

IRM UPS UPGRADE

PROJECT NO. 568-13-102

AREA OF CONSTRUCTION






V.A. MEDICAL CENTER

FT. MEADE, S.D.

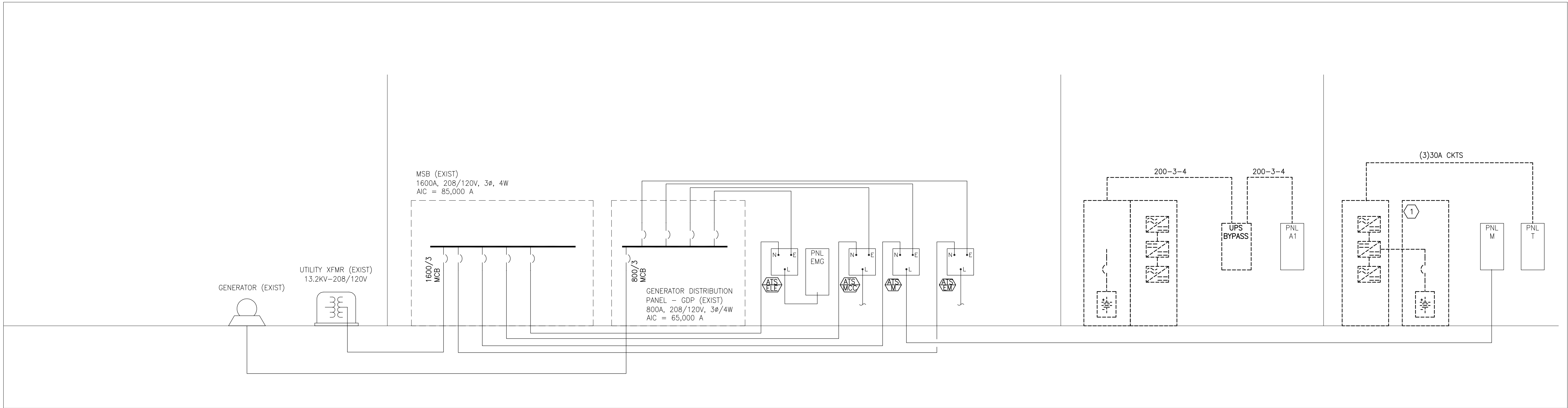
SHEET INDEX
E-001 - SITE LOCATION PLAN AND SHEET INDEX
EP101 - ELECTRICAL POWER & AUXILIARY PLAN
E-601 - ELECTRICAL ONE-LINE DIAGRAM
E-602 - ELECTRICAL SCHEDULES

PLAN NORTH
F1 OVERALL SITE PLAN
SCALE: 1" = 150'-0"

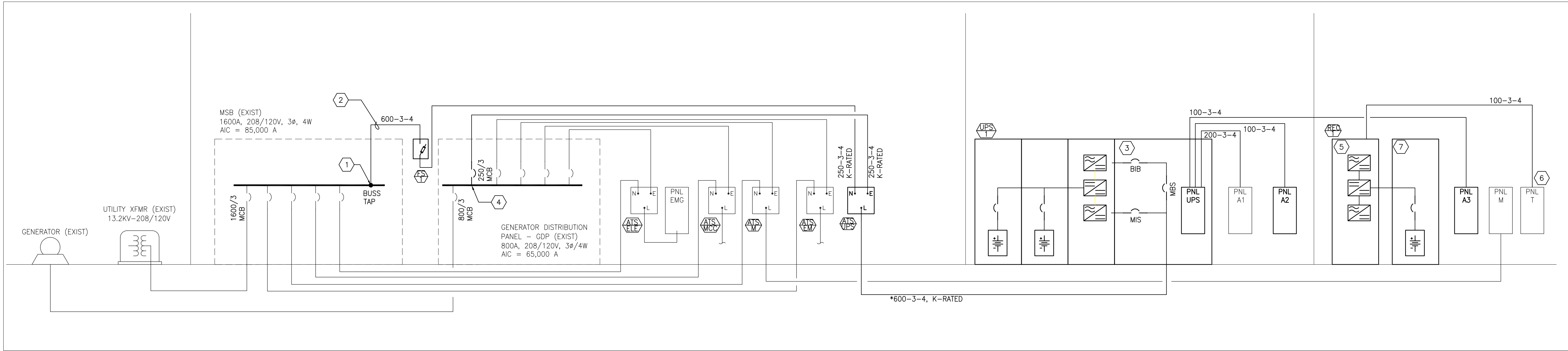
Revisions:		Date:		CONSULTANTS:				ARCHITECT/ENGINEERS:  TSP, Inc. 1112 N. West Ave. Sioux Falls, SD 57104 phone: (605) 336-1160 fax: (605) 336-7926 www.teamtsp.com TSP PROJECT #04121142		Drawing Title OVERALL SITE PLAN AND SHEET INDEX		Approved Project Director		Project Title IRM UPS UPGRADES		Project Number 568-13-102		Building Number CAMPUS		Drawing Number E-001		Date 02-01-13		Checked DLB		Drawn NSW		Dwg 1 of 4		Office of Construction and Facilities Management 	
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three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot
one sixteenth inch = one foot

