# SAN RAFAEL ROCK QUARRY VIBRATION REPORT

<table>
<thead>
<tr>
<th>Location: S4° 41' 120&quot;</th>
<th>Max. Charge Weight: 540</th>
<th>Date of Blast: 6/4/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northing: 37°59.00N</td>
<td>Blast Duration: 234 ms</td>
<td>Time of Blast: 11:47</td>
</tr>
<tr>
<td>Easting: 122°27.21W</td>
<td>Blasting Number: 1594</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrument Details</th>
<th></th>
<th>Teledyne 1000</th>
<th>Micro</th>
<th>Micro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seismograph Model</td>
<td>1000</td>
<td>Micro</td>
<td>Micro</td>
<td>Micro</td>
</tr>
<tr>
<td>Serial Number</td>
<td>2481</td>
<td>4550</td>
<td>4567</td>
<td>4570</td>
</tr>
<tr>
<td>Last Calibration Date</td>
<td>5 3 13</td>
<td>5 3 13</td>
<td>5 3 13</td>
<td>5 3 13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Marin Ag</th>
<th>Via Montebello</th>
<th>San Marino</th>
<th>Mt. Near Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northing</td>
<td>37°59.19N</td>
<td>37°59.18N</td>
<td>37°59.31N</td>
<td>37°59.30N</td>
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<tr>
<td>Easting</td>
<td>122°27.22W</td>
<td>122°27.53W</td>
<td>122°27.30W</td>
<td>122°27.16W</td>
</tr>
<tr>
<td>Distance from Blasting</td>
<td>2006</td>
<td>3226</td>
<td>3326</td>
<td>3042</td>
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<tr>
<td>Scaled Distance</td>
<td>86</td>
<td>138</td>
<td>148</td>
<td>131</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Vibration Details</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Longitudinal Peak Particle Velocity (ips)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitudinal Peak Frequency (Hz)</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Transverse Peak Particle Velocity (ips)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transverse Peak Frequency (Hz)</td>
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<td></td>
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<tr>
<td>Vertical Peak Particle Velocity (ips)</td>
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<tr>
<td>Vertical Peak Frequency (Hz)</td>
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<tr>
<td>Peak Vector Sum (ips)</td>
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<tr>
<td>Peak Air Overpressure (db)</td>
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<td></td>
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</tr>
</tbody>
</table>

Nothing Triggered

Seismograph Operator: Decon Lopes

Signature: [Signature Image]
SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: 51° 12' 20"

Northing: 37° 59' 00"

Easting: 122° 27' 21"

Designed Bench Height (ft): 45'

Rock Density (lb/ft^3): 223

Relative Rock Hardness: 7

Date: 6/4/13

Time: 11:47

Blast Number: 1594

DESIGN DATA:

Number of Holes Shot: 18

Hole Dia. (in.): 6 3/4

Stemming (ft): 17

Loading Time Required (min hrs): 6

Deck Type: ____________

Ave. Hole Depth (ft): 48

Burden (ft): 15

Stem Type: 3/4 split

Staggered Pattern (y or n): N

Length (ft): ____________

Relative Confinement: ____________

Spacing (ft): 15

Subdrill (ft): 3

Number of Lost Holes: 0

Tons Shot: 15,053

EXPLOSIVES DATA:

Bulk Explosive

Weight

Boosters

Units

Delays

Units

Misc.

Units

60/40 Blend

7480

450 gpm

36

56 octol

18

___

Max (lb/ton): 540

Blast Duration (sec): 234

Total Charge Wt.: 7516

VIBRATION DATA:

Nearest Structure: Maltos Ag

Seismograph Loc.: Name

Temperature: 78°

Max. Chrg. (lb/ft^3): 540

Northing: 37° 59' 00"

Northing: ____________

Sky Condition: Clear

RPPV: 1/1

Easting: 122° 27' 21"

Easting: ____________

Wind Direction: NW

Frequency: 1/1

Distance Away: 200'

Distance Away: ____________

Wind Speed: 15 mph

Airblast: 1/1

PERFORMANCE DATA:

Powder Factor (lb/ton): 6

Displacement: Great

Crushability: ____________

Lb/ft^3: 1.4

Vibration: Great

Fines: ____________

Fragmentation: Great

Digability: ____________

Comments: ____________

Blaster in Charge: [Signature]
6.4.13
5H. E1-120°
*1594

15x15

18 Holes
18=50' E4
t
18=80' E2
det
2=17ms
2=92ms
2=950gpm

9,480 lbs 80/20 blend

Face 45°

17° stemming

540 lbs per awk

Main = 200°
Viz. M = 322°
Soda A = 332°
M oke 1 = 306°

57° 59' 00" N
112° 27' 21" W
Vibra-Tech Inc. Seismic Analysis
Stop Event Report

Serial No: 9591 v3.23
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QRY
Location: 16 MARIN BAY PARK CT.
Distance: 
Operator: VIBRA-TECH GSM
Comment: WILLIAM HOSKEN RES.

Begin Date: 06/04/2013 07:00:50 (UTC-7)
End Date: 06/04/2013 13:31:58 (UTC-7)
Events over Trigger: 0 (2-1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.7

Shaketable Calibrated: 02/20/2013
By: Vibra-Tech, Inc.
2700 Holloway Road - Suite 113
Louisville, KY 40299 U.S.A.
TEL: 502.240.9900 FAX: 502.240.9902

Dynamic Calibration Graph:

Cal Test Results:

Longitudinal: Pass
Transverse: Pass
Vertical: Pass
Sound: Pass

The seismograph located at 16 Marin Bay Park Court (S/N 9591) did not trigger during the shot on June 4, 2013 at approximately 11:47 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.
The seismograph on Quarry Property (S/N 9808) did not trigger during the shot on June 4, 2013 at approximately 11:47 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.