

26 05 33.00 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

Raceways:

Normal system power feeders and branch circuits shall be installed in separate raceways from emergency system power. All wiring for different power voltages shall be installed in raceway systems separate from each other. All wiring for the various electrical systems shall be installed in raceway systems separate from each other.

All conduit installed indoors shall be galvanized steel EMT (3/4" minimum); all fittings shall be set-screw or compression type steel, with insulated throats. Unless indicated otherwise on drawings or in other parts of the electrical specifications, all wiring of all systems shall be installed in conduit. Conduit fill shall not exceed NFPA 70 requirements.

Conduit shall be cleaned inside before any wires are pulled. Conduit ends shall be capped and plugged with standard accessories as soon as conduit has been permanently installed. Conduit installed without conductors shall be provided with sweep bends and baling wire for pulling.

All joints shall be made tight with watertight couplings matching conduit and all corners shall be made with long radius elbows. The ends of all conduits shall be cut square and reamed and all joints brought to a shoulder. Conduit shall be continuous between outlets to make a complete installation and to provide a continuous ground. Suitable supports and fastening shall be provided for conduit.

All raceways shall be entirely free of plaster, mortar, water and other foreign matter before installing conductors or cables.

Outlet, Junction and Switchboxes:

In general, gang type outlet boxes shall not be used. The outlet box locations indicated on drawings shall be considered approximate, and therefore, it shall be incumbent upon this contractor to study the general construction with relation to spaces and equipment surrounding each outlet. All outlet, switch and junction boxes shall be made of code galvanized steel complete with rings and screw cover plates and located where shown and noted on drawings. Where conduit is concealed, boxes shall not be less than 4" square x 1-1/2" deep. All boxes shall be equipped with proper covers to bring flush with finished wall surface.

Where outlet boxes occur in block, cinder, or concrete block, facing tile or other material where such materials form the finished wall surface, the opening for the box shall be cut neatly and of the size that the cover plate will cover all parts of the opening. Conduits shall be used on exposed raceways. In general, junction boxes shall be furnished and required by NFPA 70, of the proper sizes, and shall be constructed of #12 gauge steel with removable front fastener on with counter sunk head screws or other approved means. For special application, junction boxes shall be noted, detailed and/or sized on the drawings or in the field as required.

Height of Boxes:

Prior to rough-in, verify all box/cover mounting heights and locations in field with Owners representative. In general, where not located at counter areas, the height of boxes from finished floor to center of boxes level shall be as follows: 1) Receptacles: 18" (unless counter height) Telephone Outlets (desk phone): 16" Telephone Outlets (Wall phone): 31" Data Cable Outlets: 16" Other devices: As directed in field.

26 05 43.00 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

Coordinate trench locations in reference to other underground utilities. Call before you dig to locate existing underground utilities in excavation areas. Request any available documentation of existing underground work. Support and protect existing services during excavation operations. Ensure no other utilities are placed directly above or parallel to conduits.

Layout and install all electrical work in strict compliance with Chapter 1, Part B, Section 110.26 of the latest adopted edition of NFPA 70. Locations and routing that may be shown on plans are schematic and diagrammatic in nature. Do not excavate under the drip line of any tree without permission of the owner's representative.

Protect excavated openings with substantial railings, fencing, signage, stanchions, and steel roadway plates in strict compliance with OSHA/NIOSH and as directed by Owner's Representative in field. Where roadway is to be performed, coordinate all work with the Department of Transportation (DOT) and comply with all DOT requirements. Schedule all work with DOT and restore roadways, curbs and sidewalks as quickly as possible.

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation operations. Provide adequate shoring, bracing, cold weather protection and dewatering for all excavation. Provide fill materials in 8 inch lifts and compact to 95%. Seal and protect structures during installation. After installation of underground raceway(s), properly restore all items disturbed by excavation and equipment including but not limited to streets, sidewalks, curbs, concrete, blacktop surfaces and lawn areas that were broken. Separately stockpile excavated topsoil adjacent to the excavated areas and trenches and utilize it in the final stage of backfilling operation. Grade exposed earth and other erodible areas to a reasonably uniform, and satisfactory, cross section and slope, as soon as practicable.

