



**Vibra-Tech**

VibraTechinc.com

July 11, 2017

Mr. Mark Martin  
Asphalt Paving Company  
14802 West 44th Avenue  
Golden, CO 80403

4818 E. Ben White Blvd.  
Suite 202  
Austin, TX 78741

Phone 512.442.6464  
Fax 512.442.6552

Dear Mr. Martin,

Attached you will find our report covering the registration and analysis of the ground vibration and air-borne effects transmitted from the blasting conducted during the first quarter of 2017 (January 1st – March 31th) by Asphalt Paving Company in Golden, Colorado. Please place this information in your Blast Data Management Book.

The attached report contains the original seismograph records obtained from the blasting along with a comparison of the recorded vibrations to the latest recommended U.S. Bureau of Mines (USBM) Variable Particle Velocity vs. Frequency Limits Report of Investigations (RI)-8507 (Nov. 1980).

The recorded ground vibrations **satisfy** the Variable Particle Velocity vs. Frequency Limits recommended by the USBM RI-8507 (Nov. 1980).

The recorded air-borne effects **satisfy** the recommended levels set forth in the USBM RI-8485 (Nov. 1980).

If we can be of further assistance in this matter, please advise.

Respectfully submitted,

VIBRA-TECH, INC

Geoffrey Rigsby  
Southwest Regional Manager

cc: Mr. Mike Miller  
Denver Water Administration Bldg.  
1600 W. 12<sup>th</sup> Ave.  
Denver, CO 80204-3412

**ASPHALT PAVING COMPANY  
RALSTON QUARRY  
GOLDEN, COLORADO  
1ST QUARTER 2017**

DATE	SHOT #	TIME	PPV (in/sec)	FREQ (Hz)	AIR (dB)	MAX/LBS DELAY	DIST (Ft)	LOCATION
03/22/17	1-2017	12:41	0.219	14	118.8	934	1200	*

NT = No Trigger, <0.020 ips.

\* Information not provided.



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Austin, TX 78741

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Fax 512.442.6552

Dear Mr. Martin,

Attached you will find our report covering the registration and analysis of the ground vibration and air-borne effects transmitted from the blasting conducted during the second quarter of 2017 (April 1st – June 30th) by Asphalt Paving Company in Golden, Colorado. Please place this information in your Blast Data Management Book.

The attached report contains the original seismograph records obtained from the blasting along with a comparison of the recorded vibrations to the latest recommended U.S. Bureau of Mines (USBM) Variable Particle Velocity vs. Frequency Limits Report of Investigations (RI)-8507 (Nov. 1980).

The recorded ground vibrations satisfy the Variable Particle Velocity vs. Frequency Limits recommended by the USBM RI-8507 (Nov. 1980).

The recorded air-borne effects satisfy the recommended levels set forth in the USBM RI-8485 (Nov. 1980).

If we can be of further assistance in this matter, please advise.

Respectfully submitted,

VIBRA-TECH, INC

Geoffrey Rigsby  
Southwest Regional Manager

cc: Mr. Mike Miller  
Denver Water Administration Bldg.  
1600 W. 12<sup>th</sup> Ave.  
Denver, CO 80204-3412

**ASPHALT PAVING COMPANY  
RALSTON QUARRY  
GOLDEN, COLORADO  
2ND QUARTER 2017**

DATE	SHOT #	TIME	PPV (in/sec)	FREQ (Hz)	AIR (dB)	MAX/LBS DELAY	DIST (Ft)	LOCATION
04/14/17	2-2017	23:09	NT	NT	NT	445	>3000	CATTLE GUARD
05/24/17	3-2017	12:27	NT	NT	NT	1,066	>1500	RALSTON DAM
06/14/17	4-2017	12:32	0.105	15	117.4	1,010	1,500	*

NT = No Trigger, <0.020 ips.

\* Information not provided.



