MECHANICAL LEGEND

- NEW SHEETMETAL SUPPLY OR MAKEUP AIR DUCTWORK
- NEW SHEETMETAL EXHAUST DUCTWORK
- EXISTING DUCTWORK OR EQUIPMENT TO REMAIN
- EXISTING DUCTWORK, EQUIPMENT OR SYSTEM(s) COMPONENTS TO BE REMOVED
- FLEXIBLE DUCT
- SUPPLY DIFFUSER, SEE DESIGNATION FOR TYPE
- RETURN GRILLE, SEE DESIGNATION FOR TYPE
- EXHAUST GRILLE, SEE DESIGNATION FOR TYPE
- 10"Ø — SQUARE-TO-ROUND TAKEOFF WITH DAMPER AND INSULATION STAND-OFF
- DIFFUSER/GRILLE TYPE SEE SCHEDULE
- TURNING VANES
- VD — MANUAL VOLUME DAMPER
- MOTORIZED CONTROL DAMPER
- CONDENSATE DRAIN PIPING
- CONDENSATE DRYWELL, SEE DETAIL
- ROOF MTD EXHAUST FAN WITH CURB, SEE SCHEDULE
- ROOF MTD GRAVITY RELIEF OR INTAKE SEE SCHEDULE (WITH ROUND DUCT CONNECTION)
- EF — CEILING MOUNTED EXHAUST FAN
- WALL LOUVER/ INTAKE OR EXHAUST
- T — THERMOSTAT; T — TEMP SENSOR DUCT MTD
- H — HUMIDISTAT; H — HUMIDITY SENSOR DUCT MTD
- DSD — DUCT MOUNTED SMOKE DETECTOR
- FD — FIRE DAMPER WITH ACCESS DOOR (OR REMOVABLE PANEL)
- EXTENT OF EXISTING TO BE REMOVED OR POINT OF OF CONNECTION BETWEEN NEW AND EXISTING
- G — NATURAL GAS
- SA — SUPPLY AIR(COMPRESSED)

NOTE :
NOT ALL SYMBOLS AND ABBREVIATIONS LISTED ABOVE ARE USED ON THIS PROJECT.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINAL GRADE
OA	OUTSIDE AIR
EXH	EXHAUST
RA	RETURN AIR
SA	SUPPLY AIR
ABV	ABOVE
T	THERMOSTAT
BEL	BELOW
HP	HORSEPOWER (SCHEDULED)
BHP	BRAKE HORSEPOWER
ESP	EXTERNAL STATIC PRESSURE
SP	STATIC PRESSURE
FCU	FAN COIL UNIT
HP-1	HEAT PUMP UNIT
AC	AIR CONDITIONING UNIT
CU	CONDENSING UNIT
CFM	CUBIC FEET PER MINUTE
N C	NOISE CRITERIA
MAX	MAXIMUM
MIN	MINIMUM
DX	DIRECT EXPANSION
OPNG	OPENING
FC	FLEXIBLE CANVAS CONNECTOR
DC	DUST COLLECTOR
MAU	MAKE UP AIR UNIT
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
CD	CONDENSATE DRAIN
DW	DRY WELL
DS-A	DUCT SUPPORT, TYPE A
NG	NATURAL GAS
SA	SUPPLY AIR(COMPRESSED)

OA CALCULATIONS PER FBC2020-MECHANICAL TABLE 403.3.1.1

AIR HANDLER NO RTU-1

ROOM NAME	AREA (SQFT)	SPACE REQUIREMENTS CFM/SQFT	CFM	OCCUPANCY REQUIREMENTS PEOPLE/1000	PEOPLE	CFM/PERSON	CFM	TOT SPACE & OCC EXH	
SALES	2723	0.12	327	15	41	7.5	306	633	
MECH ROOM	556	0.12	67	0	2	15	30	97	
MENS RR	210		0	0	0		0	0	
WOMENS RR	144		0	0	0		0	0	100
SOUTH UTILITY	15	0.12	2	0			0	2	100
REST HALL	78	0.12	9	0			0	9	
STOR ELEC	60	0.12	7	0			0	7.2	
TOTAL FOR THIS SYSTEM			748 CFM						
TOTAL EXHAUST			200						

OA CALCULATIONS PER FBC2020-MECHANICAL TABLE 403.3.1.1

AIR HANDLER NO RTU-2 KITCHEN

ROOM NAME	AREA (SQFT)	SPACE REQUIREMENTS CFM/SQFT	CFM	OCCUPANCY REQUIREMENTS PEOPLE/1000	PEOPLE	CFM/PERSON	CFM	TOT SPACE & OCC EXH CFM/SQFT		EXH REQD
KITCHEN	579	0.12	69	20	12	7.5	87	156	0.27	100 X
				0	0		0	0		
				0	0		0	0		
				0	0		0	0		
				0	0		0	0		
				0	0		0	0		
				0	0		0	0		
				0	0		0	0		
TOTAL FOR THIS SYSTEM			156 CFM							
TOTAL EXHAUST			405 X							
EXHAUST PROVIDED			400							

AIR BALANCE SCHEDULE

UNIT	OA AIR	EXHAUST AIR
RTU-1	800	
RTU-2	400	
KEF-1		900
H-1	0	750
H-2	0	750
	0	
	0	
	0	
	0	
TOTAL MAKE UP	1600	
TOTAL EXHAUST		2200
BUILDING PRESSURE	400	

GRILLE & DIFFUSER SCHEDULE

MARK	TYPE	NECK	FACE SIZE	DESCRIPTION
A	100-60 61-110 111-240 241-420 421-620 621-730	6ø 8ø 8ø 10ø 12ø 14ø	12x12 24x24 24x24 24x24 24x24 24x24	SUPPLY DIFFUSER BASIS OF DESIGN: TITUS TMS COLOR: WHITE MATERIAL: ALUMINUM MOUNTING: 24x24 LAY-IN OPPOSED BLADE DAMPERS: NO
B	0-175 176-350 351-600 600-1200	6x6 8x8 12x12 15x15	24x24 24x24 24x24 24x24	SUPPLY DIFFUSER BASIS OF DESIGN: TITUS TDC-AA COLOR: WHITE MATERIAL: ALUMINUM MOUNTING: TYPE 1 BORDER OPPOSED BLADE DAMPERS: YES
C	100-60 61-110 111-220 221-350 351-530 531-730 731-970 971-1600	6ø 8ø 8ø 10ø 12ø 14ø 16ø 40x20	12x12 24x24 24x24 24x24 24x24 24x24 24x24 24x48	RETURN/EXHAUST GRILLE BASIS OF DESIGN: TITUS 50F COLOR: WHITE MATERIAL: ALUMINUM MOUNTING: 24x24 LAY-IN OPPOSED BLADE DAMPERS: NO
D	100-50 50-125	8x4 6x6	8x4 6x6	SUPPLY - TITUS L-201 CURVED BLADE MATERIAL - ALUMINUM COLOR - WHITE OPPOSED BLADE DAMPER
E	250-340	14x6	14 5x8.5	SUPPLY SIDEWALL DIFFUSER BASIS OF DESIGN: TITUS 272FS COLOR: WHITE MATERIAL: ALUMINUM MOUNTING: DUCT MOUNTED OPPOSED BLADE DAMPERS: NO

MECHANICAL NOTES

1. ALL WORK SHALL COMPLY WITH THE FLORIDA BUILDING CODE 2017 - MECHANICAL FLORIDA ENERGY CODE, NFPA 101, NFPA 90 AND ALL LOCAL CODES AND ORDINANCES.
2. UNLESS NOTED OTHERWISE ALL SUPPLY GRILLES AND DIFFUSERS SHALL BE ALUMINUM OFF-WHITE WITH OPPOSED BLADE DAMPERS. DIFFUSERS IN GRID CEILINGS SHALL BE LAY-IN TYPE; DIFFUSERS IN GYPSUM BUILT-IN CEILINGS SHALL BE FLANGED TYPE.
3. UNLESS NOTED OTHERWISE ALL RETURN GRILLES SHALL BE ALUMINUM OFF-WHITE WITH 1" FILTERBACK WHERE NOTED.
4. GRILLES AND DIFFUSERS SHALL BE IN ACCORDANCE WITH THE GRILLE AND DIFFUSER SCHEDULE. SCHEDULE IS BASED ON TITUS MANUFACTURER WITH METALAIRE AND AIR GUIDE AS EQUALS.
5. SUPPLY AND RETURN DUCTWORK SHALL BE GALVANIZED SHEETMETAL WITH EXTERNAL INSULATION OF DUCTWRAP (MIN R6) OR RIGID FIBERGLAS (R6) INSULATION 1" CLOSURE SYSTEM SHALL BE GLASS FABRIC AND MASTIC INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
6. EXHAUST DUCTWORK SHALL BE GALVANIZED SHEETMETAL WITH NO INSULATION.
7. FLEXIBLE DUCTWORK IS ALLOWED ONLY WHERE SHOWN AND SHALL NOT EXCEED 12 FEET IN LENGTH. FLEXIBLE DUCT SHALL MEET UL 181 CLASS 1.
8. FLEXIBLE DUCTWORK WHERE INSTALLED SHALL BE ATTACHED USING SPIN-IN TAKE-OFFS WITH LOCKING QUADRANT DAMPERS.
9. ALL DUCTWORK INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH SMACNA DETAILS.
10. CONDENSATE LINES SHALL BE SCHEDULE 40 PVC EXCEPT IN PLENUMS. CONDENSATE LINES IN PLENUMS SHALL BE RIGID COPPER TUBING. CONDENSATE LINES SHALL BE INSULATED WHEN INSTALLED IN ATTICS OR ABOVE INSULATED DROP CEILINGS - ROUTE TO NEAREST ROOF GUTTER OR ROOF DRAIN.
11. PROVIDE 2" TRAP ON CONDENSATE LINES AT EACH UNIT.
12. PROVIDE A FLOAT SWITCH IN THE EMERGENCY DRAIN PAN TO SHUT DOWN THE AIR HANDLER/UNIT IN THE EVENT OF WATER IN THE EM DRAIN PAN.
13. PROVIDE ALL TOILET EXHAUST FAND WITH PROPERLY FLASHED ROOF JACK OR WALL CAP AS NOTED ON THE DRAWINGS.
14. PROVIDE EACH SYSTEM WITH AN ELECTRONIC PROGRAMMABLE THERMOSTAT WITH HEAT-COOL-OFF AND FAN AUTO-ON SUBBASE. UNIT SHALL BE PROGRAMMABLE FOR MINIMUM OF FOUR (4) SEPARATE SET POINTS PER DAY AND EACH DAY SHALL BE CAPABLE OF INDEPENDENT SET POINTS. THERMOSTAT SHALL HAVE EASILY ACCESSIBLE OVERRIDE CONTROL FOR MANUALLY CHANGING THE THERMOSTAT SETTING. THERMOSTAT SHALL AUTOMATICALLY REVERT BACK TO PROGRAM AT THE NEXT TIME SCHEDULE CHANGE. THERMOSTAT MUST HAVE AN OCCUPIED/UNOCCUPIED PROGRAMMABLE SETTING IN EACH SET POINT/TIME OF DAY SETTING AND HAVE AN AUXILIARY RELAY CONTACTS TO CLOSE IN THE OCCUPIED MODE.
15. CONTRACTOR SHALL PROVIDE AND INSTALL A DUCT SMOKE DETECTOR IN THE SUPPLY AND RETURN DUCTWORK OF EACH SYSTEM IN EXCESS OF 2000 CFM. DUCT DETECTOR SHALL BE INTERLOCKED TO PROVIDE SHUTDOWN OF THE AIR HANDLING UNIT UPON SENSING SMOKE. UNIT SHALL BE PROVIDED WITH LOCAL TEST PANEL, ALARM AND TEST SWITCHES WHEN INSTALLED ABOVE A DROP CEILING OR INACCESSIBLE LOCATION.
16. TYPE 2 EXHAUST DUCT SHALL BE GALVANIZED SHEET METAL INSTALLED PER FBC MECH-SECTION 603. PROVIDE WITH TAPE AND MASTIC SUITABLE FOR 200°F.
17. CONTRACTOR SHALL PROVIDE AN OUTSIDE AIR DAMPER AND MOTOR IN EACH SEPARATE UNIT DAMPER SHALL MEET THE LEAKAGE REQUIREMENTS OF THE FLORIDA BUILDING CODE. THE OUTSIDE AIR DAMPER SHALL BE CONTROLLED BY THE AUXILIARY CONTACT IN THE THERMOSTAT AND BY THE INTERLOCK WITH THE HEAT EXTRACTION HOOD.

