	0	ວ	
	PLUMBING GENERAL NOTES:	8.	SANITARY SEWER
1.	SLOPES & INVERT ELEVATIONS SHALL BE ESTABLISHED BEFORE ANY PIP ORDER TO MAINTAIN PROPER SLOPES. ANY DISCREPANCIES SHALL BE RE CONTRACTOR. ALL PIPING SHALL BE LOCATED & DETERMINED WHEN TO	E IS INSTALLED IN PORTED THE GENERAL BE INSTALLED TO	PROVIDE A MINIMU EMERGENCY OVER
	AVOID CONFLICT WITH OTHER TRADES.	9.	DO NOT SCALE DE FIXTURE LOCATION
2.	PIPING SHALL BE CONCEALED UNLESS OTHERWISE NOTED.		EXACT ELEVATIONS ARCHITECTURAL PL BETWEEN THE ARC
3.	KEEP ALL BURIED PIPING CLEAR OF FOOTINGS. COORD. W/STRUCTURAL.		
4.	ALL WALL CLEANOUTS SHALL BE PROVIDED WITH WALL COVERS, MOUNT LOCATION WHILE MAINTAINING ACCESSIBILITY. ALL FLOOR CLEANOUTS SH	10. IN UNOBTRUSIVE OWN SHALL BE SET	EXTENSION OF EQ Shall be providi
	FLUSH WITH FLOOR AREAS OR FINISHED GRADE.	11.	WHERE POSSIBLE Cleaning & Adju
5.	CONTRACTOR SHALL COORDINATE LOCATION OF PIPING AND DRAINS WITH ELECTRICAL EQUIPMENT. NO PIPING SHALL BE INSTALLED ABOVE ELECTRI OR DATA EQUIPMENT OR PANELS. COMPLY WITH ARCHITECTURAL PLANS	ALL MECHANICAL & CAL, COMMUNICATIONS, FOR EXACT LOCATION	JANITOR'S CLOSET LOCATIONS.
	OF PLUMBING FIXTURES, COMPLIANCE TO ADA CLEARANCES, AND FINISHI	LS. 12.	ALL HOSE BIBBS, EQUIPPED W/VACL
6.	CONTRACTOR SHALL PROVIDE REQUIRED WATER, WASTE, & VENT PIPING, INSULATION, & MAKE FINAL CONNECTIONS TO EQUIPMENT. THESE PLANS	FITTINGS & ARE SCHEMATIC &	TYPE.
	DIAGRAMMATIC ONLY. THEY DO NOT SHOW ALL REQUIRED BENDS, OFFSE MISCELLANEOUS FITTINGS FOR A COMPLETE INSTALLATION. ALL PIPING ECONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATION	TS, VALVES, AND 13. QUIPMENT, AND IS, LOCAL CODES AND	WHERE CONNECTIN BEING HANDLED, &

	E	
SYM		
P.		

ORDINANCES, AND MANUFACTURER'S INSTRUCTIONS.

SYMBOL	FIXTURE	PIP				
P-1	WATER CLOSET	3	2	1- 1/4	-	ZURN Z5615, WALL-HUNG, FLUSH VA STAINLESS STEEL HARDWARE AND MOUNT AUTOMATIC FLUSHER. ZUR
P-1A	WATER CLOSET, ACCESSIBLE	3	2	1- 1/4	-	ZURN Z5615, WALL-HUNG, FLUSH V/ STAINLESS STEEL HARDWARE AND MOUNT AUTOMATIC FLUSHER. ZUR
P-2	URINAL	2	1-1/2	3/4	-	ZURN Z5755 OMNI FLOW URINAL, WA ROOM WHERE SHOWN WITH THE LII THE FLOOR. ZURN Z6003AV CPM YB
P-3A	LAVATORY, COUNTER TOP, ACCESSIBLE	1-1/2	1-1/2	1/2	1/2	ZURN Z 5114, SELF-RIMMING, 20 1/4" SENSOR OPERATED FAUCET WITH WITH CLEANOUT, ANGLE SUPPLIES
P-3B	LAVATORY, WALL HUNG, ACCESSIBLE	1-1/2	1-1/2	1/2	1/2	ZURN Z5834, WALL HUNG (ON CHAIF POWERED SENSOR OPERATED FA BRASS P-TRAP WITH CLEANOUT, AI DEVICE.
P-4A	SINK, SINGLE COMPARTMENT, ADA	1 -1/2	1 -1/2	1/2	1/2	JUST SL-ADA-2231-A55-J, ADA,18 G ON 4" CENTERS. T&S BRASS B-2866 HANDLES, POLISHED CHROME FIN TO MAINTAIN ADA CLEARANCE, ANG TEMPERATURE LIMITING DEVICE
P-4B	SINK, SINGLE COMPARTMENT, ADA	1 -1/2	1 -1/2	1/2	1/2	JUST SL-ADA-17519-A55-J, ADA,18 (ON 4" CENTERS. T&S BRASS B-2866 HANDLES, POLISHED CHROME FIN TO MAINTAIN ADA CLEARANCE, ANG TEMPERATURE LIMITING DEVICE.
P-5	SINK, DUAL COMPARTMENT, ADA	1 -1/2	1 1/2	1/2	1/2	JUST DL-ADA-1829-A65-J,18 GA. STA 2866-08 SWING GOOSENECK FAUC POLISHED CHROME FINISH, OFFSE CLEANOUT, ANGLE SUPPLIES WITH DEVICE.
P-6	ELECTRIC WATER COOLER, BI-LEVEL, ADA	1-1/2	1-1/2	1/2	-	ELKAY EZH20 BOTTLE FILLING STAT LEVEL, SURFACE MOUNT, 120 VOLT OUT. PROVIDE PROPER ADA SKIRT
P-7	MOP BASIN	3	2	1/2	1/2	STERN WILLIAMS EB-54 SQUARE M TOP BRACE, T-35 HOSE AND WALL SIDE(S).
P-8	FREESTANDING SINK FOR PULP MILL	1 -1/2	1 -1/2	1/2	1/2	JUST NSFB-242-2-J, STAINLESS STE CORNERS. T&S CHROME PLATED B INERCEPTOR ON OUTLET.
P-9	EMERGENCY SAFETY STATION, ADA	-	-	1-1/4	1-1/4	GUARDIAN GBF2150 RECESSED SA FACE/EYEWASH. SHOWER HEAD TO BELOW CEILING. EXPOSED PIPE AN ABOVE CEILING, SET AT 90°F. INST
P-11	ICE MAKER CONNECTION	-	-	1/2	-	GUY GRAY BIM875AB, ICE MAKER H SUPPLY CONNECTION 1/2" MPT OR
P-12	DISHWASHER CONNECTION	1-1/2	1-1/2	-	1/2	GUY GRAY BIM875AB, HOT WATER I CONNECTION ½" MPT OR 5/8" OD SV IN COUNTERTOP WITH DISHWASHE
WH	WALL HYDRANT	-	-	3/4	-	JR SMITH 5509QT, FREEZELESS, DF
НВ	HOSE BIBB	-	_	3/4	_	JR SMITH 5670-H WITH VACUUM BRE HOSE CONNECTION, SUITABLE ONI
HB-L	HOT/COLD HOSE STATION, LAB AREAS	-	-	3/4	3/4	JR SMITH 5560QT "TWIN-TEMP" HOS INSTALLED IN KITCHENS, PANTRIES THE COLD AND HOT WATER SUPPL
HB-R	HOSE BIBB, PUBLIC AREAS	-	-	3/4	-	JR SMITH 5518, BOX TYPE WITH CON FACE, 'T' HANDLE KEY AND STAINLE SUBJECT TO FREEZING.
FD-L	FLOOR DRAIN - LAB	3	1-1/2	-	-	JR SMITH 3040 10-1/2" DIAMETER, SA DEEP DRAIN BODY, AND SEDIMENT TRAP PRIMER.
FD-M	FLOOR DRAIN - MECHANICAL ROOM	3	1-1/2	-	-	JR SMITH 3040 10-1/2" DIAMETER, SA DEEP DRAIN BODY, AND SEDIMENT TRAP PRIMER.
FD-R	FLOOR DRAIN - RESTROOMS	3	1-1/2	_	-	JR SMITH 2010-B, SQUARE ADJUSTA DRAINS TO HAVE AN 8 X8" GRATE, DEVICE, NO TRAP PRIMER.
FD-S	FLOOR SINK	4	1-1/2	-	-	JR SMITH 3200 SANI-CEPTOR ACID F JR SMITH QUAD CLOSE TRAP SEAL
TD1	TRENCH DRAIN, OUTDOORS	4	2	_	-	JR SMITH 6" WIDE CHANNEL SLOPE WITH SLOPE TO DRAIN CONNECTION GRADE INSTALLATION
TD2	TRENCH DRAIN, INDOORS	4	2	-	_	WITH SLOPE TO DRAIN CONNECTIO

*NOTE: PROVIDE ALL OPTIONS AS INDICATED WHETHER THE MODEL NUMBER INCLUDES THE OPTIONS OR NOT.

6

INDOOR INSTALLATION

- PIPING SHALL BE INSTALLED TO PROVIDE A MINIMUM SLOPE OF 2% BELOW IVE THE SLAB. WASTE PIPING 3" & SMALLER SHALL BE INSTALLED TO UM SLOPE OF 2.5% THROUGHOUT THE BUILDING. STORM PIPING AND RFLOW PIPING SHALL BE SLOPED AT 1.25% MINIMUM.
- RAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS, NS. ROOM NAMES. & NUMBERS. REFER TO ARCHITECTURAL DRAWINGS FOR S OF ALL PLUMBING FIXTURES AND LOCATIONS OF ADA FIXTURES. PLANS SHALL GOVERN WHEN THERE IS A CONFLICT IN ADA LOCATIONS CHITECTURAL AND PLUMBING PLANS.
- QUIPMENT DRAINS TO FLOOR DRAINS, FLOOR SINKS AND OPEN SITE DRAINS DED BY EQUIPMENT CONTRACTOR.
- INSTALL SHUT-OFF VALVES AND EQUIPMENT REQUIRING MAINTENANCE, USTMENT ABOVE ACCESSIBLE CEILINGS OR IN SERVICE AREAS SUCH AS TS. IN OTHER LOCATIONS, PROVIDE ACCESS PANELS IN INCONSPICUOUS
- WALL HYDRANTS, & VALVES W/THREADED HOSE CONNECTIONS SHALL BE UUM BREAKER. HOSE BIBBS IN PUBLIC RESTROOMS SHALL BE CONCEALED
- NG TO A UTILITY OR SERVICE, VERIFY LOCATION, SIZES, MATERIALS, FLUID & INVERTS OF ALL EXISTING UTILITIES & CONFIRM THAT NEW PIPES BEING ROUTED TO EXISTING UTILITIES CAN BE INSTALLED CONFORMING TO CODE & AS SHOWN. NOTIFY ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO PURCHASING ANY MATERIALS OR PERFORMING ANY WORK OR EXTENSION OF CONNECTION. WITH THE EXCEPTION OF EXCAVATION OR OTHER WORK TO PROVIDE ACCESS TO THE CONCEALED UTILITY.

SPECIFICATIONS*

- ALVE, ELONGATED BOWL, 1.6 GPF, BEMIS 1955 SS CC OPEN FRONT SEAT WITH D STA TITE FASTENING SYSTEM, WHITE BOLT CAPS, WAX RING. ZURN ZER 6000 WS SIDE RN Z1201-N_4 CHAIR CARRIER
- ALVE, ELONGATED BOWL, 1.6 GPF, BEMIS 1955 SS CC OPEN FRONT SEAT WITH D STA TITE FASTENING SYSTEM, WHITE BOLT CAPS, WAX RING. ZURN ZER 6000 WS SIDE RN Z1201-N_4 CHAIR CARRIER, INSTALL FIXTURE AT ADA HEIGHT
- 'ALL HUNG (ON CHAIR CARRIER), WASH-OUT, .5 GPF. MOUNT ONE IN EACH MALE TOILET IP AT 16-3/4" ABOVE THE FLOOR (ADA) AND OTHER(S) IF ANY, WITH THE LIP AT 24" ABOVE YC BATTERY FLUSH VALVE. EQUALS BY SLOAN ROYAL
- " X 17 1/2", FAUCET HOLES ON 4" CENTERS. ZURN Z6956 XL FS BATTERY POWERED I GRID STRAINER, POLISHED CHROME FINISH, 0.5 GPM AERATOR, CAST BRASS P-TRAP WITH STOPS. PROVIDE ASSE 1070 WATER TEMPERATURE LIMITING DEVICE.
- R CARRIER), 19" X 17", FAUCET HOLES ON 4" CENTERS.ZURN Z6956 XL FS BATTERY AUCET WITH GRID STRAINER, POLISHED CHROME FINISH, 0.5 GPM AERATOR, CAST NGLE SUPPLIES WITH STOPS. PROVIDE ASSE 1070 WATER TEMPERATURE LIMITING
- GA. STAINLESS STEEL, 6-1/2" DEPTH, DROP-IN COUNTER TOP MODEL, FAUCET HOLES 6-08 SWING GOOSENECK FAUCET (8" REACH MIN) WITH DUAL 4" WRIST BLADE IISH, , CAST BRASS P-TRAP WITH CLEANOUT, PROVIDE WITH OFFSET TRAP IF REQUIRED IGLE SUPPLIES WITH STOPS, 1.8 GPM AERATOR. PROVIDE ASSE 1070 WATER
- GA. STAINLESS STEEL, 6-1/2" DEPTH, DROP-IN COUNTER TOP MODEL, FAUCET HOLES 5-08 SWING GOOSENECK FAUCET (8" REACH MIN) WITH DUAL 4" WRIST BLADE IISH, , CAST BRASS P-TRAP WITH CLEANOUT, PROVIDE WITH OFFSET TRAP IF REQUIRED IGLE SUPPLIES WITH STOPS, 1.8 GPM AERATOR. PROVIDE ASSE 1070 WATER
- "AINLESS STEEL, 6-1/2" DEPTH, DROP-IN, FAUCET HOLES ON 8" CENTERS. T&S BRASS B ET (8" REACH MIN) WITH DUAL 4" WRIST BLADE HANDLES, WITH CRUMB CUP STRAINER, T WASTE FOR ADA CLEARANCE, CONTINUOUS WASTE, CAST BRASS P-TRAP WITH I STOPS, 1.8 GPM AERATOR, PROVIDE ASSE 1070 WATER TEMPERATURE LIMITING
- TION AND BI-LEVEL ADA COOLER, FILTERED, 8 GPH, LIGHT GRAY, BARRIER FREE, SPLIT T/1 PHASE/60 HZ, 8 GPH, ANGLE SUPPLY WITH STOP, CAST BRASS P-TRAP WITH CLEAN-TS ON UPPER LEVEL OF THE EQUIPMENT.
- IOP BASIN, 24"X24"X6", T-10-VB FAUCET WITH VACUUM BREAKER, BUCKET HOOK AND BRACKET, T-40 MOP HANGER, STAINLESS STEEL BACK SPLASH, ALUMINUM CAP ON 2
- EEL, 14" DEPTH, FLOOR MOUNT DOUBLE 2-HOLE SCULLERY SINK WITH COVERED BRASS B-0230-135X-WH4, 8" WALL MOUNTED MIXING FAUCET. STRIEM SIDEKICK SOLIDS
- AFETY STATION WITH DRAIN PAN, EXPOSED SHOWER HEAD, G6040 MIXING VALVE,WITI O INCLUDE VERTICAL SUPPLY PIPE AND CEILING ESCUTCHEON FOR MOUNTING HEAD ND ESCUTCHEON TO BE STAINLESS STEEL. THERMOSTATIC MIXING VALVE MOUNTED ALL PER IOM TO MEET ADA REQUIREMENTS.
- IOOK-UP, WALL BOX, 1/2" FIP INLET X 1/4"OD OUTLET COMPRESSION ANGLE VALVE. 5/8" OD SWEAT CONNECTION. PROVIDE WITH INTEGRAL WATER HAMMER ARRESTOR.
- HOOK-UP, 1/2" FIP INLET X 1/4" OD OUTLET COMPRESSION ANGLE VALVE. SUPPLY WEAT CONNECTION. PROVIDE WITH AMERIGAP MODEL 52 WITH CHROME TOP MOUNTED R WASTE PIPED THROUGH TO SINK WASTE ARM.
- RAINING TYPE WITH VACUUM BREAKER, NICKEL-BRONZE BOX WITH KEY LOCKING DOOR
- EAKER, BENT NOSE ROUGH BRASS FINISHED BODY WITH FLANGE, WHEEL HANDLE, 3/4" ILY FOR INSTALLATION INSIDE THE BUILDING WHERE NOT SUBJECT TO FREEZING. SE STATION, NON FREEZE, NICKEL-BRONZE BOX WITH KEY LOCKING DOOR. WHERE
- , FOOD SERVICE AREAS AND AT HYDROTHERAPY TUBS, PROVIDE CHECK VALVES IN LIES TO THE VALVE. MOUNT AT 18" ABOVE THE FLOOR TO CENTERLINE. NCEALED HOSE CONNECTION, INTEGRAL VACUUM BREAKER, NICKEL BRONZE BOX ESS STEEL BOX, SUITABLE ONLY FOR INSTALLATION INSIDE THE BUILDING WHERE NOT
- ANITARY WITH ACID RESISTANT INTERIOR COATING MEDIUM DUTY TRACTOR GRATE, BUCKET. PRO-SET TRAP GUARD OR JR SMITH QUAD CLOSE TRAP SEAL DEVICE, NO
- ANITARY WITH ACID RESISTANT INTERIOR COATING MEDIUM DUTY TRACTOR GRATE, BUCKET. PRO-SET TRAP GUARD OR JR SMITH QUAD CLOSE TRAP SEAL DEVICE, NO
- ABLE NICKEL BRONZE STRAINER, 3" AND SMALLER DRAINS TO HAVE A 6"X6" GRATE, 4" CAST IRON BODY. PRO-SET TRAP GUARD OR JR SMITH QUAD CLOSE TRAP SEAL
- RESISTANT COATED, 3/4 GRATE, DOME BOTTOM STRAINER. PRO-SET TRAP GUARD OR DEVICE, NO TRAP PRIMER. PRECAST POLYMER TRENCH DRAIN SYSTEM, LENGTH AS INDICATED ON THE PLANS IN INDICATED. HEAVY DUTY DUCTILE IRON TRAFFIC DUTY GRATES. INTENDED FOR ON-
- PRECAST POLYMER TRENCH DRAIN SYSTEM, LENGTH AS INDICATED ON THE PLANS WITH SLOPE TO DRAIN CONNECTION INDICATED. HEAVY DUTY DUCTILE IRON TRAFFIC DUTY GRATES. INTENDED FOR

- 14. PROVIDE INSULATION, PIPE IDENTIFICATION AND OTHER REQUIREMENTS AS LISTED IN SPECIFICATIONS.
- 15. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED FROM AND SHALL NOT REST ON CEILING TILES OR BE SUPPORTED FROM
- 16. WATER PIPING ROUTED ABOVE CEILINGS AND IN EXTERIOR WALLS HEATED SIDE (UNDERSIDE) OF CEILING INSULATION AND HEATED S INSULATION.
- 17. TOPS OF ALL FLOOR DRAINS AND CLEANOUTS SHALL BE SET FLUS UNLESS NOTED OTHERWISE.
- 18. LOCATE ALL SECTIONAL OR MAIN CONTROL VALVES WITHIN 1'-0" CEILING TILES, OR OTHER POINT OF ACCESS.
- 19. PROVIDE WATER HAMMER ARRESTORS SIZED PER PDI SPECIFICATION LINES SERVING FLUSH VALVE FIXTURES, WASHING MACHINES SUPPL OTHER INSTALLATIONS WITH QUICK CLOSING VALVES.
- 20. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS AND THE AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOW
- 21. ALL PLUMBING EQUIPMENT AND SYSTEMS SHALL BE GUARANTEED FOR A MINIMUM PERIOD OF ONE YEAR AFTER OWNER'S FINAL ACCEPTANCE.
- 22. ALL PIPE PENETRATIONS OF FIRE AND/OR SMOKE-RATED ASSEMBLIES SHALL BE FIRE-STOPPED AS REQUIRED TO RESTORE ASSEMBLY TO ORIGINAL INTEGRITY.
- 23. ALL WATER CLOSET FLUSH VALVE LEVERS SHALL BE LOCATED ON THE APPROACH SIDE OF THE WATER CLOSET.
- 4. ALL GAS REGULATORS LOCATED INDOORS SHALL BE VENTED TO THE EXTERIOR. LOCATE REGULATORS AS CLOSE TO THE EXTERIOR AS POSSIBLE SUCH THAT VENT IS NOT MORE THAN 20 FT IN LENGTH. VENT PIPING SIZE SHALL BE PER THE REGULATOR MANUFACTURER. BUT NO SMALLER THAN THE LINE SIZE OF VENT CONNECTION ON REGULATOR AND SHALL INCREASE ONE PIPE DIAMETER FOR EVERY 10 FEET OF PIPING. DO NOT MANIFOLD MULTIPLE REGULATORS INTO A COMMON VENT. VENTLESS REGULATORS (REGULATORS WITH VENT LIMITERS) ARE NOT ALLOWED INDOORS UNLESS SPECIFICALLY STATED ON THE PLANS AND/OR SPECIFICATIONS. VENT TERMINATION TO THE EXTERIOR SHALL BE A MINIMUM OF 10'-0" FROM ANY AIR INTAKE OR SOURCE OF IGNITION.
- 25. ALL VENTS THRU ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE.
- 26. ALL COLD WATER, HOT WATER AND DRAIN PIPING AT HANDICAPPED FIXTURES, WHERE EXPOSED IN SPACE, SHALL BE INSTALLED WITH HANDI-LAV GUARD MODELS 102 AND 105 INSULATION KITS OR EQUAL.
- 27. PAINT ALL EXTERIOR GAS PIPING, AND INTERIOR PIPING IN THE MECHANICAL ROOM.
- 28. FOR ALL SPACES WITHOUT DROPPED CEILINGS, PLUMBING PIPING IS TO BE INSTALLED AS HIGH AS POSSIBLE IN SPACE WITH OFFSETS AT LOW BEAMS WHERE REQUIRED.
- 9. REFER TO STRUCTURAL DRAWINGS FOR INFORMATION REGARDING LIMITATIONS ON ATTACHMENTS TO EXISTING STRUCTURE IN THE BUILDING.

	NATURAL GAS DOMESTIC WATER HEATER SCHEDULE											
MARK	LOCATION	BASIS MANUFACTURER &	TVDE	TANK SIZE	MAXIMUM INPUT	RECC	OVERY	THERMAL	E	LECTRICA	L DATA	
		MODEL	ITPE	(GAL)	(MBH)	GAL / HR	°F RISE	EFFICIENCY	VOLTS / PH	MCA	NO. OF CIRCUITS	
WHR-1	1ST FLOOR MAIN MECH	LOCHINVAR SHIELD SWA	CONDENSING	110	285	328	100	95%	115/1	6.2	1	1,2
REMARKS	5:											

1. PROVIDE CONDENSATE NEUTRALIZATION KIT 2. PROVIDE BAS CONNECTION FOR MONITORING AND ALARMS.

> UNIT SP-1 REMARK

THE BUILDING STRUCTURE CEILING TILES.
SHALL BE ROUTED ON IDE (INSIDE) OF WALL
SH WITH FINISHED FLOOR,
FROM ACCESS PANELS,
NS ON ALL DOMESTIC WATER LIES, PRV STATIONS AND
D REQUIREMENTS OF ALL ELECTRICAL CONTRACTOR, N THEREIN.

3. VENT TO BE PVC CONCENTRIC VENT KIT THROUGH THE ROOF, WITH SEALED COMBUSTION DUCTED TO WATER HEATER. BASIS OF DESIGN INTAKE AND VENT DIAMETER = 4"

ABBREVIATIONS

CFH

FCO

GCO

WCO

CP

DSN

ERD

U.G.

AREA DRAIN

BELOW FLOOR

BACKFLOW PREVENTER

CUBIC FEET PER HOUR

CLEANOUT, FLOOR

CLEANOUT, GRADE

CLEANOUT, WALL

FLOOR DRAIN

HOSE BIBB

HUB DRAIN

ROOF DRAIN

SUMP PUMP

TRAP PRIMER

UNDERGROUND

WALL HYDRANT

WATER HEATER

MAKE UP WATER

RAIN WATER LEADER

VENT THROUGH THE ROOF

CIRCULATING PUMP

DOWNSPOUT NOZZLE

EMERGENCY ROOF DRAIN

	SUMP PUMP SCHEDULE										
			CAPACITY	HEAD	MAX.		MO	TOR			
	TYPE	SERVICE	(GPM)	(FT. H20)	R.P.M.	H.P.	VOLTS	PHASE	ΗZ	REMAR	
	SUBMERSIBLE SUMP PUMP	HYDRAULIC ELEVATOR	50	25	1800	3/4	115	1	60	1, 2	
(S:											

1) DUPLEX PUMP CAPABLE OF PUMPING OIL AND WATER, BASIS OF DESIGN LIBERTY OIL MINDER SYSTEM. INSTALL IN ELEVATOR SHAFT SUMP. PROVIDE WITH 59 GALLON OIL WASTE HOLDING TANK. 2) BAS OUTPUT ON ALARM CONTROL PANEL FOR STATUS AND ALARMS.

	NATURAL GAS PRESSURE REDUCING VALVE SCHEDULE										
MARK	SEDVICE		EQUIPMENT	CAPACITY	INLET	OUTLET					
	GERVICE	LOONTION	CAPACITY (SCFH)	FOR PRV SIZING (SCFH)	PRESSURE	PRESSURE					
PR-1	BOILER BLR-1	INDOORS	1,500	1,500	2 PSI	14 IN. W.C.	1,2				
PR-2	BOILER BLR-2	INDOORS	1,500	1,500	2 PSI	14 IN. W.C.	1,2				
PR-3	WATER HEATER WHR-1	INDOORS	285	285	2 PSI	14 IN. W.C.	1,2				
PR-4	GENERATOR	OUTDOORS	1,000	1,000	30 PSI	11 IN. W.C.					
NOTES:											

1. REGULATORS INSTALLED INDOORS SHALL BE VENTED TO THE EXTERIOR, MAXIMUM LENGTH OF 20 FT. 2. PROVIDE LENGTH OF PIPING DOWNSTREAM OF REGULATOR PER MANUFACTURER'S RECOMMENDATION

2

PUMP SCHEDULE									
DESCRIPTION				PUMP DATA		OR DATA			
UNIT DESIG.	SERVICE	TYPE	FLOW (GPM)	HEAD (FT.)	HP	VOLTS/PH	CONTROL	NOTE	
CP-1	DHW RECIRCULATION LOOP	CIRCULATOR	8	35	300 W	115/1	BAS	1	
REMARKS									

1. PUMP SHALL BE LEAD FREE CONSTRUCTION AND RATED FOR DOMESTIC WATER SERVICE.

G
RWC
——ERWC——
——— PD ———
<u>N</u>
$\!$
(K)
۲ ۹"#"
t
\bigoplus
<u>••</u> •

RA

\P5.01A/

<u> LEGEND</u>
WASTE PIPING
VENT PIPING
DOMESTIC COLD WATER PIPING
DOMESTIC HOT WATER PIPING
DOMESTIC HOT WATER RECIRC.
NATURAL GAS FUEL PIPING
RAIN WATER CONDUCTOR
EMERGENCY RAIN WATER COND
PUMP DISCHARGE
CHECK VALVE
VALVE
VALVE IN VALVE BOX
VALVE
FLOW CONTROL VALVE, 2.0 GP
PIPE REDUCER/INCREASER
COMMERCIAL WATER HAMMER ARRESTOR "PDI SIZE"
PIPE PENETRATION
CLEANOUT
FLOOR DRAIN

















END VIEW



TOP VIEW



BIN-GROUND SOLIDS INTERCEPTOR NOT TO SCALE









- EXISTING 1-1/2", 2 PSI GAS U.G. IN CRAWL SPACE

AUTHERINE LUCY HALL

2













P2.01

5

PLUMBING - FIRST FLOOR PLAN - NON-PRESSURE 1/8" = 1'-0"

4

3

SHEET NOTES

1. DUE TO SHALLOW DEPTH OF EXISTING STORM DRAIN ROUTED UNDER BUILDING (TO REMAIN), BELOW SLAB PIPING TO BE SLOPED AT 1/8" PER FOOT VS. 1/4" PER FOOT, FOR PIPING 3" AND LARGER.



PLUMBING - PARTIAL SECOND FLOOR PLAN - NON-PRESSURE



























1/25/2024 3:53:43 PM		HHB #223008	SHEET SIZE: 42x30 ARCH E1		REVIT VERSION: 2023
A	В	C	D	E	F
	4				

P3.01 P3.01 P3.01 P3.01 P3.01 PLUMBING - FIRST FLOOR PLAN - PRESSURE













KEYED NOTES

- 1 1-1/2", 2 PSIG, EXISTING U.G. NATURAL GAS TO BE REUSED.
- 2 PLATE MAKER TO HAVE WATER CONNECTION WITH BACKFLOW PREVENTION.
- $\langle 3 \rangle$ CIRCUIT SETTER IN HOT WATER RETURN.
- 4 RPZ BACKFLOW PREVENTER. DRAIN TO ROUTE IN WALL AND DISCHARGE TO FLOOR SINK SERVING PLATE MAKER.
- 5 SEE STRUCTURAL DRAWINGS FOR CONSTRAINTS ON HANGER LOCATIONS WITHIN THIS AREA.
- 6 CONCENTRIC VENT UP THROUGH ROOF FOR WHR-1.
- (7) REFER TO MECHANICAL SHEET M3.02 FOR BOILER/ WATER HEATER EMERGENCY OFF SWITCH.
- 8
 PROVIDE GAS SHUT OFF VALVE INSIDE
 MECHANICAL ROOM IN VERTICAL RISE.









HHB Engineers, P.C. Consulting Engineers PRATTVILLE, AL 334/358-2707



























FIRE PROTECTION LEGEND

<u>)</u> ——	DRAIN PIPING	\odot
N	WATER PIPING	\neg
)C ☆	FIRE DEPARTMENT CONNECTION THRUST BLOCK	0
G	UNDERGROUND	Ā
P	STAND PIPE	

CONCEALED SPRINKLER
SIDE-WALL SPRINKLER
UPRIGHT SPRINKLER
SUPERVISED AND INDICATING VALVE

FLOW SWITCH

FS

GENERAL NOTES

- 1. BUILDING TO BE PROTECTED BY A WET PIPE SPRINKLER SYSTEM TO COMPLY WITH NFPA 13-2019.
- 2. CONTRACTOR TO PERFORM FLOW TEST FOR HYDRAULIC CALCULATIONS. INDICATE DATE AND TIME OF TEST.
- 3. FIRE SPRINKLER CONTRACTOR TO BE CERTIFIED THROUGH THE STATE OF ALABAMA FIRE MARSHALL'S OFFICE.
- 4. MANUAL WET STANDPIPES TO BE PROVIDED IN THE STAIRWELL, INSTALLATION TO COMPLY WITH NFPA 14-2016.
- 5. HAZARD CLASSIFICATIONS TO BE AS FOLLOWS: a. MECHANICAL AND ELECTRICAL ROOMS: ORD GROUP 1 ALL OTHER SPACES (OFFICE TYPE): LIGHT HAZARD. b. PAPER MILL: ORD. GROUP 1
- 7. EXPOSED PIPING IS NOT REQUIRED TO BE PAINTED.
- 8. REFER TO CIVIL PLANS FOR LOCATION OF BACKFLOW PREVENTER AND FDC. COORDINATE WITH CIVIL CONTRACTOR FOR CONNECTION OF BUILDING FIRE LINE.
- 9. UNDERGROUND PIPING SHALL COMPLY WITH NFPA 24.
- 10. WHERE LAY-IN CEILINGS ARE USED, HEADS TO BE CENTERED WITHIN THE CEILING TILE.
- 11. ALL SPRINKLER HEADS TO BE INTERMEDIATE TEMPERATURE UNLESS OTHERWISE NOT AVAILABLE.
- 12. REFER TO STRUCTURAL DRAWINGS FOR INFORMATION REGARDING LIMITATIONS ON ATTACHMENTS TO EXISTING STRUCTURE IN THE BUILDING.

PRELIMINARY FLOW TEST DATA*

STATIC PRESS	88.2 PSI
FLOW	1278 GPM
RESIDUAL PRESS	83.3 PSI
FLOW HYDRANT LOCATION	H1549 CITY HYDRANT (420 SYSTEM)
*CONTRACTOR SHALL PERFOR	RM THEIR OWN FLOW TEST



3



<u>1/8 BEND OR 1/16 BEND</u>

CONCRETE THRUST BLOCK DETAIL NOT TO SCALE

2





1/25/2024 3:53:00 PM	E	HHB #223008	SHEET SIZE: 42x30 ARCH E1	E	REVIT VERSION: 2023
	3				=
			ORDINARY GF	PAPER MILL	
			ROUP 1 PANCY	TO BE	
	4				
	· · ·				

6

5

5



FIRE PROTECTION - FIRST FLOOR PLAN FP2.01 1/8" = 1'-0"

4

3

SHEET NOTES

- 1. BUILDING TO BE FULLY PROTECTED WITH A WET-PIPE SPRINKLER SYSTEM. ORIGINAL BUILDING HAS A WOODEN ROOF CONSTRUCTION, REFER TO 3RD FLOOR PLAN FOR AREA OF CEILING CAVITY REQUIRING SPRINKLERS.
- 2. FLOW TEST INFORMATION INDICATES A FIRE PUMP IS NOT REQUIRED.

