

ELECTRICAL

GRAPHIC SYMBOLS

ELECTRICAL:

PNL P-1

CIRCUIT BREAKER PANELBOARD  
SEE SCHEDULES AND RISER DIAGRAM

P-1-2

PANELBOARD CIRCUIT

ELECTRIC CIRCUITING

SIMPLEX RECEPTACLE

DUPLEX RECEPTACLE

QUADRAPLEX RECEPTACLE

208/240 V, 1 PH RECEPTACLE - VERIFY WITH EQUIPMENT

SPECIAL RECEPTACLE - AS NOTED - VERIFY WITH EQUIPMENT

BLANK SINGLE GANG DEVICE BOX  
FOR DATA/TELEPHONE/CATV/COMMUNICATIONS  
3/4" CONDUIT WITH PULL CORD TO ACCESSIBLE LOCATION  
PLASTIC BUSHING ON CONDUIT END  
WIRING, DEVICES) AND DEVICE PLATE BY OTHERS

FB

FLOOR BOX  
RECESSED WITH FLUP LID AND STEEL BOX  
DUAL COMPARTMENTS FOR POWER AND COMMUNICATIONS  
DUPLEX OR QUAD RECEPTACLE AS SHOWN  
BLANK SINGLE GANG FOR COMMUNICATIONS WITH 1" CONDUIT

JUNCTION BOX FOR HARD WIRED EQUIPMENT CONNECTION  
CIRCUIT AS NOTED  
PROVIDE CONDUIT AND WIRE CONNECTION TO EQUIPMENT

RECEPTACLES & DEVICE BOXES TYPICAL:

120V RECEPTACLES - NEMA 5-15R - COMMERCIAL GRADE

1" 6" ABOVE FLOOR UNLESS OTHERWISE NOTED

+XX - MOUNTING HEIGHT XX INCHES AFF

C - COUNTER HEIGHT - VERIFY WITH CASEWORK

CLG - CEILING MOUNTED

GFI - GROUND FAULT CIRCUIT INTERRUPTER TYPE

H - MOUNT DEVICE HORIZONTAL

R - RECESSED BOX

S - SURFACE BOX

TR - TAMPER RESISTANT TYPE

USB - INTEGRAL DUAL USP CHARGING PORTS

WP - WEATHERPROOF BOX AND COVER

XPXXA

SAFETY DISCONNECT SWITCH

XPXXA - # OF POLES AND AMPS RATINGS  
2P & 3P - 240VAC; 1P - 120VAC RATED  
INDOOR - NEMA 1; OUTDOOR NEMA 3R ENCLOSURE  
/F - FUSED PER EQUIPMENT MFG REOMTS.  
OR AS NOTED TO COORD WITH EQUIPMENT SUPPLIER

EWI-1

MECHANICAL EQUIPMENT TAG

LIGHTING:

A

LIGHTING FIXTURE WITH TYPE TAG  
SHAPE OF FIXTURES VARY  
SEE LIGHTING FIXTURE SCHEDULE

ELECTRIC CIRCUITING

P-1-2

PANEL CIRCUIT NUMBER

EM

PROVIDE FIXTURE WITH INTEGRAL EMERGENCY BATTERY

EMR

PROVIDE FIXTURE WITH REMOTE EMERGENCY BATTERY

ILLUMINATED EXIT SIGN  
INTEGRAL BATTERY BACKUP  
DIRECTION ARROWS AS INDICATED  
POWER REMOTE HEAD WHERE SHOWN

EXIT SIGN  
INTEGRAL BATTERY BACKUP  
INTEGRAL DUAL EMERGENCY LIGHT HEADS  
POWER REMOTE HEAD WHERE INDICATED

DUAL HEAD EMERGENCY LIGHT  
INTEGRAL BATTERY PACK  
POWER REMOTE HEAD WHERE INDICATED

DUAL HEAD EMERGENCY LIGHT  
POWERED REMOTELY

S

LIGHTING CONTROL SWITCH  
20A, 120/277V - COMMERCIAL GRADE  
40" ABOVE FINISHED FLOOR  
3 - 3 WAY SWITCHING  
D - DIMMING - 0-10V UNLESS NOTED OTHERWISE  
OS - INTEGRAL OCCUPANCY SENSOR  
F - FAN SWITCHING  
UF - COMBINATION LIGHT/FAN CONTROL SWITCH  
TC - PROGRAMMABLE ELECTRONIC TIME CLOCK DEVICE

LCP

LIGHTING CONTROL PANEL  
ELECTRONIC LIGHTING CONTROL STATION  
ZONED CIRCUITS  
DIMMING FOR CIRCUITS/ZONES  
INTEGRAL PROGRAMMED SCENES AND TIME CLOCK