Backfill Materials as specified on drawings or in details. Excavated or borrowed material. Prior to backfilling, remove rock and gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetable matter, and other deleterious material.

Controlled Low Strength Material (CLSM - "Flowable Backfill") Flowable Backfill shall have and have a minimum compressive strength of 1200 PSI at 28 days.

Concrete Concrete shall be air entrained and have a minimum compressive strength of 3000 PSI at 28 days. Provide steel reinforcement per details on drawings. Provide joint dowel bars between concrete structures / duct banks.

26 05 48.00 - VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

Provide seismic bracing of mechanical and electrical components where required by code.

Provide seismic restraint systems to meet total design lateral force requirements for support and restraint of piping, ductwork, equipment and other similar systems and equipment where required by the applicable building code.

Seismic restraint designer shall coordinate all attachments with the structural engineer of record. Provide engineered stamped and signed drawings of seismic design.

Seismic restraint designer shall provide visual inspection after installation and approve installation of seismic design components.

Design analysis shall include calculated dead loads, static seismic loads, and capacity of materials utilized for the connection of the equipment or system to the structure.

Analysis shall detail anchoring methods, bolt diameter, and embedment depth. All seismic restraint devices shall be designed to accept without failure the forces calculated per the applicable building code.

Friction from gravity loads shall not be considered resistance to seismic forces.

26 05 53.00 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

General:

Provide manufacturers standard self-adhesive vinyl tape not less than 3 mils thick by 1-1/2" wide. Where applicable, install on all concealed raceways at connection to all junction boxes, pull boxes, equipment, wall/floor/roof penetrations, etc. Unless otherwise indicated or required by governing regulations, provide color tape with black letters. Provide circuit identification bands for all cables and conductors. Provide manufacturer's standard color coding for cable/conductor jacket and/or insulation for all cables and conductors of all systems. Match identification with marking system used in existing systems (where applicable). See drawings, contractor documents, and similar previously established identification for projects electrical work. Provide on all conductors of all systems.

The following insulation color code shall be used for system and voltage identification: This shall apply to both feeder and branch circuit wiring. Interchange of colors shall not be permitted. 208Y/120V System: Equipment Grounding: To match existing where applicable - verify in field.

The use of Scotch color coding tapes for phase identification shall be limited to feeder cables only.

Provide engraved plastic-laminating sign on identification points of electrical equipment including panelboards, disconnects, starters, control panels, etc. Except as otherwise indicated, provide double line of text, 1/2" high lettering, in 1-1/2" high sign in "O" position (where applicable) and 2" high lettering in "H" position (where applicable). Unless otherwise indicated, provide text on both sides of sign. Provide text on both sides of sign. Provide text on both sides of sign. Provide text on both sides of sign.

All equipment and system identification nomenclature shown on drawings or listed herein is shown for general design and installation reference only. The actual nameplate, etc., nomenclature for this project shall be verified by electrical contractor in field prior to fabrication and where applicable, shall be an extension of existing nomenclature used on the site as determined in field by electrical contractor.

Equipment to be Labeled: (Project may not include all pieces of equipment listed here.)

Enclosed Motor Control Centers Remote-controlled switches, dimmer modules, and control devices, via engraved wall plates. Miscellaneous Control Stations. Panelboards (also including typewritten directory of circuits in the location provided by panelboard manufacturer). Enclosures and electrical cabinets.

Access doors and panels for concealed electrical items. Monitoring and control equipment. Other similar equipment designated by owner's representative, architect or engineer in field.