6:\2012\04121142 Dept of VA\23\ Replace IRM UPS Systems\Drawings\Electrical\E-601.dwg 2-06-13 01:45:15 PM kennedyjn



B5 ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION
SCALE: NOT TO SCALE



E5 ELECTRICAL ONE-LINE DIAGRAM - NEW
SCALE: NOT TO SCALE

CIRCUIT SCHEDULE		
MARK (AMPACITY)	4-WIRE (N/NEUTRAL) PH/N-OND-C	K RATED (N/ 200% NEUTRAL) PH-N-OND-C
15	12-12-3/4"	12-12-3/4"
20	12-12-3/4"	12-12-3/4"
25	12-12-3/4"	12-12-3/4"
30	12-12-3/4"	12-12-3/4"
35	8-10-1"	8-10-1"
40	8-10-1"	8-10-3/4"
45	6-10-1 1/4"	6-10-1 1/4"
50	6-10-1 1/4"	6-10-1 1/4"
60	6-10-1 1/4"	6-10-1 1/4"
70	4-8-1 1/2"	4-8-1 1/2"
80	3-8-1 1/2"	3-8-1 1/2"
90	3-8-1 1/2"	3-2/0-8-1 1/2"
100	2-8-1 1/2"	2-3/0-8-1 1/2"
110	2-8-1 1/2"	2-4/0-8-1 1/2"
125	1-6-2"	1-6-1 1/2"
150	1/0-6-2"	1/0-6-2"
175	3/0-6-2"	2/0-6-2"
200	3/0-6-2 1/2"	3/0-500 KCMIL-6-2 1/2"
225	4/0-4-2 1/2"	4/0-4-2 1/2"
250	250 KCMIL-4-3"	250 KCMIL-2 250 KCMIL-4-3"
300	350 KCMIL-4-3"	350 KCMIL-2 350 KCMIL-4-3 1/2"
350	500 KCMIL-3-3 1/2"	500 KCMIL-2 500 KCMIL-3-3 1/2"
400	600 KCMIL-3-4"	600 KCMIL-2 600 KCMIL-3-4"
450	(2) 3/0-3-2 1/2"	(2) 3/0-3-2"
500	(2) 250 KCMIL-2-3"	(2) 250 KCMIL-2 250 KCMIL-2-3"
600	(2) 350 KCMIL-1-3"	(2) 350 KCMIL-1-3"
700	(2) 500 KCMIL-1/0-3 1/2"	(2) 500 KCMIL-2 500 KCMIL-1/0-3 1/2"
800	(3) 300 KCMIL-1/0-3"	(3) 300 KCMIL-2 300 KCMIL-1/0-3"
1000	(4) 300 KCMIL-2/0-5"	(4) 300 KCMIL-2/0-2 1/2"
1000	(5) 500 KCMIL-2/0-3 1/2"	(5) 500 KCMIL-2 500 KCMIL-2/0-3 1/2"
1200	(6) 500 KCMIL-3/0-3 1/2"	(6) 500 KCMIL-2 500 KCMIL-3/0-3 1/2"
1400	(5) 500 KCMIL-4/0-3 1/2"	(5) 500 KCMIL-2 500 KCMIL-4/0-3 1/2"
2000	(6) 500 KCMIL-250 KCMIL-3 1/2"	(6) 500 KCMIL-2 500 KCMIL-250 KCMIL-3 1/2"
2500	(8) 500 KCMIL-350 KCMIL-3 1/2"	(8) 500 KCMIL-2 500 KCMIL-350 KCMIL-3 1/2"
2500	(7) 600 KCMIL-350 KCMIL-4"	(7) 600 KCMIL-2 600 KCMIL-350 KCMIL-4"
3000	(9) 500 KCMIL-500 KCMIL-3 1/2"	(9) 500 KCMIL-2 500 KCMIL-500 KCMIL-3 1/2"
3500	(8) 600 KCMIL-500 KCMIL-4"	(8) 600 KCMIL-2 600 KCMIL-500 KCMIL-4"

