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LOVELAND HIGH SCHOOL HVAC CONTROLS UPDATE

LOVELAND CITY SCHOOL DISTRICT 1 Tiger Trail, Loveland, OH 45140

BID DOCUMENTS

02/21/2023 PURSUANT TO R.C. 153.12, THE ESTIMATED COST OF THIS PROJECT IS \$1,100,000.

> LOVELAND PROJECT MANAGER : JOHN AMES CMTA Project Manager: KYLE WAYMEYER (kwaymeyer@cmta.com)





GENERAL NOTES - MECHANICAL

- "GENERAL CONDITIONS MECHANICAL" OF THE PROJECT SPECIFICATIONS AND TO ALL OTHER CONTRACT DOCUMENTS AS THEY APPLY TO THIS BRANCH OF WORK. ATTENTION IS ALSO DIRECTED TO ALL OTHER SECTIONS OF THE CONTRACT DOCUMENTS WHICH AFFECTS THE WORK AND WHICH ARE HEREBY MADE A PART OF THE WORK SPECIFIED. ALL MANUFACTURERS, SUPPLIERS, FABRICATORS, CONTRACTORS, ETC. SUBMITTING PROPOSALS FOR ANY PART OF THE WORK, SERVICES, MATERIALS OR EQUIPMENT TO BE USED ON OR APPLIED TO THIS PROJECT ARE HEREBY DIRECTED TO FAMILIARIZE THEMSELVES WITH THE
- CONTRACT DOCUMENTS. IN CASE OF CONFLICTS, THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR CLARIFICATION AND FINAL DETERMINATION PRIOR TO THE BID. THE WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, TRANSPORTATION, SUPPLIES, MATERIALS, APPURTENANCES AND SERVICES NECESSARY FOR THE SATISFACTORY INSTALLATION OF THE COMPLETE AND OPERATING SYSTEMS INDICATED OR SPECIFIED IN THE CONTRACT DOCUMENTS.
- ANY MATERIALS, LABOR, EQUIPMENT OR SERVICES NOT MENTIONED SPECIFICALLY HEREIN WHICH MAY BE NECESSARY TO COMPLETE ANY PART OF THE SYSTEMS IN A SUBSTANTIAL MANNER, IN COMPLIANCE WITH THE REQUIREMENTS STATED, IMPLIED OR INTENDED IN THE PLANS AND SPECIFICATIONS, SHALL BE INCLUDED IN THE BID AS PART OF THE CONTRACT. THE ENGINEER DOES NOT DEFINE THE SCOPE OF INDIVIDUAL TRADES, SUBCONTRACTORS,
- SYSTEM USED WHICH IDENTIFIES DISCIPLINES IS SOLELY FOR THE ENGINEER'S CONVENIENCE AND IS NOT INTENDED TO DEFINE A SUBCONTRACTOR'S SCOPE OF WORK. INFORMATION REGARDING INDIVIDUAL TRADES, SUBCONTRACTORS, MATERIAL SUPPLIERS AND VENDORS MAY BE DETAILED, DESCRIBED AND INDICATED AT DIFFERENT LOCATIONS THROUGHOUT THE CONTRACT DOCUMENTS. NO CONSIDERATION WILL BE GIVEN TO REQUESTS FOR CHANGE ORDERS FOR FAILURE TO OBTAIN AND REVIEW THE COMPLETE SET OF CONTRACT DOCUMENTS WHEN PREPARING BIDS, PRICES AND QUOTATIONS. UNLESS STATED OTHERWISE, THE SUBDIVISION AND ASSIGNMENT OF WORK UNDER THE VARIOUS SECTIONS SHALL BE THE
- RESPONSIBILITY OF THE CONTRACTOR HOLDING THE PRIME CONTRACT. 6. IT IS THE INTENTION OF THE CONTRACT DOCUMENTS TO CALL FOR A COMPLETE AND OPERATIONAL SYSTEM, INCLUDING ALL COMPONENTS, ACCESSORIES, FINISH WORK, ETC NECESSARY FOR TROUBLE FREE OPERATION; TESTED AND READY FOR OPERATION. ANYTHING THAT MAY BE REQUIRED, IMPLIED, OR INFERRED BY THE CONTRACT DOCUMENTS SHALL BE PROVIDED AND INCLUDED AS PART OF THE BID. ALL CONTRACTORS AND VENDORS PROVIDING A BID FOR THIS PROJECT SHALL REVIEW THE PLANS AND SPECIFICATIONS AND DETERMINE ANY MODIFICATIONS AND/OR ADJUSTMENTS
- NECESSARY RELATIVE TO THE PROPOSED EQUIPMENT AND MATERIALS WITH SPECIFIC MANUFACTURER'S INSTALLATION REQUIREMENTS. INCLUDE IN THE BID ANY NECESSARY METHODS, FEATURES, OPTIONS, ACCESSORIES, ETC. NECESSARY TO INSTALL THE PROPOSED EQUIPMENT AND MATERIALS, REGARDLESS OF WHETHER USED AS BASIS OF DESIGN OR BEING OFFERED AS A SUBSTITUTION, IN ACCORDANCE WITH THE SPECIFIC MANUFACTURER'S INSTALLATION REQUIREMENTS, WHETHER SPECIFICALLY DETAILED OR NOT, WITHIN THE PLANS AND SPECIFICATIONS.
- 8. THE BIDDER/PROPOSER SHALL COMPLETELY REVIEW THE CONTRACT DOCUMENTS. ANY INTERPRETATION AS TO DESIGN INTENT OR SCOPE SHALL BE PROVIDED BY THE ENGINEER. SHOULD ANY INTERPRETATION BE REQUIRED, THE BIDDER/PROPOSER SHALL REQUEST A CLARIFICATION NOT LESS THAN TEN (10) DAYS PRIOR TO THE SUBMISSION OF THE BID SO THAT THE CONDITION MAY BE CLARIFIED BY ADDENDUM. IN THE EVENT OF ANY CONFLICT, DISCREPANCY, OR INCONSISTENCY DEVELOPS; THE INTERPRETATION OF THE ENGINEER SHALL BE FINAL.
- 9. THE CONTRACTOR SHALL PROVIDE LAYOUT CONFIRMATION OF EQUIPMENT LOCATIONS TO VERIFY THAT ALL COMPONENTS WILL FIT IN THE PROPOSED SPACE AND HAVE ADEQUATE CLEARANCE FOR SERVICES. COORDINATE THE LOCATION OF DRAINS, CONNECTIONS, ETC. PRIOR TO COMMENCING INSTALLATION. WORK NOT SO COORDINATED SHALL BE REMOVED AND PROPERLY INSTALLED AT THE EXPENSE OF THE RESPONSIBLE CONTRACTOR(S). 10. EQUIPMENT AND MATERIALS SUBSTITUTIONS OR DEVIATIONS SHALL COMPLY WITH "GENERAL PROVISIONS - MECHANICAL PART 6." ANY VENDOR WISHING TO OBTAIN AN EQUIPMENT
- SUBMISSION OF THE PROPOSAL SO THAT IT MAY BE CONSIDERED AND POTENTIALLY INCLUDED BY ADDENDUM. REQUESTS MADE AFTER THIS PERIOD WILL BE REJECTED. 11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE REGARDLESS IF CONTRACTOR IS IGNORANT OF CODES, RULES, REGULATIONS, LAWS, ETC. THE CONTRACTOR SHALL ALSO BE VERSED IN ALL CODES, RULES, REGULATIONS, LAWS, ETC. PERTINENT TO THEIR PART OF THE WORK PRIOR TO SUBMISSION OF THE PROPOSAL.
- 12. ALL WARRANTIES SHALL BEGIN STARTING AT THE PROJECT'S SUBSTANTIAL COMPLETION DATE. ALL EQUIPMENT, MATERIAL AND LABOR WARRANTIES SHALL BE FURNISHED BY THE EQUIPMENT SUPPLIER/VENDOR. 3. WHEREVER WORK PENETRATES ROOFING, IT SHALL BE DONE IN A MANNER THAT WILL NOT DIMINISH OR VOID THE ROOFING GUARANTEE OR WARRANTY IN ANY WAY. COORDINATE ALL
- SUCH WORK WITH THE ROOFING INSTALLER. 14. DUCTWORK, PIPING AND EQUIPMENT SHALL BE KEPT CLEAN AT ALL TIMES. DUCTWORK STORED ON THE JOB SITE SHALL BE PLACED A MINIMUM OF 4" ABOVE THE FLOOR AND BE COMPLETELY COVERED IN PLASTIC. INSTALLED DUCTWORK SHALL BE PROTECTED WITH PLASTIC. DO NOT INSTALL THE DUCTWORK OR INSULATION (PIPE OR DUCT) IF THE BUILDING IS NOT "DRIED-IN". IF THIS IS REQUIRED, THE ENTIRE LENGTHS SHALL BE COVERED IN PLASTIC TO PROTECT. THE OWNER/ENGINEER SHALL PERIODICALLY INSPECT THAT THESE PROCEDURES ARE FOLLOWED. IF DEEMED UNACCEPTABLE, THE CONTRACTOR SHALL BE REQUIRED TO CLEAN THE DUCT SYSTEM
- UTILIZING A NADCA CERTIFIED CONTRACTOR. 15. THE PERMANENT SYSTEMS, WHEN INSTALLED, MAY BE USED FOR TEMPORARY SERVICES WITH THE CONSENT OF THE ENGINEER AND IN STRICT ACCORDANCE WITH "GENERAL PROVISIONS -MECHANICAL - TEMPORARY USE OF EQUIPMENT." 16. THE CONTRACTOR AND THEIR SUBCONTRACTORS SHALL INCLUDE IN THE BID TO PROVIDE
- EQUIPMENT AND CONTROLS STARTUP AND VERIFICATION FOR ALL MECHANICAL SYSTEMS SPECIFIED FOR THIS PROJECT AND IN STRICT ACCORDANCE WITH "GENERAL PROVISIONS -MECHANICAL - EQUIPMENT/CONTROLS STARTUP & VERIFICATION." 17. THE CONTRACTOR SHALL DETERMINE FROM THE CONTRACT DOCUMENTS, THE DATE OF COMPLETION FOR THE PROJECT AND INSURE THAT EQUIPMENT DELIVERY SCHEDULES CAN BE
- MET SO AS TO ALLOW THIS COMPLETION TO BE MET. 18. THROUGH COORDINATION WITH OTHER CONTRACTORS, VENDORS, AND SUPPLIERS ASSOCIATED WITH THIS PROJECT, THIS CONTRACTOR SHALL INSURE, 100% FUNCTIONAL, TESTED, INSPECTED AND APPROVED SYSTEMS. CLAIMS FOR ADDITIONAL COST OR CHANGE ORDERS WILL BE REJECTED.
- 19. PRIOR TO ORDERING ANY MATERIALS OR ROUGH-IN OF ANY KIND, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION OF ALL ELECTRICAL REQUIREMENTS (I.E. VOLTAGE, PHASE, CIRCUIT BREAKER, WIRE SIZING, ETC.) WITH THE ELECTRICAL CONTRACTOR. THERE WILL BE NO CHANGE IN THE CONTRACT AMOUNT FOR ANY
- DISCREPANCIES. 20. ALL OFFSETS, TURNS, FITTINGS, TRIM, DETAIL, ETC., MAY NOT BE INDICATED, BUT SHALL BE PROVIDED AS REQUIRED. ADDITIONAL ALLOWANCES SHALL BE INCLUDED FOR SAME AT EACH PROPOSERS' DISCRETION. 21. DO NOT SCALE FROM DRAWINGS, PRINTING DISTORTS SCALE. WORK SHALL BE LAID OUT FROM
- CONTRACTOR GENERATED DIMENSIONED DRAWINGS. 22. THE CONTRACTOR SHALL ENSURE PROPER COORDINATION BETWEEN ALL TRADES SUCH THAT CONDUITS, PIPING, DUCTWORK, ETC, DOES NOT BLOCK ACCESS TO VALVES, EQUIPMENT, DUCT ACCESS DOORS, ETC. ITEMS THAT HAVE BEEN INSTALLED WHERE ACCESS IS COMPROMISED SHALL BE RELOCATED AT THE CONTRACTOR'S EXPENSE.
- 23. THESE DRAWINGS ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE, HOWEVER LOCATIONS AND SIZES WERE TAKEN FROM DIFFERENT SOURCES AND ARE SUBJECT TO DEVIATION. THE CONTRACTOR SHALL ASSUME SOME DEVIATIONS AND INCLUDE OFFSETS, ADDITIONAL PIPING, ETC. AT THE TIME OF BID.
- 24. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR THEIR WORK. ALL CUTTING AND PATCHING SHALL MATCH ADJACENT SURFACES AND PERFORMED BY SKILLED WORKERS OF THE TRADE. REFER TO SPECIFICATION SECTION "SLEEVING, CUTTING, PATCHING, REPAIRING, ETC." AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION. 25. ALL SUPPORTS FOR EQUIPMENT, DEVICES OR FIXTURES SHALL BE UNIQUE, FROM THE BUILDING
- STRUCTURE. DO NOT SUPPORT WORK FROM OTHER TRADES, EQUIPMENT OR SUPPORTS WITHOUT WRITTEN PERMISSION FROM THE ENGINEER AND CONSENT OF THE OTHER TRADE, IN WRITING. 26. PRIOR TO PURCHASE OR FABRICATION OF PIPING, THE CONTRACTOR SHALL COORDINATE
- INSTALLATION WITH ACTUAL CONDITIONS AND INSTALL ACCORDINGLY. 27. VALVES, BALANCING DAMPERS OR ANY MECHANICAL/ELECTRICAL ITEM SHALL NOT BE LOCATED ABOVE A HARD CEILING. IF THIS IS NOT POSSIBLE, THEN AN APPROPRIATELY SIZED ACCESS DOOR SHALL BE PLACED AT NO ADDITIONAL COST UNDER THE ITEM WHETHER SHOWN OR NOT
- ON THE PLANS TO ALLOW ACCESS AND ADJUSTMENT. 28. THE CONTRACTOR SHALL VISIT THE SITE FOR EXACT LOCATIONS OF ALL WALL AND CEILING DEVICES. THIS SHALL INCLUDE PLUMBING FIXTURES, CEILING GRILLES AND DIFFUSERS, ETC. 29. CONTRACTOR SHALL CLEAN UP CONSTRUCTION DEBRIS AT ALL TIMES DURING CONSTRUCTION.

GENERAL NOTES - DEMOLITION

- A. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR AREAS IN WHICH THE CEILING IS REMAINING. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE EXISTING CEILING AS REQUIRED AND REINSTALLATION. TEMPORARILY SUPPORT LIGHTS, DIFFUSERS, CEILING ETC. REPLACE BROKEN CEILING TILES WITH NEW AT NO ADDITIONAL COST TO OWNER. FIELED VERIFY EXACT REOUIREMENTS.
- B. ALL OUTAGES SHALL BE SCHEDULED THROUGH THE PROJECT REPRESENTATIVE FOR PROPER COORDINATION. A REQUEST FOR AN OUTAGE SHALL BE SUBMITTED IN WRITING A MINIMUM OF TWO WEEKS IN ADVANCE. C. DURING SPRINKLER SYSTEM OUTAGES THE CONTRACTORS SHALL PROVIDE FIRE WATCH OF
- AREAS WITH OUTAGES. D. ALL WALLS AND FLOOR SLABS SHALL BE REPAIRED TO MATCH EXISTING AND TO A LIKE NEW CONDITION. ALL RATED WALLS AND FLOOR SLABS SHALL BE PATCHED AND REPAIRED TO MAINTAIN RATING.
- ALL EXISTING BUILDING FINISHES SHALL BE PROTECTED DURING THE DEMOLITION PHASE. HEAVY DASHED LINES INDICATE ITEMS FOR REMOVAL (U.O.N) AND LIGHT SOLID LINES INDICATE EXISTING ITEMS TO REMAIN.
- G. COORDINATE DISPOSAL OF ALL FIXTURES, DEVICES, ETC. (INDICATED FOR DEMOLITION) WITH THE OWNER.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE GENERAL AND SPECIAL CONDITIONS,

MATERIAL SUPPLIERS AND VENDORS. ANY SHEET NUMBERING OR SPECIFICATION NUMBERING

SUBSTITUTION SHALL REQUEST A CLARIFICATION NOT LESS THAN TEN (10) DAYS PRIOR TO THE

ABBREVIA	ABBREVIATIONS				
ADJ	ADJUSTABLE				
AFF	ABOVE FINISHED FLOOR				
AFR	ABOVE FINISHED ROOF				
APD	AIR PRESSURE DROP				
AVG	AVERAGE				
BAS	BUILDING AUTOMATION SYSTEM				
BHP	BREAK HORSEPOWER				
BTU	BRITISH THERMAL UNIT				
CAV	CONSTANT AIR VOLUME				
CFM	CUBIC FEET PER MINUTE				
СО	CARBON MONOXIDE				
CO2	CARBON DIOXIDE				
DB	DRY BULB				
DDC	DIRECT DIGITAL CONTROLS				
DN	DOWN				
EAT	ENTERING AIR TEMPERATURE				
EC	ELECTRICAL CONTRACTOR				
ESP	EXTERNAL STATIC PRESSURE				
ETR	EXISTING TO REMAIN				
EWT	ENTERING WATER TEMPERATURE				
FA	FREE AREA				
FD	FIRE DAMPER				
FLA	FULL LOAD AMPS				
FPC	FIRE PROTECTION CONTRACTOR				
FPM	FEET PER MINUTE				
FPS	FEET PER SECOND				
FSD	FIRE SMOKE DAMPER				
GAL	GALLON (-S)				
GC	GENERAL CONTRACTOR				
GPM	GALLONS PER MINUTE				
GR	GRAINS				
HD	HEAD				
HP	H (-ORSEPOWER, -EAT PUMP)				
ID	I (-DENTIFICATION, -NSIDE DIAMETER, -NSIDE DIMENSION)				
kW	KILOWATT				
LAT	LEAVING AIR TEMPERATURE				
LWT	LEAVING WATER TEMPERATURE				
MBH	BTU PER HOUR [THOUSANDS]				
MCA	MINIMUM CIRCUIT AMPS				
MFG	MANUFACTURER				
МОСР	MAXIMUM OVERCURRENT PROTECTION [AMPS]				
NC	NOISE CRITERIA OR NORMALLY CLOSED				
	<u>.</u>				

NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OD	OUTSIDE DI (-AMETER, -MENSION)
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE [ELECTRICAL]
PPM	PARTS PER MILLION
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE (STEAM, WATER, GAS
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAUGE
RH	RELATIVE HUMIDITY [%]
RPM	REVOLUTIONS PER MINUTE
SD	SMOKE DAMPER
SP	STATIC PRESSURE
SQ FT	SQUARE FEET OR FOOT
TSP	TOTAL STATIC PRESSURE
ТҮР	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	VOLT (-AGE, -S)
VAR	VARI (-ABLE, -IES)
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FEQUENCY DRIVE
W	WATT (-AGE, -S)
WB	WET BULB
WPD	WATER PRESSURE DROP
ΔΡ	DIFFERENTIAL PRESSURE
ΔΤ	TEMPERATURE DIFFERENCE
¢	CENTERLINE

GENERAL SYMBOLS

(#)	TAGGED NOTE DESIGNATOR
\bigtriangleup	REVISION TRIANGLE
ROOM NAME RM #	ROOM TAG
<u>XXX-X</u>	EQUIPMENT TAG
•	POINT OF CONNECTION / CONNECT TO EXISTING
\$	POINT OF DEMOLITION

PHASING NOTES

THIS PROJECT INTERFACES EXTENSIVELY WITH EXISTING BUILDING SERVICES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND PHASE ALL TIE-INS AND INTERRUPTIONS OF EXISTING SERVICES TO MINIMIZE OR ELIMINATE DOWNTIME. AS AN EXAMPLE, MAIN GAS SERVICE, WATER SERVICE, ELECTRICAL SERVICE, HVAC SERVICES, STEAM GENERATION, ETC., WILL BE AFFECTED AND REPLACED OR MOVED DURING THIS PROJECT. THE CONTRACTOR SHALL INSTALL ALL NEW SERVICES AND EQUIPMENT AND HAVE THEM TESTED AND FULLY AND RELIABLY FUNCTIONAL PRIOR TO INTERRUPTING, RELOCATING OR REMOVING ANY EXISTING SERVICES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BARE ANY AND ALL COSTS ASSOCIATED WITH THIS PHASING, INCLUDING TEMPORARY SERVICES, TEMPORARY RELOCATION, PREMIUM TIME WORK, ETC. CONTRACTOR SHALL COORDINATE ALL SAID WORK WITH THE OWNER AND APPLICABLE UTILITIES PER THE CONTRACT DOCUMENTS.

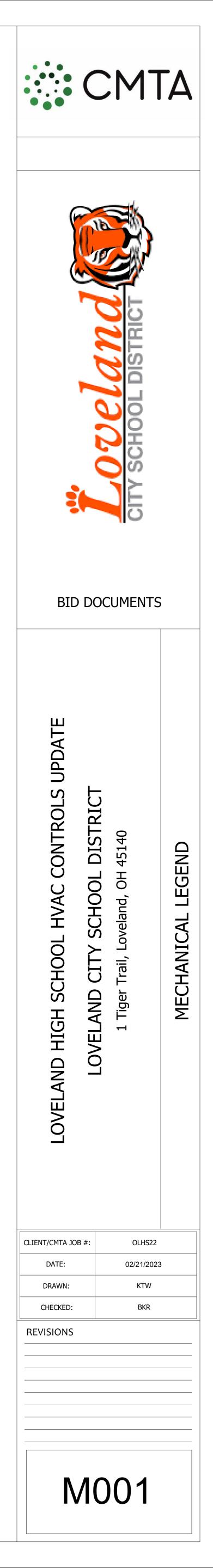
HAZARDOUS MATERIALS NOTES

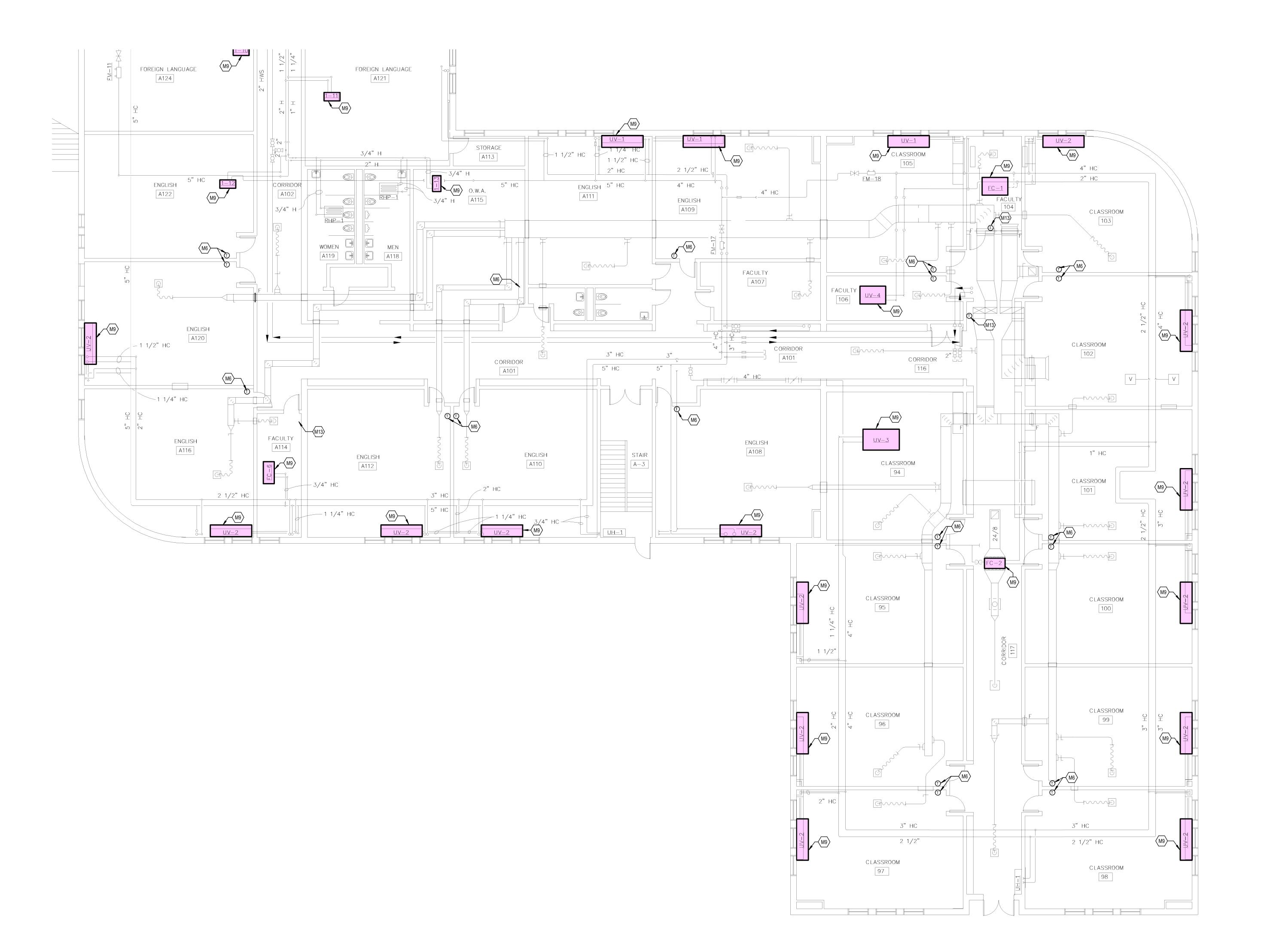
- A. THE CONTRACTOR IT IS HEREBY ADVISED THAT IS POSSIBLE THAT ASBESTOS AND/OR OTHER HAZARDOUS MATERIALS ARE OR WERE PRESENT IN THIS BUILDING(S). ANY WORKER, OCCUPANT, VISITOR, ETC., WHO ENCOUNTERS ANY MATERIAL OF WHOSE CONTENT THEY ARE NOT CERTAIN SHALL PROMPTLY REPORT THE EXISTENCE AND LOCATION OF THAT MATERIAL TO THE OWNER. FURTHERMORE, THE CONTRACTOR SHALL INSURE THAT NO ONE COMES NEAR TO OR IN CONTACT WITH ANY SUCH MATERIAL OR FUMES THEREFROM UNTIL ITS CONTENT CAN BE ASCERTAINED TO BE NON-HAZARDOUS.
- B. CMTA, INC. HAS NO EXPERTISE IN THE DETERMINATION OF THE PRESENCE OF ANY HAZARDOUS MATERIAL. THEREFORE, NO ATTEMPT HAS BEEN MADE BY CMTA TO IDENTIFY THE EXISTENCE OR LOCATION OF ANY SUCH HAZARDOUS MATERIAL. FURTHERMORE, CMTA NOR ANY AFFILIATE HEREOF WILL NOT OFFER OR MAKE ANY RECOMMENDATIONS RELATIVE TO THE REMOVAL, HANDLING OR DISPOSAL OF SUCH MATERIAL. C. IF THE WORK WHICH IS TO BE PERFORMED INTERFACES, CONNECTS OR RELATES IN ANY
- PHYSICAL WAY WITH OR TO EXISTING COMPONENTS WHICH CONTAIN OR BEAR ANY HAZARDOUS MATERIAL, ASBESTOS BEING ONE, THEN IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO CONTACT THE OWNER AND SO ADVISE HIM/HER IMMEDIATELY. D. THE CONTRACTOR BY EXECUTION OF THE CONTRACT FOR ANY WORK AND/OR BY THE ACCOMPLISHMENT OF ANY WORK THEREBY AGREE TO BRING NO CLAIM RELATIVE TO HAZARDOUS MATERIALS FOR NEGLIGENCE, BREACH OF CONTRACT, INDEMNITY, OR ANY OTHER SUCH ITEM AGAINST CMTA, ITS PRINCIPALS, EMPLOYEES, AGENTS OR CONSULTANTS. ALSO, THE CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD CMTA, ITS PRINCIPALS, EMPLOYEES, AGENTS AND CONSULTANTS HARMLESS FROM ANY SUCH RELATED
- CLAIMS WHICH MAY BE BROUGHT BY ANY SUBCONTRACTORS, SUPPLIERS OR ANY OTHER THIRD PARTIES. E. THE CONTRACTOR IS DIRECTED TO THE SPECIFICATIONS FOR FURTHER INFORMATION.

	SUPPLY AIR DIFFUSER
ø	RETURN AIR GRILLE
	EXHAUST AIR DIFFUSER
	TRANSFER AIR GRILLE W/ SOUND ATTENUATING BOOT
	SIDEWALL DIFFUSER/GRILLE
TAG AIRFLOW	AIR DEVICE TAG (REGISTER, GRILLE, DIFFUSER,LOUVER)
##/##	RECTANGULAR DUCT
#ø	ROUND/SPIRAL DUCT
##/## Φ	FLAT OVAL DUCT
SA	SUPPLY AIR DUCT
RA	RETURN AIR DUCT
EA	EXHAUST AIR DUCT
AO	OUTSIDE AIR DUCT
ТА	TRANSFER AIR DUCT
CAE	COMBUSTION AIR EXHAUST DUCT
CAI	COMBUSTION AIR INTAKE DUCT
SA SA	SA AIR DUCT TURNING UP
× SA	SA AIR DUCT TURNING DOWN
RA	RA AIR DUCT TURNING UP
RA	RA AIR DUCT TURNING DOWN
EA	EA AIR DUCT TURNING UP
EA	EA AIR DUCT TURNING DOWN
E(XXX)	EXISTING DUCT - (XXX) DENOTES SYSTEM
	DUCT TO BE DEMOLISHED - (XXX) DENOTES SYSTEM
A(XXX)	DUCT TO BE ABANDONED IN PLACE - (XXX) DENOTES SYSTEM
ઝઝ	MITERED ELBOW WITH TURNING VANES
++++++	FLEXIBLE DUCT
T	THERMOSTAT
Ţ	TEMPERATURE SENSOR
H	HUMIDITY SENSOR
©	CARBON DIOXIDE SENSOR
Ō	TEMPERATURE & CARBON DIOXIDE SENSOR
	MANUAL BALANCING/VOLUME DAMPER
VERT. HORIZ.	MOTORIZED DAMPER

—0	PIPE ELBOW TURNING UP
	PIPE ELBOW TURNING DOWN
	PIPE TEE; CONNECTION ON TOP
	PIPE TEE; CONNECTION ON BOTTOM
3	PIPE CAP
	CONDENSATE DRAIN
-CHWS/R	CHILLED WATER SUPPLY/RETURN
-CWS/R	CONDENSER WATER SUPPLY/RETURN
-DTS/R	DUAL TEMP. WATER SUPPLY/RETURN
GS/R	GEOTHERMAL WATER SUPPLY/RETURN
—HPC——	HIGH PRESSURE STEAM CONDENSATE
-HPS(#)	HIGH PRESSURE STEAM; (#) DENOTES PRESSURE
-HPS/R	HEAT PUMP WATER SUPPLY/RETURN
-HRS/R	HEAT RECOVERY SUPPLY/RETURN PIPING
-HWS/R	HEATING WATER SUPPLY/RETURN
-LPC	LOW PRESSURE STEAM CONDENSATE
-LPS(#)	LOW PRESSURE STEAM; (#) DENOTES PRESSURE
	MEDIUM PRESSURE STEAM RETURN
-MPS(#)	MEDIUM PRESSURE STEAM; (#) DENOTES PRESSURE
—SVT——	STEAM VENT PIPING
D(XXX)	PIPING TO BE DEMOLISHED - (XXX) DENOTES SYSTEM
-E(XXX)	EXISTING PIPING - (XXX) DENOTES SYSTEM

NOTE: NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED ON THIS PROJECT









- TAGGED NOTES
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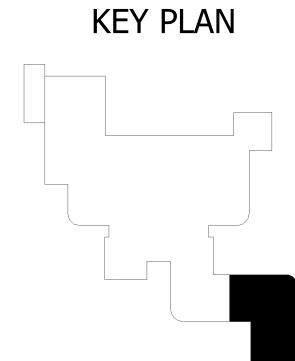
 M6
 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW

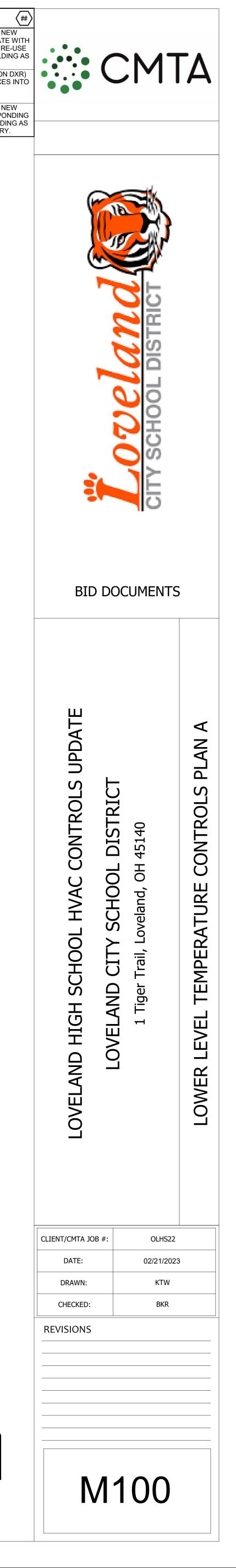
 THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE WITH

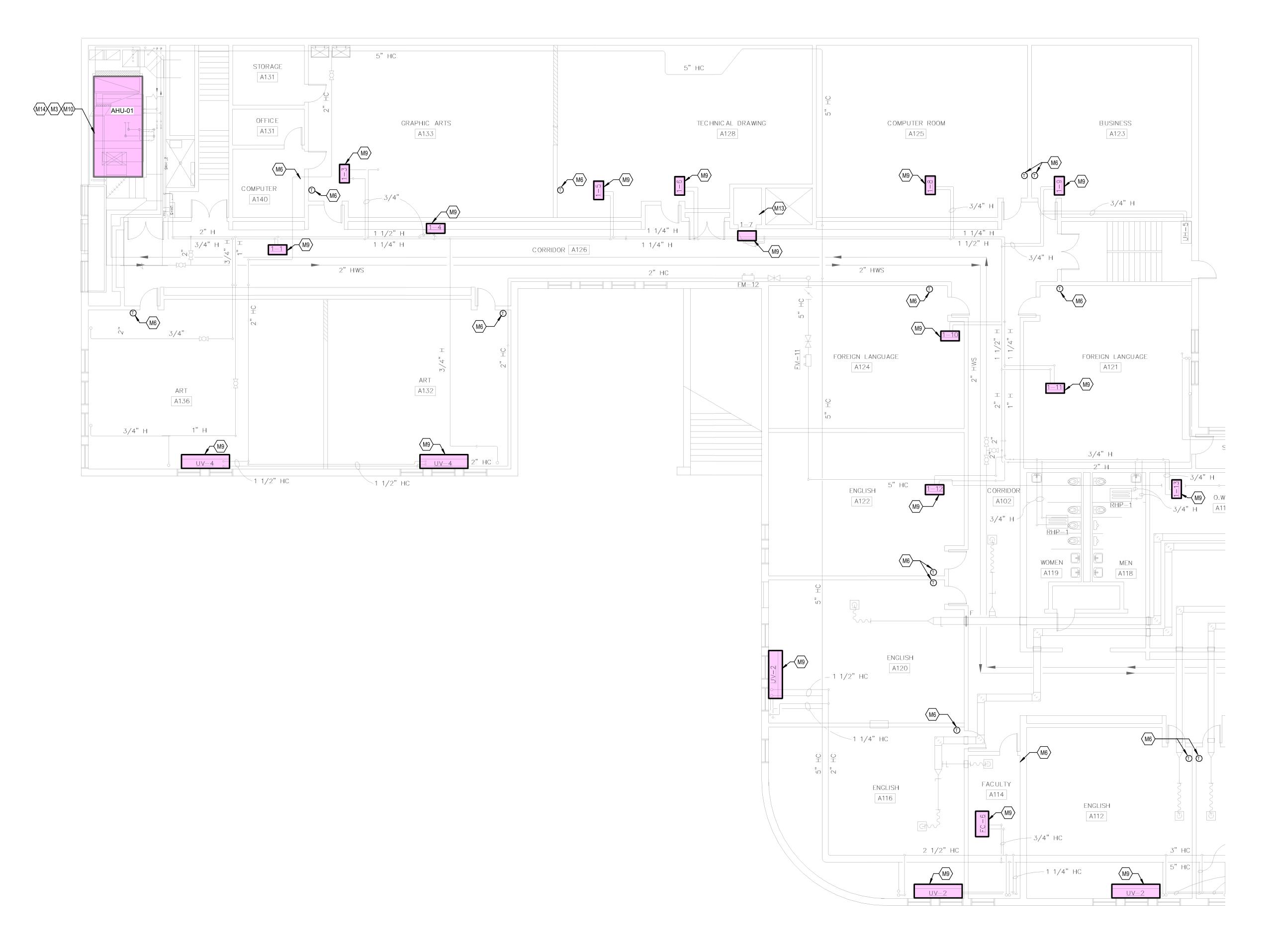
 CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE

 WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS

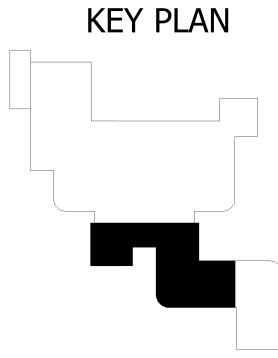
 NECESSARY.
- M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.
- M13 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.









