CITY OF
Albuquerque

P.O. Box 1293 Albuquerque, NM 87103

November 18, 1996

Martin J. Chávez, Mayor

Stephen Crawford, PE
Crawford Dev Service
3634 Highway 47
Peralta, NM 87042

RE: DRAINAGE REPORT FOR PICO LA CUEVA SUBDIVISION (C-20/D15)
RECEIVED NOVEMBER 12, 1996 FOR FINAL PLAT & WORK ORDER
ENGINEER'S STAMP DATED 11-07-96

Dear Mr. Crawford:

Based on the information included in the submittal referenced above, City Hydrology accepts the Drainage Report for Final Plat & Work Order:

Engineer's Certification of grading & drainage per DPM checklist must be accepted by City Hydrology before the Financial Guaranty will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 95-538
Kurt Browning, AMAFCA

DRAINAGE INFORMATION SHEET

(REV. 11/01/2001)

PROJECT TITLE: Pico La Cueva
ZONE ATLAS/DRG. FILE #: C 20
DRB #: *556781*
EPC #:
WORK ORDER #:

LEGAL DESCRIPTION: Lots 1, 2, 30, 31, and 32 Block 3 North Albuquerque Acres, T 11 N, R 4 E, Section 17
CITY ADDRESS: Barstow Street and Alameda Boulevard

ENGINEERING FIRM: TIERRA WEST, LLC
CONTACT: RONALD R. BOHANNAN
ADDRESS: 8509 JEFFERSON NE
PHONE: (505) 858-3100
CITY, STATE: ALBUQUERQUE, NM
ZIP CODE: 87113

OWNER:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

ARCHITECT:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

SURVEYOR:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

CONTRACTOR:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

CHECK TYPE OF SUBMITTAL:

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

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANACIAL GUARANTEE RELEASE
- ___ 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 (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- ___ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY) - SO # 19 Permit

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

DATE SUBMITTED: 1/18/02
BY: Ronald R. Bohannan

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

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

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

January 18, 2002

Fred Aguirre
City of Albuquerque
Public Works Department
P. O. Box 1293
Albuquerque, NM 87103
Attn: Kevin Curran

RE: Pico La Cueva Subdivision

Dear Kevin:

I have reviewed the Grading and Drainage Plan for the Pico La Cueva Subdivision, City Project #556781, and visited the site. The subdivision is in substantial compliance with the Grading Plan and Drainage Report.

The retaining wall shown on the plan is built up to Lot 5. Approximately 80 feet of retaining wall needs to be built in order for the subdivision to be in full compliance. This certification assumes the retaining wall along Barstow Street was inspected and accepted by a City inspector when it was constructed. The perimeter wall will be built by the individual lot owners.

Should you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, P.E.

Enclosure(s)

cc: Mel Ottley

JN: 21067
RRB/jdn

21067kevin011602

FINAL DRAINAGE PLAN

for the

PICO LA CUEVA

SUBDIVISION

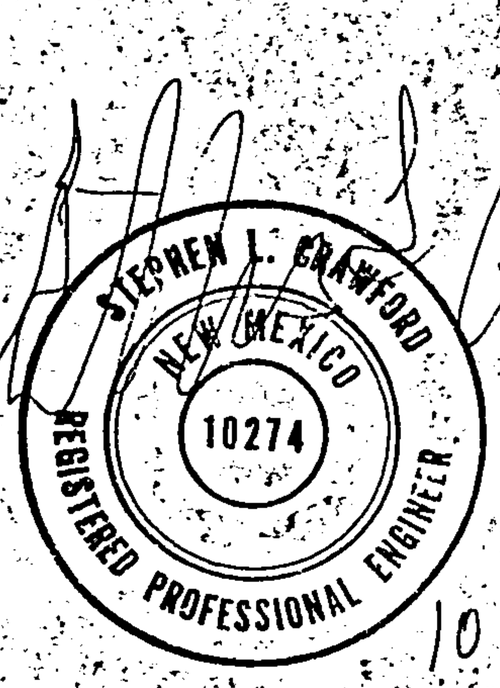
ALBUQUERQUE, NEW MEXICO

OCTOBER, 1996

Crawford
Development
Services
Founded 1989

Stephen L. Crawford, P.E.

3634 HIGHWAY 47, PERALTA, NM 87042 865-6442



10-17-96
11-07-96

October 21, 1996

TO: John P Curtin, P.E.
Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: DRAINAGE REPORT FOR PICO LA CUEVA SUBDIVISION (C-20/D15)

Dear Mr. Curtin;

This "Final Drainage Plan" is in response to your letter of October 14, 1996 concerning the Pico La Cueva Subdivision (APPENDIX A contains a copy of said letter for your convenience). This report is basically a reproduction of the last drainage plan for this subdivision dated October 1996 with several additions. The differences between the two reports center mainly around the verification of compliance with DPM design criteria for Barstow St and Alameda Blvd. The "PROPOSED CONDITIONS" and "SUMMARY/ CONCLUSIONS" sections of the report provide an explanation of the results of the calculations performed for the 10 year and 100 year storms. A printout of the AHYMO calculations for the two storms is provided in APPENDIX E. The storm inlet calculations for both storms and a "Summary Table for Street Hydraulics" is provided in APPENDIX G.

A copy of the final construction plans is being sent to AMAFCA for their approval of the discharge to the La Cueva Arroyo. I have been verbally assured by John Kelly that no problems should exist.

Your comment in the letter concerning the garden walls has also been addressed in the final construction plans as was discussed at the DRC meeting.

Please call me if there are any questions concerning this letter.

Sincerely,

John J Dipollino, Project Engineer

96006lt1.doc

Table of Contents

I. SITE LOCATION :

This site is a 4 acre ± parcel of old North Albuquerque Acres lots located on the east side of Barstow Street between Alameda Ave (formerly Richfield Ave) and Oakland Ave, see vicinity map on grading plan in map pocket at end of this report.

II. PROPOSED PROJECT :

The proposed project consists of subdividing the existing 4 acres into 13 lots for single family dwelling units. The project also proposes to construct a new local street, Pico La Cueva Ct, that will divide the property and intersect with Oakland Ave. In addition, the developer will construct the south half of Oakland Ave, a major local street, from Barstow to the easterly property corner of the site and the eastern half of Barstow Street, a collector road, from Alameda Ave to Oakland Ave.

III. OFF-SITE DRAINAGE :

Under existing conditions, runoff from properties to the east (see APPENDIX C) traverses the site and is captured in a bar ditch which parallels the existing section of Barstow Street and runs northward to the La Cueva Arroyo. Approximately half of the area which currently contributes to the offsite flows is developed. The flows from the upstream properties are concentrated at three distinct points which constitute the three offsite drainage basins (see APPENDIX C). The existing runoff from these basins, calculated using the AHYMO computer program is 1.58 cfs, 7.64 cfs, and 3.36 cfs respectively for Basins OS-1, OS-2, and OS-3. The runoff for Basin OS-3, which is, from a practical point of view, fully developed and has a retention pond to mitigate the increase in runoff, was calculated ignoring the capacity of the pond. Since both Alameda Blvd and Barstow St. are existing in some form, the runoff from these streets was calculated as fully developed. APPENDIX D contains a plan view of the Alameda Blvd and Barstow St intersection showing the flow directions. The runoff for Oakland Ave was calculated assuming type "C" soils, compacted by human traffic. A copy of the calculations and a summary of the hydrologic data is included in APPENDIX E.

IV. EXISTING CONDITIONS :

The existing site is a vacant lot with evidence of light vehicular and pedestrian traffic traversing it. The site slopes down hill from east to west at about a 3.4% grade and from south to north at about a 1% grade. The south to north grade is broken by several small rivulets flowing east to west. These rivulets prohibit all surface runoff from the site and from upstream properties from migrating northward across the site. All runoff is directed to the bar ditch along the eastern edge of Barstow Street and then northward to the La Cueva Arroyo. The current flows reaching the bar ditch include the onsite flows, the flows from basins OS-2 and OS-3, and Alameda Blvd. These flows calculated using the AHYMO computer program, total 30.71 cfs.
A copy of the calculations is included in APPENDIX E.

V. LA CUEVA ARROYO:

The La Cueva Arroyo is the major conveyor of storm water runoff from the area east of the site. The arroyo runs in a north-westerly direction to the east of the site and then turns to the west after crossing Oakland Ave. The drainage report for the Swingle properties, the developed lots to the east of the site, includes a meander study for the La Cueva Arroyo. The report, prepared by Tierra West Engineering in October of 1994, indicates that the erosion set-back from the bankline is 230.6'. This distance was calculated using flow information acquired from Resource Technologies and the "Sediment and Erosion Design Guide" as approved by AMAFCA. A copy of the FEMA map of the area showing the La Cueva Arroyo, with the approximate erosion set-back limits in relation to the site sketched on it, is found in APPENDIX F. This shows that the arroyo meander does not impact the proposed subdivision.

VI. PROPOSED CONDITIONS:

To analyze the proposed conditions, the site will be divided into Basins B-1 and B-2 (see APPENDIX C). All the lots in the subdivision will drain to Pico La Cueva Ct. The runoff from offsite Basins OS-2 and OS-3 will be directed by a flood wall protecting the easterly limits of the site to a 10' wide concrete channel that flows into the cul-de-sac at the end of Pico La Cueva Ct. The developer has elected to construct a garden wall around the perimeter of the subdivision. The portion of the wall at the east end of the channel and a section on the north side of the channel at the western end will contain orifices to allow the offsite flows to enter the channel. The calculations for the orifices are in APPENDIX G. The runoff will then be directed northward along Pico La Cueva Ct to Oakland Ave where it will combine with the flows from offsite basin OS-1. The combined runoff will then continue to the west to Barstow Street where a portion will be collected in storm sewer inlets and carried via a 24" diameter pipe to the La Cueva Arroyo. The aforementioned inlets will also serve to mitigate the surface flow from Alameda Blvd and Barstow St at the Oakland Ave intersection.

The inlets and pipe for the storm drain system were designed to capture and redirect the increase in runoff from the development of the Pico La Cueva Subdivision, the potential and existing development in OS-1, OS-2 and OS-3, and the increase in runoff from the construction of the streets adjacent to the subdivision. The total runoff generated by Alameda Blvd and Barstow St, which will enter the storm system from the south, is 10.89 cfs., for the 100 year storm and 7.29 cfs for the 10 year storm The total runoff from all other sources from the 100 year storm is 31.92 cfs, of which 27.88 cfs is historic flow, and will come from the east on Oakland Ave. During the 10 year storm, this flow is reduced to 19.38 cfs. Of the 100 year storm flow on Oakland Ave, 23 cfs will reach the storm inlets and the remainder will exceed the crown and flow to the north. In the 100 year storm, the three inlets will capture a total of 22.6 cfs. This capture is reduced to 19.3 cfs in the 10 year storm. This will effectively reduce the surface flow on Barstow St north of Oakland Ave to 20.21 cfs in the 100 year storm, which is substantially lower than the historic surface flow. Flows on Barstow St. north of Oakland Ave during the 10 year storm only reach 7.37 cfs. The AHYMO calculations for both the 100 year storm and the 10 year storm are included in APPENDIX E, and APPENDIX G has the inlet calculations for both storms.

VI. PROPOSED CONDITIONS:

To analyze the proposed conditions, the site will be divided into Basins B-1 and B-2 (see APPENDIX C). All the lots in the subdivision will drain to Pico La Cueva Ct. The runoff from offsite Basins OS-2 and OS-3 will be directed by a flood wall protecting the easterly limits of the site to a 10' wide concrete channel that flows into the cul-de-sac at the end of Pico La Cueva Ct. The developer has elected to construct a garden wall around the perimeter of the subdivision. The portion of the wall at the east end of the channel and a section on the north side of the channel at the western end will contain orifices to allow the offsite flows to enter the channel. The calculations for the orifices are in APPENDIX G. The runoff will then be directed northward along Pico La Cueva Ct to Oakland Ave where it will combine with the flows from offsite basin OS-1. The combined runoff will then continue to the west to Barstow Street where a portion will be collected in storm sewer inlets and carried via a 24" diameter pipe to the La Cueva Arroyo. The aforementioned inlets will also serve to mitigate the surface flow from Alameda Blvd and Barstow St at the Oakland Ave intersection.

The inlets and pipe for the storm drain system were designed to capture and redirect the increase in runoff from the development of the Pico La Cueva Subdivision, the potential and existing development in OS-1, OS-2 and OS-3, and the increase in runoff from the construction of the streets adjacent to the subdivision. The total runoff generated by Alameda Blvd and Barstow St, which will enter the storm system from the south, is 10.89 cfs., for the 100 year storm and 7.29 cfs for the 10 year storm The total runoff from all other sources from the 100 year storm is 31.92 cfs, of which 27.88 cfs is historic flow, and will come from the east on Oakland Ave. During the 10 year storm, this flow is reduced to 19.38 cfs. Of the 100 year storm flow on Oakland Ave, 23 cfs will reach the storm inlets and the remainder will exceed the crown and flow to the north. In the 100 year storm, the three inlets will capture a total of 22.6 cfs. This capture is reduced to 15.5 cfs in the 10 year storm. This will effectively reduce the surface flow on Barstow St north of Oakland Ave to 20.21 cfs in the 100 year storm, which is substantially lower than the historic surface flow. Flows on Barstow St. north of Oakland Ave during the 10 year storm only reach 11.17 cfs. The AHYMO calculations for both the 100 year storm and the 10 year storm are included in APPENDIX E, and APPENDIX G has the inlet calculations for both storms.

Calculations for depth of flow in the concrete channel were performed using Manning's formula and the calculations are included in APPENDIX G. Also included in APPENDIX G is a "Summary Table for Street Hydraulics". The calculations for Pico La Cueva Court indicate the use of mountable curb and gutter to be acceptable in the bulb of the cul-de-sac and the bulb of the eyebrow. The remainder of Pico La Cueva Ct. will, however, require standard curb and gutter.

VII. SUMMARY / CONCLUSION :

The development of this site will not have any significant effect on any of the areas surrounding it. The new street has significant capacity to channel the existing and developed runoff from the site itself, as well as the adjacent upstream sites, through the subdivision and back to its historical point of discharge. Further development in the area east of the proposed project will have the ability to force the drainage from those sites directly onto Oakland Ave. This would serve to reduce the amount of runoff through this site from the quantities used in our calculations.

