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

May 1, 2001

James V. Domenick, P.E.
Parsons Brinckerhoff Inc..
5801 Osuna Rd NE Suite 200
Albuquerque, NM 87109

Re: Grading and Drainage Certification – Mirabella Subd Unit 7 (L-21/D037A4)
Submitted for Release of Financial Guaranty
Engineers Stamp dated 8/1/2000
Engineers Certification Dated 4/25/2001

Dear Mr. Domenick:

Based upon the information provided in your submittal dated 4/26/2001, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement for Release of Financial Guaranty.

If I can be of further assistance, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Senior Civil Engineer, Hydrology
Public Works Dept./C.O.A.

C: Arlene Portillo, PWD – #628081
file

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

DRAINAGE INFORMATION SHEET

APPLICANT'S NAME: Marcella Jaramillo ZONE ATLAS/DRNG. FILE #: L-21 / D37A4

DRB #: 97-209 EPC #: WORK ORDER #:

LEGAL DESCRIPTION: Mirabella Unit 7

CITY ADDRESS:

ENGINEERING FIRM: Parsons Brinckerhoff CONTACT: Marcella Jaramillo

ADDRESS: 5801 Osuna Rd, Suite 200 87109 PHONE: 881-5357

OWNER: Manzano Mesa Limited Partnership CONTACT: Stan Strickman

ADDRESS: 6301 Indian School Rd, Suite 208 87110 PHONE: 875-1721

ARCHITECT: N/A CONTACT: N/A

ADDRESS: N/A PHONE: N/A

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: 4109 Montgomery Blvd 87109 PHONE: 884-1990

CONTRACTOR: New Concepts, Inc. CONTACT: Tom Lakeman

ADDRESS: 508 Paragon Rd SE 87109 PHONE: 452-8910

TYPE OF SUBMITTAL:
- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION
- ___ OTHER ___

PRE-DESIGN MEETING:
- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:
- ___ SKETCH PLAT APPROVAL
- ___ PRELIMINARY PLAT APPROVAL
- ___ 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 APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- X OTHER Release of Financial Guaranty (SPECIFY)

DATE SUBMITTED: 4-26-01

BY: Marcella V. Jaramillo

Revised 02/98

RECEIVED
APR 26 2001
HYDROLOGY SECTION

Transmittal

Parsons Brinckerhoff
5801 Osuna Road NE
Suite 200
Albuquerque, NM 87109
505-881-5357
Fax: 505-881-7602

To: Terri - COA PWD
HYDROLOGY
Plaza del Sol
One Stop Shop

From: Marcella Jaramillo

By:

Date: 5-1-01 **Time:**

Project: Mirabella Unit 7

PB Project Number: 33467

Copies:	Description:	For:
1	Overall Mirabella Grading Plan	Per Your Request

If enclosures are not as noted, kindly notify us at once.

Comments:

RECEIVED
MAY 01 2001
HYDROLOGY SECTION
12:00

Copies to:

Date:

Received by:

Over a Century of Engineering Excellence

Transmittal

Parsons Brinckerhoff
5801 Osuna Road NE
Suite 200
Albuquerque, NM 87109
505-881-5357
Fax: 505-881-7602

To: Brad Bingham
COA PWD- Hydrology
Plaza del Sol
One Stop Shop

From: Marcella Jaramillo
By:
Date: 4-26-01 **Time:**
Project: Mirabella Unit 7 & 8
PB Project Number: 33467

Copies:	Description:	For:
1	Mirabella Unit 7 Grading Cert. Submittal	your approval
1	" " 8 " "	" " "

If enclosures are not as noted, kindly notify us at once.

Comments:

RECEIVED
APR 26 2001
HYDROLOGY SECTION

Copies to:

Date:

Received by:

Over a Century of Engineering Excellence

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

April 10, 2001

James V. Domenick, P.E.
Parsons Brinckerhoff Inc..
5801 Osuna Rd NE Suite 200
Albuquerque, NM 87109

Re: Grading and Drainage Certification – Mirabella Subd Unit 9 (L-21/D037A4)
Submitted for Release of Financial Guaranty
Engineers Stamp dated 8/1/2000
Engineers Certification Dated 4/3/2001

Dear Mr. Domenick:

Based upon the information provided in your submittal dated 4/5/2001, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement for Release of Financial Guaranty.

If I can be of further assistance, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Senior Civil Engineer, Hydrology
Public Works Dept./C.O.A.

C: Arlene Portillo, PWD – 644781
file

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

DRAINAGE INFORMATION SHEET

APPLICANT'S NAME: Marcella Jaramillo ZONE ATLAS/DRNG. FILE #: L-21/D37A4

DRB #: 97-209 EPC #: WORK ORDER #:

LEGAL DESCRIPTION: Mirabella Unit 9

CITY ADDRESS:

ENGINEERING FIRM: Parsons Brinckerhoff CONTACT: Marcella Jaramillo

ADDRESS: 5801 Osuna Rd. Suite 200 87109 PHONE: 881-5357

OWNER: Manzano Mesa Limited Partnership CONTACT: Stan Strickman

ADDRESS: 6301 Indian School Rd, Suite 208 87110 PHONE: 875-1721

ARCHITECT: N/A CONTACT: N/A

ADDRESS: N/A PHONE: N/A

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: 4109 Montgomery Blvd 87109 PHONE: 884-1990

CONTRACTOR: New Concepts, Inc. CONTACT: Tom Lakeman

ADDRESS: 508 Paragon Rd SE 87109 PHONE: 452-8910

TYPE OF SUBMITTAL:
- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION
- ___ OTHER

PRE-DESIGN MEETING:
- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:
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- ___ S. DEV. PLAN FOR SUB'D APPROVAL
- ___ S. DEV PLAN FOR BLDG. PERMIT APPROVAL
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- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY APPROVAL
- ___ GRADING PERMIT APPROVAL
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- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- X OTHER Release of Financial Guaranty (SPECIFY)

DATE SUBMITTED: 4-5-01

BY: Marcella V. Jaramillo

Revised 02/98

Transmittal

Parsons Brinckerhoff
5801 Osuna Road NE
Suite 200
Albuquerque, NM 87109
505-881-5357
Fax: 505-881-7602

To: Brad Bingham
COA PWD - Hydrology
Plaza del Sol
One Stop Shop

From: Marcella Jaramillo

By:

Date: 5-April-01 **Time:**

Project: Mirabella Unit 9

PB Project Number: 33467

Copies:	Description:	For:
1	Drainage Info. Sheet	YOUR
1	Grading Cert. Display	APPROVAL

If enclosures are not as noted, kindly notify us at once.

Comments:

RECEIVED
APR 05 2001
HYDROLOGY SECTION
4:10

Copies to:

Date: 4/05/01

Received by:

Over a Century of Engineering Excellence

[redacted]

AVID ENGINEERING, INC.

DRAINAGE REPORT
FOR
WILLOWWOOD SUBDIVISION

Prepared For:

MANZANO MESA LIMITED PARTNERSHIP
6301 Indian School NE, Suite 208
Albuquerque, NM 87110

Prepared By:

AVID ENGINEERING, INC.
5801 Osuna Rd. NE, Suite 200
Albuquerque, NM 87109

RECEIVED
APR - 5 1996

MAY 1992
REVISED OCTOBER 1994
REVISED MARCH 1996

AVID ENGINEERING, INC.

Civil • Structural • Transportation

March 26, 1996

Mr. John Curtin, P.E.
City Hydrologist
The City of Albuquerque
Public Works Department
Albuquerque, NM 87103
[Hand Delivered]

RE: WILLOW WOOD SUBDIVISION - DRAINAGE REPORT REVISIONS
FILE:L-21/D37A

Dear John:

Submitted for your review is the drainage report with the following revisions: 1) format changes in response to your comments, 2) revised 2 x 100 year analysis and 3) revised storm drain geometry. Also submitted are the Work Order construction plan mylars. Your approval of the construction plans is required to continue the work order process.

A modified type 'C' quadruple grate catch basin, located at the end of Chiricahua St.., intercepts the 2 x 100 year storm event. Flow is surcharged to a depth of 1.4 ft., or 0.5 ft. above the top of curb (elevation 5488.4). Approximately 1.6 ft. of freeboard is available to the lowest pad in the cul-de-sac. The 100 year flow is contained well within the street curb.

The revised storm drain design consists of a 60" RC pipe which passes through the modified type 'C' catch basin. The pre-fab RCP wye and manhole have been eliminated. This design is the result of a meeting with Fred Aguirre and Steve Boberg. The simplified design is hydraulically more efficient. See sheets 22 and 7 for details of the storm drain and catch basin.

Should you have any questions or need additional information, please call anytime. I am available to meet with you to discuss this project at your convenience.

Sincerely,

Rick Beltramo, P.E.
Project Manager

curtin1.doc

5801 Osuna Rd. NE • Suite 200 • Albuquerque, NM 87109 • (505) 881-5357 • Fax 505-881-7602

AVID ENGINEERING, INC.

Civil • Structural • Transportation

October 18, 1995

Mr. John Curtin, P.E.
City Hydrologist
City of Albuquerque
Public Works Department
P.O. Box 1293
Albuquerque, NM 87103

Re: WillowWood Subdivision
Master Drainage Plan Revision

Dear John:

Submitted for your review is the Revised Drainage Report for WillowWood Subdivision. Revisions to the March 1994 report are as follows:

- Hydraulic Gradeline (HGL) analysis revised to incorporate developed flows from the Albuquerque Public Schools (APS) future site;
- Hydrologic Hydraulic Gradeline analysis revised to incorporate developed flows from future Unit 9 (Phase 6); and
- Revised hydraulic gradeline and inlet analysis for construction plans for Units 7 and 8 (Phase 5).

APS Future School Site

This report more formerly addresses the issue of downstream capacity available to the APS school site (Basin C-1-A). The storm drain collection system, storm drain mainline and temporary retention pond is designed to accept fully developed, free discharge from the proposed APS school site. Under City Work Order #4604.93, WillowWood Phase 4 (Units 7 & 8), a storm drain line has been extended to the APS property for connection of future inlets. It is intended that when the school site is developed, free discharge will be made available and that no additional analysis of downstream capacity be required.

5801 Osuna Rd. NE • Suite 200 • Albuquerque, NM 87109 • (505) 881-5357 • Fax 505-881-7602

WillowWood Unit 9

WillowWood, Unit 9, is under consideration for development. Unit 9 consists of approximately 25 lots and is a cul-de-sac extension of Los Padres Street from Arches Road. Unit 9 is not within the original 98 acre WillowWood Subdivision, but is within Manzano Mesa. The logical outfall for Unit 9 is the WillowWood Subdivision storm drain. The pond and storm drain has been designed to accept fully developed runoff from Unit 9. Under City Work Order #4604.93, WillowWood Phase 4 (Units 7 & 8), a 30" diameter storm drain has been extended to serve Unit 9.

Approval of Unit 9 requires a separate drainage plan submittal. This report recommends free discharge of developed flows from Unit 9 to the WillowWood storm drain.

WillowWood Units 7 & 8

Also included within this revised report are the final design calculations for Units 7 & 8 (Phase 5) construction plans. Included are inlet design calculations and hydraulic gradeline calculations used to determine the HGL shown on the construction plans. Please note that the system has a low point, sump condition, at the north end of Chiricahua Street. 100% of the flows reaching this point must be intercepted. No overflow channel is provided. As a matter of added protection, the storm drain has been designed to greater than the standard 100-year 6-hour design storm. This analysis assumes that a portion (the largest subbasin) of the collection system fails to collect any runoff. This assumption is conservative because, in the event that any of the inlet systems would fail, the additional flow would be partially collected by other downstream inlets. The recommended design provides approximately 150% of the 100-year event. Due to the geometry of the subdivision, and the fact that the sanitary sewer outfalls to the south and the storm drain outfalls to the north, it is proving to be difficult to meet the standard 2 x 100-year design criteria. In light of the adverse conditions, 1.5 times the 100-year appears to be appropriate.

Should you have any questions or need additional information, please call any time. I am available to meet with you to discuss this project at your convenience.

Sincerely,

Rick Beltramo, P.E.
Project Manager

RB/cs
Enclosure

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APPENDICES

Appendix A	Revised Infrastructure List
Appendix B	Notice of Emergency Rule/Retention Ponding
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Appendix E	Hydraulics
Appendix F	Unit 5 (Phases 7 & 8) Detailed Hydraulic Analysis--Construction Plans

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Manzano Mesa Drainage Master Plan - Exhibit I (Pocket)
WillowWood Drainage Plan - Exhibit II (Pocket)
WillowWood Drainage Plan - Exhibit III (Pocket)

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Willow Wood Subdivision ZONE ATLAS/DRAINAGE FILE # L-21/D37A

LEGAL DESCRIPTION: Tract D-1, Manzano Mesa

CITY ADDRESS: West of Juan Tabo, North of Gibson

ENGINEERING FIRM: AVID ENGINEERING, INC. CONTACT: Rick Beltramo

ADDRESS: 6100 Seagull Ln., NE, Suite 102, 87109 PHONE: 881-5357

OWNER: Manzano Mesa Limited Partnership CONTACT: Stan Strickman

ADDRESS: 6301 Indian School, NE, Suite 208 PHONE: 242-6375

ARCHITECT: None CONTACT: ____

ADDRESS: ____ PHONE: ____

SURVEYOR: AVID ENGINEERING, INC. CONTACT: Ruan Bacigalupa

ADDRESS: Same as Above PHONE: 881-5357

CONTRACTOR: None CONTACT: ____

ADDRESS: ____ PHONE: ____

PRE-DESIGN MEETING:

X YES DRB NO. DRB-92-0106

____ NO EPC NO. ____

____ COPY OF CONFERENCE RECAP SHEET PROVIDED PROJECT NO. 4604.90-94

TYPE OF SUBMITTAL:

X DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAIN PLAN

____ GRADING PLAN

____ EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ SITE DEVELOPMENT PLAN APPROVAL

____ FINAL PLAT APPROVAL

____ BUILDING PERMIT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY APPROVAL

____ ROUGH GRADING PERMIT APPROVAL

____ GRADING/PAVING PERMIT APPROVAL

XX OTHER ____ (SPECIFY)

DATE SUBMITTED: 3/27/96

BY: [signature]

REV. 10/85

INTRODUCTION AND PROJECT DESCRIPTION

This report is the master drainage report for Willowwood subdivision. Willowwood is a planned residential development of approximately 98 acres, which will be developed in several phases over a period of time. The development is in southeast Albuquerque, as shown on Figure I (Vicinity Map) and Figure II (Location Map). It will consist of approximately 500 single family (R-1) lots when fully developed.

Willowwood is part of a larger master planned area known as Manzano Mesa. Within Manzano Mesa, there is approximately 210 acres zoned for residential use. Manzano Mesa is owned by the Albuquerque Public Schools (APS) which is in the process of subdividing the 98 acre parcel for Willowwood from a larger 210 acre parcel. The 98 acre parcel to be developed into Willowwood is shown in Figure III as Tract D-1. The remaining residential area in Manzano Mesa is shown as Tract D-2 on that Exhibit; it is not included as part of this drainage plan.

Willowwood will be developed in phases, with each phase of development consisting of a final plat for an area of 20 acres or less. It is the intent of the developer to plan the entire 98 acres to be subdivided, and obtain approval of the preliminary plat for the entire 98 acres. They will then prepare a final plat to separate each phase of development from the remaining larger parcel and subdivide it into lots. It is understood that, at the approval stage for each phase of development, the City will require that the infrastructure be guaranteed such that the phase can stand independent of any future planned phases. Figure IV shows the general layout of the entire 98 acre development, including all phases of construction. Figure V shows the layout of the planned first phase of development, which consists of approximately 15.5 acres.

PURPOSE AND SCOPE

The purpose of this Drainage Report is to provide a graphic and written presentation of the proposed grading, drainage and erosion control criteria for the proposed Willowwood subdivisions. The proposed drainage improvements are to be developed in a manner which is in accordance with the regulations of the City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA). The plan studies the existing and developed conditions of Willowwood and analyzes the 100-year, 6-hour storm event and 100-year 10-day duration event.

The scope of the report is to describe the detailed drainage plan for the 98 acre site which is part of the overall Manzano Mesa master plan area. The plan reviews the approved drainage master plan for the site and demonstrates the conformance of the proposed development with that plan. It then describes the plan for the overall development, including the ultimate connection to the future City facilities, as well as the interim plan until those facilities are constructed. Finally, it describes the general drainage and grading proposal for the first subdivision proposed for platting at this time, and shows how it will integrate with subsequent phases, while being able to stand independently of the other phases.

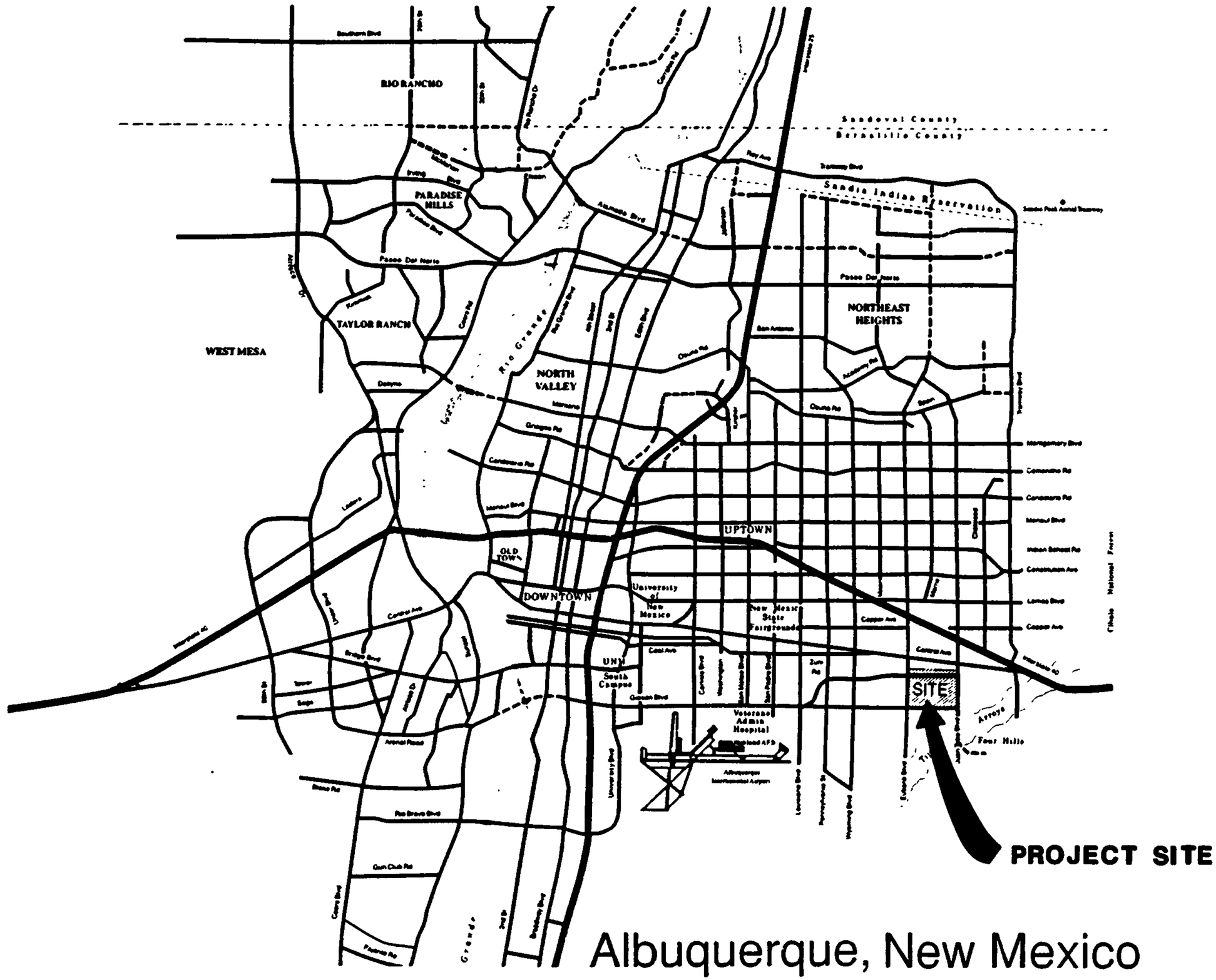
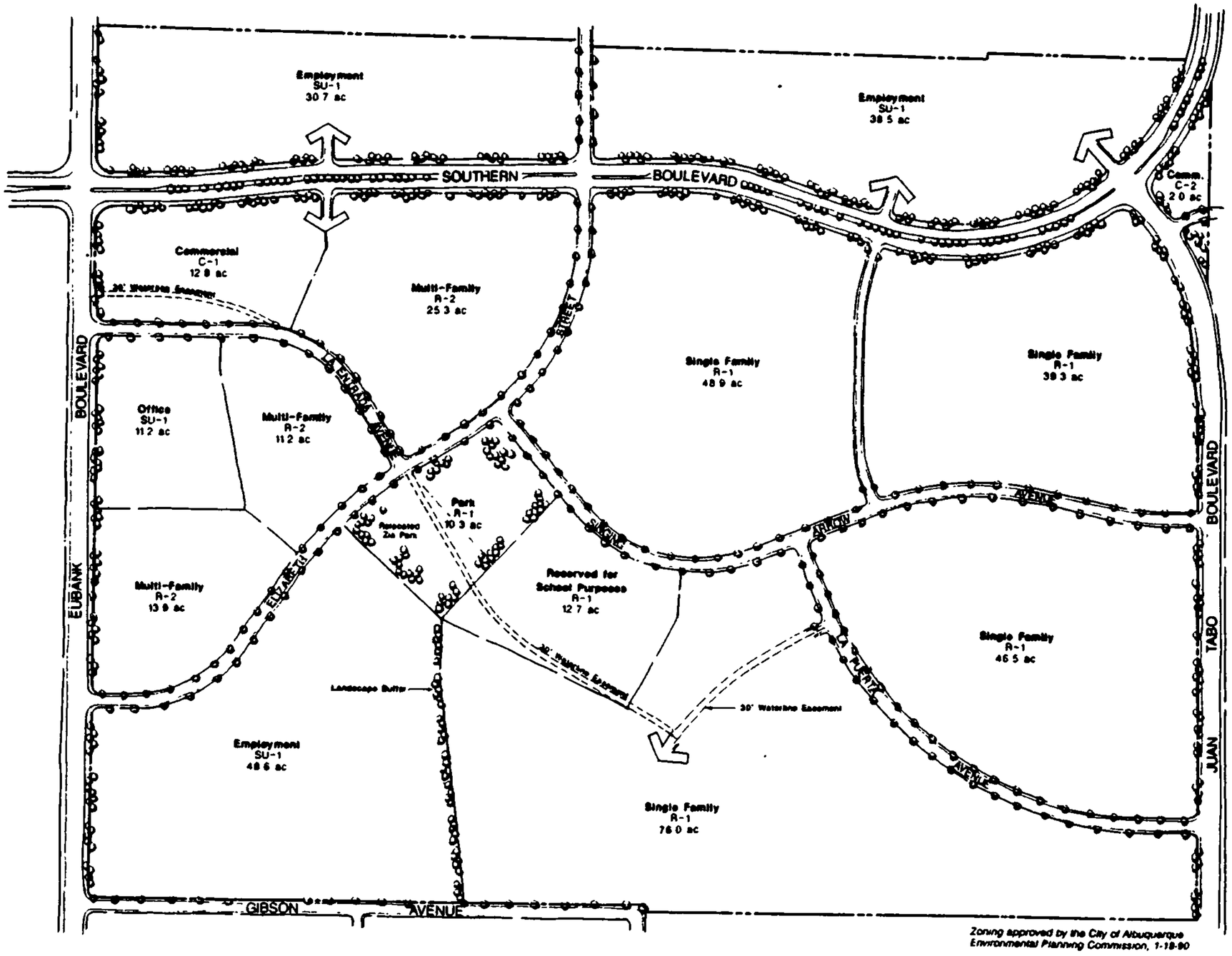


FIGURE I
VICINITY MAP



Zoning approved by the City of Albuquerque Environmental Planning Commission, 1-18-90

SITE DATA

LAND USE	ZONING	ACRES	DENSITY	UNITS
• Single Family	R-1	210.7	3.5 du/ac	737
• Multi-Family	R-2	50.4	24.0 du/ac	1208
Commercial	C-1	12.8		
Commercial	C-2	2.0		
Office	SU-1	11.2		
Employment	SU-1	117.8		
• Park	R-1	10.3		
• Reserved for School Purposes	R-1	12.7		
• Interior R.O.W.		20.1		
Arterial R.O.W.		32.0		
TOTAL		480.0	(n) 6.39 du/ac (g) 4.05 du/ac	1946

NOTE: • Used to Calculate Net Density (n)
Total Units ÷ Gross Acres = Gross Density (g)

MASTER PLAN

Manzano Mesa

ALBUQUERQUE PUBLIC SCHOOLS

9/11/89

0 100 200 400 600
SCALE IN FEET 1"=200

A. WAYNE SMITH & ASSOCIATES

810 GOLD SOUTHWEST #216
ALBUQUERQUE, NEW MEXICO
(505) 764-9801

FIGURE II
LOCATION MAP

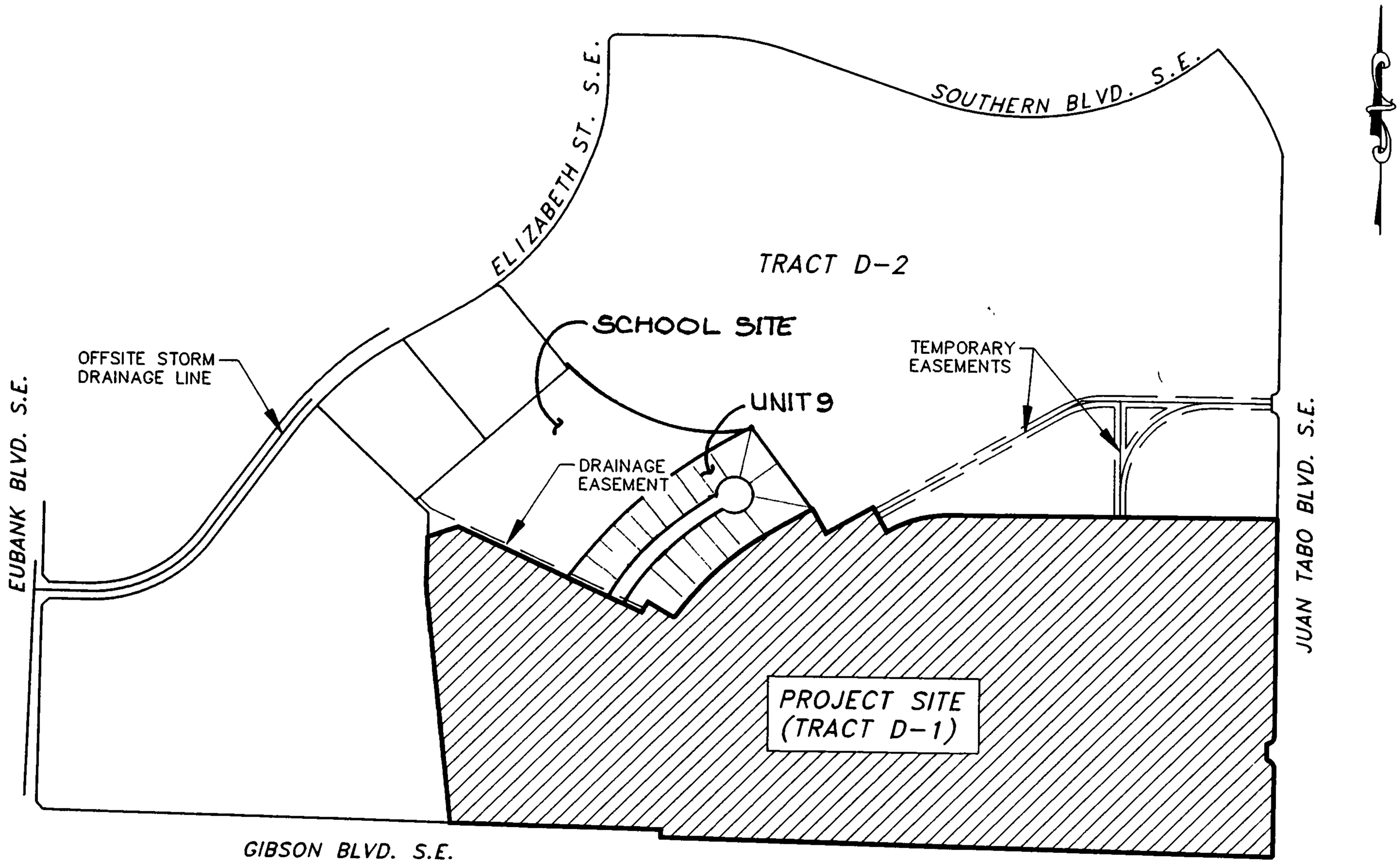


FIGURE III
PROJECT SITE MAP

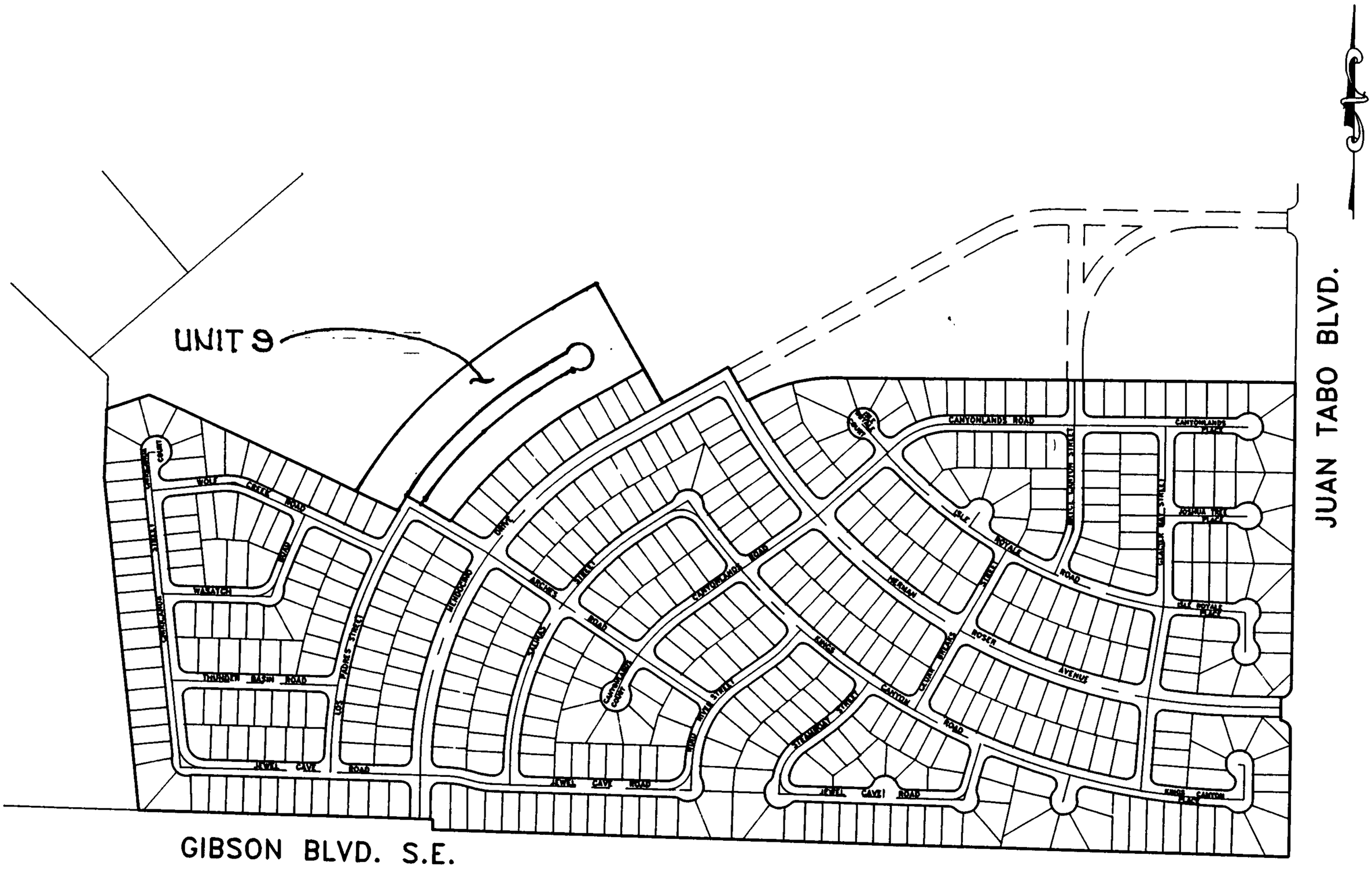


FIGURE IV
WILLOWWOOD LOT LAYOUT
(98 Acres +/-)

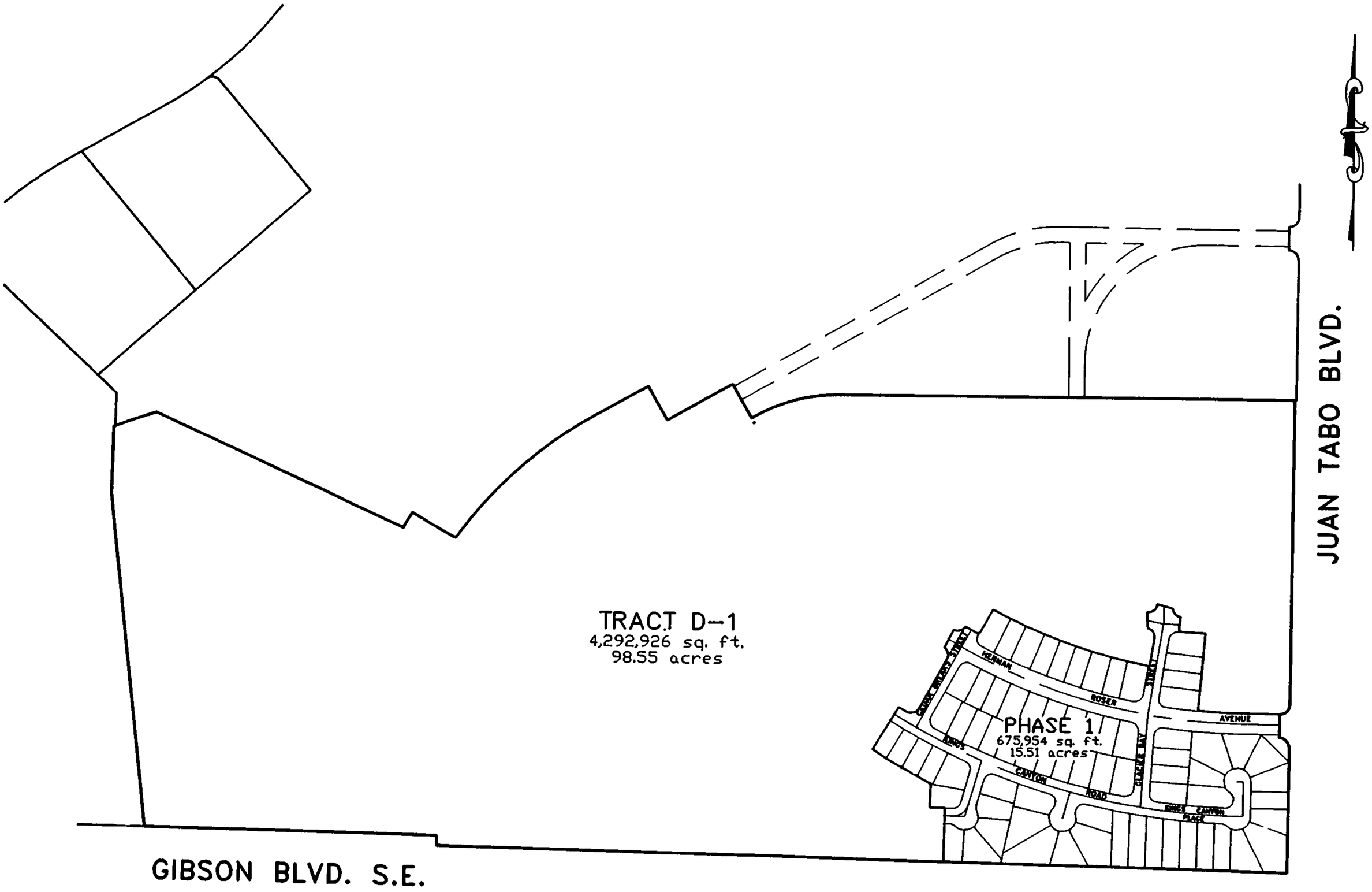


FIGURE V
WILLOWWOOD LOT LAYOUT
PHASE 1 DEVELOPMENT

The plan includes the sizing and capacity analysis for the roads and other drainage facilities needed for all phases of development. Preliminary building pad elevations have been shown for the purpose of determining the locations where retaining walls will be required. Final lot grading is not included for any of the subdivision at this time. Each phase to be platted and developed will require an approved final grading and drainage plan prior to final plat approval. The final grading and drainage plan will include detailed site grading and retaining wall design.

Approval of this Drainage Report shall facilitate Preliminary Plat Approval for 98 acres of residential land within the Manzano Mesa Master plan area. Final platting for each phase will require complete grading plans and backup information to confirm compliance with the criteria established in this report.

SITE LOCATION AND DESCRIPTION

Willowwood subdivision is located in the southeast quadrant of the Manzano Mesa Plan area (see Vicinity map, Figure I). Manzano Mesa is bounded by Juan Tabo on the East; Opportunity Avenue, Shaw Mobile Home Park and Four Hills Mobile Home Park on the South; Eubank Boulevard on the West; and developed commercial properties on the North. The Manzano Mesa Plan area contains approximately 480 acres.

Manzano Mesa has been developed as a master plan area with approximately 261 acres dedicated to residential purposes. Tract D contains approximately 210 acres zoned for R-1 purposes, in those areas shown on Figure II. Willowwood subdivision is planned to constitute 98 acres of this residential area. The area to be developed is shown on Figure III.

The unimproved areas of the site are vegetated with typical native grasses and shrubs. The plant community covers approximately 15 percent of the topsoil surface. The dominant native grasses found on the site include:

Black Gramma	Alkali Sacaton
Sand Dropseed	Bush Muhly
Spike Dropseed	Fluffgrass
Mesa Dropseed	Galleta
Blue Gramma	Indian Ricegrass

The major types of shrubs indigenous to the area are:

Fourwing Saltbrush	Winterfat
Wolfberry	Mormon Tea
Apache-Plume	Chamisa

Site topography is relatively uniform with slopes typically 1.5% from east to west and less than 0.5% from north to south. No significant drainage courses traverse the site.

On-site soils consist mainly of Embudo and Tijeras, which are classified by the Soil Conservation Service as hydrological group "B" soils. The soils units are described by SCS as follows:

EmB-Embudo gravelly fine sandy loam; 0-5% slopes. These are generally deep, well drained soils formed in alluvium derived from decomposed, coarse-grained rocks. They exhibit medium runoff characteristics with moderate erosion.

TgB-Tijeras gravelly fine sandy loam; 1-5% slopes. These are generally deep, well drained soils formed in decomposed granitic alluvium. Runoff and water erosion are moderate.

Figure VI is a reproduction of the SCS soils maps showing the location of the various soils units within the subdivision.

EXISTING DRAINAGE CONDITIONS

An extensive analysis of existing drainage was recently completed as part of the drainage master plan for the 480 acre Manzano Mesa area (Espey, Huston & Assoc., Drainage Master Plan for Manzano Mesa). That study described the existing situation in detail and the reader is referred to that report for an in-depth analysis. The following is a summary of the existing conditions.

Willowwood will be protected from offsite flows originating east of the site by the new storm drain system which was recently constructed in Juan Tabo Boulevard (AMDS Project 2-07-1D). This system was designed to pick up all runoff which previously drained across Juan Tabo Avenue and eventually across the Willowwood site.

The FEMA floodplain maps and the Manzano Mesa drainage master plan identify a number of FEMA floodplains within Manzano Mesa. Although the intent of the new storm drain in Eubank was to eliminate flood potential in this area, a Letter of Map Revision for the area has not yet been issued by FEMA, so any development within the designated floodplains will be subject to those restrictions.

Willowwood is largely outside the area of these floodplains. Exhibit I (the Manzano Mesa Master plan) shows their location, and the majority are north of the development. There is a small area of floodplain at the Juan Tabo entrance to the subdivision which is within the designated floodplain, and it affects 8 of the proposed lots. All other floodplains are north of the area considered by this drainage report.

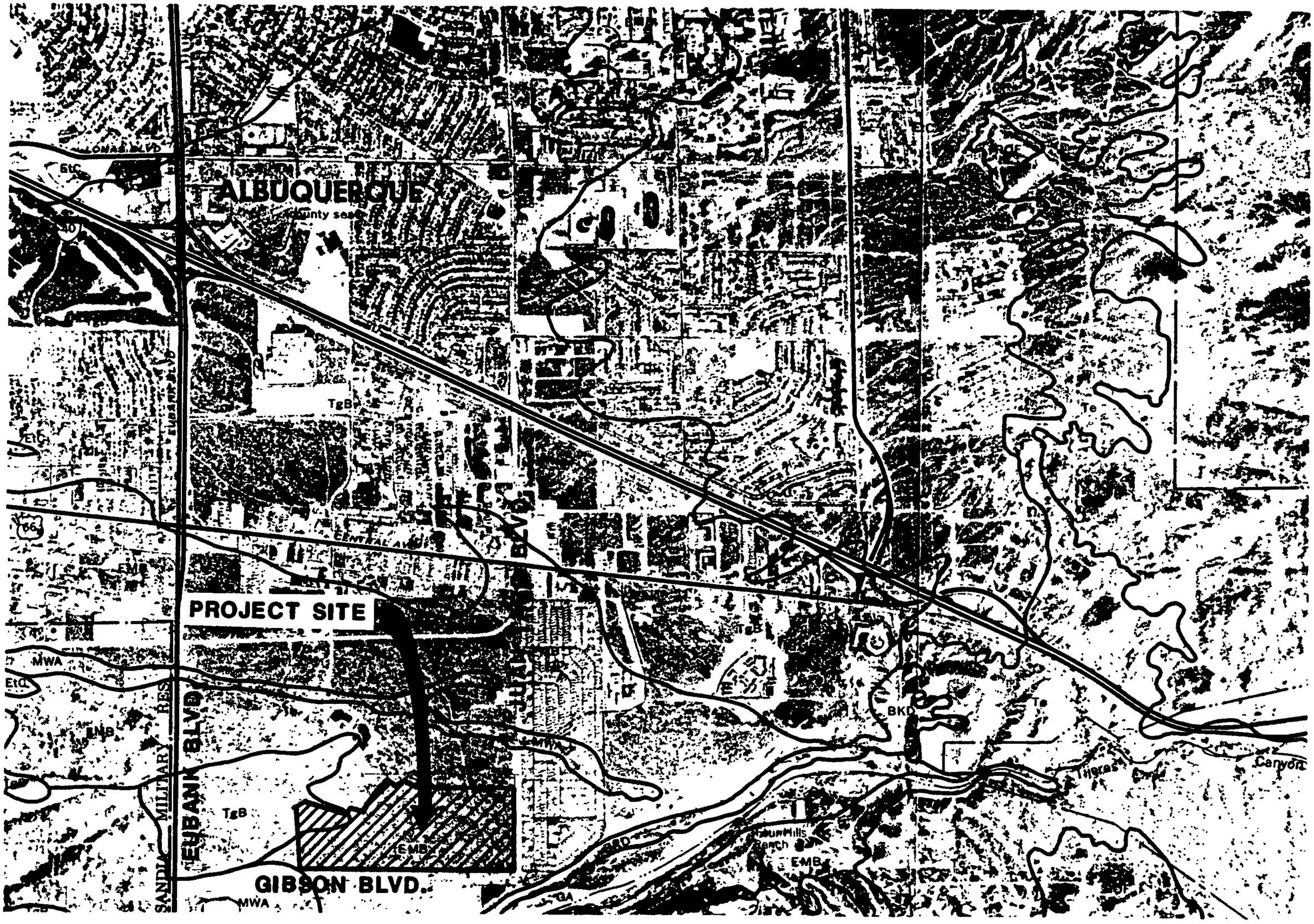


FIGURE VI
SOILS MAP

APPROVED DRAINAGE MASTER PLAN FOR MANZANO MESA

The Drainage master plan for Manzano Mesa specifies that the primary drainage outfall for Willowwood will be the Eubank Storm Drain. Due to the pressing need for this improvement, the project has been programmed for funding in 1995 by way of a $3.45 million bond issue which will be presented to the voters. Assuming the bond issue is approved, construction should follow in 1996. It has been mutually agreed by APS and the City that APS will assist the City on this project by providing financial support. APS has provided a financial guarantee to the City for their equitable portion of the cost of the Eubank system.

The approved, ultimate drainage management plan for Manzano Mesa is provided in the back pocket of this document for review by the reader (Exhibit I). The intent of the plan is to illustrate the drainage management criteria and to outline the infrastructure required to implement the plan when the area is completely developed and all downstream facilities are in place. As shown by the plan, the entire project area will drain to the future Eubank storm drain. It also shows that additional storm drainage facilities are required to convey flows to Eubank. These facilities have been sized for 100-year developed conditions.

The Manzano Mesa plan identifies the Willowwood area as an individual basin which will drain to the future 72" storm drain in Elizabeth Street near the park site. That plan shows a 100 year peak flow rate of 220 cfs originating from the site and using free discharge to the storm drain. The Willowwood drainage plan is developed in compliance with the criteria established in the master plan, for the ultimate condition. However, since the downstream facilities are not yet constructed, interim measures will be needed to handle the runoff.

INTERIM OUTFALL PLAN FOR OVERALL WILLOWWOOD DRAINAGE

Willowwood's drainage is designed to have uncontrolled discharge to the future Elizabeth Street and Eubank systems. This plan is in conformance with existing City policy which discourages ponding of stormwater runoff. However, Mayor Saavedra has issued a notice of Emergency Rule for temporary retention ponding which applies in this case. This rule allows temporary ponding of runoff until downstream capacity is obtained. This Emergency Rule is particularly pertinent in this instance, where the developer of the property (APS) has provided financial guarantees for their share of the downstream infrastructure. A copy of the Notice of Emergency Rule is contained in Appendix A.

The Emergency Rule directs that retention ponding be designed for the 100 year, 10 day storm, to provide additional safety over the 6-hour storm used for discharging facility design. From our meetings with City staff, we have come to the agreement on several other criteria for the temporary retention pond for this development.

1. City staff has expressed a preference for a single pond for the entire development, rather than multiple ponds developed in concert with each phase of development. Based on these discussions, a singe pond will be located near the future point of discharge to the Elizabeth Street Storm Drain.

   Further, staff has requested the developer to provide assurances that the remaining residential area could be developed without constructing a second pond within Manzano Mesa. The reason for this is that if the Eubank system is delayed for some time, staff would like to be sure the remaining 112 acre parcel could be required to expand the Willowwood pond if it were to develop, and use that expanded pond for its outfall. The Willowwood pond will use only a portion of the designated park area, and the pond could be expanded into the remaining area to accommodate the remaining R-1 area. In order to use the adjacent area for a temporary pond, permission from the city would be required.

   The pond for Willowwood will be located on the southern park site as shown on Exhibit IV. This site is currently owned by the City, but they have agreed to trade the parcel to APS for the northern site. The pond will be located south of the waterline easement which crosses the northern part of the site, as shown on Exhibit IV.

2. Staff expressed the need for a guarantee for the maintenance and operation of the pond. They preferred adequate financial guarantees, or that a public agency guarantee the maintenance. APS has agreed to be ultimately responsible for the maintenance, operation, and reclamation of the pond.

3. Approval of the temporary retention pond has been granted by the State Engineer's office.

WILLOW WOOD
PROPOSED PHASING PLAN

Units = Planned Phases as shown on the Prelim. Plat.
Phases = Actual Phases as construction Plans developed.

PHASE I
PHASE II
PHASE III
PHASE IV
PHASE V
PHASE VI
PHASE VII and VIII

NOTE: PHASE I = UNIT I
PHASE II = UNIT II
PHASE III = UNIT III
PHASE IV, V, VI = UNIT IV
PHASE VII, VIII = UNIT VI

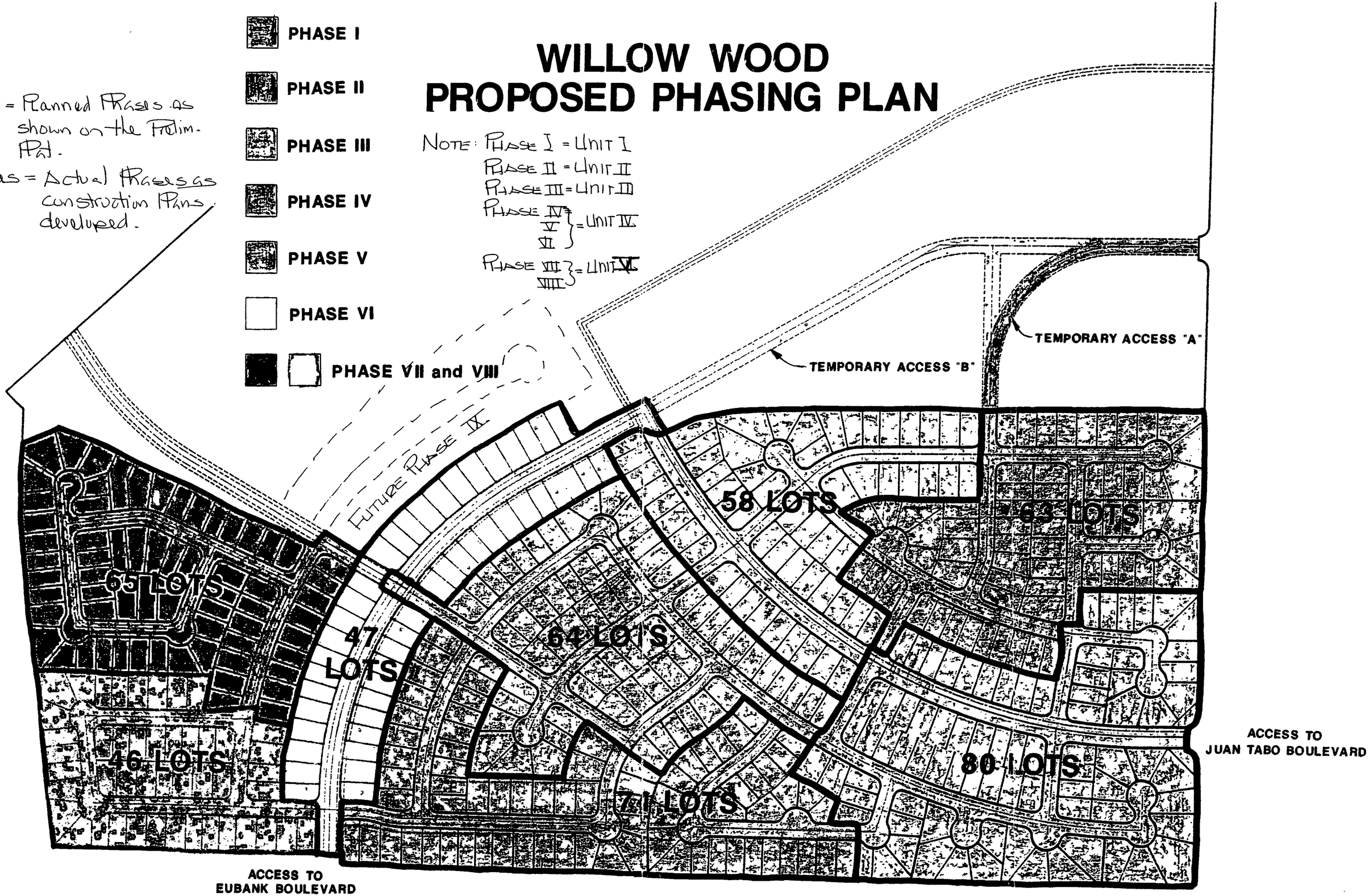


FIGURE VII

The internal hydrology was developed using the current version of AHYMO, in accordance with the interim City guidelines. Street and storm drain capacities are based on Manning's formula, as described in the Development Process Manual. Computations are included in Appendix C.

This overall drainage plan provides a preliminary design for the streets and internal grading of the subdivision. It sets the parameters under which public infrastructure and private lot grading will be designed, but it is not a substitude for the final grading plan for each development, which will have to be submitted to City staff for review and approval on each phase.

EXTERNAL PROPERTIES

Properties outside the WillowWood subdivision are identified which to be served by the subdivision storm drain improvemnets. These areas currently are undeveloped basins which drain through Willow Wood. The same areas are planned to be developed at some time as the future APS future school site and as Willow Wood, Unit 9.

APS Future School Site

The masterplanned facilities and temporary retention pond have been designed to accept fully developed runoff from the future school site. The design allows for the school site to discharge into the storm drain at the southwest corner of the school site or directly into the retention pond. A pipe has been extended to the school site for future storm drain connections.

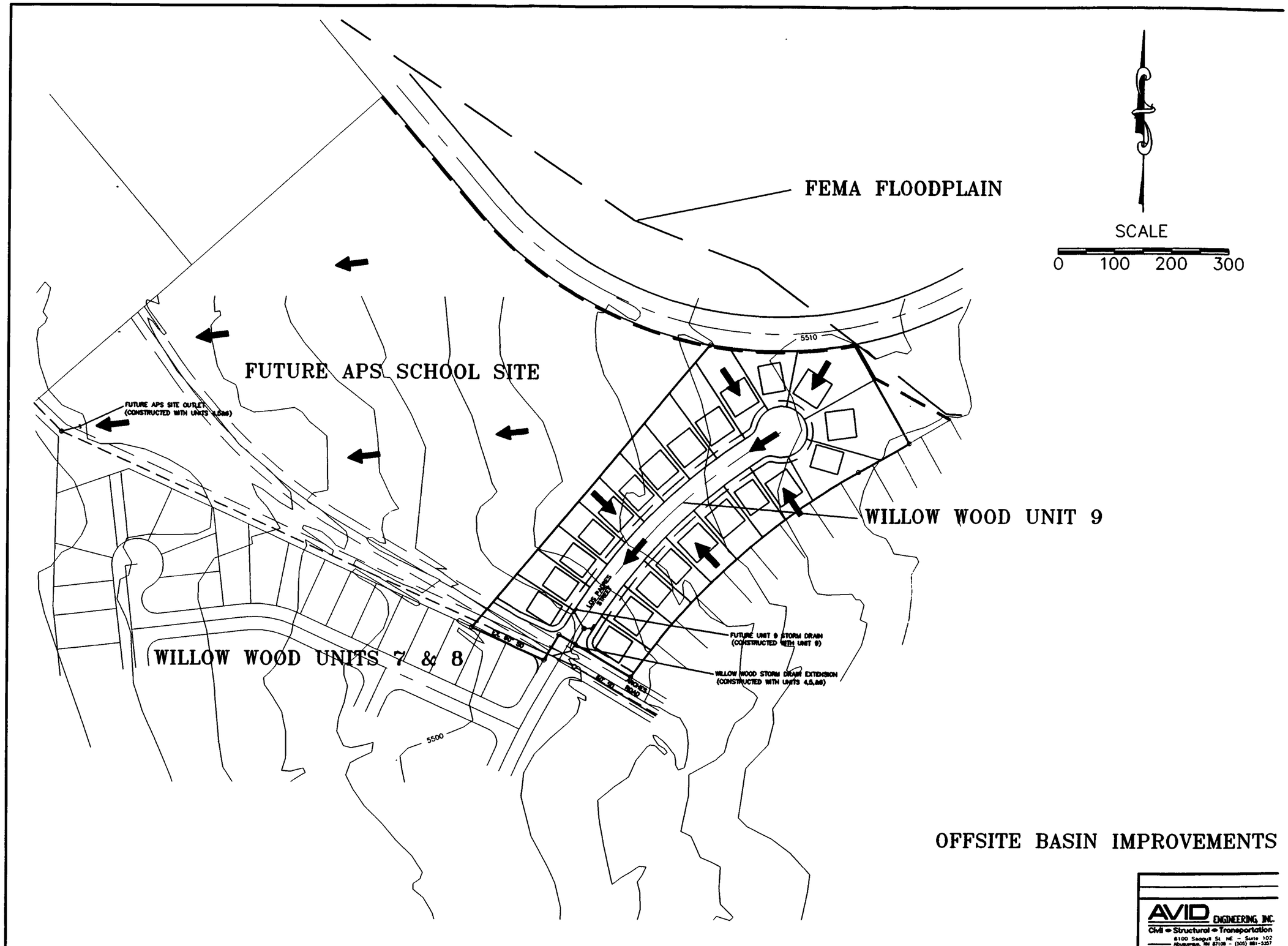
By this report free discharge is allowed from the school site into the WillowWood storm sewer system and retention pond. Future hydrologic or hydrologic analysis is not required.

Willow Wood, Unit 9

Recently areas outside the 98 Acre WillowWood subdivision, but within the Manzano Mesa masterplan, have been submitted for sketch plat review as "WillowWood, Unit 9". This proposed subdividion is an extension of Los Padres Street, north from Arches Road. This report allows free discharge of developed runoff from Unit 9. A 30" diameter storm drain has been constructed and extended to the boundary for this purpose. It is intended that no additional hydrology or storm drain analysis be required in the future to demonstrate downstream capacity. However submittals for the grading plan and storm drain analysis will be required. Approval is subject to resolution of floodlpain issues and other plat issues.

PHASING

Figure VII is a conceptual plan for the phasing of the subdivision. This represents a "best guess" of how the project will proceed, with each Unit being a separate platting action. However, the exact configuration and size of each Unit will depend on market forces and other factors. Therefore, the development of each phase of the project will require an update to this plan showing the grading and drainage design.



OFFSITE BASIN IMPROVEMENTS

AVID ENGINEERING, INC.
Civil • Structural • Transportation
8100 Seagull St NE – Suite 102
Albuquerque, NM 87109 – (505) 881-3357

FEMA FLOODPLAIN REMOVALS

The development is encumbered by a Federal Emergency Management Agency (FEMA) floodplain and a floodplain easement. The floodplain does not recognize the Juan Tabo storm drain and WillowWood storm drain improvements. The subdivision is appropriately protected, yet the floodplains and easements still encumber 9 lots within Phases 1 and 2.

In 1995, the floodplain easement was vacated. At this time, the City of Albuquerque is in the process of designing and constructing improvements which would remove the FEMA floodplain. As of March 1, 1996, the City was in the final design phase of the storm drain improvements. Construction of these improvements and processing of a FEMA Letter of Map Revision is anticipated within 1996. No further action by WillowWood Subdivision is required.

SUMMARY

1. Willowwood subdivision is being developed in conformance with the approved master plan developed for the area by APS, and approved by the City in 1991.

2. Since downstream facilities are planned but not yet in place, the Emergency Rule is appropiate and will be used to allow temporary retention ponding of the storm runoff.

3. The temporary retention pond will be in compliance with all state regulations, and adequate provision has been made for its safety, operation and maintenance.

4. The overall plan for the subdivision's internal drainage is in conformance to the City Development Process Manual. Major conveyances have been properly sized and located to permit the subsequent design of the final grading for each phase of development.

5. Financial guarantees for the required downstream infrastructure have been provided.

RECOMMENDATIONS

1. That this document serve as the basis for approval of the preliminary plat for Willowwood Subdivision. The preliminary plat is for the entire 98 acre development.

2. That the approval process for each phase of Willow Wood require a complete grading and drainage plan approval prior to final plat sign-off. The purpose of the detailed grading and drainge plan will be to assure compliance with the plan.

3. That free discharge of developed flows be allowed from the APS future school site, either to the storm drain or directly to the retention pond, at APS option. It is intended that no additional analysis be required to demonstrate downstream capacity.

4. That Unit 9 be allowed free discharge or developed flows to the 30" storm provided. It is intended that no additional analysis be required to demonstrate downstream capacity.

REFERENCES

DEVELOPMENT PROCESS MANUAL, VOLUME II, City of Albuquerque, Chapter 22

SOIL SURVEY OF BERNALILLO COUNTY, NEW MEXICO, U.S. Soil Conservation Service

ALBUQUERQUE MASTER DRAINAGE STUDY, VOLUME II, Bohannan-Huston Inc.

JUAN TABO STORM DRAIN DESIGN ANALYSIS REPORT, for the City of Albuquerque Public Works Department, Holmes and Narver, June 26, 1989

ALBUQUERQUE MASTER DRAINAGE STUDY - RESTUDY, Volume II, Bohannan-Huston Inc.

DESIGN ANALYSIS REPORT, EUBANK STORM DRAINAGE SYSTEM 201-03C, Scanlon & Associates, December 1983

DRAINAGE MASTER PLAN FOR MANZANO MESA, Espey, Huston and Associates, Inc., 1990

HYDROLOGIC MODELING AND DRAINAGE CRITERIA - USING THE AHYMO COMPUTER PROGRAM, Short Course Manual, UNM, 1992

APPENDIX A

INFRASTRUCTURE LIST
REVISION MARCH 1994

D.R.B. Case No. 92-106
S-92-22
D.R.C. Project No. 92-0106
Date Submitted July 30, 1992
Submitted by: Avid Engineering
By: [signature]

REVISIONS 3-2-93, SHTS 2&5
REVISIONS 4-4-94, SHTS 7,8,9&10

Figure II

EXHIBIT "D"
to Subdivision Improvements Agreement

DEVELOPMENT REVIEW BOARD (D.R.B.)
REQUIRED INFRASTRUCTURE LISTING
for WILLOWWOOD SUBDIVISION
for PRELIMINARY PLAT APPROVAL
UNITS I THROUGH VIII

JULY 30, 1992

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development.

UNIT I

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving *				
A. 28' Residential paving, standard curb & gutter, 4' sidewalk. (BOTH SIDES)	Glacier Bay	Isle Royale	Kings Canyon	Interior Residential streets. Approximately 1550 LF
	Kings Canyon Place	Cul-de-sac	Glacier Bay	
	Kings Canyon Road	Glacier Bay	800 ~~500~~' west of Glacier Bay	
	Jewel Cave	Kings Canyon	200' South OF KINGS CANYON	
B. 40' Residential paving, standard curb & gutter, 4' sidewalk. BOTH SIDES	Herman Roser	Juan Tabo	600' west of Glacier Bay	Approximately 950 LF
C. 6' SIDEWALK	JUAN TABO	HERMAN ROSER	SOUTH P/L	

Figure II
EXHIBIT "D"
Page 2

UNIT I

ITEM	LOCATION	FROM	TO	DESCRIPTION
2. Sanitary Sewer				
A. 8" sanitary sewer.	Glacier Bay Kings Canyon Place Jewel Cave Kings Canyon Wind River Jewel Cave Herman Roser	Isle Royale Cul-de-sac Kings Canyon Wind River Jewel Cave Mendocino Glacier Bay	Kings Canyon Glacier Bay 200' South Glacier Bay Herman Roser Wind River Wind River	Approximately 3850 LF
B. 10" Sanitary Sewer	Mendocino	Jewel Cave	Gibson	Approximately 160 LF
C. 10" Sanitary Sewer: (Offsite)	Gibson	Mendocino	Existing MH	Approximately 600 LF
3. Water Lines				
A. 6" Waterline	Glacier Bay Kings Canyon Place Kings Canyon Road Herman Roser Jewel Cave ~~Wind River~~ ~~JEWEL CAVE~~ Joshua Tree	~~Isle Royale~~ Joshua Tree 3/2/93 Cul-de-sac Glacier Bay Wind River Kings Canyon ~~Herman Roser~~ ~~WIND RIVER~~ Glacier Bay	Kings Canyon Glacier Bay ~~Wind River~~ Steamboat St 3/2/93 ~~Glacier Bay~~ JUAN TABO EXISTING 8" CI 200' South and 50' West ~~Kings Canyon~~ ~~JEWEL CAVE~~ 3/2/93 ~~MENDOCINO~~ ~~(EXISTING 10" PVC)~~ 3/2/2 Juan Tabo 3/2/93	~~Approximately 3430 LF~~

3/2/93

UNIT I

ITEM	LOCATION	FROM	TO	DESCRIPTION
4. Drainage				
A. Drainage Pond	Tract F (APS OWNED)			Excavated for Unit I Drainage. Includes conveyance channel.
B. Storm Drain: 78"*	Elizabeth Street	Park site	Eubank	Guaranteed by APS
5. Miscellaneous				
A. Street Trees	Juan Tabo	Herman Roser	500 Feet South	
B. Retaining Walls	Throughout Subdivision			Approximately 380 LF

NOTES:
1). Waterlines include valves, fittings and services.
2). Sanitary Sewer lines include manholes and services.
3). Storm drains include manholes, inlets and 24" connector pipe.
4). Paving items include street lighting

NOTES APPLY TO UNITS I THROUGH VIII

* Deferred: To be constructed upon the earlier of construction of the Eubank Storm Drain System AMDS (Project 2-03-18) or development adjacent to Elizabeth Street or development requiring paving improvements in Elizabeth Street.

