

**DRAINAGE REPORT**  
**for**  
**DAL-TILE**

FEBRUARY 2004



## **TABLE OF CONTENTS**

<b>I.</b>	<b>PROJECT DESCRIPTION .....</b>	<b>1</b>
<b>II.</b>	<b>DESIGN CRITERIA AND PREVIOUS REPORTS .....</b>	<b>1</b>
<b>III.</b>	<b>EXISTING DRAINAGE CONDITIONS .....</b>	<b>1</b>
<b>IV.</b>	<b>DEVELOPED DRAINAGE CONDITIONS .....</b>	<b>2</b>
<b>V.</b>	<b>SUMMARY .....</b>	<b>2</b>

<b>FIGURE 1 .....</b>	<b>Vicinity Map</b>
-----------------------	---------------------

<b>FIGURE 2 .....</b>	<b>Exerpts from Citicorp Report</b>
-----------------------	-------------------------------------

<b>FIGURE 3 .....</b>	<b>Offsite Basins</b>
-----------------------	-----------------------

<b>APPENDIX A .....</b>	<b>AHYMO calculations, low-flow channel calculations, grate capacity</b>
-------------------------	--

<b>PLATE 1 .....</b>	<b>Grading &amp; Drainage Plan</b>
----------------------	------------------------------------

## **I. PROJECT DESCRIPTION**

*The proposed development presented in this report is a commercial/warehouse to be constructed on a 1.36 acre site along the north side of Venice Avenue between San Mateo Blvd. and Pan American Freeway (Figure 1: Vicinity Map).*

## **II. DESIGN CRITERIA AND PREVIOUS REPORTS**

*The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual (DPM), Volume 2, Design Criteria. AMAFCA's AHYMO hydrology modeling software was utilized in accordance with the DPM to determine the amount of runoff generated in both the existing and developed states. The hypothetical storm event used was the 100-year, 6-hour storm.*

*Previous C.O.A. approved drainage reports used in preparing this study included:*

*Citicorp Site  
Bohannon-Huston, Inc  
1996*

*San Mateo Business Park  
C.L. Weiss Engineering, Inc.  
1999*

## **III. EXISTING DRAINAGE CONDITIONS**

*Currently, the majority of properties along the south side of Venice Ave. are either developed or are currently under construction. With that, the south half of Venice Avenue will very soon be constructed to City standards for the entire reach between San Mateo Blvd. and Pan American Freeway. Along the north side of Venice Avenue, development has occurred on all properties west of this site to San Mateo Blvd. and with it, the north half of Venice Ave. is constructed to City Standards from the western boundary of this site to San Mateo. East of this site, to Pan American Freeway, all properties are still undeveloped and there is no north curb on Venice Ave.*

*The Venice Avenue drainage basin fall from east to west at slopes ranging from 2.5% to 4.0%. San Mateo Blvd., with an existing trunk line already in place, serves as the lower boundary of the basin, while Pan American Freeway serves as the upper basin limit. Flows from the existing Venice Ave. drainage basin, once collected by the San Mateo storm drain system are routed further west across the Citicorp site where they ultimately outfall into the AMAFCA channel. Within Venice Ave., a 36"-30" lateral storm drain from the San Mateo system currently extends east where it ends just west of Pan American Freeway. There exists today a total of 3 Double 'C' drop inlets along the north side of Venice Ave. west of this site.*

*Plate 1: Existing Drainage Basins, identifies an area of roughly 5.22 acres upstream that contribute an estimated 10.80 cfs (Appendix 1 - AHYMO calculations) to this site during a 100-year event. Existing flows generated from this site total 2.21 cfs. At present, the combined 13 cfs sheetflow onto the developed parcels immediately west and north of this site.*

#### **IV. DEVELOPED DRAINAGE CONDITIONS**

*The owner/developer of this site is also the owner of the adjacent lot to the east. Given that, it is proposed with the development of this site that a berm/swale be constructed just outside the eastern edge of this site. Undeveloped storm flows from the east (10.8 cfs) will be routed along the east side of this berm to Venice Avenue and thereby not impact this site.*

*As indicated on the Grading & Drainage plan contained in Plate 1, the developed site will contain two distinct drainage basins. Basin B1 contains approximately 0.276 acres on the south side of the proposed new building. This area has been designed to surface discharge 1.2 cfs to Venice Ave. via the westernmost driveway. There exists three (3) drop inlets downstream of this site, along the north curb of Venus Ave., that will intercept this flow. The remaining 1.07 acres will surface discharge an estimated 5.0 cfs to the northwest corner of the site where a new Single 'C' drop inlet will intercept the flow and route it within a new 18" pvc private storm drain to an existing storm drain manhole in Venus Ave. Figure 2, an excerpt from the BHI Citicorp drainage report, which analyzed developed storm flows along Venus Ave., recommended free discharge from this site.*

#### **V. SUMMARY**

*Following the drainage management plan identified in this report, with the development of this 1.36 acre site, potential flood conditions will actually improve given the reduction in surface flows released downstream of this site.*

## Downstream Energy Dissipator

As combined on-site and off-site flows traverse down the escarpment, the water velocity and its potential energy increase significantly. To safely discharge these flows to the existing downstream natural arroyo, the water velocity and energy must be decreased. This will be accomplished through the construction of a large reinforced concrete box at the base of the escarpment. Flow will enter the box through the RCP storm drain from the site to the east and then exit at a lower velocity ( $\approx 3$  to 4 fps) to the north. The final configuration of the energy dissipator will be completed with the final storm drain design.

## IV. CONCLUSION

The proposed Citicorp site receives runoff from nearly 120 acres of upstream land. A dual branch storm drain system is proposed to protect the site from this upstream runoff and convey on-site runoff to a downstream outfall point west of the site. This system is sized according to community standards which require the ability to convey the fully developed conditions 100-year storm event runoff. The two branches of the storm drain system join near the west boundary of the site. From this point a single storm drain will drop flows down the escarpment. At the base of the escarpment flows will be slowed to allow discharge to the existing natural arroyo through the use of a reinforced concrete energy dissipator box.

4 With the construction of this storm drain both the Citicorp site and the contributing upstream basins will be allowed free discharge. The storm drain concept presented in this report is the most cost effective means to achieve this condition. Additionally, the proposed storm drain system is in accordance with the area master plan developed for the adjacent Balloon Fiesta Park.