


Table 1: URM Building Classification and Upgrade Table (Except 1 and 2 Family Dwellings)

Seismic Risk	Classification	Description	Upgrade Level ^{2,3}	Approximate # of Buildings ⁴
Highest	URM Class 1	Critical Buildings (Risk category ¹ IV buildings, power generating stations serving critical facilities, water facilities, and other public utilities)	<p>Evaluation and Retrofit Level: Tier 3 in accordance with ASCE 41</p> <p>Performance Objective: BPON for Risk Category IV</p> <p>Structural Performance Objective: Immediate Occupancy for BSE-1N and Life Safety for BSE-2N</p> <p>Non-Structural Performance Objective: Operational for BSE-1N for all non-structural components assigned a component importance factor, $I_p=1.5$ as defined in ASCE 7-10 Chapter 13, as well as URM parapets, cornices, partitions and chimneys and hollow clay tile partitions.</p>	10
	URM Class 2	<p>A. All school buildings</p> <p>B. Risk category¹ III buildings</p>	<p>Evaluation and Retrofit Level: Tier 3 in accordance with ASCE 41</p> <p>Performance Objective: BPOE for Risk Category III</p> <p>Structural Performance Objective: Damage Control for BSE-1E and Limited Safety for BSE-2E.</p> <p>Non-Structural Performance Objective: Position Retention for BSE-1E for URM parapets, cornices and chimneys as well as unreinforced masonry or clay tile partitions along major routes of egress.</p>	(68) of which 38 are school buildings and 30 are public assembly buildings (mostly churches)
	URM Class 3	<p>A. Buildings ≥ 4 stories or</p> <p>B. Buildings with ≥ 300 occupants or</p> <p>C. Residential buildings with ≥ 100 units</p>	<p>Evaluation and Retrofit Level: Tier 2 deficiency only in accordance with ASCE 41 (unless Tier 3 required by ASCE 41)</p> <p>Performance Objective : BPOE for Risk Category II</p> <p>Structural Performance Objective: Life Safety for BSE-1E. When Tier 3 is required by ASCE 41, structural performance objective also includes Collapse Prevention for BSE-2E.</p> <p>Non-Structural Performance Objective: Life Safety for BSE-1E for URM parapets, cornices and chimneys.</p>	<ul style="list-style-type: none"> ▪ (188) Buildings ≥ 4 stories ▪ (76) Buildings ≥ 300 occupants

Footnotes:

1. Risk category as defined in Oregon Structural Specialty Code, 2014 Table 1604.5. (See Appendix B)
2. ASCE 41 refers to latest edition of American Society of Civil Engineers standard ASCE 41. At the time of writing of this report the reference standard is ASCE 41-13.
3. Refer to the glossary of terms for definition of BPOE, BPON, BSE-1, and BSE-2 etc. Note that BSE-1E and BSE-2E are defined differently in this report than in ASCE 41.
4. The number of URM buildings was obtained from the 1995 City of Portland URM database. This URM database is currently being updated to verify its accuracy, reflect any seismic upgrades that may already have been undertaken at the structure, and to remove buildings that have been fully upgraded or demolished.

Table 1: URM Building Classification and Upgrade Table (Except 1 and 2 Family Dwellings)

Seismic Risk	Classification	Description	Upgrade Level ^{2,3}	Approximate # of Buildings ⁴
 <p>Lowest</p>	URM Class 4	All other URMs not categorized as URM Class 1, 2, 3, or 5.	<p>Evaluation and Retrofit Level: Tier 2 deficiency only in accordance with ASCE 41 (unless Tier 3 is required by ASCE 41)</p> <p>Performance Objective : BPOE for Risk Category II</p> <p>Structural Performance Objective: Life Safety for BSE-1E. When Tier 3 is required by ASCE 41, structural performance objective also includes Collapse Prevention for BSE-2E.</p> <p>Non-Structural Performance Objective: Life Safety for BSE-1E for URM parapets, cornices and chimneys.</p> <p>**Exception: If a building conforms to or is brought up to the minimum requirements described in footnote 5 below, then only the following elements are required to be upgraded per ASCE 41 for Life Safety performance under the BSE-1E and Collapse Prevention under the BSE-2E:</p> <ul style="list-style-type: none"> (a) brace URM parapets, cornices and chimneys; (b) anchor URM walls to floors and roofs for out of plane loading; (c) attach diaphragm to vertical elements to transfer in plane shear; and (d) out-of-plane URM wall bracing if h/t ratio exceeds that reqd. by ASCE 41-13 Table 11-5. 	<ul style="list-style-type: none"> ▪ (736) Non-critical, 2 and 3-story buildings with occupant load between 10-100 occupants and 1 story building with occupants 10-300
	URM Class 5	1 and 2-story buildings with 0-10 occupants.	<p>Performance Objective: Limited Performance Objective</p> <p>Only the following elements are required to be upgraded per ASCE 41 for Life Safety performance under the BSE-1E and Collapse Prevention under the BSE-2E :</p> <ul style="list-style-type: none"> (a) brace URM parapets, cornices and chimneys; (b) anchor URM walls to floors and roofs for out of plane loading; (c) attach diaphragm to vertical elements to transfer in plane shear; and (d) out-of-plane URM wall bracing for URM walls with h/t ratio greater than 16 for one-story buildings or h/t ratio greater than 18 for the first story of a multi-story building, or h/t ratio greater than 14 for walls in top story of a multi-story building. 	<ul style="list-style-type: none"> (599) 1-story buildings (110) 2-story buildings

Footnotes (Continued):

5. Minimum Requirements / Building Configurations when limited upgrade is applicable for URM Class 4 buildings:
 - a) The building does not have vertical irregularity type 5a or 5b (a "weak story") as defined in ASCE 7-10, Table 12.3-2.
 - b) The building has a mortar strength (v_t) of 30 psi or more for all masonry at an axial stress of 0 psi.
 - c) The building has diagonally sheathed or plywood diaphragms at all levels above the base of the building.
 - d) The building has or will be provided with a minimum of two lines of vertical elements of the lateral force resisting system parallel to each axis. Masonry walls shall have piers with a height to width ratio that does not exceed 2:1. Wall piers shall occupy not less than 40 percent of the wall's length for the wall to be considered as providing a line of resistance. Exception: If a design professional registered in Oregon can demonstrate that the flexural, shear and compressive strength Demand/Capacity ratio are equal to 2.0 or less for all walls when evaluated using ASCE 41.