

# LIGHTING

- 2x4 FLUORESCENT FIXTURE ASSOCIATED CONTROL DEVICE FIXTURE TYPE (SEE LIGHT FIXTURE SCHEDULE)
- 1x4 FLUORESCENT FIXTURE
- 2x2 FLUORESCENT FIXTURE
- FIXTURE WIRED TO UNSWITCHED NORMAL CIRCUIT
- FIXTURE WIRED TO UNSWITCHED EMERGENCY CIRCUIT
- FIXTURE WIRED TO SWITCHED EMERGENCY CIRCUIT
- DOWN LIGHT
- FLUORESCENT STRIP
- WALL MOUNTED FIXTURES
- POLE MOUNTED SITE LIGHTING FIXTURE FIXTURE TYPE (SEE LIGHT FIXTURE SCHEDULE)
- FLOOD LIGHT
- WALL WASH LIGHT FIXTURE
- EXIT SIGN, CEILING MOUNTED ARROW INDICATES EGRESS DIRECTION SHADING INDICATES SIGN FACE
- EXIT SIGN, WALL MOUNTED SHADING INDICATES SIGN FACE
- DUAL HEAD EMERGENCY LIGHT BATTERY PACK TD - TIME DELAY RESET
- REMOTE EMERGENCY LIGHTING HEAD
- WALL PACK
- S<sub>3</sub> 3-WAY TOGGLE SWITCH
- S<sub>o</sub> SINGLE POLE TOGGLE SWITCH INDICATES CONTROLLED FIXTURE
- S<sub>4</sub> 4-WAY TOGGLE SWITCH
- S<sub>II</sub> DUAL LEVEL SWITCHING
- S<sub>D</sub> DIMMER SWITCH, INCANDESCENT OR FLUORESCENT AS REQUIRED.
- S<sub>P</sub> TOGGLE SWITCH WITH PILOT LIGHT
- S<sub>T</sub> TIMER SWITCH, SPRING WOUND
- S<sub>DT</sub> SINGLE POLE DOUBLE THROW TOGGLE SWITCH, CENTER POSITION OFF
- S<sub>WP</sub> WEATHER PROOF
- S<sub>XP</sub> EXPLOSION PROOF
- S<sub>OS</sub> OCCUPANCY SENSOR SWITCH
- UNSWITCHED CONTINUATION OF BRANCH CIRCUIT
- HOME RUN
- OCCUPANCY SENSOR  
o. INDICATES CONTROLLED FIXTURE  
INDICATES AIMING DIRECTION
- OSR OCCUPANCY SENSOR RELAY
- DS x DAYLIGHT SENSOR LIGHTS CONTROLLED BY SENSOR

# COMMUNICATION & DATA SYSTEMS

- TELEPHONE SYSTEM WALL JACK W-INDICATES WALL MOUNTED AT 60" AFF P-INDICATES PAYPHONE (2)-INDICATES 2 OUTLETS, SINGLE BOX
- DATA SYSTEM OUTLET
- COMBINATION VOICE/DATA SYSTEM OUTLET
- UNDERFLOOR TELEPHONE SYSTEM OUTLET
- UNDERFLOOR DATA SYSTEM OUTLET
- UNDERFLOOR VOICE & DATA OUTLET
- CATV CABLE TELEVISION SYSTEM OUTLET, MOUNT 18" AFF UNLESS OTHERWISE NOTED
- CCTV CLOSED CIRCUIT TELEVISION OUTLET, MOUNT 18" AFF UNLESS OTHERWISE NOTED
- PA PAGING SYSTEM CONTROL PANEL AND PAGING AMPLIFIER
- PAGING SYSTEM SPEAKER, CEILING MOUNTED
- PAGING SYSTEM SPEAKER, WALL MOUNT AT 7'-6" AFF  
1. FLUSH, 2. SURFACE, 3. HORN, 4. DUAL HORN
- VC VOLUME CONTROL
- HC INTERCOM SYSTEM HAND KEY
- CS CLOCK SPEAKER
- HS INTERCOM SYSTEM HAND SET
- CH WALL MOUNTED CLOCK
- CEILING MOUNTED TELEPHONE SYSTEM OUTLET
- CEILING MOUNTED DATA SYSTEM OUTLET