SCHEDULE REFERENCE INFORMATION
A. SCHEDULE WILL BE REFERENCED ON THE DRAWINGS BY "MARK" - "PHASE" - "WIRE COUNT"
B. FEEDERS/CIRCUITS SIZED FOR VOLTAGE DROP SHALL BE PROCEEDED WITH AN ASTERISK.
MISCELLANEOUS NOTES:
1. ALL CIRCUITS (BRANCH, FEEDERS, AND SERVICE) SHALL BE SIZED PER THE OVERCURRENT DEVICE AND THIS CIRCUIT SCHEDULE UNLESS OTHERWISE NOTED.
2. THE ABOVE CHART IS THE MINIMUM CONDUCTOR AND CONDUIT SIZE FOR THE OVERCURRENT DEVICE. CHART DOES NOT INCLUDE REQUIRED VOLTAGE DROP.
3. CIRCUITS SHALL BE 4 WIRE (4W) UNLESS INDICATED WITH "3W" (3 WIRE) OR "N" (K RATED), OR IS THE SERVICE ENTRANCE FROM THE UTILITY.
4. ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR.
5. ALL CONDUCTORS SHALL BE COPPER.
6. THE NEUTRAL SHALL BE THE SAME SIZE AS THE PHASE CONDUCTORS UNLESS K RATED, 3-WIRE, OR NOTED OTHERWISE.
7. THE NUMBER OF PHASES, SEE'S INDICATED IN PARENTHESES.
8. SINGLE PHASE CIRCUITS SHALL BE SIZED PER THE OVERCURRENT DEVICE UNLESS OTHERWISE NOTED. SIZE THE CONDUCTORS AND CONDUIT PER THE 4-WIRE COLUMN OF THIS CHART BUT REDUCE THE AMOUNT OF PHASE CONDUCTORS AS REQUIRED.

F3 BRANCH CIRCUIT-FEEDER SCHEDULE
SCALE: NOT TO SCALE

DEMOLITION PLAN - SHEET KEYNOTES

- EXISTING RECTIFIER BATTERY RACK

NEW PLAN - SHEET KEYNOTES

- PROVIDE TAP CONNECTION WITHIN EXISTING WESTINGHOUSE POWRLINE C MANUFACTURED SWITCHBOARD FOR FEEDING NEW FUSIBLE DISCONNECT SWITCH (ROUTE NEW FEEDERS THROUGH THE TOP OF THE SWITCHBOARD).
- MAXIMUM DISTANCE OF FEEDERS FROM SWITCHBOARD TAP TO FUSIBLE DISCONNECT SHALL NOT EXCEED 25 FEET.
- REFER TO SPECIFICATIONS FOR REQUIREMENTS OF THE UPS.
- PROVIDE NEW CIRCUIT BREAKER WITHIN EXISTING SIEMENS BOARD (EXISTING BOARD IS A SB3 Rev A, 800A, S.O. 19-52683-B0001001).
- REFER TO SPECIFICATIONS FOR ADDITIONAL RECTIFIER INFORMATION.
- PROVIDE 100/3 BREAKER IN EXISTING PANEL T FOR NEW RECTIFIER FEEDER.
- PROVIDE NEW BATTERY RACK FOR NEW RECTIFIER UNIT AS SPECIFIED.

