



Gerard Metal Roofing

PURPOSE: To approve the use of Gerard Metal roofing in Truckee

COMMENTS:

Gerard steel roof panels are approved for use in the Town of Truckee when installed in accordance with current research report ESR-1188 as prepared by ICC Evaluation Service, Inc. at an elevation not to exceed 7,000 feet above mean sea level on all roof pitches. Use 2x2 battens spaced at 15 inches on center nailed with a 16d nail at each rafter (rafters not to exceed 16 inches on center spacing).

FORBES DUNAGAN

February 13, 2009

Richard Anderson
Gerard Roofing Technologies
955 Columbia Street
Brea, CA 92821

Dear Mr. Anderson:

The following summarizes the testing completed at the Brea Facility on January 30, 2009:

Purpose of Testing

The purpose of the testing performed on the steel roof tile is to evaluate the load carrying capacity of the typical installation of Gerard stone-coated steel roof tile.

Testing Procedure

The steel roof tiles will be installed using the typical installation requirements of Gerard for stone-coated steel roof tile. The roof tile installation is on 5/8" roof plywood supported on 2x roof rafters spaced at 16" o.c. The roof tiles will then be loaded with sand bags that are approximately 42" x 42" and 4000#. The tile will be loaded with up to 3 bags of sand totaling 12007#. This will result in a total load of 980 psf on the steel roof tiles.

Observations

The observations of the testing were documented in photos shown in the following pages. A short description of the photos is included. The roof tiles performed with no failure of the tiles at the mid span of the tile or at the overlap.

Conclusion

The roof tiles did not fail under the loading applied.

The total load carried by the tile was 980 psf. This results in an allowable load of 490 psf when using a factor of safety of 2. The use of a factor of safety of 2 is justified as the steel roof tiles were not loaded to failure. If you use a factor of safety of 2.5, the allowable load is 392 psf.

Our test set up was limited to a total load of 12007#, but the roof tile installation could have held much more before failure.

The tiles should perform more than adequately under snow loads in excess of 500 psf. Based on the included calculations for roof snow loads in the town of Truckee, the load of 500 psf exceeds all calculated roof snow loads. In fact, the typical roof snow loads do not exceed the allowable load of 400 psf calculated with a factor of safety of 2.5.

STRUCTURAL ENGINEERS

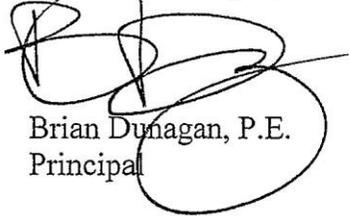
Based on the results of the testing, it is our opinion the Gerard stone-coated steel roof tile will perform under the snow loads present in the town of Truckee. Areas with the potential of snow loads in excess of 500 psf may, at the request of the design professional, use the intermediate 1x4 to increase the load capacity of the steel roof tile installation.

All installation of Gerard stone-coated steel roof tile shall be per the manufacturer's specifications and by an approved installer.

We appreciate the opportunity to work with you on this testing and evaluation of the Gerard Roofing Tiles.

Sincerely,

Forbes & Dunagan, Inc.



Brian Dunagan, P.E.
Principal



2-25-09

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Memo

To Michael Lavallee
Town of Truckee Building Dept.
10183 Truckee Airport Road
Truckee, CA 96161-3306
P: (530) 582-7820 F: (530) 582-7889

From Brian Dunagan, PE
Principal

Project 13950: Steel Roof Tile Evaluation & Roof Solutions

25 Mar 2009

Copies To	Contact	Phone	Fax
True Green Roofing	Audrey Smith	(775) 225-1590	audrey@omegaroof.com

Comments

Re: Steel roof tile

Mr. Lavallee:

Forbes & Dunagan, Inc. has evaluated the performance of the Gerard steel roof tile system for high snow loads within the jurisdiction of the Town of Truckee. We have concluded that this roof system may be installed in accordance with the manufacturer's requirements without need for additional engineering review at site elevations at or below 7000 ft. Engineering review/design of the roof framing system and connection of the steel roof tile system to the roof framing is required for site elevations above 7000 ft. For elevations up to 7000 ft and for all roof pitches, use 2x2 battens at 15" o.c. with a 16d at each rafter (16" o.c.).

Please contact us if you have any additional questions.

Sincerely,

Brian Dunagan, P.E.
Forbes & Dunagan, Inc.



3-27-09