

# SPECIFICATIONS

- I. SCOPE**
- INSTALL ALL ELECTRICAL WORK COVERED BY THESE SPECIFICATIONS AND APPROVED DRAWINGS. PROVIDE ALL MATERIAL, LABOR, TRANSPORTATION, TOOLS, SUPERVISION, ETC., NECESSARY TO COMPLETE THE TOTAL ELECTRICAL JOB. ALL ITEMS NOT SPECIFICALLY MENTIONED HEREIN WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION SHALL BE PROVIDED.
  - ELECTRICAL COMPONENTS INCLUDING BUT NOT LIMITED TO CONDUCTOR SIZE, OVERCURRENT PROTECTIVE DEVICE AND DISCONNECT SWITCHES ARE BASED ON POWER REQUIREMENTS FOR EQUIPMENT SPECIFIED AS SHOWN ON THE CONTRACT DOCUMENTS. PRIOR TO INSTALLING WORK, CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT OF ALL TRADES REQUIRING ELECTRICAL CONNECTIONS.
  - FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH ACTUAL EQUIPMENT SUPPLIED.
  - VERIFY EXACT LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING AND RACEWAY SYSTEMS PRIOR TO TRENCHING, PROVIDE NECESSARY TRENCHING, BACKFILL, EXCAVATION, SUPPORTS, SERVICES (CONDUIT AND/OR WIRE), FILLWORKS, TRANSFORMER PADS, SAWCUTTING AND PATCHING, CONCRETE/PAVING, ETC. AS REQUIRED. CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY DRAWINGS AND REQUIREMENTS.
  - EXAMINATION OF BIDDING DOCUMENTS
    - EACH BIDDER SHALL EXAMINE THE BIDDING DOCUMENTS CAREFULLY AND MAKE WRITTEN REQUEST TO THE ARCHITECT FOR INTERPRETATION OR CORRECTION OF ANY DISCREPANCIES, AMBIGUITY, INCONSISTENCY OR ERROR THEREIN. ANY INTERPRETATION OR CORRECTION WILL BE ISSUED BY THE ARCHITECT AS AN ADDENDUM ONLY WRITTEN INTERPRETATION OR CORRECTIONS BY ADDENDUM SHALL BE BINDING. CONTRACTOR SHALL INCLUDE IN HIS BID, LABOR, MATERIALS AND METHODS OF CONSTRUCTION FOR COMPLETE INSTALLATION. AFTER AWARD OF CONTRACT, NO ALLOWANCE OR EXTRA COMPENSATION WILL BE MADE IN BEHALF OF THE CONTRACTOR DUE TO HIS FAILURE TO MAKE THE WRITTEN REQUESTS AS DESCRIBED ABOVE.
    - FAILURE TO REQUEST CLARIFICATION OF ANY INADEQUACY, OMISSION OR CONFLICT WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY. THE SILENCING OF THE CONTRACT WILL BE CONSIDERED IMPLICITLY DENOTING THAT THE CONTRACTOR HAS A THOROUGH COMPREHENSION OF THE FULL INTENT AND SCOPE OF THE WORKING DRAWINGS AND SPECIFICATIONS.

- II. CODES AND FEES**
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE ENFORCED EDITION OF THE NATIONAL ELECTRICAL CODE AND ALL LOCAL AND STATE CODES AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY THE BUILDING AND SAFETY CODES AND ORDINANCES, AND THE RULES AND REGULATIONS OF ANY LEGAL BODY HAVING JURISDICTION.

	120/208 VOLT SYSTEM	277/480 VOLT SYSTEM
PHASE A - BLACK	PHASE A - BLACK	PHASE A - BROWN
PHASE B - RED	PHASE B - RED	PHASE B - ORANGE
PHASE C - BLUE	PHASE C - BLUE	PHASE C - YELLOW
NEUTRAL - WHITE	NEUTRAL - WHITE	NEUTRAL - GREY
GROUND - GREEN	GROUND - GREEN	GROUND - GREEN

