	Title: YALE OFFICE OF FACILITIES PROCEDURE MANUAL Chapter: 01 - Yale Design Standard Division: 07 00 00 Thermal and Moisture Protection	Section: 07 00 00 Requirements for Thermal and Moisture Protection
		Date: December 2023
		Author: Office of Facilities

PART 1 - INTRODUCTION

1.1 PURPOSE

This section contains general design criteria for Thermal & Moisture Protection.

PART 2 - GENERAL DESIGN REQUIREMENTS

2.1 SYSTEM DESIGN AND PERFORMANCE REQUIREMENTS


A. Waterproofing Locations Provide waterproofing at the following locations:

1. Below-grade at the perimeter of the structure in locations subject to hydrostatic pressure
2. Exterior decks or plazas that form a roof over enclosed space
3. Pools or fountains
4. Toilet rooms and shower floors over occupied areas
5. Mechanical room floors over occupied areas
6. High risk areas, such as cultural collections, data centers, equipment rooms.

B. General Performance Requirements

1. Waterproofing systems must prevent the infiltration of water and moisture through specific building components.
2. Waterproofing systems must show evidence of successful performance for a minimum of five years.
3. Waterproofing systems must have extremely minimal permeability.
4. Waterproofing systems must have extremely minimal emulsification or degradation in a constant water environment
5. Waterproofing systems must have high elasticity.
6. Waterproofing systems must have crack bridging capability.
7. Waterproofing systems must exhibit leak location characteristics by preventing the migration of water under the waterproofing.
8. All waterproofing system components must be compatible products as recommended by the manufacturer. The components must be applied according to the manufacturer's instructions.
9. All waterproofing membranes, except fluid, sprayed, or crystalline materials, must be terminated with a non-corrosive metal bar. The bar must be subject to the membrane manufacturer's approval.
10. Waterproofing systems must resist the effects of de-icing chemicals.
11. Waterproofing systems must have watertight compatibility at tie-insto existing systems.
12. Fumes must be minimized during installation.

C. Specific Performance Requirements

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Whenever possible and appropriate, the waterproofing system for a given condition must respond to project-specific needs, including the following.

1. Below-grade perimeter wall waterproofing subject to hydrostatic pressure must have the following characteristics:
 - High-static loading (so drainage composite sheet dimples are not driven into the insulation, damaging the membrane itself)
 - Structural integrity that is greater than the structural burden, including anticipated live loading.
2. Mechanical room floor waterproofing over occupied areas must have the following characteristics.
 - Resistance to wear from foot traffic.
 - Slip resistance when wet or dry

2.2 SUBMITTALS


Submit the following design and construction documents to Yale University.

A. Design Documents

1. Submit documentation of the intended systems for review that includes the following:
 - An understanding of the conditions that require waterproofing
 - A description of the system to be installed
 - Materials to be used
 - Evidence of successful applications
2. Details of each typical waterproofing condition must be drawn at large scale, so that all components are clearly shown and labeled.

B. Construction Documents

1. Submit product data for all waterproofing materials. Include material, warranty, and installation instructions.
2. Submit installer certification that the manufacturer has provided training in the installation of warranted waterproofing materials.

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2.3 WARRANTY

Warranties must cover the entire cost of repairs or replacement of defective work during the warranty period, including the costs associated with exposing the waterproofing and replacing all materials.


2.4 MATERIALS

Waterproofing materials for specific applications must conform to the following standards.

A. Below-Grade Waterproofing

Below-grade waterproofing materials may include the following:

1. Asphalt/polyethylene sheet consisting of a self-adhering, rubberized asphalt membrane bonded to polyethylene sheeting
 - At least 0.060" thick, with 0.004" polyethylene film
 - Bituthene manufactured by W.R. Grace and Company or an approved equivalent
2. Thermoplastic membrane consisting of polyvinyl chloride (PVC) flexible sheets
 - Conforms to ASTM D4434 standards
 - Manufactured by Sarnafil Waterproofing Systems, Inc
3. Bentonite waterproofing consisting of Volclay Type 1 panels
 - Manufactured by American Colloid Company or an approved equivalent
4. Primer
 - Rubber based type
 - Free of toxic solvents
 - Compatible with waterproofing
5. Prefabricated geo composite drainage core
 - High impact polymeric drain core
 - Flow channels on one side
 - Filter fabric bonded to the molded dimples
6. Protection board consisting of 1/8" thick asphaltic core
 - PC-2 protection board manufactured by WR Meadows, Inc. or an approved equivalent

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B. Exterior Plaza Waterproofing

The designer must provide a waterproofing recommendation for approval by Yale University.

C. Pool and/or Fountain Waterproofing

The designer must provide a waterproofing recommendation for approval by Yale University.

D. Toilet Room and Shower Floor Waterproofing

Use a cold-applied, liquid rubber membrane and reinforcing fabric by Laticrete 9235. Use a polyethylene membrane system by Schluter-DITRA, or an approved equivalent.

E. Mechanical Room Floor Waterproofing

The designer must provide a waterproofing recommendation for approval by Yale University.

2.5 QUALITY CONTROL

- A. Yale University may require a full-time waterproofing consultant during the construction phase to observe critical waterproofing operations.
- B. Horizontal waterproofing surfaces with occupied space below must be flood-tested before back-filling or other overburden installation. To ensure that university property is not damaged during flood testing, the contractor must have personnel on-site during the entire flood test.

Date	Description of Change	Pages / Sections Modified	ID
12/1/23	Template update	-	Office of Facilities