UNIT II

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving				
A. 26' Residential paving, standard curb & gutter, 4' sidewalk (BOTH SIDES)	Canyonlands Place Joshua Tree Place Isle Royale Place	Cul-de-sac Cul-de-sac Cul-de-sac	Glacier Bay Glacier Bay Glacier Bay	
B. 28' Residential paving, standard curb & gutter, 4' sidewalk (BOTH SIDES)	Canyonlands Road Isle Royale Glacier Bay Bryce Canyon	Bryce Canyon 103' W/S Wind River Canyonlands Isle Royale	Canyonlands Place Glacier Bay Isle Royale N. Property Line	Approximately 2700 LF
C. Temporary Access Pavement (28' wide)	Easement	Bryce Canyon	Juan Tabo	Approximately 950 LF
D. 6' SIDEWALK	JUAN TABO	ROSER	N. PROP LINE	
2. Sanitary Sewer				
A. 8" sanitary sewer	Canyonlands Road Isle Roayle Canyonlands Place Joshua Tree Place Isle Royale Place Glacier Bay Bryce Canyon Wind River	Bryce Canyon Wind River Cul-de-sac Cul-de-sac Cul-de-sac Canyonlands Isle Royale Isle Royale	Canyonlands Place Glacier Bay Glacier Bay Glacier Bay Glacier Bay Isle Royale ~~Canyonlands~~ NORTH PROPERTY LINE Herman Roser	Approximately 2900 LF

Figure II
EXHIBIT "D"
Page 5

UNIT II

ITEM	LOCATION	FROM	TO	DESCRIPTION
3. Water Lines				
A. 6" Waterline	Glacier Bay	Joshua Tree	Canyonlands PL	3/2/93
	Canyonlands Road	Bryce Canyon	Canyonlands Place	~~Approximately 3050 LF~~
	Isle Royale	Wind River	Glacier Bay	
	Canyonlands Place	Cul-de-sac	Glacier Bay	
	~~Joshua Tree Place~~	~~Cul-de-sac~~	~~Glacier Bay~~	3/2/93
	~~Glacier Bay~~ ISLE ROYALE	Cul-de-sac	Glacier Bay	
	Bryce Canyon N. P/L	~~Canyonlands~~	Isle Royale	
	~~Wind River~~ ~~GLACIER BAY~~	~~Isle Royale~~	~~Canyonlands~~	3/2/93
	WIND RIVER	Isle Royale	Herman Roser	
	20' PUBLIC W/L EASEMENT	CANYONLANDS PLACE	JUAN TABO	
4. Drainage				
A. Drainage Pond	Tract F (APS OWNED)			Excavate to full depth (33 A-F) includes conveyance to pond.
5. Miscellaneous				
A. Retaining Walls	Throughout Subdivision			Approximately 120 LF
B. Street Trees	Juan Tabo	Herman Roser	900' North	

UNIT III

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving *				
A. 28' Residential paving, standard curb & gutter, 4' sidewalk. (BOTH SIDES)	Canyonlands Road	Bryce Canyon	100' South of Herman Roser	Approximately 2700 LF
	Wind River	Isle Royale	100' South of Herman Roser	
	Isle Royale	Canyonlands	100' WEST Wind River	
	Canyonlands Court	~~Beginning~~ CUL DE SAC	~~End~~ CANYONLANDS	
B. 40' Residential paving, standard curb & gutter, 4' sidewalk. BOTH SIDES	Herman Roser	200 East of Wind River	Wind River	Approximately 600 LF
	Herman Roser	Canyonlands	Mendocino	
C. 6' SIDEWALK	BLOCK 9	WIND RIVER	CANYONLANDS	
2. Sanitary Sewer				
A. Sanitary Sewer 8"	Mendocino	Jewel Cave	Herman Roser	Approximately 3280 LF
	Canyonlands	Bryce Canyon	Kings Canyon	
	Kings Canyon	Salinas	Canyonlands	
	Salinas	Jewel Cave	Kings Canyon	
	Isle Royale Court	Beginning	End	
	Herman Roser	Canyonlands	Mendocino	
3. Water Lines				
A. 6" water line	Canyonlands Road	Bryce Canyon	100' South of Herman Roser	Approximately 1520 LF
	Isle Royale Court	~~Beginning~~ CANYONLANDS RD	End OF CUL DE SAC	
	Herman Roser	Canyonlands	Mendocino	

UNIT III

ITEM	LOCATION	FROM	TO	DESCRIPTION
4. Storm Drain	DELETE FROM UNIT III AND ADDED TO UNIT IV			
* ~~A. 78"~~	~~Easement~~	~~Pond~~	~~Elizabeth~~	~~Approximately 600 LF~~ (Future Elizabeth Street connection)
* ~~B. 60" & 72"~~	~~Drainage Easement~~ and Arches	~~Salinas~~	~~Pond~~	~~Approximately 2200 LF~~
* ~~C. 54"~~	~~Arches~~	~~Canyonlands~~	~~Salinas~~	~~Approximately 300 LF~~
* ~~D. 42"~~	~~Canyonlands~~	~~Arches~~	~~Herman Roser~~	~~Approximately 700 LF~~
* ~~E. 24"~~	~~Canyonlands~~	~~Herman Roser~~	~~Isle Royale~~	~~Approximately 350 LF~~

UNIT IV

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving *				
A. 28' Residential paving, standard curb & gutter, 4' sidewalk. (BOTH SIDES)	Canyonlands Court	CUL DE SAC ~~Beginning~~	ARCHES ~~End~~	Approximately 3350 LF
	Arches Road	Mendocino	Wind River	
	Salinas Street	Arches	Kings Canyon	
	Canyonlands Road	Arches	100' South of Herman Roser	
	Kings Canyon	Salinas	50' East of Steamboat	
	Wind River	Arches	100' South of Herman Roser	
2. Sanitary Sewer				
A. 8" Sanitary Sewer	Canyonlands Road	Arches	Kings Canyon	Approximately 750 LF
	Arches	Salinas	Canyonlands	
	Canyonlands Court	~~Beginning~~ ARCHES	End OF CUL DE SAC	
3. Water Line				
A. 6" water line	Arches Road	Mendocino	Wind River	
	Salinas Street	Arches	Kings Canyon	
	Canyonlands Road	Arches	100' South of Herman Roser	
	Kings Canyon	Salinas	Canyonlands	
	~~Wind River~~	~~Arches~~	~~Kings Canyon~~	
	Canyonlands Court	~~Beginning~~ ARCHES	End OF CUL DE SAC	
4. Drainage				
~~A. 24" Storm Drain~~	Kings Canyon	Canyonlands	Cedar Breaks	Approximately ~~350 LF~~
* B. 78"	~~EASEMENT~~	POND	ELIZABETH	Approximately 600 LF
* C. 60" & 72"	ARCHES + EASEMENT	SALINAS	POND	2200 LF
* D. 54"	ARCHES	CANYONLANDS	SALINAS	300 LF
* E. 42" & 24"	CANYONLANDS	ARCHES	KINGS CANYON	700 LF

* ITEMS DELETED FROM UNIT III

UNIT V

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving *				
A. 28' Residential. paving, standard curb & gutter, 4' sidewalk. (BOTH SIDES)	Jewel Cave	Mendocino	Wind River	Approximately 2530 LF
	Salinas Street	Jewel Cave	Arches	
	Wind River	Jewel Cave	Arches	
	Jewel Cave	Steamboat	200' south of Kings Canyon	
	Steamboat	Kings Canyon	Jewel Cave	
2. Sanitary Sewer				
A. 8" sanitary sewer.	Jewel Cave	Steamboat	200' South of Kings Canyon	Approximately 1200 LF
	Steamboat	Kings Canyon	Jewel Cave	
20' PUBLIC	Easement	Wind River	Steamboat	
3. Water Lines				
A. 6" water line.	Jewel Cave	Mendocino	Wind River	Approximately 2530 LF
	Salinas Street	Jewel Cave	Arches	
	Wind River	Jewel Cave	Arches	
	Jewel Cave	Steamboat	200' South of	
	~~Steamboat~~ STEAMBOAT	~~Kings Canyon~~ KINGS CANYON	Kings Canyon	
			Jewel Cave	
4. Miscellaneous				
A. Retaining Walls	Throughout Subdivision			Approximately 1000 LF
5. DRAINAGE				
A. 30" STORM DRAIN	ARCHES RD	CANYONLANDS RD.	WIND RIVER	
B. 30" STORM DRAIN	WIND RIVER ST	ARCHES ROAD	JEWEL CAVE RD.	
C. 30" STORM DRAIN	JEWEL CAVE RD	ALLEY		APPROXIMATELY 200 LF

Figure II
EXHIBIT "D"
Page 10

UNIT VI

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving				
A. 40' Residential paving, standard curb & gutter, 4' sidewalk. BOTH SIDES	Mendocino	Gibson AVE	Herman Roser	Approximately 1740 LF
B. Temporary Access (28' wide)	Easement	Mendocino	Juan Tabo	Approximately 1400 LF
C. TEMP INTESECTION CONFIG	EASEMENT INTERSECTION			
2. Water Line				
A. 6" water line.	Mendocino	Arches	Herman Roser	Approximately 900 LF
3. Drainage				
A. 30" storm drain.	Mendocino	Arches	50' ~~250'~~ South	Approximately 50 ~~250~~ LF

UNIT VII

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving				
A. 28' Residential paving, standard curb & gutter, 4' sidewalk. (BOTH SIDES)	Chiricahua Street	Wolf Creek	Thunder Basin	Approximately 2490 LF
	Wasatch Road	Chiricahua	Wolf Creek	
	Chiricahua Court	Wolf Creek	~~North End~~ CUL DE SAC	
	Wolf Creek Road	Chiricahua	Los Padres	
	Los Padres Street	Thunder Basin	Arches	
	Arches Road	Los Padres	Mendocino	
2. Sanitary Sewer				
A. 8" sanitary sewer.	Chiricahua Street	Wolf Creek	Jewel Cave	Approximately 3570 LF
	Wasatch Road	Chiricahua	Wolf Creek	
	Chiricahua Court	Wolf Creek	~~North~~ End OF CUL DE SAC	
	Wolf Creek Road	Chiricahua	Los Padres	
	Los Padres Street	Thunder Basin	Arches	
	Thunder Basin	Los Padres	Chiricahua	
	Easement	Gibson	Chiricahua	
3. Water Lines				
A. 6" water line.	Chiricahua Street	Wolf Creek	Thunder Basin	Approximately 3810 LF
	Wasatch Road	Chiricahua	Wolf Creek	
	Chiricahua Court	Wolf Creek	~~North~~ End OF CUL DE SAC	
	Wolf Creek Road	Chiricahua	Los Padres	
	Los Padres Street	Jewel Cave	Arches	
	Arches Road	Los Padres	Mendocino	
	Thunder Basin	Los Padres	Chiricahua	
4. Drainage				
A. 60" & 54" storm drain.	Chiricahua	Wasatch	Pond	Approximately 600 LF
5. Miscellaneous				
A. Retaining Wall	South Boundary			Approximately 480 LF

Figure II
EXHIBIT "D"
Page 12

UNIT VIII

ITEM	LOCATION	FROM	TO	DESCRIPTION
1. Paving *				
A. 28' Residential paving, standard curb & gutter, 4' sidewalk. BOTH SIDES	Chiricahua Street Thunder Basin Jewel Cave Los Padres Street GIBSON	Thunder Basin Chiricahua Chiricahua Jewel Cave MENDOCINO	Jewel Cave Los Padres Mendocino Thunder Basin W. PROP LINE **	Approximately 1820 LF
2. Sanitary Sewer				
A. 8" sanitary sewer.	Jewel Cave Los Padres Street	Chiricahua Jewel Cave	Mendocino Thunder Basin	Approximately 800 LF
3. Water Lines				
A. 6" water line.	Chiricahua Street Jewel Cave	Thunder Basin Chiricahua	Jewel Cave ~~Los Padres~~ MENDOCINO	Approximately 700 LF
4. Drainage				
A. 42" storm drain.	Chiricahua	Jewel Cave	Wasatch	Approximately 520 LF
5. Miscellaneous				
A. Retaining Walls	Throughout Subdivision			Approximately 600 LF

* TEMP TURNAROUNDS W TEMP C+G AS REQ'D

** ~~40'~~ 16' PAVEMENT, C+G, ~~4' SIDEWALK~~
(NORTH SIDE ONLY)

3/2/93 Certification for Grading includes retainning walls & private drainage improvements required for Financial Guarantee Release. Financial Guarantees are not required for these items.

DRB-92-106
S-92-22

WILLOWWOOD SUBDIVISION
INFRASTRUCTURE LIST
JULY 28, 1992
FOR PRELIMINARY PLAT APPROVAL

Approved on 8-4-92, by the Development Review Board

Planning Department — Date: 8-4-92 — 3-2-93

Utility Development Division, City Engineer — Date: 8-4-92 — RWK 3-2-93

Transportation Development Division, Traffic Engineer — Date: 8-04-92 — 3-02-93

Parks and Recreation Department — Date: 8/4/92 — 3/2/93

City Engineer/AMAFCA — Date: 8/4/92 — 3/2/93

APPENDIX B

NOTICE OF EMERGENCY RULE / RETENTION PONDING

CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

REF. NO._____

February 28, 1991

TO: Louis E. Saavedra, Mayor

FROM: Robert E. Gurule, Director, Public Works Department REG

SUBJECT: NOTICE OF EMERGENCY RULE/RETENTION PONDING

At the request of Mr. Kevin Murphy, the Hydrology Division has prepared a Notice Of Emergency Rule for your consideration. The purpose of this Emergency Rule is to formalize the City's policy.

Under the City's policy, retention ponding is allowed on a temporary basis only. We have found that the permanent retention ponds, a policy of the 1970's, became mosquito breeding areas and quickly failed as they became clogged with silt. We remedied this by allowing retention ponding as a temporary solution until proper drainage facilities were installed.

The DPM Steering Committee has created a drainage sub-committee to look into the retention pond question. The committee consists of private and public engineers and one professor from the university. The members are:

Dr. Richard Heggen, Civil Engineering Professor, UNM
Chuck Easterling, P.E., Easterling & Associates, Inc.
Brian Burnett, P.E., Bohannan-Huston, Inc.
Dwayne Sheppard, P.E., Public Works Department
Bob Foglesong, P.E., Bernalillo County Public Works
Cliff E. Anderson, P.E., AMAFCA
Fred Aguirre, P.E., Public Works Department

With the issuance of this Emergency Rule, we can approve plans which require retention on a temporary basis without creating a burden on the development community or the City. This rule will serve until the drainage sub-committee recommendations are adopted by the DPM Steering Committee.

Concur:

Walter H. Nickerson, Jr., P.E.

Concur:

Daniel W. Hogan 3/1/91

Daniel W. Hogan, P.E.

xc: Kevin Murphy

FJA:REG/bsj

NOTICE OF EMERGENCY RULE

Pursuant to Article XI, Chapter 7 of the Revised Ordinances of Albuquerque, 1974:

I, Louis E. Saavedra, Mayor of the City of Albuquerque, have determined that there are urgent and compelling reasons to include certain rules in the Development Process Manual relating to the Minimum Standards for the design of Subdivisions.

This modification of rules is necessary to preclude possible inaccuracies and inconsistencies in the application of certain design criteria for the design of drainage management and flood control systems within the platting and planning jurisdiction of the City of Albuquerque.

I, therefore, declare that the following modifications to the Development Process Manual of the City of Albuquerque shall become effective immediately:

Volume II, of the Development Process Manual shall be modified as follows:

Chapter 22, page 7. Expand part C.3. to include the following:

All Detention ponds must be evacuated in 24 hours or less. Ponds that take more than six hours to drain will be designed for a 24 hour storm. Credit for evacuation by means of percolation will not be taken into account.

Retention ponds will only be permitted on a temporary basis and will only be allowed on a case by case basis as determined by the City Engineer. The criteria for temporary ponds may include but are not limited to the following:

Design of the pond volume will be based on a 100 year 10 day storm with no percolation credit for volume reduction;

The inclusion of an emergency spillway with the pond to carry the 100 year design flow which enters the pond;

The acceptance by the owner of maintenance responsibilities and legal liabilities of the pond;

Approval by the State Engineer if the pond comes under that agent's jurisdiction; and,

Fencing as required by the City Engineer.

Additional modifications may be incorporated into the next periodic update of the Development Process Manual.

For further information regarding this matter, contact the City Engineer at telephone number 768-2650 or by mail at City/County Government Center, One Civic Plaza, Public Works Department, Engineering Group, 3rd Floor, 87103.

LSaavedra

Louis E. Saavedra, Mayor

TO BE PUBLISHED IN THE ALBUQUERQUE JOURNAL AND ALBUQUERQUE TRIBUNE ON _____.
date

APPENDIX C

DRAFT AGREEMENT REGARDING INFRASTRUCTURE

ADDENDUM #1

TO THE SUBDIVISION IMPROVEMENTS AGREEMENT
FOR MANZANO MESA/AGREEMENT TO CONSTRUCT
AND GUARANTEE PUBLIC IMPROVEMENTS

THIS ADDENDUM amends the Subdivision Improvements Agreement for Manzano Mesa dated May 22, 1991 and is made this _____ day of _____, 1992 by and between the City of Albuquerque, New Mexico ("City"), a municipal corporation, whose address is P.O. Box 1293, Albuquerque, New Mexico 87103 and Albuquerque Public Schools ("APS"), New Mexico Municipal School District #12, whose address is P.O. Box 25704, Albuquerque, New Mexico 87102, is made in Albuquerque, New Mexico, and is entered into as of the date of final execution of this agreement.

1. Recital

WHEREAS APS and the City have previously entered into a Subdivision Improvements Agreement dated May 22, 1991 regarding improvements for the Manzano Mesa Subdivision, and

WHEREAS the City requires an additional agreement regarding two additional storm drainage improvements related to development of Manzano Mesa prior to approving a plat for major subdivision, and.

WHEREAS the additional improvements can best be agreed to in an addendum to the original agreement dated May 22, 1991 so that all other provisions of the original agreement may still apply, and now therefore the City and APS agree as follows:

2. Improvements and Responsibility

A. At the time that the City's Eubank Storm Drain System (AMDS Project 2-03-18) is constructed, APS will bear the cost and responsibility for the construction of that portion of the Elizabeth Street storm drain system (as identified in the approved Drainage Master Plan for Manzano Mesa) between Eubank Boulevard and the Park site (Tract F, Manzano Mesa Replat).

B. Until such time as the Eubank and Elizabeth storm drains are in place, a temporary retention pond will be located in Tract F, the park site of Manzano Mesa, said pond to be constructed by the subdivision developer at the time of development. APS, as a public entity, agrees to accept responsibility for the maintenance of the pond, until such time as it is no longer needed due to the Eubank and Elizabeth storm drain systems availability for use.

3. Entire Addendum

This addendum contains the entire addendum to the agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

4. Terms of Original Agreement/Severability

All other terms and conditions of the original agreement dated May 22, 1991 still apply. If any part of this Addendum is held to be invalid or unenforceable, the remainder of the Addendum and the original Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

Executed on the date stated in the first paragraph of this Addendum.

ALBUQUERQUE PUBLIC SCHOOLS

By [Signature]:_____
Name:_____
Title:_____
Dated:_____

CITY OF ALBUQUERQUE

_____
Arthur A. Blumenfeld
Chief Administrative Officer
Dated:_____

Approved by:

_____
Director of Public Works

APS'S NOTARY

STATE OF NEW MEXICO)
) SS.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me on this _____ day of _____, 1992, by _____, _____, of Albuquerque Public Schools.

_____
Notary Public

My Commission Expires:

_____

CITY'S NOTARY

STATE OF NEW MEXICO)
) SS.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me on this _____ day of _____, 1992, by _____, Chief Administrative Officer of the City of Albuquerque. a municipal corporation, on behalf of said corporation.

_____
Notary Public

My Commission Expires:

_____

APPENDIX D

HYDROLOGY

SUMMARY OF SUBBASIN FLOWS BY THE RATIONAL METHOD

	EXISTING:			FUTURE:		
BASIN I.D.	AREA ACRES	PEAK FLOW CFS/ACRE	RUNOFF CFS	AREA ACRES	PEAK FLOW CFS/ACRE	RUNOFF CFS
A-1	8.5	1.87	16	8.5	4.02	34
A-2	6.4	1.87	12	6.4	4.02	26
A-3	7.6	1.87	14	7.6	4.02	30
A-4	5.5	1.87	10	5.5	4.02	22
A-5	1.3	1.87	02	1.3	4.02	05
A-6	3.4	1.87	07	3.3	4.02	13
A-7	5.8	1.87	11	5.8	4.02	23
A-8	10.8	1.87	20	10.8	4.02	43
A-9	1.4	1.87	03	1.4	4.02	06
A-10	4.3	1.87	08	4.3	4.02	17
A-11	5.7	1.87	11	5.7	4.02	23
A-12	7.7	1.87	14	7.7	4.02	31
A-13	1.9	1.87	04	0.9	4.02	04
A-14	4.3	1.87	08	5.3	4.02	21
A-15	3.0	1.87	06	3.0	4.02	12
B-1	7.0	1.87	13	7.0	4.02	28
B-2	3.8	1.87	07	3.8	4.02	15
B-3	6.8	1.87	13	6.8	4.02	27
B-4	4.8	1.87	09	4.8	4.02	19
C-1	25.0	1.87	29	--	--	--
[1] C-1-A	--	--	--	15.5	3.35	52.0
[2] C-1-B	--	--	--	05.0	4.02	20.1
[3] C-1-C	--	--	--	04.5	--	--

REVISIONS:
[1] APS future school site hydrologic parameters per aps request @ 3.35cfs/ac.
[2] Unit 9, add to WillowWood Units 1-8.
[3] Off-site, undeveloped flow intecepted by future streets.

NOTE: ALL TIMES OF CONCENTRATION (Tc) ARE = 0.1333 HOURS.

AVID ENGINEERING, INC.

Willow Wood - Hydrology

ASSUMPTIONS:

1.) Use 100 yr, 6 hr storm for finding peak flows.

2.) Use Albuquerque version of HYMO (AHYMO392) for hydrologic calculations. (See assumption #4)

3.) Use NOAA Atlas 2 raintall distributions: The site is on zone map L-21.

$P_{60} = 2.07''$

$P_{360} = 2.54''$

4.) For initial drainage structure sizing, calculate the peak flows from basins with the rational method:

Zone 3: 100 yr peak flow

Treatment:	A	B	C	D
Q_p (cfs/acre)	1.87	2.60	3.45	5.02

PROJECT NAME _____ SHEET _____ OF _____

PROJECT NO. _____ BY JB DATE 6-27-92

SUBJECT _____ CH'D _____ DATE _____

AVID ENGINEERING, INC.

4.) continued

For single family residential, with 5 units/acre,

$\% D = 7\sqrt{5^2+5^2} = 49.5$ say 50 %

assume remaining area is 25% B, 25% C.

$Q_{P/1\,acre} = 0.25(2.60) + 0.25(3.45) + .5(5.02)$

$= 4.02$ cfs/acre

For undeveloped conditions, area is 100 %

treatment A → $Q_{P/acre} = 1.87$ cfs/acre

For Basin C-1, the future school site,

% D = 50%, assume 25% B, 25% C

$Q_{P/ac} = 4.02$ cfs/acre

Assume pond is impervious → 100% D

PROJECT NAME _____ SHEET _____ OF _____

PROJECT NO. _____ BY JB DATE 6-22-92

SUBJECT _____ CH'D _____ DATE _____

AVID ENGINEERING, INC.

WILLOW WOOD - STREET & INLET CAPACITY CALCULATIONS

ASSUMPTIONS

1.) Use flows calculated with rational method and AHYMO392 version of HYMO for the 100 yr storm

2.) Use street capacities from Albuquerque DPM vol. 2, plates 22.3 D-1 + D-2.

3.) Use inlet capacities from DPM vol. 2 plates D-5 to D-7.

4.) Use rough grade slopes from topography.

~~5.) Since we use 28' and 36' sections, while the DPM charts for street capacity apply to 32' and 40' sections, convert flows to equivalent flows so we can use DPM charts:~~

$$\cancel{Q_{32} = 1.15\, Q_{28}}$$

$$\cancel{Q_{40} = 1.11\, Q_{36}}$$

Street flow depths computed using AHYMO Routing.

PROJECT NAME _____ SHEET _____ OF _____

PROJECT NO. _____ BY _____ DATE _____

SUBJECT _____ CH'D _____ DATE _____

AVID ENGINEERING, INC.

MANZANO MESA SUBDIVISION (WILLOWWOOD)

SIZE DRAINAGE POND RETENTION

USE DPM SEC 22.2 REVISED JAN '91

A.1) PRECIP ZONE 3

A.2) DESIGN STORM = 100 YR 10 DAY STORM, IN ACCORDANCE WITH "NOTICE OF EMERGENCY RULE — RETENTION PONDING"

$P_{10\,DAY} = 4.9''$

A.3) LAND TREATMENT

THIS PROJECT IS R-1, WITH 5 DU/AC. THE % IMPERVIOUS (TREATMENT D) IS CALC'D FROM TABLE 5.

$\% \text{ IMP} = 7\sqrt{(5)(5)+(5)(5)} = 50\%$

PROJECT NAME MANZANO MESA SHEET 1 OF
PROJECT NO. BY JD DATE 3/92
SUBJECT DRAINAGE (PONDS) CH'D DATE

AVID ENGINEERING, INC.

$$V_{10DAY} = 0.1394 + 0.5\,\frac{(4.9 - 2.6)}{12}$$

$$= 0.2352 \text{ A-F/ACRE}$$ RUNOFF

38 + 5 = 103 △2

THE DEVELOPED AREA IS ~~98~~ ACRES,

SO THE RUNOFF VOLUME FROM IT IS

$$V = (0.2352)(\cancel{98}\ 103) = \cancel{23.04}\ 24.22 \text{ A-F}$$ △2

THE SCHOOL SITE ALSO DRAINS TO THE POND, AND RAINFALL WHICH FALLS ON THE POND ALSO CONTRIBUTES TO THE VOLUME. THE SCHOOL SITE IS SHOWN AS BASIN C-1.

BASIN	AREA (AC)	TREATMENT	V_{360}	$V_{10\,DAY}$
C-1	~~25~~ 20	A	0.57"	2.87"
POND	5	D	2.33"	4.66"

PROJECT NAME MANZANO MESA SHEET 3 OF 4
PROJECT NO. BY JD DATE 5/92
SUBJECT DRAINAGE (PONDS) CH'D DATE

AVID ENGINEERING, INC.

BASIN	AREA (AC)	$V_{10\ DAY}$ (INCHES)	$V_{10\ DAY}$ (A-F)
C-1	~~25~~ 20	2.87	~~5.97~~ 4.78 (2)
POND	5	4.66	1.94

∴ VOLUME NEEDED FOR POND

= ~~23.04~~ 24.22 + ~~5.97~~ 4.78 + 1.94 (2)

= ~~30.95~~ 30.94 A-F (2)

USE 31 A-F

(2) REVISIONS TO INCORP. UNIT 9 5/95

PROJECT NAME MANZANO MESA SHEET 4 OF 4

PROJECT NO. BY JD DATE 5/92

SUBJECT POND CH'D DATE

AVID ENGINEERING, INC.

ASSUME THE REMANING AREA IS EVENLY DIVIDED BETWEEN TREATMENTS B AND C.

∴ TREATMENT B — 25%
TREATMENT C — 25%
TREATMENT D — 50%

A.5) CALCULATE EXCESS PRECIP.

	INCHES	TREATMENT
V_{360}:	0.83	B
	1.20	C
	2.33	D

TABLE 8

WEIGHTED $E = (.25)(.83) + (0.25)(1.2) + (0.5)(2.33)$
$= 1.67''$

$$\text{VOLUME}_{360} = 1\,AC \; \frac{1.67}{12} = 0.1394 \text{ A-F/ACRE}$$

PROJECT NAME MANZANO MESA SHEET 2 OF 4
PROJECT NO. BY JD DATE 5/92
SUBJECT DRAINAGE PONDS CH'D DATE

AVID ENGINEERING, INC.

PHASE 1 RUNOFF CALCS

DEVELOPED AREA = 15.5 AC

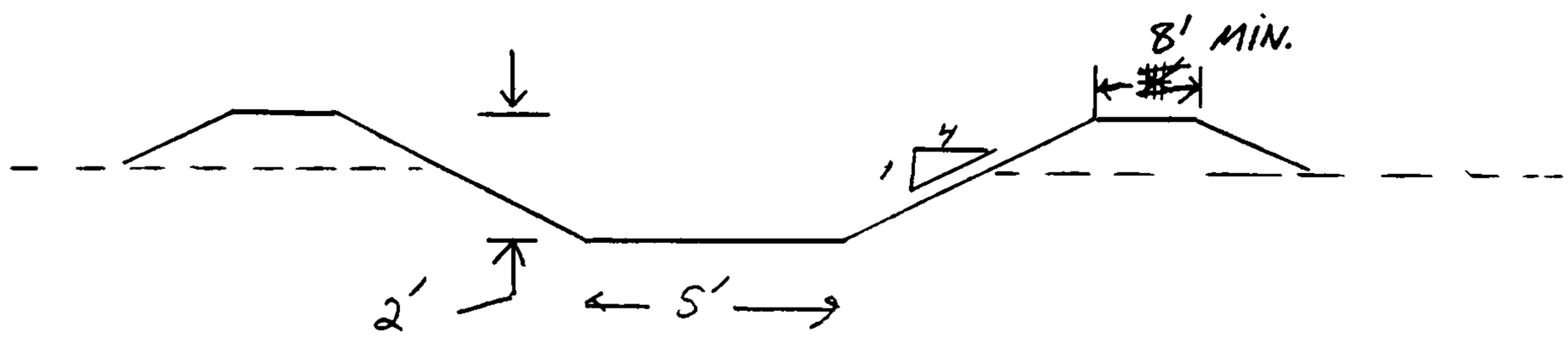
1) PEAK FLOW

Q_p = 4.02 cfs/AC, BASED ON LAND USE & DPM. (FROM PREVIOUS PART OF THIS REPORT)

$Q_p = (15.5)(4.02) = 62.31$ cfs

USE 65 cfs

THESE MUST BE CONVEYED TO THE POND. USE A GRADED EARTH CHANNEL



PROJECT NAME WILLOWOOD SHEET 1 OF 3
PROJECT NO. BY JD DATE 5/92
SUBJECT PHASE 1 CH'D DATE

AVID ENGINEERING, INC.

USING :

$n = 0.035$ 5' BOTTOM WIDTH

$S = 0.015$ 4:1 SIDESLOPES

$Q = 65$ CFS

FLOW DEPTH = 1.34 FT

VEL = 4.7 FT/SEC

OK

2) 10-DAY VOLUME

THE AREAS WHICH WILL GET DRAINED TO THE POND ONLY INCLUDE BASIN C-1, THE POND ITSELF AND THE PHASE 1 DEVELOPMENT. THE AREAS TO BE DEVELOPED IN FUTURE PHASES WILL DRAIN SOUTH OF THE POND (EXISTING CONDITION) UNTIL THE ARE DEVELOPED.

PROJECT NAME WILLOWWOOD SHEET 2 OF 3

PROJECT NO. BY JD DATE 5/92

SUBJECT PHASE 1 CH'D DATE

AVID ENGINEERING, INC.

BASIN	(AC) AREA	V 10 DAY (INCHES)	V 10 DAY (A-F)
C-1	25	2.87	5.97
POND	5	4.66	1.94
PHASE 1	16	(12)(.2352)	3.76
TOTAL	———		11.67 A-F

USE 12 A-F FOR PHASE I.

PROJECT NAME WILLOWWOOD SHEET 3 OF 3
PROJECT NO. BY JD DATE 5-93
SUBJECT PHASE 1 CH'D DATE

CHANNEL CAPACITY BASED ON NORMAL DEPTH
TRAPEZOIDAL CHANNEL WITH UNEVEN SIDESLOPES

INPUT DATA

n	0.0350
SLOPE	0.0150
BOTTOM WIDTH	5.00
SIDESLOPE 1	4.0
SIDESLOPE 2	4.0
DEPTH	1.34
Q-CALC	65.53

AREA	13.88
WP	16.05
R	0.86
R^.667	0.91
VEL	4.72
RADIUS	0.00
SE	0.00
FROUDE	0.78

Note: On curved alignments, use Sideslope 1 for OUTSIDE of curve.
(For Superelevation calculations.)

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
   RUN DATE (MON/DAY/YR) = 03/25/1995
   START TIME (HR:MIN:SEC) = 16:53:47     USER NO.= AVID__NM.I01
   INPUT FILE = OHYM95.IN

*WILLOW WOOD   23MARCH95
*COMPUTATIONS FOR 6 HR STORM (TYPE 1), ZONE 3
*ALL AREAS ARE 5 UNITS/ACRE: 50% D, 25% C, 25% B ASSUMED
*FILE: C:\PROJECTS\WILLOW\HYM95.IN
*REVISIONS [1] SCHOOL SITE PARAMETERS PER APS, BASIN C-1-A
*          [2] PHASE 6, UNIT 9 ADDED TO WILLOW WOOD, C-1-B
*          [3] OFFSITE DIVERTED BY FUTURE IMPROVEMENTS, C-1-C
START        TIME=0.0 HR  PUNCH CODE=0
RAINFALL       TYPE=1 (SIX HR STORM)  RAIN QUARTER=0.0 IN
         RAIN ONE=2.07 IN  RAIN SIX=2.54 IN
   RAIN DAY=0.0 IN  DT=0.0333333 HRS

         COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40
HR.

         DT =   .033333 HOURS     END TIME =    5.999995 HOURS
          .0000  .0029  .0059  .0090  .0121  .0154  .0186
          .0220  .0254  .0289  .0325  .0362  .0400  .0439
          .0479  .0520  .0562  .0606  .0651  .0698  .0746
          .0796  .0848  .0902  .0958  .1016  .1077  .1141
          .1209  .1280  .1355  .1412  .1473  .1539  .1679
          .1994  .2478  .3173  .4122  .5369  .6959  .8938
         1.1353 1.3587 1.4522 1.5311 1.6013 1.6652 1.7240
         1.7786 1.8297 1.8775 1.9225 1.9650 2.0051 2.0431
         2.0791 2.1132 2.1456 2.1763 2.2055 2.2128 2.2197
         2.2263 2.2327 2.2388 2.2446 2.2502 2.2557 2.2610
         2.2661 2.2710 2.2759 2.2805 2.2851 2.2896 2.2939
         2.2982 2.3023 2.3064 2.3103 2.3142 2.3181 2.3218
         2.3255 2.3291 2.3326 2.3361 2.3395 2.3429 2.3462
         2.3495 2.3527 2.3559 2.3590 2.3621 2.3651 2.3681
         2.3711 2.3740 2.3768 2.3797 2.3825 2.3853 2.3880
         2.3907 2.3934 2.3960 2.3987 2.4012 2.4038 2.4063
         2.4088 2.4113 2.4138 2.4162 2.4186 2.4210 2.4234
         2.4257 2.4280 2.4303 2.4326 2.4349 2.4371 2.4393
         2.4415 2.4437 2.4459 2.4480 2.4501 2.4522 2.4543
         2.4564 2.4585 2.4605 2.4626 2.4646 2.4666 2.4686
         2.4705 2.4725 2.4744 2.4764 2.4783 2.4802 2.4821
         2.4840 2.4858 2.4877 2.4895 2.4913 2.4932 2.4950
         2.4968 2.4986 2.5003 2.5021 2.5038 2.5056 2.5073
         2.5090 2.5107 2.5125 2.5141 2.5158 2.5175 2.5192
         2.5208 2.5225 2.5241 2.5257 2.5273 2.5290 2.5306
         2.5322 2.5337 2.5353 2.5369 2.5384 2.5400

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A3
COMPUTE NM HYD     ID=1  HYD NO=3  DA=0.0119 SQ MI
           %A=0.0  %B=25.0  %C=25.0  %D=50.0
```

TP=0.1333 HR
MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 23.491 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 2.0700
AREA = .005950 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .120467HR TP = .133300HR K/TP RATIO = .903729 SHAPE CONSTANT, N = 3.920589
UNIT PEAK = 15.616 CFS UNIT VOLUME = .9996 B = 349.84 P60 = 2.0700
AREA = .005950 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

OUTFLOW HYDROGRAPH REACH 3.00

RUNOFF VOLUME = 1.66364 INCHES = 1.0559 ACRE-FEET
PEAK DISCHARGE RATE = 29.55 CFS AT 1.500 HOURS BASIN AREA = .0119 SQ. MI.

*
*
*
*CHANNEL ROUTE (STREET) HERMAN ROSER
*40' SECTION, S=0.016
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100.00 MAX ELEV=100.67
CH SLP=0.016 FP SLP=0.016 N=0.017
DIST=40.0
00.0 100.67 0.0 100.00 2.0 100.13
20.0 100.49 38.0 100.13 40.0 100.00
40.0 100.67

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.09	2.17
100.11	.17	.26	3.26
100.14	.31	.52	5.11
100.18	.55	.96	8.63
100.21	.92	1.80	12.16
100.25	1.41	3.09	15.68
100.28	2.03	4.95	19.21
100.32	2.76	7.43	22.74
100.35	3.63	10.63	26.26

100.39	4.62	14.60	29.79
100.42	5.73	19.42	33.32
100.46	6.97	25.16	36.84
100.49	8.33	32.07	40.00
100.53	9.74	41.60	40.00
100.56	11.15	52.09	40.00
100.60	12.56	63.50	40.00
100.63	13.97	75.78	40.00
100.67	15.38	88.91	40.00

COMPUTE TRAVEL TIME ID=2 REACH NO=1 NO VS=1 L=1000 SLP=0.016

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.3794
.071	.077	.09	.2390
.106	.172	.26	.1824
.141	.310	.52	.1657
.176	.553	.96	.1592
.212	.919	1.80	.1422
.247	1.410	3.09	.1266
.282	2.025	4.95	.1137
.317	2.765	7.43	.1033
.353	3.629	10.63	.0949
.388	4.617	14.60	.0879
.423	5.730	19.42	.0819
.458	6.967	25.16	.0769
.494	8.327	32.07	.0721
.529	9.738	41.60	.0650
.564	11.148	52.09	.0594
.599	12.559	63.50	.0549
.635	13.969	75.78	.0512
.670	15.380	88.91	.0481

ROUTE ID=2 HYD NO=4 INFLOW ID=1
PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH REACH 4.00

RUNOFF VOLUME = 1.66367 INCHES = 1.0559 ACRE-FEET
PEAK DISCHARGE RATE = 25.43 CFS AT 1.567 HOURS BASIN AREA = .0119 SQ. MI.

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A4
COMPUTE NM HYD ID=1 HYD NO=4 DA=0.0086 SQ MI
%A=0.0 %B=25.0 %C=25.0 %D=50.0
TP=0.1333 HR

```
          MASS RAINFALL=-1

     K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =  16.977   CFS  UNIT VOLUME =  .9987      B =  526.28      P60 = 2.0700
     AREA =     .004300 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333


     K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
     UNIT PEAK =  11.285   CFS  UNIT VOLUME =  .9993      B =  349.84      P60 = 2.0700
     AREA =     .004300 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

   PRINT HYD        ID=1  CODE=1

                    OUTFLOW HYDROGRAPH REACH    4.00


   RUNOFF VOLUME =    1.66365 INCHES    =      .7631 ACRE-FEET
   PEAK DISCHARGE RATE =     21.36 CFS  AT   1.500 HOURS   BASIN AREA =   .0086 SQ. MI.



*
*
*
*ADD HYDROGRAPHS
ADD HYD          ID=3  HYD=4  ID I=2  ID II=1
PRINT HYD        ID=3  CODE=1

                    OUTFLOW HYDROGRAPH REACH    4.00


   RUNOFF VOLUME =    1.66361 INCHES    =     1.8189 ACRE-FEET
   PEAK DISCHARGE RATE =     45.27 CFS  AT   1.533 HOURS   BASIN AREA =   .0205 SQ. MI.


*
*
*COMPUTE DEPTH OF FLOW ONLY
*HERMAN ROSER AT WIND RIVER
*40' SECTION, S=0.0059
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.0059  FP SLP=0.0059  N=0.017
          DIST=40.0
          00.0   100.67  0.0   100.00   2.0   100.13
          20.0   100.49 38.0   100.13  40.0   100.00
          40.0   100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.05	2.17
100.11	.17	.16	3.26
100.14	.31	.32	5.11
100.18	.55	.59	8.63
100.21	.92	1.09	12.16
100.25	1.41	1.88	15.68
100.28	2.03	3.00	19.21
100.32	2.76	4.51	22.74
100.35	3.63	6.45	26.26
100.39	4.62	8.87	29.79
100.42	5.73	11.79	33.32
100.46	6.97	15.28	36.84
100.49	8.33	19.47	40.00
100.53	9.74	25.26	40.00
100.56	11.15	31.63	40.00
100.60	12.56	38.56	40.00
100.63	13.97	46.02	40.00
100.67	15.38	53.99	40.00

```
*
*
*WIND RIVER, AP4 BEFORE STORM DRAIN
*COMPUTE STREET FLOW DEPTHS ONLY
*40' SECTION, S=0.0092
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.0092  FP SLP=0.0092  N=0.017
          DIST=28.0
          00.0  100.67  0.0  100.00  2.0  100.13
          14.0  100.33 26.0  100.13  28.0  100.00
          28.0  100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.07	2.17
100.11	.17	.20	3.26
100.14	.31	.39	5.33
100.18	.57	.73	9.56
100.21	.99	1.41	13.79
100.25	1.55	2.50	18.02
100.28	2.26	4.08	22.25
100.32	3.12	6.22	26.48
100.35	4.09	9.44	28.00
100.39	5.08	13.53	28.00
100.42	6.07	18.17	28.00

100.46	7.06	23.34	28.00
100.49	8.04	29.01	28.00
100.53	9.03	35.16	28.00
100.56	10.02	41.76	28.00
100.60	11.01	48.80	28.00
100.63	11.99	56.27	28.00
100.67	12.98	64.15	28.00

```
*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-8
COMPUTE NM HYD     ID=1  HYD NO=8  DA=0.0169 SQ MI
           %A=0.0  %B=25.0  %C=25.0  %D=50.0
           TP=0.1333 HR
           MASS RAINFALL=-1

     K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =  33.361   CFS  UNIT VOLUME =   .9990      B =  526.28      P60 = 2.0700
     AREA =     .008450 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333


     K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
     UNIT PEAK =  22.177   CFS  UNIT VOLUME =   .9998      B =  349.84      P60 = 2.0700
     AREA =     .008450 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

  PRINT HYD        ID=1 CODE=1

                    OUTFLOW HYDROGRAPH REACH    8.00


    RUNOFF VOLUME =    1.66365 INCHES    =      1.4995 ACRE-FEET
    PEAK DISCHARGE RATE =     41.96 CFS  AT   1.500 HOURS   BASIN AREA =   .0169 SQ. MI.


*
*
*
*ADD HYDROGRAPHS
ADD HYD          ID=3  HYD=8  ID I=3  ID II=1
PRINT HYD        ID=3  CODE=1

                    OUTFLOW HYDROGRAPH REACH    8.00


    RUNOFF VOLUME =    1.66362 INCHES    =      3.3184 ACRE-FEET
    PEAK DISCHARGE RATE =     85.61 CFS  AT   1.533 HOURS   BASIN AREA =   .0374 SQ. MI.
```

```
*
*
*
*SPLIT HYDROGRAPH--STORM DRAIN INTERCEPTION AT AP8
DIVIDE HYD        ID=3  Q=50.0  ID I=4  HYD I=8 TO PIPE
                  ID II=3  HYD II=8 IN STREET
*S  AP8 PIPE FINAL
PRINT HYD         ID=4  CODE=1

                    OUTFLOW HYDROGRAPH REACH    8.00


  RUNOFF VOLUME =    1.66362 INCHES    =      2.8641 ACRE-FEET
  PEAK DISCHARGE RATE =     50.00 CFS  AT   1.433 HOURS   BASIN AREA =  .0323 SQ. MI.


*S  AP8 STREET FINAL
PRINT HYD         ID=3  CODE=1

                    OUTFLOW HYDROGRAPH REACH    8.00


  RUNOFF VOLUME =    1.66362 INCHES    =       .4543 ACRE-FEET
  PEAK DISCHARGE RATE =     35.61 CFS  AT   1.533 HOURS   BASIN AREA =  .0051 SQ. MI.


*
*
*KINGS CANYON
*CHANNEL ROUTE (STREET)
*28' SECTION
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.0342  FP SLP=0.0342  N=0.017
          DIST=28.0
          00.0   100.67  0.0   100.00  2.0   100.13
          14.0   100.33 26.0   100.13  28.0   100.00
          28.0   100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.02	1.09
100.07	.08	.13	2.17
100.11	.17	.38	3.26
100.14	.31	.74	5.33
100.18	.57	1.40	9.56
100.21	.99	2.72	13.79
100.25	1.55	4.82	18.02
100.28	2.26	7.86	22.25

100.32	3.12	11.99	26.48
100.35	4.09	18.21	28.00
100.39	5.08	26.08	28.00
100.42	6.07	35.03	28.00
100.46	7.06	45.00	28.00
100.49	8.04	55.93	28.00
100.53	9.03	67.78	28.00
100.56	10.02	80.51	28.00
100.60	11.01	94.09	28.00
100.63	11.99	108.49	28.00
100.67	12.98	123.68	28.00

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=270 SLP=0.0342

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.02	.0701
.071	.077	.13	.0441
.106	.172	.38	.0337
.141	.312	.74	.0314
.176	.574	1.40	.0306
.212	.986	2.72	.0272
.247	1.547	4.82	.0241
.282	2.257	7.86	.0215
.317	3.116	11.99	.0195
.353	4.094	18.21	.0169
.388	5.081	26.08	.0146
.423	6.068	35.03	.0130
.458	7.056	45.00	.0118
.494	8.043	55.93	.0108
.529	9.031	67.78	.0100
.564	10.018	80.51	.0093
.599	11.005	94.09	.0088
.635	11.993	108.49	.0083
.670	12.980	123.68	.0079

ROUTE ID=5 HYD NO=8 INFLOW ID=3
*S ROUTE STREET FLOW AP8 TO AP9
PRINT HYD ID=5 CODE=1

OUTFLOW HYDROGRAPH REACH 8.00

RUNOFF VOLUME = 1.66463 INCHES = .4546 ACRE-FEET
PEAK DISCHARGE RATE = 37.46 CFS AT 1.533 HOURS BASIN AREA = .0051 SQ. MI.

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-9

```
COMPUTE NM HYD     ID=1  HYD NO=9  DA=0.0022 SQ MI
           %A=0.0  %B=25.0  %C=25.0  %D=50.0
           TP=0.1333 HR
           MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  4.3429   CFS  UNIT VOLUME =  .9969     B =  526.28     P60 = 2.0700
  AREA =    .001100 SQ MI   IA =  .10000 INCHES   INF =  .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333


  K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
  UNIT PEAK =  2.8869   CFS  UNIT VOLUME =  .9959     B =  349.84     P60 = 2.0700
  AREA =    .001100 SQ MI   IA =  .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

PRINT HYD        ID=1 CODE=1

                    OUTFLOW HYDROGRAPH REACH    9.00


  RUNOFF VOLUME =    1.66364 INCHES    =      .1952 ACRE-FEET
  PEAK DISCHARGE RATE =     5.48 CFS  AT   1.500 HOURS   BASIN AREA =  .0022 SQ. MI.


*
*
*
*S  AP9 STREET FLOW FROM AP8
*ADD HYDROGRAPHS
ADD HYD          ID=5  HYD=9  ID I=5  ID II=1
PRINT HYD        ID=5  CODE=1

                    OUTFLOW HYDROGRAPH REACH    9.00


  RUNOFF VOLUME =    1.66423 INCHES    =      .6497 ACRE-FEET
  PEAK DISCHARGE RATE =    42.73 CFS  AT   1.533 HOURS   BASIN AREA =  .0073 SQ. MI.


*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-1
COMPUTE NM HYD     ID=1  HYD NO=12.51  DA=0.0133 SQ MI
           %A=0.0  %B=25.0  %C=25.0  %D=50.0
           TP=0.1333 HR
           MASS RAINFALL=-1

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

UNIT PEAK = 26.255 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 2.0700
AREA = .006650 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .120467HR TP = .133300HR K/TP RATIO = .903729 SHAPE CONSTANT, N = 3.920589
UNIT PEAK = 17.453 CFS UNIT VOLUME = .9997 B = 349.84 P60 = 2.0700
AREA = .006650 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

OUTFLOW HYDROGRAPH REACH 12.51

RUNOFF VOLUME = 1.66365 INCHES = 1.1801 ACRE-FEET
PEAK DISCHARGE RATE = 33.03 CFS AT 1.500 HOURS BASIN AREA = .0133 SQ. MI.

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-2
COMPUTE NM HYD ID=2 HYD NO=12.52 DA=0.01 SQ MI
%A=0.0 %B=25.0 %C=25.0 %D=50.0
TP=0.1333 HR
MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 19.740 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 2.0700
AREA = .005000 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .120467HR TP = .133300HR K/TP RATIO = .903729 SHAPE CONSTANT, N = 3.920589
UNIT PEAK = 13.122 CFS UNIT VOLUME = .9994 B = 349.84 P60 = 2.0700
AREA = .005000 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH REACH 12.52

RUNOFF VOLUME = 1.66365 INCHES = .8873 ACRE-FEET
PEAK DISCHARGE RATE = 24.84 CFS AT 1.500 HOURS BASIN AREA = .0100 SQ. MI.

```
*
*
*ROUTE A2 THROUGH A1
*CHANNEL ROUTE (STREET)
*28' SECTION, S=0.0062
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.0062  FP SLP=0.0062  N=0.017
          DIST=28.0
          00.0  100.67  0.0  100.00  2.0  100.13
          14.0  100.33 26.0  100.13  28.0  100.00
          28.0  100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.06	2.17
100.11	.17	.16	3.26
100.14	.31	.32	5.33
100.18	.57	.60	9.56
100.21	.99	1.16	13.79
100.25	1.55	2.05	18.02
100.28	2.26	3.35	22.25
100.32	3.12	5.11	26.48
100.35	4.09	7.75	28.00
100.39	5.08	11.10	28.00
100.42	6.07	14.92	28.00
100.46	7.06	19.16	28.00
100.49	8.04	23.82	28.00
100.53	9.03	28.86	28.00
100.56	10.02	34.28	28.00
100.60	11.01	40.06	28.00
100.63	11.99	46.19	28.00
100.67	12.98	52.66	28.00

```
COMPUTE TRAVEL TIME ID=3  REACH NO=1  NO VS=1 L=400 SLP=0.0062
```

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.2438
.071	.077	.06	.1536
.106	.172	.16	.1172
.141	.312	.32	.1091
.176	.574	.60	.1066
.212	.986	1.16	.0947
.247	1.547	2.05	.0838
.282	2.257	3.35	.0749
.317	3.116	5.11	.0678

.353	4.094	7.75	.0587
.388	5.081	11.10	.0508
.423	6.068	14.92	.0452
.458	7.056	19.16	.0409
.494	8.043	23.82	.0375
.529	9.031	28.86	.0348
.564	10.018	34.28	.0325
.599	11.005	40.06	.0305
.635	11.993	46.19	.0288
.670	12.980	52.66	.0274

```
ROUTE        ID=3  HYD NO=2  INFLOW ID=2
PRINT HYD      ID=3  CODE=1
```

OUTFLOW HYDROGRAPH REACH 2.00

RUNOFF VOLUME = 1.66367 INCHES = .8873 ACRE-FEET
PEAK DISCHARGE RATE = 24.28 CFS AT 1.533 HOURS BASIN AREA = .0100 SQ. MI.

```
*
*
*
*ADD HYDROGRAPHS
ADD HYD        ID=2  HYD=2  ID I=1  ID II=3
PRINT HYD       ID=2  CODE=1
```

OUTFLOW HYDROGRAPH REACH 2.00

RUNOFF VOLUME = 1.66362 INCHES = 2.0673 ACRE-FEET
PEAK DISCHARGE RATE = 56.03 CFS AT 1.533 HOURS BASIN AREA = .0233 SQ. MI.

```
*
*
*ROUTE A1 AND A2 THROUGH A5 TO AP9
*CHANNEL ROUTE (STREET)
*28' SECTION, S=0.0085
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.0085  FP SLP=0.0085  N=0.017
          DIST=28.0
          00.0  100.67  0.0  100.00  2.0  100.13
          14.0  100.33 26.0  100.13  28.0  100.00
          28.0  100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00

100.04	.02	.01	1.09
100.07	.08	.06	2.17
100.11	.17	.19	3.26
100.14	.31	.37	5.33
100.18	.57	.70	9.56
100.21	.99	1.35	13.79
100.25	1.55	2.40	18.02
100.28	2.26	3.92	22.25
100.32	3.12	5.98	26.48
100.35	4.09	9.08	28.00
100.39	5.08	13.00	28.00
100.42	6.07	17.46	28.00
100.46	7.06	22.43	28.00
100.49	8.04	27.88	28.00
100.53	9.03	33.79	28.00
100.56	10.02	40.14	28.00
100.60	11.01	46.91	28.00
100.63	11.99	54.09	28.00
100.67	12.98	61.66	28.00

COMPUTE TRAVEL TIME ID=1 REACH NO=1 NO VS=1 L=400 SLP=0.0085

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.2082
.071	.077	.06	.1312
.106	.172	.19	.1001
.141	.312	.37	.0932
.176	.574	.70	.0911
.212	.986	1.35	.0809
.247	1.547	2.40	.0715
.282	2.257	3.92	.0640
.317	3.116	5.98	.0579
.353	4.094	9.08	.0501
.388	5.081	13.00	.0434
.423	6.068	17.46	.0386
.458	7.056	22.43	.0349
.494	8.043	27.88	.0320
.529	9.031	33.79	.0297
.564	10.018	40.14	.0277
.599	11.005	46.91	.0261
.635	11.993	54.09	.0246
.670	12.980	61.66	.0234

ROUTE ID=1 HYD NO=9 INFLOW ID=2
PRINT HYD ID=1 CODE=1

OUTFLOW HYDROGRAPH REACH 9.00

RUNOFF VOLUME = 1.66364 INCHES = 2.0673 ACRE-FEET
PEAK DISCHARGE RATE = 56.73 CFS AT 1.533 HOURS BASIN AREA = .0233 SQ. MI.

```
*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-5
COMPUTE NM HYD     ID=2  HYD NO=12.55  DA=0.0020 SQ MI
           %A=0.0  %B=25.0  %C=25.0  %D=50.0
           TP=0.1333 HR
           MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  3.9481   CFS  UNIT VOLUME =  .9965     B =  526.28     P60 = 2.0700
  AREA =    .001000 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

  K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
  UNIT PEAK =  2.6245   CFS  UNIT VOLUME =  .9954     B =  349.84     P60 = 2.0700
  AREA =    .001000 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

PRINT HYD        ID=2 CODE=1

                    OUTFLOW HYDROGRAPH REACH   12.55


  RUNOFF VOLUME =    1.66365 INCHES    =      .1775 ACRE-FEET
  PEAK DISCHARGE RATE =     4.98 CFS  AT   1.500 HOURS   BASIN AREA =   .0020 SQ. MI.


*
*
*
*ADD HYDROGRAPHS
ADD HYD          ID=1  HYD=9  ID I=1  ID II=2
PRINT HYD        ID=1  CODE=1

                    OUTFLOW HYDROGRAPH REACH   9.00


  RUNOFF VOLUME =    1.66362 INCHES    =     2.2448 ACRE-FEET
  PEAK DISCHARGE RATE =    61.52 CFS  AT   1.533 HOURS   BASIN AREA =   .0253 SQ. MI.


*
*
*COMPUTE FLOW DEPTHS AT AP9 NORTH ONLY
*CHANNEL ROUTE (STREET)
*28' SECTION, S=0.0085
```

```
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.0085  FP SLP=0.0085  N=0.017
          DIST=28.0
          00.0  100.67  0.0  100.00  2.0  100.13
          14.0  100.33 26.0  100.13  28.0  100.00
          28.0  100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.06	2.17
100.11	.17	.19	3.26
100.14	.31	.37	5.33
100.18	.57	.70	9.56
100.21	.99	1.35	13.79
100.25	1.55	2.40	18.02
100.28	2.26	3.92	22.25
100.32	3.12	5.98	26.48
100.35	4.09	9.08	28.00
100.39	5.08	13.00	28.00
100.42	6.07	17.46	28.00
100.46	7.06	22.43	28.00
100.49	8.04	27.88	28.00
100.53	9.03	33.79	28.00
100.56	10.02	40.14	28.00
100.60	11.01	46.91	28.00
100.63	11.99	54.09	28.00
100.67	12.98	61.66	28.00

```
*
*
*ST DR FLOW COLLECTED AT AP9, CANYONLANDS
DIVIDE HYD        ID=1  Q=70.0  ID I=6  HYD I=9.2 TO PIPE
                  ID II=7  HYD II=9.1 IN STREET
PRINT HYD         ID=6  CODE=1
```

OUTFLOW HYDROGRAPH REACH 9.20

RUNOFF VOLUME = 1.66362 INCHES = 2.2448 ACRE-FEET
PEAK DISCHARGE RATE = 61.52 CFS AT 1.533 HOURS BASIN AREA = .0253 SQ. MI.

```
PRINT HYD         ID=7  CODE=1
```

OUTFLOW HYDROGRAPH REACH 9.10

RUNOFF VOLUME = .00000 INCHES = .0000 ACRE-FEET
PEAK DISCHARGE RATE = .00 CFS AT -.033 HOURS BASIN AREA = .0000 SQ. MI.

```
*
*
*
*S  STREET FLOW FROM AP9 FINAL
*ADD HYDROGRAPHS
ADD HYD          ID=7  HYD=9  ID I=7  ID II=5
PRINT HYD        ID=7  CODE=1
```

OUTFLOW HYDROGRAPH REACH 9.00

RUNOFF VOLUME = 1.66423 INCHES = .6497 ACRE-FEET
PEAK DISCHARGE RATE = 42.73 CFS AT 1.533 HOURS BASIN AREA = .0073 SQ. MI.

```
*
*
*
*CHANNEL ROUTE (STREET), ap9 to ap10
*28' SECTION, S=0.010
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.010  FP SLP=0.010  N=0.017
          DIST=28.0
          00.0  100.67  0.0  100.00  2.0  100.13
          14.0  100.33 26.0  100.13  28.0  100.00
          28.0  100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.07	2.17
100.11	.17	.21	3.26
100.14	.31	.40	5.33
100.18	.57	.76	9.56
100.21	.99	1.47	13.79
100.25	1.55	2.61	18.02
100.28	2.26	4.25	22.25
100.32	3.12	6.49	26.48
100.35	4.09	9.85	28.00
100.39	5.08	14.10	28.00
100.42	6.07	18.94	28.00
100.46	7.06	24.33	28.00
100.49	8.04	30.25	28.00
100.53	9.03	36.65	28.00
100.56	10.02	43.54	28.00
100.60	11.01	50.88	28.00
100.63	11.99	58.66	28.00

100.67 12.98 66.88 28.00

COMPUTE TRAVEL TIME ID=9 REACH NO=1 NO VS=1 L=800 SLP=0.010

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.3839
.071	.077	.07	.2418
.106	.172	.21	.1846
.141	.312	.40	.1719
.176	.574	.76	.1679
.212	.986	1.47	.1492
.247	1.547	2.61	.1319
.282	2.257	4.25	.1179
.317	3.116	6.49	.1068
.353	4.094	9.85	.0924
.388	5.081	14.10	.0801
.423	6.068	18.94	.0712
.458	7.056	24.33	.0644
.494	8.043	30.25	.0591
.529	9.031	36.65	.0548
.564	10.018	43.54	.0511
.599	11.005	50.88	.0481
.635	11.993	58.66	.0454
.670	12.980	66.88	.0431

ROUTE ID=9 HYD NO=10 INFLOW ID=7

*S ROUTE STREET FLOW AP9 TO AP10, SALINAS ST

PRINT HYD ID=9 CODE=1

OUTFLOW HYDROGRAPH REACH 10.00

RUNOFF VOLUME = 1.66430 INCHES = .6497 ACRE-FEET

PEAK DISCHARGE RATE = 36.60 CFS AT 1.567 HOURS BASIN AREA = .0073 SQ. MI.

*

*

*

*S PIPE FLOW FROM AP9 FINAL

*ADD HYDROGRAPHS

ADD HYD ID=4 HYD=9 ID I=4 ID II=6

PRINT HYD ID=4 CODE=1

OUTFLOW HYDROGRAPH REACH 9.00

RUNOFF VOLUME = 1.66362 INCHES = 5.1088 ACRE-FEET

PEAK DISCHARGE RATE = 111.52 CFS AT 1.533 HOURS BASIN AREA = .0576 SQ. MI.

```
*
*
*
*ROUTE PIPE AP9 TO AP12
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1 (PIPE)
          SLOPE=0.011  DIA=3.5 FEET
          N=0.015
```

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.18	.19	.48	1.56
.36	.53	2.08	2.14
.55	.96	4.84	2.54
.73	1.45	8.71	2.84
.91	1.99	13.59	3.07
1.09	2.57	19.40	3.25
1.28	3.17	25.99	3.37
1.46	3.80	33.23	3.45
1.64	4.43	40.96	3.49
1.82	5.07	49.02	3.50
2.01	5.70	57.23	3.50
2.19	6.33	65.39	3.50
2.37	6.94	73.29	3.50
2.55	7.52	80.69	3.50
2.74	8.07	87.31	3.50
2.92	8.57	92.81	3.50
3.10	9.01	96.75	3.50
3.28	9.37	98.37	3.50
3.50	9.62	98.37	3.50

```
COMPUTE TRAVEL TIME ID=6  REACH NO=1  VS NO=1  L=400 FEET
          SLOPE=0.011
```

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.182	.191	.48	.0443
.365	.532	2.08	.0284
.547	.961	4.84	.0221
.730	1.453	8.71	.0185
.912	1.994	13.59	.0163
1.094	2.571	19.40	.0147
1.277	3.175	25.99	.0136
1.459	3.797	33.23	.0127
1.641	4.431	40.96	.0120
1.824	5.069	49.02	.0115
2.006	5.704	57.23	.0111
2.189	6.330	65.39	.0108

2.371	6.938	73.29	.0105
2.553	7.520	80.69	.0104
2.736	8.069	87.31	.0103
2.918	8.571	92.81	.0103
3.101	9.014	96.75	.0104
3.283	9.374	98.37	.0106
3.500	9.621	98.37	.0109

ROUTE ID=6 HYD NO=12 INFLOW ID=4
TRAVEL TIME TABLE EXCEEDED
PRINT HYD ID=6 CODE=1

OUTFLOW HYDROGRAPH REACH 12.00

RUNOFF VOLUME = 1.66363 INCHES = 5.1088 ACRE-FEET
PEAK DISCHARGE RATE = 111.00 CFS AT 1.533 HOURS BASIN AREA = .0576 SQ. MI.

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-11,A-12
COMPUTE NM HYD ID=1 HYD NO=11.12 DA=0.0209 SQ MI
%A=0.0 %B=25.0 %C=25.0 %D=50.0
TP=0.1333 HR
MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 41.257 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 2.0700
AREA = .010450 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .120467HR TP = .133300HR K/TP RATIO = .903729 SHAPE CONSTANT, N = 3.920589
UNIT PEAK = 27.426 CFS UNIT VOLUME = .9999 B = 349.84 P60 = 2.0700
AREA = .010450 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

OUTFLOW HYDROGRAPH REACH 11.12

RUNOFF VOLUME = 1.66365 INCHES = 1.8544 ACRE-FEET
PEAK DISCHARGE RATE = 51.89 CFS AT 1.500 HOURS BASIN AREA = .0209 SQ. MI.

*
*
*

```
*ST DR FLOW COLLECTED AT AP12
DIVIDE HYD        ID=1  Q=40.0  ID I=8  HYD I=12 TO PIPE
                   ID II=3  HYD II=12 IN STREET
PRINT HYD         ID=8  CODE=1

                    OUTFLOW HYDROGRAPH REACH    12.00


  RUNOFF VOLUME =    1.66363 INCHES    =      1.7633 ACRE-FEET
  PEAK DISCHARGE RATE =     40.00 CFS  AT   1.467 HOURS   BASIN AREA =   .0199 SQ. MI.


PRINT HYD         ID=3  CODE=1

                    OUTFLOW HYDROGRAPH REACH    12.00

  RUNOFF VOLUME =    1.66363 INCHES    =       .0911 ACRE-FEET
  PEAK DISCHARGE RATE =     11.89 CFS  AT   1.500 HOURS   BASIN AREA =   .0010 SQ. MI.


*
*
*CHANNEL ROUTE (STREET)
*28' SECTION, S=0.010
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.01  FP SLP=0.01  N=0.017
          DIST=28.0
          00.0   100.67  0.0   100.00   2.0   100.13
          14.0   100.33 26.0   100.13  28.0   100.00
          28.0   100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.07	2.17
100.11	.17	.21	3.26
100.14	.31	.40	5.33
100.18	.57	.76	9.56
100.21	.99	1.47	13.79
100.25	1.55	2.61	18.02
100.28	2.26	4.25	22.25
100.32	3.12	6.49	26.48
100.35	4.09	9.85	28.00
100.39	5.08	14.10	28.00
100.42	6.07	18.94	28.00
100.46	7.06	24.33	28.00
100.49	8.04	30.25	28.00

100.53	9.03	36.65	28.00
100.56	10.02	43.54	28.00
100.60	11.01	50.88	28.00
100.63	11.99	58.66	28.00
100.67	12.98	66.88	28.00

COMPUTE TRAVEL TIME ID=11 REACH NO=1 NO VS=1 L=270 SLP=0.0100

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.1296
.071	.077	.07	.0816
.106	.172	.21	.0623
.141	.312	.40	.0580
.176	.574	.76	.0567
.212	.986	1.47	.0503
.247	1.547	2.61	.0445
.282	2.257	4.25	.0398
.317	3.116	6.49	.0360
.353	4.094	9.85	.0312
.388	5.081	14.10	.0270
.423	6.068	18.94	.0240
.458	7.056	24.33	.0217
.494	8.043	30.25	.0199
.529	9.031	36.65	.0185
.564	10.018	43.54	.0173
.599	11.005	50.88	.0162
.635	11.993	58.66	.0153
.670	12.980	66.88	.0146

ROUTE ID=11 HYD NO=12 INFLOW ID=3
*S ROUTE STREET FLOW AP12 TO AP10, ARCHES RD
PRINT HYD ID=11 CODE=1

OUTFLOW HYDROGRAPH REACH 12.00

RUNOFF VOLUME = 1.66866 INCHES = .0914 ACRE-FEET
PEAK DISCHARGE RATE = 10.81 CFS AT 1.533 HOURS BASIN AREA = .0010 SQ. MI.

*
*
*
*S PIPE FLOW FINAL AP12
*ADD HYDROGRAPHS
ADD HYD ID=10 HYD=12 ID I=8 ID II=6
PRINT HYD ID=10 CODE=1

OUTFLOW HYDROGRAPH REACH 12.00

RUNOFF VOLUME = 1.66362 INCHES = 6.8721 ACRE-FEET
PEAK DISCHARGE RATE = 151.00 CFS AT 1.533 HOURS BASIN AREA = .0775 SQ. MI.

