Date (mmm dd yyyy)	Issued For	Rev.
12-07-2007	TITLE II DESIGN 30% REVIEW SUBMITTAL	C
03-28-2008	TITLE II DESIGN 60% REVIEW SUBMITTAL	D
07-31-2008	TITLE II DESIGN 90% REVIEW SUBMITTAL	E
08-25-2008	TITLE II DESIGN 100% OWNER REVIEW	F
02-19-2009	TITLE II CONSTRUCTION BID ISSUE	0

ELECTRICAL SYMBOL LIST

CONDUIT SYSTEM

- CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING EXPOSED IN UNFINISHED AREAS
- CONDUIT RUN BELOW FLOOR (DO NOT RUN IN FLOOR SLAB)
- FUTURE CONDUIT
- CONDUIT OR CABLE TURNED UP
- CONDUIT OR CABLE TURNED DOWN
- BRANCH CIRCUIT HOMERUNS TO PANELS OR AS NOTED, LINES INDICATE NUMBER OF WIRES IN CONDUIT SHORT LINE IS NEUTRAL OPPOSITE SHORT SLANT IS GROUND
- J — JUNCTION BOX (SIZE PER NEC OR AS INDICATED)
- PB — PULL BOX (SIZE PER NEC OR AS INDICATED)

MOUNTING HEIGHTS

(ALL MOUNTING HEIGHTS ARE TO THE CENTER OF THE DEVICE, UNLESS OTHERWISE NOTED)

RECEPTACLE	48" AFF
LIGHT SWITCHES	48" AFF
CLOCK OUTLETS	7'-6" AFF
FIRE ALARM AUDIO AND VISUAL SIGNALS, OFFICE AREA	6'-8" AFF
FIRE ALARM SIGNALS INDUSTRIAL AREAS	AS NOTED
MANUAL PULL STATION	48" AFF
CARD READERS	48" AFF

POWER SYSTEMS

- LIGHTING PANEL, 480/277 VOLT, 3 PHASE, 4 WIRE
- RECEPTACLE PANEL 208/120 VOLT, 3 PHASE, 4 WIRE
- DISTRIBUTION PANEL, 480 VOLT, 3 PHASE, 3 WIRE
- MINI LOAD CENTER
- T — TRANSFORMER, 480-208Y/120 VOLT DRY TYPE UNLESS OTHERWISE NOTED
- MCC- — 480V, 3 PHASE, MOTOR CONTROL CENTER
- PLUG-IN BUS 480 VOLT, 3 PHASE, 3W CAPACITY AS NOTED
- MULTI-OUTLET ASSEMBLY WITH OUTLETS 18"ON CENTER UNLESS OTHERWISE NOTED
- 5 — 460V, 3 PHASE MOTOR - SIZE AS INDICATED
- 1/4 — 115V, 1 PHASE MOTOR - SIZE AS INDICATED
- 10 — PACKAGED EQUIPMENT UNIT STARTERS & CONTROLS SUPPLIED WITH UNIT
- PUSH BUTTON STATION
- UNFUSED DISCONNECT SWITCH
- F — FUSED DISCONNECT SWITCH
- 120V MANUAL STARTER, WITH PILOT LIGHT
- 480V 3 PHASE FUSIBLE COMBINATION STARTER
- 60A, 480V, 3 PHASE OUTLET WITH DISCONNECT SWITCH 42" AFF
- 60A, 480V, 3 PHASE WELDING RECEPTACLE 42" AFF
- 20A, 125V, 3W, SINGLE GROUNDING RECEPTACLE, NEMA 5-20R
- 30 — 30A, 125V, 3W, SINGLE GROUNDING RECEPTACLE, NEMA 5-30R
- 20A, 125V, 3W, DUPLEX GROUNDING RECEPTACLE, NEMA 5-20R
- 20A, 208V, 1 PHASE RECEPTACLE, NEMA 6-20R
- C — CLOCK OUTLET

CLOCK

- 120V CLOCK
- 120V CLOCK- DOUBLE FACED

GROUNDING

- GROUND ROD
- G — 1/4 " X 2" COPPER GROUND BAR
- DOT INDICATES EXOTHERMIC WELD OR CONNECTION
- #4/0 COPPER GROUND WIRE, UNLESS OTHERWISE NOTED

FIRE ALARM SYSTEM

- F — MANUAL PULL STATION
- S — AREA SMOKE DETECTOR -IONIZATION TYPE
- P — AREA SMOKE DETECTOR -PHOTOELECTRIC TYPE
- SD — DUCT TYPE SMOKE DETECTOR
- F S — ALARM SIGNAL RECESSED MOUNTED
- INDICATES SURFACE MOUNTED
- F S — AUDIO/VISUAL ALARM SIGNAL RECESSED MOUNTED
- VISUAL ALARM STROBE SIGNAL - SURFACED WALL MOUNTED
- VISUAL ALARM STROBE SIGNAL - RECESSED WALL MOUNTED
- H — CEILING MOUNTED AUDIO/VISUAL ALARM SIGNAL
- F — ALARM SIGNAL -INDUSTRIAL AREA
- L — DETECTOR REMOTE ALARM LAMP
- H — HEAT DETECTOR
- F — FLAME DETECTOR
- BD R — BEAM SMOKE DETECTOR - RECEIVER
- BD T — BEAM SMOKE DETECTOR - TRANSMITTER
- M — ADDRESSABLE MONITOR MODULE
- C — ADDRESSABLE CONTROL MODULE
- WF — SPRINKLER FLOW SWITCH
- PS — SPRINKLER PRESSURE SWITCH
- TS — SPRINKLER VALVE TAMPER SWITCH
- PIV — SPRINKLER POST INDICATOR VALVE SUPERVISORY SWITCH
- FT — FIREMANS TELEPHONE JACK
- FA — FIRE ALARM SYSTEM CONTROL PANEL OR TRANSPONDER

