

# C0.01

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**ORANGE COUNTY  
INTERNAL OPERATIONS  
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[illegible]

# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

A circular professional engineer seal for the State of Florida. The outer ring contains the text "LAURA ISABEL BARBERO BUFFA" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars. Inside this ring, the word "LICENSE" is at the top, "No 74027" is in the center, a single star is below the number, and "STATE OF FLORIDA" is at the bottom.

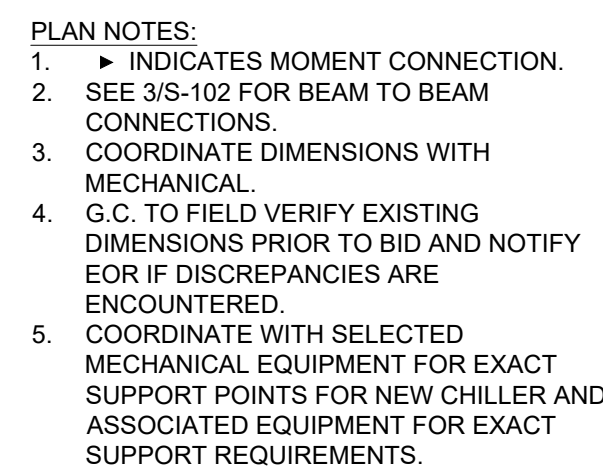
## FRAMING PLAN & DETAILS

# S-102

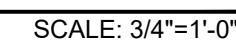


1. BOLTS IN WEB CONNECTION SHALL BE SNUG TIGHTENED PRIOR TO WELDING OF FLANGES.
2. SLIP-CRITICAL BOLTED CONNECTION IN WEB USING A325 BOLTS IN HORIZONTAL SHORT-SLOTTED HOLES U.N.O. RESISTANCE BY BOLTS TO SHEAR SHALL BE BY FRICTION, PROPORTIONED USING THE STANDARD HOLE VALUE ON A CLASS "A" SURFACE.

SCALE: N.T.S.



SCALE: 1/8" = 1'-0"

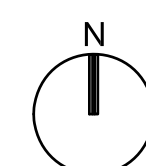


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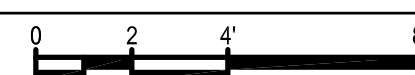
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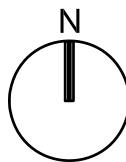
# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT



SCALE: 1/4"=1'-0"





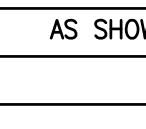


SCALE: 1/8"=1'-0"

- a. REFER TO SYMBOL LEGENDS.
- b. REFER TO SPECIFICATION MANUAL.
- c. PROVIDE A FIVE YEAR WARRANTY ON ALL MECHANICAL, ELECTRICAL, AND CONTROLS LABOR AND PARTS.
- d. REUSE MAIN BUILDING MANAGEMENT (BMS) CONTROLLER. INTEGRATE NEW EQUIPMENT ONTO THE EXISTING BMS. EXISTING CONTROLS ARE METAYSYS SYSTEM. EXPAND AND REPROGRAM BACNET COMPATIBLE SYSTEM. METAYSYS SYSTEM TO CONTROL VARIABLE PRIMARY CONTROLS. EXISTING CONTROLLER IS LOCATED IN THE 1ST FLOOR ELECTRICAL ROOM 152.
- e. PROVIDE AND INSTALL A NEW CHILLER PLANT CONTROLLER AND PROGRAM SOFTWARE FOR A VARIABLE PRIMARY CHW CONTROL DISTRIBUTION SYSTEM.
- f. PROVIDE AND INSTALL ALL NEW CONTROL COMPONENTS ON EXISTING PIPING.
- g. PROVIDE BALANCING OF THE CHILLED WATER SYSTEM FOR NEW EQUIPMENT.

No.	Date	Description
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# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

Project Number: 2017-304	Drawing File Name:
Scale: AS SHOWN	Seal:
Design By:	
Drawn By:	
Checked By:	
Engineer of Record:	
License Number:	

MECHANICAL FLOOR  
PLAN - FIRST LEVEL

Sheet Number:

M1.01

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INTERNAL OPERATIONS  
CENTER**

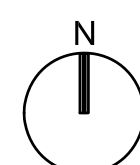
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# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

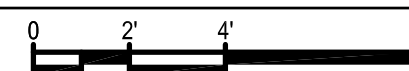
FLORIDA

# MECHANICAL ROOF PLAN

# M3.01



SCALE: 1/4"=1'-0"



