County of Santa Cruz 0451

DEPARTMENT OF PUBLIC WORKS

701 OCEAN STREET, ROOM 410, SANTA CRUZ, CA 95060
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JOHN A. FANTHAM
DIRECTOR OF PUBLIC WORKS

AGENDA: MARCH 7, 2000

February 24, 2000

SANTA CRUZ COUNTY BOARD OF SUPERVISORS
701 Ocean Street
Santa Cruz, California 95060

SUBJECT: AMESTI ROAD DEWATERING PROJECT
PHASE II DESIGN STATUS REPORT

Members of the Board:

On December 14, 1999, your Board accepted and filed the Phase I report on the subject landslide and directed Public Works, Planning and Environmental Health to meet and consider alternative funding options and program responsibilities and report to your Board by today. Your Board also authorized IT/EMCON, the County's consultant, to proceed with its Phase II engineering design of the proposed dewatering/landslide stabilization project for a not-to-exceed cost of $92,400. At that time IT/EMCON's proposed solution called for installing a series of some 60 extraction wells to try to dewater the entire lo-acre area.

Since that time representatives from Public Works, Planning, and Environmental Health have met twice with the consultant to review the project's basic design parameters and to discuss each department's role in this project. Based on issues raised at those meetings, and in light of subsequent data collected by the three departments and the consultant regarding the various contributing sources of the water being introduced into the slide prism, we are now asking your Board to ratify a change in the scope of IT/EMCON's existing contract.

The three department group agreed that it would be premature to have IT/EMCON proceed with a final design solution until this additional information was available in the form of a "water balance analysis". This analysis would correlate additional hydrologic monitoring this winter, water use in the Crow Avenue area and rainfall data, with slope stability to ascertain how the slide is affected by each of the probable sources of water. This amended scope of work requires, among other issues, that the consultant assess the available data and develop the "water balance analysis", and it will not change the total cost of IT/EMCON's present contract.

Concurrently, the Planning Department has been proceeding with acquisition of much of the property south of Amesti Road through the Federal Emergency Management Agency's (FEMA) Landslide Hazard Mitigation Program. In response to both the Board's direction and to a petition received last month from concerned residents (copy attached), Planning will be developing an informational letter to the property owners and residents of the Crow Avenue area when the IT/EMCON analysis has been completed and evaluated by the three department group. Environmental Health has provided the consultant with additional data concerning the existing septic tanks in the Crow Avenue area. Environmental Health will test the groundwater as needed, review IT/EMCON's chemical evaluation of the groundwater, and advise the consultant on issues that pertain to public health.

Until IT/EMCON completes the "water balance analysis" it would be premature to develop a stabilization plan dependent on a complex and expensive dewatering well system. Therefore, the potential short term solution to slowing the movement of the landslide may involve one or more of the following measures:

- Regrading the landslide slope (on property acquired by Planning via FEMA's Hazard Mitigation Program) to maximize runoff and reduce rainfall infiltration into the slide mass

- Installing hydraugers (horizontal borings with perforated casings) to drain the landslide without the need for pumps

- Installing french drains beneath Amesti Road to intercept and divert groundwater before it enters the landslide

- Collecting runoff from the Amesti Road and Crow Avenue neighborhood via a new storm drain system

It appears that there may be sufficient funds remaining in the State Office of Emergency Services grant to fund the first two measures once the design work is complete. However, to date, no additional sources of funding have been identified to finance the full cost of construction and the installation of these other proposed solutions. As was pointed out in our report of December 14, 1999, it is still apparent that much of what may need to be done to try to stabilize this massive landslide is outside the County's right-of-way and beyond the originally proposed storm damage repairs to Amesti Road. In light of FEMA's "landslide policy," which prevents them from repairing public roadways damaged in federal disaster events until an active landslide has been stabilized, it appears likely that an assessment district may yet be needed to resolve this problem.

It is therefore recommended that the Board of Supervisors take the following action:

1. Accept and file this report on the Amesti Road Dewatering Project-Phase II Design.

2. Ratify the latest amendment to IT/EMCON's contract scope of work for the Amesti Road Dewatering Project-Phase II Design.

3. Direct Public Works, Planning, and Environmental Health to return to the Board on or before April 25, 2000, with the final results of IT/EMCON's hydrologic modeling study and their proposed landslide stabilization plan, along with any alternative funding options.