*
*
*
*ROUTE PIPE AP12 TO AP10
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 (PIPE)
SLOPE=0.011 DIA=4.0 FEET
N=0.015

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.21	.25	.68	1.78
.42	.69	2.97	2.44
.63	1.25	6.91	2.91
.83	1.90	12.43	3.25
1.04	2.60	19.41	3.51
1.25	3.36	27.69	3.71
1.46	4.15	37.10	3.85
1.67	4.96	47.44	3.94
1.88	5.79	58.48	3.99
2.08	6.62	69.99	4.00
2.29	7.45	81.71	4.00
2.50	8.27	93.36	4.00
2.71	9.06	104.63	4.00
2.92	9.82	115.20	4.00
3.13	10.54	124.65	4.00
3.34	11.20	132.51	4.00
3.54	11.77	138.14	4.00
3.75	12.24	140.45	4.00
4.00	12.57	140.45	4.00

COMPUTE TRAVEL TIME ID=12 REACH NO=1 VS NO=1 L=270 FEET
SLOPE=0.011

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.68	.0274
.417	.695	2.97	.0175
.625	1.255	6.91	.0136
.834	1.898	12.43	.0115
1.042	2.604	19.41	.0101
1.251	3.358	27.69	.0091
1.459	4.146	37.10	.0084
1.668	4.960	47.44	.0078

```
                    1.876     5.788     58.48     .0074
                    2.084     6.621     69.99     .0071
                    2.293     7.451     81.71     .0068
                    2.501     8.267     93.36     .0066
                    2.710     9.062    104.63     .0065
                    2.918     9.823    115.20     .0064
                    3.127    10.539    124.65     .0063
                    3.335    11.195    132.51     .0063
                    3.544    11.773    138.14     .0064
                    3.752    12.243    140.45     .0065
                    4.000    12.566    140.45     .0067
  ROUTE          ID=12  HYD NO=10  INFLOW ID=10
TRAVEL TIME TABLE EXCEEDED
  PRINT HYD        ID=12 CODE=1

                    OUTFLOW HYDROGRAPH REACH    10.00

    RUNOFF VOLUME =    1.66363 INCHES    =      6.8721 ACRE-FEET
    PEAK DISCHARGE RATE =    150.28 CFS  AT   1.533 HOURS   BASIN AREA =   .0775 SQ. MI.


  *
  *
  *
  *COMPUTE HYDROGRAPH FOR BASIN A-10
  COMPUTE NM HYD     ID=1  HYD NO=10  DA=0.0067 SQ MI
            %A=0.0  %B=25.0  %C=25.0  %D=50.0
            TP=0.1333 HR
            MASS RAINFALL=-1

    K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =  13.226   CFS  UNIT VOLUME =   .9985 .   B =  526.28     P60 = 2.0700
    AREA =     .003350 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

    K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
    UNIT PEAK =  8.7919   CFS  UNIT VOLUME =   .9989     B =  349.84     P60 = 2.0700
    AREA =     .003350 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

  PRINT HYD        ID=1  CODE=1

                    OUTFLOW HYDROGRAPH REACH    10.00


    RUNOFF VOLUME =    1.66365 INCHES    =       .5945 ACRE-FEET
    PEAK DISCHARGE RATE =     16.65 CFS  AT   1.500 HOURS   BASIN AREA =   .0067 SQ. MI.
```

```
*
*
*
*S  STREET FLOW AP10, SALINAS
*ADD HYDROGRAPHS
ADD HYD          ID=13  HYD=10  ID I=1  ID II=9
PRINT HYD        ID=13  CODE=1

                    OUTFLOW HYDROGRAPH REACH    10.00


  RUNOFF VOLUME =    1.66393 INCHES    =     1.2442 ACRE-FEET
  PEAK DISCHARGE RATE =     50.68 CFS  AT   1.567 HOURS   BASIN AREA =   .0140 SQ. MI.


*
*
*
*S  STREET FLOW AP10, SALINAS
*ADD HYDROGRAPHS
ADD HYD          ID=13  HYD=10  ID I=13  ID II=11
PRINT HYD        ID=13  CODE=1

                    OUTFLOW HYDROGRAPH REACH    10.00


  RUNOFF VOLUME =    1.66422 INCHES    =     1.3355 ACRE-FEET
  PEAK DISCHARGE RATE =     58.24 CFS  AT   1.567 HOURS   BASIN AREA =   .0150 SQ. MI.


*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-13
COMPUTE NM HYD     ID=1  HYD NO=13  DA=0.0014 SQ MI
           %A=0.0  %B=25.0  %C=25.0  %D=50.0
           TP=0.1333 HR
           MASS RAINFALL=-1

    K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =  2.7636   CFS  UNIT VOLUME =   .9955      B =  526.28      P60 = 2.0700
    AREA =     .000700 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333


    K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
    UNIT PEAK =  1.8371   CFS  UNIT VOLUME =   .9932      B =  349.84      P60 = 2.0700
    AREA =     .000700 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333
```

```
PRINT HYD        ID=1 CODE=1

                    OUTFLOW HYDROGRAPH REACH   13.00

  RUNOFF VOLUME =    1.66364 INCHES    =      .1242 ACRE-FEET
  PEAK DISCHARGE RATE =     3.49 CFS  AT   1.500 HOURS   BASIN AREA =  .0014 SQ. MI.

*
*
*
*S  STREET FLOW AP10, BEFORE SD
*ADD HYDROGRAPHS
ADD HYD          ID=13  HYD=10  ID I=1  ID II=13
PRINT HYD        ID=13  CODE=1

                    OUTFLOW HYDROGRAPH REACH   10.00

  RUNOFF VOLUME =    1.66415 INCHES    =     1.4597 ACRE-FEET
  PEAK DISCHARGE RATE =    61.20 CFS  AT   1.567 HOURS   BASIN AREA =  .0164 SQ. MI.

*
*
*
*ST DR FLOW COLLECTED AT AP10
DIVIDE HYD       ID=13  Q=24.0  ID I=14  HYD I=10 TO PIPE
                 ID II=15  HYD II=10 IN STREET
*S  FINAL STREET FLOW AP10, ARCHES & SALINAS
PRINT HYD        ID=15  CODE=1

                    OUTFLOW HYDROGRAPH REACH   10.00

  RUNOFF VOLUME =    1.66416 INCHES    =      .3852 ACRE-FEET
  PEAK DISCHARGE RATE =    37.20 CFS  AT   1.567 HOURS   BASIN AREA =  .0043 SQ. MI.

*S FINAL PIPE FLOW AP10, ARCHES RD & SALINAS
PRINT HYD        ID=14  CODE=1

                    OUTFLOW HYDROGRAPH REACH   10.00

  RUNOFF VOLUME =    1.66416 INCHES    =     1.0745 ACRE-FEET
  PEAK DISCHARGE RATE =    24.00 CFS  AT   1.467 HOURS   BASIN AREA =  .0121 SQ. MI.
```

```
*
*
*
*ADD HYD FINAL STORM AP10
ADD HYD        ID=16  HYD=7  ID I=12  ID II=14
PRINT HYD      ID=16  CODE=1

                    OUTFLOW HYDROGRAPH REACH    7.00


  RUNOFF VOLUME =    1.66369 INCHES    =     7.9466 ACRE-FEET
  PEAK DISCHARGE RATE =    174.28 CFS  AT   1.533 HOURS   BASIN AREA =   .0896 SQ. MI.


*
*
*
*ROUTE PIPE AP10 TO AP7
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1 (PIPE)
          SLOPE=0.011  DIA=5.0 FEET
          N=0.015

                RATING CURVE PIPE SECTION  1.0
                 WATER     FLOW      FLOW      MAX
                SURFACE    AREA      RATE      WIDTH
                 ELEV      SQ FT     CFS       FT
                  .00       .00       .00       .00
                  .26       .39      1.24      2.22
                  .52      1.09      5.39      3.06
                  .78      1.96     12.53      3.63
                 1.04      2.97     22.54      4.06
                 1.30      4.07     35.19      4.39
                 1.56      5.25     50.21      4.64
                 1.82      6.48     67.27      4.81
                 2.08      7.75     86.01      4.93
                 2.35      9.04    106.03      4.99
                 2.61     10.35    126.89      5.00
                 2.87     11.64    148.14      5.00
                 3.13     12.92    169.27      5.00
                 3.39     14.16    189.72      5.00
                 3.65     15.35    208.87      5.00
                 3.91     16.47    226.00      5.00
                 4.17     17.49    240.26      5.00
                 4.43     18.39    250.46      5.00
                 4.69     19.13    254.66      5.00
                 5.00     19.63    254.66      5.00
COMPUTE TRAVEL TIME ID=18  REACH NO=1  VS NO=1  L=270 FEET
          SLOPE=0.011

               TRAVEL TIME TABLE
                        REACH=  1.0

               WATER     AVERAGE   FLOW      TRAVEL
```

DEPTH FEET	AREA SQ.FT.	RATE CFS	TIME HRS
.261	.390	1.24	.0236
.521	1.086	5.39	.0151
.782	1.961	12.53	.0117
1.042	2.966	22.54	.0099
1.303	4.069	35.19	.0087
1.563	5.246	50.21	.0078
1.824	6.479	67.27	.0072
2.084	7.749	86.01	.0068
2.345	9.043	106.03	.0064
2.606	10.345	126.89	.0061
2.866	11.641	148.14	.0059
3.127	12.918	169.27	.0057
3.387	14.159	189.72	.0056
3.648	15.348	208.87	.0055
3.908	16.467	226.00	.0055
4.169	17.492	240.26	.0055
4.429	18.395	250.46	.0055
4.690	19.130	254.66	.0056
5.000	19.635	254.66	.0058

ROUTE ID=18 HYD NO=10 INFLOW ID=16
PRINT HYD ID=18 CODE=1

OUTFLOW HYDROGRAPH REACH 10.00

RUNOFF VOLUME = 1.66370 INCHES = 7.9466 ACRE-FEET
PEAK DISCHARGE RATE = 175.05 CFS AT 1.567 HOURS BASIN AREA = .0896 SQ. MI.

```
*
*
*CHANNEL ROUTE (STREET)
*28' SECTION, S=0.010
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=1
          MIN ELEV=100.00 MAX ELEV=100.67
          CH SLP=0.010  FP SLP=0.010  N=0.017
          DIST=28.0
          00.0  100.67  0.0  100.00  2.0  100.13
          14.0  100.33 26.0  100.13  28.0  100.00
          28.0  100.67
```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.07	2.17
100.11	.17	.21	3.26
100.14	.31	.40	5.33
100.18	.57	.76	9.56

100.21	.99	1.47	13.79
100.25	1.55	2.61	18.02
100.28	2.26	4.25	22.25
100.32	3.12	6.49	26.48
100.35	4.09	9.85	28.00
100.39	5.08	14.10	28.00
100.42	6.07	18.94	28.00
100.46	7.06	24.33	28.00
100.49	8.04	30.25	28.00
100.53	9.03	36.65	28.00
100.56	10.02	43.54	28.00
100.60	11.01	50.88	28.00
100.63	11.99	58.66	28.00
100.67	12.98	66.88	28.00

COMPUTE TRAVEL TIME ID=17 REACH NO=1 NO VS=1 L=270 SLP=0.010

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.1296
.071	.077	.07	.0816
.106	.172	.21	.0623
.141	.312	.40	.0580
.176	.574	.76	.0567
.212	.986	1.47	.0503
.247	1.547	2.61	.0445
.282	2.257	4.25	.0398
.317	3.116	6.49	.0360
.353	4.094	9.85	.0312
.388	5.081	14.10	.0270
.423	6.068	18.94	.0240
.458	7.056	24.33	.0217
.494	8.043	30.25	.0199
.529	9.031	36.65	.0185
.564	10.018	43.54	.0173
.599	11.005	50.88	.0162
.635	11.993	58.66	.0153
.670	12.980	66.88	.0146

ROUTE ID=17 HYD NO=10 INFLOW ID=15
*S ROUTE STREET FLOW AP10 TO AP7, ARCHES RD
PRINT HYD ID=17 CODE=1

OUTFLOW HYDROGRAPH REACH 10.00

RUNOFF VOLUME = 1.66534 INCHES = .3855 ACRE-FEET
PEAK DISCHARGE RATE = 40.69 CFS AT 1.567 HOURS BASIN AREA = .0043 SQ. MI.

*

```
*
*
*COMPUTE HYDROGRAPH FOR BASINS A-6 AND A-7
COMPUTE NM HYD     ID=1  HYD NO=6.7  DA=0.0143 SQ MI
           %A=0.0  %B=25.0  %C=25.0  %D=50.0
           TP=0.1333 HR
           MASS RAINFALL=-1

  K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  28.229   CFS  UNIT VOLUME =   .9990      B =  526.28     P60 = 2.0700
  AREA =     .007150 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

  K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
  UNIT PEAK =  18.765   CFS  UNIT VOLUME =   .9997      B =  349.84     P60 = 2.0700
  AREA =     .007150 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

PRINT HYD        ID=1  CODE=1

                    OUTFLOW HYDROGRAPH REACH    6.70


  RUNOFF VOLUME =    1.66365 INCHES    =      1.2688 ACRE-FEET
  PEAK DISCHARGE RATE =     35.51 CFS  AT   1.500 HOURS   BASIN AREA =   .0143 SQ. MI.


*
*
*
* ADD A6 &A7 AND AP10 STREET FLOW, AP7
ADD HYD          ID=19  HYD=7  ID I=1  ID II=17
PRINT HYD        ID=19  CODE=1

                    OUTFLOW HYDROGRAPH REACH    7.00


  RUNOFF VOLUME =    1.66401 INCHES    =      1.6543 ACRE-FEET
  PEAK DISCHARGE RATE =     70.72 CFS  AT   1.567 HOURS   BASIN AREA =   .0186 SQ. MI.


*
*
*
*ST DR FLOW COLLECTED AT AP7
DIVIDE HYD        ID=19  Q=33.0  ID I=2  HYD I=7 TO PIPE
                  ID II=3  HYD II=7 IN STREET
*S  FINAL STREET FLOW AP7, ARCHES AND MENDOCINO
PRINT HYD        ID=3  CODE=1
```

OUTFLOW HYDROGRAPH REACH 7.00

RUNOFF VOLUME = 1.66401 INCHES = .2911 ACRE-FEET
PEAK DISCHARGE RATE = 37.72 CFS AT 1.567 HOURS BASIN AREA = .0033 SQ. MI.

*S PIPE FLOW COLLECTED AT AP7, ARCHES RD AND MENDOCINO
PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH REACH 7.00

RUNOFF VOLUME = 1.66401 INCHES = 1.3632 ACRE-FEET
PEAK DISCHARGE RATE = 33.00 CFS AT 1.500 HOURS BASIN AREA = .0154 SQ. MI.

*
*
*
*S FINAL PIPE FLOW, AP7
ADD HYD ID=4 HYD=7 ID I=2 ID II=18
PRINT HYD ID=4 CODE=1

OUTFLOW HYDROGRAPH REACH 7.00

RUNOFF VOLUME = 1.66374 INCHES = 9.3098 ACRE-FEET
PEAK DISCHARGE RATE = 208.05 CFS AT 1.567 HOURS BASIN AREA = .1049 SQ. MI.

*
*
*
*ROUTE PIPE AP7 TO AP15
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 (PIPE)
SLOPE=0.011 DIA=5.0 FEET
N=0.015

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.26	.39	1.24	2.22
.52	1.09	5.39	3.06
.78	1.96	12.53	3.63
1.04	2.97	22.54	4.06
1.30	4.07	35.19	4.39
1.56	5.25	50.21	4.64
1.82	6.48	67.27	4.81

2.08	7.75	86.01	4.93
2.35	9.04	106.03	4.99
2.61	10.35	126.89	5.00
2.87	11.64	148.14	5.00
3.13	12.92	169.27	5.00
3.39	14.16	189.72	5.00
3.65	15.35	208.87	5.00
3.91	16.47	226.00	5.00
4.17	17.49	240.26	5.00
4.43	18.39	250.46	5.00
4.69	19.13	254.66	5.00
5.00	19.63	254.66	5.00

COMPUTE TRAVEL TIME ID=6 REACH NO=1 VS NO=1 L=300 FEET
SLOPE=0.011

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.24	.0262
.521	1.086	5.39	.0168
.782	1.961	12.53	.0130
1.042	2.966	22.54	.0110
1.303	4.069	35.19	.0096
1.563	5.246	50.21	.0087
1.824	6.479	67.27	.0080
2.084	7.749	86.01	.0075
2.345	9.043	106.03	.0071
2.606	10.345	126.89	.0068
2.866	11.641	148.14	.0065
3.127	12.918	169.27	.0064
3.387	14.159	189.72	.0062
3.648	15.348	208.87	.0061
3.908	16.467	226.00	.0061
4.169	17.492	240.26	.0061
4.429	18.395	250.46	.0061
4.690	19.130	254.66	.0063
5.000	19.635	254.66	.0064

ROUTE ID=6 HYD NO=15 INFLOW ID=4
PRINT HYD ID=6 CODE=1

OUTFLOW HYDROGRAPH REACH 15.00

RUNOFF VOLUME = 1.66374 INCHES = 9.3098 ACRE-FEET
PEAK DISCHARGE RATE = 208.26 CFS AT 1.567 HOURS BASIN AREA = .1049 SQ. MI.

*
*
*CHANNEL ROUTE (STREET)

*28' SECTION, S=0.010

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100.00 MAX ELEV=100.67
CH SLP=0.010 FP SLP=0.010 N=0.017
DIST=28.0
00.0 100.67 0.0 100.00 2.0 100.13
14.0 100.33 26.0 100.13 28.0 100.00
28.0 100.67

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.07	2.17
100.11	.17	.21	3.26
100.14	.31	.40	5.33
100.18	.57	.76	9.56
100.21	.99	1.47	13.79
100.25	1.55	2.61	18.02
100.28	2.26	4.25	22.25
100.32	3.12	6.49	26.48
100.35	4.09	9.85	28.00
100.39	5.08	14.10	28.00
100.42	6.07	18.94	28.00
100.46	7.06	24.33	28.00
100.49	8.04	30.25	28.00
100.53	9.03	36.65	28.00
100.56	10.02	43.54	28.00
100.60	11.01	50.88	28.00
100.63	11.99	58.66	28.00
100.67	12.98	66.88	28.00

AP-16 Q= 44 cfs
V≃ 4.5 fps
E≃ 0.91'

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 L=300 SLP=0.010

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.1440
.071	.077	.07	.0907
.106	.172	.21	.0692
.141	.312	.40	.0645
.176	.574	.76	.0630
.212	.986	1.47	.0559
.247	1.547	2.61	.0495
.282	2.257	4.25	.0442
.317	3.116	6.49	.0400
.353	4.094	9.85	.0346
.388	5.081	14.10	.0300
.423	6.068	18.94	.0267
.458	7.056	24.33	.0242

.494	8.043	30.25	.0222
.529	9.031	36.65	.0205
.564	10.018	43.54	.0192
.599	11.005	50.88	.0180
.635	11.993	58.66	.0170
.670	12.980	66.88	.0162

```
ROUTE          ID=5  HYD NO=15  INFLOW ID=3
*S  ROUTE STREET FLOW AP7 TO AP15, ARCHES RD
PRINT HYD      ID=5  CODE=1
```

OUTFLOW HYDROGRAPH REACH 15.00

RUNOFF VOLUME = 1.66558 INCHES = .2914 ACRE-FEET
PEAK DISCHARGE RATE = 33.63 CFS AT 1.567 HOURS BASIN AREA = .0033 SQ. MI.

```
*
*
*
*S ALL STREET AND PIPE FLOW COMBINED, AP15
ADD HYD        ID=8  HYD=15  ID I=5  ID II=6
PRINT HYD      ID=8  CODE=1
```

OUTFLOW HYDROGRAPH REACH 15.00

RUNOFF VOLUME = 1.66379 INCHES = 9.6011 ACRE-FEET
PEAK DISCHARGE RATE = 241.89 CFS AT 1.567 HOURS BASIN AREA = .1082 SQ. MI.

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*
*
*
*REVISIONS [2], MARCH 25, 1995, ADD PHASE 6
*COMPUTE HYDROGRAPH FOR BASIN C-1-B
*PHASE 6, UNIT 9, WILLOWWOOD
COMPUTE NM HYD    ID=1  HYD NO=1  DA=0.0078 SQ MI
          %A=0.0  %B=25.0  %C=25.0  %D=50.0
          TP=0.1333 HR
          MASS RAINFALL=-1
```

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 15.397 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 2.0700
AREA = .003900 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .120467HR TP = .133300HR K/TP RATIO = .903729 SHAPE CONSTANT, N = 3.920589
UNIT PEAK = 10.235 CFS UNIT VOLUME = .9992 B = 349.84 P60 = 2.0700
AREA = .003900 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

OUTFLOW HYDROGRAPH REACH 1.00

RUNOFF VOLUME = 1.66364 INCHES = .6921 ACRE-FEET
PEAK DISCHARGE RATE = 19.38 CFS AT 1.500 HOURS BASIN AREA = .0078 SQ. MI.

*
*
*
*S ALL STREET AND PIPE FLOW COMBINED, AP15
ADD HYD ID=9 HYD=15 ID I=8 ID II=1
PRINT HYD ID=9 CODE=2

OUTFLOW HYDROGRAPH REACH 15.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	188.6	3.333	2.6	5.000	1.6	6.667	.1
.067	.0	1.733	141.4	3.400	2.5	5.067	1.6	6.733	.1
.133	.0	1.800	110.2	3.467	2.3	5.133	1.6	6.800	.1
.200	.0	1.867	90.1	3.533	2.2	5.200	1.6	6.867	.1
.267	.0	1.933	75.4	3.600	2.1	5.267	1.6	6.933	.1
.333	.0	2.000	63.8	3.667	2.0	5.333	1.6	7.000	.0
.400	.0	2.067	54.1	3.733	1.9	5.400	1.6	7.067	.0
.467	.0	2.133	42.1	3.800	1.9	5.467	1.6	7.133	.0
.533	.0	2.200	30.1	3.867	1.8	5.533	1.6	7.200	.0
.600	.0	2.267	22.5	3.933	1.8	5.600	1.6	7.267	.0
.667	.0	2.333	17.9	4.000	1.7	5.667	1.6	7.333	.0
.733	.0	2.400	14.7	4.067	1.7	5.733	1.6	7.400	.0
.800	.0	2.467	12.1	4.133	1.7	5.800	1.6	7.467	.0
.867	.0	2.533	10.3	4.200	1.6	5.867	1.7	7.533	.0
.933	.3	2.600	8.8	4.267	1.6	5.933	1.7	7.600	.0
1.000	1.2	2.667	7.6	4.333	1.6	6.000	1.7	7.667	.0
1.067	2.7	2.733	6.6	4.400	1.6	6.067	1.7	7.733	.0
1.133	4.2	2.800	5.7	4.467	1.6	6.133	1.5	7.800	.0
1.200	5.6	2.867	5.0	4.533	1.6	6.200	1.2	7.867	.0
1.267	13.3	2.933	4.5	4.600	1.6	6.267	.8	7.933	.0
1.333	40.3	3.000	4.0	4.667	1.6	6.333	.6	8.000	.0
1.400	107.7	3.067	3.6	4.733	1.6	6.400	.4	8.067	.0
1.467	200.5	3.133	3.3	4.800	1.6	6.467	.3		
1.533	236.3	3.200	3.0	4.867	1.6	6.533	.2		
1.600	248.5	3.267	2.8	4.933	1.6	6.600	.2		

RUNOFF VOLUME = 1.66378 INCHES = 10.2932 ACRE-FEET
PEAK DISCHARGE RATE = 258.28 CFS AT 1.567 HOURS BASIN AREA = .1160 SQ. MI.

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*
*
*
*ROUTE FLOWS THROUGH APS EASEMENT TO DETENTION POND IN PIPE
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1 (PIPE)
          SLOPE=0.010  DIA=5.0 FEET
          N=0.013
```

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.26	.39	1.37	2.22
.52	1.09	5.93	3.06
.78	1.96	13.79	3.63
1.04	2.97	24.80	4.06
1.30	4.07	38.72	4.39
1.56	5.25	55.24	4.64
1.82	6.48	74.01	4.81
2.08	7.75	94.62	4.93
2.35	9.04	116.65	4.99
2.61	10.35	139.60	5.00
2.87	11.64	162.98	5.00
3.13	12.92	186.22	5.00
3.39	14.16	208.72	5.00
3.65	15.35	229.78	5.00
3.91	16.47	248.64	5.00
4.17	17.49	264.32	5.00
4.43	18.39	275.55	5.00
4.69	19.13	280.16	5.00
5.00	19.63	280.16	5.00

```
COMPUTE TRAVEL TIME ID=10  REACH NO=2  VS NO=1  L=870 FEET
          SLOPE=0.010
```

TRAVEL TIME TABLE

REACH= 2.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.37	.0690
.521	1.086	5.93	.0442
.782	1.961	13.79	.0344
1.042	2.966	24.80	.0289
1.303	4.069	38.72	.0254
1.563	5.246	55.24	.0230
1.824	6.479	74.01	.0212
2.084	7.749	94.62	.0198
2.345	9.043	116.65	.0187
2.606	10.345	139.60	.0179
2.866	11.641	162.98	.0173
3.127	12.918	186.22	.0168

```
                3.387    14.159    208.72    .0164
                3.648    15.348    229.78    .0161
                3.908    16.467    248.64    .0160
                4.169    17.492    264.32    .0160
                4.429    18.395    275.55    .0161
                4.690    19.130    280.16    .0165
                5.000    19.635    280.16    .0169
ROUTE         ID=10  HYD NO=204.1  INFLOW ID=9
PRINT HYD       ID=10  CODE=1

                  PARTIAL HYDROGRAPH  204.10


  RUNOFF VOLUME =    1.66378 INCHES    =    10.2932 ACRE-FEET
  PEAK DISCHARGE RATE =    253.32 CFS  AT   1.600 HOURS   BASIN AREA =   .1160 SQ. MI.


  *
  *
  *
  *COMPUTE HYDROGRAPH FOR BASINS A-14,A-15
  COMPUTE NM HYD     ID=1  HYD NO=105.0  DA=0.0128 SQ MI
            %A=0.0  %B=25.0  %C=25.0  %D=50.0
            TP=0.1333 HR
            MASS RAINFALL=-1

    K =  .072649HR   TP =  .133300HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =  25.268   CFS  UNIT VOLUME =   .9989      B =  526.28      P60 = 2.0700
    AREA =     .006400 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333


    K =  .120467HR   TP =  .133300HR   K/TP RATIO =  .903729    SHAPE CONSTANT, N =  3.920589
    UNIT PEAK =  16.797   CFS  UNIT VOLUME =   .9997      B =  349.84      P60 = 2.0700
    AREA =     .006400 SQ MI   IA =   .42500 INCHES   INF =  1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033333

  PRINT HYD        ID=1 CODE=1

                  PARTIAL HYDROGRAPH  105.00


  RUNOFF VOLUME =    1.66364 INCHES    =     1.1357 ACRE-FEET
  PEAK DISCHARGE RATE =     31.79 CFS  AT   1.500 HOURS   BASIN AREA =   .0128 SQ. MI.


  *
  *
  *
  *ROUTE DOWN JEWEL CAVE TO CHIRICAHUA
```

*28' SECTION, S=0.5%

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1 MIN ELEV=100.00
MAX ELEV=100.67 CH SLP=0.005 FP SLP=0.005

N=0.017 DIST=28.0
00.0 100.67 0.0 100.00 2.0 100.13
14.0 100.33 26.0 100.13 28.0 100.00
28.0 100.67

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
100.00	.00	.00	.00
100.04	.02	.01	1.09
100.07	.08	.05	2.17
100.11	.17	.15	3.26
100.14	.31	.28	5.33
100.18	.57	.54	9.56
100.21	.99	1.04	13.79
100.25	1.55	1.84	18.02
100.28	2.26	3.01	22.25
100.32	3.12	4.59	26.48
100.35	4.09	6.96	28.00
100.39	5.08	9.97	28.00
100.42	6.07	13.39	28.00
100.46	7.06	17.21	28.00
100.49	8.04	21.39	28.00
100.53	9.03	25.92	28.00
100.56	10.02	30.79	28.00
100.60	11.01	35.98	28.00
100.63	11.99	41.48	28.00
100.67	12.98	47.29	28.00

Wasatch AP 18b Q=15cfs

Wolf Creek AP 18a Q=28cfs

COMPUTE TRAVEL TIME ID=3 REACH NO=1 NO VS=1 L=700 SLP=0.005

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.4750
.071	.077	.05	.2993
.106	.172	.15	.2284
.141	.312	.28	.2127
.176	.574	.54	.2078
.212	.986	1.04	.1846
.247	1.547	1.84	.1632
.282	2.257	3.01	.1459
.317	3.116	4.59	.1321
.353	4.094	6.96	.1143
.388	5.081	9.97	.0991
.423	6.068	13.39	.0881
.458	7.056	17.21	.0797

.494	8.043	21.39	.0731
.529	9.031	25.92	.0678
.564	10.018	30.79	.0633
.599	11.005	35.98	.0595
.635	11.993	41.48	.0562
.670	12.980	47.29	.0534

ROUTE ID=3 HYD NO=105.1 INFLOW ID=1
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 105.10

RUNOFF VOLUME = 1.66366 INCHES = 1.1357 ACRE-FEET
PEAK DISCHARGE RATE = 28.73 CFS AT 1.533 HOURS BASIN AREA = .0128 SQ. MI.

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS,B-1,B-2,B-3,B-4
COMPUTE NM HYD ID=1 HYD NO=106.0 DA=0.03496 SQ MI
%A=0.0 %B=25.0 %C=25.0 %D=50.0
TP=0.1333 HR
MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 69.012 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.0700
AREA = .017480 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .120467HR TP = .133300HR K/TP RATIO = .903729 SHAPE CONSTANT, N = 3.920589
UNIT PEAK = 45.876 CFS UNIT VOLUME = 1.000 B = 349.84 P60 = 2.0700
AREA = .017480 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 106.00

86.79
175.52

RUNOFF VOLUME = 1.66364 INCHES = 3.1019 ACRE-FEET
PEAK DISCHARGE RATE = 86.79 CFS AT 1.500 HOURS BASIN AREA = .0350 SQ. MI.

*ADD HYDROGRAPH TO TOTAL
ADD HYD ID=1 HYD=206.0 ID I=1 ID II=3
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 206.00

RUNOFF VOLUME = 1.66363 INCHES = 4.2376 ACRE-FEET
PEAK DISCHARGE RATE = 112.38 CFS AT 1.500 HOURS BASIN AREA = .0478 SQ. MI.

*
*
*
*S ROUTE PIPE FLOWS TO AP 19
*ROUTE FLOW IN PIPE FROM INLETS ON CHIRICAHUA TO DETENTION POND
COMPUTE RATING CURVE CID=-1 VS NO=1 NO SEGS=-1 (PIPE)
SLOPE=0.005 DIA=4.0 FEET
N=0.013
COMPUTE TRAVEL TIME ID=3 REACH NO=3 VS NO=1 L=950 FEET
SLOPE=0.005

TRAVEL TIME TABLE
REACH= 3.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.53	.1237
.417	.695	2.31	.0793
.625	1.255	5.38	.0616
.834	1.898	9.67	.0518
1.042	2.604	15.10	.0455
1.251	3.358	21.54	.0411
1.459	4.146	28.86	.0379
1.668	4.960	36.90	.0355
1.876	5.788	45.49	.0336
2.084	6.621	54.44	.0321
2.293	7.451	63.56	.0309
2.501	8.267	72.62	.0300
2.710	9.062	81.40	.0294
2.918	9.823	89.61	.0289
3.127	10.539	96.97	.0287
3.335	11.195	103.08	.0287
3.544	11.773	107.46	.0289
3.752	12.243	109.26	.0296
4.000	12.566	109.26	.0304

ROUTE ID=3 HYD NO=206.1 INFLOW ID=1
TRAVEL TIME TABLE EXCEEDED
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 206.10

RUNOFF VOLUME = 1.66364 INCHES = 4.2376 ACRE-FEET
PEAK DISCHARGE RATE = 109.04 CFS AT 1.533 HOURS BASIN AREA = .0478 SQ. MI.

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*
*
*
*ADD HYDROGRAPH TO TOTAL FROM BASINS A1 THRU A13, AP19
ADD HYD        ID=3  HYD=206.2  ID I=10  ID II=3
PRINT HYD      ID=3  CODE=2
```

PARTIAL HYDROGRAPH 206.20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.733	206.5	3.467	3.5	5.200	2.2	6.933	.1
.067	.0	1.800	160.5	3.533	3.3	5.267	2.2	7.000	.1
.133	.0	1.867	131.0	3.600	3.1	5.333	2.2	7.067	.1
.200	.0	1.933	109.6	3.667	3.0	5.400	2.2	7.133	.1
.267	.0	2.000	92.7	3.733	2.9	5.467	2.2	7.200	.0
.333	.0	2.067	79.0	3.800	2.7	5.533	2.2	7.267	.0
.400	.0	2.133	63.1	3.867	2.7	5.600	2.3	7.333	.0
.467	.0	2.200	46.1	3.933	2.6	5.667	2.3	7.400	.0
.533	.0	2.267	34.4	4.000	2.5	5.733	2.3	7.467	.0
.600	.0	2.333	26.9	4.067	2.5	5.800	2.3	7.533	.0
.667	.0	2.400	22.2	4.133	2.4	5.867	2.3	7.600	.0
.733	.0	2.467	18.4	4.200	2.4	5.933	2.3	7.667	.0
.800	.0	2.533	15.3	4.267	2.3	6.000	2.4	7.733	.0
.867	.0	2.600	13.2	4.333	2.3	6.067	2.4	7.800	.0
.933	.2	2.667	11.4	4.400	2.3	6.133	2.2	7.867	.0
1.000	1.0	2.733	10.0	4.467	2.3	6.200	1.9	7.933	.0
1.067	2.5	2.800	8.7	4.533	2.2	6.267	1.5	8.000	.0
1.133	4.6	2.867	7.5	4.600	2.2	6.333	1.1	8.067	.0
1.200	6.9	2.933	6.6	4.667	2.2	6.400	.8	8.133	.0
1.267	14.5	3.000	6.0	4.733	2.2	6.467	.6	8.200	.0
1.333	44.7	3.067	5.4	4.800	2.2	6.533	.5	8.267	.0
1.400	129.4	3.133	4.9	4.867	2.2	6.600	.3	8.333	.0
1.467	268.2	3.200	4.5	4.933	2.2	6.667	.3	8.400	.0
1.533	338.9	3.267	4.2	5.000	2.2	6.733	.2		
1.600	349.8	3.333	3.9	5.067	2.2	6.800	.2		
1.667	274.4	3.400	3.7	5.133	2.2	6.867	.1		

RUNOFF VOLUME = 1.66374 INCHES = 14.5308 ACRE-FEET
PEAK DISCHARGE RATE = 356.35 CFS AT 1.567 HOURS BASIN AREA = .1638 SQ. MI.

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*
*
* BASIN C-1-A
* REVISION [1], MARCH 25, 1995  BASIN PARAMETERS PER APS
*COMPUTE HYDROGRAPH FOR FUTURE SCHOOL SITE
COMPUTE NM HYD     ID=2  HYD NO=107.0  DA=0.0244 SQ MI
           %A=23.0  %B=29.0  %C=15.0  %D=33.0
           TP=0.1333 HR
           MASS RAINFALL=-1
```

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 31.790 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 2.0700
AREA = .008052 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .136151HR TP = .133300HR K/TP RATIO = 1.021390 SHAPE CONSTANT, N = 3.455979
UNIT PEAK = 38.890 CFS UNIT VOLUME = .9999 B = 317.10 P60 = 2.0700
AREA = .016348 SQ MI IA = .51791 INCHES INF = 1.30015 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=2 CODE=2

PARTIAL HYDROGRAPH 107.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.467	45.4	2.933	.7	4.400	.2	5.867	.2
.067	.0	1.533	48.7	3.000	.6	4.467	.2	5.933	.2
.133	.0	1.600	37.1	3.067	.5	4.533	.2	6.000	.2
.200	.0	1.667	27.0	3.133	.5	4.600	.2	6.067	.2
.267	.0	1.733	20.2	3.200	.4	4.667	.2	6.133	.1
.333	.0	1.800	15.4	3.267	.4	4.733	.2	6.200	.1
.400	.0	1.867	12.2	3.333	.4	4.800	.2	6.267	.0
.467	.0	1.933	10.1	3.400	.4	4.867	.2	6.333	.0
.533	.0	2.000	8.7	3.467	.3	4.933	.2	6.400	.0
.600	.0	2.067	7.3	3.533	.3	5.000	.2	6.467	.0
.667	.0	2.133	5.3	3.600	.3	5.067	.2	6.533	.0
.733	.0	2.200	3.8	3.667	.3	5.133	.2	6.600	.0
.800	.0	2.267	2.9	3.733	.3	5.200	.2	6.667	.0
.867	.0	2.333	2.4	3.800	.3	5.267	.2	6.733	.0
.933	.2	2.400	2.0	3.867	.3	5.333	.2	6.800	.0
1.000	.5	2.467	1.7	3.933	.3	5.400	.2	6.867	.0
1.067	.7	2.533	1.5	4.000	.2	5.467	.2	6.933	.0
1.133	.7	2.600	1.3	4.067	.2	5.533	.2	7.000	.0
1.200	1.2	2.667	1.1	4.133	.2	5.600	.2		
1.267	3.5	2.733	1.0	4.200	.2	5.667	.2		
1.333	9.2	2.800	.8	4.267	.2	5.733	.2		
1.400	24.6	2.867	.7	4.333	.2	5.800	.2		

RUNOFF VOLUME = 1.31608 INCHES = 1.7126 ACRE-FEET
PEAK DISCHARGE RATE = 50.11 CFS AT 1.500 HOURS BASIN AREA = .0244 SQ. MI.

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*
*
*ADD HYDROGRAPH TO TOTAL
ADD HYD ID=1 HYD=207 ID I=2 ID II=3
PRINT HYD ID=1 CODE=2

PARTIAL HYDROGRAPH 207.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.733	226.6	3.467	3.8	5.200	2.4	6.933	.1
.067	.0	1.800	175.9	3.533	3.6	5.267	2.4	7.000	.1
.133	.0	1.867	143.2	3.600	3.4	5.333	2.4	7.067	.1
.200	.0	1.933	119.7	3.667	3.3	5.400	2.4	7.133	.1
.267	.0	2.000	101.3	3.733	3.1	5.467	2.5	7.200	.0
.333	.0	2.067	86.4	3.800	3.0	5.533	2.5	7.267	.0
.400	.0	2.133	68.4	3.867	2.9	5.600	2.5	7.333	.0
.467	.0	2.200	49.8	3.933	2.8	5.667	2.5	7.400	.0
.533	.0	2.267	37.3	4.000	2.8	5.733	2.5	7.467	.0
.600	.0	2.333	29.3	4.067	2.7	5.800	2.5	7.533	.0
.667	.0	2.400	24.3	4.133	2.6	5.867	2.6	7.600	.0
.733	.0	2.467	20.1	4.200	2.6	5.933	2.6	7.667	.0
.800	.0	2.533	16.8	4.267	2.6	6.000	2.6	7.733	.0
.867	.0	2.600	14.5	4.333	2.5	6.067	2.6	7.800	.0
.933	.4	2.667	12.5	4.400	2.5	6.133	2.4	7.867	.0
1.000	1.5	2.733	10.9	4.467	2.5	6.200	2.0	7.933	.0
1.067	3.2	2.800	9.6	4.533	2.5	6.267	1.5	8.000	.0
1.133	5.3	2.867	8.2	4.600	2.4	6.333	1.2	8.067	.0
1.200	8.0	2.933	7.3	4.667	2.4	6.400	.9	8.133	.0
1.267	18.0	3.000	6.5	4.733	2.4	6.467	.6	8.200	.0
1.333	53.9	3.067	5.9	4.800	2.4	6.533	.5	8.267	.0
1.400	153.9	3.133	5.4	4.867	2.4	6.600	.4	8.333	.0
1.467	313.6	3.200	5.0	4.933	2.4	6.667	.3	8.400	.0
1.533	387.5	3.267	4.6	5.000	2.4	6.733	.2		
1.600	386.9	3.333	4.3	5.067	2.4	6.800	.2		
1.667	301.4	3.400	4.0	5.133	2.4	6.867	.1		

RUNOFF VOLUME = 1.61865 INCHES = 16.2434 ACRE-FEET
PEAK DISCHARGE RATE = 399.70 CFS AT 1.567 HOURS BASIN AREA = .1882 SQ. MI.

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*
*
*
*PLOT TOTAL HYDROGRAPH
PLOT HYD        ID=1
FLOW RATE (CFS)
400..----------------------*-------------------------------------------------------------------------------------.
  .                                                                                                  .
  .              **                                                                                   .
  .                                                                                                  .
  .              *                                                                                   .
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  .                                                                                                  .
  .                                                                                                  .
320..-------------------------------------------------------------------------------------------------------------.
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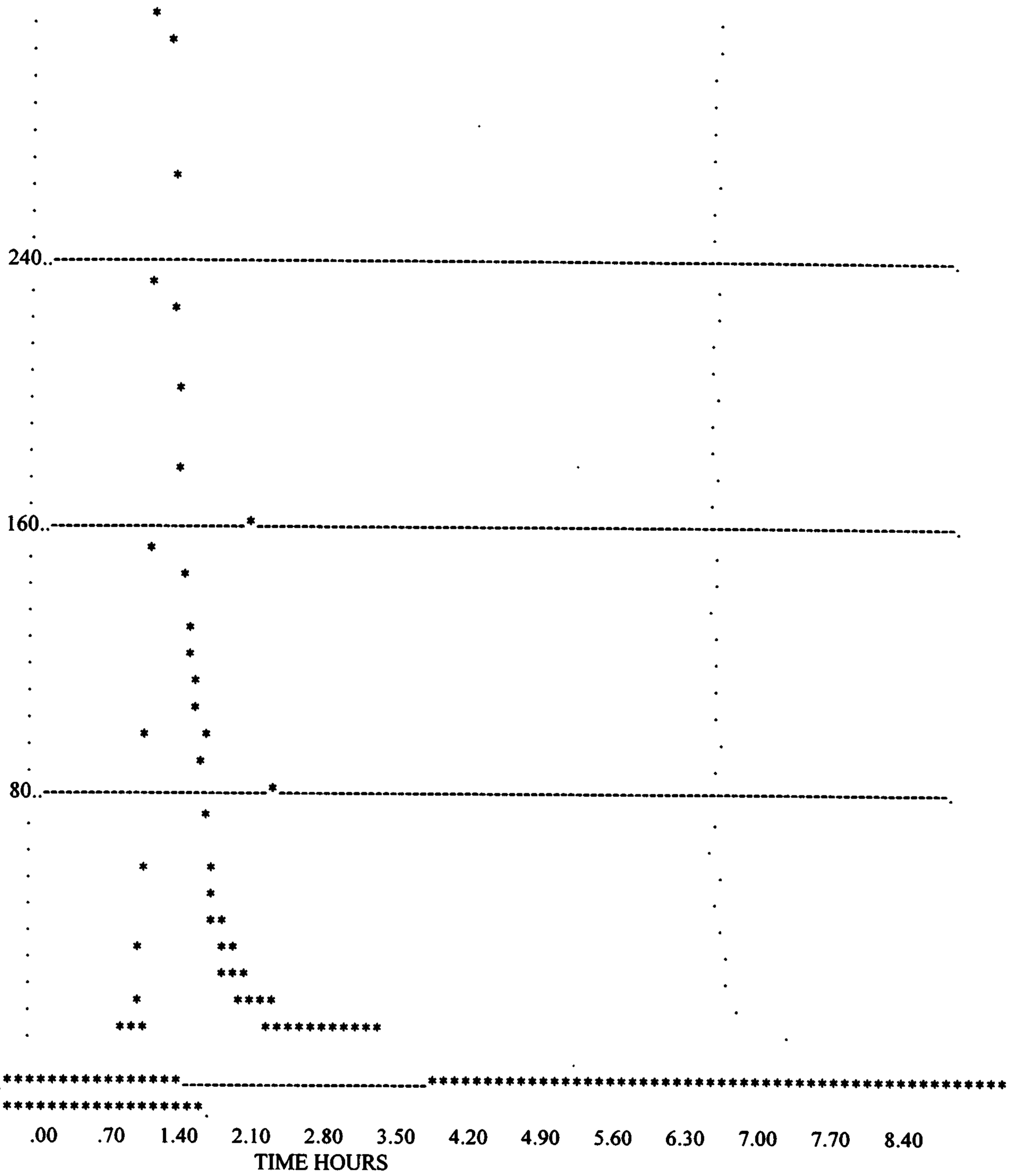

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:53:53

APPENDIX E

HYDRAULICS

CATCH BASIN DESIGN SUMMARY TABLE

DRAINAGE REPORT FOR WILLOW WOOD SUBDIVISION, UNIT 5 (PHASES 7 & 8) **March 1996**

STREET	Q100 (cfs)	SLOPE (%)	D100 (ft)	CATCH BASIN HYDRAULICS TYPE		INFLOW	BYPASS	COMMENTS
Jewel Cave	44	1	0.56	A-single	north	6	16	
AP 16				A-single	south	6	16	
				C-single	north	6	10	
				C-single	south	6	10	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		20		St. storm drain
Thunder Basin	27	0.6	0.54	A-single	north	6	7.5	
AP 17				A-single	south	6	7.5	
				C-single	north	6	1.5	
				C-single	south	6	1.5	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		3		St. storm drain
Wastach	15	0.6	0.54	A-single	north	6	1.5	
AP 18A				A-single	south	6	1.5	
				Total Intercepted=		12		Remainning flow intercepted by Chiricahua
				Total bypass flow=		3		St. storm drain
Wolf Creek	28	0.6	0.55	A-single	north	6	8	
AP 18a				A-single	south	6	8	
				C-single	north	6	2	
				C-single	south	6	2	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		4		St. storm drain
Chiricahua	26	0.6	0.55	A-single	north	6	7	Bypass flow from side streets
				C-single	north	6	7	
				A-single	south	6	1	
				C-single	south	6	1	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		2		St. storm drain
Chiricahua at	6	0	0.2	C-quad	center	6	0	Type C - quad grate, sump condition
end of cul-de-sac								Bypass flow from Chiricahua & Wolf Creek
				Total Intercepted=		6		Flow ponded 0.2 ft. over grate
				Total bypass flow=		0		Flow ponded 1.4 ft. over grate for 2X100
								year design (see seperate analysis)
				Total Intercepted=		114		AHYMO shows 112.4, difference due to
								routing and attenuation.

FILE:pantera/willow/hyd/table1.xls.

STREET/INLET CALCULATIONS

PROJECT NAME Willow wood
PROJECT NO.
SUBJECT Street and inlet capacity
BY TS DATE 2-16-92

A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
1	A-1	34.2	28'	~~1.1%~~ 0.85%	~~.55'~~ .53	~~4.0 f/s~~ 3.7 f/s	~~Try 2 type A inlets~~ ~~$Q_{in} = 2(7.4) = 14.8$ cfs~~ ~~$Q_{carry\ over} = 34.2 - 14.8 = 19.4$~~ ~~Use 2 type A inlets~~ △1
	△1 DELETE STORM						
2	A-2	25.7	28'	1.1%	.50'	3.7 f/s	OK
5A	A-1, A-2 ~~Carryover from A.P. 1~~ △1	~~45.1~~ 62	28'	~~0.6%~~ 0.85%	~~.67'~~ 0.67'	~~3.8 f/s~~ 4.76	~~Try 2 type 66 inlets~~ △1 ~~$Q_{in} = 2(.85)(10) = 17$ cfs~~ ~~(capacity reduced 15% for clogging)~~ ~~Try 2 A's $Q_{in} = 2(8.2) = 16.4$~~ ~~Use 2 66's $Q_{co} = 45.1 - 17$~~ ~~$= 28.1$ cfs 2~~
				$F_1 = \frac{4.7}{\sqrt{32.2 \times .46}} = 1.21$			
				ALTERNATE DEPTH $= \frac{d_1}{2}\left(\sqrt{1+8F_1^2} - 1\right)$ $= .86 < .87$ [OK]			
	Carryover	28.1	28'	0.5'	0.57'		Now try ~~2 CC's~~ $Q_{in} = 2(7.8) = 15.6$ ~~OK~~ ~~$Q_{co} = 12.5$ cfs~~ ~~Total interception = 32.6~~

△1 REVISIONS MARCH 1994

AVID ENGINEERING, INC.

STREET/INLET CALCULATIONS

A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
3	A-3	30.6	28'	0.5%	.60'	3.0'/s	OK Subcritical – no jump should occur at Herman Roser
4	A-3,4	~~51.9~~ 46	36'	△ ~~1.2%~~ .85%	~~.60'~~ .60'	~~4.4'/s~~ 4.4'/s	Check for hydraulic jump at entrance to easement: $D_1 = .6'$ $F_1 = \frac{V_1}{\sqrt{gD_1}} = \frac{4.4}{\sqrt{32.2 \cdot .6}} = 1.0$ critical depth. $TW/D_1 \simeq 1.0$ (DPM, plate 22.3, E-1). Jump should not change the depth significantly.
	△ WEIR ANALYSIS		$Q = CLH^{3/2}$ $46 = 3.0 \times 28 \times H^{3/2}$ $H = 0.67 ft \leq 0.67$ (ok)				
	△ Build 4" Conc. Pavement Between SW and Back of Curb, For erosion protection.						
5b	A-3,4,5	~~58.7~~ 0 cfs △	Alley width = 30'	~~1.1%~~	~~.6'~~	~~4.1'/s~~	~~See next page~~ △ Alley channel deleted. Alley sections maintained for emergency overflow.

AVID ENGINEERING, INC.

PROJECT NAME
PROJECT NO.
SUBJECT
SHEET 2 OF
BY JTB DATE
CHKD DATE

STREET/INLET CALCULATIONS

A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
5C	Carryover from A.P. 5A, 5B	12.5 + 50.1 = 62.6 cfs	~~36'~~ 28'	~~1.1%~~ 0.85%	~~.66'~~ 0.67'	~~4.6'/s~~ 4.76'/sec	Try 2 CGs – $Q_{in} = 2(12) = 24$ cfs (don't reduce for clogging because at inlets @ 5A and 5B) OK. $Q_{co} = 38.6$ cfs Total interception at 5A, B, C = ~~80 cfs~~ 62.6 cfs △1
△1	SO inlets relocated to UNIT IV						
6 △1	A-6, ~~t.a.~~ ~~from 5C~~	~~38.6+12.5 = 51.1~~ 13 cfs	~~36'~~ 40'	~~1.0%~~ 0.6%	~~.62'~~ .41'	~~4.1'/s~~ 2.1'/s	Check for curb overtopping around the corner from Herman Roser to Mendocino $F_1 = \frac{4.1}{\sqrt{32.2 \cdot 0.62}} = 0.91 < 1.0$ subcritical, so flow should not overtop curb
△1		Weir	$Q = CLH^{3/2}$ $13 = 3.0 \times 40' \times H^{3/2}$ $H = 0.23' < 0.67'$ OK				

AVID ENGINEERING, INC.

PROJECT NAME
PROJECT NO.
SUBJECT
SHEET 4 OF
BY JB DATE
CHKD DATE

STREET/INLET CALCULATIONS

A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
7a	A-6, 7, carryover from A.P. 5C	36 cfs ~~46~~ from AHYMO 33 cfs intercepted by SD. 3 cfs carry over	~~26'~~ 40'	1.6%	~~.55'~~ .51'	4.6 ft/s 4.0	~~Try 2 A inlets → Qin = 2×8.2 = 16.4 cfs~~ ~~Try 2 CC inlets → Qin = 2×.85(9.6) = 16.3 cfs~~ ~~Use 2 A inlets~~ ~~Qco = 29.6 cfs~~ USE 2- double grate Type "A" 2- double grate Type "C" = 33 cfs
8	A-8	43.4	28'	~~1.0%~~ 0.67%	~~.61'~~ 0.62	~~4.3~~ 3.7 ft/s 3.73	$F_1 = \frac{\cancel{4.3}\ 3.7}{\sqrt{32.2 \cdot \cancel{.61}\ .41}} = \cancel{0.97}\ 1.02$ → ~~subcritical~~ supercritical OK $Y_2 = \frac{Y_1}{2}\left(\sqrt{1+8F_1^2}-1\right) = .64 < .87'$ [OK]
9A	A-8, A-9	~~49.0~~ 43.0	28'	~~.5%~~ 1.0%	~~.73'~~ .56'	~~3.5~~ 4.3 ft/s	~~D > 0.67 → place inlets at point 8, upstream~~ (See AP 5C) $F_1 = \frac{4.3}{\sqrt{32.2 \times .56}} = 1.02$ $Y_2 = 0.57$ (OK) ~~Try 2 type A inlets = Qin = 2×9.2 = 18.4 cfs~~ ~~Try 2 type CC inlets.~~ ~~Qin = 2×.85(11.5) = 19.6 cfs →~~

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AVID ENGINEERING, INC.

STREET/INLET CALCULATIONS

AVID ENGINEERING, INC.

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A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
9A cont. from prev. page							~~Use 2 CC inlets~~ → ~~Qco = 49 - 19.6 = 29.4 cfs~~ △1 SEE AP 5C
△1 9B	carryover from A.P 9A	~~≈36~~ 43	28'	~~.59~~ 1.0%	~~.65'~~ .56'	~~3.3'/s~~ 4.3'/s	~~Subcritical - should not over top curb around corner~~ △1 d2 = .57 [ok]
10	A-10, carryover from 9A	~~46.7~~ 57	28'	~~1.4%~~ 1.0%	~~.54'~~ .63'	~~5.0'/s~~ 4.9	~~Try 2A's → Qin = 2×9 = 18 cfs~~ △1 ~~Try 2CC's → Qin = 2(.85)(10.1) = 17.2~~ ~~Use 2A's~~ ~~Qco = 46.7 - 18 = 28.7 cfs~~
	~~inlet carryover~~	~~28.7~~	~~28'~~	~~1.4%~~	~~.50'~~	~~4.1'/s~~	~~Next, try 2CC's → Qin = 2(9.2) = 18.4~~ ~~Try 2 C's → Qin = 2(7.8) = 15.2~~ ~~Use 2CC's~~ ~~Qco = 10.3 cfs~~ ~~Total interception = 36.4 cfs~~

△1 USE 2-TYPE Double Grate Inlets = 24cfs
57 - 24 = 33cfs by-pass to Apex

STREET/INLET CALCULATIONS

A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
11	A-11	23	~~15' alley~~	~~1.5%~~	~~.46'~~ ~~.34'~~	~~4.9'/s~~ ~~5.8'/s~~	~~See previous page for depth computations.~~
	△1 Eliminate Channel Design, Use Storm Drain. Design to 2x100YR Storm = 46 cfs Sump Condition design. Use 1—Teitle Grate, Double Wing, Type "A"						~~Check for jump at 12 outlet into Jewel Cave Rd.~~ △1 ~~$F_1 = \frac{4.9\ 5.8}{\sqrt{32.2 \cdot \cancel{0.49}\ 0.34}} = \cancel{1.24}\ 1.75'$~~ ~~Jump is possible. Check tailwater depth (TW).~~ ~~$TW/D_1 = \cancel{1.25}\ 2.0$ TW = ~~.58'~~ .68' OK~~
12	A-11, A-12	~~54~~ 12 cfs	28'	1.0%	~~.66'~~ .38'	~~4.7'/s~~ 2.7'/s	~~Try 2 A's → Q_{in} = 2×9 = 18 cfs~~ △1 ~~Try 2 CC's → Q_{in} = 2(.85)(11) = 18.7~~ ~~Use 2 A's~~ ~~for debris removal. Q_{co} = 36~~
△1	~~inlet carryover~~	~~36~~	~~28'~~	~~1.0%~~	~~.59'~~	~~4.1'/s~~	~~Try 2 C's → Q_{in} = 2(7.8) = 15.2~~ ~~Try 2 CC's → Q_{in} = 2×9.2 = 18.4~~ ~~Use 2 C's~~ ~~Q_{co} = 20.0 cfs~~ ~~Total interception = 33.2~~

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STREET / INLET ANALYSIS

A.P.	Contributing Basins	Q PEAK in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
13	A-13, C.O. from A.P. 10, 12	~~32~~ 37	28'	~~.5%~~ 1.0%	~~.63'~~ .53'	~~3.1 ft/s~~ 4.1 ft/s	~~Try 2 A's $Q_{IN} = 2(7.4) = 14.8$~~ ~~Try 2 CC's $Q_{IN} = 2(.85)(9.6) = 16.3$~~ ~~Use 2 CC's $Q_{IO} = 32 - 16 = 16$ cfs~~ $E = 0.79' < .89'$ [ok]
7c ~~7b~~	Carryover from 7a, 13	~~46~~ 36	~~36'~~ 40'	1.0	~~0.6'~~ 0.53'	~~4.0 ft/s~~ 3.9 ft/s	Design for sag conditions (S = .002) D = .67' with CC inlets: $Q_{CAPACITY} = 9$ cfs/inlet for C inlets: $Q_{CAPAC.} = 7.2$ cfs/inlet ~~Use 4 CC inlets + 2 C inlets~~ $Q_{IN} = 36$ cfs $Q_{IN} = 14$ cfs 50 > 46 OK
	Intercept 100% flows at this point. Use 2-A's d = 0.53' 2-Double Grate C's d = 0.40'						36 + 16 = 20 + 9 = 11 cfs
	Intercept 100% of remaining 11 cfs with sump inlet located at intersection of Los Padres and Arches.						Note: don't reduce capacity for clogging because of upstream inlets within 150'.

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AVID ENGINEERING, INC.

STREET/INLET ANALYSIS

A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
15	A-14, 15	29	28'	1.4%	.50'	4.1 ft/s	Check jump: $F_1 = \frac{4.1}{\sqrt{32.7 \cdot 0.5}}$ = 1.02 critical depth Jump possible at grade change $TW/D_1 = 1 \rightarrow TW \approx D_1$ OK
16	A-14, 15, B-1	44	28'	1.0% ~~0.5%~~	0.56 ~~.69~~	3.7 ft/s ~~3.5 ft/s~~	Try 2 A's $Q_{IN} = 2(9) = 18$ Try 2 CC's $Q_{IN} = 2(.85)(11) = 18.7$ Use 2 A's $Q_{co} = 44 - \cancel{18}\ 24 = \cancel{26}\ 20$
	inlet c.o.	26	28'	.5%	.58'	2.9 ft/s	Try 2 CC's ~~$Q_{IN} = 2(8.2) = 16.4$~~ ~~Use 2 CC's~~ ~~$Q_{co} = 26 - 16 = 10$ cfs~~ Total interception = ~~34 cfs~~ 24
17	B-2, ~~c.o. from A.P. 16~~	27 ~~37~~	28'	0.6 ~~.5%~~	0.54 .65'	3.4 ft/s ~~3.2 ft/s~~	~~Try 2 A's $Q_{IN} = 2 \times 7.6 = 15.2$~~ ~~Try 2 CC's $Q_{IN} = 2(.85)(9.4) = 16.0$~~ ~~Use 2 CC's $Q_{co} = 37 - 16 = 21$~~

USE 2-Single Grate Type 'A's
2-Single Grate Type 'C's

~~Use 2 CC's~~

By-Pass = 20 cfs

THUNDER BASIN

USE 2- Single Grate Grate Type 'A' CB's
2- single Grate Type 'C' CB's

AVID ENGINEERING, INC.

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STREET/INLET CALCULATIONS

A.P.	Contributing Basins	Qpeak in street (cfs)	Street: Width	S	D	V	Inlets / Analysis
18a WOLF CREEK	B-4	28	2 28'	0.6% ~~1.0%~~	0.55 ~~.52'~~	2.4 '/s ~~3.6 '/s~~	~~Try 2 A's Qin = 2(6.2) = 12.4~~ ~~Try 2 CC's Qin = 2(.15)(7.2) = 12.2~~ ~~Use 2 A's Qin = 28 - 12.4 = 15.6~~
		2	USE 2-SINGLE GRATE TYPE 'A' CB's 2-SINGLE GRATE TYPE 'C' CB's				
18b	From south B-3, C.O. from A.P. 17 CHIRICAHUA	~~36~~ 26	28'	.5% 2	~~.65'~~ 0.55'	~~3.2'/s~~ 2.26	~~Design for a sag (S=.002, D=.67')~~ ~~CC inlet capacity = 9 cfs/inlet~~ ~~C inlet capacity = 7.2 cfs/inlet~~ ~~Use 4 CC's - Qin = 36 cfs~~ ~~+ 2 C's - Qin = 14.4 cfs~~ ~~50.4 ≈ 51.6 OK~~
	~~From north B-4~~	~~15.6~~	~~11~~	~~.5%~~	~~.58'~~	~~2.9 '/s~~	
		~~Tot. = 51.6~~					
			2	USE 4-Single Grate, Type 'C' CB's			
18c	END OF Cul-De-Sac CHIRICAHUA COURT	6 cfs + 44 cfs (OVERFLOW)	SUMP CONDITION				

USE QUAD. GRATE, Single Curb Opening Type 'C' inlet
dn = 1.05' < dallowable = 1.17' ** SEE 2x100YR ANALYSIS

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COMPUTE DEPTH OF FLOW AT POINT WHERE FLOW TURNS THE CORNER AT HERMAN ROSER & WIND RIVER ST. (AP4)

COMPUTE FLOW DEPTH ASSUMING PONDING CONDITION WITH Velocity = 0, and weir flow condition.

$Q = 46 cfs = CLH^{3/2}$

$46 cfs = 3.0 \times 28' \times H^{3/2}$

$H = 0.67 ft$

C = 3.00 (KING & BEATED)
L = 28 ft F-F
H = ponded depth

COMPUTE HYDRAULIC JUMP, slope at intersection is at subcritical, use approach upstream of 1.2%.

$Q = 46 cfs \Rightarrow d = .49 ft$

$V = 3.96 fps$

$F = \frac{V}{\sqrt{gD}} = 1.29$

$$Y_2 = \frac{Y_1}{2}\left(\sqrt{1 + \frac{8q^2}{gY_1^3}} - 1\right) \quad \text{where } q = \frac{46 cfs}{40 ft} = 1.15 cfs/ft$$

$$= \frac{.49}{2}\left(\sqrt{1 + \frac{8\ 1.15^2}{32.2\ (.49)^3}} - 1\right)$$

$Y_2 = 0.68 \approx .67$ [OK]

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NOTE: The intersection is designed such that any flows exceeding the top of curb depth can continue to flow west in a Drainage/ Landscape Easement.

The area between back of curb and SW, is to be paved with 4" concrete. This is recommended to protect against erosion.

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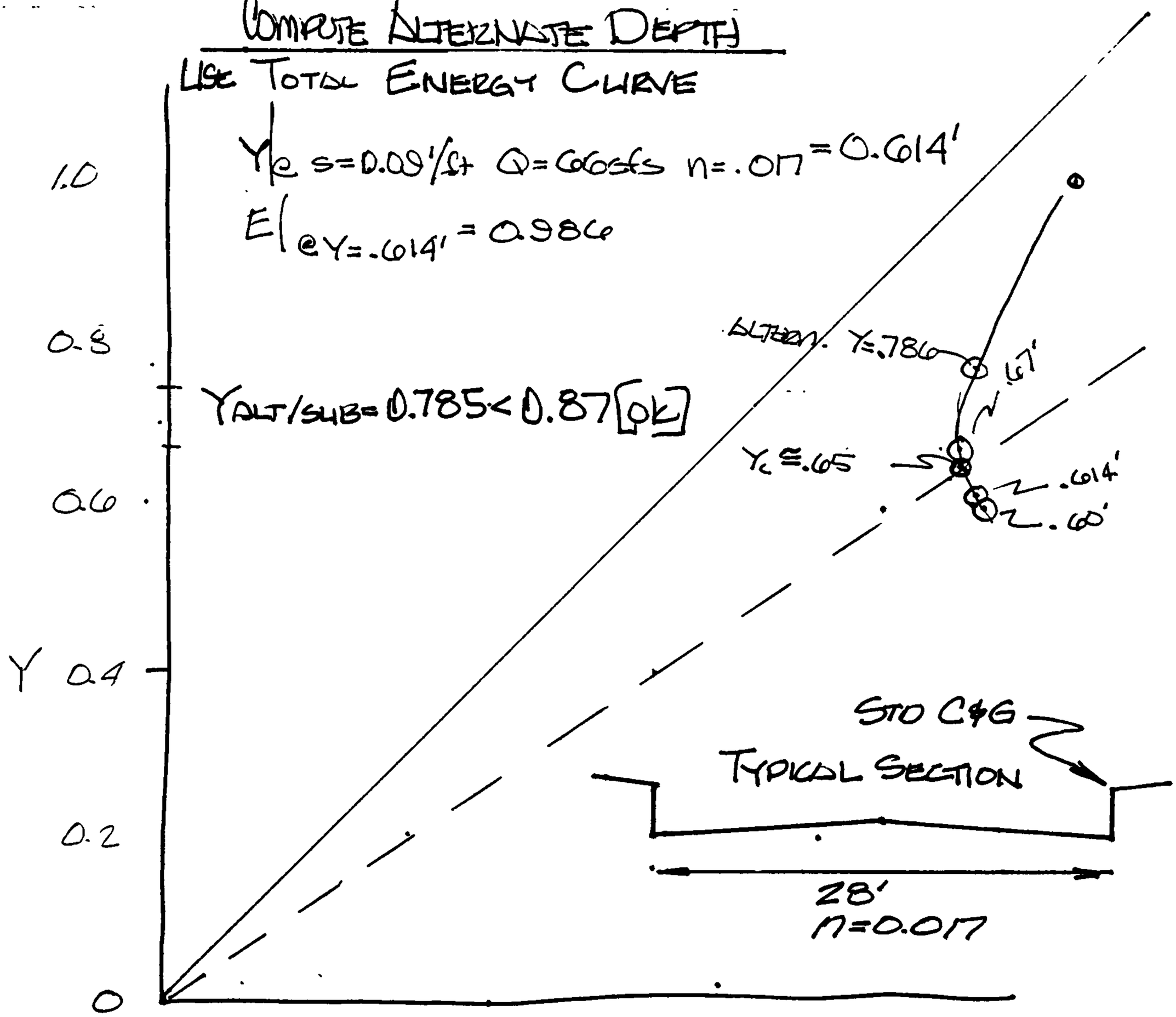
COMPUTE ALTERNATE DEPTH

USE TOTAL ENERGY CURVE

Y_c @ S=0.09'/ft Q=660cfs n=.017 = 0.614'

$E|_{@Y=.614'} = 0.986$

$Y_{ALT/SUB} = 0.785 < 0.87$ [OK]



E

SUBCRIT. POINTS

Y	A	V	E
.77	17.64	3.68	0.981
.78	17.92	3.63	0.984
.79	18.20	3.57	0.988
.785	18.06	3.59	0.986

← ALTERNATE DEPTH

.785 < .87

SUPERCRIT. POINTS

Y	A	V	E
.4	7.28	8.93	
.67	14.84	4.38	0.97
.614	13.27	4.898	0.986
1.0	24.0	2.70	1.11
0.6	12.88	5.05	1.0
0.65	14.28	4.55	.9715
.64			.975

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APPENDIX F

UNIT 5 (PHASES 7 & 8)
DETAILED HYDRAULIC ANALYSIS--CONSTRUCTION PLANS

CATCH BASIN DESIGN SUMMARY TABLE

DRAINAGE REPORT FOR WILLOW WOOD SUBDIVISION, UNIT 5 (PHASES 7 & 8) **March 1996**

STREET	Q100 (cfs)	SLOPE (%)	D100 (ft)	CATCH BASIN HYDRAULICS TYPE		INFLOW	BYPASS	COMMENTS
Jewel Cave	44	1	0.56	A-single	north	6	16	
				A-single	south	6	16	
				C-single	north	6	10	
				C-single	south	6	10	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		20		St. storm drain
Thunder Basin	27	0.6	0.54	A-single	north	6	7.5	
				A-single	south	6	7.5	
				C-single	north	6	1.5	
				C-single	south	6	1.5	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		3		St. storm drain
Wastach	15	0.6	0.54	A-single	north	6	1.5	
				A-single	south	6	1.5	
				Total Intercepted=		12		Remainning flow intercepted by Chiricahua
				Total bypass flow=		3		St. storm drain
Wolf Creek	28	0.6	0.55	A-single	north	6	8	
				A-single	south	6	8	
				C-single	north	6	2	
				C-single	south	6	2	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		4		St. storm drain
Chiricahua	26	0.6	0.55	A-single	north	6	7	Bypass flow from side streets
				C-single	north	6	7	
				A-single	south	6	1	
				C-single	south	6	1	
				Total Intercepted=		24		Remainning flow intercepted by Chiricahua
				Total bypass flow=		2		St. storm drain
Chiricahua at	6	0	0.2	C-quad	center	6	0	Type C - quad grate, sump condition
end of cul-de-sac								Bypass flow from Chiricahua & Wolf Creek
				Total Intercepted=		6		Flow ponded 0 2 ft. over grate
				Total bypass flow=		0		Flow ponded 1.4 ft. over grate for 2X100
								year design (see seperate analysis)
				Total Intercepted=		114		AHYMO shows 112.4, difference due to
								routing and attenuation.

FILE:pantera/willow/hyd/table1.xls.

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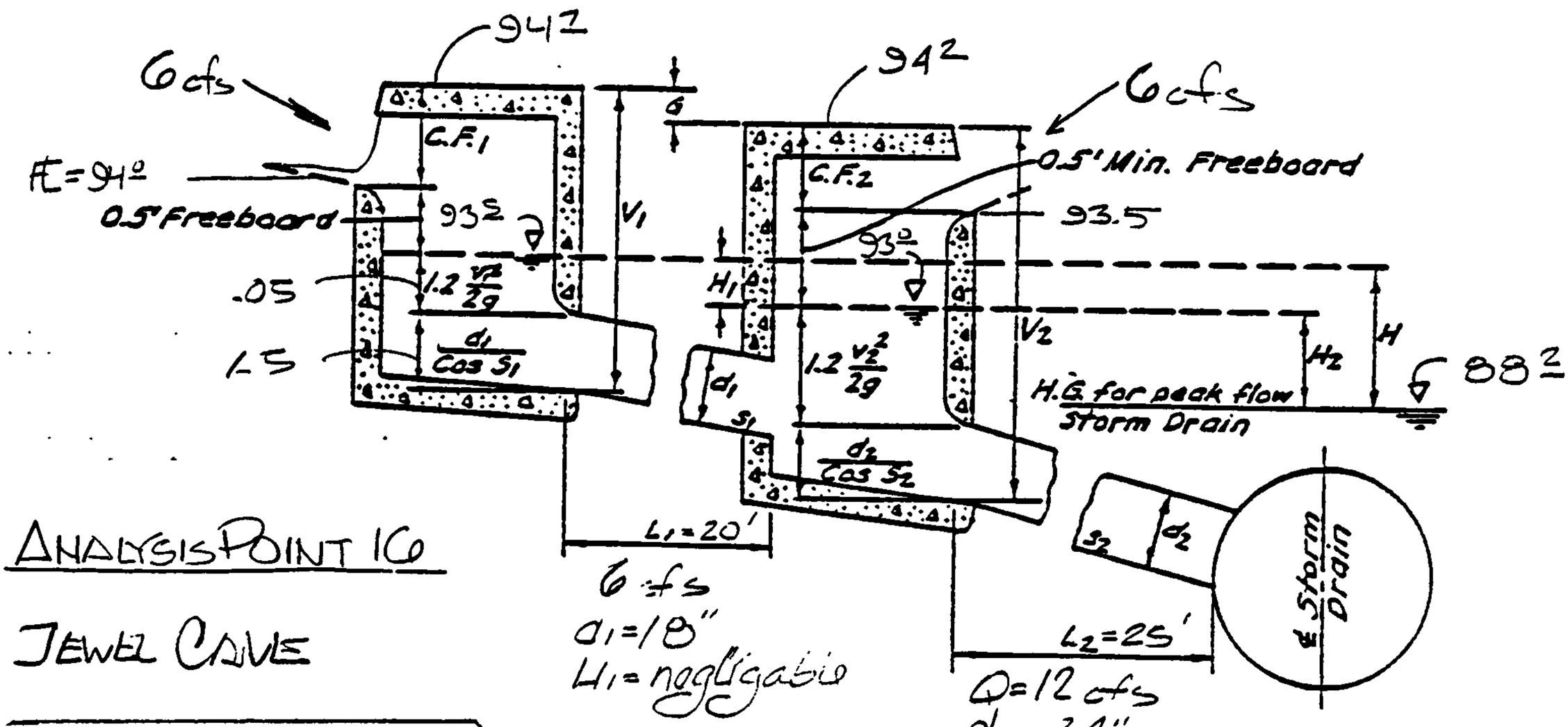

ANALYSIS POINT 16

JEWEL CAVE

STA 10+50

Q = 44 cfs . S=1.0% dn=.56' Qint/2-'C' = 6 cfs

$H_{avail} = 0.5 >> .05$

$H_{2\,avail} = 93.0 - 88.2 = 4.8$ [ok]

$H_{avail} = 5.3$ [ok] >> $H_{req'd}$.

24 cfs intercepted by 4- Single Grate "A" & "C" BASINS.

20 cfs bypass flow.

