

NB-11

Jon Sommers

Multi-hazard Loss Estimation Methodology

Earthquake Model

Hazus[®]—MH MR5

Technical Manual

Developed by:

Department of Homeland Security
Federal Emergency Management Agency
Mitigation Division
Washington, D.C.

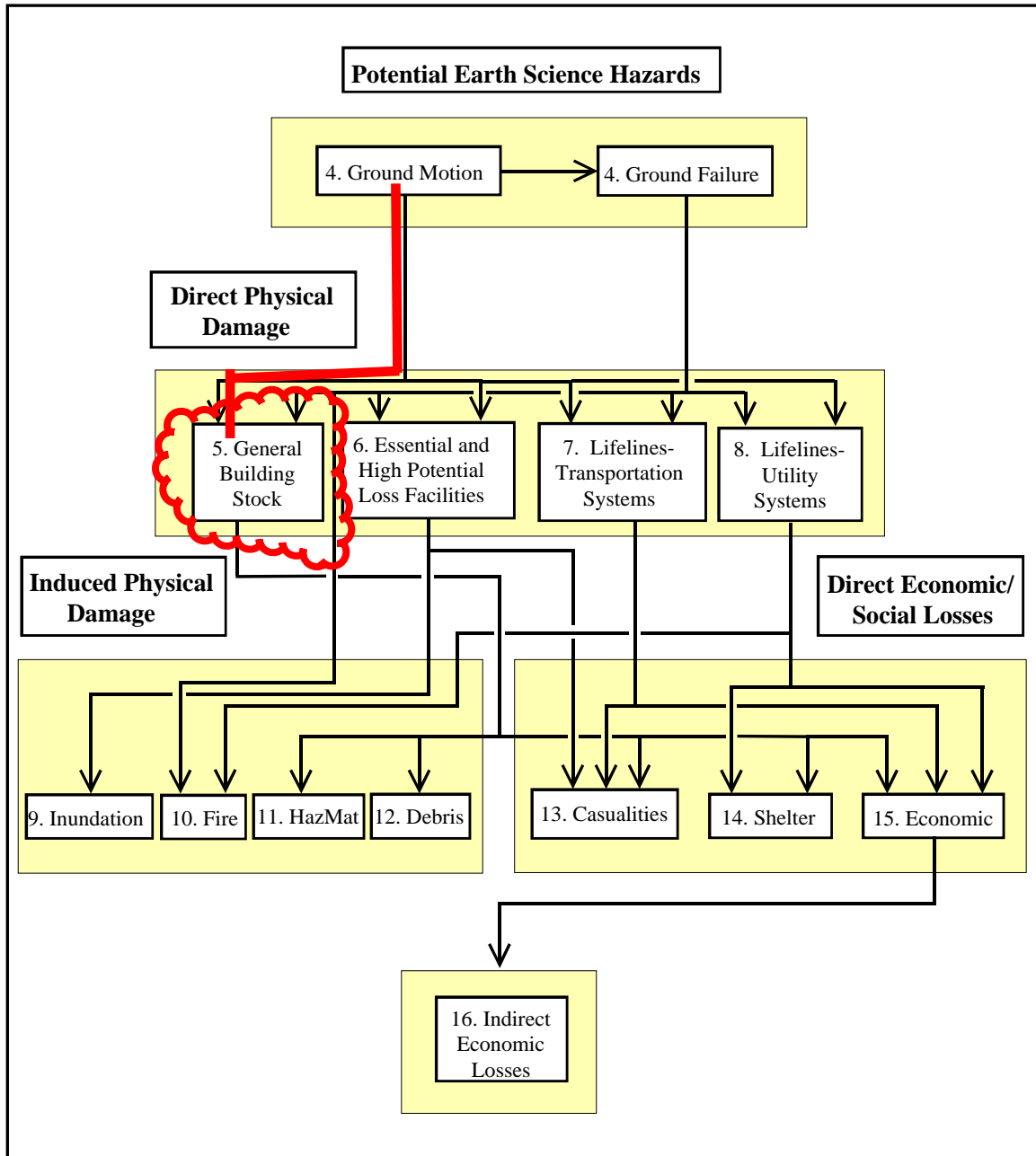


Figure 2.1 Flowchart of the Earthquake Loss Estimation Methodology.

Table 3.11: Essential Facilities Classification

Label	Occupancy Class	Description
	Medical Care Facilities	
EFHS	Small Hospital	Hospital with less than 50 Beds
EFHM	Medium Hospital	Hospital with beds between 50 & 150
EFHL	Large Hospital	Hospital with greater than 150 Beds
EFMC	Medical Clinics	Clinics, Labs, Blood Banks
	Emergency Response	
EFFS	Fire Station	
EFPS	Police Station	
EFEO	Emergency Operation Centers	
	Schools	
EFS1	Grade Schools	Primary/ High Schools
EFS2	Colleges/Universities	

3.2.2.2. Occupancy to Model Building Type Relationship

Default mapping of essential facility occupancy classes to model building types is provided in Tables 3B.2 through 3B.16 of Appendix 3B. For the regional designation of a particular state, refer to Table 3C.1 in Appendix C. The default mapping of specific occupancy to model building type mapping is based on general building stock occupancy classes 12, 26, 27 and 28.

3.2.3. High Potential Loss Facilities

High potential loss facilities are facilities that are likely to cause heavy earthquake losses if damaged. For this methodology, high potential loss (HPL) facilities include nuclear power plants, dams, and some military installations. The inventory data required for HPL facilities include the geographical location (latitude and longitude) of the facility. Damage and loss estimation calculation for high potential loss facilities are not performed as part of the methodology.

Table 3.2: Building Occupancy Classes

Label	Occupancy Class	Example Descriptions
	Residential	
RES1	Single Family Dwelling	House
RES2	Mobile Home	Mobile Home
RES3	Multi Family Dwelling RES3A Duplex RES3B 3-4 Units RES3C 5-9 Units RES3D 10-19 Units RES3E 20-49 Units RES3F 50+ Units	Apartment/Condominium
RES4	Temporary Lodging	Hotel/Motel
RES5	Institutional Dormitory	Group Housing (military, college), Jails
RES6	Nursing Home	
	Commercial	
COM1	Retail Trade	Store
COM2	Wholesale Trade	Warehouse
COM3	Personal and Repair Services	Service Station/Shop
COM4	Professional/Technical Services	Offices
COM5	Banks	
COM6	Hospital	
COM7	Medical Office/Clinic	
COM8	Entertainment & Recreation	Restaurants/Bars
COM9	Theaters	Theaters
COM10	Parking	Garages
	Industrial	
IND1	Heavy	Factory
IND2	Light	Factory
IND3	Food/Drugs/Chemicals	Factory
IND4	Metals/Minerals Processing	Factory
IND5	High Technology	Factory
IND6	Construction	Office
	Agriculture	
AGR1	Agriculture	
	Religion/Non/Profit	
REL1	Church/Non-Profit	
	Government	
GOV1	General Services	Office
GOV2	Emergency Response	Police/Fire Station/EOC
	Education	
EDU1	Grade Schools	
EDU2	Colleges/Universities	Does not include group housing

3.2.1.2. Specific Occupancy-to-Model Building Type Mapping

Default mapping schemes for specific occupancy classes (except for RES1) to model building types by floor area percentage are provided in Tables 3A.2 through 3A.16 of Appendix 3A. Table 3A.2 through 3A.10 provide the suggested mappings for the Western U.S. buildings and are based on information provided in ATC-13 (1985).