Yours truly,

JOHN A. FANTHAM
Director of Public Works

TLB:mg

Attachments

RECOMMENDED FOR APPROVAL:

County Administrative Officer

copy to: Public Works
Planning Department
Environmental Health
IT/EMCON

AMSTM

AMENDMENT TO AGREEMENT

The parties hereto agree to amend Contract Number 81688 dated September 3, 1998, by and between the COUNTY OF SANTA CRUZ and IT/EMCON, for project engineering and investigation services for the Amesti Road Stabilization Project, by revising the Santa Cruz County Board of Supervisors approved IT/EMCON scope of work as described in IT/EMCON's letter dated February 3, 2000.

All other provisions of said contract shall remain the same.

DATED: 2-24-00

COUNTY OF SANTA CRUZ
DEPARTMENT OF PUBLIC WORKS

_____
DIRECTOR OF PUBLIC WORKS

CONTRACTOR: IT/EMCON

BY: S. J. Hickey

ADDRESS: 1433 N. Market Boulevard
Sacramento, CA 95834-1943

TELEPHONE: 916-928-3300

FAX: 916-928-3341
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Approved as to form:

3/1/00
Chief Assistant County Counsel

DISTRIBUTION: Auditor-Controller
Public Works
Contractor

AMNDAGRE.DOC/ITMA
REV. 12/99

February 3, 2000
Project 79 1405
Cost Code: 00060000

Mr. Bill Williamson, P.E
Senior Civil Engineer
county of Santa Cruz
Department of Public Works
701 Ocean Street, Room 410
Santa Cruz, California 95060

Re: Revised Scope of Work for the Phase II Portion of the Amesti Road Landslide Stabilization Project

Dear Mr. Williamson:

The purpose of this letter is to transmit the newly revised scope of work for the Phase II portion of the Amesti Road Landslide Stabilization Project (ARLSP). The revised scope of work for the Phase II portion of the project is based on discussions held on January 12, 2000 at the Santa Cruz County office building. This letter is divided into a **Background** section, which describes the previously proposed Phase II scope of work; and a **Revised Phase** II section, which describes the revised scope of work.

BACKGROUND

The ARLSP is subdivided into several phases. Phase I of the project, a groundwater and landslide investigation, was completed in November 1999 (as described in the Phase I Amesti Road Storm Damage Assessment Report, IT/EMCON, November 19, 1999). Our December 8, 1999 letter identified the following tasks and accompanying costs that were proposed to be completed in the Phase II portion of the project:

• Additional Landslide Monitoring During Phase I	$14,400
• Engineering Design of Expanded Dewatering System	**$24,000**
• On-going Landslide Monitoring	$29,000
• Funding to Replace Destroyed Inclinometers	**$20,000**
• Southern Embankment Reconnaissance	**$5,000**
TOTAL ESTIMATE	**$92,400**

This proposed scope of work was authorized by the County on December 14, 1999. A summary description of the proposed tasks is provided below:

Additional Landslide Monitoring During Phase I (Task 1)

The original contract estimate for monitoring of landslide movement anticipated that significant movement for the year would end after the winter season (e.g., March). Field measurements taken during the Phase I investigation indicated that significant earth movement was continuing beyond this date. Monthly monitoring was consequently continued until September to continue data collection for use in the engineering slope analysis. These additional monitoring events were required to determine the magnitude of the total annual movement as well as to determine when movement stopped. This led to six additional monthly monitoring events.

Engineering Design of Expanded Dewatering System (Task 2)

Based on the results of the Phase I investigation, it appears certain that the originally proposed dewatering system comprising 20 extraction wells will not be adequate to sufficiently dewater the landslide to reduce movement. Preliminary analysis indicates that a combination of 60 wells, four (4) hydrauger arrays, a grading and surface water diversion plan, and potentially a water treatment system for the extracted groundwater will be needed to attain the intended results.

This task provides funding to design the dewatering system including distribution of well points, anticipated pumping rates, and well depths. A slope stability assessment will be performed to verify the concept of increasing the landslide's factor of safety to FS-1.5 by dewatering. All well collection pipe lines, header systems, and the potential treatment plant design, will be sized for flow rates determined by these calculations.

In addition, a complete equipment and materials list will be prepared for both estimating and contracting purposes. The treatment system will only be identified to a conceptual design stage until the need of such a unit is fully established.

On-going Landslide Monitoring (Task 3)

This task contains funding for monitoring of the inclinometers and piezometers for 12 monthly events. This data will be critical to the understanding of the subsurface characteristics leading to landsliding, will provide early warning of incipient landslide movement above the active landslide, and will help to determine the critical time when landslide movement stops so that the dewatering system can be installed.

Funding to Replace Destroyed Inclinometers (Task 4)

This task provides contingency funding to install six inclinometers within the landslide mass in the event that landslide movement destroys any of the existing inclinometers. This task will be performed on an as needed basis depending upon the amount of landslide movement.

