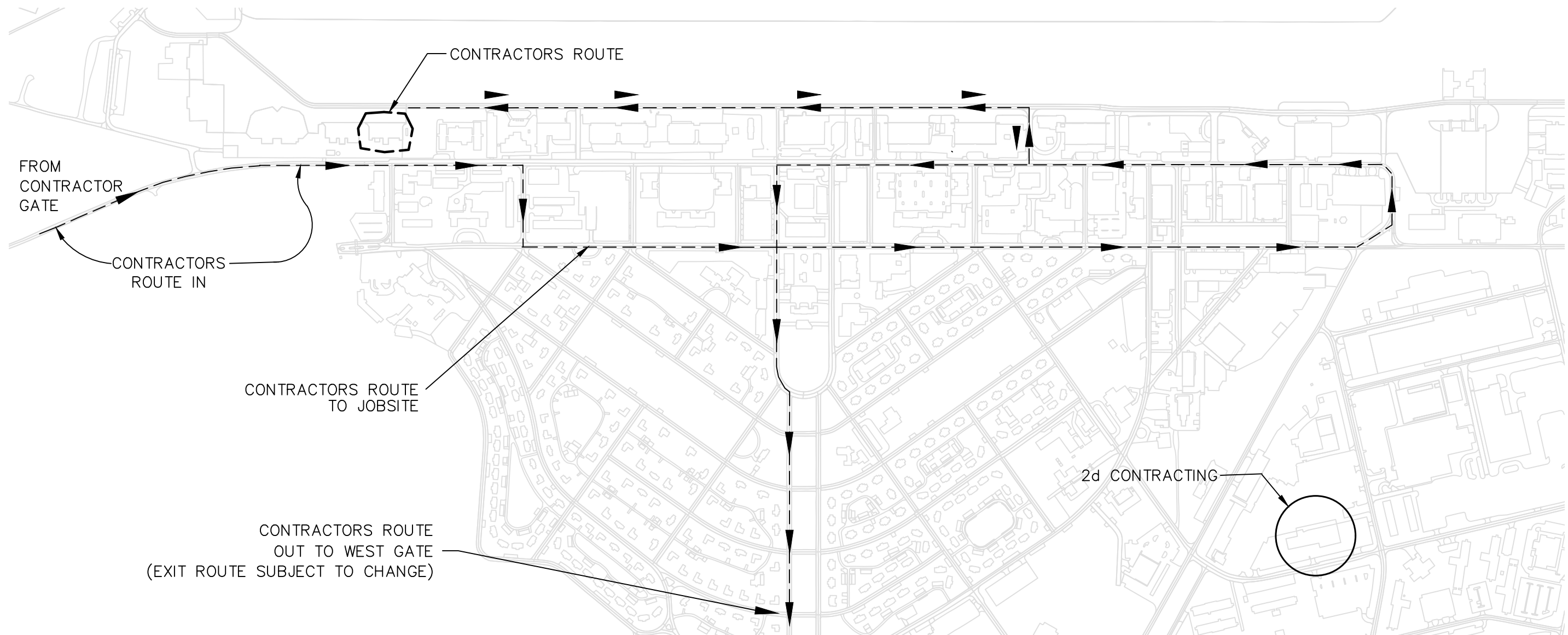


# REPAIR HEATING SYSTEM, B6215

OPP# 1142434

BARKSDALE AFB, LOUISIANA

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SCALE: NTS

REPAIR HEATING SYSTEM B6215  
BARKSDALE AIR FORCE BASE  
BARKSDALE AFB, LOUISIANA

NO.	DATE	REVISIONS
1	4/16/24	MISC ADDITIONS

OPP NO: 1142434  
BLDG NO: B6215  
DATE: 3/25/2024  
SCALE: AS SHOWN

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PLUMBING LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—H—	SANITARY SEWER OR WASTE	—O—	DOUBLE CLEANOUT (DCO)	CW	COLD WATER
-----	SANITARY VENT (V)	—H—	WALL CLEANOUT (WCO)	DN	DOWN
—GW—	GREASE/OIL WASTE (GW)	—FD/TP—	FLOOR DRAIN/TRAP PRIMER	DR	DRAIN
—LW—	LAUNDRY WASTEWATER (W/ LINT) (LW)	—FS—	FLOOR SINK	EXP OH	EXPOSED OVERHEAD
—S/O—	SAND/OIL WASTE	—RD—	ROOF DRAIN	EXT	EXTERIOR
—AW—	ACID WASTE (AW)	—OFD—	OVERFLOW DRAIN	EXTG	EXISTING
—AV—	ACID VENT (AV)	—WF/HB—	WALL FAUCET (WF) OR HOSE BIBB (HB)	FLR	FLOOR
—R—	ROOF DRAIN LEADER/STORM DRAIN	—F—	FULL PORT BALL VALVE	HDR	HEADER
—D—	CONDENSATE/DRAIN LINE	—B—	HWR BUTTERFLY BALANCING VALVE	HW	HOT WATER (SUPPLY)
—AD—	SECONDARY/AUXILIARY COND DRAIN LINE	—S—	SWING CHECK VALVE	HWR	HOT WATER RETURN
— — — —	DOM COLD WATER (CW)	—P—	PRESSURE REDUCING VALVE (PRV)	H&CW	HOT AND COLD WATER
— — — —	DOM HOT/TEMPERED WATER (HW)	—B/P—	BACKFLOW PREVENTER (DBL CHECK/RPZ)	OSD	OPEN SITE DRAIN
— — — —	DOM HOT/TEMPERED WTR RETURN (HWR)	—S—	SOLENOID SHUTOFF VALVE	RM	ROOM
—T—	DOM TEMPERED WATER (85°F–110°F)	—G—	GAS COCK	RTU	ROOFTOP UNIT
—140°—	140°F DOM HOT WATER (KITCHEN/SHWR)	—C—	CONNECT TO EXISTING	SHT	SHEET
—TP—	TEPID WATER (EMERGENCY FIXTURES)	—R—	NATURAL GAS REGULATOR	TYP	TYPICAL
—FW—	FILTERED CW (ICE MACH/DRINK DISP)	ABV	ABOVE	U/G	UNDERGROUND
—F—	FIRE SPRINKLER SUPPLY	AFF/BFF	ABOVE/BELOW FINISHED FLOOR	U/F	UNDER FLOOR
—G—	LOW PRESSURE GAS (TYP 4 TO 8 OZs)	AHU	AIR HANDLING UNIT	U/S	UNDER SLAB
—MPG—	MEDIUM PRESSURE GAS (2 TO 5 PSIG)	AVTR	ACID VENT THRU ROOF	UH	UNIT HEATER
—CA—	COMPRESSED AIR (CA)	BLDG	BUILDING	UNO	UNLESS NOTED OTHERWISE
—O—	FINISHED FLOOR CLEANOUT (FFCO)/GRADE CLEANOUT (CO)	CLG	CEILING	VTR	VENT THRU ROOF/VENT TERMINAL

\* NOTE - SOME SYMBOLS/ABBREVIATIONS MAY NOT BE USED.

MECHANICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—X—	SUPPLY AIR DIFFUSER OR DUCT	—MPS—	MEDIUM PRESSURE STEAM	—P—	RELIEF VALVE
—R—	RETURN AIR GRILLE, REGISTER OR DUCT	—MPC—	MEDIUM PRESSURE CONDENSATE RETURN	—RPZ—	REDUCED PRESSURE BACKFLOW PREVENTER
—E—	EXHAUST AIR GRILLE, REGISTER OR DUCT	—HWS—	HEATING WATER SUPPLY	—G—	PRESSURE GAUGE
—S—	ADJUSTABLE SPLITTER TEE W/TURNING VANES (S/A ONLY)	—HWR—	HEATING WATER RETURN	—S—	STRAINER
—C—	DUCT TRANSITION - CONCENTRIC, ECCENTRIC	—CWS—	CHILLED WATER SUPPLY	—C—	CONNECT TO EXISTING
U/G	UNDERGROUND	—CWR—	CHILLED WATER RETURN	—B—	BUTTERFLY BALANCING VALVE
—F—	FLEXIBLE DUCT	—CS—	CONDENSER WATER SUPPLY	—B—	BALL VALVE
—L—	LINED DUCTWORK	—CR—	CONDENSER WATER RETURN	—U—	UNION
—E—	ELBOW W/DOUBLE THICKNESS VANES	—LPS—	LOW PRESSURE STEAM	—S—	ADJUSTABLE SCOOP
—M—	MANUAL VOLUME DAMPER	—LPC—	LOW PRESSURE CONDENSATE RETURN	—S—	MANUAL SPLITTER
—M—	MOTORIZED DAMPER	—HPS—	HIGH PRESSURE STEAM	—S—	STRAINER W/ BLOW-OFF VALVE
—T—	THERMOSTAT	—HPC—	HIGH PRESSURE CONDENSATE	—T—	THERMOMETER
—F—	FIRE DAMPER	EWT	ENTERING WATER TEMPERATURE	—W—	THERMOMETER WELL
—S—	SMOKE DAMPER	LWT	LEAVING WATER TEMPERATURE	—C—	GAUGE COCK
—S—	COMBINATION FIRE & SMOKE DAMPER	EAT	ENTERING AIR TEMPERATURE	—V—	VALVE IN VERTICAL RISER
—RL—	REFRIGERANT LIQUID	LAT	LEAVING AIR TEMPERATURE	—V—	VACUUM PUMP
—RS—	REFRIGERANT SUCTION	CU	CONDENSING UNIT	IFB	INFRARED BURNER
—D—	DRAIN LINE	S/A	SUPPLY AIR	IFMC	INFRARED MASTER CONTROLLER
—AD—	AUXILIARY DRAIN LINE	R/A	RETURN AIR	⊕	ROOM PRESSURE MONITOR
—G—	GATE VALVE	E/A	EXHAUST AIR	EXTG	EXISTING
AHU	AIR HANDLING UNIT	O/A	OUTSIDE AIR	HP	HORSEPOWER
HP	HEAT PUMP	OPD	OPPOSED BLADE DAMPER	OSD	OPEN SITE DRAIN
U/S	UNDER SLAB	U/F	UNDER FLOOR	HD	HUB DRAIN
EF	EXHAUST FAN	SPF	STARWELL PRESSURIZATION FAN	CFM	CUBIC FEET PER MINUTE
UH	UNIT HEATER	SEF	SMOKE EXHAUST FAN	OAU	OUTSIDE AIR UNIT
(H)	HUMIDISTAT	TYP	TYPICAL	VRTU	VENTILATION ROOFTOP UNIT
AFF	ABOVE FINISHED FLOOR	UNO	UNLESS NOTED OTHERWISE	MAU	MAKEUP AIR UNIT
RTU	ROOF TOP UNIT	(X)	STEAM TRAP	DHU/AC	DEHUMIDIFICATION UNIT/CONDENSING UNIT
SF	SUPPLY FAN	—S—	SWING CHECK VALVE	MS/MSC	MINI-SPLIT SYSTEM/CONDENSING UNIT
CO2	CARBON DIOXIDE SENSOR	—P—	PRESSURE REDUCING VALVE OR REGULATOR	MS/MSH	MINI-SPLIT SYSTEM/HEAT PUMP
MDVS	MODULATING DRYER VENT SYSTEM	—S—	SOLENOID VALVE	KH	KITCHEN HOOD
		EMCS	ENERGY MANAGEMENT CONTROL SYSTEM	VFD	VARIABLE FREQUENCY DRIVE
		RF	RETURN FAN	EDH	ELECTRIC DUCT HEATER

\* NOTE - SOME SYMBOLS/ABBREVIATIONS MAY NOT BE USED.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
— — — —	CONDUIT IN WALL OR ABOVE CEILING
-----	CONDUIT UNDER FLOOR OR UNDERGROUND
— — — —	ARROW INDICATES HOMERUN, TICKMARKS: NEUTRAL, PHASE, GROUND
— — — —	JUNCTION BOX
— — — —	DISCONNECT SWITCH; FUSED; NONFUSED
— — — —	DUPLEX RECEPT; ABOVE COUNTER
— — — —	WEATHERPROOF; GROUND FAULT
— — — —	PILOT LIGHT; DIMMER
— — — —	SINGLE POLE SWITCH; 3-WAY; 4-WAY
AFF	ABOVE FINISHED FLOOR
— — — —	MOTOR
— — — —	MOTOR TOGGLE SWITCH

\* NOTE - SOME SYMBOLS/ABBREVIATIONS MAY NOT BE USED.

GENERAL ELECTRICAL NOTES:

- INSTALL ELECTRICAL JUNCTION BOX COVERS ON ALL EXISTING & NEW JUNCTION BOXES IN MECH ROOM.
- REMOVE EXISTING NON-USED DISCONNECTS.
- FOLLOW MANUFACTURERS RECOMMENDED BREAKER SIZE REQUIREMENTS FOR NEW IR HEATING SYSTEM.
- ALL CONDUCTORS SHALL BE COPPER.
- SECONDARY WILL BE THHN INSULATION.
- CONDUCTORS #12 AND LARGER SHALL BE STRANDED.
- NO SET SCREW CONNECTIONS FOR EMT ALLOWED; USE COMPRESSION TYPE CONNECTORS ONLY.
- UPDATE PANEL DIRECTORY. LABEL ALL NEW AND CHANGED BREAKERS.
- INSTALLATION MUST BE IN COMPLIANCE WITH THE LATEST EDITION OF NEC AND UFC.
- UPDATE ASBUILT DRAWINGS TO INCLUDE ACTUAL ELECTRICAL INSTALLATION INFORMATION.

PHASING REQUIREMENTS:

- COORDINATE WORK PLAN A MINIMUM OF (3) WEEKS PRIOR TO WORK COMMENCING INSIDE OF BAY AREA.
- PLAN AND COORDINATE ALL OUTAGES WITH MINIMUM OF (7) DAYS ADVANCE NOTICE.
- EACH WEEK, COORDINATE ALL WORK FOR A ONE TO TWO WEEK LOOK AHEAD WITH PROJECT INSPECTOR.

