GENERAL MEP SPECIFICATIONS

GENERAL

1. PRODUCTS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, ETC. OF ALL AUTHORITIES HAVING JURISDICTION. WORK SHALL COMPLY WITH THE FOLLOWING CODES, STANDARDS AND ORGANIZATIONAL STANDARDS OF:
   - CITY OF AUSTIN AMENDMENTS (CURRENT VERSION)
   - 2021 INTERNATIONAL ENERGY CODE
   - 2021 UNIFORM MECHANICAL CODE
   - NFPA
   - ADA AND TAS REQUIREMENTS
2. WHERE CONFLICTS EXIST BETWEEN CODES, STANDARDS OR THESE SPECIFICATIONS, THE HIGHER REQUIREMENT SHALL APPLY. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
3. CONTRACTOR SHALL OBTAIN PERMITS, PAY ALL FEES AND ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS.
4. CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTION POINTS IN FIELD, PRIOR TO STARTING WORK.
5. ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. ALL DRAWINGS ARE DIAGRAMMATIC IN NATURE, THEY ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS OF EQUIPMENT AND ASSOCIATED APPURTENANCES. THE CONTRACTOR SHALL LAYOUT ALL EQUIPMENT ROOMS TO MAKE SURE THE EQUIPMENT FITS IN THE ROOM OR SPACE SHOWN AND HAS ALL CLEARANCES REQUIRED BY THE APPLICABLE CODES, AUTHORITIES HAVING JURISDICTION AND MANUFACTURERS REQUIREMENTS PRIOR TO ORDER. EXACT LOCATION OF ALL ITEMS SHALL BE VERIFIED IN THE FIELD AND SHALL BE COORDINATED WITH EXISTING FIELD CONDITIONS. EXACT MEASUREMENTS SHALL BE ESTABLISHED BY THE CONTRACTOR AT THE JOB SITE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND REQUIRED TO VISIT THE PROJECT SPACE, VERIFY DIMENSIONAL DATA AND REVIEW THE EXISTING CONDITIONS BEFORE PROCEEDING WITH THE WORK. ANY CONFLICTS WITH THE EXISTING CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER. THE JOB SITE VISIT SHALL OCCUR PRIOR TO THE FINAL BID.
7. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS SKILLED IN THEIR RESPECTIVE TRADES. ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND FREE OF DEFECTS. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND ASSOCIATED ITEMS TO PROVIDE COMPLETE AND WORKING SYSTEMS, PLACED IN OPERATION, PROPERLY ADJUSTED AND CONTROLLED.
8. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE AND/OR INSTALLATION OF ALL WORK.
9. CONTRACTOR SHALL MAINTAIN THE CONSTRUCTION PREMISES IN A NEAT AND ORDERLY CONDITION AT THE END OF EACH WORKING DAY. CLEAN UP, REMOVE AND LEGALLY DISPOSE OF ALL TRASH AND DEBRIS.
10. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER OR OTHER HARM, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.
11. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF HIS WORKERS.
12. ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF PROJECT CONTRACT DOCUMENTS AND BUILDING/SITE REQUIREMENTS AS SPECIFIED BY ARCHITECT AND/OR OWNER.
13. IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND WRITTEN APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE ENGINEER AND ITS SUBCONTRACTORS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK ON THIS PROJECT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH HE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION MAY INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.
14. ALL PRODUCTS AND MATERIALS LOCATED WITHIN SUPPLY AND/OR RETURN AIR PLENUMS SHALL BE SPECIFICALLY LISTED BY THE MANUFACTURER AS SUITABLE FOR PLENUM DUTY. PRODUCTS AND MATERIALS EXPOSED TO THE AIR STREAM SHALL BE PLENUM RATED WITH A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50 (ASTM E-84, NFPA 255 AND UL 723). RATINGS SHALL BE DETERMINED BY APPLICABLE ASTM, UL AND NFPA GUIDELINES. ALL PRODUCTS SHALL COMPLY AND BE LABELED WITH 25/50 FLAME AND SMOKE HAZARD RATINGS.
15. ALL EXISTING EQUIPMENT TO BE REUSED SHALL BE THOROUGHLY CLEANED PRIOR TO RE-INSTALLATION.
16. DEFINITIONS
    - 16.1. THE WORD "PIPING" INCLUDES PIPE, FITTINGS, CONTROLS, VALVES, INSULATION AND HANGERS.
    - 16.2. THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".

ARCHITECT COORDINATION

1. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR THE LOCATION OF ALL VISIBLE CEILING MOUNTED DEVICES. ALL DEVICES IN DROPPED CEILINGS SHALL BE INSTALLED AT CENTER POINTS OF TILES UNLESS OTHERWISE INDICATED.

BUILDING/OWNER COORDINATION

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW OF, AND COMPLIANCE WITH, THE BASE BUILDING STANDARDS AND OWNER REQUIREMENTS FOR ALL EQUIPMENT, SYSTEM AND MATERIAL REQUIREMENTS AND METHODS.
2. ALL SHUT DOWNS OF EXISTING SYSTEMS SHALL BE SCHEDULED AND APPROVED BY THE OWNER PRIOR TO COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL PROVIDE LABOR TO RECEIVE, UNLOAD, STORE, PROTECT AND TRANSFER TO POINT OF INSTALLATION, ALL OWNER FURNISHED ITEMS.
4. ALL ITEMS REMOVED SHALL BECOME PROPERTY OF THE OWNER AND SHALL BE DISPOSED OF AS PER THE OWNER'S INSTRUCTIONS, UNLESS INDICATED OTHERWISE.

BASIS OF DESIGN AND SUBSTITUTIONS

1. MANUFACTURERS AND MODELS LISTED ARE BASIS OF DESIGN. SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER, ARCHITECT AND ENGINEER. IF A SUBSTITUTION IS SUBMITTED, IT IS THE CONTRACTORS RESPONSIBILITY TO EVALUATE IT AND CERTIFY THAT THE SUBSTITUTION IS EQUIVALENT IN ALL RESPECTS TO THE BASIS OF DESIGN. WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS. IF SUBSTITUTIONS ARE APPROVED, THE CONTRACTOR SHALL NOTIFY ALL OTHER CONTRACTORS, SUBCONTRACTORS OR TRADES AFFECTED BY THE SUBSTITUTIONS AND FULLY COORDINATE. ANY COSTS RESULTING FROM SUBSTITUTION, WHETHER BY CONTRACTOR OR OTHERS, SHALL BE RESPONSIBILITY OF AND PAID FOR BY SUBSTITUTING CONTRACTOR. APPROVED SHOP DRAWINGS DOES NOT ABSOLVE THIS CONTRACTOR FROM THIS RESPONSIBILITY. APPROVAL OF SUBSTITUTIONS IS AT THE DISCRETION OF THE ARCHITECT AND ENGINEER AND IF SUBMITTED AFTER THE BID, AT THE RISK OF THE CONTRACTOR.

SUBMITTALS

1. SHOP DRAWING SUBMITTALS – COORDINATE, PREPARE AND SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR THEIR REVIEW. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT ORDER, START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR.
2. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTAL AS TO MARK, LOCATION AND USE, USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS. ELECTRONIC SUBMITTALS SHALL BE PRESENTED WITH ALL SHEETS IN ALPHANUMERIC ORDER AND ALL SHEETS ORIENTED WITH TOP OF SHEET UP. SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.

RECORD DRAWINGS

1. A SET OF M.E.P. RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED IN THE GENERAL CONTRACTORS OFFICE AT THE JOB SITE. RECORD DOCUMENTS SHALL INDICATE ADDITIONS, DELETIONS, VARIATIONS IN LOCATION, VARIATIONS IN NUMBERING ETC. ALTERATIONS SHALL BE MARKED IN RED AND DELETIONS IN GREEN AND SHALL BE ON THE LATEST CONTRACT DRAWING ISSUED.
2. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS. AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT AND ENGINEER IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

EQUIPMENT

1. ALL PACKAGED EQUIPMENT SHALL BE INDEPENDENTLY THIRD PARTY LABELED AS A SYSTEM FOR ITS INTENDED USE BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) IN ACCORDANCE WITH OSHA FEDERAL REGULATIONS 29CFR1910.303 AND .399, AS WELL AS NFPA PAMPHLET NO. 70, AND THE NATIONAL ELECTRICAL CODE (NEC), ARTICLE 90-7.
2. MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTERS, FITTINGS, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. PROVIDE COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES.
3. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS, INCLUDING CLEARANCES. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK.
4. THE CONTRACTOR SHALL COORDINATE WITH THE OTHER TRADES FOR ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM.
5. ALL FLOOR MOUNTED EQUIPMENT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PADS. MINIMUM PAD THICKNESS SHALL BE NOMINAL 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4" ON EACH SIDE. CONCRETE PADS SHALL BE PROVIDED BY THIS CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF THE CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.

IDENTIFICATION

1. FURNISH AND MOUNT ON EACH MECHANICAL UNIT, WATER HEATER, PUMP, PANELBOARD, SWITCHBOARD (INCLUDING BRANCH SWITCHES), LARGE JUNCTION BOX, SAFETY SWITCH, STARTER, REMOTE CONTROL, PUSH BUTTON STATION, AND ALL SIMILAR EQUIPMENT AND CONTROLS, A NAMEPLATE DESCRIPTIVE OF THE EQUIPMENT OR EQUIPMENT CONTROLLED.
2. PROVIDE BLACK AND WHITE NAMEPLATES CONSTRUCTED FROM LAMINATED PHENOLIC WITH A WHITE CENTER CORE. LETTERS SHALL BE ENGRAVED IN THE PHENOLIC TO FORM WHITE LETTERS 3/8" HIGH MINIMUM.

CUTTING, PATCHING AND DRILLING

1. THIS BUILDING MAY CONTAIN STRUCTURAL REINFORCEMENT THAT COULD BE DAMAGED DURING CONSTRUCTION. DO NOT CORE DRILL OR CUT ANY CONCRETE SLABS OR OTHER STRUCTURAL COMPONENTS FOR ANY REASON WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE STRUCTURAL ENGINEER, ARCHITECT AND THE BUILDING OWNER. PATCH AND FINISH TO MATCH SURROUNDING MATERIALS AND METHODS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED.
2. X-RAY, SCANNING OR OTHER REINFORCEMENT LOCATION SERVICES ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCLUDED IN BID.
3. CUT, PATCH AND RESTORE ALL EXISTING SURFACES NOT RECEIVING NEW FINISHES OR DISTURBED DURING EXECUTION OF THE WORK. MATERIALS AND FINISHES USED SHALL BE SIMILAR TO ADJACENT SURFACES AND THE COMPLETE REPAIR SHALL MEET THE APPROVAL OF THE ARCHITECT AND THE OWNER'S REPRESENTATIVE.

MOUNTING ACCESSORIES

1. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL ANGLE IRON, CHANNEL IRON, RODS, SUPPORTS, HANGERS, INSERTS, CONCRETE OR PLYWOOD REQUIRED TO INSTALL, MOUNT AND SUPPORT ANY M.E.P. EQUIPMENT OR DEVICE CALLED FOR ON CONTRACT DOCUMENTS. SUPPORTING MATERIAL SHALL BE COMPLETE WITH HANGERS, CONNECTORS, BOLTS, CLAMPS AND NECESSARY ACCESSORIES TO MAKE A COMPLETE INSTALLATION. SUPPORTING MATERIAL SHALL BE GALVANIZED, PAINTED OR OTHERWISE SUITABLY FINISHED FOR THE INSTALLED ENVIRONMENT.
2. DO NOT INSTALL OR SUPPORT ANY ITEMS FROM ANY DUCTWORK, PIPES OR CONDUITS. DO NOT INSTALL ANY PIPE OR DUCT DIRECTLY TOUCHING FLOORS, WALLS OR STRUCTURE.

FIRE STOPPING/FIRE DAMPERS

1. ALL PENETRATIONS OF SLAB-TO-SLAB PARTITIONS SHALL BE SEALED AIRTIGHT.
2. WHEREVER FIRE RATED PARTITIONS ARE PENETRATED FOR WIRE, DUCT, PIPE OR OTHER ITEM PASSAGE, SEAL PASSAGES WITH CODE APPROVED, LABORATORY TESTED AND LABELED SEALANT OF FIRE RESISTANCE RATING NOT LESS THAN THAT OF PENETRATED ASSEMBLY THAT WILL PREVENT PASSAGE OF FIRE AND SMOKE. ALL FIRE STOPPING SYSTEMS SHALL MEET THE REQUIREMENTS OF ASTM E 814, UL 1479, AND BE FACTORY MUTUAL APPROVED. ALL FIRE STOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL.
3. INSTALLATION OF ITEMS AND OUTLETS IN RATED CEILINGS OR WALLS SHALL HAVE RATED BOXES OR BE PROVIDED WITH PRE-MANUFACTURED TENTS MATCHING THE RATING OF THE CEILING OR WALL ASSEMBLY.

ACCESS DOORS

1. ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO EQUIPMENT AND OTHER DEVICES WHICH REQUIRE MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.
2. ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES.
3. DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3" WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED.
4. DOORS INSTALLED IN CERAMIC TILE OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL.
5. HINGES SHALL BE CONCEALED SPRING TYPE, TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS.
6. ACCESS PANELS SHALL BE 16" X 16" OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE BEING SERVED.
7. ACCESS PANELS ARE NOT REQUIRED IN ACCESSIBLE LAY IN CEILINGS.
8. CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS IN ORDER TO VERIFY THE NEED FOR ACCESS PANELS. PROVIDE ACCESS PANELS TO GENERAL CONTRACTOR FOR INSTALLATION.

START UP

1. AFTER INSTALLATION, THE CONTRACTORS SHALL CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS. PLACE ALL SYSTEMS INTO FULL OPERATION.
2. CLEAN ALL EQUIPMENT AND FIXTURES OF ALL CONSTRUCTION DUST PRIOR TO SUBSTANTIAL COMPLETION.
3. REPLACE ALL FILTERS WITH NEW.
4. REPLACE SHEAVES, PULLEY'S AND BELTS AS NECESSARY TO BALANCE FANS.

COMPLETION AND TRAINING

1. PROVIDE OWNER TRAINING AND DEMONSTRATION OF ALL SYSTEMS AND EQUIPMENT.
2. INSTRUCT OWNER ON PROPER OPERATION AND PREVENTATIVE MAINTENANCE OF M.E.P. SYSTEMS.
3. SUBMIT OPERATING AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND SYSTEMS FOR ENGINEER REVIEW.
4. UPON COMPLETION OF PROJECT, CONTRACTOR SHALL SUBMIT A FINAL ELECTRONIC COPY OF ALL PLANS AND SPECIFICATIONS INDICATING AS-BUILT CONDITIONS TO ARCHITECT AND ENGINEER..

WARRANTY

1. FULLY WARRANT ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION. EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL EXTENDED WARRANTIES.
2. REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER, ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.

MEP SYSTEMS DEMOLITION NOTES

1. BEFORE SUBMITTING BID, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE TO VERIFY/EXAMINE THE EXACT EXTENT OF EXISTING CONDITIONS. NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT THE SITE PRIOR TO BID, NOR FOR ANY ALLEGED MISUNDERSTANDING OF WORK TO BE PERFORMED. THE CONTRACTOR SHALL INCLUDE IN HIS PRICE ALL LABOR AND MATERIAL THAT MAY EFFECT HIS WORK.
2. THE GENERAL EXTENT OF EXISTING WORK TO BE DISMANTLED AND REMOVED OR RELOCATED IS INDICATED ON THE DRAWINGS OR DESCRIBED HEREIN.
3. ALL COMPONENTS ASSOCIATED WITH SYSTEMS AND EQUIPMENT TO BE REMOVED OR RELOCATED MAY NOT BE SPECIFICALLY INDICATED. REMOVE ALL ASSOCIATED EQUIPMENT, DUCTWORK, COMPONENTS, HANGERS, PIPING, WIRING, CABLING, CONDUIT, BOXES, DEVICES AND ALL OTHER ITEMS RELATED TO EQUIPMENT AND MATERIALS WHICH ARE INDICATED TO BE REMOVED OR RELOCATED. REMOVE ALL WIRING AND CONDUIT BACK TO THE SOURCE FOR EXISTING CIRCUITS WHICH ARE BEING DEMOLISHED UNLESS SPECIFICALLY INDICATED. NO EQUIPMENT, MATERIALS OR ASSOCIATED COMPONENTS SHALL BE ABANDONED IN PLACE.
4. ABANDON ALL PIPING AND CONDUITS WHICH ARE CONCEALED IN CONCRETE, WALLS OR SLABS AND REMOVE ALL WIRING AND CABLES FROM ABANDONED CONDUITS. WATER TIGHT SEAL OPEN ENDS OF PIPING AND ABANDONED CONDUITS AND PATCH TO MATCH SURROUNDING MATERIALS AND METHODS.
5. CONTRACTORS SCOPE OF WORK INCLUDES TRACING OF ALL EXISTING PIPING SYSTEMS, CONTROLS AND ELECTRICAL CIRCUITS IN THE CONSTRUCTION AREA BACK TO SOURCE. IF REMOVAL OF EXISTING EQUIPMENT OR CIRCUITS AFFECTS ANY EXISTING CIRCUITS TO REMAIN, CONTRACTOR SHALL PROVIDE PIPING, DUCTWORK, CIRCUIT BREAKERS, FUSES, WIRING, CONDUIT, ETC. REQUIRED TO RECONNECT EXISTING TO REMAIN EQUIPMENT BACK TO SOURCE.

DISPOSAL OF DEMOLISHED MATERIALS

1. CONTRACTOR SHALL CLEAN THE PROJECT SITE AT THE END OF EACH WORKING DAY. CONTRACTOR SHALL NOTIFY THE BUILDING OWNER PRIOR TO DISPOSAL OF ALL DEMOLISHED MATERIALS TO ALLOW THE OWNER TO SALVAGE ANY USABLE MATERIALS. AFTER INSPECTION FROM THE OWNERS REPRESENTATIVE, ALL UNUSED MATERIALS SHALL BE REMOVED FROM THE JOB SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND APPLICABLE REGULATIONS.

PROTECTION

1. PROTECT FROM DAMAGE ALL EXISTING WORK TO REMAIN. ANY EXISTING TO REMAIN OR EXISTING TO BE RELOCATED MATERIALS AND EQUIPMENT DAMAGED DURING THE COURSE OF WORK SHALL BE REPLACED WITH MATERIALS AND EQUIPMENT CONFORMING TO THE PROJECT SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER. CARE MUST BE TAKEN IN REMOVING ALL EXISTING MATERIALS.

