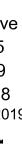
MECHANICAL AND ELECTRICAL ENGINEER



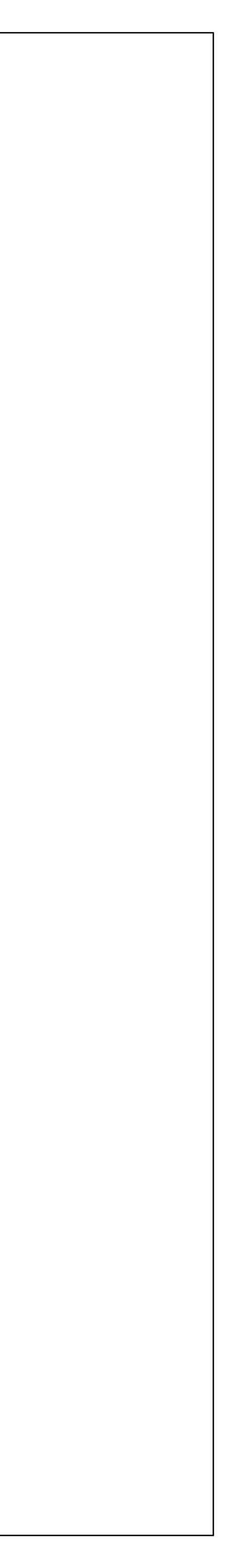
**Mechanical and Electrical Engineering** Energy Consulting Sustainable Design

# FITZSIMONS BUILDING HEATING UPGRADE PROJECT B PROJECT 21 - 174018

## FOR CONSTRUCTION SET **DECEMBER 16, 2022**

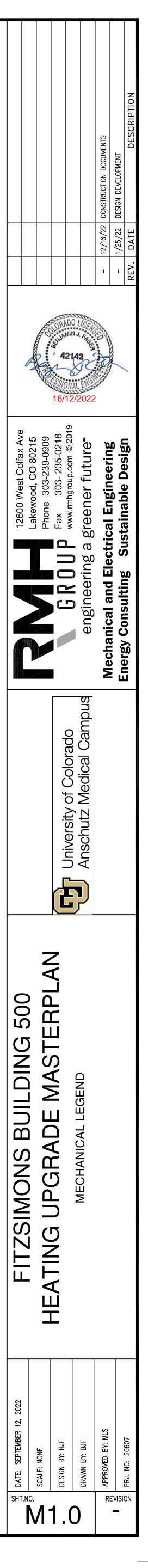


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					M	ECHANICA	L LEGEND (NOTE: NOT ALL SY	MBOLS SHO	WN ARE USED ON TH	ESE DRAWINGS)				APPLICABLE CODES
ABBR.	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	ABBR.	SYMBOL	DESCRIPTION	ABBR.	SYMBOL	DESCRIPTION	ABBR.	SYMBOL	DESCRIPTION	AHJ: UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CENTER
	— F	PLUMBING –	– C(	ONTROLS –		_	PIPING –		_	PIPING –			– HVAC –	FIRE AUTHORITY:     AURORA FIRE       REMODEL     X   NEW
			70NF#								SA	$\mathbf{X}$	POSITIVE PRESSURE DUCT UP	YEAR CODE 2018 INTERNATIONAL BUILDING CODE
RD	Ø	ROOF DRAIN	T <sup>ZONE#</sup>	THERMOSTAT WITH ZONE CALLOUT		c	PIPE DOWN		©	GAS METER		<b></b>		2018 INTERNATIONAL MECHANICAL CODE
OD	Ō	OVERFLOW DRAIN	(HS)ZONE#	HUMIDITY SENSOR WITH ZONE CALLOUT		o	PIPE UP		—— <u>M</u> ——	WATER METER	SA		POSITIVE PRESSURE DUCT DOWN	2018         INTERNATIONAL         PLUMBING         CODE           2018         INTERNATIONAL         ENERGY         CONSERVATION         CODE
AD		AREA DRAIN	TS <sup>ZONE#</sup>	TEMP SENSOR WITH ZONE CALLOUT		o	TEE OUTLET UP			2-WAY CONTROL VALVE	EA/RA		NEGATIVE PRESSURE DUCT UP	2018     INTERNATIONAL FIRE CODE       2020     NATIONAL ELECTRICAL CODE
		DOWNSPOUT NOZZLE	$\bigcirc$	CARBON MONOXIDE DETECTOR			TEE OUTLET DOWN		<u>₩</u>	3-WAY CONTROL VALVE	EA/RA		NEGATIVE PRESSURE DUCT DOWN	
FS		FLOOR SINK		CARBON DIOXIDE SENSOR	HWS	——HWS——	HEATING HOT WATER SUPPLY		O	2-WAY CONTROL BALL VALVE	OA	$\square$	OUTSIDE AIR INTAKE DUCT UP	
FD	0	FLOOR DRAIN	DSXXX	DUCT STATIC PICKUP WITH AHU CALLOUT	HWR	——HWR——	HEATING HOT WATER RETURN			BALANCE VALVE	OA		OUTSIDE AIR INTAKE DUCT DOWN	
FCO	Φ	FLOOR CLEANOUT	(BP)XXX	BUILDING PRESSURE PICKUP WITH AHU CALLOUT	CWS	CWS	CHILLED WATER SUPPLY		ť&	FLOW MEASURING STATION		$\mathbf{S}$	ROUND DUCT UP	IS THE BUILDING X YES IS THE BUILDING X YES FULLY SPRINKLERED? NO FULLY DETECTED? NO
GCO	Ø	GRADE CLEANOUT	$\square \bigcirc$	DIGITAL INPUT, ANALOG INPUT	CWR	CWR	CHILLED WATER RETURN			BALL VALVE		$\bigcirc$	ROUND DUCT DOWN	- ABBREVIATIONS -
wco	et,	WALL CLEANOUT	$\bigcirc$ $\land$	DIGITAL OUTPUT, ANALOG OUTPUT	PCWS	PCWS	PROCESS CHILLED WATER SUPPLY		<u>/x/</u>	BUTTERFLY VALVE		上	CONICAL FITTING WITH DAMPER	AAPAREA ALARM PANELLWTLEAVING WATER TEMPERATUREAFFABOVE FINISHED FLOORMAMIXED AIR
	<del></del>	HORIZONTAL CLEANOUT	$\sim$	BI-DIRECTIONAL NETWORK CONNECTION	PCWR	PCWR	PROCESS CHILLED WATER RETURN		N	CHECK VALVE		一	ECCENTRIC FITTING WITH DAMPER	BDDBACK DRAFT DAMPERMAPMASTER ALARM PANELBFFBELOW FINISH FLOORMGOMEDICAL GAS OUTLET
HB	-++	HOSE BIBB		FLOW ARROW	CTS	CTS	COOLING TOWER SUPPLY		X	GATE VALVE		Ц Ц	CONICAL FITTING WITHOUT DAMPER	CLCENTERLINEMOPMETHOD OF PROCEDURECOCLEAN OUT(N)NEW
SA	n l	SHOCK ABSORBER	FS	FLOW SWITCH	CTR	CTR	COOLING TOWER RETURN			GLOBE VALVE		/、 人	ECCENTRIC FITTING WITHOUT DAMPER	(E)     EXISTING     NC     NORMALLY CLOSED       EA     EXHAUST AIR     NO     NORMALLY OPEN
		THERMOSTATIC RECIRCULATION VALVE	7 ⊷_(ĩs)	DUCT TEMPERATURE SENSOR	LPS		LOW PRESSURE STEAM SUPPLY			PRESSURE REDUCING VALVE		上 比	ELBOW WITH TURNING VANES	EAT     ENTERING AIR TEMPERATURE     OA     OUTSIDE AIR       ELEV     ELEVATION     OTCS     OPEN TO CEILING SPACE       ESD     EXTERNAL STATIC DEESSURE     DA     DETURN AIR
RPBP			C	DUCT TEMPERATURE SENSOR	LPS		LOW PRESSURE STEAM SUPPLY		t			Ľ	ELBOW WITHOUT TURNING VANES	ESPEXTERNAL STATIC PRESSURERARETURN AIREWTENTERING WATER TEMPERATURESASUPPLY AIRFFEFINISHED FLOOR ELEVATIONTSPTOTAL STATIC PRESSURE
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER	(7) (7) (7)							PRESSURE RELIEF VALVE		L L	LONG RADIUS ELBOW	IFEFINISHED FLOOR ELEVATIONTSPTOTAL STATIC PRESSUREIEINVERT ELEVATIONVTRVENT THROUGH ROOFLATLEAVING AIR TEMPERATUREZVBZONE VALVE BOX
DCVA	[DCVA]	DOUBLE CHECK VALVE ASSEMBLY		WELL MOUNTED TEMPERATURE SENSOR	MPS		MEDIUM PRESSURE STEAM SUPPLY			HOSE END DRAIN VALVE			SHORT RADIUS ELBOW	- GRAPHIC SYMBOLS -
			(MD) • <i>/ ///</i>	MOTORIZED CONTROL DAMPER	MPR	MPR	MEDIUM PRESSURE RETURN			STRAINER		M M	SUPPLY DIFFUSER	KEY NOTE
	LABORATORY	/MEDICAL SERVICES -		TEMPERATURE LOW LIMIT THERMOSTAT	HPS		HIGH PRESSURE STEAM SUPPLY			STRAINER WITH BLOW DOWN VALVE			SUPPLY DIFFUSER ROUND NECK	REVISION NUMBER
02		OXYGEN PIPING	SD JL	DUCT SMOKE DETECTOR	HPR	HPR	HIGH PRESSURE RETURN		€	PLUG VALVE				TAG MECHANICAL EQUIPMENT TAG
VAC		VACUUM PIPING	ES	DAMPER\VALVE END SWITCH	CDS	CDS	CONDENSER WATER SUPPLY			GAS SHUTOFF VALVE			SUPPLY DIFFUSER SQUARE NECK	SHADING INDICATES MECHANICAL EQUIPMENT
N20		NITROUS OXIDE PIPING	DPS	DIFFERENTIAL PRESSURE SWITCH	CDR		CONDENSER WATER RETURN			SOLENOID VALVE			EXHAUST/RETURN GRILLE SQUARE NECK	HATCHING INDICATES ITEM(S) TO BE REMOVED
	N	NITROGEN PIPING	HPS	HIGH PRESSURE SWITCH	RL	RL	REFRIGERANT LIQUID	PRV	×	PRESSURE REGULATING VALVE			EXHAUST/RETURN GRILLE ROUND NECK	
MA	MA	MEDICAL AIR PIPING	PS	PRESSURE SWITCH MANUAL RESET	RS	RS	REFRIGERANT SUCTION			THERMOWELL		$\square$	RETURN AIR GRILLE	
		HYDROGEN PIPING		AQUASTAT	RHG	RHG	REFRIGERANT HOT GAS			THERMOMETER WITH THERMOWELL		$\bigcirc$	ROUND DIFFUSER	CONNECT TO EXISTING
NL	NL	LIQUID NITROGEN PIPING	Ъ MS	MOTOR STARTER	FOS	FOS	FUEL OIL SUPPLY			UNION			SLOT DIFFUSER	EXIST CONNECT TO EXISTING PIPE
			MS CR		FOR	——FOR ——	FUEL OIL RETURN		<u>_</u>	VENTURI		$\sim$	FLEXDUCT	TYPE7
	LA	LABORATORY COMPRESSED AIR PIPING		CONTROL RELAY	FOV	— — FOV — —	FUEL OIL VENT		P	AUTOMATIC AIR VENT		$\square$	DUCTWORK	CFM DIFFUSER, REGISTER, GRILLE CFM CALLOUT
SA	SA			VARIABLE FREQUENCY DRIVE	CA	CA	COMPRESSED AIR		Ť	MANUAL AIR VENT	MVD		MANUAL VOLUME DAMPER	TYPE7 <u>NECK</u> CFM WITH QUANTITY DIFFUSER, REGISTER, GRILLE CFM CALLOUT
WAGD	WAGD	WASTE ANESTHETIC GAS DISPOSAL	V B∠	VARIABLE FREQUENCY DRIVE	PC	PC	PUMPED CONDENSATE		<u>_</u>	VACUUM BREAKER		<b>—</b> ——	FIRE DAMPER 1–1/2 HOUR UNLESS NOTED OTHERWISE	TYPE7
C02	CO2	CARBON DIOXIDE	Bp	WITH BY-PASS	D	D	CONDENSATE OR EQUIPMENT DRAIN		μ	THERMOMETER		<b>D</b>	FIRE/SMOKE DAMPER 1–1/2 HOUR UNLESS NOTED OTHERWISE	ZONE BASEBOARD/FINTUBE RADIATION HEATING
	•	OXYGEN SERVICE OUTLET	M	ELECTRIC MOTOR	GHXS	GHXS	GEOTHERMAL HX SUPPLY		Ý	GAUGE		@	SMOKE DAMPER	LENGTH TYPE <sub>7</sub>
	T	VACCUM SERVICE OUTLET		TEMPERATURE CONTROLLER	GHXR	GHXR	GEOTHERMAL HX RETURN		Ý			MD	MOTORIZED DAMPER	VAV TERMINAL BOX CALLOUT
WAGD	Ŷ	WASTE ANESTHESIA GAS DISPOSAL OUTLET	LT	LEVEL TRANSMITTER	DCW		DOMESTIC COLD WATER		Ę	GAUGE WITH BALL VALVE		<b>—</b> ——	SECURITY BARRIER	LEVEL
	•	NITROUS OXIDE SERVICE OUTLET	PT	PRESSURE TRANSMITTER	DHW		DOMESTIC HOT WATER		 	DIFFERENTIAL PRESSURE GAUGE			ACCESS PANEL (SIZE)	M2.1 DETAIL NUMBER M2.1 SHEET NUMBER-WHERE DETAIL IS SHOWN
	P	NITROGEN SERVICE OUTLET	DPT	DIFFERENTIAL PRESSURE TRANSMITTER	DHWC		DOMESTIC HOT WATER RE-CIRCULATING		Ι	PRESSURE TEMPERATURE/TEST POINT		$\square$	PUMP	SECTION CUT
	<b>•</b>	NATURAL GAS SERVICE OUTLET	Г ГП	FLOW TRANSMITTER	DTW	ī	DOMESTIC TEMPERED WATER		—— <u>×</u> ——	PIPE ANCHOR			DUCT BREAK	M2.2 SHEET NUMBER-WHERE SECTION IS SHOWN
	Ŷ	LABORATORY / MEDICAL AIR SERVICE OUTLET	EPT	ELECTRIC\PNEUMATIC TRANSDUCER	חום	Ŋ	DEIONIZED WATER			PIPE GUIDE				
										FLEX CONNECTION			– FIRE –	GENERAL NOTES
				CURRENT SWITCH/TRANSMITTER		— — V— —	DOMESTIC VENT PIPING		E	PIPE CAP	FL	FL	FIRE LINE	CONTRACTOR SHALL REFERENCE SPECIFICATIONS FOR CONSTRUCTION MATERIALS AND INSTALLATION REQUIREMENTS. SPECIFICATIONS ARE A PART OF THE CONSTRUCTION DOCUMENTS. SHOULD ANY CONFLICT ARISE
				ANNUNCIATOR	AV	— — AV — —	ACID VENT PIPING		s	PIPE BREAK		FVC	FIRE VALVE CABINET	BETWEEN THE DRAWINGS AND SPECIFICATIONS, SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR
			FACP	FIRE ALARM CONTROL PANEL	W	W	SUSPENDED WASTE		<b>&gt;</b>	FLOW ARROW		$\Upsilon$	FIRE DEPARTMENT CONNECTION	RESOLUTION. ALL PENETRATIONS THROUGH RATED CONSTRUCTION SHALL BE SEALED
			CAM	CONTROL ADDRESSABLE MODULE	W	W	BURIED WASTE		T	STEAM TRAP (INVERTED BUCKET TRAP)		•	FIRE SPRINKLER PENDENT HEAD	TO MAINTAIN THE REQUIRED RATING.
			MAM	MONITOR ADDRESSABLE MODULE	AW	AW	ACID WASTE		Τ <sub>Π</sub>	STEAM TRAP (THERMOSTATIC TRAP)		ο	FIRE SPRINKLER UPRIGHT HEAD	THESE DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED OFFSET, FITTING, ETC.
			ESR	EMERGENCY STOP RELAY	GW	GW	GREASE WASTE		Ţ ₽IJ	STEAM TRAP (FLOAT AND		Y	FIRE SPRINKLER SIDEWALL HEAD	ALL DUCTWORK DIMENSIONS SHOWN ARE INTERIOR CLEAR DIMENSIONS. ALLOWANCES FOR DUCT LINER OR INSULATION ARE NOT INCLUDED.
			LC	LEVEL CONTROLLER	OST	OST	OVERFLOW STORM DRAIN			THERMOSTATIC TRAP)		TS	TAMPER SWITCH	LOCATIONS AND INFORMATION FOR EXISTING MECHANICAL DEVICES AND EQUIPMENT SHOWN ON THESE PLANS ARE APPROXIMATE. THIS
			EPO	EMERGENCY POWER OFF	ST	ST	SUSPENDED STORM DRAIN						OS & Y GATE VALVE	INFORMATION IS DERIVED FROM FIELD OBSERVATIONS AND AVAILABLE RECORD DRAWINGS.
			AFS	AIR FLOW SWITCH	ST	ST	BURIED STORM DRAIN							
					G	G	NATURAL GAS							REV: 06/29/2020 COPYRIGHT, THE RMH GROUP, INC. 2022

Crec File Save





TAG	
HSP-301	
HSP-302	

ADD. ALT. —

### MISCELLANEOUS MECHANICAL EQUIPMENT

		•				
TAG	DESCRIPTION		ELECTRI	CAL	NOTES	
		POWER	AMPS	V	PH	
EXP-5E2	EXPANSION TANK, VERTICAL, BLADDER TYPE, REQUIRED MINIMUM ACCEPTANCE VOLUME - 64 GALS, REQUIRED MINIMUM TANK VOLUME - 140 GALS. AMTROL EXTROL MODEL 600L, ASME, 30" DIAMETER, 65" HIGH.	N/A	-	-	-	1
GF	GLYCOL FEEDER, SEE SPECIFICATION 23 25 00, WATER TREATMENT	-	-	120	1	PLUG-IN POWER, EXISTING
		NOTES:				
		1.	PRECHARG	GE TO 32	PSI	

	PUMP SCHEDULE														
	SERVICE TYPE GPM HEAD RPM PEId MOTOR CONTROL TYPE ELECTRICAL MANUFACTURER & MODEL NOTES														
			<b>.</b>	(FT)				HP V		PH					
EAST WING HEATING HORIZ. BASE MOUNTED 510 96.00 1,743 - VFD W/ BYPASS 20 460 3 ARMSTRONG 4									ARMSTRONG 4030 - 5x4x11.5-4P	1, 2					
	EAST WING HEATING HORIZ. BASE MOUNTED 510 96.00 1,743 - VFD W/ BYPASS							20	460	3	ARMSTRONG 4030 - 5x4x11.5-4P	1, 2			
	GENERAL NOTES:							NOTE	<u>S:</u>						
	A PEId = HYDRAULIC INSTITUTE F	PUMP EFFICIENCY INDEX F	OR CON	STANT L	OAD			1.	FLUI	D IS 30%	6 PROPYLENE GLYCOL @ 160°F				
	B PROVIDE SHAFT GROUNDING K	(IT						2.	PRO	VIDE WI	TH MFG'S SUCTION DIFFUSER				

				RAD		SCHEDI	JLE			
TAG TYPE CAPACITY WPD GPM ELEMENT ENCLOSURE MANUFACTURER &										
		BTUH/LF	FT				MODEL			
А	FINTUBE	1308	-	8.1	B, 4-1/2"x4-1/2"	EXISTING	STERLING VERSALINE C45	1, 4		
В	FINTUBE	2030	-	8.0	B, 4-1/2"x4-1/2"	EXISTING	STERLING VERSALINE C45	2, 4		
С	FINTUBE	814	-	5.1	B, 4-1/2"x4-1/2"	EXISTING	STERLING VERSALINE C45	3, 4		
GENER/	AL NOTES:				<u>NOTES:</u>					
Α.	HEATING CAPACIT	TIES BASED ON	180 °F EV	NT, 160 °F	1.	1. 2 STACKED ELEMENTS. 1" TUBES				
В.	CAPACITIES ARE /	AT SITE CONDI	TIONS.		2.	2. 3 STACKED ELEMENTS, 1" TUBES				
C.	CAPACITIES BASE	D ON WATER			3.	3. 1 STACKED ELEMENT, 3/4" TUBE				
					4.	SEE PLANS FO	R CABINET INFORMATION			

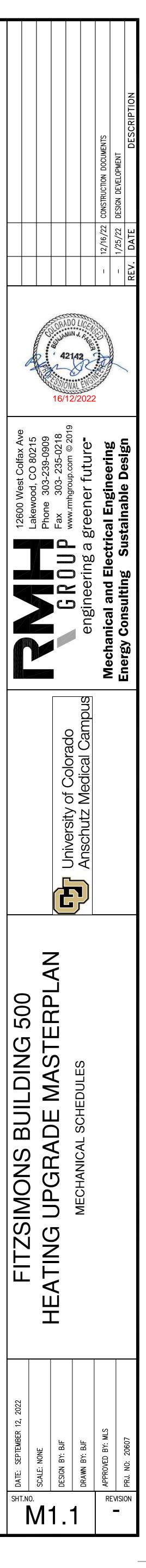
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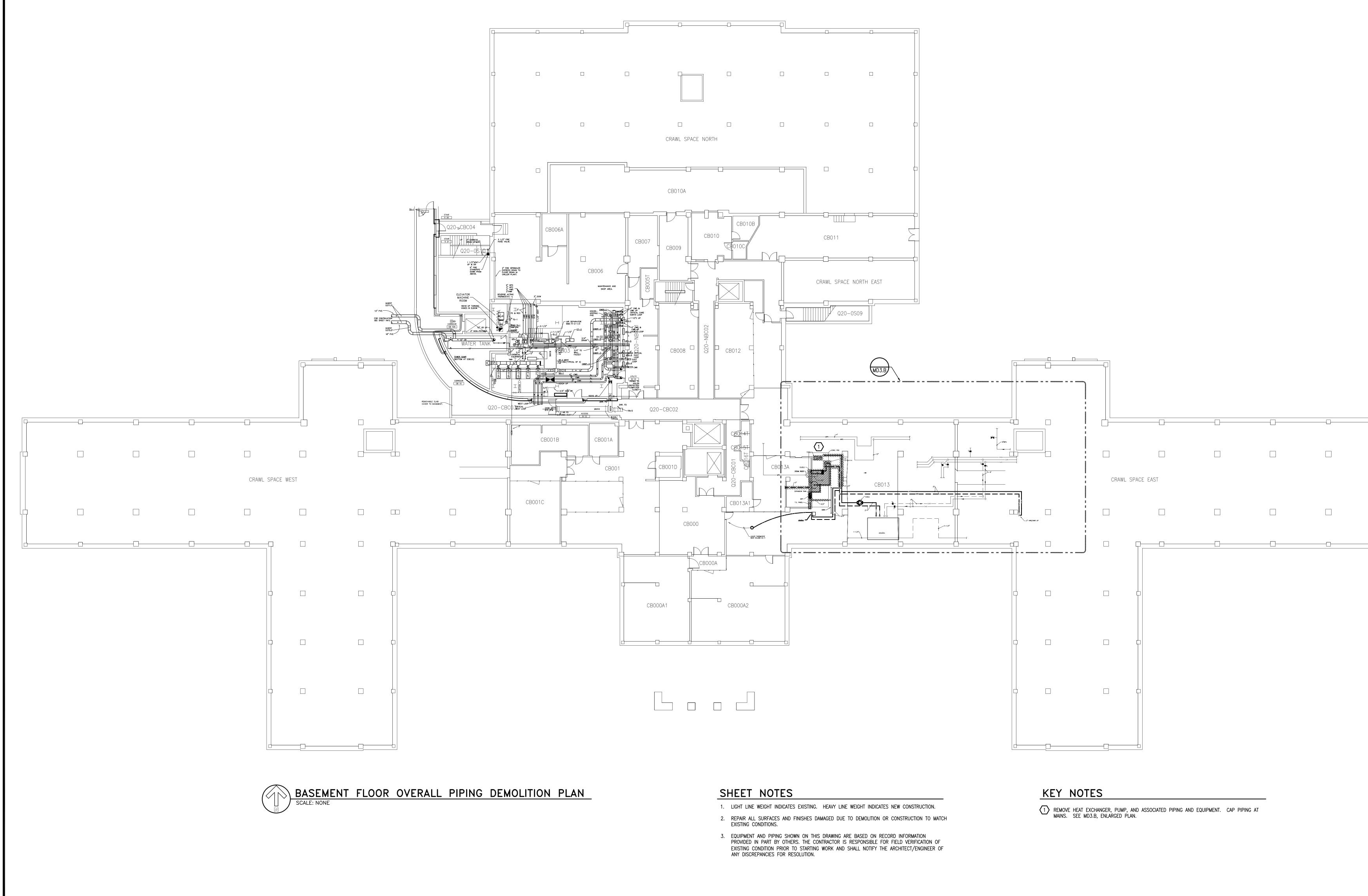
CABINET/UNIT HEATER SCHEDULE - HW													
TAG	TYPE	MBH	GPM	FT. HD.	CFM	RPM	V/PH	FLA		& MODEL	NOTES		
CUH-Q20-G-003	RECESSED WALL	51.3	5.2	3.10	625	-	115	0.9	15	STERLING RW SIZE 06	1, 2, 3, 4, 5, 6		
CUH-Q20-G-004	RECESSED WALL	35.3	3.6	1.20	635	-	115	0.9	15	STERLING RW SIZE 06	1, 2, 3, 4, 5		
ENERAL NOTES:	A. PERFORMANCE IS AT SITE ( B. HEATED FLUID IS 30% PROF			1 80°F EWI	<u>і                                    </u>			1. INTEC 2. EC M		RMOSTAT AND VALVE			
	C. EQUIPMENT WITH 208V NAM OPERATION AT 180 VOLTS C					-			ONTROL	T HIGH SPEED			

SEE DETAILS, SHEET M4.1 FOR PIPING INSTALLATIONS

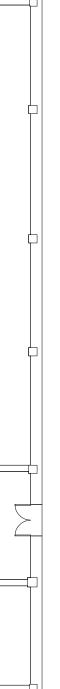
6. HIGH CAPACITY MODEL WITH 2-ROW COIL

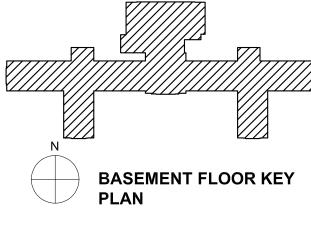
BB TAG	ROOM	EXIST	ING OPENING	GDIMS.	NEW CO	/er dims.		MANUFACTURER & MODEL	NOTES	
		W (IN.)	H (IN.)	D (IN.	W (L+3)	H (H+3)	QTY.			
BB-Q20-05E-001	E5304	32	22	8	39	23	1	RITTLING RECESSED, 16 GA.	1, 2	
BB-Q20-04E-001	E4306 (M)	40	22	8	43	26	1	RITTLING RECESSED, 16 GA.	1, 2	
BB-Q20-04E-002	E4307 (W)	44	22	8	51	26	1	RITTLING RECESSED, 16 GA.	1, 2	
BB-Q20-02E-001	E2304	46	22	10	51	26	1	RITTLING RECESSED, 16 GA.	1, 2	
BB-Q20-0GE-001	EG330A	28	22	7	31	23	2	RITTLING RECESSED, 16 GA.	1, 2	
BB-Q20-0GE-002	EG314	46	24	8	51	26	1	RITTLING RECESSED, 16 GA.	1, 2	
BB-Q20-0GE-003	E G STAIR GS02	59	41.5	11	-	-	-	-	1, 3	
BB-Q20-03E-001	E 3.5 STAIR 3S02	44	41.5	12	-	-	-	-	1, 3	
BB-Q20-05-002	E 5 STAIR 3S05	59	41.5	9.5	-	-	-	-	1, 3	
BB-Q20-0GE-004	SE G STAIR GS03	59	41.5	11	-	-	-	-	1, 3	
BB-Q20-03E-002	SE 3.5 STAIR 3S03	44	41.5	12	-	-	-	-	1, 3	
							2. VERIFY CO	IS APPROXIMATE, FIELD VERIFY VER REPLACEMENT AND COLOR W CABINET TO REMAIN	TH OWNER	

