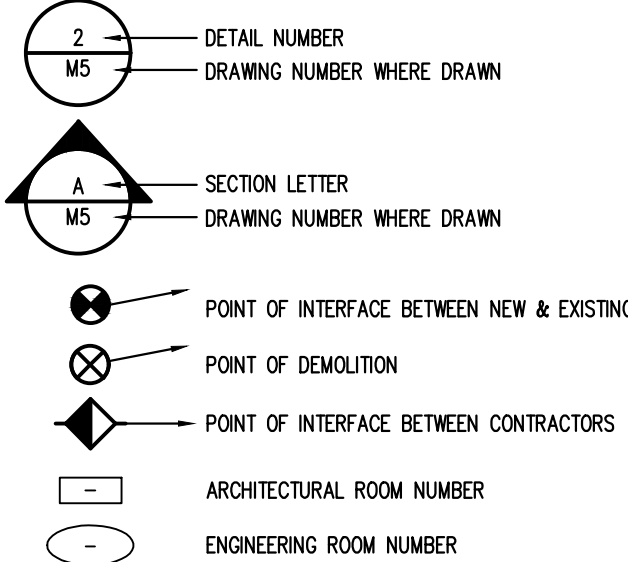


ABBREVIATIONS, LEGENDS, SYMBOLS AND GENERAL NOTES

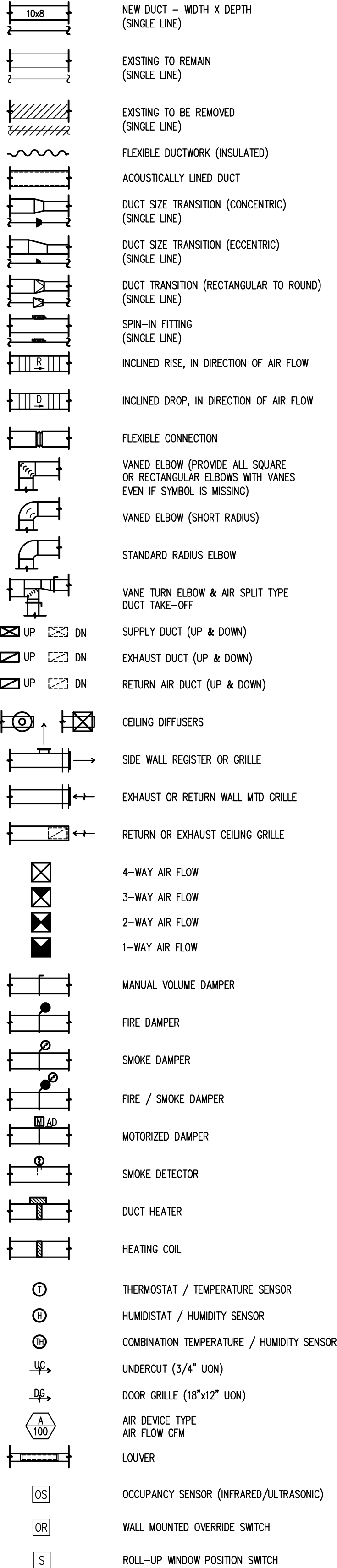
ABBREVIATIONS

AC	AIR CONDITIONING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
BHP	BRAKE HORSE POWER
BOT	BOTTOM
BTUH	BRITISH THERMAL UNIT HOUR
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
CO	CLEANOUT
CT	COOLING TOWER
CJ	CONDENSING UNIT
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DG	DOOR GRILLE
DI	DIGITAL INPUT
DN	DOWN
DO	DIGITAL OUTPUT
DP	DEW POINT
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EL	ELEVATION
EQUIP	EQUIPMENT
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
F DPR	FIRE DAMPER
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FL	FLOOR
FPF	FINS PER FOOT
FPI	FINS PER INCH
FS	FEET PER MINUTE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HUMIDITY
HB	HOSE BIBB
HC	HEATING COIL
HP	HORSE POWER
HPD	HIGH PRESSURE DUCT
HVAC	HEATING VENTILATION AND AIR CONDITIONING
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LP	LOW PRESSURE
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTUH
MD	MOTORIZED DAMPER
MIN	MINIMUM
NC	NORMALLY CLOSED
NC	NOT IN CONTRACT
NO	NORMALLY OPENED
OA	OUTSIDE AIR
PD	PRESSURE DROP
RA	RETURN AIR
RD	ROOF DRAIN
RLA	RUNNING LOAD AMPS
RTU	ROOF TOP UNIT
S	SANITARY
SD	SMOKE DAMPER
SA	SUPPLY AIR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SP	STATIC PRESSURE
T	TEMPERATURE
TYP	TYPICAL
UC	UNDERCUT
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UV	UNIT VENTILATOR
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF
W	WASTE
WB	WET BULB

DRAWING SYMBOLS

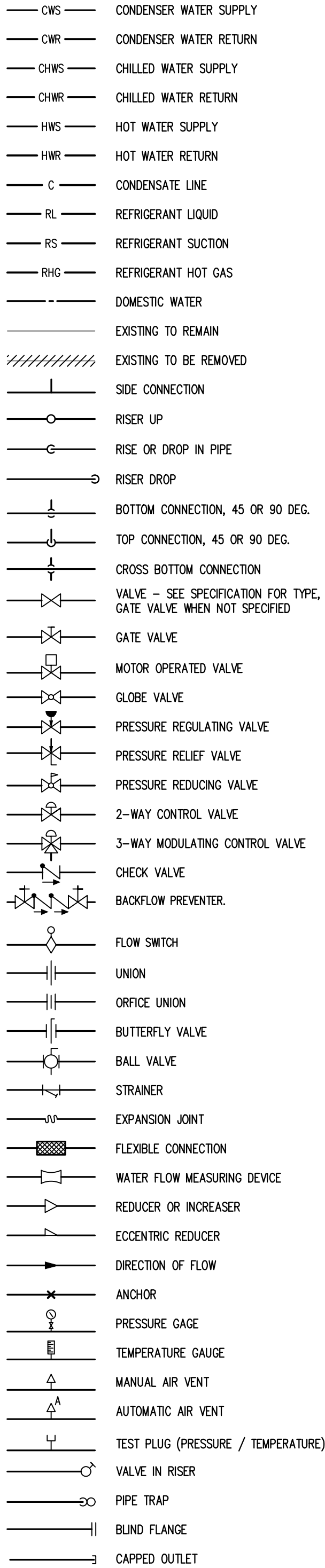


DUCTWORK LEGEND



NOTE
THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER, WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

PIPING LEGEND



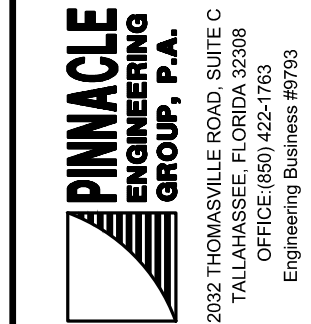
GENERAL NOTES

- HVAC WORK CONSISTS OF PROVIDING AND INSTALLING AIR CONDITIONING SYSTEMS FOR A COMPLETE OPERATING SYSTEM AND AS INDICATED ON THE DRAWINGS. ALL WORK SHALL COMPLY WITH APPLICABLE CODES INCLUDING THE FBC 2023 (8TH EDITION), NATIONAL ELECTRIC CODE, STATE ENERGY CODE, NFPA REQUIREMENTS, AND OTHER LOCAL CODES. IT IS THE INTENTION OF THE CONTRACT DRAWINGS AND SPECIFICATIONS TO CALL FOR COMPLETE, FINISHED WORK, TESTED, AND READY FOR OPERATION.
- TEST AND BALANCE SHALL BE PROVIDED BY A COMPANY SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS AS SUBCONTRACTOR TO THE HVAC CONTRACTOR. THE TEST AND BALANCE CONTRACTOR SHALL BE A MEMBER OF EITHER AABC OR NEBB.
- DUCT DIMENSIONS SHOWN ON THE DRAWINGS ARE CLEAR INSIDE AIR PASSAGE DIMENSIONS.
- ALL PIPING SUBJECT TO THERMAL EXPANSION AND/OR CONTRACTION THAT PENETRATES A SMOKE, FIRE, OR FIRE/SMOKE WALL, PARTITION, OR FLOOR SLAB SHALL BE SUITABLY SLEEVED AND FIRE SAFED.
- PROVIDE IDENTIFICATION OF THE LOCATION OF ALL FIRE, FIRE/SMOKE, BALANCING DAMPER, AND ALL DUCT SMOKE DETECTORS LOCATED INSIDE SHAFTS OR ABOVE CEILINGS (ACCESSED THROUGH DOORS LOCATED IN SHAFT WALLS OR CEILINGS). IDENTIFICATION TAGS SHALL BE AFFIXED TO THE WALLS OR CEILINGS AND SHALL BE VISIBLE FROM THE OCCUPIED SPACE. COORDINATE WITH OWNER FOR IDENTIFICATION TYPE, COLOR AND LABELING REQUIREMENTS.
- ALL PIPING SHALL BE SUPPORTED WITH COMMERCIAL MANUFACTURED CLAMPS. PROVIDE ISOLATION SLEEVES TO PREVENT CONTACT OF DISSIMILAR METALS.
- INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS.
- CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT AND MATERIALS.
- PENETRATIONS THROUGH FIRE RATED ASSEMBLIES, PENETRATIONS FOR PIPES, CONDUITS, OR OTHER PURPOSES THROUGH ASSEMBLIES (FLOORS, ROOF, WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE RESISTANCE RATING FIRE STOP MATERIAL. FIRE STOP SEALANTS SHALL BE UL LISTED. APPLY FIRE STOP AS RECOMMENDED BY THE MANUFACTURER AND IN ACCORDANCE WITH ITS LISTING TO MEET OR EXCEED THE FIRE RATING OF THE ASSEMBLY IN WHICH IT IS INSTALLED.
- MOUNT ALL SPACE THERMOSTATS AND/OR SENSORS SUCH THAT ALL OPERABLE CONTROLS ARE MAXIMUM 4 FEET ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
- UNLESS OTHERWISE NOTED, INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO THE BOTTOM OF THE STRUCTURE. COORDINATE ELEVATION AND LOCATION WITH ALL EXISTING CONDITIONS, CEILING HEIGHT, LIGHT FIXTURES, BUILDING STRUCTURE, RAIN LEADERS, WATER PIPING, PLUMBING VENTS, AND MAJOR ELECTRICAL CONDUITS OR CABLE TRAY. OFF-SET DUCTWORK OR RELOCATE OBSTRUCTION AS REQUIRED FOR NEW WORK.
- PROVIDE OPPOSED BLADE VOLUME DAMPERS AND MOTORIZED CONTROL DAMPERS IN ALL OUTSIDE AIR DUCTS.
- PROVIDE CONDENSATE TRAPS IN THE CONDENSATE LINES AT ALL AIR HANDLING UNITS.
- ROUTE FULL SIZE (MIN. 1") COPPER DRAIN PIPE FROM EACH AHU DRAIN PAN TO RESPECTIVE FLOOR DRAIN. INSULATE WITH "M" ARMSTRONG "ARMAFLEX" INSULATION. INSULATION LOCATED IN PLENUM SPACES SHALL BE PLENUM RATED "AP ARMAFLEX". FINISH EXPOSED INSULATION WITH ALUMINUM JACKET.
- THE WORK INDICATED ON THESE DRAWINGS IS GENERALLY DIAGRAMMATIC AND IS INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF DUCTWORK AND EQUIPMENT, ETC.
- WHEN CONFLICTS OCCUR IN SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
- THE CONTRACTOR SHALL CLOSELY COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
- SLOPE WATER PIPING 1" PER 40'. PROVIDE DRAINS AT LOW POINTS. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS.
- THE ENGINEER HAS MADE AN EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR CHECKING DRAWINGS AND FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.
- UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER.
- COORDINATE AND SCHEDULE ALL WORK IN ADVANCE W/OWNER. WORK SCHEDULES MUST BE APPROVED IN ADVANCE BY THE CONSTRUCTION MANAGER AND THE OWNER'S PROJECT MANAGER. WORK CANNOT DISTURB NORMAL SCHEDULE AND OPERATIONS.
- CONTRACTOR SHALL COORDINATE W/ OWNER AND DOCUMENT ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. CONTRACTOR SHALL VIDEO AND SUBMIT PICTURES (ORGANIZED BY BUILDING, FLOOR, AND ROOM) PRIOR TO BEGINNING WORK. ITEMS WHICH ARE MISSING/DAMAGED BY CONTRACTOR WILL BE REPLACED OR REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- UNLESS OTHERWISE NOTED, INSTALL ALL DUCTWORK AND PIPING AS HIGH AS POSSIBLE. COORDINATE FIT AND LOCATIONS WITH OTHER TRADES PRIOR TO BID.
- PAIN ALL VISIBLE DUCTWORK THRU AIR INLETS/OUTLETS FLAT BLACK.
- CONTRACTORS SHALL VISIT THE SITE PRIOR TO BID AND VERIFY ALL BUILDING CONSTRAINTS, ALL DUCT, PIPE, AND EQUIPMENT FIT WITH EXISTING CONDITIONS, ALL SITE ACCESS CONSTRAINTS, ALL SCHEDULING CONSTRAINTS, EQUIPMENT REQUIREMENTS (CRANES, ETC.) ALL REQUIRED BUILDING MODIFICATIONS, ETC. AND INCLUDE ALL COSTS IN BID.
- CONTRACTOR SHALL PROVIDE AND UTILIZE NEGATIVE AIR MACHINES FOR ALL WORK THAT PRODUCES CONSTRUCTION DUST. CONTRACTOR SHALL CLEAN THE BUILDING DAILY. WALK PATHS FROM CONSTRUCTION AREA TO EXTERIOR SHALL BE KEPT CLEAN AND UTILIZE PROTECTION FOR FLOORING, STICKY MATS, ETC.
- PROVIDE TEMPORARY RETURN AIR CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS DURING WORK. REMOVE FILTERS AT COMPLETION OF WORK.
- COORDINATE ALL ACCESS TO SITE AND SCHEDULING REQUIREMENTS WITH OWNER.
- PROVIDE TEMPORARY COOLING FOR AREAS IMPACTED BY OUTAGES.

DESIGN CONDITIONS

OUTDOOR (SUMMER) = 96.0° FDB / 77° FWB
OUTDOOR (WINTER) = 27.0° FDB
INDOOR (SUMMER) = 75.0° FDB / 50% RH.
INDOOR (WINTER) = 72.0° FDB
OUTSIDE AIR = REFER TO CALCULATIONS - O.A. CFM DETERMINED IN ACCORDANCE W/F.B.C. 2023 (8th EDITION)
EXHAUST AIR = MIN. 50 CFM CONTINUOUS / 70 CFM INTERMITTENT PER WATER CLOSET, OR URINAL = MIN. 20 CFM CONTINUOUS / 50 CFM INTERMITTENT PER SHOWER HEAD = MIN. 0.5 CFM / SF - LOCKER ROOM

SEAL



DATE

REV# DESCRIPTION

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:
GENERAL NOTES, ABBREVIATIONS,
LEGENDS AND SYMBOLS

FILE: M0.1
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M0.1

EXISTING PUMP SCHEDULE													
TAG	MODEL NO.	SYSTEM	FLUID DATA			PUMP DATA			ELECTRIC DATA				NOTES
			FLOW GPM	HEAD FT	FLUID TEMP	TYPE	IMPELLER SIZE	% EFF.	VFD YES/NO	MOTOR HP	MOTOR RPM	VOLTS/ PHASE	
CWP-1	-	COND. WATER	300	70	85	END SUC.	-	-	YES	10.0	1760	460/3ø	1, 2
CWP-2	-	COND. WATER	300	70	85	END SUC.	-	-	YES	10.0	1760	460/3ø	1, 2
NOTES: 1. PHASE 1 BASE BID: PROVIDE PRE-CONSTRUCTION T&B. SUBMIT REPORT TO ENGINEER. RE-BALANCE AS REQUIRED FOR FLOW AT NEW UNITS. COORDINATE WITH ENGINEER. 2. PHASE 2 BASE BID: RE-BALANCE AS REQUIRED. COORDINATE WITH ENGINEER.													

EXISTING HEAT EXCHANGER SCHEDULE									
TAG	MODEL NO.	CONDENSER WATER DATA				GROUND LOOP WATER DATA			
		WATER FLOW (GPM)	INLET TEMP (°F)	OUTLET TEMP (°F)	PD. PSI	WATER FLOW (GPM)	INLET TEMP (°F)	OUTLET TEMP (°F)	PD. PSI
HX-1	--	300	95	85	9.76	300	80	90	9.74
NOTES: 1. PHASE 1 BASE BID: PROVIDE PRE-CONSTRUCTION T&B. SUBMIT REPORT TO ENGINEER. RE-BALANCE AS REQUIRED FOR FLOW AT NEW UNITS. COORDINATE WITH ENGINEER. 2. PHASE 2 BASE BID: RE-BALANCE AS REQUIRED. COORDINATE WITH ENGINEER.									

NEW MINI-SPLIT HEAT PUMP SCHEDULE	
CONDENSING UNIT	MSO1-1
STATUS	NEW
LOCATION	EXTERIOR
CAPACITY	TONS 2.0
NO. OF COMPRESSORS	1
NO. OF CONDENSER FANS	1
CONDENSER FAN MOTOR	W 7
ELECTRICAL	V/PH/Hz 208-230/1/60
MCAM/MOCP	AMPS 22/37
SEER	21.1
REFRIGERANT	R-454B
WEIGHT	LBS. 155
MANUFACTURER	MITSUBISHI
MODEL NO.	PUZAH24NL
AIR HANDLING UNIT	MS1-1
STATUS	NEW
LOCATION	ALUMNI LOUNGE
TOTAL COOLING CAPACITY	BTUH 24,000
SUPPLY AIR	CFM 635
OUTSIDE AIR	CFM 0
FAN MOTOR	W 69
ELECTRICAL	V/PH/Hz 208-230/1/60
FILTER TYPE	THROW-AWAY
WEIGHT	LBS. 46
MANUFACTURER	MITSUBISHI
MODEL NO.	PKA-AK24NL
GENERAL NOTES: ① COORDINATE FINAL LOCATION OF NEW INDOOR AND OUTDOOR UNITS WITH OWNER. ② PROVIDE WALL MOUNTED INDOOR UNIT. PROVIDE PAD MOUNTED OUTDOOR UNIT. SECURE FOR 130 MPH WINDLOAD. ③ PROVIDE PROGRAMMABLE, HARD WIRED, WALL MOUNTED CONTROLLER. COORDINATE FINAL LOCATION WITH OWNER. ④ PROVIDE WITH MITSUBISHI ELECTRIC-A-CONTROL SYSTEM FOR SINGLE POINT POWER CONNECTION (INDOOR UNIT FED FROM OUTDOOR UNIT). ⑤ PROVIDE LOW AMBIENT CONTROL TO 0°F. ⑥ MITSUBISHI OR PRE-APPROVED EQUAL. ⑦ UNITS SHALL HAVE AUTOMATIC RESTART AFTER POWER LOSS. ⑧ REFRIGERANT PIPING SHALL BE SIZED BY MANUFACTURER FOR LONG LINE LENGTH APPLICATION SPECIFIC TO THIS INSTALLATION. PRIOR TO ORDERING, CONTRACTOR SHALL FIELD VERIFY REFRIGERANT PIPE PATH AND LENGTH. EQUIVALENT PIPE LENGTH SHALL NOT EXCEED MANUFACTURER'S MAXIMUM RECOMMENDED PIPE LENGTH. ⑨ PROVIDE REFRIGERANT LEAK DETECTOR - SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. ⑩ PROVIDE BacNet INTERFACE, MITSUBISHI M# PAC-UKPRC001-CN-1, OR EQUAL. INTERFACE SHALL ALLOW ROOM TEMPERATURE MONITORING, REMOTE START/STOP, SETPOINT ADJUSTMENT, FAN SPEED ADJUSTMENT, AND ALARM MONITORING AT A MINIMUM. ⑪ DRAIN PAN LEVEL SENSOR (FLOAT SWITCH). ⑫ PROVIDE WITH 115V/1PH CONDENSATE PUMP. LOCATE INTERNAL TO UNIT. COORDINATE WITH ELECTRICAL FOR CONECTION REQUIREMENTS.	

AIR DEVICE SCHEDULE									
ITEM NO.	A	B	C	D	E	F	G	H	I
TYPE	LINEAR	LINEAR	LOUVERED	EGGGRATE	SIDEWALL	SIDEWALL	LINEAR	SIDEWALL	SIDEWALL
FACE	ONE 2.5" SLOT; 4L	ONE 2.5" SLOT; 4L	-	-	-	-	TWO 2" SLOTS; 4L	-	-
NECK	12" OVAL	12" OVAL	20x20	16x16	20x16	20x16	12"ø	20x40	22X30
MATERIAL	ALUM	ALUM	ALUM	ALUM	ALUM	ALUM	ALUM	ALUM	ALUM
FINISH	④	④	④	WHITE	WHITE	WHITE	WHITE	⑦	⑦
ACCESSORIES	①②③⑤⑥	①②③⑤⑥	①②	①	①	①	①②⑤⑥	②⑧	②⑧
MANUFACTURER	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	RUSKIN	RUSKIN
MODEL NO.	CF-JS	CF-R	635	81	620	610Z	CF-JS	ELF6350DMP	ELF6350DMP
NOTE ① AIR DISTRIBUTION DEVICES SHALL BE EQUIPPED WITH BORDER TYPE SUITABLE FOR THEIR PARTICULAR APPLICATION PROVIDE TRANSITION TO DIFFUSER NECK AS APPROPRIATE. PROVIDE OBWMD AT EACH AIR INLET AND OUTLET UNLESS DAMPER IS IN TAKEOFF OR IN DUCT. ② FIELD VERIFY FIT PRIOR TO ORDERING. ③ ROW OF DIFFUSERS SHALL FORM ONE CONTINUOUS SLOT. BORDER SHALL BE EXPOSED FRAME. DIFFUSERS AT ENDS SHALL INCLUDE X-MITERED END CONDITION. REFER TO FLOOR PLANS. ④ EXTERIOR CUSTOM COLOR SELECTED BY OWNER TO MATCH EXISTING CEILING. INTERNAL COMPONENTS VISIBLE FROM THE SPACE SHALL BE FLAT BLACK. ⑤ PROVIDE LINEAR DIFFUSER WITH FIELD OR FACTORY FABRICATED AND INSULATED PLENUM. NECK SIZE AS SCHEDULED. OFFSET NECK LOCATION FOR FIELD CONDITIONS AND FIT WITH EXISTING AND NEW CONDITIONS. ⑥ PROVIDE WITH INTEGRAL BALANCING DAMPER. ⑦ CUSTOM COLOR SELECTED BY OWNER. ⑧ BIRD SCREEN.									

EXISTING WATER SOURCE HEAT PUMP UNIT SCHEDULE																							
TAG	NO. OF UNITS	MODEL NO.	SA CFM EXIST/ REBAL	OA CFM EXIST/ REBAL	COOLING CAPACITY						FLOW GPM	WATER P.D. FT	ELECTRICAL DATA					EER	HEAT PUMP HEATING		AUXILIARY ELEC. HEAT		NOTES
					TOTAL MBH	SENS. MBH	EAT DB	EAT WB	LAT DB	LAT WB			NO. COMP.	UNIT RLA	BLOWER HP	UNIT MCA	VOLT/ PHASE		COP	TOTAL MBH	STAGES	KW	
AC1-1	1	--	570/515	390/315	32.3	20.2	89	71	52	52	6	11.8	1	14.2	½	22.2	208/1ø	12.3	4.7	22.4	1	7.5	7, 8, 9
AC1-4	1	--	4550/3830	2340/2340	217.3	156.3	83	68	52	51	58	24.3	2	17.3	5	46.0	460/3ø	14.5	4.3	293.8	3	60	4, 9
AC1-5	1	--	1600/NA	0/NA	46.1	40.2	74	61	55	54	12	9.0	1	5.8	¾	10.1	460/3ø	10.9	4.5	63.1	2	14	1, 5
AC1-6	1	--	800/NA	0/NA	34.4	23.9	83	67	55	54	6	11.8	1	14.2	½	22.2	208/1ø	12.5	4.7	28.0	1	7.5	1, 5
AC1-7	1	--	4710/3050	2530/2530	267.4	179.8	89	72	54	54	68	10.5	2	19.2	5	50.0	460/3ø	15.4	3.6	352.0	3	50	2, 6, 9
AC3-6	1	--	2750/2550	480/250	95.7	70.9	81	75	55	53	16	5.4	2	6.4	1½	17.0	460/3ø	14.4	4.8	112.6	3	25	3, 9
NOTES: 1. PHASE 2 ADD ALTERNATE: EXISTING ELECTRIC RE-HEAT TO BE CIRCUITED. REFER TO ELECTRICAL. REFER TO CONTROLS. PROVIDE T&B. 2. PHASE 1 BASE BID: REBALANCE AS INDICATED. 3. PHASE 2 BASE BID: REBALANCE AS INDICATED. 4. PHASE 2 ADD ALTERNATE: REBALANCE AS INDICATED. 5. EXISTING UNIT TO REMAIN. 6. NEW DUCT HEATER TO BE INSTALLED UNDER PHASE 1 SCOPE. TAG AS INDICATED ON FLOOR PLANS. 7. PHASE 2 BASE BID: FULL FLOW OCCUPIED CONDITION (515 CFM SA/315 CFM OA/200 CFM RA) SCHEDULED. PART FLOW UNOCCUPIED CONDITIONS SHALL BE 515 CFM SA/145 CFM OA/370 CFM RA. T&B CONTRACTOR SHALL COORDINATE WITH CONTROLS CONTRACTOR TO ACHIEVE MOTORIZED DAMPER POSITIONS FOR OCCUPIED AND UNOCCUPIED CONDITIONS BASED ON OCCUPANCY SENSOR STATUS. REFER TO CONTROL DRAWINGS. 8. PHASE 2 BASE BID: T&B TO VERIFY OPERATION OF EXISTING UNIT'S HOT GAS REHEAT AND ELECTRIC REHEAT. PROVIDE REPORT TO ENGINEER. COORDINATE WITH CONTROLS CONTRACTOR. 9. PROVIDE NEW ADJUSTABLE SHEAVES AND BELT AS REQUIRED.																							

NEW WATER SOURCE HEAT PUMP UNIT SCHEDULE																									
PLAN MARK	NO. OF UNITS	MODEL NO.	SA CFM	OA CFM	ESP/TSP IN WG	COOLING CAPACITY						FLOW GPM	WATER P.D. FT	ELECTRICAL DATA					EER	HEAT PUMP HEATING		AUXILIARY ELEC. HEAT			NOTES
						TOTAL MBH	SENS. MBH	EAT DB	EAT WB	LAT DB	LAT WB			NO. COMP.	UNIT FLA	UNIT MCA	UNIT MFS	VOLT/ PHASE		COP	TOTAL MBH	STAGES	KW	VOLT/ PHASE	
AC1-5A	1	EC096	2400	2400	0.50 / 1.28	123.6	70.2	96	77	69.1	67.6	23	17.5	2	15.1	16.6	20	460/3	21.7	5.2	127.4	SCR	15	460/3	3,6,8,9,10,11,12,13,14
AC1-6A	1	EC096	2700	2700	0.50 / 1.28	123.6	70.2	96	77	70.5	68.6	23	17.5	2	15.1	16.6	20	460/3	21.7	5.2	127.4	SCR	15	460/3	3,6,8,9,10,11,12,13,14
AC1-7	1	PRMW210-C0	3400	2000	0.75 / 1.27	204.2	124.1	87.4	71.4	53.0	51.7	51	10.4	2	95	107.7	125	460/3	12.7	4	238.3	SCR	50	460/3	2,9,10,15,16,17,18,19,20,21,22,23,24
AC1-10A	1	SE048	1350	125	0.50 / -	47.1	32.4	76.9	63.9	55.6	52.1	10	4.6	1	26.6	31.2	45	208-230/1	15.4	4.7	59.6	SCR	10	460/3	1, 4, 5, 6, 7
AC1-10B	1	SE048	1350	125	0.50 / -	47.1	32.4	76.9	63.9	55.6	52.1	10	4.6	1	26.6	31.2	45	208-230/1	15.4	4.7	59.6	SCR	10	460/3	1, 4, 5, 6, 7
AC3-3	1	SE024	925	30	0.25 / -	24.5	19.4	75.7	62.9	56.9	53.9	5	1.1	1	15.3	17.9	25	208-230/1	14.1	5.4	30.1	-	-	-	1,9,10,12,20,24,27,28,29,30
NOTES: 1. BASIS OF DESIGN: CLIMATE MASTER. 2. BASIS OF DESIGN: ADDISON. 3. BASIS OF DESIGN: FLORIDA HEAT PUMP. 4. EQUIPMENT HAS BEEN PRE-PURCHASED BY OWNER. CONTRACTOR SHALL INSTALL AND PROVIDE LABOR WARRANTY. 5. ELECTRIC DUCT HEATER PRE-PURCHASED BY OWNER. CONTRACTOR SHALL INSTALL AND PROVIDE LABOR WARRANTY. SHIPPED LOOSE FOR INSTALLATION IN DUCT. 6. REFER TO SPECIFICATION 238146.01 FOR VERTICAL WSHP UNITS. 7. TAG DUCT HEATERS AS INDICATED ON FLOOR PLANS. 8. BELT DRIVEN FAN. INTEGRAL VFD WITH DISCONNECT. 9. CUPRO-NICKEL HEAT EXCHANGER. 10. R454B REFRIGERANT WITH INTEGRAL REFRIGERANT MONITOR. 11. BACNET MSTP INTERFACE. COORDINATE WITH CONTROLS CONTRACTOR FOR BACNET MSTP TO BACNET IP ROUTER/CONVERSION HARDWARE AND SOFTWARE. 12. 2" MERV 13 FILTERS. 13. DUAL COMPRESSORS SHALL STAGE AS REQUIRED TO MEET LOAD. 14. PROVIDE DUCT MOUNTED SCR ELECTRIC HEATER AS SCHEDULED. TAG AS INDICATED ON FLOOR PLANS. 15. REFER TO SPECIFICATION 238146.02 FOR MODULAR WSHP UNITS. 16. PROVIDE MODULAR WSHP UNIT. UNIT SHALL FIT THROUGH A STANDARD DOOR OPENING AND BE ASSEMBLED IN THE MECHANICAL ROOM. VERIFY FIT PRIOR TO ORDERING. 17. HORIZONTAL INLET AND OUTLET DUCT CONNECTIONS. 18. ECM VARIABLE SPEED BLOWER. PROVIDE WITH AIR MONITORING STATION. 19. DUAL COMPRESSOR, DUAL REFRIGERANT CIRCUIT. LEAD COMPRESSOR SHALL BE VARIABLE CAPACITY. 20. PROVIDE WITH MODULATING HOT GAS RE-HEAT. 21. CONNECT TO EXISTING DUCT MOUNTED SCR ELECTRIC HEATER. 22. NON-FUSED DISCONNECT SHIPPED LOOSE FOR MOUNTING ON MECHANICAL ROOM WALL. 23. 4" MERV 13 FILTERS. 24. PROVIDE WITH BACNET IP INTERFACE. COORDINATE WITH CONTROLS CONTRACTOR FOR FULL BAS INTEGRATION. 25. REFER TO SPECIFICATION 238146.03 FOR PRE-PURCHASED UNIT INSTALLATION SPECIFICATION. 26. PRE-PURCHASED UNIT IS EQUIPPED WITH BACNET IP INTERFACE. PROVIDE FULL BAS INTEGRATION TO UNIT AND DUCT HEATER. 27. REFER TO SPECIFICATION 238146 FOR HORIZONTAL WSHP UNITS. 28. VARIABLE CAPACITY COMPRESSOR. 29. ECM BLOWER MOTOR. 30. INTEGRAL NON-FUSED DISCONNECT.																									

FAN SCHEDULE													
PLAN MARK	CONDITION	MODEL NO.	TYPE	CFM EXIST / NEW	STATIC PRESS.	FAN RPM	MOTOR RPM	HP	VOLT/ PHASE	DRIVE TYPE	FAN SERVICE	NOTES	
EF1-3	EXIST	-	INLINE	340	0.5	2215	1725	0.25	120/1ø	BELT	UMPIRE'S LOCKER	2, 4	
EF1-6	EXIST	-	INLINE	1950 /1950	0.5	1630	1140	0.75	480/3ø	BELT	MISC. LOCKER/RR	2, 5	
EF1-7	EXIST	-	INLINE	1540 / 1540	0.5	1794	1725	0.50	120/1ø	BELT	SHOWER ROOM	3	
EF1-7	EXIST	-	INLINE	1540 / 1200	0.5	1794	1725	0.50	120/1ø	BELT	SHOWER ROOM	2, 4	
EF1-8	EXIST	-	INLINE	990 / 790	0.3	1405	1720	0.17	120/1ø	EC DIR	PLAYER'S LOCKER	2, 3	
EF1-8	NEW	100SQN-D	INLINE	- / 600	0.3	1405	1720	0.17	120/1ø	EC DIR	PLAYER'S LOCKER	1, 4, 6, 7, 8, 9, 10	
EE3-1	EXIST	-	INLINE	1530 / 1400	0.75	1899	1725	0.75	480/3ø	BELT	RESTROOMS	2, 4	
NOTES: 1. NEW FAN. BASIS OF DESIGN: COOK. 2. REBALANCE EXISTING FAN AS INDICATED. PROVIDE NEW ADJUSTABLE SHEAVE AND BELT(S) AS REQUIRED. 3. PHASE 1 BASE BID SCOPE. 4. PHASE 2 BASE BID SCOPE. 5. PHASE 2 ADDITIVE ALTERNATE SCOPE. 6. PROVIDE WITH FACTORY WIRED DISCONNECT SWITCH. 7. PROVIDE WITH BACKDRAFT DAMPER. 8. INLET/OUTLET FLEX DUCT CONNECTORS, ISOLATORS, AND SUPPORT HARDWARE. 9. REFER TO SEQUENCE OF OPERATION FOR EXHAUST FAN CONTROLS. 10. PROVIDE 0-10 VOLT EXTERNAL VARIABLE SPEED CONTROLLER FOR E.C. FAN. COORDINATE WITH CONTROLS CONTRACTOR PRIOR TO BID FOR INTERFACE REQUIREMENTS FOR REMOTE FAN SPEED CONTROL. PROVIDE TRANSFORMER AS REQUIRED. COORDINATE WITH T&B CONTRACTOR DURING START-UP FOR MULTIPLE BALANCED CONDITIONS; REFER TO FLOOR PLAN AND CONTROLS DRAWINGS. LOCATE CONTROLLER ACCESSIBLE.													

SEAL	PINNACLE ENGINEERING GROUP, P.A.		2002 THOMASVILLE ROAD, SUITE C TALLAHASSEE, FLORIDA 32308 Engineering Business #9793	
	DATE			
	REV #	DESCRIPTION		

HOWSER STADIUM UPGRADE HVAC	FLORIDA STATE UNIVERSITY TALLAHASSEE, FLORIDA

DRAWING TITLE: MECHANICAL SCHEDULES	FILE:	MO.2
	JOB NO.:	226-106
	DATE :	10-22-2026
	PLOT SIZE:	24x36
	DRAWN BY:	RA
CHECKED BY:		CA
SHEET No.:		MO.2

VENTILATION AIR CALCULATIONS - AC3-6

FLOOR NO.	ROOM NO.	ROOM NAME	ROOM AREA	OCCUPANCY	OA RATE (CFM/PER)	OA RATE (CFM/SF)	OA CFM (Voz)	SA CFM	OA/SA RATIO	Rp x Pz -	Ra x Az -	NOTES
3	324	Head Coach	324	1	5	0.06	31	640	0.048	5	19.44	
3	323	Office	143	1	5	0.06	17	300	0.057	5	8.58	
3	322	Office	142	1	5	0.06	17	300	0.056	5	8.52	
3	325	Corridor	124	0	0	0.06	9	130	0.072	0	7.44	
3	320	Lobby	280	1	5	0.06	27	490	0.056	5	16.80	
3	318	Storage	72	0	0	0.12	11	160	0.068	0	8.64	
3	321	Office	231	2	5	0.06	30	530	0.056	10	13.86	
TOTAL			1316	6			142	2550	0.06	30	83.28	

NOTES:
1. Calculations in accordance with FBC 2023; Rates in accordance with Table 403.3.1.1
2. Zone OA =((No.People*OA CFM Rate/Person)+(SF*OA Rate/SF))/0.8 Zone Air Dist Effectiveness (Table 403.3.1.1.1.2)
3. Transfer Air
4. System Ventilation Efficiency is in accordance with Table 403.3.1.1.2.3.2

Ev

1.0

0.9

0.8

0.7

0.6

0.5

0.4

0.3

0.070Maximum OA/SA Ratio (or Max Zp)

5. Uncorrected Outside Air CFM Vou=D(Sum Rp*Pz)+(Sum Ra*Az)

113CFM

Max # of People

Sum of Zone # of People

6

6

D=100.0%

6. People Diversity Factor "D" = Total Population in the "Building" / Sum of Zone Max # of People =

113Scheduled at 250 CFM for air balance.

VENTILATION AIR CALCULATIONS - AC1-4

FLOOR NO.	ROOM NO.	ROOM NAME	ROOM AREA	OCCUPANCY	OA RATE (CFM/PER)	OA RATE (CFM/SF)	OA CFM (Voz)	SA CFM	OA/SA RATIO	Rp x Pz -	Ra x Az -	NOTES
1	125	Alumni Lounge	317	4	5	0.06	49	80	0.610	20	19.02	
1	104A	Ramp	197	0	0	0.06	15	230	0.064	0	11.82	
1	117	Laundry	662	1	5	0.12	104	550	0.189	5	78.24	
1	119	Storage	332	0	0	0.12	50	300	0.166	0	39.84	
1	124	Vestibule	272	0	0	0.06	20	365	0.056	0	16.32	
1	123	Locker	204	4	20	0.06	115	365	0.316	80	12.24	
1	121	Shower	139	0	0	0	0	370	0.000	0	0.00	
1	138	Hydrotherapy	204	2	20	0.06	65	480	0.136	40	12.24	
1	134	Room	648	8	5	0.06	99	550	0.179	40	38.88	
1	135	Office	202	1	5	0.06	21	150	0.143	5	12.12	
1	136	Office	68	1	5	0.06	11	100	0.114	5	4.08	
1	137	Storage	134	0	0	0.12	20	60	0.335	0	16.08	
1	123	Corridor	893	0	0	0.06	67	230	0.291	0	53.58	
TOTAL			4262	21			637	3830	0.17	195	314.46	

NOTES:
1. Calculations in accordance with FBC 2023; Rates in accordance with Table 403.3.1.1
2. Zone OA =((No.People*OA CFM Rate/Person)+(SF*OA Rate/SF))/0.8 Zone Air Dist Effectiveness (Table 403.3.1.1.1.2)
3. Transfer Air
4. System Ventilation Efficiency is in accordance with Table 403.3.1.1.2.3.2

Ev

1.0

0.9

0.8

0.7

0.6

0.5

0.4

0.3

0.610Maximum OA/SA Ratio (or Max Zp)

5. Uncorrected Outside Air CFM Vou=D(Sum Rp*Pz)+(Sum Ra*Az)

509CFM

Max # of People

Sum of Zone # of People

21

21

D=100.0%

6. People Diversity Factor "D" = Total Population in the "Building" / Sum of Zone Max # of People =

1019Scheduled at 2340 CFM for air balance.

VENTILATION AIR CALCULATIONS - AC1-10A&B

FLOOR NO.	ROOM NAME	ROOM AREA	AVG OCCUPANCY	OA RATE (CFM/PER)	OA RATE (CFM/SF)	OA CFM (Voz)	SA CFM	OA/SA RATIO	Rp x Pz -	Ra x Az -	NOTES
1	Traditions (Meeting Room)	1175	33	5	0.06	294	3000	0.098	165	70.50	
1	Foyer	249	0	5	0.06	19	200	0.093	0	14.94	
TOTAL		1424	33			313	3200	0.10	165	85.44	

NOTES:
1. Calculations in accordance with FBC 2023; Rates in accordance with Table 403.3.1.1
2. Zone OA =((No.People*OA CFM Rate/Person)+(SF*OA Rate/SF))/0.8 Zone Air Dist Effectiveness (Table 403.3.1.1.1.2)
3. Transfer Air
4. System Ventilation Efficiency is in accordance with Table 403.3.1.1.2.3.2

Ev

1.0

0.9

0.8

0.7

0.6

0.5

0.4

0.3

0.100Maximum OA/SA Ratio (or Max Zp)

5. Uncorrected Outside Air CFM Vou=D(Sum Rp*Pz)+(Sum Ra*Az)

250CFM

Max # of People

Sum of Zone # of People

33

33

D=100.0%

6. People Diversity Factor "D" = Total Population in the "Building" / Sum of Zone Max # of People =

250

VENTILATION AIR CALCULATIONS - AC3-3 - FBC 2023

SYSTEM NO.	ROOM NUM	ROOM NAME	ROOM AREA	SYSM PPL (Ps)	OA RATE (CFM/PER)	OA RATE (CFM/SF)	OA CFM (Voz)	NOTES
AC1-4A	125	Score Board Room	160	4	5	0.06	30	
TOTAL			160	4			30	

NOTES:
1. Calculations in accordance with FBC 2023; Rates in accordance with Table 403.3.1.1
2. Zone OA Voz=((No.People*OA CFM Rate/Person)+(SF*OA Rate/SF)) / Zone Air Dist Effectiveness (per Table 403.3.1.1.1.2)

System Outside Air CFM (Vot) = Single Zone Outside Air CFM (Voz) (Per 403.3.1.1.2.1)

System Outside Air CFM =30

SEAL



DATE

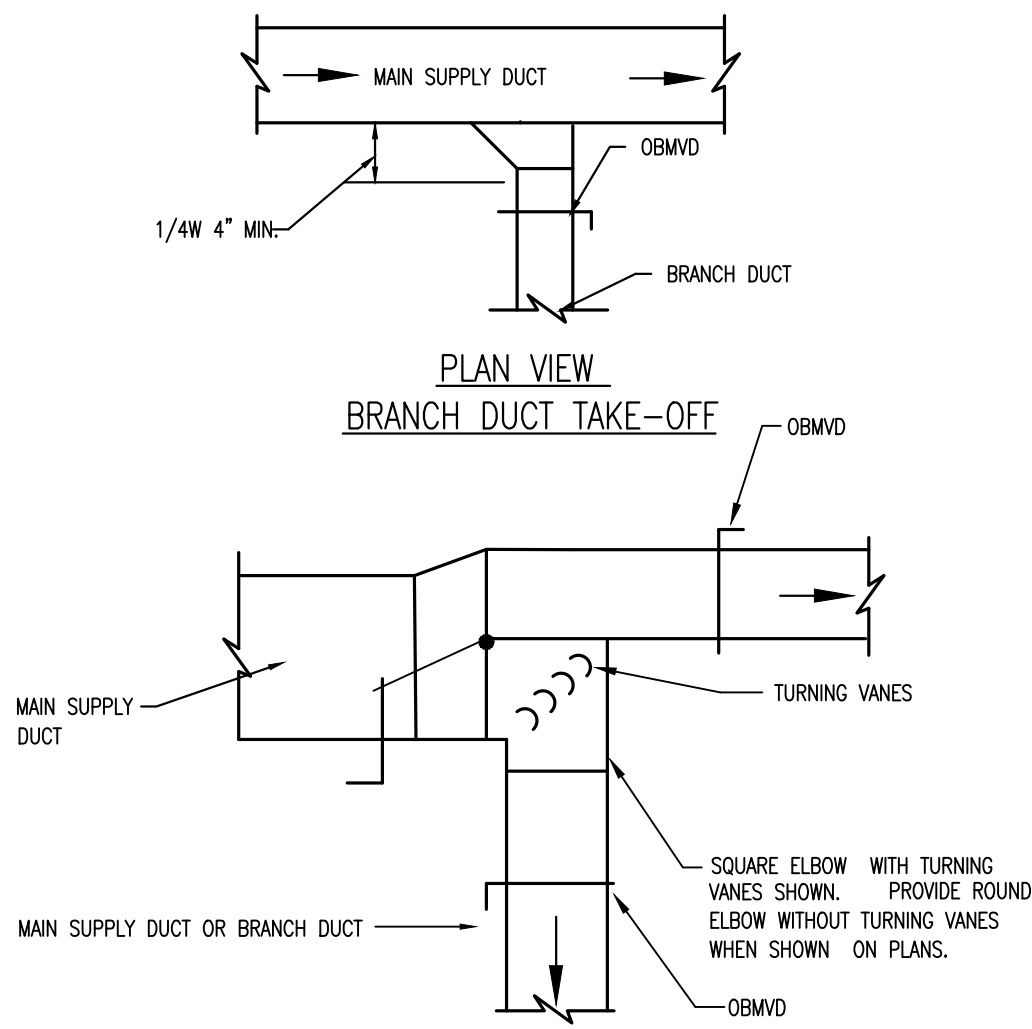
REV # DESCRIPTION

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:
MECHANICAL
VENTILATION CALCULATIONS

FILE: M0.3
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M0.3

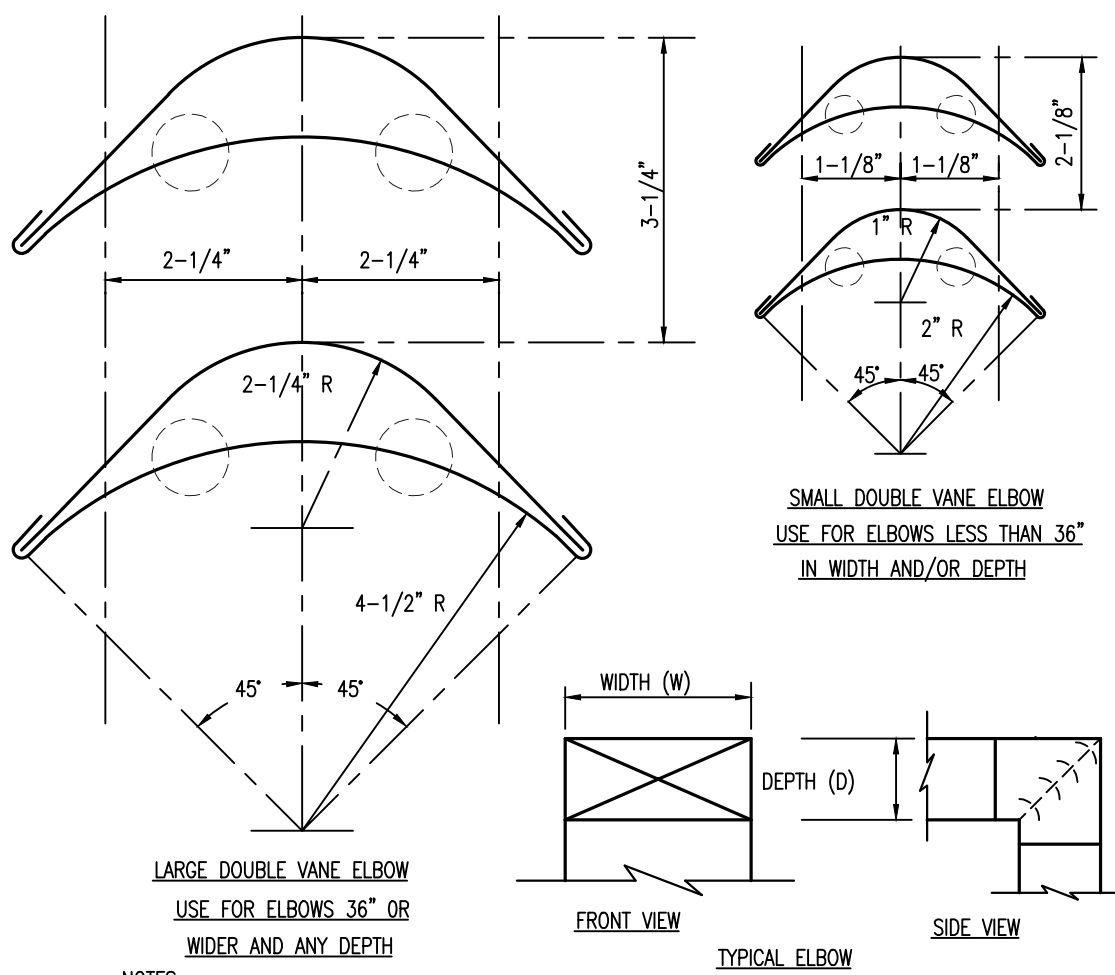


AIR SPLIT-TYPE DUCT TAKE-OFF

THE BRANCH DUCT TAKE-OFF MAY BE USED FOR UP TO 15% OF THE MAIN DUCT CFM ANYTIME AND UP TO 40% WHEN THE MAIN DUCT VELOCITY IS 1000 FPM OR LESS. THE AIR SPLIT TYPE DUCT TAKE-OFF SHALL BE USED IN ALL OTHER CASES AND MAY BE USED AT ANYTIME.

