EXISTING CONDITIONS & COORDINATION/RENOVATION:

1. COORDINATE SCHEDULES AND PROJECT COMPLETION DATES WITH OWNER. PERFORM WORK IN CLOSE COORDINATION WITH OWNER. REFER TO SUMMARY OF WORK AND BID FORM FOR SUBSTANTIAL COMPLETION DATES.
2. COORDINATE WORK AMONG ALL DISCIPLINES. IT IS NOT THE INTENT OF THESE DOCUMENTS TO DICTATE WHO MUST DO THE WORK. ALL WORK SHOWN IS THE RESPONSIBILITY OF THE (PRIME) CONTRACTOR.
3. PROVIDE LIGHTED SAFETY BARRIERS AROUND WORK AREAS AT ALL TIMES.
4. WORK TO BE DONE UNDER ALLOWANCES BECOMES AN INTEGRAL PART OF THE WORK AND THE RESPONSIBILITY OF THE CONTRACTOR ONCE THE ALLOWANCE IS APPROVED.
5. COORDINATE WITH OWNER AND ENGINEER FOR ANY DISRUPTION IN UTILITY SERVICES, PARTICULARLY THOSE THAT MIGHT AFFECT OTHER BUILDINGS ON CAMPUS.
6. CONTRACTOR SHALL NOT PROCEED WITH ANY WORK INVOLVING A CHANGE IN PROJECT SCOPE OR COST WITHOUT FIRST HAVING OBTAINED ENGINEER'S APPROVAL IN WRITING. UNLESS ENGINEER HAS AGREED TO SUCH CHANGE PRIOR TO IT BEING DONE, AND HAS AGREED THAT AN INCREASE IN COST ASSOCIATED WITH SUCH CHANGE IS WARRANTED; CONTRACTOR WILL NOT BE REIMBURSED FOR SUCH CHANGE.
7. OWNER'S EQUIPMENT, MATERIALS, FURNISHINGS, CARPETS, AND INTERIOR SURFACES ARE TO BE PROTECTED FROM DUST ACCUMULATION AND DAMAGE, AND MUST BE THOROUGHLY CLEANED PRIOR TO SUBSTANTIAL COMPLETION. CARPETS ARE TO BE PROTECTED WITH HEAVY DUTY PLASTIC SHEETING. REFER TO SPECIFICATIONS SECTION 01700 EXECUTION REQUIREMENTS FOR FURTHER DETAIL.
8. MAINTAIN PROJECT SITE FREE OF WASTE MATERIALS AND DEBRIS, AND CLEAN SITE AT END OF EACH WORK DAY TO GREATEST EXTENT POSSIBLE.
9. SUBMISSION OF PROPOSAL IS CONSIDERED AN ACKNOWLEDGEMENT THAT CONTRACTOR VISITED SITE, VERIFIED ALL EXISTING CONDITIONS, AND INCLUDED ANY MODIFICATIONS TO EXISTING AND NEW WORK REQUIRED FOR INSTALLATION OF A COMPLETE AND OPERATIONAL SYSTEM.
10. TIME OR MONEY ALLOWANCES WILL NOT BE MADE TO ACCOMMODATE CONDITIONS THAT COULD HAVE BEEN VERIFIED PRIOR TO SUBMITTING PROPOSAL.
11. DRAWINGS SHOWING ALL EQUIPMENT LOCATIONS, DUCT AND PIPE SIZES, ELEVATIONS, AND ELECTRICAL INFORMATION HAVE BEEN RECREATED USING DRAWINGS AND SITE SURVEYS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SITE CONDITIONS IN ORDER TO MAKE ANY NECESSARY ADJUSTMENTS, PRIOR TO ORDERING MATERIALS OR COMMENCING INSTALLATION. CHANGE ORDERS WILL NOT BE APPROVED FOR DIMENSIONAL VERIFICATIONS REQUIRING MINOR ADJUSTMENTS NEEDED TO COMPLETE INSTALLATION.
12. FIELD VERIFY ALL CONDITIONS AND MEASURE DIMENSIONS WITHIN THE BUILDING PRIOR TO ORDERING EQUIPMENT AND/OR PROCEEDING WITH INSTALLATION.
13. PROVIDE OWNER WITH MINIMUM 10 DAYS ADVANCE NOTICE OF INTENT TO PERFORM ANY WORK WHICH WILL REQUIRE CHILLER PLANT OR ELECTRICAL SERVICE TO BE SHUT DOWN.
14. PROVIDE SHOP DRAWINGS TO COORDINATE EXISTING AND NEW WORK.
15. CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IF ANY MATERIALS SUSPECTED OF CONTAINING ASBESTOS ARE FOUND AND STOP WORK IMMEDIATELY.
16. IT IS CONTRACTOR'S RESPONSIBILITY TO REMOVE AND DISPOSE OF ALL ITEMS INDICATED TO BE REMOVED. ONLY EXPRESSLY DESIGNATED ITEMS SHALL BE TURNED OVER TO OWNER.
17. CONTRACTOR IS RESPONSIBLE FOR RESTORING ANY DISTURBED SURFACE TO ITS ORIGINAL CONDITION. ANY ROAD, TRAFFIC, OR OTHER PAINTED OR ERECTED SIGNS DAMAGED AS A RESULT OF WORK PERFORMED IN THOSE AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
18. CUTTING AND PATCHING OF WALLS DAMAGED IN THE REMOVAL OF ITEMS SHALL BE DONE, WHETHER OR NOT DRAWINGS SPECIFICALLY CALL FOR SUCH REPAIRS.
19. REMOVE ALL EQUIPMENT, MATERIALS, CONTROL DEVICES, BOXES, POWER AND CONTROL WIRING, SAFETY SWITCHES, TUBING, ELECTRICAL CONDUIT, PIPING, SENSORS, ELECTRICAL DISCONNECTS, SUPPORTING DEVICES AND STRUCTURES, AND ALL RELATED AUXILIARY ITEMS ASSOCIATED WITH EQUIPMENT AND MATERIALS WHICH WILL NO LONGER BE USED AFTER THE PROJECT IS COMPLETE.
20. CONTRACTOR SHALL REVIEW COMPLETE DOCUMENTS PRIOR TO SUBMITTAL OF PROPOSAL TO GAIN COMPLETE UNDERSTANDING OF PROJECT SCOPE, WORK BY OTHERS, AND MECHANICAL WORK ASSOCIATED WITH OTHER DISCIPLINES.
21. IT IS NOT THE INTENT OF THESE DOCUMENTS TO DICTATE WHO MUST DO THE WORK. ALL WORK SHOWN IS THE RESPONSIBILITY OF THE (PRIME) CONTRACTOR. COORDINATE MECHANICAL WITH OTHER TRADES SUCH AS PLUMBING, ELECTRICAL AND STRUCTURAL WORK. COORDINATE SCHEDULE OF WORK WITH ALL SUB–CONTRACTORS TO ACHIEVE SMOOTH FLOW OF CONSTRUCTION.
22. PROVIDE COORDINATION DRAWINGS OF REFLECTED CEILING PLAN AND SECTION ABOVE CEILING SHOWING WORK OF ALL AFFECTED TRADES. DO NOT PROCEED WITH FABRICATION WORK UNTIL COORDINATION DRAWINGS HAVE BEEN APPROVED BY ENGEINEER.
23. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SITE CONDITIONS IN ORDER TO MAKE ANY NECESSARY ADJUSTMENTS, PRIOR TO ORDERING MATERIALS OR COMMENCING INSTALLATION. CHANGE ORDERS WILL NOT BE APPROVED FOR DIMENSIONAL VERIFICATIONS REQUIRING MINOR ADJUSTMENTS NEEDED TO COMPLETE INSTALLATION.
24. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR DETAILS OF CONSTRUCTION, INCLUDING BEAMS, FLOOR AND WALL PENETRATIONS, CHASES, AND REFLECTED CEILING PLANS. VERIFY OPENING SIZES WITH EQUIPMENT FURNISHED.
25. WHERE EXPRESSLY PERMITTED BY THE STRUCTURAL ENGINEER, GRADE BEAM PENETRATIONS SHALL BE MADE WITHIN MIDDLE 1/3 OF VERTICAL SPAN OF BEAM. SLEEVE ALL EXTERIOR WALL AND GRADE BEAM PENETRATIONS.
26. SEAL AROUND DUCTS AND PIPING AT ALL WALLS, A/C ROOMS AND WALL LOUVER PENETRATIONS WITH FIREPROOF CAULKING. RE: SPECS. PROVIDE ESCUTCHEON PLATES AND FLASHING AROUND PENETRATION, BOTH INSIDE AND OUTSIDE, TO PROVIDE A FINISHED LOOK. COORDINATE FINISH WITH ARCHITECT.
27. COORDINATE ALL WORK WITH OTHER TRADES; COORDINATE SCHEDULE OF WORK WITH ALL SUB–CONTRACTORS TO ACHIEVE SMOOTH FLOW OF CONSTRUCTION.
28. SPACES ABOVE CEILING ARE CONGESTED. DESIGN INTENT IS THAT UTILITIES BE INSTALLED TIGHT AGAINST CEILING STRUCTURE TO EXTENT POSSIBLE, WHILE RETAINING ADEQUATE MAINTENANCE ACCESS PER CODES.
29. IN CASE OF CONFLICTS, ITEMS SHALL BE ARRANGED ACCORDING TO THE FOLLOWING PRIORITIES: LIGHTING, FIRE PROTECTION, HVAC. PROVIDE OFFSETS/RISES/DROPS REQUIRED TO RESOLVE CONFLICTS WITH OTHER UTILITIES, AND TO ACCOMMODATE ALL UTILITIES ABOVE CEILINGS.
30. IN GENERAL, REROUTE SMALLER DUCTS/PIPES THROUGH JOISTS TO RESOLVE CONFLICTS WITH LARGER. PERFORM REROUTING IN MOST EFFICIENT MANNER POSSIBLE, AND IN ACCORDANCE WITH INDUSTRY STANDARDS.
31. SEE ELECTRICAL PLANS FOR EXACT LOCATION OF ELECTRICAL PANELS TO AVOID DUCTWORK AND PIPING RUNNING OVER THESE AREAS. COORDINATE WITH ELECTRICAL CONTRACTOR.
32. LOCATE AIR DEVICES AS SHOWN. COORDINATE WITH OTHER TRADES TO AVOID CONFLICT AND ADJUST LOCATION IF NEEDED WITHOUT COMPROMISING AIR DEVICES PERFORMANCE.
33. TEST AND BALANCE CONTRACTOR SHALL BE RETAINED BY THE PRIME CONTRACTOR AND NOT UNDER THE MECHANICAL CONTRACTOR. ALL SUB–CONTRACTORS SHALL COORDINATE ACTIVITIES AND ASSIST TEST AND BALANCE CONTRACTOR AS NEEDED.
34. TEST & BALANCE TO COORDINATE MINIMUM AND MAXIMUM OUTSIDE AIR DAMPER SETTINGS WITH DDC CONTROLS AND ENGINEER. PROVIDE TIME ALLOTMENT FOR MULTIPLE DAMPER SETTINGS IN SOME CASES.
35. PAINTING: WHERE EXPOSED TO VIEW, PAINT ALL PIPING, DUCTWORK, AIR DEVICES, INSULATION, AND OTHER MATERIALS. COORDINATE FINISH AND COLOR WITH OWNER AND ENGINEER.

EQUIPMENT:

1. EQUIPMENT INSPECTION:
   a. FIELD VERIFY ALL CONDITIONS AND MEASURE DIMENSIONS WITHIN THE BUILDING PRIOR TO ORDERING EQUIPMENT AND/OR PROCEEDING WITH INSTALLATION.
   b. ALL EQUIPMENT SHALL BE FACTORY TESTED, AND CONTRACTOR SHALL VERIFY EQUIPMENT CONDITION PRIOR TO INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR EQUIPMENT DAMAGED DURING MOVING AND INSTALLATION.
   c. EQUIPMENT FOUND DEFECTIVE PRIOR TO FINAL ACCEPTANCE SHALL BE REPLACED AT NO COST TO OWNER.
2. EQUIPMENT ACCESS:
   a. MAKE ALL VALVES ACCESSIBLE, INCLUDING MANUAL SHUTOFF VALVES AND AUTOMATIC VALVES. VALVES SHOULD BE CLOSE TO THE UNIT BEING SERVED AND REACHABLE BY A 5'–6" PERSON STANDING ON THE FLOOR NEARBY, WITHOUT NEED FOR A LADDER. WHERE SHUTOFF VALVES SERVE AN ABOVE–CEILING UNIT ACCESSIBLE ONLY BY LADDER, THE SHUTOFF VALVES SHOULD BE CLOSE ENOUGH TO THE UNIT SO THAT MAINTENANCE PERSONNEL CAN SHUT THE VALVES AND ACCESS THE CONTROL PANEL WITHOUT HAVING TO RELOCATE THE LADDER. WHERE PIPING CONFIGURATION MAKES IT IMPOSSIBLE TO LOCATE SHUTOFF VALVES IN THE MANNER DESCRIBED ABOVE, OBTAIN APPROVAL FROM OWNER AND/OR ENGINEER FOR ALTERNATE LOCATION.
   b. PROVIDE MANUFACTURER RECOMMENDED AND CODE ENFORCED CLEARANCES AROUND EQUIPMENT. MAINTAIN 36" CLEAR IN FRONT OF EFs CONTROLLER, ELECTRIC HEATERS, ETC.
   c. INSTALL ALL VALVES, CONTROLS, DAMPERS, FANS, ETC. IN ACCESSIBLE LOCATIONS. PROVIDE ADEQUATELY SIZED ACCESS DOORS WHERE REQUIRED.
3. EQUIPMENT INSTALLATION:
   a. PROVIDE SPRING HANGER TYPE VIBRATION ISOLATORS TO SUPPORT SUSPENDED AHUS, FANS AND OTHER POWERED VIBRATING EQUIPMENT. PROVIDE FLEXIBLE DUCT CONNECTORS.
   b. COMPLETELY WEATHERPROOF ALL EQUIPMENT, DUCTS, PIPES AND OTHER DEVICES AND MATERIALS INSTALLED OUTSIDE THE BUILDING, CHILLER YARD AREA, OR OTHERWISE EXPOSED TO WEATHER. AS A MINIMUM, WEATHERPROOFING SHALL INCLUDE, BUT IS NOT LIMITED TO THE FOLLOWING: JACKETING FOR ALL PIPING INSULATION, VALVES AND ACCESSORIES RATED FOR OUTDOOR SERVICE, ELECTRICAL ENCLOSURES NEMA 4X–SS. PROVIDE ELECTRICAL HEAT TRACING FOR UTILITIES SUSCEPTIBLE TO FREEZING.
   c. AFFIX ID TAGS TO ALL MECHANICAL EQUIPMENT PER SPECIFICATIONS.
4. EQUIPMENT INSULATION:
   a. INSULATE ALL SURFACES OF THAT ARE CAPABLE OF BECOMING COLD AND COLLECTING CONDENSATE. THIS INCLUDES SUPPLY DIFFUSERS AND CONNECTING DUCTWORK / TRANSITION PIECES.
5. PLUMBING:
   a. COORDINATE LOCATIONS WITH PLUMBING CONTRACTOR.
   b. COORDINATE CONDENSATE RECOVERY SYSTEM WITH PLUMBING CONTRACTOR.
   c. PROVIDE INSULATED AND TRAPPED CONDENSATE DRAIN LINES FROM ALL AIR CONDITIONING EQUIPMENT AND TERMINATE TO NEAREST CONDENSATE DRAIN RECEPTORS OR OTHER APPROVED RECEPTACLES. COORDINATE WITH PLUMBING.
6. ELECTRICAL:
   a. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH ELECTRICAL CONTRACTOR REGARDING EQUIPMENT SIZES AND TYPES OF ELECTRICAL INTERFACE EQUIPMENT REQUIRED.
   b. DUE TO VARIATIONS IN EQUIPMENT CHARACTERISTICS BY DIFFERENT EQUIPMENT SUPPLIERS, MECHANICAL EQUIPMENT ULTIMATELY PROVIDED MAY DIFFER IN HORSEPOWER OR AMPERAGE REQUIREMENTS FROM THAT SPECIFIED IN THESE DRAWINGS. COORDINATE WITH GENERAL CONTRACTOR PRIOR TO BIDDING, AND PRIOR TO SUBMITTALS AND ORDERING EQUIPMENT, TO ENSURE THAT EQUIPMENT ELECTRICAL REQUIREMENTS ARE CONVEYED TO ELECTRICAL CONTRACTOR. IT IS SOLELY CONTRACTOR'S RESPONSIBILITY TO ENSURE COMPATIBILITY ISSUES ARE COORDINATED.

DEMOLITION GENERAL NOTES:

1. ALL DEMOLITION WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES INCLUDING THOSE PUBLISHED BY OSHA.
2. PROVIDE ALL DEMOLITION WORK REQUIRED FOR THE REMOVAL OF MECHANICAL EQUIPMENT AND ASSOCIATED DEVICES. PROVIDE A COMPLETE AND OPERABLE SYSTEM UPON COMPLETION OF THE PROJECT.
3. ALL EXISTING EQUIPMENT REMOVED DURING CONSTRUCTION, THAT IS NOT TO BE REUSED, SHALL BE REMOVED FROM THE JOB SITE AND PROPERLY RETURNED TO THE OWNER, IF DESIRED BY OWNER.
4. CONTRACTOR SHALL NOT DAMAGE STRUCTURAL INTEGRITY OF BUILDING ELEMENTS WITHOUT THE EXPRESSED WRITTEN CONSENT OF THE ENGINEER. CONTRACTOR SHALL GAIN CONSENT OF ENGINEER PRIOR TO COMPROMISING INTEGRITY OF STRUCTURAL BEAMS, IN WORK ASSOCIATED WITH BOTH DEMOLITION AND INSTALLATION.
5. OWNER MAY WISH TO KEEP DEMOLISHED EQUIPMENT AND MATERIALS. COORDINATE OWNER, AND DISPOSE OF EQUIPMENT AND MATERIALS THAT OWNER DOES NOT RETAIN.
6. COORDINATE CUTTING AND PATCHING OF ARCHITECTURAL ELEMENTS LIKE WALLS, FLOORS, ROOFS WITH OWNER/ENGINEER. PATCH UNUSED ROOF AND WALL PENETRATIONS, AND FINISH TO MATCH EXISTING ARCHITECTURAL ELEMENTS.

CONTROLS:

1. CONTRACTOR SHALL COOPERATE AND COORDINATE WORK ACTIVITIES WITH DDC CONTROLS CONTRACTOR TO ENSURE SMOOTH TROUBLE–FREE INSTALLATION.
2. WHERE NOT SPECIFICALLY INDICATED ON PLANS, DDC CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL RELAYS AND CONTACTORS, POWER TO DDC PANELS, AND OTHER CONTROL ELEMENTS. ALTHOUGH DDC CONTRACTOR MAY COORDINATE WITH OTHER TRADES TO PROVIDE MISCELLANEOUS ELECTRICAL WORK, THE FINAL RESPONSIBILITY FOR ACHIEVEMENT OF CONTROL SEQUENCES LIES WITH DDC CONTRACTOR.
3. ON THE GRAPHIC PAGES FOR ALL EQUIPMENT AND/OR MONITORED DEVICES (SUCH AS SENSORS, METERS, DAMPERS, ETC.) GIVE A CLEAR, GRAPHICAL INDICATION AS TO WHETHER EQUIPMENT OR DEVICE HAS BEEN PLACED IN MANUAL OPERATION, OVERRIDING AUTOMATIC OPERATION. (FOR EXAMPLE, PLACE AN "M" NEXT TO EQUIPMENT HAS BEEN PLACED IN MANUAL OPERATION.)
4. REFER TO OPERATING SEQUENCE IN SPECIFICATIONS FOR ALARMS AND SEQUENCES REQUIRED.
5. ALL REFERENCES TO CONTROLLED / MONITORED POINTS AND/OR GRAPHICS WHICH ARE ON A CURRENT CONTROL SYSTEM, AND WHICH WILL BE REMOVED DURING COURSE OF CONSTRUCTION OF THIS PROJECT, MUST BE COMPLETELY REMOVED FROM CONTROL SYSTEM SOFTWARE. CONTROL SYSTEM WIRING AND CONTROLLERS TO SUCH POINTS MUST BE REMOVED AS WELL.
6. PROVIDE FULL COLOR GRAPHICS OF NEW SYSTEMS.
7. INTEGRATE NEW CONTROLS WITH OWNER'S EXISTING COS ON SITE.
8. PROVIDE WEB–SERVER. SEE SPECIFICATIONS.
9. RECOMMENDED DIVISION OF RESPONSIBILITIES BETWEEN SUB–CONTRACTORS IS AS FOLLOWS:
   a. WITH OWNER COORDINATE ETHERNET CONNECTION FOR DDC SYSTEM. CONTRACTOR TO EXTEND ETHERNET FROM OWNER DESIGNATED LOCATION TO NEW DDC PANELS.
   b. DDC CONTRACTOR SHALL COORDINATE CONTROL WIRING BETWEEN CONTROL PANELS AND UNITARY CONTROLLERS. PROVIDE MEANS TO SUPPORT WIRING (J–HOOKS). DO NOT SUPPORT WIRING FROM EXISTING DATA OR FIRE ALARM WIRING SUPPORTS.
   c. WITH ELECTRICAL SUB CONTRACTOR, CONTROL CONTRACTOR COORDINATES 120V POWER WIRING AND CONDUIT TO NEW CONTROLLERS (AND CIRCUIT BREAKERS, IF NO SPARES EXIST).
   d. CONTROLS CONTRACTOR TO COORDINATE OUTSIDE AND RETURN AIR DAMPERS WITH AHU MANUFACTURER.
   e. CONTROLS CONTRACTOR IS RESPONSIBLE FOR:
      * DAMPER ACTUATORS
      * ADJUSTABLE RANGE THERMOSTATS, RH, CO2 SENSING DEVICES
      * EQUIPMENT CONTROLLERS, SOFTWARE, PROGRAMMING.
      * ALL NETWORK CONTROL PANELS, DDC CONTROLLERS, SOFTWARE, AND PROGRAMMING.
      * WIRING AND CONDUIT FOR CONTROL AND MONITORING DEVICES
      * CONTROL RELAYS
      * SHOP DRAWINGS PER SPECIFICATIONS
      * SYSTEM CHECK OUT, OWNER TRAINING, DDC SYSTEM WARRANTY WORK