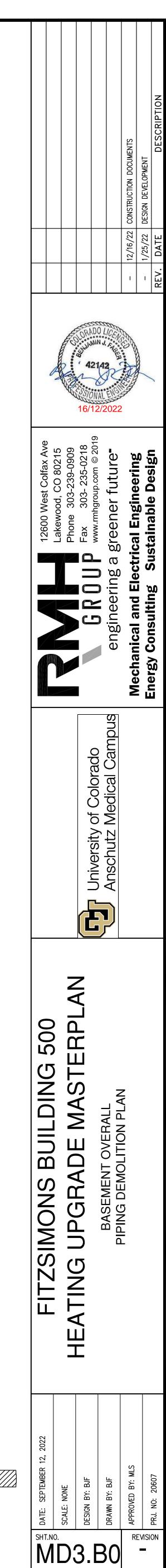


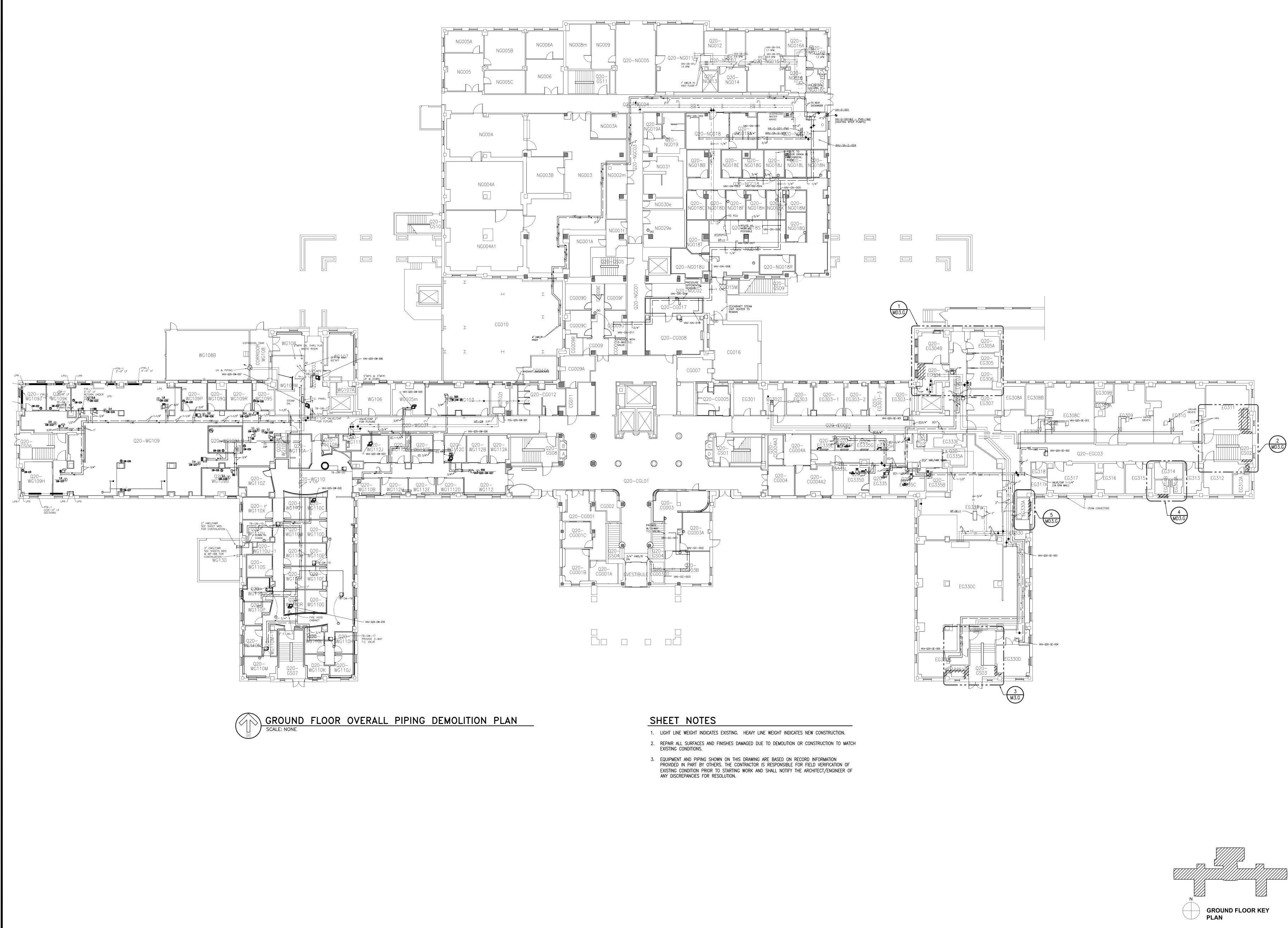


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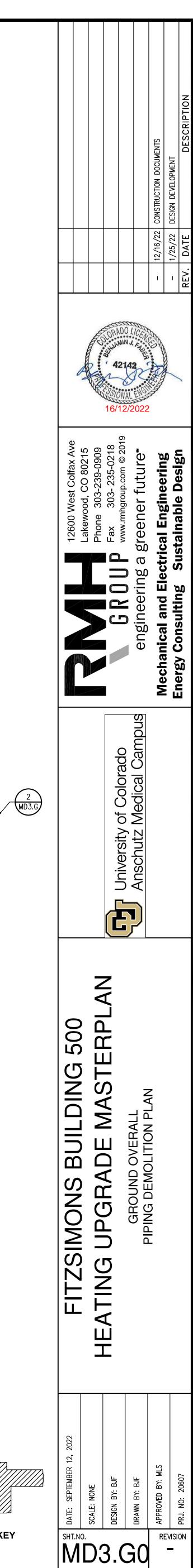


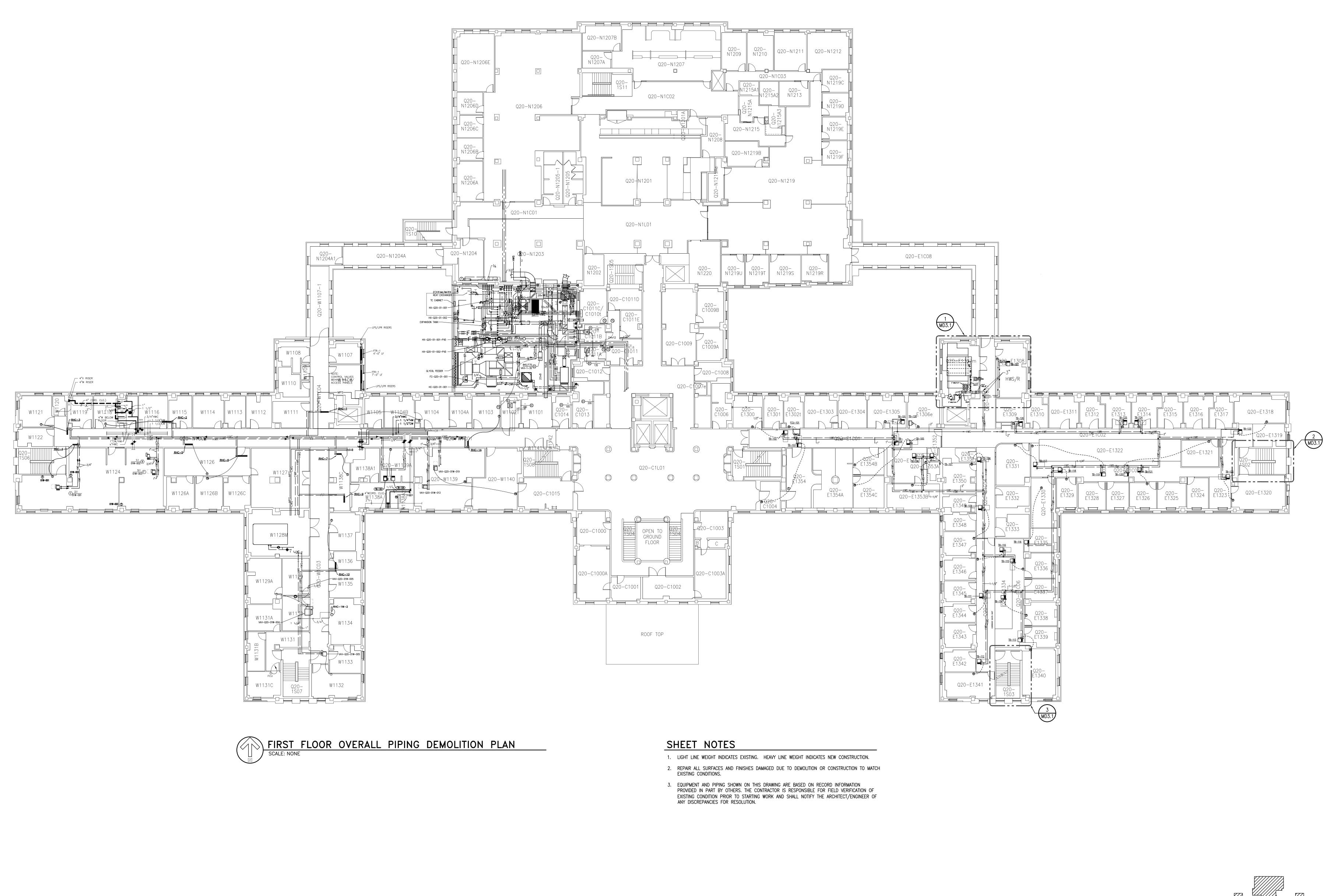




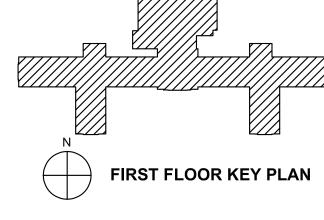


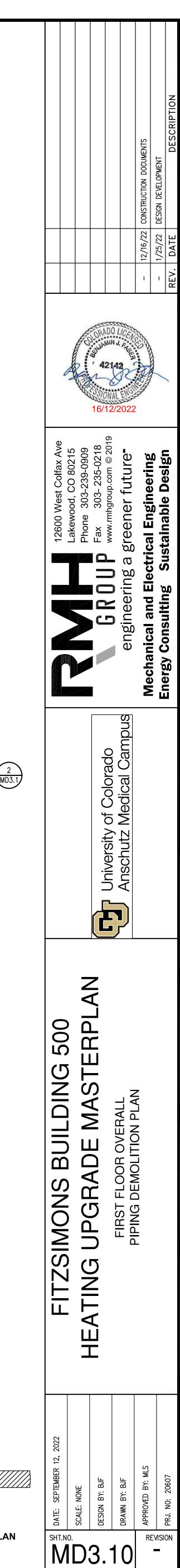
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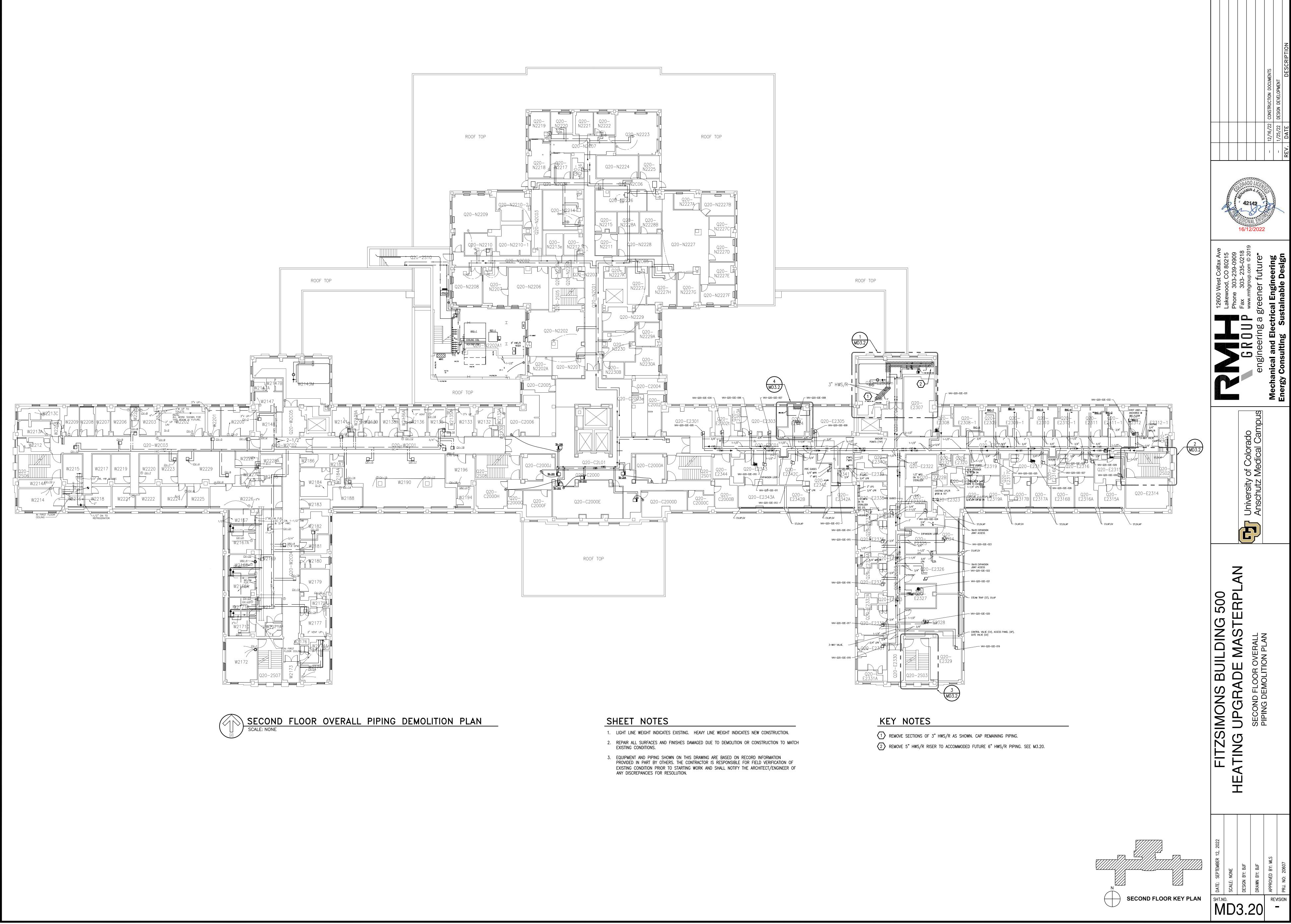




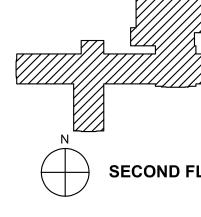
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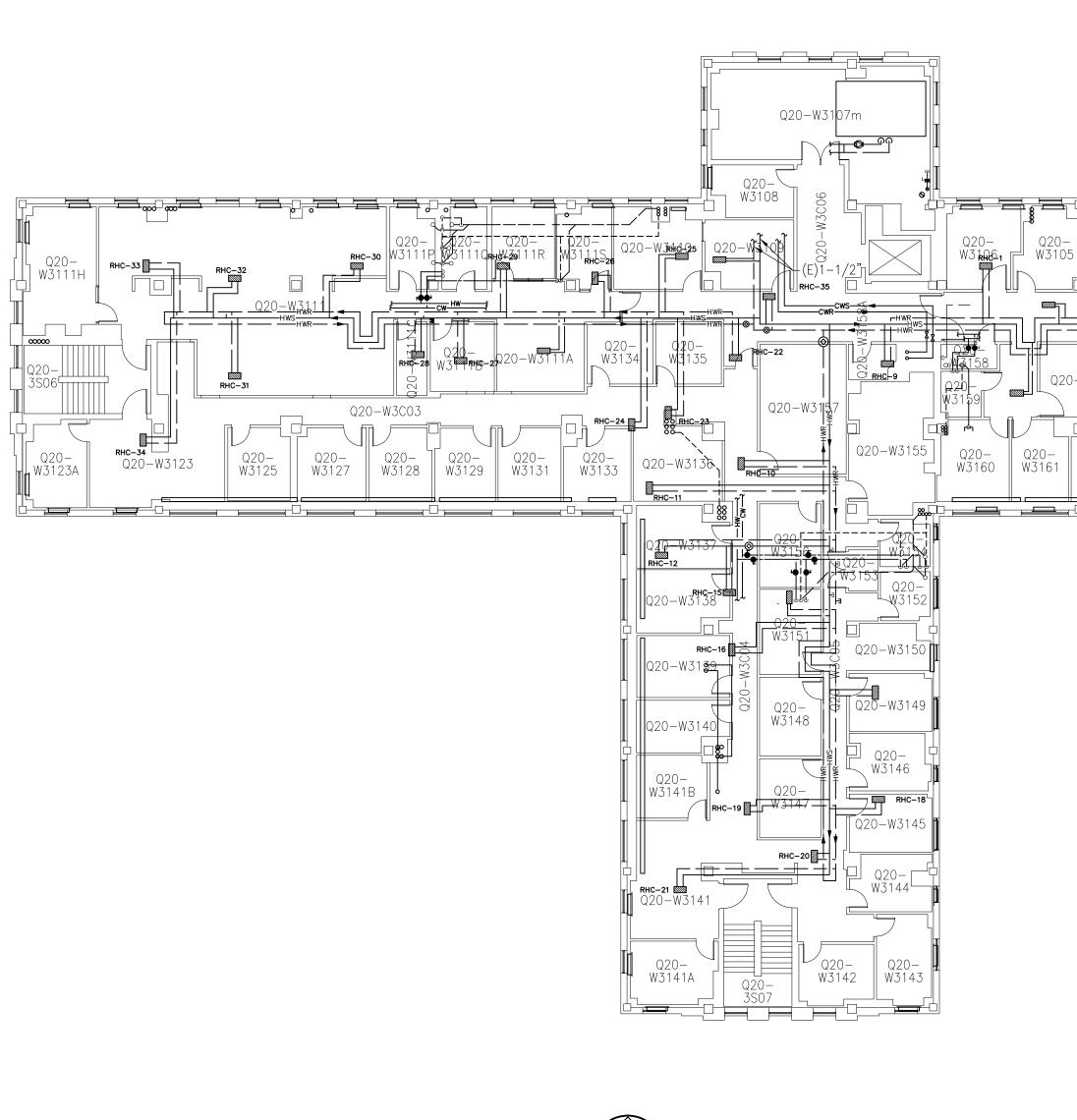




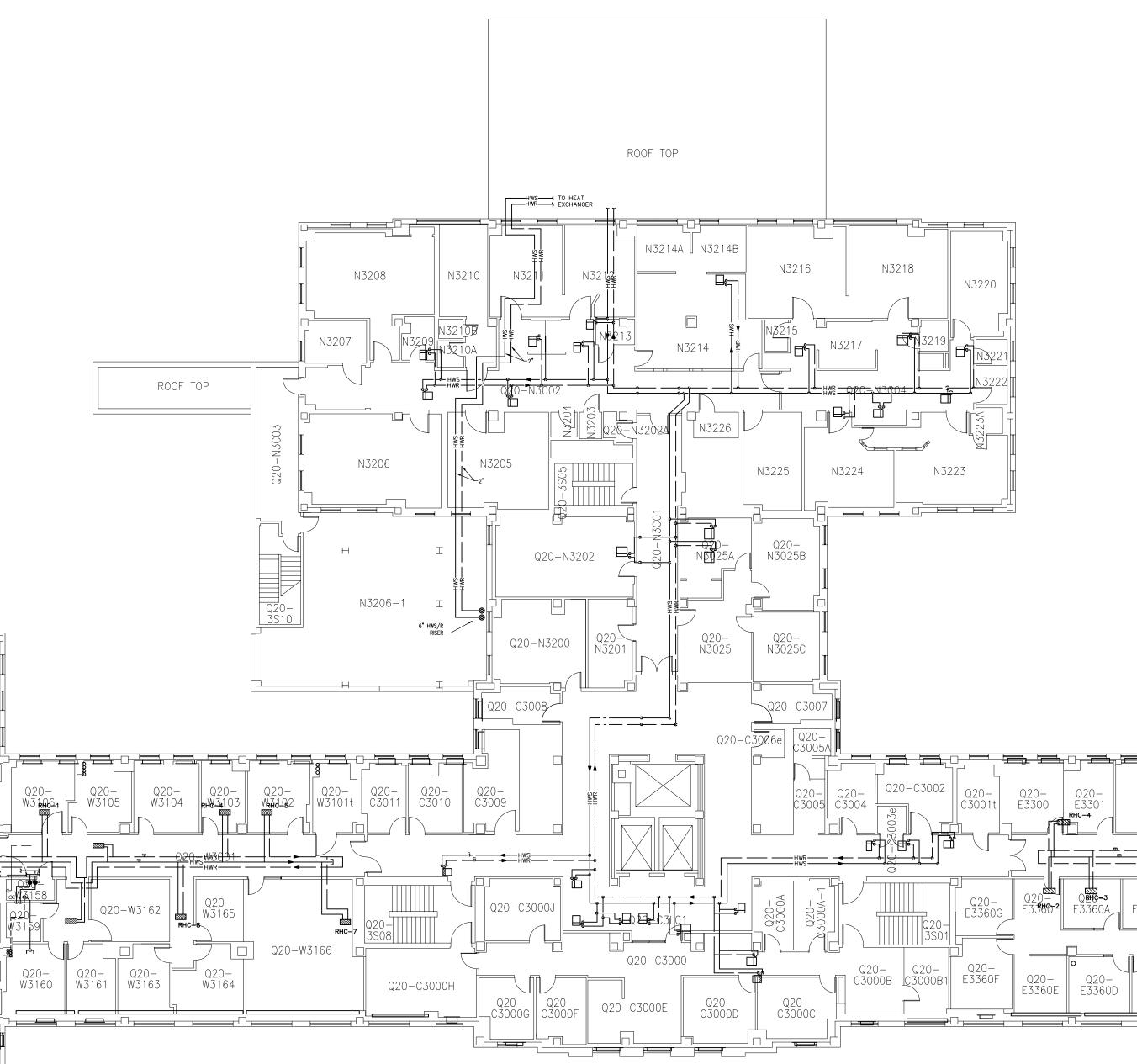


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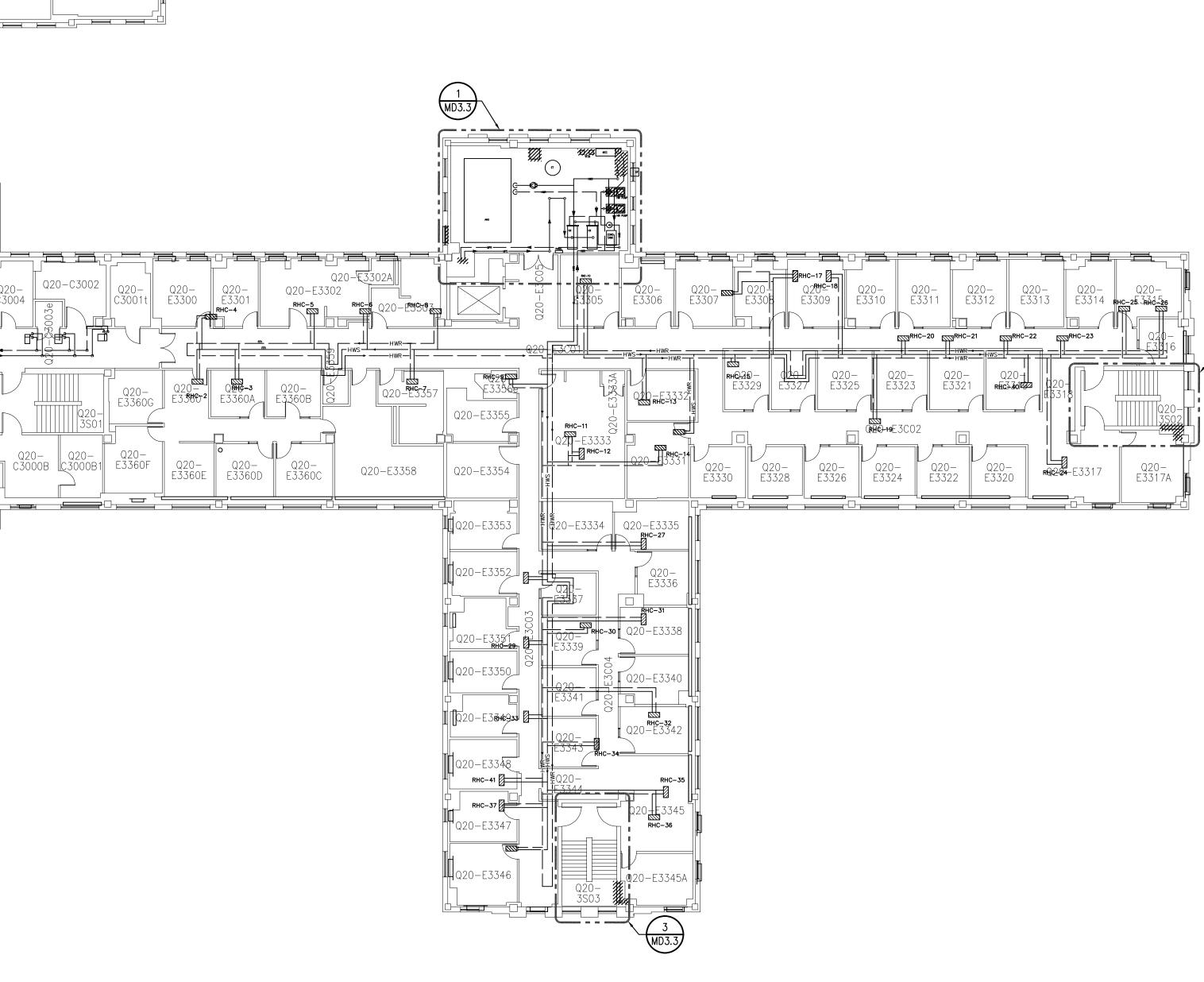
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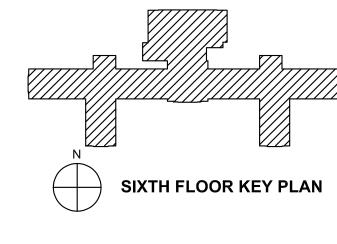


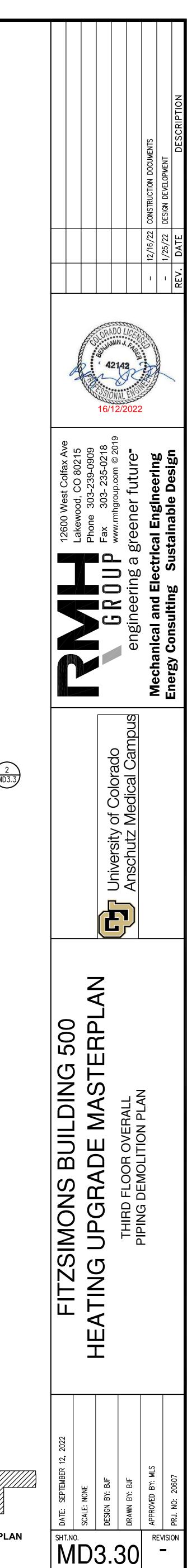
### THIRD FLOOR OVERALL PIPING DEMOLITION PLAN

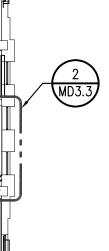
### SHEET NOTES

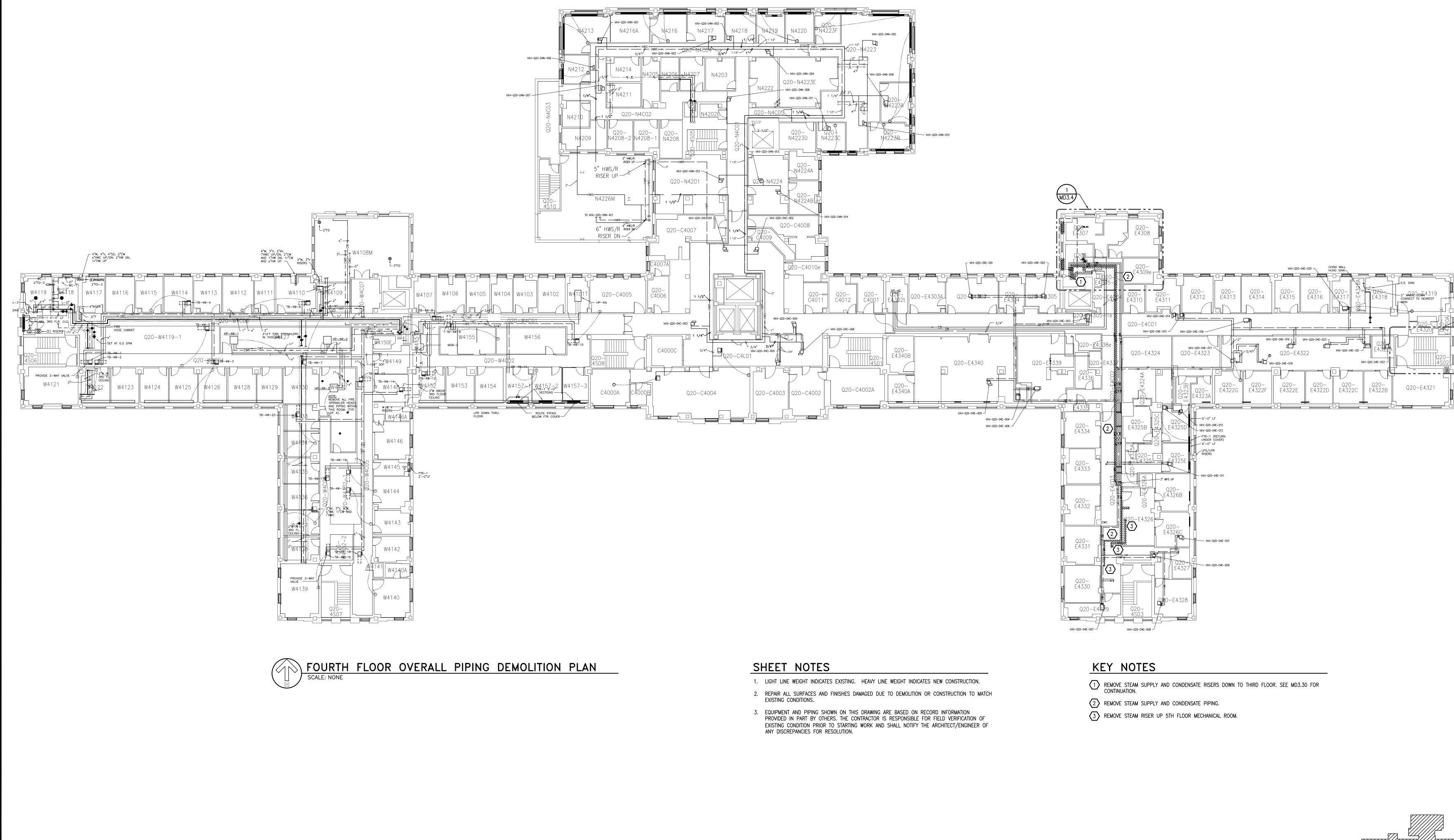
- 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
- 2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH EXISTING CONDITIONS.
- 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.