Emergency Systems: Provide permanent identification for boxes, enclosures, etc. that are associated with emergency system wiring. Panel and identify emergency pull boxes, junction boxes, and other access-pull points (boxes and covers) in accordance with NEC. Provide emergency system equipment panelboards, cabinets, enclosures, etc. with engraved nameplates (white letters on red background) with the first line of text to read "EMERGENCY CIRCUITS" and the remaining lines to include the necessary descriptive text. Properly identify system components, wiring, cabling, and terminals. Provide red color on jacket of all emergency system cables. Provide red-colored breaker handle and red-colored lock-on device at source circuit breakers that feed emergency systems. Provide red coloring for all Emergency system junction boxes, along with identification. Critical Systems: Provide permanent identification for boxes, enclosures, etc. that are associated with legally-required Critical system wiring. Panel and identify Critical system pull boxes, and other access-pull points (boxes and covers) in accordance with NEC. Provide Critical system equipment panelboards, cabinets, enclosures, etc. with engraved nameplates (white letters on red background) with the first line of text to read "CRITICAL CIRCUITS" and the remaining lines to include the necessary descriptive text. Properly identify system components, wiring, cabling, and terminals. Provide red color on jacket of all Critical system cables. Provide red-colored breaker handle and red-colored lock-on device at source circuit breakers that feed Critical systems. Provide red coloring for all fire alarm system junction boxes, along with identification.

26 05 60.00 - MECHANICAL EQUIPMENT

Common Requirements:

Provide all necessary electrically related work as required to render all mechanical equipment (including plumbing, heating, ventilating and air conditioning equipment) fully operational and fully compliant with all local and national codes. This includes, prior to ordering materials or commencing with rough-in, reviewing equipment submittal data and coordinating with installing contractors to ensure the correct size, rating and quantity of conductors are provided.

Aluminum Conductors: Review equipment submittals, installation documents and nameplates to determine if there are any warnings or UL limitations regarding copper versus aluminum wiring connections at equipment. If there are any limitations, provide local non-fused disconnect at or near equipment (external to the equipment) and terminate aluminum conductors to the line side terminals of the disconnect switch. Provide copper conductors from load side terminals of the disconnect switch to the respective equipment factory disconnect or terminals. Coordinate all related work with all affected installers.

Locations of equipment and devices are shown only for schematic indication of wiring requirements.

Refer to all contract documents for additional electrical requirements and concerns, and for further representation of this work.

Provide raceway, wiring, connections, and terminations for power and interlocks for electrically operated equipment.

Provide disconnect switch ahead of all equipment, including controls, unless the mechanical equipment comes with interlock NFPA 70-compliant disconnects). Provide NEMA 3R enclosures where installed outdoors and where installed indoors in areas subject to moisture. Ground metal frames of equipment by connecting frames to the grounded metal raceway and to a full size green ground conductor or both. Provide the necessary electrical connections between the specified equipment and the junction box near equipment with flexible metallic conduit (listed for light outdoors) and matched connectors (see Section 26 05 35). Where mechanical equipment lugs cannot accommodate conductor sizes shown on drawings, provide LISCO ClearTap Insulated Multi-Tap Connectors.

Sizes, electrical ratings, etc. of equipment and wiring shown on drawings are based on the respective equipment design base manufacturers (if different manufacturer(s) or model(s) are actually supplied, provide necessary coordination in field (prior to ordering materials and prior to rough-in) and provide the necessary size of related electrical equipment, wiring, conduit, etc.

Prior to furnishing submittals and prior to rough-in, determine exact electrically related characteristics, loads, voltages, disconnect and starter requirements, locations, mounting heights, connection points, etc. of mechanical equipment.

Provide lugs, lug kits and related accessory work as required to accommodate the conductor sizes and quantities needed for each application. Coordinate with single-line diagram, field conditions, equipment installers, etc.

HACR Breakers: Coordinate in field with the respective trades and determine case by case, which equipment is factory listed for use with Heating and Air Conditioning Rated (HACR) breakers. In an effort to minimize requirements for stocking of fuses by the owner, utilize HACR breakers at the source panelboards as the NFPA 70 required overcurrent protection wherever possible (in lieu of fusing local disconnect switches).

