

FLOWERS & ASSOCIATES, INC.

C I V I L E N G I N E E R S

Robert T. Flowers
RCE 18324
Stephen G. Flowers
RCE 18 12
Vernon E. Williams
RCE 33690
Eric L. Flavell
RCE 33000
David R. Baum
RCE 46497

500 EAST MONTECITO STREET SANTA BARBARA, CA 93103

PHONE: 805.966.2224 • FAX: 805.965.3372

E-MAIL: www.flowersassoc.com

W.O. 0421

March 25, 2004

Mr. Pete Ehlan
East Beach Ventures
401 East Haley Street
Santa Barbara, CA 93101

RECEIVED

FEB 28 2008

Subject: Drainage Evaluation for 210 Meigs Road

CITY OF SANTA BARBARA
PLANNING DIVISION

INTRODUCTION:

The purpose of this evaluation was to identify site drainage conditions and estimate storm runoff from the site. Our evaluation included physical and analytical evaluation of existing onsite and adjacent drainage patterns with consideration of existing drainage collection facilities in the vicinity of the project site located at 210 Meigs Road.

The site is currently unoccupied. The property borders Washington Elementary School to the north and east, and Meigs Road to the south and west. The proposed project will include 10 Condominiums with off street parking and pavement, drainage and grading improvements.

HYDROLOGY SUMMARY:

Our evaluation was based on a combination of review of 1" = 100' scale aerial topographic mapping dated April 10, 1995, and physical review of the site. The area of drainage tributary to the site and existing onsite drainage limits are delineated on the attached exhibit.

Surface drainage flows down Lighthouse Road from Cliff Drive and from El Faro cul-de-sac onto Lighthouse Road. An existing parking lot west of the site also contributes to the overall runoff but does not enter the site. This drainage is reduced and intercepted by two grated inlets connected to a 14" flex pipe, a berm and a bend in the road as it heads towards the site and an existing 6"-8" concrete curb. The drainage is diverted southerly along the easterly property line and is sent over an existing embankment via surface flow.

Offsite drainage is predominately from the Washington School Parking Lot and other school facilities located on the north side and a small amount of runoff from the school facilities located on the north east side of the property (A.P.N. 045-110-09).

Existing onsite drainage sheet flows southeasterly across the property, down an embankment, over an existing curb and gutter onto Meigs Road. Drainage on Meigs Road surface flows in

existing curb and gutter southeasterly down the street into an existing drop inlet located 176' +/- from the south easterly property corner. Drainage from the inlet is conveyed in a 24" reinforced concrete pipe and eventually outlets at the beach on the south side of Meigs Road. This is based on information provided by the City of Santa Barbara Storm Water Atlas dated October 2000 and is included in this report.

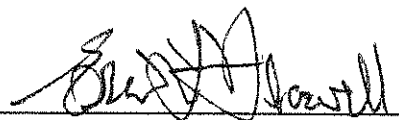
A hydrology analysis was performed to estimate existing and proposed 25 year flows generated both offsite and onsite, the result of the evaluation estimates the off site contributory flow in Area A 3.00 Cubic Feet per Second (CFS) and the proposed on site flow in Area B at 2.18 CFS for a total flow of 5.18 (CFS) as shown in the attached calculations.

AREA	EVENT	EXISTING FLOW	PROPOSED FLOW	NET INCREASE
A	25 YEAR	3.0 CFS	3.0 CFS	---
B	25 YEAR	1.98 CFS	2.18 CFS	0.2 CFS
COMBINED TOTAL A & B			5.18 CFS	

PRELIMINARY EARTHWORK SUMMARY:

The proposed building site is currently undeveloped. A preliminary contour grading drawing including driveway elevations, finish floor elevations and limits of work was provided to our office by architect Mr. Peter J. Ehlan. This information was forwarded to Earthwork Calculation Services to estimate preliminary cut and fill quantities. Their calculations, based on the grading drawing provided to us are included in this report are as follows;Z 435 cubic yards of cut and 14 cubic yards of fill.

Sincerely,
FLOWERS & ASSOCIATES, INC.

By: 
Eric L Flavell, P.E.
Vice President



Encl.

FLOWERS & ASSOCIATES, INC.

