Specifying Concrete Floor Coatings and Treatments

Institutional Applications

Tom Murphy
Agenda

- Selection Criteria for Institutional Applications
- Concrete Coatings and Treatments Selection
- Review Specific Functional Spaces and Selection Options
- Specification and Installation Monitoring
- Maintenance/Refurbishing
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonresidential Total</td>
<td>378.5</td>
<td>7.6</td>
<td>6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Total</td>
<td>176.0</td>
<td>10.2</td>
<td>6.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td>44.6</td>
<td>11.3</td>
<td>6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail &amp; Other Commercial</td>
<td>115.2</td>
<td>9.4</td>
<td>6.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel</td>
<td>16.1</td>
<td>12.1</td>
<td>9.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Total</td>
<td>55.5</td>
<td>16.9</td>
<td>7.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional Total</td>
<td>147.0</td>
<td>1.0</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>39.0</td>
<td>1.5</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>78.4</td>
<td>-0.2</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious</td>
<td>3.6</td>
<td>-4.9</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Safety</td>
<td>9.3</td>
<td>-2.9</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amusement &amp; Recreation</td>
<td>16.7</td>
<td>8.7</td>
<td>6.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Institutional Flooring*

Educational Facilities

- Community Centers (K-12)
- High Emphasis on Aesthetics and the Learning Environment
- Limited and Varied Budgets
  - New Construction
  - Renovation
  - Maintenance
- Variety of Use Environments

Healthcare Facilities

- Hospitals are always open
- Aesthetics are important
- Cleanliness/sanitation is mandated
  - Hospital Acquired Condition
  - Healthcare Associated Infections (HAI)
- Heavy foot and wheeled traffic
- Variety of use areas
- Built to Last
- Renovation is a major disruption

* Other institutional sectors that parallel these performance requirements include museums, courthouses, airports, correctional facilities, arena, stadium.
Hard Surface Flooring in Institutions

- Wet environments
- Chemical exposure
  - Foods
  - Salt
  - Cleaning chemicals
  - Body fluids
- Heavy traffic
- Dirt/abrasives
- Designed for wheeled traffic
- Aesthetics are a high priority
- Sanitary/cleanliness considerations
Other Hard Surface Flooring Options

Options

- Vinyl Composition Tile
- Luxury Vinyl Tile
- Resilient Sheet Flooring
- Rubber Flooring
- Ceramic/Porcelain Tile
- Wood/Bamboo Flooring

Weight Performance Criteria

Products weak points:

- Chemical Resistance
- Grout and Seams
- Maintenance Costs/Schedule
- Life Expectancy
- Replacement Costs
General Selection Criteria for Institutions

1. Performance
   - Abrasion
   - Thermal Exposure
   - Slip Resistant/Texture
   - Chemical/Stain Resistance
   - Specialty (ESD, Comfort, Antimicrobial)
   - Installation Schedule
   - Maintenance Schedule
   - Service Life

2. Aesthetics
   - Color
   - Gloss
   - Design
   - Wayfinding

3. Cost
   - Initial
   - Maintenance
   - Cost of Replacement
Systems Overview

1. Stained, dyed & polished concrete
2. Coatings (thin film)
3. High Build Resinous Systems
   a. Slurry/self-leveling
   b. Broadcast
   c. Troweled
4. Terrazzo (grind)
Polished, Stained, Dyed Concrete

Performance Benefits
- Variety of Color & Gloss Options
- Unlimited Design Options
- Relatively Easy to Maintain
- Initial Cost Effective
- Exterior Applications
- Seals the Concrete (if maintained)

Limitations
- Appearance Reflects Concrete
- Requires Protective “Surface” Maintenance
- Limited Stain Resistance
- Joint Treatments
- Heavy Traffic can spall concrete
Stained and Dyed Concrete

