2026, Jericho Design Group, LLC. These drawings are protected by the copyright laws of the United States. These drawings or any part thereof may not be used for any purpose or reproduced in any form or by any means without the written consent of Doug Shaw.

SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Section includes cast-in-place concrete work indicated in the Contract Documents or otherwise required for proper completion of the work.

1.2 RELATED SECTIONS
A. Section 013300 - Structural Submittals.
B. Section 014525 - Structural Testing/Inspection Agency Services.
C. Section 031000 - Concrete Formwork.
D. Section 032000 - Concrete Reinforcement.
E. Section 036200 - Non-Shrink Grout.

1.3 REFERENCES
A. ACI 301 - Specifications for Structural Concrete for Buildings.
B. ACI 318 - Building Code Requirements for Structural Concrete.
C. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
D. ASTM C33 - Standard Specification for Concrete Aggregates.
E. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
F. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
G. ASTM C138 - Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.
H. ASTM C143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
I. ASTM C150 - Standard Specification for Portland Cement.
J. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
K. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
L. ASTM C230 - Standard Specification for Flow Table or Use in Tests of Hydraulic Cement.
M. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
N. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
O. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
P. ASTM C567 - Standard Test Method for Unit Weight of Structural Lightweight Concrete.
Q. ASTM C595 — Standard Specification for Blended Hydraulic Cements.
R. ASTM C618 - Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
S. ASTM E1155 - Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System.
T. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

1.4 NOTICE
A. Notify Design Professional and Structural Testing/Inspection Agency not less than 48 hours prior to placing concrete.

1.5 QUALITY ASSURANCE
A. Structural Testing/Inspection Agency shall perform the following quality related items:
1. Examine concrete in truck to verify that concrete appears properly mixed.
2. Perform a slump test as deemed necessary for each concrete load. Record if water or admixtures are added to the concrete at the job site. Perform additional slump tests after job site adjustments.
3. Concrete testing: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu yd. plus one sample for each additional 100 cu. yd.
a. At a minimum, obtain 5 compressive strength tests for each concrete mixture per ACI 318.
4. Per composite sample taken, mold four standard cured specimens per set for compressive strength testing. For each set molded, record:
a. Slump
b. Air content
c. Unit weight
d. Temperature, ambient and concrete
e. Location of placement
f. Any pertinent information, such as addition of water, addition of admixtures, etc.
5. Verify the dry weight of the lightweight aggregates and the five-day saturated weight of the aggregate, and verify that aggregates are being properly presoaked prior to batching concrete.
6. Monitor placement of structural lightweight concrete placed by pumping.
7. Report in writing, as directed by the Design Professional, on the same day that tests are performed. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing agency, concrete design compressive strength, location of concrete placement in structure, concrete mix proportions and materials, compressive breaking strength and type of break.
8. Test concrete slabs for specified flatness and levelness in accordance with ASTM E1155. As a minimum, test three placements: the first placement and two additional placements as directed by the Design Professional. If the tested placement does not meet the specified overall values, test the next placement.
B. The ready-mixed concrete plant shall be certified for conformance with the requirements of the National Ready Mix Concrete Association.
C. Installer qualifications: Installer shall be experienced in placing concrete systems similar in complexity to this project as evidenced by 10 completed projects.
D. The Structural Testing / Inspection Agency shall provide special inspections as required by Chapter 17 of the building code as required in Specification 01 4525.