- III. WORKMANSHIP**
- THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL EQUIPMENT. COORDINATE DEVICE LOCATIONS WITH DOOR SWINGS, CABINETS, COUNTERS, ETC. AS INDICATED ON THE ARCHITECTURAL DRAWINGS. DO NOT SCALE ELECTRICAL PLANS. OBTAIN DIMENSIONS FOR LAYOUT OF EQUIPMENT FROM ARCHITECTURAL PLANS UNLESS INDICATED OTHERWISE.
  - COORDINATE WITH ALL OTHER TRADES AND SUBCONTRACTORS PERFORMING WORK ON THIS PROJECT. MINOR OFFSETS IN LOCATIONS OF FIXTURES, DEVICES, ETC., SHALL BE MADE TO AVOID CONFLICTS WITH OTHER TRADES. SUCH MODIFICATIONS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO THE WORK BEING PERFORMED.
  - MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED, ARE TO THE CENTER LINE OF THE EQUIPMENT AND/OR DEVICE EXCEPT THE MOUNTING HEIGHT OF SUSPENDED LIGHT FIXTURES WHICH IS TO THE BOTTOM OF FIXTURE.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.

- IV. SUBSTITUTIONS**
- ALL COST INCURRED BY THE ACCEPTANCE OF SUBSTITUTIONS SHALL BE BORNE BY THE CONTRACTOR. PROOF FOR THE EQUIVALENCY OF SUBSTITUTIONS SHALL BE BY THE CONTRACTOR.

- V. U.L. LISTING**
- ALL ELECTRICAL ITEMS COVERED BY THIS SPECIFICATION SHALL BE U.L. LABELED AND LISTED FOR THEIR SPECIFIC USE.

- VI. ELECTRICAL SERVICE**
- THE ELECTRICAL CONTRACTOR SHALL PAY ALL COSTS REQUIRED BY THE LOCAL UTILITY COMPANY PROVIDING SERVICES INDICATED. ELECTRICAL CONTRACTOR SHALL COORDINATE METERING, TRANSFORMER PAD, CONNECTION POINTS AND GROUNDING WITH UTILITY COMPANY.
  - WIRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES AND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR 75 DEGREE C. MINIMUM.

- VII. WARRANTY**
- WORK SHALL BE WARRANTED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.

- VIII. SPECIFICATIONS**
- GROUNDING
    - THE BUILDING ELECTRICAL SYSTEMS SHALL BE SOLIDLY GROUNDED. ALL NON CURRENT CARRYING METAL PARTS OF THE ELECTRICAL SYSTEM, I.E., RACEWAYS, EQUIPMENT ENCLOSURES, FRAMES, JUNCTION AND OUTLET BOXES AND OTHER CONDUCTIVE ITEMS IN CLOSE PROXIMITY WITH ELECTRICAL CIRCUITS, SHALL BE GROUNDED TO PROVIDE A LOW IMPEDANCE PATH FOR POTENTIAL GROUND FAULTS.
    - EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED IN ALL RACEWAYS AND CABLES.
    - THE NEUTRAL AND GROUND BUS SHALL BE BONDED TOGETHER AT ALL SERVICE EQUIPMENT.

- G. WIRING DEVICES**
- COMMERCIAL GRADE**
- DUPLEX RECEPTACLES SHALL BE RATED 20 AMP, HUBBELL CS1852 OR APPROVED EQUAL.
  - TOGGLE SWITCHES SHALL BE 20 AMP, HUBBELL CS1121 OR APPROVED EQUAL.
  - DIMMER SWITCHES SHALL BE SLIDER TYPE, LUTRON VAREO SERIES.
  - DEVICE PLATES SHALL BE NYLON (UNLESS NOTED OTHERWISE).
  - COLOR OF DEVICES AND DEVICE PLATES SHALL BE AS DETERMINED BY ARCHITECT.
- II. DISCONNECT SWITCHES**
- SAFETY-TYPE DISCONNECT SWITCHES SHALL BE HEAVY DUTY WITH QUICK MAKE, QUICK BREAK MECHANISM WITH INTERLOCKING COVER WHICH NORMALLY CANNOT BE OPENED WHEN THE SWITCH IS IN THE 'ON' POSITION. SWITCH SHALL HAVE PROVISIONS FOR PAD-LOCKING IN THE OPEN OR CLOSED POSITION.
  - FUSIBLE DISCONNECT SWITCHES SHALL HAVE REJECTION-TYPE FUSEHOLDERS. FUSES SHALL BE NON-RENEWABLE, DUAL ELEMENT TIME DELAY "RAT" OR "RIS", OR AS SPECIFIED OTHERWISE.
  - ACCEPTABLE MANUFACTURERS: Eaton/Cutler Hammer, G.E., Siemens OR SQUARE D.

