PROJECT TEAM DBR Inc. 9990 Richmond Ave. South Bldg. Suite 300 Houston, Texas 77042 713-914-0888 MEP Engineer Adam Jones, P.E. ajones@dbrinc.com Galena Park I.S.D. 14705 Woodforest Blvd. Edenglen Dr Houston, TX 77015 6500 Purple Sage Rd, Houston, TX 77049

Tel: (832) 386-3100

GALENA PARK I.S.D. PURPLE SAGE ELEMENTARY SCHOOL HVAC UPGRADES GPISD #112-2022



Adrian Stephens Noe Esparza Norma Hernandez Wanda Heath Johnson Ramon Garza Herbert Alexander Sanchez Linda Clark Sherrard

Board President Vice-President Secretary Trustee Trustee Trustee Trustee

Dr. John C. Moore

Superintendent of Schools **ISSUE FOR PROPOSAL**



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REVISION: No. / Date / 05/16/2022 SD 05/25/2022 100 06/22/2022 753 07/20/2022 100 07/28/2022 753 07/28/2022 100 07/28/2023 100 07/28/2024 100 07/28/2025 100 07/28/2025 100 07/28	A State of the second matrix o
ADAM C. JONES	28122
GALENA PARK PURPLE SAGE HVAC UPGRADES	
DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE: MEP COV SHEET	/ER
SHEET NUMBER:	





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			PA	NEL				FRAM	ME				DE	TAILS
NUMBER	NO. OF PANELS	WIDTH	HEIGHT	THICKNESS	MATERIAL	GLASS	TYPE	MATERIAL	TYPE	FIRE RATING	HARDWARE SET	HEAD	JAMB LEFT	JAMB
	-													
A100A 2	2	3' - 0"	7' - 0"	1 3/4"	HM		A	HM	1	60 MIN	TBD	1D/A1.11A	1E/A1.1A	1E/A1.1/
A100B 2	2	3' - 0"	7' - 0"	1 3/4"	HM		A	HM	1	60 MIN	TBD	1D/A1.11A	1E/A1.1A	1E/A1.1/





STRUCTURAL GENERAL NOTES:

BUILDING CODE:

DESIGN LIVE LOADS: DESIGN DEAD LOADS: ROOF WIND LOADS: EXPOSURE

STRUCTURAL STEEL: TYPES: WF

MISC.

WELDING: ARC WELDING ELECTRODES: METAL DECK - E60XX



2 FLOOR INFILL DIAGRAM

FILL WITH 3,000 PSI CONCRETE TO MATCHTOP OF ADJACENT FLOOR. USE 6X6 - W1.4XW1.4 WWF MIN

-EXIST POUR STOP FIELD VERIFY

A FIELD VERIFY

> -L3X3X1/4 @ 2'-6" MAX. PROVIDE 1/4" PLATE EA END, WELDED TO EXIST JOISTS PER DETAIL 3B-B THIS SHEET

GENERAL REQUIREMENTS:

THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIEDOWNS WHICH MIGHT BE NECESSARY. SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER COMPLETION OF THE PROJECT. REPRODUCTIONS OF CONTRACT DRAWINGS BY CONTRACTOR IN LIEU OF PREPARATION OF SHOP DRAWING SIGNIFIES ACCEPTANCE OF INFORMATION SHOWN AS CORRECT AND OBLIGATES HIMSELF TO ANY EXPENSE, REAL OR IMPLIED, ARISING FROM THEIR USE.

VERIFY DIMENSIONS AND EXISTING CONDITIONS AT JOB SITE. CHANGES TO THE STRUCTURAL DRAWINGS DUE TO THE ACCEPTANCE OF ALTERNATES AND/OR SUBSTITUTES IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL

INTERNATIONAL BUILDING CODE, 2015

- ROOF 20 PSF

20 PSF

BASIC WIND SPEED 150 MPH (3 SECOND GUST)

В RISK CATEGORY III

CONFORM TO AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", THIRTEENTH EDITION AND AISC "CODE OF STANDARD PRACTICE." REFER TO PROJECT SPECIFICATIONS FOR PAINT AND GALVANIZING.

ASTM A992, GR. 50 ASTM A36

SPLICING PROHIBITED WITHOUT PRIOR APPROVAL AS TO LOCATION AND TYPE. FIELD CONNECTIONS - BOLTED OR WELDED (EQUIVALENT TO STANDARD BOLTED). BURNING OF HOLES IN STEEL MEMBERS IS PROHIBITED. ANY MEMBER WITH BURNED HOLES MUST BE REPLACED.

ROOF CONSTRUCTION:

SUSPEND NO MECHANICAL, ELECTRICAL, PLUMBING OR OTHER EQUIPMENT FROM JOIST BRIDGING, BRACING, CEILING SUPPORT OR METAL DECK. FURNISH ALL SIZES AND LOCATIONS OF ROOF OPENINGS TO SUIT ACTUAL

MECHANICAL EQUIPMENT PURCHASED. DO NOT INSTALL MECHANICAL CURBS OR OTHER SUPPORTS DIRECTLY ON METAL

DECK UNLESS APPROVED IN WRITING BY THE STRUCTURAL ENGINEER. LOCATION OF ROOFTOP UNITS NOT SHOWN ON 'S' SERIES DRAWINGS ARE SUBJECT TO REVIEW BY ARCHITECT.

OPENINGS OVER 10" - PROVIDE L3 x 3 x 1/4 FRAME.

CONFORM TO "CODE FOR WELDING IN BUILDING CONSTRUCTION" BY THE AMERICAN WELDING SOCIETY, LATEST EDITION.

WELDS NOT INDICATED ON DRAWINGS ARE TO BE FILLET ALL AROUND AS PRESCRIBED BY AISC SPECIFICATION. PROVIDE WELDING OF CONTINUOUS MEMBERS WITH A MINIMUM OF 2 INCHES OF 3/16 INCH FILLET STITCH WELDS AT 12" OC, STAGGERED

EACH SIDE, UNLESS OTHERWISE NOTED. FIELD PAINT ALL WELDS W/ "GALVILITE" BY Z.R.C. OR APPROVED EQUAL.

STRUCTURAL STUDS - E6022 OR E6011, 3/32" RODS.

ALL OTHER - E70XX LOW HYDROGEN, 250 DEGREE MINIMUM OVEN TEMPERATURE. SIZE - ALL FILLETS ARE 1/16" LESS THAN MINIMUM THICKNESS TO BE WELDED.

D+A PROJECT NO. 22-224

90 **REVISION**: No. / DATE / DISCRIPTION

05/16/2022 SD SET 05/25/2022 100% DD SET 06/22/2022 75% CD SET 07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET

SEAL:



Ш C \triangleleft S Ш URPI () ADE GR Δ HVAC Ω ENA AL C

DATE: 07/28/2022 DRAWN BY: RHW CHECKED BY:

LMM PROJECT NUMBER: 220122.000 SHEET TITLE:



SHEET NUMBER:

S.001

A AR (COMPRESSED) AVE AR CONDITIONING C AR CONDITIONING C ALTERNATING CURRENT, AIR COMPRESSOR ACCH AR COOLED CHILLER ARCOL AR COOLED CHILLER ARCOL AR COOLED CONDENSING UNIT ADJ ADJUSTABLE ARC AR COOLED CONDENSING UNIT ADJ ADJUSTABLE ARC ABOVE FINISHED CELLING AFF ABOVE FINISHED CELLING AFF ABOVE FINISHED CELLING AFF ABOVE FINISHED CELLING AFF ABOVE FINISHED CRUOR AFF ACCESS PAREL AR CADUSTING UNIT AL ALUMINUM MB AMBENT AR CACESS PAREL AR CACESS PAREL AR CACESS PAREL ARCHTECT, ACOTETY OF HEATING, REFRIGERATING AND AIR- CONDITIONING ENGINEERS AMERICAN SOCIETY OF MECHANICAL ENGINEERS ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS ANA ACD WASTE AV ACD WASTE AV ACD WASTE AV ACD WASTE AWS AMERICAN WEDING SOCIETY AUX AUXILLARY B B B B B B B B B C C C C C C C C C C C C C	G GA GAL GALV GC GLV GND GPM GV HORIZ HP HSTAT HT HT HT HT HT HW HWP HWR HWS HX HZ ID IE IH IN SUL IN IN IN IN IN IN IN IN IN IN IN IN IN	GAS GAUGE GALLON GALVANIZED GENERAL CONTRACTOR GLOBE VALVE GROUND GALLONS PER MINUTE GATE VALVE HORIZONTAL HORSEPOWER HUMIDISTAT HEIGHT HEATING HEATER HOT WATER PUMP HOT WATER RETURN HOT WATER SUPPLY HEAT EXCHANGER HERTZ I NISIDE DIAMETER INVERT ELEVATION INFRARED HEATER INCH INSULATION INTERNAL, INTERIOR INVERT INDIRECT WASTE J JUNCTION BOX JOCKEY PUMP K KITCHEN EQUIPMENT CONTRACTOR KNOCKOUT KILOVOLT- AMPS KILOWATT
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CLG CEILING CLR CLEAR CMU CONCRETE MASONRY UNIT COL COLUMN	LF LP	LINEAR FEET LOW PRESSURE
CMU CONCRETE MASONRY UNIT	LRA	LOCKED ROTOR AMPS
an taltumin		LEAVING WET BULB
COMB COMBINATION	LWCO LWT	LOW WATER CUT OFF LEAVING WATER TEMPERATURE
COMP COMPRESSOR CONC CONCRETE, CONCENTRIC		
COND CONDENSER, CONDENSATE		
CONT CONTINUOUS,CONTINUATION		Μ
CU COPPER	MAT	MIXED AIR TEMPERATURE
D	MBTUH	THOUSAND OF BTU'S
DEPTH, DRAIN, DRYER	MC MECH	MECHANICAL CONTRACTOR MECHANICAL
DC DIRECT CURRENT	MFR MH	MANUFACTURER MANHOLE
DUC DIRECT DIGITAL CONTROL DDMB DUAL DUCT MIXING BOX	MI	
DESIG DESIGNATION		MEDIUM PRESSURE
	MS MTD	mop sink Mounted
DIFFUSER DIM DIMENSION	MU MVD	
DISC DISCONNECT DN DOWN	MSAH	MINI-SPLIT AIR HANDLER
DPR DAMPER	MSCU	mini-Split condensing UNIT
DISTRIASTILIX DWG DRAWNG		
DWH DOMESTIC WATER HEATER DWP DOMESTIC WATER PUMP		N
DX DIRECT EXPANSION	N.C.	NORMALLY CLOSED
<u> </u>	NFPA NIC	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT
EACH	N.O. NO	NORMALLY OPEN NUMBER
EC ELECTRICAL CONTRACTOR	NTS	NOT TO SCALE
ECC ECCENTRIC EDB ENTERING DRY BULB		
DH ELECTRIC DUCT HEATER		•
FF EFFICIENCY		0
EJ EXPANSION JOINT		OUTSIDE AIR
	uaf OAHU	OUTSIDE AIR FAN OUTSIDE AIR HANDLING UNIT
INCL ENCLOSURE	OBD OC	OPPOSED BLADE DAMPER ON CENTER
INGR ENGINEER EQ EQUAL	OD OFCU	OUTSIDE DIAMETER, OVERFLOW DRAIN
QUIP EQUIPMENT SP FXTERNAL STATIC PRESSURE	OPG	OPENING
T EXPANSION TANK	US&Y	OPEN STEM AND YOLK
EVAP EVAPORATOR		
WB ENTERING WET BULB EWT ENTERING WATER TEMPERATURE		Ρ
X EXPLOSION PROOF XT EXTERNAL	PC	
EXTG EXISTING	PP	POLYPROPYLENE
F	PPM PRI	PART PER MILLION PRIMARY
FAHRENHEIT, FIRE	PRS PRV	PRESSURE REDUCING STATION
CO FLOOR CLEAN OUT	PSF	POUNDS PER SQUARE FOOT
CS FLOOR CONTROL STATION TCU FAN COIL UNIT	PSI PSIG	POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH GAUGE
D FLOOR DRAIN, FIRE DAMPER DC FIRE DEPARTMENT STAMESE CONNECTION	PV PVC	
DV FIRE DEPARTMENT SIAMESE CONNECTION FIRE DEPARTMENT VALVE	r VU	
TH FIRE HYDRANT THC FIRE HOSE CABINET		
THR FIRE HOSE RACK		Q
LEX FLEXIBLE	QTY	QUANTITY
PTU FAN POWERED TERMINAL UNIT		



MECHANICAL GENERAL NOTES

PIPING AND DUCTWORK SHOWN ON PLANS ARE SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ALL NECESSARY PIPING, DUCTWORK, FITTING, INSULATION, AND OTHER ACCESSORIES IN ORDER TO

2. EXACT LOCATIONS OF VAV TERMINAL UNITS. GRILLES. AND DAMPERS SHALL BE FIELD COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS AND ALLOW ADEQUATE CLEARANCES.

3. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE MANUFACTURER DRAWINGS AND CUTSHEETS BEFORE FABRICATING OF DUCTWORK, PIPING, OR POURING OF CONCRETE

4. SHEET METAL INLET DUCTS TO VAV TERMINAL UNITS SHALL BE SAME SIZE AS THE BOX INLET SIZE. PROVIDE RIGID ROUND DUCT THAT IS ONE SIZE LARGER THAN THE INLET BOX SIZE IF THE DISTANCE BETWEEN THE MAIN DUCT AND THE VAV BOX IS MORE THAN 6'-0".

5. PROVIDE CONICAL SPIN-IN CONNECTOR FOR ALL ROUND DUCT CONNECTIONS TO VAV TERMINAL UNIT INLETS. 6. INSTALL VAV TERMINAL UNITS TO ENSURE ACCESS PANELS ARE NOT BLOCKED. ACCESS FOR SERVICE MUST

7. CONTRACTOR SHALL COORDINATE/ CONFIRM ALL ELECTRICAL POWER REQUIREMENTS WITH MANUFACTURER

8. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS.

9. PROVIDE RECTANGULAR BRANCH DUCT TAP FOR ALL RECTANGULAR DUCT CONNECTIONS TO RECTANGULAR

10. ALL MEDIUM AND LOW PRESSURE DUCTWORK AND ASSOCIATED ACCESSORIES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR MEDIUM AND LOW PRESSURE DUCTWORK.

11. ALL OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR DUCTWORK AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION WHERE LOCATED OUTSIDE THE BUILDING. REFER TO SPECIFICATION 23 07 13 DUCT INSULATION FOR FURTHER INFORMATION AND ADDITIONAL

12. ALL DUCTWORK SHALL BE CONSTRUCTED TO SEAL CLASS 'A' AS REFERENCED IN SMACNA STANDARDS. ALL NON-WELDED JOINTS AND SEAMS SHALL BE SEALED. THIS INCLUDES BUT IS NOT LIMITED TO TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS, SPIN-INS, TAPS, AND OTHER BRANCH CONNECTIONS, ACCESS DOORS, ACCESS PANELS, AND DUCT CONNECTIONS TO EQUIPMENT. OPENINGS FOR ROTATING SHAFTS SHALL ALSO BE SEALED WITH BUSHINGS. REFER TO SPECIFICATION 23 31 13 METAL DUCTWORK FOR FURTHER INFORMATION.

13. ALL EXPOSED DUCTWORK AND PIPING WITH ASSOCIATED ACCESSORIES IN AREAS WITH NO CEILING OR PARTIAL CEILING SHALL BE PAINTED. REFER TO ARCHITECT FOR COLOR.

14. DIVISION 23 MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO ACTUAL INSTALLATION OF TEMPERATURE SENSORS AND HUMIDITY SENSORS.

15. PROVIDE REMOTE SPIN-IN DAMPER OPERATOR FOR SPIN-IN CONNECTIONS AND VOLUME DAMPERS LOCATED

16. PROVIDE AIRFOIL TYPE TURNING VANES IN ALL 90 DEGREE ELBOWS.

17. PROVIDE INSULATED ACCESS DOORS FOR DUCTWORK DOWNSTREAM OF AIR HANDLING UNITS AT EVERY 20'-0" TO FACILITATE DUCT CLEANING. PROVIDE ACCESS DOORS WITHIN 5'-0" OF EACH ELBOW.

18. COORDINATE LOCATIONS OF FLOOR AND WALL OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.

19. ALL CEILING MOUNTED AND WALL MOUNTED AIR DEVICE FINISHES SHALL MATCH ADJACENT ARCHITECTURAL SURFACE. CONTRACTOR SHALL COORDINATE COLOR WITH ARCHITECT.

20. NO PIPE HANGERS SHALL BE SPACED MORE THAN 10'-0" O.C. COMPLY WITH PIPE SPACING AS SPECIFIED IN THE PIPING SUPPORT SPECIFICATIONS.

21. ALL CHILLED WATER AND HOT WATER PIPING LOCATED INSIDE BUILDING SHALL BE SUPPORTED FROM THE STRUCTURE WITH SADDLE OR TRAPEZE HANGERS WITH ADJUSTABLE CLEVIS OR THREADED RODS. 22. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL OUTSIDE AIR INTAKES TO MAINTAIN

23. MECHANICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR FOR ALL CONDENSATE DRAIN

24. PROVIDE ACCESS DOORS AT ALL FIRE & MOTORIZED DAMPERS TO ALLOW FOR VISUAL CONFIRMATION OF

CONTROLS SCHEMATIC SYMBOLS LEGEND

ANALOG INPUT ANALOG OUTPUT DIGITAL/BINARY INPUT DIGITAL/BINARY OUTPUT ON-OFF MOTORIZED DAMPER MODULATING TYPE MOTORIZED DAMPER AIR FLOW MEASURING STATION CONTROL VALVE MODULATING TYPE VARIABLE FREQUENCY DRIVE CURRENT SENSING RELAY FREEZESTAT HIGH STATIC LIMIT STATIC PRESSURE TRANSMITTER DIFFERENTIAL PRESSURE TRANSDUCER FLOW METER FLOW SWITCH DISCHARGE AIR TEMPERATURE SENSOR WALL SENSOR THERMOSTAT CARBON DIOXIDE SENSOR Set point SUPPLY AIR RETURN AIR OUTSIDE AIR HEATING COIL COOLING COIL DIRECT EXPANSION COOLING COIL PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE AIRFLOW CROSS DIFFERENTIAL PRESSURE SWITCH



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MD2.01A MECHANICAL DEMO PLAN - AREA A

MECHANICAL SCOPE OF WORK

- MECHANICAL SCOPE OF WORK • REPLACEMENT OF ENTIRE BUILDING AUTOMATION SYSTEM.
- REPLACEMENT OF ENTIRE BUILDING AUTOMATION STSTEM.
 REPLACEMENT OF CENTRAL AIR HANDLING UNITS (UNLESS NOTED AS ALTERNATE).
 REPLACEMENT OF ASSOCIATED MEDIUM PRESSURE AND LOW PRESSURE DUCTWORK
- WEPLACEMENT OF ASSOCIATED MEDIUM (UNLESS NOTED OTHERWISE).
 REPLACEMENT OF RETURN DUCTWORK.
- REPLACEMENT OF RETURN DUCTWORK.
 REPLACEMENT OF AIR DEVICES (UNLESS NOTED OTHERWISE).
- IT SHALL BE NOTED THAT EXISTING ROOF MOUNTED AND INLINE EXHAUST FANS ARE NOTED TO REMAIN/REMOVED ON A CASE BY CASE BASIS.

MECHANICAL KEYED NOTES

- EXISTING DUCTWORK AND ALL ASSOCIATED HANGERS, AIR DEVICES, AND ACCESSORIES SHALL BE REMOVED
- 2 EXISTING AIR HANDLING UNIT AND ALL ASSOCIATED DUCTWORK, ELECTRICAL, CONTROLS, AND ACCESSORIES SHALL BE REMOVED.
- 3 EXISTING AIR COOLED CONDENSING UNIT SHALL BE REMOVED.
- 4 LOCATE AND REMOVE EXISTING EMERGENCY HVAC BUTTON.
- 5 EXISTING EXHAUST DUCT TO REMAIN UNLESS NOTED OTHERWISE. ALL ASSOCIATED BRANCH DUCTS AND AIR DEVICES SHALL REMAIN UNLESS NOTED OTHER WISE.
- 6 EXISTING EXHAUST DUCT, ASSOCIATED DUCT TAPS, AND AIR DEVICES SHALL BE REMOVED FROM FAN IN LEVEL 2 MECHANICAL ROOM BACK TO APPROXIMATE LOCATION SHOWN.







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MECHANICAL SCOPE OF WORK

MECHANICAL SCOPE OF WORK

- REPLACEMENT OF ENTIRE BUILDING AUTOMATION SYSTEM. REPLACEMENT OF CENTRAL AIR HANDLING UNITS (UNLESS NOTED AS ALTERNATE).
- REPLACEMENT OF SECONDARY CHILLED WATER PUMPS. •
- REPLACEMENT OF ALL HYDRONIC PUMPS AS ALTERNATE 7. REPLACEMENT OF ASSOCIATED MEDIUM PRESSURE AND LOW PRESSURE DUCTWORK
- (UNLESS NOTED OTHERWISE).
- REMOVAL OF RETURN DUCTWORK. • • REPLACEMENT OF AIR DEVICES (UNLESS NOTED OTHERWISE).
- REFURBISHMENT OF COOLING TOWERS/PIPING AS NOTED.

IT SHALL BE NOTED THAT EXISTING ROOF MOUNTED AND INLINE EXHAUST FANS ARE NOTED TO REMAIN/REMOVED ON A CASE BY CASE BASIS.

MECHANICAL KEYED NOTES

- EXISTING MAIN SUPPLY DUCTWORK TO REMAIN AND TO BE CLEANED. ASSOCIATED AHU AND ALL OTHER ASSOCIATED DUCTWORK, AIR TERMINALS, AND ACCESSORIES SHALL BE REMOVED.
- 2 EXISTING COOLING TOWERS SHALL BE REFURBISHED. REFER TO BELOW FOR LIST OF REQUIRED SERVICES:
 - REMOVE AND DISPOSE THE EXISTING DETERIORATED PVC FILL. • CLEAN COLD WATER BASIN OF DIRT AND DEBRIS. PRESSURE WASH THE INTERIOR
 - AND EXTERIOR OF THE TOWER.
 - REMOVE ALL LOOSE, EXCESS CAULKING FROM THE SEAMS IN THE FLOOR. CLEAN SEAMS WITH A WIRE BRUSH/WHEEL AND CLEAN WITH ACETONE.
 - CAULK ALL SEAMS WITH POLYURETHANE CAULK TO HELP PREVENT LEAKS.
 - PROVIDE AND INSTALL NEW EVAPCO PVC FILL KITS WITH INTEGRAL DRIFT ELIMINATORS AND LOUVERS.
 - CLEAN HOT WATER BASINS OF DIRT AND DEBRIS AND DISPOSE. ENSURE ALL NOZZLES ARE FREE AND CLEAR WITH NO BROKEN BOTTOMS. •
 - REPLACE BROKEN NOZZLES WITH NEW OEM NOZZLES. • VERIFICATION OF EXISTING CONDENSER WATER CHEMISTRY AND ASSOCIATED CHEMICAL TREATMENT AS REQUIRED.
- 3 EXISTING CHILLER TO REMAIN. INTEGRATE EXISTING CHILLER INTO NEW EMCS. PROVIDE HARDWARE AS REQUIRED FOR CONTROLS INTEGRATION.

4 EXISTING BOILER TO REMAIN. INTEGRATE EXISTING BOILER INTO NEW EMCS. PROVIDE HARDWARE AS REQUIRED FOR CONTROLS INTEGRATION.

- 5 EXISTING PUMPS SHALL BE REMOVED AS PART OF ALTERNATE 7.
- 6 EXISTING FAN COIL UNIT TO REMAIN.
- 7 EXISTING KITCHEN EXHAUST/MAKE-UP HOOD AND ALL ASSOCIATED DUCTWORK TO REMAIN. ASSOCIATED ROOF-MOUNTED FAN TO REMAIN AS WELL.
- 8 EXISTING EXHAUST FAN AND ASSOCIATED DUCTWORK/AIR DEVICES TO REMAIN.
- 9 EXISTING PUMP SHALL BE REMOVED. EXISTING HOUSE-KEEPING PAD AND ACCESSORIES SHALL REMAIN UNLESS NOTED OTHERWISE.
- [10] EXISTING INTAKE LOUVER SHALL REMAIN. ASSOCIATED FAN AND ACCESSORIES SHALL BE REMOVED.
- 11 BLANK OFF EXISTING LOUVER WITH INSULATED SHEET METAL BLANK PLATE.
- 12 EXISTING GRAVITY HOOD, DUCT, ACCESSORIES, AND DAMPER SHALL BE REMOVED. EXISTING ROOF PENETRATION SHALL REMAIN AND BE RE-PURPOSED.
- [13] EXISTING GRAVITY HOOD, DUCT, CONTROLS, AND DAMPER SHALL BE REMOVED. EXISTING ROOF PENETRATION SHALL PATCHED AND SEALED.
- 14 EXISTING CONDENSER WATER PIPING TO BE PREPARED AND REPAINTED.

REVISION: / DATE / DESCRIPTION No. 05/16/2022 SD SET 05/25/2022 100% DD SET 06/22/2022 75% CD SET 07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET SEAL: ADAM C. JONES 110008 CENSED ... Ш Ш С S Ш S PURI ARK Q HVA 4 Ц Ц A C DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE: MECHANICAL DEMO PLAN -AREA B SHEET NUMBER: MD2.01B

aarmenaa grades/Pr Saved: 7/28/2022 by user: --Purple Sage ES --HVAC Up ЧĞ 2022, 11:34 AM by user: aarmenda Jariz\ACCDocs\DBR Inc\220122.000 Jul \aa Plotted: C:\Users\

MECHANICAL SCOPE OF WORK

MECHANICAL SCOPE OF WORK • REPLACEMENT OF ENTIRE BUILDING AUTOMATION SYSTEM.

- REPLACEMENT OF CENTRAL AIR HANDLING UNITS (UNLESS NOTED AS ALTERNATE).
 REPLACEMENT OF ASSOCIATED MEDIUM PRESSURE AND LOW PRESSURE DUCTWORK
- (UNLESS NOTED OTHERWISE). REPLACEMENT OF RETURN DUCTWORK.
- REPLACEMENT OF AIR DEVICES (UNLESS NOTED OTHERWISE).

IT SHALL BE NOTED THAT EXISTING ROOF MOUNTED AND INLINE EXHAUST FANS ARE NOTED TO REMAIN/REMOVED ON A CASE BY CASE BASIS.

