

## APPENDIX R

### REUSE OF MATERIALS

#### SECTION R101

##### GENERAL

**R101.1 Scope.** The reuse of materials shall be allowed in accordance with the provisions of this section.

**R101.2 Intent.** This appendix is intended to encourage the reuse of materials when possible and divert construction debris from landfills. This appendix is not mandatory, but specifies parameters of when materials are to be considered allowable for reuse while not compromising the integrity of the materials.

**R101.3 General notice.** The user should be vigilant regarding lead, asbestos, radon, PCB's, and other potentially harmful substances that are no longer allowed in buildings. Buildings built before 1978 may have used lead paint. Asbestos may be found in the insulation, fireproofing, floors, walls or roof. Newer buildings may have asbestos in the floors or roof. Any fluorescent light fixtures manufactured prior to 1979 may contain PCBs; new capacitors should be labeled: No PCBs.

#### SECTION R201

##### DEFINITIONS

**R201.1 General.** The following words and terms shall, for the purposes of this appendix, have the meaning shown herein.

**DOWN CYCLED MATERIALS.** The use of a material more than once, but cannot be used for the same purpose for which it was originally intended. This material would require some special processing. For example, re-using crushed concrete as an aggregate for more concrete.

**GOOD CONDITION.** Materials that have been visually inspected by the code official and that are determined to be fit for installation. Materials shall be in sufficient condition to reuse without potential harm to the health, safety, and welfare of the public. Materials shall not have any mold or water damage. Wood products shall not contain any holes other than wire or nail holes. Wood products shall not contain rot, splits, buckling, warpage or other deterioration that would prevent the material from functioning in its intended use. The condition shall be determined by the code official.

**IRREGULAR MATERIALS:** Irregular materials are materials that have been made by a manufacturer, but do not meet the exact specifications of the product and cannot be sold for their specific purpose. These materials can be down cycled, for example, an irregular paver meant for commercial use could be used for residential purposes.

**RECOVERABLE RESOURCES.** Materials that have useful physical or chemical properties after serving their original purposes. Recoverable resources can be re-used or recycled for the same or for other purposes.

**RECYCLABLE MATERIALS.** Materials that normally have been or would be discarded (such as scrap and waste) and materials that may be reused after undergoing some kind of physical or chemical processing. Recyclable materials may include materials that have been used and deformed prior to demolition or deconstruction. Recyclable materials do not include those items that may be used again for their original purposes or functions without any special processing.

**RECYCLING:** The result of a series of activities by which materials that would become or otherwise remain waste, are diverted from the solid waste stream by collection, separation, and processing and are used as raw materials in the manufacture of goods sold or distributed in commerce or the reuse of such materials as substitutes for goods made of virgin materials.

**RECYCLED MATERIALS-** materials that contain post-industrial or post-consumer waste as defined by the Federal Trade Commission.

**REUSED MATERIALS.** Materials that are reused more than once in its original form for its original purpose or for another purpose without any special processing.

**SECTION R301**  
**ACCEPTABLE APPLICATIONS**

**R301.1 Acceptable applications.** The reused materials are allowed as identified in Table R301.1.

<b>REUSED MATERIALS - ACCEPTABLE APPLICATIONS FOR USED MATERIALS</b>				
<b><u>Code Section</u></b>	<b><u>Material- original use</u></b>	<b><u>Typical allowed application for reuse</u></b>	<b><u>Comments</u></b>	<b><u>General Exclusions</u></b>
<b><u>CONCRETE, ASPHALT</u></b>				
<u>Section 3110</u>	<u>Asphalt</u>	<u>reuse for driveways and sidewalks or roadbase</u>	-	<u>1.7</u>
-	<u>Concrete</u>	<u>as fill or aggregate for concrete mix, garden borders, driveways (as gravel), road base</u>	-	<u>1.7</u>
-	<u>Pilings</u>	<u>see concrete</u>	-	<u>3</u>
<b><u>MASONRY AND STONE</u></b>				
-	<u>Brick and stone veneer</u>	<u>horizontal surfaces on site and interior floors, non-structural walls, veneer</u>	-	<u>3</u>
-	<u>Pavers</u>	<u>Non structural paving or floors and veneer</u>	-	<u>3</u>
-	<u>Concrete blocks and products</u>	<u>finishes, interior walls, low fences, base for porous paving.</u>	<u>Reused in original structural capacity if certified by Engineer, re note 3.</u>	<u>3</u>
-	<u>Stone- Sandstone, Slate, granite and marble</u>	<u>finishes, roofing (slate)</u>	-	<u>3</u>
<u>2103.6- New exception</u>	<u>Glass Block</u>	<u>original use</u>	<u>no larger than 25 sf, supported on at least 3 sides. Not allowed in structural walls</u>	<u>5</u>