- I. FIRE ALARM SYSTEM**
- FIRE ALARM SYSTEM IS EXISTING.
  - CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT FOR A COMPLETE FIRE ALARM SYSTEM, INCLUDING THE FOLLOWING:
    - ENGINEERED DRAWINGS, CALCULATIONS, AND MATERIAL SUBMITTALS APPROVED BY AUTHORITY HAVING JURISDICTION.
    - COORDINATION OF WORK IN THIS SECTION WITH ALL TRADES.
    - COMPLETE MONITORING SERVICE CONNECTION TO TELEPHONE BACKBOARD.
    - INSPECTIONS AND TESTS.
    - ONE (1) YEAR WARRANTY

- J. PENETRATIONS**
- ALL PENETRATIONS THROUGH RATED WALLS, FLOORS AND/OR CEILINGS SHALL BE SEALED WITH THE APPROPRIATELY RATED FIRE-SEALING MATERIAL BY 3M COMPANY, THOMAS & BETTS, METACALUK, OR APPROVED EQUAL.
- K. SUBMITTALS**
- PANELBOARDS, WIRING DEVICES, SWITCHES AND DISCONNECTS, LIGHTING FIXTURES, AND FUSE SUBMITTALS SHALL BE REQUIRED, AND ARE TO INCLUDE MANUFACTURER'S DATA, TEST REPORTS, PERFORMANCE DATA AND CERTIFICATIONS.

- L. COMMUNICATIONS CONDUIT/BOXES**
- THE NUMBER OF BENDS IN A CONDUIT SECTION RUN SHALL NOT EXCEED TWO (2) 90-DEGREE BENDS OR EQUIVALENT OF SWEEPS AND RADIIUS BENDS.
  - IN AREAS WITH NON-ACCESSIBLE CEILINGS, TELEPHONE CONDUITS SHALL BE CONTINUOUS FROM THE OUTLET BOX TO THE TELEPHONE EQUIPMENT BACKBOARD AND TERMINATED WITH A NYLON GROMMET.
  - EACH HORIZONTAL HOME RUN CONDUIT CAN SERVE FROM ONE (1) TO THREE (3) OUTLET BOXES. FOR ONE (1) OUTLET BOX, A 3/4" CONDUIT SHALL BE USED, MINIMUM. FOR TWO (2) OUTLET BOXES, A 1" CONDUIT SHALL BE USED, MINIMUM. FOR THREE (3) OUTLET BOXES, A 1-1/4" CONDUIT SHALL BE USED, MINIMUM.
  - THE DIMENSIONS OF THE OUTLET BOX SHALL BE 4" X 4" SQUARE WITH A MINIMUM DEPTH OF 2-1/4". BOXES SHALL BE EQUIPPED WITH SINGLE DEVICE ADAPTERS (OR TWO-DEVICE ADAPTERS WHERE NEEDED), WHERE INSTALLED IN PLASTER, GYPSUM BOARD, TILE, ETC., ADAPTERS SHALL BE RAISED TO COMPENSATE FOR THE THICKNESS OF THE WALL FINISH.

