F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
94/90	2003-031I	COOK	976	848
STA.		TO STA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

62583

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(1) (2) #4/0, (1) #4/0 NEUTRAL & (1) #2 GND, 3" C
(2) (1) #3, (1) #3 NEUTRAL, & (1) #8 GND, 1" C
(3) (2) #8 & (1) #10 GND, ¾" C
(4) (2) #10 & (1) #12 GND, ¾" C
(5) (2) #12 & (1) #12 GND, ¾" C
(6) #6 GND WIRE, ¾" C
(7) #4/0, BARE COPPER GROUND
(8) QUANTITY & CONTROL WIRE SIZE PER MANUFACTURER'S RECOMMENDATION, ¾" RGS
(9) #8 BARE COPPER GROUND
(10) (3) #4/0, 3" C
(11) (1) #2 GND, 1" C

INCOMING ELECTRICAL SERVICE (120/240 VAC, 1 Ø)
ELECTRIC SERVICE METER (SEE DETAIL A BELOW)
SEE NOTE 1 FOR INSTALLATION
AUTOMATIC TRANSFER SWITCH (ATS)
SEE NOTE 3 & 4
80 kW EMERGENCY GENERATOR (SEE NOTE 2)
2-POLE
TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)

SERVICE PANEL (NOTE 1)
SINGLE PHASE 3-WIRE TRANSFER SWITCH
GENERATOR
(SEE NOTE 3 & 4)
2-POLE ATS
SOLIDLY CONNECTED NEUTRAL
PANEL PP
DETAIL B

MAIN POWER DISTRIBUTION PANEL "PP"
225A/2P MAIN BREAKER
225A, 120/240V, 1Ø, 3W
42 SPACES
HVAC UNIT #1
HVAC UNIT #2
NORMAL QUAD RECEPT CABLE TRAY RACK NO. 1
NORMAL QUAD RECEPT CABLE TRAY RACK NO. 2
NORMAL QUAD RECEPT CABLE TRAY RACK NO. 3
NORMAL QUAD RECEPT CABLE TRAY RACK NO. 4
NORMAL QUAD RECEPT CABLE TRAY RACK NO. 5
NORMAL QUAD RECEPT CABLE TRAY RACK NO. 6
LIGHTS
EXIT LIGHTS
TVSS
CONVENIENCE DUPLEX WALL RECEPT. WEST WALL
POWER STRIP UNDER PLYWOOD TELCO BOARD
OUTDOOR GFCI RECEPT. ADJACENT TO HVAC UNITS
SPARE
1-POLE, 120V, 1Ø, 2W
FUTURE REQUIREMENTS (23-42)
"GP"
GENERATOR PANEL "GP", 120/240, 1Ø
NORMAL
BYPASS
100A, 240 VAC, MANUAL SINGLE POLE DOUBLE THROW SWITCH IN NEMA TYPE 1 ENCLOSURE

SINGLE LINE DIAGRAM
NOT TO SCALE

UNINTERRUPTED POWER SUPPLY DISTRIBUTION PANEL "UP"
100A/1P
100A, 120/240V, 1Ø, 2W + M.L.O.
24 SPACES
UPS QUAD RECEPT CABLE TRAY RACK NO. 1
UPS QUAD RECEPT CABLE TRAY RACK NO. 2
UPS QUAD RECEPT CABLE TRAY RACK NO. 3
UPS QUAD RECEPT CABLE TRAY RACK NO. 4
UPS QUAD RECEPT CABLE TRAY RACK NO. 5
UPS QUAD RECEPT CABLE TRAY RACK NO. 6
SECURITY PANEL
FIRE ALARM CONTROL PANEL
FUTURE COMM. EQUIPMENT
FUTURE COMM. EQUIPMENT
FUTURE COMM. EQUIPMENT
FUTURE REQUIREMENTS (9-24)
MINI-UPS CABINET
10 KVA
BATTERY
SIZE PER MANUFACTURER'S RECOMMENDATION