- Concrete Process
  - Integral Color
  - Dry Shake
- Finish Slab Process
  - Acid Stain
  - Water-base Stain
  - Dyes
  - Colored overlays
  - Combined with polish
Chemical Stained and Dyed Concrete

**Acid Stains**
- React with Calcium Hydroxide in Concrete
- Prep to CSP 1
- MVE < 5 lb/1000sf/24hr
- Do not use liquid curing compounds
- About 8 neutral colors
- Scrub in Stain(s)
- Neutralize
- Polish
- Seal

**Dyes**
- Vibrant colors
- Variegated look when used with stains
- Water- and solvent-based dyes
- Short Dry times
- Not as UV stable as Stains
- Seal
Polished Concrete

- Silicate densification (Na, K, Li) CSH

Depends heavily on the quality of the concrete
- Cracks/Patching
- Aggregates
- Levelness/Flatness
- MVE
- W/C <.45
- fly ash, slag, pozzolans, additives (<20%)
- Not for lightweight concrete
- 3500 psi compressive

Grind & Polish Specification

<table>
<thead>
<tr>
<th>Grade (aggregate)</th>
<th>Class (reflectance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I, II, III</td>
<td>I, II, III</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specified Overall Value</th>
<th>Minimum Local Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>F_F Floor Flatness</td>
<td>50</td>
</tr>
<tr>
<td>F_L Floor Levelness</td>
<td>30</td>
</tr>
</tbody>
</table>
Thin Film Coatings

Performance Benefits

- Protects concrete from wear
- Protects stained concrete
- Improves aesthetics
  - Color
  - Metallics
- Chemical resistance
- Texture options
- Gloss/Sheen options
- Wayfinding
- Low installed cost

Limitations

- Limited wear
- Generally not breathable
- Not good for thermal shock (CTE)
- Reflects concrete surface profile
- Limited design capability
Resin Chemistry

Polymer Backbone and Reactive Crosslink

- Epoxy/Curing Agents
- Polyurethane/Polyethers
- Methyl Methacrylate
- Polyurea/Polyaspartic
- Hybrids/UV-Cure

Functionality

- Speed of Cure
- Cure Temperature
- Chemical Resistance
- Abrasion Resistance
- Flexibility
- Adhesive/Cohesive Strength
- UV stability
# Broadcast, Slurry, Trowel Flooring

## Performance Benefits

- Resurfaces Concrete
- High Impact/Point Load Capacity
- Thermal Shock Prevention (CTE $\alpha$)
- Color and design capacity
- Cove Base Option
- Waterproof Option
- Variable Texture Capability
- Cover Control Joints
- Soft System Options

## Limitations

- Multi step installation process
- Thinner systems may reflect substrate unevenness
- May not be breathable
Aggregates

Types of Aggregate
- Powders
- Cement (reactive)
- Sand
- Colored Quartz
- Flakes
- Granite
- Marble

Application Methods
- Broadcast
- Slurry/Self-Leveling
- Mortar
- Combination

Performance Impact
- Thickness
- Texture
- Aesthetics
- Permeability
- Abrasion Resistance
Terrazzo (Epoxy/Polyacrylate)

**Performance Benefits**
- Unlimited Design Capacity
- Long Life (40-50 years)
- High Compressive Strength
- Easy Maintenance
- Good Stain Resistance
- Good Light Reflectivity
- Variable Gloss finish
- Smooth surface

**Limitations**
- High Initial Cost
- Epoxy is not Breathable
- Specialty Contractors
- Extensive Installation Process
- Can be slippery when wet
Understanding the Need by Area of Use

