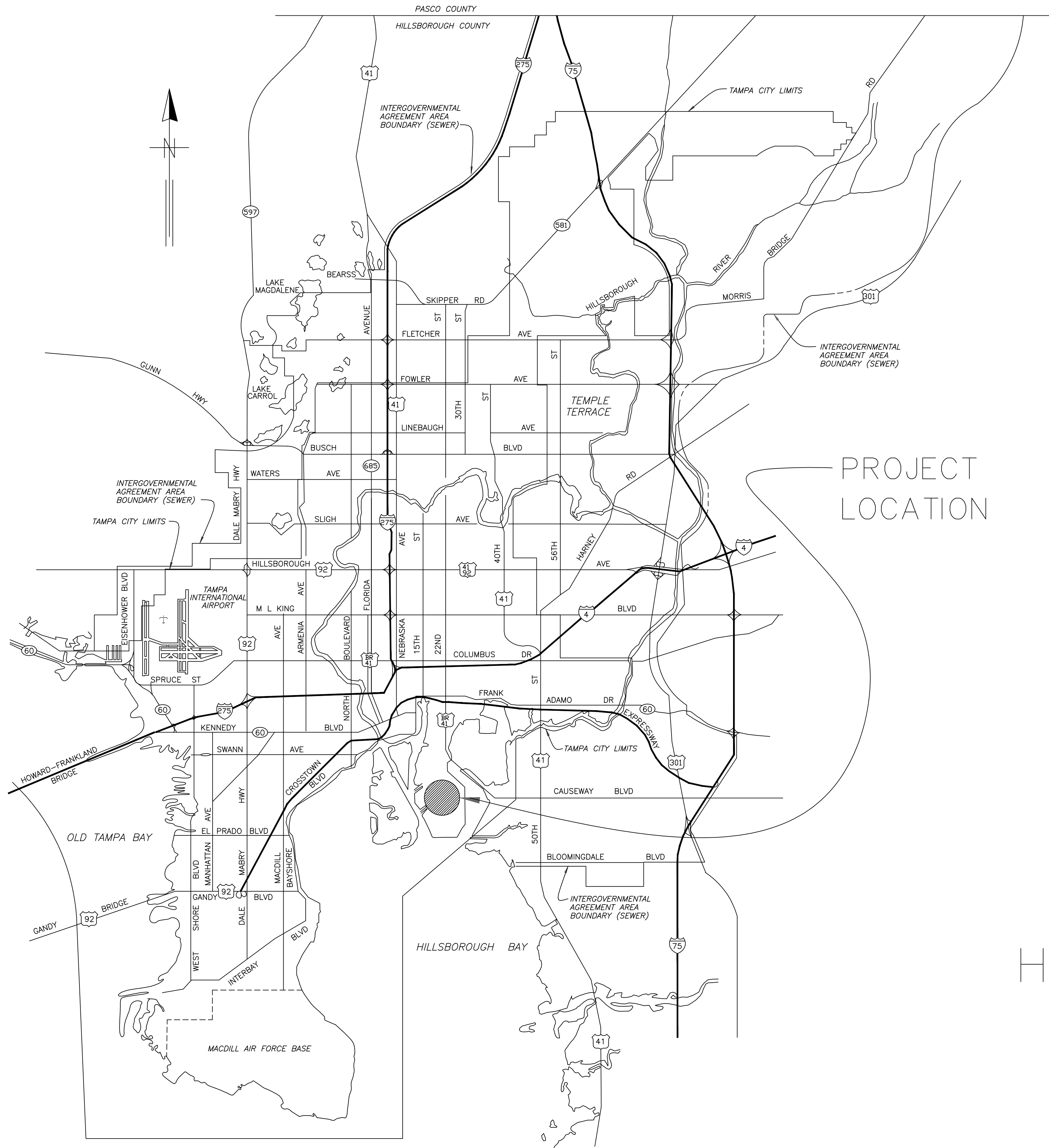
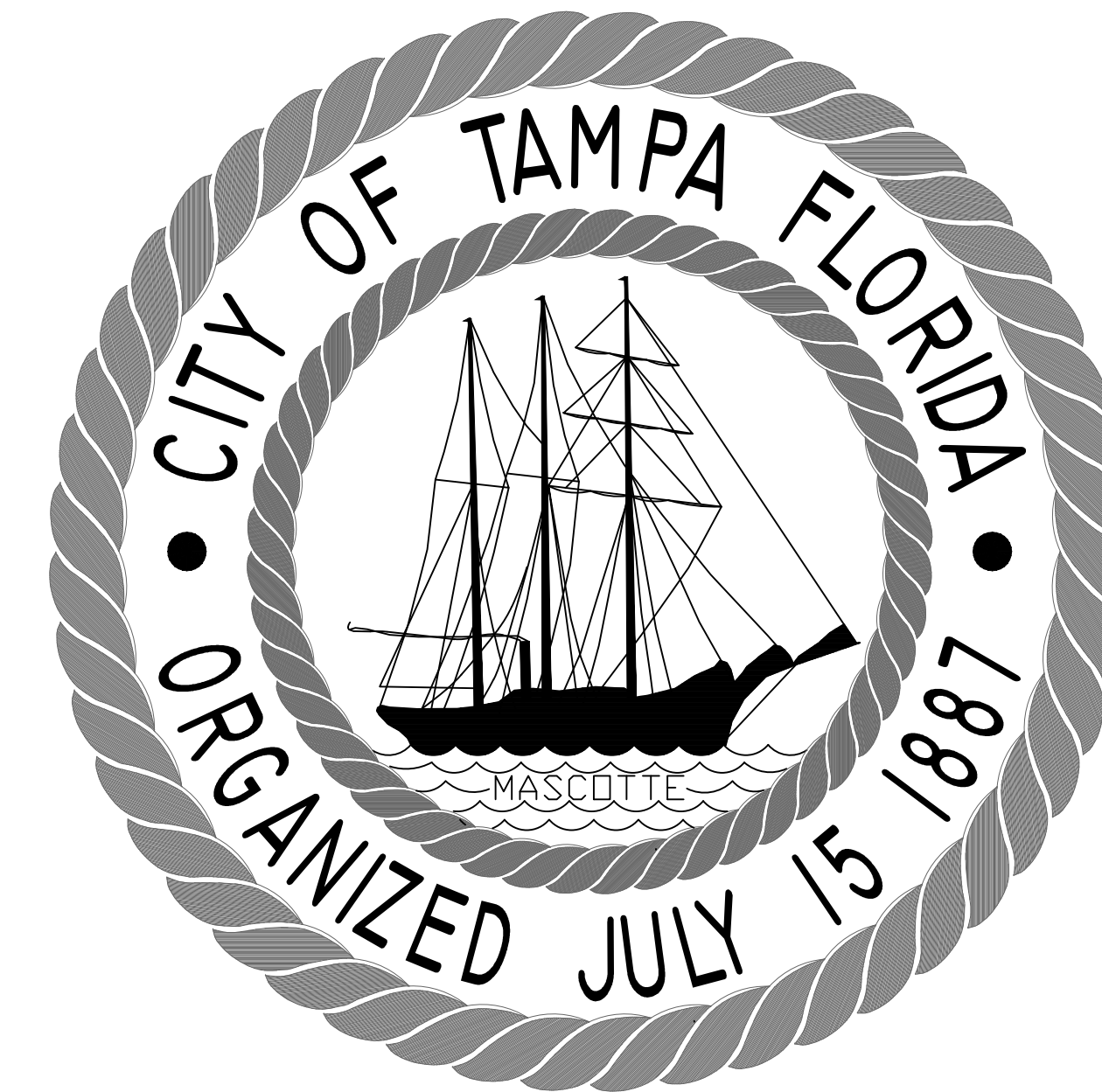


LOCATION MAP



CITY of TAMPA



PROJECT LOCATION

WASTEWATER DEPARTMENT

PLANS FOR
 HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CD SUBMITTAL
 CONTRACT No. 13-C-00039

VOLT+AIR
 CONSULTING ENGINEERS
 220 West 7th Avenue, Suite 210
 Tampa, Florida 33602 TEL 888.891.9713
 COA 27158 Project No. 13009

No.	DATE	REVISIONS
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DES:
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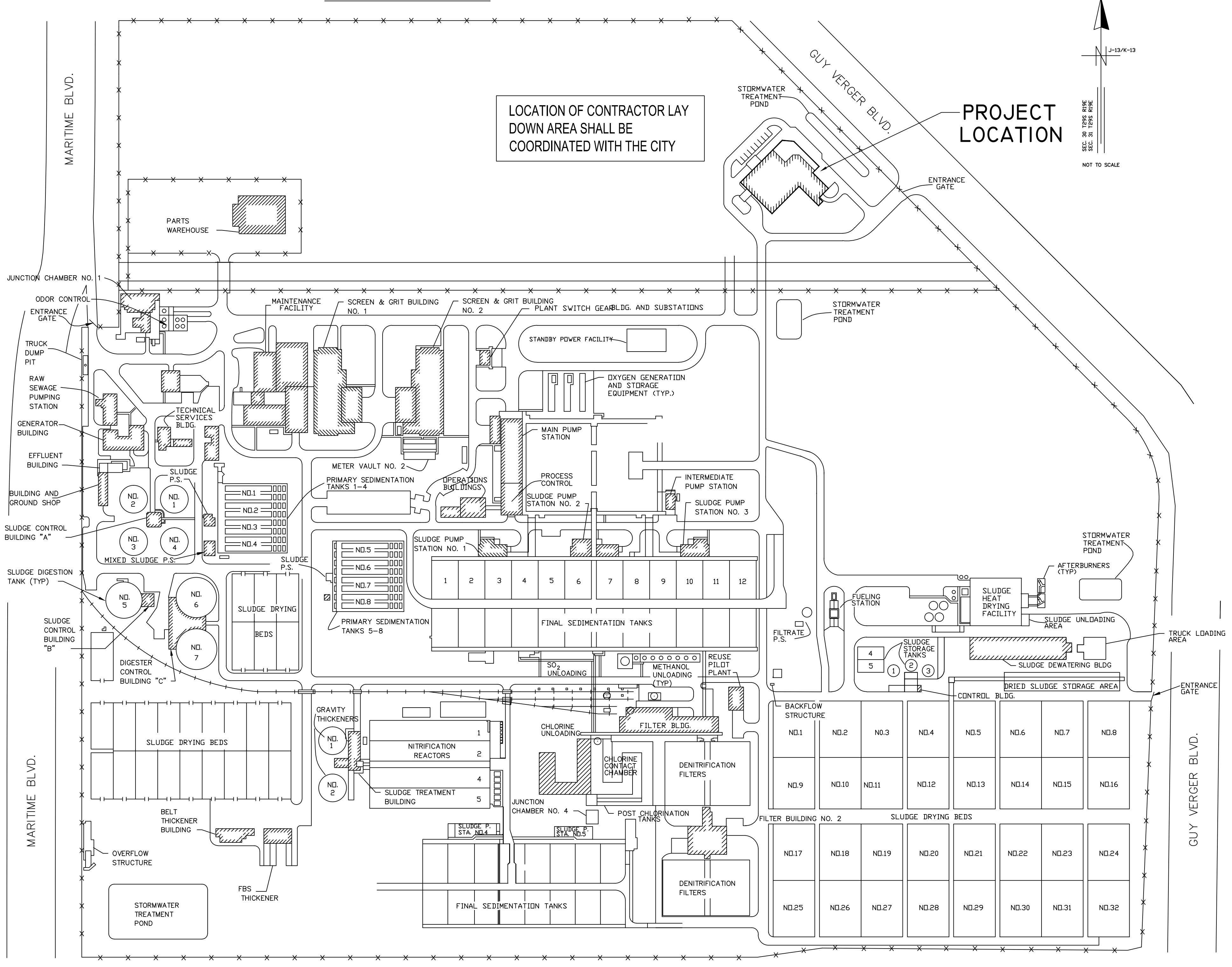
CITY of TAMPA
 WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

COVER SHEET

W.O. #5427
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LOCATION MAP



LOCATION OF CONTRACTOR LAY DOWN AREA SHALL BE COORDINATED WITH THE CITY

PROJECT LOCATION

REFERENCE DRAWINGS
 REFERENCE DRAWINGS ARE INCLUDED WITH THIS DRAWING SET TO PROVIDE THE CONTRACTOR WITH THE SAME REFERENCE DRAWINGS WHICH WERE USED BY THE ENGINEER TO PREPARE THE BID SET OF DRAWINGS. THE REFERENCE DRAWINGS ARE INCLUDED FOR REFERENCE ONLY. THE CONTRACTOR SHOULD VERIFY ANY AND ALL INFORMATION WHICH HE MAY OBTAIN FROM THESE REFERENCE DRAWINGS IN PERFORMING THE WORK.

1990: THE 1990 REFERENCE DRAWINGS ARE FROM THE ORIGINAL CONSTRUCTION DOCUMENTS FOR THE BUILDING CIRCA 1990.

2009: THE 2009 REFERENCE DRAWINGS ARE FROM AN HVAC RENOVATION WHICH OCCURRED CIRCA 2009 UNDER PROJECT TITLED "HFC AWTP ADMINISTRATION HVAC IMPROVEMENTS". THIS PROJECT DID THE FOLLOWING: (1) ADDED A NEW WATER COOLED CHILLER; (2) REPLACED THE BOILER WITH A NEW GAS FIRED BOILER; (3) REPLACED ACU-1 AND ACU-3 IN THE PENTHOUSE WITH NEW UNITS; AND (4) CLEANED ALL OF THE HOT WATER HEATING COILS AT EACH TERMINAL UNIT AND REHEAT LOCATION.

SOME MODIFICATIONS HAVE BEEN MADE TO THESE PROJECTS AFTER THEIR COMPLETION, BUT IN MOST CASES THE MODIFICATIONS ARE CONSIDERED GENERALLY MINOR BY THE ENGINEER, BUT SHOULD NONETHELESS BE VERIFIED BY THE CONTRACTOR PRIOR TO PERFORMING ANY WORK.

DRAWING LIST		
SHEET NUMBER	SHEET TITLE	ISSUE DATE
CS	COVER SHEET	July 5, 2013
LS	LOCATION & DRAWING LIST	July 5, 2013
M1	HVAC - LEGEND SYMBOLS ABBREVIATIONS & NOTES	July 5, 2013
M2	CHILLED AND HEATING HOT WATER SYSTEM CONTROL	July 5, 2013
M3	ACU-1 SYSTEM - OFFICE AREAS	July 5, 2013
M4	ACU-2 SYSTEM - MAIN LABORATORY AREAS	July 5, 2013
M5	ACU-3 SYSTEM - I.W. & BAY STUDY LABORATORIES	July 5, 2013
M6	ACU-4 SYSTEM - FUME HOOD SYSTEM	July 5, 2013
M7	MISCELLANEOUS SYSTEMS CONTROL	July 5, 2013

REFERENCE DRAWINGS	
DRAWING NUMBER	DRAWING TITLE
R1.A1	1990 GRADE FLOOR PLAN
R1.A2	1990 MAIN FLOOR PLAN
R1.A3	1990 ROOF PLAN & PENTHOUSE - REFERENCE
R1.A4	1990 MAIN FLOOR PLAN - NORTH
R1.A5	1990 MAIN FLOOR PLAN - SOUTH
R1.M1	1990 MAIN FLOOR PARTIAL NORTH PLAN AREA - OFFICE - HVAC
R1.M2	1990 MAIN FLOOR PARTIAL PLAN CENTER AREA LAB - HVAC
R1.M3	1990 MAIN FLOOR PARTIAL PLAN SOUTH AREA LABS - HVAC
R1.M4	1990 PENTHOUSE PLAN - HVAC
R1.M5	1990 PENTHOUSE SECTION - HVAC
R1.M6	1990 MECHANICAL ROOM & PENTHOUSE PIPING PLAN - HVAC
R1.M7	1990 GRADE FLOOR PLAN NORTH - HVAC
R1.M8	1990 GRADE FLOOR PLAN SOUTH - HVAC
R1.M9	1990 MAIN FLOOR PLAN NORTH PIPING PLAN - HVAC
R1.M10	1990 MAIN FLOOR PLAN SOUTH PIPING - HVAC
R1.M11	1990 AIR FLOW & CONTROL DIAGRAM - HVAC
R1.M12	1990 HYDRONIC FLOW & CONTROL DIAGRAM - HVAC
R1.M13	1990 SECTIONS & DETAILS - HVAC
R1.M14	1990 SCHEDULES - FANS - HVAC
R1.M15	1990 SCHEDULES - AIR TERMINAL UNITS - HVAC
R1.M16	SCHEDULES - HOT WATER REHEAT COILS - HVAC
R2.M1	2009 LEVEL 1 ENLARGED PLAN - HVAC
R2.M2	2009 LEVEL 1 PARTIAL PLAN NORTH - HVAC
R2.M3	2009 LEVEL 1 PARTIAL PLAN SOUTH - HVAC
R2.M4	2009 LEVEL 2 PARTIAL PLAN NORTH OFFICES - HVAC
R2.M5	2009 LEVEL 2 PARTIAL PLAN CENTER AREA - HVAC
R2.M6	2009 LEVEL 2 PARTIAL PLAN SOUTH AREA - HVAC
R2.M7	2009 LEVEL 3 PENTHOUSE PLAN - HVAC
R2.M8	2009 DETAILS - HVAC
R2.M9	2009 CONTROLS DETAILS - HVAC
R2.M10	2009 SCHEDULES - HVAC

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HFC AWTP ADMINISTRATION BUILDING
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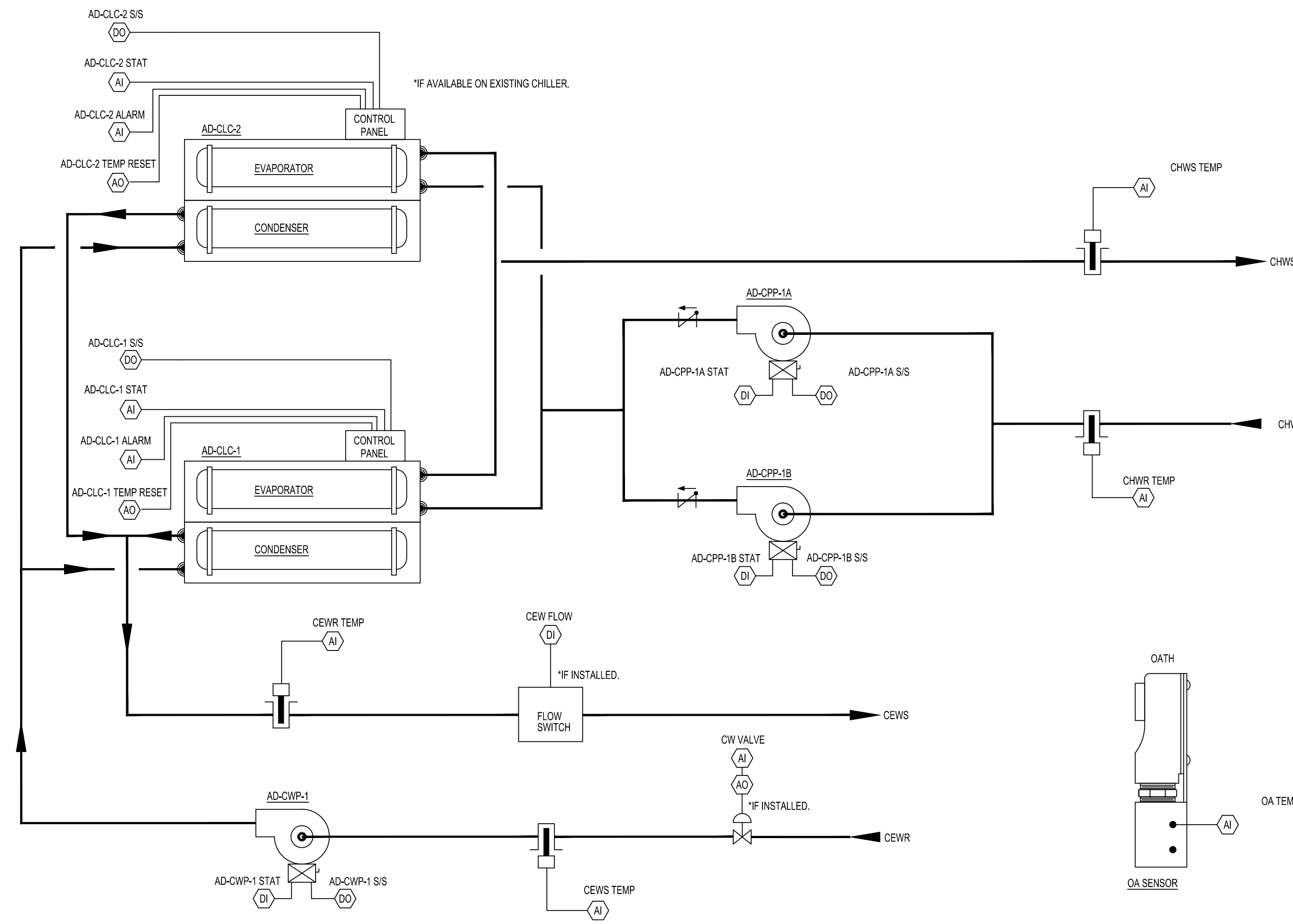
LOCATION & DRAWING LIST

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HVAC ABBREVIATIONS	HVAC PIPING SYMBOL LEGEND	EQUIPMENT	SCOPE OF WORK
<p>AFF ABOVE FINISHED FLOOR AFR ABOVE FINISHED ROOF AHU AIR HANDLING UNIT AI ANALOG IN AO ANALOG OUT BOP BOTTOM OF PIPE BHP BRAKE HORSEPOWER BTU BRITISH THERMAL UNIT CT COOLING TOWER CFM CUBIC FEET PER MINUTE CU CONDENSING UNIT DI DIGITAL IN DO DIGITAL OUT DDC DIRECT DIGITAL CONTROLS DN DOWN EAT ENTERING AIR TEMPERATURE ESP EXTERNAL STATIC PRESSURE EWT ENTERING WATER TEMPERATURE FCU FAN COIL UNIT FF FINAL FILTERS FLA FULL LOAD AMPS FPM FEET PER MINUTE GPM GALLONS PER MINUTE KW KILOWATT LAT LEAVING AIR TEMPERATURE LWT LEAVING WATER TEMPERATURE MBH THOUSAND BTUs PER HOUR MCA MINIMUM CIRCUIT AMPS MOCP MAXIMUM OVER CURRENT PROTECTION MOD MOTOR OPERATED CONTROL DAMPER (MOD) NC NORMALLY CLOSED NO NORMALLY OPEN NTS NOT TO SCALE OA OUTSIDE AIR OAL OUTSIDE AIR LOUVER PRV PRESSURE REDUCING VALVE PRS PRESSURE REDUCING STATION PSI POUNDS PER SQUARE INCH PSIG PSI GAUGE PTAC PACKAGED TERMINAL AIR CONDITIONER RA RETURN AIR RHC REHEAT COIL RPM REVOLUTIONS PER MINUTE SA SUPPLY AIR SP STATIC PRESSURE TSP TOTAL STATIC PRESSURE UNO UNLESS NOTED OTHERWISE VPH VOLTS/PHASE VAV VARIABLE AIR VOLUME VFD VARIABLE FREQUENCY DRIVE</p>	<p>HVAC PIPING SYMBOL LEGEND</p> <p>CHWS -CHILLED WATER SUPPLY CHWR -CHILLED WATER RETURN CD -CONDENSATE CR -CONDENSATE RETURN PC -PUMPED CONDENSATE HWR -HOT WATER RETURN HWS -HOT WATER SUPPLY -FLOW DIRECTION -GATE VALVE -BALL VALVE -CALIBRATING BALANCING VALVE -BUTTERFLY VALVE -GAS COCK -UNION -STRAINER -CONTROL VALVE -SOLENOID VALVE -PSI REG. -CHECK VALVE -FLOW SWITCH -FLEX CONNECTION -O.S.&Y. GATE VALVE -THREE-WAY CONTROL VALVE -THERMOMETER -P-TRAP -TWO-WAY CHECK VALVE -MANUAL VENT -PRESSURE GAUGE -ELBOW, TURNED DOWN -ELBOW, TURNED UP -TEE, OUTLET DOWN -TEE, OUTLET UP</p>	<p>EQUIPMENT</p> <p>EXHAUST DUCT UP TO FAN ABOVE EXHAUST FAN ON ROOF AND DUCT DROP TO BELOW INLINE CENTRIFUGAL FAN P-TRAP</p> <p>HVAC EQUIPMENT TAGS</p> <p>AHU-1 AIR HANDLING UNIT F-1 FAN RTU-1 ROOF TOP UNIT CU-1 CONDENSING UNIT VAV VARIABLE VOLUME BOX FPL-1 FAN POWERED VARIABLE VOLUME BOX EDH-1 ELECTRIC DUCT HEATER P-1 PUMP</p> <p>GENERAL</p> <p>REVISION REFERENCE DETAIL REFERENCE: TOP - DETAIL #, BOTTOM - DRAWING SHOWN ON NEUTRAL RELATIVE PRESSURE POSITIVE RELATIVE PRESSURE NEGATIVE RELATIVE PRESSURE SHEET NOTE CALLOUT SHEET NOTE CALLOUT SHEET NOTE CALLOUT</p> <p>CONTROLS</p> <p>FAN OR PUMP THERMOSTAT/TEMPERATURE SENSOR HUMIDISTAT/HUMIDITY SENSOR MOTORIZED CONTROL DAMPER TEMPERATURE SENSOR PRESSURE SENSOR STARTER</p>	<p>SCOPE OF WORK</p> <p><u>SCOPE OF WORK</u></p> <p>THE FOLLOWING SCOPE OF WORK OUTLINES THE GENERAL WORK REQUIRED FOR THIS PROJECT. THIS SCOPE NARRATIVE IS GENERAL IN NATURE AND NOT INTENDED TO BE ALL INCLUSIVE OF WORK REQUIRED FOR SUCCESSFUL COMPLETION OF THIS PROJECT. THIS SCOPE NARRATIVE WILL NOT COVER ALL TASKS, MATERIALS, MEETINGS, COMPONENTS, AND EQUIPMENT. IT IS TO BE USED AS A REFERENCE AND GUIDE ONLY. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND READING ALL CONTRACT DOCUMENTS INCLUDING ALL SPECIFICATIONS AND DRAWINGS.</p> <p>IN GENERAL, THE SCOPE OF THIS PROJECT IS TO REPLACE AND PROVIDE A NEW BACNET BUILDING AUTOMATION SYSTEM FOR EXISTING HVAC EQUIPMENT AT THE CITY OF TAMPA AWTP ADMINISTRATION BUILDING. EXISTING FRONT END STATION IS TO BE UPGRADED WITH NEW GRAPHICS WITH ALARM AND TRENDS CAPABILITY FOR INTEGRATION OF NEW SYSTEM. BASIS OF DESIGN IS BAC CONTROLS, TEST, ADJUST, AND BALANCE WILL BE REQUIRED FOR ALL EXISTING SYSTEMS.</p> <p>ALL HVAC SHUTDOWNS ARE LIMITED TO 4 HOURS PER OWNER DIRECTION AND MUST OCCUR DURING UNOCCUPIED HOURS SUCH AS NIGHTS AND WEEKENDS. COORDINATE SHUTDOWNS WITH OWNER'S PROJECT MANAGER AND PROVIDE MINIMUM 72 HOURS WRITTEN NOTICE. TEMPORARY COOLING MEASURES SHALL BE IN PLACE FOR THE "LIMS" ROOM. CONTRACTOR SHALL SUBMIT TEMPORARY COOLING MEASURES FOR OWNER AND ENGINEER REVIEW BEFORE IMPLEMENTATION.</p> <p>EXISTING PNEUMATIC OPERATED WATER CONTROL VALVES FOR ALL SYSTEMS ARE TO BE REPLACED, BASED ON EXISTING BUILDING PLANS. FAN COIL UNITS 1, 2, 3, 4 AND ACU-2 HAVE NEWER CONTROL VALVES WITH ELECTRIC ACTUATORS. THESE ARE TO BE TESTED AND REUSED. UNIT PRICING FOR REPLACEMENT OF EXISTING ELECTRIC ACTUATED WATER CONTROL VALVES IS TO BE PROVIDED.</p> <p>ALL OTHER END DEVICES TO BE REUSED (DIFFERENTIAL PRESSURE SWITCHES, TEMPERATURE SENSORS, ETC) ARE TO BE TESTED AND UNIT PRICING PROVIDED FOR REPLACEMENT OF EACH DEVICE.</p> <p>THE OWNER HAS INDICATED THAT ACU-4 IS NO LONGER IN OPERATION HOWEVER THE FUME HOODS THAT IT SERVED ARE STILL BEING UTILIZED. CONTROL POINTS AND SEQUENCES OF OPERATIONS ARE BEING PROVIDED FOR REFERENCE. IT IS THE ENGINEER'S RECOMMENDATION THAT ACU-4 BE EITHER REPLACED OR RE-COMMISSIONED TO ENSURE A PROPER AIR BALANCE WHEN THE FUME HOODS ARE IN OPERATION.</p> <p><u>SYSTEM DESCRIPTIONS</u></p> <p><u>WATERSIDE</u></p> <p>A CHILLED WATER SYSTEM AND A HEATING HOT WATER SYSTEM PROVIDE CHILLED WATER FOR COOLING AND HEATING HOT WATER FOR HEATING AND DEHUMIDIFICATION.</p> <p><u>CHILLED WATER SYSTEM</u></p> <p>THE CHILLED WATER SYSTEM CONSISTS OF TWO CHILLERS (AD-CLC-1 AND AD-CLC-2) IN PARALLEL CONFIGURATION WITH LEADLAG OPERATION THROUGH MANUAL CHILLER SWITCHOVER. CONSTANT FLOW PRIMARY PUMPS (AD-CPP-1A AND AD-CPP-1B) SERVE THE CHILLED WATER SYSTEM. CHILLED WATER PUMPS ARE IN PARALLEL CONFIGURATION WITH LEADLAG OPERATION THROUGH MANUAL PUMP SWITCHOVER. CONDENSER WATER SYSTEM CONSISTS OF A SINGLE CONDENSER WATER PUMP (AD-CWP-1) WITH MODULATING CONTROL VALVE. CONDENSER WATER IS PROVIDED BY AN EFFLUENT WATER SOURCE.</p> <p><u>HEATING HOT WATER SYSTEM CONTROL</u></p> <p>THE HEATING HOT WATER SYSTEM CONSISTS OF A SINGLE BOILER (AD-WH-1) FEEDING A REHEAT WATER LOOP AND A SEPARATE HEATING HOT WATER LOOP. CONSTANT FLOW PRIMARY PUMPS (AD-HPP-1A AND AD-HPP-1B) SERVE THE REHEAT WATER LOOP SYSTEM. CONSTANT FLOW PRIMARY PUMPS (AD-HPP-2A AND AD-HPP-2B) SERVE THE HEATING HOT WATER LOOP SYSTEM. PUMPS IN EACH LOOP ARE IN PARALLEL, CONFIGURATION WITH LEADLAG OPERATION THROUGH MANUAL PUMP SWITCHOVER.</p> <p><u>AIRSIDE - MAIN SYSTEMS</u></p> <p>THREE MAIN AIR HANDLING UNITS SERVE THE OFFICE AREAS, THE MAIN LABORATORY, AND THE I.W. & BAY STUDY LABORATORIES.</p> <p><u>OFFICE AREAS</u></p> <p>A VARIABLE AIR VOLUME SYSTEM (ACU-1) AND AIR TERMINAL UNITS WITH REHEAT COILS SERVES THE OFFICE AREAS. ACU-1 SYSTEM CONSISTS OF A SUPPLY FAN AND RETURN FAN WITH VARIABLE FREQUENCY DRIVES, OUTSIDE, RETURN, AND RELIEF AIR CONTROL DAMPERS, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP. CONSTANT VOLUME EXHAUST FANS AD-EAF-2 AND AD-EAF-3 SERVE THIS AREA.</p> <p><u>MAIN LABORATORY</u></p> <p>A 100% OUTDOOR AIR, CONSTANT VOLUME TWO-POSITION SYSTEM (ACU-2) WITH ZONE REHEAT COILS SERVE THE MAIN LABORATORY AREAS. ACU-2 SYSTEM CONSISTS OF A SUPPLY FAN WITH VARIABLE FREQUENCY DRIVE, OUTSIDE AIR CONTROL DAMPER, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP. CONSTANT VOLUME EXHAUST FAN AD-EAF-4, CONSTANT VOLUME TWO-POSITION EXHAUST FANS AD-EAF-1, AD-EAF-3, AND AD-EAF-5 WITH EXHAUST AIR TERMINAL UNITS, AND CONSTANT VOLUME FUME HOOD EXHAUST FANS AD-EAF-11, AD-EAF-15, AD-EAF-21, AD-EAF-22, AND AD-EAF-25 SERVE THIS AREA. VARIOUS CONSTANT VOLUME FUME EXTRACTOR EXHAUST FANS ALSO SERVE THIS AREA. CONTRACTOR TO IDENTIFY AND UPGRADE DDC FOR THESE FANS.</p> <p><u>I.W. & BAY STUDY LABORATORIES</u></p> <p>A CONSTANT VOLUME TWO-POSITION SYSTEM (ACU-3) WITH ZONE REHEAT COILS SERVE THE I.W. & BAY STUDY LABORATORIES. ACU-3 SYSTEM CONSISTS OF A SUPPLY FAN AND RETURN FAN WITH VARIABLE FREQUENCY DRIVES, OUTSIDE, RETURN, AND RELIEF AIR CONTROL DAMPERS, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP. CONSTANT VOLUME EXHAUST FAN AD-EAF-7 AND CONSTANT VOLUME TWO-POSITION EXHAUST FAN AD-EAF-4 WITH EXHAUST AIR TERMINAL UNIT SERVES THIS AREA.</p> <p><u>FUME HOOD SYSTEM</u></p> <p>A DEDICATED VARIABLE AIR VOLUME MAKE-UP AIR SYSTEM (ACU-4) WITH CONSTANT VOLUME TWO-POSITION AIR TERMINAL UNITS SERVE THE SWITCH OPERATED FUME HOODS LOCATED IN THE MAIN LABORATORY AND I.W. & BAY STUDY LABORATORIES. ACU-4 SYSTEM CONSISTS OF A SUPPLY FAN WITH VARIABLE FREQUENCY DRIVE, OUTSIDE AIR CONTROL DAMPER, BYPASS DUCT WITH BYPASS CONTROL DAMPER AND AIRFLOW MEASURING STATION, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP. DEDICATED FUME HOOD EXHAUST FANS SERVE EACH FUME HOOD.</p> <p><u>AIRSIDE - MISCELLANEOUS SYSTEMS</u></p> <p>THROUGHOUT THE BUILDING, A SERIES OF FAN COIL UNITS, HEATING WATER UNITS, AND EXHAUST FANS WITH T-STAT CONTROL, SERVE VARIOUS AREAS. REFER TO REFERENCE PLANS FOR LOCATIONS.</p>
<p>GENERAL NOTES</p> <p>1. INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER'S REPRESENTATIVE AND PROPER COORDINATION WITH OTHER TRADES. PRE-WORK SHALL BE PERFORMED TO MAKE THE SHUTDOWN PERIOD AS BRIEF AS POSSIBLE. CONTRACTOR SHALL PROVIDE 72 HOUR WRITTEN NOTICE THAT THE SYSTEMS WILL BE OFF LINE.</p>	<p>CODE COMPLIANCE</p> <p>1. TO THE BEST OF MY KNOWLEDGE, THESE PLANS AND SPECIFICATIONS ARE COMPLETE AND COMPLY WITH THE 2010 FLORIDA BUILDING CODE.</p>		

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CHILLER PLANT SYSTEM CONTROLS

CHILLED WATER SYSTEM CONTROL:

THE CHILLED WATER SYSTEM CONSISTS OF TWO CHILLERS (AD-CLC-1 AND AD-CLC-2) IN PARALLEL CONFIGURATION WITH LEAD/LAG OPERATION THROUGH MANUAL CHILLER SWITCHOVER. CONSTANT FLOW PRIMARY PUMPS (AD-CPP-1A AND AD-CPP-1B) SERVE THE CHILLED WATER SYSTEM. CHILLED WATER PUMPS ARE IN PARALLEL CONFIGURATION WITH LEAD/LAG OPERATION THROUGH MANUAL PUMP SWITCHOVER. CONDENSER WATER SYSTEM CONSISTS OF A SINGLE CONDENSER WATER PUMP (AD-CWP-1) WITH MODULATING CONTROL VALVE.

CHILLER START/STOP CONTROL:

UPON A CALL FOR CHILLED WATER BY THE BAS, THE LEAD CHILLER SHALL INITIATE ITS START SEQUENCE.

THE START SEQUENCE SHALL ENABLE THE CONDENSER WATER PUMP. UPON VERIFICATION OF CONDENSER WATER SUPPLY TEMPERATURE IS WITHIN MANUFACTURER'S RANGE, THE LEAD CHILLED WATER PUMP SHALL BE ENABLED.

THE CHILLER SHALL BE ENABLED UPON VERIFICATION OF FLOW FROM THE LEAD CHILLED WATER PUMP, VERIFICATION OF CHILLED WATER RETURN TEMPERATURE IS WITHIN MANUFACTURER'S RANGE, AND AFTER A PERIOD OF 60 SEC (ADJ.).

THE CHILLER SHALL STOP WHEN NO THERE IS NO CALL FOR CHILLED WATER BY THE BAS, THE CHILLER SHALL ALSO STOP THROUGH THE ACTION OF ITS OWN SAFETIES.

CONDENSER WATER SUPPLY TEMPERATURE CONTROL:

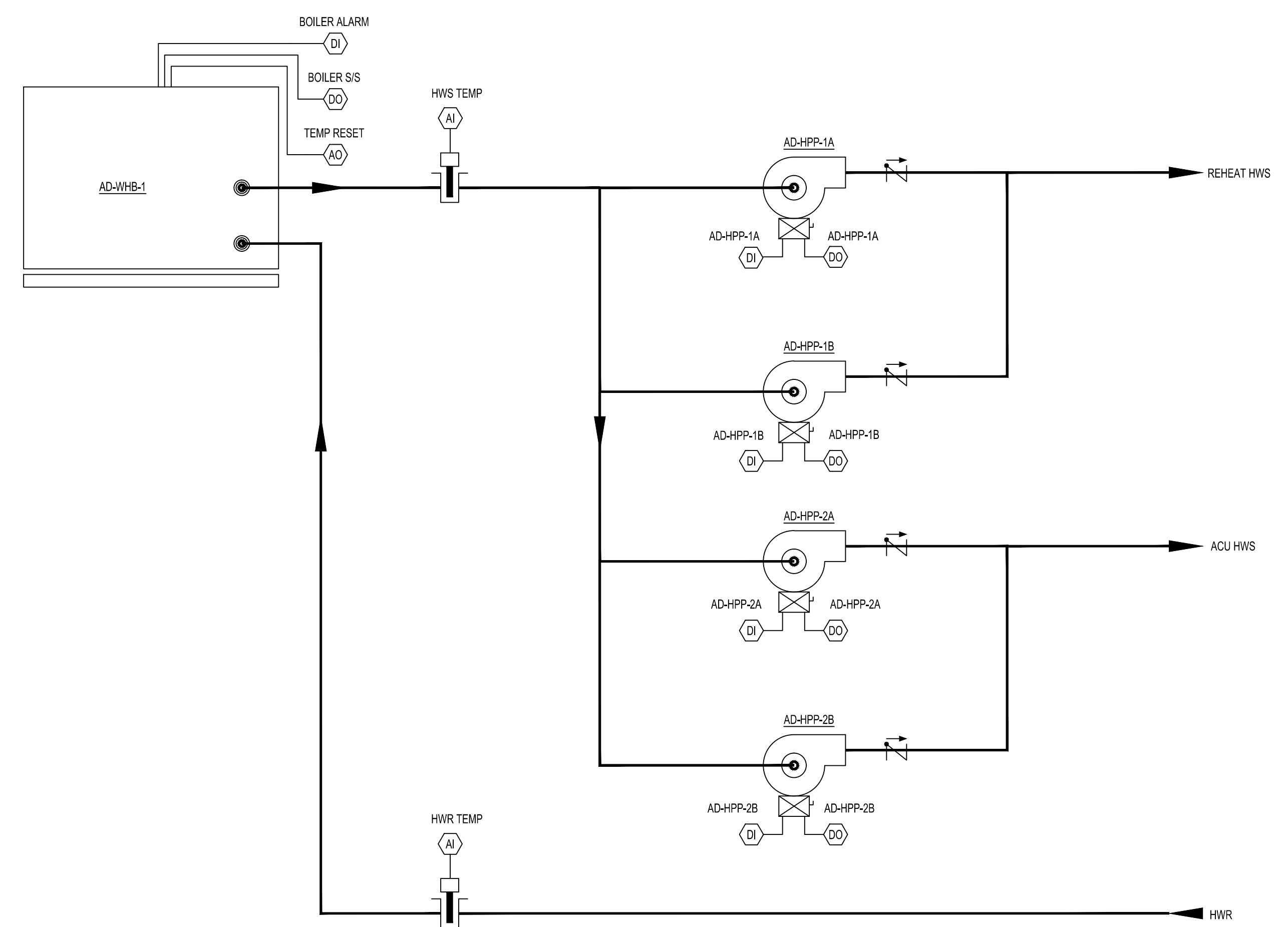
A MODULATING CONTROL VALVE SHALL MAINTAIN THE CONDENSER WATER SUPPLY TEMPERATURE OF 85 DEG F. (ADJ.)

CHILLED WATER PUMP START/STOP:

UPON LOSS OF FLOW VERIFICATION OR IF LEAD PUMP FAILS TO START, THE LAG PUMP SHALL START. VISUAL AND AUDIBLE ALARMS SHALL BE INITIATED. LEAD/LAG ASSIGNMENTS SHALL SWITCH ON A TWO WEEK BASIS (ADJ.).

CHILLER PLANT POINT SUMMARY

INPUTS			OUTPUTS		
DESCRIPTIONS	SIGNAL	NO	SIGNAL	DESCRIPTIONS	
AD-CLC-1-START/STOP	AI	1	DO	AD-1-CLC-START/STOP	
AD-CLC-1-ALARM	AI	2	AO	AD-1-CLC-TEMP RESET	
AD-CLC-2-STATUS	DI	3	DO	AD-2-CLC-START/STOP	
AD-CLC-2-ALARM	AI	4	AO	AD-2-CLC-TEMP RESET	
AD-CPP-1A STATUS	DI	5	DO	AD-CPP-1A START/STOP	
AD-CPP-1B STATUS	DI	6	DO	AD-CPP-1B START/STOP	
CHWS TEMP	AI	7	DO	AD-CWP-1 START/STOP	
CHWR TEMP	AI	8	AO	CONDENSER WATER VALVE CONTROL	
AD-CWP-1 STATUS	DI	9			
CEWS TEMP	AI	10			
CEWR TEMP	AI	11			
CEW FLOW	AI	12			
OA TEMP	AI	13			
CONDENSER WATER VALVE FEEDBACK	AI	14			
TEMP CONTROL COMP PRESS	AI	15			
LAB COMP PRESS	AI	16			
LAB VACCUM	AI	17			



BOILER PLANT SYSTEM CONTROLS

HEATING HOT WATER SYSTEM CONTROL:

THE HEATING HOT WATER SYSTEM CONSISTS OF A SINGLE BOILER (AD-WHB-1) FEEDING A REHEAT WATER LOOP AND A SEPARATE HEATING WATER LOOP. CONSTANT FLOW PRIMARY PUMPS (AD-HPP-1A AND AD-HPP-1B) SERVE THE REHEAT WATER LOOP SYSTEM. CONSTANT FLOW PRIMARY PUMPS (AD-HPP-2A AND AD-HPP-2B) SERVE THE HEATING WATER LOOP SYSTEM. PUMPS IN EACH LOOP ARE IN PARALLEL CONFIGURATION WITH LEAD/LAG OPERATION.