KEYED NOTES

- (1) DO NOT ROUTE MAIN PIPING OVER ELEC OR DATA ROOM, PROVIDE BRANCH LINE AND HEAD(S) FOR THIS ROOM ONLY.
- 2 PROVIDE CONTROL VALVE IN BRANCH LINE SERVING ELEVATOR EQUIPMENT ROOM.
- 3 SPRINKLER IN BOTTOM OF ELEVATOR SHAFT WITHIN 18" OF BOTTOM OF PIT. PROVIDE CONTROL VALVE IN BRANCH LINE SERVING PIT.

 $\langle 4 \rangle$ NOT USED.

- 5 MANUAL WET STAND PIPE IN STAIR.
- 6 DUE TO DEEP BEAMS ALONG COLUMN LINE L, J, H, AND G ABOVE UNDERGRAD STUDIO (BETWEEN COLUMN LINE 1 & 2), FP PIPING TO NOT CROSS UNDER THE BEAMS L, J, H, AND G. ROUTE PIPING IN CORRIDOR AROUND THE ROOM AND BETWEEN THE DEEP BEAMS.
- (7) UTILIZE CHASE FOR FP PIPING TO SERVE 1024 STORAGE AND 1026 CLASSROOM WITH SIDEWALL HEADS.











4

5





2 FIRE PROTECTION - THIRD FLOOR PLAN FP2.02 1/8" = 1'-0"

2

N

3

 $\langle 1 \rangle$ MANUAL WET STAND PIPE IN STAIR.



			MECHANICAL GENERAL NOTES:
		1.	FOR RENOVATIONS: WHERE ALTERATIONS ARE REQUIRED IN THE MECHANICAL SCOPE OF WORK THAT AFFECT EXISTING SURFACES AND FINISHES, CONTRACTOR IS TO PATCH/REPAIR/PAINT AFFECTED SURFACE TO MATCH EXISTING ADJACENT SURFACE IN ACCORDANCE WITH ARCHITECTURAL REQUIREMENTS AS OUTLINED IN DIVISION 1 SPECIFICATIONS MAINTAIN FIRE AND SMOKE BATINGS OF ALL FLOOPS (WALLS (POOF (CELLINGS THAT ARE DATED
	F	2.	THE MECHANICAL CONTRACTOR IS TO COORDINATE WITH THE GENERAL CONTRACTOR AND OTHER TRADES FOR REQUIRED OPENINGS IN WALLS, FOUNDATIONS, FLOORS, AND ROOFS,
		3.	OUTSIDE AIR INLETS TO BE LOCATED A MINIMUM OF 10 FEET FROM ANY EXHAUST AIR OUTLET OR PLUMBING VENT STACK. COORDINATE WITH THE PLUMBING AND GENERAL CONTRACTOR IN THE FIELD. OUTSIDE AIR INTAKES FOR BUILDING VENTILATION SHALL BE LOCATED AS PER IMC 2021.
		4.	THE MECHANICAL CONTRACTOR IS TO VERIFY MECHANICAL EQUIPMENT LOCATIONS AND BE RESPONSIBLE FOR ALL RELATED CLEARANCES IN THE FIELD. PROVIDE ADEQUATE MAINTENANCE CLEARANCE AROUND EACH PIECE OF EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE CLEARANCE IN FRONT OF AND ABOVE ELECTRICAL PANELS AND OTHER ELECTRICAL EQUIPMENT PER THE NATIONAL ELECTRICAL CODE REQUIREMENTS. COORDINATE WITH THE ELECTRICAL AND GENERAL CONTRACTORS IN THE FIELD. CONTRACTOR SHALL VERIFY THAT EQUIPMENT FITS IN SPACE PRIOR TO ORDERING EQUIPMENT. MECHANICAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL ASSOCIATED COSTS OF REPLACEMENT, MODIFICATION, REWORK, REDESIGN, AND/OR RESTOCKING FEES FOR ANY AND ALL EQUIPMENT THAT DOES NOT FIT IN THE SPACE.
		5.	AIR TERMINAL UNITS TO BE INSTALLED NO MORE THAN 2'-6" ABOVE THE SUSPENDED CEILING. AVOID THE INSTALLATION OF AIR TERMINAL UNITS ABOVE LIGHTS AND MAINTAIN ACCESS TO AND CLEARANCE AROUND AIR TERMINAL UNITS AS REQUIRED FOR MAINTENANCE OF UNIT AND CONTROLS. MINIMUM 2 FEET SHALL BE PROVIDED FOR SERVICE AT THE TERMINAL UNIT CONTROLLER. IF AN AIR TERMINAL UNIT MUST BE INSTALLED ABOVE A LIGHT, MAINTAIN 6" CLEAR BETWEEN BOTTOM OF UNIT AND TOP OF LIGHT.
	F	6.	PROVIDE WATER PROOF SEALING OF PIPE AND DUCT PENETRATIONS OF EXTERIOR WALLS, FLOORS, AND/OR ROOF.
-		7.	ALL DUCTWORK AND PIPING PENETRATING THROUGH RATED WALLS TO BE FIRE STOPPED.
		8.	THE HYDRONIC PIPING SYSTEM IS TO BE FLUSHED UNTIL CLEAN BEFORE EQUIPMENT CONNECTION. CONTRACTOR IS RESPONSIBLE FOR INITIAL CHEMICAL TREATMENT OF THE HYDRONIC SYSTEMS. REFER TO SPECIFICATIONS.
		9.	PIPING SHOWN ON THESE DRAWINGS IS DIAGRAMMATIC. ARRANGE IN A NEAT AND ORDERLY MANNER. COORDINATE ROUTING WITH OTHER TRADES PRIOR TO INSTALLATION TO AVOID CONFLICTS.
		10. 	FOR ALL INSULATED PIPING, PIPE HANGERS AND ATTACHMENTS SHALL ALLOW FOR CONTINUOUS INSULATION AT HANGER AND ATTACHMENT. UNISTRUT CLAMPS AND PIPE RISERS SHALL UTILIZE CUSHION CLAMPS AND/OR INSULATION INSERTS TO ALLOW FOR INSULATION WITHOUT COMPRESSION OF THE INSULATION. REFER TO SPECIFICATION 230529 'HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT."
		11.	THE CONTRACTOR IS TO COORDINATE FLOOR DRAIN LOCATIONS IN MECHANICAL ROOMS WITH ALL EQUIPMENT LOCATED IN MECHANICAL ROOMS.
		12. 	PENETRATIONS THROUGH FIRE RATED FLOORS AND WALLS ARE TO BE SEALED AS TO MAINTAIN FLOOR OR WALL INTEGRITY IN THE EVENT OF A FIRE. PENETRATIONS OF FIREWALLS, CEILINGS, FLOORS, ETC., BY PIPING SHALL HAVE UL LISTED FIRESTOPS AND SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATION. CONTRACTOR TO RETAIN MANUFACTURER'S SHOP DRAWINGS AT JOBSITE FOR PENETRATIONS.
	D	13.	VERIFY COLLAR SIZES ON AIR TERMINALS AND EQUIPMENT INLETS AND OUTLETS AND TRANSITION DUCTWORK AS NECESSARY. EXTERNALLY INSULATE ALL TRANSITIONS AT EQUIPMENT CONNECTIONS.
		14.	TRANSITION DUCT AS NECESSARY FROM SIZE INDICATED TO UNIT CONNECTION OPENING. TRANSITIONS SHALL BE PER SMACNA STANDARDS.
		15.	PROVIDE FLEXIBLE DUCT FINAL CONNECTIONS AND VIBRATION ISOLATORS FOR INTERNALLY ISOLATED UNITS.
		16.	DO NOT MOUNT DISCONNECT SWITCHES ON HVAC EQUIPMENT EXCEPT AS RECOMMENDED BY MANUFACTURER.
		17. / 	ALL ROUND FLEXIBLE DUCT TO BE FACTORY PRE-INSULATED WITH CORRUGATED ALUMINUM LINER. MAXIMUM LENGTH OF ANY FLEXIBLE DUCT RUNOUT TO BE 5'-O". WHERE LENGTH REQUIRED EXCEEDS 5'-O", INSTALL EXTERNALLY INSULATED ROUND SNAPLOCK DUCT FOR BALANCE OF DISTANCE TO SPIN-IN TAP AT MAIN TRUNK DUCT. FLEXIBLE DUCT SHALL BE USED ON SUPPLY AIR SYSTEMS ONLY. IT IS PROHIBITED ON NEGATIVE PRESSURE (EXHAUST AND RETURN) AIR SYSTEMS.
		18. 1	SUPPLY AIR DUCTWORK UPSTREAM OF AIR TERMINAL UNITS TO BE SINGLE-WALL MEDIUM PRESSURE RECTANGULAR. PROVIDE SMACNA STATIC PRESSURE CLASS AS REQUIRED OR SCHEDULED EXTERNAL STATIC PRESSURE, SEAL CLASS "A", EXTERNALLY INSULATED. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
	С	19. 	SUPPLY AIR DUCTWORK DOWNSTREAM OF AIR TERMINAL UNITS (EXCEPT TAKEOFFS TO SUPPLY AIR DIFFUSERS) TO BE SINGLE-WALL, LOW PRESSURE RECTANGULAR SMACNA STATIC PRESSURE CLASS 1" W.G. SEAL CLASS "A", EXTERNALLY INSULATED WITH 1–1/2" THICK FIBERGLASS DUCT WRAP. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
		20.	RETURN AIR DUCTWORK TO BE SINGLE-WALL LOW PRESSURE RECTANGULAR, SMACNA STATIC PRESSURE CLASS 1" W.G. SEAL CLASS "A", EXTERNALLY INSULATED WITH 1-1/2" THICK FIBERGLASS DUCT WRAP. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
		21.	OUTSIDE AIR INTAKE DUCTWORK TO BE SINGLE-WALL, LOW PRESSURE RECTANGULAR, SMACNA STATIC PRESSURE CLASS 1" W.G. SEAL CLASS "A", EXTERNALLY INSULATED $1-1/2$ " THICK FIBERGLASS DUCT WRAP. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
	_		
	В		
5			
	A		

5

- 22. EXHAUST AIR DUCTWORK TO BE SINGLE-WALL, LOW PRESSURE RECTANGULAR, SMACNA STATIC PRESSURE CLASS 1 W.G. SEAL CLASS "A".
- 23. REFER TO SPECIFICATIONS FOR LOCATIONS WHERE RIGID EXTERNAL INSULATION IS TO BE PROVIDED IN LIEU OF FLEXIBLE DUCT WRAP.
- 24. ALL EXPOSED LOW PRESSURE DUCTWORK SHALL BE DOUBLE-WALL WITH MINIMUM 1" THICK INTERNAL INSULATION, WITH EXCEPTION OF AREAS ON THE FIRST FLOOR. EXPOSED DUCTWORK TO HAVE EXTERNAL INSULATION.
- 25. ALL DUCTWORK SHALL BE GALVANIZED METAL CONSTRUCTION. COORDINATE ROUTING WITH OTHER TRADES PRIOR TO INSTALLATION TO AVOID CONFLICTS.
- 26. WORK SHALL COMPLY WITH THE FOLLOWING AGENCIES:
 - 2021 INTERNATIONAL BUILDING CODE
 - 2021 INTERNATIONAL MECHANICAL CODE - 2021 INTERNATIONAL FUEL GAS CODE
 - ASHRAE 90.1 2013
 - NATIONAL FIRE PROTECTION AGENCY (NFPA)
- 27. SEE ELECTRICAL DRAWINGS FOR DUCT SMOKE DETECTORS AND OTHER EQUIPMENT RELATED TO THE BUILDING FIRE ALARM SYSTEM.
- 28. COMBINATION FIRE/SMOKE DAMPERS SHALL BE PROVIDED WITH 120V POWER. COORDINATE WITH ELECTRICAL SEE LIFE SAFETY PLANS FOR ALL REQUIRED DAMPER LOCATIONS.
- 29. ALL ROOF PENETRATIONS AND ROOF-MOUNTED EQUIPMENT THROUGH AND/OR LOCATED ON THE SLOPED PORTION OF THE ROOF SHALL BE PAINTED. COORDINATE COLOR WITH THE ARCHITECT.
- 30. ALL EXTERIOR LOUVERS SHALL BE SPECIFIED BY ANOTHER DIVISION.
- 31. ALL DUCT JOINTS AND SEAMS SHALL BE BRUSHED WITH A COAT OF DUCT SEALER EQUAL TO RCD-8.
- 32. SUPPLY AIR DIFFUSERS MUST BE COMPATIBLE WITH THE CEILING GRID. SEE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL LIGHTING AND OTHER CEILING ELEMENTS.
- 33. ACCESS DOORS SHALL BE IN CEILINGS FOR ALL DAMPERS, VALVES, AND EQUIPMENT LOCATED ABOVE RIGID CEILINGS. COORDINATE ACCESS DOOR LOCATIONS WITH ARCHITECTURAL PLANS.
- 34. MECHANICAL LINK SEALS SHALL BE PROVIDED FOR ALL UNDERGROUND WALL PIPING/DUCTWORK PENETRATIONS.
- 35. TRANSFER DUCTS SHALL BE INTERNALLY INSULATED WITH 1" THICK ACOUSTICAL DUCT LINER. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
- 36. PROVIDE FIRE DAMPERS WITH ACCESS DOORS AT ALL FIRE BARRIER WALL PENETRATIONS WHETHER SPECIFICALLY SHOWN OR NOT. COORDINATE FIRE BARRIER/WALL LOCATION WITH ARCHITECTS LIFE SAFETY PLANS.
- 37. ALL VALVES AND VARIABLE VOLUME AIR TERMINAL UNITS INSTALLED ABOVE RIGID CEILING SHALL HAVE LOCKABLE ACCESS PANELS BENEATH THEM FOR EQUIPMENT MAINTENANCE AND REMOVAL. PANELS SHALL BE PAINTED TO MATCH SURROUNDING CONDITIONS PER ARCHITECT'S NEW WORK SPECIFICATIONS. COORDINATE ALL FRAMES, BORDERS, AND FINISHES WITH ARCHITECT PRIOR TO INSTALLATION.
- 38. PROVIDE NATIONAL ELECTRICAL CODE (2020 NFPA 70) CLEARANCES FOR VARIABLE FREQUENCY (SPEED) DRIVES (VFD) AND MOTOR STARTERS. AT A MINIMUM, PROVIDE 4 FT CLEAR IN FRONT OF THE FACE OF THE VFD OR STARTER. DO NOT ROUTE ANY DUCTWORK OR PIPING DIRECTLY ABOVE THE VFD OR STARTER. THERE SHALL BE 6'-6" CLEAR IN THE WORKING SPACE, WHICH IS DEFINED AS 30" WIDE X 4 FT FROM THE FACE OF THE DRIVE OR STARTER.
- 39. UPON COMPLETION OF THE BOILER INSTALLATION, THE CONTRACTOR SHALL ARRANGE FOR THE STATE OF ALABAMA BOILER & PRESSURE VESSEL SAFETY DIVISION INSPECTOR TO VISIT THE JOB SITE TO INSPECT THE BOILER INSTALLATION. THE CONTRACTOR SHALL FURNISH A WRITTEN REPORT OF HIS FINDINGS TO THE ARCHITECT AND ENGINEER AND COMPLY WITH ALL COMMENTS.
- 40. ALL ROOF MOUNTED EQUIPMENT TO BE INSTALLED TO WITHSTAND MINIMUM WIND LOADS PRESCRIBED IN 2021 IBC SECTION 1609 OF 120 MPH. REFER TO ROOF MOUNTED EQUIPMENT SPECIFICIATIONS FOR ADDITIONAL INFORMATION.
- 41. FOR ALL SPACES WITH NO DROPPED CEILINGS, MECHANICAL WORK IS TO BE HELD TIGHT TO STRUCTURE ABOVE.
- 42. REFER TO STRUCTURAL DRAWINGS FOR INFORMATION REGARDING LIMITATIONS ON ATTACHMENTS TO EXISTING STRUCTURE IN THE BUILDING.

4

3

43. PROTECTION OF EQUIPMENT DURING CONSTRUCTION – IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT EQUIPMENT DURING CONSTRUCTION FROM DAMAGE AND DUST. REFER TO REQUIREMENTS IN VARIOUS SPECIFICATIONS FOR SPECIFIC ITEMS (MECHANICAL GENERAL PROVISIONS, DUCTWORK, AHUS, ETC). IT IS THE CONTACTORS RESPONSIBILITY TO PROTECT OFOI AND OFCI INSTALLED CONTROL ITEMS FROM DUST AND DAMAGE. THE HVAC BOS SERVER IS OFOI EQUIPMENT LOCATED IN THE DATA CLOSET. WORK SHALL BE CAREFULLY SEQUENCED SUCH THAT THE BOS IS NOT INSTALLED PRIOR TO FINISHES IN THIS ROOM AND ADJACENT SPACES BEING COMPLETED. THE BOS MUST BE INSTALLED EARLY ENOUGH IN THE SCHEDULE TO ALLOW THE CONTROLS SUBCONTRACTOR TO PROGRAM AND COMPLETE THEIR REQUIRED WORK. INSTALLATION OF THE BOS SERVER SHALL BE TRACKED AS A CRITICAL PATH ITEM ON THE CONTRACTORS SCHEDULE. IT IS THE CONTRACTORS RESPONSIBILITY, IF REQUIRED, TO PROVIDE POSITIVE PRESSURIZATION OR DEDICATED FILTRATION OF THE DATA CLOSET TO PROTECT THE BOS FROM DUST. FOR OFCI NETWORK CONTROLLER INSTALLED IN THE MAIN MECHANICAL ROOM - THIS ITEM SHALL ALSO BE PROTECTED FROM DUST. THIS IS THE CONTRACTORS RESPONSIBILITY.

ABBREVIATIONS

۸D	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP. INCHES
24	
AJ	
RAN	BACKFLOW PREVENIER
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
	CEILING
CUNN	CONNECTION
CR	CONDENSATE RETURN
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DB	DRY BULB
EAI	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
FG	FXHAUST GRILLE
	EXTRAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
FD	FIRE DAMPER
FG	FLOUR GRILLE
FLA	FULL LOAD AMPERES
FPM	FEET PER MINUTE
FT	FEET (OR FOOT)
FV	FACE VELOCITY
GA	GAUGE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
н	HUMIDIFIER
нс	HEATING COIL
HP	HURSEPUWER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LAT	LEAVING AIR TEMPERATURE
LPS	LOW PRESSURE STEAM
LWB	LEAVING WET BULB
IWT	I FAVING WATER TEMPERATURE
MDN	
MIHK	MEDIUM TEMPERATURE HEATING RETURN
MTHS	MEDIUM TEMPERATURE HEATING SUPPLY
MU	MAKE-UP (WATER)
MVD	MANUAL VOLUME DAMPER
04	
	ODISIDE AIR
OED	OPEN ENDED DUCI
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
Р	PUMP
ΡΔ	PIPE ANCHORS
RAG	
RAR	RETURN AIR REGISTER
RLA	RATED LOAD AMPS
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
SP	STATIC PRESSURF
33	STAINLESS SIELL
SWD	SIDE WALL DIFFUSER
ТВ	TERMINAL BOX
TSP	TOTAL STATIC PRESSURE
U.G.	
VAV	VARIABLE AIR VOLUME BOX
VFD	VARIABLE FREQUENCY DRIVE
WB	WET BULB
WPD	WATER PRESSURE DROP FEFT
	$ \qquad \qquad$

-⁄≁ U

2

HVAC	LEGEND
\bowtie	POSITIVE PRESSURE DUCT OR DEVICE
	NEGATIVE PRESSURE DUCT OR DEVICE
	ELBOW WITH TURNING VANES
	SPLITTER/DAMPER
	ROUND BRANCH DUCT WITH VOLUME DAMPER
D	DROP IN DUCT
R	RISE IN DUCT
Ø	DIAMETER
θ	FLAT OVAL DUCT
① #	THERMOSTAT WITH UNIT DESIGNATION
— D —	DRAIN
$\rightarrow \rightarrow \rightarrow$	BALL OR BUTTERFLY VALVE
$\dashv\vdash$	FLANGE
	UNION
-N-	CHECK VALVE
-+_+-	STRAINER WITH BLOWDOWN

MAKE-UP WATER

BALL VALVE

THERMOMETER

PRESSURE GAUGE

CIRCUIT SETTER

BUTTERFLY VALVE

ACCESS

ACCESS

TWO-WAY CONTROL VALVE

THREE-WAY CONTROL VALVE

AUTOMATIC AIR VENT WITH COCK

DUCT STATIC PRESSURE SENSOR

ROUND NECK DIFFUSER

REGISTER, OR GRILLE

EQUIPMENT DESIGNATION

ACCESS DOOR

SMOKE DAMPER

HORIZONTAL INSTALLED FIRE DAMPER WITH

VERTICAL INSTALLED FIRE DAMPER WITH

SQUARE OR RECTANGULAR NECK DIFFUSER,

COMBINATION FIRE AND SMOKE DAMPER

—MU—

Ь

—------

•

DP

MARK

\CFM/

MARK

CFM

MARK

A

SD

DETAIL, SECTION, AND TITLE DESIGNATION
SECTION TITLE OR STANDARD DETAIL NUMBER SHEET ON WHICH SECTION OR DETAIL IS DRAWN
SECTION OR DETAIL NUMBER SHEET ON WHICH SECTION OR DETAIL IS DRAWN SHEET(S) ON WHICH SECTION OR DETAIL IS REFERENCED
SECTION OR ELEVATION NUMBER SHEET ON WHICH SECTION IS DRAWN
DETAIL NUMBER SHEET ON WHICH DETAIL IS DRAWN





																						AIR H		g unit s	SCHEDU	JLE																					
	HOT WATER PRE-HEAT COIL							CHILLED WATER COOLING COIL										НС	OT WAT	ER RE-HEA	TCOIL							FAN	DATA																		
MARK	SERVE		CFM _ OA	HEATI	NG CO 1 RO	DIL WS EA	AT °F LA	AT °F	EWT °F	LWT °F	GPM	RUNOUT (IN)	CONTRO VALVE CV/TYPE	- MBł	MAX W.P.D. FT. H ₂ O	MAX. FAC VELOCIT AT COIL FPM	Y EA	T (°F) WB	LAT DB	(°F) WB	WT L' °F	WT °F GPM	RUNOU (IN)	T CONTF VALV CV/TY	ROL VE W. YPE	MAX 2.P.D. FT. H ₂ O	COIL ROWS	ΤΟΤΑΙ	MBH		EAT °F	LAT °F	EWT °F	T°F G	PM RUNOL (IN)	JT CONTR VALV CV/TYF	IOL E ME PE	BH MAX W.P.D. FT. H ₂ C		T.S.P. IN. H ₂ O	E.S.P. IN. H ₂ O	QUANTITY OF FAN	۲ EACH FAN	TOTAL HP	VFD OR ECM)LTS P	H HZ
AHU-1E	FIRST FLOOR	2,200	700	2,200	D 2	2 1	10 5	52.5	140	110	6.8	1-1/4	4.7 / 2-WA	Y 102.	3 0.5	370	80	67	52.3	52.1 4	45 6	0.3 13.0	1-1/4	7.4 / 2-1	WAY	6	8	99.3	3 66.7					-						2.98	1.75	2	1.5	3	VFD 7	208 🗧	3 60
AHU-1W	FIRST FLOOR	3,000	1,000	0 3,000) 2	2 1	10 5	52.5	140	110	9.3	1-1/4	4.7 / 2-WA	Y 139.	4 0.75	500	83	78	51.4	51.2 4	45 5	9.9 37.2	2	19/2-V	WAY	11.5	10	277.3	3 103.6					-						3.47	1.75	2	2	4	VFD 2	208 🗧	3 60
AHU-2	PARITAL 2ND & 3RD FLO	OR 11,500	3,250	0 11,50	0 2	2 1	10 5	52.3	140	110	35.5	2-1/2	24 / 2-WA	Y 532.	1 1.8	480	80	67	51.8	51.6 4	45 5	9.9 71.7	3	37 / 2-V	WAY	11.5	10	534.5	5 355.1					-						4.33	2.5	2	7.5	15	VFD 2	208 ?	3 60
AHU-B	CLASSROOM	1,200	300		-											450	81	55	53.6	51.8 4	45 !	59 7.3	1-1/4	4.7 / 2-1	WAY	5	6	51.0) 35.5	1,200	58	103	140 12	20 6	.0 1	3 / 2-W	AY 5	9 1.2	2	1.6	0.75	2	1/2	1	ECM 2	208 -	1 60
AHU-OA	100% OUTSIDE AIR	1,000	1,000	0 1,000	2 C	1 -	10	58	140	120	5.2	1	3 / 2 WA	′ 52	9	415	83	78	54.3	54.1 4	45 !	59 12.1	1-1/4	7.4/2-	WAY	22.5	6	84.9	31.4					-						2.0	1.0	1	3/4	3/4	ECM 7	208 -	1 60
1 - DOUBLE 2 - VERTICA 3 - HORIZON	WALL CABINET CONSTRUNT DUCTED CABINET, REANNAL DUCTED CABINET, REANNAL DUCTED CABINET, R	ICTION R RETURN EAR RETUR	RN																																												
																													EANC					VSSE	TTC												

Mo	Σ
111	
1 2.55	5.5
1000/	- 7071
1/05	24

		VFD SCHEDU	LE				
				MO	TOR		
MARK	SERVICE	SERVICE	H.P.	VOLTS	PHASE	HZ	REMARKS
VFD-1E	AHU-1E	AIR HANDLING UNIT	3	208	3	60	1
VFD-1W	AHU-1W	AIR HANDLING UNIT	5	208	3	60	1
VFD-2	AHU-2	AIR HANDLING UNIT	15	208	3	60	1
VFD-H1	P-H1	HEATING SECONDARY	5	208	3	60	1
VFD-H2	P-H2	HEATING SECONDARY	5	208	3	60	
VFD-C1	P-C1	CHILLED WATER - TERTIARY	7.5	208	3	60	1
VFD-C2	P-C2	CHILLED WATER - TERTIARY	7.5	208	3	60	
REMARKS:							

1 - PROVIDE SPARE VFD OF THIS SIZE

			ELECTRIC WALL HEATERS	5				
MADK		K/V/			POWER			NOTES
	LOCATION	rvv	MOONTINGTIFE	VOLTS	PHASE	AMPS	BASIS OF DESIGN	NOTES
EH-1	FIRE RISER ROOM	3	RECESSED WALL	208	1	14.4	QMARK AWH	1
EH-2	STAIR	4.8	RECESSED WALL	208	1	23.1	QMARK AWH	1
EH-3	STAIR	4.8	RECESSED WALL	208	1	23.1	QMARK AWH	1
EH-4	BOILER ROOM	4.8	SURFACE MOUNTED	208	1	23.1	QMARK AWH	1
NOTES:								

1. TAMPER PROOF BUILT IN COMBINATION THERMOSTAT/DISCONNECT, INTIALLY SET TO 50F, CONFIRM WITH OWNER DURING OWNER TRAINING.

						REHEA	T COIL S	CHEDULE			
					HEATI	NG COIL				COIL	
MARK	HEATING	CAPACITY	AIR	(°F)		WATEF	२	RUNOUT	CONTROL VALVE	MAXIMUM	REMARKS
	CFM	MBH	EAT	LAT	GPM	EWT	PD FT	SIZE (IN)	TYPE/CV	HEIGHT	
RHC-0A	1000	38.0	55	90	2.60	140	5	3/4	2-WAY/ 1.9	12"	1,2
1 - MAXIMUI	M FACE VELC	OCITY ACROSS	COIL SH	ALL BE 4	50 FPM. 1	RANSITIC	ON FROM DI	UCTWORK TO	COIL IF COIL DIMENSIO	ONS ARE LARGER THA	N DUCTWORK.
2 - INSULAT	E DUCT MOU	NTED COILS TO	О МАТСН	INSULAT	ION REQ	UIREMEN	TS FOR DU	CTWORK TO V	VHICH COILS ARE INST	ALLED.	

6

												FAN C	OIL UN	IT SCH	HEDULI	E - CEIL	ING C	ASSETTE											
		= N A			С	HILLED \	NATER							HOT WA	ATER					ESP	1		POV	VER					
MARK			COOLIN	NG (M.B.H)	EA	∖T °F	GDM			MAX.		HEATING	EAT	GDM			MAX.	CONTROL VALVE	DRIVE	(IN						MOCP	TYPE	RUNUUT	
	TOTAL	O.A.	TOTAL	SENSIBLE	DB	WB				WPD	CV/TYPE	M.B.H.		GFIM			WPD	CV/TYPE		W.G.)		VOLIS	CICLE	FIASE				CW	HW
FCU 3-3001	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3002	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3003	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3004	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-C305	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-C304	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-C306	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-C308	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3014	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3015	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3016	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3017	380	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3019	870	0	26.4	20.6	80	67	4.1	45	58	8.7	3/2-WAY	48.0	70	3.2	140	110	8.0	1.2 / 2-WAY	ECM	0	(260)	208	60	1	2	15	CEILING CASSETTE	3/4	3/4
FCU 3-3020	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3021	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3022	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3023	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3024	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3025A	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2/2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3025B	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2
FCU 3-3026	360	0	9.8	7.9	80	67	1.5	45	58	4.5	1.2 / 2-WAY	18.9	70	1.3	140	110	4.1	0.46 / 2-WAY	ECM	0	(80)	208	60	1	1	15	CEILING CASSETTE	3/4	1/2

REMARKS

1. PROVIDE PRIMARY DRAIN PAN MOISTURE SENSOR, LOCATED IN AUXILIARY DRAIN OUTLET, TO SHUT OFF UNIT UPON THE DETECTION OF MOISTURE. 2. CONTROL VALVE TO BE PROVIDED BY CONTROLS CONTRACTOR.

3. PROVIDE WITH BAS CONTROLLER AND BAS THERMOSTAT, NO FACTORY OR LOCAL CONTROL. 4. PROVIDE INTEGRAL LIFT MECHANISM (PUMP) FOR CONDENSATE. HARD PIPE DISCHARGE OF CONDENSATE PUMP TO BUILDING CONDENSATE DRAIN SYSTEM, ATTACH TO TOP OF GRAVITY DRAINAGE PIPE.

								DUCTLES	S SPLIT	SYSTEM	AIR COI	NDITIONI	NG UNIT -	CEILING MC	DUNT									
				FAN COIL U	NIT											CONDE	NSING UN	IIT						
		AIR FLOW	EAT db/wb		MCA/MOCP	WEIGHT	MAX. WxDxH	BASIS				TOTAL CAP.	SENS. CAP.	SUMMER	MAX. OAT	MIN. OAT	MIN. ARI		MCA/MOCP	WEIGHT	MAX. WxDxH	BASIS		N
TAG	SERVICE	(CFM)	(°F)	VOLT/PH/HZ	(AMP)	MAX. (LBS)	(IN.)	MANUFACTURER	MODEL	TAG	LOCATION	(BTU/H)	(BTU/H)	OAT db/wb (°F)	(°F)	(°F)	SEER	VOLT/PH/HZ	(AMP)	MAX. (LBS)	(IN.)	MANUFACTURER	MODEL	ACCE
ACI 1-1006	ELEVATOR EQUP. ROOM	1218	80 / 67	208/1/60	1.8/15	70	12x33x33	Daikin	FCQ48T	ACO 1-1006	ROOF	48,000	35,000	95/75	122	0	17.0	208/1/60	29.1/35	225	53x35x13	Daikin	RZR48T	1,
NOTES/ACC	ESSORIES																							
1. REFRIGER	ANT LINE SET.			3. INTEGRAL FA	AN COIL DISCO	NNECT.																		