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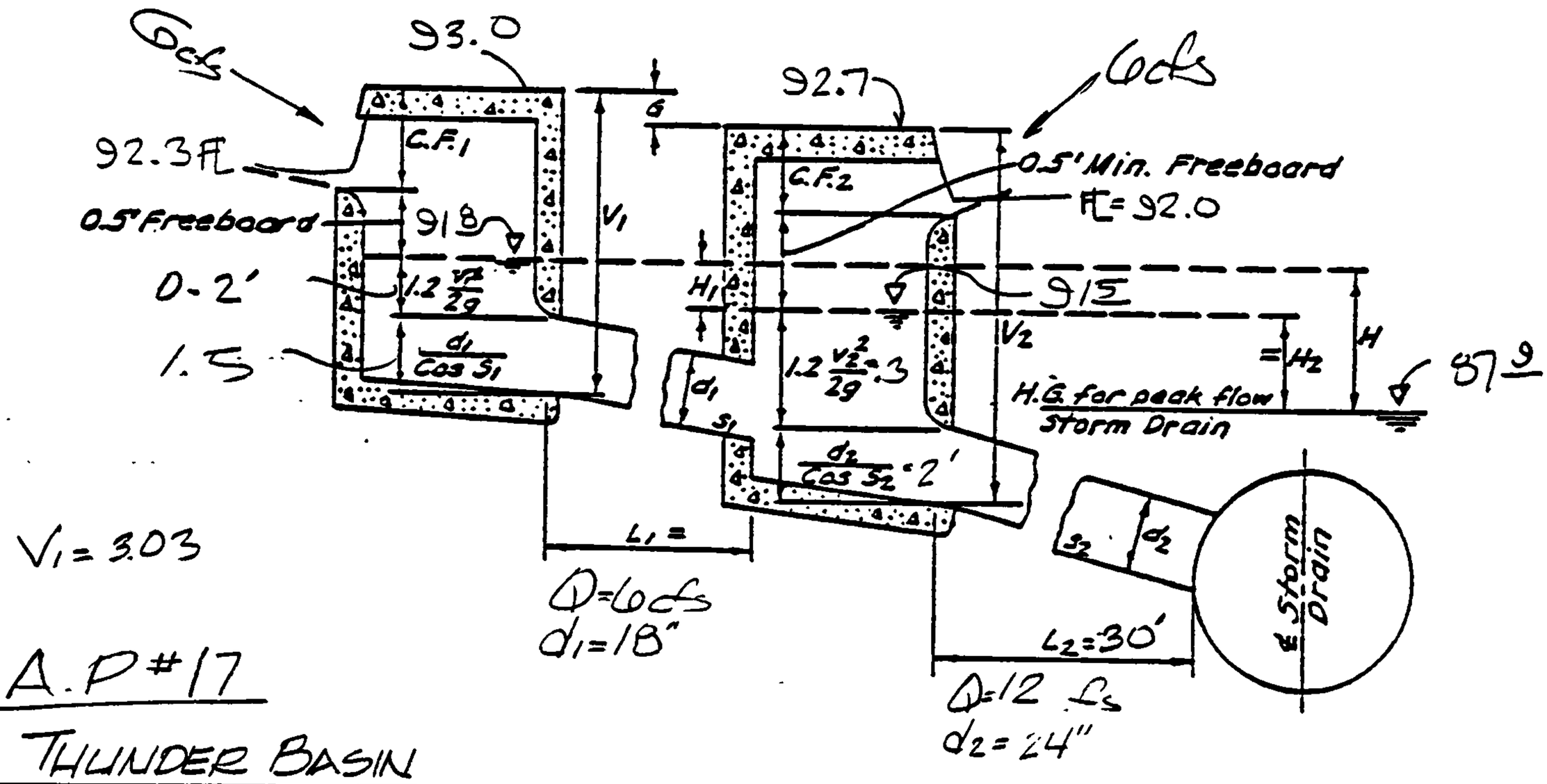

A.P #17

THUNDER BASIN

Q_{100} = 27cfs S = 0.6% dn = 0.54' Q = 6cfs/Basin

6 × 4 = 24cfs collected, 3 cfs bypass flow

H_1 = 0.3' $H_{REQ'D}$ = >> 0.1'

H = 91.8 − 89.9 = 1.9' >> $H_1 + H_2$ [ok]

NOTE: INLETS SHOWN ON CHIRICAHUA MOVED TO THUNDER BASIN

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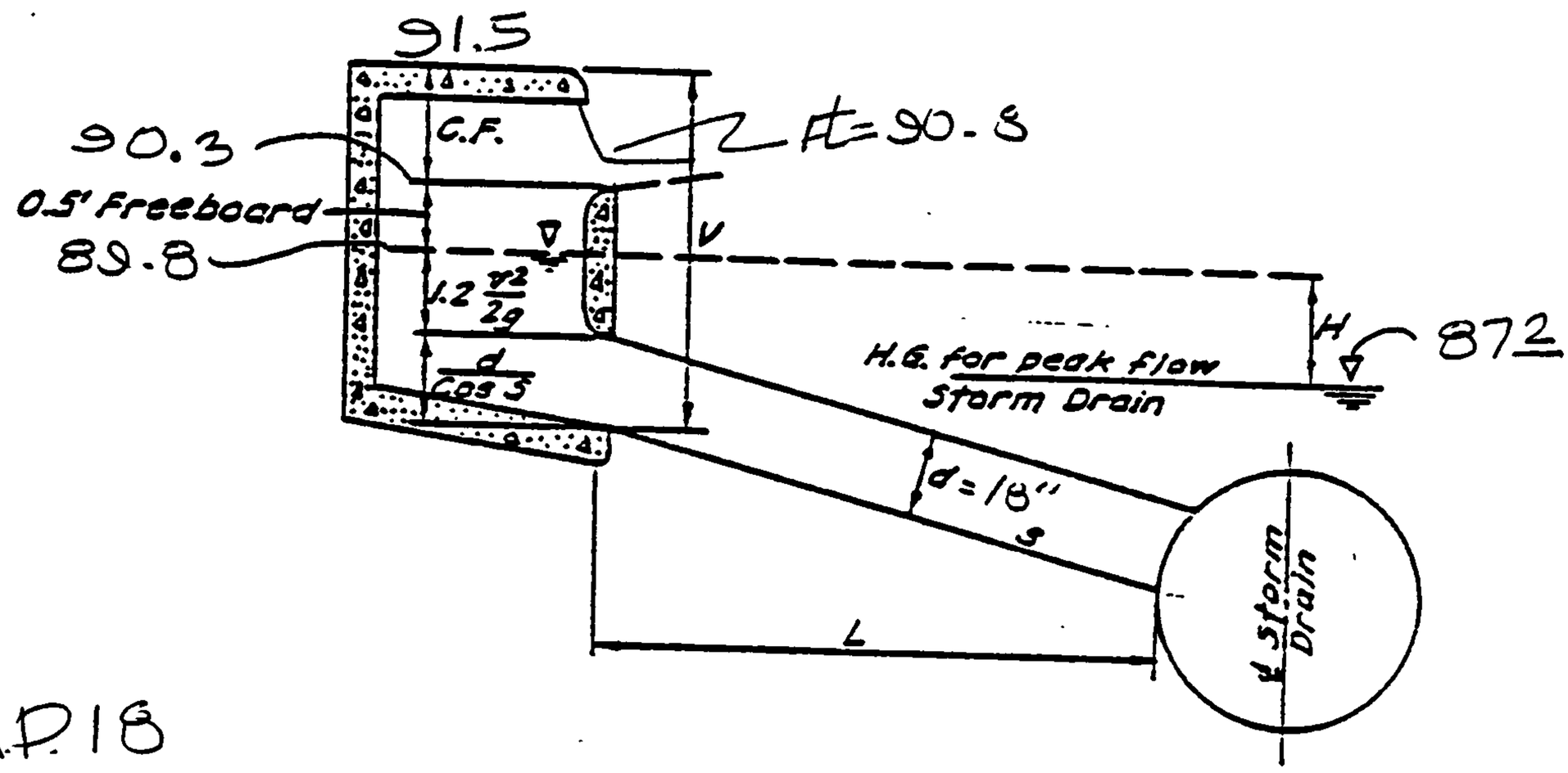

A.P. 18

WASTACH

Q=15 cfs S=0.6% dh=0.54' Qint.=6 cfs/Basin

USE 2 Sinks Grate Type "A" Catch Basins.
. 12 cfs intercepted.
3 cfs By Pass flow.

HREQ'D << HAVAILABLE
0.2' 2.6' [ok]

INLETS ADDED TO WASTACH

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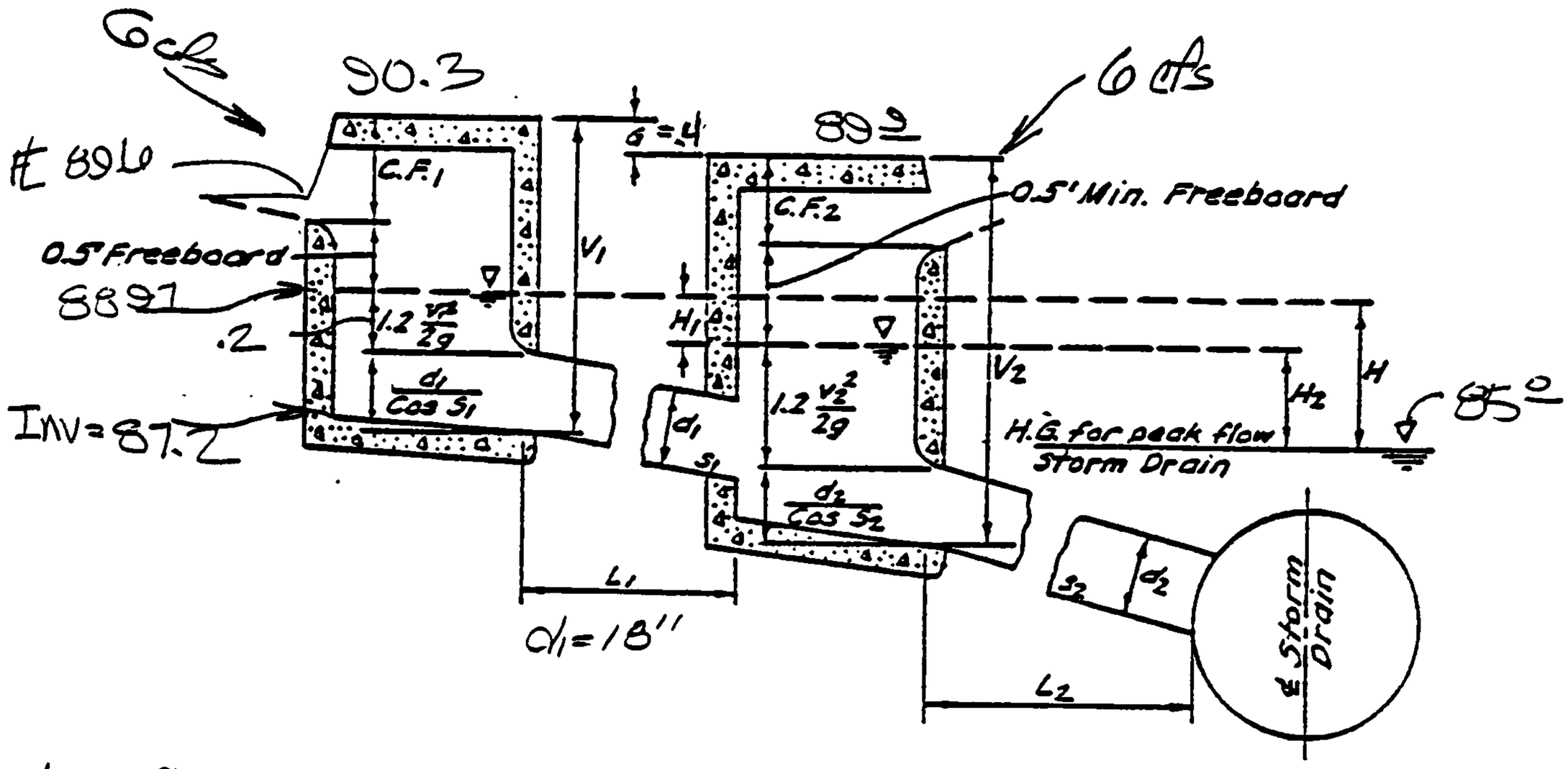

WOLF CREEK

Q_{100} = 28 cfs S = 0.6% dn = 0.55' Q_{int} = 6 cfs/inlet

USE 4 - single grate = 24 cfs collected

= 4 cfs bypass

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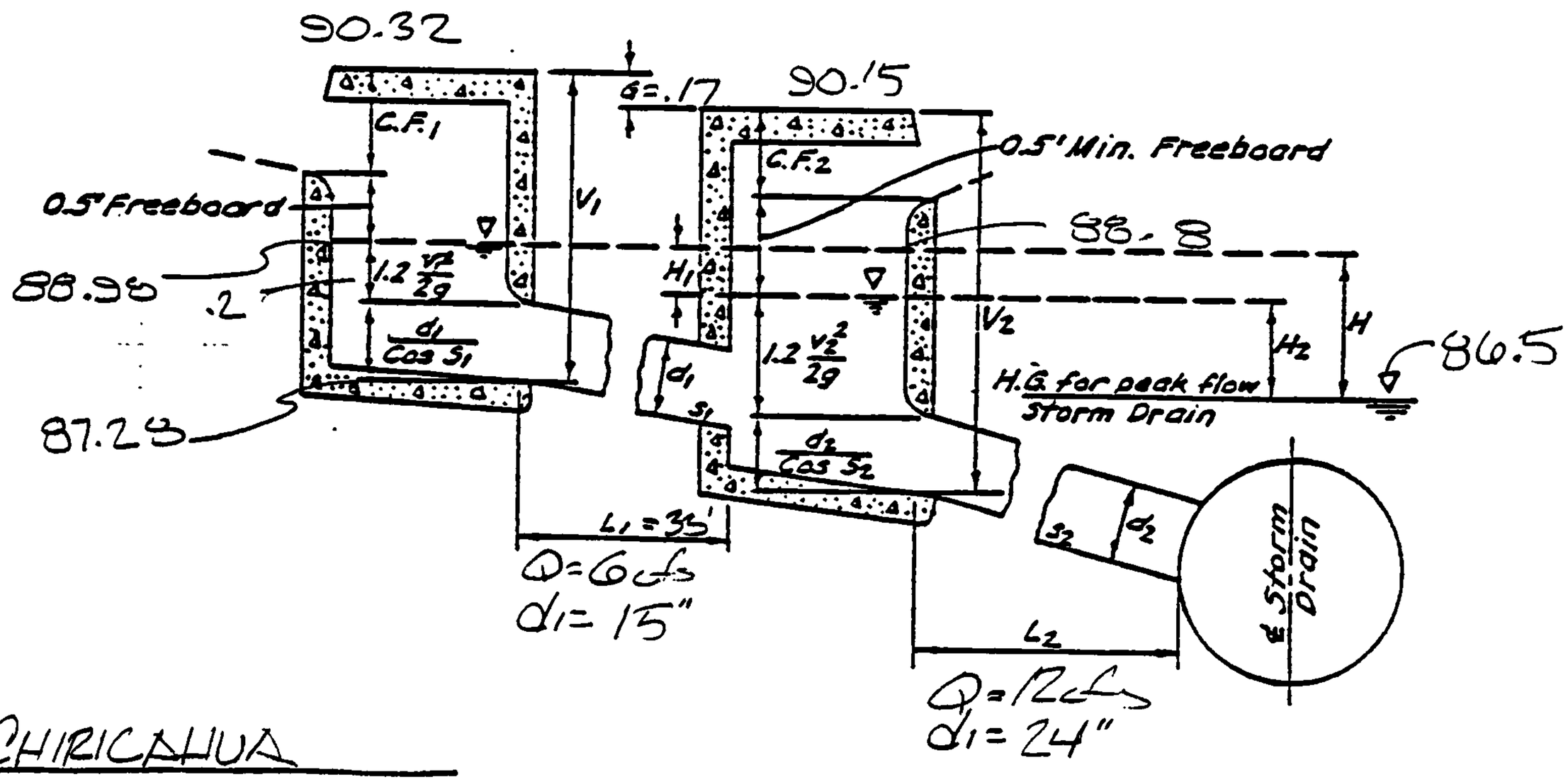

CHIRICAHUA

Q = 26 cfs (bypass flow)

S=0.5% dn=.55 ft ⟹ 6 cfs/inlet = 24 cfs
2 cfs BY PASS FLOW

USE 4 TYPE 'C' Single Grate Catch BASINS

H1 REQ'D = << .5'

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AVID ENGINEERING, INC.

INLET DESIGN AT CHICICAHUA

DESIGN SYSTEM FOR 2x100YR FLOW.
THIS DESIGN CRITERIA IS MEET BY DESIGNING THE CUL-DE-SAC INLETS TO ACCEPT A FLOW EQUAL TO THE FULL 100YR BASIN. THIS COMBINED WITH THE FLOW COLLECTED BY THE UPSTREAM INLETS EQUALS 2x100YR EVENT.

109 cfs collected by upstream inlets + 3.4 cfs flow remaining to be collected + 112.4 cfs Over-design equal to 100YR EVENT FOR BASIN = 224.8 cfs

115.8 cfs (USE 116 cfs)
Total Flow to be collected by last inlets.

DESIGN INLETS BASED ON SUMP CONDITION.
USE QUADRUPLE GRATE TYPE 'C' INLET.

FLOW COLLECTED = 79 grate + 38 curb opening = 117 cfs @ d = 1.4 ft. [ok]

DEPTH OF PONDING OVER THE 8" curb + 4' SW = 1.4' - .75" = 0.65

* AT THE LOW POINT THE 2x100YR IS 0.65 ft ABOVE THE ROW. FOR THE 100YR DESIGN THE DEPTH OF FLOW = 0.2 ft above grate (< curb height). THE Cul-DE-SAC is graded to contain the 2-100YR EVENT WITHIN THE 10 ft P.U.E AREA.

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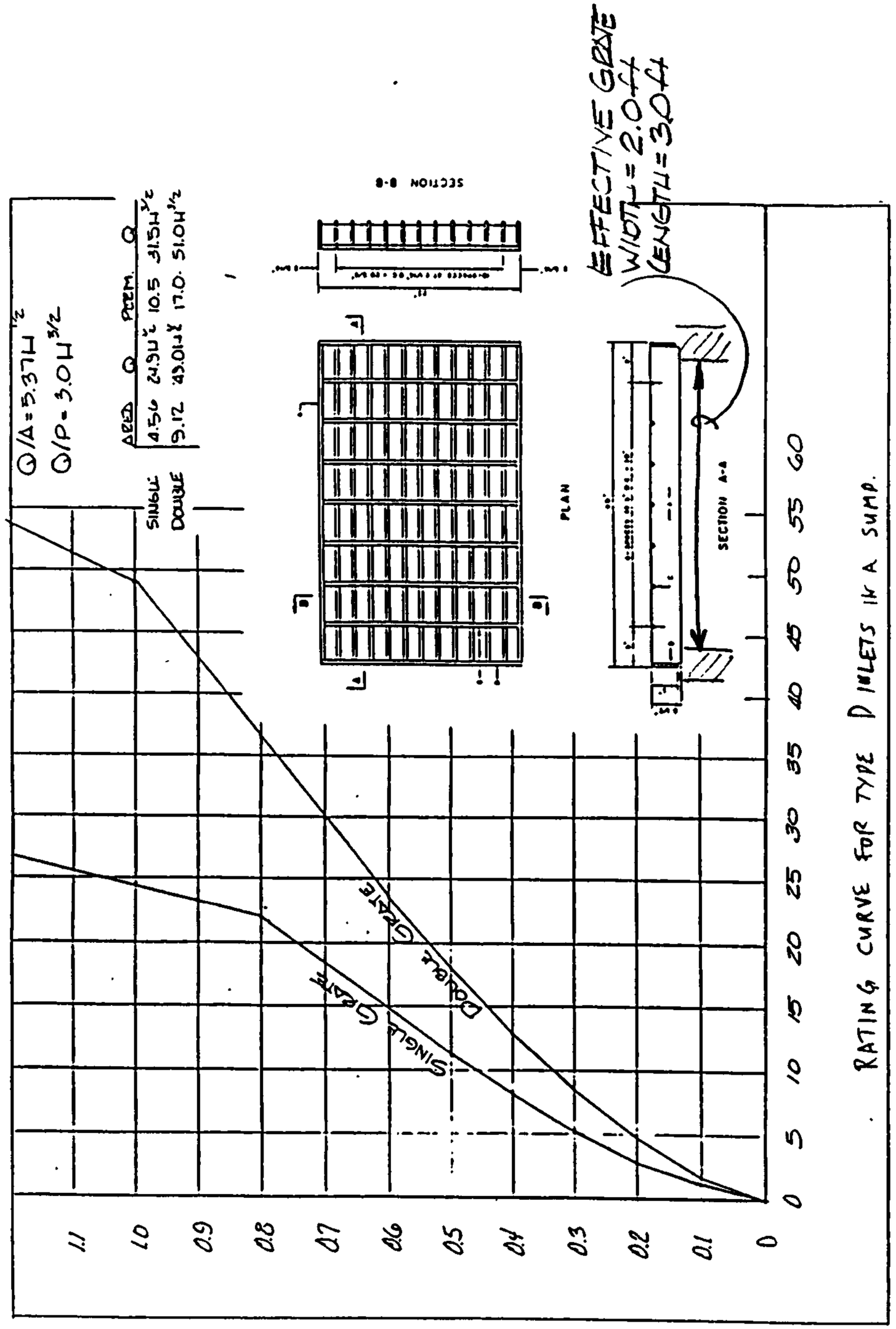
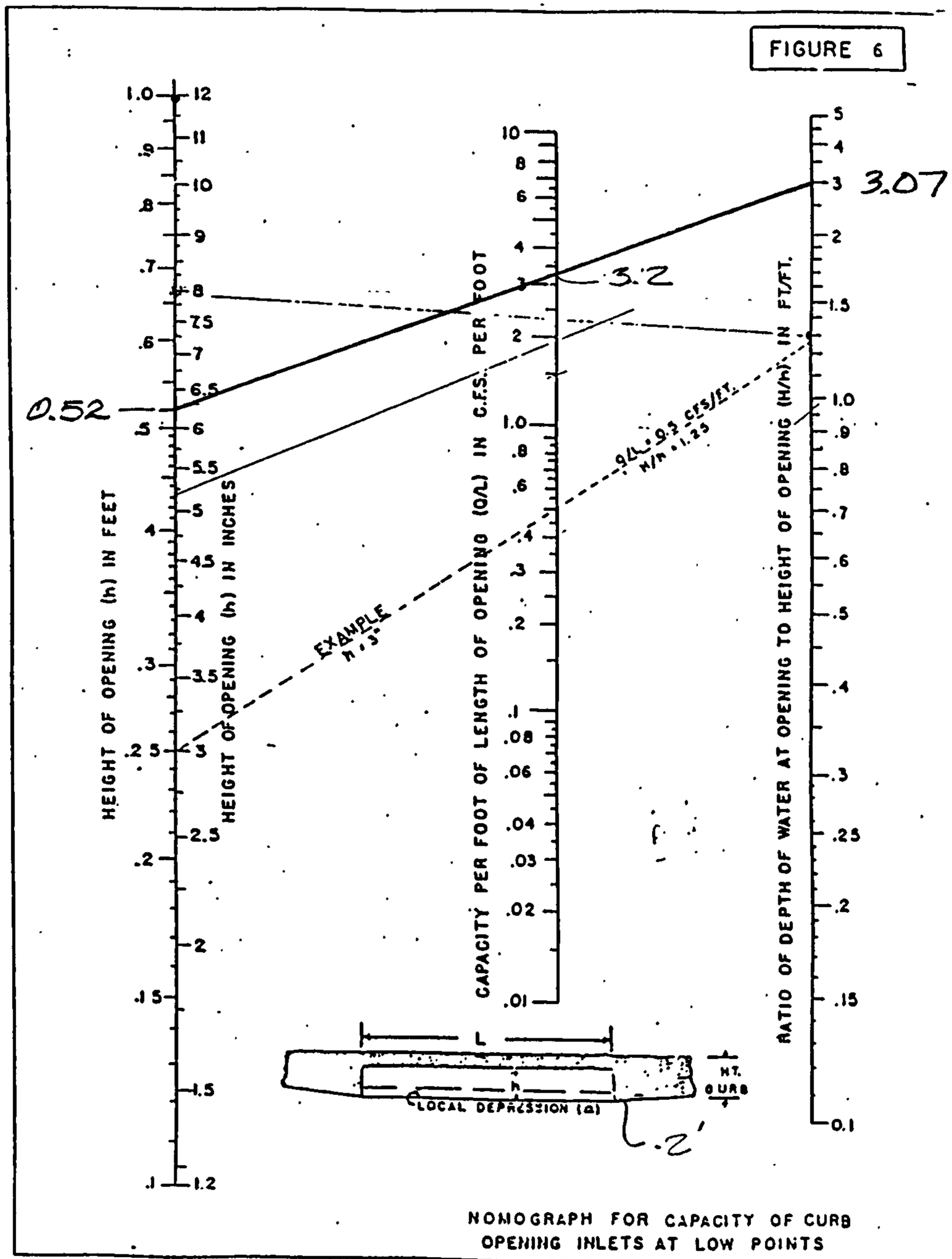




$Q_{GRATE} = P \times 3.0 \times H^{3/2}$ @ QUAD TYPE 'C' INLET

$= (2 \times 2' + 4 \times 3') \times 3.0 \times 1.4^{3/2}$ depth = 1.4'

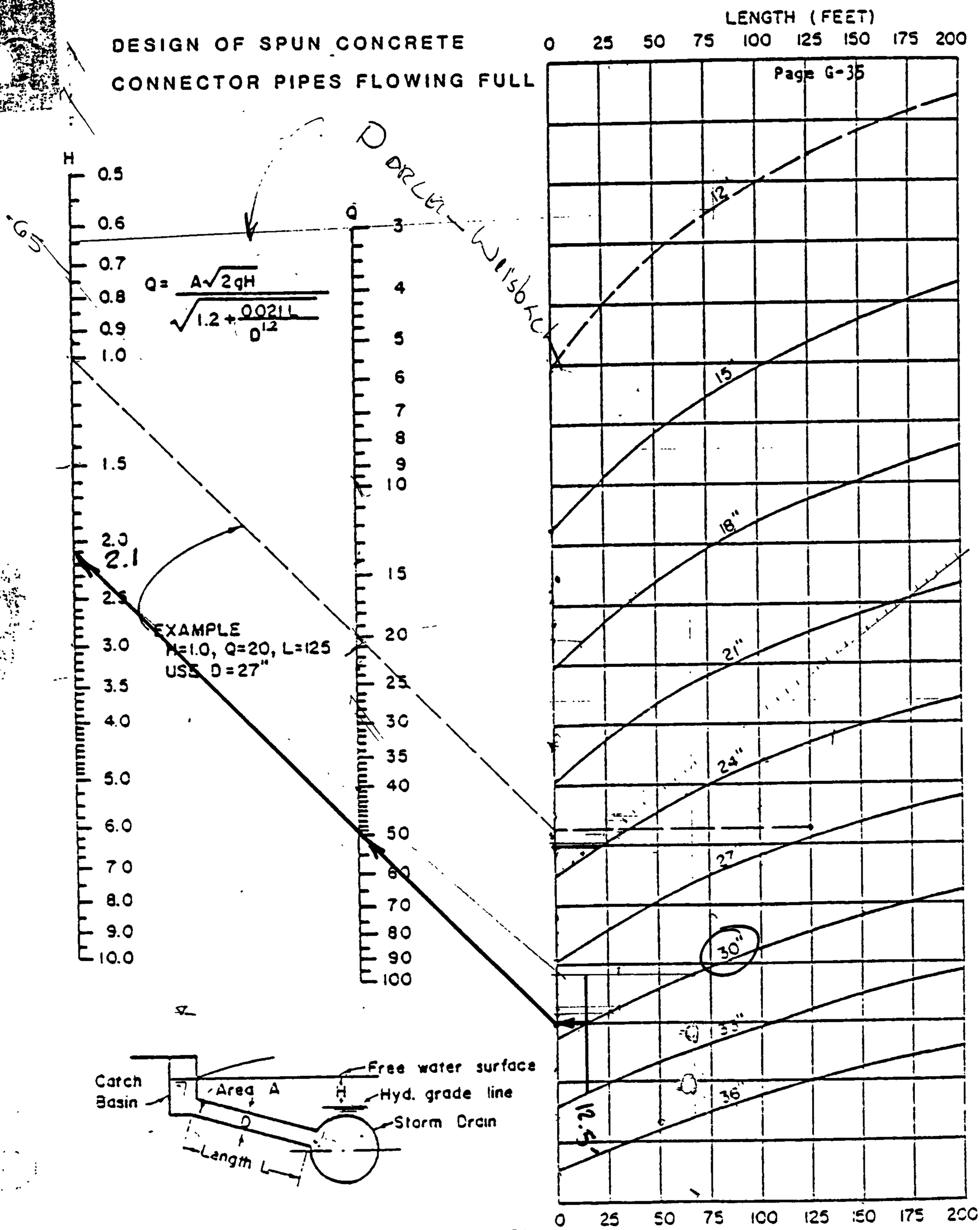
$= 79$ cfs

$h = 6\frac{1}{4}$ in. $= 0.52$ ft $H = 1.4$ ft $+ .2$ ft $= 1.6$ ft

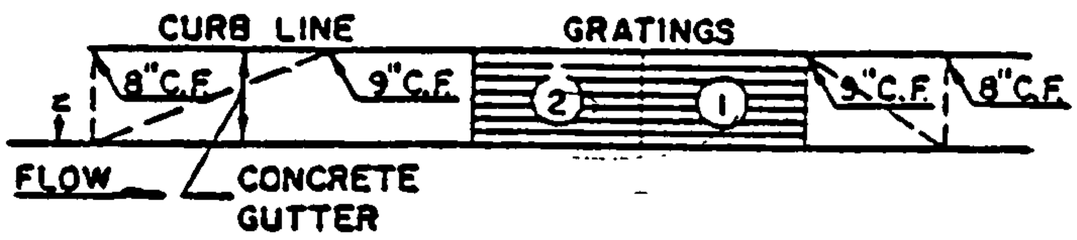
$H/h = 3.07$ $Q/L = 3.2$ $Q = 3.2 \times 12$ ft $= 38$ cfs

$Q_{TOTAL} = 79 + 38 = 117$ cfs @ 1.4 ft

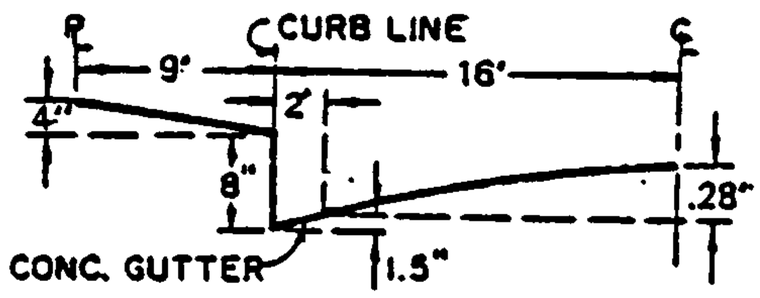
DESIGN OF SPUN CONCRETE CONNECTOR PIPES FLOWING FULL



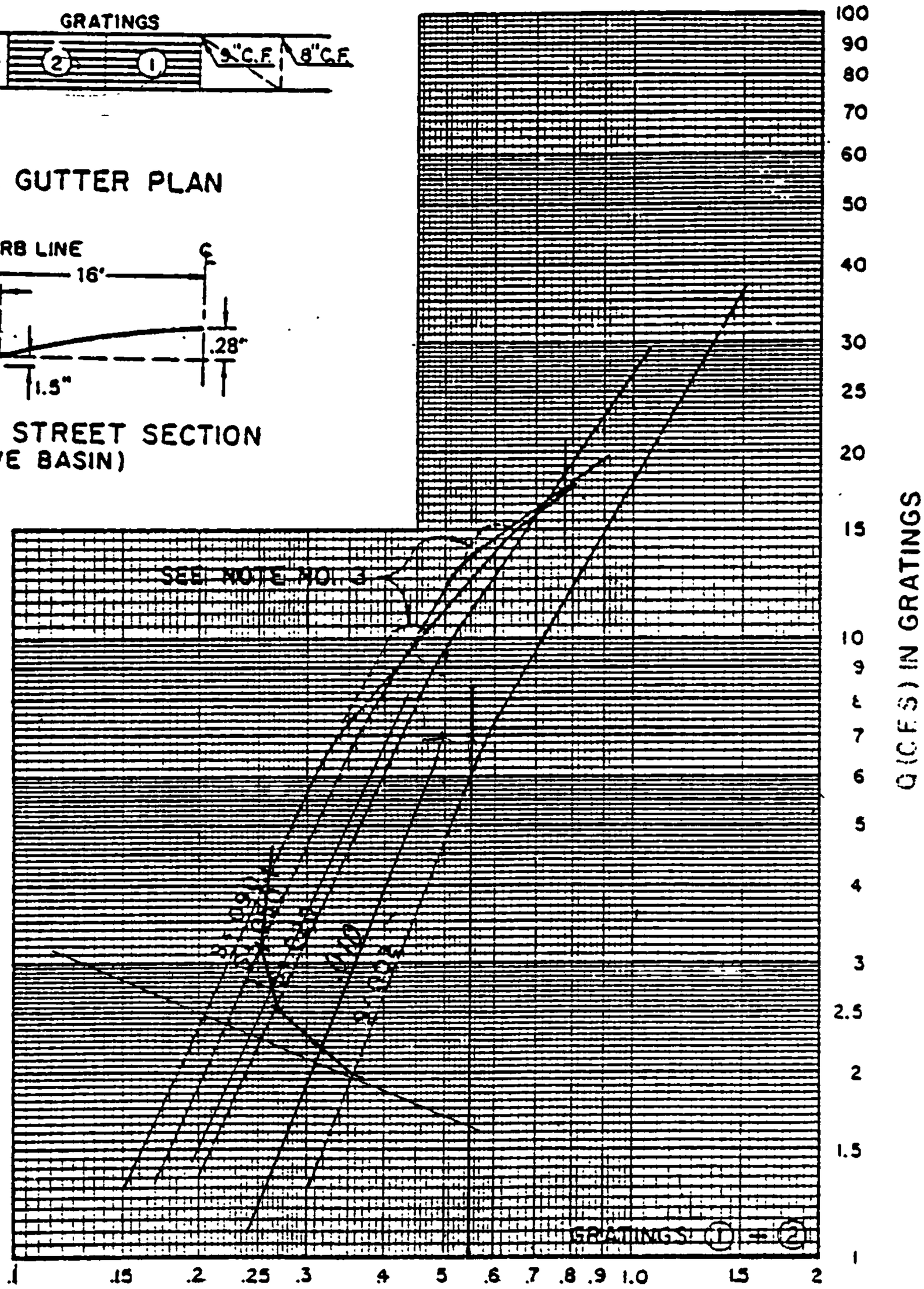
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



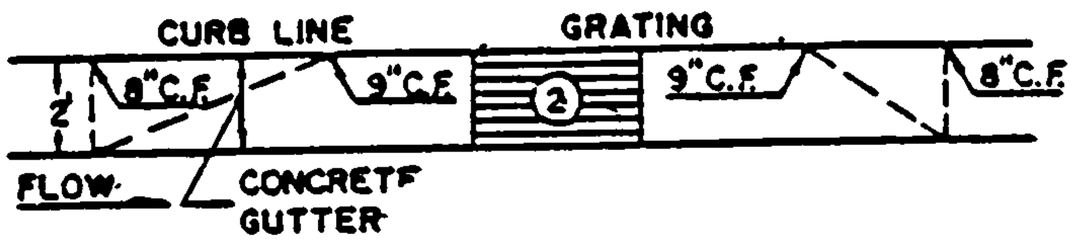
GRATING & GUTTER PLAN



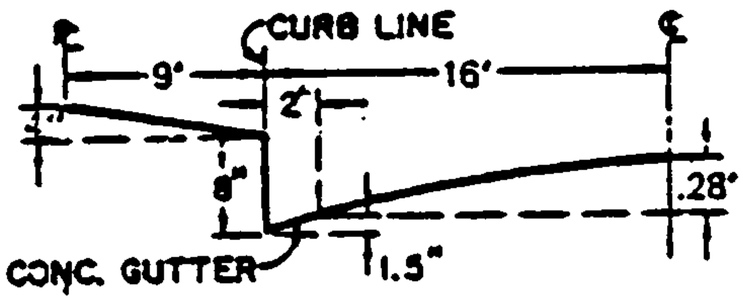
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



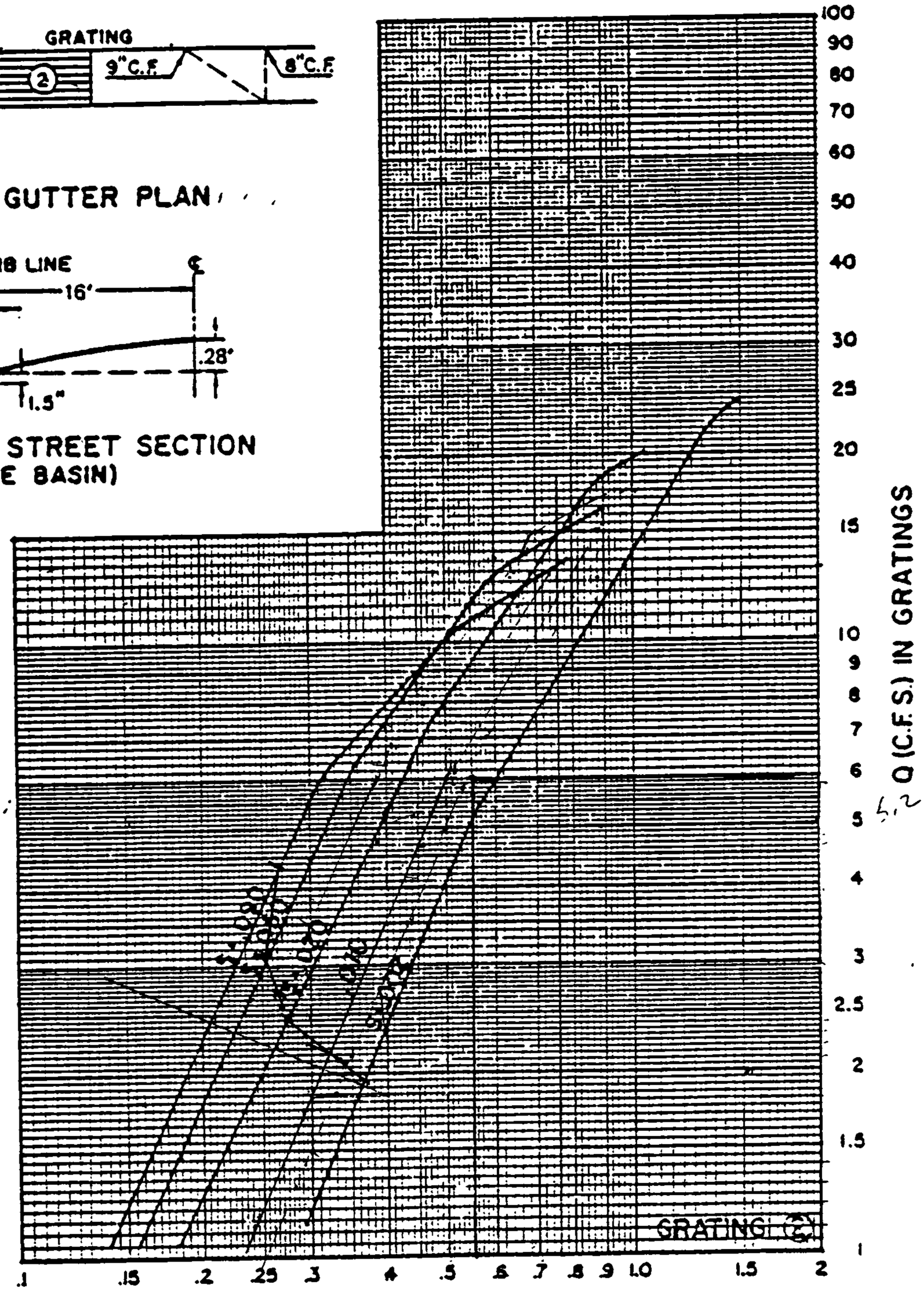
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN

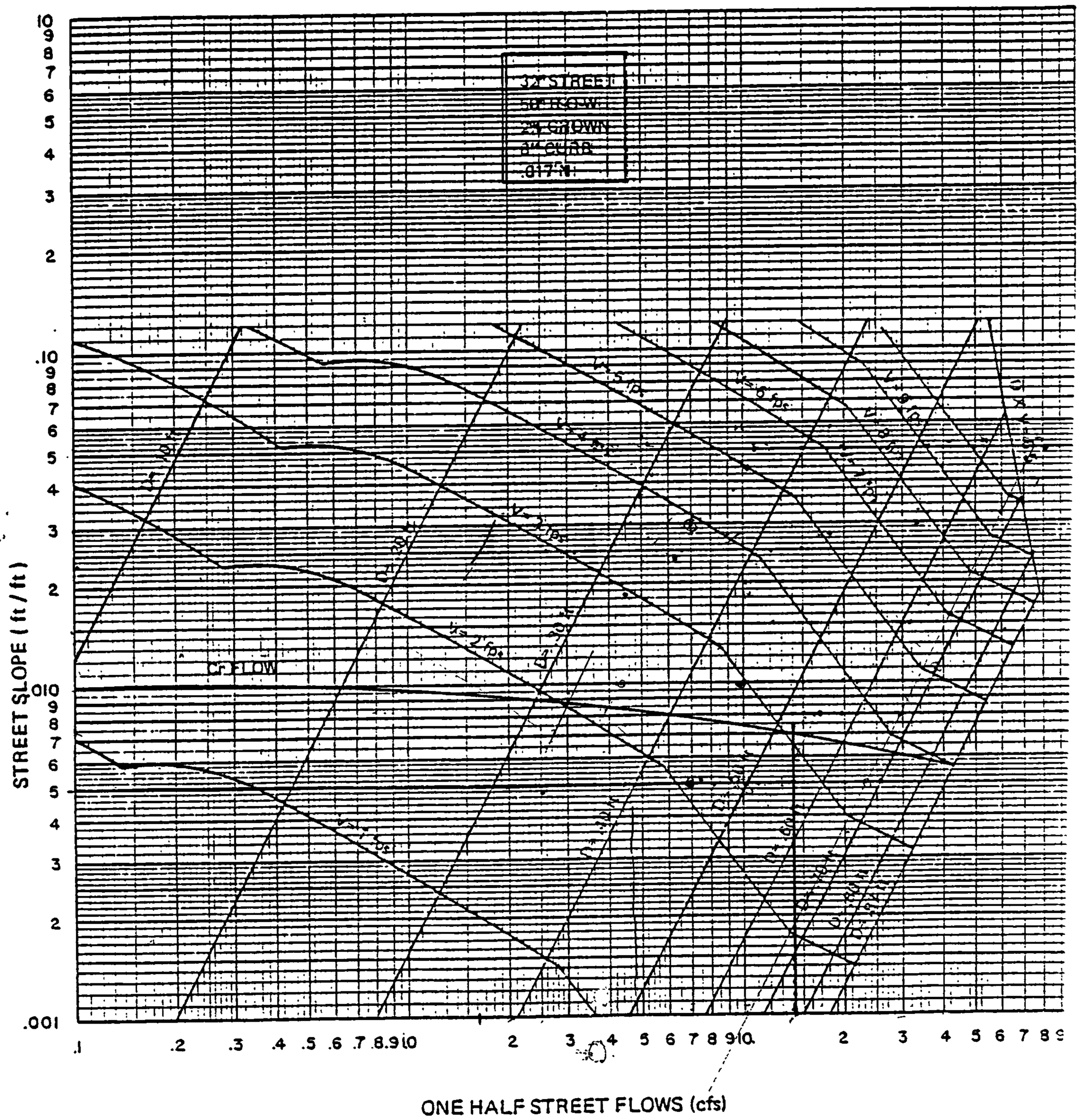


TYPICAL HALF STREET SECTION
(ABOVE BASIN)



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

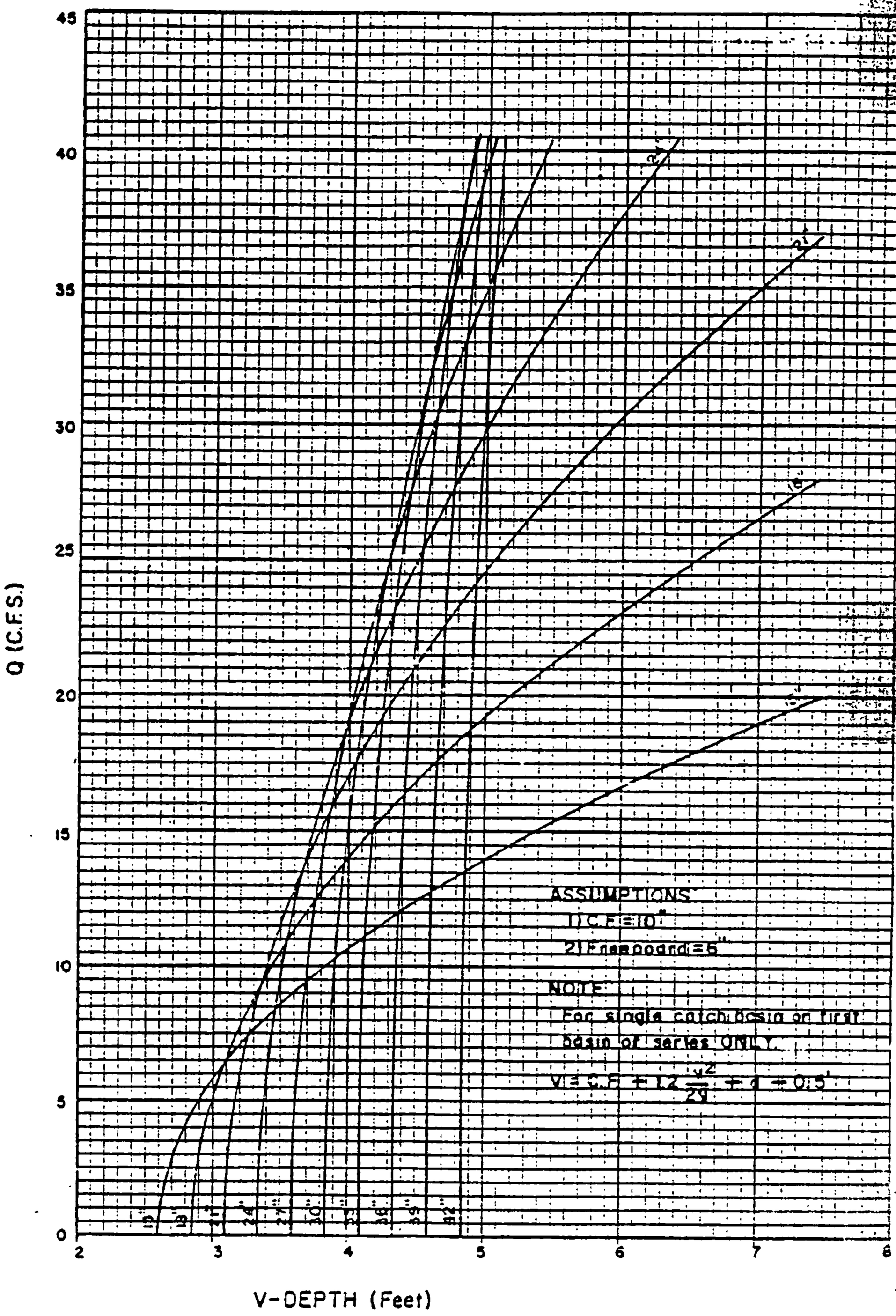
STREET CAPACITY



REV. 3-83

PLATE 22.3 D-1

CATCH BASIN V-DEPTH



SUMMARY OF HYDRAULIC CALCULATIONS, CHIRICAHUA ST - 2 x 100 Year Event
CLOSED CONDUIT

REVISED HGL ANALYSIS BASED ON REVISED HYMO, FEB 8, 1996
PROJECT. WILLOWWOOD
BY: RLB
FILE:PROJECTS\WILLOW\HYD\HGL96.WB1

1	2	3	4	5	6	7	8	9	10		11	12	13	14		15	16	17	18	19	20	21	22			Comments
											JUNCTION		LOSSES													
STATION	STRUCT	D	Q	A	V	K	Sf	L	DELTA	Q	D	ANGLE	hf	hb	Aavg	hj	hmh	ht	hmisc	SUM	E G	hv	H G	STATION	STRUCT	
OUTFALL	MH	AP 19																			5485 66	2 04	5483 62			(1) AND (2)
		60	225	19 64	11 46	2604	0 0075	159										0 01		0 01	5485 67	2 04	5483 63	OUTFALL	MH	2x100 YEAR
STA 19+11	CB JUNCTION	90 D CONF											1 19							1 19	5486 88	2 04	5484 82			2x100 YEAR
		60	109	19 64	5 55	2604	0 0018	57	5	116	46	90			19 64	0 15				0 15	5487 00	0 48	5486 53	STA 19+11	CB JUNCTION	(3) & (4)
STA 18+54	H & V BEND	7 D BEND											0 10							0 10	5487 10	0 48	5486 62			
		60	109	19 64	5 55	2604	0 0018	108	7					0 03	19 64		0 02	0 01		0 06	5487 16	0 48	5486 69	STA 18+54	H & V BEND	
STA 17+46	MH	90 D CONF											0 19							0 19	5487 35	0 48	5486 87			
		48	83	12 57	6 60	1436	0 0033	146		20	30	90			16 10	0.03	0 03			0 07	5487 42	0 68	5486 74	STA 17+46	MH	
STA 16+00	2-WYES	45 D CONF											0 49							0 49	5487 91	0 68	5487 23			
		48	61	12 57	4 85	1436	0 0018	161		22	24	45			12 57	0 62	0 02			0 64	5488 55	0 37	5488 18	STA 16+00	2-WYES	
STA 14+39	MH	90 D CONF											0 29							0 29	5488 84	0 37	5488 47			
		48	47	12 57	3.74	1436	0 0011	. 258		14	30	90			12 57	0 30	0 01			0 31	5489 15	0 22	5488 93	STA 14+39	MH	
STA 11+81	MH	90 D CONF											0 28							0 28	5489 43	0 22	5489 21			
		36	22	7 07	3 11	667	0 0011	206		25	30	90			9 82	0 34	0 01			0 35	5489 77	0 15	5489 62	STA 11+81	MH	
STA 9+75	MH	45 D BEND							45	0			0 22							0 22	5490 00	0 15	5489 85			
		36	22	7 07	3 11	667	0 0011	75			45			0 02	7 07		0 01			0 03	5490 03	0 15	5489 87	STA 9+75	MH	
STA 10+50	MH	45 D BEND							45				0 08							0 08	5490 11	0 15	5489 96			
														0 02	3 53		0 01			0 03	5490 14	0 15	5489 98	STA 10+50	MH	

NOTES

(1) MAINLINE FLOW = 387 cfs @ Tp=1 567 hrs
(2) CONFLUENCE AT MAINLINE IS NON-PRESSURE FLOW, USE 0 8D FOR STARTING WSEL
(3) ASSUMES ALL UPSTRAM INLETS FAIL, FLOW TO END OF CHIRICAHUA ST 116cfs
(4) VERTICAL CONFLUENCE AT CATCH BASIN

SCALE: 1"=50'

STA: 10+00.00 CHIRICAHUA STREET = STA: 9+46.02 JEWEL CAVE ROAD

STA: 11+92.53 CHIRICAHUA STREET = STA: 10+00.00 THUNDER BASIN ROAD

STA: 14+50.78 CHIRICAHUA STREET = STA: 10+00.00 WASATCH ROAD

STA: 17+55.93 CHIRICAHUA STREET = STA: 10+00.00 WOLF CREEK ROAD

STA: 18+68.93 CHIRICAHUA COURT

STA: 14+69.68 WOLF CREEK ROAD = STA: 15+65.91 WASATCH ROAD

STA: 14+28.12 JEWEL CAVE ROAD = STA: 10+00.00 LOS PADRES STREET

STA: 12+56.77 LOS PADRES STREET = STA: 14+88.89 THUNDER BASIN ROAD

STA: 18+77.26 LOS PADRES STREET = STA: 17+27.46 WOLF CREEK ROAD

STA: 18+30.78 LOS PADRES STREET = STA: 18+30.77 ARCHES ROAD

ADJUST GATE VALVE COVER TO GRADE

ADJUST GATE VALVE COVER TO GRADE & RELOCATE FIRE HYDRANT, PER CITY OF ALBUQUERQUE STD. DWG. 2340

GIBSON BLVD. S.E.

GIBSON R/W

JEWEL CAVE ROAD

THUNDER BASIN ROAD

WASATCH ROAD

WOLF CREEK ROAD

ARCHES ROAD

LOS PADRES STREET

CHIRICAHUA STREET

CHIRICAHUA COURT

BLOCK 20

BLOCK 17

BLOCK 18

BLOCK 19

BLOCK 16

BLOCK 15

SD MH#23

60" RCP

48" RCP

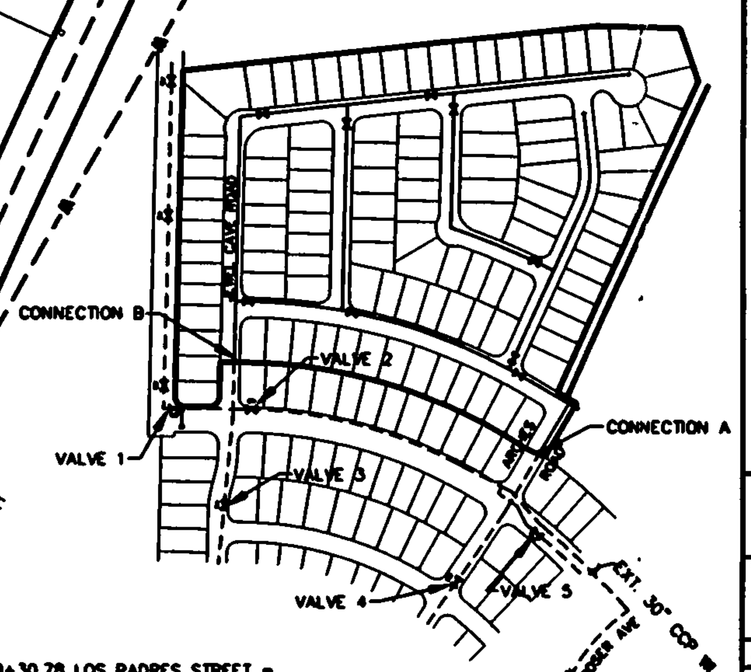
36" RCP

8" SAS

6" WL

EXISTING 8" SAS

CONTRACTOR SHALL USE CAUTION WHEN WORKING IN THE VICINITY OF THE 30" CONCRETE CYLINDER WATERLINE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR DAMAGE INFLICTED ON THE WATERLINE DURING CONSTRUCTION. SUCH REPAIRS SHALL BE MADE AT THE CONTRACTOR'S EXPENCE.



WATER SHUT-OFF PLAN

GENERAL NOTES

1. ALL STATIONING AND OFFSET DIMENSIONS ARE BASED ON CENTERLINE OF RIGHT-OF-WAY.
2. REFER TO CITY OF ABQ. STANDARD DRAWINGS FOR WATER AND SANITARY SEWER CONSTRUCTION.

WATER SHUT-OFF REQUIREMENTS

CONTRACTOR WILL BE RESPONSIBLE FOR THE TIMING AND COORDINATION OF THE WATER SHUT-OFF REQUIREMENTS IN CONJUNCTION WITH THE COMPLETION OF THIS PROJECT.

AT LEAST THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT PWD/WATER SYSTEMS DIVISION (857-8200) TO INITIATE IMPLEMENTATION OF THIS WATER SHUT-OFF PLAN.

ALL NEW WATERLINE/FIRE HYDRANT INSTALLATIONS MUST BE FLUSHED PRIOR TO BACKFILLING OF LINES.

WATER SHUT-OFF PLAN

CONNECTION	CLOSE VALVES
A. ARCHES ROAD NON-PRESSURE CONNECTION	2, 4, 5 & 6
B. JEWEL CAVE ROAD NON-PRESSURE CONNECTION	1, 2 & 3

LEGEND

- EXISTING WATERLINE
- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER
- EXISTING MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING GATE VALVE
- PROPOSED WATERLINE
- PROPOSED STORM DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED CAP OR PLUG
- PROPOSED SINGLE METER, WATER SERVICE LINE
- PROPOSED DOUBLE METER, WATER SERVICE LINES
- PROPOSED SANITARY SEWER SERVICE LINE
- PROPOSED CROSS, TEE, OR ELBOW
- PROPOSED STORM INLET

AVID ENGINEERING, INC.
Civil • Structural • Transportation
6100 Seagull St. NE - Suite 102
Albuquerque, NM 87109 - (505) 881-3237

AS BUILT INFORMATION

CONTRACTOR

WORK STAKED BY | DATE
INSPECTOR'S ACCEPTANCE BY | DATE
VERIFICATION BY | DATE
DRAWINGS CORRECTED BY | DATE

MICRO-FILM INFORMATION

RECORDED BY | DATE
NO.

BENCH MARKS

THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-L21 RESET 1994", LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEVATION 5534.63

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

DESIGN

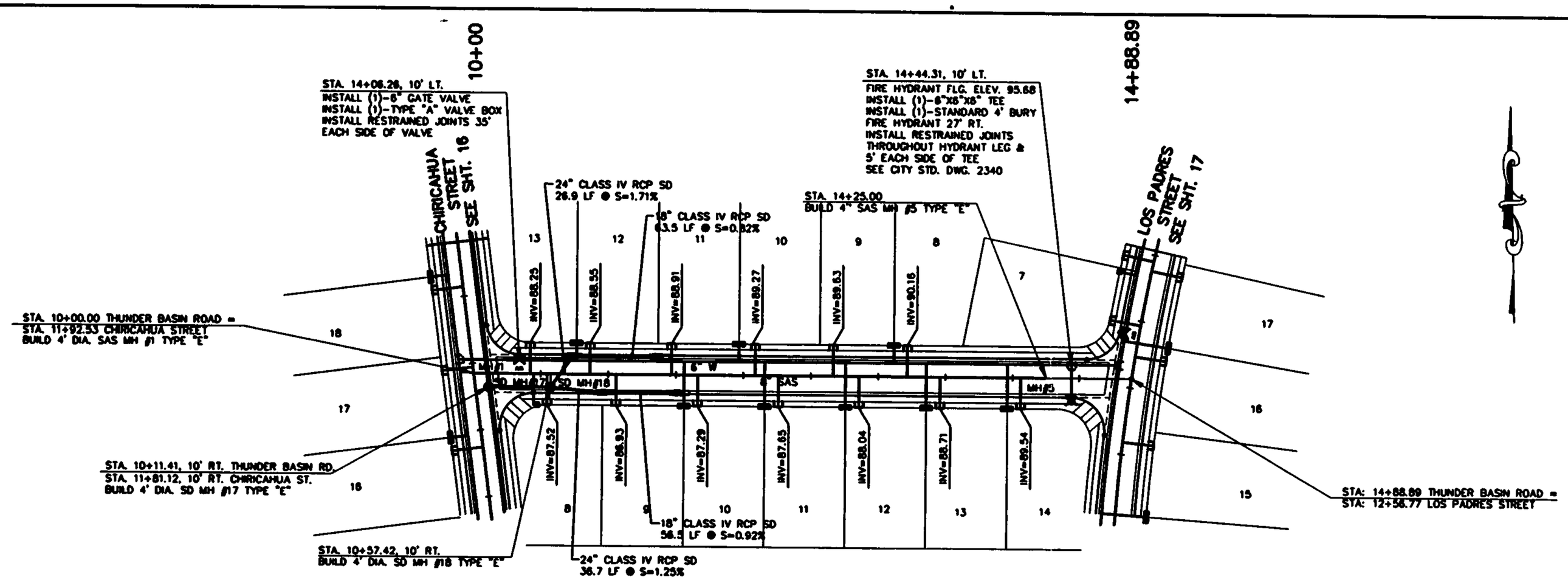
DESIGNED BY	DA	DATE 11/94
DRAWN BY	RAVJ	DATE 11/94
CHECKED BY	RLB	DATE 11/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: WILLOW WOOD - UNIT V
OVERALL UTILITY PLAN

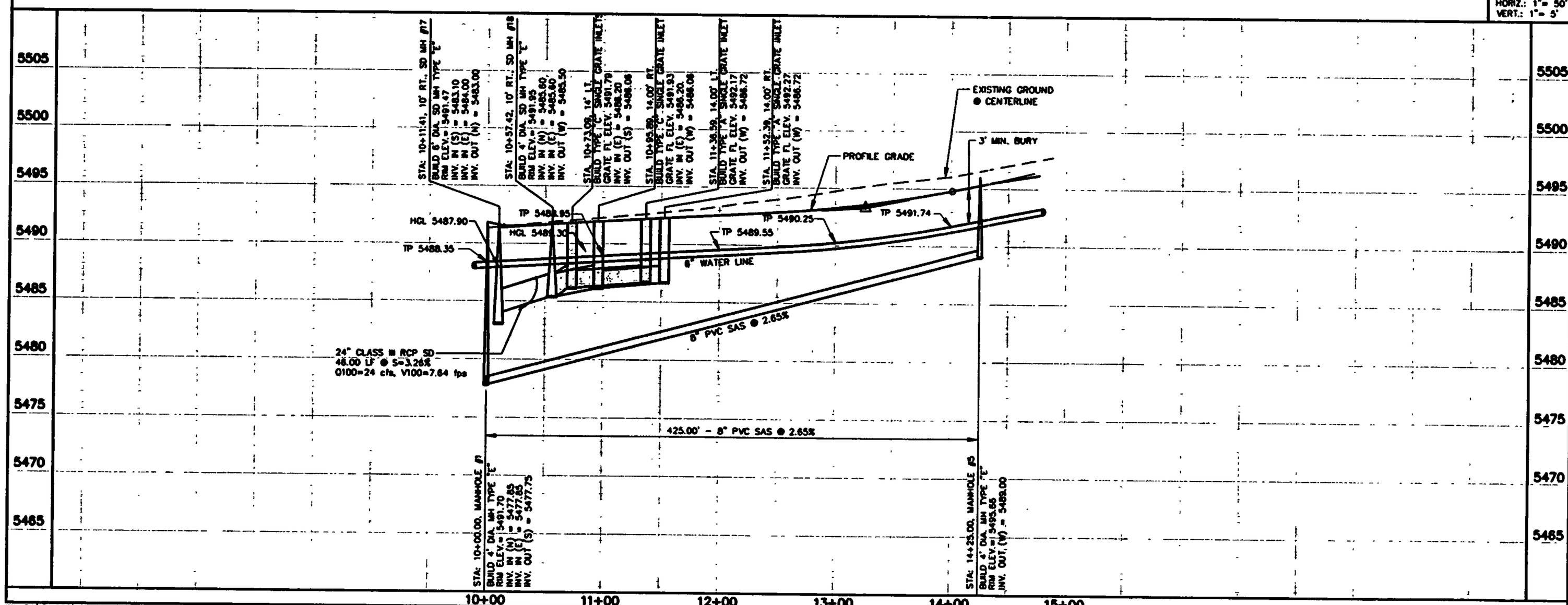
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO.	MAP NO.	SHEET	OF
4604.94	L-21-Z	4	24



THUNDER BASIN ROAD

SCALE:
HORIZ.: 1"= 50'
VERT.: 1"= 5'



WILLOW\DWGS5\UT-THUN.DWG

UTILITY NOTES

1.) STATIONING ALONG ℄ OF STREET UNLESS OTHERWISE NOTED.

2.) SANITARY SEWER LINE LENGTHS COMPUTED FROM MH ℄ TO MH ℄.

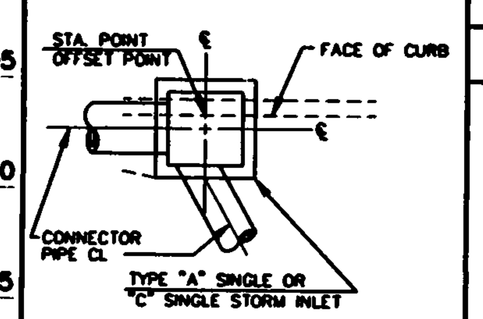
3.) SLOPES ARE COMPUTED INVERT TO INVERT. MH RIM ELEVATIONS GIVEN ARE APPROXIMATE. CONTRACTOR SHALL ADJUST ALL RIMS TO FINAL GRADE.

4.) CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH UTILITY COMPANIES.

5.) CONTRACTOR SHALL VERIFY ALL EXISTING UTILITES AND UTILITY CONNECTIONS PRIOR TO BEGINNING CONSTRUCTION. SHOULD A CONFLICT EXIST OR DESIGN REVISIONS BE REQUIRED FOR ANY REASON, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND ALLOW SUFFICIENT TIME FOR DESIGN REVISIONS SO AS TO NOT DELAY THE CONSTRUCTION SCHEDULE.