DUCTWORK:

1. DUCTWORK GENERAL:
   a. DRAWINGS ARE DIAGRAMMATIC IN NATURE. FOR CLARITY SAKE, MOST DUCT OFFSETS/RISES/DROPS ARE NOT SHOWN. WHERE DUCTS PENETRATE WALLS, INSTALL THEM PERPENDICULAR TO WALL.
   b. RECTANGULAR AND ROUND DUCTWORK SHALL BE GALVANIZED STEEL. SIZES SHOWN ARE INSIDE CLEAR DIMENSION, UNLESS NOTED OTHERWISE.
   c. VERIFY BOTTOM OF DUCT ELEVATION AND COORDINATE WITH OTHER TRADES.
   d. CONSTRUCT AND LEAKAGE TEST ALL DUCTWORK BASED ON SPECIFICATIONS AND SMACNA REQUIREMENTS, WHICHEVER IS MORE STRINGENT. COORDINATE PRESSURE CLASSES WITH EQUIPMENT SCHEDULES.
   e. FLEXIBLE DUCTS MAXIMUM LENGTH SHALL NOT EXCEED 6 FEET. USE OF FLEXIBLE DUCTWORK IS LIMITED TO AREAS WITH AN ACCESSIBLE SUSPENDED CEILING. PINCHED DUCT WILL HAVE TO BE REPLACED.
   f. IN AREAS WHERE DUCT CONFLICTS CANNOT BE AVOIDED, ROUTE SMALLER DUCTS THROUGH STRUCTURAL ROOF JOISTS.
   g. LOCATE AIR DEVICES AS SHOWN. COORDINATE WITH ELECTRICAL, IF NEEDED. RELOCATE DIFFUSER TO ADJACENT TILE.
2. DUCTWORK INSULATION:
   a. WRAP ALL OUTSIDE AIR, SUPPLY AND RETURN DUCTWORK UNLESS NOTED OTHERWISE.
   b. IN ADDITION, FOR ACOUSTICAL PERFORMANCE INTERNALLY LINE FIRST 10' OF SUPPLY AND LAST 10' OF RETURN DUCTWORK.
   c. PROVIDE ACOUSTICAL LINING FOR ALL TRANSFER DUCTS AND RETURN AIR ELBOWS.
   d. INSULATION ON DUCT SHOULD TO BE PROPERLY TAPED AND MASTICS MUST BE APPLIED ON SEAMS AND JOINTS AND AT ENDS ADJACENT TO DUCT FLANGES AND FITTINGS. FOR DUCT SIDES WITH DIMENSIONS LARGER THAN 18 INCHES, APPLY ADDITIONAL PINS AND CLIPS TO HOLD INSULATION TIGHTLY AGAINST SURFACE AT CROSS BRACING.
   e. INSULATE ALL EXHAUST DUCTWORK 10 FEET FROM EXTERIOR OPENING.
3. DUCT FITTINGS:
   a. WHERE RECTANGULAR TEE FITTINGS ARE SHOWN, PROVIDE FITTING WITH ADJUSTABLE DIVIDER SHEET AND TURNING VANES.
   b. WHERE RECTANGULAR MAIN AND BRANCH CONNECTIONS ARE SHOWN, PROVIDE EXTRACTOR VANES. NOT APPLICABLE TO DUCTWORK DOWNSTREAM OF VAV BOXES.
   c. PROVIDE TURNING VANES IN ALL ELBOWS PER SPECS.
4. DAMPERS:
   a. IN AN ACCESSIBLE LOCATION, PROVIDE MANUAL ROD–TYPE VOLUME BALANCING DUCT DAMPERS IN ALL SUPPLY, RETURN AND EXHAUST DUCT BRANCHES TO INDIVIDUAL GRILLES, REGISTERS AND DIFFUSERS (GRD). TO MINIMIZE NOISE INSTALL DAMPERS CLOSER TO THE BRANCH CONNECTION THAN TO THE GRD. IN DUCTWORK, PROVIDE ACCESS DOORS TO ALL DAMPERS.
   b. ABOVE INACCESSIBLE CEILINGS AND IN CASE DUCT CONFIGURATION DOES NOT ALLOW FOR INSTALLATION OF DAMPER IN DUCTWORK, PROVIDE REMOTE MANUAL DAMPER BY YOUNG REGULATOR OR EQUAL, (CABLE OPERATED SYSTEM) WITH ENGINEER'S PERMISSION CONTRACTOR MAY PROVIDE ROD–TYPE VOLUME DAMPER THAT IS INTEGRAL TO GRD.
   c. PROVIDE BALANCING DAMPERS ON ALL EXHAUST GRILLES TO ACHIEVE DESIRED AIRFLOW.
   d. PROVIDE DYNAMIC FIRE DAMPERS (RUSKIN DIDB20, TYPE B OR EQUAL) IN ACCORDANCE WITH CODE REQUIREMENT, IN ALL PENETRATIONS OF FIRE RATED WALLS, OCCUPANCY SEPARATION WALLS, BARRIERS AND PARTITIONS, AND EXIT CORRIDORS. REFER TO ARCHITECTURAL PLANS FOR RATED WALLS. PROVIDE ACCESS DOORS AS PER CODE REQUIREMENTS, EQUAL TO RUSKIN ADH–22 FOR RECTANGULAR DUCT, ACUDOR RD FOR ROUND DUCT. WHERE GRILLE ACCESS IS INDICATED, ADDITIONAL DUCT ACCESS DOOR IS NOT REQUIRED. WHERE THE CEILING IS FIRE RATED PROVIDE FIRE RATED AIR DEVICES FOR TRANSFER & RETURN AIR GRILLES AND SUPPLY AIR DIFFUSERS AS PER CODE REQUIRMENTS. REFER TO ARCHITECTURAL PLANS FOR RATED CEILINGS.
   e. PROVIDE ACCESS DOORS (NOT SHOWN IN DRAWINGS) FOR INSPECTION OF DUCT MOUNTED EQUIPMENT SUCH AS FIRE/SMOKE DAMPERS, MANUAL BALANCING DAMPERS AND TURNING VANES. IN AREAS WITH HARD CEILING COORDINATE ACCESS DOOR LOCATIONS AND CEILING ACCESS PANELS WITH OTHER TRADES.

PIPING:

1. DRAWINGS ARE DIAGRAMMATIC IN NATURE. FOR CLARITY SAKE, MOST PIPING OFFSETS/RISES/DROPS ARE NOT SHOWN IN DRAWINGS.
2. COORDINATE LOCATION OF CHILLED WATER PIPING WITH PLUMBING, ELECTRICAL AND OTHER TRADES.
3. SEAL ALL PENETRATIONS IN FIRE RATED WALLS WITH APPROVED FIRE RATED SEALANT. SEE SPECIFICATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIRE WALL LOCATIONS.
4. FOR PIPE SIZES, REFER TO CHILLED WATER RISER DIAGRAM.
5. PROVIDE LINE SIZE MANUAL ISOLATION VALVES AT ALL EQUIPMENT AND AT ALL MAJOR PIPING TAKE OFFS. REFER TO PIPING RISER SCHEMATIC FOR VALVE LOCATION AND SIZES. INSTALL ISOLATION VALVES IN ACCESSIBLE LOCATIONS. PROVIDE ADEQUATELY SIZED ACCESS DOORS WHERE REQUIRED.
6. WITHIN 50' OF CONNECTION TO AHU'S, FCU'S AND OTHER POWERED VIBRATION EQUIPMENT, PROVIDE SPRING HANGER TYPE VIBRATION ISOLATORS FOR PIPING SUPPORT.
7. INSTALL ALL PIPING PENETRATING WALLS, PERPENDICULAR TO WALL. DRAWINGS INDICATE GENERAL ROUTING ONLY.
8. SLEEVE ALL EXTERIOR WALL AND GRADE BEAM PENETRATIONS. GRADE BEAM PENETRATIONS SHALL BE MADE WITHIN MIDDLE 1/3 OF VERTICAL SPAN OF BEAM.
9. PROVIDE LONG STEM CHW VALVES TO AVOID CONFLICT WITH INSULATION.
10. PROVIDE EPOXY PAINTING FOR PIPING PRIOR TO INSULATING HYDRONIC PIPING.

INSULATION:

1. FIBERGLASS INSULATION MAY NOT BE USED ON ANY COLD PIPING SURFACES; ONLY CLOSED CELL INSULATION IS ACCEPTABLE.
2. PROVIDE INSULATION ON ALL SURFACES CAPABLE OF CREATING CONDENSATION.

PERMITS:

1. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS AND FEES.
2. OBTAIN APPROVAL FROM CITY FIRE DEPARTMENT AND BUILDING AND SAFETY DEPARTMENT PRIOR TO INSTALLATION OF ANY FIRE RELATED ITEMS.
3. WITH PERMITTING OFFICER, OWNER AND ENGINEER, COORDINATE PRESSURE TESTS, INSPECTIONS AND APPROVAL FOR ALL SYSTEMS.

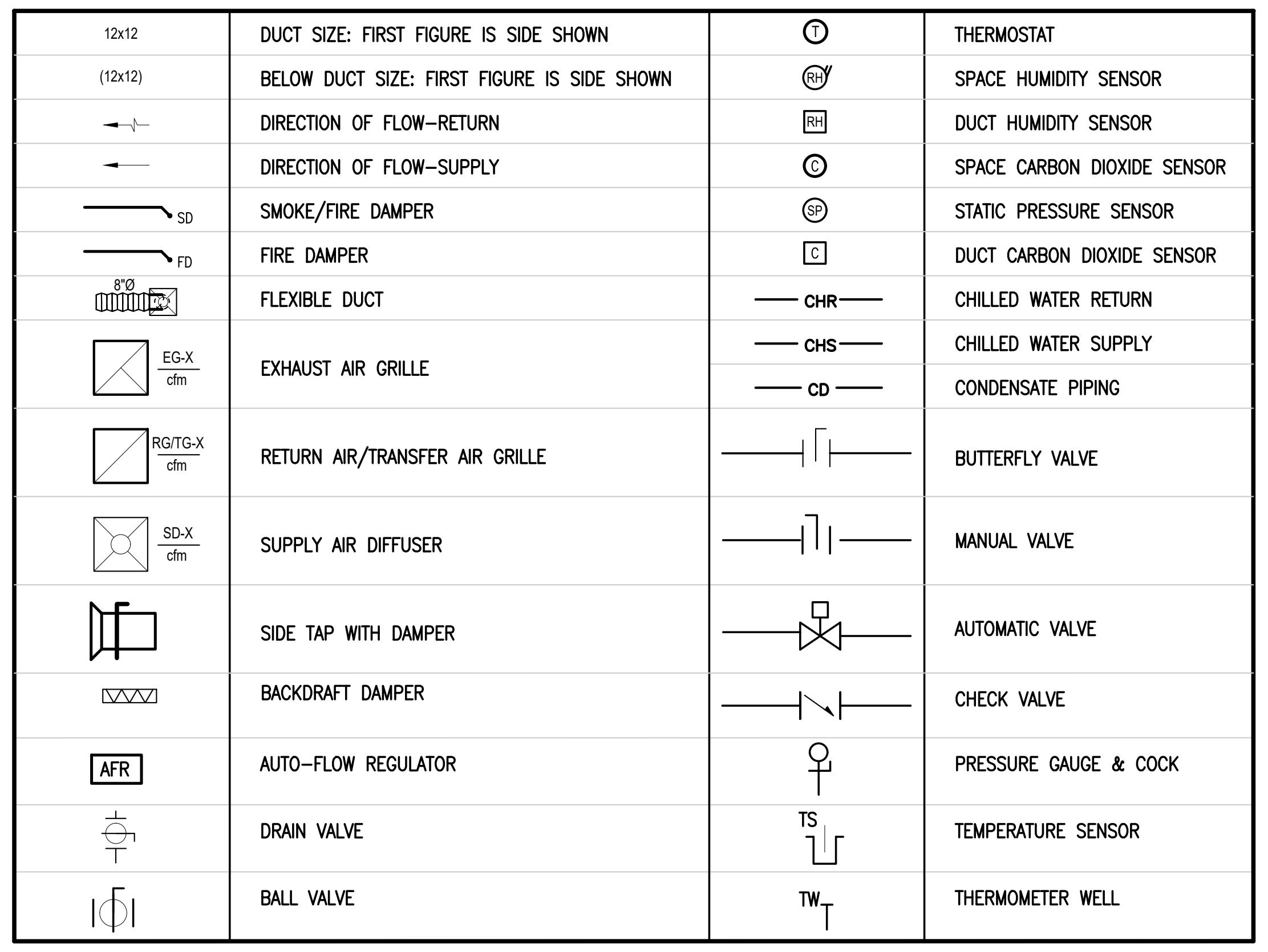
CODES & ORDINANCES:

1. GENERAL:
   a. UNLESS DRAWINGS OR SPECIFICATIONS HAVE MORE STRINGENT REQUIREMENTS, PERFORM ALL WORK PER APPLICABLE VERSION OF INTERNATIONAL BUILDING CODES, AND LOCAL CODES AND ORDINANCES.
   b. PRIOR TO SUBMITTING PROPOSAL, NOTIFY ENGINEER OF ANY ASPECTS OF DESIGN WHICH ARE THOUGHT TO BE IN NONCOMPLIANCE WITH APPLICABLE CODES.
2. WIND STORM CERTIFICATION:
   a. CONTRACTOR SHALL DESIGN, CONSTRUCT AND INSTALL EXTERIOR AND ROOF MOUNTED EQUIPMENT TO MEET GOVERNING BUILDING CODES.
3. PERMITS:
   a. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS AND FEES ASSOCIATED WITH PROJECT, INCLUDING FEES FOR INSPECTIONS, APPLICATIONS, AND PROVISION OF NEW SERVICES.
   b. CONTRACTOR WHO WILL ACTUALLY PERFORM WORK MUST APPLY FOR ALL REQUIRED PERMITS.
4. APPROVALS AND INSPECTIONS:
   a. OBTAIN APPROVAL FROM CITY FIRE DEPARTMENT AND BUILDING AND SAFETY DEPARTMENT PRIOR TO INSTALLATION OF ANY FIRE RELATED ITEMS.
   b. COORDINATE PRESSURE TESTS, INSPECTIONS AND APPROVAL FOR ALL SYSTEMS WITH PERMITTING OFFICER, OWNER AND ENGINEER.
   c. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING WIND STORM CERTIFICATION INSPECTIONS AND CERTIFICATIONS FOR ROOF MOUNTED SYSTEMS. CONTRACTOR MUST NOTIFY INSPECTOR PRIOR TO INSTALLING EQUIPMENT, AND APPRISE INSPECTOR OF WORK SCHEDULING INVOLVING EQUIPMENT REQUIRING WIND INSPECTION / CERTIFICATION, SO THAT INSPECTIONS MAY BE CARRIED OUT AT REQUIRED STAGE(S) OF CONSTRUCTION.

ABBREVIATIONS

A	AMPS	ENT.	ENTERING	NO	NORMALLY OPEN
ACCU	AIR COOLED CONDENSING UNIT	EXT.	EXTERNAL OR EXTERIOR	NTS	NOT TO SCALE
ACT	ACTUATOR	FCU	FAN COIL UNIT	OA	OUTSIDE AIR
AFF	ABOVE FINISHED FLOOR	FD	FIRE DAMPER	PH	PHASE
AHU	AIR HANDLING UNIT	FM	FLOW METER	RA	RETURN AIR
B.	BOTTOM	FS	FLOW SWITCH	RAG/RG	RETURN AIR GRILLE
BAS	BUILDING AUTOMATION SYSTEM	FPI	FINS PER INCH	RD	ROOF DRAIN
BOP	BOTTOM OF PIPE	G.	GROUND	RM.	ROOM
BOTT.	BOTTOM	GA.	GAGE	RPZ	REDUCED PRESSURE ZONE
C.	CONDUIT OR COMMON	GALV.	GALVANIZED	SA	SUPPLY AIR
CHR	CHILLED WATER RETURN	GPM	GALLONS PER MINUTE	SD	SUPPLY AIR DIFFUSER
CHS	CHILLED WATER SUPPLY	GRND.	GROUND	SS	STAINLESS STEEL
CHW	CHILLED WATER	HB	HOSE BIBB	SZ	SINGLE ZONE
CHWP	CHILLED WATER PUMP	HP	HORSEPOWER	TAB	TESTING & BALANCING
CR	CONDENSER WATER RETURN	HS	HUMIDITY SENSOR	T.O.L.	TOP OF LOUVER
CS	CONDENSER WATER SUPPLY	HVAC	HEATING, VENTILATION, & AIR CONDITIONING	TS	TEMPERATURE SENSOR
CLG.	CEILING OR COOLING			TSTAT	THERMOSTAT
COMB.	COMBINATION	LVG.	LEAVING	UG	UNDERGROUND
CONC.	CONCRETE	MECH	MECHANICAL	UNO	UNLESS OTHERWISE NOTED
COND.	CONDUIT	MOT. STRTR.	MOTOR STARTER	V	VOLTS
CT	COOLING TOWER	MS	MOTOR STARTER	VAV	VARIABLE AIR VOLUME
CU.	COPPER	MZ	MULTI–ZONE	VFD	VARIABLE FREQUENCY DRIVE
CW	CITY WATER	NC	NORMALLY CLOSED	W	WIRE
DDC	DIRECT DIGITAL CONTROLS				
DMPR.	DAMPER				
DISC.	DISCONNECT				
EAG/EG	EXHAUST AIR GRILLE				
EMS	ENERGY MANAGEMENT SYSTEM				

MECHANICAL SYMBOLS LEGEND



12x12	DUCT SIZE: FIRST FIGURE IS SIDE SHOWN	T	THERMOSTAT
(12x12)	BELOW DUCT SIZE: FIRST FIGURE IS SIDE SHOWN	RH	SPACE HUMIDITY SENSOR
	DIRECTION OF FLOW–RETURN	RH	DUCT HUMIDITY SENSOR
	DIRECTION OF FLOW–SUPPLY	C	SPACE CARBON DIOXIDE SENSOR
SD	SMOKE/FIRE DAMPER	SP	STATIC PRESSURE SENSOR
FD	FIRE DAMPER	C	DUCT CARBON DIOXIDE SENSOR
8"Ø	FLEXIBLE DUCT	CHR	CHILLED WATER RETURN
EG-X cfm	EXHAUST AIR GRILLE	CHS	CHILLED WATER SUPPLY
		CD	CONDENSATE PIPING
RG/TG-X cfm	RETURN AIR/TRANSFER AIR GRILLE		BUTTERFLY VALVE
SD-X cfm	SUPPLY AIR DIFFUSER		MANUAL VALVE
	SIDE TAP WITH DAMPER		AUTOMATIC VALVE
	BACKDRAFT DAMPER		CHECK VALVE
AFR	AUTO–FLOW REGULATOR		PRESSURE GAUGE & COCK
	DRAIN VALVE	TS	TEMPERATURE SENSOR
	BALL VALVE	TW	THERMOMETER WELL

NO: REVISION: BY:

RFP #231001

CESAR A. GONZALEZ
108611
09.25.2023

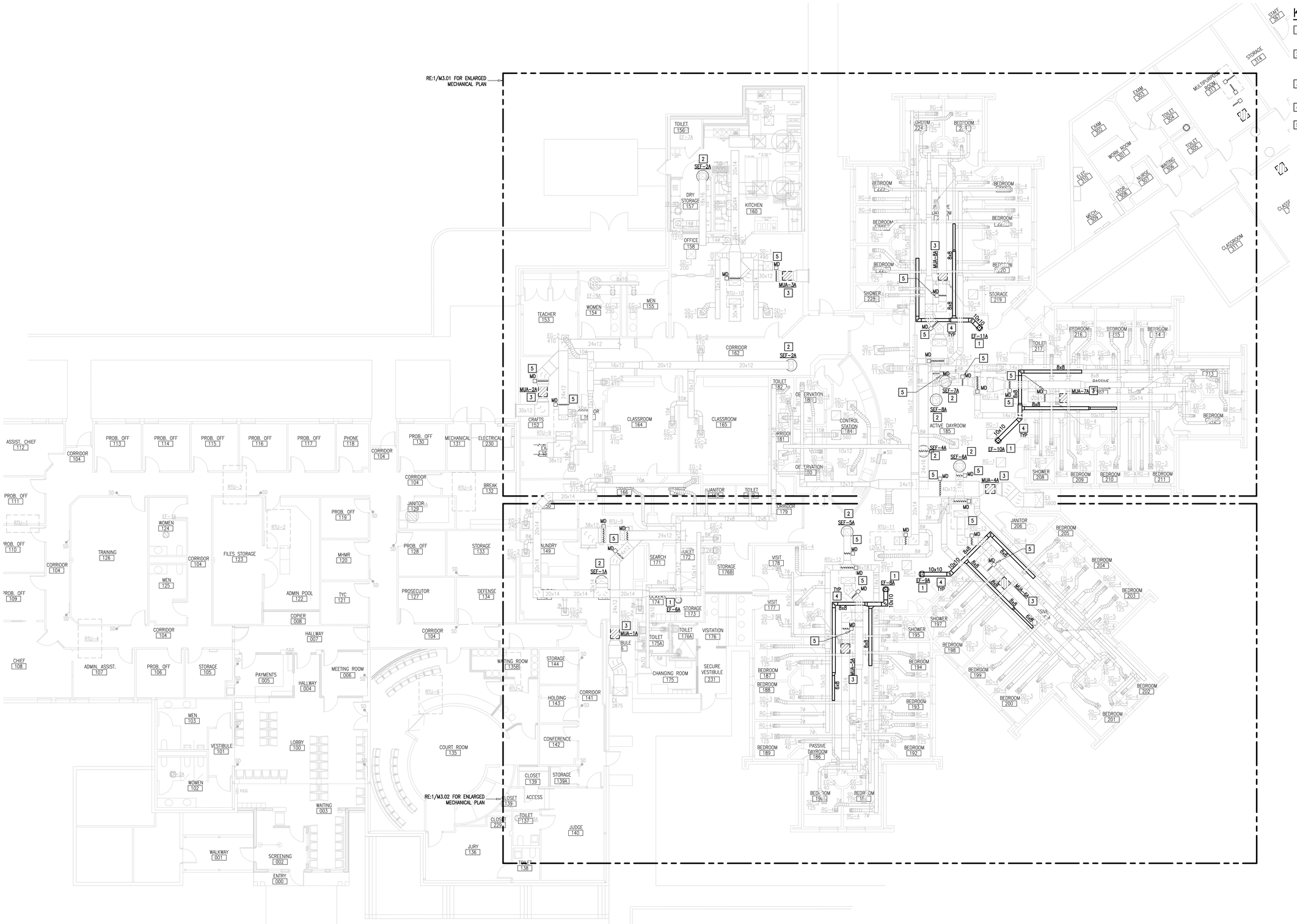
TEXAS

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED
ENGINEERING FIRM
F-15998

DATE: SEPTEMBER 25, 2023
CHECKED BY: C.A.G.
DRAWN BY: B.B.,P.M.
PROJECT NO.: 23v40
CAD FILE:
SHEET:
M1.01



KEYED NOTES:

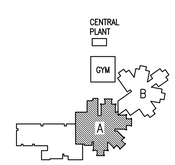
1. DEMOLISH EXISTING ENVIRONMENTAL AIR EXHAUST FAN (EF) LOCATED ON ROOF AS SHOWN. REFER TO NEW PLANS FOR MORE INFORMATION.
2. DEMOLISH EXISTING SMOKE EVACUATION FAN (SEF) LOCATED ON ROOF AS SHOWN. DEMOLISH APPROXIMATELY 2 FEET OF VERTICAL DUCT TO ACCOMMODATE NEW BACK DRAFT DAMPER. REFER TO NEW PLANS FOR MORE INFORMATION.
3. DEMOLISH EXISTING MAKE-UP AIR FAN (MUA) LOCATED ABOVE THE CEILING IN THE PLENUM SPACE AS SHOWN. REFER TO NEW PLANS FOR MORE INFORMATION.
4. DEMOLISH EXISTING DUCTWORK AS SHOWN. REFER TO NEW PLANS FOR NEW DUCTWORK LAYOUT.
5. DEMOLISH EXISTING MOTORIZED DAMPERS AND ASSOCIATED ACTUATORS AT SMOKE EVACUATION FANS, MAKE-UP AIR FANS, AND AT MAIN VERTICAL RETURN & SUPPLY AIR DUCTS SERVING ROOFTOP UNITS. PREPARE AREA AND DUCTWORK TO RECEIVE NEW MOTORIZED DAMPERS. REFER TO NEW PLANS AND SEQUENCES OF OPERATION FOR MORE INFORMATION.

LEGEND:

CHS / CHR	NEW CHILLED WATER PIPING
	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED
MD	EXIST MOTORIZED DAMPER TO BE DEMOLISHED

01 DARRELL HESTER
DEMOLITION PLAN - AREA "A"
SCALE : 1/8" = 1'-0"

NORTH



KEYPLAN

NO.	REVISION:	BY:

RFP #231001

CESAR A. GONZALEZ
108611
09.25.2023

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO TEXAS

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED
ENGINEERING FIRM
F-15998

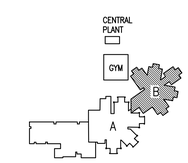
DATE: SEPTEMBER 25, 2023
CHECKED BY: C.A.G.
DRAWN BY: B.B.,P.M.
PROJECT NO.: 23v40
CAD FILE:
SHEET: M2.01

KEYED NOTES:

1. DEMOLISH EXISTING ENVIRONMENTAL AIR EXHAUST FAN (EF) LOCATED ON ROOF AS SHOWN. REFER TO NEW PLANS FOR MORE INFORMATION.
2. DEMOLISH EXISTING SMOKE EVACUATION FAN (SEF) LOCATED ON ROOF AS SHOWN. DEMOLISH APPROXIMATELY 2 FEET OF VERTICAL DUCT TO ACCOMMODATE NEW BACK DRAFT DAMPER. REFER TO NEW PLANS FOR MORE INFORMATION.
3. DEMOLISH EXISTING MAKE-UP AIR FAN (MUA) LOCATED ABOVE THE CEILING IN THE PLENUM SPACE AS SHOWN. REFER TO NEW PLANS FOR MORE INFORMATION.
4. DEMOLISH EXISTING DUCTWORK AS SHOWN. REFER TO NEW PLANS FOR NEW DUCTWORK LAYOUT.
5. DEMOLISH EXISTING MOTORIZED DAMPERS AND ASSOCIATED ACTUATORS AT SMOKE EVACUATION FANS, MAKE-UP AIR FANS, AND AT MAIN VERTICAL RETURN & SUPPLY AIR DUCTS SERVING ROOFTOP UNITS. PREPARE AREA AND DUCTWORK TO RECEIVE NEW MOTORIZED DAMPERS. REFER TO NEW PLANS AND SEQUENCES OF OPERATION FOR MORE INFORMATION.

LEGEND:

CHS / CHR	NEW CHILLED WATER PIPING
	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED
MD	EXIST MOTORIZED DAMPER TO BE DEMOLISHED



KEYPLAN

DARRELL HESTER
01 DEMOLITION PLAN - AREA "B"
SCALE : 1/8" = 1'=0"

NORTH

NO.	REVISION:	BY:

RFP #231001

CESAR A. GONZALEZ
108611
09.25.2023

TEXAS

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

DATE: SEPTEMBER 25, 2023
CHECKED BY: C.A.G.
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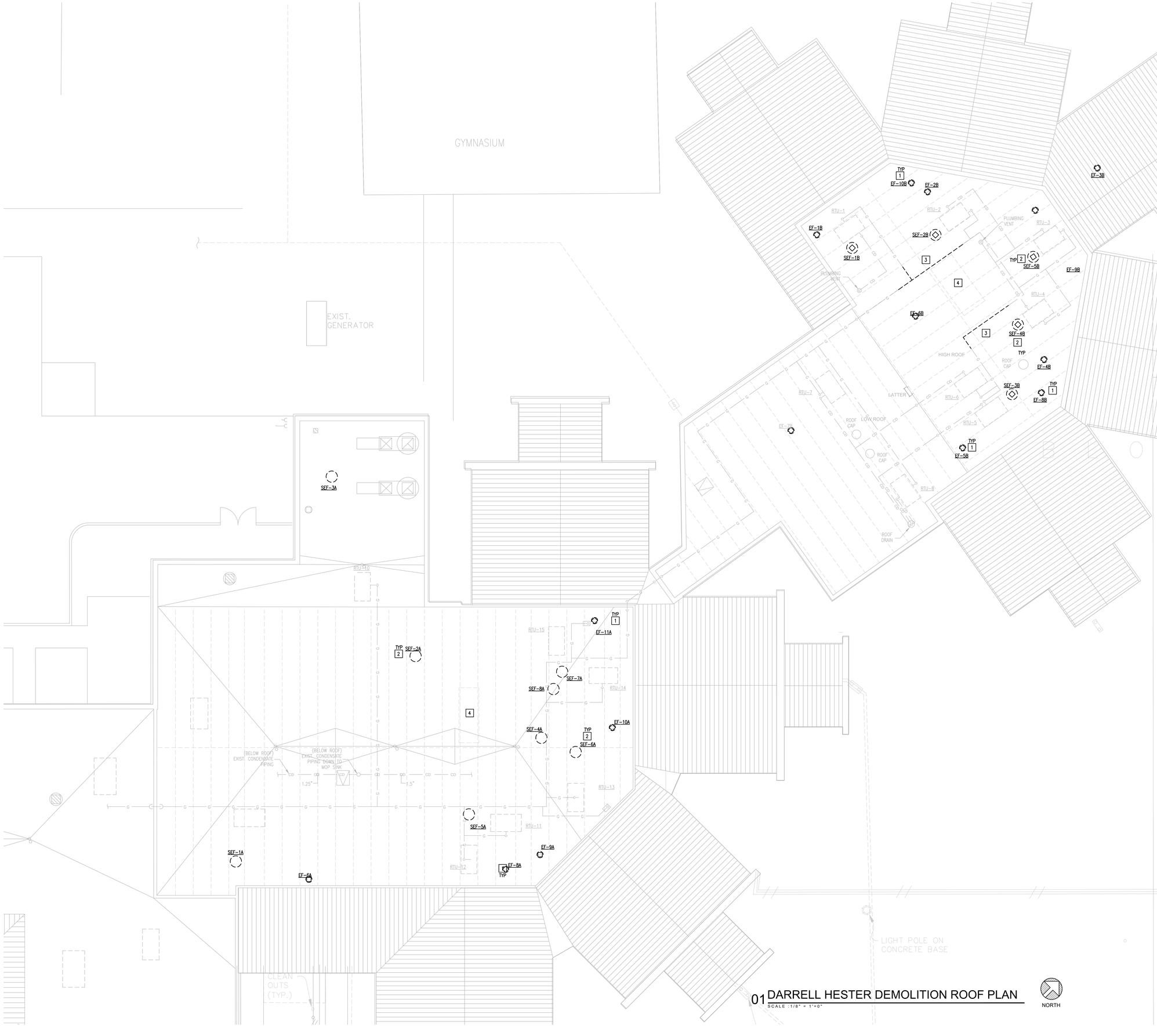
PROJECT NO.: 23v40
CAD FILE:
SHEET: M2.02



01 DARRELL HESTER DEMOLITION ROOF PLAN

SCALE : 1/8" = 1'=0"

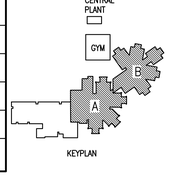
NORTH

KEYED NOTES:

1. DEMOLISH EXHAUST FAN ON ROOF. REFER TO NEW PLAN FOR NEW EXHAUST FAN.
2. DEMOLISH SMOKE EVACUATION FAN ON ROOF. REFER TO NEW PLAN FOR NEW EXHAUST FAN.
3. DEMOLISH SECTION OF EXISTING GAS PIPING AS SHOWN TO ACCOMMODATE NEW ROOFTOP UNIT. REFER TO NEW PLAN FOR NEW ROUTING.
4. PREPARE ARE FOR NEW ROOFTOP UNIT AT THIS APPROXIMATE LOCATION. REFER TO NEW PLAN FOR MORE INFORMATION.

LEGEND:

CHS / CHR	NEW CHILLED WATER PIPING
	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED



KEYPLAN

NO.	REVISION:	BY:

RFP #231001

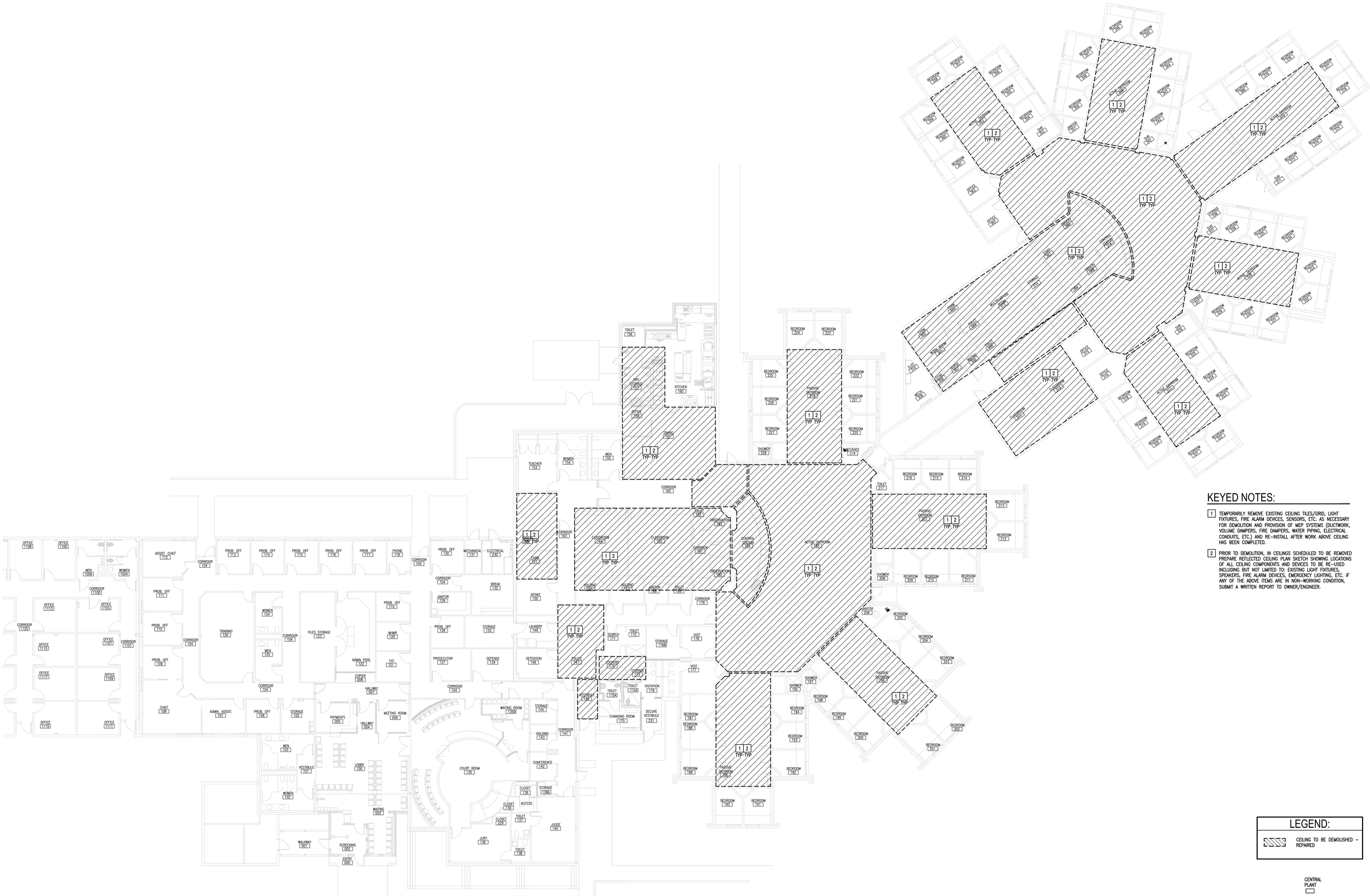
CESAR A. GONZALEZ
108611
09.25.2023

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO TEXAS

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

DATE: SEPTEMBER 25, 2023
CHECKED BY: C.A.G.
DRAWN BY: B.B., P.M.
PROJECT NO.: 23v40
CAD FILE:
SHEET: M2.03

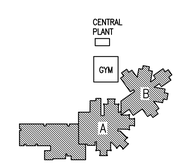


KEYED NOTES:

1. TEMPORARILY REMOVE EXISTING CEILING TILES/GRID, LIGHT FIXTURES, FIRE ALARM DEVICES, SENSORS, ETC. AS NECESSARY FOR DEMOLITION AND PROVISION OF MEP SYSTEMS (DUCTWORK, VOLUME DAMPERS, FIRE DAMPERS, WATER PIPING, ELECTRICAL CONDUITS, ETC.) AND RE-INSTALL AFTER WORK ABOVE CEILING HAS BEEN COMPLETED.
2. PRIOR TO DEMOLITION, IN CEILINGS SCHEDULED TO BE REMOVED PREPARE REFLECTED CEILING PLAN SKETCH SHOWING LOCATIONS OF ALL CEILING COMPONENTS AND DEVICES TO BE RE-USED INCLUDING BUT NOT LIMITED TO: EXISTING LIGHT FIXTURES, SPEAKERS, FIRE ALARM DEVICES, EMERGENCY LIGHTING, ETC. IF ANY OF THE ABOVE ITEMS ARE IN NON-WORKING CONDITION, SUBMIT A WRITTEN REPORT TO OWNER/ENGINEER.

LEGEND:

CEILING TO BE DEMOLISHED - REPAIRED



KEYPLAN

DARRELL HESTER
01 CEILING DEMOLITION - REPAIR PLAN

SCALE : 3/32" = 1'=0"

NORTH

NO.	REVISION:	BY:

RFP #231001

CESAR A. GONZALEZ
108611
04.25.2023

TEXAS

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-220-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

DATE: SEPTEMBER 25, 2023
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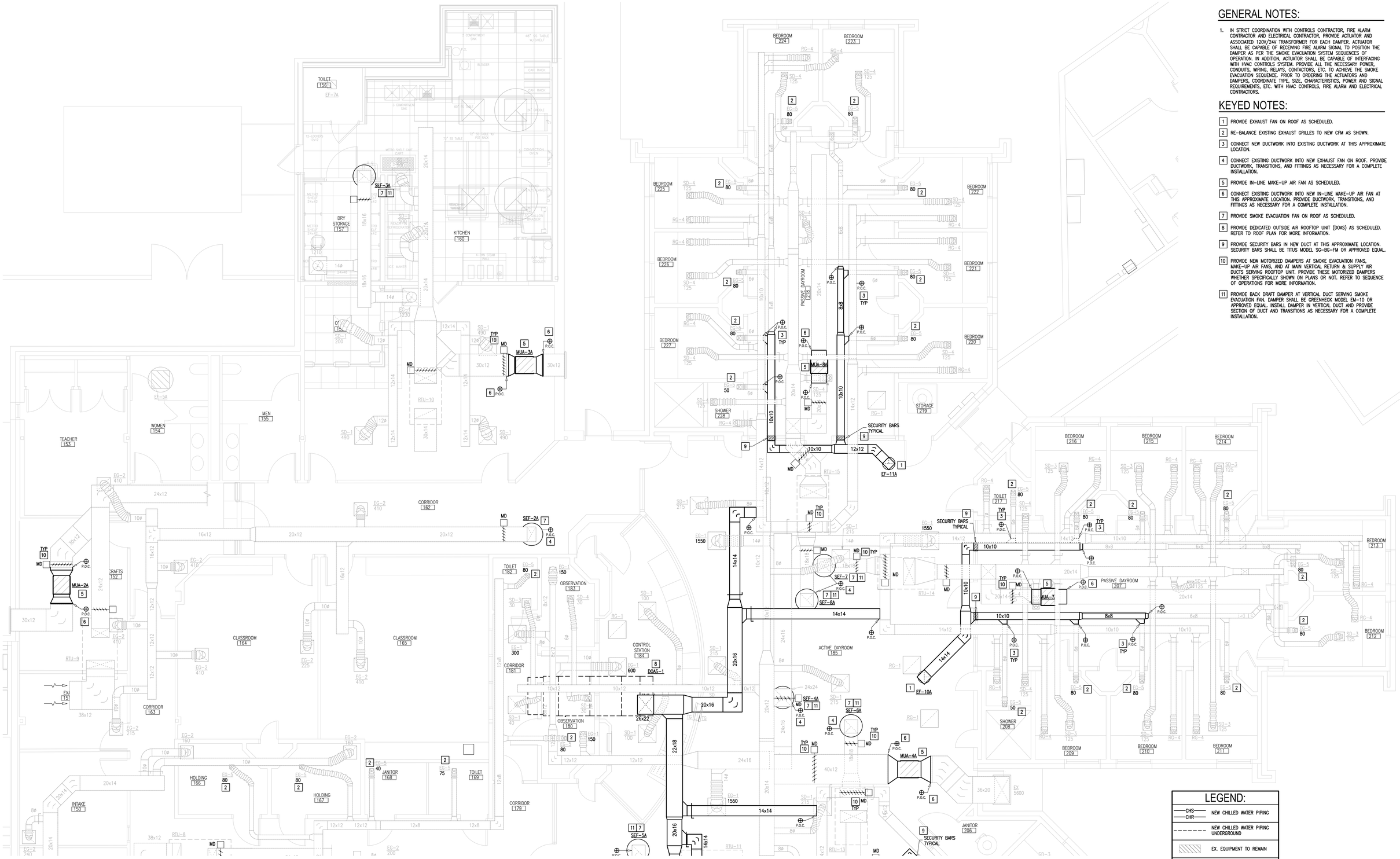
DRAWN BY: B.B.,P.M.
PROJECT NO.: 23v40
CAD FILE:
SHEET: M2.04



GENERAL NOTES:

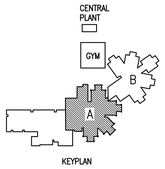
1. IN STRICT COORDINATION WITH CONTROLS CONTRACTOR, FIRE ALARM CONTRACTOR AND ELECTRICAL CONTRACTOR, PROVIDE ACTUATOR AND ASSOCIATED 120V/24V TRANSFORMER FOR EACH DAMPER. ACTUATOR SHALL BE CAPABLE OF RECEIVING FIRE ALARM SIGNAL TO POSITION THE DAMPER AS PER THE SMOKE EVACUATION SYSTEM SEQUENCES OF OPERATION. IN ADDITION, ACTUATOR SHALL BE CAPABLE OF INTERFACING WITH HVAC CONTROLS SYSTEM. PROVIDE ALL THE NECESSARY POWER, CONDUITS, WIRING, RELAYS, CONTACTORS, ETC. TO ACHIEVE THE SMOKE EVACUATION SEQUENCE. PRIOR TO ORDERING THE ACTUATORS AND DAMPERS, COORDINATE TYPE, SIZE, CHARACTERISTICS, POWER AND SIGNAL REQUIREMENTS, ETC. WITH HVAC CONTROLS, FIRE ALARM AND ELECTRICAL CONTRACTORS.