The classification of Barstow St as a collector street and Alameda Blvd as an arterial street require that these two streets meet more stringent hydraulic design criteria than for local streets, particularly in the 10 year design event. Section 22.3 of the DPM states that, in the 10 year event, the depth of flow in an arterial or collector street can not exceed 0.5' and that the product of the depth times the flow velocity in the street can not exceed 6.5. Barstow Street is approximately 0.42 feet deep and Alameda Blvd is only 0.32 feet deep in the 10 year storm. The highest product of the depth times the velocity on either street is only 1.17 in that storm. The final criteria for collector and arterial streets in the 10 year event is that at least one lane in each traffic direction be free from standing or flowing water. Alameda Blvd, assuming a 24' half street at 2.0% cross slope would have approximately 12' of the 24' in flowing water while Barstow Street at 30' wide would have approximately 17' in flowing water. The DPM also requires that no street exceed 0.87' in depth during the 100 year storm. The maximum depth of flow in Alameda Blvd is 0.35' and in Barstow St it is 0.53' during the 100 year storm. These figures indicate that both Alameda Blvd and Barstow St meet the minimum requirements for the 10 year and 100 year design events for arterial streets.

VII. SUMMARY / CONCLUSION :

The development of this site will not have any significant effect on any of the areas surrounding it. The new street has significant capacity to channel the existing and developed runoff from the site itself, as well as the adjacent upstream sites, through the subdivision and back to its historical point of discharge. Further development in the area east of the proposed project will have the ability to force the drainage from those sites directly onto Oakland Ave. This would serve to reduce the amount of runoff through this site from the quantities used in our calculations.

The classification of Barstow St as a collector street and Alameda Blvd as an arterial street require that these two streets meet more stringent hydraulic design criteria than for local streets, particularly in the 10 year design event. Section 22.3 of the DPM states that, in the 10 year event, the depth of flow in an arterial or collector street can not exceed 0.5' and that the product of the depth times the flow velocity in the street can not exceed 6.5. Barstow Street is approximately 0.36 feet deep and Alameda Blvd is only 0.23 feet deep in the 100 year storm. The highest product of the depth times the velocity on either street is only 1.24 in that storm. The final criteria for collector and arterial streets in the 10 year event is that at least one lane in each traffic direction be free from standing or flowing water. Alameda Blvd, assuming a 24' half street at 2.0% cross slope would have approximately 7' of the 24' in flowing water while Barstow Street at 30' wide would have approximately 14' in flowing water. The DPM also requires that no street exceed 0.87' in depth during the 100 year storm. The maximum depth of flow in Alameda Blvd is 0.27' and in Barstow St it is 0.45' during the 100 year storm. These figures indicate that both Alameda Blvd and Barstow St meet the minimum requirements for the 10 year and 100 year design events for arterial streets.

10?

CITY OF
Albuquerque

P.O. Box 1293 Albuquerque, NM 87103

October 14, 1996

Martin J. Chávez, Mayor

Stephen Crawford, PE
Crawford Dev Service
3634 Highway 47
Peralta, NM 87042

RE: DRAINAGE REPORT FOR PICO LA CUEVA SUBDIVISION (C-20/D15)
RECEIVED SEPTEMBER 25, 1996 FOR FINAL PLAT
ENGINEER'S STAMP DATED 9-23-96

Dear Mr. Crawford:

Based on the information included in the submittal referenced above, City Hydrology has the following comments that must be addressed before Final Plat & Work Order:

Verify that Barstow & Alameda meet the 10 year & 100 year arterial criteria. A summary table would help expedite the review and increase the understanding of the street hydraulics. Any discharge to the La Cueva Arroyo must be approved by AMAFCA.

The "Typical side yard section @ *required* garden walls" is not an good representation of the interim & final conditions. If garden walls are not constructed between all lots, then a section without garden walls is required. All *required* walls must be certified.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer, Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 95-538
Kurt Browning, AMAFCA

Good for You, Albuquerque!

D.R.B. Case No. 95-538
D.R.C. Project No. _____
Date Submitted September 24, 1996
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"

to Subdivision Improvements Agreement

DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LISTING
for PICO LA CUEVA SUBDIVISION

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 Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsiblity are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

PUBLIC INFRASTRUCTURE TO BE CONSTRUCTED

SIZE	TYPE IMPROVEMENT	LOCATION	FROM	TO
PAVING				
30'F-F	Collector Paving, Stnd C&G and 6' Sidewalk (east side), includes bike lane	Barstow St.	Oakland Ave.	Alameda Blvd
20' F-F	Residential Paving, Stnd C&G and 4' Sidewalk (south side)	Oakland Ave.	Barstow St.	NE corner of Lot 13
4' F-F	Temporary Paving	Oakland Ave.	Barstow St.	NE corner of Lot 13
26' F-F	Residential Paving, Stnd C&G (with Mountable C&G at Knuckle and Cul-de-Sac)	Pico La Cueva Pl.	Oakland Ave.	Terminus
DRAINAGE				
Per Design	Concrete Drainage Channel	N. Side of Lot 10	Pico La Cueva Pl.	165 Feet East
Per Design	Storm Drain and Appurtenances	Barstow St.	Oakland Ave.	La Cueva Arroyo
WATER				
6"	Waterline with Appurtenances	Pico La Cueva Pl.	Oakland Ave.	Terminus
8"	Waterline with Appurtenances	Oakland Ave.	Barstow St.	NE corner of Lot 13
8"	Waterline with Appurtenances	Alameda Blvd	Barstow St	East Property Line
14"	Waterline with Appurtenances	Barstow St.	Signal Ave	Oakland Ave

SANITARY SEWER

8"	Sanitary Sewer	Pico La Cueva Pl.	Oakland Ave.	Terminus
8"	Sanitary Sewer	Oakland Ave.	Henriette Wyeth Dr.	NE corner of Lot 13
8"	Sanitary Sewer	Alameda Blvd	Barstow St.	East Property Line

MISCELLANEOUS (NOT REQUIRED TO BE BONDED)

Per Design	Rough grading of Project
Per Design	Residential street lights per DPM
Per Design	Erosion control measures
Per Design	Retaining walls (private infrastructure)

PUBLIC INFRASTRUCTURE TO BE DEFERRED (SIDEWALK DEFERRAL AGREEMENT)

SIZE	TYPE IMPROVEMENT	LOCATION	FROM	TO
PAVING				
4'	Residential Sidewalk	Pico La Cueva Pl.	Oakland Ave.	Terminus

PUBLIC INFRASTRUCTURE TO BE FINANCIALLY GUARANTEED (PROCEDURE "C" - MODIFIED)

SIZE	TYPE IMPROVEMENT	LOCATION	FROM	TO
PAVING				
24' F-F	Arterial Paving, Stnd C&G and 6' Sidewalk (north side)	Alameda Blvd.	Barstow St.	SE Corner of Lot 9

NOTES

Engineer's Certification of Grading, private retaining walls and private drainage improvements is required prior to release of financial guarantees.

Prepared By: Stephen Crawford
Print Name: Stephen L. Crawford
Firm: CRAWFORD DEVELOPMENT SERVICES

* *

Development Review Board Member Approvals:

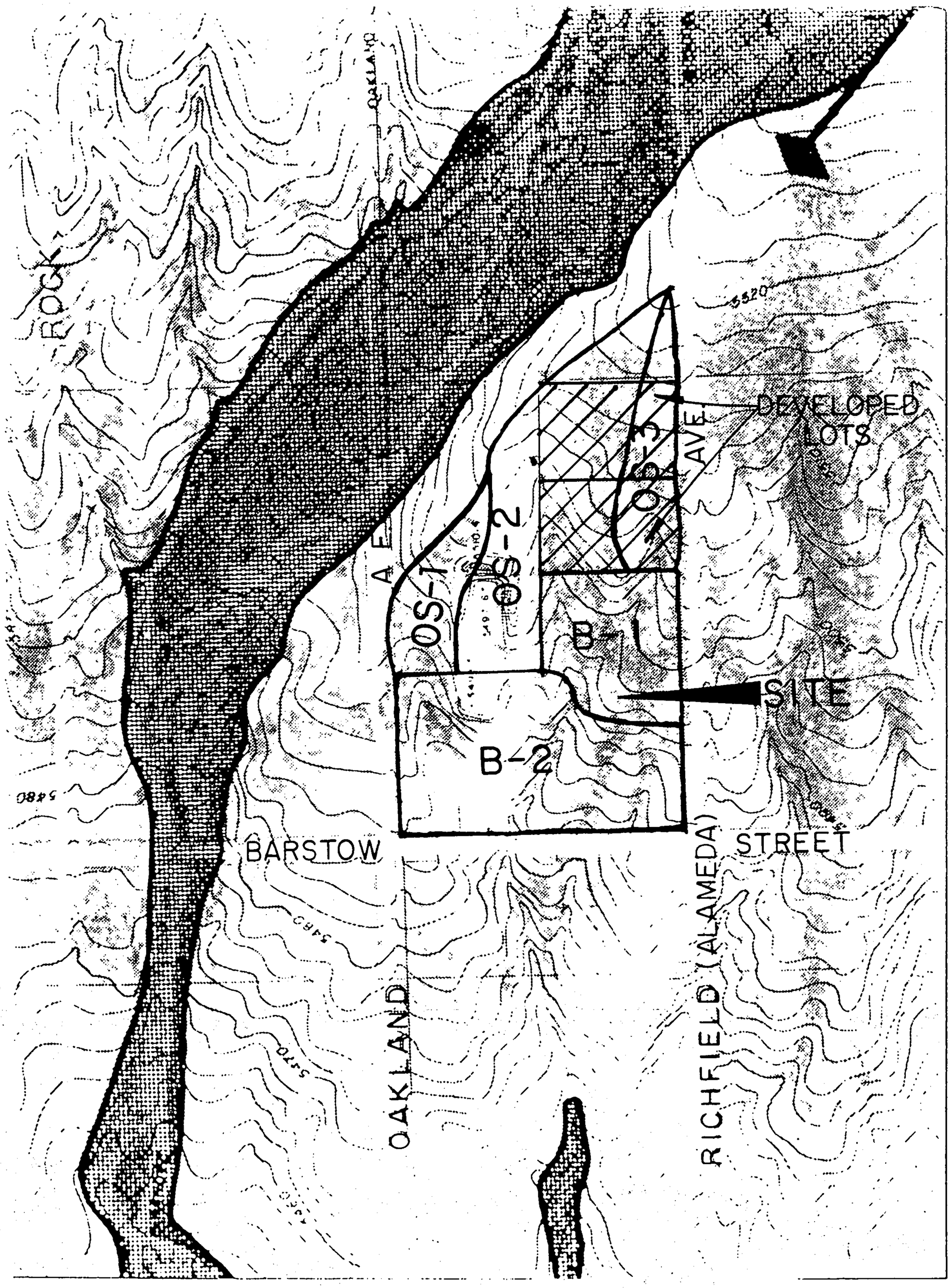
Transportation Development: [signature] Date: 9-29-96

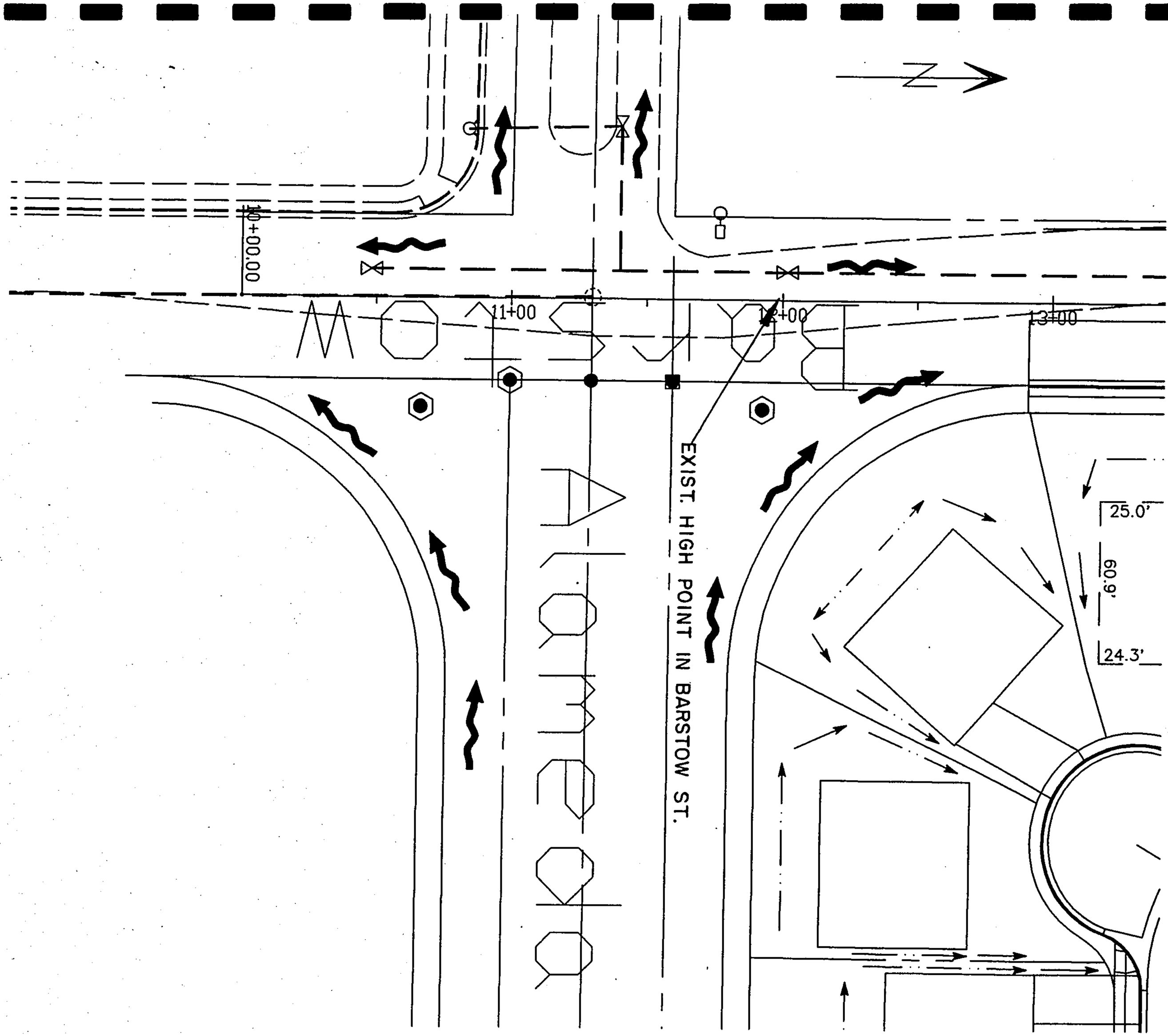
Utility Development: Robert W. Kane Date: 9-24-96

