conditioning.

1.1.3.24 Furnish and install all electrical service and controls for fans installed by others.

1.1.3.25 Furnish and install power wiring to each HVAC unit including the safety disconnect switch and other required electrical devices to make the unit operational as shown on the Drawings and specified herein.

1.1.3.26 Install emergency generator and transfer switch complete, as furnished by Publix.

1.1.3.27 Install conduit/boxes with pull string for fire alarm and burglar alarm system, as furnished by Publix per note on Electrical Drawings.

1.1.3.28 Install and connect air conditioning control panel, energy management system, supplied by Publix.

1.1.3.29 Install conduit, conductors and make connections to "Publix" sign, and all other facade signs and under-canopy signs (signs supplied and installed by Sign Contractor).

1.1.3.30 Security and fire alarm systems or combined system: the Contractor shall supply and install conduit, boxes, and pull strings as shown on Drawings. Power supply, station controls and complete final hook-up by Fire Alarm Contractor as noted on Drawings.

1.1.4 Related Work by Other Contractors:

1.1.4.1 Setting and roofing in of all curbs and pitch pockets by Roofing Contractor. (setting of A/C curb only shall be by A/C Contractor)

1.1.4.2 Setting of water heaters, ovens, kitchen equipment, gondolas, cash registers, air conditioners, exhaust fans, refrigerated cases, meat room equipment, facade signs and other miscellaneous equipment by others. Final electrical connection by Electrical Contractor.

1.1.4.3 Kitchen Hood Fire Protection System by Others.

1.1.5 Publix reserves the right to furnish some items of electrical equipment to the Electrical Contractor. If this is done the Electrical Contractor shall install the equipment and deduct the cost of the equipment from his contract. Cost adjustment will be made by Change Order.

1.1.6 All apparatus shall be installed at exact height and locations as shown on the Drawings, or if not shown, at heights and locations determined by applicable codes and laws.

1.1.7 Perform all excavation and backfill required for services, and for all conduit and work inside and outside the building. Cutting of curbs, walks, concrete and paving required for excavation shall be done by appropriate trade.

1.1.8 All store cases, coolers, and freezers will be furnished and set in place by Publix. Check Equipment Drawings against Drawings in order to verify exact locations.

1.2 Definitions: Explanation and Precedence of Documents:

1.2.1 For purposes of clarity and legibility, Electrical Drawings are essentially diagrammatic and, although size and location of equipment are drawn to scale wherever possible, Electrical Contractor shall make use of all Contract Documents.

1.2.2 The Drawings indicate size, connection points and routes of conduit and equipment. It is not intended, however, that all offsets, rises and drops are shown. Install all items as required to fit structure, avoid obstructions, and retain clearance, headroom, openings and passageways.

1.2.3 Remodels: Carefully examine all existing conditions, existing work in place and premises and compare the drawings with the existing conditions. Submittal of bid indicates that the Electrical Contractor has examined the Site and Drawings and has included all required work in his bid. No allowances will be made for any error resulting from Contractor's failure to visit Job Sites and to review Drawings/Documents.

1.2.4 Conflicts, discrepancies, interferences and omissions in Documents shall be brought to the attention of the Engineer for clarification prior to commencement of Work.

1.3. Submittals:

1.3.1 Submit LOI in accordance with Section 01 33 00 Submittal Procedures

1.3.2 Within 30 days of Contract Commencement (Authorization to Proceed), submit for Publix Engineer's approval:

1.3.2.1 List of materials intended for use in the Project.

1.3.2.2 Manufacturer's catalogue cuts of materials intended for use in the Project. LOI's not acceptable.

1.3.2.3 Submittals to include: Switchgear, breakers, panel boards, starters, disconnects, relays, walkerduct, wire channel system, conduit, wire, boxes, wiring devices, receptacles, switches.

1.3.2.4 Copies of licenses of key personnel if requested by Publix.

1.3.2.5 Samples of materials if requested by Publix.

1.3.2.6 Other items required to complete the Work

1.3.3 Submit two identical bound copies of all items. Arrange categories in order listed above.

1.3.4 All cuts for the above shall have rough-in dimensions, connection sizes, and any special installation requirements. In addition, furnish motor horsepower voltage and phase for all equipment.

1.3.5 Close Out Documents:

1.3.5.1 Comply with applicable provisions of Section 01 78 39 Project Record Documents.

1.3.5.2 Provide a complete set of manufacturer's warranties and warranty certificates.

1.3.5.3 A copy of the final approval from the local building department.

1.4 Quality:

1.4.1 Subcontractor:

1.4.1.1 The Electrical Subcontractor shall be a reputable firm regularly engaged in this type of work, employing skilled workmen, and with proper equipment.

1.4.1.2 Upon request Subcontractor shall show evidence of at least two similar jobs, of comparable size and character, installed and operating within the previous two years prior to bid opening.

1.4.1.3 Publix reserves the right to refuse any Subcontractor with or without cause.

1.4.2 Personnel:

1.4.2.1 Employ an experienced superintendent to oversee all operation.

1.4.2.2 Work shall not proceed without adequate supervision present at all times.

1.4.2.3 Work shall be accomplished by workers certified in their trade as masters, journeymen, and apprentices in accordance with regulations of the governing authority or customary practice. Utilize workers with skills in proportion to complexity of tasks required.

1.4.2.4 Publix reserves the right to reject personnel with or without cause.

1.4.3 Quality Standards

1.4.3.1 Work shall be accomplished to ensure safety to all personnel during installation and after occupancy.

1.4.3.2 Work will be judged by Publix in comparison to work of similar types. Substandard construction as judged by Publix Representative will not be accepted.

1.4.3.3 Neatness counts. Make all joints, connections, unions, etc. with proper care to insure that tight connections are made without excess material, well secured to supports.

1.4.3.4 Install conduit with runs straight, accurately formed radiuses at bends, and adequate supports.

1.4.4 Regulations: Comply with applicable provisions of the following codes (latest version adopted by governing agencies):

National Fire Protection Association (NFPA)
National Electrical Code
Local Utility Code
Local Building Code
Safety Code for Mechanical Refrigeration.
Conform to governing codes, ordinances and regulations of city, county and state having jurisdiction. Where local codes are not applicable, conform to National Electric Code/State Electric Code where Project is located.
OSHA - for construction

1.4.5 Test the entire system. The solid neutral wire shall be tested for thorough grounding and all hot wiring shall be tested for shorts and grounding.

1.4.6 Participate in the Pre-Construction Conference.

1.4.7 Substitutions: Comply with Section [illegible] Product Options and Substitutions. In general, substitutions are [illegible].

1.5. Sequencing:

1.5.1 Notify General Contractor, and others, of all required chases, sleeves and openings [illegible] that the work can be accomplished without delay. Provide necessary sleeves [illegible], to be installed [illegible]. Otherwise Electrical Sub-Contractor shall pay for appropriate trades [illegible] patching.

1.5.2 [illegible], girders, beams, columns or reinforcing steel shall not be cut.

1.5.3 Where construction necessitates the routing of conduit through structural members, framing or unusual openings, permission to make such installation shall first be obtained from the Structural Engineer.