1.6 CONCRETE MIX DESIGN
A. Establish concrete mix design proportions in accordance with ACI 318, Chapter 19 and 26 for each concrete strength noted on the contract drawings.
B. Submit concrete mix designs. Include the following:
1. Type and quantities of materials.
2. Slump.
3. Air content.
4. Fresh unit weight.
5. Aggregates sieve analysis.
6. Design compressive strength.
7. Location of placement in structure.
8. Method of placement.
9. Method of curing.
10. Seven-day and 28-day compressive strengths.
C. Concrete supplier shall submit certifications that the materials used meet applicable ASTM Specifications. Mix designs not conforming to the above will be rejected.
D. Limits on cementitious material substitutes in concrete mix design:
1. Fly ash (ASTM C618) 25%
2. Slag Cement (ASTM C989) 30%
3. Total of Fly Ash plus Slag Cement 40%

1.7 STRUCTURAL LIGHTWEIGHT CONCRETE
A. Design structural lightweight concrete mixes suitable for pumping.

1.8 SLUMP
A. Design concrete with a maximum slump of five inches.
B. If a slump greater than five inches is desired it shall be achieved with a high-range water reducer. Design the concrete mix with a high range water reducer slump of two and one-half inches plus or minus one and one-half inches. The maximum slump after high-range water reducers are added shall be eight inches.

1.9 FRESH UNIT WEIGHT
A. Normal weight concrete shall have a fresh unit weight of 140 to 152 pcf.
B. Structural lightweight concrete shall have a fresh unit weight of 110 to 120 pcf, and an air-dried unit weight of 107-116 pcf.

1.10 AIR CONTENT
A. No entrained air content is required in concrete placed in the foundation.
B. Provide entrained air content per the table below and exposure category specified on structural drawings. Tolerance on air content as delivered shall be +/-1.5 percent.

Nominal maximum aggregate size, in.*	Air Content, percent	
	Exposure Class F1	Exposure Classes F2 and F3
3/8	6	7.5
1/2	5.5	7
3/4	5	6
1	4.5	6
1-1/2	4.5	5.5
* See ASTM C33 for tolerance on oversize for various nominal maximum size designations.		

1.11 WATER/CEMENT RATIO
A. Concrete elements shall have a maximum water cement ratio of 0.50, unless noted otherwise.
B. Air entrained concrete elements shall have a maximum water cement ratio of 0.45.
C. Concrete elements within an aggressive environment (Exposure Class F2) shall have a maximum water/cement ratio of 0.45.

1.12 SUBMITTALS
A. Submit a concrete mix design as specified above for each type of concrete included in the work.
B. Submit a certification from each manufacturer or supplier stating that materials meet the requirements of the ASTM and ACI standards referenced.
C. Submit manufacturer's data including Product Data and installation instructions for the following items. Manufacturer's Data shall include the name of the manufacturer and date of the publication. All manufacturers' data shall be maintained at the project site by the contractor.
1. Admixtures
2. Curing materials
3. Joint sealing materials
4. Expansion joint filler
5. Patching compounds
6. Bonding agents

PART 2 - PRODUCTS

2.1 MATERIALS
A. Materials designated by specific manufacturer's trade names are approved, subject to compliance with the quality and performance indicated by the manufacturer. Instructions and specifications, published by the manufacturer of such materials are included in and are a part of these specifications. Upon request, provide certification from manufacturer or supplier that materials designated by reference to ASTM and ACI standards meet the requirements of these standards.

2.2 CONCRETE STRENGTH
A. Provide concrete strengths indicated on the Structural Drawings.

2.3 CEMENTITIOUS MATERIALS
A. Portland cement shall conform to ASTM C150, Type I.
B. Blended Hydraulic Cement shall conform to ASTM C595, Type IL.
C. Fly Ash shall conform to ASTM C618, Class C or F.
1. Class F fly ash shall have a loss on ignition of less than five percent.
2. Class C fly ash shall have a loss on ignition of less than one percent.
D. Slag Cement shall conform to ASTM C989, Grade 100 or 120.

2.4 AGGREGATE
A. Fine aggregate shall conform to ASTM C33.
B. Coarse aggregate of gravel or crushed stone shall conform to ASTM C33, Class 3M. Size coarse aggregate in accordance with ACI 318.
C. Lightweight coarse aggregate shall conform to ASTM C330. Do not blend lightweight coarse aggregates with normal weight coarse aggregates for structural lightweight concrete.