KEYED NOTES:

1. PROVIDE EXHAUST FAN ON ROOF AS SCHEDULED.
2. RE-BALANCE EXISTING EXHAUST GRILLES TO NEW CFM AS SHOWN.
3. CONNECT NEW DUCTWORK INTO EXISTING DUCTWORK AT THIS APPROXIMATE LOCATION.
4. CONNECT EXISTING DUCTWORK INTO NEW EXHAUST FAN ON ROOF. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
5. PROVIDE IN-LINE MAKE-UP AIR FAN AS SCHEDULED.
6. CONNECT EXISTING DUCTWORK INTO NEW IN-LINE MAKE-UP AIR FAN AT THIS APPROXIMATE LOCATION. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
7. PROVIDE SMOKE EVACUATION FAN ON ROOF AS SCHEDULED.
8. PROVIDE DEDICATED OUTSIDE AIR ROOFTOP UNIT (DOAS) AS SCHEDULED. REFER TO ROOF PLAN FOR MORE INFORMATION.
9. PROVIDE SECURITY BARS IN NEW DUCT AT THIS APPROXIMATE LOCATION. SECURITY BARS SHALL BE TITUS MODEL SG-BG-FM OR APPROVED EQUAL.
10. PROVIDE NEW MOTORIZED DAMPERS AT SMOKE EVACUATION FANS, MAKE-UP AIR FANS, AND AT MAIN VERTICAL RETURN & SUPPLY AIR DUCTS SERVING ROOFTOP UNIT. PROVIDE THESE MOTORIZED DAMPERS WHETHER SPECIFICALLY SHOWN ON PLANS OR NOT. REFER TO SEQUENCE OF OPERATIONS FOR MORE INFORMATION.
11. PROVIDE BACK DRAFT DAMPER AT VERTICAL DUCT SERVING SMOKE EVACUATION FAN. DAMPER SHALL BE GREENHECK MODEL EM-10 OR APPROVED EQUAL. INSTALL DAMPER IN VERTICAL DUCT AND PROVIDE SECTION OF DUCT AND TRANSITIONS AS NECESSARY FOR A COMPLETE INSTALLATION.

LEGEND:

CHS / CHR	NEW CHILLED WATER PIPING
	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED
MD	NEW MOTORIZED DAMPER



KEYPLAN

DARRELL HESTER
01 MECHANICAL PLAN - AREA "A"
SCALE : 1/4" = 1'=0"

NORTH

NO.	REVISION:	BY:

RFP #231001

CESAR A. GONZALEZ
108611
09.25.2023

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO TEXAS

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

DATE: SEPTEMBER 25, 2023
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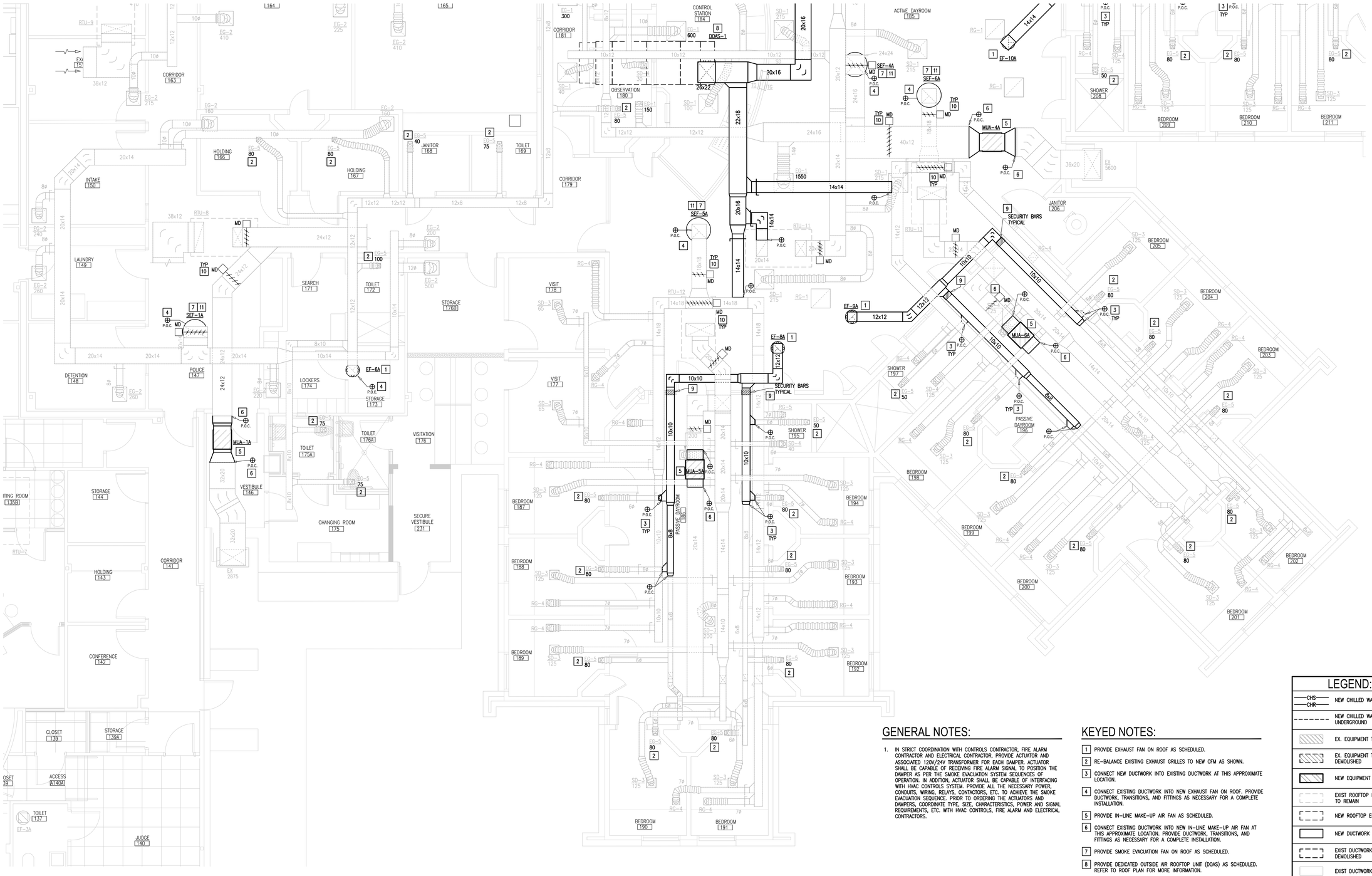
CAD FILE:
SHEET: M3.01



GENERAL NOTES:

1. IN STRICT COORDINATION WITH CONTROLS CONTRACTOR, FIRE ALARM CONTRACTOR AND ELECTRICAL CONTRACTOR, PROVIDE ACTUATOR AND ASSOCIATED 120V/24V TRANSFORMER FOR EACH DAMPER. ACTUATOR SHALL BE CAPABLE OF RECEIVING FIRE ALARM SIGNAL TO POSITION THE DAMPER AS PER THE SMOKE EVACUATION SYSTEM SEQUENCES OF OPERATION. IN ADDITION, ACTUATOR SHALL BE CAPABLE OF INTERFACING WITH HVAC CONTROLS SYSTEM. PROVIDE ALL THE NECESSARY POWER, CONDUITS, WIRING, RELAYS, CONTACTORS, ETC. TO ACHIEVE THE SMOKE EVACUATION SEQUENCE. PRIOR TO ORDERING THE ACTUATORS AND DAMPERS, COORDINATE TYPE, SIZE, CHARACTERISTICS, POWER AND SIGNAL REQUIREMENTS, ETC. WITH HVAC CONTROLS, FIRE ALARM AND ELECTRICAL CONTRACTORS.

KEYED NOTES:

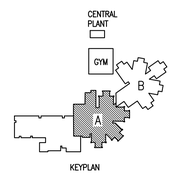
1. PROVIDE EXHAUST FAN ON ROOF AS SCHEDULED.
2. RE-BALANCE EXISTING EXHAUST GRILLES TO NEW CFM AS SHOWN.
3. CONNECT NEW DUCTWORK INTO EXISTING DUCTWORK AT THIS APPROXIMATE LOCATION.
4. CONNECT EXISTING DUCTWORK INTO NEW EXHAUST FAN ON ROOF. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
5. PROVIDE IN-LINE MAKE-UP AIR FAN AS SCHEDULED.
6. CONNECT EXISTING DUCTWORK INTO NEW IN-LINE MAKE-UP AIR FAN AT THIS APPROXIMATE LOCATION. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
7. PROVIDE SMOKE EVACUATION FAN ON ROOF AS SCHEDULED.
8. PROVIDE DEDICATED OUTSIDE AIR ROOFTOP UNIT (DOAS) AS SCHEDULED. REFER TO ROOF PLAN FOR MORE INFORMATION.
9. PROVIDE SECURITY BARS IN NEW DUCT AT THIS APPROXIMATE LOCATION. SECURITY BARS SHALL BE TITUS MODEL SG-BG-FM OR APPROVED EQUAL.
10. PROVIDE NEW MOTORIZED DAMPERS AT SMOKE EVACUATION FANS, MAKE-UP AIR FANS, AND AT MAIN VERTICAL RETURN & SUPPLY AIR DUCTS SERVING ROOFTOP UNIT. PROVIDE THESE MOTORIZED DAMPERS WHETHER SPECIFICALLY SHOWN ON PLANS OR NOT. REFER TO SEQUENCE OF OPERATIONS FOR MORE INFORMATION.
11. PROVIDE BACK DRAFT DAMPER AT VERTICAL DUCT SERVING SMOKE EVACUATION FAN. INSTALL DAMPER IN VERTICAL DUCT AND PROVIDE TRANSITIONS AS NECESSARY FOR A COMPLETE INSTALLATION.

LEGEND:

CHS / CHR	NEW CHILLED WATER PIPING
	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED

01 DARRELL HESTER
MECHANICAL PLAN - AREA "A"
SCALE : 1/4" = 1'-0"

NORTH



KEYPLAN

NO:	REVISION:	BY:

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CESAR A. GONZALEZ
108611
01.25.2023

TEXAS

DARRELL HESTER JUVENILE DETENTION CENTER
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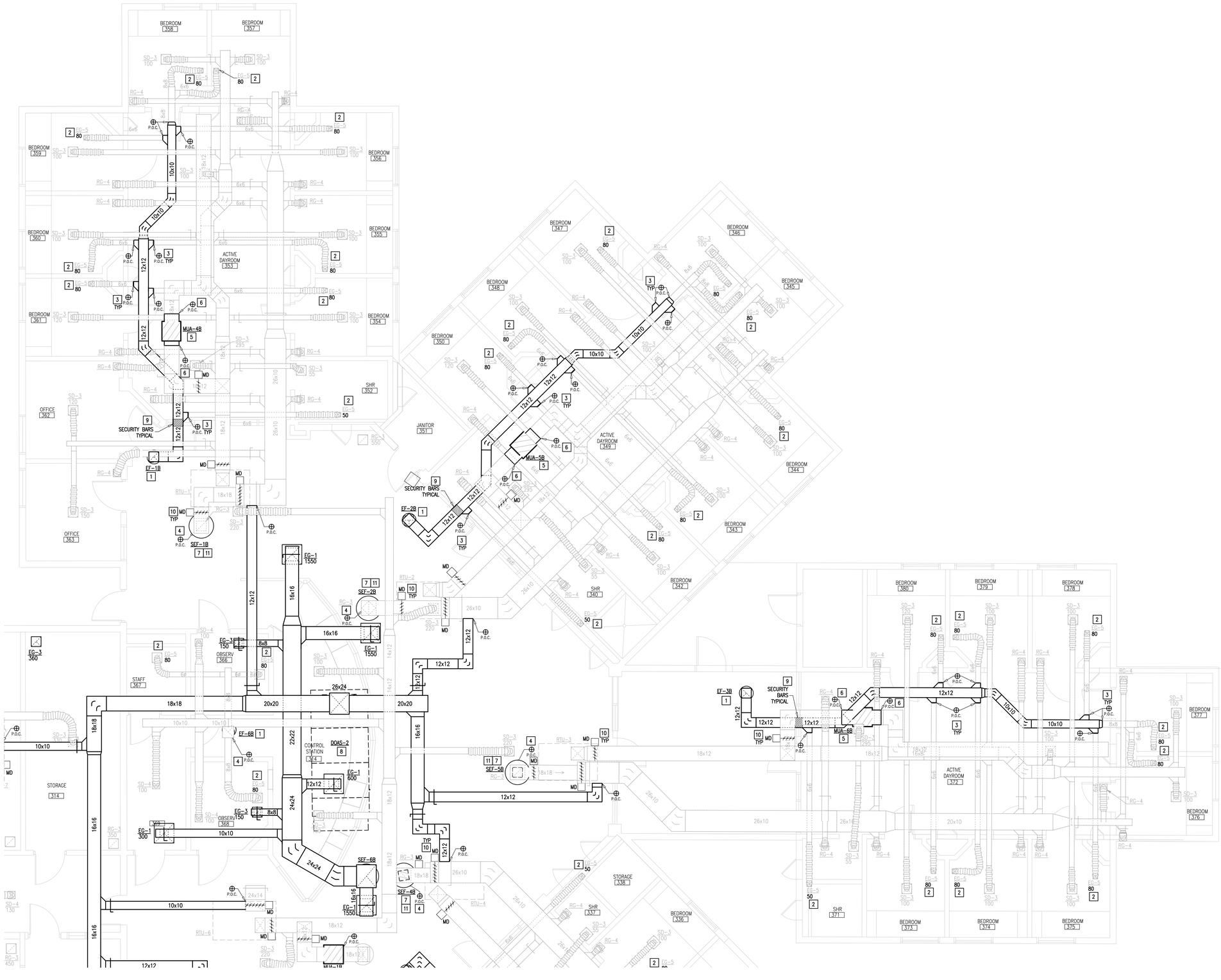

DARRELL HESTER
01 MECHANICAL PLAN - AREA "B"
SCALE : 1/4" = 1'=0"

NORTH

GENERAL NOTES:

1. IN STRICT COORDINATION WITH CONTROLS CONTRACTOR, FIRE ALARM CONTRACTOR AND ELECTRICAL CONTRACTOR, PROVIDE ACTUATOR AND ASSOCIATED 120V/24V TRANSFORMER FOR EACH DAMPER. ACTUATOR SHALL BE CAPABLE OF RECEIVING FIRE ALARM SIGNAL TO POSITION THE DAMPER AS PER THE SMOKE EVACUATION SYSTEM SEQUENCES OF OPERATION. IN ADDITION, ACTUATOR SHALL BE CAPABLE OF INTERFACING WITH HVAC CONTROLS SYSTEM. PROVIDE ALL THE NECESSARY POWER, CONDUITS, WIRING, RELAYS, CONTACTORS, ETC. TO ACHIEVE THE SMOKE EVACUATION SEQUENCE. PRIOR TO ORDERING THE ACTUATORS AND DAMPERS, COORDINATE TYPE, SIZE, CHARACTERISTICS, POWER AND SIGNAL REQUIREMENTS, ETC. WITH HVAC CONTROLS, FIRE ALARM AND ELECTRICAL CONTRACTORS.

KEYED NOTES:

1. PROVIDE EXHAUST FAN ON ROOF AS SCHEDULED.
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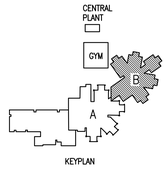
4. CONNECT EXISTING DUCTWORK INTO NEW EXHAUST FAN ON ROOF. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
5. PROVIDE IN-LINE MAKE-UP AIR FAN AS SCHEDULED.
6. CONNECT EXISTING DUCTWORK INTO NEW IN-LINE MAKE-UP AIR FAN AT THIS APPROXIMATE LOCATION. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
7. PROVIDE SMOKE EVACUATION FAN ON ROOF AS SCHEDULED.
8. PROVIDE DEDICATED OUTSIDE AIR ROOFTOP UNIT (DOAS) AS SCHEDULED. REFER TO ROOF PLAN FOR MORE INFORMATION.
9. PROVIDE SECURITY BARS IN NEW DUCT AT THIS APPROXIMATE LOCATION. SECURITY BARS SHALL BE TITUS MODEL SG-BG-FM OR APPROVED EQUAL.
10. PROVIDE NEW MOTORIZED DAMPERS AT SMOKE EVACUATION FANS, MAKE-UP AIR FANS, AND AT MAIN VERTICAL RETURN & SUPPLY AIR DUCTS SERVING ROOFTOP UNIT. PROVIDE THESE MOTORIZED DAMPERS WHETHER SPECIFICALLY SHOWN ON PLANS OR NOT. REFER TO SEQUENCE OF OPERATIONS FOR MORE INFORMATION.
11. PROVIDE BACK DRAFT DAMPER AT VERTICAL DUCT SERVING SMOKE EVACUATION FAN. DAMPER SHALL BE GREENHECK MODEL EM-10 OR APPROVED EQUAL. INSTALL DAMPER IN VERTICAL DUCT AND PROVIDE SECTION OF DUCT AND TRANSITIONS AS NECESSARY FOR A COMPLETE INSTALLATION.

LEGEND:

CHS / CHR	NEW CHILLED WATER PIPING
	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED



KEYPLAN

NO:	REVISION:	BY:

RFP #231001

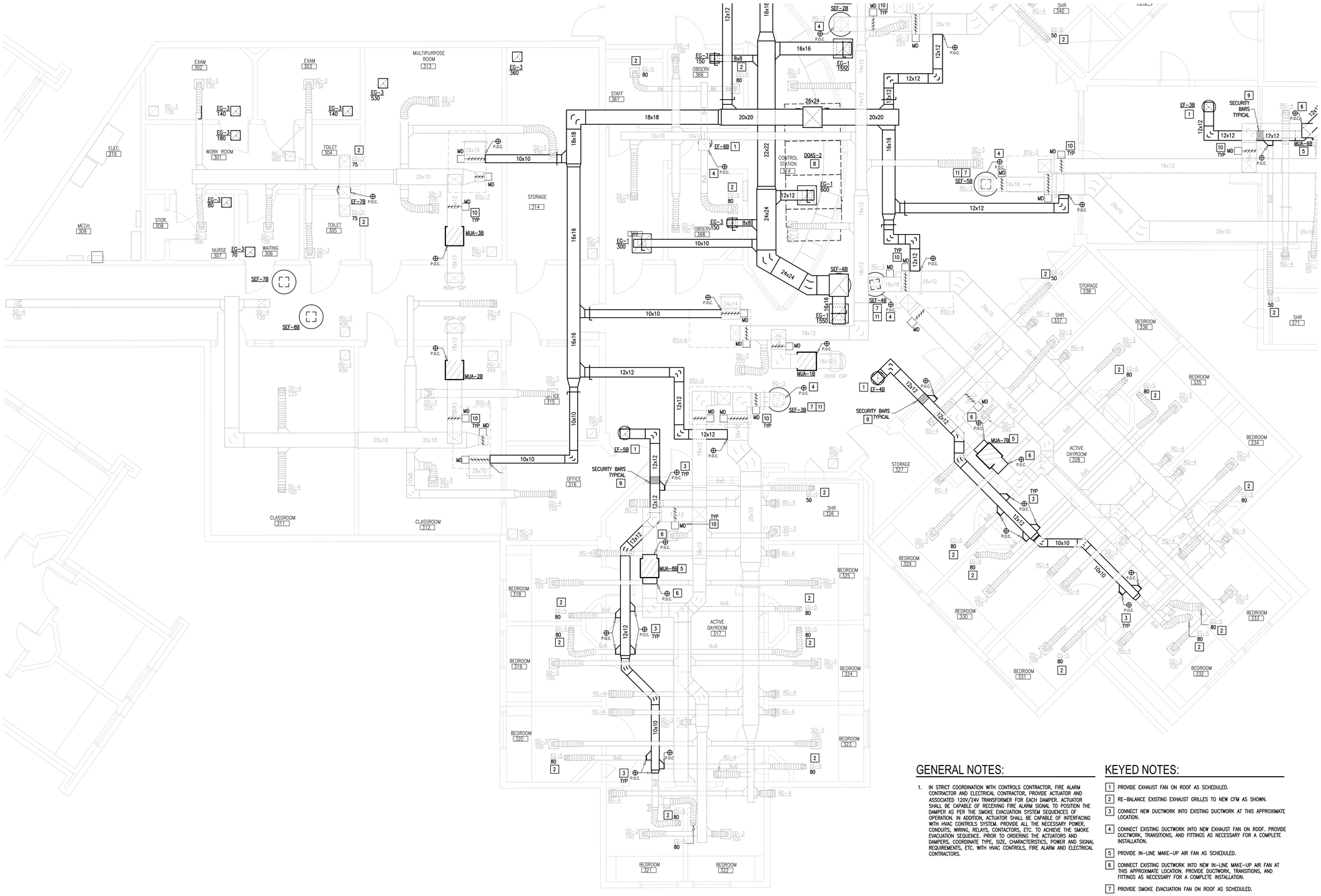
CESAR A. GONZALEZ
108611
09.25.2023

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO TEXAS

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

DATE: SEPTEMBER 25, 2023
CHECKED BY: C.A.G.
DRAWN BY: B.B., P.M.
PROJECT NO.: 23v40
CAD FILE:
SHEET: M3.03



GENERAL NOTES:

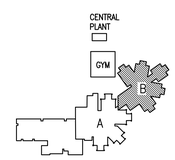
1. IN STRICT COORDINATION WITH CONTROLS CONTRACTOR, FIRE ALARM CONTRACTOR AND ELECTRICAL CONTRACTOR, PROVIDE ACTUATOR AND ASSOCIATED 120V/24V TRANSFORMER FOR EACH DAMPER. ACTUATOR SHALL BE CAPABLE OF RECEIVING FIRE ALARM SIGNAL TO POSITION THE DAMPER AS PER THE SMOKE EVACUATION SYSTEM SEQUENCES OF OPERATION. IN ADDITION, ACTUATOR SHALL BE CAPABLE OF INTERFACING WITH HVAC CONTROLS SYSTEM. PROVIDE ALL THE NECESSARY POWER, CONDUITS, WIRING, RELAYS, CONTACTORS, ETC. TO ACHIEVE THE SMOKE EVACUATION SEQUENCE. PRIOR TO ORDERING THE ACTUATORS AND DAMPERS, COORDINATE TYPE, SIZE, CHARACTERISTICS, POWER AND SIGNAL REQUIREMENTS, ETC. WITH HVAC CONTROLS, FIRE ALARM AND ELECTRICAL CONTRACTORS.