# POWER

- (4) NON-FUSED SAFETY SWITCH AMPERE RATING
- (4) NEMA ENCLOSURE RATING
- (4) FUSED SAFETY SWITCH, TOP NUMBER INDICATES SWITCH AMPERE RATING, LOWER NUMBER INDICATES FUSE RATING
- (4) MAGNETIC MOTOR STARTER, FVNR UNLESS INDICATED OTHERWISE
- (4) NEMA ENCLOSURE RATING
- (4) NEMA SIZE (TYPICAL)
- CB 20/1 COMBINATION CIRCUIT BREAKER/MAGNETIC MOTOR STARTER FIRST NUMBER INDICATES CIRCUIT BREAKER AMPERE RATING SECOND NUMBER INDICATES NEMA STARTER SIZE
- F 60/40/1 COMBINATION FUSED DISCONNECT/MAGNETIC MOTOR STARTER NUMBERS INDICATE DISCONNECT AMPERE RATING/FUSE RATING/NEMA STARTER SIZE
- 30/1 NON-FUSED DISCONNECT/MAGNETIC MOTOR STARTER FIRST NUMBER INDICATES CIRCUIT BREAKER AMPERE RATING SECOND NUMBER INDICATES NEMA STARTER SIZE
- M OL MANUAL MOTOR STARTER, TOGGLE OPERATED, 1, 2 OR 3 POLE AS REQUIRED, OVERLOAD PROTECTION
- M MANUAL MOTOR SWITCH, TOGGLE OPERATED, SINGLE PHASE, 1 OR 2 POLE AS REQUIRED (NO OVERLOAD PROTECTION)
- CB 100A ENCLOSED CIRCUIT BREAKER AMPERE RATING
- (5) ELECTRIC MOTOR, NUMBER INDICATES HORSEPOWER RATING
- (5) EXPLOSION PROOF MOTOR
- VAV VARIABLE AIR VOLUME CONTROL ACTUATORS
- HS H/O/A LOCAL SELECTOR SWITCH H/O/A - HAND/OFF/AUTO
- EMO EMERGENCY OFF BREAK GLASS STATION
- PB PUSHBUTTON STATION
- J JUNCTION BOX
- T TRANSFORMER
- J MODULAR FURNITURE FLOOR POKE THROUGH
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- EY CONDUIT SEAL
- E DUPLEX RECEPTACLE, NEMA 5-20R, INSTALLED ON EMERGENCY CIRCUIT (TYPICAL) GF DUPLEX RECEPTACLE, NEMA 5-20R
- HOSPITAL GRADE DUPLEX RECEPTACLE, NEMA 5-20R
- HOSPITAL GRADE GFCI DUPLEX RECEPTACLE, NEMA 5-20R
- HOSPITAL GRADE ISOLATED GROUND DUPLEX RECEPTACLE, NEMA 5-20R
- SINGLE RECEPTACLE, NEMA 5-20R
- DOUBLE DUPLEX (QUADRUPLEX) RECEPTACLE, NEMA 5-20R
- HOSPITAL GRADE DOUBLE DUPLEX RECEPTACLE NEMA 5-20R
- SWITCHED RECEPTACLE
- FLOOR OUTLET, DUPLEX RECEPTACLE, NEMA 5-20R
- POWER RECEPTACLE, 480 VOLT NEMA CONFIGURATION AS NOTED.
- POWER RECEPTACLE, 240 VOLT NEMA CONFIGURATION AS NOTED.
- PANELBOARD, NORMAL POWER
- PANELBOARD, EMERGENCY POWER
- MULTI OUTLET ASSEMBLY