2. REMOTE HARD-WIRED CONTROL PAD.

4. DISCONNECT SWITCH AT OUTDOOR UNIT, SEE ELECTRICAL.

								I	DUCTLE	SS SPLIT	SYSTEM	I AIR CON	DITION	NG UNIT - W	ALL MO	UNT								
				IN	DOOR UNIT	•									0	UTDOOR	CONDEI	NSING UNIT				,		
		AIR FLOW	EAT db/wb		MCA/MOCP	WEIGHT	MAX. WxDxH	BASIS				TOTAL CAP.	SENS. CAP.	SUMMER	MAX. OAT	MIN. OAT	MIN. ARI		MCA/MOCP	WEIGHT	MAX. WxDxH	BASIS		NC
TAG	SERVICE	(CFM)	(°F)	VOLT/PH/HZ	(AMP)	MAX. (LBS)	(IN.)	MANUFACTURER	MODEL	TAG	LOCATION	(BTU/H)	(BTU/H)	OAT db/wb (°F)	(°F)	(°F)	SEER	VOLT/PH/HZ	System (AMP)	MAX. (LBS)	(IN.)	MANUFACTURER	MODEL	ACCE
ACI 1-1009	DATA	716	80 / 67	208/1/60	na	38	12x39.5x11	Daikin	FTK24	ACO 1-1009	ROOF	24,000	15,670	95 / 75	115	-4	19.0	208/1/60	13.4/20	106	27.5x36.5x14	Daikin	RK24A	1,2
NOTES/ACC	ESSORIES																							
1. REFRIGE	ANT LINE S	SET.		3. INTEGRAL F	AN COIL DIS	CONNECT.			5. PROVIDE	E LITTLE GIAN	T VCMA-15L	JLS CONDENS	SATE PUMP	WITH FLOAT SWI	TCH. FIELD	WIRE FOR	UNIT SHU	TDOWN ON H	IIGH CONDENSAT	E LEVEL.				
2. REMOTE	HARD-WIRI	ED CONTRO	DL PAD.	4. DISCONNEC	CT SWITCH A	T OUTDOOR L	JNIT, SEE ELEC	TRICAL.	PUMP REQ	UIRES SEPAR	ATE 115V/1P	H POWER CO	ONNECTION.	. SUPPORT PUMP	FROM WA	LL DIRECTL	Y BELOW	DUCTLESS UN	NIT.					

			PUMP	SCHEDULE	_									
				CAPACITY	HEAD	MOTOR	MIN. PUMP	VFD /			MOTOR			
MARK	SERVICE	TYPE	BASIS	(GPM)	(FT. H20)	R.P.M.	EFF. (%)	STARTER	H.P.	VOLTS	PHASE	HZ	TYPE] F
P-H1	HEATING SECONDARY	SPLIT COUPLED VERTICAL INLINE	ARMSTRONG 4300	120	60	1,800	63	VFD	5	208	3	60	TEFC	
P-H2	HEATING SECONDARY	SPLIT COUPLED VERTICAL INLINE	ARMSTRONG 4300	120	60	1,800	63	VFD	5	208	3	60	TEFC	
P-B1	HEATING PRIMARY	CLOSE COUPLED VERTICAL INLINE	ARMSTRONG 4360	92	15	1,200	58	STARTER	3/4	208	3	60	ODP	
P-B2	HEATING PRIMARY	CLOSE COUPLED VERTICAL INLINE	ARMSTRONG 4360	92	15	1,200	58	STARTER	3/4	208	3	60	ODP	
P-C1	CHILLED WATER - TERTIARY	SPLIT COUPLED VERTICAL INLINE	ARMSTRONG 4300	200	65	1,800	63	VFD	7.5	208	3	60	TEFC	
P-C2	CHILLED WATER - TERTIARY	SPLIT COUPLED VERTICAL INLINE	ARMSTRONG 4300	200	65	1,800	63	VFD	7.5	208	3	60	TEFC	
REMARKS:														

1. TERTIARY PUMPS SIZED BASED ON 0 PSI DP AT BUILDING CONNECTION TO CENTRAL PLANT PIPING. 2. PUMP SIZE AT NO GREATER THAN 90% OF IMPELLER RANGE.

3

	AIR	DIRT SEPARATOR SCH	EDULE		
			CAPACITY	CONNECTION	REMARKS
MARK	SERVICE	TYPE	(GPM)	SIZE (IN)	
AS-C	CHILLED WATER SYSTEM	COALESCING AIR / DIRT	200	4	1
AS-H	HOT WATER SYSTEM	COALESCING AIR / DIRT	115	3	1
REMARK	S:				
1) REMO	ABLE HEAD ON BOTTOM				

4

			N	ATURAL GAS FIR		E BOII	LER SCH	EDULE						
			MIN. EFFICIENCY	CAPACITY (MBH)	EWT	LWT	GP	M	W.P.D.		PO	VER		
MARK	BASIS	TYPE	AT EWT (%)	INPUT	°F	۴F	DESIGN	MIN	FT. H20	VOLTS	PHASE	CYCLE	MCA	
B-1	LOCHINVAR FIRE TUBE	CONDENSING	97.2	1,500	110	140	92	25	10	115	1	60	13	1,2,3
B-2	LOCHINVAR FIRE TUBE	CONDENSING	97.2	1,500	110	140	92	25	10	115	1	60	13	1,2,3
EMARKS														
		IUT-OFE SWITCHES		NS.										

. PROVIDE EMERGENCY BOILER SHUT-OFF SWITCHES AS SHOWN ON PLANS. 2. BOILER SEQUENCING TO BE BY THE DDC SYSTEM 3. SEALED COMBUSTION WITH DUCTED AIR INLET FROM THE ROOF. VENT SIZE TO BE DETERMINED BY MANUFACTURER. BASIS OF DESIGN INTAKE AND VENT DIAMETER = 8"

						FA	N COIL	UNIT SCHE	EDULE - WALL MOU	NTED								
								CHILLED \	VATER					El		AL.		
MARK	SERVES	CFM	EAT	-(°F)	султ ос		CDM				ſ	ИВН	MCA	MOD		рц	<u>ц</u> 7	RE
			DB	WB			GFM				TOTAL	SENSIBLE	MCA		VOLIS	FN		
FCU 1-1018	MECH. PUMP ROOM	600	80	67	45	53	6	1	2-WAY/4.7	14.5	23.7	16.5	0.5	15	208	1	60	
FCU 1-1017	MECH. ROOM	600	80	67	45	53	6	1	2-WAY/4.7	14.5	23.7	16.5	0.5	15	208	1	60	
1. CONTROL	VALVE TO BE PROVIDE	BYCON	TROL CO	ONTRAC	TOR.													

			ESP	MAX SPEED				POV	VER		70 5	DE
MARK	AREA SERVED		IN H20	FAN RPM	DRIVE	INTERLOCK	H.P. (W)	VOLTS	PHASE	CYCLE	ITPE	RE
EF-1	LAB EXHAUST	1,000	0.5	1,725	DIRECT	BAS	1/4	115	1	60	ROOF MOUNTED EXHAUST FAN	
EF-2	LAB EXHAUST	1,260	0.5	1,550	DIRECT	BAS	1/2	115	1	60	ROOF MOUNTED EXHAUST FAN	
EF-3	GENERAL EXHAUST	775	0.75	1,725	DIRECT	BAS	1/4	115	1	60	ROOF MOUNTED EXHAUST FAN	
EF-4	LAB EXHAUST	360	0.35	1,725	DIRECT	BAS	1/10	115	1	60	ROOF MOUNTED EXHAUST FAN	
EF-5	LAB EXHAUST	130	0.2	1725	BELT	BAS	1/4	115	1	60	INLINE CENTRIFURAL EXHAUST FAN	
EMARKS:												



			ΜΙΝΙΜΙ	JM & C(ORRECTED OA RE	QUIREMENT	S - PER II	MC 2021						
PROJ PROJ	JECT NAME JECT NUMBER	8	McLure Library 223008]]						N	/AV BOX MIN	30%
		ZONE AII	R DISTRIBUTION EFFECTIVENESS (E_z)	0.8	SEE TABLE 403	3.3.1.1 IMC 2	2021, (=0.8	, TYPICAL FO	R HEATIN	IG MODE, CEILII	NG RETURN)			
АНИ	JZONE	ROOM # or Description		FT ² (A	OCCUPANCY (Pz)	CFM / PERSON (R _P)	(Rp*Pz)	CFM / FT ² (R _a)	(Ra*Az)	MIN OA CFM / ZONE (V _{oz})	SUPPLY AIR CFM (V _{pz})	MINIMUM SUPPLY AIR CFM (VAV) (V _{dzm})	ZONE OA FRACTION (Z₀)	ZONE EFFICIENCY (E _{vz})
2	3009	0309 READING ROOM	BREAK ROOMS	567	20	5	100	0.06	34.02	168	900	270	0.62	0.84
	0010	0310 MECHANICAL	No Exhaust Required	429	0	0	0	0	0	0	250	210		0.04
	3010		TOTALS FOR VAV 2-3010	429	0					0	250	75	0.00	1.46
	3012	0312 BUILDING STORAGE C304 CORRIDOR	STORAGE ROOMS CORRIDORS	262 110	0	0	0	0.12	31.44 6.6	39 8	180 40			
			TOTALS FOR VAV 2-3012	372	0					48	220	66	0.72	0.74
	3013	0313 CLASSROOM STANDARD	LECTURE CLASSROOM	817	37	7.5	277.5	0.06	49.02	408	1,550			
			TOTALS FOR VAV 2-3013	817	37					408	1550	550	0.74	0.72
	3011	0311 ELECTRICAL	ELECTRICAL EQUIPMENT ROOMS	78	0	0	0	0.06	4.68	6	200			
			TOTALS FOR VAV 2-3011	78	0	5		0.06	7.62	6	200	60	0.10	1.36
	3008	C303 CORRIDOR		245	0	0	0	0.06	14.7	18	140		0.04	
		0215 EBSCO DIGITAL PRESERVATION	I COMPUTER LAB	454	5	10	50	0.12	54.48	34 131	710	111	0.31	1.15
	2015	C203 CORRIDOR	CORRIDORS TOTALS FOR VAV 2-2015	268 722	0 5	0	0	0.06	16.08	20 151	90 800	240	0.63	0.83
	2016	0216 MECHANICAL	No Exhaust Required	522	0	0	0	0	0	0	310			
			TOTALS FOR VAV 2-2016	522	0					0	310	93	0.00	1.46
	2017	0217 OFFICE 10 C204 CORRIDOR	OFFICE SPACE CORRIDORS	134 115	1 0	5 0	5 0	0.06	8.04 6.9	16 9	160 40			
			TOTALS FOR VAV 2-2017	249	1	7.5	277.5	0.06	40.02	25	200	60	0.42	1.04
	2019			017		7.5	277.5	0.00	49.02	400	1,600			
		0214 ELECTRICAL	ELECTRICAL EQUIPMENT ROOMS	817 79	0	0	0	0.06	4.74	408 6	200	550	0.74	0.72
	2014		TOTALS FOR VAV 2-2014	79	0					6	200	60	0.10	1.36
	2008	0208 MODEL CLASSROOM	LECTURE CLASSROOM	325	15	7.5	112.5	0.06	19.5 7 14	165 15	650 75			
		C207 CORRIDOR	CORRIDORS TOTALS FOR VAV 2-2008	62 506	0 16	0	0	0.06	3.72	5 185	25 750	250	0.74	0.72
	2005	0205 COE INSTRUCTIONAL AREA	CLASSROOMS (AGES 9+)	689	35	10	350	0.12	82.68	541	1,460			
			TOTALS FOR VAV 2-2005	689	35	7.5	150	0.06	24.94	541	1460	720	0.75	0.71
	2004					1.5			24.04	219	4000		0.04	
		0203 OFFICE	OFFICE SPACE	121	1	5	5	0.06	7.26	15	80	300	0.61	0.85
	2003		OFFICE SPACE	132 253	2	5	5	0.06	7.92	16 31	80 160	48	0.66	0.80
	2002	0202 LOUNGE C206 CORRIDOR C208 CORRIDOR	BREAK ROOMS CORRIDORS	196 132	4	5	20 0	0.06	11.76 7.92	40 10	130 50			
			TOTALS FOR VAV 2-2002	434	4	5	35	0.06	42.48	58 97	220 880	80	0.72	0.74
	2001A & B			708	7					07	880	270	0.26	1 10
	0000	0230 OFFICE 4	OFFICE SPACE	108	1	5	5	0.06	6.48	14	230			1.10
	2030		TOTALS FOR VAV 2-2030	108	1					14	230	69	0.21	1.25
	2031	0231 EXECUTIVE OFFICE	OFFICE SPACE	198	1	5	5	0.06	11.88	21	420			
			TOTALS FOR VAV 2-2031	198	1					21	420	126	0.17	1.29
	2029	0226 CLOSET 0227 OFFICE 6 0228 OFFICE 5	STORAGE ROOMS OFFICE SPACE	74 115	0	0 5	05	0.12	8.88 6.9	11 15	175 260			
			TOTALS FOR VAV 2-2029	296	2	5		0.00	0.42	40	675	203	0.20	1.26
	2028			114	0	5		0.06	0.04	40	130	70	0.66	0.80
		0225 RECEPTION	RECEPTION AREAS	114	2	5	10	0.06	11.04	46 26	130	70	0.66	0.80
	2025	C210 HALL	CORRIDORS TOTALS FOR VAV 2-2025	85 269	0 2	0	0	0.06	5.1	6 33	35 170	51	0.64	0.82
	2023	0223 OFFICE 8 0224 OFFICE 7	OFFICE SPACE	127 115	1	5	5	0.06	7.62	16 15	215 195			
			TOTALS FOR VAV 2-2023	242	2				0.0	31	410	123	0.25	1.21
		0210 NURSING 0211 JANITOR	BREAK ROOMS JANITOR, TRASH, RECYCLING	77	1 0	5 0	5	0.06	4.62 0	12 0	30 0			
	2022	0212 KK 0213 RR 0220 OPEN WORK	TOILETS - PUBLIC, OFFICES TOILETS - PUBLIC, OFFICES CONFERENCE/MEETING	49 49 158	0 0 4	0 0 5	0 0 20	0 0 0.06	0 0 9.48	0 0 37	0 0 85			
		0221 COPY 0223 OFFICE 9 C205 CORRIDOR	OFFICE SPACE OFFICE SPACE CORRIDORS	95 123 242	1 1 0	5 5 0	5 5 0	0.06 0.06 0.06	5.7 7.38 14.52	13 15 18	100 50 40			
		L	TOTALS FOR VAV 2-2022	830	7 5 206		1502.5	I	629	96 2,664	305 13610	130 4635	0.74	0.72
			TOTALS FOR AHU 2	(ΣFT ²) (<u>></u> , P _z)		(Rp*Pz)		(Ra*Az)	(Σ, V _{oz})	$(V_{ps} = \sum V_{pz})$	$(V_{ps} = \sum V_{dzm})$		

				Reference	e: IMC 2021		
			FORMULA'S: V	_{ou} = D*∑V _{oz}	; $E_{vz} = 1 + X_s - Z_c$,; V _{ot} = V	ou/E
	SYSTEM POPULATION (P _S)	206	TOTAL PO	PULATION II	N THE AREA SE	ERVED BY	/ THE
Where:							
V _{ou} =	Uncorrected Outdoor Air CFM		V _{ou} =	2131			
D=	Occupant Diversity = $P_s/\Sigma P_z$		D=	1.00	Single Zone	System - V	Nhen
					100% OA Sy	stem - Wh	nen o
X _s =	Average Outdoor Air Fraction at AHU = $V_{ou}/\Sigma V_{dzm}$		X _s =	0.460	Multi-Zone S	ystem - W	hen d
							one
E _v =	System Ventilation Efficiency = minimum (E_{vz})		E _v =	0.709	DESIGN	SQ FT]
	Corrected Outdoor Air CEM		V _{ot} =	3007	3,250	10.085	C

					VARIABLE V	OLUME	FERMINAL	BOX SCHED	ULE - A	AHU-1E						
			F	PRIMARYAIR							HEAT	ING COIL	-			
MARK		CFM	MAX APD	APPROX PRIMARY AIR	RUNOUT SIZE		HEATING	CAPACITY	AIR	(°F)		WATE	२	RUNOUT	CONTROL VALVE	REMARKS
	MAX	OCCUPIED MIN	(IN H20)	CONN SIZE (IN Ø)	(IF OVER 6FT)	MAX NC	CFM	MBH	EAT	LAT	GPM	EWT	PD FT		CV / TYPE	
1E-1023	500	150	0.5	8	8	30	150	6.0	55	92	0.5	140	5.0	1/2	0.3 / 2 - WAY	0
1E-1001	760	230	0.5	10	10	30	230	9.0	55	91	0.6	140	5.0	1/2	0.3 / 2 - WAY	0
1E-1019	160	160	0.5	4	8	30	160	6.0	55	90	0.5	140	5.0	1/2	0.3 / 2 - WAY	0
1E-1015	950	700	0.5	10	12	30	700	27.0	55	91	1.8	140	5.0	1/2	1.2 / 2 - WAY	0

					VARIABLE V		ERIVITINAL									
			F	PRIMARYAIR							HEAT	ING CO	L			
MARK		CFM	MAX APD	APPROX PRIMARY AIR	RUNOUT SIZE		HEATING	САРАСПҮ	AIR	(°F)		WATE	ER	RUNOUT	CONTROL VALVE	REMARKS
	MAX	OCCUPIED MIN	(IN H20)	CONN SIZE (IN Ø)	(IF OVER 6FT)	MAX NC	CFM	MBH	EAT	LAT	GPM	EWT	MAX PD FT	SIZE (IN)	CV / TYPE	
1W-1010A	700	700	0.5	8	10	30	700	27.0	55	91	1.8	140	5.0	1/2	1.2 / 2 - WAY	
1W-1010B	750	750	0.5	8	10	30	750	29.0	55	91	1.9	140	5.0	1/2	1.2 / 2 - WAY	
1W-1004A	650	650	0.5	8	10	30	650	25.0	55	91	1.7	140	5.0	1/2	1.2 / 2 - WAY	
1W-1004B	650	650	0.5	8	10	30	650	25.0	55	91	1.7	140	5.0	1/2	1.2 / 2 - WAY	
1W-1004C	650	650	0.5	8	10	30	650	25.0	55	91	1.7	140	5.0	1/2	1.2 / 2 - WAY	
1W-1014	200	200	0.5	6	8	30		-								1
1. COOLING ON	LY															

					VARIABLE \	/OLUME	TERMINAL	BOX SCHE	DULE -	AHU-2						
			F	PRIMARYAIR							HEAT	ING COI	L			
MARK		CFM	MAX APD	APPROX PRIMARY AIR	RUNOUT SIZE		HEATING	CAPACITY	AIR	(°F)		WATE	R	RUNOUT	CONTROL VALVE	REMARKS
	MAX	OCCUPIED MIN	(IN H20)	CONN SIZE (IN Ø)	(IF OVER 6FT)	MAX NC	CFM	MBH	EAT	LAT	GPM	EWT	MAX PD FT	SIZE (IN)	CV / TYPE	
2-3009	900	270	0.5	10	12	30	270	10.5	55	91	0.7	140	5	1/2	0.46 / 2 - WAY	
2-3010	250	75	0.5	6	8	30	75	3.0	55	92	0.5	140	5	1/2	0.3 / 2 - WAY	
2-3012	220	70	0.5	6	8	30	90	3.5	55	91	0.5	140	5	1/2	0.3 / 2 - WAY	
2-3013	1550	550	0.5	12	14	30	550	21.0	55	90	1.4	140	5	1/2	0.8 / 2 - WAY	
2-3011	200	60	0.5	6	8	30	60		55							1
2-3008	370	115	0.5	6	8	30	115	4.5	55	91	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2015	800	240	0.5	10	10	30	240	9.5	55	92	0.7	140	5	1/2	0.46 / 2 - WAY	
2-2016	310	95	0.5	6	8	30	95	3.5	55	89	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2017	200	60	0.5	6	8	30	60	2.5	55	94	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2019	1600	550	0.5	12	14	30	550	21.0	55	90	1.4	140	5	1/2	0.8 / 2 - WAY	
2-2014	200	60	0.5	6	8	30	60		55							1
2-2008	750	250	0.5	8	10	30	225	9.0	55	92	0.6	140	5	1/2	0.3 / 2 - WAY	
2-2005	1460	720	0.5	12	14	30	720	27.5	55	90	1.9	140	5	1/2	1.2 / 2 - WAY	
2-2004	1200	360	0.5	10	12	30	90	3.5	55	91	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2003	160	50	0.5	4	8	30	50	2.0	55	92	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2002	220	80	0.5	6	8	30	80	3.0	55	90	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2001A	440	135	0.5	8	8	30	135	5.5	55	93	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2001B	440	135	0.5	8	8	30	135	5.5	55	93	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2030	230	70	0.5	6	8	30	70	3.0	55	95	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2031	420	130	0.5	8	8	30	130	5.0	55	91	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2029	675	205	0.5	8	10	30	205	8.0	55	91	0.6	140	5	1/2	0.3 / 2 - WAY	
2-2028	130	70	0.5	4	8	30	70	3.0	55	95	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2025	170	55	0.5	4	8	30	225	9.0	55	92	0.6	140	5	1/2	0.3 / 2 - WAY	
2-2023	410	125	0.5	8	8	30	125	5.0	55	92	0.5	140	5	1/2	0.3 / 2 - WAY	
2-2022	305	130	0.5	6	8	30	130	5.0	55	91	0.5	140	5	1/2	0.3 / 2 - WAY	
1. COOLING	ONLY															

<u>GENERAL NOTE</u>:

1. ALL TERMINAL BOXES TO HAVE 2-ROW HEATING COIL.

		L	INEAR SL	OT CEIL	ING DIFFUS	SER SCHE	DULE		
MARK	SERVICE	SLOT WIDTH	NUMBER OF SLOT	LENGTH	CFM RANGE	NECK SIZE	RUNOUT SIZE	MAX NC	NOTE
L6	SUPPLY	1/2"	2	48"	0-110	6" DIA.	6" DIA.	25	1,2,3,4
L8	SUPPLY	1"	2	48"	115-220	8" DIA.	8" DIA.	25	1,2,3,4
LR8	RETURN	1"	2	48"	0-320	10" DIA.	10" DIA.	25	1,3,4
*NC SH/	ALL INCLUD	EADJUSTI	IENT FOR S	QUARE TO	O ROUND ADA	PTER			
1 000				MENTS M					

1 - COORDINATE BORDER TYPE REQUIREMENTS WITH ARCHITECTURAL PLANS. 2 - 2 SLOT AND 2-WAY THROW

3 - PROVIDE RUNOUT SIZE SHOWN UNLESS OTHERWISE NOTED ON PLANS. 4 - PROVIDE CABLE OPERATED VOLUME CONTROL DAMPER. 5 - INSULATED PLENUM BOX.

MARK	EQUIPMENT			DIA				FAILED		
TCV-	SERVED	SERVICE	GPM	IN.	Cv	TYPE	# PORTS	POSITION	ACTUATOR	REMAR
TCV-1P	AHU-1E	HOT WATER (PRE-HEAT)	6.8	3/4	14	CB	2	OPEN	ELECTRONIC, 24 VDC	
TCV-1C	AHU-1E	CHILLED WATER	13.0	1	7.4	CB	3	CLOSED	ELECTRONIC, 24 VDC	
TCV-1P	AHU-1W	HOT WATER (PRE-HEAT)	9.3	3/4	14	СВ	2	OPEN	ELECTRONIC, 24 VDC	
TCV-1C	AHU-1W	CHILLED WATER	37.2	1-1/2	19	СВ	3	CLOSED	ELECTRONIC, 24 VDC	
TCV-1P	AHU-2	HOT WATER (PRE-HEAT)	35.5	2	46	СВ	3	OPEN	ELECTRONIC, 24 VDC	
TCV-1C	AHU-2	CHILLED WATER	71.7	2	29	СВ	3	CLOSED	ELECTRONIC, 24 VDC	
TCV-1C	AHU-B	CHILLED WATER	7.3	3/4	4.7	СВ	3	CLOSED	ELECTRONIC, 24 VDC	
TCV-1R	AHU-B	HOT WATER (RE-HEAT)	6.0	1/2	7.4	СВ	2	CLOSED	ELECTRONIC, 24 VDC	
TCV-1P	AHU-OA	HOT WATER (PRE-HEAT)	5.2	1/2	3	СВ	3	OPEN	ELECTRONIC, 24 VDC	
TCV-1C	AHU-OA	CHILLED WATER	12.1	3/4	4.7	CB	2	OPEN	ELECTRONIC, 24 VDC	
CV-CH1		CW BYPASS PRESSURE CONTROL	200	4	186	VB	2	OPEN	ELECTRONIC, 24 VDC	1
-CV-PC1		TERTIARY PUMP ISOLATION	200	4		HPBF	2	OPEN	ELECTRONIC, 24 VDC	1
CV-PC2		TERTIARY PUMP ISOLATION	200	4		HPBF	2	OPEN	ELECTRONIC, 24 VDC	1

2

SYSTEM

NOTE: Outside Airflow (OA) By system Type

en one Air Handler supplies a mixture of OA and SA to a single Zone/Room: V_{ot} = V_{oz} one Air Handler supplies only OA to one or more Zones/Rooms: V_{ot} = ΣV_{oz} n one Air Handler supplies a mixture of OA and recirculated air to more than ne Zone/Room: See "Corrected Outdoor Air CFM" for Vot

4

CFM/FT² 0.32

5

	DIF	FUSER, GRILLE, A	AND REGI	STER SCH	IEDULE		
MARK	SERVICE	TYPE	CFM RANGE	NECK SIZE	RUNOUT SIZE	MAX NC	NOTE
C6	SUPPLY	CEILING	0-95	9X9	6"DIA	25	1,2,4
C8	SUPPLY	CEILING	100-225	9X9	8" DIA	25	1,2,4
C10	SUPPLY	CEILING	230-400	12X12	10" DIA	25	1,2,4
C12	SUPPLY	CEILING	405-600	15X15	12" DIA	25	1,2,4
C14	SUPPLY	CEILING	605-750	15X15	14" DIA	25	1,2,4
C16	SUPPLY	CEILING	755-875	18X18	16" DIA	25	1,2,4
S8	SUPPLY	SIDE WALL	0-175	8X8	8X8	25	1,4
S12	SUPPLY	SIDE WALL	180-275	12X8	12X8	25	1,4
S18	SUPPLY	SIDE WALL	280-425	18X8	18X8	25	1,4
S24	SUPPLY	SIDE WALL	425-535	24X10	24X10	25	1,4
S36	SUPPLY	SIDE WALL	540-900	36X10	36X10	25	1,4
R8	RETURN	CEILING OR WALL	0-175	8X8	8X8	25	1,3,4
R12	RETURN	CEILING OR WALL	0-400	12X12	12X12	25	1,3,4
R16	RETURN	CEILING OR WALL	0-650	16X16	16X10	25	1,3,4
R20	RETURN	CEILING OR WALL	0-1000	20X20	20X12	25	1,3,4
E8	EXHAUST	CEILING OR WALL	0-175	8X8	8X8	25	1,3,4
E12	EXHAUST	CEILING OR WALL	0-400	12X12	12X12	25	1,3,4
E16	EXHAUST	CEILING OR WALL	0-650	16X16	16X10	25	1,3,4
E20	EXHAUST	CEILING OR WALL	0-1000	20X20	20X12	25	1,3,4

1 - COORDINATE BORDER TYPE REQUIREMENTS WITH ARCHITECTURAL PLANS. T-BAR MOUNTED DIFFUSERS, GRILLES, AND REGISTERS SHALL HAVE A 24X24 EXTENDED PANEL FOR ALL LAY-IN TYPE CEILINGS.

2 - 4-WAY THROW UNLESS OTHERWISE INDICATED ON THE PLANS. SQUARE TO ROUND ADAPTER FOR DIFFUSERS WITH ROUND RUNOUTS. 3 - MAX VELOCITY 500 FPM

4 - PROVIDE RUNOUT SIZE SHOWN UNLESS OTHERWISE NOTED ON PLANS.





				MINIMU	M & CORRECTE) oa requif	EMENTS -	PER IMC 20	21					
PROJE(PROJE(CT NAME CT NUMBER		McLure Library 223008]						N	VAV BOX MIN	30%
		ZONE AIR DIS	TRIBUTION EFFECTIVENESS (Ez)	0.8	SEE TABLE 403	3.3.1.1 IMC 2	021, (=0.8,	TYPICAL FC	R HEATIN	IG MODE, CEILI	ING RETURN)			
			IMC-2015 FORMULAS : V _{bz} = R _p	$P_z + R_a A_z$, $V_{oz} = V_{bz} / E_z$, Z	d=V _{oz} /V _{dzm}								
AHU	ZONE	ROOM # or Description	OCCUPANCY CATEGORY	FT ² (A _z)	OCCUPANCY (Pz)	CFM / PERSON (R _P)	(Rp*Pz)	CFM / FT ² (R _a)	(Ra*Az)	MIN OA CFM / ZONE (V _{oz})	SUPPLY AIR CFM (V _{pz})	MINIMUM SUPPLY AIR CFM (VAV) (V _{dzm})	ZONE OA FRACTION (Z ₁)	ZONE EFFICIENCY (E _{vz})
		0124 FLAT FILE & BA STOR	NO OA REQUIRED	458	0	0	0	0	0	0	300			
в	1	0125 MECHANICAL	No Exhaust Required	77	0	0	0	0	0	0	30			
	·	0126 CLASSROOM SEMINAL		452	25	7.5	187.5	0.06	27.12	268	830			
			TOTALS FOR VAV B-1	987	25					268	1160	348	0.77	0.85
			TOTALS FOR AHU B	987	25 (S.P.)		187.5		27 (Ra*Az)	268	1160	$\frac{348}{(V_{\rm c}=5V_{\rm c})}$	-	

			F	Reference: IMC 2	021	
		FORMUL	_A'S: V _{ou} =	$D^*\Sigma V_{oz}$; E_{vz} =	1+X _s -Z _d ;	$V_{ot} = V_{ou}/E_v$
	SYSTEM POPULATION (P _S) 25	TOTAL POI	PULATION I	N THE AREA SI	ERVED BY	THE SYSTEM
Where:						
V _{ou} =	Uncorrected Outdoor Air CFM	V _{ou} =	215			NOTE: Outside Airflow (OA) By system Type
D=	Occupant Diversity = $P_s/\Sigma P_z$	D=	1.00	Single Zone	System - W	Then one Air Handler supplies a mixture of OA and SA to a single Zone/Room: V_{ot} = V_{oz}
		· · ·		 100% OA Sy	stem - Whe	en one Air Handler supplies only OA to one or more Zones/Rooms: V_{ot} = ΣV_{oz}
X _s =	Average Outdoor Air Fraction at AHU = $V_{ou} / \Sigma V_{dzm}$	X _s =	0.617	Multi-Zone S	ystem - Wh	en one Air Handler supplies a mixture of OA and recirculated air to more than
						one Zone/Room: See "Corrected Outdoor Air CFM" for Vot
E _v =	System Ventilation Efficiency = minimum (E_{vz})	E _v =	0.846	DESIGN	SQ FT	
V _{ot} =	Corrected Outdoor Air CFM	V _{ot} =	254	300	452	CFM/FT ² 0.7
					4	

		McLure Librany			1					
		223008]					
	CTNOMBER	223000	1							
		STRIBUTION FEFECTIVENESS (F_)	1	SEE TABLE 403	3 1 1 IMC 20	21 (=0.8	TYPICAL FO	R HEATIN	G MODE CEILIN	
			RnPz +		/Fz 7d=Vo	z/Vdzm				
				NaA2, VO2-VD2	/ <u> </u>					
AHU	ROOM # or Description	OCCUPANCY CATEGORY	FT ² (A _z)	OCCUPANCY (Pz)	CFM / PERSON (R _P)	(Rp*Pz)	CFM / FT ² (R _a)	(Ra*Az)	MIN OA CFM / ZONE (V _{oz})	SUPPLY AIR CFN (V _{pz})
••••••	0301 OFFICE 17	OFFICE SPACE	147	1	5	5	0.06	8.82	14	35
	0302 OFFICE 18	OFFICE SPACE	150	1	5	5	0.06	9	14	35
	0303 OFFICE 21	OFFICE SPACE	111	1	5	5	0.06	6.66	12	35
	0304 OFFICE 19	OFFICE SPACE	156	1	5	5	0.06	9.36	14	35
	0305 JANITOR	JANITOR, TRASH, RECYCLING	37	0	0	0	0	0	0	0
	0306 RR	TOILETS - PUBLIC, OFFICES	49	0	0	0	0	0	0	0
	0307 RR	TOILETS - PUBLIC, OFFICES	49	0	0	0	0	0	0	0
	0308 OFFICE 20	OFFICE SPACE	127	1	5	5	0.06	7.62	13	35
	0314 WORK/COPY	OFFICE SPACE	64	1	5	5	0.06	3.84	9	25
	0315 OFFICE 16	OFFICE SPACE	118	1	5	5	0.06	7.08	12	35
	0316 OFFICE 15	OFFICE SPACE	130	1	5	5	0.06	7.8	13	35
	0317 OFFICE 14	OFFICE SPACE	120	1	5	5	0.06	7.2	12	35
OA	0318 CLOSET	STORAGE ROOMS	124	0	0	0	0.12	14.88	15	20
	0319 LARGE CONFERENCE	CONFERENCE/MEETING	210	10	5	50	0.06	12.6	63	160
	0320 OFFICE 13	OFFICE SPACE	105	1	5	5	0.06	6.3	11	35
	0321 OFFICE 12	OFFICE SPACE	100	1	5	5	0.06	6	11	35
	0322 OFFICE 11	OFFICE SPACE	111	1	5	5	0.06	6.66	12	35
	0323 OFFICE 24	OFFICE SPACE	124	1	5	5	0.06	7.44	12	35
	0324 OFFICE 23	OFFICE SPACE	117	1	5	5	0.06	7.02	12	35
	0325 BREAK ROOM	BREAK ROOMS	303	8	5	40	0.06	18.18	58	150
	0326 OFFICE 22	OFFICE SPACE	122	1	5	5	0.06	7.32	12	35
	C305 CORRIDOR	CORRIDORS	477	0	0	0	0.06	28.62	29	70
	C306 CIRCULATION	CORRIDORS	227	0	0	0	0.06	13.62	14	35
	C307 CORRIDOR	CORRIDORS	94	0	0	0	0.06	5.64	6	20
	C308 CORRIDOR	CORRIDORS	210	0	0	0	0.06	12.6	13	30
			3,582	33	l		l		379	1000
			3,582	33		165		214	379	1000
		IUTALS FOR AHU - UA	(ΣFT^2)	(ΣP _z)	1	(Rp*Pz)	1	(Ra*Az)	(ΣV ₀₂)	$(V_{ps} = \Sigma V_{pz})$

