2.6 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: minimum 4000 psi (27.6 MPa) at 28 days or match existing (only if greater).

2. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.

3. Slump: 4 inches (100 mm).

B. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.

C. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.

2.7 ADMIXTURES

No calcium chloride or chloride-ion producing admixture shall be used in any concrete.

A. Air-Entraining Admixture: ASTM C 260.

B. Water-Reducing Admixture: ASTM C 494, Type A.

C. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

D. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.

E. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.8 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.9 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Clear, Solvent-Borne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, construct, erect, shore, brace, and maintain formwork according to ACI 301.

B. Support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

C. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Chamfer exterior corners and edges of permanently exposed concrete.

H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

I. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

J. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 VAPOR RETARDER

A. Install, protect, and repair vapor-retarder sheets according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.

B. Lap joints 4 inches and seal with manufacturer's recommended tape.

3.3 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.4 STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Locate and install so as not to impair strength or appearance of concrete, at locations indicated or as approved by Architect.

C. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

D. Contraction (Control) Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 CONCRETE PLACEMENT

A. Comply with recommendations in ACI 304R, ASTM C 94, ASTM C 1116 and ACI 301, for measuring, mixing, transporting, and placing concrete.

1. Deposit concrete continuously and avoid segregation. Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm), avoiding cold joints, and in depths not to exceed formwork design pressures.

2. Consolidate concrete with mechanical vibrating equipment.

3. Screed and initial-float concrete floors and slabs using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

4. Floors to be level to within $\frac{1}{8}$" tolerance in 10 feet, smooth and sealed Verify intended floor finish. Do not seal concrete surface where sealer would interfere with floor coating. Comply with floor finish manufacturer specifications.

3.7 FINISHING FLOORS AND SLABS

A. Finish formed surfaces as follows:

1. Apply rough-formed finish, defined in ACI 301, to concrete surfaces indicated or not exposed to public view.

2. Apply smooth-formed finish, defined in ACI 301, to concrete surfaces indicated and exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.

A. Do not apply rubbed finish to smooth-formed finish.

1. Apply smooth-rubbed finish to smooth-formed finished concrete surfaces indicated or exposed to public view.

B. Finishing Floors and Slabs: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces.

1. Scratch Finish: Apply scratch finish, defined in ACI 301, to surfaces indicated and to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes.

2. Float Finish: Apply float finish, defined in ACI 301, to surfaces indicated, to surfaces to receive trowel finish, and to surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

3. Trowel Finish: Apply a trowel finish to surfaces indicated and to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

a. After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

b. Finish and measure surface so gap at any point between concrete surface and an unleveled freestanding 10-foot- (3.05-m-) long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed the following:

1) 1/8 inch (3.2 mm).

4. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

5. Broom Finish: Apply a broom finish to exterior concrete, brooming with fiber-bristle broom perpendicular to main traffic route, to platforms, steps, and ramps, and elsewhere as indicated.

6. Verify intended floor finish. Do not seal concrete surface where sealer would interfere with floor coating. Comply with floor finish manufacturer specifications.

3.8 CONCRETE PROTECTION AND CURING

General: Protect concrete from excessive cold or hot temperatures. Comply with ACI 306.1-1990 for cold-weather protection and with recommendations in ACI 305R-1990 for hot-weather protection during curing.

1. Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause excessive moisture loss.

2. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

3. Cure formed and unformed concrete for at least seven days by moisture curing, moisture-retaining-cover curing, or curing compound.

4. Cure and seal floors and slabs with a curing and sealing compound according to manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency see [illegible] additional requirements.

B. Testing Agency: Tests will be performed according to ACI 301, and additional requirements as indicated in these drawings, CS-3, Specifications and manufacturer requirements. General contractor shall coordinate and arrange with appropriate parties, Village, etc., and coordinate with the Owner's Construction Manager all such testing.

3.10 REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architec/Ownert. Remove and replace concrete that cannot be repaired and patched to requirements of the drawings.

END OF SECTION 03300

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, and other related construction documents such as Division 01 specifications apply to this Section

1.2 SUMMARY

A. This Section includes a cement-based self-leveling underlayment formulated with a special blend of polymers used to level and smooth interior concrete, terrazzo, ceramic & quarry tile, metal, wooden substrates, and non-soluble adhesive residue on concrete prior to the installation of finished flooring on all grade levels.