~~Parks & General Services:~~ Design & Development, CIP Ed Stong Date: 9-24-96

City Engineer: [signature] Date: 9-27-96

DRB Chair~~man~~: [signature] Date: 9-24-96


ROCK
OAKLAND
5520
DEVELOPED
LOTS
AVE
OS-1
OS-2
B-3
B-1
SITE
B-2
BARSTOW
STREET
OAKLAND
RICHFIELD (ALAMEDA)


10+00.00
11+00
12+00
13+00
EXIST. HIGH POINT IN BARSTOW ST.
25.0'
60.9'
24.3'

'SUMMARY OF HYDROLOGIC DATA FOR BASINS

BASIN	AREA (SM)	FLOWS IN CFS EXISTING	DEVELOPED
OS-1	0.0007	1.58	1.82
OS-2	0.0034	7.64	8.78
OS-3	0.0014	3.36	3.36
B-1	0.0016	3.60	4.19
B-2	0.0048	10.79	12.53
OAKLAND AVE ROW	0.0004	0.91	1.24
ALAMEDA BLVD ROW	0.0018	5.32	5.32
BARSTOW STREET ROW	0.0014	4.42	4.42

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =09/23/1996

INPUT FILE = 96006ex.dat USER NO.= DAGGETTK.S94

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	PICO LA CUEVA									
*S	EXISTING CONDITIONS, 100 YR, 6 HOUR STORM									
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.600
*S	**********									
*S	OFFSITE BASINS									
COMPUTE NM HYD	OS-1	-	1	.00070	1.58	.048	1.29002	1.500	3.531	PER IMP= .00
*S	**********									
COMPUTE NM HYD	OS-2	-	2	.00340	7.64	.234	1.29002	1.500	3.513	PER IMP= .00
*S	**********									
COMPUTE NM HYD	OS-3	-	3	.00140	3.36	.108	1.44235	1.500	3.754	PER IMP= 14.30
*S	**********									
*S	TOTAL FLOW AT CHANNEL ENTRANCE									
ADD HYD	100.00	2& 3	10	.00480	11.01	.342	1.33437	1.500	3.583	
*S	**********									
COMPUTE NM HYD	B1-EX	-	5	.00160	3.60	.110	1.29002	1.500	3.518	PER IMP= .00
*S	**********									
COMPUTE NM HYD	B2-EX	-	6	.00480	10.79	.330	1.29002	1.500	3.512	PER IMP= .00
*S	**********									
*S	TOTAL UNDEVELOPED ONSITE									
ADD HYD	200.00	5& 6	20	.00640	14.39	.440	1.28997	1.500	3.514	
*S	**********									
*S	TOTAL EXISTING AT END OF PICO									
ADD HYD	END 10&20		30	.01120	25.40	.782	1.30900	1.500	3.544	
*S	EXISTING OAKLAND AVE									
COMPUTE NM HYD	OAK-EX	-	7	.00040	.91	.028	1.29002	1.500	3.547	PER IMP= .00
*S	**********									
*S	TOTAL EXISTING OAKLAND AND OS-1									
ADD HYD	OAK+OS-1	7& 1	40	.00110	2.49	.076	1.28976	1.500	3.537	
*S	**********									
*S	TOTAL EXISTING AT END OF OAKLAND									
ADD HYD	SUBTOTAL 40&30		50	.01230	27.89	.858	1.30728	1.500	3.543	
*s	**********									
*S	EXISTING FLOWS ON BARSTOW									
COMPUTE NM HYD	BARSTOW	-	8	.00140	4.42	.168	2.24875	1.500	4.936	PER IMP= 90.00
*s	**********									
*S	EXISTING FLOWS ON ALAMEDA									
COMPUTE NM HYD	ALAMEDA	-	9	.00180	5.32	.195	2.03570	1.500	4.618	PER IMP= 70.00
*S	**********									
*S	TOTAL EXISITING ALAMEDA AND BARSTOW									
ADD HYD	ALA+BAR	8& 9	60	.00320	9.74	.363	2.12875	1.500	4.757	
*S	**********									
*S	TOTAL EXISTING AT BARSTOW AND OAKLAND									
ADD HYD	TOTAL	50&60	70	.01550	37.63	1.221	1.47688	1.500	3.794	
FINISH										

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 09/23/1996
         START TIME (HR:MIN:SEC) = 10:48:20     USER NO.= DAGGETTK.S94
         INPUT FILE = 96006ex.dat

*S                    PICO LA CUEVA
*S                    EXISTING CONDITIONS, 100 YR, 6 HOUR STORM

START                 TIME=0.0 HR
RAINFALL              TYPE=1 RAIN QUARTER=0.0
                      RAIN ONE=2.14 IN RAIN SIX=2.60 IN
                      RAIN DAY=3.10 IN DT=0.03333HRS

               COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                  .0000   .0027   .0055   .0084   .0113   .0143   .0173
                  .0204   .0236   .0269   .0302   .0337   .0372   .0408
                  .0445   .0484   .0523   .0564   .0606   .0649   .0694
                  .0741   .0789   .0839   .0892   .0946   .1003   .1063
                  .1126   .1192   .1262   .1322   .1385   .1452   .1597
                  .1922   .2422   .3139   .4119   .5407   .7049   .9093
                 1.1588  1.3904  1.4871  1.5687  1.6414  1.7074  1.7683
                 1.8247  1.8775  1.9270  1.9735  2.0174  2.0589  2.0982
                 2.1354  2.1707  2.2041  2.2359  2.2661  2.2737  2.2807
                 2.2875  2.2939  2.3001  2.3060  2.3117  2.3172  2.3226
                 2.3277  2.3328  2.3376  2.3423  2.3470  2.3514  2.3558
                 2.3601  2.3643  2.3683  2.3723  2.3762  2.3801  2.3838
                 2.3875  2.3911  2.3947  2.3982  2.4016  2.4050  2.4083
                 2.4115  2.4147  2.4179  2.4210  2.4241  2.4271  2.4301
                 2.4330  2.4359  2.4388  2.4416  2.4444  2.4472  2.4499
                 2.4526  2.4553  2.4579  2.4605  2.4631  2.4656  2.4681
                 2.4706  2.4731  2.4755  2.4779  2.4803  2.4827  2.4850
                 2.4873  2.4896  2.4919  2.4942  2.4964  2.4986  2.5008
                 2.5030  2.5052  2.5073  2.5094  2.5115  2.5136  2.5157
                 2.5177  2.5198  2.5218  2.5238  2.5258  2.5277  2.5297
                 2.5317  2.5336  2.5355  2.5374  2.5393  2.5412  2.5430
                 2.5449  2.5467  2.5486  2.5504  2.5522  2.5540  2.5557
                 2.5575  2.5593  2.5610  2.5627  2.5645  2.5662  2.5679
                 2.5696  2.5713  2.5729  2.5746  2.5762  2.5779  2.5795
                 2.5811  2.5828  2.5844  2.5860  2.5876  2.5891  2.5907
                 2.5923  2.5938  2.5954  2.5969  2.5984  2.6000

*S             ****************************************************************
*S                    OFFSITE BASINS
*
COMPUTE NM HYD        ID=1 HYD NO=OS-1 DA=0.0007  SQ MI
                      PER A=0.00 PER B=0.0 PER C=100.0 PER D=0.0
                      TP=-0.13 HR MASS RAIN=-1

    K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047     SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =    2.0428     CFS    UNIT VOLUME =     .9941       B =   379.38      P60 = 2.1400
    AREA =       .000700 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD             ID=1 CODE=1

                                   HYDROGRAPH FROM AREA OS-1
```

```
    RUNOFF VOLUME =      1.29002 INCHES      =          .0482 ACRE-FEET
    PEAK DISCHARGE RATE =        1.58 CFS  AT    1.500 HOURS    BASIN AREA =    .0007 SQ. MI.



*
*S              ****************************************************************
COMPUTE NM HYD         ID=2  HYD NO=OS-2 DA=0.0034 SQ MI
                       PER A=0.00 PER B=0 PER C=100 PER D=0
                       TP=-0.13 HR MASS RAIN=-1

    K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =    9.9222     CFS    UNIT VOLUME =     .9991        B =    379.38       P60 = 2.1400
    AREA =       .003400 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD              ID=2  CODE=1

                                    HYDROGRAPH FROM AREA OS-2


    RUNOFF VOLUME =      1.29002 INCHES      =          .2339 ACRE-FEET
    PEAK DISCHARGE RATE =        7.64 CFS  AT    1.500 HOURS    BASIN AREA =    .0034 SQ. MI.



*
*S              ****************************************************************
COMPUTE NM HYD         ID=3 HYD NO=OS-3 DA=0.0014 SQ MI
                       PER A=0.00 PER B=0 PER C=85.70 PER D=14.30
                       TP=-0.13 HR MASS RAIN=-1

    K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    .81046     CFS    UNIT VOLUME =     .9860        B =    526.28       P60 = 2.1400
    AREA =       .000200 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =    3.5014     CFS    UNIT VOLUME =     .9967        B =    379.38       P60 = 2.1400
    AREA =       .001200 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD              ID=3 CODE=1

                                    HYDROGRAPH FROM AREA OS-3


    RUNOFF VOLUME =      1.44235 INCHES      =          .1077 ACRE-FEET
    PEAK DISCHARGE RATE =        3.36 CFS  AT    1.500 HOURS    BASIN AREA =    .0014 SQ. MI.



*S              ****************************************************************
*S                     TOTAL FLOW AT CHANNEL ENTRANCE
*
ADD HYD                ID=10 HYD NO=100.00 ID I=2 ID II=3
PRINT HYD              ID=10 CODE=1

                                  PARTIAL HYDROGRAPH   100.00
```

```
    RUNOFF VOLUME =      1.33437 INCHES      =          .3416 ACRE-FEET
    PEAK DISCHARGE RATE =       11.01 CFS  AT    1.500 HOURS   BASIN AREA =    .0048 SQ. MI.


*
*S            ****************************************************************
COMPUTE NM HYD        ID=5. HYD NO=B1-EX DA=0.00160 SQ MI
                      PER A=0.00 PER B=0 PER C=100 PER D=0
                      TP=-0.13 HR MASS RAIN=-1

    K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =    4.6693     CFS    UNIT VOLUME =     .9977        B =    379.38       P60 = 2.1400
    AREA =       .001600 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD             ID=5 CODE=1
```

HYDROGRAPH FROM AREA B1-EX

```
    RUNOFF VOLUME =      1.29002 INCHES      =          .1101 ACRE-FEET
    PEAK DISCHARGE RATE =        3.60 CFS  AT    1.500 HOURS   BASIN AREA =    .0016 SQ. MI.


*
*S            ****************************************************************
COMPUTE NM HYD        ID=6 HYD NO=B2-EX DA=0.00480 SQ MI
                      PER A=0.00 PER B=0 PER C=100  PER D=0
                      TP=-0.13 HR MASS RAIN=-1

    K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =   14.008     CFS    UNIT VOLUME =     .9995        B =    379.38       P60 = 2.1400
    AREA =       .004800 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD             ID=6 CODE=1
```

HYDROGRAPH FROM AREA B2-EX

```
    RUNOFF VOLUME =      1.29002 INCHES      =          .3302 ACRE-FEET
    PEAK DISCHARGE RATE =       10.79 CFS  AT    1.500 HOURS   BASIN AREA =    .0048 SQ. MI.


*S            ****************************************************************
*S                    TOTAL UNDEVELOPED ONSITE
*
ADD HYD               ID=20 HYD NO=200 ID I=5 ID II=6
PRINT HYD             ID=20 CODE=1

                                PARTIAL HYDROGRAPH   200.00


    RUNOFF VOLUME =      1.28997 INCHES      =          .4403 ACRE-FEET
    PEAK DISCHARGE RATE =       14.39 CFS  AT    1.500 HOURS   BASIN AREA =    .0064 SQ. MI.
```

```
*S          ************************************************************
*S                    TOTAL EXISTING AT END OF PICO
*
ADD HYD               ID=30 HYD NO=END OF PICO ID I=10 ID II=20
PRINT HYD             ID=30 CODE=1
```

HYDROGRAPH FROM AREA END

RUNOFF VOLUME = 1.30900 INCHES = .7819 ACRE-FEET
PEAK DISCHARGE RATE = 25.40 CFS AT 1.500 HOURS BASIN AREA = .0112 SQ. MI.

```
          ************************************************************
*S                  EXISTING OAKLAND AVE
*
COMPUTE NM HYD        ID=7 HYD NO=OAK-EX DA=0.00040 SQ MI
                      PER A=0.00 PER B=0 PER C=100 PER D=0
                      TP=-0.13 HR MASS RAIN=-1
```

K = .106216HR TP = .130000HR K/TP RATIO = .817047 SHAPE CONSTANT, N = 4.373949
UNIT PEAK = 1.1673 CFS UNIT VOLUME = .9896 B = 379.38 P60 = 2.1400
AREA = .000400 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

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

HYDROGRAPH FROM AREA OAK-EX

RUNOFF VOLUME = 1.29002 INCHES = .0275 ACRE-FEET
PEAK DISCHARGE RATE = .91 CFS AT 1.500 HOURS BASIN AREA = .0004 SQ. MI.