OS

OCCUPANCY SENSOR CONTROL FOR ROOM FIXTURES,  
CEILING OR WALL MOUNT TYPE TO PROVIDE COVERAGE

PC

PHOTOCELL CONTROL

DC

DAYLIGHTING DIMMING CONTROL

TC

ELECTRONIC TIME CLOCK CONTROL

ABBREVIATIONS

A AMPS  
AC ALTERNATING CURRENT  
ADA AMERICANS WITH DISABILITIES ACT  
AFF ABOVE FINISHED FLOOR  
AHU AUTHORITY HAVING JURISDICTION  
AIC AMPS INTERRUPTING CAPACITY  
AL ALUMINUM  
ATS AUTOMATIC TRANSFER SWITCH  
AWG AMERICAN WIRE GAUGE

C CONDUIT  
CB CIRCUIT BREAKER  
CT CURRENT TRANSFORMER  
CU COPPER

DC DIRECT CURRENT  
DISC DISCONNECT  
DWG DRAWING

EC ELECTRICAL CONTRACTOR  
EM EMERGENCY  
EMT ELECTRICAL METALLIC TUBING  
ENT ELECTRICAL NON METALLIC TUBING  
EX EXISTING

G GROUND  
GC GENERAL CONTRACTOR  
GFI GROUND FAULT CIRCUIT INTERRUPTING

IBC INTERNATIONAL BUILDING CODE  
IMC INTERMEDIATE METALLIC CONDUIT  
IT

KVA KILOVOLT AMPERE  
KW KILOWATT

LED LIGHT EMITTING DIODE  
LFMC LIQUID TIGHT FLEXIBLE METALLIC CONDUIT  
LTO LIGHTS/LIGHTING FIXTURES  
IECC INTERNATIONAL ELECTRICAL CONSERVATION CODE

MAX MAXIMUM  
MC MECHANICAL CONTRACTOR OR TYPE METAL CLAD CABLE  
MCB MAIN CIRCUIT BREAKER  
MIN MINIMUM  
MLO MAIN LUGS ONLY

NEC NATIONAL ELECTRICAL CODE  
NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION  
NFFA NATIONAL FIRE PROTECTION ASSOCIATION  
NIC NOT IN CONTRACT