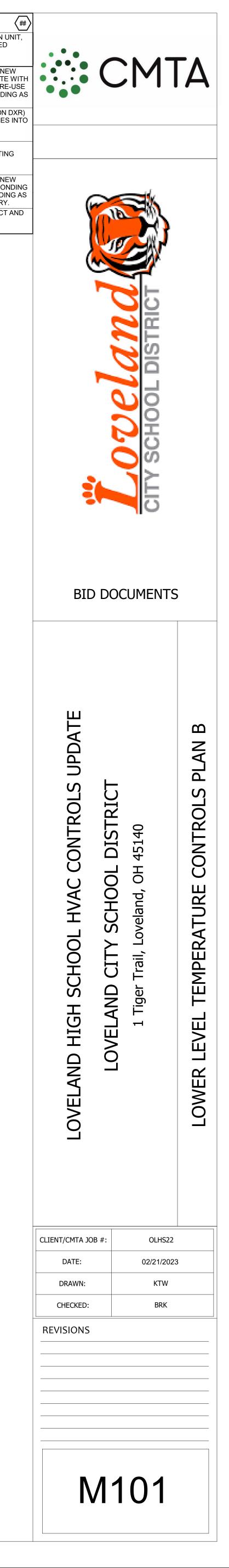


M3 PROVIDE GPS-IMOD NEEDLPOINT BIPOLAR IONIZATION UNIT, OR EQUAL. UNIT TO BE INSTALLED AT FACE OF CHILLED WATER COIL. REFER TO SPECIFICATIONS FOR MORE INFORMATION. M6 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.

- SPECIFICATIONS. M10 PROVIDE NEW NETWORK CONTROLLER (SIEMENS POINTS AND SEQUENCES INTO THE NEW BUILDING
- THE NEW BUILDING AUTOMATION SYSTEM PER THE
- M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO
- TALON/TRIDIUM JACE) FOR AND INTEGRATE ALL EXISTING
- AUTOMATION SYSTEM PER THE SPECIFICATIONS.
- M13 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS
- ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.

- MODULATE TO OA DAMPER TO MAINTAIN A CO2 CONCENTRATION BELOW 1000 PPM.
- M14 PROVIDE NEW CO2 SENSOR IN THE MAIN RETURN DUCT AND

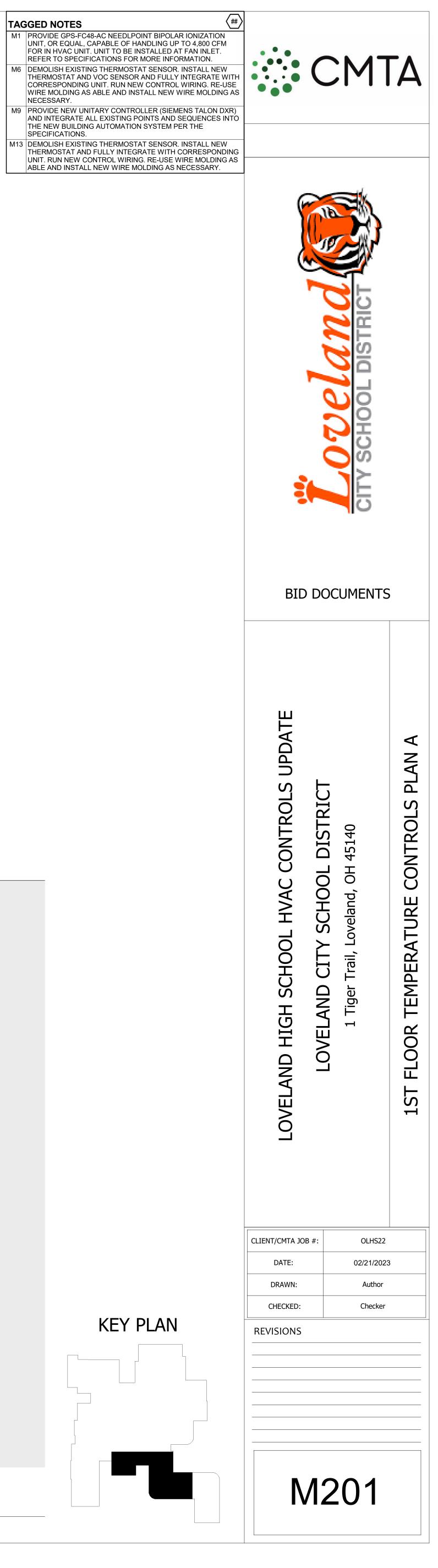
- TAGGED NOTES

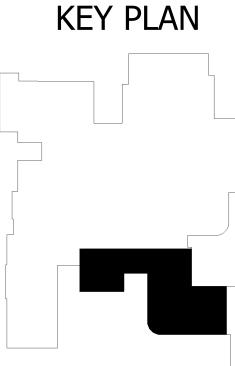


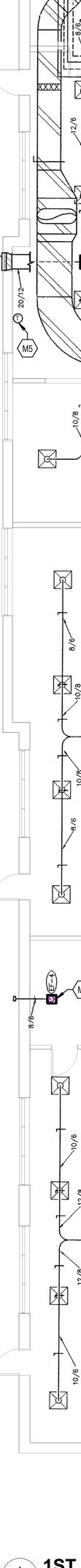




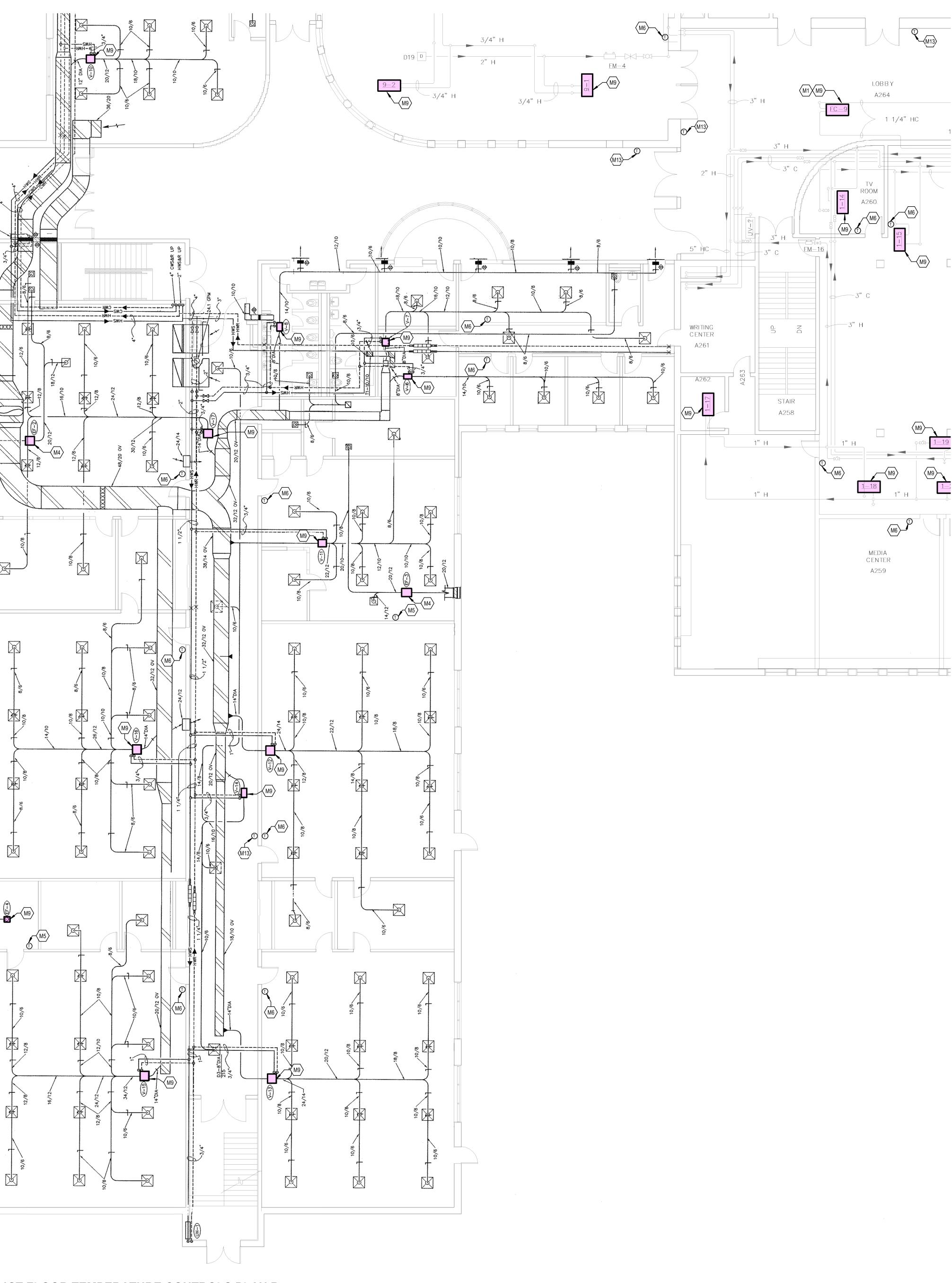








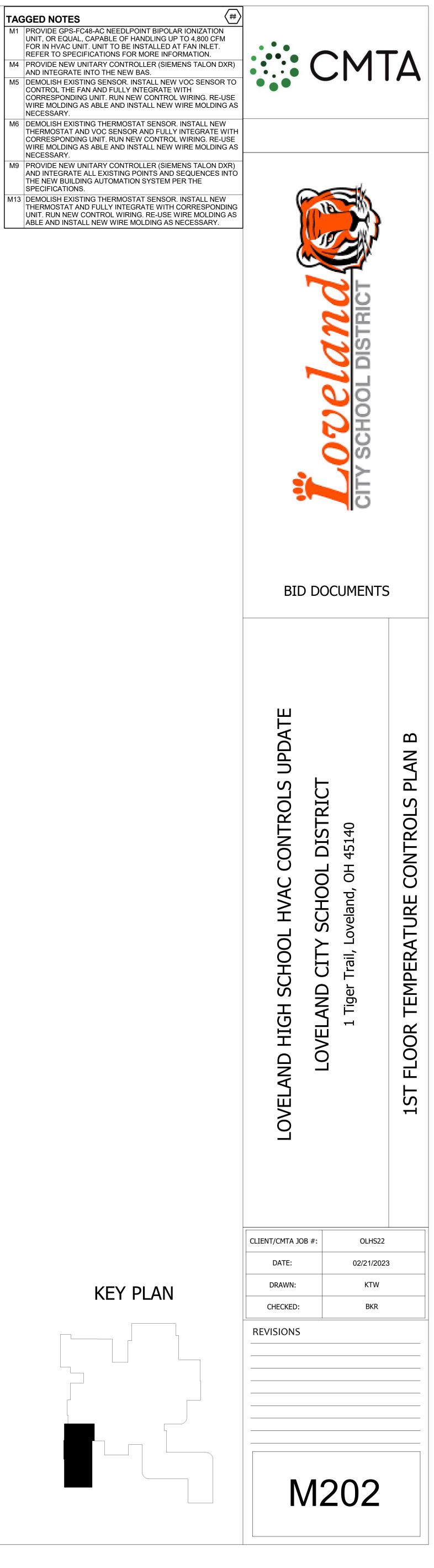




1 **1ST FLOOR TEMPERATURE CONTROLS PLAN B** M202 1/8" = 1'-0"

TAGGED NOTES

- NECESSARY. M6 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS
- NECESSARY. M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.

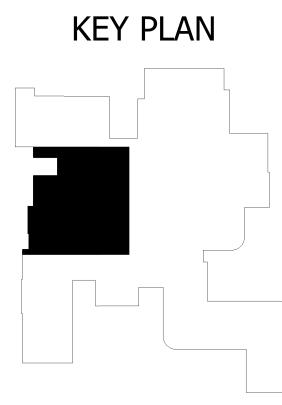


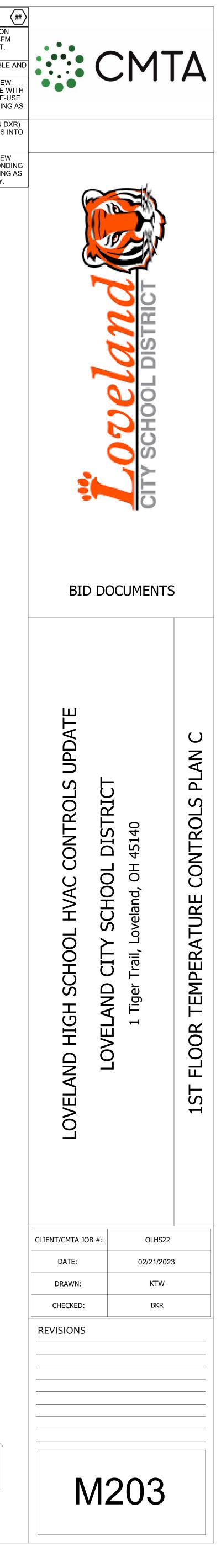


TAGGED NOTES

- M1 PROVIDE GPS-FC48-AC NEEDLPOINT BIPOLAR IONIZATION UNIT, OR EQUAL, CAPABLE OF HANDLING UP TO 4,800 CFM FOR IN HVAC UNIT. UNIT TO BE INSTALLED AT FAN INLET. REFER TO SPECIFICATIONS FOR MORE INFORMATION. M2 PROVIDE RELAY FOR EXHAUST FAN FOR ENABLE/DISABLE AN TIE TO BAS TIME SCHEDULE. M6 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.
- M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.

M13 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.