```
*
*S          ************************************************************
*S                    TOTAL EXISTING OAKLAND AND OS-1
*
ADD HYD               ID=40 HYD NO=OAK+OS-1 ID I=7 ID II=1
PRINT HYD             ID=40 CODE=1
```

HYDROGRAPH FROM AREA OAK+OS-1

RUNOFF VOLUME = 1.28976 INCHES = .0757 ACRE-FEET
PEAK DISCHARGE RATE = 2.49 CFS AT 1.500 HOURS BASIN AREA = .0011 SQ. MI.

```
*S          ************************************************************
*S                    TOTAL EXISTING AT END OF OAKLAND
*
ADD HYD               ID=50 HYD NO=SUBTOTAL ID I=40 ID II=30
```

```
PRINT HYD             ID=50 CODE=1
```

HYDROGRAPH FROM AREA SUBTOTAL

RUNOFF VOLUME = 1.30728 INCHES = .8576 ACRE-FEET
PEAK DISCHARGE RATE = 27.89 CFS AT 1.500 HOURS BASIN AREA = .0123 SQ. MI.

```
*S          **********************************************************************
*
*S          EXISTING FLOWS ON BARSTOW
*
COMPUTE NM HYD        ID=8 HYD NO=BARSTOW DA=0.0014 SQ MI
                      PER A=0.00 PER B=0 PER C=10  PER D=90
                      TP=-0.13 HR MASS RAIN=-1
```

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.1008 CFS UNIT VOLUME = .9979 B = 526.28 P60 = 2.1400
AREA = .001260 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .106216HR TP = .130000HR K/TP RATIO = .817047 SHAPE CONSTANT, N = 4.373949
UNIT PEAK = .40856 CFS UNIT VOLUME = .9697 B = 379.38 P60 = 2.1400
AREA = .000140 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD             ID=8 CODE=1
```

HYDROGRAPH FROM AREA BARSTOW

RUNOFF VOLUME = 2.24875 INCHES = .1679 ACRE-FEET
PEAK DISCHARGE RATE = 4.42 CFS AT 1.500 HOURS BASIN AREA = .0014 SQ. MI.

```
*S          **********************************************************************
*
*S          EXISTING FLOWS ON ALAMEDA
*
COMPUTE NM HYD        ID=9 HYD NO=ALAMEDA DA=0.0018 SQ MI
                      PER A=0.00 PER B=0 PER C=30 PER D=70
                      TP=-0.13 HR MASS RAIN=-1
```

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.1008 CFS UNIT VOLUME = .9979 B = 526.28 P60 = 2.1400
AREA = .001260 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .106216HR TP = .130000HR K/TP RATIO = .817047 SHAPE CONSTANT, N = 4.373949
UNIT PEAK = 1.5759 CFS UNIT VOLUME = .9926 B = 379.38 P60 = 2.1400
AREA = .000540 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD              ID=9 CODE=1
```

HYDROGRAPH FROM AREA ALAMEDA

RUNOFF VOLUME = 2.03570 INCHES = .1954 ACRE-FEET
PEAK DISCHARGE RATE = 5.32 CFS AT 1.500 HOURS BASIN AREA = .0018 SQ. MI.

```
*S          ************************************************************
*S                  TOTAL EXISITING ALAMEDA AND BARSTOW
*
ADD HYD                ID=60 HYD NO=ALA+BAR ID I=8 ID II=9
PRINT HYD              ID=60 CODE=1
```

HYDROGRAPH FROM AREA ALA+BAR

RUNOFF VOLUME = 2.12875 INCHES = .3633 ACRE-FEET
PEAK DISCHARGE RATE = 9.74 CFS AT 1.500 HOURS BASIN AREA = .0032 SQ. MI.

```
*S          ************************************************************
*S                  TOTAL EXISTING AT BARSTOW AND OAKLAND
*
ADD HYD                ID=70 HYD NO=TOTAL ID I=50 ID II=60
PRINT HYD              ID=70 CODE=1
```

HYDROGRAPH FROM AREA TOTAL

RUNOFF VOLUME = 1.47688 INCHES = 1.2209 ACRE-FEET
PEAK DISCHARGE RATE = 37.63 CFS AT 1.500 HOURS BASIN AREA = .0155 SQ. MI.

```
FINISH
```

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 10:48:20

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =09/23/1996

INPUT FILE = 96006dv.dat USER NO.= DAGGETTK.S94

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	PICO LA CUEVA									
*S	DEVELOPED CONDITIONS, 100 YR, 6 HOUR STORM									
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.600
*S	**********									
*S	OFFSITE BASINS									
COMPUTE NM HYD	OS-1	-	1	.00070	1.82	.061	1.64156	1.500	4.068	PER IMP= 33.00
*S	**********									
COMPUTE NM HYD	OS-2	-	2	.00340	8.78	.298	1.64156	1.500	4.033	PER IMP= 33.00
*S	**********									
COMPUTE NM HYD	OS-3	-	3	.00140	3.36	.108	1.44235	1.500	3.754	PER IMP= 14.30
*S	**********									
*S	TOTAL FLOW THROUGH SITE FROM OS-2 AND OS-3									
ADD HYD	OS-2+OS-3	2& 3	10	.00480	12.14	.405	1.58336	1.500	3.952	
*S	**********									
*S	ON-SITE BASINS									
COMPUTE NM HYD	B1-DEV	-	5	.00160	4.19	.143	1.67351	1.500	4.089	PER IMP= 36.00
*S	**********									
*S	TOTAL DEVELOPED ON 8% STREET									
ADD HYD	200.00	5&10	20	.00640	16.33	.548	1.60585	1.500	3.986	
*S	**********									
COMPUTE NM HYD	B2-DEV	-	6	.00480	12.53	.428	1.67351	1.500	4.077	PER IMP= 36.00
*S	**********									
*S	TOTAL DEVELOPED AT END OF PICO									
ADD HYD	B-1+B-2	20& 6	30	.01120	28.85	.977	1.63483	1.500	4.025	
*S	**********									
*S	DEVELOPED ON OAKLAND AVE									
COMPUTE NM HYD	OAK-DEV	-	7	.00040	1.24	.046	2.14223	1.500	4.837	PER IMP= 80.00
*S	**********									
*S	TOTAL DEV OAKLAND AND OS-1									
ADD HYD	OAK+OS-1	7& 1	40	.00110	3.06	.107	1.82314	1.500	4.348	
*S	**********									
*S	TOTAL DEV AT END OF OAKLAND									
ADD HYD	SUBTOTAL	40&30	50	.01230	31.91	1.083	1.65167	1.500	4.054	
*S	**********									
*S	EXISTING FLOWS ON BARSTOW									
COMPUTE NM HYD	BARSTOW	-	8	.00140	4.42	.168	2.24875	1.500	4.936	PER IMP= 90.00
*S	**********									
*S	EXISTING FLOWS ON ALAMEDA									
COMPUTE NM HYD	ALAMEDA	-	9	.00180	5.32	.195	2.03570	1.500	4.618	PER IMP= 70.00
*S	**********									
*S	TOTAL DEV ALAMEDA AND BARSTOW									
ADD HYD	ALA+BAR	8& 9	60	.00320	9.74	.363	2.12875	1.500	4.757	
*S	**********									
*S	TOTAL DEV AT BARSTOW AND OAKLAND									
ADD HYD	TOTAL	50&60	70	.01550	41.66	1.447	1.75016	1.500	4.199	
FINISH										

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
          RUN DATE (MON/DAY/YR) = 09/23/1996
          START TIME (HR:MIN:SEC) = 11:09:44      USER NO.= DAGGETTK.S94
          INPUT FILE = 96006dv.dat

*S                    PICO LA CUEVA
*S                    DEVELOPED CONDITIONS, 100 YR, 6 HOUR STORM
*
*
START                 TIME=0.0 HR
RAINFALL              TYPE=1 RAIN QUARTER=0.0
                      RAIN ONE=2.14 IN RAIN SIX=2.60 IN
                      RAIN DAY=3.10 IN DT=0.03333HRS

                 COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                 DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                    .0000   .0027   .0055   .0084   .0113   .0143   .0173
                    .0204   .0236   .0269   .0302   .0337   .0372   .0408
                    .0445   .0484   .0523   .0564   .0606   .0649   .0694
                    .0741   .0789   .0839   .0892   .0946   .1003   .1063
                    .1126   .1192   .1262   .1322   .1385   .1452   .1597
                    .1922   .2422   .3139   .4119   .5407   .7049   .9093
                   1.1588  1.3904  1.4871  1.5687  1.6414  1.7074  1.7683
                   1.8247  1.8775  1.9270  1.9735  2.0174  2.0589  2.0982
                   2.1354  2.1707  2.2041  2.2359  2.2661  2.2737  2.2807
                   2.2875  2.2939  2.3001  2.3060  2.3117  2.3172  2.3226
                   2.3277  2.3328  2.3376  2.3423  2.3470  2.3514  2.3558
                   2.3601  2.3643  2.3683  2.3723  2.3762  2.3801  2.3838
                   2.3875  2.3911  2.3947  2.3982  2.4016  2.4050  2.4083
                   2.4115  2.4147  2.4179  2.4210  2.4241  2.4271  2.4301
                   2.4330  2.4359  2.4388  2.4416  2.4444  2.4472  2.4499
                   2.4526  2.4553  2.4579  2.4605  2.4631  2.4656  2.4681
                   2.4706  2.4731  2.4755  2.4779  2.4803  2.4827  2.4850
                   2.4873  2.4896  2.4919  2.4942  2.4964  2.4986  2.5008
                   2.5030  2.5052  2.5073  2.5094  2.5115  2.5136  2.5157
                   2.5177  2.5198  2.5218  2.5238  2.5258  2.5277  2.5297
                   2.5317  2.5336  2.5355  2.5374  2.5393  2.5412  2.5430
                   2.5449  2.5467  2.5486  2.5504  2.5522  2.5540  2.5557
                   2.5575  2.5593  2.5610  2.5627  2.5645  2.5662  2.5679
                   2.5696  2.5713  2.5729  2.5746  2.5762  2.5779  2.5795
                   2.5811  2.5828  2.5844  2.5860  2.5876  2.5891  2.5907
                   2.5923  2.5938  2.5954  2.5969  2.5984  2.6000

*S          ************************************************************
*S                    OFFSITE BASINS
*
COMPUTE NM HYD        ID=1 HYD NO=OS-1 DA=0.0007  SQ MI
                      PER A=0.00 PER B=0.0 PER C=67 PER D=33
                      TP=-0.13 HR MASS RAIN=-1

    K =    .070850HR    TP =    .130000HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    .93515    CFS   UNIT VOLUME =     .9881       B =    526.28      P60 = 2.1400
    AREA =       .000231 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .106216HR    TP =    .130000HR    K/TP RATIO =    .817047     SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =    1.3687    CFS   UNIT VOLUME =     .9907       B =    379.38      P60 = 2.1400
    AREA =       .000469 SQ MI    IA =     .35000 INCHES    INF =     .83000 INCHES PER HOUR
```

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

PRINT HYD             ID=1 CODE=1

                                        HYDROGRAPH FROM AREA OS-1


    RUNOFF VOLUME =      1.64156 INCHES      =         .0613 ACRE-FEET
    PEAK DISCHARGE RATE =        1.82 CFS  AT    1.500 HOURS    BASIN AREA =    .0007 SQ. MI.


*
*S          ****************************************************************

*
COMPUTE NM HYD        ID=2  HYD NO=OS-2 DA=0.0034 SQ MI
                      PER A=0.00 PER B=0 PER C=67 PER D=33
                      TP=-0.13 HR MASS RAIN=-1

    K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    4.5422     CFS    UNIT VOLUME =     .9975        B =    526.28       P60 = 2.1400
    AREA =        .001122 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =    6.6479     CFS    UNIT VOLUME =     .9984        B =    379.38       P60 = 2.1400
    AREA =        .002278 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD             ID=2  CODE=1

                                        HYDROGRAPH FROM AREA OS-2


    RUNOFF VOLUME =      1.64156 INCHES      =         .2977 ACRE-FEET
    PEAK DISCHARGE RATE =        8.78 CFS  AT    1.500 HOURS    BASIN AREA =    .0034 SQ. MI.


*
*S          ****************************************************************
*
COMPUTE NM HYD        ID=3 HYD NO=OS-3 DA=0.0014 SQ MI
                      PER A=0.00 PER B=0 PER C=85.70 PER D=14.30
                      TP=-0.13 HR MASS RAIN=-1

    K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    .81046     CFS    UNIT VOLUME =     .9860        B =    526.28       P60 = 2.1400
    AREA =        .000200 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
    UNIT PEAK =    3.5014     CFS    UNIT VOLUME =     .9967        B =    379.38       P60 = 2.1400
    AREA =        .001200 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD             ID=3 CODE=1
```

HYDROGRAPH FROM AREA OS-3

RUNOFF VOLUME = 1.44235 INCHES = .1077 ACRE-FEET
PEAK DISCHARGE RATE = 3.36 CFS AT 1.500 HOURS BASIN AREA = .0014 SQ. MI.

```
*S          ************************************************************
*S                TOTAL FLOW THROUGH SITE FROM OS-2 AND OS-3
*
ADD HYD           ID=10 HYD NO=OS-2+OS-3 ID I=2 ID II=3
PRINT HYD         ID=10 CODE=1
```

HYDROGRAPH FROM AREA OS-2+OS-3

RUNOFF VOLUME = 1.58336 INCHES = .4053 ACRE-FEET
PEAK DISCHARGE RATE = 12.14 CFS AT 1.500 HOURS BASIN AREA = .0048 SQ. MI.

