

EXHAUST FANS													
DESIG.	SERVICE	LOCATION	MECHANICAL								ELECTRICAL		
			TYPE	CONTROL	CFM	ESP (IN W.G.)	DRIVE	ACCESSORIES (SEE BELOW)	WEIGHT (LBS)	EQUAL TO BASIS OF DESIGN MFR & MODEL #	WATTS	RPM	VOLT/PH
EF1-1	IT 115	CEILING	CABINET	T-STAT	400	0.25	DIRECT	A,C,F	31	GREENHECK SP-A510	224	1020	120/1

ACCESSORIES:
 (A) - BACKDRAFT DAMPER (D) - ROOFCURB (G) - INTERLOCK WITH APPLICABLE AHU SUPPLY FAN
 (B) - BIRDSCREEN (E) - SPEED CONTROL (H) - VFD CONTROLLED
 (C) - PRE-WIRED NON-FUSED SERVICE DISCONNECT (F) - SPRING ISOLATION

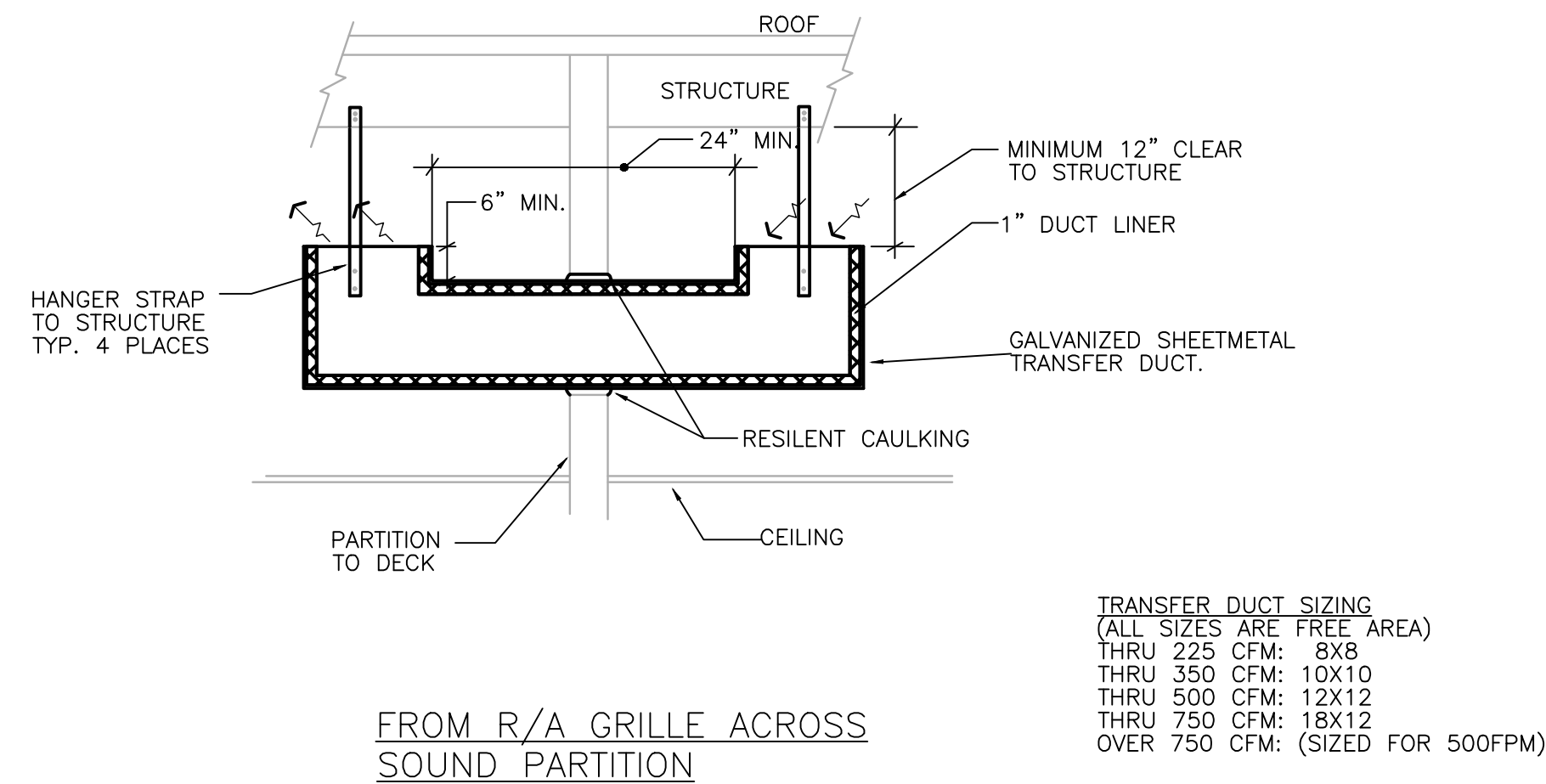
NOTES:
 1) REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
 2) CONTROL DESCRIPTION (WHERE PROVIDED, REFER TO SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION)
 T-STAT - LINE VOLTAGE THERMOSTAT PROVIDED BY DIV 23.
 3) APPROVED MANUFACTURERS - GREENHECK, COOK
 4) ALL SUBSTITUTIONS SHALL BE APPROVED, IN WRITING, PRIOR TO BID.

GRILLES - REGISTERS - DIFFUSERS										
DESIG.	DUTY	TYPE	MOUNTING LOCATION	MATERIAL	VOLUME CONTROL	FINISH	AIR PATTERN CONTROL	METHOD OF SUPPORT	EQUAL TO MANUFACTURER AND MODEL NO.	REMARKS
A	SUPPLY	LOUVERED	LAY-IN CLG	STEEL	NO	OFF WHITE	YES	T-BAR	TITUS TMS 24X24 FACE	SEE NOTE 1,2
B	RETURN	PERFORATED	LAY-IN CLG	STEEL	NO	OFF WHITE	NO	T-BAR	TITUS PAR 24X24 FACE	SEE NOTE 2
C	RETURN	DOOR LOUVER	DOOR	STEEL	NO	OFFWHITE	NO	SURFACE	TITUS T700L	SEE NOTE 3

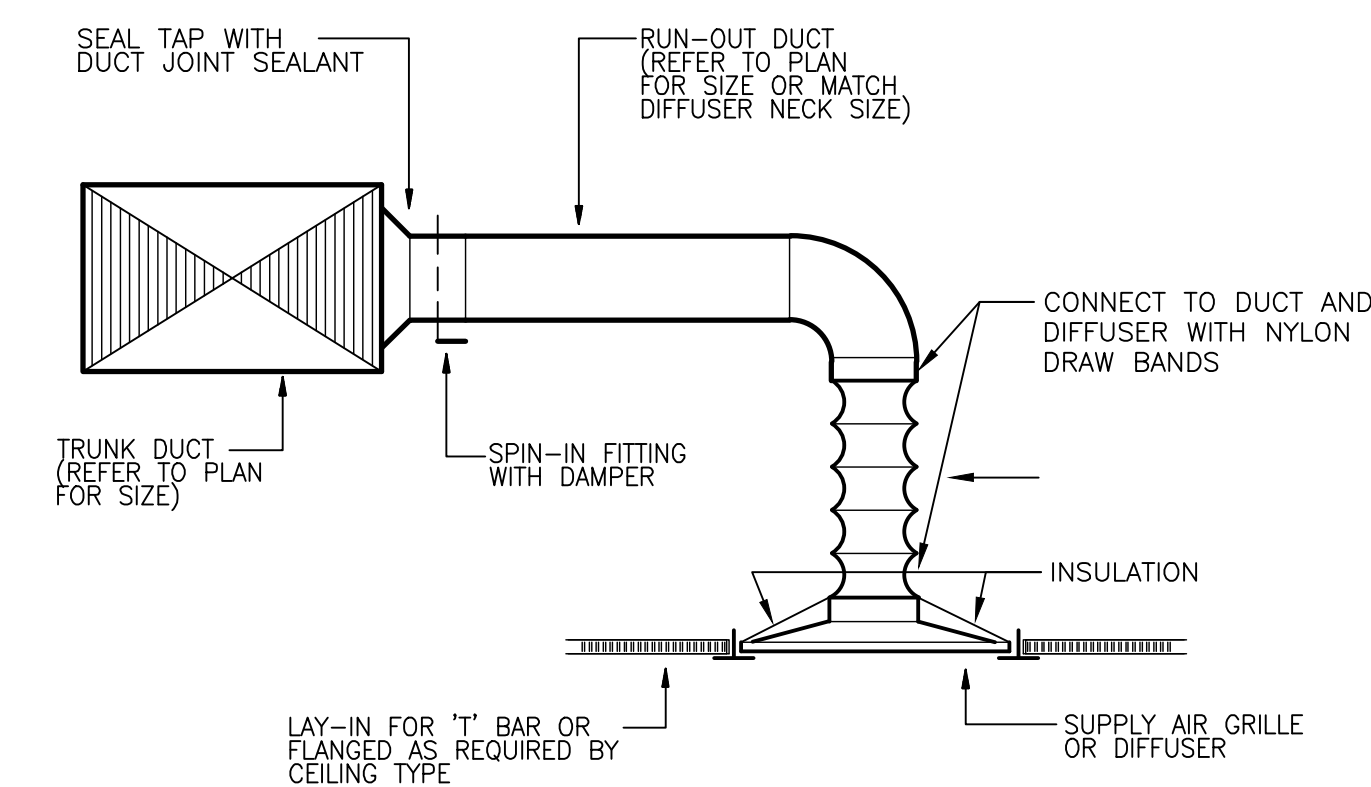
NOTES:
 1) NECK SIZES AS FOLLOWS:

DESIGNATION "A"	NECK SIZE
000-250	8"RD
255-400	10"RD
405-550	12"RD
555-700	14"RD

 2) NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN NEW MODEL NUMBER AND EXISTING NUMBER PRIOR TO PURCHASE.
 3) REFER TO DRAWINGS FOR GRILLE/NECK SIZES.
 APPROVED MANUFACTURERS: PRICE, TITUS, NAILOR, & KRUEGER.