Maintenance Receptacles for Rooftop Units, Rooftop Exhaust Fans and any Miscellaneous Exterior Equipment: Provide Type WR duplex GFCI weatherproof receptacle within 25 feet of all electrically operated equipment of any nature that requires periodic testing or maintenance.

Maintenance Receptacles for Indoor Equipment: Provide duplex receptacle within 25 feet of all indoor electrically operated equipment of any nature that requires periodic testing or maintenance.

Heating, Ventilating and Air Conditioning (HVAC) Equipment:

General:

Refer to Coordination Schedules on drawings. Provide disconnects, accessories, wiring, connections, services, etc. where defined as "EO" in the schedule. Information in this section supplements the information in schedule(s).

Air Handling Units: Provide separate power feeders or single power feed as directed in field by the HVAC installer (field verify prior to rough-in). Modify starter and disconnect requirements accordingly, if required. Provide additional dedicated 120V, 20A branch circuit for each unit from nearest panelboard (whether or not indicated clearly on the electrical drawings) for internal factory-installed lighting and receptacles. Provide conduit, wiring, and overcurrent protection for this work, and terminations to connections within the units for this lighting and convenience power.

Split System Air Conditioning Systems: Provide (1) 3/4 inch empty conduit (with drag line) from each air handling segment to each condensing unit. Provide control conduit between panel to follow refrigerant piping routing to receiver practice.

Heating, Ventilating and Air Conditioning (HVAC) Control Wiring:

General: Unless specifically indicated as empty conduit on drawings, herein, provide electrical control and interlock work as shown on drawings. Provide additional control wiring. Provide additional control wiring. Coordinate HVAC thermostat and sensor locations in field (case by case) with Architect. Coordinate with representative and equipment installer to ensure that they are placed in locations that will not interfere with fire, fire, equipment, artwork, wall-hung specialties, room finishes, etc. Field-verify these locations with a base case, prior to rough-in, since locations shown on drawings are schematic only.

Schematic Thermostat and Sensor Locations: Refer to HVAC drawings and documents.

Low Voltage Thermostats and Sensors: Provide 1/4 inch square by 2-1/8 inch deep weatherproof boxes at 46 inches above finished floor to center of outlet box (with sweep bends) for each unit. Provide one 3/4 inch empty conduit from each location, turning to provide accessible ceiling (in tight space or against overhead slab/deck). Identify conduit in ceiling with sweep bends, bushings and drag line.

Plumbing Equipment:

General:

Refer to Coordination Schedules on drawings. Provide disconnects, starters, accessories, wiring, connections, services, etc. where defined as "EO" in the schedule. Information in this section supplements the information in schedule(s).

Domestic Water Heaters (Electric): Provide local disconnect switch, and power wiring and connections. Provide interlock wiring with circulating pump, low water cutoff and aquastat controls where applicable.

Electric Water Coolers (Surface) Provide 200V duplex receptacle. Provide GFCI circuit breaker to feed the circuit that serves electric water coolers, even if not indicated on panelboard schedule. Install at height and location as directed by water cooler installer. Conceal outlet within water cooler enclosure if applicable and as designed for such installation. Assemble and connect cord if needed. Coordinate all specifics with water cooler installing contractor prior to rough-in of related work.

Electric Water Coolers (Flush): Provide 120V duplex receptacle or provide direct 120V connection with local switch (verify required method in field with electric water cooler installer). Provide GFCI circuit breaker to feed the circuit that serves electric water coolers, even if not indicated on panelboard schedule. Install outlets at height and location as directed by water cooler installer. Conceal outlets within water cooler enclosure if applicable and as designed for such installation. Assemble and connect cord if applicable and needed. Coordinate all specifics with water cooler installing contractor prior to rough-in of related work.

26 09 19.00 - ENCLOSED CONTACTORS

Provide contactors equipped with external pilot lights in cover, and external HOA selector switches in cover. Wire contactors for lighting applications so that the "AUTO" position is the normal activated condition (i.e. photo-cell controlled, photocell/time-clock controlled, remote switch controlled, BAS controlled, etc.); so that the "OFF" position is manual override to turn lighting off; and so that the "HAND" position is manual override to turn lighting on. Provide contactors with field convertible N.O./N.C. contacts and descriptive nameplates.

