



FEMA



Hazus Depth Damage Functions: Improvements in Hazus-MH 3.0

The recent release of Hazus-MH 3.0 on November 16, 2015 brought with it a number of architectural changes to the Hazus software code. A number of these changes in the flood model addressed several underlying defects in the software that did not allow the built-in Hazus Depth Damage Functions (DDFs) to work to their full strength for General Building Stock (GBS) analysis. Previously, the code would not produce a value for flood-depth-in-structure, which takes into account the flood depth and the foundation type/height. With the updated inclusion of the foundation values, Hazus users will witness improved and more accurate results in their flood modeling.

Foundation Heights Explained

When using DDFs for GBS analysis in Hazus, the foundation height/type was being ignored for versions of Hazus released between 2009 and November 16, 2015. While Hazus should be using the foundation type to determine an accurate flood-depth-in-structure damage value, it was not doing so in certain cases. For example, a 7 foot flood depth grid impacts a house with a 7 foot raised pile foundation. Damage to the home’s structure should be calculated at 0 feet of flood-depth-in-structure. However, prior to the release of Hazus 3.0, the software may have calculated the damage at a 7 foot flood (absolute) depth, which can yield higher losses. The charts below show the differences in percent of damage for an area of Newport Beach, CA with these figures:

Hazus 2.2			Absolute Depth = 7'	
CensusBlock	Building Exposure	Building Loss	Damage %	
60590630062014	13690	3099	22.64%	
60590630062015	13705	2961	21.61%	
60590630062016	11956	2806	23.47%	
60590630062017	17225	2841	16.49%	
60590630062018	20329	3770	18.54%	
60590630062023	13000	2554	19.65%	
Hazus 3.0			Depth In Structure = 0'	
CensusBlock	Building Exposure	Building Loss	Damage %	
60590630062014	13690	807	5.89%	
60590630062015	13705	771	5.63%	
60590630062016	11956	729	6.10%	
60590630062017	17225	738	4.28%	
60590630062018	20329	982	4.83%	
60590630062023	13000	664	5.11%	

Note the increase in damage percentage in the absolute depth test run completed in Hazus-MH 2.2 (which did not account for foundation height/type) as opposed to the figures achieved under Hazus-MH 3.0. This improvement to the DDFs will allow users to more accurately run analyses on every building structure or type in the Hazus GBS.

What should communities do that have completed studies in the past 7 years?

The best solution for communities looking to get more accurate data through the new Hazus-MH 3.0 release is to re-run their older studies with the new software. They will be able to see how much of a difference the new DDF improvement has on their results and be able to compare figures side by side with their previous runs.

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Questions?

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