

ROSEMARY QUARRY  
MUP P-87-021RPL  
ROCK FALL REPORT  
Jan-Mar 2010

To Department of Public Works,

This report summarizes the rock fall inspections that have taken place at Rosemary's Quarry in Jan-Mar 2010.

Rosemary Quarry is a hard granite rock quarry located in a valley between two mountain slopes. The quarry is adjacent to SR 76 where the hillsides are strewn with boulders of various shapes and sizes. These boulders are currently supported by surface friction, soil embedment or they are interlocked with other boulders. Blasting or heavy rainfall may disturb natural support mechanisms causing the boulders to fall down slope. Major Use Permit P87-021RPL requires the operator to inspect areas where there is the potential for rocks to fall. A rock fall maintenance plan was submitted and approved by the County that provides both preventative as well as protective measures for public safety and the safety of persons on the site. Section 2.1 of the "Boulder and Rock Fall Maintenance Plan for Rosemary Quarry" provides for routine inspections by a Certified Engineering Geologist (CEG) of potentially unstable boulders and rock fall areas identified in the Eastern and Western Reach areas along SR-76. The plan requires a CEG to inspect these areas after the following events;

1. An annual inspection by a CEG with written report to the Director of Public Works (DPW) completed prior to the rainy season (before September 30);
2. After blast events the Peak Particle Velocity (PPV) exceeds 1.0 in/sec as detected by a seismograph located outside the quarry approximately 900 ft. S.E. of the existing quarry entrance along SR -76;
3. Monthly inspections by the operator of the Eastern and Western reaches;
4. Following seismic events of M5 or greater (VII on the Mercalli scale) on nearby portions of the Elsinore fault or Rose Canyon fault or other significant seismic event reported as strongly felt by residents of the Lake Rancho Viejo community;  
or
5. Following rainy periods totaling 1 inch or more as recorded by a rain gauge installed at the quarry.

Annual Inspection

A rockfall inspection by a C.E.G. was conducted on June 11, 2009. This report was included in the 2<sup>nd</sup> Quarter 2009 rockfall submittal.

Inspections after Blasting

No blast events occurred in 1st Qtr 2010.

Monthly Operator Inspections

No movement detected.

Inspections after Seismic Events

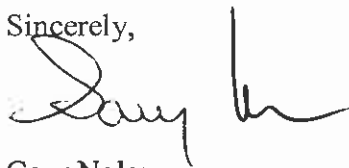
No known seismic events greater than M5 magnitude occurred in the 1st Quarter 2010.

Inspections after Rainfall

3.78" rain event recorded on Jan 18-22nd. 1.60" rain event recorded on Feb 5-6<sup>th</sup>. 1.42" rain event recorded on Feb 27<sup>th</sup>. A rockfall inspection from URS is attached.

If there are any questions regarding this report please give me a call.

Sincerely,



Gary Nolan  
Senior Project Manger  
Granite Construction Company  
(760) 578-6654



February 9, 2010

Mr. Chris Kiser  
Granite Construction  
38000 Monroe Street  
Indio, California 92203

Subject: Update Geologic Observations: February, 2010  
On-Going Rock Slope Excavation  
Rosemary's Mountain Quarry  
San Diego County, California  
URS Project No. 27661001.10000

Dear Chris:

On February 4, 2010, the undersigned geologist performed a geologic assessment update for the on-going rock slope excavations at Rosemary's Mountain Quarry. The purpose of our site visit was to observe geologic conditions encountered in the quarry that might pose major slope instability problems. At your request, the undersigned geologist also observed the existing highway road cuts to the west and east of the quarry entrance for indications of impending rock falls. Photographs of the quarry excavation and road cuts taken during the February 4, 2010 geologic assessment are attached.