PROJEC			M
PROJEC	CT NUMBER		22
AHU	ZONE	ROOM # or Description	
		0121 OFFICE 1	0
		0122 OFFICE 2	0
1E	1023	C107 CORRIDOR	
		C108 CORRIDOR	C
		C109 CORRIDOR	C
_			
	1001	0101 UNDERGRAD STUDIO	S
Γ		0107 JANITOR	J/
	1019	0108 MEN	
		C106 CORRIDOR	C
Г		0116 BINDERY	U
	1015	0117 BINDERY STORAGE	N
L			
			5/
Where:			
V _{ou} =		Uncorrected Outdoor Air CFM	
D=		Occupant Diversity = $P_s/\Sigma P_z$	
X.=		Average Outdoor Air Fraction at AH	IU =
E _v =		System Ventilation Efficiency = min	nimu
v _{ot} =		Corrected Outdoor Air CFM	
ROJEC		McLure Library	
ROJEC	INUMBER	223008	
ДШП		ROOM # or Description	
		0111 PAPER MILL	
1\//	1010A &	0112 BEATERS	
	1010B	0113 DRYING C103 CORRIDOR	
	1004A,	0103 STORAGE	
	1004B &	0104 PRINT SHOP & TYPE LAB	
	10040	C113 CORRIDOR	
	.		I
		0110 ELECTRICAL	
	1014		
			-
			יס
		SYSTEM POPULATION (P _S)

			Refer	rence: IMC 2	021		
			FORMULA'S: V _{ou} = D*∑	V_{oz} ; E_{vz} =	$1+X_s-Z_d$; $V_{ot} =$	V _{ou} /E _v	
	SYSTEM POPULATION (P _S)	30	TOTAL PO	PULATION I	N THE AREA SI	ERVED BY	Y THE SYSTEM
\ A //= = += +							
vvnere:							
V _{ou} =	Uncorrected Outdoor Air CFM		V _{ou} =	793			NOTE: Outside Airflow (OA) By system Type
D=	Occupant Diversity = P _s /∑P _z		D=	1.00	Single Zone	System - V	When one Air Handler supplies a mixture of OA and SA to a single Zone/Room: V_{ot} = V_{oz}
					100% OA Sy	vstem - Wh	hen one Air Handler supplies only OA to one or more Zones/Rooms: V_{ot} = ΣV_{oz}
X _s =	Average Outdoor Air Fraction at AHU = $V_{ou}/\Sigma V_{dzm}$		X _s =	0.551	Multi-Zone S	ystem - W	/hen one Air Handler supplies a mixture of OA and recirculated air to more than
			1 I				one Zone/Room: See "Corrected Outdoor Air CFM" for Vot
E _v =	System Ventilation Efficiency = minimum (E_{vz})		E _v =	0.801	DESIGN	SQ FT	
V _{ot} =	Corrected Outdoor Air CFM		V _{ot} =	990	1,000	3,256	CFM/FT ² 0.31

MINIMUM & C	ORRECT	ED OA REQUIRE	MENTS - PE	R IMC 2021	1						
re Library											
8									V	AV BOX MIN	30%
ZONE AIR DISTRIBUTION EFFECTIVENESS (E_z)	0.8	SEE TABLE 403	.3.1.1 IMC 2	021, (=0.8,	TYPICAL FC	R HEATIN	IG MODE, CEILI	NG RETURN)			
IMC-2015 FORMULAS : $V_{bz} = R_p P_z + R_a A_z$, V_{oz}	=V _{bz} /E _z ,	$Z_d = V_{oz} / V_{dzm}$		r r							
OCCUPANCY CATEGORY	FT ² (A ₇)	OCCUPANCY (Pz)	CFM / PERSON (R _P)	(Rp*Pz)	CFM / FT ² (R _a)	(Ra*Az)	MIN OA CFM / ZONE (V ₀₂)	SUPPLY AIR CFM (V _{oz})	MINIMUM SUPPLY AIR CFM (VAV) (V _{dzm})	ZONE OA FRACTION (Z₁)	ZONE EFFICIENCY (E _{vz})
CE SPACE	108	1	5	5	0.06	6.48	14	155			
DE SPACE	111	1	5	5	0.06	6.66	15	155			
CE SPACE	117	1	5	5	0.06	7.02	15	125			
RIDORS	185	0	0	0	0.06	11.1	14	20			
RIDORS	184	0	0	0	0.06	11.04	14	20			
RIDORS	196	0	0	0	0.06	11.76	15	25			
TOTALS FOR VAV 1E-1023	901	3					86	500	150	0.58	0.86
	957	15	0	0	0	0	0	/00			
KIDORS	511	0	0		0.06	30.66	38	60			
TOTALS FOR VAV 1E-1001	1,468	15					38	760	228	0.17	1.27
				· · · · · · · · · · · · · · · · · · ·		-					
OR, TRASH, RECYCLING	67	0	0	0	0	0	0	0			
TS - PUBLIC, SCHOOLS, THEATERS, SPORTS	138	0	0	0	0	0	0	50			
ERSITY/COLLEGE LABORATORIES	304	2	10	20	0.18	54.72	93	100			
	143	0	0	U	0.06	8.58	11	40	460	0.05	0.70
TOTALS FOR VAV 1E-1019	652	2					104	190	160	0.65	0.79
ERSITY/COLLEGE LABORATORIES	929	19	10	190	0.18	167.22	447	940			
A REQUIRED	77	0	0	0	0	0	0	10			
TOTALS FOR VAV 1E-1015	1,006	19					447	950	700	0.64	0.80
				1							
TOTALS FOR AHLL 1F	4,027	39		225		315	675	2400	1238		
	(5572)	(SP.)		(Rn*Pz)		$(Ra^*\Delta z)$	(SV)	$(V_{m} = \nabla V_{m})$	$(V_{n} = \Sigma V_{n})$		

	Ret	erence: IMC	2021		
	FORMULA'S: V _{ou} = D'	ΣV_{oz} ; E_{vz}	= 1+ X_s - Z_d ; V_{ot}	$= V_{ou}/E_v$	
39	TOTAL PO	PULATION I	N THE AREA S	ERVED BY	THE SYSTEM
	V _{ou} =	540			NOTE: Outside Airflow (OA) By system Type
	D=	1.00	Single Zone	System - V	When one Air Handler supplies a mixture of OA and SA to a single Zone/Room: $V_{ot} = V_{oz}$
			 100% OA Sy	/stem - Wh	en one Air Handler supplies only OA to one or more Zones/Rooms: $V_{ot} = \sum V_{oz}$
$V_{\Sigma}V_{dzm}$	X _s =	0.436	Multi-Zone S	ystem - Wł	nen one Air Handler supplies a mixture of OA and recirculated air to more than
	······				one Zone/Room: See "Corrected Outdoor Air CFM" for Vot
E _{vz})	E _v =	0.786	DESIGN	SQ FT	
	V _{ot} =	688	700	4,027	CFM/FT ² 0.17

MINIMUM & CORRECTED OA REQUIREMENTS - PER IMC 2021											
		1									
	Γ								、		40%
									v		40%
ZONE AIR DISTRIBUTION EFFECTIVENESS (E,)	0.8	SEE TABLE 403	.3.1.1 IMC 20	021, (=0.8,	TYPICAL FO		IG MODE, CEILI	NG RETURN)			
IMC-2015 FORMULAS : $V_{bz} = R_p P_z + R_a A_z$, $V_{oz} =$	V _{bz} /E _z ,	L Z _d =V _{oz} /V _{dzm}						, , , , , , , , , , , , , , , , , , ,			
OCCUPANCY CATEGORY	FT ² (A ₂)	OCCUPANCY (Pz)	CFM / PERSON (R₀)	(Rp*Pz)	CFM / FT ² (R ₂)	(Ra*Az)	MIN OA CFM		MINIMUM SUPPLY AIR CFM (VAV) (Vdam)	ZONE OA FRACTION (Z ₁)	ZONE EFFICIENCY (E _{rr})
VERSITY/COLLEGE LABORATORIES	722	15	10	150	0.18	129.96	350	1.040	(GZIII)		(12)
VERSITY/COLLEGE LABORATORIES	87	0	10	0	0.18	15.66	20	220			
VERSITY/COLLEGE LABORATORIES	51	0	10	0	0.18	9.18	11	150			
RRIDORS	199	0	0	0	0.06	11.94	15	40			
TOTALS FOR VAV 1W-1010A & 1010B	1,059	15					396	1450	580	0.68	0.87
LETS - PUBLIC, SCHOOLS, THEATERS, SPORTS	63	0	0	0	0	0	0	20			
DRAGE ROOMS	68	0	0	0	0.12	8.16	10	0			
VERSITY/COLLEGE LABORATORIES	1,691	15	10	150	0.18	304.38	568	1,900			
LETS - PUBLIC, SCHOOLS, THEATERS, SPORTS	148	0	0	0	0	0	0	30			
RRIDORS	92	0	0	0	0.06	5.52	7	0			
TOTALS FOR VAV 1W-1004A, 1004B & 1004C	2,062	15					585	1950	780	0.75	0.80
ECTRICAL EQUIPMENT ROOMS	135	0	0	0	0.06	8.1	10	200			
TOTALS FOR VAV 1W-1014	135	0					10	200	80	0.13	1.42
TOTALS FOR AHU 1W	3,256	30		300		493	991	3600	1440		
	(ΣFT ²)	(Σ P _z)		(Rp*Pz)		(Ra*Az)	(ΣV _{oz})	$(V_{ps} = \sum V_{pz})$	$(V_{ps} = \sum V_{dzm})$		













TYPICAL AUTOMATIC AIR VENT INSTALLATION DETAIL MO.06









F HVAC MAKE-UP CONNECTION DETAIL MO.06 NOT TO SCALE







6

3

4



1

PIPE INSULATION -AS SPECIFIED - PIPE INSULATION - PIPE CLAMP WITH INSULATION INSERT. - INSULATION SADDLE OR SHIELD: SADDLE FOR PIPES 2-1/2" DIA. AND LARGER SHIELD FOR PIPES 2" AND SMALLER SHIELD LENGTH = 1.5 X INSUL. DIA. PIPE — — UNISTRUT OR EQUAL H INSULATED PIPING SUPPORT DETAIL MO.07 NOT TO SCALE G PIPE HANGER DETAIL MO.07 NOT TO SCALE

2

M0.07



- CLEVIS HANGER

C CHEMICAL POT FEEDER





TYPICAL MECHANICAL HOUSEKEEPING PAD DETAIL

NOT TO SCALE















<u>REFRIGERANT PIPE HANGER DETAIL</u>

4

M0.09



NOT TO SCALE

- REFER TO PLANS FOR DUCTED COMBUSTION AIR ROUTING

E CTE - CWS PUMP BYPASS CONTROL VALVE NOT TO SCALE

FLANGED CONTROL VALVE

3



└─ TO NEW OR EXISTING PIPING, TWO PLACES

2









AUTHERINE LUC

3

<u>KEYED NOTES</u>

- $\langle 1 \rangle$ INSTALL 6" VALVES IN EXISTING 6" CWS/R SERVING MCLURE AND LUCY. SHUTDOWN SHALL BE LIMITED TO 24 HOURS FOR THIS WORK. WORK TO BE SCHEDULED WITH UA, AND FOR BIDDING PURPOSES IS ASSUMED TO OCCUR EITHER DURING UA'S THANKSGIVING BREAK OR CHRISTMAS BREAK. THE C&BA CHILLED WATER PUMPS/PLANT MUST BE SHUT DOWN FOR THIS WORK TO OCCUR. FOLLOW PROTOCOLS FOR US SHUTDOWN MEETINGS/NOTIFICATIONS PER THE SPECIFICATIONS.
- $\langle 2 \rangle$ EXISTING CWS/R VALVES FOR ISOLATING LUCY IN THIS GENERAL AREA IN BASEMENT MECH. ROOM.
- $\overline{3}$ LUCY MECHANICAL ROOM ACCESS DOWN EXTERIOR STAIRS.
- $\langle \mathbf{4} \rangle$ phase work such that new U.G. pipe north of this area to occur during a UA APPROVED SHUTDOWN PERIOD TO LIMIT OUTAGE FOR LUCY HALL. FOR BIDDING ASSUME WORK TO OCCUR EITHER DURING UA'S THANKSGIVING BREAK OR CHRISTMAS BREAK.
- 5 COORDINATE CLOSELY WITH GENERATOR INSTALLATION AND PLAN ACCORDINGLY DUE TO OTHER PHASING REQUIREMENTS.



C&BA PLANT CHILLED WATER PIPING SITE PLAN

2















HHB Engineers, P.C. CONSULTING ENGINEERS PRATTVILLE, AL 334/358-2707





KEYED NOTES

- (1) EXHAUST TO SNORKLE AT PRESS. SEE M501 FOR SNORKLE
- $\langle 2 \rangle$ 8"/8" EXHAUST DUCT UP.
- $\langle 3 \rangle$ 16"/10" SUPPLY AN 24"/10" RETURN DUCT UP AHU-1W.
- $\langle 4 \rangle$ BOILER VENT AND INTAKE UP TO ROOF.
- 5 18" x 8" EXHAUST GRILLE, 400 CFM.
- 6 R12 TRANSFER GRILLE WITH 12"/12" TRANSFER DUCT.
- $\langle 7 \rangle$ 18"/10" EXHAUST DUCT UP.
- $\langle 8 \rangle$ 10" x 6" DOOR TRANSFER GRILLE.
- $\langle 9 \rangle$ 3/4" UNDERCUT DOOR.
- $\langle 10 \rangle$ WALL SWITCH FOR ON/OFF CONTROL OF EXHAUST FAN EF-4. USERS TO ENABLE FAN CLEANING PRESS. LABEL SWITCH "SNORKLE EXHAUST".
- WALL SWITCH FOR ON/OFF CONTROL OF EXHAUST FAN EF-2. USERS TO ENABLE FAN WHEN CLEANING PRESSES, LABEL SWITCH "SNORKLE EXHAUST".
- $\langle 12 \rangle$ OFFSET IN DUCT DUE TO BEAM.
- (13) ROUTE IN SPACE BETWEEN BEAMS.
- ACCESS DOOR IN OA PLENUM FOR INSPECTION / CLEANING.
- $\langle 15 \rangle$ UTILIZE EXISTING OPENING FOR DUCT, THEN OFFSET
- $\langle 16 \rangle$ DUCT AT 6'-5" AFF, TIGHT TO WALL.

1

2







SHEET NOTES

1. ALL RETURN TO BE DUCTED, NO PLENUM.

KEYED NOTES

- 10" Ø SA DUCT UP, AND 12"/12" RA DUCT UP.
- (2) 16"/12" EXHAUST DUCT UP.
- 3 14"/14" SA , 18"/12" RA, AND 14"/12" EXHAUST DUCT DOWN.
- 4 8"/8" EXHAUST DUCT DOWN.
- $\langle 5 \rangle$ 12"/10" EXHAUST DUCT UP.
- 6 10"/8" EXHAUST DUCT DOWN. WITH COMBINATION FIRE/ SMOKE DAMPER AT FLOOR LEVEL.
- $\langle 7 \rangle$ 3/4" UNDERCUT DOOR.
- 8 PROVIDE ACCESS DOOR IN OA PLENUM FOR INSPECTION / CLEANING.
- $\langle 9 \rangle$ OFFSET IN DUCT.
- (10) BOILER VENT. EXTEND 36" MINIMUM ABOVE ROOF OR GREATER PER MANUFACTURES IOM.
- (11) BOILER COMBUSTION AIR INTAKE, WITH 2 90°L SUCH THAT INTAKE IS PARALLEL WITH ROOF, 12" MINIMUM ABOVE ROOF.



2





5

- 1. ALL RETURN TO BE DUCTED, NO PLENUM.
- AHU-OA HANG FROM ABOVE. AHU-OA TO PROVIDE ROOM NEUTRAL AIR TO EACH ROOM WITH FAN COIL UNIT.

- (9) COORDINATE WITH EXISTING ROOF FRAMING. ROUTE





4

6



<u>SHEET NOTES</u> (ROOF PLAN)

- 1. ALL ROOF MOUNTED EQUIPMENT MUST BE 10 FT FROM ROOF EDGE, MINIMUM.
- 2. EXTERIOR RS/RL TO BE COVERED WITH ALUMINUM JACKETING.

2

3





HHB Engineers, P.C. CONSULTING ENGINEERS PRATTVILLE, AL 334/358-2707



	E
HEET SIZE: 42x30 ARCH E1	
Ŷ	D
HB #223008	
Ŧ	С
	В
1/25/2024 3:53:23 PM	A



HVAC - FIRST FLOOR PLAN - PIPING M3.01 1/8" = 1'-0"

 \square








KEYED NOTES

- (1) HVAC CONTROL PANEL, PROVIDE UNISTRUT STAND FOR MOUNTING.
- CONDENSATE DRAIN TO FLOOR DRAIN IN MECH. ROOM 1017. DO NOT ROUTE ACROSS WALKING PATH.
- $\langle 3 \rangle$ CONDENSATE DRAIN TO JANITOR SINK.
- $\langle 4 \rangle$ EMERGENCY BOILER & WATER HEATER OFF SWITCH. GENERAL ROUTING OF CONTROL CONDUIT FROM BOS TO
- SW-051-1. ROUTE TIGHT TO STRUCTURE AND PERIMETER WALLS OF ROOM 1019 (EXPOSED, NO CEILING).
- $\langle 6 \rangle$ HW DP SENSOR MOUNTED HIGH ON WALL.
- $\overline{7}$ COOLING ONLY.



2





T SIZE: 42x30 ARCH E1

HB #223008

25/2024 3:53:27 |

6

5



2







4'

1. ALL EQUIPMENT TO HAVE ISOLATION VALVES PER SPECIFICATIONS & DETAILS. NOT ALL ACCESSORIES, VALVES, ETC. ARE SHOWN THIS PLAN AT COILS AND EQUIPMENT.

5

)	PROC	ESS AN		ONTRO	L DIAG	RAM	LEGE	ND			
			l	NSTRU	JMENT	IDENT	IFICA	TION	LETT	ERS	
T	<u>TER</u>	<u>FI</u>	RST LETT	<u>ER</u>				SUCC	EEDING LET	<u>TERS</u>	
		MFASURFD OR				RFADO	UT OR				
	Ì	NITIATING /ARIABI F		MODIFIFR		PASSIN	/E ION	(F	OUTPUT FUNCTION		MODIFIFR
۵				MODIFIER		ALARM		·			
B	Ē	BURNER FLAME				USER'S	CHOICE	ι	JSER'S CHOICE		USER'S CHOICE
С	(CONDUCTIVITY						(CONTROL		
D	ſ	DIGITAL		DIFFERENTIAL							DEVIATION
Ε	١	/OLTAGE (EMF)				PRIMARY ELEMENT					
F	F	LOW		RATIO (FRACTION)							
G	(GAUGING				GLASS					
Н	ŀ	IAND									HIGH
I	(CURRENT FLFCTRICAL)				INDICATE					
J	F	POWER		SCAN							
K	(CONSISTENCY						(CONTROL STATION	l	
L	l	EVEL				LIGHT (F	PILOT)				LOW
М	N	AOISTURE, IUMIDITY									MIDDLE, INTERMEDIATE
N	1	IME				USER'S	CHOICE	ι	JSER'S CHOICE		USER'S CHOICE
0	S	SMOKE				ORIFICE (RESTRIC	TION)				
Ρ	F	PRESSURE,				POINT (IEST				
0	N (ACUUM				CONNEC	FION)				
Q	F	PAPERBREAK		TOTALIZE							
R	F	RADIOACTIBITY SOLENOID,				RECORD,	PRINT				RATE
2	e F	SPEED, REQUENCY		SAFETY, SEQUENCE				3	WIICH		
Т	1	EMPERATURE						I	RANSMIT		
U	N .					MULTIFU	NCTION	h v			MULTIFUNCTION
v w	, N	VISCOSITY				WFU		Ň	ALVE, DAMPER		
x	l	JNCLASSIFIED				UNCLASS	SIFIED	ι	INCLASSIFIED		UNCLASSIFIED
Y	ι	JSER'S CHOICE, CA	RBON MONOX	IDE				F	RELAY, COMPUTE		
Z	F	POSITION							DRIVE, ACTUATE		
	SIG	SNAL CO	ONVE	RTER	DESIGN	ATION		F	UNCTIC	N R	ELAY SY
F	IRST LETT	ER	PART	TITION	SECOND	LETTER			SYMBOL	FUNCTI	<u>ON</u>
-				1					Σ	ADD OR T	OTALIZED SEVERAL IN
Б	HYDRAULIC			/	HYDRAULIC				*	BIAS A SII	NGLE INPUT UP OR D
I	CURRENT			/	CURRENT				X	MULTIPLY	ONE INPUT BY ANOTH
0	ELECTROMAG	NETIC, SONIC		/	ELECTROMAGN	IETIC, SONIC			> <	SELECT LO	UWEST OF SEVERAL V
Ρ	PNEUMATIC			/	PNEUMATIC				<u> </u>	REVERSE 1	THE SIGNAL ACTION
R	RESISTANCE			/	RESISTANCE				<u>_</u>	INTEGRATE	WITH RESPECT TO T
A D				/	DIGITAL				(-)	SUBTRACT	TWO SIGNALS
	SEDV		רצ	/							
		SERVICE									
<u> </u>	BDD	BACKDRAFT DAMP	ER								
	CWR	CHILLED WATER R	RETURN								
	CWS	CHILLED WATER S	SUPPLY								
	CS CP	CONDENSER WATE									
	D	DRAIN	IN NEIUKN								
÷	FCD	FLOW CONTROL D	AMPER								
	GS GR	GLYCOL SUPPLY GLYCOL RETURN									
	HWR	HOT WATER RETU	RN								
	nws MU	MAKE-UP WATER	Ĺ								
	RRW	RECLAIMED RAIN									
	HRR	HEAT RECOVERY	RETURN								

4

GENERAL CONTROL NOTES

- 1. BASIS OF DESIGN IS A DISTECH BACNET/IP SYSTEM WITH NIAGRA BASED FRONT END SOFTWARE INTEGRATED WITH US CAMPUS SYSTEM.
- 2. ALL CONTROL CABLE FOR SPACE MOUNTED INSTRUMENTS WILL BE CONCEALED IN WALL CONSTRUCTION AND BE INSTALLED IN CONDUIT. CABLE ABOVE LAY-IN CEILING TO BE PLENUM RATED CABLE. PROVIDE SLEEVE THROUGH ALL INTERIOR PARTITIONS THAT EXTEND TO STRUCTURE. ALL CONTROL CABLE NOT ABOVE A LAY-IN CEILING SHALL BE IN CONDUIT. ALL CONDUITS REQUIRED FOR CONTROL SYSTEM TO BE THE RESPONSIBILITY OF THE CONTROL CONTRACTOR.
- ALL CONTROL CABLE EXTERIOR TO BUILDING TO BE IN GRC TYPE CONDUIT.
 24-VOLT CONTROL POWER TO VAV TERMINAL FROM CONTROL PANEL IS
- THE RESPONSIBILITY OF THE CONTROLS CONTRACTOR.
- 5. FOR SYSTEMS WITH VARIABLE SPEED DRIVES, DRIVES TO NOT BE OPERATED BELOW 30% (OR MINIMUM RECOMMENDED BY MANUFACTURER).

MISCELLANEOUS CONTROL NOTES

2

- 1. PROVIDE START/STOP OF DOMESTIC HOT WATER RECIRCULATING PUMP.
- 2. PROVIDE INTERLOCK WITH DOMESTIC HOT WATER HEATER FOR ON/OFF STATUS AND ALARMS.
- 3. WATER PRESSURE SENSOR IN MAIN DOMESTIC WATER SERVICE ENTRY TO BUILDING, LOCATED IN FIRE RISER ROOM.
- 4. PROVIDE EMERGENCY SHUT OFF SWITCH TO SHUT OFF WATER HEATER AND BOILERS, REFER TO M3.02 FOR LOCATION.
- 5. INTERLOCK ELEVATOR SUMP PUMP CONTROL PANEL FOR HIGH WATER AND HIGH OIL ALARMS AND STATUS.

MBOLS

NPUTS DOWN

HER

VARIABLES

VARIABLES

TIME

3

6

4

- PRODUCED IF THE LAG BOILER IS NOT PROVEN OPERATING AFTER 15 MINUTES. THE HW PLANT

- TOGGLE THE LAG PUMP TO THE LEAD AND VICE VERSA.
- DECREASES THE SPEED OF THE PUMP.

2. A CRITICAL ALARM IS PRODUCED IF THE BOILER IS NOT PROVEN OPERATING AFTER 15 MINUTES. THE ALARM MESSAGE WILL INDICATE THE AFFECTED BOILER AND CONDITION THAT CAUSED THE ALARM. START THE LAG BOILER AND LOCKOUT THE LEAD BOILER UNTIL THE ALARM IS ACKNOWLEDGED BY AN OPERATOR AND THE ALARM IS CLEARED. A CRITICAL ALARM IS

IS DISABLED AND AN ALARM MESSAGE PRODUCED INDICATING THE REASON FOR DISABLING THE

1. BOILERS TO BE STAGED TO MAINTAIN HOT WATER SUPPLY TEMPERATURES AND TO OPERATE AT

2. WHEN THE LEAD BOILER IS OPERATING AND THE LOAD IS GREATER THAN 60% FOR 10 MINUTES AND THE 2ND/ BOILER IS NOT IN ALARM, ENABLE THE 2ND/ BOILER. THE BOILER UNIT

3. TO STAGE BOILERS, TEMPORARILY UNLOAD THE ACTIVE BOILER(S) BY LOWERING THE HW SETPOINT 5 MINUTES (ADJUSTABLE) BEFORE THE OFF-LINE BOILER IS ENABLED. THEN ENABLING THE LAG BOILER PUMP. THEN, RAMP ALL BOILERS UP TO THE REQUIRED LOAD TOGETHER. DURING THE STAGING SEQUENCE, LOCK THE HW PUMP(S) SPEED AT ITS CURRENT VALUE. 4. WHEN TWO BOILERS ARE OPERATING AND THE LOAD IS LESS THAN 40% FOR 20 MINUTES.

1. THE PURPOSE IS TO PROVIDE EQUAL RUN TIME PER PUMP. OPERATE THE LEAD HW PUMP FOR 21 DAYS. AFTER THIS TIME, ONE OF THE LAG HW PUMPS BECOMES THE LEAD AND THE LEAD BECOMES THE LAG. THE LEAD/LAG CHANGE IS TO OCCUR BETWEEN THE HOURS OF 8:00AM AND 5:00 PM MONDAY - FRIDAY. INDICATE THE LEAD AND LAG PUMPS ON THE PLANT GRAPHICS SCREEN. PROVIDE A BUTTON ON THE PLANT GRAPHICS SCREEN TO MANUALLY

2. A CRITICAL ALARM IS PRODUCED IF THE LEAD PUMP FLOW IS NOT PROVED AFTER 30 SECONDS. THE ALARM MESSAGE WILL INDICATE THE AFFECTED PUMP AND CONDITION THAT CAUSED THE ALARM. START THE LAG PUMP AND LOCKOUT THE LEAD PUMP UNTIL THE ALARM IS ACKNOWLEDGED BY AN OPERATOR AND THE ALARM IS CLEARED. A CRITICAL ALARM IS

PRODUCED IF THE LAG PUMP FLOW IS NOT PROVED AFTER 30 SECONDS. THE HW PLANT IS DISABLED AND AN ALARM MESSAGE PRODUCED INDICATING THE REASON FOR DISABLING THE

1. PUMP SPEED IS CONTROLLED TO MAINTAIN DP AT SETPOINT WHEN THE PUMP IS PROVEN ON. A DROP IN THE DP INCREASES THE SPEED OF THE PUMP AND AN INCREASE IN THE DP

2. DIFFERENTIAL PRESSURE CONTROL. THE OBJECTIVE IS TO ALWAYS HAVE ONE HEATING CONTROL VALVE 90% OPEN SO THE PUMP OPERATES AT THE LOWEST SPEED AND PRESSURE POSSIBLE TO SATISFY THE CURRENT LOAD. EVERY 5 MINUTES THE HEATING VALVES SHALL BE POLLED. WHEN THE MOST OPEN HEATING VALVE IS MORE THAN 90% OPEN, THE BAS SHALL RESET THE

DIFFERENTIAL PRESSURE SETPOINT UP BY .50 PSID (ADJ). WHEN ALL HEATING CONTROL VALVES ARE 60% (ADJ) OR BELOW, THE BAS SHALL RESET THE DIFFERENTIAL PRESSURE SETPOINT DOWN BY .25 PSID.

- 3. THE REMOTE DP SETPOINT SHALL BE MAINTAINED BETWEEN MAXIMUM AND MINIMUM PRESSURES. THE MAXIMUM PRESSURE LIMIT IS THE PRESSURE REQUIRED TO PROVIDE FULL FLOW TO ALL HEATING CONTROL VALVES SIMULTANEOUSLY (PER TAB). THE MINIMUM PRESSURE LIMIT IS THE PRESSURE CORRELATING TO THE LOWEST SPEED THE PUMP MOTOR IS ALLOWED TO BE OPERATED AT (PER MOTOR MANUF. AND TAB).
- G. HOT WATER SUPPLY RESET
- 1. THE BOILER FACTORY INSTALLED CONTROLS AND INSTRUMENTATION MAINTAINS A LEAVING HW TEMPERATURE OF 90°F, WITH SETPOINT ADJUSTED FROM BAS AS DESCRIBED.
- 2. RESET THE HOT WATER SUPPLY TEMPERATURE SETPOINT BASED ON OUTSIDE AIR TEMPERATURE 3. AT OUTSIDE AIR TEMPERATURES ABOVE 65-F, HOT WATER SUPPLY TEMPERATURE TO BE 90 DEGREES F. PROVIDE A LINEAR RESET OF 140-DEGREES SUPPLY AT OUTSIDE AIR TEMPERATURE OF 30 DEGREES F.
- 4. A HEATING REQUEST IS GENERATED WHEN ANY HOT WATER CONTROL VALVE POSITION EXCEEDS 90% OPEN.
- a. EVERY 2 MINUTES, INCREASE ("TRIM") THE HW PLANT RESET POINT BY 1% AND IF THERE ARE MORE THAN 3 HEATING REQUESTS THEN INCREASE ("RESPOND") THE RESET POINT BY 2% FOR EACH HEATING REQUEST, UP TO A MAXIMUM OF 5% INCREASE EVERY 2 MINUTES. MAKE ALL VALUES ADJUSTABLE FOR TUNING.
- b. AS THE HW PLANT RESET POINT INCREASES FROM 0% TO 50% THE DP SETPOINT IS FIRST RESET FROM MINIMUM (5 PSI) TO MAXIMUM (12 PSI).
- c. FROM 50% TO 100% THE HWS SETPOINT IS RESET FROM MINIMUM (90°F) TO MAXIMUM (150°F). WHEN THE HEATING PLANT IS OFF, FREEZE T-MAX AT ITS LAST MAXIMUM VALUE.

INTERLOCK AND CONTROL NOTES

 $\langle \mathsf{A}
angle$ heating plant controller to enable boiler pump and boiler based on sequence of OPERATION. DISABLE BOILER IF PROOF OF BOILER PUMP THROUGH CS IS NOT INDICATED, ENABLE LAG BOILER PUMP AND BOILER, GENERATE SOFTWARE ALARM.

- a. WHEN ENABLING A BOILER AND PUMP: PUMP TO BE ENABLED 5-MINUTES PRIOR TO BOILER START SIGNAL
- BOILER START SUBJECT TO CLOSING FLOW SWITCH CONTACTS
- WHEN DISABLING AT BOILER:
- e. PUMP TO BE ENABLED FOR 5-MINUTES AFTER BOILER SHUT-DOWN HAS BEEN INITIATED.

 $\langle B \rangle$ current switch to provide proof of operation for boiler pump. Provide alarm on PUMP FAILURE, ENABLE LAG PUMP.