MECHANICAL KEYED NOTES

- EXISTING DUCTWORK AND ALL ASSOCIATED HANGERS, AIR DEVICES, AND ACCESSORIES SHALL BE REMOVED UNLESS NOTED OTHERWISE.
- 2 ALL THERMOSTATS ARE TO BE REMOVED.
- 3 EXISTING TRANSFER DUCT AND ASSOCIATED FIRE SMOKE DAMPER TO REMAIN.

4 EXISTING AIR HANDLING UNIT, MAKE-UP AIR UNIT, AND ALL ASSOCIATED DUCTWORK, ELECTRICAL, CONTROLS, AND ACCESSORIES SHALL BE REMOVED AS AN ALTERNATE. 5 EXISTING FIRE SMOKE DAMPER TO BE REMOVED ALONG WITH ASSOCIATED DUCTWORK.

MECHANICAL SCOPE OF WORK

- MECHANICAL SCOPE OF WORK
- REPLACEMENT OF ENTIRE BUILDING AUTOMATION SYSTEM. • REPLACEMENT OF CENTRAL AIR HANDLING UNITS (UNLESS NOTED AS ALTERNATE). •
- REPLACEMENT OF ASSOCIATED MEDIUM PRESSURE AND LOW PRESSURE DUCTWORK
- (UNLESS NOTED OTHERWISE). REPLACEMENT OF RETURN DUCTWORK. •
- REPLACEMENT OF AIR DEVICES (UNLESS NOTED OTHERWISE).

IT SHALL BE NOTED THAT EXISTING ROOF MOUNTED AND INLINE EXHAUST FANS ARE NOTED TO REMAIN/REMOVED ON A CASE BY CASE BASIS.

MECHANICAL KEYED NOTES

- 1 EXISTING DUCTWORK AND ALL ASSOCIATED HANGERS, AIR DEVICES, AND ACCESSORIES SHALL BE REMOVED. 2 ALL THERMOSTATS ARE TO BE REPLACED.
- 3 EXISTING FIRE SMOKE DAMPER TO REMAIN.
- 4 EXISTING AIR HANDLING UNIT AND MAKE-UP AIR UNIT AND ALL ASSOCIATED DUCTWORK, ELECTRICAL, CONTROLS, AND ACCESSORIES SHALL REMAIN.

5 EXISTING TRANSFER DUCT AND ASSOCIATED FIRE SMOKE DAMPER TO REMAIN

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MD2.01D MECHANICAL DEMO PLAN - AREA D

MECHANICAL SCOPE OF WORK

- MECHANICAL SCOPE OF WORK REPLACEMENT OF ENTIRE BUILDING AUTOMATION SYSTEM.
- REPLACEMENT OF CENTRAL AIR HANDLING UNITS (UNLESS NOTED AS ALTERNATE).
 REPLACEMENT OF ASSOCIATED MEDIUM PRESSURE AND LOW PRESSURE DUCTWORK
- (UNLESS NOTED OTHERWISE).
 REPLACEMENT OF RETURN DUCTWORK.
- REPLACEMENT OF AIR DEVICES (UNLESS NOTED OTHERWISE).

IT SHALL BE NOTED THAT EXISTING ROOF MOUNTED AND INLINE EXHAUST FANS ARE NOTED TO REMAIN/REMOVED ON A CASE BY CASE BASIS.

MECHANICAL KEYED NOTES

- 1 EXISTING PACKAGE UNIT TO BE REMOVED AND REPLACED AS ALTERNATE 5.
- 2 EXISTING EXHAUST FAN AND ALL ASSOCIATED DUCTWORK, HANGERS, SUPPORTS, ELECTRICAL, CONTROL, AIR DEVICES, AND ACCESSORIES SHALL BE REMOVED.
- 4 BLANK OFF EXISTING LOUVER WITH INSULATED SHEET METAL BLANK PLATE.

MECHANICAL SCOPE OF WORK

- MECHANICAL SCOPE OF WORK REPLACEMENT OF ENTIRE BUILDING AUTOMATION SYSTEM.
- REPLACEMENT OF CENTRAL AIR HANDLING UNITS (UNLESS NOTED AS ALTERNATE).
 REPLACEMENT OF ASSOCIATED MEDIUM PRESSURE AND LOW PRESSURE DUCTWORK
- (UNLESS NOTED OTHERWISE). • REPLACEMENT OF RETURN DUCTWORK.
- REPLACEMENT OF AIR DEVICES (UNLESS NOTED OTHERWISE).

IT SHALL BE NOTED THAT EXISTING ROOF MOUNTED AND INLINE EXHAUST FANS ARE NOTED TO REMAIN/REMOVED ON A CASE BY CASE BASIS.

MECHANICAL KEYED NOTES

1 EXISTING DUCTWORK AND ALL ASSOCIATED HANGERS, AIR DEVICES, AND ACCESSORIES SHALL BE REMOVED

2 EXISTING SLOTS TO REMAIN. CLEAN AND CONNECT TO NEW SUPPLY DUCTWORK ASSOCIATED WITH AHU-F1.

REVISION:

SEAL:

No. / DATE / DESCRIPTION

ADAM C. JONES 110008 LICENSED ...

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AGE

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05/16/2022 SD SET

05/25/2022 100% DD SET

06/22/2022 75% CD SET

07/20/2022 100% REVIEW

07/28/2022 PROPOSAL SET

MECHANICAL SCOPE OF WORK

- MECHANICAL SCOPE OF WORK REPLACEMENT OF ENTIRE BUILDING AUTOMATION SYSTEM.
- REPLACEMENT OF CENTRAL AIR HANDLING UNITS (UNLESS NOTED AS ALTERNATE).
 REPLACEMENT OF ASSOCIATED MEDIUM PRESSURE AND LOW PRESSURE DUCTWORK
- (UNLESS NOTED OTHERWISE). REPLACEMENT OF RETURN DUCTWORK.
- REPLACEMENT OF AIR DEVICES (UNLESS NOTED OTHERWISE).

IT SHALL BE NOTED THAT EXISTING ROOF MOUNTED AND INLINE EXHAUST FANS ARE NOTED TO REMAIN/REMOVED ON A CASE BY CASE BASIS.

MECHANICAL KEYED NOTES

- EXISTING AIR HANDLING UNIT AND ALL ASSOCIATED DUCTWORK, ELECTRICAL, CONTROLS, AND ACCESSORIES SHALL BE REMOVED.
- 2 EXISTING EXHAUST FAN AND ALL ASSOCIATED DUCTWORK, HANGERS, SUPPORTS, ELECTRICAL, CONTROL, AIR DEVICES, AND ACCESSORIES SHALL BE REMOVED.
- 3 EXISTING SLOTS TO REMAIN. CLEAN AND CONNECT TO NEW SUPPLY DUCTWORK ASSOCIATED WITH AHU-F1.
- 4 EXISTING EXHAUST FAN TO BE RELOCATED TO APPROXIMATE LOCATION SHOWN. DEMO ALL ASSOCIATED DUCT AND ACCESSORIES BACK TO POINT REFERENCED ON MD.201A.

MECHANICAL PLAN - AREA A

- 1 PROVIDE FAN POWERED TERMINAL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUSPEND UNIT FROM STRUCTURE. RE: DETAIL 17/M4.02.
- 2 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE: 2/M4.01.
- 3 PROVIDE FLAT PLATE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER AND EXISTING CLASSROOM LAYOUT. TYPICAL TO ALL CLASSROOMS.
- 4 PROVIDE NEW VRF FAN COIL UNIT WITH ASSOCIATED DUCTWORK AS SCHEDULED AT THE APPROXIMATE LOCATION SHOWN. PROVIDE NEW CONDENSATE PIPING AND DRAIN TO APPROVED SANITARY DRAIN. SIZE DUCTWORK AS INDICATED ON PLAN. CONNECT AND SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE WITH ADJACENT PIPING, WALLS, CONDUIT, STRUCTURAL MEMBERS, ETC TO PROVIDE REQUIRED CLEARANCES.
- 5 NEW MAIN SUPPLY AND RETURN DUCTWORK IS TO BE ROUTED UP TO SECOND FLOOR TO CORRESPONDING AIR HANDLING UNIT. COORDINATE WITH STRUCTURAL ENGINEER AND EXISTING SECOND FLOOR SLAB PENETRATIONS.
- 6 PROVIDE HEAT RECOVERY UNIT ON GRADE AT APPROXIMATE LOCATION SHOWN. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATION.
- 7 NEW EMERGENCY HVAC SHUTDOWN BUTTON TO BE INSTALLED AT APPROXIMATE LOCATION SHOWN. VERIFY FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
- 8 PROVIDE VRF MANUFACTURER THERMOSTAT AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER.
- 9 EXISTING EXHAUST DUCT TO REMAIN.
- 10 PROVIDE CONDENSING UNIT ON GRADE AT APPROXIMATE LOCATION SHOWN. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATION. RE: 29/M4.02.
- 11 ROUTE NEW 1" CONDENSATE PIPE TO DRAIN BELOW SINK IN JANITOR ROOM.
- 12 PROVIDE BRANCH CONTROLLER, AS SCHEDULED, FOR VRF UNITS AT APPROXIMATE LOCATION SHOWN. COORDINATE WITH VRF PIPING DIAGRAM FOR LINE SIZES AND ROUTING.
- 13 CONNECT NEW DUCTWORK TO EXISTING AT APPROXIMATE LOCATION SHOWN. PROVIDE TRANSITION AS NECESSARY.
- 14 PROVIDE RETURN AIR BOOT AT APPROXIMATE LOCATION SHOWN. SIZE AS INDICATED. RE DETAIL 4/M4.01.

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SEAL: ADAM C. JONES 110008						
GALENA PARK PURPLE SAGE HVAC UPGRADES						
DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 000100,000						
SHEET TITLE: PARTIAL MECHANICAL PLAN - LEVEL 1						

SHEET NUMBER:

- 1 EXISTING COOLING TOWERS SHALL BE REFURBISHED. REFER TO BELOW FOR LIST OF REQUIRED SERVICES:
- REMOVE AND DISPOSE THE EXISTING DETERIORATED PVC FILL.
 CLEAN COLD WATER BASIN OF DIRT AND DEBRIS. PRESSURE WASH THE INTERIOR AND EXTERIOR OF THE TOWER.
- REMOVE ALL LOOSE, EXCESS CAULKING FROM THE SEAMS IN THE FLOOR. CLEAN SEAMS WITH A WIRE BRUSH/WHEEL AND CLEAN WITH ACETONE.
- CAULK ALL SEAMS WITH POLYURETHANE CAULK TO HELP PREVENT LEAKS.
- PROVIDE AND INSTALL NEW EVAPCO PVC FILL KITS WITH INTEGRAL DRIFT ELIMINATORS AND LOUVERS.
- CLEAN HOT WATER BASINS OF DIRT AND DEBRIS AND DISPOSE.
 ENSURE ALL NOZZLES ARE FREE AND CLEAR WITH NO BROKEN BOTTOMS.
- REPLACE BROKEN NOZZLES WITH NEW OEM NOZZLES.
 VERIFICATION OF EXISTING CONDENSER WATER CHEMISTRY AND ASSOCIATED CHEMICAL TREATMENT AS REQUIRED.
- 2 PROVIDE END SUCTION PUMP AT APPROXIMATE LOCATION SHOWN. INSTALL ON EXISTING INERTIA BASE. INSTALL PER MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. RE: DETAIL 16/M4.02.
- 3 PROVIDE SINGLE ZONE AIR HANDLING UNIT AS SCHEDULED AT APPROXIMATE LOCATION SHOWN. EXTEND EXISTING HOUSEKEEPING PAD AS REQUIRED FOR NEW UNIT. INSTALL AND SIZE CONDENSATE PIPING PER MANUFACTURER'S RECOMMENDATIONS. ROUTE CONDENSATE TO NEAREST EXISTING FLOOR DRAIN. FIELD COORDINATE EXACT LOCATION.
- 4 PROVIDE VARIABLE FREQUENCY DRIVE FOR HYDRONIC PUMPS AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR.
- 5 PROVIDE VARIABLE FREQUENCY DRIVE FOR VAV AIR HANDLING UNIT AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR.
- LOCATION SHOWN. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR.
- 6 PROVIDE DDC CONTROL PANEL AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH CONTROLS AND ELECTRICAL CONTRACTORS AND EXISTING CONDITIONS.
- 7 ROUTE REFRIGERANT LINES FROM DX COIL IN AHU-B2 TO ACCU-2 ON GRADE. SIZE PER MANUFACTURER'S RECOMMENDATIONS. RE: DETAIL 12/M4.01
- 8 ROUTE CHILLED/HOT WATER HYDRONIC PIPING DOWN TO CONNECTION ON AHU. SIZE AS INDICATED ON DRAWINGS AND IN AHU SCHEDULES.
- 9 EXISTING BOILER TO REMAIN. INTEGRATE EXISTING BOILER INTO NEW EMCS.
- 10 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE: DETAIL 2/M4.01.
- 11 PROVIDE ROOF MOUNTED CONDENSING UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATION. RE: DETAIL 22/M4.02
- 12 EXISTING PUMPS TO BE REPLACED AS PART OF ALTERNATE 7 SCOPE.
- 13 PROVIDE FLAT PLATE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER AND EXISTING CLASSROOM LAYOUT. TYPICAL TO ALL CLASSROOMS.
- 14 EXISTING CHILLER TO REMAIN. INTEGRATE INTO NEW EMCS.
- 15 EXISTING DUCTWORK TO REMAIN SHALL BE CLEANED.
- 16 PROVIDE SUSPENDED FAN COIL UNIT AS SCHEDULED AT APPROXIMATE LOCATION SHOWN.
- 17 RELOCATE EXISTING WALL MOUNTED CARBON MONOXIDE DETECTOR TO APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH OWNER.
- 18
 EXISTING KITCHEN HOOD EXHAUST TO REMAIN.
- 19 EXISTING EXHAUST FAN ON ROOF TO REMAIN.
- 20 PROVIDE ROOF MOUNTED GRAVITY HOOD AS SCHEDULED AT APPROXIMATE LOCATION SHOWN. ROUTE ASSOCIATED DUCT UP THROUGH EXISTING ROOF PENETRATION TO HOOD. SIZE DUCT AS INDICATED. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 21 CONNECT NEW DUCTWORK TO EXISTING AT APPROXIMATE LOCATION SHOWN. PROVIDE
- TRANSITION AS NECESSARY.
- 22 EXISTING CONDENSER WATER PIPING TO BE PREPARED AND REPAINTED.
- 23 BLANK OFF EXISTING LOUVER WITH INSULATED SHEET METAL BLANK PLATE.
- 24 PROVIDE VARIABLE FREQUENCY DRIVE FOR COOLING TOWER AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR.

REV No.	SON: / DAT 05/16/2 05/25/ 06/22/ 07/20/ 07/28/	Column Service QUALITY INTEGRITY SUSTAINABILITY 713.914.0888 713.914.0888 713.914.0888 7	ObjectObjectOuth Bldg. Suite.300 Richmond Ave. South Bldg. Suite.300 Richmond Ave. South Bldg. Suite.300 Nuston, Texas 77042300 Houston, Texas 770421002 No. 2234TBPE Firm Registration NO. 2234
SEA		HVAC UPGRADES	
DAT 07/ DRA DBF CHE DBF 220 SHE	E: /28/2022 WN BY: CKED BY: DECT NUMB 122.000 ET TITLE:		

- 2/M4.01.
- CONTRACTOR.
- STRUCTURAL ENGINEER AND EXISTING SECOND FLOOR SLAB PENETRATIONS.
- 6 EXISTING FIRE SMOKE DAMPER TO REMAIN.
- REPLACE UNIT FILTERS.
- VERIFY PROPER OPERATION OF FAN. ADJUST SHEAVES AND REPLACE BELTS. REBALANCE TO ORIGINAL AIRFLOW RATE.
- LUBRICATE FAN BEARINGS AND CLEAN FAN WHEEL.
- APPLY NEW PROTECTIVE COATING TO THE INSIDE OF THE UNIT.
- CLEAN AND REPAIR OPERATION OF ENERGY RECOVERY SECTION.
- 8 EXISTING TRANSFER DUCT AND ASSOCIATED FIRE SMOKE DAMPER TO REMAIN

1 PROVIDE FAN POWERED TERMINAL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUSPEND UNIT FROM STRUCTURE. RE: DETAIL 17/M4.02.

2 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE:

3 PROVIDE FLAT PLATE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER AND EXISTING CLASSROOM LAYOUT. TYPICAL TO ALL CLASSROOMS.

4 PROVIDE VARIABLE FREQUENCY DRIVE FOR VAV AIR HANDLING UNIT AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH ELECTRICAL

5 NEW MAIN SUPPLY AND RETURN DUCTWORK IS TO BE ROUTED UP TO THE SECOND FLOOR TO ITS CORRESPONDING AIR HANDLING UNIT. COORDINATE WITH

7 EXISTING AIR HANDLING UNIT AND MAKE-UP AIR UNIT AND ALL ASSOCIATED DUCTWORK, ELECTRICAL, CONTROLS, AND ACCESSORIES SHALL REMAIN. REFURBISH AIR HANDLING UNIT (AHU-14) AND CORRESPONDING MAKE-UP AIR UNIT (MU-1) IN EXISTING PORTION OF SCHOOL IN LOCATION HATCHED BELOW. THE SCOPE OF WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

• CLEAN THE COOLING COIL WITH PROPER SOLUTION, REMOVING ANY DIRT OR DEBRIS THAT HAS BUILT UP.

CLEAN CONDENSATE DRAIN PAN AND CONDENSATE DRAIN LINE TO THE TERMINATION POINT. CLEAR ANY BUILD UP DEBRIS THAT MAY RESTRICT FLOW. REPLACE ANY WORN OR DAMAGED INSULATION ON THE DUCT AND PIPE CONNECTIONS TO THE UNIT

9 PROVIDE NEW RETURN AIR BOOT AT APPROXIMATE LOCATION SHOWN. SIZE AS INDICATED. RE DETAIL 4/M4.01

SHEET NUMBER:

SERVES IST FLOOR - AREA C TYPE VAV FAN TYPE DIRECT DRIVE PLENUM UNT CONFIGURATION HORIZONTAL DISCI MARGE HORIZONTAL DISCI MARGE MARGE MARGE HORIZONTAL SUMMER DUTDOR DRIVE (FLA) 8.4 FAN MOROR CONTROL VFD SUMMER NEROOR DRIVE (F)		MARK	AHU-C3 (ALTERNATE)					
Type VAV FAN TYPE DIRECT DRIVE PLENUM UNIT CONFIGURATION HORIZONTAL DISCIARGE HORIZONTAL DISCIARGE HORIZONTAL DISCIARGE HORIZONTAL DISCIARGE HORIZONTAL DISCIARGE HORIZONTAL DESCIARGE HORIXON GOL VOLTSPHASERPHERTZ </th <th></th> <th>SERVES</th> <th>1ST FLOOR - AREA C</th>		SERVES	1ST FLOOR - AREA C					
FAN TYPE DIRECT DRIVE PLENUM UNIT CONFIGURATION HORIZONTAL DISCHARGE HORIZONTAL INSTALLATION TYPE 1:4:1/4" DESIGN SUPPLY AIRFLOW (CFM) 4:420 MINIMUM SUPPLY AIRFLOW (CFM) 2:210 DESIGN OUTSIDE AIRFLOW (CFM) 1:80 EXT. S.P. (N. W.G.) 1:83 FAN MOTOR HORSEPOWER (DTY) @ (I+P) (2):3.5 VOUTS/PLASE/HERTZ 480/3/80 APPROX FAN RPM 2.9965 FULL LOAD AMPS (FLA) 8.4 FAN MOTOR ODTROL VD SUMMER UNDOOR DB/WB (FF) 98.0 / 80.0 SUMMER UNDOOR DB/WB (FF) 62.3 / 72.4 TOTAL COOLING RECOVERED (MBH) 57.4 SENSIBLE COOLING RECOVERED (MBH) 29.6 WINTER NUTDOOR DB/WB (FF) 25.0 / 21.0 WINTER NUTDOOR DB/WB (FF) 25.0 / 21.0 WINTER NUTDOOR DB/WB (FF) 25.1 / 3.6 WINTER NUTDOOR DB/WB (FF) 25.2 / 43.6 TOTAL LEATITHE ERV CORE DE/WB (FF) 15.5 VOLTS/PLASE/MERTZ 480/3/80 APAROX FAN RPM 3021.0		ТҮРЕ	VAV					
UNIT CONFIGURATION HORIZONTAL DISCHARGE HORIZONTAL INSTALLATION TYPE 11 4 1/4" DESIGN SUPPLY AIRFLOW (CFM) 4.420 IMINUMI SUPPLY AIRFLOW (CFM) 2.210 DESIGN OUTSIDE ARFLOW (CFM) 1.660 EXT. S.P. (N. W.G.) 1.50 FAN MOTOR HORSEPOWER (QTY.; @ (HP) (2) 3.5 VOLTS/PLASE/HERTZ 480/360 APPROX FAN RPM 2.965 FULL LOAD AMPS (FLA) 8.4 FAN MOTOR CONTROL VFD SUMMER OUTDOOR DB/WB (F) 86.0 / 80.0 SUMMER INDOOR DB/WB (F) 86.0 / 80.0 SUMMER COTDOOR DB/WB (F) 82.3 / 72.4 TOTAL COOLING RECOVERED (MBH) 57.4 SENSIBLE COOLING RECOVERED (MBH) 57.4 SENSIBLE COOLING RECOVERED (MBH) 71.3 EXAAUST AIR (CFM) 1070.7 56.0 WINTER NUTDOOR DB/WB (F) 52.3 / 43.6 TOTAL LOODING RECOVERED (MBH) 71.3 EXAAUST AIR (CFM) 1075.0 EXT. S.P. (IN. W.G.) 0.75 FAN TYPE DIRECT DRIVE PLENUM FAN	SUPPLY FAN	FAN TYPE	DIRECT DRIVE PLENUM					
ProvideDiscilaringeHORIZONTALINSTALLATION TYPE1 * 4 1/4"DESIGN SUPPLY AIRFLOW (CFM)4.420MININUM SUPPLY AIRFLOW (CFM)2,210DESIGN OUTSIDE AIRFLOW (CFM)2,210DESIGN OUTSIDE AIRFLOW (CFM)1,880EXT S.P. (IN W.G.)1.50FAN MOTOR HORSEPOWER (QTY.; @ (HP)(2,3,5VOLTS/PHASE/HERTZ480/3/80APPROX FAN RPM2,985FULL LOAD AMPS (FLA)8.4FAN MOTOR COURDOR DB/WB (FF)88.0 / 80.0SUMMER OUTDOOR DB/WB (FF)88.0 / 80.0SUMMER NDOOR DB/WB (FF)88.0 / 80.0SUMMER LAT AT THE ERV CORE DB/WB (FF)82.3 / 72.4TOTAL COOLING RECOVERED (MBH)57.4SENSIBLE COOLING RECOVERED (MBH)57.4SENSIBLE COOLING RECOVERED (MBH)71.3WITTER NDOOR DB/WB (FF)25.0 / 21.0WITTER NDOOR DB/WB (FF)52.3 / 43.6TOTAL HEATING RECOVERED (MBH)71.3EXT.S P. (IN W.G.)0.75FAN MOTOR HORSEPOWER (QTY.; @ (HP)1.5VOLTS/PHASE/HERTZ480/3/60APPROX FAN RPM3021.0EXT.S P. (IN W.G.)0.75FAN MOTOR HORSEPOWER (QTY.; @ (HP)1.5VOLTS/PHASE/HERTZ480/3/60APPROX FAN RPM3021.0FULL LOAD AMPS (FLA)2.0EXANDAL COLING CAPACITY (MBH)2.0FAN MOTOR CONTROLVEFDMAX COL FACE VELOCITY (FPM)50.5COLING COL FACE VELOCITY (MBH)20.5SENSIBLE COOLING CAPACITY (MBH)20.5EXTLOR <t< td=""><td>UNIT CONFIGURATION</td><td colspan="5">HORIZONTAL</td></t<>		UNIT CONFIGURATION	HORIZONTAL					
NSTALLATION TYPE 1' 4 1/4" DESIGN SUPPLY AIRFLOW (CFM) 4.420 MINIMUM SUPPLY AIRFLOW (CFM) 2.210 DESIGN OUTSIDE AIRFLOW (CFM) 2.210 DESIGN OUTSIDE AIRFLOW (CFM) 1.660 EXT S P. (IN W G) 1.650 FAIN MOTOR HORSEPOWER (QTY ; @ (HP) (2) 3.5 VOLTSPHASE/HERTZ 480/3/60 APPROX FAN RPM 2.965 FULL LOAD AMPS (FLA) 8.4 FAN MOTOR CONTROL VFD SUMMER INDOOR DB/WB (°F) 96.0 / 80.0 SUMMER INDOOR DB/WB (°F) 96.0 / 80.0 SUMMER INDOOR DB/WB (°F) 75.0 / 83.0 VINTER OUTDOOR DB/WB (°F) 26.0 / 21.0 WINTER OUTDOOR DB/WB (°F) 26.0 / 21.0 WINTER OUTDOOR DB/WB (°F) 26.0 / 21.0 WINTER UNDOR DB/WB (°F) 70.0 / 56.0 WINTER NDOOR DB/WB (°F) 26.0 / 21.0 WINTER NDOOR DB/WB (°F) 26.0 / 21.0 WINTER NDOOR DB/WB (°F) 70.0 / 56.0 VINTER NDOOR DB/WB (°F) 70.0 / 56.0 VINTER NDOOR DB/WB (°F) 26.0 / 21.0 WINTER NDOOR DB/WB (°F)		DISCHARGE	HORIZONTAL					
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Image: space of the s		DESIGN SUPPLY AIRFLOW (CFM)	4,420					
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TYPE VOLTS/PHASE/HERTZ 480/3/60 APPROX FAN RPM 3021.0 FULL LOAD AMPS (FLA) 2.0 FAN MOTOR CONTROL VFD MAX COIL FACE VELOCITY (FPM) 500 COOLING COIL CFM 4.420 MIN. ROWS / MAX FINS PER INCH 6 / 11 EAT DB/WB (°F) 78.1 / 68.2 LAT DB/WB (°F) 51.4 / 51.3 TOTAL COOLING CAPACITY (MBH) 205.8 SENSIBLE COOLING CAPACITY (MBH) 127.1 EWT/LWT (°F) 42 / 56 COIL CONNECTION PIPE DIAMETER (IN.) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX WATER P.D. (FT. HD.) 10	ST F/	FAN MOTOR HORSEPOWER (QTY.) @ (HP)	1.5					
MAPPROX FAN RPM3021.0FULL LOAD AMPS (FLA)2.0FAN MOTOR CONTROLVFDMAX COIL FACE VELOCITY (FPM)500COOLING COIL CFM4,420MIN. ROWS / MAX FINS PER INCH6 / 11EAT DB/WB (°F)78.1 / 68.2LAT DB/WB (°F)51.4 / 51.3TOTAL COOLING CAPACITY (MBH)205.8SENSIBLE COOLING CAPACITY (MBH)127.1EWT/LWT (°F)42 / 56COIL WATER FLOW (GPM)29.3COIL CONNECTION PIPE DIAMETER (IN.)2"ØMAX WATER P.D. (FT. HD.)10	HAU	VOLTS/PHASE/HERTZ	480/3/60					
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MAX COIL FACE VELOCITY (FPM) 500 COOLING COIL CFM 4,420 MIN. ROWS / MAX FINS PER INCH 6 / 11 EAT DB/WB (°F) 78.1 / 68.2 LAT DB/WB (°F) 51.4 / 51.3 TOTAL COOLING CAPACITY (MBH) 205.8 SENSIBLE COOLING CAPACITY (MBH) 127.1 EWT/LWT (°F) 42 / 56 COIL WATER FLOW (GPM) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX WATER P.D. (FT. HD.) 10		FAN MOTOR CONTROL	VFD					
COOLING COIL CFM 4,420 MIN. ROWS / MAX. FINS PER INCH 6 / 11 EAT DB/WB (°F) 78.1 / 68.2 LAT DB/WB (°F) 51.4 / 51.3 TOTAL COOLING CAPACITY (MBH) 205.8 SENSIBLE COOLING CAPACITY (MBH) 127.1 EWT/LWT (°F) 42 / 56 COIL WATER FLOW (GPM) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX. WATER P.D. (FT. HD.) 10		MAX. COIL FACE VELOCITY (FPM)	500					
MIN. ROWS / MAX_FINS PER INCH 6 / 11 EAT DB/WB (°F) 78.1 / 68.2 LAT DB/WB (°F) 51.4 / 51.3 TOTAL COOLING CAPACITY (MBH) 205.8 SENSIBLE COOLING CAPACITY (MBH) 127.1 EWT/LWT (°F) 42 / 56 COIL WATER FLOW (GPM) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX_WATER P.D. (FT. HD.) 10			4,420					
Image: Box of the big		MIN. ROWS / MAX. FINS PER INCH	6 / 11					
Dig LAT DB/WB (*F) 51.4 / 51.3 TOTAL COOLING CAPACITY (MBH) 205.8 SENSIBLE COOLING CAPACITY (MBH) 127.1 EWT/LWT (°F) 42 / 56 COIL WATER FLOW (GPM) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX. WATER P.D. (FT. HD.) 10			78.1768.2					
INTAL COOLING CAPACITY (MBH) 205.8 SENSIBLE COOLING CAPACITY (MBH) 127.1 EWT/LWT (°F) 42 / 56 COIL WATER FLOW (GPM) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX. WATER P.D. (FT. HD.) 10	COIL		51.4 / 51.3					
SENSIBLE COOLING CAPACITY (MBH) 127.1 EWT/LWT (°F) 42 / 56 COIL WATER FLOW (GPM) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX. WATER P.D. (FT. HD.) 10	SNI		205.8					
COLEWT/LWT (*F) 42756 COIL WATER FLOW (GPM) 29.3 COIL CONNECTION PIPE DIAMETER (IN.) 2"Ø MAX. WATER P.D. (FT. HD.) 10	SOOL		127.1					
COIL WATER FLOW (GPM)29.3COIL CONNECTION PIPE DIAMETER (IN.)2"ØMAX. WATER P.D. (FT. HD.)10	0		42756					
COIL CONNECTION PIPE DIAMETER (IN.)2"ØMAX. WATER P.D. (FT. HD.)10			29.3					
MAX. WATER P.D. (FT. HD.) 10			2"Ø					
		MAX. WATER P.D. (FT. HD.)	10					
CONTROL VALVE (2-WAY/3-WAY) 2-WAY		CONTROL VALVE (2-WAY/3-WAY)	2-WAY					
	MAN		TEMTROL					
			ITF					
MAX DIMENSIONS (LXWXH) 119 x 73 x 87	MA>		119 x 73 x 87					
VEIGHT (LBS) 5,950	WEI		5,950					
NUIES NOTES:			1,2,3,4,5,6,7,8					

 EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.

2. PROVIDE UNIT WITH DRAW THRU DIRECT DRIVE PLENUM FAN SECTION, CHILLED WATER COIL SECTION, ERV AND 2" FLAT FILTER SECTION.

3. PROVIDE DUCT MOUNTED SMOKE DETECTOR IN SUPPLY AIR DUCTWORK FOR UNITS DELIVERING GREATER THAN 2,000 CFM AS WELL AS IN THE RETURN AIR DUCTWORK FOR UNITS DELIVERING GREATER THAN 15,000 CFM PER NFPA 90A.

^{4.} UNIT SHALL BE FURNISHED WITH FIELD INSTALLED REMOTE VFD. FAN MOTOR SHALL BE NEMA PREMIUM EFFICIENCY TEFC MOTOR. AHU MANUFACTURER TO PROVIDE UNIT WITH INDIVIDUAL MOTOR OVERLOADS.

 UNIT SHALL BE PROVIDED WITH MERV-8 FILTER DURING CONSTRUCTION AND JUST PRIOR TO OCCUPANCY SHALL BE REPLACED WITH MERV-13 FILTER.
 PROVIDE FACTORY MOUNTED RETURN AIR DAMPERS.

7. PROVIDE UV LIGHTS FOR EVERY COOLING COIL.

8. PROVIDE FOR ALTERNATE SCOPE ONLY.

FAN POWERED TERMINAL UNIT SCHEDULE - AREA C ALTERNATE												
	PRIMARY	AIR CFM		ŀ	HOT WATE	R HEATING	3		VOLTS/			MODEL
MARK	MAX	MIN.	CFM	EWT/LW T	MBTU/H	GPM	ROWS	SIZE	PHASE/ HZ	ECM HP	MFR	NO.
FPT-C3-01	1,020	510	715	180/160	24.8	2.5	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D
FPT-C3-02	1,030	520	725	180/160	25.1	2.5	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D
FPT-C3-03	990	500	695	180/160	24.1	2.4	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D
FPT-C3-04	1,030	520	725	180/160	25.1	2.5	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D
FPT-C3-05	950	480	665	180/160	23.2	2.3	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D

ALT

MECHANICAL KEYED NOTES

- 1 PROVIDE VAV AIR HANDLING UNIT WITH STACKED OUTSIDE AIR PRE-TREATMENT UNIT AT APPROXIMATE LOCATION SHOWN. EXTEND EXISTING HOUSEKEEPING PAD AS REQUIRED FOR NEW UNIT. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 2 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE: 2/M4.01.
- 3 PROVIDE FLAT PLATE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER AND EXISTING CLASSROOM LAYOUT. TYPICAL TO ALL CLASSROOMS.
- 4 PROVIDE VARIABLE FREQUENCY DRIVE FOR VAV AIR HANDLING UNIT AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR.
- 5 LOCATE DDC CONTROL PANEL AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH CONTROLS AND ELECTRICAL CONTRACTORS AND EXISTING CONDITIONS.
- 6 EXISTING TRANSFER DUCT AND ASSOCIATED FIRE SMOKE DAMPER TO REMAIN.
- 7 PROVIDE A FIRE DAMPER AT APPROXIMATE LOCATION SHOWN.

8 PROVIDE NEW RETURN AIR BOOT AT APPROXIMATE LOCATION SHOWN. SIZE AS INDICATED. RE DETAIL 4/M4.01

-	REVISION No. V DATE J 3.014.0888 f 03900 Richmond Ave. South Bldg. 05/12/2025 J 3.014.0888 v 713.914.0888 f 05 300 Houston, Texas 773.914.0888 f 02 020/100/2022 J 3.014.0888 f 02 020/100/2022 J 3.014.0888 f 02 020/100/2022 J 3.014.0888 f 02 0200 Houston, Texas 773.42 IBPE Firm Registration NO. 02/15/2025 DALE D2234
	SEAL: ADAM C. JONES 110008 C.CENSEP SSIONAL ENGINEERICS SSIONAL ENGINEERICS
	GALENA PARK PURPLE SAGE HVAC UPGRADES
	DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE: PARTIAL MECHANICAL PLAN – LEVEL 1
	SHEET NUMBER: M2.01C ALT

1 SRTU UNITS TO BE REPLACED AS ALTERNATE. SCOPE TO INCLUDE REMOVAL AND REPLACEMENT OF UNITS AND RECONNECTION TO EXISTING DUCTWORK. MODIFY DUCTWORK AS REQUIRED FOR NEW CONNECTIONS.

2 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE: 4/M4.01.

3 PROVIDE BACNET INTERFACE CONNECTION AND PROGRAMING FOR NEW EMCS INTEGRATION.

MECHANICAL PLAN - AREA E

MECHANICAL KEYED NOTES

- PROVIDE FAN POWERED TERMINAL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUSPEND UNIT FROM STRUCTURE. RE: DETAIL 17/M4.02.
- 2 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE: 2/M4.01.
- 3 PROVIDE FLAT PLATE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER AND EXISTING CLASSROOM LAYOUT. TYPICAL TO ALL CLASSROOMS.
- 4 PROVIDE NEW RETURN AIR BOOT AT APPROXIMATE LOCATION SHOWN. SIZE AS INDICATED. RE DETAIL 4/M4.01.
- 5 NEW MAIN SUPPLY AND RETURN DUCTWORK IS TO BE ROUTED UP TO THE SECOND FLOOR TO ITS CORRESPONDING AIR HANDLING UNIT. COORDINATE WITH STRUCTURAL ENGINEER AND EXISTING SECOND FLOOR SLAB PENETRATIONS.
- 8 PROVIDE VRF MANUFACTURER THERMOSTAT AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER.

3 sz m sz

TRUE

- 2/M4.01.

- 6 PROVIDE A FIRE DAMPER AT APPROXIMATE LOCATION SHOWN.

1 PROVIDE VAV AIR HANDLING UNIT WITH STACKED OUTSIDE AIR PRE-TREATMENT UNIT AT APPROXIMATE LOCATION SHOWN. EXTEND EXISTING HOUSKEEPING PAD AS REQUIRED FOR NEW UNIT. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

2 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE:

3 PROVIDE FLAT PLATE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER AND EXISTING CLASSROOM LAYOUT. TYPICAL TO ALL CLASSROOMS.

4 EXISTING SLOTS TO REMAIN. REBALANCE TO NEW CFM SHOWN. CLEAN AND CONNECT TO NEW SUPPLY DUCTWORK ASSOCIATED WITH AHU-F1. 5 NEW MAIN SUPPLY AND RETURN DUCTWORK IS TO BE ROUTED UP TO THE SECOND FLOOR TO ITS CORRESPONDING AIR HANDLING UNIT. COORDINATE WITH STRUCTURAL ENGINEER AND EXISTING SECOND FLOOR SLAB PENETRATIONS.

CONTRACTOR SHALL PROVIDE PROVISIONS TO MAINTAIN A MAXIMUM OF 85 DEGREES AND 65% RH IN LIBRARY DURING CONSTRUCTION.

8 PROVIDE VRF MANUFACTURER THERMOSTAT AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER.

SHEET NUMBER:

M2.01F

- 1 PROVIDE FAN POWERED TERMINAL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUSPEND UNIT FROM STRUCTURE. RE: DETAIL 17/M4.02.
- 2 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND FLEXIBLE DUCT CONNECTIONS TO RECTANGULAR DUCT. RE: 2/M4.01.
- 3 PROVIDE FLAT PLATE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION SHOWN. MOUNT AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE EXACT LOCATION WITH OWNER AND EXISTING CLASSROOM LAYOUT. TYPICAL TO ALL CLASSROOMS.
- 4 PROVIDE VRF FAN COIL UNIT AT THE APPROXIMATE LOCATION SHOWN. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE WITH ADJACENT PIPING, WALLS, CONDUIT, STRUCTURAL MEMBERS, ETC TO PROVIDE REQUIRED CLEARANCES. CONNECT AND SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. ROUTE CONDENSATE PIPING TO NEAREST LAVATORY TAIL PIECE.
- 5 PROVIDE SINGLE ZONE AIR HANDLING UNIT WITH STACKED ERV PRE-TREATMENT UNIT AT APPROXIMATE LOCATION SHOWN. EXTEND EXISTING HOUSKEEPING PAD AS REQUIRED FOR NEW UNIT. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE CONDENSATE TO NEAREST EXISTING FLOOR DRAIN. FIELD COORDINATE EXACT LOCATION.
- 6 PROVIDE VAV AIR HANDLING UNIT WITH STACKED OUTSIDE AIR PRE-TREATMENT UNIT AT APPROXIMATE LOCATION SHOWN. EXTEND EXISTING HOUSKEEPING PAD AS REQUIRED FOR NEW UNIT. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 7 PROVIDE VARIABLE FREQUENCY DRIVE FOR AIR HANDLING UNIT AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH ELECTRICAL CONTRACTOR.
- 8 EXISTING LOUVER TO REMAIN.
- 9 PROVIDE NEW INTAKE LOUVER AT APPROXIMATE LOCATION SHOWN.
- 10 PROVIDE SUSPENDED 100% OUTSIDE AIR HANDLING UNIT AT APPROXIMATE LOCATION SHOWN. EXTEND EXISTING HOUSKEEPING PAD AS REQUIRED FOR NEW UNIT. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE CONDENSATE TO NEAREST EXISTING FLOOR DRAIN. FIELD COORDINATE EXACT LOCATION. RE: DETAIL 23/M4.02.
- 11 INFILL REMAINING SLAB OPENING, NO LONGER USED FOR DUCT PENETRATION, WITH CONCRETE. COORDINATE EXACT LOCATIONS/DIMENSIONS WITH OWNER AND MECHANICAL CONTRACTOR.
- EXISTING SLOTS TO REMAIN. CLEAN AND CONNECT TO NEW SUPPLY DUCTWORK ASSOCIATED WITH AHU-F1. RE-BALANCE TO CFM SHOWN.
- 13 CONNECT NEW CHS/R PIPE TO EXISTING AHU TAP AT APPROXIMATE LOCATION SHOWN. SIZE AS INDICATED ON PLAN. PROVIDE TRANSITION AS NECESSARY. ROUTE NEW PIPE TO CONNECTION ON ASSOCIATED AHU.
- 14 EXISTING EXPANSION TANKS TO REMAIN
- 15 TAP NEW HYDRONIC BRANCH PIPING OFF EXISTING MAIN AT APPROXIMATE LOCATION SHOWN. SIZE AS INDICATED.
- 16 HVLS FAN TO BE PROVIDED AS ALTERNATE 6. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND EXTEND MOUNTING CABLES/TUBES AS NECESSARY.
- 17 ROUTE NEW SUPPLY AND RETURN DUCTWORK DOWN TO FIRST FLOOR. COORDINATE WITH STRUCTURAL ENGINEER AND EXISTING FLOOR SLAB PENETRATIONS.
- 18 PROVIDE DDC CONTROL PANEL AT APPROXIMATE LOCATION SHOWN. COORDINATE EXACT LOCATION WITH CONTROLS AND ELECTRICAL CONTRACTORS AND EXISTING CONDITIONS.
- 19 FINAL LOCATION OF RE-LOCATED EXISTING EXHAUST FAN. CONNECT EXISTING FAN TO NEW DUCTWORK AS SHOWN. PROVIDE TRANSITION AS NECESSARY.
- 20 PROVIDE RETURN AIR DUCT LONG ENOUGH TO INSTALL RETURN AIR MODULATING MOTORIZED DAMPER. DUCT SHALL BE THE SAME HEIGHT AND WIDTH AS UNIT RETURN AIR CONNECTION. VERIFY FINAL SIZE WITH AHU MANUFACTURER.
- 21 ROUTE DUCT TO CONNECTION ON AHU. PROVIDE TRANSITION AS NECESSARY.
- 22 PROVIDE BRANCH CONTROLLER, AS SCHEDULED, FOR VRF UNITS AT APPROXIMATE LOCATION SHOWN. COORDINATE WITH VRF PIPING DIAGRAM FOR LINE SIZES AND ROUTING.

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	MARK	AHU-AF1	AHU-C1	AHU-E1
	SERVES	1ST FLOOR - AREA A	1ST FLOOR - AREA C	1ST FLOOR - AREA E
	TYPE			
				HORIZONTAL
NA ⁼				
۲Y I		11,640	11,705	12,490
SUPF		5,820	5,855	6,245
0,	DESIGN OUTSIDE AIRFLOW (CFM)	3,880	4,020	4,065
	EXT. S.P. (IN. W.G.)	2.60	2.60	2.10
	FAN MOTOR HORSEPOWER (QTY.) @ (HP)	2 @ (6.5)	2 @ (6.5)	2 @ (7.5)
	VOLTS/PHASE/HERTZ	480/3/60	480/3/60	480/3/60
	APPROX FAN RPM	2,553	2,570	2,676
	FULL LOAD AMPS (FLA)	18.0	18.0	22.0
	FAN MOTOR CONTROL	VFD	VFD	VFD
	SUMMER OUTDOOR DB/WB (°F)	98.0 / 80.0	98.0 / 80.0	98.0 / 80.0
	SUMMER INDOOR DB/WB (°F)	75.0 / 63.0	75.0 / 63.0	75.0 / 63.0
R	SUMMER LAT AT THE ERV CORE DB/WB (°F)	82.4 / 73.0	82.5 / 71.3	82.5 / 73.1
OVER	TOTAL COOLING RECOVERED (MBH)	110.9	114.0	115.0
REC	SENSIBLE COOLING RECOVERED (MBH)	61.3	63.4	64.1
ENERGY I	WINTER OUTDOOR DB/WB (°F)	25.0 / 21.0	25.0 / 21.0	25.0 / 21.0
	WINTER INDOOR DB/WB (°F)	70.0 / 56.0	70.0 / 56.0	70.0 / 56.0
-	WINTER LAT AT THE ERV CORE DB/WB (°F)	52.1 / 43.1	52.1 / 43.0	52.1 / 43.0
	TOTAL HEATING RECOVERED (MBH)	144.0	148.7	150.2
	EXHAUST AIR (CFM)	3495.0	3620.0	3660.0
	EXT. S.P. (IN. W.G.)	1.50	1.50	1.10
AN	FAN TYPE	DIRECT DRIVE PLENUM	DIRECT DRIVE PLENUM	DIRECT DRIVE PLENUM
STF	FAN MOTOR HORSEPOWER (QTY.) @ (HP)	3.0	3.0	3.5
HAU	VOLTS/PHASE/HERTZ	480/3/60	480/3/60	480/3/60
ЖШ	APPROX FAN RPM	3577.0	3678.0	3734.0
	FULL LOAD AMPS (FLA)	6.0	6.0	6.0
	FAN MOTOR CONTROL	VFD	VFD	VFD
	MAX. COIL FACE VELOCITY (FPM)	500	500	500
		11,640	11,705	12,490
	MIN. ROWS / MAX FINS PER INCH	6 / 11	6 / 11	6 / 11
	EAT DB/WB (°F)	77.4/ 66.6	77.6 / 66.2	77.4 / 66.5
OIL	LAT DB/WB (°F)	51.9 / 51.7	51.9 / 51.7	52.2 / 52.1
0 UN	TOTAL COOLING CAPACITY (MBH)	505.9	493.2	529.1
DOLI	SENSIBLE COOLING CAPACITY (MBH)	323.8	325.7	340.6
8	EWT/LWT (°F)	42 / 56	42 / 56	42 / 56
	COIL WATER FLOW (GPM)	71.9	70.2	75.3
	COIL CONNECTION PIPE DIAMETER (IN.)	2 1/2"Ø	2 1/2"Ø	2 1/2"Ø
	MAX. WATER P.D. (FT. HD.)	10	10	10
	CONTROL VALVE (2-WAY/3-WAY)	2-WAY	2-WAY	2-WAY
MAN	NUFACTURER	TEMTROL	TEMTROL	TEMTROL
MOI	DEL NUMBER	ITF	ITF	ITF
MAX	CDIMENSIONS (LxWxH)	120 x 80 x 120	120 x 80 x 120	120 x 80 x 120
WE	IGHT (LBS)	7,550	7,550	7,550
	ΈS	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7

NOTES:

1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.

2. PROVIDE UNIT WITH DRAW THRU DIRECT DRIVE PLENUM FAN SECTION, CHILLED WATER COIL SECTION, ERV AND 2" FLAT FILTER SECTION.

3. PROVIDE DUCT MOUNTED SMOKE DETECTOR IN SUPPLY AIR DUCTWORK FOR UNITS DELIVERING GREATER THAN 2,000 CFM AS WELL AS IN THE RETURN AIR DUCTWORK FOR UNITS DELIVERING GREATER THAN 15,000 CFM PER NFPA 90A.

4. UNIT SHALL BE FURNISHED WITH FIELD INSTALLED REMOTE VFD. FAN MOTOR SHALL BE NEMA PREMIUM EFFICIENCY TEFC MOTOR. AHU

MANUFACTURER TO PROVIDE UNIT WITH INDIVIDUAL MOTOR OVERLOADS. 5. UNIT SHALL BE PROVIDED WITH MERV-8 FILTER DURING CONSTRUCTION AND JUST PRIOR TO OCCUPANCY SHALL BE REPLACED WITH MERV-13 FILTER. 6. PROVIDE FACTORY MOUNTED RETURN AIR DAMPERS.

7. PROVIDE UV LIGHTS FOR EVERY COOLING COIL.

CEILING FAN SCHEDU	ILE
MARK	HVLS-FAN
SERVES	LEARNING CENTER
TYPE/DRIVE	CEILING/DIRECT
FAN DIAMETER (FT.)	16
HORSEPOWER	
RPM (MAX)	108
WEIGHT (LBS.)	242
VOLTS/PHASE/HERTZ	480/3/60
FAN MOTOR FLA (A)	7.55
MANUFACTURER	BIG ASS FAN
MODEL NUMBER	POWERFOIL D
NOTES	1,2,3,4,5

NOTES:

1. PROVIDE WITH MANUFACTURER WALL MOUNTED VARIABLE SPEED CONTROLLER. 2. FAN SHALL BE MOUNTED A MINIMUM OF 6 FT. BELOW STRUCTURE.

3. COORDINATE FINISH AND COLOR 4. PROVIDE WITH BACNET ADAPTER FOR INTEGRATION WITH EMCS.

5. PROVIDE AS PART OF ALTERNATE 6.

SINGLE ZONE VAV AIR HANDLING UNIT SCHEDULE										
	MARK	AHU-B1	AHU-B2	AHU-C2	AHU-F1					
	SERVES	CAFETERIA	KITCHEN	MULTI-PURPOSE	LIBRARY					
	ТҮРЕ	SZ VAV	SZ VAV	SZ VAV	SZ VAV					
	CONFIGURATION	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL					
	DISCHARGE	VERTICAL	VERTICAL	HORIZONTAL	HORIZONTAL					
	DESIGN SUPPLY AIR (CFM)	6.640	6.150	5.635	3.950					
FAN		3,365	2 460	2 925	2 165					
FAN		3 365	835	2,025	2,165					
		1,350	000	1 170	2,103					
		1,350		2.25	1.05					
		(0) 0.5	(2) 0.5	2.25	1.25					
	FAN MOTOR HORSEPOWER (HP EA. / # OF FANS)	(2) 3.5	(2) 3.5	(2) 3.5	(2) 2.5					
	VOLIS/PHASE/HERIZ	460/3/60	460/3/60	460/3/60	460/3/60					
	MAX FAN RPM	3,758	3,388	3,538	3,453					
	FLA	8.4	8.4	8.4	6.2					
	SUMMER OUTDOOR DB/WB (°F)	98.0 / 80.0		98.0 / 80.0	98.0 / 80.0					
	SUMMER INDOOR DB/WB (°F)	75.0 / 63.0		75.0 / 63.0	75.0 / 63.0					
ΈRΥ	SUMMER LAT AT THE WHEEL DB/WB (°F)	82.4 / 72.9		82.3 / 72.6	82.4 / 72.7					
COV	TOTAL COOLING RECOVERED (MBH)	97.8		88.4	64.5					
Y RE	SENSIBLE COOLING RECOVERED (MBH)	63.2	X	46.4	34.3					
ERG	WINTER OUTDOOR DB/WB (°F)	25.0 / 21.0		25.0 / 21.0	25.0 / 21.0					
ENE	WINTER INDOOR DB/WB (°F)	70.0 / 56.0		70.0 / 56.0	70.0 / 56.0					
	WINTER LAT AT THE WHEEL DB/WB (°F)	52.1 / 43.1		52.2 / 43.4	52.2 / 43.3					
	TOTAL HEATING RECOVERED (MBH)	125.8		111.2	81.8					
	EXHAUST AIR (CFM)	3030.0		2635.0	1950.0					
	EXT. S.P. (IN. W.G.)	0.75		0.75	0.75					
۸A	FAN TYPE	DIRECT DRIVE PLENUM		DIRECT DRIVE PLENUM	DIRECT DRIVE PLENUM					
XHAUST F.	FAN MOTOR HORSEPOWER (QTY.) @ (HP)	2.5		2.0	1.5					
	VOLTS/PHASE/HERTZ	480/3/60	X	480/3/60	480/3/60					
EXI	APPROX FAN RPM	3883.0		3467.0	3542.0					
	FULL LOAD AMPS (FLA)	3.1		2.6	2.1					
	FAN MOTOR CONTROL	VFD		VFD	VFD					
	MAX COIL FACE VELOCITY (FPM)	500	500	500	500					
	MINIMUM COIL ROWS / MAX FINS PER INCH	6 / 11	6 / 11	6 / 11	6 / 11					
	COIL CFM	6,640	6,150	5,635	3,950					
	EAT DB/WB (°F)	78.7 / 68.2	77.5/65.9	83.6/70.9	87.7/71.9					
D CO	LAT DB/WB (°F)	52.7 / 52.5	53.0 / 52.2	53.0 / 52.2	53.0 / 52.2					
DLINC		313.8	252.0	308.2	250.1					
000	SENSIBLE COOLING CAPACITY (MBH)	186.0	162.7	180.0	148.0					
	EWT / LWT (°F)	42 / 56	42 / 56	42 / 56	42 / 56					
	COIL WATER FLOW (GPM)	44.7	36.0	44 0	35.7					
		15.0	15.0	15.0	15.0					
			500							
			6 / 11	-						
ЫL			6 150	-						
ы С			77 5/65 9	-						
		X	54 0 / 52 4	X	X					
co v		Λ	222.0							
â			150.1	-						
			156.1	-						
		500	15.0	500	500					
		500	500	500	500					
	MINIMUM COIL ROWS / MAX FINS PER INCH	2711	2/11	2 / 11	2 / 11					
אר		4,650	4,305	3,945	2,765					
00 g	EAT (°F)	51.2	65.0	50.8	49.3					
ATIN(LAT (°F)	85.6	91.5	87.3	85.3					
HE/	EWT / LWT (°F)	180/160	180/160	180/160	180/160					
	HEATING CAPACITY (MBH)	172.7	123.0	155.5	107.6					
	COIL WATER FLOW (GPM)	17.3	12.3	15.6	10.8					
	MAX WATER P.D. (FT. HD.)	15.0	15.0	15.0	15.0					
MAN	NUFACTURER	TEMTROL	TEMTROL	TEMTROL	TEMTROL					
MO	DEL NUMBER	ITF	ITF	ITF	ITF					
MAX	(DIMENSIONS (LxWxH)	119 x 73 x 98	119 x 73 x 84	119 x 71 x 95	119 x 73 x 74					
OPE	RATING WEIGHT (LBS.)	6,350	5,850	6,200	5,390					
		A11	Δ11	Δ11						

NOTES:

1. PROVIDE UNIT WITH DRAW THRU DIRECT DRIVE PLENUM FAN SECTION, CHILLED WATER COIL SECTION, REHEAT COIL SECTION AND 2" ANGLED FILTER. 2. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COILS, FILTERS, AND CASINGS.