LEGEND

- EXISTING WATERLINE
- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER
- EXISTING MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING GATE VALVE
- PROPOSED WATERLINE
- PROPOSED STORM DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED MANHOLE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED CAP OR PLUG
- PROPOSED SINGLE METER, WATER SERVICE LINE
- PROPOSED DOUBLE METER, WATER SERVICE LINES
- PROPOSED SANITARY SEWER SERVICE LINE
- PROPOSED CROSS, TEE, OR ELBOW
- PROPOSED STORM INLET



TYPICAL INLET LOCATION DETAIL

AVID ENGINEERING, INC.
Civil • Structural • Transportation
6100 Seagull St. NE - Suite 102
Albuquerque, NM 87109 - (505) 881-5357

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY
FIELD VERIFICATION BY
DRAWINGS CORRECTED BY
DATE
MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

BENCH MARKS
THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-L21 RESET 1994", LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEVATION 5534.63

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

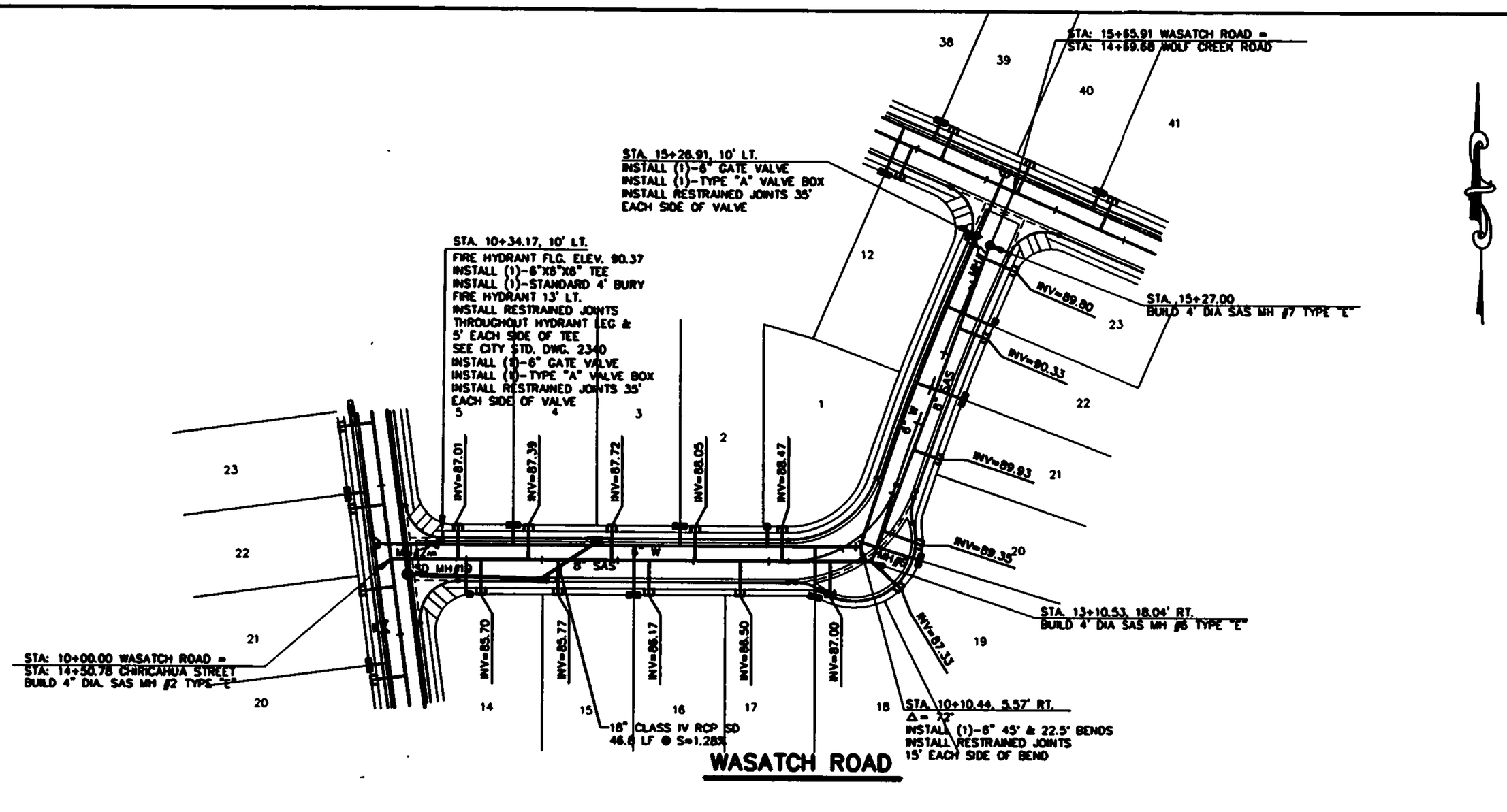
DESIGN
DESIGNED BY DA DATE 11/94
DRAWN BY RAYJ DATE 11/94
CHECKED BY JD DATE 11/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

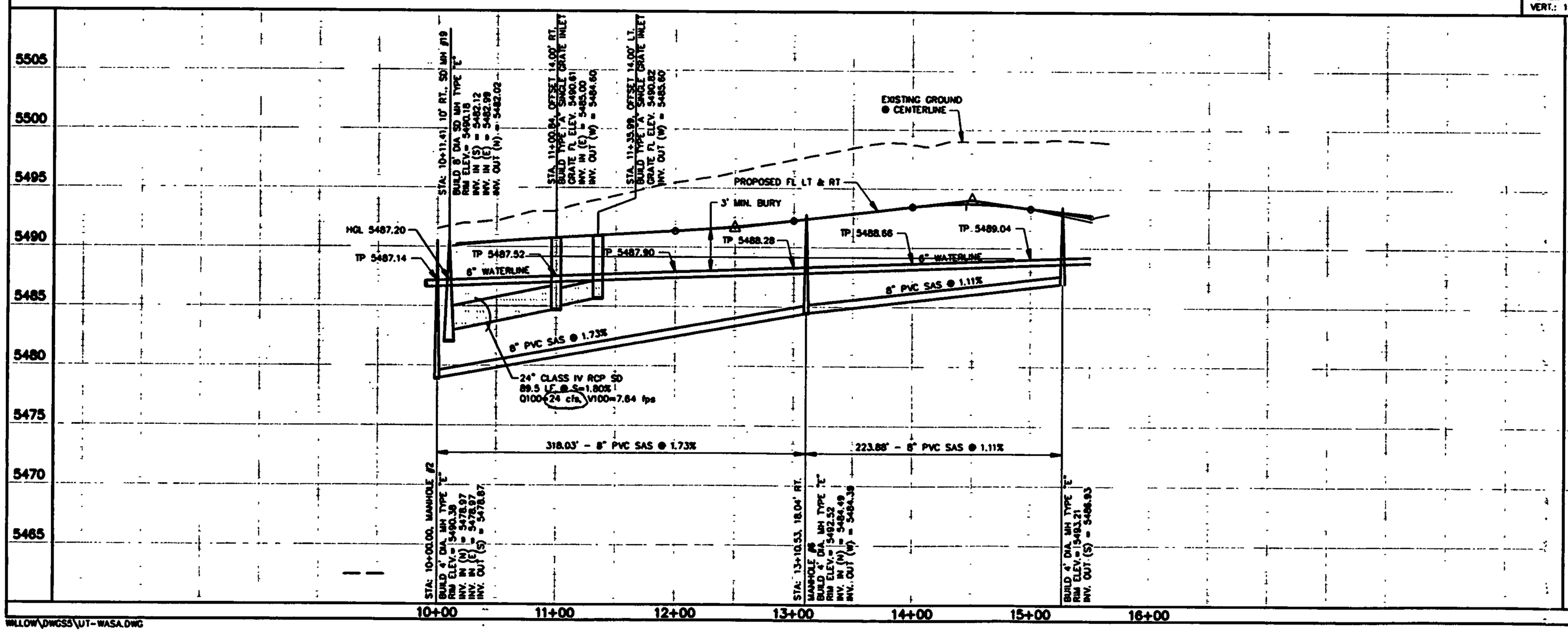
TITLE: WILLOW WOOD - UNIT V
THUNDER BASIN ROAD
UTILITY PLAN AND PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO.	MAP NO.	SHEET	OF
4604.94	L-21-Z	19	24



SCALE:
HORZ.: 1"= 50'
VERT.: 1"= 5'



WILLOW\DWGS5\UT-WASA.DWG

UTILITY NOTES

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2.) SANITARY SEWER LINE LENGTHS COMPUTED FROM MH ℄ TO MH ℄.

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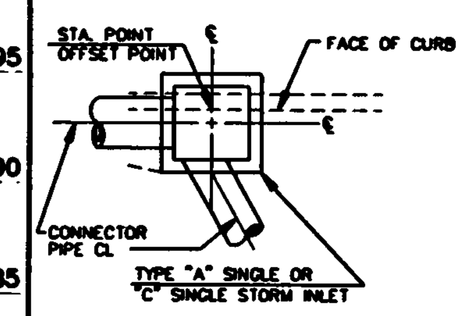
LEGEND

— —W— —	EXISTING WATERLINE
— — SD — —	EXISTING STORM DRAIN
— —SAS— —	EXISTING SANITARY SEWER
	EXISTING MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING GATE VALVE
W	PROPOSED WATERLINE
SD	PROPOSED STORM DRAIN
SAS	PROPOSED SANITARY SEWER
●	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED GATE VALVE
	PROPOSED CAP OR PLUG
	PROPOSED SINGLE METER, WATER SERVICE LINE
	PROPOSED DOUBLE METER, WATER SERVICE LINES
	PROPOSED SANITARY SEWER SERVICE LINE
	PROPOSED CROSS, TEE, OR ELBOW
	PROPOSED TYPE DOUBLE "A" STORM INLET



TYPICAL INLET LOCATION DETAIL

AVID ENGINEERING, INC.
Civil • Structural • Transportation
6100 Seagull St. NE - Suite 102
Albuquerque, NM 87109 - (505) 881-5357

AS BUILT INFORMATION

		DATE
CONTRACTOR		
WORK STAKED BY		
INSPECTOR'S ACCEPTANCE BY		DATE
VERIFICATION BY		DATE
DRAWINGS CORRECTED BY		DATE
MICRO-FILM INFORMATION		
RECORDED BY		DATE
NO.		

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SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

DESIGN

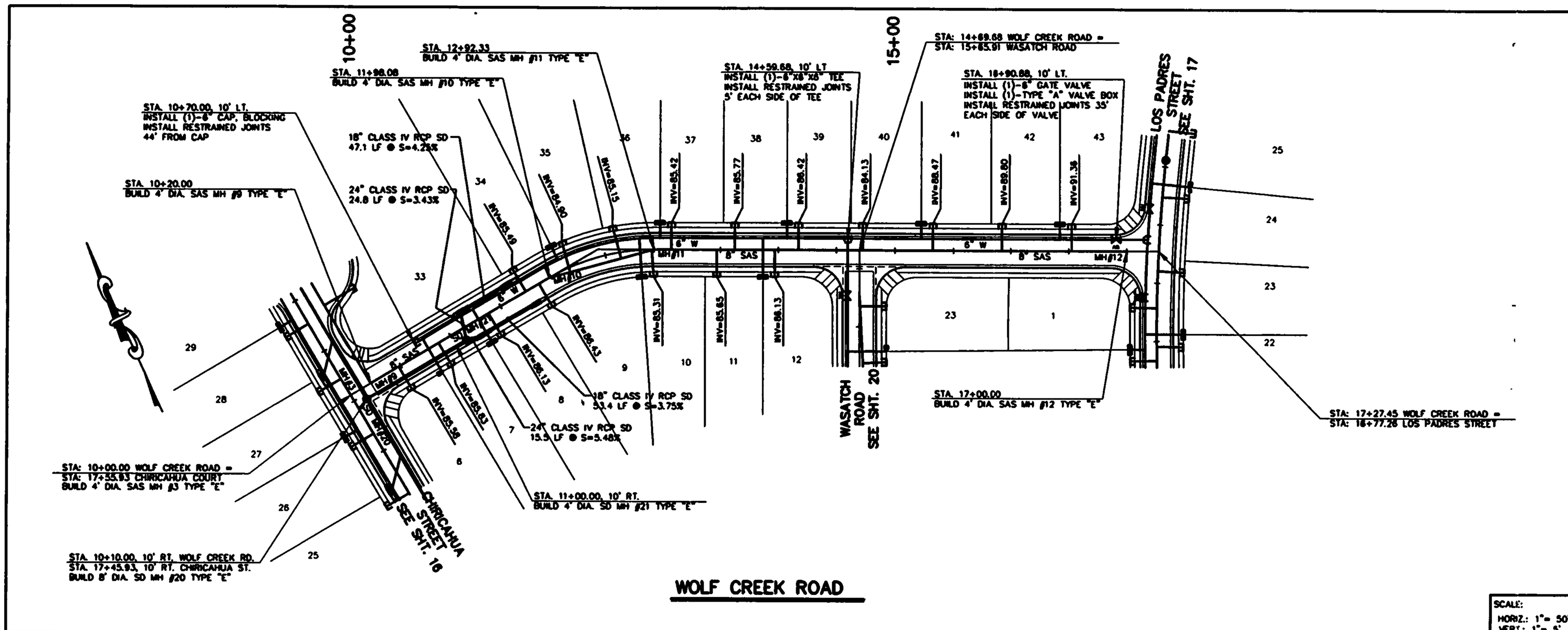
DESIGNED BY DA DATE 11/94
DRAWN BY RAYJ DATE 11/94
CHECKED BY JD DATE 11/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: WILLOW WOOD - UNIT V
WASATCH ROAD
UTILITY PLAN AND PROFILE

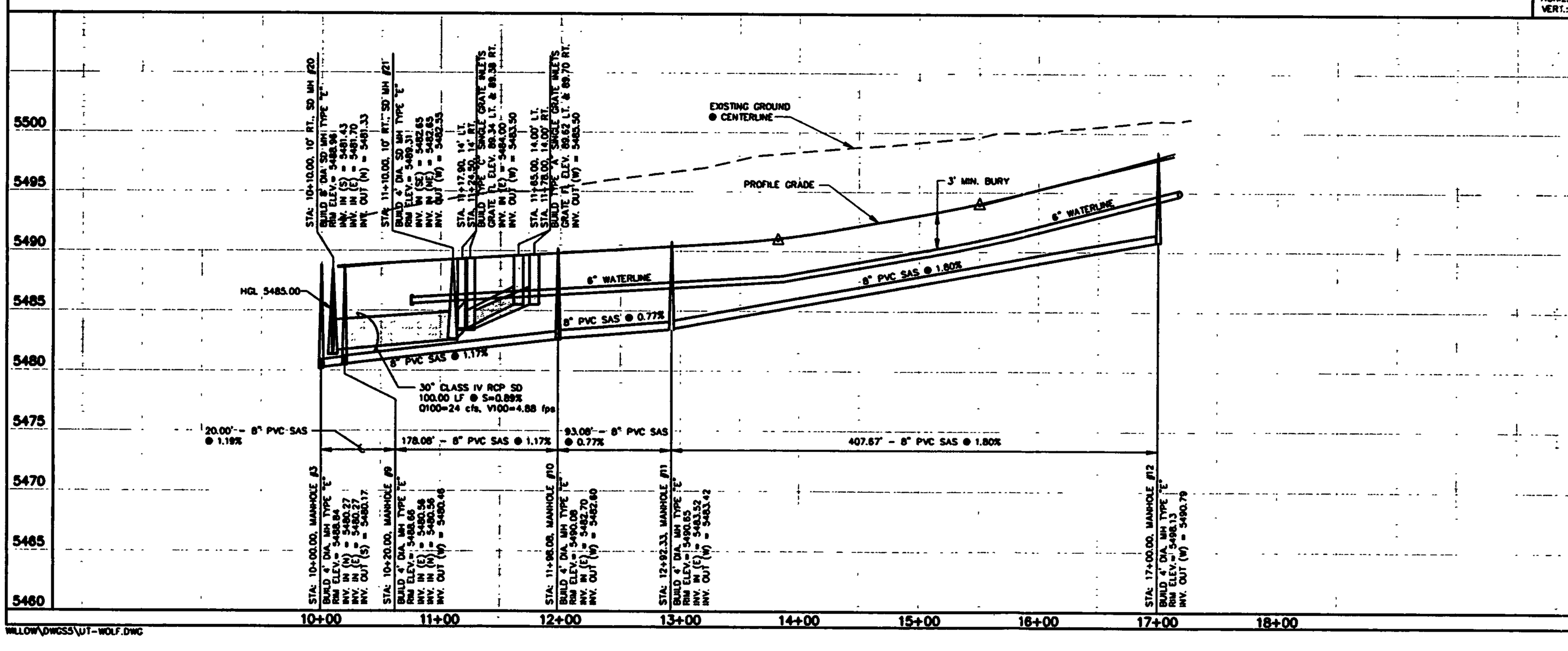
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO.	MAP NO.	SHEET	OF
4604.94	L-21-Z	20	24



WOLF CREEK ROAD

SCALE:
HORIZ.: 1"= 50'
VERT.: 1"= 5'



WILLOW\DWGS5\UT-WOLF.DWG

UTILITY NOTES

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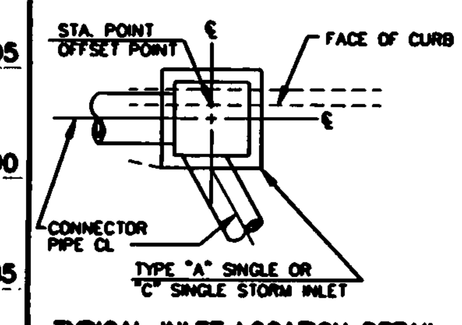
LEGEND

— —W— —	EXISTING WATERLINE
— — SD — —	EXISTING STORM DRAIN
— —SAS— —	EXISTING SANITARY SEWER
	EXISTING MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING GATE VALVE
—W—	PROPOSED WATERLINE
—SD—	PROPOSED STORM DRAIN
—SAS—	PROPOSED SANITARY SEWER
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED GATE VALVE
	PROPOSED CAP OR PLUG
	PROPOSED SINGLE METER, WATER SERVICE LINE
	PROPOSED DOUBLE METER, WATER SERVICE LINES
	PROPOSED SANITARY SEWER SERVICE LINE
	PROPOSED CROSS, TEE, OR ELBOW
	PROPOSED TYPE DOUBLE "A" STORM INLET



TYPICAL INLET LOCATION DETAIL

AVID ENGINEERING, INC.
Civil • Structural • Transportation
6100 Seagull St. NE – Suite 102
Albuquerque, NM 87109 – (505) 881-5357

AS BUILT INFORMATION

		DATE
	CONTRACTOR	
	WORK STAKED BY	
	INSPECTOR'S ACCEPTANCE BY	DATE
	FIELD VERIFICATION BY	DATE
	DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY DATE

NO.

BENCH MARKS

THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-L21 RESET 1994", LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEVATION 5534.63

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

DESIGN

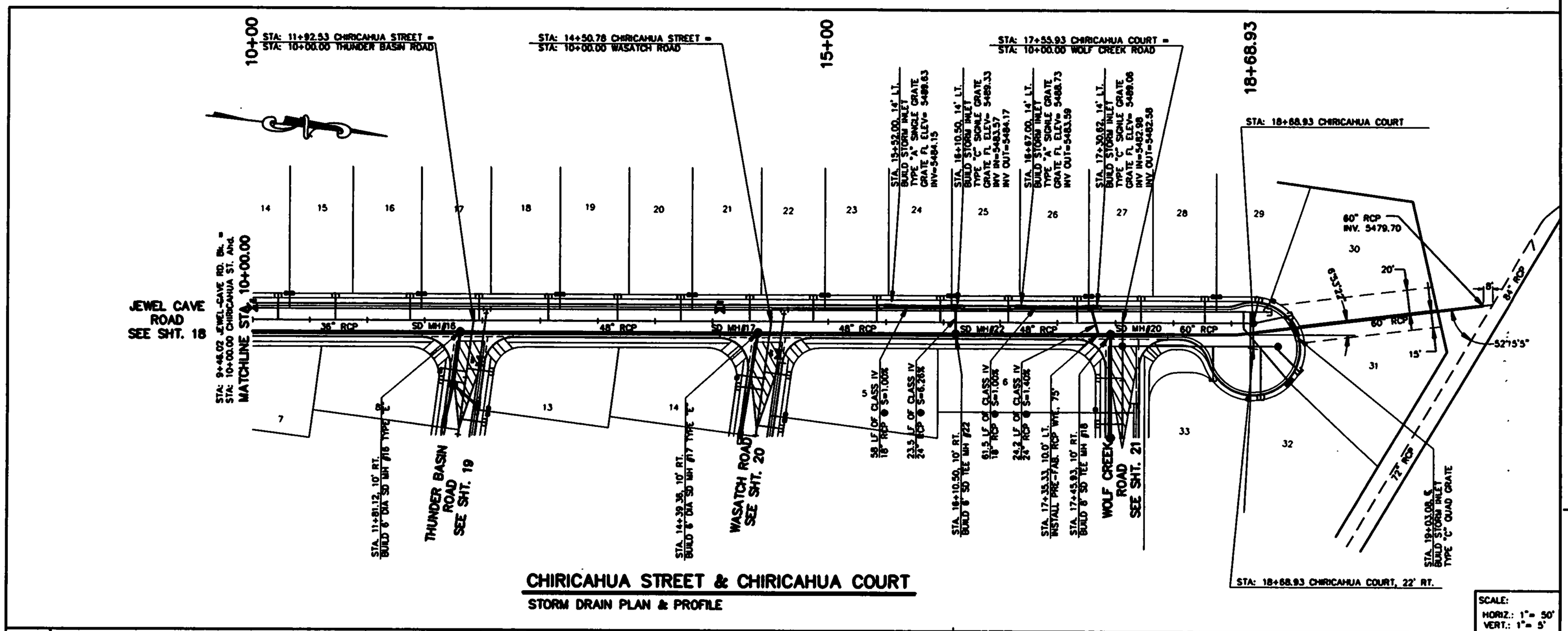
DESIGNED BY DA DATE 11/94
DRAWN BY RAVJ DATE 11/94
CHECKED BY JD DATE 11/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: WILLOW WOOD – UNIT V
WOLF CREEK ROAD
UTILITY PLAN AND PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

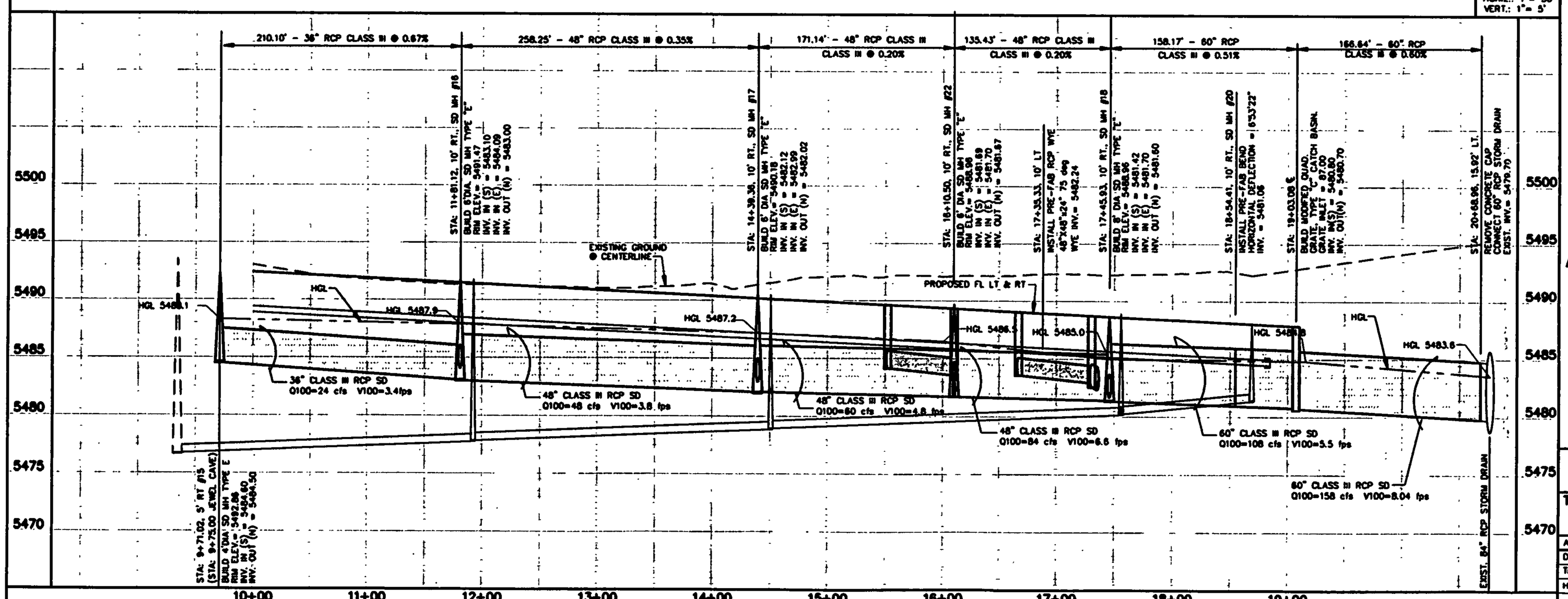
DRAWING NO. 4604.94 | MAP NO. L-21-Z | SHEET 21 OF 24



CHIRICAHUA STREET & CHIRICAHUA COURT

STORM DRAIN PLAN & PROFILE

SCALE:
HORIZ.: 1"= 50'
VERT.: 1"= 5'



UTILITY NOTES

1.) STATIONING ALONG ℄ OF STREET UNLESS OTHERWISE NOTED.

2.) STORM SEWER LINE LENGTHS COMPUTED FROM MH ℄ TO MH ℄.

3.) SLOPES ARE COMPUTED INVERT TO INVERT. MH RIM ELEVATIONS GIVEN ARE APPROXIMATE. CONTRACTOR SHALL ADJUST ALL RIMS TO FINAL GRADE.

4.) INLET INVERTS AND CONNECTOR PIPE SLOPES AND LENGTHS ARE COMPUTED FROM STA./OFFSET TO STA./OFFSET SHOWN ON PLANS.

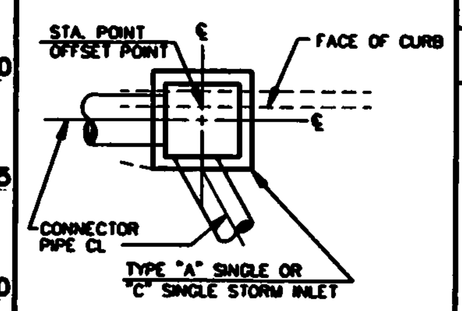
5.) CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH UTILITY COMPANIES.

6.) CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES AND UTILITY CONNECTIONS PRIOR TO BEGINNING CONSTRUCTION. SHOULD A CONFLICT EXIST OR DESIGN REVISIONS BE REQUIRED FOR ANY REASON, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND ALLOW SUFFICIENT TIME FOR DESIGN REVISIONS SO AS TO NOT DELAY THE CONSTRUCTION SCHEDULE.

7.) CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF PRE FABRICATED RCP PIPE FOR APPROVAL BY THE CONSTRUCTION INSPECTOR.

LEGEND

- PROPOSED STORM DRAIN
- PROPOSED MANHOLE
- PROPOSED STORM INLET



TYPICAL INLET LOCATION DETAIL

AVID ENGINEERING, INC.
Civil • Structural • Transportation
8100 Seagull St. NE - Suite 102
Albuquerque, NM 87109 - (505) 881-3357

AS BUILT INFORMATION

CONTRACTOR | DATE
WORK STAKED BY | DATE
FIELD VERIFICATION OF ACCEPTANCE BY | DATE
FIELD VERIFICATION BY | DATE
DRAWINGS CORRECTED BY | DATE

MICRO-FILM INFORMATION

RECORDED BY | DATE
NO.

BENCH MARKS

THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-L21 RESET 1994", LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEVATION 5534.63

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	BY	REMARKS

DESIGN

DESIGNED BY DA — DATE 11/94
DRAWN BY RAYJ — DATE 11/94
CHECKED BY JD — DATE 11/94

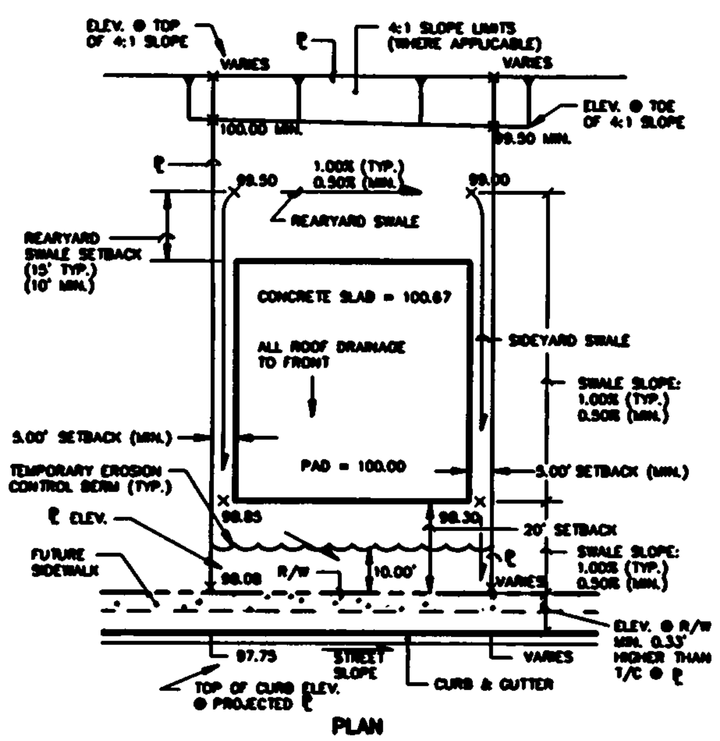
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: WILLOW WOOD - UNIT V
CHIRICAHUA STREET & CHIRICAHUA COURT
STORM DRAIN PLAN AND PROFILE

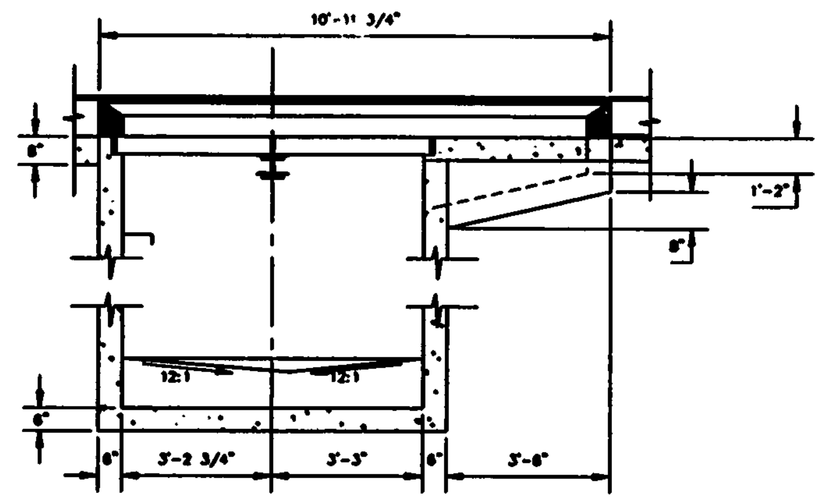
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO.	MAP NO.	SHEET	OF
4604.94	L-21-Z	22	24

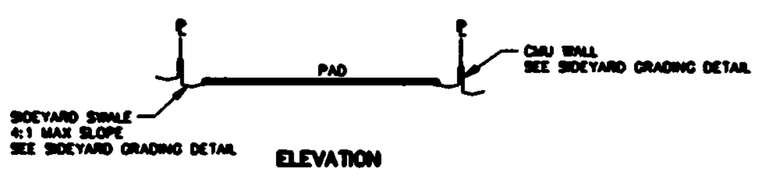
WILLOW\DWGS5\STM-CHIR.DWG



PLAN



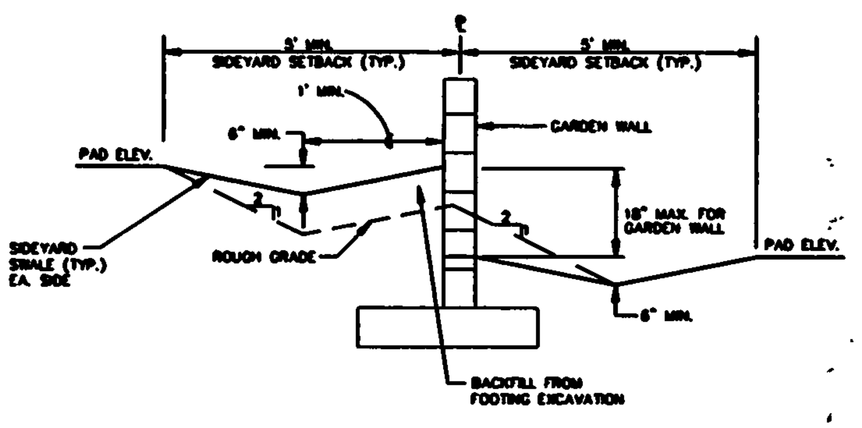
STORM INLET DOUBLE "A"



ELEVATION

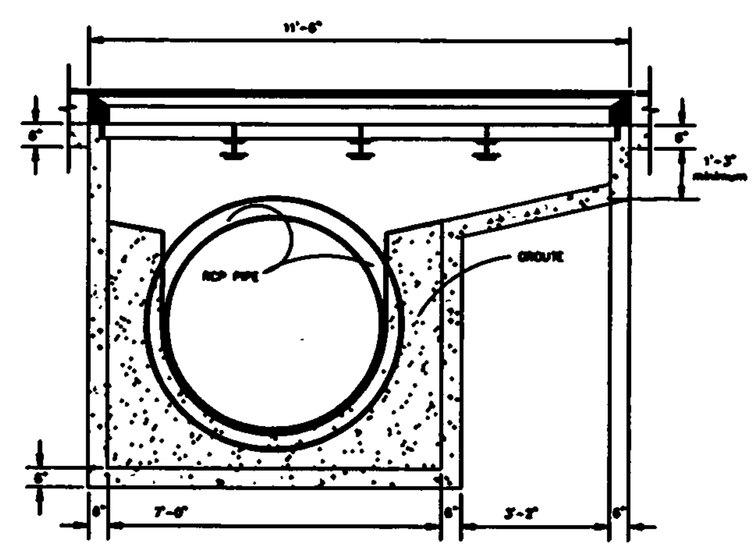
TYPICAL LOT GRADING DETAIL

SCALE: 1"=20'



SIDEYARD GRADING DETAIL

NTS



⚠ QUADRUPLE "C" MODIFIED INLET
SECTION A-A

EROSION CONTROL PLAN

1. SLOPES SHALL NOT EXCEED 4:1 EXCEPT FOR INTERIM SIDE YARD SLOPES OF 2:1 MAX.

2. THE CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO COMMENCING CONSTRUCTION.

3. THE CONTRACTOR IS TO REFER TO EARTHWORK SPECIFICATIONS AS NOTED IN THE SOILS REPORT SUPPLIED BY CURB INC.

4. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.

5. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE CONSTRUCTION SITE. EROSION CONTROL MEASURES ARE INTENDED TO CONTROL MINOR FLOWS AND PROHIBIT THE RELEASE OF SEDIMENT INTO ADJACENT STREETS AND PROPERTY. EROSION CONTROL AND DIVERSION BERMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAIL SHOWN ON THIS SHEET, AT LOCATIONS SHOWN ON THE GRADING PLAN.

6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TEMPORARY BERMS THROUGHOUT THE CONSTRUCTION PHASE. THE OWNER WILL MAINTAIN BERMS AFTER COMPLETION AND ACCEPTANCE OF CONSTRUCTION.

7. TEMPORARY EROSION CONTROL BERMS LOCATED ON INDIVIDUAL LOTS SHALL REMAIN IN PLACE UNTIL THE CONSTRUCTION OF EACH RESPECTIVE BUILDING IS COMPLETE, ON A LOT BY LOT BASIS.

8. THE TOLERANCES FOR ROUGH GRADING SHALL CONFORM TO THE FOLLOWING:

PAD SUBGRADE:	+/- 0.3'
STREET SUBGRADE:	+/- 0.2'
ALL OTHER AREAS:	+/- 0.5'

9. THE CONTRACTOR SHALL REVEGETATE AND RE-ESTABLISH ALL AREAS WHICH ARE DISTURBED BY SITE GRADING AND ARE NOT TO RECEIVE PERMANENT SURFACE TREATMENTS. SPECIFICATIONS FOR SEEDING SHALL BE PER CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION, SECTION 1012, NATIVE GRASS SEEDING.

LOT GRADING GENERAL NOTES:

1. LOT GRADING SHALL MEET THE SITE GRADING AND DRAINAGE CRITERIA FOR PROPOSED CONSTRUCTION AS SET FORTH BY THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT – FEDERAL HOUSING ADMINISTRATION IN CIRCULAR LETTER NO. 91-1, OFFICE OF THE MANAGER, ALBUQUERQUE, NEW MEXICO, DATED 1/25/91.

2. ELEVATION OF HIGHPOINT OF REARYARD SWALE SHALL BE MIN. OF 6" BELOW PAD ELEVATION.

3. FINISHED FLOOR ELEVATIONS (NOT SHOWN) SHALL BE 8" ABOVE PAD ELEVATIONS (SHOWN).

4. FRONT YARD SIDEWALK SLOPE SHALL NOT EXCEED 10%.

5. DRIVEWAY SLOPE SHALL NOT EXCEED 14%. IF DRIVEWAY IS USED AS SIDEWALK, MAX-SLOPE SHALL NOT EXCEED 10%.

6. THE CONTRACTOR IS FULLY RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING UTILITIES AND NOTIFYING THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES. CAUTION SHALL BE EXERCISED WHEN WORKING IN THE VICINITY OF EXISTING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES RESULTING FROM CONSTRUCTION ACTIVITIES WILL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

7. GRADE ELEVATIONS, WHERE NOTED, ARE FOR TOP OF STANDARD CURB UNLESS OTHERWISE SPECIFIED.

8. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL UTILITY CONDUITS AND EXISTING LINES.

9. ANY DAMAGE TO THE EXISTING FACILITIES (CURB AND GUTTER, PAVEMENT, CONDUITS, LANDSCAPING, UTILITY LINES, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

AVID ENGINEERING, INC.
Civil ⇔ Structural ⇔ Transportation
8100 Sequoia St. NE – Suite 101
Albuquerque, NM 87109 – (505) 821-1351

AS BUILT INFORMATION

CONTRACTOR | DATE
SIGN SURVEYOR'S CERTIFICATE BY | DATE
PAVED CURBS BY | DATE
SIDEWALKS BY | DATE
CONDUITS BY | DATE
COMPLETED BY | DATE
CONTOURS OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEV. 5534.63 | MICRO-FLIM INFORMATION | DATE
RECORDED BY | DATE
NO.

BENCH MARKS

THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-21 RESET 1974," LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD.

SURVEY INFORMATION

FIELD NOTES | DATE
BY
NO.

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
1	2/96	MODIFIED 4:1 GRADE	RLB

DESIGN

DESIGNED BY DA — DATE 11/94
DRAWN BY RAYJ — DATE 11/94
CHECKED BY JD — DATE 11/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

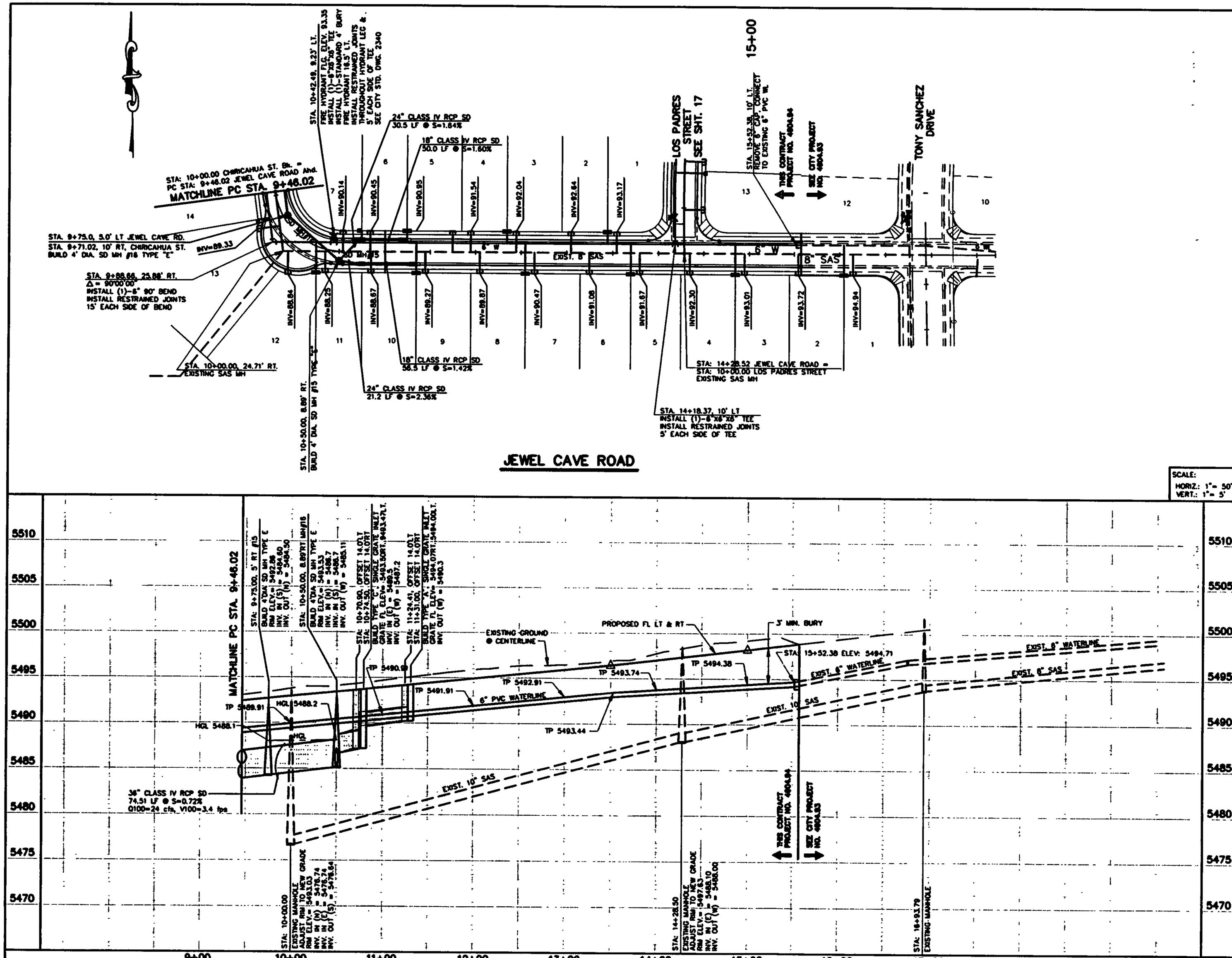
TITLE: WILLOW WOOD UNIT IV GRADING DETAILS

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO. 4604.93 | MAP NO. L-21-Z | SHEET 7 OF 24

LEGAL DESCRIPTION: TRACT D-1-A-1-B, MANZANO MESA

L ORDOTL.DWG



UTILITY NOTES

1.) STATIONING ALONG ℄ OF STREET UNLESS OTHERWISE NOTED.

2.) SANITARY SEWER LINE LENGTHS COMPUTED FROM MH ℄ TO MH ℄.

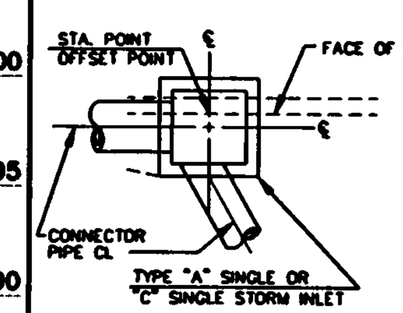
3.) SLOPES ARE COMPUTED INVERT TO INVERT. MH RIM ELEVATIONS GIVEN ARE APPROXIMATE. CONTRACTOR SHALL ADJUST ALL RIMS TO FINAL GRADE.

4.) CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH UTILITY COMPANIES.

5.) CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES AND UTILITY CONNECTIONS PRIOR TO BEGINNING CONSTRUCTION. SHOULD A CONFLICT EXIST OR DESIGN REVISIONS BE REQUIRED FOR ANY REASON, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND ALLOW SUFFICIENT TIME FOR DESIGN REVISIONS SO AS TO NOT DELAY THE CONSTRUCTION SCHEDULE.

LEGEND

—W—	EXISTING WATERLINE
— SD —	EXISTING STORM DRAIN
—SAS—	EXISTING SANITARY SEWER
○	EXISTING MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING GATE VALVE
W	PROPOSED WATERLINE
SD	PROPOSED STORM DRAIN
SAS	PROPOSED SANITARY SEWER
●	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED GATE VALVE
	PROPOSED CAP OR PLUG
	PROPOSED SINGLE METER, WATER SERVICE LINE
	PROPOSED DOUBLE METER, WATER SERVICE LINES
	PROPOSED SANITARY SEWER SERVICE LINE
	PROPOSED CROSS, TEE, OR ELBOW
	PROPOSED STORM INLET



TYPICAL INLET LOCATION DETAIL

AVID ENGINEERING, INC.
Civil • Structural • Transportation
6100 Seagull St. NE • Suite 102
Albuquerque, NM 87109 • (505) 881-5357

AS BUILT INFORMATION

CONTRACTOR	DATE
WORK STAKED BY	DATE
INSPECTOR	DATE
FIELD VERIFICATION BY	DATE
DRAWINGS CORRECTED BY	DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO.	

BENCH MARKS

THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-L21 RESET 1994", LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEVATION 5534.83

SURVEY INFORMATION

FIELD NOTES		
NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

DESIGN

DESIGNED BY	DA	DATE 11/94
DRAWN BY	RAYJ	DATE 11/94
CHECKED BY	JD	DATE 11/94

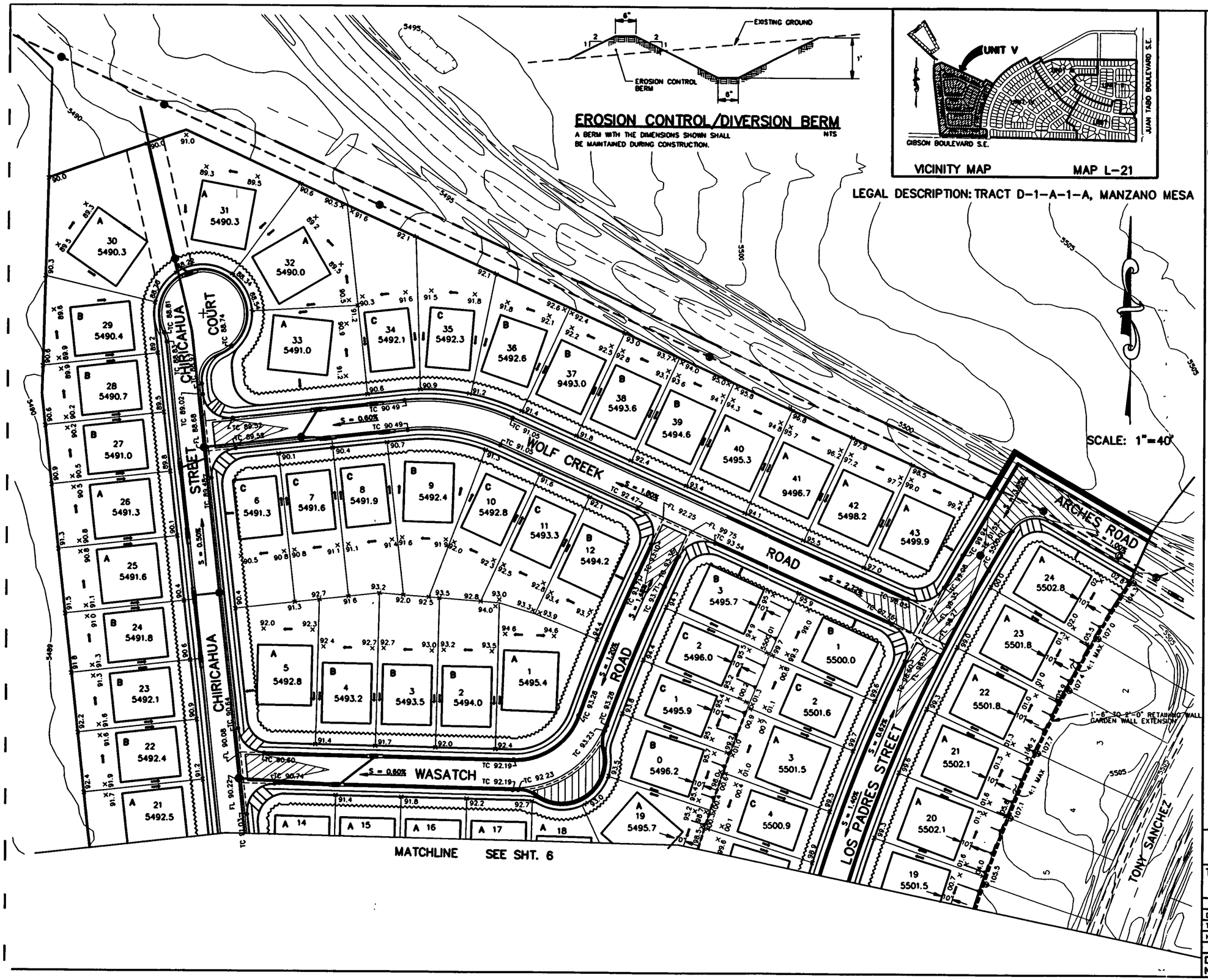
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: WILLOW WOOD – UNIT V
JEWEL CAVE ROAD
UTILITY PLAN AND PROFILE

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO.	MAP NO.	SHEET	OF
4604.94	L-21-Z	18	24

WILLOW\DWGSS\UT-JEW.DWG



GENERAL NOTES

1. ALL CURB ELEVATIONS SHOWN ARE TOP OF CURB UNLESS OTHERWISE NOTED.
2. GRADE PADS TO WITHIN 5' OF THE PROPERTY LINE EXCEPT AT SIDESTREETS GRADE PADS TO WITHIN 10' OF PROPERTY LINE.
3. CONTRACTOR TO PROVIDE AS-BUILT INFORMATION NECESSARY FOR CITY GRADING & DRAINAGE CERTIFICATION.
4. SEE TYPICAL LOT GRADING DETAILS
5. CONTRACTOR SHALL OBTAIN A TOP SOIL DISTURBANCE PERMIT PRIOR TO BEGINNING ANY EARTHWORK CONSTRUCTION.
6. CONTRACTOR REQUIRED TO REMOVE SEDIMENT IN STREET WITHIN 24 HOURS.
7. GRADING & DRAINAGE NOTES AND EROSION CONTROL PLAN ON GRADING DETAIL SHT.

LEGEND

- EXISTING STANDARD CURB & GUTTER
- PROPOSED STANDARD CURB & GUTTER
- PROPOSED MOUNTABLE CURB & GUTTER
- EXISTING GROUND CONTOUR
- PROPOSED CONCRETE VALLEY GUTTER
- TRANSITION SECTION FROM FULL CROWN TO NO CROWN SECTION
- PROPOSED WHEELCHAIR RAMP
- ×98.6 PROPOSED SPOT ELEVATION
- ⊕107.0 EXISTING SPOT ELEVATION
- PROPOSED FLOW DIRECTION
- PROPOSED WATER BLOCK
- 138.90 BUILDING PAD & ELEVATION
- TEMPORARY EROSION CONTROL BERM
- PROPOSED MANHOLE
- PROPOSED DROP INLET

A 50'X55' | B 45'X55' | C 40'X55'

PADS

AVID ENGINEERING, INC.
Civil • Structural • Transportation
6100 Seagull St. NE - Suite 102
Albuquerque, NM 87109 - (505) 881-3357

AS BUILT INFORMATION

CONTRACTOR		
WORK STAKED BY		DATE
FIELD INSPECTIONS BY		DATE
FIELD VERIFICATION BY		DATE
DRAWINGS CORRECTED BY		DATE

MICRO-FILM INFORMATION

RECORDED BY		DATE
NO.		

BENCH MARKS

THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-21 RESET 1974," LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEV. 5534.63

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

DESIGN

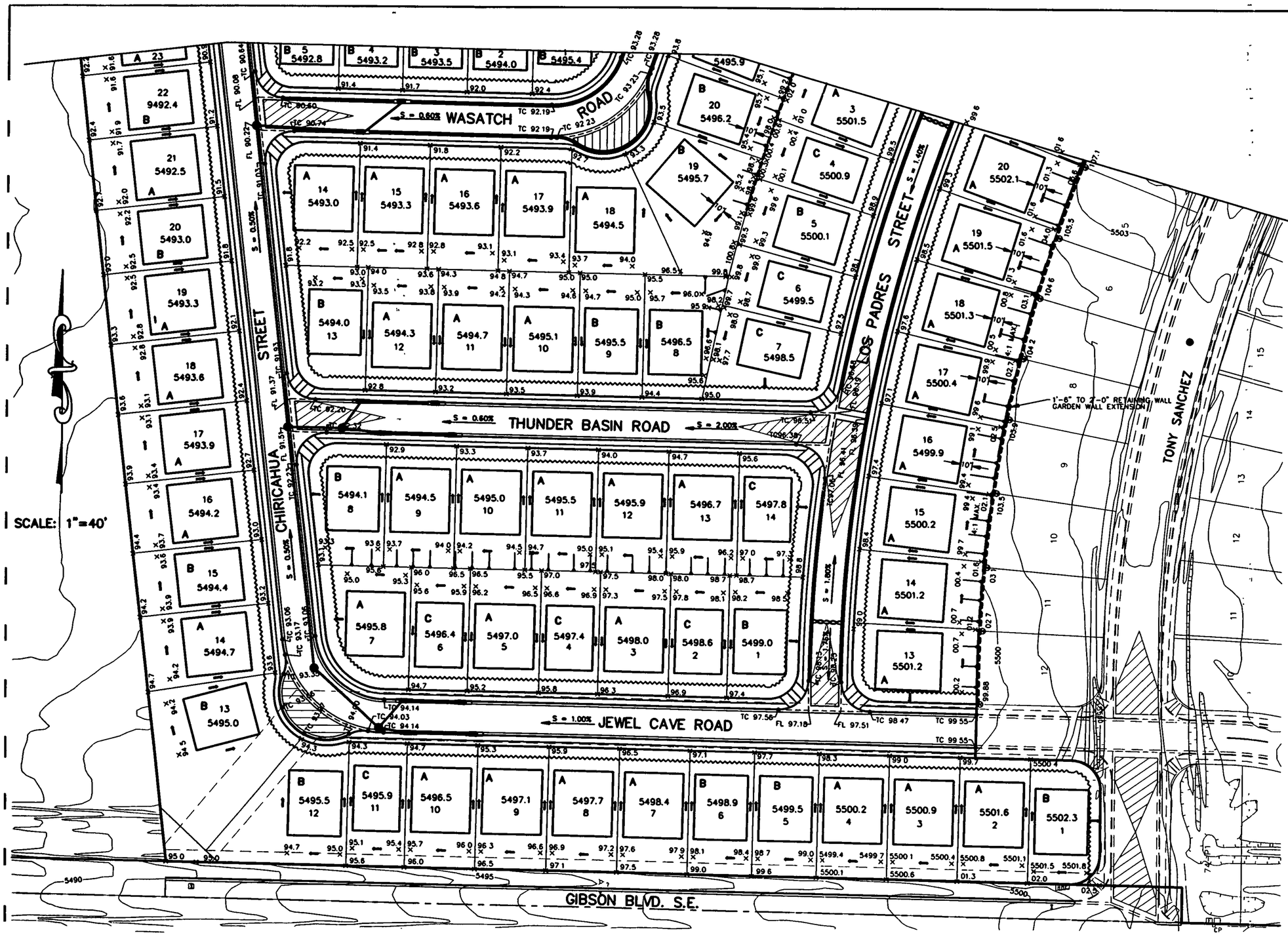
DESIGNED BY	DA	DATE 11/94
DRAWN BY	RAYJ	DATE 11/94
CHECKED BY	JD	DATE 11/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: WILLOW WOOD - UNIT V
GRADING & DRAINAGE PLAN
SHEET 1

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO.	MAP NO.	SHEET	OF
4604.94	L-21-Z	5	22



GENERAL NOTES

1. ALL CURB ELEVATIONS SHOWN ARE TOP OF CURB UNLESS OTHERWISE NOTED.
2. GRADE PADS TO WITHIN 5' OF THE PROPERTY LINE EXCEPT AT SIDESTREETS GRADE PADS TO WITHIN 10' OF PROPERTY LINE.
3. CONTRACTOR TO PROVIDE AS-BUILT INFORMATION NECESSARY FOR CITY GRADING & DRAINAGE CERTIFICATION.
4. SEE TYPICAL LOT GRADING DETAILS
5. CONTRACTOR SHALL OBTAIN A TOP SOIL DISTURBANCE PERMIT PRIOR TO BEGINNING ANY EARTHWORK CONSTRUCTION.
6. CONTRACTOR REQUIRED TO REMOVE SEDIMENT IN STREET WITHIN 24 HOURS.
7. GRADING & DRAINAGE NOTES AND EROSION CONTROL PLAN ON GRADING DETAIL SHT.

LEGEND

- EXISTING STANDARD CURB & GUTTER
- PROPOSED STANDARD CURB & GUTTER
- PROPOSED MOUNTABLE CURB & GUTTER
- EXISTING GROUND CONTOUR
- PROPOSED CONCRETE VALLEY GUTTER
- TRANSITION SECTION FROM FULL CROWN TO NO CROWN SECTION
- PROPOSED WHEELCHAIR RAMP
- ×98.6 PROPOSED SPOT ELEVATION
- ⊕107.0 EXISTING SPOT ELEVATION
- PROPOSED FLOW DIRECTION
- RETAINING WALL
- PROPOSED WATER BLOCK
- 136.90 BUILDING PAD & ELEVATION
- TEMPORARY EROSION CONTROL BERM
- PROPOSED MANHOLE
- PROPOSED DROP INLET

A	B	C
50'X55'	45'X55'	40'X55'

PADS

AVID ENGINEERING, INC.
Civil • Structural • Transportation
6100 Seagull St. NE - Suite 102
Albuquerque, NM 87109 - (505) 881-3357

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY
DATE
VERIFICATION BY
DATE
DRAWINGS CORRECTED BY
DATE
MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

BENCH MARKS
THE STATION MARK IS A STANDARD ACS BRASS TABLET, STAMPED "1-L21 RESET 1974," LOCATED 7.8 MILES EAST OF DOWNTOWN ALBUQUERQUE, AT THE INTERSECTION OF CENTRAL AVE. AND JUAN TABO BLVD. THE STATION IS ON THE MEDIAN STRIP OF CENTRAL AVE., 81' WEST OF THE CENTERLINE OF JUAN TABO BLVD. AND FLUSH WITH THE TOP OF CURB. SLD ELEV. 5534.63

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

DESIGN
DESIGNED BY DA DATE 11/94
DRAWN BY RAYJ DATE 11/94
CHECKED BY JD DATE 11/94

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: WILLOW WOOD - UNIT V
GRADING & DRAINAGE PLAN
SHEET 2

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair			Water		
Transportation			Waste Water		
Hydrology					

DRAWING NO.	MAP NO.	SHEET	OF
4604.94	L-21-Z	6	22

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

April 30, 2001

James V. Domenick, P.E.
Parsons Brinckerhoff Inc..
5801 Osuna Rd NE Suite 200
Albuquerque, NM 87109

Re: Grading and Drainage Certification – Mirabella Subd Unit 8 (L-21/D037A4)
Submitted for Release of Financial Guaranty
Engineers Stamp dated 8/1/2000
Engineers Certification Dated 4/25/2001

Dear Mr. Domenick:

Based upon the information provided in your submittal dated 4/26/2001, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement for Release of Financial Guaranty.

If I can be of further assistance, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Senior Civil Engineer, Hydrology
Public Works Dept./C.O.A.

C: Arlene Portillo, PWD – #639881
file

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

DRAINAGE INFORMATION SHEET

APPLICANT'S NAME: Marcella Jaramillo ZONE ATLAS/DRNG. FILE #: L-21 / D37A4

DRB #: 97-209 EPC #: WORK ORDER #:

LEGAL DESCRIPTION: Mirabella Unit 8

CITY ADDRESS: —

ENGINEERING FIRM: Parsons Brinckerhoff CONTACT: Marcella Jaramillo

ADDRESS: 5801 Osuna Rd, Suite 200, 87109 PHONE: 881-5357

OWNER: Manzano Mesa Limited Partnership CONTACT: Stan Strickman

ADDRESS: 6301 Indian School Rd, Suite 208 87110 PHONE: 875-1721

ARCHITECT: N/A CONTACT: N/A

ADDRESS: N/A PHONE: N/A

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: 4109 Montgomery Blvd. 87109 PHONE: 884-1990

CONTRACTOR: New Concepts, Inc. CONTACT: Tom Lakeman

ADDRESS: 508 Paragon Rd SE 87109 PHONE: 452-8910

TYPE OF SUBMITTAL:
- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION
- ___ OTHER ___

PRE-DESIGN MEETING:
- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:
- ___ SKETCH PLAT APPROVAL
- ___ PRELIMINARY PLAT APPROVAL
- ___ 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 APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- X OTHER Release of Financial Guaranty (SPECIFY)

DATE SUBMITTED: 4-26-01

BY: Marcella V. Jaramillo

Revised 02/98

RECEIVED
APR 26 2001
HYDROLOGY SECTION

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

February 15, 2001

James V. Domenick, P.E.
Parsons Brinckerhoff Inc..
5801 Osuna Rd NE Suite 200
Albuquerque, NM 87109

Re: Grading and Drainage Certification – Mirabella Subd Unit 6 (L-21/D037A4)
Submitted for Release of Financial Guaranty
Engineers Stamp dated 10/1/1999
Engineers Certification Dated 2/8/2001

Dear Mr. Domenick:

Based upon the information provided in your submittal dated 2/8/2001, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement for Release of Financial Guaranty.

If I can be of further assistance, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Senior Civil Engineer, Hydrology
Public Works Dept./C.O.A.

C: Arlene Portillo, PWD – #624081
file

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

DRAINAGE INFORMATION SHEET

APPLICANT'S NAME: Marcella Jaramillo ZONE ATLAS/DRNG. FILE #: L-21/D037A4

DRB #: 97-209 EPC #: — WORK ORDER #:

LEGAL DESCRIPTION: Mirabella Unit 6 (Manzano Mesa Tract D-2-A-1-A-2-A-3)

CITY ADDRESS:

ENGINEERING FIRM: Parsons Brinckerhoff CONTACT: Marcella Jaramillo

ADDRESS: 5801 Osuna Rd, Suite 200, 87109 PHONE: 881-5357

OWNER: Manzano Mesa Limited Partnership CONTACT: Stan Strickman

ADDRESS: 6301 Indian School Rd, Suite 208 87110 PHONE: 875-1721

ARCHITECT: — CONTACT: —

ADDRESS: PHONE:

SURVEYOR: Aldrich Land Surveying CONTACT: Jim Aldrich

ADDRESS: 4109 Montgomery Blvd. 87109 PHONE: 884-1990

CONTRACTOR: New Concepts, Inc. CONTACT: Tom Lakeman

ADDRESS: 508 Paragon Rd SE 87105 PHONE: 452-8910

TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION
- ___ OTHER

PRE-DESIGN MEETING:

- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SKETCH PLAT APPROVAL
- ___ PRELIMINARY PLAT APPROVAL
- ___ 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 APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- X OTHER Release of Financial Guaranty (SPECIFY)

DATE SUBMITTED: February 8, 2001

BY: Marcella V. Jaramillo

Revised 02/98

Transmittal

Parsons Brinckerhoff
5801 Osuna Road NE
Suite 200
Albuquerque, NM 87109
505-881-5357
Fax: 505-881-7602

To: Brad Bingham
COA PWD – Hydrology
Plaza del Sol
One Stop Shop

From: Marcella Jaramillo

By:

Date: 2-8-01 **Time:**

Project: Mirabella Unit 6

PB Project Number: 33467

Copies:	Description:	For:
1	Certified Grading Plan	Your Review
1	Drainge Information Sheet	Your Review

If enclosures are not as noted, kindly notify us at once.

Comments:

Copies to:

Date: 2-8-01

Received by: Gloria V. Saavedra

Over a Century of Engineering Excellence

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

September 17, 1999

James V. Domenick, P.E.
Parsons Brinckerhoff
5801 Osuna Rd. NE, Suite 200
Albuquerque, New Mexico 87109

RE: Grading and Drainage Certification for Mirabella Unit 5, (L21/D37A4), Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated 9/8/99.

Dear Mr. Domenick:

The above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List dated December 30, 1997, and last revised on April 20, 1999 for the release of Financial Guarantees for Mirabella Unit 5.

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

Sincerely,

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

c: Stan Strickman, Manzano Mesa Limited Partnership
Terri Martin, DRB-97-209, City Project #6044.81
rFile

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **MIRABELLA UNIT 5** ATLAS/DRAINAGE FILE# **L-21/D37A4**

LEGAL DESCRIPTION: **TRACT D-2-A-1-A-1, MANZANO MESA**
CITY ADDRESS: **TONY SANCHEZ AT HERMAN ROSER**
ENGINEERING FIRM: **PARSONS BRINCKERHOFF** CONTACT: **JD DOMENICK**
ADDRESS: **5801 OSUNA RD. NE, SUITE 200** PHONE: **881-5357**
ALB, NM 87109
OWNER: **MANZANO MESA LIMITED PARTNERSHIP** CONTACT: **STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD., NE SUITE 208** PHONE: **(505) 875-1721**
ALBUQUERQUE, NM 87110
ARCHITECT: CONTACT:
ADDRESS: PHONE:
SURVEYOR: **PARSONS BRINCKERHOFF** CONTACT: **RUAN BACIGALUPA**
ADDRESS: PHONE:
CONTRACTOR: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:
_____ YES
_____ NO
_____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. **DRB-97-209**
EPC NO. _____
PROJECT NO. _____

TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT
_____ DRAINAGE PLAN
_____ CONCEPTUAL GRADING & DRAINAGE PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
XX ENGINEERS CERTIFICATION
_____ FOUNDATION PERMIT APPROVAL

CHECK TYPE OF APPROVAL SOUGHT:

_____ SECTOR PLAN APPROVAL
_____ SKETCH PLAT APPROVAL
_____ PRELIMINARY PLAT APPROVAL
_____ SITE DEVELOPMENT PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY
_____ ROUGH GRADING PERMIT
XX ~~GRADING/PAVING PERMIT APPROVAL~~ RO FG
_____ OTHER _____ (SPECIFY)

RECEIVED
SEP 08 1999
HYDROLOGY SECTION

DATE SUBMITTED: 9-8-99
BY: _____
REV. 10/85

Transmittal

Parsons Brinckerhoff
5801 Osuna Road NE
Suite 200
Albuquerque, NM 87109
505-881-5357
Fax: 505-881-7602

to: JOHN MURRAY
COA HYDROLOGY
200 2ND STREET
ABQ, NM

from: ELIAS ARCHULETA

date: 8 SEPT 99 **time:**

project: MIRABELLA UNIT 5

project number: 33449

via:
- ☐ mail
- ☒ messenger
- ☐ overnight

for your:
- ☐ information/use
- ☒ approval
- ☐ review/comment

the following:
- ☐ shop drawings
- ☐ copy of letter
- ☐ prints
- ☐ change order
- ☒ plans
- ☐ samples
- ☐ specifications
- ☐ other

drawing	rev. no.	description	copies	date
		GRADING CERT., MIRABELLA UNIT 5	1	
		DRAINAGE INFO SHEET	1	

If enclosures are not as noted, kindly notify us at once

comments

RECEIVED
SEP 08 1999
HYDROLOGY SECTION

copies to:

signature:

City of Albuquerque

February 17, 2000

James V. Domenick, P.E.
Parsons Brinckerhoff
5801 Osuna Rd. NE, Suite 200
Albuquerque, New Mexico 87109

RE: Grading and Drainage Certification for Mirabella Unit 3, (L21/D37A4), Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated 1/20/00.

Dear Mr. Domenick:

Our files indicate that the approved Grading and Drainage Plan for Mirabella Subdivision, formerly known as Willow Wood North Subdivision, was dated December 9, 1997. Both DRB and City Hydrology approved this 1997 plan.

The plan provided in the above referenced submittal is dated April 30, 1999. I cannot find in my files any letter indicating that City Hydrology approved the plan dated April 30, 1999.

Since you are required to certify the plan that was approved by City Hydrology and by DRB, please provide me with documentation that this plan was approved by the DRB, as well as a copy of the approval letter from City Hydrology for this plan. I need this information prior to acceptance of the certification plan.

If you have any questions, please call me at 924-3982.

Sincerely,

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

c: Stan Strickman, Manzano Mesa Limited Partnership
File

DRAINAGE INFORMATION SHEET

APPLICANT'S NAME: MARCELLA JARAMILLO ZONE ATLAS/DRNG. FILE #: L-21 / D037A3

DRB #: 97-209 EPC #: WORK ORDER #:

LEGAL DESCRIPTION: MIRABELLA UNIT 3 (MANZANO MESA TRACT D-2-A-1-A-2-C)

CITY ADDRESS:

ENGINEERING FIRM: PARSONS BRINCKERHOFF CONTACT: MARCELLA JARAMILLO

ADDRESS: 5801 OSUNA RD NE, SUITE 200 87109 PHONE: 505-881-5357

OWNER: MANZANO MESA LIMITED PARTNERSHIP CONTACT: STAN STRICKMAN

ADDRESS: 6301 INDIAN SCHOOL RD NE, SUITE 208 87110 PHONE: 505-875-1721

ARCHITECT: N/A CONTACT: N/A

ADDRESS: N/A PHONE: N/A

SURVEYOR: ALDRICH LAND SURVEYING CONTACT: TIM ALDRICH

ADDRESS: 4109 MONTGOMERY BLVD NE 87109 PHONE: 505-884-1990

CONTRACTOR: NEW CONCEPTS INC. CONTACT: TOM LAKEMAN

ADDRESS: 508 PARAGON RD SE, 87105 PHONE: 505-452-8910

TYPE OF SUBMITTAL:
- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION
- ___ OTHER _____

PRE-DESIGN MEETING:
- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:
- ___ SKETCH PLAT APPROVAL
- ___ PRELIMINARY PLAT APPROVAL
- ___ 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 APPROVAL
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- X OTHER RELEASE OF FINANCIAL GUARANTY (SPECIFY)

DATE SUBMITTED: 1-31-00

BY: Marcella V. Jaramillo

Revised 02/98

RECEIVED JAN 31 2000 HYDRO.

Transmittal

Parsons Brinckerhoff
5801 Osuna Road NE
Suite 200
Albuquerque, NM 87109
505-881-5357
Fax: 505-881-7602

to: JOHN MURRAY
HYDROLOGY - COA
ONE STOP DESK
PLAZA DEL SOL

from: MARCELLA JARAMILLO

date: 1-31-00 **time:**

project: MIRABELLA UNIT 3

project number:

via:
- ☐ mail
- ☐ messenger
- ☐ overnight

for your:
- ☐ information/use
- ☐ approval
- ☐ review/comment

the following:
- ☐ shop drawings
- ☐ copy of letter
- ☐ prints
- ☐ change order
- ☐ plans
- ☐ samples
- ☐ specifications
- ☐ other

drawing	rev. no.	description	copies	date
		DRAINAGE INFORMATION SHEET		
		MIRABELLA UNIT 3 GRADING CERTIFICATION - COPY		

RECEIVED JAN 31 2000 HYDROLOGY SECTION

If enclosures are not as noted, kindly notify us at once

comments

copies to:

signature: Gloria S. Saavedra
1-31-00

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

September 17, 1999

James V. Domenick, P.E.
Parsons Brinckerhoff
5801 Osuna Rd. NE, Suite 200
Albuquerque, New Mexico 87109

RE: Grading and Drainage Certification for Mirabella Unit 2, (L21/D37A4), Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated 8/12/99.

Dear Mr. Domenick:

The above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List dated December 30, 1997, and last revised on April 20, 1999 for the release of Financial Guarantees for Mirabella Unit 2.