KEYED NOTES:

1. PROVIDE EXHAUST FAN ON ROOF AS SCHEDULED.
2. RE-BALANCE EXISTING EXHAUST GRILLES TO NEW CFM AS SHOWN.
3. CONNECT NEW DUCTWORK INTO EXISTING DUCTWORK AT THIS APPROXIMATE LOCATION.
4. CONNECT EXISTING DUCTWORK INTO NEW EXHAUST FAN ON ROOF. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
5. PROVIDE IN-LINE MAKE-UP AIR FAN AS SCHEDULED.
6. CONNECT EXISTING DUCTWORK INTO NEW IN-LINE MAKE-UP AIR FAN AT THIS APPROXIMATE LOCATION. PROVIDE DUCTWORK, TRANSITIONS, AND FITTINGS AS NECESSARY FOR A COMPLETE INSTALLATION.
7. PROVIDE SMOKE EVACUATION FAN ON ROOF AS SCHEDULED.
8. PROVIDE DEDICATED OUTSIDE AIR ROOFTOP UNIT (DOAS) AS SCHEDULED. REFER TO ROOF PLAN FOR MORE INFORMATION.
9. PROVIDE SECURITY BARS IN NEW DUCT AT THIS APPROXIMATE LOCATION. SECURITY BARS SHALL BE TITUS MODEL SG-BG-FM OR APPROVED EQUAL.
10. PROVIDE NEW MOTORIZED DAMPERS AT SMOKE EVACUATION FANS, MAKE-UP AIR FANS, AND AT MAIN VERTICAL RETURN & SUPPLY AIR DUCTS SERVING ROOFTOP UNIT. PROVIDE THESE MOTORIZED DAMPERS WHETHER SPECIFICALLY SHOWN ON PLANS OR NOT. REFER TO SEQUENCE OF OPERATIONS FOR MORE INFORMATION.
11. PROVIDE BACK DRAFT DAMPER AT VERTICAL DUCT SERVING SMOKE EVACUATION FAN. DAMPER SHALL BE GREENHECK MODEL DM-10 OR APPROVED EQUAL. INSTALL DAMPER IN VERTICAL DUCT AND PROVIDE SECTION OF DUCT AND TRANSITIONS AS NECESSARY FOR A COMPLETE INSTALLATION.

LEGEND:

CHS / CHR	NEW CHILLED WATER PIPING
	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED



KEYPLAN

DARRELL HESTER
01 MECHANICAL PLAN - AREA "B"
SCALE : 1/4" = 1'-0"

NORTH

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CESAR A. GONZALEZ
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SAN BENITO TEXAS

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-220-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

DATE:	SEPTEMBER 25, 2023
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01 DARRELL HESTER MECHANICAL ROOF PLAN

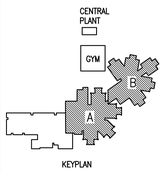
SCALE : 1/8" = 1'-0"

KEYED NOTES:

1. PROVIDE NEW HYDRONIC ROOFTOP UNIT (DOAS) AS SCHEDULED ON NEW ROOF CURB. SEAL ALL OPENINGS AND ENSURE THAT INSTALLATION IS WEATHER-TIGHT. SECURE EQUIPMENT TO ROOF CURB AND ROOF CURB TO ROOF STRUCTURE. ATTACHMENTS SHALL BE CAPABLE OF WITHSTANDING THE LOCAL WIND PRESSURES. ORIENT UNITS TO OPTIMIZE DUCTWORK, AND CONNECT TO EXISTING DUCTWORK. PROVIDE DUCT RISERS, DUCT TRANSITIONS, AND FLEX CONNECTORS AS NECESSARY. PROVIDE PIPING CONNECTIONS PER DETAILS, WITH INSULATED PIPING, NEW MANUAL ISOLATION VALVE, CONTROL VALVES, PT PLUGS, STRAINER, AIR VENTS, DRAINS AND OTHER ACCESSORIES.
2. PROVIDE FACTORY INSTALLED CONVENIENCE ELECTRICAL OUTLET AT INDICATED RTUS. COORDINATE WITH EQUIPMENT MANUFACTURER. COORDINATE WITH ELECTRICAL CONTRACTOR.
3. PROVIDE COPPER CONDENSATE PIPING ON ROOF AND PROVIDE SUPPORTS AS PER DETAIL. REFER TO DETAIL SHEET. (TYPICAL)
4. PROVIDE ROOF PENETRATION SYSTEM FOR CONDENSATE PIPING, HVAC CONTROL WIRING AND ELECTRICAL POWER CONDUITS. SEE ASSOCIATED DETAIL ON DETAIL SHEET. COORDINATE INSTALLATION WITH ELECTRICAL AND PLUMBING CONTRACTORS.
5. ROUTE CONDENSATE PIPING DOWN TO CEILING SPACE BELOW AND CONNECT INTO EXISTING 1.5" CONDENSATE PIPING.
6. SLEEVE ALL PENETRATIONS PER SPECIFICATIONS. SEAL AROUND PIPING WITH FIRE PROOF CAULKING. PROVIDE ESCUTCHEON PLATES AND FLASHING AROUND PENETRATION BOTH INSIDE AND OUTSIDE TO PROVIDE FINISHED LOOK.
7. PROVIDE EXHAUST FAN ON ROOF AS SCHEDULED.
8. PROVIDE SMOKE EVACUATION FAN ON ROOF AS SCHEDULED.
9. PROVIDE CONNECTION FOR FUTURE EQUIPMENT TIE-IN.

LEGEND:

—CHS— —CHR—	NEW CHILLED WATER PIPING
- - - - - -	NEW CHILLED WATER PIPING UNDERGROUND
	EX. EQUIPMENT TO REMAIN
	EX. EQUIPMENT TO BE DEMOLISHED
	NEW EQUIPMENT
	EXIST ROOFTOP EQUIPMENT TO REMAIN
	NEW ROOFTOP EQUIPMENT
	NEW DUCTWORK
	EXIST DUCTWORK TO BE DEMOLISHED
	EXIST DUCTWORK TO REMAIN
	EXIST EXHAUST FAN TO REMAIN
	EXIST EXHAUST FAN TO BE DEMOLISHED



KEYPLAN

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PHONE: 956-230-3435
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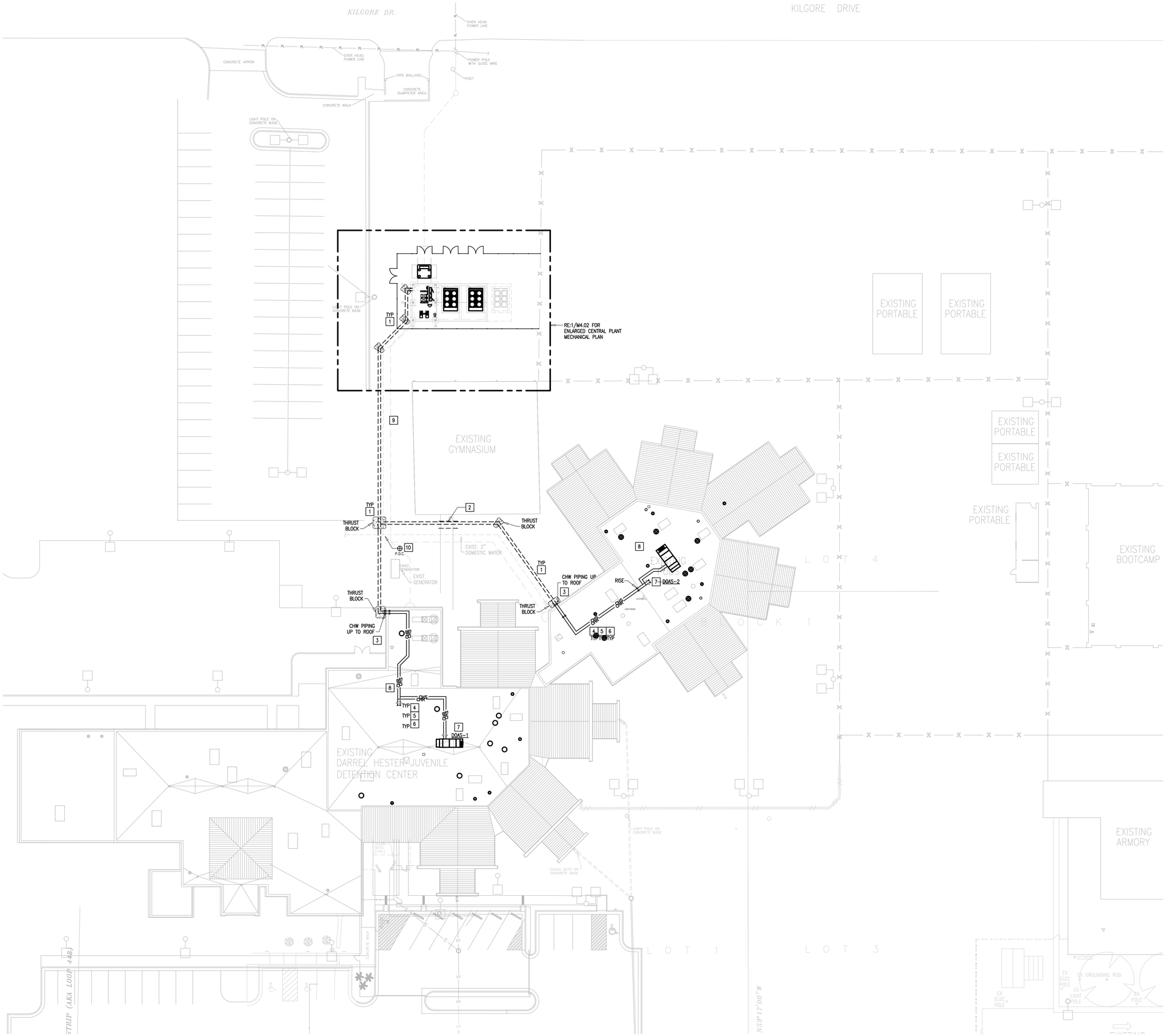


DARRELL HESTER
01 CHILLED WATER PIPING PLAN
SCALE : 1" = 20'-0"

NORTH

GENERAL NOTES:

1. NOTIFY ENGINEER AND OWNER'S DESIGNATED REPRESENTATIVE TO REQUEST INSPECTION.
2. PROVIDE HYDROSTATIC PRESSURE TESTING AS PER SPECIFICATIONS.
3. CONTRACTOR SHALL FLUSH, CLEAN AND DRAIN THE CHW PIPING PRIOR CIRCULATING CHILLED WATER. PROVIDE TEMPORARY CONNECTIONS, BYPASSES, FITTINGS, ETC. ON CHW PIPING AS NECESSARY TO ACCOMPLISH THESE ACTIVITIES. COORDINATE WITH CHEMICAL WATER TREATMENT CONTRACTOR. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
4. FIELD VERIFY EXISTING CONDITIONS AND ELEVATIONS PRIOR TO COMMENCING ANY WORK.
5. REFER TO ARCHITECTURAL DRAWINGS FOR PHASING AND SEQUENCE OF CONSTRUCTION OF WORK. COORDINATE WITH GENERAL CONTRACTOR.
6. PRESSURE TEST PIPING BEFORE MAKING TIE-INS TO BUILDING.

KEYED NOTES:

1. PROVIDE UNDERGROUND CHILLED WATER PIPING AS PER SPECIFICATIONS. PROVIDE THRUST BLOCKS AND SUPPORT AS PER SPECIFICATIONS.
2. BORE UNDER SIDEWALK AND ROUTE CHILLED WATER PIPING UNDERGROUND AS SHOWN.
3. RISE WITH CHILLED WATER PIPING UP TO ROOF AT THIS APPROXIMATE LOCATION.
4. PROVIDE ALUMINUM METAL JACKETING FOR ALL CHW PIPING EXPOSED OUTDOORS AND IN CENTRAL PLANT.
5. INSTALL PIPING PER SPECIFICATIONS AND MANUFACTURER INSTRUCTIONS. PIPE SIZES ARE INDICATED ON THE CHILLED WATER RISER DIAGRAM.
6. PROVIDE ROOF SUPPORTS FOR CHW PIPING PER DETAIL.
7. PROVIDE DEDICATED OUTSIDE AIR UNIT (DOAS) AS SCHEDULED. REFER TO MECHANICAL ROOF PLAN FOR MORE INFORMATION.
8. PROVIDE ISOLATION VALVES WITH BLIND FLANGES FOR FUTURE CONNECTIONS.
9. PROVIDE UNDERGROUND MAKE-UP WATER LINE AS PER SPECIFICATIONS.
10. CONNECT 1" MAKE-UP WATER LINE INTO EXISTING 2" WATER LINE AT THIS APPROXIMATE LOCATION.

TRENCHING DETAIL GENERAL NOTES:

A. CLEAR TRENCH OF ALL ROCKS AND DEBRIS BEFORE ADDING SAND CUSHION.

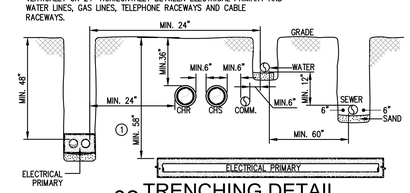
B. COMPACT TRENCH FILL TO 95% PROCTOR DENSITY.

C. MAINTAIN A MINIMUM OF 60 INCHES UNDISTURBED EARTH BETWEEN PARALLEL WATER AND SEWER LINES OR SUPPORT WATER LINE ON SEPARATE SHELF A MINIMUM OF 12" ABOVE SEWER LINE.

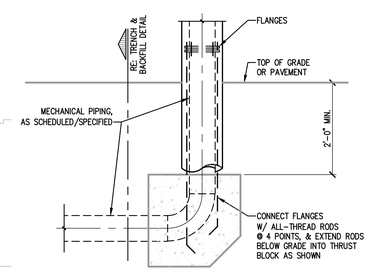
D. MAINTAIN A MINIMUM OF 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND AND OTHER UTILITIES. MAINTAIN A MINIMUM OF 12" VERTICALLY OR 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND WATER LINES, GAS LINES, TELEPHONE RACEWAYS AND CABLE RACEWAYS.

KEYED NOTES:

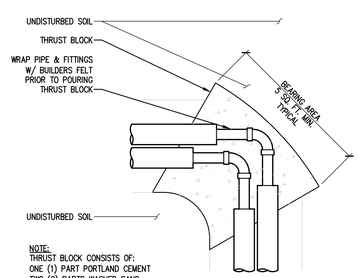
1. DEPTH AT CHW INTERSECTIONS



02 TRENCHING DETAIL
SCALE : NOT TO SCALE

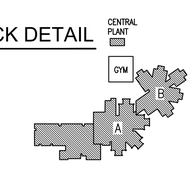


03 PIPE PENETRATION AT GROUND
SCALE : NOT TO SCALE



NOTE:
THRUST BLOCK CONSISTS OF:
ONE (1) PART PORTLAND CEMENT
TWO (2) PARTS WASHED SAND
THREE (3) PARTS WASHED GRAVEL

04 THRUST BLOCK DETAIL
SCALE : NOT TO SCALE



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SAN BENITO

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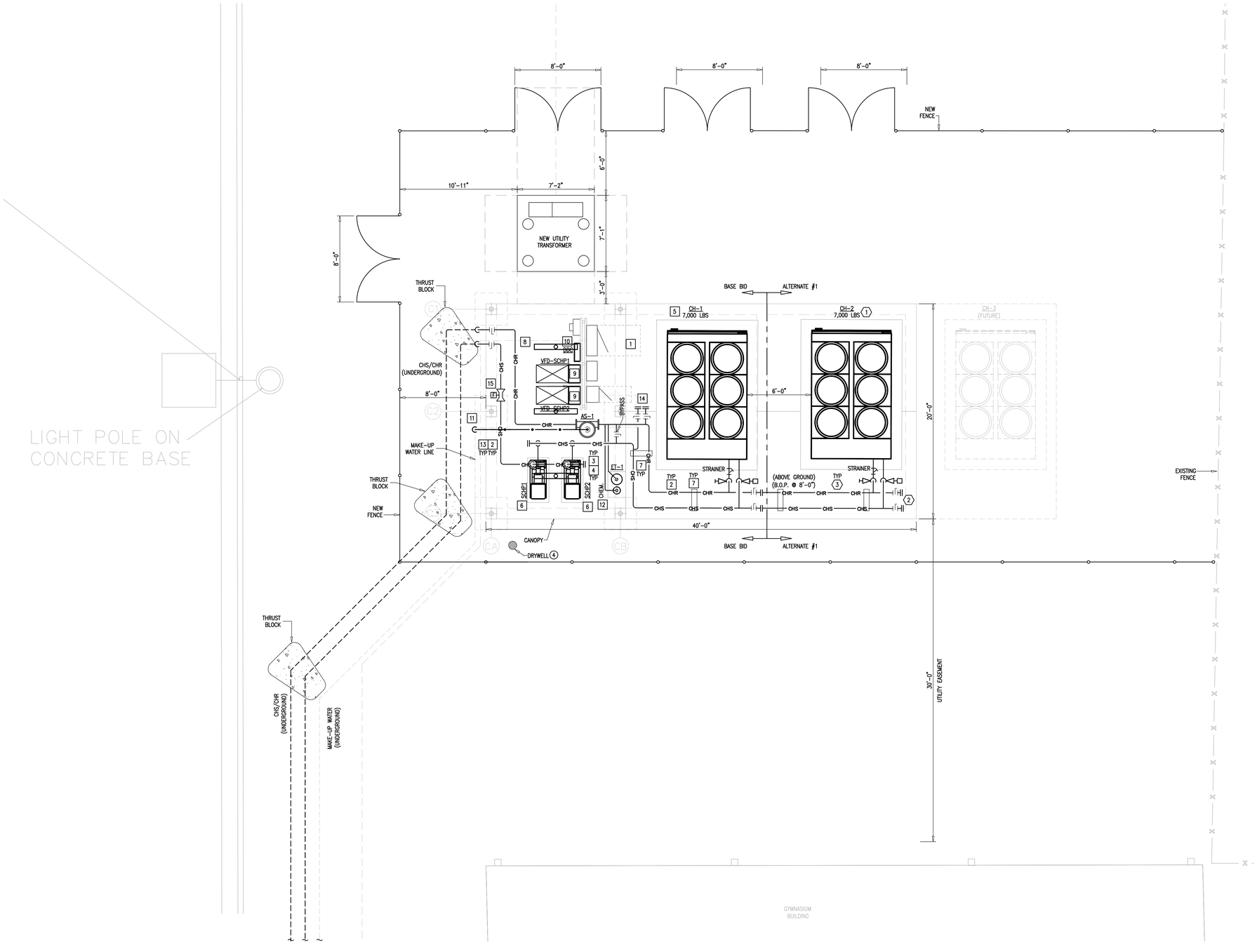


01 DARRELL HESTER ENLARGED CENTRAL PLANT MECHANICAL PLAN

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

NORTH

GENERAL NOTES:

1. ALL PIPING WELDS MUST BE WIRE-BRUSHED AND PAINTED A MINIMUM OF 12" ON EITHER SIDE OF WELD PRIOR TO INSULATION.
2. AT LOWEST POINT IN PIPING ENTERING CHILLER BARRELS, PROVIDE 6" LONG DRAIN NIPPLES AND BALL VALVES FOR DRAINING NEW CHILLER.
3. INSULATE PER SPECIFICATIONS ALL PIPING, VALVES, FITTINGS, PUMP BODIES AND COLD SURFACES THAT ARE CAPABLE OF GENERATING CONDENSATION. FIBERGLASS INSULATION WILL NOT BE ALLOWED.
4. PRIOR TO INSTALLATION OF EQUIPMENT, VERIFY THAT MANUFACTURER RECOMMENDED AND CODE REQUIRED CLEARANCES ARE AVAILABLE.
5. INSTALL PIPES AND DUCTS AS HIGH AS POSSIBLE TO ALLOW MAXIMUM POSSIBLE HEADROOM. MIN. 10' A.F.F. OR AS HIGH AS POSSIBLE.
6. PROVIDE REFRIGERANT SIGNAGE, AND EMERGENCY CONTROLS AS PER SPECIFICATIONS AND AS PER REQUIREMENTS OF INTERNATIONAL MECHANICAL AND FIRE CODES.
7. PROVIDE P/T TEST PORT WITHIN 6 INCHES OF EVERY PRESSURE GAGE AND THERMOWELL. SEE PIPING SCHEMATIC FOR LOCATIONS.
8. REFER TO HYDRONIC PIPING SCHEMATICS FOR DETAILS AND PIPE SIZES.
9. PROVIDE PIPE STANCHION SUPPORTS AT SPECIFIED INTERVALS, CLOSE TO ELBOWS AND VALVES. PROVIDE CONCRETE PADS AS REQUIRED. RE: STRUCTURAL.
10. FOR ALL PIPING SUPPORTS LOCATED OUTDOORS, PROVIDE THE FOLLOWING:
    - A.) POLYAMIDE PRIME COAT OF DEVOE PAINTS, DEVRAN 201.
    - B.) INTERMEDIATE TOP COAT OF DEVOE PAINTS, DEVRAN 224HS.
    - C.) TOP COAT OF DEVOE PAINTS, DEVTHANE 379.