<b>METALS</b>				
-	<u>Cold Formed Metal Framing- Studs, joists, rafters, perlin, girts</u>	<u>repetitive members in original capacity, structural if identifiable</u>	<u>Steel with Mill test certificates may be reused in original capacity. Steel design values for materials manufactured after 1910 can be found in Design Guide 15: AISC Rehabilitation and Retrofit Guide. Weldability for sections produced prior to the 1950's need testing.</u>	<u>4</u>
-	<u>Metal joists</u>	<u>if identifiable can be used for structure</u>		<u>4</u>
<u>Ch. 17- Special Inspection</u>	<u>Structural steel- Columns, pillars, and posts</u>	<u>reuse in structural capacity with special inspection.</u>		<u>4</u>
<b>WOOD, AGRI-FIBER, AND PLASTIC MATERIALS</b>				
-	<u>Columns, pillars, and posts</u>	<u>Reuse in original capacity</u>	-	-
-	<u>Dimensional Lumber, min. 4 ft long, unstamped (includes rough hewn)</u>	<u>Install as one dimension higher than required OR 1.Floor plates 2.Second top-plates 3.Fillers, fire-blocking, and nailers 4.Strut-bracing, bridging, and ledgers (if ledger is one dimension larger than what otherwise might be used)</u>	<u>for species not easily recognized, may need Special Inspection 4</u>	-
-	<u>Dimensional Lumber (stud capacity), with original stamp (includes rough hewn)</u>	<u>Reused in original capacity 1.Studs (cripple, trim, and jack), joists, rafters 2.Wind-bracing</u>	-	<u>8</u>
-	<u>Glu-lam beams, I-joists, laminated veneer lumber, parallel strand lumber, oriented strand lumber (unstamped)</u>	<u>Install as per dimensional lumber</u>	-	-
-	<u>Trusses</u>	-	<u>Trusses to be inspected by Structural Engineer as installed</u>	<u>4</u>
-	<u>Utility Poles (untreated)</u>	-	-	<u>3</u>
-	<u>Oriented strand board (OSB) and Plywood</u>	<u>reuse in original capacity</u>	-	<u>8</u>
-	<u>Plastic lumber</u>	<u>reuse in original capacity</u>	-	-
-	<u>Masonite and chipboard</u>	<u>reuse in original capacity</u>	-	<u>8</u>

<b>WINDOWS, DOORS, INSULATION, SIDING, AND ROOFING</b>				
Chapter 7	<u>Insulation- Batt, gently used</u>	<u>Reuse in horizontal capacities only, such as attics or sound attenuation in cavities.</u>	<u>25% reduction in R-Value to be assumed.</u>	<u>2</u>
Chapter 7	<u>Insulation- Board, gently used</u>	<u>reuse in original capacity</u>	<u>Polyisocyanurte to be reduced by R-2 per board. Extruded and/or expanded polystyrene to remain the same R-value and reused in the same orientation (horizontal or vertical).</u>	<u>2</u>
-	<u>Windows</u>	<u>reuse in original capacity or as décor</u>	-	<u>2</u>
-	<u>Doors and Door assemblies</u>	<u>reuse in original capacity</u>	-	<u>2.5</u>
-	<u>Glass, sheet and Plexiglas</u>	<u>reuse in original capacity or as décor</u>	-	<u>2</u>
-	<u>Stained glass</u>	<u>reuse in original capacity</u>	-	<u>2</u>
-	<u>Siding- cement board, wood, vinyl, metal panels</u>	<u>reuse in original capacity</u>	-	<u>5</u>
-	<u>Soffits- cement board, wood, perforated metal panels, aluminum panels</u>	<u>reuse in original capacity</u>	-	<u>5</u>
-	<u>Roof tiles</u>	<u>reuse in original capacity, fencing, ornament</u>	-	-
-	<u>metal roof panels</u>	<u>reuse in original capacity</u>	-	-
<b>FINISHES</b>				
-	<u>Acoustical ceiling tiles</u>	<u>reuse in original capacity</u>	-	<u>5</u>
-	<u>Carpet and carpet pad</u>	<u>reuse in original capacity</u>	-	-
-	<u>Drywall</u>	<u>reuse in original capacity</u>	-	-
-	<u>Flooring—wood</u>	<u>reuse in original capacity</u>	-	-
-	<u>Cement Board</u>	<u>reuse in original capacity</u>	-	-
-	<u>Hinges and other hardware</u>	<u>reuse in original capacity</u>	-	<u>1.5</u>

General Exclusions:

1. TAS- Texas Accessibility Standards
2. Must comply with Houston Energy Code
3. For structural reuse applications, review and stamp of plans by an Engineer.
4. For structural reuse of material, the material and its new application must be inspected and certified by an Engineer.
5. Not allowed in fire assemblies unless tested or marked
6. EPA Act of 1995 (water flush/ flow rates)
7. Per City planning requirements, do not use in Driveways and sidewalks in the Right Of Way
8. Material should be stamped. For structural steel, the material should be identifiable.