EQUIPMENT

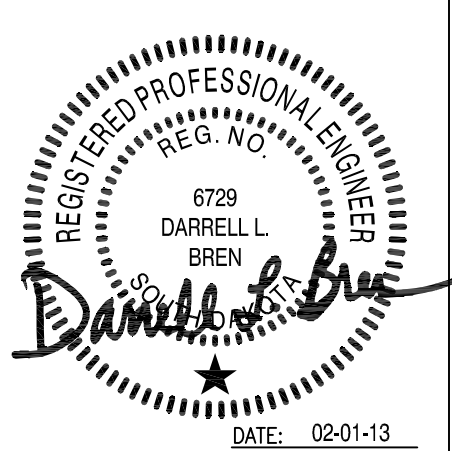
- ATS: 400A, 4-POLE, 200% NEUTRAL, MIN. AIC OF 65,000A.
- EXISTING ATS
- EXISTING ATS
- EXISTING ATS
- EXISTING ATS
- FUSED HD DISCONNECT SWITCH: 600A, 3-POLE, 250AF, MIN. AIC OF 65,000 A
- RECTIFIER SYSTEM: +24VDC RECTIFIERS, -48VDC CONVERTERS, (10) 30A OUTPUT CIRCUIT BREAKERS
- UPS: 60KVA/54KW

SHEET GENERAL NOTES

- ELECTRICAL ITEMS SHOWN DASHED AND IN FULL TONE LINES ON THIS PLAN INDICATE EXISTING EQUIPMENT TO BE REMOVED AND/OR RELOCATED BY DIVISION 26 (ALONG WITH ALL ASSOCIATED UNUSED CONDUIT AND WIRE), UNLESS NOTED OTHERWISE. ELECTRICAL ITEMS IN HALF TONE ARE EXISTING ITEMS TO REMAIN.
- ANY DEMOLITION REQUIRED ON THIS PLAN IS BASED ON INFORMATION SHOWN ON OWNER'S EXISTING PLANS AND AN ON-SITE REVIEW OF THE FACILITY. QUANTITIES, TYPES, AND LOCATIONS OF ITEMS SHOWN ARE BELIEVED TO BE ACCURATE. HOWEVER, DIVISION 26 CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND/OR RELOCATING ELECTRICAL EQUIPMENT AS REQUIRED TO ACCOMMODATE REMODELING.
- WHEN EXISTING ELECTRICAL PANELS, LIGHT FIXTURES, OR OTHER OUTLETS ARE REMOVED AND/OR RELOCATED, DIVISION 26 CONTRACTOR SHALL EXTEND EXISTING CIRCUITING (CONDUIT AND WIRE) IF REQUIRED; INSTALL JUNCTION BOXES IN WALLS, CEILINGS OR FLOORS, IF REQUIRED TO CONTINUE CIRCUITING; REMOVE ALL UNUSED WIRE; REMOVE ALL UNUSED CONDUIT WHERE ACCESSIBLE; AND INSTALL NEW BLANK PLATES AS REQUIRED ON EXISTING OUTLET BOXES.
- EXISTING EQUIPMENT REMOVED AND NOT REUSED, AT OWNER'S OPTION, SHALL BE RETURNED TO OWNER. IF THE OWNER DOES NOT WISH TO KEEP THE ITEMS, THEY SHALL BECOME THE CONTRACTOR'S PROPERTY AND BE REMOVED FROM THE SITE, UNLESS OTHERWISE SPECIFIED OR SHOWN.
- THE CONTRACTOR SHALL PLAN THE SWITCHBOARD MSB SHUTDOWN DURING NON-BUSINESS HOURS, WITH THE EMERGENCY GENERATORS RUNNING DURING THE EFFORT (OWNER TO BE RESPONSIBLE FOR FUEL).
- DOWNTIME FOR THE UPS/RECTIFIER/PANEL A1 SHALL BE MINIMIZED, WITH ALL DISCONNECTED/RECONNECTED EFFORTS FOR THESE THREE PIECES TO BE ACCOMMODATED IN A SINGLE NIGHT (BETWEEN 1 AND 3 AM). OWNER TO CONTACT ALL PARTIES AFFECTED AFTER AGREEMENT BETWEEN CONTRACTOR AND OWNER ON EXACT DATE.