BASE BID KEYED NOTES:

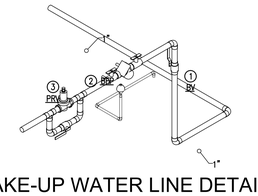
1. CLEARANCE FOR ELECTRICAL PANELS. DO NOT ROUTE PIPING OVER THIS AREA. REFER TO ELECTRICAL PLANS FOR EXACT LOCATION OF ELECTRICAL ROOMS (TYPICAL).
2. PROVIDE ALUMINUM METAL JACKETING FOR ALL CHW PIPING EXPOSED OUTDOORS. SEE SPECIFICATIONS.
3. PROVIDE HYDRONIC PIPING WITH AUTOMATIC ISOLATION VALVES, THERMOWELLS, PRESSURE GAUGES, THERMOMETERS, FLOW SWITCHES, MANUAL VALVES, ETC. PROVIDE PIPING SPECIALTIES SUCH AS AIR SEPARATOR, EXPANSION TANK, MAKE UP WATER, CHEMICAL POT FEEDER, ETC. SEE PIPING SCHEMATIC AND ASSOCIATED DETAILS.
4. PROVIDE AIR SEPARATOR, EXPANSION TANK AND CHEMICAL POT FEEDER. INSTALL ON 4" HOUSEKEEPING CONCRETE PADS PROVIDED BY STRUCTURAL. PADS SHALL BE 6" LARGER ON ALL SIDES FOR ALL EQUIPMENT EXCEPT CHILLERS. REFER TO STRUCTURAL DRAWINGS.
5. PROVIDE CHILLER AS SCHEDULED. INSTALL CHILLER ON 6" HOUSEKEEPING CONCRETE PAD PROVIDED BY STRUCTURAL. PAD SHALL BE 12" LARGER ON ALL SIDES FOR CHILLERS. REFER TO STRUCTURAL DRAWINGS.
6. PROVIDE HYDRONIC PUMP AS SCHEDULED.
7. PIPE SUPPORTS AND STANCHIONS SHALL BE HOT DIPPED GALVANIZED AND PAINTED. BASE PLATE SHALL BE INSTALLED ON A 4" CONCRETE PAD. (TYPICAL)
8. PROVIDE ISOLATION VALVES TO SERVE CENTRAL PLANT.
9. PROVIDE VFD PER SCHEDULE WITH NEMA-1 ENCLOSURE FOR MOUNTING INDOORS. (TYPICAL)
10. LOCATE DDC PANEL AT THIS APPROXIMATE LOCATION. REFER TO SPECIFICATIONS FOR DDC CONTROLS AND SEQUENCES OF OPERATION.
11. PROVIDE MAKE UP WATER LINE 1" TO SERVE EXPANSION TANK. CONNECT TO BACKFLOW PREVENTER AND PRESSURE RELIEF VALVE. REFER TO "MAKE-UP DETAIL" ON DETAIL SHEET. COORDINATE WITH PLUMBING.
12. COORDINATE WITH WATER TREATMENT COMPANY TO ACHIEVE SPECIFIED WATER CONDITIONING. PROVIDE NEW FILTRATION SYSTEM AND DYE IN CHILLED WATER. SEE SPECIFICATION FOR ADDITIONAL INFORMATION.
13. PIPING UNDER CANOPY SHALL BE SUPPORTED FROM GROUND WITH PIPE SUPPORTS (NOT SHOWN FOR CLARITY). PROVIDE PIPE SUPPORTS AS PER SPECIFICATIONS. SUBMIT SHOP DRAWINGS WITH PIPE SUPPORT LOCATIONS FOR APPROVAL.
14. PROVIDE CONNECTIONS FOR EMERGENCY CHILLER TIE-IN.
15. PROVIDE FLOW METER AS PER SCHEMATICS AND SPECIFICATIONS. INSTALL AS PER MANUFACTURER RECOMMENDATIONS.

ALTERNATE #1 MECHANICAL KEYED NOTES:

1. PROVIDE CHILLER AS SCHEDULED. INSTALL CHILLER ON 6" HOUSEKEEPING CONCRETE PAD PROVIDED BY STRUCTURAL. PAD SHALL BE 12" LARGER ON ALL SIDES FOR CHILLERS. REFER TO STRUCTURAL DRAWINGS.
2. PROVIDE CONNECTIONS FOR FUTURE CHILLER TIE-IN.
3. PROVIDE ALUMINUM METAL JACKETING FOR ALL CHW PIPING EXPOSED OUTDOORS. SEE SPECIFICATIONS.

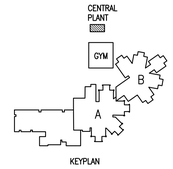
PLUMBING KEYED NOTES:

1. PROVIDE BRONZE ISOLATION BALL VALVE.
2. PROVIDE A RPZ TYPE BACKFLOW PREVENTER (BFP) WILKINS MODEL #975XL2 OR APPROVED EQUAL. INSTALL MOUNTED ON SUPPORTS IN WATER LINE SERVING MAKE UP WATER. PROVIDE A MINIMUM OF 3' CLEARANCE IN FRONT OF BFP FOR TESTING AND SERVICE. PROVIDE DRAIN RECEPTOR UNDER BFP AND RUN COPPER LINE TO NEARBY DRY WELL. SEE ASSOCIATED DETAIL ON DETAIL SHEET FOR CONCRETE PIPE SUPPORT AND BFP.
3. PROVIDE A PRESSURE REDUCING VALVE (PRV) WATTS SERIES LFU5B OR APPROVED EQUAL. REFER TO ASSOCIATED DETAIL ON DETAILS SHEET.
4. PROVIDE DRYWELL TO SERVE BACK-FLOW PREVENTER DRAIN LINE. SEE ASSOCIATE DETAIL ON DETAIL SHEET.



02 MAKE-UP WATER LINE DETAIL

SCALE : NOT TO SCALE



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CESAR A. GONZALEZ
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1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
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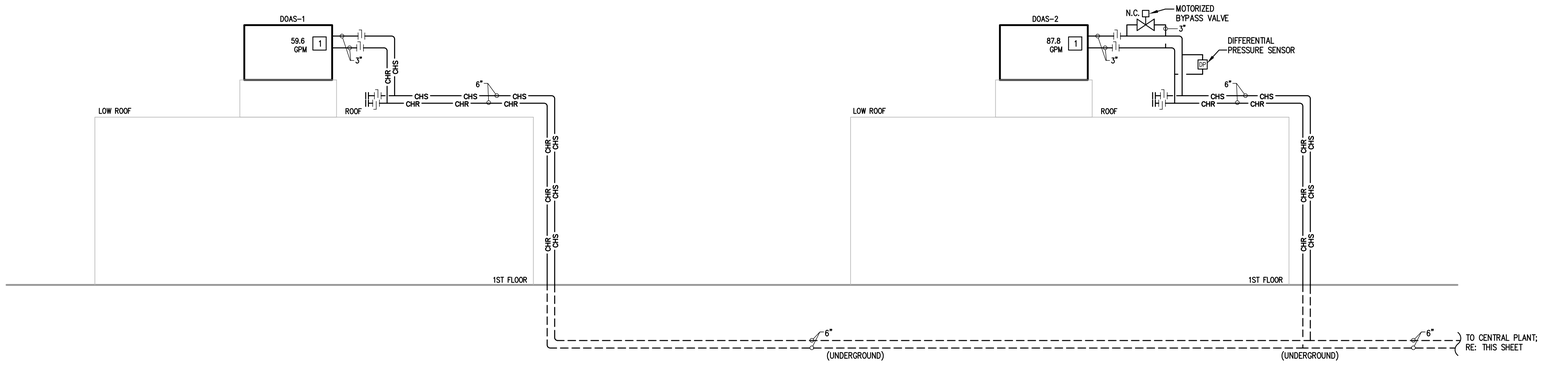
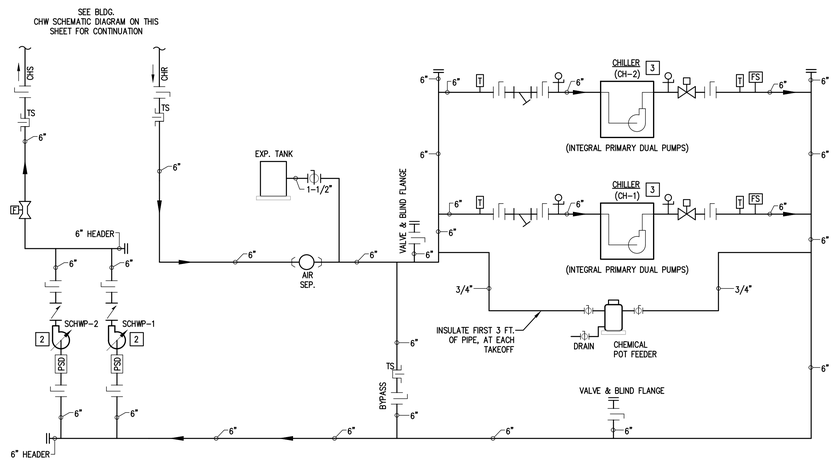


01 BUILDING CHILLED WATER SCHEMATIC DIAGRAM

SCALE : NOT TO SCALE



02 CENTRAL PLANT CHILLED WATER SCHEMATIC DIAGRAM

SCALE : NOT TO SCALE

GENERAL NOTES:

1. ALL PIPING WELDS MUST BE WIRE-BRUSHED AND PAINTED A MINIMUM OF 12" ON EITHER SIDE OF WELD PRIOR TO INSULATION.
2. CLEAN AND PREPARE SURFACE OF CHILLED WATER PIPING BEFORE INSULATING. APPLY CORROSION COATING TO ALL PIPING. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
3. INSULATE PER SPECIFICATIONS ALL PIPING, VALVES, FITTINGS, PUMP BODIES AND COLD SURFACES THAT ARE CAPABLE OF GENERATING CONDENSATION. FIBERGLASS INSULATION WILL NOT BE ALLOWED.
4. PRIOR TO INSTALLATION OF EQUIPMENT, VERIFY THAT MANUFACTURER RECOMMENDED AND CODE REQUIRED CLEARANCES ARE AVAILABLE.
5. INSTALL PIPES AND DUCTS AS HIGH AS POSSIBLE TO ALLOW MAXIMUM POSSIBLE HEADROOM. MIN. 9' AFF.
6. PROVIDE P/T TEST PORT WITHIN 6 INCHES OF EVERY PRESSURE GAGE AND THERMOWELL. SEE PIPING SCHEMATIC FOR LOCATIONS.
7. REFER TO HYDRONIC PIPING SCHEMATICS FOR DETAILS.
8. FOR ALL PIPING SUPPORTS LOCATED OUTDOORS, PROVIDE THE FOLLOWING:
   - A) POLYAMIDE PRIME COAT OF DEVOE PAINTS, DEVRAN 201.
   - B) INTERMEDIATE TOP COAT OF DEVOE PAINTS, DEVRAN 224HS.
   - C) TOP COAT OF DEVOE PAINTS, DEVTHANE 379.
9. GPM's ARE SHOWN FOR VERIFICATION PURPOSE ONLY. DO NOT USE THIS DATA FOR TAB. IN CASE OF CONFLICT, OR IF FLOW DATA DO NOT MATCH WITH THOSE FOR SCHEDULED EQUIPMENT, USE LARGER OF THE TWO.
10. REFER TO SPECIFICATIONS FOR CONTROL COMPONENTS, DEVICES, AND SENSORS TO BE COORDINATED WITH MECHANICAL WORK.
11. AT LOWEST POINT IN PIPING ENTERING CHILLER BARRELS, PROVIDE 6" LONG DRAIN NIPPLES AND BALL VALVES FOR DRAINING CHILLER.
12. MINIMUM PIPE SIZE SHALL BE 1".

KEYED NOTES:

1. PROVIDE 2-WAY CONTROL VALVE AT AHU. REFER TO CHILLED WATER COIL CONNECTION SCHEMATIC WITH 2-WAY VALVE ON DETAIL SHEET.
2. REFER TO PUMP DETAIL ON DETAIL SHEET.
3. REFER TO CHILLER PIPING CONNECTION DETAIL ON DETAIL SHEET.

LEGEND:

- AIR SEPARATOR (AS)
- AUTOMATIC VALVE
- MANUAL VALVE
- STRAINER
- FLOW METER (FM)
- PUMP SUCTION DIFFUSER (PSD)
- BALL VALVE
- WATER METER (M)
- BLIND FLANGE
- PUMP
- PUMP WITH VFD
- PRESSURE GAUGE
- NEW EQUIPMENT
- NEW PIPING
- THERMOWELL FOR DDC TEMPERATURE SENSOR (TS)
- FLOW SWITCH (FS)
- CHECK VALVE
- THERMOMETER (T)

NO.	REVISION:	BY:

RFP #231001

CESAR A. GONZALEZ 108611 09.25.2023

TEXAS

DARRELL HESTER JUVENILE DETENTION CENTER SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

DATE: SEPTEMBER 25, 2023
CHECKED BY:
DRAWN BY:
PROJECT NO.: 23v40
CAD FILE:
SHEET: M4.03

BACKDRAFT DAMPER SCHEDULE

MARK	EQUIPMENT SERVING	AIRFLOW	DUCT SIZE	TEMPERATURE RATING °F	MANUFACTURER & MODEL NUMBER	NOTES
RTU-8						
MD-SEF-1A	SEF-1A	SMOKE EVACUATION	30 X 14	250	GREENHECK VCD-20	ALL
MD-MUA-1A	MUA-1A	MAKE-UP	24 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-8	SUPPLY AIR	24 x 12	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-8	RETURN AIR	38 x 12	180	GREENHECK VCD-20	ALL
RTU-9						
MD-SEF-2A	SEF-2A	SMOKE EVACUATION	20 X 12	250	GREENHECK VCD-20	ALL
MD-MUA-2A	MUA-2A	MAKE-UP	30 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-9	SUPPLY AIR	24 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-9	RETURN AIR	38 X 12	180	GREENHECK VCD-20	ALL
RTU-10						
MD-SEF-3A	SEF-3A	SMOKE EVACUATION	18 X 16	250	GREENHECK VCD-20	ALL
MD-MUA-3A	MUA-3A	MAKE-UP	30 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-10	SUPPLY AIR	30 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-10	RETURN AIR	30 X 14	180	GREENHECK VCD-20	ALL
RTU-11						
MD-SEF-4A	SEF-4A	SMOKE EVACUATION	24 X 24	250	GREENHECK VCD-20	ALL
MD-MUA-4A	MUA-4A	MAKE-UP	40 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-11	SUPPLY AIR	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-11	RETURN AIR	20 X 14	180	GREENHECK VCD-20	ALL
RTU-12						
MD-SEF-5A	SEF-5A	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-5A	MUA-5A	MAKE-UP	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-12	SUPPLY AIR	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-12	RETURN AIR	34 X 14	180	GREENHECK VCD-20	ALL
RTU-13						
MD-SEF-6A	SEF-6A	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-6A	MUA-6A	MAKE-UP	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-13	SUPPLY AIR	30 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-13	RETURN AIR	34 X 14	180	GREENHECK VCD-20	ALL
RTU-14						
MD-SEF-7A	SEF-7A	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-7A	MUA-7A	MAKE-UP	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-14	SUPPLY AIR	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-14	RETURN AIR	34 X 14	180	GREENHECK VCD-20	ALL
RTU-15						
MD-SEF-8A	SEF-8A	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-8A	MUA-8A	MAKE-UP	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-15	SUPPLY AIR	20 X 14	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-15	RETURN AIR	34 X 14	180	GREENHECK VCD-20	ALL
RTU-6						
MD-SEF-6B	SEF-6B	SMOKE EVACUATION	24 X 24	250	GREENHECK VCD-20	ALL
MD-MUA-1B	MUA-1B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-6	SUPPLY AIR	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-6	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL
RTU-2						
MD-SEF-2B	SEF-2B	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-5B	MUA-5B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-2	SUPPLY AIR	20 X 10	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-2	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL
RTU-1						
MD-SEF-1B	SEF-1B	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-4B	MUA-4B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-1	SUPPLY AIR	20 X 10	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-1	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL
RTU-3						
MD-SEF-5B	SEF-5B	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-6B	MUA-6B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-3	SUPPLY AIR	20 X 10	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-3	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL
RTU-4						
MD-SEF-4B	SEF-4B	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-7B	MUA-7B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-4	SUPPLY AIR	20 X 10	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-4	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL
RTU-5						
MD-SEF-3B	SEF-3B	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-8B	MUA-8B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-5	SUPPLY AIR	20 X 10	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-5	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL
RTU-7						
MD-SEF-7B	SEF-3B	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-3B	MUA-3B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-7	SUPPLY AIR	20 X 10	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-7	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL
RTU-8						
MD-SEF-8B	SEF-3B	SMOKE EVACUATION	18 X 18	250	GREENHECK VCD-20	ALL
MD-MUA-2B	MUA-3B	MAKE-UP	18 X 12	180	GREENHECK VCD-20	ALL
MD-RTU-SA	RTU-8	SUPPLY AIR	20 X 10	180	GREENHECK VCD-20	ALL
MD-RTU-RA	RTU-8	RETURN AIR	26 X 10	180	GREENHECK VCD-20	ALL

NOTES:

1. DAMPER SHALL BE GALVANIZED, TWO POSITION, SPRING RETURN.
2. IN STRICT COORDINATION WITH CONTROLS CONTRACTOR, FIRE ALARM CONTRACTOR AND ELECTRICAL CONTRACTOR, PROVIDE ACTUATOR AND ASSOCIATED 120V/24V TRANSFORMER FOR EACH DAMPER. ACTUATOR SHALL BE CAPABLE OF RECEIVING FIRE ALARM SIGNAL TO POSITION THE DAMPER AS PER THE SMOKE EVACUATION SYSTEM SEQUENCES OF OPERATION. IN ADDITION, ACTUATOR SHALL BE CAPABLE OF INTERFACING WITH HVAC CONTROLS SYSTEM. PROVIDE ALL THE NECESSARY POWER, CONDUITS, WIRING, RELAYS, CONTACTORS, ETC. TO ACHIEVE THE SMOKE EVACUATION SEQUENCE. PRIOR TO ORDERING THE ACTUATORS AND DAMPERS, COORDINATE TYPE, SIZE, CHARACTERISTICS, POWER AND SIGNAL REQUIREMENTS, ETC. WITH HVAC CONTROLS, FIRE ALARM AND ELECTRICAL CONTRACTORS.

PUMP SCHEDULE

MARK	LOCATION	QTY	TYPE	MANUFACTURER & MODEL NUMBER	GPM	HEAD (FT)	MIN. HP	MIN. EFF.	RPM	ELECTRICAL	NOTES
SCHWP-1, 2	CHILLER YARD	2	HORZ END SUCTION	BELL&GOSSET E-1510 2BD	155	80	7.5	72.5%	1,800	460V / 3PH / 60HZ	ALL

NOTES:

1. PROVIDE NON-OVERLOADING, PREMIUM EFFICIENCY, TEFC MOTORS, RATED FOR VFD DUTY.
2. PROVIDE COUPLINGS RATED FOR VFD DUTY. FALK T31 SPACER TYPE.
3. FACTORY REPRESENTATIVE SHALL FIELD-VERIFY PUMP ALIGNMENT WITH LASER ALIGNMENT TOOLS.
4. PROVIDE SUCTION DIFFUSERS AND SHAFT GROUNDING ON MOTORS.
5. PROVIDE ONE SET OF SPARE SEALS FOR EACH PUMP. COORDINATE DELIVERY WITH OWNER.

EXPANSION TANK SCHEDULE

MARK	SERVICE	TYPE	ACCEPTANCE VOLUME GALLONS	(DIAMETER) X (HEIGHT)	LOCATION	MANUFACTURER & MODEL NUMBER OR EQUAL	NOTES
ET-1	CHILLED WATER	VERTICAL FLOOR MOUNT BLADDER	53	24"x37"	CENTRAL PLANT	BELL AND GOSSETT B-200	ALL

NOTES:

1. PROVIDE LINE SIZE AIR SEPARATOR, BELL AND GOSSETT ROLAIRTROL RL-6F FOR 6" CONNECTION.
2. PROVIDE FILTER FEEDER NEPTUNE MODEL FTF OR APPROVED EQUAL.