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

Sincerely,

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

c: Stan Strickman, Manzano Mesa Limited Partnership
Terri Martin, DRB-97-209, City Project #5897.82
'File

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

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **MIRABELLA UNIT 2** ATLAS/DRAINAGE FILE# **L-21/D37A4**

LEGAL DESCRIPTION: **TRACT D-2-A-1-C, MANZANO MESA**
CITY ADDRESS: **JUAN TABO BETWEEN SINGING ARROW AND SOUTHERN**
ENGINEERING FIRM: **PARSONS BRINCKERHOFF** CONTACT: **JD DOMENICK**
ADDRESS: **5801 OSUNA RD. NE, SUITE 200** PHONE: **881-5357**
ALB, NM 87109
OWNER: **MANZANO MESA LIMITED PARTNERSHIP** CONTACT: **STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD., NE SUITE 208** PHONE: **(505) 875-1721**
ALBUQUERQUE, NM 87110
ARCHITECT: CONTACT:
ADDRESS: PHONE:
SURVEYOR: **PARSONS BRINCKERHOFF** CONTACT: **RUAN BACIGALUPA**
ADDRESS: PHONE:
CONTRACTOR: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:
____ YES
____ NO
____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. **DRB-97-209**
EPC NO. _____
PROJECT NO._____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
XX ENGINEERS CERTIFICATION
____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL
____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT
XX GRADING/PAVING PERMIT APPROVAL
____ OTHER _____(SPECIFY)

DATE SUBMITTED: 8-12-99
BY: _____
REV. 10/85

RECEIVED
SEP 01 1999
HYDROLOGY SECTION

2060 Main Street NE
Suite E
Los Lunas, NM 87031
Phone: 866-1395
Fax: 866-1475

Thompson Engineering Consultants, Inc.

Fax

To: Susan Calonge ✓ **From:** David B. Thompson

Fax: 924-3863~~4~~ **Date:** September ~~18~~ 20, 1999

Phone: 924-3982 **Pages:** 2

Re: Transfer of Responsibility for Mirabella **CC:**

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments:

THOMPSON Engineering Consultants, Inc.

September 15, 1999

Mr. J. D. Domenick
Parsons Brinckerhoff, Inc.
5801 Osuna Road NE, Suite 200
Albuquerque, NM 87109

RE: Transfer of Responsibility for Mirabella Units 1 through 9

Dear Mr. Domenick:

As of today, I transfer all responsibility for Mirabella Units 1 through 9 to Mr. J. D. Domenick of Parsons Brinckerhoff, Inc. The transfer of responsibility includes all stamped reports and drawings. From here on Mr. Domenick is allowed to stamp any drawings or reports related to this project that I previously stamped.

If you should have any questions regarding this proposal you can call me at 866-1395.

Sincerely,

David B. Thompson, PE

Cc: Mr. Fred Aguirre, City of Albuquerque
Mr. Stan Strickman, Curb, Inc.

2060 Main Street NE, Suite E • Los Lunas, NM 87031 • (505)866-1395 • Fax (505) 866-1475

Transmittal

Parsons Brinckerhoff
5801 Osuna Road NE
Suite 200
Albuquerque, NM 87109
505-881-5357
Fax: 505-881-7602

to: JOHN MURRAY, PE
COA, PWD - HYDROLOGY
200 2ND STR.
ABQ, NM

from: ELIAS ARCHULETA

date: 1 SEPT 99 **time:**

project: MIRABERCA UNIT 2

project number:

via:
- ☐ mail
- ☒ messenger
- ☐ overnight

for your:
- ☐ information/use
- ☒ approval
- ☐ review/comment

the following:
- ☐ shop drawings
- ☐ copy of letter
- ☐ prints
- ☐ change order
- ☒ plans
- ☐ samples
- ☐ specifications
- ☐ other

drawing	rev. no.	description	copies	date
		GRADING AS BUILTS / CERTIFICATION	1	
		DRAINAGE INFO. SHEET	1	

If enclosures are not as noted, kindly notify us at once

comments

RECEIVED SEP 01 1999 HYDROLOGY SECTION

RECEIVED SEP 10 1999 HYDROLOGY SECTION

copies to:

signature:

Some

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **MIRABELLA UNIT 2** ATLAS/DRAINAGE FILE# **L-21/D37A4**

LEGAL DESCRIPTION: **TRACT D-2-A-1-C, MANZANO MESA**
CITY ADDRESS: **JUAN TABO BETWEEN SINGING ARROW AND SOUTHERN**
ENGINEERING FIRM: **PARSONS BRINCKERHOFF** CONTACT: **JD DOMENICK**
ADDRESS: **5801 OSUNA RD. NE, SUITE 200** PHONE: **881-5357**
ALB, NM 87109
OWNER: **MANZANO MESA LIMITED PARTNERSHIP** CONTACT: **STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD., NE SUITE 208** PHONE: **(505) 875-1721**
ALBUQUERQUE, NM 87110
ARCHITECT: CONTACT:
ADDRESS: PHONE:
SURVEYOR: **PARSONS BRINCKERHOFF** CONTACT: **RUAN BACIGALUPA**
ADDRESS: PHONE:
CONTRACTOR: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:
____ YES
____ NO
____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. **DRB-97-209**
EPC NO. _____
PROJECT NO._____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
XX ENGINEERS CERTIFICATION
____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL
____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT
XX ~~GRADING/PAVING PERMIT APPROVAL~~ ROFG
____ OTHER _____(SPECIFY)

DATE SUBMITTED: 8-12-99
BY: _____
REV. 10/85

RECEIVED
AUG 12 1999
HYDROLOGY SECTION

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

April 16, 1999

James Domenick, P.E.
Parsons Brinkerhoff
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: MIRABELLA UNIT I (L21-D37A4). ENGINEER'S CERTIFICATION FOR GRADING AND DRAINAGE DATED MARCH 12, 1999. G&D PLAN STAMPED JUNE 23, 1998.

Dear Mr. Domenic:

Based on the information provided in your March 17, 1999 submittal, the above referenced project is approved for the subject Certification.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Andrew Garcia
File

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

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **MIRABELLA UNIT 1** ATLAS/DRAINAGE FILE# **L-21/D37A4**

LEGAL DESCRIPTION: **TRACT D-2-A-1-C, MANZANO MESA**
CITY ADDRESS: **JUAN TABO BETWEEN SINGING ARROW AND SOUTHERN**
ENGINEERING FIRM: **PARSONS BRINCKERHOFF** CONTACT: **JD DOMENICK**
ADDRESS: **5801 OSUNA RD. NE, SUITE 200** PHONE: **881-5357**
ALB, NM 87109
OWNER: **MANZANO MESA LIMITED PARTNERSHIP** CONTACT: **STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD., NE SUITE 208** PHONE: **(505) 875-1721**
ALBUQUERQUE, NM 87110
ARCHITECT: CONTACT:
ADDRESS: PHONE: _____
SURVEYOR: **PARSONS BRINCKERHOFF** CONTACT: **RUAN BACIGALUPA**
ADDRESS: PHONE: _____
CONTRACTOR: **NA** CONTACT: **NA** _____
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:

____ YES
____ NO
____ COPY OF CONFERENCE
RECAP SHEET PROVIDED

DRB NO. **DRB-97-209**
EPC NO. _____
PROJECT NO._____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
XX ENGINEERS CERTIFICATION
____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL
____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT
____ GRADING/PAVING PERMIT APPROVAL
____ OTHER _____ (SPECIFY)

RECEIVED
MAR 1 7 1999
HYDROLOGY SECTION

DATE SUBMITTED: 3-17-99
BY: _____
REV. 10/85

FIGURE 6

CITY OF ALBUQUERQUE

NOTICE OF D.R.C. MEETING

12-9-98

(DATE)

DRB NO: 97-209

PROJECT NO: 604481

ZONE ATLAS: L-21

D37A4

PROJECT NAME: Muralla, Unit 5

LOCATION:

TYPE OF PROJECT: AHBA X CIP ____ PWC ____ SAD ____ ALL PRIVATE ____

Contact Person: Dave Thompson **Phone:** 881-5357

Firm: Parsons Brinckerhoff

X Scheduled with the D.R.C. on 12-14-98 at 1:30 Plaza Del Sol/2nd Fl.

____ No DRC Meeting Scheduled. Please return any comments by ____

NO adverse 12/14

The Project Is Scheduled For:

/ / Design Report Review / / Final Plan Review

/ / Pre-Design Meeting / / Signoff of Plans

/X/ Preliminary Plan Review / / ____

The Project Relates To:

/X/ Water /X/ San. Sewer /X/ Paving / / Storm Drainage / / ____

The Attached Package Includes:

/D/ Drawings /S/ Spec's /E/ Estimate /R/ Report /M/ Memo Only

Indicated below are the Departments/Divisions that have received project documents and/or are invited to attend. It will be the Project Managers responsiblity to notify consulting engineering firms of date and time of scheduled meetings.

/D/ DRC Chairman	Project Review Section	All Drawings
/D/ Traffic Repres	Transportation Development	All Drawings
/D/ Utility Dev.(Bob Kane)	Utility Design	All AHBA Drawings
/ / Utility Dev.(Keith Reed)	Utility Design	All CIP Drawings
/D/ Hydro Repres. MURRAY	Hydrology	All Drawings
/D/ Const. Repres.	Construction	All Drawings
/D/ Ray Chavez	Traffic Operations	All Drawings
/D/ Sergio Miranda	Water (Shutoff Plan)	All Water Shutoff
/D/ CIP/Parks Repres.	Parks & Recreation	ALL Landscaping
/ / Andre Houle	Street Maintenance	All Paving
/ / Kevin Broderick	Utility Coordinator	ALL PWC & CIP
/ / Jim Hamel	Transit Department	CIP/Memo
/ / Joe Luehring	Construction Coordinator	CIP/Memo
/ / Jim Fink	Line Maintenance	CIP & SAS/Memo
/ / George Gee	City Architect	Arch. Drawings
/ / Lee Lunsford	SAD Engineer	SAD/Memo
/ / Tom Ellis	Park Mangement	Parks/Community Ctrs/APS
/ / Gene Bustamante	General Services Dept.	Arch. Drawings
/ / Greg Smith	PWD/Legal	Specs & Dwgs.
/ / Richard Sertich	Planning Department	CIP/Memos
/ / CIP Project Manager	CIP	CIP/Memos
/ / Donald Bartlett	Risk Management	Arch. Drawings
/ / ____	____	____

DRCNOTIC. 10/19/95

CITY OF
Albuquerque

September 24, 1998

Dave Thompson, P.E.
AVID Engineering, Inc.
5801 Osuna Rd. NE, Suite 200
Albuquerque, New Mexico 87109

RE: Grading and Drainage Certification for Willow Wood Subdivision Unit 6, (L21/D37A4), Submitted for Release of Financial Guarantees, Engineer's Stamp Dated 8/25/98.

Dear Mr. Thompson:

The above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List dated October 14, 1997 for the release of Financial Guarantees for Willow Wood Unit 6.

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

Sincerely,

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

c: Stan Strickman, Manzano Mesa LTD
Terri Martin, City Project #4604.96
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **WILLOW WOOD UNIT 6** ATLAS/DRAINAGE FILE# **L-21/D37A3**

LEGAL DESCRIPTION: **TRACT D-2-A-2 MANZANO MESA**
CITY ADDRESS: **JUAN TABO AND SINGING ARROW**
ENGINEERING FIRM: **AVID ENG. INC.,** CONTACT:**DAVE THOMPSON**
ADDRESS: **5801 OSUNA RD. NE, ALB., NM, 87109**
OWNER: **MANZANO MESA LTD** CONTACT:**STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD NE, SUITE 680** PHONE: **881-9190**
ARCHITECT: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**
SURVEYOR: **AVID ENGINEERING, INC.** CONTACT: **Ruan Bacigalupa**
ADDRESS: **Same as Above** PHONE: **881-5357**
CONTRACTOR: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:
____ YES
XX NO
____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97-393 10-14-97
EPC NO.
City PROJECT NO. 4604.96

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
XX ENGINEERS CERTIFICATION
____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL
____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
XX FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
XX CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT
____ GRADING/PAVING PERMIT APPROVAL
____ OTHER _____(SPECIFY)

DATE SUBMITTED: 8-27-98
BY: [signature]
REV. 1/98

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AUG 27 1998
HYDROLOGY SECTION

CITY OF
Albuquerque

CY
From
Hrs. File
7/13/98

January 27, 1998

Dave Thompson, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOW WOOD UNIT 6 (L21-D37A4). DRAINAGE PLAN FOR FINAL PLAT AND GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED DECEMBER 31, 1997.

Dear Mr. Thompson:

Based on the information provided on your January 6, 1998 submittal, the above referenced submittal is approved for Final Plat and Grading Permit.

An Engineer's Certification will be required prior to the release of financial guarantees.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **WILLOW WOOD NORTH, UNIT 6** ATLAS/DRAINAGE FILE# **L-21/D37A4**

LEGAL DESCRIPTION: **TRACT D-2-A MANZANO MESA**
CITY ADDRESS: **JUAN TABO AND SINGING ARROW**
ENGINEERING FIRM: **AVID ENG. INC.,** CONTACT:**DAVE THOMPSON**
ADDRESS: **5801 OSUNA RD. NE, ALB., NM, 87109**
OWNER: **MANZANO MESA LTD** CONTACT:**STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD NE, SUITE 680** PHONE: **881-9190**
ARCHITECT: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**
SURVEYOR: **AVID ENGINEERING, INC.** CONTACT: **Ruan Bacigalupa**
ADDRESS: **Same as Above** PHONE: **881-5357**
CONTRACTOR: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:

____ YES
XX NO
____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97-393
EPC NO. ____
PROJECT NO. 4604.96

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
XX DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
XX GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEERS CERTIFICATION
____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL
____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
XX FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
XX ROUGH GRADING PERMIT
____ GRADING/PAVING PERMIT APPROVAL
____ OTHER ____(SPECIFY)

RECEIVED
JAN 06 1998
HYDROLOGY SECTION

DATE SUBMITTED: 1-6-98
BY: David B. Thompson
REV. 1/98

AVID ENGINEERING, INC.

Civil • Structural • Transportation

September 24, 1997

Lisa Ann Manwill, P.E.
The City of Albuquerque
Public Works Department
[Hand Delivered]

RE: WILLOW WOOD UNIT 6 SUBDIVISION,
GRADING AND DRAINAGE PLAN REVISIONS, Drainage File L21-D37A4

Dear Ms. Manwill:

Submitted is the revised Willow Wood Unit 6 Grading and Drainage plan for your review. The cul-de-sac was modified to remove all the retaining walls in the subdivision. The cul-de-sac bulb was moved five (5) feet to the left of centerline, thus allowing the back yards to be sloped at 4:1 eliminating the retaining walls in lots 26 and 27. Using new topographic data for the site and lowering the pad elevations in lots 46 through 49 allowed us to remove the back lot retaining walls on these lots.

Per your comment at DRC on project #4604.96, the storm drain was re-routed to tie into the existing 30" stub. Our previous design abandoned the existing 30" stub and connected to 60" storm drain, under Arches Road, with a new connection. To avoid installing a new manhole at the new connection, we opted to utilize the existing stub. This design required a back flow tie into one of the drop inlets. Because the inlet is relatively deep and the flows do not enter at the same elevation, there will be no conflict as a result of the back flow. Enclosed with this packet is a copy of the Los Padres Place Plan and Profile which shows the storm drain revisions.

Should you have any additional comment or questions, please call anytime at 881-5357

Sincerely,

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JAN 06 1998
HYDROLOGY SECTION

David B. Thompson, P.E.
Project Manager

Attachments

cc: Stan Strickman, Trails Management Inc.

5801 Osuna Rd. NE • Suite 200 • Albuquerque, NM 87109 • (505) 881-5357 • Fax 505-881-7602

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

December 24, 1997

Dave Thompson, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOW WOOD UNIT 6 (L21-D37A4). DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED DECEMBER 9, 1997.

Dear Mr. Thompson:

Based on the information provided on your December 17, 1997 submittal, the above referenced submittal is approved for Preliminary Plat.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa-Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **WILLOW WOOD NORTH** ATLAS/DRAINAGE FILE# **L-21/ D37A4**

LEGAL DESCRIPTION: **TRACT D-2-A MANZANO MESA**
CITY ADDRESS: **JUAN TABO AND SINGING ARROW**
ENGINEERING FIRM: **AVID ENG. INC.,** CONTACT:**DAVE THOMPSON**
ADDRESS: **5801 OSUNA RD. NE, ALB., NM, 87109**
OWNER: **MANZANO MESA LTD** CONTACT:**STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD NE, SUITE 680** PHONE: **881-9190**
ARCHITECT: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**
SURVEYOR: **AVID ENGINEERING, INC.** CONTACT: **Ruan Bacigalupa**
ADDRESS: **Same as Above** PHONE: **881-5357**
CONTRACTOR: **NA** CONTACT: **NA** _____
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:
_____ YES
XX NO
_____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97-209
EPC NO. _____
PROJECT NO._____

TYPE OF SUBMITTAL:

XX DRAINAGE REPORT
_____ DRAINAGE PLAN
_____ CONCEPTUAL GRADING & DRAINAGE PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEERS CERTIFICATION
_____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

_____ SECTOR PLAN APPROVAL
_____ SKETCH PLAT APPROVAL
XX PRELIMINARY PLAT APPROVAL
_____ SITE DEVELOPMENT PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY APPROVAL
_____ ROUGH GRADING PERMIT
_____ GRADING/PAVING PERMIT APPROVAL
_____ OTHER _____(SPECIFY)

DATE SUBMITTED: 12-17-97
BY: _____
REV. 10/85

AVID ENGINEERING, INC.

Civil • Structural • Transportation

December 17, 1997

RECEIVED
DEC 17 1997
HYDROLOGY SECTION

Ms. Lisa Ann Manwill, P.E.
Hydrology Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103
[Hand Delivered]

**RE: REVISIONS TO WILLOW WOOD NORTH SUBDIVISION (L21-D37A4)
GRADING PLAN AND SOUTHERN BOULEVARD DRAINAGE ANALYSIS
DRB 97-209**

Dear Ms. Manwill:

Submitted for your review and approval is this addendum to the Willow Wood North Drainage Report. This addendum includes some slight revisions to the approved Grading Plan and an analysis of the Southern Boulevard drainage.

Per comments received from the City Environmental Health Department the Preliminary Plat and Grading Plan for Willow Wood North have been slightly revised. The revisions include removing the cul-de-sacs on De Soto Place and Glacier Bay Place and extending the streets to connect with Deer Lodge Road. We also added two (2) additional 10' Tracts on Deer Lodge Place and Deer Lodge Road to provide pedestrian access from the subdivision to Southern Blvd. The revised layout resulted in five (5) additional lots, bringing the total lot count for Willow Wood North to 573 lots, and two (2) additional blocks.

On the Grading Plan, various lot and pad elevations along Deer Lodge Road, De Soto Street, Manistee Street, Glacier Bay Street and Adirondack Place were changed as a result of the Preliminary Plat changes. The changes in elevations resulted in the elimination of retaining walls in Unit 2. The drainage basin boundaries remain the same. The increase in peak flows is negligibleand do not affect the street or storm sewer hydraulics.

As a requirement of the development, the outer two lanes of Southern Boulevard adjacent to the subdivision will be constructed in phases. Construction of the two lanes of Southern Boulevard, which is classified as a Principal Arterial, will include the pavement and associated drainage infrastructure. An analysis was completed to determine the required drainage infrastructure.

According to the "South Eubank Area Storm Drainage Analysis" report prepared by Smith Engineering for the City, peak flows in Southern Boulevard from Elizabeth Street to Juan Tabo are generated by a small tract at the eastern end of Southern and the Southern Right-of-

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way. Since only the southern two lanes of the proposed six-lane facility will be constructed, we considered half of the flows reaching Elizabeth in Southern.

At the Elizabeth Street intersection, the peak 10-year flows in one-half of Southern are 17.55 cfs and the peak 100-year flows are 27.05 cfs. In this case, because Southern Boulevard is a Principal Arterial, the arterial criteria governs, where one lane (the middle lane) must remain dry during a 10-year storm. The analysis indicates that the depth of flow available in the outside two lanes of Southern is 0.565 feet, which is greater than the 10-year flow depth of 0.51 feet. Therefore the 10-year criteria is met.

The storm inlets and storm sewer were sized to intercept and convey the 100-year peak flows. The analysis indicates that three single-grate inlets are required. The attached sketch shows the inlets and required connector pipes. The downstream pipe is connected to the proposed 108 inch RCP in Elizabeth Street.

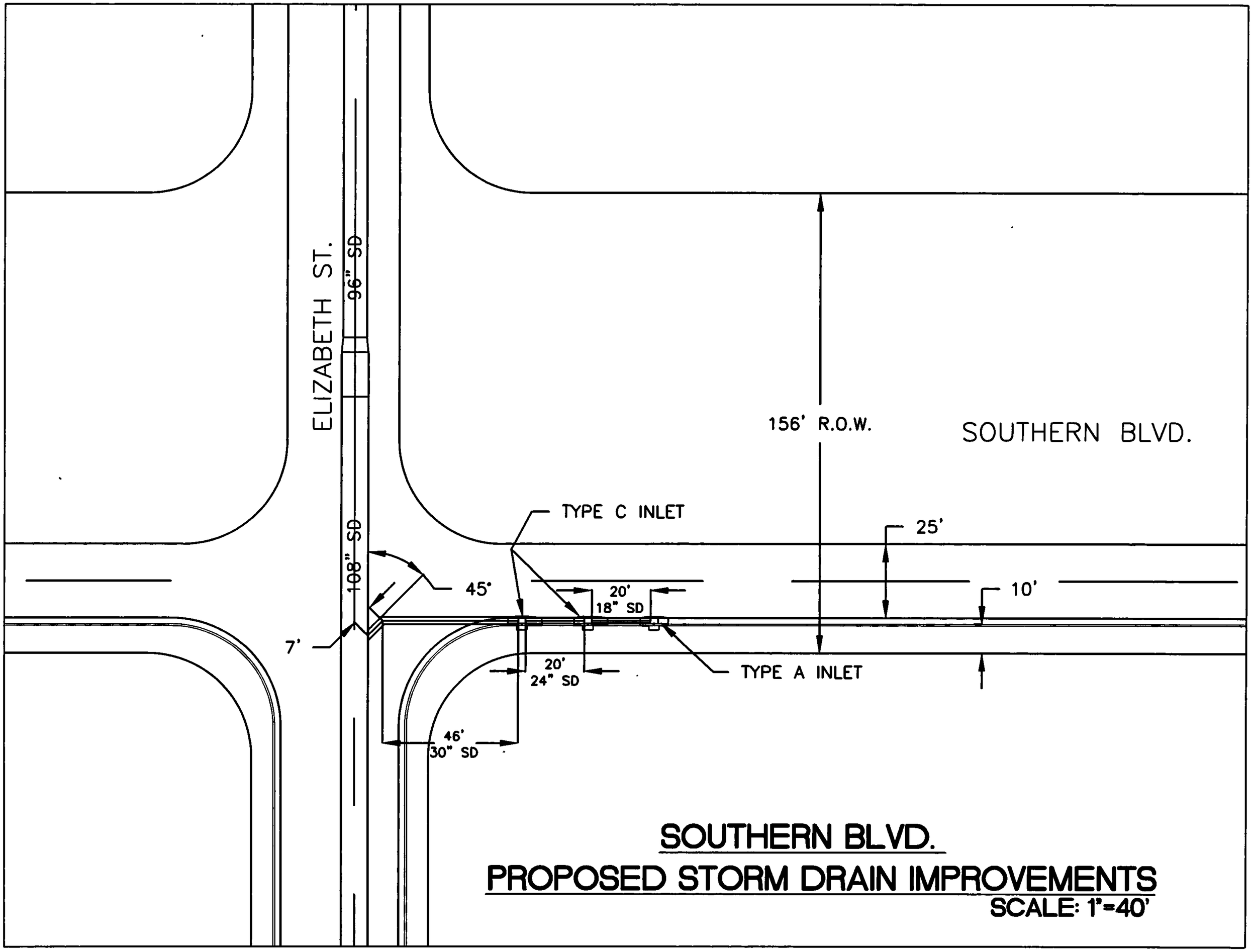
The Preliminary Plat is scheduled for DRB on December 30, 1997. I would like to schedule a meeting with you and Fred Aguirre Prior to December 24 so that we may discuss this addendum. Should you have any questions or need additional information, please call anytime.

Sincerely,

David B. Thompson, P.E.

Attachments

cc: Stan Strickman, Trails Management, Inc.


ELIZABETH ST.
96" SD
108" SD
156' R.O.W.
SOUTHERN BLVD.
TYPE C INLET
25'
10'
45°
20'
18" SD
7'
20'
24" SD
TYPE A INLET
46'
30" SD
SOUTHERN BLVD.
PROPOSED STORM DRAIN IMPROVEMENTS
SCALE: 1"=40'

AVID ENGINEERING, INC.

DETERMINE DRAINAGE INFRASTRUCTURE REQUIRED FOR 1/2 OF SOUTHERN BOULEVARD FROM ELIZABETH STREET TO JUAN TABO BLVD

DETERMINE WHERE STORM SEWER SHOULD START

ACCORDING TO "SOUTH ENBANK AREA STORM DRAINAGE ANALYSIS" by Smith Engineering THE ONLY DRAINAGE BASINS DRAINING TO SOUTHERN ARE FROM BASIN 213 BETWEEN SOUTHERN AND JUAN TABO, AND BASIN 501 WHICH IS THE SOUTHERN RIGHT-OF-WAY

BASIN	Q10	1/2 Q10	Q100	1/2 Q100
213 (Routed)	7.9 CFS	3.95 CFS	12.5 CFS	6.25 CFS
501	27.2	13.6	41.55	20.8
TOTAL		17.55 CFS		27.05 CFS

SOUTHERN BOULEVARD IS CLASSIFIED AS A PRINCIPAL ARTERIAL WITH 6 LANES ULTIMATE BUILDOUT, THEREFORE, ACCORDING TO ARTERIAL CRITERIA, ONE LANE MUST REMAIN DRY DURING A 10-YEAR STORM. IN THIS CASE, 2 LANES IN EACH DIRECTION CAN HAVE STORMWATER FLOWING AND THE 3RD LANE (MIDDLE) MUST REMAIN DRY.

PROJECT NAME Willow Wood North SHEET 1 OF 3
PROJECT NO. 6076.471 BY DBT DATE 12-15-97
SUBJECT CH'D DATE

AVID ENGINEERING, INC.

ACCORDING TO AS-BUILT DRAWINGS FOR SOUTHERN, THE EXISTING SLOPE IS 1.6%

ACCORDING TO STREET CAPACITY CHARTS FOR 1/2 OF A 48 FOOT WIDE STREET AT 1.6% SLOPE, THE DEPTH OF FLOW IS 0.51 ft FOR A FLOW OF 17.55 CFS.

TOTAL DEPTH OF 24 ft WIDE STREET = 0.125 ft (2' GUTTER PAN) + 22 X .02 (CROSS-SLOPE OF STREET) = 0.565 ft > 0.51 ft

THEREFORE, THE MIDDLE LANE (3RD LANE) REMAINS DRY FROM ELIZABETH TO JUAN TABO

<u>DETERMINE INLETS AND STORM SEWER REQUIRED TO INTERCEPT 100 YR FLOWS</u>

1/2 Q_{100} = 27.05 CFS IN SOUTHERN BOULEVARD

ACCORDING TO GRATE CAPACITY CHARTS FOR A SINGLE TYPE "A" OR "C" INLET AT 1.6% SLOPE AND A DEPTH OF 0.575 ft Q = 9 CFS PER INLET

THEREFORE, USE 3 INLETS IN SERIES WITH A TYPE A UPSTREAM AND TWO TYPE C'S. FIRST TYPE C WILL BE LOCATED AT THE RETURN

PROJECT NAME Willow Wood North SHEET 2 OF 3
PROJECT NO. 6076.471 BY DBF DATE 12-15-97
SUBJECT _____ CH'D _____ DATE _____

AVID ENGINEERING, INC.

DETERMINE STORM SEWER SIZES BETWEEN INLETS. ASSUME SLOPE OF STORM SEWER EQUALS SLOPE OF STREET (1.6%)

USE 18" RCP BETWEEN UPPER TWO INLETS
Q=9CFS DEPTH = 0.90 ft

USE 24" RCP BETWEEN MIDDLE TWO INLETS
Q=18CFS DEPTH = 1.15 ft

USE 30" RCP BETWEEN LOWER TWO INLETS
Q=27CFS DEPTH = 1.28 ft

THE 30" RCP WILL DRAIN INTO THE PROPOSED 108" RCP IN ELIZABETH

SEE ATTACHED SKETCHES

PROJECT NAME Willow Wood Nortel SHEET 3 OF 3
PROJECT NO. 6076.471 BY DAT DATE 12-15-97
SUBJECT CH'D DATE

LEGEND

34 — ANALYSIS POINT NUMBER WITH LOCATION BAR

STUDY BOUNDARY

SUB-BASIN BOUNDARY

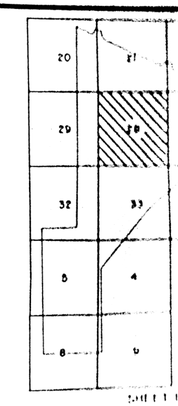
SUB-BASIN NUMBER
AREA (ACRES)
% IMPERVIOUS
100-YEAR RUNOFF VOLUME (AC-FT)
100-YEAR PEAK RUNOFF FLOW (CFS)

SUB-BASIN DATA

DRAINAGE BASIN MAP

N

1"=500'



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ZONE ATLAS PAGE

SEC. 28

SHEET INDEX

THE AERIAL PHOTOGRAPH ON THIS SHEET HAS BEEN RECTIFIED TO SELECTED PLANIMETRIC DETAIL OBTAINED DURING MAP COMPILATION. CONSEQUENTLY, THE PHOTO IMAGES FALLING OUTSIDE OF THE MAPPING AREA ARE UNCONTROLLED.

500 250 0 500 1000

DATE OF PHOTOGRAPHY: MARCH 2, 1994

PROJ. # 4790

SOUTH EUBANK AREA STORM DRAINAGE ANALYSIS

Smith Engineering Company

A Full Service Engineering Company

6400 Uptown Boulevard, N.E. Suite 500E Albuquerque, New Mexico 87110

MAP L-21 [redacted] 1C

CITY OF ALBUQUERQUE, NEW MEXICO

SOUTH EUBANK AREA STORM DRAINAGE ANALYSIS

COA PROJECT NO. 4790-01
PUBLIC WORKS DEPARTMENT
HYDROLOGY DIVISION

DRAFT DATE: FEBRUARY 10, 1995

Prepared by

SMITH ENGINEERING COMPANY
6400 UPTOWN BOULEVARD NE SUITE 500E
ALBUQUERQUE, NM 87110

SEC No. 89-01-08

100 YEAR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =02/07/1995
INPUT FILE = EUBANK2.DAT USER NO.= C_ANDRSN.B01

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	NOTATION
										PAGE = 1
*S										
*S DEVELOPED CONDITIONS WITH NO PROPOSED PIPES										
*S										
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.560
*S ONE-HOUR=2.07										
*S SIX-HOUR=2.56										
*S HYD 101 IS OLF THAT IS AT THE BEGINNING OF THE CENTRAL SD SYSTEM										
COMPUTE NM HYD	101.00	-	11	.03319	103.12	4.092	2.31187	1.500	4.855	PER IMP= 100.00
*S ROUTING 101 THRU 102 ON CENTRAL AVENUE'S NORTH SIDE										
ROUTE	101.02	11	12	.03319	91.32	4.092	2.31188	1.533	4.299	
COMPUTE NM HYD	102.00	-	11	.05253	149.46	5.978	2.13387	1.500	4.446	PER IMP= 88.00
ADD HYD	102.10	11&12	13	.08572	237.16	10.071	2.20279	1.533	4.323	
*S DIVIDE BETWEEN MH# S-132 TO MH# S-262										
*S**** PIPE HYD "CB1" AND OLF HYD 102.13 IS AP #9 *****										
DIVIDE HYD	CB1	13	11	.05140	61.00	6.039	2.20279	1.367	1.854	
	102.13	AND	12	.03432	176.16	4.032	2.20279	1.533	8.020	
*S OLF HYD 102.13 THRU 103 ON CENTRAL STREET'S NORTH SIDE										
ROUTE	102.12	12	14	.03432	137.98	4.032	2.20293	1.600	6.282	
COMPUTE NM HYD	103.00	-	13	.02347	49.09	2.453	1.95937	1.600	3.268	PER IMP= 77.00
ADD HYD	103.10	13&14	12	.05779	187.07	6.485	2.10399	1.600	5.058	
*S DIVIDE CATCH BASINS AND CATTLE GUARD BETWEEN MH# S-102 TO MH# S-132										
*S**** OLF HYD 103.13 IS AP #13 *****										
DIVIDE HYD	CB2	12	14	.04573	98.90	5.131	2.10399	1.500	3.380	
	103.13	AND	15	.01206	88.17	1.354	2.10399	1.600	11.419	
COMPUTE NM HYD	104.00	-	12	.04955	124.58	5.290	2.00178	1.533	3.929	PER IMP= 79.00
COMPUTE NM HYD	105.00	-	16	.01810	51.06	2.232	2.31187	1.533	4.408	PER IMP= 100.00
COMPUTE NM HYD	106.00	-	17	.03425	68.27	3.016	1.65135	1.567	3.115	PER IMP= 48.00
COMPUTE NM HYD	107.00	-	19	.01986	51.82	1.963	1.85327	1.500	4.077	PER IMP= 70.00
ADD HYD	107.10	17&19	13	.05411	115.01	4.979	1.72545	1.533	3.321	
*S ROUTING OLF HYD 107.1 THRU 105/108 ON SKYLINE ROAD										
*S**** OLF HYD 107.12 IS AP #11 *****										
ROUTE	107.12	13	18	.05411	104.96	4.979	1.72546	1.600	3.031	
COMPUTE NM HYD	108.00	-	13	.02297	66.89	2.604	2.12531	1.500	4.550	PER IMP= 87.00
*S ROUTING OLF HYD 104 THRU 105										
ROUTE	104.02	12	17	.04955	109.01	5.290	2.00179	1.600	3.438	
ADD HYD	105.10	16&17	19	.06765	156.19	7.522	2.08473	1.567	3.608	
ADD HYD	107.20	19&18	17	.12176	259.94	12.501	1.92507	1.567	3.336	
*S TOTAL FLOW GOING INTO JUAN TABO'S CATTLE GUARD										
ADD HYD	108.10	13&17	16	.14473	315.18	15.105	1.95685	1.567	3.403	
*S CATTLE GUARD AND CATCH BASINS BETWEEN MH# S-993 TO MH# S-903										
*S**** PIPE HYD CB3 AND OLF HYD 108.13 IS AP #12 *****										
DIVIDE HYD	CB3	16	17	.08700	88.00	9.079	1.95685	1.400	1.581	
	108.13	AND	18	.05773	227.18	6.025	1.95685	1.567	6.149	
COMPUTE NM HYD	201.00	-	21	.02777	84.21	3.318	2.24012	1.500	4.738	PER IMP= 95.00
*S EXISTING DETENTION BASIN IN BASIN 201										
*S ROUTING RESERVOIR WITH SMALL ORIFICE PIPES AND 20' WEIR										
ROUTE RESERVOIR	201.RES	21	22	.02777	23.79	3.316	2.23882	1.933	1.339	AC-FT= 2.055
*S										

*S	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
*S	0	0	5620
*S	2.5	0.468	5621
*S	3.8	0.937	5622
*S	4.8	1.405	5623
*S	5.6	1.873	5624
*S	29.0	2.107	5624.5
*S	70.0	2.342	5625

*S

*S ROUTING 201.RES THRU 202										
ROUTE	201.02	22	21	.02777	20.59	3.315	2.23821	2.066	1.159	
COMPUTE NM HYD	202.00	-	22	.04041	103.90	4.816	2.23453	1.567	4.017	PER IMP= 95.00
COMPUTE NM HYD	209.00	-	25	.05761	119.24	5.400	1.75764	1.567	3.234	PER IMP= 62.00
ADD HYD	202.10	21&22	24	.06818	105.99	8.131	2.23602	1.567	2.429	
*S**** OLF HYD 209.1 IS AP #1 *****										
ADD HYD	209.10	24&25	23	.12579	225.22	13.531	2.01693	1.567	2.798	
*S ROUTING 209.1 THRU 210 ON TOMLINSON DRIVE TO PARKSIDE										
ROUTE	209.12	23	22	.12579	200.00	13.530	2.01680	1.633	2.484	
COMPUTE NM HYD	203.00	-	21	.08386	172.02	8.709	1.94717	1.600	3.205	PER IMP= 75.00
*S DIVIDE SOUTH SIDE CENTRAL AVENUE BETWEEN MH# S-132 AND MH# S-262(CHECK TO S										
*S**** OLF HYD 203.03 IS AP #10 *****										

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	NOTATION
DIVIDE HYD	CB5	21	24	.00449	1.73	.466	1.94823	8.566	.602	
	203.03	AND	25	.07937	171.02	8.247	1.94823	1.600	3.367	
*S**** PIPE HYD CB5.1 IS AP #10 *****										
ADD HYD	CB5.1	24&11	21	.05589	62.00	6.505	2.18235	1.367	1.733	
*S FROM MH# S-102 TO MH# S-132										
*S Q(CAP) = 73 CFS										
ROUTE	CB5.12	21	27	.05589	62.00	6.505	2.18244	1.966	1.733	
*S ROUTING 203.03 THRU 204 ON CENTRAL AVENUE'S SOUTH SIDE										
ROUTE	203.02	25	23	.07937	152.20	8.248	1.94829	1.667	2.996	
COMPUTE NM HYD	204.00	-	21	.06581	141.97	7.399	2.10798	1.600	3.371	PER IMP= 86.00
ADD HYD	204.10	23&21	24	.14518	287.70	15.646	2.02067	1.633	3.096	
*S DIVIDE SOUTH SIDE CENTRAL AVENUE BETWEEN MH# S-102 AND MH# S-123										
*S OLF HYD 204.13 IS AT JUAN TABO AND CENTRAL ON THE SOUTH SIDE										
*S**** OLF HYD 204.13 IS AP #14 *****										
DIVIDE HYD	CB6	24	25	.10360	117.10	11.165	2.02067	1.467	1.766	
	204.13	AND	26	.04158	170.60	4.481	2.02067	1.633	6.411	
ADD HYD	CB6.1	27&25	21	.15949	179.10	17.670	2.07735	1.933	1.755	
*S TOTAL PIPE FLOW AT JUAN TABO AND CENTRAL										
*S Q(CAP) AT MH# S-102 IS 260 CFS										
*S**** PIPE HYD CB6.2 IS AP #13 AND #14										
ADD HYD	CB6.2	14&21	99	.20521	278.00	22.801	2.08329	1.766	2.117	
COMPUTE NM HYD	205.00	-	21	.01633	43.64	1.651	1.89569	1.500	4.175	PER IMP= 71.00
*S ROUTING 205 THRU 206 ON JUAN TABO STREET										
ROUTE	205.02	21	23	.01633	36.77	1.651	1.89570	1.567	3.519	
COMPUTE NM HYD	206.00	-	24	.01425	38.20	1.550	2.03920	1.500	4.189	PER IMP= 81.00
ADD HYD	206.10	23&24	21	.03058	73.94	3.201	1.96254	1.533	3.778	
*S DIVIDE OLF HYD 206.1 AT MH# S-592										
*S**** PIPE HYD CB18 AND OLF HYD 206.13 IS AP #6 *****										
DIVIDE HYD	CB18	21	27	.02389	32.60	2.501	1.96265	1.433	2.132	
	206.13	AND	28	.00669	41.34	.700	1.96265	1.533	9.659	
*S FROM MH# S-791 TO MH# S-592										
*S Q(CAP) = 48 CFS										
ROUTE	CB18.02	27	29	.02389	32.60	2.501	1.96287	1.800	2.132	
COMPUTE NM HYD	207.00	-	23	.03038	70.01	2.857	1.76351	1.533	3.601	PER IMP= 63.00
*S ROUTING 207 THRU 208 ON SINGING ARROW ROAD										
ROUTE	207.02	23	27	.03038	56.24	2.857	1.76351	1.600	2.893	
COMPUTE NM HYD	208.00	-	23	.09685	190.67	9.850	1.90704	1.600	3.076	PER IMP= 72.00
*S**** OLF HYD 208.1 IS AP #5 *****										
ADD HYD	208.10	27&23	24	.12723	246.91	12.708	1.87275	1.600	3.032	
*S DIVIDE OLF HYD 208.1 BETWEEN MH# S-791 AND MH# S-592										
*S**** OLF HYD 208.13 IS AP #7 *****										
DIVIDE HYD	CB19	24	27	.06474	52.20	6.466	1.87275	1.400	1.260	
	208.13	AND	21	.06249	194.71	6.241	1.87276	1.600	4.869	
*S**** PIPE HYD CB19.1 IS AP #7 *****										
ADD HYD	CB19.1	27&29	23	.08863	84.80	8.968	1.89704	1.800	1.495	
*S FROM MH# S-94(OUTFALL) TO MH# S-791										
*S Q(CAP) = 94 CFS										
ROUTE	CB19.12	23	29	.08863	84.76	8.968	1.89705	1.800	1.494	
COMPUTE NM HYD	210.00	-	24	.02613	51.48	2.153	1.54525	1.533	3.078	PER IMP= 47.00
*S**** OLF HYD 210.1 IS AP #3 *****										
ADD HYD	210.10	24&22	23	.15192	244.51	15.684	1.93569	1.600	2.515	
*S ROUTING 210.1 THRU 209 ON TOMLINSON DRIVE TO OUTFALL										
ROUTE	210.12	23	27	.15192	235.94	15.683	1.93562	1.667	2.427	
COMPUTE NM HYD	211.00	-	23	.06408	110.04	5.340	1.56261	1.600	2.683	PER IMP= 48.00
*S TOTAL OLF AT TOMLINSON OUTFALL										
*S**** OLF HYD 211.1 IS AP #4 *****										
ADD HYD	211.10	23&27	25	.21600	342.46	21.024	1.82496	1.633	2.477	
COMPUTE NM HYD	212.00	-	22	.05122	111.55	5.313	1.94479	1.567	3.403	PER IMP= 74.00
*S DIVIDE SUB-BASIN 212 BETWEEN MH# S-94(OUTFALL) AND MH# S-791										
*S**** OLF HYD 212.03 IS AP #8 *****										
DIVIDE HYD	CB20	22	24	.04534	69.80	4.709	1.94721	1.467	2.405	
	212.03	AND	27	.00588	41.75	.610	1.94721	1.567	11.102	
*S TOTAL FLOW IN THE JUAN TABO STORM DRAIN SYSTEM										
*S**** PIPE HYD CB20.1 IS AP #8 *****										
ADD HYD	CB20.1	24&29	22	.13398	154.48	13.676	1.91402	1.733	1.802	
*S JUAN TABO ROAD, SOUTH OF CENTRAL										
COMPUTE NM HYD	213.00	-	24	.00828	18.50	1.021	2.31187	1.633	3.490	PER IMP= 100.00
COMPUTE NM HYD	301.00	-	31	.05794	99.24	5.468	1.76955	1.633	2.676	PER IMP= 62.00
*S FROM MH# S-973 TO MH# S-993 IN BEUENA VENTURA STREET										
*S Q(CAP) = 96 CFS										
ROUTE	CB3.02	17	32	.08700	88.05	9.079	1.95685	1.467	1.581	
*S OLF HYD 108.13 THRU 301 ON BEUENA VENTURA STREET										

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

ROUTE                  108.12    18   13       .05773      191.06      6.026     1.95693       1.633   5.171
*S TOTAL OLF AT JANE AND BEUENA VENTURA
*S****     OLF HYD 301.1 IS AP #20     *****
ADD HYD                301.10 13&31   33       .11567      290.31     11.494     1.86307       1.633   3.921
DIVIDE HYD                CB8   33   34       .03749       34.00      3.726     1.86306       1.433   1.417
                       301.03  AND   35       .07818      256.31      7.768     1.86306       1.633   5.123
*S****     PIPE HYD CB8.1 IS AP #20     *****
ADD HYD                 CB8.1 34&32  36       .12449      122.05     12.805     1.92860       1.467   1.532
*S FROM MH# S-772  TO  MH# S-973 IN JANE STREET
*S Q(CAP) = 146 CFS
ROUTE                  CB8.12   36   31       .12449      122.35     12.805     1.92861       1.467   1.536
*S OLF HYD 301.03 THRU 302 ON JANE STREET
ROUTE                  301.02   35   32       .07818      234.60      7.768     1.86313       1.700   4.689
COMPUTE NM HYD         302.00    -   33       .02999       51.08      2.830     1.76916       1.633   2.661 PER IMP=  63.00
*S DIVIDE BETWEEN MH# S-772  AND  MH# S-973
DIVIDE HYD                CB9   32   35       .01867       30.00      1.856     1.86313       1.500   2.510
                       301.06  AND   36       .05951      204.60      5.913     1.86313       1.700   5.372
*S TOTAL PIPE FLOW AT CHICO AND JANE
*S****     PIPE HYD CB9.1 IS AP #21     *****
ADD HYD                 CB9.1 31&35  34       .14316      152.05     14.661     1.92006       1.500   1.659
*S FROM MH# S-743   TO   MH# S-772
*S Q(CAP) = 169 CFS
ROUTE                  CB9.12   34   31       .14316      152.00     14.661     1.92006       1.800   1.659
*S****     OLF HYD 302.1 IS AP #21     *****
ADD HYD                302.10 33&36   34       .08950      253.77      8.743     1.83163       1.700   4.431
ROUTE                  302.12   34   32       .08950      241.85      8.743     1.83164       1.733   4.222
COMPUTE NM HYD         303.00    -   33       .08070      128.73      7.616     1.76955       1.667   2.493 PER IMP=  62.00
ADD HYD                303.10 33&32   34       .17020      366.90     16.359     1.80219       1.733   3.368
*S DIVIDE BETWEEN MH# S-743  AND  MH# S-772
DIVIDE HYD                CB10   34   32       .02607       10.00      2.506     1.80219       1.333    .599
                       303.13  AND   33       .14413      356.90     13.853     1.80219       1.733   3.869
*S TOTAL PIPE FLOW AT CHICO AND MORRIS
*S****     PIPE HYD CB10.1 IS AP #22     *****
ADD HYD                CB10.1 31&32  35       .16924      162.00     17.166     1.90190       1.800   1.496
*S FROM MH# S-704  TO  MH# S-743 IN CHICO ROAD
*S Q(CAP) = 216 CFS
ROUTE                 CB10.12   35   36       .16924      162.00     17.166     1.90191       2.066   1.496
COMPUTE NM HYD         304.00    -   31       .01342       39.16      1.655     2.31187       1.533   4.559 PER IMP= 100.00
ROUTE                  304.03   31   32       .01342       28.02      1.655     2.31189       1.600   3.262
COMPUTE NM HYD         305.00    -   31       .03919       64.44      3.290     1.57396       1.633   2.569 PER IMP=  49.00
ADD HYD                305.10 31&32   35       .05261       92.16      4.944     1.76216       1.600   2.737
*S TOTAL OLF AT CHICO AND MORRIS
*S****     OLF HYD 305.2 IS AP #22     *****
ADD HYD                305.20 35&33   32       .19674      434.62     18.797     1.79148       1.700   3.452
ROUTE                  305.22   32   33       .19674      412.44     18.797     1.79149       1.766   3.276
COMPUTE NM HYD         306.00    -   31       .03441       83.70      4.243     2.31187       1.600   3.801 PER IMP= 100.00
*S ROUTING SUB-BASIN 306 THRU 308 ( THRU WALL BETWEEN BASIN 306 AND 308)
ROUTE                  306.03   31   32       .03441       74.97      4.243     2.31187       1.667   3.404
*S SUB-BASIN 307 IS DETAINED WITH A 8" PVC OUTLET
COMPUTE NM HYD         307.00    -   34       .02937       64.35      2.258     1.44180       1.500   3.423 PER IMP=  40.00
COMPUTE NM HYD         308.00    -   31       .08051      133.77      6.512     1.51655       1.600   2.596 PER IMP=  45.00
*S****     OLF HYD 308.1 IS AP #23     *****
ADD HYD                308.10 31&32   35       .11492      205.71     10.755     1.75468       1.633   2.797
*S EXISTING DETENTION BASIN IN BASIN 308
*S ROUTING RESERVOIR WITH 36" ORIFICE
ROUTE RESERVOIR       308.RES   35   39       .11492       69.84     10.755     1.75468       2.100    .950 AC-FT=    4.468
*S
*S        OUTFLOW(CFS)    STORAGE(AC-FT)    ELEV(FT)
*S              0                0            5456
*S             19               0.09          5458
*S             48               1.25          5460
*S             69               4.09          5462
*S             83              10.36          5464
*S
COMPUTE NM HYD         309.00    -   31       .01291       29.71      1.064     1.54525       1.500   3.596 PER IMP=  47.00
ADD HYD                309.10 33&31   32       .20965      423.16     19.861     1.77632       1.766   3.154
*S DIVIDE BY CB ON CHICO STREET BETWEEN MH# S-704  TO  MH# S-743
*S OLF HYD 309.13 IS AT CHICO AND EUBANK
*S****     OLF HYD 309.13 IS AP #24     *****
DIVIDE HYD                CB11   32   33       .01096        3.00      1.038     1.77632       1.267    .428
                       309.13  AND   37       .19868      420.16     18.823     1.77632       1.766   3.304
ADD HYD                CB11.1 36&33  38       .18020      165.00     18.205     1.89426       2.066   1.431
*S TOTAL PIPE FLOW AT CHICO AND EUBANK FROM THE CHICO SYSTEM
*S****     PIPE HYD CB11.2 IS AP #24     *****
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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	NOTATION
ADD HYD	CB11.2	38&39	32	.29512	234.83	28.959	1.83991	2.066	1.243	
COMPUTE NM HYD	310.00	-	38	.05825	145.16	6.710	2.15990	1.567	3.894	PER IMP= 90.00
COMPUTE NM HYD	311.00	-	39	.10616	208.97	11.041	1.95009	1.633	3.076	PER IMP= 75.00
COMPUTE NM HYD	312.00	-	33	.02461	71.05	2.756	2.09963	1.500	4.511	PER IMP= 85.00
*S BASIN 400 IS SOUTH OF CENTRAL										
COMPUTE NM HYD	401.00	-	41	.03371	73.42	3.928	2.18485	1.633	3.403	PER IMP= 90.00
*S ROUTE SUB-BASIN 401 THRU 405 ON COCHITI AND UNIMPROVED ROAD										
ROUTE	401.02	41	48	.03371	55.54	3.928	2.18485	1.733	2.574	
COMPUTE NM HYD	402.00	-	42	.03516	76.91	4.315	2.30112	1.633	3.418	PER IMP= 99.00
*S OLF HYD 103.13 THRU 303 AND 304 ON NORTH SIDE OF CENTRAL STREET										
ROUTE	103.12	15	43	.01206	48.37	1.354	2.10442	1.667	6.265	
*S OLF HYD 204.13 THRU 402 ON SOUTH SIDE CENTRAL STREET										
ROUTE	204.12	26	44	.04158	115.23	4.482	2.02079	1.766	4.330	
ADD HYD	402.10	42&44	45	.07674	181.23	8.796	2.14920	1.733	3.690	
*S DIVIDE BY CB ON NORTH SIDE CENTRAL STREET BETWEEN MH# S-42 AND MH# S-102										
*S OLF HYD 103.13 IS FLOW ON CENTRAL'S NORTH SIDE AT ELIZABETH AND CENTRAL										
*S**** OLF HYD 103.13 IS AP #15 *****										
DIVIDE HYD	CB14	43	42	.01170	42.00	1.313	2.10430	1.633	5.611	
	103.13	AND	44	.00037	6.37	.041	2.10430	1.667	27.009	
*S DIVIDE BY CB ON SOUTH SIDE CENTRAL STREET BETWEEN MH# S-42 AND MH# S-102										
*S OLF HYD 402.13 IS CENTRAL'S TOTAL SOUTH SIDE FLOW AT ELIZABETH AND CENTRAL										
*S**** OLF HYD 402.13 IS AP #16 *****										
DIVIDE HYD	CB15	45	46	.04223	49.00	4.840	2.14920	1.500	1.813	
	402.13	AND	47	.03451	132.23	3.956	2.14920	1.733	5.986	
*S FROM MH# S-42 TO MH# S-102										
*S Q(CAP) = 276 CFS										
ROUTE	CB6.22	99	43	.20521	277.94	22.801	2.08329	1.766	2.116	
ADD HYD	CB14.1	42&43	41	.21691	319.87	24.114	2.08442	1.733	2.304	
*S TOTAL PIPE FLOW AT CENTRAL AND ELIZABETH										
*S**** PIPE HYD CB15.1 IS AP #15 AND AP #16 *****										
ADD HYD	CB15.1	41&46	42	.25914	368.87	28.954	2.09498	1.733	2.224	
*S FROM MH# S-4 TO MH# S-42										
*S Q(CAP) = 394 CFS										
ROUTE	CB15.12	42	43	.25914	368.28	28.954	2.09498	1.733	2.221	
*S OLF HYD 103.13 THRU 304 ON NORTH SIDE CENTRAL STREET; BETWEEN EUBANK AND ELIZ										
ROUTE	103.12	44	46	.00037	1.33	.041	2.10657	1.733	5.633	
*S OLF HYD 402.13 THRU 402 ON SOUTH SIDE CENTRAL STREET; BETWEEN EUBANK AND ELIZ										
ROUTE	402.12	47	42	.03451	109.04	3.956	2.14935	1.833	4.936	
COMPUTE NM HYD	403.00	-	41	.05744	110.01	5.677	1.85327	1.600	2.992	PER IMP= 70.00
COMPUTE NM HYD	404.00	-	44	.04882	89.80	4.825	1.85327	1.633	2.874	PER IMP= 70.00
ADD HYD	404.10	48&44	45	.08253	138.77	8.753	1.98868	1.667	2.627	
COMPUTE NM HYD	405.00	-	48	.04851	126.82	5.850	2.26106	1.567	4.085	PER IMP= 96.00
ADD HYD	405.10	48&45	47	.13104	245.11	14.603	2.08951	1.600	2.923	
COMPUTE NM HYD	406.00	-	44	.02202	55.38	2.643	2.25016	1.567	3.930	PER IMP= 95.00
ADD HYD	406.10	42&44	45	.05653	135.71	6.599	2.18859	1.800	3.751	
*S DIVIDE BY CB ON NORTH SIDE CENTRAL STREET BETWEEN MH# S-4 AND MH# S-42										
DIVIDE HYD	CB16	46	42	.00037	1.33	.041	2.10355	1.733	5.641	
	103.23	AND	44	.00000	.02	.000	2.10355	6.899	63.639	
*S DIVIDE BY CB ON SOUTH SIDE CENTRAL STREET BETWEEN MH# S-4 AND MH# S-42										
DIVIDE HYD	CB17	45	48	.03122	42.00	3.644	2.18859	1.500	2.102	
	406.13	AND	49	.02532	93.71	2.955	2.18859	1.800	5.784	
ADD HYD	CB16.1	43&42	45	.25950	369.61	28.995	2.09499	1.733	2.225	
*S TOTAL PIPE FLOW AT CENTRAL AND EUBANK										
*S**** PIPE FLOW CB17.1 IS AP #17 *****										
ADD HYD	CB17.1	45&48	42	.29072	411.61	32.639	2.10504	1.733	2.212	
*S DIVIDE PIPE HYD CB17.1 BY MAXIMUM PIPE CAPACITY OF 60" IN EUBANK										
*S**** PIPE HYD CB17.13 IS AP #19 *****										
DIVIDE HYD	CB17.13	42	43	.21598	210.00	24.248	2.10504	1.467	1.519	
	CB17.OLF	AND	45	.07474	201.61	8.391	2.10504	1.733	4.215	
*S DIVIDE OLF HYD CB17.OLF BY 50% TO NORTH AND SOUTH SIDE										
DIVIDE HYD	NOR	45	42	.03737	100.81	4.196	2.10504	1.733	4.215	
	SOU	AND	46	.03737	100.81	4.196	2.10504	1.733	4.215	
*S TOTAL OLF FLOW AT CENTRAL AND EUBANK ON NORTH SIDE										
*S**** OLF HYD "NORTH" IS AP #18 *****										
ADD HYD	NORTH	42&44	48	.03737	100.81	4.196	2.10504	1.733	4.215	
*S TOTAL OLF FLOW AT CENTRAL AND EUBANK ON SOUTH SIDE										
*S**** OLF HYD "SOUTH" IS AP #17 *****										
ADD HYD	SOUTH	46&49	45	.06269	190.04	7.151	2.13878	1.766	4.737	
*S FROM MH# S-704 TO MH# S-4										
*S Q(CAP) = 187 CFS										
ROUTE	CB17.12	43	42	.21598	210.00	24.248	2.10504	2.000	1.519	
*S TOTAL PIPE FLOW AT EUBANK AND CHICO										

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	NOTATION
ADD HYD	CB17.2	32&42	43	.51110	444.83	53.207	1.95195	2.066	1.360	
*S DIVIDE PIPE HYD CB17.2 BY MAXIMUM PIPE CAPACITY OF 60" IN EUBANK										
*S**** PIPE FLOW CB17.23 IS AP #25 *****										
DIVIDE HYD	CB17.23	43	42	.37444	235.00	38.981	1.95195	1.467	.981	
	CB17.OLF2	AND	44	.13666	209.83	14.227	1.95195	2.066	2.399	
*S FROM MH# S-503 TO MH# S-704										
*S Q(CAP) = 235 CFS										
ROUTE	CB17.22	42	43	.37444	235.00	38.981	1.95195	2.033	.981	
*S TOTAL OLF AT EUBANK AND CHICO										
*S**** OLF HYD 309.2 IS AP #25 *****										
ADD HYD	309.20	37&44	46	.33534	624.69	33.049	1.84789	1.766	2.911	
*S OLF HYD 309.2 THRU 310 ON EUBANK STREET; FROM CHICO TO COPPER										
ROUTE	309.22	46	42	.33534	605.86	33.050	1.84791	1.833	2.823	
ADD HYD	310.10	42&38	46	.39359	670.39	39.760	1.89408	1.833	2.661	
*S DIVIDE BY CB ON EUBANK STREET BETWEEN MH# S-704 AND MH# S-503, INCLUDING 48										
*S**** OLF HYD 310.13 IS AP #26 *****										
DIVIDE HYD	CB12	46	44	.16510	160.00	16.678	1.89408	1.500	1.514	
	310.13	AND	49	.22849	510.39	23.082	1.89408	1.833	3.490	
*S TOTAL PIPE FLOW AT EUBANK AND COPPER										
*S**** PIPE FLOW CB17.3 IS AP #27 *****										
ADD HYD	CB17.3	44&43	99	.53954	395.00	55.659	1.93424	2.033	1.144	
COMPUTE NM HYD	501.00	-	51	.01967	41.55	2.275	2.16836	1.633	3.301	PER IMP= 90.00
*S ROUTING 213 THRU 501 ON SOUTHERN STREET										
ROUTE	213.02	24	52	.00828	12.54	1.021	2.31188	1.800	2.366	
ADD HYD	403.10	41&52	53	.06572	118.31	6.698	1.91102	1.633	2.813	
*S TOTAL OLF AT SOUTHERN AND ELIZABETH										
*S**** OLF HYD 501.1 IS AP #28 *****										
ADD HYD	501.10	51&53	52	.08539	159.86	8.973	1.97030	1.633	2.925	
*S ROUTING 501.1 THRU 506 ON SOUTHERN STREET										
ROUTE	501.12	52	51	.08539	134.13	8.973	1.97030	1.733	2.454	
COMPUTE NM HYD	502.00	-	52	.19070	313.77	16.069	1.57996	1.633	2.571	PER IMP= 49.00
*S ROUTE 206.13 THRU 502 ON LA CARIDAD AND LA PUERTA AVE; ASSUME 40' PAVING										
ROUTE	206.12	28	53	.00669	15.11	.700	1.96343	1.667	3.529	
*S ROUTE 208.13 THRU 502 ON LA PUERTA AVE? ; ASSUME 40' PAVING										
ROUTE	208.02	21	54	.06249	134.07	6.242	1.87283	1.733	3.352	
COMPUTE NM HYD	503.00	-	55	.18018	290.84	15.045	1.56562	1.633	2.522	PER IMP= 48.00
COMPUTE NM HYD	504.00	-	56	.00886	23.13	.876	1.85327	1.500	4.079	PER IMP= 70.00
ADD HYD	208.10	53&54	57	.06918	147.30	6.942	1.88154	1.733	3.327	
ADD HYD	502.10	52&57	53	.25988	443.98	23.011	1.66024	1.667	2.669	
ADD HYD	503.10	53&55	54	.44006	730.27	38.056	1.62149	1.633	2.593	
*S TOTAL FLOW AT EXISTING RETENTION BASIN										
*S**** OLF HYD 504.1 IS AP #31 *****										
ADD HYD	504.10	54&56	52	.44892	744.08	38.932	1.62607	1.633	2.590	
*S ROUTING 504.1 ON PROPOSED ELIZABETH STREET THRU BASIN 509/510										
ROUTE	504.12	52	53	.44892	738.05	38.932	1.62607	1.667	2.569	
COMPUTE NM HYD	505.00	-	55	.06230	72.84	3.390	1.02027	1.633	1.827	PER IMP= 10.00
*S ROUTING 505 THRU 507 ON ENTRADA ; ASSUME 40' PAVING										
ROUTE	505.02	55	54	.06230	72.52	3.390	1.02027	1.633	1.819	
COMPUTE NM HYD	506.00	-	56	.01509	32.37	1.549	1.92516	1.567	3.352	PER IMP= 75.00
ADD HYD	506.10	51&56	55	.10048	157.25	10.522	1.96351	1.700	2.445	
*S ROUTING 506.1 THRU 404 ON EUBANK STREET										
ROUTE	506.12	55	58	.10048	150.82	10.522	1.96351	1.766	2.345	
*S TOTAL OLF AT EUBANK AND COCHITI										
*S***** OLF HYD 506.2 IS AP #29 *****										
ADD HYD	506.20	47&58	56	.23152	366.03	25.125	2.03482	1.667	2.470	
COMPUTE NM HYD	507.00	-	51	.02184	66.23	2.609	2.24012	1.500	4.738	PER IMP= 95.00
COMPUTE NM HYD	508.00	-	52	.02059	53.72	2.035	1.85327	1.500	4.077	PER IMP= 70.00
ADD HYD	507.10	54&51	55	.08414	117.23	5.999	1.33690	1.567	2.177	
*S***** OLF HYD 508.1 IS AP #30 *****										
ADD HYD	508.10	52&55	57	.10473	165.84	8.034	1.43841	1.533	2.474	
COMPUTE NM HYD	509.00	-	51	.02582	67.36	2.552	1.85327	1.500	4.076	PER IMP= 70.00
COMPUTE NM HYD	510.00	-	52	.07573	167.53	7.485	1.85328	1.567	3.457	PER IMP= 70.00
ADD HYD	509.10	53&51	54	.47474	772.79	41.484	1.63843	1.667	2.543	
*S***** OLF HYD 510.1 IS AP #32 *****										
ADD HYD	510.10	52&54	53	.55047	898.02	48.969	1.66798	1.667	2.549	
COMPUTE NM HYD	601.00	-	61	.03286	75.65	3.322	1.89569	1.533	3.597	PER IMP= 71.00
*S ROUTE 212.03 THRU 601 ON WILD HORSE TRAIL ; 30' PAVING										
ROUTE	212.02	27	62	.00588	26.68	.611	1.94809	1.633	7.094	
*S OLF HYD 601.1 GOES INTO THE TIJERAS ARROYO										
ADD HYD	601.10	61&62	69	.03874	92.03	3.933	1.90360	1.600	3.712	
*S SUB-BASIN 602 EITHER PONDS OR GOES INTO TIJERAS ARROYO										
COMPUTE NM HYD	602.00	-	62	.01436	26.02	.770	1.00588	1.500	2.832	PER IMP= .00

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	NOTATION
COMPUTE NM HYD	603.00	-	63	.01970	35.70	1.057	1.00588	1.500	2.831	PER IMP= .00
COMPUTE NM HYD	604.00	-	64	.06839	127.07	6.348	1.74050	1.600	2.903	PER IMP= 60.50
*S ROUTING 604 THRU 603 ON GRAVEL ROAD										
ROUTE	604.02	64	65	.06839	123.73	6.348	1.74050	1.633	2.827	
*S OLF HYD 604.1 EITHER PONDS OR GOES INTO TIJERAS ARROYO										
*S***** OLF HYD 603.1 IS AP #33 *****										
ADD HYD	603.10	63&65	64	.08809	147.32	7.405	1.57621	1.633	2.613	
COMPUTE NM HYD	605.00	-	65	.04536	80.92	5.286	2.18485	1.733	2.787	PER IMP= 90.00
COMPUTE NM HYD	606.00	-	66	.06633	154.15	7.729	2.18485	1.600	3.631	PER IMP= 90.00
*S OLF HYD 606.1 GOES INTO EXISTING RETENTION BASIN										
*S***** OLF HYD 606.1 IS AP #34 *****										
ADD HYD	606.10	65&66	67	.11169	217.95	13.015	2.18484	1.633	3.049	
COMPUTE NM HYD	607.00	-	65	.12156	223.97	12.545	1.93498	1.667	2.879	PER IMP= 68.00
*S ROUTING 607 THRU 608 ON A GRAVEL EUBANK ROAD										
ROUTE	607.02	65	66	.12156	210.21	12.545	1.93498	1.733	2.702	
COMPUTE NM HYD	608.00	-	65	.08609	74.20	4.330	.94295	1.700	1.347	PER IMP= 15.00
ADD HYD	608.10	65&66	63	.20765	284.25	16.874	1.52369	1.700	2.139	
*S ROUTING 608 THRU 609 ON A GRAVEL EUBANK ROAD										
ROUTE	608.12	63	66	.20765	271.71	16.874	1.52369	1.766	2.045	
COMPUTE NM HYD	609.00	-	65	.02603	25.38	1.062	.76501	1.600	1.523	PER IMP= .00
*S OLF HYD 609.1 GOES INTO TIJERAS ARROYO										
*S***** OLF HYD 609.1 IS AP #35 *****										
ADD HYD	609.10	65&66	68	.23368	289.30	17.936	1.43918	1.766	1.934	
FINISH										

10 YEAR STORM

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =02/07/1995
INPUT FILE = EUBANK2.DAT USER NO.= C_ANDRSN.B01

