SPECIFICATIONS

A. ELECTRICAL WORK INCLUDES BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING:

1. GROUNDING.
2. SAFETY SWITCHES AND CIRCUIT BREAKERS.
3. BRANCH CIRCUIT WIRING AND CONDUIT FROM PANELS TO ALL OUTLETS.
4. RECEPTACLES, SWITCHES AND OTHER DEVICES.
5. OUTLET BOXES, RECEPTACLES, SWITCHES AND OTHER DEVICES.
6. BRANCH CIRCUIT WIRING, CONDUIT AND CONNECTIONS FOR ELECTRICAL POWER TO HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT, WITH EXCEPTIONS AS NOTED.
7. MOTOR STARTERS FOR HVAC AND PLUMBING EQUIPMENT.
8. EMERGENCY LIGHTING SYSTEM.
9. SURFACE METAL RACEWAY.
10. FIRE ALARM DEVICES, WIRING AND MODIFICATION OF EXISTING FIRE ALARM CONTROL PANEL.
11. LIGHTING FIXTURES COMPLETE WITH LAMPS, BALLASTS AND RELATED WIRING.
12. NAMEPLATES, LABELS AND TAGS.
13. FUSES.
14. TESTING.

B. WORK BY OWNER OR SEPARATE CONTRACTOR:

1. TELEPHONE AND DATA EQUIPMENT, TRUNK CABLES TO THE TELEPHONE CLOSETS, OUTLETS WIRING AND RELATED ITEMS.

C. GENERAL:

1. THE WORK SHALL BE EXECUTED IN STRICT CONFORMITY WITH NATIONAL ELECTRICAL CODE, ALL LOCAL REGULATIONS THAT MAY APPLY AND THE REQUIREMENTS OF THE OWNER'S INSURANCE UNDERWRITERS. IN CASE OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND A GOVERNING CODE OR ORDINANCE, THE MORE STRINGENT STANDARD SHALL APPLY.
2. THIS CONTRACTOR SHALL SECURE ALL PERMITS, PAY FEES, PERFORM ALL TASKS, AND ARRANGE FOR INSPECTIONS REQUIRED FOR THE WORK SPECIFIED UNDER THIS SECTION.
3. REFER TO ALL DRAWINGS ASSOCIATED WITH THE PROJECT, PRIOR TO THE INSTALLATION OR ROUGHING-IN OF THE ELECTRICAL OUTLETS, CONDUIT AND EQUIPMENT, TO DETERMINE THEIR EXACT LOCATION.
4. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY AND ARE NOT INTENDED TO SHOW EVERY DETAIL OF CONSTRUCTION OR ARBITRARY LOCATION OF WIRING. EACH SYSTEM SHALL BE COMPLETE WITH MINOR PARTS NOT SPECIFICALLY NOTED ON THE DRAWINGS, BUT REQUIRED FOR A PROPERLY FUNCTIONING SYSTEM CONFIRMING TO ALL APPLICABLE CODES. WHERE BUILDING CONSTRUCTION MAKES IT ADVISABLE OR NECESSARY TO CHANGE LOCATION OF WIRING OR FIXTURES WITHOUT INCREASING THE COST OF THE WORK, SUCH CHANGES SHALL BE MADE WITH THE CONSENT OF THE ARCHITECT.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SEE THAT ALL THE ELECTRICAL EQUIPMENT (SUCH AS JUNCTION BOXES, PULL BOXES, PANELBOARDS, SWITCHES, CONTROLS AND OTHER APPARATUS AS MAY REQUIRE MAINTENANCE AND OPERATION FROM TIME TO TIME), SHALL BE MADE ACCESSIBLE.
6. AFTER INSTALLATION, ELECTRICAL EQUIPMENT SHALL BE PROTECTED TO PREVENT DAMAGE DURING THE CONSTRUCTION PERIOD. OPENINGS IN CONDUITS, BOXES, PANELBOARDS AND THE LIKE SHALL BE CLOSED DURING AND AFTER CONSTRUCTION TO PREVENT THE ENTRANCE OF FOREIGN MATERIALS.