1. ARDEX K-15® Premium Self-Leveling Underlayment

2. ARDEX P 51™ Primer

3. ARDEX P 82™ Ultra Prime

4. ARDEX E 25™ Resilient Emulsion

B. Related Sections include the following:

1. Section 03 30 00, Cast-In-Place Concrete

2. Section 07 26 19, Topical Moisture Vapor Mitigation

3. Division 09 Flooring Sections

1.3 REFERENCES

A. ASTM C 109M, Compressive Strength Air-Cure Only

B. ASTM C348, Flexural Strength of Hydraulic-Cement Mortars

C. ASTM E84, Surface Burning Characteristics of Building Materials

D. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ Probes

E. ASTM F1869, Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Ca Chloride

F. ASTM 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used. Include manufacturer's Material Safety Data Sheets.

B. Qualification Data: For Installer

1.5 QUALITY ASSURANCE

A. Installation of the ARDEX product must be completed by a factory-trained applicator, such as an ARDEX LevelMaster® Elite or Choice Contractor, using mixing equipment and tools approved by the manufacturer. Contact ARDEX for a list of certified installers. See Ardex contact information on CS3.0 sheet.

B. Product must have a hydraulic cement-based inorganic binder content as the primary binder which includes portland cement per ASTM C150: Standard Specification for Portland Cement and other specialty hydraulic cements. Gypsum-based products are not acceptable.

C. Manufacturer Experience: Provide products of this section by companies which have successfully specialized in production of this type of work for not less than 10 years. Contact Manufacturer Representative prior to installation.

1.6 WARRANTY ARDEX K15® installed as part of a floor system, shall be installed in conjunction with the recommended ARDEX Tile & Stone Installation Materials or WW HENRY Flooring Adhesive, as appropriate, to provide the ARDEX SystemOne 10-year comprehensive warranty.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.

B. Store products in a dry area with temperature maintained between 50° and 85° F (10° and 29° C) and Protect from direct sunlight.

C. Handle products in accordance with manufacturer's printed recommendations

1.8 PROJECT CONDITIONS

A. Do not install material below 50° F (10° C) surface and air temperatures. These temperatures must also be maintained during and for 48 hours after the installation of products included in this section. Install quickly if substrate is warm and follow warm weather instructions available from the ARDEX Technical Service Department.

PART 2 - PRODUCTS

2.1 HYDRAULIC CEMENT UNDERLAYMENT

A. Hydraulic Cement-based Self-Leveling Underlayment

1. Acceptable Products:

a. ARDEX K 15®; Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, Pa 15001 USA, (724) 203-5000, www.ardex.com

i. Primer Standard Porous Concrete: ARDEX P 51™ Primer

ii. Primer Non-porous substrates, ceramic & quarry tile, non-water soluble adhesive residue, concrete treated with silicate compounds, metal, and wooden subfloors: ARDEX P 82™ Ultra Prime

iii. Additive: ARDEX E 25™ Resilient Emulsion

2. Performance and Physical Properties: Meet or exceed the following values for material cured at 73° F+/-3°F (23° C+/-3°C) and 50% +/-5% relative humidity:

a. Application: Barrel Mix or Pump

b. Flow Time: 10 minutes

c. Initial Set: Approx. 30 minutes

d. Final Set: Approx. 90 minutes

e. Compressive Strength: 4100 psi at 28 days, ASTM C109M.

f. Flexural Strength: 1000 psi at 28 days, ASTM C78.

g. VOC: 0 g/l, calculated SCAQMD 1168

2.2 WATER: Water shall be clean, potable, and sufficiently cool (not warmer than 70°F).

2.3 ALTERNATE UNDERLAYMENTS: When appropriate and when technical criteria are met for each underlayment, ARDEX K10, K13, K16, K60 and V1200 are also approved underlayments for use on Ulta projects. Alternate underlayments must meet technical requirements of conditions and moisture mitigation system being used (if any).

PART 3 - EXECUTION

3.1 PREPARATION

A. Concrete Subfloors: Prepare substrate in accordance with manufacturer's instructions.

1. Prior to proceeding please refer to ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring. All concrete subfloors must be sound, solid, clean, and free of all oil, grease, dirt, curing compounds and any substance that might act as a bond breaker before priming. Mechanically clean if necessary using shot blasting or other. Acid etching and the use of sweeping compounds and solvents are not acceptable.