By AHC
Date 3-19-04
Chkd. By _____
Date _____

CIVIL ENGINEERS
500 E. Montecito Street
Santa Barbara, CA 93103
Telephone (805) 966-2224
Fax (805) 965-3372

W.O. # 0421
Ref. 210 MEIGS
Sht. 1 of 1

DRAINAGE STUDY

ESTIMATE OFF SITE DRAINAGE AND ONSITE DRAINAGE

FROM CITY OF SANTA BARBARA AERIAL TOPOGRAPHY
DATED APRIL 10, 1995
HORIZONTAL DATUM NAD 1983
VERTICAL DATUM NAVD 1988

AREA (A) 53,000 ft² = 1.22 ACRES = OFFSITE
AREA (B) 39,450 ft² = 0.91 ACRES = ONSITE

ESTIMATE TIME OF CONCENTRATION

FROM SBPC NOMOGRAPH TC = 12 MIN. (MIN. VALUE)

ESTIMATE FLOW

Q = CIA

REFERENCE: "RAINFALL INTENSITY DURATION CURVE"
"RUNOFF COEFFICIENTS VS. RAINFALL INTENSITY"

25 YEAR RETURN

EXISTING CONDITIONS

AREA (A)
Q = (0.77) (3.2) (1.22) = 3.00 CFS / OFFSITE

AREA (B)
Q = (0.68) (3.2) (0.91) = 1.98 CFS / ONSITE

IMPROVED CONDITION

AREA (A)
= NO CHANGE / OFFSITE

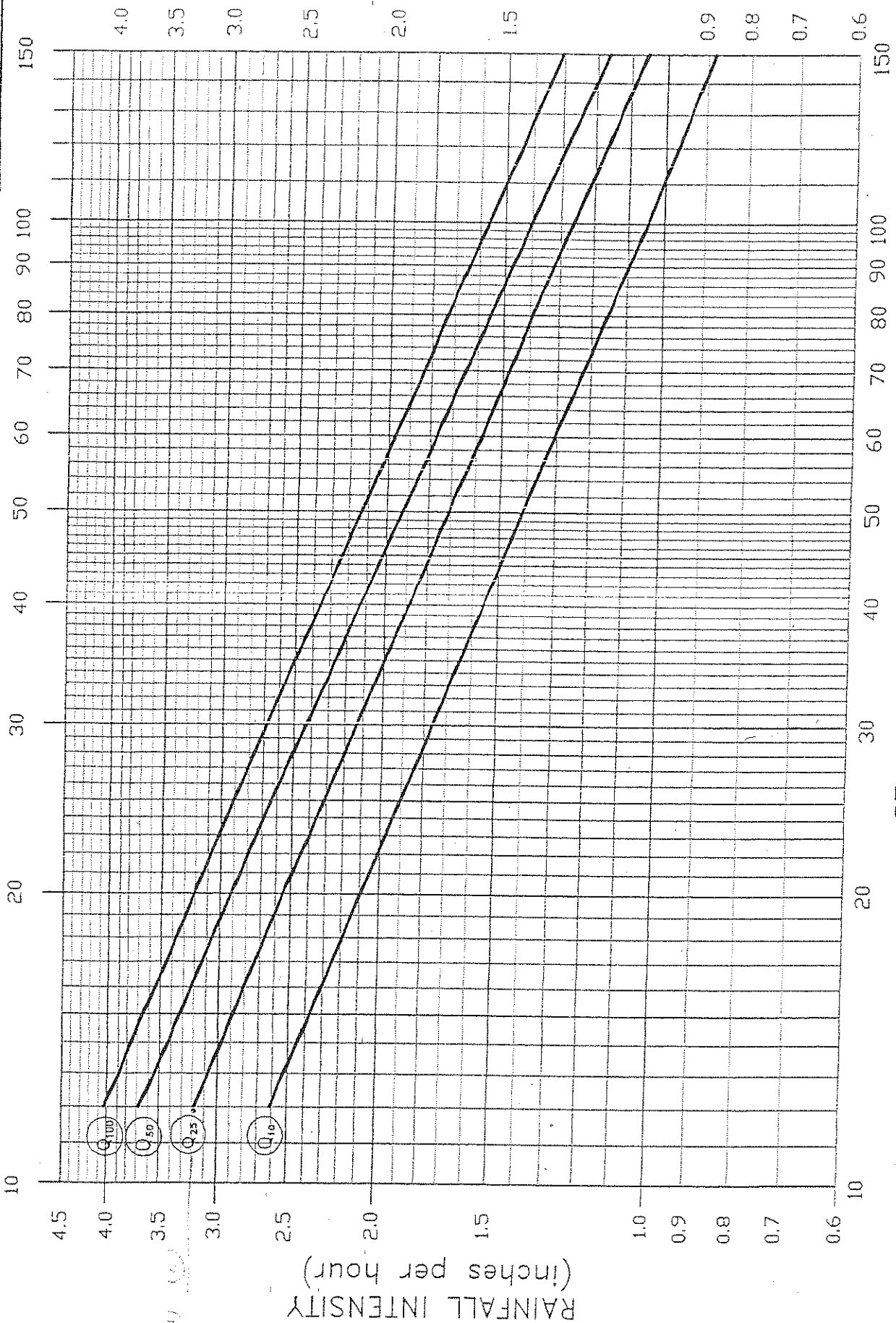
AREA (B)
Q = (0.75) (3.2) (0.91) = 2.18 CFS / ONSITE