D. SUBMITTALS:

1. SUBMITTAL LIST: SUBMIT A LIST OF ALL MATERIALS TO THE ARCHITECT FOR APPROVAL WITHIN 10 DAYS AFTER THE DATE OF COMMENCEMENT OF THE WORK.
2. PRODUCT DATA: FOR ALL SPECIFIED PRODUCTS AND MATERIALS.
   a. CONDUIT.
   b. WIRE AND CABLE.
   c. DISCONNECT SWITCHES.
   d. WIRING DEVICES AND PLATES.
   e. EMT FITTINGS, COUPLINGS AND CONNECTORS.
   f. SURFACE METAL RACEWAY.
   g. ARMORED CABLE.
   h. FIRE ALARM DEVICES.
   i. OCCUPANCY SENSORS.
3. SHOP DRAWINGS:
   a. FIRE ALARM SYSTEM AND DEVICES.
   b. LIGHTING FIXTURES.
   c. NAMEPLATES.

E. GROUNDING:

1. SYSTEM SHALL BE INSTALLED WITH METHODS AND MATERIALS IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS AND ABLE TO CONDUCT GROUND FAULT CURRENTS TO THE GROUNDED NEUTRAL OF ELECTRICAL DISTRIBUTION SYSTEMS AND LIMIT POTENTIAL DIFFERENCES BETWEEN CONDUCTIVE SYSTEMS UNDER FAULT CONDITIONS. ALL EXPOSED, NON-CURRENT CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, THE RACEWAY SYSTEM, AND THE NEUTRAL CONDUCTOR OF THE WIRING SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.
2. FEEDER AND BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTORS SHALL HAVE GREEN INSULATION.
3. CLAMP, CONNECTORS, BOLT, NUTS, AND OTHER HARDWARE, SHALL BE HIGH CONDUCTIVITY COPPER ALLOY PRODUCTS, AS MANUFACTURED BY O-Z/GEDNEY, THOMAS & BETTS CO., ERICO OR EQUAL.

F. WIRING METHODS:

1. IN GENERAL, WIRING SHALL BE INSULATED 600V. CONDUCTORS INSTALLED IN CONDUIT OR ELECTRICAL METALLIC TUBING RUN CONCEALED OR EXPOSED IN THE UNFINISHED AREAS (MECHANICAL, ELECTRICAL, STORAGE ROOMS.). MINIMUM CONDUIT SIZE SHALL BE 1/2 INCH.
2. UNDERGROUND CONDUITS SHALL BE RIGID STEEL, OR SCHEDULE 40 PLASTIC. CONDUIT EXPOSED TO WEATHER SHALL BE RIGID STEEL AND PAINTED.
3. ARMORED CABLE ("MC") WITH A SEPARATE GREEN GROUNDING WIRE MAY BE USED ABOVE SUSPENDED CEILINGS AND IN DRYWALL PARTITIONS. SUPPORT MC TYPE AT INTERVALS NOT EXCEEDING 6FT.
4. CONDUCTORS SHALL HAVE BE TYPE THHN, THWN OR XHHW RATED AT 90 DEG C BUT SIZED FOR 75 DEG C AMPACITY, RATED FOR 600 VOLTS AND SHALL BE COPPER, 120 VOLT BRANCH CIRCUITS OF MORE THAN 100' FROM CENTER OF LOAD TO PANEL SHALL BE #10.
5. MINIMUM SIZE WIRE FOR POWER AND LIGHTING CIRCUITS SHALL BE #12 AWG. CONTROL WIRING AND LOW VOLTAGE SYSTEMS SHALL BE MINIMUM #14 AWG. CONDUCTORS #10 OR LARGER SHALL BE STRANDED, COLOR-CODED PER MASSACHUSETTS ELECTRICAL CODE.
6. FLEXIBLE METAL CONDUIT OF SHORT LENGTHS (MAXIMUM 24 INCHES) SHALL BE PROVIDED AT ALL MOTORS AND EQUIPMENT SUBJECT TO VIBRATION OR MOVEMENT. LIQUID-TIGHT FLEXIBLE CONDUIT SHALL BE USED IN WET LOCATIONS AND FOR MOTORS.
7. FITTINGS FOR ELECTRICAL METALLIC TUBING SHALL BE STEEL SET SCREW TYPE.
8. ALL POWER WIRING INCLUDING DISCONNECTING DEVICES SHALL BE ACCOMPLISHED UNDER THIS SECTION AND ALL CONTROL WIRING FOR AUXILIARY AND PILOT CONTROL DEVICES UNDER HVAC.