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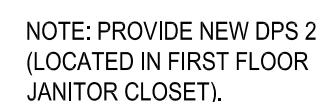
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# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT



## MECHANICAL CONTROLS

# M6.01



(E)CENTRAL PLANT CONTROLLER

DP-1

DP-2

CH-1

CHWP-1

CHWP-2

FM-1

CW METER

(E)BC

VFD-1

VFD-2

## CONTROL SYSTEM ARCHITECTURE

NTS


NTS



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[illegible]

# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT



## MECHANICAL SCHEDULES

# M7.01

MARK	MANUF.	MODEL #	NOMINAL CAPACITY (TONS)	EER	IPLV	EVAPORATOR				ELECTRICAL					WEIGHT (LBS)	REMARKS			
						WATER FLOW (GPM)	WFT (°F)	LWT (°F)	NUMBER OF PASSES	PRESSURE DROP (FT)	# COND FANS/AMPS	COMPR STARTER TYPE	# COMPR / AMPS	POWER CONNECTION			MCA	MOCP	VOLTA GE
CH-1	TRANE	RTAE225	225	11.9	19.6	520	56	45	2	23.5	12 @ 2.7	WYE DELTA	2 @ 160	SINGLE POINT POWER	396	500	460/3	16266	SEE NOTES
<b>NOTES:</b> 1 PROVIDE REFRIGERANT ISOLATION VALVES ON INDIVIDUAL COMPRESSORS INTALLED BY MANUFACTURER. 2 CHILLERS TO HAVE A MINIMUM OF TWO INDEPENDENT REFRIGERANT CIRCUITS. 3 CHILLERS TO HAVE A AUTO-RESTART IN THE EVENT OF A POWER FAILURE. 4 SINGLE POINT WYE DELTA STARTER. COORDINATE EXACT PERFORMANCE WITH MANUFACTURER. 5 INSTALL MANUFACTURER-PROVIDED DP FLOW SWITCHES IN PIPE AND WIRE TO CONTROL CENTER. 6 PROVIDE CHILLER WITH BAQNET FOR COMMUNICATION WITH EXISTING BMS (METASYS). 7 MOUNT CHILLER ON 2 INCH THICK ISOLATION PADS PROVIDED WITH CHILLER BY MANUFACTURER. 8 PROVIDE CHILLER ISOLATION VALVES FOR EACH CHILLER. 9 PROVIDE CHILLER WITH FACTORY MOUNTED COIL DRAIN. 10 PROVIDE COMPRESSOR SOUND ATTENUATION PACKAGE. 11 TRANE MANUFACTURER IS SCHEDULED AS AN OR EQUAL. COORDINATE WITH SPECIFICATIONS FOR OTHER LISTED ACCEPTABLE MANUFACTURERS																			

MARK	MANUF.	MODEL #	SERVICE	TYPE	FLUID	TANK VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	RELIEF VALVE (PSIG)	DIAMETER (N)	HEIGHT (N)	WEIGHT (LBS)	REMARKS
ET-1	B&G	B-400LA	CHILLED WATER	BLADDER	WATER	106	53	50	24	68"	1148	SEE NOTES
<b>NOTES:</b> 1 ASME CERTIFIED 2 WEIGHT IS TANK @ 100% FULL 3 PROVIDE B&G MODEL 107A HIGH CAPACITY AUTO AIR VENT												

MARK	MANUF.	MODEL #	FLOW (GPM)	HEAD (FT) MAX	IMPELLER DIA.	PLEV EFF (%)	ELECTRICAL			REMARKS
							HP	RPM	VOLTAGE	
CHMP-1	B&G	e-1510-3EB	520	90	10.75	79.7	20	1730	480/3	SEE NOTES
CHMP-2	B&G	e-1510-3EB	520	90	10.75	79.7	20	1730	480/3	SEE NOTES

NOTES:

1. PROVIDE TRIPLE DUTY VALVE WITH NON-SLAM DRIP TIGHT CHECK VALVE, POSITIVE SHUT-OFF VALVE AND CALIBRATED SYSTEM BALANCE VALVE
2. PROVIDE DISCHARGE DEFUSER W/ STAINLESS STEEL, STRAIGHTENING VANES, STAINLESS STEEL STRAINER AND PRESSURE/TEMPERATURE PORTS
3. PROVIDE PREMIUM EFFICIENCY MOTOR, TEFC TYPE, VFD COMPATIBLE

