

APR 10 2002

Mr. Randall Fujiki, Director  
Department of Planning and Permitting  
City and County of Honolulu  
650 South King Street, 7<sup>th</sup> Floor  
Honolulu, Hawaii 96813

Attention: Mr. Bob Sumitomo

Dear Mr. Fujiki:

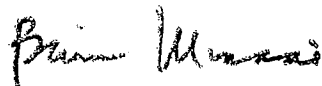
Subject: Technical Memorandum, Kaloi Gulch Interim Drainage Plan, North South Road Phase 1, Kapolei Parkway to Farrington Highway, Hydrology for the Interim Drainage Plan, Kapolei, Oahu, Hawaii

We are pleased to submit the enclosed Technical Memorandum describing our proposed Hydrology for the Kaloi Gulch Interim Drainage Plan for your concurrence. Your expeditious review and concurrence will facilitate the continuation of the permitting and design of the North-South Road project.

A response by April 26, 2002 would be greatly appreciated.

Should you or your staff have any questions please call Craig Watanabe at 692-7551, Technical Design Services Office, Design Branch, Highways Division.

Very truly yours,



BRIAN K. MINAAI  
Director of Transportation

Enclosure.

c: R.M. Towill (G. Hiyakumoto)

bc: HWY-DS (CW)  
HWY-DH (FN)  
DEP-P

CW:tk

## TECHNICAL MEMORANDUM

### KALOI GULCH INTERIM DRAINAGE PLAN - NORTH-SOUTH ROAD PHASE 1, KAPOLEI PARKWAY TO FARRINGTON HIGHWAY HYDROLOGY FOR THE INTERIM DRAINAGE PLAN

DATE SUBMITTED: March 7, 2002  
PROJECT: NORTH-SOUTH ROAD  
PREPARED BY: R. M. Towill Corporation  
PREPARED FOR: Department of Transportation, State of Hawaii

#### **Purpose**

This Memorandum describes the proposed the interim drainage plan hydrology of Kaloi Gulch that will be used in the North-South Project.

#### **Background**

The original North-South Road drainage system was integrated into the Housing and Community Development Corporation of Hawaii (HCDCH) East Kapolei Project's Drainage System for Kaloi Gulch. Due to the change in the housing market, the HCDCH has deferred the development of their East Kapolei Project. The date when the proposed East Kapolei development will proceed is indeterminate at this time.

The Department of Transportation (DOT) of the State of Hawaii intends to continue with the planning and design of the North-South Road Project and construct the road prior to the re-start of the East Kapolei Project. An interim drainage plan for Kaloi Gulch is required to design and construct the North-South Road until the drainage improvements for the proposed East Kapolei Project are completed.

#### **Interim Drainage Plan**

The North-South Road will cross Kaloi Gulch approximately 2,500 feet south of Farrington Highway. The road grade will be higher than the existing grade of the gulch. Most of the Kaloi Gulch storm runoff will flow to the east of the North-South Road and the rest will flow within the stream channel to the west. A culvert will be constructed to allow the North-South Road to cross the Gulch to maintain the Kaloi Gulch streambed and allow runoff to flow from east to west. The culvert will be sized to convey the flow determined by the interim drainage plan hydrology. The remainder of the runoff on the east side of the North-South Road will be conveyed within a channel sized for 2,500 cubic feet per second (cfs) according to the Interim Agreement of the Kaloi Gulch Flood Task Force or sheet flow to the boundary of the Ewa Villages Golf Course. A second culvert is required where Kaloi Gulch once again crosses the North-South Road at the northwest corner of the Ewa Villages which is the Kaloi Gulch entrance to the Golf Course. This

culvert will be sized to convey the remainder of the flow for the drainage basin, Subarea but will be restricted during the interim until the regional drainage system for Kaloi Gulch is resolved. A detention basin sized for the increase in runoff generated by the North-South Road project will be constructed at the Kaloi Gulch entrance to the Ewa Villages Golf Course. A new box drain will be constructed to discharge the storm runoff into the Ewa Villages Golf Course.

### **Interim Drainage Plan Hydrology**

The proposed interim drainage plan hydrology to be used for the North-South Road drainage analysis is based on the existing drainage patterns defined in the Ewa Villages Drainage Master Plan. The existing drainage patterns are shown on Figure 3-2 (attached) of the Ewa Villages Drainage Master Plan. Figure 3-2 shows that Subareas 1 - 4, 13, 14, 22, 24 and S1 - S17 drain into the Ewa Villages Golf Course from within or from the east side of Kaloi Gulch. The runoff is sheet flowing to the Golf Course except for the flow within the stream channel.

The proposed North-South Road culvert at the Kaloi Gulch crossing will convey the flow calculated in the Ewa Villages Drainage Master Plan for the stream channel. The calculated channel flow is 800 cfs. This flow will be allowed to pass under the North-South Road at the second culvert near the Golf Course. The remainder of the flows calculated for Subareas 1 - 4, 13, 14 and S2 - S17 will remain in the east side of the North-South Road and flow within the 2,500 cfs channel to the proposed basin or sheet flow to the Ewa Villages Golf Course. Subareas 15, 22, 24 and S1 will be restricted from flowing to the Golf Course by restricting the flow of the second culvert to the calculated channel capacity of 800 cfs. The ultimate capacity of the culvert will be sized to drain subareas 5 - 12, 15 - 21, 23, 25 and 26.

