480V 3Ph 3W, w/copper ground bus

10000.00 24-Nov-10 11:12 AM Version 6.1d PPA ccliements

MHMRA - 7011 SOUTH WEST FREEWAY, HOUSTON, TX

DIST. PANELBOARD "PPA"

Copper Bus Rating: 600 AMP
Mains Rating (M.L.O.) 600 AMP
2 runs of 3#350 KCM, 1 #1 G, 3 1/2"conduit
Feeder Ampacity = 620A
(All wires shall have THHN/THWN insulation unless noted otherwise)

MCB ____
MLO X
Circuit Breaker (CB) X
Fused Switch (FS) ____
Shunt-trip MCB

Existing/New/Relocated Existing
Isolated Ground Bus ____
Enclosure (NEMA) 1
A.I.C. (KA) 65KA
MTG:CONCRETE PAD X

CKT.	LOAD DESCRIPTIONS	Load Type	CONN. KVA	CONN. AMP	Cont. Loads	O.C. Type	BKR AMP	POLES	Phase			PHASE WIRES + GROUND + CONDUIT SIZE	FEEDER AMPACITY	DISCONNECT SWITCH AND/OR STARTER
1	EXISTING ELEVATORS	MIS	66.5	80.0	Y	CB	100	3P	A	B	C	1 run 4#1/0,1#6G, 2"C	150 Amp	----
2	EXISTING FAN 7.5HP	MT	9.1	11.0	N	CB	20	3P	A	B	C	1 run 3#12,1#12G,3/4"C	20 Amp	----
3	EXISTING EXH. FAN "A" 7.5HP	MT	9.1	11.0	N	CB	20	3P	A	B	C	1 run 3#12,1#12G,3/4"C	20 Amp	----
4	NEW Panel "HPA"	---	39.3	47.3	--	CB	100	3P	A	B	C	1 run 3#3, 1 #8 G, 1 1/2"C.	100 Amp	----
5	EXISTING COND. UNITS (2-5 TON, 1-71/2 TON)	C	17.5	21.0	Y	CB	40	3P	A	B	C	1 run 3#8, 1#10G, 3/4"C	50 Amp	----
6	EXISTING HEATING PUMP 7.5HP	MT	9.1	11.0	N	CB	20	3P	A	B	C	1 run 3#12,1#12G,3/4"C	20 Amp	----
7	NEW CHILLER	C	252.1	303.2	Y	CB	500	3P	A	B	C	2 runs 4#3/0, 1#2G, 3"C	400 Amp	SWC-CH = 400A/3P/600V/NEMA 3R

DIST. PANELBOARD "PPA" LOAD ANALYSIS

LOAD DESCRIPTION	Load Type	DMND FCTR	LOAD (KVA) CONNECTED	LOAD (KVA) CALCULATED	NEC CALCULATION REFERENCE
LIGHTING	L				
RECEPTACLES	R				
COOLING LOADS	C		269.6	269.6	
HEATING LOADS	H				
MOTOR	MT		62.4	62.4	
MISC. NON-CONTINUOUS LOADS	MIS		66.5	66.5	
MISC. CONTINUOUS LOADS	MC				
KITCHEN LOADS	K				
OUTSIDE LIGHTING	OL				
TRANSFORMER LOADS	X				
25% LARGEST MOTOR	--		9.1	2.3	
TOTAL LOAD (KVA)			398.4 KVA	400.7 KVA	
TOTAL LOAD (AMP AVG)			479Amp	482Amp	Ph A=479.2 Amp, Ph B=479.2Amp ,Ph C=479.2 Amp , Neut=.0 Amp

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PANEL "HPA"

Copper Bus Rating 100 AMP
Mains Rating (M.L.O.) 100 AMP
Feeder 1 run of 3#3, 1 #8 G, 1 1/2"C.
Feeder Ampacity = 100A
(All Branch Breakers Shall Be Bolt-On Type)

____ MCB
X MLO
____ Feed Thru Lugs
____ Shunt-trip MCB
35 KA A.I.C.

New Panel
____ Isolated Ground Bus
SEE PLAN Location
Surface Mounting
3R Enclosure (NEMA)

LOAD DESCRIPTION	TYPE	LOAD KVA	LOAD AMP	WIRE/CONDUIT SIZE (Note 1)	TRIP/POLE (Note 2)	CKT #	PH	CKT #	TRIP/POLE (Note 2)	WIRE/CONDUIT SIZE (Note 1)	LOAD AMP	LOAD KVA	TYPE	LOAD DESCRIPTION
CHWP-1	MT	5.8	21.0	3#10,1#10G,3/4"C	40 /3	1	A	2	20 /1					SPARE
** 1SHP,21FLA	MT	5.8	21.0			3	B	4	20 /1					SPARE
***Disc30A/3P/600V/NEMA 3R (VFD)	MT	5.8	21.0			5	C	6	20 /1					SPARE
CHWP-2	MT	5.8	21.0	3#10,1#10G,3/4"C	40 /3	7	A	8	20 /1					SPARE
** 1SHP,21FLA	MT	5.8	21.0			9	B	10	20 /1					SPARE
***Disc30A/3P/600V/NEMA 3R (VFD)	MT	5.8	21.0			11	C	12	/1					SPACE
SPACE					/1	13	A	14	/1					SPACE
SPACE					/1	15	B	16	/1					SPACE
SPACE					/1	17	C	18	/1					SPACE
SPACE					/1	19	A	20	/1					SPACE
SPACE					/1	21	B	22	/1					SPACE
SPACE					/1	23	C	24	/1					SPACE
SPACE					/1	25	A	26	/1					SPACE
SPACE					/1	27	B	28	/1					SPACE
SPACE					/1	29	C	30	/1					SPACE