① RA TRANSFER BOOT DETAIL
 SCALE: NOT TO SCALE



② DIFFUSER CONNECTION DETAIL
 SCALE: NOT TO SCALE

GENERAL NOTES:

- ALL WORK SHALL COMPLY WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES, RULES, REGULATIONS AND REQUIREMENTS.
- ALL WORK SHALL COMPLY WITH THE BUILDING TENANT CONSTRUCTION GUIDE. COORDINATE WITH BUILDING MANAGEMENT/OWNER FOR ACCESS TO ANY TENANT LEASE SPACES THAT MIGHT BE REQUIRED FOR THE INSTALLATION. UNLESS DIRECTED BY LANDLORD ALL EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR 1 YEAR.
- EXISTING CONDITIONS ARE BASED ON INFORMATION PROVIDED BY SITE SURVEY AND PREVIOUS RECORD DRAWINGS. HOWEVER, IT IS NOT INTENDED TO BE A TRUE REPRESENTATION OF ACTUAL CONDITIONS. CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BIDDING TO ASCERTAIN EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO BID.
- CONTRACTOR SHALL ENGAGE AN INDEPENDENT AIR BALANCING COMPANY TO OBTAIN AIR QUANTITIES SHOWN ON DRAWING. AT COMPLETION OF AIR BALANCE, BALANCING DAMPER SHALL BE TIGHTENED AND PROPERLY SEALED WITH FOIL TAPE.
- ALL MEDIUM AND LOW PRESSURE DUCTWORK SHALL BE GALVANIZED SHEET METAL, FABRICATED, INSTALL AND SEAL MEDIUM PRESSURE DUCTWORK FOR 3"W.G. AND LOW PRESSURE DUCTWORK FOR 1"W.G. IN ACCORDANCE WITH SMACNA STANDARD. DUCTWORK SHALL BE INSULATED WITH FIBERGLASS BLANKET WITH FOIL FACED VAPOR BARRIER TO MEET IECC REQUIREMENT (MIN R5 VALUE).
- ALL SUPPLY AND RETURN DUCT SIZES ARE FREE AREAS.
- INDIVIDUAL DUCT RUN-OUTS TO EACH DIFFUSER SHALL BE SIZED IN ACCORDANCE TO THE DIFFUSER NECK SIZE FOUND IN THE GRILLES-REGISTERS-DIFFUSERS SCHEDULE UNLESS NOTED OTHERWISE
- OFFSET DUCTS INTO JOIST SPACE FOR CLEARANCE WHERE SPACE ABOVE CEILING IS NOT SUFFICIENT FOR DUCTS TO CROSS OTHER DUCTS OR WORK OF OTHER TRADES.
- INSULATED FLEX DUCT IN THE LOW PRESSURE SYSTEM SHALL BE LIMITED TO AN OVERALL LENGTH OF SIX (6) FEET WITH A MAXIMUM OF A 90 DEGREE CHANGE IN DIRECTION. SUPPORTS SHALL BE SADDLE BANDED TO STRUCTURE. SUPPORTING FROM FIRE PROTECTION PIPING, ELECTRICAL CONDUIT OR CEILING SUPPORT WIRES IS NOT ACCEPTABLE.
- CONTRACTOR SHALL VERIFY ALL EXISTING SLOT DIFFUSERS AS LOCATED PER DRAWINGS OR ENSURE RELOCATION TO MATCH PLANS. CONTRACTOR SHALL ALSO VERIFY THAT EXISTING SLOT INDICATED SHALL BE ABLE TO DELIVER CFM AS NOTED. IF NOT, CONTRACTOR SHALL REMOVE EXISTING SLOT AND REPLACE WITH NEW OR RELOCATED SLOT THAT CAN DELIVER CFM AS INDICATED.
- ALL ENCLOSED ROOMS (INTERIOR AND PERIMETER) SHALL HAVE RETURN AIR PATH. ROOMS WITH ALL WALLS TO DECK SHALL HAVE LINED SHEET METAL RETURN AIR BOOTS PLACED IN WALL ABOVE CEILING SIZED FOR 500 FPM MAXIMUM. FIRE RATED WALLS SHALL HAVE FIRE DAMPERS WITHIN THE DUCT PER LOCAL CODE REQUIREMENTS. FIRE DAMPERS AND FIRE-SMOKE DAMPERS SHALL BE FREE AREA/OUT OF AIRSTREAM TYPE. ALL MOTORIZED DAMPERS SHALL BE FREE AREA/OUT OF AIRSTREAM TYPE.
- PIPES AND DUCTS TO BE COORDINATED ON JOB WITH BUILDING STRUCTURE AND WORK OF OTHER CONTRACTORS. ROUTE AS HIGH AS PHYSICALLY POSSIBLE.
- COORDINATE CEILING DIFFUSERS AND GRILLES WITH LIGHTING FIXTURES. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.
- THERMOSTATS TO BE MOUNTED 48" ABOVE FINISHED FLOOR LEVEL UNLESS NOTED OTHERWISE ON THE PLANS. CONTRACTOR SHALL COORDINATE LOCATION OF THERMOSTATS WITH ARCHITECT IN FIELD
- REPAIR AND PATCH CONSTRUCTION DAMAGED DUE TO THE DEMOLITION OF THIS PROJECT, USING SAME METHODS AND MATERIALS TO MATCH EXISTING.
- PROVIDE TEMPORARY HIGH EFFICIENCY FILTER MEDIA ON MAIN RETURN AIR AND EXHAUST FROM FLOOR AT BEGINNING OF PROJECT AND REPLACED AT TWO (2) WEEK INTERVALS UNTIL PROJECT COMPLETION AT WHICH TIME THE FILTER MEDIA SHALL BE REMOVED.
- FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX TYPE M-KE. FLEXIBLE DUCTS SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.
- ALL EXISTING DUCTWORK SHALL BE FIELD VERIFIED TO BE INSULATED AND IN GOOD CONDITION, ANY TORN, DAMAGED OR MISSING INSULATION WILL BE REPLACED. EXISTING CONTROLS SHALL BE CONFIRMED TO BE IN WORKING CONDITION.

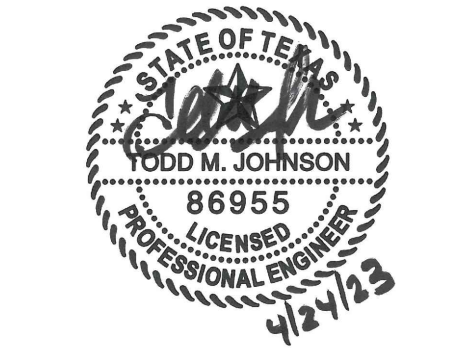
HVAC SYMBOLS

SYMBOL	DESCRIPTION
	ARROW INDICATES EXISTING TO BE RELOCATED AS INDICATED ON PLAN
	REDISTRIBUTE AIR TO EXISTING DIFFUSER AS INDICATED ON PLAN
	NEW CEILING SUPPLY DIFFUSER
	NEW RETURN AIR/EXHAUST GRILLE
	EXISTING RETURN AIR/EXHAUST GRILLE
	EXISTING SLOT DIFFUSER
	POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
	EXISTING TO REMAIN
	REMOVE EXISTING AS INDICATED
	CAP EXISTING DUCT
	MANUAL VOLUME CONTROL DAMPER
	DUCT TRANSITION
	NEW OR RELOCATED THERMOSTAT
	EXISTING THERMOSTAT
	FLEXIBLE DUCT CONNECTION
	INDICATES A WALL TO DECK (FOR COORDINATION PURPOSE ONLY-REFER TO ARCHITECTS PLANS FOR REQUIREMENTS)

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 PMI JOB NO. 22004.001
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PROJECT NO.: 522-008
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NO.	ISSUED FOR:	DATE:

LANDLORD/CLIENT REVIEW ISSUE DATE: 04/24/23
 BID ISSUE DATE: 04/24/23
 PERMIT ISSUE DATE: 04/24/23

DRAWING TITLE:
MECHANICAL
 NOTES & SYMBOLS

DRAWING NUMBER:

M0.01

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DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

SECTION 230500 - COMMON WORK RESULTS

PART 1 - GENERAL

1.1 GENERAL NOTES AND SCOPE OF WORK

A. REFER TO SECTION 230500 ON PLUMBING SHEET P1.01 FOR INFORMATION RELATED TO HVAC GENERAL CONDITIONS, MISCELLANEOUS EQUIPMENT AND MATERIALS, AND CONSTRUCTION REQUIREMENTS.