G. MATERIALS:

1. ALL MATERIALS SHALL BE LISTED BY UNDERWRITER'S LABORATORIES.

H. WIRING DEVICES:

1. ALL WIRING DEVICES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY ARROW-HART, HUBBELL, GENERAL ELECTRIC, LEVITON OR AN APPROVED EQUAL. COORDINATE LOCATIONS WITH ARCHITECT AND OWNER.
2. ALL WIRING DEVICES SHALL HAVE FACES AND SWITCH HANDLES OF NYLON. COLOR AND FACE PLATE FINISHES TO BE SELECTED BY ARCHITECT AND OWNER.
3. DUPLEX CONVENIENCE OUTLETS SHALL BE RATED 20 AMP, 120-VOLTS GROUNDING TYPE, EQUAL TO HUBBELL #5362.
4. TOGGLE SWITCHES SHALL BE RATED 20-AMP AT 120-277 VOLTS AND SHALL BE UL LISTED FOR MOTOR LOADS UP TO 80 PERCENT OF RATED AMPERAGE AND 100 PERCENTAGE OF RATED AMPERAGE FOR FLUORESCENT, RESISTANCE OR TUNGSTEN LOADS.
5. FLUSH STYLE ONE-PIECE POKE-THRU FOR EXISTING/NEW CONCRETE DECK APPLICATION: COMBINATION POWER & TEL/DATA, 4" CORE HOLE, 4 HOUR FIRE-RATED, TWO DUPLEX RECEPTACLES & PORTS FOR COMMUNICATION DEVICES. HUBBELL #S1PTAVFIT/S1SP4X4/S1CFCBL OR EQUAL
6. FLUSH STYLE FLOOR BOX FOR EXISTING/NEW CONCRETE SLAB ON GRADE APPLICATION: COMBINATION POWER & TEL/DATA, TWO DUPLEX RECEPTACLES & PORTS FOR COMMUNICATION DEVICES. HUBBELL #S1PFB/S1SP4X4/S1CFCBL OR EQUAL.
7. FLUSH STYLE ONE-PIECE POKE-THRU FOR EXISTING/NEW CONCRETE DECK APPLICATION: COMBINATION POWER & TEL/DATA, 4" CORE HOLE, 4 HOUR FIRE-RATED, ONE 3/4" LIQUID TIGHT FLEXIBLE CONNECTION TO QUADPLEX RECEPTACLE & ONE 1 1/2" LIQUID TIGHT FLEXIBLE CONNECTION TO COMMUNICATION DEVICE. HUBBELL #S1PTAVFIT/S1SPFFBL OR EQUAL.

I. LIGHTING:

1. LIGHTING SYSTEMS: THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE SYSTEM, CONSISTING OF FEEDERS, CONDUIT AND FITTINGS, WIRE, JUNCTION BOXES, SWITCHES, AND LIGHT FIXTURES, COMPLETE WITH LAMPS. SEE DRAWINGS FOR FIXTURE SCHEDULE.
2. BALLASTS FOR FLUORESCENT LAMPS SHALL BE RAPID-START TYPE ETL CERTIFIED, CLASS P, UL LISTED, HIGH POWER-FACTOR TYPE, ELECTRONIC CLASS A NOISE, THD LESS THAN 20%.
3. LAMPS SHALL BE ENERGY SAVING TYPE. CRI FOR FLUORESCENT LAMPS SHALL BE NOT LESS THAN .82 ALL AS LISTED ON FIXTURE SCHEDULE.
4. EMERGENCY EXIT AND EGRESS LIGHTING WILL BE PROVIDED BY THE USE OF BATTERY/BALLAST SYSTEMS INTEGRAL WITH THE LIGHTING FIXTURE. SYSTEM SHALL BE SUFFICIENT TO OPERATE ONE LAMP IN FIXTURE TO COMPLY WITH CODE REQUIREMENTS. BATTERY/BALLAST SYSTEMS SHALL BE MANUFACTURED BY BODINE TYPE B50 OR EQUAL.
5. EMERGENCY LIGHTING BATTERY UNITS SHALL BE WITH 12 VOLT, LONG LIFE, LEAD-CALCIUM BATTERIES. UNITS SHALL BE FULLY AUTOMATIC, WITH SOLID STATE BATTERY CHARGER, AND VOLTMETER. LIGHTING HEADS SHALL BE MOUNTED ON THE UNIT, REMOTE HEADS SHALL ALSO BE PROVIDED IF SHOWN ON THE DRAWINGS.