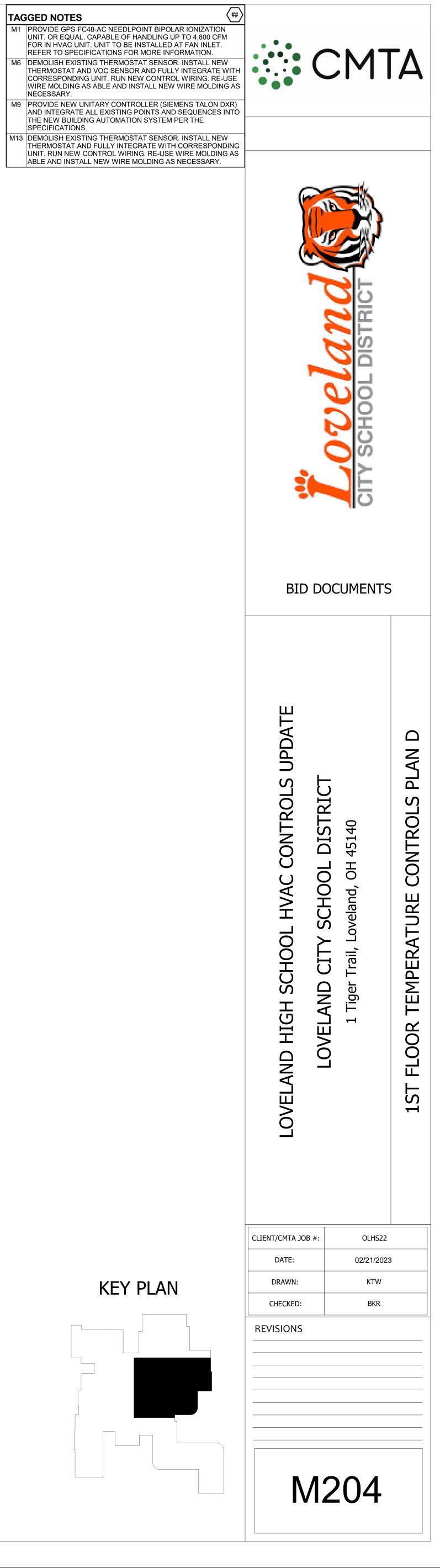






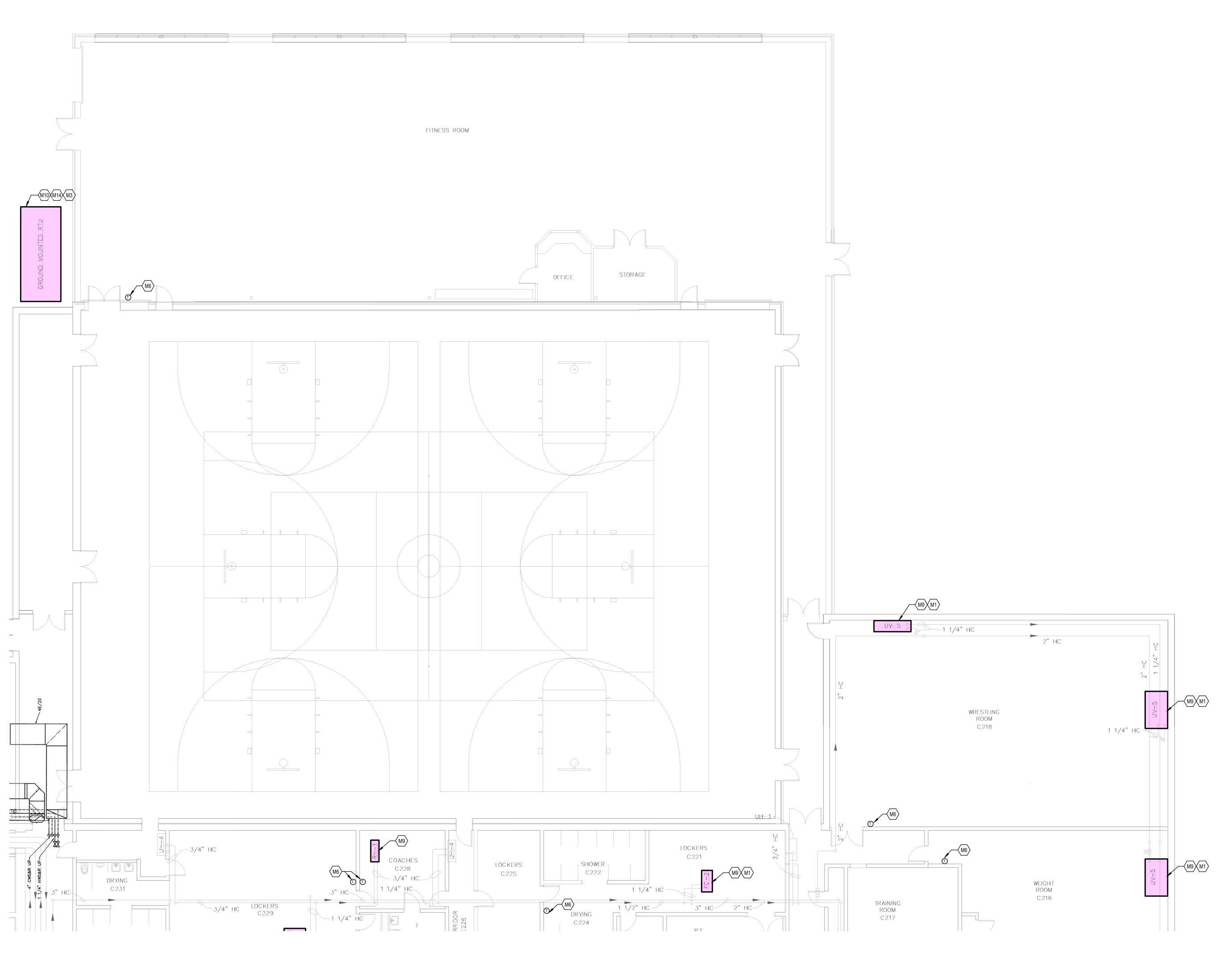
TAGGED NOTES

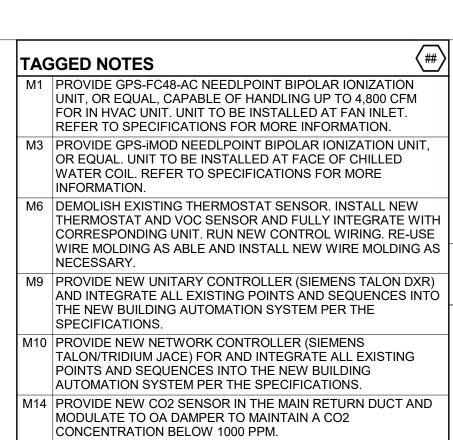
- M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.



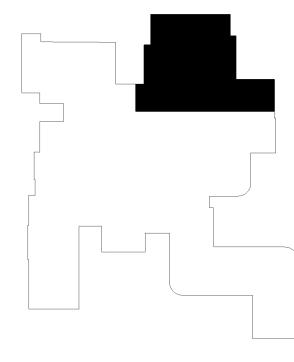


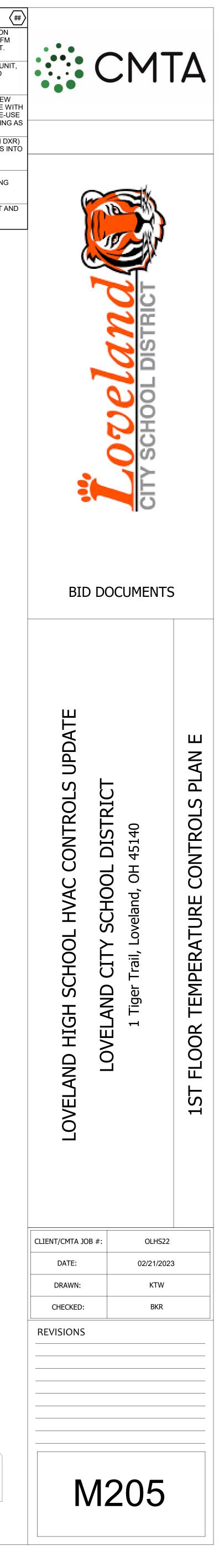
1 **1ST FLOOR TEMPERATURE CONTROLS PLAN E** M205 1/8" = 1'-0"

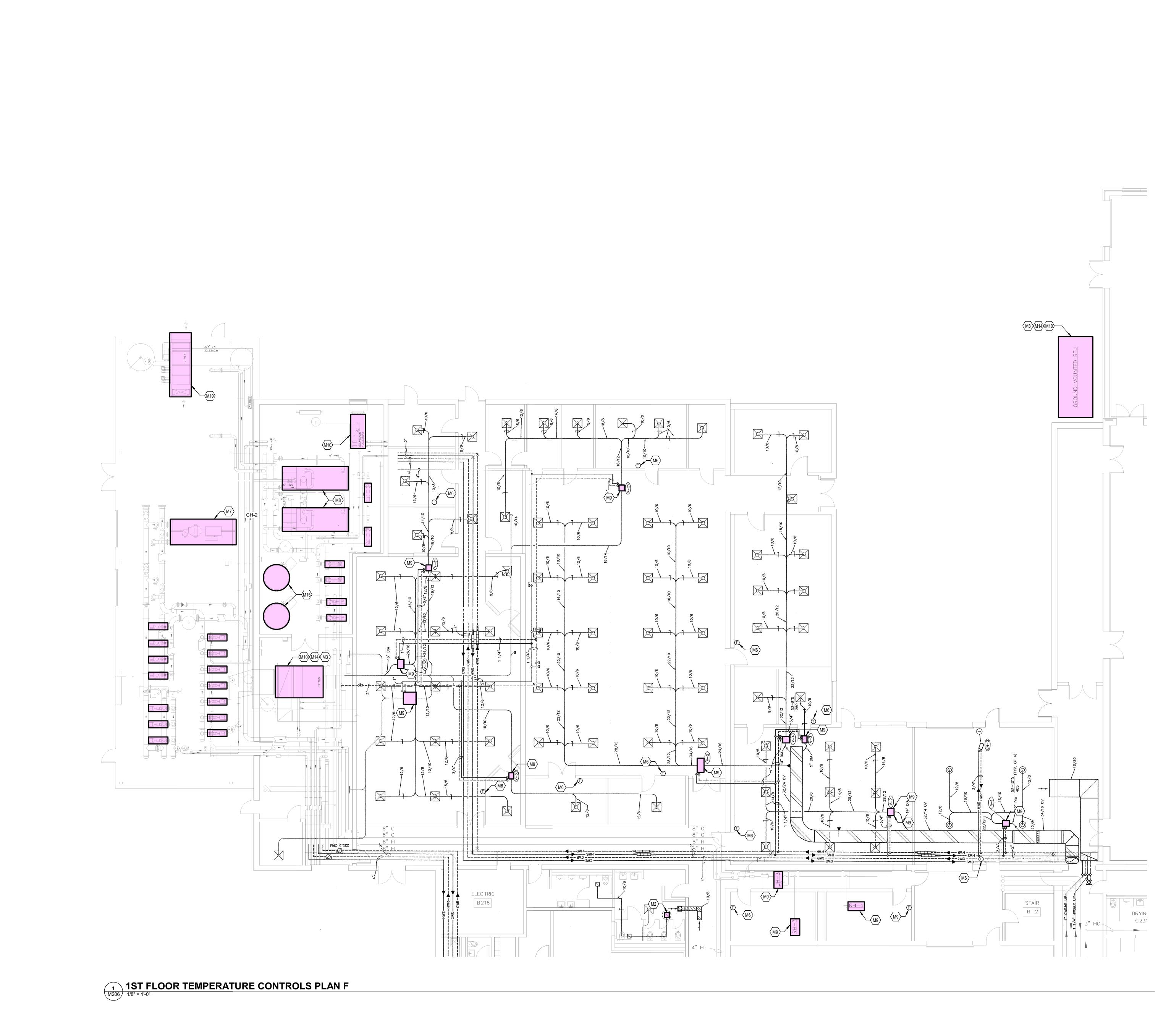




KEY PLAN



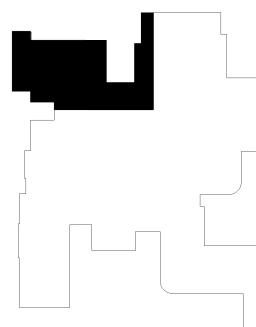


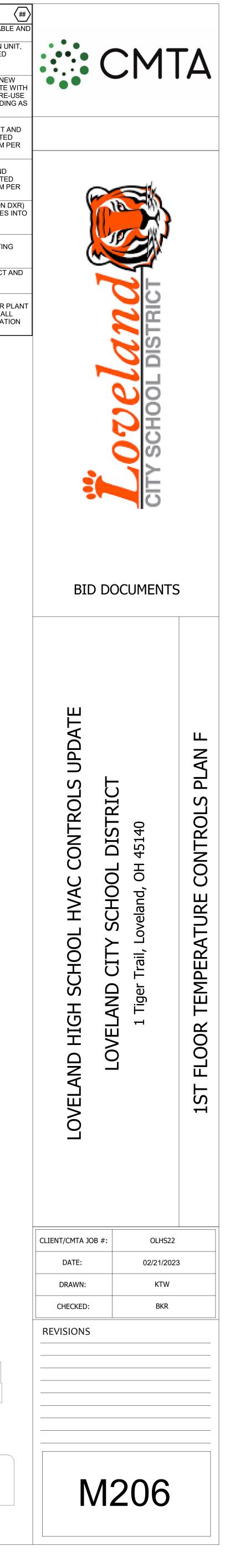


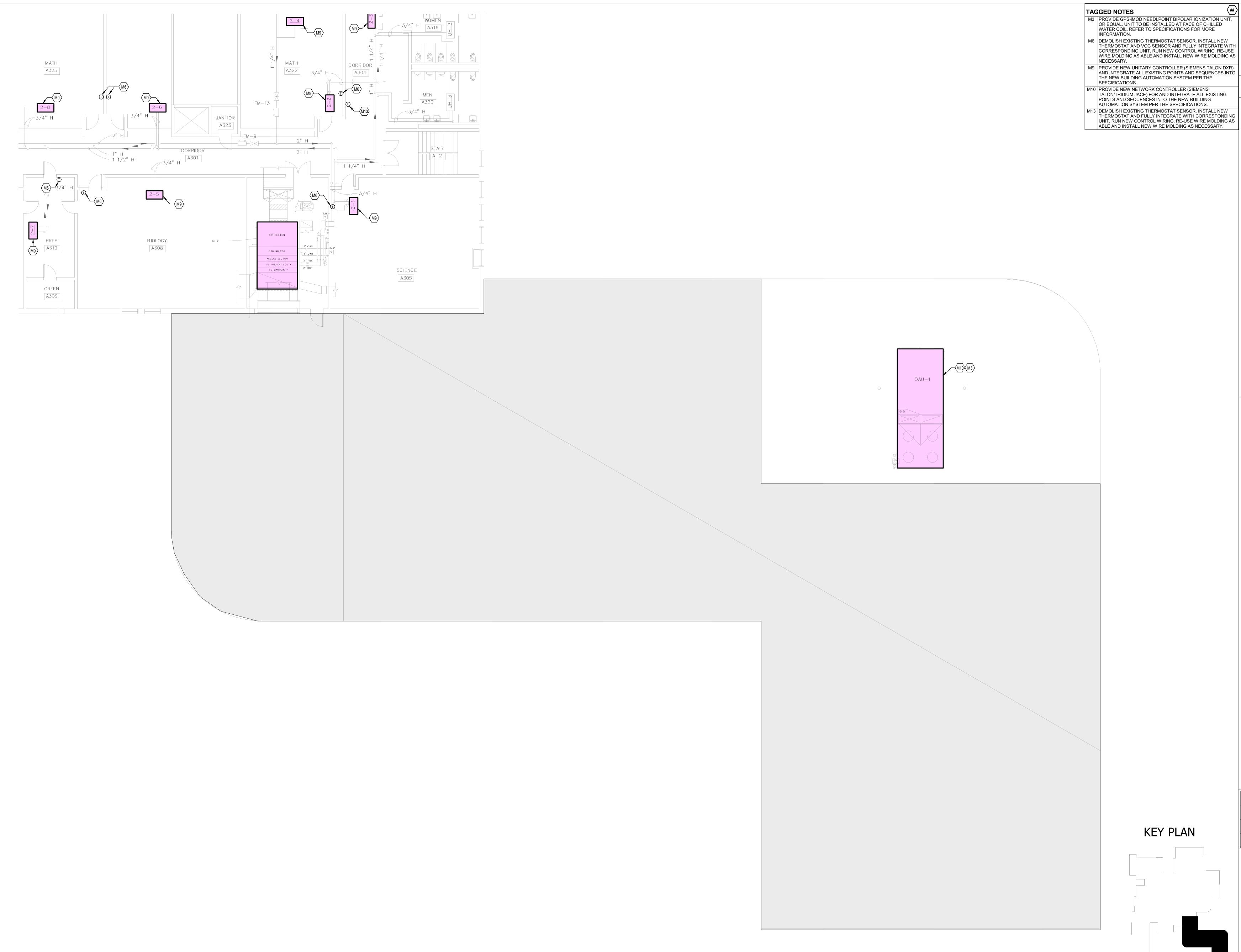
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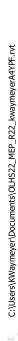
M2	PROVIDE RELAY FOR EXHAUST FAN FOR ENABLE/DISABL TIE TO BAS TIME SCHEDULE.
M3	PROVIDE GPS-IMOD NEEDLPOINT BIPOLAR IONIZATION UP OR EQUAL. UNIT TO BE INSTALLED AT FACE OF CHILLED WATER COIL. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
M6	DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEY THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE- WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDIN NECESSARY.
M7	PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR THE CHILLED WATER PLANT A INTEGRATE THE EXISTING CHILLER AND ALL ASSOCIATED PUMPS INTO THE NEW BUILDING AUTOMATION SYSTEM P THE SPECIFICATIONS.
M8	PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR THE HOT WATER PLANT AND INTEGRATE THE EXISTING BOILERS AND ALL ASSOCIATEI PUMPS INTO THE NEW BUILDING AUTOMATION SYSTEM P THE SPECIFICATIONS.
M9	PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON I AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.
M10	PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.
M14	PROVIDE NEW CO2 SENSOR IN THE MAIN RETURN DUCT / MODULATE TO OA DAMPER TO MAINTAIN A CO2 CONCENTRATION BELOW 1000 PPM.
M15	PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR THE DOMESTIC HOT WATER P AND INTEGRATE THE EXISTING WATER HEATERS AND AL ASSOCIATED PUMPS INTO THE NEW BUILDING AUTOMATI SYSTEM PER THE SPECIFICATIONS.