1.2 RELATED SECTIONS

A. SECTIONS 230523, 230529, 230553 AND 230700 ARE APPLICABLE BUT THEY DO NOT APPEAR IN THESE DIVISION 23 SPECIFICATIONS. REFER TO GENERAL NOTES.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 230548 - VIBRATION CONTROLS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

2.1 EQUIPMENT PADS

A. PADS SHALL BE 3/4 INCH WATER RESISTANT NEOPRENE WITH WAFFLE PATTERN, MASON TYPE WSW, OR EQUAL.

2.2 ELASTOMERIC HANGERS
A. HANGER SHALL CONSIST OF RODS WITH STEEL BOX HOUSING NEOPRENE ISOLATION ELEMENT AND SPRING, MASON SERIES 30N, OR EQUAL.

2.3 RESTRAINED SPRING ISOLATORS

A. ISOLATORS SHALL UTILIZE A STEEL BASE WITH WAFFLED NEOPRENE PAD, WELDED STEEL ENCLOSURE WITH SPRING AND RESTRAINING BOLTS, MASON TYPE SLR, OR EQUAL.

2.4 ROOF CURB ISOLATORS

A. AS PART OF THE ROOF CURB, PROVIDE SPRING ISOLATORS WITH WATER-TIGHT DESIGN, RETRAINED SPRINGS AND NEOPRENE PADS, MASON TYPE RSC, OR EQUAL.

2.5 INERTIA BASES

A. PROVIDE STEEL POURING FORM FOR REINFORCED CONCRETE BLOCKS WITH FLOOR MOUNTED SPRINGS, MASON KSL, OR EQUAL.

PART 3 - EXECUTION

3.1 SCHEDULE

A. EQUIPMENT PADS - SMALL FLOOR MOUNTED EQUIPMENT OR PACKAGED EQUIPMENT WITH INTERNAL ISOLATION.

B. ELASTOMERIC HANGERS - SUSPENDED AIR HANDLING UNITS, EXHAUST FANS, TERMINAL UNITS, HEAT PUMPS, PUMPS, ETC.

C. RESTRAINED SPRING ISOLATORS - FLOOR MOUNTED FANS GREATER THAN 1/4 HP.

D. ROOF CURB ISOLATORS - FACTORY FABRICATED ROOFTOP UNITS.

E. INERTIA BASES - FLOOR MOUNTED PUMPS GREATER THAN 1/4 HP.

3.2 INSTALLATION

A. INSTALL VIBRATION CONTROLS PER THE MANUFACTURER'S INSTRUCTIONS.

END OF SECTION

SECTION 230553 - IDENTIFICATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 230500.

B. LABEL ALL NEW EQUIPMENT AND PIPING SYSTEMS.

PART 2 - PRODUCTS

2.1 PIPE LABELS

A. PRETENSION PIPE LABELS OF SEMI-RIGID PLASTIC FORMED TO COVER THE FULL CIRCUMFERENCE OF PIPE.

B. IDENTIFY THE SERVICE AND DIRECTION OF FLOW. LABELS SHALL CONTAIN AT LEAST 1/2 INCH HIGH LETTERING AND BE PLACED SO THEY ARE EASY TO READ.

2.2 VALVE TAGS

A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND CHAIN FOR ATTACHMENT TO VALVE.

2.3 EQUIPMENT LABELS

A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND HOLES FOR ATTACHMENT TO EQUIPMENT.

PART 3 - EXECUTION

3.1 PIPE LABELS

A. INSTALL PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE AN ACCESSIBLE CEILING AT MAXIMUM 20 FT. CENTERS.

3.2 VALVE TAGS

A. ATTACH TAGS TO VALVES USING CHAIN. PROVIDE A VALVE SCHEDULE FOR MOUNTING IN THE MECHANICAL ROOM.

3.3 EQUIPMENT LABELS

A. PERMANENTLY ATTACH LABELS TO EQUIPMENT. LOCATE WHERE LABEL CAN BE EASILY SEEN AND READ.

END OF SECTION.

SECTION 230593 - TESTING ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. THE WORK INCLUDED IN THIS SECTION CONSISTS OF FURNISHING ALL LABOR, MATERIALS, INSTRUMENTS, TOOLS, AND SERVICES REQUIRED IN CONNECTION WITH THE TESTING, ADJUSTING AND BALANCING (TAB) OF THE HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS AS DESCRIBED IN THE MECHANICAL SPECIFICATIONS AND/OR SHOWN ON THE MECHANICAL PLANS, OR REASONABLY IMPLIED THERE FROM.

B. THE TAB FIRM SHALL HAVE A LICENSED PROFESSIONAL ENGINEER SUPERVISING ALL WORK AND THE FIRM SHALL HOLD A CURRENT AABC OR NEHS CERTIFICATION.

C. REFER TO SECTION 230500

1.2 START-UP, TEST AND ADJUST

A. PROVIDE ALL TESTS OF EQUIPMENT AND SYSTEMS REQUIRED TO PROVE COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS. OWNER SHALL BE MADE COMPLETELY FAMILIAR WITH THE COMPLETE WORKING OF ALL THE MECHANICAL SYSTEMS.

B. THE TESTS SHALL DEMONSTRATE THE SPECIFIED CAPACITIES AND OPERATION OF ALL EQUIPMENT AND MATERIALS COMPRISING THE SYSTEMS. ALL DATA REQUIRED BY THESE SPECIFICATIONS SHALL BE PREPARED ON TYPED FORMS AND SUBMITTED TO THE ENGINEER FOR APPROVAL. COMPLETE APPROVAL WILL BE NECESSARY BEFORE FINAL PAYMENT CAN BE MADE. THE CONTRACTOR SHALL THEN MAKE AVAILABLE SUCH INSTRUMENTS NECESSARY FOR SPOT CHECKS ON THE SYSTEM.

END OF SECTION.

SECTION 230593 - TESTING ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. THE WORK INCLUDED IN THIS SECTION CONSISTS OF FURNISHING ALL LABOR, MATERIALS, INSTRUMENTS, TOOLS, AND SERVICES REQUIRED IN CONNECTION WITH THE TESTING, ADJUSTING AND BALANCING (TAB) OF THE HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS AS DESCRIBED IN THE MECHANICAL SPECIFICATIONS AND/OR SHOWN ON THE MECHANICAL PLANS, OR REASONABLY IMPLIED THERE FROM.

B. THE TAB FIRM SHALL HAVE A LICENSED PROFESSIONAL ENGINEER SUPERVISING ALL WORK AND THE FIRM SHALL HOLD A CURRENT AABC OR NEHS CERTIFICATION.

C. REFER TO SECTION 230500

1.2 START-UP, TEST AND ADJUST

A. PROVIDE ALL TESTS OF EQUIPMENT AND SYSTEMS REQUIRED TO PROVE COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS. OWNER SHALL BE MADE COMPLETELY FAMILIAR WITH THE COMPLETE WORKING OF ALL THE MECHANICAL SYSTEMS.

B. THE TESTS SHALL DEMONSTRATE THE SPECIFIED CAPACITIES AND OPERATION OF ALL EQUIPMENT AND MATERIALS COMPRISING THE SYSTEMS. ALL DATA REQUIRED BY THESE SPECIFICATIONS SHALL BE PREPARED ON TYPED FORMS AND SUBMITTED TO THE ENGINEER FOR APPROVAL. COMPLETE APPROVAL WILL BE NECESSARY BEFORE FINAL PAYMENT CAN BE MADE. THE CONTRACTOR SHALL THEN MAKE AVAILABLE SUCH INSTRUMENTS NECESSARY FOR SPOT CHECKS ON THE SYSTEM.

END OF SECTION.