TERMINATION AND PATCHING

1. DISCONNECT EXISTING TO BE REMOVED OR EXISTING TO BE RELOCATED PIPING, DUCTWORK, CONDUIT, WIRING, CABLING AND EQUIPMENT FROM EXISTING TO REMAIN POINT INDICATED. IF NOT INDICATED ON THE PLANS, VERIFY WITH THE DESIGN ENGINEER OR BUILDING OWNERS REPRESENTATIVE PRIOR TO DISCONNECTION.
2. WHERE EXISTING FLOORS, WALLS AND ROOFS MUST BE CUT OR ARE DAMAGED DURING REMOVAL OR RELOCATION OF WORK, PATCH THE CUT OR DAMAGED AREAS TO MATCH ADJACENT CONSTRUCTION WITH LIKE MATERIALS AND METHODS.
3. THE CONTINUITY OF ALL MEP SYSTEMS SERVICING AREAS TO REMAIN SHALL BE MAINTAINED. MODIFY THE EXISTING PIPING, DUCTWORK OR ELECTRICAL CIRCUITS IF REQUIRED IN ORDER TO MAINTAIN THE OPERATIONS OF EXISTING SYSTEMS.

SYMBOLS

	DESCRIPTION
	ROUND ELBOW DOWN
	ROUND ELBOW UP
	OFFSET TO CHANGE ELEVATION (AT 30° WHEN POSSIBLE. ARROW SLOPES DOWN, U.N.O.)
	ROUND RADIUS ELBOW R = 1.5
	90° STRAIGHT TEE
	90° CONICAL TEE
	45° LATERAL TAP
	45° LATERAL CONICAL TEE
	SIZE OR SHAPE TRANSITION
	ROUND FLEXIBLE DUCT RUN OUT
	RECTANGULAR ELBOW DOWN
	RECTANGULAR ELBOW UP
	OFFSET TO CHANGE ELEVATION (AT 30° WHERE POSSIBLE. ARROW SLOPES DOWN., U.N.O)
	RECTANGULAR RADIUS ELBOW R = 1.5
	RECTANGULAR ELBOW WITH TURNING VANES
	SPLIT BRANCH TAKE-OFF WITH SQUARE ELBOW & SPLITTER DAMPER
	SPLIT BRANCH TAKE-OFF WITH RADIUS ELBOW & SPLITTER DAMPER
	SPLIT BRANCH TAKE-OFF TEE WITH STATIONARY SPLITTER DAMPER
	BRANCH TAKE-OFF WITH 45° LEAD IN TAP
	INSULATED / LINED DUCTWORK (U.N.O.)
	SQUARE FACED CEILING DIFFUSER 4-WAY DIRECTIONAL THROW (U.N.O.)
	ROUND FACED CEILING DIFFUSER
	CEILING RETURN OR EXHAUST AIR GRILLE OR REGISTER
	SIDEWALL SUPPLY GRILLE OR REGISTER
	SUPPLY DUCT RISER
	RETURN, EXHAUST OR OUTSIDE AIR DUCT RISER
	MANUAL BALANCING DAMPER
FD	FIRE DAMPER
MOD	MOTORIZED DAMPER
	SPIN TAP TAKE-OFF WITH BALANCING DAMPER
	SUPPLY DIFFUSER
	EXHAUST GRILLE
	RETURN GRILLE
	RETURN GRILLE
100 CFM	BALANCE AIRFLOW ON EXG AIR DEVICE
T	THERMOSTAT
RTU-1	SYSTEM SERVED
18/18	DUCT WIDTH IN INCHES BY HEIGHT IN INCHES
6ø / 100 | G	NECK SIZE INCHES; AIR DEVICE TAG; DIFFUSER TYPE; DIFFUSER AIRFLOW IN CFM
CO2	CO2 SENSOR

GENERAL SYMBOLS

	DESCRIPTION
XX-X	EQUIPMENT OR FIXTURE TAG
	NEW TO EXISTING CONNECTION
	POINT OF DISCONNECTION
	EQUIPMENT/ITEM – NEW
	EQUIPMENT/ITEM – EXISTING TO REMAIN
	EQUIPMENT/ITEM – TO BE DEMOLISHED
	EQUIPMENT/ITEM – TO BE DEMOLISHED
R	EQUIPMENT/ITEM – TO BE RELOCATED
R	EQUIPMENT/ITEM – RELOCATED TO NEW LOCATION

LINE TYPES

	DESCRIPTION
	EQUIPMENT/DUCTWORK BEHIND
	EQUIPMENT CLEARANCES
	MECHANICAL EQUIPMENT
	MECHANICAL EQUIPMENT TAG
	HATCHES AND PATTERNS
	SUPPLY DUCTWORK
	SUPPLY DIFFUSER
	RETURN DUCTWORK
	RETURN DIFFUSER
	EXHAUST DUCT
	EXHAUST DIFFUSER
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
CD	CONDENSATE PIPING
R	REFRIGERANT PIPING

MECHANICAL SHEET INDEX

PROJECT: 21-085

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DRAWN BY: AMPED

DATE	REVISION

MECHANICAL COVER SHEET

M0.0

PROJECT NO. 21-043

ABBREVIATIONS

AAD	AUTOMATIC AIR DAMPER	EAR	EXHAUST AIR REGISTER	MC	MECHANICAL CONTRACTOR
AAV	AUTOMATIC AIR VENT	EAT	ENTERING AIR TEMPERATURE	MD	MANUAL DAMPER
ABS	ABSOLUTE			MECH	MECHANICAL
ACCU	AIR COOLED CONDENSING UNIT	EBB	ELECTRIC BASE BOARD	MH	MANHOLE
		EC	ELECTRICAL CONTRACTOR	MIN	MINIMUM
ACCUM	ACCUMULATOR	ECON	ECONOMIZER	MISC	MISCELLANEOUS
AC	AIR-CONDITIONING	ECU	EVAPORATIVE COOLING UNIT	MOD	MOTOR OPERATED DAMPER
ACU	AIR-CONDITIONING UNIT	EDBT	ENTERING DRY BULB	MOV	MOTOR OPERATED VALVE
ACV	AUTOMATIC CONTROL VALVE	TEMPERATURE		MP	MEDIUM PRESSURE
AC	ALTERNATING CURRENT	EDH	ELECTRIC DUCT HEATER	MPH	MILES PER HOUR
AD	ACCESS DOOR OR AREA DRAIN	EER	ENERGY EFFICIENCY RATIO	MPS	MEDIUM PRESSURE STEAM
		EF, EXHFN	EXHAUST FAN	MPT	MALE PIPE THREAD
ADA	AMERICAN DISABILITIES ACT	EFF	EFFICIENCY	MTD	MOUNTED
ADD	ADDITION	EL	ELEVATION	MVD	MANUAL VOLUME DAMPER
ADJ	ADJUSTABLE	ELEC	ELECTRIC		
AFF	ABOVE FINISHED FLOOR	ELEV	ELEVATOR	N/A	NOT APPLICABLE
AHP	AIR HORSEPOWER	EMER	EMERGENCY	NC	NOISE CRITERIA OR NORMALLY CLOSED
AHU	AIR HANDLING UNIT	ENCL	ENCLOSURE		
ALT	ALTITUDE OR ALTERNATE	ENT	ENTERING	NIC	NOT IN CONTRACT
AMB	AMBIENT	EQUIP	EQUIPMENT	NR	NOISE REDUCTION
AMP	AMPERE (AMP, AMPS)	ESC	ESCUTCHEON	NTS	NOT TO SCALE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	ESP	EXTERNAL STATIC PRESSURE	OA	OUTSIDE AIR
AP	ACCESS PANEL	ET	EXPANSION TANK	OAD	OUTSIDE AIR DAMPER
APD	AIR PRESSURE DROP	EUH, EH	ELECTRIC UNIT HEATER	OAI	OUTSIDE AIR INTAKE
APPROX	APPROXIMATE(LY)	EWBT	ENTERING WET BULB TEMPERATURE	OAT	OUTSIDE AIR TEMPERATURE
AR	AIR RELIEF			OBD	OPPOSED BLADE DAMPER
ARCH	ARCHITECT	EWH	ELECTRIC WATER HEATER	OD	OUTSIDE DIAMETER
ARV	AIR RELIEF VALVE	EWT	ENTERING WATER TEMPERATURE	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
AS	AIR SEPARATOR				
ATM	ATMOSPHERE	EXCH	EXCHANGER	OFD	OVERFLOW DRAIN
AVG	AVERAGE	EXH	EXHAUST	OFO	OWNER FURNISHED OWNER INSTALLED
AWG	AMERICAN WIRE GAUGE	EXHFN	EXHAUST FAN		
AXFL	AXIAL FLOW	EXHHD	EXHAUST HOOD	OS&Y	OPEN SCREW & YOKE
		EXIST, (E), EXG	EXISTING	OZ	OUNCE
BAL	BALANCE	EXP	EXPANSION		
BAPR	BAROMETRIC PRESSURE	EXT	EXTERIOR	PCT	PERCENT
BARO	BAROMETER			PD	PRESSURE DROP
BBD	BOILER BLOWDOWN	F	FAHRENHEIT	PF	PRE-FILTER
BBR	BASEBOARD RADIATOR	FA	FACE AREA	PH	PHASE
BCV	BUTTERFLY CHECK VALVE	FC	FLEXIBLE CONNECTION	PHC	PREHEAT COIL
BCS	BUILDING CONTROL SYSTEM	FCU	FANCOIL UNIT	PLMB	PLUMBING
BD	BUTTERFLY DAMPER	FD	FIRE DAMPER	POC	POINT OF CONNECTION
BDD	BACKDRAFT DAMPER	FH	FIRE HOSE	PPM	PARTS PER MILLION
BFV	BUTTERFLY VALVE	FHC	FIRE HOSE CABINET	PREFAB	PRE-FABRICATED
BHP	BRAKE HORSEPOWER	FIN	FINISH	PRESS	PRESSURE
BLDG	BUILDING	FIXT	FIXTURE	PRI	PRIMARY
BOM	BILL OF MATERIAL	FLR	FLOOR	PRV	PRESSURE REDUCING VALVE
BP	BOILING POINT	FLTR	FILTER	PSI	POUNDS PER SQUARE INCH
BOT	BOTTOM	FP	FIRE PROTECTION	PSIG	POUNDS PER SQUARE INCH GAGE
BTU	BRITISH THERMAL UNIT	FPCV	FAN POWERED CONSTANT VOLUME	PTAC	PACKAGED TERMINAL AIR CONDITIONER
BV	BALL VALVE				
BYP	BYPASS	FPT	FAN POWERED TERMINAL	PVC	POLYVINYL CHLORIDE
		FPM	FEET PER MINUTE		
CAV	CONSTANT AIR VOLUME	FPS	FEET PER SECOND		
C/C, CC	COOLING COIL	FPVAV	FAN POWERED VARIABLE VOLUME	QTY	QUANTITY
CCW	COUNTER CLOCKWISE	AIR			
CD	CONDENSATE DRAIN OR CEILING DIFFUSER	FRP	FIBER-GLASS REINFORCED PLASTIC	R	THERMAL RESISTANCE
		FSD	FIRE SMOKE DAMPER	RFGT	REFRIGERANT
CFM	CUBIC FEET PER MINUTE	FSS	FLOW SENSING SWITCH	RA	RETURN AIR
CFOI	CONTRACTOR FURNISHED/OWNER INSTALLED	FTG	FOOTING	RAD	RETURN AIR DUCT
		FV	FACE VELOCITY	RAT	RETURN AIR TEMPERATURE
CFS	CUBIC FEET PER SECOND	G	NATURAL GAS	RCP	REINFORCED CONCRETE PIPE
CH	CHILLER	GAL	GALLON	RECIRC	RECIRCULATE
CHCF	CHILLED WATER CHEMICAL FEED	GALV	GALVANIZED	RG	RETURN AIR GRILLE
CHKV	CHECK VALVE	GC	GENERAL CONTRACTOR	RH	RELATIVE HUMIDITY
CHWM	CHILLED WATER MAKE-UP	GPD	GALLON PER DAY	RL	REFRIGERANT LIQUID
CHWP	CHILLED WATER PUMP	GPH	GALLON PER HOUR	RLL	REFRIGERANT LIQUID LINE
CHWPP	CHILLED WATER PRIMARY PUMP	GPM	GALLON PER MINUTE	RPM	REVOLUTIONS PER MINUTE
		GPS	GALLON PER SECOND	RTU	ROOFTOP UNIT
CHWR	CHILLED WATER RETURN	HD	HEAD	REV	REVISION
CHWRP	CHILLED WATER RECIRCULATING PUMP	HEPA	HIGH EFFICIENCY PARTICULATE AIR FILTER	SA	SUPPLY AIR
				SAF	SUPPLY AIR FAN
CHWS	CHILLED WATER SUPPLY			SCFM	STANDARD CUBIC FEET PER MINUTE
CHWSP	CHILLED WATER SECONDARY PUMP	HG	HEAT GAIN	SCW	SOFTENED COLD WATER (DOMESTIC)
		HOA	HAND, OFF, AUTO		
CI	CAST IRON	HP	HORSEPOWER OR HEAT	SD	SMOKE DAMPER
CKT	CIRCUIT	PUMP		SAG	SUPPLY GRILLE
CLG	CEILING	HR	HOUR	SPGR	SPECIFIC GRAVITY
CLGDIFF	CEILING DIFFUSER	HSTAT	HUMIDISTAT	SH	SENSIBLE HEAT
CLGGRL	CEILING GRILLE	HT	HEIGHT	SHG	SENSIBLE HEAT GAIN
CLGHT	CEILING HEIGHT	HVAC	HEATING, VENTILATING, AND CONDITIONING	SHT	SHEET
CO	CLEAN OUT	AIR		SOV	SHUT OFF VALVE
CW	CLOCKWISE	HTWR	HEATING WATER RETURN	SP	STATIC PRESSURE
COEFF	COEFFICIENT	HTWS	HEATING WATER SUPPLY	SPEC	SPECIFICATIONS
COL	COLUMN	HZ	FREQUENCY	SQ	SQUARE
COMP	COMPRESSOR			STP	STANDARD TEMPERATURE PRESSURE
CONC	CONCRETE	IAQ	INDOOR AIR QUALITY		
COND	CONDENSER	ID	INSIDE DIAMETER	SUCT	SUCTION
CONST	CONSTRUCTION	IHP	INDICATED HORSEPOWER		
CONT	CONTINUOUS	IN WC	INCHES OF WATER COLUMN	T&P	TEMPERATURE AND PRESSURE VALVE
CP	CONDENSATE PUMP	INCL	INCLUDE		
CPLG	COUPLING	INSUL	INSULATE	TAB	TEST ADJUST & BALANCE
CR	CONTROL RELAY	INT	INTERIOR	TAG	TRANSFER AIR GRILLE
CSG	CASING	INV	INVERT	TB	TERMINAL BOX
CT	COOLING TOWER	I/O	INPUT/OUTPUT	TCV	TEMPERATURE CONTROL VALVE
CTR	COOLING TOWER RETURN	IPS	INTERNATIONAL PIPE STD		
CTS	COOLING TOWER SUPPLY			TDH	TOTAL DYNAMIC HEAD
CU	CONDENSING UNIT	JT	JOINT	TEMP	TEMPERATURE
CV	CONTROL VALVE			TG	TRANSFER GRILLE
CUFT	CUBIC FEET	K	THERMAL CONDUCTIVITY	TONS	TONS OF REFRIGERATION
CUIN	CUBIC INCHES	KW	KILOWATT	TSTAT	THERMOSTAT
CUYD	CUBIC YARD	KWH	KILOWATT HOUR	TYP	TYPICAL
CUH	CABINET UNIT HEATER				
CW	COLD WATER	'LAD	LAMINAR AIR DIFFUSER	U	HEAT TRANSFER COEFFICIENT
CWP	CONDENSER WATER PUMP	LAF	LAMINAR AIR FLOW		
CWR	CONDENSER WATER RETURN	LAT	LEAVING AIR TEMPERATURE	UC	UNDERCUT
CWS	CONDENSER WATER SUPPLY	LAV, LV	LAVATORY	UH	UNIT HEATER
		LB	POUND	UON	UNLESS OTHERWISE NOTED
DAP	DUCT ACCESS PANEL	LCD	LINEAR CEILING DIFFUSER		
DB	DECIBEL(S) OR DRY BULB TEMPERATURE	LD	LINEAR DIFFUSER	VA	VOLT AMPERE
		LDBT	LEAVING DRY BULB TEMPERATURE	VAR	VARIABLE
DC	DIRECT CURRENT			VAV	VARIABLE AIR VOLUME
DCI	DUCT COVERING INSULATION	LF	LINEAR FEET	VB	VACUUM BREAKER
DDC	DIRECT DIGITAL CONTROL	LFD	LAMINAR FLOW DIFFUSER	VEL	VELOCITY
DEG	DEGREE	LH	LATENT HEAT	VERT	VERTICAL
DENS	DENSITY	LHG	LATENT HEAT GAIN	VOL	VOLUME
DEPT	DEPARTMENT	LHR	LATENT HEAT RATIO		
DH	DUCT HEATER	LPR	LOW PRESSURE RETURN	WBT	WET BULB TEMPERATURE
DIA	DIAMETER	LPS	LOW PRESSURE STEAM		
DISCH	DISCHARGE	LVR	LOUVER	WT	WEIGHT
DLI	DUCT LINER INSULATION	LWBT	LEAVING WET BULB TEMPERATURE	WTR	WATER
DMPR	DAMPER				
DP	DEWPOINT	LWT	LEAVING WATER TEMPERATURE		
DPS	DIFFERENTIAL PRESSURE				
SENSOR					
DPT	DEWPOINT TEMPERATURE	MA	MIXED AIR		
DT	DELTA TEMPERATURE	MAT	MIXED AIR TEMPERATURE		
DUC	DOOR UNDERCUT	MAU, MAHU	MAKE UP AIR HANDLING UNIT		
DWG	DRAWING				
DWV	DRAIN, WASTE AND VENT	MAV	MANUAL AIR VENT		
		MAX	MAXIMUM		
EAG	EXHAUST AIR GRILLE	MBH	BTU/HRX1,000,000		