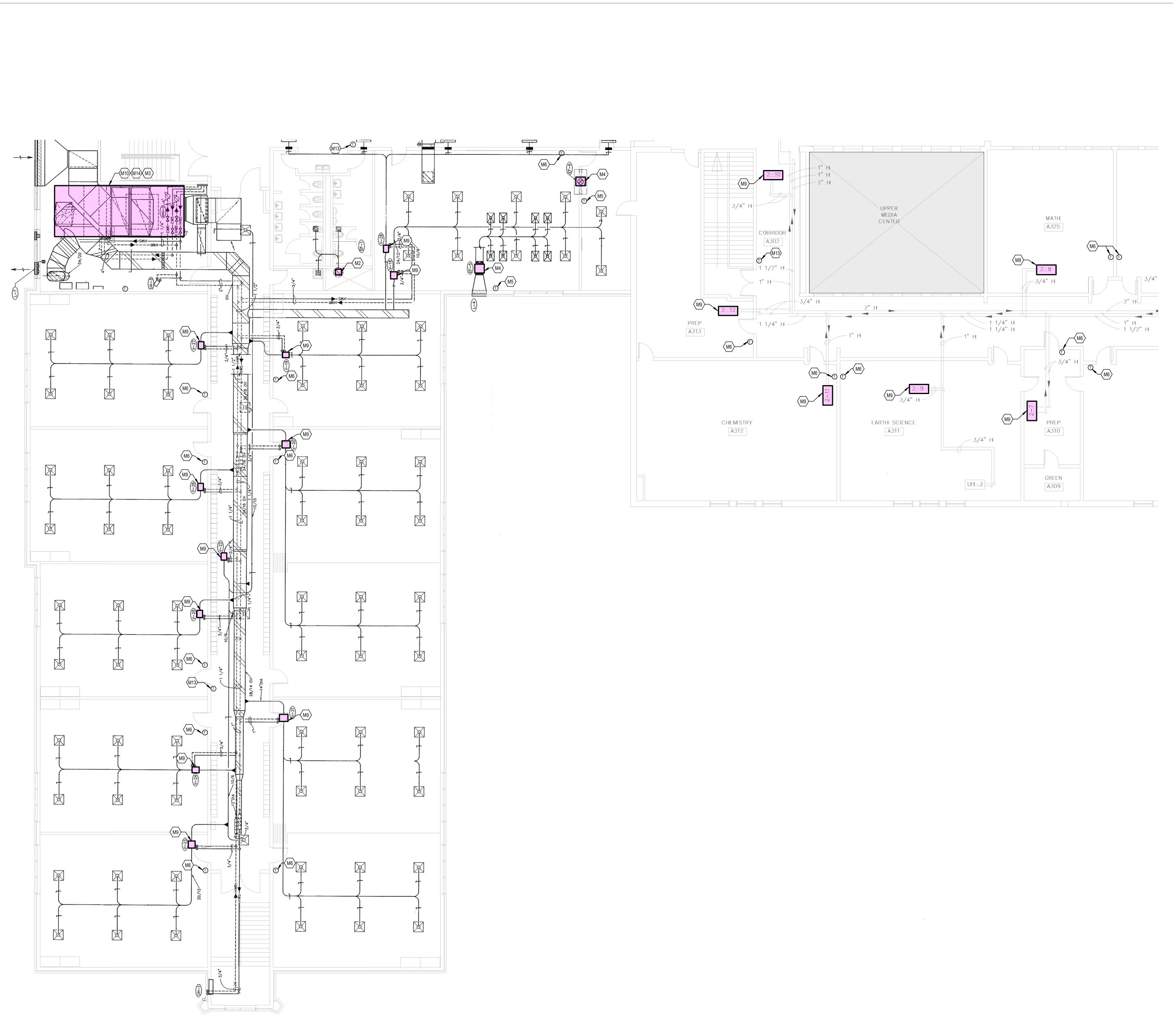




1 2ND FLOOR TEMPERATURE CONTROLS PLAN A

M3 PROVIDE GPS-IMOD NEEDLPOINT BIPOLAR IONIZATION UNIT, OR EQUAL. UNIT TO BE INSTALLED AT FACE OF CHILLED WATER COIL. REFER TO SPECIFICATIONS FOR MORE INFORMATION. M6 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY. M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS. M10 PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.





1 M302 1/8" = 1'-0"

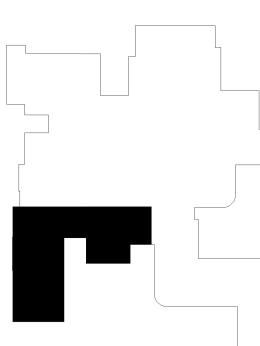
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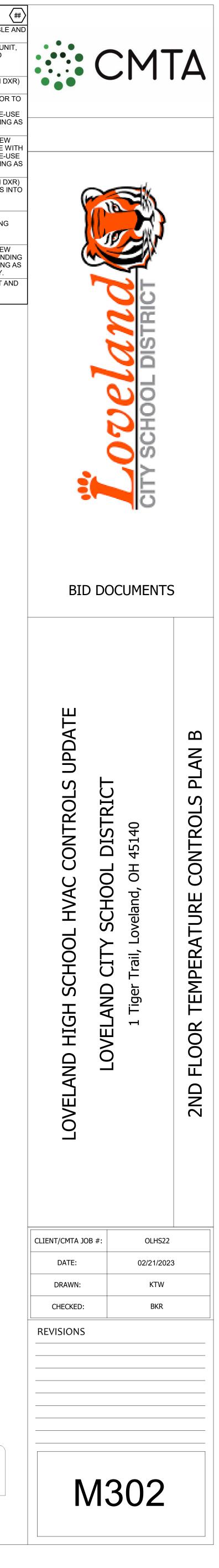
TAGGED NOTES

- M2
 PROVIDE RELAY FOR EXHAUST FAN FOR ENABLE/DISABLE AND TIE TO BAS TIME SCHEDULE.

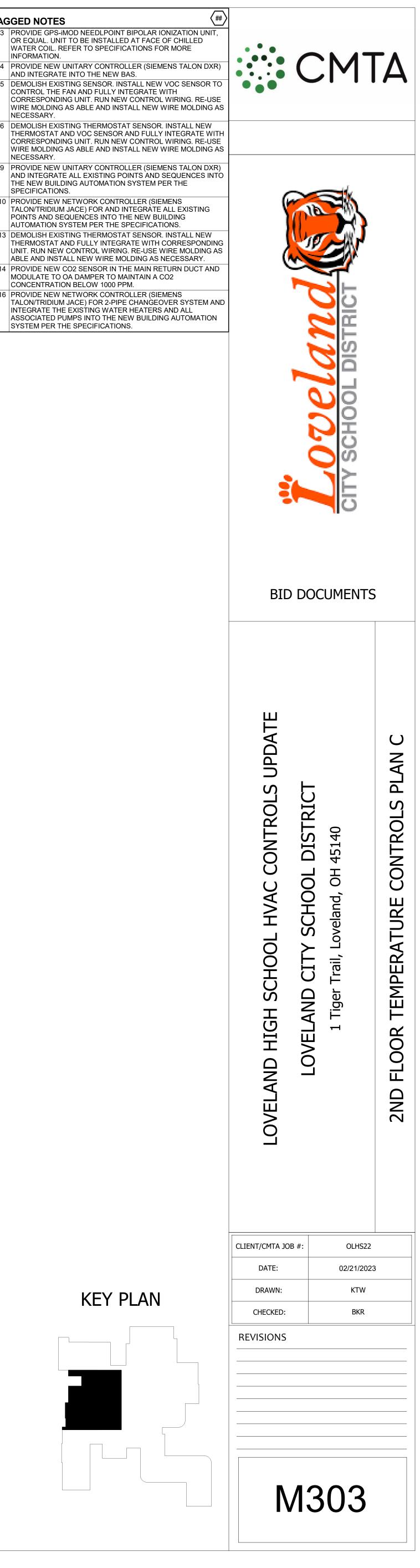
 M3
 PROVIDE GPS-iMOD NEEDLPOINT BIPOLAR IONIZATION UNIT, OR EQUAL. UNIT TO BE INSTALLED AT FACE OF CHILLED WATER COIL. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
- M4 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE INTO THE NEW BAS.
 M5 DEMOLISH EXISTING SENSOR. INSTALL NEW VOC SENSOR TO CONTROL THE FAMILY INTEGRATE WITH
- M5 DEMOLISH EXISTING SENSOR. INSTALL NEW VOC SENSOR TO CONTROL THE FAN AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.
- M6 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.
- M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.
- M10 PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS.
 M13 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW
- M13 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY.
 M14 PROVIDE NEW CO2 SENSOR IN THE MAIN RETURN DUCT AND MODULATE TO OA DAMPER TO MAINTAIN A CO2 CONCENTRATION BELOW 1000 PPM.

KEY PLAN

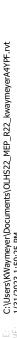




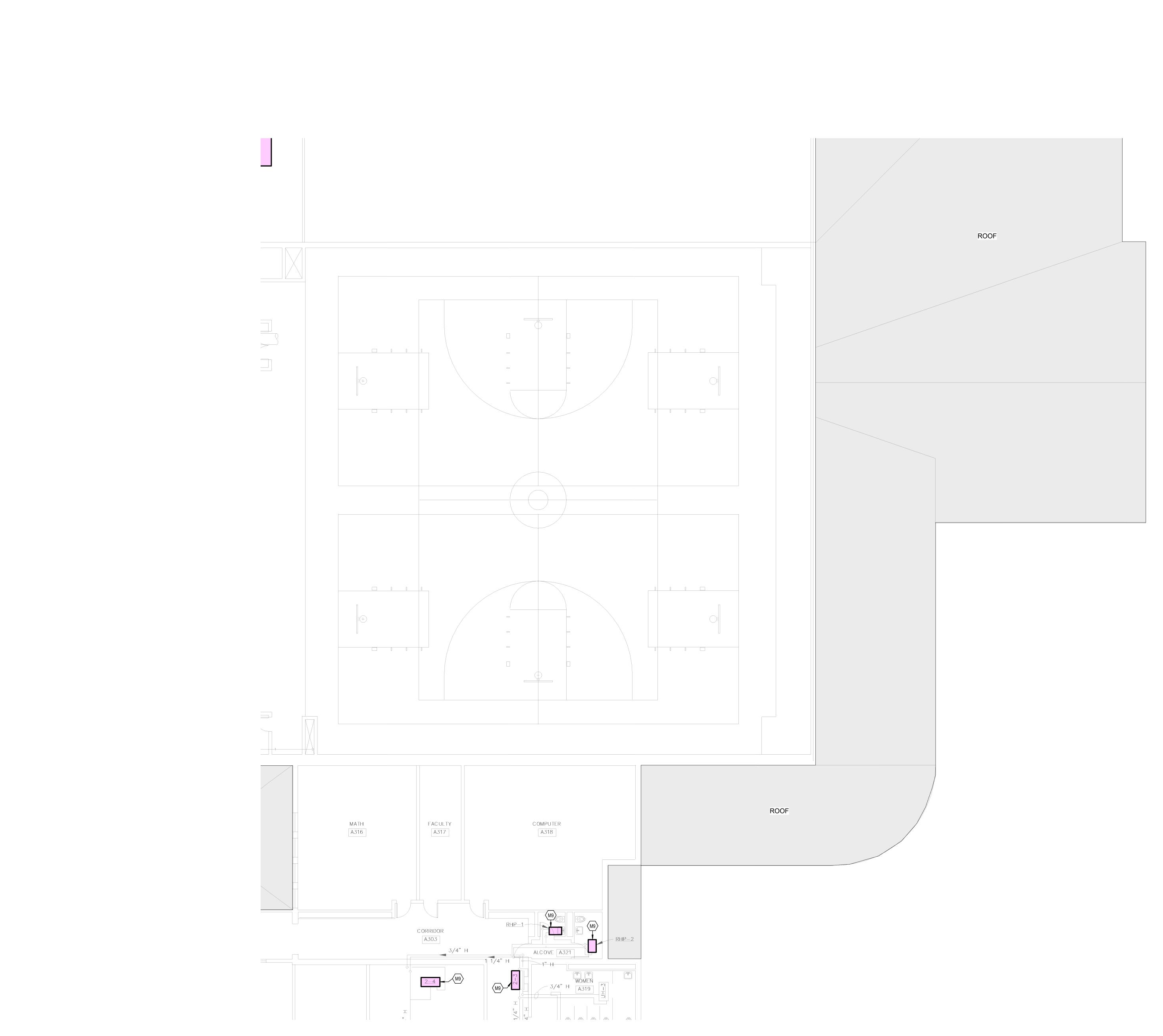




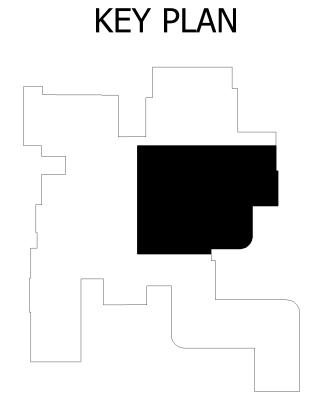
TAGGED NOTES M3 PROVIDE GPS-IMOD NEEDLPOINT BIPOLAR IONIZATION UNIT, OR EQUAL. UNIT TO BE INSTALLED AT FACE OF CHILLED WATER COIL. REFER TO SPECIFICATIONS FOR MORE INFORMATION. M4 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DX AND INTEGRATE INTO THE NEW BAS. M5 DEMOLISH EXISTING SENSOR. INSTALL NEW VOC SENSOR TO CONTROL THE FAN AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY. M6 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND VOC SENSOR AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY. M9 PROVIDE NEW UNITARY CONTROLLER (SIEMENS TALON DXR) AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS. M10 PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR AND INTEGRATE ALL EXISTING POINTS AND SEQUENCES INTO THE NEW BUILDING AUTOMATION SYSTEM PER THE SPECIFICATIONS. M13 DEMOLISH EXISTING THERMOSTAT SENSOR. INSTALL NEW THERMOSTAT AND FULLY INTEGRATE WITH CORRESPONDING UNIT. RUN NEW CONTROL WIRING. RE-USE WIRE MOLDING AS ABLE AND INSTALL NEW WIRE MOLDING AS NECESSARY. M14 PROVIDE NEW CO2 SENSOR IN THE MAIN RETURN DUCT AND MODULATE TO OA DAMPER TO MAINTAIN A CO2 CONCENTRATION BELOW 1000 PPM. M16 PROVIDE NEW NETWORK CONTROLLER (SIEMENS TALON/TRIDIUM JACE) FOR 2-PIPE CHANGEOVER SYSTEM AND