# GROUNDING

- GROUND ROD
- EXOTHERMIC WELD CONNECTION
- BOLTED CONNECTION
- BARE COPPER CONDUCTOR RUN EXPOSED
- BARE COPPER CONDUCTOR EMBEDDED IN CONCRETE OR BURIED

# LINE TYPES

- EXISTING
- NEW
- DEMOLITION

# FIRE ALARM

- FACP FIRE ALARM CONTROL PANEL
- FAA FIRE ALARM ANNUNCIATOR
- FIRE ALARM MASTER BOX
- FIRE ALARM MANUAL PULL STATION
- FIRE ALARM SPEAKER/STROBE UNIT
- FIRE ALARM AUDIBLE/VISIBLE NOTIFICATION APPLIANCE (GENERAL EVACUATION)
- FIRE ALARM AUDIBLE/VISIBLE NOTIFICATION APPLIANCE CLEAN ROOM NOTIFICATION (LOCAL)
- FIRE ALARM VISIBLE ONLY NOTIFICATION APPLIANCE CANDELA INTENSITY-15/75 UNLESS OTHERWISE NOTED CEILING MOUNTED
- PHOTOELECTRIC SMOKE DETECTOR, CEILING MOUNTED INDICATES AUXILIARY CONTACT.
- (H) FIXED TEMPERATURE HEAT DETECTOR, CEILING MOUNTED. INDICATES EQUIPMENT INTERLOCKED WITH THE DETECTOR
- (P) CLEAN ROOM SMOKE DETECTOR INDICATES EQUIPMENT INTERLOCKED WITH THE SMOKE DETECTOR
- (H) COMBINATION RATE-OF-RISE/FIXED TEMPERATURE HEAT DETECTOR, CEILING MOUNTED
- DUCT SMOKE DETECTOR, PHOTOELECTRIC WITH AUXILIARY CONTACT.
- FS SPRINKLER SYSTEM FLOW SWITCH
- TS SPRINKLER SYSTEM TAMPER SWITCH
- DH FIRE ALARM SYSTEM MAGNETIC DOOR HOLDER
- INTERLOCK RELAY
- SMOKE DAMPER
- RTI DUCT SMOKE DETECTOR REMOTE TEST INDICATOR
- K KNOX BOX

# SECURITY SYSTEMS

- DOOR CONTACT
- CR CARD READER
- KP KEY PAD
- CCTV CLOSED CIRCUIT TELEVISION CAMERA
- ES ELECTRIC STRIKE
- ML MAG LOCK

# ONE LINE DIAGRAM

- MEDIUM VOLTAGE DRAWOUT CIRCUIT BREAKER
- LOW VOLTAGE DRAWOUT CIRCUIT BREAKER AF - AMP FRAME AT - AMP TRIP EO - ELECTRICALLY OPERATED
- MOLDED CASE CIRCUIT BREAKER
- DISCONNECT, ISOLATION OR SAFETY SWITCH
- FUSED CUTOUT
- FUSED LOAD BREAK SWITCH
- MEDIUM VOLTAGE MOTOR STARTER
- MAGNETIC MOTOR STARTER, NUMERAL INDICATES NEMA SIZE FVNR UNLESS OTHERWISE NOTED. FVR - FULL VOLTAGE REVERSING RV2 - REDUCING VOLTAGE AUTO TRANSFORMER 2S - TWO SPEED
- CAPACITOR
- VFD VARIABLE FREQUENCY DRIVE
- POWER TRANSFORMER OA - LIQUID TYPE SELF COOLED AA - DRY TYPE SELF COOLED FA - FAN COOLED CONNECTION
- SHIELDED ISOLATION TRANSFORMER
- POTENTIAL TRANSFORMER RATIO NUMBER REQUIRED
- CURRENT TRANSFORMER RATIO NUMBER REQUIRED
- GROUND FAULT CURRENT TRANSFORMER
- (5) MOTOR, NUMBER INDICATES HORSEPOWER
- GENERATOR
- ATS - AUTOMATIC TRANSFER SWITCH MTS - MANUAL TRANSFER SWITCH
- METER A - AMMETER V - VOLTMETER W - WATTMETER WH - WATT HOURMETER KWH - KILOWATT HOUR KVAR - KILOVAR METER VAR - VAR METER HZ - FREQUENCY METER PF - POWER FACTOR METER
- DPM DIGITAL POWER METER
- METER TRANSFER SWITCH AS - AMMETER SWITCH VS - VOLTMETER SWITCH
- TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR
- LA LIGHTNING ARRESTOR
- KEY INTERLOCK
- FUSE
- EPF ELECTRONIC POWER FUSE
- DRAWOUT DEVICE
- GROUND