GENERAL NOTES:

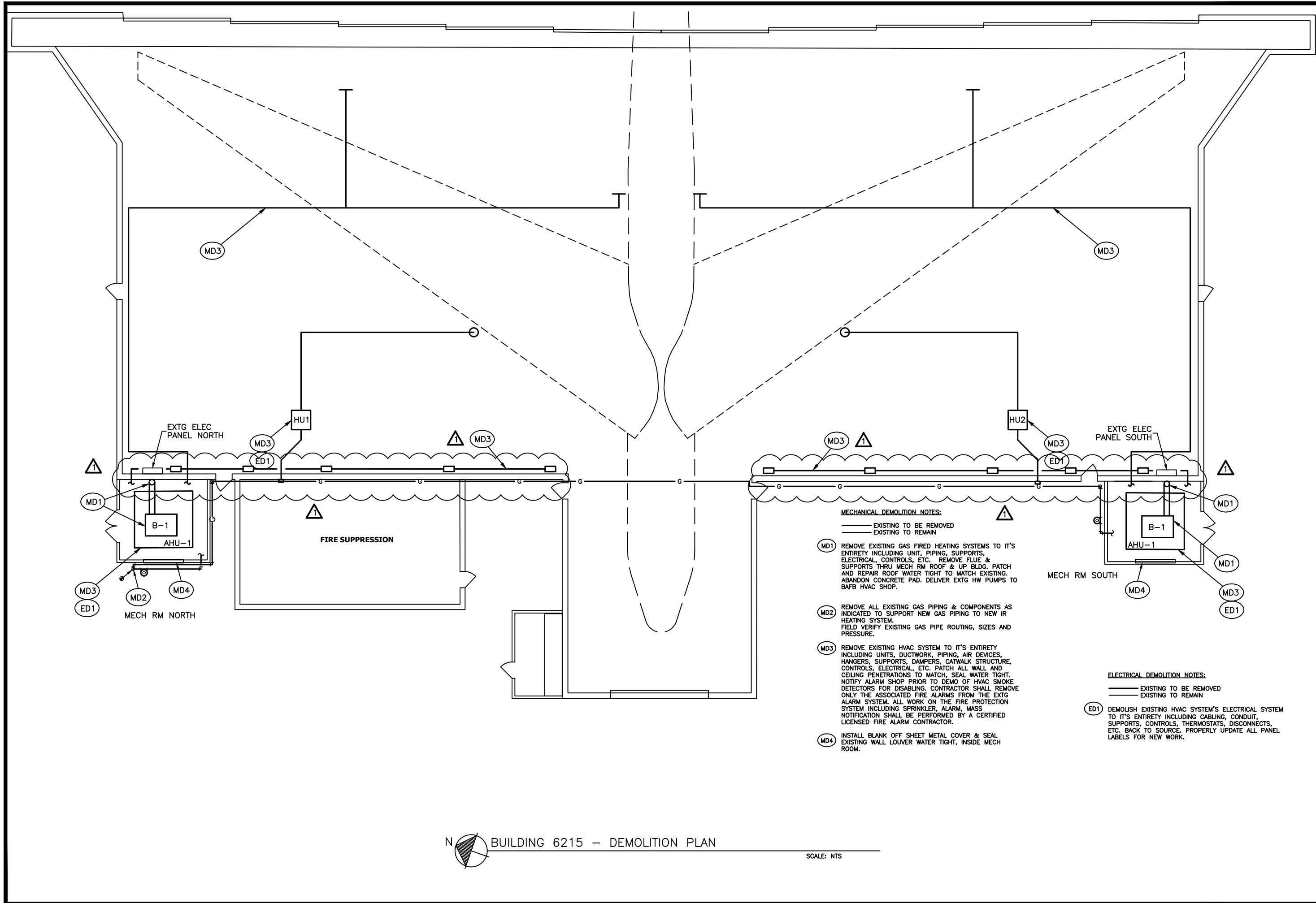
- PRIOR TO PROJECT CLOSEOUT, SUBMIT FOR APPROVAL AS-BUILT DRAWINGS IN LATEST VERSION OF AUTOCAD AND PDF WITH DELIVERABLES AS FOLLOWS: 1) (3)-CD'S WITH AS-BUILTS BINDED IN ACAD & PDF 2) (3)-HARD COPIES 24X36 SIZE & (1) HARD COPY 18X24. ALL HARD COPIES SHALL BE EDGE BINDED.
- SUBMIT FOR APPROVAL ALL OPERATIONS & MAINTENANCE MANUALS FOR ALL NEW EQUIPMENT AND MATERIALS. (2) CD'S, (3) HARD COPIES IN LABELED 3-RING BINDERS.
- SUBMIT ALL NEW SHOP DRAWINGS, EQUIPMENT AND MATERIALS DATA TO CONTRACTING FOR APPROVAL PRIOR TO ORDERING.
- NEW IR HEATING SYSTEM WARRANTY REQUIRED PER SPECIFICATIONS (OTHER THAN REQUIRED ONE YEAR WARRANTY):
  - Burner Assembly: Five years.
  - Combustion and Emitter Tubes: Five years.
  - Heater Controls: One year.
- PROVIDE EQUIPMENT BALANCING & START-UP FOR THE NEW IR HEATER SYSTEM BY MANUFACTURER'S AUTHORIZED REPRESENTATIVES.
- SUBMIT WARRANTY LETTER(S) FOR ALL NEW EQUIPMENT.
- COORDINATE ALL UTILITY AND OTHER OUTAGES AT LEAST 7 DAYS IN ADVANCE.
- PROVIDE FIRE STOPPING AT PIPE PENETRATION(S) THROUGH WALLS. COVER AND SEAL ALL NON-USED PENETRATIONS AT MECH ROOM WATER TIGHT.
- COMPLY WITH LATEST EDITIONS OF ALL APPLICABLE CODES INCLUDING NATIONAL ELECTRIC CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), INTERNATIONAL MECHANICAL CODE (IMC), INTERNATIONAL PLUMBING CODE (IPC), UNIFIED FACILITIES CRITERIA (UFC). OBTAIN ALL PERMITS AND PAY ALL REQUIRED FEES.
- CAP AND TERMINATE ALL EXISTING UTILITIES NOT USED.
- PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH APPLICABLE STANDARDS SET FORTH IN THE UFC, IMC & IPC.
- PRIOR TO BID, CONTRACTOR SHALL COORDINATE AND VERIFY ALL EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO SITE AND COMPONENT DIMENSIONS & LOCATIONS, EQUIPMENT, FLOOR PLAN LAYOUT, ELECTRICAL, PLUMBING, CONTROLS, ETC. ANY DISCREPANCIES DISCOVERED SHALL BE PROVIDED TO THE CONTRACTING OFFICER PRIOR TO BID.
- VERIFY FINAL LOCATION OF THERMOSTATS OR OTHER TEMPERATURE CONTROL DEVICE WITH PROJECT ENGINEER PRIOR TO INSTALLATION. ANY ASSOCIATED EXPOSED, LOW VOLTAGE CONTROL WIRING WITHIN THE BUILDING INTERIOR SHALL BE INSTALLED WITHIN CONDUIT AND PAINTED TO MATCH INTERIOR FINISHES.
- PRIOR TO ORDER, CONTRACTOR SHALL COORDINATE AND VERIFY ALL EXACT EQUIPMENT POWER PROVISIONS AND REQUIREMENTS WITH THE EXISTING ONSITE ELECTRICAL SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASSOCIATED CONTROL WIRING AND THE COORDINATION OF ALL SUPPLY POWER.
- ALL ELECTRICAL & CONTROLS WIRING SHALL BE IN METAL CONDUIT RACEWAY (EMT FOR INSIDE, RIGID FOR EXTERIOR).
- THIS PLAN AND ACCOMPANYING DETAILS ARE SCHEMATIC IN NATURE; COORDINATION WITH BUILDING STRUCTURE, COMPONENTS, EQUIPMENT, AND ALL OTHER TRADES MUST BE COMPLETED PRIOR TO CONSTRUCTION. FIELD VERIFY ALL DIMENSIONS AND EQUIPMENT.
- COORDINATE MECHANICAL AND ELECTRICAL PLANS. REFER TO SCHEDULES FOR REQUIRED POWER REQUIREMENTS.
- CLEARANCE TO COMBUSTIBLES SHALL BE COORDINATED WITH ALL OBJECTS LOCATED NEAR INFRARED HEATERS; REFER TO MANUFACTURER'S CLEARANCE TO COMBUSTIBLE CHARTS FOR DISTANCES UNIQUE TO EACH INFRARED BURNER SIZE AND MOUNTING CONFIGURATION.
- ANY DIMENSIONAL DATA INDICATED IS SCHEMATIC ONLY AND IS FOR REFERENCE FOR INCORPORATING THE INFRARED EQUIPMENT WITH ENGINEERED DRAWINGS. VERIFY ALL DIMENSIONS AND ORIENTATION OF EQUIPMENT AND EXHAUSTS. COORDINATE EXACT LOCATION OF NEW EQUIPMENT WITH EXISTING CONDITIONS.
- COORDINATE INFRARED HEATER MOUNTING HEIGHT AND SLOPING OF SYSTEMS WITH BUILDING ELEMENTS AND OTHER TRADES: SLOPE SYSTEM MIN. 1/16" PER FOOT FOR EMITTER TUBING AND 1/8" PER FOOT FOR TAIL PIPE UNLESS NOTED OTHERWISE. SLOPE PIPE DOWN TO THE VACUUM PUMPS.
- EQUIPMENT AND PIPING SUPPORTS AND CONNECTIONS SHALL MEET SEISMIC CRITERIA IN ACCORDANCE WITH THE UFC, IBC AND ALL LOCAL REQUIREMENTS. PIPING, DUCTING, HEATERS, AND SYSTEM SHALL BE SEISMIC BRACED.
- LABEL ALL NEW PIPING.
- NEW EQUIPMENT, PIPING, DUCTING, ETC. ARE INDICATED IN THEIR GENERAL LOCATIONS. COORDINATE EXACT LOCATIONS AND ROUTING WITH EXISTING CONDITIONS. MINOR LOCATION CHANGES AND RELOCATION OF EXISTING SYSTEMS MAY BE NECESSARY DUE TO SPACE CONSTRAINTS.
- ADJUST PIPING AND DUCT SIZES AT EQUIPMENT AS NECESSARY TO MAKE FINAL CONNECTIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- WHERE NEW SERVICES ARE SHOWN CONNECTING TO EXISTING SERVICES, FIELD VERIFY THE EXACT LOCATION AND SIZE OF THE EXISTING SERVICES PRIOR TO BIDDING.
- ALL WORK SHALL COMPLY WITH UFC'S, NFPA, INTERNATIONAL MECHANICAL CODE, INTERNATIONAL PLUMBING CODE, NATIONAL ELECTRICAL CODE, AND ALL OTHER APPLICABLE STANDARDS AND CODES.
- SEAL ALL DUCT AND PIPING PENETRATIONS THROUGH INTERIOR WALLS. SEAL DUCT AND PIPING PENETRATIONS THROUGH EXTERIOR WALLS WITH WATERPROOFING SEAL WATER TIGHT. USE A METHOD OF SEALING THAT IS UL APPROVED. PAINT TO MATCH ALL EXTERIOR DUCTING, DUCT GRILLS, PIPING, ETC.
- AREAS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO MATCH ADJACENT AREAS WITH RESPECT TO CONSTRUCTION, COLOR, AND FINISH.
- INFRARED HEATERS SHALL BE PROVIDED IN ACCORDANCE WITH MECHANICAL SCHEDULE, UFC & NFPA 409. THE INFRARED HEATERS SHALL BE INSTALLED AT LEAST 10 FEET ABOVE THE UPPER SURFACE OF THE WINGS OR ENGINE ENCLOSURE OF THE HIGHEST AIRCRAFT THAT IS CAPABLE OF BEING HOUSED IN THE HANGAR.
- OPENING IN BUILDING WALLS, RESULTING FROM THE REMOVAL OF ITEMS TO BE DEMOLISHED SHALL BE PATCHED TO MATCH SURROUNDING WALLS. INCLUDING FIRE RATING.
- NEW EQUIPMENT, PIPING, ETC. SHALL BE COORDINATED WITH EXISTING LIGHTING, FIRE SUPPRESSION SYSTEM, CRANE/HOIST SYSTEMS, AND OTHER BUILDING SYSTEMS WHICH REMAIN FULLY FUNCTIONAL.
- VERIFY CONDITIONS SHOWN AS EXISTING AND NOTIFY CONTRACTING OF ANY DISCREPANCIES PRIOR TO BID.
- WORK IN B6215 IS LOCATED ON THE FLIGHT LINE. ALL CONTRACTORS & SUBCONTRACTORS WILL HAVE TO BE ESCORTED OR HAVE A FLIGHT LINE DRIVERS LICENSE. ALL CONTRACTORS WILL HAVE TO ATTEND A FLIGHT LINE SAFETY BRIEFING.