October 30, 2017

VibraTechinc.com

Mr. Mark Martin  
Asphalt Paving Company  
14802 West 44th Avenue  
Golden, CO 80403

4818 E. Ben White Blvd.  
Suite 202  
Austin, TX 78741

Phone 512.442.6464  
Fax 512.442.6552

Dear Mr. Martin,

Attached you will find our report covering the registration and analysis of the ground vibration and air-borne effects transmitted from the blasting conducted during the third quarter of 2017 (July 1<sup>st</sup> – September 30<sup>th</sup>) by Asphalt Paving Company in Golden, Colorado. Please place this information in your Blast Data Management Book.

The attached report contains the original seismograph records obtained from the blasting along with a comparison of the recorded vibrations to the latest recommended U.S. Bureau of Mines (USBM) Variable Particle Velocity vs. Frequency Limits Report of Investigations (RI)-8507 (Nov. 1980).

The recorded ground vibrations **satisfy** the Variable Particle Velocity vs. Frequency Limits recommended by the USBM RI-8507 (Nov. 1980).

All but one of the recorded air-borne effects **satisfy** the recommended levels set forth in the USBM RI-8485 (Nov. 1980). There was a 134.6 dB on August 28<sup>th</sup>.

If we can be of further assistance in this matter, please advise.

Respectfully submitted,

VIBRA-TECH, INC

Geoffrey Rigsby  
Southwest Regional Manager

cc: Mr. Mike Miller  
Denver Water Administration Bldg.  
1600 W. 12<sup>th</sup> Ave.  
Denver, CO 80204-3412

**ASPHALT PAVING COMPANY  
RALSTON QUARRY  
GOLDEN, COLORADO  
3RD QUARTER 2017**

DATE	SHOT #	TIME	PPV (in/sec)	FREQ (Hz)	AIR (dB)	MAX/LBS DELAY	DIST (Ft)	LOCATION
07/13/17	5-2017	10:41	0.045	128	97.5	547	1,800	*
08/04/17	6-2017	10:49	0.399	32	128.1	500	2,000	*
08/28/17	7-2017	1:48	0.036	37	134.6	497	1,200	*
09/25/17	8-2017	12:57	0.079	32	119.9	505	1,600	*

\* Information not provided.



January 10, 2018

VibraTechInc.com

Mr. Mark Martin  
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14802 West 44th Avenue  
Golden, CO 80403

4818 E. Ben White Blvd.  
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Austin, TX 78741

Phone 512.442.6464  
Fax 512.442.6552

Dear Mr. Martin,

Attached you will find our report covering the registration and analysis of the ground vibration and air-borne effects transmitted from the blasting conducted during the fourth quarter of 2017 (October 1st – December 31<sup>st</sup>) by Asphalt Paving Company in Golden, Colorado. Please place this information in your Blast Data Management Book.

The attached report contains the original seismograph records obtained from the blasting along with a comparison of the recorded vibrations to the latest recommended U.S. Bureau of Mines (USBM) Variable Particle Velocity vs. Frequency Limits Report of Investigations (RI)-8507 (Nov. 1980).

The recorded ground vibrations satisfy the Variable Particle Velocity vs. Frequency Limits recommended by the USBM RI-8507 (Nov. 1980).

The recorded air-borne effects satisfy the recommended levels set forth in the USBM RI-8485 (Nov. 1980).

If we can be of further assistance in this matter, please advise.

Respectfully submitted,

VIBRA-TECH, INC

Geoffrey Rigsby  
Southwest Regional Manager

cc: Mr. Mike Miller  
Denver Water Administration Bldg.  
1600 W. 12<sup>th</sup> Ave.  
Denver, CO 80204-3412

**ASPHALT PAVING COMPANY  
RALSTON QUARRY  
GOLDEN, COLORADO  
4TH QUARTER 2017**

DATE	SHOT #	TIME	PPV (In/sec)	FREQ (Hz)	AIR (dB)	MAX/LBS DELAY	DIST (Ft)	LOCATION
10/23/17	9-2017	13:05	NT	NT	NT	1,475	<700	TUNNEL