- M. RENOVATIONS AND ADDITIONS**
- WORK REQUIRING INTERRUPTION OF ELECTRICAL POWER, WHICH WOULD ADVERSELY AFFECT THE NORMAL OPERATION OF THE OWNER'S PROPERTY, SHALL BE DONE AT A TIME OTHER THAN NORMAL WORKING HOURS. NORMAL WORKING HOURS SHALL BE CONSIDERED 8:00 A.M. TO FIVE P.M. MONDAY THROUGH FRIDAY. SCHEDULE ALL OUTAGES WITH THE OWNER AND ARCHITECT PRIOR TO SHUTDOWN.
  - PRIOR TO SUBMITTING BIDS ON THE PROJECT, VISIT THE SITE TO BECOME AWARE OF EXISTING CONDITIONS WHICH MAY AFFECT THE COST OF THE PROJECT.
  - WHERE WORK UNDER THIS PROJECT REQUIRES EXTENSION, RELOCATION, RECONNECTION OR MODIFICATION TO EXISTING EQUIPMENT OR SYSTEMS, THE EQUIPMENT OR SYSTEMS SHALL BE RESTORED TO OPERATING CONDITION. EXTEND NEW HOMERUNS OR CIRCUIT EXTENSIONS WHERE REQUIRED. DISCONNECT AND REMOVE ALL EQUIPMENT INDICATED TO BE DEMOLISHED, INCLUDING OUTLET BOXES, DEVICES, RACEWAYS AND CONDUITS.
  - CARE SHALL BE EXERCISED IN THE REMOVAL AND STORAGE OF EQUIPMENT INDICATED TO BE RELOCATED, REMOVED AND/OR REUSED. PRIOR TO PLACING BACK INTO SERVICE, EXISTING EQUIPMENT SHALL BE CLEANED AND/OR RELAMPED. MARKED OR CHIPPED SURFACES SHALL BE TOUCHED UP. DISPOSE OF ANY MATERIAL NOT WISHED TO BE KEPT BY THE OWNER.
  - PROVIDE ALL CORING, CUTTING AND PATCHING TO EXISTING WALLS, FLOORS, ETC. REQUIRED FOR THE REMOVAL OF EXISTING WORK OR THE INSTALLATION OF NEW WORK.

# ELECTRICAL ABBREVIATIONS

A	AMPERE	MCB	MAIN CIRCUIT BREAKER
AC	ALTERNATING CURRENT	MCC	MOTOR CONTROL CENTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER	MF	MAIN FUSE
AF	ABOVE FINISHED FLOOR	MH	MOUNTING HEIGHT
ARC	AMPERE INTERRUPTING CAPACITY	MLO	MAIN LUGS ONLY
AL	ALUMINUM	MT	MOUNT
ATS	AUTOMATIC TRANSFER SWITCH	MTG	MOUNTING
AWG	AMERICAN WIRE GAUGE	NC	NORMALLY CLOSED
BKR	BREAKER	NEC	NATIONAL ELECTRICAL CODE
CB	CIRCUIT BREAKER	NF	NON FUSED
CMTV	COMMUNITY ANTENNA TELEVISION	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CCTV	CLOSED CIRCUIT TELEVISION	NKC	NOT IN CONTRACT
CKT	CIRCUIT	NL	NIGHT LIGHT
CLG	CEILING	NO	NORMALLY OPEN
CPU	CENTRAL PROCESSING UNIT	NTS	NOT TO SCALE
CU	COPPER	P	POLE
CT	CURRENT TRANSFORMER	PBL	PANELBOARD
DC	DIRECT CURRENT	PVC	POLY VINYL CHLORIDE
DN	DOWN	RC	REMOTE CONTROL
EX	EXISTING	RECPT	RECEPTACLE
E	EMERGENCY	REF	REFERENCE
FA	FIRE ALARM	RMS	ROOT MEAN SQUARE
FACP	FIRE ALARM CONTROL PANEL	ST	SHUNT TRIP
FBR	FEDER	SYM	SYMMETRICAL
FL	FLOOR	SW	SWITCH
F	FUSE OR FUSED	SWBD	SWITCHBOARD
FNVR	FULL VOLTAGE NON REVERSING	TB	TERMINAL BOX
GE	GENERATOR	TC	TIME CLOCK
GF	GROUND FAULT (DETECTOR)	TEL	TELEPHONE
GRFC/GR	GROUND FAULT CIRCUIT INTERRUPTER	TV	TELEVISION
GRC	GALVANIZED RIGID STEEL CONDUIT	TYP	TYPICAL
G OR GND	GROUND	UG	UNDERGROUND
HT	HEIGHT	UL	UNDERWRITERS LABORATORY
IE	HIGH INTENSITY DISCHARGE	UNO	UNLESS NOTED OTHERWISE
HP	HORSE POWER	UPS	UNINTERRUPTED POWER SUPPLY
HOA	HAND OFF AUTOMATIC	V	VOLTS
HD	HERTZ	VA	VOLT-AMPERE
ISO	ISOLATED	W	WAITS
JB	JUNCTION BOX	WP	WEATHERPROOF COVER (RECEPTACLES SHALL BE WEATHER RESISTANT TYPE)
K	KILO, THOUSAND	XMR	TRANSFORMER
KCML	THOUSAND CIRCULAR MILS	XP	EXPLOSION PROOF
LED	LIGHT EMITTING DIODE	Y	WYE
M	MOTOR	Y	WYE
MATV	MASTER ANTENNA TELEVISION	Z	IMPEDANCE

