City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 14, 2003

Amy Driscoll, PE
Mark Goodwin & Associates
P.O. Box 90606,
Albuquerque, NM 87199

Re: Desert Pine Unit 4 Subdivision Drainage Report
Engineer's Stamp dated 3-7-03, (L9/D27C)

Dear Ms. Driscoll,

Based upon the information provided in your submittal dated 3-7-03, the above referenced plan is approved for Preliminary Plat action by the DRB.

If you have any questions, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Planning Dept
Development and Building Services

C: file

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 9, 2004

Ms. Amy L. D. Niese, PE
MARK GOODWIN & ASSOCIATES
P.O. Box 90606
Albuquerque, NM 87119

RE: DESERT PINE SUBDIVISION, UNIT 4 (L-9/D027)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 03/17/2003
Engineers Certification dated 06/09/2004

Dear Amy:

Based upon the information provided in your Engineer's Certification Submittal dated 06/09/2004, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services
BLB

C: Marilyn Maldonado, COA# 713381
File

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV.1/11/2002)

PROJECT TITLE: Desert Pine Unit 4 ZONE MAP/DRB.FILE#: L-9/D27C

DRB#: 1001267 EPC# WORK ORDER#:

LEGAL DESCRIPTION: Tract 46,47, & 48, Town of Atrisco Grant, Unit 2

CITY ADDRESS:

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Amy L. D. Niese, PE

ADDRESS: P.O. Box 90606 Albuquerque NM 87119 PHONE: 828-2200

CITY, STATE: Albuquerque NM ZIP CODE: 87119

OWNER: K B. Homes of New Mexico CONTACT: Bob Coleman

ADDRESS: 4921 Alexander NE Suite B PHONE: 344-9400

CITY, STATE: Albuquerque, NM ZIP CODE: 87107

ARCHITECT: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

SURVEYOR: Aldrich Land Survey CONTACT: Tim Aldrich

ADDRESS: P.O. Box 30701 PHONE: 884-1990

CITY, STATE: Albuquerque, NM 87190-0701 ZIP CODE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

RECEIVED
JUN 0 9 2004
HYDROLOGY SECTION

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- x ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERTIFICATION (TCL)
- ____ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- ✓ NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- x SIA / FINANCIAL GUARANTY RELEASE
- ____ PRELIMINARY PLAT APRROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TEMP)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

DATE SUBMITTED: 6/8/04 BY: Amy L. D. Niese, PE

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of to the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5).
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5).
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

f:\\a02108 desert pine, unit 4\drainingf.tbl

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

P.O. Box 90606 ❖ Albuquerque, NM 87199
(505) 828-2200 ❖ (505) 797-9539 fax
e-mail: dmg@swcp.com

RECEIVED
JUN 0 9 2004
HYDROLOGY SECTION

LETTER OF TRANSMITTAL

To: City of Albuquerque
Brad Bingham

Date: June 9, 2004

Re: Desert Pine, Unit 4

We are sending:

No. Copies	Date	Item Description
1		G&D Plan Certification

_____ For your approval _____ For your information

_____ As you requested _____ For your comments

NOTES:

SIGNED: Amy L. D. Niese, PE

MARK GOODWIN

& ASSOCIATES

CONSULTING ENGINEERS

dmg

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 12, 2003

Amy Driscoll, PE
Mark Goodwin & Associates
P.O. Box 90606,
Albuquerque, NM 87199

Re: Desert Pine Unit 4 Subdivision Drainage Report
Engineer's Stamp dated 12-30-02, (L9/D27C)

Dear Ms. Driscoll,

Based upon the information provided in your submittal dated 12-31-02, the above referenced plan cannot be approved for Preliminary Plat until the following comments are addressed.

- There are some lots (14-16, Block 3) that do not have finished pad grades.
- Please provide the alternate depth for the flow at the sump in Desert Maize. There will be a hydraulic jump at this location.
- There are numerous lots that have no usable backyards. For example, lots 1-7, Block 5 have a 5' elevation difference from back property line to pad grade and with the setback at 15 feet (and a maximum 3:1 slope), there is nothing else left. Please review all other lots for "usability". Also, retaining walls need to be shown where side yard slopes are steeper than 3:1.
- No backyard drainage to 86th is allowed because this road is collector. Besides, it doesn't agree with your basin map.
- Everything in the SAD drainage report programs your runoff into Eucariz and not to 86th. Your analysis of the existing storm drain in 86th is only correct when the inlet inverts are under 7.9 feet of head. The HGL shown on the SAD plans is much less than this. The additional head needed at your intersection may cause the down stream HGL to rise above acceptable levels (the street). Please provide an in-depth HGL analysis of 86th to the Tower pond.

If you have any questions, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Planning Dept
Development and Building Services

C: file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE REPORT

for

Desert Pine, Unit 4

Prepared By

Amy L. Driscoll, PE
Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

AMY L DRISCOLL
NEW MEXICO
15334
PROFESSIONAL ENGINEER
12/30/02

RECEIVED
DEC 31 2002
HYDROLOGY SECTION

December, 2002

TABLE OF CONTENTS

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III. Proposed Drainage Plan

IV. Summary

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- *Zone Atlas Map,L-9*
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- *Desert Pine, Unit 4 Basin Map*
- *Desert Pine, Unit 4 Grading and Drainage Plan*
- *AHYMO Run*
    - *Summary Output - 100 year*
    - *Input Data - 100 year*
    - *Output Data - 100 year*
- *Calculations for Desert Pine, Unit 4*
- *Excerpts from Eldorado North*
- *Excerpts from SAD 222*

INTRODUCTION

This report is being submitted for Grading and Drainage approval.

Please see the enclosed Zone Atlas Map, L-9. The proposed Desert Pine, Unit 4 subdivision is bounded by 86th Street, Euchariz Avenue, 90th Street, and Valhalla Estates. The project covers 15.1 acres and will be developed into 111 single family residential homes.

EXISTING CONDITIONS

Currently the site is vacant and covered with typical desert vegetation. This site is not in the 100 year flood plain. All of the Zoning is now RD / 9DU / AC.

Drainage on the site generally flows from west to east. Please see the enclosed Desert Pine, Unit 4 Basin Map for existing contours. No flows enter the site from 86th Street to the east, Euchariz Avenue to the south, or Valhalla Estates to the north. 86th Street is fully developed with inlets just north of Euchariz Avenue and 86th Street. Euchariz has 175 feet of 36 inch storm drain which drains to 86th Street, but the road is not paved yet. Flows do enter west from 90th Street and Eldorado Subdivision, which are under construction.

PROPOSED DRAINAGE PLAN

Please see the enclosed Desert Pine, Unit 4 Grading and Drainage Plan, the AHYMO run, and the detailed calculations for this project. The following is a summary of the basins:

Basin	Area (Acre)	100 Year Flow (cfs)
A-1	6.8	23.6
A-2	8.3	29.0
Subtotal A	15.1	52.6
B	1.5	5.9
C-1	0.6	2.4
C-2	0.3	1.2
Subtotal C	0.9	3.6
Basin D	---	27.8 by pipe 9.7 by surface 37.5 total
Basin E	1.5	8.4

No

The site is divided into two basins A-1 (23.6 cfs) and A-2 (29.0 cfs). The flow from Basin A-1will surface discharge to 86th Street which has sufficient gutter capacity for 32.0 cfs (23.6 + 8.4 = 32.0). The pipes in 86th Street are sufficiently sized for 32.0 cfs, but a single Type A inlet and a double Type C inlet will have to be added.

The flow from Basin A-2 will discharge into new inlets in Desert Maize Drive which will connect by a 30 inch pipe to the existing manhole in Euchariz Avenue.

Although drainage is presently coming on site from the west, no off-site flow will be allowed to enter the site. For the interim, Eldorado North is designed to have a retention pond on site and a stubbed out 24 inch storm pipe in Euchariz Avenue. Please see the enclosed excerpts from the Eldorado North Subdivision. The Desert Pine, Unit 4 project will connect the 24 inch pipe to the existing 36 inch storm pipe in Euchariz Avenue west of 86th Street. The 100 year flow in the pipe from Eldorado North will be 27.8 cfs. The surface flow from Eldorado North will be 9.7 cfs.

The western portion of 90th Street was designed with Eldorado North. Most of the street will drain south to Euchariz Avenue by surface flow (2.4 cfs). The upper third will drain freely to the north (1.2 cfs).

Euchariz Avenue south of this site will have a total surface flow of 18.0 cfs. Double Type A and Double Type C inlets will be added in Euchariz near 86th Street. These inlets will also connect to the pipe coming from Desert Maize.

The total flow going into the existing 36 inch storm pipe in Euchariz is 74.8 cfs (29.0 + 5.9 + 2.4 + 9.7 +27.8 = 74.8) The 36 inch pipe in Euchariz is sufficiently sized for this.

The total flow going to the intersection of 86th Street and Euchariz Avenue is 106.8 cfs (74.8 + 32.0 = 106.8). Please see the excerpts from SAD 222 report. Per SAD 222, our site (A10-D) is allowed to discharge 57 cfs and the site to the west (A9-D) is allowed to discharge 40 cfs. This is a total of 97 cfs. The 9.8 difference between the two flows will be attenuated across this subdivision and Eldorado North. The existing 42 inch storm drain in 86th Street is sufficiently sized for this flow.

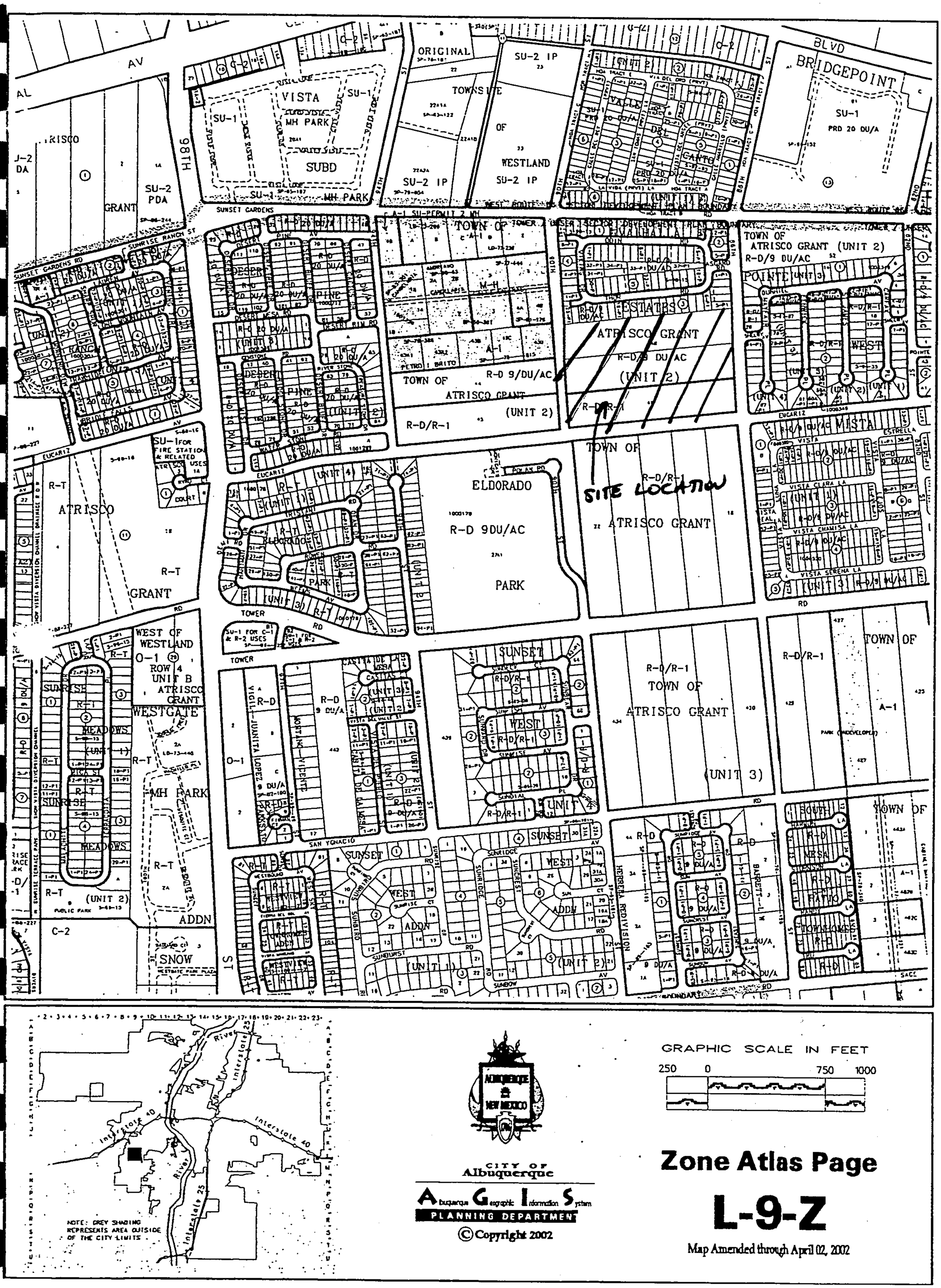
This subdivision will have both mountable curb and gutter and standard curb and gutter. The average flow per lot is 0.473 cfs. The flow just before the intersection of Round Rock Road and Fern Spring Drive is 10.4 cfs. The mountable curb and gutter for 28 feet face to face and 1.89 % can hold up to 12 cfs so the mountable curb and gutter is sufficient to contain the flow in the road. The total flow at the south end of Desert Maize Drive is 29.0 cfs, and the water surface elevation is 0.44 feet above the flow line within the standard curb and gutter.

The total flow just before the intersection of Dakota Ridge Road and Cole Spring Drive is 11.8 cfs, and the mountable curb and gutter can contain up to 12.0 cfs. The total flow at the intersection of Desert Maize Drive and Sedge Creek Road is 23.6 cfs, and the water surface elevation within standard curb and gutter is 0.49 feet above the flow line. The entire subdivision has sufficient capacity for the flow in the curb and gutters.

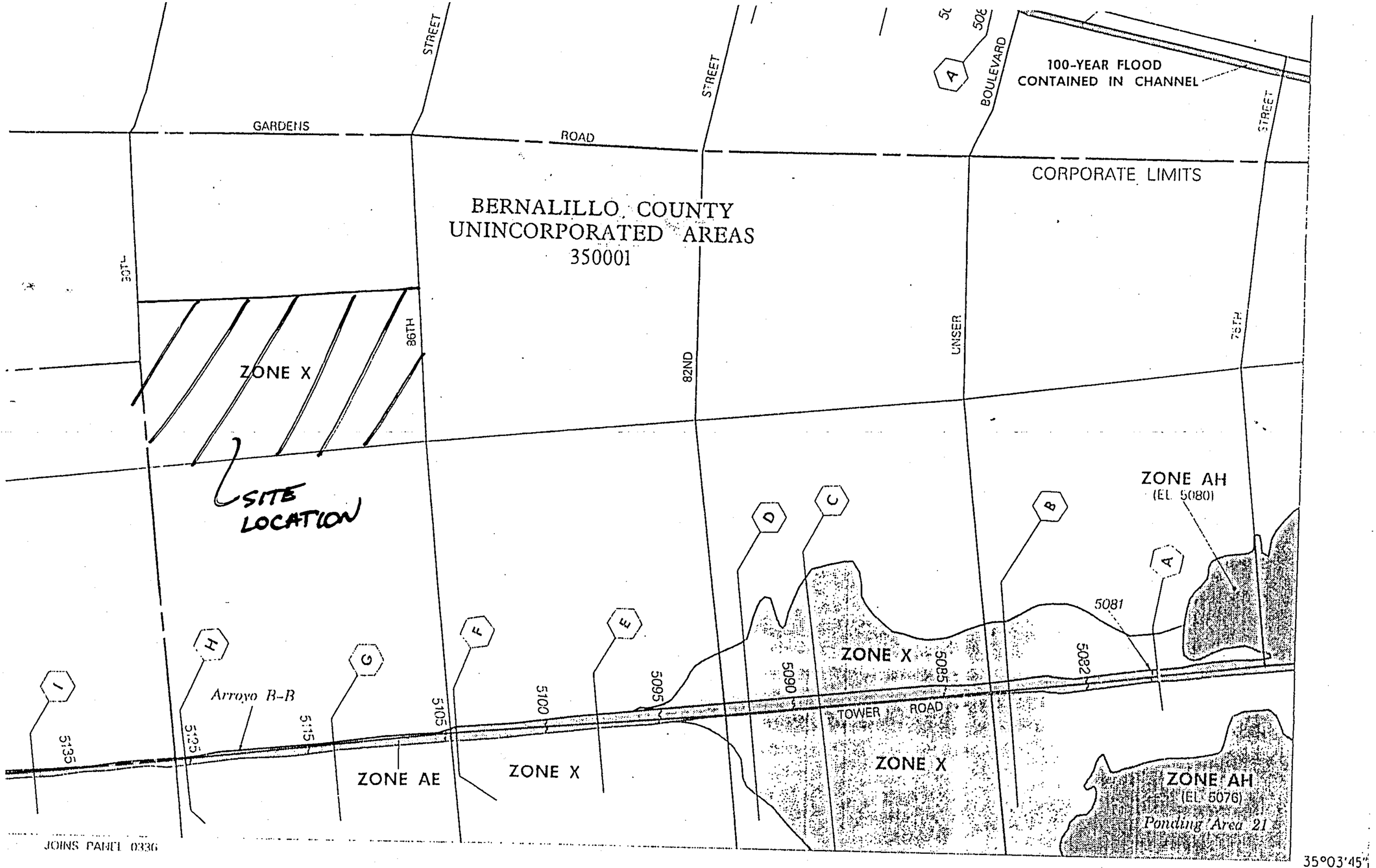
SUMMARY

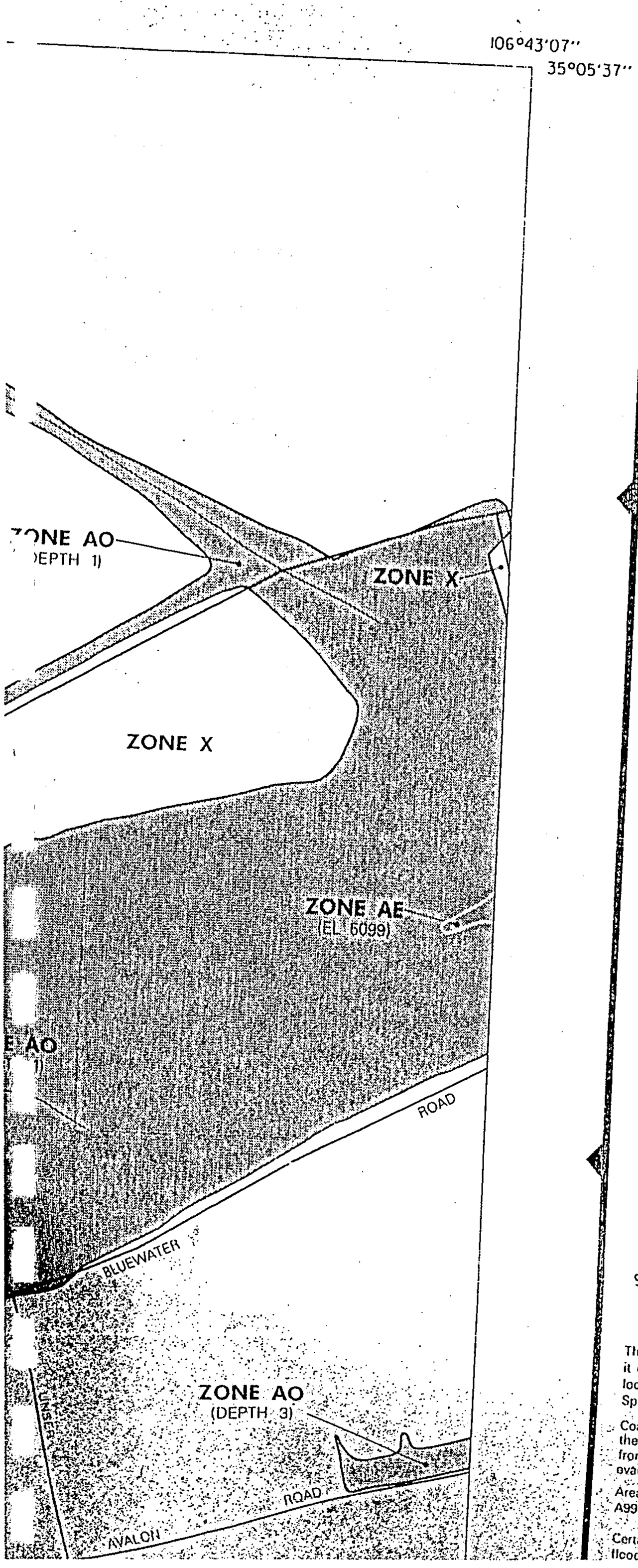
The existing vacant lot will become a 111 lot subdivision. The site is not in the 100 year flood plain. Basin A-1will discharge 23.6 cfs to 86th Street. Basin A-2 will discharge 29.0 cfs to the strom drain in Euchariz Avenue. The total flow at the intersection of 86th and Euchariz will be 106.8 cfs. Per SAD 222, this site and Eldorado North are allowed to discharge 97 cfs. The 9.8 difference between the two flows will be attenuated across this subdivision and Eldorado North. The existing 42 inch storm drain in 86th Street is sufficiently sized for this flow.