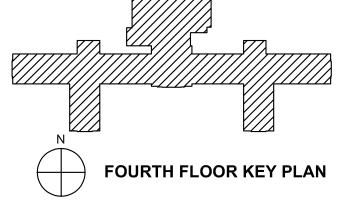


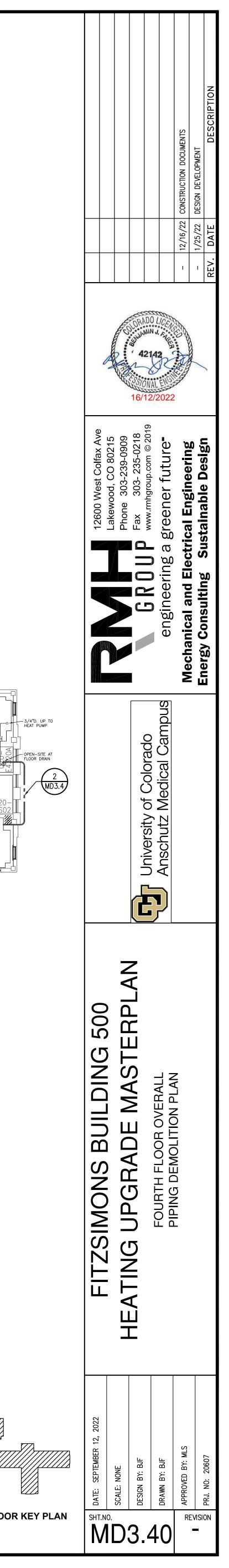


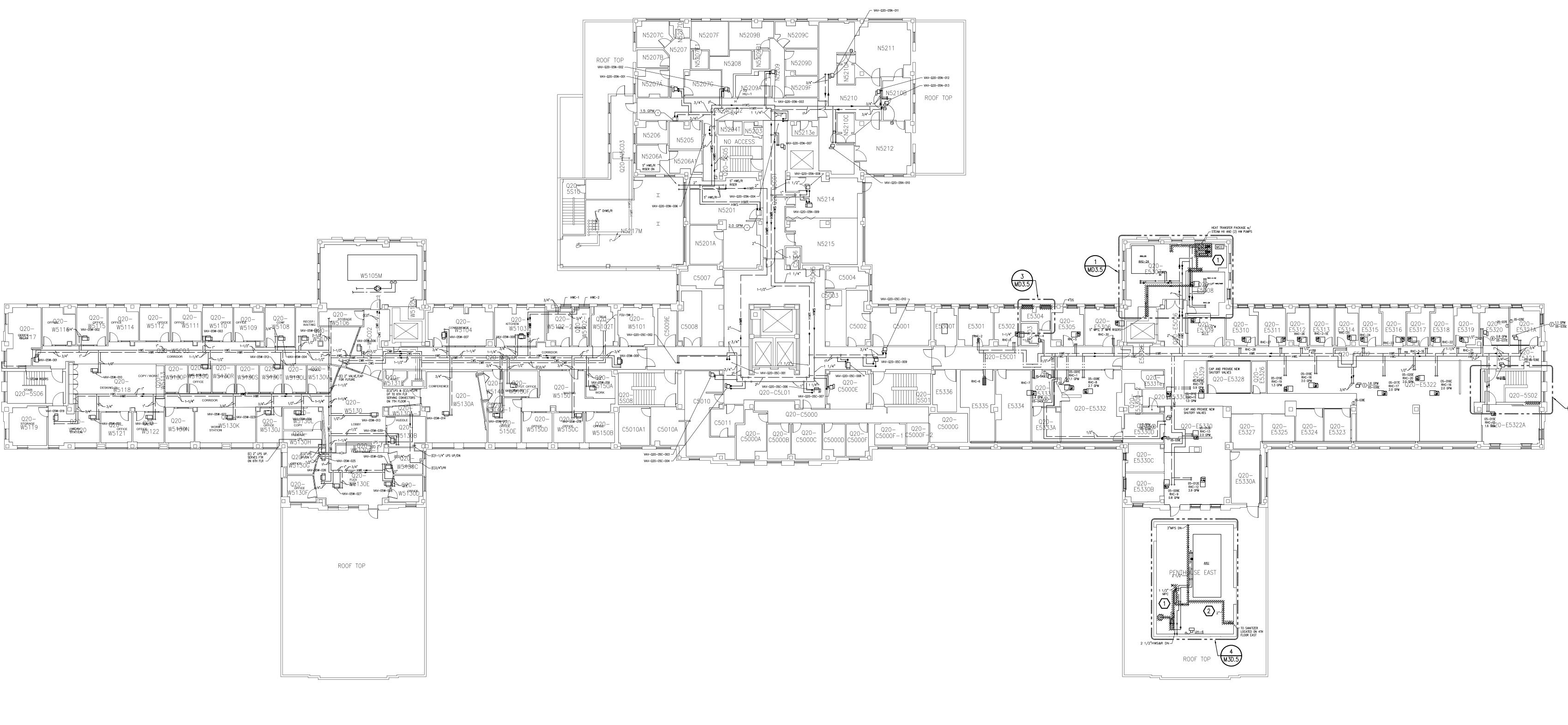




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FIFTH FLOOR OVERALL PIPING DEMOLITION PLAN SCALE: NONE

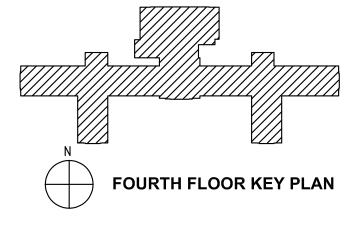
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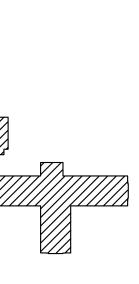
### SHEET NOTES

- 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
- 2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH EXISTING CONDITIONS.
- 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.

### KEY NOTES

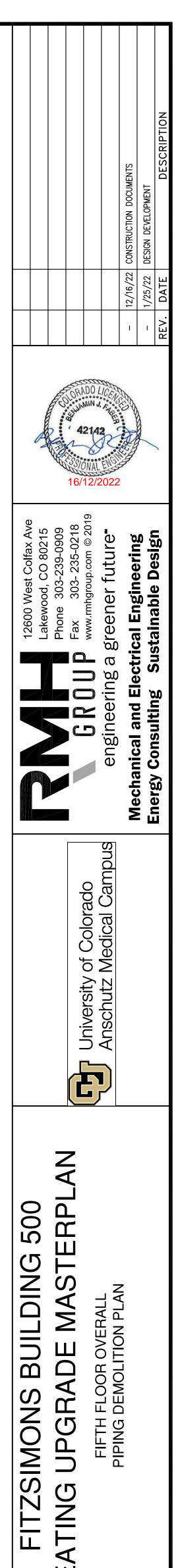
- 1 REMOVE HEAT EXCHANGER, PUMPS AND ASSOCIATED STEAM PIPING. CAP STEAM PIPING AT MAINS. REMOVE HWS/R FROM HX TO MAINS. CAP HWS/R AT MAINS. REMOVE CONTROLS AND ASSOCIATED WIRING BACK TO CONTROL PANEL.
- 2 remove steam piping serving sanitizer and remove sanitizer on 4th floor below. Coordinate with campus representative.

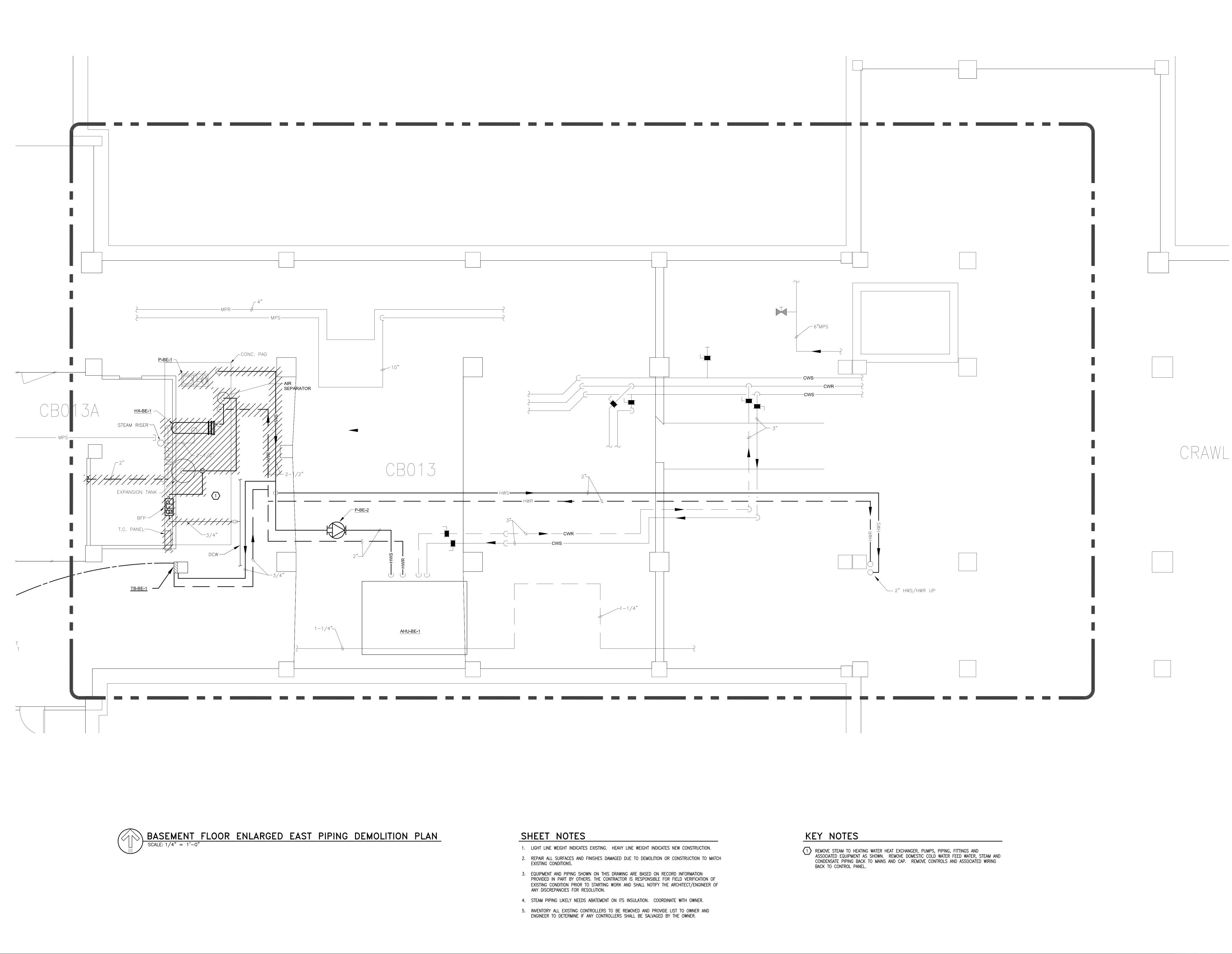




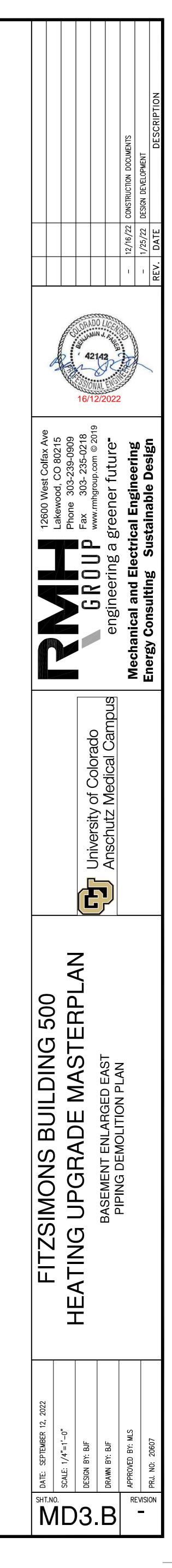
SHT.NO. REVISION

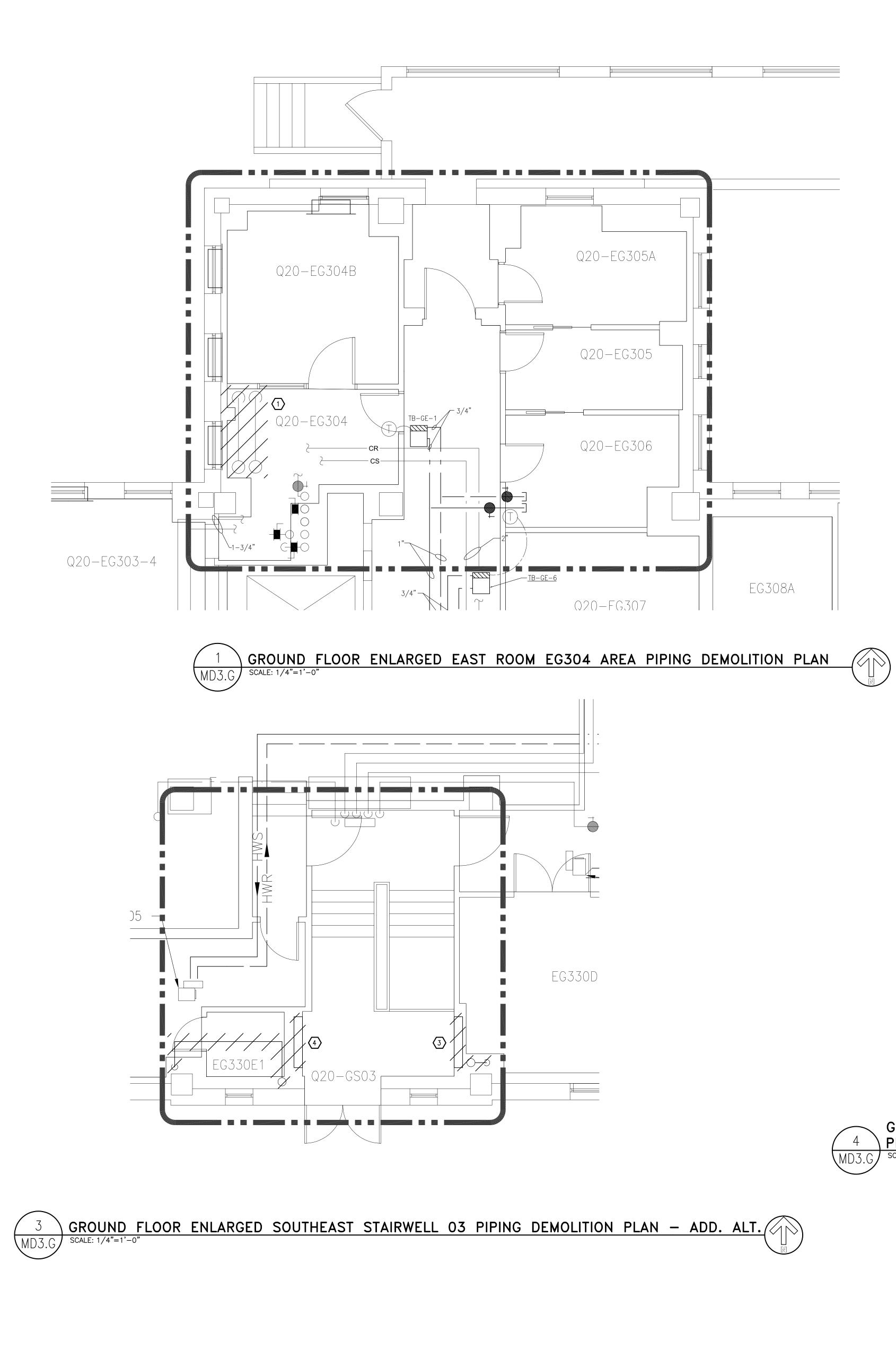
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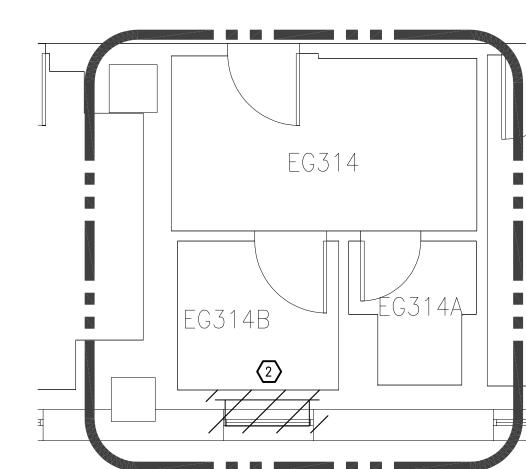


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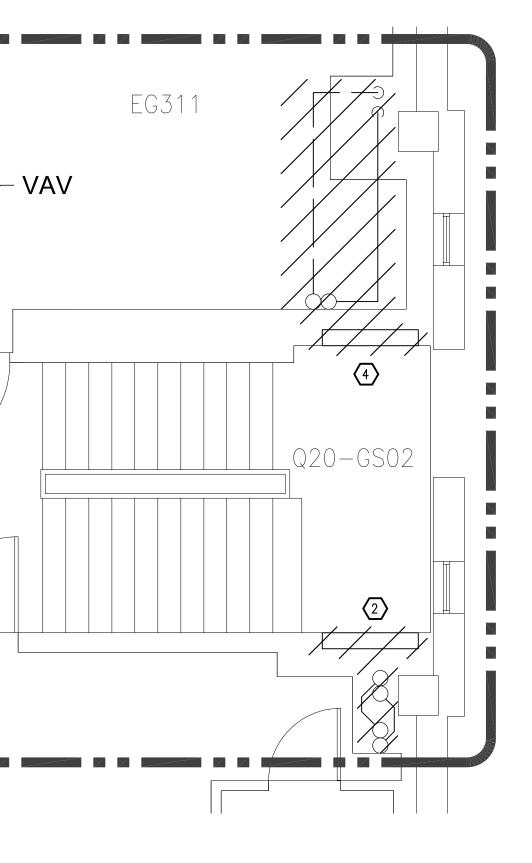


′AV-20 E-015

GROUND FLOOR ENLARGED EAST RESTROOM EG314B PIPING DEMOLITION PLAN – ADD. ALT. SCALE: 1/4"=1'-0"

### SHEET NOTES

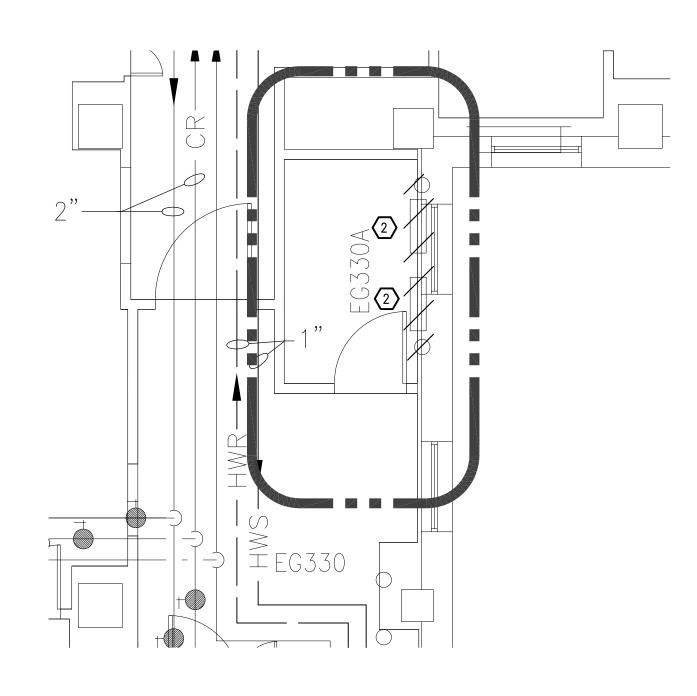
- 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION. 2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH
- EXISTING CONDITIONS. 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF
- ANY DISCREPANCIES FOR RESOLUTION. 4. STEAM PIPING LIKELY NEEDS ABATEMENT ON ITS INSULATION. COORDINATE WITH OWNER.
- 5. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE IN STAIRWELL.

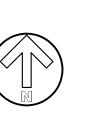










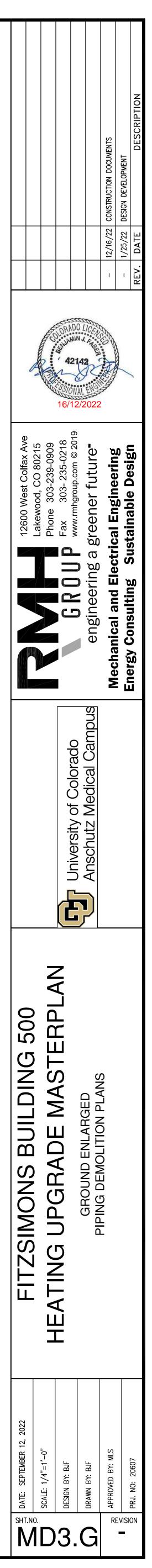


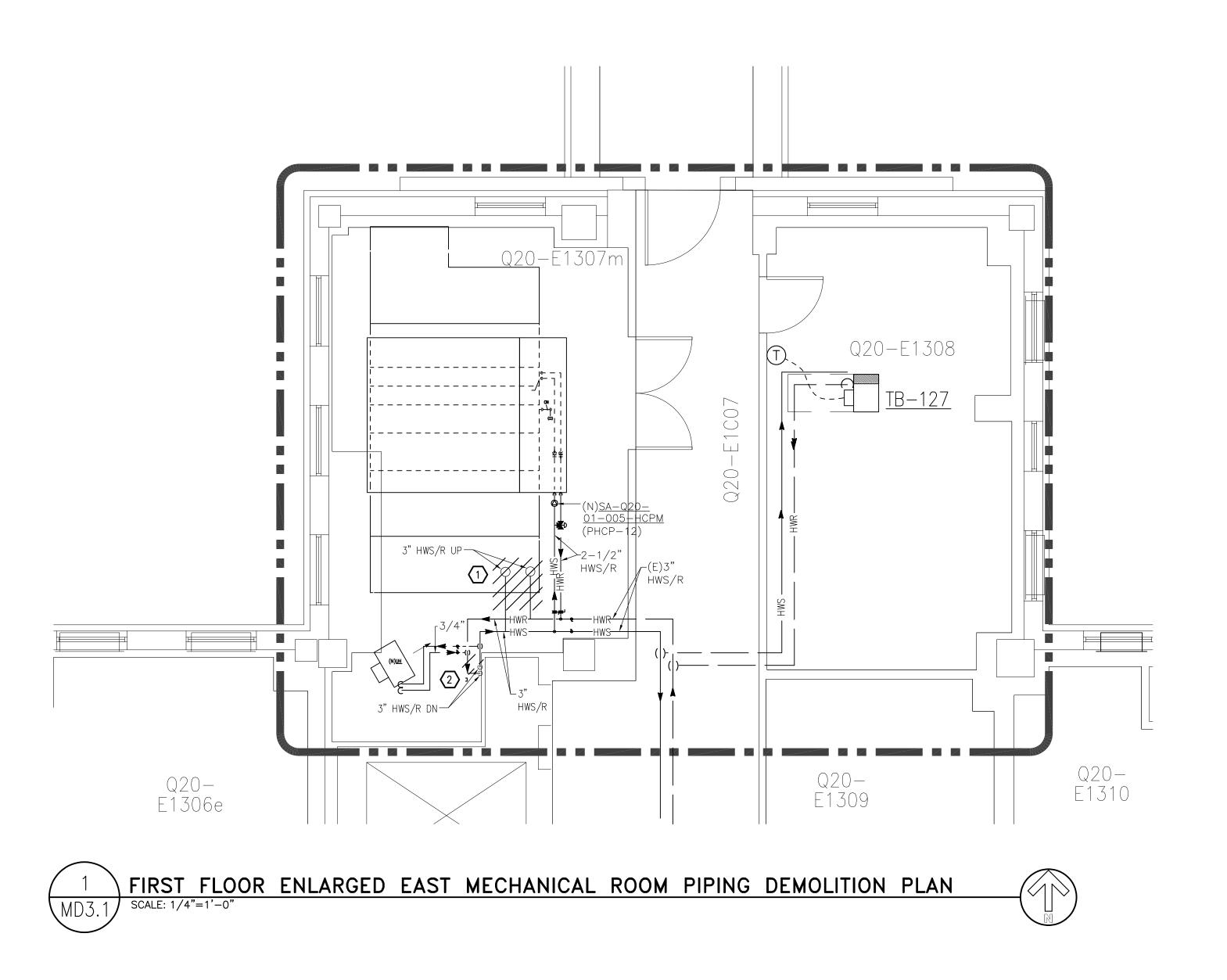
## 5 GROUND FLOOR ENLARGED EAST RESTROOM EG330A 9 PIPING DEMOLITION PLAN – ADD. ALT. //

### KEY NOTES

- (1) REMOVE ANY ABANDONED PIPING IN CEILING SPACE IN HATCHED AREA.
- (2) REMOVE STEAM CONVECTOR HEATING ELEMENT. CABINET TO REMAIN. REMOVE ASSOCIATED STEAM AND CONDENSATE PIPING AND FITTINGS BACK TO MAINS. CAP AT MAINS.
- 3 disconnect stairwell steam convector and abandon in place. Remove its associated piping and fittings back to mains and cap.

REMOVE STEAM CONVECTOR HEATING ELEMENT AND CABINET COVER. CABINET TO REMAIN. REMOVE ASSOCIATED STEAM AND CONDENSATE PIPING AND FITTINGS BACK TO MAINS. CAP AT MAINS.





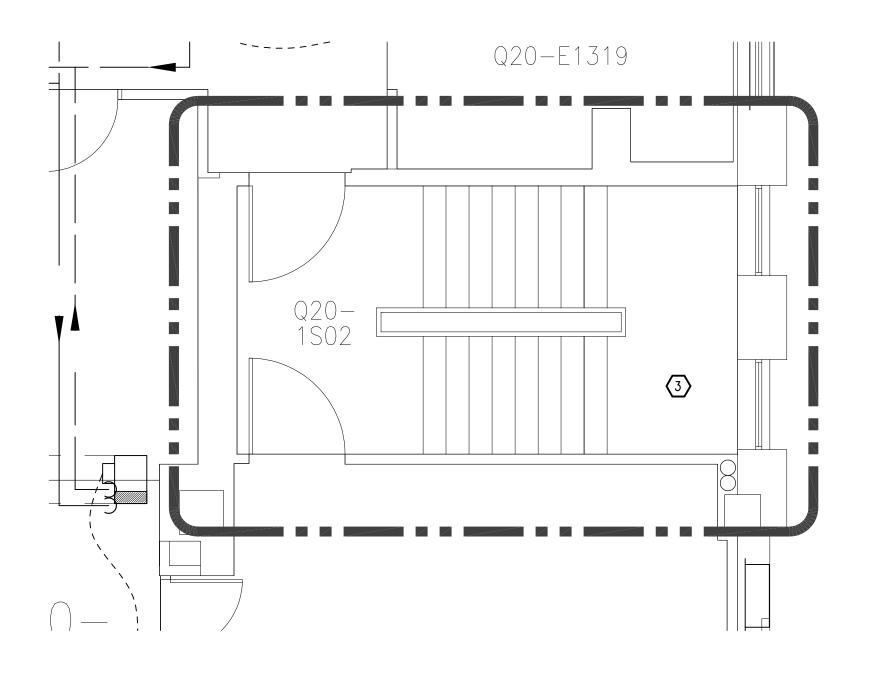
- 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
- 2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH EXISTING CONDITIONS.
- 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
- 4. STEAM PIPING LIKELY NEEDS ABATEMENT ON ITS INSULATION. COORDINATE WITH OWNER. 5. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE IN STAIRWELL.

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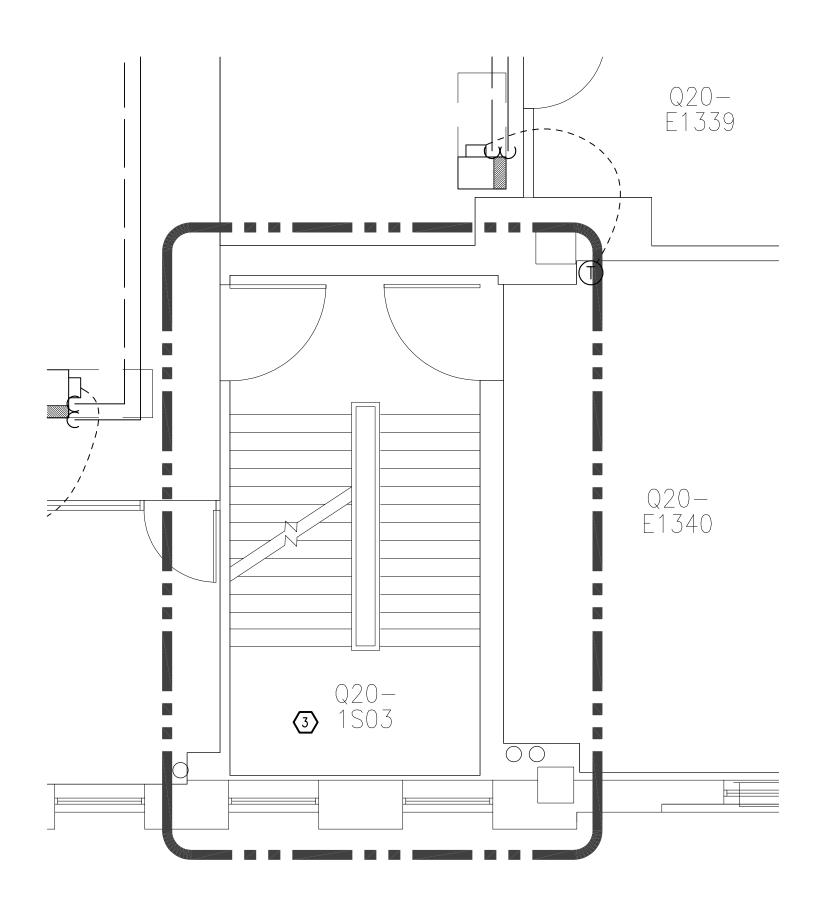
### KEY NOTES

- 1 REMOVE 3" HWS/R RISER AND PIPING AS SHOWN. CAP REMAINING PIPING.
- (2) REMOVE 3" HWS/R PIPING AS SHOWN. CAP REMAINING PIPING.
- 3 STAIRWELL AT THIS LEVEL SHOWN FOR REFERENCE. NO DEMO WORK.