SUPPLY DUCT TAKE-OFFS

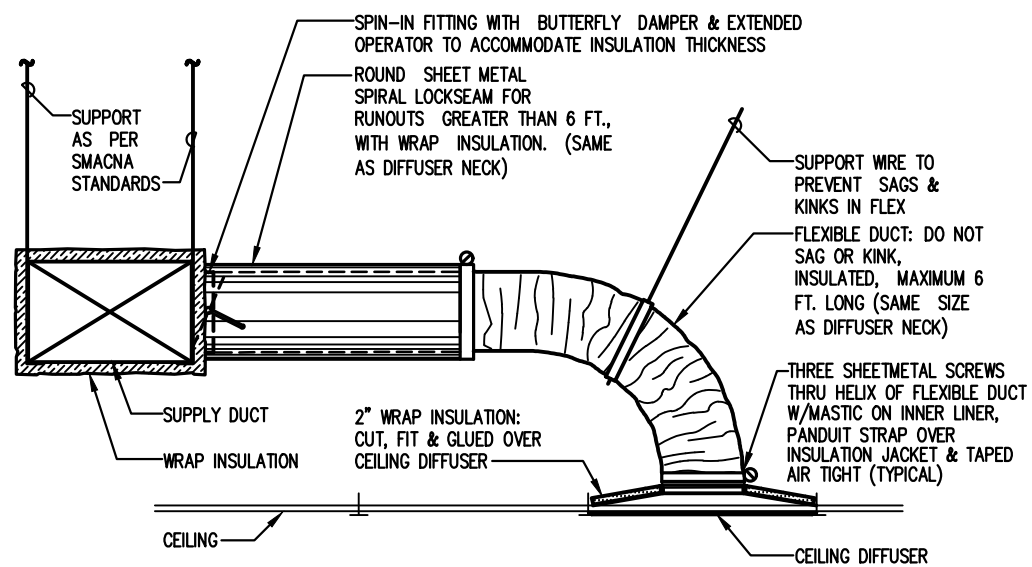
NOT TO SCALE



SQUARE & RECTANGULAR ELBOWS

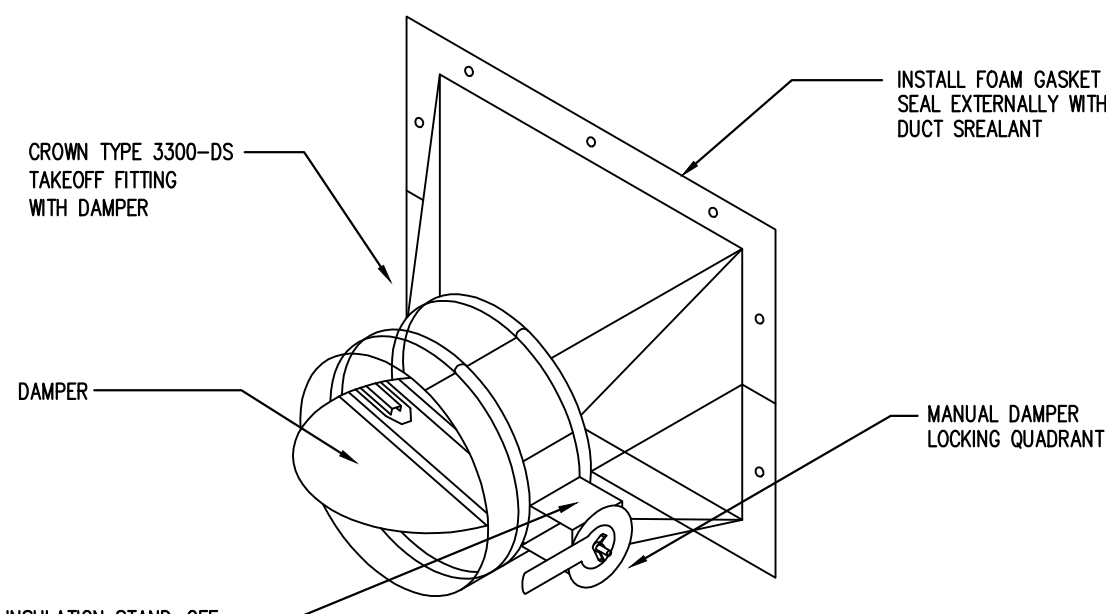
NOT TO SCALE

- NOTES:
1. ALL SQUARE & RECTANGULAR ELBOWS SHALL HAVE ONE OF THE TWO TYPES OF TURNING VANES SHOWN ABOVE. SINGLE VANE ELBOWS WILL NOT BE PERMITTED.
 2. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.
 3. ALL SQUARE & RECTANGULAR ELBOWS SHOWN ON PLANS FOR EXHAUST OR RETURN DUCT MAY BE MADE RADIUS ELBOWS PROVIDED SPACE PERMITS RADIUS INSTALLATION.
 4. ALL SQUARE & RECTANGULAR ELBOWS SHOWN ON PLANS FOR SUPPLY DUCT MAY BE MADE RADIUS ELBOWS PROVIDED SPACE PERMITS RADIUS INSTALLATION AND/OR THERE ISN'T AN OUTLET OR TAKE-OFF WITHIN 50 ON THE DOWNSTREAM SIDE OF THE ELBOW.



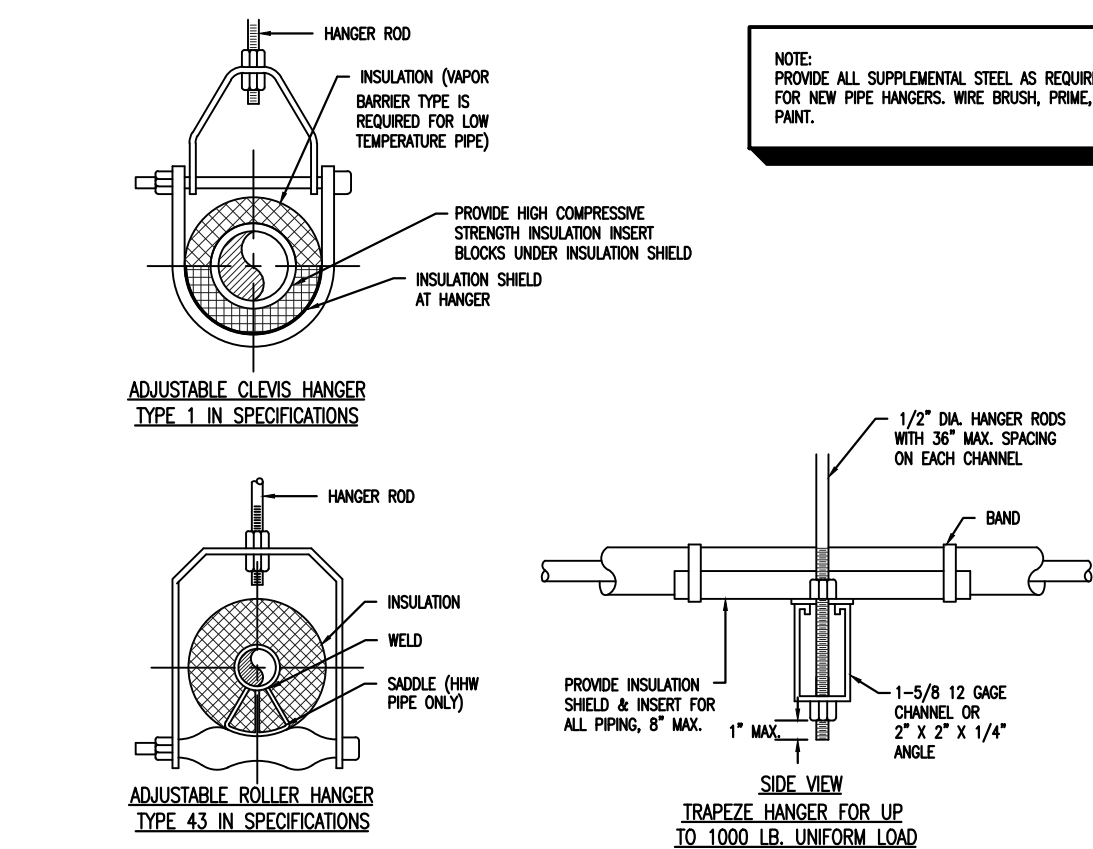
CEILING DIFFUSER RUNOUT DETAIL

NOT TO SCALE



DUCT TAKE-OFF DETAILS

NOT TO SCALE

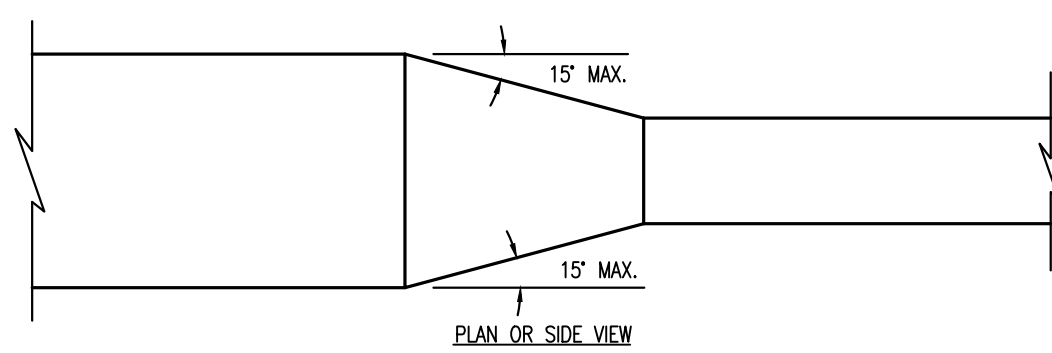


TYPICAL PIPE HANGERS

NOT TO SCALE

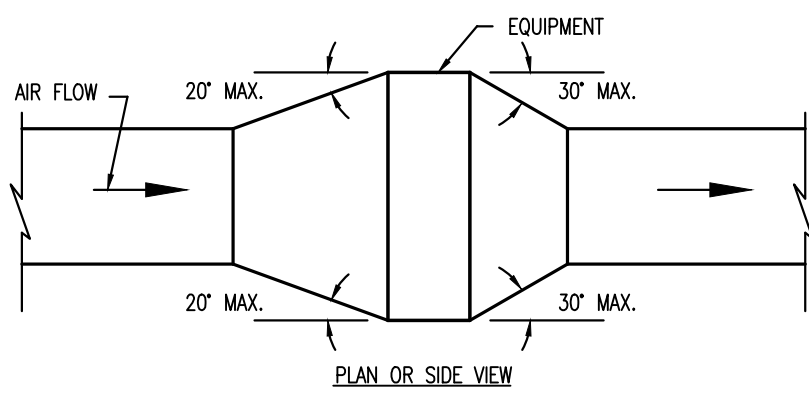
		MAXIMUM PIPE/TUBING SUPPORT SPACING, FEET																	
NOM. SIZE	THRU 3/4"	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
PIPE	7 FT	7	7	9	10	11	12	14	16	17	19	22	23	25	27	28	30	32	
TUBING	5 FT	6	7	8	8	9	10	12	13	14	16	—	—	—	—	—	—	—	
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																			

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.



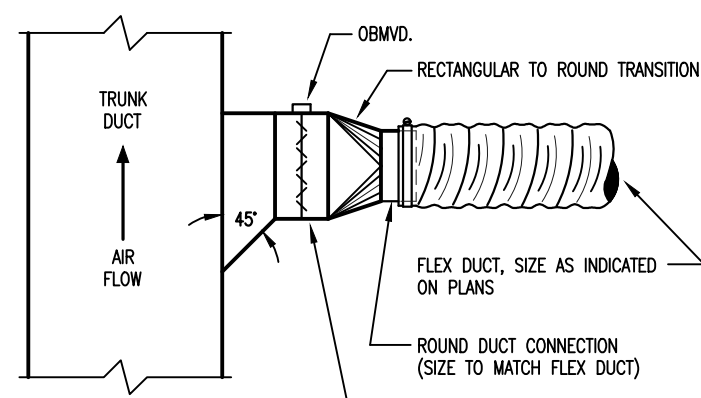
DUCT TRANSITION

NOT TO SCALE



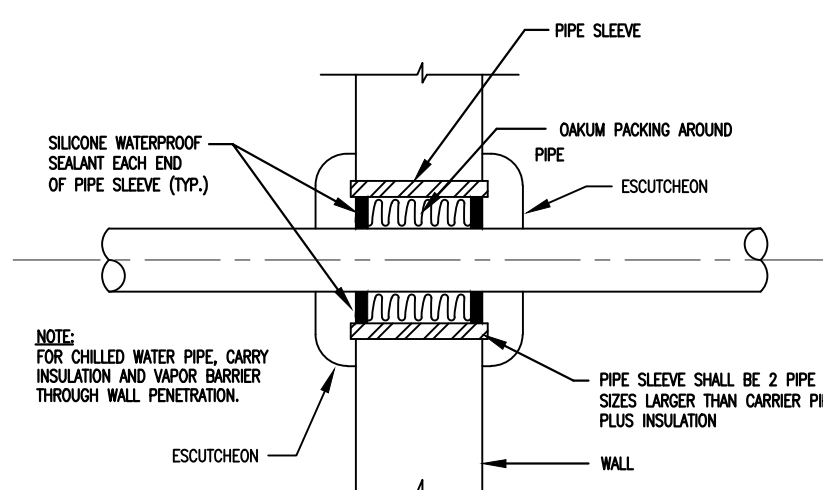
DUCT TRANSFORMATION WITH EQUIPMENT IN DUCT

NOT TO SCALE



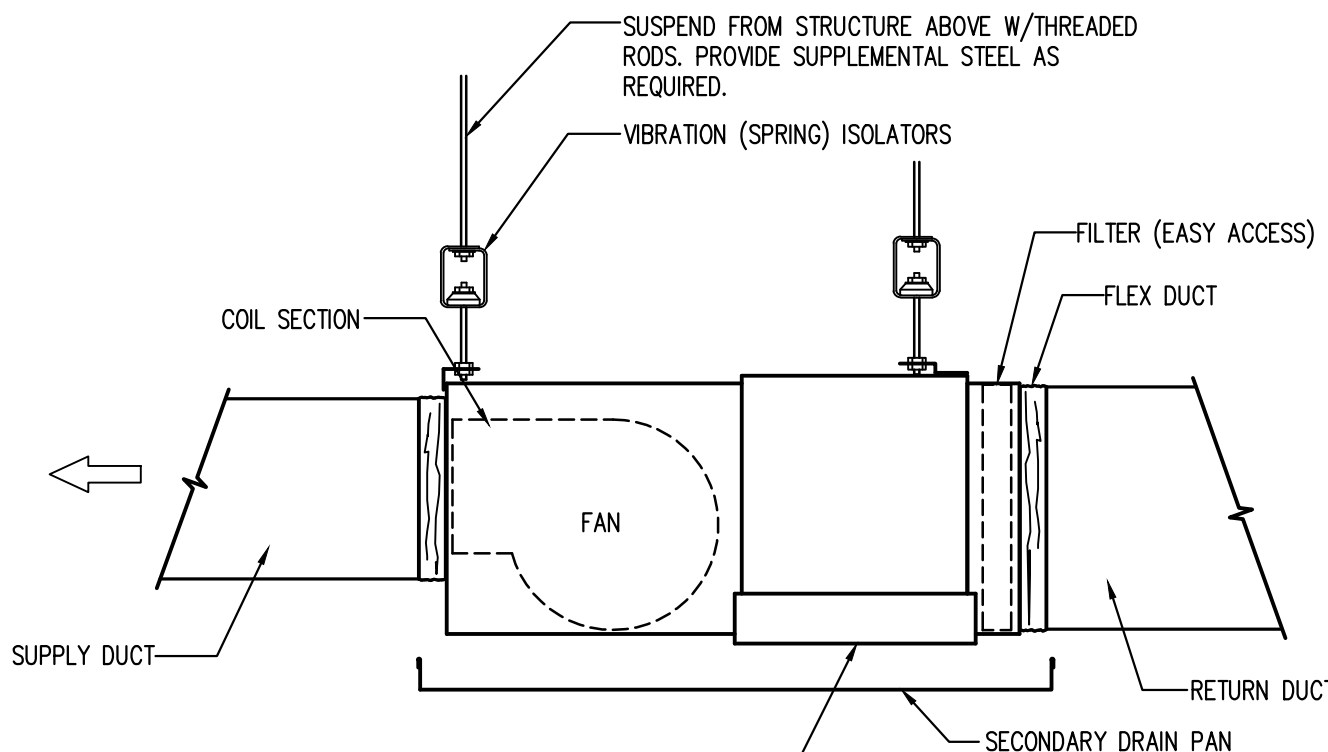
TYPICAL SHALLOW SUPPLY TAKE-OFF

NOT TO SCALE



PIPES PIERCING WALLS DETAIL

NO SCALE (SIMILAR FOR HARD CEILING PENETRATIONS)

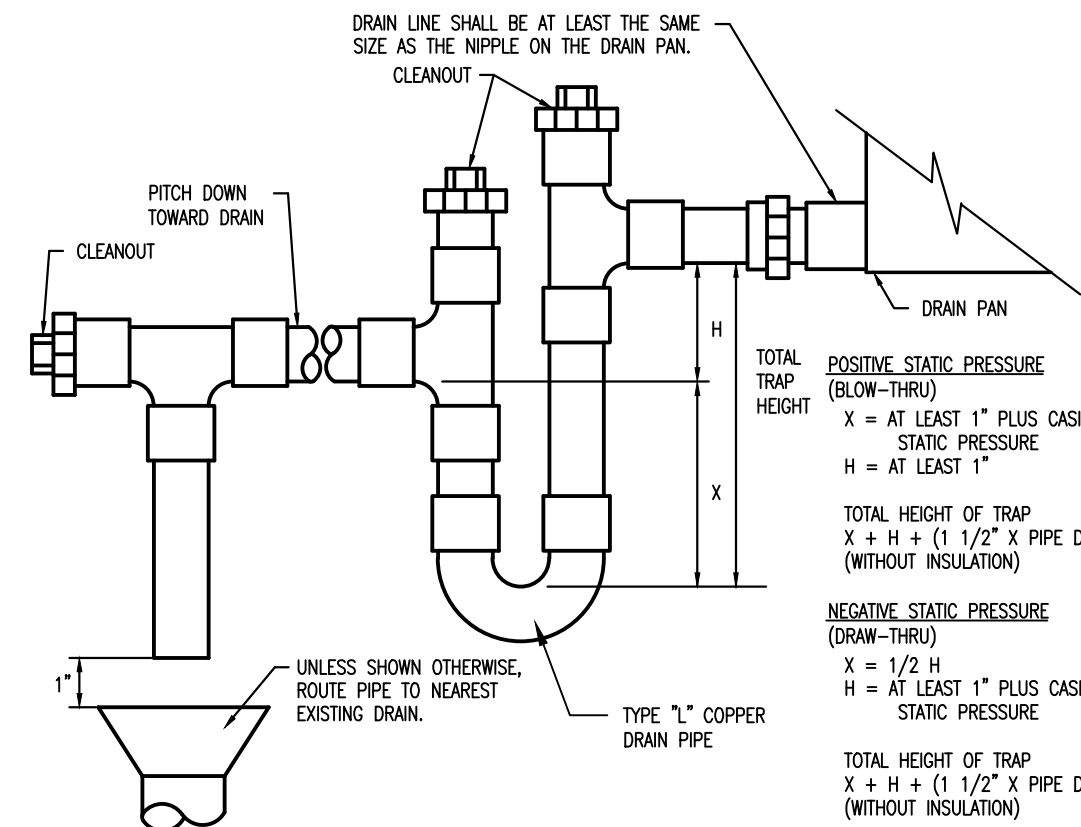


(SEE COIL PIPING DETAIL FOR ADDITIONAL INFORMATION)

NOTE: FINAL LOCATION OF WSPH SHALL ALLOW EASY ACCESS TO SERVICE ACCESS PANELS, VALVE TRAIN, ETC. COORDINATE FINAL LOCATION WITH FIELD CONDITIONS AND OWNER.

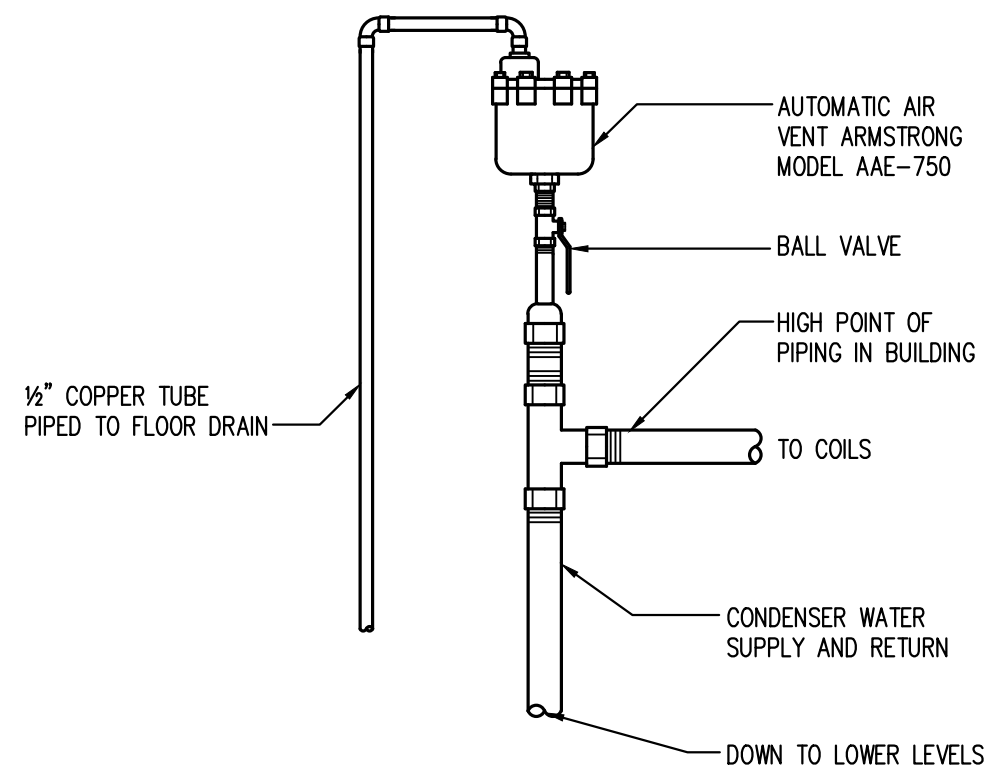
WATER SOURCE HEAT PUMP - CONCEALED MODEL

NOT TO SCALE (TYP FOR AC1-10A, AC1-10B, AND AC3-3)



AIR HANDLING UNIT DRAIN TRAP DETAIL

NOT TO SCALE



AUTOMATIC AIR VENT DETAIL

NOT TO SCALE

SEAL

PINNACLE
ENGINEERING
GROUP, P.A.
2002 THOMASVILLE ROAD, SUITE C
TALLAHASSEE, FLORIDA 32308
T: 904.241.1111
F: 904.241.1112
Engineering Business #9793

DATE

DESCRIPTION

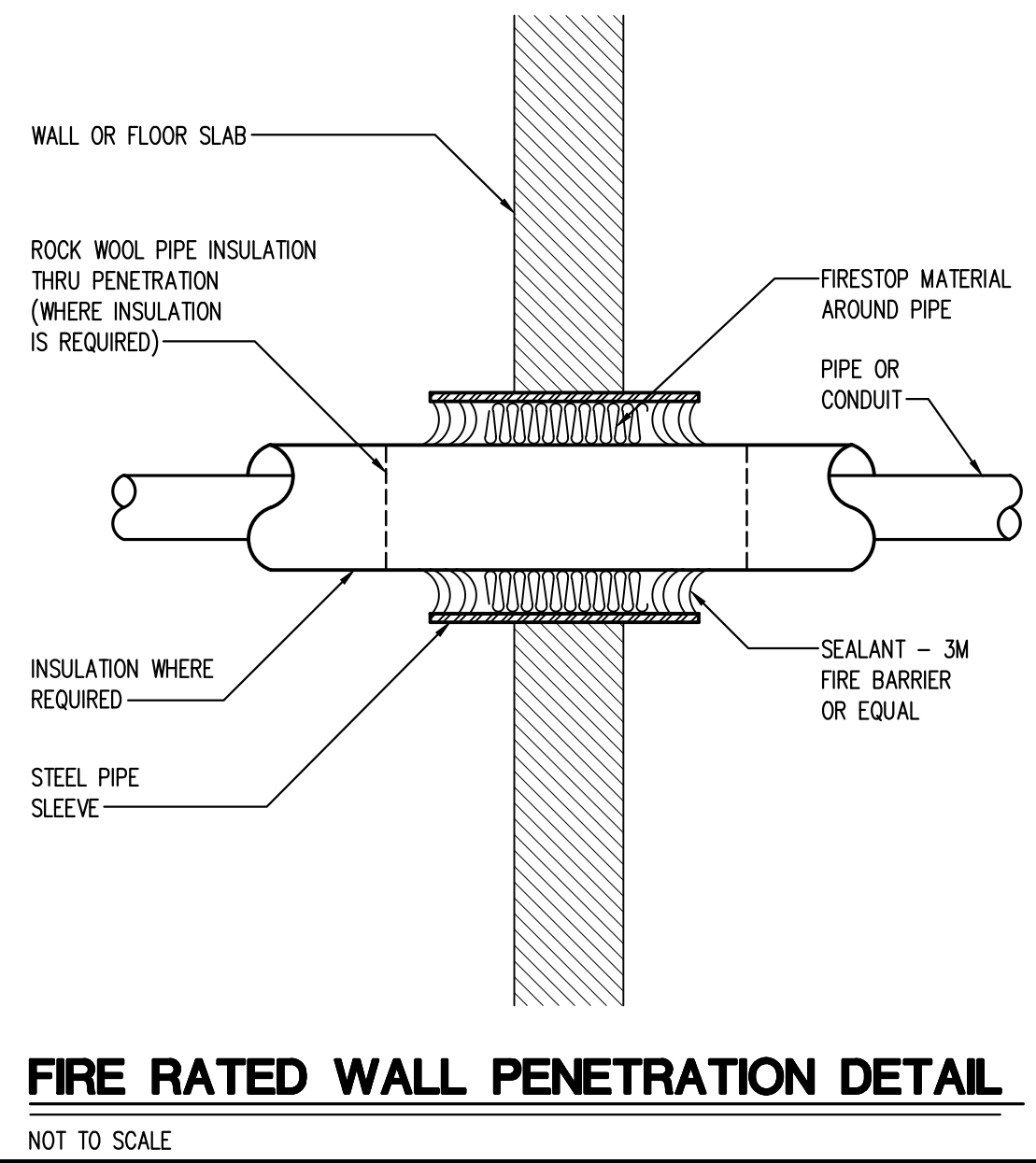
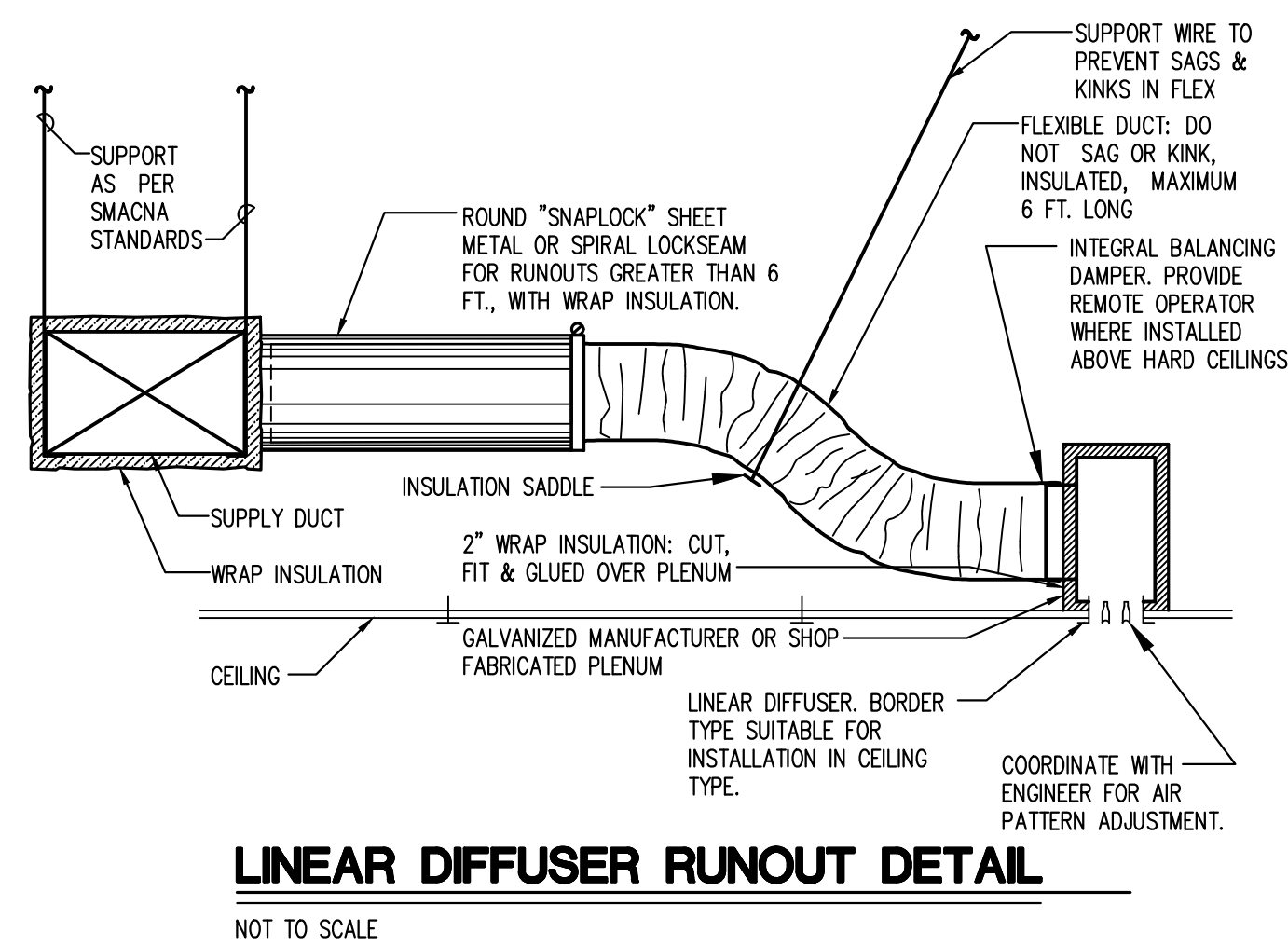
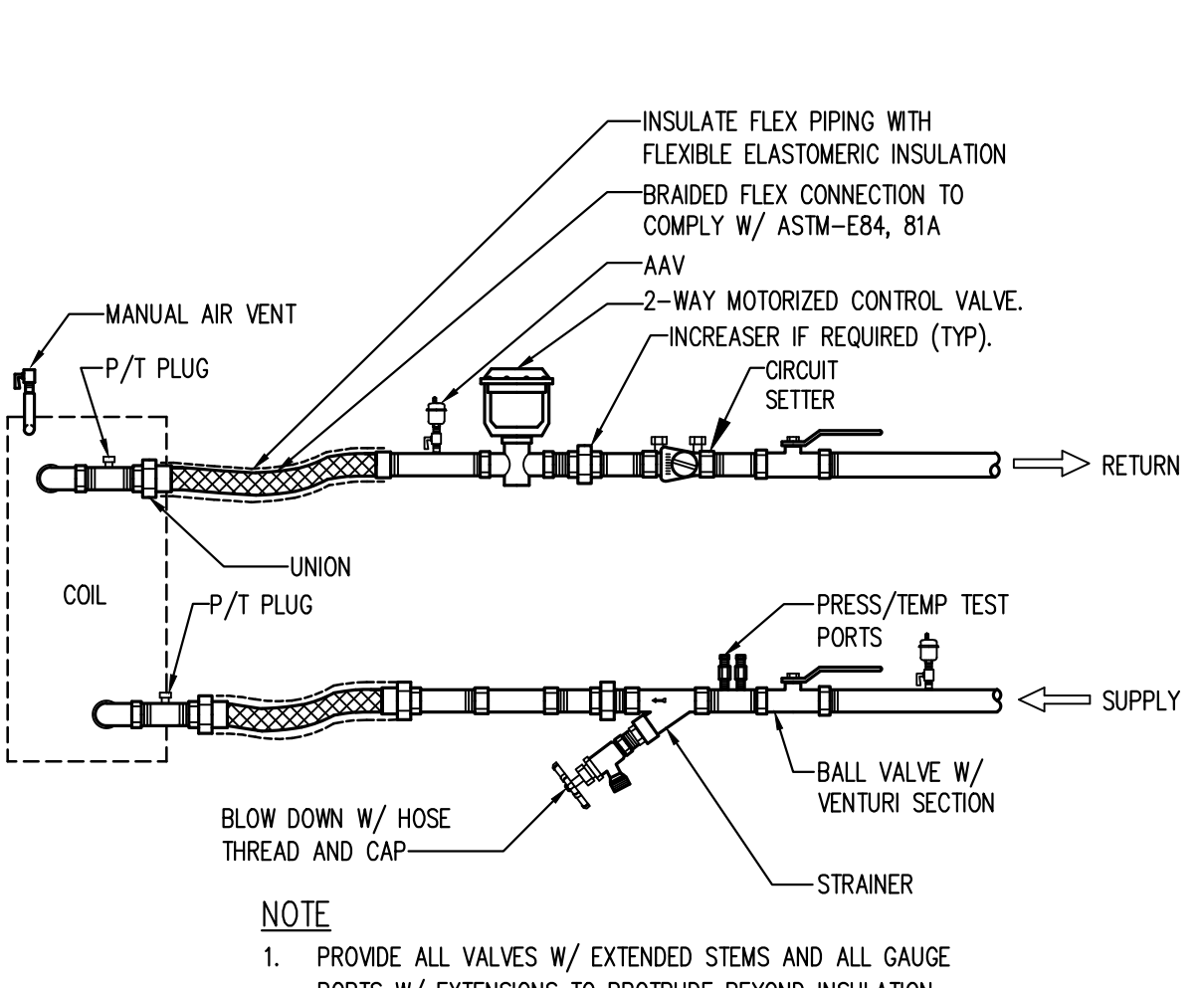
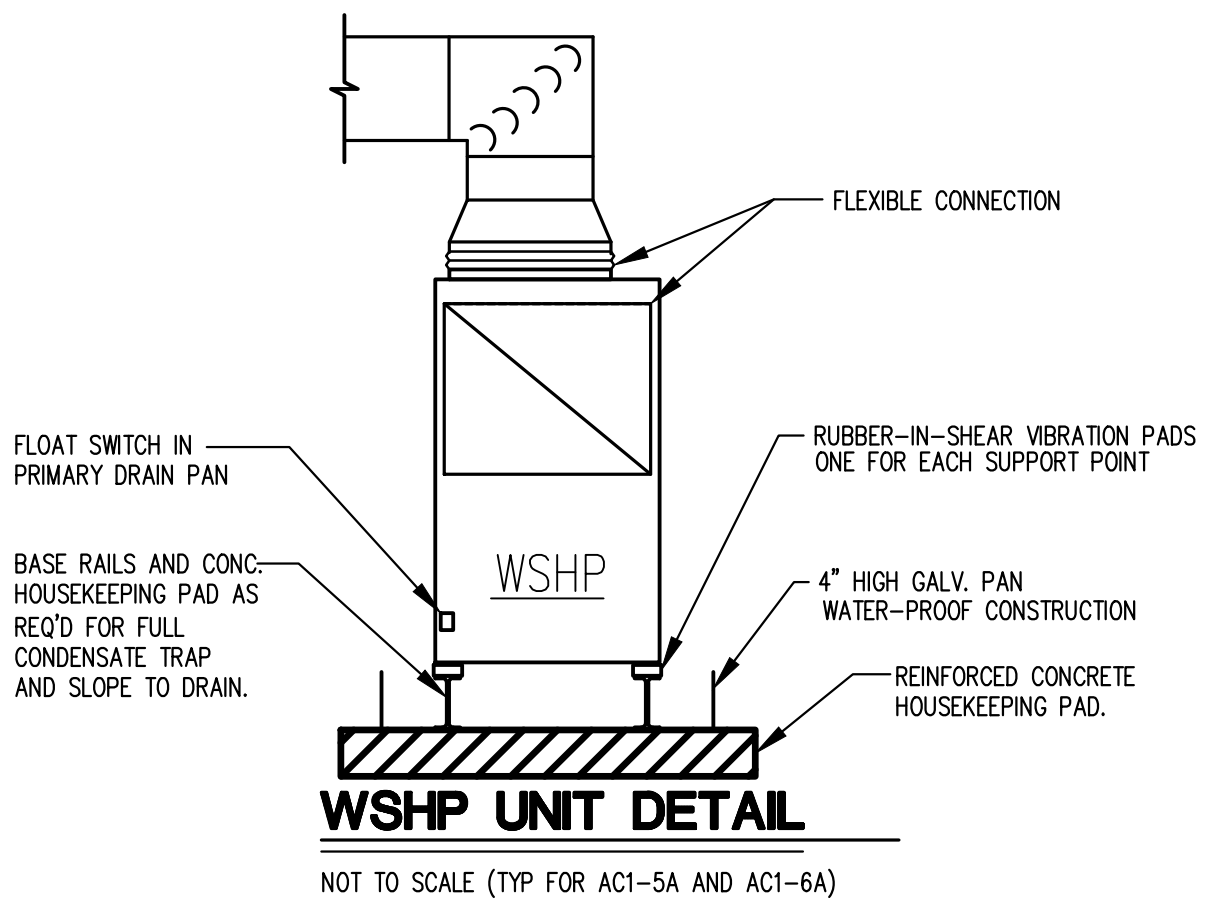
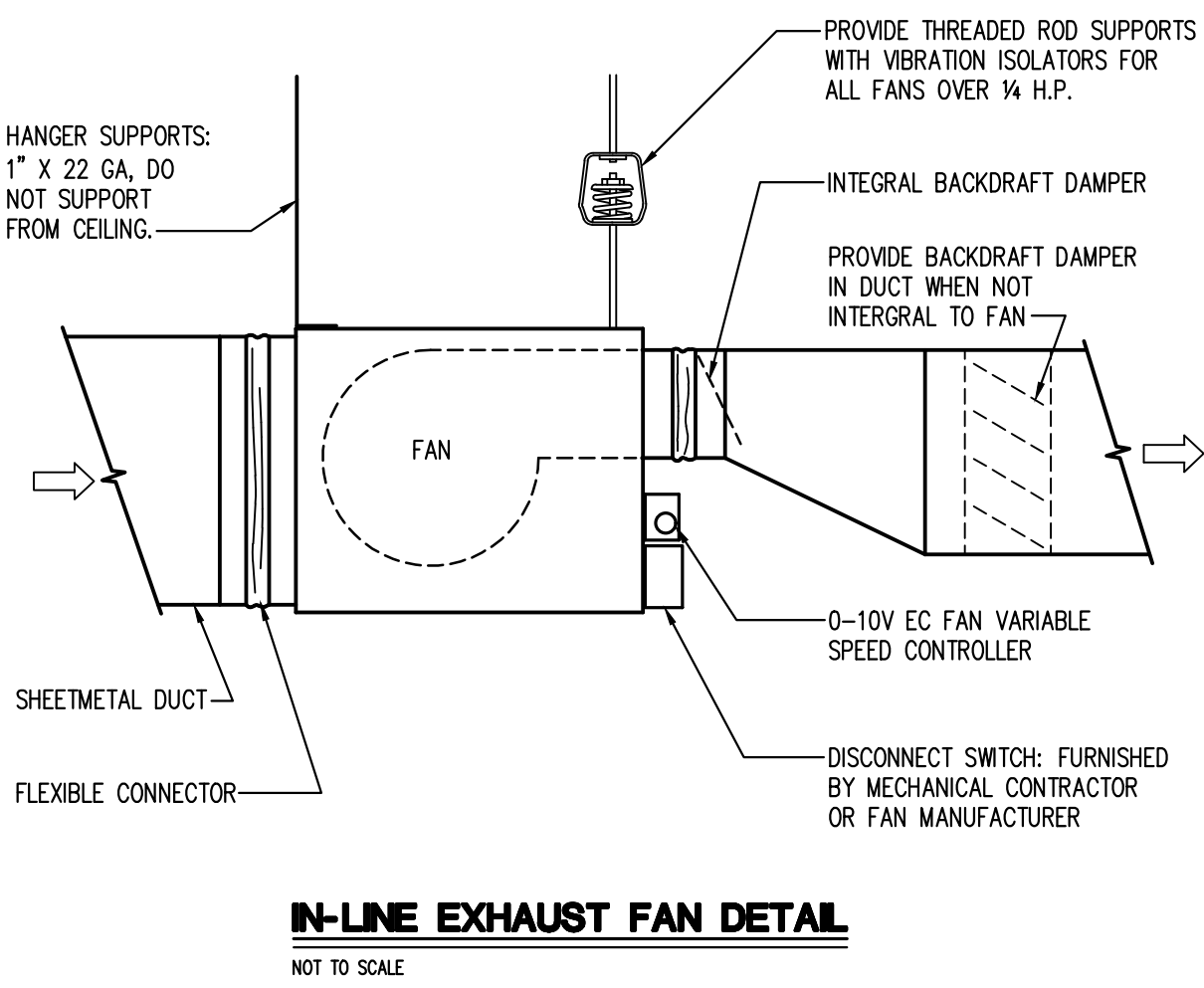
REV#

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:
MECHANICAL DETAILS

FILE: M0.4
JOB NO.: 226-106
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PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M0.4



REV#	DESCRIPTION	DATE

SEQUENCE OF OPERATION

GENERAL

SEQUENCE OF OPERATION IS HEREBY DEFINED AS THE MANNER AND METHOD BY WHICH CONTROLS FUNCTION. REQUIREMENTS FOR EACH TYPE OF CONTROL SYSTEM OPERATION ARE SPECIFIED IN THIS SECTION.