MECHANICAL SPECIFICATIONS

DUCTWORK

1. CONTRACTOR SHALL INSPECT THE EXISTING DUCTWORK FOR DEFECTS AND REPORT TO THE ARCHITECT/ENGINEER AND THE OWNER ANY DEFICIENCIES PRIOR TO PERFORMING ANY WORK. CONTRACTOR SHALL CLEAN ALL EXISTING DUCTWORK, GRILLES, REGISTERS AND DIFFUSERS PRIOR TO INSTALLING THE NEW WORK.
2. DUCT CONSTRUCTION, INCLUDING SHEET METAL THICKNESSES, SEAM AND JOINT CONSTRUCTION, REINFORCEMENTS, AND HANGERS AND SUPPORTS, SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE".
3. DUCT SIZES INDICATED ON DRAWINGS ARE FREE AREA, AIRSTREAM SIZES, CONSTRUCT DUCTS WITH LINER TO LARGER DIMENSIONS TO MAINTAIN FREE – AIR PATH SIZES INDICATED ON DRAWINGS.
4. AIRSTREAM SURFACES: SURFACES IN CONTACT WITH THE AIRSTREAM SHALL COMPLY WITH REQUIREMENTS IN ASHRAE 62.1.
5. GENERAL MATERIAL REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.
6. GALVANIZED SHEET STEEL: COMPLY WITH ASTM A 653/A 653M.
   6.1. GALVANIZED COATING DESIGNATION: G90 (Z275).
   6.2. FINISHES FOR SURFACES EXPOSED TO VIEW: MILL PHOSPHATIZED.
7. CARBON–STEEL SHEETS: COMPLY WITH ASTM A 1008/A 1008M, WITH OILED, MATTE FINISH FOR EXPOSED DUCTS.
8. STAINLESS–STEEL SHEETS: COMPLY WITH ASTM A 480/A 480M, TYPE 304 OR 316; COLD ROLLED, ANNEALED, SHEET. EXPOSED SURFACE FINISH SHALL BE NO. 4 AND TYPE 316. FOR CONCEALED DUCTS SURFACE FINISH SHALL BE NO. 2D AND TYPE 304.
9. ALUMINUM SHEETS: COMPLY WITH ASTM B 209 (ASTM B 209M) ALLOY 3003, H14 TEMPER; WITH MILL FINISH FOR CONCEALED DUCTS, AND STANDARD, ONE–SIDE BRIGHT FINISH FOR DUCT SURFACES EXPOSED TO VIEW.
10. REINFORCEMENT SHAPES AND PLATES: ASTM A 36/A 36M, STEEL PLATES, SHAPES, AND BARS; BLACK AND GALVANIZED.
    10.1. WHERE BLACK– AND GALVANIZED–STEEL SHAPES AND PLATES ARE USED TO REINFORCE ALUMINUM DUCTS, ISOLATE THE DIFFERENT METALS WITH BUTYL RUBBER, NEOPRENE, OR EPDM GASKET MATERIALS.
11. DUCT LINER: COMPLY WITH ASTM C 1071, NFPA 90A, OR NFPA 90B; AND WITH NAIMA AH124, "FIBROUS GLASS DUCT LINER STANDARD."
    11.1. MAXIMUM THERMAL CONDUCTIVITY: 0.25 BTU X IN/H X SQ. FT. X DEG F(0.036 W/M*K)
12. APPLY ADHESIVE COATING ON LONGITUDINAL SEAMS IN DUCTS WITH AIR VELOCITY OF 2500 FPM.
13. SECURE TRANSVERSELY ORIENTED LINER EDGES FACING THE AIRSTREAM WITH METAL NOSINGS THAT HAVE EITHER CHANNEL OR "Z" PROFILES OR ARE INTEGRALLY FORMED FROM DUCT WALL. FABRICATE EDGE FACINGS AT THE FOLLOWING LOCATIONS:
    13.1. FAN DISCHARGES.
    13.2. INTERVALS OF LINED DUCT PRECEDING UNLINED DUCT.
    13.3. UPSTREAM EDGES OF TRANSVERSE JOINTS IN DUCTS WHERE AIR VELOCITIES ARE HIGHER THAN 2500 FPM OR WHERE INDICATED.
14. TERMINATE INNER DUCTS WITH BUILDOUTS ATTACHED TO FIRE–DAMPER SLEEVES, DAMPERS, TURNING VANE ASSEMBLIES, OR OTHER DEVICES. FABRICATED BUILDOUTS (METAL HAT SECTIONS) OR OTHER BUILDOUT MEANS ARE OPTIONAL; WHEN USED, SECURE BUILDOUTS TO DUCT WALLS WITH BOLTS, SCREWS, RIVETS, OR WELDS.
15. HANGERS AND SUPPORTS
    15.1. HANGER RODS FOR NONCORROSIVE ENVIRONMENTS: CADMIUM–PLATED STEEL RODS AND NUTS.
    15.2. HANGER RODS FOR CORROSIVE ENVIRONMENTS: ELECTROGALVANIZED, ALL–THREAD RODS OR GALVANIZED RODS WITH THREADS PAINTED WITH ZINC–CHROMATE PRIMER AFTER INSTALLATION.
    15.3. STRAP AND ROD SIZES: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE," TABLE 5–1, "RECTANGULAR DUCT HANGERS MINIMUM SIZE," AND TABLE 5–2, "MINIMUM HANGER SIZES FOR ROUND DUCT."
    15.4. STEEL CABLES FOR GALVANIZED–STEEL DUCTS: GALVANIZED STEEL COMPLYING WITH ASTM A 603.
    15.5. STEEL CABLES FOR STAINLESS–STEEL DUCTS: STAINLESS STEEL COMPLYING WITH ASTM A 492.
    15.6. STEEL CABLE END CONNECTIONS: CADMIUM–PLATED STEEL ASSEMBLIES WITH BRACKETS, SWIVEL, AND BOLTS DESIGNED FOR DUCT HANGER SERVICE; WITH AN AUTOMATIC–LOCKING AND CLAMPING DEVICE.
    15.7. DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF–TAPPING METAL SCREWS; COMPATIBLE WITH DUCT MATERIALS.
    15.8. TRAPEZE AND RISER SUPPORTS:
        15.8.1. SUPPORTS FOR GALVANIZED–STEEL DUCTS: GALVANIZED–STEEL SHAPES AND PLATES.
        15.8.2. SUPPORTS FOR STAINLESS–STEEL DUCTS: STAINLESS–STEEL SHAPES AND PLATES.
        15.8.3. SUPPORTS FOR ALUMINUM DUCTS: ALUMINUM OR GALVANIZED STEEL COATED WITH ZINC CHROMATE.
16. INSTALL DUCTS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE" UNLESS OTHERWISE INDICATED.
17. WHERE DUCTS PASS THROUGH FIRE–RATED INTERIOR PARTITIONS INSTALL FIRE DAMPERS.
18. SEAL DUCTS FOR DUCT STATIC–PRESSURE, SEAL CLASSES, AND LEAKAGE CLASSES SPECIFIED IN "DUCT SCHEDULE" ARTICLE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE."
19. TURNING VANES
20. MANUFACTURED TURNING VANES FOR METAL DUCTS: CURVED BLADES OF GALVANIZED SHEET STEEL; SUPPORT WITH BARS PERPENDICULAR TO BLADES SET; SET INTO VANE RUNNERS SUITABLE FOR DUCT MOUNTING.
    20.1. ACOUSTIC TURNING VANES: FABRICATE AIRFOIL–SHAPED ALUMINUM EXTRUSIONS WITH PERFORATED FACES AND FIBROUS–GLASS FILL.
21. MANUFACTURED TURNING VANES FOR NONMETAL DUCTS: FABRICATE CURVED BLADES OF RESIN–BONDED FIBERGLASS WITH ACRYLIC POLYMER COATING; SUPPORT WITH BARS PERPENDICULAR TO BLADES SET; SET INTO VANE RUNNERS SUITABLE FOR DUCT MOUNTING.
22. GENERAL REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE"; FIGURES 4–3, "VANES AND VANE RUNNERS," AND 4–4, "VANE SUPPORT IN ELBOWS."
23. RETAIN ONE OF TWO PARAGRAPHS BELOW.
24. VANE CONSTRUCTION: DOUBLE WALL.
25. PROVIDE TURNING VANES IN SQUARE ELBOWS WITH DUCT VELOCITIES BELOW 1500 FPM.
26. FLEXIBLE CONNECTORS
    26.1. MATERIALS: FLAME–RETARDANT OR NONCOMBUSTIBLE FABRICS.
    26.2. COATINGS AND ADHESIVES: COMPLY WITH UL 181, CLASS 1.
    26.3. METAL–EDGED CONNECTORS: FACTORY FABRICATED WITH A FABRIC STRIP 3–1/2 INCHES WIDE ATTACHED TO 2 STRIPS OF 2–3/4–INCH WIDE, 0.028–INCH THICK, GALVANIZED SHEET STEEL OR 0.032–INCH THICK ALUMINUM SHEETS. PROVIDE METAL COMPATIBLE WITH CONNECTED DUCTS.
    26.4. INDOOR SYSTEM, FLEXIBLE CONNECTOR FABRIC: GLASS FABRIC DOUBLE COATED WITH NEOPRENE.
        26.4.1. MINIMUM WEIGHT: 26 OZ./SQ. YD.
        26.4.2. TENSILE STRENGTH: 480 LBF/INCH IN THE WARP AND 360 LBF/INCH IN THE FILLING.
        26.4.3. SERVICE TEMPERATURE: MINUS 40 TO PLUS 200 DEG F.
    26.5. OUTDOOR SYSTEM, FLEXIBLE CONNECTOR FABRIC: GLASS FABRIC DOUBLE COATED WITH WEATHERPROOF, SYNTHETIC RUBBER RESISTANT TO UV RAYS AND OZONE.
        26.5.1. MINIMUM WEIGHT: 24 OZ./SQ. YD.
        26.5.2. TENSILE STRENGTH: 530 LBF/INCH IN THE WARP AND 440 LBF/INCH IN THE FILLING.
        26.5.3. SERVICE TEMPERATURE: MINUS 50 TO PLUS 250 DEG F.
    26.6. HIGH–CORROSIVE–ENVIRONMENT SYSTEM, FLEXIBLE CONNECTORS: GLASS FABRIC WITH CHEMICAL–RESISTANT COATING.
        26.6.1. MINIMUM WEIGHT: 14 OZ./SQ. YD.
        26.6.2. TENSILE STRENGTH: 450 LBF/INCH IN THE WARP AND 340 LBF/INCH IN THE FILLING.
        26.6.3. SERVICE TEMPERATURE: MINUS 67 TO PLUS 500 DEG F.
27. FLEXIBLE DUCTWORK
28. INSULATED, FLEXIBLE DUCT: UL 181, CLASS 1, BLACK POLYMER FILM SUPPORTED BY HELICALLY WOUND, SPRING–STEEL WIRE; FIBROUS–GLASS INSULATION; ALUMINIZED R–EVAPOR–BARRIER FILM.
    28.1. PRESSURE RATING: 4–INCH WG POSITIVE AND 0.5–INCH WG NEGATIVE.
    28.2. MAXIMUM AIR VELOCITY: 4000 FPM.
    28.3. TEMPERATURE RANGE: MINUS 20 TO PLUS 175 DEG F.
    28.4. INSULATION R–VALUE: R–6.
29. PROVIDE SPIN TAP FITTING WITH MANUAL VOLUME DAMPERS FOR ROUND DIFFUSER TAKE–OFFS.

MECHANICAL INSULATION

1. INSTALLER QUALIFICATIONS: SKILLED MECHANICS WHO HAVE SUCCESSFULLY COMPLETED AN APPRENTICESHIP PROGRAM OR ANOTHER CRAFT TRAINING PROGRAM CERTIFIED BY THE U.S. DEPARTMENT OF LABOR, BUREAU OF APPRENTICESHIP AND TRAINING.
2. FIRE–TEST–RESPONSE CHARACTERISTICS: AS DETERMINED BY TESTING MATERIALS IDENTICAL TO THOSE SPECIFIED IN THIS SECTION ACCORDING TO APPLICABLE ASTM STANDARDS, BY A TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION. FACTORY LABEL INSULATION AND JACKET MATERIALS AND SEALER AND CEMENT MATERIAL CONTAINERS WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AND INSPECTING AGENCY.
   2.1. INSULATION INSTALLED INDOOR AND OUTDOOR: FLAME–SPREAD RATING OF 25 OR LESS, AND SMOKE–DEVELOPED RATING OF 50 OR LESS.
3. MANUFACTURERS
   3.1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
      3.1.1. MINERAL–FIBER INSULATION:CERTAINTEED MANSON., KNAUF FIBERGLASS GMBH., OWENS–CORNING FIBERGLAS CORP., SCHULLER INTERNATIONAL, INC.
      3.1.2. FLEXIBLE ELASTOMERIC THERMAL INSULATION: ARMSTRONG WORLD INDUSTRIES, INC., RUBATEX CORP.
      3.1.3. CLOSED–CELL PHENOLIC–FOAM INSULATION:, KOOLTHERM INSULATION PRODUCTS, LTD.
      3.1.4. CALCIUM SILICATE INSULATION:OWENS–CORNING FIBERGLAS CORP.,PABCO., SCHULLER INTERNATIONAL, INC.
4. INSULATION MATERIALS
   4.1. MINERAL–FIBER BOARD THERMAL INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH APPLICABLE ASTM STANDARDS, FOR TYPE IB, WITHOUT FACING AND WITH ALL–SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM.
   4.2. MINERAL–FIBER BLANKET THERMAL INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM STANDARDS, TYPE II, WITHOUT FACING AND WITH ALL–SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM.
   4.3. FLEXIBLE ELASTOMERIC THERMAL INSULATION: CLOSED–CELL, SPONGE OR EXPANDED–RUBBER MATERIALS. COMPLY WITH APPLICABLE ASTM STANDARDS FOR TYPE II FOR SHEET MATERIALS.
      4.3.1. ADHESIVE: AS RECOMMENDED BY INSULATION MATERIAL MANUFACTURER.
      4.3.2. ULTRAVIOLET–PROTECTIVE COATING: AS RECOMMENDED BY INSULATION MANUFACTURER.
   4.4. CLOSED–CELL PHENOLIC–FOAM INSULATION: BLOCK INSULATION OF RIGID, EXPANDED, CLOSED–CELL STRUCTURE. COMPLY WITH ASTM STANDARDS, TYPE I, GRADE 1.
   4.5. CALCIUM SILICATE INSULATION: FLAT–, CURVED–, AND GROOVED–BLOCK SECTIONS OF NONCOMBUSTIBLE, INORGANIC, HYDROUS CALCIUM SILICATE WITH A NONASBESTOS FIBROUS REINFORCEMENT. COMPLY WITH ASTM STANDARDS, TYPE I FOR TEMPERATURES UP TO 1200 AND ASTM STANDARDS, TYPE II FOR TEMPERATURES UP TO 1700 DEG F (927 DEG C).
5. FIELD–APPLIED JACKETS
   5.1. GENERAL: COMPANY WITH APPLICATIONS ASTM STANDARDS, FOR TYPE 1, UNLESS OTHERWISE INDICATED.
   5.2. FOIL AND PAPER JACKET: LAMINATED, GLASS–FIBER–REINFORCED, FLAME–RETARDANT KRAFT PAPER AND ALUMINUM FOIL.
   5.3. PVC JACKET: HIGH–IMPACT, ULTRAVIOLET–RESISTANT PVC; 20 MILS (0.5 MM) THICK; ROLL STOCK READY FOR SHOP OR FIELD CUTTING AND FORMING.
      5.3.1. ADHESIVE: AS RECOMMENDED BY INSULATION MATERIAL MANUFACTURER.
      5.3.2. PVC JACKET COLOR: WHITE OR AS SELECTED BY THE ARCHITECT.
   5.4. ALUMINUM JACKET: DEEP CORRUGATED SHEETS MANUFACTURED FROM ALUMINUM ALLOY COMPLYING WITH APPLICABLE ASTM STANDARDS, AND HAVING AN INTEGRALLY BONDED MOISTURE BARRIER OVER ENTIRE SURFACE IN CONTACT WITH INSULATION. METAL THICKNESS AND CORRUGATION DIMENSIONS ARE SCHEDULED AT THE END OF THIS SECTION.
      5.4.1. FINISH: SMOOTH FINISH.
      5.4.2. MOISTURE BARRIER: 1–MIL– (0.025–MM–) THICK, HEAT–BONDED POLYETHYLENE AND KRAFT PAPER.
   5.5. STAINLESS–STEEL JACKET: DEEP CORRUGATED SHEETS OF STAINLESS STEEL COMPLYING WITH APPLICABLE ASTM STANDARDS FOR TYPE 304 OR 316; 0.10 INCH (2.5 MM) THICK; AND ROLL STOCK READY FOR SHOP OR FIELD CUTTING AND FORMING TO INDICATE SIZE.
      5.5.1. MOISTURE BARRIER: 1 MIL (0.025 MM) THICK, HEAT BONDED POLYETHYLENE AND KRAFT PAPER.
      5.5.2. JACKET BANDS: STAINLESS STEEL, TYPE 304, ½INCH (19 MM) WIDE.
   5.6. ACCESSORIES AND ATTACHMENTS
   5.7. GLASS CLOTH AND TAPE: PROVIDE TYPE I FOR CLOTH AND TYPE II FOR TAPE. WOVEN GLASS–FIBER FABRICS, PLAIN WEAVE, PRESIZED A MINIMUM OF 8 OZ./SQ. YD. (270 G/SQ. M).
      5.7.1. TAPE WIDTH: 4 INCHES (100 MM).
   5.8. BANDS: 3/4 INCH (19 MM) WIDE, IN ONE OF THE FOLLOWING MATERIALS COMPATIBLE WITH JACKET:
      5.8.1. STAINLESS STEEL: APPLICABLE ASTM STANDARDS, TYPE 304; 0.020 INCH (0.5 MM) THICK.
      5.8.2. GALVANIZED STEEL: 0.005 INCH (0.13 MM) THICK.
   5.9. WIRE: 0.062–INCH (1.6–MM), SOFT–ANNEALED, STAINLESS STEEL
   5.10. SELF–ADHESIVE ANCHOR PINS AND SPEED WASHERS: GALVANIZED STEEL PLATE, PIN, AND WASHER MANUFACTURED FOR ATTACHMENT TO DUCT AND PLENUM WITH ADHESIVE. PIN LENGTH SUFFICIENT FOR INSULATION THICKNESS INDICATED.
6. VAPOR RETARDERS
   6.1. MASTICS: MATERIALS RECOMMENDED BY INSULATION MATERIAL MANUFACTURER THAT ARE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES.
7. APPLICATION SCHEDULE
   7.1. 2 INCH LINER FOR FIRST 10 FEET DOWN STREAM AND UP STREAM OF FAN POWERED DEVICES.
   7.2. 1–1/2 INCH DUCT WRAP SUPPLY AND RETURN DUCTWORK
   7.3. 1–1/2 INCH FOR SUPPLY AND DUCTED RETURN DIFFUSERS PLENUMS/BACKPANS.