PURNISH ALL FANS WITH INTEGRAL DISCONNECT, THERMALLY PROTECTED MOTOR, BACKDRAFT DAMPER AND ROOF CURB.

EXHAUST FAN SCHEDULE

MARK	MFGR	MODEL	TYPE	WATTS	HP	RPM	CFM	ESP IN	VOLTS /	COMMENTS
EF1	EXISTING		ROOF		1/4	1170	300	.25	120	ROOF MOUNTED
EF2	CAPTIVEAIRE	SEE MOD5	ROOF		1/2	900	900	.125	120	SEE M5

EXHAUST HOOD CONROL INTERLOCKS

RTU-1 IS AN EXISTING 10 TON PACKAGED ROOF TOP UNIT THE UNIT DELIVERS 1600 CFM. ADD A NEW 0 A. INTAKE HOOD AND MOTORIZED O A. DAMPER. O A DAMPER SHALL BE INTERLOCKED WITH THE HOOD. O A. DAMPER SHALL HAVE 3 POSITIONS - CLOSED, 400 CFM, 800 CFM. WHEN STORE IS CLOSED O A. = P (CLOSED) WHEN PIZZA HOOD IS OFF O A = 400CFM. WHEN PIZZA HOOD IS OPERATING O A. = 800 CFM.

TRANE - PACKAGED UNIT SCHEDULE - ELECTRIC COOLING/ELECTRIC HEATSTRIP 208/3Ø

MARK	SYSTEM TYPE	MFGR	MODEL	LAMINAT	NOM TON	COOLING CAPACITY TOTAL	SENS.	SEER	IPLV	RATING CONDITIONS AMB	EAT-DB/WB	HEATING CAP @47/70 BTUH	HSPF/COP	AIR FLOW CONFIG	AIR FLOW	INDOOR FAN CFM	EST SP	DRIVE	RPM	HP	VOLTS/MPLA	AUXILIARY HEATER KW	STAGE	VOLTS	PH	HTR AMP	COMP AMPS	FAN AMPS	ELECTRICAL MCA	BRKR	VIPH	COMMENTS
RTU-2	PACKAGE COOLING	TRANE	THC120E3EM	3MHDR1/125J	10	114000	84100	15	-	95	80/67	N/A	N/A	DOWN FLOW	VERTICAL	1600	0.8	0	900	3.6	208/3ø/5.6	20.3	2	208	3	58.4	19.9/13.2	0.7	81	90	208/3	1,2

COMMENTS
1. PROVIDE WITH ROOF CURB
2. PROVIDE WITH O.A. HOOD AND 3 POSITION DAMPER. OPERATION OF DAMPER SHALL BE SAME AS RTU-1

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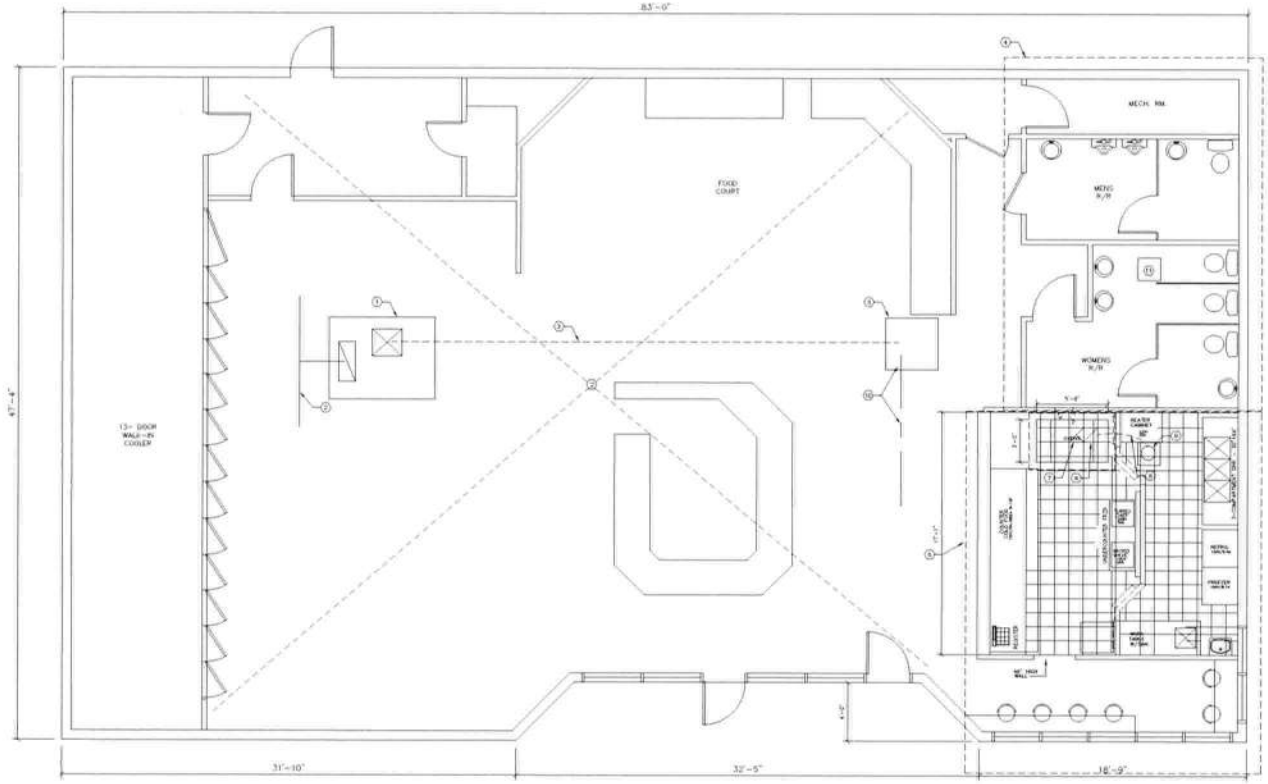
S&S FOOD STORE #341

BUILDING RENOVATION
COLUMBIA, FLORIDA

REV 4
REV 3
REV 2
REV 1
ISSE FOR PERMIT XX/XX/2020
DRAWN CAS
APPROVED REC
2020-50
M1
OF SHEETS

1. EXISTING RTU-1 TO REMAIN
2. EXISTING SUPPLY & RETURN DUCTWORK AND GRILLES FROM RTU-1 TO BE REMOVED
3. EXISTING RTU-2 TO BE REPLACED
4. FIELD CONNECT THE EXISTING SUPPLY DUCT IN THIS AREA TO NEW TRUNK LINE FROM RTU-2 REPLACE ALL GRILLES AND DIFFUSERS IN THIS AREA WITH NEW- TO MATCH EXISTING
5. FIELD CONNECT THE EXISTING DUCTWORK AND SUPPLY GRILLES AND DIFFUSERS IN THIS AREA TO NEW TRUNK LINE FROM RTU-2
6. REMOVE EXISTING RETURN GRILLE(S) REMOVE EXISTING RETURN DUCT
7. REMOVE EXHAUST GRILLE(S) TO BE REMOVED
8. EXISTING EXHAUST DUCT TO BE REMOVED
9. REMOVE EXISTING EXHAUST FAN & CURB (TO BE REPLACED)
10. REMOVE EXISTING SUPPLY & RETURN DUCTS EXCEPT WHERE NOTED
11. EXISTING EXHAUST FAN TO REMAIN



MECHANICAL DEMO PLAN

SCALE 1/4" = 1'-0"

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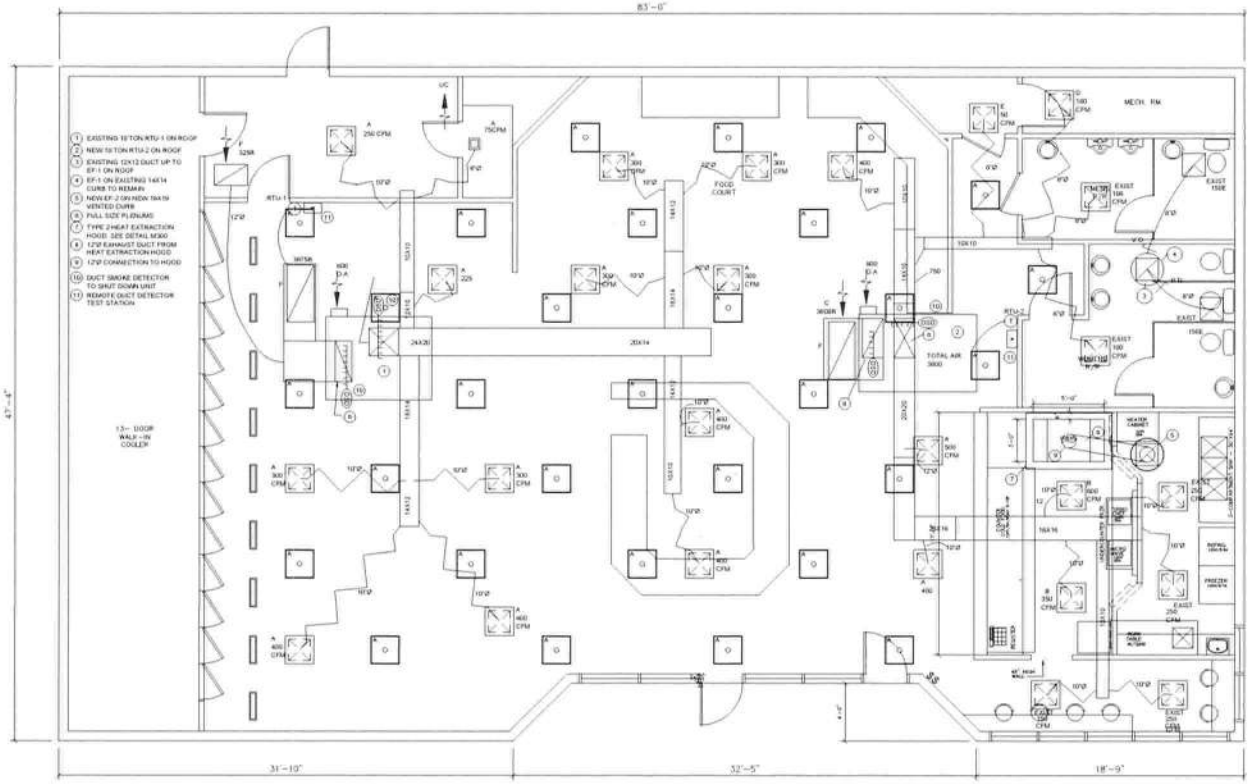
83'-0"
47'-4"
31'-10"
32'-5"
18'-9"
1 EXISTING 10 TON RTU-1 ON ROOF
2 NEW 10 TON RTU-2 ON ROOF
3 EXISTING 12X12 DUCT UP TO EF-1 ON ROOF
4 EF-1 ON EXISTING 14X14 CURB TO REMAIN
5 NEW EF-2 ON NEW 16X16 VENTED CURB
6 FULL SIZE PLENUMS
7 TYPE 2 HEAT EXTRACTION HOOD. SEE DETAIL M300
8 12"Ø EXHAUST DUCT FROM HEAT EXTRACTION HOOD
9 12"Ø CONNECTION TO HOOD
10 DUCT SMOKE DETECTOR TO SHUT DOWN UNIT
11 REMOTE DUCT DETECTOR TEST STATION
13'- 10"Ø WALK - IN COOLER
MECH. RM
FOOD COURT
TOTAL AIR 3600
EXIST 150 CFM
EXIST 100 CFM
EXIST 250 CFM
EXIST 200 CFM
EXIST 150 CFM
EXIST 250 CFM
EXIST 250 CFM
EXIST 200 CFM
EXIST 150 CFM
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EXIST 150 CFM
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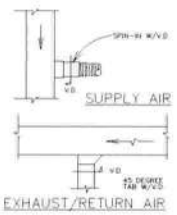
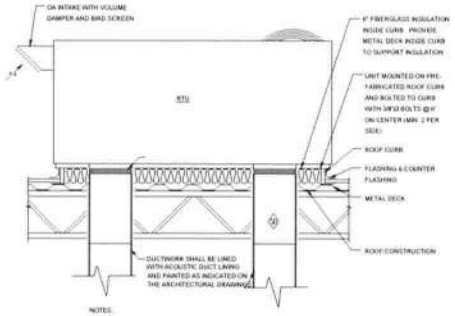
EXIST 200 CFM
EXIST 150 CFM
EXIST 250 CFM
EXIST 250 CFM
EXIST 250