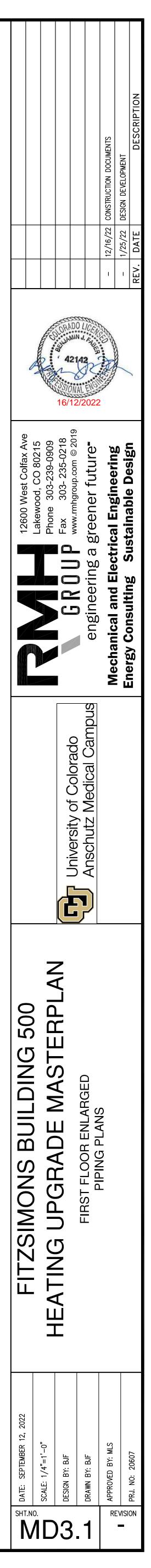




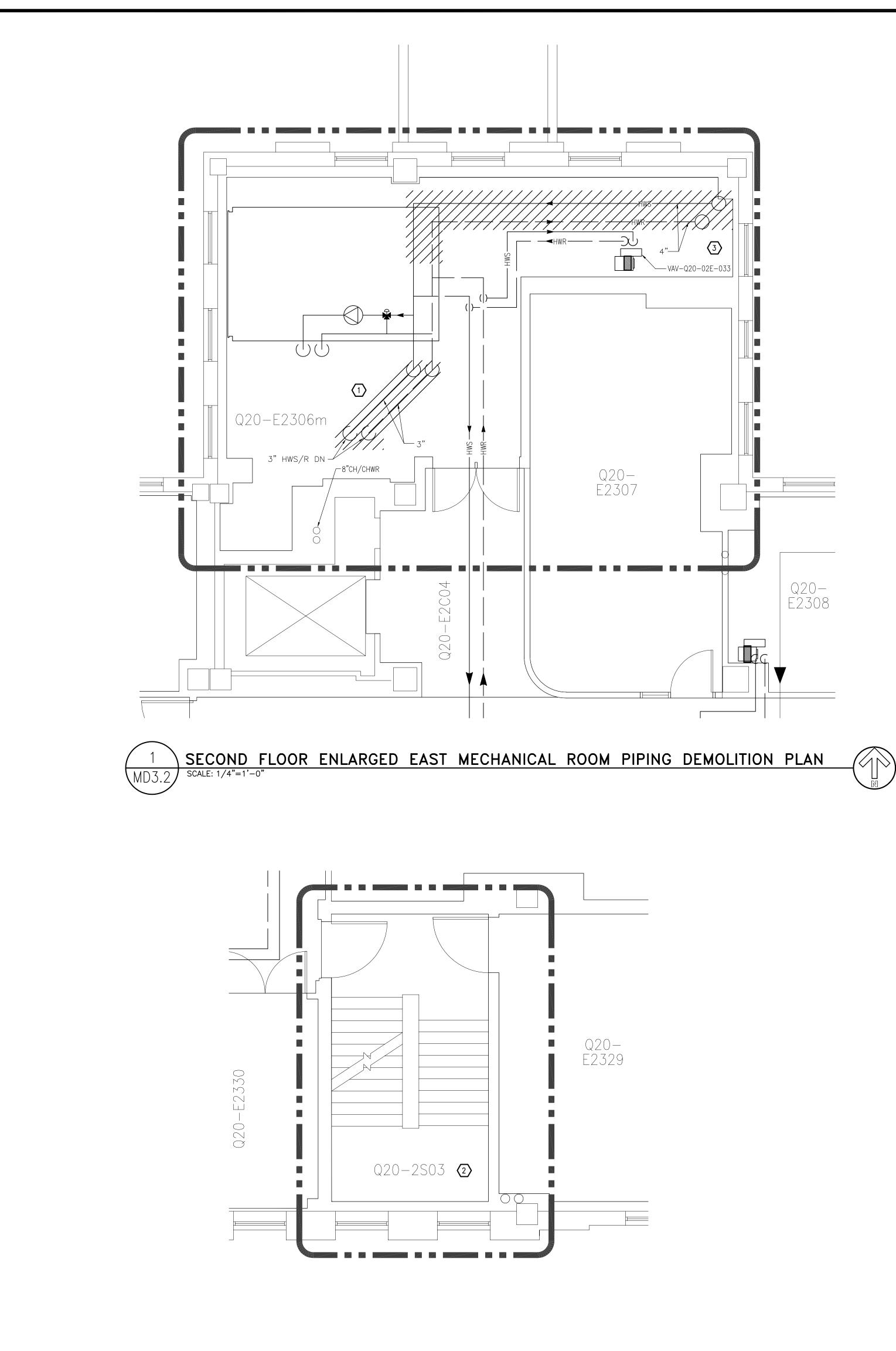
(2 MD3.1) FIRST FLOOR ENLARGED EAST STAIRWELL 02 PIPING DEMOLITION PLAN - ADD. ALT. ( MD3.1) SCALE: 1/4"=1'-0"



(3) FIRST FLOOR ENLARGED SOUTHEAST STAIRWELL 03 PIPING DEMOLITION PLAN - ADD. ALT.

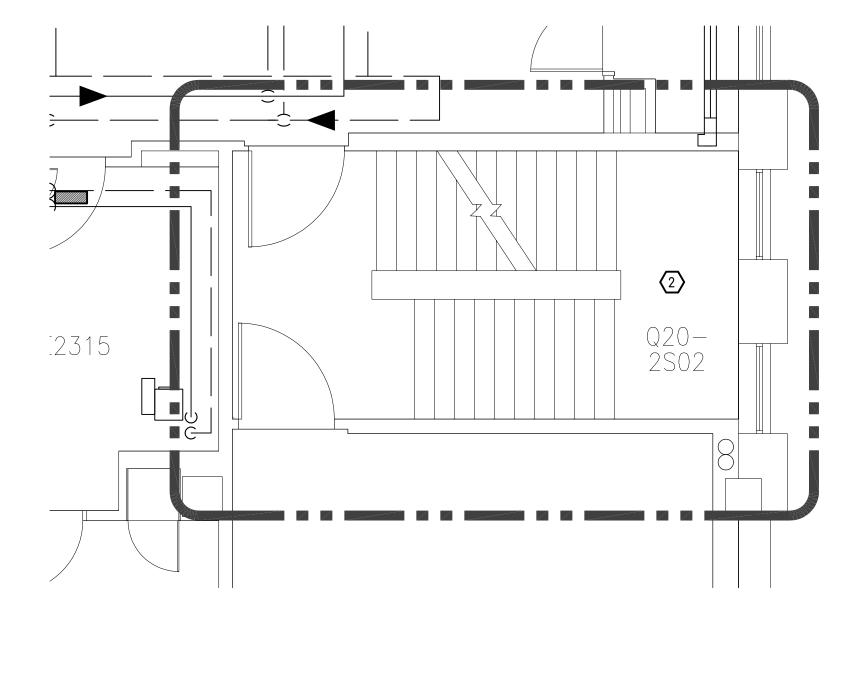








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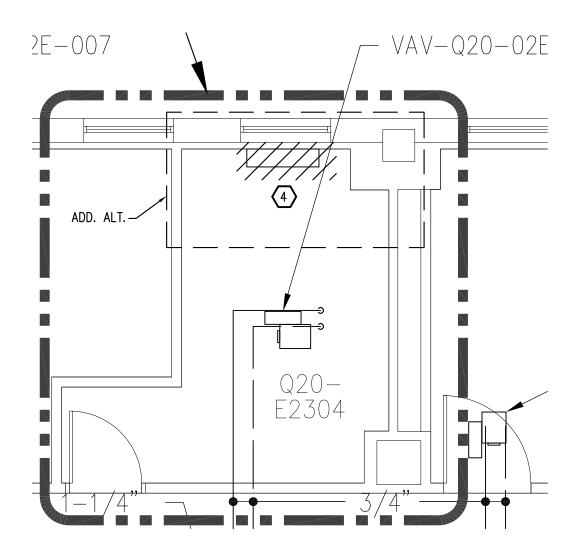




### SHEET NOTES 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.

- EXISTING CONDITIONS.
- 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION ANY DISCREPANCIES FOR RESOLUTION.
- 4. STEAM PIPING LIKELY NEEDS ABATEMENT ON ITS INSULATION. COORDINATE WITH OWNER.
- 5. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE IN STAIRWELL.

(2) SECOND FLOOR ENLARGED EAST STAIRWELL O2 PIPING DEMOLITION PLAN - ADD. ALT.





2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH

PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF

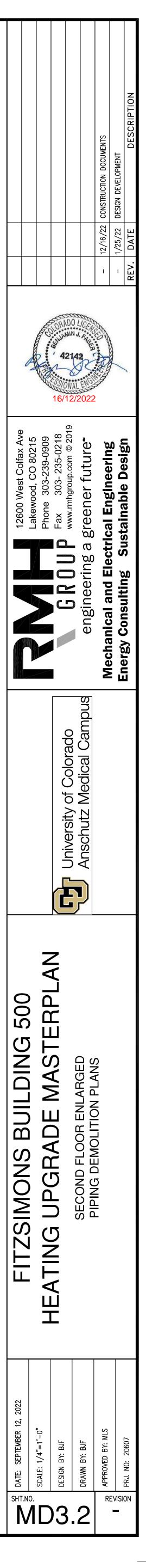
### KEY NOTES

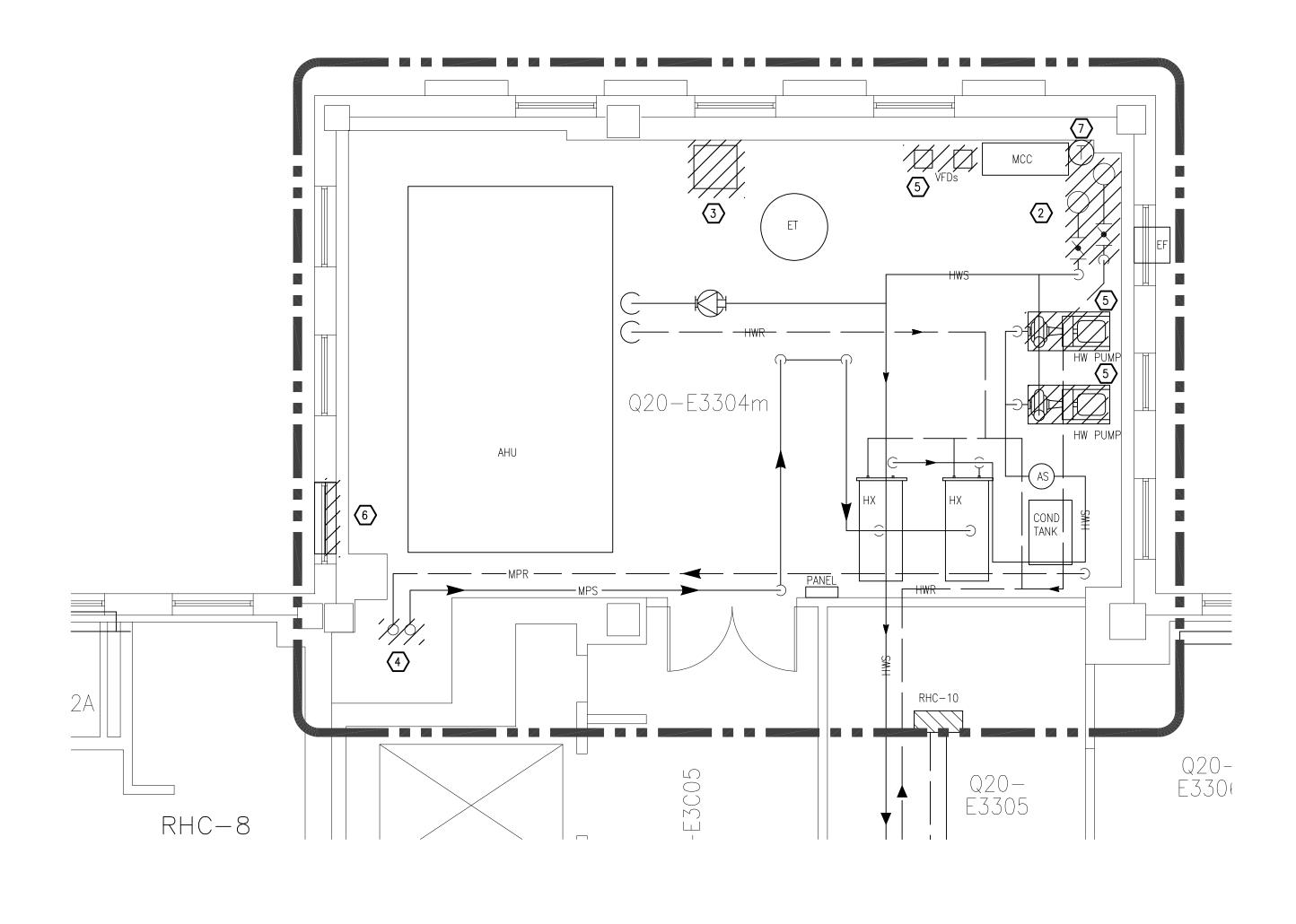
1 remove existing 3" HWS/R PIPING and Riser as shown. Cap remaining PIPING.

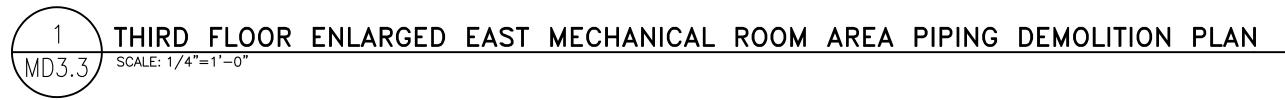
2 STAIRWELL AT THIS LEVEL SHOWN FOR REFERENCE. NO DEMO WORK. ABANDON EXISTING STEAM RISER IN PLACE.

3 REMOVE EXISTING 5" HWS/R PIPING AND RISER AS SHOWN TO ACCOMMODATE NEW 6" HWS/R RISER. SEE M3.20.

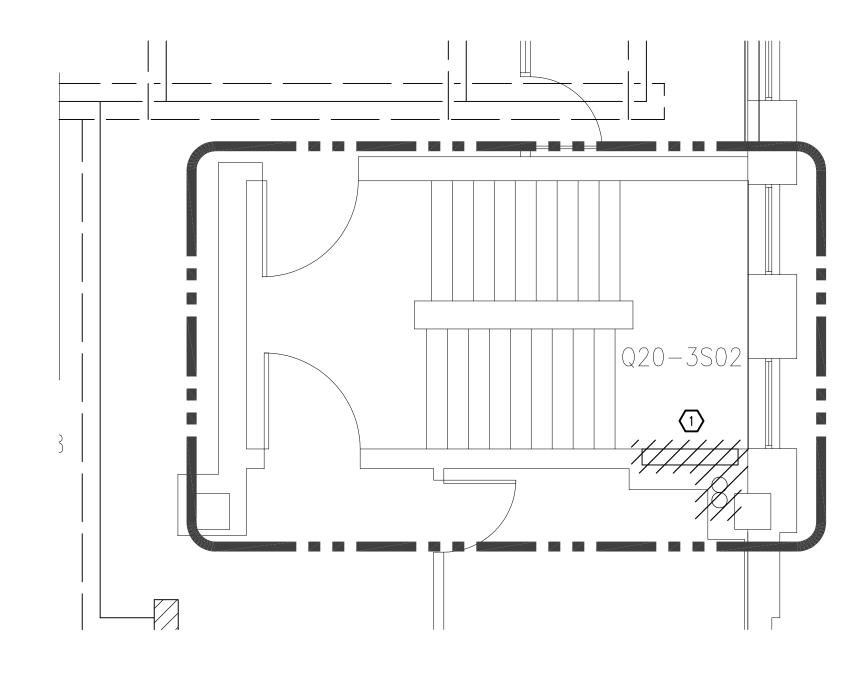
(4) REMOVE STEAM CONVECTOR AND ITS CONTROLS. REMOVE STEAM PIPING BACK TO MAIN. CAP AT

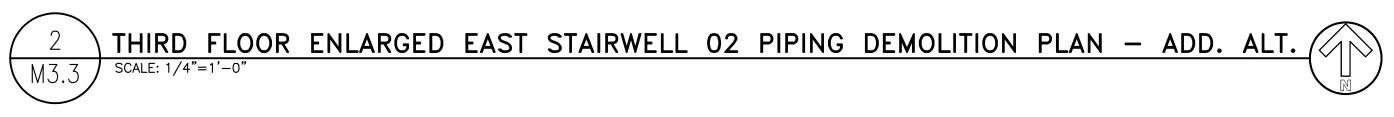


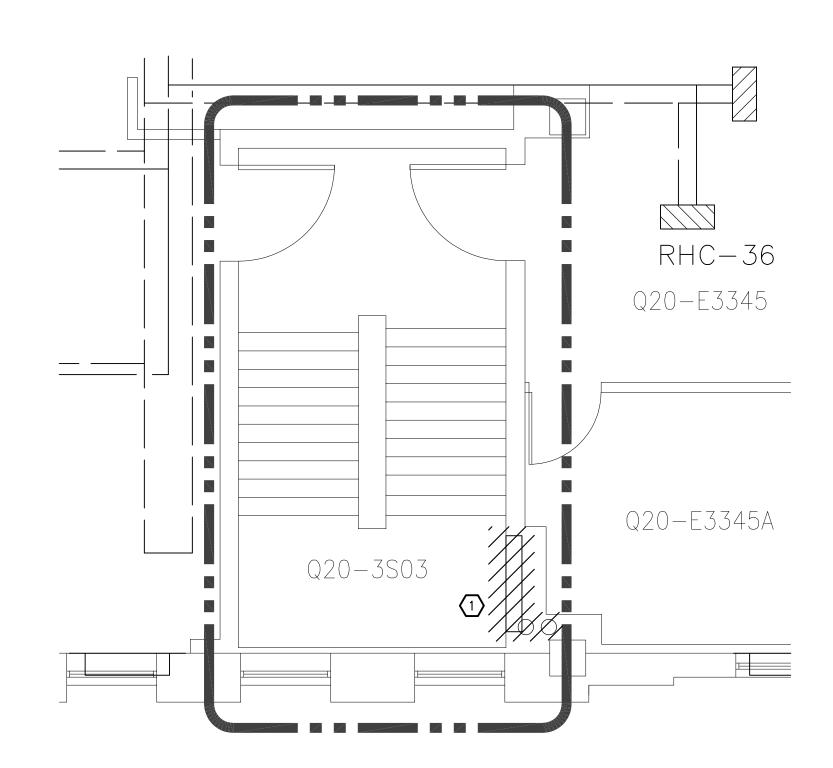




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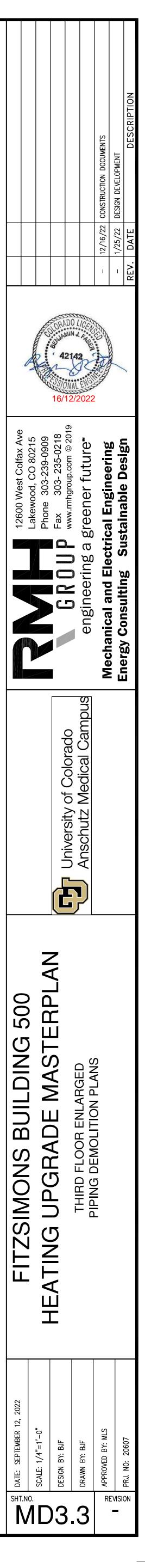
### SHEET NOTES

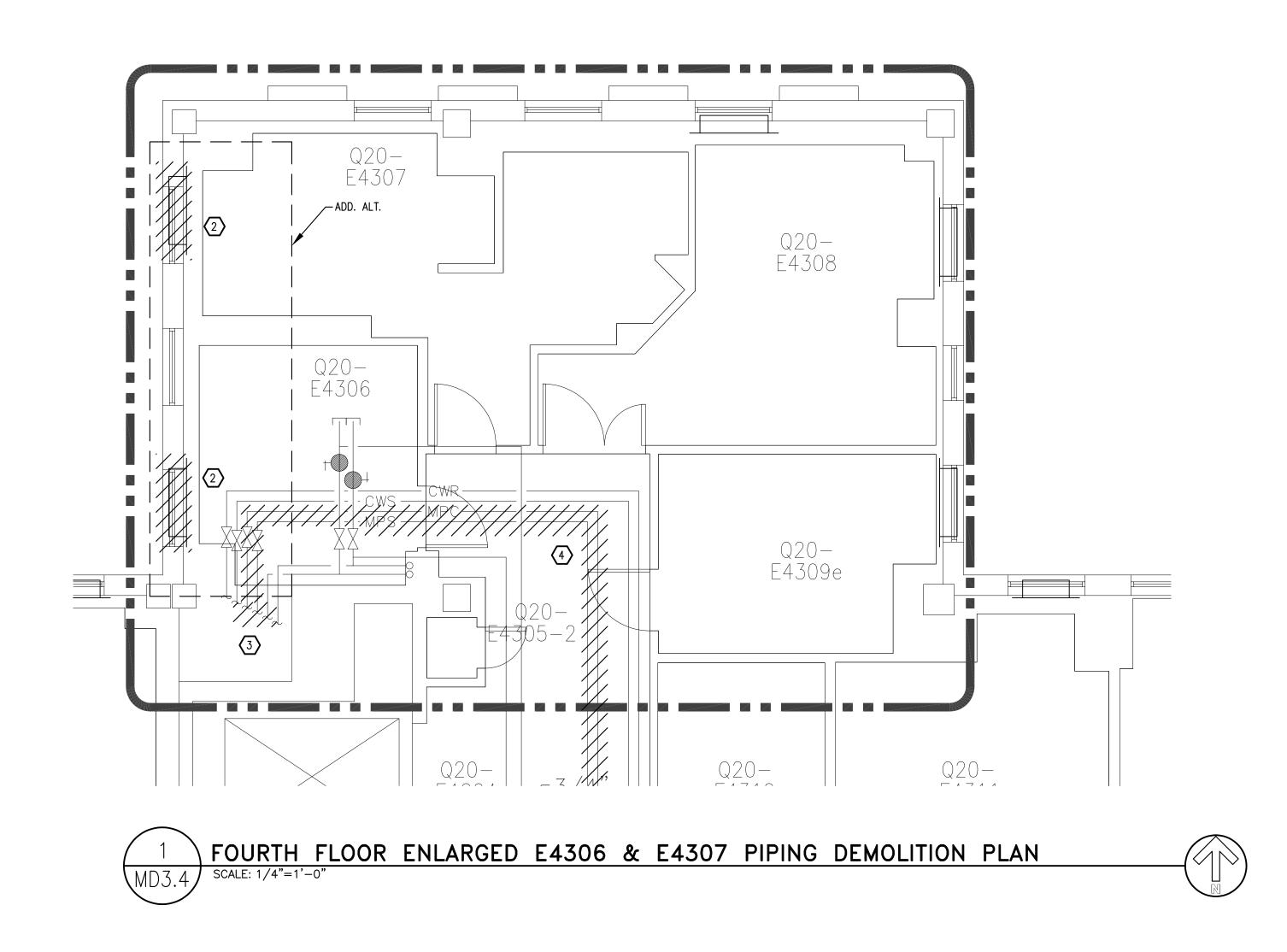
- 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
- 2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH EXISTING CONDITIONS.
- 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
- 4. STEAM PIPING LIKELY NEEDS ABATEMENT ON ITS INSULATION. COORDINATE WITH OWNER.
- 5. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE IN STAIRWELL.

(3) THIRD FLOOR ENLARGED SOUTHEAST STAIRWELL 03 PIPING DEMOLITION PLAN - ADD. ALT.

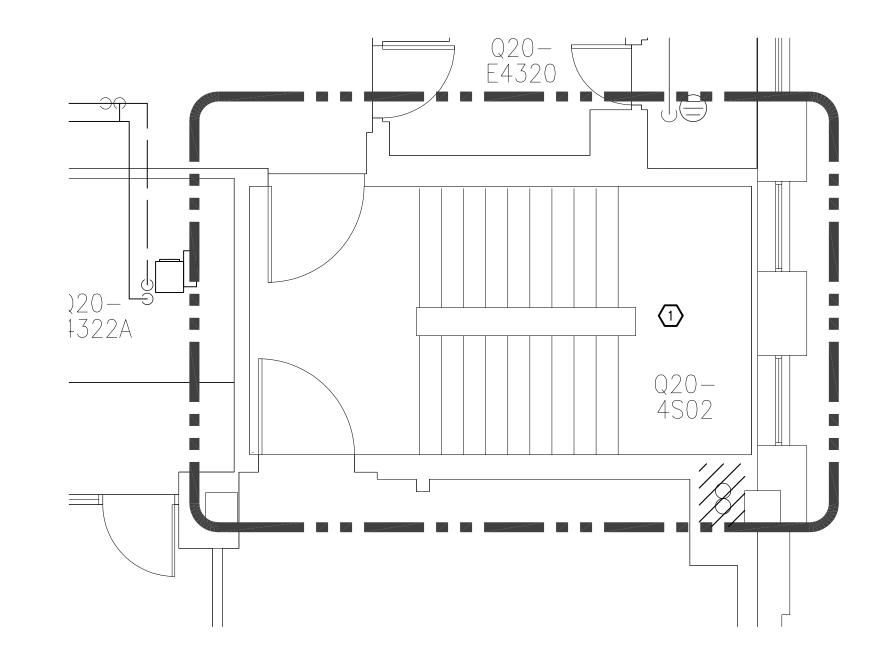
### KEY NOTES

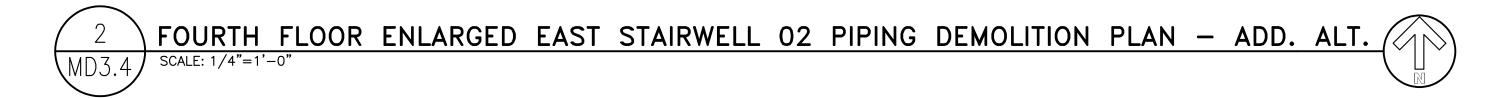
- 1 disconnect stairwell steam convector and abandon in place. Remove its associated piping and fittings back to mains and cap.
- 2 REMOVE 4" HORIZONTAL HWS/R PIPING DOWNSTREAM OF 6" HWS/R, AND 3" HWS/R VERTICAL ABOVE TEE AND 4" HWS/R BELOW HWS/R TO ACCOMMODATE NEW WORK. SEE M3.3.
- 3 REMOVE EXISTING GLYCOL FEEDER FOR REPLACEMENT WITH NEW FEEDER. SEE M3.3 FOR MORE INFORMATION.
- A REMOVED STEAM CONDENSATE AND RETURN UP TO FOURTH FLOOR ABOVE. SEE MD3.4 FOR CONTINUATION. CAP REMAINING PIPING ABOVE BRANCH PIPING SERVING THIS FLOOR.
- 5 REMOVE 15 HP PUMP. AND THEIR VFDs. RE: ELECTRICAL DRAWINGS. PADS AND ISOLATION PADS TO REMAIN.
- 6 REMOVE SUPPLY DAMPER ON WEST WALL. LOUVER TO REMAIN.
- $\overline{7}$  REMOVE THERMOSTAT FOR EXHAUST FAN ON EAST WALL.





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### SHEET NOTES

- 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
- 2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH EXISTING CONDITIONS.
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- 4. STEAM PIPING LIKELY NEEDS ABATEMENT ON ITS INSULATION. COORDINATE WITH OWNER.
- 5. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE IN STAIRWELL.

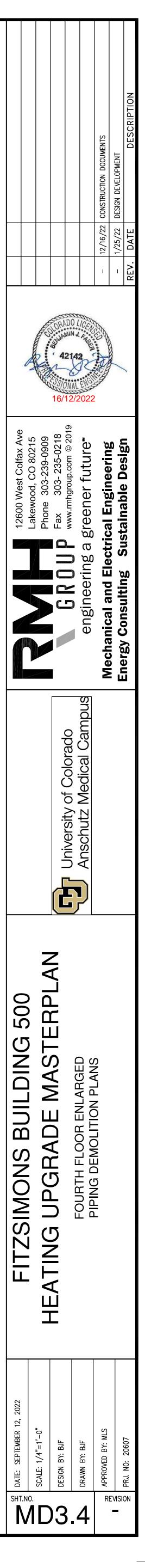
KEY NOTES

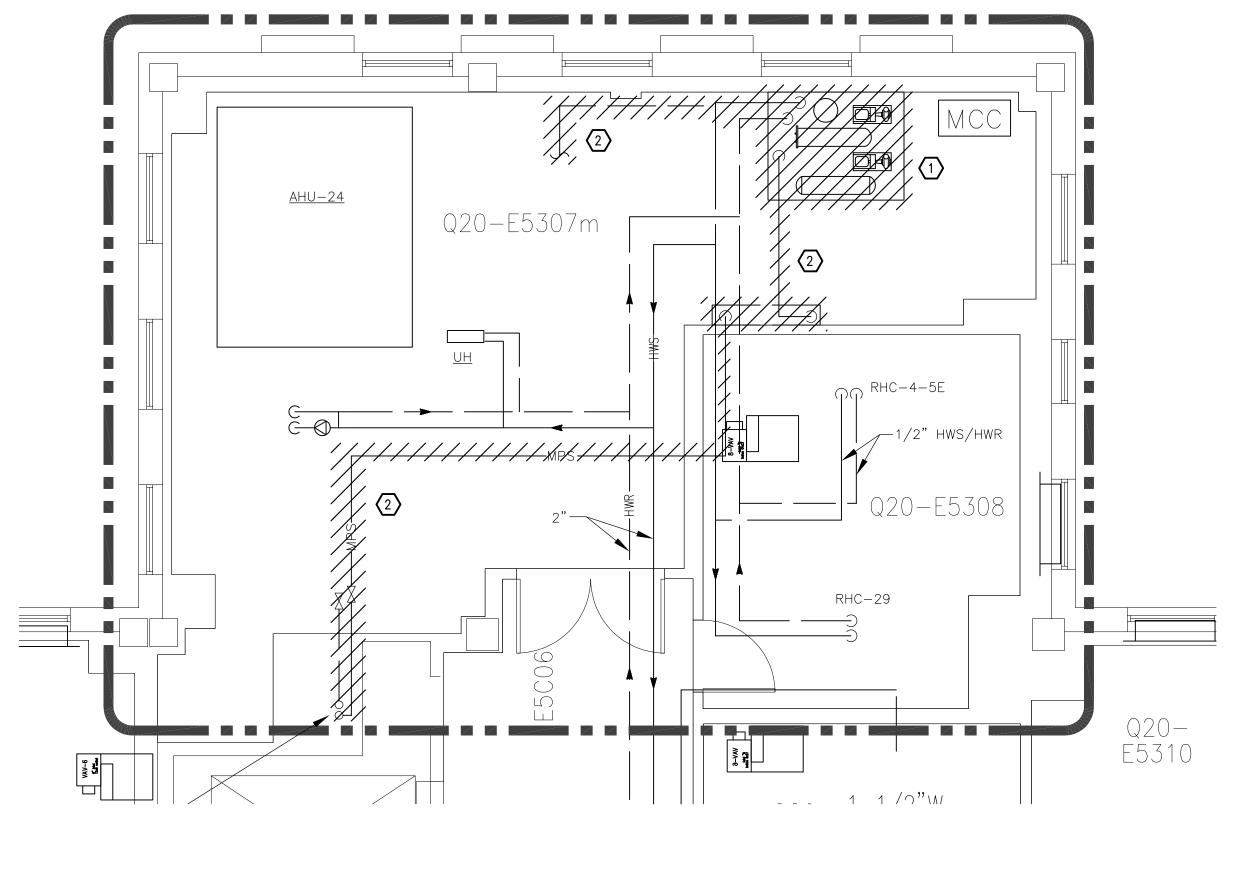
1 no work in this area. Stairwell shown for reference.