ALL SETPOINTS SHALL BE USER ADJUSTABLE. PROGRAMMING SHALL HAVE SUFFICIENT RANGES, DEADBANDS, ETC. TO PREVENT EXCESSIVE CYCLING AND/OR UNSTABLE CONTROL.

EACH ANALOG SENSOR (TEMPERATURE, HUMIDITY, PRESSURE, FLOW, ETC.) SHALL HAVE ADJUSTABLE HIGH AND LOW LIMIT ALARM SETPOINTS. WHENEVER A SETPOINT IS EXCEEDED, THE DDC SHALL SEND AN ALARM MESSAGE TO THE BUILDING (AND OFF-SITE MAINTENANCE) BMS WORKSTATION(S). THE ALARM SHALL REMAIN ACTIVE UNTIL THE SENSOR REPORTS TO THE DDC THAT THE READING IS IN THE NORMAL RANGE.

ALL ALARMS SHALL BE INTERLOCKED WITH THE ASSOCIATED EQUIPMENT SO THAT ALARMS SHALL BE SUPPRESSED WHEN THE EQUIPMENT OR SYSTEM IS INACTIVE. STATUS ALARMS SHALL HAVE A ADJUSTABLE TIME DELAY SET LONG ENOUGH TO ALLOW THE EQUIPMENT STATUS TO BE SENSED TO HELP PREVENT NUISANCE ALARMS. ANALOG SENSOR ALARMS SHALL HAVE A TIME DELAY AS WELL AS AN ADJUSTABLE DEADBAND TO PREVENT TOGGING BETWEEN NORMAL AND ALARM STATES. MEANS SHALL BE PROVIDED TO THE OPERATOR TO MANUALLY SUPPRESS EACH ALARM AND TO ADJUST ALARM LIMITS.

SEE EQUIPMENT SCHEMATICS FOR ADDITIONAL REQUIREMENTS.

NOTE: CONTROL SYSTEMS AND CONTROL DEVICES IN AREAS OF THE BUILDING THAT ARE NOT WITHIN THE SCOPE OF THIS PROJECT SHALL REMAIN OPERATIONAL. CONTRACTOR SHALL MAKE PROVISIONS AS REQUIRED TO MAINTAIN FUNCTION AND CONTINUITY OF CONTROL SYSTEMS NOT WITHIN THE PROJECT SCOPE.

NOTE: PRIOR TO CALLING FOR SUBSTANTIAL COMPLETION, EMCS CONTRACTOR SHALL INCLUDE "10 DAY OPERATIONAL TREND LOG". LOG SHALL SHOW EMCS FUNCTIONED PROPERLY, MAINTAINED SETPOINTS, ETC. DURING THE 10 DAY TEST.

GENERAL SEQUENCE OF OPERATION, NOTES, GENERAL NOTES, SYMBOL LEGEND, ETC., ON THIS SHEET SHALL APPLY TO ALL PHASES OF THIS PROJECT.

NOTE: PRIOR TO BID, EMCS CONTRACTOR SHALL VISIT THE SITE AND INCLUDE ALL COSTS TO ROUTE COMMUNICATION CONDUIT TO ALL EQUIPMENT AND DEVICES INDICATED IN THESE CONSTRUCTION DOCUMENTS, INCLUDING BUT NOT LIMITED TO UP AND DOWN CHASES, THROUGH FLOORS, MULTIPLE LEVELS, ETC. TO ALL NEW EQUIPMENT WITHIN WORK AREAS, ROUTING IN BUILDING, ROUTING TO SPACE SENSORS, ETC. ALL EXPOSED COMMUNICATION CONDUIT MUST BE APPROVED PRIOR TO BID AND WILL REQUIRE PAINTING. INCLUDE ALL COSTS FOR CONNECTION TO FSU ON-SITE AND OFF-SITE WORKSTATIONS. ANY QUESTIONS SHALL BE REFERRED TO ENGINEER AND OWNER PRIOR TO BID. AT CONCLUSION OF PROJECT ALL EQUIPMENT SHALL BE FULLY OPERATIONAL AND CONTROLLED.

EMCS GENERAL NOTES

- ALL EQUIPMENT TO BMS INTERFACES SHALL BE ACCOMPLISHED VIA BACNET IP PROTOCOL.
- CONTRACTOR SHALL COORDINATE ALL CONTROLS INTERFACE WORK OF HVAC EQUIPMENT WITH EQUIPMENT MANUFACTURERS SO TO ENSURE:
 - WARRANTIES WILL REMAIN VALID
 - INTERFACE METHOD IS APPROPRIATE FOR PROPER OPERATION OF EQUIPMENT
 - PROPER EMCS PERFORMANCE
- CONTRACTOR SHALL PROVIDE POWER (AND CONTROL POWER) TO ALL CONTROL PANELS, CONTROL DEVICES, ACTUATORS, AND ACCESSORIES AS REQUIRED. COORDINATE WITH OWNER FOR ELECTRICAL SERVICE CONNECTION FOR NEW CONTROLS.
- LOCATION OF BMS CONTROL PANELS SHALL BE COORDINATED WITH OWNER.
- MOUNT ZONE SENSORS OPERABLE CONTROLS 48" ABOVE FINISHED FLOOR, PER ADA REQUIREMENTS.
- BMS CONTRACTOR SHALL PROVIDE NEW OR UPDATE THE EXISTING BMS, GRAPHICS, SEQUENCES, ETC. FOR ALL NEW WORK AND MODIFIED EXISTING WORK ASSOCIATED WITH THIS PROJECT. PROVIDE NEW OR UPDATE EXISTING GRAPHICS/WORKSTATIONS WITH ALL CHANGES TO FLOOR PLANS, ROOM NUMBERS, THERMOSTAT LOCATIONS, WSHp LOCATIONS, ELECTRIC DUCT HEATER LOCATIONS, OR ANY OTHER MODIFICATIONS. COORDINATE WITH OWNER FOR FINAL EQUIPMENT TAG NUMBERS.
- WHERE ABOVE CEILINGS ARE USED AS AIR PLENUMS. ALL WIRING SHALL BE PLENUM RATED OR CONTAINED WITHIN CONDUIT. ROUTE WIRING BY FOLLOWING BUILDING LINES AND SUPPORT IN A NEAT WORKMAN LIKE MANNER.
- CONTROLS SHALL FULLY INTEGRATE/INTERFACE WITH WSHp CONTROLLERS VIA BACNET IP PROTOCOL. PROVIDE ALL REQUIRED COMMUNICATIONS, HARDWARE, FIRMWARE, AND SOFTWARE TO INTERFACE WITH LOCAL EMCS CONTROLLERS AND ON/OFF-SITE WORKSTATION(S). ALL UNIT DATA, CONTROL, AND ADJUSTABILITY AVAILABLE AT LOCAL CONTROL PANELS SHALL BE ACCESSIBLE TO REMOTE EMCS WORKSTATION(S).
- ALL CONTROL VALVES AND DAMPERS SHALL INCLUDE "ANALOG INPUT" FOR REPORTING POSITION STATUS.
- ALL CONTROLS ASSOCIATED WITH HVAC EQUIPMENT SHALL REMAIN OPERATIONAL THROUGH LOSS OF NORMAL POWER. PROVIDE ALL REQUIRED BATTERY BACKUP, NON-VOLATILE MEMORY, PROGRAM PROTECTION, AND AUTO RESTORATION AS REQUIRED FOR A FULLY OPERATIONAL CONTROL SYSTEM. PROVIDE FOR AUTO RESTART OF EQUIPMENT WHEN POWER IS RESTORED.
- ALL CONTROLS WIRING, POWER WRING, AND CONDUIT SHALL BE CONCEALED (EXCEPT IN MER'S)
- COORDINATE CLOSELY WITH TAB, MECHANICAL, CX SUBCONTRACTORS TO FULLY ACCOMPLISH BMS SCOPE OF WORK.
- CONTRACT WITH BUILDING FIRE ALARM SYSTEM CONTRACTOR TO COMPLETE ALL FIRE ALARM INTERLOCK/INTERFACE WORK REQUIRED BY THIS PROJECT. MAINTAIN FIRE SYSTEM WARRANTY.
- COORDINATE WITH OWNER FOR EQUIPMENT I.P. ADDRESSES.
- COORDINATE WITH OWNER FOR STANDARD GRAPHIC LAYOUTS. NEW GRAPHICS SHALL HAVE CONSISTENT CAMPUS STANDARD PRESENTATION LOOK.
- PRIOR TO CALLING FOR SUBSTANTIAL COMPLETION BMS CONTRACTOR SHALL INCLUDE "10-DAY OPERATIONAL TREND LOG". LOG SHALL SHOW BMS FUNCTIONED PROPERLY, MAINTAINED SETPOINTS, ETC. DURING THE 10-DAY TEST.
- CONTROL SYSTEMS AND CONTROL DEVICES IN AREAS OF THE BUILDING(S) THAT ARE NOT WITHIN THE SCOPE OF THE PROJECT SHALL REMAIN OPERATIONAL. CONTRACTOR SHALL MAKE PROVISIONS AS REQUIRED TO MAINTAIN FUNCTION AND CONTINUITY OF CONTROL SYSTEMS NOT WITHIN THE PROJECT SCOPE.
- SALVAGE DEMOLISHED SIEMENS SPACE TEMPERATURE SENSORS AND UNIT CONTROLLERS. TURN OVER TO OWNER.
- PRIOR TO BID, BMS CONTRACTOR SHALL VISIT THE SITE AND INCLUDE ALL COSTS TO ROUTE COMMUNICATION CONDUIT, FIBER AND WIRING TO ALL EQUIPMENT, DEVICES, AND SENSORS INDICATED IN THESE CONSTRUCTION DOCUMENTS. REQUIRED ROUTING INCLUDES, BUT IS NOT LIMITED TO, UP AND DOWN CHASES, THROUGH FLOORS, MULTIPLE LEVELS, ETC. TO ALL NEW AND EXISTING EQUIPMENT WITHIN THE WORK AREAS IN THE BUILDING. ALL EXPOSED COMMUNICATION CONDUIT MUST BE PAINTED TO MATCH EXISTING CONDITIONS AND APPROVED BY OWNER PRIOR TO BID. INCLUDE ALL COSTS FOR CONNECTION TO EXISTING SIEMENS SYSTEM. ANY QUESTIONS SHALL BE REFERRED TO ENGINEER AND OWNER PRIOR TO BID. AT CONCLUSION OF PROJECT ALL EQUIPMENT SHALL BE FULLY OPERATIONAL AND CONTROLLED.
- WHERE EXISTING BMS DEVICES AND PANELS ARE BEING REMOVED, CONTRACTOR SHALL ALSO REMOVE CONTROL POWER CONDUIT, CONDUCTORS, ETC. BACK TO ELECTRICAL PANEL, UNLESS CIRCUIT IS RE-USED FOR NEW BMS PANEL, OR DEVICE OR SERVES OTHER EXISTING TO REMAIN BUILDING COMPONENTS.

CONTROL SYMBOL LEGEND

I	CURRENT SENSOR	AO	ANALOG OUTPUT
F	FLOW METER	A	ANALOG INPUT
T	TEMPERATURE SENSOR	SD	SMOKE DETECTOR
H	RELATIVE HUMIDITY SENSOR	MS	MOISTURE SENSOR
C	CARBON DIOXIDE SENSOR	N.C.	NORMALLY CLOSED
M	MOTOR ACTUATOR	N.O.	NORMALLY OPEN
R	RELAY OR CONTACTOR	H.C.	HEATING COIL
DP	DIFFERENTIAL PRESSURE SENSOR	C.C.	COOLING COIL
SP	STATIC PRESSURE SENSOR	D.X.C.	DIRECT EXPANSION COIL
HSP	HIGH PRESSURE SWITCH	S/S	START/STOP
FS	FLOAT SWITCH	D.D.C.	DIRECT DIGITAL CONTROLS
DO	DIGITAL OUTPUT	BMS	BUILDING MANAGEMENT SYSTEM
DI	DIGITAL INPUT	TRF	TRANSFORMER
OS	OCCUPANCY SENSOR (INFRARED/ULTRASONIC)		
OR	WALL MOUNTED OVERRIDE SWITCH		
S	ROLL-UP WINDOW POSITION SWITCH		

PHASE 1:

WATER-SOURCE HEAT PUMP UNIT (AC1-10A, AC1-10B)

EACH WSHp WILL BE CONTROLLED BY A STAND-ALONE DDC CONTROLLER. THE EMCS SHALL START/STOP THE WSHp THROUGH THE AUTOMATIC CIRCUIT OF THE WSHp CONTROLS. THE EMCS SHALL START/STOP THE WSHp BASED ON TIME SCHEDULES, COMMANDS GENERATED BY THE DDC CONTROLLER, THE EMCS OR BY REMOTE COMMANDS FROM MAINTENANCE WORKSTATION. WSHp POSITIVE RUN STATUS SHALL BE REPORTED TO THE CONTROL WORKSTATION(S) VIA CURRENT SENSOR RELAYS OR DIFFERENTIAL PRESSURE SWITCH.

A. SUPPLY AIR FAN

THE WSHp FAN SHALL START ON A PRESET OCCUPIED SCHEDULE. IF THE FAN FAILS TO START, AN ALARM SIGNAL WILL BE SENT TO THE CONTROL WORKSTATION(S). THE SUPPLY FAN WILL BE ALLOWED TO START MANUALLY VIA THE LOCAL MOTOR STARTER. THE HEATING/COOLING MODES WILL BE ENABLED ONCE THE FAN RUNS CONTINUOUSLY.

B. OUTSIDE AIR FLOW

WHEN THE WSHp FAN IS IN THE OFF MODE, THE ASSOCIATED O/A DAMPER WILL BE CLOSED. WHEN THE WSHp IS CALLED TO RUN IN OCCUPIED MODE, THE ASSOCIATED O/A DAMPER WILL OPEN.

C. COOLING MODE

WHEN THE UNIT IS CALLED TO RUN IN THE COOLING MODE, THE CONDENSER WATER VALVE SHALL OPEN AND THE COMPRESSOR SHALL BE MODULATED TO MAINTAIN A MAXIMUM SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF, THE CONDENSER WATER VALVE SHALL CLOSE AND THE MECHANICAL COOLING SHALL BE OFF.

D. HEATING MODE

WHEN THE UNIT IS CALLED TO RUN IN THE HEATING MODE, THE CONDENSER WATER VALVE SHALL OPEN AND THE COMPRESSOR SHALL BE MODULATED TO MAINTAIN A MINIMUM SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF THE CONDENSER WATER VALVE SHALL CLOSE AND MECHANICAL HEATING SHALL BE OFF.

IF THE HEAT PUMP CANNOT MAINTAIN MINIMUM SPACE TEMPERATURE FOR 5 MINUTES (ADJ.), THE BAS SHALL MODULATE THE DUCT MOUNTED SCR ELECTRIC HEAT TO MAINTAIN MINIMUM SPACE TEMPERATURE.

E. HUMIDITY CONTROL

THE BMS SHALL CONTINUOUSLY CALCULATE AND MONITOR SPACE RELATIVE HUMIDITY. IF THE SPACE RELATIVE HUMIDITY RISES ABOVE 60% (ADJUSTABLE), THE BMS SHALL:

-IN THE COOLING MODE, START THE COMPRESSOR AND MODULATE FOR CONSTANT DISCHARGE TEMPERATURE (AS SCHEDULED).
-MODULATE THE HOT-GAS REHEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT.

WHEN THE SPACE RELATIVE HUMIDITY DECREASES BELOW SETPOINT (INCLUDING DEAD BANDS TO AVOID CYCLING), THE UNIT SHALL RETURN TO NORMAL OPERATION.

F. LEAD/LAG CAPACITY CONTROL

AC1-10A SHALL BE THE LEAD UNIT. THE LEAD UNIT SHALL RUN AS THE BASE LOAD WHENEVER THE SPACE CALLS FOR COOLING OR HEATING. IF THE LEAD UNIT CANNOT MAINTAIN MAXIMUM COOLING SET POINT OR MINIMUM HEATING SET POINT, THE LAG UNIT (AC1-10B) SHALL BE CALLED TO RUN TO SUPPLEMENT. BOTH UNITS SHALL OPERATE IN THE SAME MODE (COOLING OR HEATING). IF ELECTRIC HEAT IS CALLED TO OPERATE, BOTH UNITS SHALL MODULATE TOGETHER. ONCE SET POINT IS MET, THE LAG UNIT (AC1-10B) SHALL CYCLE OFF AND THE LEAD UNIT (AC1-10A) SHALL CONTINUE NORMAL OPERATION. INCLUDE DEADBANDS TO AVOID EXCESSIVE CYCLING OF THE LAG UNIT.

G. SAFETIES

WHEN THE O.A. TEMP DROPS BELOW 37°F (ADJUSTABLE) THE UNIT WILL BE CYCLED ON AND THE AUXILIARY HEAT WILL MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT.

ON HIGH WATER LEVEL CONDITION IN THE UNIT'S PRIMARY PAN, THE WSHp WILL SHUT DOWN, CLOSE THE CONDENSER WATER VALVE, AND STOP THE SUPPLY AIR FANS. AN ALARM SIGNAL WILL BE SENT TO THE ONSITE AND OFF-SITE BMS WORKSTATION(S).

ON DETECTION OF SMOKE, THE WSHp DUCT SMOKE DETECTORS WILL SIGNAL THE FIRE ALARM PANEL AND STOP THE WSHp SUPPLY AIR FAN. COORDINATE WITH FIRE ALARM CONTRACTOR. AN ALARM SIGNAL WILL BE SENT TO THE BUILDING (AND OFF SITE MAINTENANCE) BMS WORKSTATION(S). THE FAN WILL BE RESTARTED WHEN THE FIRE ALARM CIRCUIT IS RESET. (COORDINATE WITH FIRE ALARM CONTRACTOR FOR ALL LIFE SAFETY WORK SCOPE).

H. MISCELLANEOUS CONTROL SEQUENCES

REFERENCE MISCELLANEOUS CONTROL SEQUENCES FOR OTHER REQUIRED SEQUENCES OF OPERATION. THESE SEQUENCES SHALL BE PROGRAMMED IN THE SOFTWARE; HOWEVER, THE OWNER MUST BE ABLE TO "TOGGLE" SEQUENCES ON OR OFF. REQUIRED MISCELLANEOUS CONTROL SEQUENCES ARE:

- SCHEDULED START/STOP
- OPTIMUM START
- MORNING COOL-DOWN CYCLE
- OFF-HOUR OVERRIDE
- MORNING WARM-UP CYCLE
- UNOCCUPIED/OCCUPIED

MISCELLANEOUS CONTROL SEQUENCES:

THE FOLLOWING CONTROL STRATEGIES ARE DEFINED AS REQUIRED FOR THE INITIAL IMPLEMENTATION OF THIS PROJECT BUT ARE NOT TO BE CONSTRUED AS DEFINING ALL AVAILABLE STRATEGIES OF THE BMS. THE BMS SHALL ACCOMPLISH THE DEFINED STRATEGIES.

1. SCHEDULED START/STOP:

THE SCHEDULED START/STOP PROGRAM SHALL START AND STOP EQUIPMENT BASED ON THE TIME-OF-DAY AND DAY-OF-WEEK. A FEEDBACK SIGNAL SHALL VERIFY THAT THE COMMAND HAS BEEN CARRIED OUT AND PROVIDE THE BMS OPERATOR WITH AN ALARM WHEN THE EQUIPMENT FAILS OR IS LOCALLY STARTED OR STOPPED.

2. OPTIMUM START:

THE BMS SHALL CALCULATE THE OPTIMUM START WARM-UP/COOL DOWN PERIOD REQUIRED TO CONDITION THE SPACE TO TARGET HEATING/COOLING SETPOINTS (NEEDED AT

THE SCHEDULED "OCCUPIED" MODE) AS SENSED BY SPACE TEMPERATURE SENSOR(S). THE OPTIMUM START CALCULATION SHALL BE SELF-CORRECTING BASED ON AN AUTOMATIC ANALYSIS OF ACCUMULATED HISTORICAL DATA. CALCULATION ADJUSTMENTS SHALL BE MADE ON A DAILY BASIS. ALL COMPONENTS USED IN THE CALCULATION SHALL BE OPERATOR ADJUSTABLE SETPOINTS. THIS PROGRAM SHALL COMPUTE THE START TIME REQUIRED BASED ON THE ACTUAL SPACE TEMPERATURE, REQUIRED SPACE TEMPERATURE, OUTSIDE AIR TEMPERATURE, AND LENGTH OF TIME THE WSHp HAS BEEN OFF.

WHEN THE COMPUTED START TIME IS REACHED, THE BMS SHALL START THE WSHp, MAINTAIN THE OUTSIDE AIR DAMPER CLOSED, AND MODULATE THE COMPRESSOR OR SCR HEAT TO ATTAIN THE REQUIRED OCCUPIED SPACE TEMPERATURE. WHEN THE SCHEDULED "OCCUPIED" TIME OCCURS, THE WSHp SHALL REVERT TO THE NORMAL SEQUENCE OF OPERATION AS INDICATED.

3. MORNING WARM-UP CYCLE:

WHEN THE WSHp IS STARTED, IF THE SPACE TEMPERATURE IS LESS THAN 65°F, THE BMS SHALL ACTIVATE THE MORNING WARM-UP CYCLE AS FOLLOWS: THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, AND THE COMPRESSOR SHALL MODULATE IN HEATING MODE.

WHEN THE SPACE TEMPERATURE RISES TO THE OCCUPIED TEMPERATURE SETPOINT, THE BMS SHALL REVERT TO NORMAL WSHp SEQUENCE OF OPERATION AS INDICATED.

4. MORNING COOL-DOWN CYCLE:

WHEN THE WSHp IS STARTED, IF THE SPACE TEMPERATURE IS MORE THAN 82°F, THE BMS SHALL ACTIVATE THE MORNING COOL-DOWN CYCLE AS FOLLOWS: THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, AND THE COMPRESSOR SHALL MODULATE IN COOLING MODE. WHEN THE SPACE TEMPERATURE LOWERS TO 76°F (ADJ.), THE BMS SHALL REVERT TO THE NORMAL WSHp SEQUENCE OF OPERATION AS INDICATED.

5. OFF-HOUR OVERRIDE:

ON A PRESS OF A WALL MOUNTED OFF-HOUR OVERRIDE SWITCH, THE SYSTEM (INCLUDING THE WATER SIDE - WELL PUMP(S), CONDENSER WATER PUMP(S) AND VALVES) SHALL OPERATE IN OCCUPIED MODE FOR 30 MINUTES (ADJ.).

6. UNOCCUPIED / OCCUPIED:

THE BMS SHALL MAINTAIN AN "UNOCCUPIED" SPACE TEMPERATURE SETPOINT. REFER TO "SPECIFIC SEQUENCE OF OPERATION", BELOW. IF THE ACTUAL SPACE TEMPERATURE EXCEEDS THE UNOCCUPIED SPACE TEMPERATURE SETPOINT, THE BMS SHALL CYCLE THE UNIT ON TO MAINTAIN THE UNOCCUPIED SPACE TEMPERATURE SETPOINT.

7. SPACE TEMPERATURE CONTROL:

THE CONTROL SYSTEM SHALL MAINTAIN SPACE TEMPERATURE SETPOINTS AS INDICATED IN THE "SPECIFIC SEQUENCE OF OPERATION" BELOW.

SPECIFIC SEQUENCE OF OPERATION:

A. WSHp (TYPICAL):

- SPACE TEMPERATURE SETPOINTS:
 - MAXIMUM SPACE TEMPERATURE (SUMMER MODE) = 75.0°F (ADJ)
 - MINIMUM SPACE TEMPERATURE (WINTER MODE) = 70.0°F (ADJ)
 - UNOCCUPIED SPACE TEMPERATURE (SUMMER MODE) = 82.0°F (ADJ)
 - UNOCCUPIED SPACE TEMPERATURE (WINTER MODE) = 60.0°F (ADJ)
- HOURS OF OPERATION:
 - HOURS OF OPERATION = COORDINATE WITH OWNER FOR DAILY AND WEEKLY HOURS OF OPERATION REQUIRED

WATER-SOURCE HEAT PUMP UNIT (AC1-7)

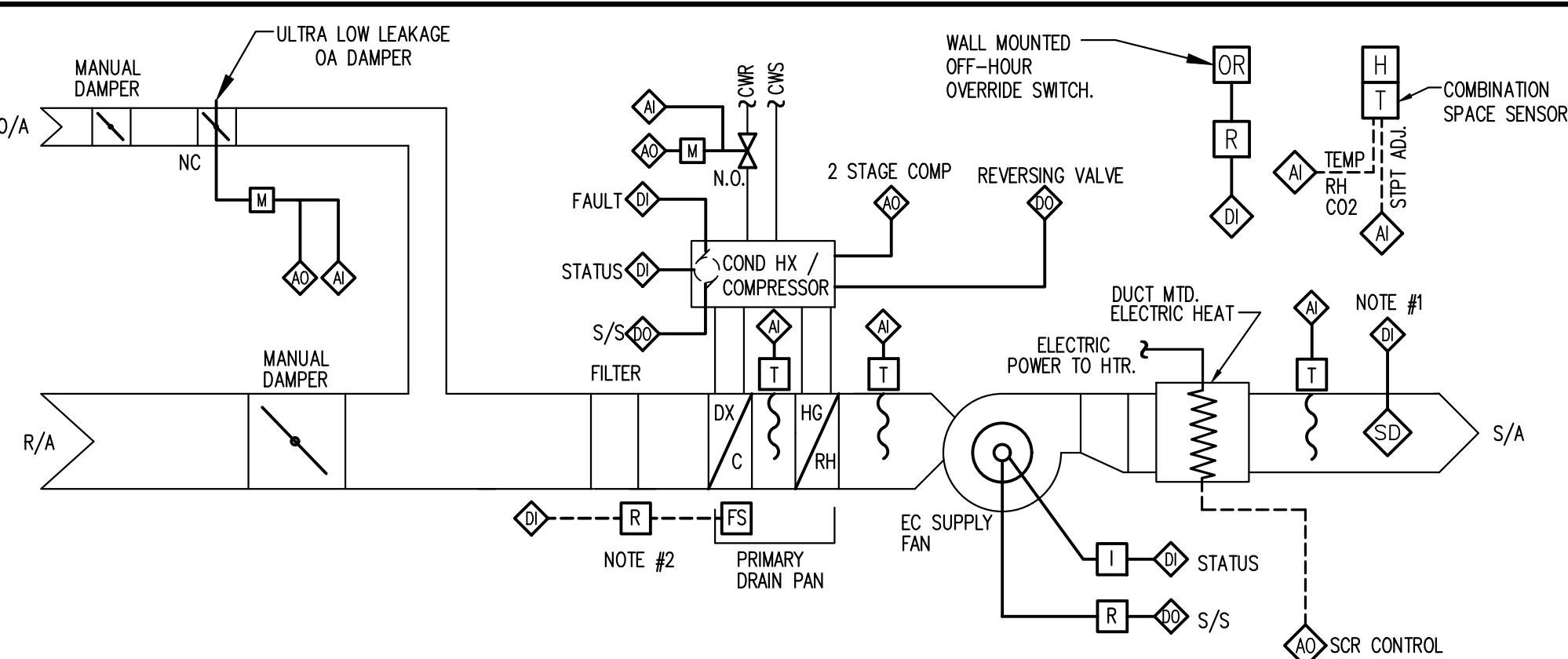
THE EXISTING AC1-7 SHALL CONTINUE TO OPERATE UNDER IT'S EXISTING SEQUENCE OF OPERATION. DUCT MOUNTED SCR ELECTRIC REHEAT IS TO BE PROVIDED UNDER PHASE 1 SCOPE. NEW SEQUENCES BELOW SHALL BE ADDED TO EXISTING SEQUENCE OF OPERATION.

A. HUMIDITY CONTROL

THE BMS SHALL CONTINUOUSLY CALCULATE AND MONITOR SPACE RELATIVE HUMIDITY. IF THE SPACE RELATIVE HUMIDITY RISES ABOVE 60% (ADJUSTABLE), THE BMS SHALL:

-IN THE COOLING MODE, START THE COMPRESSOR AND MODULATE FOR CONSTANT DISCHARGE TEMPERATURE (AS SCHEDULED).
-MODULATE THE DUCT MOUNTED SCR ELECTRIC REHEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT.

WHEN THE SPACE RELATIVE HUMIDITY DECREASES BELOW SETPOINT (INCLUDING DEAD BANDS TO AVOID CYCLING), THE UNIT SHALL RETURN TO NORMAL OPERATION.

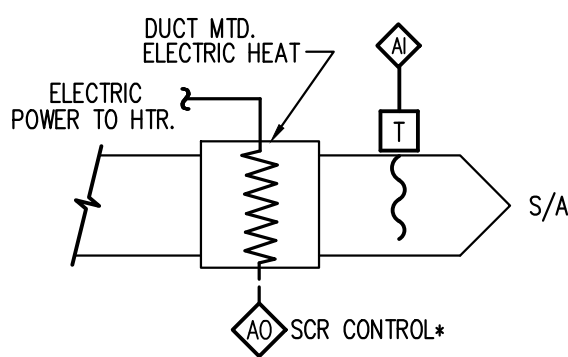


CONTROL SCHEMATIC WATER SOURCE HEAT PUMPS

NOT TO SCALE (TYP. FOR AC1-10A, AC1-10B)

NOTES

- REFER TO FLOOR PLANS FOR SMOKE DETECTOR LOCATIONS. SMOKE DETECTORS TO BE INSTALLED AND CONNECTED TO FIRE ALARM SYSTEM. COORDINATE WITH ELECTRICAL AND FIRE ALARM CONTRACTOR.
- PROVIDE FLOAT SWITCH IN PRIMARY DRAIN PAN. AHU SHALL SHUT-DOWN ON FLOAT SWITCH ACTIVATION.



CONTROL SCHEMATIC DUCT MOUNTED RE-HEAT

NOT TO SCALE (TYP. FOR AC1-7)

*PROVIDE NEW CONTROLS TRANSFORMER AS REQUIRED.

SCALE



DATE

REV# DESCRIPTION

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:
PHASE 1
MECHANICAL CONTROLS

FILE: MO.6
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

MO.6

WATER-SOURCE HEAT PUMP UNIT (AC1-7)

A. SUPPLY AIR FAN

B. OUTSIDE AIR FLOW

C. COOLING MODE

D. HEATING MODE

E. HUMIDITY CONTROL

THE BMS SHALL CONTINUOUSLY CALCULATE AND MONITOR SPACE RELATIVE HUMIDITY. IF THE SPACE RELATIVE HUMIDITY RISES ABOVE 60% (ADJUSTABLE), THE BMS SHALL

WHEN THE SPACE RELATIVE HUMIDITY DECREASES BELOW SETPOINT (INCLUDE DEAD BANDS TO AVOID CYCLING), THE UNIT SHALL RETURN TO NORMAL OPERATION.

F. SAFETIES

WHEN THE O.A. TEMP DROPS BELOW 37°F (ADJUSTABLE) THE UNIT WILL BE CYCLED ON AND THE AUXILIARY HEAT WILL MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT.

ON HIGH WATER LEVEL CONDITION IN THE UNIT'S PRIMARY PAN, THE WSPH SHALL SHUT DOWN, CLOSE THE CONDENSER WATER VALVE, AND STOP THE SUPPLY AIR FANS. AN ALARM SIGNAL WILL BE SENT TO THE ONSITE AND OFF-SITE BMS WORKSTATION(S).

G. MISCELLANEOUS CONTROL SEQUENCES

REFERENCE MISCELLANEOUS CONTROL SEQUENCES FOR OTHER REQUIRED SEQUENCES OF OPERATION. THESE SEQUENCES SHALL BE PROGRAMMED IN THE SOFTWARE; HOWEVER, THE OWNER MUST BE ABLE TO "TOGGLE" SEQUENCES ON OR OFF. REQUIRED MISCELLANEOUS CONTROL SEQUENCES ARE:

MISCELLANEOUS CONTROL SEQUENCES:

THE FOLLOWING CONTROL STRATEGIES ARE DEFINED AS REQUIRED FOR THE INITIAL IMPLEMENTATION OF THIS PROJECT BUT ARE NOT TO BE CONSTRUED AS DEFINING ALL AVAILABLE STRATEGIES OF THE BMS. THE BMS SHALL ACCOMPLISH THE DEFINED STRATEGIES.

1. SCHEDULED START/STOP:

THE SCHEDULED START/STOP PROGRAM SHALL START AND STOP EQUIPMENT BASED ON THE TIME-OF-DAY AND DAY-OF-WEEK. A FEEDBACK SIGNAL SHALL VERIFY THAT THE COMMAND HAS BEEN CARRIED OUT AND PROVIDE THE BMS OPERATOR WITH AN ALARM WHEN THE EQUIPMENT FAILS OR IS LOCALLY STARTED OR STOPPED.

- ## 2. OPTIMUM START

THE BMS SHALL CALCULATE THE OPTIMUM START WARM-UP/COOL DOWN PERIOD REQUIRED TO CONDITION THE SPACE TO TARGET HEATING/COOLING SETPOINTS (NEEDED AT THE SCHEDULED "OCCUPIED" MODE) AS SENSED BY SPACE TEMPERATURE SENSOR(S). THE OPTIMUM START CALCULATION SHALL BE SELF-CORRECTING BASED ON AN AUTOMATIC ANALYSIS OF ACCUMULATED HISTORICAL DATA. CALCULATION ADJUSTMENTS SHALL BE MADE ON A DAILY BASIS. ALL COMPONENTS USED IN THE CALCULATION SHALL BE OPERATOR ADJUSTABLE SETPOINTS. THIS PROGRAM SHALL COMPUTE THE START TIME REQUIRED BASED ON THE ACTUAL SPACE TEMPERATURE, REQUIRED SPACE TEMPERATURE, OUTSIDE AIR TEMPERATURE, AND LENGTH OF TIME THE WSPH HAS BEEN OFF.

3. MORNING WARM-UP CYCLE:

WHEN THE SPACE TEMPERATURE RISES TO THE OCCUPIED TEMPERATURE SETPOINT, THE BMS SHALL REVERT TO NORMAL WSHF SEQUENCE OF OPERATION AS INDICATED.

- #### 4. MORNING COOL-DOWN CYCLE:

5. OFF-HOUR OVERRIDE:

ON A PRESS OF A WALL MOUNTED OFF-HOUR OVERRIDE SWITCH, THE SYSTEM (INCLUDING THE WATER SIDE - WELL PUMP(S), CONDENSER WATER PUMP(S) AND VALVES) SHALL OPERATE IN OCCUPIED MODE FOR 60 MINUTES (ADJ.).

6. UNOCCUPIED / OCCUPIED:

THE BMS SHALL MAINTAIN AN "UNOCCUPIED" SPACE TEMPERATURE SETPOINT. REFER TO "SPECIFIC SEQUENCE OF OPERATOR", BELOW. IF THE ACTUAL SPACE TEMPERATURE EXCEEDS THE UNOCCUPIED SPACE TEMPERATURE SETPOINT, THE BMS SHALL CYCLE THE UNIT ON TO MAINTAIN THE UNOCCUPIED SPACE TEMPERATURE SETPOINT.

7. SPACE TEMPERATURE CONTROL:

THE CONTROL SYSTEM SHALL MAINTAIN SPACE TEMPERATURE SETPOINTS AS INDICATED IN THE "SPECIFIC SEQUENCE OF OPERATION" BELOW.

SPECIFIC SEQUENCE OF OPERATION:

- A. WSPH (TYPICAL):
1. SPACE TEMPERATURE SETPOINTS:
MAXIMUM SPACE TEMPERATURE (SUMMER MODE) = 75.0°F (ADJ)
MINIMUM SPACE TEMPERATURE (WINTER MODE) = 70.0°F (ADJ)
UNOCCUPIED SPACE TEMPERATURE (SUMMER MODE) = 82.0°F (ADJ)
UNOCCUPIED SPACE TEMPERATURE (WINTER MODE) = 60.0°F (ADJ)
 2. HOURS OF OPERATION:
HOURS OF OPERATION = COORDINATE WITH OWNER FOR DAILY AND WEEKLY HOURS OF OPERATION REQUIRED
 3. VENTILATION CONTROL / EQUIPMENT INTERLOCK:
IN OCCUPIED MODE EXHAUST FANS SHALL OPERATE IN CONJUNCTION W/OTHER ASSOCIATED WSPH'S:

WHEN THE SYSTEM IS OPERATING IN UNOCCUPIED MODE, THE EF'S SHALL REMAIN OFF UNTIL THE SYSTEM IS CALLED TO RUN IN OCCUPIED MODE.

REFER TO TABLE BELOW FOR OCCUPIED AND UNOCCUPIED REQUIRED AIR FLOWS. COORDINATE WITH T&B CONTRACTOR TO SET DAMPERS AND SUPPLY FAN BALANCED POSITIONS FOR EACH MODE.

EXHAUST FAN EF1-7

WHEN AC1-7 IS CALLED TO RUN IN OCCUPIED MODE, EF1-7 SHALL BE CALLED TO RUN. WHEN AC1-7 IS OFF OR IS OPERATING IN OTHER UNOCCUPIED MODES (SEE TABLE BELOW), EF1-7 SHALL BE OFF.