AIR DUCT DETAILS — NTS — DET #3 / M4

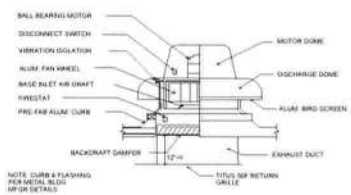


NOTES:

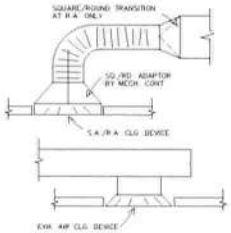
1. DUCT TRANSITION FROM RTU TO DUCT SIZE SHOWN ON MECH. FLOOR PLAN SHALL BE MADE BETWEEN RTU AND TOP OF ROOF WITHIN CURB
2. SIZE OF OPENING IN ROOF DECK TO BE AS SMALL AS POSSIBLE COORDINATE WITH STRUCTURAL DWGS (4" MIN. LARGER THAN DUCT SIZE SHOWN)
3. INSTALL PER MANUFACTURER'S RECOMMENDATION AND INSTALLATION MANUAL
4. PAINT LINER WITH(2 COATS OF ANTI-MICROBIAL PAINT (SIMILAR TO "PROTECT-CEPT" PAINT BY PORTER PAINTS.
5. ROOF SHALL BE CUT OUT ONLY TO ALLOW FOR DUCT PENETRATION. SEAL SPACE BETWEEN DUCT AND CUT-OUT WITH FIBERGLASS INSULATION WITH 24 GAUGE SHEET METAL TRIM

UNIT CONNECTIONS TO MEET THE FLORIDA BUILDING CODE WIND LOADS.

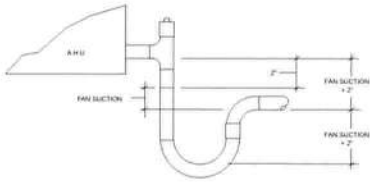
TYPICAL ROOF MOUNTING DETAIL — NTS — DET #6 / M4



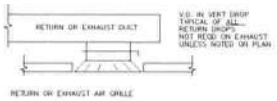
ROOF EXHAUST FAN DETAIL — NTS — DET #1 / M4



DIFFUSER CONNECTIONS — NTS — DET #4 / M4



AHU CONDENSATE DRAIN DETAIL — NTS — DET #2 / M4



DETAIL OF RETURN OR EXHAUST DROP FROM BOTTOM OF DUCTWORK

RET./ EXH. DROP DETAIL — NTS — DET #5 / M4

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HOOD INFORMATION – JOB#4645855

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM DIMENSIONS WIDTH	LONG	HEIGHT	DIA	CFM	VEL	SP	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1		54x24 VHW	CAPTIVEAIRE	6' 0"	750 DEG	II	N/A	250	988			4"	12"	996	1146	-6.695"	430 SS 20GL	ALONE	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 5 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	LOCATION	SIZE	UTILITY CABINET(S) FIRE SYSTEM TYPE	SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1							8									NO	224 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 120" HIGH FRONT, LEFT, RIGHT

EXHAUST FAN INFORMATION – JOB#4645855

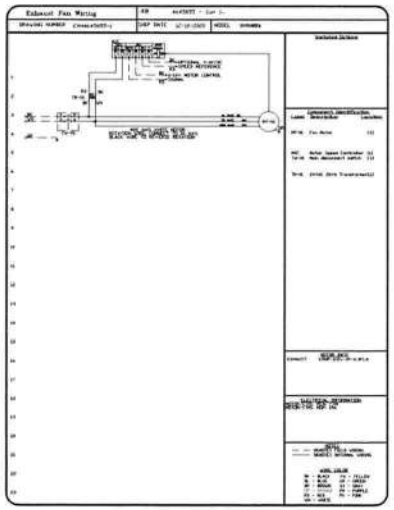
FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	#	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1		1	DUSHFA	CAPTIVEAIRE	965	0.751	1325	TEAO-ECM	0.500	0.23HP	1	115	6.3	542 FPM	71	12.6

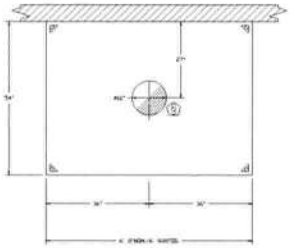
FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1		1	NSF-ANSI CERTIFICATION - NSF-1 ALUMINUM UPBLAST.
		1	SCR-13 BIRD SCREEN.
		1	ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -NSC-1TL(CD), ECM ROTATION

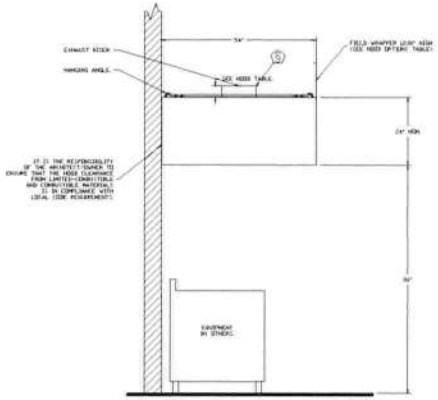
CURB ASSEMBLIES

NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	27 LBS.	CURB	19.500"W x 19.500"L x 20.000"H VENTED

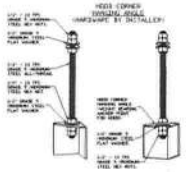




FLAN VIEW – HOOD #1
6'-0"W - LONG 54x24VHB

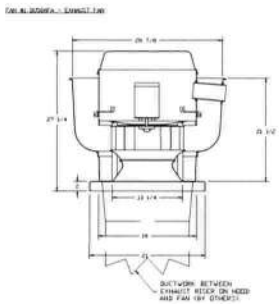


SECTION VIEW – MODEL 54x24VHB
HOOD – #1



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLE AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLE HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLE AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

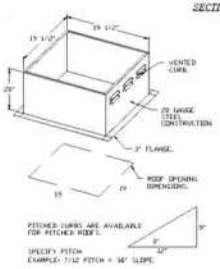


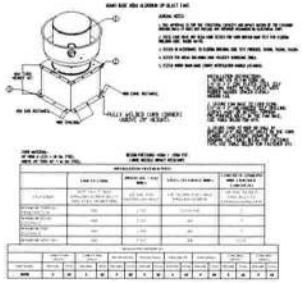
FEATURES:

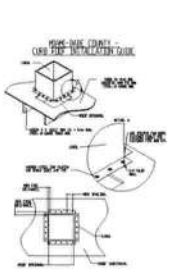
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION (80°F (44°C)).
- NEMA 3R SAFETY DISCONNECT SWITCH.

THERMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 80°F (44°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD LIMIT INFINITE OPERATION.

DESIGN:
NSF-ANSI CERTIFICATION - NSF-1
ALUMINUM UPBLAST.
SCR-13 BIRD SCREEN.
ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -NSC-1TL(CD), ECM ROTATION







REVISIONS

NO	DESCRIPTION	DATE
1		
2		
3		
4		
5		

CAPTIVEAIRE

Orlando Mechanical

Sun Stop 341
LAKE CITY, FL, 32024

DATE: 12/10/2020
DWG.#: 4645855
DRAWN BY: PAB
SCALE: +/- 3/4"=1'-0"
MASTER DRAWING
M5
SHEET NO. 1

ELECTRICAL SPECIFICATIONS GENERAL

A. Furnish all labor, materials, fixtures, equipment, tools and service necessary for installation, testing and adjusting of all electrical system. Electrical systems shall be furnished and installed in compliance with the Drawings, Specifications, and any Addenda thereto.

B. Drawings and Specification shall be understood to cover, according to their intent and meaning, complete electrical systems. Work shown and not specified, or work specified and not shown shall be performed as though mentioned in both.

C. Minor items and accessories reasonably inferred as necessary for the complete and proper operation of any system shall be provided by contractor at sub-contractor's expense, whether or not they are specifically called for.

D. The Electrical Contractor shall include in his bid the cost of furnishing, installing, maintaining and removing all material and equipment required to provide temporary lights and power to perform the work of all trades during construction and until work is completed. Adequate lighting and receptacle outlets for operation of hand tools shall be provided throughout the project, including shanties, trailers, field offices, temporary toilet enclosures, and shall be extended as construction progresses.

E. Before submitting a bid, the Electrical Contractor is to coordinate with the electric power company for assistance, in detail, the division of work, and the extent of performance by the Power Company.

F. All electrical work required by the telephone company shall be furnished and performed by the Electrical Contractor. The Electrical Contractor shall coordinate with the telephone company before bidding.

G. All work shall be performed or installed in strict accordance with the National Electrical Code and all applicable laws, regulations and codes of local, state, and Federal Governments having lawful jurisdiction, and each contractor and subcontractor shall be responsible for such compliance.

H. All panelboards, disconnects, relays, magnetic contactors and time clocks shall be labeled with the same designation shown on the Drawings.

I. Labels shall be laminated plastic engraved, with minimum 3/4 inch width, minimum letter size 3/8 inch.

J. Mount a typewritten, directory framed glass or plastic on the inside of each panel door, showing circuit number and complete description of all outlets on each circuit. Handwritten edits are not acceptable. Directory shall be installed prior to substantial inspection.

K. Furnish all equipment and personnel and conduct all tests required to secure approval of the installation.

L. Safety Tests
   1. All systems shall test free from short circuits and grounds, shall be free from mechanical and electrical defects, and shall show an insulation resistance between phase conductors and ground of not less than that required by the National Electrical Code.
   2. All systems shall show proper neutral connections.

M. Upon completion of each part of the electrical system, the contractor shall demonstrate to the Engineer that each item on that system is installed with proper covers, fuses, outlets, etc., and that all are in proper working order.

N. A set of "red-lined" electrical drawings shall be carefully maintained at the job site. Actual conditions are to be put on the drawings in red on a daily basis so the drawings will continuously show locations and routings of cable trays, conduits, pull boxes, circuit numbers, and other information required by the Engineer.

O. Equipment and materials shall meet the accepted specification requirements and be free, sheared, of best quality and grade. Furnish current model replacement parts for which originals are not available.

P. All work shall be performed in compliance with OSHA regulations.

Q. Shop drawings and product data shall be submitted on all equipment, fixtures, etc. Shop drawings shall be labeled in the same designation as individual piece of equipment for which they are being submitted; the proper designation shall be the designation used on the various equipment schedules and or in other Sections of this Specification, i.e. Fixture A, Panel B, MDP, etc.

R. Job condition shall be determined prior to bidding in the following manner
   1. Site visit to determine:
      a. Existing conditions
      b. How and where materials will be delivered and stored
      c. Special problems encountered during construction
   2. Examine all Contract Drawings and Specifications to determine
      a. Type of construction to be used
      b. How construction or work will affect the work of this Section
      c. Nature and extent of work of other trades
   3. Failure to determine existing conditions or nature of construction will not be considered as a basis for granting additional compensation.

S. General
   1. Contract Drawings show the intended arrangements and sizes of principal apparatus and devices to be provided under this Contract. Drawings shall be followed as closely as actual building construction will permit.
   2. Dimensions of work as indicated on Plans are not guaranteed to be as-built dimensions.
   3. Measurements shall not be scaled from Drawings and used as definite dimensions for layout or fitting of work in place.
   4. Layout of equipment, as shown on the plan, shall be checked and exact location determined by dimension of equipment approved by the Architect.
   5. Consult the Drawings for all dimensions, locations of partitions, sizes of structural members, foundations, etc.
   6. Do not make final layouts until shop or equipment drawings are approved and job conditions verified.
   7. Electrical reference symbols are given on the electrical legend on the drawings.