CONSULTANTS:

ARCHITECT/ENGINEERS:



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1112 N. West Ave.
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TSP PROJECT #04121142

Drawing Title
BUILDING 145 - ELECTRICAL ONE-LINE DIAGRAM

Approved Project Director

Project Title
IRM UPS UPGRADES

Location
FORT MEADE, SD

Date
02-01-13

Checked
DLB

Drawn
NSW

Project Number
568-13-102

Building Number
145

Drawing Number
E-601

Dwg 3 of 4

Office of
Construction
and Facilities
Management



PANEL A1 (EXISTING)

LOCATION: RM 137C

AMP MAIN BKR: 200

AMP MLO:

PANEL SCHEDULE

VOLTS: 208

Y/ 120

PH: 3-Phase

W: 4-Wire

SCCR: 10,000

MOUNT: SURFACE

FED FROM: UPS PANEL

CIRCUIT DESCRIPTION	LOAD VA	OKT BKR	P	OR #	H	CIR #	P	OKT BKR	LOAD VA	CIRCUIT DESCRIPTION
ROK-2 = RECEPTACLES (CENTER OF ROOM)		20	1	1	A	2	1	20		RECEPTACLES
ROK-2 = RECEPTACLES (CENTER OF ROOM)		20	1	3	B	4	1	20		RECEPTACLES
ROK-2 = RECEPTACLES (CENTER OF ROOM)		20	1	5	C	6	1	20		RECEPTACLES
ROK-4 = RECEPTACLES (CENTER OF ROOM)		20	1	7	A	8	1	20		RECEPTACLES
ROK-4 = RECEPTACLES (CENTER OF ROOM)		20	1	9	B	10	1	20		RECEPTACLES
ROK-4 = RECEPTACLES (CENTER OF ROOM)		20	1	11	C	12	1	20		RECEPTACLES
ROK-6 = RECEPTACLES (BACK OF ROOM)		20	1	13	A	14	1	20		ROK-5 = RECEPTACLES (CENTER OF ROOM)
ROK-6 = RECEPTACLES (BACK OF ROOM)		20	1	15	B	16	1	20		ROK-5 = RECEPTACLES (CENTER OF ROOM)
ROK-7 = RECEPTACLES (BACK OF ROOM)		20	1	17	C	18	1	20		ROK-5 = RECEPTACLES (CENTER OF ROOM)
ROK-7 = RECEPTACLES (BACK OF ROOM)		20	1	19	A	20	1	20		TELEPHONE OUTLET (1ST)
EXISTING		20	1	21	B	22	1	20		TELEPHONE OUTLET (2ND)
EXISTING		20	1	23	C	24	1	20		TELEPHONE OUTLET (3RD)
EXISTING		20	1	25	A	26	2	20		CISCO SWITCH
EXISTING		20	1	27	B	28	---	---		---
EXISTING		20	1	29	C	30	2	20		CISCO SWITCH
EXISTING		20	1	31	A	32	---	---		---
ALS 2		20	1	33	B	34	1	20		EXISTING
EXISTING		20	1	35	C	36	1	20		EXISTING
SPARE		20	1	37	A	38	1	20		ALS 1
SPARE		20	1	39	B	40	1	20		EXISTING
SPARE		20	1	41	C	42	1	20		EXISTING

LOAD SUMMARY:

CONNECTED

FEEDER / SERVICE CALCULATION

LIGHTING	0.00 KVA	0.00 KVA (125%)	HI-PHASE 0 A
LARGEST MOTOR	0.00 KVA	0.00 KVA (125%)	
MOTORS	0.00 KVA	0.00 KVA (100%)	
RECEPT	0.00 KVA	0.00 KVA (100KVA @ 100%, REMAIN @ 50%)	
KITCHEN EQUIPMENT	0.00 KVA	0.00 KVA (65%)	
ELECTRONIC LOADS	0.00 KVA	0.00 KVA (100%)	
ELECTRIC HEATING	0.00 KVA	0.00 KVA (100%)	
MISC.	0.00 KVA	0.00 KVA (100%)	
TOTALS	0 KVA 0 AMPS	0 KVA 0 AMPS	

PRIMARY FEEDER INPUT DATA:

V-I Primary:

208	Volts
0	
Motor (FLA):	
Avail. Fault (lfc):	1133.3
#1	Amps
Feeder Size:	
Feeder Length (L):	10
Parallel Sets:	1
Power Factor %:	90%
Feeder/Load Amps:	100
C' Value:	7493
Volt Drop' Value:	268

VOLTAGE DROP CALCULATIONS:

Prim Vdrop = 0.27 Volts

Prim Vdrop % = 0.1%

BMS BALTED 3-PHASE SHORT CIRCUIT

CURRENT CALCULATIONS:

Isc (At Panel) =

Isc (w/ motor contrib.) =

Amps

Amps

NOTES:

1. NON-LINEAR PANELBOARD, 200% RATED NEUTRAL

2. EXISTING ISOLATED GROUNDING REQUIREMENTS FOR PANELBOARD

3. EXISTING PANELBOARD THAT HAS BEEN MODIFIED

4.