```
*
*S          ************************************************************
*S                ON-SITE BASINS
*
COMPUTE NM HYD    ID=5. HYD NO=B1-DEV DA=0.00160 SQ MI
                  PER A=0.00 PER B=0 PER C=64 PER D=36
                  TP=-0.13 HR MASS RAIN=-1
```

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.3318 CFS UNIT VOLUME = .9954 B = 526.28 P60 = 2.1400
AREA = .000576 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .106216HR TP = .130000HR K/TP RATIO = .817047 SHAPE CONSTANT, N = 4.373949
UNIT PEAK = 2.9883 CFS UNIT VOLUME = .9962 B = 379.38 P60 = 2.1400
AREA = .001024 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD         ID=5 CODE=1
```

HYDROGRAPH FROM AREA B1-DEV

RUNOFF VOLUME = 1.67351 INCHES = .1428 ACRE-FEET
PEAK DISCHARGE RATE = 4.19 CFS AT 1.500 HOURS BASIN AREA = .0016 SQ. MI.

```
*
*S          ************************************************************
*S                TOTAL DEVELOPED ON 8% STREET
*
ADD HYD           ID=20 HYD NO=200 ID I=5 ID II=10
PRINT HYD         ID=20 CODE=1
```

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = 1.60585 INCHES = .5481 ACRE-FEET
PEAK DISCHARGE RATE = 16.33 CFS AT 1.500 HOURS BASIN AREA = .0064 SQ. MI.

```
*
*S          ****************************************************************
*
COMPUTE NM HYD       ID=6 HYD NO=B2-DEV DA=0.00480 SQ MI

                     PER A=0.00 PER B=0 PER C=64  PER D=36
                     TP=-0.13 HR MASS RAIN=-1
```

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.9954 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 2.1400
AREA = .001728 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .106216HR TP = .130000HR K/TP RATIO = .817047 SHAPE CONSTANT, N = 4.373949
UNIT PEAK = 8.9650 CFS UNIT VOLUME = .9990 B = 379.38 P60 = 2.1400
AREA = .003072 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD            ID=6 CODE=1
```

HYDROGRAPH FROM AREA B2-DEV

RUNOFF VOLUME = 1.67351 INCHES = .4284 ACRE-FEET
PEAK DISCHARGE RATE = 12.53 CFS AT 1.500 HOURS BASIN AREA = .0048 SQ. MI.

```
*
*S          ****************************************************************
*S                   TOTAL DEVELOPED AT END OF PICO
*
ADD HYD              ID=30 HYD NO=B-1+B-2 ID I=20 ID II=6
PRINT HYD            ID=30 CODE=1
```

HYDROGRAPH FROM AREA B-1+B-2

RUNOFF VOLUME = 1.63483 INCHES = .9765 ACRE-FEET
PEAK DISCHARGE RATE = 28.85 CFS AT 1.500 HOURS BASIN AREA = .0112 SQ. MI.

```
*
*S          ****************************************************************
*S                   DEVELOPED ON OAKLAND AVE
*
COMPUTE NM HYD       ID=7 HYD NO=OAK-DEV DA=0.00040 SQ MI
                     PER A=0.00 PER B=0 PER C=20  PER D=80
                     TP=-0.13 HR MASS RAIN=-1
```

```
K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
UNIT PEAK =    1.2954     CFS   UNIT VOLUME =     .9913        B =    526.28       P60 = 2.1400
AREA =        .000320 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
UNIT PEAK =    .23346     CFS   UNIT VOLUME =     .9428        B =    379.38       P60 = 2.1400
AREA =        .000080 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD              ID=7 CODE=1

                                    HYDROGRAPH FROM AREA OAK-DEV


    RUNOFF VOLUME =      2.14223 INCHES      =          .0457 ACRE-FEET
    PEAK DISCHARGE RATE =         1.24 CFS  AT    1.500 HOURS    BASIN AREA =    .0004 SQ. MI.


*
*S          **************************************************************
*S                    TOTAL DEV OAKLAND AND OS-1
*
ADD HYD                ID=40 HYD NO=OAK+OS-1 ID I=7 ID II=1
PRINT HYD              ID=40 CODE=1

                                    HYDROGRAPH FROM AREA OAK+OS-1


    RUNOFF VOLUME =      1.82314 INCHES      =          .1070 ACRE-FEET
    PEAK DISCHARGE RATE =         3.06 CFS  AT    1.500 HOURS    BASIN AREA =    .0011 SQ. MI.



*S          **************************************************************
*S                    TOTAL DEV AT END OF OAKLAND
*
ADD HYD                ID=50 HYD NO=SUBTOTAL ID I=40 ID II=30
PRINT HYD              ID=50 CODE=1

                                    HYDROGRAPH FROM AREA SUBTOTAL


    RUNOFF VOLUME =      1.65167 INCHES      =         1.0835 ACRE-FEET
    PEAK DISCHARGE RATE =        31.91 CFS  AT    1.500 HOURS    BASIN AREA =    .0123 SQ. MI.



*s          **************************************************************
*
*S          EXISTING FLOWS ON BARSTOW
*
COMPUTE NM HYD         ID=8 HYD NO=BARSTOW DA=0.0014 SQ MI
                       PER A=0.00 PER B=0 PER C=10  PER D=90
```

```
                    TP=-0.13 HR MASS RAIN=-1

     K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    5.1008     CFS    UNIT VOLUME =     .9979       B =    526.28       P60 = 2.1400
     AREA =       .001260 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


     K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
     UNIT PEAK =    .40856     CFS    UNIT VOLUME =     .9697       B =    379.38       P60 = 2.1400
     AREA =       .000140 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=8 CODE=1

                                HYDROGRAPH FROM AREA BARSTOW


     RUNOFF VOLUME =      2.24875 INCHES      =          .1679 ACRE-FEET
     PEAK DISCHARGE RATE =       4.42 CFS  AT    1.500 HOURS    BASIN AREA =    .0014 SQ. MI.


*S           **********************************************************************
*
*S           EXISTING FLOWS ON ALAMEDA
*
COMPUTE NM HYD       ID=9 HYD NO=ALAMEDA DA=0.0018 SQ MI
                     PER A=0.00 PER B=0 PER C=30 PER D=70
                     TP=-0.13 HR MASS RAIN=-1

     K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    5.1008     CFS    UNIT VOLUME =     .9979       B =    526.28       P60 = 2.1400
     AREA =       .001260 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


     K =    .106216HR     TP =    .130000HR     K/TP RATIO =    .817047      SHAPE CONSTANT, N =  4.373949
     UNIT PEAK =    1.5759     CFS    UNIT VOLUME =     .9926       B =    379.38       P60 = 2.1400
     AREA =       .000540 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=9 CODE=1

                                HYDROGRAPH FROM AREA ALAMEDA


     RUNOFF VOLUME =      2.03570 INCHES      =          .1954 ACRE-FEET
     PEAK DISCHARGE RATE =       5.32 CFS  AT    1.500 HOURS    BASIN AREA =    .0018 SQ. MI.


*S           **********************************************************************
*S                    TOTAL DEV ALAMEDA AND BARSTOW
*
ADD HYD              ID=60 HYD NO=ALA+BAR ID I=8 ID II=9
PRINT HYD            ID=60 CODE=1

                                HYDROGRAPH FROM AREA ALA+BAR
```

RUNOFF VOLUME = 2.12875 INCHES = .3633 ACRE-FEET
PEAK DISCHARGE RATE = 9.74 CFS AT 1.500 HOURS BASIN AREA = .0032 SQ. MI.

```
*S          ************************************************************
*S                    TOTAL DEV AT BARSTOW AND OAKLAND
*
ADD HYD             ID=70 HYD NO=TOTAL ID I=50 ID II=60
PRINT HYD           ID=70 CODE=1
```

HYDROGRAPH FROM AREA TOTAL

RUNOFF VOLUME = 1.75016 INCHES = 1.4468 ACRE-FEET
PEAK DISCHARGE RATE = 41.66 CFS AT 1.500 HOURS BASIN AREA = .0155 SQ. MI.

```
FINISH
```

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:09:44

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/17/1996

INPUT FILE = 9600610D.DAT USER NO.= DAGGETTK.S94

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	PICO LA CUEVA									
*S	DEVELOPED CONDITIONS, 10 YR, 6 HOUR STORM									
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.730
*S	**********									
*S	OFFSITE BASINS									
COMPUTE NM HYD	OS-1	-	1	.00070	1.10	.033	.89546	1.500	2.465	PER IMP= 33.00
*S	**********									
COMPUTE NM HYD	OS-2	-	2	.00340	5.32	.162	.89546	1.500	2.445	PER IMP= 33.00
*S	**********									
COMPUTE NM HYD	OS-3	-	3	.00140	1.97	.054	.72817	1.500	2.199	PER IMP= 14.30
*S	**********									
*S	TOTAL FLOW THROUGH SITE FROM OS-2 AND OS-3									
ADD HYD	OS-2+OS-3	2& 3	10	.00480	7.29	.217	.84656	1.500	2.373	
*S	**********									
*S	ON-SITE BASINS									
COMPUTE NM HYD	B1-DEV	-	5	.00160	2.55	.079	.92230	1.500	2.491	PER IMP= 36.00
*S	**********									
*S	TOTAL DEVELOPED ON 8% STREET									
ADD HYD	200.00	5&10	20	.00640	9.84	.295	.86545	1.500	2.403	
*S	**********									
COMPUTE NM HYD	B2-DEV	-	6	.00480	7.63	.236	.92230	1.500	2.484	PER IMP= 36.00
*S	**********									
*S	TOTAL DEVELOPED AT END OF PICO									
ADD HYD	B-1+B-2	20& 6	30	.01120	17.47	.531	.88979	1.500	2.437	
*S	**********									
*S	DEVELOPED ON OAKLAND AVE									
COMPUTE NM HYD	OAK-DEV	-	7	.00040	.80	.028	1.31592	1.500	3.123	PER IMP= 80.00
*S	**********									
*S	TOTAL DEV OAKLAND AND OS-1									
ADD HYD	OAK+OS-1	7& 1	40	.00110	1.90	.061	1.04792	1.500	2.704	
*S	**********									
*S	TOTAL DEV AT END OF OAKLAND									
ADD HYD	SUBTOTAL	40&30	50	.01230	19.38	.593	.90393	1.500	2.461	
*S	**********									
*S	EXISTING FLOWS ON BARSTOW									
COMPUTE NM HYD	BARSTOW	-	8	.00140	2.89	.105	1.40537	1.500	3.224	PER IMP= 90.00
*S	**********									
*S	EXISTING FLOWS ON ALAMEDA									
COMPUTE NM HYD	ALAMEDA	-	9	.00180	3.40	.118	1.22646	1.500	2.950	PER IMP= 70.00
*S	**********									
*S	TOTAL DEV ALAMEDA AND BARSTOW									
ADD HYD	ALA+BAR	8& 9	60	.00320	6.29	.223	1.30455	1.500	3.070	
*S	**********									
*S	TOTAL DEV AT BARSTOW AND OAKLAND									
ADD HYD	TOTAL	50&60	70	.01550	25.66	.816	.98664	1.500	2.587	
FINISH										

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
          RUN DATE (MON/DAY/YR) = 10/17/1996
          START TIME (HR:MIN:SEC) = 12:45:32      USER NO.= DAGGETTK.S94
          INPUT FILE = 9600610D.DAT

*S                    PICO LA CUEVA
*S                    DEVELOPED CONDITIONS, 10 YR, 6 HOUR STORM
*
*
START                 TIME=0.0 HR
RAINFALL              TYPE=1 RAIN QUARTER=0.0
                      RAIN ONE=1.42 IN RAIN SIX=1.73 IN
                      RAIN DAY=2.07 IN DT=0.03333HRS

                 COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                 DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                    .0000   .0019   .0038   .0057   .0077   .0098   .0118
                    .0140   .0161   .0184   .0207   .0230   .0254   .0279
                    .0304   .0331   .0358   .0385   .0414   .0444   .0475
                    .0506   .0539   .0574   .0609   .0647   .0686   .0727
                    .0770   .0815   .0863   .0902   .0944   .0989   .1085
                    .1300   .1632   .2108   .2758   .3613   .4702   .6059
                    .7714   .9251   .9893  1.0434  1.0916  1.1355  1.1758
                   1.2133  1.2483  1.2811  1.3120  1.3412  1.3687  1.3948
                   1.4194  1.4428  1.4651  1.4861  1.5062  1.5112  1.5159
                   1.5204  1.5247  1.5288  1.5328  1.5366  1.5403  1.5438
                   1.5473  1.5506  1.5539  1.5571  1.5601  1.5631  1.5661
                   1.5689  1.5717  1.5744  1.5771  1.5797  1.5823  1.5848
                   1.5873  1.5897  1.5921  1.5944  1.5967  1.5989  1.6012
                   1.6034  1.6055  1.6076  1.6097  1.6118  1.6138  1.6158
                   1.6178  1.6197  1.6216  1.6235  1.6254  1.6273  1.6291
                   1.6309  1.6327  1.6345  1.6362  1.6379  1.6396  1.6413
                   1.6430  1.6446  1.6463  1.6479  1.6495  1.6511  1.6527
                   1.6542  1.6558  1.6573  1.6588  1.6603  1.6618  1.6633
                   1.6647  1.6662  1.6676  1.6690  1.6705  1.6719  1.6733
                   1.6746  1.6760  1.6774  1.6787  1.6800  1.6814  1.6827
                   1.6840  1.6853  1.6866  1.6879  1.6891  1.6904  1.6917
                   1.6929  1.6941  1.6954  1.6966  1.6978  1.6990  1.7002
                   1.7014  1.7026  1.7037  1.7049  1.7061  1.7072  1.7084
                   1.7095  1.7106  1.7118  1.7129  1.7140  1.7151  1.7162
                   1.7173  1.7184  1.7195  1.7206  1.7216  1.7227  1.7237
                   1.7248  1.7258  1.7269  1.7279  1.7290  1.7300

*S            ************************************************************
*S                    OFFSITE BASINS
*
COMPUTE NM HYD        ID=1 HYD NO=OS-1 DA=0.0007  SQ MI
                      PER A=0.00 PER B=0.0 PER C=67 PER D=33
                      TP=-0.13 HR MASS RAIN=-1

    K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    .93515     CFS    UNIT VOLUME =     .9881        B =    526.28       P60 = 1.4200
    AREA =       .000231 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .103687HR     TP =    .130000HR     K/TP RATIO =    .797590      SHAPE CONSTANT, N =  4.493347
    UNIT PEAK =    1.3955     CFS    UNIT VOLUME =     .9914        B =    386.82       P60 = 1.4200
    AREA =       .000469 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
```

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

PRINT HYD             ID=1 CODE=1

                                        HYDROGRAPH FROM AREA OS-1


    RUNOFF VOLUME =       .89546 INCHES      =         .0334 ACRE-FEET
    PEAK DISCHARGE RATE =       1.10 CFS  AT   1.500 HOURS   BASIN AREA =    .0007 SQ. MI.