1.6 Temporary Operation:

1.6.1 The Owner may require operation of parts or all of the installation prior to Final Acceptance

1.6.2 Cost of utilities for such operation shall be paid by the Contractor. This operation does not constitute acceptance of the Contractor's Work.

1.6.3 All electricity used for construction shall be paid for by the General Contractor. Furnish and install temporary electrical connection and meter for construction purposes. Remove temporary service when use is no longer required. Clean up and landscape as required.

1.7. Emergency Repairs: The Owner reserves the right to make emergency repairs as required to keep equipment in operation without voiding the Contractor's guarantee nor relieving the Contractor of his responsibilities during the guarantee period.

1.8. Operating Instructions and Service Manual:

1.8.1 Provide two (2) neatly bound copies of maintenance and instructions book, parts lists pertaining to all equipment furnished.

1.8.2 Each section shall be indexed and include parts lists, instruction books, suppliers' phone numbers and addresses, and individual equipment guarantees all in separate sections.

1.8.3 Representatives of the Owner shall be instructed by the Contractor as to complete care and operation of the electrical system. Inform the Engineer in writing as to the persons who received the instructions and the date that this was done.

2. Products:

2.1. Materials:

2.1.1 All materials shall be new, of the best quality.

2.1.2 All similar materials such as switches, panelboards, starters, contactors, fuses, circuit breakers, junction boxes, and other classes of equipment shall be of the same type and manufacturer.

2.1.3 All equipment and materials shall be furnished in strict accordance with the equipment schedule and Specification requirements.

2.2. Panelboards

2.2.1 The panelboards shall be dead-front, totally enclosed, with locking doors, with quick-lab ambient corrected bolt-in type circuit breakers in one, two or three pole common trip units as noted on the Drawings, UL approved. The panelboards shall be 3 phase, 4 wire, solid neutral, ground buss, voltage and number of poles as noted on the Drawings. Panelboards shall have copper bussing. The circuits shall be connected to individual poles of the panel exactly as shown on the Drawings, and the panel shall be provided with a typewritten directory.

2.2.2 All panels shall be factory assembled.

2.2.3 Ground fault circuit interrupters shall be provided on each circuit as required by the NEC or where specified on the Drawings.

2.2.4 Provide all panels sized as noted on the Drawings or as required.

2.2.5 Circuit breakers supplying High Intensity Discharge (HID) shall be equipped with HID compensated breakers.

2.2.6 Equipment ground bus and neutral bus to be copper with screw type lugs.

2.2.7 All panels noted on drawings with isolated ground circuits shall have a copper isolated ground bus in addition to equipment ground bus.

2.2.8 Acceptable Manufacturers:

G.E.
Square - D
ITE. Div. of Siemens-Allis

2.3. Service and Switchboard

2.3.1 Secondary service entrance shall be as indicated on the Drawings, and shall be:

2.3.1.1 Pad mounted transformer

2.3.1.2 Coordinate Publix drawings with site electrical drawings. Conflicts are to be brought to the Engineer for clarification/resolution.

2.3.2 Verify method of service with local utility company and obtain written approval from Publix Representative before commencement of work.

2.3.3 Obtain all utility requirements for commercial service installation. Electrical Contractor must provide all requirements of the utility for a complete and operational system.

2.3.4 System shall be grounded in conformance with NEC, and as shown on Drawings.

2.3.5 All switchgear and panels shall be sized as noted on the Drawings or as required.

G.E.
Square - D
ITE. Div. of Siemens-Allis,

2.4. Main Switchboard

2.4.1 General: Furnish and install the service entrance distribution switchboard as herein specified and shown on the Drawings.

2.4.2 The switchboard shall meet Underwriters' Laboratories enclosure requirements and be furnished with an Underwriters' Laboratories label

2.4.3 Construction: Square D Busstack construction or approved equal.

2.4.4 Enclosure Construction

2.4.4.1 The switchboard framework shall consist of steel channels welded or bolted to the frame to rigidly support the entire shipping section for moving on rollers and floor mounting. The framework is to be formed, code gauge steel, rigidly welded and bolted together to support all cover plates, bussing and component devices during shipment and installation.

2.4.4.2 Each switchboard section shall have an open bottom and individual removable top plate for installation and termination of conduit. top and bottom Conduit areas are to be clearly shown and dimensioned on the Shop Drawings. Switchboards are to be front access only. The wireway front covers are to be hinged to permit access to the branch switch load side terminals without removing the covers. All enclosure plates shall be screw removable and small enough for easy handling by one man. The paint finish shall be gray enamel over a rust-inhibiting phosphate primer.

2.4.5 Bussing:

2.4.5.1 The switchboard bussing shall be plated and of sufficient cross-sectional area to continuously conduct amperage as indicated on Drawings with a maximum average temperature rise of 50 degrees c. above an ambient temperature of 25 degrees c.

2.4.5.2 The buss shall be aluminum with 100% neutral with an integrated equipment rating of 100,000 amps (sym) A.I.C. at 240V, 65,000 amps (sym) A.I.C. at 480V.

2.4.5.3 The buss shall extend the full length of the available feeder area.

2.4.6 Withstand Rating:

2.4.6.1 The switchboard, as a complete unit, shall be given a single withstand short circuit current rating by the manufacturer. The withstand short circuit current rating shall certify that all equipment is capable of withstanding the stress of a fault equal to the interrupting rating of the least overcurrent protective device contained therein. Such rating shall be established by actual tests by the manufacturer on equipment constructed similarly to the subject switchboard This test data shall be available and shall be furnished to the Engineer, if requested, with or before the submittal of Approval Drawings.

2.4.6.2 The complete unit shall have interrupting rating of not less than 100,000 amps rms symmetrical at 240 volts,65000 amps RMS symmetrical at 480V.

2.4.6.3 All devices in the switchboard to be fully rated. Series rating is unacceptable.

2.4.7 Main Switch (Two-step stored energy electronic trip molded case circuit breaker):

2.4.7.1 Individually fixed mounted through connect type, equipped with an electric trip device for remote shunt trip operation.

2.4.7.2 Circuit breakers shall have power terminals to accomodate either [illegible] bolted buss connections.

2.4.7.3 Circuit protective devices shall be two-step stored energy type circuit breakers UL listed for 100% continuous current when applied in [illegible] switchboards. Sensor ampere ratings shall be as shown on the drawings unless otherwise indicated.

2.4.7.4 Provide a fixed instantaneous (High [illegible] Selective Override) circuit on [illegible]. The circuit shall have a [illegible] instantaneous [illegible] to allow the breaker to remain closed for up [illegible] cycles during [illegible] events below [illegible] symmetrical [illegible] withstand [illegible]. The circuit [illegible] trip instantaneously when current [illegible] exceeds the withstand [illegible].

2.4.7.5 Circuit breakers shall be factory sealed and shall [illegible] date code of [illegible]. Poles shall be labeled with respective phase designations.

2.4.7.6 Breaker faceplates shall indicate rated ampacity. Breaker faceplate shall indicate UL and IEC certification standards with applicable voltage systems and corresponding ratings.