3. UNIT SHALL BE FURNISHED WITH FIELD INSTALLED REMOTE VFD. FAN MOTOR SHALL BE NEMA PREMIUM EFFICIENCY TEAO MOTOR. AHU MANUFACTURER TO PROVIDE UNIT WITH INDIVIDUAL MOTOR OVERLOADS.

4. UNIT SHALL BE PROVIDED WITH MERV-8 FILTER DURING CONSTRUCTION AND JUST PRIOR TO OCCUPANCY SHALL BE REPLACED WITH MERV-13 FILTER. 5. PROVIDE 2-WAY AUTOMATIC CONTROL VALVE FOR COOLING AND HEATING COILS.

6. PROVIDE UNIT WITH DUAL SUPPLY FANS AND INTERAL BACKDRAFT DAMPERS.

7. PROVIDE SEPARATE POWER SOURCE FOR SUPPLY AND EXHAUST FAN AND UVC LIGHTS.

8. PROVIDE UV LIGHTS FOR EVERY COOLING COIL.

9. PROVIDE DUCT MOUNTED SMOKE DETECTOR IN SUPPLY AIR DUCTWORK FOR UNITS DELIVERING GREATER THAN 2,000 CFM AS WELL AS IN THE RETURN AIR DUCTWORK FOR UNITS DELIVERING GREATER THAN 15,000 CFM PER NFPA 90A.

10. PROVIDE DUCT UNIT MOUNTED DAMPER ON RETURN AIR OPENING FOR BALANCING.

FA	AN COIL UNIT SCHEDULE	
	MARK	FCU-1
	SERVES	CHILLER ROOM
	DISCHARGE	HORIZONTAL
Z	DESIGN SUPPLY AIR (CFM)	2,400
F/	DESIGN OUTDOOR AIR (CFM)	200
	EXT. S.P. (IN. W.G.)	0.7
	FAN MOTOR HORSEPOWER	1.0
	VOLTS/PHASE/HERTZ	460/3/60
	MAX FAN RPM	1,800
	MAX COIL FACE VELOCITY (FPM)	500
	COIL CFM	2,400
SOIL	EAT DB (°F)	67.0
10 0	LAT DB (°F)	85.0
ATIN	TOTAL HEATING CAPACITY (MBH)	46.7
HE/	EWT/LWT (°F)	130/100
	COIL WATER FLOW (GPM)	3.1
	MAX WATER P.D. (FT. HD.)	15
	MAX COIL FACE VELOCITY (FPM)	500
	COIL CFM	2,400
Ŀ	EAT DB/WB (°F)	78.6/62.7
00	LAT DB/WB (°F)	54.0/51.8
UNG	TOTAL COOLING CAPACITY (MBH)	73.1
100	SENSIBLE COOLING CAPACITY (MBH)	64.0
0	EWT/LWT (°F)	42/58
	COIL WATER FLOW (GPM)	9.1
	MAX WATER P.D. (FT. HD.)	15.0
MAN	IUFACTURER	TEMTROL
MO	DEL NUMBER	ITF
OPE	RATING WEIGHT (LBS.)	1,940
NOT	ES	1,2,3,4,5
NOTE	S:	

1. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE LOSSES DUE TO COILS, FILTERS, AND CASING.

2. UNIT SHALL BE SUSPENDED FROM STRUCTURE ABOVE. PROVIDE WITH VIBRATION ISOLATION PER SPECIFICATIONS.

3. PROVIDE CHILLED WATER COIL WITH 2-WAY AUTOMATIC CONTROL VALVE. 4. PROVIDE HOT WATER COIL WITH 2-WAY AUTOMATIC CONTROL VALVE.

5. PROVIDE DUCT MOUNTED SMOKE DETECTOR IN SUPPLY AIR DUCTWORK FOR UNITS DELIVERING GREATER THAN 2,000 CFM PER NFPA 90A.

AIR COOLED CONDENSING UNIT SCHEDULE

MARK	ACCU-2
SERVES	AHU-B2
NET TOTAL COOLING CAPACITY (MBH)	233.1
EFFICINECY (EER)	23.2
AMBIENT TEMP. (°F)	105
REFRIGERANT TYPE	R-410A
NUMBER STAGES OF COOLING	MODULATING
MCA (MINIMUM CIRCUIT AMPACITY) - AMPS	41
MOCP (MAXIMUM OVER-CURRENT PROTECTION) - AMPS	50
VOLTS/PHASE/HERTZ	460/3/60
MANUFACTURER	LG
MODEL NUMBER	ARUM241DTE5
NOTES	1-7

NOTES:

1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

2. MOUNT ON 6" HOUSEKEEPING PAD.

3. PROVIDE ALL CLEARANCES AS REQUIRED BY EQUIPMENT MANUFACTURER.

4. PROVIDE VARIABLE SPEED COMPRESSOR ON BOTH CIRCUITS 5. PROVIDE 5 YEAR PART WARRANTY AND 5 YEAR COMPRESSOR WARRANTY.

6. PROVIDE VARIABLE FREQUENCY DRIVE ON CONDENSER

7. PROVIDE FIELD INSTALLED NON-FUSED DISCONNECT

i i								
			ULE	SCHED	OR BOX	SELECTO	BRANCH	VRF E
D	NOTES	WEIGHT (LBS)	MODEL NO.	MFR	RLA	VOLTS/PHASE /HERTZ	CAPACITY (BTU/H)	MARK
0	1, 2	68	PRHR083A	LG	0.2	208/1/60	135,500	BS-1.1
D	1, 2	37	PRHR033A	LG	0.15	208/1/60	54,600	BS-1.2
	NOTES 1, 2 1, 2	WEIGHT (LBS) 68 37	MODEL NO. PRHR083A PRHR033A	MFR LG LG	RLA 0.2 0.15	VOLTS/PHASE /HERTZ 208/1/60 208/1/60	CAPACITY (BTU/H) 135,500 54,600	MARK BS-1.1 BS-1.2

NOTES

1. CONTRACTOR TO INSTALL "FULL PORT" ISOLATION VALVES AND SCHRADER VALVE UPSTREAM OF EAG BRANCH SELECTOR BOX 2. BRANCH SELECTORS SHALL HAVE BRAZED CONNECTIONS.

GRAVITY HOOD SCHEDULE

MARK	EAH-01
SERVES	AHU-C1
CFM	3,150
MAX. P.D. (IN. W.G.)	0.08
ТҮРЕ	EXHAUST
THROAT AREA (SQ. FT.)	3.50
MODEL	FGR - 28x20
MANUFACTURER	GREENHECK
NOTES	1,2,3
NOTES:	

1. PROVIDE WITH MOTORIZED DAMPER INTERLOCKED WITH ASSOCIATED MECHANICAL EQUIPMENT SUCH THAT DAMPER IS OPEN WHEN UNIT IS ENERGIZED AND SHUT WHEN UNIT IS DE-ENERGIZED.

2. PROVIDE WITH PREFABRICATED ROOF CURB AND INTEGRAL ALUMINUM BIRD

SCREEN. HOOD HOUSING SHALL BE PROVIDED WITH ALUMINUM CONSTRUCTION. 3. PROVIDE CURB ADAPTER AS REQUIRED TO UTILIZE EXISTING ROOF OPENING.

	Kerker Output Service Output No. V DATE V0314.0888 f 9990 Richmond Ave. South Bldg. Moston, Texas 713.914.0888 f 9990 Richmond Moston, Texas 713.914.0888 f 9990 Richmond Ave. South Bldg. Suite. 300 Houston, Texas 77042 TBPE Firm Registration NO. 2234
	SEAL: ADAM C. JONES 110008 CCENSED SSIONAL ENGINE SSIONAL ENGINE
	GALENA PARK PURPLE SAGE HVAC UPGRADES
OTES 1, 2 1, 2	DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE: MECHANICAL
	SCHEDULES Sheet NUMBER: M5.01

MARK	MFR. & MODEL	TYPE	REMARKS
A	TITUS TMS-AA	24"X24" LOUVERED FACE SUPPLY AIR DIFFUSER	ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR HARD CEILING, DEPENDING ON CEILING TYPE. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPE; SIZE NECK ACCORDING TO DRAWING.
A1	TITUS TDC-AA	12"X12" LOUVERED FACE SUPPLY AIR DIFFUSER	ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR HARD CEILING, DEPENDING ON CEILING TYPE. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPE; SIZE NECK ACCORDING TO DRAWING.
В	TITUS PAR-AA	24"x24" PERFORATED FACE RETURN / EXHAUST AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR HARD CEILING, DEPENDING ON CEILING TYPE. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPE; PROVIDE 22"x22" NECK OPEN TO PLENUM UNLESS OTHERWISE NOTED ON DRAWINGS. PROVIDE O.B.D. WHEN USED FOR DUCTED EXHAUST OR RETURN.
(B1)	TITUS PAR-AA	12"x12" PERFORATED FACE RETURN / EXHAUST AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR HARD CEILING, DEPENDING ON CEILING TYPE. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPE; PROVIDE 10"x10" NECK OPEN TO PLENUM UNLESS OTHERWISE NOTED ON DRAWINGS. PROVIDE O.B.D. WHEN USED FOR DUCTED EXHAUST.
C	TITUS 300-FL	SIDEWALL SUPPLY AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 3/4" BLADE SPACING, DOUBLE DEFLECTION WITH FRONT BLADES PARALLEL TO LONG DIMENSION. PROVIDE O.B.D., PROVIDE SIZE ACCORDING TO DRAWING.
	TITUS 350-FL	SIDEWALL RETURN / EXHAUST AIR GRILLE	ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 3/4" BLADE SPACING, 35° DEFLECTION WITH BLADES PARALLEL TO LONG DIMENSION. PROVIDE O.B.D. WHEN USED FOR DUCTED EXHAUST, PROVIDE SIZE ACCORDING TO DRAWING.
NOTES:			

1. INSULATE BAC

2. PROVIDE FRAM

3. PAINT INTERIO

PUMP SCHEDULE				
MARK	SCHP-1,2	PCHP-1,2	CDWP-1,2	HWP-1,2
MANUFACTURER	TACO	TACO	TACO	TACO
MODEL NUMBER	FI3009D	FI3007D	EM311T	F12508
DESIGN FLOW (GPM)	400	360	570	210
HEAD (FT. H ₂ O)	60	25	40	60
APPROX IMPELLER DIA. (INCHES)	8.25	6.35	10.05	8.10
MOTOR RPM	1,800	1,800	1,800	1,800
HORSEPOWER	10	7.5	10	7.5
VOLTS/PHASE/HERTZ	480/3/60	480/3/60	480/3/60	480/3/60
NOTES	1,2,3	1,2,3,4	1,2,4	1,2,3,4

ESC	CHEDULE					FAN PO	WERED	TERN	<u>/INAL U</u>	NIT SC	HEDU	LE		,		· · · ·		
NODEL	TYPE		REMARK	S		MARK	PRIMARY	AIR CFM	HEATING		HOT WATE	R HEATING	-	INLET	VOLTS/ PHASE/	ECM	MFR	MODEL NO
s	24"X24" LOUVERED FACE		WITH FRAME FOR	LAY-IN CEILI			MAX	MIN.	CFM	EWT/LWT	MBTU/H	GPM	ROWS	SIZE	HZ	HP		
AA	SUPPLY AIR DIFFUSER	TYPE; SIZE NECK ACCORDIN	NG TO DRAWING.	CHITECTURA	L PLANS FOR CEILING	FPT-A1-01	875	350	615	180/160	13.9	1.4	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
s	12"X12" LOUVERED FACE	ALUMINUM CONSTRUCTION	WITH FRAME FOR	LAY-IN CEILI	NG OR HARD CEILING,	FPT-A1-02	750	300	525	180/160	17.0	1.7	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
4A	SUPPLY AIR DIFFUSER	DEPENDING ON CEILING TYP TYPE: SIZE NECK ACCORDIN	PE. REFER TO AR NG TO DRAWING.	CHITECTURA	L PLANS FOR CEILING	FPT-A1-03	875	440	615	180/160	21.3	2.1	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
		ALUMINUM CONSTRUCTION	WITH FRAME FOR	LAY-IN CEILI	NG OR HARD CEILING,	FPT-A1-04	750	380	525	180/160	18.3	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
S A A	24"x24" PERFORATED FACE		PE. REFER TO AR	CHITECTURA	L PLANS FOR CEILING	FPT-A1-05	725	360	510	180/160	17.6	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
		DRAWINGS. PROVIDE O.B.[D. WHEN USED FC	R DUCTED E	XHAUST OR RETURN.	FPT-A1-06	725	360	510	180/160	17.6	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
_			WITH FRAME FOR	LAY-IN CEILI		FPT-A1-07	900	450	630	180/160	21.9	2.2	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D
AA	12"x12" PERFORATED FACE RETURN / EXHAUST AIR GRILLE	TYPE; PROVIDE 10"x10" NEC	CK OPEN TO PLEN	UM UNLESS	OTHERWISE NOTED ON	FPT-A1-08	1,040	520	730	180/160	25.3	2.5	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D
		DRAWINGS. PROVIDE O.B.I	D. WHEN USED FO	R DUCTED E	XHAUST.	FPT-A1-09	690	350	485	180/160	16.8	1.7	1	8"Ø	277/1/60	1/3	TITUS	DTFS-C
s		ALUMINUM CONSTRUCTION	WITH FRAME FOR	SURFACE M	OUNT. 3/4" BLADE	FPT-A1-10	1,210	610	850	180/160	29.5	2.9	1	12"Ø	277/1/60	1/3	TITUS	DTFS-D
		DIMENSION. PROVIDE O.B.I	D., PROVIDE SIZE	ACCORDING	TO DRAWING.	FPT-A1-11	1,180	590	830	180/160	28.7	2.9	1	12"Ø	277/1/60	1/3	TITUS	DTFS-D
s	SIDEWALL RETURN / EXHAUST AIR			SURFACE M	OUNT. 3/4" BLADE	FPT-A1-12	1,300	660	910	180/160	31.8	3.2	1	12"Ø	277/1/60	1/3	TITUS	DTFS-D
=L	GRILLE	O.B.D. WHEN USED FOR DU	CTED EXHAUST, F	ROVIDE SIZE	ACCORDING TO DRAWING.						1					<u> </u>		
						FPT-C1-01	785	390	550	180/160	19.0	1.9	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
CK-PAN ME TO I	OF ALL DEVICES. MATCH CEILING TYPE INDICATED ON A	RCHITECTS REFLECTED CEILI	NG PLAN.			FPT-C1-02	785	390	550	180/160	19.0	1.9	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
	ACES OF DUCTWORK VISIBLE FROM	FACE OF RETURN AIR GRILLES	S FLAT BLACK.			FPT-C1-03	750	380	525	180/160	18.3	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
						FPT-C1-04	815	410	575	180/160	19.8	2.0	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
r						FPT-C1-05	750	380	525	180/160	18.3	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
PU	IMP SCHEDULE					FPT-C1-06	785	390	550	180/160	19.0	1.9	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
MAR	<	SCHP-1,2	PCHP-1,2	CDWP-	l,2 HWP-1,2	FPT-C1-07	385	190	270	180/160	9.3	0.9	1	6"Ø	277/1/60	1/4	TITUS	DTFS-B
MAN	JFACTURER	TACO	TACO	TACC	TACO	FPT-C1-08	785	390	550	180/160	19.0	1.9	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
MODI	EL NUMBER	FI3009D	FI3007D	EM311	T F12508	FPT-C1-09	735	370	515	180/160	17.9	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
DESI	GN FLOW (GPM)	400	360	570	210	FPT-C1-10	975	490	685	180/160	23.7	2.4	1	10"Ø	277/1/60	1/3	TITUS	DTFS-D
HEAD	D (FT. H₂O)	60	25	40	60	FPT-C1-11	725	360	510	180/160	17.6	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
APPF	ROX IMPELLER DIA. (INCHES)	8.25	6.35	10.05	8.10	FPT-C1-12	600	300	420	180/160	14.6	1.5	1	8"Ø	277/1/60	1/3	TITUS	DTES-C
мото		1,800	1,800	1,800	1,800	FPT-C1-13	785	390	550	180/160	19.0	1.9	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
HORS	SEPOWER	10	7.5	10	7.5	FPT-C1-14	660	330	465	180/160	16.0	1.6	1	8"Ø	277/1/60	1/3	TITUS	DTFS-C
VOLT	S/PHASE/HERTZ	480/3/60	480/3/60	480/3/6	0 480/3/60	FPT-C1-15	725	360	510	180/160	17.6	1.8	1	10"Ø	277/1/60	1/3	TITUS	DTES-C
NOTE	S	1.2.3	1.2.3.4	1.2.4	1.2.3.4	FPT-C1-16	600	300	420	180/160	14.6	1.5	1	8"Ø	277/1/60	1/3		DTES-C
		.,_,_	.,_,_, .	•,=,•	.,_,_,	FPT-C1-17	860	430	605	180/160	20.9	21	1	10"Ø	277/1/60	1/3		DTES-C
1. F	PUMP SHALL BE NON-OVERLOADING A	ACROSS ENTIRE GPM RANGE.				EPT-C1-18	500	250	350	180/160	12.2	1.2	1	8"Ø	277/1/60	1/4		DTES-B
2. F	PROVIDE WITH REMOTE MOUNTED VA	RIABLE FREQUENCY DRIVE.				FPT-C1-19	800	400	560	180/160	19.4	1.2	1	10"Ø	277/1/60	1/3		DTES-C
' 3. I ' 4 F	NSTALL ON EXISTING INERTIA BASE. PROVIDE FOR ALTERNATE 7 SCOPE O	NIY					000	400	500	100/100	10.4	1.5	I	10.6	27771100	1/5		D11 0-0
						EPT_C3_01	1 020	510	715	180/160	24.8	2.5	1	10"Ø	277/1/60	1/3		
						EPT-C3-02	1,020	520	725	180/160	25.1	2.0	1	10 0	277/1/60	1/3		
VK	F HEAT RECOVERY L	JNIT SCHEDULE				EPT-C3-03	840	420	590	180/160	20.1	2.0	1	10"Ø	277/1/60	1/3		DTES-C
MARK	<	HRU-1	HRU-2		ACCU-1	EPT-C3-04	1 030	520	725	180/160	25.1	2.0	1	10 0	277/1/60	1/3		
SERV	ES	LEVEL 1 ADMIN	LEVEL 2 AD	MIN	LEVEL 1& 2 ADMIN	EPT-C3-05	950	480	665	180/160	23.7	2.0	1	10"Ø	277/1/60	1/3		
REQU	IRED COOLING CAPACITY (MBH)	142.2	60.7		112.2		000	-100	000	100,100	20.2	2.0			21111100	1/0		BIIOB
AMBI	ENT TEMP. (°F)	105	105		105	EPT-E1-01	005	410	580	180/160	20.0	2.0	1	10"Ø	277/1/60	1/3		DTES-C
COOL	ING EFFICIENCY (IEER/EER)	28.60/12.50	28.40/13.4	.0	29.60/13.10	EPT-E1-02	825	410	580	180/160	20.0	2.0	1	10 9	277/1/60	1/3		DTES-C
NOMI	NAL HEATING CAPACITY (MBH)	162.0	81.0		135.0	EDT E1 03	825	480	665	180/160	20.0	2.0	1	10 0	277/1/60	1/3		
ACTU	AL HEATING CAPACITY (MBH)	161.6	71.5		119.2		950	400	660	180/160	23.2	2.0	1	10 0	277/1/60	1/3		
REQU	IRED HEATING CAPACITY (MBH)	140.5	140.5		140.5		940	470	620	190/100	22.0	2.5	1	10 0	277/1/60	1/3		
HEAT	ING EFFICIENCY (COP @ 47 DEG F)	3.84	3.83		3.97		900	450	630	190/100	21.9	2.2		10 0	277/1/00	1/3		
VOLT	S/PHASE/HERTZ	460/3/60	460/3/60		460/3/60		900	400 500	700	190/100	21.9	2.2		10 0	277/1/00	1/3		
MCA		26	13		41		1000	500	700	190/100	24.3	2.4	1	10 0	277/1/00	1/3		
MOCF)	35	20		50		1000	500	700	190/100	24.3	2.4		10 0	277/1/00	1/3		
REFR	IGERANT TYPE	R410A	R410A		R410A		900	450	030	100/100	21.9	2.2			27714/00	1/3		
MANL	JFACTURER	LG	LG		LG		900	450	630	180/160	21.9	2.2			2///1/60	1/3		
MODE							940	4/0	660	180/160	22.8	2.3	1	10"Ø	2///1/60	1/3		
(INDE	PENDENT UNITS)	ARUM144DTE5	ARUM072D	res	ARUM121DTE5		1200	600	840	180/160	29.2	2.9		12"Ø	2///1/60	1/3		
1 16 117 1		620	400		E 07	FPI-E1-13	925	460	650	180/160	22.4	2.2		10"Ø	277/1/60	1/3		
		038	430			FPT-E1-14	825	410	580	180/160	20.0	2.0		10"Ø	277/1/60	1/3		DTFS-C
	3	1,2,3,4,5	1,2,3,4,5		1,2,3,4,5	FPT-E1-15	775	390	545	180/160	18.9	1.9	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
1. P	ROVIDE WITH NEMA 3R WEATHERPRO	OOF DISCONNECT SWITCH(S).				FPT-E1-16	825	410	580	180/160	20.0	2.0	1	10"Ø	277/1/60	1/3	TITUS	DTFS-C
2. R	OUTE REFRIGERANT PIPING TO ASSO	CIATED BRANCH SELECTOR E	BOX REFER TO RE	FRIGERANT	PIPING DIAGRAMS ON	FPT-E1-17	620	310	435	180/160	15.1	1.5	1	8"Ø	277/1/60	1/3	TITUS	DTFS-C

M6.02, M6.03, M6.04.

3. PROVIDE 5 YEAR PART WARRANTY AND 7 YEAR COMPRESSOR WARRANTY

4. SYSTEM INDICATE TWINNING MODULE. REFER TO MANUFACTURER INSTALLATION MAUNAL FOR PIPING TWINNING UNITS.

5. PROVIDE ALL NECESSARY CLEARANCES AS RECOMMENDED BY MANUFACTURER.

VRV FAN COIL UNIT SCHEDULE

•••••																
				COOLIN	G MODE		Н	Eating Moe	ЭE							
MARK	SUPPLY AIR FLOW (CFM)	MAX ESP	TOTAL COOLING (BTU/H)	SENSIBLE COOLING (BTU/H)	COOLING EAT DB/WB (°F)	COOLING LAT DB/WB (°F)	Total Heating (Btu/H)	HEATING EAT (°F)	HEATING LAT (°F)	PHASE/ HERTZ	WEIGHT (LBS.)	RLA	МСА	MFR	MODEL	NOTES
VRF-1-01	460	0.5	14,572	10,355	74.4/63.4	55.0/53.7	19,284	67.6	90.0	208/1/60	82.9	2.3	2.9	LG	ARNU243M2A4	1-11
VRF-1-02	350	0.5	9,283	6,637	74.5/63.4	55.0/53.7	12,081	67.6	90.0	208/1/60	82.9	2.3	2.9	LG	ARNU153M2A4	1-11
VRF-1-03	1040	0.5	30,326	21,681	74.5/63.4	55.0/53.7	40,065	67.6	85.0	208/1/60	86.2	2.3	2.9	LG	ARNU283M2A4	1-11
VRF-1-04	400	0.5	13,673	9,705	74.5/63.4	55.0/53.6	18,026	67.6	85.0	208/1/60	82.9	2.3	2.9	LG	ARNU243M2A4	1-11
VRF-1-05	900	0.39	27,294	19,513	74.5/63.4	55.0/53.6	36,119	67.6	85.0	208/1/60	59	1.6	2	LG	ARNU243M1A4	1-11
VRF-1-06	850	0.39	25,778	18,429	74.5/63.4	55.0/53.7	34,112	67.6	85.0	208/1/60	59	1.6	2	LG	ARNU243M1A4	1-11
VRF-1-07	775	0.45	23,503	16,803	74.5/63.4	55.0/53.6	31,102	67.6	85.0	208/1/60	59	1.6	2	LG	ARNU243M1A4	1-11
VRF-2-01	650	0.5	20,591	14,721	74.5/63.4	55.0/53.6	27,249	67.6	90.0	208/1/60	82.9	2.3	2.9	LG	ARNU243M2A4	1-11
VRF-2-02	650	0.5	20,591	14,721	74.5/63.4	55.0/53.6	27,249	67.6	90.0	208/1/60	82.9	2.3	2.9	LG	ARNU243M2A4	1-11
VRF-2-03	600	0.5	20,591	14,721	74.5/63.4	55.0/53.6	27,249	67.6	90.0	208/1/60	82.9	2.3	2.9	LG	ARNU243M2A4	1-11
NOTES																

1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.

2. SEE PIPING SCHEMATICS ON M602 FOR REFRIGERANT PIPING CONNECTION DETAILS.

3. ALL BRANCH "Y" FITTINGS OR MULTI-UNIT HEADER CONNECTION PIECES ARE FACTORY PROVIDED. 4. DUCTED UNITS SHALL HAVE CONTRACTOR PROVIDED/INSTALLED FILTER HOUSINGS.

5. UNITS SHALL BE PROVIDED WITH MULTIPLE FAN SPEEDS (LOW-MED-HIGH) AS SCHEDULED.

6. PROVIDE UNITS WITH MERV 13 FILTERS. INSTALL PER MANUFACTURERS RECOMMENDATIONS. 7. PROVIDE WITH INTEGRAL FACTORY INSTALLED CONDENSATE PUMP.

