las Lomitas Drive
5.95 cfs (Escondido @ El Segunda Ave)
25.40 cfs

See Appendix C for Las Lomitas Storm Sewer Schematic.

ESCONDIDO @ Vista del Norte

TABLE 2: SUMMARY OF STREET CAPACITIES

LOCATION	CURB	CROWN	WIDTH ft.	SLOPE %	Q cfs	DEPTH ft	EG ft.
EL SEGUNDO	MTB	Y	26	2.076	5.95	0.24	0.35
DEL MAR	MTB	Y	26	4.060	5.75	0.21	0.40
LA PUENTA	MTB	Y	26	4.060	6.93	0.22	0.43
LA BREA	MTB	Y	26	1.500	6.99	0.26	0.36
SEPULVEDA	MTB	Y	26	0.600	9.50	0.33	0.40
SEPULVEDA	STD	Y	26	0.600	35.02	0.59	0.76
SEPULVEDA	STD	Y	26	0.600	22.08	0.50	0.62

MTB = Mountable Curb
STD = Standard Curb

r:\Escondido\str_cap.wpd
7-17-02

```
RUN DATE (MON/DAY/YR) =07/13/2002
      USER NO.= M_GOODWN.I01
```

[illegible]

B IN
15.0
RM
(E)
(N)
(S)
6.6
62.6
RIM

24 00, 0' L
INV = 19.21

CALLE OTONO

LAS LOMITAS DRIVE

SEPUVEDA AVE
(FUTURE ROAD)

Q=3502 cfs

25+38.10, 10.00' RT.
38 LF 8" WL STUBOUT W/CAP
1 - 8" 11.25' BEND
1 - 16" X 8" TAPPING SADDLE
1 - 8" GATE VALVE
1 - TYPE "B" VALVE BOX

25+92.86, CL. EXIST. SAS MH#6
EXIST. RIM = 29.48

25+99.94, 10.00' RT. EXIST. FIRE HYDRANT
ADJUST & RESET EX. FIRE HYDRANT
VALVE BOX

PC 30+94.33, CL.
BEGIN 8" CURVILINEAR SAS
 $\Delta = 09^{\circ}47'42''$
 $R = 1987.00'$
 $L = 339.69'$
 $T = 170.26'$

30+94.33, 12.52' RT.
CONNECT TO EXISTING 16" WL
NON PRESSURE CONNECTION
1 - 18" X 16" REDUCER
1 - 18" 11.25' BEND
RESTRAINED

31+10.00, 19.00' RT.
1 - TYPE "A" INLET #2
GRATE = 25.93
FL = 26.16
INV = 21.90
Q = 12.7 cfs

31+10.00, 10.00' RT.
1 - 18" 11.25' BEND
RESTRAINED

SD MH#4A

1d-10

1d-8

1d-6

1d-8

1d-2

75" PUBLIC WATER,
SANITARY SEWER
EASEMENT

EX. 21" SAS
EX. 10" WL

15' WIDE
ACCESS
ROAD
16.25 LF
18" RCP

N89°52'09"W
90 LF
(Q=192.0 cfs)

WSE
=25.5

31+56.64, 93.85' LT.
90 LF 54" RCP OUTFALL
INV = 108.0
SEE HEADWALL DETAIL B
SHEET 13

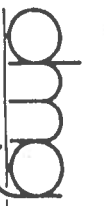
31+24.76, 10.00' LT. SD MH#3
RIM = 26.36

30.33 LF
18" RCP

NEW 18" WL (DIP)

31+19.24, CL.
SD/WL CROSSING

TRACT T-1
Las Lomitas Drive Storm Sewer (North Pond)
DLH (rev. 7-18-02)