3" NIPPLE
CONTRACTOR MUST PROVIDE THE UTILITY METER SOCKET. METER WILL BE PROVIDED BY THE UTILITY.
SHELTER INTERIOR
SEE NOTE 1
4" RGC ATTACHED TO SHELTER
GALVANIZED STEEL CONDUIT STRAPS AT 2' INTERVALS FASTENED WITH GALVANIZED STEEL LAG SCREWS. (TYP)
UNDERGROUND ELECTRIC SERVICE CONDUIT AND CABLE FROM SERVICE PROVIDER
4" RGC IN TRENCH
DETAIL A
NOT TO SCALE

PANEL CIRCUIT AND LOAD SCHEDULE

WIRE SIZE #3/0
1P, 225A

SERVICE : 120/240VAC, 1Ø, 3W
DESIGNATION : IDOT- SHELTER NORMAL POWER (PP)
LOCATION : MAINTENANCE YARD SHELTER (RO2)

LOAD DESCRIPTION	QTY	UNIT (W)	LOAD PER PHASE(KVA) A	LOAD PER PHASE(KVA) B	TRIP	POLES	WIRE SIZE
HVAC UNIT 1 (36K BTU)	1	10300	5150	5150	40	2	6
NORMAL QUAD RECEPTACLE - RACK 1	1	900	900		20	1	12
NORMAL QUAD RECEPTACLE - RACK 3	1	900		900	20	1	12
NORMAL QUAD RECEPTACLE - RACK 5	1	900	900		20	1	12
LIGHTS	8	50		400	20	1	12
TVSS	1	N/A	—	—	60	2	4
OUTDOOR GFCI RECEPTACLE	1	180	180		20	1	12
UPS BYPASS (LOAD NOT INCLUDED IN TOTALS)					70	1	3
SPARE					20	1	
GENERATOR PANEL "GP"					60	2	6
SPARE	1				20	1	
SPARE	1				20	1	
SPARE	1				20	1	
SPARE	1				20	1	
SPARE	1				20	1	
SPARE	1				20	1	
SPARE	1				20	1	
SPARE	1				20	1	
SUBTOTAL LEFT			1980	6450			

WIRE SIZE	POLES	TRIP	LOAD PER PHASE(W) A	LOAD PER PHASE(W) B	UNIT (W)	QTY	LOAD DESCRIPTION
6	2	40	5150	5150	10300	1	HVAC UNIT 2 (36K BTU)
12	1	20	900		900	1	NORMAL QUAD RECEPTACLE - RACK 2
12	1	20		900	900	1	NORMAL QUAD RECEPTACLE - RACK 4
12	1	20	900		900	1	NORMAL QUAD RECEPTACLE - RACK 6
12	1	20		35	35	1	EXIT LIGHT
12	1	20	900		180	5	DUPLEX RECEPTACLE
12	1	20		900	180	5	RECEPTACLE- POWER STRIP
	1	20					SPARE
2	2	70	5000		10000	1	UPS INPUT (10 KVA)
				5000			
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
	1	20				1	SPARE
SUBTOTAL RIGHT			3830	6905			
SUBTOTAL			11830	15435			TOTAL LOAD: 27,265 W

VOLTAGE: 120/240V CYCLE: 60 Hz PHASE: 1 WIRES: 3
SOLID NEUTRAL: 225 AMPS
MAIN BREAKER: 225 AMP FRAME 225 AMP TRIP
MAIN LUGS: - AMPS MAIN COPPER BUS: 225 AMPS
MAINS: TOP [X] BOTTOM [ ]
S/N
GRD
MANUFACTURER:
TYPE AND CAT. NO. : ~~0014QM200~~
NO EQUAL: [X] APPROVED EQUAL: [ ]
MOUNTING: SURFACE: [X] FLUSH: [ ]

1. BOLT ON BRANCH BREAKERS
2. ALL COPPER CURRENT CARRYING PARTS
3. 51 = SHUNT TRIP

PANEL CIRCUIT AND LOAD SCHEDULE

WIRE SIZE (2)
1P, 100A

SERVICE : 120/VAC, 1Ø
DESIGNATION : IDOT- SHELTER UPS POWER (UP)
LOCATION : MAINTENANCE YARD SHELTER (RO2)