(2) REMOVE RESTROOM STEAM CONVECTOR.

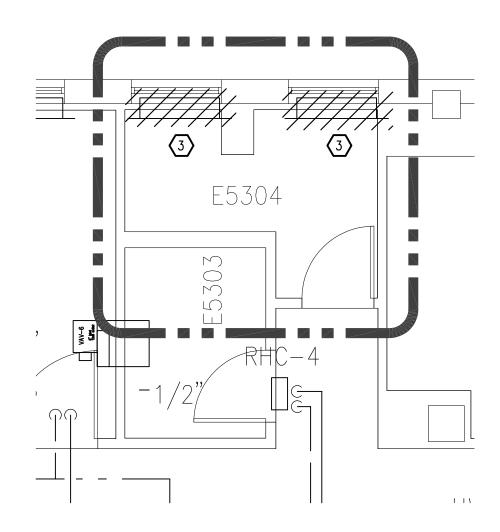
 $\overbrace{3}$  REMOVE STEAM SUPPLY AND CONDENSATE RISERS DOWN TO THIRD FLOOR. SEE MD3.3 FOR CONTINUATION.

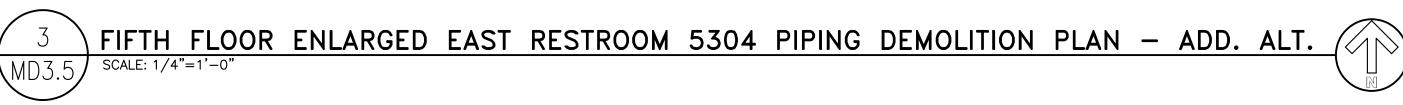
4 REMOVE STEAM SUPPLY AND CONDENSATE PIPING.



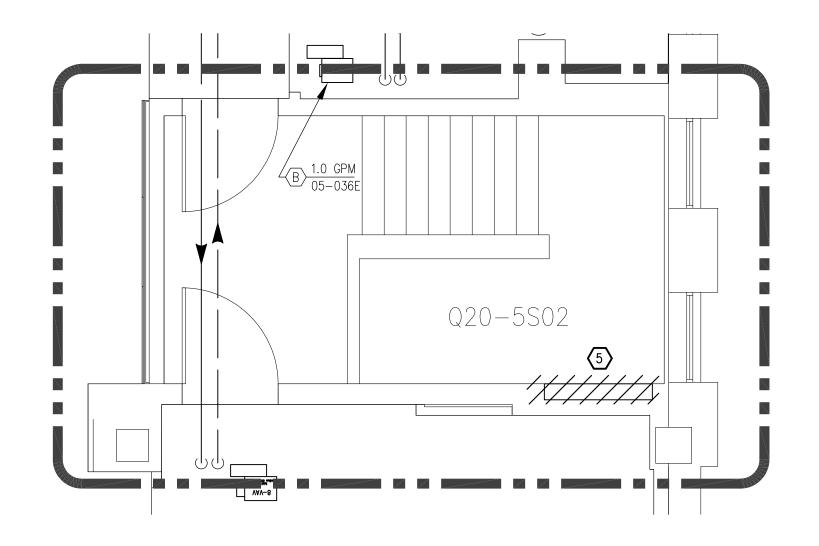


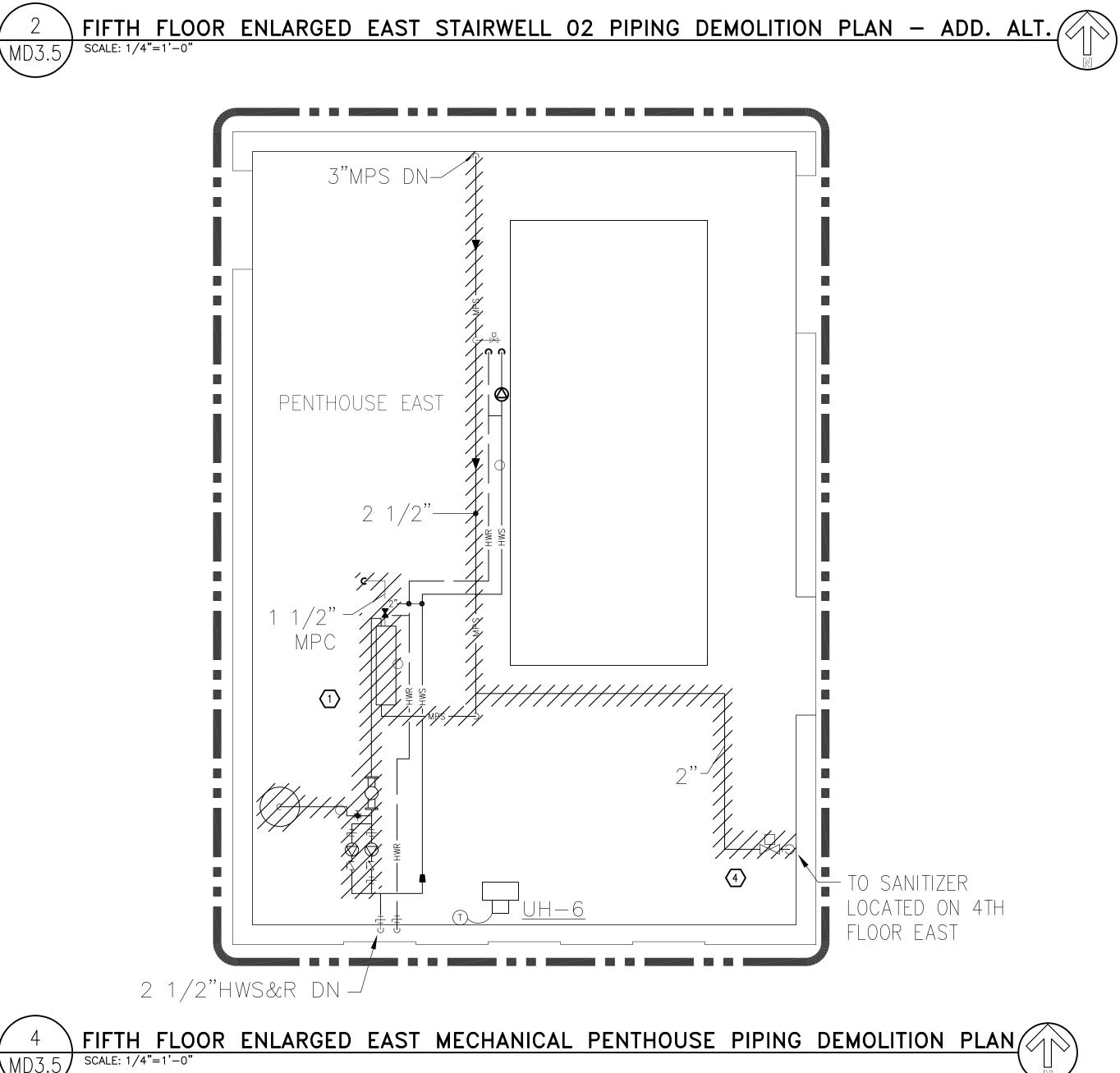


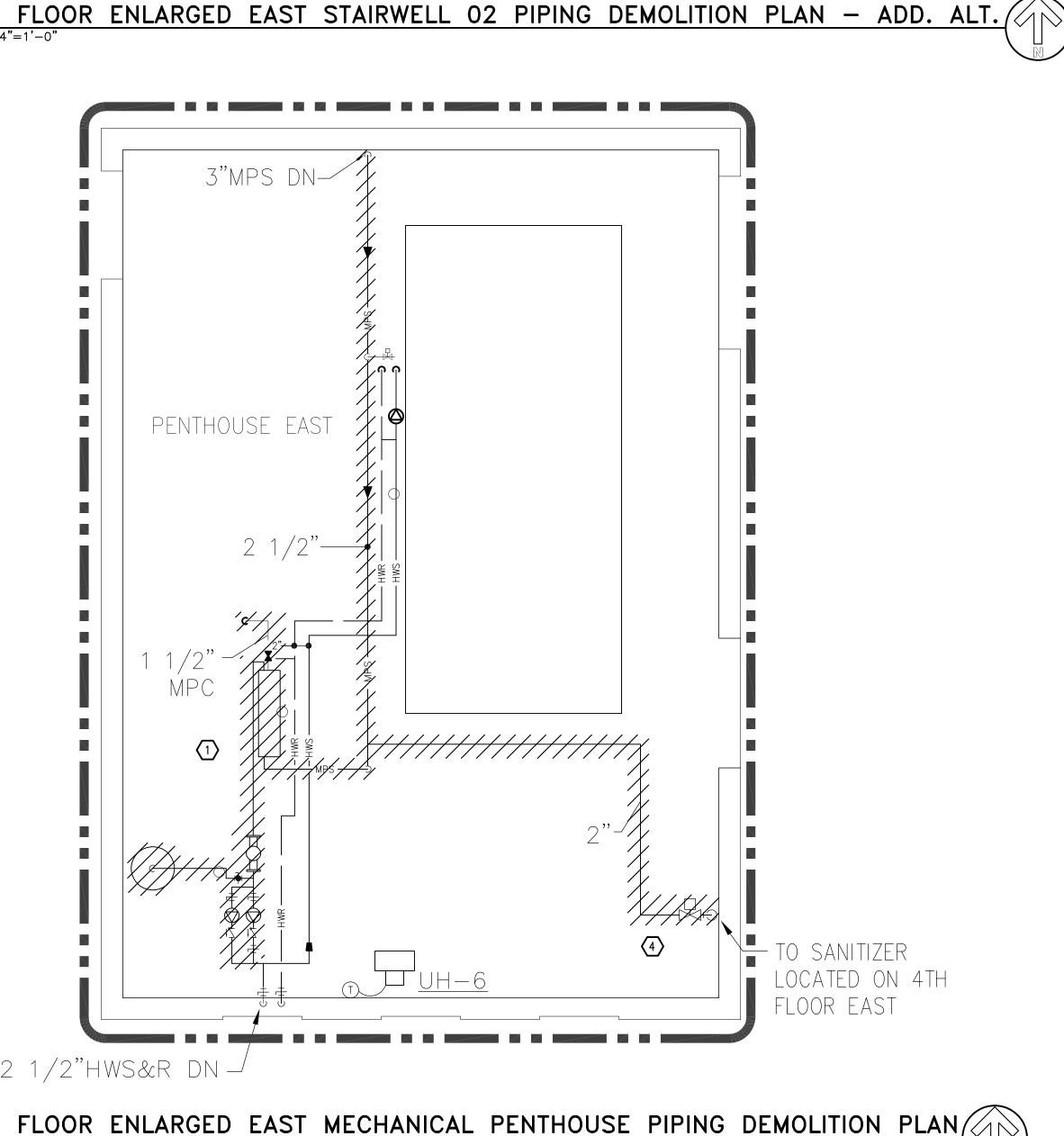




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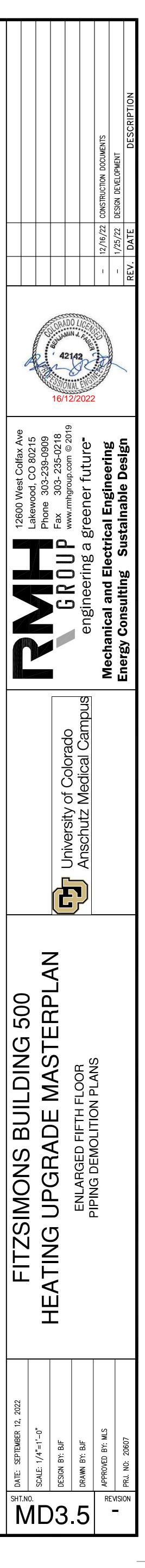


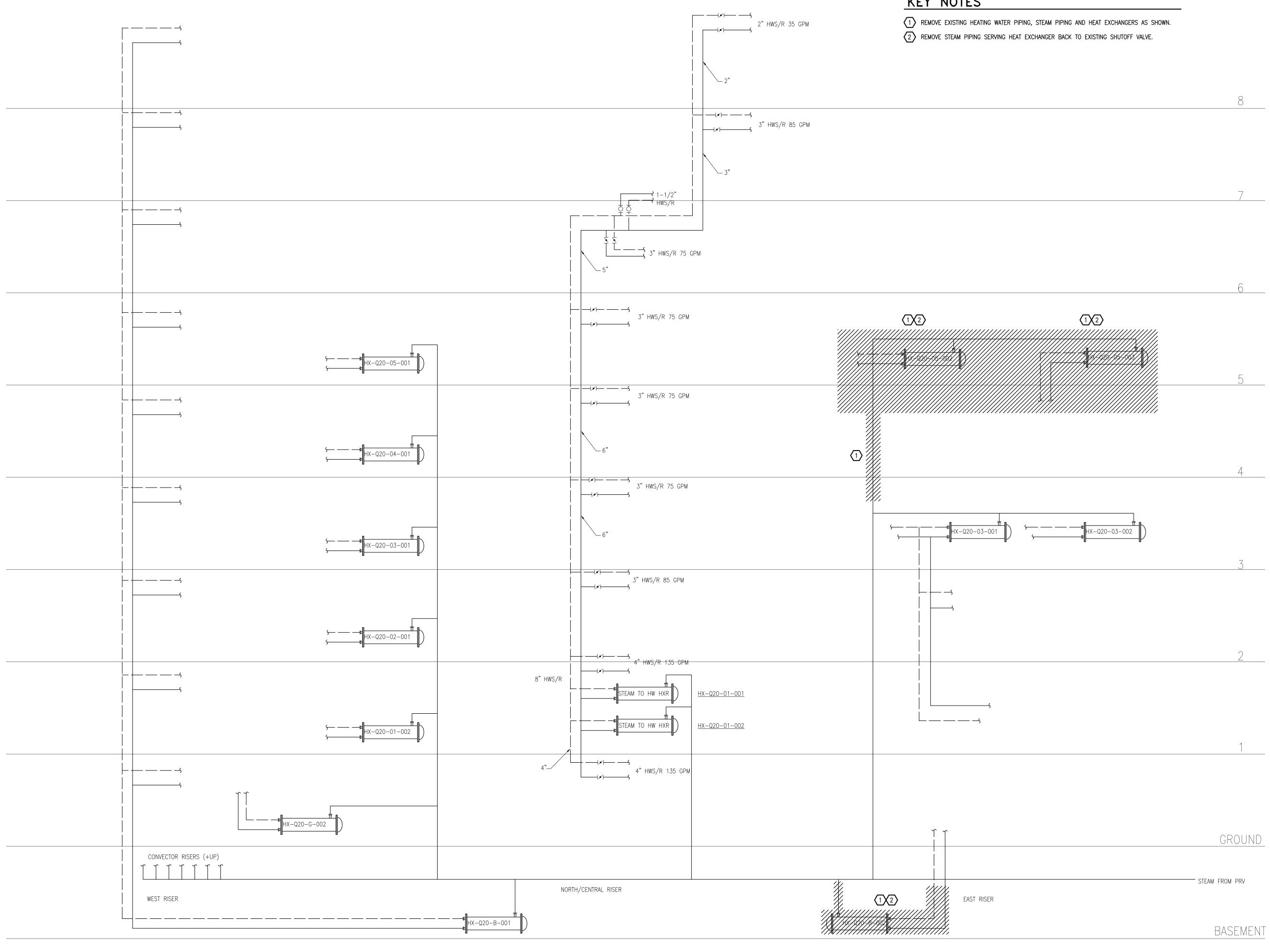
### SHEET NOTES

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- 4. STEAM PIPING LIKELY NEEDS ABATEMENT ON ITS INSULATION. COORDINATE WITH OWNER.
- 5. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE IN STAIRWELL.
- 6. INVENTORY ALL EXISTING CONTROLLERS TO BE REMOVED AND PROVIDE LIST TO OWNER AND ENGINEER TO DETERMINE IF ANY CONTROLLERS SHALL BE SALVAGED BY THE OWNER.

### KEY NOTES

- 1 REMOVE HEAT EXCHANGER, PUMPS, AND ASSOCIATED PIPING, FITTINGS AND ACCESSORIES AS SHOWN. REMOVE CONTROLS AND ASSOCIATED WIRING BACK TO CONTROL PANEL.
- $\langle 2 \rangle$  REMOVE STEAM PIPING BACK AND VALVES AS SHOWN.
- 3 REMOVE STEAM CONVECTOR HEATING ELEMENT. CABINET TO REMAIN. REMOVE ASSOCIATED STEAM AND CONDENSATE PIPING AND FITTINGS BACK TO MAINS. CAP AT MAINS.
- A REMOVE STEAM PIPING SERVING SANITIZER AND REMOVE SANITIZER ON 4TH FLOOR BELOW. COORDINATE WITH CAMPUS REPRESENTATIVE.
- 5 DISCONNECT STAIRWELL STEAM CONVECTOR AND ABANDON IN PLACE. REMOVE ITS ASSOCIATED PIPING AND FITTINGS BACK TO MAINS AND CAP.

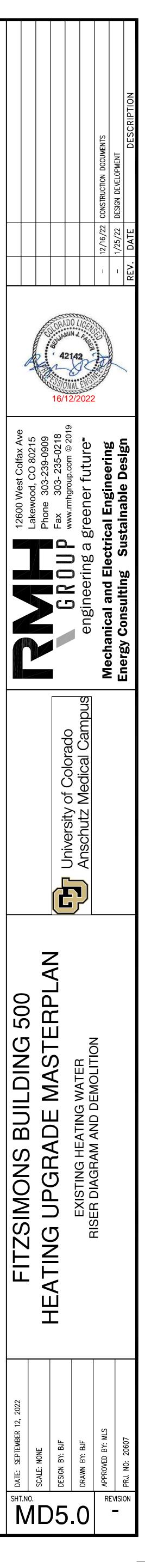


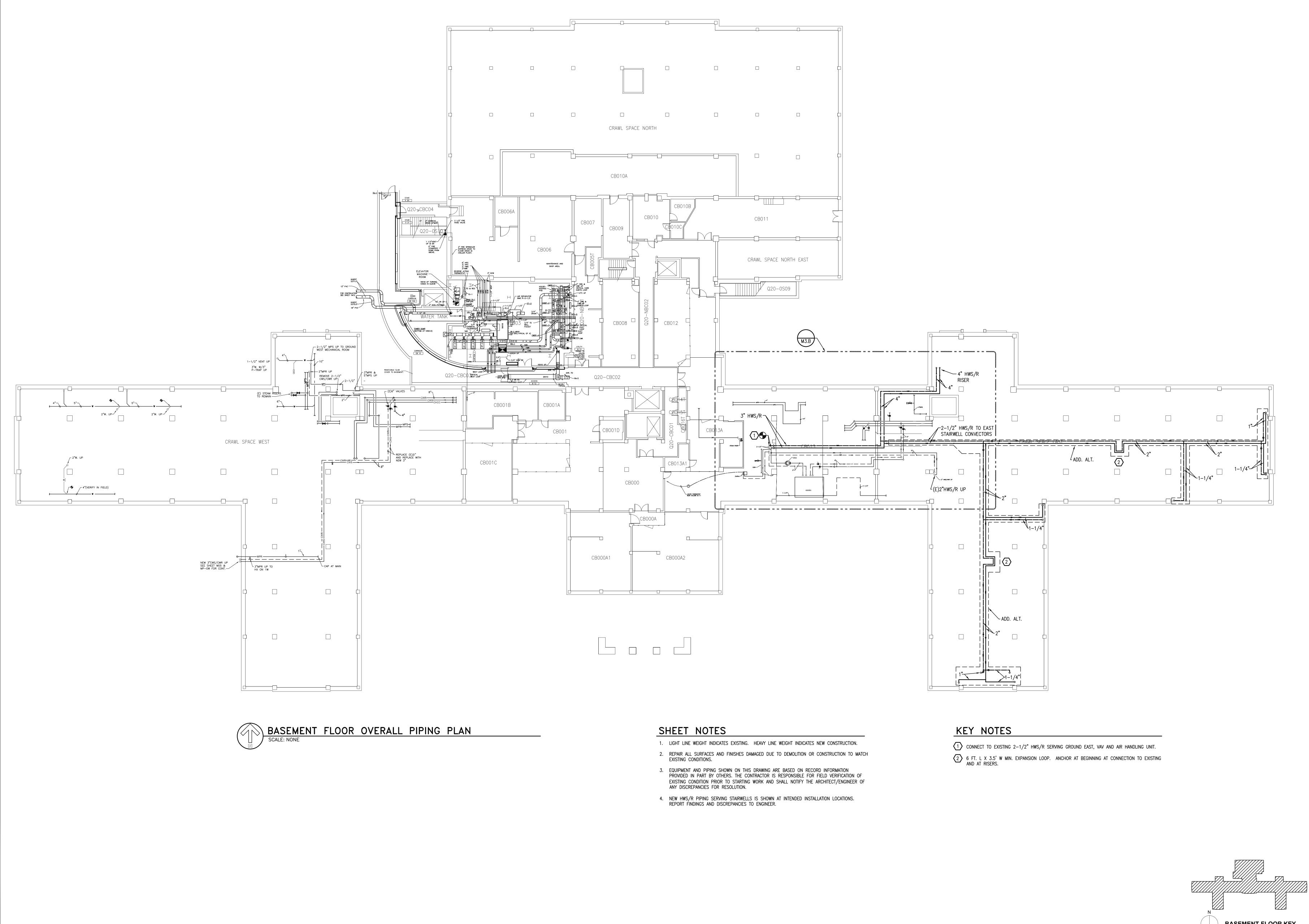




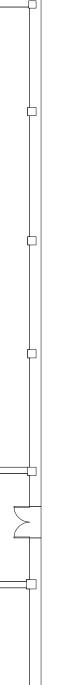
- 1. EXISTING INFORMATION IS TAKEN FROM SITE INVESTIGATION AND EXISTING DRAWINGS. CONTRACTOR SHALL VERIFY ACCURACY PRIOR TO COMMENCING WORK.
- 2. ALL RISERS AND HEAT EXCHANGERS SHALL REMAIN IN SERVICE AT THIS TIME UNTIL NEW RISERS AND HEAT EXCHANGERS ARE INSTALLED TO SERVE THE AREA.

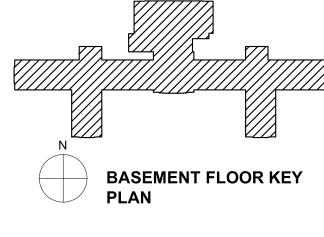
### KEY NOTES

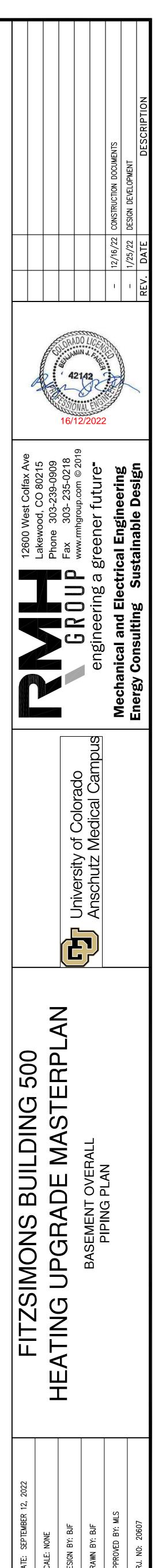




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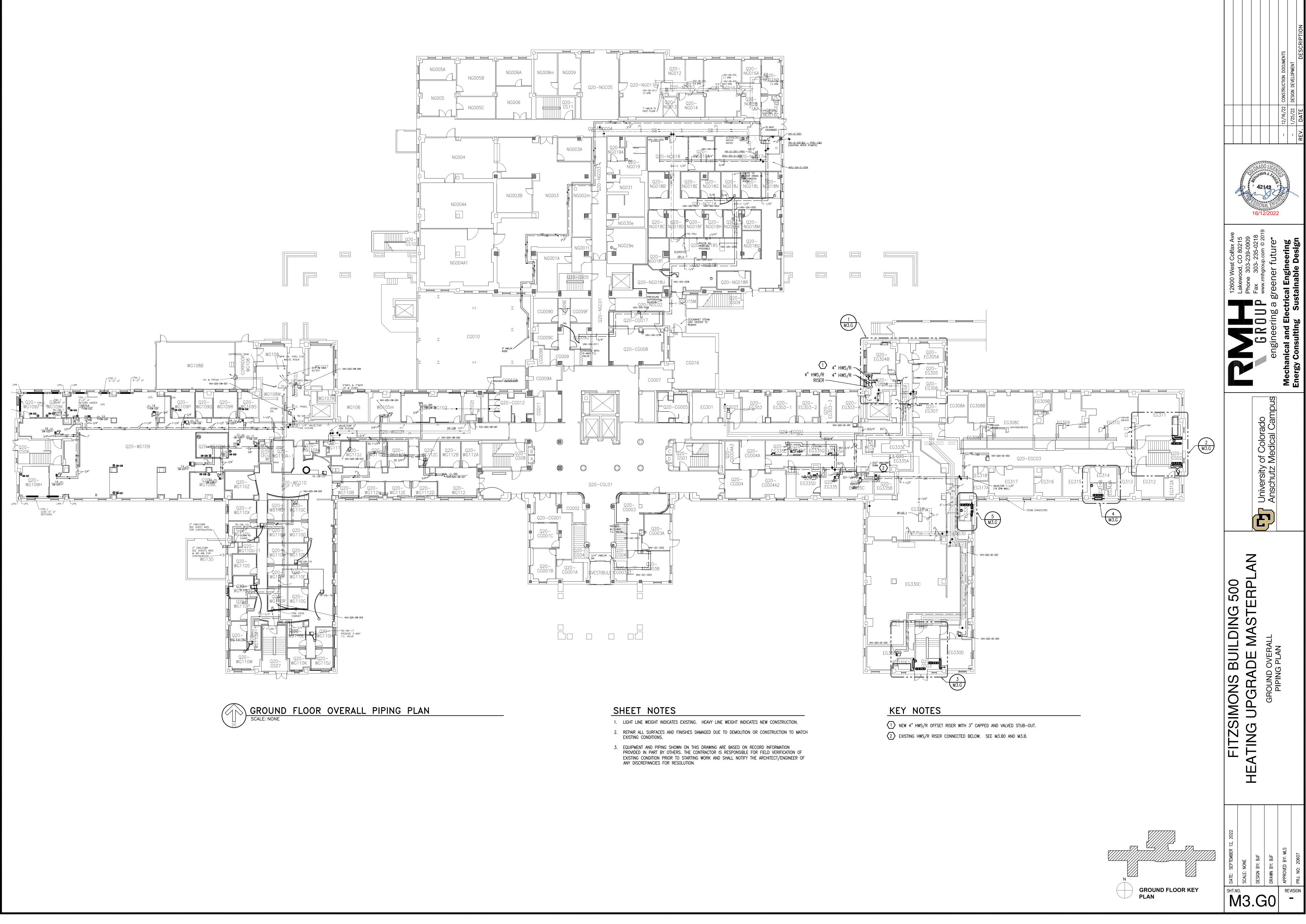