SECTION 230900 - CONTROLS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

2.1 CONTROLS SYSTEM

A. PROVIDE NEW, MODIFY OR EXTEND AUTOMATIC TEMPERATURE CONTROLS TO ALL NEW EQUIPMENT SHOWN ON THE DRAWINGS.

B. REFER TO THE DRAWINGS FOR ANY SPECIAL SEQUENCES OF CONTROL AND LOCATION OF EQUIPMENT.

C. REMODEL PROJECTS SHALL UTILIZE EQUIPMENT BY THE SAME MANUFACTURER AS CURRENTLY EXISTS.

PART - EXECUTION

3.1 DESIGN AND LAYOUT

A. THE CONTROL SYSTEM DESIGN AND LAYOUT SHALL BE PERFORMED BY A FACTORY AUTHORIZED AGENT OF THE MANUFACTURER USED.

3.2 SYSTEM OPERATION

A. AT THE CONCLUSION OF WORK, ALL EQUIPMENT AND SYSTEMS SHALL BE PROVEN TO THE ENGINEER TO OPERATE IN ACCORDANCE WITH THE NEW OR EXISTING MAIN CONTROL PANEL AND NEW/EXISTING SEQUENCES OF OPERATION ON THE DRAWINGS.

B. PROVIDE ALL WIRING REQUIRED TO CONNECT INPUT/OUTPUT DEVICES TO CONTROL PANELS.

C. TEST AND ADJUST ALL DEVICES AND DOCUMENT CALIBRATION.

D. PROVIDE NECESSARY INSTRUCTION TO THE OWNER'S PERSONNEL.

END OF SECTION

SECTION 233113 - DUCTWORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

2.1 GENERAL

A. CONCEALED DUCTWORK SHALL BE CONSTRUCTED OF NEW, PRIME GRADE, CONTINUOUS HOT-DIP MILL GALVANIZED, LOCK-FORMING, QUALITY STEEL. REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS.

B. WHERE DUCTS EXPOSED TO VIEW PASS THROUGH WALLS, FLOORS OR CEILINGS, PROVIDE SHEET METAL COLLARS TO COVER VOIDS AROUND THE DUCTS.

C. SQUARE AND ROUND ELBOWS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA STANDARDS. ELBOWS NOT CONSTRUCTED WITH A CENTERLINE RADIUS OF AT LEAST 50 PERCENT OF THE DUCT WIDTH OR DIAMETER SHALL BE PROVIDED WITH TURNING VANES IN ACCORDANCE WITH SMACNA STANDARDS.

D. "FIBERBOARD" DUCTWORK WILL NOT BE ACCEPTED ON THIS PROJECT.

2.2 MEDIUM PRESSURE DUCT CONSTRUCTION

A. UNLESS NOTED OTHERWISE, MEDIUM PRESSURE DUCTS SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF THREE (3) INCHES WG POSITIVE.

B. ALL ROUND MEDIUM PRESSURE DUCTS SHALL BE SPIRAL TYPE.

2.3 LOW PRESSURE DUCT CONSTRUCTION

A. LOW PRESSURE DUCTS CONNECTING SMALL AIR HANDLING EQUIPMENT, SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF TWO (2) INCHES WG, POSITIVE OR NEGATIVE AS APPROPRIATE. THESE LOW PRESSURE ROUND DUCTS SHALL BE SPIRAL TYPE.

B. DUCTWORK DOWN STREAM OF AIR TERMINAL UNITS SHALL BE CONSTRUCTED TO A PRESSURE CLASSIFICATION OF ONE (1) INCHES WG POSITIVE. THESE LOW PRESSURE ROUND DUCTS MAY BE SPIRAL OR SNAP-LOCK TYPE.

C. SHOP FABRICATED DUCTS SHALL BE CONSTRUCTED, BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA STANDARDS.

2.4 DUCT SEALING

A. SEAL ALL DUCTWORK ON THE PROJECT TO SMACNA CLASSIFICATION A.

2.5 FLEXIBLE DUCTS

A. FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX TYPE M-KE AND SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.

B. FLEXIBLE DUCTS SHALL BE FACTORY INSULATED WITH A NOMINAL 1 INCH THICKNESS OF FIBERGLASS INSULATION, PRODUCING A THERMAL CONDUCTANCE ("C") OF 0.23. DUCTS SHALL HAVE A POSITIVE INTERIOR AIR SEAL PERMANENTLY BONDED TO A COATED HIGH CARBON SPRING STEEL HELIX, ALL SHEATHED IN AN OUTER VAPOR BARRIER OF FIBERGLASS REINFORCED FILM LAMINATE.

C. FLEXIBLE DUCTS SHALL BE RATED FOR OPERATING PRESSURE OF PLUS 6 INCHES WG THROUGH 10 INCH DIAMETER, PLUS 4 INCHES WG THROUGH 16 INCH DIAMETER AND - 2 INCHES WG FOR ALL SIZES.

A. FLEXIBLE DUCTS TO DIFFUSERS AND GRILLES SHALL BE LIMITED TO 6 FOOT LENGTHS AND A MAXIMUM OF ONE (1) 90 DEGREE CHANGE IN DIRECTION. MEDIUM PRESSURE DUCTS SERVING TERMINAL UNITS SHALL BE LIMITED TO 2 FOOT LENGTHS WITH NO ELBOWS.

2.6 FLEXIBLE DUCT FABRIC

A. PROVIDE VENTFABRICS "VENTGLAS", OR EQUAL, 30 OZ PER SQ YD, BETWEEN SHEET METAL DUCTS AND AIR HANDLING EQUIPMENT, INCLUDING ALL FANS, AND POWER TYPE VENTILATORS.

2.7 DAMPERS

A. DAMPER AND SPLITTER HARDWARE FOR LOW PRESSURE DUCTS SHALL BE:
END BEARINGS - VENTLOK #607
REGULATOR FINISHED AREAS - VENTLOK #666, PLAIN COVER
REGULATOR UNFINISHED AREAS - VENTLOK #640, 3/8 INCH.

B. VOLUME DAMPERS SHALL BE LOCATED AT BRANCH TAKE-OFFS AT MAIN TRUNK DUCT. NO DAMPERS (SPLITTER DAMPERS) SHALL BE LOCATED IN THE CENTER OF DUCTS.

PART 3 - EXECUTION

3.1 FABRICATION

A. DUCTWORK SHOWN ON THE DRAWINGS, SPECIFIED, OR REQUIRED FOR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS SHALL BE CONSTRUCTED AND ERECTED IN A FIRST CLASS MANNER.

B. DUCTS SHALL BE REINFORCED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS TO PREVENT BUCKLING, BREATHING, VIBRATION AND UNNECESSARY NOISE.

C. PROVIDE MANUALLY OPERATED VOLUME CONTROL DAMPERS IN DUCT BRANCHES, FOR PROPER BALANCING OF AIR DISTRIBUTION. DAMPERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.

D. PROVIDE HINGED ACCESS DOORS IN DUCTWORK FOR ACCESS TO ALL SMOKE DETECTORS, SENSORS, AND OTHER CONTROL DEVICES, MANUAL DAMPERS, AND FOR CLEANING OPERATIONS. FACTORY FABRICATED DOORS SIMILAR AND EQUAL TO MILCOR AND MEETING THESE SPECIFICATIONS SHALL BE ACCEPTABLE.

E. WHERE DUCTS CONNECT TO FANS, INCLUDING ROOF EXHAUSTERS PROVIDE FLEXIBLE DUCT FABRIC CONNECTIONS. PROVIDE A MINIMUM OF 1/2 INCH SLACK IN THE CONNECTIONS, AND A MINIMUM OF 2-1/2 INCH DISTANCE BETWEEN THE EDGES OF THE DUCTS, PLUS AN ADDITIONAL MINIMUM IF 1 INCH OF SLACK FOR EACH INCH OF STATIC PRESSURE ON THE FAN SYSTEM.

F. PROVIDE SCREENS ON DUCTS, FANS AND OPENINGS WHICH LEAD TO, OR ARE OUTDOORS. SCREENS SHALL BE 16 GAUGE, 1/2 INCH MESH, IN REMOVABLE GALVANIZED STEEL FRAMES.

G. FURNISH TEST OPENINGS WITH COVERS IN EACH DUCT FOR TAKING READINGS OF AIR VELOCITIES AND PRESSURES IN DUCTS. REFER TO THE APPROPRIATE SMACNA STANDARD FOR COVER CONSTRUCTION.

3.2 DUCT SUPPORTS

A. HORIZONTAL AND VERTICAL SHEET METAL DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.

B. HANGER DESIGN AND METHODS OF HANGING AND SUPPORTING SHALL BE COMPATIBLE WITH THE STRUCTURE.

END OF SECTION

SECTION 233713 - DIFFUSERS, REGISTERS AND GRILLES

PART 1 - GENERAL

1.1 GENERAL NOTES

A. REFER TO SECTION 230500

PART 2 - PRODUCTS

2.1 AIR INLETS AND OUTLETS

A. GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE AS INDICATED ON THE DRAWING, AND SHALL BE PROVIDED WITH HEAVY DUTY SPONGE, OR SOFT FELT GASKETS. THE THROW SHALL BE SUCH THAT THE VELOCITY AT THE END OF THE THROW IN THE FIVE (5) FOOT OCCUPANCY ZONE WILL NOT BE MORE THAN 50 FPM NOT LESS THAN 25 FPM. NOISE LEVELS (NC CURVE) SHALL NOT EXCEED 40.

