



City of Long Beach  
Department of Development Services

**Cargo Containers Adapted as a  
Building Material**

Information  
Bulletin

**BU-031**

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The purpose of this Information Bulletin is to clarify pertinent sections of the Long Beach Municipal Code ("LBMC"), California Building Code ("CBC"), applicable building standards and Departmental policy concerning the adaptation of transport cargo containers as a building material. Transport cargo containers ("containers"), commonly used on oceangoing vessels, may be adapted as a building material when all of the applicable Zoning and Building Code regulations are satisfied. This Information Bulletin establishes the minimum conditions and requirements for when the containers may be adapted as a building material. Applicants who intend to adapt containers in this manner will need to obtain the necessary planning permits and a building permit.

**It is not the intent of this Information Bulletin to address containers located within the Port of Long Beach, or cargo containers used as storage in Industrial zoning districts (see Information Bulletin BU-030 "Cargo Containers Used as Storage in Industrial Zones").**

ZONING CODE REGULATION:

- A. In non-residential zoning districts, no specific zoning regulations address the use of design, treatment, and finish of adapted cargo containers as a building material. Such containers are subject to the same design, review, and permitting standards as any other building material.
- B. In residential zoning districts, the Zoning Regulations prohibits the use of metallic or metallic looking roofing or siding in residential zoning districts (LBMC Section 21.31.255 Design, Treatment, and Finish). At a Classification of Use hearing on April 21, 2011, the Planning Commission ruled that these prohibitions did not apply to design, treatment, and finish of cargo containers adapted as a building material for dwellings in residential zoning districts. This includes the use of cargo containers, or elements thereof, that are finished (i.e., painted) but otherwise undisguised. The Planning Commission also ruled that such adaptation of cargo containers is subject to Site Plan Review Committee approval, similar to wing walls or residences on narrow lots. Site Plan Review approval must be obtained before such a project may apply for building permits.

BUILDING CODE REGULATION:

The provisions of this Information Bulletin shall govern the structural design of containers adapted as a building material.

- A. Construction Documents. The construction documents shall show the size, section and relative locations of structural members with floor levels, column centers and offset dimensioned. The design loads and other information pertinent to the structural design required by CBC Section 1603.1.1 through 1603.1.9 shall be indicated on the construction documents.

- B. Structural Design Standards. The provisions of CBC Chapter 22 shall govern the quality, design, fabrication and erection of steel used structurally in buildings. The steel elements of a container furnished for structural load-carrying purposes shall meet the following structural design standards where applicable:
1. ASCE 7-05 Minimum Design Loads for Buildings and Other Structures including Supplement No. 1 and 2, excluding Chapter 14 and Appendix 11A;
  2. AISC 360-05 Specification for Structural Steel Buildings;
  3. AISC 341-05 Seismic Provisions for Structural Steel Buildings, including Supplement No. 1 dated 2005; and/or
  4. AISI S100-07 North American Specification for the Design of Cold-Formed Steel Structural Members.
  5. AWS D1.1-08 Structural Welding Code – Steel
  6. AWS D1.3-08 Structural Welding Code – Sheet Steel
  7. AWS D1.8-09 Structural Welding Code – Seismic Supplement
- C. Material Properties and Specifications. The steel elements of a container furnished for structural load-carrying purposes shall be properly identified for conformity to the ordered grade in accordance with the specified ASTM standards adopted in CBC Chapter 35 and the provisions of CBC Chapter 22 or other specification as approved by the Building Official. Any material of questioned suitability proposed for use in the construction of a building shall be subjected to the test prescribed in CBC Chapter 17 and in the approved rules to determine character, quality and limitations of use. The steel elements of a container that is not readily identifiable as to grade from marking and test records shall be tested to determine conformity to such standards.
- D. Structural Design Considerations. The following structural analysis shall be considered when utilizing any steel elements of a container for structural load-carrying purposes.
1. Design coefficients and factors shall be based on ASCE 7-05 Table 12.2-1 B.27 when any steel elements of a container is used as a seismic force-resisting system;
  2. Identify and detail a continuous load path, including the impact of openings, penetrations or the cutting of the container;
  3. Identify and detail method of attachments (i.e., welding, bolting, anchoring, etc.);
  4. Existing welds in the members and connections shall be made with filler metals meeting the requirements specified in AWS D1.8 Clause 6.3 if the container is used as a seismic force-resisting system. Existing welds that are required to be or designated as demand critical welds shall be made with filler metals meeting the requirements specified in AWS D1.8 Clauses 6.3.5, 6.3.6, 6.3.7 and 6.3.8. Verification of the existing welds shall be determined by non-destructive methods in accordance with CBC Chapter 17, ASIC 341-05, or by other methods if approved by the Building Official.