# RENOVATION AND DEMOLITION NOTES

- ATTENTION IS DRAWN TO THE FACT THAT THIS PROJECT INVOLVES RENOVATION OF AN EXISTING FACILITY.
- CONTRACTOR SHALL VISIT THE SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS. VERIFY LOCATIONS, CONDUIT ROUTING, SYSTEM COMPONENTS ETC. BEFORE SUBMITTING A BID. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT BEFORE THE BID DATE.
- SCHEDULING FOR REQUIRED SHUTDOWNS AND OTHER DISTURBANCES TO THE BUILDING SHALL BE COORDINATED WITH THE OWNER OR BUILDING MANAGEMENT PRIOR TO BEGINNING WORK.
- ANY EQUIPMENT AND/OR MATERIALS REMOVED FROM SERVICE BECOMES THE PROPERTY OF THE CONTRACTOR UNTIL IT HAS BEEN PLACED BACK INTO SERVICE OR UNTIL IT HAS BEEN DISPOSED OF. EQUIPMENT PLACED BACK INTO SERVICE SHALL BE IN GOOD WORKING CONDITION. TRANSPORTATION AND DISPOSAL OF DEMOLISHED EQUIPMENT AND MATERIALS SHALL BE TO AN APPROPRIATE DISPOSAL LOCATION OFF PROJECT SITE.
- OWNER SHALL BE GIVEN THE FIRST RIGHT OF REFUSAL FOR DEMOLISHED MATERIALS AND EQUIPMENT.
- CONTRACTOR SHALL PATCH AND PREPARE WALLS FOR SCHEDULED FINISH WHERE EQUIPMENT AND DEVICES ARE REMOVED FROM WALLS THAT ARE TO BE RETAINED.
- EXISTING CIRCUITS INDICATED ARE DIAGRAMMATIC ONLY. VERIFY EXACT ROUTING OF EXISTING CONDUIT RUNS AND NUMBERS OF CONDUCTORS AND EXTEND EXISTING CIRCUITS TO NEW PANELBOARD LOCATIONS AS REQUIRED TO ACCOMPLISH DESIGN INTENT.
- CONTRACTOR SHALL PROPERLY CAP, SEAL, OR TERMINATE EXISTING TO REMAIN SYSTEMS THAT ARE PARTIALLY DEMOLISHED.
- IN THE COURSE OF REMOVING EXISTING LIGHT FIXTURES, CONTRACTOR SHALL NOT DISPOSE OF LAMPS AS GENERAL DEBRIS. SPECIAL CARE SHALL BE TAKEN NOT TO BREAK LAMPS. SPECIAL CONTAINERS WILL BE PROVIDED FOR THE COLLECTION OF CERTAIN BALLASTS. IF A BALLAST IS LABELED INDICATING THAT IT CONTAINS NO POIS, THEN IT MAY BE DISPOSED OF AS GENERAL DEBRIS. OTHERWISE, THE BALLAST SHALL BE PLACED IN CONTAINERS FOR POB'S AND SHALL BE SET ASIDE FOR HANDLING BY OWNER.
- CONTRACTOR SHALL MAINTAIN CONTINUITY OF POWER CIRCUITS TO EXISTING-TO-REMAIN-IN-USE EQUIPMENT. COORDINATE WORK WITH OWNER TO MINIMIZE IMPACT TO OWNER'S OPERATION.
- IN THE EVENT THERE IS REMOVAL OF EXISTING ELECTRICAL EQUIPMENT, DEVICES, CONDUIT, WIRING, ETC. THE CONTRACTOR SHALL REMOVE ASSOCIATED WIRING BACK TO THE SOURCE OF FEED UNLESS OTHERWISE NOTED, WHERE A PORTION OF A BRANCH CIRCUIT IS TO BE MAINTAINED, REMOVE CIRCUITING BACK TO LAST ENERGIZED DEVICE.
- CONTRACTOR SHALL MAINTAIN AND RESTORE ANY INTERRUPTED CONDUITS AND/OR CIRCUITING PASSING THROUGH RENOVATED AREAS AND SERVICING OTHER AREAS.
- RE-USE EXISTING BRANCH CIRCUIT CONDUITS WHERE POSSIBLE. ALL UNUSED CONDUIT SHALL BE REMOVED FROM THE JOB SITE UNLESS DIRECTED OTHERWISE BY THE ARCHITECT/OWNER.
- UPDATE DIRECTORIES IN EXISTING PANELBOARDS TO REFLECT CHANGES, DELETIONS AND ADDITIONS FOR THE RENOVATION.
- EXISTING FIRE ALARM SYSTEM AND DEVICES SHALL REMAIN IN SERVICE TO THE MAXIMUM EXTENT POSSIBLE. CONTRACTOR SHALL REWORK THE SYSTEM AS NECESSARY TO MAINTAIN CONTINUITY AND MAXIMIZE AREA COVERAGE INCLUDING COMMISSIONING OF NEW WORK WHEN COMPLETE.
- RECONDITIONED ELECTRICAL EQUIPMENT SHALL BE MARKED WITH THE NAME, TRADEMARK, OR OTHER DESCRIPTIVE MARKING BY WHICH THE ORGANIZATION RESPONSIBLE FOR RECONDITIONING THE ELECTRICAL EQUIPMENT CAN BE IDENTIFIED, ALONG WITH THE DATE OF THE RECONDITIONING. RECONDITIONED EQUIPMENT SHALL BE IDENTIFIED AS "RECONDITIONED" AND APPROVAL OF THE RECONDITIONED EQUIPMENT SHALL NOT BE BASED SOLELY ON THE EQUIPMENT'S ORIGINAL LISTING.

# ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	HEIGHT
\$ / \$ / \$ / \$	SINGLE POLE SINGLE THROW / THREE WAY / FOUR WAY TOGGLE SWITCH (NOTE L-1)	48"
\$ / \$ / \$ / \$	MOTOR RATED SWITCH / KEYSWITCH / TIMER SWITCH	46"
⊕ / ⊕ / ⊕ / ⊕	SINGLE / DUPLEX / QUAD RECEPTACLE OUTLET (NOTE L-1)	18"
⊕ / ⊕ / ⊕ / ⊕	GFCI DUPLEX / GFCI DUPLEX ABOVE COUNTER / GFCI QUAD RECEPTACLE (NOTE L-1)	18"/43"
⊕ / ⊕ / ⊕ / ⊕	DUPLEX / QUAD / GFCI QUAD RECEPTACLE OUTLET ABOVE COUNTER MOUNTED (NOTE L-1)	43"
⊕	ISOLATED GROUND DUPLEX RECEPTACLE OUTLET	18"
⊕	SPECIAL PURPOSE RECEPTACLE OUTLET, NEMA CONFIGURATION TO MATCH PLUG, (NOTE L-1)	18"
⊕	SPLIT WIRED DUPLEX RECEPTACLE. ONE RECEPTACLE SHALL BE CONTROLLED (NOTE L-1) WHERE USED TO CONSERVE ENERGY. RECEPTACLE SHALL BE SUITABLY MARKED PER NEC REQUIREMENTS.	18"
⊕ / ⊕ / ⊕	DUPLEX RECEPTACLE OUTLET, CEILING MOUNTED / FLOOR MOUNTED / CLOCK (WALL RECESSED)	
⊕ / ⊕ / ⊕	ARROWHEAD INDICATES HOMERUN, X 1.3.5 ADJACENT TO HOMERUN ARROWHEADS INDICATES HOMERUN TO PANEL X CIRCUIT NUMBERS 1,3, AND 5.	
⊕ / ⊕ / ⊕	INDICATES CIRCUIT CONTRIBUTION OF CIRCUITS 3 AND 5 OF PANEL X.	
⊕ / ⊕ / ⊕	RACEWAY/CABLE CONCEALED IN WALL AND/OR ABOVE CEILING	
⊕ / ⊕ / ⊕	RACEWAY CONCEALED BELOW GRADE OR IN SLAB	
⊕ / ⊕ / ⊕	RACEWAY/CABLE CONCEALED IN WALL AND/OR ABOVE CEILING - EMERGENCY CIRCUIT	
⊕ / ⊕ / ⊕	RACEWAY INSTALLED EXPOSED	
⊕ / ⊕ / ⊕	GROUNDING CONNECTION (SYSTEM AND/OR EQUIPMENT)	
⊕ / ⊕ / ⊕	CONDUIT TURNING UP/DOWN	
⊕ / ⊕ / ⊕	CONDUIT STUB, TERMINATE IN INSULATED BUSHING OR CAP IF UNDERGROUND	