ZONE ATLAS MAP


SITE LOCATION
TOWN OF ATRISCO GRANT (UNIT 2)
R-D/9 DU/AC
ATRISCO GRANT
(UNIT 2)
R-D/R-1
TOWN OF
ATRISCO GRANT
R-D/R-1
ELDORADO
R-D 9DU/AC
PARK
VISTA
MH PARK
SUBD
ORIGINAL
TOWNSITE
OF
WESTLAND
SU-2 IP
SU-2 PDA
GRANT
ATRISCO
R-T
WEST OF WESTLAND
O-1
ROW 4
UNIT B
ATRISCO GRANT
WESTGATE
MH PARK
ADDN
SNOW
SUNSET
WEST
ADDN
(UNIT 1)
(UNIT 2)
(UNIT 3)
(UNIT 4)
TOWN OF
R-D/R-1
A-1
PARK (UNDEVELOPED)
SOUTH
MESA
TOWNHOMES
SAN YGNACIO
TOWER
EUCARIZ
SUNSET GARDENS
SUNRISE RANCH ST
BRIDGEPOINT
BLVD
VALLE DEL ORO
ESTATES
POINTE
WEST
MESTA
VISTA CLARA LA
VISTA CHAMISA LA
VISTA SERENA LA
ESTRELLA
DESERT
PINE
RIVER STONE
WATER STONE
SUNRISE
MEADOWS
WESTVIEW
HERBERT RD DIVISION
BARBERT LN
SUNRIDGE
SUNCREST
SUNDIAL
SUNBURST
SUNBOW
SUNSET
WEST
ADDN
(UNIT 1)
(UNIT 2)
(UNIT 3)
(UNIT 4)
CASITAS DE MESA
VISTA DEL VALLE
VISTA DEL MONTE
VISTA DEL MESA
JUNITA LOPEZ
MONTANO VILLAGE
ELDORADO
PARK
TOWER
SUNSET GARDENS RD
SUNRISE RANCH ST
EUCARIZ
SAN YGNACIO
SUNSET
SUNRIDGE
SUNCREST
SUNDIAL
SUNBURST
SUNBOW
HERBERT RD DIVISION
BARBERT LN
SOUTH
MESA
TOWNHOMES
R-D
9 DU/A
R-D/R-1
A-1
O-1
C-2
SU-1 FOR C-1 & R-2 USES
SU-1 FOR FIRE STATION & RELATED USES
SU-1 PRD 20 DU/A
SU-2 IP
SU-2 PDA
SU-1
ATRISCO
GRANT
ST
RD
AV
BLVD
COURT
PUBLIC PARK
NOTE: GREY SHADING REPRESENTS AREA OUTSIDE OF THE CITY LIMITS
Interstate 25
Interstate 40
River
GRAPHIC SCALE IN FEET
250 0 750 1000
CITY OF Albuquerque
Albuquerque Geographic Information System
PLANNING DEPARTMENT
© Copyright 2002
Zone Atlas Page
L-9-Z
Map Amended through April 02, 2002

FIRM MAP


STREET
STREET
BOULEVARD
100-YEAR FLOOD
CONTAINED IN CHANNEL
STREET
GARDENS
ROAD
CORPORATE LIMITS
BERNALILLO COUNTY
UNINCORPORATED AREAS
350001
86TH
82ND
UNSER
78TH
ZONE X
SITE LOCATION
ZONE AH
(EL. 5080)
ZONE X
5081
5085
5090
5095
5100
5105
5115
5125
5135
5082
TOWER ROAD
Arroyo B-B
ZONE AE
ZONE X
ZONE X
ZONE AH
(EL. 5076)
Ponding Area 21
JOINS PANEL 0336
35°03'45"
106°43'07"



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983

Identified 1990

Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum

D — D Cross Section Line

(EL 987) Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum

RM7 × Elevation Reference Mark

• M2 River Mile

97°07'30", 32°22'30" Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection

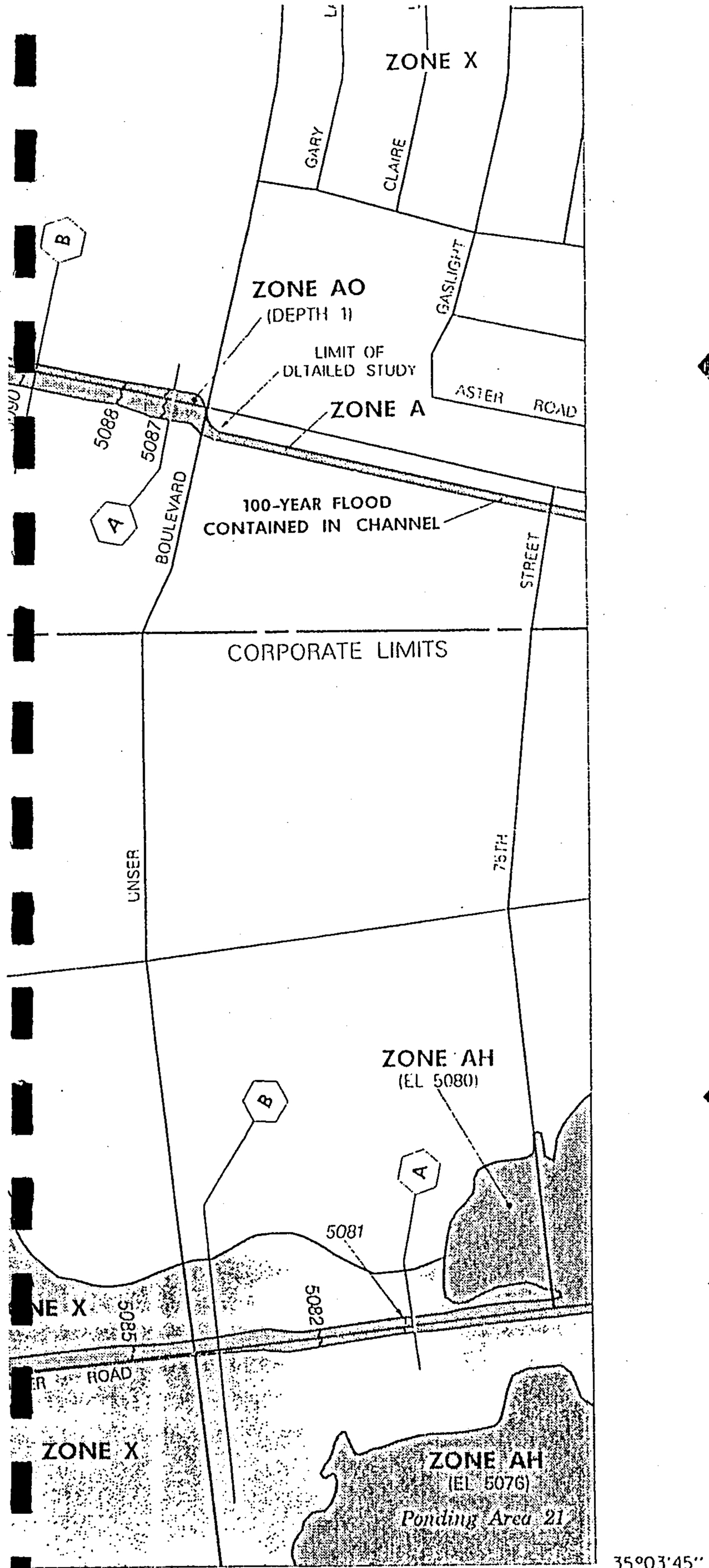
NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Coastal base flood elevations apply only landward of 0.0' NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.



Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 328 OF 825

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0328	D
BERNALILLO COUNTY, UNINCORPORATED AREAS	350001	0328	D

MAP NUMBER
35001C0328 D

EFFECTIVE DATE:
SEPTEMBER 20, 1996

Federal Emergency Management Agency

ZONING

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
DEVELOPMENT SERVICES DIVISION
P. O. BOX 1293
ALBUQUERQUE, NEW MEXICO 87103

Date: November 27, 2001

CERTIFICATE OF ZONING

Onorio & Virginia Colucci
P.O. Box 14374
Albuquerque, NM 87191

FILE: 01114-00725/01110-00726/01138-00728
Project # 1001267
(Council Bill No. 0-01-125, Enactment #49-2001)
LEGAL: for Tracts 46, 47, 48, Town of Atrisco Grant, Unit 2, located on Eucariz Ave. SW between 90th and 86th Streets, containing approximately 15 acres. (L-9) Lola Bird, Staff Planner.

On November 5, 2001, the City Council approved your request to annex and amend the zone map as it applies to the above-cited property. The possible appeal period having expired, the property status is now changed as follows:

RD 9/DU/ACRE ZONING

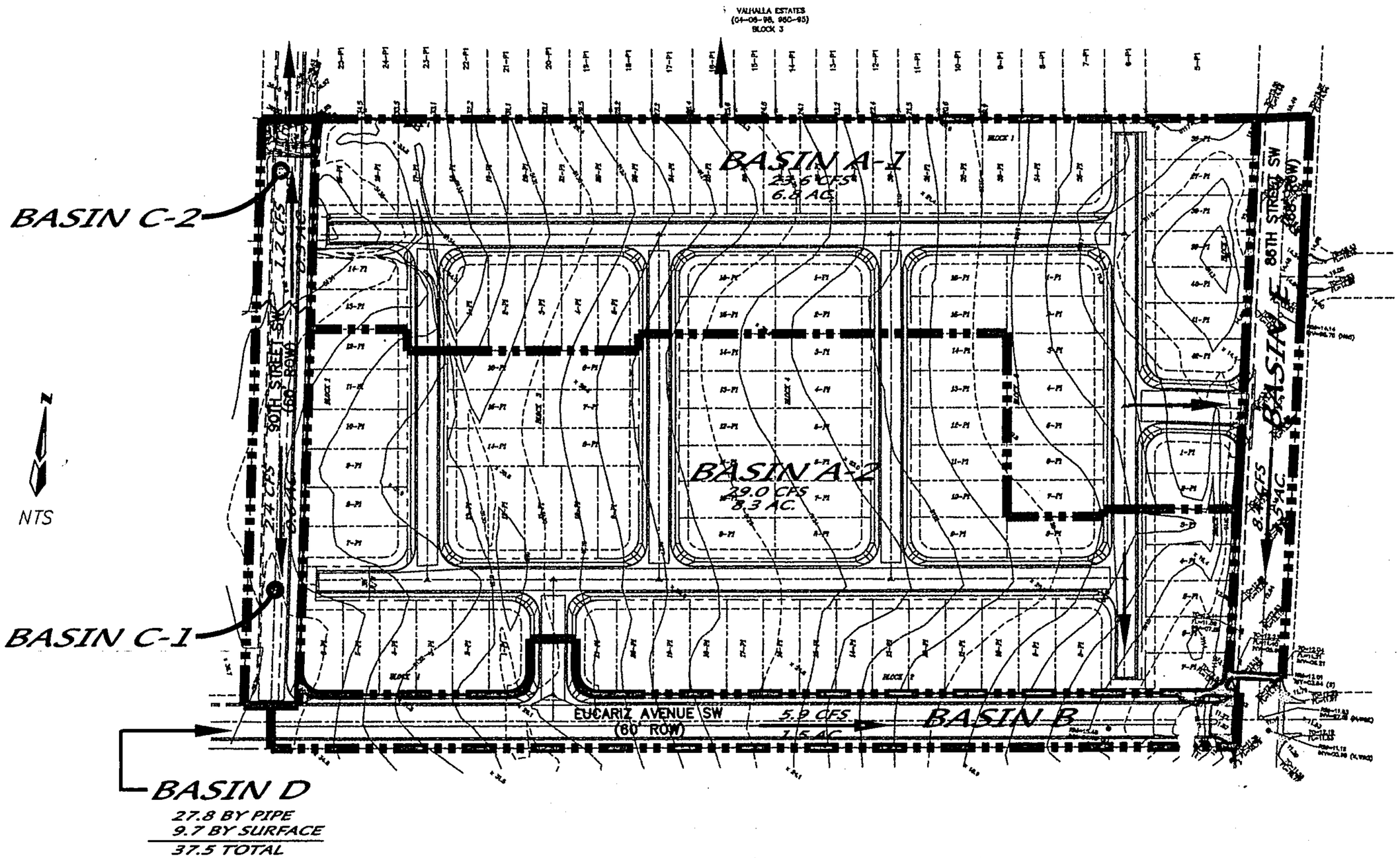
Successful applicants are reminded that other regulations of the City must be complied with, even after approval of the zoning is secured. Approval of this case does not constitute approval of plans for a building permit. You should take two copies of your plans to the Building & Inspection Division of the City to initiate a building permit.

Sincerely,

Robert R. McCabe, AIA, APA
Planning Director

cc: Southwest Surveying Co., 333 Lomas NE, Albuq. NM 87102
Theresa Rio Sandoval, Westgate Heights NA, 1505 Gschwind Pl. SW, Albuq. NM 87121
Libby McIntosh, Westgate Heights NA, 1316 Ladrones Ct. SW, Albuq. NM 87121
File

DESERT PINE, UNIT 4 BASIN MAP



dmg
MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505) 828-2200, FAX (505) 797-9539

LEGEND

NEW BASIN BOUNDRY

HIGH POINT

DESERT PINE - UNIT 4
BASIN MAP

A02108\BASIN8X11\12-30-02\ MJR NHE

DESERT PINE, UNIT 4

GRADING AND DRAINAGE PLAN

AHYMO RUN

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =12/30/2002
INPUT FILE = DP4.DAT USER NO.= M_GOODWN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.00	-	1	.00060	1.43	.050	1.55506	1.500	3.713	PER IMP= 68.00
COMPUTE NM HYD	500.00	-	5	.00050	1.19	.041	1.55506	1.500	3.721	PER IMP= 68.00
COMPUTE NM HYD	200.00	-	2	.00100	2.37	.083	1.55506	1.500	3.697	PER IMP= 68.00
COMPUTE NM HYD	300.00	-	3	.00230	5.91	.213	1.73501	1.500	4.016	PER IMP= 82.00
COMPUTE NM HYD	400.00	-	4	.02360	52.59	1.828	1.45223	1.500	3.482	PER IMP= 60.00
FINISH										

```
START                TIME=0.0
*****    DESERT PINE UNIT 4
*****    FILE: C:\AHYMO\DP4.DAT DECEMBER 2002   BY:AMY
*****
*****    100-YEAR 6-HOUR STORM EVENT
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.67 IN DT=0.033333 HR
*****
*****   PROPOSED CONDITIONS
*****
*****  PART OF BASIN D - EUCHARIZ FROM INLET WEST OF CITY PARK TO 90TH STREET
*****
COMPUTE NM HYD       ID=1 HYD NO=100.00 AREA=0.0006 SQ MI
                     PER A=00.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*****
*****  BASIN C-2  - 90TH ST FROM HIGH POINT TO VALHALLA
*****
COMPUTE NM HYD       ID=5 HYD NO=500.00 AREA=0.0005 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=5 CODE=1
*****
*****  BASIN C-1 - 90TH ST FROM HIGH POINT TO EUCHAIZ
*****
COMPUTE NM HYD       ID=2 HYD NO=200.00 AREA=0.0010 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1

*****
*****  BASIN B - EUCHARIZ FROM 90TH TO 86TH ST
*****
COMPUTE NM HYD       ID=3 HYD NO=300.00 AREA=0.0023 SQ MI
                     PER A=0.00 PER B=18.00 PER C=0.00 PER D=82.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
*****
*****  BASIN A - THE SITE
*****
COMPUTE NM HYD       ID=4 HYD NO=400.00 AREA=0.0236 SQ MI
                     PER A=0.00 PER B=40.00 PER C=0.00 PER D=60.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1

FINISH
```

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 12/30/2002
         START TIME (HR:MIN:SEC) = 15:37:36     USER NO.= M_GOODWN.I01
         INPUT FILE = DP4.DAT

START                TIME=0.0
*****    DESERT PINE UNIT 4
*****    FILE: C:\AHYMO\DP4.DAT DECEMBER 2002   BY:AMY
*****
*****    100-YEAR 6-HOUR STORM EVENT
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.67 IN DT=0.033333 HR

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033333 HOURS       END TIME =     5.999940 HOURS
                   .0000   .0013   .0027   .0041   .0055   .0069   .0084
                   .0099   .0115   .0131   .0147   .0164   .0181   .0199
                   .0217   .0236   .0256   .0276   .0296   .0318   .0340
                   .0363   .0387   .0412   .0438   .0465   .0493   .0523
                   .0554   .0587   .0622   .0675   .0731   .0791   .0920
                   .1209   .1653   .2291   .3162   .4306   .5765   .7582
                   .9799  1.1849  1.2707  1.3432  1.4077  1.4663  1.5203
                  1.5704  1.6173  1.6612  1.7025  1.7415  1.7783  1.8132
                  1.8462  1.8775  1.9072  1.9354  1.9622  1.9681  1.9737
                  1.9789  1.9839  1.9887  1.9933  1.9976  2.0019  2.0059
                  2.0098  2.0136  2.0172  2.0208  2.0242  2.0276  2.0308
                  2.0340  2.0371  2.0401  2.0430  2.0458  2.0486  2.0514
                  2.0541  2.0567  2.0592  2.0618  2.0642  2.0667  2.0690
                  2.0714  2.0737  2.0759  2.0781  2.0803  2.0825  2.0846
                  2.0867  2.0887  2.0908  2.0927  2.0947  2.0966  2.0986
                  2.1004  2.1023  2.1041  2.1060  2.1077  2.1095  2.1113
                  2.1130  2.1147  2.1164  2.1180  2.1197  2.1213  2.1229
                  2.1245  2.1261  2.1277  2.1292  2.1308  2.1323  2.1338
                  2.1353  2.1367  2.1382  2.1396  2.1411  2.1425  2.1439
                  2.1453  2.1466  2.1480  2.1494  2.1507  2.1520  2.1534
                  2.1547  2.1560  2.1573  2.1585  2.1598  2.1611  2.1623
                  2.1636  2.1648  2.1660  2.1672  2.1684  2.1696  2.1708
                  2.1720  2.1731  2.1743  2.1755  2.1766  2.1777  2.1789
                  2.1800  2.1811  2.1822  2.1833  2.1844  2.1855  2.1866
                  2.1876  2.1887  2.1898  2.1908  2.1919  2.1929  2.1939
                  2.1950  2.1960  2.1970  2.1980  2.1990  2.2000

*****
*****   PROPOSED CONDITIONS
*****
*****  PART OF BASIN D - EUCHARIZ FROM INLET WEST OF CITY PARK TO 90TH STREET
*****
COMPUTE NM HYD       ID=1 HYD NO=100.00 AREA=0.0006 SQ MI
                     PER A=00.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.6108    CFS   UNIT VOLUME =    .9922       B =   526.28      P60 = 1.9000
    AREA =      .000408 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130761HR    TP =   .133300HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =   .47179    CFS   UNIT VOLUME =    .9702       B =   327.55      P60 = 1.9000
    AREA =      .000192 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1 CODE=1

                                  PARTIAL HYDROGRAPH   100.00


    RUNOFF VOLUME =     1.55506 INCHES     =        .0498 ACRE-FEET
    PEAK DISCHARGE RATE =       1.43 CFS  AT   1.500 HOURS   BASIN AREA =   .0006 SQ. MI.


*****
*****  BASIN C-2  - 90TH ST FROM HIGH POINT TO VALHALLA
*****
COMPUTE NM HYD       ID=5 HYD NO=500.00 AREA=0.0005 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   1.3423    CFS   UNIT VOLUME =    .9911       B =   526.28      P60 = 1.9000
    AREA =      .000340 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .130761HR    TP =   .133300HR    K/TP RATIO =   .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =   .39316    CFS   UNIT VOLUME =    .9646       B =   327.55      P60 = 1.9000
    AREA =      .000160 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=5 CODE=1

                                  OUTFLOW HYDROGRAPH RESERVOIR   500.00


    RUNOFF VOLUME =     1.55506 INCHES     =        .0415 ACRE-FEET
    PEAK DISCHARGE RATE =       1.19 CFS  AT   1.500 HOURS   BASIN AREA =   .0005 SQ. MI.
```

```
*****
*****  BASIN C-1 - 90TH ST FROM HIGH POINT TO EUCHAIZ
*****
COMPUTE NM HYD       ID=2 HYD NO=200.00 AREA=0.0010 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   2.6847    CFS   UNIT VOLUME =    .9949       B =   526.28      P60 = 1.9000
    AREA =       .000680 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =    .78632    CFS   UNIT VOLUME =    .9822       B =   327.55      P60 = 1.9000
    AREA =       .000320 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=2 CODE=1

                                   PARTIAL HYDROGRAPH   200.00


    RUNOFF VOLUME =      1.55506 INCHES      =         .0829 ACRE-FEET
    PEAK DISCHARGE RATE =        2.37 CFS  AT   1.500 HOURS   BASIN AREA =    .0010 SQ. MI.


*****
*****  BASIN B - EUCHARIZ FROM 90TH TO 86TH ST
*****
COMPUTE NM HYD       ID=3 HYD NO=300.00 AREA=0.0023 SQ MI
                     PER A=0.00 PER B=18.00 PER C=0.00 PER D=82.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   7.4460    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 1.9000
    AREA =       .001886 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =   1.0173    CFS   UNIT VOLUME =    .9863       B =   327.55      P60 = 1.9000
    AREA =       .000414 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=3 CODE=1

                                   HYDROGRAPH FROM AREA   300.00


    RUNOFF VOLUME =      1.73501 INCHES      =         .2128 ACRE-FEET
    PEAK DISCHARGE RATE =        5.91 CFS  AT   1.500 HOURS   BASIN AREA =    .0023 SQ. MI.


*****
*****  BASIN A - THE SITE
*****
COMPUTE NM HYD       ID=4 HYD NO=400.00 AREA=0.0236 SQ MI
                     PER A=0.00 PER B=40.00 PER C=0.00 PER D=60.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   55.904    CFS   UNIT VOLUME =    .9992       B =   526.28      P60 = 1.9000
    AREA =       .014160 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =   23.196    CFS   UNIT VOLUME =    .9997       B =   327.55      P60 = 1.9000
    AREA =       .009440 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=4 CODE=1

