NOTICE OF CHANGE

INCH-POUND

MIL-HDBK-1002/6
NOTICE 1
8 September 1997

DEPARTMENT OF DEFENSE
HANDBOOK

ALUMINUM STRUCTURES, COMPOSITE STRUCTURES, STRUCTURAL PLASTICS, AND FIBER-REINFORCED COMPOSITES

TO ALL HOLDERS OF MIL-HDBK-1002/6:

1. THE FOLLOWING PAGES OF MIL-HDBK-1002/6 HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
vii	30 June 1987	vii	Reprinted without change
viii	8 September 1997	viii	30 June 1987
11	30 June 1987	11	Reprinted without change
12	8 September 1997	12	30 June 1987

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-HDBK-1002/6 will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the handbook is completely revised or canceled.

Custodian:
Navy - YD2

Preparing Activity:
Navy - YD2
(Project FACR-1174)

AMSC N/A

AREA FACR

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CONTENTS

SUPERSEDES PAGE VIII OF MIL-HDBK-1002/6.

4.2.5 Tension Membranes - Tents and Air-Supported Structures. Tension membranes are used in structures such as tents and air-supported enclosures and components. Air-supported structures include single membranes, enclosing an entire pressurized space, and closed cell double membrane, pressurized components that can be used for covering non-pressurized spaces. Fabrics used for such membranes are often composites of flexible plastic coating and inorganic or organic fiber. Three common types are fluoroplastic (PTFE) coated glass fiber, polyvinyl chloride (PVC) coated nylon or polyester fiber, and neoprene coated nylon or polyester fiber. The first type can be formulated to be non-combustible, a particularly important consideration for covering large spaces used for public assembly.

For guidance in designing tension membranes, see:

(1) ASCE Structural Plastic Design Manual, Chapters 6 and 9.

(2) ASCE State-of-the-Art Report on Air Supported Structures.

(3) Design Manual for Ground-Mounted Air-Supported Structures [Single Wall and Double Wall], U.S. Army Natick Laboratories.

A survey of past applications of fabric structures and guidance on rational application of the various structures of this type are given in Use of Tensioned Fabric Structures by Federal Agencies, by the National Research Council.

Recommended model code provisions for fabric structures have been published by the Architectural Fabric Structures Institute in Recommended Code Provisions.

See also Appendix B, Paragraph B.8, for supplementary information on tension membranes.

4.2.6 Thermoplastics. Structural design handbooks are published by some materials manufacturers. Material properties and design aids are also published in annual editions of Modern Plastics Encyclopedia, McGraw-Hill. See also ASCE Structural Plastics Design Manual and Selection Manual.

4.2.7 Glass Fiber-Reinforced Concrete (GFRC) Wall Panels. GFRC panels are used as exterior non-load-bearing wall panels on buildings. Often, light gage steel framing is used as a back-up structure, reducing the panel span to 2 feet or less. The following references describe current design practice with this composite material:

(1) PCI, Recommended Practice for Glass Fiber Reinforced Concrete Panels.

(2) PCI, Guide Specification for Glass Fiber Reinforced Concrete Panels.

(3) Council of American Building Officials, National Research Board, Report No. NRB-115, Sept. 1983, Glass Fiber Reinforced Concrete Panels, Prestressed Concrete Institute.

4.2.8 Fiber-Reinforced Concrete. Concrete and cementitious mortar is reinforced with special alkali-resistant, chopped-glass fibers, short steel fibers, or various organic plastic fibers to obtain enhanced strength, ductility, and toughness, compared to plain concrete and mortar. Design guidance and typical materials properties may be found in the following:

(1) ACI 544.1R, State-of-the Art Report on Fiber Reinforced Concrete. An extensive list of technical articles covering various types of fiber-reinforced concrete is included in this report.

(2) ACI 544.2R, Measurement of Properties of Fiber Reinforced Concrete.

(3) ACI SP-44, An International Symposium: Fiber Reinforced Concrete.

4.2.9 Polypropylene Fiber-Reinforced Slabs-on-Grade. Polypropylene fibers have been suggested as a replacement for welded wire fabric or other steel reinforcing, for control of shrinkage and temperature cracking. At this time, claims for this product have not been conclusively demonstrated. For a summary of the information available on fibrillated polypropylene used as concrete reinforcement, including references to test data, refer to Polypropylene Fibers in Concrete - What do the tests tell us?, Concrete Construction, April 1986.

4.2.10 FRP Reinforcement for Concrete. FRP is increasingly being considered as a replacement for carbon steel reinforcing in concrete structures. However, this technology is still evolving and performance is unknown. Therefore, do not use FRP as concrete reinforcement in structural applications unless a waiver is received from the Office of the Chief Engineer, NAVFACENGCOM (copied to Code 15C).

4.2.11 Availability of Repair Materials. Consider local availability of plastic and epoxy repair and replacement during the design process. Some products may be inexpensive to ship large quantities during construction, but cost-prohibitive to ship a small quantity during repairs.