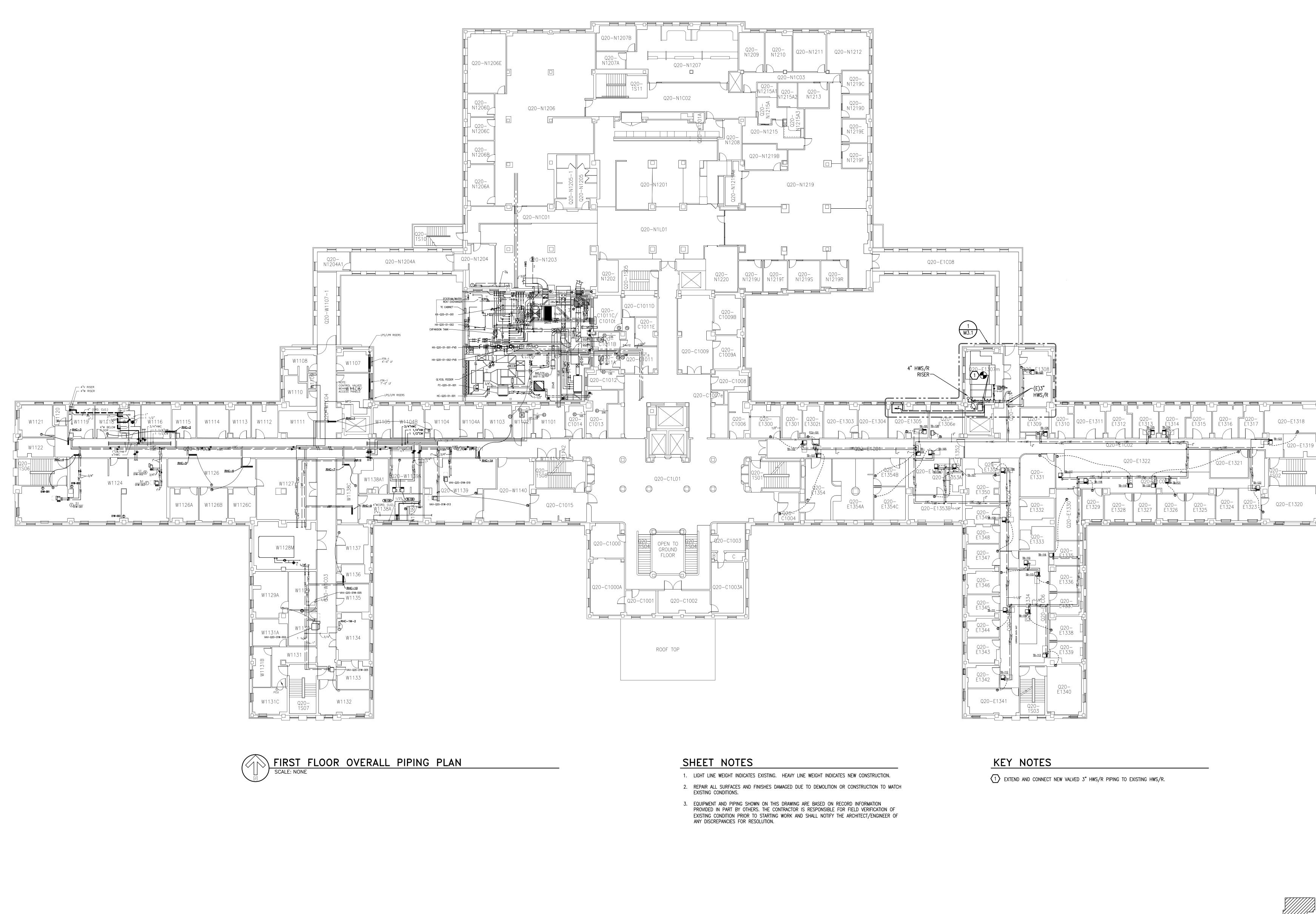


REVISION

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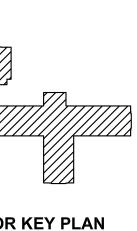


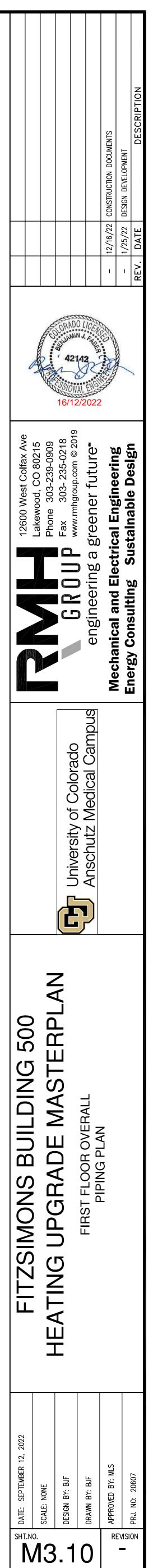
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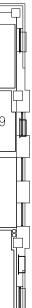


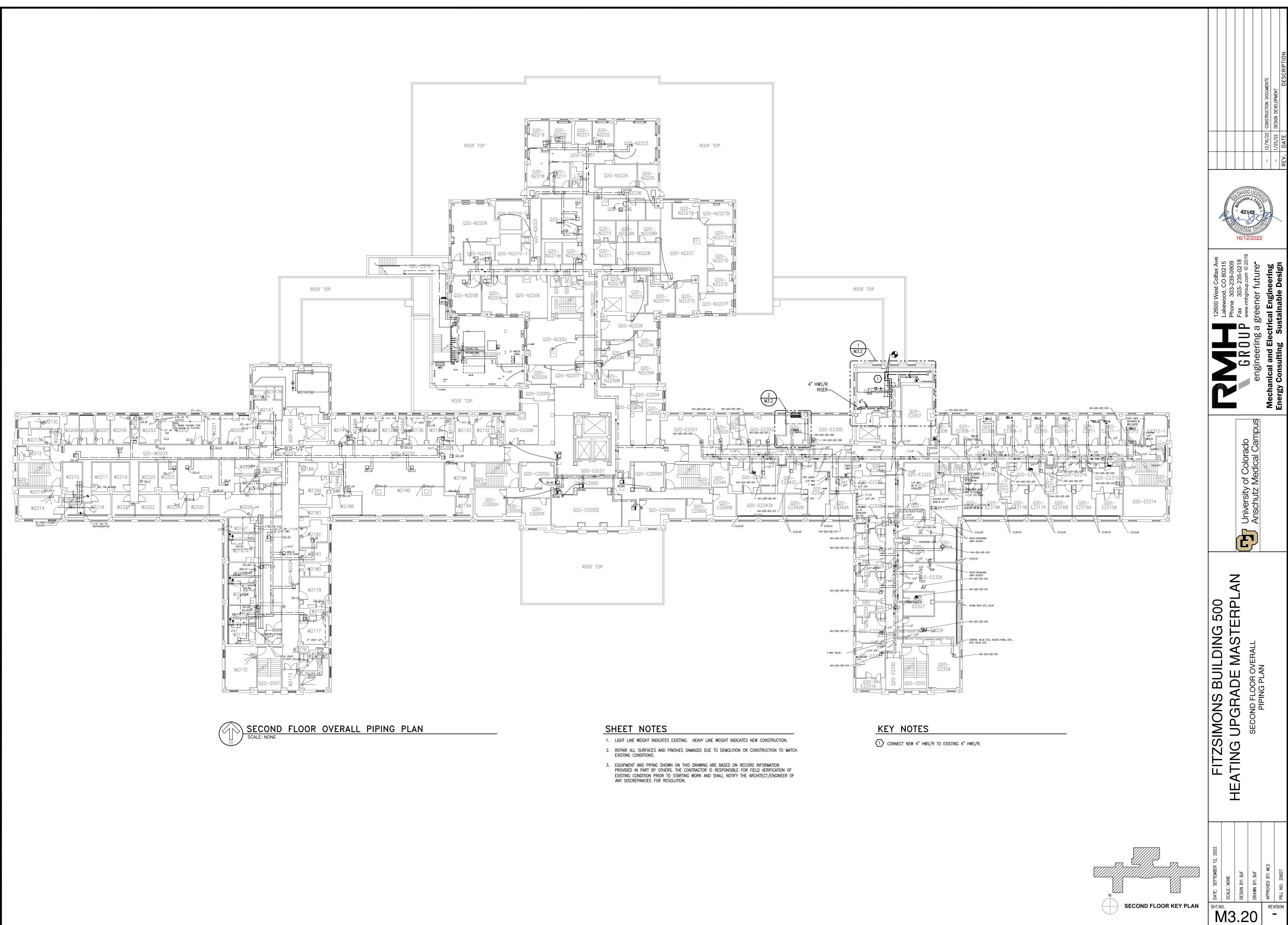
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FIRST FLOOR KEY PLAN

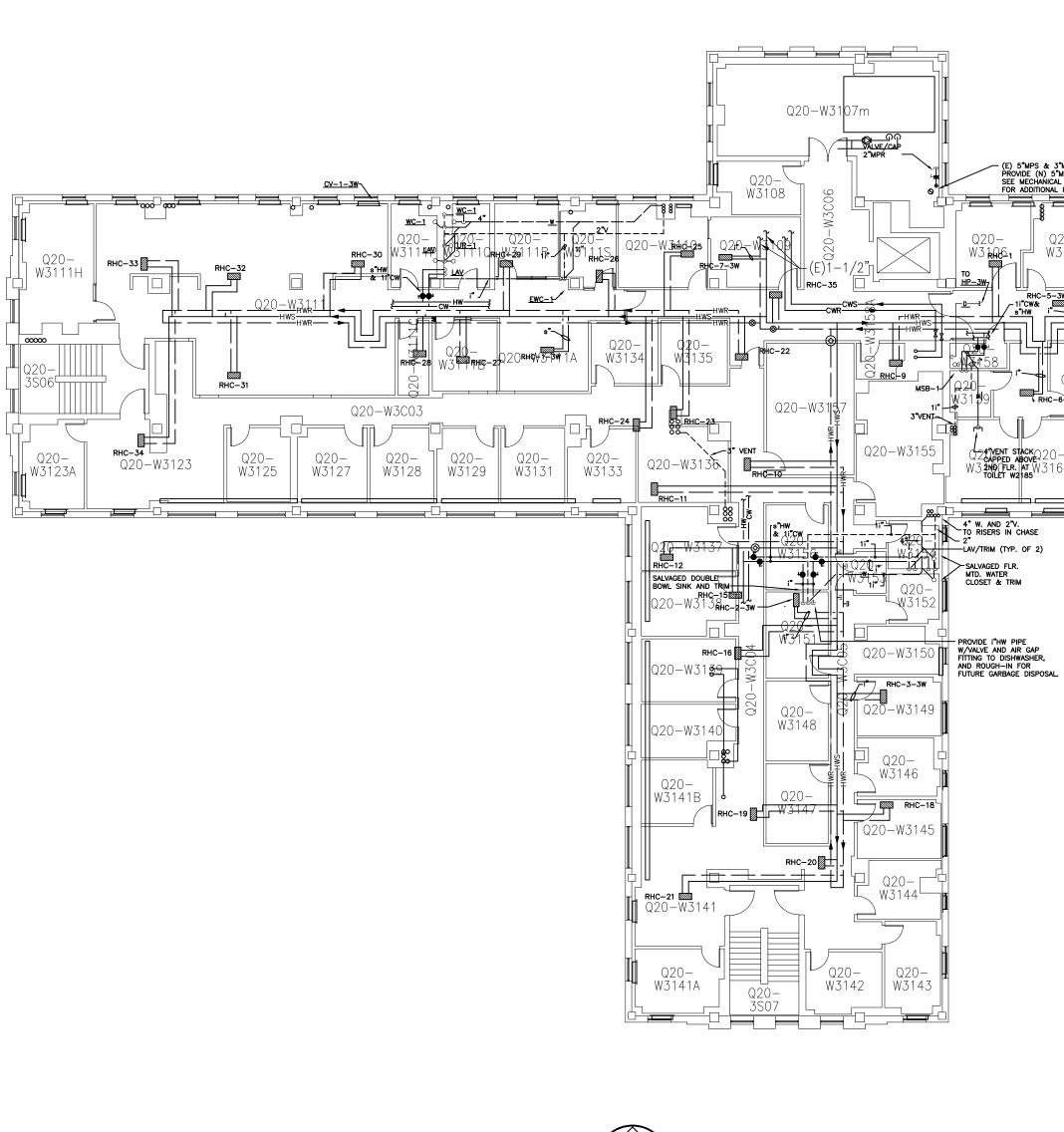






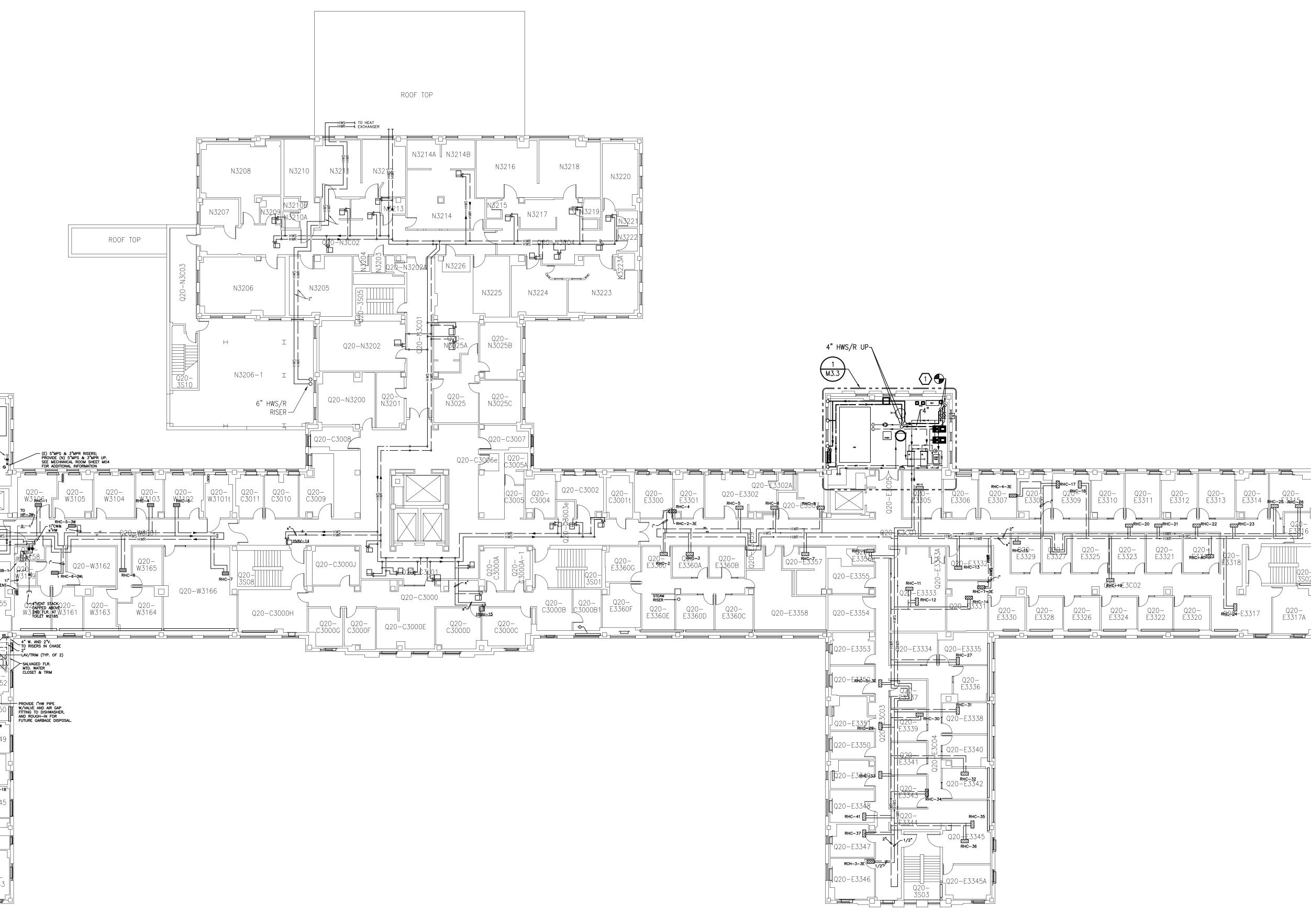


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SCALE: NONE

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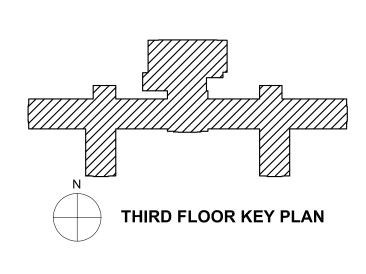
THIRD FLOOR OVERALL PIPING PLAN

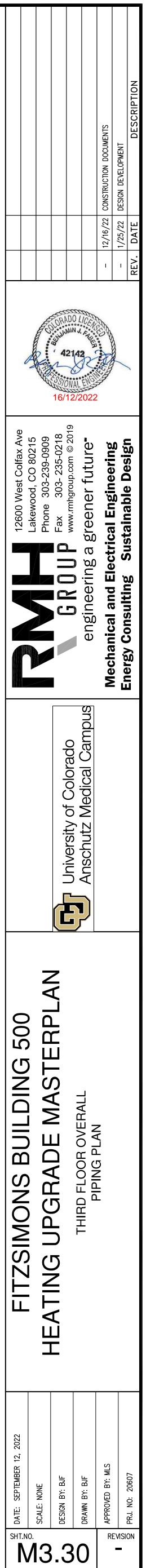
### SHEET NOTES

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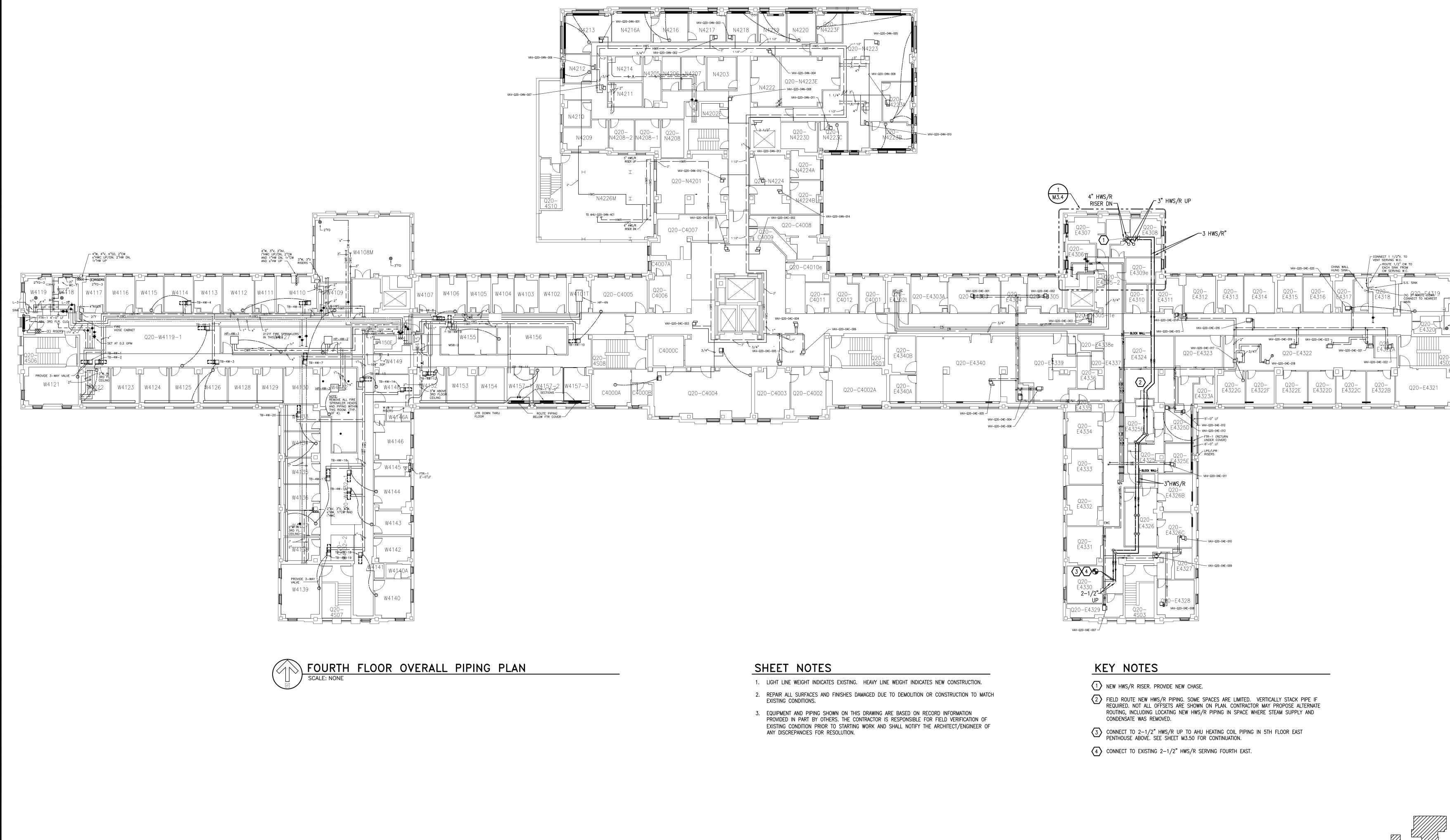
KEY NOTES

1 connect and extend new 4" Hws/r to existing 4" Hws/r vertical valued stub-outs.

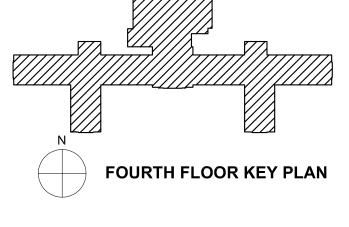


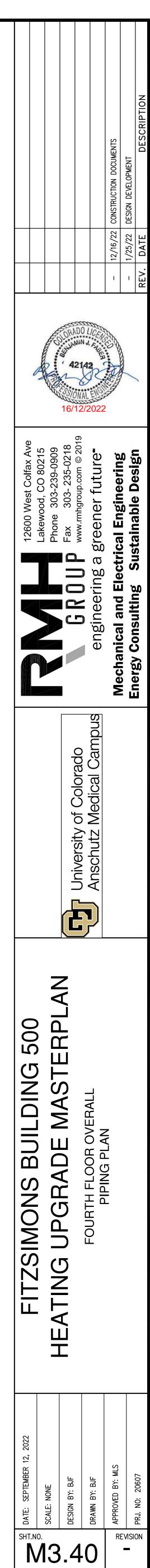


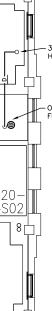




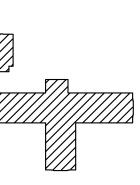
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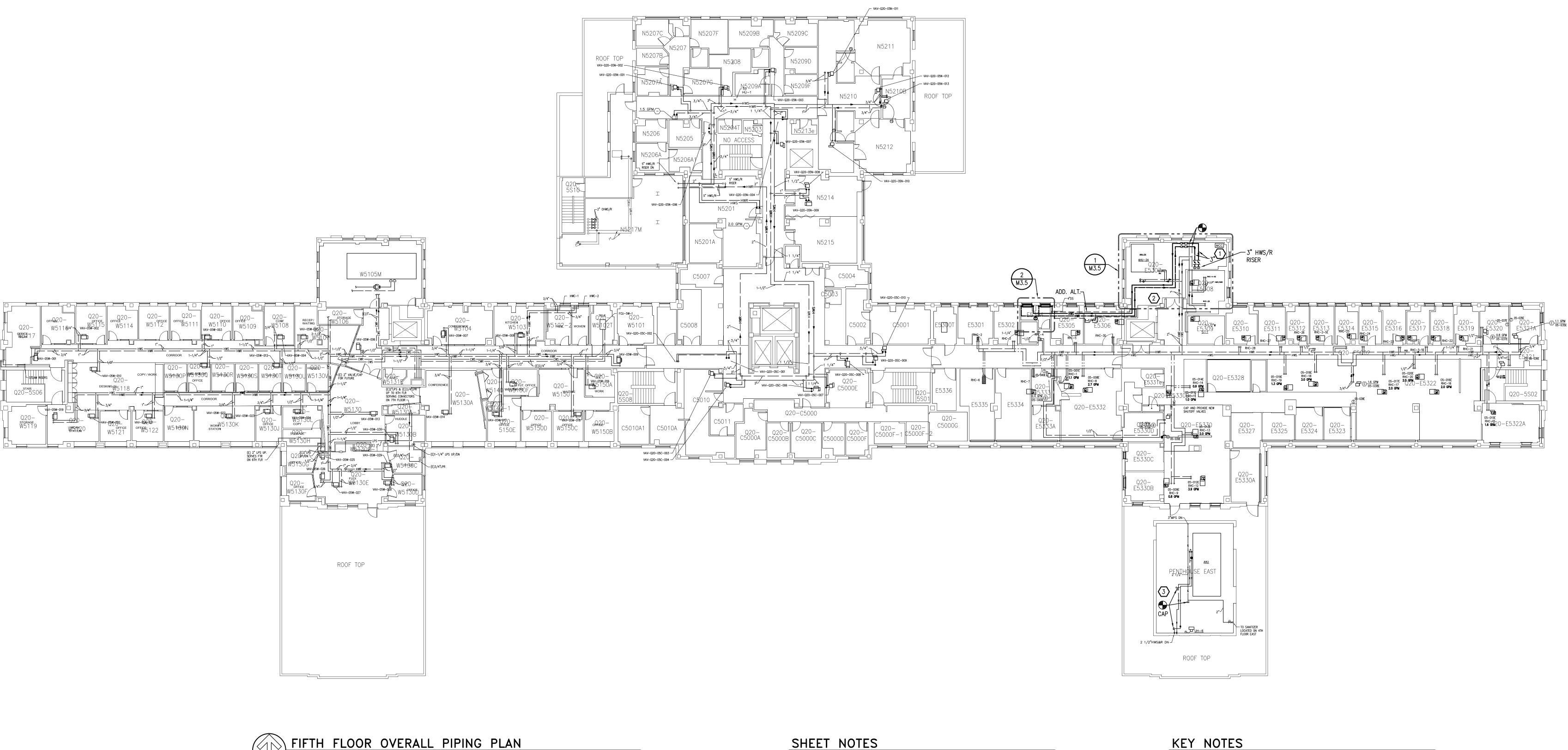






-0 - 3/4"D. UP TO HEAT PUMP DPEN-SITE AT FLOOR DRAIN





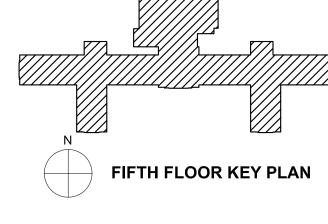
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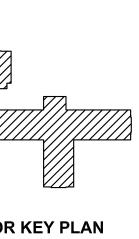
SCALE: NONE

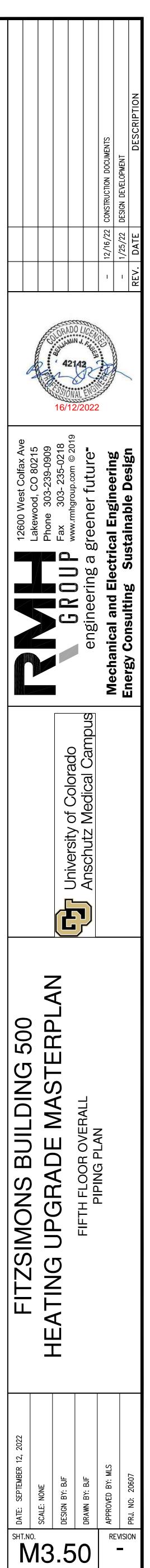
### SHEET NOTES

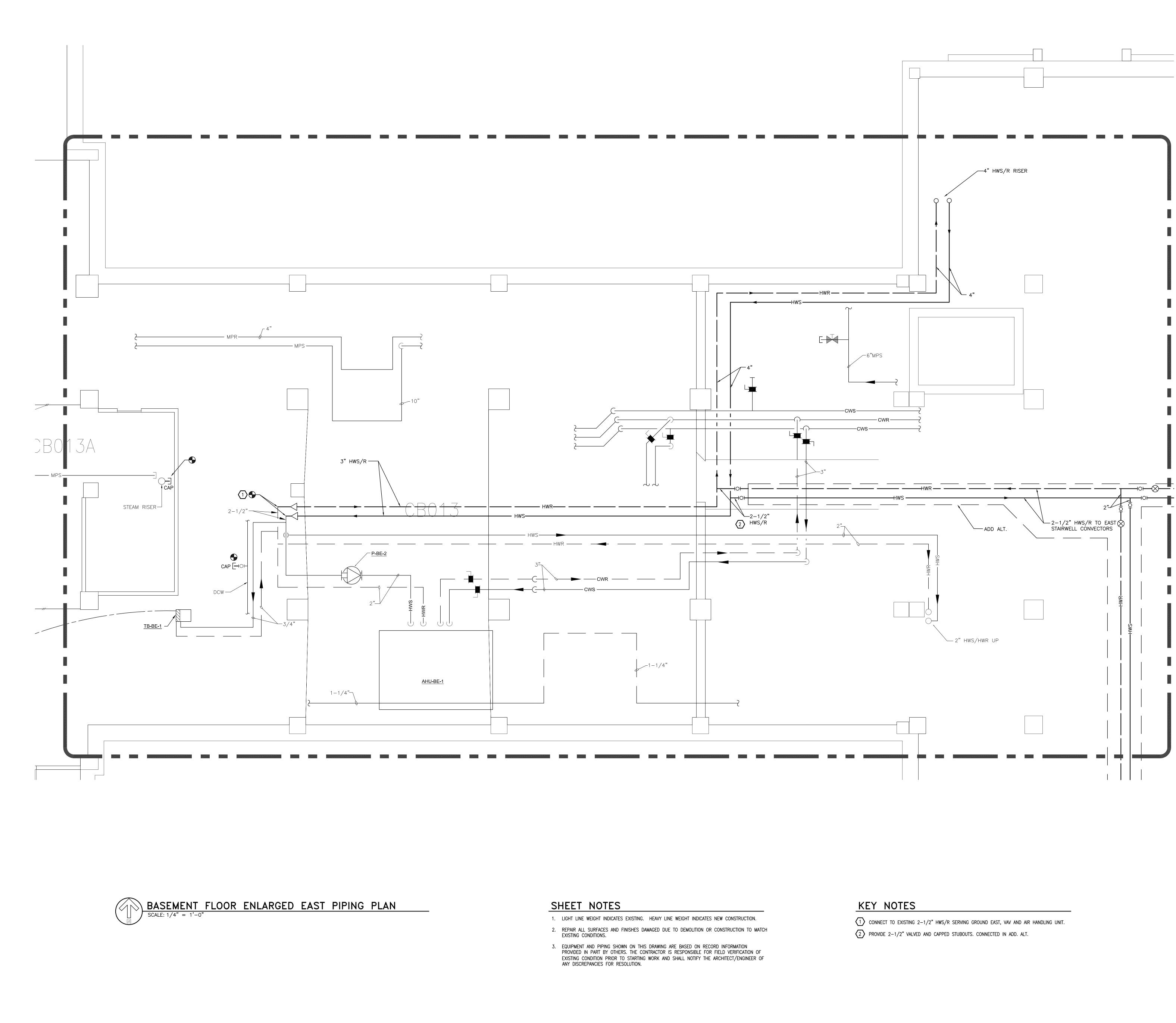
- 1. LIGHT LINE WEIGHT INDICATES EXISTING. HEAVY LINE WEIGHT INDICATES NEW CONSTRUCTION.
- 2. REPAIR ALL SURFACES AND FINISHES DAMAGED DUE TO DEMOLITION OR CONSTRUCTION TO MATCH EXISTING CONDITIONS.
- 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.