URS's previous site visit was on June 11, 2009. The quarry cuts have not substantially changed since our last visit. The SR-76 highway re-alignment had been completed, which shifted the roadway away from the existing highway cut slope. Rock fall protection measures along the re-aligned roadway (installed as part of the re-alignment) include a brow ditch, chain link fence, and retaining wall. The February site visit followed a rainy period with measured rainfall of 1.2 inches on January 18 and 1.25 inches on January 21, 2010.

#### Quarry Conditions

A visual assessment of the excavated high wall slopes and benches was made. The existing unpaved access road above the high wall quarry area had experienced significant concentrated runoff during the recent rains. Some of the runoff from the access road flowed down the high wall slopes at several locations. Ponding was noted locally. Groundwater seepage was indicated at many areas of the quarry.

Many small, single block rock falls had occurred as a result of the rain. Recent scarps resulting from block falls were observed above the 610, 570 and 530 benches. Two rock falls each involving about 5 yards of material had occurred along the high wall above the 490 bench. The rock fall areas involved some soil slippage from along the top edge of the cut. One of the previously identified 'precarious boulders' had fallen to the 490 bench.



Mr. Chris Kiser  
Granite Construction  
February 9, 2010  
Page 2

A fairly substantial rock slide occurred between the 410 and 390 bench. The rock slide appeared to have involved weathered rock from along the back edge of the cut. The slope and rocky areas above the quarry entrance appeared stable. The rock slide and single block rock falls noted above were contained on the existing quarry benches and did not endanger Granite Construction employees or traffic on SR-76.

Tension cracks were observed along the top edges of fill slopes between the 570 /610 benches, and the outer edge of the 490 bench. The cracking appeared to be related to settlement resulting from saturation of the rocky fill material. The outer edges of the fill slope along the dirt access road (above the quarry) contain boulders within the fill. The soil embedding the boulders eroded during the recent rains, such that the boulders could topple with additional rain.

Based on our periodic assessment, the high wall cut slopes appear to be steep enough, and the existing quarry benches have been wide enough to contain the recently dislodged boulders and rock falls. The upper benches are currently bermed off and closed to prevent access. There is currently no work taking place in these areas. We understand that slope scaling is planned when these areas are re-opened. Our assessment of the large boulder above the 530 bench (note the 570 bench tapers out and does not extend below the boulder) suggests the recent rain may have deepened crevices around the base of the rock. We recommend this area be re-evaluated when the quarry operation resumes.

Quarry personnel should keep adequate distance from the recently unstable areas. It should be recognized that rock falls and/or boulder instability can occur within the quarry. However, in our opinion, the potential hazard of rock fall and/or boulder instability does not represent a public health and safety issue.

#### Highway Cut Slopes

We did not observe slope conditions that were conducive to rock falls. Some of the potential rock falls areas identified previously appeared to be intact. Locally, loose boulders are present on inclined rock surfaces. Rock falls and/or boulder instability, if they occur will likely be contained by the new rock fall protection measures.

If you have any questions concerning this report, please call.

