DIVISION 08 – DOORS AND WINDOWS

03 0505 – UNDER SLAB VAPOR BARRIER

A. Sheet vapor retarder shall be polyethylene sheet, ASTM D 4397, 10 mils thick minimum. Consult with UND PM for approval of additional material substitutions.

03 1000 – CONCRETE FORMING AND ACCESSORIES

A. Prepare formwork shop drawings using qualified professional engineer. Include detail of fabrication, assembly, and support of formwork.

B. Formwork shall be inspected by Architect/Engineer and UND PM prior to concrete placement.

C. Where vertical concrete will be used as a finished surface, specify forming requirements which will give an aesthetically pleasing look when completed and identify the areas clearly on the drawings.

03 2000 – CONCRETE REINFORCING

A. Concrete reinforcement shall be new and of a grade strong enough to resist anticipated tensile forces plus a predetermined factor of safety.

B. Tie wire shall be annealed steel, 16-gauge minimum.

C. Galvanized or epoxy coated rebar shall be used in corrosive environments such as parking structures where de-icing agents may be used.

D. Synthetic Fiber Reinforcement shall be 100% virgin homopolymer polypropylene fibrillated fibers, containing no reprocessed olefin materials.

03 3000 - CAST-IN-PLACE CONCRETE

A. Exterior Walks and Drives

1. Design walks to be 6” minimum thickness and drives to be 8” minimum thickness with reinforcing steel as dictated by the traffic use and as recommended in the Soils Report.

2. Provide slip resistant texture: broom finish is preferred.

B. Show concrete design strengths, floor live loads, and soil bearing capacity values on drawings.

C. Use minimum concrete strength of 4000 psi at 28 days unless otherwise indicated by need.

D. Colorant additive shall be Solomon Colors Inc. or approved equal.

E. Use only a standard brand of admixture for concrete. No admixtures shall be used without the approval of the Owner except air-entrainment.

F. Aggregates

FINE AGGREGATE FOR CONCRETE

Sieve Size	% Passing by Weight
3/8 inch	100
No. 4	95-100
No. 16	45-80
No. 50	10-30
No. 100	0-10
No. 200	0-3

G. Portland Cement: Type I, Type II, or Type III when needed for rapid curing.

H. Concrete Mixtures for Building Elements

Concrete Types	Concrete Weights	Minimum Compressive Strength at 28 days
Footings:	Normal-weight	**4000 psi**
Foundation Walls:	Normal-weight	**4000 psi**
Slabs-on-Grade:	Normal-weight	**4000 psi**
Suspended Slabs:	Normal-weight	**4000 psi**
Suspended Slabs:	Lightweight	**4000 psi**
Cementitious Toppings:	Light-weight	**5000 psi**
- Gypsum based toppings shall not be used unless approved by Facilities Management.		
Building Frame Members:	Normal-weight	**5000 psi**
Building Walls:	Normal-weight	**4000 psi**

I. The consistency of the concrete mixes shall be such that the slump does not exceed 4 inches.

J. Specify a single, standard brand of cement in all exposed concrete to obtain greater uniformity of color. Prefer gray color over white.

K. Where concrete is to be exposed to view, specify aggregate that does not contain iron or other staining elements.

L. Prohibit use of calcium chloride or other salts as anti-freeze or accelerated set additives.

M. All concrete shall be air-entrained, with air content between 3 and 7 percent.

N. Specify procedures to be followed in both hot and cold weather operations.

O. Include specific instruction controlling finish tolerance (floors, walls, etc.)

P. Specify surface hardener where interior slabs are exposed. Surface shall be cleaned thoroughly prior to application.

Q. When stained concrete is used as the finished interior floor, investigate the local market for product.

R. Include Sample sets showing the full range of variations expected in these characteristics for cast-in-place architectural concrete.

S. Source Limitations: Obtain each color, size, type, and variety of cementitious material and/or concrete mixture from single manufacturer with resources to provide cast-in-place architectural concrete of consistent quality in appearance and physical properties.

T. Chamfer exterior corners and edges of cast-in-place architectural concrete.

03 5000 – CONCRETE FINISHING

A. Tool expansion joints into the wet concrete or “green sawed” within 24 hours after the concrete placement. Placement of joints to be coordinated with Owner.

B. Provide broom finish for sidewalks.

03 3511 – CONCRETE FLOOR FINISHES

A. Reference Standards

1. ASTM C779 – Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

2. ASTM F609 – Standard Test Method for Using Horizontal Pull Slip Meters (HPS).

3. ASTM E1155 – Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2008).

B. Deliver Materials in manufacturer’s sealed packaging, including application instructions.

C. Include Manufacturer’s name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation and instructions for mixing and reducing on the container label.