- 1 connect to existing 3" hws/r serving fifth east.
- (2) CAP STEAM SUPPLY AND CONDENSATE RETURN AT MAINS.
- $\overline{3}$  CAP HWS/R AND STEAM SUPPLY PIPING.

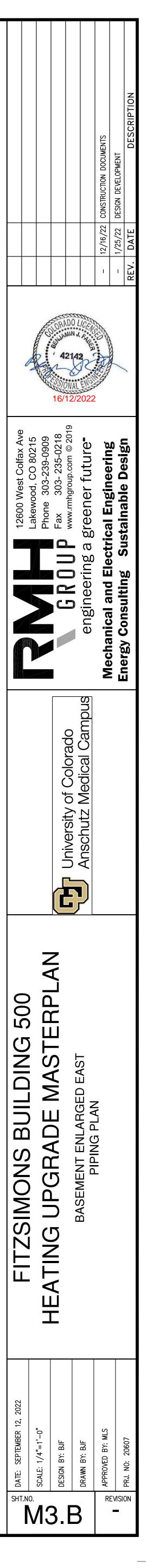


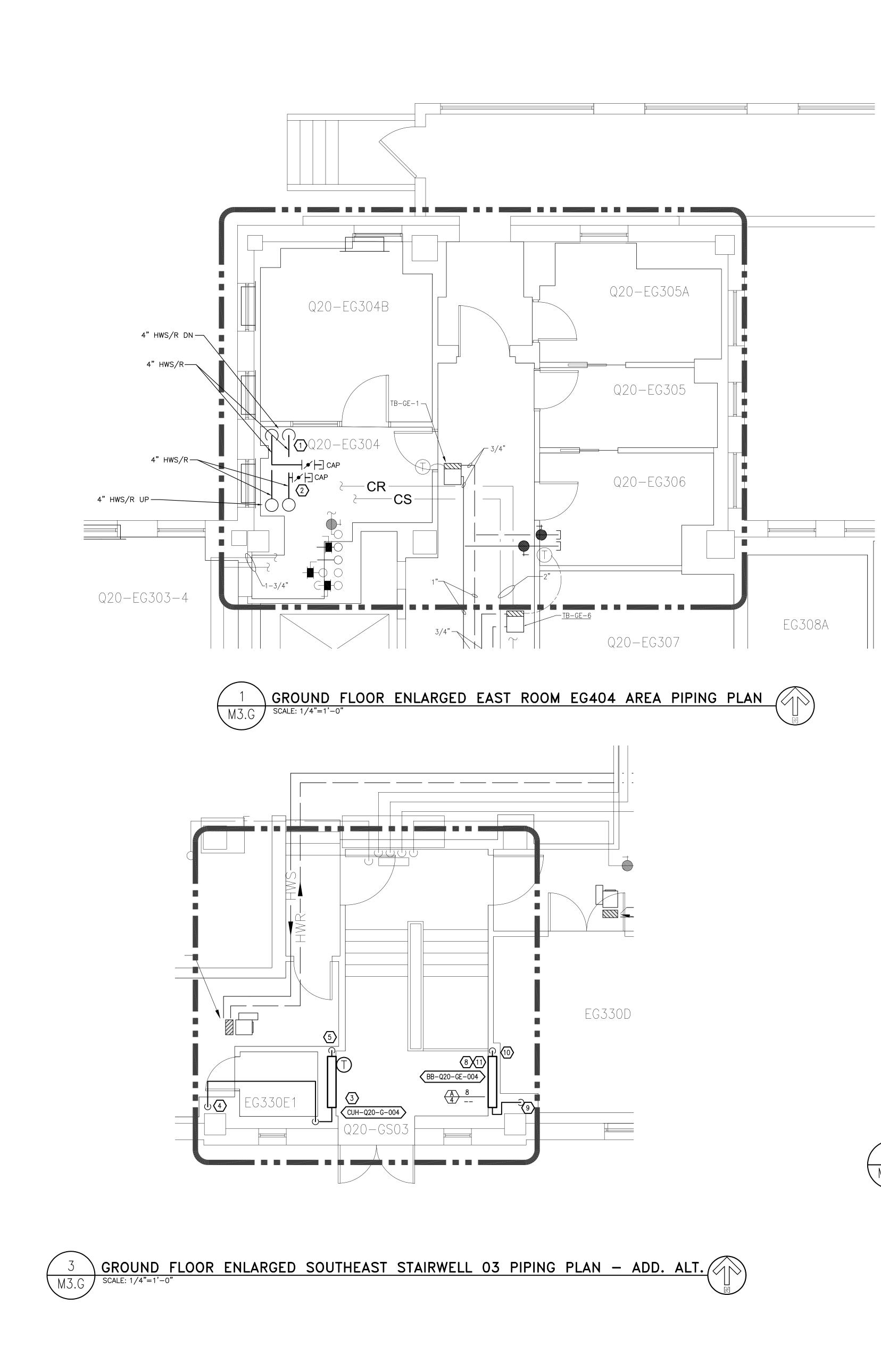




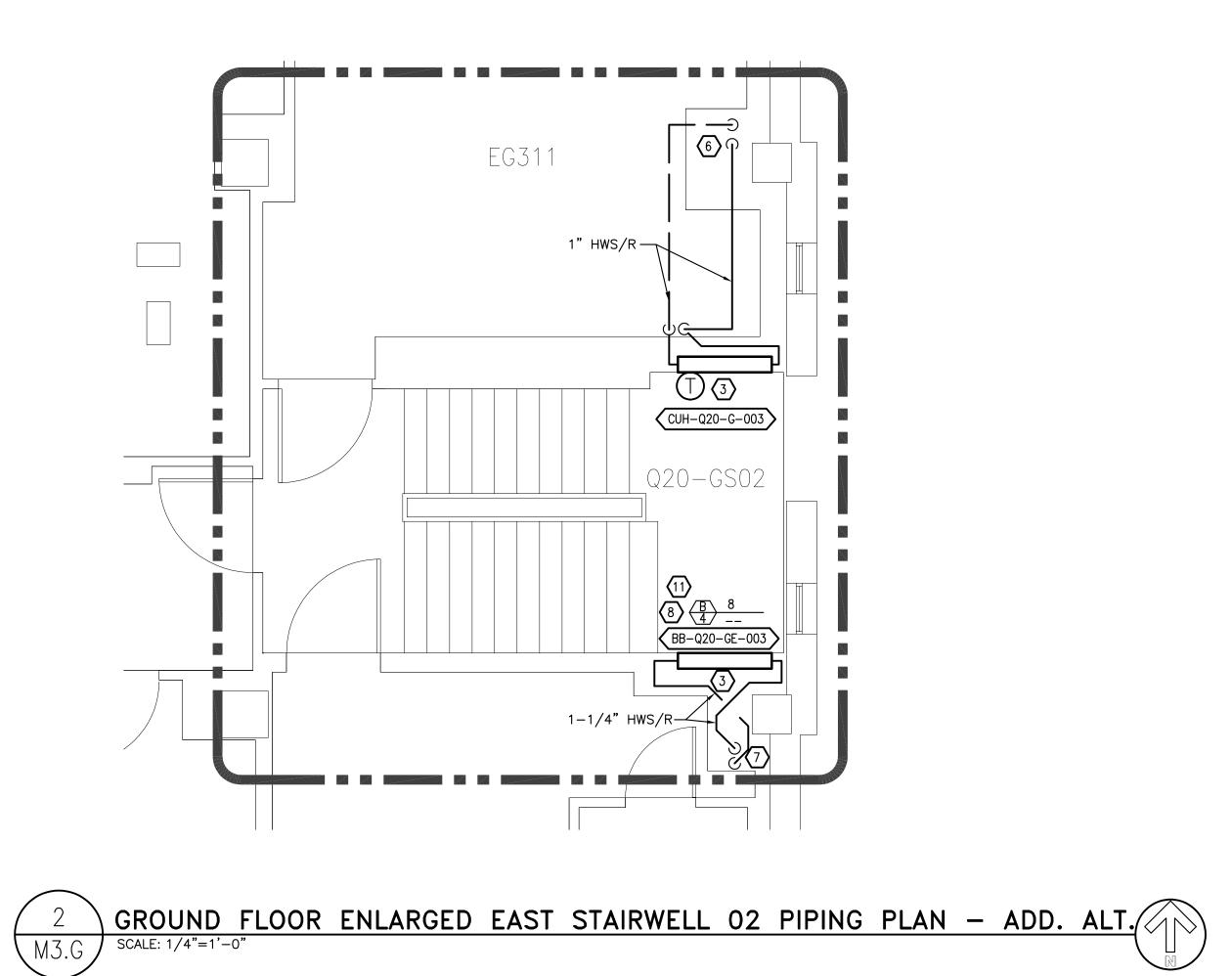


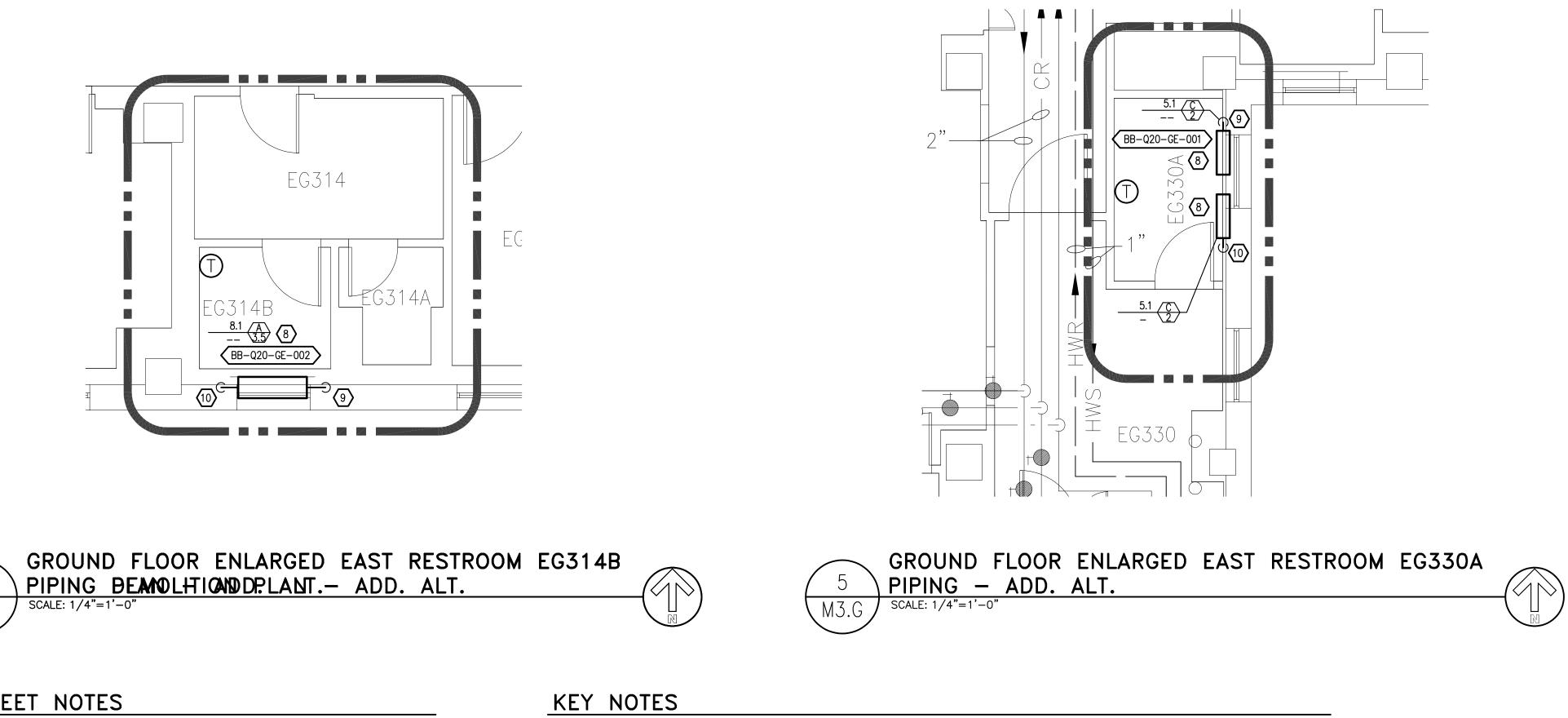
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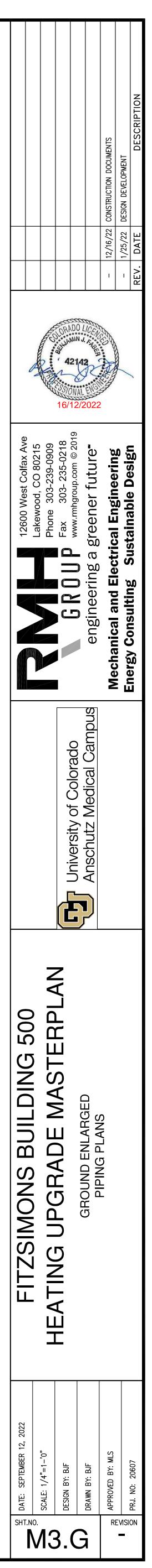
**M**3.G

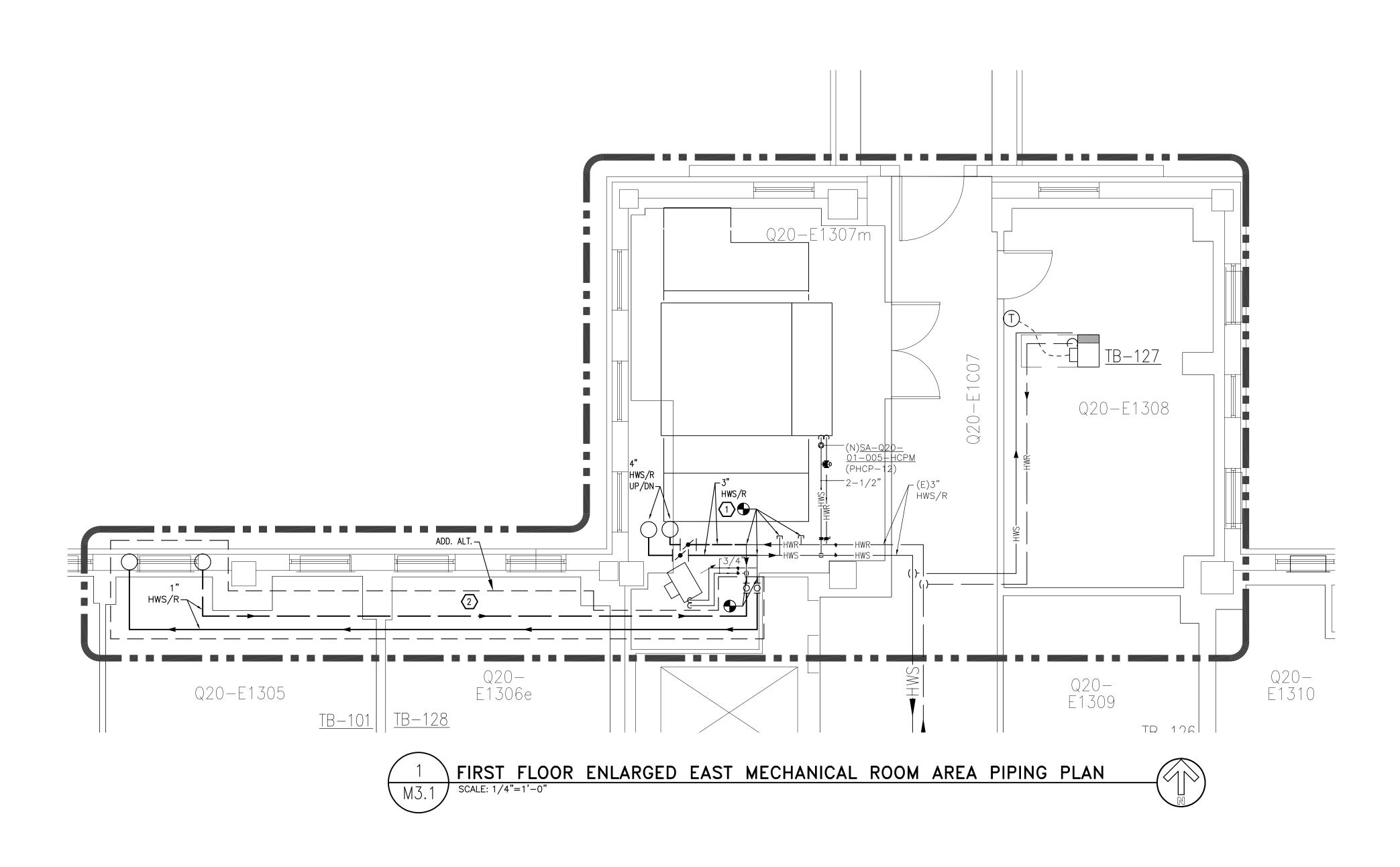
### SHEET NOTES

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- 4. FIELD VERIFY INNER CONVECTOR CABINET DIMENSIONS AFTER DEMOLITION AND BEFORE ORDERING NEW FIN TUBE. COORDINATE DISCREPANCIES WITH ENGINEER.
- 5. NEW HWS/R PIPING SERVING STAIRWELLS IS SHOWN AT INTENDED INSTALLATION LOCATIONS. REPORT FINDINGS AND DISCREPANCIES TO ENGINEER.
- 6. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE.
- 7. X-RAY ALL NEW FLOOR PENETRATIONS.
- 8. MODIFY FIRE SPRINKLER SYSTEM AS REQUIRED TO ACCOMMODATE NEW WORK.

- 1 NEW RISER WITH OFFSET/JOG.
- (2) provide 3" HWS/R CAPPED AND VALVED STUB-OUTS.
- 3 NEW HW RECESSED CABINET UNIT HEATER. INTEGRAL THERMOSTAT TO BE INTERLOCKED WITH ADJACENT BASEBOARD. SEE SCHEDULE, M1.1 AND DETAIL 3, M4.1 FOR FURTHER INFORMATION. COORDINATE WITH ELECTRICAL FOR CONVENIENCE OUTLET, LOCATED IN RECESS SPACE BELOW HEATER.
- 4 NEW 1" HWS DN.
- 5 NEW 1" HWR DN.
- 6 NEW 1" HWS/R DN.

- $\overline{7}$  NEW 1-1/4" HWS/R DN.
- 8 NEW HW CONVECTOR. SEE SCHEDULE, M1.1 AND DETAIL 2, M4.1 FOR FURTHER INFORMATION.
- $\left< \frac{9}{9} \right>$  NEW 1-1/4" HWS DN.
- 10 NEW 1-1/4" HWR DN.
- PROVIDE 3-WAY VALVE FOR STAIRWELL CONVECTOR. SEE DETAIL 2, SHEET M4.1 FOR PIPING AND CONTROL INFORMATION.

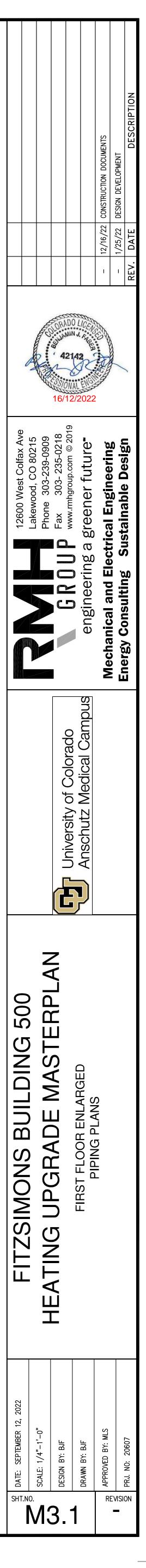


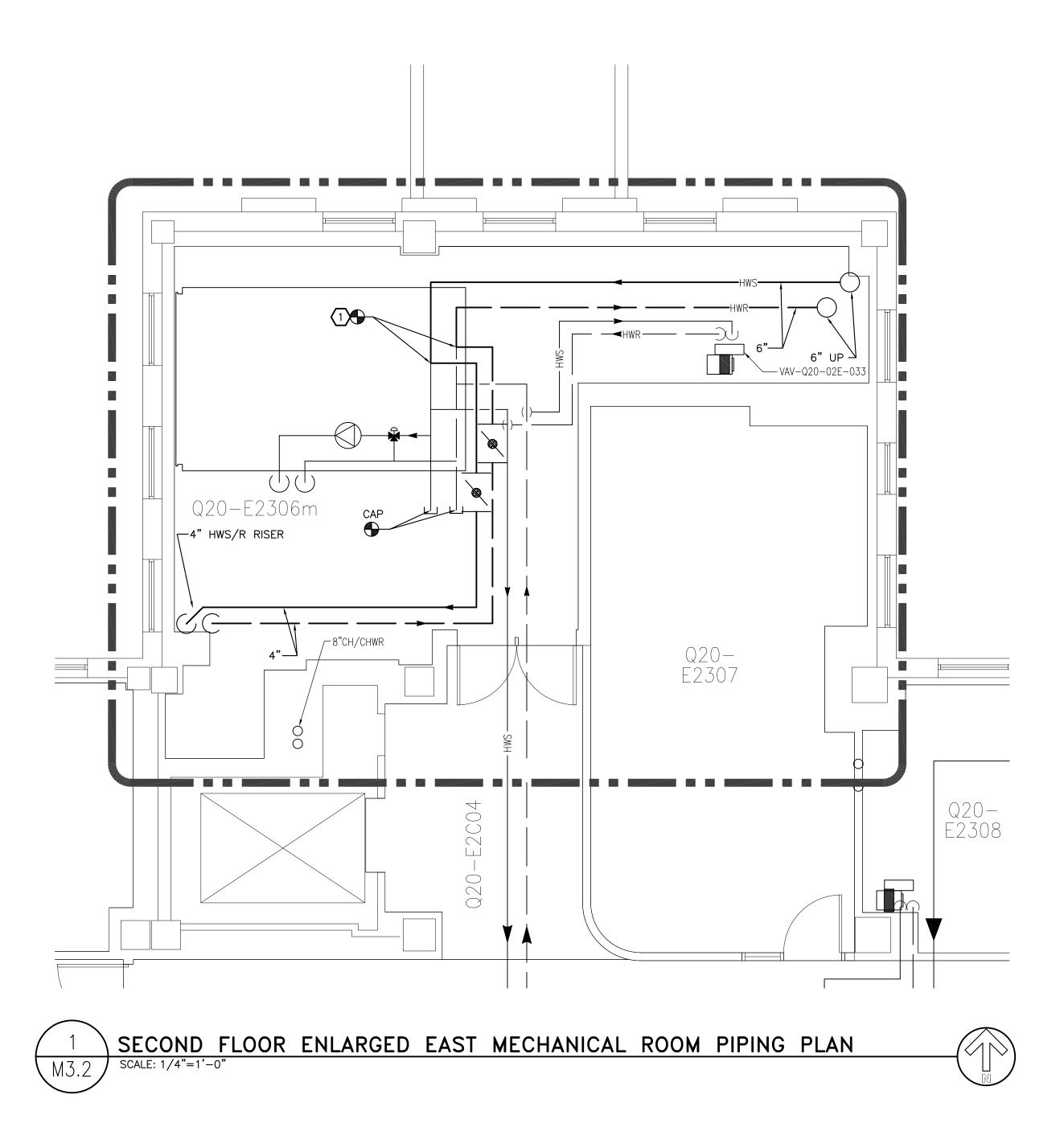


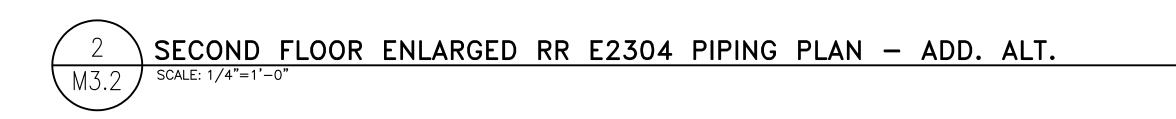
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- 5. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE.
- 6. X-RAY ALL NEW FLOOR PENETRATIONS.

### KEY NOTES

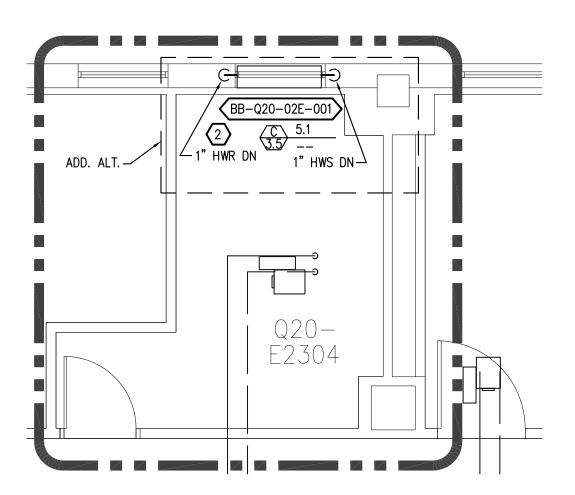
 CONNECT TO EXISTING 3" HWS/R SERVING FIRST EAST.
 ENCLOSE NEW HWS/R PIPING IN ELECTRICAL ROOM IN SOFFIT ALONG NORTH WALL. SEE DETAIL 4, M4.1.

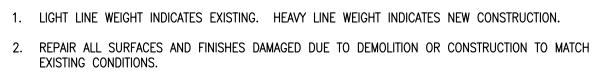






- EXISTING CONDITION PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
- 5. MODIFY FIRE SPRINKLER SYSTEM AS REQUIRED TO ACCOMMODATE NEW WORK.
- 6. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE.
- 7. X-RAY ALL NEW FLOOR PENETRATIONS.





### 3. EQUIPMENT AND PIPING SHOWN ON THIS DRAWING ARE BASED ON RECORD INFORMATION PROVIDED IN PART BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF

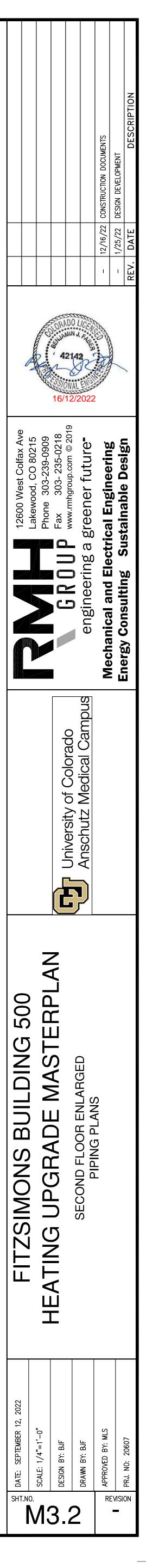
4. FIELD VERIFY INNER CONVECTOR CABINET DIMENSIONS AFTER DEMOLITION AND BEFORE ORDERING NEW FIN TUBE. COORDINATE DISCREPANCIES WITH ENGINEER.

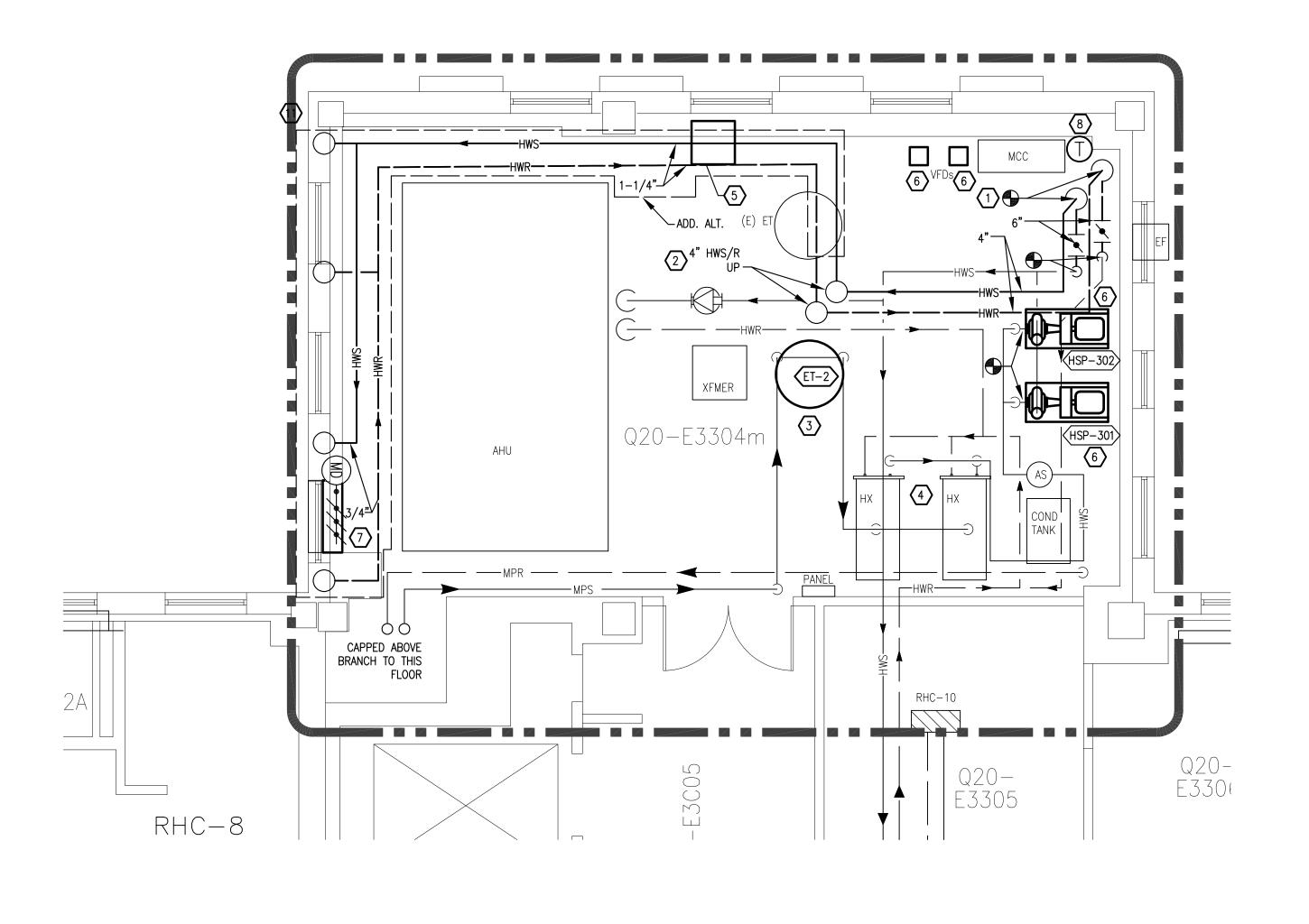
### KEY NOTES

 $\bigcirc$  Connect to existing 4" HWS/R serving second floor east.