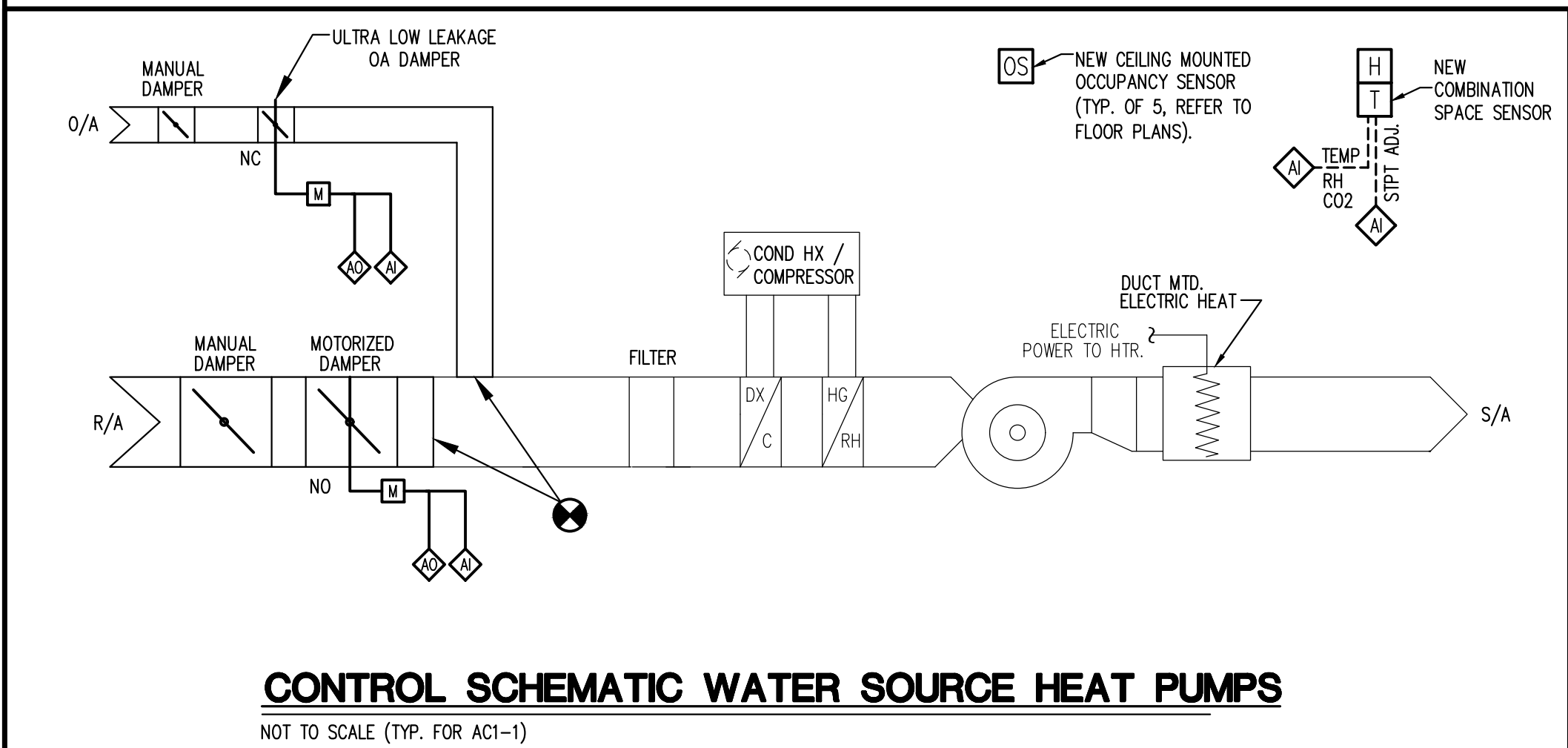
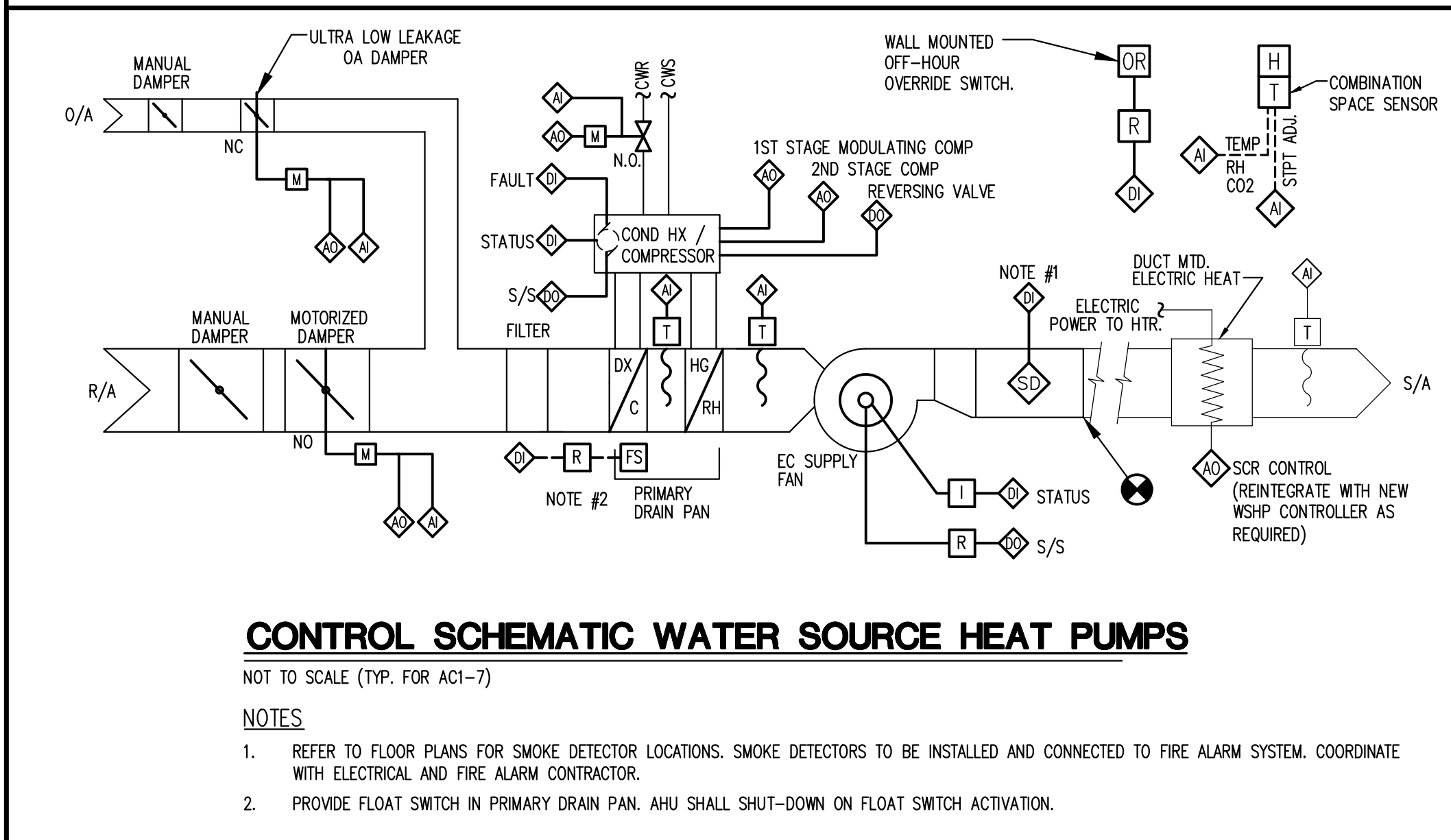
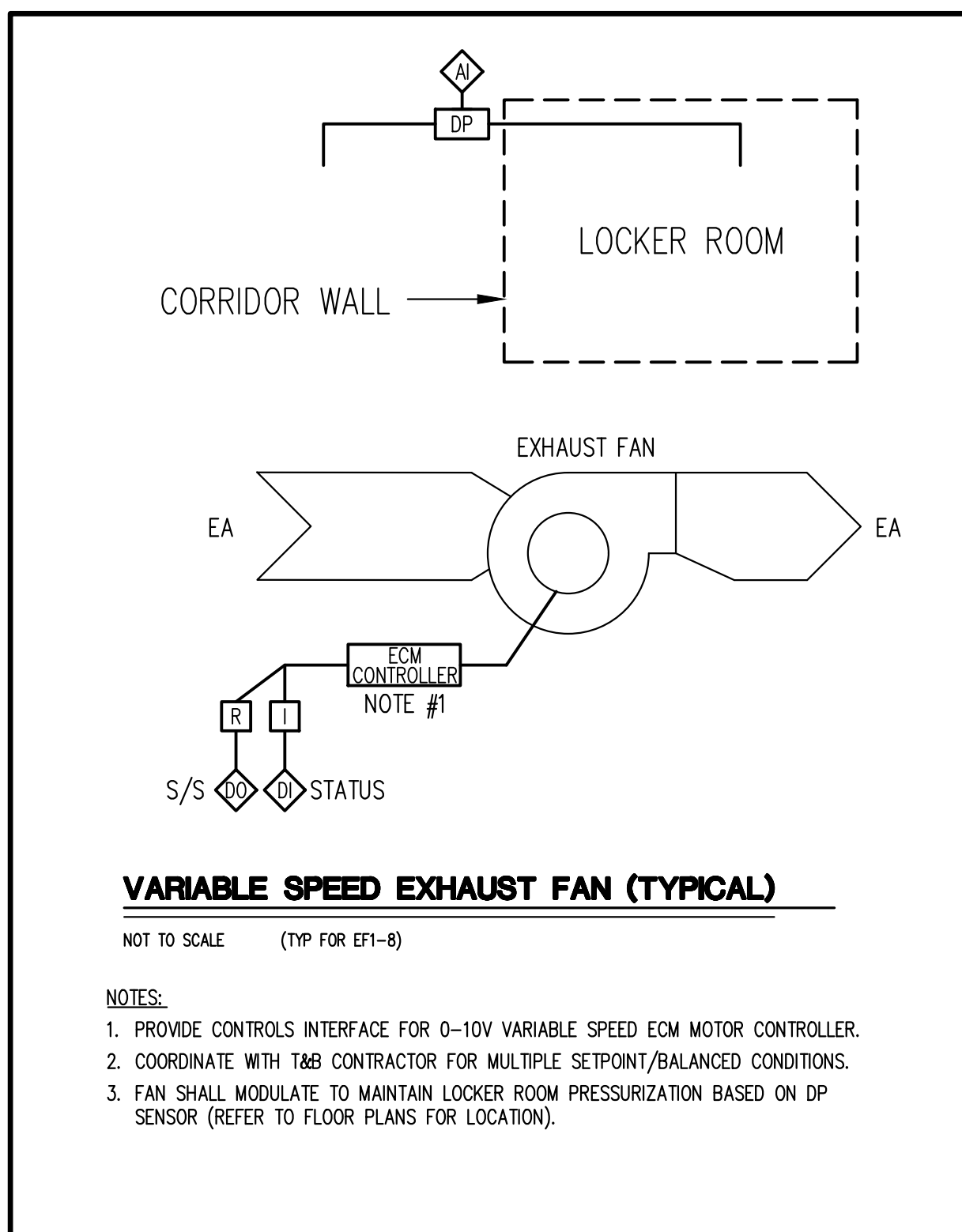
IF THE FAN FAILS TO OPERATE, AN ALARM SIGNAL WILL BE SENT TO THE BMS.

EXHAUST FAN EF1-8

WHEN AC1-7 IS CALLED TO RUN IN OCCUPIED MODE, THE BMS SHALL MONITOR THE DIFFERENTIAL PRESSURE BETWEEN THE LOCKER ROOM AND CORRIDOR AND MODULATE EF1-8 EXHAUST AIR FLOW TO MAINTAIN NEUTRAL LOCKER ROOM PRESSURE. WHEN AC1-7 IS OFF OR IS OPERATING IN OTHER UNOCCUPIED MODES (SEE TABLE BELOW), EF1-7 SHALL BE OFF.

IF THE FAN FAILS TO OPERATE, AN ALARM SIGNAL WILL BE SENT TO THE BMS.

AC1-7 MODE	SA QUANTITY	RA QUANTITY	QA QUANTITY	EF STATUS
OCCUPIED (NORMAL)	3400 CFM	1400 CFM	2000 CFM	EF1-7: ON; EF1-8: VARIABLE
UNOCCUPIED	2000 CFM	1800 CFM	200 CFM	EF1-7: OFF; EF1-8: OFF
MORNING WARM UP	2000 CFM	1800 CFM	200 CFM	EF1-7: OFF; EF1-8: OFF
MORNING COOL DN	2000 CFM	1800 CFM	200 CFM	EF1-7: OFF; EF1-8: OFF



PHASE 2 - ADDITIVE ALTERNATE SCOPE:

WATER-SOURCE HEAT PUMP UNIT (AC3-3)

EACH WSHF WILL BE CONTROLLED BY A STAND-ALONE DDC CONTROLLER. THE EMCS SHALL START/STOP THE WSHF THROUGH THE AUTOMATIC CIRCUIT OF THE WSHF CONTROLS. THE EMCS SHALL START/STOP THE WSHF BASED ON TIME SCHEDULES, COMMANDS GENERATED BY THE DDC CONTROLLER, THE EMCS OR BY REMOTE COMMANDS FROM MAINTENANCE WORKSTATION. WSHF POSITIVE RUN STATUS SHALL BE REPORTED TO THE CONTROL WORKSTATION(S) VIA CURRENT SENSOR RELAYS OR DIFFERENTIAL PRESSURE SWITCH.

A. SUPPLY AIR FAN

THE WSHF FAN SHALL START ON A PRESET OCCUPIED SCHEDULE. IF THE FAN FAILS TO START, AN ALARM SIGNAL WILL BE SENT TO THE CONTROL WORKSTATION(S). THE SUPPLY FAN WILL BE ALLOWED TO START MANUALLY VIA THE LOCAL MOTOR STARTER. THE HEATING/COOLING MODES WILL BE ENABLED ONCE THE FAN RUNS CONTINUOUSLY.

B. OUTSIDE AIR FLOW

WHEN THE WSHF FAN IS IN THE OFF MODE, THE ASSOCIATED O/A DAMPER WILL BE CLOSED. WHEN THE WSHF IS CALLED TO RUN IN OCCUPIED MODE, THE ASSOCIATED O/A DAMPER WILL OPEN.

C. COOLING MODE

WHEN THE UNIT IS CALLED TO RUN IN THE COOLING MODE, THE CONDENSER WATER VALVE SHALL OPEN AND THE COMPRESSOR SHALL BE MODULATED TO MAINTAIN A MAXIMUM SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF, THE MECHANICAL COOLING SHALL BE OFF.

D. HEATING MODE

WHEN THE UNIT IS CALLED TO RUN IN THE HEATING MODE, THE CONDENSER WATER VALVE SHALL OPEN AND THE COMPRESSOR SHALL BE MODULATED TO MAINTAIN A MINIMUM SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF THE MECHANICAL HEATING SHALL BE OFF.

E. HUMIDITY CONTROL

THE BMS SHALL CONTINUOUSLY CALCULATE AND MONITOR SPACE RELATIVE HUMIDITY. IF THE SPACE RELATIVE HUMIDITY RISES ABOVE 60% (ADJUSTABLE), THE BMS SHALL:

- IN THE COOLING MODE, START THE COMPRESSOR AND MODULATE FOR CONSTANT DISCHARGE TEMPERATURE (AS SCHEDULED).
- MODULATE THE HOT-GAS REHEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT.

WHEN THE SPACE RELATIVE HUMIDITY DECREASES BELOW SETPOINT (INCLUDING DEAD BANDS TO AVOID CYCLING), THE UNIT SHALL RETURN TO NORMAL OPERATION.

G. SAFETIES

WHEN THE O.A. TEMP DROPS BELOW 37°F (ADJUSTABLE) THE UNIT WILL BE CYCLED ON IN HEATING MODE, AND THE OA DAMPER SHALL REMAIN CLOSED.

ON HIGH WATER LEVEL CONDITION IN THE UNIT'S PRIMARY PAN, THE WSHF WILL SHUT DOWN, CLOSE THE CONDENSER WATER VALVE, AND STOP THE SUPPLY AIR FAN. AN ALARM SIGNAL WILL BE SENT TO THE ONSITE AND OFF-SITE BMS WORKSTATION(S).

H. MISCELLANEOUS CONTROL SEQUENCES

REFERENCE MISCELLANEOUS CONTROL SEQUENCES FOR OTHER REQUIRED SEQUENCES OF OPERATION. THESE SEQUENCES SHALL BE PROGRAMMED IN THE SOFTWARE; HOWEVER, THE OWNER MUST BE ABLE TO "TOGGLE" SEQUENCES ON OR OFF. REQUIRED MISCELLANEOUS CONTROL SEQUENCES ARE:

- SCHEDULED START/STOP
- OFF-HOUR OVERRIDE
- OPTIMUM START
- UNOCCUPIED/OCCUPIED

MISCELLANEOUS CONTROL SEQUENCES:

THE FOLLOWING CONTROL STRATEGIES ARE DEFINED AS REQUIRED FOR THE INITIAL IMPLEMENTATION OF THIS PROJECT BUT ARE NOT TO BE CONSTRUED AS DEFINING ALL AVAILABLE STRATEGIES OF THE BMS. THE BMS SHALL ACCOMPLISH THE DEFINED STRATEGIES.

1. SCHEDULED START/STOP:

THE SCHEDULED START/STOP PROGRAM SHALL START AND STOP EQUIPMENT BASED ON THE TIME-OF-DAY AND DAY-OF-WEEK. A FEEDBACK SIGNAL SHALL VERIFY THAT THE COMMAND HAS BEEN CARRIED OUT AND PROVIDE THE BMS OPERATOR WITH AN ALARM WHEN THE EQUIPMENT FAILS OR IS LOCALLY STARTED OR STOPPED.

2. OPTIMUM START:

THE BMS SHALL CALCULATE THE OPTIMUM START WARM-UP/COOL DOWN PERIOD REQUIRED TO CONDITION THE SPACE TO TARGET HEATING/COOLING SETPOINTS (NEEDED AT THE SCHEDULED "OCCUPIED" MODE) AS SENSED BY SPACE TEMPERATURE SENSOR(S). THE OPTIMUM START CALCULATION SHALL BE SELF-CORRECTING BASED ON AN AUTOMATIC ANALYSIS OF ACCUMULATED HISTORICAL DATA. CALCULATION ADJUSTMENTS SHALL BE MADE ON A DAILY BASIS. ALL COMPONENTS USED IN THE CALCULATION SHALL BE OPERATOR ADJUSTABLE SETPOINTS. THIS PROGRAM SHALL COMPUTE THE START TIME REQUIRED BASED ON THE ACTUAL SPACE TEMPERATURE, REQUIRED SPACE TEMPERATURE, OUTSIDE AIR TEMPERATURE, AND LENGTH OF TIME THE WSHF HAS BEEN OFF.

WHEN THE COMPUTED START TIME IS REACHED, THE BMS SHALL START THE WSHF, MAINTAIN THE OUTSIDE AIR DAMPER CLOSED, AND MODULATE THE COMPRESSOR OR SCR HEAT TO ATTAIN THE REQUIRED OCCUPIED SPACE TEMPERATURE. WHEN THE SCHEDULED "OCCUPIED" TIME OCCURS, THE WSHF SHALL REVERT TO THE NORMAL SEQUENCE OF OPERATION AS INDICATED.

3. OFF-HOUR OVERRIDE:

ON A PRESS OF A WALL MOUNTED OFF-HOUR OVERRIDE SWITCH, THE SYSTEM SHALL OPERATE IN OCCUPIED MODE FOR 30 MINUTES (ADJ.).

4. UNOCCUPIED / OCCUPIED:

THE BMS SHALL MAINTAIN AN "UNOCCUPIED" SPACE TEMPERATURE SETPOINT. REFER TO "SPECIFIC SEQUENCE OF OPERATION", BELOW. IF THE ACTUAL SPACE TEMPERATURE EXCEEDS THE UNOCCUPIED SPACE TEMPERATURE SETPOINT, THE BMS SHALL CYCLE THE UNIT ON TO MAINTAIN THE UNOCCUPIED SPACE TEMPERATURE SETPOINT.

5. SPACE TEMPERATURE CONTROL:

THE CONTROL SYSTEM SHALL MAINTAIN SPACE TEMPERATURE SETPOINTS AS INDICATED IN THE "SPECIFIC SEQUENCE OF OPERATION" BELOW.

SPECIFIC SEQUENCE OF OPERATION:

A. WSHF (TYPICAL):

1. SPACE TEMPERATURE SETPOINTS:

- MAXIMUM SPACE TEMPERATURE (SUMMER MODE) = 75.0°F (ADJ.)
- MINIMUM SPACE TEMPERATURE (WINTER MODE) = 70.0°F (ADJ.)
- UNOCCUPIED SPACE TEMPERATURE (SUMMER MODE) = 82.0°F (ADJ.)
- UNOCCUPIED SPACE TEMPERATURE (WINTER MODE) = 60.0°F (ADJ.)

2. HOURS OF OPERATION:

HOURS OF OPERATION = COORDINATE WITH OWNER FOR DAILY AND WEEKLY HOURS OF OPERATION REQUIRED

WATER-SOURCE HEAT PUMP UNIT (AC1-5A, AC1-6A)

EACH WSHF WILL BE CONTROLLED BY A STAND-ALONE DDC CONTROLLER. THE EMCS SHALL START/STOP THE WSHF THROUGH THE AUTOMATIC CIRCUIT OF THE WSHF CONTROLS. THE EMCS SHALL START/STOP THE WSHF BASED ON TIME SCHEDULES, COMMANDS GENERATED BY THE DDC CONTROLLER, THE EMCS OR BY REMOTE COMMANDS FROM MAINTENANCE WORKSTATION. WSHF POSITIVE RUN STATUS SHALL BE REPORTED TO THE CONTROL WORKSTATION(S) VIA CURRENT SENSOR RELAYS OR DIFFERENTIAL PRESSURE SWITCH.

A. ROLL-UP WINDOW POSITION SWITCH

WHEN THE ROLL-UP WINDOW POSITION SWITCH INDICATES THAT THE WINDOW IS CLOSED, THE ROOM SHALL OPERATE IN NORMAL MODE:

- AC1-5 SHALL OPERATE UNDER IT'S CURRENT (MODIFIED) SEQUENCE OF OPERATION AND AC1-5A SHALL REMAIN OFF.
- THE 18x6 CHANGEOVER DAMPER SHALL REMAIN OPEN AND THE 12"ø CHANGEOVER DAMPER SHALL REMAIN CLOSED. (REFER TO FLOOR PLANS.)

AND/OR

- AC1-6 SHALL OPERATE UNDER IT'S CURRENT (MODIFIED) SEQUENCE OF OPERATION AND AC1-6A SHALL REMAIN OFF.

WHEN THE ROLL-UP WINDOW POSITION SWTCH INDICATES THAT THE WINDOW IS OPEN, THE ROOM SHALL OPERATE IN GAME MODE:

- AC1-5 SHALL CYCLE OFF AND AC1-5A SHALL BE CALLED TO RUN.
- THE 18x6 CHANGEOVER DAMPER SHALL CLOSE AND THE 12"ø CHANGEOVER DAMPER SHALL OPEN. (REFER TO FLOOR PLANS.)

AND/OR

- AC1-6 SHALL CYCLE OFF AND AC1-6A SHALL BE CALLED TO RUN.

B. SUPPLY AIR FAN

THE OA DAMPER SHALL OPEN AND THE WSHF FAN SHALL START ON A SIGNAL FROM THE ROLL-UP WINDOW POSITION SWITCH. IF THE FAN FAILS TO START, AN ALARM SIGNAL WILL BE SENT TO THE CONTROL WORKSTATION(S). THE SUPPLY FAN WILL BE ALLOWED TO START MANUALLY VIA THE LOCAL MOTOR STARTER. THE HEATING/COOLING MODES WILL BE ENABLED ONCE THE FAN RUNS CONTINUOUSLY.

C. COOLING MODE

WHEN THE UNIT IS CALLED TO RUN IN THE COOLING MODE, THE CONDENSER WATER VALVE SHALL OPEN AND THE COMPRESSOR SHALL BE MODULATED TO MAINTAIN A MAXIMUM SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF, THE CONDENSER WATER VALVE SHALL CLOSE AND MECHANICAL COOLING SHALL BE OFF.

D. HEATING MODE

WHEN THE UNIT IS CALLED TO RUN IN THE HEATING MODE, THE CONDENSER WATER VALVE SHALL OPEN AND THE COMPRESSOR SHALL BE MODULATED TO MAINTAIN A MINIMUM SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF, THE CONDENSER WATER VALVE SHALL CLOSE AND MECHANICAL HEATING SHALL BE OFF.

IF THE HEAT PUMP CANNOT MAINTAIN MINIMUM SPACE TEMPERATURE FOR 5 MINUTES (ADJ.), THE BAS SHALL MODULATE THE DUCT MOUNTED SCR ELECTRIC HEAT TO MAINTAIN MINIMUM SPACE TEMPERATURE.

E. SPACE CONDENSATION CONTROL

THE BMS SHALL CONTINUOUSLY CALCULATE AND MONITOR SPACE DEWPOINT. IN COOLING MODE, IF THE SUPPLY AIR TEMPERATURE DROPS BELOW SPACE DEWPOINT, THE BMS SHALL:

-MODULATE THE COMPRESSOR TO LOW-SPEED.

IF THE SUPPLY AIR TEMPERATURE IS STILL ABOVE THE SPACE DEWPOINT, THE BMS SHALL:

-MODULATE THE SCR ELECTRIC REHEAT TO MAINTAIN SUPPLY AIR TEMPERATURE ABOVE SPACE DEWPOINT.

WHEN THE SUPPLY AIR TEMPERATURE RISES ABOVE SPACE DEW POINT (INCLUDING DEAD BANDS TO AVOID CYCLING), THE UNIT SHALL RETURN TO NORMAL OPERATION.

G. SAFETIES

IF THE ROLL-UP DOOR POSITION SENSOR INDICATES THAT THE WINDOW IS OPEN, THE UNIT SHALL OPERATE IN HEATING MODE WITH SCR ELECTRIC HEAT. THE COMPRESSOR SHALL REMAIN OFF AND THE CONDENSER WATER VALVE SHALL REMAIN CLOSED.

ON HIGH WATER LEVEL CONDITION IN THE UNIT'S PRIMARY PAN, THE WSHF WILL SHUT DOWN, CLOSE THE CONDENSER WATER VALVE, AND STOP THE SUPPLY AIR FAN. AN ALARM SIGNAL WILL BE SENT TO THE ONSITE AND OFF-SITE BMS WORKSTATION(S).

H. MISCELLANEOUS CONTROL SEQUENCES

REFERENCE MISCELLANEOUS CONTROL SEQUENCES FOR OTHER REQUIRED SEQUENCES OF OPERATION. THESE SEQUENCES SHALL BE PROGRAMMED IN THE SOFTWARE; HOWEVER, THE OWNER MUST BE ABLE TO "TOGGLE" SEQUENCES ON OR OFF. REQUIRED MISCELLANEOUS CONTROL SEQUENCES ARE:

- SCHEDULED START/STOP
- OFF-HOUR OVERRIDE

MISCELLANEOUS CONTROL SEQUENCES:

THE FOLLOWING CONTROL STRATEGIES ARE DEFINED AS REQUIRED FOR THE INITIAL IMPLEMENTATION OF THIS PROJECT BUT ARE NOT TO BE CONSTRUED AS DEFINING ALL AVAILABLE STRATEGIES OF THE BMS. THE BMS SHALL ACCOMPLISH THE DEFINED STRATEGIES.

1. SCHEDULED START/STOP:

THE SCHEDULED START/STOP PROGRAM SHALL START AND STOP EQUIPMENT BASED ON THE TIME-OF-DAY AND DAY-OF-WEEK. A FEEDBACK SIGNAL SHALL VERIFY THAT THE COMMAND HAS BEEN CARRIED OUT AND PROVIDE THE BMS OPERATOR WITH AN ALARM WHEN THE EQUIPMENT FAILS OR IS LOCALLY STARTED OR STOPPED.

2. OFF-HOUR OVERRIDE:

ON A PRESS OF A WALL MOUNTED OFF-HOUR OVERRIDE SWITCH, THE SYSTEM SHALL OPERATE IN GAME MODE (IF ROLL-UP WINDOW POSITION SENSOR INDICATES WINDOW IS OPEN) FOR 60 MINUTES (ADJ.).

3. SPACE TEMPERATURE CONTROL:

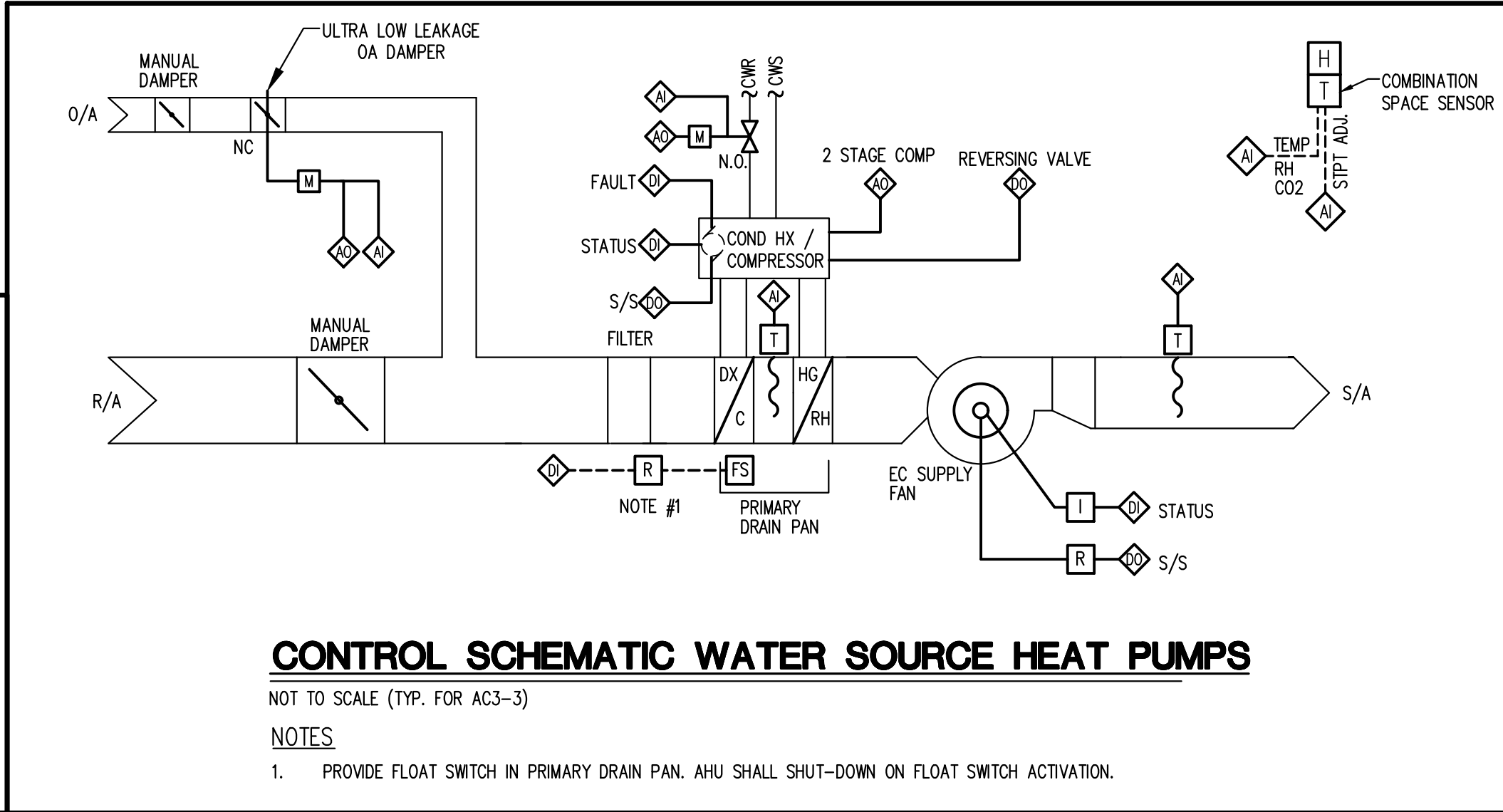
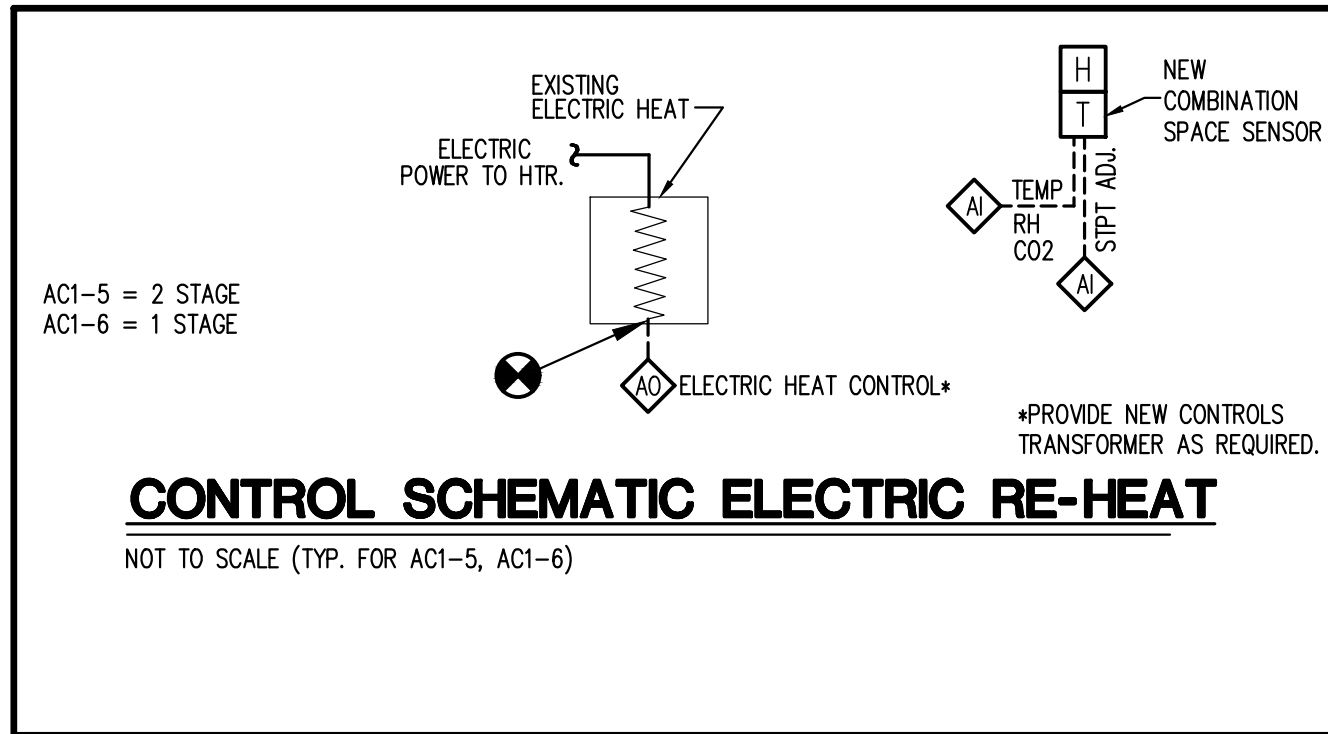
THE CONTROL SYSTEM SHALL MAINTAIN SPACE TEMPERATURE SETPOINTS AS INDICATED IN THE "SPECIFIC SEQUENCE OF OPERATION" BELOW.

SPECIFIC SEQUENCE OF OPERATION:

A. WSHF (TYPICAL):

1. SPACE TEMPERATURE SETPOINTS:

- MAXIMUM SPACE TEMPERATURE (SUMMER MODE) = 75.0°F (ADJ.)
- MINIMUM SPACE TEMPERATURE (WINTER MODE) = 70.0°F (ADJ.)



WATER-SOURCE HEAT PUMP UNIT (AC1-5, AC1-6)

THE EXISTING AC1-5 AND AC1-6 SHALL CONTINUE TO OPERATE UNDER IT'S EXISTING SEQUENCE OF OPERATION. THE EXISTING ELECTRIC REHEAT IS TO BE CONNECTED UNDER PHASE 2 - ADDITIVE ALTERNATE SCOPE. NEW SEQUENCES BELOW SHALL BE ADDED TO EXISTING SEQUENCE OF OPERATION.

A. HUMIDITY CONTROL

THE BMS SHALL CONTINUOUSLY CALCULATE AND MONITOR SPACE RELATIVE HUMIDITY. IF THE SPACE RELATIVE HUMIDITY RISES ABOVE 60% (ADJUSTABLE), THE BMS SHALL:

- IN THE COOLING MODE, START THE COMPRESSOR AND MODULATE FOR CONSTANT DISCHARGE TEMPERATURE (AS SCHEDULED).
- ENGAGE THE DUCT MOUNTED ELECTRIC REHEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT.

WHEN THE SPACE RELATIVE HUMIDITY DECREASES BELOW SETPOINT (INCLUDING DEAD BANDS TO AVOID CYCLING), THE UNIT SHALL RETURN TO NORMAL OPERATION.

B. HEATING MODE

IF THE HEAT PUMP CANNOT MAINTAIN MINIMUM SPACE TEMPERATURE FOR 5 MINUTES (ADJ.), THE BAS SHALL ENGAGE THE DUCT MOUNTED ELECTRIC HEAT TO MAINTAIN MINIMUM SPACE TEMPERATURE.

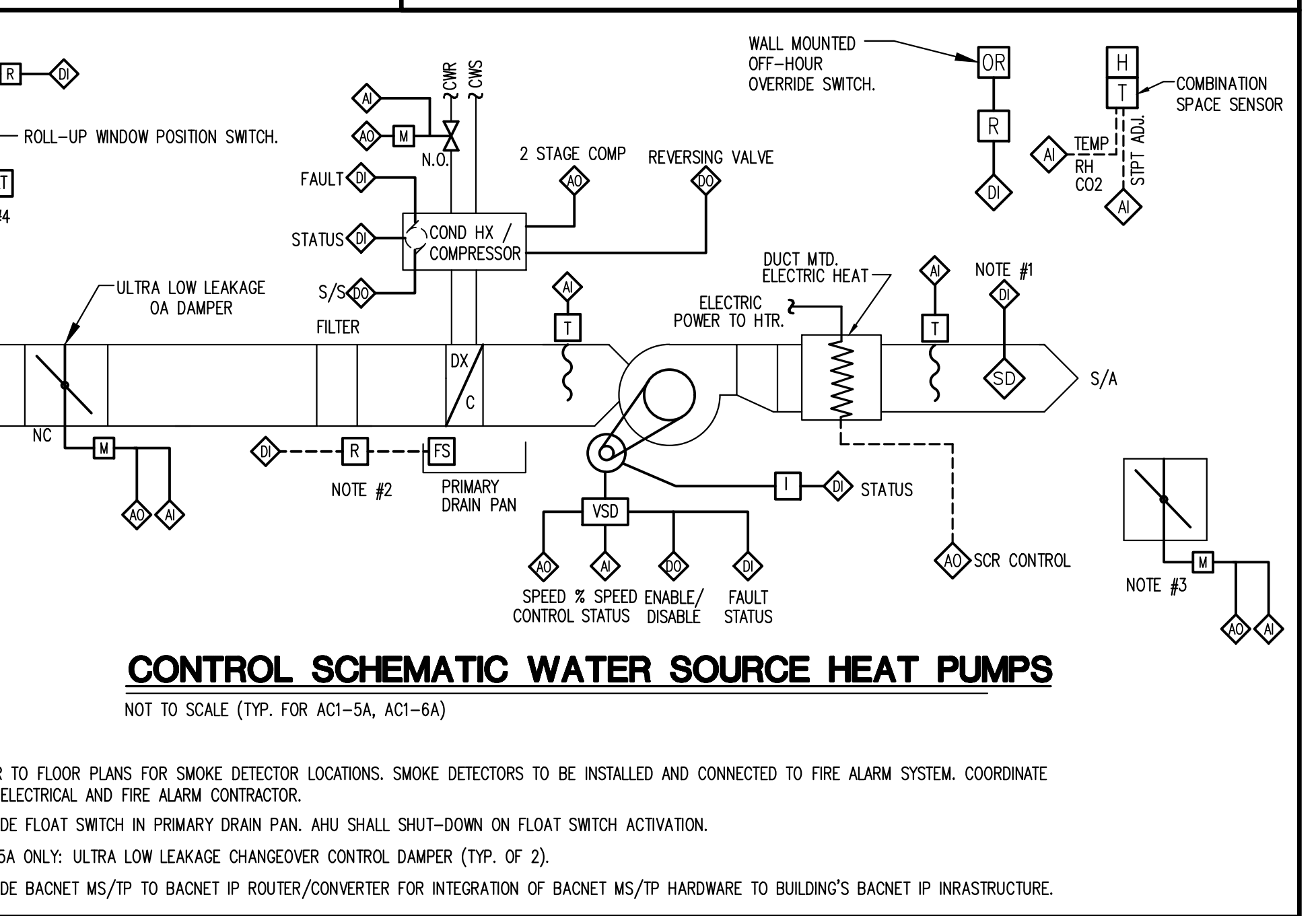
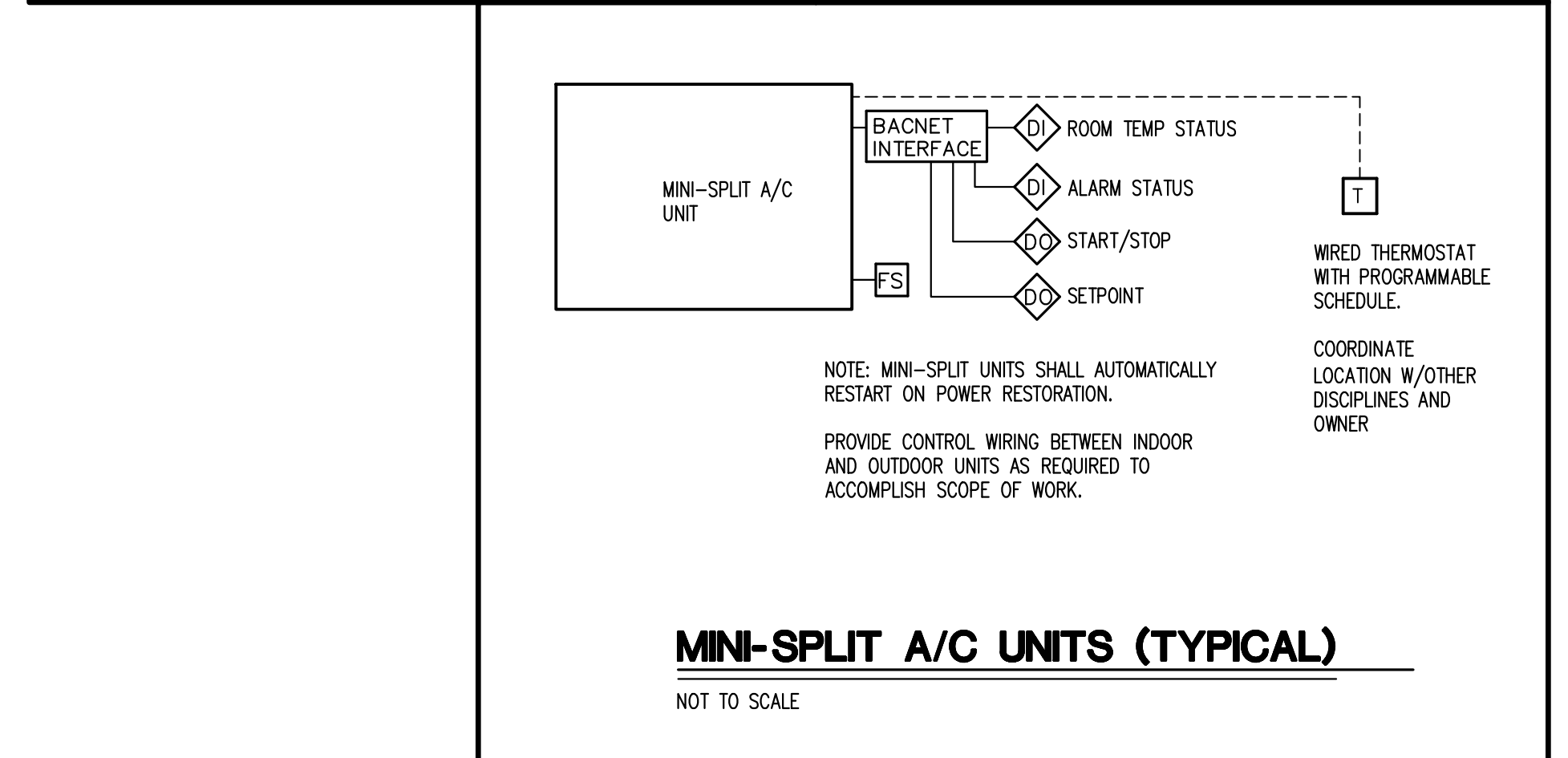
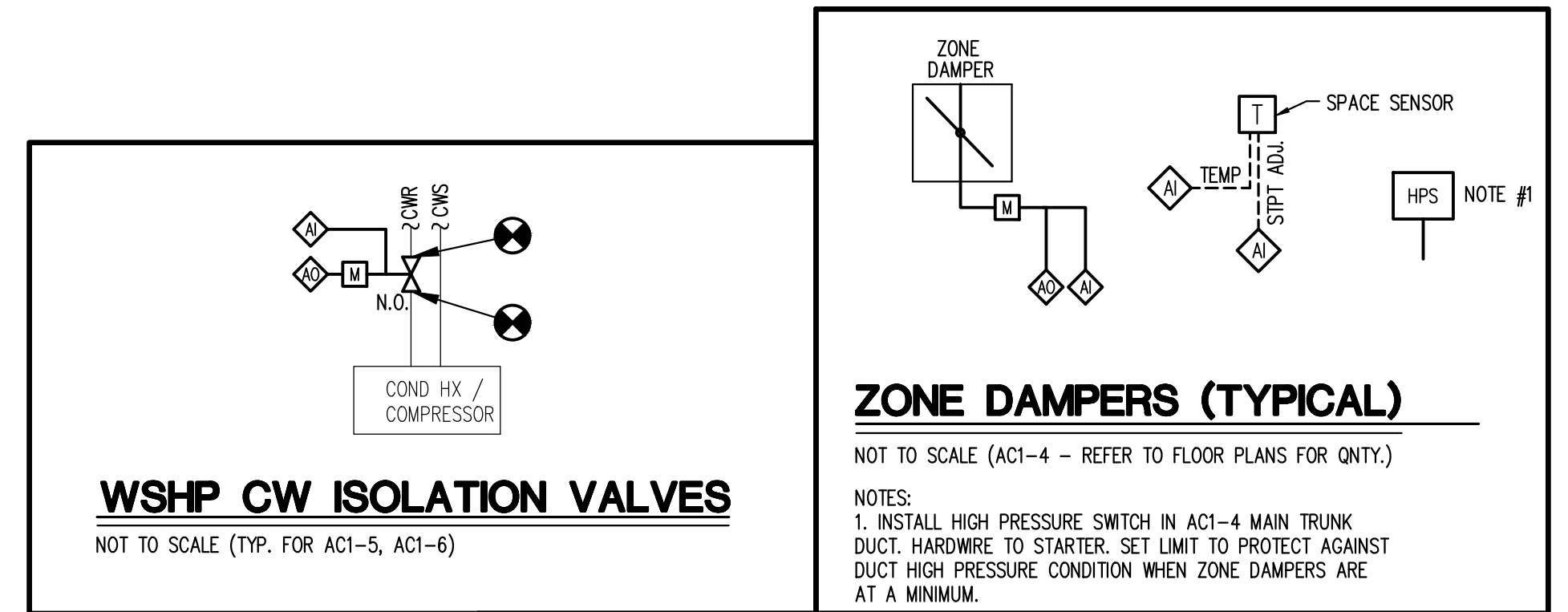
C. CONDENSER WATER FLOW CONTROL

UPON CHANGEOVER BETWEEN AC1-5/AC1-5A OR AC1-6/AC1-6A (REFER TO ROLL-UP POSITION SWITCH SEQUENCE, THIS SHEET), THE 2-WAY ISOLATION CONTROL VALVE SHALL POSITION OPEN FOR UNITS THAT ARE CALLED TO RUN, AND CLOSED FOR UNITS THAT ARE OFF.

ZONE DAMPERS (AC1-4)

THE EXISTING AC1-4 SHALL CONTINUE TO OPERATE UNDER IT'S EXISTING SEQUENCE OF OPERATION. ZONE DAMPERS ARE TO BE ADDED IN THE EXISTING DUCTWORK UNDER PHASE 2 - ADDITIVE ALTERNATE SCOPE. ONE OR MORE ZONE DAMPER SHALL BE CONTROLLED BY A STAND-ALONE WALL MOUNTED TEMPERATURE SENSOR. THE ZONE DAMPER(S) SHALL MODULATE TO MAINTAIN ZONE TEMPERATURE SETPOINT. MULTIPLE ZONE DAMPERS ASSOCIATED WITH A SINGLE TEMPERATURE SENSOR SHALL MODULATE TOGETHER.