2. All cracks in the subfloor shall be repaired to minimize telegraphing through the underlayment.

3. Substrates shall be inspected in accordance with ASTM F1869 or ASTM F2170 and corrected for moisture or any other conditions that could affect the performance of the underlayment or the finished floor covering. For areas where moisture vapor emissions exceed the limits required by the floor covering manufacturer refer to Section 07 26 19, Topical Moisture Vapor Mitigation Systems and install the appropriate ARDEX Moisture Control System.

B. Joint Preparation:

1. Moving Joints - honor all expansion and isolation joints up through the underlayment. A flexible sealing compound such as ARDEX ARDISEAL™ Rapid Plus may be installed.

2. Saw Cuts and Control Joints - fill all non-moving joints with ARDEX ARDIFIX™ Joint Filler or ARDEX SD-F™ FEATHER FINISH® as recommended by the manufacturer.

C. Wooden subfloors: must be clean and free of all foreign matter. Sand to bare wood then vacuum to remove all dust. Re-nail any loose boards exhibiting movement.

D. Metal subfloors must be clean and free of all rust and foreign matter. Where required, a corrosive resistant coating should be applied and allowed to dry before priming.

E. Cutback and other non-water soluble adhesive residues must be wet scraped to a thin, well-bonded layer.

F. Non-porous subfloors such as ceramic and quarry tile as well as terrazzo should be clean and free of all waxes and sealers. If necessary, clean by mechanical methods such as shot blasting or other.

3.2 APPLICATION OF ARDEX K 15®:

A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.

B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas from contact due to mixing and handling of materials.

C. Priming:

1. Primer for standard absorbent concrete subfloors: Mix ARDEX P-51 1:1 with water and apply evenly with a soft push broom. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry to a clear, thin film (min. 3 hours, max. 24 hours). Underlayment shall not be applied until the primer is dry. Primer coverage is approximately 400 to 600 sq. ft. per gallon.

2. Primer for extremely absorbent concrete subfloors: Make an initial application of ARDEX P-51mixed with 3 parts water using a soft push broom. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry thoroughly before proceeding with the standard application of primer as described above for standard absorbent concrete.

3. Primer for non-porous subfloors, wooden or metal subfloors, or cutback and other non-water soluble adhesive residues over concrete: Prime with ARDEX P-82 Ultra Prime. Mix Part A (red) with Part B (white) and apply with a short-nap or sponge paint roller, leaving a thin coat of primer no heavier than a thin coat of paint. Do not leave any bare spots. Remove all puddles and excess primer. Allow to dry to a clear, slightly tack film (minimum 3 hours, maximum 24 hours). Underlayment shall not be installed until primer is dry. Primer coverage is approximately 200 to 400 square feet per gallon.

4. Minimum drying time for ARDEX P-82 Ultra-Prime over cutback adhesive is 18 hours.

D. Mixing: Comply with manufacturer's printed instructions and the following.

1. Add 7 quarts (6.5 L) of clean potable water per two 55-pound bag.

2. Mix using a ½" (650 rpm) low speed heavy-duty mixing drill with an ARDEX T-1 mixing paddle. Do not overwater.

3. Aggregate mix: For areas to be installed over 1 ½" thick, aggregate may be added to reduce material costs. Mix ARDEX K 15® with water first, then add from 1/3 up to 1 part by volume of washed, well graded pea gravel aggregate (1/8" to 1/4" or larger). Do not use sand. Note: The addition of aggregate will diminish the workability of the make it necessary to install a finish coat to obtain a smooth surface. Ardex recommends a ¼" application of ARDEX K 15® neat to be installed as the top coat.

4. For pump installations, ARDEX K 15® shall be mixed using the ARDEX Levelcraft Automatic Mixing Pump. Start the pump at 210 gallons of water per hour, and then adjust to the minimum water reading that still allows self-leveling properties. Do not overwater. Check the consistency of the product on the floor to ensure a uniform distribution of the sand aggregate at both the top surface and bottom of the pour.

E. Application: Comply with manufacturer's printed instructions and the following.

1. ARDEX K 15® must be installed at a minimum thickness of 1/8" over the highest point of the floor, which typically results in an average thickness of ¼" over the entire floor. ARDEX K 15® can be installed up to 1 ½" over large areas neat, and up to 5" with the addition of proper aggregate. ARDEX K 15® can also be featheredged to match existing elevations.

2. Pour or pump the liquid ARDEX K 15® and spread in place with the ARDEX T-4 Spreader. Use the ARDEX T-5 Smoother and featheredge and touch-up. Wear non-metallic cleats to avoid leaving marks in the liquid ARDEX K 15®.