MARK	MANUF.	MODEL #	SERVICE	GPM	WORKING FLUID	HEAD LOSS (FT)	DIAMETER (IN)	WEIGHT (LBS)	REMARKS
A-S-1	B&G	RL-6F	CHILLED WATER	540	WATER	1	6	564	1.2
NOTES:									
1. ASME CERTIFIED									
2. INLET AND OUTLET SHALL BE SAME SIZE AS PIPE									
3. WEIGHT IS EQUIPMENT FLOODED WEIGHT									



Client Name:

**ORANGE COUNTY  
INTERNAL OPERATIONS  
CENTER**

Issue:

[illegible]

Project Name:

# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

Project Number:  
2017-304

Scale: AS SHOW

Design By:

Drawn By:

Checked By	
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1	035
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Engineer c

License No.	
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Drawing File Name:

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N Seal: 

SHAH

B.A. LICENSE

No. 78419



STATE OF  
FLORIDA

PROFESSIONAL ENGINEER

Sheet Name:

## MECHANICAL DETAILS

Sheet Number:

# M8.01

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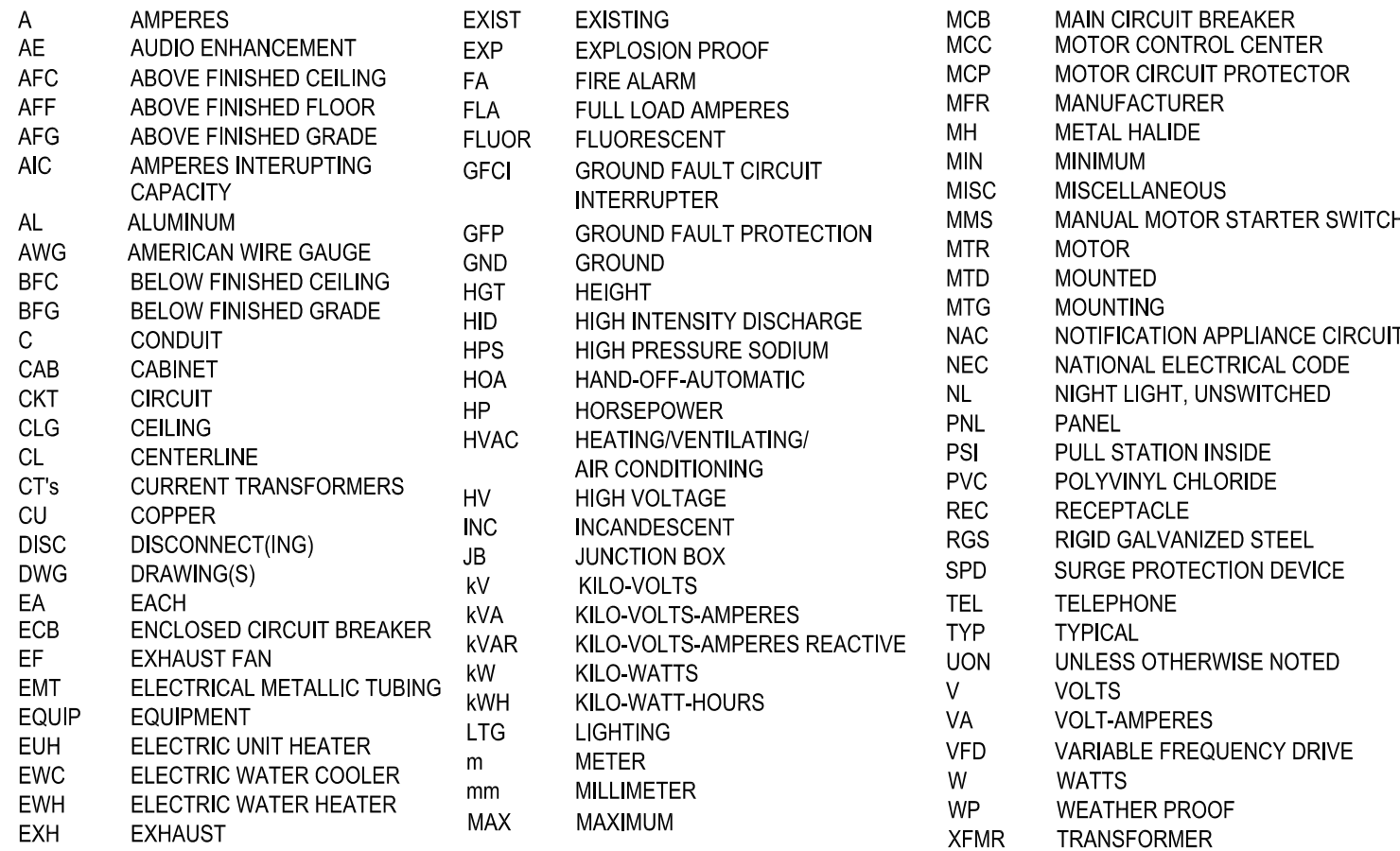
# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

## ELECTRICAL GENERAL NOTES & SYMBOLS LEGEND

# E0.01

\*FOR LOW VOLTAGE OCCUPANCY SENSORS, PROVIDE POWER  
PACK(S) 120/277 VAC; 20 AMPS, 225mA SECONDARY AS NEEDED FOR  
ZONE/AREA CONTROL. WATTSTOPPER BZ-250 OR EQUAL.