*
*S          ****************************************************************
*
COMPUTE NM HYD        ID=2  HYD NO=OS-2 DA=0.0034 SQ MI
                      PER A=0.00 PER B=0 PER C=67 PER D=33
                      TP=-0.13 HR MASS RAIN=-1

    K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    4.5422     CFS    UNIT VOLUME =     .9975        B =    526.28       P60 = 1.4200
    AREA =       .001122 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .103687HR     TP =    .130000HR     K/TP RATIO =    .797590      SHAPE CONSTANT, N =  4.493347
    UNIT PEAK =    6.7782     CFS    UNIT VOLUME =     .9983        B =    386.82       P60 = 1.4200
    AREA =       .002278 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD             ID=2  CODE=1

                                        HYDROGRAPH FROM AREA OS-2


    RUNOFF VOLUME =       .89546 INCHES      =         .1624 ACRE-FEET
    PEAK DISCHARGE RATE =       5.32 CFS  AT   1.500 HOURS   BASIN AREA =    .0034 SQ. MI.


*
*S          ****************************************************************
*
COMPUTE NM HYD        ID=3 HYD NO=OS-3 DA=0.0014 SQ MI
                      PER A=0.00 PER B=0 PER C=85.70 PER D=14.30
                      TP=-0.13 HR MASS RAIN=-1

    K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    .81046     CFS    UNIT VOLUME =     .9860        B =    526.28       P60 = 1.4200
    AREA =       .000200 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .103687HR     TP =    .130000HR     K/TP RATIO =    .797590      SHAPE CONSTANT, N =  4.493347
    UNIT PEAK =    3.5700     CFS    UNIT VOLUME =     .9965        B =    386.82       P60 = 1.4200
    AREA =       .001200 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD             ID=3 CODE=1
```

HYDROGRAPH FROM AREA OS-3

RUNOFF VOLUME = .72817 INCHES = .0544 ACRE-FEET
PEAK DISCHARGE RATE = 1.97 CFS AT 1.500 HOURS BASIN AREA = .0014 SQ. MI.

```
*S              ************************************************************
*S                      TOTAL FLOW THROUGH SITE FROM OS-2 AND OS-3
*
ADD HYD                 ID=10 HYD NO=OS-2+OS-3 ID I=2 ID II=3
PRINT HYD               ID=10 CODE=1
```

HYDROGRAPH FROM AREA OS-2+OS-3

RUNOFF VOLUME = .84656 INCHES = .2167 ACRE-FEET
PEAK DISCHARGE RATE = 7.29 CFS AT 1.500 HOURS BASIN AREA = .0048 SQ. MI.

```
*
*S              ************************************************************
*S                      ON-SITE BASINS
*
COMPUTE NM HYD          ID=5. HYD NO=B1-DEV DA=0.00160 SQ MI
                        PER A=0.00 PER B=0 PER C=64 PER D=36
                        TP=-0.13 HR MASS RAIN=-1
```

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.3318 CFS UNIT VOLUME = .9954 B = 526.28 P60 = 1.4200
AREA = .000576 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .103687HR TP = .130000HR K/TP RATIO = .797590 SHAPE CONSTANT, N = 4.493347
UNIT PEAK = 3.0469 CFS UNIT VOLUME = .9961 B = 386.82 P60 = 1.4200
AREA = .001024 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD               ID=5 CODE=1
```

HYDROGRAPH FROM AREA B1-DEV

RUNOFF VOLUME = .92230 INCHES = .0787 ACRE-FEET
PEAK DISCHARGE RATE = 2.55 CFS AT 1.500 HOURS BASIN AREA = .0016 SQ. MI.

```
*
*S              ************************************************************
*S                      TOTAL DEVELOPED ON 8% STREET
*
ADD HYD                 ID=20 HYD NO=200 ID I=5 ID II=10
PRINT HYD               ID=20 CODE=1
```

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = .86545 INCHES = .2954 ACRE-FEET
PEAK DISCHARGE RATE = 9.84 CFS AT 1.500 HOURS BASIN AREA = .0064 SQ. MI.

```
*
*S              ************************************************************
*
COMPUTE NM HYD        ID=6 HYD NO=B2-DEV DA=0.00480 SQ MI

                      PER A=0.00 PER B=0 PER C=64  PER D=36
                      TP=-0.13 HR MASS RAIN=-1
```

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.9954 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.4200
AREA = .001728 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .103687HR TP = .130000HR K/TP RATIO = .797590 SHAPE CONSTANT, N = 4.493347
UNIT PEAK = 9.1407 CFS UNIT VOLUME = .9989 B = 386.82 P60 = 1.4200
AREA = .003072 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```
PRINT HYD             ID=6 CODE=1
```

HYDROGRAPH FROM AREA B2-DEV

RUNOFF VOLUME = .92230 INCHES = .2361 ACRE-FEET
PEAK DISCHARGE RATE = 7.63 CFS AT 1.500 HOURS BASIN AREA = .0048 SQ. MI.

```
*
*S              ************************************************************
*S                    TOTAL DEVELOPED AT END OF PICO
*
ADD HYD               ID=30 HYD NO=B-1+B-2 ID I=20 ID II=6
PRINT HYD             ID=30 CODE=1
```

HYDROGRAPH FROM AREA B-1+B-2

RUNOFF VOLUME = .88979 INCHES = .5315 ACRE-FEET
PEAK DISCHARGE RATE = 17.47 CFS AT 1.500 HOURS BASIN AREA = .0112 SQ. MI.

```
*
*S              ************************************************************
*S                    DEVELOPED ON OAKLAND AVE
*
COMPUTE NM HYD        ID=7 HYD NO=OAK-DEV DA=0.00040 SQ MI
                      PER A=0.00 PER B=0 PER C=20  PER D=80
                      TP=-0.13 HR MASS RAIN=-1
```

```
K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =    1.2954     CFS   UNIT VOLUME =     .9913       B =   526.28      P60 = 1.4200
AREA =       .000320 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


K =    .103687HR     TP =    .130000HR     K/TP RATIO =    .797590     SHAPE CONSTANT, N =  4.493347
UNIT PEAK =    .23804     CFS   UNIT VOLUME =     .9453       B =   386.82      P60 = 1.4200
AREA =       .000080 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD              ID=7 CODE=1

                                HYDROGRAPH FROM AREA OAK-DEV

    RUNOFF VOLUME =      1.31592 INCHES      =         .0281 ACRE-FEET
    PEAK DISCHARGE RATE =         .80 CFS  AT    1.500 HOURS    BASIN AREA =    .0004 SQ. MI.


*
*S          ************************************************************
*S                  TOTAL DEV OAKLAND AND OS-1
*
ADD HYD                ID=40 HYD NO=OAK+OS-1 ID I=7 ID II=1
PRINT HYD              ID=40 CODE=1

                                HYDROGRAPH FROM AREA OAK+OS-1

    RUNOFF VOLUME =      1.04792 INCHES      =         .0615 ACRE-FEET
    PEAK DISCHARGE RATE =        1.90 CFS  AT    1.500 HOURS    BASIN AREA =    .0011 SQ. MI.


*S          ************************************************************
*S                  TOTAL DEV AT END OF OAKLAND
*
ADD HYD                ID=50 HYD NO=SUBTOTAL ID I=40 ID II=30
PRINT HYD              ID=50 CODE=1

                                HYDROGRAPH FROM AREA SUBTOTAL

    RUNOFF VOLUME =       .90393 INCHES      =         .5930 ACRE-FEET
    PEAK DISCHARGE RATE =       19.38 CFS  AT    1.500 HOURS    BASIN AREA =    .0123 SQ. MI.


*s          ************************************************************
*
*S          EXISTING FLOWS ON BARSTOW
*
COMPUTE NM HYD         ID=8 HYD NO=BARSTOW DA=0.0014 SQ MI
                       PER A=0.00 PER B=0 PER C=10  PER D=90
```

```
                    TP=-0.13 HR MASS RAIN=-1

     K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    5.1008     CFS    UNIT VOLUME =     .9979       B =    526.28       P60 = 1.4200
     AREA =       .001260 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


     K =    .103687HR     TP =    .130000HR     K/TP RATIO =    .797590     SHAPE CONSTANT, N =  4.493347
     UNIT PEAK =    .41657     CFS    UNIT VOLUME =     .9681       B =    386.82       P60 = 1.4200
     AREA =       .000140 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=8 CODE=1

                              HYDROGRAPH FROM AREA BARSTOW


     RUNOFF VOLUME =      1.40537 INCHES      =          .1049 ACRE-FEET
     PEAK DISCHARGE RATE =       2.89 CFS  AT    1.500 HOURS    BASIN AREA =    .0014 SQ. MI.


*S          ************************************************************
*
*S          EXISTING FLOWS ON ALAMEDA
*
COMPUTE NM HYD       ID=9 HYD NO=ALAMEDA DA=0.0018 SQ MI
                     PER A=0.00 PER B=0 PER C=30 PER D=70
                     TP=-0.13 HR MASS RAIN=-1

     K =    .070850HR     TP =    .130000HR     K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    5.1008     CFS    UNIT VOLUME =     .9979       B =    526.28       P60 = 1.4200
     AREA =       .001260 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


     K =    .103687HR     TP =    .130000HR     K/TP RATIO =    .797590     SHAPE CONSTANT, N =  4.493347
     UNIT PEAK =    1.6068     CFS    UNIT VOLUME =     .9923       B =    386.82       P60 = 1.4200
     AREA =       .000540 SQ MI     IA =     .35000 INCHES     INF =     .83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=9 CODE=1

                              HYDROGRAPH FROM AREA ALAMEDA


     RUNOFF VOLUME =      1.22646 INCHES      =          .1177 ACRE-FEET
     PEAK DISCHARGE RATE =       3.40 CFS  AT    1.500 HOURS    BASIN AREA =    .0018 SQ. MI.


*S          ************************************************************
*S                    TOTAL DEV ALAMEDA AND BARSTOW
*
ADD HYD              ID=60 HYD NO=ALA+BAR ID I=8 ID II=9
PRINT HYD            ID=60 CODE=1

                              HYDROGRAPH FROM AREA ALA+BAR
```

RUNOFF VOLUME = 1.30455 INCHES = .2226 ACRE-FEET
PEAK DISCHARGE RATE = 6.29 CFS AT 1.500 HOURS BASIN AREA = .0032 SQ. MI.

```
*S          ************************************************************
*S                  TOTAL DEV AT BARSTOW AND OAKLAND
*
ADD HYD            ID=70 HYD NO=TOTAL ID I=50 ID II=60
PRINT HYD          ID=70 CODE=1
```

HYDROGRAPH FROM AREA TOTAL

RUNOFF VOLUME = .98664 INCHES = .8156 ACRE-FEET
PEAK DISCHARGE RATE = 25.66 CFS AT 1.500 HOURS BASIN AREA = .0155 SQ. MI.