# ABBREVIATIONS

A,AMP	AMPERE	LA	LIGHTNING ARRESTER
AFG	ABOVE FINISHED FLOOR	LTG	LIGHTING
AHJ	ABOVE FINISHED GRADE	MC	METAL CLAD
AIC	AUTHORITY HAVING JURISDICTION	MCB	MAIN CIRCUIT BREAKER
AWG	AMPERE INTERRUPTING CAPACITY	MFR	MANUFACTURER
BFG	AMERICAN WIRE GAUGE	MI	MINERAL INSULATED
BOS	BELOW FINISHED GRADE	MLO	MAIN LUG ONLY
C	BOTTOM OF STEEL	MTD	MOUNTED
CATV	CONDUIT, CONDUCTOR	MV	MEDIUM VOLTAGE
CB	CABLE TELEVISION	NC	NORMALLY CLOSED
CB	CIRCUIT BREAKER	NEC	NATIONAL ELECTRICAL CODE
CCTV	CLOSED CIRCUIT TELEVISION	NEG	NEGATIVE
CPT	CURRENT POWER TRANSFORMER	NEUT	NEUTRAL
CT	CONTROL TRANSFORMER	NTS	NOT IN CONTRACT
CU	COPPER	NO	NORMALLY OPEN
DACT	DIGITAL ALARM COMMUNICATOR TRANSMITTER	NTS	NOT TO SCALE
DB	DIRECT BURIED	PF	POWER FACTOR
DISC	DISCONNECT	PH	PHASE
DN	DOWN	PVC	POLYVINYL CHLORIDE
EMT	ELECTRICAL METALLIC TUBING	RGS	RIGID STEEL CONDUIT
EWC	ELECTRIC WATER COOLER	RSC	RIGID STEEL CONDUIT
FAA	FIRE ALARM ANNUNCIATOR	RTD	RESISTANCE TEMPERATURE DETECTOR
FACP	FIRE ALARM CONTROL PANEL	SN	SOLID NEUTRAL
FBO	FURNISHED BY OTHERS	STP	SHIELDED TWISTED PAIR
FU	FUSE	STT	SHIELDED TWISTED TRIPLET
FWE	FURNISHED WITH EQUIPMENT	SWBD	SWITCHBOARD
GEN	GENERATOR	SWGR	SWITCHGEAR
GFCI	GROUND FAULT CIRCUIT BREAKER	TOS	TOP OF STEEL
GND	GROUND	TRANSF	TRANSFORMER
HP	HORSEPOWER	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
HTR	HEATER	V	VOLT
IG	ISOLATED GROUND	VA	VOLT-AMPERE
IMC	INTERMEDIATE METAL CONDUIT	VAR	VOLT-AMPERE REACTIVE
K	KILO	WM	WATT METER
KCMIL	THOUSAND CIRCULAR MILS	WP	WEATHER PROOF
KV	KILOVOLT	XFMR	TRANSFORMER
KVA	KILOVOLT-AMPERE	XP	EXPLOSION PROOF
KVAR	KILOVOLT-AMPERE REACTIVE		
KW	KILOWATT		
KWH	KILOWATT-HOUR		