AIR COOLED CHILLER SCHEDULE

MARK		NOMINAL (TONS)	CAPACITY (TONS)	AMBIENT TEMP (F)	FLOW (GPM)	MAX PD (FT WG)	EWT (F)	LWT (F)	# OF COMPRESSORS TYPE	MIN % CAPACITY	ELEC. V-PH-HZ	MCA	MOCP	IPLV AT ARI	FULL LOAD EER AT ARI	SOUND POWER OVERALL dBA	DIMENSIONS (LxWxH) IN.	OPERATING WEIGHT (LB)	MANUFACTURER & MODEL NUMBER
CH-1	BASE BID	80	77.71	100	154.9	11.2	56	44	4, SCROLLS	25	460/3/60	184.0	225.0	16.45	10.86	92	143 X 89 X 92	6,790	CGAM080
CH-2	ALTERNATE-1	80	77.71	100	154.9	11.2	56	44	4, SCROLLS	25	460/3/60	184.0	225.0	16.45	10.86	92	143 X 89 X 92	6,790	CGAM080

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR CHANGES TO DESIGN RESULTING FROM SELECTION OF OTHER MANUFACTURERS EQUIPMENT.
2. LISTED CAPACITY BASED ON ACTUAL CONDITIONS LISTED ABOVE. EFFICIENCIES LISTED AT ARI CONDITIONS.
3. PROVIDE CHILLER WITH FACTORY INSTALLED HAIL GUARDS, LOW SOUND ACOUSTICAL PACKAGE, CONDENSER COIL COATING (E-COAT)
4. PROVIDE UNIT WITH LOW AMBIENT CONTROL TO 40°F, ACROSS THE LINE STARTER, AND SUCTION SERVICE VALVES.
5. CONDENSER COILS SHALL HAVE COPPER TUBES AND ALUMINUM FINS (PREFERRED), OR MICRO-CHANNEL COILS.
6. PROVIDE CHILLER WITH SINGLE POINT POWER CONNECTION, INCLUDING POWER FOR CONTROLS.
7. PROVIDE TERMINAL BLOCK FOR POWER CONNECTION. DIV. 26 TO PROVIDE EXTERNALLY MEANS OF DISCONNECT.
8. PROVIDE FACTORY INSTALLED COMBINATION VALVE (CHECK, ISOLATION AND MODULATION)
9. PROVIDE DEMAND LIMITING VIA 4-20MA INPUT FEATURE TO LIMIT MACHINE CAPACITY.
10. PROVIDE INTEGRAL PRIMARY DUAL PUMP PACKAGE WITH 40' TDH.

HYDRONIC - DOAS ROOF TOP UNIT SCHEDULE

							MIN	SINGLE POINT	EAT	CHILLED WATER COOLING COIL								ELEC HEATING (EAT 40F)					
MARK	UNIT TYPE	MOUNTING	TOTAL CFM	SERVES	ESP IN WG	ELECT. V/P/H	MOTOR # / HP	MCA/MOCP AMPS	DEHUM. EAT DB/WB (F)	TOTAL BTU/H	SENS. BTU/H	LAT DB/WB (F)	EWT/LWT (F)	CHW GPM	WPD (FT)	MAX ROWS	MAX FPI	KW	STG	DAT DBT	WEIGHT (LBS.)	NOTES	MODEL NUMBER
DOAS-1	HYDRONIC	NEW ROOFCURB	3400	AS DOAS	1.20	460/3/60	1 / 8.05	58 / 60	83.0/80.1	358,990	126,030	50.0/49.9	44/56	59.6	12.8	8.0	12.0	30.0	SCR	68.0	1,730	ALL	TRANE PCC
DOAS-2	HYDRONIC	NEW ROOFCURB	5000	AS DOAS	1.20	460/3/60	2 / 8.05	94.5 / 100	83.0/80.1	528,450	185,340	50.0/49.9	44/56	87.8	10.0	8.0	12.0	47.0	SCR	69.7	2,350	ALL	TRANE PCC

NOTES:

1. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL". SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS AND SUBSTITUTION PROCEDURES.
2. ESP IS STRICTLY EXTERNAL STATIC PRESSURE, AND DOES NOT INCLUDE FILTER, COIL, CABINET LOSSES.
3. PROVIDE SINGLE PIECE UNIT, 2" R-13 DOUBLE WALL CONSTRUCTION ACROSS ENTIRE EXTERIOR OF UNIT, INCLUDING DRAIN PAN, WITH THERMAL BREAK.
4. PROVIDE MERV8 FLAT FILTER SECTION, COIL SECTION, ACCESS SECTIONS, AND FAN SECTION WITH DOORS ACCESS SIDE FOR EACH, ELECTRIC HEATER.
5. PROVIDE GALVANIZED FILTER PAD FRAMES/RACKS NO LONGER THAN 24". SEE SPECIFICATIONS.
6. PROVIDE OUTSIDE AIR HOOD, OUTSIDE AIR DAMPERS. OUTSIDE AIR DAMPERS SHALL BE RUSKIN CD-50 ALLUMINUM DAMPERS OR EQUIVALENT. DAMPER ACTUATORS BY CONTROLS CONTRACTOR.
7. PROVIDE STAINLESS STEEL DRAIN PAN AND COIL CASING, AND INSIDE LINER. EXTEND DRAIN PAN 6" PAST COIL SECTION. PROVIDE EPOXY COATED COILS. SEE SPECS FOR DETAILS.
8. ALL MOTORS SHALL BE NON-OVERLOADING, TEFC, VFD DUTY RATED, PREMIUM EFFICIENCY MOTORS.
9. PROVIDE DIRECT DRIVE PLENUM FANS WITH FACTORY INSTALLED VFD PER FAN AND GROUND SHAFT RING. PROVIDE BLANK OFF PLATES.
10. PROVIDE UNIT MOUNTED SUPPLY AIR SMOKE DETECTORS IN UNITS LARGER THAN 2000 CFM.
11. PROVIDE SINGLE POINT POWER FEED FOR CONNECTION TO FAN MOTORS, HEATER, CONTROLS TRANSFORMERS, WITH FUSED PROTECTION FOR DEDICATED CIRCUITS.
12. COORDINATE CONTROL POINT CONNECTIONS FOR FAN SPEED, AND SCR HEATER CONTROL WITH BAS. ENSURE THAT ALL DRIVERS, CONTROLLERS, AND ENGINES ARE SUPPLIED WITH THE UNIT.
13. ELECTRICAL DISCONNECT BY DIV. 26. COORDINATE WITH ELECTRICAL CONTRACTOR.
14. PROVIDE IBC 2012 COMPLIANT CURB AND ATTACHMENTS FROM UNIT TO CURB AND CURB TO STRUCTURE. EQUIPMENT OR CURB MANUFACTURER IS RESPONSIBLE FOR PROVIDING ENGINEERED DETAIL ANALYSIS OF:
    1) ATTACHMENT OF EQUIPMENT TO CURB.
    2) CURB TO STRUCTURE.
    3) CURB AND ATTACHMENT HARDWARE STRENGTH.
    REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ROOF SUBSTRATE DETAILS.
    EQUIPMENT OR CURB MANUFACTURER IS ALSO RESPONSIBLE FOR PROVIDING ENGINEERED INSTALLATION DRAWINGS FOR ITEMS 1 AND 2 LISTED ABOVE.
    BOTH, THE ENGINEERED ANALYSIS AND THE ENGINEERED INSTALLATION DRAWINGS SHALL BE PERFORMED SPECIFICALLY FOR THIS BUILDING AND PROJECT SITE AND STAMPED AND SEALED BY A TEXAS LICENSED ENGINEER.

EXHAUST FAN SCHEDULE

MARK	SERVING	TYPE	STATUS	ELECTR. V/P/H	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	E.S.P. IN. H20	SOUND IN SONES	WEIGHT (LBS)	MANUFACTURER	MODEL NUMBER	CONTROL NOTES	NOTES
EF-1A	RESTROOM	ROOF MOUNTED	EXISTING TO REMAIN	120/1/60	BELT	400	-	.25	1235	0.5	-		GREENHECK	GB-80-4	A	ALL
EF-2A	RESTROOM	ROOF MOUNTED	EXISTING TO REMAIN	120/1/60	DIRECT	700	-	.25	1235	0.5	8.4	50	GREENHECK	GB-90-4B	A	ALL
EF-3A	RESTROOM	ROOF MOUNTED	EXISTING TO REMAIN	120/1/60	DIRECT	120	-	.25	1170	0.5	4.9	50	GREENHECK	GB-70-4-R4	A	ALL
EF-4A	JANITORS CLOSET	ROOF MOUNTED	EXISTING TO REMAIN	120/1/60	DIRECT	260	-	.25	1360	0.375	-		GREENHECK	GB-70-4-R5	A	ALL
EF-5A	RESTROOM	ROOF MOUNTED	EXISTING TO REMAIN	120/1/60	DIRECT	500	-	.25	-	0.5	6.4	50	GREENHECK	GB-90-4-R4	A	ALL
EF-6A	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	685	-	1/6	1019	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-7A	RESTROOM	CEILING	EXISTING TO REMAIN	120/1/60	DIRECT	60	-	.0625		0.375			GREENHECK	SP-6	A	1-4
EF-8A	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-9A	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-10A	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	770	-	1/6	1063	0.4	7.0	70	GREENHECK	G-120-B	A	ALL
EF-11A	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-1B	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-2B	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-3B	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-4B	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-5B	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	690	-	1/6	1021	0.4	6.6	70	GREENHECK	G-120-B	A	ALL
EF-6B	DETENTION CELLS	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	240	-	1/6	1036	0.4	4.7	70	GREENHECK	G-098-B	A	ALL
EF-7B	RESTROOM	ROOF MOUNTED	TO BE REPLACED	120/1/60	DIRECT	150	-	1/6	1027	0.25	4.1	70	GREENHECK	G-097-B	A	ALL
EF-1C	RESTROOM	ROOF MOUNTED	EXISTING TO REMAIN	120/1/60	BELT	250	-	1/6	-	0.125	6.7	70	GREENHECK	70ACE-B	A	ALL
EF-2C	RESTROOM	ROOF MOUNTED	EXISTING TO REMAIN	120/1/60	BELT	250	-	1/6	-	0.125	6.7	70	GREENHECK	70ACE-B	A	ALL

NOTES:

1. PROVIDE FACTORY MOUNTED DISCONNECT.
2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.
3. PROVIDE FIELD-INSTALLED FAN SPEED CONTROLLER. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR.
4. PROVIDE FAN WITH ALL ALUMINUM BACKDRAFT DAMPER.
5. PROVIDE PREMIUM EFFICIENCY MOTOR WITH FACTORY WIRED DISCONNECT SWITCH, NEMA 1.
6. PROVIDE SOUND ATTENUATING ALUMINUM ROOF CURB AND LORENIZED COATING.
7. PROVIDE STAINLESS STEEL INSECT SCREEN, EXTENDED LUBE LINES AND BACKDRAFT DAMPER.
8. PROVIDE IBC 2012 COMPLIANT CURB AND ATTACHMENTS FROM UNIT TO CURB AND CURB TO STRUCTURE. EQUIPMENT OR CURB MANUFACTURER IS RESPONSIBLE FOR PROVIDING ENGINEERED DETAIL ANALYSIS OF:
    1) ATTACHMENT OF EQUIPMENT TO CURB.
    2) CURB TO STRUCTURE.
    3) CURB AND ATTACHMENT HARDWARE STRENGTH.
    REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ROOF SUBSTRATE DETAILS.
    EQUIPMENT OR CURB MANUFACTURER IS ALSO RESPONSIBLE FOR PROVIDING ENGINEERED INSTALLATION DRAWINGS FOR ITEMS 1 AND 2 LISTED ABOVE.
    BOTH, THE ENGINEERED ANALYSIS AND THE ENGINEERED INSTALLATION DRAWINGS SHALL BE PERFORMED SPECIFICALLY FOR THIS BUILDING AND PROJECT SITE AND STAMPED AND SEALED BY A TEXAS LICENSED ENGINEER.
    SUBMITTALS WILL NOT BE APPROVED UNTIL ALL DOCUMENTATION LISTED ABOVE IS PROVIDED ACCURATELY.

CONTROL NOTES:

A. PROVIDE DDC START/STOP POINTS. REFER TO SEQUENCES OF OPERATIONS.
B. FAN SHALL BE INTERLOCKED SWITCH LIGHT SWITCH. COORDINATE WITH ELECTRICAL.

SMOKE EVACUATION FAN SCHEDULE

MARK	SERVING	TYPE	STATUS	ELECTR. V/P/H	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	E.S.P. IN. H20	SOUND IN SONES	WEIGHT (LBS)	MANUFACTURER	MODEL NUMBER	CONTROL NOTES	NOTES
SEF-1A	RTU-8A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2020	-	1.5	1660	1.25	13.0	83.0	GREENHECK	CUBE-140	A,B	ALL
SEF-2A	RTU-9A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2662	-	1.5	1354	1.25	17.0	116	GREENHECK	CUBE-180HP	A,B	ALL
SEF-3A	RTU-10A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2197	-	1.5	1718	1.25	14.9	83	GREENHECK	CUBE-140	A,B	ALL
SEF-4A	RTU-11A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	5853	-	5.0	1212	1.25	24.0	171.0	GREENHECK	CUBE-220HP	A,B	ALL
SEF-5A	RTU-12A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2377	-	1.5	1353	1.25	17.0	84	GREENHECK	CUBE-160	A,B	ALL
SEF-6A	RTU-13A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2045	-	1.5	1668	1.25	13.4	83	GREENHECK	CUBE-140	A,B	ALL
SEF-7A	RTU-14A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2108	-	1.5	1689	1.25	13.9	83	GREENHECK	CUBE-140	A,B	ALL
SEF-8A	RTU-15A	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2050	-	1.5	1669	1.25	13.4	83	GREENHECK	CUBE-140	A,B	ALL
SEF-1B	RTU-1B	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2283	-	1.5	1334	1.25	16.6	84.0	GREENHECK	CUBE-160	A,B	ALL
SEF-2B	RTU-2B	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	1937	-	1.0	1633	1.25	12.3	83	GREENHECK	CUBE-140	A,B	ALL
SEF-3B	RTU-5B	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	1930	-	1.0	1631	1.25	12.3	83	GREENHECK	CUBE-140	A,B	ALL
SEF-4B	RTU-4B	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	1933	-	1.0	1632	1.25	12.3	83.0	GREENHECK	CUBE-140	A,B	ALL
SEF-5B	RTU-3B	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	1947	-	1.0	1636	1.25	12.5	83	GREENHECK	CUBE-140	A,B	ALL
SEF-6B	DAY ROOM	ROOF MOUNTED	NEW	208/3/60	BELT	5853	-	5.0	1212	1.25	24.0	171.0	GREENHECK	CUBE-220HP	A,B	ALL
SEF-7B	RTU-7B	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	1850	-						GREENHECK		A,B	ALL
SEF-8B	RTU-8B	ROOF MOUNTED	TO BE REPLACED	208/3/60	BELT	2315	-						GREENHECK		A,B	ALL

NOTES:

1. PROVIDE FACTORY MOUNTED DISCONNECT.
2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.
3. PROVIDE FAN WITH FIELD INSTALLED ALL ALUMINUM BACKDRAFT DAMPER.
4. PROVIDE PREMIUM EFFICIENCY MOTOR WITH FACTORY WIRED DISCONNECT SWITCH, NEMA 1.
5. PROVIDE HIGH WIND RATED ASSEMBLY INCLUDING FAN AND CURB.
6. PROVIDE STAINLESS STEEL INSECT SCREEN, EXTENDED LUBE LINES AND BACKDRAFT DAMPER.
7. PROVIDE IBC 2012 COMPLIANT CURB AND ATTACHMENTS FROM UNIT TO CURB AND CURB TO STRUCTURE. EQUIPMENT OR CURB MANUFACTURER IS RESPONSIBLE FOR PROVIDING ENGINEERED DETAIL ANALYSIS OF:
    1) ATTACHMENT OF EQUIPMENT TO CURB.
    2) CURB TO STRUCTURE.
    3) CURB AND ATTACHMENT HARDWARE STRENGTH.
    REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ROOF SUBSTRATE DETAILS.
    EQUIPMENT OR CURB MANUFACTURER IS ALSO RESPONSIBLE FOR PROVIDING ENGINEERED INSTALLATION DRAWINGS FOR ITEMS 1 AND 2 LISTED ABOVE.
    BOTH, THE ENGINEERED ANALYSIS AND THE ENGINEERED INSTALLATION DRAWINGS SHALL BE PERFORMED SPECIFICALLY FOR THIS BUILDING AND PROJECT SITE AND STAMPED AND SEALED BY A TEXAS LICENSED ENGINEER.
    SUBMITTALS WILL NOT BE APPROVED UNTIL ALL DOCUMENTATION LISTED ABOVE IS PROVIDED ACCURATELY.

CONTROL NOTES:

A. PROVIDE DDC START/STOP POINTS. REFER TO SEQUENCES OF OPERATIONS.
B. FAN SHALL BE INTERLOCKED WITH FIRE ALARM SYSTEM. COORDINATE WITH ELECTRICAL.

MAKE-UP AIR FAN SCHEDULE

MARK	SERVING	TYPE	STATUS	ELECTR. V/P/H	DRIVE	CFM	INPUT WATTS	MOTOR HP	RPM	E.S.P. IN. H20	SOUND IN SONES	WEIGHT (LBS)	MANUFACTURER	MODEL NUMBER	CONTROL NOTES	NOTES
MUA-1A	RTU-8A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2020	-	2	1310	1.25	13.7	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-2A	RTU-9A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2662	-	2	1427	1.25	16.4	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-3A	RTU-10A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2197	-	2	1336	1.25	15.0	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-4A	RTU-11A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	5853	-	5	1630	1.25	19.5	191	GREENHECK	SQ-18-M2-VG	A,B	ALL
MUA-5A	RTU-12A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2377	-	2	1366	1.25	15.1	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-6A	RTU-13A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2045	-	2	1314	1.25	13.8	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-7A	RTU-14A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2108	-	2	1323	1.25	14.0	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-8A	RTU-15A	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2050	-	2	1314	1.25	13.8	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-1B	RTU-6B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2424	-	2	1376	1.25	15.3	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-2B	RTU-8B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2424	-	2	1376	1.25	15.3	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-3B	RTU-7B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2424	-	2	1376	1.25	15.3	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-4B	RTU-1B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	2283	-	2	1348	1.25	14.6	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-5B	RTU-2B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	1937	-	2	1298	1.25	14.0	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-6B	RTU-3B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	1947	-	2	1300	1.25	13.4	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-7B	RTU-4B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	1933	-	2	1298	1.25	13.4	165	GREENHECK	SQ-160-VG	A,B	ALL
MUA-8B	RTU-5B	IN-LINE MOUNTED	TO BE REPLACED	208/3/60	DIRECT	1930	-	2	1297	1.25	13.4	165	GREENHECK	SQ-160-VG	A,B	ALL

NOTES:

1. PROVIDE FACTORY MOUNTED DISCONNECT.
2. MANUFACTURER AND MODEL NUMBER LISTED ARE "OR APPROVED EQUAL." REFER TO SPECIFICATIONS.
3. PROVIDE FIELD-INSTALLED FAN SPEED CONTROLLER. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR.
4. PROVIDE FAN WITH ALL ALUMINUM GRAVITY BACKDRAFT DAMPER. SHIPPED LOOSE. GREENHECK MODEL EM-10
5 PROVIDE FAN WITH DIRECT DRIVE ECM MOTOR.

CONTROL NOTES:

A. PROVIDE DDC START/STOP POINTS. REFER TO SEQUENCES OF OPERATIONS.
B. FAN SHALL BE INTERLOCKED WITH FIRE ALARM SYSTEM. COORDINATE WITH ELECTRICAL.

NO:	REVISION:	BY:

RFP #231001

CESAR A. GONZALEZ
108611
09.25.2023

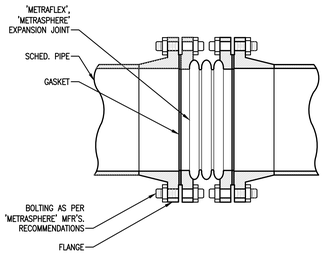
DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO

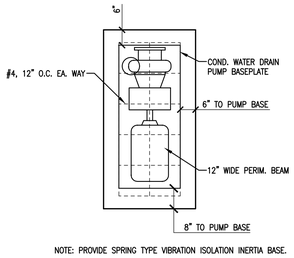
TEXAS

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED
ENGINEERING FIRM
F-15998

DATE: SEPTEMBER 25, 2023
CHECKED BY: C.A.G.
DRAWN BY: B.B.,P.M.
PROJECT NO.: 23v40
CAD FILE:
SHEET:
M5.01



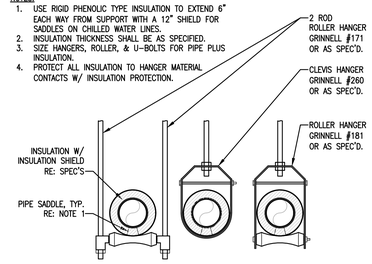
01 TYPICAL EXPANSION JOINT
S C A L E : NOT TO SCALE



NOTE: PROVIDE SPRING TYPE VIBRATION ISOLATION INERTIA BASE.

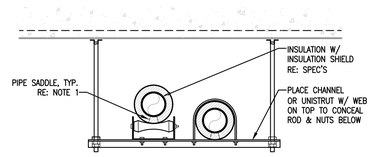
02 PUMP HOUSEKEEPING PAD
S C A L E : NOT TO SCALE

NOTES:
1. USE RIGID PHENOLIC TYPE INSULATION TO EXTEND 6" EACH WAY FROM SUPPORT WITH A 12" SHIELD FOR SADDLES ON CHILLED WATER LINES.
2. INSULATION THICKNESS SHALL BE AS SPECIFIED.
3. SIZE HANGERS, ROLLER, & U-BOLTS FOR PIPE PLUS INSULATION.
4. PROTECT ALL INSULATION TO HANGER MATERIAL CONTACTS W/ INSULATION PROTECTION.