2.4.7.7 Each circuit breaker shall be equipped with a push-to-trip button to operate the trip mechanism mechanically.

2.4.7.8 Provide local control pushbuttons to OPEN and CLOSE circuit breaker. Color coded visual indication of contact position (OPEN or CLOSED) shall be provided on the front of the breaker. Provide for local manual charging following CLOSE operation, with color coded visual indication of charging status. Visual indicator shall indicate CHARGED only when closing springs are completely charged.

2.4.8 Main switch shall be as manufactured by Square "D" or equal as approved by Publix Engineer 100% rated at specified amps - no substitutes

2.4.9 Bus Duct: (When Used)

2.4.9.1 Service entrance bus duct shall be amps as shown on Drawings, 3 phase, full neutral, suitable for 120/208 volts service, inside-outside location.

2.4.9.2 The bus duct shall be complete with all necessary elbows, transformer taps, fire stops, wall flange for fittings and supports to provide a satisfactory installation as indicated on the Drawings

2.4.9.3 The bus duct shall be of the same manufacturer as the main switchboard.

2.4.9.4 The bus duct shall have the same interrupting rating as the main switchboard.

2.4.9.5 Support for bus duct by General Contractor.

2.4.10 Fusible Switches:

2.4.10.1 The fusible switches shall be quick-make, quick-break and suitable for use on the services described by the size shown on the associated Drawings. The units shall be listed and approved by Underwriters' Laboratories for heavy duty entrance use and where applicable, shall be dual horsepower rated for both standard one-time or dual-element fuses. The fusible switches shall be group mounted in panel-type construction. Each switch shall be equipped with Class 'R' rejection type fuse clips per Bussman or Littlefuse KTN-R, Class "R" type.

2.4.10.2 Each switch is to be enclosed in a separate steel enclosure. The enclosure shall employ a hinged cover for access to the fuses which shall be interlocked with the operating handle to prevent opening the cover when the switch is in the on position. This interlock shall be constructed so that it can be released with a standard electrician's tool for testing fuses without interrupting service. The units shall have padlocking provisions in the off position and the operating handle position shall give positive switch position indication, i.e. horizontal off, diagonal on. Switches shall pass industry standard I2T withstandability tests and fuse race tests as described elsewhere in the Specifications.

2.4.10.3 All fusing as manufactured by Bussman or Littlefuse; dual-element and current limiting as shown on the Drawings.

2.5. Contactors

2.5.1 Contactors shall be manufactured by Square 'D', Siemens, or General Electric; or others as approved by Publix in writing specifically for this project.

2.5.2 Contactors shall be designed to carry the full rated current on a continuous basis.

2.5.3 Contactors shall be electrically operated, mechanically held, and suitable for remote operation. The mechanically held contactors shall be supplied with coil clearing contacts which disconnect the magnet coil when operated to eliminate any AC magnetic hum.

2.5.4 Contactors shall be as sized as shown on the Drawings and be installed in a NEMA 1 enclosure.

2.6. Wire and Cable

2.6.1 All wires shall be THHN copper unless otherwise noted. No wire shall be smaller than #12 AWG. except control wire. No aluminum wire will be permitted.

2.6.2 Except as noted, no conductors smaller than #12 AWG shall be used. #10 AWG shall be used on runs of over 100 ft.

2.6.3 In no case shall the number of conductors installed in conduits exceed the maximum fill allowed by the NEC. Should this occur on the Drawings, the Electrical Contractor shall inform the Engineer before installation. Conductors shall not be installed beneath the heating equipment foundations.

2.6.4 Control wire for the air conditioning and refrigeration equipment shall be type THHN stranded and no smaller than #14 or where indicated on Drawings.

2.6.5 Pull boxes are allowed only when required by code. Wire must be in one unspliced run to all secondary panel feeders, and in one unspliced run to all air conditioning and refrigeration units.

2.6.6 Install all phase conductors, neutral conductor, and ground conductor from panel board to the equipment connection junction box. If the neutral conductor is not needed it shall be taped and identified in the J.B. for future use.

2.7. Conduits and Raceways

2.7.1 PVC: Schedule 40 conduit may be used under floor slab. Riser shall be heavy wall hot dipped galvanized steel.

2.7.2 No PVC shall be installed above floor slab.

2.7.3 ORC 90's shall be used on all runs over 50'.

2.7.4 Underfloor Duct:

2.7.4.1 Shall be "Walkerduct" (no substitutes) as manufactured by Walker/ Textron Company, Parkersburg, West Virginia. Install complete service fittings, blanking plates, junction boxes, covers, etc., with threaded firings. Use standard No. 2 and No. 4 duct with #2-24 x 2 x 2 or #2-12 x 2 x 2 inserts as shown on Drawings; adapters #4 126a-3/4", for cable. Install Walker Duct junction boxes with brass tops recessed to receive terrazzo/methyl methacrylate. Verify locations of duct with Drawings.

2.7.4.2 Top of cut insert shall be 3/4" below finish floor line.

2.7.5 Raceways concealed in wall or ceiling spaces shall be standard weight hot dipped galvanized EMT with compression couplings or as specified below.

2.7.6 All "L'S" used to turn up through concrete slabs shall be thick wall galvanized conduit & couplings.

2.8. Time Switches

2.8.1 Provide time switches as manufactured by Intermatic (no substitutes)

2.8.2 Time switches shall be DPST, 40 amperes, 120 volt, AC motor and astronomic dial, spring-wound carry-over.

2.8.3 Time clocks shall be labeled.

2.9. Outlet Boxes, Fittings, and Connectors

2.9.1 Unless hereinafter specifically noted or shown on the Drawings, the minimum size of branch circuit outlet boxes for concealed work shall be 4"x4"x1 1/2" for square boxes and 4"x1 1/2" for octagon boxes.

2.9.2 Boxes shall be provided with plaster covers of sufficient depth to bring the face of the outlet substantially flush with the finished wall or ceiling. The box shall not project beyond the finished wall or ceiling line.

2.9.3 Outlets in concrete block, or other hollow masonry walls:

2.9.3.1 Openings in concrete block walls for outlets shall be cut to exact size with a masonry saw.

2.9.3.2 Switch and receptacle mounting heights, as specified or noted may be adjusted so that the bottom of the outlet box may rest on the top of the wall block at the nearest mortar joint

2.9.3.3 All unused outlets shall be provided with blank covers.

2.9.4 Where conduits 1" or larger enter outlet boxes, the boxes shall be 4 11/16"x4-11/16"x2 1/4" minimum. Boxes shall be of ample size to provide conductor spaces as required by the National Electric Code.

2.9.5 "Handy", utility or sectional boxes will not be permitted in masonry walls.

2.9.6 When more than one switch or device is shown ganged at any location a one-piece box of suitable size shall be installed.

2.9.7 Outlet boxes intended for the installation of lighting fixtures shall be equipped with 3/8" "No-Bolt" or equal fixture studs.

2.9.8 Unless otherwise noted, all switches, receptacles and devices shown on the exterior of building walls shall be installed in flush mounted boxes provided with weatherproof gaskets.

2.9.9 All conduit fittings (condulets) shall be of the cast metal threaded hub type, Crouse-Hinds, or Appleton.

2.9.10 All rigid conduits entering panels, cabinets, outlet boxes, etc., shall be provided with lockouts on both sides of such devices driven tight so as to maintain positive electrical and mechanical continuity throughout the conduit system. Insulated bushings shall be installed on the inside of the termination

2.9.11 Threadless couplings shall not be used for rigid conduit.

2.9.12 All EMT couplings and box connectors shall be of the set screw or compression type. Compression type shall be used in [illegible] coolers/freezers, or in outdoor applications. Cast connectors or couplings [illegible] be allowed.

2.9.13 All flex conduit shall be steel w/steel fittings, and shall extend a maximum of 10 ft. unless approved by Publix.

2.9.14 All receptacles labeled GFI on drawings to be supplied GFI receptacles. GFI circuit breaker or feed through series GFI circuit is [illegible].

2.9.15 All receptacles labeled IG (isolated ground) shall be IG [illegible] get a separate (from other equipment ground) [illegible] with yellow [illegible] isolated ground conductor. All isolated ground conductors to include equipment ground conductor.

2.9.16 All conduits to have an equipment ground conductor in addition to conductors shown on drawings.

2.10. Junction Boxes: Wiring shall be neatly arranged, [illegible] of proper groups.

2.11. [illegible]

2.11.1 Pull boxes shall be installed in conduit system where needed whether or not they are shown on the Drawings.

2.11.2 [illegible] shall be constructed of code gauge galvanized steel with screw covers.

2.12. Safety Switches

2.12.1 The basis of design and quality standards is Square - D.

2.12.2 All units shall be of the same manufacturer.

2.12.3 Safety switches shall be fusible, solid neutral, 277 volt, quick-make and quick-break with visible blades, single throw, general duty, of size and fusing as shown on the Drawings, or required for application. switches mounted out of doors shall be weatherproof, heavy duty type with protective barrier over hot lugs.

2.12.4 Exterior units shall be in rain tight enclosure. (NEMA 3R)

2.13. Wall Switches

2.13.1 Switches shall be flush mounted, quiet tumbler type, 250 volts, 20 amp. rated.

2.13.2 Wall plates shall be smooth, 302 stainless steel, one piece as indicated on the Drawings.

2.13.3 Switches shall be installed on the "strike" side of the door swing.

2.13.4 Switches shown near doors shall be not less than two inches and not more than twelve (12) inches from the trim.

2.14. Receptacles

2.14.1 All units shall be totally enclosed composition with side and rear connections. All units shall be equipped with ears and have a rating as listed below. All devices shall be Hubbel, Pass and Seymour or Leviton. See symbol schedule on construction drawings.

2.14.2 Duplex convenience outlets with ground shall be 20 amp, 125 volt parallel slot, "U"-shaped ground, heavy duty "T" rated.

2.14.3 120/208 volt, 3 wire receptacles with ground shall be single 3 wire polarized receptacles with grounding terminal.

2.14.4 Weatherproof receptacles shall be duplex, 20 amp, 125 volt parallel slot receptacle with "U" shaped grounding slot in flush, weatherproof box with gasketed cover and self closing, spring door.

2.14.5 Floor outlets shall be 20 amp. 125 volts single or duplex parallel slot receptacles with "U" shaped grounding slot as called for, located as shown on the Drawings. Provide slotted brass flush cap for sealing when not in use.

2.14.6 All device cover plates shall be smooth 302 stainless steel, one piece.

2.15. Lighting Fixtures

2.15.1 All lighting fixtures shall be furnished by Publix and installed by appropriate trade. In-line fuses are included with all fluorescent and metal halide fixtures.

2.15.2 In areas of suspended ceilings two safety wires per fixture will be supplied and hung by the suspended ceiling Subcontractor, the Electrical Subcontractor shall tie fixtures in areas of suspended ceilings with two (2) #10 wire up to the roof joists per fixture.

2.16. Electric Door Operators: Electric door openers shall be furnished and installed by others but wired with two (2) 115 volt, 20 amp, 3 wire circuits to control box at the top of the door.

2.17. Intercom/Music/Paging System

2.17.1 The Contractor shall supply and install sound outlets, conduit and junction boxes with equipment as shown on the Drawings (including architectural ceiling grid plan).

2.17.2 The outlet boxes shall be standard boxes provided with blank covers.

2.17.3 The conduit shall be not less than 1/2".

2.18. Telephone Outlets:

2.18.1 Provide outlets as located on Drawings,

2.18.2 See Drawings for location and size of conduit runs,

2.18.3 Provide stainless steel outlet boxes and cover plates.

2.18.4 Locate telephone control box inside telephone equipment room.

2.18.5 Provide outlets for wall phones at indicated locations.

2.19. Standby Electric-Emergency Generator and Transfer Switch

2.19.1 Emergency generator and automatic load transfer switch will be furnished by Publix and shall be set in place and connected by the contractor.

2.20. Grounding

2.20.1 All wiring system shall be grounded in accordance with article 250 of the NEC. All items of electrical equipment not connected directly and mechanically to the conduit system shall be connected thereto with a jumper of suitable size. All breaks in the continuity of the conduit system shall be bridged with a jumper of the proper size between the next adjacent outlet or junction boxes regardless of the information on the drawings.

2.20.2 All conduit runs shall include an equipment ground conductor appropriately sized for the associated circuits.

2.20.3 Due care must be taken as not to interchange circuit neutrals, as over heating of the panel board may occur.

2.20.4 A green THHN insulated stranded 12 AWG conductor shall run unbroken from the system ground through the conduit system to the ground connections at all receptacles, switches and lights. Appliance outlets shall be in accordance with NEC Table 250-95.

2.20.5 Isolated ground, as required in the drawings, shall be a green THHN insulated stranded 12 AWG (min.) with yellow tracer line along the entier length.

2.21. Tests

2.21.1 The Electrical Contractor shall test all wiring and equipment for grounds, continuity and proper operation.

2.21.2 When directed he shall demonstrate by use of a 500 volt megger, the insulation resistance of any circuit or group of circuits.

2.21.3 Where such tests indicate the possibility of faulty insulation, the Electrical Contractor shall locate the point or points of such faulty insulation and shall pull out the faulty conductor or conductors, replace same with new and demonstrate the elimination of faults.

3. Execution

3.1. General:

3.1.1 Temporary Electric Service: Install and maintain 120/240 volt, 1 phase, 3 wire, 200 amp temporary service. power Consumption cost only paid by Contractor. Installation shall comply with OSHA; NEC; and all local requirements.

3.1.2 The locations of the outlets, switches and convenience outlets shall be approximately as shown on the drawings and as specified, but exact locations shall be as directed by Publix Field Representative. The running of all circuits, switch legs and conduits is purely diagrammatic. Do not scale from Drawings.

3.1.3 Rigging and hoisting that is incidental to the electrical portion of the Work shall be performed by the Electrical Contractor. This shall include the hoisting of equipment supplied by both the Electrical Contractor and Publix that are installed by the Electrical Contractor.

3.1.4 Coordinate this work with other trades so that interference between the trades can be avoided.

3.1.5 All channels, angles and other members for the installation and support of the electrical equipment shall be furnished and installed by the Electrical Contractor.

3.1.6 The attachment of boxes, conduit, hangers, etc. shall be by machine screws or through bolts on steel, expansion bolts in concrete and masonry, and wood screws in wood. Wood composition plugs shall not be used.

3.2. Excavation and Backfilling:

3.2.1 Do all excavating required to install any underground conduit and after the same are in place and tested and approved, Thoroughly tamp earth around conduits and remove earth from premises as directed.

3.2.2 Underground conduit must be covered by a minimum [illegible] (3) inches of underslab fill.

3.3. Conduit, Raceways, Etc.

3.3.1 All metallic non-current carrying components and enclosures of the electrical wiring system are to be bonded and grounded.

3.3.2 Furnish all necessary fittings and supports to make raceways or busways fit the building structure and equipment. Raceway sizes [illegible] called for are minimum. The Electrical Contractor shall verify all raceways [illegible] with the dimensions of the particular cable to be installed.

3.3.3 All exposed raceways and conduit shall be neatly installed perpendicular or parallel to walls and floors. No exposed conduit is allowed in sales area or work rooms [illegible] where required in exposed structure areas of stores without ceilings.)

3.3.4 All raceways shall be [illegible] approved types of galvanized wall brackets, ceiling trapeze hangers, [illegible] or pipe straps. Perforated metal strap or [illegible] shall not be used for conduit or raceway.

3.3.5 All [illegible] above ceilings shall be EMT or ERC, and must be installed within [illegible] provided for on Drawings

3.3.6 Areas for work of various trades: Conform to locations as defined in Section 01 11 00 Summary of Work.

3.3.7 All conduit located underground may be PVC Schedule 40, except service entrance which may be concrete encased PVC schedule 40 or heavy wall rigid conduit, or weather proof buss duct as shown. Underground conduit lengths greater than 50' shall include GRC 90.

3.3.8 All job cut threads shall be given a coat of rust-inhibitive paint.

3.3.9 Caulk where conduit passes through walls, providing approved fire-stopping system where required. Caulk where conduit passes through walk-in freezers and coolers. All cutting in block work must be done with carborundum saw; no chisel or hammer work will be accepted.

3.4. Circuit Identification: Label all panels by approved means to identify circuits. Install equipment in cans, as per Drawings. Mark all panels, time clocks, starters, contactors, disconnect devices and main panels on the outside with riveted or approved attached plastic laminated labels 1" minimum high w/ 3/4" minimum letters of contrasting colors. All circuits shall be identified by typed lettering of contrasting color to tags & covered w/approved plastic cover.

3.5. All panelboards shall include a typed directory of all associated loads. Refrigeration circuits shall be albeled with associated rfrigeration system number.

3.6. Installation of Items Supplied by Others:

3.6.1 All store fixtures and equipment, including shelf gondolas and check out stands, will be furnished and set in place by Publix, or others, and this Contractor shall make all required electrical connections. Verify items and their locations with Publix's Representative.

3.6.2 Meat and Deli Department equipment will all be with plug-in connectors. Do not wire direct. (unless directed by Publix's Representative).

3.6.3 All wiring and mounting shall be in cooperation with and under the direction of the Publix's Representative.

3.6.4 Make connection to electric water heaters as furnished by Publix.

3.7. Control of Outlets:

3.7.1 Branch lighting circuits controlled at panels by a switch shall be located at the Manager's Office, unless indicated otherwise.

3.7.2 Convenience outlets shall have no intermediate control between panels and outlets unless noted on the drawings.

3.8. Connection of Conductors: All joints between conductors shall be connected with approved pressure type, connectors and insulated with scotch 33 tape and friction tape, if insulation is not provided in pressure type connector used.

3.9. Sleeves at Fire Retardant Lumber: If fire treated lumber is required by local codes and ordinances, the Electrical Contractor shall provide PVC fitting boxes and piping that penetrate the fire resistent lumber. If the PVC components are not approved by local code, other approved methods must be used to protect against the salt in the fire resistant lumber.

3.10. Final Inspection: All of the following items must be completed prior to final inspection. No exceptions will be made and no final payment will be made until all items are completed.

3.10.1 Thoroughly clean all parts of the apparatus and equipment. Exposed parts which are to be painted shall be thoroughly cleaned of cement, plaster, and other material and all oil and grease spots shall be removed repaint or touch up as required to make look like new. Such surfaces shall be carefully wiped and all cracks and corners scraped out.

3.10.2 Exposed metal work shall be carefully brushed down with steel brushes to remove rust and other spots and touched up with primer.

End of Section 26 00 00

Section 31 20 00

Earth Moving
V02022015

1. General

1.1. Prepared Pad (Not In Contract)

1.1.1 Pad preparation and Field Density Testing of the Pad are not part of the Work of this Contract.

1.1.2 On projects for which Publix Super Markets, Inc. is the sole Owner, part or all of the Site Work may be part of this Contract; see Bid Forms and Contract for definitive list.

1.1.3 The slab sub-grade material will be based on the geotechnical engineer's recommendation for this site. Any changes from the original geotech report must be submitted, in writing, from the geotechnical engineer to the Publix structural engineer, for approval. The geotechnical recommendation is noted on the Publix foundation plan, for reference only.

1.1.3.1 Where the recommended slab sub-grade is native soils or compacted fill, the pad preparation will be brought up to an elevation of four and five eights (4-5/8") inches below finished floor by the work of another contract.

1.1.3.2 Where the recommended slab sub-grade is a porous fill, the pad preparation will be brought up to an elevation of eight and five eights (8-5/8")inches below finished floor by the work of another contract.

1.1.3.3 Porous fill shall be clean sand, stone, gravel, or crushed rock. Porous fill under slabs shall have a maximum aggregate size of 1 1/2 inches.

1.1.4

1.2. Field Density Tests and Samples

1.2.1 The Contractor shall employ a testing laboratory acceptable to the Owner for testing of footing and foundation excavations, for testing of other areas where the prepared pad is disturbed by the Work of this Contract, and for testing of the underslab porous fill where said porous fill is part of the Work of this Contract.

1.2.2 Sample specimens shall be recovered by the "Shelby Tube" or the "Sand Cone" method, or as otherwise directed by Engineer.

1.2.3 Density Tests shall be secured at 50 ft. intervals in linear footing excavations, and at every spread footing.

1.2.4 Density Tests shall be secured in areas of backfill and recompaction at vertical intervals not exceeding 12 in. and at a horizontal frequency of one per 4000 sq. ft. Also, density tests are required every 50 linear feet in utility trenches at vertical intervals not exceeding 12 in. Areas requiring compacted fill that support small independent slabs shall have density tests at vertical intervals of 18" in the event this is a separate compaction procedure.

1.2.5 Densities shall conform to those specified in the Pad Preparation Contract, based on a Geotechnical Report and Publix' design criteria of 2000 psf minimum soil bearing capacity.

1.3. Testing and Remediation:

1.3.1 Any test result which does not conform to the requirements of the Contract shall be furnished verbally to both Engineer and Contractor within 24 hours after sampling. Written test results shall be distributed as specified in Section 01340 - Submittals, and shall include horizontal and vertical location, test number, dry density, moisture content, percent compaction and Proctor Compaction Curve to which each test is referenced. The Testing Laboratory shall also call attention, by a separate symbol, to those tests which do not conform with these Specifications.

1.3.2 Field Density Tests and Samples: In the event of Test Results not in conformance with the Contract Requirements, Publix will obtain a Soils Engineer's recommendation for remedial measures. Remedial measures will be part of the Work of this Contract if they are required by activities of the Contractor after his receipt of a properly prepared pad. Remedial measures required by pre-existing conditions will be part of the Work of this Contract only by Change Order.

1.4. Termite Treatment

1.4.1 This Section contains information normally found in Section 31 31 16 Termite Control.

1.4.2 Submit LOI in accordance with Section 01 33 00 Submittal Procedures.

1.4.3 Guarantee of Treatment: Upon completion of the Soil Treatment and as a condition for its Final Acceptance, the Contractor shall furnish to the Owner a written Guarantee stating that the Applicator guarantees the [illegible]eness of the soil treatment against termite infestation for a period of [illegible] five years from date of treatment. Any evidence of re-infestation within the Guarantee Period will require treatment without cost to the Owner.

2. Products

2.1. Termite Treatment: Provide pesticides approved for use by Federal and local authorities:

Prof[illegible]d TC
[illegible]
[illegible]
Bifen[illegible] ONLY)

3. Execution

3.1. Excavation:

3.1.1 Perform [illegible] excavation and cutting necessary to accommodate the work shown on the plans. [illegible] may be omitted if soil is suitable to provide accurate and stable trenches [illegible] pours.

3.1.2 Bottom of excavations shall be true and level to provide level bearing.

3.1.3 Notify Publix' Representative should debris or deleterious materials be encountered during excavations. Publix will obtain a Soils Engineer's recommendation for remedial measures which will be part of the work of this Contract by appropriate Change Order if desired by Publix.

3.1.4 Backfill under concrete floor slabs, walks, ramps, etc., where required by disturbance of the prepared pad shall be deposited in lifts not exceeding twelve (12) inches with each layer thoroughly compacted. Tamping and puddling shall be done at least 24 hours before concrete is laid. Re-compaction shall reach the compaction specified in the separate Contract which covers Pad Preparation, or the compaction actually achieved for the prepared pad, whichever is greater.

3.1.5 Additional requirements for excavation and backfilling for underground utilities may be found in other sections.

3.2. Termite Treatment:

3.2.1 Mixing and application: Adhere strictly to manufacturer's written instructions for concentrations and application rates, and for methods of application.

3.2.2 Treat on top of pad under the slabs over the entire area of Publix store including loading docks, and along both sides of foundation walls, along interior foundations, and around plumbing and electrical penetrations, and under sidewalks and all other paved areas within five feet of the building.

End of Section 31 20 00

Section 32 13 13

Concrete Paving
V03172017

1. General

1.1. Summary:

1.1.1 This Section includes exterior portland cement paving for walkways related to the Publix facade (including stamped finishes).

1.2. Related Sections:

1.2.1 Section 31 20 00 Earth Moving for subgrade preparation, grading and subbase course.

1.2.2 Section 07 92 00 Joint Sealants for joint fillers and sealants within concrete paving and at joints with adjacent construction.

1.3. Submittals:

1.3.1 Submit requested items in accordance with Section 01 33 00 Submittal Procedures. Submit an LOI indicating finishing system to be used.

1.3.2 Product Data: Submit product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, joint systems, curing compounds, dry-shake finish materials and others requested by Publix Architect.

1.3.3 Shop Drawings: Submit shop drawings indicating joint spacing and locations.

1.3.4 Design Mixes: Submit design mixes for each class of concrete. Include revised mix proportions when characteristics of materials, project conditions, weather, test results or other circumstances warrant adjustments.

1.3.5 Laboratory Test Reports: Submit two copies of laboratory test reports for evaluation of concrete materials and mix design tests

1.3.6 Qualifications:

1.3.6.1 Submit official, up-to-date documentation indicating that the installer has an ACI Certification for Flatwork Finishing.

1.3.6.2 Submit official, up-to-date documentation indicating that the installer has been trained by the tool manufacturer to use their stamping system.

1.3.7 Minutes: Submit minutes of pre-installation conference.

1.4. Quality Assurance:

1.4.1 Comply with provision of the following standards, except where more stringent requirements are indicated.

1.4.1.1 American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings".

1.4.1.2 ACI 318, "Building Code Requirements for Reinforced Concrete".

1.4.1.3 ACI 330, "Guide for Design and Construction of Concrete Parking Lots".

1.4.1.4 Concrete Reinforcing Institute (CRSI), "Manual of Standard Practice".

1.4.2 Installer: Engage an installer/applicator who is certified by ACI as a Concrete Flatwork Finisher. The Installer shall be a company trained by the tool manufacturer specializing in decorative concrete work.

1.4.3 Concrete Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 for production facilities and equipment.

1.4.4 Concrete Testing Service: Engage a qualified independent testing agency to perform materials evaluation tests and to design concrete mixes.

1.4.5 Pre-Installation Conference: Conduct conference at Project site to comply with the following:

1.4.5.1 Before installing portland cement concrete paving, meet with representatives of authorities having jurisdiction, General Contractor, Publix Construction Manager or designated Representative, consultants, independent testing agency and other concerned entities to review requirements. Notify participants at least three working days before conference.

1.5. Project Conditions:

1.5.1 Maintain access for vehicular and pedestrian traffic as required for other construction activities per local and state standards.

2. Products

2.1. Forms:

2.1.1 Plywood, metal, metal-framed plywood or other acceptable panel-type materials to provide full-depth, continuous, straight, smooth, exposed surfaces.

2.1.2 Use flexible or curved forms for curves of 100 foot or less radius.

2.2. Reinforcing Materials:

2.2.1 Reinforcing Bars and Tie Bars: ASTM 615, Grade 60, deformed.

2.2.2 Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 60. Cut bars true to length with ends square and free of burrs

2.2.3 Hook Bolts: ASTM 307, Grade A Bolts, internally and externally threaded. Design hook bolt joint assembly to hold coupling against pavement form and in position during concreting operations and to permit removal without damage to concrete or hook bolt.

2.3. Concrete Materials:

2.3.1 Portland Cement: ASTM C 150, Type I

2.3.1.1 Use one brand of cement for this portion of the Work unless otherwise approved by Publix Architect.

2.3.2 Normal-Weight Aggregates: ASTM C 33, Class 4. Provide aggregates from a single source.

2.3.2.1 Maximum aggregate size: 3/4".

2.3.2.2 Do not use fine or coarse aggregates that contain substances that can cause spalling.

2.3.2.3 Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength durability by special tests or actual service may be used when approved by Publix Architect.

2.3.3 Water: Potable.

2.3.4 Fiber Reinforcement: Mineral fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116, Type III.

2.3.4.1 Products:

Fibermesh 300, SI Concrete Systems
Durafibers-CFP Durafiber Corp.
MEGAfibers, Nexcel Synthetics
Fiberstand F, Euclid
Gracefibers, Grace
Genesis XF Fibers, PGI Polymer Group

2.4. Admixtures: Provide concrete admixtures that contain not more than [illegible] percent chloride ions.

2.4.1 Air-entraining Admixture: ASTM C 260, certified by manufacturer [illegible] compatible with other required admixtures.

2.4.2 Water-reducing Admixture: ASTM C 494, [illegible] and containing no [illegible] chloride [illegible].

2.5. Curing Materials:

2.5.1 Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.

2.5.2 Moisture-retaining Cover: Provide [illegible] polyethylene film or white burlap-polyethylene sheet, complying with ASTM C 171.

2.5.3 Curing Compound: ASTM C 309, [illegible] liquid type, membrane-forming, water soluble, VOC compliant, sprayable. Submit certification of compliance from manufacturer.

2.5.3.1 Curing compound shall not be used on colored, stamped concrete. See [illegible] for alternate methods.

2.6. Related Materials:

2.6.1 Concrete Integral Color: Pre-weighed and packaged dry high grade coloring product. Color as selected by shopping center Architect from manufacturer's standards, unless otherwise indicated. Refer to Color-Crete product chart by Increte Systems.

2.6.2 Decorative Concrete Dry-Shake Color Hardener: Packaged dry combination of materials consisting of portland cement, graded quartz aggregate, coloring pigments and plasticizing admixture. Use coloring pigments that are finely ground, nonfading mineral oxides interground with cement.

2.6.2.1 Products:

"Color Hardener", Increte Systems, Inc.
or approved equal.

2.6.2.2 Colors: See Article 4 Schedules.

2.6.3 Release Agent. Dry-shake powder to facilitate the release of imprinting tools as manufactured by Increte Systems.

2.6.4 Sealer:

2.6.4.1 Products:

"Clear-Seal", Increte Systems, Inc.

2.6.5 Anti-Slip Additive:

2.6.5.1 Products:

"ULTRA-GRIP", Increte Systems, Inc.

2.6.6 Bonding Agent: Acrylic or styrene butadiene. Subject to compliance with requirements, provide by color hardener manufacturer.

2.6.7 Epoxy Adhesives: ASTM C 881, two-component material suitable for dry or damp surfaces. Provide material type, grade and class to suit requirements.

2.7. Concrete Mix:

2.7.1 Prepare design mixes for each type and strength of normal-weight concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use a qualified independent testing agency for preparing and reporting proposed mix designs.

2.7.2 Do not use Owner's field quality-control testing agency as the independent testing agency.

2.7.3 Do not use fly ash in this mix design.

2.7.4 Proportion mixes according to ACI 211.1 and ACI 301 to provide normal-weight concrete with the following properties:

2.7.4.1 Compressive strength (28 day): 4000 psi.

2.7.4.2 Slump limit at point of placement: 3 to 5 inches

2.7.4.3 Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 3 to 6 percent.

2.7.5 Fiber Reinforcement: Add to mix at rate of 1.5 lb. per cu. yd., unless manufacturer recommends otherwise.

2.7.5.1 Welded wired reinforcement WWR 6x6-w1.4 x w1.4 can be used instead of reinforcement .

2.7.6 Adjustments: Mix design adjustments may be requested by Contractor when warranted by characteristics of materials, project conditions, weather, test results or other circumstances.

2.8. Concrete Mixing:

2.8.1 Ready-mixed Concrete: Comply with requirements of this Section and ASTM C 94.

2.8.2 When air temperature is between 85°F (30°C) and 90°F(32°C), reduce mixing and delivery time from 1 1/2 hours to 75 minutes. When air temperatures are above 90°F (32°C), reduce mixing and delivery time to 60 minutes.

2.9. Imprinting Tools:

2.9.1 Increte Systems, Tampa, FL.

Phone: 800-752-4626 or 813-886-8811
Fax: 813-886-0188

2.9.2 See Article 4 Schedules for tool selection.

2.9.3 Mat Tools: Tools shall be high quality resilient mats reproduced from castings of natural materials and providing uniform control of joint depth.

2.9.4 Provide pattern(s) shown on Construction Drawings.

3. Execution

3.1. Preparation:

3.1.1 Layout: Carefully lay out form work and joints, taking into consideration pattern, intended aesthetics and construction sequence. Lay out long lines of patterns to run across the normal line of sight (except where shown otherwise in the Construction Drawings).

3.1.2 Surface Preparation:

3.1.2.1 Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving.

3.1.2.2 Remove loose material from compacted subbase surface immediately before placing concrete.

3.2. Edge Forms and Screed Construction:

3.2.1 Set, brace and secure edge forms, bulkheads and intermediate screed guides for paving to required lines, grades and elevations. Install forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.

3.2.2 Check completed formwork and screeds for grade and alignment to the following tolerances:

3.2.2.1 Top of Forms: Not more than 1/8 inch in 10 feet.

3.2.2.2 Vertical Face on Longitudinal Axis: Not more than 1/4 inch in 10 feet

3.2.3 Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

3.3. Joints:

3.3.1 Construct all joints true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to the centerline unless indicated otherwise.

3.3.2 When jointing existing paving, place transverse joints to align with previously placed joints unless indicated otherwise.

3.3.3 Contraction joints: Provide weakened-plane contraction joints, sectioning concrete into areas as shown on Construction Drawings. Construct contraction joints for a depth equal to at least 1/4 of the concrete thickness:

3.3.3.1 Tooled Joints: Form contraction joints in fresh concrete by grooving and finishing each edge of joint with a radiused jointer tool.

3.3.3.2 Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 3/8 inch wide joints into hardened concrete when cutting action will not tear, abrade or otherwise damage surface and before development of random contraction cracks.

3.3.3.3 Inserts: Form contraction joints by inserting premolded plastic, hardboard or fiberboard strips into fresh concrete until top surface of strip is flush with paving surface. Radius each joint edge with a jointer tool. Carefully remove strips or caps of two-piece assemblies after concrete has hardened. Clean groove of loose debris.

3.3.4 Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than 1/2 hour unless paving terminates at isolation joints.

3.3.4.1 Provide preformed galvanized steel or plastic keyway section forms or bulkhead forms with keys unless indicated otherwise. Embed keys at least 1 1/2 inches into concrete.

3.3.4.2 Continue reinforcement across construction joints unless indicated otherwise. Do not continue reinforcement through side of strip paving unless indicated otherwise.

3.3.4.3 Provide tie bars at side of paving strips where indicated.

3.3.4.4 Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

3.3.4.5 Where load transfer slip dowel devices are used, install so that one end of each dowel bar is free to move.

3.3.5 Isolation (Expansion) Joints: Form isolation joints of preformed joint filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walk, other fixed objects and where indicated.

3.3.5.1 Locate expansion joints where indicated and/or [illegible] a vertical surface

3.3.5.2 Extend joint fillers width and depth of joint not less than 1[illegible] inch or more than 1 inch [illegible] finished surface where joint sealant is indicated. [illegible] joint filler [illegible] with finished concrete surface when no joint sealant is required.

3.3.5.3 Fu[illegible] joint fillers in one-piece lengths [illegible] placed [illegible]ossible. Where [illegible] than one length is required, lace or clip joint [illegible] sections together.