REPAIR HEATING SYSTEM B6215  
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BARKSDALE AFB, LOUISIANA

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**MECHANICAL DEMOLITION NOTES:**  
 ——— EXISTING TO BE REMOVED  
 ——— EXISTING TO REMAIN

**(MD1)** REMOVE EXISTING GAS FIRED HEATING SYSTEMS TO IT'S ENTIRETY INCLUDING UNIT, PIPING, SUPPORTS, ELECTRICAL, CONTROLS, ETC. REMOVE FLUE & SUPPORTS THRU MECH RM ROOF & UP BLDG. PATCH AND REPAIR ROOF WATER TIGHT TO MATCH EXISTING. ABANDON CONCRETE PAD. DELIVER EXTG HW PUMPS TO BAFB HVAC SHOP.

**(MD2)** REMOVE ALL EXISTING GAS PIPING & COMPONENTS AS INDICATED TO SUPPORT NEW GAS PIPING TO NEW IR HEATING SYSTEM. FIELD VERIFY EXISTING GAS PIPE ROUTING, SIZES AND PRESSURE.

**(MD3)** REMOVE EXISTING HVAC SYSTEM TO IT'S ENTIRETY INCLUDING UNITS, DUCTWORK, PIPING, AIR DEVICES, HANGERS, SUPPORTS, DAMPERS, CATWALK STRUCTURE, CONTROLS, ELECTRICAL, ETC. PATCH ALL WALL AND CEILING PENETRATIONS TO MATCH, SEAL WATER TIGHT. NOTIFY ALARM SHOP PRIOR TO DEMO OF HVAC SMOKE DETECTORS FOR DISABLING. CONTRACTOR SHALL REMOVE ONLY THE ASSOCIATED FIRE ALARMS FROM THE EXTG ALARM SYSTEM. ALL WORK ON THE FIRE PROTECTION SYSTEM INCLUDING SPRINKLER, ALARM, MASS NOTIFICATION SHALL BE PERFORMED BY A CERTIFIED LICENSED FIRE ALARM CONTRACTOR.

**(MD4)** INSTALL BLANK OFF SHEET METAL COVER & SEAL EXISTING WALL LOUVER WATER TIGHT, INSIDE MECH ROOM.

**ELECTRICAL DEMOLITION NOTES:**  
 ——— EXISTING TO BE REMOVED  
 ——— EXISTING TO REMAIN

**(ED1)** DEMOLISH EXISTING HVAC SYSTEM'S ELECTRICAL SYSTEM TO IT'S ENTIRETY INCLUDING CABLING, CONDUIT, SUPPORTS, CONTROLS, THERMOSTATS, DISCONNECTS, ETC. BACK TO SOURCE. PROPERLY UPDATE ALL PANEL LABELS FOR NEW WORK.