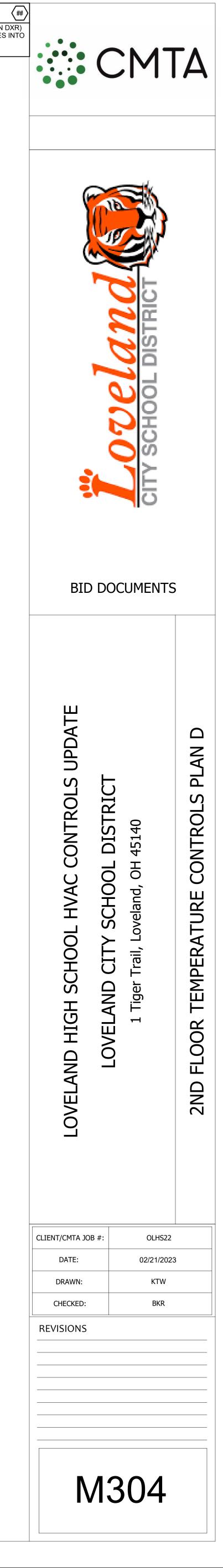






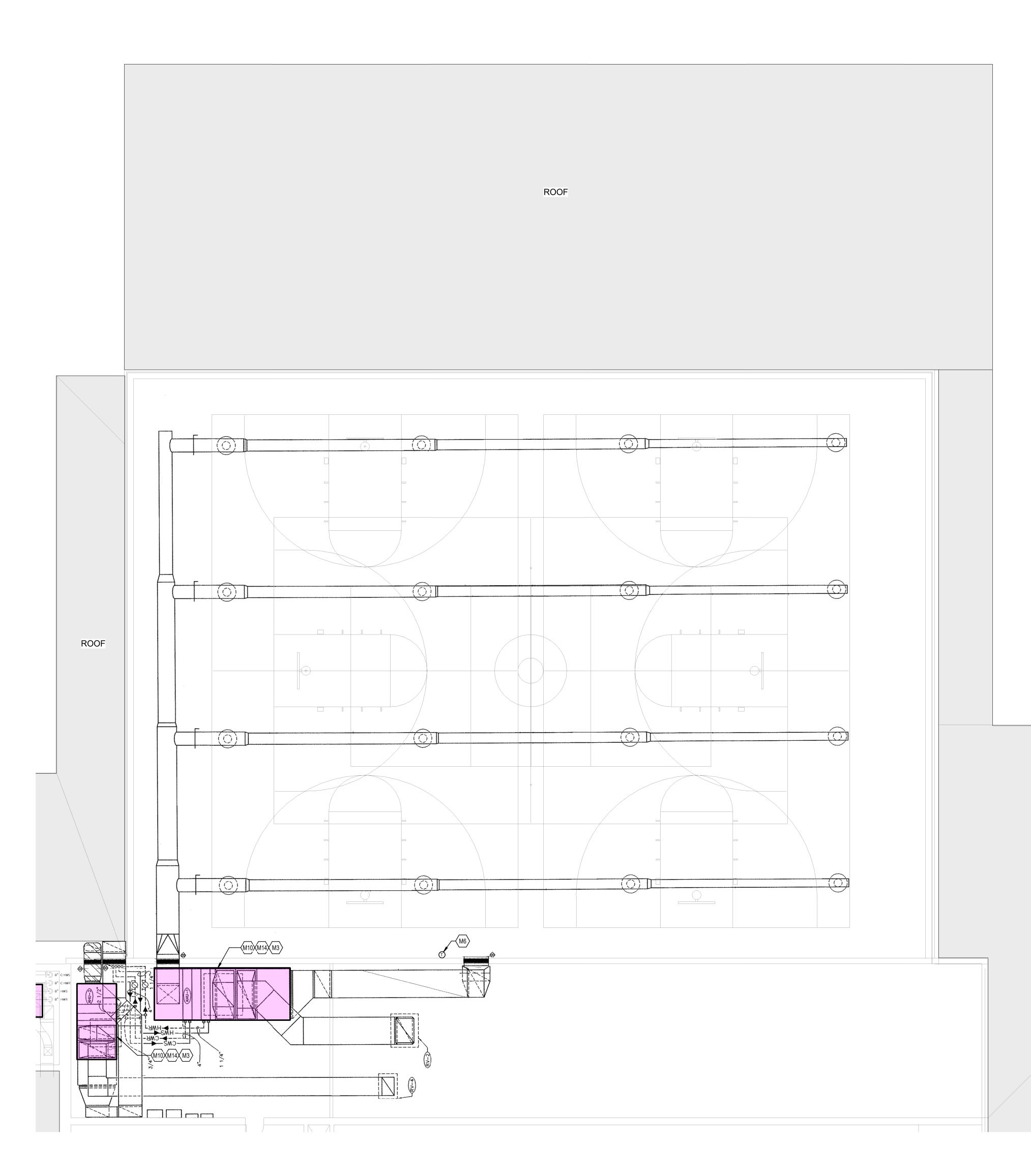






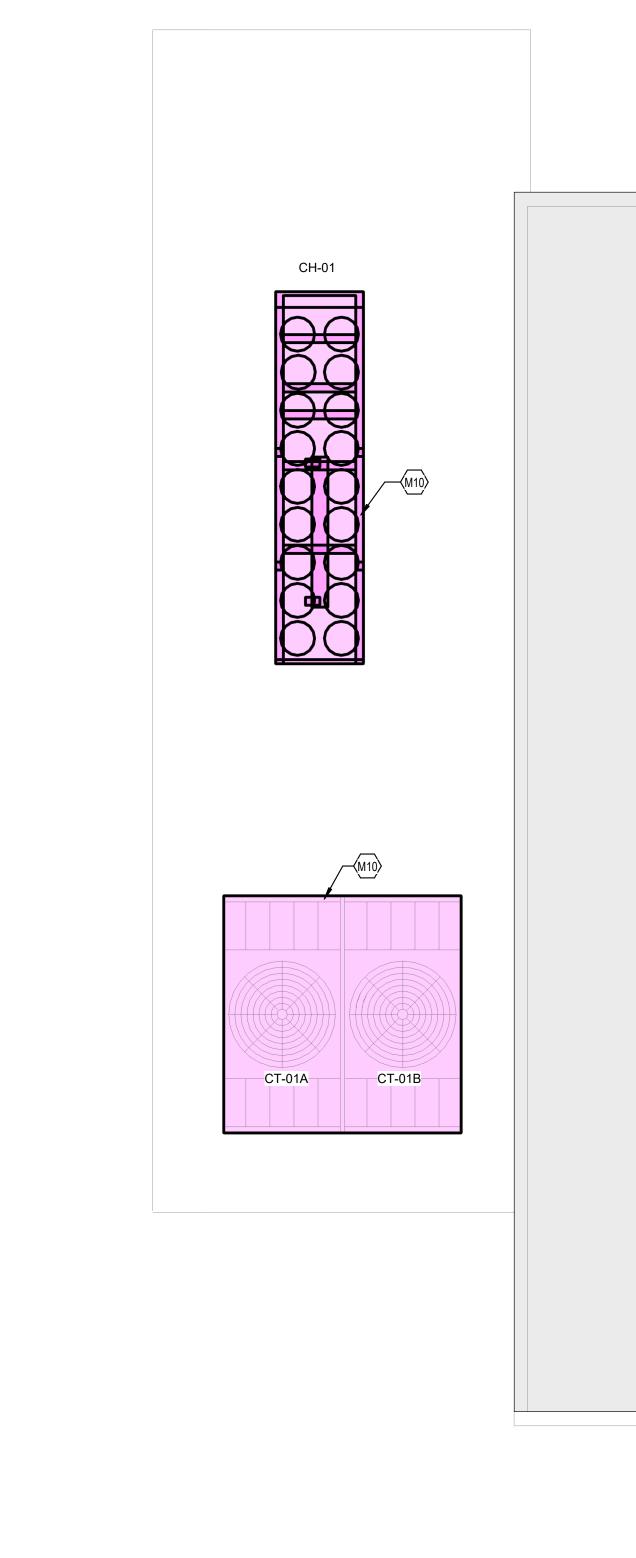


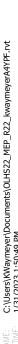


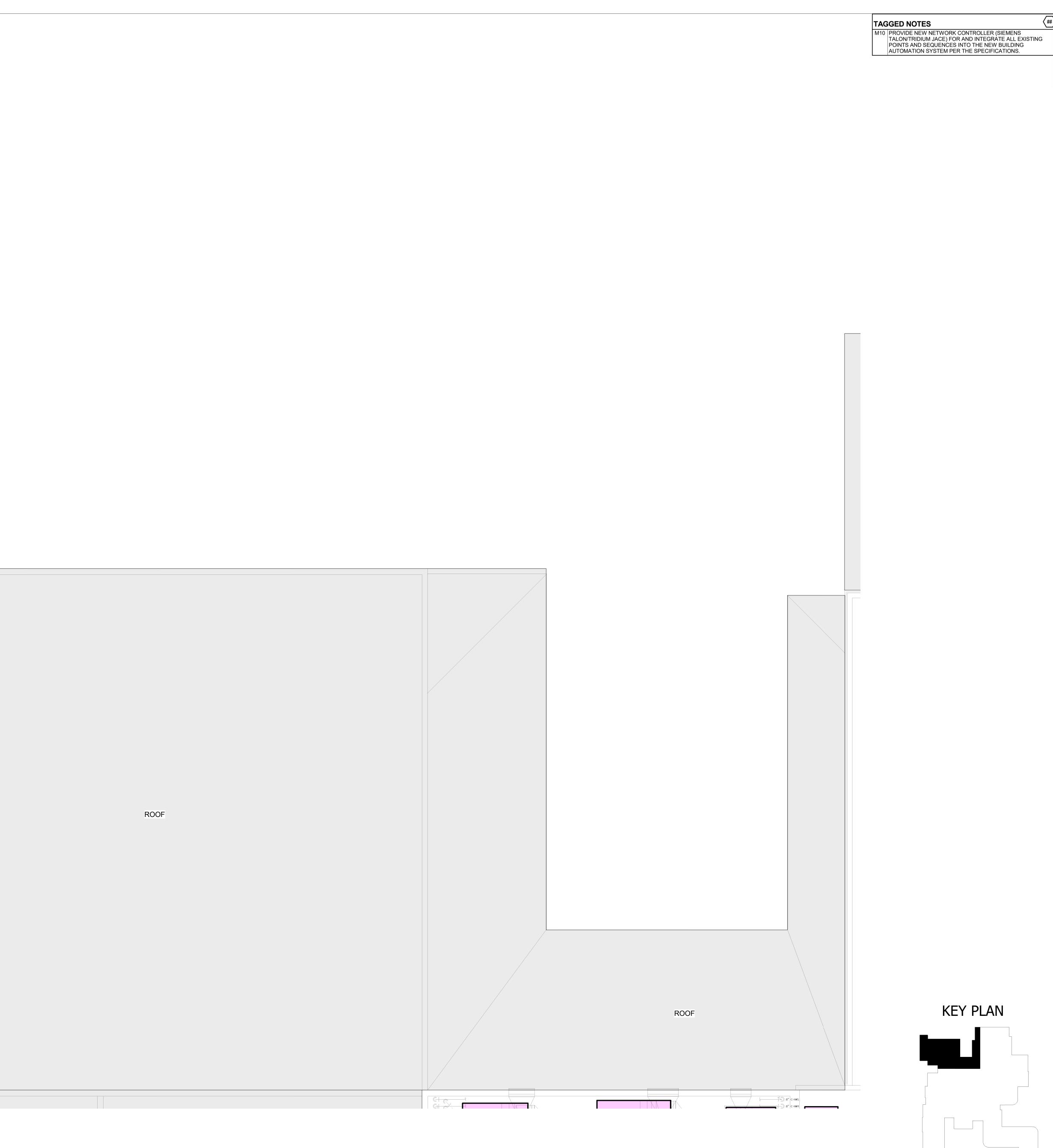


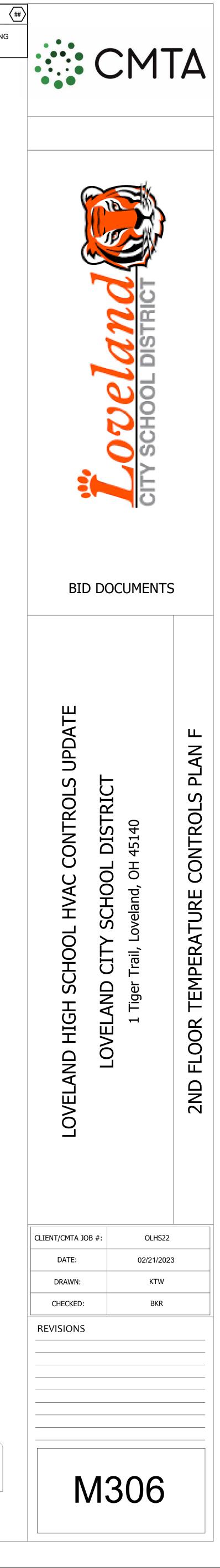


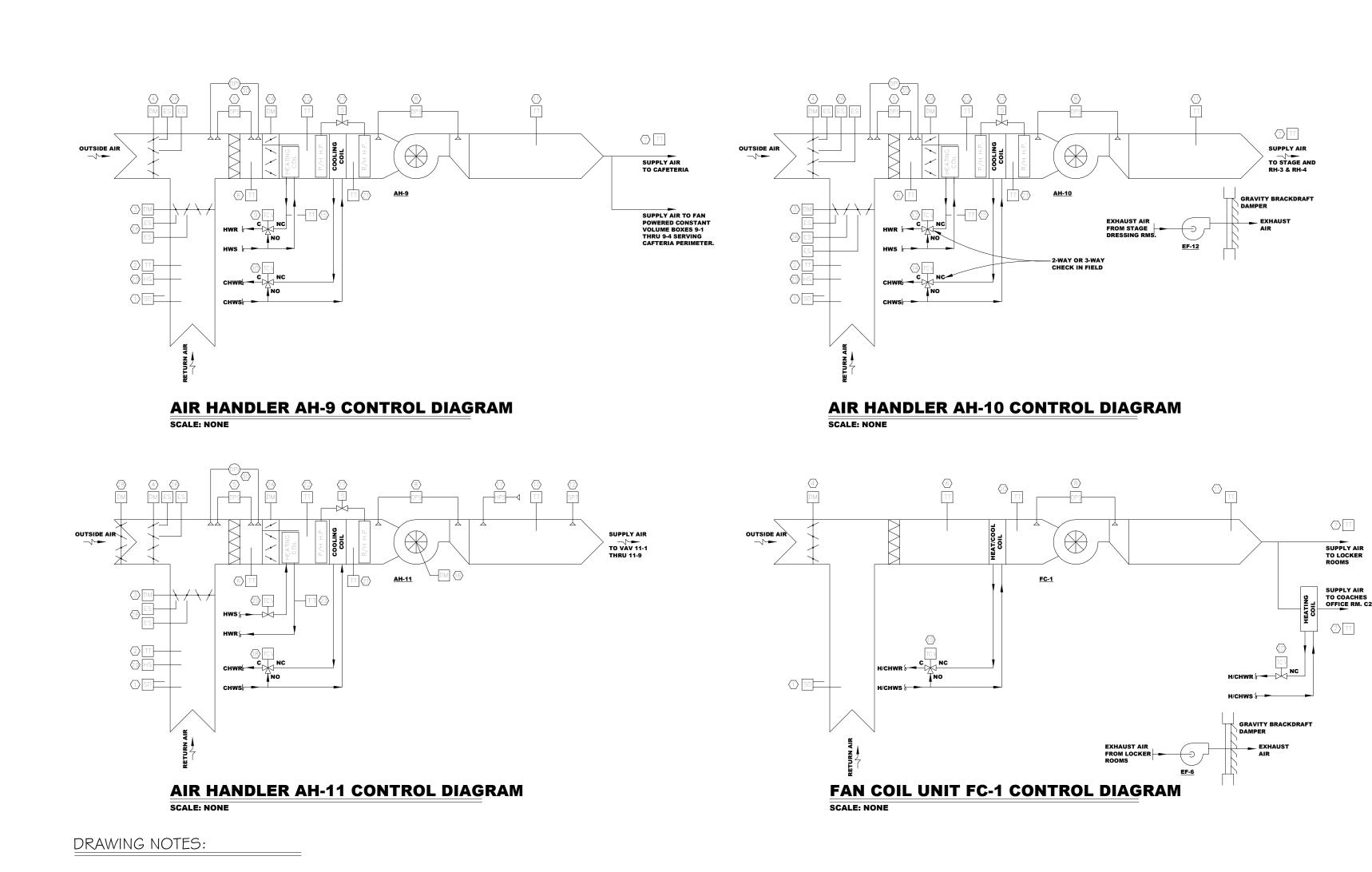




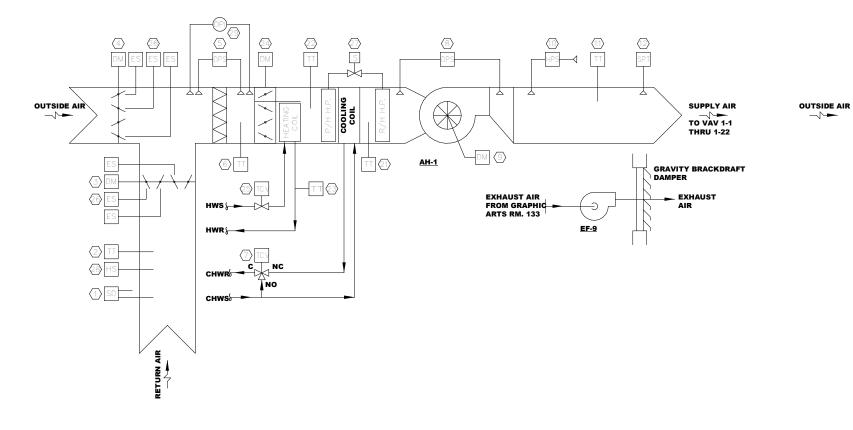




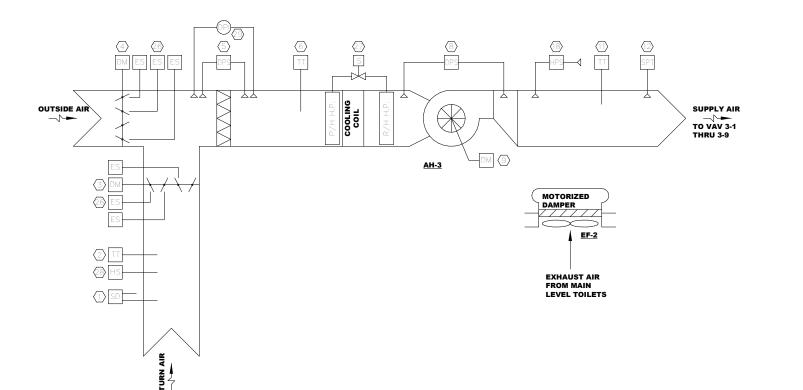




- 1 SD-RA, DUCT SMOKE DETECTOR. $\overline{2}$ TT-RA, FK-T30, STAEFFA, DUCT TEMP SENSOR.
- $^{3}
 angle$ DM-RA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATO
- DM-OA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATOR.
- DPS-FIL, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESS SWITCH W/ DBZ-06 TUBING KIT, SET 0.75" WC. $\overline{6}
 angle$ TT-MA, ST-AV81, KELE & ASSOC., 100 OHM, AVE RTD W/ M81T-3090,
- 4-20MA XMTR, 30/90°F. TT-RM, SM2-RS1111, STAEFFA, ROOM TEMP SENSOR WITH $\pm4^\circ$ F SET PT ADJUSTMENT AND OCCUPIED OVERRIDE SWITCH.
- DPS-SF, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESS SWITCH W/ DBZ-06 TUBING KIT, SET 1.0" WC.
- TCV-HC, M3P50G/C1, STAEFFA, 2.0" 3W-NC, CNTL VALVE, Cv=35, GPM=60, PD=2.9#. TCV-CC, M3P65G/C1, STAEFFA, 2.5" 3W-NC, CNTL VALVE, Cv=58, GPM=96, PD=2.7#.
- TT-SA, FK-T30, STAEFFA, DUCT TEMP SENSOR.
- $^{>}$ 3/8" STATIC PRESSURE SENSING LINE TO SPT-SA, SM2-DPX, STAEFFA, DIFF PRESS SENSOR.
- TCV-HC, M3P25G/C1, STAEFFA, 1.0" 3W-NC, CNTL VALVE, Cv=9.3, GPM=13, PD=2.0#.
- TCV-CC, M3P32G/C1, STAEFFA, 1.25" 3W-NC, CNTL VALVE, Cv=14, GPM=26, PD=3.5#.
- $\overline{5}$ TT-HWR, FT-T1, STAEFFA IMMERSION TEMP SENSOR.
- DM-SF, ASU1D30, STAEFFA, MODULATING NON FAIL SAFE DPR ACTUATOR.
- HPS-SF, 1900-5-MR, DWYER, MANUAL RESET HIGH STATIC PRESS. SWITCH, SET 2" WC.
- TCV-CC, M3P50G/C1, STAEFFA, 2.0" 3W-NC, CNTL VALVE, Cv=35, GPM=58, PD=2.7#. TCV-CC, M3P25G/C1, STAEFFA, 1.0" 3W-NC, CNTL VALVE, Cv=9.3, GPM=14, PD=2.3#.
- CV-RH1, VSZ11, INTEC CONTROLS, 0.5" 2W-NC, CNTL VALVE, Cv=0.7, GPM=1.0, PD=2.0#.
- \bigodot TT-FZ, RTD TYPE, 4-20 MA, FREEZE STAT TEMPERATURE SENSER.



AIR HANDLER AH-1 CONTROL DIAGRAM



AIR HANDLER AH-3 CONTROL DIAGRAM SCALE: NONE

DRAWING NOTES:

- 1 SD-RA, DUCT SMOKE DETECTOR. 2
 angle TT-RA, FK-T30, STAEFFA, DUCT TEMP SENSOR.
- $\overline{\mathbb{C}}$ DM-RA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATOR.

