ELECTRICAL SYMBOLS

NOTE: SOME SYMBOLS IN THIS LIST MAY NOT HAVE BEEN USED FOR THIS PROJECT.

- 2' X 4' FLUORESCENT LIGHT FIXTURE – SEE LIGHTING FIXTURE SCHEDULE.
- 2' X 4' FLUORESCENT LIGHT FIXTURE – EMERGENCY WITH BATTERY BACK UP
- 2' X 4' FLUORESCENT LIGHT FIXTURE – NIGHT LIGHT "NL"
- 1' X 4' FLUORESCENT LIGHT FIXTURE – SEE LIGHTING FIXTURE SCHEDULE.
- RECESSED COMPACT FLUORESCENT DOWNLIGHT – SEE LIGHTING FIXTURE SCHEDULE.
- WALL PACK – SCONCES LIGHT FIXTURE
- EXIT SIGN /EMERGENCY COMBO – SEE LIGHTING FIXTURE SCHEDULE.
- EXIT SIGN WITH BATTERY – SEE LIGHTING FIXTURE SCHEDULE.
- SELF–CONTAINED EMERGENCY LIGHT FIXTURE. TO BE MOUNTED 15" BELOW CEILING U.N.O. PROVIDE NUMBER OF LAMPS AS SHOWN ON PLANS. SEE LIGHTING FIXTURE SCHEDULE FOR DETAILS.
- JUNCTION BOX IN ACCESSIBLE LOCATION.
- FLEXIBLE CONDUIT EQUIPMENT CONNECTION. PROVIDE GROUND BUSHING AND GROUND CONDUCTOR IN ACCORDANCE WITH THE NEC. PROVIDE WEATHERPROOF FLEXIBLE CONDUIT FOR EQUIPMENT LOCATED OUTSIDE.
- $ — TOGGLE SWITCH TO BE MOUNTED AT 48" ABOVE FINISHED FLOOR U.N.O. 20A, 120V OR 277V AS REQUIRED.
- $2 — TWO POLE TOGGLE SWITCH TO BE MOUNTED AT 48" ABOVE FINISHED FLOOR U.N.O. 20A, 120V OR 277V AS REQUIRED.
- $3 — THREE WAY TOGGLE SWITCH TO BE MOUNTED AT 48" ABOVE FINISHED FLOOR U.N.O. 20A, 120V OR 277V AS REQUIRED.
- $4 — FOUR WAY TOGGLE SWITCH TO BE MOUNTED AT 48" ABOVE FINISHED FLOOR U.N.O. 20A, 120V OR 277V AS REQUIRED.
- $T — MOTOR RATED SWITCH, VOLTAGE AND PHASE RATED WITH THERMAL OVERLOAD PROTECTION. NEMA 3R WHEN LOCATED OUTSIDE.
- $P — TOGGLE SWITCH WITH PILOT LIGHT TO BE MOUNTED AT 48" ABOVE FINISH FLOOR U.N.O. 20A, 120V OR 277V AS REQUIRED.
- $K — KEY OPERATED SWITCH TO BE MOUNTED AT 48" ABOVE FINISH FLOOR U.N.O. 20A, 120V OR 277V AS REQUIRED.
- $D — DIMMER SWITCH. MOUNT AT 48" ABOVE FINISHED FLOOR U.N.O. SUPERSCRIPT NUMBER INDICATES: 1=1000 WATTS, 2=2000 WATTS, NONE =600 WATTS. DO NOT REMOVE COOLING FINS.
- SINGLE RECEPTACLE. TO BE MOUNTED 18" ABOVE FINISHED FLOOR U.N.O.
- DUPLEX RECEPTACLE TO BE MOUNTED AT 18" ABOVE FINISHED FLOOR U.N.O.
- QUAD RECEPTACLE. TWO DUPLEX RECEPTACLES WITH ONE DEVICE PLATE. T