TOTAL AREA / IMPROVED CONDITION

Q = (0.76) (3.2) (2.13) = 5.18 CFS

NET ADJUSTED INCREASE → 0.20 CFS

South Coast



STORM DURATION (Minutes)

SANTA BARBARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Feb. 25, 2004

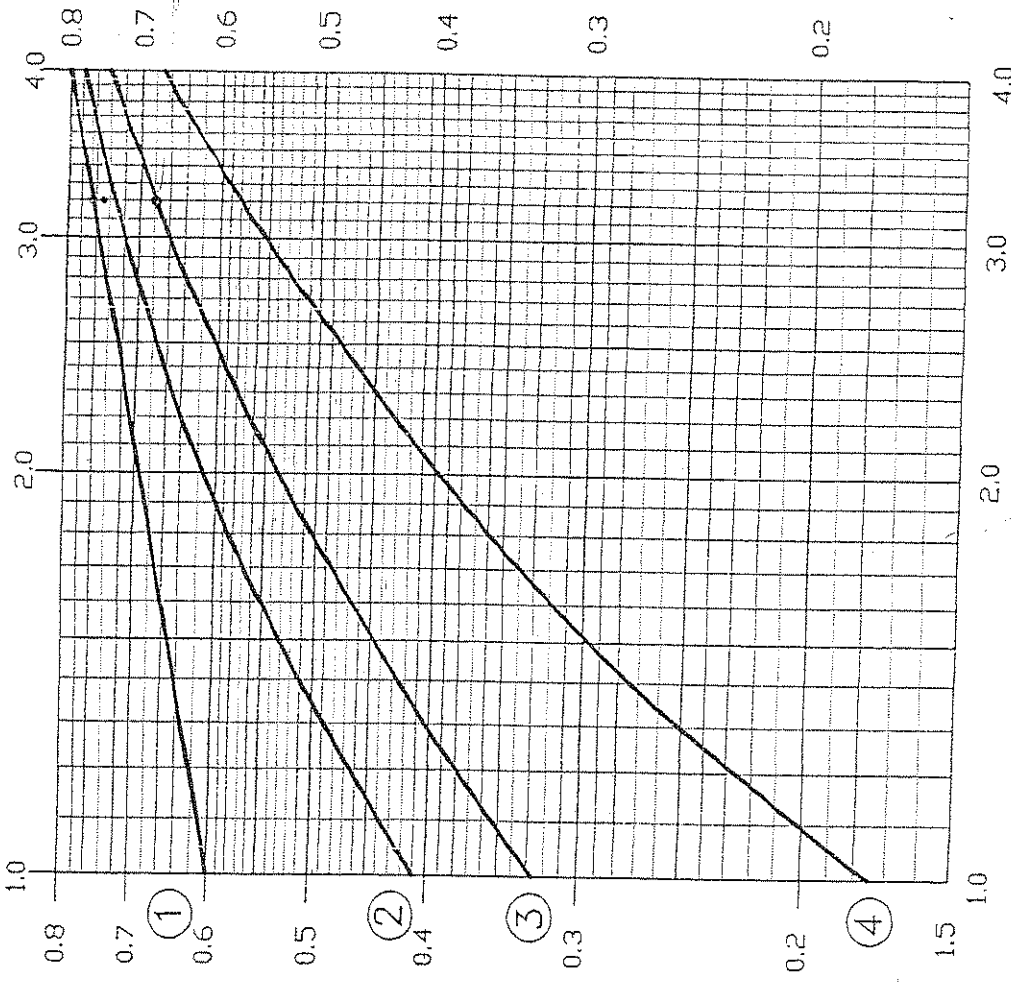
SHEET 5 OF 6

RAINFALL INTENSITY-DURATION CURVES

Approved by:

[Signature]
FLOOD CONTROL DISTRICT / DATE

3/2/04



0.8
 0.7
 0.6
 0.5
 0.4
 0.3
 0.2

LEGEND	
①	COMMERCIAL
②	SOUTH COAST SINGLE FAMILY*
③	NORTH COAST SINGLE FAMILY,* SOUTH COAST AGRICULTURE
④	NORTH COAST AGRICULTURE

* Single family lots with an average of 10,000 sq. ft. or more, interpolate between Single Family and Agriculture.