J. SURFACE METAL RACEWAY:

1. SURFACE METAL RACEWAY SHALL BE INSTALLED WITHOUT WIRING AS SHOWN ON DRAWINGS.
2. BASE SHALL HAVE TWO EQUAL COMPARTMENTS (ONE FOR POWER AND ONE FOR COMMUNICATIONS WIRING) WITH OVERALL DIMENSIONS OF 1 3/4 INCH DEEP AND 4 3/4 INCH WIDE.
3. RACEWAY SYSTEM MUST ALLOW FUTURE ADDITION OF FLUSH MOUNTED STANDARD WIRING DEVICES AND COVER PLATES WITHIN EITHER OF THE TWO COMPARTMENTS WITHOUT ENCROACHING UPON THE OTHER.
4. PROVIDE ALL NECESSARY COUPLINGS AND FITTINGS FOR A COMPLETE AND CONTINUOUS SYSTEM AS SHOWN ON PLANS.
5. AT THE LOCATIONS INDICATED, PROVIDE TWO EMPTY 1 1/4 INCH CONDUITS FROM RACEWAY, CONCEALED IN WALL TO STUB OUT FROM WALL AT 10 FEET ABOVE FINISHED FLOOR. CONNECT ONE CONDUIT TO EACH OF THE TWO COMPARTMENTS WHILE MAINTAINING A SEPARATION BETWEEN THE TWO.
6. COLOR SHALL BE SELECTED BY ARCHITECT.

K. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES: FUSIBLE OR NON-FUSIBLE TYPE, AS NOTED, EQUIPPED WITH AN EXTERNAL LEVELER OR HANDLE FOR MANUAL OPERATION. PROVIDE FUSE HOLDERS WHICH WILL ACCEPT ONLY UL CLASS R FUSES. PROVIDE SOLID NEUTRAL CONDUCTORS THROUGHOUT AND FUSES RATED FOR EQUIPMENT AND CONDUCTORS SERVED.
2. PROVIDE HEAVY DUTY SWITCHES, IN NEMA 1 ENCLOSURE. PROVIDE NEMA TYPE 3R SWITCHES WHERE EXPOSED TO THE WEATHER.