3. Wood subfloors require the use of the mesh-reinforced ARDEX K15® + E25™ Resilient Emulsion Underlayment System. After priming, install 3.4 galvanized diamond metal lath by stapling to the wooden subfloor approximately every 6 inches.

4. Metal subfloors require the use ARDEX K15® + E25™ Resilient Emulsion Underlayment System.

5. Steel subfloors require that the substrate first be primed with an anti-corrosive paint. After thorough drying of the paint, prime the surface with ARDEX P82™ Ultra Prime.

F. Curing

1. ARDEX K15® can be walked on in 2-3 hours. Moisture-insensitive tiles such as ceramic quarry and porcelain can be installed after 6 hours. Underlayment can accept all other finish floor covering materials after 16 hours at 70°F and 50% relative humidity. For resinous systems such as epoxy and polyurethane floors please contact the ARDEX Technical Services Department.

3.4 FIELD QUALITY CONTROL

A. Where specified, field sampling of the Ardex underlayment is to be done by taking an entire unopened bag of the product being installed to an independent testing facility to perform compressive strength testing in accordance with ASTM C 109/modified: air-cure only. There are no in situ test procedures for the evaluation of compressive strength.

3.5 PROTECTION

A. Prior to the installation of the finish flooring, the surface of the underlayment should be protected from abuse by other trades by the use of plywood, Masonite or other suitable protection course.

SECTION 05500 - METAL FABRICATIONS

1.1 GENERAL

A. Submittals: In addition to product data, submit the following:

1. Shop drawings detailing fabrication and erection, including templates for anchor bolt placement.

2. Samples, materials and finishes as may be requested by Architect.

3. For structural steel fabrication: AISC Certification for steel fabrication is required.

a. Fabricators Qualifications: A qualified fabricator who participates in the AISC Quality Certification Program and designated as an AISC Certified Plant, Category Sbd.

b. Welding Qualifications: Qualifying procedures and personnel according to AWS D1.1, structural welding code - steel.

1.2 PRODUCTS

A. General: Provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes.

B. Steel and Iron: As follows:

1. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2. Rolled Floor Plates: ASTM A 786/A 786M/Rolled from plate complying with ASTM A36/A, 36M, Grand C or D.

3. Cold-Formed Tubing: ASTM A 500.

4. Pipe: ASTM A 53, standard weight (schedule 40), unless otherwise indicated. Paint black, unless otherwise indicated.

5. Gray-Iron Castings: ASTM A 48, Class 30.

6. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 (ASTM A 47M) malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM F2329.

C. Aluminum: As follows:

1. Extrusions: ASTM B 221 (ASTM B 221M), alloy 6063-T6.

2. Rolled Tread Plate: ASTM B 632 (ASTM B 632M) Pattern 1, alloy 6061-T6.

D. Fasteners: Provide plated fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating, for exterior use or where built into exterior walls. Select fasteners for the type, grade, & class req'd.

E. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer with good resistance to corrosion, compatible with finish paint systems, and complying with performance requirements of FSTT-P-664.

F. Galvanizing Repair Paint: High-zinc-dust-content paint, with dry film containing not less than 94 percent zinc dust by weight.

G. Concrete Fill: Comply with requirements of Division 3 Section "Cast-in-Place Concrete" for normal-weight concrete with a minimum 28-day compressive strength of 3,000 psi (20 MPa).

H. Nonshrink, Metallic Grout: Factory-packaged, ferrous-aggregate grout complying with ASTM C 1107.

I. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.

J. Fabrication, General: Form from materials of type, size, thickness, and shapes indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Reassemble items in shop to greatest extent possible.

1. Shear and punch metals cleanly and accurately. Remove sharp or rough areas and ease exposed edges.

2. Weld corners and seams continuously. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. Remove welding flux immediately. Finish exposed welds and surfaces smooth and blended.

3. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.

4. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

K. Rough Hardware: Furnish custom-fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes for supporting and anchoring woodwork.

1. Galvanize, unless otherwise indicated.

L. Loose Bearing and Leveling Plates: Provide for steel items bearing on masonry or concrete, as indicated. Drill plates to receive anchor bolts.