N BUILDING 6215 - DEMOLITION PLAN

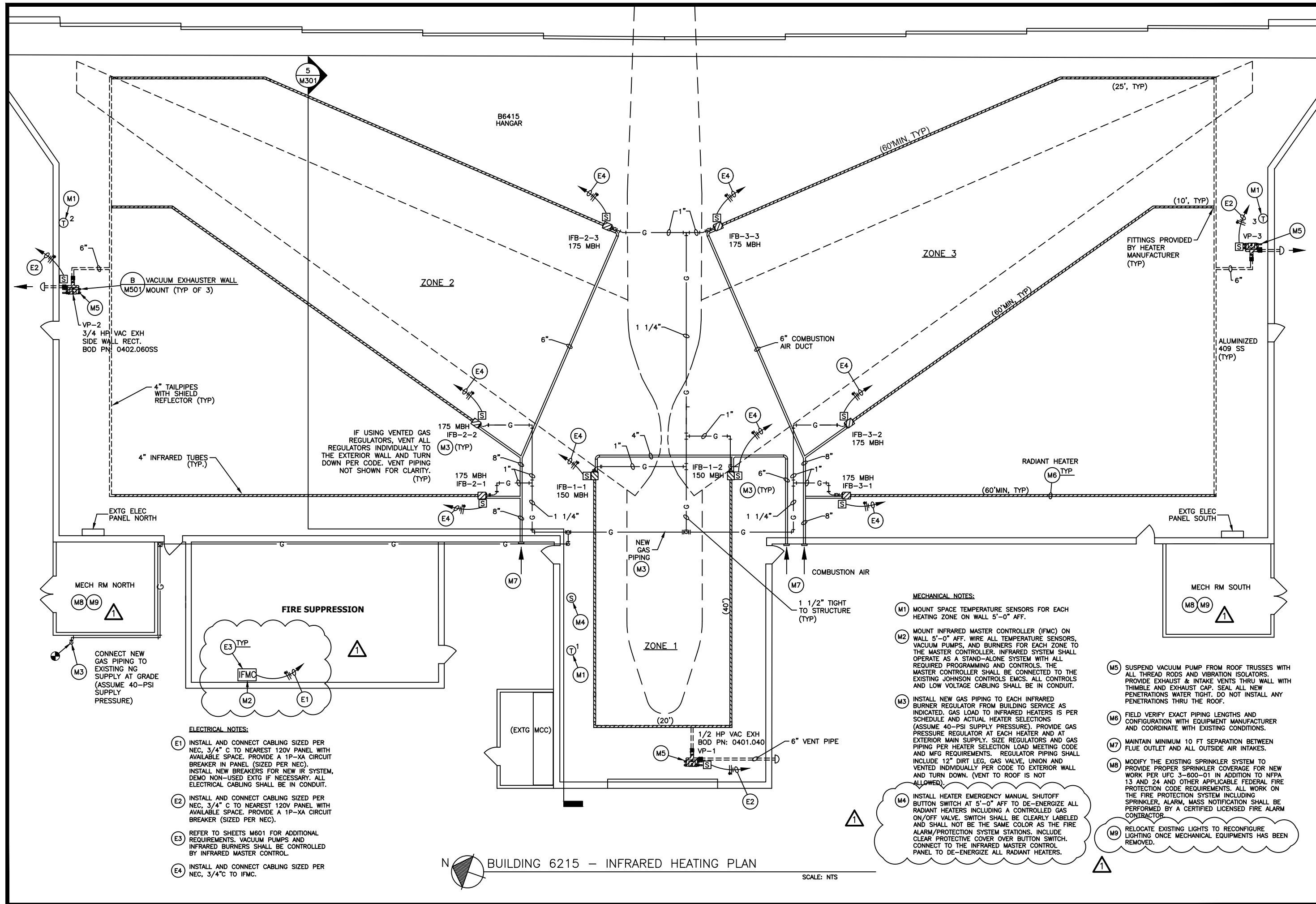
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- ELECTRICAL NOTES:**
- E1 INSTALL AND CONNECT CABLING SIZED PER NEC, 3/4" C TO NEAREST 120V PANEL WITH AVAILABLE SPACE. PROVIDE A 1P-XA CIRCUIT BREAKER IN PANEL (SIZED PER NEC). INSTALL NEW BREAKERS FOR NEW IR SYSTEM, DEMO NON-USED EXTG IF NECESSARY. ALL ELECTRICAL CABLING SHALL BE IN CONDUIT.
  - E2 INSTALL AND CONNECT CABLING SIZED PER NEC, 3/4" C TO NEAREST 120V PANEL WITH AVAILABLE SPACE. PROVIDE A 1P-XA CIRCUIT BREAKER (SIZED PER NEC).
  - E3 REFER TO SHEETS M601 FOR ADDITIONAL REQUIREMENTS. VACUUM PUMPS AND INFRARED BURNERS SHALL BE CONTROLLED BY INFRARED MASTER CONTROL.
  - E4 INSTALL AND CONNECT CABLING SIZED PER NEC, 3/4" C TO IFMC.

- MECHANICAL NOTES:**
- M1 MOUNT SPACE TEMPERATURE SENSORS FOR EACH HEATING ZONE ON WALL 5'-0" AFF.
  - M2 MOUNT INFRARED MASTER CONTROLLER (IFMC) ON WALL 5'-0" AFF. WIRE ALL TEMPERATURE SENSORS, VACUUM PUMPS, AND BURNERS FOR EACH ZONE TO THE MASTER CONTROLLER. INFRARED SYSTEM SHALL OPERATE AS A STAND-ALONE SYSTEM WITH ALL REQUIRED PROGRAMMING AND CONTROLS. THE MASTER CONTROLLER SHALL BE CONNECTED TO THE EXISTING JOHNSON CONTROLS EMCS. ALL CONTROLS AND LOW VOLTAGE CABLING SHALL BE IN CONDUIT.
  - M3 INSTALL NEW GAS PIPING TO EACH INFRARED BURNER REGULATOR FROM BUILDING SERVICE AS INDICATED. GAS LOAD TO INFRARED HEATERS IS PER SCHEDULE AND ACTUAL HEATER SELECTIONS (ASSUME 40-PSI SUPPLY PRESSURE). PROVIDE GAS PRESSURE REGULATOR AT EACH HEATER AND AT EXTERIOR MAIN SUPPLY. SIZE REGULATORS AND GAS PIPING PER HEATER SELECTION LOAD MEETING CODE AND MFG REQUIREMENTS. REGULATOR PIPING SHALL INCLUDE 12" DIRT LEG, GAS VALVE, UNION AND VENTED INDIVIDUALLY PER CODE TO EXTERIOR WALL AND TURN DOWN. (VENT TO ROOF IS NOT ALLOWED).
  - M4 INSTALL HEATER EMERGENCY MANUAL SHUTOFF BUTTON SWITCH AT 5'-0" AFF TO DE-ENERGIZE ALL RADIANT HEATERS INCLUDING A CONTROLLED GAS ON/OFF VALVE. SWITCH SHALL BE CLEARLY LABELED AND SHALL NOT BE THE SAME COLOR AS THE FIRE ALARM/PROTECTION SYSTEM STATIONS. INCLUDE CLEAR PROTECTIVE COVER OVER BUTTON SWITCH. CONNECT TO THE INFRARED MASTER CONTROL PANEL TO DE-ENERGIZE ALL RADIANT HEATERS.
  - M5 SUSPEND VACUUM PUMP FROM ROOF TRUSSES WITH ALL THREAD RODS AND VIBRATION ISOLATORS. PROVIDE EXHAUST & INTAKE VENTS THRU WALL WITH THIMBLE AND EXHAUST CAP. SEAL ALL NEW PENETRATIONS WATER TIGHT. DO NOT INSTALL ANY PENETRATIONS THRU THE ROOF.
  - M6 FIELD VERIFY EXACT PIPING LENGTHS AND CONFIGURATION WITH EQUIPMENT MANUFACTURER AND COORDINATE WITH EXISTING CONDITIONS.
  - M7 MAINTAIN MINIMUM 10 FT SEPARATION BETWEEN FLUE OUTLET AND ALL OUTSIDE AIR INTAKES.
  - M8 MODIFY THE EXISTING SPRINKLER SYSTEM TO PROVIDE PROPER SPRINKLER COVERAGE FOR NEW WORK PER UFC 3-600-01 IN ADDITION TO NFPA 13 AND 24 AND OTHER APPLICABLE FEDERAL FIRE PROTECTION CODE REQUIREMENTS. ALL WORK ON THE FIRE PROTECTION SYSTEM INCLUDING SPRINKLER, ALARM, MASS NOTIFICATION SHALL BE PERFORMED BY A CERTIFIED LICENSED FIRE ALARM CONTRACTOR.
  - M9 RELOCATE EXISTING LIGHTS TO RECONFIGURE LIGHTING ONCE MECHANICAL EQUIPMENTS HAS BEEN REMOVED.