T. Coordination
   1. Work shall be coordinated between all Contractors, Subcontractors, Installers, Suppliers, Trades, etc. to:
      a. Insure a neatly fitted installation
      b. Determine the nature and extent of the work of others
      c. Elevate interferences
      d. Maintain maximum headroom and clearances
   2. Any interference which develops or is foreseen and cannot be resolved by the affected trades, etc., shall be handled as follows:
      a. Cause installation of that portion of the work which is in conflict as no additional compensation will be allowed for any relocation, etc.
      b. Continue work only on items which are not in conflict
      c. Notify the Architect immediately.
      d. Architect's decision shall be final as to any relocation, rerouting, removal, etc.
      e. No additional compensation will be allowed for removal, relocation, reports or changes required by interferences.

U. Clear away all debris, surplus materials, etc., resulting from work. Maintain job and equipment in clean, first-class condition.

V. Cover all panel boards, switches, boxes, etc. and leave them in a ready-to-use condition.

W. All panelboard and junction box covers shall be secured with proper screws or bolts.

X. Where factory finish is provided on equipment, all scarred or damaged surfaces shall be touched up or refinished hereunder as approved.

Y. In addition to provisions and stipulation set forth in other Sections of these Specifications, provide various types of protection as follows:
   1. Protect finished floors from chips and cutting oil by use of metal chip receiving pan and oil-proof floor cover.
   2. Protect adjacent surfaces and surrounding items from over-spray and drops due to painting work associated with electrical work i.e. pull-box labels, conduit identification, backboard painting, etc.)
   3. Protect intake grills, parts, and vents to prevent intrusion of dust/debris in devices, equipment, HVAC systems, etc. Ensure protection of heat generating equipment does not cause equipment to overheat.

Z. All pumps, motors, fans and other rotating equipment shall be stored at site with openings, bearing, etc. covered to exclude dust and moisture, and protected from weather and from entry of foreign materials.

EXCAVATION AND BACKFILL

A. Contractor shall coordinate with the General Contractor to determine the extent of his responsibility to perform the excavation and backfilling related to the electrical scope of work.

B. Contractor shall be responsible for contacting the appropriate "CALL BEFORE YOU DIG" authority prior to commencing excavation activities.

ROUGHIN

A. Contractor shall rough-in for all equipment, fixtures, etc., in building whether or not such equipment is furnished by the Contractor or under other divisions of Specifications or by Owner.

B. Determine in advance the location and size of all openings and sleeves necessary for proper installation of all work and these openings and chases provided during construction.

C. Install all inserts for hangers and supports of electrical work as general construction progresses.

D. Rough-in openings in masonry, brick, or stud walls shall be not, not broken or chiseled.

E. Openings shall be smaller than the coverplate or box which fits over it.

F. Openings for recessed boxes shall not be larger than the coverplate which will cover the final opening.

G. Sleeves shall be required of all points where exposed conduits pass through concrete walls, slabs or masonry walls. Sleeves installed below grade are subject to high water conditions shall be installed water tight.

BASIC MATERIALS & METHODS CONDUIT

A. Rigid steel conduit shall be UL listed, hot dip galvanized. Minimum trade size shall be 3/4".

B. Electrical Metallic Tubing (EMT) shall be steel, electric or hot dip galvanized.

C. Flexible Metallic Tubing shall be galvanized steel construction not acceptable. Sealtite type UA or ET shall be used for all motor connections.

D. Rigid Non-metallic conduit shall be listed for use as electrical raceways. All PVC shall be high density Type I (Schedule 40) unless noted otherwise.

E. All conduit shall be installed in a first-class workmanship manner with runs generally parallel with building lines.

F. All connections shall be installed in conduit.

G. Fittings or symmetrical bends shall be required wherever right angle turns are made in exposed work.

H. Bends and offsets shall be avoided wherever possible, but where necessary, they shall be made with an approved conduit bending tool or machine.

I. All conduit runs shall be cut square, reamed smooth and drawn up tight.

J. Conduit shall be installed in horizontal and vertical runs in such a manner as to ensure approximate trouble from the collection of trapped condensation and shall be arranged so as to be devoid of traps.

K. Special care shall be used to ensure that exposed conduit runs are parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceiling.

L. During construction, all conduit work shall be protected to prevent introduction of dirt, plaster or trash in conduits. Fittings or boxes containing such have been plugged shall be entirely freed of accumulations or be replaced.

M. All conduits in floors or below grade shall be swabbed free of debris and mortar before wires are pulled.

O. Conduit shall be properly supported as specified elsewhere in this Section.

P. Expansion fittings or other approved devices shall be used to provide for expansion and contraction where conduits cross building expansion joints and as recommended by manufacturer for long runs.

Q. A flexible grounding strap shall bridge expansion joints and shall be bonded to conduit.

R. Conduit boxes, devices, lights, etc. shall be located so that they will not interfere with intended use of eyebolts, monorails, or other lifting equipment.

S. Conduit above slab shall be run concealed in the walls or ceilings unless specifically noted otherwise.

T. Conduit under ground and or slab shall be buried 24 inches minimum, unless noted otherwise.

U. Exact routing of conduit shall be determined in the field for ease of installation provided that the following criteria is met:
   1. All conduit, home runs, and circuits are made to the panel specified on the drawings and/or panel schedule. Any deviation in this regard shall be done only with written approval of the Architect.
   2. Conduit shall be run so as not to conflict with ductwork, diffusers, mechanical equipment and piping.
   3. Conduit is not kinked or deformed to be specifically run in a particular location.
   4. Hangers and supports shall be attached to wooden stud walls with wood screws.

V. Final connection to motors, etc. shall be made via one of the following methods if conditions are appropriate for the environment installed:
   1. Flexible metal conduit with stranded conductors
   2. Liquid-tight flexible metal conduit with stranded conductors
   3. Armored flexible conduit which shall be waterproof for any locations outside, in kitchen, or any inside area subject to water, heavy moisture, condensation, etc.

W. SPECIFIC CONDUIT TO BE USED:
   1. All conduit and fittings shall be in new, unused condition free from rust, excessive dirt and moisture, kinks, flats, cuts, or other deformations of shape caused by impact, crushing or bending.
   2. Concealed and exposed conduit in building, above slab shall be EMT conduit with "set screw" or compression fittings. IMC and RMC also permitted.
   3. Conduit embedded in or penetrating slab shall be PVC with waterproof joints.
   4. Exposed conduit outside building, above grade shall be rigid galvanized steel with threaded waterproof fittings.
   5. Underground conduit shall be PVC with waterproof joints.

SUPPORTS AND HANGERS

A. All conduit shall be supported on structural building members, i.e. columns, beams, purlins, block, studs, etc.

B. Conduit shall be supported on galvanized or aluminum brackets, clamps, or straps.

C. Conduit hangers shall be attached to building steel by beam clamps or welding.

D. Hangers and supports shall be attached to wooden stud walls with wood screws.

E. Hangers and supports shall be attached to masonry with expansion type anchors (shield).

F. Supports shall be channel type supports such as manufactured by Unistrut, Globe, Kindorf, or equal.

G. Supporting means shall not be attached to roof decking.

BOXES

A. Pullboxes inside buildings shall be code gauge and size, galvanized steel with screw type cover.

B. Pullboxes outside building above grade shall be code gauge and size, galvanized steel with enamel finish and screw type cover. Boxes shall be raintight and waterproof.

C. Pullboxes outside building in slab type shall have galvanized cover and be completely weatherproof.

D. Switch and outlet boxes in standard stud and thicknesses shall be galvanized steel, 2 1/2 inch deep.

E. Switch and receptacle boxes in furred wall or wall less than standard stud depth shall be galvanized steel, 1 1/2 inch deep.

F. Wall boxes in four inch block shall be galvanized steel 2 1/2" deep. And in walls larger than four inch block, galvanized steel 3 1/2" deep.

G. Boxes may be ganged as required for multiple switches, etc.

H. Through-wall boxes are prohibited.

I. Lighting outlet boxes and specified junction boxes shall be galvanized steel, 4" octagon with cover. Ratings shall not be less than N.E.C.

J. Floor boxes shall be standard depth cast steel, flush-mounted cover with brass. Furnish with threaded brass receptacle covers unless noted otherwise.

K. Telephone/data boxes shall be standard gauge galvanized steel, 4" square.

L. All wiring devices shall be installed in metallic boxes. Provide outlet boxes, receptacle boxes, junction boxes, etc., where shown on the drawings and/or required by the National Electrical Code.

M. Provide pull boxes as shown on the Drawings, as required by code and as needed for ease of construction. Pull boxes shall remain accessible.

N. Outlets shall be installed in the locations shown on the drawings.

O. Contractor shall study the general building plans in relation to the space surrounding each outlet, in order that his work may fit with all other work required by these Specifications.

P. All steel supports for outlet boxes shall be furnished and installed.

Q. Outlet boxes for use with exposed steel conduit shall be cast steel. Cast metal fittings shall be cast steel. Cast metal fittings shall be Crouse-Hinds, Square D, Bryant, or equal.

R. All openings in electrical equipment, enclosures, cabinet, outlet and junction boxes shall be by means of welded boxes, standard knockouts, or shall be sawed, drilled, or punched with tools specially made for the purpose. The use of a cutting torch is prohibited.

S. All conduit connections to electrical boxes shall be made with locknuts and bushings.

T. Locknuts shall be drawn down tight to make ground connection between the conduit and box.

U. All boxes shall be labeled to indicate circuit and/or feeder name. Boxes larger than four inch shall be provided with painted or adhesive labels. Boxes not and smaller may be legibly labeled ink permanent marker. Refer to wiring devices specs regarding cover plate labeling.

WIRE AND CABLES

A. All wire used throughout work shall be soft drawn copper of not less than 98% conductivity. Aluminum is not acceptable.

B. Wire and cable shall be new, and in manufacturer's name permanently marked on the outer covering at regular intervals.

C. Conductors #4/0 No. 6 or smaller may be solid or stranded; larger sizes shall be stranded. Stranded conductors shall be used for final connections to vibrating equipment (such as motors).

D. All conductors for general wiring shall be insulated with THWN or THHN insulation.

E. Conductor markings and color coding shall be in accordance with the latest edition of the N.E.C.

F. Green color coding is required by the N.E.C. for conductors used for grounding. Provide green and insulated insulation for insulated grounding conductors.

G. All wiring shall be installed in conduit.

H. Conductors shall be sized according to the National Electrical Code or as shown on the drawings, whichever is greater.

I. Minimum conductor size for 20A receptacle and lighting circuits shall be No. 12 AWG. Where one-way circuit distance from panelboard to farthest load exceeds 65 feet, use No. 10 AWG (minimum over 130 feet, use No. 8 AWG).

J. All wiring shall be fully protected throughout using white or gray depending on voltages wires for neutral and making all switching connections in colored hot wires.

K. No conductors shall be drawn into conduits until all work which may cause damage is completed; only approved cable lubricants shall be used.

L. As far as practical, all feeder cables shall be continuous from feeder source to load termination without using splices or intermediate pull boxes.

M. All cable terminals, taps, and splices shall be made with solderless pressure type connectors. Connectors shall be Type QA-B or QZA as manufactured by Burndy, Dossite, Mcsunion or equal.

N. The minimum free length of conductor at each box for the connection of a fixture, switch or receptacle shall be 8".

O. Boxes for Lighting Control devices shall be provided with a neutral conductor from each branch circuit included in the box.

PANELBOARDS

A. The panelboards shall be of dead-front construction with code gauge galvanized steel box, and door-in-door hinged front finished in gray lacquer.

B. Doors shall be provided with a plate tumbler lock with flush handle and typed directory card and holders.

C. Panels rated 225 amp or less and 10,000 AIC shall be Square D, type NQO, or equal.

D. Panels rated 225 amp or less and greater than 10,000 A.I.C. shall be Square D, Type NQOD, or equal.

E. Panel rated 400 to 600 amp shall be Square D, "I-Line" or equal. Panels greater than 600 amps are considered to be Distribution Switchboards.