**Choices** - most areas have a number of options that will provide the performance required.

- Aesthetics
- Schedule
- Cost
# Understanding the Need

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Performance/Aesthetics</th>
<th>System Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>Light chemical exposure</td>
<td>Stained Concrete</td>
</tr>
<tr>
<td>Lobby</td>
<td>Foot &amp; wheeled traffic</td>
<td>Decorative High Build</td>
</tr>
<tr>
<td>Hallways</td>
<td>Logos/Design</td>
<td>Resinous Flooring</td>
</tr>
<tr>
<td></td>
<td>Wayfinding</td>
<td>Terrazzo</td>
</tr>
<tr>
<td></td>
<td>Light Reflectance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Easy Maintenance</td>
<td></td>
</tr>
</tbody>
</table>
Understanding the Need

**Application Area**
- Classrooms

**Performance/Aesthetics**
- Foot & wheeled traffic
- Light Reflectance
- Easy Maintenance
- Potential Chemical Exposure

**System Options**
- Stained Concrete
- Decorative High Build Resinous Flooring
Understanding the Need

Application Area
- Cafeteria
- Assembly Areas

Performance/Aesthetics
- Food chemical exposure
- Foot & wheeled traffic
- Light Reflectance
- Easy Maintenance

System Options
- Stained Concrete
- Decorative High Build Resinous Flooring
Understanding the Need

Application Area
- Kitchen
- Bakery
- Coldrooms/Freezers

Performance/Aesthetics
- Light chemical exposure
- Wheeled traffic
- Thermal shock
- Texture/slip resistance
- Slope to drain

System Options
- High Build Flooring
Understanding the Need

### Application Area
- Locker rooms
- Restrooms
- Scrub Rooms
- Laundry
- Utility

### Performance/Aesthetics
- Chemical exposure
- Foot/wheeled traffic
- Texture/slip resistance
- Wet environment

### System Options
- Stained Concrete
- High Build Resinous Flooring
- Terrazzo
Understanding the Need

Application Area
- Showers

Performance/Aesthetics
- Waterproof
- Texture/slip resistance
- Thermal shock
- Slope to drain

System Options
- High Build Flooring w/waterproofing membrane
Understanding the Need

Application Area
- Mechanical Equipment Rooms

Performance/Aesthetics
- Waterproof
- Texture/slip resistance

System Options
- High Build Flooring w/waterproofing membrane
- Coating
## Understanding the Need

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Performance/Aesthetics</th>
<th>System Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Rooms</td>
<td>Foot/wheeled traffic</td>
<td>Decorative High Build</td>
</tr>
<tr>
<td></td>
<td>Chemical exposure</td>
<td>Flooring</td>
</tr>
<tr>
<td></td>
<td>Point loading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aesthetics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Light reflectance</td>
<td></td>
</tr>
</tbody>
</table>
# Understanding the Need

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Performance/Aesthetics</th>
<th>System Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>Foot/wheeled traffic</td>
<td>High Build Flooring</td>
</tr>
<tr>
<td>ER</td>
<td>Chemical exposure</td>
<td>Terrazzo</td>
</tr>
<tr>
<td>Clinic</td>
<td>Comfort</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stain Resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antimicrobial</td>
<td></td>
</tr>
</tbody>
</table>
Cost Comparison

Factors Affecting Cost

1. System Manufacturer
2. Chemistry
3. System Complexity
4. Labor Requirement/Rate
5. Square Footage
6. Install Schedule
Life Cycle Costs

+ Cost of Installation
  + Material
  + Labor
  + Schedule
  + Area
  + Preparation
+ Annual Maintenance Costs
  + Cleaning
  + Waxing
  + Buffing
  + Repair
  + Energy
+ Replacement Costs
  + Tear-out
  + Reinstallation
  + Protection
  + Cost of Disruption
  + Life of Building/System Useful Life
+ Life of Flooring System

Example: 75 year life

**Terrazzo**

\[
\frac{([40 + (1\times75)) + 1\times(40+10)]}{75} = \frac{2.20}{sf}
\]

[Initial + Maintenance + Replacement(s)]/Life

**Polished/Stained**

\[
\frac{([6 + (2\times75)) + 7\times(6 + 5)]}{75} = \frac{3.10}{sf}
\]
Specifying for Performance and Quality