BUILDING 6215 - INFRARED HEATING PLAN

SCALE: NTS

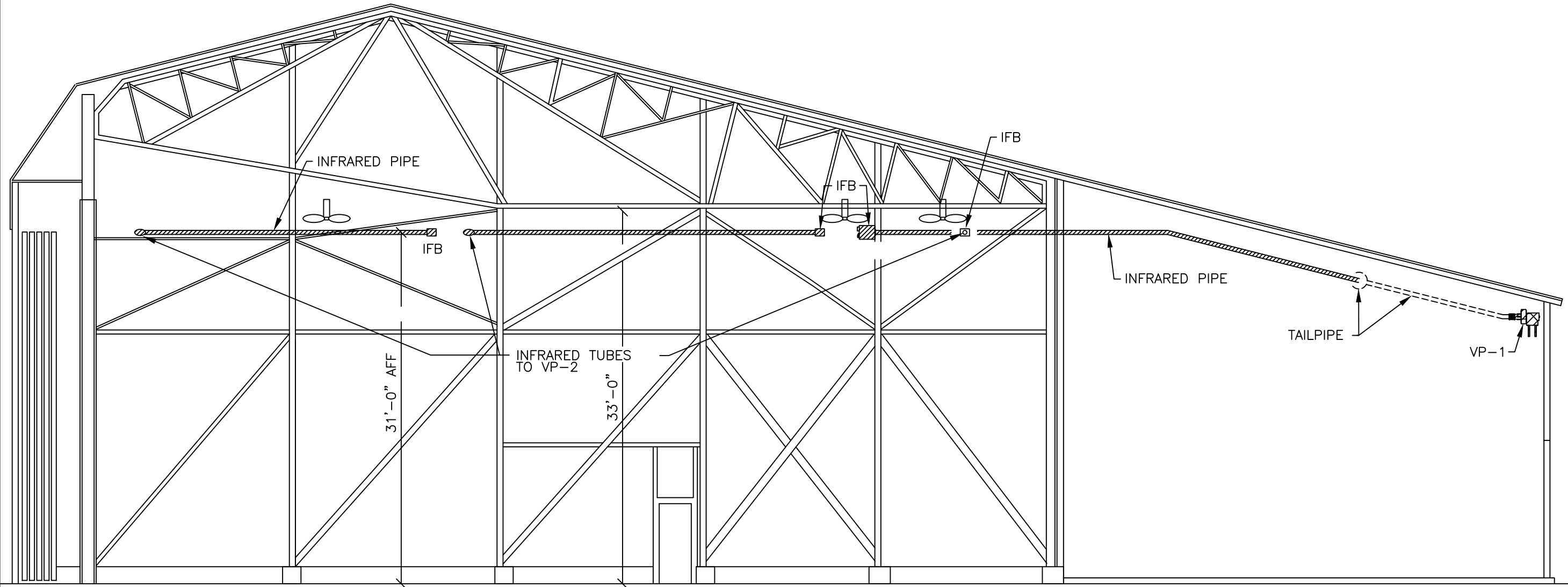
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5 SECTION - BUILDING 6215  
SCALE: NTS

NOTE:  
CONTRACTOR SHALL INSTALL INFRARED HEATING SYSTEMS  
IN STRICT COMPLIANCE WITH THE MANUFACTURER'S  
INSTALLATION INSTRUCTIONS, MAINTAINING ALL REQUIRED  
CLEARANCES AND IN COMPLIANCE WITH ALL APPLICABLE  
CODES. COORDINATE WITH EXISTING CONDITIONS.

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## INFRARED HEATER SCHEDULE

TAG	BASIS OF DESIGN MANUFACTURER	MODEL	INFRARED BURNERS					VACUUM EXHAUSTER						
			INPUT (MBH)	QTY	FUEL	GAS PRESSURE (IN W.C.)	VOLTS	TAG	MODEL	QTY	VOLTS	PHASE	HZ	HP
IFB-1-1	COMBUSTION RESEARCH	REFLECT-O-RAY	150	1	NAT. GAS	5 - 14	24	VP-1	0401-040	1	120	1	60	1/2
IFB-1-2	COMBUSTION RESEARCH	REFLECT-O-RAY	150	1	NAT. GAS	5 - 14	24							
IFB-2-1	COMBUSTION RESEARCH	REFLECT-O-RAY	175	1	NAT. GAS	5 - 14	24	VP-2	0402.060SS	1	120	1	60	1
IFB-2-2	COMBUSTION RESEARCH	REFLECT-O-RAY	175	1	NAT. GAS	5 - 14	24							
IFB-2-3	COMBUSTION RESEARCH	REFLECT-O-RAY	175	1	NAT. GAS	5 - 14	24							
IFB-3-1	COMBUSTION RESEARCH	REFLECT-O-RAY	175	1	NAT. GAS	5 - 14	24	VP-3	0402.060SS	1	120	1	60	1
IFB-3-2	COMBUSTION RESEARCH	REFLECT-O-RAY	175	1	NAT. GAS	5 - 14	24							
IFB-3-3	COMBUSTION RESEARCH	REFLECT-O-RAY	175	1	NAT. GAS	5 - 14	24							

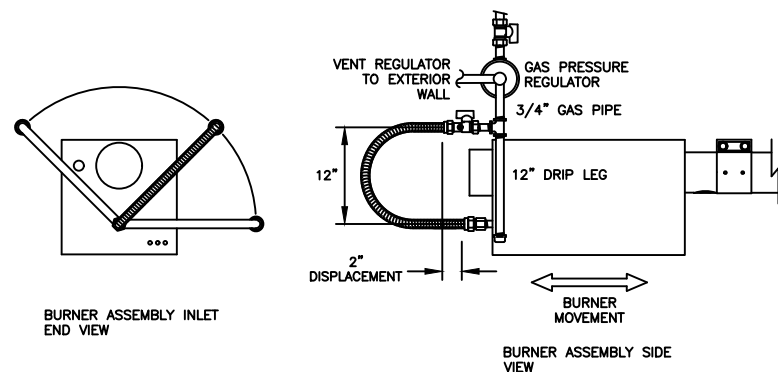
THE MECHANICAL CONTRACTOR SHALL COORDINATE THE EXACT VOLTAGE & PHASE OF EACH AND EVERY EQUIPMENT ITEM WITH THE ELECTRICAL CONTRACTOR, PRIOR TO ORDER.