1. Galvanize after fabrication.

M. Loose Steel Lintels: Fabricate from shapes and to sizes indicated.

1. Galvanize after fabrication.

N. Shelf and Relieving Angles: Fabricate to sizes indicated for attachment to support framing. Provide slotted holes to receive 3/4-inch (19-mm) bolts, spaced not more than 6 inches (150 mm) from ends and not more than 24 inches (600mm) o.c.

1. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2. Galvanize shelf angles to be installed on exterior concrete.

O. Miscellaneous Framing and Supports: Provide as required to complete the Work but not included with structural steel framework. Fabricate as indicated and required to receive adjacent construction. Fabricate from structural steel of welded construction. Drill and tap to receive hardware, hangers, and similar items. Include anchors for building into other work, spaced not more than 24 inches (600 mm) o.c.

P. Miscellaneous Steel Trim: Fabricate from steel shapes, plates, and bars of profiles shown with continuously welded joints, and smooth exposed edges. Miter corners and use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages; coordinate assembly and installation with other work.

Q. Pipe Bollards: Fabricate from Schedule 80 steel pipe capped with 1/4-inch (6.4-mm) steel plate.

1. Fabricate sleeves for bollards from steel pipe with 1/4-inch- (6.4-mm-) thick steel plate welded to bottom of sleeve.

R. Finish metal fabrications after assembly. Comply with NAAMM "Metal Finishes Manual for Architectural and Metal Products" for recommendations on application of finishes. Shop-prime ferrous metal items not indicated to be galvanized.

1. Hot-dip galvanize items indicated to be galvanized. Comply with ASTM A 153 or ASTM A 123 as applicable.

2. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with SSPC-SP 3 "Power Tool Cleaning."

3. Apply shop primer per requirements of SSPC-PA 1 "Paint Application Specification No. 1" for shop painting.

1.3 EXECUTION

A. Installation, General: Perform cutting, drilling, and fitting required for installing metal fabrications. Set units accurately in location, alignment and elevation with edges and surfaces level, plumb, and true.

1. Fit exposed connections accurately together and weld, unless otherwise indicated. Do not weld, cut, or abrade the surfaces of galvanized units that are intended for bolted connections.

2. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

B. Set loose items on cleaned bearing surfaces using wedges or other adjustable devices. After the items have been positioned and plumbed, tighten the anchor bolts and pack space with grout.

1. Use nonshrink, metallic grout in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.

C. Anchor bollards in concrete with pipe sleeves preset into concrete. Fill space between bollard and sleeve solidly with nonshrink, nonmetallic grout.

1. Fill bollards solidly with concrete, mounding top surface.

D. Touch up shop paint after erection. Clean field welds, bolted connections, and abraded areas and paint with same material as used for shop painting.

E. For galvanized surfaces, clean welds, bolted connections, & abraded areas, & apply galvanizing repair paint.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood or dissimilar with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.

2. Extruded Aluminum: Two coats of clear lacquer.

SECTION 06100 - ROUGH CARPENTRY

1.1 GENERAL

A. Submittals: Submit the following:

1. Product Data for engineered wood products, underlayment, insulating sheathing, air-infiltration barriers, metal framing anchors, and construction adhesives.

2. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses.

3. Wood treatment data, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials.

1.2 PRODUCTS

A. Lumber, General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review. Provide dressed lumber, S4S, with each piece factory marked with grade stamp of inspection agency.

1. Provide lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

B. Wood-Preservative-Treated Materials: Comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 15 percent. Treat indicated items and the following:

a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

b. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

c. Wood framing members less than 18 inches (460 mm) above grade.

d. Wood floor plates installed over concrete slabs directly in contact with earth.

2. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

3. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect the finishes.

C. Dimension Lumber: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

1. Framing Other than Non-Load-Bearing Partitions: Provide Construction or No. 2 grade and any of the following species:

a. Species: Southern pine; SPIB.

b. Species: Douglas fir-larch; NLGA, WCLIB, or WWPA.

c. Species: Hem-fir; NLGA, WCLIB, or WWPA.

d. Species: Douglas fir south; WWPA.

2. Framing Other than Non-Load-Bearing Partitions: Provide any species and grade with a modulus of elasticity of at least 1,300,000 psi (8950 MPa) and an extreme fiber stress in bending of at least 850 psi (5.9 MPa) for 2-inch nominal (38 mm-actual) thickness and 12-inch nominal (286-mm actual) width for single member use.

D. Fire-Retardant-Treated Materials:

1. General: Comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood).

a. Use Exterior type for exterior locations and where indicated.

b. Use Interior Type A, High Temperature (HT) for enclosed roof framing, framing in attic spaces, and where otherwise indicated.

2. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

a. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.

3. For exposed items to indicated to receive a stained or natural finish, use formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

E. Miscellaneous Lumber: Provide No. 3 or Standard grade lumber of any species for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, and similar members.

F. Air-Infiltration Barrier: Air retarder complying with ASTM E 1677; made from polyolefins; either cross-laminated films, woven strands, or spunbonded fibers; coated or uncoated; with or without perforations to transmit water vapor but not liquid water; and with minimum water-vapor transmission of 10 perms (575 ng/Pa x s x sq. m) when tested according to ASTM E 96, Procedure A.

G. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.

1. Power-Driven Fasteners: CABO NER-272.

2. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

H. Metal Framing Anchors: Provide galvanized steel framing anchors of structural capacity, type, and size indicated and as follows:

1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence of compliance of metal framing anchors for application indicated with building code in effect for Project.

2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.

3. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 (ASTM A 653M, Z180) coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.

I. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8mm); selected from manufacturer's standard widths to suit width of sill members indicated.

J. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.

K. Telephone and Electrical Equipment Backing Panels: DOC PS 1, exterior, AC where exposed to view, [Exterior, C-C Plugged, where acceptable to owner/landlord] [fire-retardant treated where required,] in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

1.3 EXECUTION

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

B. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

C. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.

2. Published requirements of metal framing anchor manufacturer.

3. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction."

4. "Table 23-I-Q--Nailing Schedule" of the Uniform Building Code.

5. "Table 2305.2--Fastening Schedule" of the B.O.C.A. National Building Code where applicable.

6. "Table 1705.1--Fastening Schedule," of the Standard Building Code.

7. "Table 2304.9.1--Fastening Schedule," of the International Building Code.

D. Use hot-dip galvanized or stainless-steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity.

E. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

F. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.

G. Air-Infiltration Barrier: Cover sheathing with air-infiltration barrier to comply with manufacturer's written instructions.

1. Apply air-infiltration barrier to cover upstanding flashing with 4-inch (100-mm) overlap.

a. All manufacturers of air barrier, installation and flashing products are to provide letters of compatibility for these products in combination with each other.

SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL (Not Applicable)

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber Standards: DOC PS 20 and grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.

B. Softwood Plywood: DOC PS 1. C. Hardwood Plywood: HPVA HP-1.

2.2 STANDING AND RUNNING TRIM

A. Exterior Lumber Trim: Smooth-textured Clear Heart, western red cedar, Grade A, western red cedar, B & B, southern yellow pine.

B. Exterior Primed Hardboard Trim: High-temperature cured, high-resin, wood fiber composite; factory primed; and recommended by manufacturer for exterior use.

C. Interior Trim: Painted Trim C Select, eastern white pine; B & Btr. Select or Supreme, Idaho white, lodgepole, ponderosa, or sugar pine, Stained Trim rift-sawn, clear, kiln-dried red oak selected for compatible grain and color.

SECTION 06400 - CUSTOM CASEWORK

Field Installation:

1. Install casework plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level and with no variations in flushness of adjoining surfaces. Scribe and cut to fit adjoining work. Anchor by blocking or directly to substrates without distortion so that cabinet doors fit openings properly and are accurately aligned. Adjust hardware to center doors in openings and to provide free operation. Anchor countertops securely to base units and to the support systems as indicated.

Adjust and clean:

1. Repair damaged and defective casework where possible to eliminate defects; where not possible to repair, replace casework. Clean, lubricate and adjust hardware for smooth operation.

2. Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

SECTION 07210 - BUILDING INSULATION

1.1 GENERAL

A. Submittals: Product Data for each type of insulation product specified.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated as determined by testing identical products per ASTM E 84, ASTM E 119, or ASTM E 136 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

C. All manufacturers of vapor barrier, insulation and flashing products, are to provide letters of compatibility for these products in combination with each other.

1.2 PRODUCTS

A. General: Provide insulating materials that comply with requirements and with referenced standards.

1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thickness, widths, and lengths.

B. Polyisocyanurate Board Insulation: Rigid, cellular polyisocyanurate thermal insulation faced on both sides with aluminum foil to comply with requirements indicated below:

1. ASTM Standard: ASTM C 1289, Type I, Class 1 or 2.

C. Unfaced Mineral-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing) of type described below:

1. Mineral-Fiber Type: Fibers manufactured from glass, slag wool, or rock wool.

2. Mineral-Fiber Type: Fibers manufactured from glass.

3. Mineral-Fiber Type: Fibers manufactured from slag or rock wool.

4. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indices of 25 and 50, respectively.