1. Concrete
   - Sub Grade
   - Vapor Retarder
   - Concrete Mix
     - Aggregates
     - Fly Ash
     - W/C <0.4
   - Finish/Flatness/Pitch
   - Curing Process
   - Joints

2. Surface Preparation
   - Surface Prep
   - Inspection (soundness, contaminants, moisture)

3. Installation
   - Certified Contractor + Material Manufacturer
   - Mock-up & Approval
   - Trades Scheduling
   - Install in climatized condition
   - Material sampling, coupons, retains
   - Protection
Division 3/7 Concrete and Joints

- ACI 302.1R-15 Guide to Concrete Floor and Slab Construction
- ACI 224.3R Joints in Concrete Construction
- ASTM C 33 Standard Specifications for Concrete Aggregates
- ASTM E1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
- ASTM E1155 Standard Test Method for Determining $F_F$ Floor Flatness and $F_L$ Floor Levelness Numbers
- ACI 308R Guide to Curing Concrete
- ACI 224.1R Causes, Evaluation, and Repair of Cracks in Concrete Structures
- ACI CCS-5(16) Placing and Finishing Decorative Concrete Flatwork
- CPAA Recommendations for the Design, Specification, and Placement of Concrete Floor Slabs
Division 9 Flooring - Surface Preparation

- NACE/SSPC Joint Surface Preparation Standard NACE No. 6/SSPC-SP 13 “Surface Preparation of Concrete”
- ICRI Guideline No. 310.1R–2008 (formerly No. 03730) Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
- ICRI Guideline No. 310.2R–2013 Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair
## Surface Preparation

<table>
<thead>
<tr>
<th>Material to be applied</th>
<th>Concrete Surface Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealer, 0 to 3 mils (0 to 0.075 mm)</td>
<td>CSP 1</td>
</tr>
<tr>
<td>Thin film, 4 to 10 mils (0.01 to 0.25 mm)</td>
<td>CSP 2, CSP 4</td>
</tr>
<tr>
<td>High-build coatings, 10 to 40 mils (0.25 to 1.0 mm)</td>
<td>CSP 5, CSP 7, CSP 9</td>
</tr>
<tr>
<td>Self-leveling toppings, 50 mils to 1/8 in. (1.25 to 3 mm)</td>
<td>CSP 10, CSP 6, CSP 8, CSP 3</td>
</tr>
<tr>
<td>Polymer overlays, 1/8 to 1/4 in. (3 to 6 mm)</td>
<td>CSP 1, CSP 2, CSP 5, CSP 7</td>
</tr>
<tr>
<td>Concrete overlays and repair materials, &gt;1/4 in. (&gt;6 mm)</td>
<td>CSP 3, CSP 4, CSP 8, CSP 10</td>
</tr>
</tbody>
</table>

**Caution:** The texture and appearance of the profile obtained will vary depending on the concrete strength, the method of application, and the surface preparation method used. The images illustrate the appearance of various concrete surface profiles (CSP) after different treatment methods:

- **Fig. 6.1:** CSP 1 (acid-etched)
- **Fig. 6.2:** CSP 2 (grinding)
- **Fig. 6.3:** CSP 3 (light shotblast)
- **Fig. 6.4:** CSP 4 (light scarification)
- **Fig. 6.5:** CSP 5 (medium shotblast)
- **Fig. 6.6:** CSP 6 (medium scarification)
- **Fig. 6.7:** CSP 7 (heavy abrasive blast)
- **Fig. 6.8:** CSP 8 (scabbled)
- **Fig. 6.9:** CSP 9 (heavy scarification—rotomilled)
- **Fig. 6.10:** CSP 10 (handheld concrete breaker followed by abrasive blasting)
Division 9 Flooring - Moisture Testing

- **ASTM D4263** Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method

- **ASTM F1869** Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

- **ASTM F2170** Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
Division 9 Flooring - Installation

- SSPC Guide 20 Guide for Applying Thick Film Coatings and Surfacings Over Concrete Floors
- SSPC PA No. 7 Applying Thin Film Coatings to Concrete
- Manufacturer's Installation Instructions
Division 9 Flooring - Slip Resistance

- ANSI A137.1 Tile Slip Test
- ANSI/NFSI B101.0 Walkway Surface Auditing Procedure for the Measurement of Walkway Slip Resistance
- ANSI/NFSI B101.1 Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials
- ANSI/NFSI B101.2 Test Method for Determining the Impact on Wet Dynamic Coefficient of Friction of Various Chemical or Physical Walkway Surface Treatments
- ANSI/NFSI B101.4 Test Method for Measuring the Wet Barefoot Condition of Flooring Materials or Products
- ANSI/NFSI B101.5 Standard Guide for Uniform Labeling Method for Identifying the Wet Static Coefficient of Friction (Traction) of Floor Coverings, Floor Coverings with Coatings, and Treated Floor Coverings
- ANSI/NFSI B101.6 Standard Guide for Commercial Entrance Matting in Reducing Slips, Trips and Falls
- ANSI/NFSI B101.8 A Floor Safety Management Program for Slip, Trip, and Fall Prevention
- ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine (Lab)
- ASTM F609 Standard Test Method for Using a Horizontal Pull Slipmeter (HPS) (Dry)
  - ASTM F1677 Standard Test Method for Using a Portable Inclinable Articulated Strut Slip Tester (PIAST) (W)
  - ASTM F1679 Standard Test Method for Using a Variable Incidence Tribometer (VIT) (W)
- ASTM F2508 “Standard Practice for Validation, Calibration, and Certification of Walkway Tribometers Using Reference Surfaces”
### Standard Guide for Concrete Coating Finish Texture*

<table>
<thead>
<tr>
<th>Designation</th>
<th>Finish texture (Average Maximum Peak Heights) (mils)</th>
<th>Finish texture (Average Maximum Peak Heights) (microns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFT-A</td>
<td>2 - 6 mils</td>
<td>50 - 165 microns</td>
</tr>
<tr>
<td>CFT-B</td>
<td>7 – 18 mils</td>
<td>166 - 465 microns</td>
</tr>
<tr>
<td>CFT-C</td>
<td>19 – 30 mils</td>
<td>466 - 775 microns</td>
</tr>
<tr>
<td>CFT-D</td>
<td>31 - 50 mils</td>
<td>776 - 1270 microns</td>
</tr>
</tbody>
</table>

*Under Development
Details - Joints

Figure 3: Isolation (Expansion) Joint at Floor/Wall Junction

Figure 5: Contraction Joint, Construction Joint, or Crack at Light-Duty Floor Slab

Figure 4: Contraction Joint, Construction Joint, or Crack at Heavy-Duty Floor Slab
Details - Joints (cover)

Figure 6: Contraction Joint, Construction Joint, or Crack with Elastomer Underlayment at Light-Duty Floor Slab

Figure 7: Contraction Joint, Construction Joint, and/or Crack with Reinforced Elastomer Underlayment at Light Duty Floor Slab
Details - Drains

Figure 10: Floor Termination Design at Floor Drain

- Flooring System
- Cast-in-Place Floor Drain
- Chip concrete back from sawcut for transition around floor drain
- Existing Concrete Substrate
Details - Protrusions

Figure 11: Floor Termination Design at Unslaved Pipe Penetration

Figure 12: Floor Termination Design at Slaved Pipe Penetration
Details - Cove Base

Figure 13: Rolled Radius Cove Base Detail

Figure 14: Cove Strip Cove Base Detail

Figure 15: Premanufactured Cove Strip

Figure 16: Gypsum Wall Board Cove Base Detail

Figure 17: Isolation (Expansion) Joint and Cove Base Detail at Floor/Wall Junction
Installation Quality