PANEL "HPA" LOAD ANALYSIS

CODE DESCRIPTION	TYPE	DEMAND FACTOR	LOAD (KVA) CONNECTED	LOAD (KVA) CALCULATED	NEC CALCULATION REFERENCE
LIGHTING	L				
RECEPTACLES	R				
COOLING LOADS	C				
HEATING LOADS	H				
MOTOR	MT		34.9	34.9	
MISC. NON-CONTINUOUS LOADS	MIS				
MISC. CONTINUOUS LOADS	MC				
KITCHEN LOADS	K				
OUTSIDE LIGHTING	OL				
TRANSFORMER LOADS	X				
25% LARGEST MOTOR	--	0.25	17.5	4.4	
TOTAL LOAD (KVA)			34.9 KVA	39.3 KVA	
TOTAL LOAD (AMP AVG)			42.0 AMP	47.3 AMP	Cal'd Amps: Ph A=42.0 Amp, Ph B=42.0 Amp, Ph C=42.0

NOTES - PANEL SCHEDULES

Abbreviations: D.R.=DUPLEX RECEPTACLE S.R.=SINGLE RECEPTACLE PC=PERSONAL COMPUTER HACR=HEATING/AIR CONDITIONING RATED BKR SWD=SWITCHING DUTY BKR
GP=GENERAL PURPOSE (E)=EXISTING (N)=NEW

Note 1: Each circuit is shown as an individual homerun. Contractor may elect to combine two or three circuits in a common raceway. Contractor shall not install more than three circuits in a common conduit, except where specifically noted and allowed. Where more than three conductors are installed in a common raceway, the ampacity of all current-carrying conductors shall be derated and conductor size increased per N.E.C.2008 Article 310.15(B)(2)(a). All wires shall have THHN/THWN insulation unless noted otherwise.
Voltage drop - Use #10 wires for 20Amp 120V ckts longer than 75 feet, use #10 wires for 20Amp 277V ckts longer than 200 feet.

Note 2: All breakers 100Amp or less shall be rated for 75/60C wire termination. Breakers rated for only 60C wire termination shall not be used. All breakers greater than 100Amp shall be rated for 75C wire termination. N.E.C.2008 Article 110.14(C)(1).

General Notes:
(A) Quantity and type of duplex & quad receptacles, light fixtures etc shown in panel schedule are for reference only, refer to plans for exact quantity of outlets, light fixtures and other devices.
(B) All underground conduit shall be a minimum size of 3/4".
(C) Each PC circuit shall have separate neutral wire. Do not share neutral wire between 2 or more circuits.
(D) Provide isolated ground for each PC circuit in pre-wired furniture system.
(E) Provide HACR rated breaker for all air-conditioning/heating eqpt.
(F) Provide type-written Panel Directory with room name and devices served. Example: CLASSROOM 124, 3 RECEPTS

ELECTRICAL LOAD ANALYSIS

EXISTING MAXIMUM DEMAND	1073	KVA
EXISTING MAXIMUM DEMAND X 1.25% =	1341	KVA
EXISTING LOAD REMOVED =	<422.3>	KVA
NEW LOAD ADDED (CHILLED WATER PUMPS) =	275.1	KVA
NEW MAXIMUM LOAD =	1193.8	KVA
	1432	AMPS

SINCE THE EXISTING SERVICE IS 1600 AMPS, THERE IS NO CHANGE REQUIRED.

#	REVISION DESCRIPTION	DATE
1	ISSUED FOR REVIEW	07/15/08

CHILLER REPLACEMENT PROJECT
MHMRA BUILDING, 7011 SW FREEWAY
HOUSTON, TX

REDDING LINDEN BURR
CONSULTING ENGINEERS
500 TEXAS, SUITE 1300
HOUSTON, TEXAS 77002
PH: 713.237.9800
FAX: 713.237.9801

STATE OF TEXAS
JAMES Y. CHEE
48447
REGISTERED PROFESSIONAL ENGINEER
12-23-10

DATE: 3/30/2010
PROJECT # 10100.00
SHEET # E-1.20

File Name: M:\MHMRA\10100.00 Chiller Replacement 7011 SW Freeway\Elec\7011 E-1.10.DWG
User: mcowan
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