BOILER START/STOP CONTROL:

UPON A CALL FOR HEATING HOT WATER BY THE BAS, THE BOILER SHALL INITIATE ITS START SEQUENCE.

THE START SEQUENCE SHALL ENABLE THE LEAD PUMP FOR THE CORRESPONDING LOOP CALLING FOR HEATING HOT WATER. THE BOILER SHALL BE ENABLED UPON VERIFICATION OF FLOW FROM THE LEAD PUMP AND AFTER A PERIOD OF 60 SEC (ADJ.).

THE BOILER SHALL DE-ENERGIZE WHEN NO THERE IS NO CALL FOR HEATING HOT WATER BY THE BAS. THE BOILER SHALL ALSO STOP THROUGH THE ACTION OF ITS OWN SAFETIES.

HEATING HOT WATER SUPPLY TEMPERATURE CONTROL:

HEATING HOT WATER SUPPLY TEMPERATURE SHALL RESET LINEARLY BASED ON OUTDOOR AIR TEMPERATURE. AT AN OUTSIDE AIR TEMPERATURE OF 80 DEG F, THE HEATING HOT WATER SUPPLY TEMPERATURE SHALL BE 140 DEG F. AT AN OUTSIDE AIR TEMPERATURE OF 30 DEG F, THE HEATING HOT WATER SUPPLY TEMPERATURE SHALL BE 190 DEG F.

UNDER MANUAL CONTROL, THE BOILER SHALL MAINTAIN A HEATING WATER SUPPLY TEMPERATURE AS INDICATED ON ITS LOCAL PANEL.

REHEAT WATER AND HEATING WATER PUMPS ALARMS:

UPON LOSS OF FLOW VERIFICATION OR IF LEAD PUMP FAILS TO START, THE LAG PUMP SHALL START. VISUAL AND AUDIBLE ALARMS SHALL BE INITIATED. LEAD/LAG ASSIGNMENTS SHALL SWITCH ON A TWO WEEK BASIS (ADJ.).

BOILER PLANT POINT SUMMARY

INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
BOILER ALARM	AI	1	DO	BOILER START/STOP	
HWS TEMP	AI	2	AO	BOILER TEMP RESET	
HWR TEMP	DI	3	DO	AD-HPP-1A START/STOP	
AD-HPP-1A STATUS	AI	4	AO	AD-HPP-1B START/STOP	
AD-HPP-1B STATUS	DI	5	DO	AD-HPP-2A START/STOP	
AD-HPP-2A STATUS	DI	6	DO	AD-HPP-2B START/STOP	
AD-HPP-2B STATUS	AI	7			

B NO SCALE CHILLER PLANT CONTROLS

A NO SCALE BOILER PLANT CONTROLS

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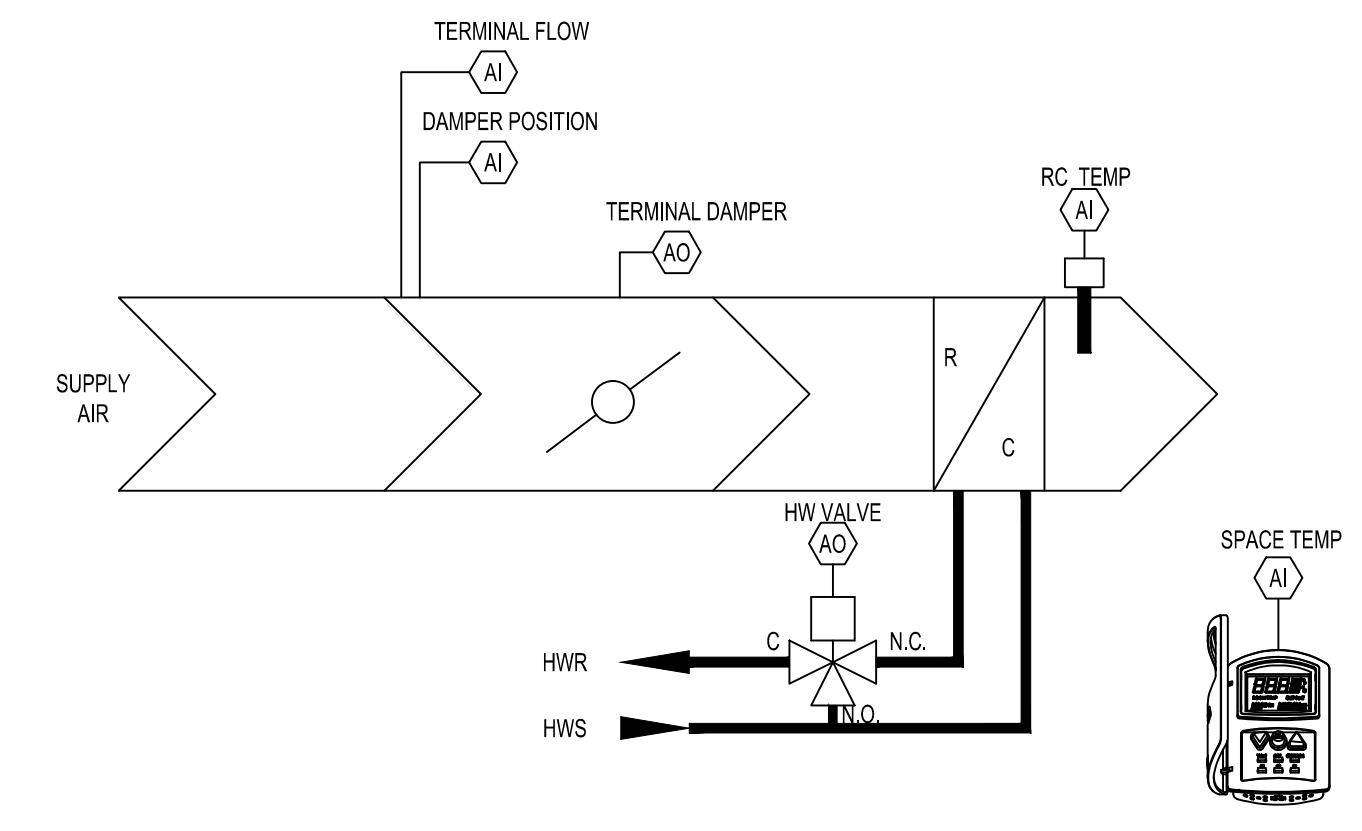
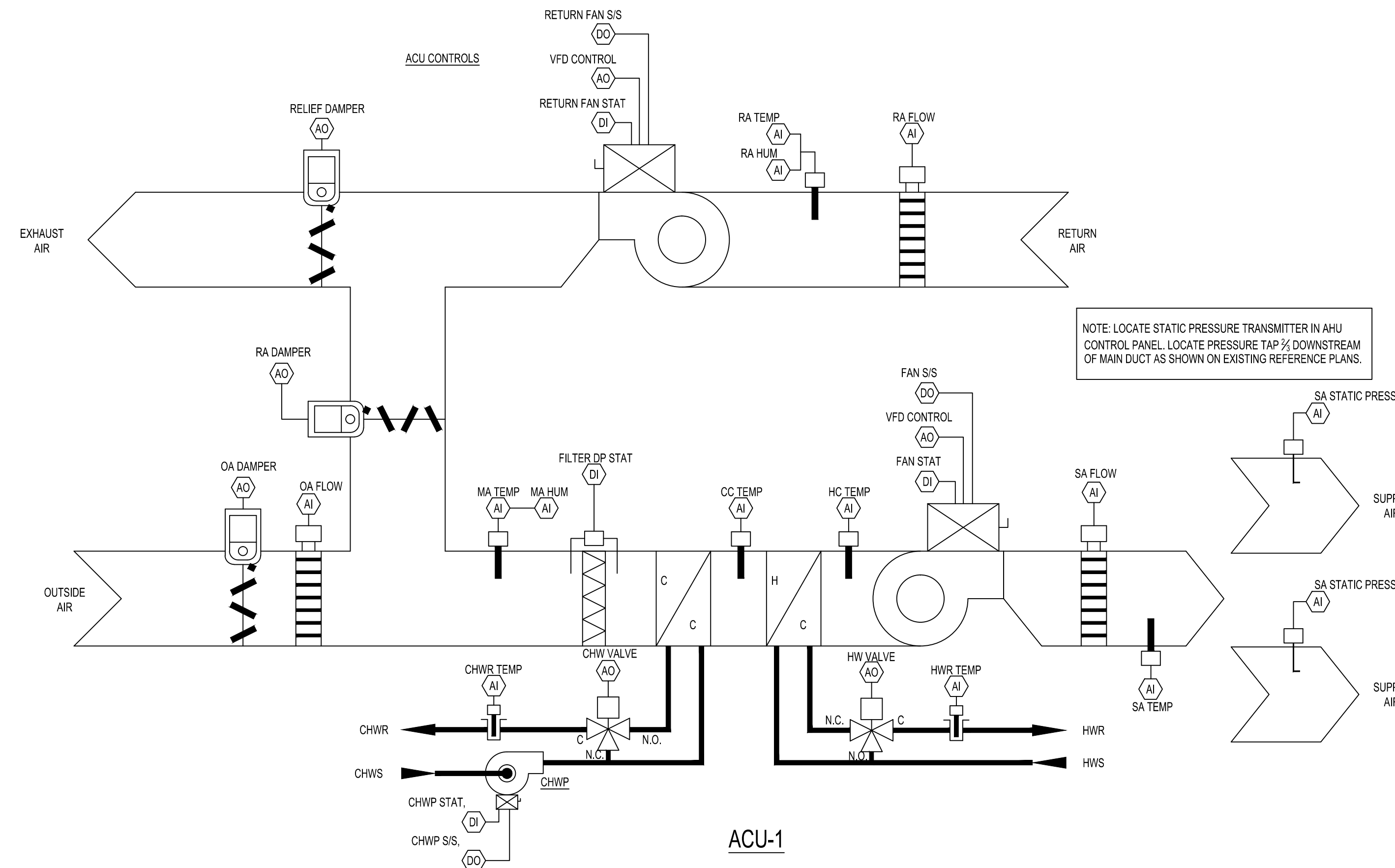
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CITY of TAMPA
WASTEWATER DEPARTMENT

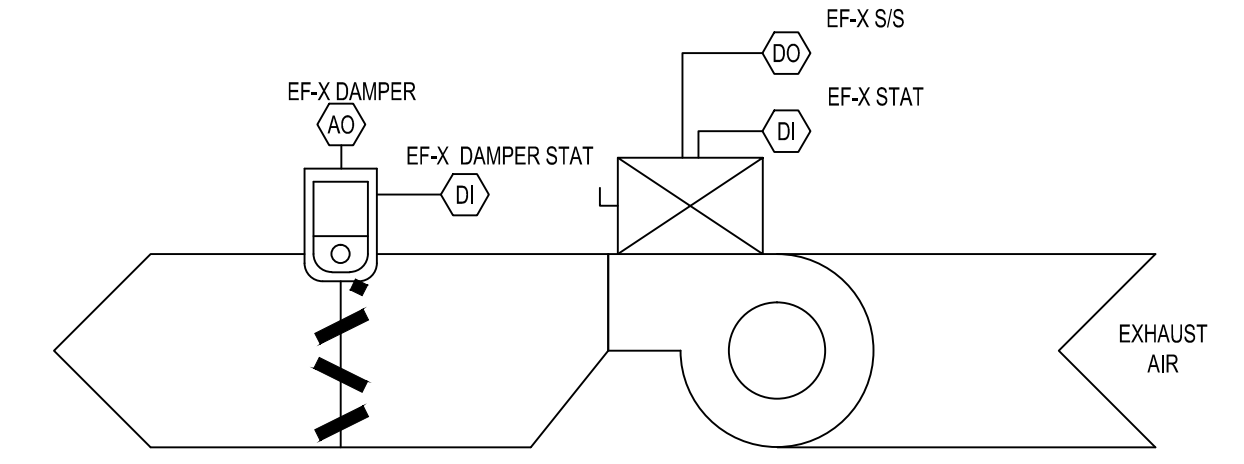
HFC AWTP ADMINISTRATION BUILDING
BUILDING CONTROL SYSTEM
100% CONSTRUCTION DOCUMENTS

CHILLED AND HEATING
HOT WATER SYSTEM
CONTROL

W.O. #5427
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M2
OF



TYPICAL AIR TERMINAL UNIT



TYPICAL EXHAUST FAN

ACU-1 SYSTEM CONTROLS

ACU-1 CONTROL:
 ACU-1 SYSTEM CONSISTS OF A SUPPLY FAN AND RETURN FAN WITH VARIABLE FREQUENCY DRIVES, OUTSIDE, RETURN, AND RELIEF AIR CONTROL DAMPERS, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP.
OCCUPIED MODE:
 ACU-1 WILL ENTER THE OCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)
 IN THE OCCUPIED MODE, THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED. THE 3-WAY CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE CHILLED WATER COIL LEAVING AIR TEMPERATURE SETPOINT OF 55 DEG F (ADJ).
 RETURN AIR HUMIDITY SHALL BE MONITORED. IF RETURN HUMIDITY EXCEEDS 60% SETPOINT (ADJ.), CHILLED WATER LEAVING AIR TEMPERATURE SHALL RESET DOWN AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 55 DEG F (ADJ). ONCE SETPOINT IS ACHIEVED, THE UNIT WILL RESUME NORMAL OPERATION.
 MIXED AIR TEMPERATURE SHALL BE MONITORED. IF MIXED AIR TEMPERATURE DROPS BELOW 50 DEG F (ADJ.), THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED. CHILLED WATER CONTROL VALVE SHALL OPEN TO THE CHILLED WATER COIL AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 55 DEG F (ADJ). ONCE SETPOINT IS ACHIEVED, THE UNIT WILL RESUME NORMAL OPERATION.
 OUTSIDE AIR DAMPERS SHALL MODULATE TO MAINTAIN THE OUTSIDE AIR CFM SETPOINT OF 1850 CFM (ADJ.) AS SENSED BY THE OUTSIDE AIRFLOW MONITORING STATION. IF THE OUTSIDE AIR CFM IS NOT ACHIEVED AFTER THE OUTDOOR DAMPER IS FULLY OPEN, THEN THE RETURN AIR DAMPER SHALL MODULATE CLOSED IN ORDER TO MAINTAIN THE OUTSIDE AIR CFM.
 THE SUPPLY FAN VFD SHALL MODULATE SUPPLY FAN SPEED TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT SET BY TAB. THE BAS SHALL MONITOR ALL SUPPLY TERMINAL BOXES ASSOCIATED WITH ACU-1. IF ALL THE TERMINALS ARE LESS THAN 92% OPEN, THE STATIC PRESSURE SETPOINT WILL DECREASE BY 5%. IF ANY TERMINAL EXCEEDS 98% OPEN, THE STATIC PRESSURE SETPOINT WILL INCREASE BY 5% UNTIL THE MAXIMUM VALUE FOR ANY TERMINAL IS 95% OPEN. THE SUPPLY AIR FLOW MONITORING STATION WILL MONITOR THE SUPPLY AIR CFM.
 THE RETURN FAN VFD SHALL MODULATE RETURN FAN SPEED TO PROVIDE A RETURN AIRFLOW (AS SENSED BY RETURN AIR AIRFLOW MONITORING STATION) EQUAL TO THE DIFFERENCE OF THE SUPPLY AIR AND THE AIRFLOW OF EXHAUST FANS AD-EAF-2 (1300 CFM) AND AD-EAF-8 (300 CFM).
 IF OUTSIDE AIR TEMPERATURE DROPS BELOW 50 DEG F (ADJ.), THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL MODULATE OPEN TO MAINTAIN A MIXED AIR TEMPERATURE OF 55 DEG F (ADJ).
UNOCCUPIED MODE
 ACU-1 WILL ENTER THE UNOCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)
 IN THE UNOCCUPIED MODE, THE OUTSIDE AIR AND THE RELIEF AIR DAMPER SHALL CLOSE AND EXHAUST FANS SHALL DE-ENERGIZE. SPACE TEMPERATURE SETPOINTS WILL BE RESETTED TO AN ADJUSTABLE NIGHT SETBACK SETPOINT. IF ALL SETPOINTS ARE SATISFIED FOR A PERIOD OF 30MIN (ADJ.) THEN ACU-1 SHALL DE-ENERGIZE.
 HIGH AND LOW TEMPERATURE AND CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

AIR TERMINAL UNIT CONTROL:
 THE BAS SHALL MODULATE THE AIR TERMINAL UNIT CFM FROM ITS MINIMUM TO MAXIMUM SCHEDULED VALUE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.
 THE 3-WAY HOT WATER REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT IF THE SETPOINT IS NOT MET BY THE AIR TERMINAL UNIT'S MINIMUM SCHEDULED CFM VALUE.
 HIGH AND LOW TEMPERATURE AND CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

EXHAUST FAN CONTROL
 EXHAUST FANS AD-EAF-2 AND AD-EAF-8 SHALL BE INTERLOCKED WITH ACU-1 OUTSIDE AIR DAMPER AND ACU-1 FAN STATUS. CONTROL DAMPERS FOR EACH FAN SHALL OPEN WHEN EXHAUST FANS ARE ENABLED.

ACU-1 POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
SUPPLY FAN STATUS	DI	1	DO	SUPPLY FAN START/STOP	
SUPPLY AIR STATIC PRESS 1	AI	2	AO	SUPPLY FAN VFD CONTROL	
SUPPLY AIR STATIC PRESS 2	AI	3	AO	CHILLED WATER VALVE CONTROL	
SUPPLY AIR FLOW	AI	4	AO	HOT WATER VALVE CONTROL	
SUPPLY AIR TEMP	AI	5	DO	CHILLED WATER PUMP START/STOP	
OUTSIDE AIR FLOW	AI	6	AO	RETURN AIR DAMPER CONTROL	
FILTER DP STATUS	DI	7	AO	OUTSIDE AIR DAMPER CONTROL	
MIXED AIR TEMP	AI	8	DO	RETURN FAN START/STOP	
MIXED AIR HUM	AI	9	AO	RETURN VFD CONTROL	
CHILLED WATER COIL LVG. AIR TEMP	AI	10	AO	RELIEF AIR DAMPER CONTROL	
HOT WATER COIL LVG. AIR TEMP	AI	11			
CHILLED WATER RETURN TEMP	AI	12			
CHILLED WATER PUMP STATUS	DI	13			
RETURN FAN STATUS	DI	14			
RETURN AIR FLOW	AI	15			
RETURN AIR TEMP	AI	16			
RETURN AIR HUM	AI	17			
HOT WATER RETURN TEMP	AI	18			

TYPICAL AIR TERMINAL UNIT POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
AIR TERMINAL AIRFLOW	AI	1	AO	AIR TERMINAL DAMPER CONTROL	
AIR TERMINAL DAMPER POSITION	AI	2	AO	REHEAT COIL VALVE CONTROL	
REHEAT COIL SUPPLY TEMP	AI	3			
SPACE TEMPERATURE	AI	4			

TYPICAL EXHAUST FAN POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
EXHAUST FAN STATUS	DI	1	DO	EXHAUST FAN START/STOP	
EXHAUST FAN SMOKE DETECTOR STATUS	DI	2	DO	EXHAUST AIR DAMPER CONTROL	
EXHAUST FAN DAMPER STATUS	DI	3			
		4			

A NO SCALE ACU-1 CONTROLS

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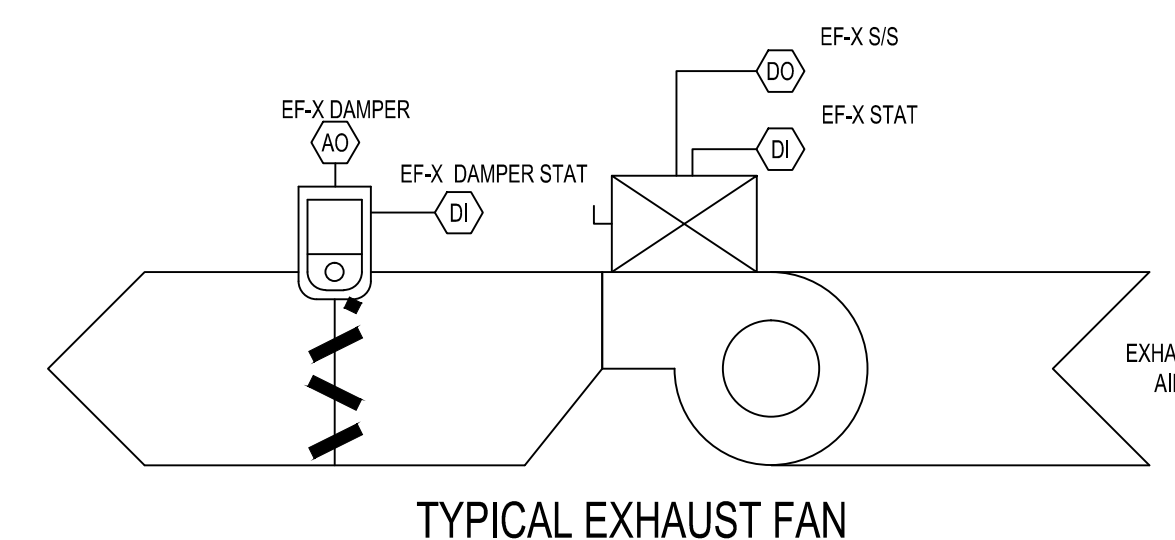
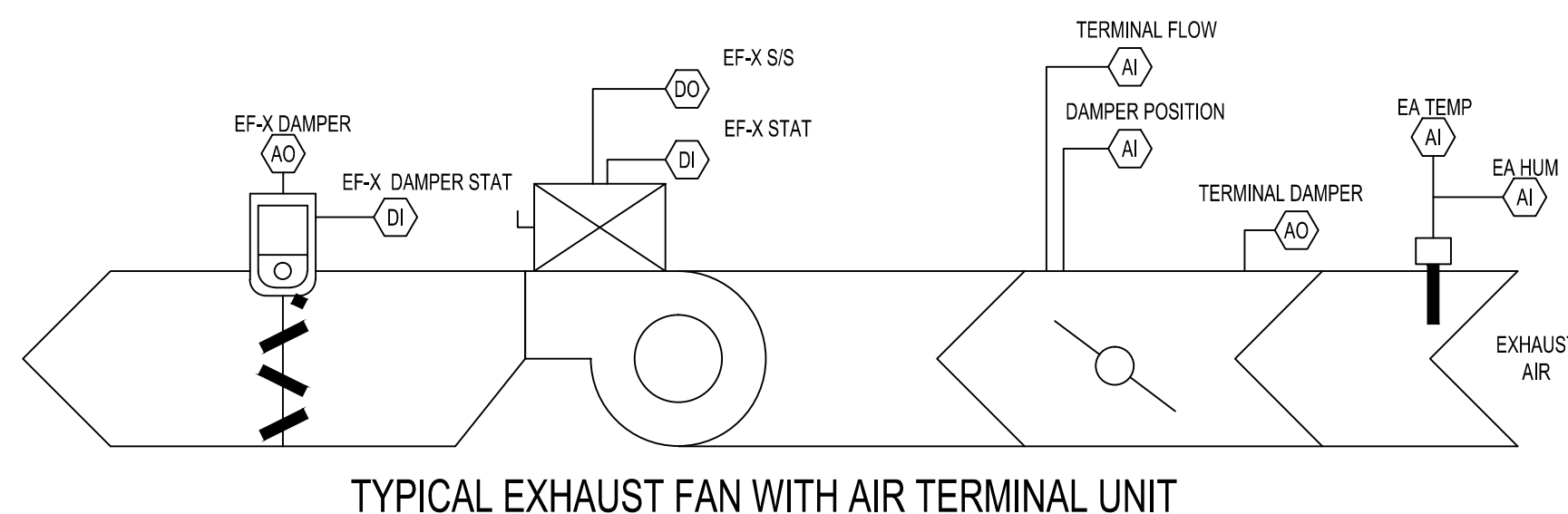
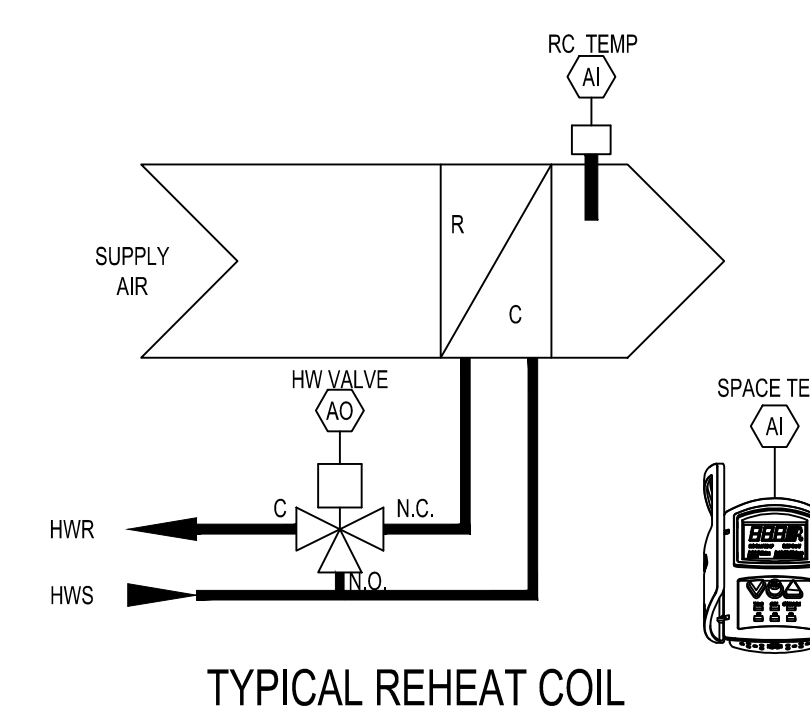
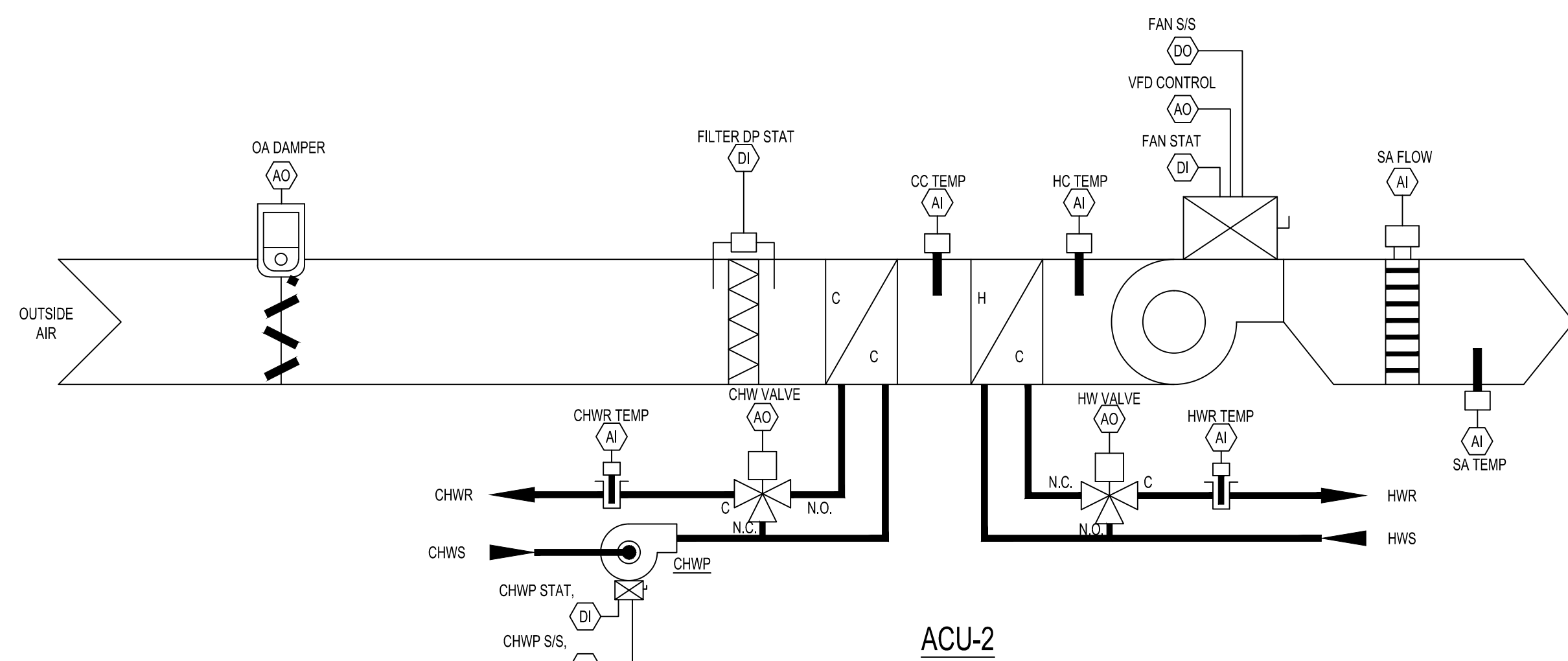
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CITY of TAMPA
 WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

ACU-I SYSTEM - OFFICE
 AREAS

W.O. #5427
 SHEET
M3
 OF



ACU-2 SYSTEM CONTROLS

ACU-2 CONTROL:

ACU-2 SYSTEM CONSISTS OF A SUPPLY FAN WITH VARIABLE FREQUENCY DRIVE, OUTSIDE AIR CONTROL DAMPER, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP.

OCCUPIED MODE:

ACU-2 WILL ENTER THE OCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE OCCUPIED MODE, THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED. THE 3-WAY CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE CHILLED WATER COIL LEAVING AIR TEMPERATURE SETPOINT OF 55 DEG F (ADJ.).

THE SUPPLY FAN SHALL BE INTERLOCKED WITH THE OUTSIDE AIR DAMPER.

EXHAUST AIR HUMIDITY SHALL BE MONITORED. IF EXHAUST HUMIDITY EXCEEDS 60% SETPOINT (ADJ.), CHILLED WATER LEAVING AIR TEMPERATURE SHALL RESET DOWN AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 55 DEG F (ADJ.). ONCE SETPOINT IS ACHIEVED, THE UNIT WILL RESUME NORMAL OPERATION.

OUTSIDE AIR TEMPERATURE SHALL BE MONITORED. IF OUTSIDE AIR TEMPERATURE DROPS BELOW 50 DEG F (ADJ.), THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE DEENERGIZED. CHILLED WATER CONTROL VALVE SHALL CLOSE AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 55 DEG F (ADJ.). IF OUTSIDE AIR TEMPERATURE DROPS BELOW 35 DEG F (ADJ.), THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED. CHILLED WATER CONTROL VALVE SHALL OPEN TO THE CHILLED WATER COIL AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 55 DEG F (ADJ.). ONCE OUTSIDE AIR TEMPERATURE RISES ABOVE 38 DEG F (ADJ.), THE UNIT WILL RESUME NORMAL OPERATION.

THE SUPPLY FAN VFD SHALL MODULATE SUPPLY FAN SPEED TO MAINTAIN THE SUPPLY AIR CFM OF 14740 CFM (ADJ.).

UNOCCUPIED MODE

ACU-2 WILL ENTER THE UNOCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE UNOCCUPIED MODE, THE SUPPLY FAN VFD SHALL MODULATE SUPPLY FAN SPEED TO MAINTAIN THE SUPPLY AIR CFM OF 7000 CFM (ADJ.). SPACE TEMPERATURE SETPOINTS WILL BE RESETTED TO AN ADJUSTABLE NIGHT SETBACK SETPOINT. IF ALL SETPOINTS ARE SATISFIED FOR A PERIOD OF 30MIN (ADJ.) THEN ACU-2 SHALL DE-ENERGIZE.

HIGH AND LOW TEMPERATURE AND CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

REHEAT COIL CONTROL:

THE 3-WAY HOT WATER REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.

HIGH AND LOW TEMPERATURE AND CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

EXHAUST FAN CONTROL

EXHAUST FANS AD-EAF-1, AD-EAF-3, AD-EAF-5, AD-EAF-6, AND VARIOUS FUME EXTRACTOR EXHAUST FANS SHALL BE INTERLOCKED WITH ACU-2 OUTSIDE AIR DAMPER AND ACU-2 FAN STATUS. CONTROL DAMPERS FOR EACH FAN SHALL BE PROVEN OPEN BEFORE EXHAUST FANS ARE ENABLED.

OCCUPIED MODE:

EXHAUST FANS WILL ENTER THE OCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE OCCUPIED MODE, FUME HOOD EXHAUST FANS AD-EAF-11, AD-EAF-15, AD-EAF-21, AD-EAF-22, AND AD-EAF-25 SHALL BE INTERLOCKED WITH ACU-2 OUTSIDE AIR DAMPER AND ACU-2 FAN STATUS. CONTROL DAMPERS FOR EACH FAN SHALL BE PROVEN OPEN BEFORE EXHAUST FANS ARE ENABLED. LAG FUME HOOD EXHAUST FANS AD-EAF-15, AD-EAF-19, AND AD-EAF-25 SHALL REMAIN DE-ENERGIZED. LEADLAG ASSIGNMENTS SHALL SWITCH ON A TWO WEEK BASIS (ADJ.).

AIR TERMINAL UNITS SERVING AD-EAF-1, AD-EAF-3, AND AD-EAF-5 SHALL MODULATE TO MAINTAIN OCCUPIED CFM SETPOINTS FOR EACH FAN. UNOCCUPIED SETPOINTS ARE AS FOLLOWS: AD-EAF-1 - 2080 CFM; AD-EAF-3 - 2760 CFM; AD-EAF-5 - 2840 CFM.

UNOCCUPIED MODE:

EXHAUST FANS WILL ENTER THE OCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE UNOCCUPIED MODE, LEAD FUME HOOD EXHAUST FANS AD-EAF-11, AD-EAF-21, AND AD-EAF-22 SHALL BE INTERLOCKED WITH ACU-2 OUTSIDE AIR DAMPER AND ACU-2 FAN STATUS. CONTROL DAMPERS FOR EACH FAN SHALL BE PROVEN OPEN BEFORE EXHAUST FANS ARE ENABLED. LAG FUME HOOD EXHAUST FANS AD-EAF-15, AD-EAF-19, AND AD-EAF-25 SHALL REMAIN DE-ENERGIZED. LEADLAG ASSIGNMENTS SHALL SWITCH ON A TWO WEEK BASIS (ADJ.).

AIR TERMINAL UNITS SERVING AD-EAF-1, AD-EAF-3, AND AD-EAF-5 SHALL MODULATE TO MAINTAIN UNOCCUPIED CFM SETPOINTS FOR EACH FAN. UNOCCUPIED SETPOINTS ARE AS FOLLOWS: AD-EAF-1 - 1000 CFM; AD-EAF-3 - 1400 CFM; AD-EAF-5 - 1400 CFM.

HIGH AND LOW CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

ACU-2 POINT SUMMARY				
INPUTS		NO	OUTPUTS	
DESCRIPTIONS	SGNL		SGNL	DESCRIPTIONS
SUPPLY FAN STATUS	DI	1	DO	SUPPLY FAN START/STOP
SUPPLY AIR FLOW	AI	2	AO	SUPPLY FAN VFD CONTROL
SUPPLY AIR TEMP	AI	3	AO	CHILLED WATER VALVE CONTROL
FILTER DP STATUS	DI	4	AO	HOT WATER VALVE CONTROL
CHILLED WATER COIL LVG. AIR TEMP	AI	5	DO	CHILLED WATER PUMP START/STOP
CHILLED WATER RETURN TEMP	AI	6	AO	OUTSIDE AIR DAMPER CONTROL
CHILLED WATER PUMP STATUS	DI	7		
HOT WATER RETURN TEMP	AI	8		

TYPICAL REHEAT COIL POINT SUMMARY				
INPUTS		NO	OUTPUTS	
DESCRIPTIONS	SGNL		SGNL	DESCRIPTIONS
REHEAT COIL SUPPLY TEMP	AI	1	AO	REHEAT COIL VALVE CONTROL
SPACE TEMPERATURE	AI	2		
		3		
		4		

TYPICAL EXHAUST FAN POINT SUMMARY				
INPUTS		NO	OUTPUTS	
DESCRIPTIONS	SGNL		SGNL	DESCRIPTIONS
EXHAUST FAN STATUS	DI	1	DO	EXHAUST FAN START/STOP
EXHAUST FAN SMOKE DETECTOR STATUS	DI	2	DO	EXHAUST AIR DAMPER CONTROL
EXHAUST FAN DAMPER STATUS	DI	3		
		4		

TYPICAL EXHAUST FAN WITH AIR TERMINAL POINT SUMMARY				
INPUTS		NO	OUTPUTS	
DESCRIPTIONS	SGNL		SGNL	DESCRIPTIONS
EXHAUST FAN STATUS	DI	1	DO	EXHAUST FAN START/STOP
EXHAUST FAN SMOKE DETECTOR STATUS	DI	2	DO	EXHAUST AIR DAMPER CONTROL
AIR TERMINAL AIRFLOW	AI	3	AO	AIR TERMINAL DAMPER CONTROL
EXHAUST FAN DAMPER STATUS	DI	4		
AIR TERMINAL DAMPER POSITION	AI	5		

A NO SCALE ACU-2 CONTROLS

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Tampa, Florida 33602 TEL 888.891.9713
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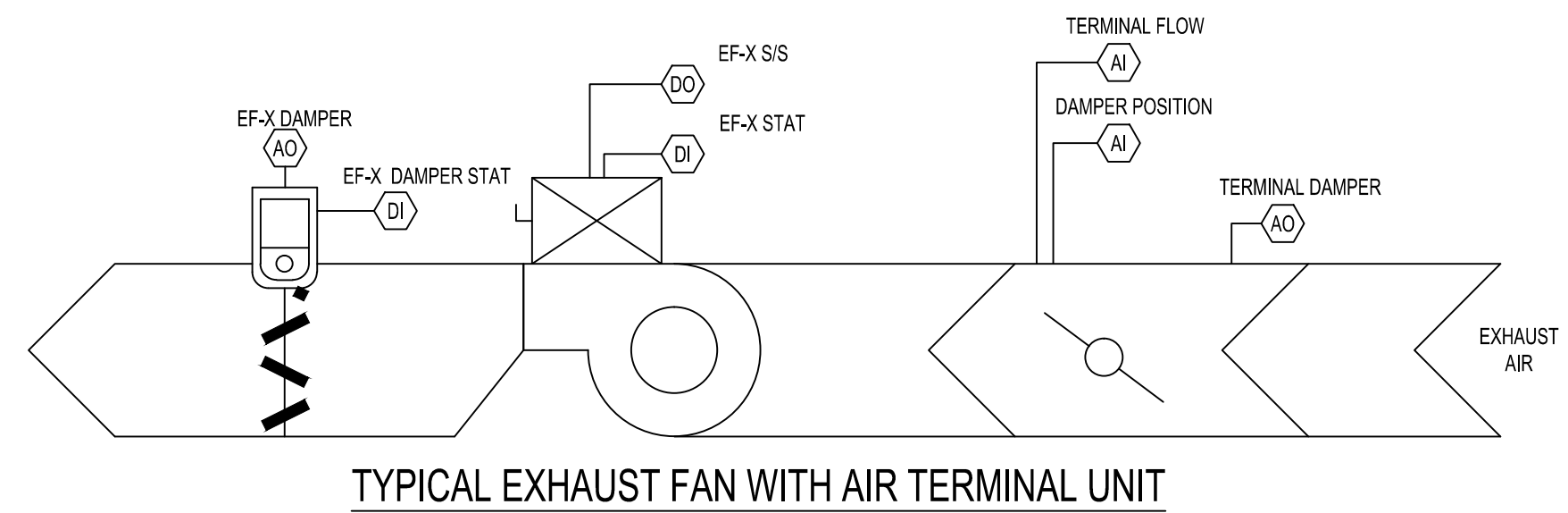
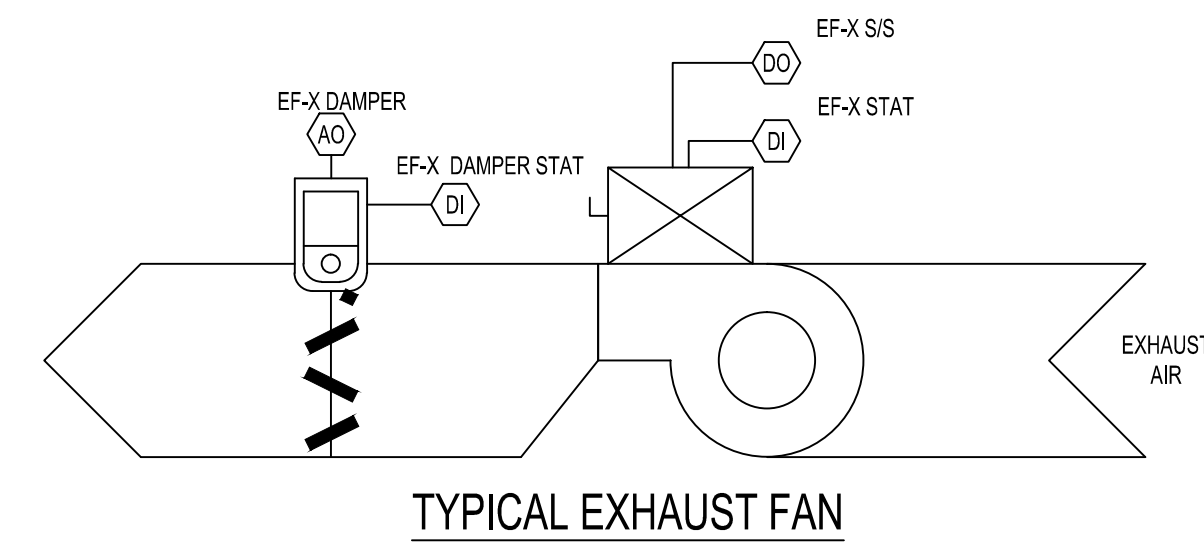
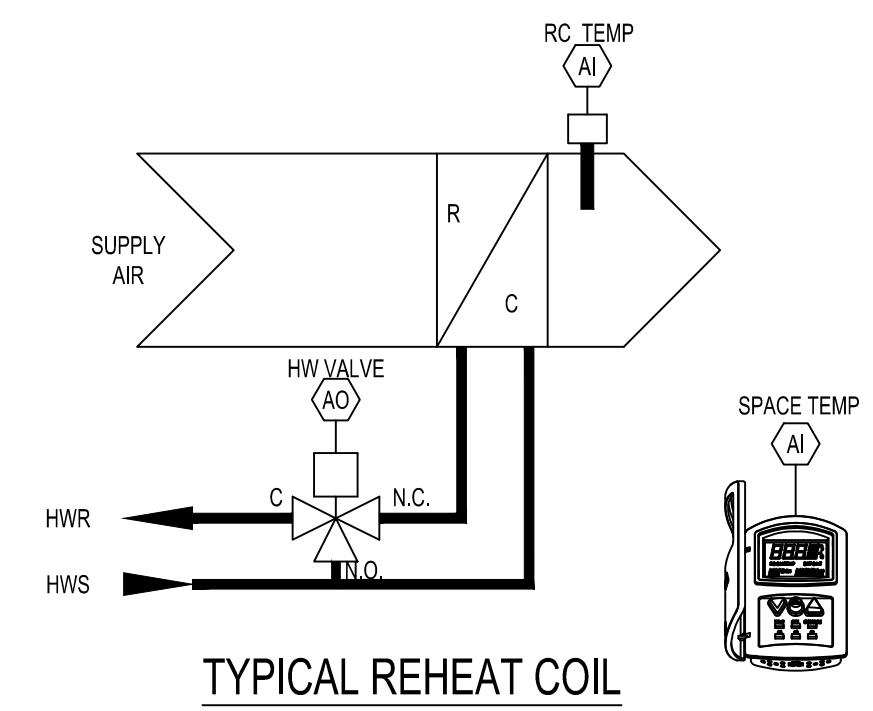
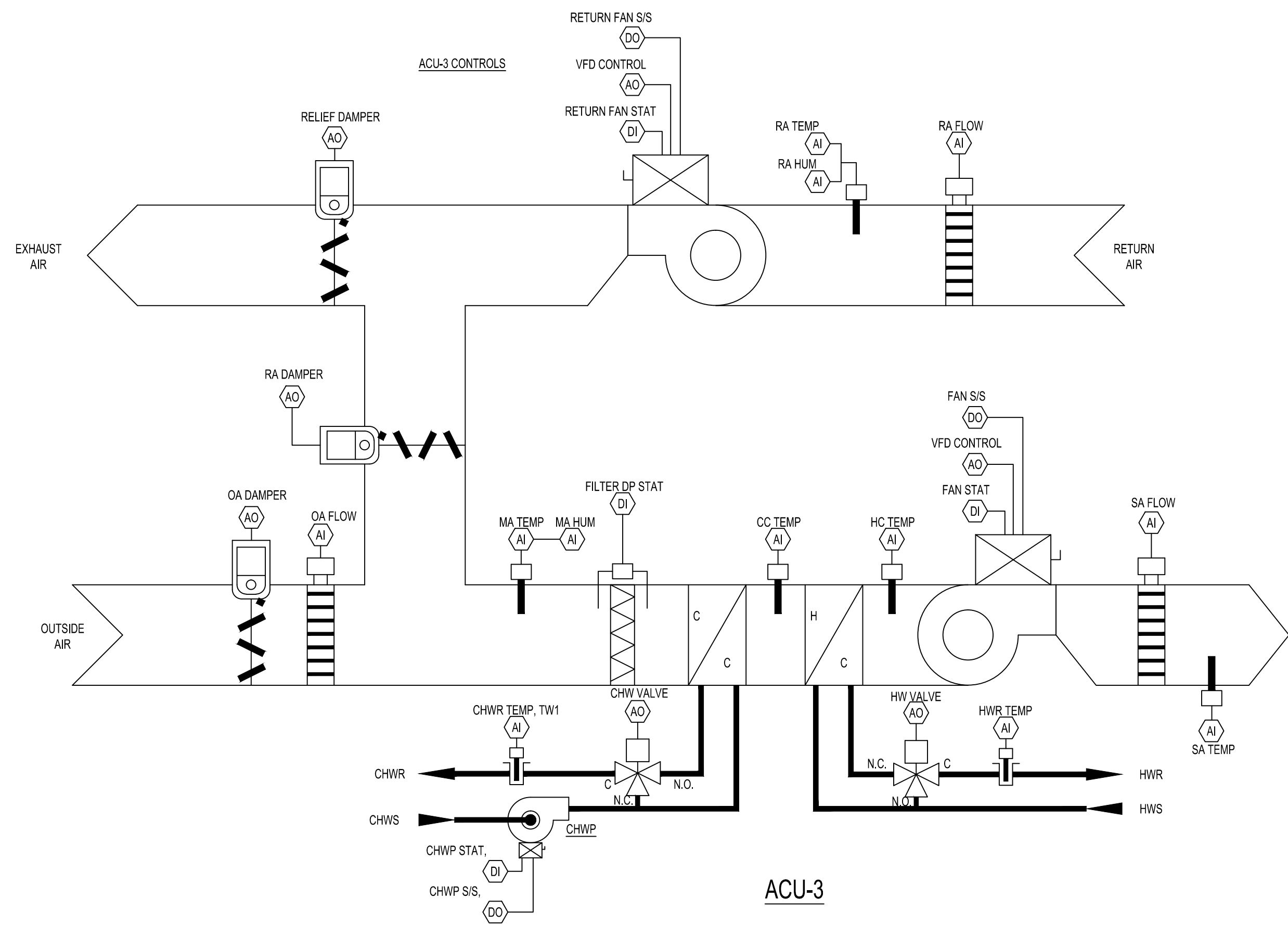
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CITY of TAMPA
WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
BUILDING CONTROL SYSTEM
100% CONSTRUCTION DOCUMENTS

ACU-2 SYSTEM - MAIN
LABORATORY AREAS

W.O. #5427
SHEET
M4
OF



ACU-3 SYSTEM CONTROLS

ACU-3 CONTROL:
 ACU-3 SYSTEM CONSISTS OF A SUPPLY FAN AND RETURN FAN WITH VARIABLE FREQUENCY DRIVES, OUTSIDE, RETURN, AND RELIEF AIR CONTROL DAMPERS, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP.