PH PHASE  
PNL ELECTRICAL PANEL  
PVC POLY VINYL CHLORIDE

REC RECEPTACLE  
RM ROOM  
RMC RIGID METALLIC CONDUIT

SW SWITCH

TYP TYPICAL

UL UNDERWRITERS LABORATORIES

V VOLTS  
VA VOLT-AMPS  
VAC VOLTS ALTERNATING CURRENT  
VPD VARIABLE FREQUENCY DRIVE

W WIRE(S) OR WATTS POWER  
WP WEATHER RESISTANT

GENERAL NOTES

- ALL WORK AND EQUIPMENT SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, AND REQUIREMENTS, OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO THE NATIONAL ELECTRICAL CODE, THE LOCAL FIRE MARSHALL, UNDERWRITERS LABORATORY, IRI, FM, OSHA. MODIFICATIONS REQUIRED BY THE ABOVE AUTHORITIES IN ORDER TO BRING THE PROJECT INTO CODE REQUIREMENTS SHALL BE MADE AT NO ADDITIONAL COST TO OWNER. IF CONTRACT DOCUMENTS ARE MORE STRINGENT THAN CODE REQUIREMENTS, THE CONTRACT DOCUMENTS SHALL GOVERN.
- ALL SPECIFICATIONS AND DRAWINGS ARE COMPLEMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER, AND WORK SHALL CEASE ON THAT PORTION OF THE PROJECT UNTIL CLARIFICATIONS ARE ISSUED.
- THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE APPROXIMATE ARRANGEMENT OF THE SYSTEMS. THE CONTRACTOR SHALL FIELD VERIFY EXACT INFORMATION, DIMENSIONS, LOCATIONS AND COORDINATE WORK WITH ALL OTHER TRADES AND EXISTING CONDITIONS. NOT ALL INFORMATION IS SHOWN.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING WORK.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH THE WORK OF OTHER TRADES. ALL MATERIAL, WASTE, AND DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY. MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY.
- CONTRACTOR SHALL CONFIRM THE REQUIREMENTS FOR PREMIUM TIME OR SPECIAL PROCEDURES WITH THE OWNER.
- CONTRACTOR SHALL COORDINATE, PREPARE AND SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR THEIR APPROVAL. SHOP DRAWINGS TO BE SUBMITTED INCLUDE: ALL EQUIPMENT, PANELBOARDS, CIRCUIT BREAKERS, LIGHTING FIXTURES, DEVICES AND MATERIALS. SHOP DRAWINGS FOR SYSTEMS SUCH AS LIGHTING CONTROLS, FIRE ALARM, SOUND, CCTV OR OTHER SIMILAR SYSTEMS WITHIN THE BUILDING SHALL INCLUDE INTERCONNECTION WIRING DIAGRAMS OF ALL COMPONENTS, RACKS, DEVICES, ETC. AS WELL AS WIRE TYPES.
- A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED BY THE CONTRACTOR AT THE JOB SITE. ACTUAL LOCATIONS OF ALL EQUIPMENT, WIRING, DEVICES, CONNECTIONS, AND ALL OTHER ITEMS INCLUDED IN THIS CONTRACT, AND ALL DEVIATIONS OF THE WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS SHALL BE MARKED ON THE RECORD/COORDINATION DRAWINGS. EACH TRADE SHALL REVIEW THE COORDINATION DRAWINGS AND RESOLVE ANY POTENTIAL CONFLICTS WITH OTHER TRADES PRIOR TO INSTALLING ANY PORTION OF THEIR WORK. CONTRACTOR SHALL NOT CORE DRILL, OR CUT CONCRETE SLABS FOR ANY REASON WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE ARCHITECT, STRUCTURAL ENGINEER AND THE OWNER.
- WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS IN THEIR RESPECTIVE TRADES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. UPON COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL DELIVER COMPLETE AND FUNCTIONAL SYSTEMS AS ENCOMPASSED BY THE CONTRACT. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND CODE REQUIREMENTS.
- IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ARCHITECT AND ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ARCHITECT AND ENGINEER.
- THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK OF THIS CONTRACT.
- THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.
- WHEREVER FIRE RATED PARTITIONS ARE PENETRATED FOR WIRE, CONDUITS OR RACEWAYS, SEAL AROUND PASSAGES WITH CODE APPROVED, LABORATORY TESTED AND LABELED SEALANT OF FIRE RESISTANCE RATING NOT LESS THAN THAT OF PENETRATED ASSEMBLY THAT WILL PREVENT PASSAGE OF FIRE AND SMOKE. PENETRATIONS SHALL BE INSTALLED IN A MANNER TO MATCH ASSEMBLY AS TESTED BY AN APPROVED TESTING LABORATORY OR AGENCY AND INCLUDE PENETRATION SYSTEM NUMBER.
- DRAWING SYMBOLS ARE USED AS AN AIDE, NOT TO DEFINE AN EXACT NUMBER OF PIECES OF EQUIPMENT.