2.5 WATER
A. Water shall be potable and free of deleterious substances in accordance with ACI 318.

2.6 AIR ENTRAINING AGENT
A. Air entraining agent shall conform to ASTM C260.

2.7 WATER REDUCER
A. Water reducing agent shall conform to ASTM C494.

2.8 HIGH-RANGE WATER REDUCER
A. High-range water reducers (superplasticizers) shall conform to ASTM C494.

2.9 CHLORIDE
A. Use no chlorides of any form in concrete.

2.10 CURING MATERIALS
A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.
1. Color:
a. Ambient Temperature Below 50 deg F (10 deg C): Black.
b. Ambient Temperature between 50 deg F (10 deg C) and 85 deg F (29 deg C): Any color.
c. Ambient Temperature Above 85 deg F (29 deg C): White.
D. Curing Paper: Eight-feet- (2438-mm-) wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.
E. Water: Potable or complying with ASTM C1602/C1602M.
F. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.
G. Clear, Waterborne, Membrane-Forming, Nondissipating Curing Compound: ASTM C309, Type 1, Class B, certified by curing compound manufacturer to not interfere with bonding of floor covering].
H. Clear, Waterborne, Membrane-Forming, Curing Compound: ASTM C309, Type 1, Class B, 18 to 25 percent solids, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering].
I. Clear, Solvent-Borne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A.
J. Clear, Waterborne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

2.11 ACCELERATORS
A. Non-chloride accelerators shall conform to ASTM C494.

2.12 RETARDERS
A. Retarders shall conform to ASTM C494.

PART 3 - EXECUTION

3.1 HIGH-RANGE WATER REDUCERS
A. High-range water reducers are to be added at dosage recommended by the manufacturer. The slump of the concrete shall be one to four inches at the time the high-range water reducers are added. Do not permit fresh concrete containing superplasticizers to come in contact with fresh concrete not containing superplasticizers.

3.2 COARSE LIGHTWEIGHT AGGREGATE
A. Presoak coarse lightweight aggregate a minimum of 72 hours prior to batching. Maintain the moisture content indicated by the five-day saturated weight.

3.3 ADDITION OF WATER AT JOB SITE
A. Provide batch tickets indicating the amount of mix water withheld at the batch plant for each load of concrete delivered. Water may be added to the batch only if neither the maximum permissible water/cement ratio nor the maximum slump is exceeded.
B. Water shall not be added to the batch after the required on-site testing has been performed.

3.4 PLACEMENT OF CONCRETE
A. Deposit concrete as near as practical to final position to prevent segregation of concrete.
B. Do not use aluminum equipment in placing and finishing concrete.
C. Place thickened slabs for partitions integral with floor slabs.
D. Prepare place of deposit, mix, convey, place, and cure concrete in accordance with ACI 301 and ACI 318. Wet forms before placing concrete.
E. Concrete Placement
1. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.
a. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
b. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
2. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.
3. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect in writing, but not to exceed the amount indicated on the concrete delivery ticket.
a. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
4. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M), but not to exceed the amount indicated on the concrete delivery ticket.
a. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
5. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
a. If a section cannot be placed continuously, provide construction joints as indicated.
b. Deposit concrete to avoid segregation.
c. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
d. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301 (ACI 301M).
1. Do not use vibrators to transport concrete inside forms
2. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer.
3. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
4. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
6. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
a. Do not place concrete floors and slabs in a checkerboard sequence.
b. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
c. Maintain reinforcement in position on chairs during concrete placement.
d. Screed slab surfaces with a straightedge and strike off to correct elevations.
e. Level concrete, cut high areas, and fill low areas.
f. Slope surfaces uniformly to drains where required.
g. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
h. Do not further disturb slab surfaces before starting finishing operations.