 $\langle c \rangle$ boiler controller setpoint to be reset based on sequence of operation, see M7.3.

(D) PROVIDE SOFTWARE ALARM ON GENERAL BOILER FAILURE CONDITION.

 $\langle E \rangle$ FOR GENERAL MONITORING PURPOSES.

2

- $\langle F \rangle$ provide software alarm tal-hws "low hot water supply temperature" if temperature AT TT-HWS IS 20-DEGREES BELOW SETPOINT FOR OVER 15 MINUTES.
- G heating plant controller to enable system pumps on a lead/lag sequence based on SEQUENCE DESCRIBED ABOVE, ENABLE LAG PUMP IF PROOF OF OPERATION NOT ESTABLISHED, GENERATE SOFTWARE ALARM.
- H> PRESSURE CONTROL LOOP PIC-110 TO MODULATE PUMP VARIABLE SPEED DRIVES BASED ON VALVE POSITION OF HEATING COIL VALVES.
- $\langle I \rangle$ current switch to provide proof of operation for pump. Provide alarm on pump FAILURE, ENABLE LAG PUMP

RELIEF VALVE, SEE MAKE-UP WATER DETAIL FOR SETPOINT. - PRV, SEE MAKE-UP WATER DETAIL FOR SETPOINT.

AHU SEQUENCE OF OPERATION

6

A. RUN CONDITIONS

- 1. UNIT SHALL BE AUTOMATICALLY OR MANUALLY ENABLED TO RUN IN OCCUPIED. OCCUPIED-STANDY OR UNOCCUPIED MODE AS FOLLOWS: a. AUTOMATIC OPERATION IN ALL MODES SHALL BE AS DEFINED BELOW IN THE VAV ZONE TERMINAL UNIT INTERFACE, FAN CONTROL AND
- OUTDOOR AIR CONTROL SECTIONS. **b.** OR MANUALLY SELECTED BY USER FROM GRAPHIC INTERFACE. c. OR THROUGH A MANUAL OVER-RIDE INTEGRAL WITH THE SPACE THERMOSTAT.
- d. WHEN THE UNIT IS STOPPED (MANUALLY, AUTOMATICALLY IN UNOCCUPIED, OR FROM SAFETY FUNCTIONS), THE FAN SHALL BE DE-ENERGIZED, THE OUTSIDE AIR (OA) DAMPER SHALL CLOSE, INTERLOCKED EXHAUST FANS DISABLED, THE CHW VALVE SHALL CLOSE COMPLETELY AND THE PREHEAT VALVE SHALL BE CONTROLLED AS DESCRIBED IN PREHEAT SECTION.
- 2. OCCUPIED STANBY: DURING THIS WARM-UP/COOL-DOWN MODE, THE UNIT AIR MIXING DAMPERS SHALL OPERATE AS DESCRIBED IN THE UNOCCUPIED MODE, AND EXHAUST RELIEF FANS SHALL BE DISABLED.
- SETPOINTS PER OCCUPIED NODE SETTINGS. **3. SAFETY SHUTDOWNS:**
- a. FREEZE PROTECTION: THE UNIT SHALL SHUT DOWN AS DESCRIBED ABOVE AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS ON LEAVING SIDE OF PREHEAT COIL. MANUAL RESTART REQUIRED.
- SHUTDOWN SIGNAL. FINAL SETTING SHALL BE ADJUSTED IN THE FIELD, BASED ON APPROXIMATELY 30% SAFETY FACTORY BEYOND EACH SYSTEM.
- c. GENERAL FIRE ALARM: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A GENERAL ALARM FROM FIRE ALARM SYSTEM.
- 4. FAN STATUS MONITORING AND ALARMS SHALL BE PROVIDED AS FOLLOWS: a. FAN FAILURE : STATUS DOES NOT MATCH COMMAND **b. FAN VFD FAULT.**
- 5. POWER OUTAGE RESTART: PROVIDE TIMED DELAY RESTART OF AIR HANDLING UNIT.
- B. ZONE VAV AIR TERMINAL UNIT INTERFACE 1. AT A MINIMUM, ALL VAV TERMINAL UNITS SERVED BY AN AHU SHALL BE LINKED WITH ASSOCIATED VAV AHU CONTROLLER TO PERFORM THE FOLLOWING FUNCTIONS.
- a. ZONE OCCUPANCY SCHEDULE (USER DEFINED FROM GRAPHIC INTERFACE) SHALL AUTOMATICALLY SELECT THE OCCUPIED OR UNOCCUPIED OPERATING MODE OF AIR HANDLING UNIT. 1) ACTIVATION OF TIMED OVERRIDE SWITCH ON ZONE THERMOSTATS (IF PROGRAMMED) SHALL ONLY RESET ZONE HEATING AND COOLING SETPOINTS TO "OCCUPIED" VALUES, BUT SHALL NOT AFFECT OTHERWISE SCHEDULED UNOCCUPIED OPERATING MODE OF AIR HANDLING
- UNIT. 2) WHEN A TIMED OVER-RIDE IS INITIATED, BAS TO OPEN ALL VAV TERMINAL BOXES SERVED TO THE MINIMUM SETPOINT POSITION (TO
- ALLOW SUFFICIENT AIR FLOW TO KEEP VARIABLE SPEED DRIVE ABOVE ITS MINIMUM SETPOINT)
- b. DUCT STATIC PRESSURE RESET AS DESCRIBED IN FAN CONTROL SECTION. c. UNOCCUPIED CALL FOR HEATING OR COOLING: SUPPLY FAN ENABLED, OUTSIDE AIR DAMPER CLOSED. VAV TERMINAL AIR VALVE AT MINIMUM. TEMPERATURE CONTROLLED TO NIGHT SET-UP OR SET-BACK SETPOINT.
- C. FAN CONTROL

1. GENERAL: THE SUPPLY FAN SPEED SHALL BE MODULATED TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT WHICH SHALL BE AUTOMATICALLY RESET TO MEET ZONE AIRFLOW DEMANDS. THE DAMPER CONTROLS ARE DISCUSSED IN THE MINIMUM OA CONTROL SECTION. 2. OCCUPIED MODE: a. SUPPLY FAN:

- 1) SHALL BE ENABLED TO RUN CONTINUOUSLY. UNLESS SHUTDOWN ON SAFETIES. 2) SUPPLY FAN SPEED CONTROL VIA AIR DUCT STATIC PRESSURE CONTROL - OPTIMIZED: THE CONTROLLER SHALL MEASURE DUCT STATIC PRESSURE AND MODULATE THE SUPPLY FAN VFD SPEED TO MAINTAIN AN OPTIMIZED DUCT STATIC PRESSURE SETPOINT. a) THE INITIAL DUCT STATIC PRESSURE SETPOINT SHALL BE 1.5 IN H/20 (ADJ.).
- AIRFLOW AND SPACE TEMPERATURE REQUIREMENTS AS DESCRIBED BELOW.
- c) WHEN THERE ARE NO ZONE AIRFLOW REQUESTS, (WHEN ALL ZONE DAMPERS ARE THROTTLING CLOSED BELOW 90% OPEN AND ITS LOWEST OPERATING SPEED LIMIT.
- RATIO IS LESS THAN 90% AND SPACE TEMPERATURE IS NOT SATISFIED, THE REVERSE SHALL OCCUR AND THE DUCT STATIC PRESSURE SETPOINT SHALL INCREMENTALLY RESET UP AT SAME RATE AS ABOVE TO A MAXIMUM OF 1.5 IN H/20 (ADJ.).
- **3. OCCUPIED STANDBY, OR UNOCCUPIED MODE:**
- THERE ARE NO ZONE COOLING OR HEATING REQUESTS AS DEFINED AT THE VAV TU CONTROL LEVEL.

NOTE: THE CONTROL BANDS, SETPOINT INCREMENT VALUES, SETPOINT DECREMENT VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED AND TUNED TO MAINTAIN MAXIMUM STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.

D. MINIMUM OUTSIDE AIR VENTILATION CONTROL

- 1. GENERAL: WHEN IN OCCUPIED MODE, THE MINIMUM OUTSIDE AIR SHALL BE MEASURED AND CONTROLLED TO MAINTAIN VENTILATION AND PRESSURIZATION REQUIREMENTS.
- a. AN AIRFLOW MEASURING STATION TO CONTINUOUSLY MONITOR THE MINIMUM OUTSIDE AIR VOLUME IN CFM AND SEND OUTPUT TO THE BAS TO MAINTAIN OA CFM SETPOINT AS SYSTEM FAN MODULATES. OA CFM INPUT AND OUTPUT, AND OA DAMPER POSITION SHALL BE MONITORED AND GRAPHICALLY DISPLAYED IN THE BAS.

5

a. THE AHU SHALL BE STARTED UPON REQUEST FROM ANY OF ITS ASSOCIATED AIR TERMINAL UNIT CONTROLLERS WITH SPACE TEMPERATURE

b. HIGH STATIC SHUTDOWN: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A HARD-WIRED HIGH STATIC NORMAL MAXIMUM OPERATING CONDITIONS TO AVOID NUISANCE TRIPS, BUT NOT TOO EXCEED DUCT CONSTRUCTION PRESSURE CLASS FOR

b) EACH AHU CONTROLLER SHALL BE NETWORKED WITH ALL ASSOCIATED VAV TERMINAL UNITS TO OBTAIN AIRFLOW REQUESTS. THE STATIC PRESSURE SETPOINT SHALL BE RESET BASED ON ZONE AIRFLOW REQUESTS. DERIVED FROM DAMPER POSITION AND MEETING

ACTUAL/SETPOINT AIRFLOW RATIO IS GREATER THAN 95%). THE DUCT STATIC PRESSURE SETPOINT SHALL BE INCREMENTALLY RESET DOWN BY 0.10" AT A FREQUENCY OF 10 MINUTES TO A MINIMUM OF 0.50 IN H/20 (ADJ.) OR THE SUPPLY FAN VFD HAS REACHED

d) AS AIRFLOW REQUESTS INCREASE, WHEN AT LEAST ONE ZONE DAMPER IS GREATER THAN 99% OPEN AND ACTUAL/SETPOINT AIRFLOW

a. THE UNIT SHALL NORMALLY BE OFF AND BE ENABLED AS NECESSARY TO SATISFY A USER DEFINABLE MINIMUM NUMBER OF ZONE COOLING REQUESTS. THE FAN SHALL OPERATE UNDER NORMAL FAN CONTROL, AND SHALL RUN FOR A MINIMUM OF 30 MINUTES (ADJ.) OR UNTIL

2. STARTUP SEQUENCE: UPON STARTUP, OPEN THE RETURN DAMPER 100% AND THE MINIMUM OA TO ABSOLUTE MINIMUM POSITION

a. WHEN THE UNIT IS STARTED IN OCCUPIED MODE AND OUTSIDE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.), THE OUTSIDE AIR (OA) DAMPER SHALL RAMP OPEN TO ITS MINIMUM SETPOINT OVER A 5 MINUTE (ADJ.) PERIOD. WHEN OAT IS >40°F, THERE SHALL NOT BE A DELAYED RAMP OPEN PERIOD.

E. TEMPERATURE AND HUMIDITY CONTROL

FUNCTIONS AS DESCRIBED IN THE SECTIONS FOLLOWING. a. OUTSIDE AIR TEMPERATURE

1) NETWORKED

b. RETURN AIR TEMPERATURE:

PERIODS).

a) HIGH RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS GREATER THAN 85'F (ADJ.) FOR MORE THAN 30 MINUTES (ADJ.). b) LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 65'F (ADJ.), FOR MORE THAN 30 MINUTES (ADJ.).

c. RETURN AIR HUMIDITY THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY. 1) ALARMS SHALL BE PROVIDED AS FOLLOWS:

a) HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN UPPER LIMIT OF 70% (ADJ.). d. MIXED AIR TEMPERATURE: THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND DISPLAY.

e. PREHEAT LEAVING AIR TEMP: SEE PREHEAT TEMPERATURE CONTROL

f. DISCHARGE AIR TEMPERATURE: 1) ALARMS SHALL BE PROVIDED AS FOLLOWS: a) HIGH DISCHARGE AIR TEMP: IF GREATER THAN 5°F (ADJ.) ABOVE EFFECTIVE DAT SETPOINT OR UPPER LIMIT OF 75°F (ADJ)

b) LOW DISCHARGE AIR TEMP: IF LESS THAN 5'F (ADJ.) BELOW EFFECTIVE DAT SETPOINT (ADJ.)

2. AHU CHW REQUESTS TO BE USED FOR CHILLED WATER DIFFERENTIAL PRESSURE SETPOINT RESET.

F. PREHEAT TEMPERATURE CONTROL

1. WHEN ENABLED, THE CONTROLLER SHALL MODULATE THE PHC VALVE TO MAINTAIN THE DAT HEATING SETPOINT AS INDICATED ON SCHEDULE (ADJ.).

2. THE PREHEATING VALVE SHALL BE ENABLED WHENEVER: a. OUTSIDE AIR TEMPERATURE IS LESS THAN 45°F (ADJ.). b. AND THE SUPPLY FAN STATUS IS ON.

c. AND THE COOLING (IF PRESENT) IS NOT ACTIVE.

d. OR THE UNIT IS OFF AND OAT IS BELOW 40 DEGREES (SEE BELOW).

3. PREHEAT DISCHARGE AIR TEMPERATURE (PHDAT): THE CONTROLLER SHALL MONITOR THE PREHEAT COIL LEAVING AIR TEMPERATURE. a. WHEN UNIT IS STOPPED, AND OAT IS LESS THAN 40 DEGREES, CONTROLLER SHALL MAINTAIN PHDAT AT 40 DEGREES (ADJ.), WITH A LOW LIMIT ALARM AT 35 DEGREES.

G. DISCHARGE AIR TEMPERATURE CONTROL

+/- 0.5°F.

H. MISCELLANEOUS ALARMS & SYSTEM DIAGNOSTICS 1. MISCELLANEOUS ALARMS SHALL BE PROVIDED AS FOLLOWS: 1) FILTER DIFFERENTIAL PRESSURE SWITCH: ALARM SHALL BE PROVIDED IF FILTER CHANGE REQUIRED: FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

2. VFD COMMUNICATIONS BAS INTERFACE: 1) SPEED OUTPUT 2) HAND/AUTO SELECTION INDICATION 3) DRIVE AMPS 4) OPERATING HOURS

5) WARNINGS

6) FAULTS

1. GENERAL: THE CONTROLLER SHALL MONITOR THE FOLLOWING TEMPERATURE/HUMIDITY SENSORS AND USE AS REQUIRED FOR CONTROL

1) ALARMS SHALL BE PROVIDED AS FOLLOWS: ONLY DURING THE OCCUPIED PERIOD (NOT DURING THE UNOCCUPIED/OPTIMAL START

1. THE COOLING COIL CONTROL VALVE SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN THE DISCHARGE AIR SETPOINT TO WITHIN

g. THE VFD INTERFACE SHALL BE CONNECTED DIRECTLY TO THE MAIN BAS NETWORK TRUNK TO MONITOR. DISPLAY, TREND AND REPORT THE FOLLOWING MINIMUM POINTS. VFD INTERFACE SHALL NOT BE NETWORKED INDIRECTLY TO THE MAIN BAS THROUGH AHU CONTROLLER:

6

3

4

ITALICS = ITEMS NOTED IN ITALICS SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED, CONFIGURED AND PROGRAMMED

TO EC-SMART-VUE-H

イSPACE TEMPERATURE & HUMIDITY SENSOR

INTERLOCK AND SEQUENCE NOTES SINGLE ZONE VAV

<u>GENERAL:</u> 1. INTERLOCK NOTES SUPPLEMENT THE DETAILED SEQUENCE OF OPERATION SHOWN ON SHEET M7.06, IF A CONFLICT THEN M7.06 GOVERNS.

- 2. REFER TO AIR HANDLING UNIT SCHEDULES FOR THE FAN MODULATION TYPE: VARIABLE SPEED DRIVE (SHOWN) OR ECM MOTOR WITH CONTROL CONNECTION TO CONTROL PANEL PROVIDED WITH AHU (NOT SHOWN). PROVIDE
- DEAD-BAND IN HEATING AND COOLING SETPOINT. 3. REFER TO CONTROL VALVE SCHEDULE FOR 2-WAY OR 3-WAY VALVES, CV, FLOW, AND SIZE.
- $\langle 1 \rangle$ supply fan to be enabled through building automation system, with intention that fan to be enabled in OCCUPIED AND CYCLED IN UNOCCUPIED MODE. START SEQUENCE AS FOLLOWS: a. THE SUPPLY FAN VARIABLE SPEED DRIVE OUTPUT SIGNAL FROM LOOP TIC-100 SHALL BE RAMPED OVER A
 - 3-MINUTE PERIOD (ADJUSTABLE). FOR ECM FANS THERE IS NO SEPARATE VFD. b. START SIGNAL SHALL CLOSE SUBJECT TO FIRE ALARM RELAY, TSL AND PSH (WHERE SHOWN).
 - c. WHEN FAN CYCLED IN UNOCCUPIED MODE, THE OUTSIDE AIR DAMPER TO REMAIN CLOSED.
 - d. IN UNOCCUPIED MODE, FAN TO BE CYCLED TO MEASURE SPACE TEMPERATURE.
- $\langle 2 \rangle$ COOLING AND HEATING SEQUENCE:
 - a. SPACE ABOVE SETPOINT (COOLING): TIC-100 TO RESET TIC-101 COOLING DISCHARGE AIR TEMPERATURE FROM MAXIMUM (60–F) TO MINIMUM (SEE AHU SCHEDULE) THEN MODULATE SUPPLY FAN VFD FROM MINIMUM (35%) TO MAXIMUM (100%) SETPOINT ON A RISE IN SPACE TEMPERATURE ABOVE SETPOINT. ON A FALL IN SPACE TEMPERATURE, THE REVERSE TO OCCUR UNTIL SPACE TEMPERATURE FALLS THROUGH DEAD-BAND, THEN INTO HEATING SEQUENCE.
 - b. SPACE BELOW SETPOINT (HEATING): TIC-100 TO RESET TIC-101 HEATING DISCHARGE AIR TEMPERATURE FROM MINIMUM (60-F) TO MAXIMUM (SEE AHU SCHEDULE) THEN MODULATE SUPPLY FAN VFD FROM MINIMUM (35%) TO MAXIMUM (100%) SETPOINT ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT. ON A RISE IN SPACE TEMPERATURE, THE REVERSE TO OCCUR UNTIL SPACE TEMPERATURE RISES THROUGH DEAD-BAND, THEN INTO COOLING SEQUENCE
 - c. MODE, TIC-100 TO RESET TIC-101 COOLING DISCHARGE AIR TEMPERATURE FROM COOLING SETPOINT ON A FALL IN SPACE TEMPERATURE. PROVIDE THE REVERSE ON A RISE IN TEMPERATURE. d. PROVIDE DEADBAND BETWEEN COOLING AND HEATING SETPOINTS.
- $\langle 3 \rangle$ TEMPERATURE SWITCH-LOW HARD-WIRED INTERLOCK WITH THE VFD.
- $\langle 4 \rangle$ TEMPERATURE SWITCH-LOW INPUT TO TY-200 TO OPEN CHILLED WATER VALVE WHEN TLS IS ACTIVATED
- $\langle 5 \rangle$ SPACE RELATIVE HUMIDITY CONTROLLER MIC-100 TO OVERRIDE CHILLED WATER CONTROL VALVE SIGNAL AND MODULATE VALVE OPEN UPON A RISE IN SPACE RH ABOVE SETPOINT (60% ADJUSTABLE). MINIMUM DISCHARGE TEMPERATURE OF 50-F.
- 6 NOT USED.

2

- $\langle 7 \rangle$ provide digital input to DDC for status. Provide alarm if fan fails to start.
- 8 PROVIDE DIGITAL INPUT TO DDC FOR STATUS. PROVIDE ALARM FOR HIGH MOISTURE/WATER LEVEL IN THE AUXILIARY DRAIN PAN
- $\langle 9 \rangle$ ahu-b: provide co2 demand controlled ventilation, outside air setpoint to be reset based on the RETURN AIR CO2 LEVEL. RESET FROM THE MINIMUM TO MAXIMUM AS CO2 LEVEL RISES ABOVE 700 PPM TO 1000 PPM.
- 10 moisture sensor in auxiliary pan for all units.

4

6

GENERAL FAN COIL SYSTEM NOTES

VENTILATION SYSTEM, AHU-OA.

2. REFER TO EQUIPMENT SCHEDULES FOR LOCATION OF 3-WAY VALVES TO MAINTAIN MINIMUM FLOW FOR PUMPS.

2

2 M7.08

3

1. THE FAN COIL UNIT CONSISTS OF A CHILLED WATER COIL, HOT WATER RE-HEAT COIL, ECM FAN MOTOR. UNIT IS 100% RECIRCULATION, WITH OUTSIDE AIR BEING PROVIDED TO THE SPACES VIA ROOM DIRECT

INTERLOCK AND SEQUENCE NOTES (FCU)

 $\langle 1 \rangle$ supply fan for fan coil units to be enabled through building automation SYSTEM (BAS). THE CONSTANT SPEED FAN SHALL CYCLE ON AND OFF TO MAINTAIN SPACE TEMPERATURE AND HUMIDITY SETPOINTS. CONTROL SYSTEM SHALL HAVE ABILITY TO CHANGE FAN SPEED FROM LOW-MID-HIGH IN THE BAS. CONTRACTOR SHALL SET LOW-MID-HIGH FAN SPEED SETUP SETTING DURING TAB ACTIVITIES.

 $\langle 2 \rangle$ SPACE TEMPERATURE CASCADE CONTROL LOOP TIC-201 AND TIC-200 TO MODULATE CHILLED WATER CONTROL VALVE TCV-1C, HEATING CONTROL VALVE

- TCV-1H, AND FAN SPEED BASED ON THE FOLLOWING: a. WHEN SPACE TEMPERATURE IS SATISFIED, VALVE TCV-1H TO BE CLOSED
- (EXCEPT WHEN HUMIDITY CONTROL OVERRIDE IS ACTIVE) AND FAN TO BE DISABLED. b. AS SPACE TEMPERATURE FALLS, MODULATE FAN TO MINIMUM, AND HEATING
- VALVE FROM CLOSED TO FULL OPEN. c. AS SPACE TEMPERATURE RISES, MODULATE HEATING VALVE FROM FULL OPEN
- TO CLOSE, THEN MODULATE FAN FROM MINIMUM TO MAXIMUM, AND COOLING VALVE FROM CLOSE TO FULL OPEN. d. ALARM WHEN SPACE TEMPERATURE IS OUT OF RANGE FOR 15 MINUTES (ADJ.).
- 3 PROVIDE DIGITAL INPUT TO DDC FOR STATUS. PROVIDE ALARM IF FAN FAILS TO START.
- 4 LIMIT LOCAL SPACE TEMPERATURE SETPOINT ADJUSTMENT PER UA STANDARDS/DIRECTION FROM OWNER.
- $\langle 5 \rangle$ provide 0-10VDC input to supply fan ECM motor controller.
- 6 HUMIDITY CONTROL LOOP TO BIAS CHILLED WATER COIL OPEN WHEN SPACE RELATIVE HUMIDITY IS ABOVE SET POINT (60%), AND REDUCE FAN SPEED TO IT'S MINIMUM. PROVIDE SOFTWARE INTERLOCK TO CLOSE CHILLED WATER VALVE WHEN RE-HEAT VALVE IS OPEN UNLESS CHILLED WATER VALVE IS CONTROLLED BY HUMIDITY CONTROL LOOP.