F. Furnish and install electrical system as described on Drawings, panel schedules and electrical riser diagram.

G. Panels shall be surface mounted or recessed as specified on the panel schedule.

H. All panelboards shall be circuit breaker type unless noted otherwise.

I. Voltage, phase, wires as specified on schedules.

J. Solid neutral.

K. Panels rated at 10,000 AIC shall have state-in breakers.

L. Panels rated greater than 10,000 AIC shall have bolt-on breakers.

M. Breakers size and quantity as shown on Schedules.

N. Breakers listed as "space" shall be furnished and installed.

O. Panel listed with "space" shall be provided with extra space for future breakers.

P. Each "space" shall be on one single pole. For I-Line (or similar) panels, each "space" shall be prepared to be the mounting space required to accommodate one 2PA single pole breaker.

Q. Panels rated 225 amps or less shall be provided as full 42 space panels unless specifically noted otherwise.

R. Unless otherwise indicated on Drawings, install all panels with the top of the trim 6'-0" above finished floor.

S. Install panelboards in location shown on the Drawings.

T. Panelboards shall be mounted with screws, bolts, or anchors as required.

U. Panels shall not be supported by conduit alone.

V. Panelboards shall be internally and externally clean and shall be free from dust, debris, and non-intentional markings. Panelboards shall be vacuumed and wiped down internally and externally prior to substantial inspection.

W. Neutral and equipment grounding terminals shall be electrically isolated unless specifically noted otherwise.

X. Panelboard cover shall be provided with an engraved phenolic plastic nameplate. Refer to detail on drawings.

CIRCUIT BREAKERS

A. Breakers shall be of the size specified on the Panel Schedules.

B. Breakers rated at 10,000 AIC shall be plug-on.

C. Breakers rated greater than 10,000 AIC shall be bolt-on.

D. Breakers shall have visual trip indicators.

E. Breaker sizes shall be verified against equipment it serves.

F. Current-limiting breakers shall be used where shown on panel schedules.

G. On three-phase panels, breakers shall alternate consecutively phases to provide a balanced load.

H. Breaker types listed below are for Square D equipment and are listed for reference only.
   1. For Type NQO and NQOB Panels, the main breaker shall be equal to the Square D numbers as listed below:
      1. 10,000 AIC - Q1B, Q2, KA, LA
      2. 22,000 AIC - Q1B-VH, Q2-H, KA, LA
      3. 42,000 AIC - KH, LH
      4. 65,000 AIC - KH, LH
   2. For type NQO and NQOB Panels, the branch breakers shall be equal to Square D models.
      1. 10,000 AIC - QO, QOH, Q1-H
      2. 22,000 AIC - QO-VH, Q1-VH
      3. 42,000 AIC - Q1H
      4. 65,000 AIC - QH

I. For I-Line panels, the main breaker shall be 65,000 AIC rated, and equal to Square D Models FA, FH, KA, LA, LH, MA, MH.

J. For I-Line panels, the branch breakers shall be rated at 65,000 AIC and equal to Square D Models FA, FH, FY, F, Q2, Q2H, Q2H, KA, KH, K, QA, LA, LH, MA, MH, ME.

M. Breakers listed as current limiting breakers shall be equal to Square D - I - Limiter, or F or K frame sizes.

N. Furnish and install all circuits breakers as described on the panel schedules and drawings.

O. Contractor shall be responsible for confirming brand, breaker type, mounting type, kits, accessories, and compatibility of new breakers to be installed in existing panelboards. Refer to drawings for available existing panelboard information, and field verify character stics.

FUSES

A. General duty fuses shall be equal to Bussmann 250 volt "Trion JJN" Fuses.

B. Motor circuit fuses and compressor fuses shall be equal to Bussmann 250V "Fusetron FRN" dual element fuses.

C. Current-limiting fuses shall be equal to Bussmann KTN-R fast acting fuses.

DISCONNECTS

A. Amperes rated for general disconnects

B. Horsepower rated for motor disconnects

C. Meet Federal Spec. WS-865c for Heavy Duty Switches

D. UL Listed

E. Gray baked enamel finish

F. Quick-break operating mechanism

G. Visible handle

H. Meets NEMA KS1-1975 for Type HD

I. Indoor disconnects shall be NEMA 1

J. Outdoor disconnects shall be NEMA 3R, minimum

K. Supply and install a disconnecting means for each motor where required by N.E.C. or if shown on drawings.

L. Locate disconnect as shown or as near as possible to motor

M. Disconnects furnished as an integral part of any piece of equipment shall be acceptable in lieu of a safety switch.

N. Switches shall be fused where shown on drawings

O. Motor rated switches shall be acceptable as disconnects for motors of 1/3 HP or less.

P. Disconnect switches shall be provided with labels to indicate circuit source, circuit number, and load served.

STARTERS

A. Provide magnetic or manual starters and associated equipment as required for each motor.

B. Each starter shall have properly sized thermal overload protection for bottom or switches for each piece of equipment unless other specifications call for starter to be furnished with equipment.

C. Contractor shall coordinate with both general contractor and mechanical contractor to ensure that a starter has been provided for all equipment.

COMBINATION STARTERS

A. Where both a disconnect switch and motor starter are required in the same location, a combination starter shall be acceptable in lieu of individual components.

WIRING DEVICES

A. Model or part number listed below are for reference and establishing quality.

B. In so far as practical, all wiring devices shall be of the same manufacturer.

C. All catalog numbers listed are Hubbell unless noted.

D. Acceptable manufacturers shall be Hubbell, Pass and Seymour Leviton, or Arrow-Hart.

E. General Purpose Receptacles
   1. General purpose receptacles shall be specification grade, 120 volt AC, 20 amp, NEMA 5-20R, grounding type, ivory, capable of accepting 15A and 20A plugs.
   2. Catalog numbers shall be
      a. Single receptacle: 5361-I
      b. Duplex receptacle: 5352-I

F. Single appliance type
   1. Single appliance type receptacles shall be specification grade, 120 volt AC, NEMA 5-20R, 20 amp, grounding type, ivory
   2. Catalog numbers shall be
      a. Single receptacle: 5361-I
      b. Duplex receptacle: 5362-I

G. Special purpose receptacles
   1. Special purpose receptacles shall be installed as required and as shown to match equipment and appliance cord.
   2. Catalog numbers for special purpose receptacles shall be as follows, based on VOLT AMPS NEMA COLOR CAT. NO. 125V 30A 5-30R Black 5362, 125V 50A 5-50R Black 9361, 250V 30A 6-30R Black 9330, 250V 50A 6-50R Black 9367

H. Switches
   1. General light switches shall be specification grade, 125-277 volt 20 amp, ivory, and ivory
   2. Catalog numbers shall be: SPST 1221; DPST 1222; 3-Way 1223; 4-Way 1224
   3. Motor rated switches shall be used for any switches controlling angles phase motors
   4. Motor rated switches shall be 120-277 volt and rated in accordance with the voltage and amperage of the motor

I. Cover plates
   1. In finished areas with flush boxes: All cover plates shall be ivory plastic unless noted otherwise
   2. In areas with exposed raceway and surface mounted boxes: cover plates shall be galvanized steel.
   3. Contractor shall provide adhesive label on each cover plate to indicate source panel and circuit number. Also, circuit number shall be written on back side of cover plate.
   4. Catalog numbers
      a. Switch rated 20amp gang-P1, Two gang—P2, Three gang—P3
      b. Single Receptacle 5300-I
      c. Duplex Receptacle Single gang P5, Two gang P52
      d. Special purpose outlets: Single gang P7862, Duplex 7423
      e. Weatherproof covers: Switches 7420, Receptacles 5350WR

GROUNDING AND GROUND FAULT PROTECTION

A. All wiring devices and circuits shall be grounded and bonded in accordance with the National Electrical Code, Article 250.

B. Provide ground fault protection for all circuits noted on the drawings as GFI. All receptacles indicated on the drawings as GFI receptacle symbol, all restroom/bathroom receptacles, all receptacles in exterior locations, and for all location required by N.E.C. Standard receptacles shall be convenient ground fault protected if in series with the GFI protection provided in an upstream GFI receptacle or GFI breaker.

C. Provide ground fault protection on all temporary construction circuits as required by OSHA or the National Electrical Code.

D. Secure entrance neutral and separately derived neutrals shall each be bonded to the grounding electrode system once, at the location noted in the electrical riser diagram. Grounding electrode conductor shall be sized per N.E.C., yet no smaller than shown on Drawings.

E. All conduits shall contain a continuous "green" equipment grounding conductor, sized in accordance with Table 250.122 of the National Electrical Code.

F. All metallic raceways shall be bonded to the equipment grounding conductor.

G. Provide driven ground rod(s) as close as possible to the service entrance location, named and referenced as shown on the drawings and in accordance with N.E.C.

H. Nearest cold water supply pipe, footer or slab steel, building steel and other electrodes per N.E.C. shall be bonded together to create a grounding electrode system.

I. Mechanical Equipment
   1. All mechanical equipment motors shall have grounded cases
   2. All equipment shall have its metallic enclosure, frame, etc. bonded to the circuit equipment grounding conductor

DATA/TELEPHONE

A. Provide conduit system for Telephone/Data including that wires, boxes and blank plates.

B. Conduit, cabling, and outlets shall be provided as shown on the drawings and the telephone riser.

C. Consult the local utility representatives for any special requirements prior to starting the work.

DIMMERS

A. LED 0-10V, where noted on dwgs.

B. Dimmers shall not rely on equipment grounding conductor as a return current path for control power, provide a neutral for this purpose.

C. Dimmers shall be fully compatible with the drivers they control.

SURGE PROTECTION DEVICE (SPD)

A. Provide TYPE 2 on panels as shown

B. Provide SPD with integral audible and visible alarm features to indicate loss of protection

C. TYPE 2, MOV TYPE meeting UL-1449, 3rd edition, TYPE 2 listing
   1. 120KA Surge Current Rating (L-L and L-N)
   2. 20KA Nominal Discharge Current
   3. 200KA SCCR (Short Circuit Current Rating)
   4. 150V MOV (Maximum Continuous Operating Voltage for 120/240V and 208Y/120V systems, 320V MCOV for 480Y/277V systems

GENERAL ELECTRICAL NOTES

THE FOLLOWING NOTES ARE APPLICABLE TO ALL ELECTRICAL SHEETS.

1. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION AND THE APPLICABLE CODES, INCLUDING:
   1.1 2017 FLORIDA BUILDING CODE (6TH EDITION)
   1.2 2014 NATIONAL ELECTRICAL CODE (NFPA 70)
   1.3 2013 NATIONAL FIRE ALARM AND SIGNALING CODE (NFPA 72)
2. ALL MATERIALS PROVIDED SHALL BE NEW AND UNUSED (UNLESS FURNISHED BY THE OWNER); LISTED UNDER AN UL CATEGORY, AND SHALL BE A PRODUCT OF A MANUFACTURER REGULARLY ENGAGED IN PRODUCING SUCH EQUIPMENT AND MATERIALS FOR AT LEAST FIVE YEARS.
3. EXTERIOR RECEPTACLES SHALL BE PROVIDED WITH WEATHERPROOF IN-USE COVERS, UNO.
4. CONDUCTORS FOR ALL 20A BRANCH CIRCUITS SHALL BE CU #12 AWG MIN. REFER TO SPECIFICATIONS REGARDING LARGER SIZES FOR VOLTAGE DROP.
5. ALL BRANCH CIRCUITS SHALL BE RUN WITH DEDICATED NEUTRALS. NO SHARED NEUTRALS.
6. EACH FACEPLATE FOR RECEPTACLES AND LIGHT SWITCHES SHALL BE LABELED WITH SOURCE PANEL AND CIRCUIT NUMBER ON BACKSIDE OF COVER.
7. PROVIDE PULLSTRING IN CONDUITS INDICATED TO BE "SPARE". "FOR FUTURE USE". OR "EMPTY". ALSO PROVIDE TEMPORARY CAPS (OR REMOVABLE DUCT SEAL) TO PREVENT ACCUMULATION OF DEBRIS WITHIN RACEWAY.
8. WIRING DEVICES SHALL BE MOUNTED AT HEIGHTS TO MATCH EXISTING SIMILAR DEVICES IN SURROUNDING AREAS, UNO.
9. REFER TO EQUIPMENT SCHEDULES, RISER DIAGRAM, LIGHTING FIXTURE SCHEDULE, PLANS AND DETAILS FOR SPECIFIC EQUIPMENT, DEVICE, AND/OR FIXTURE CHARACTERISTICS.