                                   HYDROGRAPH FROM AREA   400.00


    RUNOFF VOLUME =      1.45223 INCHES      =        1.8279 ACRE-FEET
    PEAK DISCHARGE RATE =       52.59 CFS  AT   1.500 HOURS   BASIN AREA =    .0236 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 15:37:36
```

CALCULATIONS FOR

DESERT PINE, UNIT 4

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Consulting Engineers
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e-mail: dmg@swcp.com

PROJECT DESERT PINE, UNIT 4
SUBJECT
BY AMY DATE 12/12/02
CHECKED DATE
SHEET 1 OF

FROM SAD222 GTD REPORT (YR 2000)

OUR SITE (A10-D) ALLOWED TO DISCHARGE 57 CFS

SITE TO WEST (A9-D ; NOW ELDORADO NORTH) ALLOWED TO DISCHARGE 40 CFS

97 CFS

BOTH ARE WITH 50% B AND 50% D

THERE IS 36" RCP GOING WEST FROM EUCHARIZ + 86th FOR US TO CONNECT
NO FLOW IS COMING FROM SOUTH, NORTH, OR EAST PER THIS REPORT

FROM ELDORADO NORTH GTD REPORT (8/02) (BASIN D)

THERE IS 24" PIPE FROM SUBDIVISION (GOING INTO POND NOW) 27.8 CFS

FROM CITY PARK BET SUB + 90th ST 6.3 CFS

FLOW THAT PASSES OVER LAST INLET BY WESLOY CT 2.0 CFS

FLOW IN EUCHARIZ SOUTH OF PARK (I CALCULATED) 1.43 CFS

AREA IS 60(2081 − 1781) = 18,000 SF = 0.41 AC = 0.0006 SQ MI

% D = $\frac{41(300)}{18,000}$ = 0.68 % B = 0.32

37.5 CFS

How if pe

90th STREET – FROM N. EDGE OF CITY PARK TO EUCHARIZ (BASIN C-1)

(HIGH POINT IS AT 14+51) SEE ELDORADO N. WO # 689881

60' ROW, 32' FF

IMPERV WIDTH = 4'x2 SW + 16.5'(2) RD = 41

LENGTH = 1458 − 1014 = 444 FT

TOTAL AREA = 60(444) = 26,640 SF = 0.001 SQ MI = 0.61 AC

% D = $\frac{41(444)}{26,640}$ = 0.68 % B = 0.32

FROM ATHYMO 2.37 CFS

EUCHARIZ – FROM 90th ST TO 86th ST (BASIN B)

LENGTH = 1060

60' ROW, 40' FF

IMPERV WIDTH = 4'(2) SW + 20'(2) RD + 0.5'(2) CURB = 49 FT

TOTAL AREA = 1060(60) = 63,600 SF = 0.0023 SQ MI = 1.46 AC

% D = $\frac{49(1060)}{63,600}$ = 0.82 % B = 0.18

FROM ATHYMO 5.91 CFS

THIS SITE (BASIN A)

FOR SAD 222, FOR R-D/9 DU/AC ASSUME 40% B AND 60% D

THIS SITE IS 15.0861 AC = 657,151 SF = 0.0236 SQ MI

$\frac{52.59 \text{ CFS}}{15.0861 \text{ AC}}$ = 3.49 $\frac{\text{CFS}}{\text{AC}}$

FROM ATHYMO 52.59 CFS

98.4 CFS

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PROJECT DESERT PINE - UNIT 4
SUBJECT
BY AMY DATE 12/24/02
CHECKED DATE
SHEET 2 OF

90th ST FROM N EDGE OF CITY PARK TO VAHALLA SUB (BASIN C-2)

LENGTH = 233
60' ROW, 32' FF
AREA = 60(233) = 13,980 SF = 0.32 AC = 0.0005 SQ MI
% D = 41(233) / 13,980 = .68 % B = 0.32

FROM HYMO 1.2 CFS

BREAKDOWN OF BASIN A

BASIN A IS 52.59 CFS → 3.49 CFS/AC

BASIN A-1 IS 1030 x 235 + 255 x 205 = 6.76 AC
6.76 AC x 3.49 CFS/AC = 23.58 CFS

BASIN A-2 IS 52.59 − 23.58 = 29.01 CFS
15.09 AC − 6.76 AC = 8.33 AC

TOTAL GOING INTO STORM DRAIN IN EUCARIZ

BASIN B + BASIN A-2 + BASIN C-1 + BASIN D
5.9 29.0 2.4 +27.8+9.7 = 74.8
(INITIALLY SURPLUS 2.4 + 9.7 + 5.9 = 18.0 cfs)

TOTAL GOING INTO STORM DRAIN IN 86th ST

BASIN A-1 + EXIST 86th ST
23.6 8.4 = 32.0 CFS

CHECK EXISTING 24" PIPE IN 86th ST ORIFICE (UNDER PRESSURE)

$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}}$ Q = 32.0 CFS
h = 12.06 − (3.69 + .5) = 7.87 (FROM STD 222 DWGS)

$D = \sqrt{\frac{4(32.0)}{0.6\pi\sqrt{2(32.2)(7.87)}}}$ = 1.74 FT = 20.8 IN < 24 IN EXIST PIPE ✓

CHECK EXISTING 36" RCP IN EUCHARIZ

Q = 74.8 CFS
h = 14.66 − (3.98 + 1.5') = 9.18 FT

$D = \sqrt{\frac{4(74.8)}{0.6\pi\sqrt{2(32.2)9.18}}}$ = 2.56 FT = 30.67 IN < 36" EXIST PIPE ✓

TOTAL FLOW AT EUCHARIZ + 86th ST

74.8 + 32.0 = 106.8

h = 11.44 − (2.24 + 42/12) = 5.70 FT

$D = \sqrt{\frac{4(106.8)}{0.6\pi\sqrt{2(32.2)(5.70)}}}$ = 3.4 FT = 41.3 IN < 42 IN EXIST PIPE

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PROJECT DESERT PINE - UNIT 4
SUBJECT
BY AMY DATE 12/24/02
CHECKED DATE
SHEET 3 OF

SIZE PIPE IN DESERT MAIZE DR

$Q = 29.0 CFS$
$h = 13.91 - 5.03 = 8.88 FT$ (PL SLOPE FROM EXIST MH)
$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}} = \sqrt{\frac{4(29.0)}{0.6\pi\sqrt{2(32.2)8.88}}} = 1.60 FT = 19.25 IN \rightarrow 24 IN PIPE$

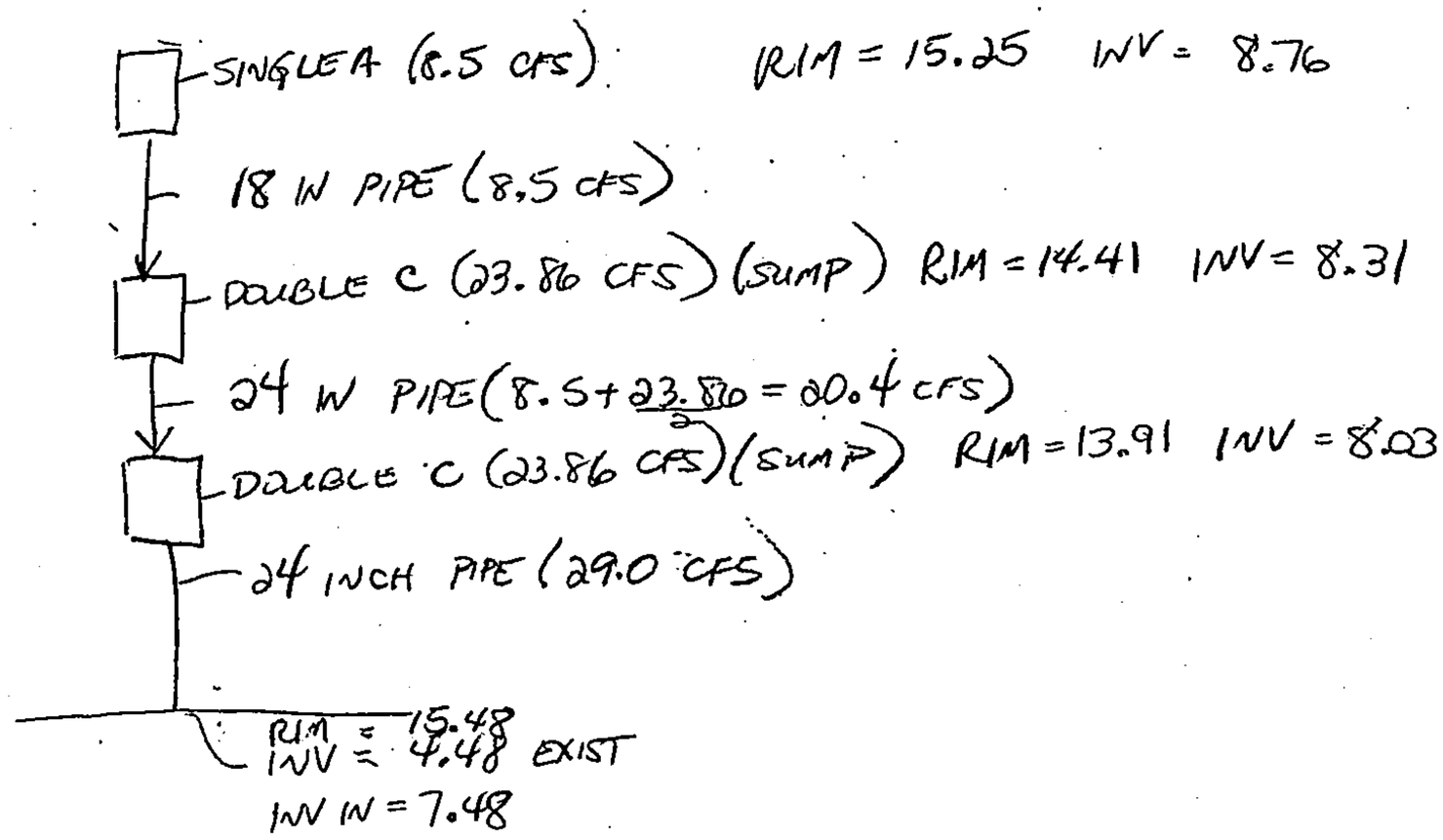
SIZE INLETS IN DESERT MAIZE

FIRST INLET IS SINGLE A NOT A SUMP CONDITION
FROM PLATE 22.3 D-5, FOR $D = 0.53$, $S = 0.0189$ $\rightarrow Q = 8.5 CFS$

TOTAL FLOW AT SOUTH END OF DESERT MAIZE = 29.0 CFS
$29.0 - 8.5 = 20.5$ ACTUAL FLOW AT LAST INLET
THIS IS SUMP CONDITION SO SIZE INLET
FOR $2 \times 20.5 = 41.0 CFS$

DOUBLE C
SIDE = 2' AVG DEPTH = $\frac{6.5' + 10.75''}{2(12)} = 0.719 FT$
FRONT = 6.5' WITH $\frac{10.75}{12} = 0.896 FT$ AT GUTTER
$Q = 3.0 LH^{3/2}$
$Q_{SIDE} = 3(2 \times 2')(0.719)^{3/2} = 7.32$
$Q_{FRONT} = 3(6.5')(.896)^{3/2} = 16.54$
23.86 CFS

USE 2 DOUBLE Cs $\rightarrow 2 \times 23.86 = 47.71 > 41.0 CFS$ ✓



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PROJECT DESERT PINE-UNIT 4
SUBJECT
BY AMY DATE 12/26/02
CHECKED DATE
SHEET 4 OF

SIZE PIPE BETWEEN INLETS IN DESERT MAZE

BET SINGLE A + DOUBLE C $Q = 8.5$ CFS $h = 15.25 - (8.76 + .5) = 5.99$ FT

$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}} = \sqrt{\frac{4(8.5)}{0.6\pi\sqrt{2(32.2)5.99}}} = .96$ FT $= 11.5$ IN $\rightarrow$ 18 IN PIPE ASS

BET DOUBLE C AND DOUBLE C $Q = 20.4$ CFS $h = 14.41 - (8.31 + 18/12) = 4.6$ FT

$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}} = \sqrt{\frac{4(20.4)}{0.6\pi\sqrt{2(32.2)4.6}}} = 1.59$ FT $= 19.03$ IN $\rightarrow$ 24 IN PIPE

SIZE INLETS IN EUCHARIZ

SURFACE FLOW = 9.7 (PART OF D) + 2.4 BASIN C + 5.9 BASIN B = 18.0 CFS

NOT A SUMP CONDITION

FROM PLATE 22.3 D-5, FOR SINGLE A + C
$D = 0.44$
$S = 0.0264$ $\rightarrow$ $Q = 7.0$ CFS

FROM PLATE 22.3 D-6, FOR DOUBLE A + C
$D = 0.44$
$S = 0.0864$ $\rightarrow$ $Q = 8$ CFS Exceeds crown

$\rightarrow$ USE A DOUBLE A AND A DOUBLE C

CHECK CAPACITY OF EXIST INLETS IN 86th ST

2 - TYPE A 1 - DOUBLE C $Q = 32.0$ CFS

FROM PLATE 22.3 D-5, FOR SINGLE A
$D = .55$
$S = .0054$ $\rightarrow$ $Q = 5.5$

FROM PLATE 22.3 D-6, FOR DOUBLE C
$D = .55$
$S = .0054$ $\rightarrow$ $Q = 6.8$ CFS

$5.5 + 5.5 + 6.8 = 19.1 < 32.0$ CFS NOT SUFFICIENT

$h = 11.29 - (7.74 + 1.5) = 2.05$

IF USE 1-A 2-C $Q = 5.5 + 2(6.8) = 19.1$

$D = \sqrt{\frac{4(19.1)}{0.6\pi\sqrt{2(32.2)4.40}}} = 1.55$ FT $= 18.6$ IN HEAD WILL PUSH THIS

IF USE 2-A $Q = (5.5)2 = 11.0$

$D = \sqrt{\frac{4(11.0)}{0.6\pi\sqrt{2(32.2)4.40}}} = 1.18$ FT $= 14.1$ IN < 18 ✓

$19.1 + 11.0 = 30.1$ $32 - 30.1 = 1.9$ CFS WILL PASS ON

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PROJECT DESERT PINE UNIT 4
SUBJECT
BY AMY DATE 12/26/02
CHECKED DATE
SHEET 5 OF

SIZE PIPE BET INLET IN EUCHARIZ + EXIST MH

$Q = 29.0 + 18.0 = 47.0\,CFS$
BASIN A SURFACE

$D = \sqrt{\frac{4(47.0)}{0.6\pi\sqrt{2(32.2)6.08}}} = 2.25\,FT = 26.9\,IN \Rightarrow USE\ 30''$ $h = 14.84 - (7.76 + 1) = 6.08\,FT$

SIZE PIPE BET LAST INLET IN DESERT MAIZE + INLET IN EUCHARIZ

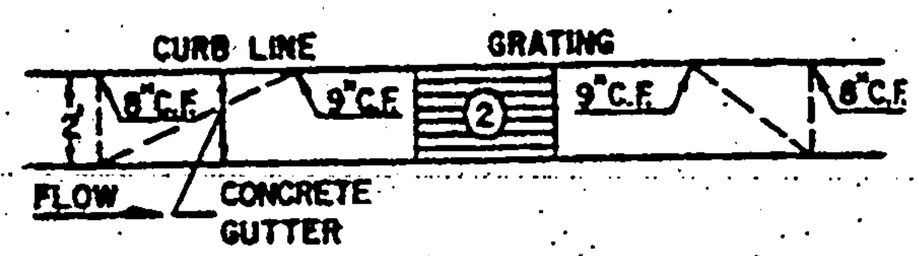
$Q = 29.0\ CFS$ $h = 13.91 - (8.03 + 1.5) = 4.38$

$D = \sqrt{\frac{4(29.0)}{0.6\pi\sqrt{2(32.2)4.38}}} = 1.91\,FT = 23\,IN \rightarrow USE\ 24\,IN$

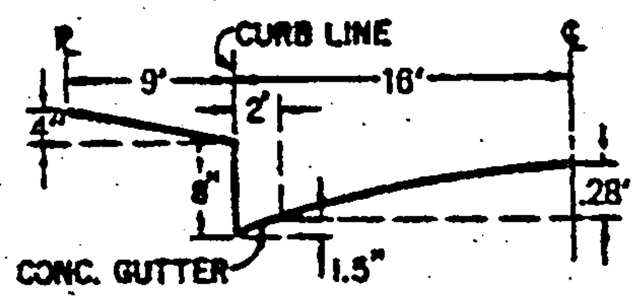
CFS PER LOT

$\frac{52.59\,CFS}{111\ LOTS} = .473\,\frac{CFS}{LOT}$

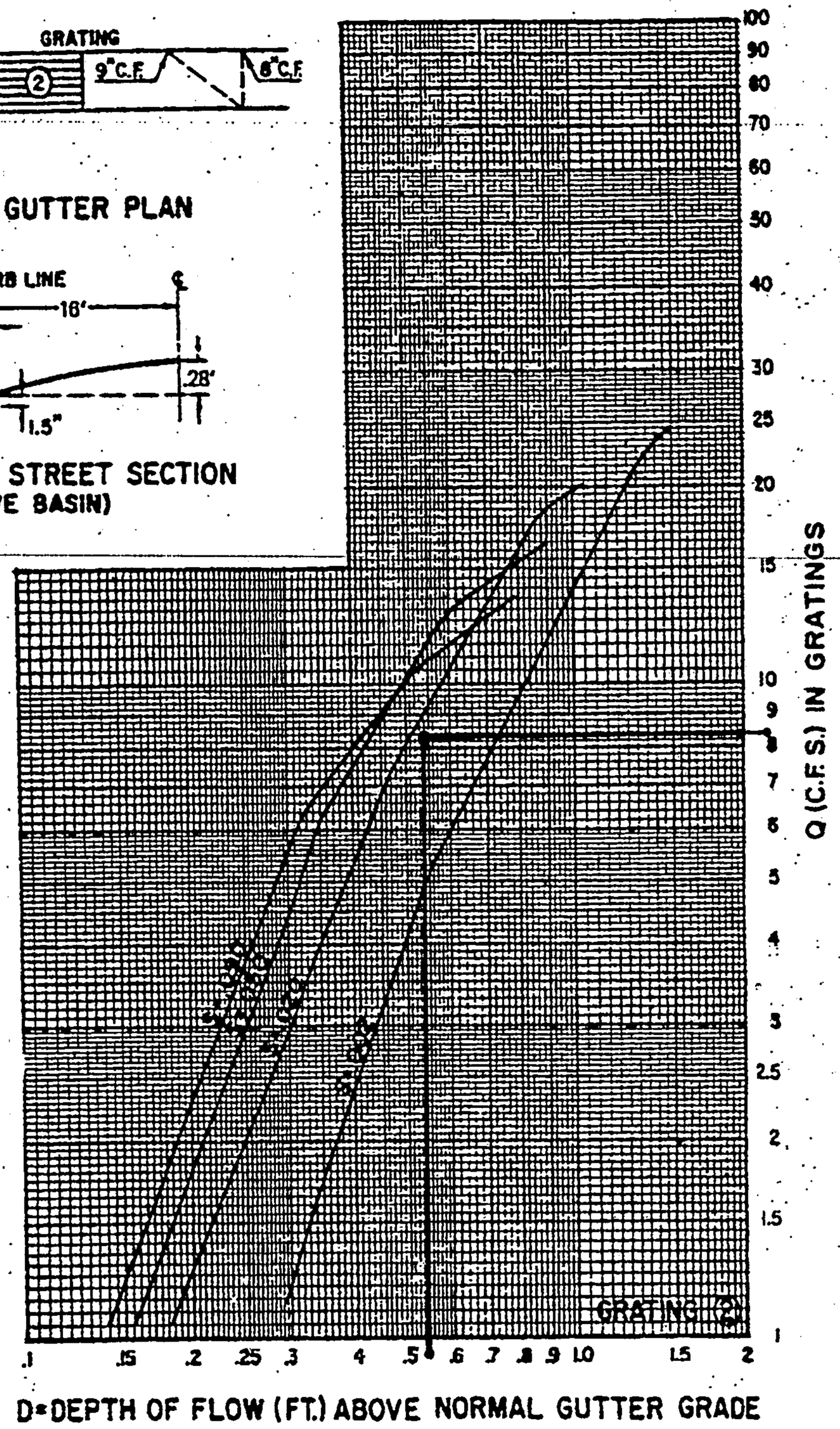
GRATING CAPACITIES FOR TYPE 'A', 'C' and 'D'



GRATING & GUTTER PLAN



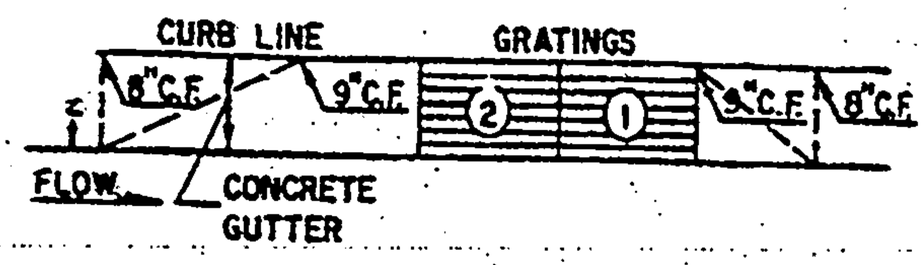
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



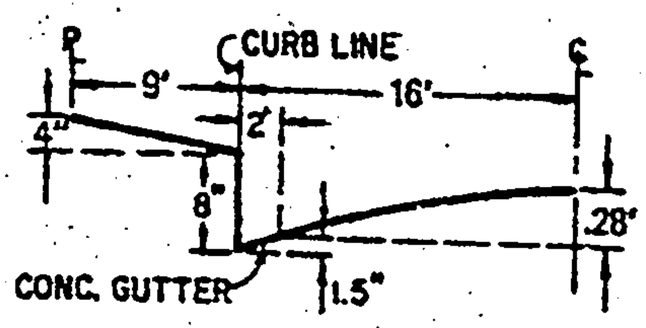
D = 0.53
S = 0.0189 → Q = 8.5 cfs
DESERT MAIZE

PLATE 22.3 D-5

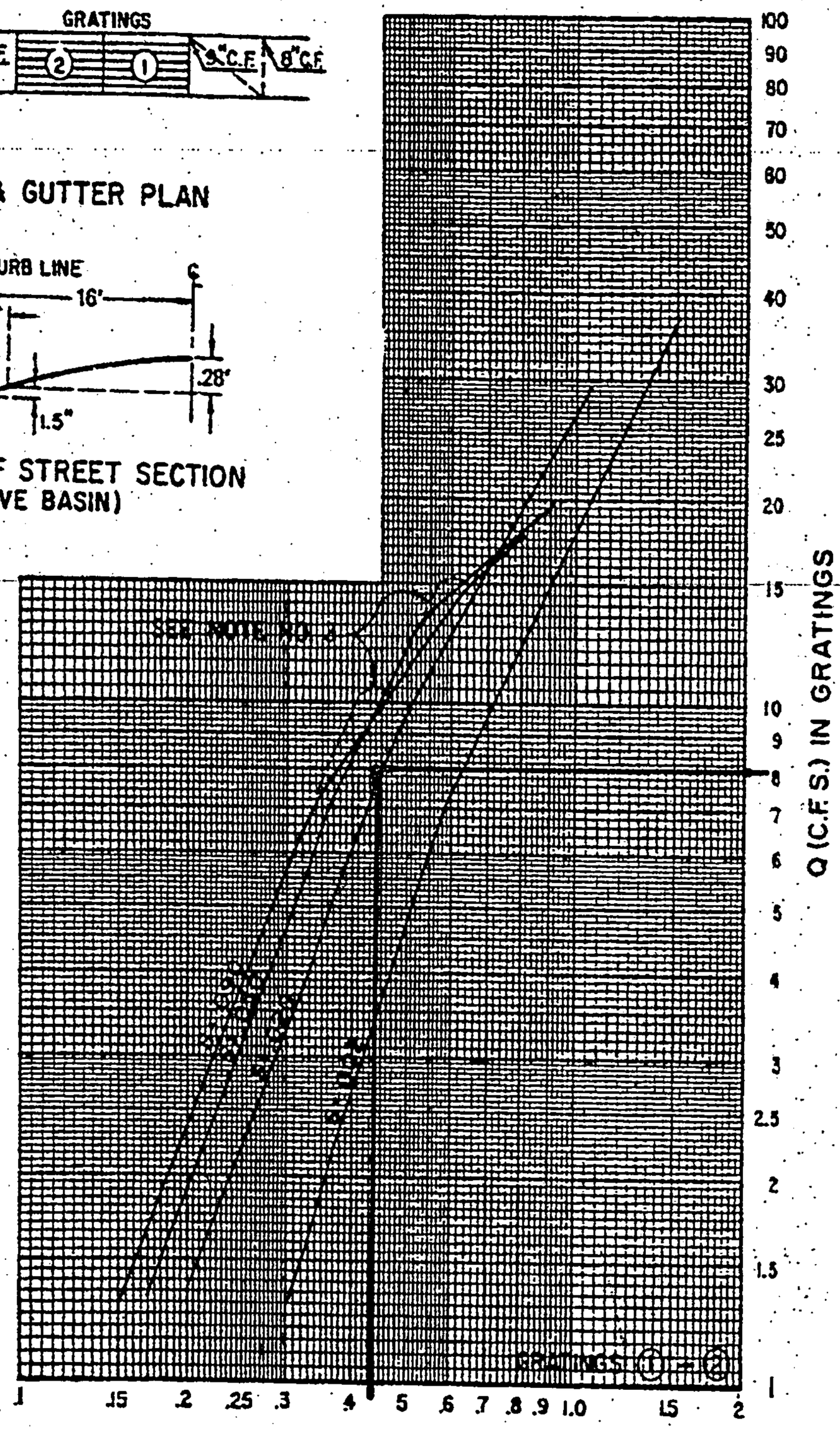
GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



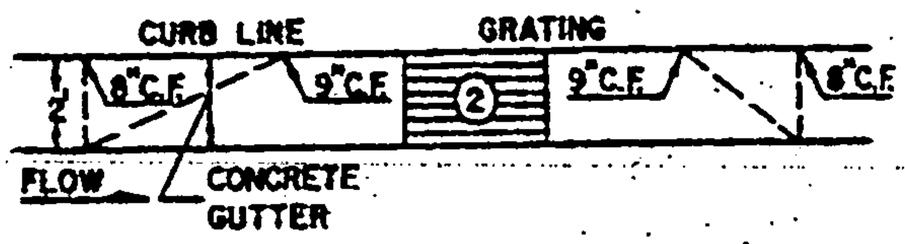
D=DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

D= .44 ⇒ Q = 8.0 CFS
S = 0.0264

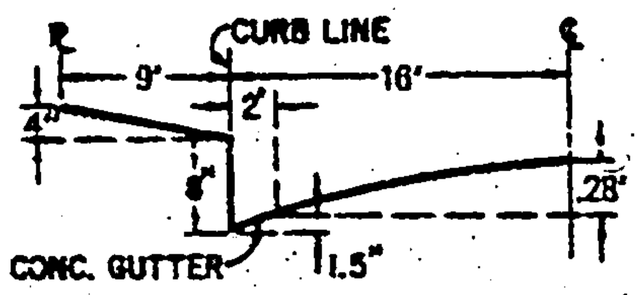
EUCHARIZ

PLATE 22.3 D-6

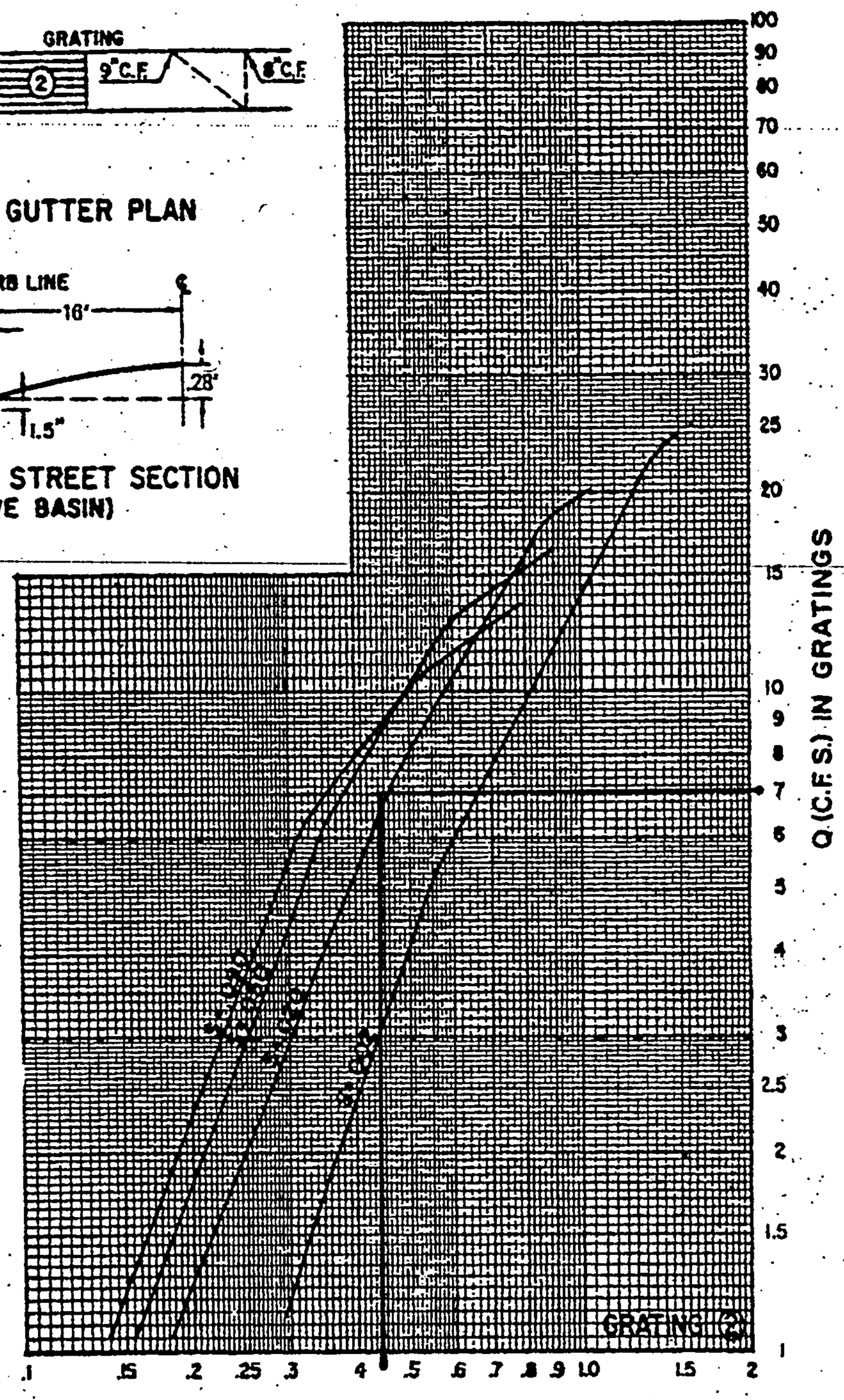
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

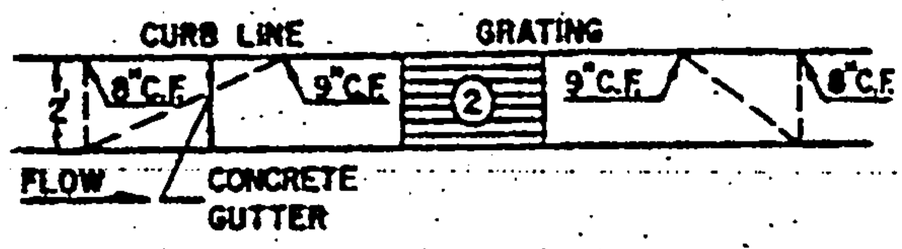


D = 0.44
S = 0.0064 → Q = 7.0

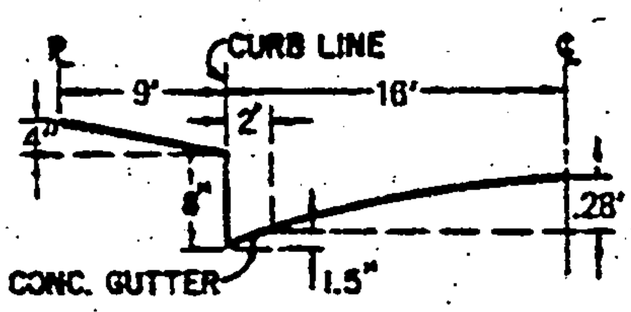
EUCHARIZ

PLATE 22.3 D-5

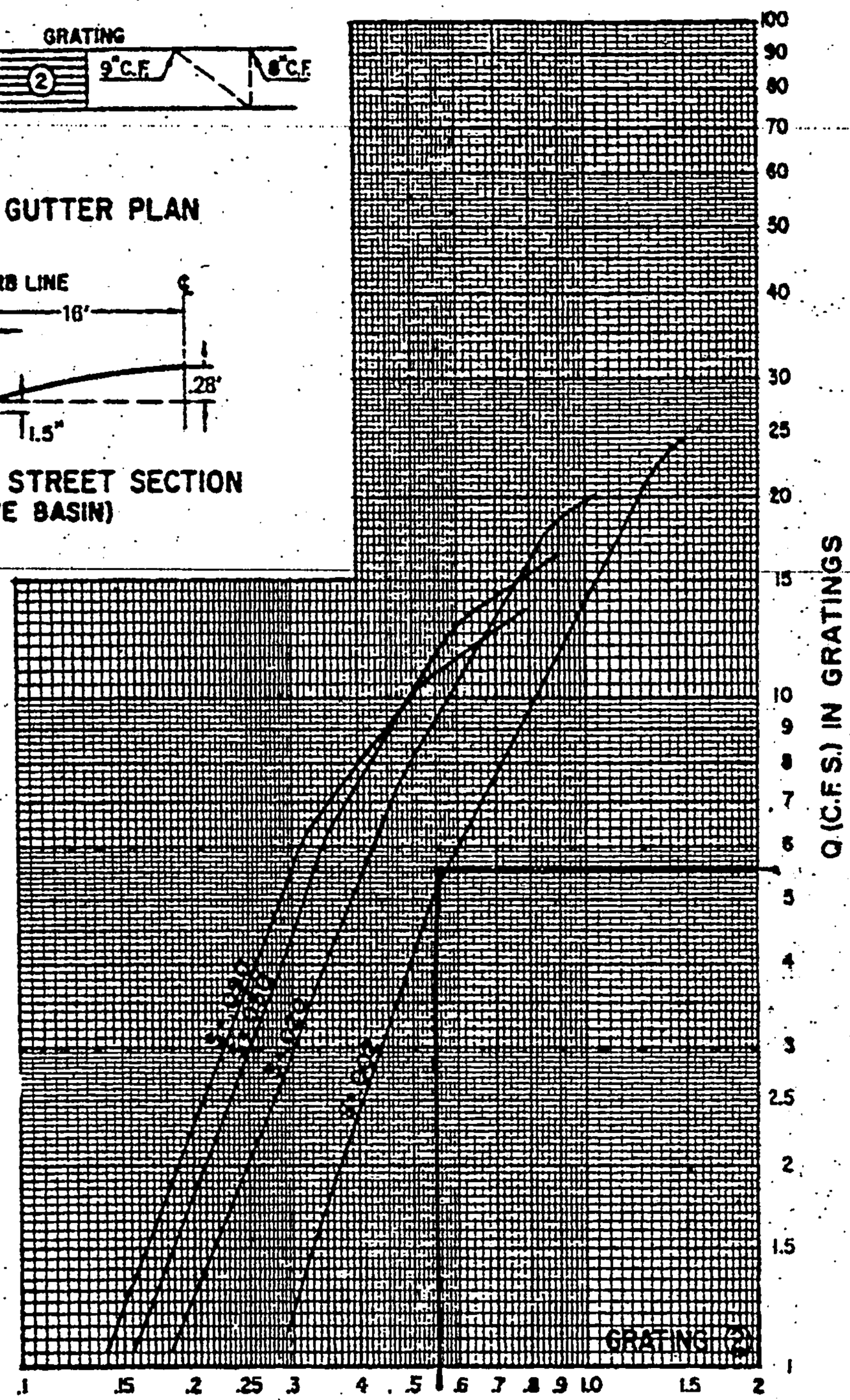
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



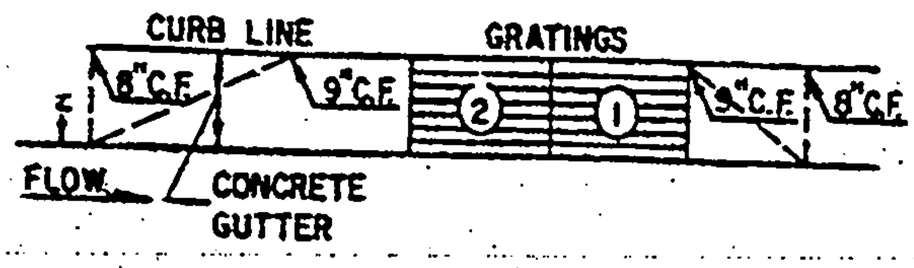
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



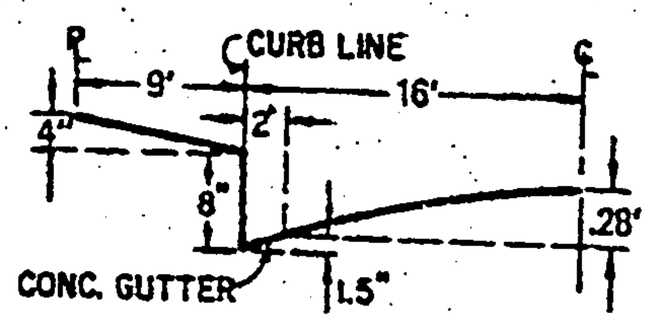
D = .55 → Q = 5.5 CFS
S = .0054
86th ST

PLATE 22.3 D-5

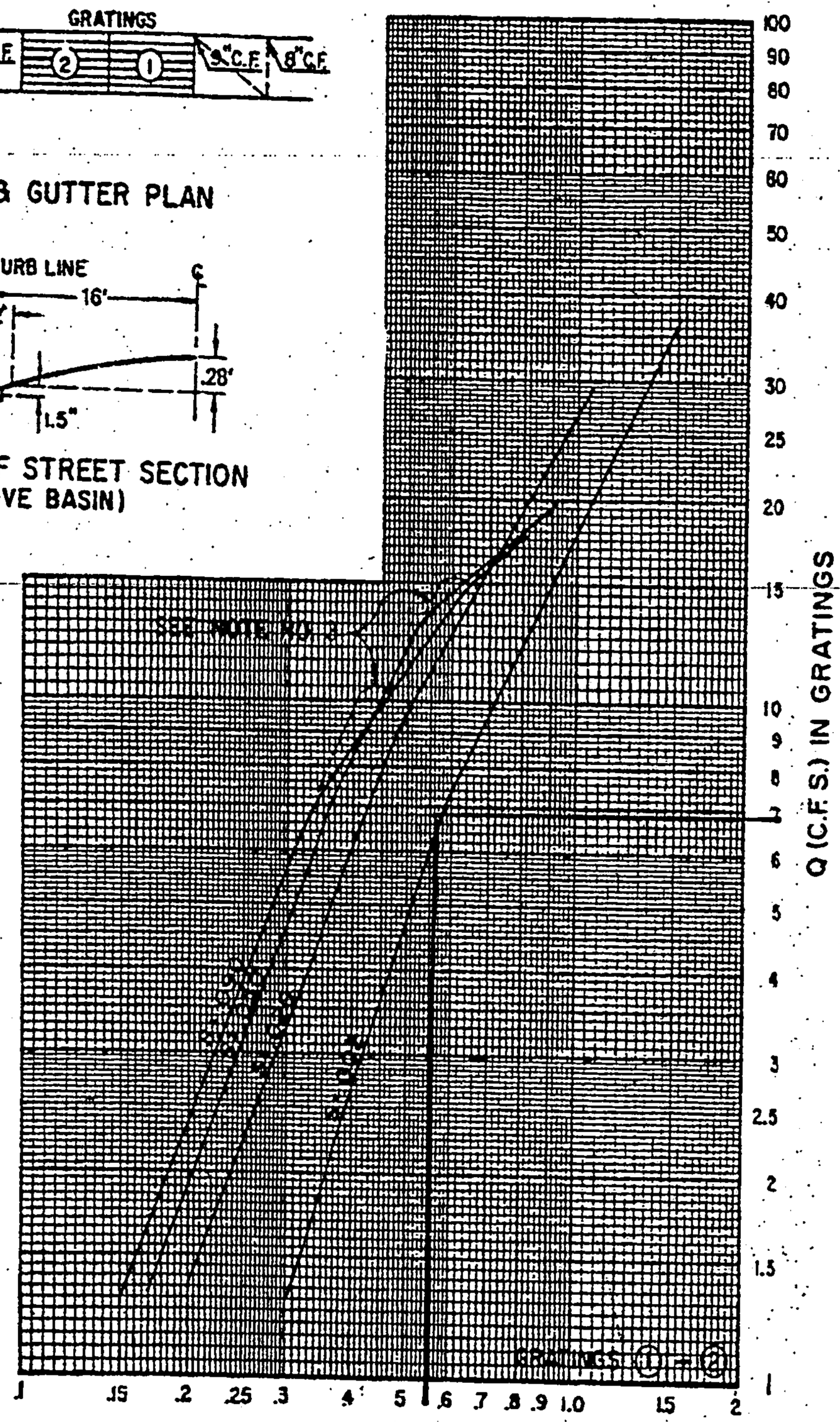
GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



D = .55
S = .0054 → Q = 6.8 cfs
86th ST

PLATE 22.3 D-6