5.

6.

V5.4

PANEL: A3

LOCATION: RM 137B

AMPS MAIN BRKR: 100

AMP MISC:

VOLTS: 208 Y/ 120

PH: 3-Phase

W: 4-Wire

SCOR: 18,000

MOUNT: SURFACE

FED FROM: UPS PANEL

LOAD DESCRIPTION	LOAD VA	CKT BKR	P	OR #	H	CR #	P	CKT BKR	LOAD VA	LOAD DESCRIPTION
RACK 12/13 RECEPT		20	1	1	A	2	1	20		RACK 12/13 RECEPT
RACK 12/13 RECEPT		20	1	3	B	4	1	20		RACK 12/13 RECEPT
RACK 12/13 RECEPT		20	1	5	C	6	1	20		RACK 12/13 RECEPT
TELEPHONE BOARD RECEP		20	1	7	A	8	1	20		TELEPHONE BOARD RECEP
TELEPHONE BOARD RECEP		20	1	9	B	10	1	20		TELEPHONE BOARD RECEP
TELEPHONE BOARD RECEP		20	1	11	C	12	1	20		TELEPHONE BOARD RECEP
SPARE		20	1	13	A	14	1	20		SPARE
SPARE		20	1	15	B	16	1	20		SPARE
SPARE		20	1	17	C	18	1	20		SPARE
SPARE		20	1	19	A	20	1	20		SPARE
SPACE				21	B	22				SPACE
SPACE				23	C	24				SPACE
SPACE				25	A	26				SPACE
SPACE				27	B	28				SPACE
SPACE				29	C	30				SPACE
SPACE				31	A	32				SPACE
SPACE				33	B	34				SPACE
SPACE				35	C	36				SPACE
SPACE				37	A	38				SPACE
SPACE				39	B	40				SPACE
SPACE				41	C	42				SPACE

LOAD SUMMARY:

CONNECTED

FEEDER / SERVICE CALCULATION

LIGHTING	0.00 KVA	0.00 KVA (125%)	
LARGEST MOTOR	0.00 KVA	0.00 KVA (125%)	
MOTORS	0.00 KVA	0.00 KVA (100%)	
RECEPT	0.00 KVA	0.00 KVA (100KVA @ 100%, REMAIN @ 50%)	
KITCHEN EQUIPMENT	0.00 KVA	0.00 KVA (65%)	
ELECTRONIC LOADS	0.00 KVA	0.00 KVA (100%)	
ELECTRIC HEATING	0.00 KVA	0.00 KVA (100%)	
MISC.	0.00 KVA	0.00 KVA (100%)	
TOTALS	0 KVA	0 KVA	HI-PHASE
	0 AMPS	0 AMPS	0 A

PRIMARY FEEDER INPUT DATA:

V-I Primary:

208 Volts

Motor (FLA):

0

Avg. Fault (Isc):

17373 Amps

Avg. Feeder Size:

#1

Feeder Length (L):

10 Ft.

Parallel Sets:

1

Power Factor %

90%

Feeder/Load Amps:

100 Amps

C' Value:

7493 Cu

Volt Drop' Value:

268

VOLTAGE DROP CALCULATIONS:

Prim Vdrop = 0.27 Volts

Prim Vdrop% = 0.1%

DMS SOLTEC 3 PHASE SHORT CIRCUIT CURRENT CALCULATIONS:

Isc (At Panel) = 14562 Amps

Isc (w/ motor contrib.) = 14562 Amps

NOTES:

1. NON-LINEAR PANELBOARD, 200% RATED NEUTRAL

2. PROVIDE ISOLATED GROUNDING REQUIREMENTS FOR PANELBOARD

3.

4.

5.

6.

V5.4

SCALE: NOT TO SCALE

CONSULTANTS:



TSP

To Solve. To Excel. **Together.**

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Drawing Title
BUILDING 145 - ELECTRICAL SCHEDULES

Approved: Project Director

Project Title	IRM UPS UPGRADES
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Location	
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Checked

Drawn

Project Number
568-13-102Building Number
145

Drawing Number

E-602

Dwg. 4 of 4

Office of
Construction
and Facilities
Management