POWER LEGEND

- DUPLEX RECEPTACLE, INSTALL AT 18" AFF UNO
  - +48 = INSTALL AT 48" AFF
  - +60 = INSTALL AT 60" AFF
  - TV = INSTALL AT 72" AFF, UNO
  - * = INSTALL 8" ABOVE COUNTER OR DESK
  - REF = DEDICATED FOR REFRIGERATOR
  - MW = DEDICATED FOR MICROWAVE
  - COFF = DEDICATED FOR COFFEE POT
- DUPLEX RECEPTACLE, GFI
  - WP = WEATHERPROOF
- CEILING DUPLEX RECEPTACLE
- QUAD RECEPTACLE
- CEILING QUAD RECEPTACLE
- SPECIAL RECEPTACLE AS NOTED
- POWER FLOOR OUTLET
- POWERTILE/CEOM FLOOR BOX
- JUNCTION BOX
- DISCONNECT SWITCH
- STARTER/DISCONNECT SWITCH
- STARTER OR CONTACTOR
- VARIABLE FREQUENCY/SPEED DRIVE
- MANUAL MOTOR STARTER WITH THERMAL OVERLOAD PROTECTION
- PANELBOARD
- ELECTRIC MOTOR
- UTILITY METER
- HOMERUN (ONE HOT, ONE NEUTRAL, ONE GROUND)
- HOMERUN (TWO HOT, ONE GROUND)
- CIRCUIT CONTINUATION
- CONDUIT CONCEALED IN WALL OR CEILING
- CONDUIT UNDERGROUND OR IN FLOOR
- LIGHTNING PROTECTION AIR TERMINAL
- LIGHTNING PROTECTION CONDUCTOR
- DRIVEN GROUND ROD
- GROUND INSPECTION WELL
- CIRCUIT BREAKER
- DRAWOUT CIRCUIT BREAKER
- FUSE
- SWITCH
- KEYNOTE SYMBOL

LIGHTING LEGEND

- 2X4 LIGHT FIXTURE
  - UPPERCASE LETTER = FIXTURE TYPE
  - LOWERCASE LETTER = SWITCH CIRCUIT
- 2X2 LIGHT FIXTURE
- WALL-MOUNTED LINEAR FIXTURE
- SURFACE-MOUNTED STRIP FIXTURE
- RECESSED CAN LIGHT
- SURFACE-MOUNTED CIRCULAR FIXTURE
- WALL-MOUNTED SCONCE OR WALL PACK
- CHANDELIER
- EMERGENCY LIGHT, WALL MOUNTED
- EMERGENCY LIGHT, CEILING MOUNTED
- EXIT SIGN, WALL/CEILING-MOUNTED CHEVRON DIRECTION INDICATED BY ARROWS
- EXIT SIGN AND EMERGENCY LIGHT, WALL/CEILING-MOUNTED
- OCCUPANCY SENSOR, WALL/CEILING-MOUNTED, DUAL TECHNOLOGY TYPE, UNO
- PHOTOCELL
- LIGHT SWITCH
  - 3 = 3-WAY
  - 4 = 4-WAY
  - D = 0-10V DIMMER, UNO
- COMBINATION WALL-SWITCH/OCCUPANCY SENSOR
- CEILING FAN

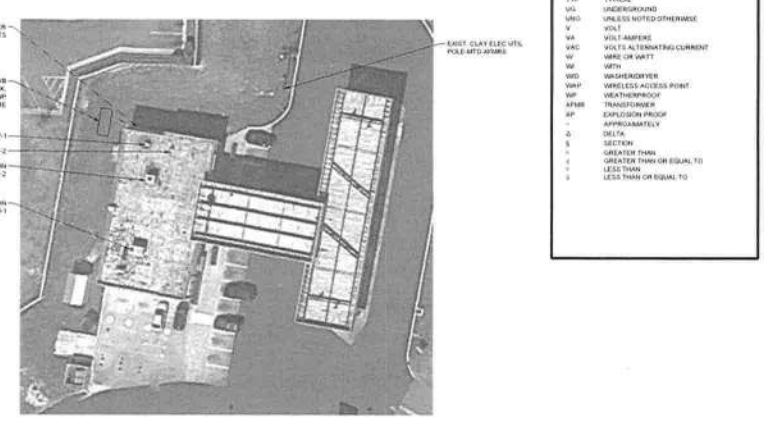
SYSTEMS LEGEND

- DATA OUTLET, INSTALL AT 18", UNO
- PHONE OUTLET
- DATA/PHONE OUTLET, INSTALL AT 18", UNO
- TELECOM FLOOR OUTLET
- TV OUTLET, INSTALL AT 72" AFF, UNO
- SPEAKER
- BUZZER
- ANTENNA

NOTE: NOT ALL SYMBOLS AND ABBREVIATIONS ARE USED

ABBREVIATIONS

A	AMPERE
AC	ABOVE COUNTER
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AH	AIR HANDLER
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AWG	AMERICAN WIRE GAUGE
BFG	BELOW FINISHED GRADE
BJ	BONDING JUMPER
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CKT	CIRCUIT
CLG	CEILING
CONC	CONCRETE
COORD	COORDINATE
CPT	CONTROL POWER TRANSFORMER
CRI	COLOR RENDITION INDEX
CTRL	CONTROL
Cu	COPPER
CU	CONDENSING UNIT
DISC	DISCONNECT
DGR	GRINDER GROUND ROD
EA	EACH
EBJ	EQUIPMENT BONDING JUMPER
EF	EXHAUST FAN
EGC	EQUIPMENT GROUNDING CONDUCTOR
EJ	EXPANSION JOINT
EM	EMERGENCY
ENCL	ENCLOSURE, ENCLOSED
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EX	EXISTING
EXIST	EXISTING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
G, GND	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GFI	GROUND FAULT INTERRUPT
GWB	GYPSUM WALL BOARD
HD	HEAVY DUTY
HOA	HAND-OFF-AUTO
JB	JUNCTION BOX
K	KELVIN
KVA	KILOVOLT AMPERE
KW	KILOWATT
LED	LIGHT EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHTING
LTS	LIGHTS
MBJ	MAIN BONDING JUMPER
MCB	MAIN CIRCUIT BREAKER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSED
NL	NIGHT LIGHT
NS	NOT SWITCHED
NTS	NOT TO SCALE
OAE	OR APPROVED EQUAL
OE	OR EQUAL
OEM	ORIGINAL EQUIPMENT MANUFACTURER
OH	OVERHEAD
OL	OVERLOAD
P	POLE
PB	PULL BOX
PC	PHOTOCELL
PP	PUSH PLATE
PH, Ø	PHASE
PNL	PANEL
PRI	PRIMARY
REC	RECEPTACLE
RECEPT	RECEPTACLE
REF	REFRIGERATOR
RGS	RIGID GALVANIZED STEEL
RTU	ROOFTOP UNIT
SE	SERVICE ENTRANCE
SBJ	SYSTEM BONDING JUMPER
SEC	SECONDARY
SPD	SURGE PROTECTIVE DEVICE
SW	SWITCH
TC	TIMECLOCK
THD	TOTAL HARMONIC DISTORTION
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT-AMPERE
VAC	VOLTS ALTERNATING CURRENT
W	WIRE OR WATT
WH	WATT-HOUR
WID	WASHER/DRYER
WAP	WIRELESS ACCESS POINT
WP	WEATHERPROOF
AFMR	TRANSFORMER
XP	EXPLOSION PROOF
~	APPROXIMATELY
Δ	DELTA
§	SECTION
>	GREATER THAN
≥	GREATER THAN OR EQUAL TO
<	LESS THAN
≤	LESS THAN OR EQUAL TO



ELECTRICAL SITE PLAN/ROOF PHOTO
SCALE: 1" = 30' (APPROX.)

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S&S FOOD STORE #341
BUILDING RENOVATION
COLUMBIA, FLORIDA

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REV 2
REV 1
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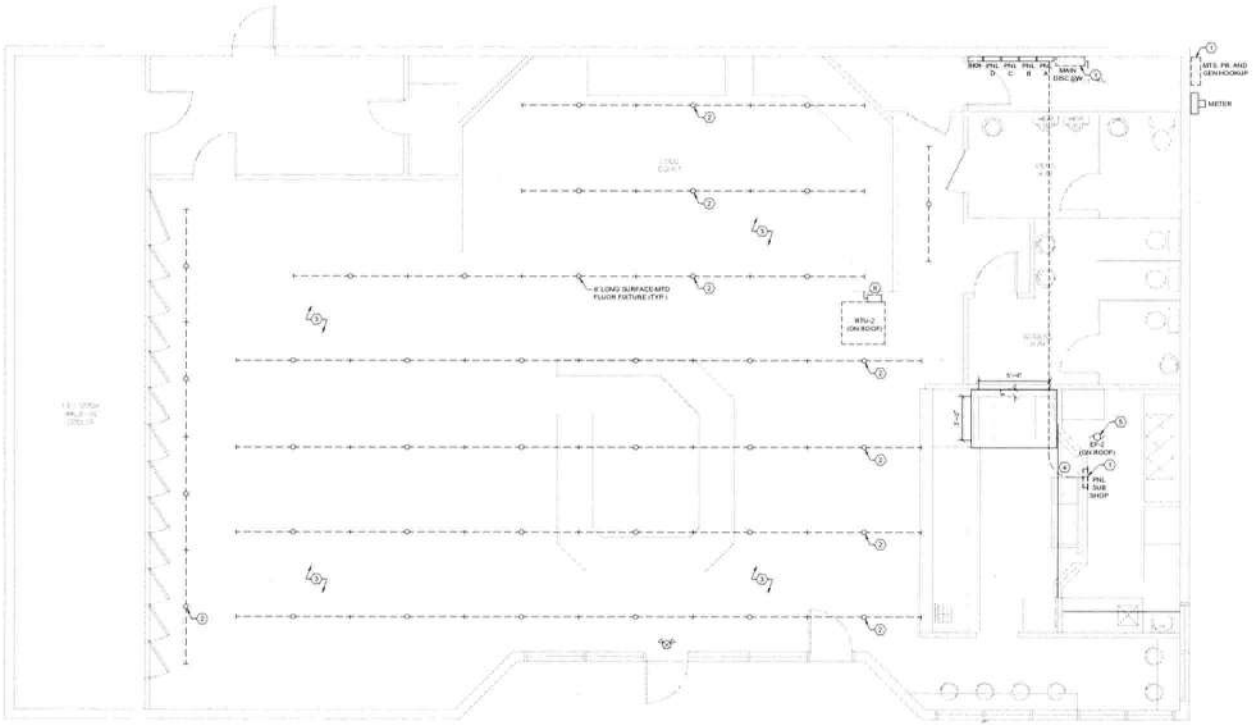
SHEETS



ELECTRICAL DEMO PLAN

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

SHEET NOTES

A

SHEET KEYNOTES

1. DEMOLISH ITEM. REFER TO RISER DIAGRAM
2. DEMOLISH FLUOR STRIP FIXTURES.
3. TEMPORARILY REMOVE CEILING MOUNTED ELECTRICAL ITEMS (CAMERAS, TVS, AND SPEAKERS) AND RE-INSTALL IN NEW CEILING.
4. DEMO FEEDER TO PANEL.
5. DISCONNECT EXISTING EXHAUST FAN ON ROOF AND DEMO CIRCUIT BACK TO SOURCE
6. DEMO RTU-2 DISC SW AND CIRCUITING BACK TO SOURCE PANEL.