D. Store materials in a clean, dry area in accordance with manufacturer’s instructions. Keep materials from freezing. Avoid direct contact with this product as it may cause mild to moderate irritation of the eyes and/or skin. Protect materials during handling and application to prevent damage or contamination.

E. Manufacturer shall be Prosoco or approved equal.

F. Consolideck surface preparation cleaner or mechanical process to remove surface contaminants shall be used.

G. Verify that floor surfaces are acceptable to receive the work of this section. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes. Notify Architect if surfaces are not acceptable. Do not begin application until unacceptable condition(s) have been corrected.

H. Surface Preparation

1. Protect adjacent surfaces not designated to receive treatment. Use polyethylene or other proven protective material.

2. Clean and prepare surfaces to receive treatment in accordance with manufacturer's instructions ensuring that all stains, oil, grease, form release agents, dust and dirt are removed prior to application.

B.

1. Do not apply to surfaces which are frozen, dirty or have standing water. Surface must be clean, dry and absorbent. Confirm surface with a light water spray – surfaces designated for treatment should wet uniformly. If surface does not wet uniformly, use the appropriate surface preparation cleaner or mechanical process to remove remaining surface contaminants.

I. Surface and Air Temperatures

1. Verify that surface and air temperatures are as recommended by manufacturer

   a. Temperatures for application should be between 40-100 degrees F.

   b. Do not begin product installation until required surface and air temperature conditions are met.

J. Densifiers and Hardeners Application:

1. Test Application: Test a small area of each surface to confirm suitability and desired results before starting overall application. Test with the same equipment, recommended surface preparation and application procedures planned for general application.

2. Clean concrete of any dirt, residue or soft cut saw debris.

3. Ensure application equipment is clean and free of previously used materials.

4. Do not dilute densifier and chemical hardener.

5. Apply materials in accordance with manufacturer's instructions.

K. Penetrating Translucent Color Dye (Stain) Application

1. Verify that surface temperatures are as recommended by manufacturer. Temperatures for application should be between 50-90 degrees F. Do not begin product installation until required surface and air temperature conditions are met.

2. Ensure application equipment is clean and free of previously used materials.

3. Test Application: Test a small area of each surface to confirm suitability and desired results before starting overall application. Test with the same equipment, recommended surface preparation and application procedures planned for general application.

4. Dilution and Mixing: As per manufacturer's recommendations.

5. Execute using materials, equipment, and procedures specified by manufacturer, using manufacturer approved installer. Burnish concrete densifier treated floors in accordance with the following: Allow densifier and hardener to "cure" for a minimum of 28 days before beginning the application of polishing and staining.

6. Apply materials in accordance with manufacturer's instructions Diamond grind and polish the surface to the equivalent of #200 grit resin diamonds.

L. High Gloss Clear Sealer Finish Coating Application

1. Ensure application equipment is clean and free of previously used materials.

2. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents and other impediments to adhesion.

3. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.

4. Protect adjacent non-coated areas from drips, overflow and overspray. Immediately remove excess material.

5. Apply with a low-pressure sprayer and a microfiber or synthetic lint free mop. Do not atomize.

6. Test Application: Test a small area of each surface to confirm suitability and desired results before starting overall application. Test with the same equipment, recommended surface preparation and application procedures planned for general application.

7. Dilute as per manufacturer's recommendations.

8. Apply materials in accordance with manufacturer's instructions.

M. Keep surface dry for a minimum of 48 hours after application.

03 4500 - PRECAST ARCHITECTURAL CONCRETE

A. When precast concrete is used, require that fabricator have past record of competent performance on jobs of comparable size and complexity. Where premium quality "Architectural grade" is required, the Architect shall investigate and identify local availability.

B. Specify that fabricator be fully responsible for design of reinforcing for transit and lifting as well as for ultimate use.

C. Specify that all necessary attachments and connecting inserts be included and shown on shop drawings.

D. Provide shop drawings

03 5216 – LIGHTWEIGHT INSULATING CONCRETE

A. Lightweight concrete topping is preferred: Gypsum based toppings shall not be used unless approved by Facilities Management.

B. Design with adequate pitch for proper drainage.

03 5400 – CAST UNDERLAYMENT

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations. Compressive Strength according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations. Compressive Strength according to ASTM C 109/C 109M.

C. Hydraulic Cement Underlayment: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/4 inch (6 mm) and that can be feathered at edges to match adjacent floor elevations. Compressive Strength according to ASTM C 109/C 109M.

D. Surface Sealer: Designed to reduce porosity as recommended by manufacturer for type of floor covering to be applied to underlayment.

END OF DIVISION 03