CONDENSATE PIPING

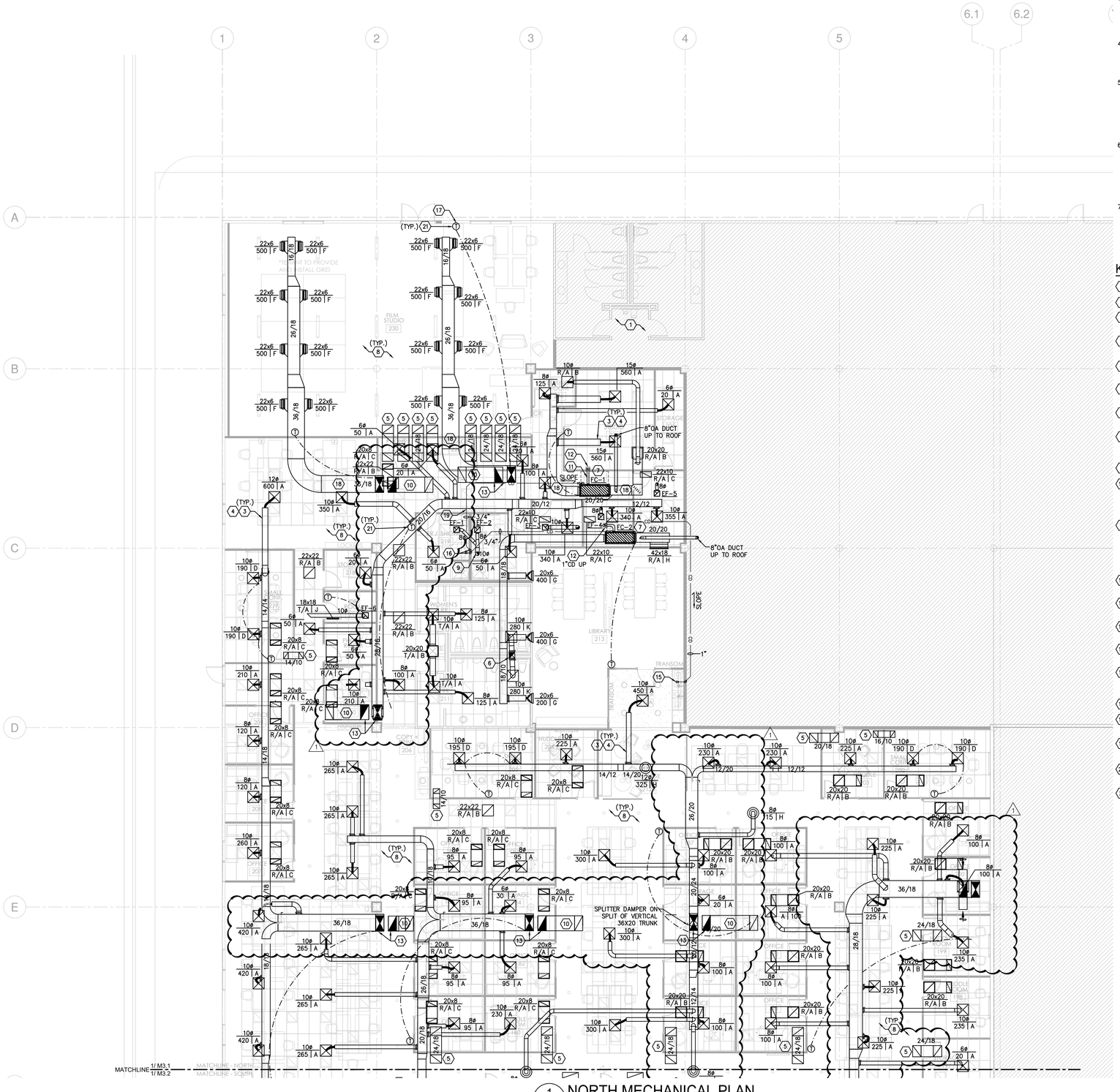
1. 12. CONDENSATE DRAIN PIPING AND FITTINGS SHALL BE SEAMLESS TYPE "L" COPPER WITH 95–5 SOLDER.

DIFFUSERS, REGISTERS AND GRILLES

1. VERIFICATION OF PERFORMANCE: RATE DIFFUSERS, REGISTERS, AND GRILLES ACCORDING TO ASHRAE 70, "METHOD OF TESTING FOR RATING THE PERFORMANCE OF AIR OUTLETS AND INLETS."
2. NFPA COMPLIANCE: ALL DIFFUSERS MEET NFPA 90A FLAME–SPREAD RATING OF 25 OR LESS, AND SMOKE DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 OR ASTM 1187.
3. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: TITUS, NAILOR, PRICE INDUSTRIES.
4. PROVIDE MINIMUM R–5 INSULATION FOR DUCTED SUPPLY AND RETURN AIR GRILLES AND DIFFUSERS.
5. INSTALL DIFFUSERS, REGISTERS AND GRILLES LEVEL AND PLUMB.
6. COORDINATE FRAME TYPE WITH ARCHITECTURAL CEILING.
7. ADJUST AIR PATTERNS AFTER INSTALLATION.

DAMPERS

1. COMPLY WITH NFPA 90A, "INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS," AND WITH NFPA 90B, "INSTALLATION OF WARM AIR HEATING AND AIR CONDITIONING SYSTEMS." RETAIN PARAGRAPH BELOW IF LOW–LEAKAGE DAMPERS ARE RETAINED IN "MANUAL VOLUME DAMPERS" OR "CONTROL DAMPERS" ARTICLE.
2. COMPLY WITH AMCA 500–D TESTING FOR DAMPER RATING.
3. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.
4. BAROMETRIC RELIEF DAMPERS
   4.1. SUITABLE FOR HORIZONTAL OR VERTICAL MOUNTING.
   4.2. MAXIMUM AIR VELOCITY: 2000 FPM
   4.3. MAXIMUM SYSTEM PRESSURE: 2–INCH WG
   4.4. FRAME: 0.063–INCH THICK EXTRUDED ALUMINUM WITH WELDED CORNERS AND MOUNTING FLANGE.
   4.5. BLADES:
      4.5.1. MULTIPLE, 0.025–INCH THICK, ROLL–FORMED ALUMINUM 0.050–INCH THICK ALUMINUM SHEET.
      4.5.2. MAXIMUM WIDTH: 6 INCHES.
      4.5.3. ACTION: PARALLEL.
      4.5.4. BALANCE: GRAVITY.
      4.5.5. ECCENTRICALLY PIVOTED.
   4.6. BLADE SEALS: NEOPRENE.
   4.7. BLADE A



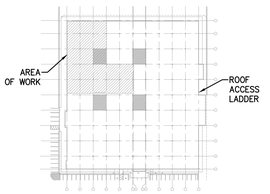
1 M3.1 NORTH MECHANICAL PLAN
SCALE: 1/8"=1'-0"

GENERAL NOTES

1. REFER TO MECHANICAL SCHEDULES AND DETAIL DRAWINGS FOR ADDITIONAL INFORMATION.
2. MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE FOR NEW AND EXISTING MECHANICAL EQUIPMENT.
3. THE CONTRACTOR SHALL VERIFY THAT ALL EXISTING AND NEW MECHANICAL EQUIPMENT ARE MOUNTED SO THAT ALL REQUIRED CLEARANCES ARE MAINTAINED AT THE BOTTOM AND SIDES OF EACH UNIT FOR PROPER SERVICING AND MAINTENANCE. COORDINATE COMPLETELY WITH ALL NEW WALLS TO STRUCTURE, AND RELOCATE AS REQUIRED TO MAINTAIN PROPER CLEARANCES.
4. CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATIONS OF ALL EQUIPMENT, DUCKWORK, & PIPING PRIOR TO SUBMITTING A BID. COORDINATE COMPLETELY WITH ALL OTHER TRADES. RELOCATE TERMINAL UNITS AND PROVIDE ADDITIONAL DUCTWORK, OFFSETS, FITTINGS, ETC. AS REQUIRED.
5. DUE TO DRAWING SCALE, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL EXAMINE FIELD CONDITIONS AND FURNISH THE NECESSARY FITTINGS WHICH MAY BE REQUIRED TO COMPLETE THE INSTALLATION. CONTRACTOR SHALL FURNISH AND INSTALL BALANCING DAMPERS IN HVAC SYSTEMS THAT HAVE MORE THAN ONE INLET/OUTLET UNLESS NOTED OTHERWISE. BALANCING DAMPERS SHALL APPLY TO NEW AND EXISTING DUCTWORK
6. THE CONTRACTOR SHALL VERIFY THAT THERE ARE NO NON-PLENUM RATED MATERIALS IN THE RETURN AIR PLENUM. THE CONTRACTOR SHALL ENCAPSULATE ALL NON PLENUM RATED MATERIALS IN A MATTER APPROVED BY THE AUTHORITY HAVING JURISTICTION. IF NON-PLENUM RATED MATERIALS ARE NOT ENCAPSULATED IN A MATER APPROVED BY THE AUTHORITY HAVING JURISTICTION, THEN THE CONTRACTOR SHALL REPLACE MATERIAL WITH AN APPROVED PLENUM RATED MATERIAL.
7. DURING CONSTRUCTION, SEAL ALL OPEN DUCTS WITH PLASTIC TO PREVENT DUST/DIRT. CLEAN ALL INTERIOR DUCT SURFACES PRIOR TO DUCT INSTALLATION. PROVIDE CONSTRUCTION FILTERS OVER AIR HANDLING UNIT INTAKES AND MAINTAIN FILTER MEDIA DURING CONSTRUCTION. REPLACE ALL FILTERS AT END OF CONSTRUCTION. ALL RETURN AIR INTAKES TO MECHANICAL ROOM SHALL BE COVERED WITH FILTER MEDIA DURING CONSTRUCTION. REMOVE UPON COMPLETION.

KEYED NOTES (ALL NOTES MAY NOT APPLY)

1. EXISTING TO REMAIN.
2. CONNECT NEW DUCT TO EXISTING, FIELD VERIFY.
3. PROVIDE DUCT RUN OUTS TO MATCH DIFFUSER NECK SIZE UNLESS OTHERWISE NOTED ON DRAWNGS. (TYPICAL)
4. EXTEND RIGID ROUND AND INSULATION AS REQUIRED TO MAINTAIN A MAXIMUM FLEX DUCT RUN OUT OF NOT MORE THAN 5'.
5. INTERNALLY LINED RETURN AIR BOOT WITH OPENING(S) ON THE TOP. INSTALL AS HIGH AS POSSIBLE.
6. TURN EXHAUST DUCT UP AND TRANSITION TO EXHAUST FAN BACKDRAFT DAMPER IN VERTICAL.
7. MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE FOR MECHANICAL EQUIPMENT.
8. PAINT ALL HVAC/MECHANICAL PIPING, SUPPORTS AND ASSOCIATED APPURTENANCES, NEW AND EXISTING, ROUTED WITHIN THE EXPOSED CEILING AREA. COORDINATE PAINTING REQUIREMENTS WITH ARCHITECT.
9. TURN DUCTWORK UP TO ROOF AND TRANSITION TO ROOF JACK/HOOD.
10. ROUTE DUCTWORK UP THROUGH ROOF TO ROOF TOP UNIT. PROVIDE TRANSITION TO UNIT CONNECTIONS. PROVIDE FULL SIZE 1" LINED RETURN BOOT 8' LONG (WHERE POSSIBLE), TURN RETURN AIR OPENING UP TOWARDS DECK. (TYPICAL)
11. ROUTE REFRIGERANT PIPING HIGH AND TIGHT TO STRUCTURE. REFER TO MANUFACTURER FOR PIPE SIZES. PROVIDE AND INSTALL NEW U.L. FIRE RATED FLOOR PENETRATION ASSEMBLIES AND SLEEVES AS REQUIRED BY APPLICABLE CODES TO MAINTAIN EXISTING WALL AND FLOOR FIRE ASSEMBLY RATINGS. INSULATE REFRIGERANT PIPING PER MANUFACTURER RECOMMENDATIONS. (TYPICAL)
12. REFRIGERANT PIPING UP TO ROOF THROUGH PIPING CURB. COORDINATE EXACT ROUTING WITH EXISTING CONDITIONS.
13. ROUTE DUCTWORK UP THROUGH ROOF TO ROOF TOP UNIT. PROVIDE TRANSITION TO UNIT CONNECTIONS.
14. ROUTE CONDENSATE DOWN IN WALL. OPEN SIGHT TO INDIRECT WASTE RECEPTACLE.
15. ROUTE CONDENSATE DOWN WITHIN WALL. TERMINATE WITH AIR GAP ABOVE INDIRECT WASTE RECEPTACLE LOCATED BELOW MILLWORK.
16. PROVIDE WYE-FITTING ON SINK TAILPIECE FOR DRAINAGE FROM MECHANICAL UNIT. INSULATE P-TRAP, TRAP ARM AND ABOVE FLOOR HORIZONTAL SANITARY PIPING WHERE RECEIVING CHILLED DRAINAGE.
17. INSTALL THERMOSTATS ON EXTERIOR WALLS ON INSULATED BASE. (TYPICAL)
18. PROVIDE 2" INTERNALLY LINED DUCTWORK FOR SOUND SENSITIVE AREAS: FILM STUDIO, STUDIO AND RECORDING STUDIO.
19. INSULATE CONDENSATE PIPING WITH CLOSED CELL MINIMUM THICKNESS 0.5" INSULATION OR CODE MINIMUM WHICHEVER IS THICKEST. (TYPICAL)
20. 10/6 INTERNALLY LINED RETURN AIR BOOT WITH OPENING(S) ON THE TOP. INSTALL AS HIGH AS POSSIBLE.
21. THERMOSTATS TO BE OWNER FURNISHED, CONTRACTOR INSTALLED.



KEY PLAN

PROJECT: 21-085

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STATE OF TEXAS
04/15/2022
DAVID PICH
91116
LICENSED
PROFESSIONAL ENGINEER

KDS de stijl interiors
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512-457-1332
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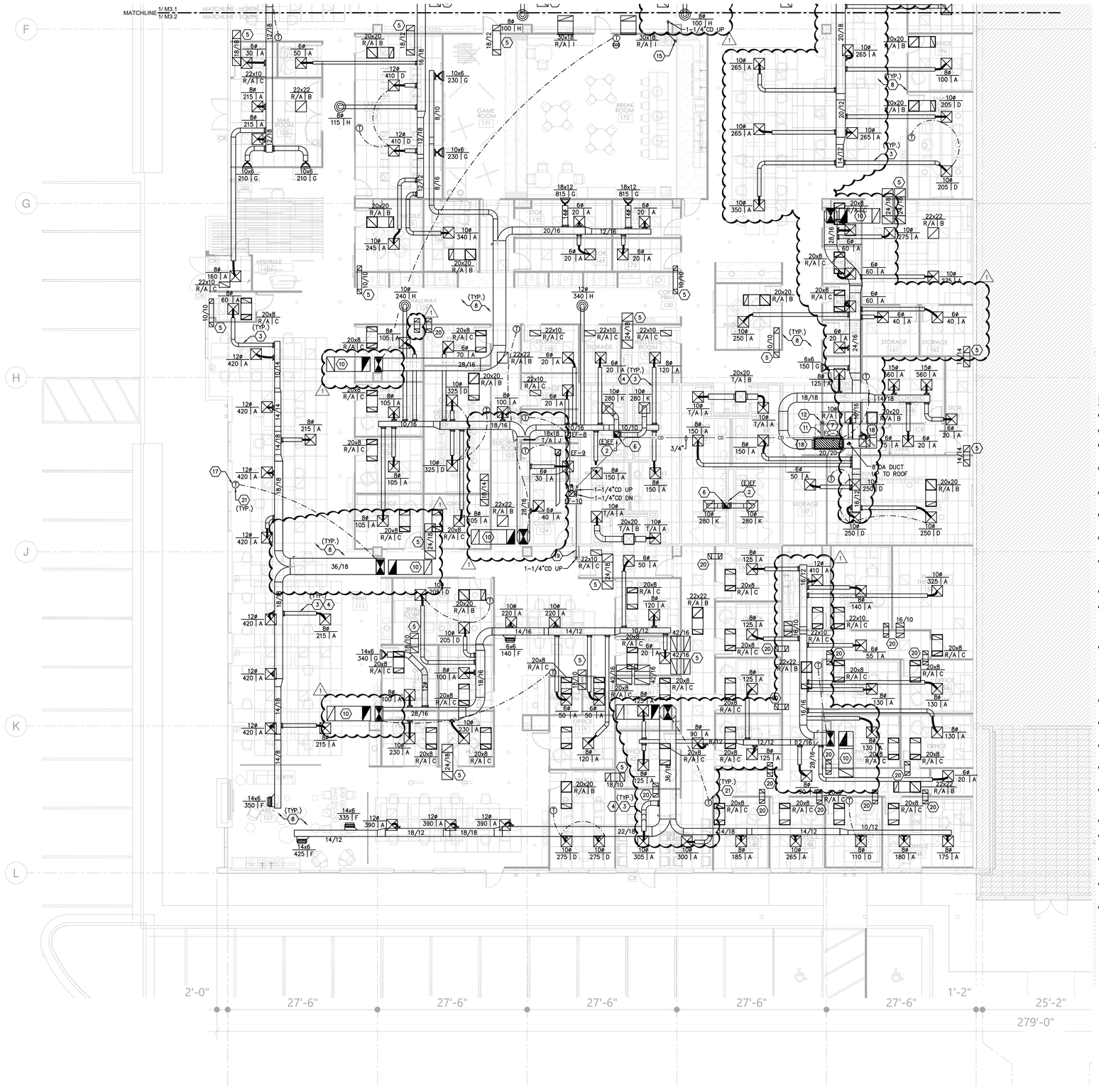
DATE: 6.20.22
SCALE: NOTED
DRAWN BY: AMPED

DATE		REVISION
08.15.22	1	Rev1 - HVAC Unit Rev

NORTH MECHANICAL PLAN

M3.1

PROJECT NO. 21-043



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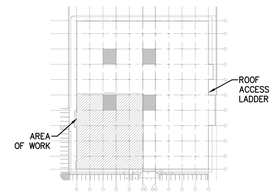

KEY PLAN

1 M3.2 SOUTH MECHANICAL PLAN
SCALE: 1/8"=1'-0"

PROJECT: 21-085

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DAVID PICH
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2022 06/15

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512-457-1332
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DATE: 6.20.22
SCALE: NOTED
DRAWN BY: AMPED

DATE		REVISION
06.15.22	1	Rev1 - HVAC Unit Rev

SOUTH MECHANICAL PLAN
M3.2
PROJECT NO. 21-043

MECHANICAL CONTROL NOTES

EF-7,9,11,12 SCHEDULE SHALL BE SET BY TIME CLOCK. ENERGIZED DURING OCCUPIED HOURS AND DE-ENERGIZED DURING UN-OCCUPIED HOURS. TIME CLOCKS SHALL BE INSTALLED IN ELECTRICAL ROOM THAT EXHAUST FAN CIRCUIT ORIGINATES FROM. PROVIDE LINE VOLTAGE TIME CLOCK OR CONTROL VOLTAGE TIME CLOCK WITH EXHAUST FAN STARTER AS REQUIRED.

EF-1,2,3,4,5 FANS SHALL BE INTERLOCKED WITH LIGHTING SWITCH AND OCCUPANCY SENSOR. FANS SHALL ENERGIZE AND DE-ENERGIZE WITH ROOM LIGHTS.

EF-6,8,10 FANS SHALL BE CONTROLLED BY COOLING ONLY THERMOSTAT. FAN SHALL ENERGIZE WHEN TEMPERATURE RISES ABOVE 75°F AND DE-ENERIZE WHEN TEMPERATURE FALLS BELOW 75°F.

ROOF TOP UNITS ARE PROVIDED WITH ONBOARD CONTROL SYSTEMS AND FACTORY SEQUENCE OF OPERATION TO INCLUDE ECONOMOZIER, BAROMETRIC RELIEF WHEN PROVIDED WITH UNIT. PROVIDE WEB ACCESSIBLE PROGAMMABLE IECC COMPLIANT THERMOSTATS FOR SETPOINT AND SCHEDULING (EQUAL TO ECOBEE). SCHEDULING TO MATCH BUILDING OPERATION HOURS AND NIGHT SET BACK TEMPERATURES TO BE MAINTAINED DURING UNOCCUPIED/OFF HOURS.