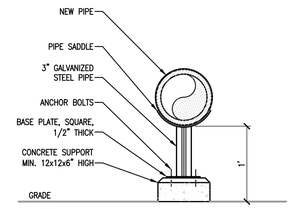


03 PIPING HANGER DETAIL
S C A L E : NOT TO SCALE

NOTES:
1. USE RIGID PHENOLIC TYPE INSULATION TO EXTEND 6" EACH WAY FROM SUPPORT WITH A 12" SHIELD FOR SADDLES ON CHILLED WATER LINES.
2. INSULATION THICKNESS SHALL BE AS SPECIFIED.
3. SIZE HANGERS, ROLLER, & U-BOLTS FOR PIPE PLUS INSULATION.
4. PROTECT ALL INSULATION TO HANGER MATERIAL CONTACTS W/ INSULATION PROTECTION.

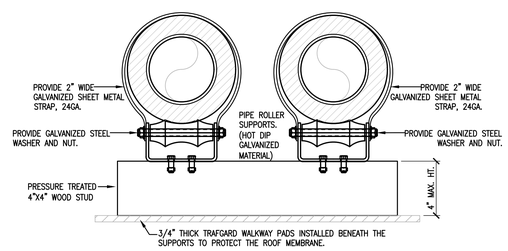


04 PIPING HANGER DETAIL
S C A L E : NOT TO SCALE

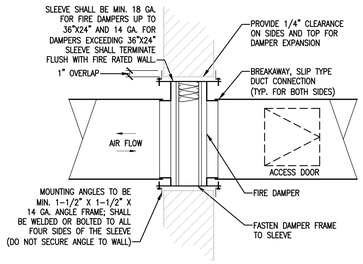


NOTE:
1. ALL STEEL EXPOSED TO EXTERIOR SHALL BE HOT DIPPED GALVANIZED & PAINTED WITH EPOXY PAINT.

05 CONCRETE PIPE SUPPORT DETAIL
S C A L E : NOT TO SCALE

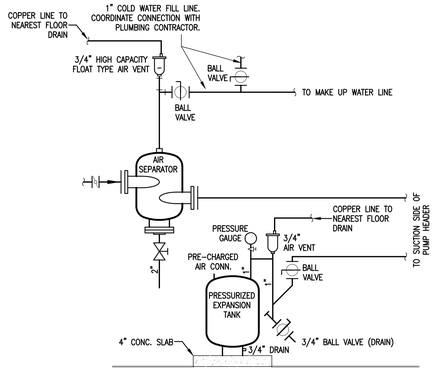


06 CHW PIPING ROOF SUPPORT DETAIL
S C A L E : NOT TO SCALE

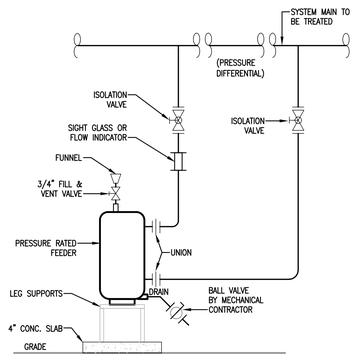


NOTES:
1. FIRE DAMPER TO BE LABELED IN ACCORDANCE WITH UL STANDARDS, AND STATE FIRE MARSHALL APPROVED.
2. INSTALLATION DETAILS SHALL MEET NFPA 90A & B REQUIREMENTS.
3. LOCATE ACCESS DOOR FOR BEST ACCESS TO LINK.
4. FUSIBLE LINK TO BE RATED FOR 50% ABOVE MAXIMUM OPERATING TEMPERATURE OF SYSTEM.
5. FOR STAINLESS STEEL FIRE DAMPER METAL GAUGE, REFER TO MANUFACTURER RECOMMENDATIONS.
6. FIRE DAMPER SHALL BE RATED FOR DYNAMIC DUTY.
7. SLEEVE SHALL TERMINATE FLUSH WITH FIRE RATED WALL.

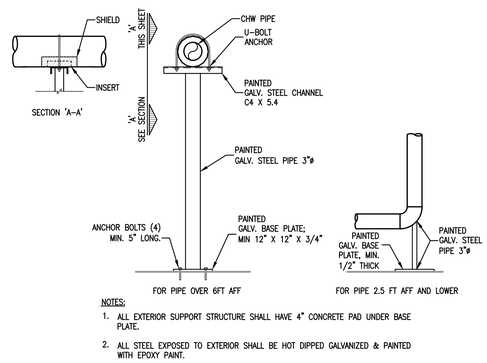
07 FIRE DAMPER WITH ACCESS PANEL
S C A L E : NOT TO SCALE



08 AIR SEPARATOR & EXPANSION TANK DETAIL
S C A L E : NOT TO SCALE



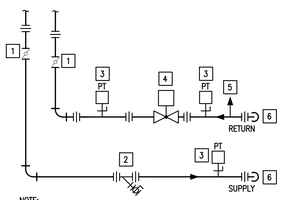
09 CHEMICAL TREATMENT POT FEEDER
S C A L E : NOT TO SCALE



NOTES:
1. ALL EXTERIOR SUPPORT STRUCTURE SHALL HAVE 4" CONCRETE PAD UNDER BASE PLATE.
2. ALL STEEL EXPOSED TO EXTERIOR SHALL BE HOT DIPPED GALVANIZED & PAINTED WITH EPOXY PAINT.

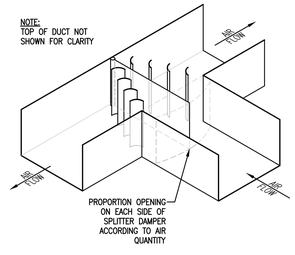
10 PIPE SUPPORT STRUCTURE
S C A L E : NOT TO SCALE

KEYED NOTES
1. 2-1/2" & LARGER BUTTERFLY VALVES FOR SHUTOFF, LINE SIZE; BALL VALVES FOR 2" AND BELOW
2. Y STRAINER WITH 3/4" BALL VALVE ON DISCHARGE
3. PRESSURE/TEMPERATURE TEST PLUG WITH COCK AND CAP
4. 2-WAY MODULATING DDC CONTROL VALVE WITH ELECTRIC NEMA 4X ACTUATOR, PROVIDED BY CONTROLS CONTRACTOR INSTALLED BY MECHANICAL CONTRACTOR
5. AUTOMATIC AIR VENT W/MANUAL SHUT-OFF
6. DIELECTRIC STEEL/COPPER CONNECTION AT UNIT



NOTE:
PROVIDE SEPARATE PIPING PACKAGES FOR TOP AND BOTTOM UNITS OF DUAL PATH AIR HANDLERS.

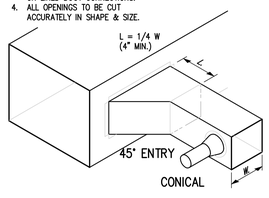
11 CHILLED WATER COIL CONNECTION SCHEMATIC
S C A L E : NOT TO SCALE



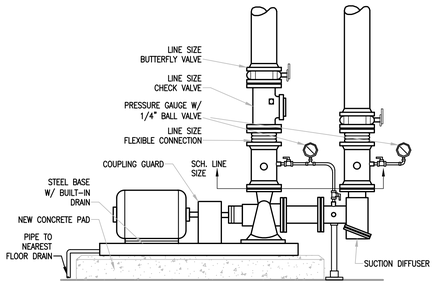
NOTE:
TOP OF DUCT NOT SHOWN FOR CLARITY

12 TYPICAL SPLITTER DAMPER
S C A L E : NOT TO SCALE

NOTES:
1. FIT ALL CONNECTIONS TO AVOID VISIBLE OPENINGS & SECURE SUITABLY FOR THE PRESSURE CLASS.
2. ADDITIONAL MECHANICAL FASTENERS REQ'D. FOR 4" W.G. & OVER.
3. DO NOT EXPOSE LINER EDGES ON LINED DUCT CONNECTIONS.
4. ALL OPENINGS TO BE CUT ACCURATELY IN SHAPE & SIZE.

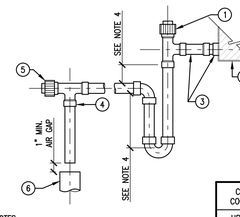


13 BRANCH CONNECTION DETAILS
S C A L E : NOT TO SCALE



NOTES:
1. PIPE SIZE INDICATED ON DRAWING SHALL BE FULL SIZE TO POINT OF CONNECTION TO PUMP FLANGES. PIPING COMPONENTS SUCH AS VALVES, STRAINERS, FLEXIBLE CONNECTORS SHALL BE SAME SIZE AS PIPING SERVING PUMPS.
2. INSULATE CHILLED WATER PUMPS AS PER SPECIFICATIONS.

14 END SUCTION PUMP DETAIL
S C A L E : NOT TO SCALE



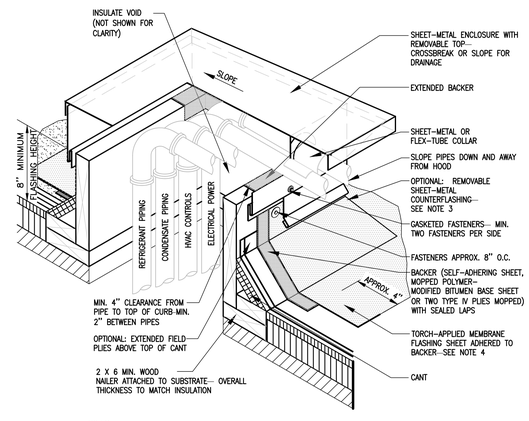
KEYED NOTES
1. CLEAN OUT.
2. DRAIN PAN.
3. DRAIN LINE SHALL BE AT LEAST OF THE SAME SIZE AS THE DRAIN PAN CONNECTION.
4. PITCH.
5. CLEAN OUT.
6. OPEN DRAIN.

CONNECTED COOLING LOAD	MIN. * PIPE SIZE
UP TO 2 TON	3/4"
2-5	1"
5-30	1-1/4"
30-50	1-1/2"
50-160	2"
160-300	3"
300-430	4"

* NOT SMALLER THAN OUTLET SIZE.

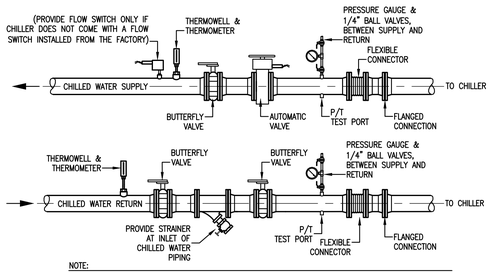
NOTES:
1. MANUALLY PRIME TRAP BEFORE START UP.
2. SUPPORT DRAIN LINES TO PREVENT SAG.
3. ALLOW SUFFICIENT SPACE BELOW PAN FOR TRAP AND PITCH TO DRAIN.
4. COORDINATE WITH MANUFACTURER OF AHU.

15 CONDENSATE DRAIN TRAP PIPE
S C A L E : NOT TO SCALE



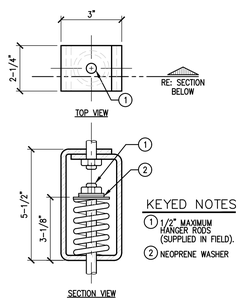
NOTES:
1. THIS DETAIL ILLUSTRATES ANOTHER METHOD OF ELIMINATING PITCH POCKETS AND AN OPTIONAL METHOD OF GROUPING PIPING THAT MUST PENETRATE THE ROOF.
2. MANY MANUFACTURERS OFFER PREFABRICATED BOOTS AND OTHER MATERIALS FOR THIS PURPOSE. SPECIFICS ABOUT THESE PROPRIETARY DESIGNS VARY GREATLY, AND INDIVIDUAL MANUFACTURERS' SPECIFICATIONS SHOULD BE CONSULTED FOR THEIR USE.
3. WHERE THE SHEET-METAL ENCLOSURE OVERLAPS THE BASE FLASHING AT LEAST 3 INCHES, THE REMOVABLE SHEET-METAL COUNTERFLASHING IS NOT REQUIRED.
4. WHEN POTENTIAL FIRE HAZARDS CAN BE MITIGATED, NRCA CONSIDERS IT ACCEPTABLE TO INSTALL TORCH-APPLIED POLYMER-MODIFIED BITUMEN SHEET OVER THE SPECIFIED BACKER FLASHING USING THE DIRECT TORCHING METHOD PROVIDED LOW OUTPUT (50,000 BTU OUTPUT OR LESS) TORCHING EQUIPMENT IS USED. WHEN POTENTIAL FIRE HAZARDS CANNOT BE ADEQUATELY MITIGATED, TORCH-APPLIED POLYMER-MODIFIED BITUMEN SHEET SHALL BE INSTALLED USING INDIRECT TORCHING METHODS, SUCH AS THE TORCH-AND-FLOP APPLICATION METHOD.
5. FOR ROOF SYSTEMS WITH FACTORY-APPLIED GRANULE SURFACING, PROPERLY PREPARE CAP SHEET TO RECEIVE FLASHING.
6. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.

16 HVAC PIPING ROOF PENETRATION DETAIL
S C A L E : NOT TO SCALE



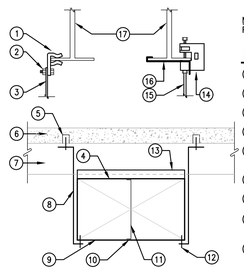
NOTE:
1. DO NOT PERFORM WELDING IN CLOSE PROXIMITY TO THE CHILLER BARRELS AND COMPRESSORS. ALL PIPING CONNECTIONS TO THE CHILLER SHALL BE FLANGED OR GROOVED TYPE.

17 CHILLER PIPING CONNECTION DETAIL
S C A L E : NOT TO SCALE



KEYED NOTES
1. 1/2" MAXIMUM HANGER RODS (SUPPLIED IN FIELD).
2. NEOPRENE WASHER

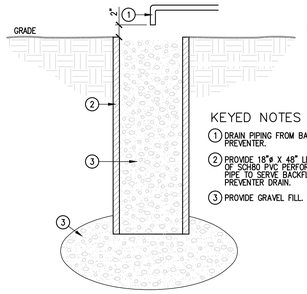
18 SPRING ISOLATION HANGER
S C A L E : NOT TO SCALE



NOTE:
FOLLOW SMACNA GUIDELINES FOR DUCT SUPPORT.

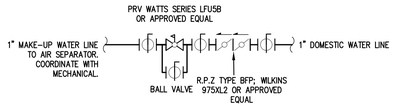
KEYED NOTES
1. FRICTION CLAMP.
2. NUT & BOLT.
3. HANGER STRAP.
4. ARRANGE SEAM JOINTS TO MISS BEAMS.
5. INSERT-DO NOT INSERT INTO BOTTOM OF BEAMS OR JOISTS.
6. CEILING SLAB.
7. CONSTRUCTION BEAM.
8. 1" X 18 GA. STRAP HANGER (ONE HANGER ON DUCTS 31" AND UP).
9. DUCT WITH FLAT SEAM CONSTRUCTION (STANDARD "S" SLIP SNUG TO BEAM).
10. 3/16" SD 64BS POP RIVETS (TWO EACH AT TOP & BOTTOM OF VERTICAL STIFFENER).
11. 1-1/2" X 16 GA. STEEL BAR SUPPORT LOCATED CLOSE TO STIFFENER: DUCT WIDTH TO 24" - NOT REQUIRED DUCT WIDTH 25" TO 47" - ONE (1) REQUIRED.
12. #6 X 3/8" S/M SCREW (TYP).
13. ANGLE STIFFENER FOR DUCT WIDTH 25" TO 40"; 1" STANDING "S" OR 1" X 1" X 1/2" ANGLE.
14. C-CLAMP WITH RETAINING CLIP OR WITH LOCK NUT (OPTIONAL).
15. HANGING ROD.
16. RETAINING CLIP.
17. STRUCTURAL.

19 TYPICAL DUCT SUPPORT
S C A L E : NOT TO SCALE



KEYED NOTES
1. DRAIN PIPING FROM BACKFLOW PREVENTER.
2. PROVIDE 18"ø X 48" LENGTH OF SCH80 PVC PERFORATED PIPE TO SERVE BACKFLOW PREVENTER DRAIN.
3. PROVIDE GRAVEL FILL.

20 DRYWELL DETAIL
S C A L E : NOT TO SCALE



21 MAKE-UP WATER DETAIL
S C A L E : NOT TO SCALE

NO:	REVISION:	BY:

RFP #231001

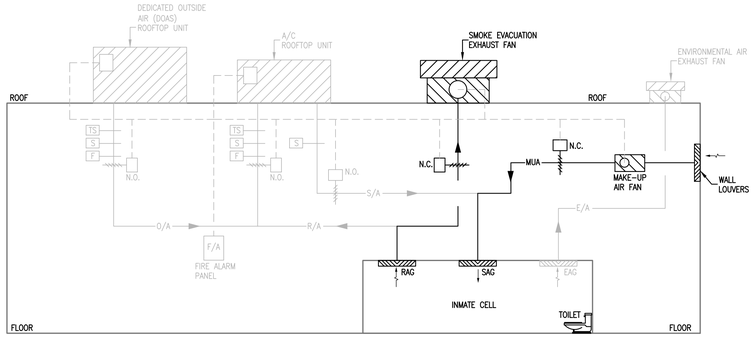
CESAR A. GONZALEZ 108611 01.25.2023

DARRELL HESTER JUVENILE DETENTION CENTER
SMOKE EVACUATION AND HVAC SYSTEMS UPGRADES

SAN BENITO TEXAS

ethos engineering
1126 SOUTH COMMERCE ST.
HARLINGEN, TX
PHONE: 956-230-3435
TEXAS REGISTERED ENGINEERING FIRM F-15998

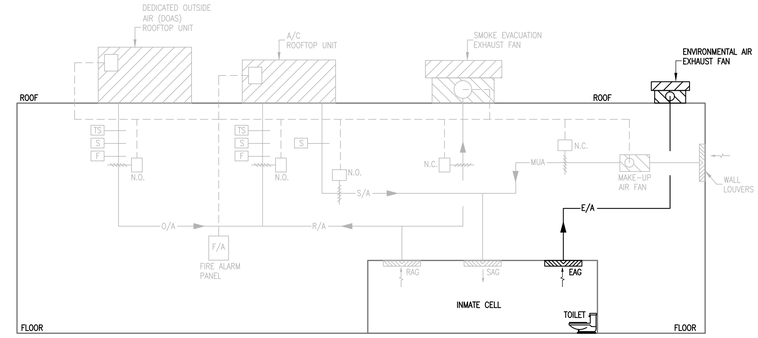
DATE: SEPTEMBER 25, 2023
CHECKED BY: C.A.G.
DRAWN BY: B.B.,P.M.
PROJECT NO.: 23v40
CAD FILE:
SHEET: M6.01



CONTROL SEQUENCE:
A SIGNAL FROM THE FIRE ALARM CONTROL PANEL SHALL: DE-ENERGIZE RTU, CLOSE S.A. & R.A. DAMPERS, OPEN MUA & EXHAUST DAMPERS, ENERGIZE SMOKE EXHAUST AND MAKE-UP AIR FANS. REFER TO DIVISION 26 FIRE ALARM SPECIFICATIONS.

LEGEND	
TS	REMOTE TEMPERATURE SENSOR DUCT
S	SMOKE DETECTOR
F	FIRE STAT
N.O.	MOTORIZED DAMPER (NORMALLY OPEN)
N.C.	MOTORIZED DAMPER (NORMALLY CLOSED)
S/A	SUPPLY AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
MUA	MAKE-UP AIR

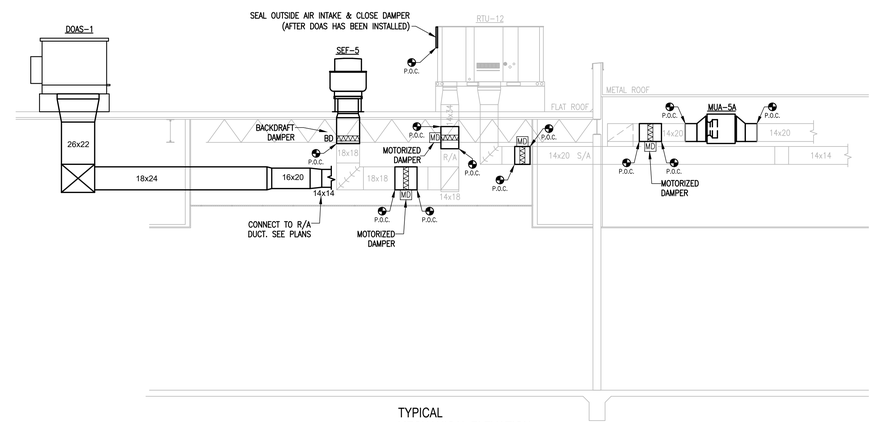
01 FLOW DIAGRAM-
SMOKE EVACUATION SYSTEM
SCALE: NOT TO SCALE



CONTROL SEQUENCE:
A SIGNAL FROM THE FIRE ALARM CONTROL PANEL SHALL: DE-ENERGIZE RTU, CLOSE S.A. & R.A. DAMPERS, OPEN MUA & EXHAUST DAMPERS, ENERGIZE SMOKE EXHAUST AND MAKE-UP AIR FANS. REFER TO DIVISION 26 FIRE ALARM SPECIFICATIONS.

LEGEND	
TS	REMOTE TEMPERATURE SENSOR DUCT
S	SMOKE DETECTOR
F	FIRE STAT
N.O.	MOTORIZED DAMPER (NORMALLY OPEN)
N.C.	MOTORIZED DAMPER (NORMALLY CLOSED)
S/A	SUPPLY AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
MUA	MAKE-UP AIR

02 FLOW DIAGRAM-
ENVIRONMENTAL AIR EXHAUST SYSTEM
SCALE: NOT TO SCALE



03 TYPICAL
MECHANICAL ELEVATION
SCALE: 1/4" = 1'-0"

NO:	REVISION:	BY:

RFP #231001

CESAR A. GONZALEZ
108611
01.25.2023

TEXAS

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DRAWN BY: B.B.,P.M.
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CAD FILE:
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