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	NOTATION
*S										
*S DEVELOPED CONDITIONS WITH NO PROPOSED PIPES										
*S										
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.710
*S 10-YEAR STORM										
*S ONE-HOUR=1.39										
*S SIX-HOUR=1.71										
*S HYD 101 IS OLF THAT IS AT THE BEGINNING OF THE CENTRAL SD SYSTEM										
COMPUTE NM HYD	101.00	-	11	.03319	68.87	2.607	1.47292	1.500	3.242	PER IMP= 100.00
*S ROUTING 101 THRU 102 ON CENTRAL AVENUE'S NORTH SIDE										
ROUTE	101.02	11	12	.03319	61.03	2.607	1.47293	1.533	2.873	
COMPUTE NM HYD	102.00	-	11	.05253	97.39	3.735	1.33301	1.500	2.897	PER IMP= 88.00
ADD HYD	102.10	11&12	13	.08572	156.07	6.342	1.38718	1.533	2.845	
*S DIVIDE BETWEEN MH# S-132 TO MH# S-262										
*S**** PIPE HYD "CB1" AND OLF HYD 102.13 IS AP #9 *****										
DIVIDE HYD	CB1	13	11	.06346	61.00	4.695	1.38718	1.400	1.502	
	102.13	AND	12	.02226	95.07	1.647	1.38718	1.533	6.673	
*S OLF HYD 102.13 THRU 103 ON CENTRAL STREET'S NORTH SIDE										
ROUTE	102.12	12	14	.02226	68.91	1.647	1.38741	1.600	4.836	
COMPUTE NM HYD	103.00	-	13	.02347	31.16	1.499	1.19745	1.600	2.074	PER IMP= 77.00
ADD HYD	103.10	13&14	12	.04573	100.06	3.146	1.28989	1.600	3.419	
*S DIVIDE CATCH BASINS AND CATTLE GUARD BETWEEN MH# S-102 TO MH# S-132										
*S**** OLF HYD 103.13 IS AP #13 *****										
DIVIDE HYD	CB2	12	14	.04568	98.90	3.143	1.28989	1.600	3.383	
	103.13	AND	15	.00005	1.16	.003	1.28993	1.600	39.024	
COMPUTE NM HYD	104.00	-	12	.04955	79.59	3.248	1.22898	1.533	2.510	PER IMP= 79.00
COMPUTE NM HYD	105.00	-	16	.01810	34.07	1.422	1.47292	1.533	2.941	PER IMP= 100.00
COMPUTE NM HYD	106.00	-	17	.03425	40.92	1.714	.93854	1.567	1.867	PER IMP= 48.00
COMPUTE NM HYD	107.00	-	19	.01986	32.19	1.180	1.11436	1.500	2.533	PER IMP= 70.00
ADD HYD	107.10	17&19	13	.05411	69.77	2.895	1.00306	1.533	2.015	
*S ROUTING OLF HYD 107.1 THRU 105/108 ON SKYLINE ROAD										
*S**** OLF HYD 107.12 IS AP #11 *****										
ROUTE	107.12	13	18	.05411	61.86	2.895	1.00307	1.600	1.786	
COMPUTE NM HYD	108.00	-	13	.02297	43.57	1.624	1.32544	1.500	2.963	PER IMP= 87.00
*S ROUTING OLF HYD 104 THRU 105										
ROUTE	104.02	12	17	.04955	67.39	3.248	1.22898	1.600	2.125	
ADD HYD	105.10	16&17	19	.06765	98.09	4.670	1.29423	1.567	2.266	
ADD HYD	107.20	19&18	17	.12176	158.58	7.564	1.16483	1.600	2.035	
*S TOTAL FLOW GOING INTO JUAN TABO'S CATTLE GUARD										
ADD HYD	108.10	13&17	16	.14473	194.08	9.188	1.19032	1.567	2.095	
*S CATTLE GUARD AND CATCH BASINS BETWEEN MH# S-993 TO MH# S-903										
*S**** PIPE HYD CB3 AND OLF HYD 108.13 IS AP #12 *****										
DIVIDE HYD	CB3	16	17	.11108	88.00	7.052	1.19032	1.433	1.238	
	108.13	AND	18	.03365	106.08	2.136	1.19032	1.567	4.926	
COMPUTE NM HYD	201.00	-	21	.02777	55.72	2.097	1.41620	1.500	3.135	PER IMP= 95.00
*S EXISTING DETENTION BASIN IN BASIN 201										
*S ROUTING RESERVOIR WITH SMALL ORIFICE PIPES AND 20' WEIR										
ROUTE RESERVOIR	201.RES	21	22	.02777	5.10	2.096	1.41538	2.200	.287	AC-FT= 1.583

*S

*S OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
0	0	5620
2.5	0.468	5621
3.8	0.937	5622
4.8	1.405	5623
5.6	1.873	5624
29.0	2.107	5624.5
70.0	2.342	5625

*S

*S ROUTING 201.RES THRU 202										
ROUTE	201.02	22	21	.02777	4.99	2.096	1.41500	2.500	.281	
COMPUTE NM HYD	202.00	-	22	.04041	68.64	3.044	1.41259	1.567	2.654	PER IMP= 95.00
COMPUTE NM HYD	209.00	-	25	.05761	72.87	3.183	1.03592	1.567	1.976	PER IMP= 62.00
ADD HYD	202.10	21&22	24	.06818	69.94	5.140	1.41357	1.567	1.603	
*S**** OLF HYD 209.1 IS AP #1 *****										
ADD HYD	209.10	24&25	23	.12579	142.81	8.323	1.24061	1.567	1.774	
*S ROUTING 209.1 THRU 210 ON TOMLINSON DRIVE TO PARKSIDE										
ROUTE	209.12	23	22	.12579	126.82	8.322	1.24053	1.633	1.575	
COMPUTE NM HYD	203.00	-	21	.08386	108.33	5.302	1.18537	1.600	2.018	PER IMP= 75.00
*S DIVIDE SOUTH SIDE CENTRAL AVENUE BETWEEN MH# S-132 AND MH# S-262(CHECK TO S										
*S**** OLF HYD 203.03 IS AP #10 *****										

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	NOTATION
DIVIDE HYD	CB5	21	24	.00673	1.00	.425	1.18537	1.233	.232	
	203.03	AND	25	.07713	107.33	4.876	1.18537	1.600	2.174	
*S**** PIPE HYD CB5.1 IS AP #10 *****										
ADD HYD	CB5.1	24&11	21	.07019	62.00	5.120	1.36783	1.400	1.380	
*S FROM MH# S-102 TO MH# S-132										
*S Q(CAP) = 73 CFS										
ROUTE	CB5.12	21	27	.07019	62.00	5.120	1.36784	1.800	1.380	
*S ROUTING 203.03 THRU 204 ON CENTRAL AVENUE'S SOUTH SIDE										
ROUTE	203.02	25	23	.07713	93.54	4.876	1.18543	1.667	1.895	
COMPUTE NM HYD	204.00	-	21	.06581	92.08	4.605	1.31213	1.600	2.186	PER IMP= 86.00
ADD HYD	204.10	23&21	24	.14294	181.18	9.482	1.24375	1.633	1.980	
*S DIVIDE SOUTH SIDE CENTRAL AVENUE BETWEEN MH# S-102 AND MH# S-123										
*S OLF HYD 204.13 IS AT JUAN TABO AND CENTRAL ON THE SOUTH SIDE										
*S**** OLF HYD 204.13 IS AP #14 *****										
DIVIDE HYD	CB6	24	25	.12567	117.10	8.336	1.24375	1.533	1.456	
	204.13	AND	26	.01727	64.08	1.146	1.24375	1.633	5.796	
ADD HYD	CB6.1	27&25	21	.19585	179.10	13.456	1.28822	1.800	1.429	
*S TOTAL PIPE FLOW AT JUAN TABO AND CENTRAL										
*S Q(CAP) AT MH# S-102 IS 260 CFS										
*S**** PIPE HYD CB6.2 IS AP #13 AND #14										
ADD HYD	CB6.2	14&21	99	.24154	277.91	16.599	1.28853	1.600	1.798	
COMPUTE NM HYD	205.00	-	21	.01633	27.39	.996	1.14392	1.500	2.620	PER IMP= 71.00
*S ROUTING 205 THRU 206 ON JUAN TABO STREET										
ROUTE	205.02	21	23	.01633	22.29	.996	1.14393	1.567	2.133	
COMPUTE NM HYD	206.00	-	24	.01425	24.54	.956	1.25737	1.500	2.690	PER IMP= 81.00
ADD HYD	206.10	23&24	21	.03058	45.90	1.952	1.19676	1.533	2.345	
*S DIVIDE OLF HYD 206.1 AT MH# S-592										
*S**** PIPE HYD CB18 AND OLF HYD 206.13 IS AP #6 *****										
DIVIDE HYD	CB18	21	27	.02844	32.60	1.815	1.19676	1.467	1.791	
	206.13	AND	28	.00214	13.30	.137	1.19676	1.533	9.709	
*S FROM MH# S-791 TO MH# S-592										
*S Q(CAP) = 48 CFS										
ROUTE	CB18.02	27	29	.02844	32.45	1.815	1.19678	1.633	1.783	
COMPUTE NM HYD	207.00	-	23	.03038	42.80	1.688	1.04183	1.533	2.201	PER IMP= 63.00
*S ROUTING 207 THRU 208 ON SINGING ARROW ROAD										
ROUTE	207.02	23	27	.03038	31.94	1.688	1.04184	1.600	1.643	
COMPUTE NM HYD	208.00	-	23	.09685	118.82	5.957	1.15329	1.600	1.917	PER IMP= 72.00
*S**** OLF HYD 208.1 IS AP #5 *****										
ADD HYD	208.10	27&23	24	.12723	150.76	7.645	1.12667	1.600	1.852	
*S DIVIDE OLF HYD 208.1 BETWEEN MH# S-791 AND MH# S-592										
*S**** OLF HYD 208.13 IS AP #7 *****										
DIVIDE HYD	CB19	24	27	.08433	52.20	5.067	1.12667	1.433	.967	
	208.13	AND	21	.04290	98.56	2.578	1.12667	1.600	3.590	
*S**** PIPE HYD CB19.1 IS AP #7 *****										
ADD HYD	CB19.1	27&29	23	.11277	84.65	6.883	1.14434	1.633	1.173	
*S FROM MH# S-94(OUTFALL) TO MH# S-791										
*S Q(CAP) = 94 CFS										
ROUTE	CB19.12	23	29	.11277	83.87	6.883	1.14435	1.667	1.162	
COMPUTE NM HYD	210.00	-	24	.02613	29.91	1.209	.86770	1.533	1.788	PER IMP= 47.00
*S**** OLF HYD 210.1 IS AP #3 *****										
ADD HYD	210.10	24&22	23	.15192	152.70	9.532	1.17640	1.600	1.571	
*S ROUTING 210.1 THRU 209 ON TOMLINSON DRIVE TO OUTFALL										
ROUTE	210.12	23	27	.15192	146.66	9.531	1.17635	1.667	1.508	
COMPUTE NM HYD	211.00	-	23	.06408	64.20	3.011	.88101	1.600	1.566	PER IMP= 48.00
*S TOTAL OLF AT TOMLINSON OUTFALL										
*S**** OLF HYD 211.1 IS AP #4 *****										
ADD HYD	211.10	23&27	25	.21600	208.17	12.542	1.08873	1.633	1.506	
COMPUTE NM HYD	212.00	-	22	.05122	70.64	3.229	1.18193	1.567	2.155	PER IMP= 74.00
*S DIVIDE SUB-BASIN 212 BETWEEN MH# S-94(OUTFALL) AND MH# S-791										
*S**** OLF HYD 212.03 IS AP #8 *****										
DIVIDE HYD	CB20	22	24	.05118	69.80	3.226	1.18192	1.567	2.131	
	212.03	AND	27	.00004	.84	.003	1.18190	1.567	31.911	
*S TOTAL FLOW IN THE JUAN TABO STORM DRAIN SYSTEM										
*S**** PIPE HYD CB20.1 IS AP #8 *****										
ADD HYD	CB20.1	24&29	22	.16395	152.06	10.109	1.15607	1.600	1.449	
*S JUAN TABO ROAD, SOUTH OF CENTRAL										
COMPUTE NM HYD	213.00	-	24	.00828	12.32	.650	1.47292	1.633	2.325	PER IMP= 100.00
COMPUTE NM HYD	301.00	-	31	.05794	60.81	3.225	1.04379	1.633	1.640	PER IMP= 62.00
*S FROM MH# S-973 TO MH# S-993 IN BEUENA VENTURA STREET										
*S Q(CAP) = 96 CFS										
ROUTE	CB3.02	17	32	.11108	88.11	7.052	1.19032	1.500	1.239	
*S OLF HYD 108.13 THRU 301 ON BEUENA VENTURA STREET										

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	NOTATION
ROUTE	108.12	18	13	.03365	95.99	2.137	1.19047	1.600	4.457	
*S TOTAL OLF AT JANE AND BEUENA VENTURA										
*S**** OLF HYD 301.1 IS AP #20 *****										
ADD HYD	301.10	13&31	33	.09159	155.52	5.362	1.09767	1.633	2.653	
DIVIDE HYD	CB8	33	34	.04842	34.00	2.835	1.09767	1.500	1.097	
	301.03	AND	35	.04317	121.52	2.527	1.09767	1.633	4.399	
*S**** PIPE HYD CB8.1 IS AP #20 *****										
ADD HYD	CB8.1	34&32	36	.15950	122.11	9.887	1.16219	1.500	1.196	
*S FROM MH# S-772 TO MH# S-973 IN JANE STREET										
*S Q(CAP) = 146 CFS										
ROUTE	CB8.12	36	31	.15950	122.14	9.887	1.16220	1.533	1.196	
*S OLF HYD 301.03 THRU 302 ON JANE STREET										
ROUTE	301.02	35	32	.04317	113.81	2.527	1.09779	1.667	4.120	
COMPUTE NM HYD	302.00	-	33	.02999	31.30	1.672	1.04542	1.633	1.631	PER IMP= 63.00
*S DIVIDE BETWEEN MH# S-772 AND MH# S-973										
DIVIDE HYD	CB9	32	35	.02015	30.00	1.180	1.09778	1.567	2.326	
	301.06	AND	36	.02301	83.81	1.347	1.09778	1.667	5.691	
*S TOTAL PIPE FLOW AT CHICO AND JANE										
*S**** PIPE HYD CB9.1 IS AP #21 *****										
ADD HYD	CB9.1	31&35	34	.17966	152.02	11.067	1.15497	1.567	1.322	
*S FROM MH# S-743 TO MH# S-772										
*S Q(CAP) = 169 CFS										
ROUTE	CB9.12	34	31	.17966	152.00	11.067	1.15497	1.866	1.322	
*S**** OLF HYD 302.1 IS AP #21 *****										
ADD HYD	302.10	33&36	34	.05300	115.01	3.019	1.06815	1.667	3.390	
ROUTE	302.12	34	32	.05300	102.84	3.020	1.06816	1.700	3.032	
COMPUTE NM HYD	303.00	-	33	.08070	78.42	4.492	1.04380	1.667	1.518	PER IMP= 62.00
ADD HYD	303.10	33&32	34	.13370	181.17	7.512	1.05344	1.700	2.117	
*S DIVIDE BETWEEN MH# S-743 AND MH# S-772										
DIVIDE HYD	CB10	34	32	.03334	10.00	1.873	1.05344	1.400	.469	
	303.13	AND	33	.10037	171.17	5.639	1.05344	1.700	2.665	
*S TOTAL PIPE FLOW AT CHICO AND MORRIS										
*S**** PIPE HYD CB10.1 IS AP #22 *****										
ADD HYD	CB10.1	31&32	35	.21299	162.00	12.939	1.13908	1.866	1.188	
*S FROM MH# S-704 TO MH# S-743 IN CHICO ROAD										
*S Q(CAP) = 216 CFS										
ROUTE	CB10.12	35	36	.21299	161.98	12.939	1.13908	1.866	1.188	
COMPUTE NM HYD	304.00	-	31	.01342	26.14	1.054	1.47292	1.533	3.043	PER IMP= 100.00
ROUTE	304.03	31	32	.01342	17.65	1.054	1.47294	1.633	2.055	
COMPUTE NM HYD	305.00	-	31	.03919	37.66	1.861	.89039	1.633	1.502	PER IMP= 49.00
ADD HYD	305.10	31&32	35	.05261	55.31	2.915	1.03895	1.633	1.643	
*S TOTAL OLF AT CHICO AND MORRIS										
*S**** OLF HYD 305.2 IS AP #22 *****										
ADD HYD	305.20	35&33	32	.15298	221.06	8.554	1.04846	1.700	2.258	
ROUTE	305.22	32	33	.15298	190.11	8.554	1.04846	1.766	1.942	
COMPUTE NM HYD	306.00	-	31	.03441	55.79	2.703	1.47292	1.600	2.533	PER IMP= 100.00
*S ROUTING SUB-BASIN 306 THRU 308 (THRU WALL BETWEEN BASIN 306 AND 308)										
ROUTE	306.03	31	32	.03441	47.86	2.703	1.47293	1.667	2.173	
*S SUB-BASIN 307 IS DETAINED WITH A 8" PVC OUTLET										
COMPUTE NM HYD	307.00	-	34	.02937	36.34	1.232	.78632	1.500	1.933	PER IMP= 40.00
COMPUTE NM HYD	308.00	-	31	.08051	76.69	3.628	.84501	1.600	1.488	PER IMP= 45.00
*S**** OLF HYD 308.1 IS AP #23 *****										
ADD HYD	308.10	31&32	35	.11492	121.63	6.331	1.03301	1.633	1.654	
*S EXISTING DETENTION BASIN IN BASIN 308										
*S ROUTING RESERVOIR WITH 36" ORIFICE										
ROUTE RESERVOIR	308.RES	35	39	.11492	54.14	6.331	1.03301	2.000	.736	AC-FT= 2.080

*S

*S OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
0	0	5456
19	0.09	5458
48	1.25	5460
69	4.09	5462
83	10.36	5464

*S

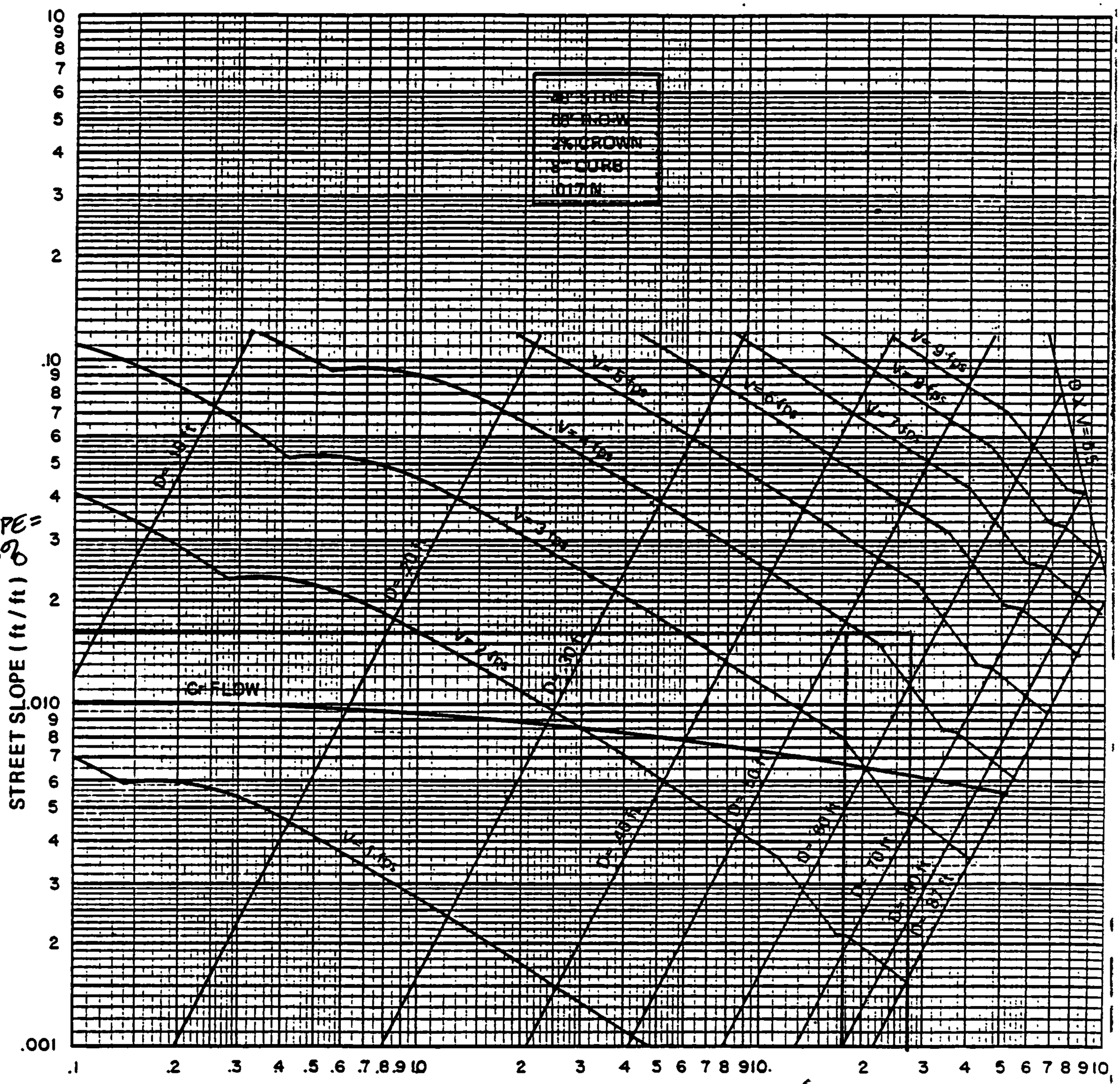
COMPUTE NM HYD	309.00	-	31	.01291	17.27	.597	.86770	1.500	2.090	PER IMP= 47.00
ADD HYD	309.10	33&31	32	.16589	196.10	9.152	1.03439	1.766	1.847	
*S DIVIDE BY CB ON CHICO STREET BETWEEN MH# S-704 TO MH# S-743										
*S OLF HYD 309.13 IS AT CHICO AND EUBANK										
*S**** OLF HYD 309.13 IS AP #24 *****										
DIVIDE HYD	CB11	32	33	.01499	3.00	.827	1.03439	1.333	.313	
	309.13	AND	37	.15090	193.10	8.325	1.03439	1.766	1.999	
ADD HYD	CB11.1	36&33	38	.22798	164.98	13.766	1.13220	1.866	1.131	
*S TOTAL PIPE FLOW AT CHICO AND EUBANK FROM THE CHICO SYSTEM										
*S**** PIPE HYD CB11.2 IS AP #24 *****										

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	NOTATION
ADD HYD	CB11.2	38&39	32	.34290	218.51	20.098	1.09895	1.866	.996	
COMPUTE NM HYD	310.00	-	38	.05825	94.93	4.206	1.35398	1.567	2.547	PER IMP= 90.00
COMPUTE NM HYD	311.00	-	39	.10616	130.86	6.722	1.18733	1.633	1.926	PER IMP= 75.00
COMPUTE NM HYD	312.00	-	33	.02461	46.12	1.713	1.30474	1.500	2.928	PER IMP= 85.00
*S BASIN 400 IS SOUTH OF CENTRAL										
COMPUTE NM HYD	401.00	-	41	.03371	48.15	2.463	1.37016	1.633	2.232	PER IMP= 90.00
*S ROUTE SUB-BASIN 401 THRU 405 ON COCHITI AND UNIMPROVED ROAD										
ROUTE	401.02	41	48	.03371	33.17	2.463	1.37016	1.766	1.538	
COMPUTE NM HYD	402.00	-	42	.03516	51.15	2.745	1.46400	1.633	2.273	PER IMP= 99.00
*S OLF HYD 103.13 THRU 303 AND 304 ON NORTH SIDE OF CENTRAL STREET										
ROUTE	103.12	15	43	.00005	.04	.003	1.40083	1.633	1.456	
*S OLF HYD 204.13 THRU 402 ON SOUTH SIDE CENTRAL STREET										
ROUTE	204.12	26	44	.01727	35.39	1.146	1.24405	1.733	3.201	
ADD HYD	402.10	42&44	45	.05243	81.08	3.891	1.39150	1.700	2.416	
*S DIVIDE BY CB ON NORTH SIDE CENTRAL STREET BETWEEN MH# S-42 AND MH# S-102										
*S OLF HYD 103.13 IS FLOW ON CENTRAL'S NORTH SIDE AT ELIZABETH AND CENTRAL										
*S**** OLF HYD 103.13 IS AP #15 *****										
DIVIDE HYD	CB14	43	42	.00004	.55	.005	2.05604	5.333	19.115	
	103.13	AND	44	.00000	.08	.000	2.05604	5.333	62.201	
*S DIVIDE BY CB ON SOUTH SIDE CENTRAL STREET BETWEEN MH# S-42 AND MH# S-102										
*S OLF HYD 402.13 IS CENTRAL'S TOTAL SOUTH SIDE FLOW AT ELIZABETH AND CENTRAL										
*S**** OLF HYD 402.13 IS AP #16 *****										
DIVIDE HYD	CB15	45	46	.04545	49.00	3.373	1.39150	1.600	1.685	
	402.13	AND	47	.00699	32.08	.519	1.39150	1.700	7.172	
*S FROM MH# S-42 TO MH# S-102										
*S Q(CAP) = 276 CFS										
ROUTE	CB6.22	99	43	.24154	270.68	16.599	1.28854	1.633	1.751	
ADD HYD	CB14.1	42&43	41	.24158	270.72	16.604	1.28868	1.633	1.751	
*S TOTAL PIPE FLOW AT CENTRAL AND ELIZABETH										
*S**** PIPE HYD CB15.1 IS AP #15 AND AP #16 *****										
ADD HYD	CB15.1	41&46	42	.28703	319.72	19.977	1.30496	1.633	1.740	
*S FROM MH# S-4 TO MH# S-42										
*S Q(CAP) = 394 CFS										
ROUTE	CB15.12	42	43	.28703	316.64	19.977	1.30496	1.667	1.724	
*S OLF HYD 103.13 THRU 304 ON NORTH SIDE CENTRAL STREET; BETWEEN EUBANK AND ELIZ										
ROUTE	103.12	44	46	.00000	.00	.000	4.77361	5.666	3.131	
*S OLF HYD 402.13 THRU 402 ON SOUTH SIDE CENTRAL STREET; BETWEEN EUBANK AND ELIZ										
ROUTE	402.12	47	42	.00699	19.87	.519	1.39223	1.800	4.442	
COMPUTE NM HYD	403.00	-	41	.05744	68.59	3.414	1.11436	1.600	1.866	PER IMP= 70.00
COMPUTE NM HYD	404.00	-	44	.04882	55.98	2.901	1.11436	1.633	1.792	PER IMP= 70.00
ADD HYD	404.10	48&44	45	.08253	83.61	5.365	1.21881	1.667	1.583	
COMPUTE NM HYD	405.00	-	48	.04851	84.08	3.704	1.43182	1.567	2.708	PER IMP= 96.00
ADD HYD	405.10	48&45	47	.13104	154.92	9.069	1.29766	1.600	1.847	
COMPUTE NM HYD	406.00	-	44	.02202	36.66	1.671	1.42277	1.567	2.601	PER IMP= 95.00
ADD HYD	406.10	42&44	45	.02901	39.77	2.190	1.41536	1.766	2.142	
*S DIVIDE BY CB ON NORTH SIDE CENTRAL STREET BETWEEN MH# S-4 AND MH# S-42										
DIVIDE HYD	CB16	46	42	.00000	.00	.000	4.12805	5.666	3.225	
	103.23	AND	44	.00000	.00	.000	4.12805	7.266	124.886	
*S DIVIDE BY CB ON SOUTH SIDE CENTRAL STREET BETWEEN MH# S-4 AND MH# S-42										
DIVIDE HYD	CB17	45	48	.02901	39.77	2.190	1.41536	1.766	2.142	
	406.13	AND	49	.00000	.00	.000	.00000	-.033	.000	
ADD HYD	CB16.1	43&42	45	.28703	316.64	19.977	1.30497	1.667	1.724	
*S TOTAL PIPE FLOW AT CENTRAL AND EUBANK										
*S**** PIPE FLOW CB17.1 IS AP #17 *****										
ADD HYD	CB17.1	45&48	42	.31604	352.61	22.167	1.31511	1.667	1.743	
*S DIVIDE PIPE HYD CB17.1 BY MAXIMUM PIPE CAPACITY OF 60" IN EUBANK										
*S**** PIPE HYD CB17.13 IS AP #19 *****										
DIVIDE HYD	CB17.13	42	43	.26211	210.00	18.384	1.31511	1.533	1.252	
	CB17.OLF	AND	45	.05393	142.61	3.782	1.31511	1.667	4.132	
*S DIVIDE OLF HYD CB17.OLF BY 50% TO NORTH AND SOUTH SIDE										
DIVIDE HYD	NOR	45	42	.02696	71.31	1.891	1.31511	1.667	4.132	
	SOU	AND	46	.02696	71.31	1.891	1.31511	1.667	4.132	
*S TOTAL OLF FLOW AT CENTRAL AND EUBANK ON NORTH SIDE										
*S**** OLF HYD "NORTH" IS AP #18 *****										
ADD HYD	NORTH	42&44	48	.02696	71.31	1.891	1.31511	1.667	4.132	
*S TOTAL OLF FLOW AT CENTRAL AND EUBANK ON SOUTH SIDE										
*S**** OLF HYD "SOUTH" IS AP #17 *****										
ADD HYD	SOUTH	46&49	45	.02696	71.31	1.891	1.31511	1.667	4.132	
*S FROM MH# S-704 TO MH# S-4										
*S Q(CAP) = 187 CFS										
ROUTE	CB17.12	43	42	.26211	210.00	18.384	1.31511	2.000	1.252	
*S TOTAL PIPE FLOW AT EUBANK AND CHICO										

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	NOTATION
ADD HYD	CB17.2	32&42	43	.60501	428.51	38.482	1.19260	1.866	1.107	
*S DIVIDE PIPE HYD CB17.2 BY MAXIMUM PIPE CAPACITY OF 60" IN EUBANK										
*S**** PIPE FLOW CB17.23 IS AP #25 *****										
DIVIDE HYD	CB17.23	43	42	.45448	235.00	28.907	1.19260	1.500	.808	
	CB17.OLF2	AND	44	.15053	193.51	9.575	1.19260	1.866	2.009	
*S FROM MH# S-503 TO MH# S-704										
*S Q(CAP) = 235 CFS										
ROUTE	CB17.22	42	43	.45448	235.00	28.907	1.19260	2.100	.808	
*S TOTAL OLF AT EUBANK AND CHICO										
*S**** OLF HYD 309.2 IS AP #25 *****										
ADD HYD	309.20	37&44	46	.30143	384.57	17.899	1.11340	1.766	1.993	
*S OLF HYD 309.2 THRU 310 ON EUBANK STREET; FROM CHICO TO COPPER										
ROUTE	309.22	46	42	.30143	367.84	17.900	1.11341	1.833	1.907	
ADD HYD	310.10	42&38	46	.35968	409.74	22.106	1.15237	1.833	1.780	
*S DIVIDE BY CB ON EUBANK STREET BETWEEN MH# S-704 AND MH# S-503, INCLUDING 48										
*S**** OLF HYD 310.13 IS AP #26 *****										
DIVIDE HYD	CB12	46	44	.21392	160.00	13.147	1.15237	1.567	1.169	
	310.13	AND	49	.14576	249.74	8.959	1.15237	1.833	2.677	
*S TOTAL PIPE FLOW AT EUBANK AND COPPER										
*S**** PIPE FLOW CB17.3 IS AP #27 *****										
ADD HYD	CB17.3	44&43	99	.66840	395.00	42.055	1.17972	2.100	.923	
COMPUTE NM HYD	501.00	-	51	.01967	27.19	1.426	1.35947	1.633	2.160	PER IMP= 90.00
*S ROUTING 213 THRU 501 ON SOUTHERN STREET										
ROUTE	213.02	24	52	.00828	7.87	.650	1.47292	1.800	1.486	
ADD HYD	403.10	41&52	53	.06572	73.39	4.064	1.15950	1.633	1.745	
*S TOTAL OLF AT SOUTHERN AND ELIZABETH										
*S**** OLF HYD 501.1 IS AP #28 *****										
ADD HYD	501.10	51&53	52	.08539	100.58	5.490	1.20556	1.633	1.840	
*S ROUTING 501.1 THRU 506 ON SOUTHERN STREET										
ROUTE	501.12	52	51	.08539	81.16	5.490	1.20557	1.733	1.485	
COMPUTE NM HYD	502.00	-	52	.19070	176.95	9.096	.89433	1.633	1.450	PER IMP= 49.00
*S ROUTE 206.13 THRU 502 ON LA CARIDAD AND LA PUERTA AVE; ASSUME 40' PAVING										
ROUTE	206.12	28	53	.00214	2.53	.137	1.19917	1.633	1.847	
*S ROUTE 208.13 THRU 502 ON LA PUERTA AVE? ; ASSUME 40' PAVING										
ROUTE	208.02	21	54	.04290	61.42	2.578	1.12679	1.733	2.237	
COMPUTE NM HYD	503.00	-	55	.18018	163.89	8.485	.88298	1.633	1.421	PER IMP= 48.00
COMPUTE NM HYD	504.00	-	56	.00886	14.37	.527	1.11436	1.500	2.534	PER IMP= 70.00
ADD HYD	208.10	53&54	57	.04504	62.67	2.715	1.13014	1.733	2.174	
ADD HYD	502.10	52&57	53	.23574	228.12	11.811	.93938	1.667	1.512	
ADD HYD	503.10	53&55	54	.41592	388.55	20.296	.91495	1.667	1.460	
*S TOTAL FLOW AT EXISTING RETENTION BASIN										
*S**** OLF HYD 504.1 IS AP #31 *****										
ADD HYD	504.10	54&56	52	.42478	396.74	20.822	.91911	1.633	1.459	
*S ROUTING 504.1 ON PROPOSED ELIZABETH STREET THRU BASIN 509/510										
ROUTE	504.12	52	53	.42478	388.75	20.822	.91911	1.700	1.430	
COMPUTE NM HYD	505.00	-	55	.06230	33.66	1.501	.45187	1.633	.844	PER IMP= 10.00
*S ROUTING 505 THRU 507 ON ENTRADA ; ASSUME 40' PAVING										
ROUTE	505.02	55	54	.06230	32.92	1.501	.45188	1.667	.826	
COMPUTE NM HYD	506.00	-	56	.01509	20.44	.943	1.17127	1.567	2.116	PER IMP= 75.00
ADD HYD	506.10	51&56	55	.10048	95.01	6.433	1.20040	1.700	1.477	
*S ROUTING 506.1 THRU 404 ON EUBANK STREET										
ROUTE	506.12	55	58	.10048	91.67	6.433	1.20041	1.766	1.425	
*S TOTAL OLF AT EUBANK AND COCHITI										
*S***** OLF HYD 506.2 IS AP #29 *****										
ADD HYD	506.20	47&58	56	.23152	226.41	15.502	1.25545	1.667	1.528	
COMPUTE NM HYD	507.00	-	51	.02184	43.83	1.650	1.41620	1.500	3.135	PER IMP= 95.00
COMPUTE NM HYD	508.00	-	52	.02059	33.37	1.224	1.11436	1.500	2.533	PER IMP= 70.00
ADD HYD	507.10	54&51	55	.08414	61.83	3.151	.70217	1.567	1.148	
*S***** OLF HYD 508.1 IS AP #30 *****										
ADD HYD	508.10	52&55	57	.10473	93.58	4.375	.78321	1.533	1.396	
COMPUTE NM HYD	509.00	-	51	.02582	41.85	1.535	1.11436	1.500	2.532	PER IMP= 70.00
COMPUTE NM HYD	510.00	-	52	.07573	103.90	4.501	1.11436	1.567	2.144	PER IMP= 70.00
ADD HYD	509.10	53&51	54	.45060	409.71	22.357	.93029	1.667	1.421	
*S***** OLF HYD 510.1 IS AP #32 *****										
ADD HYD	510.10	52&54	53	.52633	486.60	26.858	.95678	1.667	1.445	
COMPUTE NM HYD	601.00	-	61	.03286	47.47	2.005	1.14392	1.533	2.257	PER IMP= 71.00
*S ROUTE 212.03 THRU 601 ON WILD HORSE TRAIL ; 30' PAVING										
ROUTE	212.02	27	62	.00004	.04	.003	1.30769	1.600	1.673	
*S OLF HYD 601.1 GOES INTO THE TIJERAS ARROYO										
ADD HYD	601.10	61&62	69	.03290	47.47	2.008	1.14408	1.533	2.254	
*S SUB-BASIN 602 EITHER PONDS OR GOES INTO TIJERAS ARROYO										
COMPUTE NM HYD	602.00	-	62	.01436	12.77	.323	.42215	1.533	1.390	PER IMP= .00

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	NOTATION
COMPUTE NM HYD	603.00	-	63	.01970	17.52	.444	.42215	1.533	1.390	PER IMP= .00
COMPUTE NM HYD	604.00	-	64	.06839	77.27	3.727	1.02184	1.600	1.765	PER IMP= 60.50
*S ROUTING 604 THRU 603 ON GRAVEL ROAD										
ROUTE	604.02	64	65	.06839	73.36	3.727	1.02184	1.633	1.676	
*S OLF HYD 604.1 EITHER PONDS OR GOES INTO TIJERAS ARROYO										
*S***** OLF HYD 603.1 IS AP #33 *****										
ADD HYD	603.10	63&65	64	.08809	84.39	4.171	.88772	1.633	1.497	
COMPUTE NM HYD	605.00	-	65	.04536	52.94	3.315	1.37016	1.733	1.824	PER IMP= 90.00
COMPUTE NM HYD	606.00	-	66	.06633	101.05	4.847	1.37016	1.600	2.380	PER IMP= 90.00
*S OLF HYD 606.1 GOES INTO EXISTING RETENTION BASIN										
*S***** OLF HYD 606.1 IS AP #34 *****										
ADD HYD	606.10	65&66	67	.11169	142.55	8.162	1.37015	1.633	1.994	
COMPUTE NM HYD	607.00	-	65	.12156	139.28	7.549	1.16441	1.667	1.790	PER IMP= 68.00
*S ROUTING 607 THRU 608 ON A GRAVEL EUBANK ROAD										
ROUTE	607.02	65	66	.12156	129.61	7.549	1.16441	1.733	1.666	
COMPUTE NM HYD	608.00	-	65	.08609	32.40	1.906	.41514	1.700	.588	PER IMP= 15.00
ADD HYD	608.10	65&66	63	.20765	161.26	9.455	.85377	1.733	1.213	
*S ROUTING 608 THRU 609 ON A GRAVEL EUBANK ROAD										
ROUTE	608.12	63	66	.20765	152.81	9.455	.85377	1.800	1.150	
COMPUTE NM HYD	609.00	-	65	.02603	9.07	.370	.26630	1.600	.544	PER IMP= .00
*S OLF HYD 609.1 GOES INTO TIJERAS ARROYO										
*S***** OLF HYD 609.1 IS AP #35 *****										
ADD HYD	609.10	65&66	68	.23368	158.79	9.825	.78833	1.766	1.062	
FINISH										

STREET CAPACITY



Q_{10}=17.55CFS
D=0.51 ft

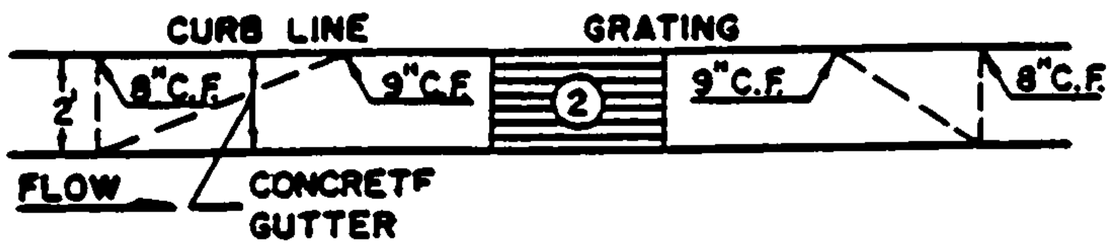
Q_{100}=27.05CFS
D=0.575 ft

SOUTHERN BOULEVARD

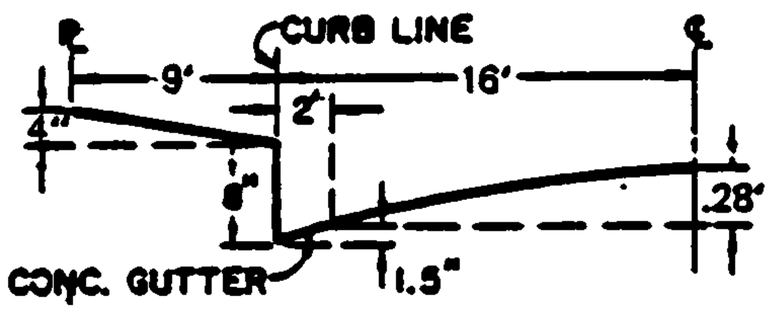
REV. 3-83

PLATE 22.3 D-3

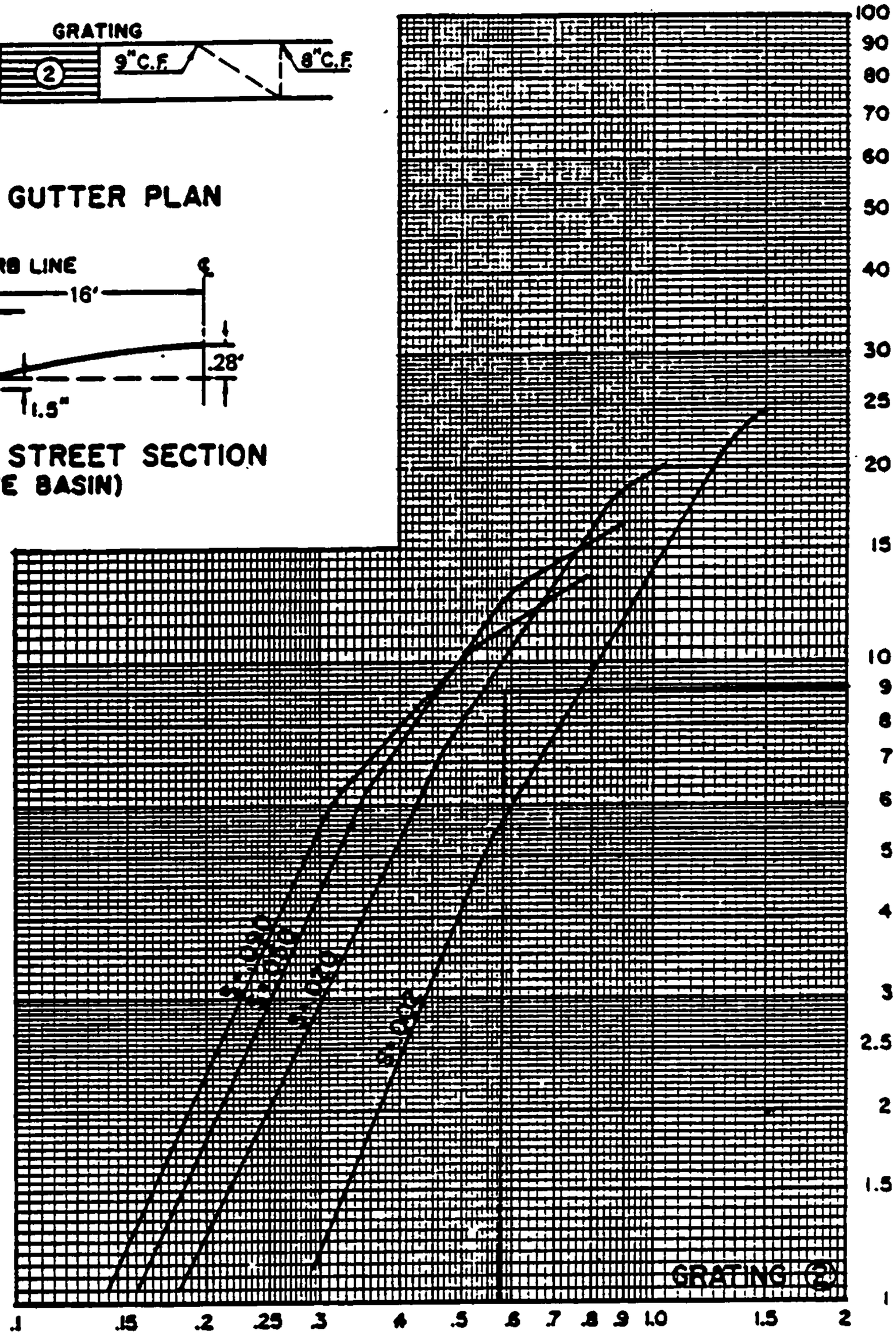
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



SOUTHERN BOULEVARD
~~S=20~~, S=1.6%
D=0.575 ft
Q=9 CFS

CIRCULAR CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

December 15, 1997
WILLOWWOOD NORTH
SOUTHERN BOULEVARD
STORMSEWER SIZE BETWEEN UPPER TWO INLETS

==========

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Flow Rate (cubic feet per second).....	9.0
Channel Bottom Slope (feet per foot).....	0.0160
Manning's Roughness Coefficient (n-value).....	0.0130
Channel Diameter (feet).....	1.50

==========

PROGRAM RESULTS:

DESCRIPTION	VALUE
Normal Depth (feet).....	0.90
Flow Velocity (feet per second).....	8.09
Froude Number (Flow is Super-Critical).....	1.637
Velocity Head (feet).....	1.02
Energy Head (feet).....	1.92
Cross-Sectional Area of Flow (square feet).....	1.11
Top Width of Flow (feet).....	1.47

==========

CIRCULAR CHANNEL ANALYSIS COMPUTER PROGRAM, Version 1.5 (c) 1986
Dodson & Associates, Inc., 5629 FM 1960 W., #314, Houston, TX 77069
(713) 440-3787. A complete program manual is available.

CIRCULAR CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

December 15, 1997
WILLOWWOOD NORTH
SOUTHERN BOULEVARD
STORMSEWER SIZE BETWEEN MIDDLE TWO INLETS

==========

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Flow Rate (cubic feet per second).....	18.0
Channel Bottom Slope (feet per foot).....	0.0160
Manning's Roughness Coefficient (n-value).....	0.0130
Channel Diameter (feet).....	2.00

==========

PROGRAM RESULTS:

DESCRIPTION	VALUE
Normal Depth (feet).....	1.15
Flow Velocity (feet per second).....	9.63
Froude Number (Flow is Super-Critical).....	1.746
Velocity Head (feet).....	1.44
Energy Head (feet).....	2.59
Cross-Sectional Area of Flow (square feet).....	1.87
Top Width of Flow (feet).....	1.98

==========

CIRCULAR CHANNEL ANALYSIS COMPUTER PROGRAM, Version 1.5 (c) 1986
Dodson & Associates, Inc., 5629 FM 1960 W., #314, Houston, TX 77069
(713) 440-3787. A complete program manual is available.

CIRCULAR CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

December 15, 1997
WILLOWWOOD NORTH
SOUTHERN BOULEVARD
STORMSEWER SIZE BETWEEN LOWER TWO INLETS

==========

PROGRAM INPUT DATA:

DESCRIPTION	VALUE
Flow Rate (cubic feet per second).....	27.0
Channel Bottom Slope (feet per foot).....	0.0160
Manning's Roughness Coefficient (n-value).....	0.0130
Channel Diameter (feet).....	2.50

==========

PROGRAM RESULTS:

DESCRIPTION	VALUE
Normal Depth (feet).....	1.28
Flow Velocity (feet per second).....	10.63
Froude Number (Flow is Super-Critical).....	1.858
Velocity Head (feet).....	1.75
Energy Head (feet).....	3.04
Cross-Sectional Area of Flow (square feet).....	2.54
Top Width of Flow (feet).....	2.50

==========

CIRCULAR CHANNEL ANALYSIS COMPUTER PROGRAM, Version 1.5 (c) 1986
Dodson & Associates, Inc., 5629 FM 1960 W., #314, Houston, TX 77069
(713) 440-3787. A complete program manual is available.

CITY OF
Albuquerque

January 27, 1998

Dave Thompson, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOW WOOD UNIT 6 (L21-D37A4). DRAINAGE PLAN FOR FINAL PLAT AND GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED DECEMBER 31, 1997.

Dear Mr. Thompson:

Based on the information provided on your January 6, 1998 submittal, the above referenced submittal is approved for Final Plat and Grading Permit.

An Engineer's Certification will be required prior to the release of financial guarantees.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **WILLOW WOOD UNIT 6** ATLAS/DRAINAGE FILE# **L-21/D37A4**

LEGAL DESCRIPTION: **TRACT D-2-A MANZANO MESA**
CITY ADDRESS: **JUAN TABO AND SINGING ARROW**
ENGINEERING FIRM: **AVID ENG. INC.,** CONTACT:**RICK BELTRAMO**
ADDRESS: **5801 OSUNA RD. NE, ALB., NM, 87109**
OWNER: **MANZANO MESA LTD** CONTACT:**STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD NE, SUITE 680** PHONE: **881-9190**
ARCHITECT: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**
SURVEYOR: **AVID ENGINEERING, INC.** CONTACT: **Ruan Bacigalupa**
ADDRESS: **Same as Above** PHONE: **881-5357**
CONTRACTOR: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:

____ YES
XX NO
____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97-393
EPC NO._____
PROJECT NO._____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
XX GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEERS CERTIFICATION
____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL
____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
XX FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT
____ GRADING/PAVING PERMIT APPROVAL
____ OTHER _____(SPECIFY)

DATE SUBMITTED: Sept. 24, 1997
BY: _____
REV. 10/85

CITY OF
Albuquerque

September 19, 1997

Martin J. Chávez, Mayor

Rick Beltramo
5801 Osuna Rd. NE
Albuquerque, NM 87109

RE: WILLOW WOOD UNIT 6 (L21-D37A4). DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED AUGUST 21, 1997.

Dear Mr. Beltramo:

Based on the information provided on your August 29, 1997 submittal, City Hydrology has the following comments:

1. I assume you are discharging the approved, allowable flow. Please state your discharge rate and how it compares to the approved allowable discharge rate. In general, a short narrative explaining the project and referencing the approved master plan would be helpful.

2. Show a typical lot layout drainage plan. I am unable to tell if everything drains to the street or if you use cross lot draining patterns.

3. Show roof drain on typical lot layout. The roof flow must go directly to the street.

4. Provide a side yard section. A minimum 18-inch side yard wall is required.

5. Call out the inlets in Los Padres Place. Provide an infrastructure list.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

AVID ENGINEERING, INC.

REVISED AHYMO LAND TREATMENTS

%D => $N = \frac{\text{UNITS}}{\text{ACRE}} = \frac{34}{5.4528} = 6.24 \frac{\text{UNITS}}{\text{ACRE}}$

$\%D = 7 * ((N^2) + (5 * N))^{1/2}$

$\%D = 7 * ((6.24)^2 + (5 * 6.24))$

%D = 58.62%

%A = 0%

%B = 20.69%

%C = 20.69%

DESIGN STORM

TYPE = 1 (SIX HR STORM) RAIN QUARTER = 0.0 IN

RAIN ONE = 2.07 IN RAIN SIX = 2.54 IN

RAIN DAY = 0.0 IN DT = 0.033333 HRS

RESULTS, FINAL PIPE FLOW

DATE OF ANALYSIS	DESCRIPTION	AREA	FLOW (CFS)	Tp (hr)	HGL
Oct 95	ORIGINAL ANALYSIS	5.00 ACRES	258.28	1.67	5488.65'
SEPT 97	FINAL DESIGN	6.73 ACRES	264.80	1.67	5488.79'

% CHANGE = $100\left(1.00 - \frac{258.28}{264.80}\right) \approx$ 2.5% INCREASE IN FLOW

CHANGE IN FLOW (CFS) = 264.80 − 258.28 = 6.52 CFS INCREASE

CHANGE IN H.G.L (FT) = 5488.79' − 5488.65' = 0.14' INCREASE

NEGLECTABLE % CHANGE IN H.G.L, THEREFORE THE INCREASE IN FLOW IS DETERMINED TO BE NEGLECTABLE.

* NOTE: THE INCREASE IN FLOW IS ATTRIBUTED TO AN INCREASE IN AREA AND DENSITY. THE ORIGINAL BASIN GEOMETRY WAS CHANGED AND THE CONTRIBUTING AREA WAS INCREASED. THE OVERALL LOT COUNT WAS ALSO INCREASED WHICH INCREASED THE DENSITY OF BASIN AND INCREASED THE IMPERVIOUS AREA.

PROJECT NAME Willow Wood Unit 6 SHEET 1 OF 1

PROJECT NO. 6076.48 BY EEA DATE 24 Sept 97

SUBJECT Unit 6 Revised Hydrology CH'D _____ DATE _____

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 09/24/1997
         START TIME (HR:MIN:SEC) = 08:57:29     USER NO.= AVID__NM.I01
         INPUT FILE = E:\WWNORTH\HYD\HYM97.IN

*WILLOW WOOD UNIT 6, FINAL DESIGN SEPT. 24, 1997
*COMPUTATIONS FOR 6 HR STORM (TYPE 1), ZONE 3
*ALL AREAS ARE 5 UNITS/ACRE: 50% D, 25% C, 25% B ASSUMED
*FILE: C:\PROJECTS\WILLOW\HYM95.IN
*REVISIONS [1] SCHOOL SITE PARAMETERS PER APS, BASIN C-1-A
*                     [2] PHASE 6, UNIT 9 ADDED TO WILLOW WOOD, C-1-B
*                     [3] OFFSITE DIVERTED BY FUTURE IMPROVEMENTS, C-1-C
START                TIME=0.0 HR  PUNCH CODE=0
RAINFALL             TYPE=1 (SIX HR STORM)  RAIN QUARTER=0.0 IN
                     RAIN ONE=2.07 IN  RAIN SIX=2.54 IN
                     RAIN DAY=0.0 IN  DT=0.0333333 HRS

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033333 HOURS       END TIME =     5.999995 HOURS
                   .0000   .0029   .0059   .0090   .0121   .0154   .0186
                   .0220   .0254   .0289   .0325   .0362   .0400   .0439
                   .0479   .0520   .0562   .0606   .0651   .0698   .0746
                   .0796   .0848   .0902   .0958   .1016   .1077   .1141
                   .1209   .1280   .1355   .1412   .1473   .1539   .1679
                   .1994   .2478   .3173   .4122   .5369   .6959   .8938
                  1.1353  1.3587  1.4522  1.5311  1.6013  1.6652  1.7240
                  1.7786  1.8297  1.8775  1.9225  1.9650  2.0051  2.0431
                  2.0791  2.1132  2.1456  2.1763  2.2055  2.2128  2.2197
                  2.2263  2.2327  2.2388  2.2446  2.2502  2.2557  2.2610
                  2.2661  2.2710  2.2759  2.2805  2.2851  2.2896  2.2939
                  2.2982  2.3023  2.3064  2.3103  2.3142  2.3181  2.3218
                  2.3255  2.3291  2.3326  2.3361  2.3395  2.3429  2.3462
                  2.3495  2.3527  2.3559  2.3590  2.3621  2.3651  2.3681
                  2.3711  2.3740  2.3768  2.3797  2.3825  2.3853  2.3880
                  2.3907  2.3934  2.3960  2.3987  2.4012  2.4038  2.4063
                  2.4088  2.4113  2.4138  2.4162  2.4186  2.4210  2.4234
                  2.4257  2.4280  2.4303  2.4326  2.4349  2.4371  2.4393
                  2.4415  2.4437  2.4459  2.4480  2.4501  2.4522  2.4543
                  2.4564  2.4585  2.4605  2.4626  2.4646  2.4666  2.4686
                  2.4705  2.4725  2.4744  2.4764  2.4783  2.4802  2.4821
                  2.4840  2.4858  2.4877  2.4895  2.4913  2.4932  2.4950
                  2.4968  2.4986  2.5003  2.5021  2.5038  2.5056  2.5073
                  2.5090  2.5107  2.5125  2.5141  2.5158  2.5175  2.5192
                  2.5208  2.5225  2.5241  2.5257  2.5273  2.5290  2.5306
                  2.5322  2.5337  2.5353  2.5369  2.5384  2.5400

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A3
COMPUTE NM HYD       ID=1  HYD NO=3  DA=0.0119 SQ MI
                     %A=0.0  %B=25.0  %C=25.0  %D=50.0
                     TP=0.1333 HR
                     MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   23.491    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 2.0700
    AREA =       .005950 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .120467HR    TP =   .133300HR    K/TP RATIO =   .903729     SHAPE CONSTANT, N =  3.920589
    UNIT PEAK =   15.616    CFS   UNIT VOLUME =    .9996       B =   349.84      P60 = 2.0700
    AREA =  .    .005950 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                                   OUTFLOW HYDROGRAPH REACH     3.00


    RUNOFF VOLUME =     1.66364 INCHES     =       1.0559 ACRE-FEET
    PEAK DISCHARGE RATE =      29.55 CFS  AT   1.500 HOURS   BASIN AREA =   .0119 SQ. MI.
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.1440
.071	.077	.07	.0907
.106	.172	.21	.0692
.141	.312	.40	.0645
.176	.574	.76	.0630
.212	.986	1.47	.0559
.247	1.547	2.61	.0495
.282	2.257	4.25	.0442
.317	3.116	6.49	.0400
.353	4.094	9.85	.0346
.388	5.081	14.10	.0300
.423	6.068	18.94	.0267
.458	7.056	24.33	.0242
.494	8.043	30.25	.0222
.529	9.031	36.65	.0205
.564	10.018	43.54	.0192
.599	11.005	50.88	.0180
.635	11.993	58.66	.0170
.670	12.980	66.88	.0162

```
ROUTE                    ID=5  HYD NO=15  INFLOW ID=3
*S  ROUTE STREET FLOW AP7 TO AP15, ARCHES RD
PRINT HYD                ID=5  CODE=1

                                    OUTFLOW HYDROGRAPH REACH    15.00

    RUNOFF VOLUME =      1.66558 INCHES      =         .2914 ACRE-FEET
    PEAK DISCHARGE RATE =       33.63 CFS  AT   1.567 HOURS   BASIN AREA =   .0033 SQ. MI.


*
*
*
*S ALL STREET AND PIPE FLOW COMBINED, AP15
ADD HYD                  ID=8  HYD=15  ID I=5  ID II=6
PRINT HYD                ID=8  CODE=1

                                    OUTFLOW HYDROGRAPH REACH    15.00

    RUNOFF VOLUME =      1.66379 INCHES      =        9.6011 ACRE-FEET
    PEAK DISCHARGE RATE =      241.89 CFS  AT   1.567 HOURS   BASIN AREA =   .1082 SQ. MI.


*
*
*
*REVISIONS [2], MARCH 25, 1995, ADD PHASE 6
*REVISIONS SEPTEMBER 24, 1997, FINAL DESIGN UNIT 6
*COMPUTE HYDROGRAPH FOR BASIN C-1-B
*PHASE 6, UNIT 9, WILLOWWOOD
COMPUTE NM HYD           ID=1  HYD NO=1  DA=0.01052 SQ MI
                         %A=0.0  %B=20.69  %C=20.69  %D=58.62
                         TP=0.1333 HR
                         MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   24.347    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 2.0700
    AREA =      .006167 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .120467HR    TP =   .133300HR    K/TP RATIO =   .903729     SHAPE CONSTANT, N =  3.920589
    UNIT PEAK =   11.425    CFS   UNIT VOLUME =    .9993       B =   349.84      P60 = 2.0700
    AREA =      .004353 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD                ID=1  CODE=1

                                    OUTFLOW HYDROGRAPH REACH     1.00
```

RUNOFF VOLUME = 1.77225 INCHES = .9943 ACRE-FEET
PEAK DISCHARGE RATE = 27.26 CFS AT 1.500 HOURS BASIN AREA = .0105 SQ. MI.

```
*
*
*
*S ALL STREET AND PIPE FLOW COMBINED, AP15
ADD HYD              ID=9  HYD=15  ID I=8  ID II=1
PRINT HYD            ID=9  CODE=2
```

OUTFLOW HYDROGRAPH REACH 15.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	192.6	3.333	2.7	5.000	1.6	6.667	.1
.067	.0	1.733	144.7	3.400	2.5	5.067	1.6	6.733	.1
.133	.0	1.800	112.9	3.467	2.4	5.133	1.6	6.800	.1
.200	.0	1.867	92.5	3.533	2.3	5.200	1.6	6.867	.1
.267	.0	1.933	77.5	3.600	2.2	5.267	1.6	6.933	.1
.333	.0	2.000	65.6	3.667	2.1	5.333	1.6	7.000	.0
.400	.0	2.067	55.7	3.733	2.0	5.400	1.6	7.067	.0
.467	.0	2.133	43.2	3.800	1.9	5.467	1.7	7.133	.0
.533	.0	2.200	30.8	3.867	1.9	5.533	1.7	7.200	.0
.600	.0	2.267	23.0	3.933	1.8	5.600	1.7	7.267	.0
.667	.0	2.333	18.3	4.000	1.8	5.667	1.7	7.333	.0
.733	.0	2.400	15.1	4.067	1.8	5.733	1.7	7.400	.0
.800	.0	2.467	12.4	4.133	1.7	5.800	1.7	7.467	.0
.867	.0	2.533	10.6	4.200	1.7	5.867	1.7	7.533	.0
.933	.4	2.600	9.0	4.267	1.7	5.933	1.7	7.600	.0
1.000	1.4	2.667	7.8	4.333	1.7	6.000	1.7	7.667	.0
1.067	2.9	2.733	6.8	4.400	1.7	6.067	1.7	7.733	.0
1.133	4.4	2.800	5.9	4.467	1.6	6.133	1.5	7.800	.0
1.200	5.9	2.867	5.2	4.533	1.6	6.200	1.2	7.867	.0
1.267	14.3	2.933	4.6	4.600	1.6	6.267	.8	7.933	.0
1.333	42.7	3.000	4.2	4.667	1.6	6.333	.6	8.000	.0
1.400	112.2	3.067	3.7	4.733	1.6	6.400	.4	8.067	.0
1.467	207.7	3.133	3.4	4.800	1.6	6.467	.3		
1.533	243.8	3.200	3.1	4.867	1.6	6.533	.2		
1.600	254.0	3.267	2.9	4.933	1.6	6.600	.2		

RUNOFF VOLUME = 1.67340 INCHES = 10.5955 ACRE-FEET
PEAK DISCHARGE RATE = 264.80 CFS AT 1.567 HOURS BASIN AREA = .1187 SQ. MI.

```
*
*
*
*ROUTE FLOWS THROUGH APS EASEMENT TO DETENTION POND IN PIPE
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1 (PIPE)
SLOPE=0.010  DIA=5.0 FEET
N=0.013
```

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.26	.39	1.37	2.22
.52	1.09	5.93	3.06
.78	1.96	13.79	3.63
1.04	2.97	24.80	4.06
1.30	4.07	38.72	4.39
1.56	5.25	55.24	4.64
1.82	6.48	74.01	4.81
2.08	7.75	94.62	4.93
2.35	9.04	116.65	4.99
2.61	10.35	139.60	5.00
2.87	11.64	162.98	5.00
3.13	12.92	186.22	5.00
3.39	14.16	208.72	5.00
3.65	15.35	229.78	5.00
3.91	16.47	248.64	5.00
4.17	17.49	264.32	5.00

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 09/24/1997
         START TIME (HR:MIN:SEC) = 08:50:42     USER NO.= AVID__NM.I01
         INPUT FILE = E:\WWNORTH\HYD\HYM95.IN

*WILLOW WOOD    23MARCH95
*COMPUTATIONS FOR 6 HR STORM (TYPE 1), ZONE 3
*ALL AREAS ARE 5 UNITS/ACRE: 50% D, 25% C, 25% B ASSUMED
*FILE: C:\PROJECTS\WILLOW\HYM95.IN
*REVISIONS [1] SCHOOL SITE PARAMETERS PER APS, BASIN C-1-A
*                     [2] PHASE 6, UNIT 9 ADDED TO WILLOW WOOD, C-1-B
*                     [3] OFFSITE DIVERTED BY FUTURE IMPROVEMENTS, C-1-C
START                TIME=0.0 HR  PUNCH CODE=0
RAINFALL             TYPE=1 (SIX HR STORM)  RAIN QUARTER=0.0 IN
                     RAIN ONE=2.07 IN  RAIN SIX=2.54 IN
                     RAIN DAY=0.0 IN  DT=0.0333333 HRS

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033333 HOURS       END TIME =     5.999995 HOURS
                   .0000   .0029   .0059   .0090   .0121   .0154   .0186
                  .0220   .0254   .0289   .0325   .0362   .0400   .0439
                  .0479   .0520   .0562   .0606   .0651   .0698   .0746
                  .0796   .0848   .0902   .0958   .1016   .1077   .1141
                  .1209   .1280   .1355   .1412   .1473   .1539   .1679
                  .1994   .2478   .3173   .4122   .5369   .6959   .8938
                 1.1353  1.3587  1.4522  1.5311  1.6013  1.6652  1.7240
                 1.7786  1.8297  1.8775  1.9225  1.9650  2.0051  2.0431
                 2.0791  2.1132  2.1456  2.1763  2.2055  2.2128  2.2197
                 2.2263  2.2327  2.2388  2.2446  2.2502  2.2557  2.2610
                 2.2661  2.2710  2.2759  2.2805  2.2851  2.2896  2.2939
                 2.2982  2.3023  2.3064  2.3103  2.3142  2.3181  2.3218
                 2.3255  2.3291  2.3326  2.3361  2.3395  2.3429  2.3462
                 2.3495  2.3527  2.3559  2.3590  2.3621  2.3651  2.3681
                 2.3711  2.3740  2.3768  2.3797  2.3825  2.3853  2.3880
                 2.3907  2.3934  2.3960  2.3987  2.4012  2.4038  2.4063
                 2.4088  2.4113  2.4138  2.4162  2.4186  2.4210  2.4234
                 2.4257  2.4280  2.4303  2.4326  2.4349  2.4371  2.4393
                 2.4415  2.4437  2.4459  2.4480  2.4501  2.4522  2.4543
                 2.4564  2.4585  2.4605  2.4626  2.4646  2.4666  2.4686
                 2.4705  2.4725  2.4744  2.4764  2.4783  2.4802  2.4821
                 2.4840  2.4858  2.4877  2.4895  2.4913  2.4932  2.4950
                 2.4968  2.4986  2.5003  2.5021  2.5038  2.5056  2.5073
                 2.5090  2.5107  2.5125  2.5141  2.5158  2.5175  2.5192
                 2.5208  2.5225  2.5241  2.5257  2.5273  2.5290  2.5306
                 2.5322  2.5337  2.5353  2.5369  2.5384  2.5400

*
*
*
*COMPUTE HYDROGRAPH FOR BASINS A3
COMPUTE NM HYD       ID=1  HYD NO=3  DA=0.0119 SQ MI
                     %A=0.0  %B=25.0  %C=25.0  %D=50.0
                     TP=0.1333 HR
                     MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   23.491    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 2.0700
    AREA =      .005950 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


    K =   .120467HR    TP =   .133300HR    K/TP RATIO =   .903729     SHAPE CONSTANT, N =  3.920589
    UNIT PEAK =   15.616    CFS   UNIT VOLUME =    .9996       B =   349.84      P60 = 2.0700
    AREA =      .005950 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                                    OUTFLOW HYDROGRAPH REACH     3.00


    RUNOFF VOLUME =     1.66364 INCHES     =       1.0559 ACRE-FEET
    PEAK DISCHARGE RATE =      29.55 CFS  AT   1.500 HOURS   BASIN AREA =   .0119 SQ. MI.
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PEAK DISCHARGE RATE =      33.63 CFS  AT   1.567 HOURS   BASIN AREA =   .0033 SQ. MI.


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*
*
*S ALL STREET AND PIPE FLOW COMBINED, AP15
ADD HYD              ID=8  HYD=15  ID I=5  ID II=6
PRINT HYD           ID=8  CODE=1

                                    OUTFLOW HYDROGRAPH REACH    15.00

RUNOFF VOLUME =     1.66379 INCHES     =       9.6011 ACRE-FEET
PEAK DISCHARGE RATE =     241.89 CFS  AT   1.567 HOURS   BASIN AREA =   .1082 SQ. MI.


*
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*
*REVISIONS [2], MARCH 25, 1995, ADD PHASE 6
*COMPUTE HYDROGRAPH FOR BASIN C-1-B
*PHASE 6, UNIT 9, WILLOWWOOD
COMPUTE NM HYD       ID=1  HYD NO=1  DA=0.0078 SQ MI
                     %A=0.0  %B=25.0  %C=25.0  %D=50.0
                     TP=0.1333 HR
                     MASS RAINFALL=-1

K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   15.397    CFS   UNIT VOLUME =    .9987       B =   526.28      P60 = 2.0700
AREA =      .003900 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333


K =   .120467HR    TP =   .133300HR    K/TP RATIO =   .903729     SHAPE CONSTANT, N =  3.920589
UNIT PEAK =   10.235    CFS   UNIT VOLUME =    .9992       B =   349.84      P60 = 2.0700
AREA =      .003900 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033333

PRINT HYD            ID=1  CODE=1

                                    OUTFLOW HYDROGRAPH REACH     1.00


RUNOFF VOLUME =     1.66364 INCHES     =        .6921 ACRE-FEET
PEAK DISCHARGE RATE =      19.38 CFS  AT   1.500 HOURS   BASIN AREA =   .0078 SQ. MI.