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	29.00	0.00	0.44	0.53	0.75	0.018916	4.43	6.54	28.83	1.64
street	500	29.00	0.00	0.53	0.53	0.69	0.006541	3.21	9.03	28.99	1.01

24' FF (DESERT MAIZE)
STANDARD CURB + GUTTER
S = 0.0189

$$.44 + \frac{(4.43)^2}{2(32.2)} = .74$$

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	23.60	0.00	0.49	0.49	0.63	0.006574	2.97	7.95	28.92	1.00
street	500	23.60	0.00	0.49	0.49	0.63	0.006574	2.97	7.95	28.92	1.00

28' FF (DESERT MAIZE)
STANDARD CURB + GUTTER
S = 0.006

HEC-RAS Plan: Plan 01 River: street Reach: a

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
a	900	12.00	0.00	0.28	0.33	0.46	0.023244	3.41	3.51	26.97	1.67
a	500	12.00	0.00	0.33	0.33	0.42	0.007792	2.37	5.06	29.62	1.01

28' FF (DAKOTA RIDGE RD)

MOUNTABLE CURB AND GUTTER

S = 0.0232

HEC-RAS Plan: Plan 01 River: street Reach: a

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
a	900	12.00	0.00	0.29	0.33	0.44	0.018936	3.16	3.80	28.04	1.51
a	500	12.00	0.00	0.33	0.33	0.42	0.007792	2.37	5.06	29.62	1.01

28' FF (RAND ROCK RD)
MOUNTABLE CURB + GUTTER
S = 0.0189

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	18.00	0.00	0.37	0.45	0.61	0.026421	3.95	4.56	30.83	1.81
street	500	18.00	0.00	0.44	0.44	0.56	0.007378	2.76	6.52	28.83	1.02

40' FF (EUCHARIZ)

STANDARD CURB + GUTTER

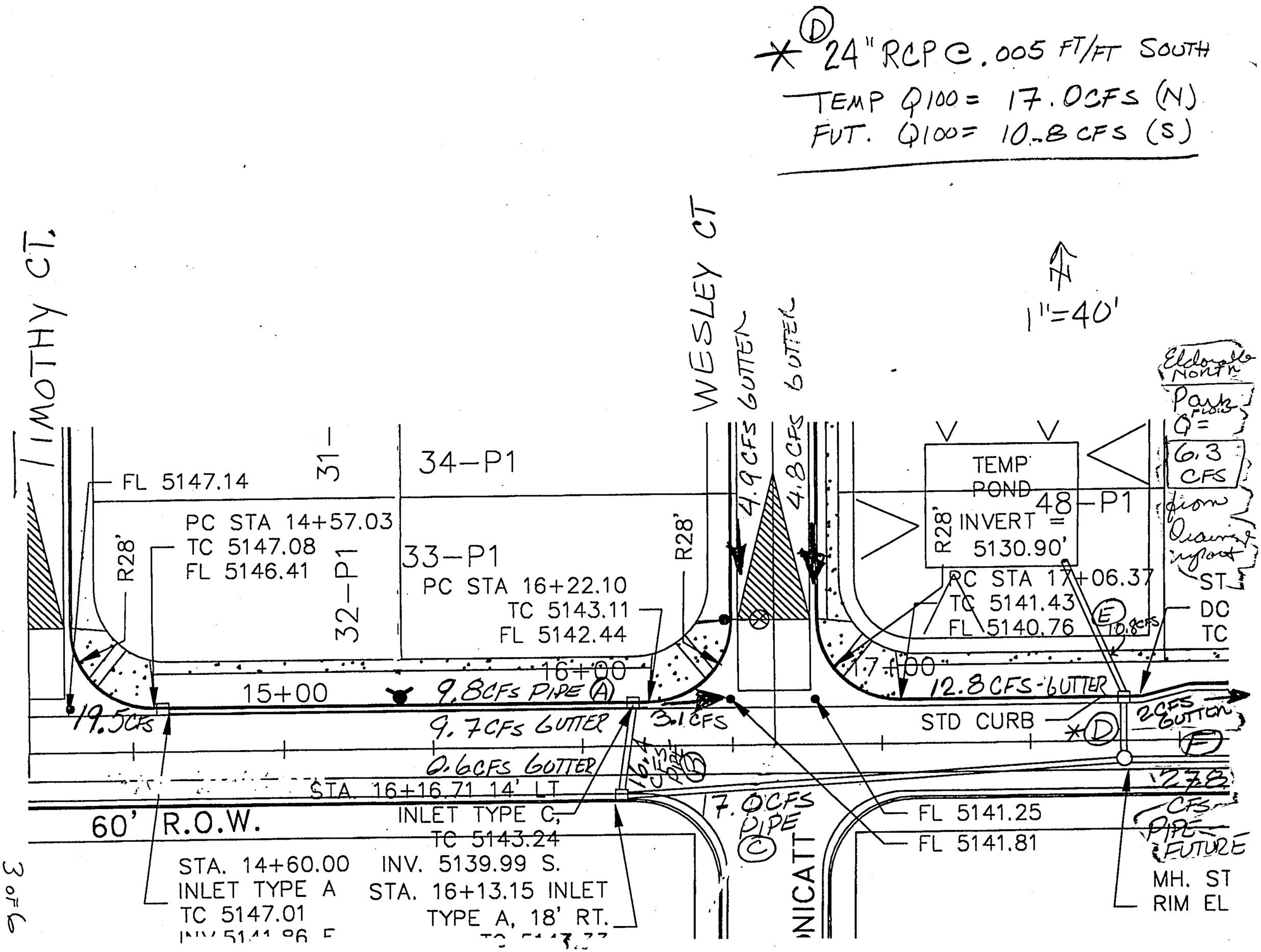
S = 2.64%

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	32.00	0.00	0.54	0.54	0.67	0.007264	2.80	11.42	49.01	1.02
street	500	32.00	0.00	0.55	0.55	0.72	0.006315	3.30	9.69	29.03	1.01

48' FF (86th ST)
STANDARD CURB AND GUTTER
S = 0.54%

EXCERPTS FROM ELDORADO NORTH


* (D) 24" RCP @ .005 FT/FT SOUTH
TEMP Q100 = 17.0CFS (N)
FUT. Q100 = 10.8 CFS (S)
TIMOTHY CT.
WESLEY CT
1"=40'
Eldorado North Park
Q FLOW = 6.3 CFS from Drainage report
31-P1
34-P1
33-P1
32-P1
48-P1
FL 5147.14
PC STA 14+57.03
TC 5147.08
FL 5146.41
R28'
PC STA 16+22.10
TC 5143.11
FL 5142.44
4.9 CFS GUTTER
4.8 CFS GUTTER
TEMP POND
INVERT = 5130.90'
PC STA 17+06.37
TC 5141.43
FL 5140.76
(E) 10.8CFS
DC
TC
ST
15+00
16+00
17+00
9.8CFS PIPE (A)
12.8 CFS-GUTTER
19.5CFS
9.7CFS GUTTER
3.1CFS
STD CURB
* (D)
2CFS GUTTER
(F)
0.6CFS GUTTER
16.4 CFS PIPE (B)
STA. 16+16.71 14' LT
INLET TYPE C,
TC 5143.24
INV. 5139.99 S.
7.0CFS PIPE (C)
60' R.O.W.
FL 5141.25
FL 5141.81
27.8 CFS PIPE FUTURE
MH. ST
RIM EL
STA. 14+60.00
INLET TYPE A
TC 5147.01
STA. 16+13.15 INLET
TYPE A, 18' RT.

3 of 6

EXCERPTS FROM SAD 222

TABLE 4

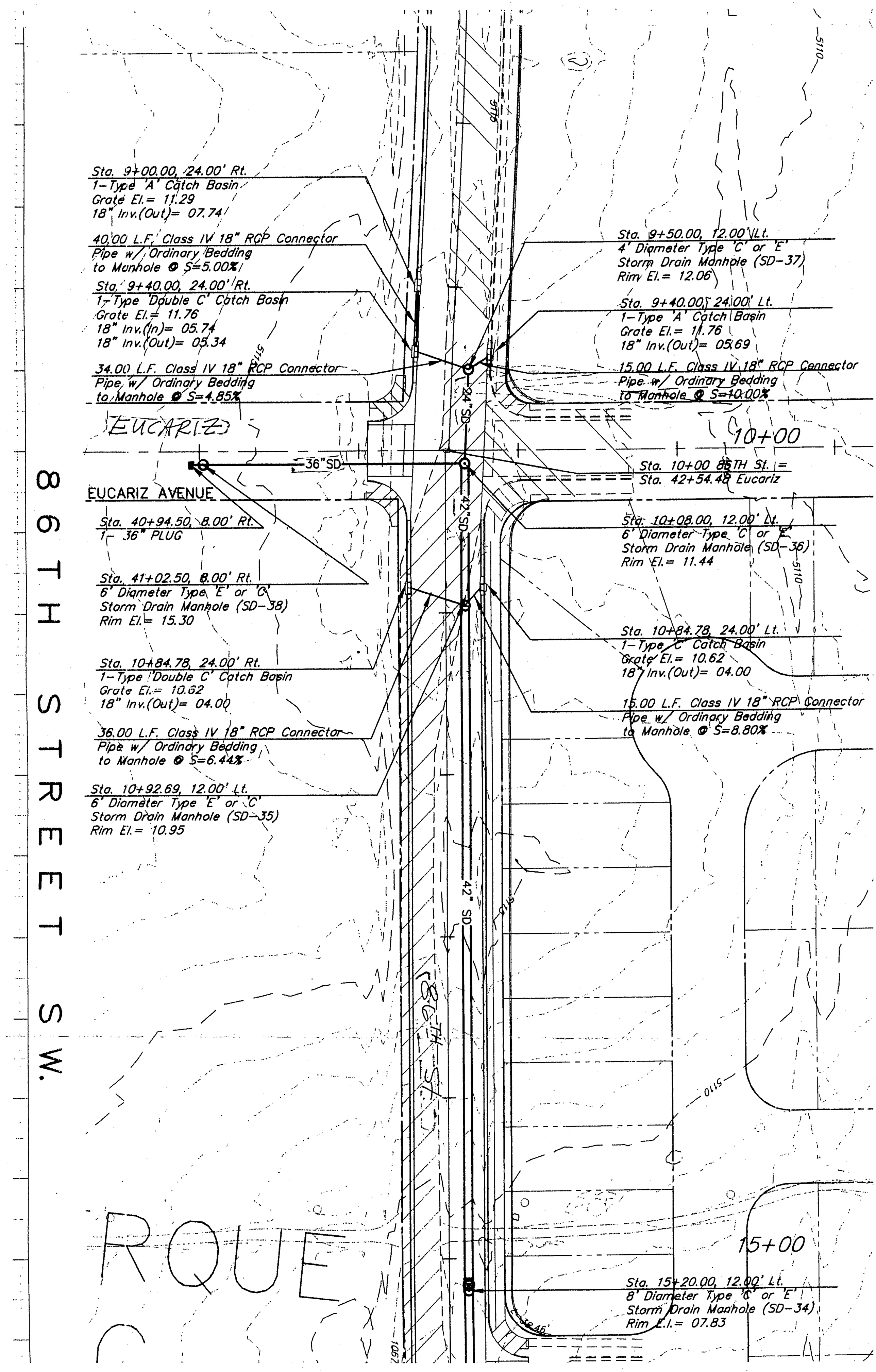
AHYMO BASIN PARAMETER WORKSHEET
PEAK BASIN FLOWS AND VOLUMES

DEVELOPED CONDITIONS

(ALL FLOWS & VOLUMES INCLUDE A 2% BULKING FACTOR)

BASIN	AREA (ac)	AREA (sq mi)	LENGTH (ft)	DIFF (ft)	SLOPE (%)	K	VEL (fps)	T(c) (hr)	T(p) (hr)	LAND TREATMENT (%) A	B	C	D	10 YEAR PEAK FLOW (6 hr) (cfs)	10 YEAR RUNOFF VOLUME (24 hr) (ac ft)	100 YEAR PEAK FLOW (6 hr) (cfs)	100 YEAR RUNOFF VOLUME (24 hr) (ac ft)
A6-D	28.9	0.0452	200	4.0	2.00	0.7	0.99	0.06	0.04								
			950	8.0	0.84	3.0	2.75	0.10	0.06								
			900	18.0	2.00	3.0	4.24	0.06	0.04								
		TOTAL =						0.21	0.14	0	50	0	50	52	2.1	93	3.7
A7-D	13.2	0.0206	150	1.0	0.67	0.7	0.57	0.07	0.05								
			400	1.0	0.25	3.0	1.50	0.07	0.05								
			900	18.0	2.00	3.0	4.24	0.06	0.04								
		TOTAL =						0.21	0.14	0	50	0	50	24	1.0	42	1.7
A8-D	37.1	0.0580	200	4.0	2.00	0.7	0.99	0.06	0.04								
			900	21.0	2.33	3.0	4.58	0.05	0.04								
			1250	6.0	0.48	3.0	2.08	0.17	0.11								
		TOTAL =						0.28	0.19	0	50	0	50	68	2.7	114	4.8
A9-D	11.8	0.0185	200	1.0	0.50	0.7	0.49	0.11	0.07								
			900	22.0	2.44	3.0	4.69	0.05	0.04								
		TOTAL =						0.17	0.11	0	50	0	50	22	0.9	40	1.5
A10-D	17.0	0.0266	150	2.0	1.33	0.7	0.81	0.05	0.03								
			900	18.0	2.00	3.0	4.24	0.06	0.04								
			100	2.0	2.00	3.0	4.24	0.01	0.00								
		TOTAL =						0.12	0.08	0	50	0	50	32	1.2	57	2.2

BRIDGE BLVD.
SUNSET GARDENS RD
80TH STREET
86TH STREET
A10-D
17.0 Ac.
A9-D
11.8 Ac.
EUCARIZ AVE.
A4.1-D
A5-D
26.2 Ac.
A6-D
28.9 Ac.
TOWER RD
A7-D
13.2 Ac.
B5-D
25.0 Ac.
TOWER PARK/ POND
B1-D
14.7 Ac.
B2-D
22.4 Ac.
B3-D
27.0 Ac.
B4-D
14.7 Ac.
97TH STREET
SAN YG
S3-D
36.3 Ac.
S4-D
27.9 Ac.
S5-D
19.6 Ac.
S1-D
20.1 Ac.
S2-D
10.4 Ac.
SAGE
BASINS
C1-D THRU C3-D
SEE MAP NO. 4
PENAVIDES RD.


Sta. 9+00.00, 24.00' Rt.
1-Type 'A' Catch Basin
Grate El.= 11.29
18" Inv.(Out)= 07.74
40.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=5.00%
Sta. 9+40.00, 24.00' Rt.
1-Type 'Double C' Catch Basin
Grate El.= 11.76
18" Inv.(In)= 05.74
18" Inv.(Out)= 05.34
34.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=4.85%
EUCARIZ
36"SD
EUCARIZ AVENUE
Sta. 40+94.50, 8.00' Rt.
1- 36" PLUG
Sta. 41+02.50, 8.00' Rt.
6' Diameter Type 'E' or 'C'
Storm Drain Manhole (SD-38)
Rim El.= 15.30
Sta. 10+84.78, 24.00' Rt.
1-Type 'Double C' Catch Basin
Grate El.= 10.62
18" Inv.(Out)= 04.00
36.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=6.44%
Sta. 10+92.69, 12.00' Lt.
6' Diameter Type 'E' or 'C'
Storm Drain Manhole (SD-35)
Rim El.= 10.95
Sta. 9+50.00, 12.00' Lt.
4' Diameter Type 'C' or 'E'
Storm Drain Manhole (SD-37)
Rim El.= 12.06
Sta. 9+40.00, 24.00' Lt.
1-Type 'A' Catch Basin
Grate El.= 11.76
18" Inv.(Out)= 05.69
15.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=10.00%
10+00
Sta. 10+00 86TH St. =
Sta. 42+54.48 Eucariz
Sta. 10+08.00, 12.00' Lt.
6' Diameter Type 'C' or 'E'
Storm Drain Manhole (SD-36)
Rim El.= 11.44
Sta. 10+84.78, 24.00' Lt.
1-Type 'C' Catch Basin
Grate El.= 10.62
18" Inv.(Out)= 04.00
15.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=8.80%
15+00
Sta. 15+20.00, 12.00' Lt.
8' Diameter Type 'C' or 'E'
Storm Drain Manhole (SD-34)
Rim El.= 07.83
24"SD
42"SD
42" SD
86TH ST.
86 TH STREET W.
ROUE
5110
5115
5116
5118
5120
5122
5124
5126
5128
5130
5132
5134
5136
5138
5140
5142
5144
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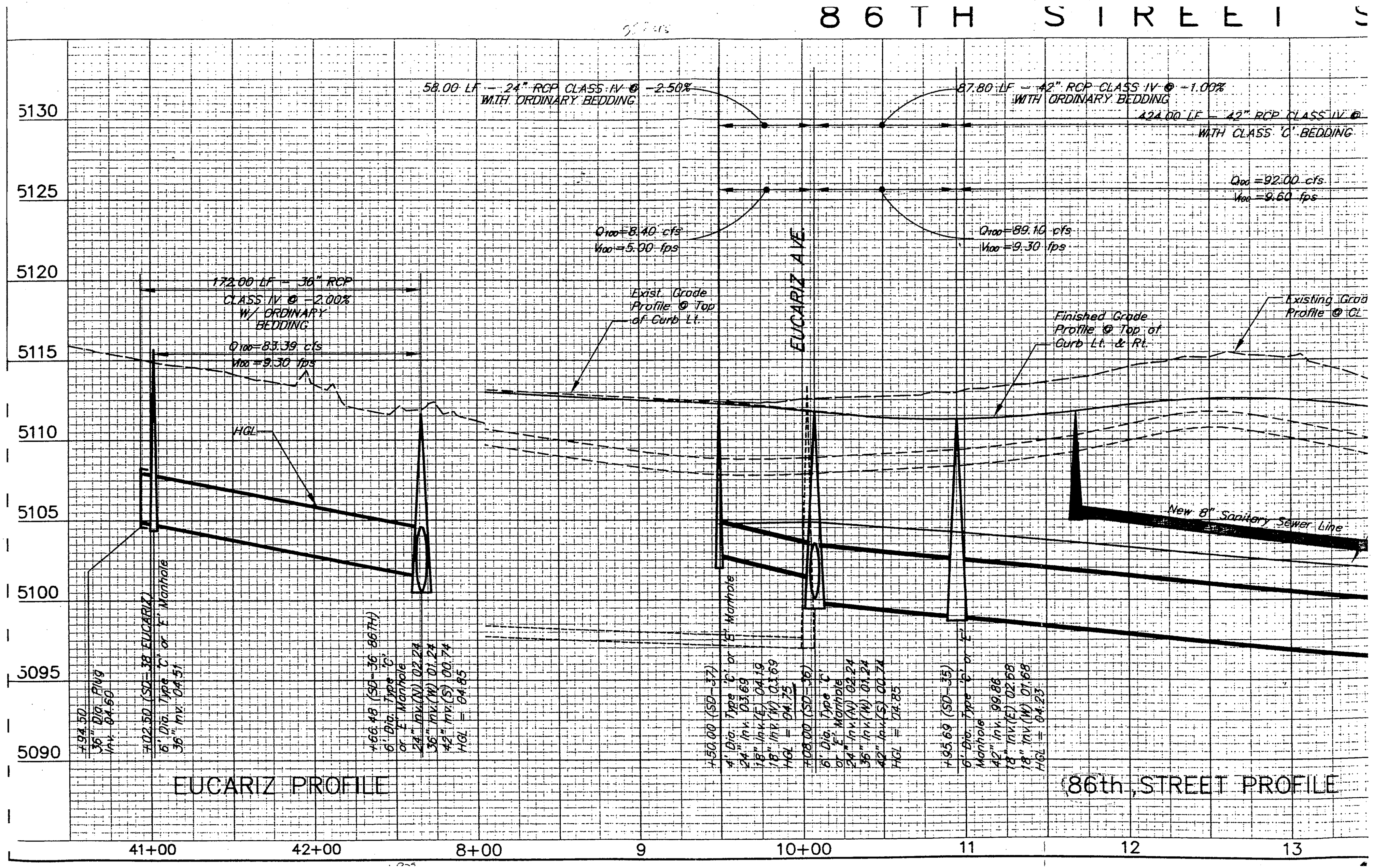
86TH STREET S
5130
5125
5120
5115
5110
5105
5100
5095
5090
58.00 LF – 24" RCP CLASS IV @ -2.50%
WITH ORDINARY BEDDING
87.80 LF – 42" RCP CLASS IV @ -1.00%
WITH ORDINARY BEDDING
424.00 LF – 42" RCP CLASS IV @
WITH CLASS 'C' BEDDING
Q100 = 92.00 cfs
V100 = 9.60 fps
Q100 = 8.40 cfs
V100 = 5.00 fps
Q100 = 89.10 cfs
V100 = 9.30 fps
172.00 LF – 36" RCP
CLASS IV @ -2.00%
W/ ORDINARY
BEDDING
Q100 = 83.39 cfs
V100 = 9.30 fps
Exist. Grade
Profile @ Top
of Curb Lt.
EUCARIZ AVE.
Finished Grade
Profile @ Top of
Curb Lt. & Rt.
Existing Grad
Profile @ CL
HGL
New 8" Sanitary Sewer Line
+94.50
36" Dia. Plug
Inv. 04.60
+02.50 (SD-38 EUCARIZ)
6' Dia. Type 'C' or 'E' Manhole
36" Inv. 04.51
+66.48 (SD-36 86TH)
6' Dia. Type 'C'
or 'E' Manhole
24" Inv.(N) 02.24
36" Inv.(W) 01.24
42" Inv.(S) 00.74
HGL = 04.85
+50.00 (SD-37)
4' Dia. Type 'C' or 'E' Manhole
24" Inv. 03.69
18" Inv.(E) 04.19
18" Inv.(W) 03.69
HGL = 04.75
+08.00 (SD-36)
6' Dia. Type 'C'
or 'E' Manhole
24" Inv.(N) 02.24
36" Inv.(W) 01.24
42" Inv.(S) 00.74
HGL = 04.85
+95.69 (SD-35)
6' Dia. Type 'C' or 'E'
Manhole
42" Inv. 99.86
18" Inv.(E) 02.68
18" Inv.(W) 01.68
HGL = 04.23
EUCARIZ PROFILE
86th STREET PROFILE
41+00
42+00
8+00
9
10+00
11
12
13

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE REPORT

for

Desert Pine, Unit 4

Prepared By

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HYDROLOGY SECTION

March, 2003

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II. Existing Conditions

III. Proposed Drainage Plan

IV. Summary

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- Zone Atlas Map,L-9
- FIRM Map
- Zoning
- Desert Pine, Unit 4 Basin Map
- Desert Pine, Unit 4 Grading and Drainage Plan
- AHYMO Run
  - Summary Output - 100 year
  - Input Data - 100 year
  - Output Data - 100 year
- Calculations for Desert Pine, Unit 4
- Excerpts from Eldorado North
- Excerpts from SAD 222

INTRODUCTION

This report is being submitted for Grading and Drainage approval.

Please see the enclosed Zone Atlas Map, L-9. The proposed Desert Pine, Unit 4 subdivision is bounded by 86th Street, Euchariz Avenue, 90th Street, and Valhalla Estates. The project covers 15.1 acres and will be developed into 111 single family residential homes.

EXISTING CONDITIONS

Currently the site is vacant and covered with typical desert vegetation. This site is not in the 100 year flood plain. All of the Zoning is now RD / 9DU / AC.

