



Designation: D 6497 – 99

Standard Guide for Mechanical Attachment of Geomembrane to Penetrations or Structures¹

This standard is issued under the fixed designation D 6497; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide covers procedures that can be employed to mechanically attach fabricated geomembranes to structures, pipes, etc.

1.2 This guide does not address all problems or situations a geomembrane installer or design engineer may face in the attachment of geomembranes to structures, pipes, etc. The sole purpose of this standard guide is to point out typical problems with geomembrane attachments and clearly state objectives of each component of the geomembrane attachment(s).

1.3 This guide has been generated for geomembrane application(s); however, a geomembrane installer or design engineer, or both, may find portions of this guide applicable to other geosynthetics.

1.4 The values stated in SI units are to be regarded as standard, unless other units are specifically given.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 EPA Document:

Quality Assurance and Quality Control for Waste Containment Facilities, Technical Guidance Document, United States Environmental Protection Agency, EPA/600/R-93/182, September 1993²

3. Terminology

3.1 Definitions:

3.1.1 *banding strap*, *n*—a flexible narrow strip of metal, plastic or other material, which compresses the geomembrane around a penetration by placing the clamp around the penetration.

3.1.2 *batten*, *n*—a rigid narrow strip of metal, wood, plastic or other material which assists to compress the geomembrane against a penetration or structure.

3.1.3 *boot*, *n*—a factory or field fabricated geomembrane

used to wrap around a pipe penetration prior to attachment (see Fig. 1).

3.1.4 *clamp*, *n*—a flexible narrow strip of metal, plastic or other material, which compresses the geomembrane against a penetration by tightening the bolt(s) or screw(s) of the clamp (see Fig. 2).

3.1.5 *concrete*, *n*—a homogeneous mixture of portland cement, aggregates, and water which may contain admixtures.

(C 822)

3.1.6 *gaskets*, *n*—a material, which may be clamped between faces, and acts as a static seal. Gaskets are cut, formed, or molded into the desired configuration. They may consist of any of the following construction: one or more plies of a sheet material; composites of dissimilar materials; and materials applied as a bead or other form to one or both mating faces prior to assembly.

(F 118)

3.1.7 *geomembrane*, *n*—an essentially impermeable geosynthetic composed of one or more synthetic sheets.

(D 4439)

3.1.8 *rondel*, *n*—a strip of polymeric material formed to a geometry, which is embedded and secured to a penetration or structure (for example, concrete structure) (see Fig. 3).

3.1.9 *sealant*—in building construction, a material that has the adhesive and cohesive properties to form a seal.

(C 717)

3.1.10 *torque*, *n*—a movement (of forces) which produces or tends to produce rotation or torsion.

(D 4848)

3.1.11 *void space*, *n*—in engineered structures, space(s) between the geomembrane and penetration or structure, which allow liquid or vapor migration, or allow the geomembrane to deform into the space(s) due to overburden pressure. (New, to be balloted under Terminology Committee.)

4. Significance and Use

4.1 This guide attempts to detail specific areas of concern regarding the attachment of geomembranes to structures. Components of the geomembrane attachment are addressed as to the type and use of each component.

4.2 Although this guide does not address all aspects of geomembrane attachments, the user of this guide may note important objectives and design issues of each component of the geomembrane. All these objectives and design issues may or may not be required to obtain an appropriate geomembrane attachment. By describing these areas of concern, it is hoped that the user of this guide will be able to design geomembrane

¹ This guide is under the jurisdiction of ASTM Committee D-35 on Geosynthetics and is the direct responsibility of Subcommittee D35.10 on Geomembranes.

Current edition approved Dec. 10, 1999. Published March 2000.

² Available from Superintendent of Documents, US Government Printing Office, Washington, DC 20402.