3.5 TIME LIMIT
A. Deposit concrete within one and one-half hours after batching.

3.6 FINISHING FORMED SURFACES
A. As-Cast Surface Finishes:
1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
a. Patch voids larger than 1-1/2 inches (38 mm) wide or 1/2 inch (13 mm) deep.
b. Remove projections larger than 1/2 inch (25 mm).
c. Tie holes do not require patching.
d. Surface Tolerance: ACI 117 Class C.
e. Apply to concrete surfaces not exposed to public view.
2. ACI 301 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
a. Patch voids larger than 3/4 inch (19 mm) wide or 1/2 inch (13 mm) deep.
b. Remove projections larger than 1/4 inch (6 mm).
c. Patch tie holes.
d. Surface Tolerance: ACI 117 Class B.
e. Locations: Apply to concrete surfaces exposed to public view.
3. ACI 301 Surface Finish SF-3.0:
a. Patch voids larger than 3/4 inch (19 mm) wide or 1/2 inch (13 mm) deep.
b. Remove projections larger than 1/8 inch (3 mm).
c. Patch tie holes.
d. Surface Tolerance: ACI 117 Class A.
e. Locations: Apply to concrete surfaces exposed to public view.

3.7 CURING
A. Begin curing procedures immediately following the commencement of the finishing operation.
B. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
1. Maintain moisture loss no more than 0.2 lb/sq. ft. x h (1 kg/sq. m x h), calculated in accordance with ACI 305.1, before and during finishing operations.
C. Curing Formed Surfaces: Comply with ACI 308.1 as follows:
1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
3. If forms remain during curing period, moist cure after loosening forms.
4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
b. Continuous Sprinkling: Maintain concrete surface continuously wet.
c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
1. Recoat areas subject to heavy rainfall within three hours after initial application.
2. Maintain continuity of coating and repair damage during curing period.
D. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
1. Begin curing immediately after finishing concrete.
2. Interior Concrete Floors:
a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
1. Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
i. Lap edges and ends of absorptive cover not less than 12-inches (300-mm).
ii. Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive.
i. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
ii. Cure for not less than seven days.
3. Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
i. Water.
ii. Continuous water-fog spray
b. Floors to Receive Penetrating Liquid Floor Treatments: Contractor has option of the following:
1. Absorptive cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
i. Lap edges and ends of absorptive cover not less than 12 inches.
ii. Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive.
i. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
ii. Cure for not less than seven days.
3. Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
i. Water.
ii. Continuous water-fog spray.
c. Floors to Receive Polished Finish: Contractor has option of the following:
1. Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
i. Lap edges and ends of absorptive cover not less than 12 inches.
ii. Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
2. Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
i. Water.
ii. Continuous water-fog spray.
d. Floors to Receive Curing Compound:
1. Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
2. Recoat areas subjected to heavy rainfall within three hours after initial application.
3. Maintain continuity of coating, and repair damage during curing period.
4. Removal: After curing period has elapsed remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.
e. Floors to Receive Curing and Sealing Compound:
1. Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
2. Recoat areas subjected to heavy rainfall within three hours after initial application.
3. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.8 ENVIRONMENTAL PROVISIONS
A. Hot weather concrete
1. Procedure applies when concrete mix starts to exceed 77 degrees Fahrenheit.
2. Forms, reinforcing steel and subgrade shall be fogged or sprinkled with cool water. prior to concrete in placement.
3. Expedite all elements of the concrete placement.
4. Moist curing shall commence as soon as the surfaces are finished and shall continue for at least seven days.
5. Hot weather concreting shall comply with ACI 305.1.
B. Cold weather concrete
1. Procedure applies when a period of more than 3 successive days the average daily air temperature drops below 40 degrees Fahrenheit and stays below 50 degrees for more than one half of any 24-hour period.
2. Provide wind break or heated enclosure to protect freshly placed concrete.
3. During curing protect concrete with polyethylene sheets or insulating blankets for at least seven days.
4. In no instance shall the concrete temperature drop below 50 degrees Fahrenheit prior to stripping forms and reshoring the structure.
5. Cold weather concreting shall comply with ACI 306.1.
C. Protect concrete from drying and excessive temperature for the first seven days.
D. Protect fresh concrete from wind.