- ISOLATED GROUND DUPLEX RECEPTACLE TO BE MOUNTED 6" ABOVE SPLASH OF COUNTER TOP. VERIFY EXACT DIMENSIONS WITH ARCHITECT.
- CEILING MOUNTED DUPLEX RECEPTACLE.
- SPECIAL PURPOSE RECEPTACLE WITH NEMA CONFIGURATION NOTED, ie; 6–50, 15–20, ETC.
- MULTI OUTLET ASSEMBLY (MOA). TO BE MOUNTED 6" ABOVE COUNTER SPLASH WHERE LOCATED BEHIND COUNTER, OR AT 12", U.N.O.
- FLUSH FLOOR OUTLET WITH DEVICE SHOWN. PROVIDE WITH BRASS DEVICE PLATE AND CARPET FLANGE, IN CARPETED AREAS. TELEPHONE AND DATA OUTLETS SHALL HAVE MIN. 1"C. WITH PULL STRING STUBBED UP INTO ACCESSIBLE CEILING SPACE. PROVIDE CONDUIT BUSHINGS ABOVE CEILING.
- M — MICROPHONE OUTLET.
- C — CLOCK RECEPTACLE. TO BE MOUNTED 80" ABOVE FINISHED FLOOR U.N.O.
- FACP — FIRE ALARM CONTROL PANEL PLACEMENT TO BE DETERMINED.
- FAA — FIRE ALARM REMOTE ANNUNCIATOR PANEL
- MANUAL PULL STATION, 48" A.F.F. PLACEMENT TO BE DETERMINED.
- TS — TAMPER (SUPERVISORY) SWITCH PLACEMENT TO BE DETERMINED.
- FS — (WATER) FLOW SWITCH PLACEMENT TO BE DETERMINED.
- SMOKE DETECTOR (SMOKE SENSOR)
- STROBE – WALL
- STROBE – CEILING
- CHIME STROBE – WALL
- DATA OUTLET. PROVIDE 3/4"C. WITH PULL STRING UP INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.
- TELEPHONE OUTLET. MOUNT AT 18" ABOVE FINISH FLOOR U.N.O. PROVIDE 3/4"C. WITH PULL STRING UP INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING. PROVIDE #6 CU GROUND PER NEC 800–40.
- COMBO DATA AND TELEPHONE OUTLETS IN ONE BOX. PROVIDE (2) 3/4"C. WITH PULL STRING UP INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.
- S — SPEAKER. PROVIDE SPEAKER, BACKBOX, AND GRILL. VERIFY MOUNTING TYPE AND LOCATION WITH OWNER AND PLANS.
- OS — OCCUPANCY SENSOR
- TC — TIMECLOCK. 4–POLE SINGLE THROUGH T7401BC, 24–HR ASTRONOMIC DIAL WITH DAY OMITTING DEVICE, RESERVE POWER, AND NEMA 1 ENCLOSURE FOR INDOORS – NEMA 3R ENCLOSURE WHEN LOCATED OUTSIDE. OR EQUAL SUBSTITUTE.
- PC — PHOTOCELL SWITCH. MOUNT ABOVE ROOF AND AIM NORTH.
- T — TRANSFORMER AS SHOWN ON PLANS.
- S.E.S. — SERVICE ENTRANCE SECTION. SEE ONE–LINE DIAGRAM.
- M.C.C. — MOTOR CONTROL CENTER. SEE ONE–LINE DIAGRAM AND M.C.C. SCHEDULE.