FAN COIL UNIT CONTROL DIAGRAM

GENERAL EL	ECTRICAL LEGEND	
MAL EMERGENCY	EQUIPMENT OUTLET DESIGNATIONS (APPLY TO ALL OUTLETS, DEVICES & EQUIPMENT):	PULLBOX – FLUSH IN-GRADE – QUAZITE 18"X12"X18"D PG CONCRETE PULLBOX WITH TRAFFIC COVER – COVER SHALL BE PROVIDED WITH LOGO TO READ "TELECOMMUNICATIONS" – CONFIRM
FIXTURE OUTLET – SURFACE OR PENDANT MOUNTED LIGHT FIXTURE.	COP COPYING MACHINE OUTLET. DF DRINKING FOUNTAIN OUTLET - EXACT MOUNTING HEIGHT AS DIRECTED BY EQUIPMENT SUPPLIER.	LOCATION WITH UA PROJECT MANAGER PRIOR TO ROUGH-IN. PULLBOX - FLUSH IN-GRADE - QUAZITE 36"X24"X24"D PG TIER 22 CONCRETE PULLBOX WITH
FIXTURE OUTLET - CEILING - RECESSED LIGHT FIXTURE.	DW BELOW COUNTER DISHWASHER OUTLET – VERIFY EXACT LOCATION AND REQUIREMENTS WITH EQUIPMENT SUPPLIER.	TRAFFIC RATED COVER - COVER SHALL BE PROVIDED WITH LOGO TO READ "TELECOMMUNICATION CONFIRM EXACT LOCATION WITH UA PROJECT MANAGER PRIOR TO ROUGH-IN.
FIXTURE OUTLET – LINEAR – SURFACE OR PENDANT MOUNTED LIGHT FIXTURE.	GD GARBAGE DISPOSAL OUTLET - VERIFY EXACT LOCATION AND REQUIREMENTS WITH EQUIPMENT SUPPLIER - PROVIDE TOGGLE-TYPE CONTROL SWITCH (IN CAST BOX) IN ACCESSIBLE LOCATION IN	RESCUE ASSISTANCE SYSTEM – CALL STATION – FLUSH MOUNTED IN WALL – 4.25"W X 7.5"H BACK BOX FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR – INSTALL WITH CENTER OF 48" A.F.F. AND WITH 1 1/4"E.C. TO J-HOOK SYSTEM – COORDINATE WITH UA PROJECT MANAG
FIXTURE OUTLET - CEILING - RECESSED LIGHT FIXTURE.	HD VENTILATION HOOD OUTLET.	
FIXTURE OUTLET - WALL MOUNTED LIGHT FIXTURE.	MW MICROWAVE (OR COMBINATION MICROWAVE/VENTILATION HOOD) OUTLET - VERIFY EXACT LOCATION WITH ARCHITECTURAL ELEVATION PRIOR TO ROUGH-IN.	2SD CP ACCESS CONTROL SYSTEM CARD READER SEE DETAIL A /EQ.05
FIXTURE OUTLET - BOLLARD OR POST-TOP LIGHT FIXTURE.	OV OVEN OUTLET - VERIFY EXACT LOCATION WITH ARCHITECTURAL ELEVATION PRIOR TO ROUGH-IN.	CRY ACCESS CONTROL SYSTEM - CARD READER - SEE DETAIL A/EU.US.
FIXTURE OUTLET – POLE LIGHT FIXTURE – QUANTITY AND ORIENTATION(S) OF LUMINAIRES AS INDICATED ON PLANS.	EQUIPMENT SUPPLIER. TV TELEVISION OUTLET - MOUNTING HEIGHT AS DIRECTED BY ARCHITECT.	CR ACCESS CONTROL SYSTEM - CARD READER - SEE DETAIL B/E0.05.
DR 🔊 FIXTURE OUTLET – EXIT SIGN – CEILING OR WALL MOUNTED AS INDICATED – QUANTITY AND ORIENTATION OF FACES AND DIRECTIONAL ARROWS AS INDICATED.	VM VENDING MACHINE OUTLET - MOUNT AT 36" A.F.F. UNLESS DIRECTED OTHERWISE BY EQUIPMENT SUPPLIER.	2DDADA CR ACCESS CONTROL SYSTEM – CARD READER – SEE DETAIL C/E0.05.
FIXTURE DESIGNATIONS:	I FLOOR OR SURFACE-MOUNTED OUTLET - JUNCTION BOX - CROUSE HINDS CAST TYPE FS/FD BOX.	HANDICAP DOOR SYSTEM – WALL MOUNTED PUSH BUTTON OPERATOR – FURNISHED WITH DOO HARDWARE BY DOOR HARDWARE INSTALLER – INSTALLED AND CONNECTED BY ELECTRICAL COM
 A FIXIORE TIPE A - MAY BE USED WITH OTHER TIPES. b SWITCH LEG TO WHICH FIXTURE IS CONNECTED - MAY BE USED WITH OTHER LOWER-CASE LETTERS. 2 CIRCUIT NUMBER - MAY BE USED WITH OTHER NUMBERS. 	FLOOR OUTLET – JUNCTION BOX – CROUSE HINDS CAST TYPE FS/FD BOX – MOUNT IN HORIZONTAL POSITION 1-INCH ABOVE FINISHED FLOOR ON RIGID CONDUIT STEM.	DC ACCESS CONTROL SYSTEM - DOOR CONTACT - 3/4"E.C. FROM TOP OF DOOR FRAME STUBBED ABOVE ACCESSIBLE CEILING.
NL NIGHT LIGHT – DO NOT SWITCH. PC INDICATES FIXTURE CONTROLLED BY PHOTO-CELL. SL SECURITY LIGHT – DUSK-TO-DAWN OPERATION.	🖓 WALL OUTLET – JUNCTION BOX – FLUSH MOUNTED.	SP SPEAKER - CEILING MOUNTED - OUTLET BOX - COORDINATE EXACT LOCATION WITH A/V SYS
SWITCH OUTLET – S.P.S.T. – 20A – 120–277VAC.	CEILING OUTLET - JUNCTION BOX.	MICROPHONE - CEILING MOUNTED - OUTLET BOX - COORDIANTE EXACT LOCATION WITH A/V S
WALL OUTLET – COMBINATION SWITCH AND RECEPTACLE – SINGLE PLATE MAY BE USED WITH OTHER SWITCHES AND RECEPTACLES.	BRANCH/FEEDER CIRCUIT - CONCEALED IN WALLS OR CEILING.	POLELIGHT DESIGNATION - "8A" INDICATES FIXTURE MARK NUMBER (SEE LIGHTING FIXTURE SCH "1" INDICATES POLE NUMBER - MAY BE USED WITH OTHER FIXTURE MARK NUMBERS AND POL
SWITCH OUTLET - CONTROLS OUTLET "a", ETC.	BRANCH/FEEDER CIRCUIT – EXPOSED ON WALLS OR CEILING.	
SWITCH OUTLET — MANUAL MOTOR STARTER — TOGGLE TYPE — 2 POLE — SQUARE "D" TYPE K01 WITH ENCLOSURE AS REQUIRED BY APPLICATION — PROVIDE LOCK—OFF HARDWARE.	BRANCH/FEEDER CIRCUIT – HOMERUN 2 #12 & 1 #12G, 3 #12 & 1 #12G, ETC. UNLESS	EO.5 DETAIL DESIGNATOR – "A" INDICATED DETAIL MARK – "EO.5" INDICATES SHEET NUMBER WHERI LOCATED (TYPICAL).
SWITCH OUTLET – OCCUPANCY SENSOR WITH MANUAL OVERRIDE – S.P.S.T. – 120–277VAC – P.I.R. SENSOR – WATTSTOPPER PW–100 OR EQUAL – RATED 800W AT 120VAC AND 1200W AT 277VAC – GREY	BRANCH/FEEDER CIRCUIT – HOMERUN 10 2 #10 & 1 #10G, 10 3 #10 & 1 #10G, ETC. – MAY BE USED WITH OTHER WIRE SIZES	GENERAL ABBREVIATIONS: EX EXISTING TO REMAIN.
WITH STAINLESS STEEL COVERPLATE. SWITCH OUTLET - LOW VOLTAGE - "ON/OFF" CONTROL - NLIGHT MOMENTARY CONTACT TWO (2)	✓ FLEXIBLE CONNECTION TO EQUIPMENT.	EX-R EXISTING TO BE REMOVED - REMOVE ALL ASSOCIATED ELECTRICAL EQUIPMENT, CONDUIT AND WIRING CONNECTIONS TO OTHER ELECTRICAL ITEMS UNLESS SHOW
BUTTON DIGITAL WALL SWITCH NPODM. SWITCH OUTLET – LOW VOLTAGE – DIMMING CONTROL – NLIGHT DIGITAL DIMMING WALL SWITCH NPODMDX	BRANCH CIRCUIT - RISER DOWN OR GENERAL CONDUIT STUB-OUT.	EX-RL EXISTING TO BE RELOCATED - REMOVE ALL ASSOCIATED ELECTRICAL EQUIPMEN CONDUIT AND WIRING AT EXISTING LOCATION. RELOCATE ITEM TO NEW LOCATION
DISCONNECT SWITCH - INTEGRAL TO EQUIPMENT - PROVIDED WITH MECHANICAL UNIT.	MOUNTED ABOVE ACCESSIBLE CEILING ALONG PATH INDICATED ON DRAWINGS - SPACING OF J-HOOKS SHALL NOT EXCEED 5'-0" ON CENTER.	ELECTRICAL PLANS. EXTEND AND RECONNECT EXISTING CONDUIT, WIRING, ETC. LOCATION AS REQUIRED UNLESS SHOWN OTHERWISE.
SWITCH OUTLET – 3 WAY – 20A – 120–277VAC.	DISTRIBUTION CENTER OR MOTOR CONTROL CENTER.	EA-RE EXISTING TO BE REPLACED - EXTEND AND RECONNECT EXISTING CONDULT AND REPLACED ITEM. ELECTRICAL ABBREVIATIONS:
LIGHTING CONTROL SYSTEM – OCCUPANCY SENSOR – CEILING OR WALL MOUNTED AS INDICATED – EXACT MOUNTING PROVISIONS, SENSOR TYPE AND LOCATION SHALL BE AS DIRECTED BY SUPPLIER FOR PROPER COVERAGE – DIGITAL – DUAL TECHNOLOGY (P.I.R. AND ULTRASONIC) – NLIGHT NCMPDT (CENTER OF	LIGHTING FANEL - SURFACE MOUNTED.	C CONDUIT.
CEILING MOUNT) OR NWVPDT (WALL OR CEILING CORNER MOUNT).	T TRANSFORMER - POWER - DRY-TYPE.	E.C. EMPTY CONDUIT. FPN FUSE PER NAMEPLATE.
MOUNTING PROVISIONS, SENSOR TYPE AND LOCATION SHALL BE AS DIRECTED BY SUPPLIER FOR PROPER COVERAGE – DIGITAL – DIMMING – NLIGHT NCM ADCX.	ATS AUTOMATIC TRANSFER SWITCH – PROVIDE WITH AUXILIARY CONTACTS AS REQUIRED FOR MONITORING OF SWITCH STATUS BY FIRE ALARM SYSTEM.	G GROUND CONDUCTOR.
LIGHTING CONTROL SYSTEM – OCCUPANCY SENSOR – CEILING OR WALL MOUNTED AS INDICATED – EXACT MOUNTING PROVISIONS, SENSOR TYPE AND LOCATION SHALL BE AS DIRECTED BY SUPPLIER FOR PROPER COVERAGE – DIGITAL – ULTRASONIC (OR SIMILAR) – NLIGHT NCM.	GEN GENERATOR REMOTE ANNUNCIATOR PANEL – FLUSH MOUNTED UNLESS INDICATED OTHERWISE ON PLANS – LOCATE AS DIRECTED BY OWNER – CONFIRM EXACT LOCATION PRIOR TO ROUGH–IN.	
LIGHTING CONTROL SYSTEM - ROOM CONTROLLER(S) - LOW VOLTAGE - NLIGHT NPP16 - MOUNT AS	MAGNETIC MOTOR STARTER.	
IRECTED BY SUPPLIER ABOVE ACCESSIBLE CEILING - PROVIDE ALL INTERCONNECTIONS (LOW VOLTAGE AND INE VOLTAGE) TO SENSORS, CONTROL SWITCHES, LIGHT FIXTURES, ETC.) TO CONTROL LOCAL LIGHTING AS IRECTED BY SUPPLIER - SEE WIRING DIAGRAMS ON SHEET E0.06 & DETAIL "E-RC".	L DISCONNECT SWITCH - NONFUSED.	
LIGHTING CONTROL SYSTEM – DIMMING ROOM CONTROLLER(S) – LOW VOLTAGE – NLIGHT NPP16D – MOUNT AS DIRECTED BY SUPPLIER ABOVE ACCESSIBLE CEILING – PROVIDE ALL INTERCONNECTIONS (LOW VOLTAGE	DISCONNECT SWITCH - FUSED.	
AND LINE VOLTAGE) TO SENSORS, CONTROL SWITCHES, LIGHT FIXTURES, ETC.) TO CONTROL LOCAL LIGHTING AS DIRECTED BY SUPPLIER – SEE WIRING DIAGRAMS ON SHEET E0.06 & DETAIL E-RC".	ELEVATOR DISCONNECT SWITCH – FUSED – FURNISH WITH AUXILIARY CONTACTS FOR ELEVATOR CONTROL FUNCTIONS.	February 14, 2022
RELAY — EMERGENCY LIGHTING INTERCONNECT — 10A — 120/277VAC — FURNISH WITH NEMA 1 ENCLOSURE AND MOUNT ABOVE ACCESSIBLE CEILING — NLIGHT NPP16DER — SEE DETAIL "E-ELC".		To: Billy Kilgore, Electrical Engineer, Construction Administration; Joe Cobb, Director of Construction Operations
² HOTOELECTRIC CONTROL – LOW VOLTAGE – COMPATIBLE WITH LIGHTING CONTROL PANEL.		From: Paul K. Rencibia, Electrical Power Distribution Engineer, Facilitie
HTING CONTROL PANEL - FURNISHED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.	FAAP FIRE ALARM - ANNUNCIATOR PANEL - FLUSH MOUNTED - UNLESS NOTED OTHERWISE ON PLANS.	Cc. Terry McMillian, Electrical Supervisor, Facilities and Grounds; Greg McKelvey, Executive Director, Maintenance Operations, Facilities
DUPLEX	F FIRE ALARM – PULL STATION.	Re: Short Circuit and Fault Data for Substation Facilities
Wall OUTLET – DUPLEX RECEPTACLE – 20A – 125V – 2P – 3W – GROUNDING – TAMPER RESISTANT – NEMA 5–20R – SINGLE PLATE.	SM FIRE ALARM – SMOKE DETECTOR.	
WALL OUTLET – DUPLEX RECEPTACLE – 20A – 125V – 2P – 3W – GROUNDING – "GFI" TYPE – TAMPER RESISTANT – WEATHER RESISTANT – NEMA 5–20R – SINGLE PLATE.	H FIRE ALARM - HEAT DETECTOR.	Stephen Graham, APC's Transmission Project Manager, and Derek Monl Manager, provided us the latest information on the Short Circuit and Faul Campus and USC Substation Facilities. This information is current as of
NALL OUTLET - SINGLE RECEPTACLE - 30A - 125V - 2P - 3W - GROUNDING - NEMA 5-30R.	FIRE ALARM – SMOKE DETECTORS – DUCT MOUNTED – LOCATE DETECTORS (QUANTITIES AS REQUIRED) IN SUPPLY DUCT(S) AND RETURN DUCT(S) FOR INDICATED UNIT AS DIRECTED BY MECHANICAL PER CODE REQUIREMENTS – FURNISH RELAY COMPATIBLE WITH FIRE ALARM SYSTEM FOR FAN SHUT DOWN – FURNISH	Note: X/R ratios are calculated per IEEE 37.010-2016 - Application Guid
.LL OUTLET – SINGLE TWIST-LOCK RECEPTACLE – 30A – 125V – 2P – 3W – GROUNDING – NEMA –30R.	REMOTE TEST/ALARM INDICATOR STATION(S) LOCATED IN ACCESSIBLE, INCONSPICUOUS LOCATION AS APPROVED BY AUTHORITY HAVING JURISDICTION.	Circuit Breakers >1000 VAC Rated on a Symmetrical Current Basis
WALL OUTLET – SURFACE MOUNTED PLUGMOLD WITH 20A/125V OUTLETS 12"O.C. – LENGTH AS SHOWN	FIRE ALARM – SMOKE DETECTOR – DUCT MOUNTED – LOCATE AS DIRECTED BY MECHANICAL – FURNISH CONTROL RELAY COMPATIBLE WITH FIRE ALARM SYSTEM FOR FAN SHUT DOWN – FURNISH TEST/ALARM	USC SUBSTATION
SUPPLEMENTAL GROUND BUS – WITH $#4/0$ GROUND WIRE IN 1–1/4" CONDUIT TO FACILITY GROUND	HAVING JURISDICTION.	 APC serves this 43.8-4.16kV substation from APC's Holt – UAU Transmission Line.
DETAIL ON SHEET E0.5 FOR ADDITIONAL INFORMATION.	$\overline{\Psi}^{75}$ fire alarm – combination speaker and visual (clear) indicator – wall mounted – "75" indicates candela rating (typical).	 This substation has one (1) 5 MVA transformer. The following data is for the 4.16kV Buses at the APC substation.
TELECOMMUNICATIONS EQUIPMENT BACKBOARD – 8 H X 3/4 THICK X LENGTH AS SHOWN ON PLANS – COMPLETE WITH #4/0 GROUND WIRE IN 1–1/4 INCH CONDUIT TO FACILITY GROUND SYSTEM AND TO 18" W X 1/4" THICK GROUND BUS WITH ISOLATED MOUNTING BOLTS AND – FINISH WITH TWO (2) COATS	FIRE ALARM – VISUAL (AMBER) INDICATOR ONLY – CEILING MOUNTED – "75" INDICATES CANDELA RATING (TYPICAL).	No.1 43.8-4.16kV Transformer (ID: 41656)
RE-RETARDANT ENAMEL PAINT - PAINT COLOR TO MATCH SURROUNDING WALLS - SEE MAIN SERVICE COUNDING DETAIL ON SHEET EO.5 FOR ADDITIONAL INFORMATION.	FIRE ALARM – SPEAKER ONLY – WALL MOUNTED – SPEAKER SHALL BE TAPPED FOR 1/4 WATT CONNECTION.	Fusing = S&C SMD-1A 125E (Slow)
UANTITY OF CATEGORY 6 DATA CABLE DROPS (EX. "2D" INDICATES TWO (2) DROPS) AND IS INDICATED FOR FORMATIONAL PURPOSES ONLY – ALL CATEGORY 6 DATA CABLING, CONNECTORS AND FACEPLATES ARE	FIRE ALARM - VISUAL (CLEAR) INDICATOR ONLY - WALL MOUNTED - "75" INDICATES CANDELA RATING	Source Impedance: Z1 = 23.967 + j181.765% 100MVA base
WIRELESS ACCESS POINT - ABOVE CEILING - PROVIDE OUTLET BOX ABOVE ACCESSIBLE CEILING WITH 1" E.C.	Υ (TTPICAL). FIRE ALARM – HORN – EXTERIOR WEATHERPROOF – MOUNT AT 10'–0" AFF	Z0 = 14.927 + j141.213 % 100MVA base
AREFULLY COORDINATE WIRELESS ACCESS POINT LOCATIONS WITH OWNER.		Fault Availability: 3-Phase = 7570 A, X/R = 7.60 Phase-Phase = 6555 A
AULTISERVICE FLOOR BOX – SEE DETAIL "E-FB1".	\sim Fire alarm – magnetic door holder. \sim F \sim Branch circuit – fire alarm – wiring as required in N.E.C.–Sized conduit.	Phase-Ground = 8185 A , X/R = 8.04
MULTISERVICE FURNITURE FEED POKE-THRU - SEE DETAIL "E-PTF" - FURNISH ALL MATERIAL AND LABOR AS REQUIRED FOR A COMPLETE ELECTRICAL INSTALLATION.	FS FIRE ALARM – FLOW SWITCH.	
DUTLET DESIGNATIONS (APPLY TO ALL OUTLETS, DEVICES & EQUIPMENT):	TS FIRE ALARM – TAMPER SWITCH.	
4 INCHES ABOVE COUNTERTOP BACKSPLASH AS REQUIRED BY CONDITION, OR 48" A.F.F. OR AS NOTED.	FIRE ALARM – COMBINATION CARBON MONOXIDE/HEAT/SMOKE DETECTOR – SIMPLEX ADDRESSABLE TRUE ALARM MULTI-SENSOR WITHOUT SOUNDER BASE.	EAST SUBSTATION
C OUTLET MOUNTED FLUSH WITHIN CEILING - VERIFY EXACT LOCATIONS PRIOR TO ROUGH-IN.	E FIRE ALARM – ADDRESSABLE CONTROL RELAY(S) FOR ELEVATOR CAR RETURN – QUANTITY OF RELAYS AS	 APC serves this 40-12.47kV substation from APC's Holt - 0 Transmission Line. This substation has two (2) 10.5 MVA transformers.
DIRECTED BY CASEWORK PROVIDER. F EMERGENCY CIRCUIT - PROVIDE RED DEVICE - MAINTAIN SEPARATION BETWEEN NORMAL AND	$\langle F \rangle^{ST}$ FIRE ALARM – ADDRESSABLE CONTROL RELAY(S) FOR ELEVATOR SHUNT TRIP – PROVIDE INTERLOCK WIRING	 The following data is for the 12.47kV Buses at the APC sub
EMERGENCY CIRCUITRY (WITH SEPARATE CONDUITS AND METAL BARRIERS AS REQUIRED) PER NEC ARTICLE 700.9(B).	TO SHUNT TRIP BREAKER AS REQUIRED IN $3/4$ °C. \square SD FIRE ALARM – FIRE/SMOKE DAMPER ADDRESSABLE CONTROL RELAY – COIL VOLTAGE COMPATIBLE WITH FIRE	<u>No.1 46-12.47kV Transformer (ID: 41559)</u>
NL NIGHT LIGHT – DO NOT SWITCH. VL VERIFY EXACT OUTLET LOCATION WITH OWNER PRIOR TO ROUGH-IN.	ALARM SYSTEM - FIRE/SMOKE DAMPER SHALL CLOSE UPON ACTIVATION OF FIRE ALARM SYSTEM.	Fusing = S&C SMD-1A 200E (Slow) Source Impedance:
W WEATHER PROOF - OUTLET SHALL BE INSTALLED WITH WEATHERPROOF, IN-USE, CAST COVER.	FIRE ALARM – COMBUSTIBLE GAS DETECTOR – MACURCO NO. GD–2B OR EQUAL – PROVIDE WITH MONITORING ZAM'S AND ALL MATERIAL AND LABOR REQUIRED FOR SUPERVISION BY FIRE ALARM SYSTEM AS AN ADDRESSABLE DEVICE – WALL MOUNT AT 1'–0" BELOW CEILING.	Z1 = 12.498 + j137.873 % 100MVA base Z0 = 5.534 + j 95.077 % 100MVA base
WG WIREGUARD — EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH FACTORY FURNISHED WIREGUARD.	CCTV SYSTEM - CAMERA OUTLET - WALL - WITH 1"E.C. TO J-HOOK SYSTEM (UNLESS NOTED OTHERWISE)	Fault Availability:
	- COORDINATE ALL WORK REQUIRED WITH CCTV SYSTEM INSTALLER PRIOR TO ROUGH-IN.	3-Phase = 3344 A, X/R = 11.08 Phase-Phase = 2896 A, Phase Group 4 = 2722 A, V/R = 10.10
	CA OTHERWISE) WITH PLASTIC END BUSHING ON ABOVE CEILING TERMINATION - COORDINATE ALL WORK REQUIRED WITH CCTV SYSTEM INSTALLER PRIOR TO ROUGH-IN.	No.2 46-12.47kV Transformer (ID: 41614)
	LV 🔨 BRANCH CIRCUIT – LOW VOLTAGE – WIRING AS REQUIRED IN 3/4 INCH CONDUIT.	Fusing = S&C SMD-1A 200E (Slow)
	PULLBOX – FLUSH IN-GRADE – QUAZITE 18"X12"X18"D PG TIER 22 CONCRETE PULLBOX WITH TIER 22 TRAFFIC RATED COVER – COVER SHALL BE PROVIDED WITH LOGO TO READ "ELECTRIC" – CONFIRM EXACT	Source Impedance:
	LOCATION WITH UA PROJECT MANAGER PRIOR TO ROUGH-IN.	Z1 = 12.472 + j138.113 % 100MVA base Z0 = 5.508 + j 95.317 % 100MVA base
		Fault Availability: 3-Phase = 3339 A, $X/R = 11.12$

ONCRETE PULLBOX	WITH	TRAFFIC F	RATED
TELECOMMUNICATION	NS" –	CONFIRM	EXACT

TIER 22 CONCRETE PULLBOX WITH TIER 22 _OGO TO READ "TELECOMMUNICATIONS" -

DUNTED IN WALL – 4.25"W X 7.5"H X 3"D RACTOR – INSTALL WITH CENTER OF BOX AT RDINATE WITH UA PROJECT MANAGER PRIOR

OPERATOR - FURNISHED WITH DOOR ND CONNECTED BY ELECTRICAL CONTRACTOR.

UMBER (SEE LIGHTING FIXTURE SCHEDULE) AND FIXTURE MARK NUMBERS AND POLE NUMBERS.

INDICATES SHEET NUMBER WHERE DETAIL IS

SOCIATED ELECTRICAL EQUIPMENT, DEVICES, ELECTRICAL ITEMS UNLESS SHOWN OTHERWISE. SSOCIATED ELECTRICAL EQUIPMENT, DEVICES, RELOCATE ITEM TO NEW LOCATION SHOWN ON EXISTING CONDUIT, WIRING, ETC. TO NEW

ECONNECT EXISTING CONDUIT AND WIRING TO

MEMORANDUM r, Construction Administration; wer Distribution Engineer, Facilities and Grounds ervisor, Facilities and Grounds; ector, Maintenance Operations, Facilities and Grounds Substation Facilities Project Manager, and Derek Monk, APC-UA Account tion on the Short Circuit and Fault Data for the Main s. This information is current as of February 2022. 37.010-2016 - Application Guide for AC High-Voltage a Symmetrical Current Basis station from APC's Holt - UA USC 43.8kV 16kV Buses at the APC substation. /ID-1A 125E (Slow) 100MVA base 100MVA base substation from APC's Holt - UA East Campus 46kV 10.5 MVA transformers. e 12.47kV Buses at the APC substation. SMD-1A 200E (Slow)

100MVA base 100MVA base X/R = 11.08X/R = 12.19 SMD-1A 200E (Slow) 100MVA base 100MVA base X/R = 11.12

GENERAL ELECTRICAL NOTES

- CONTRACTOR SHALL VERIFY ALL REQUIREMENTS FOR TELECOMMUNICATIONS AND POWER SERVICES WITH RESPONSIBLE PARTY WITH THE UNIVERSITY OF ALABAMA PRIOR TO SUBMITTING BID.
- CONTRACTOR SHALL VISIT THE SITE OF THE WORK PRIOR TO SUBMITTING BID TO EXAMINE CAREFULLY LOCAL CONDITIONS AND DIFFICULTIES TO BE ENCOUNTERED. ANY DISCREPANCY BETWEEN PLANS AND EXISTING
- CONDITIONS SHALL IMMEDIATELY BE CALLED TO THE ATTENTION OF THE ARCHITECT. THIS CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS FOR ALL MECHANICAL EQUIPMENT FROM MANUFACTURER'S RECOMMENDATIONS PRIOR TO ROUGHING IN CONDUIT OR ORDERING CIRCUIT PROTECTION DEVICES. CONTRACTOR SHALL ADJUST CONDUIT SIZE, WIRE SIZE AND CIRCUIT PROTECTION SIZE ACCORDINGLY. IF REQUIREMENTS ARE LARGER THAN CALLED FOR ON ELECTRICAL PLANS NOTIFY ARCHITECT IMMEDIATELY.
- THIS CONTRACTOR SHALL PROVIDE A COMPLETE U.L. CERTIFIED LIGHTNING PROTECTION SYSTEM IN ACCORDANCE WITH SPECIFICATIONS SECTION 264100. PROVIDE A COMPLETE SET OF INSTALLTION DRAWINGS AND DETAILS WITH SHOP DRAWING SUBMITTALS. CONTRACTOR SHALL NOT BEGIN WORK UNTIL SHOP DRAWINGS HAVE BEEN APPROVED. COORDINATE WITH GENERAL CONTRACTOR REGARDING ALL CONDUIT PENETRATIONS. DOWNLEAD LOCATIONS, ETC. ALL DOWNLEADS SHALL BE ROUTED CONCEALED AND IN CONDUIT. REFER TO SPECIFICATION SECTION 264100 FOR ADDITIONAL INFORMATION.
- 5. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH NEC.
- 6. ALL LOW VOLTAGE CABLES RUN EXPOSED SHALL BE PLENUM RATED.
- 7. THIS CONTRACTOR SHALL VERIFY EXACT REQUIREMENTS FOR ELEVATOR CONTROLLER FROM MANUFACTURER'S RECOMMENDATIONS PRIOR TO ROUGHING IN CONDUIT AND ORDERING CIRCUIT PROTECTION DEVICES. CONTRACTOR SHALL ADJUST CONDUIT SIZE, WIRE SIZE AND CIRCUIT PROTECTION SIZE ACCORDINGLY. IF REQUIREMENTS ARE LARGER THAN CALLED FOR ON ELECTRICAL PLANS, NOTIFY ARCHITECT IMMEDIATELY.
- 8. SIMPLEX 4100ES FIRE ALARM CONTROL PANEL FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.

OWNER FURNISHED CONTRACTOR INSTALLED EQUIPMENT NOTES

1. THE FOLLOWING EQUIPMENT SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED:

A. POST-TOP FIXTURES MARK "8A". B. FIRE ALARM CONTROL PANEL. . SENSUS MODULES.

D. METER.

- ALL OWNER FURNISHED EQUIPMENT WILL BE DELIVERED TO THE PROJECT JOB SITE. THE CONTRACTOR SHALL COORDINATE EQUIPMENT DELIVERY WITH THE OWNER'S SUPPLIER/VENDOR AND SHALL THOROUGHLY INSPECT THE EQUIPMENT FOR DAMAGE ONCE IT IS DELIVERED TO THE SITE. IF EQUIPMENT HAS BEEN DAMAGED, THIS CONTRACTOR SHALL NOTIFY THE OWNER PRIOR TO THE SUPPLIER/VENDOR/SHIPPER LEAVING THE SITE. FAILURE TO DO SO MEANS THAT THIS CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE EQUIPMENT. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR OFF LOADING AND SECURELY STORING THE EQUIPMENT UNTIL TIME FOR INSTALLATION.
- 3. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETED INSTALLATION OF ALL OWNER FURNISHED EQUIPMENT.

 APC serves this 46-12.47kV substation from APC's Tuscaloosa – UA North Campus 46kV Transmission Line. This substation has two (2) 10.5 MVA transformers.

The following data is for the 12.47kV Buses at the APC substation.

No.1 46-12.47kV Transformer (ID: 41865)

NORTH SUBSTATION

	HS Phase Relay = 240A w/94 cycle @ 500% pickup (U3) LS Backup Ground Relay = 756A w/55 cycle @ 1000% pickup (U3)
	Source Impedance: $Z1 = 9.552 + j123.707 \%$ 100MVA base $Z0 = 5.550 + j 91.382 \%$ 100MVA base
	Fault Availability: 3-Phase = 3732 A , $X/R = 13.03$ Phase-Phase = 3231 A
	Phase-Ground = 4089 A , X/R = 13.83
<u>o.24</u>	<u>6-12.47kV Transformer (ID: 41935)</u>
	HS Phase Relay = 280A w/72 cycle @ 500% pickup (U3) LS Backup Ground Relay = 720A w/68 cycle @ 1000% pickup (U3)
	Source Impedance: $Z1 = 9.507 + j122.875 \%$ 100MVA base $Z0 = 5.464 + j 90.550 \%$ 100MVA base
	Fault Availability:3-Phase= 3757 A , X/R = 13.00Phase-Phase= 3253 A ,
	Phase-Ground = 4119 A , $X/R = 13.80$

WEST SUBSTATION

- APC serves this 46-12.47kV substation from APC's Tuscaloosa Phifer UA West
- Campus 46kV Transmission Line.
- This substation has one (1) 10.5 MVA transformers. The following data is for the 12.47kV Buses at the APC substation.

No.1 46-12.47kV Transformer (ID: 41566)

Fusing	= S&C SMD	D-1A 175E (Slow)
Source Impedant Z1 = 8.965 + Z0 = 5.417 + C	ce: j123.722 % j 92.461 %	100MVA base 100MVA base
Fault Availabilit 3-Phase	y = 3732 A	X/R = 13.89
Phase-Phase Phase-Ground	= 3232 A, = 4077 A,	X/R = 14.63

SOUTH SUBSTATION

2

- APC serves this 46-12.47kV substation from APC's South Tuscaloosa Parkview UA South Campus 46kV Transmission Line.
- This substation has one (1) 10.5 MVA transformers.
 The following data is for the 12.47kV Buses at the APC substation.

No.1 46-12.47kV Transformer (ID: 41433)

Fusing	= S&C SM	D-1A 175E (STD)
Source Impedan Z1 = 12.929 + Z0 = 5.500 +	ce j157.481 % j 91.621 %	100MVA base 100MVA base
Fault Availabilit 3-Phase Phase-Phase Phase-Ground	y = 2930 A, = 2537 A, = 3406 A,	X/R = 12.21 X/R = 12.99

-B

		6	5
	F		
	_		
	Е		
	_		
	D		
	_		
	С		
	P		
	ט		
Ч			
cal.r			
3-lo	_		
R2			
Elec			
- үле			
Libră			
ure			
McL			
top/	A		
Jeskt			
ve\C	_		
eDriv	<u>-</u>		
\On(5.08	5.5		
\jon }	;		
sers	1		
c:\u			
	-	6	5

LEVEL 3

MCLURE LIBRARY SINGLE LINE DIAGRAM

GENERATOR RATINGS, ETC. NOT SHOWN ON THIS DIAGRAM. EQUIPMENT TO INDICATE AVAILABLE FAULT CURRENT AS REQUIRED BY ARTICLE 110.24 OF THE 2020 EDITION OF THE NEC.

- CAMPUS ELECTRICAL SYSTEM MAP.
- GENERATOR.

3

4

GORGAS LIBRARY SINGLE LINE DIAGRAM NOTES REFER TO SWITCHBOARD, PANELBOARD AND TRANSFORMER SCHEDULES FOR ALL APPLICABLE FEEDER SIZES, BREAKER RATINGS, BUS RATINGS, TRANSFORMER RATINGS, GROUNDING ELECTRODE SIZES, 2. USING THE DATA ACQUIRED FROM THE STUDY REQUIRED BY SPECIFICATIONS SECTION 260573, THIS CONTRACTOR SHALL PROVIDE ARC-FLASH WARNING LABELS ON ELECTRICAL EQUIPMENT IN COMPLIANCE WITH ARTICLE 110.16 OF THE 2020 EDITION OF THE NEC AND FIELD MARK ELECTRICAL SERVICE

PROVIDE FULLY SIZED DOCKING STATION FOR ROUTINE LOAD BANK TESTING AND CONNECTION OF TEMPORARY GENERATOR IN THE EVENT THE PERMANENT GENERATOR IS DOWN FOR MAINTENANCE. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR STANDBY POWER SYSTEM ON-SITE ACCEPTANCE TESTING. ALL ON-SITE ACCEPTANCE TESTING WILL BE PERFORMED BY A TECHNICAL REPRESENTATIVE OF THE EQUIPMENT SUPPLIER, HOWEVER, THE CONTRACTOR SHALL BE ON-SITE DURING THE TESTING AND PROVIDE ASSISTANCE AS NECESSARY TO CONDUCT THE TEST.

. FURNISH ALL MATERIAL AND LABOR REQUIRED TO INTERCONNECT GENERATOR CONTROL SYSTEM TO REMOTE SHUT-OFF SWITCH, SUCH THAT, GENERATOR WILL SHUT DOWN UPON ACTIVATION OF STANDBY POWER SYSTEM EMERGENCY SHUT-OFF SWITCH. INTERCONNECTION SHALL BE SUCH THAT GENERATOR IS UNABLE TO RE-START & RUN UNTIL MANUAL RESET AT GENERATOR CONTROL PANEL. PROVIDE NEMA 1 8" X 8" LENGTH AS REQUIRED WIREWAY WITH SCREW COVER. RUN CONDUCTORS FULL

LENGTH OF WIREWAY. UTILIZE INSULATED COMPRESSION-TYPE CONNECTORS TO BOND ALL SAME PHASE CABLES TOGETHER AT EACH TAP TO ENCLOSED CIRCUIT BREAKERS MOUNTED ABOVE WIREWAY.

. FOR INFORMATIONAL PURPOSES ONY, THE UA DATA NECESSARY TO PREPARE THE POWER SYSTEM STUDIES IS PROVIDED WITHIN THESE DOCUMENTS. REFERENCE THE UA SUBSTATION INFORMATION OF SHEET EO.1 ALONG WITH THE UA MAIN CAMPUS MEDIUM VOLTAGE SINGLE LINE DIAGRAM AND MAIN

B. GENERATOR SHALL BE MOUNTED ON EXISTING CONCRETE PAD. CONTRACTOR SHALL FURNISH ALL MATERIALS AND LABOR REQUIRED AND MODIFY EXISTING PAD AS NECESSARY TO ACCEPT NEW

DETAIL	NOTES
S SHALL BE INLESS NOTED ZED TO MATCH THE	6. THE CONTRACTOR MAY "DAISY-CHAIN" SUPPLEMENTAL GROUND BUSES TOGETHER WITH A #4/0G. THIS DETAIL IS NOT INTENDED TO REQUIRE A #4/0G FROM EACH SUPPLEMENTAL GROUND BUS TO THE INTERSYSTEM BONDING TERMINATION. THE INTENT OF THIS DETAIL IS TO BOND TOGETHER ALL SUPPLEMENTAL GROUND BUSES AND THE MAIN SERVICE GROUND WITH A #4/0G.
) FEET APART AND ND RESISTANCE DOES	7. WHERE AN IDF IS LOCATED IN A SEPARATE BUILDING FROM THE MDF, THE IDF SHALL ALSO BE BONDED TO THE SERVICE GROUND FOR THE SEPARATE BUILDING CONTAINING THE IDF. THIS REQUIREMENT IS IN ADDITION TO THE BOND TO THE MDF.
PER SPECIFICATION IDUITS SHALL BE	8. THE EQUIPMENT WITHIN EACH MDF AND IDF SHALL BE BONDED TO THE SUPPLEMENTAL GROUND BUS IN ACCORDANCE WITH THE STRUCTURED CABLING SPECIFICATIONS, EQUIPMENT SUPPLIER'S DIRECTION AND CODE REQUIREMENTS.
DUNDING	

TIM COOKE, PE tim@jraee.com (D) 205.536.7107 (P) 205.995.1078 JRA JOB NO. **223068**

BUILDING SECURITY/ACCESS CONTROL SYSTEM AND BUILDING FIRE ALARM SYSTEM PRIOR TO BID AND INCLUDE ALL MATERIAL AND LABOR REQUIRED IN BID 2. THIS CONTRACTOR SHALL COORDINATE ALL WORK REQUIRED WITH DOOR HARDWARE INSTALLER PRIOR TO ROUGH-IN.

ISOMETRIC

	6		5						4
		LIGHTING	FIXTURE SCI	HEDULE					
MARK	MANUFACTURER		VOLTAGE	MATTS		TYPE			REMARKS
	LITHONIA	EPANL-24-60L-35K	MULTI	6 VVATIS		D TIPE	CEILING	RECESSED	
А	COLUMBIA			FURNISH	ED BY MANUF	ACTURER			
	RAB & DAY-BRITE								
10	LITHONIA	EPANL-22-40L-35K	MULTI	4	000 LUMEN LE	ED	CEILING	RECESSED	
A2				FURNISH	ED BY MANUF	ACTURER			
	LITHONIA	ZL1N-L48-7000LM-L/LENS-35K-WG	MULTI	7	000 LUMEN LE	ED	CEILING	SURFACE	WG
С	COLUMBIA			FURNISH	ED BY MANUF	ACTURER			
	DAY-BRITE								
D	GOTHAM	EVO6-35/25-AR-LD-MWD-EZ1	MULTI		2500 LUMEN LE		CEILING	RECESSED	
D	OMEGA			FURNISH		ACTORER			
	CANLET	68-02-20W-L-W-F-OG-09	120	20	2580	LED	ELEVATOR PIT	CAST	WG
EL	KILLARK						ELEVATOR	OUTLET BOX	
	CAPRI & STONCO						SUPPLIER		504
Р		BRM9L-HI-U/100-R4-EZB-SCT-ACG-DU	MULTI	4 FURNISH	BOU LUMEN LE	LU ACTURER	8'-0" A.F.F.	PENDANI	FSA
	DAY-BRITE								
	AAL	ALN440D-Y3-32LED-4K-SBL-PMC	120	75	4327	LED	AS DIRECTED	PENDANT	FSA
P2	LUMEC						BY ARCH.		
		N01-P1FA-24-MW/J FD4-35K-UNV-DM1	MULTI	50	5500		AS DIRECTED	PENDANT	FSA
P3			INCE II				BY ARCH.		
	ALW LIGHTING	LP1SD-S-MED-V01-EXT/F-UNV	MULTI	450	LUMENS PER	FOOT	AS DIRECTED	PENDANT	FCL, AC, FSA,
SL				FURNISH	ED BY MANUF	ACTURER	BY ARCH.		
	LITHONIA	WL4-30L-D24-NX	MULTI	3	000 LUMEN LE	D	8'-0'' A.F.F.	OUTLET BOX	FSA
STE	COLUMBIA			FURNISH	ED BY MANUF	ACTURER	OR ABOVE DOOR		
	DAY-BRITE								
LIC		700UCF-9-3-LED	MULTI	FURNISH	700 LUMEN LE		UNDER CABINET	SURFACE	UC
						NOT ONEN			
	GOTHAM	EVO6-35/20-AR-LD-MD-EZ1	120	2	2000 LUMEN LE	Ð	CEILING	RECESSED	СТ
V	PRESCOLITE			FURNISH	ED BY MANUF	ACTURER			
	OMEGA		120	75	/327				ESA
W			120	75			BY ARCH.	BRACKET	
	STERNBERG								
	LITHONIA	WSTLED-P2-40K-VF-MVOLT	MULTI	2	2000 LUMEN LE	Ð	SEE ARCH.	OUTLET BOX	FSA
W2				FURNISH	ED BY MANUF	ACTURER			
	DUAL-LITE	LE-S-G-E-I-URK	120	FURNISH	ED BY MANUF	ACTURER	CEILING / WALL	OUTLET BOX	EMX, FSA, ST
X1	LITHONIA						OR ABOVE DOOR		
	DAY-BRITE								
YO		LE-D-G-E-I-URK	120	FURNISH	ED BY MANUF	ACTURER		OUTLET BOX	EMX. FSA, ST
72	DAY-BRITE								
	HYDREL	M9420C-LED-P2-40K-MVOLT-NSP-FLC-LDIM	MULTI	2	324 LUMEN LE	D	FLUSH MOUNT	IN CONCRETE	FSA
Z	HUBBELL			FURNISH	ED BY MANUF	ACTURER	ANCHOR BASE AT	BASE OF COLUMN	
	GARDCO			4	465.4				EBO
8A	SEE PO	ST-TOF DETAIL WARK ON FIATURES	200		100.1		MARK "8A"		

LIGHTING FIXTURE SCHEDULE GENERAL NOTES:

1. ALL INTERIOR FIXTURES SHALL BE 3500K AND ALL EXTERIOR FIXTURES SHALL BE 4000K WITH A MINIMUM OF 80 CRI UNLESS NOTED OTHERWISE. 2. CONTRACTOR SHALL COORDINATE ALL FIXTURE MOUNTING PROVISIONS WITH THE ASSOCIATED CEILING TYPE(S) PRIOR TO ORDERING FIXTURES. 3. ALL FIXTURES AND BALLASTS/DRIVERS SHALL BE RATED FOR OPERATION IN AMBIENT TEMPERATURES UP TO 55 DEGREES CELSIUS.