PAGING SYSTEM

- S S — SURFACE WALL MOUNTED SPEAKER
- S S — RECESSED CEILING OR WALL MOUNTED SPEAKER
- HORN TYPE SPEAKER
- AMP — PAGING SYSTEM AMPLIFIER & CONTROL PANEL
- M — MICROPHONE OUTLET

SECURITY SYSTEM

- TV — CCTV CAMERA
- TM — CCTV MONITOR
- M — MOTION DETECTOR
- D — MAGNETIC DOOR CONTACTS FOR SINGLE DOOR
- D D — MAGNETIC DOOR CONTACTS FOR DOUBLE DOOR
- D L — MAGNETIC DOOR CONTACTS FOR OVERHEAD DOOR
- WT S — WATCHMAN'S TOUR STATION STATION NUMBER
- B — SIGNAL BELL
- I — INTERCOM STATION
- CR — CARD READER

LINE VOLTAGE SWITCHES

- $ — SWITCH, SINGLE POLE, 20A
- $2 — SWITCH, DOUBLE POLE, 20A
- $3 — SWITCH, THREE WAY, 20A
- $D — DIMMER SWITCH
- $M — SWITCH, MOMENTARY, 20A

TELEPHONE

- W — TELEPHONE OUTLET, WALL MOUNTED 4'-0" AFF
- P — PAY TELEPHONE OUTLET, WALL MOUNTED 4'-0" AFF
- ADA — TELEPHONE OUTLET, WALL MOUNTED 42" AFF
- TELEPHONE OUTLET, WALL RECESSED 18" AFF
- F — TELEPHONE OUTLET, FLOOR MOUNTED
- DATA OUTLET, WALL RECESSED 18" AFF
- TELEPHONE/DATA OUTLET, WALL RECESSED 18" AFF
- TC — TELEPHONE TERMINAL CABINET
- TELEPHONE/POWER POLE

LIGHTING SYSTEM

- 2'X4' FLUORESCENT FIXTURE
- 2'X2' FLUORESCENT FIXTURE
- 1'X4' FLUORESCENT FIXTURE
- FLUORESCENT FIXTURE WITH SPLIT NIGHT LIGHT CIRCUIT
- FLUORESCENT NIGHT LIGHT FIXTURE
- STRIP FLUORESCENT FIXTURE
- INCANDESCENT DOWNLIGHT FIXTURE
- HID FIXTURE
- HID NIGHT LIGHT FIXTURE WITH QUARTZ RESTRIKE LAMP
- EXIT LIGHT DIRECTIONAL ARROWS IF INDICATED
- B — BATTERY OPERATED AUTOMATIC EMERGENCY LIGHTING UNIT WITH NUMBER OF HEADS AS SHOWN
- REMOTE MOUNTED LIGHT HEAD FROM BATTERY EMERGENCY UNIT
- POLE MOUNTED FIXTURE
- FLOODLIGHT
- A — INDICATES FIXTURE TYPE (i.e. "A")
- R — LOW VOLTAGE RELAY
- OC C — OCCUPANCY SENSOR ARROW-INDICATES DIRECTION C-INDICATES CEILING MOUNTED

ONE LINE DIAGRAMS

- DRAW OUT SUBSTATION CIRCUIT BREAKER
- AS — AMMETER SWITCH
- VS — VOLTMETER SWITCH
- TB — TEST BLOCK
- K — KEY INTERLOCK
- AM — AMMETER
- VM — VOLTMETER
- PF — POWER FACTOR METER
- WH — WATT-HOUR METER
- WHD — WATT-HOUR DEMAND METER
- KWH — KILOWATT HOUR METER
- GROUND CONNECTION
- CTB — CURRENT TEST BLOCK
- VTB — VOLTAGE TEST BLOCK
- RTD — RESISTANCE TEMPERATURE DETECTOR
- TRW — WATT/VAR TRANSDUCER
- AFC — ADJUSTABLE FREQUENCY CONTROLLER
- AFD — ARC FLASH DETECTOR
- 46 — REVERSE PHASE OR PHASE BALANCE CURRENT RELAY
- 47 — PHASE SEQUENCE VOLTAGE RELAY
- 51 — TIME OVERCURRENT RELAY
- 50 GS — INSTANTANEOUS OVERCURRENT GROUND SENSING RELAY
- CLF — CURRENT LIMITING FUSE
- CIRCUIT BREAKER
- SINGLE THROW SWITCH
- LIGHTNING ARRESTOR
- 3 — SURGE ARRESTER (QUANITY 3)
- CAPACITOR
- AUTOMATIC TRANSFER SWITCH
- POWER TRANSFORMER
- POTENTIAL TRANSFORMER
- CURRENT TRANSFORMER
- OVERLOAD
- SOLID STATE MOTOR CONTROLLER (SOFT START)

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BROOKHAVEN NATIONAL LABORATORY

UNDER CONTRACT WITH
UNITED STATES DEPARTMENT OF ENERGY
PLANT ENGINEERING DIVISION
UPTON, NEW YORK 11973

Giffels, Partnership
25200 Telegraph Road, Suite 200
Southfield, Michigan 48033 USA
Tel. 248-936-8000
Fax 248-936-8111

Approved By: R BARTOY
Project Manager: G. KAPLAN
Project Engineer/Architect: J BOSSORY
Project No.: SF070003

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