⊕ / ⊕ / ⊕	LIGHTING FIXTURE, 2X4, 1X4, 2X2	
⊕ / ⊕ / ⊕	LIGHTING FIXTURE, 2X4, 1X4, 2X2 - PROVIDING EMERGENCY ILLUMINATION	
⊕ / ⊕ / ⊕	LIGHTING FIXTURE RECESSED / SURFACE MOUNTED / OVERHEAD WALL MOUNTED	
⊕ / ⊕ / ⊕	EXIT SIGN, CEILING-WALL MOUNTED, SHADED QUADRANT INDICATES FACES), PROVIDE ARROWS PER PLANS.	
⊕ / ⊕ / ⊕	EMERGENCY LIGHTING FIXTURE	
⊕ / ⊕ / ⊕	PANELBOARD - WALL MOUNTED (RECESSED) / WALL MOUNTED (SURFACE)	
⊕ / ⊕ / ⊕	MOTOR	
⊕ / ⊕ / ⊕	NONFUSIBLE DISCONNECT SWITCH, RATING-POLES/NEMA ENCLOSURE	
⊕ / ⊕ / ⊕	FUSIBLE DISCONNECT SWITCH, RATING-POLES/NEMA ENCLOSURE/FUSE RATING	
⊕ / ⊕ / ⊕	FIRE ALARM MANUAL STATION	46"
⊕ / ⊕ / ⊕	FIRE ALARM HORN WITH VISUAL DEVICE, WALL MOUNTED (NOTE L-3) NUMERAL INDICATES CANDELA RATING	
⊕ / ⊕ / ⊕	FIRE ALARM HORN WITH VISUAL DEVICE, CEILING MOUNTED (NOTE L-3) NUMERAL INDICATES CANDELA RATING	
⊕ / ⊕ / ⊕	FIRE ALARM VISUAL DEVICE (CEILING / WALL) NUMERAL INDICATES CANDELA RATING (NOTE L-3)	
⊕ / ⊕ / ⊕	FIRE ALARM SMOKE DETECTOR (CELLING / WALL) (NOTE L-4)	
⊕ / ⊕ / ⊕	FIRE ALARM CONTROL PANEL, SURFACE / RECESSED	
⊕ / ⊕ / ⊕	COMBINATION TELEPHONE/DATA OUTLET, WALL MOUNTED / ABOVE COUNTER (NOTE L-1, L-2) / FLOOR MOUNTED	18"/43"
⊕ / ⊕ / ⊕	TELEVISION OUTLET WALL MOUNTED (NOTE L-1) / CEILING MOUNTED / FLOOR MOUNTED, 1" EC TO ABOVE CEILING	18"
⊕ / ⊕ / ⊕	WALL JUNCTION BOX FOR OPEN OFFICE FURNITURE POWER FEED	
⊕ / ⊕ / ⊕	WALL JUNCTION BOX FOR OPEN OFFICE FURNITURE DATA FEED. "N" INDICATES NUMBER OF DATA PORTS NEEDED.	