LOAD DESCRIPTION	QTY	UNIT (W)	LOAD PER PHASE(VA) A	TRIP	POLES	WIRE SIZE
UPS QUAD RECEPTACLE - CAB 1	1	900	900	20	1	12
UPS QUAD RECEPTACLE - CAB 3	1	900	900	20	1	12
UPS QUAD RECEPTACLE - CAB 5	1	900	900	20	1	12
SECURITY PANEL	1	260	260	20	1	12
SPARE	1			20	1	
SPARE	1			20	1	
SPARE	1			20	1	
SPARE	1			20	1	
SPARE	1			20	1	
SPARE	1			20	1	
SPARE	1			20	1	
SPARE	1			20	1	
SUBTOTAL LEFT			1800			

WIRE SIZE	POLES	TRIP	LOAD PER PHASE(W) A	UNIT (W)	QTY	LOAD DESCRIPTION
12	1	20	900	900	1	UPS QUAD RECEPTACLE - CAB 2
12	1	20	900	900	1	UPS QUAD RECEPTACLE - CAB 4
12	1	20	900	900	1	UPS QUAD RECEPTACLE - CAB 6
12	1	20	260	260	1	FIRE ALARM CONTROL PANEL
	1	20			1	SPARE
	1	20			1	SPARE
	1	20			1	SPARE
	1	20			1	SPARE
	1	20			1	SPARE
	1	20			1	SPARE
	1	20			1	SPARE
	1	20			1	SPARE
SUBTOTAL RIGHT			1800	1160		
SUBTOTAL			3600	2320		TOTAL LOAD: 5,920 W

VOLTAGE: 120/240V CYCLE: 60 Hz PHASE: 1 WIRES: 2
SOLID NEUTRAL: 100 AMPS
MAIN BREAKER: 100 AMP FRAME 100 AMP TRIP
MAIN LUGS: - AMPS MAIN COPPER BUS: 100 AMPS
MAINS: TOP [X] BOTTOM [ ]
S/N
GRD
MANUFACTURER:
TYPE AND CAT. NO. : ~~0014QM200~~
NO EQUAL: [X] APPROVED EQUAL: [ ]
MOUNTING: SURFACE: [X] FLUSH: [ ]

1. BOLT ON BRANCH BREAKERS
2. ALL COPPER CURRENT CARRYING PARTS

NOTES:
1. INSTALL NEW 225 AMP MAIN CIRCUIT BREAKER DISCONNECT SWITCH WITH NEUTRAL AND GROUND BUS IN NEMA 1 ENCLOSURE.
2. PACKAGED STANDBY GENERATOR AND TRANSFER SWITCH, INSTALLATION ONLY.
3. INSTALL NEW 225 AMP CIRCUIT BREAKER DISCONNECT SWITCH WITH NEUTRAL AND GROUND BUS IN NEMA TYPE 3R ENCLOSURE.
4. MOUNT NEMA 3R DISCONNECT SWITCH TO STRUCTURAL FRAME OF GENERATOR. NOTE: DESIGNATED WORK SHALL BE PAID FOR AS PART OF COMMUNICATION SHELTER.
5. ALL CONDUIT SHALL BE RIGID GALVANIZED STEEL UNLESS OTHERWISE NOTED.
6. ALL WIRE SHALL BE TYPE THWN UNLESS OTHERWISE NOTED.

COMM-82

REVISIONS NAME	DATE
REVISION 1	12/17/04
REVISION	2/11/05

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ILLINOIS DEPARTMENT OF TRANSPORTATION
F.A.I. 94/90 (DAN RYAN EXPRESSWAY)
31st STREET to I-57

MAINTENANCE YARD SHELTER (RO2)
POWER SINGLE LINE DIAGRAM

SCALE: NOT TO SCALE
DRAWN BY: JM
DATE: October 29, 2004
CHECKED BY: CS

02/09/2005 10:22:20 AM