OCCUPIED MODE:
 ACU-3 WILL ENTER THE OCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE OCCUPIED MODE, THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED. THE 3-WAY CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE CHILLED WATER COIL LEAVING AIR TEMPERATURE SETPOINT OF 55 DEG F (ADJ.).

RETURN AIR HUMIDITY SHALL BE MONITORED. IF RETURN HUMIDITY EXCEEDS 60% SETPOINT (ADJ.), CHILLED WATER LEAVING AIR TEMPERATURE SHALL RESET DOWN AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 55 DEG F (ADJ.). ONCE SETPOINT IS ACHIEVED, THE UNIT WILL RESUME NORMAL OPERATION.

MIXED AIR TEMPERATURE SHALL BE MONITORED. IF MIXED AIR TEMPERATURE DROPS BELOW 50 DEG F (ADJ.), THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED. CHILLED WATER CONTROL VALVE SHALL OPEN TO THE CHILLED WATER COIL AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 55 DEG F (ADJ.). ONCE SETPOINT IS ACHIEVED, THE UNIT WILL RESUME NORMAL OPERATION.

OUTSIDE AIR DAMPERS SHALL MODULATE TO MAINTAIN THE OUTSIDE AIR CFM OCCUPIED SETPOINT OF 4800 CFM (ADJ.) AS SENSED BY THE OUTSIDE AIRFLOW MONITORING STATION. IF THE OUTSIDE AIR CFM IS NOT ACHIEVED AFTER THE OUTDOOR DAMPER IS FULLY OPEN, THEN THE RETURN AIR DAMPER SHALL MODULATE CLOSED IN ORDER TO MAINTAIN THE OUTSIDE AIR CFM.

THE SUPPLY FAN VFD SHALL MODULATE SUPPLY FAN SPEED TO MAINTAIN THE OCCUPIED SUPPLY AIR CFM SETPOINT OF 10,540 CFM (ADJ.).

THE RETURN FAN VFD SHALL MODULATE RETURN FAN SPEED TO MAINTAIN THE OCCUPIED RETURN AIR CFM SETPOINT OF 5600 CFM (ADJ.).

IF OUTSIDE AIR TEMPERATURE DROPS BELOW 50 DEG F (ADJ.), THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL MODULATE OPEN TO MAINTAIN A MIXED AIR TEMPERATURE OF 55 DEG F (ADJ.).

UNDER EMERGENCY PURGE MODE, THE OUTSIDE AIR AND RETURN AIR DAMPER SHALL CLOSE AND RELIEF AIR DAMPER SHALL OPEN.

UNOCCUPIED MODE:
 ACU-1 WILL ENTER THE UNOCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE UNOCCUPIED MODE, OUTSIDE AIR DAMPERS SHALL MODULATE TO MAINTAIN THE OUTSIDE AIR CFM OCCUPIED SETPOINT OF 1600 CFM (ADJ.) AS SENSED BY THE OUTSIDE AIRFLOW MONITORING STATION. IF THE OUTSIDE AIR CFM IS NOT ACHIEVED AFTER THE OUTDOOR DAMPER IS FULLY OPEN, THEN THE RETURN AIR DAMPER SHALL MODULATE CLOSED IN ORDER TO MAINTAIN THE OUTSIDE AIR CFM. SPACE TEMPERATURE SETPOINTS WILL BE RESETTED TO AN ADJUSTABLE NIGHT SETBACK SETPOINT. THE SUPPLY FAN VFD SHALL MODULATE SUPPLY FAN SPEED TO MAINTAIN THE OCCUPIED SUPPLY AIR CFM SETPOINT OF 5270 CFM (ADJ.). THE RETURN FAN VFD SHALL MODULATE RETURN FAN SPEED TO MAINTAIN THE OCCUPIED RETURN AIR CFM SETPOINT OF 3670 CFM (ADJ.).

HIGH AND LOW TEMPERATURE AND CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

REHEAT COIL CONTROL:
 THE 3-WAY HOT WATER REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.
 HIGH AND LOW TEMPERATURE ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

EXHAUST FAN CONTROL:
 EXHAUST FANS AD-EAF-4 AND AD-EAF-7 SHALL BE INTERLOCKED WITH ACU-3 OUTSIDE AIR DAMPER AND ACU-3 FAN STATUS. CONTROL DAMPERS FOR EACH FAN SHALL BE PROVEN OPEN BEFORE EXHAUST FANS ARE ENABLED.

OCCUPIED MODE:
 EXHAUST FANS WILL ENTER THE OCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE OCCUPIED MODE, AIR TERMINAL UNIT SERVING AD-EAF-4 SHALL MODULATE TO MAINTAIN OCCUPIED CFM SETPOINT OF 3270 CFM (ADJ.). AD-EAF-7 SHALL BE ENERGIZED.

UNOCCUPIED MODE:
 EXHAUST FANS WILL ENTER THE UNOCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE UNOCCUPIED MODE, AIR TERMINAL UNIT SERVING AD-EAF-4 SHALL MODULATE TO MAINTAIN OCCUPIED CFM SETPOINT OF 1600 CFM (ADJ.). AD-EAF-7 SHALL BE DE-ENERGIZED.

HIGH AND LOW CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

ACU-3 POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
SUPPLY FAN STATUS	DI	1	DO	SUPPLY FAN START/STOP	
SUPPLY AIR FLOW	AI	2	AO	SUPPLY FAN VFD CONTROL	
SUPPLY AIR TEMP	AI	3	AO	CHILLED WATER VALVE CONTROL	
OUTSIDE AIR FLOW	AI	4	AO	HOT WATER VALVE CONTROL	
FILTER DP STATUS	DI	5	DO	CHILLED WATER PUMP START/STOP	
MIXED AIR TEMP	AI	6	AO	RETURN AIR DAMPER CONTROL	
MIXED AIR HUM	AI	7	AO	OUTSIDE AIR DAMPER CONTROL	
CHILLED WATER COIL LVG. AIR TEMP	AI	8	DO	RETURN FAN START/STOP	
HOT WATER COIL LVG. AIR TEMP	AI	9	AO	RETURN VFD CONTROL	
CHILLED WATER RETURN TEMP	AI	10	AO	RELIEF AIR DAMPER CONTROL	
CHILLED WATER PUMP STATUS	DI	11			
RETURN FAN STATUS	DI	12			
RETURN AIR FLOW	AI	13			
RETURN AIR TEMP	AI	14			
RETURN AIR HUM	AI	15			
HOT WATER RETURN TEMP	AI	16			

TYPICAL REHEAT COIL POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
REHEAT COIL SUPPLY TEMP	AI	1	AO	REHEAT COIL VALVE CONTROL	
SPACE TEMPERATURE	AI	2			
		3			
		4			

TYPICAL EXHAUST FAN POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
EXHAUST FAN STATUS	DI	1	DO	EXHAUST FAN START/STOP	
EXHAUST FAN SMOKE DETECTOR STATUS	DI	2	DO	EXHAUST AIR DAMPER CONTROL	
EXHAUST FAN DAMPER STATUS	DI	3			
		4			

TYPICAL EXHAUST FAN WITH AIR TERMINAL POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
EXHAUST FAN STATUS	DI	1	DO	EXHAUST FAN START/STOP	
EXHAUST FAN SMOKE DETECTOR STATUS	DI	2	DO	EXHAUST AIR DAMPER CONTROL	
AIR TERMINAL AIRFLOW	AI	3	AO	AIR TERMINAL DAMPER CONTROL	
EXHAUST FAN DAMPER STATUS	DI	4			
AIR TERMINAL DAMPER POSITION	AI	5			

A NO SCALE ACU-3 CONTROLS

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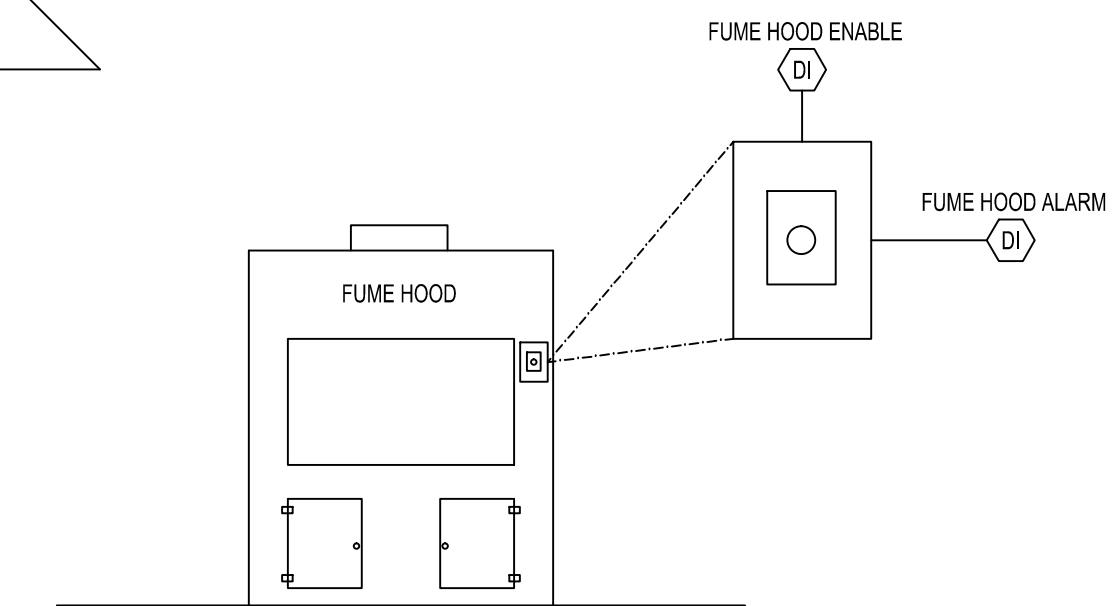
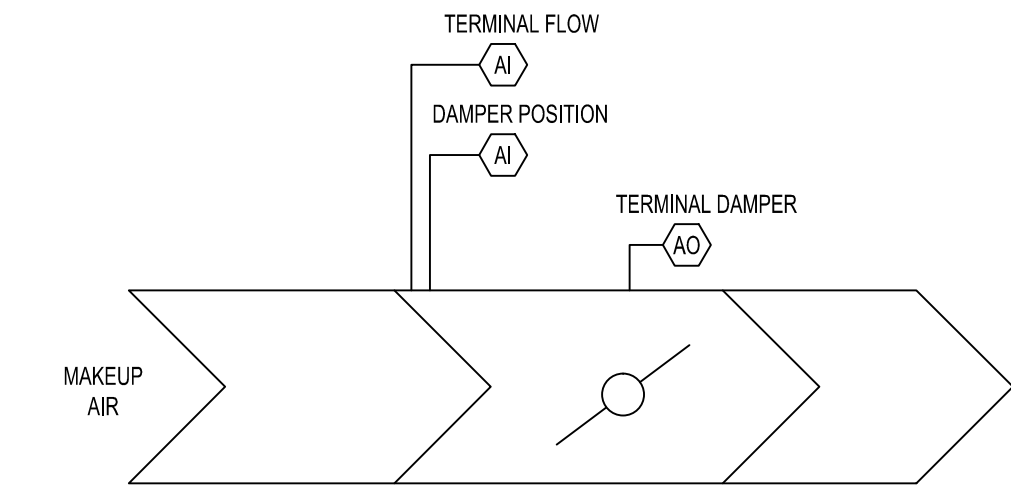
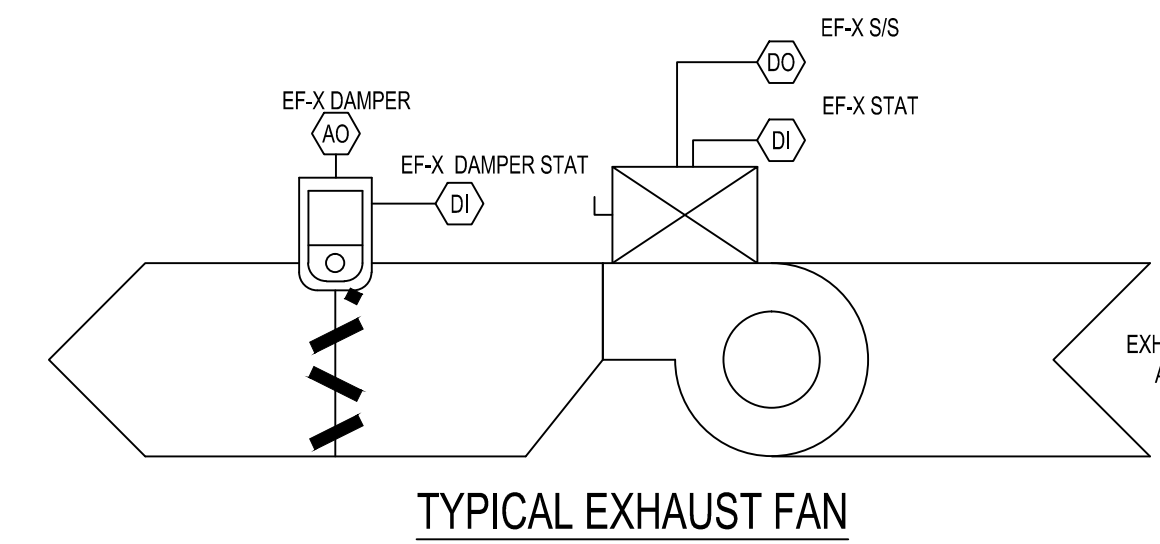
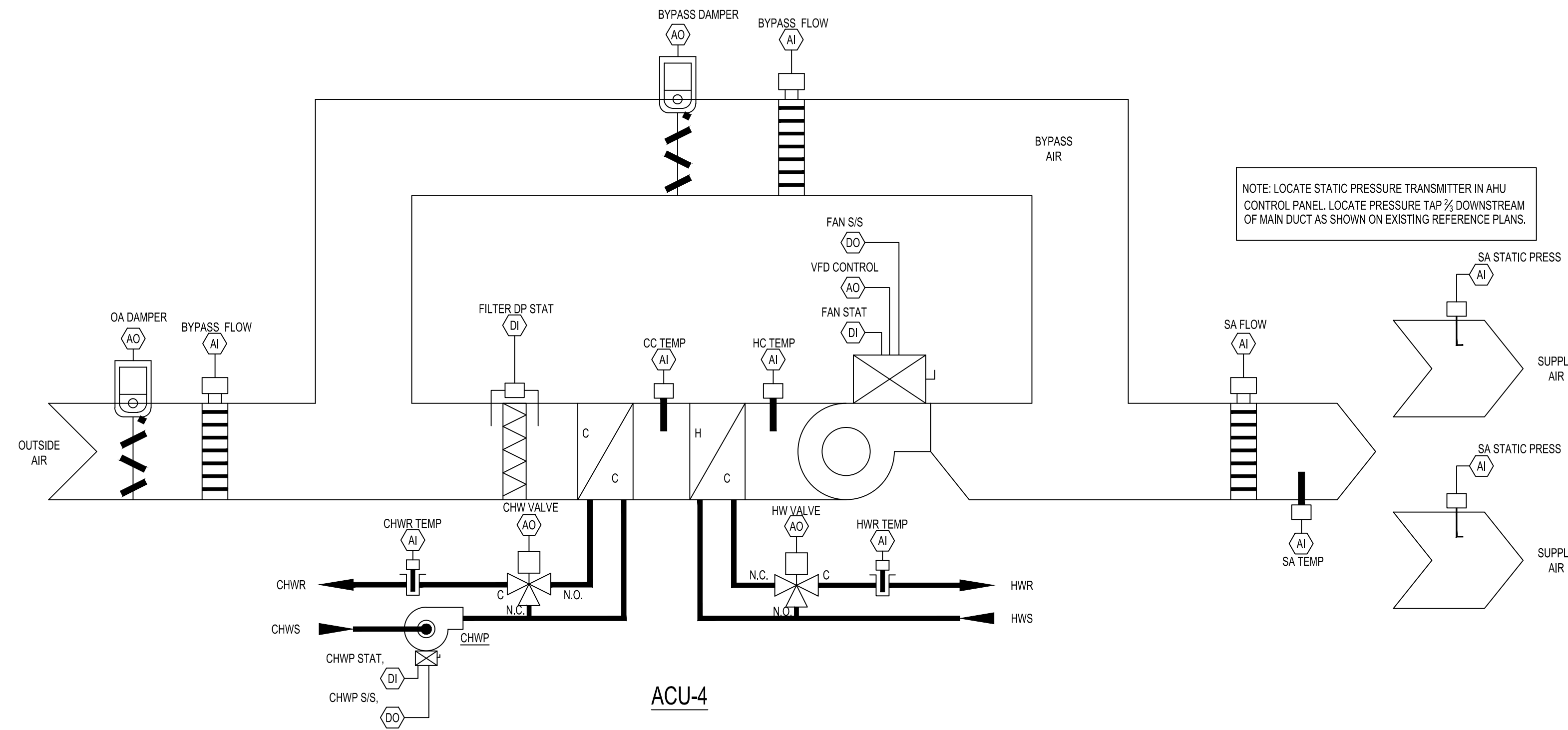
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CITY of TAMPA
 WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

ACU-3 SYSTEM - I.W. &
 BAY STUDY
 LABORATORIES

W.O. #5427
 SHEET
M5
 OF



ACU-4 SYSTEM CONTROLS

ACU-4 CONTROL:

ACU-4 SYSTEM CONSISTS OF A SUPPLY FAN WITH VARIABLE FREQUENCY DRIVE, OUTSIDE AIR CONTROL DAMPER, BYPASS DUCT WITH BYPASS CONTROL DAMPER AND AIRFLOW MEASURING STATION, REHEAT AND COOLING COILS WITH MODULATING CONTROL VALVES AND ZONE CHILLED WATER SECONDARY PUMP.

OCCUPIED MODE:

ACU-4 WILL ENTER THE OCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE OCCUPIED MODE, THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED. THE 3-WAY CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE CHILLED WATER COIL LEAVING AIR TEMPERATURE SETPOINT OF 55 DEG F (ADJ.).

THE 3-WAY HOT WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE HOT WATER COIL LEAVING AIR TEMPERATURE SETPOINT OF 70 DEG F (ADJ.).

MIXED AIR TEMPERATURE SHALL BE MONITORED. IF MIXED AIR TEMPERATURE DROPS BELOW 50 DEG F (ADJ.), THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE DEENERGIZED, CHILLED WATER CONTROL VALVE SHALL CLOSE AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 70 DEG F (ADJ.). IF MIXED AIR TEMPERATURE DROPS BELOW 35 DEG F (ADJ.), THE ZONE CHILLED WATER SECONDARY PUMP SHALL BE ENABLED, CHILLED WATER CONTROL VALVE SHALL OPEN TO THE CHILLED WATER COIL AND THE REHEAT CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE OF 70 DEG F (ADJ.), ONCE MIXED AIR TEMPERATURE RISES ABOVE 38 DEG F (ADJ.), THE UNIT WILL RESUME NORMAL OPERATION.

THE SUPPLY FAN VFD SHALL MODULATE SUPPLY FAN SPEED TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT SET BY TAB. THE BAS SHALL MONITOR ALL SUPPLY TERMINAL BOXES ASSOCIATED WITH ACU-4. IF ALL THE TERMINALS ARE LESS THAN 92% OPEN, THE STATIC PRESSURE SETPOINT WILL DECREASE BY 5%. THE STATIC PRESSURE SETPOINT SHALL CONTINUE TO DECREASE TO THE MINIMUM SETPOINT SET BY TAB FOR CONTINUED STABLE OPERATION OF THE SUPPLY FAN. THE BYPASS DAMPER SHALL MODULATE FULLY OPEN TO MAINTAIN STABLE OPERATION OF SUPPLY FAN AT MINIMUM STATIC PRESSURE SETPOINT SET BY TAB.

IF ANY TERMINAL EXCEEDS 98% OPEN, THE BYPASS DAMPER SHALL MODULATE CLOSED. THE STATIC PRESSURE SETPOINT WILL INCREASE BY 5% UNTIL THE MAXIMUM VALUE FOR ANY TERMINAL IS 95% OPEN.

OUTSIDE AIR AND BYPASS AIR DAMPERS SHALL MODULATE TO MAINTAIN THE OUTSIDE AIR CFM CALLED FOR BY THE ACTIVATION OF EACH AIR TERMINAL UNIT ASSOCIATED WITH AHU-4.

UNOCCUPIED MODE

ACU-4 WILL ENTER THE UNOCCUPIED MODE WHEN SCHEDULED BY THE BUILDING AUTOMATION SYSTEM (BAS)

IN THE UNOCCUPIED, ACU-4 SHALL DE-ENERGIZE.

HIGH AND LOW TEMPERATURE AND CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

MAKEUP AIR TERMINAL UNIT CONTROL:

THE MAKEUP AIR TERMINAL UNIT SHALL MODULATE ITS DAMPER TO MAINTAIN THE SCHEDULED MAXIMUM CFM VALUE UPON ACTIVATION OF FUME HOOD THROUGH A TWO-STATE SWITCH, AND VERIFICATION OF FLOW FROM FUME HOOD EXHAUST FAN.

THE MAKEUP AIR TERMINAL UNIT SHALL CLOSE ITS DAMPER UPON DEACTIVATION OF FUME HOOD SWITCH AND/OR FUME HOOD EXHAUST FAN.

FUME HOOD EXHAUST FAN CONTROL

FUME HOOD EXHAUST FAN SHALL ENABLE UPON ACTIVATION OF FUME HOOD THROUGH A TWO-STATE SWITCH. CONTROL DAMPERS FOR EACH FAN SHALL BE PROVEN OPEN BEFORE FUME HOOD EXHAUST FANS ARE ENABLED.

HIGH AND LOW CFM ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

ACU-4 POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
SUPPLY FAN STATUS	DI	1	DO	SUPPLY FAN START/STOP	
SUPPLY AIR STATIC PRESS 1	AI	2	AO	SUPPLY FAN VFD CONTROL	
SUPPLY AIR STATIC PRESS 2	AI	3	AO	CHILLED WATER VALVE CONTROL	
SUPPLY AIR FLOW	AI	4	AO	HOT WATER VALVE CONTROL	
SUPPLY AIR TEMP	AI	5	DO	CHILLED WATER PUMP START/STOP	
FILTER DP STATUS	DI	6	AO	OUTSIDE AIR DAMPER CONTROL	
CHILLED WATER COIL LVG. AIR TEMP	AI	7	AO	BYPASS AIR DAMPER CONTROL	
CHILLED WATER RETURN TEMP	AI	8			
CHILLED WATER PUMP STATUS	DI	9			
HOT WATER RETURN TEMP	AI	10			
OUTSIDE AIR FLOW	AI	11			
BYPASS AIR FLOW	AI	12			

TYPICAL MAKEUP AIR TERMINAL UNIT POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
MAKEUP AIR TERMINAL AIRFLOW	AI	1	AO	AIR TERMINAL DAMPER CONTROL	
MAKEUP AIR TERMINAL DAMPER POSITION	AI	2			
		3			
		4			

TYPICAL FUME HOOD EXHAUST FAN POINT SUMMARY					
INPUTS			OUTPUTS		
DESCRIPTIONS	SGNL	NO	SGNL	DESCRIPTIONS	
EXHAUST FAN STATUS	DI	1	DO	EXHAUST FAN START/STOP	
FUME HOOD ENABLE	DI	2	DO	EXHAUST AIR DAMPER CONTROL	
FUME HOOD ALARM	DI	3			
EXHAUST FAN DAMPER STATUS	DI	4			

A NO SCALE ACU-4 CONTROLS

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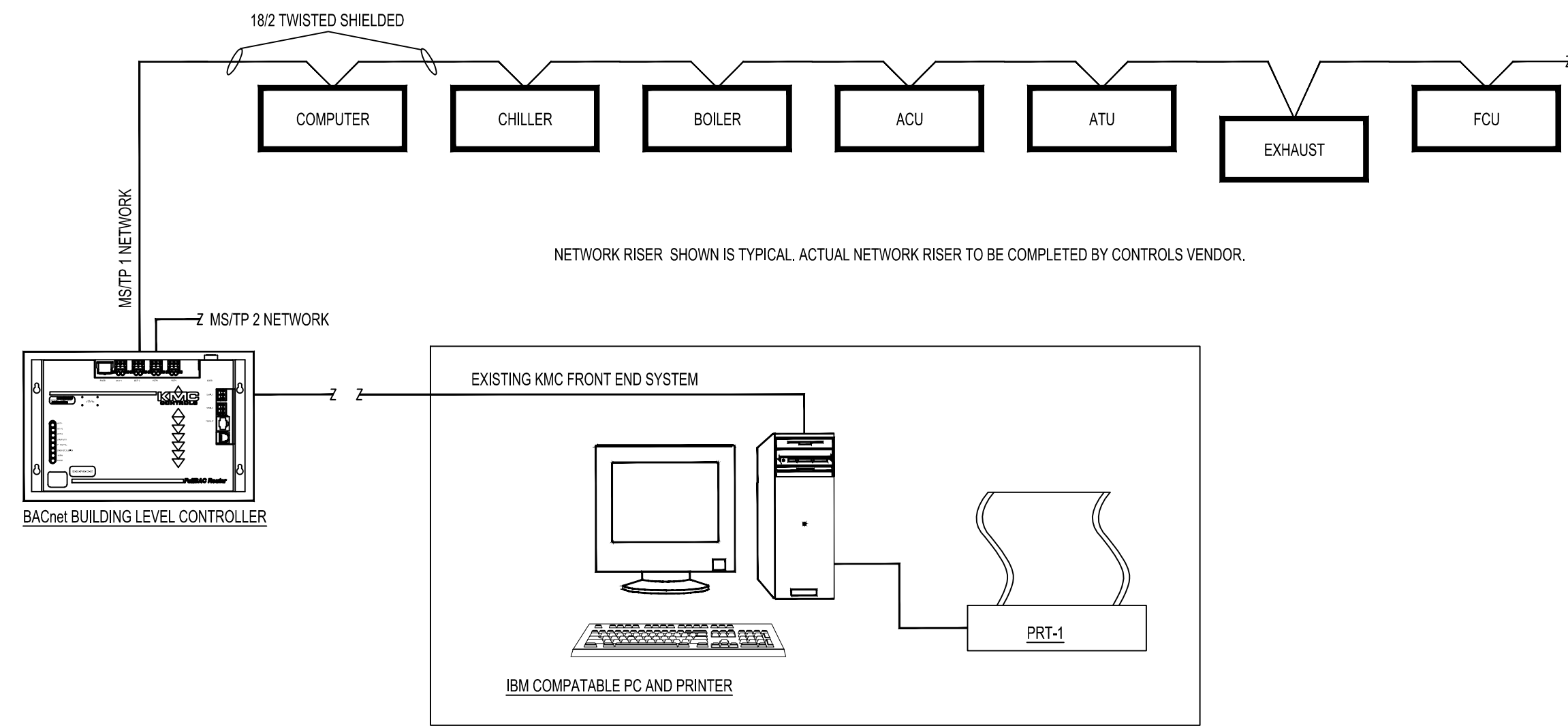
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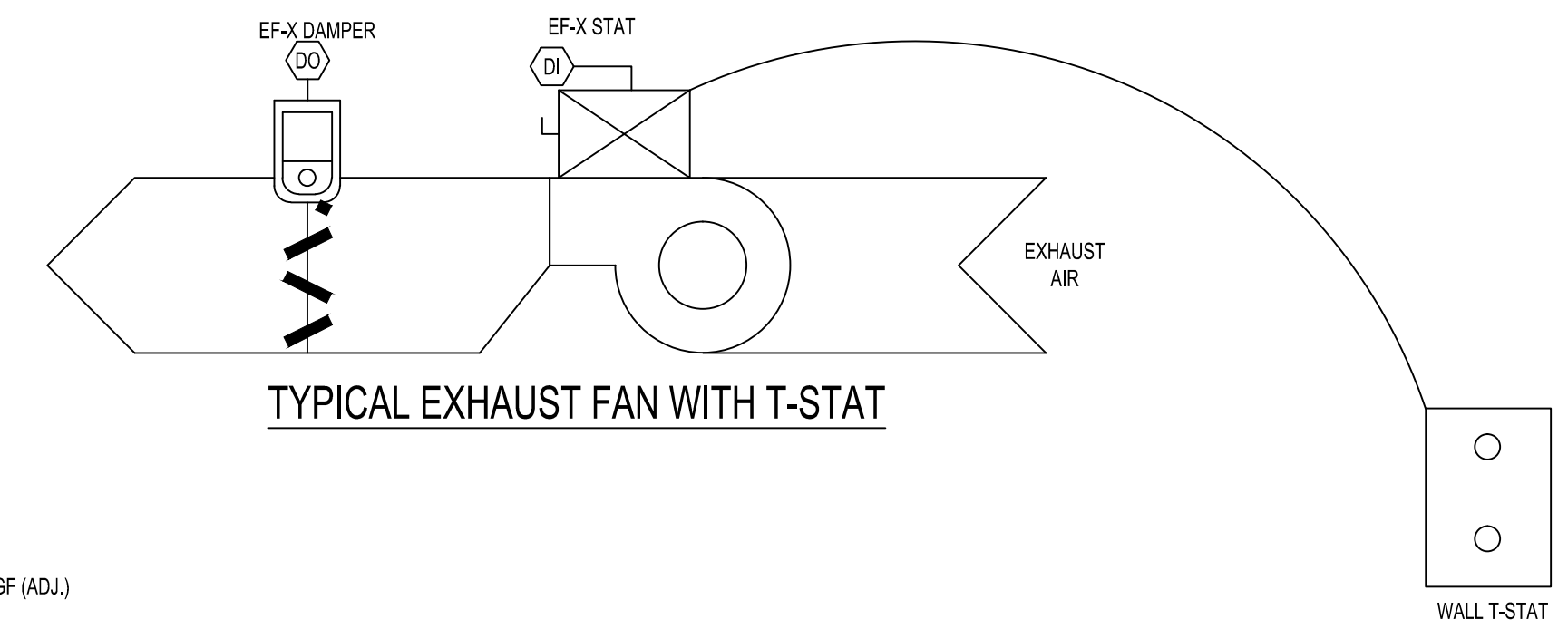
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ACU-4 SYSTEM - FUME
HOOD SYSTEM

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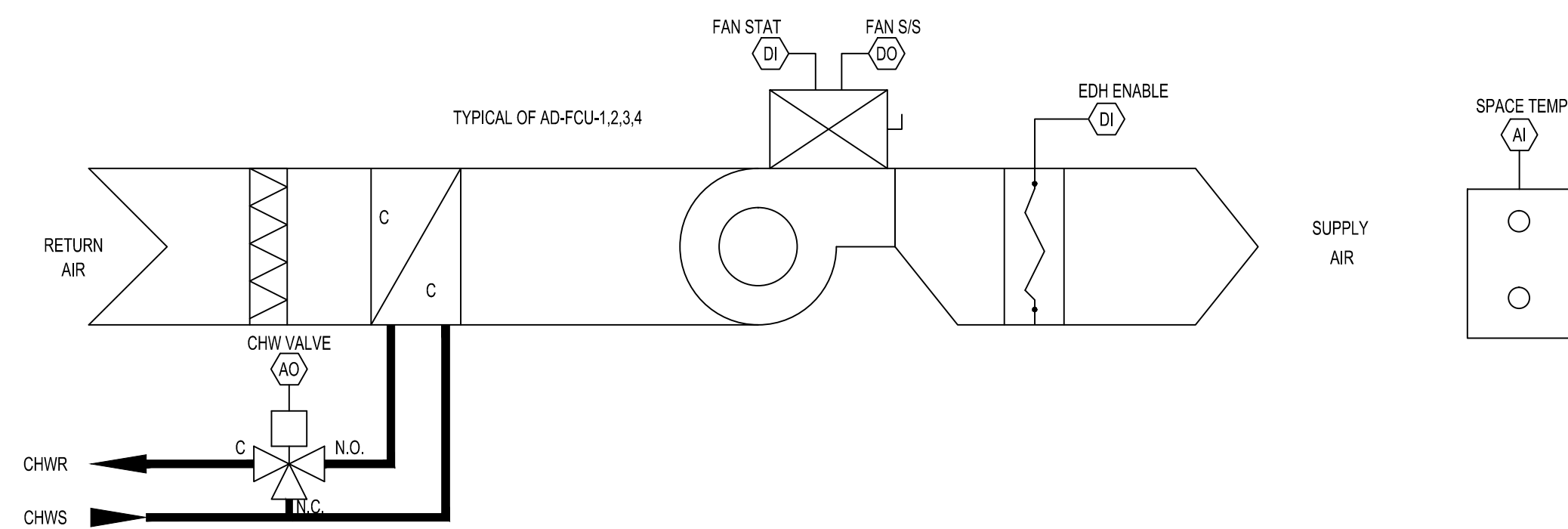


C NO SCALE TYPICAL NETWORK RISER

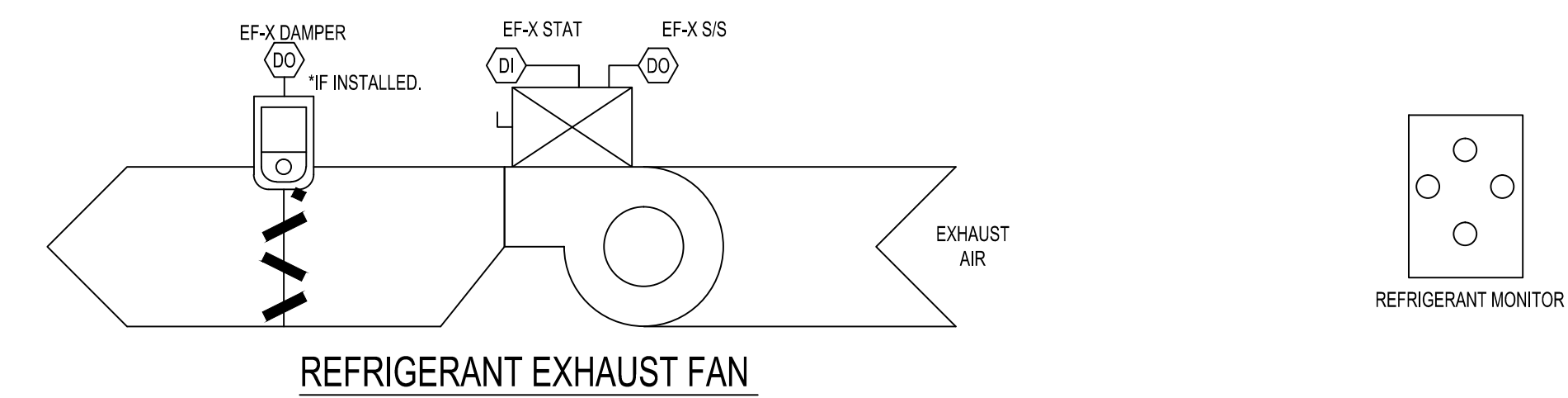


EXHAUST FAN WITH T-STAT CONTROL:
EXHAUST FAN SHALL START WHEN THE SPACE AIR TEMPERATURE INCREASES ABOVE 82 DEG F (ADJ.)

A NO SCALE EXHAUST FAN WITH T-STAT CONTROLS

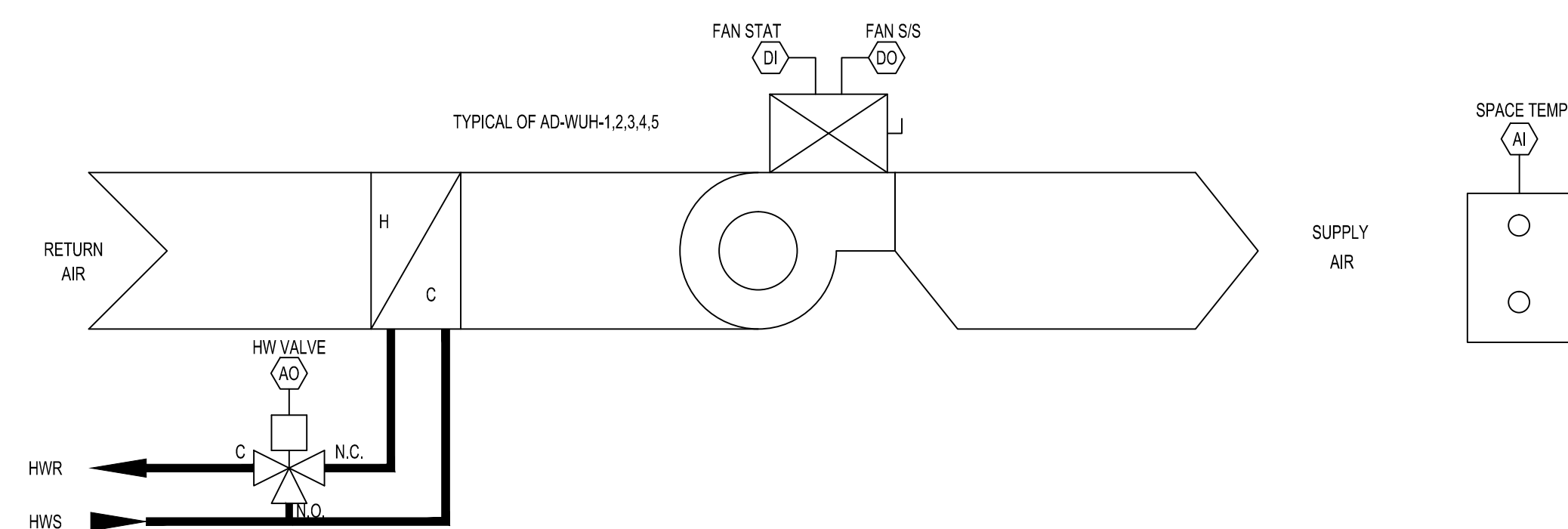


FCU CONTROL:
FCU SYSTEM CONSISTS OF A SUPPLY FAN, COOLING COIL WITH MODULATING CONTROL VALVE, AND DUCT MOUNTED ELECTRIC REHEAT COIL.
FCU SUPPLY FAN SHALL RUN CONTINUOUSLY.
THE 3-WAY CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SPACE AIR TEMPERATURE SETPOINT OF 74 DEG F (ADJ.).
THE ELECTRIC REHEAT COIL SHALL ENABLE TO MAINTAIN THE SPACE AIR TEMPERATURE SETPOINT OF 68 DEG F (ADJ.) UPON A DROP OF SPACE AIR TEMPERATURE BELOW 65 DEG F (ADJ.) AND THE CHILLED WATER CONTROL VALVE IS FULLY CLOSED.
HIGH AND LOW TEMPERATURE AND ALARMS SHALL BE INDICATED AT THE BAS FRONT END.



REFRIGERANT PURGE SYSTEM CONTROL:
SYSTEM CONSISTS OF AN EXISTING REFRIGERANT MONITOR AND EXISTING EXHAUST FAN.
THE EXHAUST FAN SHALL ENABLE UPON DETECTION OF REFRIGERANT. BOILER AS-WH-1 AND THE DOMESTIC WATER HEATER SHALL SHUTDOWN AND ALARMS WILL BE INDICATED AT BAS FRONT END.