- CONTRACTOR SHALL VERIFY THAT THE LOCATION OF CEILING MOUNTED DEVICES SHOWN ON THE DRAWINGS ARE ACCEPTABLE TO THE ARCHITECT PRIOR TO INSTALLATION.
- PROVIDE SLEEVES AROUND CONDUITS, WIRING AND RACEWAYS THROUGH ALL FLOORS, CEILINGS, WALLS, AND PARTITIONS.
- FIELD VERIFY AND COORDINATE ELECTRICAL WORK THROUGH OR BETWEEN JOISTS, BETWEEN BEAMS AND EXISTING BUILDING STRUCTURE, WALL STUDS, AND ALL TRADES NOT SPECIFICALLY LISTED.
- EQUIPMENT, APPLIANCES, STRUCTURAL JOISTS, BEAMS, WALLS, CEILINGS, LIGHTING FIXTURES, MECHANICAL EQUIPMENT, AND OTHER TRADE WORK WHERE SHOWN ARE FOR REFERENCE ONLY. VERIFY AND COORDINATE IN FIELD. REFER TO RESPECTIVE DRAWINGS.
- CONTRACTOR SHALL MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTERS, FITTINGS, VALVES, AND DEVICES FOR A COMPLETE OPERABLE SYSTEM.
- COORDINATE REQUIREMENT FOR PROVISION OF CONTRACTORS, AND CONTROL WIRING FOR PROPER FUNCTIONING SYSTEM WITH MECHANICAL CONTRACTOR. MOTOR STARTERS, AND DISCONNECTS ARE TO BE FURNISHED BY THE MECHANICAL CONTRACTOR FOR INSTALLATION AND CONNECTION BY THIS CONTRACTOR WHERE NOTED ON MECHANICAL DRAWINGS. WHERE NOTED ON ELECTRICAL DRAWINGS, DISCONNECTS SHALL BE PROVIDED BY THIS CONTRACTOR.
- ALL PRODUCTS LOCATED WITHIN PLENUM AREAS INCLUDING BUT NOT LIMITED TO INSULATION AND ADHESIVE SYSTEMS, SHALL HAVE A COMPOSITE FIRE HAZARD RATING NOT TO EXCEED 25 FLAME SPREAD AND 50 SMOKE DEVELOPED AS DETERMINED BY THE APPLICABLE UL OR ASTM STANDARD. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATIONS OF PLENUM AREAS.
- CLEAN ALL ELECTRICAL EQUIPMENT AND DEVICES OF ALL CONSTRUCTION DUST AT PROJECT COMPLETION.
- PROVIDE GROUNDING AND BONDING ACCORDING TO NATIONAL ELECTRICAL CODE ARTICLE 250.
- WIRING SHALL BE THIRTYTHW 900V INSULATED COPPER CONDUCTORS WITH TERMINATION TEMPERATURE OF 75 DEGREES C. CIRCUITS SHALL HAVE A SEPARATE GREEN GROUND CONDUCTOR.
- RACEWAYS SHALL BE (UNLESS OTHERWISE NOTED): INTERIOR CONCEALED - EMT, IMC, RMC OR TYPE MC CABLE; INTERIOR EXPOSED - EMT, IMC, OR RMC; EXTERIOR OR WET LOCATION - IMC, RMC OR LPVC (MAXIMUM 6 FEET LENGTH); UNDERGROUND OR BELOW SLAB - IMC, RMC, OR RNC WITH RMC ELBOWS AND STUB UPS. MECHANICAL CONNECTIONS - INTERIOR - MC CABLE OR LPVC; EXTERIOR - LPVC; LIGHTING WHIPS - MC CABLE (MAXIMUM 6 FEET LENGTH).
- LIGHTING CONTROL SWITCHES SHALL BE MOUNTED 40" AFF UNLESS OTHERWISE NOTED. SWITCHES IN EXISTING AREAS SHALL BE MOUNTED AT SAME HEIGHT AS EXISTING. SEE MECHANICAL PLANS FOR HEATING, VENTILATION, AIR CONDITIONING, PLUMBING EQUIPMENT LOCATIONS AND OTHER EQUIPMENT MOTOR DATA.
- PROVIDE TYPE HACR CIRCUIT BREAKERS FOR COMPRESSOR TYPE LOADS.
- ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES AND EQUIPMENT SHALL BE LABELED AND LISTED BY A CERTIFIED TESTING LABORATORY.
- PERFORM CUTTING AND PATCHING ASSOCIATED WITH NEW WORK. STRUCTURAL MEMBERS SHALL NOT BE CUT. PATCHING SHALL MATCH EXISTING ADJACENT SURFACES AS TO MATERIAL, TEXTURE, FINISH AND FIRE RATING. UNDER NO CIRCUMSTANCES SHALL WATERPROOFING BE PENETRATED WITHOUT PRIOR APPROVAL FROM ARCHITECT AND ENGINEER.
- THOROUGHLY CLEAN ALL EXPOSED SURFACES OF EQUIPMENT AND MATERIAL; LEAVE IN A NEAT, CLEAN CONDITION. RESTORE AND TOUCH-UP FACTORY FINISHES THAT HAVE BEEN DAMAGED DURING CONSTRUCTION.
- INDOOR RACEWAYS AND WIRING NOT IN MECHANICAL ROOMS SHALL BE CONCEALED UNLESS OTHERWISE NOTED.
- UPDATE PANEL SCHEDULES TO REFLECT REMOVED, ALTERED OR ADDED CIRCUITS. NEW PANELBOARD SCHEDULES SHALL INDICATE WHERE THE PANEL IS FED FROM.
- PROVIDE LABELS FOR ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE ARTICLE 110.16.
- REFER TO STRUCTURAL DRAWINGS FOR SEISMIC CLASSIFICATION FOR BUILDING. FURNISH AND INSTALL SEISMIC HANGERS AND SUPPORTS AS REQUIRED.

ELECTRICAL SERIES

NUMBER	SHEET NAME
E-001	ELECTRICAL SYMBOLS ABBREVIATIONS & GENERAL NOTES
E-101	FIRST FLOOR - LIGHTING
E-102	SECOND FLOOR - LIGHTING
E-201	FIRST FLOOR - POWER
E-202	SECOND FLOOR - POWER


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ELECTRICAL SYMBOLS ABBREVIATIONS & GENERAL NOTES

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SHEET

E-001