2 NEW CONVECTOR. ADD. ALT. SEE SCHEDULE, M1.1 AND DETAIL 2, M4.1 FOR FURTHER INFORMATION.

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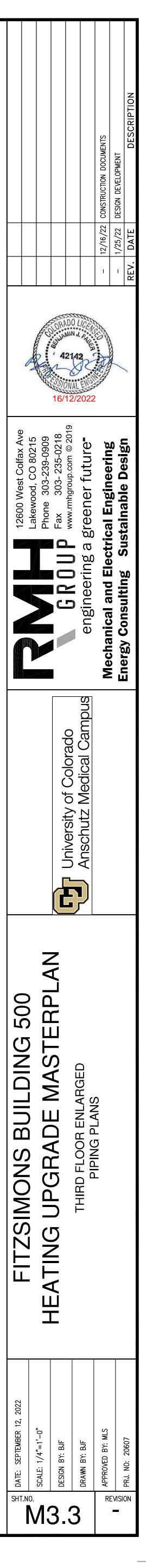


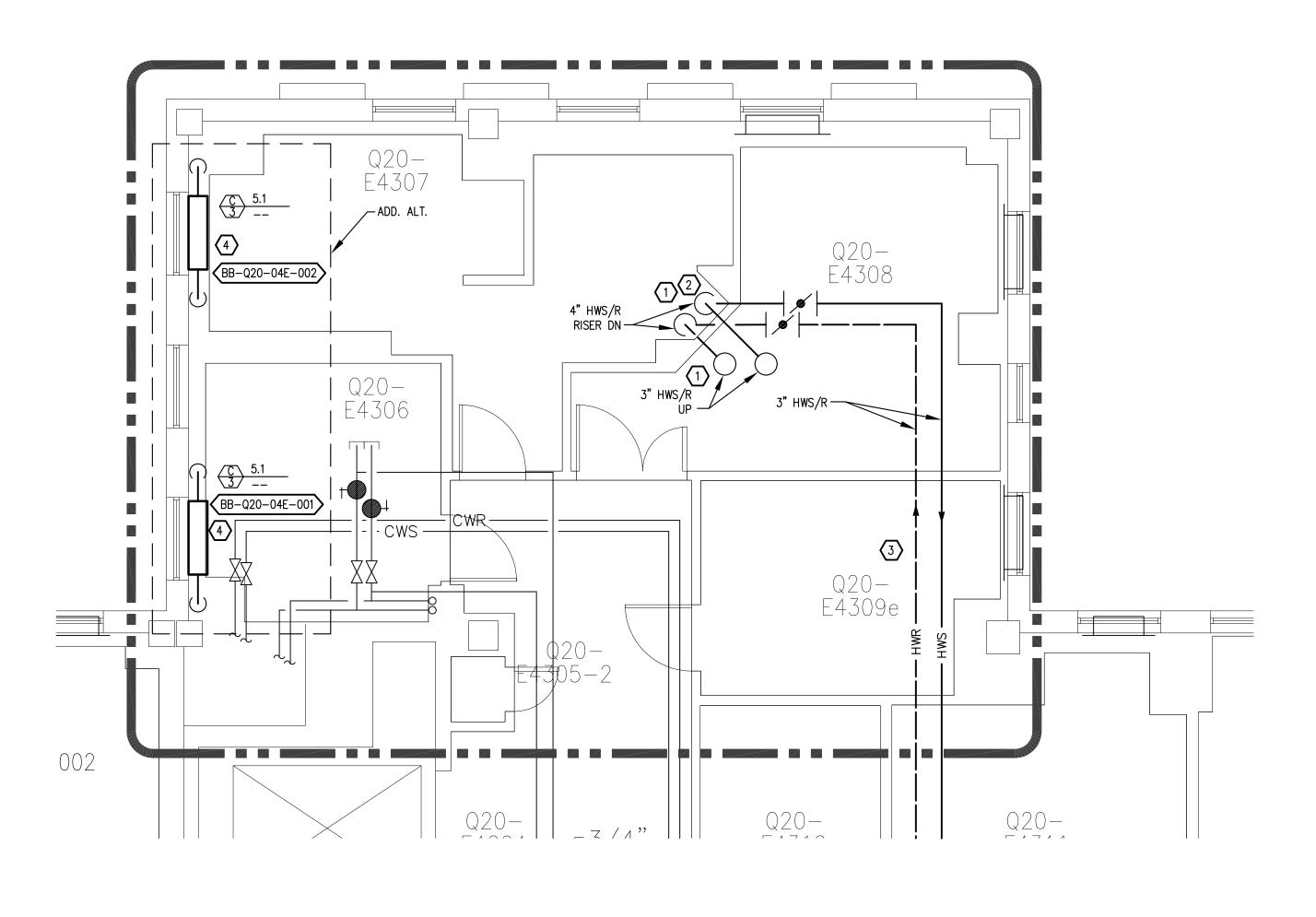
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- 5. MODIFY FIRE SPRINKLER SYSTEM AS REQUIRED TO ACCOMMODATE NEW WORK. 6. DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE.
- 7. X-RAY ALL NEW FLOOR PENETRATIONS.

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### KEY NOTES

- CONNECT AND EXTEND NEW 6" HWS/R FROM EXISTING 6" HWS/R, ALONG EAST WALL TO NEW VERTICAL 6" RISER DN AND PROVIDE NEW 4" HWS/R UP AS SHOWN. PROVIDE NEW 6" ISOLATION VALVES IN NEW HORIZONTAL SECTION (FORMERLY 4"). PROVIDE NEW 4" ISOLATION VALVES IN NEW VERTICAL SECTION (FORMERLY 3"). SEE M3.2 FOR PIPING CONTINUATION BELOW.
- (2) NEW 6" HWS/R RISER UP. SEE M3.4 FOR CONTINUATION.
- 3 NEW EXPANSION TANK. SEE EQUIPMENT SCHEDULES, M1.1. CHARGE EXISTING TANK TO MATCH NEW TANK CHARGE. DO NOT CLOSE SYSTEM AFTER FILLING UNTIL SYSTEM FLUID HAS REACHED ROOM TEMPERATURE (>60° F).
- 4 SEE CONTROLS DIAGRAM, SHEET M4.1 FOR HEAT EXCHANGER CONTROLS REFERENCE.
- 5 REPLACE GLYCOL FEEDER WITH ENGINEER APPROVED EQUIVALENT. SEE SPECIFICATION 23 25 00 FOR APPROVED MANUFACTURERS AND FURTHER INFORMATION. RECONNECT TO EXISTING PIPING AND USE EXISTING ADJACENT OUTLET FOR POWER.
- 6 PROVIDE NEW HEATING WATER PUMP AND VFD. RE: ELECTRICAL DRAWINGS AND MECHANICAL SCHEDULE. CONNECT TO EXISTING CONTROLS.
- $\bigtriangledown$  provide New Motorized 40"x32" supply damper and interlock its operation with existing exhaust fan. see detail 6, sheet M4.1.
- $\overline{(8)}$  provide new temperature sensor for exhaust fan on east wall.







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- MODIFY FIRE SPRINKLER SYSTEM AS REQUIRED TO ACCOMMODATE NEW WORK.
   DO NOT DAMAGE OR MODIFY EXISTING FLOOR AND WALL TILE.
- 7. X-RAY ALL NEW FLOOR PENETRATIONS.

4308	&	E4309e	PIPING	PLAN	

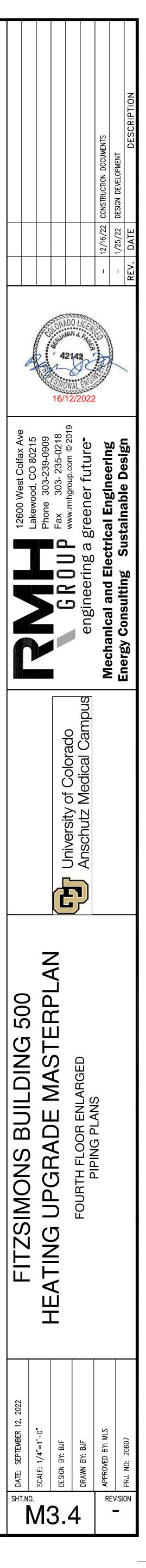
### KEY NOTES

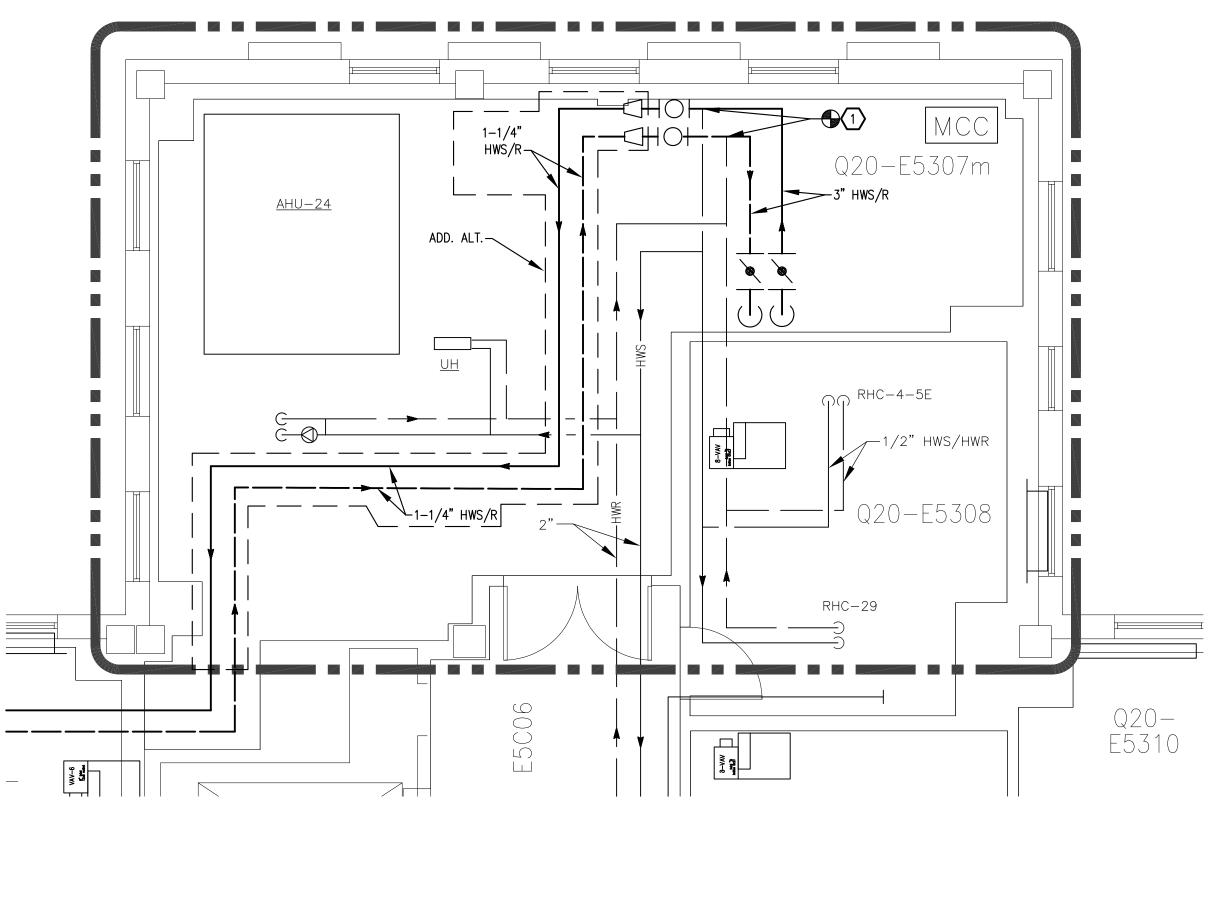
 $\bigcirc$  NEW HWS/R RISER. 4" DN AND 3" UP.

2 provide New Chase Enclosure for New Riser. Paint and finish to match existing walls. See detail 5, M4.1.

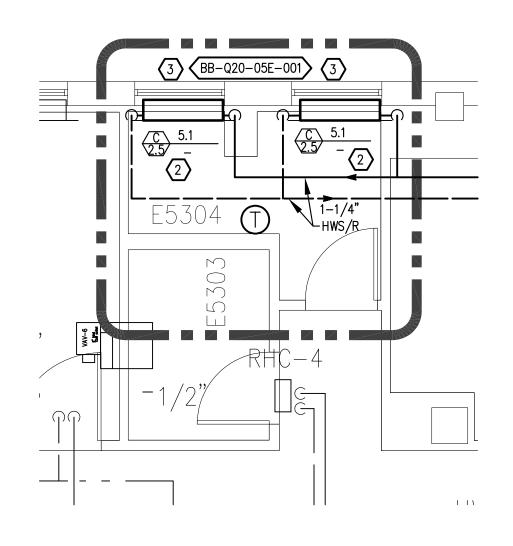
3 ENCLOSE NEW HWS/R PIPING IN SOFFIT THROUGH ELECTRICAL ROOM. SEE DETAIL 4, M4.1. CONTRACTOR MAY PROPOSE ALTERNATE ROUTING, INCLUDING LOCATING NEW HWS/R PIPING IN SPACE WHERE STEAM SUPPLY AND CONDENSATE WAS REMOVED.

4 NEW HWS/R AND CONVECTOR IN EXISTING CABINETS. SEE SCHEDULE, M1.1 AND DETAIL 2, M4.1 FOR FURTHER INFORMATION.









### 2 M3.5/

### SHEET NOTES

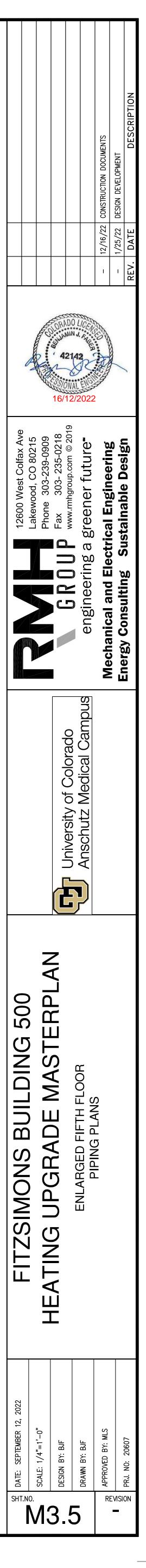
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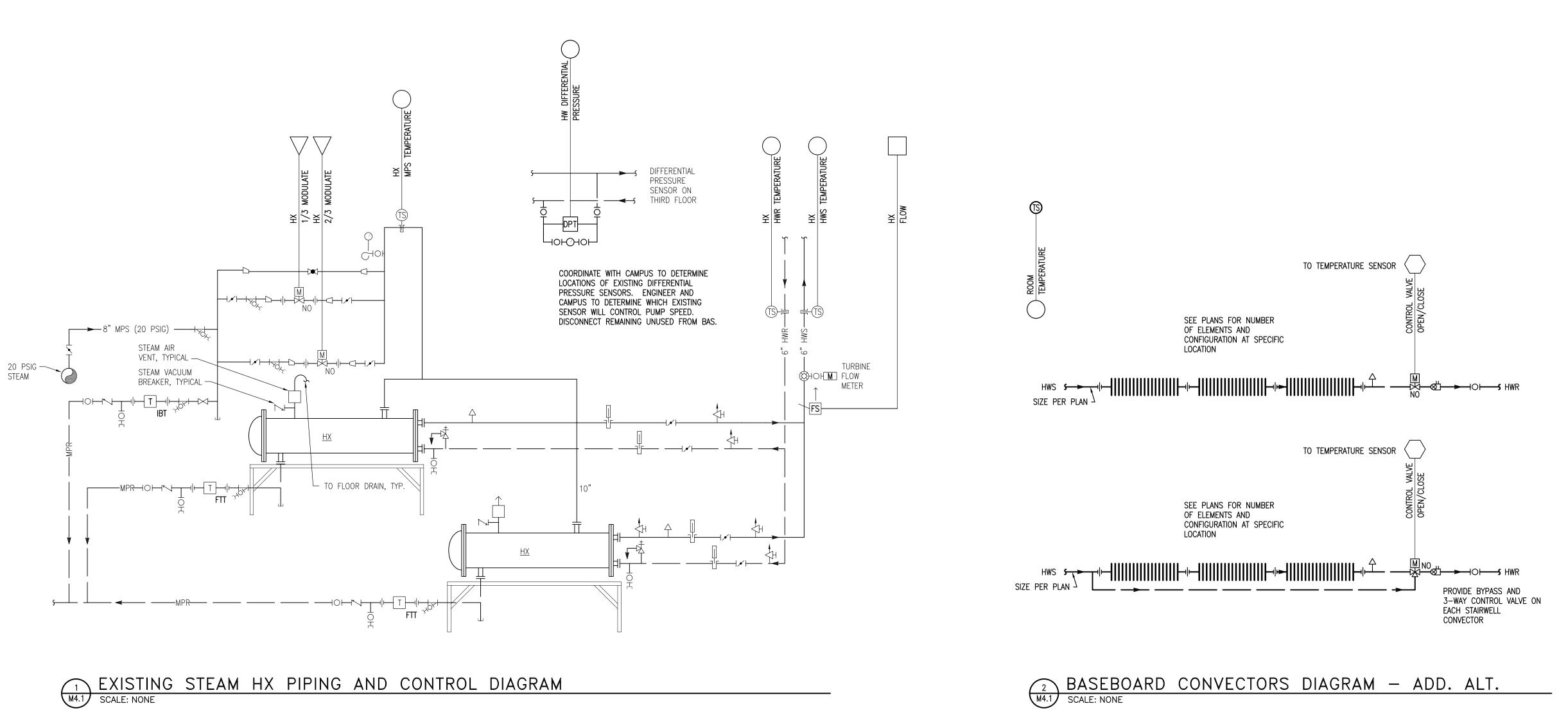
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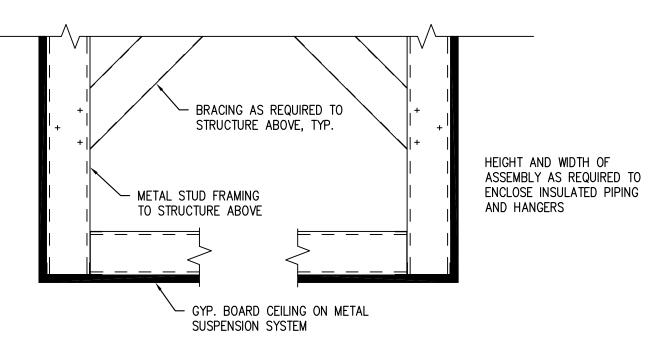


KEY NOTES

- $\bigcirc$  CONNECT TO EXISTING 3" HWS/R SERVING FIFTH EAST.
- 2 NEW HWS/R AND CONVECTOR IN EXISTING CABINETS. SEE SCHEDULE, M1.1 AND DETAIL 2, M4.1 FOR FURTHER INFORMATION.
- 3 PROVIDE NEW CAMPUS "STORM WINDOW" TREATMENT TO WINDOWS IN THIS ROOM. COORDINATE WITH PROJECT MANAGER.





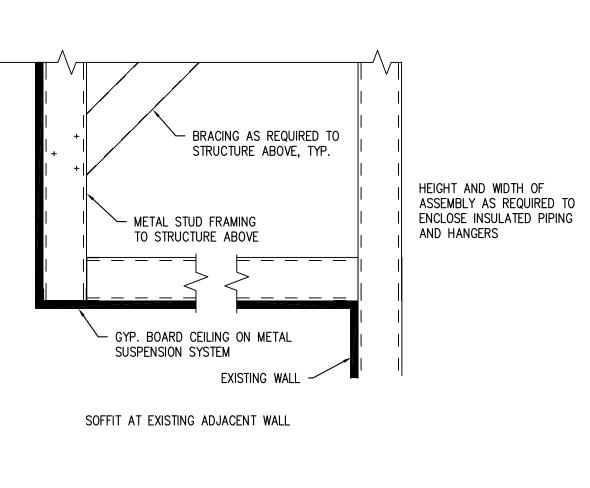


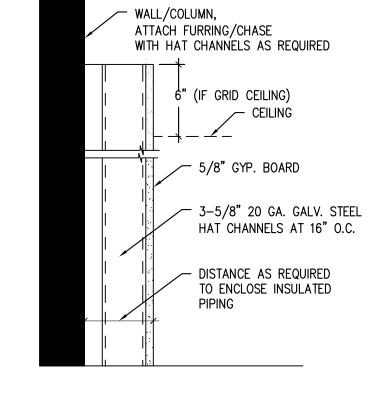
SOFFIT WITH NO EXISTING ADJACENT WALL

### 4 SOFFIT FOR PIPING ENCLOSURE DETAILS M4.1 SCALE: NONE NOTEC. NOTES:

1. TAPE, SKIM AND FINISH GYP. BOARD JOINTS.

2. PRIME AND PAINT FINISHED GYP. BOARD ASSEMBLY.

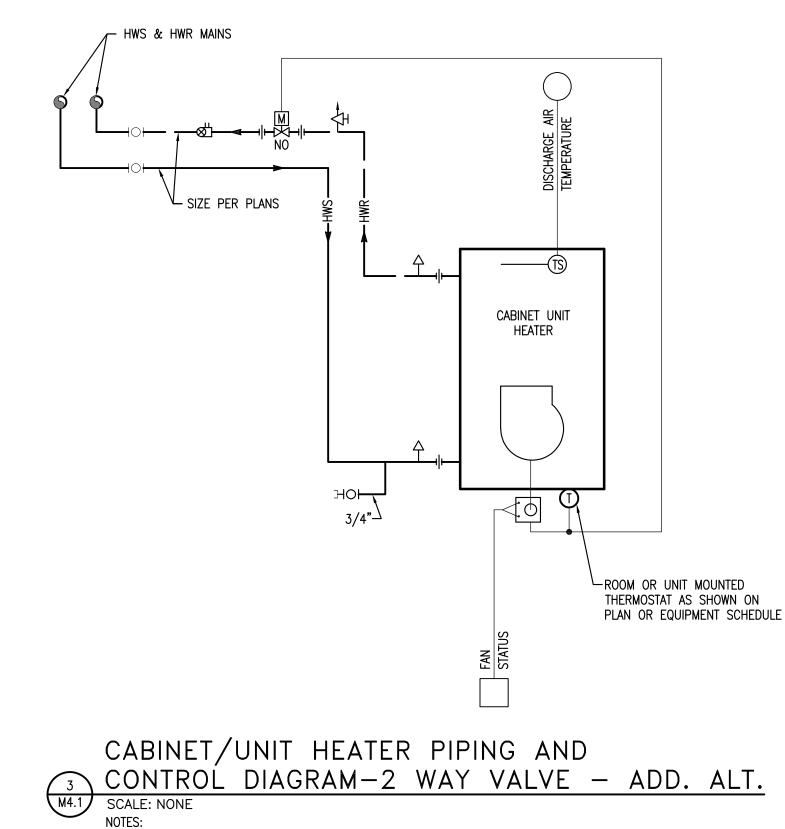




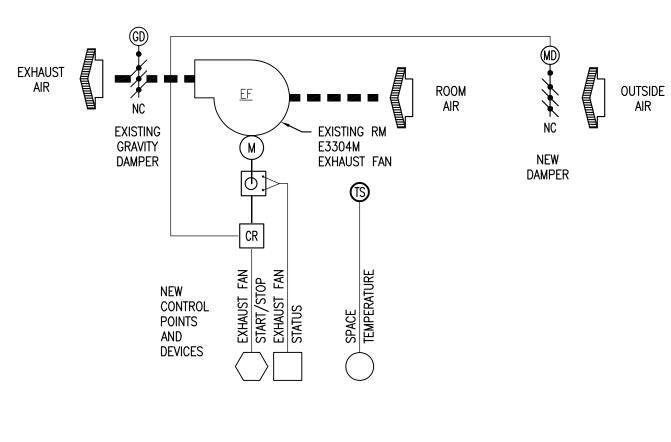


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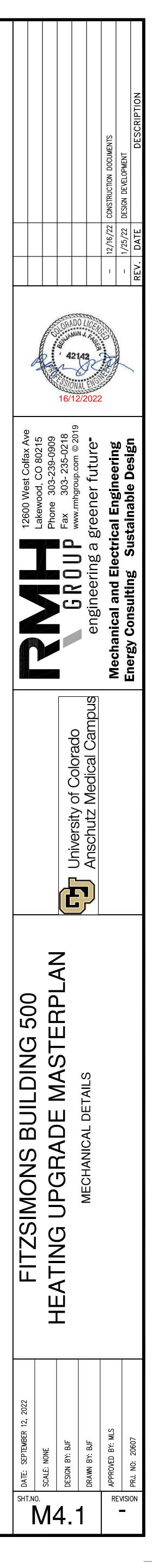
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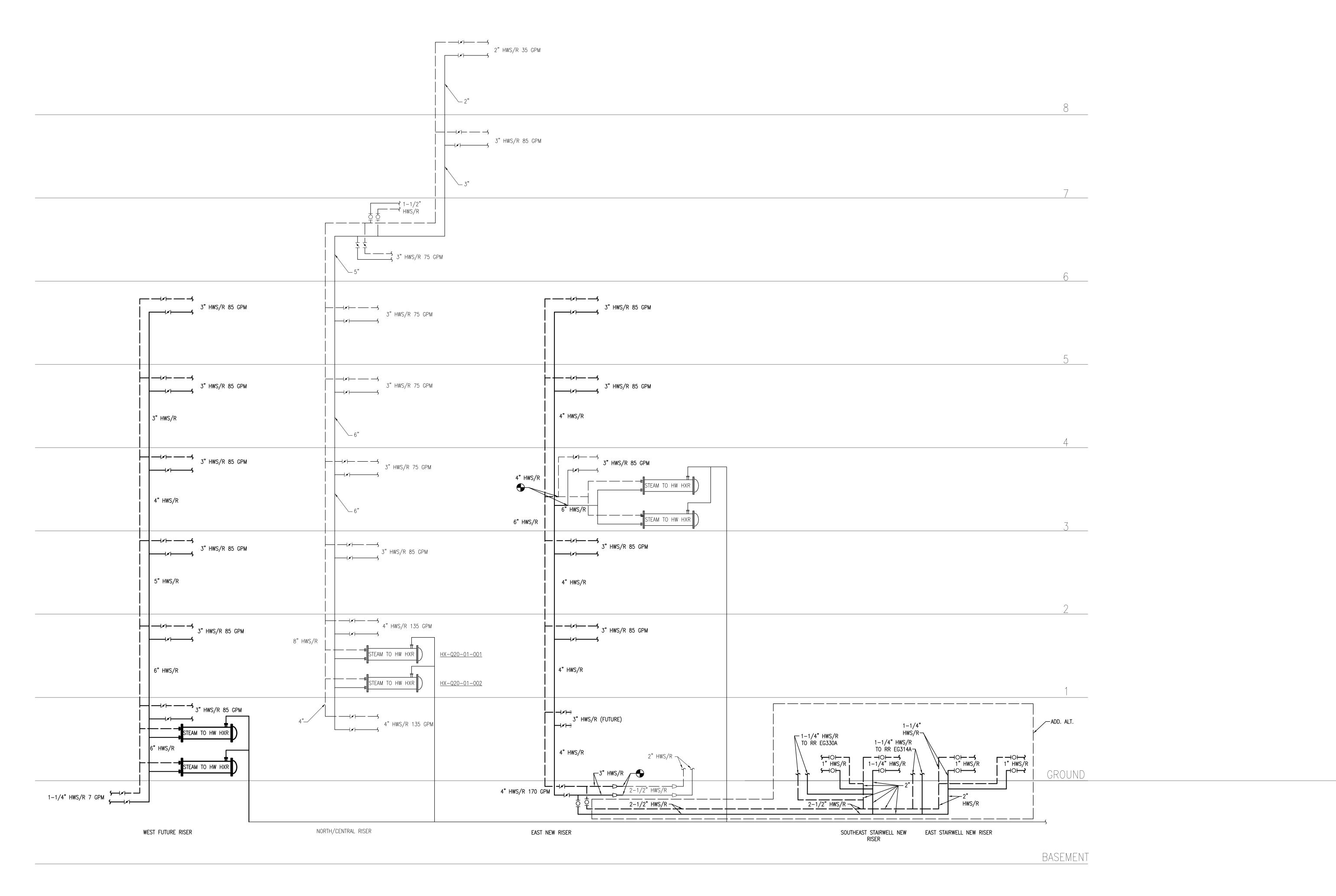


NOTES: 1. INSTALL FLOW MEASURING DEVICES PER MANUFACTURER'S RECOMMENDATIONS 2. REDUCERS SHALL BE PROVIDED AT COIL AND TEMPERATURE CONTROL VALVE WHERE REQUIRED.



6 EXHAUST FAN CONTROL DIAGRAM M4.1 SCALE: NONE





### 1 NEW HEATING WATER RISER DIAGRAM M5.0 SCALE: NONE

### SHEET NOTES

- 1. NORTH/CENTRAL RISER INSTALLED AS PART OF PREVIOUS PROJECT.
- 2. WEST RISERS SHOWN FOR FUTURE PHASES OF THE MASTERPLAN.
- 3. EAST RISER INSTALLED AS PART OF THIS PROJECT.
- 4. SEE PLANS FOR RESTROOM ADD ALT WORK (NOT SHOWN HERE).