B. IF PRODUCTS OF A MANUFACTURER OTHER THAN THE ONES INDICATED ON THE DRAWINGS ARE USED, THE SIZES SHOWN ON THE DRAWING SHALL BE CHECKED FOR PERFORMANCE, NOISE LEVEL, FACE VELOCITY, THROW AND PRESSURE DROP BEFORE THE SUBMITTAL IS MADE. SELECTIONS SHALL MEET THE MANUFACTURER'S OWN PUBLISHED DATA FOR THE ABOVE PERFORMANCE CRITERIA. SHOULD DEVICES OTHER THAN THOSE SCHEDULED BY NAME BE FURNISHED, THE MANUFACTURER SHALL DEMONSTRATE COMPLIANCE WITH NOISE CRITERIA, ON REQUEST, TO THE ARCHITECT'S SATISFACTION.

C. WHERE CALLED FOR IN SCHEDULES, THE GRILLES, REGISTERS, CEILING OUTLETS, AND CEILING INLETS SHALL BE PROVIDED WITH DEFLECTING DEVICES AND MANUAL DAMPERS. THESE SHALL BE STANDARD PRODUCTS OF THE MANUFACTURER, SUBJECT TO REVIEW BY THE ARCHITECT, AND SHALL BE SIMILAR AND EQUAL TO THOSE SCHEDULED.

PART 3 - EXECUTION

3.1 INSTALLATION

A. LOCATIONS OF OUTLETS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE THE EXACT LOCATION WITH REFLECTED CEILING PLAN AND OTHER TRADES.

B. VERIFY THE TYPE OF CEILING SYSTEM AND MATERIAL INTO EACH OF THE AIR INLETS AND OUTLETS IS TO BE INSTALLED, AND PROVIDE EQUIPMENT, WHICH PROPERLY "FITS" WHETHER SPECIFICALLY, SO INDICATED OR NOT ON THE DRAWINGS.

END OF SECTION

SECTION 232300 - REFRIGERANT PIPING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

2.1 COPPER PIPE

A. PIPING SHALL BE COPPER TYPE ACR WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. REFER TO SECTION 230529 FOR METHODS OF SUPPORTING ALL PIPING.

END OF SECTION

SECTION 233113 - DUCTWORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. REFER TO SECTION 230500.

PART 2 - PRODUCTS

2.1 GENERAL

A. CONCEALED DUCTWORK SHALL BE CONSTRUCTED OF NEW, PRIME GRADE, CONTINUOUS HOT-DIP MILL GALVANIZED, LOCK-FORMING, QUALITY STEEL. REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS.

B. WHERE DUCTS EXPOSED TO VIEW PASS THROUGH WALLS, FLOORS OR CEILINGS, PROVIDE SHEET METAL COLLARS TO COVER VOIDS AROUND THE DUCTS.

C. SQUARE AND ROUND ELBOWS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA STANDARDS. ELBOWS NOT CONSTRUCTED WITH A CENTERLINE RADIUS OF AT LEAST 50 PERCENT OF THE DUCT WIDTH OR DIAMETER SHALL BE PROVIDED WITH TURNING VANES IN ACCORDANCE WITH SMACNA STANDARDS.

D. "FIBERBOARD" DUCTWORK WILL NOT BE ACCEPTED ON THIS PROJECT.

2.2 MEDIUM PRESSURE DUCT CONSTRUCTION

A. UNLESS NOTED OTHERWISE, MEDIUM PRESSURE DUCTS SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF THREE (3) INCHES WG POSITIVE.

B. ALL ROUND MEDIUM PRESSURE DUCTS SHALL BE SPIRAL TYPE.

2.3 LOW PRESSURE DUCT CONSTRUCTION

A. LOW PRESSURE DUCTS CONNECTING SMALL AIR HANDLING EQUIPMENT, SHALL BE CONSTRUCTED TO A PRESSURIZATION CLASSIFICATION OF TWO (2) INCHES WG, POSITIVE OR NEGATIVE AS APPROPRIATE. THESE LOW PRESSURE ROUND DUCTS SHALL BE SPIRAL TYPE.

B. DUCTWORK DOWN STREAM OF AIR TERMINAL UNITS SHALL BE CONSTRUCTED TO A PRESSURE CLASSIFICATION OF ONE (1) INCHES WG POSITIVE. THESE LOW PRESSURE ROUND DUCTS MAY BE SPIRAL OR SNAP-LOCK TYPE.

C. SHOP FABRICATED DUCTS SHALL BE CONSTRUCTED, BRACED AND REINFORCED IN ACCORDANCE WITH SMACNA STANDARDS.

2.4 DUCT SEALING

A. SEAL ALL DUCTWORK ON THE PROJECT TO SMACNA CLASSIFICATION A.

2.5 FLEXIBLE DUCTS

A. FLEXIBLE DUCTS SHALL BE SIMILAR AND EQUAL TO THERMOFLEX TYPE M-KE AND SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF UL-181, NFPA 90-A AND OTHER GOVERNING AUTHORITIES.

B. FLEXIBLE DUCTS SHALL BE FACTORY INSULATED WITH A NOMINAL 1 INCH THICKNESS OF FIBERGLASS INSULATION, PRODUCING A THERMAL CONDUCTANCE ("C") OF 0.23. DUCTS SHALL HAVE A POSITIVE INTERIOR AIR SEAL PERMANENTLY BONDED TO A COATED HIGH CARBON SPRING STEEL HELIX, ALL SHEATHED IN AN OUTER VAPOR BARRIER OF FIBERGLASS REINFORCED FILM LAMINATE.

C. FLEXIBLE DUCTS SHALL BE RATED FOR OPERATING PRESSURE OF PLUS 6 INCHES WG THROUGH 10 INCH DIAMETER, PLUS 4 INCHES WG THROUGH 16 INCH DIAMETER AND - 2 INCHES WG FOR ALL SIZES.

A. FLEXIBLE DUCTS TO DIFFUSERS AND GRILLES SHALL BE LIMITED TO 6 FOOT LENGTHS AND A MAXIMUM OF ONE (1) 90 DEGREE CHANGE IN DIRECTION. MEDIUM PRESSURE DUCTS SERVING TERMINAL UNITS SHALL BE LIMITED TO 2 FOOT LENGTHS WITH NO ELBOWS.

2.6 FLEXIBLE DUCT FABRIC

A. PROVIDE VENTFABRICS "VENTGLAS", OR EQUAL, 30 OZ PER SQ YD, BETWEEN SHEET METAL DUCTS AND AIR HANDLING EQUIPMENT, INCLUDING ALL FANS, AND POWER TYPE VENTILATORS.

2.7 DAMPERS

A. DAMPER AND SPLITTER HARDWARE FOR LOW PRESSURE DUCTS SHALL BE:
END BEARINGS - VENTLOK #607
REGULATOR FINISHED AREAS - VENTLOK #666, PLAIN COVER
REGULATOR UNFINISHED AREAS - VENTLOK #640, 3/8 INCH.

B. VOLUME DAMPERS SHALL BE LOCATED AT BRANCH TAKE-OFFS AT MAIN TRUNK DUCT. NO DAMPERS (SPLITTER DAMPERS) SHALL BE LOCATED IN THE CENTER OF DUCTS.

PART 3 - EXECUTION

3.1 FABRICATION

A. DUCTWORK SHOWN ON THE DRAWINGS, SPECIFIED, OR REQUIRED FOR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS SHALL BE CONSTRUCTED AND ERECTED IN A FIRST CLASS MANNER.

B. DUCTS SHALL BE REINFORCED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS TO PREVENT BUCKLING, BREATHING, VIBRATION AND UNNECESSARY NOISE.

C. PROVIDE MANUALLY OPERATED VOLUME CONTROL DAMPERS IN DUCT BRANCHES, FOR PROPER BALANCING OF AIR DISTRIBUTION. DAMPERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SMACNA STANDARDS.

D. PROVIDE HINGED ACCESS DOORS IN DUCTWORK FOR ACCESS TO ALL SMOKE DETECTORS, SENSORS, AND OTHER CONTROL DEVICES, MANUAL DAMPERS, AND FOR CLEANING OPERATIONS. FACTORY FABRICATED DOORS SIMILAR AND EQUAL TO MILCOR AND MEETING THESE SPECIFICATIONS SHALL BE ACCEPTABLE.

E. WHERE DUCTS CONNECT TO FANS, INCLUDING ROOF EXHAUSTERS PROVIDE FLEXIBLE DUCT FABRIC CONNECTIONS. PROVIDE A MINIMUM OF 1/2 INCH SLACK IN THE CONNECTIONS, AND A MINIMUM OF 2-1/2 INCH DISTANCE BETWEEN THE EDGES OF THE DUCTS, PLUS AN ADDITIONAL MINIMUM IF 1 INCH OF SLACK FOR EACH INCH OF STATIC PRESSURE ON THE FAN SYSTEM.

