

January 21, 2014

Marty Walters
NRG Insulated Block
4540 Gentwood Drive
Williamsville, NY 14221

Dear Mr. Walters,

The NCMA Research and Development Laboratory was asked to determine the fire rating for concrete masonry units tested in October 2014, (NCMA Lab Project Number: 14-500). These units were manufactured using integrated foam inserts.

Fire ratings can be calculated in accordance with ACI 216.7-14/TMS 0216.7-14. This method calculates the fire rating of a masonry assembly based on the aggregate types in the mix and the equivalent thickness of the masonry unit. There are four general categories of aggregates used in this calculation:

- 1 – Expanded Slag or Pumice
- 2 – Expanded Clay, Expanded Shale, or Expanded Slate
- 3 – Limestone, Cinders, or Air-Cooled Slag
- 4 – Calcareous or Siliceous Gravel (other than limestone)

These units, due to the non-traditional configuration with foam inserts, should be treated as a multi-wythe assembly, where each face, as separated by a foam insert, is treated as an independent wythe. As such, a composite fire rating can be calculated in accordance with the provisions ACI 216.7-14/TMS 0216.7-14.

The following mix design was provided by NRG Insulated Block along with the 8 x 4 x 16 inch concrete masonry units:

- Lake Gravel – Batch Weight 3000 lbs; 54.00% by volume
- Limestone – Batch Weight 2300 lbs; 46.00% by volume

The average equivalent thicknesses of the individual faces of the three units submitted for testing were determined to be 2.20 and 2.27 inches according to the procedures contained in ASTM C140/C140M-14b. Based on the equivalent thicknesses and the provided mix design the following fire rating has been calculated:

- 4 x 8 x 16 inch CMU Mark: “NRG 8 inch Insulated CMU”, Manufactured by Duchini Company (Erie, PA);
 - 2.20 inch and 2.27 inch equivalent thicknesses
 - Fire resistance rating (individual wythe) – 0.7 hours (2.20 inch); 0.7 hours (2.27 inch)
 - Fire resistance rating (multi-wythe assembly) – 2.27 hours

Please feel free to contact the Research and Development Laboratory for additional information.

Sincerely,



Dominick O. Dowds
Manager, Research and Development Laboratory