B NO SCALE EMERGENCY REFRIGERANT PURGE SYSTEM CONTROL

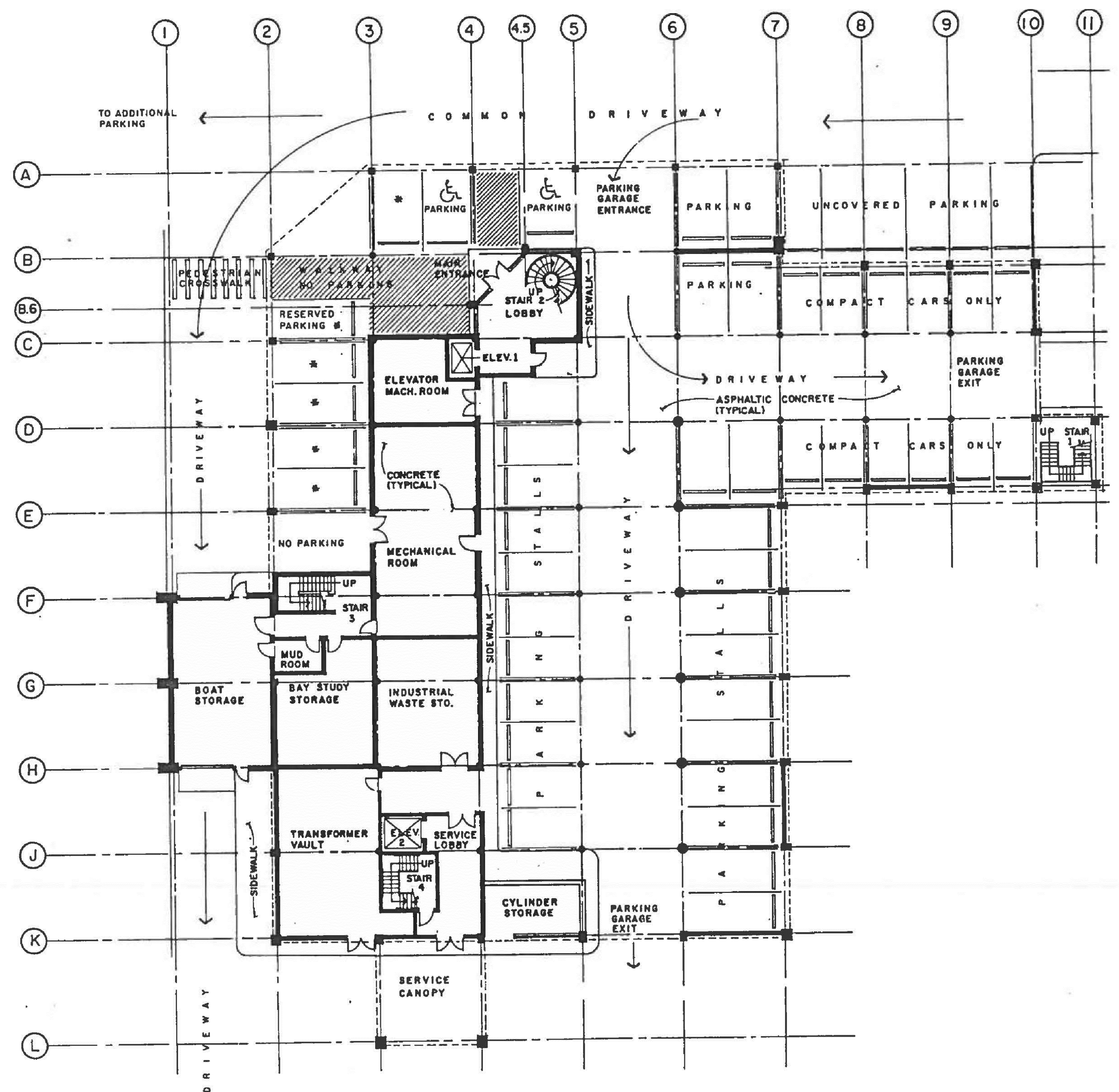
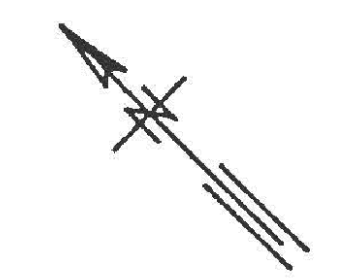


HWU CONTROL:
HWU SYSTEM CONSISTS OF A SUPPLY FAN AND HEATING COIL WITH MODULATING CONTROL VALVE.
THE SUPPLY FAN SHALL START AND THE 3-WAY HEATING HOT WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SPACE AIR TEMPERATURE SETPOINT OF 68 DEG F (ADJ.) UPON A DROP OF SPACE AIR TEMPERATURE BELOW 65 DEG F (ADJ.)
HIGH AND LOW TEMPERATURE AND ALARMS SHALL BE INDICATED AT THE BAS FRONT END.

E NO SCALE TYPICAL HOT WATER UNIT HEATER CONTROLS

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GRADE FLOOR PLAN

- ABBREVIATIONS**
- | | |
|-------------------------------|-----------------------|
| AFF - ABOVE FINISH FLOOR | GPDW - GYPSUM DRYWALL |
| ALUM - ALUMINUM | HM - HOLLOW METAL |
| B/ - BOTTOM OF | MO - MASONRY OPENING |
| CL - CENTER LINE | MTL - METAL |
| COL - COLUMN | OC - ON CENTER |
| CONC - CONCRETE | OPP - OPPOSITE |
| CONT - CONTINUOUS | PL - PLATE |
| DIA - DIAMETER | REINF - REINFORCING |
| DET - DETAIL | RM - ROOM |
| DN - DOWN | SHT - SHEET |
| DRWG - DRAWING | SIM - SIMILAR |
| EA - EACH | SS - STAINLESS STEEL |
| EL - ELEVATION | STL - STEEL |
| EQ - EQUAL | STRUCT - STRUCTURAL |
| EWC - ELECTRICAL WATER COOLER | T/ - TOP OF |
| FD - FLOOR DRAIN | THK - THICK |
| FIN - FINISH | TYP - TYPICAL |
| GYP BD - GYPSUM BOARD | W/ - WITH |
| | WD - WOOD |

REFERENCE DRAWING
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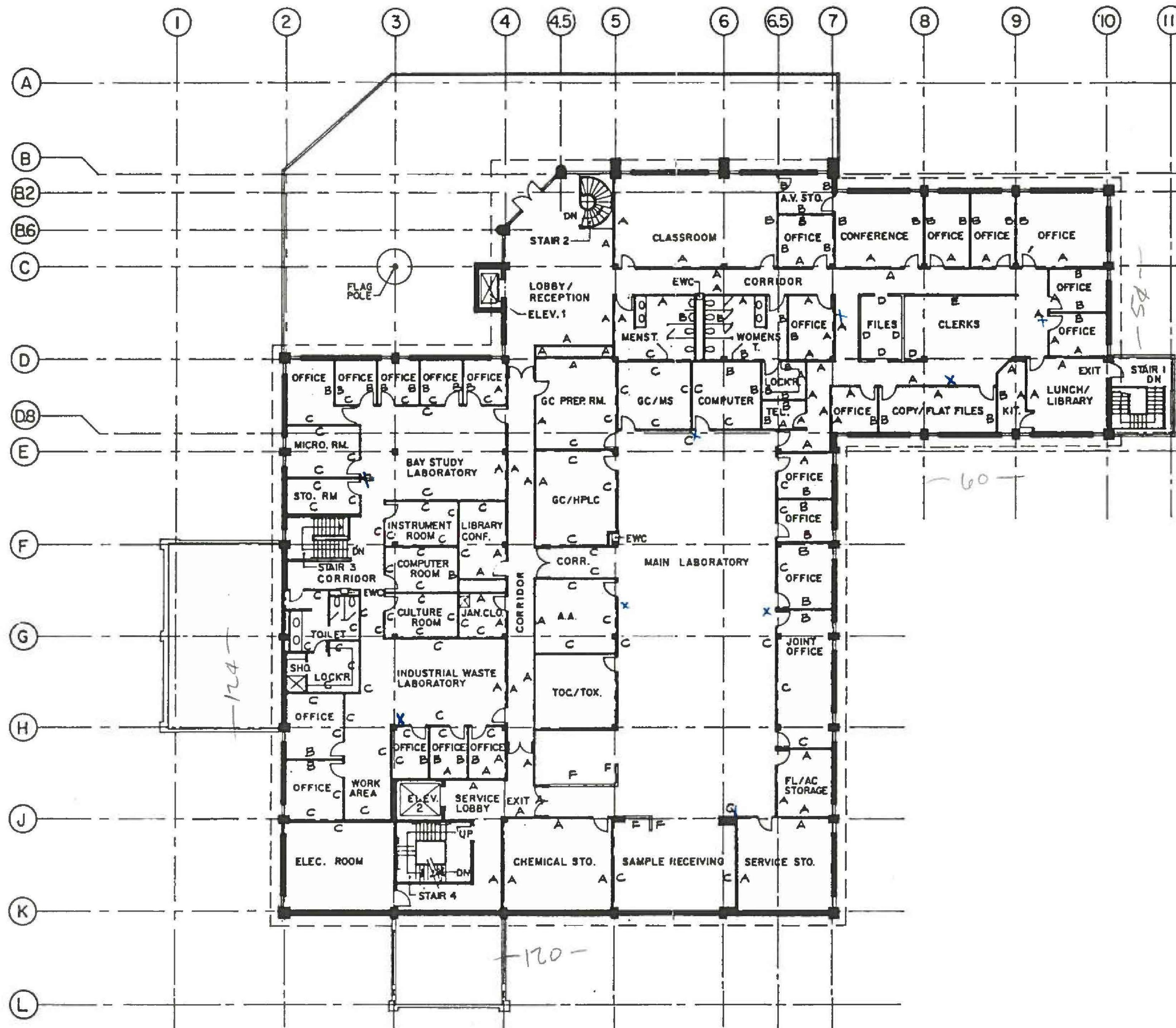
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1990 GRADE FLOOR PLAN

W.O. #5427
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LEGEND	
A	ONE-HOUR FIRE RATED PARTITION BUILT IN ACCORDANCE WITH U.L. DES. U465 EXTENDING FROM FLOOR TO UNDERSIDE OF ROOF DECK.
B	UNRATED PARTITION; GYPSUM BOARD EXTENDS FROM FLOOR TO FOUR INCHES ABOVE SUSPENDED CEILING, EVERY OTHER STUD EXTENDS TO STRUCTURE ABOVE.
C	UNRATED PARTITION; GYPSUM BOARD AND METAL STUDS EXTEND FROM FLOOR TO UNDERSIDE OF ROOF DECK; SHALL BE TAPED AND CAULKED FOR AIR TIGHTNESS.
D	6'-4" HIGH PARTITION
E	6'-4" HIGH GLASS BLOCK PARTITION
F	4'-0" HIGH PARTITION

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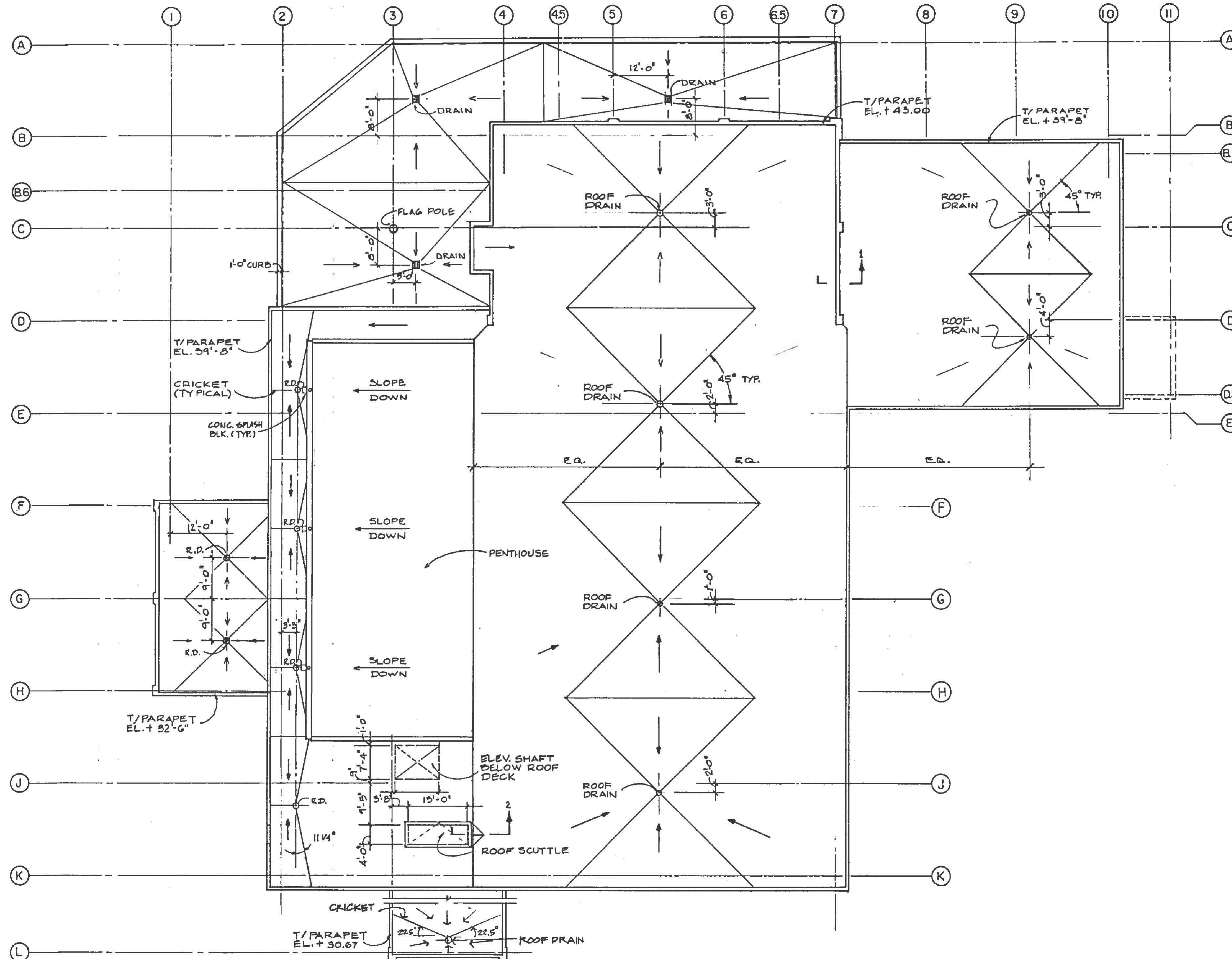
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1990 MAIN FLOOR
 PLAN

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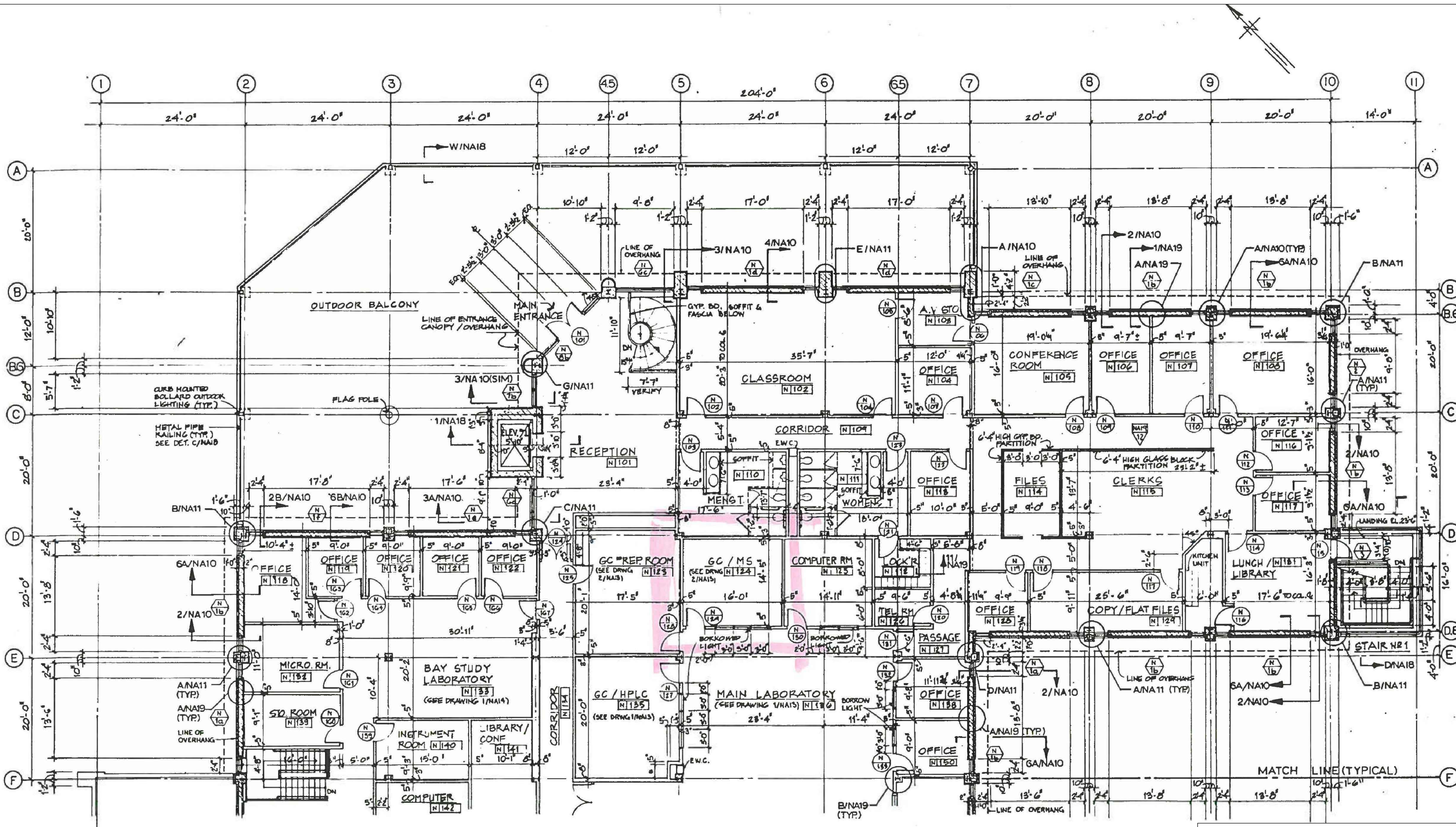
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1990 ROOF PLAN &
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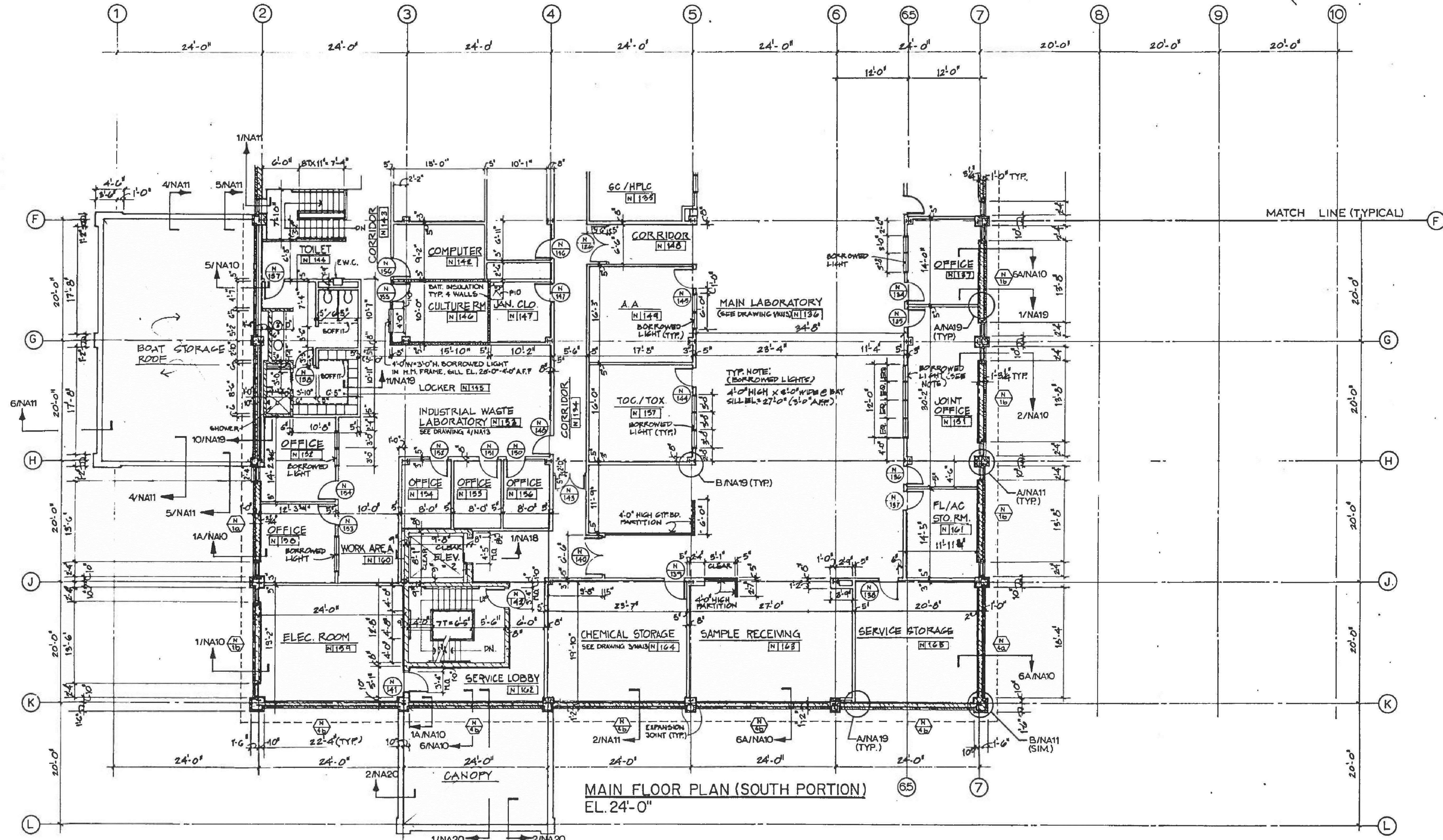
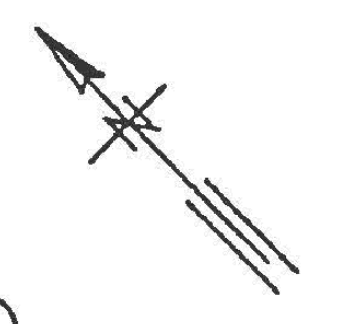


MAIN FLOOR PLAN (NORTH PORTION)
EL. 24'-0"

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MAIN FLOOR PLAN (SOUTH PORTION)
EL. 24'-0"

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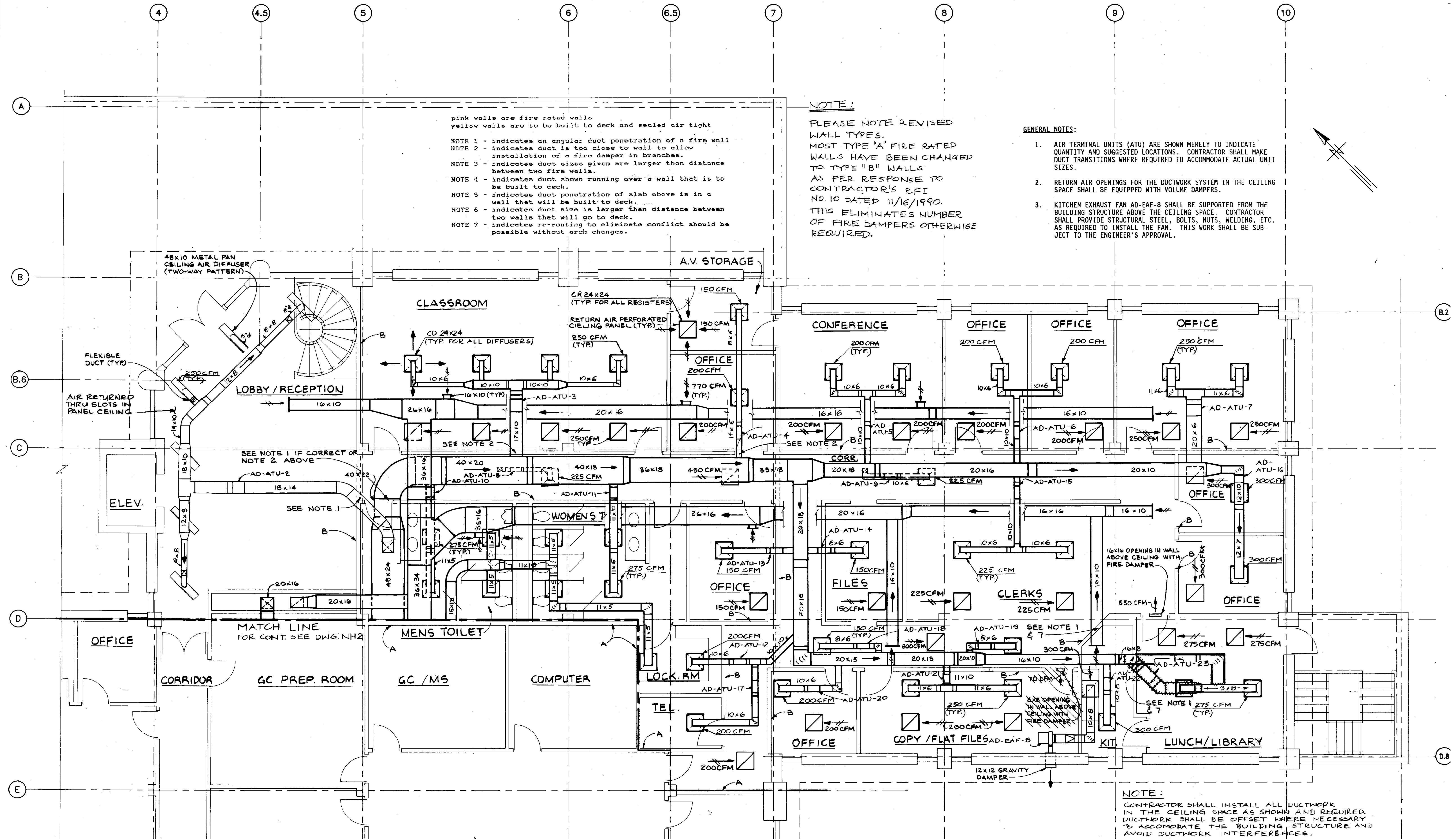
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1990 MAIN FLOOR PLAN
- SOUTH

W.O. #5427
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RI.A5
OF



pink walls are fire rated walls
yellow walls are to be built to deck and sealed air tight

NOTE 1 - indicates an angular duct penetration of a fire wall
NOTE 2 - indicates duct is too close to wall to allow installation of a fire damper in branches.
NOTE 3 - indicates duct sizes given are larger than distance between two fire walls.
NOTE 4 - indicates duct shown running over a wall that is to be built to deck.
NOTE 5 - indicates duct penetration of slab above is in a wall that will be built to deck.
NOTE 6 - indicates duct size is larger than distance between two walls that will go to deck.
NOTE 7 - indicates re-routing to eliminate conflict should be possible without arch changes.

NOTE:
PLEASE NOTE REVISED WALL TYPES. MOST TYPE "A" FIRE RATED WALLS HAVE BEEN CHANGED TO TYPE "B" WALLS AS PER RESPONSE TO CONTRACTOR'S RFI NO. 10 DATED 11/16/1990. THIS ELIMINATES NUMBER OF FIRE DAMPERS OTHERWISE REQUIRED.

- GENERAL NOTES:**
1. AIR TERMINAL UNITS (ATU) ARE SHOWN MERELY TO INDICATE QUANTITY AND SUGGESTED LOCATIONS. CONTRACTOR SHALL MAKE DUCT TRANSITIONS WHERE REQUIRED TO ACCOMMODATE ACTUAL UNIT SIZES.
 2. RETURN AIR OPENINGS FOR THE DUCTWORK SYSTEM IN THE CEILING SPACE SHALL BE EQUIPPED WITH VOLUME DAMPERS.
 3. KITCHEN EXHAUST FAN AD-EAF-8 SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE ABOVE THE CEILING SPACE. CONTRACTOR SHALL PROVIDE STRUCTURAL STEEL, BOLTS, NUTS, WELDING, ETC. AS REQUIRED TO INSTALL THE FAN. THIS WORK SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.

NOTE:
CONTRACTOR SHALL INSTALL ALL DUCTWORK IN THE CEILING SPACE AS SHOWN AND REQUIRED. DUCTWORK SHALL BE OFFSET WHERE NECESSARY TO ACCOMMODATE THE BUILDING STRUCTURE AND AVOID DUCTWORK INTERFERENCES.

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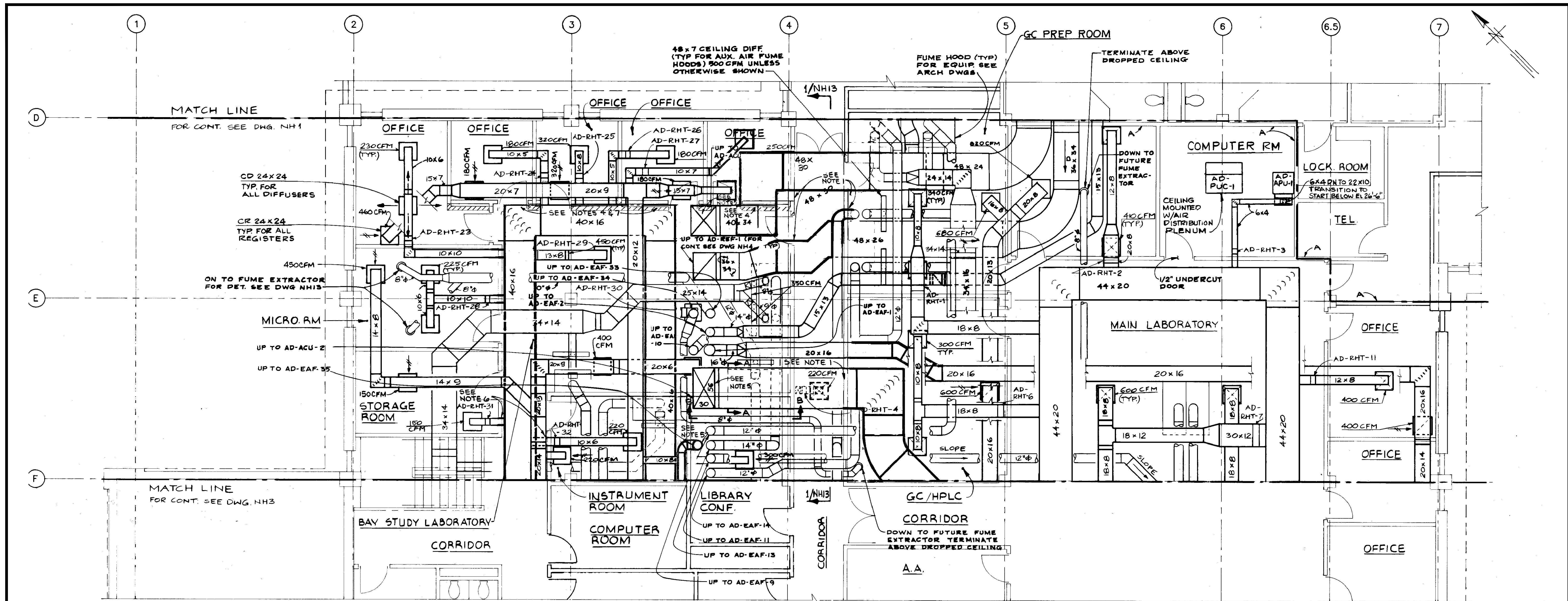
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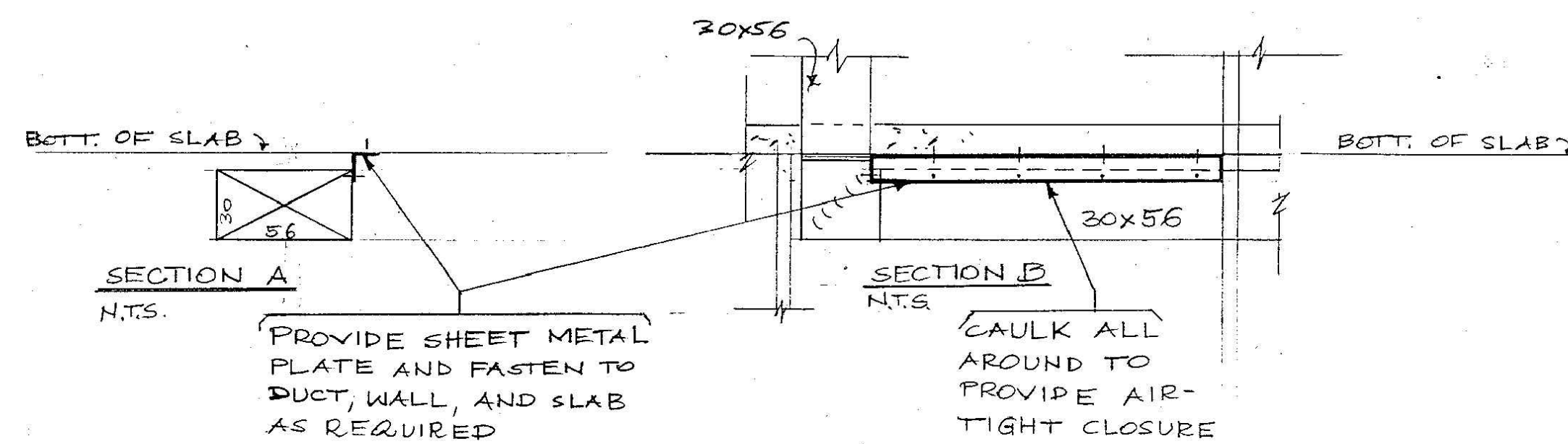
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1990 MAIN FLOOR PARTIAL
NORTH PLAN AREA -
OFFICE - HVAC

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- NOTE:**
- CONTRACTOR SHALL INSTALL ALL DUCTWORK IN THE CEILING SPACE AS SHOWN AND REQUIRED. DUCTWORK SHALL BE OFFSET WHERE NECESSARY TO ACCOMMODATE THE BUILDING STRUCTURE AND AVOID DUCTWORK INTERFERENCES.
 - REHEAT COILS ARE SHOWN MERELY TO INDICATE QUANTITY AND SUGGESTED LOCATIONS. CONTRACTOR SHALL MAKE DUCT TRANSITIONS WHERE REQUIRED TO ACCOMMODATE ACTUAL UNIT SIZES.



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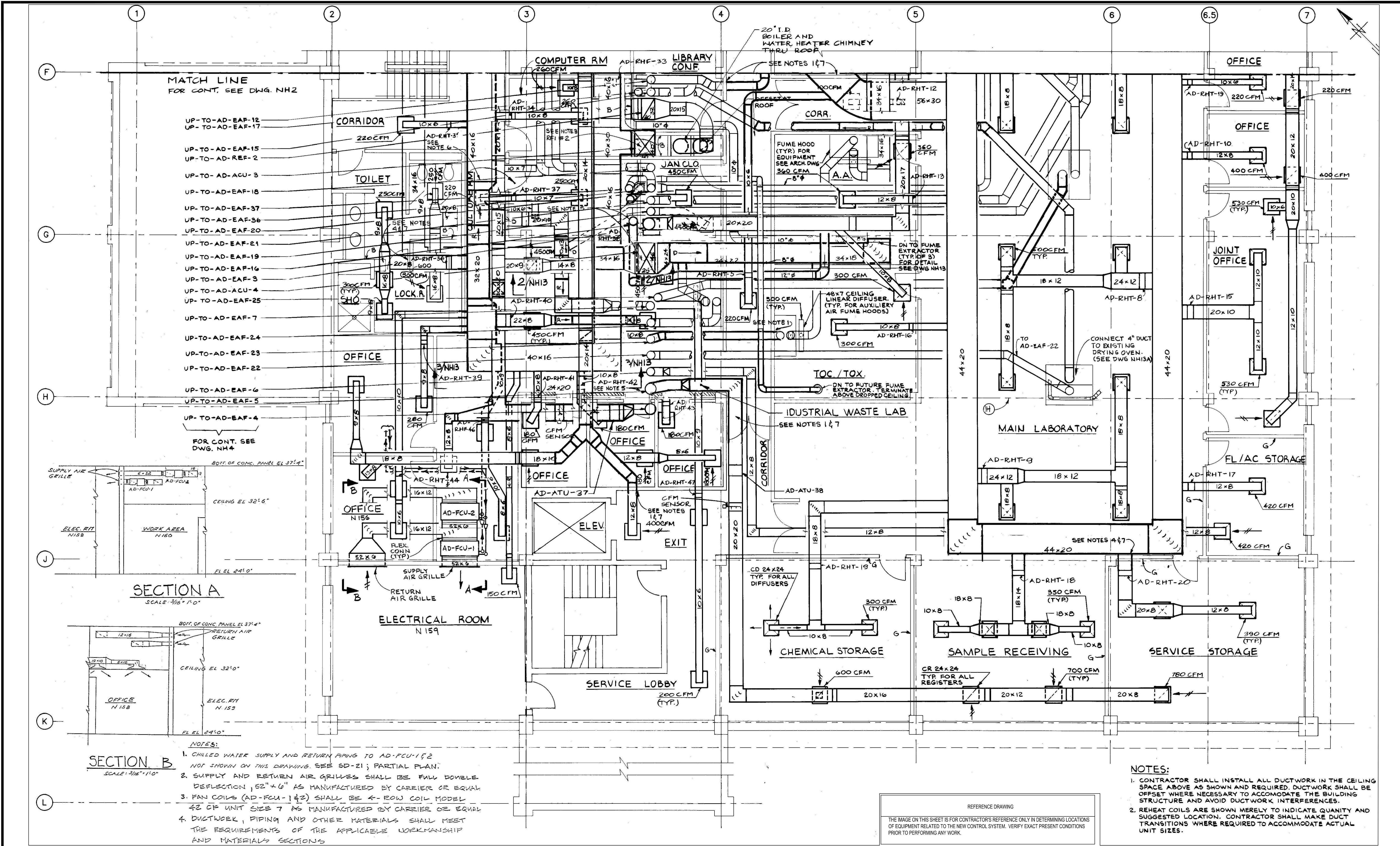
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1990 MAIN FLOOR PARTIAL
 PLAN CENTER AREA LAB -
 HVAC

W.O. #5427
 SHEET
RI.M2
 OF



MATCH LINE
FOR CONT. SEE DWG. NH2

- UP-TO-AD-EAF-12
- UP-TO-AD-EAF-17
- UP-TO-AD-EAF-15
- UP-TO-AD-REF-2
- UP-TO-AD-ACU-3
- UP-TO-AD-EAF-18
- UP-TO-AD-EAF-37
- UP-TO-AD-EAF-36
- UP-TO-AD-EAF-20
- UP-TO-AD-EAF-21
- UP-TO-AD-EAF-19
- UP-TO-AD-EAF-16
- UP-TO-AD-EAF-3
- UP-TO-AD-ACU-4
- UP-TO-AD-EAF-25
- UP-TO-AD-EAF-7
- UP-TO-AD-EAF-24
- UP-TO-AD-EAF-23
- UP-TO-AD-EAF-22
- UP-TO-AD-EAF-6
- UP-TO-AD-EAF-5
- UP-TO-AD-EAF-4

FOR CONT. SEE
DWG. NH4

SECTION A
SCALE: 3/16" = 1'-0"

SECTION B
SCALE: 3/16" = 1'-0"

- NOTES:
1. CHILLED WATER SUPPLY AND RETURN PIPING TO AD-FCU-1 & 2 NOT SHOWN ON THIS DRAWING. SEE SD-21; PARTIAL PLAN.
 2. SUPPLY AND RETURN AIR GRILLES SHALL BE FULL DOUBLE DEFLECTION, 52" x 6" AS MANUFACTURED BY CARRIER OR EQUAL.
 3. FAN COILS (AD-FCU-1 & 2) SHALL BE 4-ROW COIL MODEL 42 CF UNIT SIZE 7 AS MANUFACTURED BY CARRIER OR EQUAL.
 4. DUCTWORK, PIPING AND OTHER MATERIALS SHALL MEET THE REQUIREMENTS OF THE APPLICABLE WORKMANSHIP AND MATERIALS SECTIONS.

- NOTES:
1. CONTRACTOR SHALL INSTALL ALL DUCTWORK IN THE CEILING SPACE ABOVE AS SHOWN AND REQUIRED. DUCTWORK SHALL BE OFFSET WHERE NECESSARY TO ACCOMMODATE THE BUILDING STRUCTURE AND AVOID DUCTWORK INTERFERENCES.
 2. REHEAT COILS ARE SHOWN MERELY TO INDICATE QUANTITY AND SUGGESTED LOCATION. CONTRACTOR SHALL MAKE DUCT TRANSITIONS WHERE REQUIRED TO ACCOMMODATE ACTUAL UNIT SIZES.

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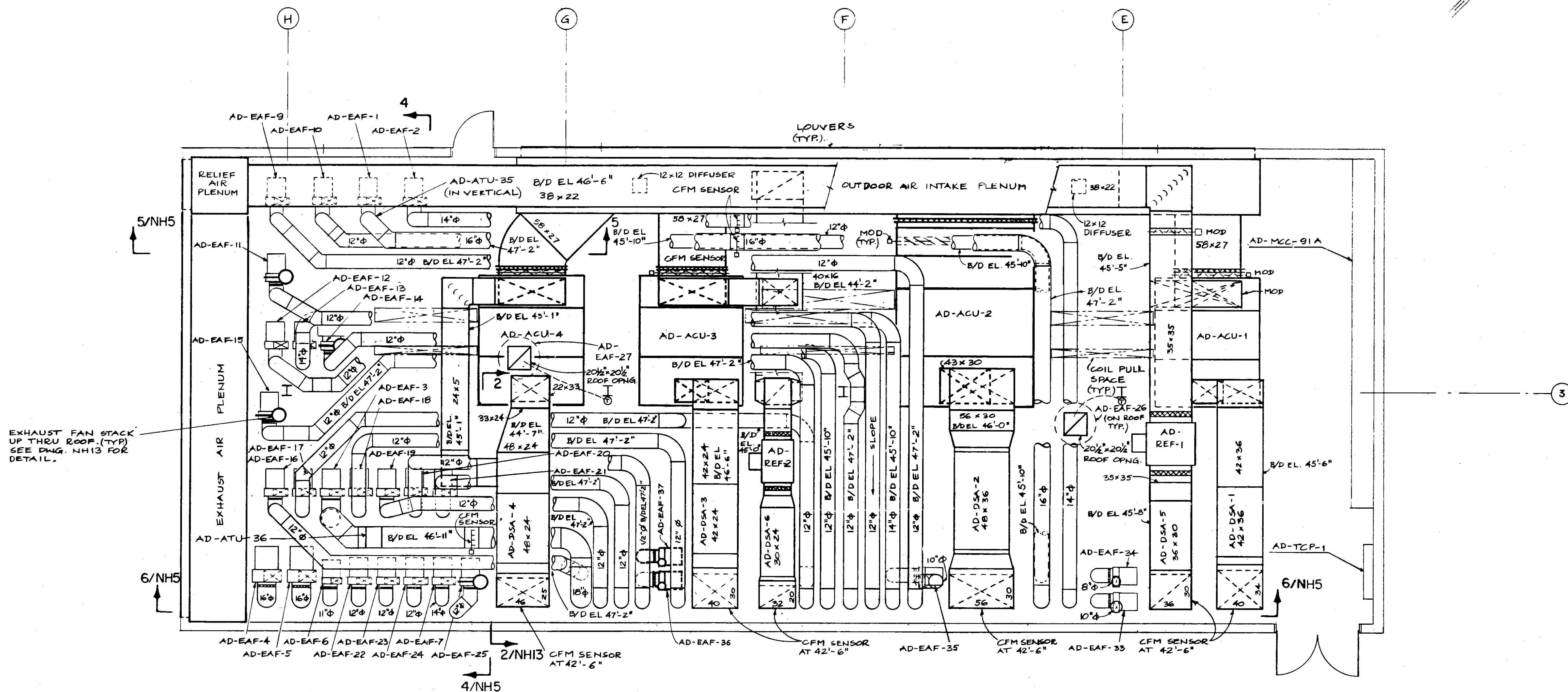
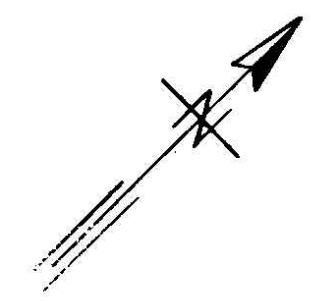
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1990 MAIN FLOOR PARTIAL
PLAN SOUTH AREA LABS -
HVAC

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EXHAUST FAN STACK UP THRU ROOF. (TYP) SEE DWG. NH13 FOR DETAIL.