F. PROVIDE

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BID ISSUE DATE: 04/24/23
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DRAWING TITLE:
**LEVEL 03 MECHANICAL
PLAN**

DRAWING NUMBER:

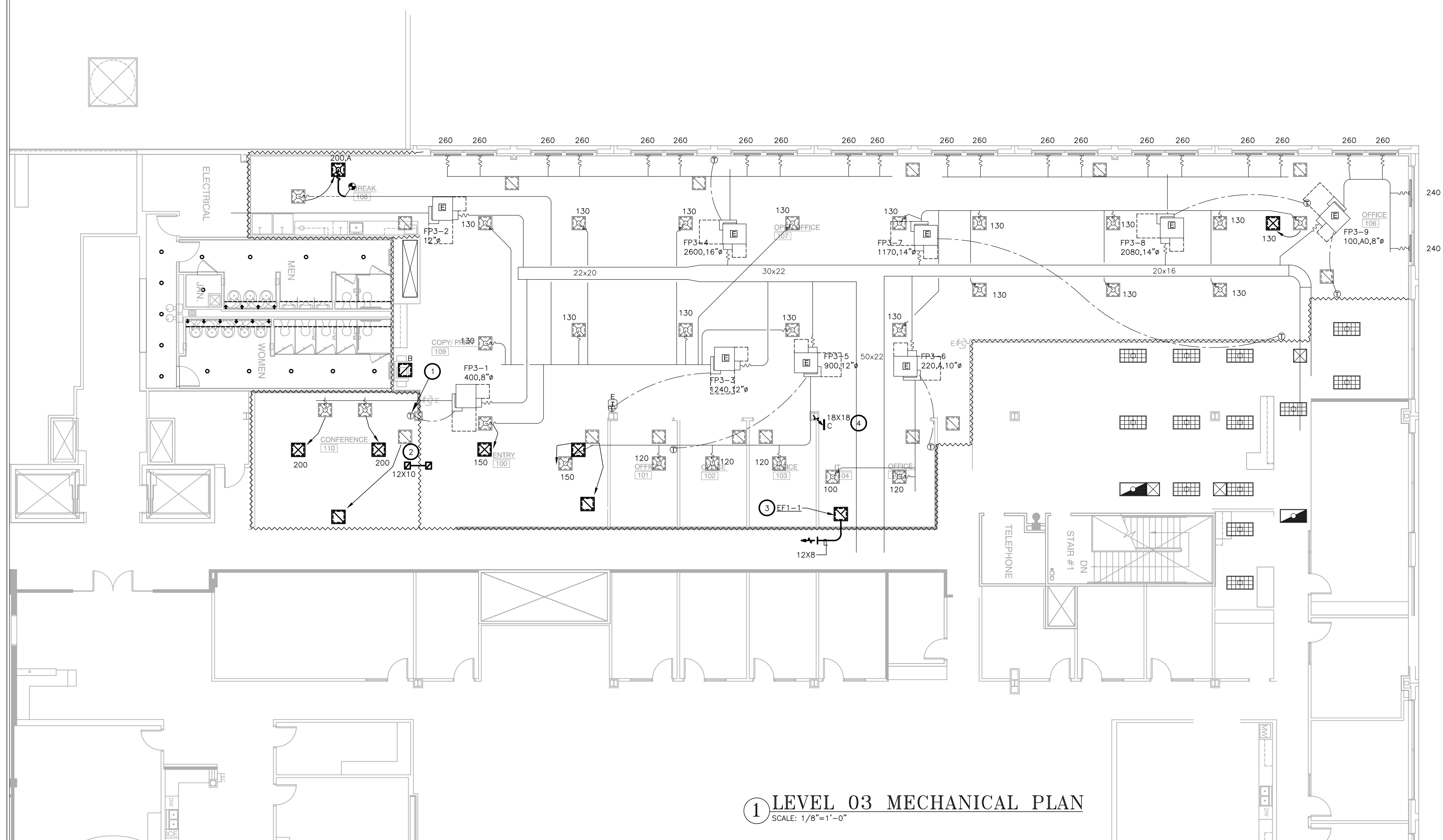
M2.03

NOTES BY SYMBOL ⊗ :

1. RELOCATE EXISTING THERMOSTAT TO NEW LOCATION AS SHOWN ON PLAN. CONFIRM THAT THE THERMOSTATS ARE ASSOCIATED WITH THE TERMINAL BOX AS SHOWN ON THE DRAWING BEFORE RELOCATING AND ARE IN WORKING ORDER.
2. PROVIDE ACOUSTICALLY LINED RETURN AIR BOOT AS HIGH AS POSSIBLE ABOVE CEILING. INSTALL INLET AND OUTLET 90 DEGREE ELBOWS FACING UPWARD. SIZE PER PLANS.
3. INSTALL NEW EXHAUST FAN AT SUSPENDED CEILING. SUPPORT FAN FROM STRUCTURE ABOVE USING HANGER RODS WITH VIBRATION ISOLATOR PER EACH ROD. EXTEND EXHAUST DUCT FROM OUTLET AT EXHAUST FAN AS SHOWN ON DRAWINGS.
4. INSTALL TRANSFER AIR GRILLE AT BOTTOM OF DOOR. EXACT LOCATION TO BE DETERMINED BY ARCHITECT PRIOR TO ROUGH-IN.

EXISTING DEMISING WALL TO REMAIN- CONTRACTOR TO ENSURE THERE IS A RETURN AIR PATH SIZED AT 500CFM FOR TOTAL SUPPLY AIR CFM TO RETURN BACK TO SERVING AIR HANDLER UNIT.

REFER TO SHEET M0.01
FOR GENERAL NOTES,
SCHEDULES AND SYMBOLS.



1 LEVEL 03 MECHANICAL PLAN
SCALE: 1/8"=1'-0"

POWER GENERAL NOTES:

- A. ALL CIRCUITS SHALL BE 120V, 20A CIRCUITS WITH 2#12, #12G, IN 3/4" C UNLESS NOTED OTHERWISE.
- B. ALL CONDUCTORS GREATER THAN 60' IN LENGTH SHALL BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3% OVER THE TOTAL LENGTH OF THE CIRCUIT CALCULATED AT 80% OF FULL LOAD OF THE OVERCURRENT DEVICE PROTECTING THE CONDUCTOR. CONTRACTOR SHALL PROVIDE PIG-TAIL OR ENCLOSED TERMINATION BLOCKS AS REQUIRED TO LAND CIRCUITS ON THE DEVICES OR EQUIPMENT.
- C. CONTRACTOR MAY COMBINE THREE (3) CIRCUITS PER NEUTRAL AND GROUND WIRE EXCEPT AS OTHERWISE NOTED. COMBINED NEUTRAL CIRCUITS SHALL MEET NEC REQUIREMENTS WITH TIE HANDLES AND COMPLIANCE LABELING.
- D. ALL EXISTING CIRCUITS WITHIN THE SCOPE OF WORK AREA THAT ARE NOT REUSED FOR THIS REMODEL SHALL BE REMOVED BACK TO THE PANELS AND THE PLACARDS SHALL INDICATE THE BREAKERS AS SPARES.
- E. PANELBOARD DIRECTORIES SHALL BE COMPLETELY FILLED OUT TO ACCURATELY IDENTIFY EACH CIRCUIT (EXISTING AND NEW CIRCUITS) IN ALL PANELS WITHIN SCOPE OF WORK. OBTAIN BUILDING MANAGEMENT/OWNER'S APPROVAL OF IDENTIFICATION. DIRECTORIES SHALL BE TYPEWRITTEN.
- F. JUNCTION BOXES AND/OR DEVICE BOXES SHALL NOT BE MOUNTED BACK TO BACK WHEN FLUSH MOUNTED IN A WALL. JUNCTION BOXES AND /OR DEVICE BOXES FLUSH MOUNTED ON OPPOSITE SIDES OF A WALL SHALL NOT BE INSTALLED IN THE SAME STUD SPACE.
- G. ALL RECEPTACLES MOUNTED ABOVE OR BELOW KITCHEN/BREAK ROOM COUNTERS OR COUNTERS WITH A SINK OR ANY OTHER WATER DISPENSING MECHANISM SHALL BE GFCI PROTECTED. ALL RECEPTACLES INSTALLED IN AN OUTDOOR LOCATION OR INTENDED TO PROVIDE POWER FOR VENDING MACHINES SHALL BE GFCI TYPE DEVICES. IN LOCATIONS WHERE THE RECEPTACLES ARE BEHIND APPLIANCES, IF THE AUTHORITY HAVING JURISDICTION REQUIRES REMOTE RESET BUTTONS, CONTRACTOR SHALL COORDINATE THE BUTTON LOCATIONS WITH THE ARCHITECT PRIOR TO ROUGH-IN, OR PROVIDE GFCI CIRCUIT BREAKERS WHEN POSSIBLE.
- H. ALL DEDICATED CIRCUITS (CIRCUITS SERVING A SINGLE DEVICE) SHALL HAVE SEPARATE NEUTRAL AND GROUND WIRES. THIS REQUIREMENT DOES NOT APPLY TO APPLIANCE CIRCUITS.
- I. PROVIDE 3/4" CONDUIT AND PULLSTRING, FROM EACH WALL MOUNTED TELEPHONE/DATA OUTLET, ROUTE TO +4" ABOVE SUSPENDED CEILING. AT SYSTEMS FURNITURE FEEDS, CONDUIT SHALL BE 1-1/4".
- J. ELECTRICAL CONTRACTOR SHALL PROVIDE A 4"x4"x2-5/8" STEEL JUNCTION BOX IN WALL WITH A SINGLE GANG MUD RING AND 3/4" METAL CONDUIT TO A MINIMUM OF 4" ABOVE FINISHED ACCESSIBLE CEILING FOR ALL THERMOSTATS AND HVAC SENSORS. COORDINATE EXACT LOCATIONS WITH MECHANICAL CONTRACTOR AND ARCHITECT. PROVIDE A PULL STRING INSTALLED FOR FUTURE USE. PULL STRING SHALL BE SECURED AT EACH END TO PREVENT ACCIDENTAL REMOVAL.
- K. PROVIDE 3/4" CONDUIT AND PULLSTRING, FROM EACH FLOOR MOUNTED TELEPHONE/DATA OUTLET TO THE NEAREST WALL THEN ROUTE TO +4" ABOVE SUSPENDED CEILING. AT SYSTEMS FURNITURE FEEDS, CONDUIT SHALL BE 1-1/4".
- L. LOW VOLTAGE CABLES (TELEPHONE, DATA, ETC.) INSTALLED IN CEILING SPACE USED FOR RETURN AIR PURPOSES SHALL BE PLENUM RATED CABLES OR INSTALLED IN CONDUIT.
- M. ELECTRIC CONNECTIONS TO PANELBOARDS AND BUS DUCTS SHALL BE MADE ONLY WHEN PANELBOARD OR BUS DUCT HAS BEEN DE-ENERGIZED. SCHEDULE DOWN TIME WITH BUILDING MANAGEMENT/OWNER.
- N. ALL NEW ELECTRICAL PANELS AND TRANSFORMERS SHALL HAVE PERMANENT ENGRAVED LABELS ON COVER INDICATING PANEL OR TRANSFORMER DESIGNATION.
- O. CONTRACTOR SHALL RELOCATE ELECTRICAL CONNECTIONS ASSOCIATED WITH ALL RELOCATED MECHANICAL EQUIPMENT. REFER TO HVAC AND PLUMBING PLANS AND COORDINATE FINAL LOCATIONS WITH MECHANICAL CONTRACTOR IN THE FIELD.
- P. ELECTRICAL CONTRACTOR SHALL X-RAY SLAB PRIOR TO ANY CORE-DRILLING. COORDINATE WITH BUILDING MANAGEMENT FOR AFTER-HOURS ACCESS TO SPACE.
- Q. WHERE A CIRCUIT IS SHOWN TO ORIGINATE FROM AN EXISTING PANELBOARD, CONTRACTOR SHALL FIELD VERIFY WHETHER THE CIRCUIT BREAKER EXISTS AND, IF NOT, SHALL PROVIDE A NEW BREAKER AS PART OF THE BASE BID.