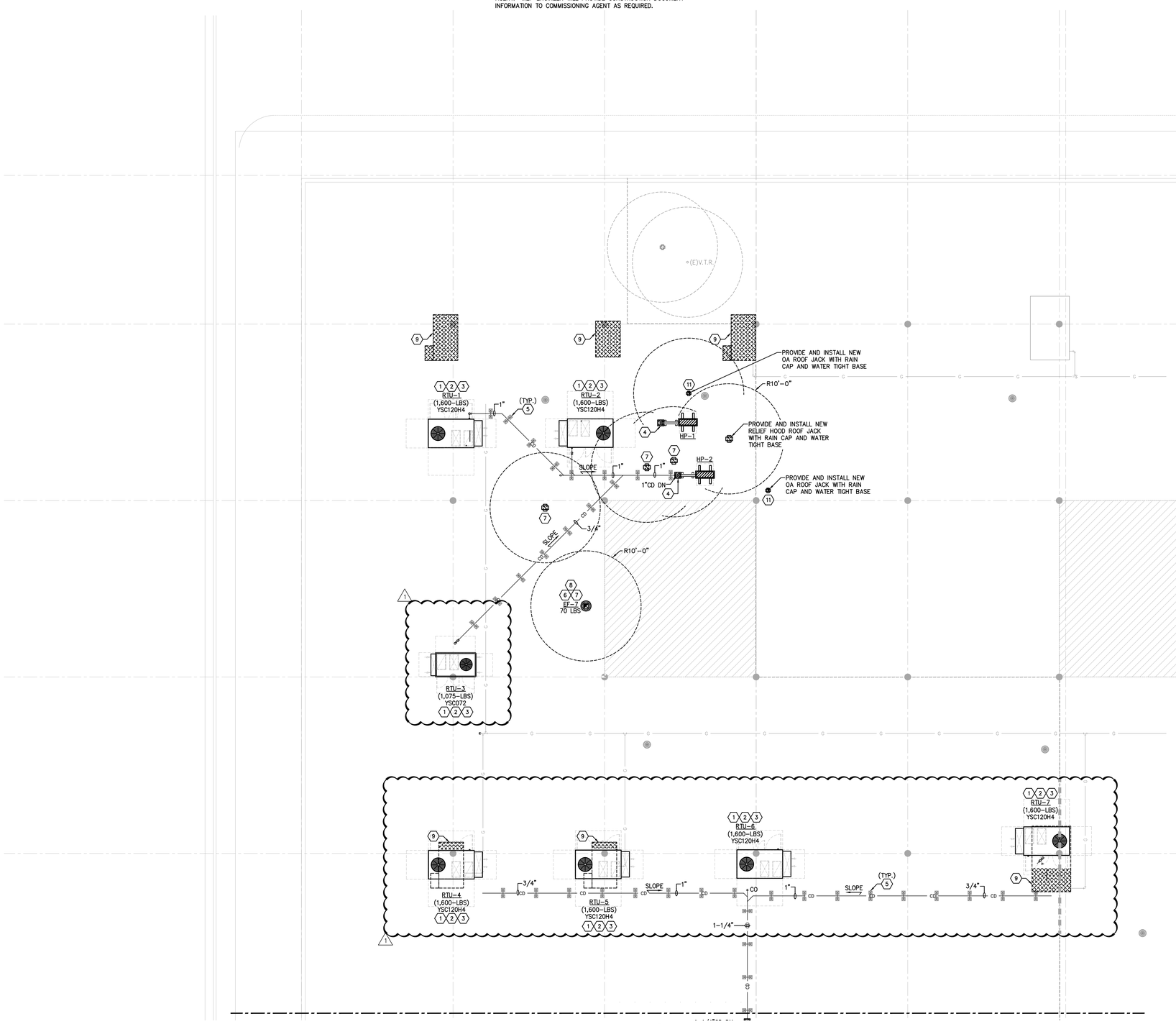
DUCTED HEAT PUMP AREA PROVIDED WITH ONBOARD CONTROL SYSTEMS AND FACTORY SEQUENCE OF OPERATION. PROVIDE WEB ACCESSIBLE PROGAMMABLE IECC COMPLIANT THERMOSTATS FOR SETPOINT AND SCHEDULING (EQUAL TO ECOBEE). PROGRAMMABLE ROOM THERMOSTATS ARE PROVIDED FOR SETPOINT NIGHT SETBACK AND SCHEDULING.

MECHANICAL COMMISSIONING NOTES

THE MECHANICAL SYSTEMS INCLUDED IN THIS PROJECT ARE REQUIRED TO BE COMMISSIONED PER CITY OF AUSTIN CODE REQUIREMENTS (C408.2). COMMISSIONING REQUIREMENTS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

- CITY OF AUSTIN PLAN REVIEW COMMISSIONING FORM
- COMMISSIONING PLAN
- MECHANICAL SYSTEM TESTING AND DOCUMENTATION
  - ADJUSTING AND BALANCING
  - AIR SYSTEM BALANCING
  - FUNCTIONAL PERFORMANCE TESTING
  - EQUIPMENT OPERATION TESTING
  - CONTROLS VERIFICATION
  - ECONOMIZER TESTING
- COMMISSIONING REPORTS
- ACCEPTANCE DOCUMENTS
- FINAL COMMISSIONING REPORT

ALL WORK SHALL BE COMPLETED BY A REGISTERED COMMISSIONING AGENT. MEP ENGINEER WILL PROVIDE CONSTRUCTION DOCUMENT INFORMATION TO COMMISSIONING AGENT AS REQUIRED.



1 M3.3 NORTH MECHANICAL ROOF PLAN
SCALE: 1/8"=1'-0"

GENERAL NOTES

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3. THE CONTRACTOR SHALL VERIFY THAT ALL EXISTING AND NEW MECHANICAL EQUIPMENT ARE MOUNTED SO THAT ALL REQUIRED CLEARANCES ARE MAINTAINED AT THE BOTTOM AND SIDES OF EACH UNIT FOR PROPER SERVICING AND MAINTENANCE. COORDINATE COMPLETELY WITH ALL NEW WALLS TO STRUCTURE, AND RELOCATE AS REQUIRED TO MAINTAIN PROPER CLEARANCES.
4. CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATIONS OF ALL EQUIPMENT, DUCKWORK, & PIPING PRIOR TO SUBMITTING A BID. COORDINATE COMPLETELY WITH ALL OTHER TRADES. RELOCATE TERMINAL UNITS AND PROVIDE ADDITIONAL DUCTWORK, OFFSETS, FITTINGS, ETC. AS REQUIRED.
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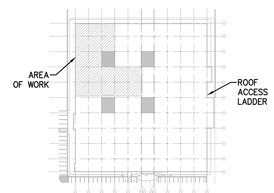
KEYED NOTES (ALL NOTES MAY NOT APPLY)

1. NEW MECHANICAL EQUIPMENT ON ROOF IS SUPPLIED WITH FACTORY MOUNTED DISCONNECT ON UNIT AND CONVENIENCE RECEPTACLE. PROVIDE POWER CONNECTION TO FACTORY MOUNTED GFCI, WEATHERPROOF RECEPTACLE AS INDICATED THROUGH ROOF CURB.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER TO MECHANICAL CONTRACTOR INSTALLED DUCT SMOKE DETECTOR. PROVIDE CONNECTION TO FIRE SYSTEM FOR AIR HANDLING UNIT SHUTDOWN UPON ACTIVATION. REFER TO ELECTRICAL PANEL SCHEDULES FOR 120V CIRCUIT.
3. MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE FOR MECHANICAL EQUIPMENT.
4. PROVIDE NEW PIPE CURB TO ACCOMMODATE NEW PIPING. COORDINATE EXACT LOCATION OF PENETRATION AND EXACT ROUTING WITH EXISTING CONDITIONS.
5. PORTABLE PIPE SUPPORTS, SPACE PER MANUFACTURER'S RECOMMENDATION. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
6. WEATHER TIGHT FACTORY DISCONNECTS FOR EXHAUST FANS. (TYPICAL)
7. BIRD SCREENS FOR EXHAUST FANS AND RELIEF HOODS. (TYPICAL)
8. COORDINATE FAN/HOOD MOUNTING AND REQUIRED FACTORY OPTIONS WITH ROOF CONSTRUCTION AND STRUCTURAL MEMBERS.
9. ROOFTOP UNIT SHOWN DASHED TO BE DEMOLISHED IN IT'S ENTIRETY. MODIFY OR UTILIZE EXISTING ROOF PENETRATIONS FOR NEW ROOFTOP WHERE POSSIBLE. WHERE DEEMED NOT REQUIRED OR NOT REUSABLE, REPAIR AND PATCH STRUCTURAL VOID AND ROOFING TO MATCH EXISTING MATERIAL AND METHODS.
10. INSTALL AND LABEL DIGITAL TIME CLOCK ADJACENT TO ELECTRICAL PANEL SERVING EXISTING FAN, IECC COMPLIANT AND WIFI ENABLED.
11. NEW INTAKE ROOF JACK WITH BIRD SCREENS. (TYPICAL)

ROOF WARRANTY COORDINATION

THIS BUILDING HAS A WARRANTY IN EFFECT ON THE ROOFING MATERIALS AND WORKMANSHIP. CONTACT BUILDING OWNER TO COORDINATE ALL ROOF WORK WITH ORIGINAL ROOFING CONTRACTOR THAT CARRIES THE WARRANTY.



KEY PLAN

PROJECT: 21-085

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STATE OF TEXAS 2022 04/15 DAVID PICH 91116 LICENSED PROFESSIONAL ENGINEER

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DATE: 6.20.22
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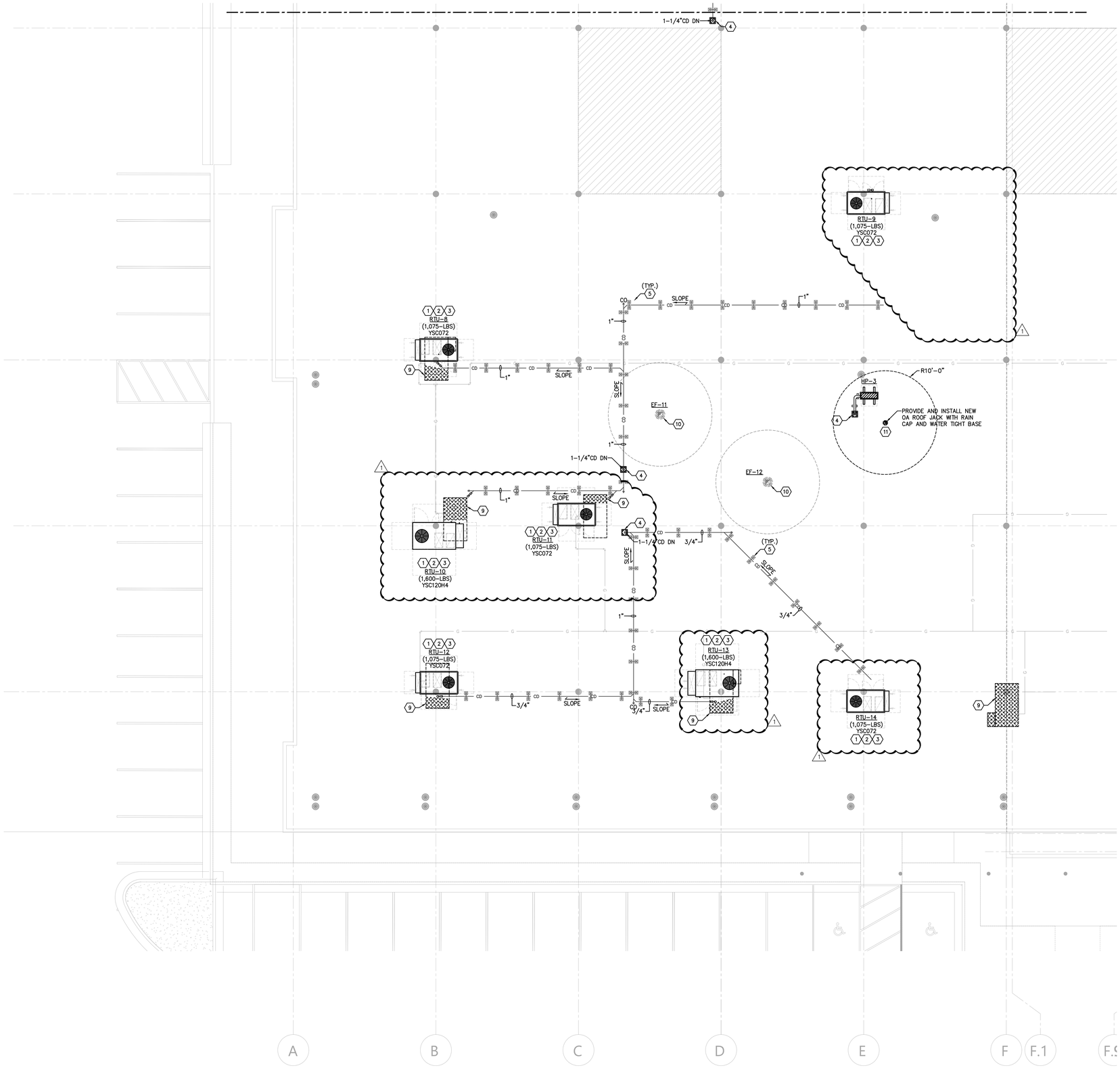
NORTH MECHANICAL ROOF PLAN
M3.3
PROJECT NO. 21-043



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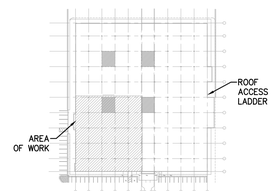
5. DUE TO DRAWING SCALE, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL EXAMINE FIELD CONDITIONS AND FURNISH THE NECESSARY FITTINGS WHICH MAY BE REQUIRED TO COMPLETE THE INSTALLATION. CONTRACTOR SHALL FURNISH AND INSTALL BALANCING DAMPERS IN HVAC SYSTEMS THAT HAVE MORE THAN ONE INLET/OUTLET UNLESS NOTED OTHERWISE. BALANCING DAMPERS SHALL APPLY TO NEW AND EXISTING DUCTWORK

KEYED NOTES (ALL NOTES MAY NOT APPLY)

1. NEW MECHANICAL EQUIPMENT ON ROOF IS SUPPLIED WITH FACTORY MOUNTED DISCONNECT ON UNIT AND CONVENIENCE RECEPTACLE. PROVIDE POWER CONNECTION TO FACTORY MOUNTED GFCI, WEATHERPROOF RECEPTACLE AS INDICATED THROUGH ROOF CURB.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER TO MECHANICAL CONTRACTOR INSTALLED DUCT SMOKE DETECTOR. PROVIDE CONNECTION TO FIRE SYSTEM FOR AIR HANDLING UNIT SHUTDOWN UPON ACTIVATION. REFER TO ELECTRICAL PANEL SCHEDULES FOR 120V CIRCUIT.
3. MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE FOR MECHANICAL EQUIPMENT.
4. PROVIDE NEW PIPE CURB TO ACCOMMODATE NEW PIPING. COORDINATE EXACT LOCATION OF PENETRATION AND EXACT ROUTING WITH EXISTING CONDITIONS.
5. PORTABLE PIPE SUPPORTS, SPACE PER MANUFACTURER'S RECOMMENDATION. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
6. WEATHER TIGHT FACTORY DISCONNECTS FOR EXHAUST FANS. (TYPICAL)
7. BIRD SCREENS FOR EXHAUST FANS AND RELIEF HOODS. (TYPICAL)
8. COORDINATE FAN/HOOD MOUNTING AND REQUIRED FACTORY OPTIONS WITH ROOF CONSTRUCTION AND STRUCTURAL MEMBERS.
9. ROOFTOP UNIT SHOWN DASHED TO BE DEMOLISHED IN IT'S ENTIRETY. MODIFY OR UTILIZE EXISTING ROOF PENETRATIONS FOR NEW ROOFTOP WHERE POSSIBLE. WHERE DEEMED NOT REQUIRED OR NOT REUSABLE, REPAIR AND PATCH STRUCTURAL VOID AND ROOFING TO MATCH EXISTING MATERIAL AND METHODS.
10. INSTALL AND LABEL DIGITAL TIME CLOCK ADJACENT TO ELECTRICAL PANEL SERVING EXISTING FAN, IECC COMPLIANT AND WIFI ENABLED.
11. NEW INTAKE ROOF JACK WITH BIRD SCREENS. (TYPICAL)

ROOF WARRANTY COORDINATION

THIS BUILDING HAS A WARRANTY IN EFFECT ON THE ROOFING MATERIALS AND WORKMANSHIP. CONTACT BUILDING OWNER TO COORDINATE ALL ROOF WORK WITH ORIGINAL ROOFING CONTRACTOR THAT CARRIES THE WARRANTY.



KEY PLAN

1 M3.4 SCALE: 1/8"=1'-0"

SOUTH MECHANICAL ROOF PLAN

PROJECT: 21-085

BUILDING CONTACT
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DATE: 6.20.22
SCALE: NOTED
DRAWN BY: AMPED

DATE		REVISION
08.15.22	1	Rev1 - HVAC Unit Rev

SOUTH MECHANICAL ROOF PLAN

M3.4

PROJECT NO. 21-043

COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code:	90.1 (2019) Standard
Project Title:	Austin Stone
Location:	Austin, Texas
Climate Zone:	2a
Project Type:	Alteration

Construction Site:
6505 AIRPORT BOULEVARD
Austin, Texas 78752

Owner/Agent:

Designer/Contractor:

Mechanical Systems List

Quantity **System Type & Description**

8 RTU-1,2,4,5,6,7,10,13
Heating: 1 each - Central Furnace, Gas, Capacity = 150 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et (or 80% AFUE)
Cooling: 1 each - Single Package DX Unit, Capacity = 108 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.20 EER, Required Efficiency: 11.00 EER + 12.7 IEER
Fan System: 10 Ton | Office -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 1 Supply, Constant Volume, 4000 CFM, 2.8 motor nameplate hp, 1.00 fan energy index , fan exception: 3rd party air/energy performance certified

SYSTEM VERIFICATION REQUIRED.

6 RTU-3,8,9,11,12,14
Heating: 1 each - Central Furnace, Gas, Capacity = 80 kBtu/h
Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et (or 80% AFUE)
Cooling: 1 each - Single Package DX Unit, Capacity = 68 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.20 EER, Required Efficiency: 11.00 EER + 12.7 IEER
Fan System: 6 Ton | Office -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 2 Supply, Constant Volume, 2200 CFM, 1.0 motor nameplate hp, 1.00 fan energy index , fan exception: 3rd party air/energy performance certified

SYSTEM VERIFICATION REQUIRED.

1 FC/HP-1,2,3
Split System Heat Pump
Heating Mode: Capacity = 28 kBtu/h,
Proposed Efficiency = 9.30 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 42 kBtu/h,
Proposed Efficiency = 18.00 SEER, Required Efficiency: 14.00 SEER
Fan System: Splits -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 3 Supply, Constant Volume, 1485 CFM, 0.6 motor nameplate hp, 1.00 fan energy index , fan exception: 3rd party air/energy performance certified

SYSTEM VERIFICATION REQUIRED.