COORDINATE WITH T&B CONTRACTOR TO SET MINIMUM AND MAXIMUM ZONE DAMPER FLOW. MAXIMUM FLOW SHALL BE SET PER THE AIR DEVICE TAGS ON THE FLOOR PLANS. MINIMUM FLOW SHALL BE SET AT 1/2 THE VALUE OF THE AIR DEVICE TAGS ON THE FLOOR PLANS.



SEA

DATE

REV# DESCRIPTION

PINNACLE ENGINEERING GROUP, P.A.
2002 THOMASVILLE ROAD, SUITE C
TALLAHASSEE, FLORIDA 32308
Engineering Building #7793

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

DRAWING TITLE:
**PHASE 2 - ADD ALT SCOPE
MECHANICAL CONTROLS**

FILE: MO.8

JOB NO.: 226-106

DATE : 10-22-2026

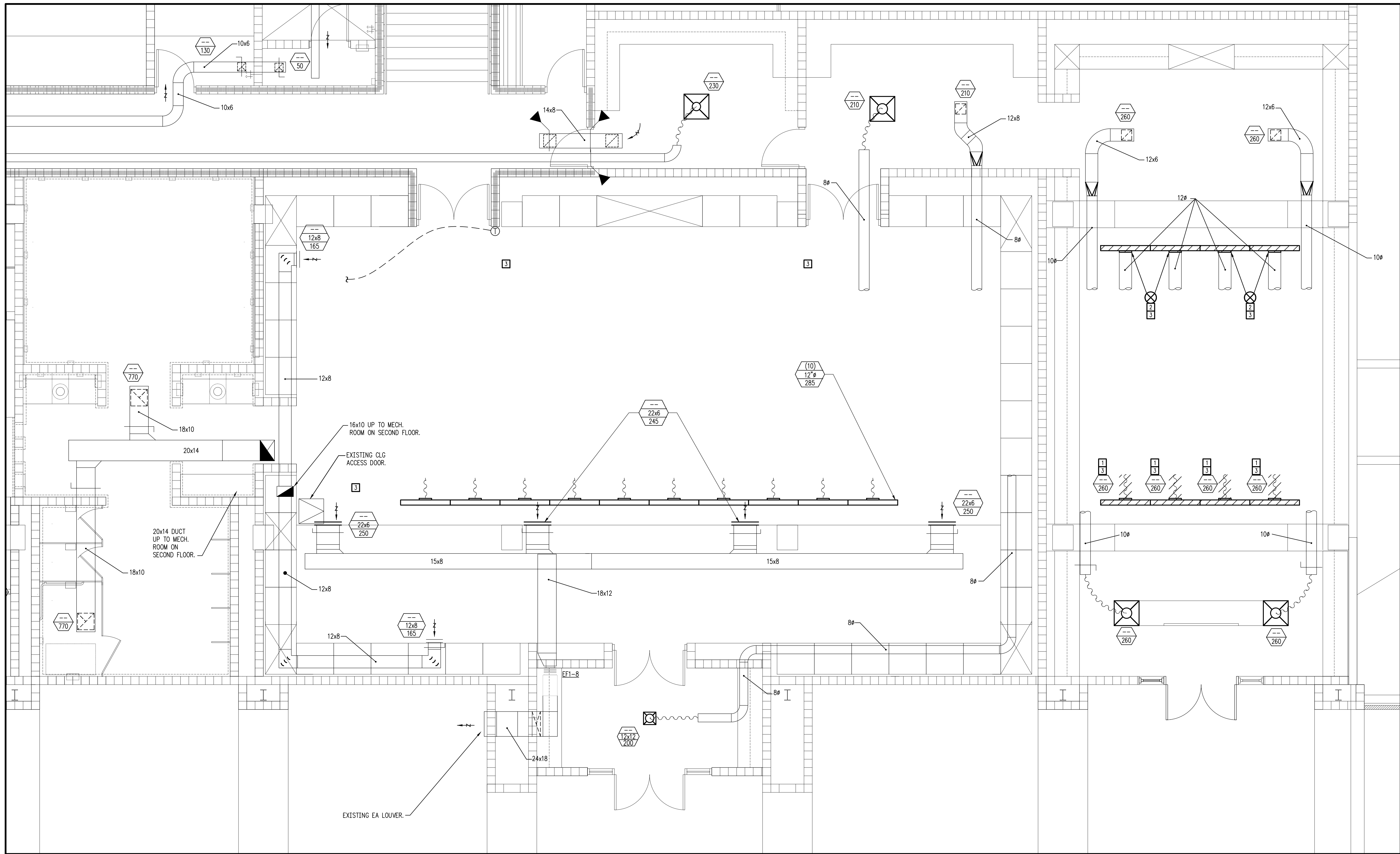
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DRAWN BY: RA

CHECKED BY: CA

SHEET No.:

MO.8



**PHASE 1 - BASE BID SCOPE
FIRST FLOOR - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK**

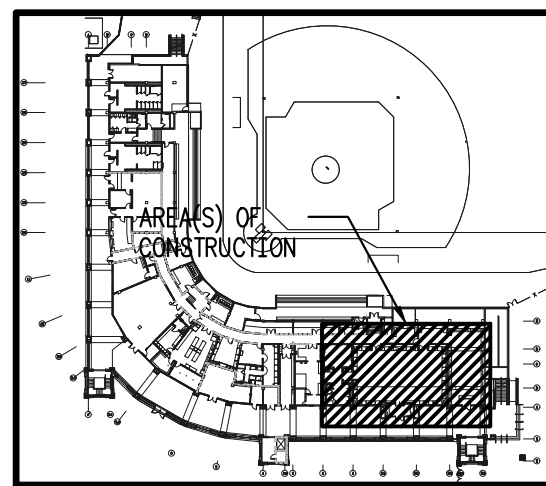
SCALE: 1/4"=1'-0"

DEMO NOTES:

- 1 REMOVE EXISTING LINEAR DIFFUSERS AND FLEX DUCT.
- 2 REMOVE EXISTING LINEAR RETURN GRILLES. DISCONNECT FROM EXISTING 12" DUCTS; DUCTS TO REMAIN FOR REUSE.
- 3 REMOVE AND REINSTALL EXISTING GYP BOARD CEILINGS AS REQUIRED FOR NEW WORK. PATCH, FINISH, PRIME, AND PAINT CEILINGS TO MATCH EXISTING.

GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

SEAL



DATE

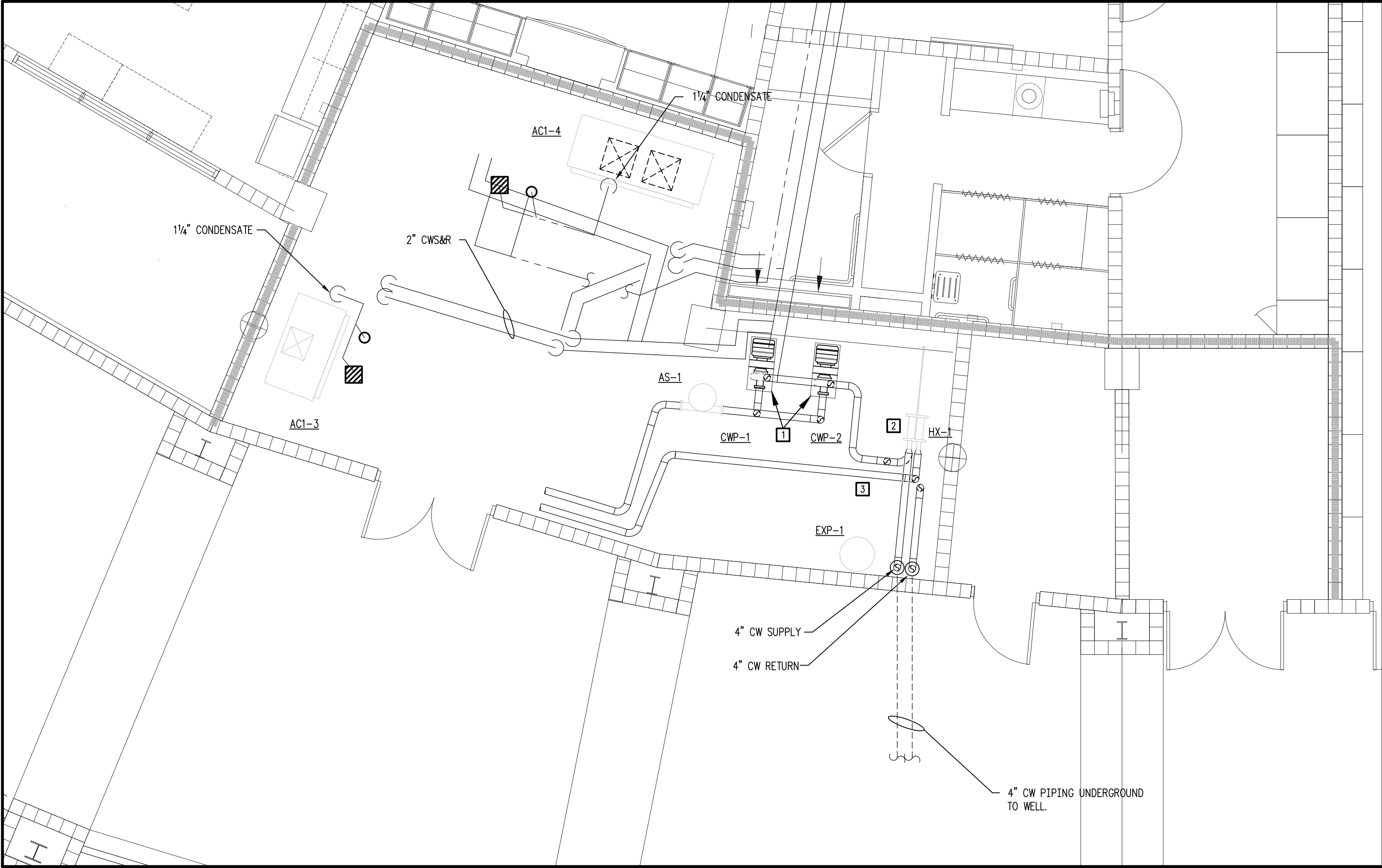
REV# DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**PHASE 1 - BASE BID SCOPE
FIRST FLOOR PLAN
EXISTING CONDITIONS / DEMO
HVAC DUCTWORK**

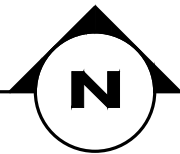
FILE: M1.1
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
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CHECKED BY: CA
SHEET No.:

M1.1



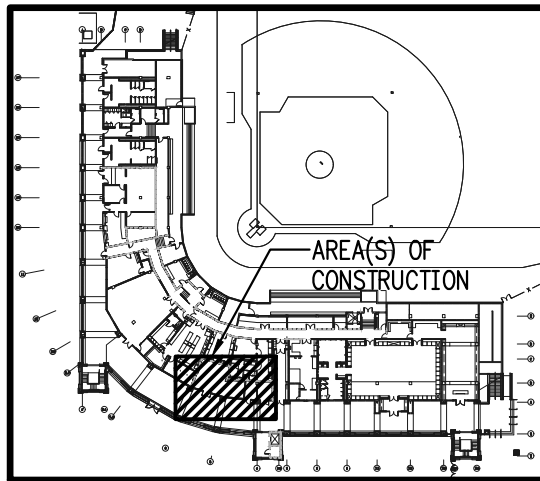
**PHASE 1 - BASE BID SCOPE
FIRST FLOOR - EXISTING CONDITIONS/DEMO - HVAC PIPING**

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



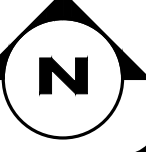
DEMO NOTES:

- 1 PROVIDE PRE-CONSTRUCTION T&B FOR EXISTING CW PUMPS.
- 2 PROVIDE PRE-CONSTRUCTION T&B FOR EXISTING HEAT EXCHANGER.
- 3 PROVIDE PRE-CONSTRUCTION T&B FOR EXISTING 3-WAY BYPASS VALVE.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL



DATE

REV# DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

DRAWING TITLE:

**PHASE 1 - BASE BID SCOPE
FIRST FLOOR PLAN
EXISTING CONDITIONS / DEMO
HVAC PIPING**

FILE: M2.1

JOB NO.: 226-106

DATE : 10-22-2026

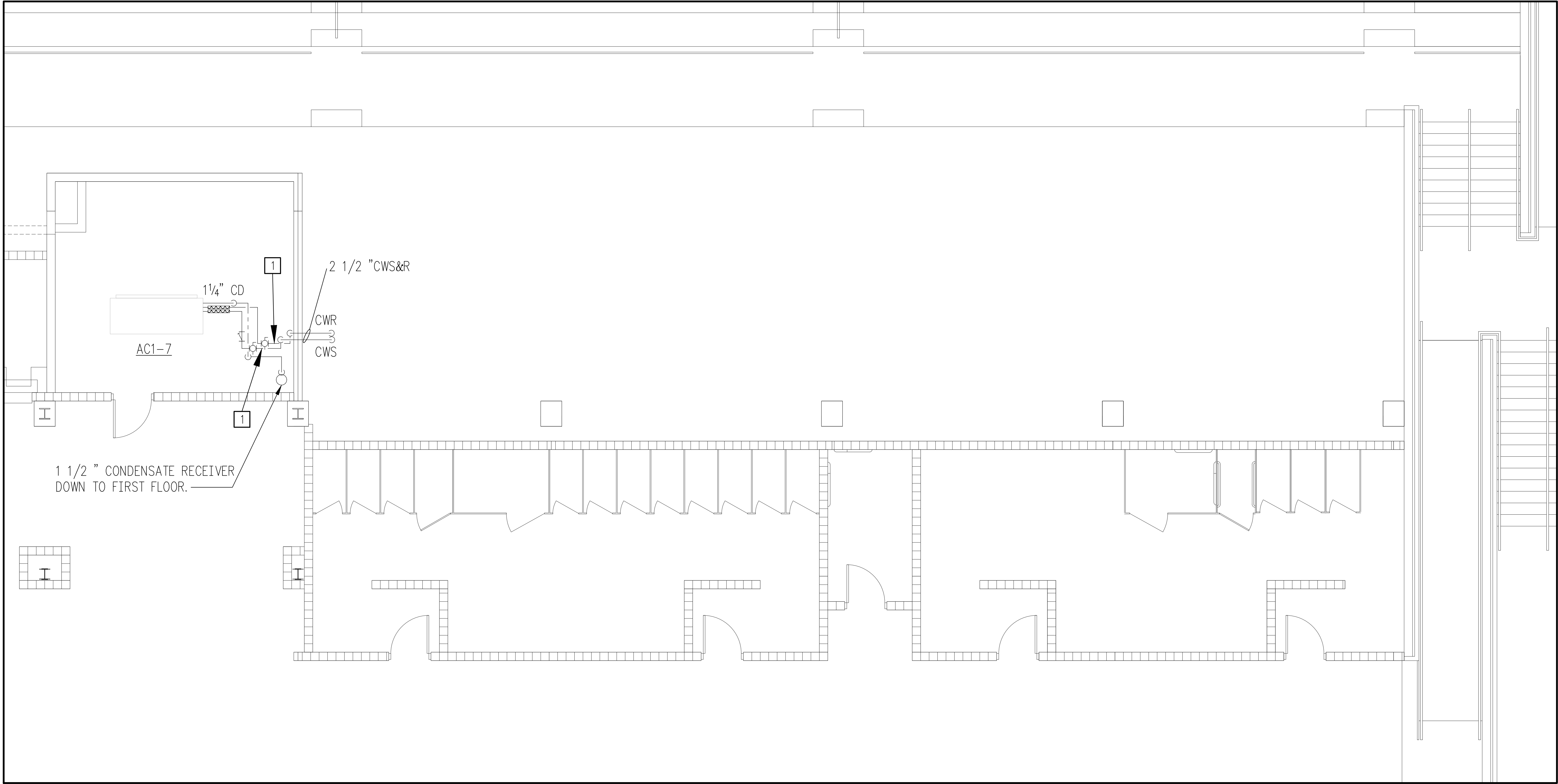
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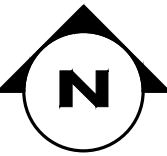
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SHEET No.:

M2.1

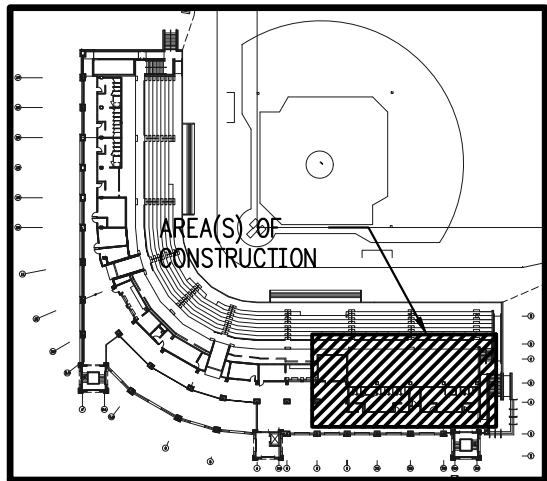


PHASE 1 - BASE BID SCOPE
SECOND FLOOR - EXISTING CONDITIONS/DEMO - HVAC PIPING
SCALE: 1/8"=1'-0"



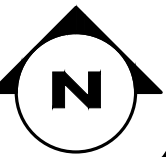
DEMO NOTES:

- 1 REMOVE EXISTING PIPE INSULATION FOR INSTALLATION OF NEW TEES.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL



DATE

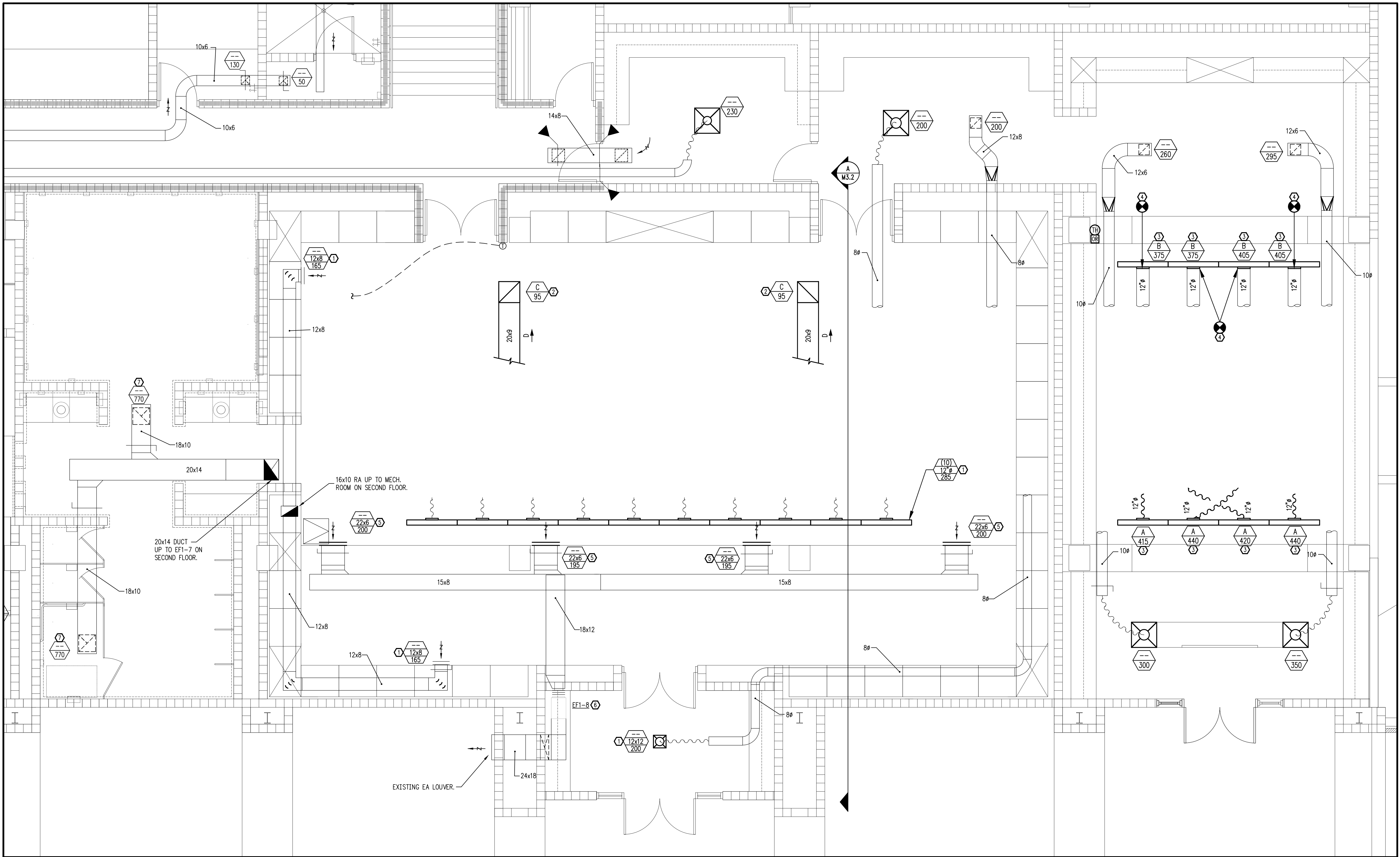
REV# DESCRIPTION

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:
PHASE 1 - BASE BID SCOPE
SECOND FLOOR
EXISTING CONDITIONS / DEMO
HVAC PIPING

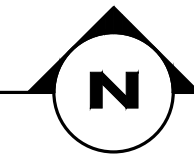
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JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M2.2



PHASE 1 - BASE BID SCOPE
FIRST FLOOR - NEW WORK - HVAC DUCTWORK

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

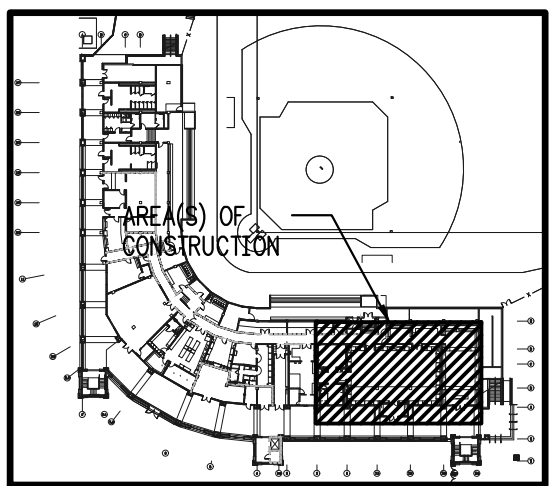


GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

NEW WORK NOTES:

- ① RE-BALANCE EXISTING AIR DEVICE ASSOCIATED WITH EXISTING AC1-7 TO QUANTITY INDICATED.
- ② COORDINATE FINAL LOCATION OF NEW RA GRILLE WITH OWNER, ENGINEER, EXISTING HARD CEILING FRAMING, AND EXISTING LIGHTING.
- ③ INSTALL NEW AIR DEVICE IN EXISTING CEILING. MODIFY, PATCH, FINISH, PRIME AND PAINT CEILING TO MATCH AS REQUIRED. SUPPORT AIR DEVICE FROM ABOVE.
- ④ RECONNECT TO EXISTING DUCT AND RE-INSULATE AS REQUIRED.
- ⑤ RE-BALANCE EXISTING AIR DEVICE ASSOCIATED WITH EF1-8 TO QUANTITY INDICATED.
- ⑥ RE-BALANCE EF1-8 AS SCHEDULED.
- ⑦ RE-BALANCE EXISTING AIR DEVICE ASSOCIATED WITH EF1-7 TO QUANTITY INDICATED.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL

PINNACLE
ENGINEERING
GROUP, P.A.
2002 THOMASVILLE ROAD, SUITE C
TALLAHASSEE, FLORIDA 32308
TALLAHASSEE, FLORIDA 32308
Engineering Business #7793

DATE

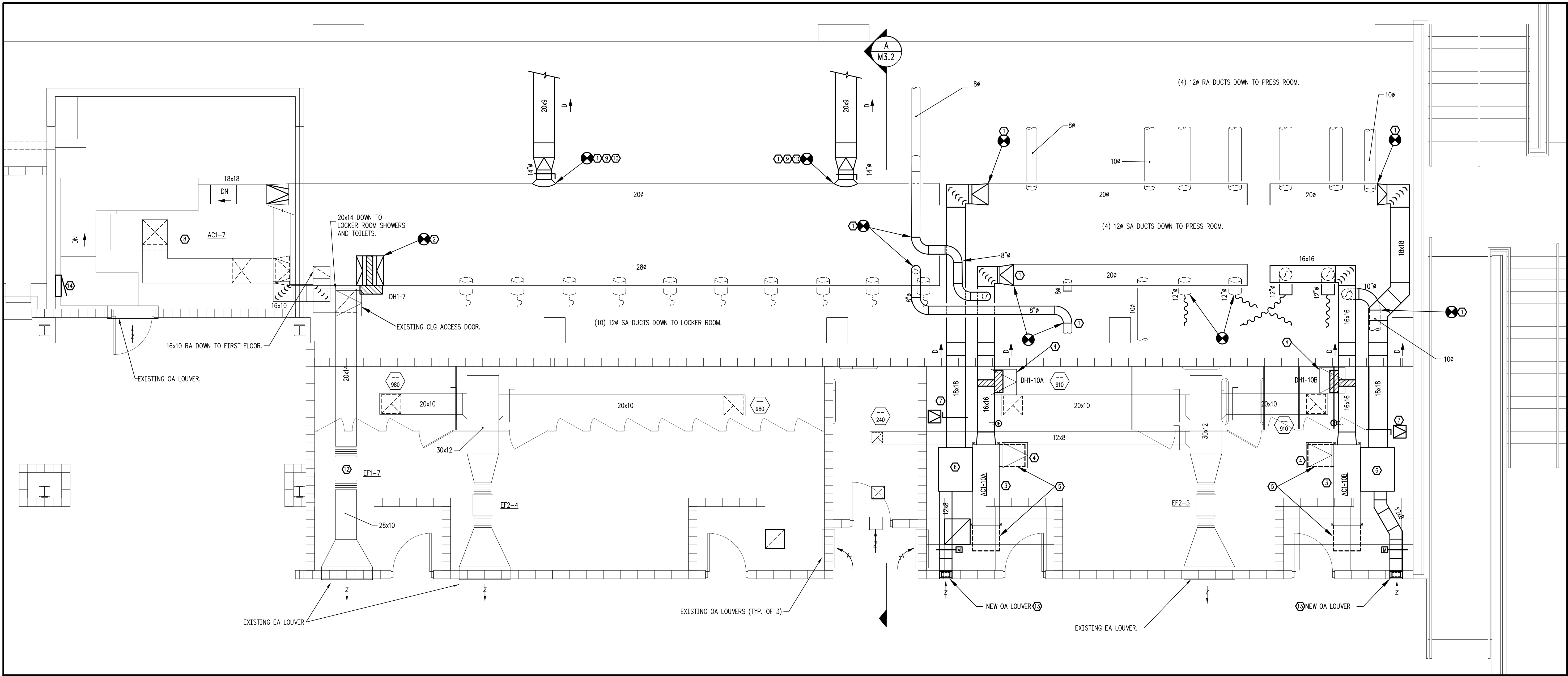
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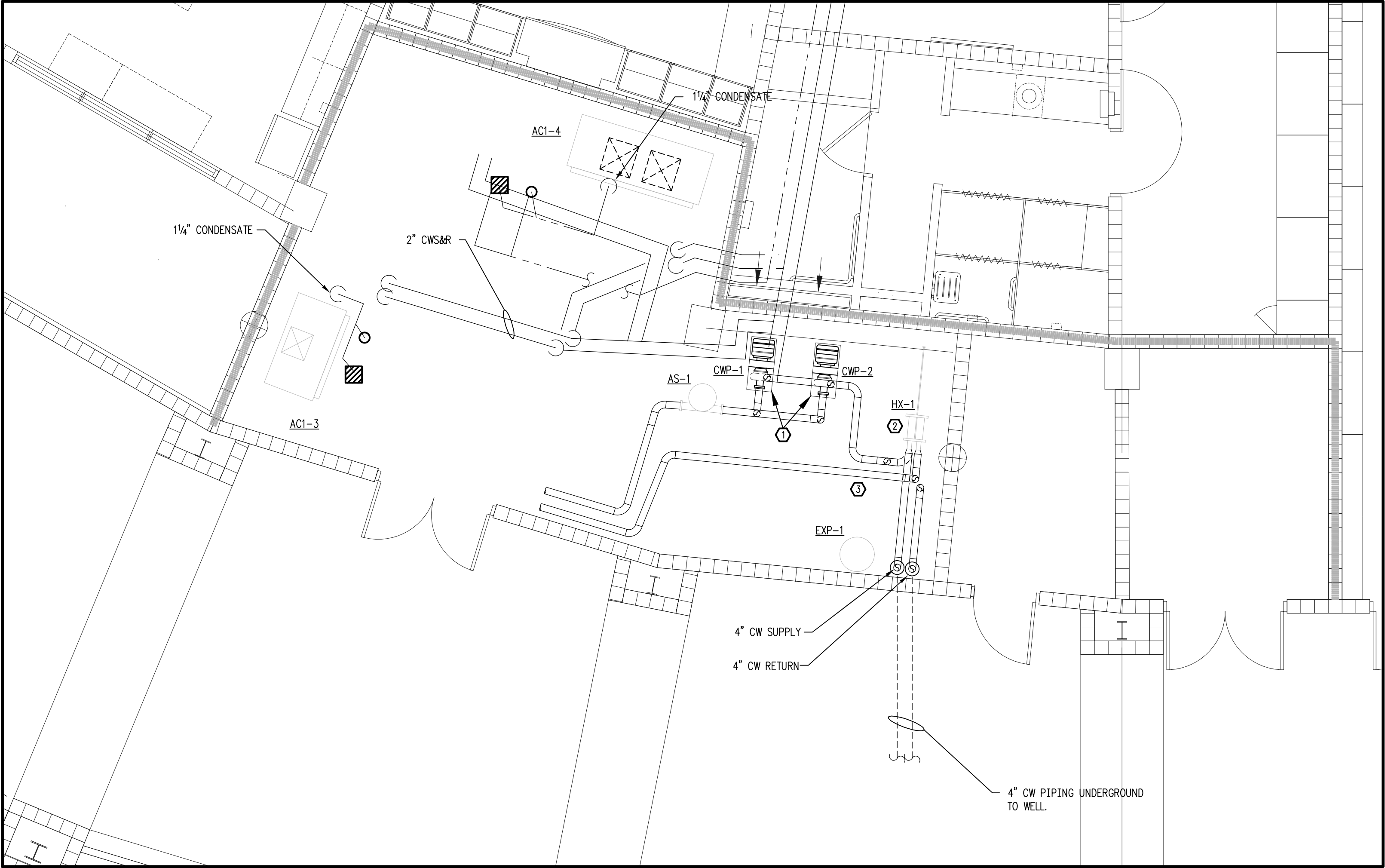
HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:
PHASE 1 - BASE BID SCOPE
FIRST FLOOR PLAN
NEW WORK
HVAC DUCTWORK

FILE: M3.1
JOB NO.: 226-106
DATE: 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M3.1



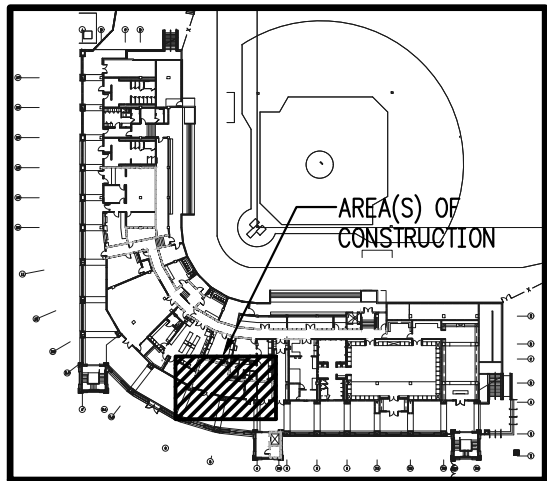


**PHASE 1 - BASE BID SCOPE
FIRST FLOOR - EXISTING CONDITIONS/DEMO - HVAC PIPING**

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

NEW WORK NOTES:

- ① T&B EXISTING PUMPS AS REQUIRED FOR FLOW AT NEW AC1-10A AND AC1-10B UNITS.
- ② T&B EXISTING HEAT EXCHANGER, RECORD FLOWS AND TEMPERATURES.
- ③ T&B EXISTING 3-WAY BYPASS VALVE AS REQUIRED FOR FLOW AT NEW AC1-10A AND AC1-10B UNITS.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

SEAL



DATE

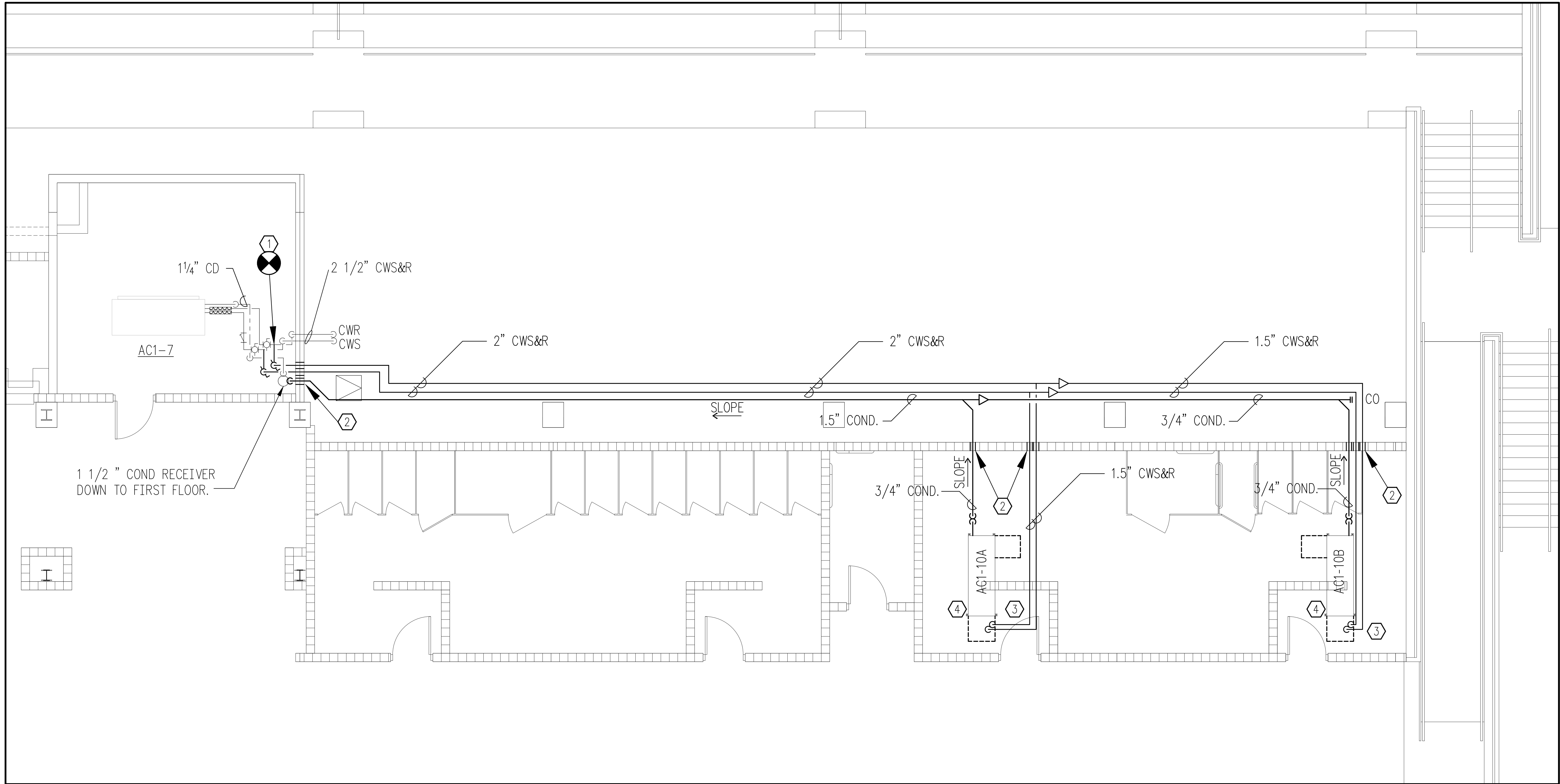
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**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**DRAWING TITLE:
PHASE 1 - BASE BID SCOPE
FIRST FLOOR PLAN
NEW WORK
HVAC PIPING**

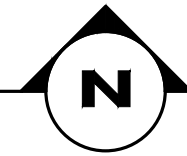
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DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M4.1



PHASE 1 - BASE BID SCOPE
SECOND FLOOR - NEW WORK - HVAC PIPING

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



SPECIAL PIPING NOTE:

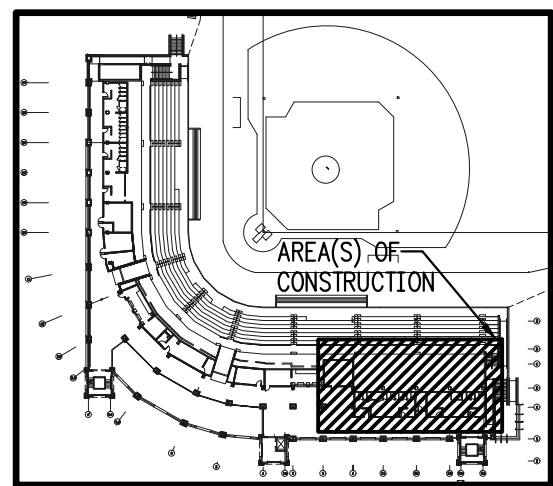
BASIS OF DESIGN IS FOR INSTALLATION OF WELDED (SCH 40 STEEL) OR SOLDERED (TYPE L COPPER) PIPING (REFER TO SPECIFICATIONS). AT THE CONTRACTOR'S DISCRETION, PRESS-TYPE FITTINGS MAY BE UTILIZED FOR PIPES 2.5" DIA AND SMALLER. FITTINGS SHALL BE VEGA OR PRE-APPROVED EQUAL.

GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

NEW WORK NOTES:

- ① NEW 2.5" TEES IN EXISTING CWS AND CWR PIPES. REDUCE TO 2" WITH BALL VALVES IN RISE. REINSULATE NEW JOINT. ROUTE UP, AS HIGH AS POSSIBLE, THROUGH WALL. COORDINATE FINAL LOCATION WITH EXISTING AND NEW DUCTWORK, EXISTING CEILING ACCESS DOOR, NEW DUCT HEATER, ETC. DO NOT BLOCK ACCESS. DO NOT ROUTE DIRECTLY OVER HEATER. PROVIDE AIR VALVES AT HIGH POINTS.
- ② SLEEVE AND SEAL PIPE PENETRATION(S) THROUGH WALL.
- ③ LOCATE CONDENSER WATER VALVE TRAIN ABOVE LAY-IN CEILING. COORDINATE WITH NEW AND EXISTING DUCTS. DO NOT BLOCK SERVICE ACCESS.
- ④ REFER TO DETAILS.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL



DATE

REV# DESCRIPTION

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:
PHASE 1 - BASE BID SCOPE
SECOND FLOOR
NEW WORK
HVAC PIPING

FILE: M4.2
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

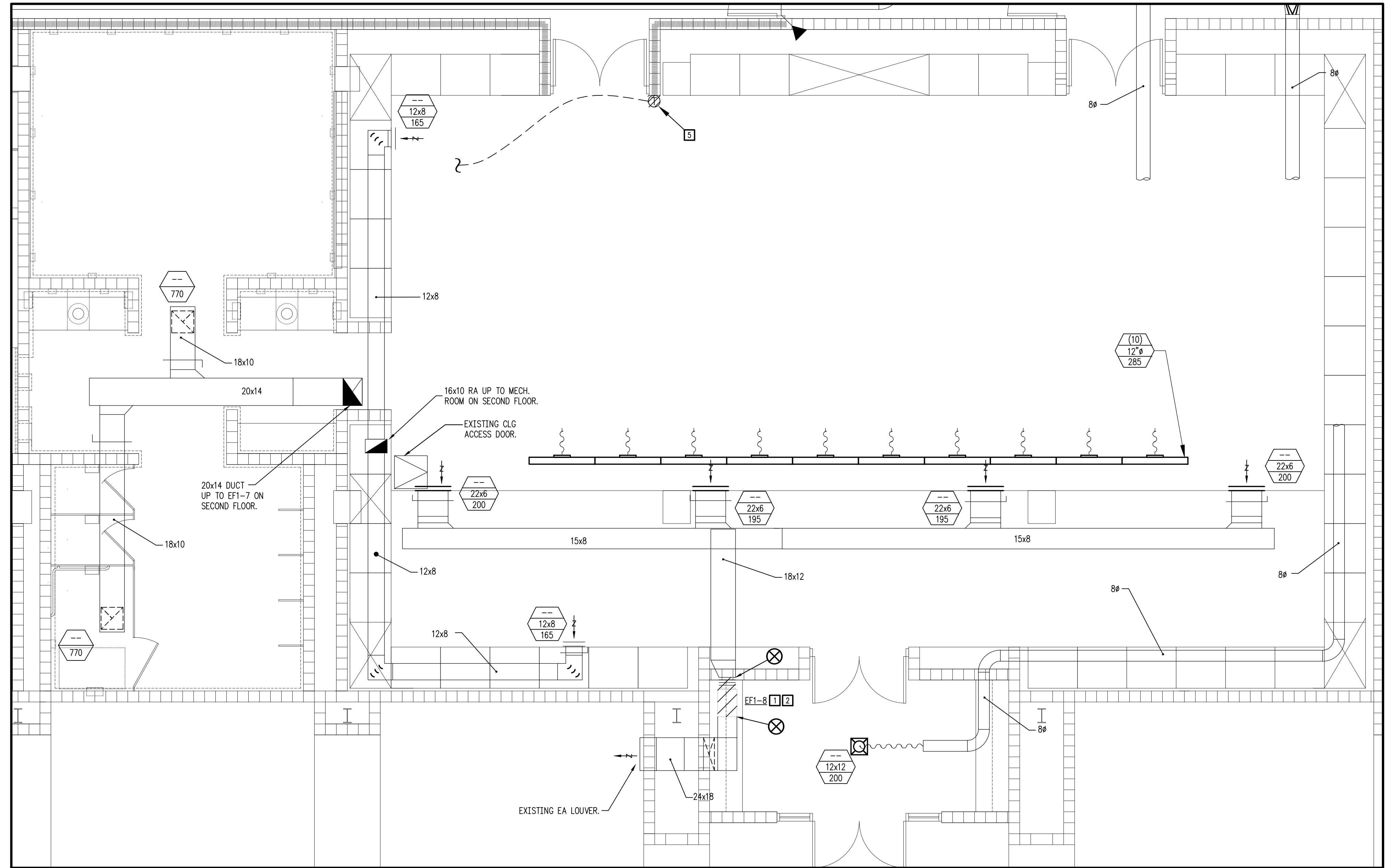
M4.2

GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

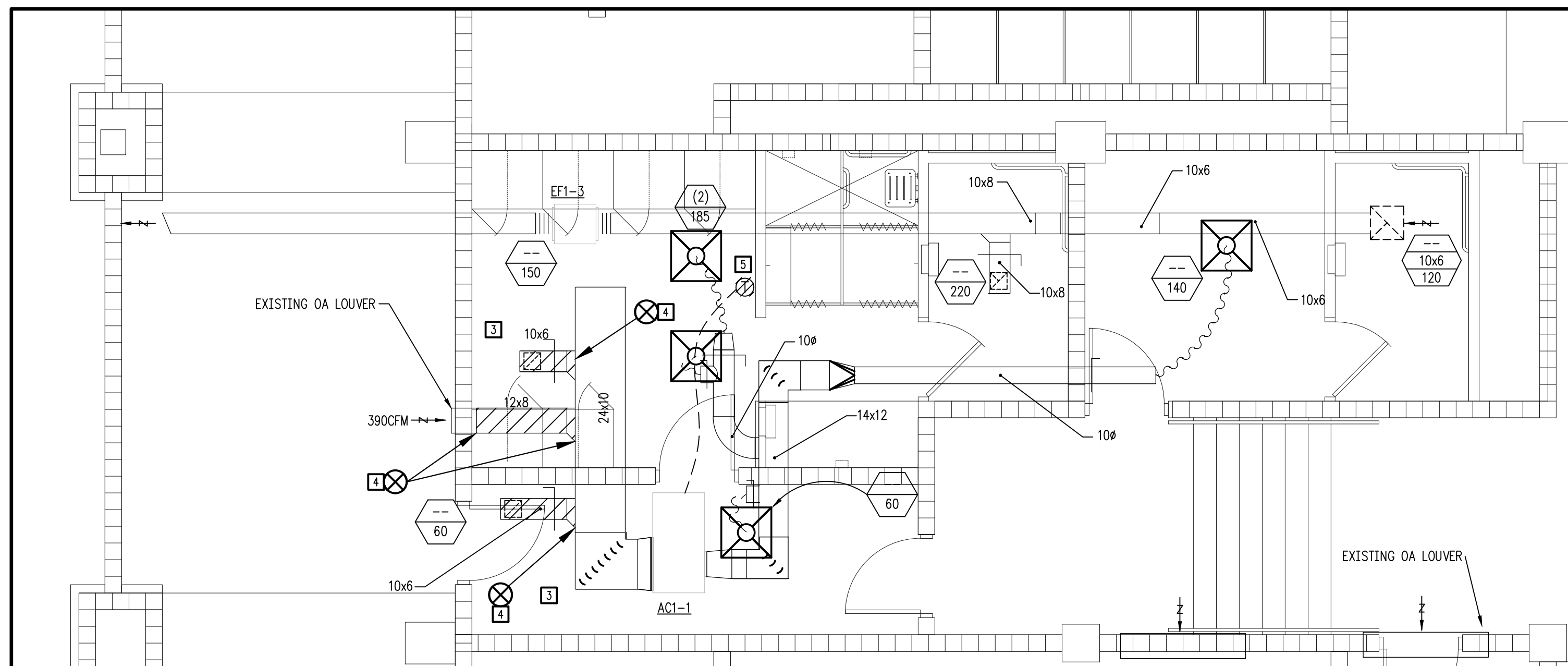
DEMO NOTES:

- 1 REMOVE EXISTING EF1-8.
- 2 REMOVE AND REINSTALL EXISTING GYP BOARD CEILINGS AS REQUIRED FOR NEW WORK. PATCH, FINISH, PRIME, AND PAINT CEILINGS TO MATCH EXISTING.
- 3 REMOVE AND REINSTALL EXISTING CEILING TILES AND GRID TO MATCH EXISTING AS REQUIRED FOR NEW WORK.
- 4 REMOVE EXISTING DUCT AND AIR DEVICES AS INDICATED. PATCH, SEAL, AND RE-INSULATE EXISTING TO REMAIN DUCT.
- 5 REMOVE EXISTING WALL MOUNTED TEMPERATURE SENSOR. PATCH, FINISH, PRIME AND PAINT WALL TO MATCH AS REQUIRED FOR NEW SENSOR INSTALLATION. REMOVE AND REPLACE SENSOR WIRING AS REQUIRED.