1. SSPC Guide for Planning Coatings Inspection
2. SSPC Monitoring and Controlling Ambient Conditions during Coating Operations
3. SSPC Development and Use of Quality Control Forms in Coatings Contracting

- Limit Substitutions at bid stage
- Qualify Installer (SSPC QP8)
- Single Sourced Systems
- Mockups
- Details
- General contractor meeting
- Independent testing -CCI (Hold Points) (SSPC QP5)
  - Surface Prep and Substrate Repairs
  - Moisture in Concrete
  - System Conformity (Materials, thickness, color)
  - Adhesion (Adhesion, Cohesion)
- Protection
Maintenance/Warranty

- Recommended Maintenance Procedures from Manufacturer (Daily/Periodic)
- Communication Procedures to the Maintenance Staff
- Inspection based upon maintenance goals and system performance
- Recommended Repair Procedures (if necessary)
LEED

Leadership in Energy & Environmental Design v4

Building Design & Construction (BD+C)

- Healthcare
- Schools
- Holistic approach to materials (source, VOC, recycled material)
- More emphasis on Cradle to Cradle Embodied Energy
- REACH chemicals of high concern
  - phthalates
  - nonylphenols
  - pigments (cobalts, chromates, cadmims)
Renovation and Renewal

- Renovation and Renewal are the quintessential Green construction
- Hospitals and Schools are at the Center of Communities
- Community and population demographics require updates and expansion
Health Facilities Management (HFM) and the American Society for Healthcare Engineering of the American Hospital Association surveyed a random sample of 3,414 hospital and health system executives to learn about trends in hospital construction. (2015)
Renovation/Renewal Considerations

- System selection options
- Operations disruption
  - Noise
  - Dust/debris
  - Traffic
- Overall time requirement
- Removal or resurface existing flooring
Institutional facilities are built to last.
Select the flooring system to meet the demands, then the aesthetics of the area.
Consider the requirements of each area of use independently.
For institutions life cycle costs outweigh installed costs.
A detailed specification is your roadmap to a successful installation.
Qualify your installer based upon your system of choice.
Quality installations starts with the substrate.
Plan and monitor the installations.
Additional Resources

- SSPC.org
- NTMA.com
- ICRI.org
- Concrete.org (ACI)
- PolishedConcrete.org
- ConcreteNetwork.com
- USGBC.org
- 4Specs.com
- Linkedin Groups
  - Decorative Concrete
  - Stained Concrete Artisans
  - Epoxy Resinous Floors - Protective Coatings & Epoxy Systems
  - Resinous Flooring Professional
  - Seamless Flooring
  - Terrazzo
Questions?

Thank you for your attention.

**April 28:** Focus on High Traffic Retail

**May 9:** Focus on Aggressive Environments

Tom Murphy  
VP Marketing LLC  
tmurphy@vpmarketingllc.com
Recognition

- Building Design + Construction
- Butterfield Color
- Citadel
- ConcreteNetwork.com
- Cornerstone
- Corrosion Technology
- Dex-O-Tex
- Duraflex
- Durability+Design
- FloRock
- Flowcrete
- Health Facilities Management
- HP Spartacote/Laticrete
- HTC
- Key Resin
- Lord
- NTMA
- ResDev
- Rhino Linings/Concrete Solutions
- RSL
- Scofield
- Senso
- Sherwin-Williams/General Polymers
- Soloman Color
- Stonhard
- Stonhard
- Westcoat Specialty Coating Systems
Learning Objectives

1. Understanding the benefits and limitations of concrete treatments, coatings and high build seamless flooring systems in healthcare and educational facility applications.

2. Understand the performance requirements and aesthetics desires for flooring in various functional areas with schools and hospitals.

3. Review the installation requirements and details for the respective flooring systems.

4. Outline key specification recommendations to provide a successful installation and long life cycle of the flooring systems.