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2019) Standard requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

DAVID PICH P.E. — Name - Title
Signature
22.06.13 — Date

ROOF TOP UNIT GAS HEAT SCHEDULE

TAG	SERVICE	EVAPORATOR									HEAT EXCHANGER DATA					BASIS OF DESIGN			ELECTRICAL				NOTES
		SUPPLY AIR FLOW (CFM)	OUTSIDE AIR FLOW (CFM)	FAN (H.P.)	E.S.P. (IN. W.G.)	E.A.T. (°F DB/WB)	L.A.T. COIL (°F DB/WB)	GROSS TOTAL CAPACITY (MBH)	GROSS SENSIBLE CAPACITY (MBH)	AMBIENT AIR (°F DB)	MINIMUM EFFICIENCY (EER/IEER)	E.A.T. (°F DB)	L.A.T. (°F DB)	MODULATION TURN DOWN /STAGES	INPUT (MBH)	OUTPUT (MBH)	MINIMUM THERMAL EFFICIENCY (% Et)	MANUFACTURER	MODEL NO	WEIGHT (LBS)	VOLTAGE	PHASE	MCA	MOCP	
RTU-3,8,9,11,12,14		2400	240	3.10	0.75	80/67	57.4/57.1	71.2	55.6	105	11/14.6	62.0	91.3	2	80	64.8	80	TRANE	YSJ072A4	1,400	460	3	18.0	20.0	1-9
RTU-1,2,4,5,6,7,10,13		4000	400	3.10	0.75	80/67	58.5/57.6	115.7	92.0	105	11/14.6	62.0	95.0	2	150	121.5	80	TRANE	YSJ120A4	1,500	460	3	29.0	40.0	1-10

NOTES:
1 PROVIDE WITH INSULATED ROOF CURB/TRANSITION CURB AS REQURIED
2 PROVIDE WITH CONDENSER COIL HAIL GUARD PROTECTION
3 PROVIDE UNIT WITH SUPPLY DUCT SMOKE DETECTOR AND AUTOMATIC SHUT-OFF
4 PROVIDE WITH UNPOWERED CONVENIENCE OUTLET
5 PROVIDE WITH MERV 8 FILTERS
6 PROVIDE WITH IECC COMPLIANT LOW LEAK ECONOMIZER WITH COMPARITIVE ENTHALPY, FAULT DETECTION AND DIAGNOSTICS, CONTROL SIGNAL, VENTILATION CONTROL, HIGH-LIMIT SHUT-OFF AND BAROMTRIC RELIEF
7 THERMOSTAT PROVIDED BY AUSTIN STONE INSTALLED BY CONTRACTOR
8 PROVIDE WITH DISCONNECT FACTORY OR FIELD SUPPLIED PROVIDED WITH NEMA 3R ENCLOSURE AND MOUNTING FRAME/SUPPORT
9 PROVIDE RTU'S WITH CONTROLS TO MEET IECC 2021 REQUIREMENTS INCLUDING OFF-HOUR CONTROLS, FAN CONTROL AND ECONOMIZER FAULT DETECTION/DIAGNOSTICS
10 PROVIDE RTU-8 WITH DEMAND CONTROL VENTILATION SEQUENCE AND CO2 SENSOR.

AIR DISTRIBUTION DEVICE SCHEDULE

TAG	SERVICE	DESCRIPTION	BASIS OF DESIGN		PANEL SIZE (IN)	MATERIAL	FINISH	MOUNTING	NECK (IN.)	NECK DAMPER	MAX SOUND (NC)	NOTES
			MANUFACTURER	MODEL NO								
A	CEILING SUPPLY DIFFUSER	PLAQUE FACED SUPPLY DIFFUSER	TITUS	OMNI	24"X24"	STEEL	WHITE	LAY-IN	REFER TO PLANS	NO	20	INSULATED BACKPAN R-6
B	CEILING RETURN GRILLE	LOUVERED FACE	TITUS	350RL	24"X24"	STEEL	WHITE	LAY-IN	20"X20"	NO	20	
C	CEILING RETURN GRILLE	LOUVERED FACE	TITUS	350RL	24"X12"	STEEL	WHITE	LAY-IN	20"X8"	NO	20	
D	CEILING SUPPLY DIFFUSER	PLAQUE FACED SUPPLY ELECTRONIC VAV DIFFUSER	TITUS	T3-SQ-2	24"X24"	STEEL	WHITE	LAY-IN	REFER TO PLANS	VAV	20	CONTROL TRANSFORMER, ROOM THERMOSTAT, RELIEF RING, CONTROL WIRING
F	SIDEWALL SUPPLY GRILLE	DOUBLE DEFLECTION AREO BLADE DIFFUSER	TITUS	272RL	REFER TO PLANS	STEEL	WHITE	DUCTMOUNTED	REFER TO PLANS	NO	20	
G	SIDEWALL SUPPLY GRILLE	DOUBLE DEFLECTION AREO BLADE DIFFUSER	TITUS	272RL	REFER TO PLANS	STEEL	WHITE	SURFACE MOUNT	REFER TO PLANS	NO	20	PROVIDE SQUARE TO ROUND TRANSITION
H	SUPPLY DIFFUSERS	ROUND PLAQUE FACED SUPPLY DIFFUSER	TITUS	R-OMNI	REFER TO PLANS	STEEL	WHITE	DUCTMOUNTED	REFER TO PLANS	NO	20	
I	SIDEWALL RETURN GRILLE	LOUVERED FACE	TITUS	350RL	REFER TO PLANS	STEEL	WHITE	SURFACE MOUNT	REFER TO PLANS	NO	20	
J	TRANSFER AIR DOOR GRILLE	SIGHT PROOF DOOR GRILLE WITH V-BLADES PARALLEL TO LONG DIMENSION	TITUS	T-700L	24X24	STEEL	WHITE	SURFACE MOUNT	REFER TO PLANS	NO	25	
K	EXHAUST GRILLE	LOUVERED FACE	TITUS	350RL	24"X24"	STEEL	WHITE	LAY-IN	REFER TO PLANS	NO	20	PROVIDE SQUARE TO ROUND TRANSITION

DUCTED HEAT PUMP SCHEDULE

TAG INDOOR / OUTDOOR	SERVICE	COOLING CAPACITY kBTU/H	AIRFLOW CFM	ESP (IN.W.G.)	EFFICENCY SEER/EER	HEATING CAPACITY kBTU/H	OUTDOOR TEMP	HSPF BTU/H/W	BASIS OF DESIGN		ELECTRICAL - INDOOR			ELECTRICAL - OUTDOOR				NOTES
									MANUFACTURER	MODEL NO	FLA	MCA	WATTS	VOLTAGE	PHASE	MCA	MOCP	
FC/HP-1	STUDIO	42	1,485	0.3	18 SEER	28.4	17.0	9.3	MITSUBISHI	TPVA-A42AA7 INDOOR TRUZ-A0421KA70 OUTDOOR	4.5	5.63	430	208	1	25	31	1-10
FC/HP-2	LIBRARY	42	1,485	0.3	18 SEER	28.4	17.0	9.3	MITSUBISHI	TPVA-A42AA7 INDOOR TRUZ-A0421KA70 OUTDOOR	4.5	5.63	430	208	1	19	26	1-10
FC/HP-3	STUDIO	42	1485	0.3	18 SEER	28.4	17.0	9.3	MITSUBISHI	TPVA-A42AA7 INDOOR TRUZ-A0421KA70 OUTDOOR	4.5	5.63	430	208	1	25	31	1-10

NOTES:
1 PROVIDE WITH CONSTRUCTION FILTERS, INSTALL NEW SET OF MERV 8 FILTERS AFTER CONSTRUCTION
2 THERMOSTAT PROVIDED BY AUSTIN STONE AND INSTALLED BY CONTRACTOR
3 CONDENSATE PUMP
4 DRAIN PAN LEVEL SENSOR
5 FACTORY DISCONNECT
6 FILTER BOX
7 INSTALL EMERGENCY DRAIN PAN BELOW FAN COIL WITH FLOAT SWITCH AND UNIT CUT-OFF
8 INSULATE CONDENSATE PIPING WITH IECC COMPLIANT CLOSED CELL INSULATION
9 INSULATE CONDENSATE PIPING WITH 1/2" CLOSED CELL INSULATION
10 HAIL GUARD, WIND BAFFLES COOLING TO 0°F

FAN SCHEDULE

TAG	SERVICE	AIR FLOW (CFM)	FAN (HP/WATTS)	E.S.P. (IN. W.G.)	DRIVE TYPE	MAX FAN SPEED (RPM)	MAX T.S. (FT/MIN)	WHEEL SIZE (IN.)	INLET (SONES)	BASIS OF DESIGN		BASE FAN WEIGHT (LBS)	ELECTRICAL		NOTES
										MANUFACTURER	MODEL NO		VOLTAGE	PHASE	
EF-1,2	SHOWER	110	17W	0.15	DIRECT	1,012	1,457	5.50	0.3	GREENHECK	SP-A125	22	120	1	1-6,8
EF-3,4,5	GYM	200	121W	0.15	DIRECT	647	1,206	7.13	0.3	GREENHECK	SP-A410	33	120	1	1-6,8
EF-6,8	IDF	400	348W	0.25	DIRECT	1023	2,008	7.50	2.5	GREENHECK	SP-A780	41	120	1	1-7
EF-7	WOMENS/MENS	560	1/6	0.25	DIRECT	1,140	2,969	11.13	4.1	GREENHECK	G-100-B	70	120	1	1,5,9,10-13
EF-9	ELEC	700	301W	0.25	DIRECT	897	1,812	7.72	4.0	GREENHECK	SP-A900	59	120	1	1-7
EF-10	JANITOR	120	20W	0.15	DIRECT	1,078	1,552	5.50	0.4	GREENHECK	SP-A125	22	120	1	1-6,9

NOTES:
1 ALUMINUM STAMPED NAME PLATES
2 SUSPENSION/ISOLATION KIT
3 ARCHITECTURAL GRILLE, TUSCAN WHITE
4 PROVIDE WITH GRAVITY BACK DRAFT DAMPER AT FAN DISCHARGE
5 FACTORY SPEED CONTROL
6 PROVIDE UNIT MOUNTED LINE VOLTAGE SWITCH FOR DISCONNECT
7 COOLING THERMOSTAT SET TO 75 DEGREES F
8 INTERLOCK WITH LIGHTS FOR ON/OFF OPERATION
9 INSTALL AND LABEL DIGITAL TIME CLOCK ADJACENT TO ELECTRICAL PANEL SERVING FAN, IECC COMPLIANT AND WIFI ENABLED
10 GRAVITY BACK DRAFT DAMPER
11 PROVIDE WITH BIRD SCREEN
12 ROOF CURB
13 FACTORY DISCONNECT WITH POWER ROUTED THROUGH CURB

PROJECT: 21-085

BUILDING CONTACT
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DATE: 6.20.22
SCALE: NOTED
DRAWN BY: AMPED

DATE	REVISION

MECHANICAL SCHEDULES AND COMCHECKS

M5.0

PROJECT NO. 21-043

VENTILATION PER 2021 UNIFORM MECHANICAL CODE

MINIMUM OUTDOOR AIRLOW: FORMULA 403.2.1, 403.2.3, 403.3 & TABLES 402.1, 403.2.2

$V_{ot} = V_{oz} = V_{oz} / E_z = (R_p * P_z + R_a * A_z) / E_z = (R_p * r_p * A_t + R_a * A_z) / E_z$

MINIMUM EXHAUST RATES: TABLE 403.7

LEVEL	SYSTEM	SPACE	CATEGORY	AIR CLASS	Zone Area A_z (FT^2)	PEOPLE OUTDOOR AIRFLOW RATE R_p (CFM/PERSON)	DEFAULT OCCUPANT DENSITY r_p (PEOPLE/1000 FT^2)	OUTDOOR AIRFLOW RATE R_a (CFM/FT^2)	ZONE AIR DISTRIBUTION EFFECTIVENESS E_z (UNITLESS)	ZONE OUTDOOR AIRFLOW V_{oz} (CFM)	CATEGORY	AIR CLASS	FIXTURE (UNIT)	EXHAUST RATE (CFM/UNIT)	EXHAUST RATE (CFM/FT^2)	EXHAUST AIRFLOW (CFM)
	10	Office 148	Office space	1	214	5.0	5	0.06	0.8	23	0	0	0	0	0	0
	20	Office 147	Office space	1	130	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	30	Office 146	Office space	1	130	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	40	Office 145	Office space	1	130	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	50	Reception 144	Main entry lobbies	1	255	5.0	10	0.06	0.8	35	0	0	0	0	0	0
	60	Small Conf. 118	Conference/meeting	1	212	5.0	50	0.06	0.8	82	0	0	0	0	0	0
	65	Open Office	Office space	1	613	5.0	5	0.06	0.8	65	0	0	0	0	0	0
	70	Lounge Area 117	Office space	1	474	5.0	5	0.06	0.8	50	0	0	0	0	0	0
	80	Open Office	Office space	1	1566	5.0	5	0.06	0.8	166	0	0	0	0	0	0
	90	Phone 178	Office space	1	45	5.0	5	0.06	0.8	5	0	0	0	0	0	0
	100	Recpetion Vest 101	Office space	1	50	5.0	5	0.06	0.8	5	0	0	0	0	0	0
	110	Reception 102	Main entry lobbies	1	380	5.0	10	0.06	0.8	52	0	0	0	0	0	0
	120	Mail Room 103	Office space	1	270	5.0	5	0.06	0.8	29	0	0	0	0	0	0
	130	Storage 231	Occupiable storage rooms for dry	1	54	5.0	2	0.06	0.8	5	0	0	0	0	0	0
	140	Open Office	Office space	1	479	5.0	5	0.06	0.8	51	0	0	0	0	0	0
	150	Office 207	Office space	1	125	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	160	Office 208	Office space	1	125	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	170	Office 209	Office space	1	125	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	180	Hall	Corridors	1	88	0.0	0	0.06	0.8	7	0	0	0	0	0	0
	190	Small Conf 217	Conference/meeting	1	241	5.0	50	0.06	0.8	93	0	0	0	0	0	0
	200	Open Office	Office space	1	245	5.0	5	0.06	0.8	26	0	0	0	0	0	0
	210	Storage 149	Occupiable storage rooms for dry	1	38	5.0	2	0.06	0.8	3	0	0	0	0	0	0
	220	Office 150	Office space	1	133	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	230	Office 151	Office space	1	133	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	240	Office 152	Office space	1	133	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	250	Office 153	Office space	1	133	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	260	Office 143	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	270	Office 142	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	280	Office 119	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	290	Office 140	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	300	Office 141	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	310	Office 139	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	320	Office 123	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	330	Office 138	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	340	Hall	Corridors	1	313	0.0	0	0.06	0.8	23	0	0	0	0	0	0
	350	Hall	Corridors	1	325	0.0	0	0.06	0.8	24	0	0	0	0	0	0
	360	Storage 122	Occupiable storage rooms for dry	1	81	5.0	2	0.06	0.8	7	0	0	0	0	0	0
	370	Play Therapy 154	Office space	1	266	5.0	5	0.06	0.8	28	0	0	0	0	0	0
	380	Hall	Corridors	1	100	0.0	0	0.06	0.8	8	0	0	0	0	0	0
	390	Office 155	Office space	1	168	5.0	5	0.06	0.8	18	0	0	0	0	0	0
	400	Break 156	Office space	1	132	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	410	Hall	Corridors	1	149	0.0	0	0.06	0.8	11	0	0	0	0	0	0
	420	Huddle 116	Office space	1	100	5.0	5	0.06	0.8	11	0	0	0	0	0	0
	430	Huddle 115	Office space	1	100	5.0	5	0.06	0.8	11	0	0	0	0	0	0
	440	Phone 121	Office space	1	39	5.0	5	0.06	0.8	4	0	0	0	0	0	0
	450	Phone 120	Office space	1	39	5.0	5	0.06	0.8	4	0	0	0	0	0	0
	460	Office 114	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	470	Office 113	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	480	Open Office	Office space	1	391	5.0	5	0.06	0.8	42	0	0	0	0	0	0
	490	Small Conf 112	Conference/meeting	1	220	5.0	50	0.06	0.8	85	0	0	0	0	0	0
	500	Copy Print	Corridors	1	54	0.0	0	0.06	0.8	4	0	0	0	0	0	0
	510	Hall	Corridors	1	576	0.0	0	0.06	0.8	43	0	0	0	0	0	0
	520	Hall	Corridors	1	140	0.0	0	0.06	0.8	11	0	0	0	0	0	0
	530	Hall	Corridors	1	307	0.0	0	0.06	0.8	23	0	0	0	0	0	0
	540	0	0	0	0	0.0	0	0.00	0.8	0	0	0	0	0	0	0
	550	0	0	0	0	0.0	0	0.00	0.8	0	0	0	0	0	0	0
	560	Medium Conf 157	Conference/meeting	1	433	5.0	50	0.06	0.8	168	0	0	0	0	0	0
	570	Storage 137	Occupiable storage rooms for dry	1	128	5.0	2	0.06	0.8	11	0	0	0	0	0	0
	580	Womens 136	Toilets – private5, 9	0	228	0.0	0	0.00	0.8	0	Toilets – private5,	2	4	70	0	280
	590	Mens 135	Toilets – private5, 9	0	228	0.0	0	0.00	0.8	0	Toilets – private5,	2	4	70	0	280
	600	Mens 134	Toilets – private5, 9	0	228	0.0	0	0.00	0.8	0	Toilets – private5,	2	4	70	0	280
	610	Womens 134	Toilets – private5, 9	0	228	0.0	0	0.00	0.8	0	Toilets – private5,	2	4	70	0	280
	620	Jan 124	Janitor closets, trash rooms, recyc	0	117	0.0	0	0.00	0.8	0	Janitor closets, tra	3	0	0	1	117
	630	Office 110	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	640	Office 107	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	650	Office 106	Office space	1	125	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	660	Office 105	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	670	Office 104	Office space	1	125	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	680	Storage 158	Occupiable storage rooms for dry	1	88	5.0	2	0.06	0.8	8	0	0	0	0	0	0
	690	Hall 159	Corridors	1	54	0.0	0	0.06	0.8	4	0	0	0	0	0	0
	700	Hall	Corridors	1	318	0.0	0	0.06	0.8	24	0	0	0	0	0	0
	710	Hall	Corridors	1	296	0.0	0	0.06	0.8	22	0	0	0	0	0	0
	720	Wellness 132	Office space	1	114	5.0	5	0.06	0.8	12	0	0	0	0	0	0
	730	Storage 131	Occupiable storage rooms for dry	1	78	5.0	2	0.06	0.8	7	0	0	0	0	0	0
	740	Electrical 125	Telephone closets	1	66	0.0	0	0.00	0.8	0	0	0	0	0	0	0
	750	IDF 126	Telephone closets	1	61	0.0	0	0.00	0.8	0	0	0	0	0	0	0
	760	Storage 127	Occupiable storage rooms for dry	1	64	5.0	2	0.06	0.8	6	0	0	0	0	0	0
	770	Storage 128	Occupiable storage rooms for dry	1	90	5.0	2	0.06	0.8	8	0	0	0	0	0	0
	780	Medium Conf 109	Conference/meeting	1	280	5.0	50	0.06	0.8	109	0	0	0	0	0	0
	790	Phone 108	Office space	1	88	5.0	5	0.06	0.8	9	0	0	0	0	0	0
	800	Recording Studio 159	Office space	1	181	5.0	5	0.06	0.8	19	0	0	0	0	0	0