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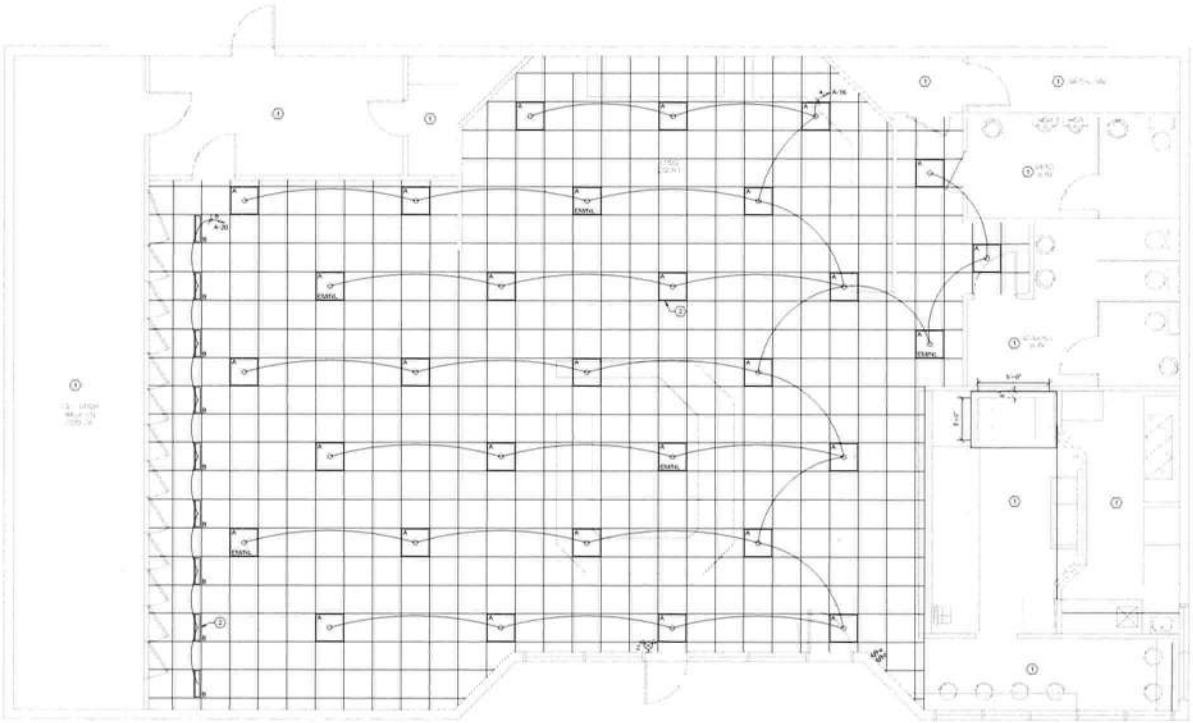

ELECTRICAL LIGHTING PLAN
SCALE 1/4" = 1'-0"

SHEET NOTES

A

SHEET KEYNOTES

1. EXISTING LIGHTING TO REMAIN THIS AREA
2. NEW FIXTURE. CONNECT TO EXISTING LIGHTING CIRCUIT INDICATED (TYP.)

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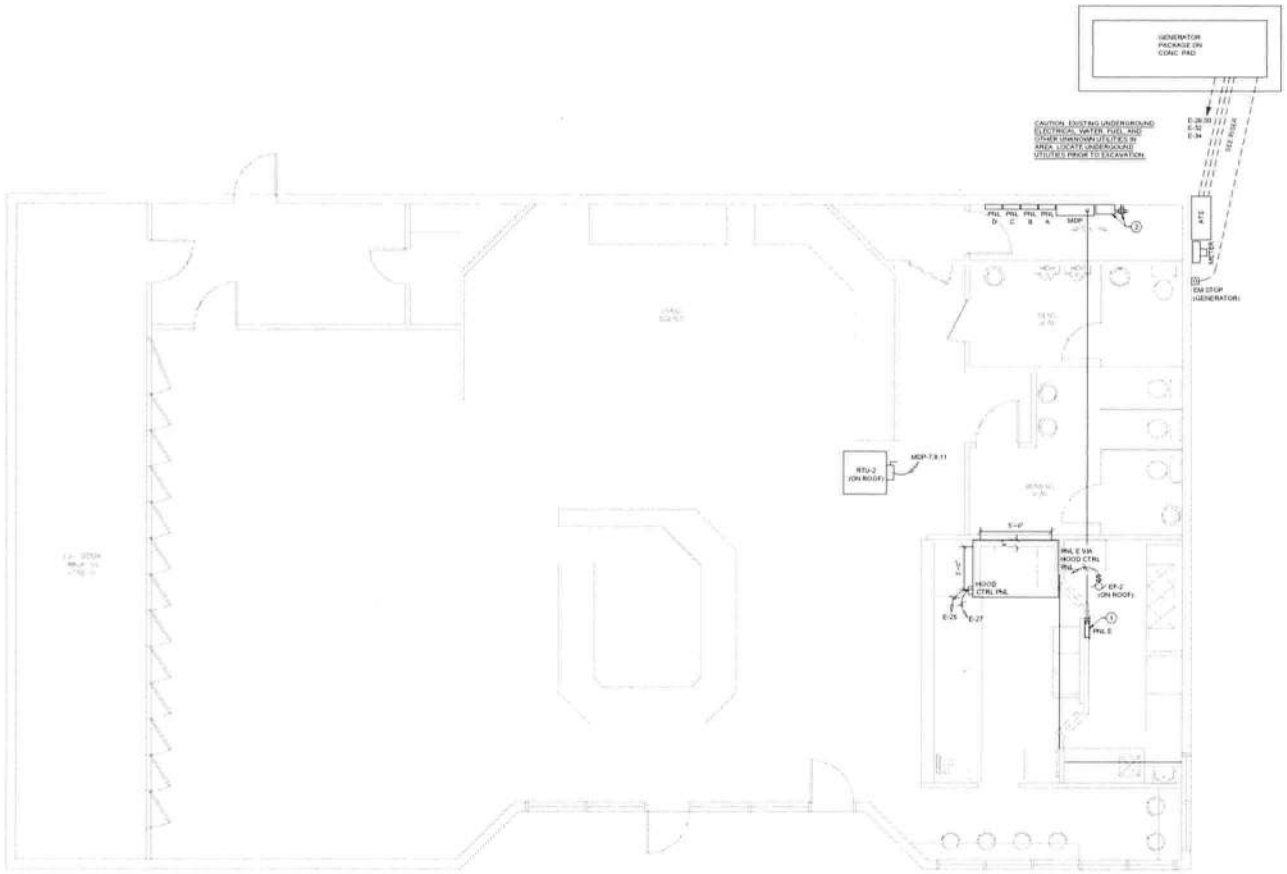

ELECTRICAL POWER PLAN
SCALE: 1/4" = 1'-0"

SHEET NOTES

A.

SHEET KEYNOTES

1. PROVIDE NEW PANEL, INTERCEPT AND RECONNECT EXISTING TO REMAIN CIRCUITS.
2. RE-LOCATE VEEDER-ROOT CONTROL PANEL APPROX. 6" NORTH ALONG WALL (OR ONLY AS REQ'D TO ACCOMMODATE WIDTH OF NEW MDP). PROVIDE NEW HOMERUN CIRCUIT. ALSO, RELOCATE QUAD OUTLET TO HIGHER ELEVATION (AS REQ'D TO ACCOMMODATE CONTROL PANEL RELOCATION).

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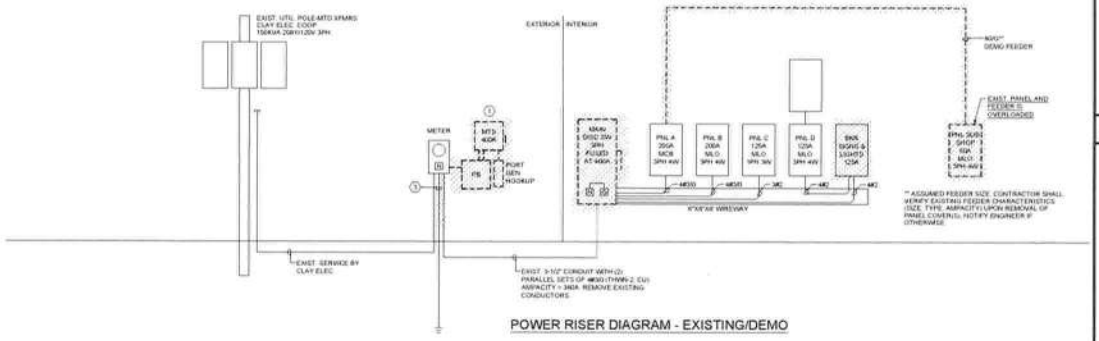
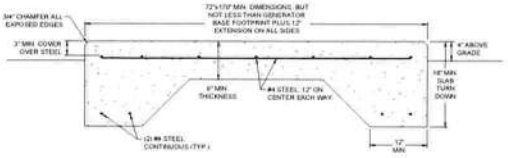
OF
SHEETS



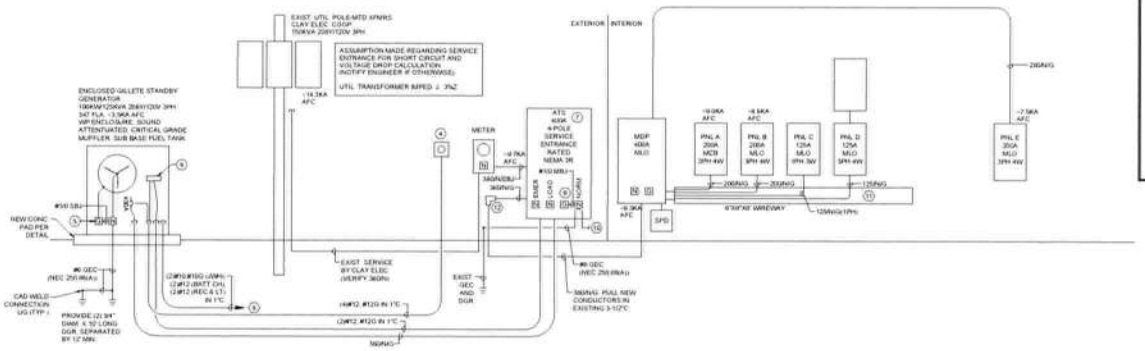
POWER RISER DIAGRAM - EXISTING/DEMO



CONCRETE: 3000 PSI (28 DAY COMPRESSIVE STRENGTH); 4" SLUMP; MIX RATIO 1:2:3 (CEMENT:SAND:AGGREGATE)

ASSUMPTIONS:
GENERATOR PACKAGE DRY WEIGHT <3300LBS (~100KW)
BASE TANK, FUEL, AND OILS <1000LBS (72HR TANK)
LOAD ON SOIL <2 PSI

GENERATOR PAD DETAIL



POWER RISER DIAGRAM - NEW WORK

SHEET NOTES

A

SHEET KEYNOTES

1. DEMO MANUAL TRANSFER SWITCH, PULLBOX, PORTABLE GENERATOR HOOKUP BOX, AND ASSOCIATED NIPPLES AND FEEDERS.
2. REMOVE EXIST. MAIN BONDING JUMPER BETWEEN NEUTRAL AND GROUND AT MAIN DISC. SW.
3. DISCONNECT EXIST. GROUNDING ELECTRODE CONDUCTOR FROM NEUTRAL TERMINAL AT METER.
4. PROVIDE REMOTE GENERATOR SHUNT TRIP/STOP BUTTON ADJACENT TO METER. CONNECT TO GENERATOR CONTROLLER (REMOTE SHUT OFF) AND GENERATOR BREAKER (SHUNT TRIP).
5. GENERATOR SHALL BE CONSIDERED A SEPARATELY DERIVED SYSTEM. PROVIDE SYSTEM BONDING JUMPER BETWEEN GENERATOR NEUTRAL AND GENERATOR FRAME/GROUND.
6. PROVIDE MAIN BONDING JUMPER BETWEEN INCOMING SERVICE (NORMAL) NEUTRAL AND GROUND BAR WITHIN ENCLOSURE. DO NOT BOND GENERATOR (GNER) NEUTRAL OR LOAD NEUTRAL TO GROUND AT ATS.
7. 3-PHASE 4-WIRE ATS WITH SWITCHED NEUTRAL (4-POLE). SERVICE ENTRANCE BREAKER (ON INCOMING NORMAL SIDE) SHALL HAVE 400A TRIP.
8. HOMERUN CIRCUITS (WITH COMMON RACEWAY AND EQUIPMENT GROUND CONDUCTOR) TO PANEL E FOR BATTERY CHARGER, JACKET WATER HEATER, AND MISC. POWER OUTLET AND ENCLOSURE LIGHT.
9. GENERATOR CONTROLLER IN ENCLOSURE.
10. BOND ATS NORM NEUTRAL TO EXISTING GROUNDING ELECTRODES (METALLIC COLD WATER PIPING, AND OTHERS). IF PRESENT, VIA #4G GEC.
11. NEW FEEDS TO EXISTING PANELS MAY UTILIZE EXISTING NIPPLES AND WIREWAY (IN LIEU OF NEW RACEWAY). EXISTING CONDUCTORS MAY BE RE-USED IF CONDITION, SIZE, AND LENGTH ARE ACCEPTABLE.
12. INTERCEPT EXISTING CONDUIT BELOW EXISTING METER.

