

## **DIVISION 7 - THERMAL AND MOISTURE PROTECTION**

### **Section 07000 - General Discussion**

#### **Introduction**

This General Discussion Section contains material which is critical to successful moisture protection systems in new construction and renovation, but which is not the sole responsibility of any individual trade. In many cases, the issues involved are fundamental to the basic design of the project, and the success or failure of the moisture protection concept is determined at the very outset of the design process.

The Consultant is expressly responsible for incorporating these overall requirements into the project, and for ensuring that all subconsultants are aware of the requirements and incorporate them into their designs as well.

Reliance on "after-the-fact" material selections to compensate for a problematic design decision is unacceptable.

#### **Below Grade Spaces**

- Below grade spaces are high-risk, expensive designs. Wherever possible, avoid
  - The use of finished below grade spaces requiring drainage systems and wall waterproofing
  - Planters above or adjacent to basement areas
- PDC actively discourages below grade elements in University projects. Designs incorporating below grade finished spaces will receive the strongest scrutiny during the programming and conceptual design phases. Be prepared to thoroughly document the unavoidable need for such elements.
- The University has experienced numerous instances of subsurface moisture working through concrete floor slabs on grade and destroying floor finishes. This seems mostly to be problem with below grade spaces. Ground floor slabs on grade have, so far, been safe from this condition. To ensure that this situation does not arise again, provide an impermeable moisture barrier under all slabs on grade.
- Wherever below grade walls are exposed to naturally flowing groundwater or substantial landscape irrigation water, even if simply foundation walls, include a foundation drainage system in addition to dampproofing or waterproofing the walls.

#### **Traffic Decks**

- Traffic bearing decks are very difficult and expensive to successfully waterproof and maintain. Wherever possible, avoid use of finished spaces with traffic decks exposed to the weather above them.
- PDC actively discourages use of such elements in University projects. Designs incorporating horizontal traffic decks will receive the strongest scrutiny during the programming and conceptual design phases. Be prepared to thoroughly document the unavoidable need for such elements. Failing such documentation, the Consultant will be directed to revise or even start completely anew the design.
- Special attention should be given to ensure that all horizontal traffic surfaces provide appropriate slip resistance.

#### **Roof Design**

- Do not design roofs which are intended to serve as walking surfaces for user functions. Activities which must be conducted on the roof top (e.g. astronomical or weather observations, greenhouses, etc.) require a design which incorporates platforms, penthouses or similar special enclosures.
- Similarly, do not design roofs which are required to be used as working platforms for maintenance of mechanical and electrical equipment. Enclose such elements in a penthouse.

- Avoid wherever possible use of conduit and piping installed on top of the roof.
- Any mechanical or electrical equipment which must be installed on the roof must be installed on either a prefabricated curb or a field fabricated platform. Where the top surface of such curbs and platforms is not completely covered and waterproofed by the actual equipment, the top surface must be a solid sheet metal cap. Design must meet OSHA workspace and fall precaution criteria.
- Installation of any type of roof top mechanical or electrical equipment on sleepers is not acceptable.
- Wherever possible, make the basic roof slope, and the slope of the crickets to the drains, part of the structural system (slope the structure). When impossible or impractical to induce slope into the structure, care should be taken in the selection of tapered rooftop insulation and rigid overlayment board to insure a durable roof surface that will hold up to maintenance activities for the life of the roof and will not compress over time under various loads.
- Dead flat roofs are not acceptable.
- Design for a slope of 3/8" per foot, throughout the field of the roof and for all crickets, at the time of construction. Ensure that anticipated deflections and proposed cambers will result in a minimum slope of 1/4" per foot throughout the life of the facility.
- Space drains so that slopes in cricket valleys are at least 3/8" per foot.
- Provide metal or wood framing and sub-framing for large crickets. Cricket surfaces must be able to accept live loads similar to those of the basic roof deck.
- Small crickets up-slope of equipment curbs must maintain 1/8" per foot slope in their valleys, and may be fabricated of tapered insulation, not to exceed 4" thick.
- Design the project to allow for one complete re-roofing without removal of the existing roof system, should the University decide to do so. This includes:
  - Structural load capacity
  - Camber and deflection
  - Parapet heights
  - Joints, drains, and flashings
- Ensure that the design makes adequate allowance for proper flashing of perimeters and penetrations. Sufficient vertical dimension to install the cant strip, base flashing, counterflashing, and coping, will result in a parapet at least 18" above the finished roof at the highest point of the roof slope. Include a specific detail in the construction documents. This includes:
  - Parapet walls
  - Partial roof structures
  - Equipment curbs and platforms
  - Door and window sills
- Do not assume that base flashings and counterflashing can be successfully nailed into concrete or masonry. Provide a 5/8" plywood nailer at all parapets.
- Do not use interior roof drains without the specific permission of the Project Coordinator. When unavoidable, provide positive overflow drainage, preferably with a scupper through the parapet wall to daylight, or with a complete separate parallel overflow drain system.
- Design all roof drains and overflow drains in a depressed sump minimum 1".

- Reroofing must comply with the requirements for new installations as much as possible. The Consultant is responsible for preparing complete details and specifications for the required reroofing work.
- Roofing repairs (e.g. installation of a new exhaust fan), must comply with the requirements for new installations as much as possible. The Consultant is responsible for preparing complete details and specifications for the required repair work. Generic notes such as "flashing as required" are not acceptable. While the University is not interested in telling the Consultant whether the Architect or the Mechanical Engineer should prepare the details and specifications for this type of repair, the information must be thorough and complete regardless of the author.

**End of Section 07000**