Southern Embankment Reconnaissance Investigation (Task 5)

Based upon the results of the Phase I landslide investigation, we have identified the area south of the active Amesti Road landslide (i.e., Southern Embankment) as being susceptible to future landslide movement capable of adversely impacting Amesti Road (as well as private residential structures).

This task provides funding to investigate these areas from a reconnaissance-level standpoint to provide the County with information that could characterize levels of risk to Amesti Road and identify possible future courses of action needed in this area.

REVISED PHASE II SCOPE OF WORK

On January 12, 2000 a meeting was held at the County offices to discuss the previously described Phase II scope of work. The meeting was attended by the following personnel:

- Thorn Bolich and Bill Williamson - Santa Cruz County, Public Works
- Mike Dever, Joe Hanna, and Rachel Lather - Santa Cruz County, Planning
- John Ricker - Santa Cruz County, Health Services

- Patrice Theriot - Faye Bernstein & Associates
- Steve Hickey and J. C. Isham - IT/EMCON

The outcome of this meeting was as follows:

- IT/EMCON will not perform the engineering design of the dewatering system (Task 2) and the reconnaissance investigation of the southern embankment (Task 5) at this time.
- IT/EMCON will commence landslide monitoring (Task 3). Inclinometers will be replaced, if necessary under Task 4.
- IT/EMCON will perform a water balance assessment of the landslide mass in-lieu of the design of the dewatering svstem. The water balance will include performing groundwater modeling to assess the contribution of septic discharge and surface water infiltration to the base flow within the slide mass.
- The groundwater modeling assessment will determine the sensitivity of infiltrating source water rates to the water levels in the landslide mass. The goals of this study are described below.

The County will provide IT/EMCON with the following septic tank information:

- Location of septic tanks on a CADD drawing, and if available, the depth of the septic pits. The base CADD drawing to be provided to the County by IT/EMCON.
- Water use rates either by household or for the subdivision. The water use rates will be assumed to equal the septic system discharge.
- Census information for the subdivision east of Amesti Road.
- Rainfall data from a near by gauging station.
- Assessors parcel map for the subdivision.

The purpose of the modeiing study is to assess the sensitivity of the septic discharge rates and surface water infiltration to the water levels in the landslide mass and its subsequent effect on the stability of the landslide mass. The study will evaluate methods of reducing infiltration including eliminating septic discharge, grading the landslide slope to improve sheet wash, and redirecting surface waters discharging from areas up slope of the landslide around the landslide area. The study will evaluate the effectiveness of landslide mitigation measures other than dewatering which may include diverting a combination of the source waters identified and installing passive dewatering systems such as horizontal hydraugers or french drains.

The groundwater modeling study will be funded from the dewatering system design task (Task 2).

If you have any questions, please call either of the undersigned.

Sincerely,

EMCON

J. C. Isham
Project Manager

Steve Hickey
Project Engineer

PETITION

John Fanthom, Director
Department of Public Works
Santa cnlz county
701 Ocean Street
Santa Cruz, CA 95060

JAN 2000

3460

December 20, 1999

Dear Mr. Fantham:

It is our understanding that the Santa Cruz County Department of Public Works is investigating the Amesti Road landslide with the intention of stabilizing it to prevent further slippage. We encourage you to continue your efforts towards designing a system to correct the conditions that have caused this landslide.

Several homes are within a few hundred feet of the head of this landslide. In order to ensure the stability of our properties in this vicinity we feel that the best solution is to stop the ground movement before it progresses any further up the hill. Several of our neighbors on Amesti Road have already experienced significant property damage caused by the landslide.

We hope that you are able to correct this potentially dangerous condition before it progresses any further.

Respectfully Submitted,

	42 Crow Ave	Daniel Mihalyfi
	36 CROW AVE	MONA DIETZ
	36 Crow Ave	Marianne Stassin
	33 Crow Road	Daniel DiScriptore
	30 CROW AVE.	William Horne
	30 Crow AVE	Madelyn Gomez
	MELVIN CALVILLO	27 CROW AVE.
	Gaye Muir	26 Crow Ave.
	C.W. McKENZIE	21 CROW AVE
	MARK GUY	6 CROW AVE
	Marilyn Mihalyfi	42 Crow Ave.
	John Kneisly	41 CROW AVE.
	Jacque Sutter	29 Crow Ave.
	ABEL ANTUNES	10 CROW RD.
		38 Crow

Copy to: Supervisor Tony Campos
Supervisor Walt Symons
Browns Valley Road Association
+ MIKE DEVER, Planning
+ John Rickert, Env. Health