POWER SYMBOLS

SYMBOL	DESCRIPTION
	WALL MOUNTED DUPLEX RECEPTACLE (NEMA 5-20R)
	WALL MOUNTED DUPLEX RECEPTACLE (NEMA 5-20R) WITH USB OUTLET
	WALL MOUNTED QUADRAPLEX RECEPTACLE (NEMA 5-20R)
	WALL MOUNTED DEDICATED QUADRAPLEX RECEPTACLE (NEMA 5-20R)
	HALF CONTROLLED DUPLEX RECEPTACLE. TOP RECEPTACLE SHALL HAVE AUTOMATIC ON/OFF CONTROL VIA A RECEPTACLE POWER PACK THAT IS CONTROLLED BY THE CEILING MOUNTED VACANCY SENSOR(S) IN THE ROOM/AREA. CONTROLLED RECEPTACLE SHALL BE PERMANENTLY MARKED PER NEC.
	HALF CONTROLLED QUADRAPLEX RECEPTACLE. ONE DUPLEX RECEPTACLE SHALL HAVE AUTOMATIC ON/OFF CONTROL VIA A RECEPTACLE POWER PACK THAT IS CONTROLLED BY THE CEILING MOUNTED VACANCY SENSOR(S) IN THE ROOM/AREA. CONTROLLED RECEPTACLE SHALL BE PERMANENTLY MARKED PER NEC.
	WALL MOUNTED COMMUNICATIONS OUTLET
	FLUSH FLOOR POKE-THRU WITH QUADRAPLEX POWER PLUS COMMUNICATIONS, WIREMOLD #RC3ATCBK + COM75.
	HDMI CONNECTION
	INDICATES EXISTING

LIGHTING GENERAL NOTES:

- A. GENERAL CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY IF CONFLICTS OCCUR BETWEEN LIGHTING AND ANY OTHER TRADE. DO NOT PROCEED WITH INSTALLATION IN THAT AREA UNTIL CONFLICT HAS BEEN RESOLVED TO THE SATISFACTION OF THE ARCHITECT AND ENGINEER.
- B. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND MOUNTING INSTRUCTIONS FOR ALL LIGHT FIXTURES. NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES BETWEEN THESE PLANS AND THE ARCHITECTURAL PLANS RELATING TO QUANTITY, TYPE AND LOCATION OF DEVICES AND/OR FIXTURES.
- C. WHEN SPECIFIC LIGHT FIXTURE TYPE HAS BEEN SPECIFIED IN THE FIXTURE INFORMATION, ELECTRICAL CONTRACTOR SHALL PROVIDE COMPLETE ASSEMBLY INCLUSIVE OF ALL PARTS AND HARDWARE.
- D. ALL CIRCUITS SHOWN SHALL BE 277V, 20A CIRCUITS UNLESS NOTED OTHERWISE.
- E. ALL 120V RUNS LONGER THAN 60' SHALL BE #10 AWG AND 277V RUNS LONGER THAN 150' SHALL BE #10 AWG UNLESS NOTED OTHERWISE ON PLANS.
- F. MOUNT LIGHT SWITCHES AS INDICATED ON ARCHITECTURAL DRAWINGS (48" AFF UNLESS NOTED OTHERWISE).
- G. ALL GANGED SWITCHES SHALL HAVE A COMMON SEAMLESS FACEPLATE. EACH MULTI-GANG BOX SHALL BE NO MORE THAN SIX (6) SWITCHES WIDE. WHERE MORE THAN SIX (6) SWITCHES ARE SHOWN AT ONE (1) LOCATION, ADDITIONAL MULTI-GANG BOXES SHALL BE STACKED VERTICALLY AND THE WIDTH OF THE MULTI-GANGS SHALL BE AS EVEN AS POSSIBLE.
- H. EACH DIMMER SWITCH SHALL BE COMPATIBLE WITH THE FIXTURES BEING DIMMED (INCANDESCENT, FLUORESCENT, LED, LOW VOLTAGE, ETC). DIMMERS SHALL BE OF THE APPROPRIATE RATING PER THE MANUFACTURER BASED ON TOTAL FIXTURE LOAD AND ANY NECESSARY DERATING WHERE DIMMERS ARE GANGED TOGETHER. WHERE SWITCHES AND DIMMERS ARE SIDE-BY-SIDE, THEY SHALL BE GANGED TOGETHER.
- I. WHERE NEW FLUORESCENT FIXTURES ARE SHOWN TO BE DIMMED, THE FIXTURES SHALL HAVE DIMMING TYPE BALLASTS WHICH ARE COMPATIBLE WITH THE SPECIFIED DIMMERS. WHERE EXISTING FLUORESCENT FIXTURES ARE SHOWN TO BE DIMMED, CONTRACTOR SHALL PROVIDE NEW DIMMING TYPE BALLASTS WHICH ARE COMPATIBLE WITH THE SPECIFIED DIMMERS.
- J. ALL EMERGENCY LIGHT FIXTURES SHALL BE FED FROM EXISTING EMERGENCY LIGHTING CIRCUITS UNLESS NOTED OTHERWISE.
- K. ALL EXIT SIGNS SHALL BE FED FROM EXISTING EXIT SIGN CIRCUITS EXCEPT AS OTHERWISE NOTED.
- L. ALL FLUORESCENT FIXTURES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLASTS SHALL BE PROVIDED WITH A DISCONNECTING MEANS IN ACCORDANCE WITH 2011 NEC 410.130(C).
- M. LIGHTING CONTROL SENSORS AND SWITCHES SHALL BE WIRED DEVICES. NO WIRELESS DEVICES SHALL BE SUBMITTED WITHOUT PRIOR WRITTEN APPROVAL BY OWNER/BUILDING MANAGEMENT.