```
FINISH
```

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 12:45:33

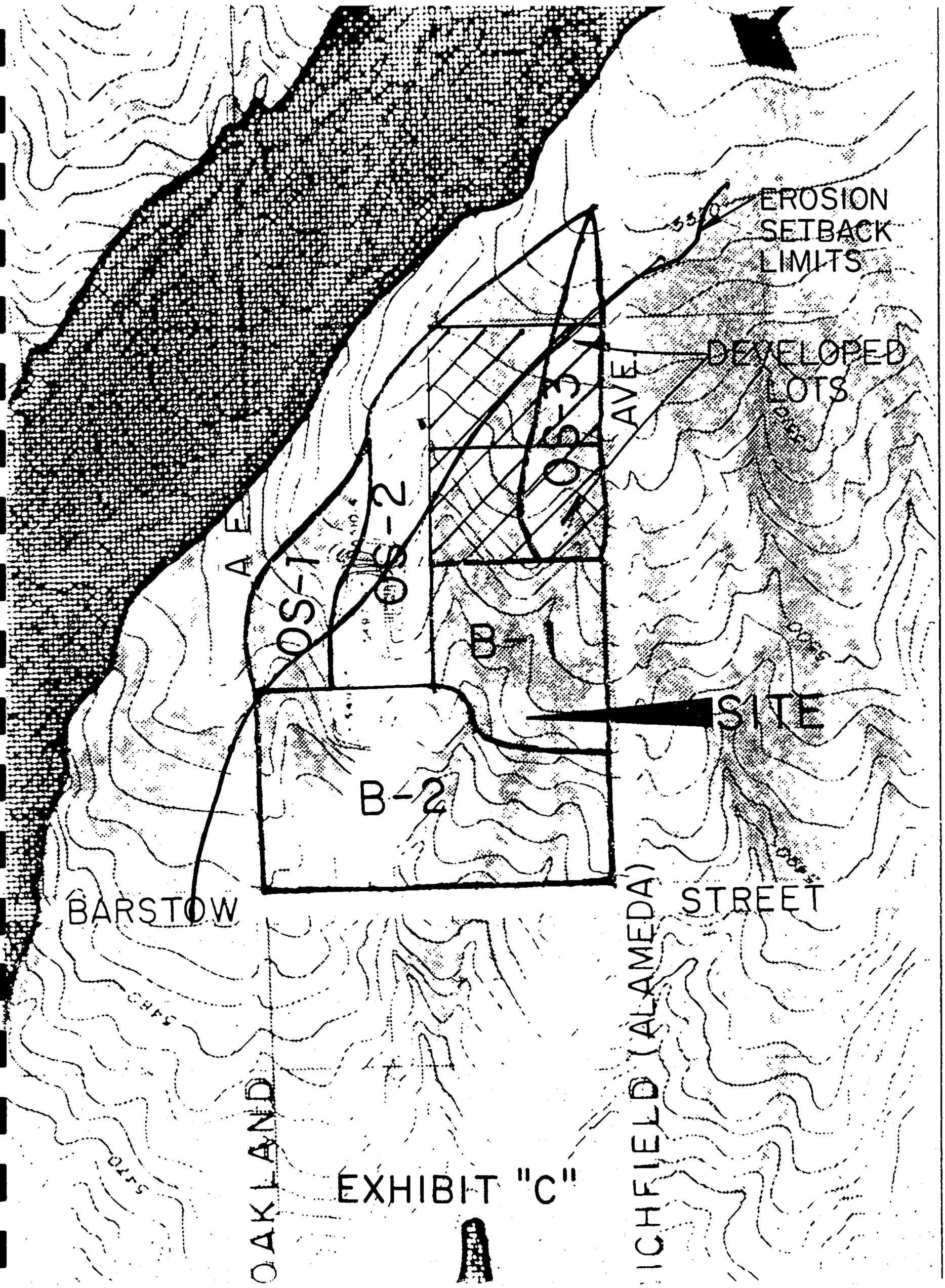

EROSION
SETBACK
LIMITS
DEVELOPED
LOTS
SITE
STREET
AVE.
B-3
B-1
B-2
OS-1
A
BARSTOW
OAKLAND
ICHFIELD (ALAMEDA)
CHPS
CHPS

EXHIBIT "C"

STORM DRAIN INLET DESIGN - 100 YEAR

The Storm Drain Inlets were designed using the following guidelines:

The flow northward on Barstow St. is the sum of the flows on Alameda Blvd and Barstow St and approximately 1/3 of the flow from basin OS-3. This gives a total design flow of 10.89 cfs at a slope of 0.84%.

The flow westward on Oakland Ave is the sum of the offsite basins, the subdivision and Oakland Ave. This is a total design flow of 31.92 cfs at a 3.0% slope.

Barstow St, at 30' to the crown, has a half streèt capacity of 35 cfs at a depth of 0.68' (Manning's Equation). Using the nomograph for double grate inlets (see next page), the capture in the inlet on Barstow St is 5.6 cfs with a bypass of 5.3 cfs.

Oakland Ave, at 20' to the crown, has a half street capacity of 23 cfs at a depth of 0.48' (Manning's Equation). Again using the nomograph for double grate inlets, the capture in the first inlet on Oakland Ave is 10.0 cfs with a bypass of 13.0 cfs.

The bypass reaching the western inlet on Oakland Ave is 13.0 cfs. Using normal depth calculations, the depth of flow on Oakland Ave. at said inlet is 0.41'. Again using the nomograph, the capture is 7.0 cfs with a bypass of 6.0 cfs.

Using King's Handbook, Table 6.2, it was determined that a 24" diameter pipe has a capacity of 25 cfs which is within the parameters of this system.

STORM DRAIN INLET DESIGN 100 year

The Storm Drain Inlets were designed using the following guidelines:

The flow northward on Barstow St. is the sum of the flows on alameda Blvd and Barstow St and approximately 1/3 of the flow from basin OS-3. This gives a total design flow of 10.89 cfs at a slope of 0.84%.

The flow westward on Oakland Ave is the sum of the offsite basins, the subdivision and Oakland Ave. This is a total design flow of 31.92 cfs at a 3.0% slope.

Barstow St, at 30' to the crown, has a capacity of 11.14 cfs at a depth of 0.47' (Manning's Equation). Using the nomograph for double grate inlets (see next page), the capture in the southern inlet on Barstow St is 5.8 cfs with a bypass of 5.1 cfs.

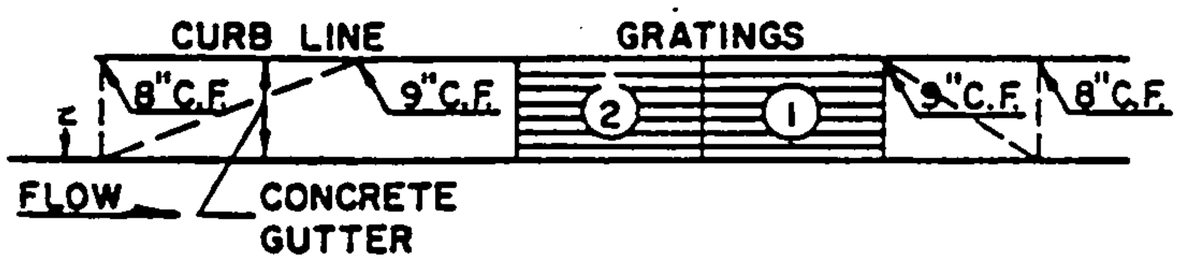
Oakland Ave, at 20' to the crown, has a capacity of 23 cfs at a depth of 0.5' (Manning's Equation). Again using the nomograph for double grate inlets, the capture in the inlet on Oakland Ave is 10.0 cfs with a bypass of 13.0 cfs.

The total bypass reaching the northern inlet on Barstow St is 18.1 cfs. Using normal depth calculations and assuming no ponding occurs, the depth of flow on Barstow St. at said inlet is 0.5'. Again using the nomograph, the capture is 6.8 cfs with a bypass of 11.3 cfs. This is a conservative estimate of the capture in this inlet.

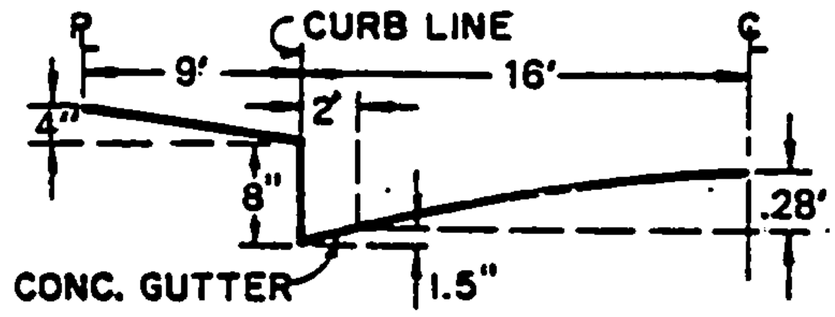
Using King's Handbook, table 6.2, it was determined that a 24" diameter pipe has a capacity of 25 cfs which is within the parameters of this system.

100 YEAR Storm Design

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



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

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

TYPE A DOUBLE GRATE's

Barstow (Inlet #1) Q = 10.89 @ 0.84%, D = 0.48, Capture = 5.6 cfs

Oakland (Inlet #3) Q = 23.0 @ 3.00%, D = 0.48, Capture = 10.0 cfs

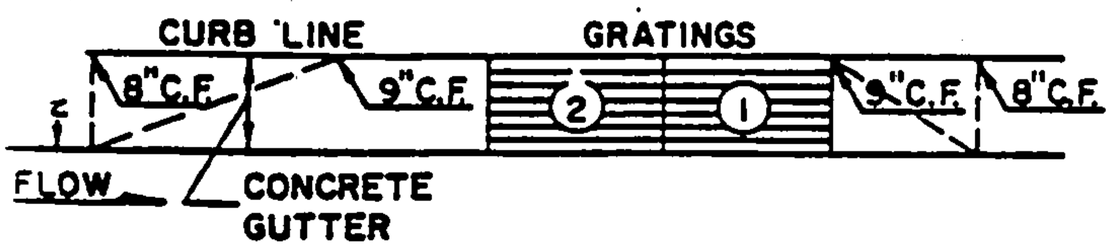
TYPE C DOUBLE GRATE's

Oakland (Inlet #2) Q = 13.0 @ 3.00%, D = 0.41, Capture = 7.0 cfs

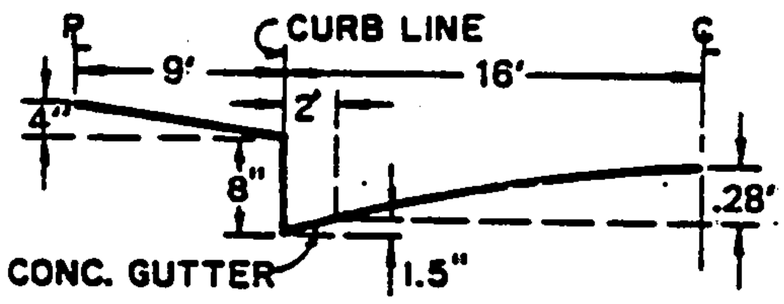
TOT 22.6

100 YEAR Storm Design

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



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

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

Type A double grate
on Barstow ⇒ Q = 10.89 cfs @ 0.84 % D = 0.4' Capture = 4 cfs
on Oakland ⇒ Q = 23 cfs @ 3.0% D = 0.5' capture = 10 cfs.
Total Q = 33.89 ⇒ capture = 14 cfs Bypass = 19.89 cfs.

Type D double grate
Barstow ⇒ Q = 19.89 @ 0.84% D = 0.5' Capture = 6.8 cfs.
Bypass = 13.1 cfs.

Storm Drain Inlet Design for 10 year Storm

Inlet on Barstow St at curb return.

Depth of flow = 0.42' @ 0.84 %
Q = 7.29 cfs Capture = 4.1 cfs Bypass = 3.19 cfs

First inlet on Oakland

Depth of flow = 0.47' @ 3.0%
Q = 19.38 cfs Capture = 9.2 cfs Bypass = 10.18 cfs

Inlet on Oakland at curb return

Depth of flow = 0.38' @ 0.84 %
Q = 10.18 cfs Capture = 6.0 cfs Bypass = 4.18 cfs

Storm Drain Inlet Design for 10 year Storm

Inlet on Barstow St at curb return.

Depth of flow = 0.34' @ 0.84 %
Q = 7.29 cfs Capture = 3 cfs Bypass = 4.29 cfs

Inlet on Oakland at curb return

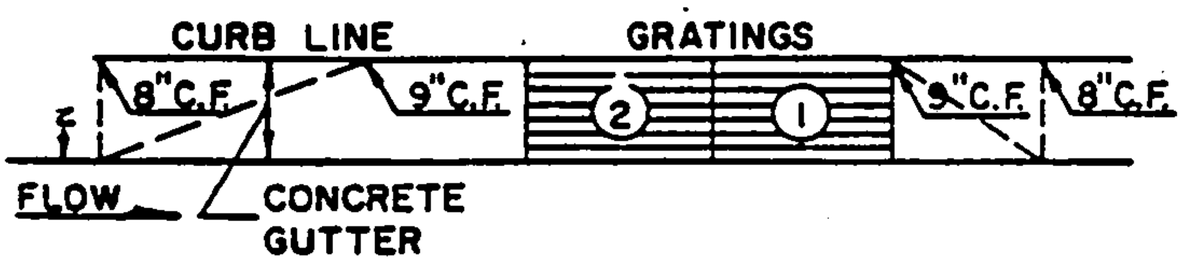
Depth of flow = 0.39' @ 3.0%
Q = 19.38 cfs Capture = 7 cfs Bypass = 12.38 cfs

Inlet in valley gutter

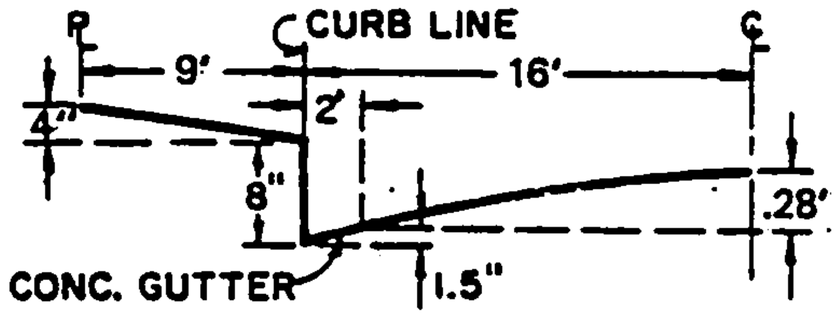
Depth of flow = 0.47' @ 0.84 %
Q = 16.67 cfs Capture = 5.5 cfs Bypass = 11.17 cfs

10 YEAR STORM DESIGN

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



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

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

TYPE A DOUBLE GRATE:

Barstow (Inlet #1) Q = 7.29 @ 0.84%, D = 0.42', Capture = 4.1 cfs