Electrically Held Contactors: Provide contactors equal to Square D Class 8903 (or Allen-Bradley Bul. 500L-BA\*94 series) for tungsten lighting loads, ballast lighting loads, and small resistance heating loads. Provide contactors that are electrically operated and electrically held (EOEH). Provide contactors in factory NEMA 1 enclosures, with 120V coils (unless indicated otherwise elsewhere or otherwise required to render controls fully operable). Provide "dry" contacts rated at 30A, minimum 250V (600V if required by application). Provide number of poles (minimum of three poles) and number of contactors as required for each application. Field verify coil voltage ratings.

26 09 23.00 - LIGHTING CONTROL DEVICES

Timer Switches: Provide Torq #A500 series timer switches without hold. Provide with time range as indicated on drawings. If no

time range is specified, provide with 30-minute maximum time range.

Digital Timer Switches: Provide WattStopper TS-400 timer switch. Program to time range as indicated on drawings. If no time range is specified, provide with 30-minute maximum time range.

Multipurpose Time Clocks : Provide Intermatic #ET90415CR series Multi-Purpose Time Clock (or equal by Torq), which is programmable 365-day/24-hour with override controls. Provide four-channel unit. Provide required external contactors, relays, etc. to render the control systems fully operational. Verify zone control requirements in field prior to rough-in. Provide 100-hour carryover carryover.

Occupancy Sensors, Dual Technology Wall Switches: Provide Wattstopper DW-100 occupancy sensor (with or without wall wart) and configure as manual on, auto off (vacancy sensor) unless otherwise specified on drawings. Provide with time delay as specified on drawings. If no time delay is specified, program to 10 minutes.

Occupancy Sensors, Dual Technology Ceiling Sensors: Provide Wattstopper DT-300 ceiling mounted occupancy sensor (or equivalent). Provide with time delay as specified on drawings. If no time delay is specified, program to 20 minutes. Adjust sensitivity based on field conditions and occupancy of room to provide 100% coverage without nuisance tripping. Provide Wattstopper BZ-50 universal voltage pack(s) as required to properly power all occupancy sensors and provide switching per the design intent. In areas where multiple occupancy sensors control a single zone together, interlock occupancy sensors/power packs per manufacturer instructions to meet control intent.

Momentary-Contact Toggle Switches: Provide Standard of Quality equal to Legrand LVS-1, 3 Amp, 24 VAC/VDC, single-pole, double-throw with center rest, designed to fit conventional toggle switch openings.

26 21 13.00 - LOW-VOLTAGE OVERHEAD ELECTRICAL SERVICE ENTRANCE

General: Make arrangements with respective utility company to provide service entrance work in strict accordance with regulations of respective utility company, and of authorities having jurisdiction. Electrically related service entrances consist of the following: Electric Power Service Telephone Service

Coordinate with other electrical work, including utility company wiring, as necessary to interface installation of service entrance equipment work with other work. Provide service entrance conduits with sweep L's. Properly seal conduits, immediately upon installation, to prevent water, moisture, dirt, rodents, insects, etc. from entering ducts. Prior to commencing with any service entrance related work, carefully coordinate installation of service work with affected utility companies, with Owner's Representative, with other trades, with affected entities, and with authorities having jurisdiction. Provide tight system and equipment grounding and bonding connections for service-entrance equipment, and wiring. Electrical Power Service: The electric service includes utility company transformer as indicated on drawings, furnished by local utility company, with secondary voltage as indicated on drawings. Furnish and install all work in strict compliance with all requirements set forth by the utility company providing electrical service for the project. Procure all needed details and information directly from the utility company as required for complete operational installations. Furnish and install all electrical work accordingly. Such work includes, but is not limited to: Insulators, weatherheads, metering, supports, conduit, wiring, connections, maintaining clearances, testing, inspections and ancillary work as applicable. Determine available fault current from electric utility company and provide appropriately rated electrical service and distribution equipment to accommodate not only the initial transformer proposed by the utility company, but also a future larger transformer (if applicable) to allow for full utilization of the electrical service capacity.