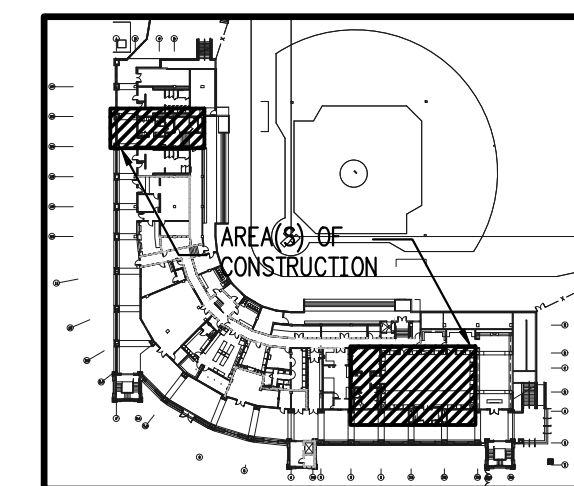
**PHASE 2 - BASE BID SCOPE
FIRST FLOOR LOCKER ROOM - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK**

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



**PHASE 2 - BASE BID SCOPE
FIRST FLOOR UMPIRE LOCKERS - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK**

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



FIRST FLOOR - KEY PLAN

NOT TO SCALE

SEAL

**PINNACLE
ENGINEERING
GROUP, P.A.**
2002 THOMASVILLE ROAD, SUITE C
TALLAHASSEE, FLORIDA 32308
Professional Engineer
Engineering Business #9793

DATE

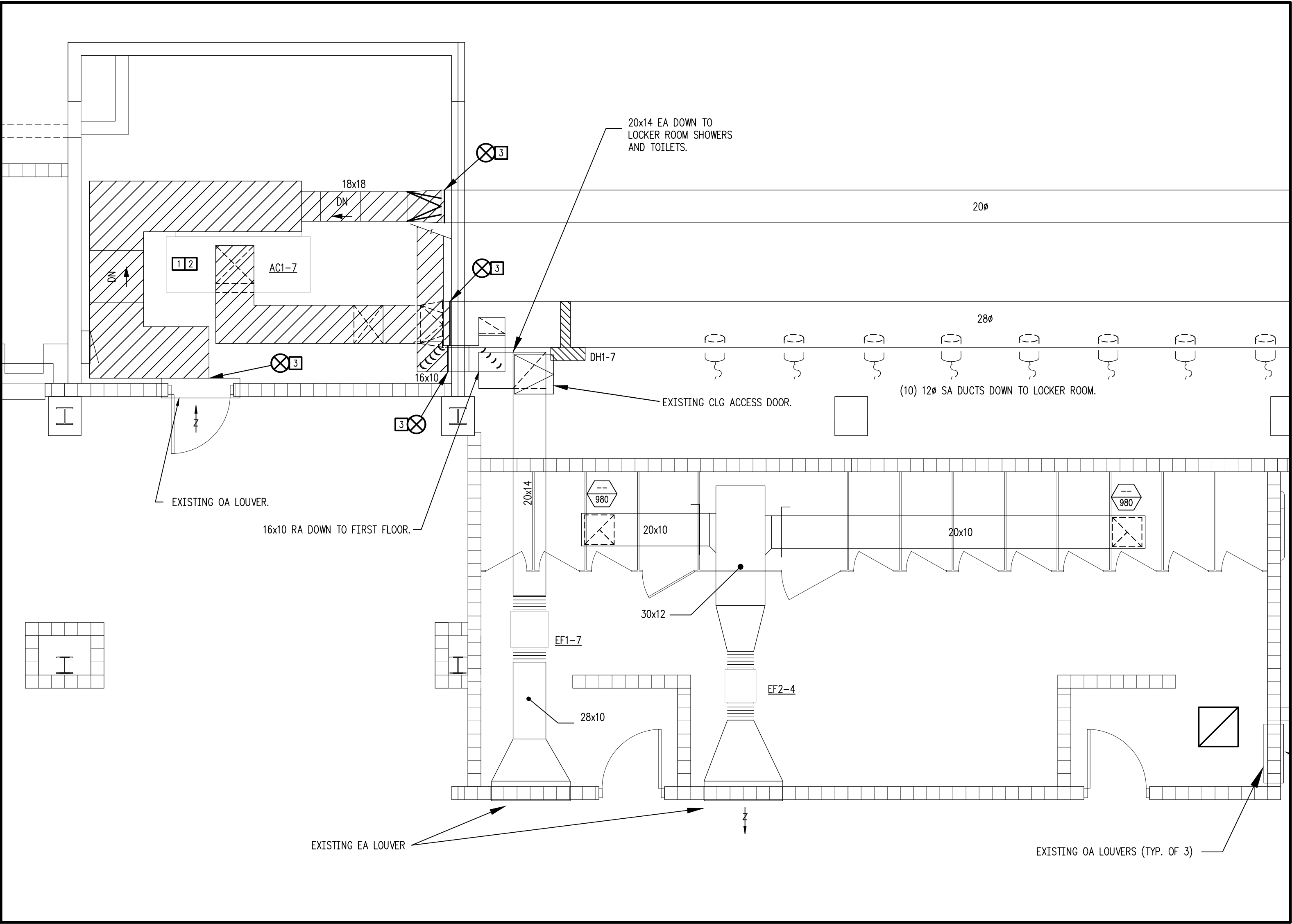
REV # DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**DRAWING TITLE:
PHASE 2 - BASE BID SCOPE
FIRST FLOOR PLAN
EXISTING CONDITIONS / DEMO
HVAC DUCTWORK**

FILE: M1.1A
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M1.1A

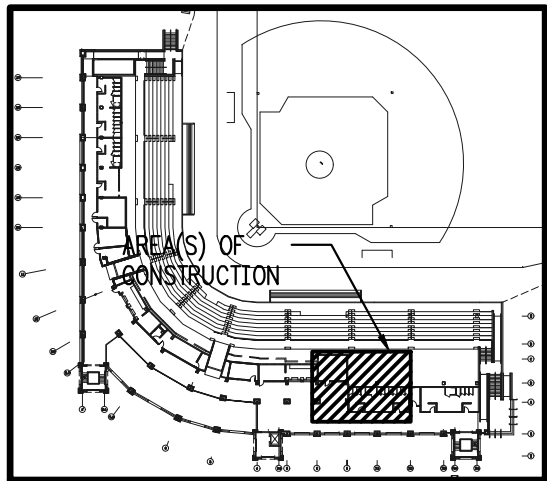


**PHASE 2 - BASE BID SCOPE
SECOND FLOOR - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK**

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

DEMO NOTES:

- 1 PROVIDE REFRIGERANT CONTAINERS, RECOVER REFRIGERANT FROM AC1-7 AND TURN OVER TO OWNER.
- 2 REMOVE EXISTING AC1-7 AND DISPOSE OFF-SITE IN LEGAL MANNER.
- 3 REMOVE EXISTING INSULATION AND DISCONNECT EXISTING DUCT AS INDICATED. RECONNECT UNDER NEW WORK SCOPE.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

SEAL



DATE

REV# DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**DRAWING TITLE:
PHASE 2 - BASE BID SCOPE
SECOND FLOOR
EXISTING CONDITIONS / DEMO
HVAC DUCTWORK**

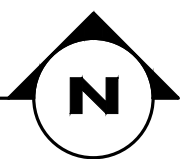
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JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
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SHEET No.:

M1.2A



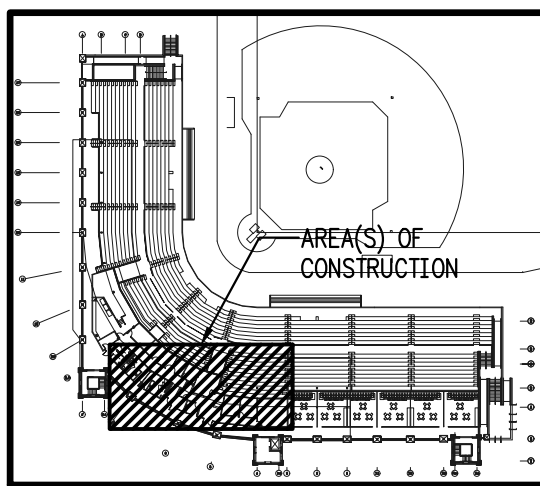
**PHASE 2 - BASE BID SCOPE
THIRD FLOOR COACH'S OFFICE - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK**

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



GENERAL NOTES:

1. EXISTING AC3-6 AND EF3-1 AIR FLOW QUANTITIES TAKEN FROM RECENT T&B REPORT.

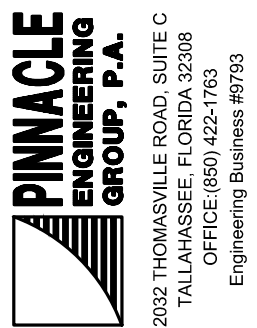


FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL



DATE

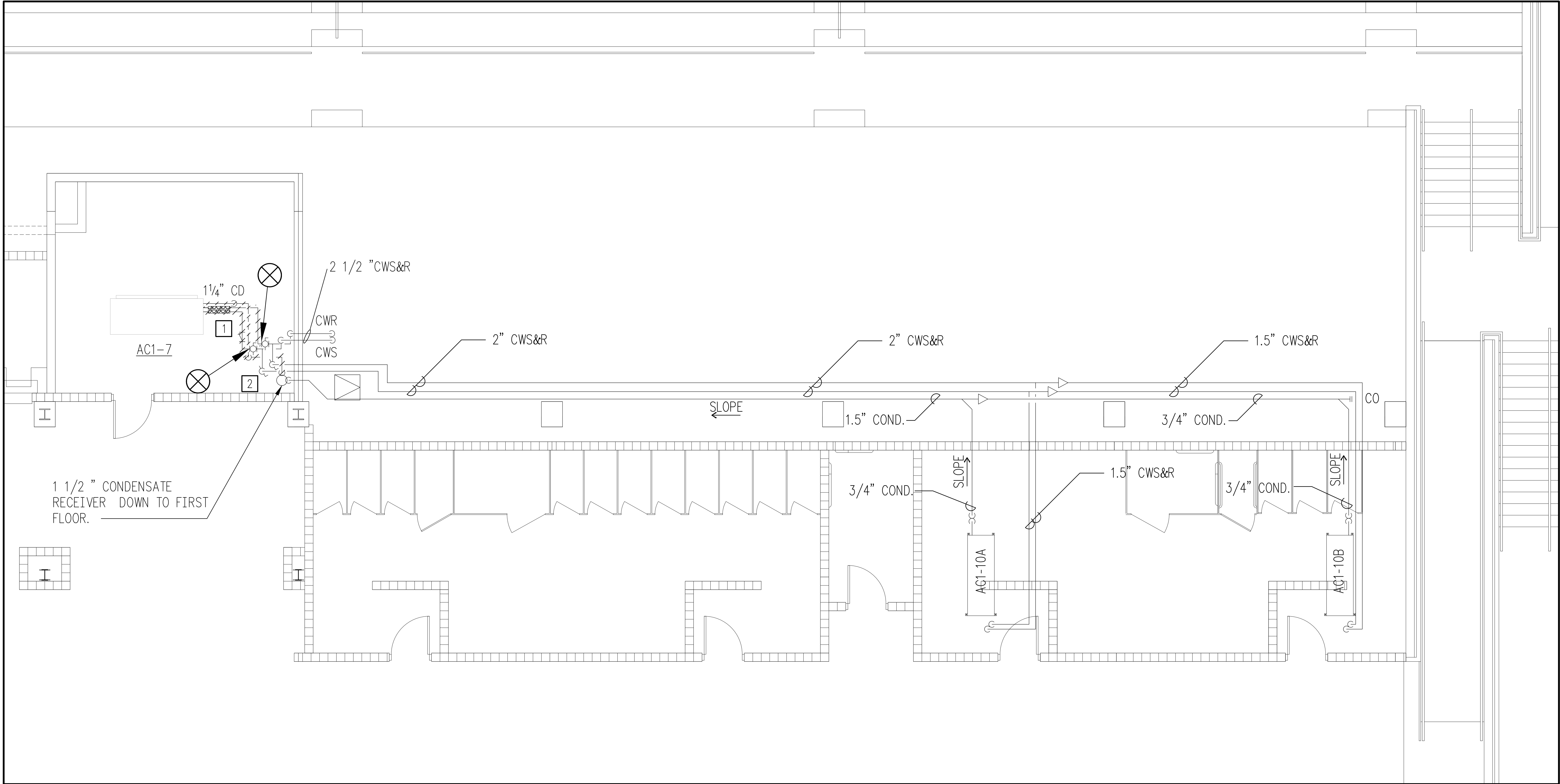
REV# DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**DRAWING TITLE:
PHASE 2
THIRD FLOOR
EXISTING CONDITIONS / DEMO
HVAC DUCTWORK**

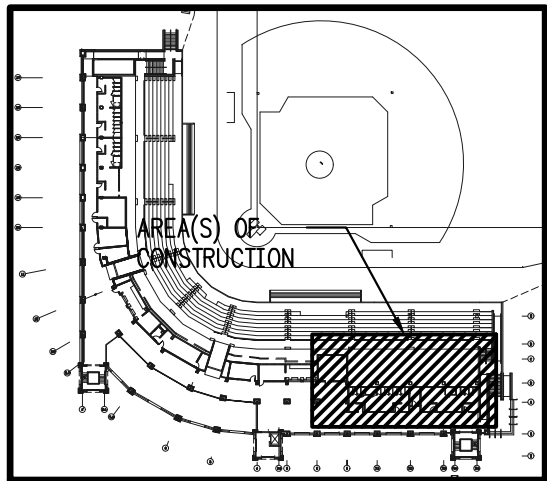
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DATE : 10-22-2026
PLOT SIZE: 24x36
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CHECKED BY: CA
SHEET No.:

M1.3A



PHASE 2 - BASE BID SCOPE
SECOND FLOOR - EXISTING CONDITIONS/DEMO - HVAC PIPING
SCALE: 1/4"=1'-0"

- DEMO NOTES:**
- 1 REMOVE EXISTING PIPING AND VALVE TRAIN TO EXISTING BALL VALVES.
 - 2 REMOVE EXISTING CONDENSATE PIPING TO AC1-7.



FIRST FLOOR - KEY PLAN
NOT TO SCALE

SEAL	
PINNACLE ENGINEERING GROUP, P.A. 2002 THOMASVILLE ROAD, SUITE C TALLAHASSEE, FLORIDA 32308 T: 904.241.1111 F: 904.241.1112 Engineering Business #9793	
DATE	
REV#	DESCRIPTION

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

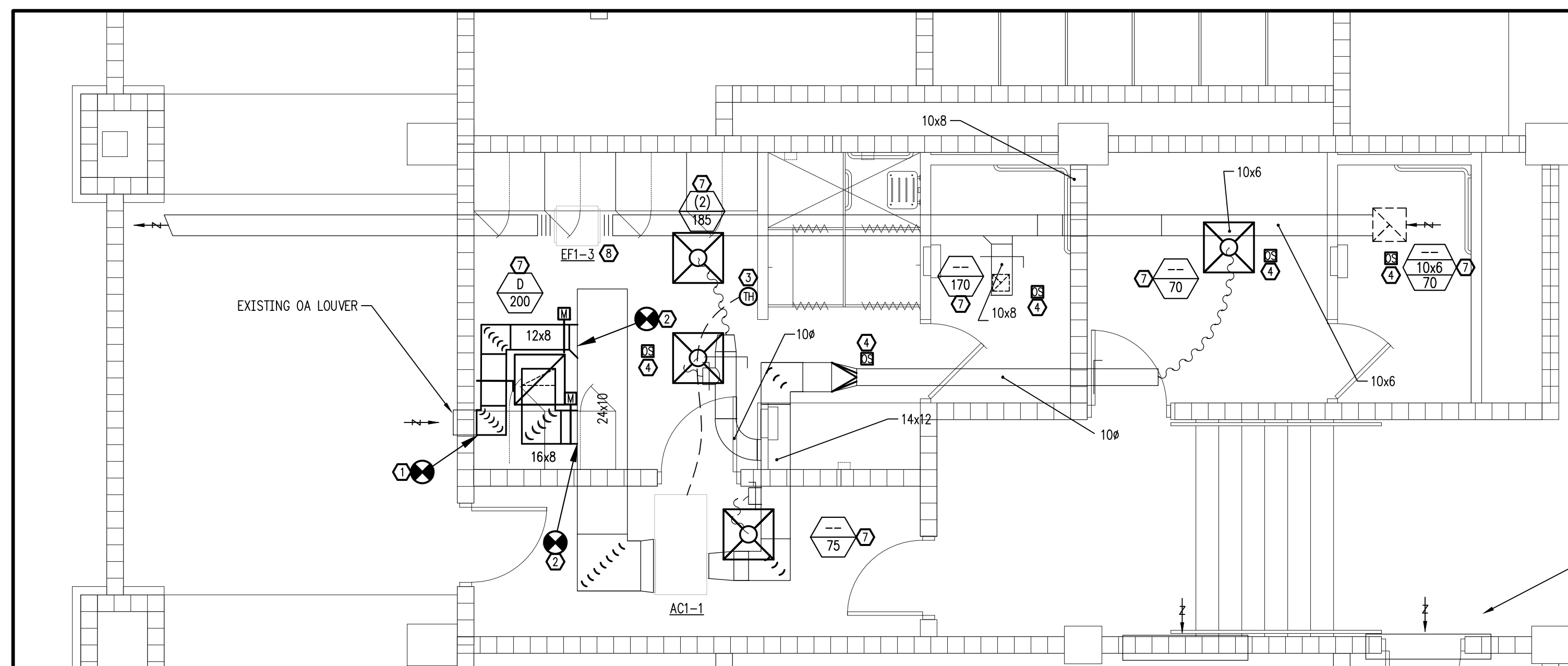
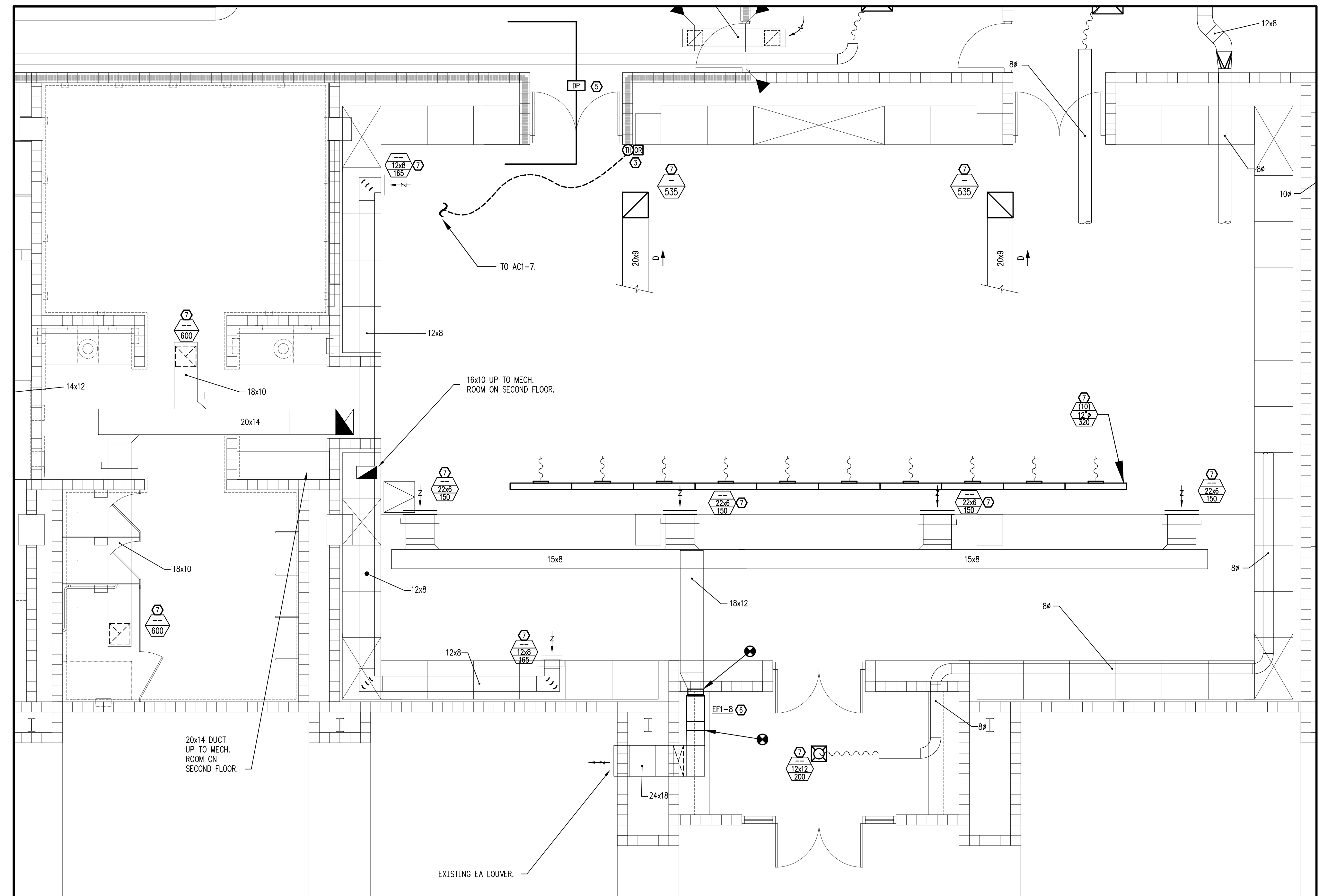
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FILE:	M2.2A
JOB NO.:	226-106
DATE :	10-22-2026
PLOT SIZE:	24x36
DRAWN BY:	RA
CHECKED BY:	CA
SHEET No.:	M2.2A

GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

NEW WORK NOTES:

- ① CONNECT TO EXISTING LOUVER AS REQUIRED. INSULATE ALL OA DUCT AND PLENUM TO WALL.
- ② CONNECT TO EXISTING RA DUCT. RE-INSULATE AS REQUIRED. LOCATE MOTORIZED CONTROL DAMPERS ACCESSIBLE.
- ③ NEW WALL MOUNTED DEVICE(S). REFER TO CONTROLS DRAWINGS.
- ④ NEW CEILING MOUNTED OCCUPANCY SENSOR. FOR AREAS WITH LAY-IN CEILING, CENTER SENSOR IN TILE. FOR AREAS WITH HARD CEILINGS, COORDINATE FINAL LOCATION WITH EXISTING CONDITIONS.
- ⑤ NEW DIFFERENTIAL PRESSURE SENSOR ABOVE CEILING. PROVIDE NEW CEILING ACCESS DOOR (MIN. 12x12) IN EXISTING CEILING AS REQUIRED. PRIME, AND PAINT ACCESS DOOR TO MATCH EXISTING CEILING. SENSOR SHALL SAMPLE DIFFERENTIAL PRESSURE BETWEEN THE LOCKER ROOM OCCUPIED SPACE AND THE CORRIDOR BELOW THE CEILING.
- ⑥ NEW EXHAUST FAN ABOVE CEILING. TRANSITION TO EXISTING DUCTS AS REQUIRED. PROVIDE FLEXIBLE CONNECTIONS. REFER TO DETAIL T&B AS SCHEDULED.
- ⑦ T&B AIR DEVICE TO CONDITIONS NOTED.
- ⑧ T&B EXISTING EF1-3 TO SCHEDULED CONDITIONS.

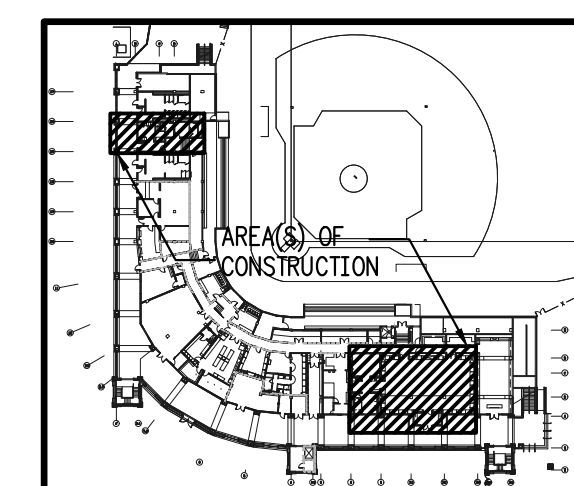


**PHASE 2 - BASE BID SCOPE
FIRST FLOOR UMPIRE LOCKERS - NEW WORK - HVAC DUCTWORK**

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

**PHASE 2 - BASE BID SCOPE
FIRST FLOOR - NEW WORK - HVAC DUCTWORK**

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



FIRST FLOOR - KEY PLAN

NOT TO SCALE

SEAL

**PINNACLE
ENGINEERING
GROUP, P.A.**
2032 THOMASVILLE ROAD, SUITE C
TALLAHASSEE, FLORIDA 32308
Professional Engineer
Engineering Business #9793

DATE

REV # DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

DRAWING TITLE:

**PHASE 2 - BASE BID SCOPE
FIRST FLOOR PLAN
NEW WORK
HVAC DUCTWORK**

FILE: M3.1A

JOB NO.: 226-106

DATE : 10-22-2026

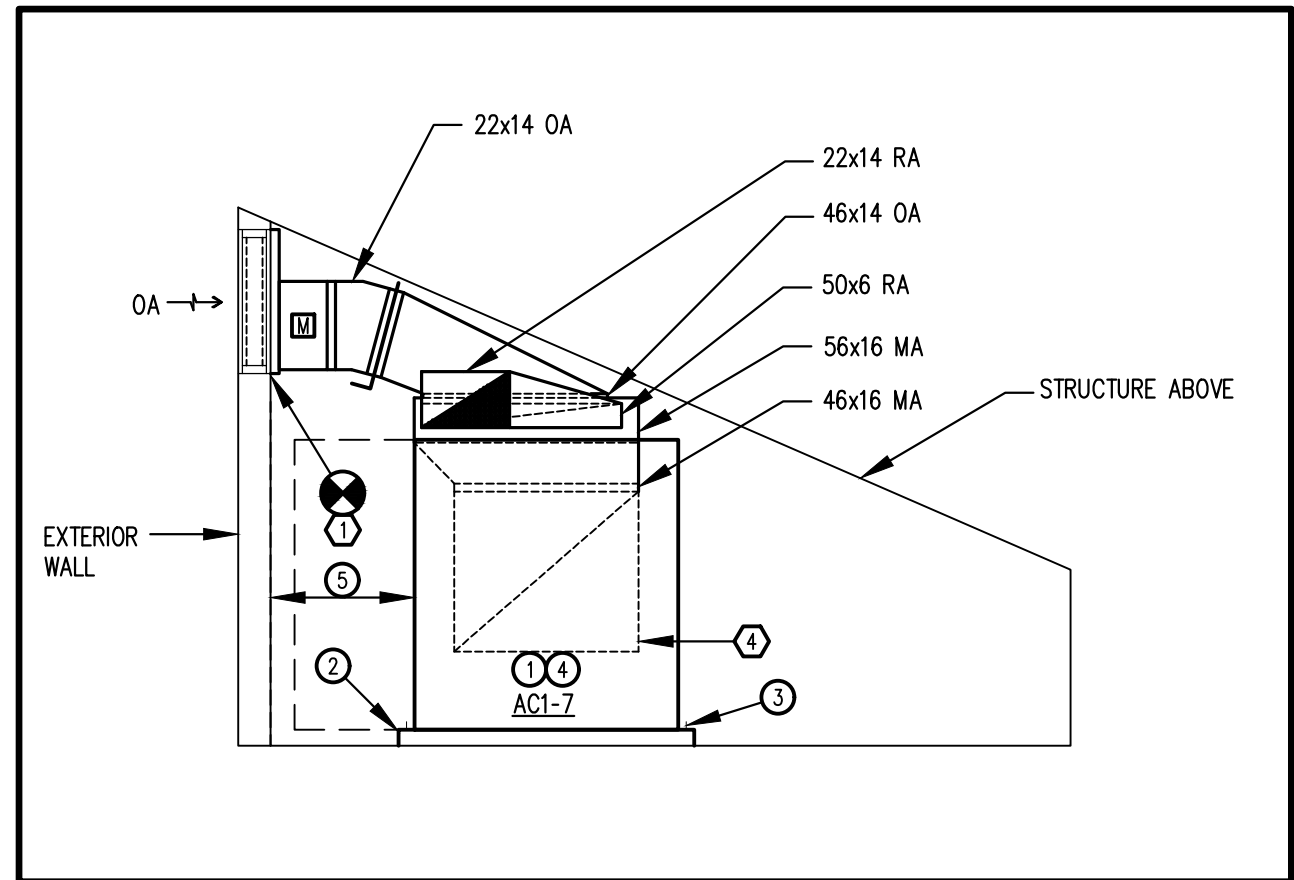
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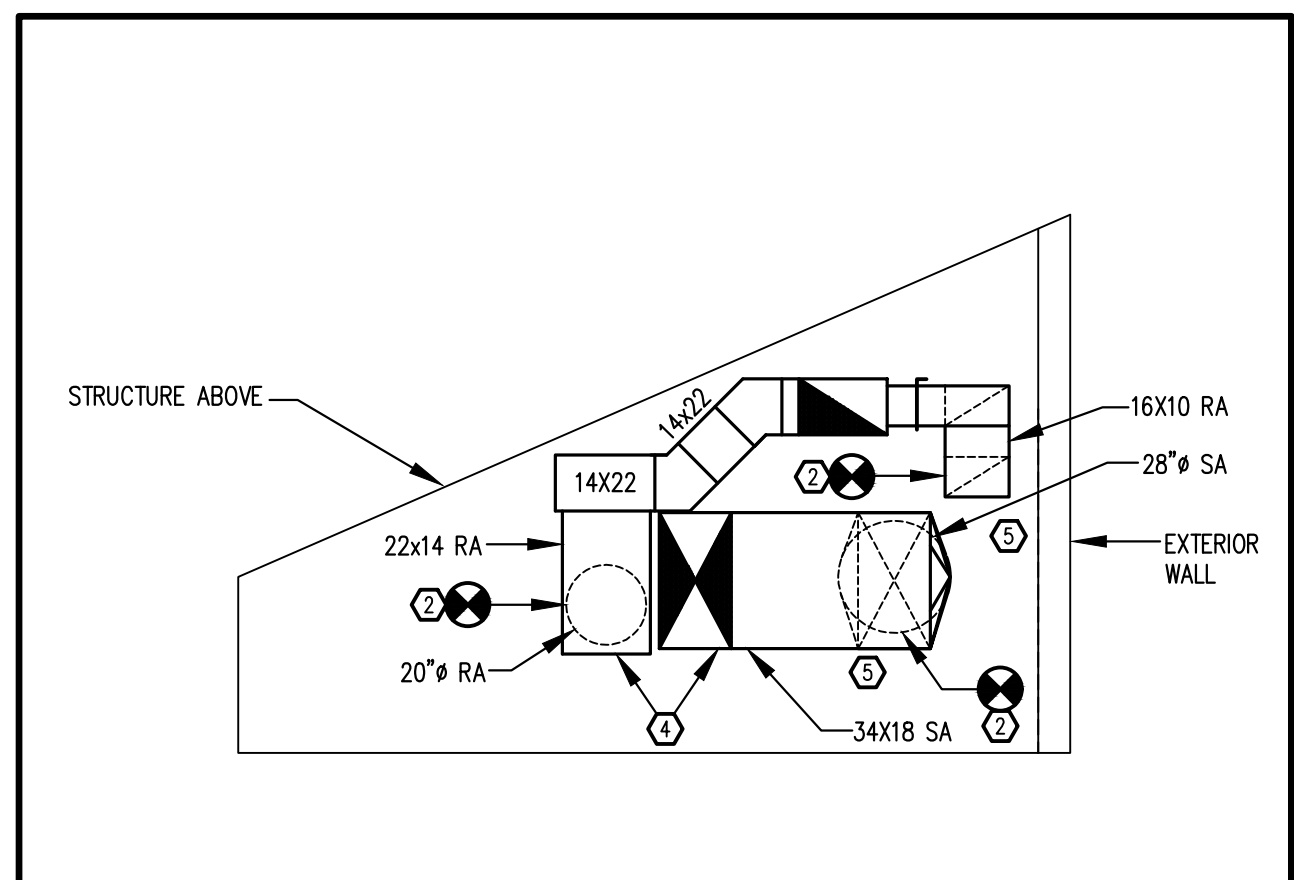
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M3.1A



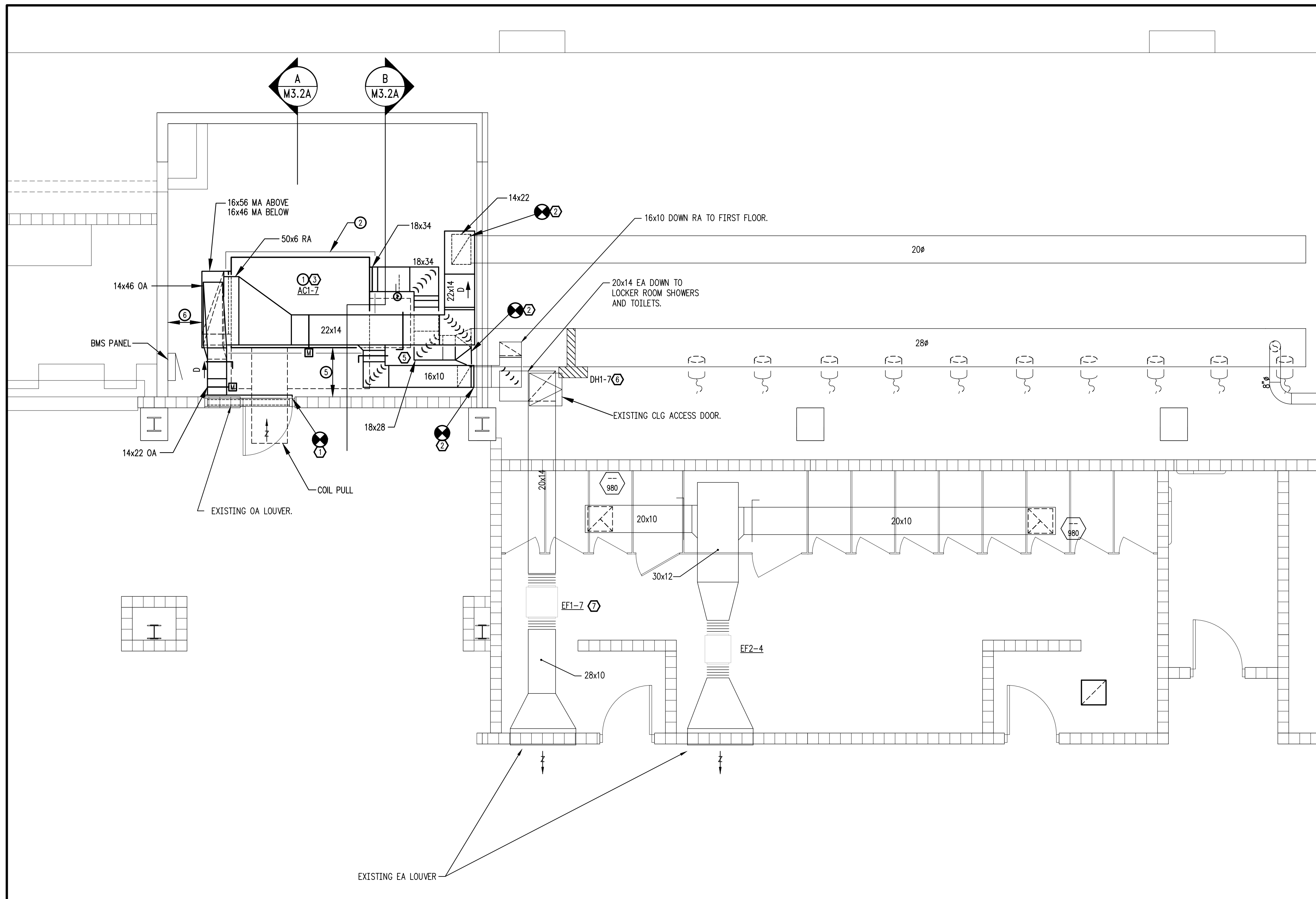
ELEVATION A - AC1-7

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



ELEVATION B - AC1-7

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



**PHASE 2 - BASE BID SCOPE
SECOND FLOOR - NEW WORK - HVAC DUCTWORK**

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

AC1-7 NOTES

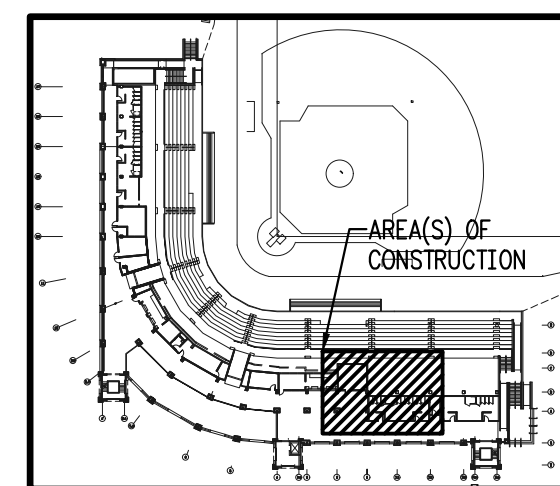
- WSHP UNIT SHALL BE SHIPPED IN MODULAR SECTIONS, TO FIT THROUGH EXISTING DOOR OPENING, AND BE ASSEMBLED INSIDE THE MECHANICAL ROOM. ACCESS TO ALL COMPONENTS SHALL BE ON ONE SIDE OF THE UNIT AS SHOWN FOR FIT AND MAINTENANCE ACCESS. COIL PULL SHALL BE THROUGH EXISTING DOOR AS SHOWN.
- PROVIDE NEW REINFORCED CONCRETE HOUSEKEEPING PAD AND UNIT BASE RAILS HIGH ENOUGH FOR FULL CONDENSATE TRAP AND SLOPE TO DRAIN. VERIFY OVERALL UNIT HEIGHT AND FIT WITH EXISTING AND NEW WORK CONDITIONS PRIOR TO ORDERING. CHAMFER HOUSEKEEPING PAD EDGES AND PAINT PAD BRIGHT YELLOW. SET UNIT ON VIBRATION ISOLATION PADS, SPACE PADS PER MANUFACTURER'S RECOMMENDATION.
- PROVIDE GALVANIZED STEEL SHEET METAL SECONDARY DRAIN PAN. ENTIRE UNIT SHALL BE PLACED INSIDE SECONDARY PAN.
- INSTALL UNIT, PIPES, VALVES, DUCTS, CONDUIT, CONTROLS ENCLOSURES, CONTROL DEVICES, ETC. SUCH THAT FULL MAINTENANCE ACCESS TO ALL EQUIPMENT AND UNIT ACCESS DOOR SWINGS ARE MAINTAINED.
- INSTALL AC1-7 WITH MINIMUM 36" CLEAR FROM THE INSIDE OF THE EXTERIOR WALL TO THE EXTERIOR OF THE UNIT.
- INSTALL AC1-7 WITH MINIMUM 24" CLEAR FROM THE INSIDE OF THE WALL TO THE EXTERIOR OF THE INSULATED MIXED AIR DUCT.

GENERAL NOTES:

- PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY COVERS OVER OPEN DUCTS.
- PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, DOORS, ETC. AS REQUIRED. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
- COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
- CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.
- CONTRACT WITH LICENSED PLUMBER AND FIRE PROTECTION CONTRACTOR AS REQUIRED FOR WORK IN THOSE TRADES.