Sincerely,

URS CORPORATION

David L. Schug, C.E.G.1212  
Principal Geologist

DLS:kl/  
Attachment



Rosemary's Quarry

Photo Date 2-4-10

URS Project No. 27683002

Photo #1

Precarious Boulder

Boulders in Fill

Precarious Boulder

Rock Fall Areas

Rock Fall Area

530

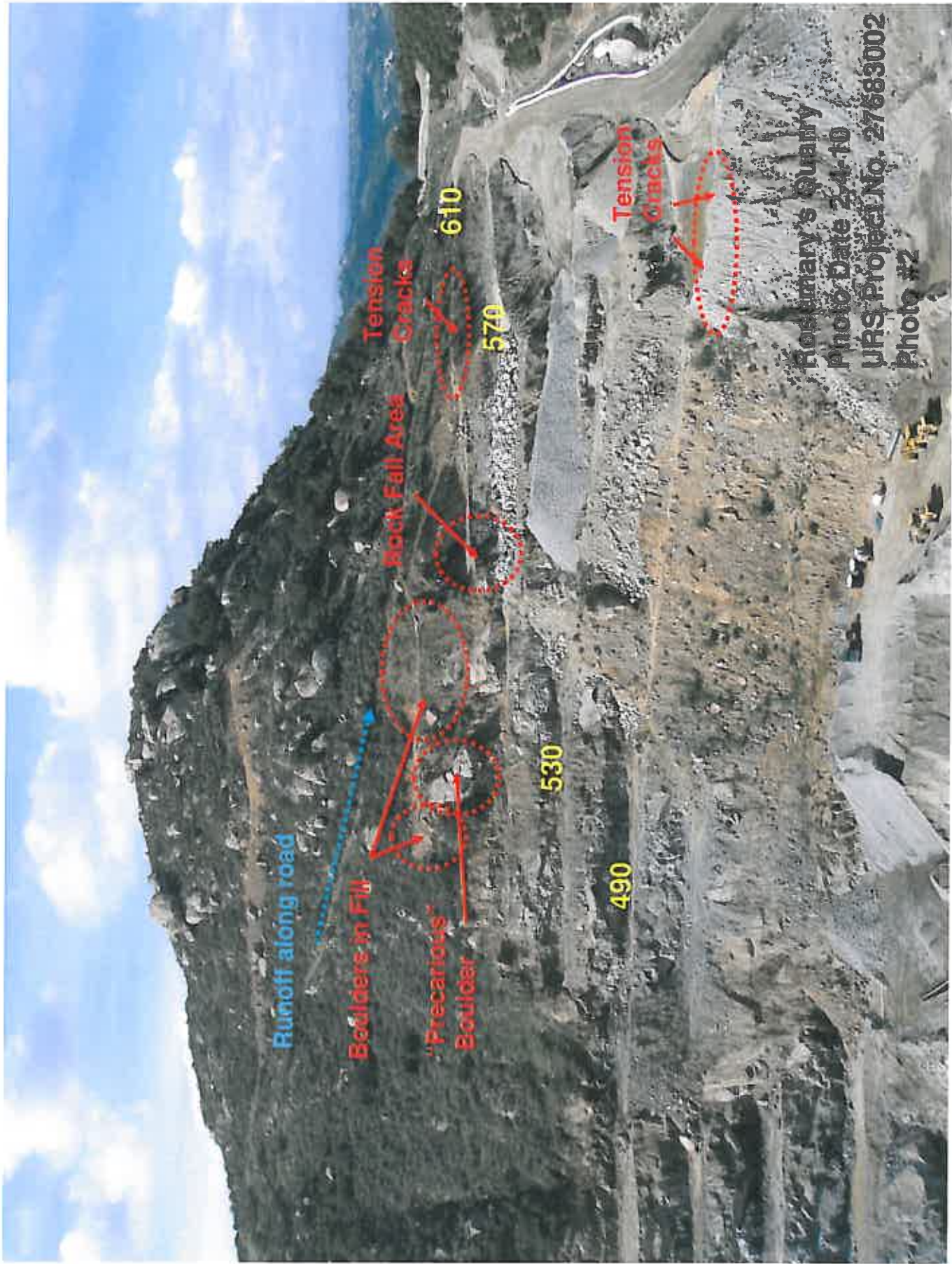
490

450

410

390

Avoid Parking



Runoff along road

Boulders in Fill

"Precarious" Boulder

Rock Fall Area

Tension Cracks