LIGHTING FIXTURE SCHEDULE KEYED NOTES

LIGHTING	FIXTORE SCHEDOLE RETED NOTES.
AC	MOUNTED FROM S.S. AIRCRAFT CABLE
EMX	EMERGENCY FIXTURE. PROVIDE EMERGENCY BATTERY PACK RATED FOR AT LEAST 90 MINUTES OF OPERATION.
FCL	FURNISH IN CONTINUOUS LENGTH AS REQUIRED TO MATCH LENGTH SHOWN ON PLANS. COORDINATE MOUNTING WITH CEILING SU
	ALL YOKES AND OTHER MOUNTING ACCESSORIES AS REQUIRED
FSA	PROVIDE FINISH AS SELECTED BY ARCHITECT.
UC	FURNISH THE GREATER QUANTITY OF ONE (1) TYPE "UC" FIXTURE PER CABINET SECTION OR ONE PER 24" OF LINEAR CABINET FOR I
	ON PLANS. FIELD-COORDINATE EXACT LOCATIONS WITH CABINETRY TO COORDINATE WITH UNDERCABINET MOUNTING STRUCTUR
	UNDERCABINET LIGHTING LEVELS
СТ	CONFIRM EXACT CEILING THICKNESS AND PROVIDE FIXTURE WITH EXTENSION COLLAR AS NECESSARY PRIOR TO ORDERING FIXTUR
ST	PROVIDE WITH SELF-TEST DIAGNOSTICS.

PROVIDE WITH WIREGUARD. WG

			LICITIN							
RELAY	DESCRIPTION	ASSOCIATED	ASSOC'D	AUTO ON	AUTO OFF	OVERRI	DE 'ON')E 'OFF'	REMARKS
MARK		PANEL	CIR. NO.			L.V. SWITCH(ES)	BUTTON(S)	L.V. SWITCH(ES)	BUTTON(S)	
A 1	EXTERIOR FAÇADE LIGHTING	LP-1A	6	PHOTOCELL	OWNER		-	-	-	NOTE 5
A 2	EXTERIOR LIGHTING	LP-1A	65	PHOTOCELL	OWNER					
A 3	EXTERIOR LIGHTING	LP-1A	66	PHOTOCELL	OWNER					
A 4	EXTERIOR EMERGENCY LIGHTING	LP-EM-1A	7	PHOTOCELL	PHOTOCELL					NOTE 1
A 5-8	SPARES	-	-							
A 6-12	SPACES	-	-							
LIGHTING CO	NTROL PANEL NOTES									
1. PROVI	DE BARRIER TO SEPARATE NORMAL AND EMERGE	ENCY CIRCUITS.								
2. VERIFY	SCHEDULING TIMES WITH OWNER PRIOR TO PR	OGRAMMING SYSTEM.								
3. ALL RE	LAYS THAT SERVE EMERGENCY CIRCUITS SHALL	CLOSE UPON LOSS OF NO	ORMAL POWE	R						

- PROVIDE 30 AMP RATED 2-POLE RELAY. PROVIDE SENSOR SWITCH SPODMRD PUSH-BUTTON 0-10 VOLT DIMMING SWITCHPOD SERIES WALL STATION FOR 0-10 VOLT DIMMING CONTROL OF LIGHTING FIXTURES. FURNISH ALL MATERIAL AND LABOR REQUIRED AND PROVIDE ALL POWER AND 0-10 VOLT DIMMING CONTROL WIRING TO EACH FIXTURE SHOWN CONNECTED TO CIRCUIT. WALL MOUNT DIMMING CONTROL SWITCH NEXT TO LIGHTING CONTROL PANEL

Sensus Modules for Acorn Fixtures

The University of Alabama requires that all Acorn Style pole fixtures use the Sensus Lighting Control system. This requires the fixtures to have a NEMA 7-pin connection for the Sensus Module to plug into.

Sensus Control Module Installation

The Sensus Modules are designed to perform a self-install when they are connected to power. The Module will evaluate the light fixture and record fixture wattage, voltage, and current. Then it will communicate with the tower and provide its GPS Location. This process can take anywhere between 20 minutes and 8 hours depending on signal strength. Therefore, it is imperative that the contractor does not plug in the module to the fixture unless the contractor plans to leave the power on for up to 8 hours. It is recommended to install the light fixture and test each fixture installed that day with a "shorting cap" to verify the light fixture is working properly. At the end of the work day the contractor should install the Sensus Modules (with power off) in all of the new fixtures and then energize the fixtures. This will give all Sensus Controls modules overnight to complete the installation process.

Sensus Module Light Fixture Identification

Each Light fixture needs to have the "Pole ID" (Light Fixture ID) printed on a ³/₄" tall label with ¹/₂" letters. The label will be a clear ¾" tall label with black text that is ½" tall for Acorn Style Fixtures. The "Pole ID" will be provided on the lighting plans or on a set drawings provided prior to construction. An example of a Pole ID would be D284-L2-158.

Sensus POLE ID Label Locations

on the bottom area of the glass and facing the street.

Each Pole ID and the flexnet # (located on the Sensus Module) will be listed in a spreadsheet by the contractor. The contractor shall submit the spreadsheet of these Sensus Modules that were energized

5: 2023

U G

JPPLIER PRIOR TO BID. PROVIDE

LENGTH OF CABINET INDICATED IRE AND TO PROVIDE UNIFORM

Sensus Modules for Acorn Fixtures

for installation to UA Energy Management at the end of each day to allow UA Energy Management to evaluate each Sensus Module for proper installation and operation.

Pole/Light ID	Flexnet ID
D280-L1-XX	5206XXXX

Spreadsheet Example

Energy Management Contact:

Donnie Grill <u>dgrill@fa.ua.edu</u> 205-454-9889

EMD@fa.ua.edu

and

The recommended labeling machine to use is the 3M Dymo 5200 or equal and use Industrial Permanent Polyester Labels (3/4") SKU: 622290 (Black on Clear or Black on Metallic). Labels must be UV resistant and water resistant.

4

RISER DIAGRAM

Ά \

E0.06

					P		OARD	SCHED	ULE - MP	-A	
PANE	L TYPE:	SQUARE 'D' I-LINE SE	RIES					AIC RAT	ING:	85KAIC (MINIMUM)	
VOLT	AGE:	120/208V-3P-4W						MOUNTI	NG:	SURFACE	
AMPS	& TYPE:	1200/3 MAIN BKR	(SEE NOT	ES 3 &	. 4)			LOCATIO	DN:	ELECTRICAL 1014	
FED F	ROM:	UTILITY						FEEDER	:	4 SETS OF 4-350MCM - 3"C	
CIR.	DESCRIPTION		VOLTS	Р	HP	кw	AMPS	BKR	LOCAL	WIRE AND COND. SIZE	REMARKS
NO.						OR		SIZE	SAFETY SW.		
						KVA			RATING		
1	LP-SB-1A		120/208	3		9.1		100/3	-	4#3 & 1#8G - 1 1/2"C	
2	LP-EM-1A		120/208	3		24.9		100/3	-	4#3 & 1#8G - 1 1/2"C	SEE NOTE 3
3	LP-1A		120/208	3		47.3		225/3	-	4#4/0 & 1#4G - 2 1/2"C	
4	LP-2A		120/208	3		30.2		225/3	-	4#4/0 & 1#4G - 2 1/2"C	
5	LP-3A		120/208	3		46.5		225/3	-	4#4/0 & 1#4G - 2 1/2"C	
6	PP-M		120/208	3		36.3		225/3	-	4#4/0 & 1#4G - 2 1/2"C	
7	AHU-B		208	1	1			20/2	30/2	2#12 & 1#12G - 1/2"C	
8	EH-1		208	1		3.0		20/2	-	2#12 & 1#12G - 1/2"C	
9	EH-2		208	1		4.8		30/2	-	2#10 & 1#10G - 3/4"C	
10	EH-3		208	1		4.8		30/2	-	2#10 & 1#10G - 3/4"C	
11	ELEVATOR		208	3	60			400/3	400/3 - F250	3-300MCM & 1#300MCMG - 3"C	SEE NOTE 3
12	ELECTRIC KET	TLE (ITEM NO. 10)	208	3		21.0		80/3	100/3	3#4 & 1#8G - 1 1/4"C	
13	ELEVATOR OIL	COOLER	208	3			10.0	15/3	30/3	3#12 & 1#12G - 3/4"C	
14	AHU-1W		208	3	4			40/3	60/3	3#8 & 1#10G - 1"C	
15	AHU-2		208	3	15			110/3	200/3	3#4 & 1#6G - 1 1/4"C	
16	AHU-OA		208	1	3/4			15/2	30/2	2#12 & 1#12G - 1/2"C	
17	SPACE		208	3				100/3	-		
18	SPACE		208	3				1003/	-		
19	SPACE		208	3				100/3	-		
20	SPACE		208	3				250/3	-		
21	SPACE		208	3				400/3	-		
			٦	OTAL	CONNECT	ED LOAD:	329.2	kva	NOTES:		
							914.3	AMPS	1. PROVIDE	E INTEGRAL 240KA (PER PHASE) SURGE PROTEC	TION DEVICE.
				тс	OTAL DEMA	ND LOAD:	303.0) KVA	2. EQUIPM	ENT SHALL BE SERVICE-ENTRANCE RATED.	
							841.7	AMPS	3. PROVIDE	E ADJUSTABLE LSI ELECTRONIC TRIP UNIT CIRCI	UIT BREAKER.
				TOTA		ED LOAD:	317.2	kva	4. PROVIDE	E ARC-FLASH ENERGY REDUCTION MAINTENANC	E SWITCH (TO ADJUST
							881.0	AMPS	BREAKE	R TRIP SETTINGS TO LOWER LEVELS WHEN SW	ITCH IS IN "MAINTENANCE
									MODE")	PER NEC 2020 ARTICLE 240.87 REQUIREMENTS.	

					P	ANELB	OARD	SCHED	ULE - PP-	M	
PANE	L TYPE:	SQUARE 'D' TYPE NQ						AIC RATI	NG:	50KAIC (MINIMUM)	
VOLT	AGE:	120/208V-3P-4W						MOUNTI	NG:	SURFACE	
AMPS	& TYPE:	225 AMP - MLO						LOCATIC	N:	MECHANICAL ROOM 1017	
FED F	ROM:	MP-A	904. A					FEEDER		SEE PANELBOARD SCHEDULE - MP-A	
CIR.	DESCRIPTION		VOLTS	Р	HP	KW	AMPS	BKR	LOCAL	WIRE AND COND. SIZE RE	MARKS
NO.						OR		SIZE	SAFETY SW.		
						KVA			RATING		
1	AHU-1E		208	3	3			25/3	30/3	3#10 & 1#10G - 3/4"C	
2	P-B1		208	3	3/4			15/3	30/3	3#12 & 1#12G - 3/4"C	
3	P-B2		208	3	3/4			15/3	30/3	3#12 & 1#12G - 3/4"C	
4	P-H1		208	3	5			40/3	60/3	3#8 & 1#10G - 1"C	
5	P-H2		208	3	5			40/3	60/3	3#8 & 1#10G - 1"C	
6	P-C1		208	3	7 1/2			60/3	60/3	3#8 & 1#8G - 1"C	
7	P-C2		208	3	7 1/2			60/3	60/3	3#8 & 1#8G - 1"C	
8	SPACE		208	3				-/3			
9	SPACE		208	3		-		-/3	-		
10	SPACE		208	3				-/3	1.7		
11	SPACE		208	3				-/3	1.7		
12	SPACE		208	3				-/3	-		
13	SPACE		208	3				-/3	073		
14	SPACE		208	3				-/3	1.00		
				TOTAL	CONNEC	FED LOAD:	36.3	KVA	NOTES:		
			6 W.				100.8	AMPS	1. PROVIDE	E INTEGRAL 160KA (PER PHASE) SURGE PROTECTION DEVICE.	
				тс	TAL DEMA	AND LOAD:	36.3	KVA			
<i>u</i> .							100.8	AMPS			
				TOTA	LCOMPU	FED LOAD:	36.3	KVA			
			27.8				100.8	AMPS			

DAM										
			120/208V-3P-4W				SURFACE			
	S & TYPE	;.	225 AMP - MI O							
FED	FROM:		MP-A		FEED	ER:	SEE PANELBOARD SCHEDULE - MP-A			
KT.	NOTES	BKR	DESCRIPTION	WATTS	PHASE	WATTS	DESCRIPTION	BKR	NOTES	CI
NO.										N
1	-	20/1	LIGHTING	1,150	А	1,000	AHU-B SERVICE COMPARTMENT	20/1	-	2
2	-	20/1	LIGHTING	1,150	В	1,000	AHU-1E SERVICE COMPARTMENT	20/1	-	2
3	-	20/1	LIGHTING	900	С	200	FCU 1-1018	15/1	-	2
4	-	20/1	LIGHTING	900	A	200	FCU 1-1017	15/1	-	
5	-	20/1	LIGHTING	950	В	300	CP-1	20/1	-	
6	NOTE 3	20/1	EXTERIOR LIGHTING	300	С	750	WHR-1	20/1	-	
7	-	20/1	ELEVATOR PIT LIGHTING	200	А	1,500	B-2	20/1	-	
8	-	20/1	RECEPTACLES	1,200	В	1,500	B-1	20/1	-	
9	-	20/1	RECEPTACLES	1,000	С	800	DRINKING FOUNTAIN	20/1	NOTE 2	
10	-	20/1	RECEPTACLES	800	А	1,600	HOLLANDER BEATER (ITEM NO. 4)	20/1	-	
11	-	20/1	RECEPTACLES	1,200	В	1,600	NAGINATA BEATER (ITEM NO. 5)	20/1	-	:
12	-	20/1	RECEPTACLES	1,000	С	800	MINI FRIDGE (ITEM NO. 7)	20/1	-	
13	-	20/1	RECEPTACLES	1,000	А	800	RESTRAINT DRYING SYSTM (ITEM NO. 8)	20/1	-	
14	-	20/1	RECEPTACLES	1,000	В	800	RESTRAINT DRYING SYSTM (ITEM NO. 9)	20/1	-	
15	-	20/1	RECEPTACLES	1,000	С		SPARE	20/1	-	
6	-	20/1	HANDICAP DOOR OPERATOR	200	Α	1,200	RECEPTACLES	20/1	-	
17	-	20/1	EF-5	700	В	1,000	RECEPTACLES	20/1	-	
8	-	20/1	SPARE		С	1,000	RECEPTACLES	20/1	-	
19	-	20/1	SPARE		А	1,500	MICROWAVE (ITEM NO. 20)	20/1	-	
20	-	20/1	SPARE		В	1,000	RECEPTACLES	20/1	-	
:1	-	20/1	SPARE		С	800	RECEPTACLES	20/1	-	
				LP-1A	(SEC	T. 2)				
13		20/1	RECERTACIES	800	<u></u>	800	RECEDITACIES	20/1		T
		20/1		400	R	200		20/1	NOTE 3	+
14	-	20/1		400		200		20/1		_
	_	20/1		450	Δ	675		20/7		+
17		20/1	VANDERCOOK PRESS (ITEM NO. 21)	450	B	675		20,2		-
<u></u>		20/1	VANDERCOOK PRESS (ITEM NO. 21)	450	C C	500	PROJECTOR	20/1		+
<u> </u>	_	20/1	VANDERCOOK PRESS (ITEM NO. 21)	450	Δ	400		20/1		+
	-	20/1		750	R	400	SPARE	20/1	-	+
1	_	20/2		750	C C		SPARE	20/1	_	+
2	_	20/1		450	Δ		SPARE	20/1		+
3	_	30/1		2 000	B		SPARE	20/1	_	+
4	_	20/1	RECEPTACIES	800	- -		SPACE	20/1	-	+
5	_	20/1	RECEPTACIES		Δ		SPACE	20/1	-	+
- 6	_	20/1	COPIER	1 000	B		SPACE	20/1	-	+
7	_	20/1	RECEPTACLES	1 400			SPACE	20/1	-	+
8	_	20/1		200	Δ		SPACE	20/1		+
a	_	20/1		200	B		SPACE	20/1		+
ິ ກ	_	20/1		800	C C		SPACE	20/1		+
1 1	_	20/1	RECEPTACIES	100	Δ		SPACE	20/1	_	-
י י	_	20/1		400	R		SPACE	20/1	-	+
2 2	_	20/1	REAGNANT HOT STAMPING MACHINE (ITEM NO. 12)	400			SPACE	20/1	-	+
<u>,</u> ОТ	FS [,]	20/1	FRAGRANT HOT STAMFING MACHINE (IT EM NO. 12)						50.6	<u>Г</u>
יי ם	-0. R0\/IDE II			16 775	19 475	14 350	TOTAL CONNECTEL		140 6	
. г в			AL TOURA (FER FRASE) SURGE	10,775	19,475	14,350			140.0	
۲ ۱۰							TOTAL DEMANL	J LOAD:	40.5	۲ <u>۲۱ (</u>
. IN . D									120.3	
). к							TOTAL COMPUTEL		47.3	- N) - N
0	anle LCF	1A.		1					T 101.4	· A

C:\Users\jon\O 6/6/2023 2:15:

			PANELBOAF	RD SCH	IEDUL	E - LP	-2A (SECT. 1)			
PAN	EL TYPE:		SQUARE 'D' TYPE NQ		AIC RA	ATING:	50KAIC (MINIMUM)			
VOL	TAGE		120/208V-3P-4W		MOUN	TING:	SURFACE			
AMP	S & TYPE	:	225 AMP - MLO		LOCA	FION:	ELECTRICAL 2014			
FED	FROM:		MP-A		FEED	ER:	SEE PANELBOARD SCHEDULE - MP-A			
СКТ.	NOTES	BKR	DESCRIPTION	WATTS	PHASE	WATTS	DESCRIPTION	BKR	NOTES	СКТ
NO.										NO.
1	-	20/1	LIGHTING	1,150	А	1,000	RECEPTACLES	20/1	-	22
2	-	20/1	LIGHTING	950	В	1,000	RECEPTACLES	20/1	-	23
3	-	20/1	LIGHTING	1,100	С	1,000	COPIER	20/1	-	24
4	-	20/1	LIGHTING	1,050	A	800	RECEPTACLES	20/1	-	25
5	-	20/1	RECEPTACLES	1,000	В	1,000	RECEPTACLES	20/1	-	26
6	-	20/1	RECEPTACLES	1,000	С	400	RECEPTACLES	20/1	-	27
7	-	20/1	RECEPTACLES	600	A	1,000	RECEPTACLES	20/1	-	28
8	-	20/1	RECEPTACLES	1,000	В	800	RECEPTACLES	20/1	-	29
9	-	20/1	RECEPTACLES	1,000	С	600	RECEPTACLES	20/1	-	30
10	-	20/1	RECEPTACLES	1,000	А	600	RECEPTACLES	20/1	-	31
11	-	20/1	RECEPTACLES	1,000	В	600	RECEPTACLES	20/1	-	32
12	-	20/1	RECEPTACLES	1,000	с	1,200	RECEPTACLES	20/1	-	33
13	_	20/1	RECEPTACLES	1.000	A	800	RECEPTACLES	20/1	_	34
14	_	20/1	RECEPTACLES	600	В	500	PROJECTOR	20/1	_	35
15	-	20/1	RECEPTACLES	1.000	c	400	PROJECTOR SCREEN	20/1	-	36
16	-	20/1	RECEPTACIES	1 000	A	800		20/1	NOTE 2	37
17	_	20/1	RECEPTACIES	1 000	B	200		20/1		38
18	_	20/1	RECEPTACIES	1,000	c C	1 000		20/1	_	39
19	_	20/1	RECEPTACIES	1 200	Δ	500	PROJECTOR	20/1		40
20	_	20/1		1,200	B	400		20/1		40
20	_	20/1		1,000	C C	400		20/1		42
	_	20/1		1,000				20/1		72
				LP-2/		JI. 2)			1	
43	-	20/1	RECEPTACLES	400	A		SPACE	20/1	-	64
44	-	20/1	RECEPTACLES	600	В		SPACE	20/1	-	65
45	-	20/1	RECEPTACLES	600	С		SPACE	20/1	-	66
46	-	20/1	RECEPTACLES	600	A		SPACE	20/1	-	67
47	-	20/1	PRINTER	400	В		SPACE	20/1	-	68
48	-	20/1	RECEPTACLES	600	С		SPACE	20/1	-	69
49	-	20/1	RECEPTACLES	600	А		SPACE	20/1	-	70
50	-	20/1	RECEPTACLES	400	В		SPACE	20/1	-	71
51	-	20/1	SPARE		С		SPACE	20/1	-	72
52	-	20/1	SPARE		А		SPACE	20/1	-	73
53	-	20/1	SPARE		В		SPACE	20/1	-	74
54	-	20/1	SPARE		С		SPACE	20/1	-	75
55	-	20/1	SPACE		А		SPACE	20/1	-	76
56	-	20/1	SPACE		В		SPACE	20/1	-	77
57	-	20/1	SPACE		С		SPACE	20/1	-	78
58	-	20/1	SPACE		A		SPACE	20/1	-	79
59	-	20/1	SPACE		В		SPACE	20/1	-	80
60	-	20/1	SPACE		С		SPACE	20/1	-	81
61	-	20/1	SPACE		A		SPACE	20/1	-	82
62	-	20/1	SPACE		В		SPACE	20/1	-	83
63	-	20/1	SPACE		С		SPACE	20/1	-	84
NOT	ES:			PH. A:	PH. B:	PH. C:	TOTAL CONNECTE	D LOAD:	39.9	KVA
1. P	ROVIDE IN	TEGR	AL 160KA (PER PHASE) SURGE	14,100	12,450	13,300			110.7	AMPS
P	ROTECT	ON DEV	/ICE.				TOTAL DEMAN	D LOAD:	29.2	KVA
2. IN	DICATED	BREAK	(ER(S) SHALL BE GFI-TYPE (5mA TRIP).						81.0	AMPS
							TOTAL COMPUTE	D LOAD:	30.2	KVA
									83.9	AMPS
				1					1	