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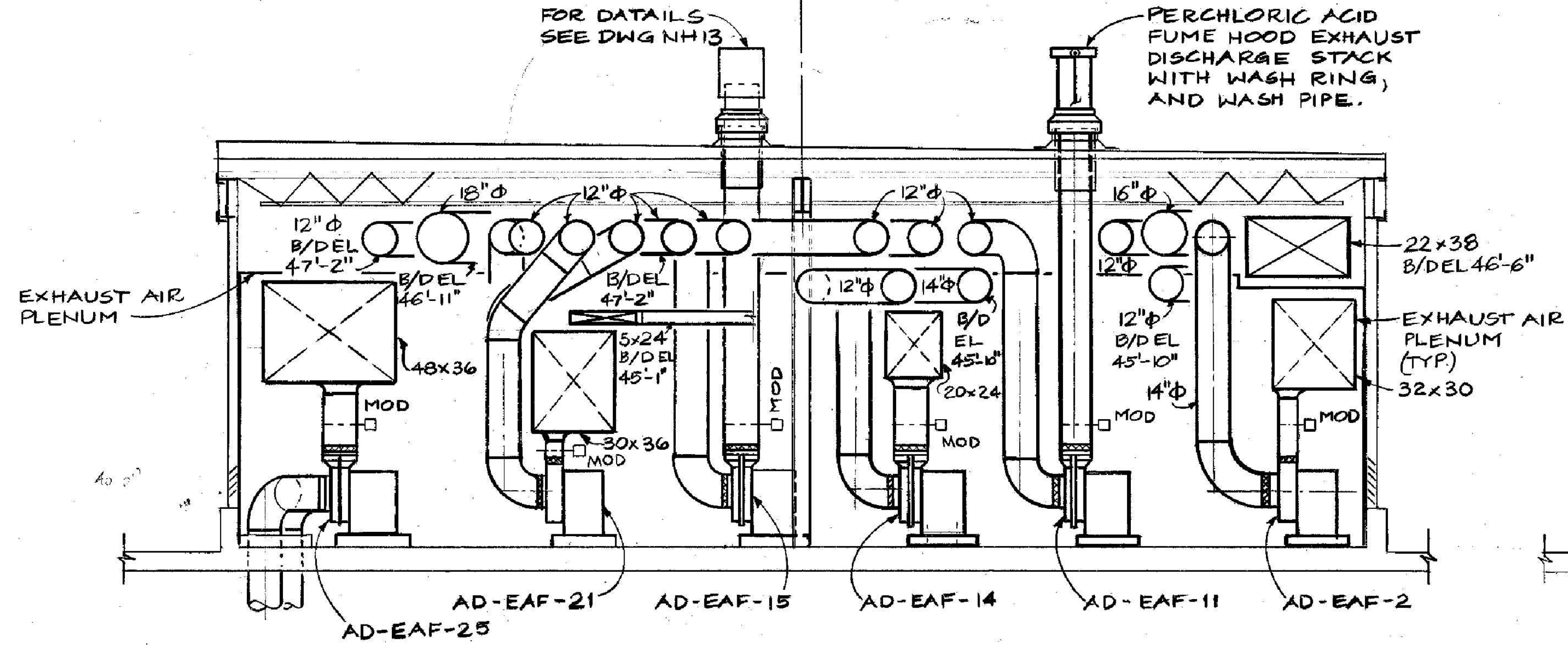
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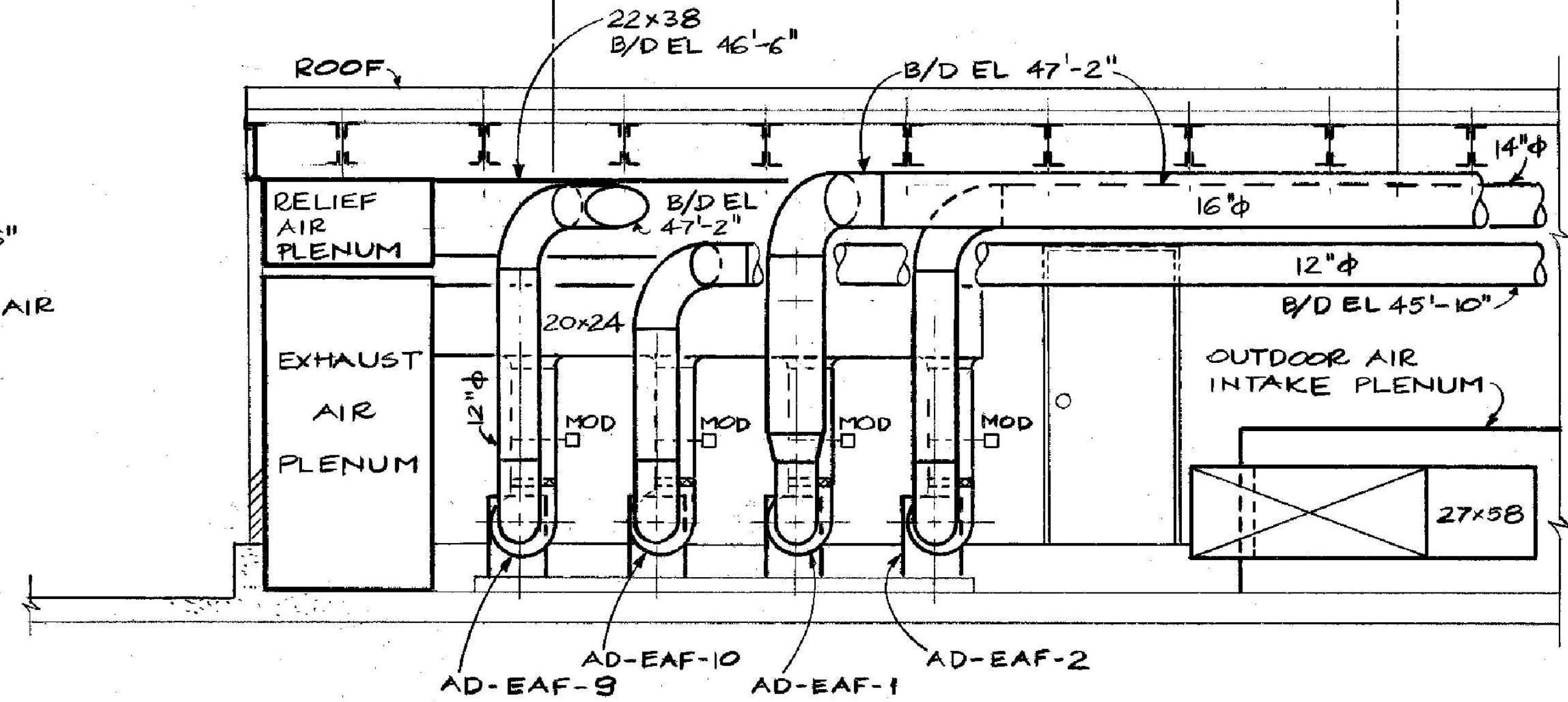
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1990 PENTHOUSE PLAN -
 HVAC

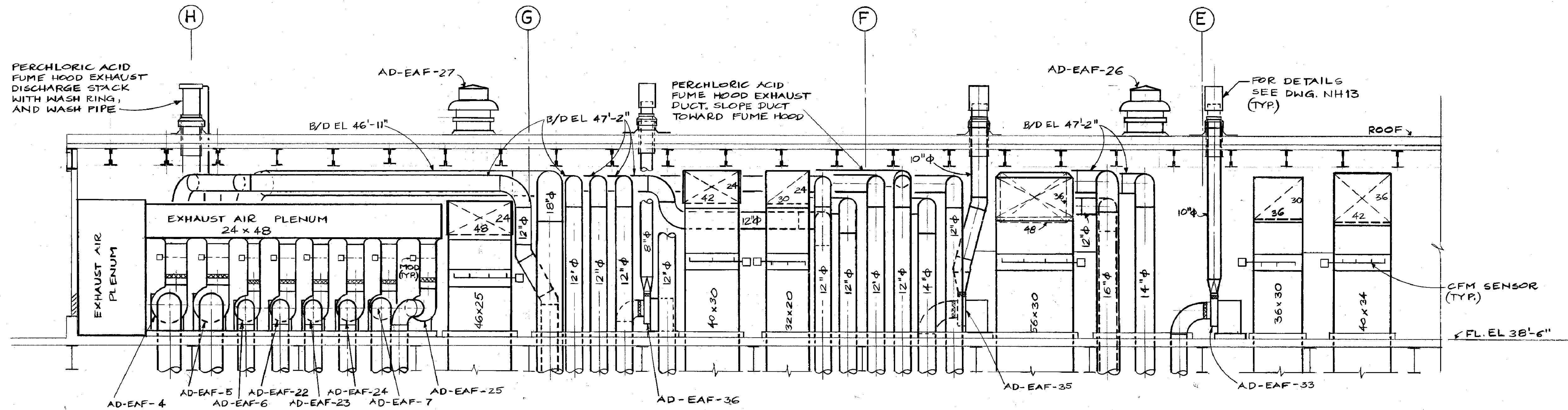
W.O. #5427
 SHEET
RI.M4
 OF



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



SECTION 5
SCALE: 1/4" = 1'-0"

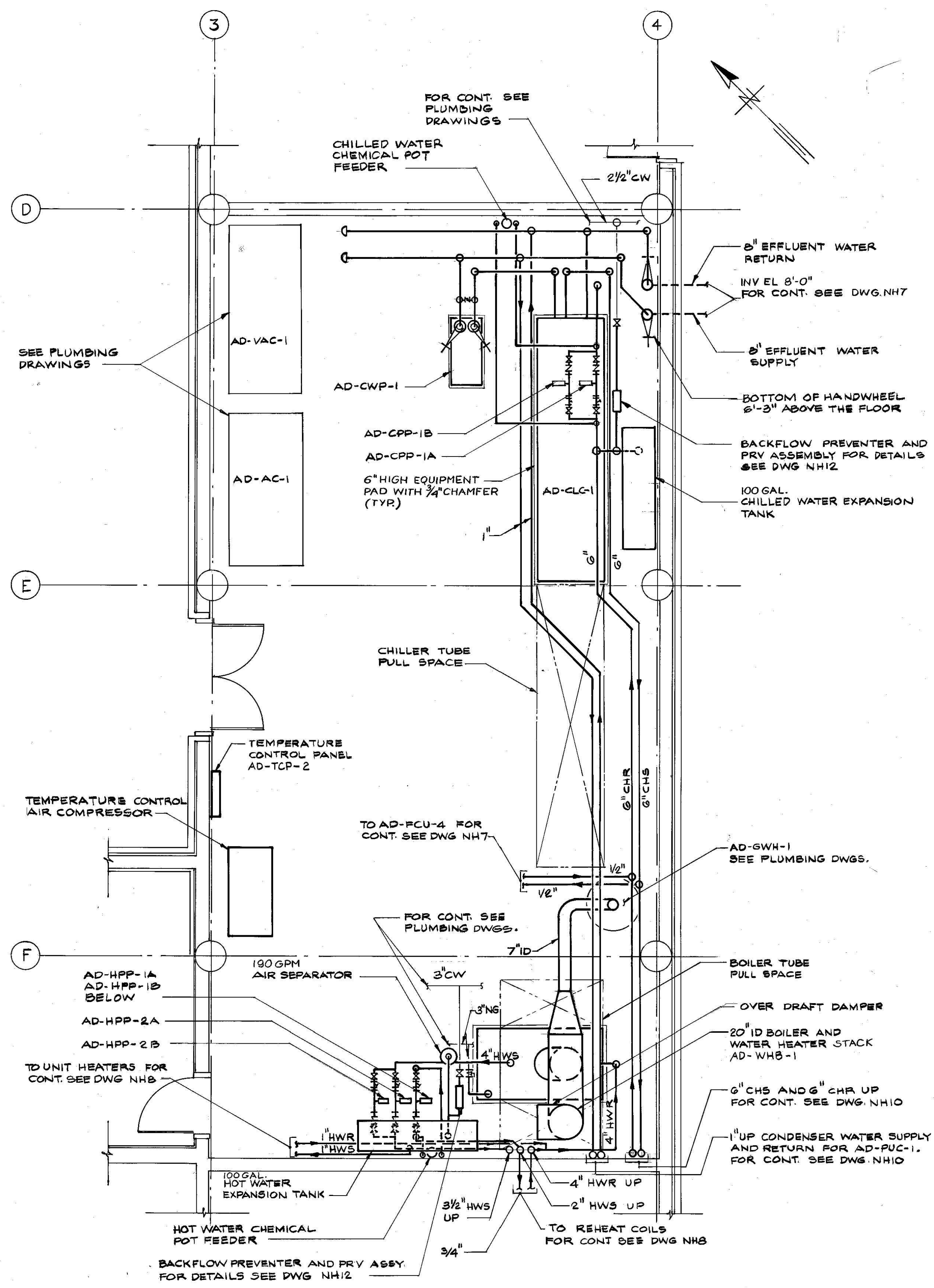


SECTION 6
SCALE: 1/4" = 1'-0"

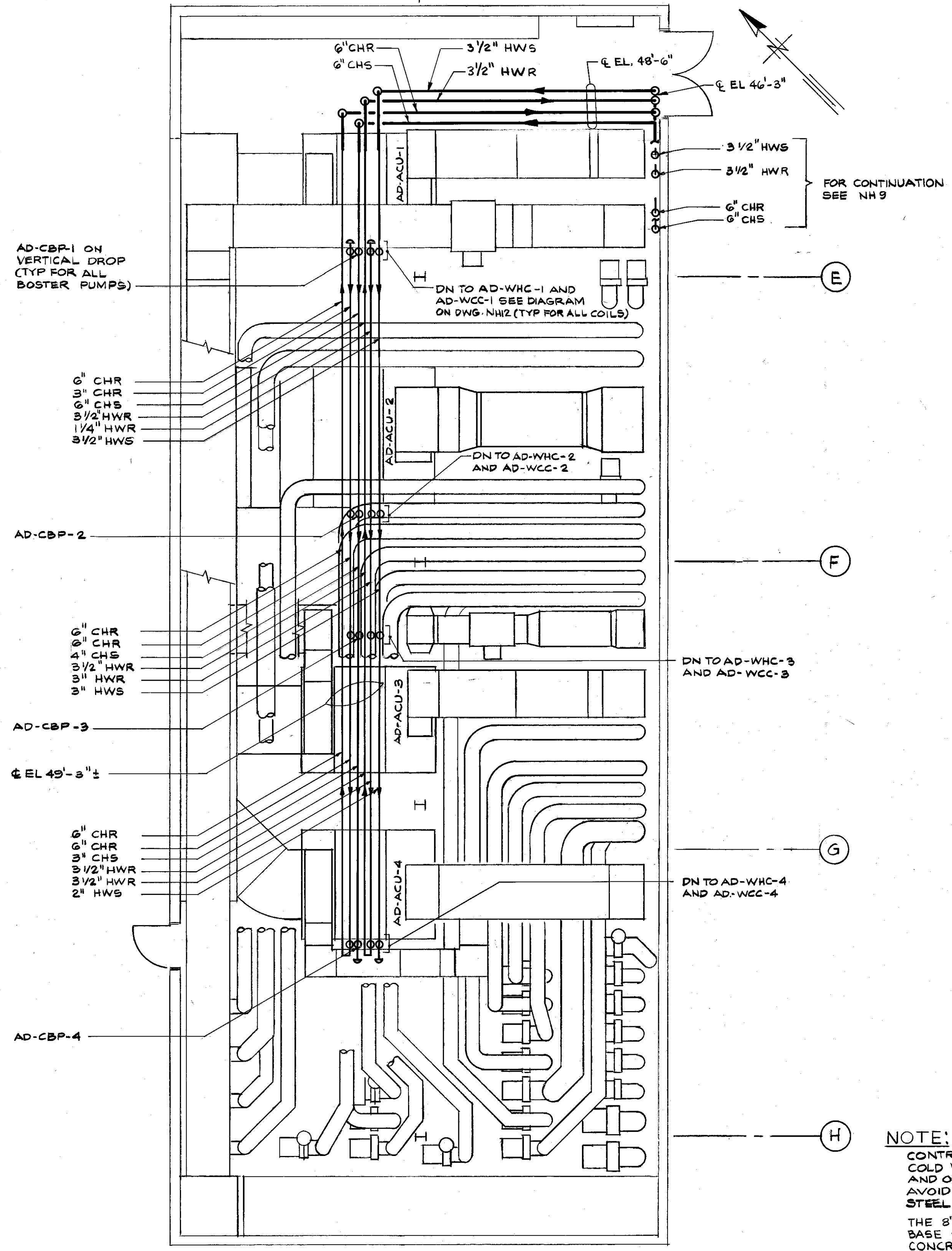
REFERENCE DRAWING

THE IMAGE ON THIS SHEET IS FOR CONTRACTOR'S REFERENCE ONLY IN DETERMINING LOCATIONS OF EQUIPMENT RELATED TO THE NEW CONTROL SYSTEM. VERIFY EXACT PRESENT CONDITIONS PRIOR TO PERFORMING ANY WORK.

No.	DATE	REVISIONS
3		
2		
1		



PLAN FL EL 13'-6"
SCALE: 1/4" = 1'-0"



PLAN FL EL 38'-6"
SCALE: 3/16" = 1'-0"

NOTE:
CONTRACTOR SHALL RUN ALL HOT AND COLD WATER PIPING AS NECESSARY, AND OFFSET WHERE REQUIRED TO AVOID CONFLICTS WITH DUCTWORK, STEEL ETC....
THE 8" EFFLUENT WATER BELOW THE BASE SLAB SHALL BE ENCASED IN CONCRETE, IN ACCORDANCE WITH STRUCTURAL DETAILS.

REFERENCE DRAWING
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VOLT AIR
CONSULTING ENGINEERS
220 West 7th Avenue, Suite 210
Tampa, Florida 33602 TEL 888.891.9713
COA 27158 Project No. 13009

No.	DATE	REVISIONS
3		
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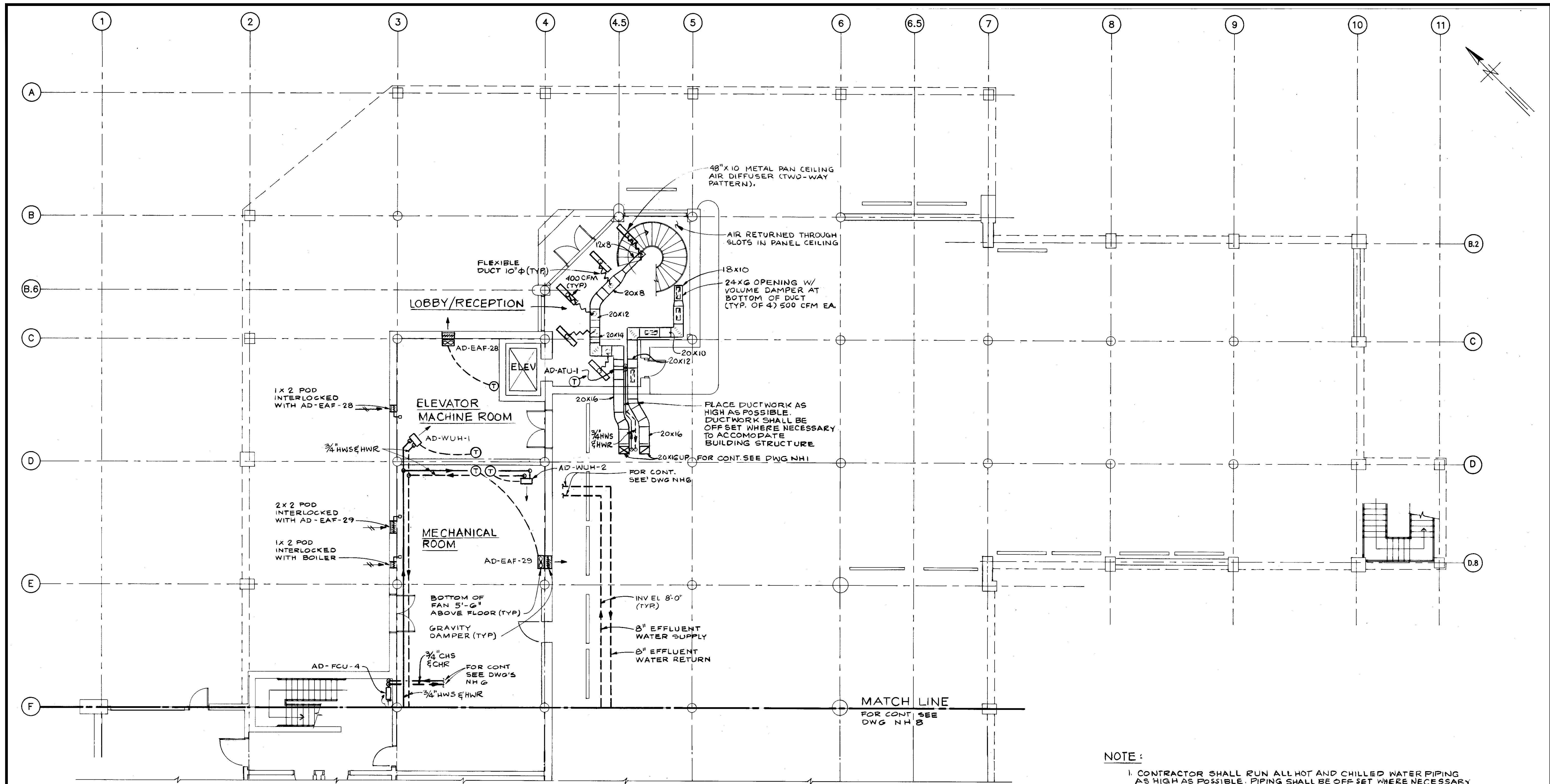
DES:
DRN:
CKD:
DATE: 07/05/13

CITY of TAMPA
WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
BUILDING CONTROL SYSTEM
100% CONSTRUCTION DOCUMENTS

1990 MECHANICAL ROOM & PENTHOUSE PIPING
PLAN - HVAC

W.O. #5427
SHEET
RI.M6
OF



NOTE:

- CONTRACTOR SHALL RUN ALL HOT AND CHILLED WATER PIPING AS HIGH AS POSSIBLE. PIPING SHALL BE OFF SET WHERE NECESSARY TO AVOID CONFLICT WITH DUCTWORK, STEEL, ETC.....
- THE 8" EFFLUENT WATER BELOW THE BASE SLAB SHALL BE ENCASED IN CONCRETE IN ACCORDANCE WITH STRUCTURAL DETAIL.

REFERENCE DRAWING
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No.	DATE	REVISIONS
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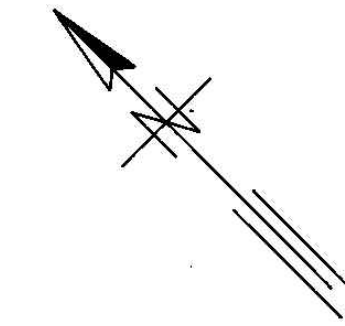
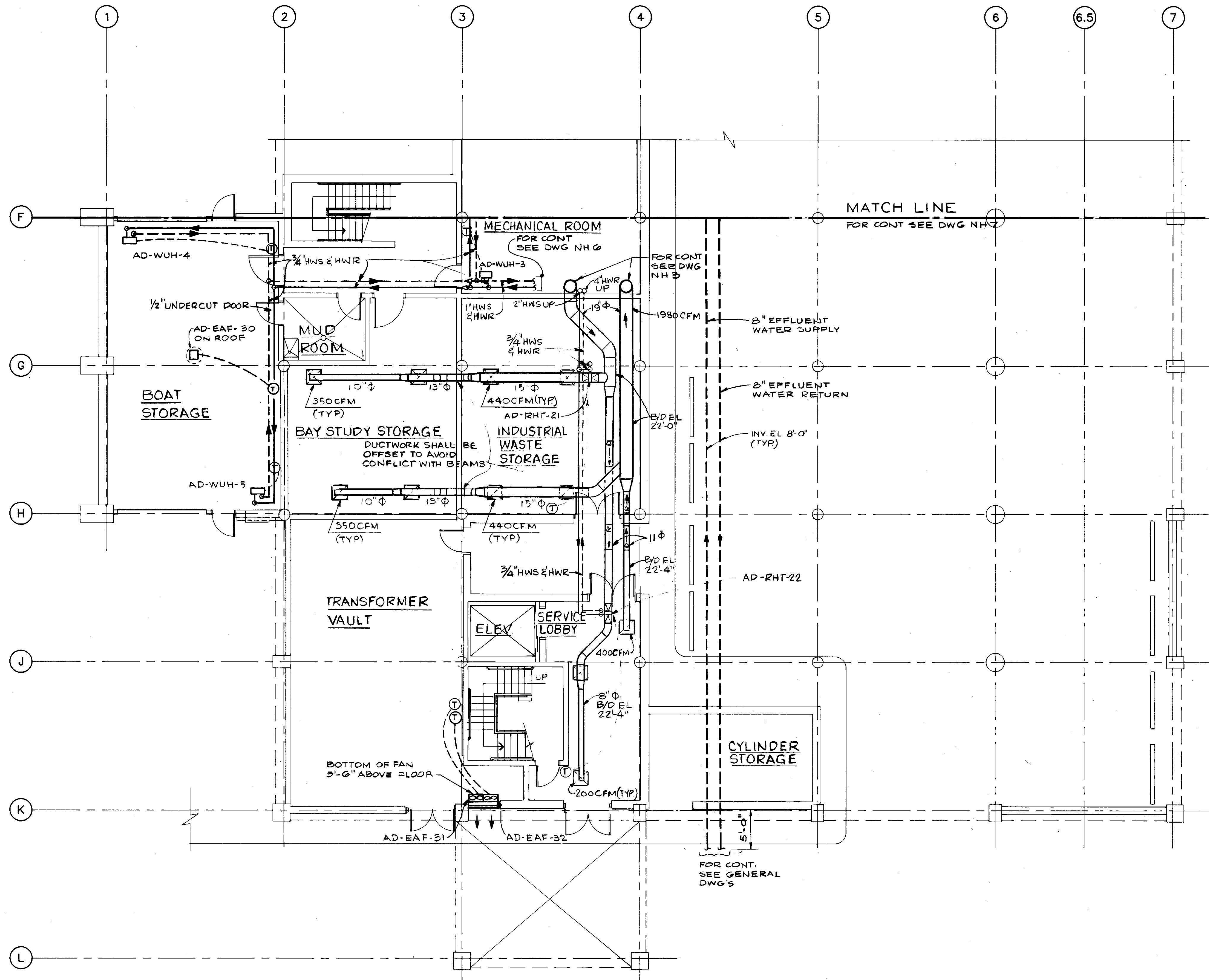
DES:
 DRN:
 CKD:
 DATE: 07/05/13

CITY of TAMPA
 WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

1990 GRADE FLOOR PLAN
 NORTH - HVAC

W.O. #5427
 SHEET
 RI.M7
 OF



- NOTE:**
- CONTRACTOR SHALL RUN ALL HOT WATER PIPING IN THE CEILING SPACE AS SHOWN AND REQUIRED PIPING SHALL BE OFFSET WHERE NECESSARY AND AVOID CONFLICTS WITH DUCTWORK, STEEL, ETC...
 - THE 8" EFFLUENT WATER BELOW THE BASE SLAB SHALL BE ENCASED IN CONCRETE IN ACCORDANCE WITH STRUCTURAL DETAILS.

REFERENCE DRAWING
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 220 West 7th Avenue, Suite 210
 Tampa, Florida 33602 TEL 888.891.9713
 COA 27158 Project No. 13009

No.	DATE	REVISIONS
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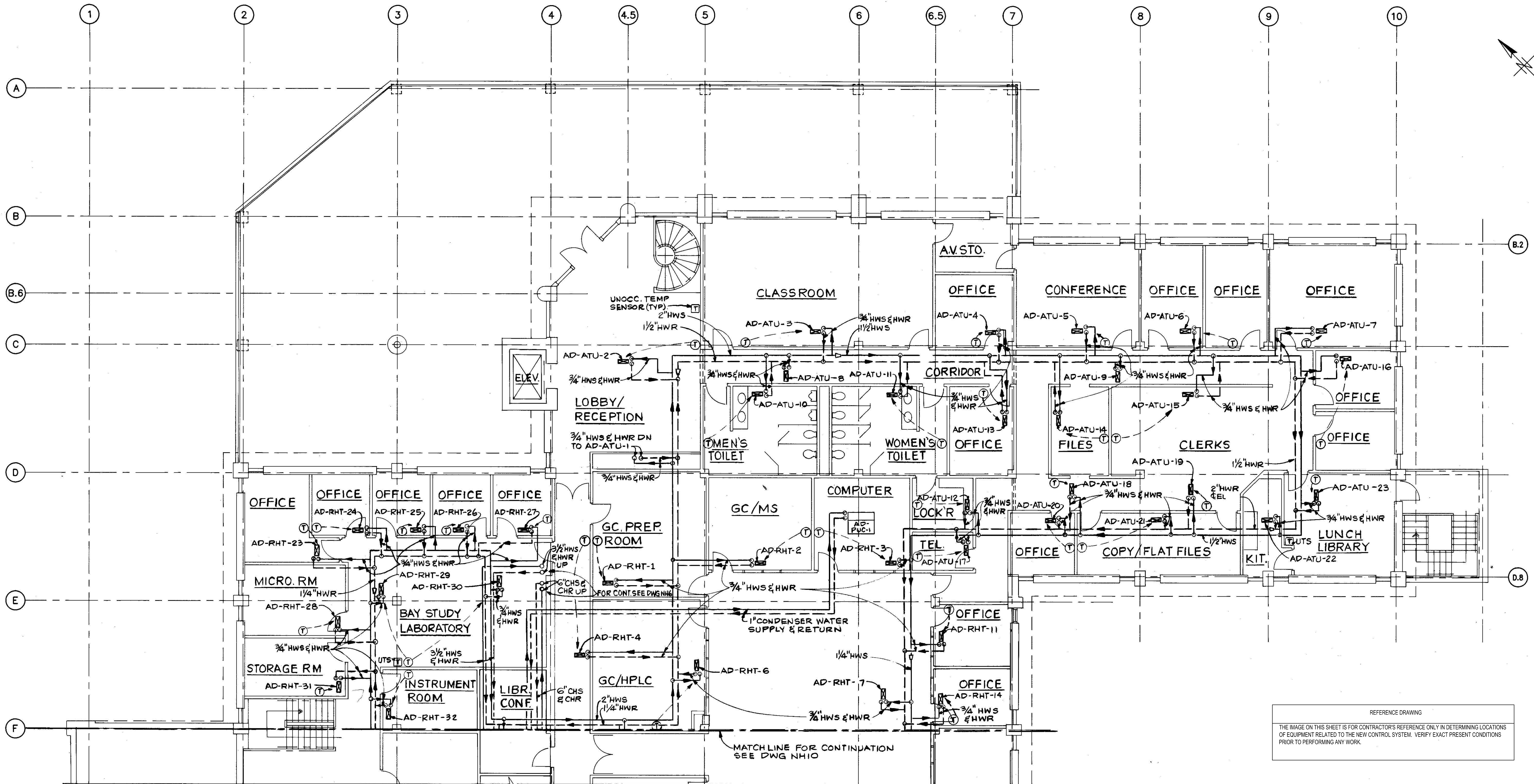
DES:
 DRN:
 CKD:
 DATE: 07/05/13

CITY of TAMPA
 WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

1990 GRADE FLOOR PLAN
 SOUTH - HVAC

W.O. #5427
 SHEET
RI.M8
 OF



REFERENCE DRAWING
 THE IMAGE ON THIS SHEET IS FOR CONTRACTOR'S REFERENCE ONLY IN DETERMINING LOCATIONS OF EQUIPMENT RELATED TO THE NEW CONTROL SYSTEM. VERIFY EXACT PRESENT CONDITIONS PRIOR TO PERFORMING ANY WORK.

- NOTES:**
1. CONTRACTOR SHALL RUN ALL HOT, CHILLED AND CONDENSER WATER PIPING IN THE CEILING SPACE AS SHOWN AND REQUIRED. PIPING SHALL BE OFFSET WHERE NECESSARY AND AVOID CONFLICTS WITH DUCTWORK, STEEL, ETC....
 2. ALL INDIVIDUAL REHEAT COILS (RHT) AND AIR TERMINAL UNITS (ATU) WITH REHEAT COILS ARE DUCTWORK MOUNTED AND ARE SHOWN FOR REFERENCE ONLY. FOR COIL LOCATIONS REFER TO DRAWINGS NHI, NH2, AND NH3.

VOLT AIR
 CONSULTING ENGINEERS
 220 West 7th Avenue, Suite 210
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 COA 27158 Project No. 13009

No.	DATE	REVISIONS
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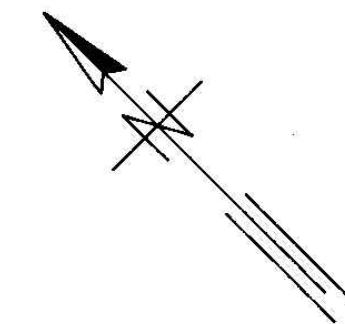
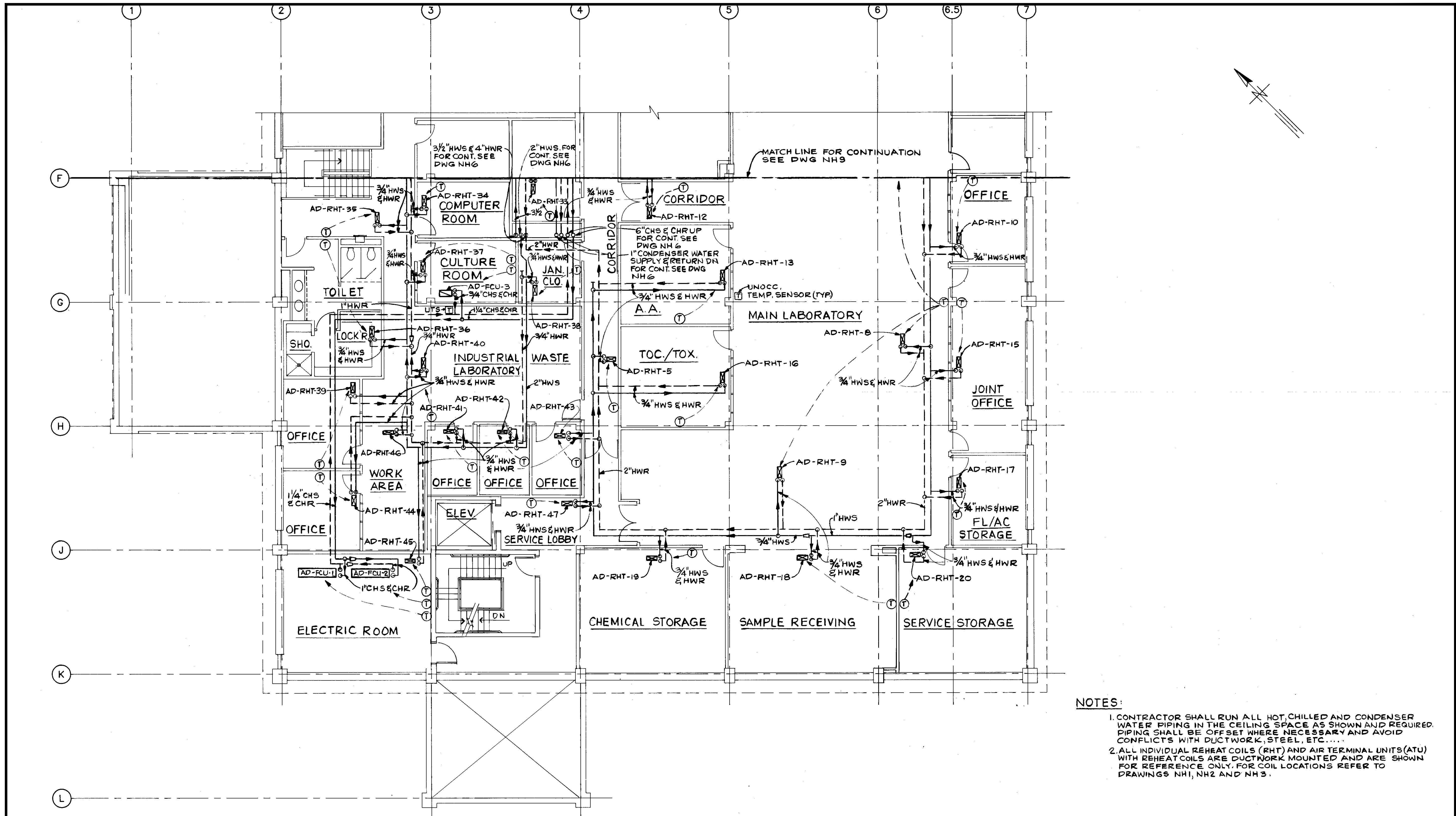
DES:
 DRN:
 CKD:
 DATE: 07/05/13

CITY of TAMPA
 WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

1990 MAIN FLOOR
 PLAN NORTH PIPING
 PLAN - HVAC

W.O. #5427
 SHEET
RI.M9
 OF



NOTES:

1. CONTRACTOR SHALL RUN ALL HOT, CHILLED AND CONDENSER WATER PIPING IN THE CEILING SPACE AS SHOWN AND REQUIRED. PIPING SHALL BE OFFSET WHERE NECESSARY AND AVOID CONFLICTS WITH DUCTWORK, STEEL, ETC....
2. ALL INDIVIDUAL REHEAT COILS (RHT) AND AIR TERMINAL UNITS (ATU) WITH REHEAT COILS ARE DUCTWORK MOUNTED AND ARE SHOWN FOR REFERENCE ONLY. FOR COIL LOCATIONS REFER TO DRAWINGS NH1, NH2 AND NH3.