8. UNIT SHALL BE SELECTED FOR A 4 WAY THROW CEILING CASSETTE UNIT.

9. UNIT SHALL BE SELECTED FOR A DUCTED FAN COIL UNIT. 10. UNIT SHALL BE SELECTED FOR A WALL MOUNTED DUCTLESS SPLIT SYSTEM.

11. UNIT SHALL BE SELECTED FOR A FLOOR MOUNTED DUCTED VERTICAL UNIT .

NOTES:

1. PROVIDE AEROCROSS MULTI-POINT CENTER AVERAGING VELOCITY SENSOR IN PRIMARY AIR INLET.

2. PROVIDE TERMINAL UNIT CASING WITH 1" INTERNALLY LINED FIBERGLASS FREE INSULATION.

3. PROVIDE TERMINAL UNIT WITH INTEGRAL DISCONNECT SWITCH.

4. PROVIDE HOT WATER REHEAT COIL WITH 2-WAY AUTOMATIC CONTROL VALVE.

OUTSIDE AIR HANDLING UNIT SCHED	ULE
MARK	DOAS-01
	SUSPENDED
TYPE	HORIZONTAL DRAW-
	THRU
SUPPLY AIR (CFM)	1,050
SUPPLY AIR DISCHARGE DIRECTION	FRONT
OUTSIDE AIR INLET CONNECTION	BACK
FAN TYPE	BI
EXT. S.P. (IN. W.G.)	1.25
DRIVE TYPE	DIRECT
DRIVE TYPE	ECM
VOLTS/PHASE/HERTZ	208/1/60
UNIT MCA	7.50
UNIT MOP	15.00
UNIT WEIGHT - LBS	400
MAX_COIL FACE VELOCITY (FPM)	700
	1,050
Ŭ EAT (°F)	20
LAT (°F)	55
ビ CONTROL STEPS	MODULATING
MAX COIL FACE VELOCITY (FPM)	400
	1,050
EAT DB (°F)	95
Ŭ EAT WB (°F)	80
LAT DB (°F)	55.58
⊣ LAT WB (°F)	55.44
TOTAL COOLING CAPACITY PROVIDED BY UNIT (MBH)	119.5
SENSIBLE COOLING CAPACITY PROVIDED BY UNIT (MBH)	62.3
HOT GAS REHEAT CAPACITY PROVIDED BY UNIT (MBH)	17.1
POSITION	FLAT
	2" MINI-PLEATED
	DISPOSABLE
DIRTY AIR FILTER PRESSURE DROP ALLOWANCE (IN. W.G.)	0.60
MINIMUM MERV RATING	13
MANUFACTURER	LG
MODEL NUMBER	ARND153DCR4
NOTES	ALL
NOTES:	
1 EXTERNAL STATIC DRESSURE DOES NOT ACCOUNT FOR LOSSES	

FILTERS, HOUSING, NOR ACCESSORIES. 2. DIRTY FILTER ALLOWANCE AT 0.5 INCH W.G. IN ADDITION TO CLEAN FILTER PRESSURE DROP NEED TO BE INCLUDED IN THE SUPPLY FAN TOTAL PRESSURE DROP

	SRTU-1	SRTU-1
	GYM	GYM
	SZ VAV	SZ VAV
/ RETURN)	BOTTOM / BOTTOM	BOTTOM / BOTTOM
	5,000	5,000
	2,000	2,000
	1,000	1,000
	1,000	1,000
	12.9	12.9
	12.0	12.0
	1.50	1.50
	480/3/60	480/3/60
WER		
	DIRECT / BI SWSI	DIRECT / BI SWSI
	R410A	R410A
	DIGITAL SCROLL /	DIGITAL SCROLL /
	MODULATING	MODULATING
(FPM)	500	500
	5,000	5,000
	105	105
	81.8/68.7	81.8/68.7
	55.0/54.2	55.0/54.2
′ (MBH)	140.0	140.0
Υ (MBH)	104.0	104.0
N SIZE (IN.)	1"	1"
	3,500	3,500
	70	70
	30	30
	2.00	2.00
	ALL	ALL

1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR

2. PROVIDE UNIT WITH OUTDOOR AIR INTAKE HOOD WITH MODULATING MOTORIZED DAMPER.

3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION.

4. PROVIDE FLOAT SWITCH IN PRIMARY DRAIN PAN TO DE-ENERGIZE UNIT WHEN PRIMARY DRAIN LINE RESTRICTS.

6. PROVIDE UNIT CONTROLLER BY MANUFACTURER. PROVIDE CONTROLLER WITH BACNET INTERFACE CARD FOR

7. PROVIDE UNIT WITH CONDENSER HAIL GUARD AND 14" PREFABRICATED ROOF CURB. 8. PROVIDE UNIT WITH INTEGRAL DISCONNECT SWITCH AND POWERED CONVENIENCE OUTLET.

10. PROVIDE UNIT WITH INTEGRAL VFD FOR OPERATION OF ASSOCIATED SUPPLY FAN(S).

11. PROVIDE UNIT WITH DUCT MOUNTED SMOKE DETECTORS IN SUPPLY DUCTWORK PER NFPA 90A. 12. PROVIDE UNIT WITH FACTORY MOUNTED AND WIRED AIRFLOW MONITORING STATION.

1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S),

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SEAL: ADAM C. JONES 110008 (CENSE Sional Engineering) Sional Engineering
GALENA PARK PURPLE SAGE HVAC UPGRADES
DATE: D7/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE: MECHANICAL SCHEDULES
SHEET NUMBER: M5.02

CONTROL SCHEMATIC LEGEND

Outdoor Air Conditions

The sensors shall be mounted in an area on the north side of the building where the representative temperature and humidity can be monitored, both shall have sun shields. Based on the outdoor air temperature and humidity the EMCS shall calculate the outdoor air enthalpy, wet bulb and dew point temperatures. These outdoor air conditions shall be broadcast as global data points for use by other control programs. These shall be displayed on all major air and water systems graphics.

Electrical Switchgear Power Meter Monitoring

The EMCS shall provide BACnet/IP communications to Shark Meter provided by electrical contractor to monitor the building power usage. The EMCS shall monitor building kW, kWH, kVAR, Power Factor, 3-Phase Amps and Volts, along with all variables available via this interface. The EMCS shall provide a graphic representation to show the current usage, monthly usage, year to date usage, and time and date of the highest peak demand for the month and year. Demand thresholds may be set to adjust setpoints and shed loads in order to reduce peak consumption.

IDF and MDF Room Monitoring

The EMCS shall monitor the space temperature and humidity in the IDF and MDF rooms. The primary cooling for IDF and MDF rooms will be supplied by the packaged computer room units. The EMCS shall report high/low temperature/humidity alarms to the computers, pagers, and/or text message compatible devices designated by the Owner. Alarms shall be sent if the space conditions deviate from the following, temperature between 60 °F and 80 °F (adj), humidity between 40% RH and 70% RH (adj), for more than 10 minutes.

Outdoor Air Emergency Shutdown Switch

A maintained mushroom type emergency local override button shall be installed in the administration area to deactivate the HVAC system in case of emergency. Once pushed the button must be reset to allow the HVAC system to resume normal operation. The final location of the building shutdown switch is to be determined by the Owner

2 MISCELLANEOUS SYSTEMS NOT TO SCALE

System Off - When the system is off: The primary air damper shall be closed

The heating coil valve shall be closed.

System Startup - Startup shall be initiated automatically by the EMCS: In Unoccupied when the corresponding AHU is in UNOCCUPIED MODE. In Occupied when the corresponding AHU is in PRE-START MODE. In Unoccupied when the corresponding AHU is in NIGHT-SETBACK MODE. In Occupied when the corresponding AHU is in OCCUPIED MODE. In Standby when the corresponding AHU is in OCCUPIED MODE and the zone-mounted Occupancy Sensor times out.

System Operation - When system start-up has been initiated, the following sequences shall be implemented:

The fan shall run at its scheduled maximum primary airflow rate. The primary air damper shall be modulated between the minimum and maximum values to maintain the space temperature within +/- 0.5 °F of the active Cooling Setpoint.

When the space temperature falls below the deadband, the primary air damper shall be modulated to the minimum flow value, the fan shall modulate to maintain its scheduled heating airflow rate, and the hot water coil control valve shall be modulated to maintain the space temperature within +/- 0.5 °F of the active Heating Setpoint.

System Setpoints - The setpoints for the system shall be set as follows:

The Occupied Heating Setpoint shall be set initially at 70 °F (adjustable). The Occupied Cooling Setpoint shall be set initially at 74 °F (adjustable).

The Unoccupied Heating Setpoint shall be set initially at 55 °F (adjustable).

The Unoccupied Cooling Setpoint shall be set initially at 85 °F (adjustable). The Standby Heating Setpoint shall be set initially at 66 °F (adjustable).

The Standby Cooling Setpoint shall be set initially at 78 °F (adjustable).

The minimum and maximum primary air flowrates shall set at the values given in the Mechanical Drawings.

System Alarms - The EMCS shall generate an alarm as follows:

If the space temperature during the Occupied Mode is 5 °F above the cooling setpoint or 5 °F below the heating

SYSTEM OPERATION - WHEN SYSTEM START-UP HAS BEEN INITIATED:

The fan coil unit shall be integrated with the EMCS to monitor fan status and compressor staging, schedule run times, and to adjust space

Cooling Mode: When the space temperature is above the Cooling Setpoint, the electronic expansion valve shall be modulated to

Heating Mode: When the space temperature is below the Heating Setpoint, the electronic expansion valve shall be modulated to maintain the space temperature within +/- 0.5 °F of the Heating Setpoint. The fan shall run anytime the unit is commanded to run,

SYSTEM SETPOINTS - THE SETPOINTS FOR THE SYSTEM SHALL BE SET AS FOLLOWS:

The Unoccupied Heating Setpoint shall be set initially at 55 °F (adjustable).

The design airflow rates shall be set at the values given in the Mechanical Drawings.

SYSTEM ALARMS - THE EMCS SHALL GENERATE AN ALARM AS FOLLOWS:

If the space temperature during the Occupied Mode is 5 °F above the cooling setpoint or 5 °F below the heating setpoint respectively. If the filter differential pressure exceeds the trip point initially set at 1.0 inch w.c. (adj), message will show "Filter Dirty" otherwise it will

All alarms shall be inhibited when the supply fan is not operating except the space temperature alarms. The alarms, except the fan failure and the space temperature alarms, shall remain inhibited following startup of the unit for 2 minutes.

	SERVICE QUALITY INTEGRITY SUSTAINABILITY SERVICE QUALITY INTEGRITY SUSTAINABILITY 713.914.0888 v 713.914.0888 f 9990 Richmond Ave. South Bldg. Suite. 300 Houston, Texas 77042 TBPE Firm Registration NO. 2234
	REVISION: No. / DATE / DESCRIPTION
	05/25/2022 SD SET 05/25/2022 100% DD SET 06/22/2022 75% CD SET
	07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET
	DEAL:
	ADAM C. JONES 110008 CCENSED SSIONAL ENG 128022
	GALENA PARK PURPLE SU HVAC UPGRADES
	DATE: 07/28/2022
	DRAWN BY: DBR
	CHECKED BY: DBR PROJECT NUMBER:
·	SHEET TITLE:
	MECHANICAL CONTROL DIAGRAMS
	SHEET NUMBER:

M6.01

lag chiller. When the valve end switch has been proven open, the EMCS shall close the evaporator barrel isolation valve on the failed chiller and it shall be removed from service. The lag chiller shall become the lead chiller. The chiller shall run to maintain the supply water setpoint.

The EMCS shall monitor temperature inputs from sensors mounted in the common supply and return piping and flow meters mounted in the chiller supply piping, and calculate the Building Load in Tons. The combined total Nominal Capacity in Tons of all operating chillers shall be the Total Capacity.

If the value of ((Building Load / Total Capacity) * 100) is greater than the stage-up setpoint for 10 minutes (adjustable) or the CHW supply temperature rises greater than 4 °F (adjustable) above setpoint, a lag chiller shall be enabled into operation. If the value of ((Building Load / Total Capacity) * 100) is less than the stage-down setpoint for 10 minutes (adjustable), a lag chiller shall be disabled.

The EMCS shall monitor the position of all of the chilled water valves at the units that the plant serves and the differential pressure setpoint shall be reset based on achieving a target valve position of 90%. There shall be a dead band of 5% to prevent hunting of the reset program. The differential pressure setpoint shall not change by more than 1 psi per 5 minute (adj.) interval. The target valve position, the reset time, the deadband, and the rate of change values shall be adjustable.

When a chiller is to be disabled, the EMCS shall discontinue the command for the chiller to run. The EMCS shall continue to hold open the chiller isolation valve until the chiller status has indicated that it is off. Then the EMCS shall close the valve. When the outdoor air temperature drops below the freeze protection setpoint, the EMCS shall open the chilled

water valves to 50% open (adj.) for flow through the AHU coils and the lead secondary chilled water pump shall be activated to run at its minimum referenced speed value until ambient temperature rises above setpoint. The EMCS shall monitor the outside air temperature and humidity. The EMCS shall calculate the outside air enthalpy, wet bulb temperature, and dew point temperature. These values shall be displayed on all air and water systems graphics.

System Setpoints - The setpoints for the system shall be set as follows:

The outside air temperature lockout setpoint shall be 50 °F (adjustable).

The chiller leaving water temperature setpoint shall be 42 °F (adjustable). The chiller stage-up setpoint shall be 90% (adjustable).

The chiller stage-down setpoint shall be 50% (adjustable).

The chilled water system differential pressure setpoint shall be initially set at 12 psi (adj.) and shall have reset limits of 8 psi to 16 psi (adjustable).

The pump stage-up setpoint shall be 95% (adjustable).

The pump stage-down setpoint shall be 50% (adjustable).

The outdoor air temperature freeze protection setpoint shall be 38 °F (adjustable).

Chilled Water System - Decoupled Loop - Control Schematic and Sequence of Operations

The outside air temperature must be above the outside air lockout setpoint, before the chiller can be activated. The number of cooling requests required and the length of time the requests must be received before activating the chiller plant shall be adjustable. The chillers and pumps shall be lead/lag and rotated weekly at a time and on a day of the week when the chiller plant is not in operation. Rotation shall be based on accumulated runtime for

When the chiller plant is activated, the lead secondary pump shall be enabled. A differential pressure sensor monitoring the pressure between the building CHWS and CHWR piping shall be used to modulate the speed of the secondary pumps. A PID control loop shall modulate the speed of the CHW pumps from their minimum speed to their maximum speed as the differential pressure deviates from setpoint. If the differential pressure is 2 psi below setpoint and the active pumps output are above the pump stage-up setpoint for 15 minutes (adjustable), a lag pump shall be enabled. When more than one pump is operating and the active pumps output are below the pump stage-down setpoint for 15 minutes (adjustable), the lag pump shall be de-energized. All

been proven open, the EMCS shall enable the lead primary pump. A current switch shall prove the pump status at the EMCS, which shall generate an alarm, if the switch is not made within 45 seconds (adjustable). There shall also be a 10 second (adjustable) de-bounce time to prevent nuisance alarms from a bouncing switch. If the pump run status is not proven, the EMCS shall discontinue the enable signal to the pump and rotate pumps. The EMCS shall then energize a lag primary pump to run in the same manner as described above. The lag primary

When the lead primary pump status is proven, the EMCS shall enable the lead chiller. A flow switch in the chilled water piping shall complete the circuit to the chiller factory installed controller proving that evaporator flow has been established. If the chiller alarm input closes (indicating that the chiller has alarm), the EMCS shall generate

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Here Here No. / DATE / DESCRIPTION 05/16/2022 SD SET 05/25/2022 100% DD SET 05/25/2022 100% DD SET 06/22/2022 75% CD SET 06/22/2022 75% CD SET 07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET SET SET SET 07/28/2022 OF SET SET SET SET SET 07/28/2022 SET SET SET SET SET SET SET 07/28/2022 SET SET SET SET SET SET SET 07/28/2022 SET SET SET SET SET SET 07/28/2022 <t< th=""></t<>
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DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE: MECHANICAL CONTROL DIAGRAMS
SHEET NUMBER: M6.02

When a tower cell is enabled and the temperature falls below the tower bypass valve setpoint, the EMCS shall modulate its bypass valve open to maintain the active tower leaving water temperature setpoint. When a chiller is to be disabled, the EMCS shall first discontinue the command for the chiller to run. The EMCS shall continue to run its associated condenser water pump until the chiller status has indicated that it is off. Once the chiller status has proven disabled, the lag chiller condenser isolation valve and the lag cooling tower cell isolation valve shall be indexed to the fully closed position and the associated condenser water pump shall be disabled. The EMCS shall monitor the outside air temperature and humidity. The EMCS shall calculate the outside air enthalpy, wet bulb temperature, and dew point temperature. These values shall be displayed on all air and water systems graphics.

If the outdoor air dry bulb temperature drops below the freeze protection setpoint, the EMCS shall open the condenser isolation value on the lead chiller. When the value end switch has been proven open, the EMCS shall close all cooling tower cell isolation valves and all tower by-pass valves shall be indexed to the fully open position. The EMCS shall enable the lead condenser water pump to circulate water through the piping loop. Condenser water shall bypass the cooling towers to the cold water basin where the electric immersion heater system shall maintain the condenser water temperature above its freezing point. When the outdoor air temperature rises above the freeze protection setpoint, the system shall return to normal operating conditions.

System Setpoints - The setpoints for the system shall be set as follows:

The tower leaving water temperature setpoint shall be set as follows: (current outside air wet bulb temperature) + (tower approach).

The tower leaving water temperature setpoint shall also have a low-limit setpoint of 55 °F (adjustable). The tower approach shall be 10 °F (adjustable).

The tower bypass valve setpoint shall be set as follows:

(current tower leaving water temperature setpoint) - 4 °F (adjustable).

The outdoor air temperature freeze protection setpoint shall be 37 °F (adjustable).

System Alarms - The EMCS shall generate an alarm as follows:

Bypass Valve failure: Commanded open but the status is off.

Fan Failure: Commanded on but the status is off. Vibration Cutout Switch: When tower vibration cutout switch signals a tower fan shutdown.

- Oil Level Switch: When sensor indicates low oil level.
- Overflow Sensor: When overflow sensor signals excessive water level.
- High Condenser Water Supply (Basin) Temp: If greater than 88 °F (adjustable).
- Low Condenser Water Supply (Basin) Temp: If less than 37 °F (adjustable).
- High Condenser Water Return Temp: If greater than 100 °F (adjustable).

Condenser Water System - Chiller Plant - Control Schematic and Sequence of Operations

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System Off - When the system is off: The boilers shall be off.

The pumps shall be off.

The bypass valve shall be closed. The boiler isolation valves shall be closed.

The control loops shall be disabled.

System Startup - System startup shall be initiated: Manually by an Operator command on the heating water system graphic at the EMCS. Automatically by the EMCS, when a call for heating has been received. temperature lockout setpoint unless heating water is required for dehumidification.

System Operation - When system start-up has been initiated: operation. Rotation shall be based on accumulated runtime for each type of equipment.

available.

(adjustable) to avoid excessive temperature buildup in the boiler.

disable the burners in the event that there is a loss of power to the CO detector.

NOT TO SCALE

- . EMCS contractor shall be responsible for point—to—point ethernet connection between boiler controllers.
- . EMCS contractor shall be responsible for wiring CO detector to auxiliary input at lead boiler controller.
- 5. Integral water flow rate sensor shall be provided by the boiler manufacturer. EMCS contractor shall utilize
- from the manufacturer's flow rate sensor to operate the system bypass valve as indicated in the sequence Division 23 shall provide the flow sensor if the sensor is not a factory option from the boiler manufacturer.
- 6. Motorized isolation valve shall be provided by the boiler manufacturer and installed by Division 23. Division provide the motorized isolation valve if the valve is not a factory option from the boiler manufacturer.
- 7. Temperature sensor provided by the boiler manufacturer and installed by Division 23. The lead boiler control
- the boiler system based on this boiler manufacturer provided temperature sensor. 8. Bypass valve shall be sized based on the minimum flow rate of a single boiler. Confirm minimum boiler flo
- equipment submittal prior to valve selection.

- The heating water system shall be disabled if the outside air temperature is greater than the outside air

- The outside air temperature must be below the outside air lockout setpoint before the heating water system can be activated. The number of heating requests required and the length of time the requests must be received before activating the heating water system shall be adjustable. The boilers and pumps shall be lead/lag and rotated weekly at a time and on a day of the week when the heating water system is not in
- When the heating water system is activated, the boiler system controller shall open the motorized isolation valve on the lead boiler. When the valve end switch has been proven open, the EMCS shall enable the lead pump. A current switch shall prove the pump status at the EMCS, which shall generate an alarm, if the switch is not made within 45 seconds (adjustable). There shall also be a 10 second (adjustable) de-bounce time to prevent nuisance alarms from a bouncing switch. If the pump run status is not proven, the EMCS shall discontinue the enable signal to the pump and rotate pumps. The EMCS shall then energize a lag pump to run in the same manner as described above. That pump shall become the lead pump.
- After the pump status has been proven, the EMCS shall send a signal to enable the lead boiler to fire provided all safeties have been met. A contact in the boiler control panel will provide status to the EMCS. If the heating water supply temperature is less than 100 °F (adjustable) or a heating water pump status is not indicating a heating water pump is running, the EMCS control module will broadcast that heating water is not
- Whenever the boilers are de-activated, the heating water pump will continue to run for 5 minutes
- The boiler room shall be provided with a manual reset type carbon monoxide (CO) detector. The CO detector shall be interlocked with the boiler control panel such that the burners will not operate when the measured level of carbon monoxide in the room rises above 50 ppm. The boiler control panel should also

- The EMCS shall receive inputs from temperature sensors located in the boiler heating water supp piping. The heating water supply setpoint shall be reset based on the outdoor air temperature, the 170 °F when the outdoor air is at 35 °F and 110 °F when the outdoor air temperature is 65 °F (all adju boiler system controller shall enable the lag boiler if the heating water supply temperature is mor (adjustable) below setpoint for 10 minutes (adjustable). If the heating water supply temperature is not °F (adjustable) below setpoint and the heating water delta-T is less than 5 °F for 10 minutes (adjust boiler shall be disabled.
- A differential pressure sensor across the heating water supply and return lines shall monitor buildir pressure. The EMCS shall modulate the speed of the operating heating water pumps to maintain heating water differential pressure at setpoint (adjustable). If the differential pressure is 2 psi below the active pumps output are above the pump stage-up setpoint for 15 minutes (adjustable), a lag pu enabled. When more than one pump is operating and the active pumps output are below the pump setpoint for 15 minutes (adjustable), the lag pump shall be de-energized. All active pumps shall be mo the same ramp signal.
- The EMCS shall monitor the position of all of the heating water valves at the units that the plant se differential pressure setpoint shall be reset based on achieving a target valve position of 90%. The dead band of 5% to prevent hunting of the reset program. The differential pressure setpoint shall ne more than 1 psi per 5 minute (adj.) interval. The target valve position, the reset time, the dead band, an change values shall be operator adjustable.
- While only one boiler is in operation, the corresponding flow rate sensor shall be used to mainta minimum flow rate by modulating the bypass valve open. The heating water flow rate shall not char than 10% per minute.

System Setpoints - The setpoints for the system shall be set as follows:

- The outside air temperature lockout setpoint shall be 65 °F (adjustable).
- The boiler minimum flow rate setpoint shall be --- gpm (adjustable).
- The heating water system differential pressure setpoint shall be initially set at 12 psi (adjustable) ar reset limits of 8 psi to 16 psi (adjustable).
- The pump stage-up setpoint shall be 95% (adjustable).
- The pump stage-down setpoint shall be 50% (adjustable).

Hot Water System - All Condensing - Variable Primary Flow with Headered Pumps - Control Schematic and Sequence of Operations

		SERVICE QUALITY INTEGRITY SUSTAINABILITY	713.914.0888 v 713.914.0888 f 9990 Richmond Ave. South Bldg. Suite. 300 Houston, Texas 77042 TBPE Firm Registration NO. 2234	
OUTSIDE AIR TEMPERATURE OUTSIDE AIR HUMIDITY	REVISION: No. 05 05 05 06 07 07 07	DATE 5/16/2022 5/25/2022 5/22/2022 7/20/2022 7/28/2022	/ DESCRIPTION SD SET 100% DD SE 75% CD SET 100% REVIEW PROPOSAL SE	
BOILER ROOM ARBON MONOXIDE DETECTOR (NOTE #4)	SEAL:	AM C. JON 110008		
flow rate of operations. 23 shall ler shall sequence w rate with final oly and return limits shall be ustable). The ore than 5 °F ot more than 5 °F ot more than 5 stable) the lag ing differential n the building v setpoint and oump shall be p stage-down nodulated with erves and the ere shall be a not change by and the rate of		GALENA PARK PURPLE SAGE		
ain the boiler ange by more nd shall have	DATE: 07/28/2 DRAWN B DBR CHECKED DBR PROJECT 220122.0	2022 f: D BY: NUMBER: 200		_
	SHEET TH ME C DI	LE CHAN ONTF AGR/	NICAL ROL AMS	
	SHEET NU	MBER: .04		

below. Operation of the system during Pre-Start Mode shall not include ventilation air, with the exception that Economizer mode shall be permitted to operate per the System Operation section as detailed below.

NIGHT-SETBACK MODE:

The system shall be enabled automatically by the EMCS based on the cooling demand of 5 (adjustable) or more associated terminal units whose space temperature has exceeded the terminal units Unoccupied Cooling Setpoint. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air, with the exception that Economizer mode shall be permitted to operate per the System Operation section as detailed below.

OCCUPIED MODE:

The system shall be enabled automatically by the EMCS based on the actual space occupancy. When the Time of Day schedule (TOD) is active, the system shall operate per the System Operation section, as detailed below, and the following sequences shall be active.

Outside Airflow and Damper Control: When the system is commanded to start, the EMCS shall index the outside air damper to the scheduled maximum outside airflow rate as measured by the outside airflow measuring station. Outside Air Damper / Return Air Damper Integration with Supply Fan VFD: The EMCS shall provide dynamic control of the outside air damper and return air damper positions through the full range of the supply fan VFD modulation. The outside air and return air motorized dampers shall modulate in sequence to maintain the outside air flow rate setpoint. The outside air damper shall first modulate open. If the outside air damper has reached the 100% open position and still cannot achieve the outside air flow rate setpoint, then the return air damper shall begin to modulate closed. The return air damper position shall have a low limit of 50% (adj) during normal system operation. Damper positions shall not be adjusted by more than 20% (adj) in any one-minute time period.