D. Faced Mineral-Fiber Blanket Insulation: ASTM C 665, Type III, Class A (blankets with reflective vapor-retarder membrane facing and flame spread of 25 or less); with foil-scrim-kraft, foil-scrim, or foil-scrim-polyethylene vapor-retarder membrane on 1 face.

1. Mineral-Fiber Type: Fibers manufactured from glass.

E. Polyethylene Vapor Retarder: ASTM D 4397, 6 mils (0.15 mm) thick, with maximum permeance rating of 0.13 perm (7.5ng/Pa x s x sq. m) and vapor retarded tape: pressure -sensitive tape of type recommended by vapor retarder manufacturer for sealing joining and penetrations in vapor retarder.

F. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates. Verify compatibility of manufacturer of insulation.

1.3 EXECUTION

A. Installation, General: Comply with insulation manufacturer's written instructions applicable to products and application indicated.

1. Install insulation that is undamaged, dry, unsoiled, and has not been exposed at any time to ice and snow.

2. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

3. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

B. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors.

C. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system. Seal all joints caused by seams, pipes, conduits, electrical boxes and similar items penetrating objects and vapor retarders. Repair tears or punctures immediately before concealment by other work.

D. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, sunlight (UV) and other causes.

SECTION 072619 - TOPICAL MOISTURE VAPOR MITIGATION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings, general provisions of the Contract, and other related construction documents such as Division 01, Division 03, and Division 09 specifications that apply to this Section

1.2 SUMMARY

A. This Section includes a single-coat, fast-curing, 100% solids epoxy moisture management system formulated to suppress excessive moisture vapor emissions in new or existing concrete prior to installing an ARDEX Underlayment.

1. ARDEX MC™ RAPID One-Coat Moisture Control System

2. ARDEX P 82™ Ultra Prime

3. ARDEX ARDIFIX™ Two-Part, Low Viscosity Rigid Polyurethane

4. ARDEX ARDISEAL™ RAPID PLUS Fast Setting Semi-Rigid Joint Sealant

5. ARDEX K15 Self Leveling Underlayment

6. ARDEX V1200 Self-Leveling Underlayment

7. ARDEX MRP™ Moisture Resistant Patch

A. Related Sections include the following:

1. Section 03 30 00, Cast-In-Place Concrete

2. Division 09 Flooring Sections

1.3 REFERENCES

A. ASTM F2170 - Relative Humidity in Concrete Floor Slabs Using in situ Probes

B. ASTM F1869 - Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

C. ASTM 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

D. ASTM C1583 - Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension

E. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials

F. ASTM D1308 - Chemical Resistance of Finishes

G. ASTM F3010-13-Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used. Include manufacturer's Material Safety Data Sheets.

B. Qualification Data: For Installer

1.5 QUALITY ASSURANCE

A. Installation of the ARDEX product must be completed by a factory trained applicator, such as an ARDEX LevelMaster Elite® or ARDEX Choice Contractor, using mixing equipment and tools approved by the manufacturer. Contact ARDEX for a list of certified installers. See Ardex contact information on CS3.0 sheet.

B. Manufacturer Experience: Provide products of this section by companies which have successfully specialized in production of this type of work for not less than 5 years. Contact Manufacturer Representative prior to installation.

1.6 WARRANTY

A. Certified applicator must file a pre-installation checklist with the manufacturer and receive written confirmation of the approval to proceed in order to obtain the extended 10-year ARDEX MC™ RAPID Warranty.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.

B. Store products in a dry area with temperature maintained between 50° and 85° F (10° and 29° C) and Protect from direct sunlight.

C. Handle products in accordance with manufacturer's printed recommendations.

1.8 PROJECT CONDITIONS

A. Do not install material below 50° F (10° C) surface and air temperatures. These temperatures must also be maintained during and for 48 hours after the installation of products included in this section. Install quickly if substrate is warm and follow warm weather instructions available from the ARDEX Technical Service Department.

