

ROSEMARY QUARRY  
MUP P-87-021RPL  
ROCK FALL REPORT  
OCTOBER 2008

To Department of Public Works,

This report summarizes the rock fall inspections that have taken place at Rosemary's Quarry since March, 2008.

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.

Inspection before Rainy Season

An inspection was conducted on the Eastern and Western reaches by a CEG on September 25, 2008 (see report). No movement has been detected.

Inspections after Blasting

Seismographs located outside the quarry approximately 900 ft. S.E. of the existing quarry entrance along SR -76. Seismographs placed along SR-76 have not detected PPVs greater than 1.0 inches/second. However, inspections by a REG have been conducted for each blast located within 500 ft. of SR-76. No movement has been detected.

Inspection Date	Peak Particle Velocity (inches/second)	Comments
4/10/2008	0.32	No movement detected
4/24/2008	0.50	No movement detected
6/30/2008	0.80	No movement detected

Monthly Operator Inspections

No movement detected.

Inspections after Seismic Events

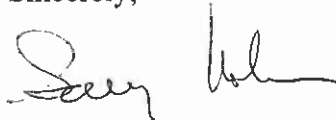
No seismic events of a M5 magnitude have occurred in this time period.

Inspections after Rainfall

An inspection was conducted by a CEG on March 25, 2008 before work on the quarry began. No movement was detected at that time (see report). No rain events of 1 inch or more have occurred since the March 25, 2008 inspection.

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



March 25, 2008

Mr. Gary Nolan  
Granite Construction  
38000 Monroe Street  
Indio, California 92203

Subject: Update Geologic Reconnaissance Post Rainy  
Post Rainy Season Slope Conditions  
Proposed Rosemary's Mountain Quarry  
San Diego County, California  
URS Project No. 27683002.10170

Dear Mr. Nolan:

In accordance with your request, we have performed an update geologic reconnaissance of the hillside slopes along SR-76 near the entrance to the proposed Rosemary's Mountain Quarry. The reconnaissance was performed on March 18, 2008 following several significant rainy periods since our last reconnaissance of August 31, 2007. The purpose of our reconnaissance was to field-check potential rock fall areas identified in our Boulder Survey report dated December 8, 2006.

The quarry will be located along the east-facing slope of Rosemary's Mountain. At the time of our reconnaissance, grading had begun within the area of the proposed quarry. Equipment operating included several heavy-duty dozers. An excavator equipped with a pneumatic rock breaker was working near the quarry entrance. Initial quarry blasting had not been performed.

Our reconnaissance consisted of making visual observations of the slopes areas east and west of the proposed quarry entrance, and comparing the current slope conditions with photographs of the slope areas taken in December, 2006. Current photographs are included as attachments. Areas of potential boulder instability are described in our December 8, 2006 report.

## **EASTERN AREA**

This area extends east of the quarry entrance (see photos 1 and 2, attached). Since our August, 2007 site visit, a dense growth of natural vegetation had covered much of the slope.

We had identified Zone A as containing a number of loose-appearing boulders over an area encompassing about 250 lineal feet of natural slope, and up to about 50 feet above existing SR-76 (see Photo 3). Loose boulders identified in this area are still present generally as observed in August of 2007.

Boulder No. 1 consists of a single boulder resting on a thin layer of soil. Rainfall over the previous several months did not appear to dislodge the boulder (see photo 2).

Boulder No. 4 appears to be in a relatively stable configuration.

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Mr. Gary Nolan  
Granite Construction  
March 25, 2008  
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The easterly edge of the slope area includes a swale containing rocky talus within a previously burned area. At the time of our last visit the rocky talus was essentially devoid of vegetation. We had previously recommended a barrier fence in this area to retain loose rocks within the swale; however, we understand that this area was determined by Granite Construction to be outside of the limits of the Multiple Use Permit. Therefore, Granite Construction plans to continue to monitor this area, and does not plan to provide a protective fence at this time. The current dense vegetation is expected to reduce the amount of soil erosion, which may in turn reduce the likelihood of rock fall that could impact SR-76.

### WESTERN AREA

This area encompasses approximately 750 lineal feet of slope west of the quarry entrance. The primary concern previously identified is loose boulders resting upon sloping surfaces of granitic rock that are above the level of SR-76. Following the rainy season, a number of loose boulders are still present generally as described previously in August, 2007 (see photos 3 and 4).