490

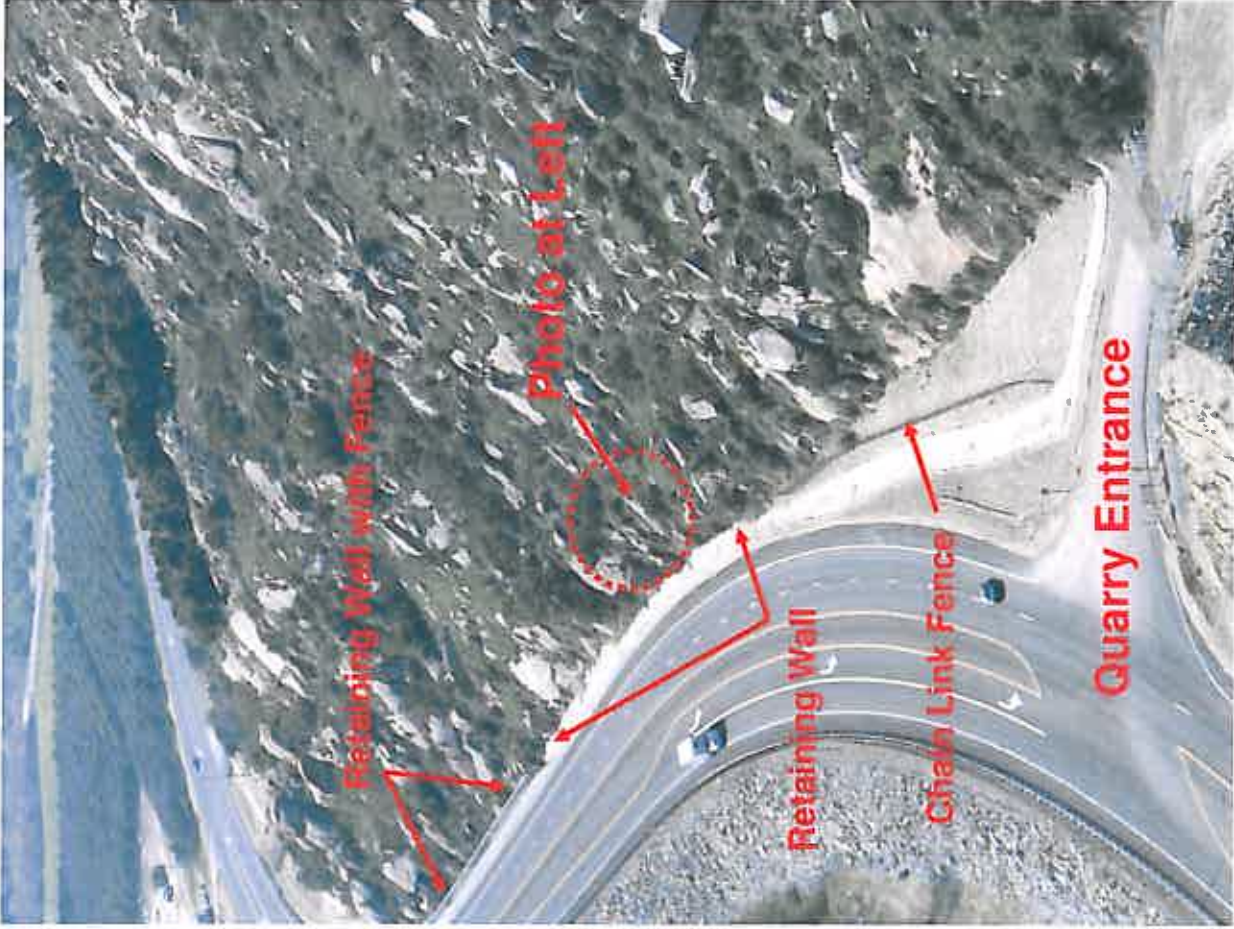
530

570

610

Tension Cracks

Rossmore's Quarry  
Photo Date 2-4-10  
URS Project No. 27683002  
Photo #2



Rosemary's Quarry  
Photo Date 2-4-10  
URS Project No. 276883002  
Photo #3



View East of SR-76  
from quarry entrance



Potentially  
Unstable Boulder  
(previously identified)

Retaining Wall

Rosemary's Quarry  
Photo Date 2-4-10  
URS Project No. 27683002  
Photo #4