Where indicated in project manual, or where indicated on drawings, or where required by NEC, provide ground-fault protection devices complying with electrical winding polarities indicated. Set field-adjustable GFF device to 5000A. Provide circuit breakers for pickup and time-current sensitivity ranges as indicated, after installation of devices and fuses.

Telephone Service Provide conduit(s) and wiring from outdoor weatherhead to demarcation point. Coordinate insulator location and conduit sizes, weatherhead locations, etc. with utility company prior to commencing any related work. Provide a minimum 4 feet wide by 8 feet high by 3/4 inches deep MDF plywood equipment panel within building (painted on all sides & edges with 2 coats of nonconductive, fire retardant paint). Provide two NEMA 5-20R 20A/120V TVSS duplex receptacles (equal to Hubbell #5362\_S series), connected to a common dedicated circuit on the plywood equipment board. Provide minimum of one #6 AWG green-insulated ground conductor (in 3/4 inch EMT) from electrical service entrance ground to plywood equipment board. Terminations as directed by telephone company. Provide related work in compliance with state building codes, with local building codes, with National Electrical Code, with National Electric Safety Code, with NFPA 706 (Commercial Buildings Standard for Telecommunications Pathways and Spaces), and with other codes and authorities having jurisdiction.

26 21 16.00 - LOW-VOLTAGE UNDERGROUND ELECTRICAL SERVICE ENTRANCE

General: Make arrangements with respective utility company to provide service entrance work in strict accordance with regulations of respective utility company, and of authorities having jurisdiction. Electrically related service entrances consist of the following: Electric Power Service Telephone Service

Coordinate with other electrical work, including utility company wiring, as necessary to interface installation of service entrance equipment work with other work. Provide service entrance conduits with sweep L's. Properly seal conduits, immediately upon installation, to prevent water, moisture, dirt, rodents, insects, etc. from entering ducts. Prior to commencing with any service entrance related work, carefully coordinate installation of service work with affected utility companies, with Owner's Representative, with other trades, with affected entities, and with authorities having jurisdiction. Provide tight system and equipment grounding and bonding connections for service-entrance equipment, and wiring.

Provide 1/2" empty conduits (privately owned), with drag lines, from the building plywood backboard (MDF) to utility pole as shown on drawings. Provide 1/2" empty conduits protected with 15A breakers, provide NEMA 5-20R 20A/120V TVSS duplex receptacles (equal to Hubbell #5362\_S series), connected to a common dedicated circuit, on the plywood equipment board. Provide minimum of one #6 AWG green-insulated ground conductor (in 3/4 inch EMT) from electrical service entrance ground to plywood equipment board. Terminations as directed by telephone company. Provide related work in compliance with state building codes, with local building codes, with National Electrical Code, with National Electric Safety Code, with EIA/TIA 569 (Commercial Buildings Standard for Telecommunications Pathways and Spaces), and with other codes and authorities having jurisdiction.

26 24 16.00 - PANELBOARDS

Subject to compliance with requirements, provide panelboard products of one of the following (for each type and rating of panelboard and enclosure): Square D Company, General Electric Company, Siemens, Eaton/Cutler-Hammer.

Panelboards shall bear UL labels for their specific applications. Panelboards shall be suitable for service voltage with number of branch circuits of capacity scheduled. Unless otherwise indicated, panelboards and sections thereof, if any, shall have main-lugs-only of capacity equal to, or greater than, the rating or setting of the over the current protective device next back on the line. All circuit breaker panelboard bus assemblies shall be of the distributed (sequence) bussing type throughout, so that any 2 adjacent single pole breakers and/or spaces shall be replaceable by a 2-pole internal common trip breaker, and any 3 adjacent single pole breakers and/or spaces shall be replaceable by a 3 pole internal common trip breaker, 15 amp through 70 amp inclusive, without disturbing any other breaker. All panelboards shall be UL listed and labeled for use as service entrance equipment where being used as such.