# ELECTRICAL GENERAL NOTES

- PROJECT DESIGN IS BASED UPON THE 2017 EDITION OF THE NATIONAL ELECTRICAL CODE.
- WHEN CONDUCTOR OR CONDUIT SIZE IS INDICATED FOR BRANCH CIRCUIT HOMERUN, THE CONDUCTOR AND CONDUIT SIZE INDICATED SHALL BE USED FOR THE COMPLETE CIRCUIT.
- REFER TO THE APPROPRIATE DRAWINGS (INCLUDING ARCHITECTURAL DRAWINGS) FOR THE EXACT LOCATION OF EQUIPMENT INSTALLED UNDER OTHER DIVISIONS OF THE DOCUMENTS WHICH REQUIRE ELECTRICAL SERVICE.
- CAPITAL LETTER BESIDE LIGHTING SYMBOL INDICATES FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR FIXTURE SELECTION.
- EQUIPMENT GROUNDING CONDUCTORS ARE TO BE INCLUDED IN ALL RACEWAYS AND CABLES.
- REFER TO SPRINKLER FIRE PROTECTION SHOP DRAWINGS FOR ALL FLOW AND TAMPER SWITCH LOCATIONS AND CONNECTIONS FOR THE FIRE ALARM SYSTEM.
- REFER TO ARCHITECTURAL DOOR SCHEDULES FOR DOORS REQUIRING FIRE ALARM SYSTEM INTERFACE AND SMOKE OPERATION. PROVIDE 120V POWER AND FIRE ALARM CONNECTION TO ALL FIRE/SMOKE AND SMOKE DAMPERS INDICATED ON THE MECHANICAL DRAWINGS. WHERE ANY DAMPER IS EQUIPPED WITH INTEGRAL SMOKE DETECTOR, PROVIDE A ZONE ADDRESSABLE MODULE FOR CONNECTION TO FIRE ALARM SYSTEM WIRING.
- IN BUILDINGS WITH MULTIPLE SERVICES, THE CONTRACTOR SHALL PROVIDE A PLaque AT EACH SERVICE EQUIPMENT LOCATION DENOTING ALL OTHER SERVICES IN THE BUILDING AND THE AREA SERVED BY EACH.
- ANY CABLE ROUTED TO A WALL SWITCH CONTROLLING LIGHTING SHALL CONTAIN A GROUNDED CONDUCTOR NEUTRAL IN ADDITION TO AN EQUIPMENT GROUNDING CONDUCTOR. EXCEPTION: SWITCHES IN ROOMS WITH ACCESSIBLE CEILINGS GIVING ACCESS TO OPEN WALL CAVITIES.
- CONTRACTOR SHALL ENSURE TO THE GREATEST EXTENT POSSIBLE THAT LOADS ON THE ELECTRICAL DISTRIBUTION SYSTEM ARE PHASED-BALANCED. WHERE MULTIMETER PAKES ARE INSTALLED, EQUIPMENT LUGS SHALL BE ADJUSTED ACCORDINGLY TO BALANCE PHASES.

# OCCUPANCY SENSOR SCHEDULE

DESCRIPTION	SYMBOL	WATTSTOPPER MODEL NUMBER	UNOBSTRUCTED RATED COVERAGE	MOUNTING	WATTAGE/VOLTAGE	TIME DELAY	NOTES
PASSIVE INFRARED SWITCH	\$R	PW-100	300 SF	WALL	800W/120V 1200W/277V	30 MIN.	
PASSIVE INFRARED AREA SENSOR	⊕R300	WPIR	300 SF	CORNER OF CEILING	24VDC	30 MIN.	1
		CX-100	1000 SF	CORNER OF WALL/CEILING	24VDC	30 MIN.	1,2
		CI-200	1200 SF	CEILING	24VDC	30 MIN.	1

- NOTES:**
- SENSOR REQUIRES POWER PACK (INSTALL IN ACCESSIBLE LOCATION)
  - SWIVEL MOUNTING BRACKET INCLUDED.
- APPROVED ALTERNATES: COOPER CONTROLS, PASS & SEYMOUR, LEVITON, SENSOR SWITCH, HUBBELL CONTROL SOLUTIONS

THIS SPECIFICATION HAS BEEN PREPARED BY PROGRESSIVE AE AS AN INSTRUMENT OF SERVICE. ANY PROGRESSIVE AE SHALL BE HELD HARMLESS FROM ALL LIABILITY AND DAMAGES, INCLUDING THE COST OF DEFENSE.

progressive ae

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**ISSUANCES**  
ISSUED FOR CONSTRUCTION  
2017-12-28

**REVISIONS**  
NO. DATE DESCRIPTION