**NOTES:**

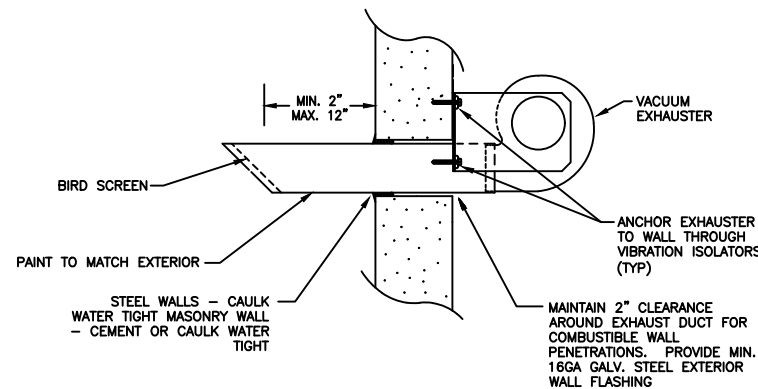
1. PROVIDE 24VAC TRANSFORMER AT EACH INFRARED BURNER. COORDINATE EXACT REQUIREMENTS WITH THE EQUIPMENT MANUFACTURER.
2. PROVIDE BALANCING DAMPER IN EACH BURNER EXHAUST TUBE.
3. PROVIDE STARTUP & BALANCING BY EQUIPMENT MFG.
4. PROVIDE GAS REGULATOR AT EACH HEATER VENTED TO EXTERIOR WALL MEETING CODE REQUIREMENTS.

### PIPE AND FITTING MATERIAL SCHEDULE

SERVICE	PIPE MATERIAL	JOINT TYPE	FITTING MATERIAL	REMARKS
GAS PIPING	SCHEDULE 40 BLACK STEEL, ASTM A-53	SCREWED THRU 3/4" SIZE, WELDED FOR 1" AND LARGER AND ALL PIPING 1 PSI AND HIGHER.	MALLEABLE SCREWED TYPE BUTT WELDED STEEL WHERE REQUIRED	SEE SPECIFICATIONS FOR PAINTING. FOR EXTERIOR MATCH COLOR OF ADJACENT WALL. INTERIOR PIPING SHALL BE SAFETY YELLOW.



**(A) DETAIL – BURNER HEAD** NO SCALE



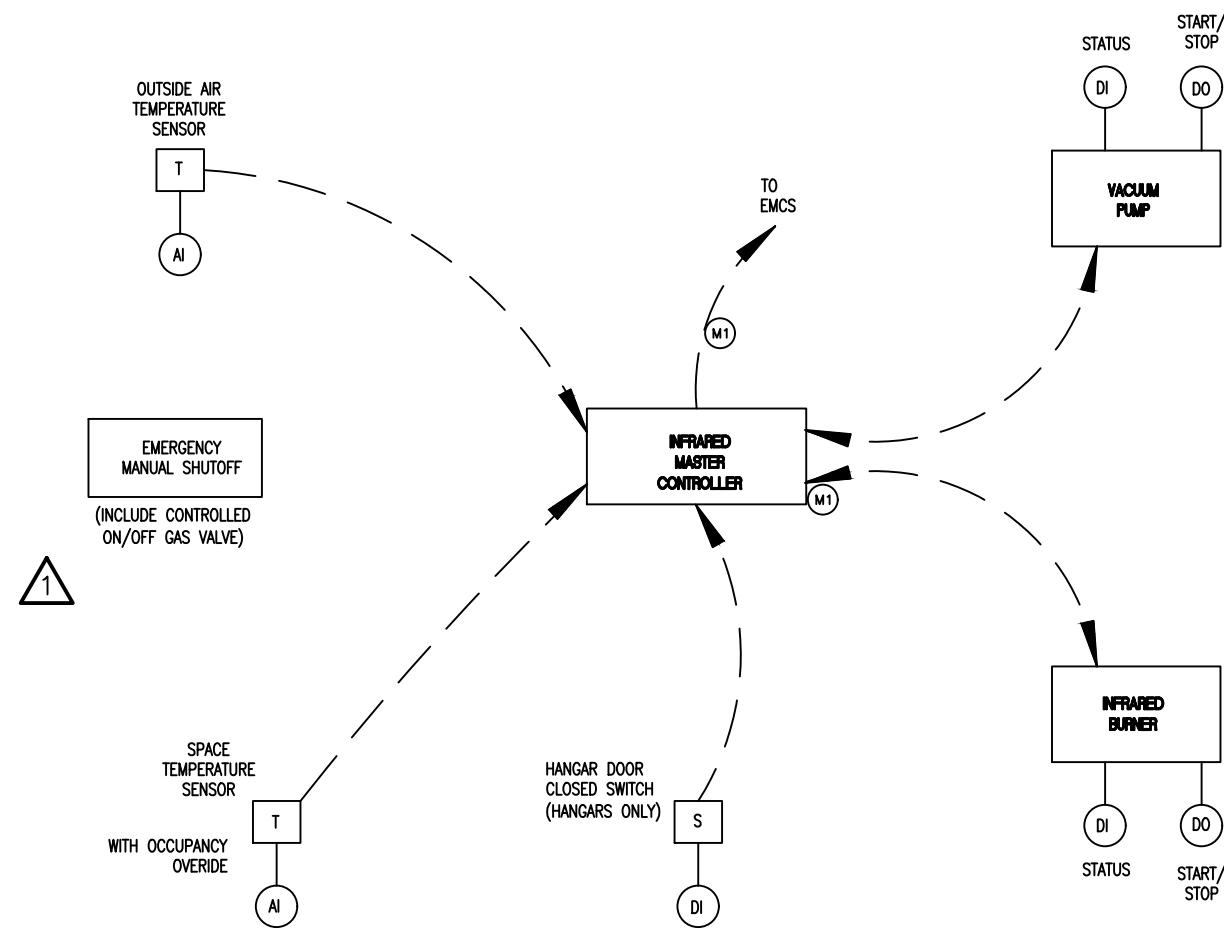
**(B) DETAIL – VACUUM EXHAUSTER WALL MOUNT** NO SCALE  
(FIELD VERIFY WALL CONSTRUCTION)

REPAIR HEATING SYSTEM B6215  
BARKSDALE AIR FORCE BASE  
BARKSDALE AFB, LOUISIANA

NO.	DATE	REVISIONS
1	4/16/24	MISC ADDITIONS

OPP NO: 1142434  
BLDG NO: B6215  
DATE: 3/25/2024  
SCALE: AS SHOWN

SHEET  
**M501**  
OF 7



CONTROL DIAGRAM INFRARED HEATING SYSTEM  
NO SCALE

**GENERAL NOTE:**

1. INSTALLING CONTRACTOR SHALL ARRANGE FOR MANUFACTURER'S REPRESENTATIVE TO OVERSEE BALANCING AND START-UP OF INFRARED HEATING SYSTEMS AND CONTROLS.