REFERENCE DRAWING

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COA 27158 Project No. 13009

No.	DATE	REVISIONS
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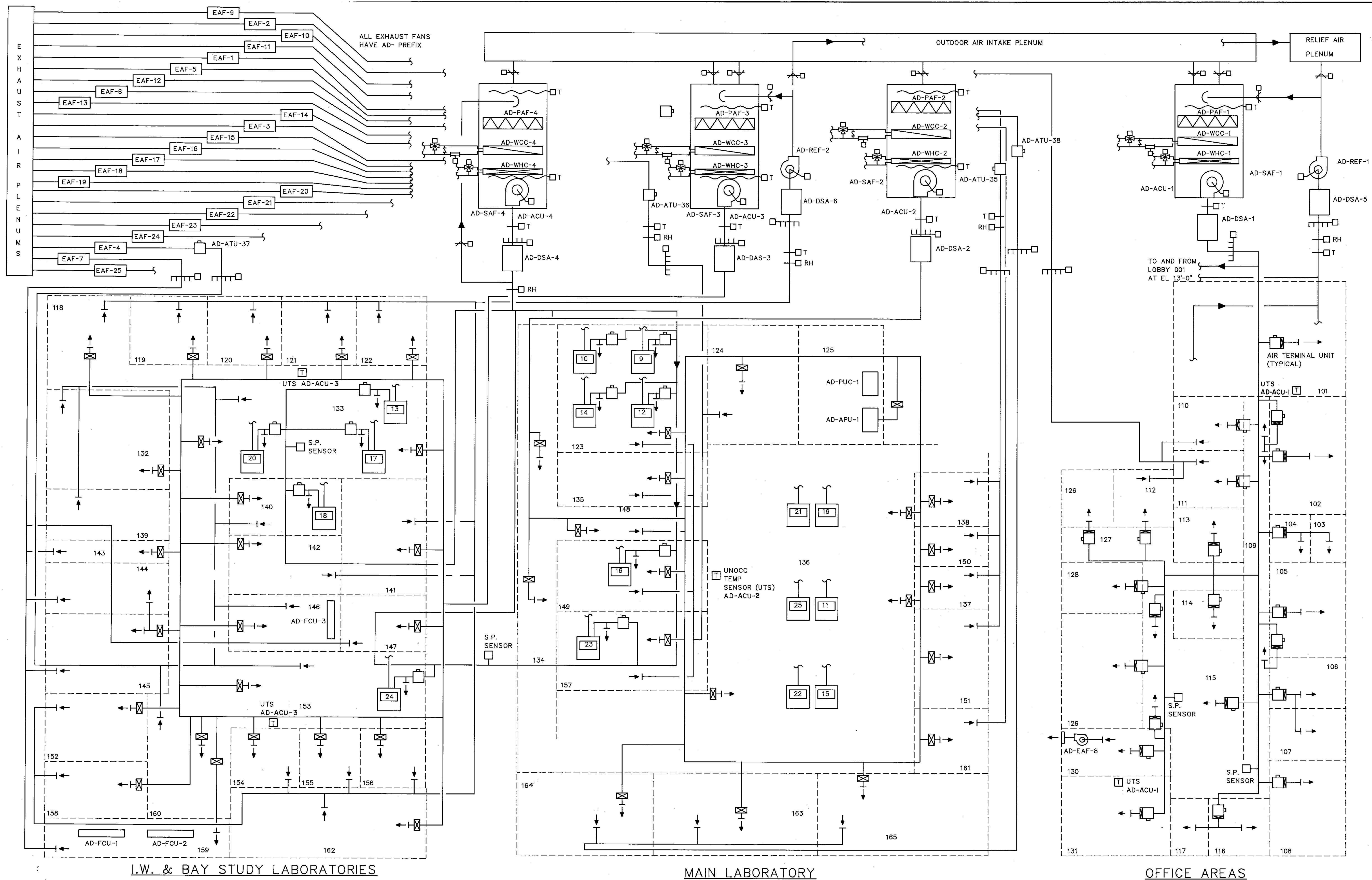
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DRN:
CKD:
DATE: 07/05/13

CITY of TAMPA
WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
BUILDING CONTROL SYSTEM
100% CONSTRUCTION DOCUMENTS

1990 MAIN FLOOR PLAN
SOUTH PIPING - HVAC

W.O. #5427
SHEET
RI.M10
OF



REFERENCE DRAWING
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 COA 27158 Project No. 13009

No.	DATE	REVISIONS
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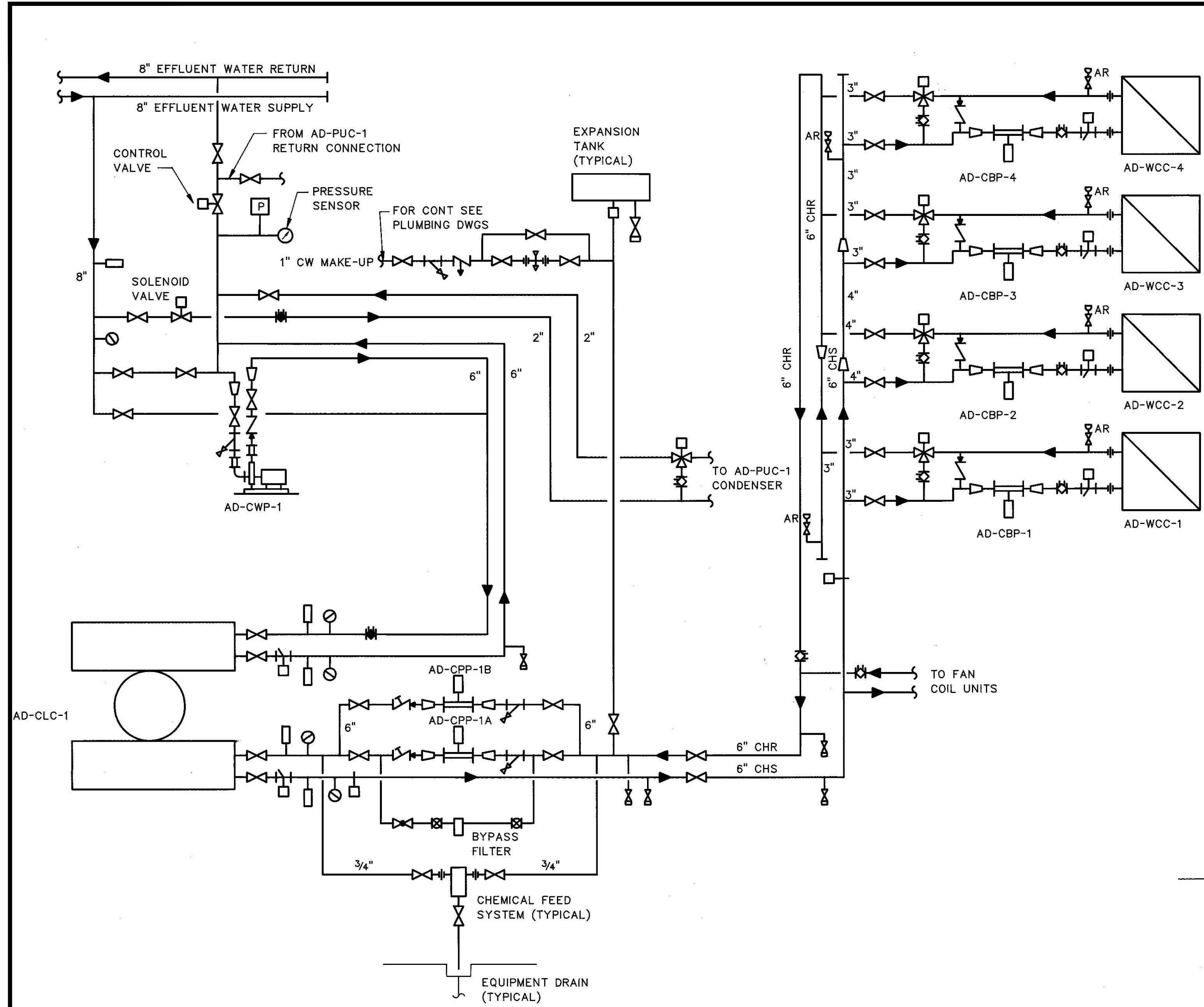
DES:
 DRN:
 CKD:
 DATE: 07/05/13

CITY of TAMPA
 WASTEWATER DEPARTMENT

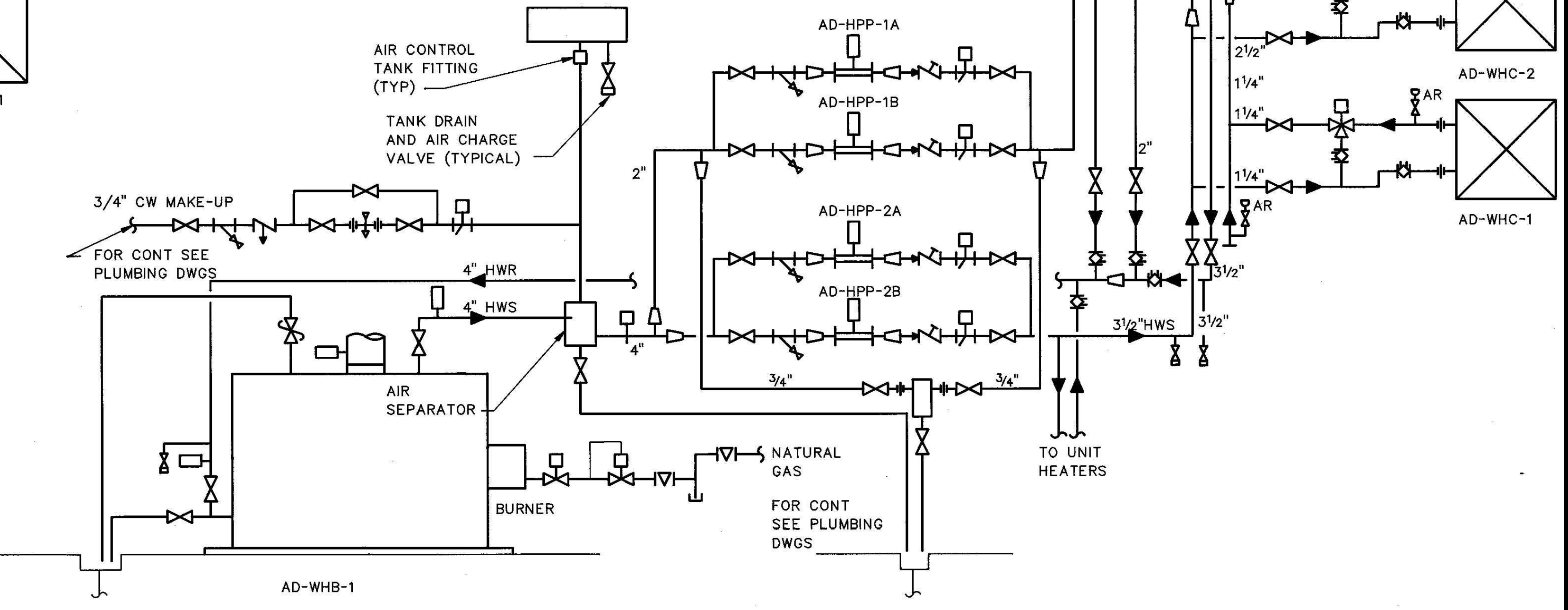
HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

1990 AIR FLOW &
 CONTROL DIAGRAM
 - HVAC

W.O. #5427
 SHEET
RI.MII
 OF



CHILLED/CONDENSER WATER FLOW AND CONTROL DIAGRAM



HEATING HOT WATER FLOW AND CONTROL DIAGRAM

REFERENCE DRAWING
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No.	DATE	REVISIONS
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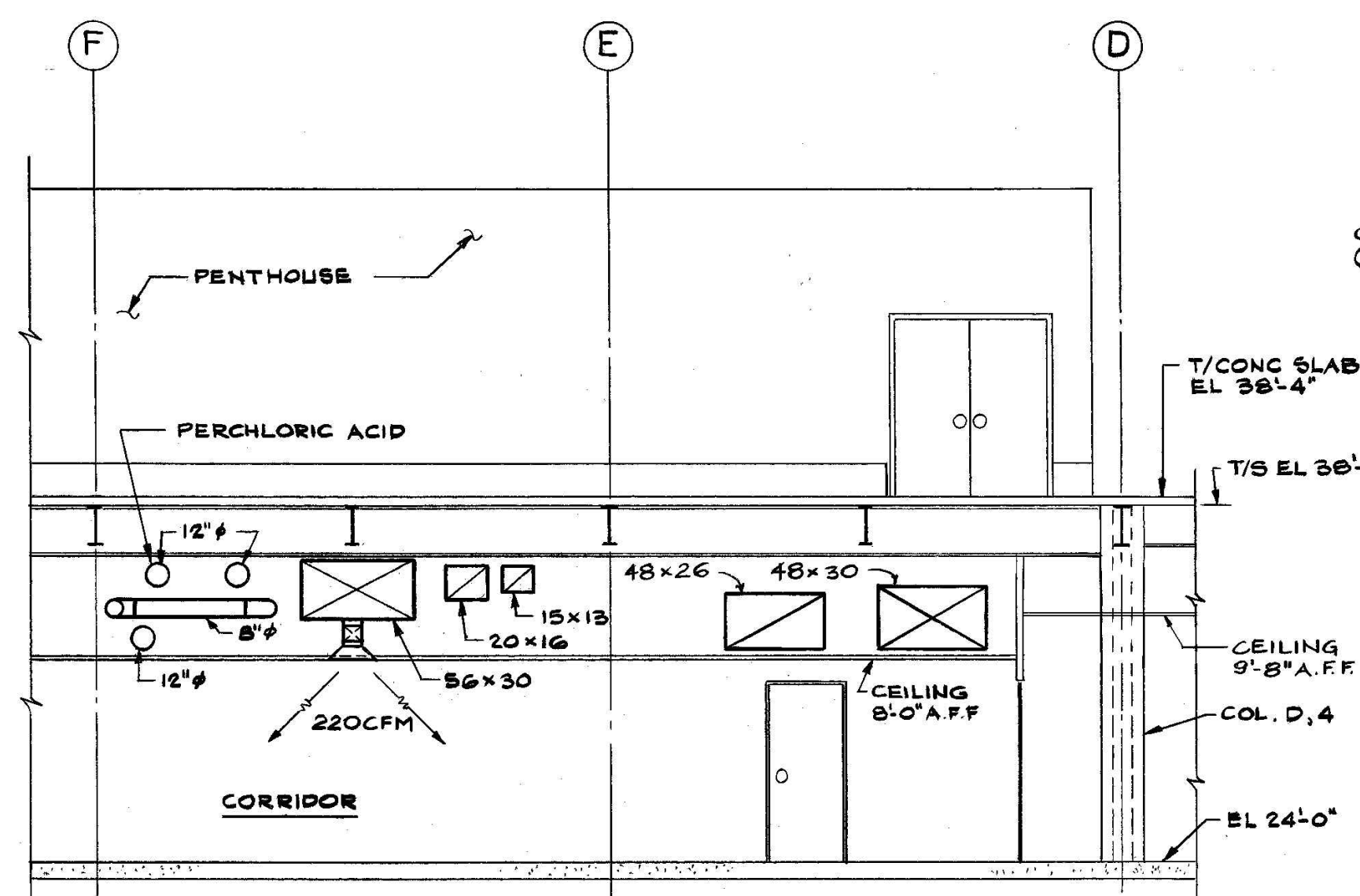
DES:
 DRN:
 CKD:
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CITY of TAMPA
 WASTEWATER DEPARTMENT

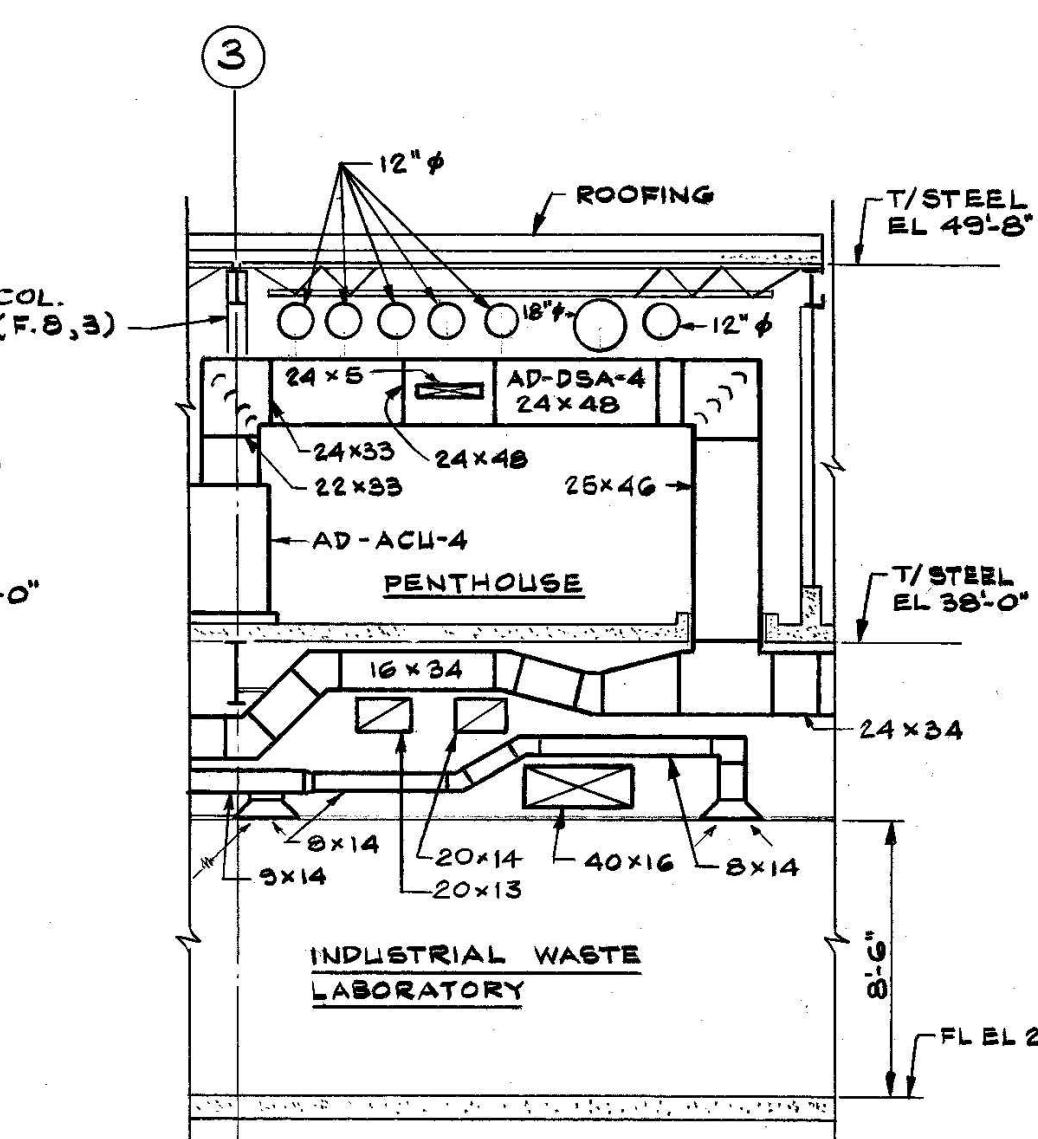
HFC AWTP ADMINISTRATION BUILDING
 BUILDING CONTROL SYSTEM
 100% CONSTRUCTION DOCUMENTS

1990 HYDRONIC FLOW
 & CONTROL DIAGRAM
 - HVAC

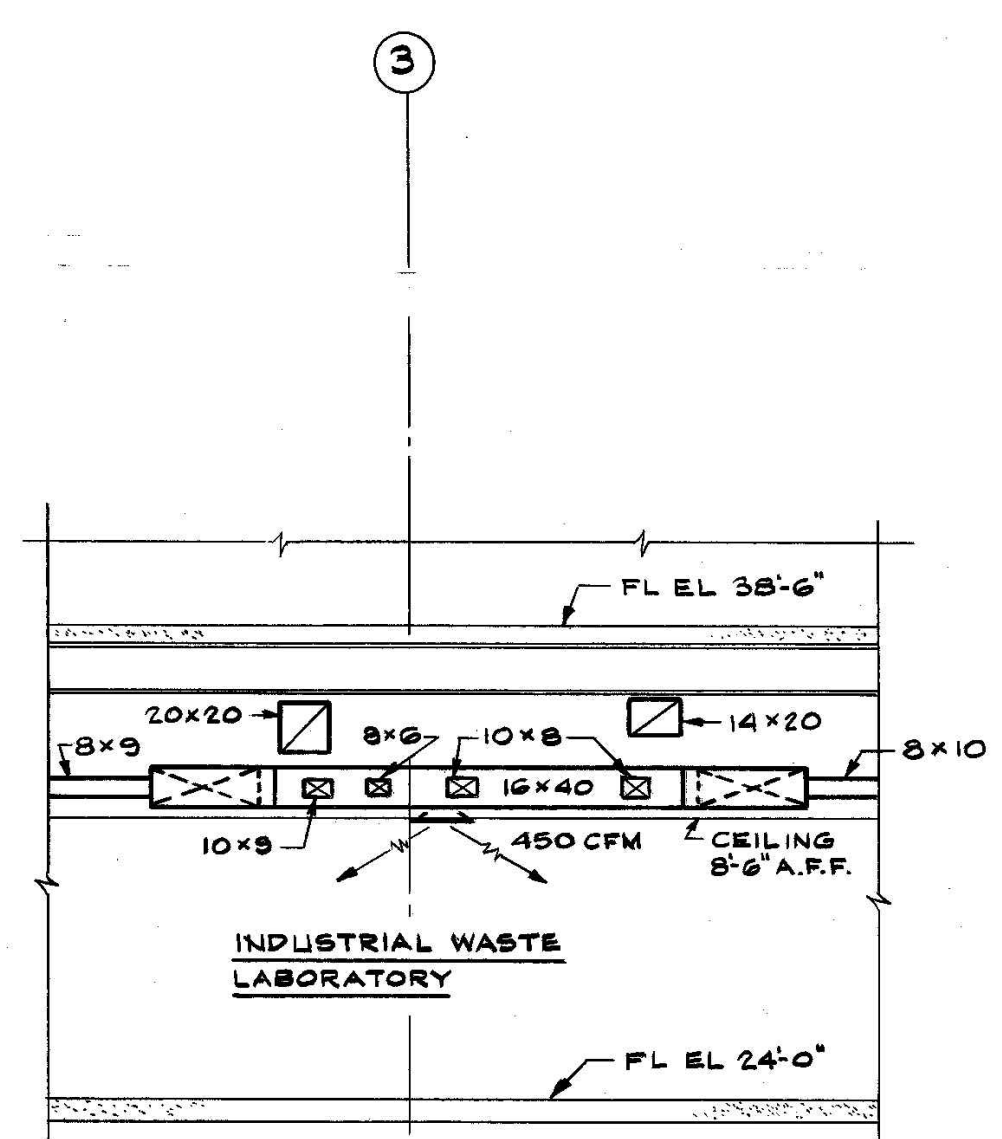
W.O. #5427
 SHEET
RI.M12
 OF



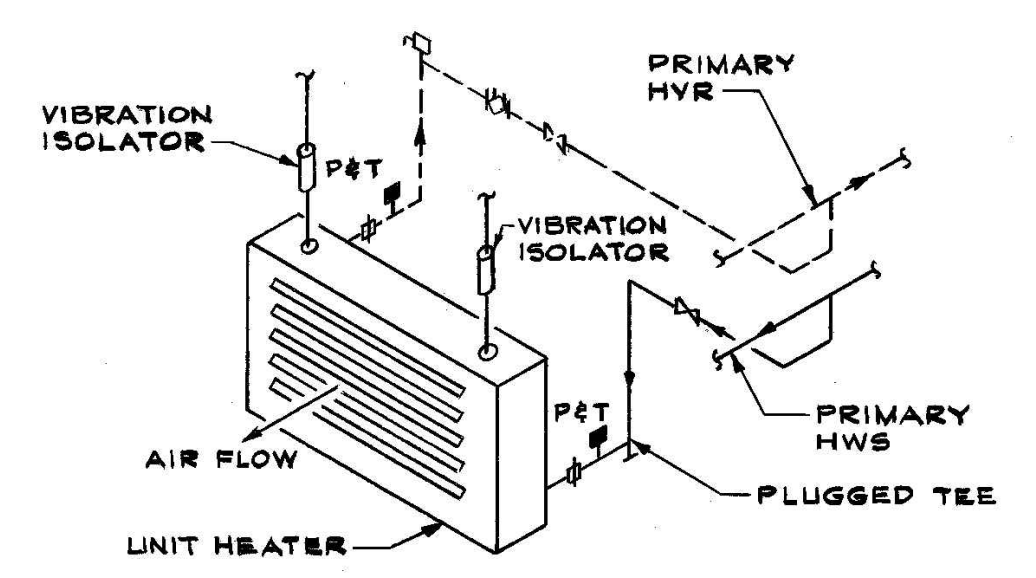
SECTION 1/NH2
SCALE: 3/16"=1'-0"



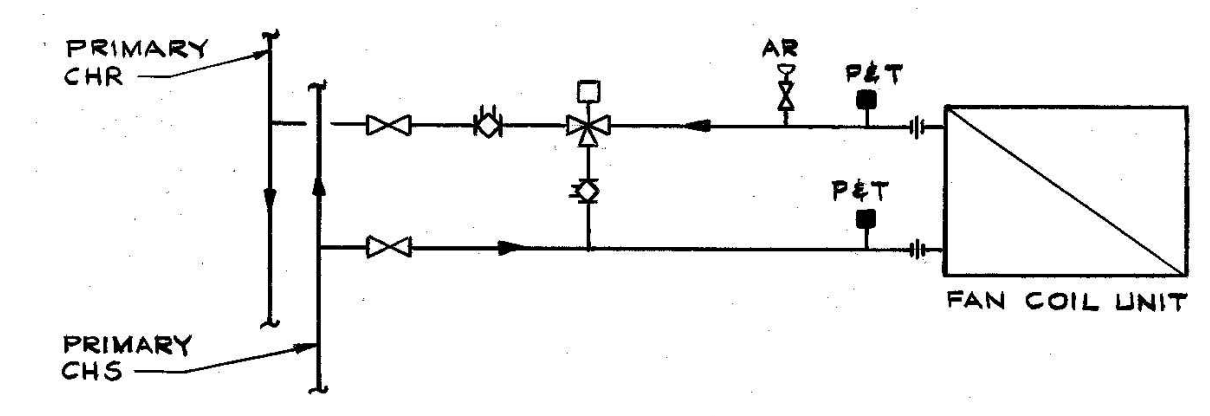
SECTION 2/NH3
SCALE: 3/16"=1'-0"



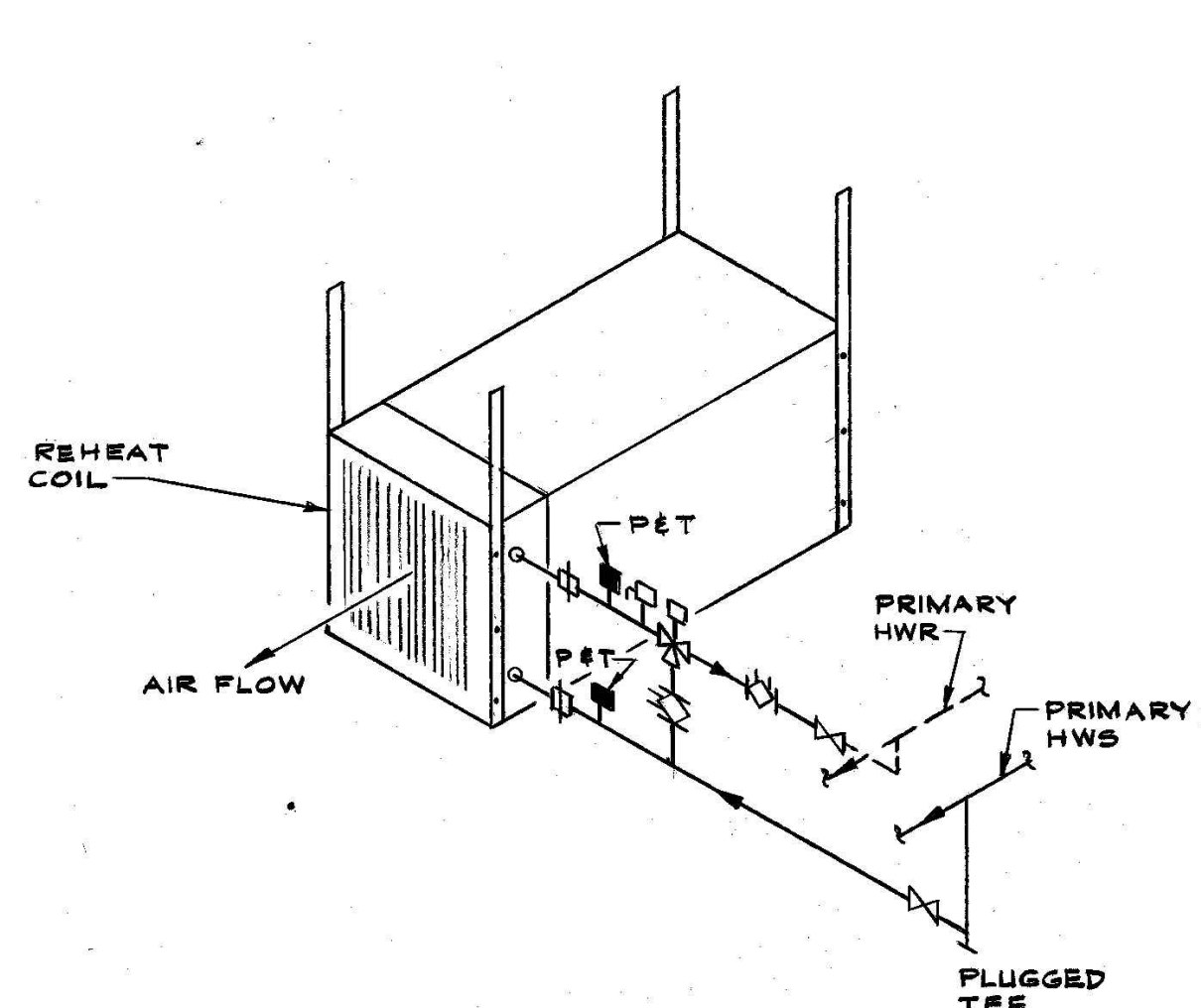
SECTION 3/NH3
SCALE: 3/16"=1'-0"



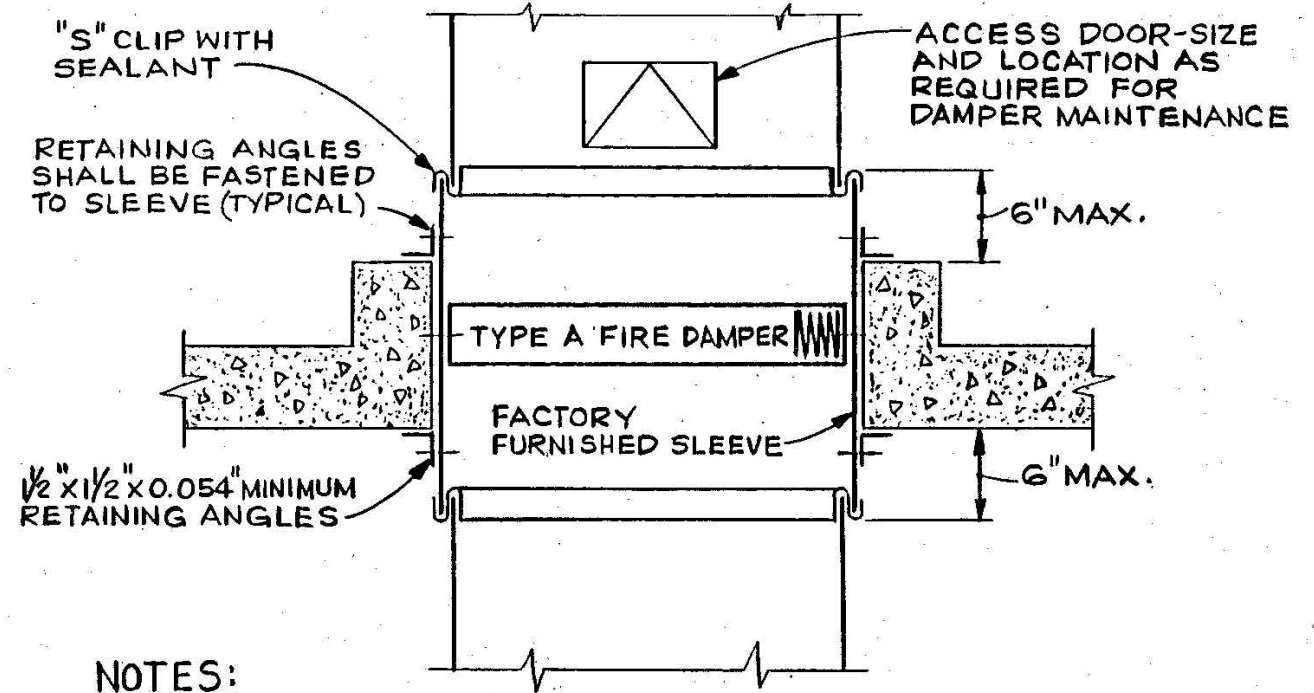
UNIT HEATER PIPING DIAGRAM
NOT TO SCALE



FAN COIL UNIT PIPING DIAGRAM
NOT TO SCALE

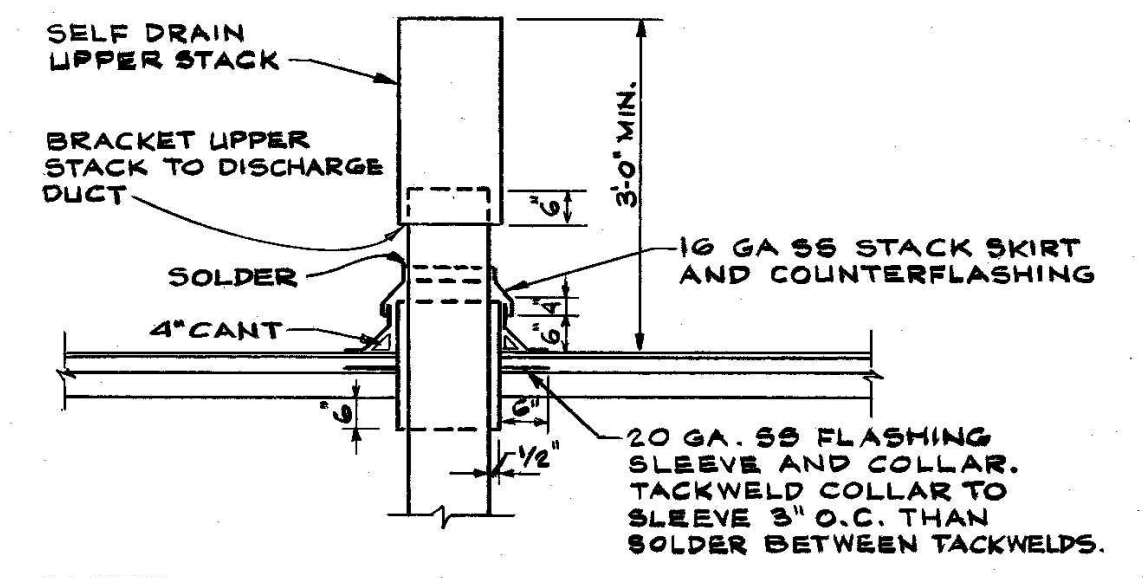


AIR TERMINAL UNIT PIPING DIAGRAM
NOT TO SCALE



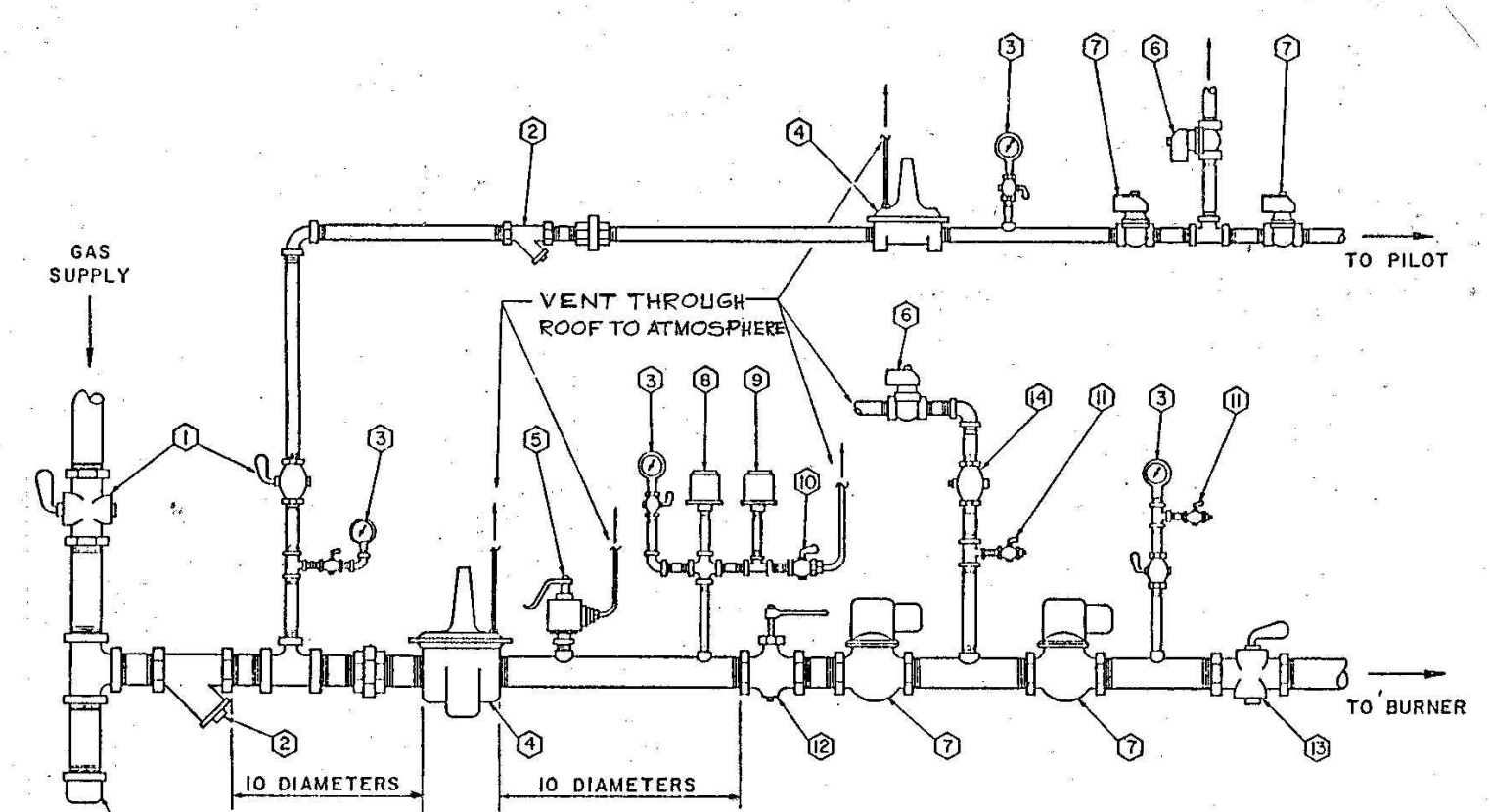
NOTES:
1. FIRE DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THEIR APPROVAL AND THE MANUFACTURER'S INSTRUCTIONS.
2. CURBED FLOOR OPENING OR WALL OPENING DIMENSIONS SHALL BE IN ACCORDANCE WITH APPROVED SHOP DRAWING SUBMITTAL OF MANUFACTURER'S EQUIPMENT AND INSTRUCTIONS.

HORIZONTAL FIRE DAMPER DETAIL
NOT TO SCALE



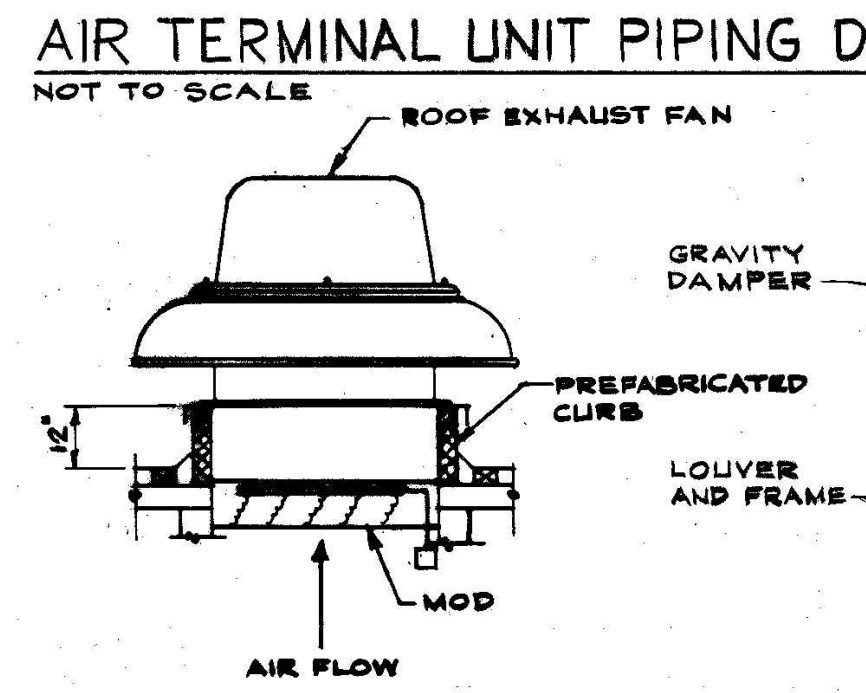
NOTE:
EXHAUST STACK FOR COATED STEEL DUCTWORK SHOWN. STACK FOR FRP DUCTWORK SHALL BE SIMILAR, WITH ALL COMPONENTS MADE OF FRP. STACK FOR PERCHLORIC ACID FUME HOOD EXHAUST DUCT SHALL TERMINATE WITH WASH RING.

FAN EXHAUST STACK DETAIL
NOT TO SCALE

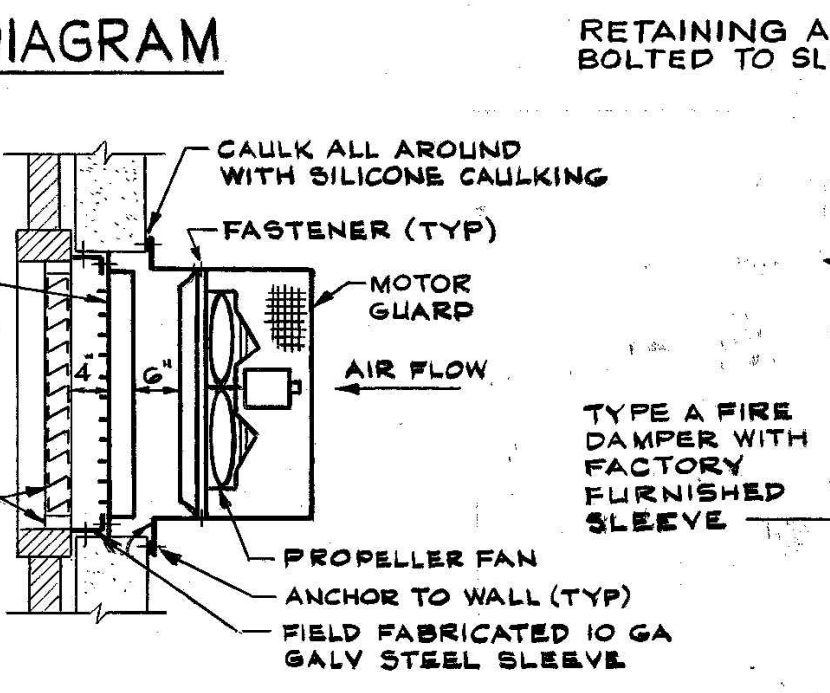


- ① MANUAL PLUG COCK
- ② STRAINER
- ③ GAUGE AND COCK
- ④ PRESSURE REGULATOR
- ⑤ RELIEF VALVE
- ⑥ SOLENOID VENT VALVE (N.O.)
- ⑦ SAFETY SHUTOFF VALVES (N.C.)
- ⑧ HIGH PRESSURE SWITCH
- ⑨ LOW PRESSURE SWITCH
- ⑩ VENT COCK
- ⑪ LEAKAGE TEST COCK
- ⑫ BURNER CONTROL VALVE
- ⑬ CHECKING CONTROL COCK
- ⑭ PLUG COCK, LOCKED OPEN

