

**3 CONCRETE – V03000**

**3.1 GENERAL**

**3.1.1 Description**

This standard identifies minimum requirements that shall be met for all concrete in the design and construction of elements for Arlington County Building Design Standards.

**3.1.2 Related Arlington County Standards, Specification and Policies**

including, but not limited to, those listed in Table 3.1.2

<b>Table 3.1.2</b> Related Arlington County Standards, Specification and Policies
Arlington County Construction Standards and Specifications - 03100 Concrete Formwork, Reinforcement and Materials
Arlington County Construction Standards and Specifications - 3400 Precast Concrete

**3.1.3 Applicable Standards and Specifications**

including, but not limited to, those listed in Table 3.1.3

<b>Table 3.1.3</b> Applicable Standards and Specifications
Construction Specification Institute (CSI)
American Society for Testing and Materials (ASTM)
ICC International Building Code/2012
Precast/Prestressed Concrete Institute (PCI)
US Green Building Council’s Leadership in Energy and Environmental Design (LEED) green building rating system

**3.1.4 Quality Assurance**

- 3.1.4.1 Project specifications shall require that all structural precast or architectural precast elements be manufactured at a precast plant which is a certified member of the Precast/Prestressed Concrete Institute (PCI) and is operated under the supervision of a PE licensed in the state of manufacture.

**3.1.5 Submittals**

- 3.1.5.1 The Registered Design Professional shall provide a list and or specification sections of all manufacturers, products, descriptions, performance criteria, materials, components, embedment, fabrication; admixtures and additives; liquid cure/ seal systems; grout; vapor retarders; vapor barrier; proportioning; mixing; source quality control; finish; and accessory materials pertaining to concrete work and construction.
- 3.1.5.2 Project specifications shall require the Contractor to provide shop drawings for all cast-in-place, structural precast and architectural precast concrete, and all mix designs and connection details, which are signed and sealed by a PE, licensed in the Commonwealth of Virginia, as required by the ACI. Any documents which are required by the ACI to

be signed and sealed by a PE which are not identified as a requirement of the Contractor in the specifications shall be considered to be a requirement of the Registered Design Professional and the Structural Engineering Consultant.

**3.2 DESIGN**

**3.2.1 Design Guidelines**

- 3.2.1.1 Concrete exposed to freeze / thaw shall have a minimum air content of 4.5%.
- 3.2.1.2 Concrete slabs (exclusive of mud slabs) shall receive a minimum of a float finish; if indicated to be broomed, the slab shall be floated and then broomed.i
- 3.2.1.3 Tolerances: The County requires proper forming, placement and finishing in accordance with Table 3.2.1.3

<b>Table 3.2.1.3 Owner’s Project Requirements for Concrete Tolerances</b>	
Sizes of sleeves, floor openings, and wall openings: Centerline of sleeves, floor wall openings, +/-1/2”.	
<b>Finished Slab Surfaces</b>	
<b>Scratch Finish:</b> For surfaces to receive concrete floor topping or mortar setting beds for tile and other bonded applied cementitious finish flooring material: Depressions between high spots shall not exceed 1/4” under a 10-foot straightedge.	
<b>Float Finish:</b> For surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing: Depressions between high spots shall not exceed 5/16” under a 10-foot straightedge.	
<b>Trowel Finish:</b> For surfaces to be exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system: Achieve level surface plane so that depressions between high spots do not exceed 1/8” under a 10-foot straightedge.	

- 3.2.1.4 Floor Leveling: The Contractor, at his own expense, shall provide floor leveling, to the satisfaction of the County, in areas where the tolerances in Table 3.2.1.3 are not achieved.

**3.2.2 Vapor Retarders over Concrete**

- 3.2.2.1 Always follow local codes and manufacturer’s instructions for acceptable vapor retarders.
- 3.2.2.2 Test concrete for moisture. For concrete slabs with a calcium chloride reading of greater than 3 lbs, a relative humidity reading of greater than 75%, or a calcium carbide (CM) rating of greater than 2.5%, the Contractor, at his own expense shall install an impermeable vapor retarder with a perm rating of less than .15 perm. Adding a vapor retarder is not required on installations over slabs with a calcium chloride reading of 3 lbs or less, a humidity reading of 75% or less, or a calcium carbide (CM) rating of 2.5% or less.

**3.3.1 CALCIUM CHLORIDE - REINFORCED CONCRETE PIPE/DRAINAGE STRUCTURES**

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**3.3 PRODUCTS****3.3.1 Calcium Chloride - Reinforced Concrete Pipe/Drainage Structures**

Calcium chloride in concrete used for reinforced concrete pipe or drainage structures is Not Acceptable as per VDOT.

**3.3.2 Expansion Joint - Building structure**

Where concrete work abuts the Building structure, plans will specify that the expansion joint will be caulked with a caulking that contains polyisocyanate prepolymer.