RAINFALL INTENSITY (inches per hour)

RUNOFF COEFFICIENTS

SANTA BARBARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Feb. 25, 2004

SHEET 1 OF 1

Approved by:

[Signature]

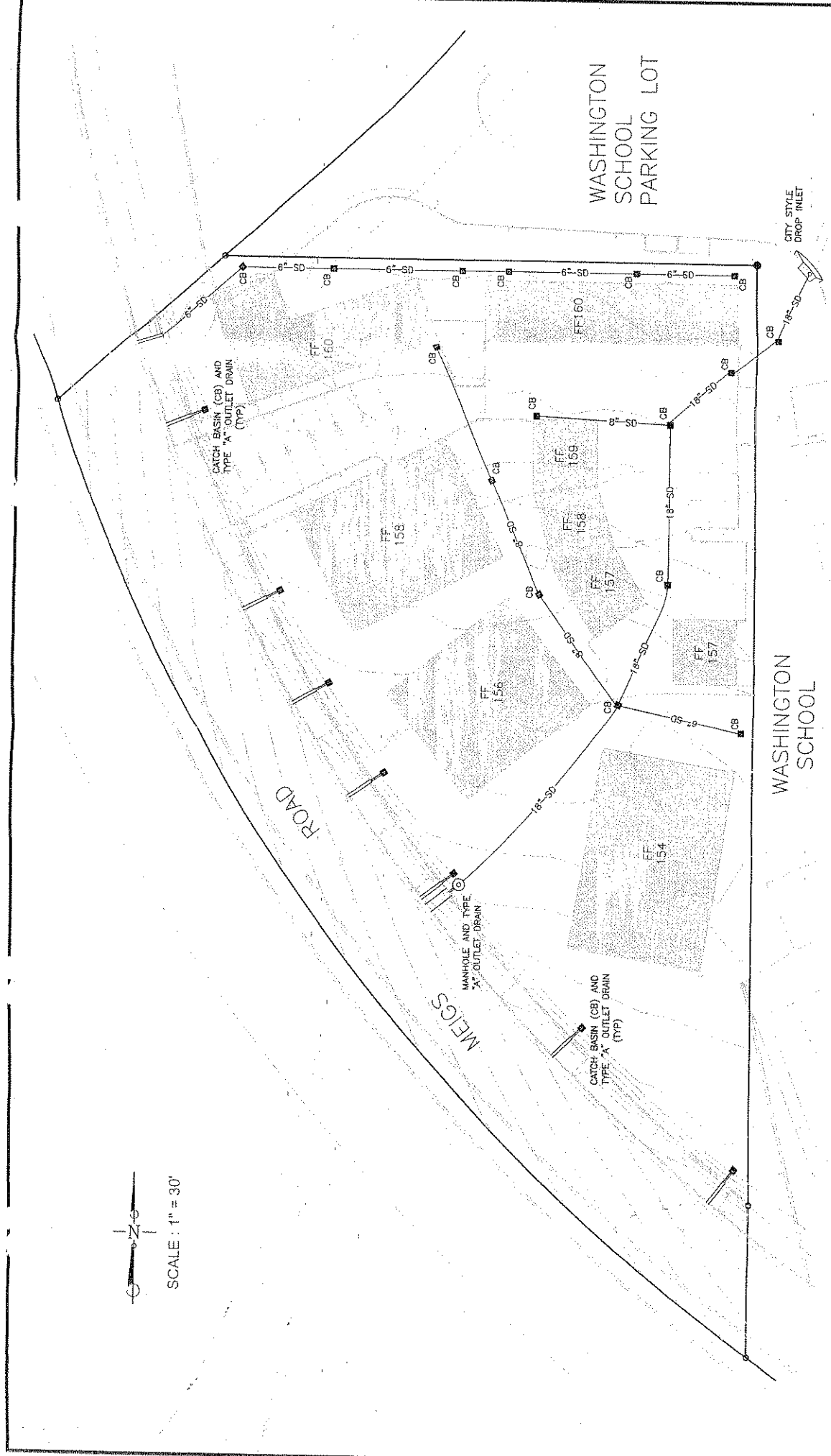
RAINFALL COEFFICIENTS VS RAINFALL INTENSITY

FLOOD CONTROL DISTRICT / DATE

3/2/04



SCALE : 1" = 30'



CONCEPTUAL DRAINAGE SYSTEM
MULTI-FAMILY RESIDENTIAL PROJECT
210 MEIGS ROAD
SANTA BARBARA, CA 93101

HYDROLOGY EXHIBIT

SCALE : 1" = 100'