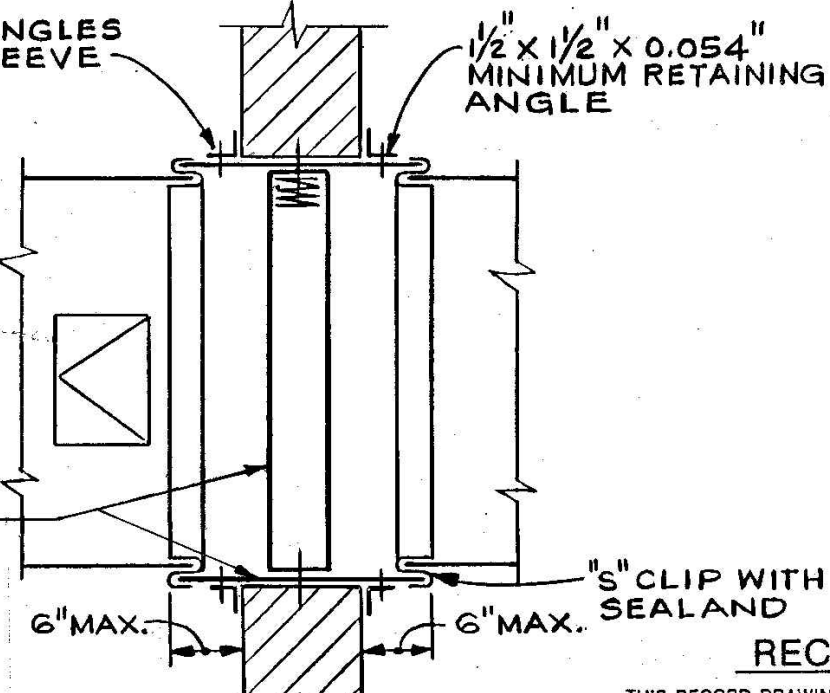
I.R.I. GAS TRAIN
NOT TO SCALE



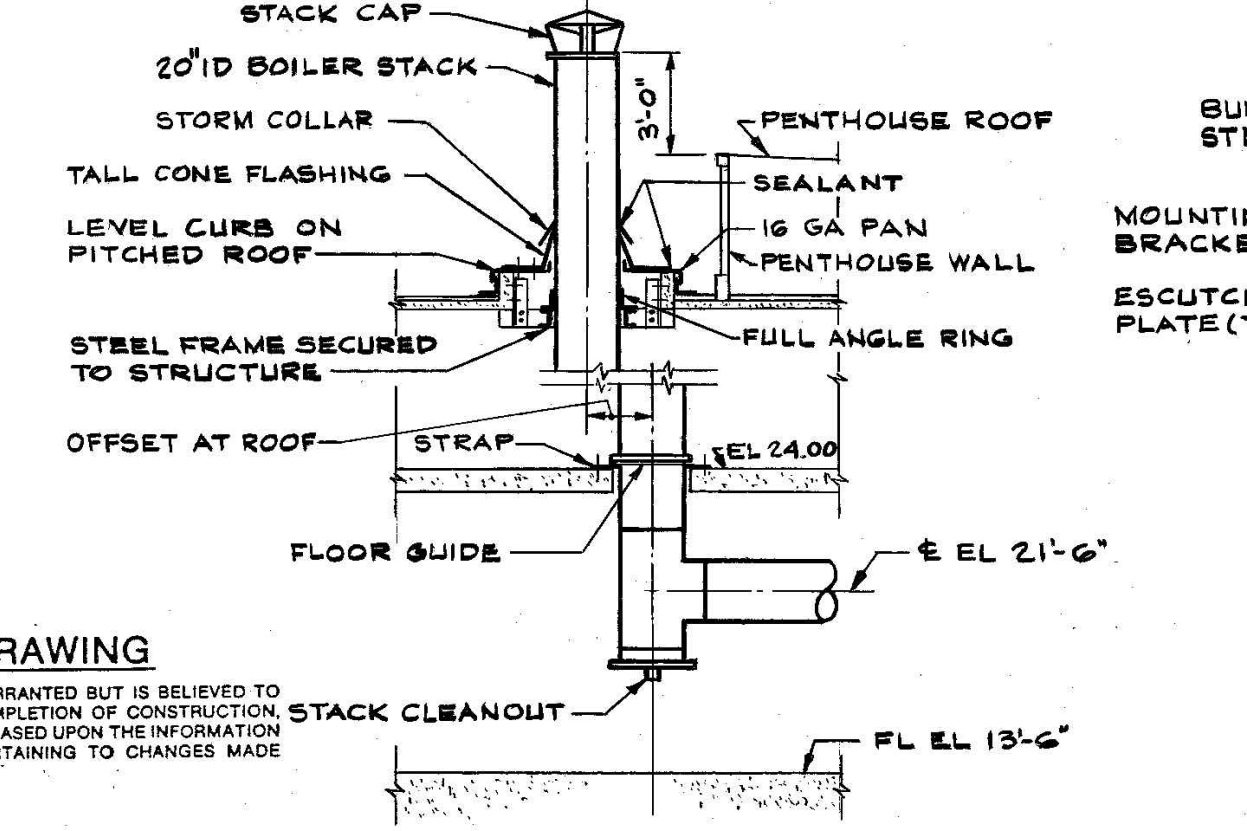
ROOF EXHAUST FAN DETAIL
NOT TO SCALE



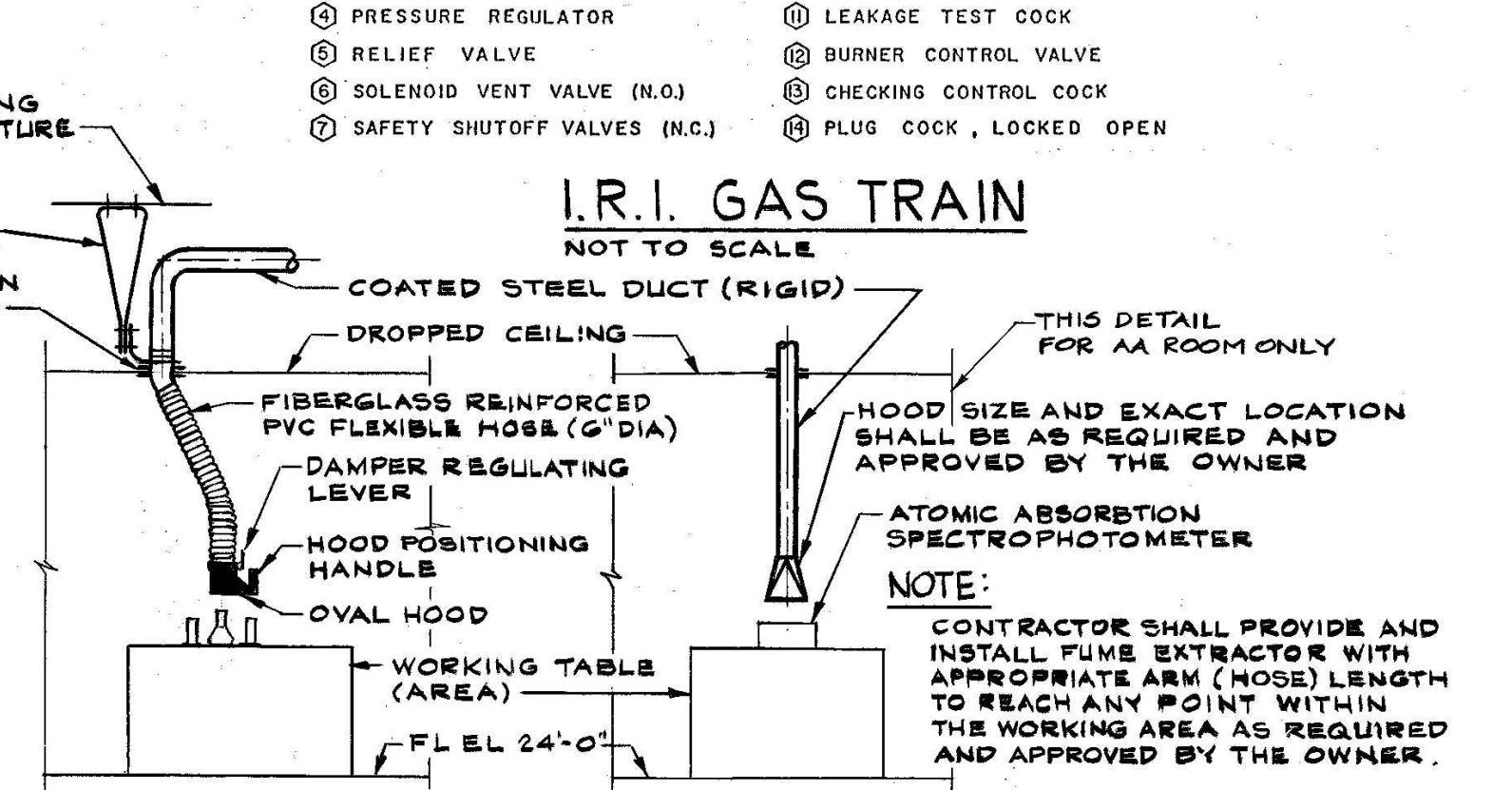
WALL EXHAUST FAN DETAIL
NOT TO SCALE



VERTICAL FIRE DAMPER DETAIL
NOT TO SCALE



BOILER AND WATER HEATER STACK DETAIL
NOT TO SCALE



FUME EXTRACTOR TYPICAL DETAIL
NOT TO SCALE

RECORD DRAWING
THIS RECORD DRAWING IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION, WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

REFERENCE DRAWING
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No.	DATE	REVISIONS
3		
2		
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DES:
DRN:
CKD:
DATE: 07/05/13

EXHAUST FANS																		
UNIT	LOCATION	AREA(S) SERVED	TYPE	WHEEL DIA	CFM	O.V.	BHP	MOTOR					MFR.	REMARKS/NOTES				
								ROTATION	ARRANG'T	EXT SP	HP	RPM			V/PH/Hz	DRIVE	CONTROL	MODEL NO.
AD-EAF-1	PENTHOUSE	OFF. 137, 138 150 & 151	CENTRIFUGAL CCW UBD	13 10 1	2080 10 0.5	— — —	0.59 — 1882	0.75	1750	460/3/60	BELT	H-O-A TCP-1	GREENHECK MOD. 13 BISW					
AD-EAF-2	PENTHOUSE	MENS T. 110 WOMENS T. 111 LOCKER 112	CENTRIFUGAL CCW UBD	12 3/16 1 1	1300 1 0.62	— — —	— 954 —	0.50	1750	460/3/60	BELT	H-O-A TCP-1	LABCONCO MOD. 70690- 002006					
AD-EAF-3	PENTHOUSE	MAIN LABORATORY LABS 123, 124, 135, 149, 157	CENTRIFUGAL CCW UBD	15 10 1	2760 10 0.5	— — —	0.85 — 1598	1.00	1750	460/3/60	BELT	H-O-A TCP-1	GREENHECK MOD. 15 BISW					
AD-EAF-4	PENTHOUSE	IWBAY LABORATORIES LABS 132, 133, 139, 140, 146, 153, 160	CENTRIFUGAL CCW UBD	15 10 1	3270 10 0.5	— — —	1.23 — 1811	1.50	1750	460/3/60	BELT	H-O-A TCP-1	GREENHECK MOD. 15 BISW					
AD-EAF-5	PENTHOUSE	MAIN LABORATORY ROOMS 164, 165 & 165	CENTRIFUGAL CCW UBD	15 10 1	2840 10 0.62	— — —	0.85 — 1598	1.00	1750	460/3/60	BELT	H-O-A TCP-1	GREENHECK MOD. 15 BISW					
AD-EAF-6	PENTHOUSE	FLAMMABLE/ACID STORAGE 161	CENTRIFUGAL CCW UBD	9 3/16 1 1	420 1 0.5	— — —	— 1044 —	1/6	1750	115/1/60	BELT	H-O-A TCP-1	LABCONCO MOD. 70680	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-7	PENTHOUSE	IWBAY LABORATORIES ROOMS 143, 144, 145 & 147	CENTRIFUGAL CCW UBD	13 10 1	1520 10 0.5	— — —	0.28 — 1320	1/3	1750	115/1/60	BELT	STARTER IN TCP-1	GREENHECK MOD. 13 BISW					
AD-EAF-8	KITCHEN 130	KITCHEN 130	CENTRIFUGAL CCW TOP HORIZ	9 3/16 1 1	300 1 0.25	— — —	— 635 —	1/6	1750	115/1/60	BELT	WALL SWITCH	LABCONCO MOD. 70680					
AD-EAF-9	PENTHOUSE	GC PREP ROOM 123 FUME HOOD	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.88	— — —	— 742 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-10	PENTHOUSE	GC PREP ROOM 123 FUME HOOD	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.88	— — —	— 742 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-11	PENTHOUSE	MAIN LAB ROOM 136 FUME HOOD	CENTRIFUGAL CCW UBD	11 11/16 1 1	1000 1 1.00	— — —	— 1267 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 71810- 002006	FIBERGLAS REINFORCED POLYESTER DRAIN CONNECTION AT BOTTOM OF FAN (WASH DOWN CONNECTION)				
AD-EAF-12	PENTHOUSE	GC PREP ROOM 123 FUME HOOD	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.75	— — —	— 648 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-13	PENTHOUSE	BAY STUDY LAB 133 FUME HOOD	CENTRIFUGAL CCW UBD	12 3/16 1 1	1400 1 0.88	— — —	— 1039 —	0.75	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70692- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-14	PENTHOUSE	GC PREP ROOM 123 FUME HOOD	CENTRIFUGAL CCW UBD	11 11/16 1 1	1000 1 1.00	— — —	— 1267 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 71810- 002006	FIBERGLASS REINFORCED POLYESTER				
AD-EAF-15	PENTHOUSE	MAIN LAB ROOM 136 FUME HOOD	CENTRIFUGAL CCW UBD	11 11/16 1 1	1000 1 0.88	— — —	— 1286 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 71810- 002006	FIBERGLASS REINFORCED POLYESTER				

EXHAUST FANS																		
UNIT	LOCATION	AREA(S) SERVED	TYPE	WHEEL DIA	CFM	O.V.	BHP	MOTOR					MFR.	REMARKS/NOTES				
								ROTATION	ARRANG'T	EXT SP	HP	RPM			V/PH/Hz	DRIVE	CONTROL	MODEL NO.
AD-EAF-16	PENTHOUSE	TOC/TOX 157	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.75	— — —	— 684 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-17	PENTHOUSE	BAY STUDY LAB 133 FUME HOOD	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.75	— — —	— 684 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-18	PENTHOUSE	INSTRUMENT ROOM 140	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.75	— — —	— 684 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-19	PENTHOUSE	MAIN LAB 136	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.88	— — —	— 742 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-20	PENTHOUSE	BAY STUDY LAB 133 FUME HOOD	CENTRIFUGAL CCW UBD	9 3/16 1 1	900 1 0.75	— — —	— 1267 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-21	PENTHOUSE	MAIN LAB 136	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.88	— — —	— 742 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-22	PENTHOUSE	MAIN LAB 136	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.75	— — —	— 684 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-23	PENTHOUSE	MAIN LAB A.A. 149 FUME HOOD	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.75	— — —	— 648 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-24	PENTHOUSE	IND. WASTE LAB 153 FUME HOOD	CENTRIFUGAL CCW UBD	12 3/16 1 1	1000 1 0.75	— — —	— 648 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70690- 002006	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-25	PENTHOUSE	MAIN LAB 136	CENTRIFUGAL CCW UBD	11 11/16 1 1	1000 1 0.88	— — —	— 1286 —	0.50	1750	460/3/60	BELT	F.H. SWITCH TCP-1	LABCONCO MOD. 70810- 002006	FIBERGLASS REINFORCED POLYESTER				
AD-EAF-26	PENTHOUSE ROOF	PENTHOUSE	CENTRIFUGAL CCW ROOF	18 1 1	2200 1 0.25	— — —	— 685 —	0.21	0.25	1750	115/1/60	BELT	115V STAT	GREENHECK MOD. GB-18				
AD-EAF-27	PENTHOUSE ROOF	PENTHOUSE	CENTRIFUGAL CCW ROOF	18 1 1	2200 1 0.25	— — —	— 685 —	0.21	0.25	1750	115/1/60	BELT	115V STAT	GREENHECK MOD. GB-18				
AD-EAF-28	ELEVATOR MACHINE ROOM	ELEVATOR MACHINE ROOM	PROPELLER SIDE WALL	1 1	600 0.25	— —	— 1550	0.05	1/20	1750	115/1/60	BELT	115V STAT	GREENHECK SDE-12-24-D				
AD-EAF-29	MECHANICAL ROOM	MECHANICAL ROOM	PROPELLER SIDE WALL	1 1	1500 0.25	— —	— 1725	0.15	0.25	1750	115/1/60	BELT	115V STAT	GREENHECK SDE-14-24-A				
AD-EAF-30	BOAT STORAGE ROOF	BOAT STORAGE	CENTRIFUGAL CCW ROOF	14 1 1	1100 1 0.25	— — —	— 815 —	0.11	0.25	1750	115/1/60	BELT	115V STAT	GREENHECK MOD. GB-14				

EXHAUST FANS																		
UNIT	LOCATION	AREA(S) SERVED	TYPE	WHEEL DIA	CFM	O.V.	BHP	MOTOR					MFR.	REMARKS/NOTES				
								ROTATION	ARRANG'T	EXT SP	HP	RPM			V/PH/Hz	DRIVE	CONTROL	MODEL NO.
AD-EAF-31	TRANSFORMER VAULT WALL	TRANSFORMER VAULT	PROPELLER SIDE WALL	1 1	1800 0.25	— —	— 172	0.24	1750	115/1/60	DIRECT	115V STAT	GREENHECK SDE-14-32-A					
AD-EAF-32	TRANSFORMER VAULT WALL	TRANSFORMER VAULT	PROPELLER SIDE WALL	1 1	1800 0.25	— —	— 1725	0.24	1750	115/1/60	DIRECT	115V STAT	GREENHECK SDE-14-32-A					
AD-EAF-33	PENTHOUSE	MICROSCOPE ROOM 132 FUME EXTRACTOR	CENTRIFUGAL CCW UBD	9 3/16 1 1	600 1 0.75	— — —	— 1128 —	0.25	1750	115/1/60	BELT	WALL SW TO TCP-1	LABCONCO MOD. 70682	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-34	PENTHOUSE	GC/HPLC ROOM 135 FUME EXTRACTOR	CENTRIFUGAL CCW UBD	9 3/16 1 1	300 1 0.5	— — —	— 850 —	1/6	1750	115/1/60	BELT	WALL SW TO TCP-1	LABCONCO MOD. 70680	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-35	PENTHOUSE	A.A. ROOM 149 FUME EXTRACTOR	CENTRIFUGAL CCW UBD	9 3/16 1 1	600 1 0.75	— — —	— 1128 —	0.25	1750	115/1/60	BELT	WALL SW TO TCP-1	LABCONCO MOD. 70682	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-36	PENTHOUSE	GC/MS ROOM 1 FUME EXTRACTOR	CENTRIFUGAL CCW UBD	9 3/16 1 1	300 1 0.5	— — —	— 850 —	1/6	1750	115/1/60	BELT	WALL SW TO TCP-1	LABCONCO MOD. 70680	PHENOLIC COATING ON WHEEL AND HOUSING				
AD-EAF-37	PENTHOUSE	TOC/TOX ROOM 157 FUME EXTRACTOR	CENTRIFUGAL CCW UBD	9 3/16 1 1	300 1 0.5	— — —	— 850 —	1/6	1750	115/1/60	BELT	WALL SW TO TCP-1	LABCONCO MOD. 70680	PHENOLIC COATING ON WHEEL AND HOUSING				

REFERENCE DRAWING

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VOLT AIR
CONSULTING ENGINEERS
220 West 7th Avenue, Suite 210
Tampa, Florida 33602 TEL 888.891.9713
COA 27158 Project No. 13009

No.	DATE	REVISIONS
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DES:
DRN:
CKD:
DATE: 07/05/13

CITY of TAMPA
WASTEWATER DEPARTMENT

HFC AWTP ADMINISTRATION BUILDING
BUILDING CONTROL SYSTEM
100% CONSTRUCTION DOCUMENTS

1990 SCHEDULES - FANS
- HVAC

W.O. #5427
SHEET
RI.M14
OF

AIR TERMINAL UNITS													
UNIT	AREA(S) SERVED	TYPE	AIR			HOT WATER COIL						MFR	REMARKS/NOTES
			MIN CFM	MAX FPM	APD *WC	EAT LAT	EWT LWT	MBH	GPM *WPD	ROWS FPI	FACE AREA		
AD-ATU-01	LOBBY 001	VARIABLE AIR VOLUME	400	1200	0.12	70	180	17	1.7	1	1.7	TITUS	
			2000			90	180			10		ESV-3000	
AD-ATU-02	RECEPTION 101	VARIABLE AIR VOLUME	800	880	0.12	70	180	10	1	1	1.7	TITUS	
			1500			85	180			10		ESV-3000	
AD-ATU-03	CLASSROOM 102	VARIABLE AIR VOLUME	400	830	0.53	70	180	16	1.6	1	1.2	TITUS	
			1000			85	180			10		ESV-3000	
AD-ATU-04	A.V. STORAGE OFFICE 104	VARIABLE AIR VOLUME	200	500	0.37	70	180	6	0.8	1	0.7	TITUS	
			350			88	180			10		ESV-3000	
AD-ATU-05	CONFERENCE ROOM 105	VARIABLE AIR VOLUME	200	570	0.46	70	180	6.5	0.7	1	0.7	TITUS	
			400			85	180			10		ESV-3000	
AD-ATU-06	OFFICE 106 OFFICE 107	VARIABLE AIR VOLUME	200	570	0.46	70	180	6.5	0.7	1	0.7	TITUS	
			400			85	180			10		ESV-3000	
AD-ATU-07	OFFICE 108	VARIABLE AIR VOLUME	260	620	0.18	70	180	6.5	0.7	1	0.8	TITUS	
			500			90	180			10		ESV-3000	
AD-ATU-08	CORRIDOR 109	VARIABLE AIR VOLUME	220	320	0.47	70	180	3.6	0.4	1	0.7	TITUS	
			225			85	180			10		ESV-3000	
AD-ATU-09	CORRIDOR 109	VARIABLE AIR VOLUME	200	320	0.47	70	180	3.6	0.4	1	0.7	TITUS	
			225			85	180			10		ESV-3000	
AD-ATU-10	MEN'S TOILET 110	VARIABLE AIR VOLUME	550	690	0.45	70	180	6	0.6	1	0.8	TITUS	
			550			80	180			10		ESV-3000	
AD-ATU-11	WOMEN'S TOILET 110	VARIABLE AIR VOLUME	550	690	0.45	70	180	6	0.6	1	0.8	TITUS	
			550			80	180			10		ESV-3000	
AD-ATU-12	LOCKER 112	VARIABLE AIR VOLUME	180	290	0.47	70	180	2	0.2	1	0.8	TITUS	
			200			80	180			10		ESV-3000	
AD-ATU-13	OFFICE 113	VARIABLE AIR VOLUME	75	220	0.26	70	180	2	0.2	1	0.7	TITUS	
			150			85	180			10		ESV-3000	
AD-ATU-14	FILES 114	VARIABLE AIR VOLUME	75	220	0.26	70	180	2.4	0.2	1	0.7	TITUS	
			150			85	180			10		ESV-3000	
AD-ATU-15	CLERK'S OFFICE 115	VARIABLE AIR VOLUME	200	640	0.59	70	180	7	0.7	1	0.7	TITUS	
			450			85	180			10		ESV-3000	
AD-ATU-16	OFFICE 116 OFFICE 117	VARIABLE AIR VOLUME	180	290	0.18	70	180	5	0.5	1	0.8	TITUS	
			800			90	180			10		ESV-3000	
AD-ATU-17	TELEPHONE ROOM 126	VARIABLE AIR VOLUME	40	290	0.47	70	180	3	0.3	1	0.7	TITUS	
			200			85	180			10		ESV-3000	
AD-ATU-18	CORRIDOR 127	VARIABLE AIR VOLUME	100	220	0.26	70	180	1.6	0.2	1	0.7	TITUS	
			150			80	180			10		ESV-3000	
AD-ATU-19	CORRIDOR 127	VARIABLE AIR VOLUME	100	220	0.26	70	180	1.6	0.2	1	0.7	TITUS	
			150			80	180			10		ESV-3000	
AD-ATU-20	OFFICE 128	VARIABLE AIR VOLUME	70	290	0.47	70	180	3	0.3	1	0.7	TITUS	
			200			85	180			10		ESV-3000	
AD-ATU-21	COPY/FLAT FILES 129	VARIABLE AIR VOLUME	220	320	0.18	70	180	4	0.4	1	0.7	TITUS	
			500			85	180			10		ESV-3000	
AD-ATU-22	KITCHENETTE 130	VARIABLE AIR VOLUME	140	430	0.37	70	180	5	0.5	1	0.8	TITUS	
			300			85	180			10		ESV-3000	
AD-ATU-23	LUNCH/LIBRARY 131	VARIABLE AIR VOLUME	250	690	0.45	70	180	9	0.9	1	0.8	TITUS	
			550			85	180			10		ESV-3000	

AIR TERMINAL UNITS													
UNIT	AREA(S) SERVED	TYPE	AIR			HOT WATER COIL						MFR	REMARKS/NOTES
			MIN CFM	MAX FPM	APD *WC	EAT LAT	EWT LWT	MBH	GPM *WPD	ROWS FPI	FACE AREA		
AD-ATU-24	FUME HOOD 9	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-25	FUME HOOD 10	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-26	FUME HOOD 12	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-27	FUME HOOD 13	TWO POSITION CONSTANT VOL.	0	1160	0.19							TITUS	
			1400									ESV-3000	
AD-ATU-28	FUME HOOD 14	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-29	FUME HOOD 16	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-30	FUME HOOD 17	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-31	FUME HOOD 18	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-32	FUME HOOD 20	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			800									ESV-3000	
AD-ATU-33	FUME HOOD 23	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-34	FUME HOOD 24	TWO POSITION CONSTANT VOL.	0	830	0.19							TITUS	
			1000									ESV-3000	
AD-ATU-35	AD-EAF-1	TWO POSITION CONSTANT VOL.	1000	1337	0.16							TITUS	
			2080									ESV-3000	
AD-ATU-36	AD-EAF-3	TWO POSITION CONSTANT VOL.	1400	1250	0.15							TITUS	
			2780									ESV-3000	
AD-ATU-37	AD-EAF-4	TWO POSITION CONSTANT VOL.	1600	1200	0.15							TITUS	
			3270									ESV-3000	
AD-ATU-38	AD-EAF-5	TWO POSITION CONSTANT VOL.	1400	1200	0.15							TITUS	
			2840									ESV-3000	

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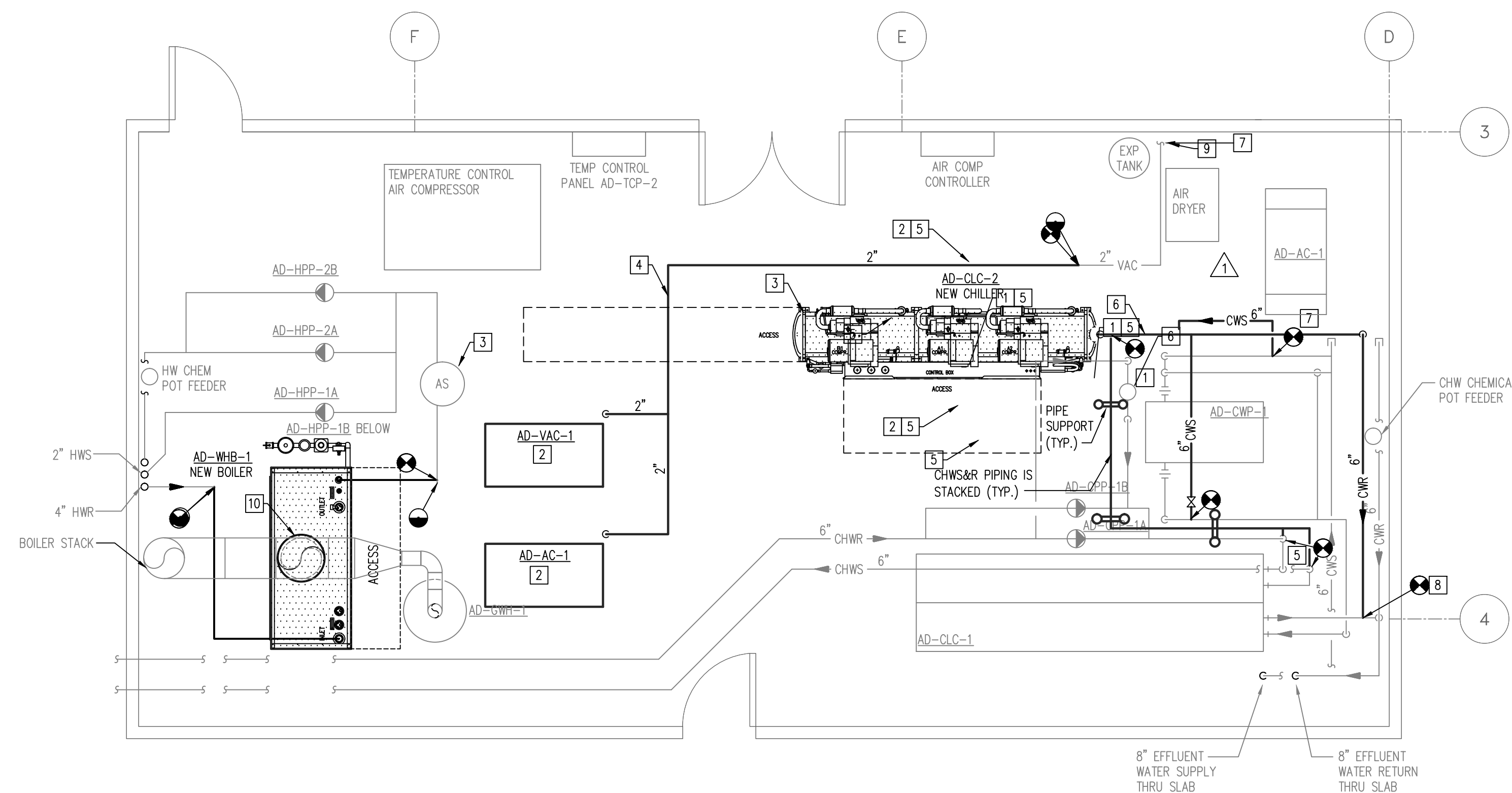
No.	DATE	REVISIONS
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DES:
 DRN:
 CKD:
 DATE: 07/05/13

HOT WATER REHEAT COILS												
UNIT	AREA(S) SERVED	AIR			COIL						MFR	REMARKS/NOTES
		CFM	VEL FPM	APD *WC	EAT LAT	EWT LWT	MBH	GPM 'WPD	ROWS FPI	FACE AREA		
AD-RHT-1	GC PREP 123	680	560	0.13	70 82	180 160	9	0.9	1	1.2	TITUS	
AD-RHT-2	GC/MS LAB 124	820	680	0.23	70 82	180 160	11	1.1	1	1.2	TITUS	
AD-RHT-3	COMPUTER RM 125	100	150	0.04	70 82	180 160	2	0.2	1	0.7	TITUS	
AD-RHT-4	CORRIDOR 134	220	320	0.18	70 82	180 160	3	0.3	1	0.7	TITUS	
AD-RHT-5	CORRIDOR 134	220	320	0.18	70 82	180 160	3	0.3	1	0.7	TITUS	
AD-RHT-6	GC/HPLS LAB 135	600	500	0.13	70 82	180 160	8	0.8	1	1.2	TITUS	
AD-RHT-7	MAIN LAB 136	2000	420	0.05	70 82	180 160	26	2.6	1	4.75	TITUS	
AD-RHT-8	MAIN LAB 136	2000	420	0.05	70 82	180 160	26	2.6	1	4.75	TITUS	
AD-RHT-9	MAIN LAB 136	2000	420	0.05	70 82	180 160	26	2.6	1	4.75	TITUS	
AD-RHT-10	OFFICE 137	400	500	0.18	70 82	180 160	5	0.5	1	0.8	TITUS	
AD-RHT-11	OFFICE 138	400	500	0.18	70 82	180 160	5	0.5	1	0.8	TITUS	
AD-RHT-12	CORRIDOR 148	100	150	0.1	70 82	180 160	1.3	0.2	1	0.7	TITUS	
AD-RHT-13	AA LAB 149	380	520	0.18	70 82	180 160	4.7	0.5	1	0.7	TITUS	
AD-RHT-14	OFFICE 150	220	320	0.18	70 82	180 160	3	0.3	1	0.7	TITUS	
AD-RHT-15	JOINT OFFICE 151	1080	440	0.14	70 82	180 160	14	1.4	1	2.4	TITUS	
AD-RHT-16	TOC/TOX LAB 157	300	430	0.18	70 82	180 160	4	0.4	1	0.7	TITUS	
AD-RHT-17	FLAMMABLE/ACID STORAGE 161	420	520	0.18	70 82	180 160	5.4	0.6	1	0.8	TITUS	
AD-RHT-18	SAMPLE RECEIVING 163	1400	470	0.12	70 82	180 160	18	1.8	1	3	TITUS	
AD-RHT-19	CHEMICAL STORAGE 164	660	550	0.13	70 82	180 160	8.6	0.9	1	1.2	TITUS	
AD-RHT-20	SERVICE STORAGE 165	780	460	0.07	70 82	180 160	10	1	1	1.7	TITUS	
AD-RHT-21	BAY STUDY STG 007 IW STORAGE 008	1580	530	0.12	70 82	180 160	20	2	1	3	TITUS	
AD-RHT-22	SERVICE LOBBY 007	400	500	0.11	70 82	180 160	5	0.5	1	0.8	TITUS	
AD-RHT-23	OFFICE 118	460	380	0.06	70 82	180 160	6	0.6	1	1.2	TITUS	
AD-RHT-24	OFFICE 119	180	260	0.18	70 82	180 160	2.3	0.2	1	0.7	TITUS	

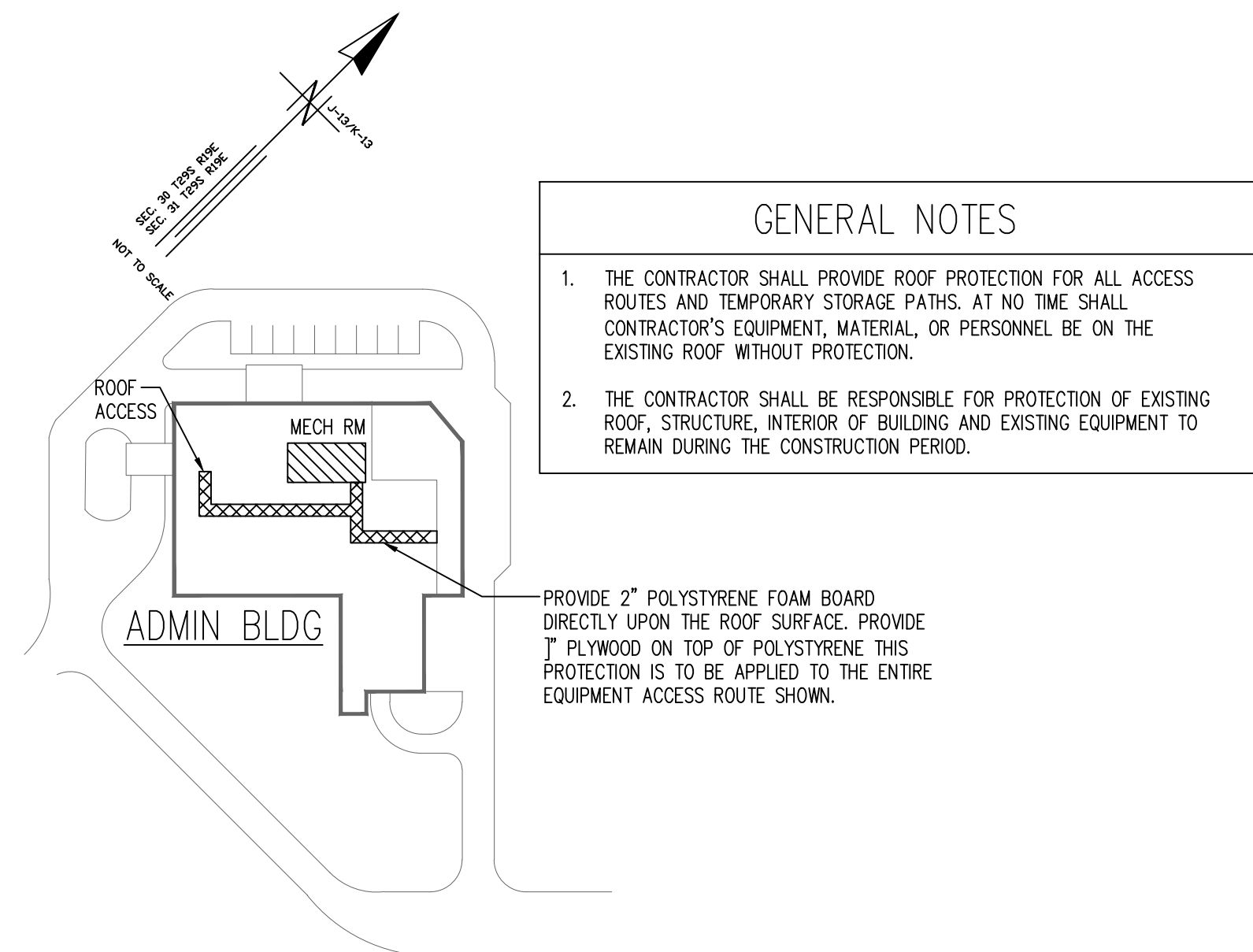
HOT WATER REHEAT COILS												
UNIT	AREA(S) SERVED	AIR			COIL						MFR	REMARKS/NOTES
		CFM	VEL FPM	APD *WC	EAT LAT	EWT LWT	MBH	GPM 'WPD	ROWS FPI	FACE AREA		
AD-RHT-25	OFFICE 120	320	460	0.18	70 82	180 160	4	0.4	1	0.7	TITUS	
AD-RHT-26	OFFICE 121	180	260	0.18	70 82	180 160	2.3	0.2	1	0.7	TITUS	
AD-RHT-27	OFFICE 122	250	360	0.18	70 82	180 160	3.2	0.3	1	0.7	TITUS	
AD-RHT-28	MICROSCOPE ROOM 132	450	380	0.06	70 82	180 160	6	0.6	1	1.2	TITUS	
AD-RHT-29	BAY STUDY LAB 133	450	380	0.06	70 82	180 160	6	0.6	1	1.2	TITUS	
AD-RHT-30	BAY STUDY LAB 133	450	380	0.06	70 82	180 160	6	0.6	1	1.2	TITUS	
AD-RHT-31	STORAGE ROOM 139	150	220	0.1	70 82	180 160	2	0.2	1	0.7	TITUS	
AD-RHT-32	INSTRUMENT ROOM 140	220	320	0.18	70 82	180 160	3	0.3	1	0.7	TITUS	
AD-RHT-33	LIBRARY/ CONFERENCE 141	300	430	0.18	70 82	180 160	4	0.4	1	0.7	TITUS	
AD-RHT-34	COMPUTER ROOM 142	260	370	0.18	70 82	180 160	3.4	0.3	1	0.7	TITUS	
AD-RHT-35	CORRIDOR 143	220	320	0.18	70 82	180 160	3	0.3	1	0.7	TITUS	
AD-RHT-36	TOILET 144 LOCKER ROOM 145	850	500	0.07	70 82	180 160	11	1.1	1	1.7	TITUS	
AD-RHT-37	CULTURE ROOM 146	250	360	0.18	70 82	180 160	3.2	0.3	1	0.7	TITUS	
AD-RHT-38	JANITOR'S CLOSET 147	450	380	0.06	70 82	180 160	6	0.6	1	1.2	TITUS	
AD-RHT-39	OFFICE 152	280	400	0.18	70 82	180 160	3.6	0.4	1	0.7	TITUS	
AD-RHT-40	INDUSTRIAL WASTE LAB 153	900	530	0.07	70 82	180 160	11.7	1.2	1	1.7	TITUS	
AD-RHT-41	OFFICE 154	180	260	0.18	70 82	180 160	2.3	0.2	1	0.7	TITUS	
AD-RHT-42	OFFICE 155	180	260	0.18	70 82	180 160	2.3	0.2	1	0.7	TITUS	
AD-RHT-43	OFFICE 156	180	260	0.18	70 82	180 160	2.3	0.2	1	0.7	TITUS	
AD-RHT-44	OFFICE 158	450	380	0.06	70 82	180 160	6	0.6	1	1.2	TITUS	
AD-RHT-45	ELECTRICAL ROOM 159	150	220	0.18	70 82	180 160	2	0.2	1	0.7	TITUS	
AD-RHT-46	LAB/WORK AREA 160	400	500	0.18	70 82	180 160	5	0.5	1	0.7	TITUS	
AD-RHT-47	SERVICE LOBBY 162	400	500	0.18	70 82	180 160	5	0.5	1	0.7	TITUS	

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A LEVEL 1 ENLARGED PLAN - MECHANICAL ROOM
SCALE: 1/4"=1'-0"

- SHEET NOTES**
- 1 EXISTING BYPASS FILTER
 - 2 NEW LOCATION OF EXISTING AIR COMPRESSOR. PROVIDE NEW HOUSEKEEPING PAD UNDER EACH UNIT AND EXTEND 4" BEYOND LIMITS OF EQUIPMENT.
 - 3 NEW CHILLER AD-CLC-2. MOUNT ON 6" THICK HOUSEKEEPING PAD AND EXTEND 6" BEYOND LIMITS OF EQUIPMENT.
 - 4 NEW AIR COMPRESSOR PIPE.
 - 5 CONNECT NEW CHILLED WATER SUPPLY AND RETURN TO EXISTING PIPE AT THESE LOCATIONS.
 - 6 CHILLED WATER SUPPLY AND RETURN PIPE ABOVE CONDENSER WATER SUPPLY AND RETURN PIPE. REFERENCE DETAIL A ON SHEET M2.1 FOR PIPING TO AND FROM CHILLER.
 - 7 CONNECT NEW CONDENSER WATER SUPPLY AT THIS LOCATION.
 - 8 CONNECT NEW CONDENSER WATER RETURN AT THIS LOCATION.
 - 9 CONTINUES TO BUILDING COMPRESSED AIR SYSTEM.
 - 10 PROVIDE NEW CONNECTION TO EXISTING BOILER FLUE.



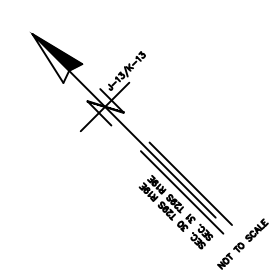
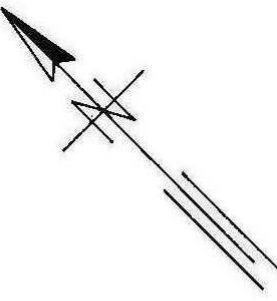
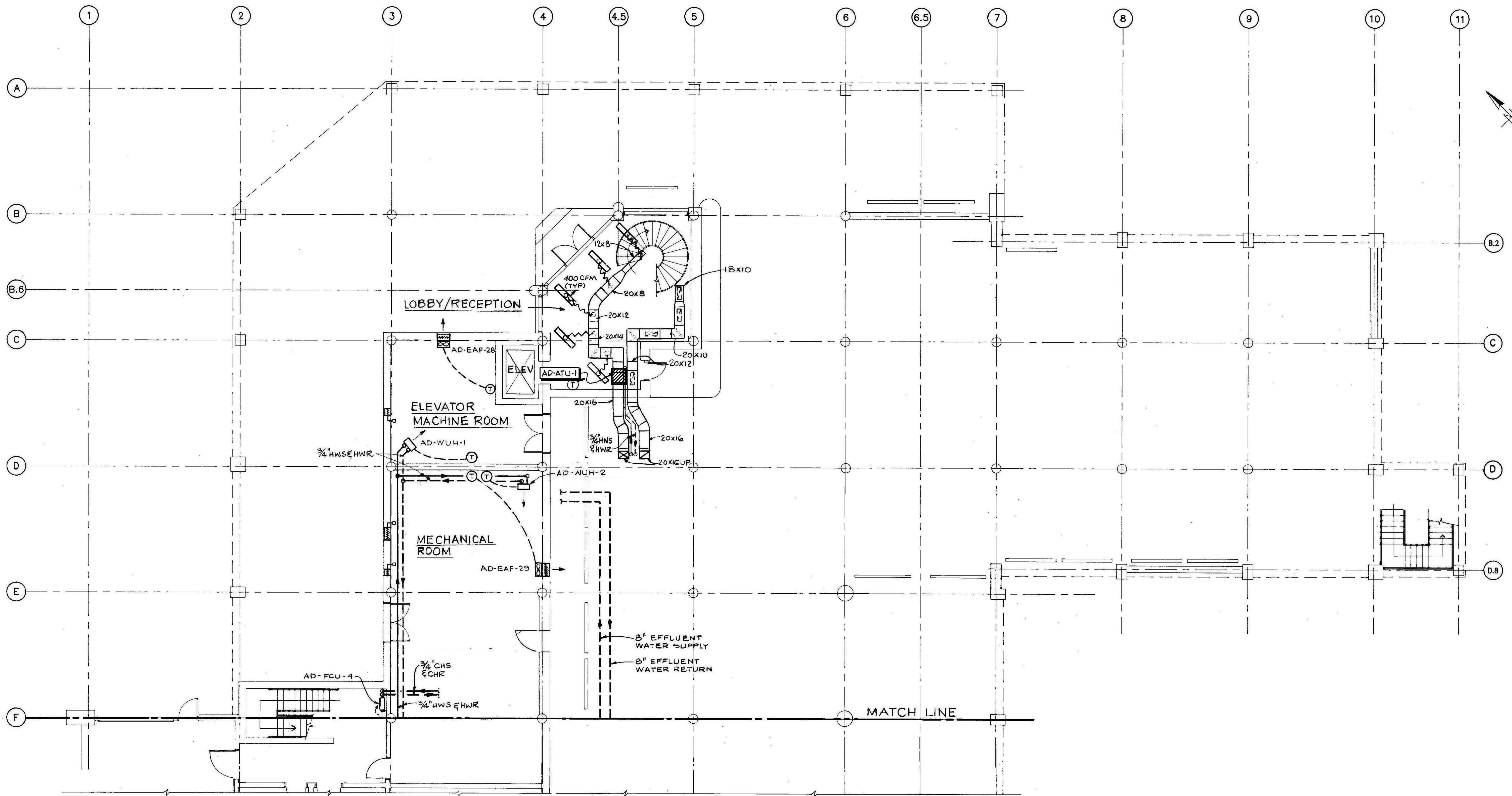
- GENERAL NOTES**
1. THE CONTRACTOR SHALL PROVIDE ROOF PROTECTION FOR ALL ACCESS ROUTES AND TEMPORARY STORAGE PATHS. AT NO TIME SHALL CONTRACTOR'S EQUIPMENT, MATERIAL, OR PERSONNEL BE ON THE EXISTING ROOF WITHOUT PROTECTION.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF EXISTING ROOF, STRUCTURE, INTERIOR OF BUILDING AND EXISTING EQUIPMENT TO REMAIN DURING THE CONSTRUCTION PERIOD.

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No.	DATE	REVISIONS
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DES:
DRN:
CKD:
DATE: 07/05/13

- GENERAL NOTES
1. CONTRACTOR SHALL CLEAN ALL HOT WATER COILS SHOWN ON THIS DRAWING, INCLUDING COILS ATTACHED TO TERMINAL UNITS.
 2. DUCT-MOUNTED COILS SHALL HAVE ACCESS DOORS ADDED ON BOTH SIDES AS SHOWN IN DETAILS A ON SHEET M2.2 AS APPLICABLE TO FIELD CONDITIONS.
 3. TERMINAL UNITS SHALL HAVE ACCESS DOOR INSTALLED AS INDICATED IN DETAIL B ON SHEET M2.2.