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OF SHEETS

3 PHASE PANEL SCHEDULE (EXISTING PANEL) — A

PANEL DESIGNATION: A
PANEL LOCATION: ELEC RM
SUPPLY FROM: MDP
VOLTAGE: 208Y/120
3 PHASE W
MAIN BUS: 200
BUS RATING (A): 200
MOUNTING: SURFACE
PHASE W
NEMA: 1
40 POLE
REMARKS

DESCRIPTION	LOAD TYPE	BKR AMP	CKT NO	A	B	C	CKT NO	BKR AMP	LOAD TYPE	DESCRIPTION
[illegible]	G	20/1	1	2,250	4,150		2	20/1	G	PH. SUB-PANEL
—	G	—	3		2,250	4,150	4	—	G	SPARE —
[illegible]		20/1	5			0	0	6	20/1	G	[illegible]
[illegible]		20/1	7	0	0		8	20/1		[illegible]
[illegible]		20/1	9		0	0	10	20/1		[illegible]
[illegible]		20/1	11			0	0	12	20/1	[illegible]
[illegible]		20/1	13	0	0		14	20/1		[illegible]
[illegible]		20/2	15		0	900	16	20/1	L	LTS - RETAIL (ALWAYS)
—			17			0	0	18	20/1		
[illegible]		20/2	19	0	108		20	20/1	L	LTS - WALK WASH
—		—	21		0	0	22	20/1		[illegible] COFFEE
[illegible]		20/1	23			0	0	24		
[illegible]		20/1	25	0	0		26	20/1		[illegible]
[illegible]		40/2	27		0	0	28	20/1		LTS - [illegible]
—			29			0	0	30	20/1		[illegible]
[illegible]		20/1	31	0	0		32	20/1		[illegible]
[illegible]		40/2	33		0	0	34	20/1		[illegible]
—		—	35			0	0	36	20/1		[illegible]
[illegible]		20/1	37	0	0		38	20/1		[illegible]
[illegible]		20/1	39		0	0	40	20/1		[illegible]
[illegible]		20/1	41			0	0	42	20/1		[illegible]

CONNECTED LOAD ON EXISTING PANEL REDUCED APPROX. 12KW 3PH (REMOVED FEED TO "SUB SHOP" SUB-PANEL)

3 PHASE PANEL SCHEDULE (EXISTING PANEL) — SUB SHOP

PANEL DESIGNATION: SUB SHOP
PANEL LOCATION: [illegible]
EQUIPMENT: [illegible]
VOLTAGE: 208Y/120
3 PHASE W
MAIN BUS ONLY
BUS RATING (A): 125
MOUNTING: [illegible]
NEMA: 1
20 POLE
REMARKS

DESCRIPTION	LOAD TYPE	BKR AMP	CKT NO	A	B	C	CKT NO	BKR AMP	LOAD TYPE	DESCRIPTION
[illegible]		20/1	1				2	20/1		[illegible]
[illegible]		20/1	3				4	20/1		[illegible]
[illegible]		20/1	5				6	20/1		[illegible]
[illegible]		20/1	7				8	20/1		[illegible]
[illegible]		20/1	9				10	20/1		[illegible]
[illegible]		20/1	11				12	20/1		[illegible]
[illegible]		20/1	13				14	40/1		[illegible]
—		—	15				16			
[illegible]		20/1	17				18	20/1		[illegible]
[illegible]		20/1	19				20			
[illegible]		20/1	21				22	20/1		[illegible]
[illegible]		20/1	23				24			
[illegible]		20/1	25				26			
[illegible]		20/1	27				28	20/1		[illegible]
[illegible]		20/1	29				30			
[illegible]		20/1	31				32			
[illegible]		20/1	33				34			
[illegible]		20/1	35				36			
[illegible]		20/1	37				38			
[illegible]		20/1	39				40			
[illegible]		20/1	41				42			

3 PHASE PANEL SCHEDULE (NEW) — E

PANEL DESIGNATION: E
PANEL LOCATION: KITCHEN
SUPPLY FROM: MDP
VOLTAGE: 208Y/120
3 PHASE W
MAIN LUGS ONLY
BUS RATING (A): 200
MOUNTING: [illegible]
NEMA: 1
40 POLE
REMARKS

DESCRIPTION	LOAD TYPE	BKR AMP	CKT NO	A	B	C	CKT NO	BKR AMP	LOAD TYPE	DESCRIPTION
MDP	G	20/1	1	900	900		2	20/1	L	LIGHTS
FEEDER	G	20/1	3		1,200	720	4	20/1	R	RECEPTS
MDP	G	20/1	5			1,440	1,080	6	20/1	G	JAL
MC TRUCK	G	20/1	7	1,080	1,080		8	20/1	G	[illegible]
CASH WRAP	G	20/1	9		360	0	10	20/1		[illegible]
SPARE		20/1	11			0	0	12	20/1	G	[illegible]
[illegible]	G	40/2	13	2,340	2,340		14	40/2	G	[illegible]
—	G	—	15		2,340	2,340	16		G	
FRIDGE	G	50/2	17			4,150	3,520	18	50/2 (GFI)	G	SUPPER CLUB
—	G	—	19	4,150	3,520		20	—	G	
FREEZER	G	50/2	21		4,150	0	22	40/2		HOOD SUPPLY
—	G	—	23			4,150	0	24	—	—
[illegible]	M	20/1	25	1,116	0		26	—		
HOOD LIGHTING	L	20/1	27		400	2,250	28	30/2	G	SOFT JACKET WARMER
SPARE		20/1	29			0	2,250	30	G	
SPARE		20/1	31	0	200		32	20/1	G	SPA PRE AMENITIES
SPARE		20/1	33		0	1,200	34	20/1	G	SPA BATH CONTROLS
SPARE		20/1	35			0	0	36	20/1	SPARE
SPARE		20/1	37	0	0		38	20/1	SPARE
SPARE		20/1	39		0	0	40	20/1	SPARE
SPARE		20/1	41			0	0	42	20/1	SPARE
				14,986	14,986	15,930				

	CONNECTED	NEC FEEDER
	VA	VA
MAX SERVED LOD	400	1,500
MIN LTG (WATS)	1,500	1,500
	1,116	1,116
VA (EXISTING)	400	1,500
VA (NEW)	1,116	1,500
VA (NEW) MULTIPLIER	1,116	1,500
	16,200	21,600 (ADT-VENDING)
NEC Feeder Calc		
Lighting per NEC 220.3 & 220.12	VA	AMPS
Receptacles per NEC 220.14 (A)	10,440	104.4
Motors per NEC 430.24	16,986	84.9

LOAD TYPE
H = HEAT/TRACE
L = LIGHTING
M = MOTOR
G = GENERAL
S = SPECIAL
R = RECEPTACLE
— = NON CONDUCTIVE

3 PHASE PANEL SCHEDULE (NEW) — MDP

PANEL DESIGNATION: MDP
PANEL LOCATION: ELEC RM
SUPPLY FROM: [illegible]
VOLTAGE: 208Y/120
3 PHASE W
MAIN LUGS ONLY
BUS RATING (A): 400
MOUNTING: [illegible]
NEMA: 1
40 SPACE
REMARKS

DESCRIPTION	LOAD TYPE	BKR AMP	CKT NO	A	B	C	CKT NO	BKR AMP	LOAD TYPE	DESCRIPTION
PNL 2	V	200/3	1	14,000	6,000		2	200/3	V	PNL 1
	V	—	3		14,000	7,000	4	—	V	
	V	—	5			10,000	8,200	6	—	G
[illegible]	G	80/3	7	7,197	0		8	20/1		PNL B
	V	—	9		7,197	0	10	—		
	V	—	11			7,197	0	12	—	
SPACE			13	0	0		14	50/2		PNL 1
SPACE			15		0	0	16			
SPACE			17			0	0	18		SPACE
SPACE			19	0	0/400		20	125/3	S	PNL B
SPACE			21		0	1,500	22	—	G	—
SPACE			23			0	4,500	24	—	G
SPACE			25	0	0		26	30/3		SPA
SPACE			27		0	0	28			—
SPACE			29			0	0	30		—

MAX 12-MONTH UTILITY PEAK DEMAND AS OF NOV 2020:
67.42kW OBSERVED JUNE 2020
AT 208V 3PH 89F (ADJUSTED PF): 234A
125% OF PEAK = 292A
LOAD REMOVED (HVAC): (27)
LOAD ADDED (HVAC & GENSET): 84A
SUM: 349A
SUM WHILE ON GENERATOR: 537A (208H OFF)
MDP SERVICE AMPACITY: 360A
GENERATOR FULL LOAD AMP: 347A

3 PHASE PANEL SCHEDULE (EXISTING PANEL) — B

PANEL DESIGNATION: B
PANEL LOCATION: ELEC RM
SUPPLY FROM: MDP
VOLTAGE: 208Y/120
3 PHASE W
MAIN LUGS ONLY
BUS RATING (A): [illegible]
MOUNTING: [illegible]
NEMA: 1
30 POLE
REMARKS

DESCRIPTION	LOAD TYPE	BKR AMP	CKT NO	A	B	C	CKT NO	BKR AMP	LOAD TYPE	DESCRIPTION
[illegible]		20/1	1	0	0		2	20/2		[illegible]
[illegible]		20/1	3		0	0	4			
[illegible]		20/1	5			0	0	6	20/1	EXISTING LOAD
[illegible]		20/1	7	0	0		8	20/1		EXISTING LOAD
[illegible]		20/1	9		0	0	10	20/1		EXISTING LOAD
ICE CREAM		20/2	11			0	0	12	20/1	EXISTING LOAD
—		—	13	0	0		14	20/1		EXISTING LOAD
[illegible]		20/1	15		0	0	16	20/1		EXISTING LOAD
[illegible]		20/1	17			0	0	18	20/1	REC
SPARE		40/2	19	0	0		20	40/2 (GFI)		SPARE
—			21		0	0	22			—
			23			0	0	24		
[illegible]		40/2	25	0	0		26	20/1		[illegible]
		—	27		0	0	28	20/1		[illegible]
		—	29			0	0	30	20/1	[illegible]

CONNECTED LOAD ON EXISTING PANEL REDUCED BY 28A 3PH

EXIST. HVAC LOADS

EQUIPMENT	LOCATION	MODEL	MOD / SERIES	CW	ELTR CHRG	MOTOR CHRG	MOTOR RLA	HP/TON	OUTDOOR CHRG	INDOOR CHRG	MCA	MOCP	FIELD VIR	EXIST VIR	TYPE CW
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

LIGHTING FIXTURE SCHEDULE

MARK	DESCRIPTION
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

FEEDER SCHEDULE

Feeder	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

NEW EQUIPMENT SCHEDULE

EQUIPMENT	DESCRIPTION	PHASE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

SHEET NOTES

A.

SHEET KEYNOTES

1. PROVIDE NEW BREAKER
2. RE-FEED PANEL FROM ATS. SEE RISER DIAGRAM

COBURN AND ASSOCIATES, INC
MECHANICAL • ELECTRICAL • CONSULTING ENGINEERS
P.O. BOX 1371
CERTIFICATE OF AUTHORIZATION: 2007

S&S FOOD STORE #341

BUILDING RENOVATION
COLUMBIA, FLORIDA

REV 4	
REV 3	
REV 2	
REV 1	
ISSUE FOR PERMIT	XX/XX/2020
DRAWN	CAS
APPROVED	REC
2020-50	
E6	
OF SHEETS	