# GENERAL NOTES:

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH NFPA-70, NATIONAL ELECTRICAL CODE (NEC).
- ALL MOTOR SAFETY SWITCHES, DISCONNECTS AND MOTOR STARTERS ARE PROVIDED BY DIVISION 16000 UNLESS NOTED AS FURNISHED WITH EQUIPMENT (FWE).
- UNLESS OTHERWISE NOTED CONVENIENCE RECEPTACLES SHALL BE MOUNTED 18-INCHES AFF, LIGHTING TOGGLE SWITCHES 48-INCHES AFF, DATA SYSTEM OUTLETS 18-INCHES AFF, FIRE ALARM NOTIFICATION DEVICES 80-INCHES AFF OR 6-INCHES BELOW CEILING, WHICHEVER IS LOWER, AND FIRE ALARM MANUAL PULL STATIONS 48-INCHES TO TOP OF DEVICE.
- ALL PENETRATIONS THROUGH FLOORS, RATED WALLS AND PARTITIONS SHALL BE SEALED WITH UL APPROVED FIRE SEALANT MATERIAL TO MAINTAIN THE RATING OF SEPARATION.
- ALL ENCLOSURES, CONDUIT BODIES AND THEIR COVERS CONTAINING FIRE ALARM SYSTEM CONDUCTORS SHALL BE PAINTED RED.
- AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED WITH EVERY FEEDER AND BRANCH CIRCUIT.
- UNLESS OTHERWISE NOTED WIRING SHALL BE 2#12 AWG CONDUCTORS AND #12 GND. HOME RUNS FED FROM 20A-1P CIRCUITS IN EXCESS OF 100 FEET SHALL BE #10 AWG.
- FLEXIBLE CONNECTIONS TO MOTORS SHALL BE LIQUID TIGHT FLEXIBLE METAL CONDUIT, UNLESS OTHERWISE NOTED.
- LIGHTING TOGGLE SWITCHES SHALL BE COMMERCIAL SPECIFICATION GRADE 120 VOLT, SIDE WIRED AND PROVIDED WITH GROUNDING SCREW. LEVITON, PASS AND SEYMOUR OR APPROVED EQUAL. COORDINATE COLOR WITH ARCHITECT.
- CONVENIENCE RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE GROUNDING TYPE NEMA 5-20R, SIDE WIRED. LEVITON, PASS AND SEYMOUR OR APPROVED EQUAL. COORDINATE COLOR WITH ARCHITECT.
- PROVIDE WALL PLATES FOR ALL WIRING DEVICES, NYLON SMOOTH TYPE IN FINISHED AREAS AND GALVANIZED IN UNFINISHED AREAS.
- ALL WIRING SHALL BE 600V, ALUMINUM WITH THHN/THWN INSULATION FOR #4 AWG & LARGER. SERVICE ENTRANCE CONDUCTORS SHALL HAVE XHHW INSULATION.

# GENERAL NOTE

1. ALL GENERAL NOTES, SYMBOL LISTS, AND DETAILS ARE TO BE CONSIDERED AS APPLICABLE TO ALL ELECTRICAL DRAWINGS FOR THIS PROJECT. SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET ARE FOR REFERENCE ONLY AND DO NOT INDICATE THEIR INCORPORATION IN THE DESIGN.

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RECORD DRAWINGS  
9-19-07

PROJECT TITLE:	CURRENT ISSUE STATUS:	DATE
RECORD DRAWINGS	9-19-07	9-19-07
ISSUED FOR REVISION	3-5-07	3-5-07
ISSUED FOR CONSTRUCTION	12-20-06	12-20-06
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2	RECORD DRAWINGS	9-19-07
1	ISSUED FOR REVISION	3-5-07
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SCALE:	AS NOTED
PROJECT MANAGER:	DJT
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LEGEND & GENERAL NOTES

SHEET No. E-001