SYSTEM OPERATION - WHEN SYSTEM START-UP HAS BEEN INITIATED:

The outside air and exhaust isolation dampers shall open and the associated outside air fan and exhaust fans shall be enabled. The variable speed supply fan shall start at its associated minimum speed. Following a confirmation of fan start status, the supply fan speed shall be modulated to maintain the supply air static pressure at setpoint. The speed of the fan shall not be adjusted by more than 20% in any one-minute period. The static pressure setpoint shall be reset via the control algorithm below to optimize the energy usage.

the primary air damper position to all of the associated terminal units have been below the defined value for more than the If the supply air temperature is outside the limits, which shall be set at +/- 5 °F around setpoint. defined interval. The static pressure setpoint shall be reset down in defined increments at defined intervals until the primary air If the supply duct static pressure exceeds the high-limit setpoint. damper position to at least one (critical zone) of the associated terminal units has been above the defined value for more than If the unit freeze-stat trips. the defined interval. The setpoints are detailed in the **System Setpoint** section below. If the filter differential pressure exceeds the trip point. Cooling Coil - The chilled water coil control valve shall be modulated to maintain the active supply air temperature setpoint. The If the current sensor relay indicates a supply fan failure status. supply air temperature setpoint shall be reset via the control algorithm below to optimize the energy usage. All alarms shall be inhibited when the supply fan is not operating. The alarms, except the fan failure alarm, shall remain Supply Air Temperature Reset - The supply air temperature setpoint shall be reset based on the actual return air temperature, inhibited following startup of the unit for 2 minutes. according to the defined reset schedule detailed in the **System Setpoint** section below.

Supply Air Static Pressure Reset - The static pressure setpoint shall be reset up in defined increments at defined intervals until

SYSTEM SETPOINTS - THE SETPOINTS FOR THE SYSTEM SHALL BE DETERMINED AS FOLLOWS: The maximum speed reference value shall be the VFD speed required to obtain the design supply airflow value from the unit schedule on the Mechanical Drawings.

The minimum speed reference value shall be VFD speed required to obtain 50% of the design supply airflow value from the unit schedule on the mechanical drawings but not less than the active outside air flow rate setpoint. The supply air static pressure setpoint shall be set initially at 1.25 inches w.c. (adj) and shall have reset limits of 0.20 to 2.00 inches w.c. (adj)

The time interval for static pressure reset shall be set at 10 minutes (adj).

The static pressure reset increment shall be set at 0.05 inches w.c. (adj)

The terminal unit primary damper position setpoint shall be 90% open. (adj)

The time interval for terminal unit primary damper position shall be set at 15 minutes. (adj)

The supply air temperature setpoint shall be set initially at 54 °F. (adj)

The supply air temperature setpoint shall be reset to 54 °F (adj) when the return air temperature is at 78 °F. (adj) The supply air temperature setpoint shall be reset to 58 °F (adj) when the return air temperature is at 72 °F. (adj)

The outside air flowrate setpoint shall be set at the scheduled flow rate from the unit schedule on the mechanical drawings. The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj).

The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).

The freeze-stat low-limit trip setpoint shall be set at 37°F(adj).

SYSTEM SHUTDOWN - SYSTEM SHUTDOWN SHALL BE INITIATED:

By operator entered manual command at the EMCS.

Automatically by the EMCS based on Night-Setback or Time of Day schedule. Automatically by the high-static pressure shut down.

Automatically by the unit freeze-stat shut down.

Automatically by a supply fan current sensor status failure.

SYSTEM ALARMS - THE EMCS SHALL GENERATE AN ALARM:

1 VAV Air Handling Unit With Energy Core (AHU-AF1, C1, C3, E1) - Control Schematic and Sequence of Operations

Revise SERVICE QUALITY INTEGRITY SUSTAINABILITY SERVICE QUALITY INTEGRITY SUSTAINABILITY NO. OQU HOUSCIN / SUSTAINABILITY SERVICE QUALITY INTEGRITY SUSTAINABILITY NO. OQU HOUSCIN / DALE OQU HOUSCIN / SUSTAINABILITY SERVICE QUALITY INTEGRITY SUSTAINABILITY NO. OQU HOUSCIN / DALE OQU HOUSCIN / DALE OQU HOUSCIN / SUSTAINABILITY OQU HOUSCIN / DALE OQU HOUSCIN / DALE
SEAL:
GALENA PARK PURPLE SAGE HVAC UPGRADES
DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE: MECHANICAL CONTROL DIAGRAMS
SHEET NUMBER: M6.05

The outside air and exhaust dampers shall be closed. The return air damper shall be open. The unit supply and exhaust fans shall be off. The cooling coil control valve shall be closed. The heating control valve shall be closed. All control loops shall be disabled.

66°F (adj). SYSTEM START-UP - SYSTEM START-UP SHALL BE INITIATED: The occupied cooling space temperature setpoint shall be set at 75°F (adj) with a high-limit alarm of By an operator entered manual command at the EMCS. 79°F (adj). Automatically by the EMCS based on Pre-Start Mode or Night-Setback Mode. The unoccupied heating space temperature setpoint shall be set at 55°F (adj) with a low-limit alarm PRE-START MODE: of 51°F (adj). The unoccupied cooling space temperature setpoint shall be set at 85°F (adj) with a high-limit alarm The system shall be enabled by an operator entered manual command at the EMCS or automatically by of 89°F (adj). the EMCS based on the Optimal Start/Stop algorithm. Once enabled, the system shall operate per the The chilled water coil discharge air temperature setpoint shall be set at 53°F (adj) with a low-limit System Operation section, as detailed below. Operation of the system during Pre-Start Mode shall not alarm of 48°F (adj). include ventilation air. The re-heat coil discharge air temperature setpoint shall be set at 85°F (adj) with a high-limit alarm of NIGHT-SETBACK MODE: 100°F (adj). The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the The system shall be enabled automatically by the EMCS based on the cooling demand of 5 (adjustable) or unit schedule on the mechanical drawings. more associated terminal units whose space temperature has exceeded the terminal units Unoccupied The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the Cooling Setpoint. Once enabled, the system shall operate per the **System Operation** section, as detailed below. Operation of the system during Night-Setback Mode shall not include ventilation air. unit schedule on the mechanical drawings.

System Operation - When system start-up has been initiated: The variable speed supply air fan shall start. Following a confirmation of fan start status, the supply fan

shall initially be indexed to its minimum speed reference value. The speed of the fan shall not be adjusted by more than 20 Hz in any one-minute period. OUTSIDE AIR CFM AND DAMPER CONTROL: When the system is commanded to start, the EMCS shall index the outside air damper to the scheduled maximum outside airflow rate as measured by the outside airflow measuring station.

OUTSIDE AIR DAMPER / RETURN AIR DAMPER INTEGRATION WITH SUPPLY FAN VFD: The EMCS shall provide dynamic control of the outside air damper and return air damper positions through the full range of the supply fan VFD modulation. The outside air and return air motorized dampers shall modulate in sequence to maintain the active outside air flow rate setpoint. The outside air damper shall first modulate open. If the outside air damper has reached the 100% open position and still cannot achieve the active outside air flow rate setpoint, then the return air damper shall begin to modulate closed. The return air damper position shall have a low limit of 50% (adj) during normal system operation. Damper positions shall not be adjusted by more than 20% (adj) in any one-minute time period. <u>COOLING MODE</u>: The EMCS shall modulate the chilled water control valve as required to maintain the active coil discharge air temperature setpoint. The EMCS shall modulate the supply fan VFD from its minimum setting to its maximum setting as required to maintain the active space temperature setpoint. <u>HEATING MODE</u>: When the supply fan is operating at its minimum setting, the hot water re-heat control valve shall modulate to maintain the active space temperature setpoint. If the space temperature drops below its active setpoint and the unit discharge air temperature is at its active setpoint, then the EMCS shall modulate the supply fan VFD from its minimum setting to its maximum setting as required to maintain the active space temperature setpoint and the hot water re-heat control valve shall modulate to maintain the re-heat coil discharge air temperature setpoint.

System Setpoints - The setpoints for the system shall be determined as follows: The maximum speed reference value shall be the VFD speed required to obtain the design supply

airflow value from the unit schedule on the Mechanical Drawings. The minimum speed reference value shall be VFD speed required to obtain 50% of the design supply airflow value from the unit schedule on the mechanical drawings but not less than the active outside air flow rate setpoint.

The occupied heating space temperature setpoint shall be set at 70°F (adj) with a low-limit alarm of

The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj). The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).

The freeze-stat low-limit trip setpoint shall be set at 37°F(adj).

System Shutdown - System shutdown shall be initiated:

By operator entered manual command at the EMCS.

Automatically by the EMCS based on Night-Setback or Time of Day schedule.

Automatically by the high-static pressure shut down.

Automatically by the unit freeze-stat shut down. Automatically by a supply fan current sensor status failure.

System Alarms - The EMCS shall generate an alarm condition for each of the following: If the space temperature is outside the active low or high-limit for 5 minutes (adj).

- If the supply air temperature drops below the chilled water coil discharge air temperature low-limit for 5 minutes (adj).
- If the supply air temperature rises above the heating coil discharge air temperature high-limit for 5

minutes (adj). If the space carbon dioxide level exceeds its high-limit for more than 20 minutes (adj) or the space

carbon dioxide level exceeds the high-limit by 10% or more.

If the supply duct static pressure exceeds the high-limit setpoint. If the filter differential pressure exceeds the trip point.

If the unit freeze-stat trips.

If the current sensor relay indicates a supply fan failure status.

All alarms shall be inhibited when the supply fan is not operating except the space temperature alarms. The alarms, except the fan failure and the space temperature alarms, shall remain inhibited following startup of the unit for 2 minutes.

1 Single Zone Air Handling Unit With Energy Core (AHU-B1, C2, F1) - Control Schematic and Sequence of Operations

	SERVICE QUALITY INTEGRITY SUSTAINABILITY	713.914.0888 v 713.914.0888 f 9990 Richmond Ave. South Bldg. Suite. 300 Houston, Texas 77042 TBPE Firm Registration NO. 2234
REVISIC No.	★ DATE 05/16/2022 05/25/2022 06/22/2022 07/20/2022 07/28/2022	/ DESCRIPTION SD SET 100% DD SET 75% CD SET 100% REVIEW PROPOSAL SET
SEAL:	ADAM C. JON 110008	
	GALENA PARK PURPLE SAGE	
DATE: 07/28 DRAWN DBR CHECK DBR PROJE 22012 SHEET M	3/2022 IBY: EDBY: CTNUMBER: 2.000 TILE: ECHAN CONTE DIAGR/	NICAL ROL AMS
SHEET	NUMBER: 5.06	

Damper positions shall not be adjusted by more than 20% (adj) in any one-minute time period. COOLING MODE: The EMCS shall modulate the chilled water control valve as required to maintain the active coil discharge air temperature setpoint. The EMCS shall modulate the supply fan VFD from its minimum setting to its maximum setting as required to maintain the active space temperature setpoint. HEATING MODE: When the supply fan is operating at its minimum setting, the hot water re-heat control valve shall modulate to maintain the active space temperature setpoint. If the space temperature drops below its active setpoint and the unit discharge air temperature is at its active setpoint, then the EMCS shall modulate the supply fan VFD from its minimum setting to its maximum setting as required to maintain the active space temperature setpoint.

Single Zone AHU (AHU-B2) - Control Schematic and Sequence of Operations

1. Provide coil control valve as indicated in mechanical schedules and control specifications.

2. Provide adequate length before and after air flow measuring station as recommended by manufacturer. 3. Direct Expansion Coil shall be used for after hour use. The DX coil shall take the place of the chilled

water coil upon use.

System Setpoints - The setpoints for the system shall be determined as follows: The maximum speed reference value shall be the VFD speed required to obtain the design supply airflow value from the

unit schedule on the Mechanical Drawings. The minimum speed reference value shall be VFD speed required to obtain 50% of the design supply airflow value from the unit schedule on the mechanical drawings but not less than the active outside air flow rate setpoint.

The occupied heating space temperature setpoint shall be set at 70°F (adj) with a low-limit alarm of 66°F (adj).

The occupied cooling space temperature setpoint shall be set at 75°F (adj) with a high-limit alarm of 79°F (adj).

The unoccupied heating space temperature setpoint shall be set at 55°F (adj) with a low-limit alarm of 51°F (adj). The unoccupied cooling space temperature setpoint shall be set at 85°F (adj) with a high-limit alarm of 89°F (adj).

The chilled water coil discharge air temperature setpoint shall be set at 53°F (adj) with a low-limit alarm of 48°F (adj).

The re-heat coil discharge air temperature setpoint shall be set at 85°F (adj) with a high-limit alarm of 100°F (adj).

The minimum outside air flowrate setpoint shall be set at the scheduled minimum flowrate from the unit schedule on the mechanical drawings. The maximum outside air flowrate setpoint shall be set at the scheduled maximum flowrate from the unit schedule on the

mechanical drawings.

The supply duct static pressure high-limit setpoint shall be set at 2.0 in. wc. (adj).

The air filter pressure differential high-limit setpoint shall be set at 1.0 in. wc. (adj).

The freeze-stat low-limit trip setpoint shall be set at 37°F(adj).

System Shutdown - System shutdown shall be initiated: By operator entered manual command at the EMCS.

Automatically by the EMCS based on Night-Setback or Time of Day schedule.

Automatically by the high-static pressure shut down.

Automatically by the unit freeze-stat shut down. Automatically by a supply fan current sensor status failure.

System Alarms - The EMCS shall generate an alarm condition for each of the following:

If the space temperature is outside the active low or high-limit for 5 minutes (adj).

If the supply air temperature drops below the chilled water coil discharge air temperature low-limit for 5 minutes (adj). If the supply air temperature rises above the heating coil discharge air temperature high-limit for 5 minutes (adj).

If the supply duct static pressure exceeds the high-limit setpoint.

If the filter differential pressure exceeds the trip point.

If the unit freeze-stat trips.

If the current sensor relay indicates a supply fan failure status.

All alarms shall be inhibited when the supply fan is not operating except the space temperature alarms. The alarms, except the fan failure and the space temperature alarms, shall remain inhibited following startup of the unit for 2 minutes.

	ON: / D/ 05/16, 05/25 06/22 07/20 07/28	Service Quality INTEGRITY SUSTAINABILITY TE 2005/	713.914.0888 v 713.914.0888 f 713.914.0888 f 713.914.0888 f 9990 Richmond Ave. South Bldg. Suite. 300 Houston, Texas 77042 TBPE Firm Registration NO. 2234
SEAL	ADAM C	JON JON DOOB ENSED NALEN	
DATE: 07/20 DRAW	8/2022 N BY:	2	
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SHEET	IECH COI DIA	HAN NTF GRA	NICAL ROL AMS

ARUM144DTE5 (142.21 kBtu/h) (161.64 kBtu/h) Additional Refrigerant : 18.53 lbs (Precharged Refrigerant : 26.50 lbs)

1/2:7/8:1+1/8	PRHR083A	
84.0 ft	8 1	

3 1			
3/8:5/8 4.0 ft		ARNU243M2A4 #VRF-1-01 (14.57 / 10.36 kBtu/h) (19.28 kBtu/h)	Room (0 %) / (0 %) kBtu/h (0 %) kBtu/h
1/4:1/2 31.0 ft		ARNU153M2A4 #VRF-1-02 (9.28 / 6.64 kBtu/h) (12.08 kBtu/h)	Room (0 %) / (0 %) kBtu/h (0 %) kBtu/h
3/8:5/8 37.0 ft		ARNU283M2A4 #VRF-1-03 (30.33 / 21.68 kBtu/h) (40.06 kBtu/h)	Room (0%)/(0%)kBtu/h(0%)kBtu/h
3/8:5/8 50.0 ft 3/8:5/8		ARNU243M2A4 #VRF-1-04 (13.67 / 9.71 kBtu/h) (18.03 kBtu/h) ARNU243M1A4 #VRF-1-05	
51.0 ft		(27.29 / 19.51 kBtu/h) (36.12 kBtu/h) ARNU243M1A4 #VRF-1-06	
35.0 ft 3/8:5/8		(25.78 / 18.43 kBtu/h) (34.11 kBtu/h) ARNU243M1A4 #VRF-1-07	(0 %) /(0 %) kBtu/h(0 %) kBtu/h Room
16.0 ft		(23.50 / 16.80 kBtu/h) (31.10 kBtu/h) #1	(0 %) / (0 %) kBtu/h (0 %) kBtu/h
	L] #2	
]	

M7.01 VRF PIPING DIAGRAM - HRU-1

gwb

ARUM072DTE5 (60.70 kBtu/h) (7 Additional Refrigerant : 14.68 lbs (F	.51 kBtu/h) recharged Refrigerant : 14.30 lbs)		
20.0ft 201.0 ft 201.0 ft 3/8:5/8 14.0 ft 3/8:5/8 8.0 ft 3/8:5/8 22.0 ft	20.0ft ARNU243M2A4 #VRF-2-01 ■	%) / (0 %) kBtu/h (0 %) kBtu/h %) / (0 %) kBtu/h (0 %) kBtu/h %) / (0 %) kBtu/h (0 %) kBtu/h	ARUM121DTE5 (112.15 kBtu Additional Refrigerant : 19.08 l 1/2:3/4:1+1/8 ARN 195.0 ft (119
2 VR M7.01 NOT	F PIPING DIAGRAM – H	IRU-2	M7.01 VRF PIP NOT TO SCALE

05/16/2022 SD SET 05/25/2022 100% DD SET 06/22/2022 75% CD SET 07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET SEAL: ADAM C. JONES 110008 CENSED. 7222 SIONAL ENS SAGE GALENA PARK PURPLE HVAC UPGRADES **DATE:** 07/28/2022 **drawn by:** Dbr CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHEET TITLE:

300 TBPE Fi

0666

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No. / DATE / DESCRIPTION

REVISION:

MECHANICAL VRF PIPING DIAGRAMS

SHEET NUMBER:

M7.01

₁tu/h) 8 lbs (Precharged Refrigerant : 23.20 lbs)

RND153DCR4 #1 1050 CFM / 1.3 inchAq 55.0 °F / 54.9 °F / 70.0 °F 7.8 / 3.6

3 W7.01 VRF PIPING DIAGRAM - ACCU-1 NOT TO SCALE

ABBREVIATIONS

GAL

GC

GEN GFCI

GND GTD GUH

-----HACR

HTG HTR HVAC

HWC HWP ΗZ

KEC ко kVA kW kWH

LED

MLO MOCP MSB MTD MV

_____ OAF OAHU OC OD OHE OPG

PVC PWR

QTY

LF LRA LTG LV LVL

GALV

	Α
A	AMPERES
ABV	ABOVE
A/C	AIR CONDITIONING
AC	ALTERNATING CURRENT, AIR COMPRESSOR, ABOVE COUNTER
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT ACCESS DOOR
ADA AF	AMERICANS WITH DISABILITIES ACT AMPERE FUSE, AMPERE FRAME ABOVE FINISHED, CEILING
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPT CAPACITY
AL	ALUMINUM
AM	AMMETER
AMP	AMPLIFIER
ANN	ANNUNICATOR
AP	ACCESS PANEL, ALARM PANEL
ARCH	ARCHITECT, ARCHITECTURAL
ASC	AMPERES SHORT CIRCUIT
AT	AMPERE TRIP RATING
ATS	AUTOMATIC TRANSFER SWITCH
AVG.	AVERAGE
AUX.	AUXILIARY
AWG.	AMERICAN WIRE GAUGE
	В
BAS	BUILDING AUTOMATION SYSTEM
BC	BELOW COUNTER
BKR	BREAKER
BLDG.	BUILDING
	C
C	CONDUIT, CELSIUS
CATV	CABLE TELEVISION SYSTEM
CCTV	CLOSED CIRCUIT TELEVISION
CWP	CONDENSER WATER PUMP
CH	CHILLER
CHP	CHILLED WATER PUMP
CIRC	CIRCULATING
CKT	CIRCUIT
CL	CENTERLINE
CLG. CMU COL	CEILING CONCRETE MASONRY UNIT
CONC CONN	CONCRETE
CONT.	CONTINUOUS, CONTINUATION
CONTR.	CONTROLLER, CONTRACTOR
CPUC	CPU CHILLER
CR	CARD READER, CORD REEL
CRU	CONDENSATE RETURN UNIT
CT	CURRENT TRANSFORMER, COOLING TOWER
CU	CENTER COPPER
	D
dB	DECIBEL
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DTL	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DP	DISTRIBUTION PANEL
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
DS	DAYLIGHT SENSOR
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DXFC DZ	DOMESTIC WATER POMP DX FAN COIL UNIT DAYLIGHT ZONE
	E
(E)	EXISTING
EC	ELECTRICAL CONTRACTOR
E.C.	EMPTY CONDUIT
EDF	ELECTRIC DRINKING FOUNTAIN
EF	EXHAUST FAN
EFF EHC EJ	ELECTRIC HEATING COIL EXPANSION JOINT
EL	ELEVATION
ELEC.	ELECTRICAL
ELEV.	ELEVATOR
EMCS	ENERGY MANAGEMENT AND CONTROLS SYSTEM
EMERG	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ENCL.	ENCLOSURE
ENGR.	ENGINEER
EPO	EMERGENCY POWER OFF
EOUIP	EQUIPMENT
(ER)	EXISTING TO REMAIN
EUH	ELECTRIC UNIT HEATER
EWH	ELEGING WATER HEATER
EXH	EXHAUST
	F
F	FAHRENHEIT, FAN, FIRE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANFI
FCU	FAN COIL UNIT
FF	FURNITURE FEED
FIXT FLA	FIXTURE FULL LOAD AMPS FLEXIBLE
FLR	FLOOR
FLUOR	FLUORESCENT
FP	FIRE PUMP, FAN POWERED
FPTB	FAN POWERED TERMINAL BOX
FKZR	FREEZER
FS	FUSED SWITCH, FLOW SWITCH
FSD	MOTORIZED FIRE SMOKE DAMPER
FT	FOOT, FEET
FTL	FEED-THRU LUGS
FUT	FUTURE
FVNR	FULL-VOLTAGE, NON-REVERSING

	G		R
GA GAI	GAUGE GALLON	R	EXISTING TO BE REMOVED
GALV		RAD	REFRIGERATED AIR DRYER
GEN	GENERATOR	RC RC	REFURN AIR FAN RECONNECT EXISTING DEVICE TO CI
GFCI GND	GROUND FAULT CIRCUIT INTERRUPTER GROUND	RCP	REFLECTED CEILING PLAN
GTD GUH	GENERATOR TRANSFER DEVICE	RCPT RE	RECEPTACLE REFERENCE, REFER
	• •	REC	RECEPTACLE REFRIGERATOR
	н	REINF	REINFORCING
HACR	HEATING, AIR CONDITIONING RATED	REL REL/EX	NEW LOCATION OF RELOCATED
HD	CIRCUIT BREAKER ELECTRIC HAND DRYER	REQD	EQUIPMENT REQUIRED
HID HOA		REV	REVISION, REVISE RIGID GALVANIZED STEEL
HORIZ	HORIZONTAL	RLA	RUNNING LOAD AMPS
HP HPS	Horsepower High Pressure Sodium	RPM RR	REVOLUTIONS PER MINUTE REMOVE AND REPLACE
HS HSC	HAND SET HAND SCANNER	RTU	ROOFTOP UNIT
HTG HTR	HEATING		
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING		S
HVU	HEATING/ VENTILATING UNIT		
HWB HWC	HOT WATER BOILER HOT WATER CIRCULATOR	SAF	SUPPLY AIR FAN
HWP HZ	HEATING WATER PUMP HERTZ	SCHED SE	SCHEDULE SEWAGE EJECTOR
		SEC SECT	SECONDARY SECTION
		SF	SQUARE FEET
		SIM	SIMILAR
IG	ISOLATED GROUND	SKVA SKW	STARTING KILOVOLT-AMPS
IN INCAND	INCH	SP SPEC	SUMP PUMP SPECIFICATION
INT	INTERNAL, INTERIOR	SPF SPKR	STAIR PRESSURIZATION FAN SPEAKER
	•	SPD	
	J	SPST	SINGLE-POLE, SINGLE-THROW
JB	JUNCTION BOX	SQ. SRF	SQUARE SMOKE REMOVAL FAN
JP	JUCKEY PUMP	SS SSSC	START-STOP PUSH BUTTON SOLID STATE SPEED CONTROL
	K	ST STB	SHUNT TRIP STEAM BOILER
	<u> </u>	STD	STANDARD
KEC KO	KITCHEN EQUIPMENT CONTRACTOR	SURF	SURFACE
kVA	KILOVOLT- AMPS	SWBD	SWITCH SWITCHBOARD
kWH	KILOWATT-HOUR		
	•		_
	L		T
LED	LIGHT EMITTING DIODE	тс	TEMPERATURE CONTROL
LF LRA	LINEAR FEET LOCKED ROTOR AMPS	TEL TF	TELEPHONE TRANSFER FAN
LTG LV	LIGHTING LOW VOLTAGE TRANSFORMER	TL TOC	TWIST-LOCK TOP OF CURB
LVL	LEVEL	TOS TP	top of steel Child Tamper proof device
	N 4	TSTAT TTB	THERMOSTAT TELEPHONE TERMINAL BOARD
	M	TTC	TELEPHONE TERMINAL CABINET
м	METER	TV	TELEVISION
MAP MATV	MASTER ALARM PANEL MASTER ANTENNA TELEVISION SYSTEM	TVSS TYP	TRANSIENT VOLTAGE SURGE SUPPR TYPICAL
MAX. MC	MAXIMUM METAL CLAD CABLE		
MCA	MINIMUM CIRCUIT AMPS		
MCC	MOTOR CONTROL CENTER		11
MD MDP	MOTORIZED DAMPER MAIN DISTRIBUTION PANEL		0
MECH. MFR	MECHANICAL MANUFACTURER	UG UH	UNDERGROUND UNIT HEATER
MH MIC	METAL HALIDE MICROPHONE	UL	UNDERWRITERS LABORATORIES, INC.
MIN.		UPS	UNINTERRUPTABLE POWER SYSTEM
MOCP	MAIN LOGS ONE I MAXIMUM OVER-CURRENT PROTECTION		
MSB MTD	MAIN SWITCHBOARD MOUNTED		
MV	MERCURY VAPOR		V
	N	 V	
	••	VA	VOLT-AMPERE
N3R	NEMA 3R ENCLOSURE	VAV VC	VARIABLE AIR VOLUME VOLUME CONTROL
N4X N.C.	NEMA 4X ENCLOSURE NORMALLY CLOSED		
NEC	NATIONAL ELECTRICAL CODE	VP	VACUUM PUMP
	ASSOCIATION NON-FUSED	VM	VOLT METER
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION		W
NFS NIC	NON-FUSED SWITCH NOT IN CONTRACT		
NL	NIGHT LIGHT	WG	WIREGUARD
NO.	NUMBER	w/ w/o	WITH WITHOUT
NTS	NOT TO SCALE	WP WS	WEATHERPROOF WATER SOFTENER
	$\mathbf{\cap}$	WT WWF	WATERTIGHT, WEIGHT WELDED WIRE FABRIC
	<u> </u>	W/FT ²	WATTS PER SQUARE FOOT
OAF OAHU	OUTSIDE AIR FAN OUTSIDE AIR HANDLING UNIT		
	ON CENTER		X
OHE	OVERHEAD ELECTRICAL	XFMR	TRANSFORMER
OPG	OPENING		
	Р		Z
 Р		7	
, PB	PUSHBUTTON	-	
PC PH	PHOTOCELL PHASE		
PL PLBG	PILOT LIGHT PLUMBING		
POS PP	POINT OF SALE		
PR			
PS	PHOTOSENSOR		
PVC PWR	POLYVINYL CHLORIDE POWER		
	$\mathbf{\cap}$		
	V		
QTY	QUANTITY		