LIGHTING SYMBOLS

SYMBOL	DESCRIPTION
	INDICATES FIXTURE SHALL BE AN EMERGENCY/NIGHT LIGHT
	INDICATES FIXTURE SHALL BE AN EMERGENCY/NIGHT LIGHT
	SINGLE FACE EXIT SIGNS - REFER TO PLAN FOR DIRECTIONAL ARROWS AND WALL OR CEILING MOUNTING
	DOUBLE FACE EXIT SIGNS - REFER TO PLAN FOR DIRECTIONAL ARROWS AND WALL OR CEILING MOUNTING
	LOW VOLTAGE SWITCH ASSOCIATED WITH CEILING MOUNTED SENSORS
	3-WAY SWITCH
	DIMMER SWITCH
	CEILING MOUNTED 360-DEGREE DUAL TECHNOLOGY OCCUPANCY SENSOR (AUTOMATIC ON AND OFF). PROVIDE ALL POWER PACKS AND ACCESSORIES AS REQUIRED TO CONTROL ALL LIGHTS IN ROOM. CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED SENSOR SPACING.
	DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH (AUTOMATIC ON AND OFF)
	DUAL TECHNOLOGY OCCUPANCY SENSOR DIMMER SWITCH (AUTOMATIC ON AND OFF)
	CEILING MOUNTED 360-DEGREE DUAL TECHNOLOGY VACANCY SENSOR (MANUAL ON AND AUTOMATIC OFF). PROVIDE ALL POWER PACKS AND ACCESSORIES AS REQUIRED TO CONTROL ALL LIGHTS IN ROOM. CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED SENSOR SPACING.
	DUAL TECHNOLOGY VACANCY SENSOR SWITCH (MANUAL ON AND AUTOMATIC OFF)
	DUAL TECHNOLOGY VACANCY SENSOR DIMMER SWITCH (MANUAL ON AND AUTOMATIC OFF)
	CEILING MOUNTED DAYLIGHT SENSOR FOR CONTINUOUS DAYLIGHT RESPONSIVE DIMMING OF LIGHTING IN THE DAYLIGHT ZONE. PROVIDE ALL REQUIRED POWER PACKS, TRANSFORMERS, ACCESSORIES AND LOW VOLTAGE CABLING. REFER TO PLANS FOR THE ZONES THAT SHALL BE CONTROLLED VIA THIS SENSOR
	LIGHTING CONTROL STATION FOR LOCAL ON/OFF/DIMMING CONTROL AND AFTER-HOURS OVERRIDE OF ZONES. THE NUMBER/LOWERCASE LETTERS INDICATE THE CONTROL ZONES THAT SHALL BE CONTROLLED BY THIS SWITCH. SEE PLANS FOR ZONE(S) THAT ARE TO BE CONTROLLED AT THIS LOCATION.
	INDICATES EXISTING

LEGEND NOTES:

- CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL ACCESSORIES FOR PROPER MOUNTING OF FIXTURES IN SPECIFIC CEILING PER LOCATION OF FIXTURES.
- CONTRACTOR SHALL PROVIDE SUBMITTALS TO THE ENGINEER OF ALL LIGHTING FIXTURES, (NEW OR SUBSTITUTES).

FIRE ALARM DEVICES

A FIRE ALARM CONTRACTOR LICENSED BY THE TEXAS DEPARTMENT OF INSURANCE SHALL MODIFY THE EXISTING FIRE ALARM DEVICE LAYOUT AS REQUIRED FOR THE NEW TENANT LAYOUT. SCOPE OF WORK SHALL BE FOR A COMPLETE TURN-KEY INSTALLATION INCLUDING, BUT NOT LIMITED TO, RELOCATION OF EXISTING DEVICES, REMOVAL OF EXISTING DEVICES, ADDITION OF NEW DEVICES, UTILIZATION OF EXISTING DEVICES IN PLACE AND UPGRADES/ADDITIONS TO PANELS/POWER SUPPLIES TO SUPPORT THE DEVICES. THE FIRE ALARM DESIGN SHALL BE APPROVED BY THE CITY AND STATE FIRE MARSHALS ON SHOP DRAWING CONSTRUCTION SET AND SHALL MEET ALL A.D.A., N.F.P.A., STATE AND LOCAL REQUIREMENTS. SYSTEMS SHALL INCLUDE DETECTION AND NOTIFICATION DEVICE COVERAGE IN ALL SPACES BY UTILIZING BUILDING STANDARD, WHITE CEILING MOUNTED AUDIBLE DEVICES, STROBES, AND COMBINATION AUDIBLE/STROBE DEVICES. PLANS MUST BE SUBMITTED TO THE FIRE DEPARTMENT FOR REVIEW, FINAL APPROVAL AND PERMIT PRIOR TO INSTALLATION, UNDER SEPARATE INSTRUMENT AND COVER. DEVICES SHALL BE WHITE UNLESS REQUIRED TO MATCH EXISTING TO REMAIN.

AVAILABLE CIRCUITS

CIRCUITS SHOWN ARE BASED ON BEST KNOWLEDGE OF EXISTING PANEL PLACARDS AND PREVIOUS CONTRACT DOCUMENTS AND DO NOT NECESSARILY INDICATE THE ACTUAL PANEL CIRCUIT NUMBERS FOR USE. IT IS INTENDED TO FIRST REUSE EXISTING CIRCUITS THAT ARE AVAILABLE IN THE SAME PANEL(S) AFTER DEMOLITION OF WALLS AND EQUIPMENT AND THEN USE AVAILABLE SPARES/SPACES FROM THE SAME PANEL(S) AS NEEDED. MAXIMUM OF 16 AMP LOAD PER 20A CIRCUIT. CONTRACTOR SHALL VERIFY ACTUAL CIRCUIT AVAILABILITY AFTER DEMOLITION AND NOTIFY ARCHITECT IMMEDIATELY IF THE QUANTITY OF AVAILABLE CIRCUITS IS INADEQUATE OR OBTAIN APPROVAL FOR ADD ALTERNATE SOLUTION. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM PURDY-MCGUIRE PRIOR TO USING CIRCUITS FROM A DIFFERENT PANEL.

MECHANICAL EQUIPMENT POWER SCHEDULE									
EQUIPMENT DESIGNATION	LOAD			VOLTAGE/PHASE	CIRCUIT NUMBER	NEW CIRCUIT BREAKER	NEW/DISCONNECT AMPS/POLES/FUSE	WIRE SIZING	REMARKS
	KW	HP	FLA						
WH4-1	11.08	-	-	277/1	LB3-26	40/1	1P40A ENCL. C/B	2#8, 1#10G, 3/4" C.	SEE NOTE 1,2
EF1-1	224	-	-	120/1	LB3-28	20/1	C/B	2#12, 1#12G, 3/4" C.	SEE NOTE 1,2

NOTES:
1. REFER TO HVAC AND PLUMBING PLANS FOR LOCATIONS OF EQUIPMENT. COORDINATE FINAL LOCATIONS IN FIELD.
2. NEW CIRCUIT BREAKER REQUIRED.

LIGHTING FIXTURES

TYPE	DESCRIPTION	MFR. & CAT. NO.	LAMPS	VOLT	INPUT WATTS	REMARKS
	RECESSED LINEAR PENDANT	LITECONTROL #4L-LG-D-X-SOF-CL-35K	LED	UNV	10W PER FT.	WATTAGE TO BE DETERMINED
	BUILDING STANDARD 2' X 4' LED	LITHONIA - AVANTE #2BLT4-40L-ADP-EZ1-LP835	LED	MVOLT	47	
	BUILDING STANDARD 2' X 4' LED EM	LITHONIA - AVANTE #2BLT4-40L-ADP-EZ1-LP835	LED	MVOLT	47	WITH BATTERY PACK
	UNDERCABINET LED TAPE LIGHT	LEDI INSPIRE V4 NANOSKN # 4V-NSKN-35B-BLK-100 WITH ZUES CON. AND EXTENTS. 3500K	LED	120/277	2.2 W/FT	PROVIDE LENGTHS AS REQUIRED TO MAKE UP FULL LENGTH OF CABINET
	LED EXIT SIGN	LITHONIA EDGR-X-G-EL	INCLUDED	120/277	5	REFER TO DRAWINGS FOR EXIT SIGN DIRECTIONAL ARROWS AND FOR SINGLE OR DOUBLE FACE QUANTITIES.

NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL ACCESSORIES FOR PROPER MOUNTING OF FIXTURES IN SPECIFIC CEILING PER LOCATION OF FIXTURES.
2. CONTRACTOR SHALL PROVIDE SUBMITTALS TO THE ENGINEER OF ALL LIGHTING FIXTURES (NEW OR SUBSTITUTES).

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NO.	ISSUED FOR:	DATE:

LANDLORD/CLIENT REVIEW ISSUE DATE: 04/24/23
BID ISSUE DATE: 04/24/23
PERMIT ISSUE DATE: 04/24/23

DRAWING TITLE:
ELECTRICAL
NOTES & SYMBOLS

DRAWING NUMBER:

E0.01

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