Oakland (Inlet #3) Q = 19.38 @ 3.0%, D = 0.47', Capture = 9.2 cfs

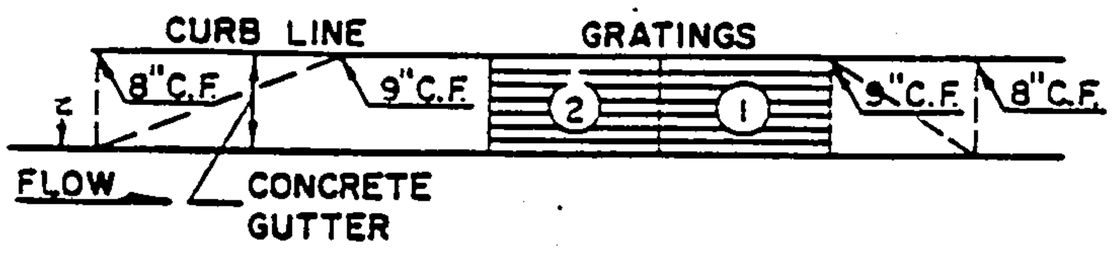
TYPE C DOUBLE GRATE:

Oakland (Inlet #2) Q = 10.18 @ 3.0%, D = 0.38', Capture = 6.0 cfs

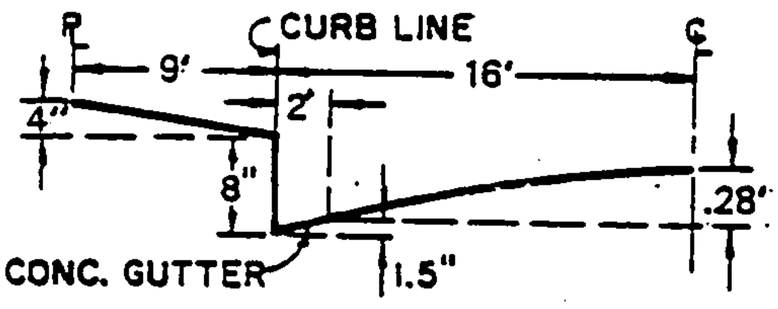
TOT 19.3

10 year Storm Design

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



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

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

Inlet #1 is on Barstow @ CR
Inlet # 2 is in the valley gutter
Inlet # 3 is on Oakland @ C.R.

Orifice Calculations

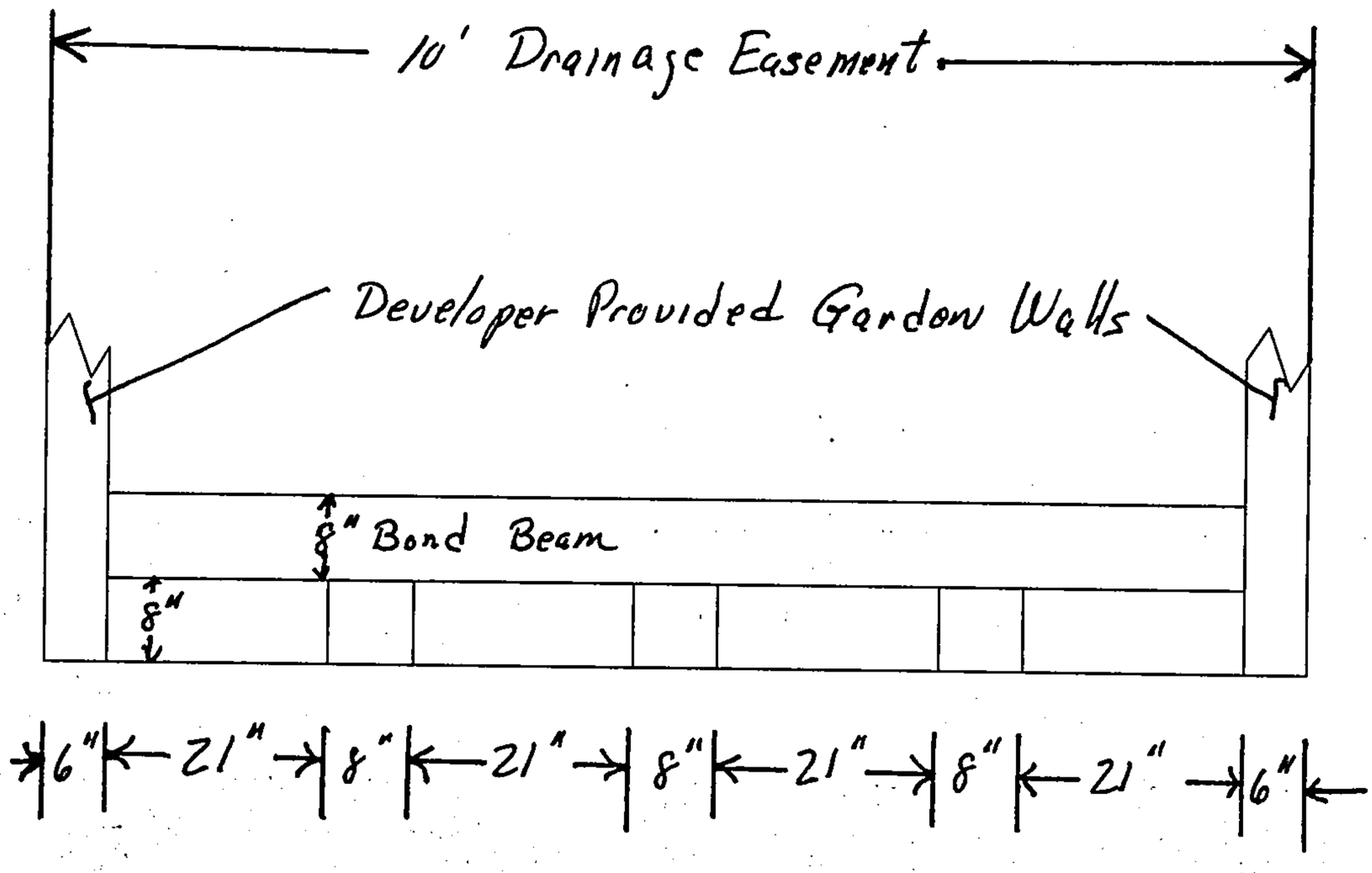
The total Q from OS-2 and OS-3 is 12.14 cfs. Assuming the entire flow reaches one of the two orifices, and that the depth of flow does not exceed 8", for $Q = Ca\sqrt{2gh}$; $C = 0.60$

$$12.14 = 0.60\, a \sqrt{64.4(0.33)}$$

$$a = 4.4\ ft^2$$

at 8" deep, $L = 4.4 / .67 = 6.55'$

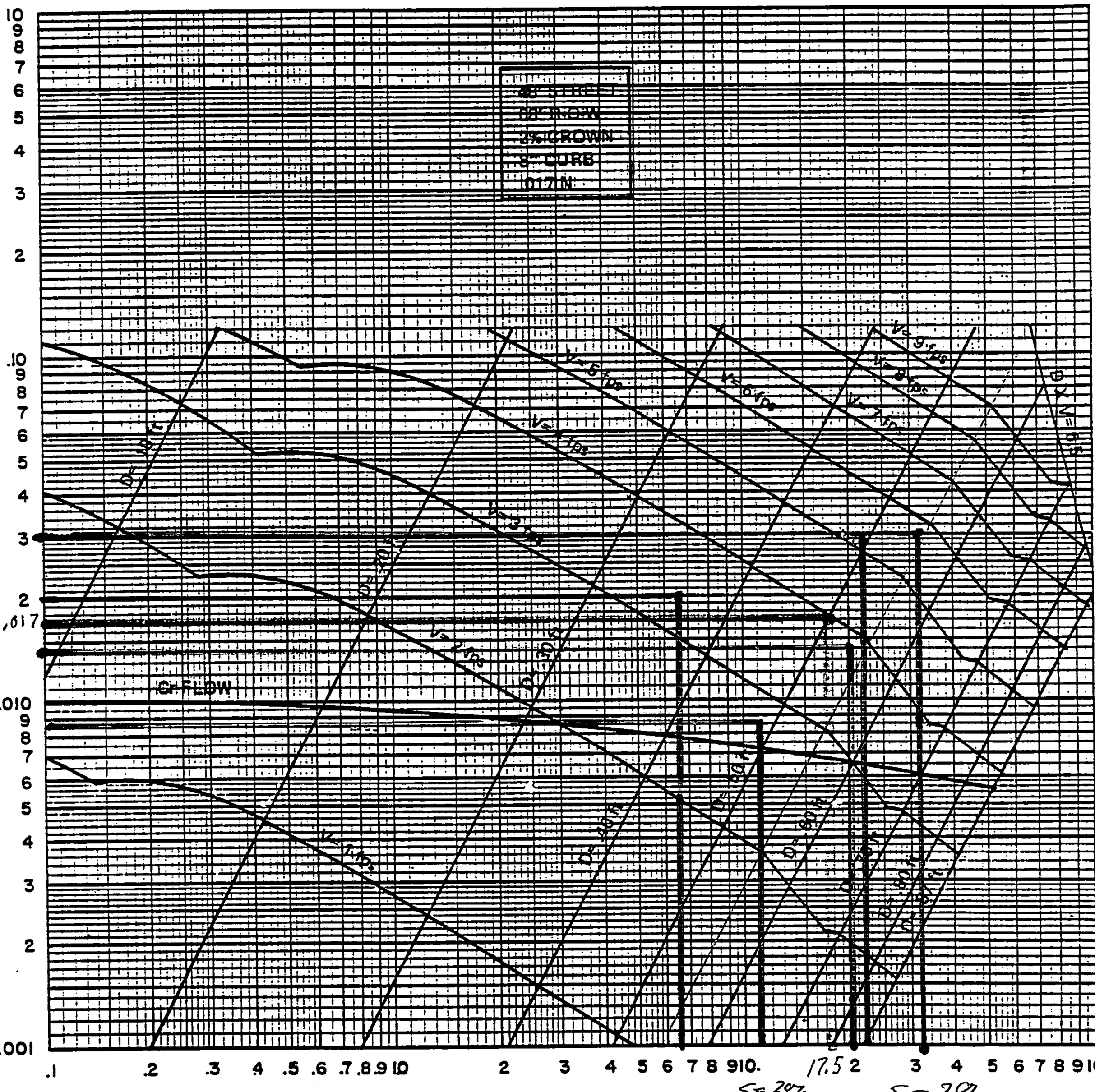
Build orifice 20' X 0.67'



40'F-F
℄ = .125 + .36
= .485'

48'F-F
℄ = .125 + .44
= .565'

STREET CAPACITY



S = 0.84%
Q = 11 cfs
d = 0.48'
V = 2.8 fps

S = 2%
Q = 6.5 cfs
d = 0.36'
V = 3.4 fps

S = 3%
d = .485
Q = 21 cfs
V ≈ 5 fps
E ≈ 0.87'

S = 3%
Q = 32 cfs
d = 0.55'
V = 5.8 fps
E = 1.07'

REV. 3-83

E =

E = 0.54'

ONE HALF STREET FLOWS (cfs)

PLATE 22.3 D-3

Depth of flow in concrete channel

MANNING'S EQUATION FOR UNIFORM FLOW--TRAPEZOI

INPUT		
DEPTH--GUESS (FT):	0.10	0.10
FLOW RATE--CALCULATED (CFS):	23.98	
MANNING'S "n" VALUE:	0.013	
BED SLOPE (FT/FT):	0.0377	
BOTTOM WIDTH (FT):	10.00	
SIDESLOPE #1 (HORZ:VERT):	0.00	
SIDESLOPE #2 (HORZ:VERT):	0.00	
OWN--NEG. FOR INVERTED (FT):	-0.33	
OUTPUT		
CROSS SECT. AREA (SF):	2.65	
TOP WIDTH (FT):	10.00	
WETTED PERIMETER (FT):	10.22	
HYDRAULIC RADIUS (FT):	0.26	
VELOCITY (FPS):	9.05	
FROUDE NUMBER:	3.10	

SUMMARY TABLE FOR STREET HYDRAULICS

STREET	WIDTH	SLOPE	Q 100 CFS	DEPTH FEET	V 100 FPS	V^2/2G FEET	EGL FEET	Q 10 CFS	DEPTH FEET	V 10 FPS	V^2/2G FEET	EGL FEET	d *v F^2/S
ALAMEDA	36' 1/2 ST	2.00%	6.47	0.35	3.3	0.17	0.52	4.4	0.32	3.1	0.15	0.47	0.99
BARSTOW (S)	60' F-F	0.84%	10.89	0.48	2.7	0.11	0.59	7.29	0.42	2.5	0.10	0.52	1.05
BARSTOW (N)	60' F-F	1.40%	20.2	0.53	3.8	0.22	0.75	7.37	0.39	3	0.14	0.53	1.17
OAKLAND	20' 1/2 ST	3.00%	31.92	0.48*	5.3	0.44	0.92	19.38	0.47	NA	NA	NA	NA
PICO LA CUEVA (S)	26' F-F	8.00%	16.33	0.30	6.35	0.63	0.93	NA	NA	NA	NA	NA	NA
PICO LA CUEVA (N)	26' F-F	0.50%	28.85	0.52	4.26	0.28	0.80	NA	NA	NA	NA	NA	NA

* Depth to Crown of Road, All flows above this depth will spill over to the north side of the ROW.

SUMMARY TABLE FOR STREET HYDRAULICS

STREET	WIDTH	SLOPE	Q 100	DEPTH	V 100	V^2/2G	EGL	Q 10	DEPTH	V 10	V^2/2G	EGL	d *v
			CFS	FEET	FPS	FEET	FEET	CFS	FEET	FPS	FEET	FEET	F^2/S
ALAMEDA	36' 1/2 ST	2.00%	6.47	0,38 0.27	3.55	0.20	0.47	4.4	0,32 0.23	3.33	0.17	0.40	0.77
BARSTOW (S)	60' F-F	0.84%	10.89	0.48 0.39	2.86	0.13	0.52	7.29	0.42 0.34	2.52	0.10	0.44	0.86
BARSTOW (N) of Oakland	60' F-F	1.40%	20.2	0.54 0.45	4.64	0.33	0.78	11.17	0,44 0.36	3.45	0.18	0.54	1.24
OAKLAND	20' 1/2 ST	3.00%	31.92	0.55 0.41	5.47	0.46	0.87	19.38	0,47 0.39	5.07	0.40	0.79	1.98
PICO LA CUEVA (S)	26' F-F	8.00%	16.33	0.30	6.35	0.63	0.93	NA	NA	NA	NA	NA	NA
PICO LA CUEVA (N)	26' F-F	0.50%	28.85	0.52	4.26	0.28	0.80	NA	NA	NA	NA	NA	NA

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 25, 2002

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Pico La Cueva Subdivision Grading Plan
Engineer Stamp date 10-17-96 (C20/D15)
Engineer Certification dated 1-24-02

Dear Mr. Bohannan,

Based on information provided in your submittal dated 1-24-02, the above referenced certification is acceptable for Final Plat. With respect to the walls that are not constructed, we will be withholding Building Permits on these lots until the walls are built and certified. My understanding is that these walls will be constructed in the next couple of weeks.

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

Sincerely,

Bradley L. Bingham

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

C: Terri Martin, CoA
Kevin Curran, CoA
Mel Ottley

DRAINAGE INFORMATION SHEET

(REV. 11/01/2001)

PROJECT TITLE: Pico La Cueva
ZONE ATLAS/DRG. FILE #: C 20
DRB #: *556781*
EPC #:
WORK ORDER #:

LEGAL DESCRIPTION: Lots 1, 2, 30, 31, and 32 Block 3 North Albuquerque Acres, T 11 N, R 4 E, Section 17
CITY ADDRESS: Barstow Street and Alameda Boulevard

ENGINEERING FIRM: TIERRA WEST, LLC
CONTACT: RONALD R. BOHANNAN
ADDRESS: 8509 JEFFERSON NE
PHONE: (505) 858-3100
CITY, STATE: ALBUQUERQUE, NM
ZIP CODE: 87113

OWNER:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

ARCHITECT:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

SURVEYOR:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

CONTRACTOR:
CONTACT:
ADDRESS:
PHONE:
CITY, STATE:
ZIP CODE:

CHECK TYPE OF SUBMITTAL:

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

CHECK TYPE OF APPROVAL SOUGHT:

- ? → X SIA / FINANACIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- X FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY) - ~~SO # 10 Permit~~

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

RECEIVED
JAN 24 2002
PWD/DESIGN REVIEW

DATE SUBMITTED: 1/18/02
BY: Ronald R. Bohannan

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

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