L. FIRE ALARM SYSTEM:

1. THE EXISTING FIRE ALARM SYSTEM IS AN ADDRESSABLE, NON-CODED, MICROPROCESSOR-BASED SYSTEM WITH MANUAL AND AUTOMATIC ALARM INITIATION AND AUTOMATIC ALARM VERIFICATION FOR ALARMS INITIATED BY DESIGNATED SMOKE DETECTOR ZONES.
2. PROVIDE FACTORY AUTHORIZED SERVICES TO REPROGRAM FACP (FIRE ALARM CONTROL PANEL) AS NECESSARY TO INCORPORATE CHANGES.
3. RECALCULATE THE POWER SUPPLY AND BATTERY SUPPLY REQUIREMENTS RESULTING FROM THE ADDITIONAL DEVICES. DETERMINE IF EXISTING BATTERIES AND POWER SUPPLIES ARE SUFFICIENT FOR MAINTAINING THE EXISTING SYSTEM DESIGN CHARACTERISTIC WHEN THE NEW DEVICES ARE ADDED TO IT. PROVIDE ADDITIONAL POWER SUPPLIES AND BATTERIES AS REQUIRED TO SATISFY THE CALCULATED NEED SHOULD THE EXISTING UNITS NOT BE SUFFICIENT.
4. PROVIDE A NEW OR UPDATED FLOOR PLAN DIRECTORY, AT THE FIRE DEPARTMENT ENTRANCE, ADJACENT TO THE REMOTE ANNUNCIATOR OR THE FIRE ALARM CONTROL PANEL WHEN NO REMOTE ANNUNCIATOR IS INCLUDED. AS A MINIMUM, PROVIDE THE FLOOR PLAN IN A CLEAR ACRYLIC SLIP SHEET HOLDER ADHERED TO THE WALL WITH CLEAR DOUBLE SIDED TAPE. IDENTIFY THE FOLLOWING INFORMATION ON THE FLOOR PLAN; ROOM NAMES, ROOM NUMBERS, FIRE EXTINGUISHER LOCATIONS, EGRESS LOCATIONS, FIRE ALARM PANEL AND FIRE ALARM REMOTE ANNUNCIATOR LOCATIONS. COORDINATE WITH BOTH THE LOCAL FIRE DEPARTMENT AND THE OWNER TO DETERMINE IF ADDITIONAL INFORMATION NEEDS TO BE SHOWN ON THE PLAN, AN ALTERNATE LOCATION FOR THE PLAN BE PREFERRED OR AN ALTERNATIVE PLAN MOUNTING METHOD BE REQUIRED. FOR A MULTI-STORY BUILDING PROVIDE AN AS BUILT PLAN BOX (WITH A COPY OF THE PLANS) WHEN DIRECTED BY THE FIRE DEPARTMENT OR PROVIDE A COPY OF THE AS-BUILT PLANS IN THE BOTTOM OF THE FIRE ALARM CONTROL PANEL WHEN SUFFICIENT SPACE PERMITS AND THE FIRE DEPARTMENT ALLOWS.
5. THE SYSTEM WILL BE ARRANGED TO SOUND AN EVACUATION GENERAL ALERT SIGNAL. SMOKE AND HEAT DETECTOR, PULL STATIONS (DOUBLE ACTION), FLOW SWITCHES AND ADA APPROVED AUDIO/VISUAL DEVICES WILL BE INSTALLED AS REQUIRED. BEACON/FLASHING LIGHTS WILL BE INSTALLED TO ASSIST FIRE DEPARTMENT IF NECESSARY.
6. COMPLIANCE: NATIONAL ELECTRIC CODE, NFPA 72 AND NFPA 101.
7. FIRE ALARM CHARACTERISTICS:
   a. DEVICES SHALL MATCH THE BUILDING FACP.
   b. ALARM INDICATION: HORNS AND STROBES.
8. FIRE ALARM SYSTEM COMPONENTS:
   ALL NEW DEVICES SHALL BE UL LISTED FOR USE WITH EXISTING SYSTEM.
   a. MANUAL PULL STATIONS: ADDRESSABLE DOUBLE-ACTION TYPE, METAL OR PLASTIC.
   b. SMOKE DETECTORS: ADDRESSABLE UL 268, SELF-RESTORING TYPE WITH VISUAL INDICATOR, PHOTOELECTRIC TYPE.
   c. THERMAL DETECTORS: ADDRESSABLE FIXED-TEMPERATURE AND RATE-OF-RISE.
   d. FIRE ALARM HORNS: ELECTRIC VIBRATING POLARIZED TYPE.
   e. VISUAL ALARM DEVICES: HIGH-INTENSITY 75CD STROBE LIGHTS.
   f. DEVICE LOCATION-INDICATING LIGHTS: SYSTEM-VOLTAGE-INDICATING LIGHT.
   g. EMERGENCY POWER SUPPLY: BATTERY OPERATED 24-HOUR OPERATION CAPACITY.
   h. LINE-VOLTAGE AND LOW-VOLTAGE CIRCUITS: SOLID COPPER CONDUCTORS WITH RATED INSULATION, COLOR CODED.
   i. INSTALLATION: CONDUIT OR UL LISTED FIRE-RATED MC CABLE ABOVE CEILING.

L. INSPECTION AND TESTS:

1. TEST AND INSPECT ALL WORK PROVIDED UNDER THE CONTRACT AS REQUIRED BY THE CODES, STANDARDS AND AUTHORITIES HAVING JURISDICTION. A PROPERLY EXECUTED CERTIFICATION OF INSPECTION SHALL BE PROVIDED.
2. THE SYSTEMS SHALL BE TEST FREE FROM THE SHORT CIRCUITS AND GROUNDS, FREE FROM MECHANICAL AND ELECTRICAL DEFECTS, AND SHALL SHOW ACCEPTABLE INSULATION RESISTANCE LEVELS BETWEEN PHASE CONDUCTORS AND GROUND. TESTS SHALL BE PERFORMED BY THE CONTRACTOR AT THE COMPLETION OF THE WORK AND THE TEST REPORT SHALL BE FURNISHED TO THE OWNER AND ARCHITECT.

SMMA
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OWNER REVIEW

NAME	DATE

NO.	DATE	DESCRIPTION
1	2/5/2010	PERMIT SET

ISSUE LOG
△ = CLOUDED CHANGE

TD BANK
TENANT RENOVATION
1 PORTLAND SQUARE
PORTLAND, ME 04112

SPECIFICATIONS

SCALE	NTS
DRAWN BY	SFM
CHECKED BY	
PROJ. ARCH. / ENGR.	RG
PROJ. MGR.	SKD
JOB NO.	09063/ 09063.01

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