**ST** SHUNT TRIP. MTD. AT 6'-5" AFF/AFG TO TOP OF ENCLOSURE



1. ALL ELECTRICAL WORK AND MATERIALS SHALL BE IN COMPLIANCE WITH ALL GOVERNING CODES AND STANDARDS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
  - A. NFPA 70 NATIONAL ELECTRICAL CODE (2014 EDITION)
  - B. FLORIDA BUILDING CODE (SIXTH EDITION 2017)
  - C. NFPA 72 NATIONAL FIRE CODE (2013 EDITION)
  - D. FLORIDA FIRE PREVENTION CODE (SIXTH EDITION)
  - E. LOCAL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION



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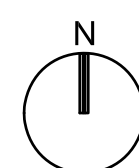
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# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

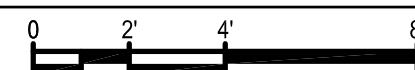
A circular professional engineer seal for Justin Lowe Mundell. The outer ring contains the text "JUSTIN LOWE MUNDELL" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by three stars. The inner circle contains the text "LICENSE" at the top, "No. 70700" in the center, and "STATE OF FLORIDA" at the bottom, also separated by three stars. The seal is stamped on a document with a grid background.

## ELECTRICAL DEMO ROOF PLAN

# ED3.01



SCALE: 1/4"=1'-0"



A diagram showing a vertical wall with a horizontal line and an arrow pointing to it.

FIFTH FLOOR  
ELEC RM (BELOW)

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[illegible]

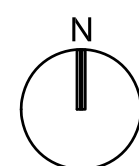
# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

A circular professional engineer seal for Justin Lowe Mundell. The outer ring contains the text "JUSTIN LOWE MUNDELL" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by three stars. The inner circle contains the text "LICENSE" at the top, "No. 70700" in the center, and "STATE OF FLORIDA" at the bottom, also separated by three stars. The seal is stamped in black ink on a white background.

## ELECTRICAL FLOOR PLAN - FIRST LEVEL

# E1.01

1. EXISTING UNDERGROUND FEEDER AND CONTROLS TO EXISTING TEMPORARY CHILLER DISCONNECT SWITCH AND JUNCTION BOX.



## ELECTRICAL FLOOR PLAN - FIRST LEVEL

SCALE: 1/8"=1'-0"

**ORANGE COUNTY  
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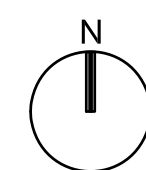
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# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

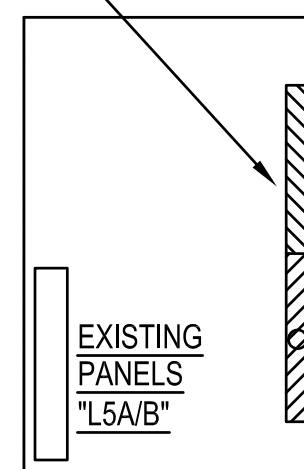
A circular professional engineer seal for Justin Lowe Mundell, State of Florida, License No. 70700. The seal features the text "JUSTIN LOWE MUNDELL" around the top inner edge, "LICENSE" in the center, "No. 70700" below it, "STATE OF FLORIDA" below that, and "PROFESSIONAL ENGINEER" around the bottom inner edge. There are three stars: one on the left, one in the center below "LICENSE", and one on the right. The seal is stamped in black ink on a white background.