3.3.5.4 Protect top [illegible] of joint filler [illegible] concrete placement with a metal, plastic or other temporary, pre-[illegible] cap. Remove protective cap after concrete has been placed on both sides of joint.

3.3.5.5 Install dowel bar [illegible] support assemblies at joints where indicated. [illegible]ricate or asphalt coat one half of dowel length to prevent concrete [illegible] to one side of joint

3.4 Concrete Placement:

3.4.1 Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel and items to be embedded or cast in. Notify other trades to permit installation of their work.

3.4.2 General Requirements:

3.4.2.1 Remove snow, ice or frost from subbase surface and reinforcing before placing concrete. Do not place concrete on surfaces that are frozen.

3.4.2.2 Moisten subbase to provide a uniform, dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.

3.4.2.3 Comply with requirements and with ACI 304R for measuring, mixing, transporting and placing concrete.

3.4.2.4 Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

3.4.2.5 Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures to consolidate concrete complying with ACI 309R.

3.4.2.5.1 Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcing, dowels and joint devices

3.4.2.6 Screed paved surfaces with a straight edge and strike off. Use bull floats or darbies to form a smooth surface place before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces prior to beginning finishing operations.

3.5. Stamped Colored Concrete: Comply with the colored pigment/hardener manufacturer's published recommendations and instructions for mix designs, concrete temperature, mixing, admixtures, installing, finishing and curing. Coordinate stamped colored concrete to ensure consistency in color, texture and quality.

3.5.1 Follow Article 4 Schedules for tool selections.

3.5.2 Color Hardener: Apply a minimum of 60 pounds per 100 sq. ft. Apply evenly in two passes from different directions using dry-shake method. When moisture is present, bull float each application of the shake. After achieving 100% color and prior to application of release agent, "seed" the color hardened surface by lightly sprinkling color hardener over it. DO NOT FLOAT THIS APPLICATION INTO THE SURFACE. Apply release agent immediately after this "seeding".

3.5.3 Imprint Pattern: Comply with tool manufacturer's instructions. Lay out to proper alignment and imprint to a consistent depth while concrete is plastic. Hand tool in areas where imprinting tools are not practical.

3.5.4 Excess Release Agent Removal: Excess release agent should be washed off with normal garden hose prior to control joints being cut. Temperature conditions will dictate the timing of release agent removal. Dispose in compliance with with local regulations.

3.5.5 Control Joints: Install where shown on Construction Drawings. In stamped areas, coordinate locations with layout of imprinted pattern.

3.5.6 Protect concrete from premature drying, excessive hot or cold temperature and damage.

3.5.7 Detailing: After concrete has set for at least 24 hours, chisel to remove marks left by imprinting tools. Color chipped areas with a slurry of color hardener mixed with water and bonding agent.

3.6. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete.

3.7. Cold Weather Placement: Comply with the provisions of ACI 306R and as follows:

3.7.1 Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions or low temperatures.

3.7.2 When air temperature has fallen to or is expected to fall below 40°F (4°C), uniformly heat water and aggregates before mixing to obtain a concrete temperature of not less than 50°F (10°C) and not more than 80°F (27°C) at point of placement.

3.7.3 Do not use frozen materials or materials containing ice or snow.

3.7.4 Do not use calcium chloride, salt or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in the mix design.

3.8. Hot Weather Placement: Place concrete complying with ACI 305R and as follows:

3.8.1 Cool ingredients before mixing to maintain a concrete temperature below 90°F (32°C) at point of placement. Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Liquid nitrogen may also be used to cool concrete.

3.8.2 Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperatures will not exceed the ambient air temperature immediately before embedding in concrete.

3.8.3 Fog spray forms, reinforcing steel and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots or dry areas.

3.8.4 Use Delay by Increte Systems on decorative concrete surfaces. Follow manufacturer's recommendations.

3.9. Concrete Finishing:

3.9.1 Float Finish.

3.9.1.1 Begin floating when bleed water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations.

3.9.1.2 Float surface with power-driven floats. Use hand-floating when area is too small or inaccessible to power units.

3.9.1.3 Finish surfaces to true planes within a tolerance of 1/4 inch in 10 feet as determined by a 10-foot-long straightedge placed anywhere on the surface in any direction. Cut down high spots and fill low spots. Refloat surface immediately to a uniform, granular texture.

3.9.1.3.1 Medium to Fine Textured Broom Finish: Draw a soft bristled broom across concrete surface perpendicular to line of traffic to provide a uniform, fine texture finish.

3.9.2 Final Toolings:

3.9.2.1 Tool edges of paving, gutter, curbs and joints formed in fresh concrete with a jointing tool of 1/4" radius.

3.9.2.2 Repeat tooling of edges and joints after applying surface finishes.

3.9.2.3 Eliminate tool marks on concrete surfaces.

3.9.3 Acid Wash:

3.9.3.1 For decorative surfaces, apply a 1 part muriatic acid to 10 parts potable water to the surface and agitate with side of a straw broom a minimum of 36 hours after placement.

3.9.3.2 Wash the surface until proper color has been achieved and then flush thoroughly.

3.9.4 Detailing:

3.9.4.1 If squeeze joints are present, a 4" grinder should be used for removal. Ground areas should then be furnished with dry release agent using a camel back sponge. Blow away excess release agent with a high velocity blower.

3.9.5 Sealing:

3.9.5.1 Anti-slip additive must be added to sealer per manufacturer's instructions prior to application.

3.9.5.2 Temperature should be above 50 degrees F to ensure proper bonding of sealer. Ideal temperature will be above 60 degrees F.

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GA. REG. [illegible]
SC. REG. 747[illegible]
AL. REG. 6234
TN. REG. 10349
NC. REG. 1243[illegible]
VA. REG. 0401[illegible]097

JOHN [illegible], PE
CIVIL/STRUCTURAL - [illegible]5277
GA. REG. 020251
SC. REG. 16340
AL. REG. 20382
TN. REG. 101507

PAUL C. HARMAN, PE
STRUCTURAL - FL. REG. 51959
GA. REG. 27740
SC. REG. 21754
AL. REG. 24905
TN. REG. 107882
NC. REG. 39673
VA. REG. 0402055022

JOHN J. CARAMALIS, PE
MECHANICAL - FL. REG. 43889
GA. REG. 021246
SC. REG. 16521
AL. REG. 20581
TN. REG. 108507
VA. REG. 0402055478

ANTHONY CLEMENTI, PE
MECHANICAL - FL. REG. 54781
GA. REG. 31882
SC. REG. 25591
AL. REG. 28469
TN. REG. 111382
NC. REG. 039664
VA. REG. 0402056137

RAYMOND J. SIRIANNI, PE
ELECTRICAL - FL. REG. 54085
GA. REG. 025636
SC. REG. 19743
AL. REG. 23065
TN. REG. 108038
NC. REG. 039963
VA. REG. 0402055379

NORMAN MEIER, PE
ELECTRICAL - FL. REG. 59422
GA. REG. 31492
SC. REG. 25290
AL. REG. 28079

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PLOT DATE:
25 AUG 2017

REVISION DATA:

1637
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