### SUMMARY

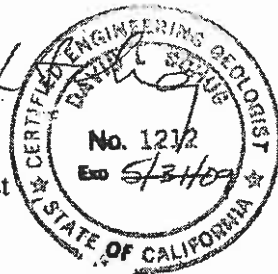
We did not observe indications of significant recent rockfalls within the area evaluated. Further, we did not observe slope changes that would warrant immediate attention. Loose boulders are still present generally as identified in our August 2007 reconnaissance. We understand that Granite will arrange for closure of SR76 at the time of initial quarry blasting. A follow-up reconnaissance should be performed after blasting.

If you have any questions concerning this update reconnaissance, please give us a call.

Very truly yours,

URS CORPORATION

  
David L. Schug  
Principal Geologist



DLS:ml

Attachment



April 23, 2008

Mr. Gary Nolan  
Granite Construction  
38000 Monroe Street  
Indio, California 92203

Subject: Geologic Observation of Quarry Blast  
Field Report from April 10, 2008  
Proposed Rosemary's Mountain Quarry  
San Diego County, California  
URS Project No. 27683002.10170

Dear Mr. Nolan:

In accordance with your request, the undersigned geologist observed a blast within the limits of the proposed Rosemary's Quarry. The blast was part of the on-going excavation of the quarry. The purpose of our observation was to note any boulder instability and/or rockfalls resulting from the blast that might impact nearby portions of Highway SR-76. As discussed below, boulder instability and/or rockfalls were not observed at the time of the blast.

The blast area on April 10 was located along an upper bench on the west side of quarry (see Photo #1, attached). Blasting had taken place previously within the quarry prior to this site visit. We understand the blast on April 10 was closest to existing SR-76 to date.

Prior to blasting, we field checked the locations of potentially unstable boulders previously identified in our Boulder Survey Report dated December 8, 2006. Our most recent update site reconnaissance was performed on March 18, 2008 (URS report, dated March 25, 2008). There were no significant changes apparent since the time frame of our last site visit.

The blast took place at approximately 2:34 pm. Granite Construction had closed traffic on Highway 76 prior to the blast. Loaders and a street sweeper were positioned on the highway to remove any boulders; however, it was not necessary to use the equipment as no material fell from the adjacent slopes onto the highway.

Seismograph monitoring was performed by Granite Construction's blasting subcontractor. The seismograph record from the monitoring point along Highway SR-76 is attached. The monitoring point was located on the highway shoulder about 250 feet west of the quarry entrance. The peak particle velocity (PPV) indicated from the record (0.32 in/s), was less than the maximum allowable PPV at 300 feet (1.25 in/s) per Granite Construction's blasting plan (also see our December 8, 2006 report).

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Mr. Gary Nolan  
Granite Construction  
April 23, 2008  
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If you have any questions concerning this field report reconnaissance, please give us a call.

Very truly yours,

URS CORPORATION

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



DLS:ml

Attachment: Seismograph record



April 30, 2008

Mr. Gary Nolan  
Granite Construction  
38000 Monroe Street  
Indio, California 92203

Subject: Geologic Observation of Quarry Blast  
Field Report from April 24, 2008  
Proposed Rosemary's Mountain Quarry  
San Diego County, California  
URS Project No. 27683002.10170

Dear Mr. Nolan:

In accordance with your request, the undersigned geologist observed a blast within the limits of the proposed Rosemary's Quarry. The blast was part of the on-going excavation of the quarry. The purpose of our observation was to note any boulder instability and/or rockfalls resulting from the blast that might impact nearby portions of Highway SR-76. As discussed below, boulder instability and/or rockfalls were not observed at the time of the blast.

The blast area on April 24, 2008 was located along an upper bench on the west side of quarry (see Photo #1, attached). Blasting had taken place previously within this general area of the quarry (URS field report dated April 23, 2008).

Prior to blasting, the undersigned geologist field checked the locations of potentially unstable boulders previously identified in our Boulder Survey Report dated December 8, 2006. Our most recent update site reconnaissance was performed on March 18, 2008 (URS report, dated March 25, 2008). There were no significant changes apparent since the time frame of our most recent site visit (April 10, 2008).

The blast took place at approximately 1:00 pm. Granite Construction had closed traffic on Highway 76 prior to the blast. Loaders and a street sweeper were positioned on the highway to remove any boulders; however, it was not necessary to use the equipment as no material fell from the adjacent slopes onto the highway.

Seismograph monitoring was performed by Granite Construction's blasting subcontractor. One of the monitoring points was located on the SR-76 highway shoulder about 250 feet west of the quarry entrance. The blast report (attached) indicates the measured particle velocity to be 0.5 inch/sec.

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April 30, 2008  
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If you have any questions concerning this field report, please give us a call.

Very truly yours,

URS CORPORATION

A handwritten signature in black ink, appearing to read 'D. Schug'.