*
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*
*S ALL STREET AND PIPE FLOW COMBINED, AP15
ADD HYD              ID=9  HYD=15  ID I=8  ID II=1
PRINT HYD           ID=9  CODE=2

                                    OUTFLOW HYDROGRAPH REACH    15.00
```

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	188.6	3.333	2.6	5.000	1.6	6.667	.1
.067	.0	1.733	141.4	3.400	2.5	5.067	1.6	6.733	.1
.133	.0	1.800	110.2	3.467	2.3	5.133	1.6	6.800	.1
.200	.0	1.867	90.1	3.533	2.2	5.200	1.6	6.867	.1
.267	.0	1.933	75.4	3.600	2.1	5.267	1.6	6.933	.1

.0	.333	.0	2.000	63.8	3.667	2.0	5.333	1.6	7.000
.0	.400	.0	2.067	54.1	3.733	1.9	5.400	1.6	7.067
.0	.467	.0	2.133	42.1	3.800	1.9	5.467	1.6	7.133
.0	.533	.0	2.200	30.1	3.867	1.8	5.533	1.6	7.200
.0	.600	.0	2.267	22.5	3.933	1.8	5.600	1.6	7.267
.0	.667	.0	2.333	17.9	4.000	1.7	5.667	1.6	7.333
.0	.733	.0	2.400	14.7	4.067	1.7	5.733	1.6	7.400
.0	.800	.0	2.467	12.1	4.133	1.7	5.800	1.6	7.467
.0	.867	.0	2.533	10.3	4.200	1.6	5.867	1.7	7.533
.0	.933	.3	2.600	8.8	4.267	1.6	5.933	1.7	7.600
.0	1.000	1.2	2.667	7.6	4.333	1.6	6.000	1.7	7.667
.0	1.067	2.7	2.733	6.6	4.400	1.6	6.067	1.7	7.733
.0	1.133	4.2	2.800	5.7	4.467	1.6	6.133	1.5	7.800
.0	1.200	5.6	2.867	5.0	4.533	1.6	6.200	1.2	7.867
.0	1.267	13.3	2.933	4.5	4.600	1.6	6.267	.8	7.933
.0	1.333	40.3	3.000	4.0	4.667	1.6	6.333	.6	8.000
.0	1.400	107.7	3.067	3.6	4.733	1.6	6.400	.4	8.067
	1.467	200.5	3.133	3.3	4.800	1.6	6.467	.3	
	1.533	236.3	3.200	3.0	4.867	1.6	6.533	.2	
	1.600	248.5	3.267	2.8	4.933	1.6	6.600	.2	

RUNOFF VOLUME = 1.66378 INCHES = 10.2932 ACRE-FEET
PEAK DISCHARGE RATE = 258.28 CFS AT 1.567 HOURS BASIN AREA = .1160 SQ. MI.

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*
*ROUTE FLOWS THROUGH APS EASEMENT TO DETENTION POND IN PIPE
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1 (PIPE)
                    SLOPE=0.010  DIA=5.0 FEET
                    N=0.013
```

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.26	.39	1.37	2.22
.52	1.09	5.93	3.06
.78	1.96	13.79	3.63
1.04	2.97	24.80	4.06
1.30	4.07	38.72	4.39
1.56	5.25	55.24	4.64
1.82	6.48	74.01	4.81
2.08	7.75	94.62	4.93
2.35	9.04	116.65	4.99
2.61	10.35	139.60	5.00
2.87	11.64	162.98	5.00
3.13	12.92	186.22	5.00
3.39	14.16	208.72	5.00
3.65	15.35	229.78	5.00
3.91	16.47	248.64	5.00
4.17	17.49	264.32	5.00
4.43	18.39	275.55	5.00
4.69	19.13	280.16	5.00
5.00	19.63	280.16	5.00

HYDRAULIC GRADELINE CALCULATIONS
WILLOW WOOD SUBDIVISION
HGL RUN TO COINCIDE WITH AHYMO RUN HYM97

BY: EEA
DATE: REVISED 9/97

LINE: MAIN

1	2	3	4	5	6	7	8	9	10		11		12	13	14		15	16	17	18	19	20	21	22
											JUNCTION			LOSSES										
STATION	STRUCT	D	Q	A	V	K	Sf	L	DELTA	Q	D	DUMMY D	ANGLE	hf	hb	Aavg	hj	hmh	ht	hmisc	SUM	E.G.	hv	H.G.
0+00	FUTURE											24										5483.15	3.15	5480.00
		72	406.2	28.2744	14.3663526	4236	0.009195343	597						5.49							5.49	5488.64	-3.20	5486.30
5+97	MH E1								45	106	30	30	90		0.34	28.27	1.30				1.64	5490.27	-3.20	5485.43
		72	362.85	28.2744	12.83316357	4236	0.007337403	146						1.07							1.07	5491.35	-2.56	5487.07
7+43	MH E2									106	54	54	45			23.95	0.76				0.76	5492.11	-2.56	5488.79
		60	264.8	19.635	13.48612172	2604	0.010340797	298						3.08							3.08	5495.19	-2.82	5489.55
10+41	MH E3											24				19.64		0.12			0.12	5495.31	-2.82	5492.36
		60	264.8	19.635	13.48612172	2604	0.010340797	400						4.14							4.14	5499.44	-2.82	5492.48
14+41	MH E4											24				19.64		0.12			0.12	5499.56	-2.82	5496.62
		60	264.8	19.635	13.48612172	2604	0.010340797	400						4.14							4.14	5503.70	-2.82	5496.74
18+41	MH E5									46	30	30	90			19.64	2.36				2.36	5506.06	-2.82	5500.88
		60	202	19.635	10.28775146	2604	0.006017565	50						0.30							0.30	5506.36	-1.64	5503.24
18+91	MH E6									16	24	24	90			19.64	0.50				0.50	5506.86	-1.64	5504.72
		60	186	19.635	9.472880061	2604	0.005102041	50						0.26							0.26	5507.12	-1.39	5505.22
19+41	MH E7									16	24	24	90			19.64	0.49				0.49	5507.60	-1.39	5505.72
		60	169	19.635	8.607079195	2604	0.00421203	213						0.90							0.90	5508.50	-1.15	5506.21
21+54	MH E8									36	24	24	90			17.77	0.60				0.60	5509.10	-1.15	5507.35
		54	133	15.90435	8.362492023	1967	0.004571877	50						0.23							0.23	5509.33	-1.09	5507.95
22+04	MH E9									33	24	24	90			15.90	0.94				0.94	5510.27	-1.09	5508.24
		54	100	15.90435	6.287587987	1967	0.002584588	226						0.58							0.58	5510.86	-0.61	5509.19
24+30	MH E10								90			24			0.34	12.76		0.08			0.42	5511.28	-0.61	5510.24
		42	100	9.62115	10.3937679	1006	0.009881071	359						3.55							3.55	5514.82	-1.68	5510.66
27+89	MH E11									20	24	24	90			9.62	1.21				1.21	5516.03	-1.68	5513.15
		42	80	9.62115	8.315014317	1006	0.006323886	270						1.71							1.71	5517.74	-1.07	5514.35
30+59	MH E12									24	24	24	90			9.62	1.10				1.10	5518.83	-1.07	5516.66
		42	56	9.62115	5.820510022	1006	0.003098704	50						0.15							0.15	5518.99	-0.53	5517.76
31+09	MH E13									9	24	24	90			9.62	0.31				0.31	5519.30	-0.53	5518.46
		42	47	9.62115	4.885070911	1006	0.002182729	48						0.10							0.10	5519.40	-0.37	5518.77
31+57	MH E14									33	24	24	90			6.38	0.81				0.81	5520.22	-0.37	5519.03
		24	14	3.1416	4.456327986	226	0.003830636	224						0.86							0.86	5521.08	-0.31	5519.85
33+81	MH E15											24				3.14		0.02			0.02	5521.10	-0.31	5520.77
		24	14	3.1416	4.456327986	226	0.003830636	50						0.19							0.19	5521.29	-0.31	5520.79
34+31	DROP																			0.06	0.06	5521.35	-0.31	5520.98
	INLET																							
																				CHECK	38.20	5521.35		

HYDRAULIC GRADELINE CALCULATIONS
WILLOW WOOD SUBDIVISION
HGL TO COINCIDE WITH AHYMO RUN HYM95

BY: EEA
DATE: REVISED 9/97

LINE: MAIN

1	2	3	4	5	6	7	8	9	10		11		12	13	14		15	16	17	18	19	20	21	22
											JUNCTION			LOSSES										
STATION	STRUCT	D	Q	A	V	K	Sf	L	DELTA	Q	D	DUMMY D	ANGLE	hf	hb	Aavg	hj	hmh	ht	hmisc	SUM	E.G.	hv	H.G.
0+00	FUTURE											24										5483.15	3.15	5480.00
		72	399.7	28.2744	14.13646267	4236	0.00890341	597						5.32							5.32	5488.47	-3.10	5486.30
5+97	MH E1								45	106	30	30	90		0.34	28.27	1.27				1.61	5490.08	-3.10	5485.36
		72	356.35	28.2744	12.60327363	4236	0.007076877	146						1.03							1.03	5491.11	-2.47	5486.98
7+43	MH E2									106	54	54	45			23.95	0.77				0.77	5491.88	-2.47	5488.65
		60	258.28	19.635	13.15406162	2604	0.009837836	298						2.93							2.93	5494.81	-2.69	5489.42
10+41	MH E3											24				19.64		0.12			0.12	5494.93	-2.69	5492.13
		60	258.28	19.635	13.15406162	2604	0.009837836	400						3.94							3.94	5498.87	-2.69	5492.25
14+41	MH E4											24				19.64		0.12			0.12	5498.99	-2.69	5496.18
		60	258.28	19.635	13.15406162	2604	0.009837836	400						3.94							3.94	5502.92	-2.69	5496.30
18+41	MH E5									46	30	30	90			19.64	2.09				2.09	5505.01	-2.69	5500.24
		60	202	19.635	10.28775146	2604	0.006017565	50						0.30							0.30	5505.31	-1.64	5502.32
18+91	MH E6									16	24	24	90			19.64	0.50				0.50	5505.81	-1.64	5503.67
		60	186	19.635	9.472880061	2604	0.005102041	50						0.26							0.26	5506.07	-1.39	5504.17
19+41	MH E7									16	24	24	90			19.64	0.49				0.49	5506.55	-1.39	5504.67
		60	169	19.635	8.607079195	2604	0.00421203	213						0.90							0.90	5507.45	-1.15	5505.16
21+54	MH E8									36	24	24	90			17.77	0.60				0.60	5508.05	-1.15	5506.30
		54	133	15.90435	8.362492023	1967	0.004571877	50						0.23							0.23	5508.28	-1.09	5506.90
22+04	MH E9									33	24	24	90			15.90	0.94				0.94	5509.22	-1.09	5507.19
		54	100	15.90435	6.287587987	1967	0.002584588	226						0.58							0.58	5509.81	-0.61	5508.14
24+30	MH E10								90			24			0.34	12.76		0.08			0.42	5510.23	-0.61	5509.19
		42	100	9.62115	10.3937679	1006	0.009881071	359						3.55							3.55	5513.77	-1.68	5509.61
27+89	MH E11									20	24	24	90			9.62	1.21				1.21	5514.98	-1.68	5512.10
		42	80	9.62115	8.315014317	1006	0.006323886	270						1.71							1.71	5516.69	-1.07	5513.30
30+59	MH E12									24	24	24	90			9.62	1.10				1.10	5517.78	-1.07	5515.61
		42	56	9.62115	5.820510022	1006	0.003098704	50						0.15							0.15	5517.94	-0.53	5516.71
31+09	MH E13									9	24	24	90			9.62	0.31				0.31	5518.25	-0.53	5517.41
		42	47	9.62115	4.885070911	1006	0.002182729	48						0.10							0.10	5518.35	-0.37	5517.72
31+57	MH E14									33	24	24	90			6.38	0.81				0.81	5519.17	-0.37	5517.98
		24	14	3.1416	4.456327986	226	0.003830636	224						0.86							0.86	5520.03	-0.31	5518.80
33+81	MH E15											24				3.14		0.02			0.02	5520.05	-0.31	5519.72
		24	14	3.1416	4.456327986	226	0.003830636	50						0.19							0.19	5520.24	-0.31	5519.74
34+31	DROP																			0.06	0.06	5520.30	-0.31	5519.93
	INLET																							
																				CHECK	37.15	5520.30		

FIGURE 6

CITY OF ALBUQUERQUE

NOTICE OF D.R.C. MEETING

9/7/99
(DATE)

DRB NO: 97-209
PROJECT NO: 624081
ZONE ATLAS: L-21

PROJECT NAME: Mirabella, Unit 6
LOCATION: Elizabeth, South of Southern Ave. S.E.

TYPE OF PROJECT: AHBA ✓ CIP ___ PWC ___ SAD ___ ALL PRIVATE ___

Contact Person: Marcella Jaramillo **Phone:** 881-5357
Firm: Parsons/Brinckerhoff

✓ Scheduled with the D.R.C. on 9/17/99 at 2:30PM Plaza Del Sol/2nd Fl.
___ No DRC Meeting Scheduled. Please return any comments by ___

The Project Is Scheduled For:

/ / Design Report Review
/ / Pre-Design Meeting
/✓/ Preliminary Plan Review
/ / Final Plan Review
/ / Signoff of Plans
/ / ___

The Project Relates To:

/✓/ Water /✓/ San. Sewer /✓/ Paving /✓/ Storm Drainage / / Traf. Signals

The Attached Package Includes:

/D/ Drawings /S/ Spec's /E/ Estimate /R/ Report /M/ Memo Only

Indicated below are the Departments/Divisions that have received project documents and/or are invited to attend. It will be the Project Managers responsiblity to notify consulting engineering firms of date and time of scheduled meetings.

/D/ DRC Chairman	Project Review Section	All Drawings
/D/ Traffic Repres.	Transportation Development	All Drawings
/D/ Utility Dev.(Bob Kane)	Utility Design	All AHBA Drawings
/ / Utility Dev.(Billy G.)	Utility Design	All CIP Drawings
/D/ Hydro Repres. Murphy	Hydrology	All Drawings
/D/ Const. Repres.	Construction	All Drawings
/D/ Ray Chavez	Traffic Operations	All Drawings
/ / Sergio Miranda	Water (Shutoff Plan)	All Water Shutoff
/D/ Parks Repres.	Parks & Recreation	ALL Landscaping
/ / Andre Houle	Street Maintenance	All Paving
/ / Kevin Broderick	Utility Coordinator	ALL PWC & CIP
/D/ Tom Murphy	Transit Department	All Drawings
/D/ Joe Luehring	Construction Coordinator	CIP/Memo
/ / Jim Fink	Line Maintenance	CIP & SAS/Memo
/ / George Gee	City Architect	Arch. Drawings
/ / Lee Lunsford	SAD Engineer	SAD/Memo
/ / Tom Ellis	Park Mangement	Parks/Community Ctrs/APS
/ / Gene Bustamante	General Services Dept.	Arch. Drawings
/ / Greg Smith	PWD/Legal	Specs & Dwgs.
/ / Richard Sertich	Planning Department	CIP/Memos
/ / CIP Project Manager	CIP	CIP/Memos
/ / Donald Bartlett	Risk Management	Arch. Drawings
/ / ___	___	___

DRCNOTIC. 10/19/95

D.R.B. Case No. 97-
D.R.C. Project No.
Date Submitted 8-29-97
Submitted by AVID Engineering, Inc.
By:

Figure II, EXHIBIT "D"
to the Subdivision Improvements Agreement

DEVELOPMENT REVIEW BOARD EQUIRED INFRASTRUCTURE LISTING
for WILLOW WOOD SUBDIVISION, UNIT 6

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider's responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

ITEM	LOCATION	FROM	TO
PAVING			
28' Residential paving, curb gutter, 4' sidewalk (both sides)	Los Padres Place	Arches Road	End of Cul-De-Sac
UTILITIES			
6" Waterlines and 8" Sanitary Sewerlines	Los Padres Place	Arches Road	End of Cul-De-Sac
STORM DRAIN			
Storm Drain Inlets	Los Padres Place	At Intersection with Arches Road	

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees

D.R.B. Case No. 97-_____

D.R.C. Project No. S-97-_____

Figure II, EXHIBIT "D"
to the Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD EQUIRED INFRASTRUCTURE LISTING
for WILLOW WOOD, UNIT 6 SUBDIVISION

Approved on _____, by the Development Review Board

_____
Planning Department Date

_____
Utility Development Division, City Engineer Date

_____
Transportation Development Division, Traffic Engineer Date

_____
Design and Development, CIP Date

_____
City Engineer/AMAFCA Date

AVID ENGINEERING, INC.

Civil • Structural • Transportation

September 24, 1997

Lisa Ann Manwill, P.E.
The City of Albuquerque
Public Works Department
[Hand Delivered]

RE: WILLOW WOOD UNIT 6 SUBDIVISION,
DRAINAGE REPORT COMMENT RESPONSES, Drainage File L21-D37A4

Dear Ms. Manwill:

Submitted are responses to your comments dated September 19, 1997. Also submitted is a revised drainage grading plan, detail sheet and the wall detail sheet. Below are detailed responses to your written comments and your comments from our meeting.

Comment 1 Revised hydrology was calculated for the final Unit 6 design. The 100 year discharge from Unit 6 increased from 19.38 cfs to 27.26 cfs. This increase is to two reasons. First, the contributing area has increased from 5.00 acres to 6.73 acres, and the density increased. This resulted in an increase in the % impervious from 50% to 58%, as per COA DPM. The flow in the storm drain was increased 2.5%, from 258.28 cfs to 264.80 cfs, an increase of 6.52 cfs. This flow increases the Hydraulic Grade Line in the storm drain approximately 0.14', an insignificant impact. Calculations and AHYMO output files are included with this letter.

Comment 2 Done, the typical lot grading detail is included on the detail sheet.

Comment 3 Done, the roof draining note is included on the lot grading detail.

Comment 4 Done, the side yard detail is included on the detail sheet.

Comment 5 Done, the drop inlets were labeled on the grading plan sheet.

Sincerely,

Rick Beltramo, P.E.
Project Manager

RECEIVED
SEP 24 1997
HYDROLOGY SECTION

Attachments

cc: Stan Strickman, Trails Inc.

5801 Osuna Rd. NE • Suite 200 • Albuquerque, NM 87109 • (505) 881-5357 • Fax 505-881-7602

CITY OF
Albuquerque

Martin J. Chávez, Mayor

October 9, 1997

Rick Beltramo, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOW WOOD UNIT 6 (L21-D37A4). DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED SEPTEMBER 24, 1997.

Dear Mr. Beltramo:

Based on the information provided on your September 24, 1997 submittal, the above referenced submittal is approved for Final Plat.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

CITY OF
Albuquerque

July 16, 1998

Dave Thompson, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOW WOOD NORTH (L21-D37A4). DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED DECEMBER 9, 1997.

Dear Mr. Thompson:

The enclosed Drainage Information Sheet for your December 17, 1997 submittal identified the project as Willow Wood NORTH (emphasis added) and was so titled on the Drainage Management Plan dated December 9, 1997. The City's approval letter of December 24, 1997 (also enclosed) referred to Willow Wood Unit 6. This letter is to confirm that the approval was for Willow Wood North.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: WILLOW WOOD NORTH ATLAS/DRAINAGE FILE# L-21/ D37A4

LEGAL DESCRIPTION: TRACT D-2-A MANZANO MESA
CITY ADDRESS: JUAN TABO AND SINGING ARROW
ENGINEERING FIRM: AVID ENG. INC., CONTACT:DAVE THOMPSON
ADDRESS: 5801 OSUNA RD. NE, ALB., NM, 87109
OWNER: MANZANO MESA LTD CONTACT:STAN STRICKMAN
ADDRESS: 6301 INDIAN SCHOOL RD NE, SUITE 680 PHONE: 881-9190
ARCHITECT: NA CONTACT: NA
ADDRESS: NA PHONE: NA
SURVEYOR: AVID ENGINEERING, INC. CONTACT: Ruan Bacigalupa
ADDRESS: Same as Above PHONE: 881-5357
CONTRACTOR: NA CONTACT: NA
ADDRESS: NA PHONE: NA

PRE-DESIGN MEETING:

____ YES
XX NO
____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97-209
EPC NO. _____
PROJECT NO. _____

TYPE OF SUBMITTAL:

XX DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEERS CERTIFICATION
____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

____ SECTOR PLAN APPROVAL
____ SKETCH PLAT APPROVAL
XX PRELIMINARY PLAT APPROVAL
____ SITE DEVELOPMENT PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ ROUGH GRADING PERMIT
____ GRADING/PAVING PERMIT APPROVAL
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: 12-17-97
BY: _____
REV. 10/85

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 24, 1997

Dave Thompson, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOW WOOD UNIT 6 (L21-D37A4). DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED DECEMBER 9, 1997.

Dear Mr. Thompson:

Based on the information provided on your December 17, 1997 submittal, the above referenced submittal is approved for Preliminary Plat.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

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

December 24, 1997

DEC 30 REC'D

Dave Thompson, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOW WOOD UNIT 6 (L21-D37A4). DRAINAGE PLAN FOR PRELIMINARY PLAT APPROVAL. ENGINEER'S STAMP DATED DECEMBER 9, 1997.

Dear Mr. Thompson:

Based on the information provided on your December 17, 1997 submittal, the above referenced submittal is approved for Preliminary Plat.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

Lisa Ann Manwill, P.E.
Hydrology

c: Andrew Garcia
File

RECEIVED
JUL 14 1998
HYDROLOGY SECTION

FAX

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
DEVELOPMENT AND BUILDING SERVICES
(ONE STOP SHOP)
600 2ND STREET - PLAZA DEL SOL - 2ND FLOOR WEST
FAX NO. 924-3864

DATE: 16 July 1998

TIME: 8:30 AM

NO. OF PAGES: 4
(INCLUDING COVER PAGE)

TO: AVID Eng'g Attn: Elias Archuleta

FROM: S P Murray, PE Hydrology

COMMENTS: Letter itself to follow.
RE: Willow Wood North

dd

JAN 07 REC'D → DBT

OFFICIAL NOTICE

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

9. DRB-97-209 SV-97-61 Avid Engineering, agent for Curb Inc., request Preliminary Plat approval (includes Grading Plan approval) and a Sidewalk Variance for Tract D-2-A, Manzano Mesa (to be known as Willow Wood North Subdivision, Units 1 thru 9), zoned R-1 (City) and located on Juan Tabo NE between Southern NE and Herman Roser NE containing approximately 127.686 acres. (L-21) [DEFERRED FROM 12/16/97]

At the December 30, 1997, Development Review Board Meeting, with the signing of the Infrastructure List dated 12/30/97 and the approval of the Grading Plan Engineer Stamp dated 12/9/97 the Preliminary Plat was conditionally approved.

The Sidewalk Variance for the temporary deferral of installation of sidewalks on the fronts of lots on interior streets for sidewalks only was approved with sidewalks to be constructed at the earlier of the two following dates:

A. When a structure is constructed on a lot, on a lot by lot basis, or

B. Four years following execution of the Subdivision Improvements Agreement.

Handicap ramps may not be deferred. Financial guarantees for sidewalks will be required. The Sidewalk Design Variance was also approved.

If you wish to appeal this decision, you must do so by January 14, 1998, in the manner described below. A nonrefundable fee of $135 is required at the time the appeal is filed.

Appeal is to the Environmental Planning Commission. Any person aggrieved with any determination of the Development Review Board may file an appeal on the Planning Division form, to the Planning Division, within 15 days of the Development Review Board's decision. The date the determination in question is issued is not included in the 15-day period for filing an appeal; If the fifteenth day falls on a Saturday, Sunday or holiday as listed in the Merit System Ordinance, the next working day is considered as the deadline for filing the appeal. Such appeal shall be heard within 45 days of its filing.

You will receive notice if any other person files an appeal. Successful applicants are reminded that other requirements of the City must be complied with, even after approval of the referenced application(s).

Please note that a Preliminary Plat (Major Subdivision) approval date is the date of the DRB action plus the appeal period. The Preliminary Plat approval is effective one year from that date. An Extension of the Preliminary Plat approval may be requested through the DRB. If and extension is approved, the approval date is the date of the DRB action plus the appeal period. The DRB must take action on the Preliminary Plat Extension prior to the expiration of the approval or the Preliminary Plat approval is null and void.
(REF: Chapter 14 Article 14 Part 3-4 (E) Revised Ordinance.)

Claire Koopman
Board Secretary

cc: Avid Engineering, 5801 Osuna Rd NE, 87109
Curb Inc., 6301 Indian School Rd NE, 87110
Loren Hines, Property Management, Legal Dept./7th Flr, City/County-Room 7042
Terri Martin, Public Works Department, 2nd Floor, Plaza del Sol Bldg.
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: **WILLOW WOOD NORTH, ~~UNIT~~ 6** ATLAS/DRAINAGE FILE# **L-21/D37A4**
7/22

LEGAL DESCRIPTION: **TRACT D-2-A MANZANO MESA**
CITY ADDRESS: **JUAN TABO AND SINGING ARROW**
ENGINEERING FIRM: **AVID ENG. INC.,** CONTACT:**DAVE THOMPSON**
ADDRESS: **5801 OSUNA RD. NE, ALB., NM, 87109**
OWNER: **MANZANO MESA LTD** CONTACT:**STAN STRICKMAN**
ADDRESS: **6301 INDIAN SCHOOL RD NE, SUITE 680** PHONE: **881-9190**
ARCHITECT: **NA** CONTACT: **NA**
ADDRESS: **NA** PHONE: **NA**
SURVEYOR: **AVID ENGINEERING, INC.** CONTACT: **Ruan Bacigalupa**
ADDRESS: **Same as Above** PHONE: **881-5357**
CONTRACTOR: **NA** CONTACT: **NA** _____
ADDRESS: **NA** PHONE: **NA**

PRE-DESIGN MEETING:
_____ YES
XX NO
_____ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 97-209 ✓
EPC NO. _____
PROJECT NO. _____

TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT
_____ DRAINAGE PLAN
_____ CONCEPTUAL GRADING & DRAINAGE PLAN
XX GRADING PLAN **(AMENDED)**
_____ EROSION CONTROL PLAN
_____ ENGINEERS CERTIFICATION
_____ FOUNDATION PERMIT

CHECK TYPE OF APPROVAL SOUGHT:

_____ SECTOR PLAN APPROVAL
_____ SKETCH PLAT APPROVAL
_____ PRELIMINARY PLAT APPROVAL
_____ SITE DEVELOPMENT PLAN APPROVAL
XX FINAL PLAT APPROVAL
_____ BUILDING PERMIT APPROVAL
_____ CERTIFICATE OF OCCUPANCY APPROVAL
XX ROUGH GRADING PERMIT
_____ GRADING/PAVING PERMIT APPROVAL
_____ OTHER _____(SPECIFY)

DATE SUBMITTED: 6-30-98
BY: Dave Thompson
REV. 1/98

RECEIVED
JUN 30 1998
HYDROLOGY SECTION

CITY OF
Albuquerque

July 22, 1998

Dave Thompson, P.E.
Avid Engineering, Inc
5801 Osuna Rd. NE
Suite 200
Albuquerque, NM 87109

RE: WILLOWWOOD NORTH/ MIRABELLA UNITS 1 & 2, (L21-D37A4). GRADING PLAN (AMENDED) FOR FINAL PLAT AND ROUGH GRADING PERMIT APPROVALS. ENGINEER'S STAMP DATED JUNE 23, 1998.

Dear Mr. Thompson:

Based on the information provided in your June 30, 1998 submittal, the above referenced project is approved for Final Plat and Rough Grading Permit.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Andrew Garcia
√File

AVID ENGINEERING, INC. Civil • Structural • Transportation

FAX COVER SHEET

DATE: 7-24-98

RE: Willow Wood North

FAX TO:

NAME: John Murray

COMPANY: City Hydrology

FAX NUMBER TO: 924-3864

FAX FROM:

NAME: Dave Thayer

FAX NUMBER FROM: *881-7602*

NUMBER OF PAGES (Including this cover sheet): 2

REMARKS / COMMENTS: Sorry for the Delay!

5801 Osuna Road, NE • Suite 200 • Albuquerque, New Mexico 87109 • (505) 881-5357

AVID ENGINEERING, INC.

Civil • Structural • Transportation

June 23, 1998

Ms. Kym Dicome
DRB Chair
Planning Department
City of Albuquerque
600 2nd Street NW - 2nd Floor West
Albuquerque, NM 87103

Re: SUBMITTAL OF AMENDED INFRASTRUCTURE LIST, GRADING PLAN, AND PRELIMINARY PLAT FOR WILLOW WOOD NORTH SUBDIVISION (DRB-97-209)

Dear Ms. Dicome:

Submitted for the Development Review Board (DRB) review is an amended infrastructure list, Grading Plan, and Preliminary Plat for Willow Wood North Subdivision (DRB 97-209). The Preliminary Plat package including Sidewalk Variance and Grading Plan was approved by the DRB on December 30, 1997. Revisions to the Preliminary Plat and Grading Plan include the following:

1. Revision of Unit 2 Boundary to include the intersection of Glacier Bay Street and Deer Lodge Road, and
2. Units 1 and 2 Grading Plan have been Modified to eliminate some retaining walls.

The amended Infrastructure List with the changes highlighted is included in this submittal. Enclosed are 6 sets of the following:

1. Amended Preliminary Plat,
2. Amended Grading Plan, and
3. Amended Infrastructure List for Unit 1.

We request that you schedule this application for amended Preliminary Plat and amended Infrastructure List to be heard at the DRB on Tuesday, June 30, 1998. If you have any questions about this request, please contact me at our office, phone number 881-5357.

Sincerely,

David B. Thompson, P.E.

Enclosures

5801 Osuna Rd. NE • Suite 200 • Albuquerque, NM 87109 • (505) 881-5357 • Fax 505-881-7602

Figure II, EXHIBIT "D"
to the Subdivision Improvements Agreement

D.R.B. Case No. 97-209
D.R.C. Project No.
Date Submitted ~~12/29/97~~ 12/30/97
Submitted by AVID Engineering, Inc.
By:

DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
for WILLOW WOOD NORTH SUBDIVISION
UNITS 1 THROUGH 9

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider's responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

ITEM	LOCATION	FROM	TO
UNIT 1			
PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Singing Arrow Road Ocala Street Medicine Bow Place Glacier Bay Street	Glacier Bay Street ~~Juan Tabo Blvd.~~ Singing Arrow Road Ocala Street Medicine Bow Place	Ocala Street Medicine Bow Place End of Cul-De-Sac ~~Unit 1-2 Boundary~~ Block 3, Lot 2 PM and 3 PL Line
Standard Ctg 1 sidewalk both sides)	40' Residential paving ~~40' radius Temporary Turn around~~	Singing Arrow Road ~~Glacier Bay Street, 100' North of Signing Arrow Road~~	Juan Tabo Blvd Glacier Bay Street
12' Bicycle/Pedestrian Trail	west side, Juan Tabo Blvd.	Willow Wood North Unit 1/ Willow Wood North Unit 2 Boundary	Unit 1 Pond Boundary
~~Street Trees~~	~~west side, Juan Tabo Blvd.~~	~~Willow Wood North Unit 1/ Willow Wood North Unit 2 Boundary~~	~~Unit 1 Pond Boundary~~
Residential Street Lights * Sidewalk to be deferred			
UTILITIES			
6" Waterlines and 8" Sanitary Sewerlines	Singing Arrow Road Ocala Street Medicine Bow Street Glacier Bay Street	Juan Tabo Blvd. Singing Arrow Road Ocala Street Medicine Bow Place	Ocala Street Medicine Bow Place End of Cul-De-Sac Unit 1-2 Boundary
*10" Waterline	Singing Arrow Road Ocala Street Tract A	Juan Tabo Blvd. Singing Arrow Road Ocala St.	Ocala Street Tract A Ozark St.
*8" Waterline	Glacier Bay Street	Medicine Bow Place	Unit 1-2 Boundary
8" Sanitary Sewerline	Tract A Ozark Street Tony Sanchez Street	Ocala Street Tract A Ozark Street	Ozark Street Tony Sanchez Street Herman Roser Avenue

* Indicates 8" or 10" Waterline instead of 6" Waterline

ITEM	LOCATION	FROM	TO
STORM DRAIN			
Temporary 5' Wide Earthen Channels	Tract A	West Property Line	Ozark St.
	Ozark St.	Tract A	Oceola Rd.
	Oceola Rd.	Ozark St.	Tract B
	Tract B	Oceola Rd.	Grand Mesa Rd.
	Grand Mesa Rd.	Tract B	Sawtooth St.
	Sawtooth St.	Grand Mesa Rd.	Tract C
	Tract C	Sawtooth St.	Buffalo River Rd.
	Buffalo River Rd.	Tract C	Tract D
	Tract D	Buffalo River Rd.	Elizabeth St.
60" RCP Storm Drain	Elizabeth St.	Tract D	Eubank Storm Drain (by others in Elizabeth St.)

Temporary Earthen Channels located within Public Drainage Easements and Future Street Right-Of-Way.
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 2			
PAVING			
28' Residential paving, standard curb gutter, 4' sidewalk (both sides)	Glacier Bay Street	Unit 1-2 Boundary	Unit 2-3 Boundary
	Plumas Road	Glacier Bay Street	Adirondack Place
	Adirondack place	Deer Lodge Road	Cul-De-Sac
	Deer Lodge Road	Adirondack place	Unit 2-3 Boundary
	Grand Mesa Road	Glacier Bay Street	Unit 2-3 Boundary
40' Radius Temporary Turn-around	Glacier Bay Street at Unit 2-3 Boundary		
	Deer Lodge Road at Unit 2-3 Boundary		
12' Bicycle/Pedestrian Trail	Juan Tabo Blvd.	Singing Arrow Rd.	1050' North at location where P/L departs ROW alignment
Street Trees (west side only)			
25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side) (to be financially guaranteed and deferred) ~~until Unit 4)~~	Southern Blvd.	Juan Tabo Blvd.	Unit 2-3 Boundary

Residential Street Lights per DPM
Off-site Mitigation Requirements - intersection improvements to include signalization of Juan Tabo/Southern intersection. Approximate total cost including all fees and design of $110,000 (to be financially guaranteed and deferred until Unit 4).
* Sidewalks to be deferred

UTILITIES			
6" Waterlines and 8" Sanitary Sewer Lines	Glacier Bay Street	Signing Arrow Road	Deer Lodge Rd
	Plumas Road	Glacier Bay Place	Adirondack Place
	Adirondack place	Deer Lodge Road	Cul-De-Sac
	Deer Lodge Road	Adirondack place	Unit 2-3 Boundary
	Grande Mesa Road	Glacier Bay Street	Unit 2-3 Boundary
*8" Waterline	Glacier Bay Street	Unit 1-2 Boundary	Grande Mesa Road
	Grand Mesa Road	Glacier Bay Street	Unit 2-3 Boundary

* Indicates 8" Waterline instead of 6" Waterline at these locations

ITEM	LOCATION	FROM	TO
STORM DRAIN			
Temporary 5' Wide Earthen Channels	Grand Mesa Road	West Property Line	Tract B
	Deer Lodge Rd.	West Property Line	Sawtooth St.
	Sawtooth St.	Deer Lodge Rd.	Tract C

Temporary Earthen Channels located within Public Drainage Easements and Future Street Right-Of-Way.
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 3

PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Manistee Street	Grande Mesa Road	Deer Lodge Road
	Grand Mesa Road	Unit 2-3 Boundary	Unit 3-4 Boundary
	Oconee Court	Manistee Street	Cul-de-sac
	Huron Court	Manistee Street	Cul-de-sac
	Deer Lodge Road	Unit 2-3 Boundary	Unit 3-4 Boundary
	Glacier Bay Street	Unit 2-3 Boundary	Deer Lodge Road
4' Sidewalk	Tract H	Deer Lodge Road	Southern Blvd.
25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side) (to be financially guaranteed and deferred until Unit 4)	Southern Blvd.	Unit 2-3 Boundary	Unit 3-4 Boundary

Residential Street Lights per DPM
* Sidewalk to be deferred

UTILITIES			
6" Waterlines and 8" Sanitary Sewer Lines	Manistee Street	Grande Mesa Road	Deer Lodge Road
	Grand Mesa Road	Unit 2-3 Boundary	Unit 3-4 Boundary
	Oconee Court	Manistee Street	Cul-de-sac
	Huron Court	Manistee Street	Cul-de-sac
	Deer Lodge Road	Unit 2-3 Boundary	Unit 3-4 Boundary
*8" Waterline	Grand Mesa Road	Unit 2-3 Boundary	Unit 3-4 Boundary
8" Sanitary Sewer Line	Grand Mesa Road	Unit 3-4 Boundary	Tract B
	Tract B	Grand Mesa Road	Oceola Road
	Oceola Road	Tract B	Ozark Street
	Ozark Street	Oceola Road	Tract A

*Indicates 8" Waterline at these locations instead of 6" waterline

STORM DRAIN
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 4

PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	De Soto Street	Grande Mesa Road	Deer Lodge Road
	Grande Mesa Road	Sawtooth Street	Unit 3-4 Boundary
	Sawtooth Street	Grande Mesa Road	Deer Lodge Road
	Deer Lodge Road	Sawtooth Street	Unit 3-4 Boundary

ITEM	LOCATION	FROM	TO
32' to 28' 40' Residential Paving Standard Curb & Gutter, 4' Sidewalk (Both Sides)	Coconino Road Pike Street	Pike Street Coconino Road	Sawtooth Street Southern Boulevard
10' Bicycle/Pedestrian Trail	Tract B	Oceola Road	Grande Mesa Road
25" Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side)	Southern Blvd.	Unit 3-4 Boundary	Pike Street

Residential Street Lights per DPM & Sidewalks to be deferred

UTILITIES

6" Waterlines and 8" Sanitary Sewer Lines	De Soto Street	Grande Mesa Road	Deer Lodge Road
	Grande Mesa Road	Sawtooth Street	Unit 3-4 Boundary
	Sawtooth Street	Grande Mesa Road	Deer Lodge Road
	Deer Lodge Road	Sawtooth Street	Unit 3-4 Boundary
	Coconino Road	Pike Street	Sawtooth Street
*8" Waterline	Coconino Road	Pike Street	Sawtooth Street
	Pike Street	Coconino Road	Southern Boulevard

*Indicates 8" Waterline at these locations instead of 6" waterline

STORM DRAIN

60" RCP Storm Drain	Tract D	Elizabeth Street	Humbolt Street
54" RCP Storm Drain	Buffalo River Rd.	Humbolt Street	Deschutes St.
48" RCP Storm Drain	Buffalo River Rd.	Deschutes St.	Tract C
48" RCP Storm Drain	Tract C	Buffalo River Rd.	Sawtooth Street
48" RCP Storm Drain	Sawtooth Street	Tract C	Grande Mesa Road
48" RCP Storm Drain	Grande Mesa Road	Sawtooth Street	Tract B
36" RCP Storm Drain	Tract B	Grande Mesa Road	Unit 4-5 Boundary
36" RCP Storm Drain	Sawtooth Street	Tract C	Deer Lodge Road
24" RCP Storm Drain	Deer Lodge Road	Sawtooth Street	Unit 3-4 Boundary
30" RCP Storm Drain	Grande Mesa Road	Sawtooth Street	Unit 3-4 Boundary

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 5

PAVING

28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Ozark Street Tony Sanchez Street Oceola Street	Oceola Street Ozark Street Ozark Street	Tony Sanchez Street Herman Roser Avenue Elizabeth Street
40' ~~28'~~ Residential paving, standard curb & gutter, 6' sidewalk (north and east side only), ~~4' Temp. Paving~~	Elizabeth Street	Tony Sanchez Street	~~Unit 5-6 Boundary~~ to Lot 167
10' Bicycle/Pedestrian	Tract A	Ocala Street	Ozark Street

Residential Street Lights per DPM
& sidewalks to be deferred

ITEM	LOCATION	FROM	TO
UTILITIES			
6" Waterlines and 8" Sanitary Sewer Lines	Oceola Street	Ozark Street	Elizabeth Street
10" Waterlines and 8" Sanitary Sewer Line	Elizabeth Street	Tony Sanchez Street	Unit 5-6 Boundary
STORM DRAIN			
36" RCP Storm Drain	Tract B	Unit 4-5 Boundary	Ozark Street
36" RCP Storm Drain	Ozark Street	Tract B	Tract A
36" RCP Storm Drain	Tract A	Ozark Street	Unit 1-5 Boundary
30" RCP Storm Drain	Tract G-2 Easement	Eubank Storm Drain	Elizabeth Rd.
24" RCP Storm Drain	Elizabeth St.	Tract G-2	Oceola Rd.

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 6			
PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Humbolt Street Kaibab Road Talladega Street Colville Road Buffalo River Rd.	Colville Road Colville Road Kaibab Road Elizabeth Street Talladega	Unit 6-9 Boundary Talladega Street Unit 6-7 Boundary Kaibab Road (East End) Unit 6-7 Boundary
20' Residential paving, standard curb & gutter, 6' sidewalk (north and east side only), 4' Temp. Paving	Elizabeth Street	~~Unit 5-6 Boundary~~ Lot 107	Unit 6-9 Boundary
10' Bicycle/Pedestrian Trail	Tract C	Sawtooth Street	Talladega Street

Residential Street Lights per DPM
~~*Sidewalks~~ to be deferred

UTILITIES			
6" Waterlines and 8" Sanitary Sewerline	Humbolt Street Kaibab Road Talladega Street Colville Road	Colville Road Colville Road Kaibab Road Elizabeth Street	Unit 6-9 Boundary Talladega Street Unit 6-7 Boundary Kaibab Road
8" Sanitary Sewerline and 10" Waterline	Elizabeth Street	Unit 5-6 Boundary	Unit 6-9 Boundary
*8" Waterline	Kaibab Road Talladega Street Colville Road	Colville Road Kaibab Road Elizabeth Street	Talladega Street Unit 6-7 Boundary Humbolt Street/Kaibab Road

*Indicates 8" Waterline at these locations instead of 6" waterline

6" Waterline	Buffalo River Road	Talladega Street	Unit 6-7 Boundary

STORM DRAIN
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees

ITEM	LOCATION	FROM	TO
UNIT 7			
PAVING			
28' Residential paving, standard curb & gutter, 4' sidewalk (both sides)	Buffalo River Road	Unit 6-7 Boundary	Talladega Street
	Deschutes St.	Buffalo River Road	Unit 7-8 Boundary
	Lassen Court	Buffalo River Road	Cul-de-sac
	Talladega Street	Unit 6-7 Boundary	Coconino Road
	Coconino Road	Unit 4-7 Boundary	Pike Street
25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side) (to be financially guaranteed and deferred until Unit 8)	Southern Boulevard	Pike Street	Lot Line between Lots 35-P1 and 36-P1 of Block 12
Residential Street Lights per DPM & Sidewalks to be deferred			
UTILITIES			
6" Waterlines and 8" Sanitary Sewer Line	Buffalo River Road	Unit 6-7 Boundary	Unit 7-9 Boundary
	Deschutes St.	Buffalo River Road	Coconino Road
	Lassen Court	Buffalo River Road	Cul-de-sac
	Talladega Street	Unit 6-7 Boundary	Coconino Road
	Coconino Road	Unit 4-7 Boundary	Pike Street
*8" Waterline	Talladega Street	Unit 6-7 Boundary	Coconino Road
	Coconino Road	Talladega Street	Pike Street
*Indicates 8" Waterline at these locations instead of 6" waterline			
6" Waterline	Deschutes St.	Coconino Road	Unit 7-8 Boundary
8" Sanitary Sewer Line	Buffalo River Road	Unit 7-9 Boundary	Humbolt Street
	Humbolt Street	Buffalo River Road	Unit 6-9 Boundary
STORM DRAIN			
42" RCP Storm Drain	Coconino Rd.	Elizabeth St.(Eubank SD)	Humbolt Street
30" RCP Storm Drain	Coconino Rd.	Humbolt	100 ft. east
30" RCP Storm Drain	Humbolt St.	Coconino Rd.	100 ft. north
Retaining Walls throughout the Subdivision.			
Grading and Drainage Certification is required prior to release of Financial Guarantees			
UNIT 8			
PAVING			
28' Residential paving, *mountable or standard curb & gutter, 4' sidewalk (both sides)	Coconino Road	Unit 7-8 Boundary	Elizabeth Street
	Humbolt Street	Unit 8-9 Boundary	Deer Lodge Place
	Deer Lodge Place	Humbolt Street	Cul-de-sac
	Deschutes Street	Unit 7-8 Boundary	Deer Lodge Place
20' Residential paving, standard curb & gutter, 6' sidewalk (north & east side only), 4' temp. paving	Elizabeth Street	Southern Boulevard	Unit 8-9 Boundary

ITEM	LOCATION	FROM	TO
25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side)	Southern Boulevard	Lot line between Lots 35-P1 and 36-P1 of Block 12	Elizabeth Street

Residential Street Lights per DPM
& Sidewalks to be deferred

UTILITIES

6" Waterlines and 8" Sanitary Sewerline	Coconino Road Humbolt Street Deer Lodge Place	Unit 7-8 Boundary Unit 8-9 Boundary Humbolt Street	Elizabeth Street Deer Lodge Place Cul-de-sac
8" Sanitary Sewerline	Humbolt Street	Unit 8-9 Boundary	Buffalo River Road
8" Waterline 10" Waterline	Coconino Road Elizabeth Street	Unit 7-8 Boundary Southern Blvd.	Humbolt Street Unit 8-9 Boundary

STORM DRAIN

30" RCP Storm Drain	Southern Boulevard	Elizabeth Street	46 Feet East
24" RCP Storm Drain	Southern Boulevard	End of 30" RCP Storm Drain	20 Feet East
18" RCP Storm Drain	Southern Boulevard	End of 24" RCP Storm Drain	20 Feet East

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 9

PAVING

28' Residential paving, *mountable or standard curb & Gutter (both sides) 4' Sidewalk	Humbolt Street Buffalo River Road Winema Court	Unit 6-9 Boundary Humbolt Street Buffalo River Road	Unit 8-9 Boundary Unit 7-9 Boundary Cul-de-sac
20' Residential paving, standard curb & gutter, 6' sidewalk (north and east side only), 4' Temp. Paving	Elizabeth Street	Unit 8-9 Boundary	Unit 6-9 Boundary

Residential Street Lights per ~~DPM~~ DPM
& Sidewalks to be deferred

UTILITIES

6" Waterlines	Humbolt Street Buffalo River Road Winema Court	Unit 6-9 Boundary Humbolt Street Buffalo River Road	Unit 8-9 Boundary Unit 7-9 Boundary Cul-de-sac
8" Sanitary Sewer Line	Winema Court	Buffalo River Road	Cul-de-sac
10" Waterlines	Elizabeth Street	Unit 8-9 Boundary	Unit 6-9 Boundary

STORM DRAIN

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

ITEM	LOCATION	FROM	TO

NOTES:

(1) Waterlines include valves, fittings and services.
(2) Sanitary Sewerlines include manholes and services.
(3) Storm drains include manholes, inlets, connector pipes and outlet structures.
(4) Paving includes street lights and sidewalks.

Figure II, EXHIBIT "D"
to the Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
for WILLOW WOOD NORTH SUBDIVISION
UNITS 1 THROUGH 9

D.R.B. Case No. 97-209
S-97-
D.R.C. Project No. _____

Approved on _____, by the Development Review Board

Planning Department	12/30/97 Date
Utility Development Division, City Engineer	12/30/97 Date
Transportation Development Division, Traffic Engineer	12-30-97 Date
Design and Development, CIP	12-30-97 Date
City Engineer/AMAFCA	12-30-97 Date

FAX

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
DEVELOPMENT AND BUILDING SERVICES
(ONE STOP SHOP)
600 2ND STREET - PLAZA DEL SOL - 2ND FLOOR WEST
FAX NO. 924-3864

AUID
FAX
881-7602

DATE: 7/24/98

TIME: 9:25AM

NO. OF PAGES: 1
(INCLUDING COVER PAGE)

TO: Dave Thompson, PE

FROM: JP Murray, PE

COMMENTS: RE: Willowwood North

We are able to receive FAXes!

JM

Figure II, EXHIBIT "D"
to the Subdivision Improvements Agreement

D.R.B. Case No. 97-209
D.R.C. Project No.
Date Submitted ~~12/29/97~~ 12/30/97
Submitted by AVID Engineering, Inc.
By: [signature] 8/4/98

DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
for ~~WILLOW WOOD NORTH SUBDIVISION~~ MIRABELLA SUBDIVISION
UNITS 1 THROUGH 9

1 Revised ~~6/30/98~~ DBT
2 Revised 8/25/98 DBT

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider's responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

3 Revised 12/15/98 DBT

ITEM	LOCATION	FROM	TO
	5 8-5-99		4 Revised 4/20/99 EEA
	6 9-7-99		
9 5-3-00	7 ~~10~~-24-99		
UNIT 1 10 5-16-00	8 2-14-00		
PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Singing Arrow Road Ocala Street Medicine Bow Place Glacier Bay Street	~~Juan Tabo Blvd.~~ Glacier Bay Street Singing Arrow Road Ocala Street Medicine Bow Place	Ocala Street Medicine Bow Place End of Cul-De-Sac, Block 3, Lot 2-PL and 3PL Line ~~Unit 1-2 Boundary~~ Glacier Bay Street
3 DBT 34' Standard C&G & 4' sidewalk (both sides)	~~40' radius Temporary Turn around~~ 34' Residential paving	~~Glacier Bay Street, 100' North of Signing Arrow Road~~ Singing Arrow Road	Juan Tabo Blvd
12' Bicycle/Pedestrian Trail	west side, Juan Tabo Blvd.	Willow Wood North Unit 1/ Willow Wood North Unit 2 Boundary	Unit 1 Pond Boundary
~~Street Trees~~	~~west side, Juan Tabo Blvd.~~	~~Willow Wood North Unit 1/ Willow Wood North Unit 2 Boundary~~	~~Unit 1 Pond Boundary~~
~~Street~~ Residential Street Lights			
* Sidewalk to be deferred			
UTILITIES			
6" Waterlines and 8" Sanitary Sewerlines	Singing Arrow Road Ocala Street Medicine Bow Street Glacier Bay Street	Juan Tabo Blvd. Singing Arrow Road Ocala Street Medicine Bow Place	Ocala Street Medicine Bow Place End of Cul-De-Sac Unit 1-2 Boundary
*10" Waterline	Singing Arrow Road Ocala Street Tract A	Juan Tabo Blvd. Singing Arrow Road Ocala St.	Ocala Street Tract A Ozark St.
*8" Waterline	Glacier Bay Street	Medicine Bow Place	Unit 1-2 Boundary
8" Sanitary Sewerline	Tract A Ozark Street Tony Sanchez Street	Ocala Street Tract A Ozark Street	Ozark Street Tony Sanchez Street Herman Roser Avenue

* Indicates 8" or 10" Waterline instead of 6" Waterline

ITEM	LOCATION	FROM	TO
STORM DRAIN	Elizabeth Street	Tract D	Drainage Pond ② DBT 8-25-98
Temporary 5' Wide Earthen Channels	Tract A	West Property Line	Ozark St.
	Ozark St.	Tract A	Oceola Rd.
	Oceola Rd.	Ozark St.	Tract B
	Tract B	Oceola Rd.	Grand Mesa Rd.
	Grand Mesa Rd.	Tract B	Sawtooth St.
	Sawtooth St.	Grand Mesa Rd.	Tract C
	Tract C	Sawtooth St.	Buffalo River Rd.
	Buffalo River Rd.	Tract C	Tract D
	Tract D	Buffalo River Rd.	Elizabeth St. ② DBT 8-25-98
~~60" RCP Storm Drain~~	~~Elizabeth St.~~	~~Tract D~~	~~Eubank Storm Drain (by others in Elizabeth St.)~~

Temporary Earthen Channels located within Public Drainage Easements and Future Street Right-Of-Way.
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 2

PAVING			
28' Residential paving, standard curb gutter, 4' sidewalk (both sides)	Glacier Bay Street	Unit 1-2 Boundary	Deer Lodge Road ~~Unit 2-3 Boundary~~ △ 6-30-98 DBT
	Plumas Road	Glacier Bay Street	Adirondack Place
	Adirondack place	Deer Lodge Road	Cul-De-Sac
	Deer Lodge Road	Adirondack place	Unit 2-3 Boundary
	Grand Mesa Road	Glacier Bay Street	Unit 2-3 Boundary
40' Radius Temporary Turn-around	Glacier Bay Street at Unit 2-3 Boundary		
	Deer Lodge Road at Unit 2-3 Boundary		
12' Bicycle/Pedestrian Trail	Juan Tabo Blvd.	Singing Arrow Rd.	1050' North at location where P/L departs ROW alignment
Street Trees (west side only)			
25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side) (to be financially guaranteed and deferred) ~~until Unit 4)~~	Southern Blvd.	Juan Tabo Blvd.	Unit 2-3 Boundary

Residential Street Lights per DPM
Off-site Mitigation Requirements - intersection improvements to include signalization of Juan Tabo/Southern intersection. Approximate total cost including all fees and design of $110,000 (to be financially guaranteed and deferred until Unit 4).
* Sidewalks to be deferred

UTILITIES			
6" Waterlines and 8" Sanitary Sewer Lines	Glacier Bay Street	Unit 1-2 Boundary ~~Signing Arrow Road~~ △ 6-30-98 DBT	Deer Lodge Rd
	Plumas Road	Glacier Bay Place	Adirondack Place
	Adirondack place	Deer Lodge Road	Cul-De-Sac
	Deer Lodge Road	Adirondack place	Unit 2-3 Boundary
	Grande Mesa Road	Glacier Bay Street	Unit 2-3 Boundary
*8" Waterline	Glacier Bay Street	Unit 1-2 Boundary	Grande Mesa Road
	Grand Mesa Road	Glacier Bay Street	Unit 2-3 Boundary

* Indicates 8" Waterline instead of 6" Waterline at these locations

ITEM	LOCATION	FROM	TO
STORM DRAIN			
Temporary 5' Wide Earthen Channels	Grand Mesa Road	West Property Line	Tract B
	Deer Lodge Rd.	West Property Line	Sawtooth St.
	Sawtooth St.	Deer Lodge Rd.	Tract C

Temporary Earthen Channels located within Public Drainage Easements and Future Street Right-Of-Way.
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 3

PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Manistee Street	Grande Mesa Road	Deer Lodge Road
	Grand Mesa Road	Unit 2-3 Boundary	Unit 3-4 Boundary
	Oconee Court	Manistee Street	Cul-de-sac
	Huron Court	Manistee Street	Cul-de-sac
	Deer Lodge Road	Unit 2-3 Boundary	Unit 3-4 Boundary
	Glacier Bay Street	Unit 2-3 Boundary	Deer Lodge Road
4' Sidewalk	Tract H	Deer Lodge Road	Southern Blvd.
25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side) (to be financially guaranteed and deferred until Unit 4)	Southern Blvd.	Unit 2-3 Boundary	Unit 3-4 Boundary

Residential Street Lights per DPM
*Sidewalk to be deferred

UTILITIES			
6" Waterlines and 8" Sanitary Sewer Lines	Manistee Street	Grande Mesa Road	Deer Lodge Road
	Grand Mesa Road	Unit 2-3 Boundary	Unit 3-4 Boundary
	△4 *Oconee Court	Manistee Street	Cul-de-sac
	△4 *Huron Court	Manistee Street	Cul-de-sac
	Deer Lodge Road	Unit 2-3 Boundary	Unit 3-4 Boundary

NOTE = *△4 4" WATERLINE IN OCONEE COURT & HURON COURT FROM MANISTEE ST. TO CUL-DE-SAC

*8" Waterline	Grand Mesa Road	Unit 2-3 Boundary	Unit 3-4 Boundary
	△4 ELIZABETH STREET	MANZNO MESA PARK	TRACT D
8" Sanitary Sewer Line	Grand Mesa Road	Unit 3-4 Boundary	Tract B
	Tract B	Grand Mesa Road	Oceola Road
	Oceola Road	Tract B	Ozark Street
	Ozark Street	Oceola Road	Tract A

*Indicates 8" Waterline at these locations instead of 6" waterline

STORM DRAIN
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 4

PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	De Soto Street	Grande Mesa Road	Deer Lodge Road
	Grande Mesa Road	Sawtooth Street	Unit 3-4 Boundary
	Sawtooth Street	Grande Mesa Road	Deer Lodge Road
	Deer Lodge Road	Sawtooth Street	Unit 3-4 Boundary

ITEM	LOCATION	FROM	TO
32' to 28' ~~40'~~ Residential Paving Standard Curb & Gutter, 4' Sidewalk (both sides)	Coconino Road Pike Street	Pike Street Coconino Road	Sawtooth Street Southern Boulevard
10' Bicycle/Pedestrian Trail	Tract B	Oceola Road	Grande Mesa Road
25" Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side) Residential Street Lights per DPM * Sidewalks to be deferred	Southern Blvd.	Unit 3-4 Boundary	8 ~~Pike Street~~ LOT LINE BETWEEN LOTS 35-P1 & 36-P1 OF BLOCK 12
UTILITIES			
6" Waterlines and 8" Sanitary Sewer Lines	De Soto Street Grande Mesa Road Sawtooth Street Deer Lodge Road Coconino Road	Grande Mesa Road Sawtooth Street Grande Mesa Road Sawtooth Street Pike Street	Deer Lodge Road Unit 3-4 Boundary Deer Lodge Road Unit 3-4 Boundary 4 SAS BUILT W/ UNIT 3 Sawtooth Street 4 BUILT W/ UNIT 3 (SAS ONLY)
*8" Waterline	Coconino Road Pike Street	Pike Street Coconino Road	Sawtooth Street Southern Boulevard
*Indicates 8" Waterline at these locations instead of 6" waterline			
4 8" SAS LINE	TRACT C	SAWTOOTH ST.	BUFFALO RIVER ROAD
STORM DRAIN			
60" RCP Storm Drain (4 DEFER TO COMPLETION OF EUBANK STORM DRAIN)	Tract D	Elizabeth Street	Humbolt Street
54" RCP Storm Drain	Buffalo River Rd.	Humbolt Street	Deschutes St. 4 DEFER TO UNIT 9
48" RCP Storm Drain	Buffalo River Rd.	Deschutes St.	Tract C 4 DEFER TO UNIT 7
48" RCP Storm Drain	Tract C	Buffalo River Rd.	Sawtooth Street
48" RCP Storm Drain	Sawtooth Street	Tract C	Grande Mesa Road
48" RCP Storm Drain	Grande Mesa Road	Sawtooth Street	Tract B
36" RCP Storm Drain	Tract B	Grande Mesa Road	Unit 4-5 Boundary
36" RCP Storm Drain	Sawtooth Street	Tract C	Deer Lodge Road
24" RCP Storm Drain	Deer Lodge Road	Sawtooth Street	Unit 3-4 Boundary
30" RCP Storm Drain	Grande Mesa Road	Sawtooth Street	Unit 3-4 Boundary

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 5			
PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Ozark Street Tony Sanchez Street Oceola Street	Oceola Street Ozark Street Ozark Street	Tony Sanchez Street Herman Roser Avenue Elizabeth Street
40' ~~20'~~ Residential paving, standard curb & gutter, 6' sidewalk (north and east side only), ~~4' Temp. Paving~~	Elizabeth Street	Tony Sanchez Street	~~Unit 5-6 Boundary~~ to Lot 167
10' Bicycle/Pedestrian	Tract A	Ocala Street	Ozark Street

Residential Street Lights per DPM
* sidewalks to be deferred

ITEM	LOCATION	FROM	TO
UTILITIES			
6" Waterlines and 8" Sanitary Sewer Lines	Oceola Street	Ozark Street	Elizabeth Street
10" Waterlines and 8" Sanitary Sewer Line	Elizabeth Street	Tony Sanchez Street	Unit 5-6 Boundary
STORM DRAIN			
36" RCP Storm Drain	Tract B	Unit 4-5 Boundary	Ozark Street
36" RCP Storm Drain	Ozark Street	Tract B	Tract A
36" RCP Storm Drain	Tract A	Ozark Street	Unit 1-5 Boundary
30" RCP Storm Drain	Tract G-2 Easement	Eubank Storm Drain	Elizabeth Rd.
4 ~~24"~~ 36" RCP Storm Drain	Elizabeth St.	~~Tract G-2~~ 4 LOT 107	Oceola Rd.

4 DEFER 36" RCP ON ELIZABETH ST. FROM LOT 107 TO TRACT G-2 TO UNIT 6

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 6			
PAVING			
28' Residential paving, standard curb and gutter, 4' sidewalk (both sides)	Humbolt Street	Colville Road	Unit 6-9 Boundary 4 10/91
	Kaibab Road	Colville Road	~~Talladega Street~~ LOT BOUNDARY
	Talladega Street	Kaibab Road	Unit 6-7 Boundary
	Colville Road	Elizabeth Street	Kaibab Road (East End)
	1 ~~Buffalo Road~~	~~Talladega~~	~~Unit 6-7 Boundary~~
20' Residential paving, standard curb & gutter, 6' sidewalk (north and east side only), 4' Temp. Paving	Elizabeth Street	~~Unit 5-6 Boundary~~ Lot 107	Unit 6-9 Boundary
5 ~~10' Bicycle/Pedestrian Trail~~	~~Tract C~~	~~Sawtooth Street~~	~~Talladega Street~~

Residential Street Lights per DPM
~~*Sidewalks~~ to be deferred

UTILITIES			
6" Waterlines and 8" Sanitary Sewerline	Humbolt Street	Colville Road	Unit 6-9 Boundary 5
	Kaibab Road	5 ~~Colville Road~~ UNIT 6-9 BOUNDARY	~~Talladega Street~~ UNIT 6-7 BOUNDARY
	5 ~~Talladega Street~~	Kaibab Road	~~Unit 6-7 Boundary~~
	Colville Road	Elizabeth Street	Kaibab Road
5 8" SANITARY SEWERLINE	KAIBAB ROAD	UNIT 6-9 BOUNDARY	BUFFALO RIVER ROAD
6 ~~8" Sanitary Sewerline~~ ~~and~~ 10" Waterline	Elizabeth Street	Unit 5-6 Boundary	Unit 6-9 Boundary
*8" Waterline	Kaibab Road	Colville Road	~~Talladega Street~~ UNIT 6-7 BOUNDARY 5
	5 ~~Talladega Street~~	~~Kaibab Road~~	~~Unit 6-7 Boundary~~
	Colville Road	Elizabeth Street	Humbolt Street/Kaibab Road

*Indicates 8" Waterline at these locations instead of 6" waterline

5 ~~6" Waterline~~	~~Buffalo River Road~~	~~Talladega Street~~	~~Unit 6-7 Boundary~~

STORM DRAIN
Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees

ITEM	LOCATION	FROM	TO
	Internal sidewalks deferred		
UNIT 7			
PAVING			
28' Residential paving, standard curb & gutter, 4' sidewalk (both sides)	Buffalo River Road Deschutes St. Lassen Court Talladega Street Coconino Road	Unit 6-7 Boundary Buffalo River Road Buffalo River Road Unit 6-7 Boundary ~~Unit 4-7 Boundary~~ UNIT 7-8 BOUNDARY	Talladega Street Unit 7-8 Boundary Cul-de-sac Coconino Road Pike Street
10' BIKE/PED TRAIL ~~25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side) (to be financially guaranteed and deferred until Unit 8)~~ (moved to Unit 4)	TRACT C ~~Southern Boulevard~~	SAWTOOTH STREET ~~Pike Street~~	TALLADEGA STREET ~~Lot Line between Lots 35-PT and 36-PT of Block 12~~
Residential Street Lights per DPM & sidewalks to be deferred			
UTILITIES			
6" Waterlines and 8" Sanitary Sewer Line	Buffalo River Road Deschutes St. Lassen Court ~~Talladega Street~~ Coconino Road	TALLADEGA STREET ~~Unit 6-7 Boundary~~ Buffalo River Road Buffalo River Road ~~Unit 6-7 Boundary~~ ~~Unit 4-7 Boundary~~ TALLADEGA STREET	Unit 7-9 Boundary SAS BUILT W/UNIT 3 Coconino Road Cul-de-sac ~~Coconino Road~~ ~~Pike Street~~ UNIT 7-8 BOUNDARY
*8" Waterline	Talladega Street Coconino Road	Unit 6-7 Boundary ~~Talladega Street~~ UNIT 4-7 BOUNDARY	Coconino Road ~~Pike Street~~ UNIT 7-8 BOUNDARY
*Indicates 8" Waterline at these locations instead of 6" waterline			
6" Waterline	Deschutes St.	Coconino Road	Unit 7-8 Boundary
8" Sanitary Sewer Line	~~Buffalo River Road~~ Humbolt Street COCONINO ROAD	~~Unit 7-9 Boundary~~ ~~Buffalo River Road~~ COCONINO ROAD UNIT 7-8 BOUNDARY	~~Humbolt Street~~ ~~Unit 6-9 Boundary~~ BUFFALO RIVER ROAD HUMBOLT STREET
STORM DRAIN	BUFFALO RIVER	UNIT 4-7 BOUNDARY	UNIT 7-9 BOUNDARY
66 ~~42"~~ RCP Storm Drain	~~Coconino~~ Rd.	~~Elizabeth St.(Eubank SD)~~	~~Humbolt Street~~
~~30" RCP Storm Drain~~	~~Coconino Rd.~~	~~Humbolt~~	~~100 ft. east~~
36 ~~30"~~ RCP Storm Drain	~~Humbolt St.~~ DESCHUTES ST.	Coconino Rd.	~~100 ft. north~~ BUFFALO RIVER RD.

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees

UNIT 8			
PAVING			
28' Residential paving, *mountable or standard curb & gutter, 4' sidewalk (both sides)	Coconino Road Humbolt Street Deer Lodge Place Deschutes Street	Unit 7-8 Boundary Unit 8-9 Boundary Humbolt Street Unit 7-8 Boundary	Elizabeth Street Deer Lodge Place Cul-de-sac Deer Lodge Place
20' Residential paving, standard curb & gutter, 6' sidewalk (north & east side only), 4' temp. paving	Elizabeth Street	Southern Boulevard	Unit 8-9 Boundary

ITEM	LOCATION	FROM	TO
25' Arterial Pavement, standard curb and gutter, asphalt curb, 6' sidewalk (south side)	Southern Boulevard	Lot line between Lots 35-P1 and 36-P1 of Block 12	Elizabeth Street

Residential Street Lights per DPM
#Sidewalks to be deferred

UTILITIES

6" Waterlines and 8" Sanitary Sewerline	Coconino Road	Unit 7-8 Boundary	Elizabeth Street
	Humbolt Street	Unit 8-9 Boundary	Deer Lodge Place
	Deer Lodge Place	Humbolt Street	Cul-de-sac
~~8" Sanitary Sewerline~~	~~Humbolt Street~~	~~Unit 8-9 Boundary~~	~~Buffalo River Road~~ 5
8" Waterline	Coconino Road	Unit 7-8 Boundary	Humbolt Street
~~10" Waterline~~	~~Elizabeth Street~~	~~Southern Blvd~~	~~Unit 8-9 Boundary~~ 9

STORM DRAIN

10 36~~30~~" RCP Storm Drain	Southern Boulevard	Elizabeth Street 10	56~~46~~ Feet East
~~24" RCP Storm Drain~~	~~Southern Boulevard~~	~~End of 30" RCP Storm Drain~~	~~20 Feet East~~
18" RCP Storm Drain	Southern Boulevard	End of ~~24"~~ 36" RCP Storm Drain @ MH	~~20 Feet East~~ 61 FEET SOUTH EAST 10

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

UNIT 9

PAVING

28' Residential paving, *mountable or standard curb & Gutter (both sides) 4' sidewalk	Humbolt Street	Unit 6-9 Boundary	Unit 8-9 Boundary
	Buffalo River Road	Humbolt Street	Unit 7-9 Boundary
	Winema Court	Buffalo River Road	Cul-de-sac
20' Residential paving, standard curb & gutter, 6' sidewalk (north and east side only), 4' Temp. Paving	Elizabeth Street	Unit 8-9 Boundary	Unit 6-9 Boundary

Residential Street Lights per ~~Bu~~ DPM
Sidewalks to be deferred

UTILITIES

6" Waterlines	Humbolt Street	Unit 6-9 Boundary	Unit 8-9 Boundary 4 SAS BUILT w/ UNIT
	Buffalo River Road	Humbolt Street	Unit 7-9 Boundary
	Winema Court	Buffalo River Road	Cul-de-sac
6 8" Sanitary Sewer Line	Winema Court	Buffalo River Road	Cul-de-sac
" "	ELIZABETH	LOT 17-18 (UNIT 9)	TRACT D (UNIT 3) existing sewer
10" Waterlines	Elizabeth Street	Unit 8-9 Boundary	Unit 6-9 Boundary

STORM DRAIN

Retaining Walls throughout the Subdivision.
Grading and Drainage Certification is required prior to release of Financial Guarantees.

ITEM	LOCATION	FROM	TO

NOTES:

(1) Waterlines include valves, fittings and services.
(2) Sanitary Sewerlines include manholes and services.
(3) Storm drains include manholes, inlets, connector pipes and outlet structures.
(4) Paving includes street lights and sidewalks.
4 (5) MOUNTABLE CURB TO BE USED IN ALL PHASES PER APPROVED DRC PLANS

Figure II, EXHIBIT "D"
to the Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
for ~~WILLOW WOOD NORTH SUBDIVISION~~
UNITS 1 THROUGH 9 MIRABELLA SUBDIVISION

D.R.B. Case No. 97-209
S-97-
D.R.C. Project No.

Approved on _____, by the Development Review Board

Planning Department — Date

Utility Development Division, City Engineer — Date

Transportation Development Division, Traffic Engineer — Date

Design and Development, CIP — Date

City Engineer/AMAFCA — Date

REVISIONS	DATE	DRC CHAIR	USER DEPT	AGENT/OWNER
5	8-5-99			
6	9-7-99			
7	11-24-99	See Signature Block Above		
8	2-14-00			
9	5.3-00			
10	5-16-00			