VENTILATION PER 2021 UNIFORM MECHANICAL CODE

MINIMUM OUTDOOR AIRLOW: FORMULA 403.2.1, 403.2.3, 403.3 & TABLES 402.1, 403.2.2

$V_{ot} = V_{oz} = V_{oz} / E_z = (R_p * P_z + R_a * A_z) / E_z = (R_p * r_p * A_t + R_a * A_z) / E_z$

MINIMUM EXHAUST RATES: TABLE 403.7

LEVEL	SYSTEM	SPACE	CATEGORY	AIR CLASS	Zone Area A_z (FT^2)	PEOPLE OUTDOOR AIRFLOW RATE R_p (CFM/PERSON)	DEFAULT OCCUPANT DENSITY r_p (PEOPLE/1000 FT^2)	OUTDOOR AIRFLOW RATE R_a (CFM/FT^2)	ZONE AIR DISTRIBUTION EFFECTIVENESS E_z (UNITLESS)	ZONE OUTDOOR AIRFLOW V_{oz} (CFM)	CATEGORY	AIR CLASS	FIXTURE (UNIT)	EXHAUST RATE (CFM/UNIT)	EXHAUST RATE (CFM/FT^2)	EXHAUST AIRFLOW (CFM)
	810	Control Room 159	Office space	1	84	5.0	5	0.06	0.8	9	0	0	0	0	0	0
	820	Storage 162	Occupiable storage rooms for dry	1	86	5.0	2	0.06	0.8	8	0	0	0	0	0	0
	830	Storage 161	Occupiable storage rooms for dry	1	94	5.0	2	0.06	0.8	8	0	0	0	0	0	0
	840	Storage 160	Occupiable storage rooms for dry	1	44	5.0	2	0.06	0.8	4	0	0	0	0	0	0
	850	Phone 163	Office space	1	44	5.0	5	0.06	0.8	5	0	0	0	0	0	0
	860	Phone 164	Office space	1	46	5.0	5	0.06	0.8	5	0	0	0	0	0	0
	870	Phone 166	Office space	1	57	5.0	5	0.06	0.8	6	0	0	0	0	0	0
	880	Work Room 165	Office space	1	387	5.0	5	0.06	0.8	41	0	0	0	0	0	0
	890	Huddle 167	Office space	1	143	5.0	5	0.06	0.8	15	0	0	0	0	0	0
	900	Hallway 129 Copy 130	Corridors	1	633	0.0	0	0.06	0.8	47	0	0	0	0	0	0
	910	Storage 173	Occupiable storage rooms for dry	1	72	5.0	2	0.06	0.8	6	0	0	0	0	0	0
	920	Storage 169	Occupiable storage rooms for dry	1	104	5.0	2	0.06	0.8	9	0	0	0	0	0	0
	930	Pantry Storage 174	Occupiable storage rooms for dry	1	84	5.0	2	0.06	0.8	7	0	0	0	0	0	0
	940	Storage 170	Occupiable storage rooms for dry	1	121	5.0	2	0.06	0.8	11	0	0	0	0	0	0
	950	Huddle 168	Office space	1	131	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	960	Huddle 175	Office space	1	160	5.0	5	0.06	0.8	17	0	0	0	0	0	0
	970	Small conf 195	Conference/meeting	1	231	5.0	50	0.06	0.8	90	0	0	0	0	0	0
	980	Phone 177	Office space	1	50	5.0	5	0.06	0.8	5	0	0	0	0	0	0
	990	0	0	0	0	0.0	0	0.00	0.8	0	0	0	0	0	0	0
	1000	Open Office	Office space	1	1391	5.0	5	0.06	0.8	148	0	0	0	0	0	0
	1010	Break Room 172	Coffee stations	1	1045	5.0	20	0.06	0.8	209	0	0	0	0	0	0
	1020	Game room 171	Coffee stations	1	398	5.0	20	0.06	0.8	80	0	0	0	0	0	0
	1030	Large Conf 176	Conference/meeting	1	476	5.0	50	0.06	0.8	184	0	0	0	0	0	0
	1040	Hall	Corridors	1	369	0.0	0	0.06	0.8	28	0	0	0	0	0	0
	1050	Office 196	Office space	1	124	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1060	Storage 197	Occupiable storage rooms for dry	1	107	5.0	2	0.06	0.8	9	0	0	0	0	0	0
	1070	Hall	Corridors	1	623	0.0	0	0.06	0.8	47	0	0	0	0	0	0
	1080	Huddle 198	Office space	1	128	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	1090	Huddle 199	Office space	1	128	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	1100	Office 200	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1110	0	0	0	0	0.0	0	0.00	0.8	0	0	0	0	0	0	0
	1120	Office 201	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1130	Office 194	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1140	Office 192	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1150	Office 190	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1160	Office 188	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1170	Office 193	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1180	Office 191	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1190	Storage 189	Occupiable storage rooms for dry	1	121	5.0	2	0.06	0.8	11	0	0	0	0	0	0
	1200	Office 187	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1210	Huddle Room 180	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1220	Office 182	Office space	1	121	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1230	Storage 184	Occupiable storage rooms for dry	1	120	5.0	2	0.06	0.8	11	0	0	0	0	0	0
	1240	Office 186	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1250	Office 179	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1260	Office 181	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1270	Office 183	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1280	Office 185	Office space	1	120	5.0	5	0.06	0.8	13	0	0	0	0	0	0
	1290	Open Office	Office space	1	824	5.0	5	0.06	0.8	88	0	0	0	0	0	0
	1300	Open Office	Office space	1	764	5.0	5	0.06	0.8	81	0	0	0	0	0	0
	1310	Hall	Corridors	1	439	0.0	0	0.06	0.8	33	0	0	0	0	0	0
	1320	Open Office	Office space	1	1442	5.0	5	0.06	0.8	153	0	0	0	0	0	0
	1330	Small Conf 202	Conference/meeting	1	228	5.0	50	0.06	0.8	88	0	0	0	0	0	0
	1340	Huddle 203	Office space	1	132	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	1350	Open Office	Office space	1	298	5.0	5	0.06	0.8	32	0	0	0	0	0	0
	1360	Lounge Area 212	Office space	1	193	5.0	5	0.06	0.8	21	0	0	0	0	0	0
	1370	Huddle 204	Office space	1	130	5.0	5	0.06	0.8	14	0	0	0	0	0	0
	1380	Samll Conf. 205	Conference/meeting	1	226	5.0	50	0.06	0.8	88	0	0	0	0	0	0
	1390	Café Área 212	Coffee stations	1	140	5.0	20	0.06	0.8	28	0	0	0	0	0	0
	1400	Library 213	Office space	1	720	5.0	5	0.06	0.8	77	0	0	0	0	0	0
	1410	Mens	Toilets – private5, 9	0	226	0.0	0	0.00	0.8	0	Toilets – private5,	2	4	70	0	280
	1420	Womens	Toilets – private5, 9	0	220	0.0	0	0.00	0.8	0	Toilets – private5,	2	4	70	0	280
	1430	Hall	Corridors	1	644	0.0	0	0.06	0.8	48	0	0	0	0	0	0
	1435	Hall	Corridors	1	159	0.0	0	0.06	0.8	12	0	0	0	0	0	0
	1440	Huddle 210	Office space	1	92	5.0	5	0.06	0.8	10	0	0	0	0	0	0
	1450	Phone 215	Office space	1	66	5.0	5	0.06	0.8	7	0	0	0	0	0	0
	1460	IDF 216	Telephone closets	1	49	0.0	0	0.00	0.8	0	0	0	0	0	0	0
	1470	Storage 218	Occupiable storage rooms for dry	1	65	5.0	2	0.06	0.8	6	0	0	0	0	0	0
	1480	Gym 223	Health club/weight rooms	2	118	20.0	10	0.06	0.8	38	0	0	0	0	0	0
	1490	Gym 222	Health club/weight rooms	2	72	20.0	10	0.06	0.8	23	0	0	0	0	0	0
	1500	Gym 221	Health club/weight rooms	2	72	20.0	10	0.06	0.8	23	0	0	0	0	0	0
	1510	RR/Shower	Toilets – private5, 9	0	124	0.0	0	0.00	0.8	0	Toilets – private5,	2	1.5	70	0	105
	1520	RR/Shower	Toilets – private5, 9	0	124	0.0	0	0.00	0.8	0	Toilets – private5,	2	1.5	70	0	105
	1530	Storage 225	Occupiable storage rooms for dry	1	89	5.0	2	0.06	0.8	8	0	0	0	0	0	0
	1540	Studio 224	Office space	1	268	5.0	5	0.06	0.8	28	0	0	0	0	0	0
	1550	Editing Room 226	Office space	1	48	5.0	5	0.06	0.8	5	0	0	0	0	0	0
	1560	Storage 227	Occupiable storage rooms for dry	1	56	5.0	2	0.06	0.8	5	0	0	0	0	0	0
	1570	Storage 228	Occupiable storage rooms for dry	1	54	5.0	2	0.06	0.8	5	0	0	0	0	0	0
	1580	Phone 229	Office space	1	40	5.0	5	0.06	0.8	4	0	0	0	0	0	0
	1590	Open Office	Office space	1	288	5.0	5	0.06	0.8	31	0	0	0	0	0	0
	1600	Film Studio 230	Office space	1	2146	5.0	5	0.06	0.8	228	0	0	0	0	0	0
									OA REQUIRED	4281					EX REQUIRE	2007
	RTU-1	0								400	EF-1					110
	RTU-2	0								400	EF-2					110
	RTU-3	0								240	EF-3					200
	RTU-4	0								400	EF-4					200
	RTU-5	0								400	EF-5					200
	RTU-6	0								400	EF-7					560
	RTU-7	0								400	EF-10					120
	RTU-8	0								240	EF-11					560
	RTU-9	0								240	EF-12					560
	RTU-10	0								400						
	RTU-11	0								240						
	RTU-12	0								240						
	RTU-13	0								400						
	RTU-14	0								240						
	FC/HP-1	0								100						
	FC/HP-2	0								100						
	FC/HP-3	0								100						
									OA PROVIDED	4940					EX PROVIDE	2620

PROJECT: 21-085

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KAMPFE/DE STIJL, INC.
A Texas Corporation
2006 East Cesar Chavez
Austin, Texas 78702
512-457-1332
kdsaustin.com

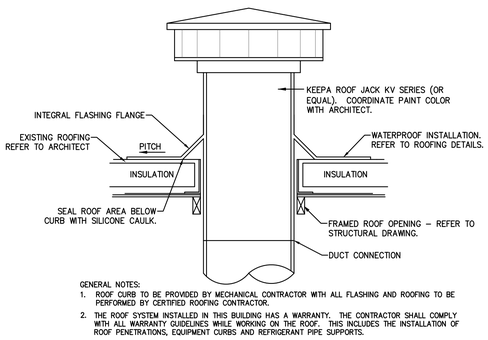
DATE: 6.20.22
SCALE: NOTED
DRAWN BY: AMPED

DATE	REVISION

MECHANICAL SCHEDULES

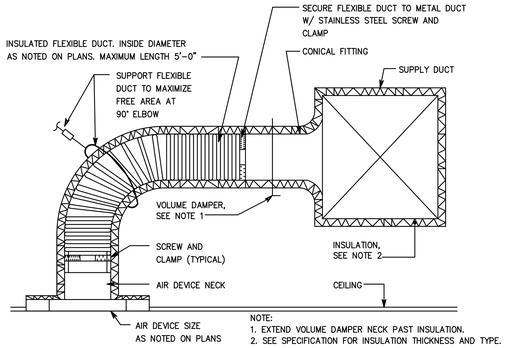
M5.1

PROJECT NO. 21-043



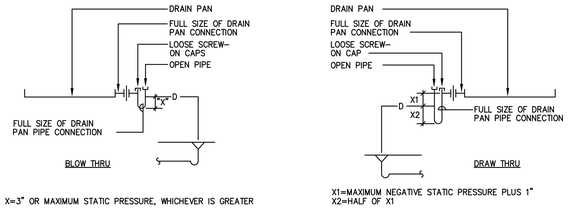
GENERAL NOTES:
1. ROOF CURB TO BE PROVIDED BY MECHANICAL CONTRACTOR WITH ALL FLASHING AND ROOFING TO BE PERFORMED BY CERTIFIED ROOFING CONTRACTOR.
2. THE ROOF SYSTEM INSTALLED IN THIS BUILDING HAS A WARRANTY. THE CONTRACTOR SHALL COMPLY WITH ALL WARRANTY GUIDELINES WHILE WORKING ON THE ROOF. THIS INCLUDES THE INSTALLATION OF ROOF PENETRATIONS, EQUIPMENT CURBS AND REFRIGERANT PIPE SUPPORTS.

17 TYPICAL ROUND ROOF JACK PENETRATION
M6.0 SCALE: NONE

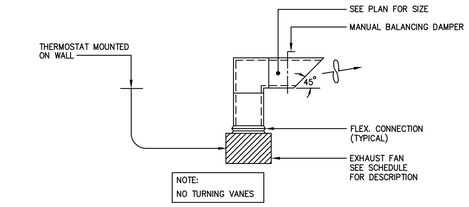


NOTE:
1. EXTEND VOLUME DAMPER NECK PAST INSULATION.
2. SEE SPECIFICATION FOR INSULATION THICKNESS AND TYPE.

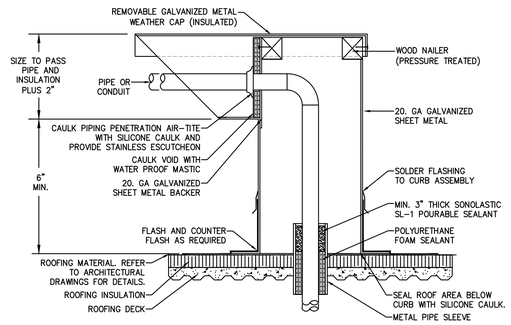
16 DUCT RUN OUT DETAIL
M6.0 SCALE: NONE



15 CONDENSATE DRAIN PIPING DETAIL
M6.0 SCALE: NONE

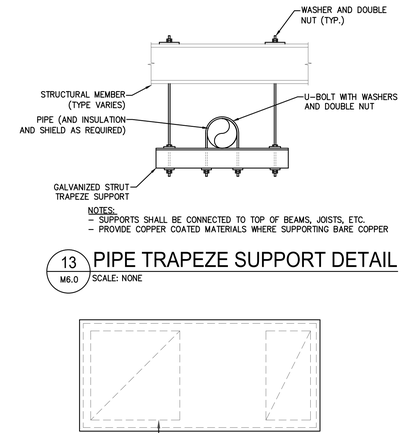


14 TYPICAL ROOM TO PLENUM EXHAUST SYSTEM
M6.0 SCALE: NONE



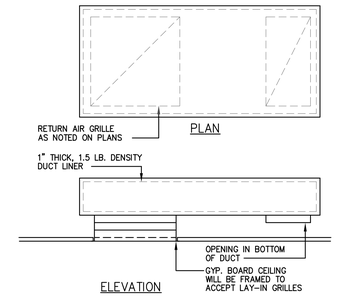
GENERAL NOTES:
1. ROOF CURB TO BE PROVIDED BY MECHANICAL CONTRACTOR WITH ALL FLASHING AND ROOFING TO BE PERFORMED BY CERTIFIED ROOFING CONTRACTOR.
2. SECURE HOOD ROOF CURB TO ROOF WITH SHEET METAL SCREWS, LAG BOLTS OR OTHER METHOD CONSISTANT WITH ROOF CONSTRUCTION. SECURE HOOD ROOF CURB TO ROOF USING FASTENERS AT 12" O.C. BEFORE APPLYING ROOFING FELT & ROOF INSULATION. (IF REQUIRED)
3. THE ROOF SYSTEM INSTALLED IN THIS BUILDING HAS A WARRANTY. THE CONTRACTOR SHALL COMPLY WITH ALL WARRANTY GUIDELINES WHILE WORKING ON THE ROOF. THIS INCLUDES THE INSTALLATION OF ROOF PENETRATIONS, EQUIPMENT CURBS AND REFRIGERANT PIPE SUPPORTS.

10 ROOF PIPE PENETRATION DETAIL
M6.0 SCALE: NONE

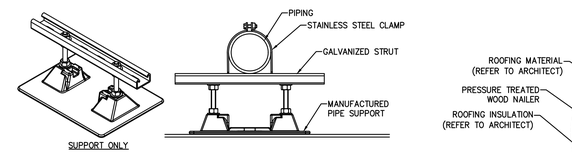


NOTES:
– SUPPORTS SHALL BE CONNECTED TO TOP OF BEAMS, JOISTS, ETC.
– PROVIDE COPPER COATED MATERIALS WHERE SUPPORTING BARE COPPER

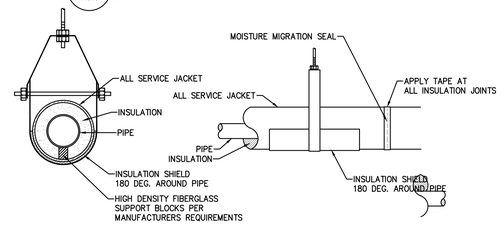
13 PIPE TRAPEZE SUPPORT DETAIL
M6.0 SCALE: NONE



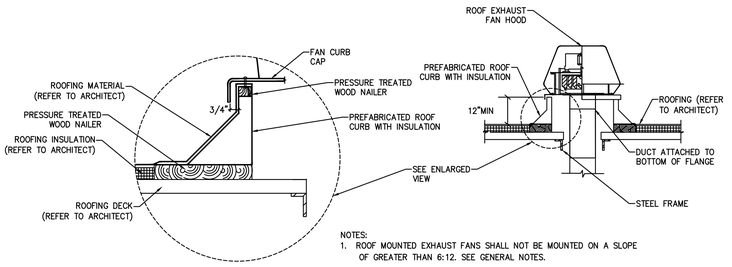
7 RETURN AIR BOOT DETAIL
M6.0 SCALE: NONE



12 PIPE SUPPORT DETAIL
M6.0 SCALE: NONE

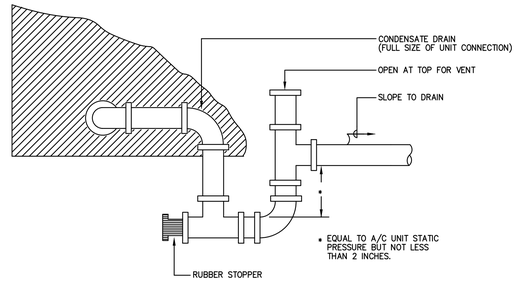


9 PIPE INSULATION AND VAPOR BARRIER DETAIL
M6.0 SCALE: NONE

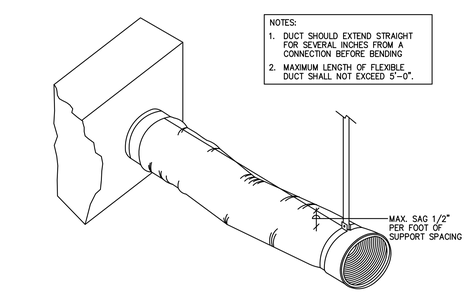


NOTES:
1. ROOF MOUNTED EXHAUST FANS SHALL NOT BE MOUNTED ON A SLOPE OF GREATER THAN 6:12. SEE GENERAL NOTES.