A LEVEL 1 PARTIAL PLAN
SCALE: 1/8"=1'-0"

REFERENCE DRAWING
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VOLT AIR
CONSULTING ENGINEERS
220 West 7th Avenue, Suite 210
Tampa, Florida 33602 TEL 888.891.9713
COA 27158 Project No. 13009

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CKD:
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CITY of TAMPA
WASTEWATER DEPARTMENT

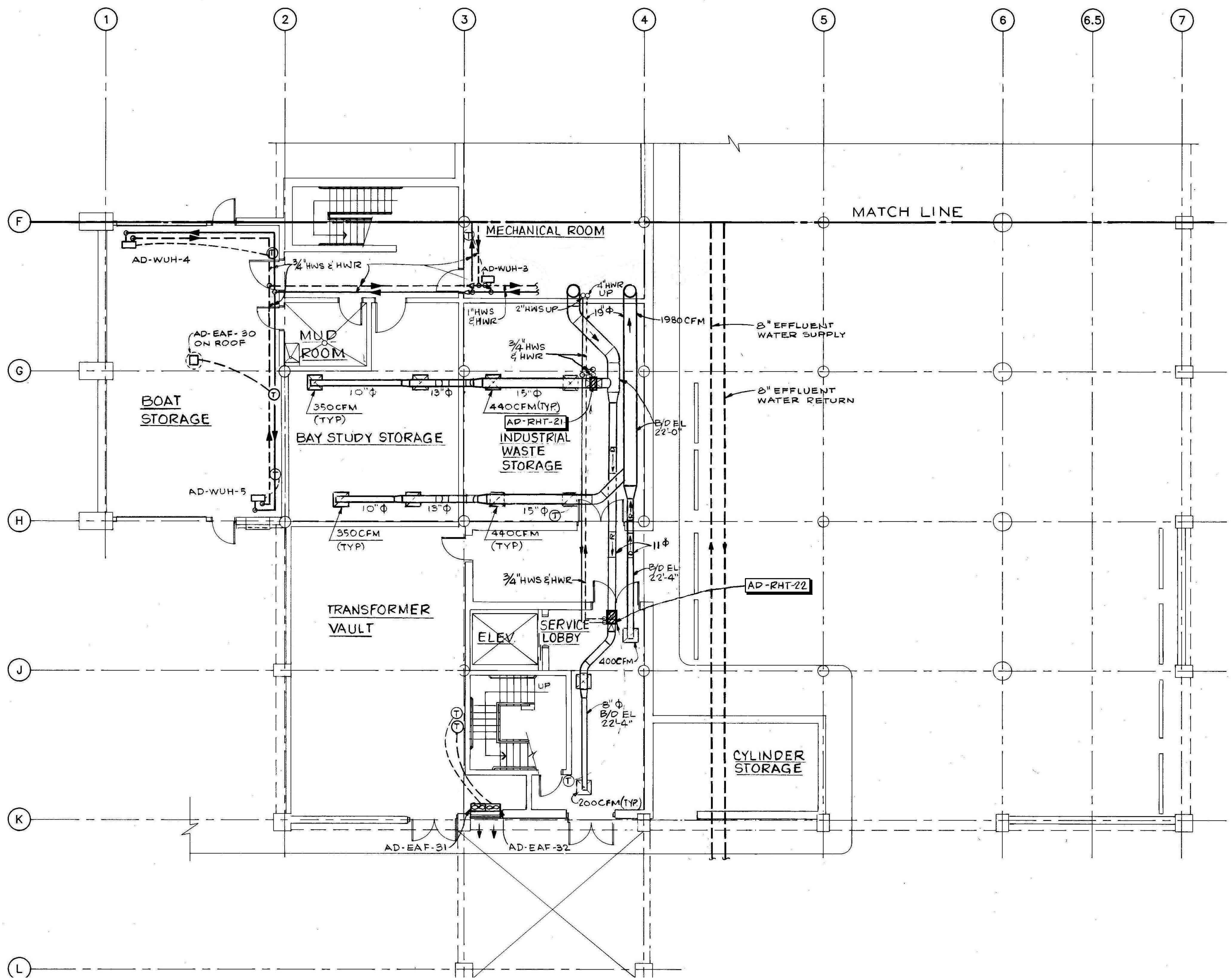
HFC AWTP ADMINISTRATION BUILDING
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100% CONSTRUCTION DOCUMENTS

2009 LEVEL I PARTIAL PLAN NORTH - HVAC

W.O. #5427
SHEET
R2.M2
OF

GENERAL NOTES

- CONTRACTOR SHALL CLEAN ALL HOT WATER COILS SHOWN ON THIS DRAWING, INCLUDING COILS ATTACHED TO TERMINAL UNITS.
- QUART-MOUNTED COILS SHALL HAVE ACCESS DOORS ADDED ON BOTH SIDES AS SHOWN IN DETAIL A ON SHEET M2.3 AS APPLICABLE TO FIELD CONDITIONS.
- TERMINAL UNITS SHALL HAVE ACCESS DOOR INSTALLED AS INDICATED IN DETAIL B ON SHEET M2.2.



A LEVEL 1 PARTIAL PLAN
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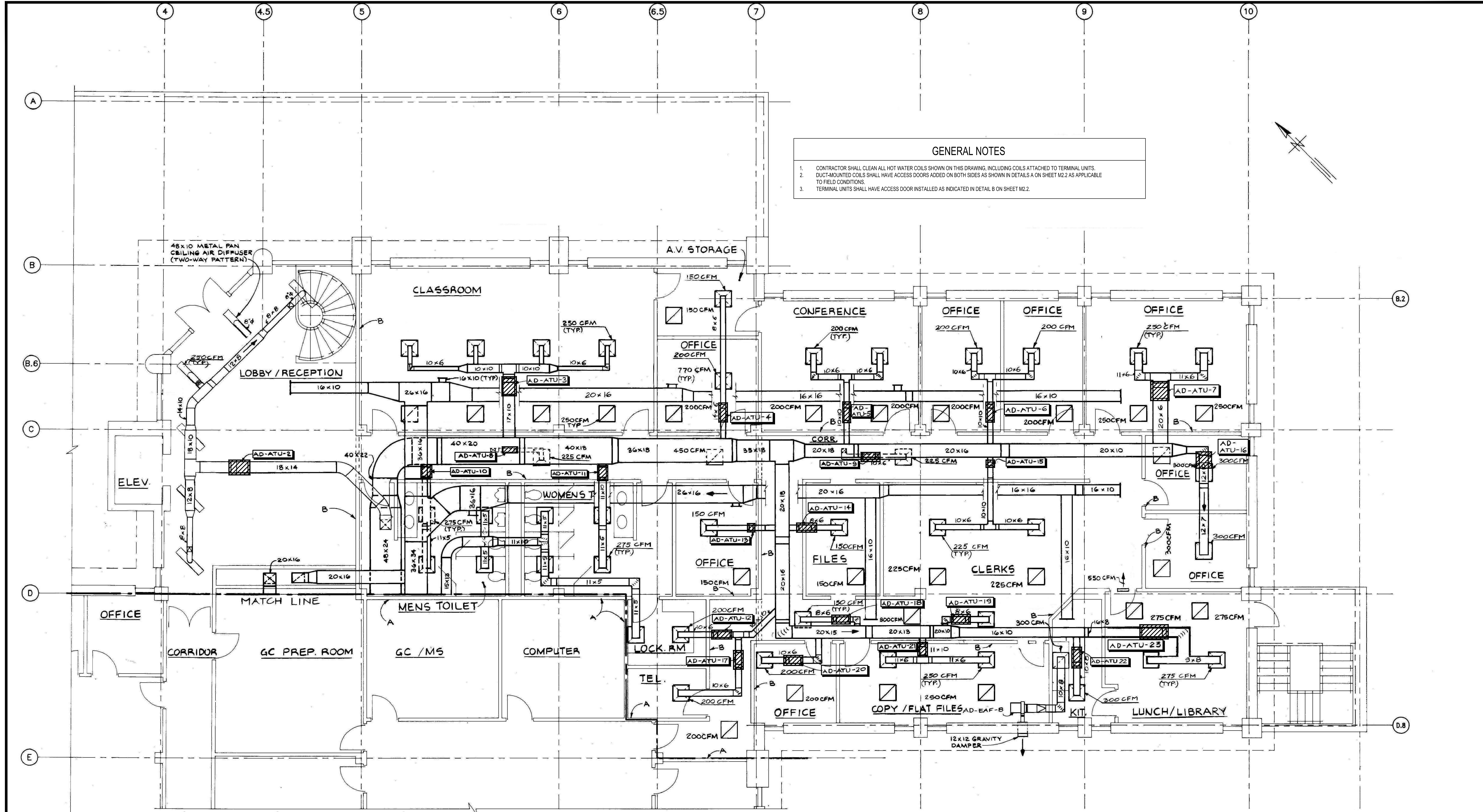
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WASTEWATER DEPARTMENT

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2009 LEVEL I PARTIAL
PLAN SOUTH - HVAC

W.O. #5427
SHEET
R2.M3
OF



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A LEVEL 2 PARTIAL PLAN
SCALE: 3/16"=1'-0"

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CITY of TAMPA
WASTEWATER DEPARTMENT

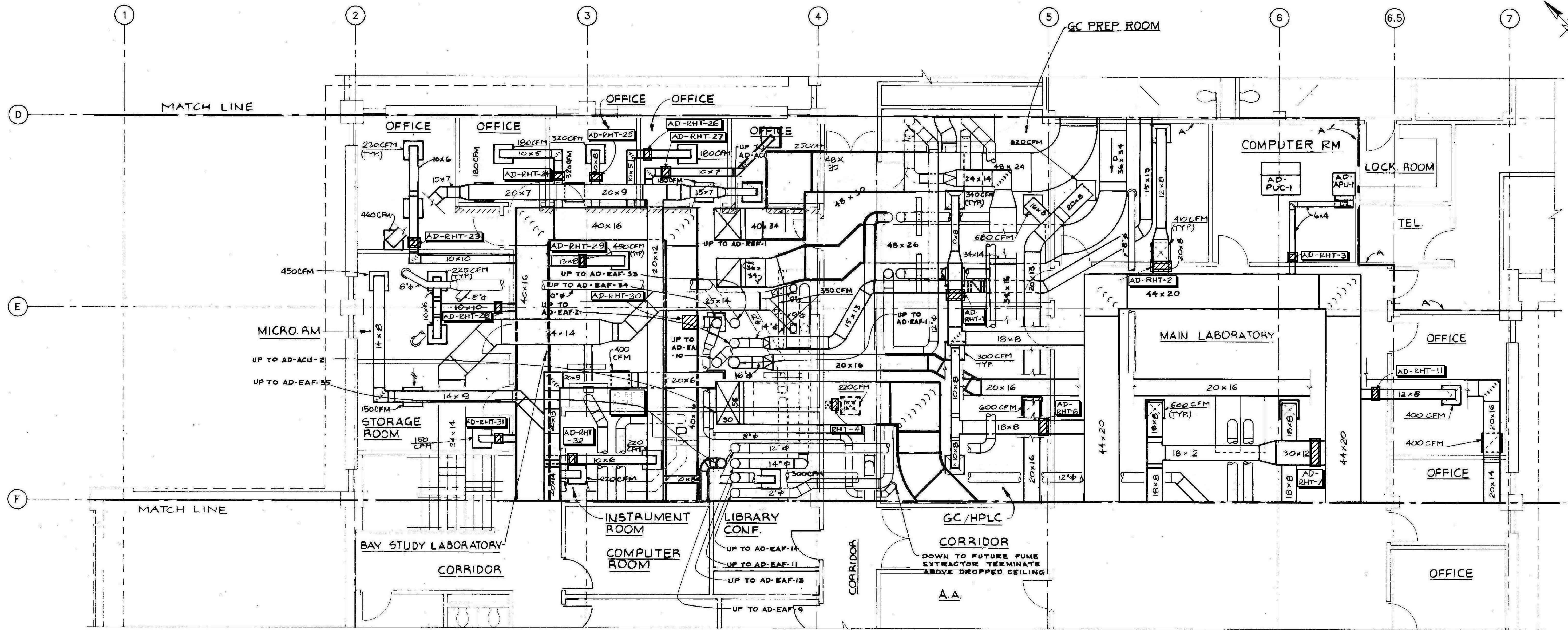
HFC AWTP ADMINISTRATION BUILDING
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**2009 LEVEL 2 PARTIAL
PLAN NORTH OFFICES
- HVAC**

W.O. #5427
SHEET
R2.M4
OF

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A LEVEL 2 PARTIAL PLAN
SCALE: 3/16"=1'-0"

REFERENCE DRAWING
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CITY of TAMPA
WASTEWATER DEPARTMENT

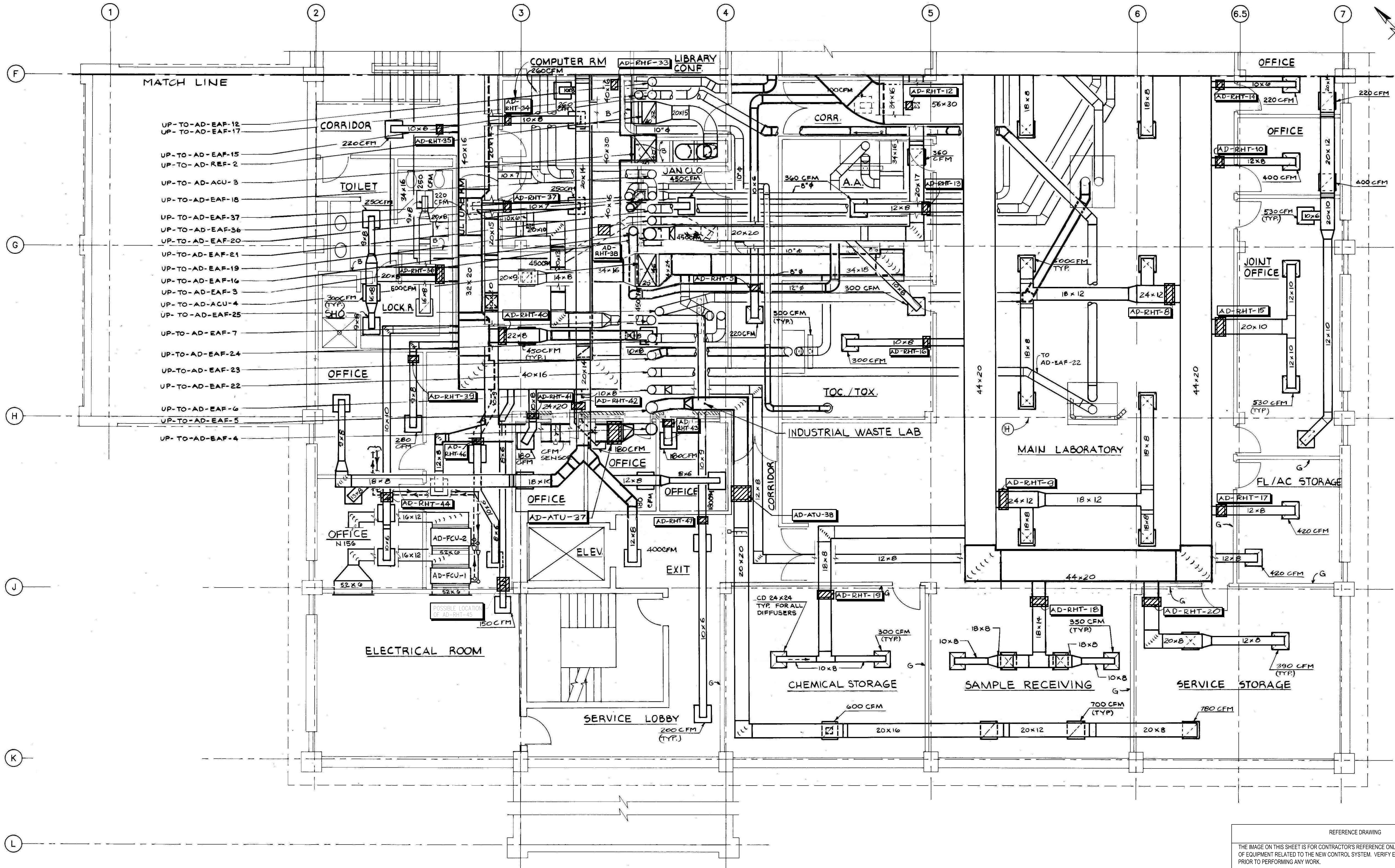
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2009 LEVEL 2 PARTIAL
PLAN CENTER AREA -
HVAC

W.O. #5427
SHEET
R2.M5
OF

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CITY of TAMPA
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HFC AWTP ADMINISTRATION BUILDING
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2009 LEVEL 2
PARTIAL PLAN SOUTH
AREA - HVAC

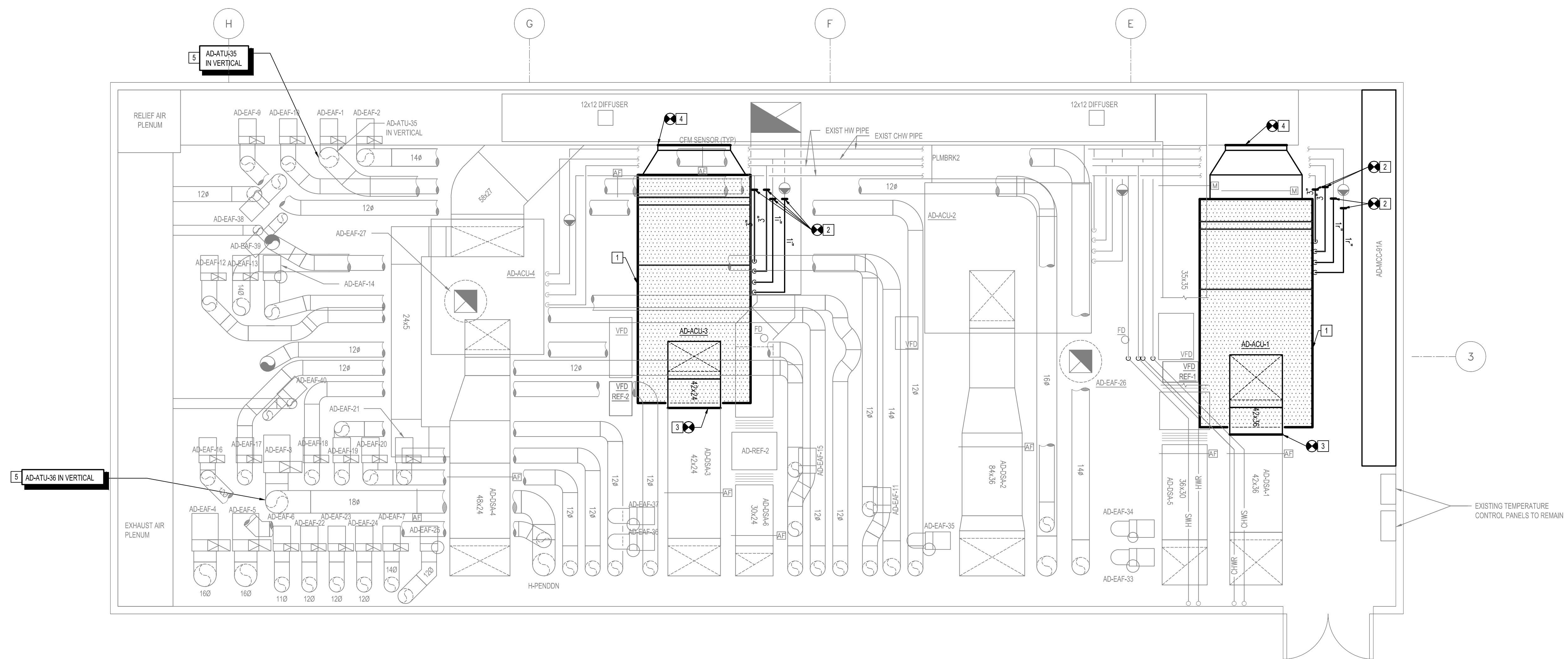
W.O. #5427
SHEET
R2.M6
OF

SHEET NOTES

- 1 NEW AIR HANDLING UNIT. ADD LENGTH AND WIDTH TO MATCH EXISTING HOUSEKEEPING PAD AS REQUIRED TO EXTEND 4' AROUND PERIMETER OF UNIT.
- 2 NEW HOT WATER AND CHILLED WATER PIPE CONNECTIONS.
- 3 CONNECT SUPPLY DUCT TO EXISTING DUCT SOUND ATTENUATOR. REPAIR ANY DAMAGED INSULATION.
- 4 CONNECT NEW DUCT TO EXISTING OUTDOOR AIR PLENUM. TRANSITION FULL SIZE OF AHU DAMPER TO EXISTING OA CONNECTION.
- 5 CLEAN EXISTING AIR TERMINAL UNIT HOT WATER COIL AND INSTALL ACCESS DOOR AS INDICATED ON SHEET M2.2 DETAIL B.

GENERAL NOTES

1. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS WHEN MOVING LARGE PIECES OF MECHANICAL EQUIPMENT IN AND OUT OF THE MECHANICAL ROOM LOCATED ON THE ROOF.
2. CHANGE OUT OF AHUS SHALL BE COORDINATED TO OCCUR ON WEEKEND. EACH UNIT TO BE INSTALLED STARTING AT 5PM ON FRIDAY AND COMPLETED BY 7PM SUNDAY. NO WORK TO BEGIN UNLESS ALL EQUIPMENT AND PERSONNEL ARE AVAILABLE AND READY.
3. PROVIDE CONNECTION SIZES OF NEW WORK TO EXISTING AFTER FIELD VERIFYING DIMENSIONS PRIOR TO FINAL CONNECTION.



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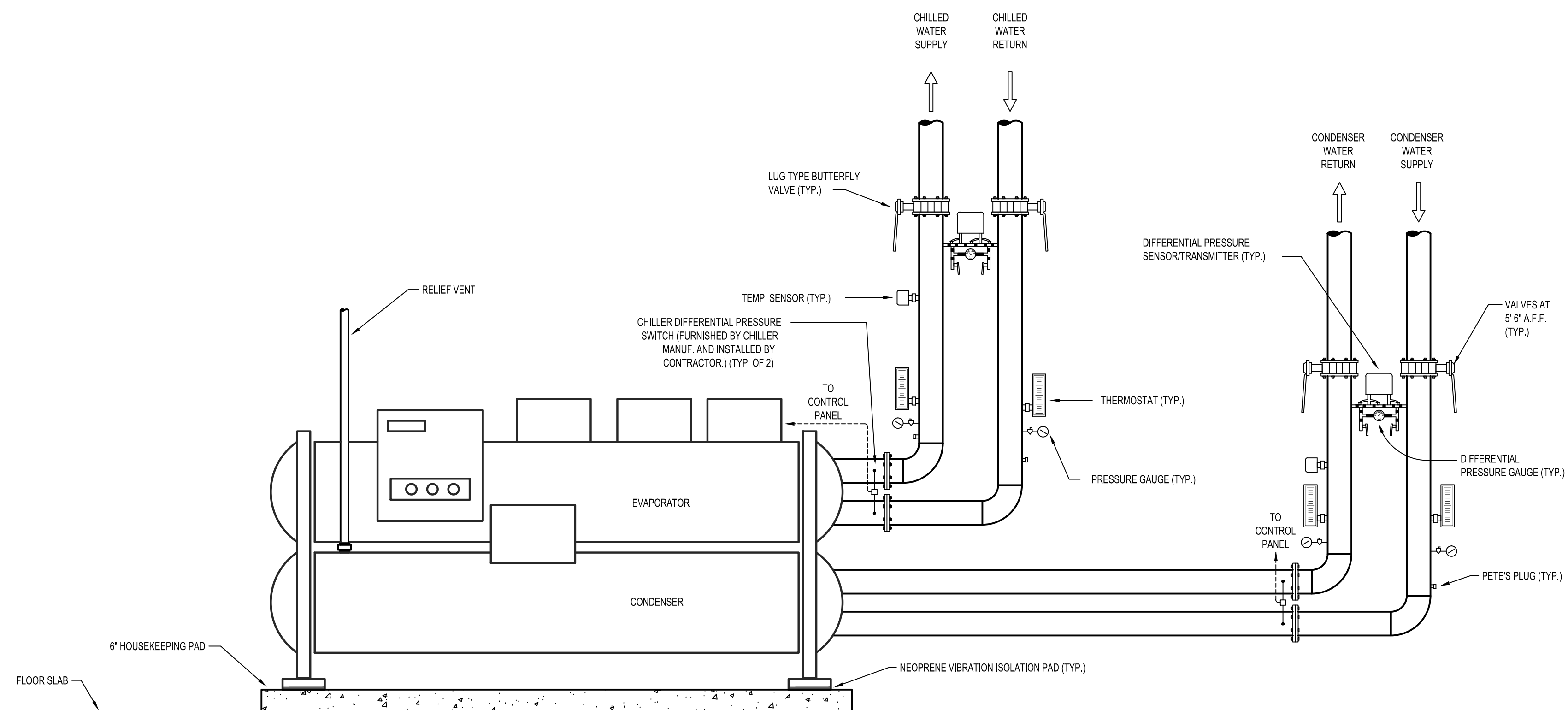
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CITY of TAMPA
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HFC AWTP ADMINISTRATION BUILDING
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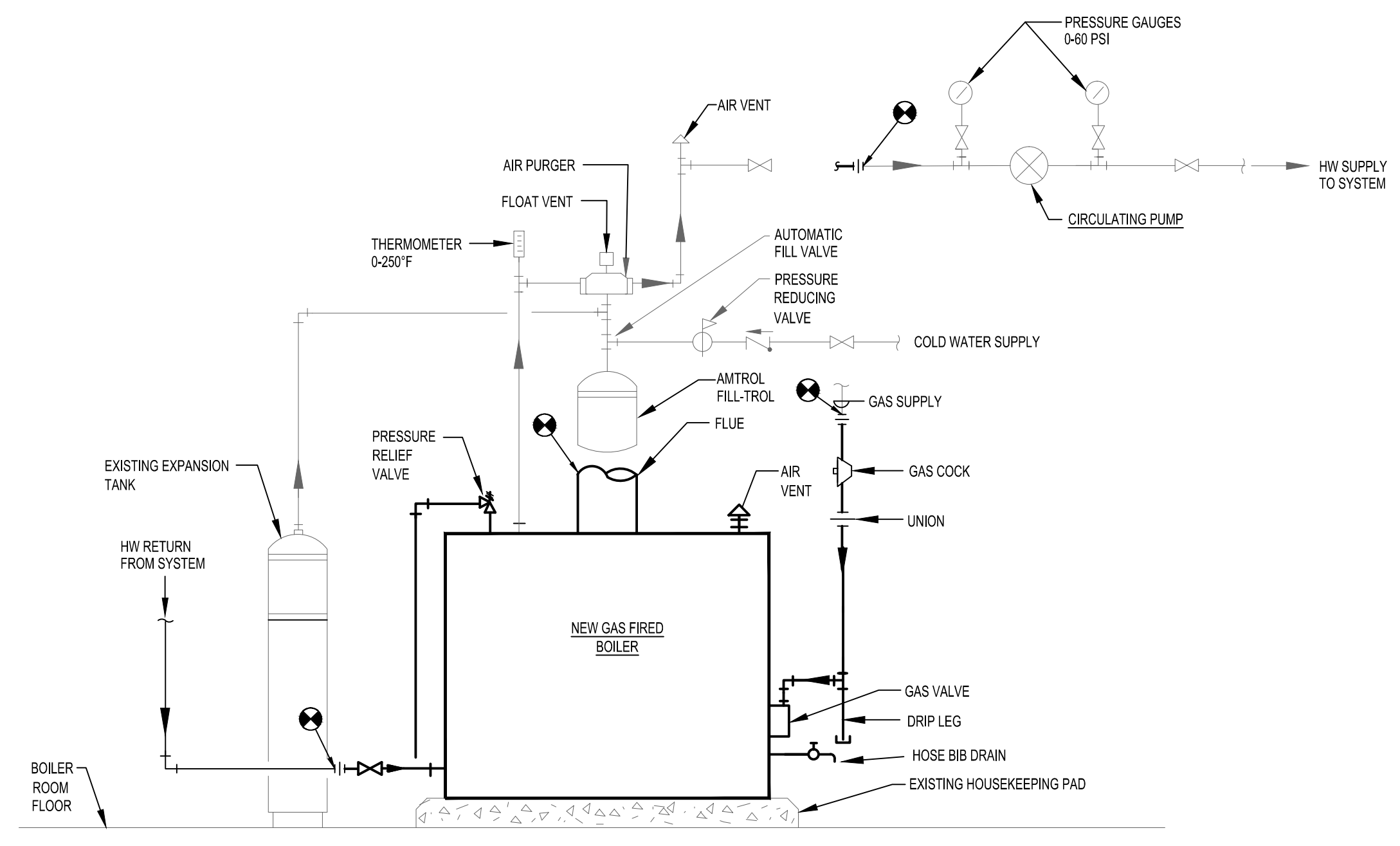
2009 LEVEL 3
PENTHOUSE PLAN - HVAC

W.O. #5427
 SHEET
R2.M7
 OF

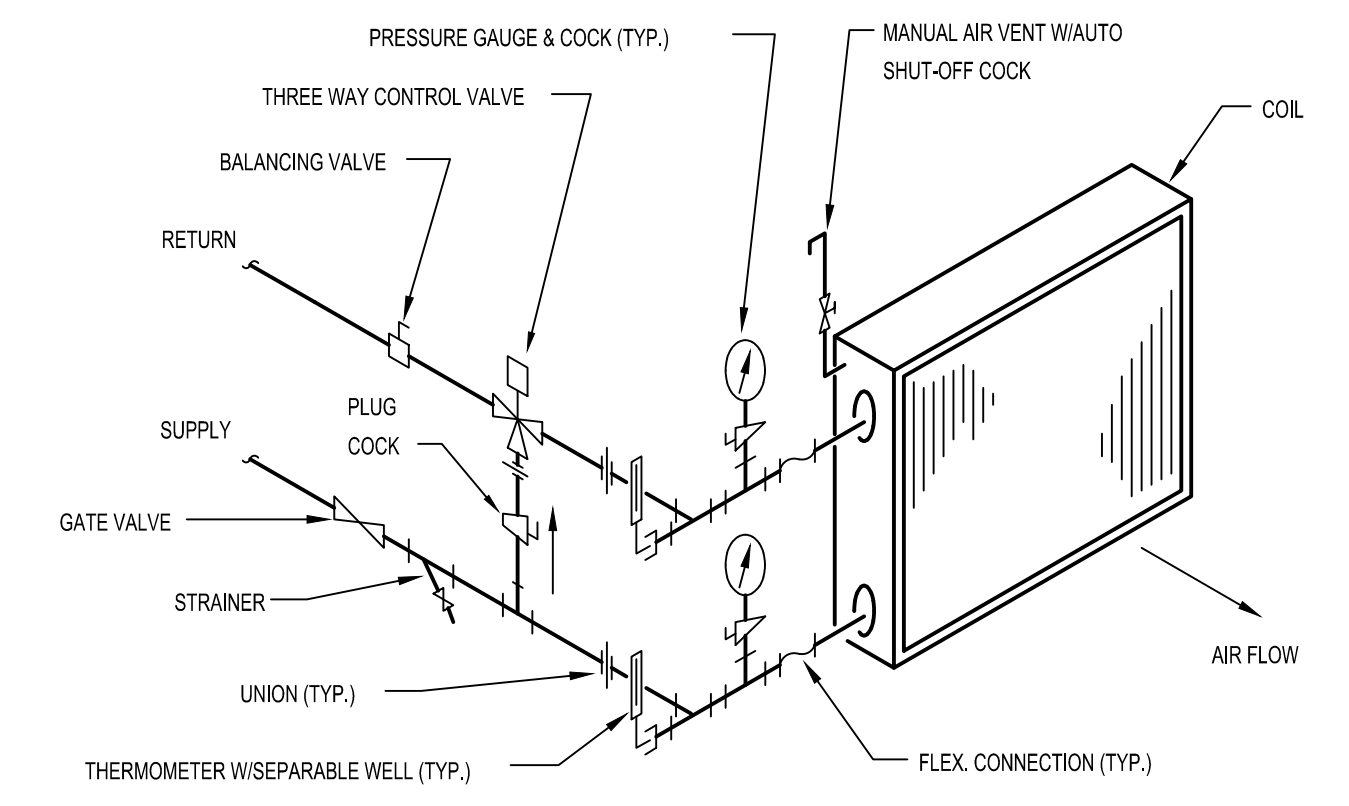


NOTES:
1. BUTTERFLY VALVES SHALL BE LOCATED ABOVE TUBE PULL AREA.
2. PROVIDE HOUSEKEEPING PAD CONCRETE AND REINFORCING STEEL IN ACCORDANCE WITH THE CITY OF TAMPA SPECIFICATION AS SET FORTH IN THE TECHNICAL STANDARD MANUAL, LATEST EDITION.

A NO SCALE WATER COOLED CHILLER PIPING DETAIL



B NO SCALE GAS FIRED BOILER DETAIL



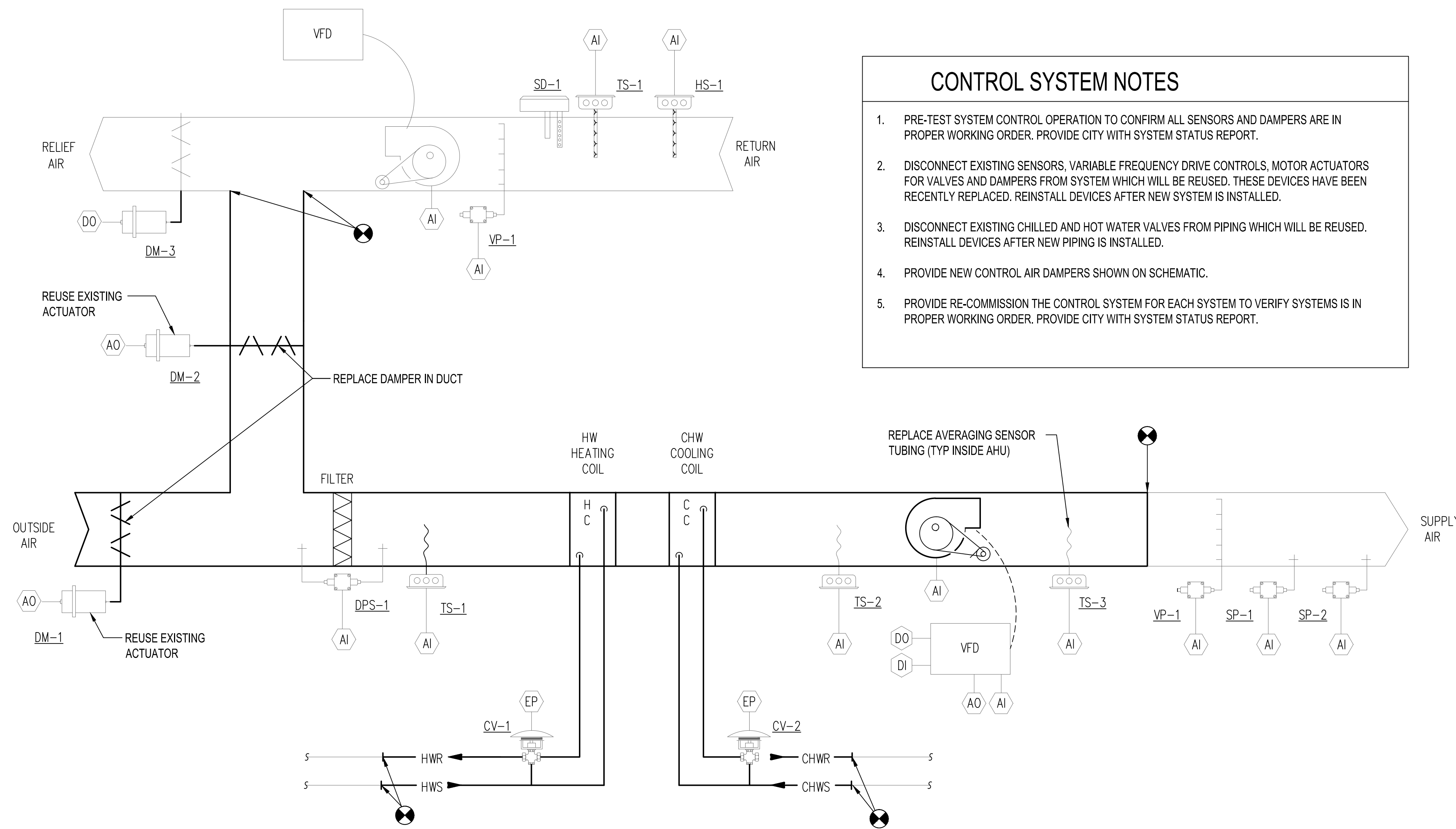
NOTES: 1. PROVIDE (4 x DIA.) OF STRAIGHT PIPE ON BOTH SIDES OF BALANCING VALVE
2. ALL COMPONENTS FULL LINE SIZE UNLESS NOTED OTHERWISE
3. LOCATE UNIONS TO ALLOW FOR COIL PULL

C NO SCALE COOLING COIL AND HEATING COIL PIPING DIAGRAM (3-WAY VALVE)

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- ### CONTROL SYSTEM NOTES
1. PRE-TEST SYSTEM CONTROL OPERATION TO CONFIRM ALL SENSORS AND DAMPERS ARE IN PROPER WORKING ORDER. PROVIDE CITY WITH SYSTEM STATUS REPORT.
 2. DISCONNECT EXISTING SENSORS, VARIABLE FREQUENCY DRIVE CONTROLS, MOTOR ACTUATORS FOR VALVES AND DAMPERS FROM SYSTEM WHICH WILL BE REUSED. THESE DEVICES HAVE BEEN RECENTLY REPLACED. REINSTALL DEVICES AFTER NEW SYSTEM IS INSTALLED.
 3. DISCONNECT EXISTING CHILLED AND HOT WATER VALVES FROM PIPING WHICH WILL BE REUSED. REINSTALL DEVICES AFTER NEW PIPING IS INSTALLED.
 4. PROVIDE NEW CONTROL AIR DAMPERS SHOWN ON SCHEMATIC.
 5. PROVIDE RE-COMMISSION THE CONTROL SYSTEM FOR EACH SYSTEM TO VERIFY SYSTEMS IS IN PROPER WORKING ORDER. PROVIDE CITY WITH SYSTEM STATUS REPORT.

CONTROL LEGEND

	INPUT/OUTPUT POINT TO DDC CONTROL PANEL
TS	TEMPERATURE SENSOR
CV	CONTROL VALVE
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
AI	ANALOG INPUT
EP	ELECTRIC PNEUMATIC
AO	ANALOG OUTPUT
DPS	DIFFERENTIAL PRESSURE SWITCH
PS	STATIC PRESSURE SWITCH
FT	WATER FLOW TRANSMITTER
DPT	DIFFERENTIAL PRESSURE SENSOR
FZ	FREEZESTAT
VP	VELOCITY PRESSURE SENSOR
HS	HUMIDITY SENSOR
----	ELECTRIC/ELECTRONIC WIRE

A NO SCALE VARIABLE AIR VOLUME AHU CONTROL (TYP OF 2)

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2009 CONTROLS DETAILS
- HVAC

W.O. #5427
SHEET
R2.M9
OF

AIR HANDLING UNIT SCHEDULE																																
PLAN MARK	MODEL NO.	UNIT COMPONENTS IN DIRECTION OF AIR FLOW SEE LEGEND BELOW	AIR FLOWS		FAN DATA					COOLING COIL										HEATING COIL												
			TOTAL CFM	EXT. SP	TOTAL SP	WHEEL TYPE	MAX. RPM	MOTOR HP	VOLT/ PHASE	DESIGN CONDITIONS		CAPACITY		AIR DATA		WATER DATA				AIR DATA		CAPACITY		AIR DATA		WATER DATA						
										EAT	LAT	SEN.	TOTAL	VEL.	ROW/FIN.	PRESS.	TEMP. °F		FLOW	Δ P	TEMP. °F		TOTAL	VEL.	ROW/FIN.	Δ P	TEMP. °F		FLOW	Δ P		
										DB	WB	DB	WB	MBH	MBH	FPM	PER IN.	DROP	ENT.	LVG.	GPM	FT	ENT.	LVG.	MBH	FPM	PER IN.	IN. WG.	ENT.	LVG.	GPM	FT
ACU-1	WF-DH23	FMXB-CCL-RHC-MAC-FAN-PLN	11,300	2.36	3.5	PLUG	1280	15	460/3	84.7	71.8	56.7	55.7	332.8	571.2	500	6/6	0.6	44	54	113.9	12.2	45	73.6	367.7	500	1/8	0.1	180	160	37.9	3.2
ACU-3	WF-DH23	FMXB-CCL-RHC-MAC-FAN-PLN	10,540	2.36	3.5	PLUG	1243	15	460/3	84.8	71.9	56.9	55.9	309.9	533.4	500	6/6	0.6	44	54	106.3	11.5	47	74.8	332.7	500	1/8	0.1	180	160	34.4	4.6

COMPONENTS LEGEND

MXB - MIXING BOX	PLN - PLENUM	NOTES: 1. MODEL NUMBERS AND EQUIPMENT SELECTIONS BASED ON TEMPTROL.	4. FILTERS SHALL BE SIMILAR TO FARR COMPANY 30/30.
FMXB - MIXING BOX WITH FILTERS AND ACCESS	SAC - SMALL ACCESS	2. AIR PRESSURE DROP FOR FILTERS IS INCLUDED IN TOTAL STATIC.	5. AHU-1 AND AHU-3 SHALL BE CONNECTED TO EXISTING YASKAWA VARIABLE FREQUENCY DRIVES. VFD FOR AHU-3 REQUIRES MODIFICATION WHICH DOWN-SIZES OVERLOAD LIMIT TO 21 AMPS.
CCL - COOLING COIL W/ 30" PAN	MAC - MEDIUM ACCESS	3. CAPACITIES SHOWN ARE MINIMUM. AIR AND WATER PRESSURE DROPS ARE MAXIMUM.	
FAN - FAN	LAC - LARGE ACCESS		
PFL - FLAT FILTER	RHC - REHEAT COIL		
FLT - FILTERS			

BOILER SCHEDULE								
PLAN MARK	MODEL NUMBER	INPUT MBH	MINIMUM OUTPUT MBH	MIN. SUPPLY PRESSURE	CAPACITY CONTROL TYPE	FLUE CONNECTION SIZE	CONTROLS VOLTAGE	BASIS OF DESIGN
AD-WHB-1	CLM-210	2200	1760	7" W.G.	MODULATING	140	120	BRYAN

WATER-COOLED SCREW CHILLER SCHEDULE															
PLAN MARK	MODEL NUMBER	MIN. TONS	EVAPORATOR DATA				CONDENSER DATA				FULL LOAD Kw/TON	NPLV TON	ELECTRICAL DATA		
			EWT °F	LWT °F	DESIGN GPM	Δ P FT.	EWT °F	LWT °F	FLOW GPM	Δ P FT.			MCA	MOCP	VOLTS/PHASE
AD-CLC-2	30HXC206	200	54	44	480	14.3	95	105	600	18.5	0.863	0.539	263.2	350	480/3

- NOTES:
1. WATER CHILLER SELECTION BASED ON CARRIER. SEE SPECIFICATIONS FOR ALTERNATE MANUFACTURERS.
 2. THE CHILLER EFFICIENCY INDICATED IS THE MAXIMUM ELECTRICAL POWER INPUT PER UNIT OF NET REFRIGERATION EFFECT, IN ACCORDANCE WITH THE APPLICATION PART-LOAD VALUE PERFORMANCE CRITERIA OF ARI STANDARD 550-92. REFER TO THE SPECIFICATIONS FOR EXACT RATING CONDITIONS.

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