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

DLS:ml



July 15, 2008

Mr. Gary Nolan  
Granite Construction  
38000 Monroe Street  
Indio, California 92203

Subject: Geologic Observation of Quarry Blast  
Field Report from June 30, 2008  
Proposed Rosemary's Mountain Quarry  
San Diego County, California  
URS Project No. 27683002.10170

Dear Mr. Nolan:

In accordance with your request, the undersigned geologist observed a blast within the limits of the proposed Rosemary's Quarry. The blast was part of the on-going excavation of the quarry. The purpose of our observation was to note any boulder instability and/or rockfalls resulting from the blast that might impact nearby portions of Highway SR-76. As discussed below, boulder instability and/or rockfalls were not observed at the time of the blast.

The blast area on June 30 was located along the second bench from the top on west side of quarry (see Photos #1 and #2, attached). Prior to blasting, we field checked the locations of potentially unstable boulders previously identified in our Boulder Survey Report dated December 8, 2006. Our most recent update site reconnaissance was performed on March 18, 2008 (URS report dated March 25, 2008). There were no significant changes apparent since the time frame of our last site visit (April, 2008).

The blast took place at approximately 2:05 pm. Granite Construction had closed traffic on Highway 76 prior to the blast. Loaders and a street sweeper were positioned on the highway to remove any boulders. There were some fragments projected from the blast onto the highway (see Photo #3, attached). The street sweeper was used to clean Highway SR-76 of coarse sand and gravel size rocks that landed on the highway. After two passes of the street sweeper, the highway was clear for traffic at approximately 2:10 pm. There was no other material that fell from the adjacent slopes onto the highway.

Seismograph monitoring was performed by Granite Construction's blasting subcontractor. The seismograph record from the monitoring point along Highway SR-76 is attached. The monitoring point was located on the highway shoulder about 250 feet west of the quarry entrance. The measured peak particle velocity was 0.8 inch/second.

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Mr. Gary Nolan  
Granite Construction  
July 15, 2008  
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If you have any questions concerning this field report reconnaissance, please give us a call.

Very truly yours,

URS CORPORATION

A handwritten signature in black ink, appearing to read "David L. Schug". The signature is fluid and cursive, with a long, sweeping underline.

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

DLS:ml



September 25, 2008

Mr. Gary Nolan  
Granite Construction  
38000 Monroe Street  
Indio, California 92203

Subject: Update Geologic Reconnaissance  
Post Blasting Slope Conditions  
Proposed Rosemary's Mountain Quarry  
San Diego County, California  
URS Project No. 27683002.10170

Dear Mr. Nolan:

In accordance with your request, we have performed an update geologic reconnaissance of the hillside slopes along SR-76 near the entrance to the Rosemary's Mountain Quarry. The reconnaissance was performed on September 23, 2008 following the most recent blast on September 18, 2008. The purpose of our reconnaissance was to field-check potential rock fall areas identified in our Boulder Survey report dated December 8, 2006.

The quarry is located along the east-facing slope of Rosemary's Mountain. At the time of our reconnaissance, blasted material was being moved, broken, and stockpiled within the Phase 1 area of the quarry. Equipment operating included several heavy-duty dozers and an excavator equipped with a pneumatic rock breaker.

Our reconnaissance consisted of making visual observations of the slopes areas east and west of the quarry entrance, and comparing the current slope conditions with photographs of the slope areas taken in December 2006 and March of 2008. Current photographs are included in this report (Photographs 1 and 2). Areas of potential boulder instability are described in our December 8, 2006 report. We understand boulders and/or rockfalls were not dislodged onto the area of SR-76 near the quarry.

## **EASTERN AREA**

This area extends east of the quarry entrance along SR-76 and extends up to the top of the slope. In our initial report, we identified Zone A in the Eastern Area as containing a number of loose-appearing boulders over an area encompassing about 250 lineal feet of natural slope, and up to about 50 feet above existing SR-76. Other loose boulders were also identified within the Eastern Area. Blasting events over the past approximate six months did not appear to dislodge previously identified boulders.



Mr. Gary Nolan  
Granite Construction  
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## WESTERN AREA

This area encompasses approximately 750 lineal feet of slope west of the quarry entrance. This area also has a zone (Zone A) as described in our December 2006 report that contains a number of loose-appearing boulders resting from about 20 feet above the highway up to about 80 feet in some sections. This zone covers most of the length of the Western Area. A number of loose-appearing boulders are still present in the Western Area as described previously in our reporting. Blasting events over the past approximate six months did not appear to dislodge previously identified boulders.

If you have any questions concerning this update reconnaissance, please give us a call.

Very truly yours,

URS CORPORATION

A handwritten signature in black ink, appearing to read 'David L. Schug'.

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

DLS:ml