- T.M.B. — T.M.B. – 4'x 8'x 3/4" THICK FIRE RATED TELEPHONE MOUNTING BOARD. TO BE MOUNTED 6" BELOW CEILING. PROVIDE WITH #6 SOLID CU. GROUND PER N.E.C. 800–40.
- T.T.C. — TELEPHONE TERMINAL CABINET. NEMA 3R HINGED DOOR. COORDINATE SIZE WITH SERVING UTILITY. PROVIDE #6 SOLID CU. GROUND PER N.E.C. 800–40.
- PANELBOARD. SURFACE OR FLUSH MOUNTED AS NOTED IN PANEL SCHEDULE.
- INDICATES HOMERUN TO PANELBOARD OR AS NOTED. HACHURES INDICATE NUMBER OF PHASE AND NEUTRAL CONDUCTORS, WHERE NO HACHURES ARE SHOWN PROVIDE 2#12 CU., 1#12 CU. BOND IN 1/2" CONDUIT. WHEN HOMERUN CONDUCTORS ARE LARGER THAN #12, PROVIDE INDICATED SIZE FOR ENTIRE LENGTH OF CIRCUIT. BOND AND ISOLATED GROUND CONDUCTORS ARE NOT SHOWN. PROVIDE EQUIPMENT BOND WITH ALL CIRCUITS PER N.E.C. 250–95. PROVIDE ISOLATED GROUND FOR IG RECEPTACLES PER N.E.C. 250–122.
- CONDUIT SURFACE MOUNTED, CONCEALED IN WALL OR ABOVE CEILING.
- CONDUIT ROUTED UNDERGROUND OR UNDER FLOOR SLAB.
- CONDUIT STUB–OUT. CAP FOR FUTURE USE. IF UNDERGROUND, MARK LOCATION OF STUB–OUT WITH APPROVED MARKER.
- MOTOR. SIZE AND RATING AS SHOWN. "EF" INDICATES EXHAUST FAN.
- PREWIRED MOTOR CONTROLLER FURNISHED WITH EQUIPMENT.
- MAGNETIC MOTOR STARTER. SIZE, VOLTAGE, PHASE, AND NUMBER OF POLES AS REQUIRED. FURNISHED WITH (1) N.O./N.C. FIELD CONVERTIBLE AUXILIARY CONTACT. SHALL BE SINGLE SPEED NON–REVERSING U.N.O. PROVIDE NEMA 3R WHEN LOCATED OUTSIDE.
- COMBINATION DISCONNECT SWITCH AND MOTOR STARTER WITH ENCLOSURE. SEE DISCONNECT SWITCH AND MAGNETIC MOTOR STARTER SYMBOLS.
- HEAVY DUTY DISCONNECT SWITCH. PROVIDE AS NOTED: AMPERAGE/VOLTAGE/NO. OF POLES/WEATHERPROOF FUSE SIZE AND DESIGNATION. NF = NON–FUSIBLE
- M — UTILITY KWH POWER METER.
- CIRCUIT BREAKER. AMPERAGE/POLES, AS INDICATED.
- SWITCH WITH FUSES. AMPERAGE/POLES, AND FUSE SIZE AND TYPE AS INDICATED.
- FUSED PULL–OUT SWITCH. AMPERAGE/POLES, AND FUSE SIZE AND TYPE AS INDICATED.
- TRANSFORMER. DRY TYPE, PAD MOUNT, WITH KVA, PRI. & SEC. VOLTAGE, MIN. IMPEDANCE, AND "K" RATING AS NOTED. 150°C RISE U.N.O. PROVIDE SEPARATELY DERIVED SOURCE GROUNDING PER NEC 250–26. CONDUCTOR SIZE AS NOTED.
- GROUND CONDUCTOR OR ELECTRODE.

GENERAL NOTES:

1. ALL ELECTRICAL CONDUIT, DEVICES AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY. DO NOT SCALE. CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATION PRIOR TO ANY ROUGH IN.
2. ALL CIRCUITS SHALL BE MINIMUM: #12 THHN/THWN COPPER W/#12 COPPER BOND IN 1/2" CONDUIT UNLESS NOTED OTHERWISE. ALL CONDUCTORS, REGARDLESS OF SIZE SHALL BE 90°C RATED, THHN OR XHHW. ALL WIRING SHALL BE IN METAL CONDUIT WITH N.E.C. SIZED BONDING CONDUCTORS UNLESS NOTED OTHERWISE.
3. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL DEVICE & LIGHTING FIXTURE FINISHES PRIOR TO PURCHASING ANY EQUIPMENT. ALSO CONFIRM THE EXACT CEILING TYPE PRIOR TO ORDERING ANY FIXTURES.
4. FURNISH AND INSTALL ALL ELECTRICAL WIRING, RACEWAYS, OUTLET AND JUNCTION BOXES, MOTOR STARTERS, DISCONNECT AND CONTROLS FOR EQUIPMENT FURNISHED UNDER OTHER SECTIONS, UNLESS NOTED OTHERWISE. VERIFY EQUIPMENT REQUIREMENTS PRIOR TO BID.
5. ALL MATERIALS SHALL BE NEW AND IN GOOD CONDITION, THE PRODUCT OF SUBSTANTIALLY ESTABLISHED AND RECOGNIZED MANUFACTURERS.
6. AS A MINIMUM REQUIREMENT ALL WORK SHALL COMPLY WITH THE LATEST ACTIVE OR ADOPTED EDITIONS OF THE NATIONAL ELECTRICAL CODE, STATE OR LOCAL ELECTRICAL CODES, AND THE REQUIREMENTS OF THE POWER COMPANY. WHERE CONFLICTS OCCUR THE MORE STRINGENT OR THE CODE ENFORCED BY THE AUTHORITY HAVING JURISDICTION SHALL APPLY.
7. ELECTRICAL CONTRACTOR SHALL COORDINATE AND MAKE FINAL CONNECTIONS FOR MECHANICAL EQUIPMENT. SIZE ALL FUSES/CIRCUIT BREAKERS PROTECTING MECHANICAL EQUIPMENT PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
8. ALL WIRING DEVICES SHALL BE U.L. APPROVED, OF THE TYPE AND NUMBER SHOWN ON THE DRAWINGS. ALL NEW RECEPTACLES & SWITCHES SHALL BE 20 AMP, SPECIFICATION GRADE DEVICES RATED AT 120V OR 277V AS NECESSARY. UNLESS SPECIFICALLY NOTED OTHERWISE, THE CONTRACTOR SHALL PROVIDE DEVICE & DEVICE PLATE TYPES AND COLORS AS SPECIFIED IN SPECIFICATION.
9. ALL LUMINAIRES, LAMPS AND LENSES SHALL BE THOROUGHLY CLEANED PRIOR TO FINAL ACCEPTANCE.
10. NO PORTION OF ANY LIGHT FIXTURE MOUNTED IN A SUSPENDED GRID TYPE CEILING MAY BE SUPPORTED IN ANY WAY BY THE CEILING GRID OR THE CABLES OR WIRES THAT SUPPORT THE CEILING. ALL FIXTURES MOUNTED IN GRID TYPE CEILINGS SHALL BE INDEPENDENTLY SUPPORTED (SUSPENDED) FROM BUILDING STRUCTURE ABOVE, AT 2 DIAGONAL CORNERS BY WIRE, CABLE OR OTHER APPROVED MEANS WITHIN 6" OF THE CORNER.
11. PLAN AND INSTALL ALL ELECTRICAL WORK IN SUCH A MANNER AS TO PREVENT OBSTRUCTIONS, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. CONSULT GENERAL CONTRACT DRAWINGS FOR CONDITIONS AFFECTING THIS WORK AND VERIFY SPACES IN WHICH WORK WILL BE INSTALLED. NOTIFY ENGINEER IMMEDIATELY OF POSSIBLE CONFLICTS. WHERE INTERFERENCES WITH STRUCTURAL, MECHANICAL OR OTHER FEATURES EXIST, OR WHERE JOB CONDITIONS REQUIRE REASONABLE CHANGES IN LOCATIONS AND ARRANGEMENT OF INDICATED EQUIPMENT, CONDUIT, OUTLETS OR WIRING, CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT EXTRA COST TO OWNER.
12. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO EXAMINE THE DRAWINGS AND EXISTING PREMISES PRIOR TO BIDDING. NO SUBSEQUENT ALLOWANCES WILL BE MADE FOR NOT BEING KNOWLEDGEABLE OF EXISTING CONDITIONS.
13. NEW CONDUIT OR EXISTING CONDUIT WHICH MUST BE MODIFIED, WITHIN THE SCOPE OF THIS PROJECT SHALL NOT BE ATTACHED TO NOR SUPPORTED BY ANY WIRE OR CABLE WHICH IS USED TO SUSPEND THE CEILING GRID. NEW CONDUIT SUPPORTS OR SUPPORT WIRES AND APPROVED SUPPORTING DEVICES SHALL BE PROVIDED AS NECESSARY.
14. CONTRACTOR SHALL NOT INTERRUPT OR REMOVE ANY EXISTING CIRCUITS OR EQUIPMENT UNLESS NOTED OTHERWISE ON PLANS. ANY DAMAGED OR DISRUPTED CIRCUITS OR EQUIPMENT SHALL BE RESTORED TO LIKE NEW CONDITION AT NO ADDITIONAL COST TO OWNER, ARCHITECT OR ENGINEER.
15. CONTRACTOR SHALL FIELD VERIFY SOURCE OF ALL EXISTING AND NEW LIGHTING AND POWER CIRCUITS, BY PANEL AND BREAKER NUMBERS FOR AREAS WITHIN SCOPE OF THIS PROJECT. PRIOR TO CONSTRUCTION CLOSE OUT PROVIDE A NEATLY TYPED PERMANENTLY ATTACHED PANEL INDEX, TO IDENTIFY EACH CIRCUIT, USE, AND AREA SERVED, (I.E.: #1 RECEIPT. RM. 100).
16. THE CONTRACTOR SHALL PROVIDE NEW, TYPED, PANELBOARD DIRECTORIES FOR ALL NEW AND/OR EXISTING PANELS WITHIN THE SCOPE OF THIS PROJECT. THE DIRECTORIES SHALL INDICATE THE LOAD TYPE AND AREA SERVED. PROVIDE ALL FIELD VERIFICATION WORK AS NECESSARY.
17. THE CONTRACTOR SHALL CONFIRM & VERIFY THE LOCATIONS OF ALL EXIT AND EMERGENCY LIGHTING AS SHOWN ON THE PLAN PRIOR TO ANY INSTALLATION.
18. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH THE OTHER TRADES.

DEVICE MTG. HEIGHTS

ALL HEIGHTS ARE ABOVE FINISHED FLOOR AND TO THE CENTERLINE OF THE DEVICE U.N.O. UNLESS AS NOTED.

RECEPTACLES	+18"
TELEPHONE OUTLETS	+18"
DATA OUTLETS	+18"

ABOVE COUNTER RECEPTACLES, TELEPHONE AND DATA OUTLETS, OTHERWISE AS NOTED.

SWITCHES	+48"
DIMMERS	+48"
OTHER CONTROLS	+48"
TIME SWITCHES	+48"
RECEPTACLE(S) LOCATED AT T.M.B.	+48"
FA MANUAL PULL STATION	+48"
FA VISUAL DEVICES	+80"
FA AUDIO DEVICES	+80"

VERIFY HEIGHTS AND COORDINATE BEFORE INSTALLATION.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	SES	SERVICE ENTRANCE SECTION
AFG	ABOVE FINISHED GRADE	SWBD	SWITCHBOARD
ATS	AUTOMATIC TRANSFER SWITCH	TMB	TELEPHONE MOUNTING BOARD
EDF	ELECTRIC DRINKING FOUNTAIN	TTC	TELEPHONE TERMINAL CABINET
EF	EXHAUST FAN	UNO	UNLESS NOTED OTHERWISE
GFI	GROUND FAULT INTERRUPTER	WP	WEATHERPROOF
IG	ISOLATED GROUND	A/C	AIR / CONDITIONING UNIT
GRD	GROUNDING–BONDING CONDUCTOR	E/C	EVAPORITIVE / COOLER
MCC	MOTOR CONTROL CENTER	FACP	FIRE ALARM CONTROL PANEL
NIC	NOT IN CONTRACT	FBO	FURNISHED BY OTHERS
NL	NIGHT LIGHT	EM	EMERGENCY
PNL	PANEL		

A1 — ELECTRICAL SYMBOLS — NTS

A5 — GENERAL NOTES — NTS

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