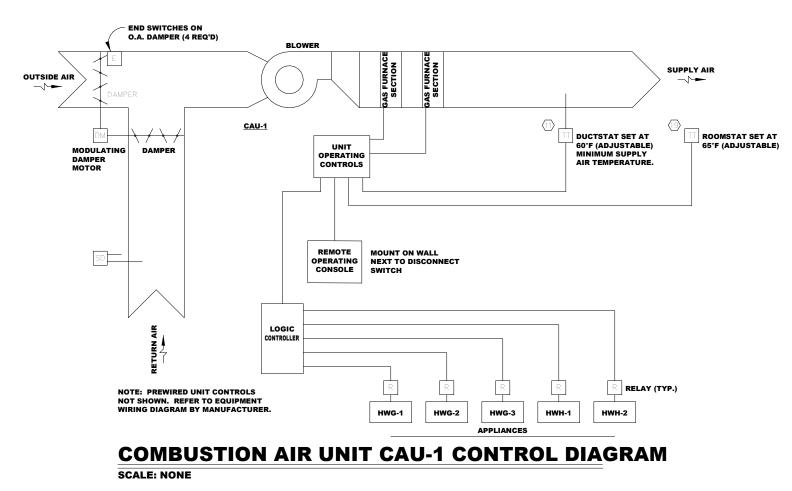
SCALE: NONE

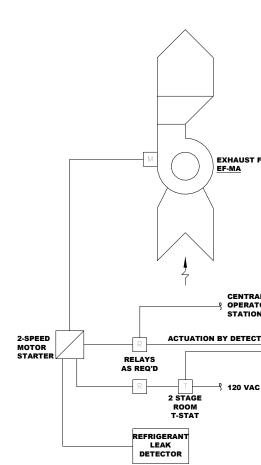
- $\overline{4}$ DM-OA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATOR. $\overline{5}$ dps-fil, dbl-205b, intec controls, differential press switch w/
- DBZ-06 TUBING KIT, SET 0.75" WC. $\langle \widehat{\circ}
 angle$ TT-MA, ST-AV81, KELE & ASSOC., 100 OHM, AVE RTD W/ M81T-3090,
- 4-20MA XMTR, 30/90°F. TCV-CC, M3P65F, STAEFFA, 2.5" 3W-NC, CNTL VALVE, Cv=58, GPM=86.3, PD=2.2#.
- DPS-SF, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESS SWITCH W/ DBZ-06 TUBING KIT, SET 1.0" WC.
- > HPS-SF, 1900-5-MR, DWYER, MANUAL RESET HIGH STATIC PRESS. SWITCH, SET 3" WC.

DM-SF, ASU1D30, STAEFFA, MODULATING NON FAIL SAFE DPR

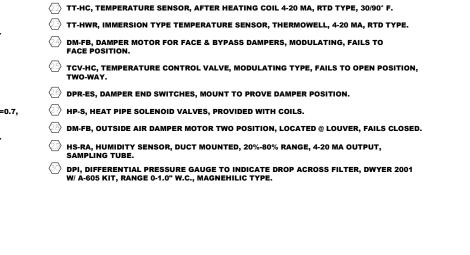
- ightarrow TT-SA, FK-T30, STAEFFA, DUCT TEMP SENSOR.
- 3/8" STATIC PRESSURE SENSING LINE TO SPT-SA, SM2-DPX, STAEFFA, DIFF PRESS SENSOR.
- TT-HC, ST-AV81, KELE & ASSOC., 100 OHM, AVE RTD W/ M81T-3090, 4-20MA XMTR, 30/90°F.
- TCV-HC, M3P32G/C1, STAEFFA, 1.25" 3W-NC, CNTL VALVE, Cv=14, GPM=23, PD=2.7#.
- $\langle \overline{5} \rangle$ TT-HWR, FT-T1, STAEFFA IMMERSION TEMP SENSOR.
- C TCV-CC, M3P65F, STAEFFA, 2.5" 3W-NC, CNTL VALVE, Cv=58, GPM=130, PD=5.0#. TCV-HC, M3P65F, STAEFFA, 2.5" 3W-NC, CNTL VALVE, Cv=58, GPM=109, PD=3.5#.

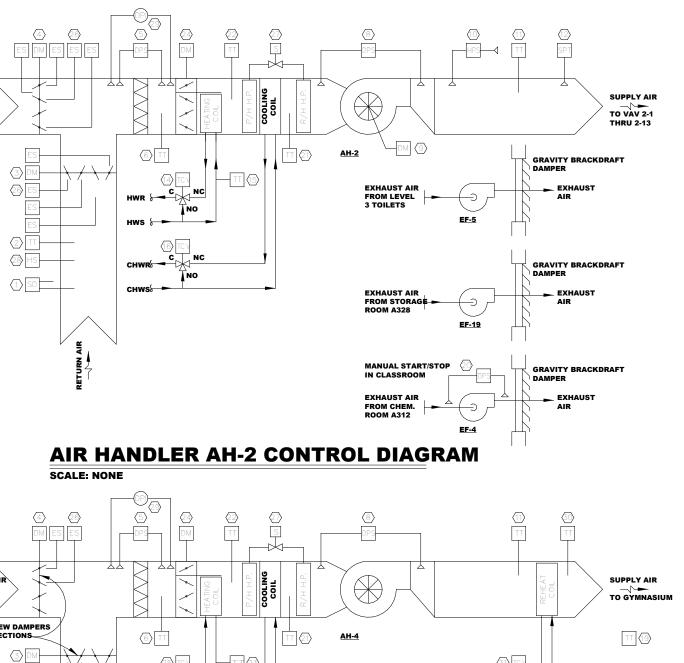
- HPS-SF, 1900-5-MR, DWYER, MANUAL RESET HIGH STATIC PRESS. SWITCH, SET 2" WC.
- 🕥 TT-RM, VRWM-F-T30, ATKINSON ELEC, VANDAL RESISTANT, ROOM
- DPS-EF4, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESS SWITCH W/ DBZ-06 TUBING KIT, SET 0.5" WC.
- \fbox TT-FZ, RTD TYPE, 4-20 MA, FREEZE STAT TEMPERATURE SENSOR.

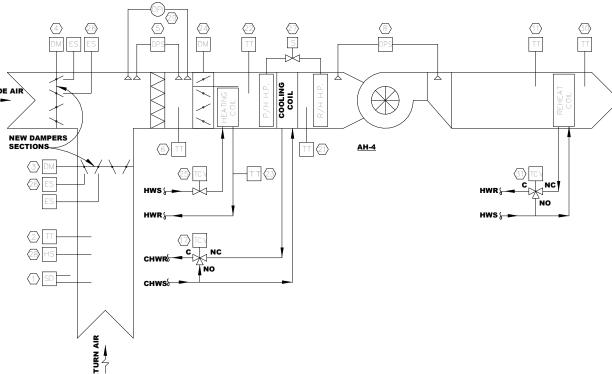




SCALE: NONE

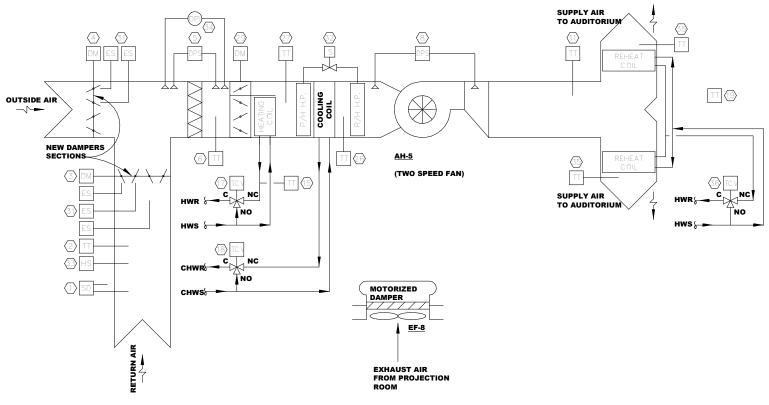




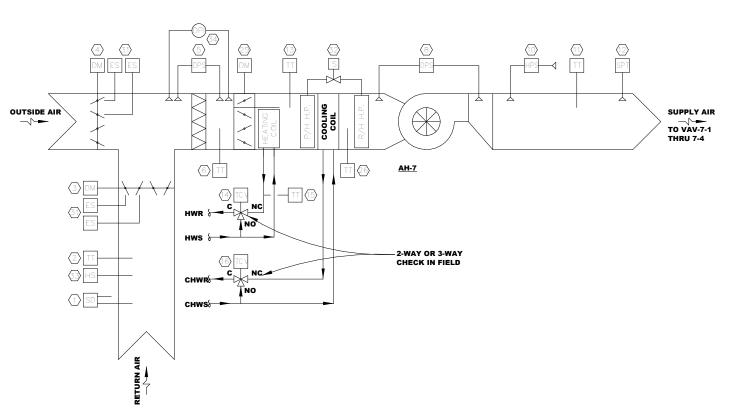


AIR HANDLER AH-4 CONTROL DIAGRAM SCALE: NONE

- \sim TT-HC, TEMPERATURE SENSOR, AFTER HEATING COIL 4-20 MA, RTD TYPE, 30/90° F. TT-HWR, IMMERSION TYPE TEMPERATURE SENSOR, THERMOWELL, 4-20 MA, RTD TYPE.
- DM-FB, DAMPER MOTOR FOR FACE & BYPASS DAMPERS, MODULATING, FAILS TO FACE POSITION.
- TCV-HC, TEMPERATURE CONTROL VALVE, MODULATING TYPE, FAILS TO OPEN POSITION, TWO-WAY.
- DPR-ES, DAMPER END SWITCHES, MOUNT TO PROVE DAMPER POSITION. 2 HP-S, HEAT PIPE SOLENOID VALVES, PROVIDED WITH COILS.
- HS-RA, HUMIDITY SENSOR, DUCT MOUNTED, 20%-80% RANGE, 4-20 MA OUTPUT, SAMPLING TUBE.
- DPI, DIFFERENTIAL PRESSURE GAUGE TO INDICATE DROP ACROSS FILTER, DWYER 2001 W/ A-605 KIT, RANGE 0-1.0" W.C., MAGNEHILIC TYPE. $\textcircled{\odot}$ tt-rh, temperature transmitter, annunciate output temperature @ central operators terminal.
- ♂ TCV-RH, 3-WAY CONTROL VALVE.



AIR HANDLER AH-5 CONTROL DIAGRAM SCALE: NONE



AIR HANDLER AH-7 CONTROL DIAGRAM SCALE: NONE

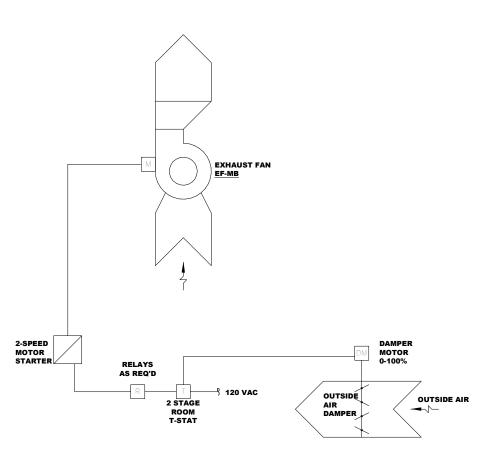
DRAWING NOTES:

- angle SD-RA, DUCT SMOKE DETECTOR.
- angle TT-RA, FK-T30, STAEFFA, DUCT TEMP SENSOR. angle DM-RA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATOR.
- angle DM-OA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATOR.
- DPS-FIL, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESS SWITCH W/ DBZ-06 TUBING KIT, SET 0.75" WC. $\overline{6}
 angle$ TT-MA, ST-AV81, KELE & ASSOC., 100 OHM, AVE RTD W/ M81T-3090,
- 4-20MA XMTR, 30/90°F. TT-RM, SM2-RS1111, STAEFFA, ROOM TEMP SENSOR WITH ±4'F SET PT ADJUSTMENT AND OCCUPIED OVERRIDE SWITCH.
- DPS-SF, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESS SWITCH W/ DBZ-06 TUBING KIT, SET 1.0" WC.
- DM-SF, ASU1D30, STAEFFA, MODULATING NON FAIL SAFE DPR $\overline{0}
 angle$ HPS-SF, 1900-5-MR, DWYER, MANUAL RESET HIGH STATIC PRESS. SWITCH, SET 2" WC. angle TT-SA, FK-T30, STAEFFA, DUCT TEMP SENSOR. 3/8" STATIC PRESSURE SENSING LINE TO SPT-SA, SM2-DPX, STAEFFA, DIFF PRESS SENSOR.

- TT-HC, ST-AV81, KELE & ASSOC., 100 OHM, AVE RTD W/ M81T-3090, 4-20MA XMTR, 30/90°F.
- TCV-HC, M3P32G/C1, STAEFFA, 0.5" 3W-NC, CNTL VALVE, Cv=3.5, GPM=5.0, PD=2.0#. TT-HWR, FT-T1, STAEFFA IMMERSION TEMP SENSOR. TCV-CC, M3P32G/C1, STAEFFA, 1.25" 3W-NC, CNTL VALVE, Cv=14, GPM=29, PD=4.3#.



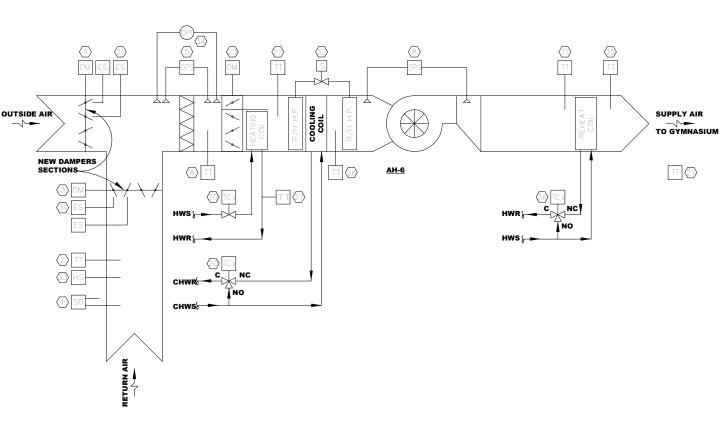
SCAN QR CODE FOR FULL HIGH SCHOOL POINTS LIST



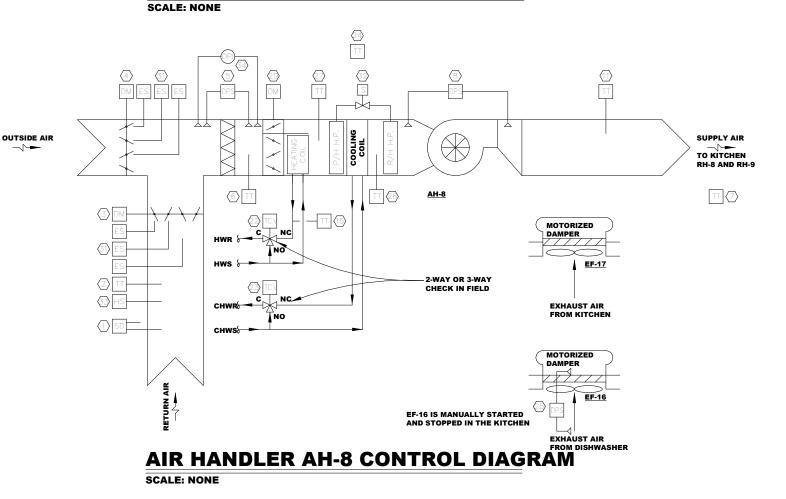


OUTSIDE AIR DAMPER

EXHAUST FAN EF-MB CONTROL DIAGRAM SCALE: NONE



AIR HANDLER AH-6 CONTROL DIAGRAM



 TCV-HC, M3P65F, STAEFFA, 2.5" 3W-NC, CNTL VALVE, Cv=58, GPM=92, PD=2.5#.

TCV-HC, M3P65F, STAEFFA, 2.5" 3W-NC, CNTL VALVE, Cv=58, GPM=109, PD=3.5#.

TT-RM, VRWM-F-T30, ATKINSON ELEC, VANDAL RESISTANT, ROOM SENSOR.

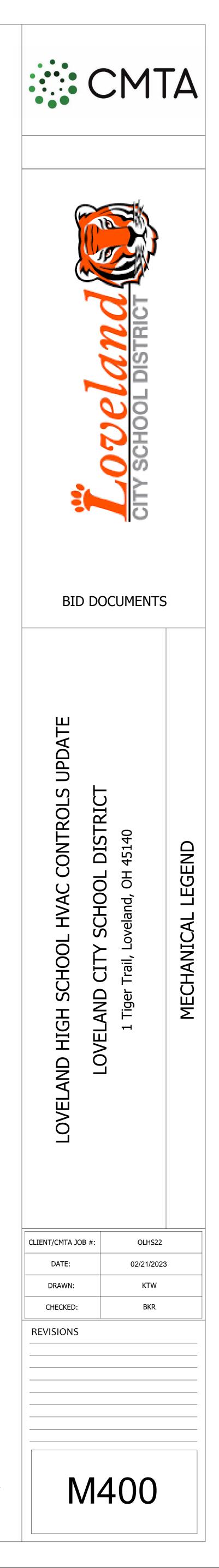
TCV-HC, M3P32G/C1, STAEFFA, 1.25" 3W-NC, CNTL VALVE, Cv=14, GPM=31, PD=4.9#.