PNELTY SOUCOMMENT SOUCOMMENT SUB SUB SUB				PANELBOAF	RD SCH	IEDUL	E - LP-	-3A (SECT. 1)			
UNITAGE 100UTILS 0187ACE UNITAGE	PANE	EL TYPE:		SQUARE 'D' TYPE NQ		AIC RA	TING:	50KAIC (MINIMUM)			
MMP 5 PTV: UD0A** LODA**DE LECTROL SUT LECTROL SUT UT UD0A** VI	VOLT	AGE		120/208V-3P-4W		MOUN	TING:	SURFACE			
FED FED SEC SEC <td>AMPS</td> <td>S & TYPE</td> <td>:</td> <td>225 AMP - MLO</td> <td></td> <td>LOCAT</td> <td>ION:</td> <td>ELECTRICAL 3011</td> <td></td> <td></td> <td></td>	AMPS	S & TYPE	:	225 AMP - MLO		LOCAT	ION:	ELECTRICAL 3011			
Kit Vict	FED	FROM:		MP-A		FEEDE	ER:	SEE PANELBOARD SCHEDULE - MP-A			
NO Image Image <t< td=""><td>CKT.</td><td>NOTES</td><td>BKR</td><td>DESCRIPTION</td><td>WATTS</td><td>PHASE</td><td>WATTS</td><td>DESCRIPTION</td><td>BKR</td><td>NOTES</td><td>СКТ</td></t<>	CKT.	NOTES	BKR	DESCRIPTION	WATTS	PHASE	WATTS	DESCRIPTION	BKR	NOTES	СКТ
Image Image <th< td=""><td>NO. 1</td><td>_</td><td>20/1</td><td></td><td>1 050</td><td>Δ</td><td>1 200</td><td>RECEPTACIE</td><td>20/1</td><td>_</td><td>NO. 22</td></th<>	NO. 1	_	20/1		1 050	Δ	1 200	RECEPTACIE	20/1	_	NO. 22
3 - 201 LIGHTING 960 C 1,000 RECEPTACLE 201 - 24 4 - 201 LIGHTING 100 RECEPTACLE 201 - 25 5 - 201 RECEPTACLES 1000 RECEPTACLE 201 - 27 6 - 201 RECEPTACLES 1000 RECEPTACLE 201 - 28 9 - 201 RECEPTACLES 1000 FL 201 - 201 - 201 - 201 - 201 - 201 - 201 RECEPTACLES 1000 A 200 RECEPTACLE 201 NOTE 2 31 11 - 201 RECEPTACLES 1000 A 400 VENDING MACHINE 201 NOTE 2 32 12 - 201 RECEPTACLES 1000 A 1,000 AHU2 SERVEC COMPARTIME 201 NOTE 2 32	2	-	20/1	LIGHTING	1,000	B	1,000	RECEPTACLE	20/1	-	23
I I	3	_	20/1		950	С	1.000	RECEPTACLE	20/1	_	24
5 - 201 RECEPTACLES 1,000 B 1,000 RECEPTACLE 201 201 6 - 201 RECEPTACLES 1,000 RECEPTACLE 201 </td <td>4</td> <td>_</td> <td>20/1</td> <td></td> <td>950</td> <td>A</td> <td>1 000</td> <td>RECEPTACIE</td> <td>20/1</td> <td>_</td> <td>25</td>	4	_	20/1		950	A	1 000	RECEPTACIE	20/1	_	25
B - 201 RECEPTACLES 1/20 C 1/00 RECEPTACLE 201 - 27 7 - 201 RECEPTACLES 1/00 A 1/00 RECEPTACLE 201 - 28 8 - 201 RECEPTACLES 1/00 C 1/00 RECEPTACLE 201 - 28 9 - 201 RECEPTACLES 1/00 C 1/00 RECEPTACLE 201 NOTE 2 31 10 - 201 RECEPTACLES 1/00 A 800 RERREPARCE 201 NOTE 2 33 13 - 201 RECEPTACLE 1/00 A 400 VENDINS MACHINE 201 NOTE 2 33 15 - 201 RECEPTACLE 1/00 C 440 VENDINS MACHINE 201 NOTE 2 35 16 - 201 RECEPTACLE 1/00 C 440 PAU2 SERVICE COMPARTMENT 201	5	_	20/1	RECEPTACLES	1.000	B	1.000	RECEPTACLE	20/1	_	26
7 - 201 RECEPTACLES 1,000 A 1,000 RECEPTACLE 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 - 201 NOTE 2 31 10 - 201 RECEPTACLES 800 C 400 VENDIM MACHINE 201 NOTE 2 34 11 - 201 RECEPTACLES 800 C 440 VENDIM MACHINE 201 NOTE 2 36 16 - 201 RECEPTACLE 1000 A 1000 A+U2 STRUCE COMPARTMENT 201 NOTE 2 37 17 - 201 RECEPTACLE 1000 A 1700 EF1 201	6	-	20/1	RECEPTACLES	1.200	C	1.000	RECEPTACLE	20/1	-	27
8 - 201 RECEPTACLES 1.000 8 1.000 RECEPTACLE 201 - 201 9 - 201 RECEPTACLES 1.000 C 1.000 RECEPTACLE 201 - 30 11 - 201 RECEPTACLES 1.000 A 800 RERKGERATOR 201 NOTE 2 31 13 - 201 RECEPTACLES 900 C 400 VENDNS MACHINE 201 NOTE 2 33 14 - 201 RECEPTACLES 400 B 400 VENDNS MACHINE 201 NOTE 2 34 14 - 201 RECEPTACLES 1.000 A 400 VENDNS MACHINE 201 NOTE 2 36 15 - 201 RECEPTACLE 1.000 A 1.000 AUD VENDNS MACHINE 201 NOTE 2 36 16 - 201 RECEPTACLE 1.000 A 1.000	7	-	20/1	RECEPTACLES	1,000	A	1,000	RECEPTACLE	20/1	-	28
9 - 201 RECEPTACLES 1.000 C 1.000 RECEPTACLE 201 NOTE 2 30 10 - 201 RECEPTACLES 1.000 A 000 RECEPTACLE 201 NOTE 2 31 11 - 201 RECEPTACLES 1.000 A 400 VENDING MACHINE 201 NOTE 2 33 13 - 201 PROLECTOR 500 A 400 VENDING MACHINE 201 NOTE 2 35 15 - 201 RECEPTACLES 1.000 A 400 VENDING MACHINE 201 NOTE 2 35 16 - 201 RECEPTACLE 1.000 A 400 VENDING MACHINE 201 NOTE 2 35 16 - 201 RECEPTACLE 1.000 A 1.000 A 400 FE-1 201 . 41 21 - 201 RECEPTACLE 1.000 A <t< td=""><td>8</td><td>-</td><td>20/1</td><td>RECEPTACLES</td><td>1,000</td><td>В</td><td>1,000</td><td>RECEPTACLE</td><td>20/1</td><td>-</td><td>29</td></t<>	8	-	20/1	RECEPTACLES	1,000	В	1,000	RECEPTACLE	20/1	-	29
10 - 201 RECEPTACLES 1,000 A 800 REFRICERATOR 201 NOTE 2 31 11 - 201 RECEPTACLES 1,000 A 800 DRINKING FOUNTAIN 201 NOTE 2 31 13 - 201 PROJECTOR 500 A 400 VENDIG MACHINE 201 NOTE 2 34 14 - 201 PROJECTOR SCREEN 400 B 400 VENDIG MACHINE 201 NOTE 2 35 16 - 201 RECEPTACLE 1,000 A 1,000 AHU2 SERVICE COMPARTMENT 201 - 37 17 - 201 RECEPTACLE 1,000 A 700 EF-1 201 - 40 20 - 201 RECEPTACLE 1,000 A 700 EF-1 201 - 41 21 - 201 RECEPTACLE 1,000 A 700 EF-3 <td< td=""><td>9</td><td>-</td><td>20/1</td><td>RECEPTACLES</td><td>1,000</td><td>С</td><td>1,000</td><td>RECEPTACLE</td><td>20/1</td><td>-</td><td>30</td></td<>	9	-	20/1	RECEPTACLES	1,000	С	1,000	RECEPTACLE	20/1	-	30
11 - 201 RECEPTACLES 120 B 800 DRINKING FOUNTAIN 201 NOTE2 32 12 - 201 RECEPTACLES 800 C 440 VENDING MACHINE 201 NOTE2 33 14 - 201 PROJECTOR 500 400 VENDING MACHINE 201 NOTE2 35 15 - 201 RECEPTACLE 1000 C 400 VENDING MACHINE 201 NOTE2 35 16 - 201 RECEPTACLE 1000 A 400 VENDING MACHINE 201 37 17 - 201 RECEPTACLE 1000 A 400 HU SENCE COMPARTMENT 201 40 19 - 201 RECEPTACLE 1000 A 700 EF-2 201 40 20 - 201 RECEPTACLE 1000 B 1200 EF-2 201 40 21 NoTE2 34 400 SPACE 201	10	-	20/1	RECEPTACLES	1,000	А	800	REFRIGERATOR	20/1	NOTE 2	31
12 - 201 RECEPTACLES 400 C 400 VENDING MACHINE 201 NOTE 2 33 13 - 201 PROJECTOR 500 A 400 VENDING MACHINE 201 NOTE 2 35 15 - 201 RECEPTACLES 1,000 C 400 VENDING MACHINE 201 NOTE 2 35 16 - 201 RECEPTACLE 1,000 A 1,000 MU2 SERVICE COMPARTMENT 201 - 37 17 - 201 RECEPTACLE 1,000 A 1,000 FGUS 201 - 40 20 - 201 RECEPTACLE 1,000 A 700 EF-3 201 - 40 21 - 201 RECEPTACLE 1,000 A 700 EF-3 201 - 40 44 - 402 AC01-1006 3,050 A SPACE 201 - 65 45 - 201 RECEPTACLES 3,050 A SPACE<	11	-	20/1	RECEPTACLES	1,200	В	800	DRINKING FOUNTAIN	20/1	NOTE 2	32
13 - 201 PROJECTOR 500 A 400 VENDING MACHINE 201 NOTE 2 34 14 - 201 RECEPTACLES 1,000 C 400 VENDING MACHINE 201 NOTE 2 36 15 - 201 RECEPTACLE 1,000 C 400 VENDING MACHINE 201 NOTE 2 36 16 - 201 RECEPTACLE 400 B 440 VENDING MACHINE 201 NOTE 2 36 17 - 201 RECEPTACLE 1,000 A 7,00 EF-1 201 40 20 - 201 RECEPTACLE 1,000 A 7,00 EF-3 201 - 41 21 - 201 RECEPTACLE 1,000 A SPACE 201 - 40 20 - 201 RECEPTACLE 1,000 A SPACE 201 - 40 44 - 402 A SPACE 201 - 40 - 40	12	-	20/1	RECEPTACLES	800	С	400	VENDING MACHINE	20/1	NOTE 2	33
14 - 201 PROJECTOR SCREEN 400 B 400 VENDING MACHINE 201 NOTE 2 35 15 - 201 RECEPTACLES 1,000 C 400 VENDING MACHINE 201 NOTE 2 35 16 - 201 RECEPTACLE 1,000 A 1,000 MU-2 SERVICE COMPARTMENT 201 - 38 18 - 201 RECEPTACLE 1,000 A 700 EF-1 201 - 40 20 - 201 RECEPTACLE 1,000 A 700 EF-1 201 - 40 21 - 201 RECEPTACLE 1,000 C 700 EF-3 201 - 41 21 - 201 RECEPTACLE 1,000 C 700 EF-3 201 - 64 41 - 401 ACO 1-1006 3,050 B SPACE 201 - 65	13	-	20/1	PROJECTOR	500	Α	400	VENDING MACHINE	20/1	NOTE 2	34
15 - 201 RECEPTACLES 1,000 C 400 VENDING MACHINE 201 NOTE 2 36 16 - 201 RECEPTACLE 1,000 A 1,000 AHU2 SERVICE COMPARTMENT 201 - 37 17 - 201 RECEPTACLE 400 FGUS 202 - 38 18 - 201 COPER 1,000 C 440 FGUS 201 - 40 20 - 201 RECEPTACLE 1,000 C 700 EF-1 201 - 41 21 - 201 RECEPTACLE 1,000 C 700 EF-3 201 - 64 44 - - 3,050 A SPACE 201 - 66 45 - 201 RECEPTACLES 400 C SPACE 201 - 67 46 - 201 RECEPTACLES 400 A SPACE 201 - 71 47 - <	14	-	20/1	PROJECTOR SCREEN	400	В	400	VENDING MACHINE	20/1	NOTE 2	35
16 - 201 RECEPTACLE 1,000 A 1,000 AHU-2 SERVICE COMPARTMENT 201 - 37 17 - 201 RECEPTACLE 400 B 440 FCU'S 202 - 38 18 - 201 COPIER 1,000 C 440 - 39 20 - 201 RECEPTACLE 1,000 R 700 EF-1 201 - 41 21 - 201 RECEPTACLE 1,000 R 700 EF-2 201 - 44 21 - 201 RECEPTACLE 1,000 R SPACE 201 - 64 44 - 402 ACO 1-1006 3,050 A SPACE 201 - 66 45 - 201 RECEPTACLES 400 C SPACE 201 - 67 46 - 202 C SPACE	15	-	20/1	RECEPTACLES	1,000	С	400	VENDING MACHINE	20/1	NOTE 2	36
17 . 2011 RECEPTACLE 400 B 440 FCUS 202 . 38 18 . 2011 COPER 1,000 C 440 . </td <td>16</td> <td>-</td> <td>20/1</td> <td>RECEPTACLE</td> <td>1,000</td> <td>Α</td> <td>1,000</td> <td>AHU-2 SERVICE COMPARTMENT</td> <td>20/1</td> <td>-</td> <td>37</td>	16	-	20/1	RECEPTACLE	1,000	Α	1,000	AHU-2 SERVICE COMPARTMENT	20/1	-	37
16 · 2011 COPIER 1.000 C 440 19 · 2011 RECEPTACLE 1,000 A 700 EF-1 201 · 40 20 · 2011 RECEPTACLE 1,000 B 1,200 EF-2 2011 · 41 20 · 2011 RECEPTACLE 1,000 C 700 EF-3 2011 · 41 21 · 2011 RECEPTACLE 0.000 C 700 EF-3 2011 · 64 44 · · 402 AOC 1-1006 3,050 B SPACE 201 · 64 45 · 201 RECEPTACLES 400 C SPACE 201 · 66 47 · · 201 RECEPTACLES 400 C SPACE 201 · 69 48 · 2011 EF-4 200 C SPACE 201 · 70 50 · 2011 SPAR	17	-	20/1	RECEPTACLE	400	В	440	FCU'S	20/2	-	38
19 · 201 RECEPTACLE 1.000 A 700 EF-1 201 · 40 20 · 201 RECEPTACLE 1.000 B 1,200 EF-2 201 · 41 21 · 201 RECEPTACLE 1.000 C 700 EF-3 201 · 41 21 · 201 RECEPTACLE 1.000 C 700 EF-3 201 · 64 43 · 402 ACD 1-1006 3,050 A SPACE 201 · 64 44 · 202 FCUS 400 C SPACE 201 · 66 45 · 201 EF-4 200 C SPACE 201 · 67 48 · 201 BARE 800 A SPACE 201 · 70 50 · 201 BARE 800 B SPACE 201 · 73 51 · 201 SPARE	18	-	20/1	COPIER	1,000	С	440			-	39
20 . 201 RECEPTACLE 1,000 B 1,200 EF-2 201 . 41 21 . 201 RECEPTACLE 1,000 C 700 EF-3 201 . 41 21 . 201 RECEPTACLE 1,000 C 700 EF-3 201 . 42 LP-34 (SECT.2) LP-36 (SECT.2) 43 . 402 AC0.1:006 3,050 A SPACE 201 . 64 44 . . 202 FCU'S 400 C SPACE 201 . 66 46 . 201 EF-4 200 C SPACE 201 . 67 47 . . 201 BF-4 200 C SPACE 201 . 71 . 67 50 . 201 MICROWAVE 800 A SPACE 201 <td>19</td> <td>-</td> <td>20/1</td> <td>RECEPTACLE</td> <td>1,000</td> <td>Α</td> <td>700</td> <td>EF-1</td> <td>20/1</td> <td>-</td> <td>40</td>	19	-	20/1	RECEPTACLE	1,000	Α	700	EF-1	20/1	-	40
21 - 201 RECEPTACLE 1,000 C 700 EF-3 201 - 42 LP-3A (SECT. 2) 43 - 402 AC0 1-1006 3.050 A SPACE 201 - 64 44 - 202 RCOEPTACLES 400 C SPACE 201 - 68 46 - 202 FCUS 400 A SPACE 201 - 68 47 - 400 B SPACE 201 - 68 48 - 201 EF-4 200 C SPACE 201 - 68 48 - 201 DISHWASHER 800 A SPACE 201 - 70 50 - 201 MICROWAVE 800 B SPACE 201 - 73 51 - 201 MICROWAVE 800 B SPACE 201 - 74 54 - 201 SPARE C SPACE<	20	-	20/1	RECEPTACLE	1,000	В	1,200	EF-2	20/1	-	41
LP-3A (SECT. 2) 43 - 402 ACO 1-1006 3.050 A SPACE 2011 - 64 44 - 201 RECEPTACLES 400 C SPACE 2011 - 64 45 - 201 RECEPTACLES 400 C SPACE 2011 - 66 46 - 202 FCU'S 490 A SPACE 2011 - 66 47 - - 490 A SPACE 2011 - 66 48 - 2011 EF.4 200 C SPACE 2011 - 68 49 NOTE 2 2011 MICROWAVE 800 B SPACE 2011 - 71 51 - 2011 SPARE C SPACE 2011 - 73 53 - 2011 SPARE B SPACE 2011 -	21	-	20/1	RECEPTACLE	1,000	С	700	EF-3	20/1	-	42
A A VAC ACO 1-1006 A SPACE 201 - 64 44 - 201 RECEPTACLES 400 C SPACE 201 - 65 45 - 201 RECEPTACLES 400 C SPACE 201 - 66 46 - 202 FCUS 490 A SPACE 201 - 68 48 - 201 EF-4 200 C SPACE 201 - 68 49 NOTE2 201 MICROWAVE 800 A SPACE 201 - 70 50 - 201 SPARE C SPACE 201 - 71 51 - 201 SPARE C SPACE 201 - 73 53 - 201 SPARE C SPACE 201 - 75 54 - 201					LP-3/		T 2)				
43 - 40/2 ADD 11006 3000 A SPACE 201 - 64 44 - - 64 - 201 - 65 44 - - 65 SPACE 201 - 66 46 - 202 FCUS 490 A - SPACE 201 - 66 47 - - - 490 B SPACE 201 - 66 48 - 201 EF.4 200 C SPACE 201 - 69 49 NOTE 2 201 DISHWASHER 800 A SPACE 201 - 70 50 - 201 SPARE C SPACE 201 - 71 51 - 201 SPARE C SPACE 201 - 73 53 - 201 SPARE C SPACE	40		40/0	400.4.4000			JT. Z)	00405	00/4		64
44 - - 201 RECEPTACLES 400 C SPACE 201 201 RECEPTACLES 400 C SPACE 201 201 - 66 45 - 201 RECEPTACLES 400 C SPACE 201 - 66 47 - - 400 R SPACE 201 - 66 48 - 201 EF-4 200 C SPACE 201 - 66 49 NOTE 2 201 DSHWASHER 800 A SPACE 201 - 70 50 - 201 MICROWAVE 800 B SPACE 201 - 71 51 - 201 SPARE 40 SPACE 201 - 73 53 - 201 SPARE - 6 SPACE 201 - 76 54 - 201 SPARE	43	-	40/2	ACO 1-1008	3,050	A		SPACE	20/1	-	04 65
43 - 201 RECEPTALES 440 - 6 3PAC 201 201 - 60 66 - 202 FUS 440 A SPACE 201 201 - 66 67 - 201 EF-4 200 C SPACE 201 - 66 48 - 201 DISHWASHER 800 A C SPACE 201 - 70 50 - 201 MICROWAVE 800 A C SPACE 201 - 71 51 - 201 SPARE C A SPACE 201 - 72 52 - 201 SPARE C A SPACE 201 - 73 53 - 201 SPARE C B SPACE SPACE 201 - 73 54 - 201 SPACE	44	-	20/4		3,050	В		SPACE	20/1	-	60
Image: Matrix	40	-	20/1		400	<u>ر</u>		SPACE SPACE	20/1	-	67
Image: Problem intermediate intermedia	40	-	20/2	1000	490	 		SPACE	20/1	_	68
Image: Horized Field Image: Horized Field <t< td=""><td>47</td><td>-</td><td>20/1</td><td>EE /</td><td>490</td><td>С</td><td></td><td>SPACE</td><td>20/1</td><td>-</td><td>60</td></t<>	47	-	20/1	EE /	490	С		SPACE	20/1	-	60
No FEC 2 201 BERMUNTER 300 N Or No Or No Or No Or No 50 - 201 MICROWAVE 800 B SPACE 201 - 71 51 - 201 SPARE C C SPACE 201 - 72 52 - 201 SPARE E A SPACE 201 - 73 53 - 201 SPARE E B SPACE 201 - 74 54 - 201 SPARE C SPACE 201 - 75 55 - 201 SPACE C SPACE 201 - 76 56 - 201 SPACE C SPACE 201 - 77 57 - 201 SPACE C SPACE 201 - 78 58 - 201 SPACE A SPACE 201 - 79 59 - 201 SPACE	40	NOTE 2	20/1		800	Δ		SPACE	20/1	_	70
1 201 MARCH ME 200 D 0100 0100 0110 011	50	-	20/1	MICROWAVE	800			SPACE	20/1	_	71
31 201 01 AL 0 0 01 AL 12 13 14 </td <td>51</td> <td>-</td> <td>20/1</td> <td>SPARE</td> <td>000</td> <td>0</td> <td></td> <td>SPACE</td> <td>20/1</td> <td></td> <td>72</td>	51	-	20/1	SPARE	000	0		SPACE	20/1		72
Lit Lit Struct Lit Struct Lit It Struct Lit It Struct Struct <td>52</td> <td>_</td> <td>20/1</td> <td>SPARE</td> <td></td> <td>A</td> <td></td> <td>SPACE</td> <td>20/1</td> <td>_</td> <td>73</td>	52	_	20/1	SPARE		A		SPACE	20/1	_	73
54 - 201 SPARE C SPACE 201 - 75 55 - 201 SPACE A SPACE 201 - 76 56 - 201 SPACE A SPACE 201 - 76 56 - 201 SPACE B SPACE 201 - 77 57 - 201 SPACE C SPACE 201 - 78 58 - 201 SPACE C SPACE 201 - 79 59 - 201 SPACE A SPACE 201 - 80 60 - 201 SPACE A SPACE 201 - 81 61 - 201 SPACE A SPACE 201 - 82 62 - 201 SPACE A SPACE 201 - 83	53	-	20/1	SPARE		B		SPACE	20/1	_	74
55 20/1 SPACE A SPACE 20/1 - 76 56 - 20/1 SPACE 0 A SPACE 20/1 - 76 56 - 20/1 SPACE 0 B SPACE 20/1 - 77 57 - 20/1 SPACE 0 C SPACE 20/1 - 78 58 - 20/1 SPACE 0 A SPACE 20/1 - 78 59 - 20/1 SPACE 0 A SPACE 20/1 - 80 60 - 20/1 SPACE 0 A SPACE 20/1 - 81 61 - 20/1 SPACE 0 A SPACE 20/1 - 82 62 - 20/1 SPACE 0 A SPACE 20/1 - 83 63 - <	54	_	20/1	SPARE		C		SPACE	20/1	_	75
56 . 20/1 SPACE Image: Figure Fig	55	-	20/1	SPACE		A		SPACE	20/1	-	76
57 - 20/1 SPACE C SPACE 20/1 - 78 58 - 20/1 SPACE - A SPACE 20/1 - 79 59 - 20/1 SPACE B SPACE 20/1 - 80 60 - 20/1 SPACE 0 A SPACE 20/1 - 81 61 - 20/1 SPACE 0 A SPACE 20/1 - 81 61 - 20/1 SPACE 0 A SPACE 20/1 - 82 62 - 20/1 SPACE 0 A SPACE 20/1 - 83 63 - 20/1 SPACE 0 C SPACE 20/1 - 84 NOTES: - 20/1 SPACE 16,340 16,330 12,490 - 16,330 12,490 127.1 AMPS	56	-	20/1	SPACE		В		SPACE	20/1	-	77
58 - 20/1 SPACE A SPACE 20/1 - 79 59 - 20/1 SPACE B SPACE 20/1 - 80 60 - 20/1 SPACE C SPACE 20/1 - 80 61 - 20/1 SPACE C SPACE 20/1 - 81 61 - 20/1 SPACE A SPACE 20/1 - 82 62 - 20/1 SPACE B SPACE 20/1 - 83 63 - 20/1 SPACE C SPACE 20/1 - 84 NOTES: 1 SPACE C SPACE 20/1 - 84 1. PROVIDE INTEGRAL 160KA (PER PHASE) SURGE PH. A: PH. A: PH. C: TOTAL CONNECTED LOAD: 45.5 KVA 2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). I F F TOTAL COMPUTED	57	-	20/1	SPACE		С		SPACE	20/1	-	78
59 - 20/1 SPACE B SPACE 20/1 - 80 60 - 20/1 SPACE C SPACE 20/1 - 80 60 - 20/1 SPACE C SPACE 20/1 - 81 61 - 20/1 SPACE A SPACE 20/1 - 82 62 - 20/1 SPACE A SPACE 20/1 - 83 63 - 20/1 SPACE C SPACE 20/1 - 84 NOTES: 20/1 SPACE C SPACE 20/1 - 84 NOTES: PROTECTION DEVICE. PH. A: PH. B: PH. C: TOTAL CONNECTED LOAD: 45.5 KVA 2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). I FOTAL COMPUTED LOAD: 46.5 KVA 2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). I I 126.3 AMPS I 126.1 AMPS	58	-	20/1	SPACE		A		SPACE	20/1	-	79
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	59	-	20/1	SPACE		В		SPACE	20/1	-	80
61 - 20/1 SPACE A SPACE 20/1 - 82 83 <td>60</td> <td>-</td> <td>20/1</td> <td>SPACE</td> <td></td> <td>С</td> <td></td> <td>SPACE</td> <td>20/1</td> <td>-</td> <td>81</td>	60	-	20/1	SPACE		С		SPACE	20/1	-	81
62 - 20/1 SPACE B SPACE 20/1 - 83 63 - 20/1 SPACE C SPACE 20/1 - 84 NOTES: PH. A: PH. B: PH. C: TOTAL CONNECTED LOAD: 45.8 KVA 1. PROVIDE INTEGRAL 160KA (PER PHASE) SURGE PH. A: PH. B: PH. C: TOTAL DEMAND LOAD: 45.5 KVA 2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). I I FOULT TOTAL COMPUTED LOAD: 46.5 KVA 1. PROVIDE INTEGRAL 160KA (PER PHASE) SURGE I<	61	-	20/1	SPACE		Α		SPACE	20/1	-	82
63 - 20/1 SPACE C SPACE 20/1 - 84 NOTES: PH. A: PH. B: PH. C: TOTAL CONNECTED LOAD: 45.8 KVA 1. PROVIDE INTEGRAL 160KA (PER PHASE) SURGE 16,940 16,330 12,490 127.1 AMPS PROTECTION DEVICE. 1 16,940 16,330 12,490 TOTAL DEMAND LOAD: 45.5 KVA 2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). Image: Comparison of the second s	62	-	20/1	SPACE		В		SPACE	20/1	-	83
NOTES:PH. A:PH. B:PH. C:TOTAL CONNECTED LOAD:45.8 KVA1. PROVIDE INTEGRAL 160KA (PER PHASE) SURGE PROTECTION DEVICE.16,94016,33012,490127.1 AMPS2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP).Image: Constant of the second s	63	-	20/1	SPACE		С		SPACE	20/1	-	84
1. PROVIDE INTEGRAL 160KA (PER PHASE) SURGE 16,940 16,330 12,490 127.1 AMPS PROTECTION DEVICE. TOTAL DEMAND LOAD: 45.5 KVA 2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). 126.3 AMPS 126.3 AMPS TOTAL COMPUTED LOAD: 46.5 KVA 120.1 AMPS	NOT	ES:			PH. A:	PH. B:	PH. C:	TOTAL CONNECTEI	LOAD:	45.8	KVA
PROTECTION DEVICE. 2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). TOTAL COMPUTED LOAD: 45.5 KVA 126.3 AMPS TOTAL COMPUTED LOAD: 46.5 KVA 129.1 AMPS	1. Pf	ROVIDE IN	TEGRA	AL 160KA (PER PHASE) SURGE	16,940	16,330	12,490			127.1	AMPS
2. INDICATED BREAKER(S) SHALL BE GFI-TYPE (5mA TRIP). 126.3 AMPS TOTAL COMPUTED LOAD: 46.5 KVA 120.1 AMPS	PF	ROTECT	ON DEV	/ICE.				TOTAL DEMANI	D LOAD:	45.5	KVA
TOTAL COMPUTED LOAD: 46.5 KVA	2. IN	DICATED	BREAK	(ER(S) SHALL BE GFI-TYPE (5mA TRIP).						126.3	AMPS
				. ,			ŀ	TOTAL COMPUTE	D LOAD:	46.5	KVA
										129.1	AMPS

			PANELBC	ARD S	SCHEE	OULE -	LP-EM-1A			
PAN	EL TYPE:		SQUARE 'D' TYPE NQ		AIC RA	TING:	22KAIC (MINIMUM)			
VOL	TAGE		120/208V-3P-4W		MOUN	TING:	SURFACE			
AMF	S & TYPE	:	100 AMP - MLO		LOCA	FION:	ELECTRICAL 1014			
FED	FROM:		MP-A		FEEDI	ER:	SEE PANELBOARD SCHEDULE - MP-A			
CKT.	NOTES	BKR	DESCRIPTION	WATTS	PHASE	WATTS	DESCRIPTION	BKR	NOTES	СКТ
NO.										NO.
1	-	20/1	LIGHTING	950	A	500	FIRE/SMOKE DAMPERS	20/1	-	22
2	-	20/1	LIGHTING	1,000	В	500	FIRE/SMOKE DAMPERS	20/1	-	23
3	-	20/1	LIGHTING	800	С	500	LCP-1A	20/1	-	24
4	-	20/1	LIGHTING	450	A	500	GENERATOR CONTOLS	20/1	-	25
5	-	20/1	LIGHTING	100	В		SPARE	20/1	-	26
6	-	20/1	LIGHTING	550	С		SPARE	20/1	-	27
7	NTOE 2	20/1	EXTERIOR EMERGENCY LIGHTING	600	A		SPARE	20/1	-	28
8	-	20/1	LIGHTING	850	В		SPARE	20/1	-	29
9	-	20/1	LIGHTING	850	С		SPACE	20/1	-	30
10	-	20/1	DIGITAL SIGNAGE	500	A		SPACE	20/1	-	31
11	-	20/1	ELEVATOR CAB LTS. & CONTROLS	1,000	В		SPACE	20/1	-	32
12	-	20/1	ELEVATOR MACHINE ROOM RECEP	200	С		SPACE	20/1	-	33
13	-	20/1	TELECOMMUNICATIONS EQUIPMENT	1,000	A		SPACE	20/1	-	34
14	-	20/1	TELECOMMUNICATIONS EQUIPMENT	1,000	В		SPACE	20/1	-	35
15	-	30/1	TELECOMMUNICATIONS EQUIPMENT	2,000	С		SPACE	20/1	-	36
16	-	30/1	TELECOMMUNICATIONS EQUIPMENT	2,000	А		SPACE	20/1	-	37
17	-	20/1	FACP	500	В		SPACE	20/1	-	38
18	-	20/1	FACP	500	С		SPACE	20/1	-	39
19	-	20/1	DIGITAL SIGNAGE	500	A		SPACE	20/1	-	40
20	-	20/1	DIGITAL SIGNAGE	500	В		SPACE	20/1	-	41
21	-	20/1	DIGITAL SIGNAGE	500	С		SPACE	20/1	-	42
NOT	ES:			PH. A:	PH. B:	PH. C:	TOTAL CONNECTED	LOAD:	23.1	KVA
1. P	ROVIDE II	NTEGR/	AL 160KA (PER PHASE) SURGE	7,000	5,450	5,900			64.0	AMPS
P	ROTECTI	ION DE	/ICE.	SUB-I	FEED LP-	EM-3A	TOTAL DEMAND	LOAD:	23.1	KVA
2. R	OUTE TH	IROUGH	H RELAY WITHIN LIGHTING CONTROL	5.0	KVA DE	MAND			64.0	AMPS
P		P-1A.					TOTAL COMPUTED	LOAD:	24.9	KVA
									69.1	

			PANELE	BOARD S	SCHEE	DULE -	LP-EM-3A			
PAN	EL TYPE:		SQUARE 'D' TYPE NQ		AIC RA	ATING:	14KAIC (MINIMUM)			
VOL.	TAGE		120/208V-3P-4W		MOUN	ITING:	SURFACE			
AMP	S & TYPE	:	100 AMP - MLO		LOCA	TION:	ELECTRICAL 3011			
FED	FROM:		LP-EM-1A		FEED	ER:	4#3 & 1#8G - 1 1/2"C			
CKT.	NOTES	BKR	DESCRIPTION	WATTS	PHASE	WATTS	DESCRIPTION	BKR	NOTES	СКТ
NO.										NO.
1	-	20/1	LIGHTING	1,200	A		SPARE	20/1	-	13
2	-	20/1	SPARE		В		SPACE	20/1	-	14
3	-	20/1	DIGITAL SIGNAGE	500	С		SPACE	20/1	-	15
4	-	20/1	DIGITAL SIGNAGE	500	A		SPACE	20/1	-	16
5	-	20/1	DIGITAL SIGNAGE	500	В		SPACE	20/1	-	17
6	-	20/1	FIRE/SMOKE DAMPERS	500	С		SPACE	20/1	-	18
7	-	20/1	FIRE/SMOKE DAMPERS	500	A		SPACE	20/1	-	19
8	-	20/1	FIRE/SMOKE DAMPERS	500	В		SPACE	20/1	-	20
9	-	20/1	FIRE/SMOKE DAMPERS	500	С		SPACE	20/1	-	21
10	-	20/1	SPARE		A		SPACE	20/1	-	22
11	-	20/1	SPARE		В		SPACE	20/1	-	23
12	-	20/1	SPARE		С		SPACE	20/1	-	24
NOT	ES:			PH. A:	PH. B:	PH. C:	TOTAL CONNECTE	D LOAD:	4.7	KVA
1. P	ROVIDE II	NTEGR.	AL 160KA (PER PHASE) SURGE	2,200	1,000	1,500			13.1	AMPS
P	ROTECTI	ON DEV	/ICE.				TOTAL DEMAN	ID LOAD:	4.7	KVA
									13.1	AMPS
							TOTAL COMPUTE	D LOAD:	5.0	KVA
									13.0	

			PANELBO	DARD S	SCHEI	OULE -	LP-SB-1A			
PAN	EL TYPE:		SQUARE 'D' TYPE NQ		AIC RA	TING:	22KAIC (MINIMUM)			
VOL	TAGE		120/208V-3P-4W		MOUN	TING:	SURFACE			
AMP	S & TYPE	:	100 AMP - MLO		LOCA	FION:	ELECTRICAL 1014			
FED	FROM:		MP-A		FEED	ER:	SEE PANELBOARD SCHEDULE - MP-A			
CKT.	NOTES	BKR	DESCRIPTION	WATTS	PHASE	WATTS	DESCRIPTION	BKR	NOTES	СКТ
NO.										NO.
1	-	20/1	HVAC CONTROL PANEL	500	Α		SPACE	20/1	-	16
2	-	20/1	HVAC CONTROL PANEL	500	В		SPACE	20/1	-	17
3	NOTE 2	30/1	SP-1	1,600	С		SPACE	20/1	-	18
4	-	20/1	HVAC CONTROL PANEL	500	А		SPACE	20/1	-	19
5	-	20/1	HVAC CONTROL PANEL	500	В		SPACE	20/1	-	20
6	-	20/1	HVAC CONTROL PANEL	500	С		SPACE	20/1	-	21
7	-	20/2	ACO 1-1009	1,400	А		SPACE	20/1	-	22
8	-			1,400	В		SPACE	20/1	-	23
9	-	20/1	CONDENSATE PUMP	200	С		SPACE	20/1	-	24
10	-	20/1	ENGINE BLOCK HEATER	1,500	А		SPACE	20/1	-	25
11	-	20/1	BATTERY CHARGER	500	В		SPACE	20/1	-	26
12	-	20/1	SPARE		С		SPACE	20/1	-	27
13	-	20/1	SPARE		А		SPACE	20/1	-	28
14	-	20/1	SPARE		В		SPACE	20/1	-	29
15	-	20/1	SPARE		С		SPACE	20/1	-	30
NOT	ES:			PH. A:	PH. B:	PH. C:	TOTAL CONNECTED) Load:	9.1	KVA
1. P	ROVIDE II	NTEGR	AL 160KA (PER PHASE) SURGE	3,900	2,900	2,300			25.3	AMPS
P	ROTECTI	ON DEV	VICE.				TOTAL DEMAN) LOAD:	9.1	KVA
2. IN		BREA	KER(S) SHALL BE GFI-TYPE (5mA TRIP).						25.3	AMPS
							TOTAL COMPUTE) LOAD:	9.1	KVA
									25.3	AMPS

_R23-local.rvt
<u>ec</u>
: Library - I
\McLure
Desktop'
neDrive\
\jon\O
10

Ü

6

	D	
	С	
	в	
1/25/2024 2:24:25 PM	A	

23-local.rvt
- Elec_R
e Library
∖McLure
Desktop
)neDrive
s\jon\C

5

4

C:\Users\jon\OneDrive\Desktop\McLure Library - Elec_R23-I	ocal.rvt		
1/26/2024 11:39:51 AM			
A	В	С	D

1. COORDINATE EXACT LOCATION OF ALL CEILING MOUNTED LIGHT FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLAN.

3

NOTES THIS SHEET ONLY

323-local.rvt
с Г
Ele
- >
rar
Lib
Гe
cLu
Š
_do
skt
De
ve/
Dri
ne
2
jon
S

	D	
	С	
	В	
Σ		
1/26/2024 1:39:14 PI		

NOTES THIS SHEET ONLY

1. COORDINATE EXACT LOCATION OF ALL CEILING MOUNTED LIGHT FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLAN.

_R23-local.rvt
Elec_
: Library - I
\McLure
Desktop'
neDrive\
\jon\O
10

c:/U

6

1/26/2024 3:28:30 PM				
A	В	С	D	

_R23-local.rvt
Elec_
: Library - I
\McLure
Desktop'
neDrive\
\jon\O
10

Ċ

	D	
	С	
	В	
1/26/2024 3:28:32 PM	A	

ပ်
Ē
Library
are
1cLi
2∕0
(to
les
e/D
Jriv
ne
9
jon
~

5

4

rary - Elec_R23-local.rvt B D		D	
rary - Elec_R23-local.rvt		C	
Q	brary - Elec_R23-local.rvt	В	

1.	CC IN.
2.	CC RC

3

NOTES THIS SHEET ONLY

ONFIRM EXACT LOCATION AND ALL ELECTRICAL REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-

COORDINATE EXACT LOCATION WITH UA PROJECT MANAGER AND UA OIT DEPARTMENT PRIOR TO ROUGH-IN.

cal.rvt
c_R23-lo
rary - Ele
cLure Lib
esktop\M
Drive\De
\jon\One

	D	
	С	
	В	
1/26/2024 9:45:14 AM	Α	

local.rvt
_R23-
- Elec
ibrary
Lure L
op\Mc
Deskto
Drive/I
\One[
-s∖jon

<pre>ktop\McLure Library - Elec_R23-local.rvt</pre> P B		D	
ctop\McLure Library - Elec_R23-local.rvt В		С	
Ň	sktop\McLure Library - Elec_R23-local.rvt	В 	

Elec
McLure Library -
Desktop
OneDrive/
s\jon\

C:\U

C: (OSCI 3 NOIL (OTTEDITIVE (DESNLOP (INTERNIE EINI AL 7 - ETEC_123-1				
1/25/2024 11:13:13 AM				
A	в	С	D	

	6	
F		
F		
E		
D		
		I L
		7
		<u>P-H2</u> 7
		PP-M
		P-C1 CIR. 4
C		M PP-M CIR. 6
		PP-M CIR. 7
		MECH P R
		N
		$\overline{\mathbb{N}}$
		1
В		$\begin{pmatrix} A \\ E5.01 \end{pmatrix} = \begin{pmatrix} P \\ SC \end{pmatrix}$
cal.rvt		
823-loc 		
Elec_F		
- Jrary		
ure Lit		
p/McL		
Deskto		
Drive\I L6 AM		
onel/ר		
ers\joi 2024 1		
C:\Us 1/25/	6	
	v	1

Elec
McLure Library -
Desktop
OneDrive/
s\jon\

C:\Users\jon\OneDrive\Desktop\McLure Library - Elec_R23-local.rvt				
1/25/2024 11:13:17 AM				
A	В	C	D	









-local.rvt
R23
Elec
Library -
McLure
)esktop/
eDrive\
\jon\On€

C:\Users\jon\OneDrive\Desktop\McLure Library - Elec_R23-loc	cal.rvt		
1/25/2024 11:13:19 AM			
A	В	С	D





NORTH LEVEL 3 HVAC POWER PLAN SCALE: 1/8" = 1'-0"





-local.rvt
R23
Elec
Library -
McLure
)esktop/
eDrive\
\jon\On€

C:\Users\jon\OneDrive\Desktop\McLure Library - Elec_R23-loc	cal.rvt		
1/25/2024 11:13:19 AM			
A	В	С	D





NORTH ROOF HVAC POWER PLAN SCALE: 1/8" = 1'-0"