Distribution Panels shall be equal to Square D I-Line series with bolt-on branch breakers 208Y/120V panelboards shall be equal to Square D NIQ with bolt-on branch breakers

All bussing shall be copper.

All branch circuit breakers shall be full ambient compensated thermal magnetic molded case with quick-make and quick-break action and positive handle trip indication, both on manual and on automatic operation. Breakers shall be of the over-the-center toggle operating type with the handle going to a position between "on" and "off" to indicate automatic tripping. All breakers shall be bolt-on type.

All circuit breakers shall be full size. "Tandem" or "split" breakers shall not be permitted. All multi-pole breakers shall have internal common trip with all load side box lugs of one breaker in the same gutter. All circuit breakers shall have sealed cases to prevent tampering. All 15 and 20 ampere branch circuit breakers shall be UL Listed as SWD (switching duty). All 15-70 ampere branch circuit breakers shall be HACR Type. All GFCI circuit breakers shall be UL Class A with maximum threshold of 5 mA. All branch circuit breakers serving all ballasted (fluorescent/HID) lighting loads shall be HID rated.

Provide all electrical distribution related equipment with appropriately braced bussing and properly rated breakers, fuses, etc. for the available fault currents.

In existing buildings where fault current values are not indicated on drawings, coordinate with existing "upstream" distribution equipment provide equipment AIC ratings to meet or exceed same.

Fill out panelboards' circuit directory card upon completion of installation work. Directories shall be neatly typewritten. All panelboard directories shall include the actual room names/numbers that are selected for interior signage/designation.

All recessed panelboards shall be provided with a minimum of three 1-1/4" empty conduits terminated to a single 12" X 12" X 6" deep junction box above accessible ceiling.

26 27 13.00 - ELECTRICITY METERING

Furnish and install all work in strict compliance with all requirements set forth by the utility company providing electrical service for the project. Procure all needed details and information directly from the utility company as

required for complete operational installations. Furnish and install all electrical work accordingly. Such work includes, but is not limited to: OT cabinets (bussed or unbussed), meter busses, supports, conduit, wiring, connections, maintaining clearances, testing and inspections. Provide lugs, lug kits and related accessory work required to accommodate the conductor sizes and quantities needed for each application. Coordinate with single-line diagram, field conditions, etc. Meter will be furnished and installed by utility company. Provide metering-related work in strict accordance with applicable company requirements. Position meters in locations approved by the utility company, the Design Professionals, and the Owner.

26 27 26.00 - WIRING DEVICES

General:

Unless specifically indicated otherwise, or directed otherwise in field, provide white color for normal utility wiring devices. Provide grounded ("neutral") conductors in all wall switch, dimmer and other lighting control outlet boxes, even if not immediately utilized.

Provide wall plates with engraved legends where indicated on drawings and/or where required per 26 05 53.00 - IDENTIFICATION FOR ELECTRICAL SYSTEMS Section. All device wall plates shall be standard size, "midwidth," "oversized" ("jumbo") or "extra deep" wall plates shall not be acceptable. Construct with metal screws for securing plates to devices; screw heads colored to match finish of plates. Except where/if indicated otherwise on drawings, wall plates in finished areas shall be commercial specification grade, satin finish stainless steel, with beveled edges, equal to Leviton Type 430 series. Wall plates in unfinished areas shall be galvanized steel unless otherwise noted. Refer to architectural finish schedules and owner representative for additional information.

Wall-Box Type Lighting Controls:

Provide wall switches, that are flush self-grounding with green ground screw and color coded cover, single toggle type, back and side wired, specification grade. Provide wall switches rated 20A, 120/277 volts, 1 HP at 120V A.C. quiet type.