3.9 CONTRACTION JOINTS
A. Obtain Design Professional 's approval for location of contraction joints.
B. Do not place contraction joints in framed floors, composite slabs, or shear walls.
C. Place contraction joints in slabs-on-grade with a maximum spacing of 36 times the slab thickness to form a regular grid. The long dimension of the grid shall not exceed 1.5 times the short dimension of the grid. Contraction joints may be saw cut after placement of concrete. Cut joints into concrete when cutting action does not tear, abrade or otherwise damage surface and before concrete develops random cracks. Sawing should be completed within the first six to 18 hours and never delayed more than 24 hours. Saw cuts shall be a depth equal to one-fourth the slab thickness by one-eighth inch wide. Alternately, in areas to receive carpeting or wood flooring contraction joints may be provided by preformed plastic strip inserts.
D. Provide contraction joints in concrete foundation or retaining walls at a maximum spacing of 25-foot but not more than 3 times the wall height for walls less than 8 feet, more than 1 times the wall height for walls greater than 12 feet, or less than 0.7 times the wall height. Space contraction joints equally between column interruptions in the wall surface such as pedestals, corners, or construction joints, and ensure a joint is located within 10 feet of corners. Coordinate location with Architect. Contraction joints shall be formed as a V-groove on both faces of the wall, 3/4-inch minimum depth. Waterstops should be provided at all contraction joints.

3.10 CONSTRUCTION JOINTS
A. Locate construction joints as required for installation of concrete elements, unless otherwise noted on the Drawings.
B. Surface of the concrete placed first should be cleaned and a bonding agent applied. Concrete must be placed before the bonding agent dries.
C. Reinforcement should be continuous through construction joints.

3.11 EXPANSION JOINTS
A. Provide expansion joints in concrete foundation or retaining walls at a maximum spacing of 200 feet in straight walls and at direction changes of walls or where two or more wall come together in different directions. Waterstops should be provided at all contraction joints.

3.12 CUTTING CONCRETE
A. Obtain Design Professional's written approval prior to cutting concrete for installation of other work.

3.13 PATCHWORK AND REPAIRS
A. Notify Design Professional of any defective areas in concrete to be patched or repaired. Repair and patch defective areas with non-shrink grout. Cut out defective areas over two inches in diameter to solid concrete, but not less than a depth of one inch. Make edges of cuts perpendicular to the concrete surface.

3.14 JOINT FILLING
A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.
1. Defer joint filling until concrete has aged at least three months.
2. Do not fill joints until construction traffic has permanently ceased.
B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints.
D. Overfill joint, and trim joint filler flush with top of joint after hardening.

3.15 CONCRETE FINISHES
A. Finish concrete in accordance with ACI 301.
B. Finish concrete slabs to flatness and levelness tolerances which correspond to FF 25/FL 20 minimum overall for composite of all measured values and FF 17/FL 12 minimum for any individual floor section.
C. For concrete slabs to receive thin-set flooring, finish to flatness and levelness tolerances which correspond to FF 35/FL 25 minimum overall for composite of all measured values and FF 25/FL 20 minimum for any individual floor section.
D. For concrete slabs to receive wood flooring, finish to flatness and levelness tolerances which correspond to FF 45/FL 30 minimum overall for composite of all measured values and FF 30/FL 20 minimum for any individual floor section.
E. For metal deck construction, floors shall be finished to an FF 25.
F. Slabs, which do not meet the flatness and levelness criteria shall be repaired or replaced.