NEW WORK NOTES:

- CONNECT EXISTING LOUVER TO NEW OA PLENUM. PLENUM SHALL BE FULL HEIGHT AND WIDTH OF EXISTING LOUVER. DEPTH AS REQUIRED FOR FIT.
- TRANSITION AND CONNECT TO EXISTING DUCT AS REQUIRED.
- INCLUDE COST TO REMOVE/RELOCATE/REINSTALL EXISTING FIRE SPRINKLER PIPING AND UPRIGHT SPRINKLER HEADS AS REQUIRED TO INSTALL NEW WORK.
- DUCTS WITHIN 30" OF FLOOR SHALL BE SUPPORTED FROM BELOW.
- COORDINATE CLOSELY WITH EXISTING AND NEW CONDENSER WATER PIPING IN THIS AREA.
- RECONNECT EXISTING DUCT HEATER TO NEW UNIT CONTROLS.
- RE-BALANCE EXISTING EF1-7 TO SCHEDULED CONDITIONS.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

SEAL

**PINNACLE
ENGINEERING
GROUP, P.A.**
2002 THOMASVILLE ROAD, SUITE C
TALLAHASSEE, FLORIDA 32308
T: 904.241.1111
F: 904.241.1112
Engineering Business #9793

DATE

REV# DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**DRAWING TITLE:
PHASE 2 - BASE BID SCOPE
SECOND FLOOR
NEW WORK
HVAC DUCTWORK**

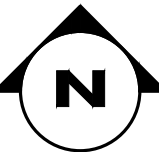
FILE: M3.2A
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
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SHEET No.:

M3.2A



**PHASE 2 - BASE BID SCOPE
THIRD FLOOR COACH'S OFFICE - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK**

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

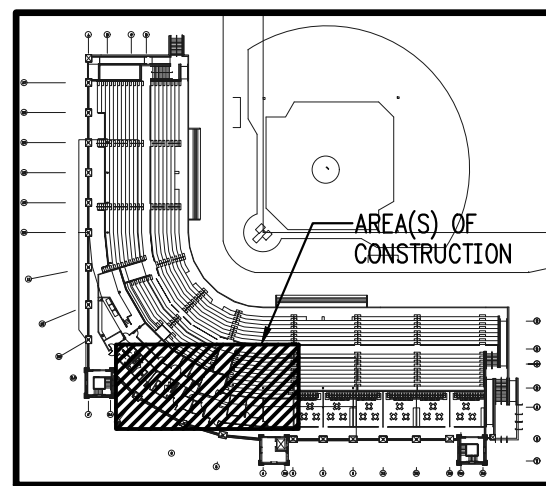


GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

NEW WORK NOTES:

- ① T&B EXISTING AIR DEVICE TO CONDITION INDICATED.
- ② T&B EXISTING WSHF TO SCHEDULED CONDITIONS. COORDINATE WITH CONTROLS CONTRACTOR AS REQUIRED TO VERIFY OPERATION OF EXISTING ELECTRIC REHEAT.
- ③ T&B EXISTING EF TO SCHEDULED CONDITIONS.
- ④ EXISTING MOTORIZED OA DAMPER IS NOT OPERATIONAL. EXISTING DAMPER SHAFT/ACTUATOR ATTACHMENT IS DEFECTIVE. REPAIR AS REQUIRED TO RESTORE DAMPER OPERATION.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL



DATE

REV # DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

DRAWING TITLE:

**PHASE 2 - BASE BID
THIRD FLOOR
NEW WORK
HVAC DUCTWORK**

FILE: M3.3A

JOB NO.: 226-106

DATE : 10-22-2026

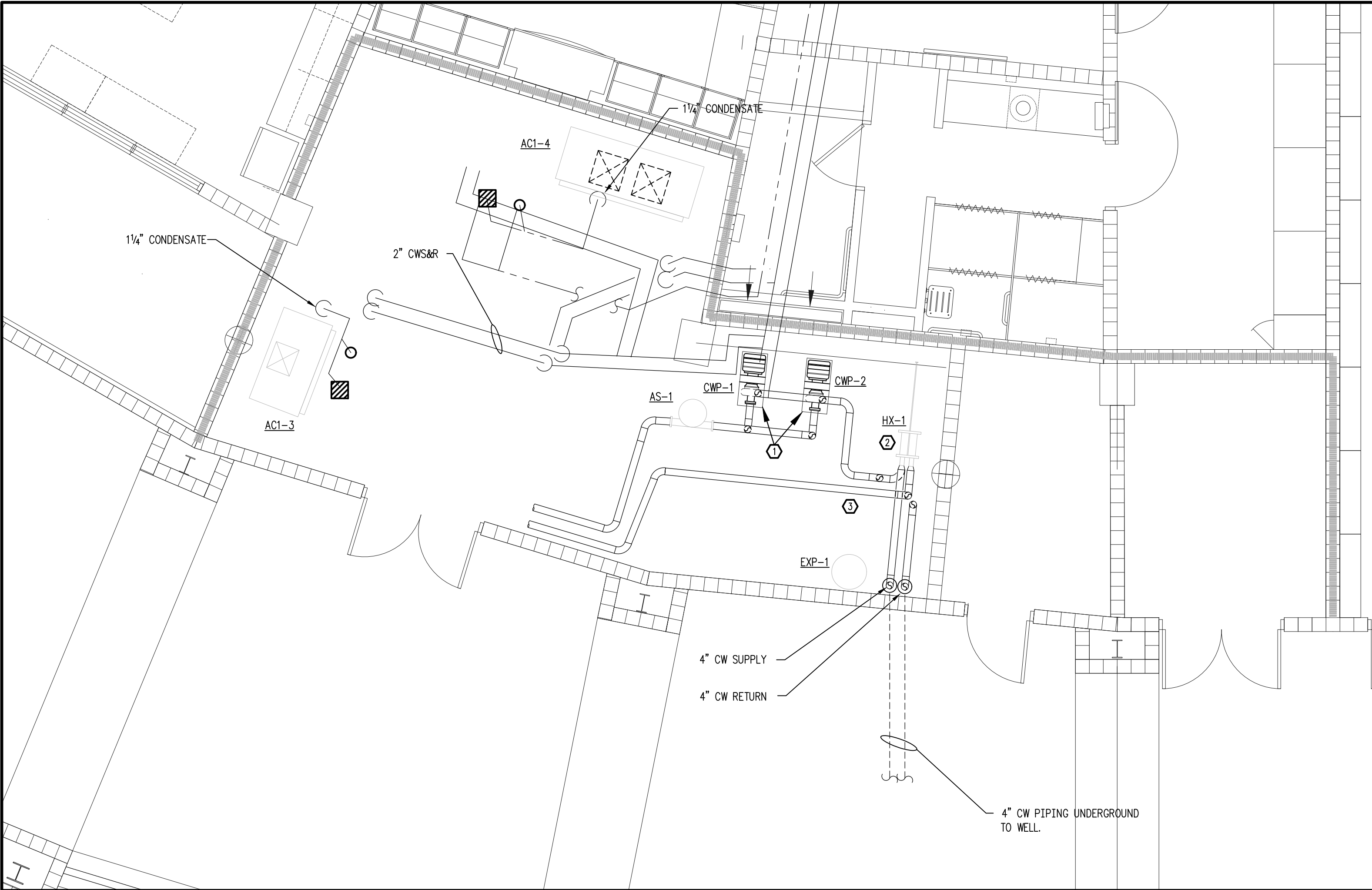
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SHEET No.:

M3.3A



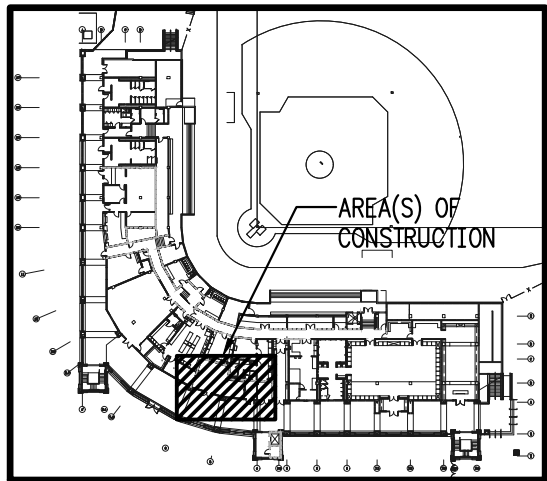
**PHASE 2 - BASE BID SCOPE
FIRST FLOOR - NEW WORK - HVAC PIPING**

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



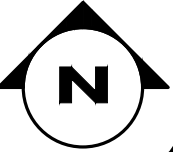
NEW WORK NOTES:

- ① T&B EXISTING PUMPS AS REQUIRED FOR FLOW AT NEW AC1-10A AND AC1-10B UNITS.
- ② T&B EXISTING HEAT EXCHANGER, RECORD FLOWS AND TEMPERATURES.
- ③ T&B EXISTING 3-WAY BYPASS VALVE AS REQUIRED FOR FLOW AT NEW AC1-10A AND AC1-10B UNITS.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL



DATE

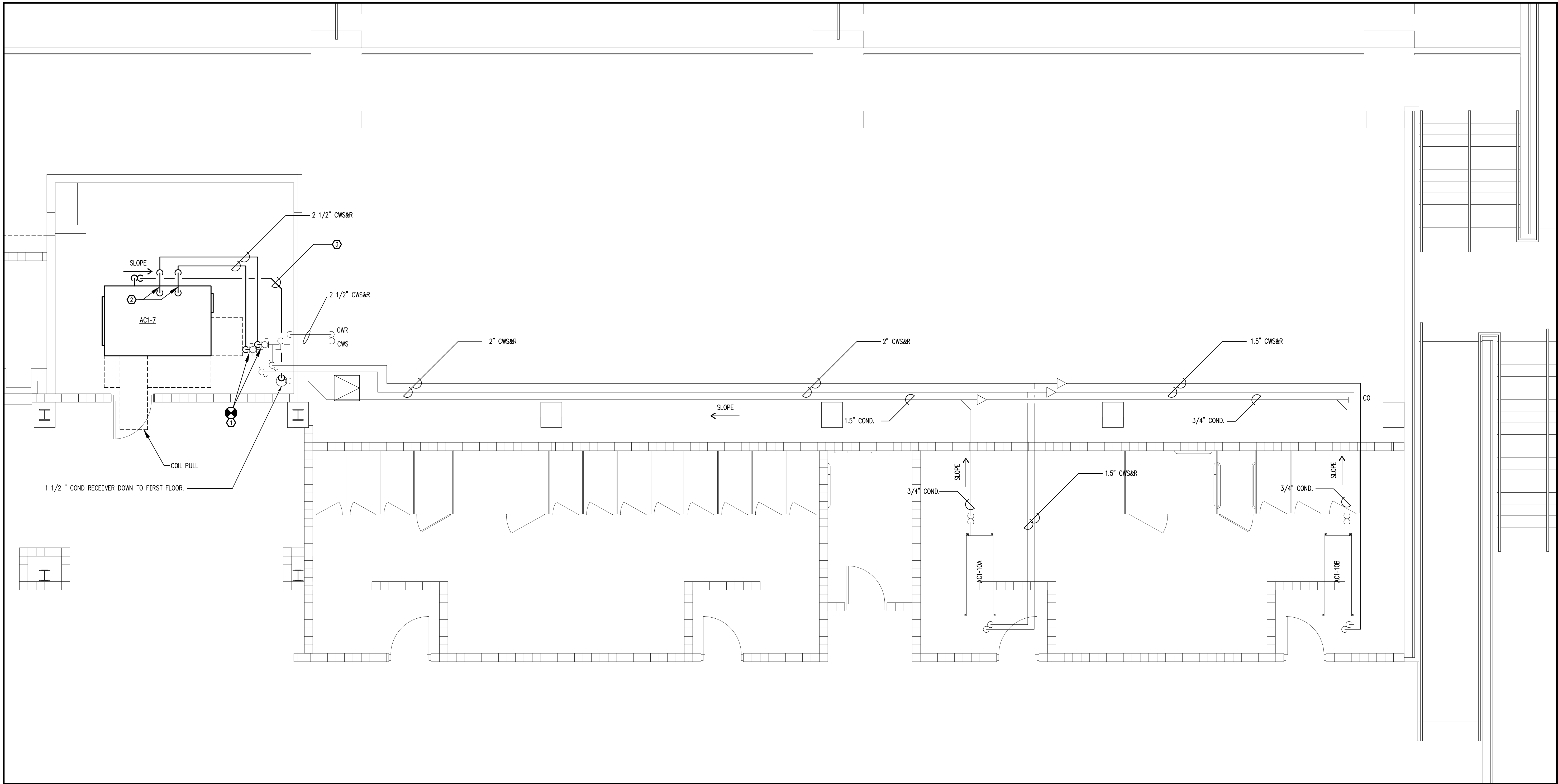
REV# DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**DRAWING TITLE:
PHASE 2 - BASE BID SCOPE
FIRST FLOOR PLAN
NEW WORK
HVAC PIPING**

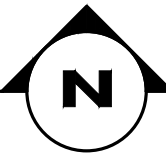
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JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M4.1A



PHASE 2 - BASE BID SCOPE
SECOND FLOOR - NEW WORK - HVAC PIPING

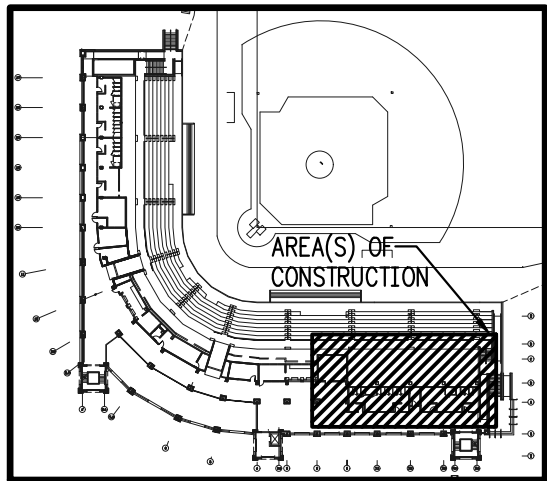
SCALE: 1/4"=1'-0"



SPECIAL PIPING NOTE:
BASIS OF DESIGN IS FOR INSTALLATION OF WELDED (SCH 40 STEEL) OR SOLDERED (TYPE L COPPER) PIPING (REFER TO SPECIFICATIONS). AT THE CONTRACTOR'S DISCRETION, PRESS-TYPE FITTINGS MAY BE UTILIZED FOR PIPES 2.5" DIA AND SMALLER. FITTINGS SHALL BE VEGA OR PRE-APPROVED EQUAL.

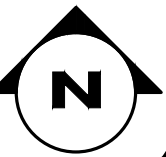
- GENERAL NOTES:**
1. PROVIDE NEGATIVE AIR MACHINE(S).
 2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, DOORS, ETC. AS REQUIRED. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
 3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
 4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.
 5. CONTRACT WITH LICENSED PLUMBER AND FIRE PROTECTION CONTRACTOR AS REQUIRED FOR WORK IN THOSE TRADES.
 6. PROVIDE ALUMINUM JACKET OVER ALL PIPE INSULATION IN MECHANICAL ROOM.

- NEW WORK NOTES:**
- ① CONNECT TO EXISTING 2.5" CWS&R PIPES. DESIGN INTENT IS FOR PIPES TO BE INSTALLED BELOW NEW AND EXISTING DUCTS. SUPPORT NEW PIPING FROM FLOOR.
 - ② COORDINATE NEW WSHIP INSTALLATION LOCATION WITH PIPE FITMENT. PROVIDE BRAIDED STAINLESS STEEL FLEXIBLE PIPES IN THE HORIZONTAL NEAR THE ROOF TO CONNECT UNIT CWS&R. INSULATE BRAIDED STEEL WITH ARMAFLEX. REFER TO DETAILS AND SCHEMATICS FOR VALVE TRAIN REQUIREMENTS.
 - ③ ROUTE CONDENSATE, FULL SIZE, FROM UNIT OUTLET TO DRAIN. COORDINATE FINAL CONCRETE PAD AND BASE RAIL HEIGHT PRIOR TO AC1-7 INSTALLATION FOR FULL COPPER CONDENSATE TRAP AND SLOPE TO DRAIN. SUPPORT CONDENSATE PIPE FROM FLOOR.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

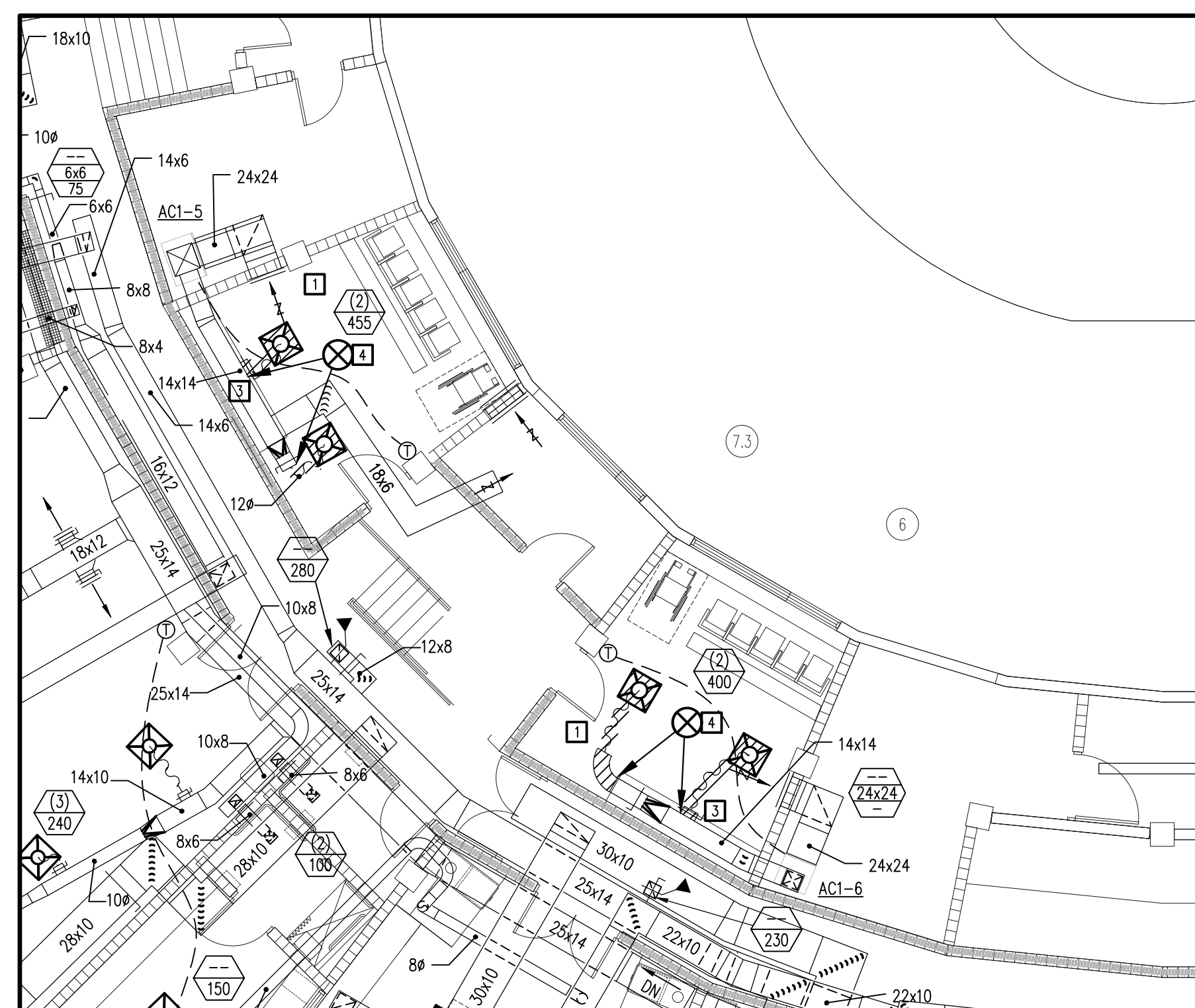


SEAL	 PINNACLE ENGINEERING GROUP, P.A. 2032 THOMASVILLE ROAD, SUITE C TALLAHASSEE, FLORIDA 32308 Phone: 904.243.8888 Fax: 904.243.8889 Engineering Business #9793		
DATE			
REV #	DESCRIPTION		

HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

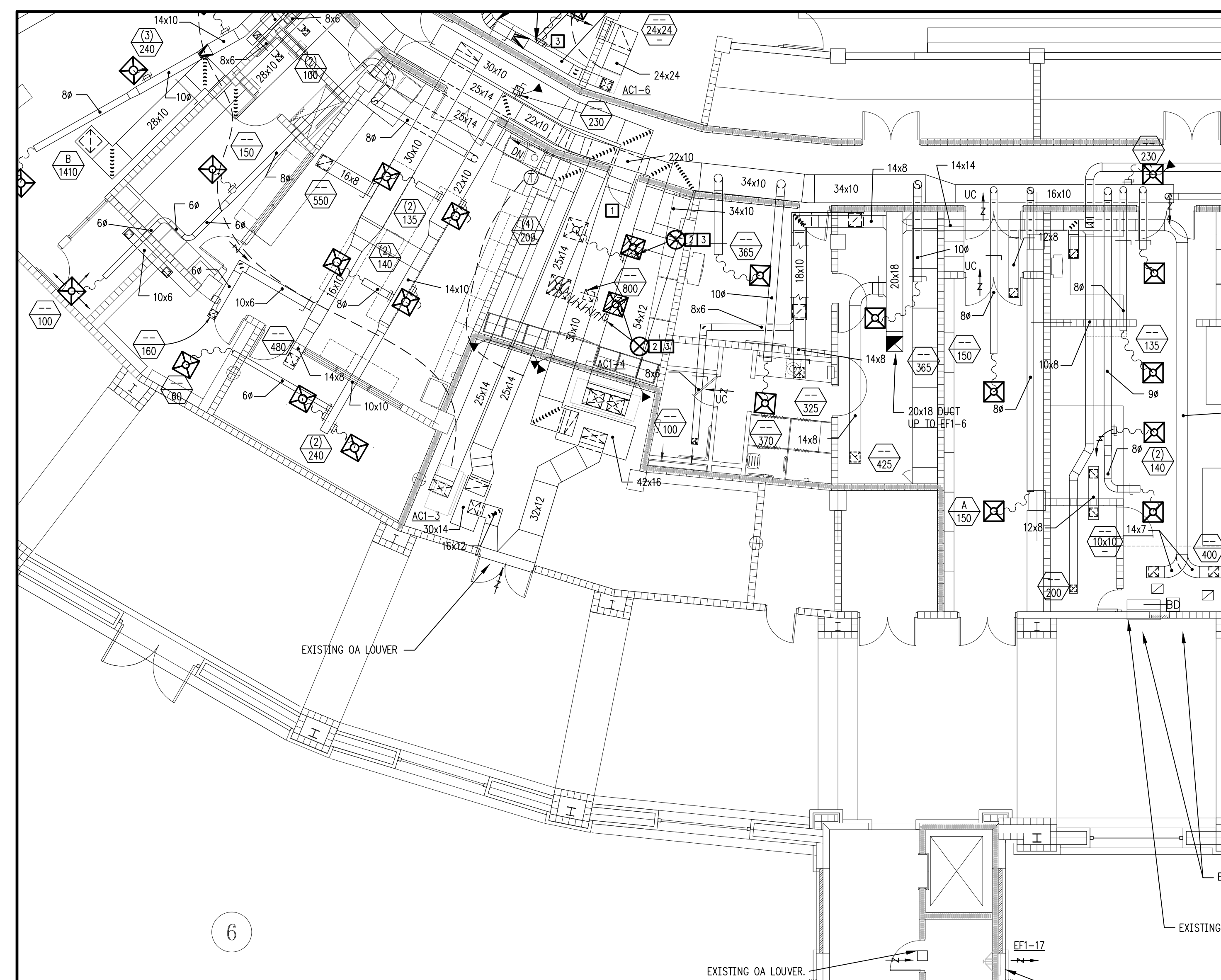
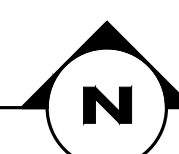
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FILE:	M4.2A
JOB NO.:	226-106
DATE :	10-22-2026
PLOT SIZE:	24x36
DRAWN BY:	RA
CHECKED BY:	CA
SHEET No.:	

M4.2A



PHASE 2 - ADDITIVE ALTERNATE SCOPE
FIRST FLOOR BOX SUITES - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK

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



PHASE 2 - ADDITIVE ALTERNATE SCOPE
FIRST FLOOR - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK

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

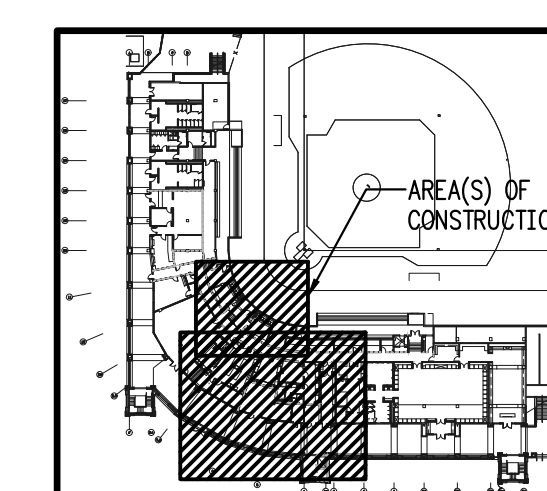


GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; EXISTING AT COMPLETION OF WORK.
2. PROTECT REMOVING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

DEMO NOTES:

- 1 REMOVE EXISTING CEILING TILES AND GRID AS REQUIRED FOR DEMO AND NEW WORK SCOPE. AT CONCLUSION OF PROJECT, REPLACE AS REQUIRED FOR FIT OF NEW AIR DEVICES.
- 2 REMOVE EXISTING DUCT AND AIR DEVICE AS INDICATED.
- 3 CAP AND INSULATE.
- 4 REMOVE EXISTING DUCT AND AIR DEVICE AS INDICATED. STORE EXISTING AIR DEVICE FOR REUSE.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

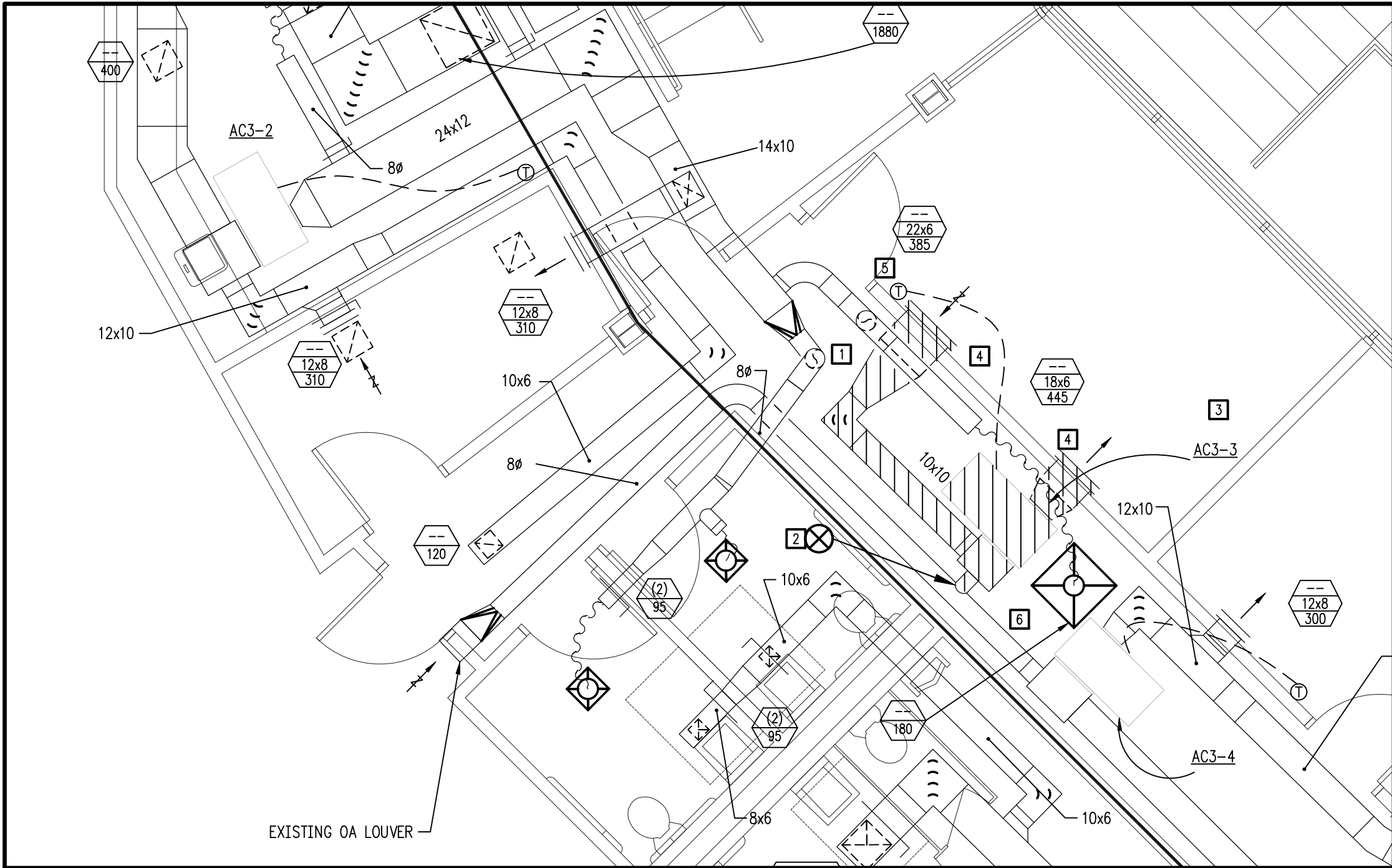


DRAWING TITLE:

DRAWING TITLE:
PHASE 2 - ADD ALT SCOPE
FIRST FLOOR PLAN
EXISTING CONDITIONS / DEMO
HVAC DUCTWORK

FILE:	M1.1B
JOB NO.:	226-106
DATE :	10-22-2026
PLOT SIZE:	24x36
DRAWN BY:	RA
CHECKED BY:	CA
SHEET No.:	

M1.1B



PHASE 2 - ADDITIVE ALTERNATE SCOPE
THIRD FLOOR SCOREBOARD ROOM - EXISTING CONDITIONS/DEMO - HVAC DUCTWORK

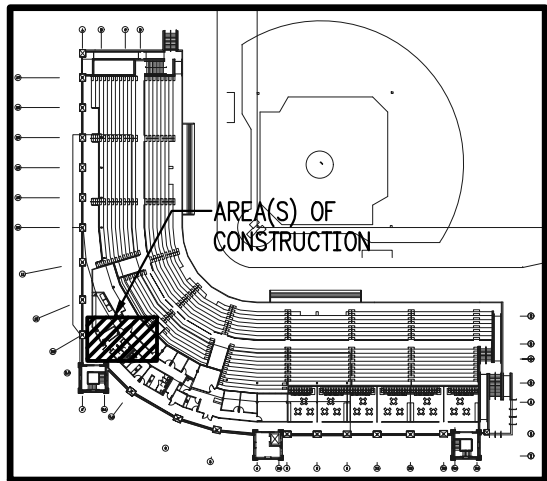
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

DEMO NOTES:

- 1 REMOVE EXISTING ACOUSTICAL CEILING TILES AND GRID AS REQUIRED FOR AC3-3 REPLACEMENT. AT PROJECT CONCLUSION, REPLACE TILES AND GRID TO MATCH EXISTING.
- 2 REMOVE EXISTING OA DUCT TO MAIN. CAP AND INSULATE.
- 3 REMOVE EXISTING AC3-3. DISPOSE OFF-SITE IN LEGAL MANNER.
- 4 REMOVE EXISTING SUPPLY AND RETURN GRILLES THROUGH WALL. MODIFY OPENING AS REQUIRED FOR INSTALLATION OF NEW GRILLES.
- 5 REMOVE EXISTING WALL MOUNTED TEMPERATURE SENSOR. PATCH, FINISH, PRIME AND PAINT WALL TO MATCH EXISTING AS REQUIRED FOR NEW WALL MOUNTED SENSOR INSTALLATION AT 48" AFF.
- 6 TEMPORARILY RELOCATE EXISTING CORRIDOR DUCT AND DIFFUSER AS REQUIRED. REINSTALL AT PROJECT CONCLUSION.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

DRAWING TITLE:

PHASE 2 - ADD ALT SCOPE
THIRD FLOOR
EXISTING CONDITIONS / DEMO
HVAC DUCTWORK

FILE:

M1.3B

JOB NO.:

226-106

DATE :

10-22-2026

PLOT SIZE:

24x36

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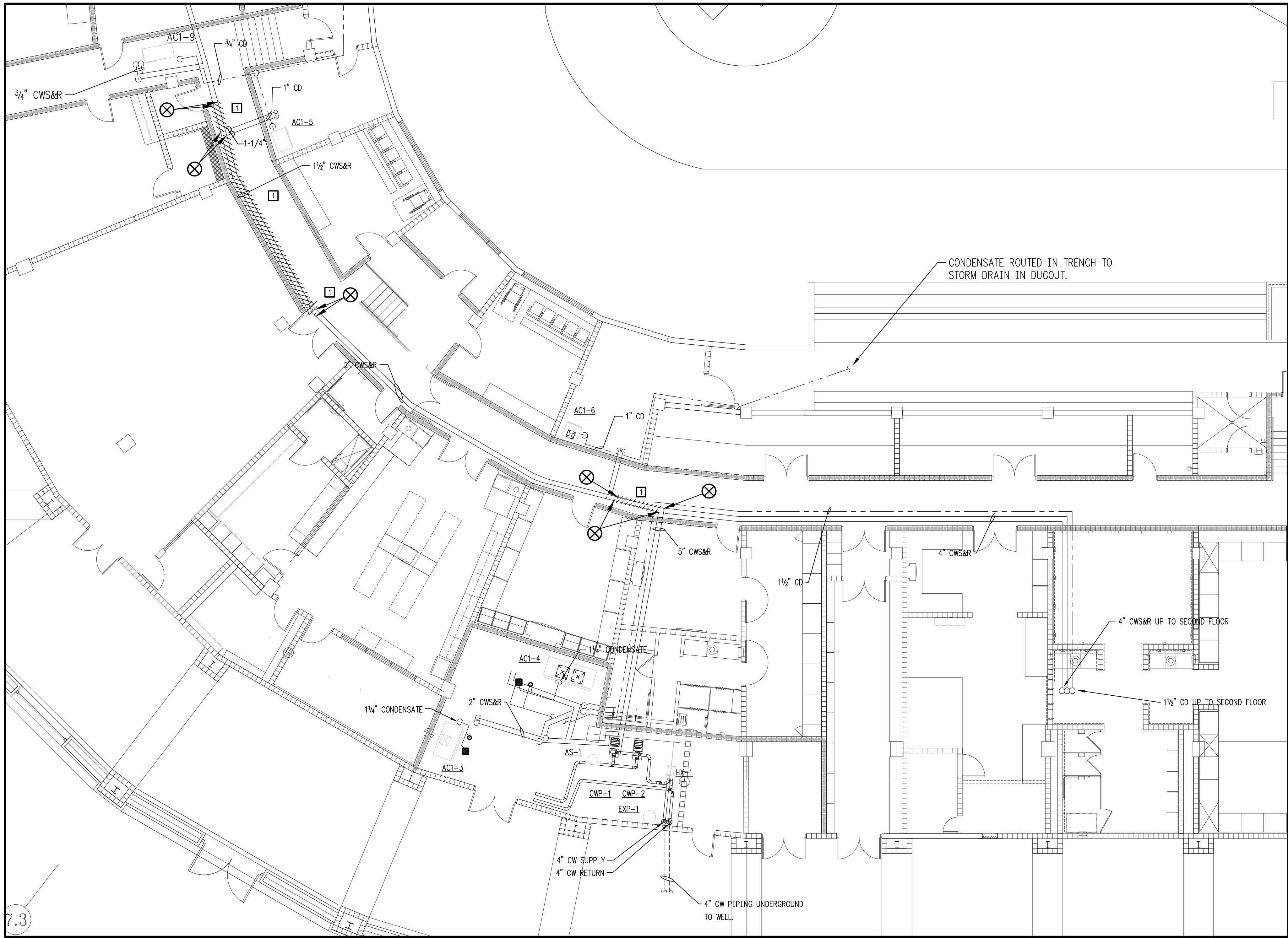
M1.3B

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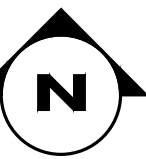
DATE

REV# DESCRIPTION



**PHASE 2 - ADDITIVE ALTERNATE SCOPE
FIRST FLOOR BOX SUITES - EXISTING CONDITIONS/DEMO - HVAC PIPING**

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

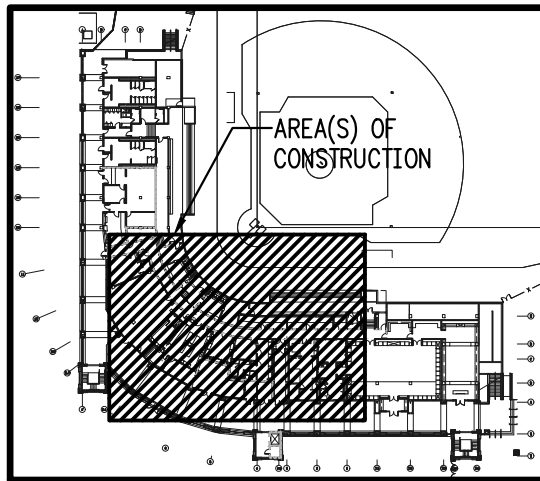


DEMO NOTES:

- REMOVE EXISTING GYP BOARD CEILING AS REQUIRED FOR DEMO AND NEW WORK SCOPE. AT CONCLUSION OF PROJECT, REPLACE, PATCH, FINISH, PRIME AND PAINT AS REQUIRED TO MATCH EXISTING.

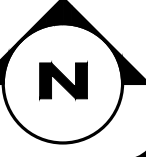
GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL



DATE

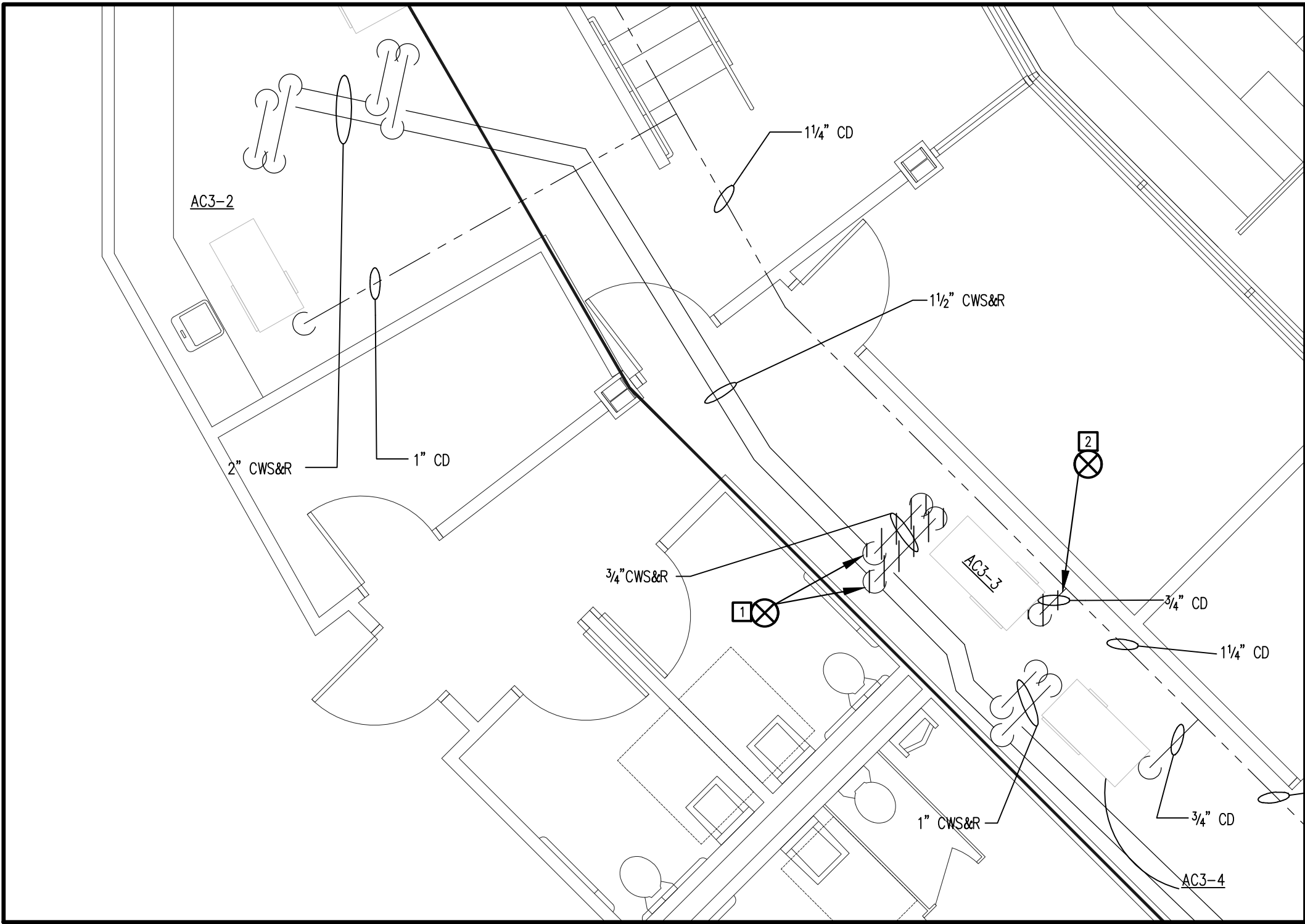
REV# DESCRIPTION

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FLORIDA STATE UNIVERSITY
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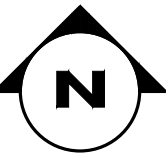
DRAWING TITLE:
**PHASE 2 - ADD ALT SCOPE
FIRST FLOOR PLAN
EXISTING CONDITIONS / DEMO
HVAC PIPING**

FILE: M2.1B
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M2.1B



PHASE 2 - ADDITIVE ALTERNATE SCOPE
THIRD FLOOR - EXISTING CONDITIONS/DEMO - HVAC PIPING
SCALE: 1/4"=1'-0"

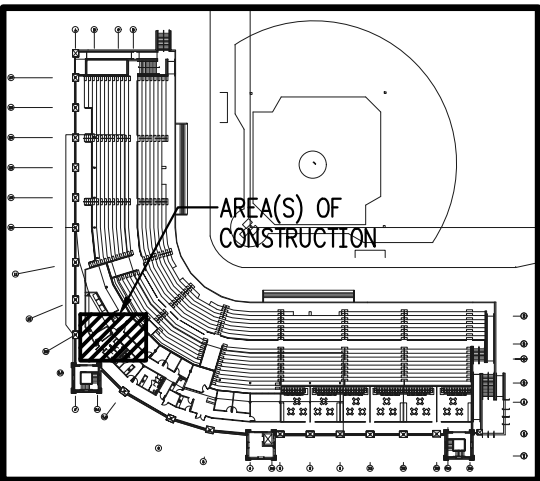


GENERAL NOTES:

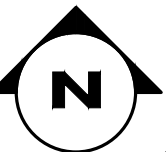
1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

DEMO NOTES:

- 1 REMOVE EXISTING 3/4" CWS&R PIPES TO MAIN. CAP AND INSULATE.
- 2 REMOVE EXISTING 3/4" CONDENSATE PIPE AS REQUIRED FOR INSTALLATION OF NEW UNIT. REFER TO NEW WORK PLAN.