Single pole switches shall be equal to Leviton #1221-2 series.

Double-pole switches shall be equal to Leviton #1222-2 series.

Receptacles:

Provide Weather Resistant (WR) receptacles for all receptacles installed in wet locations. Any receptacle shown on the drawings as "WR/GFCI" next to it denotes that interior cover shall be installed with a WR GFCI receptacle. Provide duplex weather resistant receptacles equal to Leviton #W7899 series. For receptacle circuits protected with circuit breakers, provide NEMA 5-15R equivalents.

Provide duplex and single specification grade receptacles, 2-pole, 3-wire grounding, self-grounding, green grounding screw, ground terminals and pole externally connected to mounting yoke, color coded base, 20-ampere rating, 120 volts, with 1/2" plaster edge, back and side wiring, NEMA configuration 5-20R. Provide duplex receptacle equal to Leviton #5362\_S series. For applications with #361 series (single) applications. Provide clock hanger receptacle equal to Leviton #5362\_SH.

Provide self-grounding commercial specification grade, duplex receptacles, ground-fault circuit interrupters: 1) 20-ampere, 120-volt, capable of protecting connected downstream receptacles on single circuit, grounding type UL-rated Class A, Group 1 specification grade, 20-ampere rating (device and feed-thru), 125-volts, 60 Hz; with separate ground-fault sensing and signaling (maximum threshold of 5mA at 0.025 seconds maximum); equip with 15 ampere plug configuration, NEMA 5-20R. Provide ground fault circuit interrupter duplex receptacles equal to LE #8898 series. For receptacle circuits protected with 15A breakers, provide NEMA 5-15R equivalents. Where indicated on drawings, provide a separate GFCI receptacle for each one showing protected downstream receptacles from load-side (GFCI-protected) terminals of upstream receptacles. Provide Weather-Resistant Receptacles with UL "WR" marking, compliant with NFPA 70, article 406.8, for all applications in wet or damp locations.

Special purpose receptacles shall be of the size, type and manufacturer as indicated on the plans or as determined in field.

26 28 16.00 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

Subject to compliance with requirements, provide equipment of one of the following manufacturers: General Electric Co. Siemens/ITE Square D Co. Westinghouse/Cutler-Hammer

Disconnect switches shall be equal to Square D Type HD. All Safety Switches/Disconnects shall be heavy duty, safety type, quick make and quick break and externally operated. Unless noted otherwise on drawings or directed otherwise in field, all disconnect switches shall be fused. Unless noted otherwise on drawings or directed otherwise in field, brace all disconnect switches for 200,000 A.I.C. Provide heavy-duty dual switches, with fuses of classes and current ratings indicated and UL listed for use as service equipment under UL Standard 98 or 989. Where current limiting fuses are indicated, provide switches with non-interchangeable fuses suitable only for current limiting type fuses. Install disconnect switches within sight of controller position unless otherwise indicated.



Table with 2 columns: REVISIONS, DATE. Row 1: ISSUE FOR CLIENT, LANDLORD AND PERMIT, 1/02/2017. Row 2: ISSUE FOR PERMIT, 1/17/2017.

Vertical text: robert o. lyon + associates, inc. ARCHITECTS ENGINEERS PLANNERS 5100 SCHUMER PARK, SUITE 200 SCHUMER PARK, LEXINGTON, KY 40502 P: 847.671.7452 F: 847.671.7453 WWW.RGLA.COM

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WRITE EN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PROFESSIONAL SEAL. DESIGNER-CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS SHOWN IN THESE DRAWINGS SHALL BE AS SHOWN TO THE OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

8001 RGLA SOLUTIONS, INC. 8001 ROBERT O. LYON ASSOCIATES, INC.



AVENTURA MALL 19501 BISCAYNE BLVD SPACE #327 AVENTURA, FL 33180

ELECTRICAL SPECIFICATIONS

Table with 2 columns: DRAWN BY LAH, CHECKED BY LGF, JOB NUMBER 19811, SHEET NAME.

E5.2

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