Drainage on the site generally flows from west to east. Please see the enclosed Desert Pine, Unit 4 Basin Map for existing contours. No flows enter the site from 86th Street to the east, Euchariz Avenue to the south, or Valhalla Estates to the north. 86th Street is fully developed with inlets just north of Euchariz Avenue and 86th Street. Euchariz has 175 feet of 36 inch storm drain which drains to 86th Street, but the road is not paved yet. Flows do enter west from 90th Street and Eldorado Subdivision, which are under construction.

PROPOSED DRAINAGE PLAN

Please see the enclosed Desert Pine, Unit 4 Grading and Drainage Plan, the AHYMO run, and the detailed calculations for this project. The following is a summary of the basins:

Basin	Area (Acre)	100 Year Flow (cfs)
A-1	6.8	23.6
A-2	8.3	29.0
Subtotal A	15.1	52.6
B	1.5	5.9
C-1	0.6	2.4
C-2	0.3	1.2
Subtotal C	0.9	3.6
Basin D	---	27.8 by pipe 9.7 by surface 37.5 total
Basin E	1.5	8.4

The site is divided into two basins A-1 (23.6 cfs) and A-2 (29.0 cfs). Both Basins will discharge into inlets at the south end of Desert Maize Drive. Flow from these inlets will connect by a 30 inch pipe to the existing 36 inch storm pipe in Euchariz Avenue. Please see the enclosed calculations that detail the flow into each inlet and the size of connecting pipes.

Although drainage is presently coming on site from the west, no off-site flow will be allowed to enter the site. For the interim, Eldorado North is designed to have a retention pond on site and a stubbed out 24 inch storm pipe in Euchariz Avenue. Please see the enclosed excerpts from the Eldorado North Subdivision. The Desert Pine, Unit 4 project will connect the 24 inch pipe to the existing 36 inch storm pipe in Euchariz Avenue west of 86th Street. The 100 year flow in the pipe from Eldorado North will be 27.8 cfs. The surface flow from Eldorado North will be 9.7 cfs.

The western portion of 90th Street was designed with Eldorado North. Most of the street will drain south to Euchariz Avenue by surface flow (2.4 cfs). The upper third will drain freely to the north (1.2 cfs).

Euchariz Avenue south of this site will have a total surface flow of 18.0 cfs. Double Type A and Double Type C inlets will be added in Euchariz Avenue near 86th Street. These inlets will also connect to the pipe coming from Desert Maize.

The total flow going into the existing 36 inch storm pipe in Euchariz Avenue is 96.4 cfs. The 36 inch pipe in Euchariz is sufficiently sized for this.

The total flow going to the intersection of 86th Street and Euchariz Avenue is 106.8 cfs (98.4+8.4 = 106.8). Please see the excerpts from SAD 222 report. Per SAD 222, our site (A10-D) is allowed to discharge 57 cfs and the site to the west (A9-D) is allowed to discharge 40 cfs. This is a total of 97 cfs. The 9.8 difference between the two flows will be attenuated across this subdivision and Eldorado North. The existing 42 inch storm drain in 86th Street is sufficiently sized for this flow.

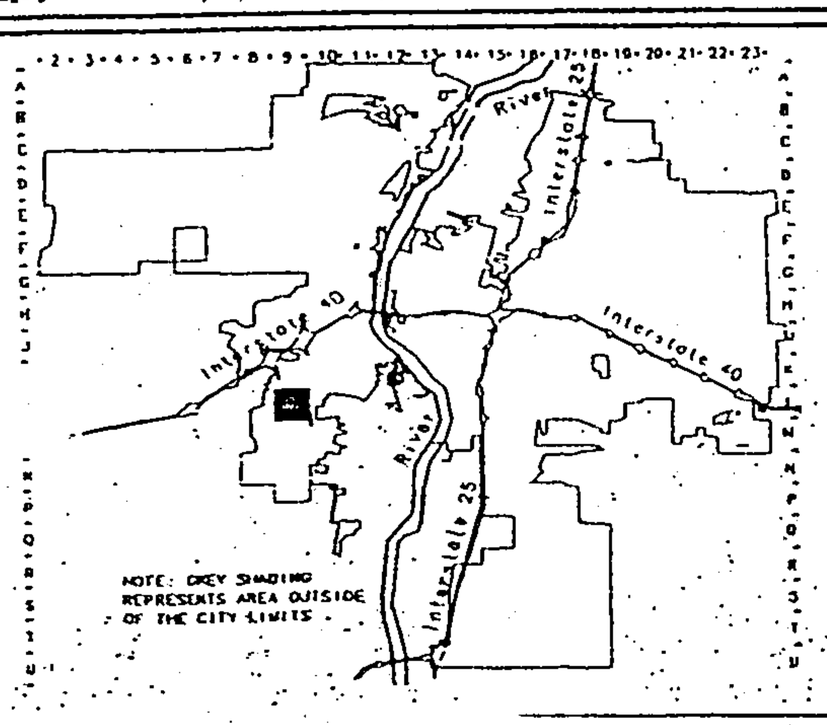
This subdivision will have both mountable curb and gutter and standard curb and gutter. The average flow per lot is 0.473 cfs. The flow just before the intersection of Round Rock Road and Fern Spring Drive is 10.4 cfs. The mountable curb and gutter for 28 feet face to face and 1.89 % can hold up to 12 cfs so the mountable curb and gutter is sufficient to contain the flow in the road. The total flow at the south end of Desert Maize Drive is 29.0 cfs, and the water surface elevation is 0.44 feet above the flow line within the standard curb and gutter.

The total flow just before the intersection of Dakota Ridge Road and Cole Spring Drive is 11.8 cfs, and the mountable curb and gutter can contain up to 12.0 cfs. The total flow at the intersection of Desert Maize Drive and Sedge Creek Road is 23.6 cfs, and the water surface elevation within standard curb and gutter is 0.49 feet above the flow line. The entire subdivision has sufficient capacity for the flow in the curb and gutters.

SUMMARY

The existing vacant lot will become a 111 lot subdivision. The site is not in the 100 year flood plain. Basin A-1 and Basin A-2 will discharge 52.6 cfs to the strom drain in Euchariz Avenue. The total flow at the intersection of 86th and Euchariz will be 106.8 cfs. Per SAD 222, this site and Eldorado North are allowed to discharge 97 cfs. The 9.8 difference between the two flows will be attenuated across this subdivision and Eldorado North. The existing 42 inch storm drain in 86th Street is sufficiently sized for this flow.

ZONE ATLAS MAP



CITY OF
Albuquerque

Albuquerque Geographic Information System
PLANNING DEPARTMENT

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GRAPHIC SCALE IN FEET

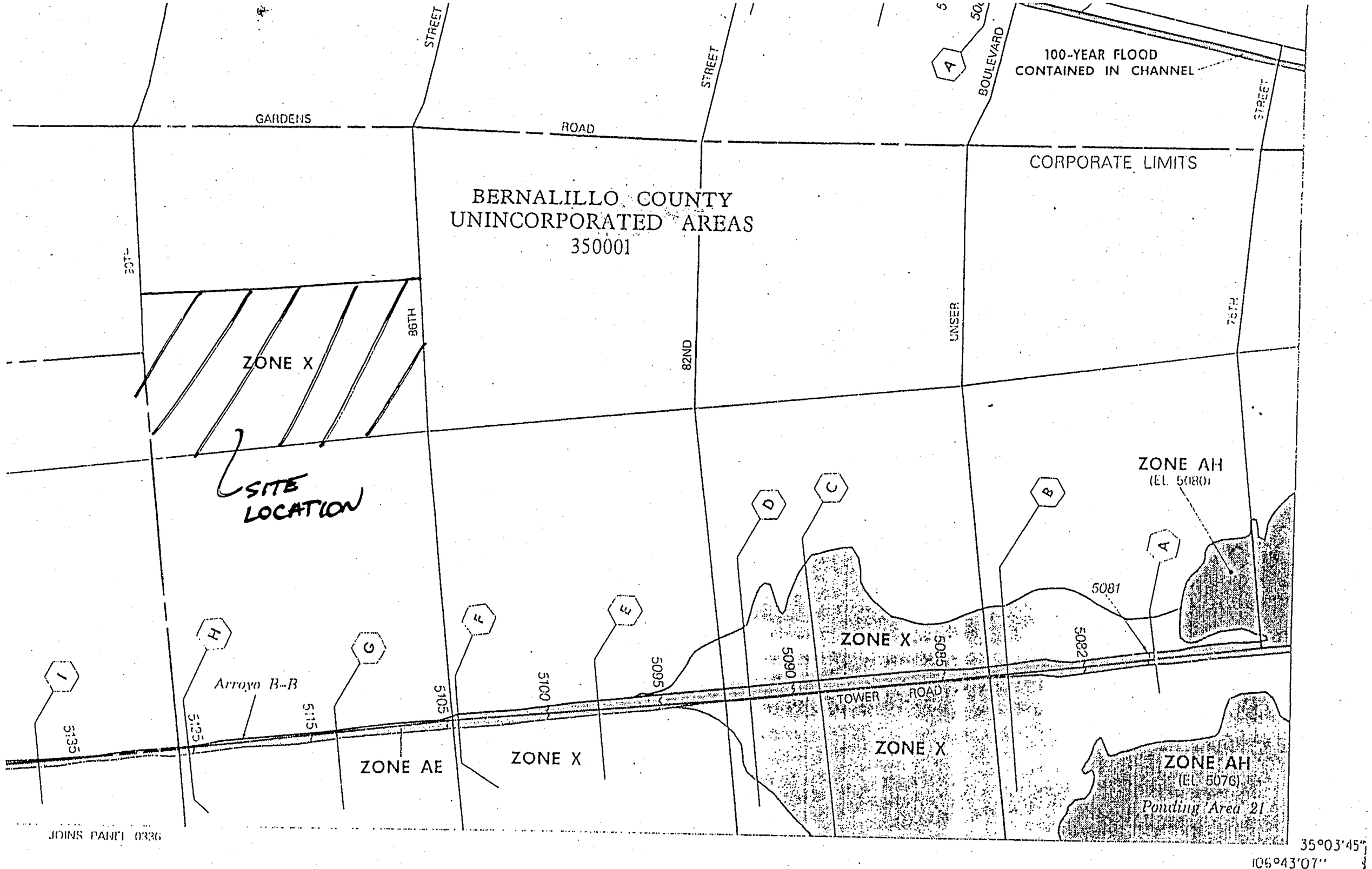
250 0 750 1000

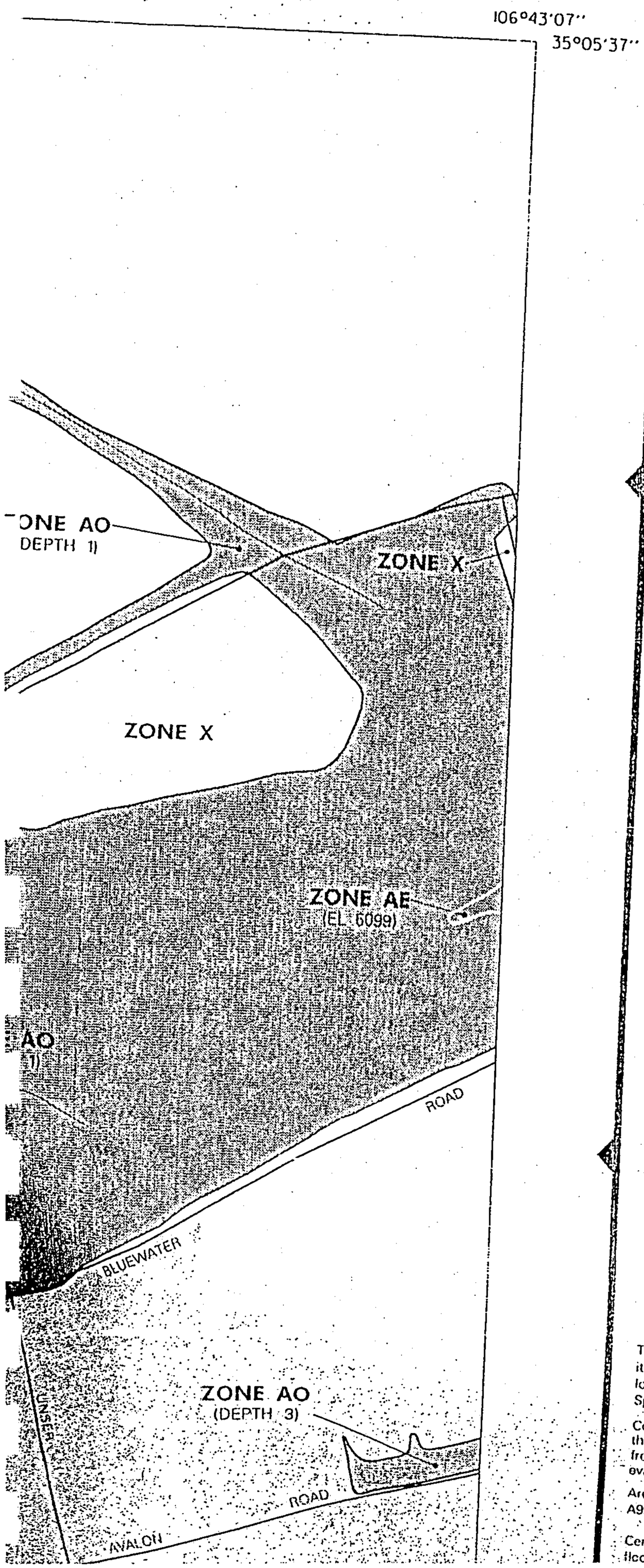
Zone Atlas Page

L-9-Z

Map Amended through April 02, 2002

FIRM MAP


GARDENS
ROAD
STREET
STREET
BOULEVARD
STREET
100-YEAR FLOOD
CONTAINED IN CHANNEL
CORPORATE LIMITS
BERNALILLO COUNTY
UNINCORPORATED AREAS
350001
86TH
82ND
UNSER
78TH
ZONE X
SITE LOCATION
ZONE AH
(EL. 5080)
ZONE X
ZONE X
ZONE AE
ZONE X
ZONE AH
(EL. 5076)
Ponding Area 21
Arroyo B-B
TOWER ROAD
5081
5082
5085
5090
5095
5100
5105
5115
5125
5135
A
B
C
D
E
F
G
H
I
JOINS PANEL 0336
35°03'45"
106°43'07"



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983

Identified 1990

Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum

RM7 × — Elevation Reference Mark

• M2 — River Mile

97°07'30", 32°22'30" — Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

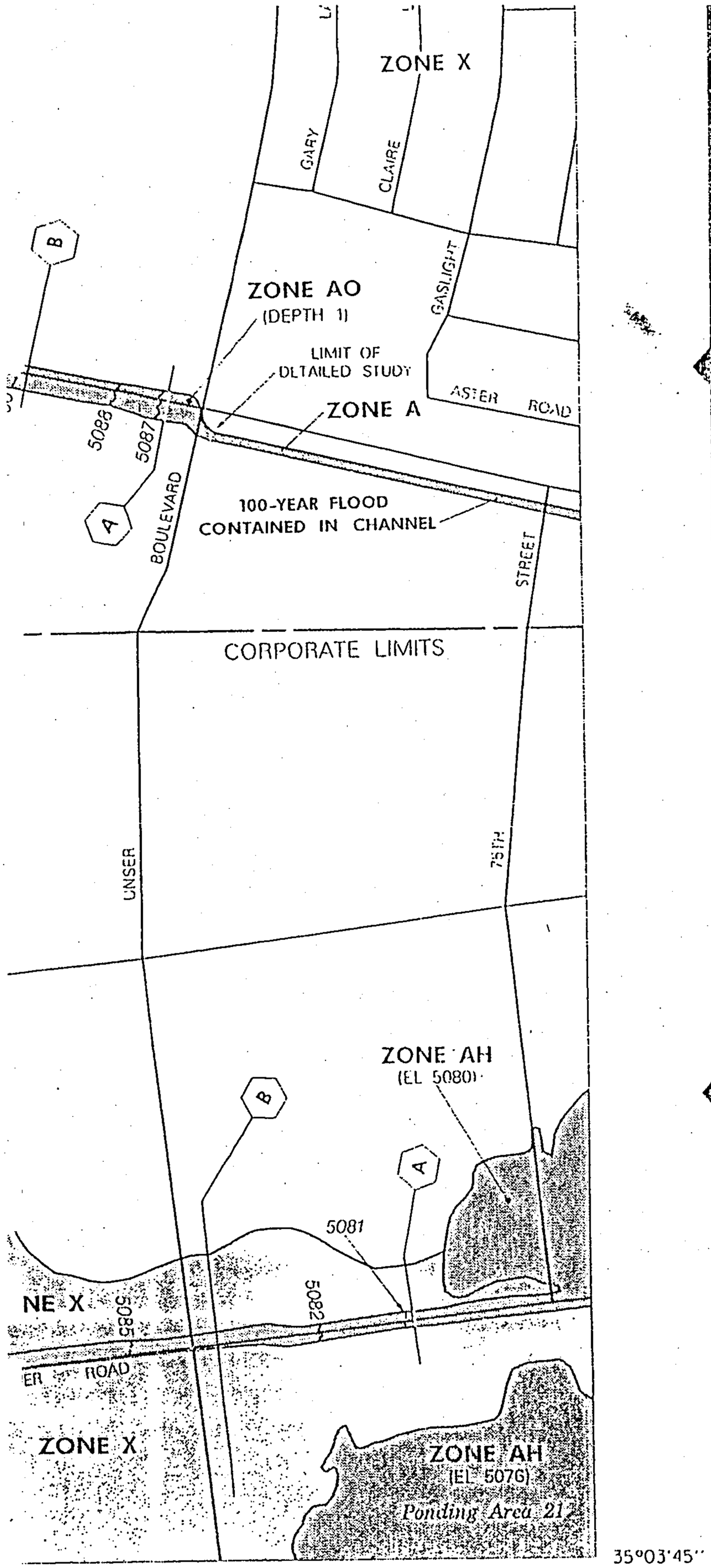
NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Coastal base flood elevations apply only land ward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, AH, AO, A99, V and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.



Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 328 OF 825

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0328	D
BERNALILLO COUNTY, UNINCORPORATED AREAS	350001	0328	D

MAP NUMBER
35001C0328 D

EFFECTIVE DATE:
SEPTEMBER 20, 1996

Federal Emergency Management Agency

ZONING

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
DEVELOPMENT SERVICES DIVISION
P. O. BOX 1293
ALBUQUERQUE, NEW MEXICO 87103

Date: November 27, 2001

CERTIFICATE OF ZONING

Onorio & Virginia Colucci
P.O. Box 14374
Albuquerque, NM 87191

FILE: 01114-00725/01110-00726/01138-00728
Project # 1001267
(Council Bill No. 0-01-125, Enactment #49-2001)
LEGAL: for Tracts 46, 47, 48, Town of Atrisco Grant, Unit 2, located on Eucariz Ave. SW between 90th and 86th Streets, containing approximately 15 acres. (L-9) Lola Bird, Staff Planner.

On November 5, 2001, the City Council approved your request to annex and amend the zone map as it applies to the above-cited property. The possible appeal period having expired, the property status is now changed as follows:

RD 9/DU/ACRE ZONING

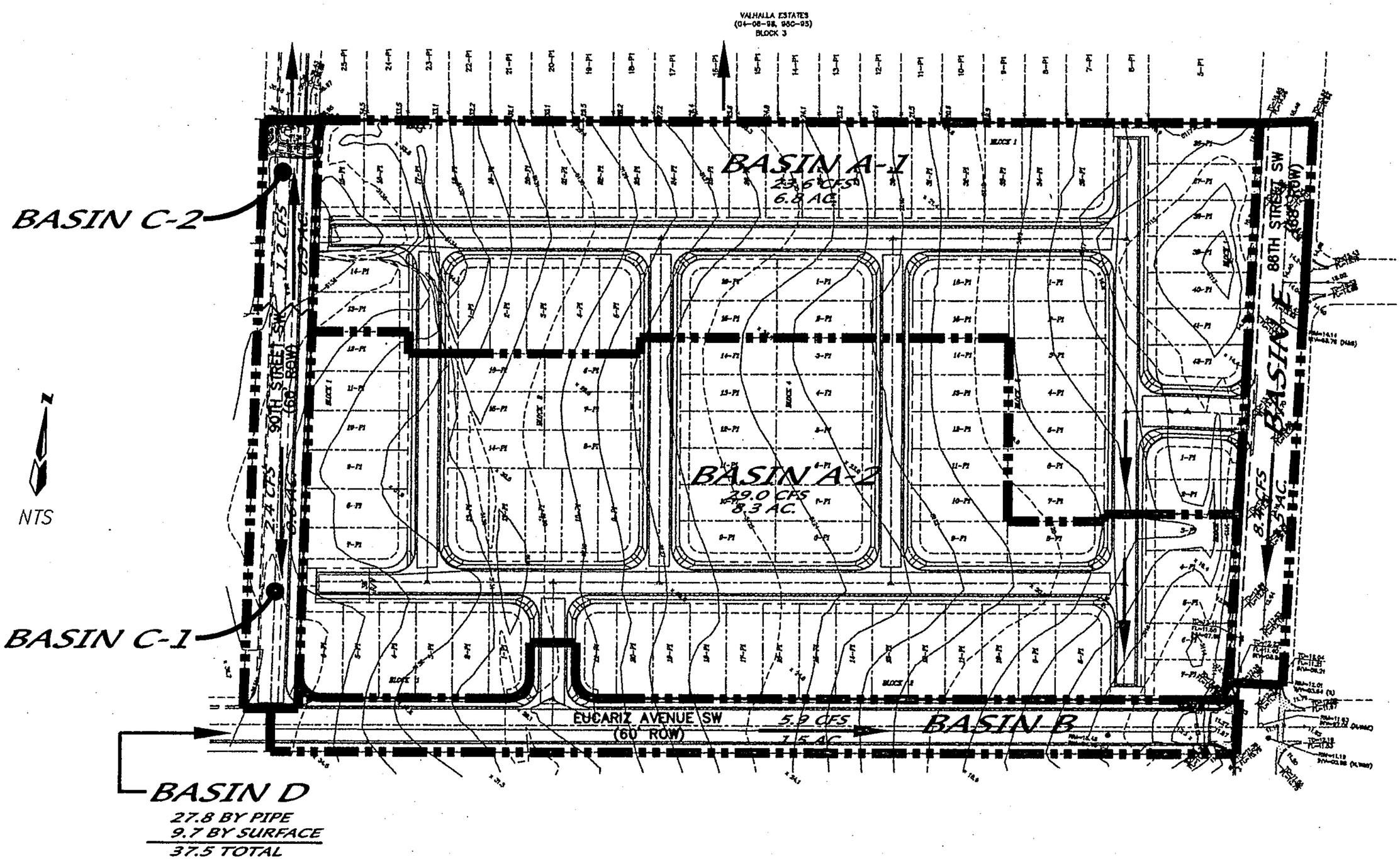
Successful applicants are reminded that other regulations of the City must be complied with, even after approval of the zoning is secured. Approval of this case does not constitute approval of plans for a building permit. You should take two copies of your plans to the Building & Inspection Division of the City to initiate a building permit.

Sincerely,

Robert R. McCabe, AIA, APA
Planning Director

cc: Southwest Surveying Co., 333 Lomas NE, Albuq. NM 87102
Theresa Rio Sandoval, Westgate Heights NA, 1505 Gschwind Pl. SW, Albuq. NM 87121
Libby McIntosh, Westgate Heights NA, 1316 Ladrones Ct. SW, Albuq. NM 87121
File

DESERT PINE, UNIT 4 BASIN MAP



MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505) 828-2200, FAX (505) 797-9539

LEGEND

NEW BASIN BOUNDRY

HIGH POINT

DESERT PINE - UNIT 4
BASIN MAP

A02108\BASIN8X11\03-07-03\ MJR NHE ACH

DESERT PINE, UNIT 4

GRADING AND DRAINAGE PLAN

AHYMO RUN

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =12/30/2002
INPUT FILE = DP4.DAT USER NO.= M_GOODWN.I01

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.00	-	1	.00060	1.43	.050	1.55506	1.500	3.713	PER IMP= 68.00
COMPUTE NM HYD	500.00	-	5	.00050	1.19	.041	1.55506	1.500	3.721	PER IMP= 68.00
COMPUTE NM HYD	200.00	-	2	.00100	2.37	.083	1.55506	1.500	3.697	PER IMP= 68.00
COMPUTE NM HYD	300.00	-	3	.00230	5.91	.213	1.73501	1.500	4.016	PER IMP= 82.00
COMPUTE NM HYD	400.00	-	4	.02360	52.59	1.828	1.45223	1.500	3.482	PER IMP= 60.00
FINISH										