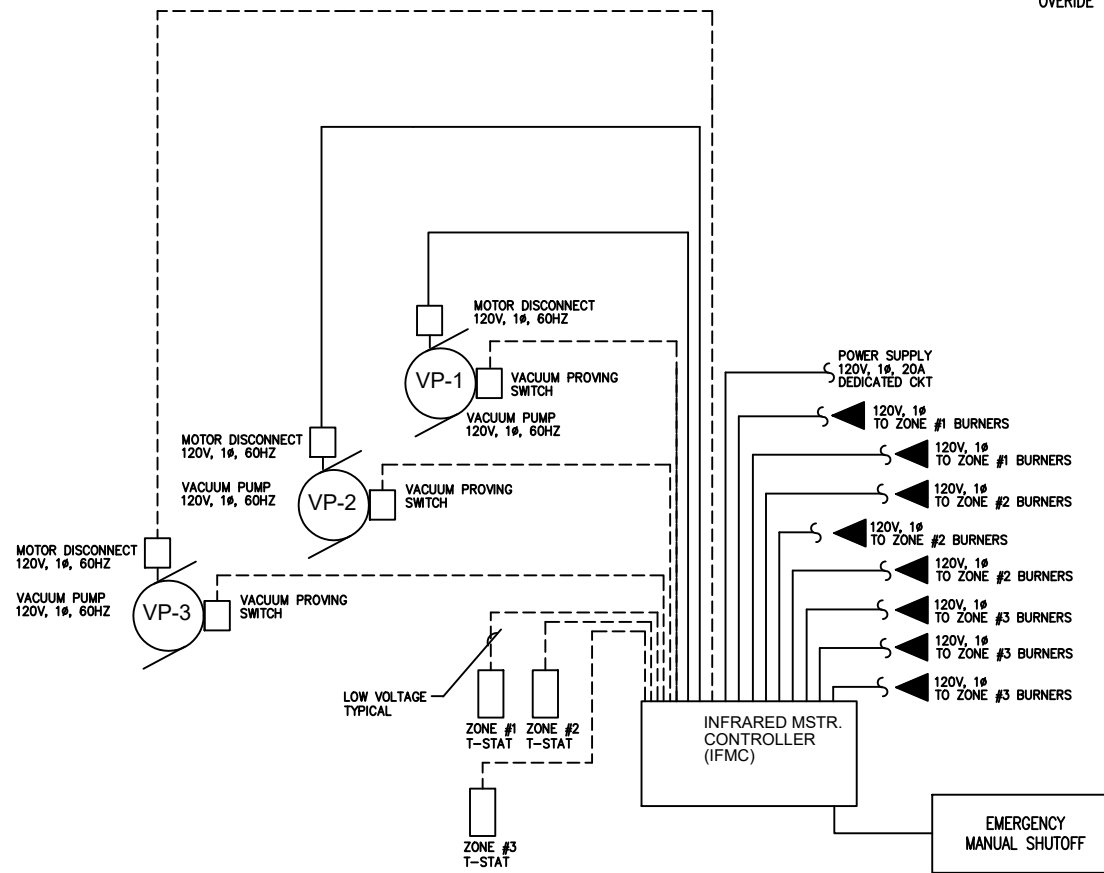
**MECHANICAL NOTES:**

- (M1) THE INFRARED MASTER CONTROLLER SHALL OPERATE AS A STAND-ALONE SYSTEM WITH ALL REQUIRED PROGRAMMING AND CONTROLS. THE INFRARED MASTER CONTROLLERS SHALL BE CONNECTED TO THE EXISTING JOHNSON CONTROLS EMCS INCLUDING GRAPHICS PER SPECIFICATIONS 230923.

**SEQUENCE OF CONTROLS:**

**INFRARED HEATING SYSTEMS:**

1. WHENEVER THE OUTSIDE AIR TEMPERATURE IS ABOVE 60°F, THE INFRARED HEATING SYSTEMS SHALL BE DISABLED.
2. WHENEVER THE OUTSIDE AIR TEMPERATURE IS 60°F OR LESS, THE INFRARED HEATING SYSTEMS SHALL BE ENABLED.
3. DURING OCCUPIED HOURS THE SPACE HEATING TEMPERATURE SET POINT SHALL BE 60°F. OCCUPIED HOURS SHALL BE 7:00 A.M. TO 5:00 P.M., MONDAY TO FRIDAY.
4. DURING UNOCCUPIED HOURS THE SPACE HEATING TEMPERATURE SET POINT SHALL BE SET BACK TO 45°F IN THE HANGARS.
5. THE DOORS OF THE HANGAR SHALL EACH BE INTERLOCKED WITH THE RESPECTIVE INFRARED HEATER(S). WHEN THE HANGAR DOORS ARE OPEN AND THE OUTSIDE AIR TEMPERATURE IS ABOVE 40°F, THEN THE INFRARED HEATERS IN THE HANGAR BAY SHALL BE AUTOMATICALLY DISABLED. IF THE OUTSIDE AIR TEMPERATURE IS 40°F OR BELOW, THEN THE INFRARED HEATERS SHALL OPERATE INDEPENDENT OF THE RESPECTIVE HANGAR DOOR POSITION AND SHALL NOT BE AUTOMATICALLY DISABLED WHEN THE RESPECTIVE HANGAR DOORS ARE OPEN.
6. EACH INFRARED HEATING ZONE SHALL BE ABLE TO OPERATE INDEPENDENTLY OF THE OTHER ZONES. SEE ELECTRICAL SHEETS FOR THE WIRING DIAGRAM FOR THE MULTIBURNER AND VACUUM PUMP INFRARED SYSTEMS
7. WHEN THE INFRARED HEATING SYSTEM IS ENABLED, AND THE SPACE TEMPERATURE SENSORS ARE CALLING FOR HEAT, THE INFRARED CONTROLLERS SHALL START THE INFRARED HEATING SYSTEM.
  - A. A SIGNAL SHALL BE SENT TO START THE ZONE VACUUM PUMPS.
  - B. WHEN THE VACUUM PUMP MOTOR ACHIEVES NORMAL RUNNING RPM, AND THE PRESSURE SWITCH AT THE PUMP INLET CLOSES, THE VACUUM PUMP SHALL RUN THROUGH A PRE-PURGE CYCLE OF THE HEATER TUBING
  - C. WHEN THE PRE-PURGE IS COMPLETE, THE ZONE RELAY FOR THE ZONE CALLING FOR HEAT IS ENERGIZED AND LINE VOLTAGE IS SENT TO THE BURNERS IN THAT ZONE.
  - D. WHEN THERE IS SUFFICIENT VACUUM AND POWER AT THE BURNER, THE PRESSURE SWITCH IN THE BURNER CLOSES AND THE IGNITION MODULE IS ENERGIZED.
  - E. WHEN THE SECOND PRE-PURGE OF APPROXIMATELY 45 SECONDS IS COMPLETE, THE IGNITION MODULE OPENS THE GAS VALVE AND ENERGIZES THE ELECTRODE. WHEN THE FLAME IS ESTABLISHED THE SPARKING SEQUENCE ENDS.
  - F. IF THE FLAME IS NOT ESTABLISHED DURING THE IGNITION SEQUENCE, THE IGNITION MODULE CLOSES THE GAS VALVE, AND A PURGE BEGINS. THE IGNITION MODULE SHALL TRY TWO MORE TIMES TO ESTABLISH A FLAME, AND AFTER THAT THE BURNER WILL LOCK OUT.
  - G. IF A FLAME IS DETECTED, THE GAS VALVE SHALL REMAIN OPEN, AND THE VACUUM PUMP SHALL RUN.



© CONTROL PANEL SCHEMATIC -  
(3) PUMP (3) ZONE

SEE SHEET ME140 - B6215

NO SCALE

SYSTEM COMPONENT	SYSTEM INPUTS		SYSTEM OUTPUTS		ALARMS
	ANALOG (AI)	DIGITAL (DI)	ANALOG (AO)	DIGITAL (DO)	
	TEMPERATURE	STATUS	SPEED	SPEED	
1. VACUUM PUMP MOTOR:					
START/STOP		X			
STATUS		X			X
2. INFRARED BURNERS:					
START/STOP				X	
STATUS		X			X
3. OUTSIDE AIR TEMPERATURE:	X				
4. SPACE TEMPERATURE:	X				
5. HANGAR DOOR INTERLOCKS:		X			

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11. CONTROLS SHALL INCLUDE OCCUPANCY OVERRIDE SWITCH IN CASE OCCUPANT NEEDS TO OVERRIDE UNOCCUPIED STATUS.

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