PART 2 - PRODUCTS

2.1 TOPICAL MOISTURE VAPOR EMISION SYSTEM

A. One-Coat Moisture Control System for Concrete to Receive ARDEX Underlayments and Toppings

Acceptable Products:

a. ARDEX MC™ RAPID; Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, Pa 15001 USA 724-203-5000

1. Performance and Physical Properties: Meet or exceed the following values for material cured at 70° F+/-3°F (21° C+/-3°C) and 50% +/-5%relative humidity:

a. Application: Manual

b. Material Requirements on CSP 3 Prepared Concrete: Max 270 sq. ft. per mixed unit for 10 mils

c. Permeability (ASTM E96): ≤0.06 perms

d. 14 pH solution (ASTM D1308): No effect

e. Working Time: 20 minutes

f. Pot Life: 20 minutes

g. VOC: 0g/L, calculated SCAQMD 1113

h. Walkable: Minimum of 4 hours

i. Prime and Install Underlayment: Minimum 4 hours, maximum 24 hours

2.2 HYDRAULIC CEMENT UNDERLAYMENT

A. Hydraulic Cement-based Self-Leveling Underlayment

1. Acceptable Products:

a. ARDEX K 15®, Manufactured by ARDEX Engineered Cements: 400 Ardex Park Drive, Aliquippa, Pa 15001 USA, (724) 203-5000 www.ardexamericas.com

i. Primer: ARDEX P 82™ Ultra Prime

2. Performance and Physical Properties: Meet or exceed the following values for material cured at 70° F+/-3°F (21° C+/-3°C) and 50% +/-5% relative humidity:

a. Application: Barrel Mix or Pump

b. Flow Time: 10 minutes

c. Initial Set: Approx. 30 minutes

d. Final Set: Approx. 90 minutes

e. Compressive Strength: Minimum 4100 psi at 28 days, ASTM C109M.

f. Flexural Strength: 1000 psi at 28 days, ASTM C78.

g. VOC: 0 g/l, calculated SCAQMD 1113

2.3 ALTERNATE UNDERLAYMENTS: When appropriate and when technical criteria are met for each underlayment, ARDEX K10, K13, K16, K60 and V1200 are also approved underlayments for use on Ulta projects. Alternate underlayments must meet technical requirements of conditions and moisture mitigation system being used (if any).

2.4 WATER: Water shall be clean, potable, and sufficiently cool (not warmer than 70°F).

2.5 CRACK REPAIR: As required to provide a sound, solid substrate to accept the moisture control system:

1. ARDEX ARDIFIX™ Two-Part, Low Viscosity Rigid Polyurethane

2. ARDEX ARDISEAL™ RAPID PLUS Fast Setting Semi-Rigid Joint Sealant

Order Plans @ WWW.LDIILine.com

RGLA

rgla solutions, inc.

5100 River Road, Ste 125
Schiller Park, IL 60176
p: 847.671.7452
f: 847.671.4200
www.rgla.com

REVISIONS:	DATE:
LL & ULTA REVIEW	06/03/2019
BID ISSUE	06/03/2019
PERMIT ISSUE	06/04/2019

robert g. lyon + associates, inc.
retail architecture
5100 River Road, Ste 125
Schiller Park, IL 60176
p: 847.671.7452
f: 847.671.4200
www.rgla.com

SEAL:

THE ABOVE DRAWINGS AND SPECIFICATIONS AND IDEAS, DESIGNS AND ARRANGEMENTS REPRESENTED THEREBY ARE AND SHALL REMAIN THE PROPERTY OF THIS OFFICE: AND NO PART THEREOF SHALL BE COPIED, DISCLOSED TO OTHERS OR USED IN THE CONNECTION WITH ANY WORK OR PROJECT OTHER THAN THE SPECIFIC PROJECT FOR WHICH THEY HAVE BEEN PREPARED AND DEVELOPED WITHOUT THE WRITTEN CONSENT OF THIS OFFICE. VISUAL CONTACT WITH THESE DRAWINGS OR SPECIFICATIONS SHALL CONSTITUTE CONCLUSIVE EVIDENCE OF ACCEPTANCE OF THESE RESTRICTIONS.

WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS: CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS. SHOP DETAILS MUST BE SUBMITTED TO THIS OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

©2018 RGLA SOLUTIONS, INC.
©2018 ROBERT G. LYON & ASSOCIATES, INC.

ULTA BEAUTY

ULTA #1613
SHOPPES OF MADISON
8201 HIGHWAY 72 WEST
SUITE C
MADISON, AL 35758

SPECIFICATIONS

DRAWN BY	IA
CHECKED BY	PK
JOB NUMBER	19047
SHEET NAME	SP2