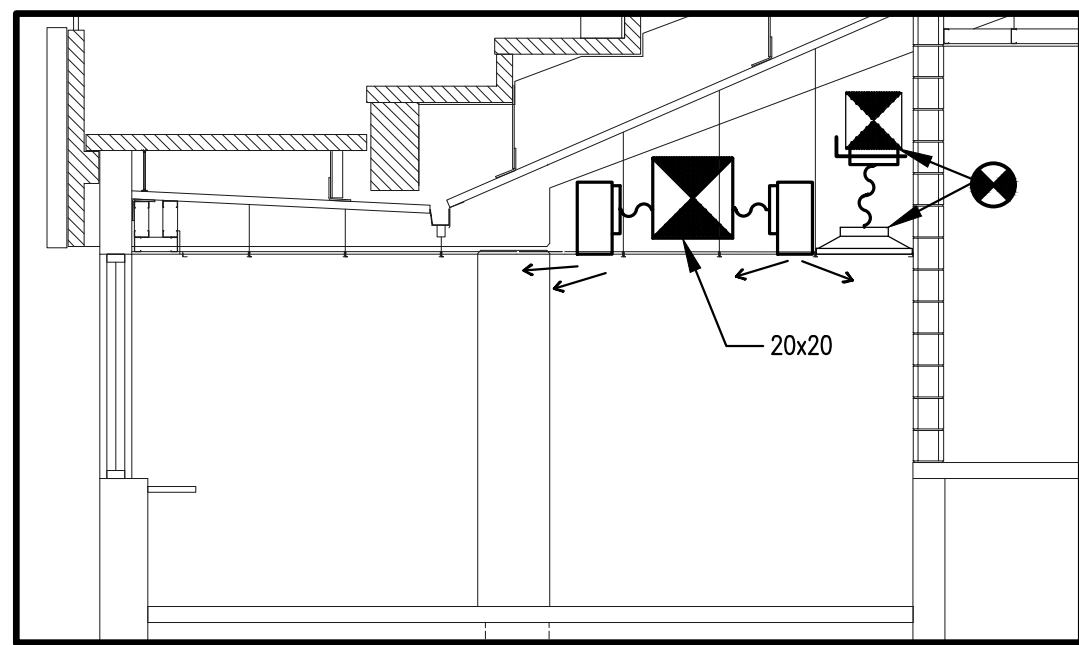
FIRST FLOOR - KEY PLAN
NOT TO SCALE



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REV#	DESCRIPTION	DATE	

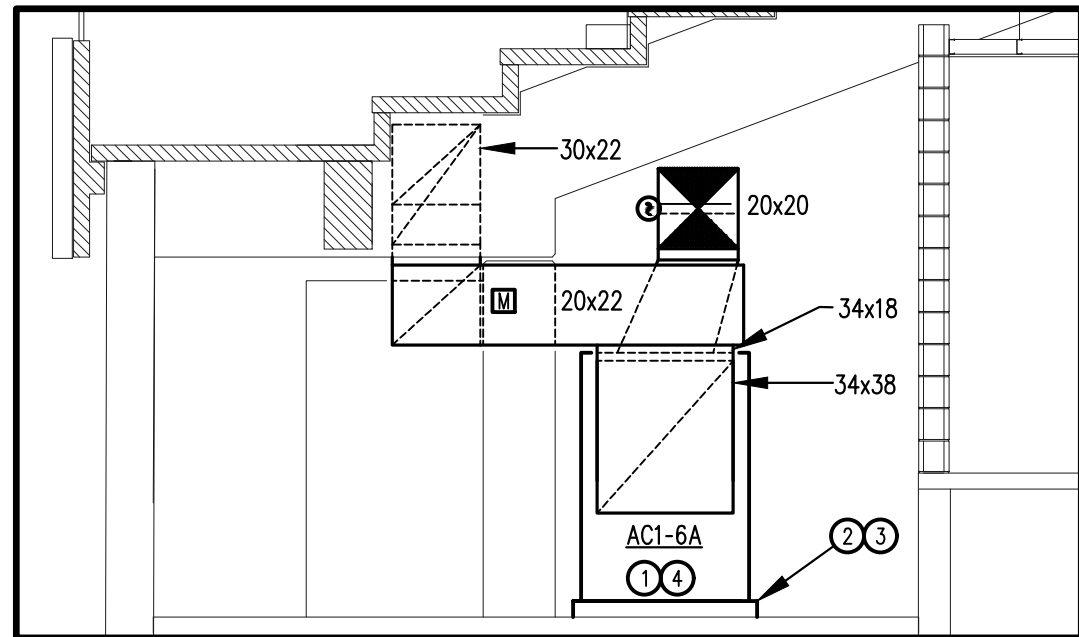
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TALLAHASSEE, FLORIDA

DRAWING TITLE: PHASE 2 - ADD ALT SCOPE THIRD FLOOR EXISTING CONDITIONS / DEMO HVAC PIPING	
FILE:	M2.3B
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DATE :	10-22-2026
PLOT SIZE:	24x36
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CHECKED BY:	CA
SHEET No.:	M2.3B



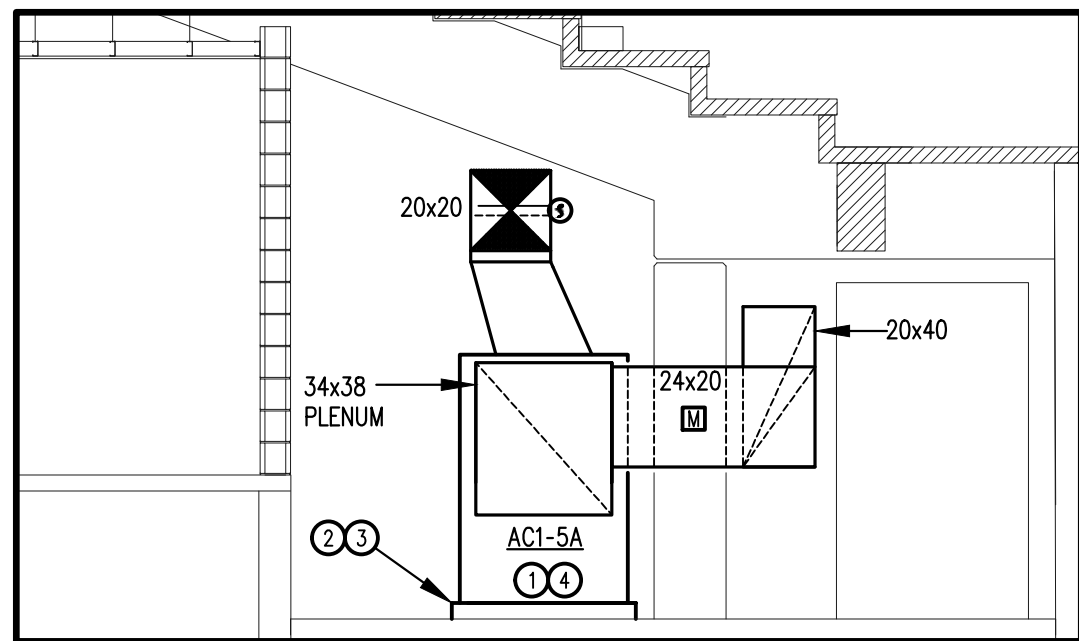
ELEVATION A

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



ELEVATION B

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



ELEVATION C

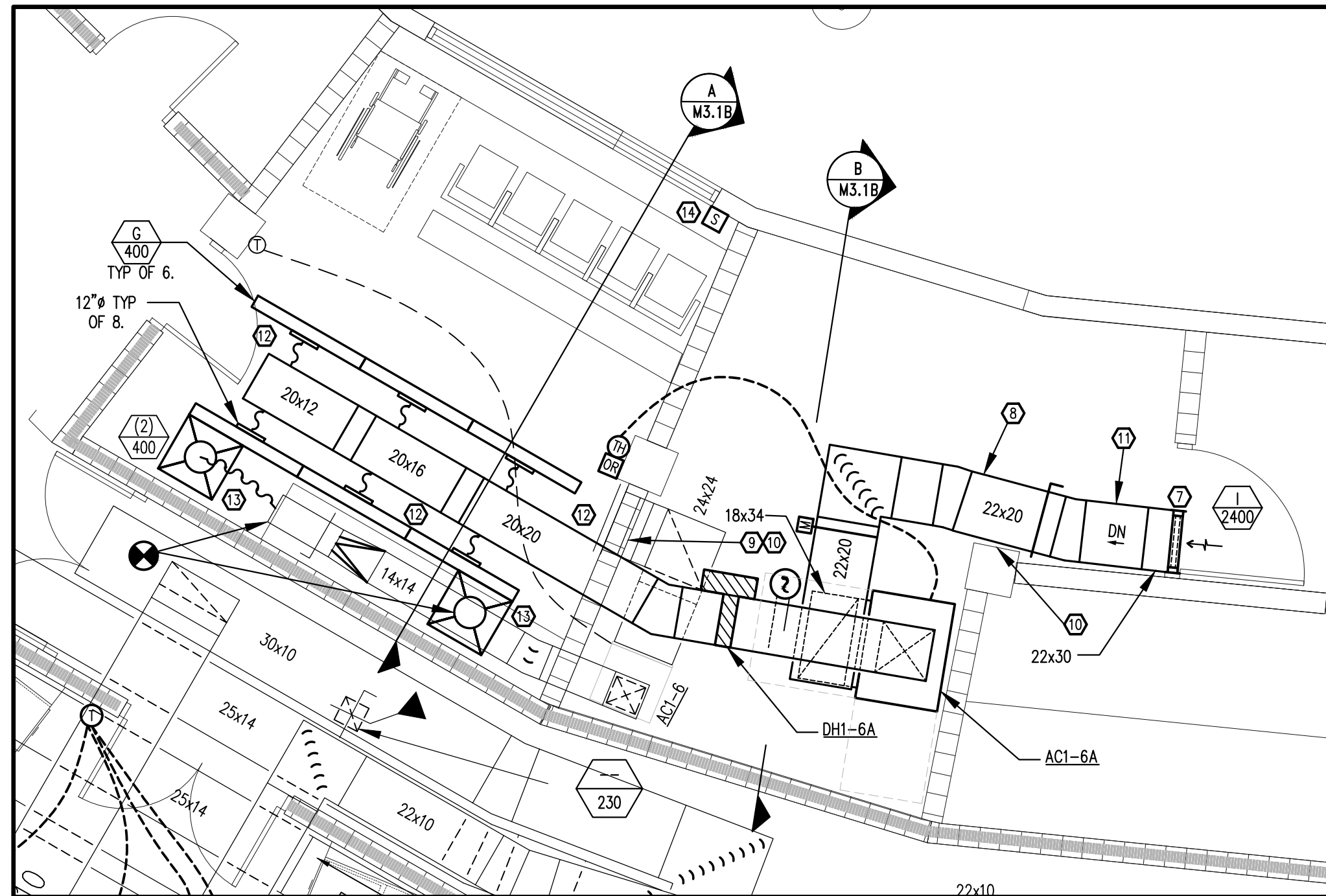
SCALE: 1/4"=1'-0"

AC1-5A AND AC1-6A NOTES (TYP):

- 1 PROVIDE WSPH UNIT TO FIT THROUGH EXISTING DOOR OPENING. DISASSEMBLE AND REASSEMBLE INSIDE THE MECHANICAL ROOM AS REQUIRED. ACCESS TO ALL COMPONENTS SHALL BE MAINTAINED AS SHOWN FOR FIT AND MAINTENANCE ACCESS.
- 2 PROVIDE NEW REINFORCED CONCRETE HOUSEKEEPING PAD AND UNIT BASE RAILS HIGH ENOUGH FOR FULL CONDENSATE TRAP AND SLOPE TO CONNECTION TO EXISTING CONDENSATE PIPING (REFER TO PIPING PLAN). CHAMFER HOUSEKEEPING PAD EDGES AND PAINT PAD BRIGHT YELLOW. SET UNIT ON VIBRATION ISOLATION PADS, SPACE PADS PER MANUFACTURER'S RECOMMENDATION.
- 3 PROVIDE GALVANIZED STEEL SHEET METAL SECONDARY DRAIN PAN. ENTIRE UNIT SHALL BE PLACED INSIDE SECONDARY PAN.
- 4 INSTALL UNIT, PIPES, VALVES, DUCTS, CONDUIT, CONTROLS ENCLOSURES, CONTROL DEVICES, ETC. SUCH THAT FULL MAINTENANCE ACCESS TO ALL EQUIPMENT AND UNIT ACCESS PANELS ARE MAINTAINED.

**PHASE 2 - ADDITIVE ALTERNATE SCOPE
FIRST FLOOR - NEW WORK - HVAC DUCTWORK**

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



**PHASE 2 - ADDITIVE ALTERNATE SCOPE
FIRST FLOOR BOX SUITES - NEW WORK - HVAC DUCTWORK**

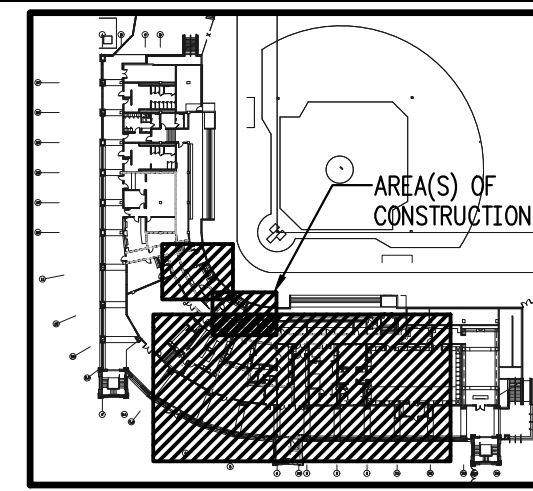
SCALE: 1/4"=1'-0"

NEW WORK NOTES:

- 1 EXISTING MOTORIZED OA DAMPER IS NOT OPERATIONAL. EXISTING DAMPER SHAFT/ACTUATOR ATTACHMENT IS DEFECTIVE. REPAIR AS REQUIRED TO RESTORE DAMPER OPERATION.
- 2 PROVIDE NEW ZONE DAMPER IN EXISTING DUCT. DISCONNECT/RECONNECT DUCT AND REINSULATE AS REQUIRED. T&B EXISTING AIR DEVICE TO CONDITIONS INDICATED. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL T&B SCOPE.
- 3 T&B EXISTING WSPH TO SCHEDULED CONDITIONS.
- 4 T&B EXISTING EF TO SCHEDULED CONDITIONS.
- 5 NEW WALL-HUNG MINI-SPLIT. COORDINATE WITH OWNER FOR FINAL LOCATION. COORDINATE WITH OWNER FOR FINAL LOCATION OF (MANUFACTURER'S WIRED THERMOSTAT).
- 6 NEW CONCRETE HOUSEKEEPING PAD FOR MINI-SPLIT CONDENSING UNIT. SECURE UNIT TO PAD FOR 120 MPH WINDLOADS.
- 7 INSTALL NEW AIR DEVICE AS HIGH AS POSSIBLE, BETWEEN EXTERIOR WALL AND BUILDING STRUCTURE. AN EXISTING TO REMAIN PLUMBING PIPE INSIDE THE MECHANICAL ROOM IS AN OBSTRUCTION. VERIFY FIT OF AIR DEVICE PRIOR TO BID AND TRANSITION DUCT TO AIR DEVICE AS REQUIRED.
- 8 INSTALL DUCT AS HIGH AS POSSIBLE. TRANSITION TO UNIT INLET AS REQUIRED.
- 9 REMOVE AND RELOCATE EXISTING PLUMBING DRAIN PIPING AS REQUIRED FOR FIT OF NEW DUCTWORK. REINSULATE PIPE TO MATCH EXISTING.
- 10 RELOCATE EXISTING WALL MOUNTED LIGHT FIXTURE(S) AS REQUIRED FOR FIT OF NEW DUCTWORK. COORDINATE WITH ELECTRICAL CONTRACTOR.
- 11 TRANSITION UNDER BEAM AS REQUIRED.
- 12 RELOCATE EXISTING FIRE SPRINKLER PIPING AND HEADS AS REQUIRED FOR NEW WORK.
- 13 REINSTALL EXISTING DEVICE IN NEW LOCATION.
- 14 ROLL-UP WINDOW POSITION SWITCH. REFER TO CONTROLS DRAWINGS.
- 15 PROVIDE NEW PERMANENT FLOOR MOUNTED DOOR STOP TO PREVENT DOOR SWING FROM CONTACTING NEW DUCTWORK.
- 16 CONNECT NEW 12"Ø BETWEEN NEW 20X12 AND EXISTING 18X6.
- 17 PROVIDE NEW ULTRA LOW LEAKAGE CHANGEOVER CONTROL DAMPERS FOR NEW 12"Ø AND EXISTING 18X6 DUCTS (FIELD VERIFY SIZES PRIOR TO ORDERING). REFER TO CONTROLS DRAWINGS.

GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.



FIRST FLOOR - KEY PLAN

NOT TO SCALE

SCALE

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GROUP, P.A.**
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Engineering Business #9793

DATE

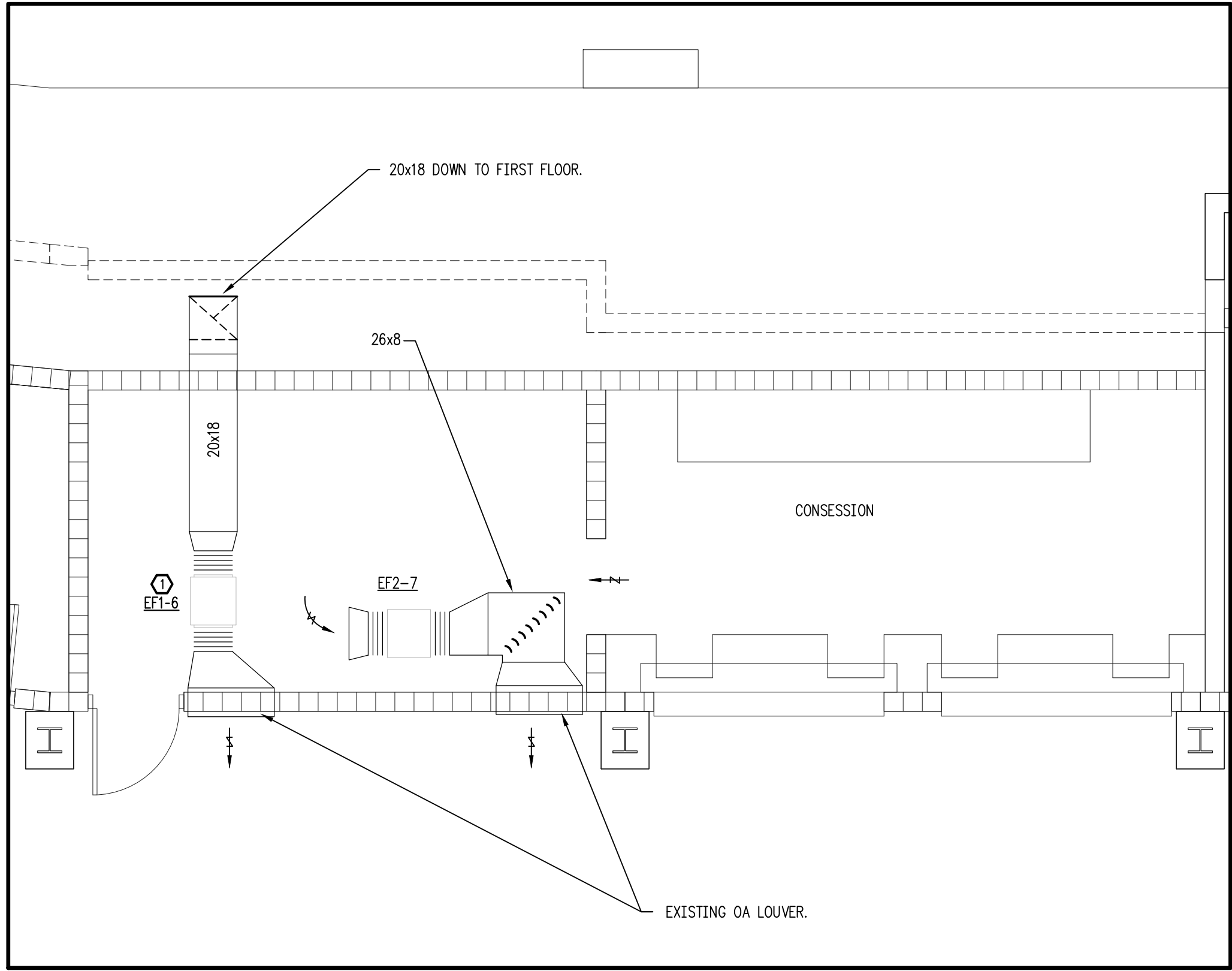
REV # DESCRIPTION

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FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

**DRAWING TITLE:
PHASE 2 - ADD ALT SCOPE
FIRST FLOOR PLAN
NEW WORK
HVAC DUCTWORK**

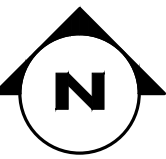
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JOB NO.: 226-106
DATE: 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET NO.:

M3.1B



PHASE 2 - ADDITIVE ALTERNATE SCOPE
SECOND FLOOR - NEW WORK - HVAC DUCTWORK

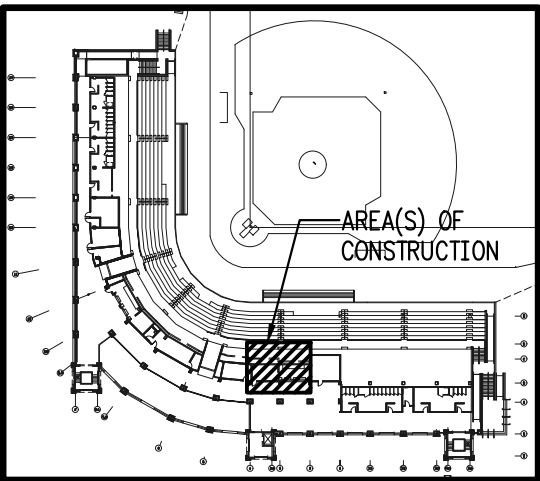
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NEW WORK NOTES:

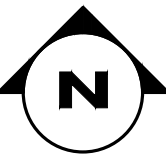
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REBALANCE EF1-6 AS SCHEDULED.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



REV#		DESCRIPTION	DATE

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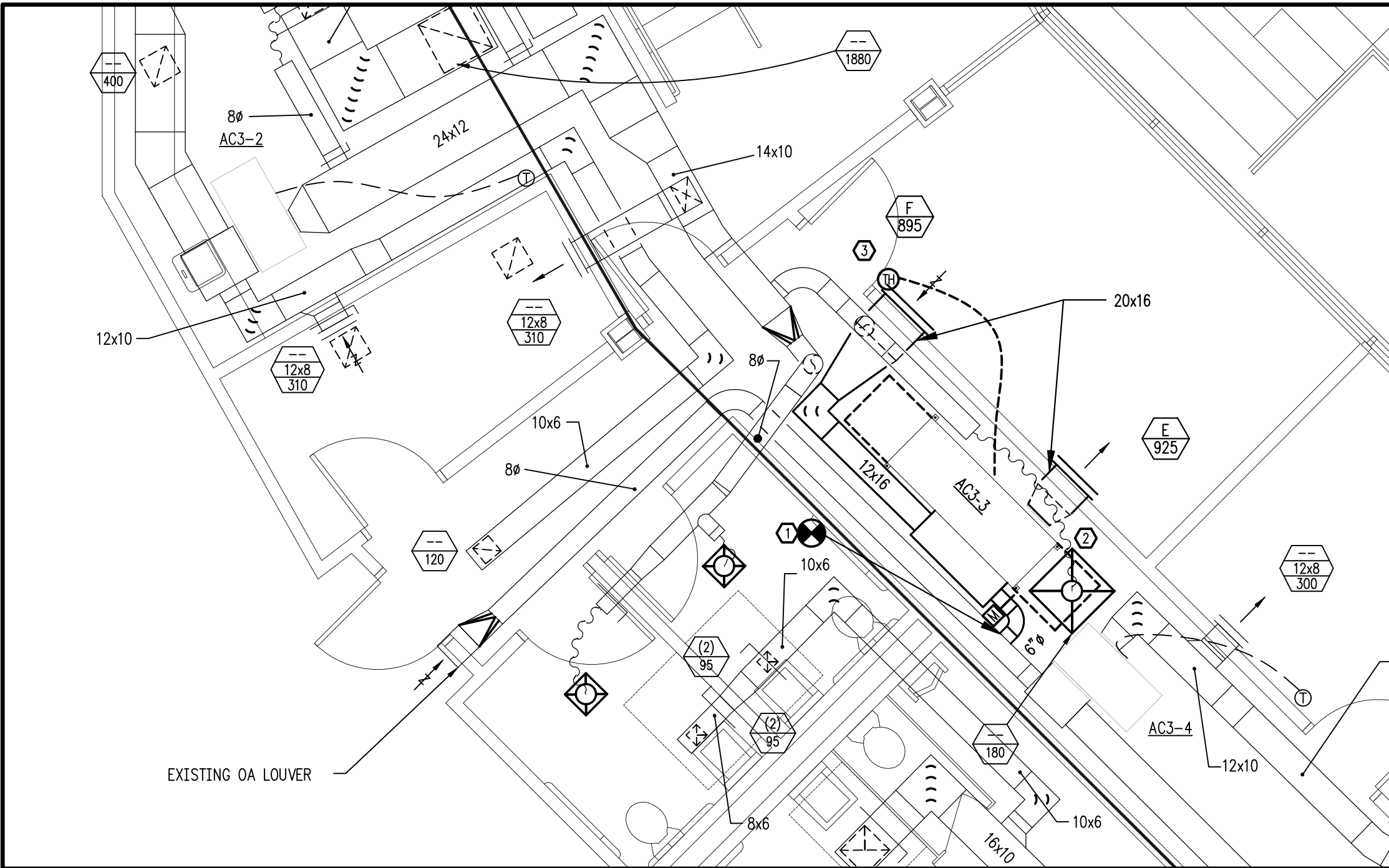
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FILE:	M3.2B
JOB NO.:	226-106
DATE :	10-22-2026
PLOT SIZE:	24x36
DRAWN BY:	RA
CHECKED BY:	CA
SHEET No.:	M3.2B

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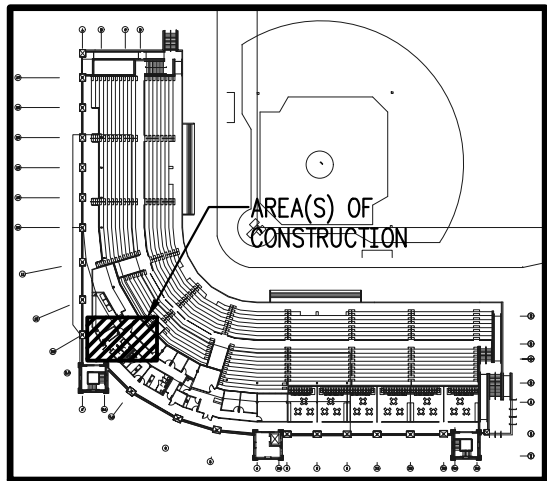
PHASE 2 - ADDITIVE ALTERNATE SCOPE
THIRD FLOOR SCOREBOARD ROOM - NEW WORK - HVAC DUCTWORK
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

NEW WORK NOTES:

- ① NEW 6" TAP IN EXISTING OA DUCT, WITH NEW 6" MOTORIZED DAMPER.
- ② TRANSITION WSHWP OUTLET TO SUPPLY GRILLE AS REQUIRED.
- ③ NEW WALL MOUNTED TEMPERATURE SENSOR. INSTALL 48" AFF.



FIRST FLOOR - KEY PLAN
NOT TO SCALE

DRAWING TITLE:

PHASE 2 - ADD ALT SCOPE
THIRD FLOOR
NEW WORK
HVAC DUCTWORK

FILE: M3.3B
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

SEAL

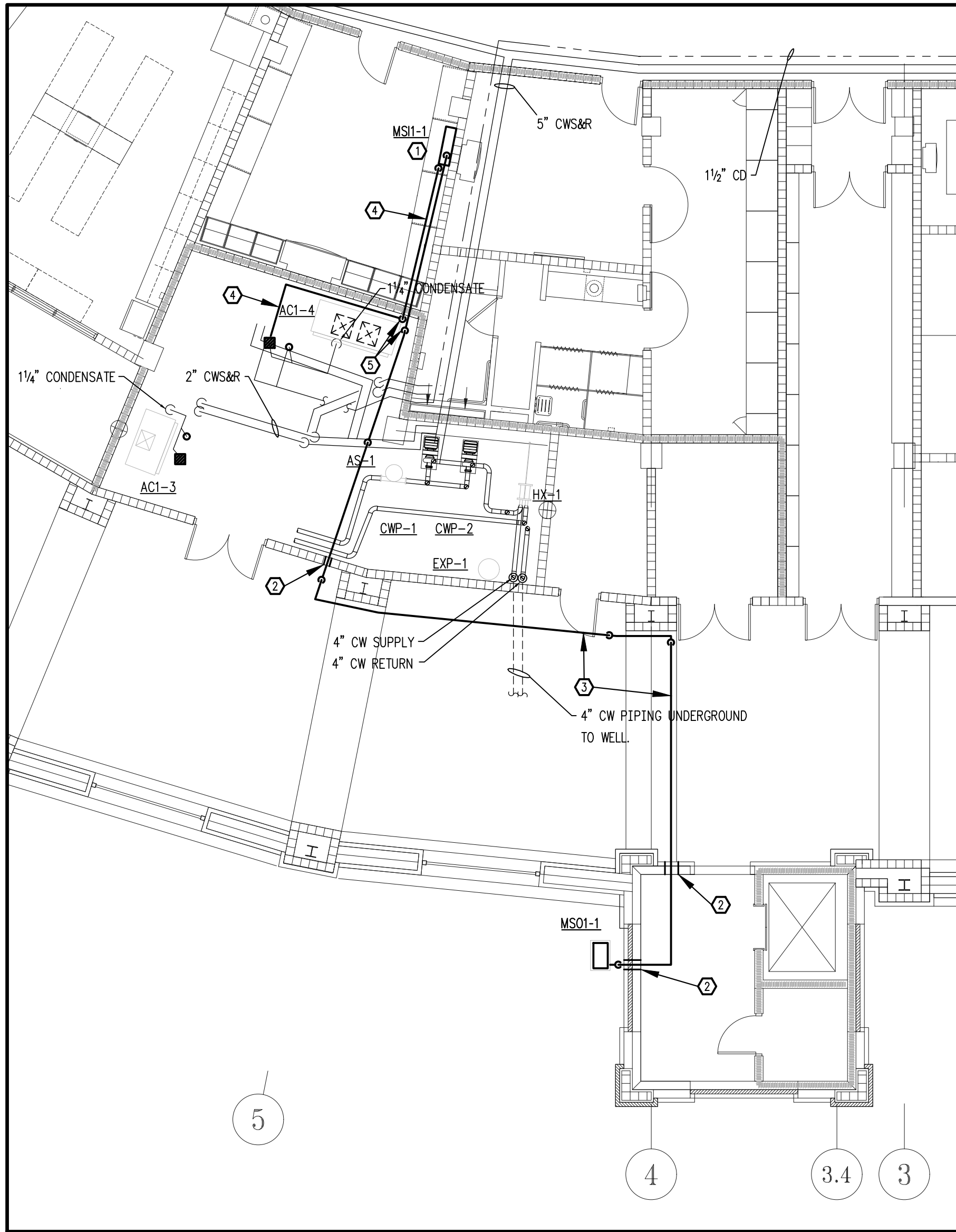
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GROUP, P.A.
2032 THOMASVILLE ROAD, SUITE C
TALLAHASSEE, FLORIDA 32308
P: 904.241.0000
F: 904.241.0001
Engineering Business #9793

DATE

REV# DESCRIPTION

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FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

M3.3B



**PHASE 2 - ADDITIVE ALTERNATE SCOPE
FIRST FLOOR ALUMNI LOUNGE - NEW WORK - HVAC PIPING**

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

GENERAL NOTES:

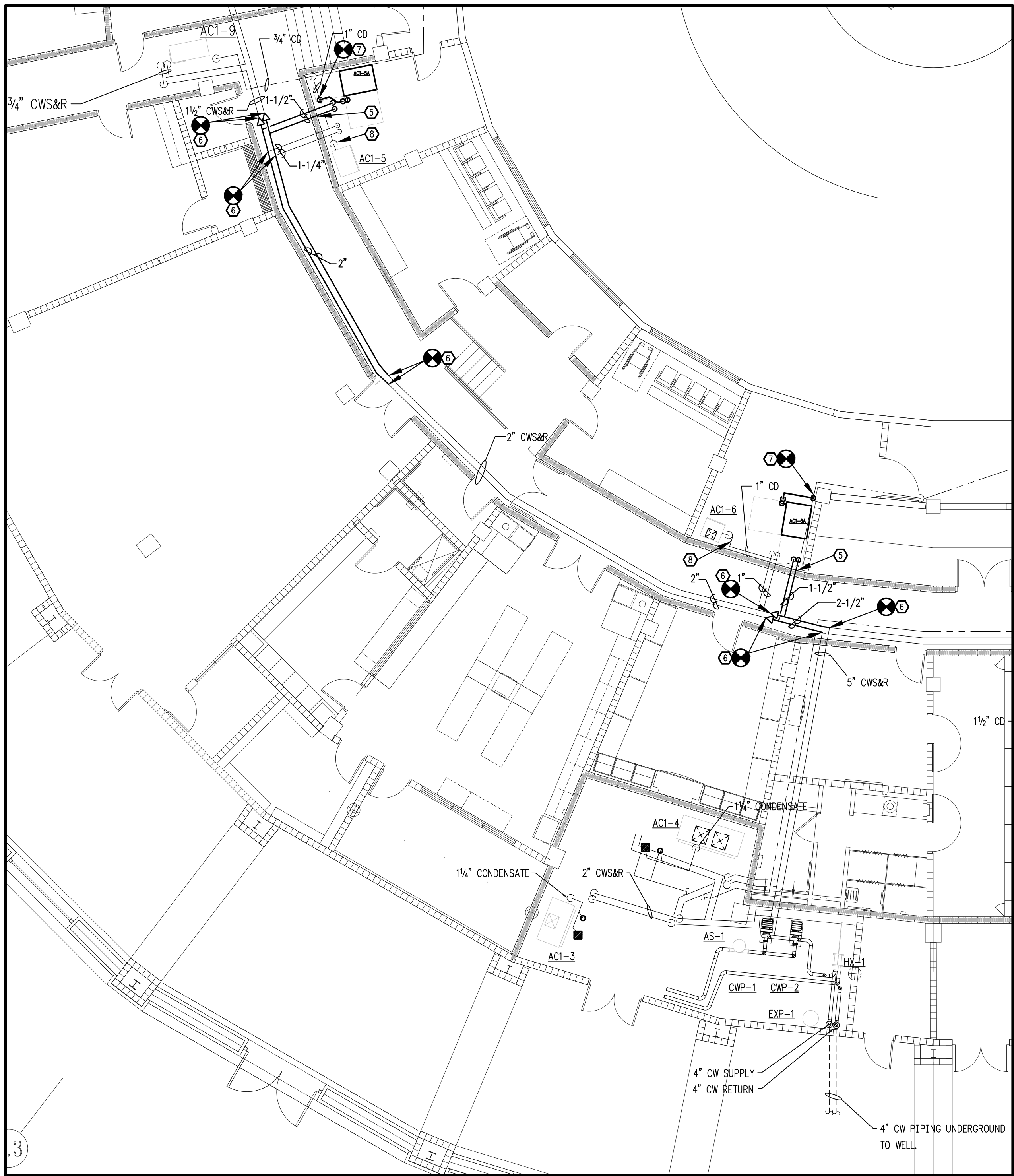
1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

SPECIAL PIPING NOTE:

BASIS OF DESIGN IS FOR INSTALLATION OF WELDED (SCH 40 STEEL) OR SOLDERED (TYPE L COPPER) PIPING (REFER TO SPECIFICATIONS). AT THE CONTRACTOR'S DISCRETION, PRESS-TYPE FITTINGS MAY BE UTILIZED FOR PIPES 2.5" DIA AND SMALLER. FITTINGS SHALL BE VEGA OR PRE-APPROVED EQUAL.

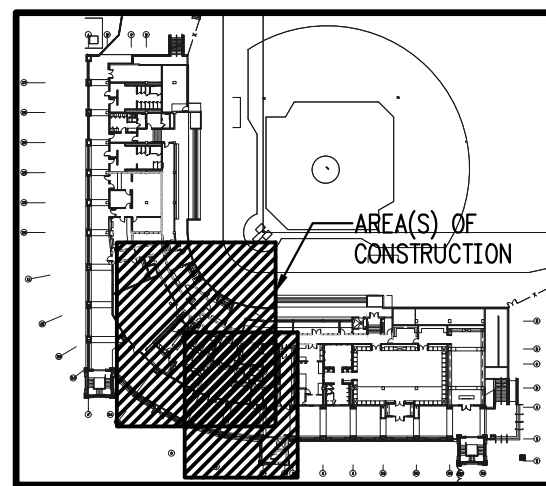
NEW WORK NOTES:

- ① PROVIDE CONDENSATE PUMP. PUMP SHALL BE CONCEALED.
- ② ROUTE REFRIGERANT PIPING THROUGH EXISTING WALL. SLEEVE AND SEAL PENETRATION. COORDINATE FINAL PENETRATION LOCATION WITH OWNER AND EXISTING ARTWORK ON INTERIOR STAIRWELL. ROUTE AS HIGH AS POSSIBLE. INCLUDE ELBOWS TO TRANSITION AROUND OBSTRUCTIONS. REFRIGERANT PIPING INSULATION SHALL BE FINISHED WITH ALUMINUM JACKET AND PAINTED, COLOR SELECTED BY OWNER.
- ③ REFRIGERANT PIPE PATH SHALL FOLLOW EXISTING CONDUIT. EXISTING UNISTRUT MAY BE UTILIZED FOR SUPPORT.
- ④ ROUTE 3/4" COPPER CONDENSATE ABOVE CEILING, TO FLOOR DRAIN IN MECHANICAL ROOM. DO NOT CREATE TRIP HAZARD.
- ⑤ SLEEVE AND FIRE SEAL PENETRATION(S).
- ⑥ REINSULATE NEW PIPE JOINT.
- ⑦ COPPER CONDENSATE TRAP. ROUTE FULL SIZE FROM UNIT OUTLET TO CONNECTION AT EXISTING PIPE. REINSULATE AT CONNECTION.
- ⑧ PROVIDE NEW NORMALLY OPEN 2-WAY MOTORIZED CONTROL VALVE FOR EXISTING WSHF. VERIFY PIPE SIZE PRIOR TO BID. VALVE SHALL CLOSE WHEN UNIT IS OFF.



**PHASE 2 - ADDITIVE ALTERNATE SCOPE
FIRST FLOOR BOX SUITES - NEW WORK - HVAC PIPING**

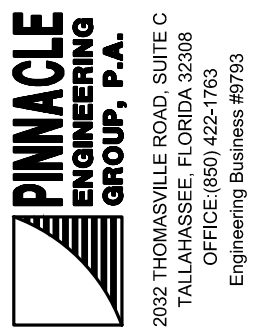
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FIRST FLOOR - KEY PLAN

NOT TO SCALE

SEAL



DATE

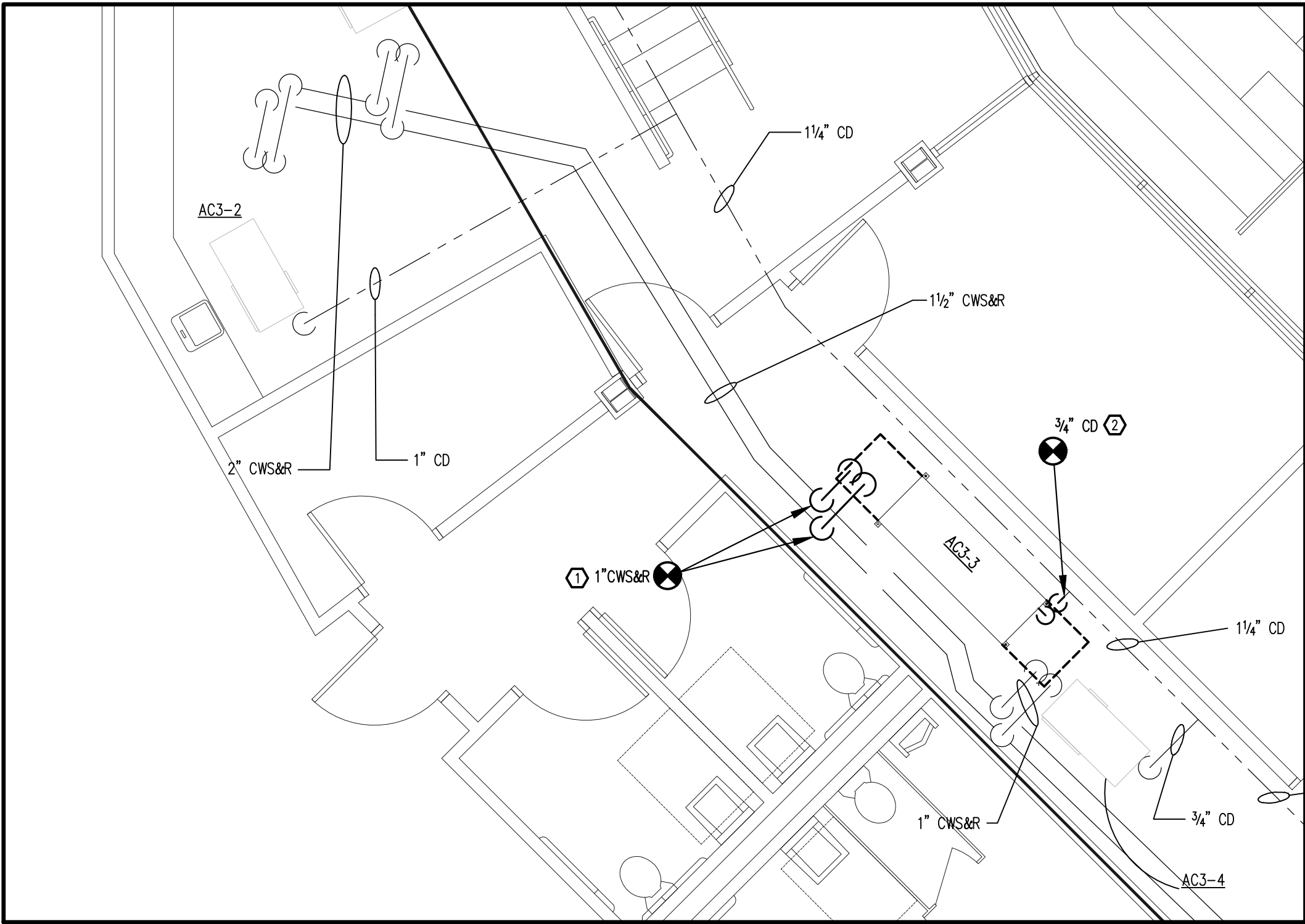
REV # DESCRIPTION

**HOWSER STADIUM
UPGRADE HVAC
FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA**

DRAWING TITLE:
PHASE 2 - ADD ALT SCOPE
FIRST FLOOR PLAN
NEW WORK
HVAC PIPING

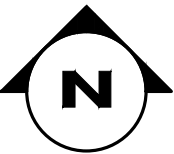
FILE: M4.1B
JOB NO.: 226-106
DATE : 10-22-2026
PLOT SIZE: 24x36
DRAWN BY: RA
CHECKED BY: CA
SHEET No.:

M4.1B



**PHASE 2 - ADDITIVE ALTERNATE SCOPE
THIRD FLOOR - NEW WORK - HVAC PIPING**

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



GENERAL NOTES:

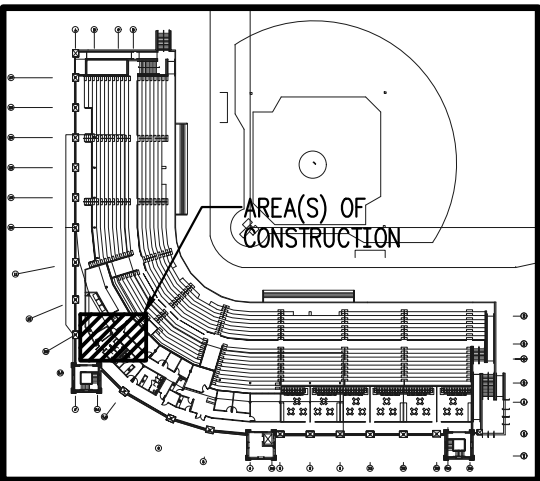
1. PROVIDE NEGATIVE AIR MACHINE(S) AND TEMPORARY CONSTRUCTION FILTERS OVER RETURN AIR OPENINGS; REMOVE AT COMPLETION OF WORK.
2. PROTECT EXISTING BUILDING COMPONENTS, FLOORS, WALLS, ARTWORK, TROPHIES, FURNITURE, ELECTRONIC EQUIPMENT, ETC. AS REQUIRED. COORDINATE W/OWNER FOR TEMPORARY RELOCATION OF ITEMS. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST.
3. COORDINATE CLOSELY WITH OTHER TRADES PRIOR TO BID AND DURING CONSTRUCTION.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND INCLUDE ALL COSTS TO ACCOMPLISH WORK SCOPE.

NEW WORK NOTES:

- ① NEW 1-1/2" TEES IN EXISTING CWS&R MAIN. REDUCE TO 1" RUN OUTS AND VALVE TRAIN TO NEW AC3-3. REFER TO DETAIL. REMOVE/REPLACE INSULATION AT NEW TEES AS REQUIRED.
- ② CONNECT NEW 3/4" COPPER CONDENSATE TRAP TO EXISTING 3/4" CONDENSATE PIPE. INSULATE.

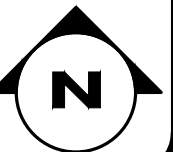
SPECIAL PIPING NOTE:

BASIS OF DESIGN IS FOR INSTALLATION OF WELDED (SCH 40 STEEL) OR SOLDERED (TYPE L COPPER) PIPING (REFER TO SPECIFICATIONS). AT THE CONTRACTOR'S DISCRETION, PRESS-TYPE FITTINGS MAY BE UTILIZED FOR PIPES 2.5" DIA AND SMALLER. FITTINGS SHALL BE VIEGA OR PRE-APPROVED EQUAL.



FIRST FLOOR - KEY PLAN

NOT TO SCALE



SEAL		PINNACLE ENGINEERING GROUP, P.A. 2032 THOMASVILLE ROAD, SUITE C TALLAHASSEE, FLORIDA 32308 Phone: 904.251.1111 Fax: 904.251.1112 Engineering Building #7793	
REV#	DESCRIPTION	DATE	

HOWSER STADIUM
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FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA

DRAWING TITLE:	PHASE 2 - ADD ALT SCOPE THIRD FLOOR NEW WORK HVAC PIPING
FILE:	M4.3B
JOB NO.:	226-106
DATE :	10-22-2026
PLOT SIZE:	24x36
DRAWN BY:	RA
CHECKED BY:	CA
SHEET No.:	M4.3B