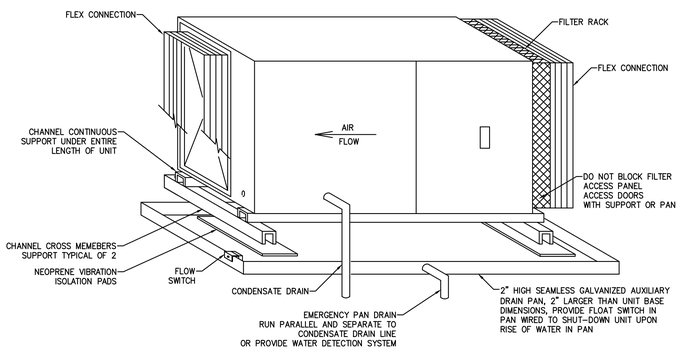
11 ROOF MOUNTED EXHAUST FAN
M6.0 SCALE: NONE



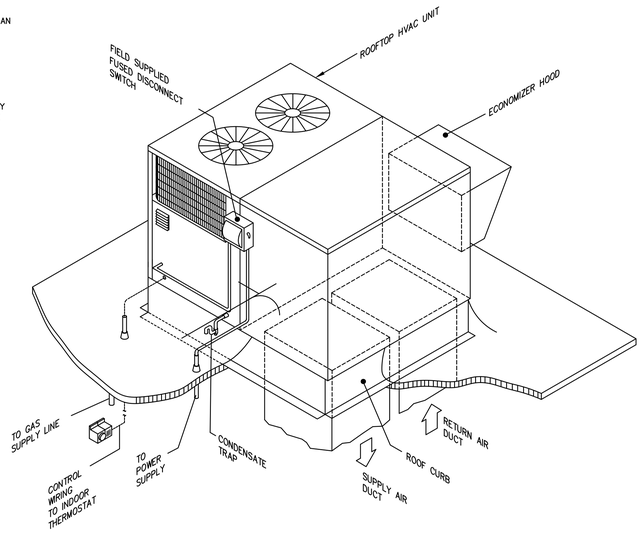
8 ROOFTOP CONDENSATE DRAIN TRAP DETAIL
M6.0 SCALE: NONE



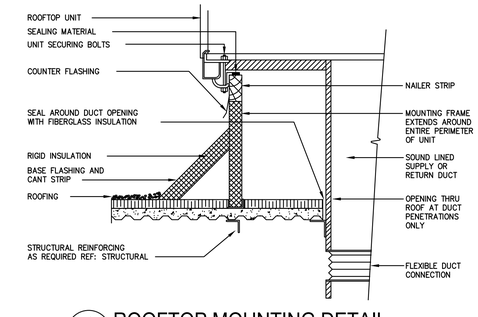
6 FLEXIBLE DUCT SUPPORT DETAIL
M6.0 SCALE: NONE



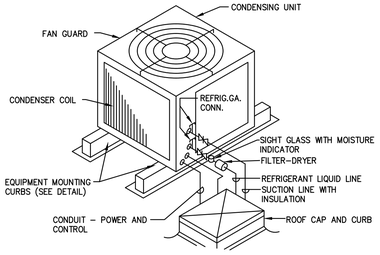
8 SPLIT SYSTEM SUPPORT DETAIL
M6.0 SCALE: NONE



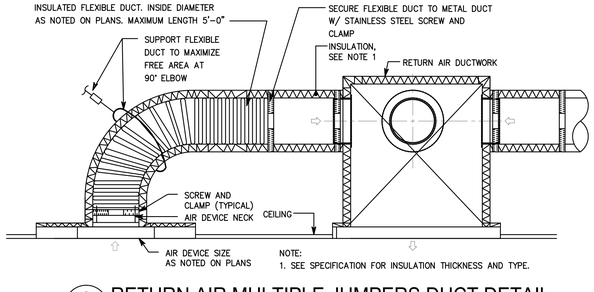
1 GAS FIRED ROOFTOP HVAC UNIT DETAIL
M6.0 SCALE: NONE



4 ROOFTOP MOUNTING DETAIL
M6.0 SCALE: NONE



3 TYPICAL CONDENSING UNIT MOUNTED ON ROOF
M6.0 SCALE: NONE



NOTE:
1. SEE SPECIFICATION FOR INSULATION THICKNESS AND TYPE.

2 RETURN AIR MULTIPLE JUMPERS DUCT DETAIL
M6.0 SCALE: NONE

PROJECT: 21-085
BUILDING CONTACT
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DATE: 6.20.22
SCALE: NOTED
DRAWN BY: AMPED

DATE	REVISION

MECHANICAL DETAILS
M6.0
PROJECT NO. 21-043

AUSTIN STONE
HVAC DESIGN CRITERIA

ROOM NO.	SPACE	AREA (FT^2)	PEOPLE	PC PER SPACE	LAPTOP CONFERENCE ROOM	PUBLIC PRINTER	COFFEE POT	MICROWAVE	REFRIGERATOR	TV	MISC ALLOWANCE (WATTS)	TOTAL EQUIPMENT (WATTS)	LIGHTING POWER (WATTS)
10	Office 148	214	3	1	0	0	0	0	0	1	0	324	214
20	Office 147	130	2	1	0	0	0	0	0	0	0	124	130
30	Office 146	130	2	1	0	0	0	0	0	0	0	124	130
40	Office 145	130	2	1	0	0	0	0	0	0	0	124	130
50	Reception 144	255	7	1	0	0	0	0	0	1	0	324	255
60	Small Conf. 118	212	8	0	8	0	0	0	0	1	0	600	212
65	Open Office	613	8	8	0	0	0	0	0	3	0	1592	613
70	Lounge Area 117	474	10	0	0	0	1	1	1	1	0	1187	474
80	Open Office	1566	32	32	0	0	0	0	0	1	0	4168	1566
90	Phone 178	45	1	0	1	0	0	0	0	0	0	50	45
100	Recpetion Vest 101	50	0	0	0	0	0	0	0	0	0	0	50
110	Reception 102	380	5	2	0	0	0	0	1	1	0	573	380
120	Mail Room 103	270	4	0	0	0	0	0	0	0	500	500	270
130	Storage 231	54	0	0	0	0	0	0	0	0	0	0	54
140	Open Office	479	12	12	0	0	0	0	0	0	0	1488	479
150	Office 207	125	1	1	0	0	0	0	0	0	0	124	125
160	Office 208	125	1	1	0	0	0	0	0	0	0	124	125
170	Office 209	125	1	1	0	0	0	0	0	0	0	124	125
180	Hall	88	0	0	0	0	0	0	0	0	0	0	88
190	Small Conf 217	241	8	0	8	0	0	0	0	1	0	600	241
200	Open Office	245	5	5	0	0	0	0	0	0	0	620	245
210	Storage 149	38	0	0	0	0	0	0	0	0	0	0	38
220	Office 150	133	2	1	0	0	0	0	0	0	0	124	133
230	Office 151	133	2	1	0	0	0	0	0	0	0	124	133
240	Office 152	133	2	1	0	0	0	0	0	0	0	124	133
250	Office 153	133	2	1	0	0	0	0	0	0	0	124	133
260	Office 143	120	2	1	0	0	0	0	0	0	0	124	120
270	Office 142	120	2	1	0	0	0	0	0	0	0	124	120
280	Office 119	120	2	1	0	0	0	0	0	0	0	124	120
290	Office 140	120	2	1	0	0	0	0	0	0	0	124	120
300	Office 141	120	1	1	0	0	0	0	0	0	0	124	120
310	Office 139	120	2	1	0	0	0	0	0	0	0	124	120
320	Office 123	120	1	1	0	0	0	0	0	0	0	124	120
330	Office 138	120	2	1	0	0	0	0	0	0	0	124	120
340	Hall	313	0	0	0	0	0	0	0	0	0	0	313
350	Hall	325	0	0	0	0	0	0	0	0	0	0	325
360	Storage 122	81	0	0	0	0	0	0	0	0	0	0	81
370	Play Therapy 154	266	8	0	0	0	0	0	0	1	0	200	266
380	Hall	100	0	0	0	0	0	0	0	0	0	0	100
390	Office 155	168	2	1	0	0	0	0	0	0	0	124	168
400	Break 156	132	1	0	0	0	1	1	1	0	0	987	132
410	Hall	149	0	0	0	0	0	0	0	0	0	0	149
420	Huddle 116	100	4	0	4	0	0	0	0	1	0	400	100
430	Huddle 115	100	4	0	4	0	0	0	0	1	0	400	100
440	Phone 121	39	1	0	1	0	0	0	0	0	0	50	39
450	Phone 120	39	1	0	1	0	0	0	0	0	0	50	39
460	Office 114	120	1	1	0	0	0	0	0	0	0	124	120
470	Office 113	120	1	1	0	0	0	0	0	0	0	124	120
480	Open Office	391	6	6	0	0	0	0	0	0	0	744	391
490	Small Conf 112	220	8	0	8	0	0	0	0	1	0	600	220
500	Copy Print	54	0	0	0	10	0	0	0	0	0	425	54
510	Hall	576	0	0	0	0	0	0	0	0	0	0	576
520	Hall	140	0	0	0	0	0	0	0	0	0	0	140
530	Hall	307	0	0	0	0	0	0	0	0	0	0	307
560	Medium Conf 157	433	14	0	14	0	0	0	0	1	0	900	433
570	Storage 137	128	0	0	0	0	0	0	0	0	0	0	128
580	Womens 136	228	4	0	0	0	0	0	0	0	0	0	228
590	Mens 135	228	4	0	0	0	0	0	0	0	0	0	228
600	Mens 134	228	4	0	0	0	0	0	0	0	0	0	228
610	Womens 134	228	4	0	0	0	0	0	0	0	0	0	228
620	Jan 124	117	0	0	0	0	0	0	0	0	0	0	117
630	Office 110	120	1	1	0	0	0	0	0	0	0	124	120
640	Office 107	121	1	1	0	0	0	0	0	0	0	124	121
650	Office 106	125	1	1	0	0	0	0	0	0	0	124	125
660	Office 105	121	1	1	0	0	0	0	0	0	0	124	121
670	Office 104	125	1	1	0	0	0	0	0	0	0	124	125
680	Storage 158	88	0	0	0	0	0	0	0	0	0	0	88
690	Hall 159	54	0	0	0	0	0	0	0	0	0	0	54
700	Hall	318	0	0	0	0	0	0	0	0	0	0	318
710	Hall	296	0	0	0	0	0	0	0	0	0	0	296
720	Wellness 132	114	1	0	1	0	0	0	1	0	0	175	114
730	Storage 131	78	0	0	0	0	0	0	0	0	0	0	78
740	Electrical 125	66	0	0	0	0	0	0	0	0	0	0	66
750	IDF 126	61	0	0	0	0	0	0	0	0	3000	3000	61
760	Storage 127	64	0	0	0	0	0	0	0	0	0	0	64
770	Storage 128	90	0	0	0	0	0	0	0	0	0	0	90
780	Medium Conf 109	280	14	0	14	0	0	0	0	1	0	900	280
790	Phone 108	88	1	0	1	0	0	0	0	0	0	50	88
800	Recording Studio 159	181	8	0	0	0	0	0	0	0	0	0	181
810	Control Room 159	84	3	3	0	0	0	0	0	0	0	372	84
820	Storage 162	88	0	0	0	0	0	0	0	0	0	0	88
830	Storage 161	94	0	0	0	0	0	0	0	0	0	0	94
840	Storage 160	44	0	0	0	0	0	0	0	0	0	0	44
850	Phone 163	44	1	0	1	0	0	0	0	0	0	50	44
860	Phone 164	46	1	0	1	0	0	0	0	0	0	50	46
870	Phone 166	57	1	0	1	0	0	0	0	0	0	50	57
880	Work Room 165	387	5	0	0	20	0	0	0	0	0	850	387
890	Huddle 167	143	4	0	4	0	0	0	1	0	0	325	143

AUSTIN STONE
HVAC DESIGN CRITERIA

ROOM NO.	SPACE	AREA (FT^2)	PEOPLE	PC PER SPACE	LAPTOP CONFERENCE ROOM	PUBLIC PRINTER	COFFEE POT	MICROWAVE	REFRIGERATOR	TV	MISC ALLOWANCE (WATTS)	TOTAL EQUIPMENT (WATTS)	LIGHTING POWER (WATTS)
900	Hallway 129 Copy 130	633	6	0	6	10	0	0	0	0	0	725	633
910	Storage 173	72	0	0	0	0	0	0	0	0	0	0	72
920	Storage 169	104	0	0	0	0	0	0	0	0	0	0	104
930	Pantry Storage 174	84	0	0	0	0	0	0	0	0	0	0	84
940	Storage 170	121	0	0	0	0	0	0	0	0	0	0	121
950	Huddle 168	131	7	0	7	0	0	0	0	1	0	550	131
960	Huddle 175	160	4	0	4	0	0	0	0	1	0	400	160
970	Small conf 195	231	8	0	8	0	0	0	0	1	0	600	231
980	Phone 177	50	1	0	1	0	0	0	0	0	0	50	50
1000	Open Office	1391	18	18	0	0	0	0	0	0	0	2232	1391
1010	Break Room 172	1045	30	0	0	0	1	2	2	0	1000	2194	1045
1020	Game room 171	398	8	0	0	0	0	0	0	2	1000	1400	398
1030	Large Conf 176	476	16	0	16	0	0	0	0	2	0	1200	476
1040	Hall	369	0	0	0	0	0	0	0	0	0	0	369
1050	Office 196	124	1	1	0	0	0	0	0	0	0	124	124
1060	Storage 197	107	0	0	0	0	0	0	0	0	0	0	107
1070	Hall	623	0	0	0	0	0	0	0	0	0	0	623
1080	Huddle 198	128	4	0	4	0	0	0	0	1	0	400	128
1090	Huddle 199	128	4	0	4	0	0	0	0	1	0	400	128
1100	Office 200	121	1	1	0	0	0	0	0	0	0	124	121
1110	Office 201	121	0	0	0	0	0	0	0	0	0	0	121
1120	Office 194	121	1	1	0	0	0	0	0	0	0	124	121
1130	Office 192	121	1	1	0	0	0	0	0	0	0	124	121
1140	Office 190	121	1	1	0	0	0	0	0	0	0	124	121
1150	Office 188	121	1	1	0	0	0	0	0	0	0	124	121
1160	Office 193	121	1	1	0	0	0	0	0	0	0	124	121
1170	Office 191	121	1	1	0	0	0	0	0	0	0	124	121
1180	Storage 189	121	1	1	0	0	0	0	0	0	0	124	121
1190	Office 187	121	0	0	0	0	0	0	0	0	0	0	121
1200	Huddle Room 180	120	1	1	0	0	0	0	0	0	0	124	120
1210	Huddle Room 180	120	4	0	4	0	0	0	0	1	0	400	120
1220	Office 182	121	1	1	0	0	0	0	0	0	0	124	121
1230	Storage 184	120	0	0	0	0	0	0	0	0	0	0	120
1240	Office 186	120	1	1	0	0	0	0	0	0	0	124	120
1250	Office 179	120	1	1	0	0	0	0	0	0	0	124	120
1260	Office 181	120	1	1	0	0	0	0	0	0	0	124	120
1270	Office 183	120	1	1	0	0	0	0	0	0	0	124	120
1280	Office 185	120	1	1	0	0	0	0	0	0	0	124	120
1290	Open Office	824	12	12	0	0	0	0	0	0	0	1488	824
1300	Open Office	764	12	12	0	0	0	0	0	0	0	1488	764
1310	Hall	439	0	0	0	0	0	0	0	0	0	0	439
1320	Open Office	1442	18	18	0	10	0	0	0	0	0	2657	1442
1330	Small Conf 202	228	8	0	8	0	0	0	0	1	0	600	228
1340	Huddle 203	132	4	0	4	0	0	0	0	1	0	400	132
1350	Open Office	298	6	6	0	0	0	0	0	1	0	944	298
1360	Lounge Area 212	193	8	0	8	0	0	0	0	0	0	400	193
1370	Huddle 204	130	4	0	4	0	0	0	0	1	0	400	130
1380	Samll Conf. 205	226	8	0	8	0	0	0	0	1	0	600	226
1390	Café Area 212	140	1	0	0	0	1	1	1	0	0	987	140
1400	Library 213	720	13	0	13	0	0	0	0	0	0	650	720
1410	Mens	226	4	0	0	0	0	0	0	0	0	0	226
1420	Womens	220	4	0	0	0	0	0	0	0	0	0	220
1430	Hall	644	0	0	0	0	0	0	0	0	0	0	644
1435	Hall	159	0	0	0	0	0	0	0	0	0	0	159
1440	Huddle 210	92	4	0	4	0	0	0	0	1	0	400	92
1450	Phone 215	66	1	0	1	0	0	0	0	0	0	50	66
1460	IDF 216	49	0	0	0	0	0	0	0	0	3000	3000	49
1470	Storage 218	65	0	0	0	0	0	0	0	0	0	0	65
1480	Gym 223	118	1	0	0	0	0	0	0	0	1000	1000	118
1490	Gym 222	72	1	0	0	0	0	0	0	0	1000	1000	72
1500	Gym 221	72	1	0	0	0	0	0	0	0	1000	1000	72
1510	RR/Shower	124	1	0	0	0	0	0	0	0	0	0	124
1520	RR/Shower	124	1	0	0	0	0	0	0	0	0	0	124
1530	Storage 225	89	0	0	0	0	0	0	0	0	0	0	89
1540	Studio 224	268	0	0	0	0	0	0	0	0	0	0	268
1550	Editing Room 226	48	1	2	0	0	0	0	0	0	0	248	48
1560	Storage 227	56	0	0	0	0	0	0	0	0	0	0	56
1570	Storage 228	54	0	0	0	0	0	0	0	0	0	0	54
1580	Phone 229	40	1	0	1	0	0	0	0	0	0	50	40
1590	Open Office	288	5	5	0	0	0	0	0	0	0	620	288
1600	Film Studio 230	2146	0	0	0	0	0	0	0	0	0	0	2146

PROJECT: 21-085

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DESIGN CRITERIA

M7.0

PROJECT NO.
21-043