		S AND CONTROLS	RACEWA	YS AND WIRING	MISCI	ELLANEOUS		иsта 0888 31dg. 7042
	\$ _M	MOTOR RATED SWITCH WITH THERMAL OVERLOADS]	CAP AND STAKE	D F	SHADED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED.		914.0 914.0 th E th E s 77 s 77
	5	SINGLE OR THREE PHASE MOTOR NUMBER INDICATES HORSE POWER	EM	CONDUIT UNDERSLAB OR UNDERGROUND EMERGENCY CONDUIT		INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL		GRITY Sou Sou Texa ation
CIRCUIT		ELECTRIC DUCT HEATER DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES /POLF /FUSE, "NE" DENOTES NON-FUSED	DB	EXPOSED CONDUIT UNDERGROUND CONDUIT, "DB" DENOTES DUCTBANK ENCASED IN CONCRETE		STARTER/DISCONNECT SCHEDULE REFERENCE		INTE Ave. Dn,
	B	"N3R" DENOTES NEMA 3R ENCLOSED CIRCUIT BREAKER- "200/3/150" DENOTES	OHE	OVERHEAD ELECTRIC PRIMARY UTILITY POWER LINE		FEEDER SCHEDULE REFERENCE		174 8888 104 / Wetc
		AMPERES/POLE/TRIP. MOTOR STARTER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.	<u></u>	CONDUIT TURNED DOWN				14.0 Ho Ho Trm
	⊠'	COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER, "30/3/15/#0" DENOTES AMPERES/POLES/FUSE/		LEFT TO RIGHT: PHASE/NEUTRAL/SWITCH LEG/GROUND/ISOLATED GROUND. NO HASH MARKS INDICATES 2# 12, PLUS GROUND, UNLESS NOTED OTHERWISE	PC	PHOTOCELL		13.9 13.9 300 300 7
		STARTER SIZE, "NF" DENOTES NON-FUSED. FURNISHED BÝ DIVISION 23 AND INSTALLED BY DIVISION 26.		HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.	н	PUSH BUTTON/DOOR BELL		RVICE 390 TBI
	VFD	VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23 AND INSTALLED BY DIVISION 26.		PARTIAL CIRCUIT HOMERUN TO PANEL.	TC	TIMECLOCK		SE 56
			- (ON)1LA-6	COMMUNICATIONS CONDUIT OR CABLE:	R	RELAY	REVISION:	
	RECEPT	ACLES AND OUTLETS	_	"CA" DENOTES MASTER CLOCK, "CR" DENOTES CASH REGISTER "D" DENOTES DATA,	B SOS	AREA OF RESCUE ASSISTANCE	No. /	$\frac{\text{DATE}}{16/2022}$ SD SET
	ALL RECEPTAC TO CENTER OF	CLES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR F DEVICE UNLESS NOTED OTHERWISE.		"FA" DENOTES FIRE ALARM, "1" DENOTES INTERCOM, "OHE" DENOTES OVERHEAD ELECTRICAL LINE.	FIRE		05/	/25/2022 100% DD SET
	ф —	SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V		"PA" DENOTES PAGING, "S" DENOTES SECURITY, "T" DENOTES TELEPHONE,		WATER FLOW SWITCH	06/	/22/2022 75% CD SET
		"GFGI" DENOTES GROUND FAULT INTERRUPTER, "WP" DENOTES WEATHERPROOF,		"V" DENOTES VIDEO, TELECOMMUNICATIONS CABLE TRAY TO BE CONCEALED	SP (SUPERVISORY SWITCH	07/	20/2022 100% REVIEW 728/2022 PROPOSAL SE
		"IG" DENOTES ISOLATED GROUND, "TP" DENOTES SAFETY TYPE, (TAMPER PROOF) "DR" DENOTES DROPPED RECEPTACLE,			S	SMOKE DETECTOR - MULTI CRITERIA DETECTOR		
		"USB" DENOTES RECEPTACLE WITH UNIVERSAL SERIAL BUS, "AC" DENOTES ABOVE COUNTER MOUNTING, SEE "UC" DENOTES UNDER COUNTER MOUNTING, SEE	ELECIH			SMOKE DETECTOR – "SB" INDICATES IN INTEGRAL SOUNDER BASE "D" INDICATES DUCT TYPE		
	AL R	"H" DENOTES HORIZONTALLY ORIENTED RECEPTACLE, SEE ARCHITECTURAL PLANS FOR EXACT MOUNTING HEIGHT.				"R" INDICATES 120 VOLT RESIDENTIAL TYPE		
		RED COLOR.	MSB	SWITCHBOARD, MAIN DISTRIBUTION PANEL OR	s in the second	BEAM DETECTOR TRANSMITTER, HIGH IN CEILING WALL DIRECT	SEAL:	I
	U	PROCESSING, GRAY COLOR. PROVIDE ISOLATED GROUND TYPE RECEPTACLES WHERE NOTED.				BEAM DETECTOR RECEIVER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.		
	D	SPLIT WRED RECEPTACLE. TOP RECEPTACLE SHALL BE SWITCHED ACCORDING TO PLANS, AND BOTTOM SHALL REMAIN UNSWITCHED.		MANELBUARD (FLUSH/SURFACE MOUNT)		FIRE ALARM SPEAKER STROBE / CEILING MOUNTED	Δ.	E MA
	°₽₽₽	CONTROLLED DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V. "SP" DENOTES SPLIT WRED		FLOOR MOUNTED DRY-TYPE TRANSFORMER		FIRE ALARM SPEAKER STROBE / WALL MOUNTED	A P	E A A Shi
	- + + + + + + + + + + + + + + + + + + +	FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.		SUSPENDED OR WALL MOUNTED TRANSFORMER		FIRE ALARM SPEAKER / CEILING MOUNT.	*	
	₩ R	FOURPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.	ATS	AUTOMATIC TRANSFER SWITCH	S	FIRE ALARM SPEAKER / WALL MOUNTED		110008
	⊕°	CONTROLLED FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5-20R, 20A, 125V.		FIRE RATED PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS NOTED OTHERWISE	머	MAGNETIC DOOR HOLDER		SIONAL ENGINE
	Ф	SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED.		TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS NOTED, 24" X 48" X 3-1/2" UNLESS NOTED OTHERWISE.	R	AUXILIARY CONTROL RELAY		Allere Allere
		TWO-GANG FLOOR OUTLET	BAT	BATTERY/INVERTER UNIT		FIRE FIGHTER HANDSET		
		THREE-GANG FLOOR OUTLET	🔀 LV	LOW VOLTAGE TRANSFORMER.		FIRE ALARM PULL STATION +42" AFF FIREMAN'S TELEPHONE JACK +42" AFF		
	0 0	DRAWINGS FOR EXACT MOUNTING HEIGHTS.	COMMU			VISUAL FIRE ALARM (STROBE) CEILING MOUNT - 15/75cd U.N.O.		Щ
		"MD" DENOTES MOTOR DAMPER, "CR" DENOTES CORD REEL, "D" DENOTES DROP CORD RECEPTACLE,			- HX	VISUAL FIRE ALARM (STROBE) WALL MOUNT +80" AFF- 15/75cd U.N.O.		U A
	⊂∦ →	DUPLEX RECEPTACLE WITH HOMERUN	THE FOLL	T BOXES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR R OF DEVICE UNLESS NOTED OTHERWISE. DWING NOTATIONS REFER TO ALL COMMUNICATIONS OUTLETS:		AUDIO VISUAL FIRE ALARM HORN STROBE +80" AFF- 15/75cd U.N.O.		
		DUPLEX RECEPTACLE (PEDESTAL MOUNTED)	"FAX" "W" D "PAY"	DENOTES OUTLET DEDICATED FOR A FAX, ENOTES WALL PHONE SHALL BE MOUNTED AT 42" A.F.F. DENOTES PAY PHONE SHALL BE MOUNTED 42" A.F.F.		AUDIO FIRE ALARM HORN +80" AFF		
		FLUSH ELECTRICAL FLOOR OUTLET, "P" DENOTES POKE-THRU.	HES	SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.	ANN	REMOTE FIRE ALARM ANNUNCIATOR PANEL		Щ
	\odot \bigcirc	"D" INDICATES DUPLEX RECEPTACLE, "R" INDICATES RED RECEPTACLE ON EMERGENCY POWER. REFER TO FLOOR BOX SCHEDULE, FIRE RATED POKE-THROUGH SCHEDULE AND KEYED NOTES.	HTV	TV ROUGH—IN: 3—GANG RECESSED TV BOX, CONTAINING 1 DUPLEX RECEPTACLE, 1 GANG FOR	RPS	REMOTE POWER SUPPLY FOR AUDIO/VISUAL FIRE ALARM DEVICES.		<mark>፲</mark>
RESSOR		POWER POLE		AV, 1 GANG FOR DATA	(SD)	FIRE SMOKE DAMPER		
	- ∲ - □	DIRECT CONNECTION TO EQUIPMENT		INDICATES THE LOCATION OF A NEW TECHNOLOGY WALL OUTLET, PROVIDE DUAL GANG BACK BOX. REFERENCE TECHNOLOGY SHEET FOR CONTENT.		REMOTE LED INDICATOR LIGHT		D A B A B
		CLOCK RECEPTACLE SHALL BE MOUNTED 12" BELOW FINISHED	∭ w	MICROPHONE FLOOR OUTLET, "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED "H" INDICATES HANGING MOUNTED	SECL	RITY		
		CEILING. (2) DENOTES DOUBLE SIDED CLOCK.	S ^{vc}	CEILING MOUNTED SPEAKER. "VC" INDICATES VOLUME CONTROL	Нкр	KEYPAD IDP INTRUSION DETECTION PANEL		
C.	LIGHTING		HSL	WALL MOUNTED SPEAKER.	GB	GLASS BREAK SENSOR DOOR CONTACT		AF OA
	LETTER(S) DENOTE	TYPE- SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.	НСВ	"L" INDICATED LOCAL SOUND REINFORCEMENT SCHOOL INTERCOMMUNICATION SYSTEM CALL-IN. PUSH BUTTON	B	HOLD UP BUTTON HPB ADA AUTO DOOR OPEN BUTTON		l
		2' X 4' LIGHTING FIXTURE.		BELL, BUZZER OR CHIME AT 80+ A.F.F.	DS	INTERCOM DOOR STATION DR DOOR RELEASE BUTTON		\checkmark
		1' X 4' LIGHTING FIXTURE.		VOLUME CONTROL - WALL MOUNTED	MS			Ž
	•	1' X 2' LIGHTING FIXTURE.	ۯw	AUXILIARY INPUT JACK. "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED "H" INDICATES HANGING MOUNTED		LONG RANGE MOTION DETECTOR HCR WALL MOUNTED CARD READER		Ш
		STRIP LIGHTING FIXTURES.		"HIGH" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.		WALL MOUNTED MOTION DETECTOR		Ļ
		STAGGERED STRIP LIGHTING FIXTURE.		"LOW" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.				L L L
		ROUND DOWNLIGHT FIXTURE. SQUARE DOWNLIGHT FIXTURE.	HCC ⁽²⁾	LOW VOLTAGE CLOCK SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.				U
	Бю	WALL MOUNTED LIGHTING FIXTURE.	REFEF	ENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.	5 7 1 1 (
		LIGHTING FIXTURE SCHEDULE. CEILING MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADFD ARFA			- ALL SWITC LOCATED	THES AND SENSORS THES FOUND ON LIGHTING CONTROL DEVICE SCHEDULE. IN ELECTRICAL SCHEDULE SHEETS	DATE	
		DENOTES FACE. WALL MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA				NOTATION AS FOLLOWS: TYPE, PER SCHEDULE NOTYPE_INDICATES_SINGLE_POLE_TOGGLE_SWITCH	07/28/20	J22
	[™] 12	DENOTES FACE. EMERGENCY WALL MOUNTED LIGHTING FIXTURE.		TRANSFORMER, TYPE AND RATINGS AS NOTED SWITCH, RATING AS SHOWN	\$x \$a,b,c	- SWITCH LEGS, PER PLAN, SHOWN HERE AS 3 (a.b.c)		
		DATTERT OPERATED UNLESS NOTED OTHERWISE. SECURITY WALL PACK	400A	FUSE, RATING AS SHOWN	OCCUPAN	Y SENSOR ANNOTATION, AS FOLLOWS:		RY:
	│ └────────────────────	SITE LIGHTING FIXTURE.		CIRCUIT BREAKER, RATING AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE. "CL" DENOTES CURRENT LIMITING DRAWOUT CIRCUIT BREAKER, RATINGS AS SHOWN, 3 POLE		OCCUPANCY / VACANCE SENSOR 'x' INDICATES TYPE, PER SCHEDULE	DBR	
			5 5	UNLESS NOTED OTHERWISE SHUNT TRIP		- CEILING SENSOR - WITH BRACKET INDICATES WALL / CORNER MOUNT	PROJECT N	NUMBER:
	⊢₩	BRACKET ARM INDICATES WALL MOUNT WITH ARM	GFI		LIGHT SEM	SOR ANNOTATION. AS FOLLOWS:	220122.00	00
		EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH UNSWITCHED HOT FOR LOSS OF VOLTAGE AND CHARGING (SAME CIRCUIT	M K	DIGITAL METER	29	DIGITAL PHOTOSENSOR	SHEET TITL	E:
		AS NORMAL POWER LIGHTING). FIXTURES SHALL BE WIRED IN A MANNER AS TO ALLOW SWITCHING OF FIXTURES WITHOUT DISCHARGING THE EMERGENCY BATTERY. BATTERY PACK IS TO ONLY OPFRATE IN THE	A 0-2000	AMMETER, RANGE AS SHOWN		JATLIGHT MARVESTING SENSUR		
	EM CIRCUIT	EVENT OF A POWER OUTAGE.	AS <u> </u> 0−600	AMMETER SWITCH VOLTMETER, RANGE AS SHOWN	DRAV	ING/DETAIL REFERENCE KEY		CI HICAL
		LIGHT FIXTURE ON EMERGENCY BRANCH CIRCUIT, CIRCUIT NUMBER ADJACENT TO FIXTURE INDICATES EMERGENCY CIRCUIT CONNECTED TO FIXTURE, PROVIDE UNSWITCHED HOT NEUTRAL AND CROUND FOR ALL	 	VOLTMETER SWITCH WATT-HOUR METER, "D" DENOTES DEMAND REGISTER "15"			S	YMBOL
		EMERGENCY LIGHTING ORIGINATING FROM THE EMERGENCY CIRCUIT SHOWN.	^{1200/5}	DENOTES MINUTES OF DEMAND INTERVAL CURRENT TRANSFORMER, RATED AS SHOWN				EGEND
	NL	EMERGENCY "NIGHT LIGHT" LIGHT FIXTURE. LIGHT FIXTURE IS UNSWITCHED AND INTENDED FOR 24 HOUR OPERATION. FEED VIA	12.47KV/120 ≪-⊡t €	POTENTIAL TRANSFORMER, RATING AS SHOWN				
	<u> </u>	UNSWITCHED HOT.	اب سان	GROUND CONNECTION				
		DAYLIGHT ZONE/PRIMARY DAYLIGHT ZONE		GENERATOR SET		SHEET NUMBER	SHEEI NUN	IDEN:
				BUS DUCT PLUG				~ .
				TRANSIENT VOLTAGE SURGE SUPPRESSOR	GENE	KAL NOTES	E0.0	J1
	· /// /// /// /// /// /// /// /// ///	J SECUNDART DATLIGHT ZUNE	I (M)	ELECTRICAL METER	1			

Saved: 7/28/2022 by user: -Purple Sage ES -HVAC Up Plotted: Ci/Users

) COMPOSITE ELECTRICAL PLAN - LEVEL 1 SCALE: 1" = 20'-0"

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KEYED PLAN NOTES:

 AREAS SHOWING 2' x 4' LIGHTING FIXTURE HAVE LAY-IN GRID CEILINGS. TYPICAL UNLESS NOTED OTHERWSE.
 HATCHED AREAS ARE SHEETROCK CEILINGS. TYPICAL UNLESS NOTED OTHERWISE.

	Keves No: V DATE Sustainability 300 Houston, Texas 713.914.0888 f 300 North Bildg. Suite. 300 300 Houston, Texas 77042 100, 2234 Destruction No. 200 Houston, Texas 77042 100, 2234 202 100.2234
	07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET
	SEAL:
	GALENA PARK PURPLE SAGE HVAC UPGRADES
	DATE: 07/28/2022 DRAWN RY:
	DBR CHECKED BY: DBR
	PROJECT NUMBER: 220122.000 SHEET TITLE: COMPOSITE ELECTRICAL PLAN - LEVEL 2
	SHEET NUMBER:
$\Big)$	E1.02

TRUE

- IN THESE NOTES.
- EXISTING CIRCUITS, DO NOT EXCEED 80% OF THE CIRCUIT RATING.
- AND PLUMBING EQUIPMENT.

KEYED PLAN NOTES

- MECHANICAL DRAWINGS.

GENERAL ELECTRICAL REMODELING NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF THE ARCHITECTURAL MODIFICATIONS TO THE EXISTING CONDITIONS. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED SO THAT THE REMODELING WORK MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS. ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS.

2. WHEN OUTLETS ARE ABANDONED, WIRE MUST BE PULLED OUT OF THE CONDUIT BACK TO THE NEAREST REMAINING BOX, CABINET OR PANEL. ANY EXPOSED CONDUIT THAT HAS BEEN ABANDONED MUST BE REMOVED.

3. RE-ESTABLISH SERVICE TO ALL OUTLETS THAT MAY HAVE BEEN INTERRUPTED BECAUSE OF THE REMODELING WORK. 4. PROVIDE ALL APPURTENANCES REQUIRED TO REROUTE, RELOCATE, REMOVE OR REINSTALL ALL ITEMS DESCRIBED

5. VERIFY THE LOCADING OF EACH CIRCUIT AFFECTED BY THE REMODELING WORK. WHEN ADDING OUTLETS TO ANY

6. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT THAT IS BEING REMOVED, INCLUDING MECHANICAL

1 EXISTING AIR HANDLING UNIT TO BE REMOVED. SCOPE OF WORK TO INCLUDE DISCONNECTION FROM THE EXISTING POWER SUPPLY. RETAIN EXISTING BRANCH CIRCUIT WIRING FOR REUSE.. REFER TO

2 EXISTING AIR COOLED CONDENSING UNIT TO BE REMOVCE. SCOPE OF WORK TO INCLUDE DISCONNECTION FROM THE EXISTING POWER SUPPLY. RETAIN EXISTING BRANCH CIRCUIT WIRING FOR REUSE. REFER TO MECHANICAL DRAWINGS.

KEYED PLAN NOTES

- 1 EXISTING COOLING TOWER TO REMAIN. REFER TO MECHANICAL DRAWINGS FOR MECHANICAL SCOPE OF WORK. ELECTRICAL SCOPE OF SHALL INCLUDE ANY DISCONNECTION AND RECONNECTION OF EXISTING POWER SUPPLIES IF REM C QUIRED BY MECHANICAL SCOPE. COORDINATE WITH MECHANICAL CONTRACTOR.
- 2 EXISTING CHILLER TO REMAIN.
- (3) EXISTING BOILER TO REMAIN.
- (4) EXISTING PUMP TO BE REMOVE UNDER ALTERNATE.
- 5 EXISTING AIR HANDLING UNIT TO BE REMOVED. RETAIN EXISTING BRANCH CIRCUIT WIRING FOR REUSE.
- 6 EXISTING FAN COIL UNIT TO REMAIN.

GENERAL ELECTRICAL REMODELING NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF THE ARCHITECTURAL MODIFICATIONS TO THE EXISTING CONDITIONS. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED SO THAT THE REMODELING WORK MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS. ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS.

2. WHEN OUTLETS ARE ABANDONED, WIRE MUST BE PULLED OUT OF THE CONDUIT BACK TO THE NEAREST REMAINING BOX, CABINET OR PANEL. ANY EXPOSED CONDUIT THAT HAS BEEN ABANDONED MUST BE REMOVED.

3. RE-ESTABLISH SERVICE TO ALL OUTLETS THAT MAY HAVE BEEN INTERRUPTED BECAUSE OF THE REMODELING WORK.

4. PROVIDE ALL APPURTENANCES REQUIRED TO REROUTE, RELOCATE, REMOVE OR REINSTALL ALL ITEMS DESCRIBED

5. VERIFY THE LOCADING OF EACH CIRCUIT AFFECTED BY THE REMODELING WORK. WHEN ADDING OUTLETS TO ANY EXISTING CIRCUITS, DO NOT EXCEED 80% OF THE CIRCUIT RATING.

6. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT THAT IS BEING REMOVED, INCLUDING MECHANICAL

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ED2.01C2 ELECTRICAL DEMO PLAN - AREA C2 SCALE: 1/8" = 1'-0" IN THESE NOTES.

GENERAL ELECTRICAL REMODELING NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF THE ARCHITECTURAL MODIFICATIONS TO THE EXISTING CONDITIONS. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED SO THAT THE REMODELING WORK MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS. ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS.

2. WHEN OUTLETS ARE ABANDONED, WIRE MUST BE PULLED OUT OF THE CONDUIT BACK TO THE NEAREST REMAINING BOX, CABINET OR PANEL. ANY EXPOSED CONDUIT THAT HAS BEEN ABANDONED MUST BE REMOVED.

RE-ESTABLISH SERVICE TO ALL OUTLETS THAT MAY HAVE BEEN INTERRUPTED BECAUSE OF THE REMODELING WORK.
 PROVIDE ALL APPURTENANCES REQUIRED TO REPOUTE, RELOCATE, REMOVE OR REINSTALL ALL ITEMS DESCRIBED

5. VERIFY THE LOCADING OF EACH CIRCUIT AFFECTED BY THE REMODELING WORK. WHEN ADDING OUTLETS TO ANY EXISTING CIRCUITS, DO NOT EXCEED 80% OF THE CIRCUIT RATING.

6. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT THAT IS BEING REMOVED, INCLUDING MECHANICAL AND PLUMBING EQUIPMENT.

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GENERAL ELECTRICAL REMODELING NOTES:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF THE ARCHITECTURAL MODIFICATIONS TO THE EXISTING CONDITIONS. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED SO THAT THE REMODELING WORK MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS. ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS.

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GENERAL ELECTRICAL REMODELING NOTES:

- IN THESE NOTES.
- AND PLUMBING EQUIPMENT.

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF THE ARCHITECTURAL MODIFICATIONS TO THE EXISTING CONDITIONS. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED SO THAT THE REMODELING WORK MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS. ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS.

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5. VERIFY THE LOCADING OF EACH CIRCUIT AFFECTED BY THE REMODELING WORK. WHEN ADDING OUTLETS TO ANY EXISTING CIRCUITS, DO NOT EXCEED 80% OF THE CIRCUIT RATING.

6. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT THAT IS BEING REMOVED, INCLUDING MECHANICAL

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POWER PLAN - AREA A SCALE: 1/8" = 1'-0"

GENERAL ELECTRICAL NOTES:

- INDICATED ON THE DRAWINGS.
- CONDUIT THAT HAS BEEN ABANDONED MUST BE REMOVED.
- BECUASE OF THE REMODELING WORK.
- OR REINSTALL ALL ITEMS DESCRIBED IN THESE NOTES.
- WHEN ADDING OUTLETS TO ANY EXISTING CIRCUITS, DO NOT EXCEED 80% OF THE CIRCUIT RATING.
- IS BEING REMOVED, INCLUDING MECHANICAL AND PLUMBING EQUIPMENT.

ELECTRICAL KEYED NOTES

- (1) EXISTING ELECTRICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE.
- 3 30A/2P/4AF
- (4) 30A/2P/3AF

A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF THE ARCHITECTURAL MODIFICATIONS TO THE EXISTING CONDITIONS. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED SO THAT THE REMODELING WORK MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY

B. WHEN OUTLETS ARE ABANDONED, WIRE MUST BE PULLED OUT OF THE CONDUIT BACK TO THE NEAREST REMAINING BOX, CABINET OR PANEL. ANY EXPOSED

C. RE-ESTABLISH SERVICE TO ALL OUTLETS THAT MAY HAVE BEEN INTERRUPTED

D. PROVIDE ALL APPURTENANCES REQUIRED TO REROUTE, RELOCATE, REMOVE E. VERIFY THE LOCADING OF EACH CIRCUIT AFFECTED BY THE REMODELING WORK.

F. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT THAT

(2) APPROXIMATE LOCATION OF EXISTING PANEL "2LA" ON SECOND FLOOR.

GENERAL ELECTRICAL NOTES:

- A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF THE ARCHITECTURAL MODIFICATIONS TO THE EXISTING CONDITIONS. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED SO THAT THE REMODELING WORK MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS.
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- C. RE-ESTABLISH SERVICE TO ALL OUTLETS THAT MAY HAVE BEEN INTERRUPTED BECUASE OF THE REMODELING WORK.
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- F. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT THAT IS BEING REMOVED, INCLUDING MECHANICAL AND PLUMBING EQUIPMENT.