```
START                TIME=0.0
*****     DESERT PINE UNIT 4
*****     FILE: C:\AHYMO\DP4.DAT DECEMBER 2002   BY:AMY
*****
*****     100-YEAR 6-HOUR STORM EVENT
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.67 IN DT=0.033333 HR
*****
*****    PROPOSED CONDITIONS
*****
*****   PART OF BASIN D - EUCHARIZ FROM INLET WEST OF CITY PARK TO 90TH STREET
*****
COMPUTE NM HYD       ID=1 HYD NO=100.00 AREA=0.0006 SQ MI
                     PER A=00.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*****
*****   BASIN C-2   - 90TH ST FROM HIGH POINT TO VALHALLA
*****
COMPUTE NM HYD       ID=5 HYD NO=500.00 AREA=0.0005 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=5 CODE=1
*****
*****   BASIN C-1 - 90TH ST FROM HIGH POINT TO EUCHAIZ
*****
COMPUTE NM HYD       ID=2 HYD NO=200.00 AREA=0.0010 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1

*****
*****   BASIN B - EUCHARIZ FROM 90TH TO 86TH ST
*****
COMPUTE NM HYD       ID=3 HYD NO=300.00 AREA=0.0023 SQ MI
                     PER A=0.00 PER B=18.00 PER C=0.00 PER D=82.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
*****
*****   BASIN A - THE SITE
*****
COMPUTE NM HYD       ID=4 HYD NO=400.00 AREA=0.0236 SQ MI
                     PER A=0.00 PER B=40.00 PER C=0.00 PER D=60.00
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1

FINISH
```

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 12/30/2002
         START TIME (HR:MIN:SEC) = 15:37:36     USER NO.= M_GOODWN.I01
         INPUT FILE = DP4.DAT

START                TIME=0.0
*****    DESERT PINE UNIT 4
*****    FILE: C:\AHYMO\DP4.DAT DECEMBER 2002   BY:AMY
*****
*****    100-YEAR 6-HOUR STORM EVENT
*****
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.67 IN DT=0.033333 HR

               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =     .033333 HOURS        END TIME =     5.999940 HOURS
                  .0000   .0013   .0027   .0041   .0055   .0069   .0084
                  .0099   .0115   .0131   .0147   .0164   .0181   .0199
                  .0217   .0236   .0256   .0276   .0296   .0318   .0340
                  .0363   .0387   .0412   .0438   .0465   .0493   .0523
                  .0554   .0587   .0622   .0675   .0731   .0791   .0920
                  .1209   .1653   .2291   .3162   .4306   .5765   .7582
                  .9799  1.1849  1.2707  1.3432  1.4077  1.4663  1.5203
                 1.5704  1.6173  1.6612  1.7025  1.7415  1.7783  1.8132
                 1.8462  1.8775  1.9072  1.9354  1.9622  1.9681  1.9737
                 1.9789  1.9839  1.9887  1.9933  1.9976  2.0019  2.0059
                 2.0098  2.0136  2.0172  2.0208  2.0242  2.0276  2.0308
                 2.0340  2.0371  2.0401  2.0430  2.0458  2.0486  2.0514
                 2.0541  2.0567  2.0592  2.0618  2.0642  2.0667  2.0690
                 2.0714  2.0737  2.0759  2.0781  2.0803  2.0825  2.0846
                 2.0867  2.0887  2.0908  2.0927  2.0947  2.0966  2.0986
                 2.1004  2.1023  2.1041  2.1060  2.1077  2.1095  2.1113
                 2.1130  2.1147  2.1164  2.1180  2.1197  2.1213  2.1229
                 2.1245  2.1261  2.1277  2.1292  2.1308  2.1323  2.1338
                 2.1353  2.1367  2.1382  2.1396  2.1411  2.1425  2.1439
                 2.1453  2.1466  2.1480  2.1494  2.1507  2.1520  2.1534
                 2.1547  2.1560  2.1573  2.1585  2.1598  2.1611  2.1623
                 2.1636  2.1648  2.1660  2.1672  2.1684  2.1696  2.1708
                 2.1720  2.1731  2.1743  2.1755  2.1766  2.1777  2.1789
                 2.1800  2.1811  2.1822  2.1833  2.1844  2.1855  2.1866
                 2.1876  2.1887  2.1898  2.1908  2.1919  2.1929  2.1939
                 2.1950  2.1960  2.1970  2.1980  2.1990  2.2000

*****
*****   PROPOSED CONDITIONS
*****
*****  PART OF BASIN D - EUCHARIZ FROM INLET WEST OF CITY PARK TO 90TH STREET
*****
COMPUTE NM HYD       ID=1 HYD NO=100.00 AREA=0.0006 SQ MI
                     PER A=00.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    1.6108    CFS   UNIT VOLUME =    .9922       B =   526.28      P60 = 1.9000
    AREA =       .000408 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =    .47179    CFS   UNIT VOLUME =    .9702       B =   327.55      P60 = 1.9000
    AREA =       .000192 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=1 CODE=1

                                   PARTIAL HYDROGRAPH   100.00


    RUNOFF VOLUME =      1.55506 INCHES     =        .0498 ACRE-FEET
    PEAK DISCHARGE RATE =        1.43 CFS  AT   1.500 HOURS   BASIN AREA =    .0006 SQ. MI.


*****
*****  BASIN C-2  - 90TH ST FROM HIGH POINT TO VALHALLA
*****
COMPUTE NM HYD       ID=5 HYD NO=500.00 AREA=0.0005 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    1.3423    CFS   UNIT VOLUME =    .9911       B =   526.28      P60 = 1.9000
    AREA =       .000340 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =    .39316    CFS   UNIT VOLUME =    .9646       B =   327.55      P60 = 1.9000
    AREA =       .000160 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=5 CODE=1

                                   OUTFLOW HYDROGRAPH RESERVOIR   500.00


    RUNOFF VOLUME =      1.55506 INCHES     =        .0415 ACRE-FEET
    PEAK DISCHARGE RATE =        1.19 CFS  AT   1.500 HOURS   BASIN AREA =    .0005 SQ. MI.
```

```
*****
*****  BASIN C-1 - 90TH ST FROM HIGH POINT TO EUCHAIZ
*****
COMPUTE NM HYD       ID=2 HYD NO=200.00 AREA=0.0010 SQ MI
                     PER A=0.00 PER B=32.00 PER C=0.00 PER D=68.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   2.6847    CFS   UNIT VOLUME =     .9949       B =   526.28      P60 = 1.9000
    AREA =       .000680 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =    .78632    CFS   UNIT VOLUME =     .9822       B =   327.55      P60 = 1.9000
    AREA =       .000320 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=2 CODE=1

                                   PARTIAL HYDROGRAPH   200.00


    RUNOFF VOLUME =      1.55506 INCHES      =         .0829 ACRE-FEET
    PEAK DISCHARGE RATE =        2.37 CFS  AT   1.500 HOURS   BASIN AREA =   .0010 SQ. MI.



*****
*****  BASIN B - EUCHARIZ FROM 90TH TO 86TH ST
*****
COMPUTE NM HYD       ID=3 HYD NO=300.00 AREA=0.0023 SQ MI
                     PER A=0.00 PER B=18.00 PER C=0.00 PER D=82.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   7.4460    CFS   UNIT VOLUME =     .9978       B =   526.28      P60 = 1.9000
    AREA =       .001886 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =   1.0173    CFS   UNIT VOLUME =     .9863       B =   327.55      P60 = 1.9000
    AREA =       .000414 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=3 CODE=1

                                   HYDROGRAPH FROM AREA   300.00


    RUNOFF VOLUME =      1.73501 INCHES      =         .2128 ACRE-FEET
    PEAK DISCHARGE RATE =        5.91 CFS  AT   1.500 HOURS   BASIN AREA =   .0023 SQ. MI.



*****
*****  BASIN A - THE SITE
*****
COMPUTE NM HYD       ID=4 HYD NO=400.00 AREA=0.0236 SQ MI
                     PER A=0.00 PER B=40.00 PER C=0.00 PER D=60.00
                     TP=0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   55.904    CFS   UNIT VOLUME =     .9992       B =   526.28      P60 = 1.9000
    AREA =       .014160 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333


    K =    .130761HR    TP =    .133300HR    K/TP RATIO =    .980950     SHAPE CONSTANT, N =  3.599930
    UNIT PEAK =   23.196    CFS   UNIT VOLUME =     .9997       B =   327.55      P60 = 1.9000
    AREA =       .009440 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033333

PRINT HYD            ID=4 CODE=1

                                   HYDROGRAPH FROM AREA   400.00


    RUNOFF VOLUME =      1.45223 INCHES      =        1.8279 ACRE-FEET
    PEAK DISCHARGE RATE =       52.59 CFS  AT   1.500 HOURS   BASIN AREA =   .0236 SQ. MI.



FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 15:37:36
```

CALCULATIONS FOR

DESERT PINE, UNIT 4

dmg
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PROJECT DESERT PINE, UNIT 4
SUBJECT
BY AMY DATE 12/12/02
CHECKED DATE
SHEET 1 OF

FROM SAD 222 GTD REPORT (YR 2000)

OUR SITE (A10-D) ALLOWED TO DISCHARGE 57 CFS

SITE TO WEST (A9-D ; NOW ELDORADO NORTH) ALLOWED TO DISCHARGE 40 CFS

97 CFS

BOTH ARE WITH 50% B AND 50% D

THERE IS 36" RCP GOING WEST FROM EUCHARIZ + 86th FOR US TO CONNECT
NO FLOW IS COMING FROM SOUTH, NORTH, OR EAST PER THIS REPORT

FROM ELDORADO NORTH GTD REPORT (8/02) (BASIN D)

THERE IS 24" PIPE FROM SUBDIVISION (GOING INTO POND NOW) 27.8 CFS

FROM CITY PARK BET SUB + 90th ST 6.3 CFS

FLOW THAT PASSES OVER LAST INLET BY WESLOY CT 2.0 CFS

FLOW IN EUCHARIZ SOUTH OF PARK (I CALCULATED) 1.43 CFS

AREA IS 60(2081 − 1781) = 18,000 SF = 0.41 AC = 0.0006 SQ MI

% D = $\frac{41(300)}{18,000}$ = 0.68 % B = 0.32

37.5 CFS

90th STREET – FROM N. EDGE OF CITY PARK TO EUCHARIZ (BASIN C-1)