## ELECTRICAL ROOF PLAN

# E3.01



SCALE: 1/4"=1'-0"



FIFTH FLOOR  
ELEC RM (BELOW)

- a. REFER TO SYMBOL LEGEND ON SHEET E0.01.
- b. REFER TO BOOK SPECIFICATIONS.
- c. REFER TO EQUIPMENT SCHEDULES FOR DISCONNECT, CONDUIT AND WIRE SIZES.
- d. ALL FEEDERS ARE DESIGNED TO HAVE LESS THAN 2% TOTAL VOLTAGE DROP AND ALL BRANCH CIRCUITS ARE DESIGNED TO HAVE LESS THAN 3% VOLTAGE DROP.
- e. IF CIRCUITS ARE COMBINED AND RUN AS MULTIPLE BRANCH CIRCUITS SHARING A COMMON NEUTRAL, THEN EACH UNGROUNDED CONDUCTOR MUST BE DISCONNECTED SIMULTANEOUSLY BY A COMMON TRIP CIRCUIT BREAKER. CONTRACTOR MAY, AT THEIR OPTION, PROVIDE EITHER COMMON TRIP MULTIPOLE CIRCUIT BREAKERS OR UTILIZE MANUFACTURERS LISTED HANDLE TIES IN ORDER TO PROVIDE THE SIMULTANEOUS TRIP. THESE DEVICES ARE NOT SHOWN IN PANEL SCHEDULES AND NOT PROVIDED IN THIS SCOPE OF WORK. NO MORE THAN 3 CIRCUITS MAY BE COMBINED IN A SINGLE RACEWAY WITHOUT PRIOR APPROVAL BY THE ENGINEER.
- f. CONTRACTOR TO IDENTIFY CONDUITS EXTING PANEL WITH CIRCUIT NUMBER INFORMATION.

1. PROVIDE NEW CONNECTION TO MECHANICAL EQUIPMENT AS SHOWN.
2. PROVIDE NEW UNISTRUT SUPPORT STRUCTURE FOR VFD'S.
3. CONNECT TO EXISTING LIGHTING PROTECTION SYSTEM.
4. DUPLEX RECEPTICLE GROUND FAULT IN WEATHERPROOF ENCLOSURE, CKT L5A-22





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[illegible]

# ORANGE COUNTY INTERNAL OPERATIONS CENTER CHILLER REPLACEMENT

1. PROVIDE NEW BREAKERS IN EXISTING PANELS. SEE FEEDER SCHEDULE.
2. UTILIZE EXISTING ROOF PENETRATIONS. SEAL OFF OLD/UNUSED PENETRATIONS COMPATIBLE WITH EXISTING ROOF MEMBRANE.
3. PROVIDE 500A/3P BREAKER IN EXISTING PANELBOARD.



# E7.01

[illegible]

MANUFACTURER:		SQ. D.		MAIN OPTIONS REQUIRED				PANEL NAME:		SB	
TYPE:				MCB:		1200		AMPS		LOCATION:	
A/C RATING:		65		K		AMPS				SECTIONS:	
VOLTS L-N:		277		V						0	
VOLTS L-L:		480								3R	
PHASE:		3								IN	
										IN	

CKT NO.	IDENTIFICATION	CIRCUIT BREAKER			LOAD TYPE	LOAD (KVA)	NOTES
		FRAME	TRIP	P			
1	PANEL H-1	250	225	3	E	83	
2	SPACE			3			
3	HP-5	250	225	3	E	83	
4	SPACE			3			
5	TVSS	30	30	3			
6	SPACE			3			
7	HP-1.3	250	225	3	E	83	
8	SPACE			3			
9	PANEL H-5	200	150	3	E	50	
10	SPACE			3			
11	PANEL H-2	200	125	3	E	42	
12	SPACE			3			
13	PANEL H-3	200	125	3	E	42	
14	SPACE			3			
15	PANEL H-4	200	150	3	E	50	
16	SPACE			3			
17	SPACE			3			
18	SPACE			3			
19	HP-3.4	400	300	3	E	104	
20	SPACE			3			
21	CH-1	600	500	3	M	291	NEW BREAKER
22	ATS	400	250	3	E		
23							
24							
25							
26							
27							
28							
29							
30							
		TOTAL				827	

	CONN. LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
LIGHTING (L)	0.00	1.25	0.00
RECEPTACLES 1ST 10 KVA(R)	0.00	1.00	0.00
RECEPTACLES OVER 10KVA(R)	0.00	0.50	0.00
HVAC EQUIPMENT (H)	0.00	1.00	0.00
APPLIANCES (A)	0.00	1.00	0.00
EQUIPMENT (E)	536.00	1.00	536.00
LARGEST MOTOR (M)	290.85	1.25	363.56
OTHER (O)	0.00	0.00	0.00
SPARE (S)	0.00	1.00	0.00
LINKED PANEL (P)	INCLUDED IN ABOVE TOTALS		

TOTAL CONNECTED KVA:	827
TOTAL CONNECTED AMPS/PH:	995
TOTAL DEMAND KVA:	900
TOTAL DEMAND AMPS/PH:	1083

NOTES: