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POND AND RESERVOIR LINERS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D1149	(2007; R 2012) Standard Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber
ASTM D2136	(2002; R 2007) Coated Fabrics - Low-Temperature Bend Test
ASTM D3020	(1989) Polyethylene and Ethylene Copolymer Plastic Sheeting for Pond, Canal, and Reservoir Lining
ASTM D3083	(1989) Flexible Poly(Vinyl Chloride) Plastic Sheeting for Pond, Canal, and Reservoir Lining
ASTM D413	(1998; R 2007) Rubber Property - Adhesion to Flexible Substrate
ASTM D751	(2006; R 2011) Coated Fabrics

1.2 SUBMITTALS

SD-02 Shop Drawings

Liner system

SD-03 Product Data

Liner

Seaming adhesive

Penetration assemblies

Filter fabric

SD-07 Certificates

Liner

Filter fabric

SD-08 Manufacturer's Instructions

Liner

Seaming adhesive

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1.3 DELIVERY AND STORAGE

Deliver liner to site in largest sizes possible to minimize field seaming. Protect from sunlight and other ultraviolet light sources during storage. Keep cements and adhesives from extreme cold or heat. Keep materials clean and dry.

1.4 QUALITY ASSURANCE

1.4.1 Required Drawing

Submit drawing of liner system indicating sheet and seam layout, anchorage details, and penetration details.

PART 2 PRODUCTS

2.1 LINER

2.1.1 Unsupported Plastic

ASTM D3020 or ASTM D3083, 40 mils thick.

2.2 SPLICING CEMENT

Provide seaming adhesive as recommended by manufacturer to be compatible with type of liner used.

2.3 PENETRATIONS

Provide manufacturer's standard factory fabricated penetration assemblies.

Make penetration assemblies of the same base material as liner and at least 45 mils (1.12 mm) thick.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 Soil or Granular Subgrade

Remove vegetation, boulders and rocks larger than 3/4 inch (20 mm) in size and other sharp objects. Fill in holes, including stake holes. Inspect subgrade surface and correct defects prior to continuing construction.

3.1.2 Concrete

Provide concrete surfaces and pipe anchorages in accordance with Section 03 30 00 CAST-IN-PLACE CONCRETE. Provide smooth surfaces with no sharp projections or abrupt surface changes. Compact earth within 300 mm 12 inches of any concrete surfaces to 100 percent maximum density, optimum moisture as specified in Section 31 00 00 EARTHWORK.

3.2 CLEANING OF LINER SHEET

Clean liner sheets of dust, dirt, and other foreign matter. Carefully clean area (both mating surfaces) of seams.

3.3 LINER INSTALLATION

3.3.1 Placement

Position liner on previously prepared surface as indicated. Unroll or unfold carefully. Avoid stretching. Allow liner to lie in a relaxed state for a minimum of 1/2 hour prior to seaming.

3.3.2 Seams and Laps

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Provide personnel handling or applying seaming adhesive with protective clothing and other appropriate safety equipment. Apply seaming adhesive and make field seam. Make lap or seam 6 inches (150 mm) wide. Seal lap or seam using rollers or hand pressure removing any wrinkles at that time. A plank or board may be used for back-up during sealing but remove prior to completion of installation.

3.3.3 Repairs

Make repairs to liner with same material as liner. Extend patch 6 inches (150 mm) in all directions from puncture. Use same method as for seams.

3.4 ANCHORAGE

3.4.1 Earth Anchorage

Make perimeter trench a minimum of 12 inches (300 mm) wide by 12 inches (300 mm) deep. After installation of liner in reservoir is complete, place liner in perimeter trench. Backfill trench.

3.4.2 Anchorage to Structures

Remove curing compounds and coatings from structures in joint areas. Use bonding adhesive recommended by manufacturer to make joints. Make joint to structures at least 12 inches (300 mm) wide. Use batten strips of stainless steel bars to reinforce joint.

3.5 FIELD QUALITY CONTROL

3.5.1 Inspection

Inspect completed liner for pinholes, punctures, and tears. Inspect seams and joints for unbonded areas. Repair defects as specified herein.

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