(HIGH POINT IS AT 14+51) SEE ELDORADO N. WO # 689881

60' ROW, 32' FF

IMPERV WIDTH = 4' x 2 SW + 16.5'(2) RD = 41

LENGTH = 1458 − 1014 = 444 FT

TOTAL AREA = 60(444) = 26,640 SF = 0.001 SQ MI = 0.61 AC

% D = $\frac{41(444)}{26,640}$ = 0.68 % B = 0.32

FROM AHYMO 2.37 CFS

EUCHARIZ – FROM 90th ST TO 86th ST (BASIN B)

LENGTH = 1060

60' ROW, 40' FF

IMPERV WIDTH = 4'(2) SW + 20'(2) RD + 0.5'(2) CURB = 49 FT

TOTAL AREA = 1060(60) = 63,600 SF = 0.0023 SQ MI = 1.46 AC

% D = $\frac{49(1060)}{63,600}$ = 0.82 % B = 0.18

FROM AHYMO 5.91 CFS

THIS SITE (BASIN A)

FOR SAD 222, FOR R-D/9 DU/AC ASSUME 40% B AND 60% D

THIS SITE IS 15.0861 AC = 657,151 SF = 0.0236 SQ MI

$\frac{52.59 \text{ CFS}}{15.0861 \text{ AC}}$ = 3.49 $\frac{\text{CFS}}{\text{AC}}$

FROM AHYMO 52.59 CFS

98.4 CFS

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PROJECT DESERT PINE - UNIT 4
SUBJECT
BY AMY DATE 12/24/02
CHECKED DATE
SHEET 2 OF

90th ST FROM N EDGE OF CITY PARK TO VAHALLA SUB (BASIN C-2)

LENGTH = 233
60' ROW, 32' FF
AREA = 60(233) = 13,980 SF = 0.32 AC = 0.0005 SQ MI
% D = 41(233) / 13,980 = .68 % B = 0.32

FROM AHYMO 1.2 CFS

BREAKDOWN OF BASIN A

BASIN A IS 52.59 CFS → 3.49 CFS/AC

BASIN A-1 IS 1030 x 235 + 255 x 205 = 6.76 AC
6.76 AC x 3.49 CFS/AC = 23.58 CFS

BASIN A-2 IS 52.59 − 23.58 = 29.01 CFS
15.09 AC − 6.76 AC = 8.33 AC

VOID

TOTAL GOING INTO STORM DRAIN IN EUCARIZ

BASIN B + BASIN A-2 + BASIN C-1 + BASIN D
5.9 29.0 2.4 +27.8+9.7 = 74.8
(INITIALLY SURPLUS 2.4 + 9.7 + 5.9 = 18.0 CFS)

VOID →

TOTAL GOING INTO STORM DRAIN IN 86th ST

BASIN A-1 + EXIST 86th ST
23.6 8.4 = 32.0 CFS

VOID

CHECK EXISTING 24" PIPE IN 86th ST

$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}}$ Q = 32.0 CFS
h = 12.06 − (3.69 + .5) = 7.87 (FROM STD 222 DWGS)

$D = \sqrt{\frac{4(32.0)}{0.6\pi\sqrt{2(32.2)(7.87)}}}$ = 1.74 FT = 20.8 IN < 24 IN EXIST PIPE ✓

VOID

CHECK EXISTING 36" RCP IN EUCHARIZ

Q = 74.8 CFS
h = 14.66 − (3.98 + 1.5') = 9.18 FT

$D = \sqrt{\frac{4(74.8)}{0.6\pi\sqrt{2(32.2)9.18}}}$ = 2.56 FT = 30.67 IN < 36" EXIST PIPE ✓

TOTAL FLOW AT EUCHARIZ & 86th ST

Q = 106.8

h = 11.44 − (2.24 + 42/12) = 5.70 FT

$D = \sqrt{\frac{4(106.8)}{0.6\pi\sqrt{2(32.2)(5.70)}}}$ = 3.4 FT = 41.3 IN < 42 IN EXIST PIPE

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PROJECT DESERT PINE-UNIT 4
SUBJECT
BY AMY DATE 12/26/02
CHECKED DATE
SHEET 4 OF

SIZE PIPE BETWEEN INLETS IN DESERT MAZE

BET SINGLE A + DOUBLE C $Q = 8.5$ CFS $h = 15.25 - (8.76 + .5) = 5.99$ FT

$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}} = \sqrt{\frac{4(8.5)}{0.6\pi\sqrt{2(32.2)5.99}}} = .96$ FT $= 11.5$ IN $\rightarrow$ 18 IN PIPE USE

VOID

BET DOUBLE C AND DOUBLE C, $Q = 20.4$ CFS $h = 14.41 - (8.31 + 18/12) = 4.6$ FT

$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}} = \sqrt{\frac{4(20.4)}{0.6\pi\sqrt{2(32.2)4.6}}} = 1.59$ FT $= 19.03$ IN $\rightarrow$ 24 IN PIPE

SIZE INLETS IN EUCHARIZ

SURFACE FLOW = 9.7 (PART OF D) + 2.4 BASIN C + 5.9 BASIN B = 18.0 CFS

NOT A SUMP CONDITION

FROM PLATE 22.3 D-5, FOR SINGLE A + C
$D = 0.44$
$S = 0.0264$ $\rightarrow$ $Q = 7.0$ CFS

FROM PLATE 22.3 D-6, FOR DOUBLE A + C
$D = 0.44$
$S = 0.0264$ $\rightarrow$ $Q = 8$ CFS

$\rightarrow$ USE A DOUBLE A AND A DOUBLE C

CHECK CAPACITY OF EXIST INLETS IN 86th ST

2 - TYPE A 1 - DOUBLE C $Q = 32.0$ CFS

VOID

FROM PLATE 22.3 D-5, FOR SINGLE A
$D = .55$
$S = .0054$ $\rightarrow$ $Q = 5.5$

FROM PLATE 22.3 D-6, FOR DOUBLE C
$D = .55$
$S = .0054$ $\rightarrow$ $Q = 6.8$ CFS

$5.5 + 5.5 + 6.8 = 19.1 < 32.0$ CFS NOT SUFFICIENT

$h = 11.29 - (7.74 + 1.5) = 2.05$

IF USE 1-A 2-C $Q = 5.5 + 2(6.8) = 19.1$

$D = \sqrt{\frac{4(19.1)}{0.6\pi\sqrt{2(32.2)4.40}}} = 1.55$ FT $= 18.6$ IN HEAD WILL PUSH THIS

IF USE 2-A $Q = (5.5)2 = 11.0$

$D = \sqrt{\frac{4(11.0)}{0.6\pi\sqrt{2(32.2)4.40}}} = 1.18$ FT $= 14.1$ IN < 18 ✓

$19.1 + 11.0 = 30.1$ $32 - 30.1 = 1.9$ CFS WILL PASS ON

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PROJECT DESERT PINE
SUBJECT
BY AMY DATE 3/5/03
CHECKED DATE
SHEET 7 OF

INLET CALC REVISION

BASIN A-1 WILL NO LONGER DISCHARGE TO 86th ST.
BASIN A-1 + A-2 WILL GO TO EUCHARIZ

A-1	23.6 CFS
A-2	29.0 CFS
	52.6 CFS < 57 CFS ✓

TOTAL FLOW IN EUCHARIZ

BASIN D	27.8 (PIPE)	
	9.7 (SURFACE)	18.0 CFS
BASIN B	5.9 (SURFACE)	
BASIN C-1	2.4 (SURFACE)	
BASIN A	52.6	
	98.40 CFS	

97 CFS IS WHAT DAD 222 ALLOWS
FLOWS WILL BE ATTENUATED

CHECK EXIST 36" IN EUCHARIZ

$Q = 98.40$ CFS

$h = 15.48 - (4.48 + 1.5) = 9.50$ FT

$$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}} = \sqrt{\frac{4(98.4)}{0.6\pi\sqrt{2(32.2)(9.50)}}} = 2.91 \text{ FT} = 34.9 \text{ IN} < 36 \text{ IN}$$

TOTAL FLOW AT EUCHARIZ + 86th ST

EUCHARIZ	98.40
86th (EXIST)	8.4
Q =	106.8 CFS

$h = 11.44 - (2.24 + 42/12) = 7.45$ FT

$$D = \sqrt{\frac{4(106.8)}{0.6\pi\sqrt{2(32.2)7.95}}} = 3.21 \text{ FT} = 38.6 \text{ IN} < 42 \text{ IN} ✓$$

EXIST PIPE

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PROJECT DESERT PINE
SUBJECT
BY AMY DATE 3/5/03
CHECKED DATE
SHEET 8 OF

SIZE INLETS IN DESERT MAIZE

BASIN A-1 = 23.6 CFS

BASIN A-2 = 29.0 CFS

FIRST INLET IS SINGLE A (ONE ON EACH SIDE) NOT A SUMP CONDITION
FROM PLATE 22.3 D-5, FOR D = .49 → Q = 5 CFS
S = 0.6%

AT INTERSECTION OF DESERT MAIZE + ROUND ROCK
Q = 29 + 23.6 - 2(5) = 42.6 CFS REMAINING IN ST

SINGLE A + C
SIDE = 2' AVG DEPTH = 0.719
FRONT = 3' WITH 0.896 AT GUTTER
$Q_{SIDE} = 3(2 \times 2)(.719)^{3/2} = 7.32$
$Q_{FRONT} = 3(3)(.896)^{3/2} = 7.63$
14.95 (SUMP CONDITION)

DOUBLE C
SIDE = 2' AVG DEPTH = 0.719
FRONT = 6.5' WITH 0.896 AT GUTTER
$Q_{SIDE} = 3(2 \times 2)(.719)^{3/2} = 7.32$
$Q_{FRONT} = 3(6.5)(.896)^{3/2} = 16.54$
23.86 (SUMP CONDITION)

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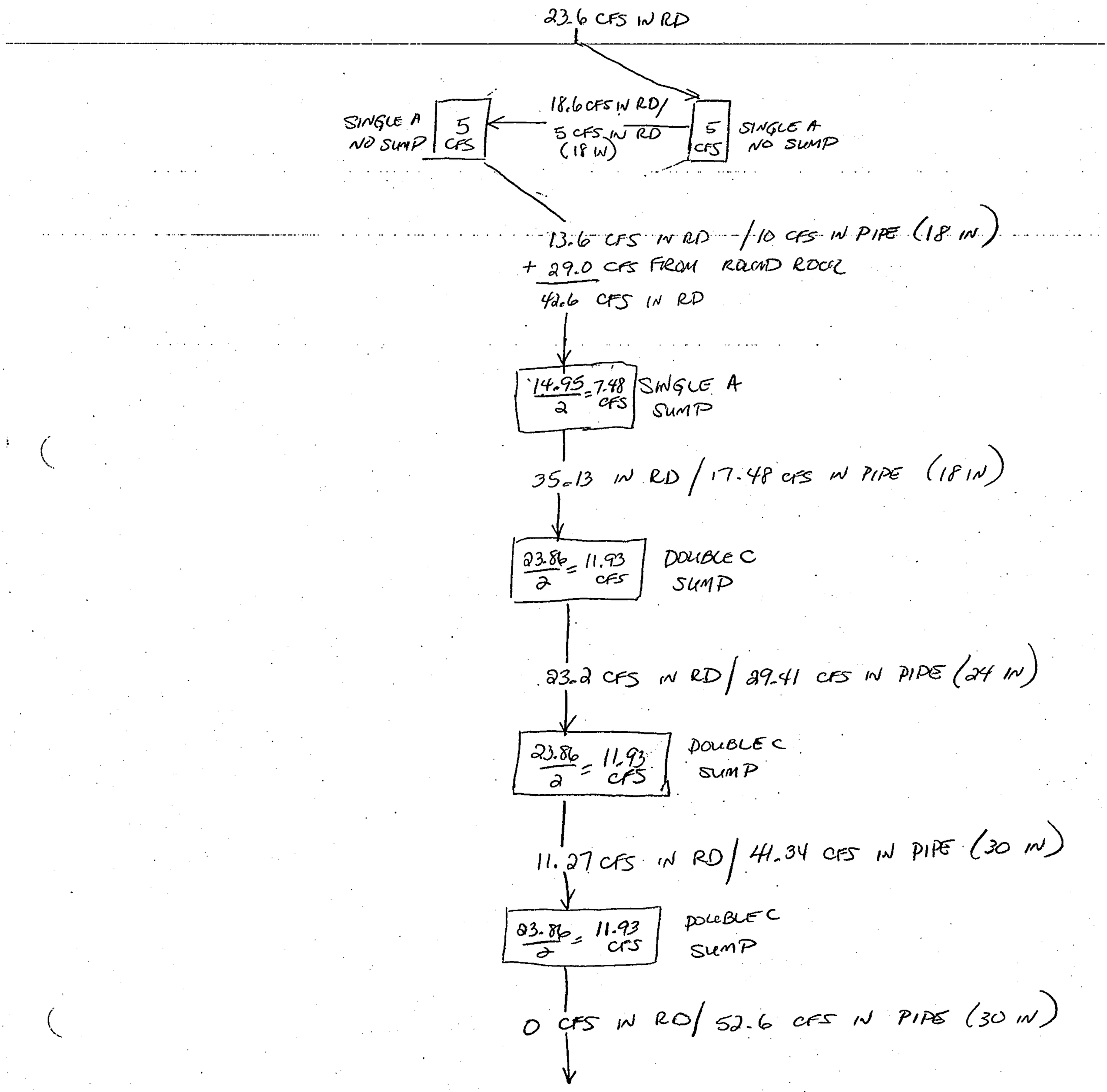
PROJECT DESERT PINE
SUBJECT
BY AMY DATE 3/6/03
CHECKED DATE
SHEET 9 OF



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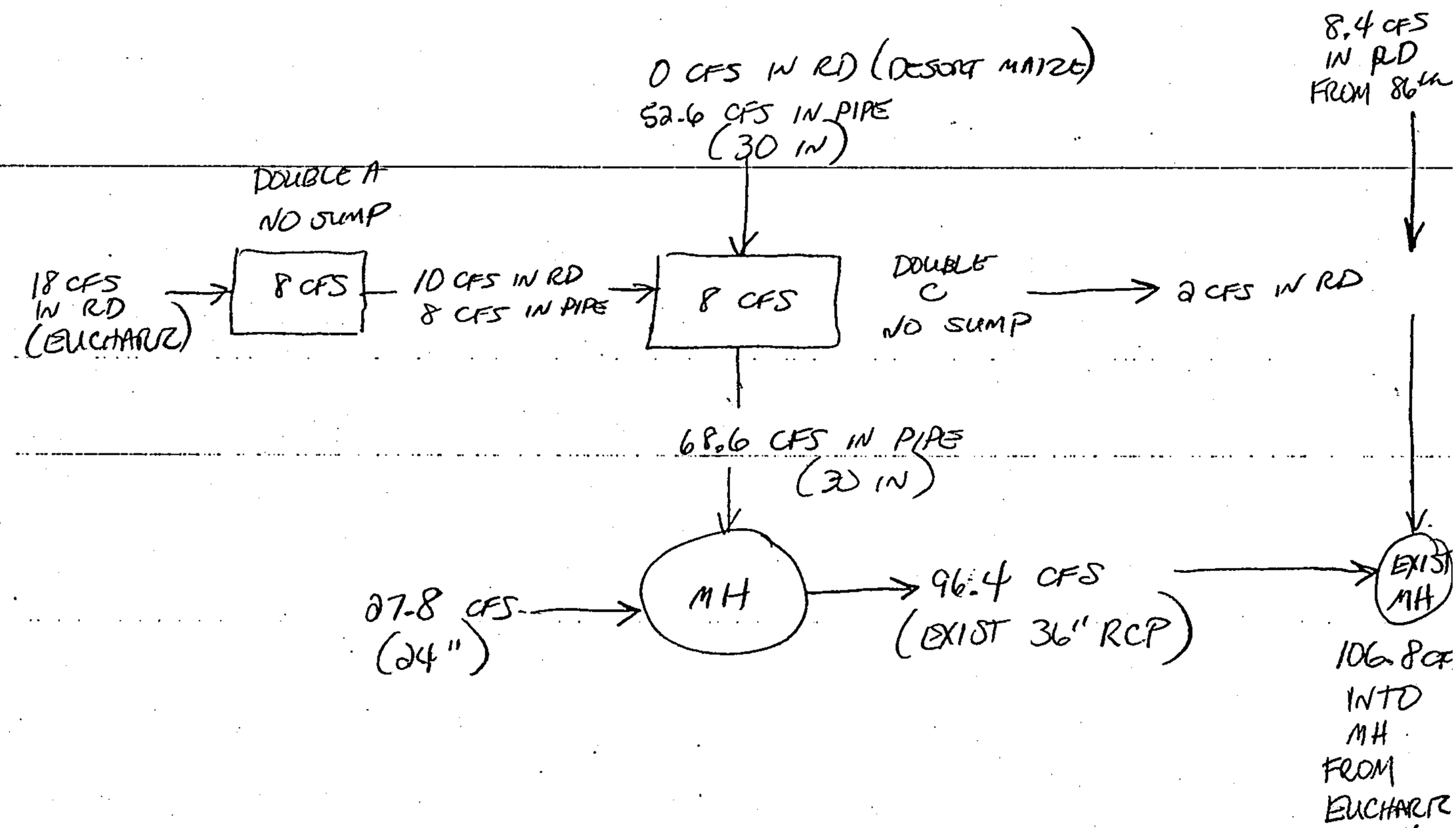
PROJECT DESERT PINE
SUBJECT
BY AMV DATE 3/6/03
CHECKED DATE
SHEET 11 OF



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PROJECT DESERT PINE
SUBJECT
BY Amy DATE 3/6/03
CHECKED DATE
SHEET 10 OF

SIZE PIPE BET INLETS

BET SINGLE A + SINGLE A IN SUMP

$Q = 10$ CFS

$h = 12 - (6.71 + 1.5/2) = 5.12$ FT

$D = \sqrt{\frac{4Q}{0.6\pi\sqrt{2gh}}} = \sqrt{\frac{4(10)}{0.6\pi\sqrt{2(32.2)\,7.46}}} = 1.1$ FT → USE 18" PIPE

BET SINGLE A + DOUBLE C

$Q = 17.48$ CFS

$h = 11.82 - (5.52 + 1.5/2) = 5.55$ FT

$D = \sqrt{\frac{4(17.48)}{0.6\pi\sqrt{2(32.2)(5.55)}}} = 1.40$ FT → USE 18" PIPE

BET DOUBLE C + DOUBLE C

$Q = 29.41$ CFS

$h = 11.54 - (5.32 + 2/2) = 5.22$

$D = \sqrt{\frac{4(29.41)}{0.6\pi\sqrt{2(32.2)(5.22)}}} = 1.84$ FT → USE 24" PIPE

BET NEXT DOUBLE C + DOUBLE C

$Q = 41.34$ CFS

$h = 11.36 - (5.12 + 2.5/2) = 4.99$

$D = \sqrt{\frac{4(41.34)}{0.6\pi\sqrt{2(32.2)(4.99}}} = 2.21$ FT → USE 30" PIPE

BET LAST INLET IN DESERT MAZE

$Q = 52.6$

$h = 11.20 - (4.92 + 2.5/2) = 5.03$

$D = \sqrt{\frac{4(52.6)}{0.6\pi\sqrt{64.4(5.03)}}} = 2.49$ → USE 30" PIPE

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PROJECT DESERT PINE
SUBJECT
BY AMI DATE 3/6/03
CHECKED DATE
SHEET 12 OF

FLOW IN EUCHARIZ PRIOR TO INLETS

SURFACE BASIN C-1 BASIN D BASIN B
2.4 cfs + 9.7 cfs + 5.9 cfs = 18.0 cfs

PIPE BASIN A BASIN D
52.6 CFS + 27.8 cfs = 80.4 cfs

98.4 cfs

FLOW AT INTERSECTION OF 86th + EUCHARIZ

OTHER BASINS BASIN E
98.4 + 8.4 = 106.8 cfs

SIZE PIPE BET BOTH INLETS IN EUCHARIZ

$Q = 8$ CFS

$h = 16.04 - (10.04 + 1.5/2) = 5.25$ FT

$D = \sqrt{\frac{4(8)}{(.6)\pi\sqrt{64.4(5.25)}}} = 0.96$ FT → USE 18 IN PIPE

SIZE PIPE BET DBL C IN EUCHARIZ + MH

$Q = 68.6$ cfs

$h = 15.64 - (4.60 + 3/2) = 9.54$ FT

$D = \sqrt{\frac{4(68.6)}{.6\pi\sqrt{64.4(9.54)}}} = 2.42$ FT

$h = 15.64 - (4.60 + 2.5/2) = 9.79$ FT

$D = \sqrt{\frac{4(68.6)}{.6\pi\sqrt{64.4(9.79)}}} = 2.41$ FT → USE 30 IN PIPE

SIZE PIPE PRIOR TO NEW MH W EUCHARIZ

$Q = 27.8$

$h = 34.48 - (28.11 + 2/2) = 5.37$ FT

$D = \sqrt{\frac{4(27.8)}{.6\pi\sqrt{64.4(5.37)}}} = 1.78$ FT → USE 24" PIPE

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	23.60	0.00	0.46	0.49	0.64	0.010007	3.37	7.00	28.86	1.21
street	500	23.60	0.00	0.49	0.49	0.63	0.006574	2.97	7.95	28.92	1.00

S = 0.6 %
28' FT SIG C+G
UPRIG DISCT MAZE

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	44.42	0.00	0.63	0.63	0.85	0.006203	3.74	11.89	29.17	1.03
street	500	44.42	0.00	0.63	0.63	0.85	0.006203	3.74	11.89	29.17	1.03

S= .006

28' FF STG CIG

MIN CAPACITY

(DESIRE MAIZE)

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	39.00	0.00	1.21		1.23	0.000273	1.18	32.98	43.25	0.24
street	500	39.00	0.00	0.63	0.63	0.85	0.006001	3.72	10.48	25.18	1.02

24' FF

STG C+G

S = 0.6%

SUBCRITICAL

PESONT MAIZE

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	39.00	0.00	0.63	0.63	0.85	0.006293	3.77	10.33	25.17	1.04
street	500	39.00	0.00	0.63	0.63	0.85	0.006293	3.77	10.33	25.17	1.04

24' FF
STG C16
S-0.6%
SUPERCRITICAL
DESCRIT MAIZE

HEC-RAS Plan: Plan 01 River: street Reach: a

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
a	900	12.00	0.00	0.28	0.33	0.46	0.023244	3.41	3.51	26.97	1.67
a	500	12.00	0.00	0.33	0.33	0.42	0.007792	2.37	5.06	29.62	1.01

28' FF (DAKOTA RIDGE CO)

MOUNTABLE CURB AND GUTTER

S = 0.0232

HEC-RAS Plan: Plan 01 River: street Reach: a

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
a	900	12.00	0.00	0.29	0.33	0.44	0.018936	3.16	3.80	28.04	1.51
a	500	12.00	0.00	0.33	0.33	0.42	0.007792	2.37	5.06	29.62	1.01

28' FF (ROUND ROCK RD)

MOUNTABLE CURB + GUTTER

S = 0.0189

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	18.00	0.00	0.37	0.45	0.61	0.026421	3.95	4.56	30.83	1.81
street	500	18.00	0.00	0.44	0.44	0.56	0.007378	2.76	6.52	28.83	1.02

40' FF (EICHARIZ)