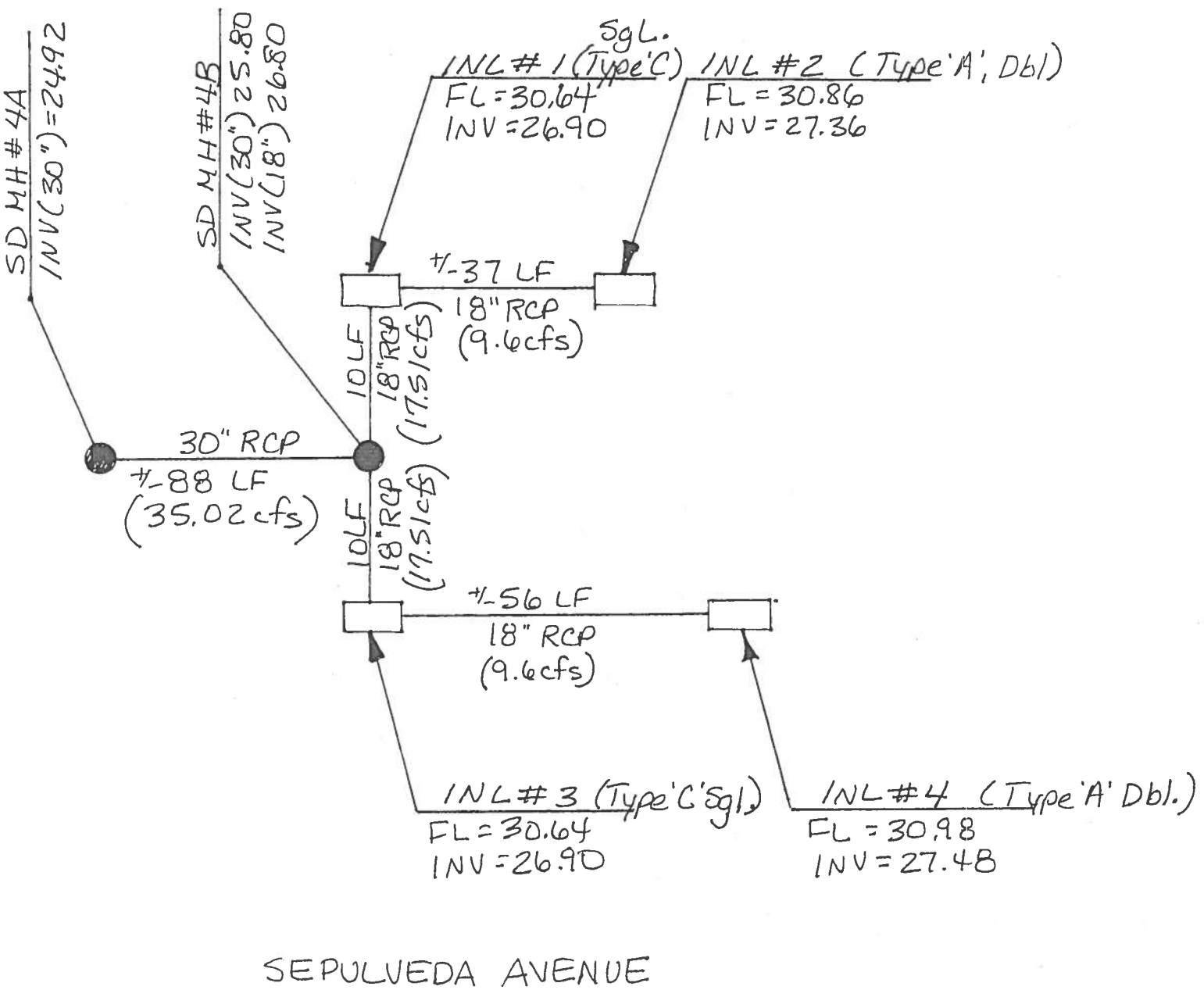


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PRELIMINARY

PROJECT Esccondido @ VAN
SUBJECT Storm Sewer Schematic
BY DLT DATE 7-17-02
CHECKED _____ DATE _____
SHEET _____ OF _____



CALCULATIONS FOR SUMP INLETS
for
Escondido @ Vista del Norte

Capacity is measured by the weir equation at the lip of the gutter assuming an allowable ponding elevation equal to the lowest adjacent right of way elevation. The length of the single grate facing the street is 3.0' and the maximum depth is 0.725' at the lip of the gutter. The sides are each 2' long and the average depth is 0.892'. These depths assume an 8" curb with right of way 9' behind the curb for an additional depth of 0.18' above the top of curb. From the weir equation:

Sepulveda sump inlets:

FOR SINGLE 'C' INLET

Front $Q \text{ cap} = (3.0) \times (3.0') \times (0.725) \times 1.5 = 5.56 \text{ cfs}$

Sides $Q \text{ cap} = (3.0) \times (4.0') \times (0.892) \times 1.5 = 10.11 \text{ cfs}$

Total $Q \text{ cap} = 5.56 \text{ cfs} + 10.11 \text{ cfs} = 15.67 \text{ cfs}$

The 100 year peak discharge at the Sepulveda stub road is 35.02 cfs. A total of 19.2 cfs will be intercepted by two double 'C' inlets leaving a remaining 15.82 cfs to be intercepted by two sump inlets. Since no overflow will be provided, the sump inlets are designed for 2 times the flow rate of 31.64 cfs.