3.16 FIELD QUALITY CONTROL
A. Special Inspections: Special inspector to perform field tests and inspections and prepare testing and inspection reports.
B. Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
C. For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.
D. Inspections:
1. Headed bolts and studs.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.
5. Verification of concrete strength before removal of shores and forms from beams and slabs.
6. Batch Plant Inspections: On a random basis, as determined by Architect.
E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172 shall be performed in accordance with the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture for each 100 cubic yards per Section 1.
a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143:
a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
b. Perform additional tests when concrete consistency appears to change.
3. Slump Flow: ASTM C1611:
a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
b. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C231 pressure method, for normal-weight concrete; ASTM C173 volumetric method, for structural lightweight concrete.
a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C1064:
a. One test hourly when air temperature is 40 deg F (4.4 deg C) and below or 80 deg F (27 deg C) and above, and one test for each composite sample.
6. Unit Weight: ASTM C138 fresh unit weight of structural concrete or ASTM C567 fresh unit weight of structural lightweight concrete.
a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C31:
a. Cast and laboratory cure four 6-inch (150 mm) by 12-inch (300 mm) cylinder specimens for each composite sample. If testing agency chooses to use 4 inch by 8 inch cylinders an additional cylinder will be required.
8. Compressive-Strength Tests: ASTM C39.
a. From each set:
1. Test one laboratory-cured specimen at seven days and two specimens at 28 days. Fourth specimen is to be held in reserve.
b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated. If 4 inch by 8 inch cylinders are used, it shall be from a set of three specimens.
9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if both of the following conditions are met:
a. Every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength.
b. No compressive-strength test value falls below the specified compressive strength by: more than 500 psi (3.4 MPa) when specified compressive strength is less than or equal to 5000 psi (34.5 MPa) or more than 10 percent of specified compressive strength when the specified compressive strength is greater than 5000 psi (34.5 MPa).
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests:
a. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
b. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
F. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 72 hours of completion of floor finishing and promptly report test results to Architect.

END OF SECTION

SECTION 036200
NON-SHRINK GROUT

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Section includes non-shrink grout under base plates, bearing plates, and where specified in Contract Documents.

1.2 RELATED SECTIONS
A. Section 013330 - Structural Submittals.
B. Section 014525 - Structural Testing/Inspection Agency Services.

1.3 REFERENCES
A. ASTM C1107 — Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
B. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).

1.4 QUALITY ASSURANCE
A. Structural Testing/Inspection Agency shall perform the following quality related items:
1. Perform compressive strength tests in accordance with ASTM C109 with 2-inch x 2-inch cubes. Test one cube at three days, two cubes at seven days and three cubes at 28 days. Perform one test for each ten bags of grout used or one test in accordance with day of grouting.

1.5 SUBMITTALS
A. Submit product data sheets for review.

PART 2 - PRODUCTS

2.1 GROUT
A. Provide a non-shrink, non-metallic grout that complies with ASTM C1107.
B. Grout shall have a minimum compressive strength of 5000 psi at 28 days.

2.2 WATER
A. Provide clean, potable water.

PART 3 - EXECUTION

3.1 HANDLING
A. Store and protect non-shrink grout from moisture and conta-mina-tion.

3.2 PREPARATION
A. Remove mud, dirt and other foreign materials from areas to be grouted.

3.3 MIXING
A. Mix grout to its fluid, self-leveling consistency in accordance with manufacturers recommendations. Do not retemper grout. Do not exceed manufacturer's maximum limit on water content or use at a consistency which produces free bleeding. Mix grout in a paddle-type mortar mixer. Do not mix by hand.

3.4 PLACEMENT
A. Consolidate grout to provide uniformity. Do not vibrate grout.
B. Use forms to contain grout.

3.5 PROTECTION
A. Protect grout and areas to be grouted from excessive heat and cold in accordance with manufacturer's specifications. Protect grout from excessive drying shrinkage resulting from wind or direct sunlight. Protect areas grouted from excessive vibrations for three days.

END OF SECTION

JERICHO design group
208 Pirkle Ferry Road, Suite C
Cumming, GA 30040

FIRE STATION #23
City of Covington
HIGHWAY 36
COVINGTON, GA 30014

PRINT RECORD

No.	DATE	DESCRIPTION
	07/22/2026	ISSUED FOR PERMIT

Drawn By: BS & SRC
Checked By: HJ
Date: 07/02/2026
Job No.: 25033
Sheet Title: SPECIFICATIONS
Sheet No.: S-0.05

RELEASED FOR CONSTRUCTION

7/22/2026 4:15:37 AM