STANDARD CURB + GUTTER

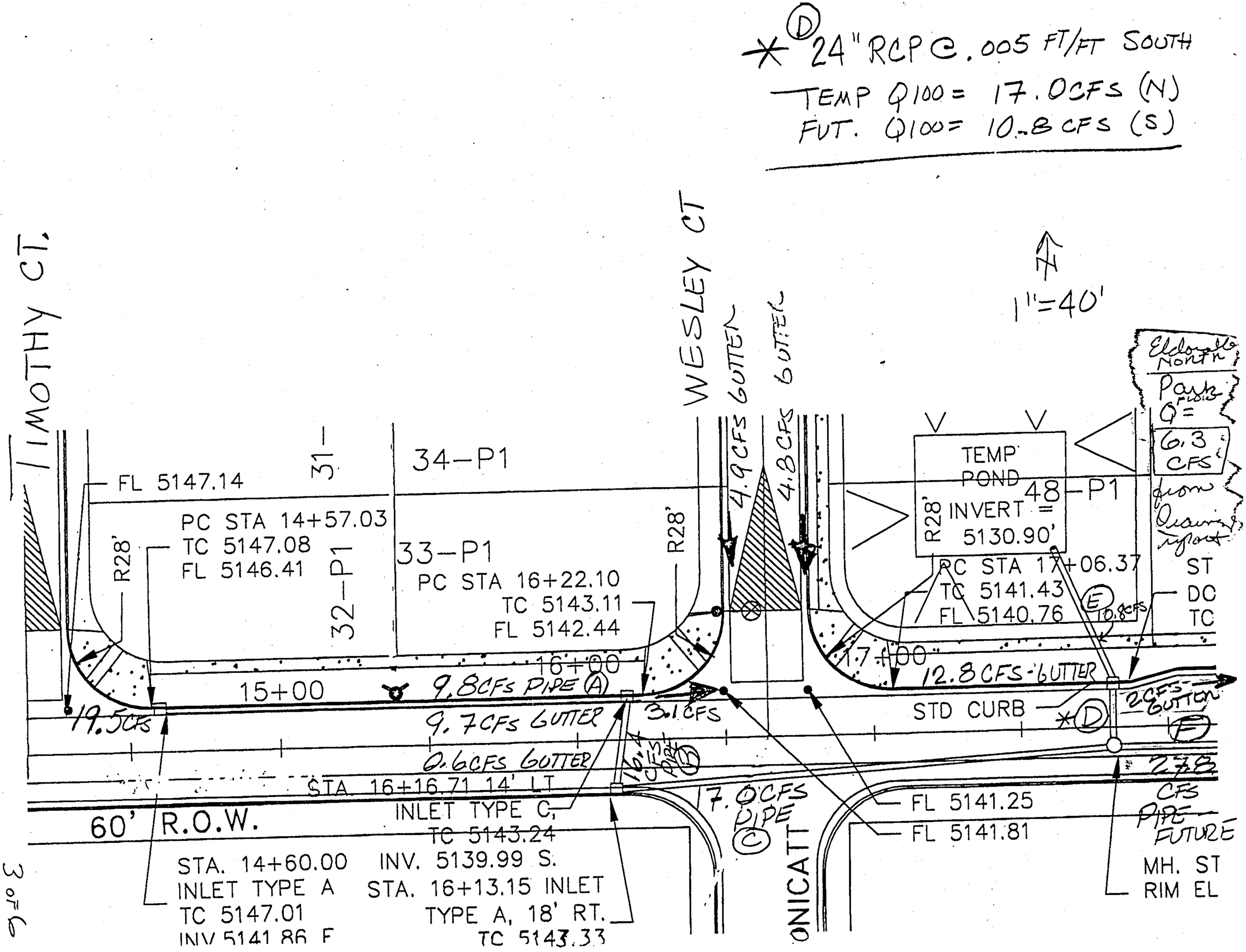
S = 2.64%

HEC-RAS Plan: Plan 01 River: street Reach: street

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
street	900	32.00	0.00	0.54	0.54	0.67	0.007264	2.80	11.42	49.01	1.02
street	500	32.00	0.00	0.55	0.55	0.72	0.006315	3.30	9.69	29.03	1.01

48' FF (86th ST)
STANDARD CURB AND GUTTER
S = 0.54%

EXCERPTS FROM ELDORADO NORTH


* (D) 24" RCP @ .005 FT/FT SOUTH
TEMP Q100 = 17.0CFS (N)
FUT. Q100 = 10.8 CFS (S)
1"=40'
TIMOTHY CT.
WESLEY CT
MONICATT
FL 5147.14
31
34-P1
PC STA 14+57.03
TC 5147.08
FL 5146.41
R28'
32-P1
33-P1
PC STA 16+22.10
TC 5143.11
FL 5142.44
R28'
4.9 CFS GUTTER
4.8 CFS GUTTER
TEMP POND
INVERT = 5130.90'
48-P1
PC STA 17+06.37
TC 5141.43
FL 5140.76
(E) 10.8CFS
Elkhorn North Park
Q = 6.3 CFS from Drainage report
ST
DC
TC
16+00
15+00
17+00
9.8CFs PIPE (A)
12.8 CFS-GUTTER
19.5CFS
9.7CFs GUTTER
3.1CFS
STD CURB
* (D)
2CFS GUTTER
(F)
0.6CFs GUTTER
16.4 CFS PIPE (B)
STA 16+16.71 14' LT
INLET TYPE C,
TC 5143.24
INV. 5139.99 S.
STA. 16+13.15 INLET
TYPE A, 18' RT.
TC 5143.33
7.0CFS PIPE (C)
60' R.O.W.
FL 5141.25
FL 5141.81
2.8 CFS PIPE FUTURE
MH. ST
RIM EL
STA. 14+60.00
INLET TYPE A
TC 5147.01
INV 5141.86 E

3 of 6

EXCERPTS FROM SAD 222

TABLE 4

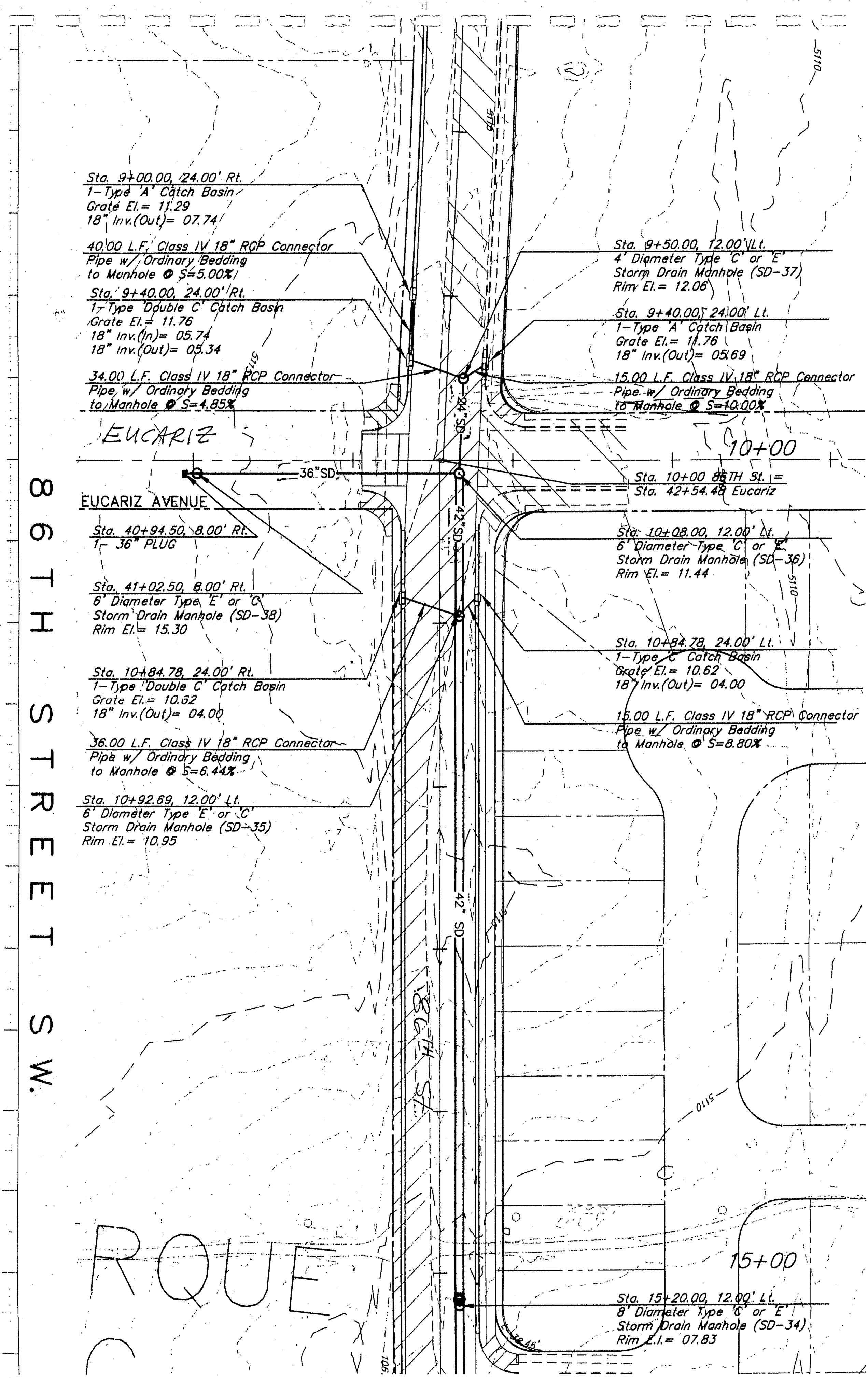
AHYMO BASIN PARAMETER WORKSHEET
PEAK BASIN FLOWS AND VOLUMES

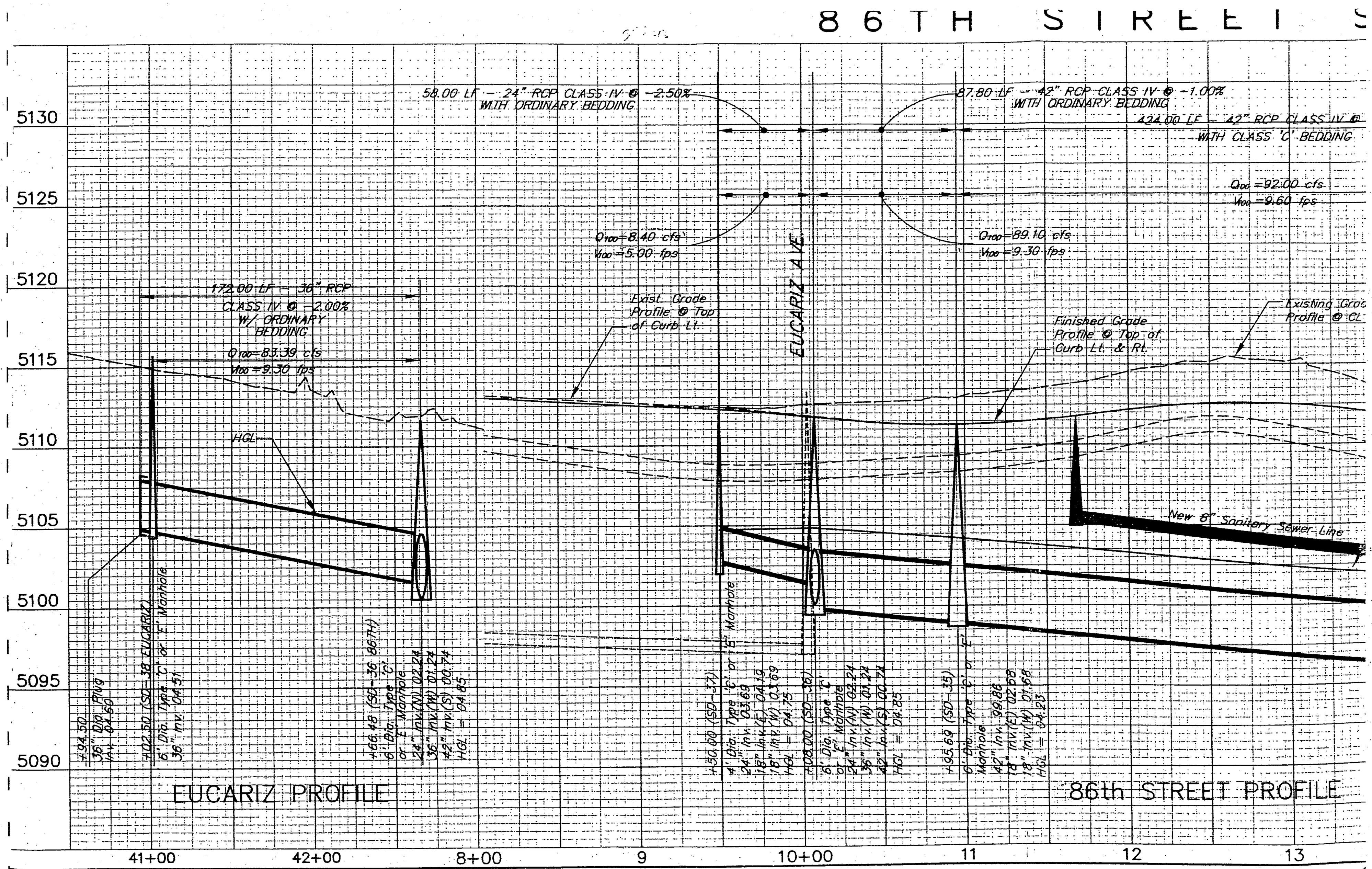
DEVELOPED CONDITIONS

(ALL FLOWS & VOLUMES INCLUDE A 2% BULKING FACTOR)

BASIN	AREA (ac)	AREA (sq mi)	LENGTH (ft)	DIFF (ft)	SLOPE (%)	K	VEL (fps)	T(c) (hr)	T(p) (hr)	LAND TREATMENT (%) A	B	C	D	10 YEAR PEAK FLOW (6 hr) (cfs)	10 YEAR RUNOFF VOLUME (24 hr) (ac ft)	100 YEAR PEAK FLOW (6 hr) (cfs)	100 YEAR RUNOFF VOLUME (24 hr) (ac ft)
A6-D	28.9	0.0452	200	4.0	2.00	0.7	0.99	0.06	0.04								
			950	8.0	0.84	3.0	2.75	0.10	0.06								
			900	18.0	2.00	3.0	4.24	0.06	0.04								
		TOTAL =						0.21	0.14	0	50	0	50	52	2.1	93	3.7
A7-D	13.2	0.0206	150	1.0	0.67	0.7	0.57	0.07	0.05								
			400	1.0	0.25	3.0	1.50	0.07	0.05								
			900	18.0	2.00	3.0	4.24	0.06	0.04								
		TOTAL =						0.21	0.14	0	50	0	50	24	1.0	42	1.7
A8-D	37.1	0.0580	200	4.0	2.00	0.7	0.99	0.06	0.04								
			900	21.0	2.33	3.0	4.58	0.05	0.04								
			1250	6.0	0.48	3.0	2.08	0.17	0.11								
		TOTAL =						0.28	0.19	0	50	0	50	68	2.7	114	4.8
A9-D	11.8	0.0185	200	1.0	0.50	0.7	0.49	0.11	0.07								
			900	22.0	2.44	3.0	4.69	0.05	0.04								
		TOTAL =						0.17	0.11	0	50	0	50	22	0.9	40	1.5
A10-D	17.0	0.0266	150	2.0	1.33	0.7	0.81	0.05	0.03								
			900	18.0	2.00	3.0	4.24	0.06	0.04								
			100	2.0	2.00	3.0	4.24	0.01	0.00								
		TOTAL =						0.12	0.08	0	50	0	50	32	1.2	57	2.2

BRIDGE BLVD.
SUNSET GARDENS RD
EUCARIZ AVE.
TOWER RD
SAN YG
SAGE
80TH STREET
86TH STREET
87TH STREET
A10-D
17.0 Ac.
A9-D
11.8 Ac.
A6-D
28.9 Ac.
A5-D
26.2 Ac.
A7-D
13.2 Ac.
B5-D
25.0 Ac.
TOWER PARK/ POND
B2-D
22.4 Ac.
B3-D
27.9 Ac.
B4-D
14.7 Ac.
S3-D
36.3 Ac.
S4-D
27.9 Ac.
S1-D
20.1 Ac
S2-D
10.4 Ac
BASINS
C1-D THRU C3-D
SEE MAP NO. 4
BENAVIDES RD.


Sta. 9+00.00, 24.00' Rt.
1-Type 'A' Catch Basin
Grate El.= 11.29
18" Inv.(Out)= 07.74
40.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=5.00%
Sta. 9+40.00, 24.00' Rt.
1-Type 'Double C' Catch Basin
Grate El.= 11.76
18" Inv.(In)= 05.74
18" Inv.(Out)= 05.34
34.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=4.85%
EUCARIZ
36"SD
EUCARIZ AVENUE
Sta. 40+94.50, 8.00' Rt.
1- 36" PLUG
Sta. 41+02.50, 8.00' Rt.
6' Diameter Type 'E' or 'C'
Storm Drain Manhole (SD-38)
Rim El.= 15.30
Sta. 10+84.78, 24.00' Rt.
1-Type 'Double C' Catch Basin
Grate El.= 10.62
18" Inv.(Out)= 04.00
36.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=6.44%
Sta. 10+92.69, 12.00' Lt.
6' Diameter Type 'E' or 'C'
Storm Drain Manhole (SD-35)
Rim El.= 10.95
8 6 TH STREET W.
24"SD
42"SD
42" SD
Sta. 9+50.00, 12.00' Lt.
4' Diameter Type 'C' or 'E'
Storm Drain Manhole (SD-37)
Rim El.= 12.06
Sta. 9+40.00, 24.00' Lt.
1-Type 'A' Catch Basin
Grate El.= 11.76
18" Inv.(Out)= 05.69
15.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=10.00%
10+00
Sta. 10+00 86TH St. =
Sta. 42+54.48 Eucariz
Sta. 10+08.00, 12.00' Lt.
6' Diameter Type 'C' or 'E'
Storm Drain Manhole (SD-36)
Rim El.= 11.44
Sta. 10+84.78, 24.00' Lt.
1-Type 'C' Catch Basin
Grate El.= 10.62
18" Inv.(Out)= 04.00
15.00 L.F. Class IV 18" RCP Connector
Pipe w/ Ordinary Bedding
to Manhole @ S=8.80%
15+00
Sta. 15+20.00, 12.00' Lt.
8' Diameter Type 'C' or 'E'
Storm Drain Manhole (SD-34)
Rim El.= 07.83
ROUE


86TH STREET S
5130
5125
5120
5115
5110
5105
5100
5095
5090
58.00 LF – 24" RCP CLASS IV @ -2.50%
WITH ORDINARY BEDDING
87.80 LF – 42" RCP CLASS IV @ -1.00%
WITH ORDINARY BEDDING
424.00 LF – 42" RCP CLASS IV @
WITH CLASS 'C' BEDDING
Q100 = 92.00 cfs
V100 = 9.60 fps
Q100 = 8.40 cfs
V100 = 5.00 fps
Q100 = 89.10 cfs
V100 = 9.30 fps
172.00 LF – 36" RCP
CLASS IV @ -2.00%
W/ ORDINARY
BEDDING
Q100 = 83.39 cfs
V100 = 9.30 fps
Exist. Grade
Profile @ Top
of Curb Lt.
EUCARIZ AVE
Finished Grade
Profile @ Top of
Curb Lt. & Rt.
Existing Grade
Profile @ CL
HGL
New 8" Sanitary Sewer Line
+94.50
36" Dia. Plug
Inv. 04.60
+102.50 (SD-38 EUCARIZ)
6' Dia. Type 'C' or 'E' Manhole
36" Inv. 04.51
+166.48 (SD-36 86TH)
6' Dia. Type 'C'
or 'E' Manhole
24" Inv.(N) 02.24
36" Inv.(W) 01.24
42" Inv.(S) 00.74
HGL = 04.85
+350.00 (SD-37)
4' Dia. Type 'C' or 'E' Manhole
24" Inv. 03.69
18" Inv.(E) 04.19
18" Inv.(W) 03.69
HGL = 04.75
+408.00 (SD-36)
6' Dia. Type 'C'
or 'E' Manhole
24" Inv.(N) 02.24
36" Inv.(W) 01.24
42" Inv.(S) 00.74
HGL = 04.83
+885.69 (SD-35)
6' Dia. Type 'C' or 'E'
Manhole
42" Inv. 99.86
18" Inv.(E) 02.68
18" Inv.(W) 01.68
HGL = 04.23
EUCARIZ PROFILE
86th STREET PROFILE
41+00
42+00
8+00
9
10+00
11
12
13

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

L-9/D27C

(REV.1/11/2002)

PROJECT TITLE: Desert Pine Unit 4 ZONE MAP/DRB.FILE#: ~~L-9/D27~~

DRB#: 1001267 EPC# WORK ORDER#:

LEGAL DESCRIPTION: Tract 46,47, & 48, Town of Atrisco Grant, Unit 2

CITY ADDRESS:

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Amy L. Driscoll, PE

ADDRESS: P.O. Box 90606 Albuquerque NM 87119 PHONE: 828-2200

CITY, STATE: Albuquerque NM ZIP CODE: 87119

OWNER: K B. Homes of New Mexico CONTACT: Greg Breedlove

ADDRESS: 4921 Alexander NE Suite B PHONE: 344-9400

CITY, STATE: Albuquerque, NM ZIP CODE: 87107

ARCHITECT: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

SURVEYOR: Aldrich Land Survey CONTACT: Tim Aldrich

ADDRESS: P.O. Box 30701 PHONE: 884-1990

CITY, STATE: Albuquerque, NM 87190-0701 ZIP CODE:

CONTRACTOR: CONTACT:

ADDRESS: PHONE:

CITY, STATE: ZIP CODE:

TYPE OF SUBMITTAL:

- ✓ DRAINAGE REPORT
- ✓ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ✓ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEER'S CERTIFICATION (TCL)
- ___ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANCIAL GUARANTY RELEASE
- ✓ PRELIMINARY PLAT APRROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TEMP)
- ✓ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

RECEIVED MAR 07 2003 HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- ✓ NO
- ___ COPY PROVIDED

DATE SUBMITTED: 3/7/03 BY: Amy L. Driscoll, PE

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of to the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5).
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5).
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

f:\\a02108 desert pine, unit 4\drainingf.tbl

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

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

March 7, 2003

Mr. Brad Bingham, PE
City of Albuquerque
600 2nd Street SW
Albuquerque, NM 87103

Re: Desert Pine, Unit 4 (L9/D27C)

Dear Mr. Bingham:

This letter is in response to your February 12, 2003 comments.

1. All lots now have finished pad grades.

2. The sump is Desert Maize is now analyzed under both supercritical and subcritical conditions. The flow is actually at the critical water surface so there is no EGL or water surface difference between the two conditions. In either case, there is sufficient capacity in the road. Please see the enclosed results.

3. All lots now have 9 feet of usable backyard. Retaining walls have been added to make this possible. Previously only retaining walls were shown on the Grading and Drainage Plan. Garden walls are now shown where there is greater than 1.3 ft of difference between side yard lots.

4. The backyard drainage to 86th Street does not exist anymore.

5. No more flow is being directed to 86th Street from this subdivision prior to the intersection at Euchariz. All flow is being directed to the existing 36 inch RCP in Euchariz which discharges to pipe in 86th Street. This follows the SAD plans so no HGL analysis to Tower is necessary.

Please contact me if I can be of further assistance.

Sincerely,

MARK GOODWIN & ASSOCIATES, P.A.

Amy L. Driscoll, PE
Project Engineer

RECEIVED
MAR 07 2003
HYDROLOGY SECTION

F:\ desert pine unit 4\Brad1

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

L-9/D27C

(REV.1/11/2002)

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DRB#: 1001267 EPC# WORK ORDER#:

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- ___ CERTIFICATE OF OCCUPANCY (TEMP)
- ✓ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- ✓ NO
- ___ COPY PROVIDED

RECEIVED DEC 31 2002 HYDROLOGY SECTION

DATE SUBMITTED: 12/30/02 BY: Amy L. Driscoll, PE

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3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

f:\\a02108 desert pine, unit 4\draininf.tbl

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

P.O. Box 90606 ❖ Albuquerque, NM 87199
(505) 828-2200 ❖ (505) 797-9539 fax
e-mail: dmg@swcp.com

LETTER OF TRANSMITTAL

To: City of Albuquerque
Hydrology

Date: December 30, 2002

Re: Desert Pine, Unit 4

We are sending:

No. Copies	Date	Item Description
1		Grading and Drainage Report

__X__ For your approval _____ For your information

_____ As you requested _____ For your comments

NOTES:

RECEIVED
DEC 3 1 2002
HYDROLOGY SECTION

SIGNED: Amy L. Driscoll, PE