ELECTRICAL KEYED NOTES

- (1) EXISTING ELECTRICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE.
- (2)UNDER ALTERNATE #7, THE SCOPE OF ELECTRICAL WORK TO INCLUDED DISCONNECTION OF THE EXISTING PUMP BRANCH WIRING FROM THE EXISTING POWER SOURCE AND RECONNECTION TO THE EXISTING MOTOR CONTROL CENTER. REFER TO ELECTRICAL ON LINE DIAGRAM FOR ADDITIONAL INFORMATION. PROVIDE ALL MATERIALS AND LABOR REQUIRED TO RE-ESTABLISH POWER TO THE PUMPS VIA THE NEW VARIABLE FREQUENCY DRIVES. COORDINATE LOCATIONS OF VFD'S WITH MECHANICAL CONTRACTOR.
- (3) THIS PUMP TO BE REPLACED UNDER ALTERNATE #7.
- (4) EXISTING MECHANICAL EQUIPMENT TO REMAIN.
- (5) EXISTING CHILLER TO REMAIN.
- 6 EXISTING BOILER TO REMAIN
- 7 JUNCTION BOX FOR 120V POWER TO MOTORIZED DAMPER. FIELD COORDIANTE ROUGH-IN WITH MECHANICAL CONTRACTOR.
- 8 2 #12 AND 1 #12 GROUND IN 3/4" CONDUIT TO EXISTING PANEL CPL. REMOVE EXISTING 20A/2P CIRCUIT BREAKER AT CPL-21,23 THAT IS CURRENTLY IN THE "OFF" POSITION. INSTALL NEW 20A/1P CIRCUIT BREAKERS.
- (9) PROVIDE A COMMON 20A, 120V CIRCUIT FOR ALL DDC CONTROL PANELS IN CENTRAL PLANT.
- 10 NEW EMCS MONITORED SHARK METER. REFER TO SHEET E4.01. FIELD COORDINATE EXACT LOCATION WITH EXISTING CONDITIONS.

ELECTRICAL KEYED NOTES

1 EXISTING ELECTRICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE.

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GENERAL ELECTRICAL NOTES:

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- F. REMOVE ALL OUTLETS AND WIRING ASSOCIATED WITH ALL EQUIPMENT THAT IS BEING REMOVED, INCLUDING MECHANICAL AND PLUMBING EQUIPMENT.

ELECTRICAL KEYED NOTES

- (1) APPROXIMATE LOCATION OF EXISTING PANEL "HP" (2) APPROXIMATE LOCATION OF EXISTING PANEL "LP"
- 3 REUSE EXISTING 15A/3P CIRCUIT BREAKER PREVIOUSLY SERVING EXISTING AIR HANDLING UNIT TO BE REMOVED. PROVIDE 3 #12 AND 1 #12 GROUND IN 3/4" CONDUIT.
- 4 3 #12 AND 1 #12 GROUND IN 3/4" CONDUIT TO A NEW 15A/3P CIRCUIT BREAKER INSTALLED IN EXISTING PANEL SPACE.

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ELECTRICAL KEYED NOTES

(1) EXISTING NE3R PANEL "PH" IN UNISTRUT RACK.

- 2 REUSE EXISTING POWER SUPPLY FROM DEMOLISHED UNIT.
- 3 NEW UNIT TO REPLACE EXISTING AS AN ALTERNATE
- (4) SRTU-1 AND SRTU-2 ARE BEING REPLACED UNDER ALTERNATE #5

4 0666 **REVISION:** No. / DATE / DESCRIPTION 05/16/2022 SD SET 05/25/2022 100% DD SET 06/22/2022 75% CD SET 07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET

SEAL:

SHEET NUMBER:

GENERAL ELECTRICAL NOTES:

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ELECTRICAL KEYED NOTES

EXISTING ELECTRICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE.
 APPROXIMATE LOCATION OF EXISTING PANEL "2LA" ON SECOND FLOOR.
 30A/2P/4AF

(4) 30A/2P/3AF

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ELECTRICAL KEYED NOTES

- (1) EXISTING ELECTRICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE.
- 2 DOWN TO HVLS-FAN CONTROLLER. REFER TO MECHANICAL PLANS FOR LOCATION OF CONTROLLER.
- 3 30A/2P/4AF
- 4 JUNCTION BOX FOR 120V POWER TO MOTORIZED DAMPER. FIELD COORDINATE ROUGH-IN WITH MECHANICAL CONTRACTOR. TYPICAL.
- 5 JUNCTION BOX FOR 120V POWER TO FIRE DAMPER. FIELD COORDIANTE ROUGH-IN WITH MECHANICAL CONTRACTOR. PROVIDE FIRE ALARM CONTROL MODULE AND CONNECT TO EXISTING FIRE ALARM SYSTEM ACTIVATION OF FIRE ALARM

GENERAL ELECTRICAL NOTES:

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	F	EEDER SCHEDULE COPPER ONLY	
RATING	SETS	CONDUCTOR SIZE	CONDUIT
30A	1	4#10, 1#10 G.	3/4"
40A	1	4#8, 1#10 G.	1"
50A	1	4#8, 1#10 G.	1"
60A	1	4#6, 1#10 G.	1"
70A	1	4#4, 1#8 G.	1 1/4"
80A	1	4#4, 1#8 G.	1 1/4"
90A	1	4#3, 1#8 G.	1 1/4"
100A	1	4#3, 1#8 G.	1 1/4"
125A	1	4#1, 1#6 G.	1 1/2"
150A	1	4#1/0, 1#6 G.	1 1/2"
175A	1	4#2/0, 1#6 G.	2"
200A	1	4#3/0, 1#6 G.	2"
225A	1	4#4/0, 1#4 G.	2 1/2"
250A	1	4#250, 1#4 G.	2 1/2"
300A	1	4#350, 1#4 G.	3"
350A	1	4#500, 1#3 G.	3 1/2"
400A	1	4#600, 1#3 G.	4"
450A	2	4#4/0, 1#2 G.	2 1/2"
500A	2	4#250, 1#2G.	2 1/2"
600A	2	4#350, 1#1G.	3"
700A	2	4#500, 1#1/0G.	4"
800A	2	4 # 600, 1#1/0G.	4"
1000A	3	4#500, 1#2/0G.	4"
1200A	4	4#350, 1#3/0G.	3"
	4	4#600, 1#4/0G.	4"
1600A	5	4#500, 1#4/0G.	4"
	5	4#600, 1#250G.	4"
2000A	6	4 # 500, 1 # 250G.	4"
	6	4#600, 1#350G.	4"
2500A	7	4#500, 1#350G.	4"
7000	7	4#600, 1#400G.	4"
3000A	8	4#500, 1#400G.	4"
	9	4#600, 1#500G.	4"
3500A	10	4#500, 1#500G.	4"
	10	4#600, 1#500G.	4"
4000A 11		4#500, 1#500G.	4"
	12	4 # 600, 1 # 750G.	4"
5000A	14	4#500_1#7500	<u>م</u> ۳

1. ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.

2. GROUND NOT REQUIRED AT SERVICE LATERAL.

1LB

2 E4.02 MOTOR CONTROL CENTER "2MCC" ONE LINE DIAGRAM

KEYED PLAN NOTES

- (1) REPLACE EXISTING CIRCUIT BREAKER WITH NEW CIRCUIT BREAKER AS SHOWN.
- (3)

INSTALL NEW 25A/3P CIRCUIT BREAKER IN EXISTING MOTOR CONTROL CENTER "MCC3" SPACE FOR NEW SCHP. INSTALL NEW 50A/3P CIRCUIT BREAKER IN EXISTING MOTOR CONTROL CENTER "MCC3" SPACE FOR NEW ACCU-2. (4) INSTALL NEW 15A/3P CIRCUIT BREAKER IN EXISTING MOTOR CONTROL CENTER "MCC3" SPACE FOR NEW FCU-2. (5) INSTALL NEW 40A/3P CIRCUIT BREAKER IN EXISTING MOTOR CONTROL CENTER "2MCC" SPACE

SECTION TWO OF PANEL 1HA

											EXIS	STING	AIC Rating)		
			Pan	elbo	ard	1	-ΙΔ					Х	Existing			
						••		-					New			
	277/480	Volt.3-Phase.4-Wire	e	MCB		AMF	P MC	B		X	Singl	e			Mounting	1
		2 Section	X	MLO	400	AMF	Р BU	S (C	opper)		Doub	le			X Surface	,
	1	-Nema Rating						· ·	,		Feed	d - Thru			Flush	
Notes	Load (VA)	Description	Туре	Wire	СВ	CKT #	PH	CKT #	СВ	Wire	Туре		Description		Load (VA)	Notes
2	3501	HRU-2	м	12	20/3	1	А	2	35/3	8	м	HRU-	1		7202	3
	3601	-	м	12	-	3	В	4	-	8	M	-			7202	
	3601	-	м	12	-	5	С	6	-	8	M	-			7202	
3	11357	ACCU-1	С	8	50/3	7	Α	8	40/3	EX		EXIST	TING CIRCU	JIT		
	11357	-	С	8	-	9	В	10	-	EX		-				
	11357	-	С	8	-	11	С	12	-	EX		-				
1		FPT-A1-01	F	12	15/1	13	Α	14				SPAC	CE			
1		FPT-A1-02	F	12	15/1	15	В	16	20/1	EX		EXIS	TING CIRCI	JIT		
1		FPT-A1-03	F	12	15/1	17	С	18	60/3	6	SP	PANE	EL HN2		5621	
1		FPT-A1-04	F	12	15/1	19	Α	20	-	6	SP	-			4818	
1		FPT-A1-05	F	12	15/1	21	В	22	-	6	SP	-			3212	
1		FPT-A1-06	F	12	15/1	23	С	24	60/3	6	SP	PANE	EL HN3		8722	
1		FPT-A1-07	F	12	15/1	25	А	26	-	6	SP	-			7863	
		SPACE				27	В	28	-	6	SP	-			6398	
		SPACE				29	С	30				SPAC	ЭE			
		SPACE				31	А	32				SPAC	ЭE			
		SPACE				33	В	34				SPAC)E			
		SPACE				35	С	36				SPAC)E			
		SPACE				37	А	38				SPAC)E			
		SPACE				39	В	40				SPAC)E			
		SPACE				41	С	42				SPAC)E			
	44,774	Subtotal											Subtotal		58,240	
N	I.E.C.	Load Type	Conn.	Fct.	Divers	sity	N	1.E.C).				Conn.	Fct.	Diversity	
2	20.44	(R) Recept.	0		0		21	0.20	(a) (L)	Lighting	3		0	125%	0	
2	20.56	(K) Kitchen	0	100%	0				(E	L) Ext. L	.tg.		0	125%	0	
2	20.60	(C) Cooling	34,071	100%	34,0	71	6	520.1	4 (E) Elevato	ors		0	100%	0	
2	20.60	(H) Heating	0	0%	0				(V)	/H) Wate	er Ht.		0	100%	0	
2	20.60	(F) Fans	0	100%	0		2	20.5	0 (M	T) Lrg. N	/lot.		0	125%	0	
		(M) Misc.	32,309	100%	32,3	09			(S	P) Sub F	Panel		36,634	100%	36,63	34
		Total Connected Lo Total Load (Diversifi	ad edj	103,014 103,014	VA = VA =	12 12	4.0 4.0	AMF AMF	PS PS	Locatio	on of P	anel:				

INSTALL NEW CIRCUIT BREAKER AS SHOWN IN EXISTING PANEL SPACE.
 REUSE EXISTING CIRCUIT BREAKER
 REPLACE EXISTING CIRCUIT BREAKER WITH NEW CIRCUIT BREAKER AS SHOWN.

											EXIS	TING AIC Ra	ting		
			Pan	elbo	ard	2	-Ι Δ					X Existin	g		
			i qili	01100		_	• /					New	-		
	277/480	Volt,3-Phase,4-W	ire	МСВ		AM	Р МС	В		Х	Singl	e		Mountin	a
		1 Section	X	MLO	225	AM	Р BU	S (Co	opper)	Double				X Surface	
	1	-Nema Rating							,		Feed	- Thru		Flush	
Notes	Load (VA)	Description	Туре	Wire	СВ	CKT #	PH	CKT #	СВ	Wire	Туре	Descrip	tion	Load (VA)	Notes
		EXISTING CIRCUI	т	EX	20/1	1	Α	2	20/1	1 EX		EXISTING CI	RCUIT		
		EXISTING CIRCUI	Т	EX 20/1 3 B 4 20/1 EX EXISTING CIRCU				RCUIT							
	EXISTING CIRCUIT EXISTING CIRCUIT			EX 20/1 5 C 6 20/1 EX EXISTING			EXISTING CI	RCUIT							
				EX	20/1	7	Α	8	20/1	1 EX		EXISTING CI	RCUIT		
		EXISTING CIRCUI	т	EX	20/1	9	В	10	20/1	1 EX		EXISTING CI	RCUIT		
		EXISTING CIRCUI	Т	EX	20/1	11	С	12	20/1	1 EX		EXISTING CI			
OFF		EXISTING CIRCUI	Т	EX	20/1	13	Α	14	20/1	1 EX		EXISTING CI			
OFF		EXISTING CIRCUI	Т	EX	20/1	15	В	16	20/1	1 EX		EXISTING CI			
OFF		EXISTING CIRCUI	Т	EX	20/1	17	С	18	20/1	1 EX		EXISTING CI	RCUIT		
		SPACE				19	А	20	15/1	1 12	F	FPT-A1-08	FPT-A1-08		
		SPACE				21	В	22	15/1	1 12	F	FPT-A1-09	803	1	
		SPACE				23	С	24	15/1	1 12	F	FPT-A1-10		803	1
		SPACE				25	А	26	15/1	1 12	F	FPT-A1-11		8103	1
		SPACE				27	В	28	15/1	1 12	F	FPT-A1-12		914	1
		SPACE				29	С	30				SPACE			
		SPACE				31	А	32				SPACE			
		SPACE				33	В	34				SPACE			
		SPACE				35	С	36				SPACE			
		SPACE				37	Α	38				SPACE			
		SPACE				39	В	40				SPACE			
		SPACE				41	С	42				SPACE			
		SPACE				43	А	44				SPACE			
	0	Subtotal	-				·					Subto	otal	3,434	
N	.E.C.	Load Type	Conn.	Fct.	Divers	sity	1	N.E.C).			Conn	n. Fct	. Diversity	/
2	20.44	(R) Recept.	0		0		21	0.20	(a) (L) Lighting	3	0	125%	6 0	
2	220.56 (K) Kitchen		0	100%	0				(EL) Ext. L	.tg.	0	125%	6 0	
2	20.60	(C) Cooling	0	0%	0		€	520.1 [,]	4 (E) Elevato	ors	0	1009	6 0	
2	20.60	(H) Heating	0	0%	0		_		(WH) Wate	er Ht.	0	1009	6 0	
2	20.60	(F) Fans	3,434	100%	3,43	34	2	220.5	0 (MT) Lrg. N	/lot.	0	1259	6 0	
	((M) Misc.	0	100%	0				(SP) Sub F	Panel	0	1009	6 0	
		Total Connected L Total Load (Divers	.oad ified	3,434 3,434	VA = VA =	4 4	.1 .1	AMF AMF	PS PS	Location of Panel:					

1. INSTALL NEW CIRCUIT BREAKER AS SHOWN IN EXISTING PANEL SPACE.

													4	2,000	AIC Rating			
			Ρ	and	elbo	ard	H	N2)						Existing			
			-						•					Х	New			
	277/480	Volt,3-Phase,4-W	/ire		МСВ		AMF	Р МС	B			X Single Mour						g
		1 Section		Х	MLO	60A	DA AMP BUS (Copper)					Double					X Surface	
	1	-Nema Rating										Feed - Thru					Flush	
tes	Load (VA)	Description		Туре	Wire	СВ	CKT #	ΡΗ	CKT #	СВ	;	Wire	Туре		Description		Load (VA)	Notes
	803	FPT-E1-01		F	12	15/1	1	Α	2	15/	1	12	F	FPT-E	E1-10		803	
	803	FPT-E1-02		F	12	15/1	3	В	4	15/	1	12	F	FPT-E	1-11		803	
	803	FPT-E1-03		F	12	15/1	5	С	6	15/	1	12	F	FPT-E	E1-12		803	
	803	FPT-E1-04		F	12	15/1	7	Α	8	15/	1	12	F	FPT-E	E1-13		803	
	803	FPT-E1-05		F	12	15/1	9	В	10	15/	1	12	F	FPT-E	1-14		803	
	803	FPT-E1-06	F 12 15/1 11 C 12 15/1 12 F							F	FPT-E	E1-15		803				
	803	FPT-E1-07		F	12	15/1 13 A 14 15/1				12	F	FPT-E	E1-16		803			
	803	FPT-E1-08		F	12	15/1	15	B 16 15/1		1	12	F	FPT-E	E1- 1 7		803		
	803	FPT-E1-09		F	12	15/1	17	С	18					SPAC	ЭE			
		SPACE					19	А	20					SPAC	Έ			
		SPACE					21	В	22					SPAC	ЭE			
		SPACE					23	С	24					SPAC	E			
		SPACE					25	Α	26					SPAC	E			
		SPACE					27	В	28					SPAC	Е			
		SPACE					29	С	30					SPAC	ЭE			
	7,227	Subtotal						-							Subtotal		6,424	
N	.E.C.	Load Type	Cor	וח.	Fct.	Divers	sity	N	I.E.C						Conn.	Fct.	Diversity	/
2	20.44	(R) Recept.	0			0		21	0.20((a) ((L)	Lighting			0	125%	。 0	
220.56 (K) Kitchen 0 100						0					(EL) Ext. L	tg.		0	125%	• 0	
2	20.60	60 (C) Cooling 0 0% 0 620.1			20.14	4 🛛	(E)	Elevato	rs		0	100%	5 0					
2	20.60	(H) Heating 0 0% 0			(Wł	H) Wate	er Ht.		0	100%	• 0							
2	20.60	(F) Fans 13,651 100% 13,651 220.5		20.50	0 ((MT	T) Lrg. N	lot.		0	125%	• 0						
(M) Misc. 0 100% 0 (SP)) Sub F	anel		0	100%	. 0									
Total Connected Load13,651 VA =16.4AMPSTotal Load (Diversified13,651 VA =16.4AMPS						rs rs	Location of Panel:											

											4	2 000	AIC Rating			
			Don	alha	ard	ш	NIC	•				,	Evisting	,		
			Ган	eino	aru		IN J					v	New			
	277/480) Volt 3-Phase 4-Wi	re	MCB		AME		B			Sina		New		Mountin	n
		1 Section	X	MIO	60	AMF		s (C	opper)		Double					9
		I -Nema Rating				/					Feed - Thru				Flush	
tes	Load (VA)	Туре	Wire	СВ	CKT #	PH	СКТ #	СВ	Wire	Туре		Description		Load (VA)	Note	
	803	FPT-C1-01	- F	12	15/1	1	A	2	15/1	1 12	F	FPT-0	C1-05		803	
	803	FPT-C1-02	- F	12	15/1	3	В	4	15/1	1 12	F	FPT-0	C1-06		803	
	803	FPT-C1-03	F	12	15/1	5	С	6	15/1	1 12	F	FPT-0	C1-07		803	
	803	FPT-C1-04	F	12	15/1	7	A	8	15/1	1 12	F	FPT-0	C1-08		803	
	914	FPT-C3-01	F	12	15/1	9	В	10	15/1	1 12	F	FPT-0	C1-09		664	
	803	FPT-C3-02	F	12	15/1	11	С	12	15/1	1 12	F	FPT-0	C1-10		664	
	914	FPT-C3-03	F	12	15/1	13	A	14	15/1	1 12	F	FPT-0	C1-11		1495	
	1495	FPT-C3-04	F	12	15/1	15	В	16	15/1	1 12	F	FPT-0	C1-12		914	
	803	FPT-C3-05	F	12	15/1	17	С	18	15/1	1 12	F	FPT-0	C1-13		914	
		SPACE				19	A	20	15/1	1 12	F	FPT-0	C1-14		1495	
		SPACE				21	В	22	15/1	1 12	F	FPT-0	C1-15		803	
		SPACE				23	С	24	15/1	1 12	F	FPT-0	C1-16		803	
		SPACE				25	A	26	15/1	1 12	F	FPT-0	C1-17		803	
		SPACE				27	В	28	15/1	1 12	F	FPT-0	C1-18		803	
		SPACE				29	С	30	15/1	1 12	F	FPT-0	C1-19		803	
		SPACE				31	Α	32				SPAC	ЭE			
		SPACE				33	В	34				SPAC	ЭE			
		SPACE				35	С	36				SPAC	ЭE			
		SPACE				37	Α	38				SPAC	ЭE			
		SPACE				39	В	40				SPAC	ЭE			
		SPACE				41	С	42				SPAC	ЭE			
	8,141	Subtotal											Subtotal		13,373	
N	I.E.C.	Load Type	Conn.	Fct.	Divers	sity	N	I.E.C) .				Conn.	Fct.	Diversity	'
2	20.44	(R) Recept.	0		0		21	0.20	(a) (L) Lighti	ng		0	125%	0	
2	20.56	(K) Kitchen	0	100%	0				(EL) Ext.	Ltg.		0	125%	0	
2	20.60	(C) Cooling	0	0%	0		6	20.1	4 (E) Eleva	tors		0	100%	0	
220.60 (H) Heating		0	0%	0					(WH) Wa	iter Ht.		0	100%	0		
2	20.60	(F) Fans	21,514	100%	21,5	14	2	20.5	0 ((MT) Lrg.	Mot.		0	125%	0	
		(M) Misc.	0	100%	0				(SP) Sub	Panel		0	100%	0	
		Total Connected L Total Load (Diversi	oad fied	21,514 21,514	VA = VA =	25 25	5.9 5.9	amf Amf	PS PS	Loca	tion of F	anel:				

													EXIS	TING		ating			
			D	on/	alba	ard	21	Λ					-/	Y	Evieti	na			
			Г	anu	ouis	aru	ZL	_A						^		ng			
	400/000		<u></u>										<u> </u>		New				
	120/208	Volt,3-Phase,4-V	Vire		MCB		AMF		B			х	Singl	e				Mounting	g
		1 Section		Х	MLO	100	AMI	, BO	S (Co	opper))		Doub	le				X Surface	
1	1	-Nema Rating								r			<u>⊢eed</u>	- Ihru				Flush	1
Notes	Load (VA)	Description	-	Туре	Wire	СВ	СКТ #	PH	СКТ #	СВ		Wire	Туре		Descr	iption		Load (VA)	Notes
		EXISTING CIRCU	JIT		EX	20/1	1	Α	2	20/1	1	EX		EXIST	ing c	IRCU	JIT		
		EXISTING CIRCU	JIT		EX	20/1	3	В	4	20/1	1	EX		EXIST	ing c	IRCU	JIT		
		EXISTING CIRCL	лт		ΕX	20/1	5	С	6	20/1	1	EX		EXIST	ing c	IRCL	JIT		
		EXISTING CIRCU	JIT		ΕX	20/1	7	Α	8	20/1	1	EX		EXIST	ing c	IRCL	JIT		
		EXISTING CIRCU	JIT		ΕX	20/1	9	В	10	20/1	1	EX		EXIST	ing c	IRCL	דו		
		EXISTING CIRCU	JIT		EX	20/1	11	С	12	20/1	1	EX		EXIST	ing c	IRCU	JIT		
		EXISTING CIRCU	JIT		ΕX	20/1	13	Α	14	20/1	1	EX		EXIST	ing c	IRCU	ЛТ		
		EXISTING CIRCU	JIT		ΕX	20/1	15	В	16	20/1	1	EX		EXIST	ing c	IRCU	ЛТ		
		EXISTING CIRCL	JIT		ΕX	20/1	17	С	18	20/1	1	EX		EXIST	ing c	IRCL	דו		
		EXISTING CIRCL	JIT		ΕX	20/1	19	Α	20	20/1	1	EX		EXISTING CIRCUI			JIT		
		EXISTING CIRCL	JIT		EX	20/1	21	В	22	20/1	1	EX		EXIST	ing c	IRCL	JIT		
		EXISTING CIRCL	JIT 📙		EX	20/1	23	С	24	20/1	1	EX		EXIST	ing c	IRCU	ЛТ		
		EXISTING CIRCL	JIT 📙		EX	20/1	25	Α	26	15/2	2	10	F	VRF-2	2-01,02	2,03		905	1
		EXISTING CIRCL	JIT 🕇		EX	20/1	27	В	28	-		10	F	-				905	
		EXISTING CIRCL	JIT 📙		EX	20/1	29	С	30	15/2	2	12	F	DOAS	5-01			1560	1
		EXISTING CIRCL	JIT 📙		EX	20/1	31	Α	32	-		12	F	-					
		SPACE					33	В	34	20/2	2	12	F	VRF-1	-01 T	HRU	1-07	1830	1
		SPACE					35	С	36	-		12	F	-				1830	
		SPACE					37	Α	38					SPAC	E				
		SPACE					39	В	40					SPAC	E				
		SPACE					41	С	42					SPAC	E				
	0	Subtotal													Sub	total		7,030	
N	I.E.C.	Load Type	Con	n.	Fct.	Divers	sity	N N	I.E.C						Cor	ın.	Fct.	Diversity	
2	20.44	(R) Recept.	0			0		21	0.20	(a) ((L) L	ighting			0		125%	<u> </u>	
2	20.56	(K) Kitchen	0		100%	0					(EL)	Ext. L	tg.		0		125%	0	
220.60 (C) Cooling 0				0%	0		6	20.1	4 🛛	(E) E	Elevato	rs		0		100%	0		
2	220.60 (H) Heating 0 0%		0%	0					(WH	l) Wate	er Ht.		0		100%	0			
2	220.60 (F) Fans 7,030 100% 7,030			30	2	20.5	0 ((MT)) Lrg. N	lot.		0		125%	0				
		(M) Misc.	0		100%	0					(SP)) Sub P	anel		0		100%	0	
		Total Connected	Load		7.030	VA =		9.5	AMF	-s		Locatio	on of P	anel					
		Total Load (Diver	sified		7,030	VA =	19	9.5	AMF	s									
		· · · · · · · · · · · · · · · · · · ·	-							I									

1. INSTALL NEW CIRCUIT BREAKER AS SHOWN IN EXISTING PANEL SPACE.

SERVICE QUALITY INTEGRITY SUSTAINABILITY SERVICE QUALITY INTEGRITY SUSTAINABILITY 713.914.0888 v 713.914.0888 f 9990 Richmond Ave. South Bldg. Suite. 300 Houston, Texas 77042 TBPE Firm Registration NO. 2234
No. / DATE / DESCRIPTION
05/25/2022 3D SET 05/25/2022 100% DD SET 06/22/2022 75% CD SET
07/20/2022 100% REVIEW 07/28/2022 PROPOSAL SET
ADAM C. JONES 1 3 110008 1 3 C. JONES 1 3 110008 1 3 C. JONES 1 3 110008 1 3 C. JONES 1 1 0 0 0 8 1 5 C. JONES 1 5 C. JONES
GALENA PARK PURPLE SAGE Hvac upgrades
DATE: 07/28/2022 DRAWN BY: DBR CHECKED BY: DBR PROJECT NUMBER: 220122.000 SHFFT TTT F:
ELECTRICAL PANELBOARD SCHEDULES
SHEET NUMBER:
E5.01