

**071000 SUB-GRADE WATERPROOFING**

*Cornell’s Design and Construction Standards provide mandatory design constraints and acceptable or required products for all construction at Cornell University. These standards are provided to aid the design professional in the development of contract documents and are not intended to be used verbatim as a contract specification nor replace the work and best judgement of the design professional. Any deviation from the Design and Construction standards shall only be permitted with approval of the University Engineer.*

**PART 1: GENERAL**

**1.01 SUMMARY**

- A. New construction or repairs shall provide a robust and redundant subgrade waterproofing and drainage system that will provide decades of performance and a dry building interior space.
- B. A comprehensive waterproofing system with foundation drainage is required on all construction projects with new below-grade rooms or impacting existing below-grade space.
- C. Post-project interventions to repair below-grade leaks and failing foundation waterproofing are costly and disruptive to University operations.

**1.02 CONSTRUCTION DOCUMENTS**

- A. Design team shall develop a matrix during schematic design to consider multiple types of waterproofing systems appropriate for the specific project to be provided to Cornell Project Team. Matrix shall include information for each system such as, but not limited to, installed cost, constructability, complexity of the system, warranties for construction and material, life expectancy, and any other advantages or disadvantages of the system.
- B. The manufacturer shall provide, in writing, compatibility of their waterproof system with existing substrate (including any curing compounds or form release agents applied) and confirm stability with existing soils.
- C. The waterproofing system should be adequately detailed on construction drawings, including but not limited to information on terminations at the footing & building envelope/wall, penetrations through the membrane, laps, transitions and any other details.
- D. The design team shall show foundation drainage on construction documents including pipe diameter, fittings, slopes, inverts, cleanouts, and tie-ins to the existing storm system. See Cornell Standard 334600 Subdrainage.

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- E. Design team shall specify and detail stone, filter fabric and drainage board backfilled against all foundation walls (horizontally from outside edge of footer drain vertically to grade). Stone shall provide a pervious drainage plane to eliminate hydrostatic water pressure on the wall and allow a path for water to reach foundation drainage. Backfilling with soil or construction fill is prohibited.
- F. Sheet applied waterproofing systems are required to be terminated with termination bars and properly sealed.
- G. Construction drawings shall require a pre-installation meeting with the installer, waterproof system manufacturer, design team, and Cornell. Manufacturer shall review substrate prior to membrane installation to confirm appropriate preparation of surface. Manufacturer representative shall visit jobsite during installation to review installer’s technique and product for conformance with installation instructions.

**PART 2: PRODUCTS**

**2.01 WATERPROOFING PRODUCTS**

- A. Waterproofing systems can consist of sheet or liquid applied waterproofing. Asphaltic damproofing or cementitious parging are prohibited.
- B. Sheet membranes are not to be used in whole if the foundation wall has horizontal 90 degree transitions. A 45 degree cant strip must be installed and detailed accordantly to eliminate fish mouthing and to maintain a watertight assembly.
- C. Waterproofing membranes must be protected from damage. Protection boards, drainage boards or polystyrene insulation or a combination are required.
- D. Extruded polystyrene insulation should be installed over — not under— the membrane.

**PART 3: EXECUTION**

**3.01 WATERPROOFING QA/QC**

- A. Hold a pre-installation meeting with project team prior to system installation. Engage system manufacturer for visits during construction.
- B. Representatives from the Cornell Project Management team shall review all foundation waterproofing prior to applying protection board and backfilling operations.
- C. Any leaks that arise during construction must be reported in writing to the University’s Representative.

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3.02 PROTECTION OF WATERPROOFING

- A. It is the responsibility of the general contractor to protect the waterproofing system from damage during the construction project. The contractor shall indicate to all site workers that materials, tools, and equipment shall not be laid against or on top of the waterproofing system. The top termination of the waterproofing system shall be temporarily secured as needed and not walked on or damaged by workers. Protection of the system during construction is critical to maintaining an impermeable foundation system.

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