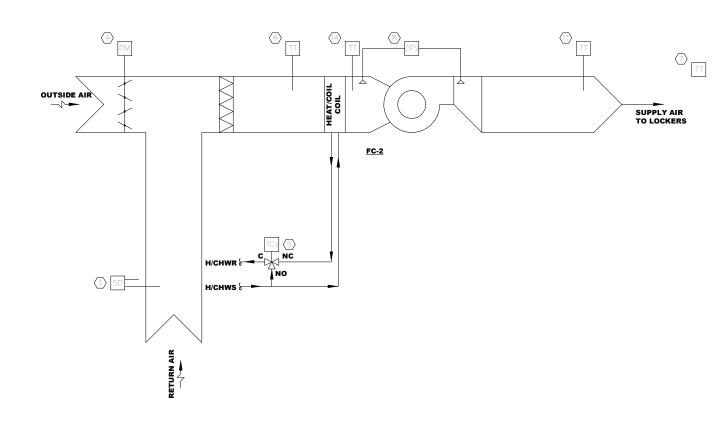
TCV-CC, M3P32G/C1, STAEFFA, 2.0" 3W-NC, CNTL VALVE, Cv=35, GPM=55, PD=2.5#.

TT-RM, SM2-RS1000, STAEFFA, ROOM TEMP SENSOR. SENSOR MTD ABOVE CEILING ADJACENT TO RETURN AIR DUCT OPENING NEAR REFRIGERATION UNITS.

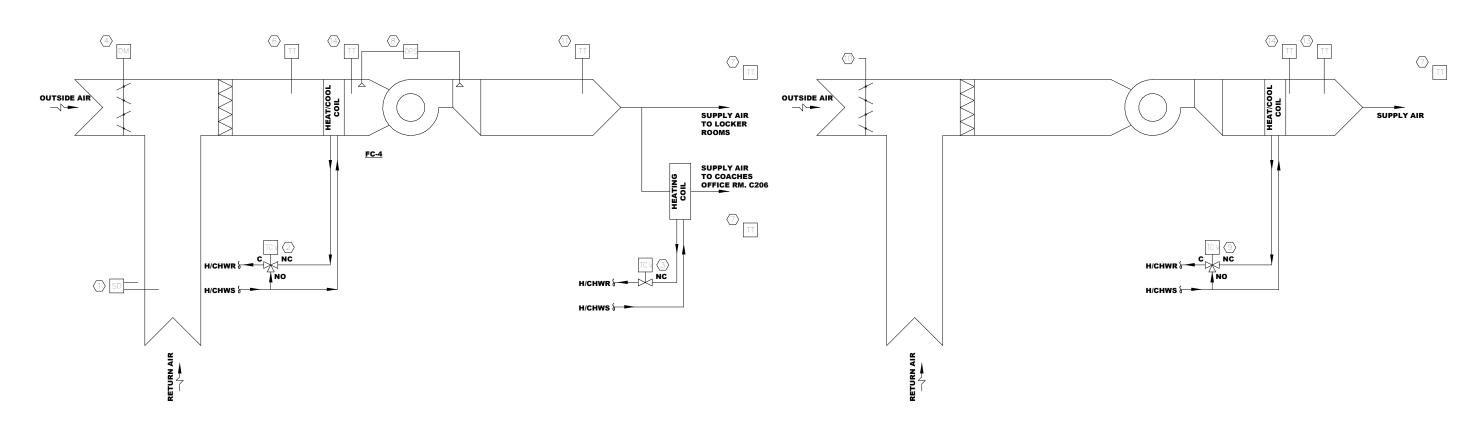
- DPS-EF16, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESSURE SWITCH W/ DBZ-06 TUBING KIT, SET @ 0.5" WC TT-FZ, RTD TYPE, 4-20 MA, FREEZE STAT TEMPERATURE SENSOR.
- TT-HC, TEMPERATURE SENSOR, AFTER HEATING COIL 4-20 MA, RTD TYPE, 30/90° F. TT-HWR, IMMERSION TYPE TEMPERATURE SENSOR, THERMOWELL, 4-20 MA, RTD TYPE.] DM-FB, DAMPER MOTOR FOR FACE & BYPASS DAMPERS, MODULATING, FAILS TO
- TCV-HC, TEMPERATURE CONTROL VALVE, MODULATING TYPE, FAILS TO OPEN POSITION, TWO-WAY.
- ightarrow dpr-es, damper end switches, mount to prove damper position. Description of the second seco
- HS-RA, HUMIDITY SENSOR, DUCT MOUNTED, 20%-80% RANGE, 4-20 MA OUTPUT, SAMPLING TUBE.
- DPI, DIFFERENTIAL PRESSURE GAUGE TO INDICATE DROP ACROSS FILTER, DWYER 2001 W/ A-605 KIT, RANGE 0-1.0" W.C., MAGNEHILIC TYPE.
- $\stackrel{\textstyle \textstyle \frown}{\textstyle \odot}$ tt-rh, temperature transmitter, annunciate output temperature @ central operators terminal. (36) TCV-RH, 3-WAY CONTROL VALVE.

- TCV-CC, M3P65F, STAEFFA, 2.5" 3W-NC, CNTL VALVE, Cv=58, GPM=104, PD=3.2#. TT-RM, SM2-RS1000, STAEFFA, ROOM TEMP SENSOR.

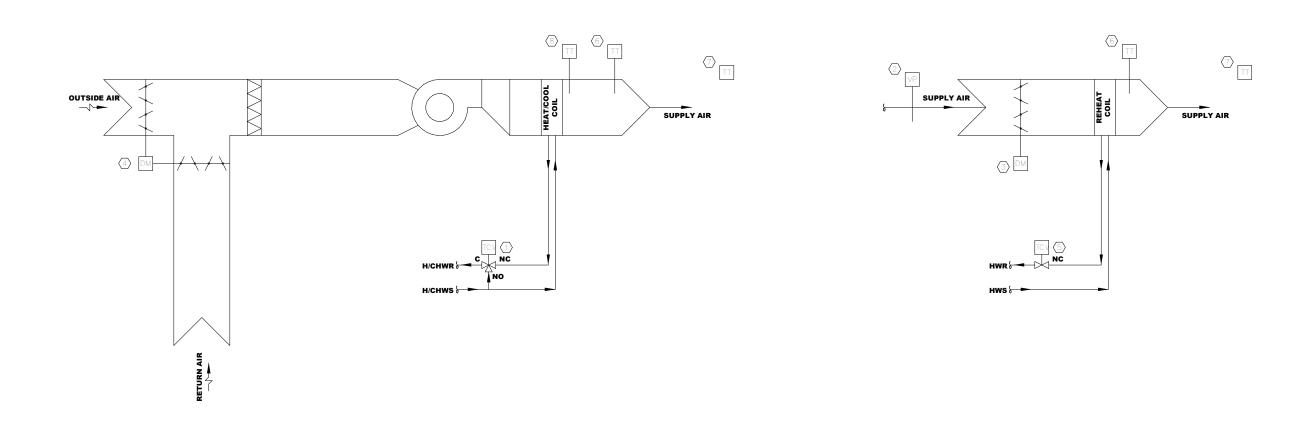




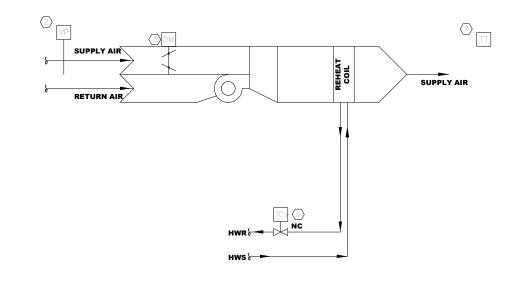
FAN COIL UNIT FC-2 CONTROL DIAG RAM



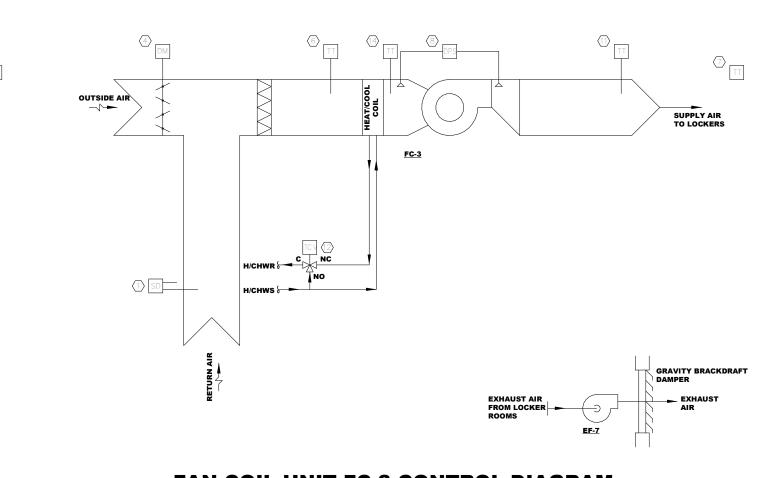
FAN COIL UNIT FC-4 CONTROL DIAGRAM SCALE: NONE



UNIT VENTILATORS UV1,2,3,4 AND 5 CONTROL DIAGRAM SCALE: NONE



PARALLEL FAN POWERED BOX 9-1,2,3 AND 4 CONTROL DIAGRAM SCALE: NONE REHEAT COIL CONTROL DIAGRAM SCALE: NONE



© DRAWING NOTES:

1 ight angle sd-ra, duct smoke detector.

- TCV-HC, M3P20G/C1, STAEFFA, 0.75" 3W-NC, CNTL VALVE, Cv=5.8, GPM=111, PD=3.6#. $\overline{\underline{\mathbf{C}}}$ TCV-RH1, VSZ11, INTEC CONTROLS, 0.5" 2W-NC, CNTL VALVE, Cv=0.7, GPM=1.0, PD=2.0#.
- \sum DM-OA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATOR.
- TT-MA, FK-T30, STAEFFA, DUCT TEMP SENSOR.
- TT-RM, SM2-RS1111, STAEFFA, ROOM TEMP SENSOR WITH $\pm 4^\circ$ F SET PT ADJUSTMENT AND OCCUPIED OVERRIDE SWITCH.
- DPS-SF, DBL-205B, INTEC CONTROLS, DIFFERENTIAL PRESS SWITCH W/
- TCV-HC, M3P*, STAEFFA, 3W-NC,
- $\stackrel{-}{\bigcirc}$ OA AIR DUCT AND MANUAL BALANCING DAMPER PRESENT ON FC-5,6,7 $\stackrel{-}{\bigcirc}$ AND 8. FC-9 AND 10 ARE 100% OA UNITS. TT-SA, FK-T30, STAEFFA, DUCT TEMP SENSOR.
- □ TCV-HC, M3P25G/C1, STAEFFA, 1.0" 3W-NC, CNTL VALVE, Cv=9.3, GPM=14, PD=2.3#. TT-SA, FB-KT30/C2, STAEFFA, DUCT TEMP SENSOR.
- $\langle 14 \rangle$ TT-FZ, FREEZESTAT.



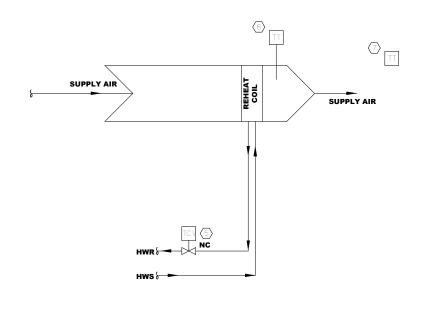
FAN COIL UNIT FC-5,6,7,8.,9,10 CONTROL DIAGRAM SCALE: NONE

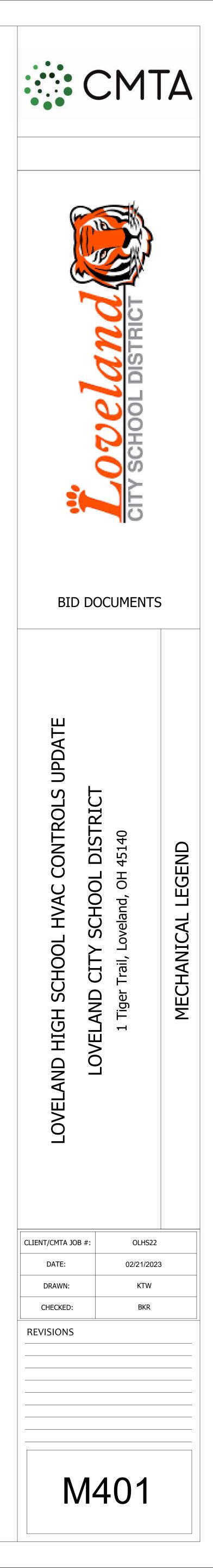
DRAWING NOTES: EXISTING EQUIPMENT

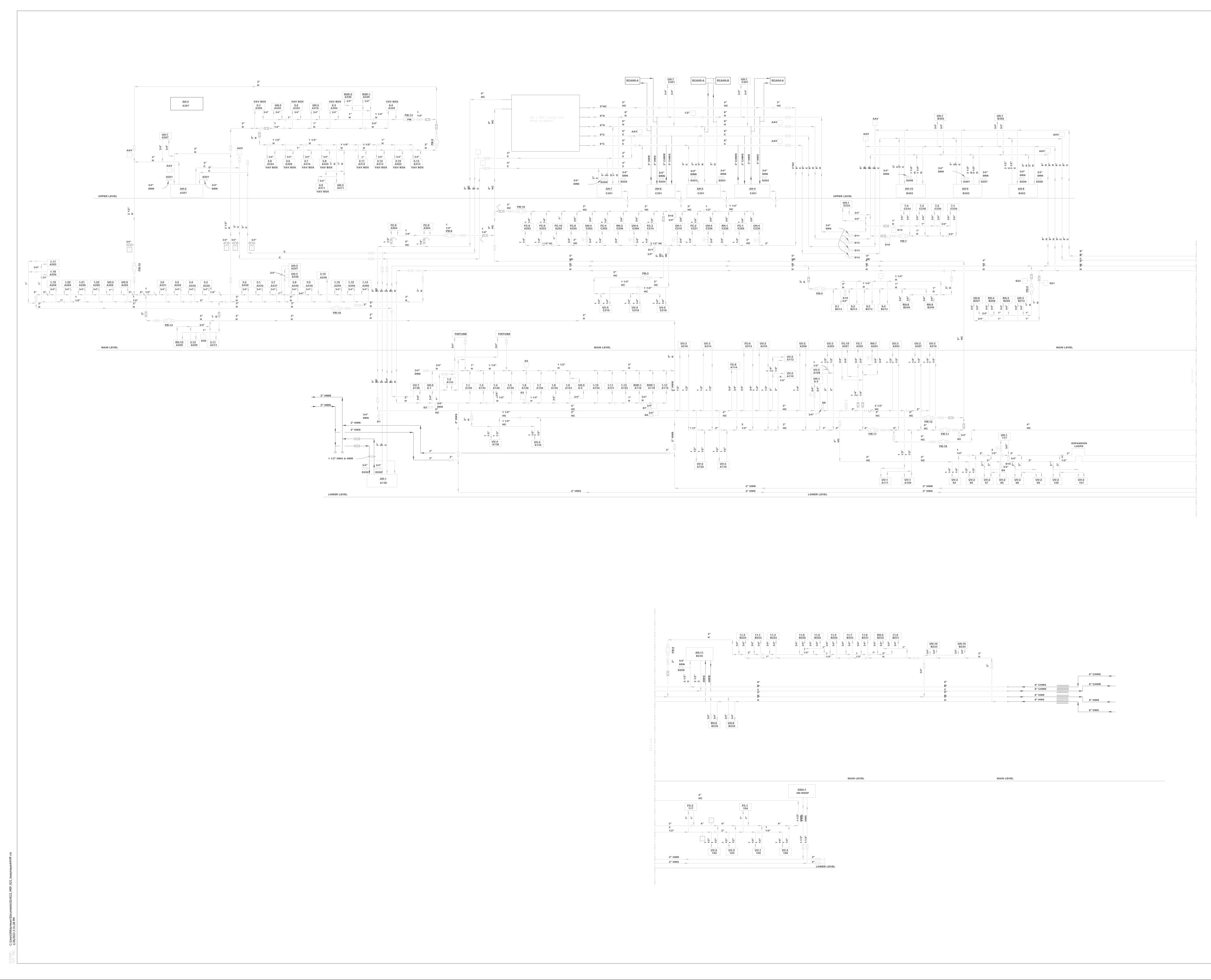
TCV-HC, M3P*, STAEFFA, 3W-NC,

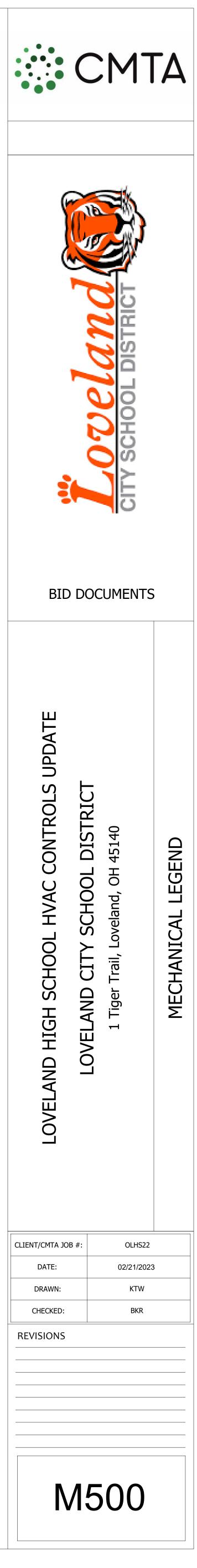
- > VP-1, SM2-SVP, STAEFFA, THERMAL ANEMOMETER VELOCITY SENSOR.
- DM-1, EM402-102, STAEFFA, DAMPER ACTUATOR. DM-OA, ASU1D10/F, STAEFFA, MODULATING FAILSAFE DPR ACTUATOR.
- TCV-RHC, INTEC, 2W-NC, CNTL VALVE.
- TT-SA, FB-KT30/C2, STAEFFA, DUCT TEMP SENSOR. Σ TT-RM, SM2-RS1111, STAEFFA, ROOM TEMP SENSOR WITH ±4°F SET PT adjustment and occupied override switch.
- $\overline{(3)}$ TT-FZ, FREEZESTAT.

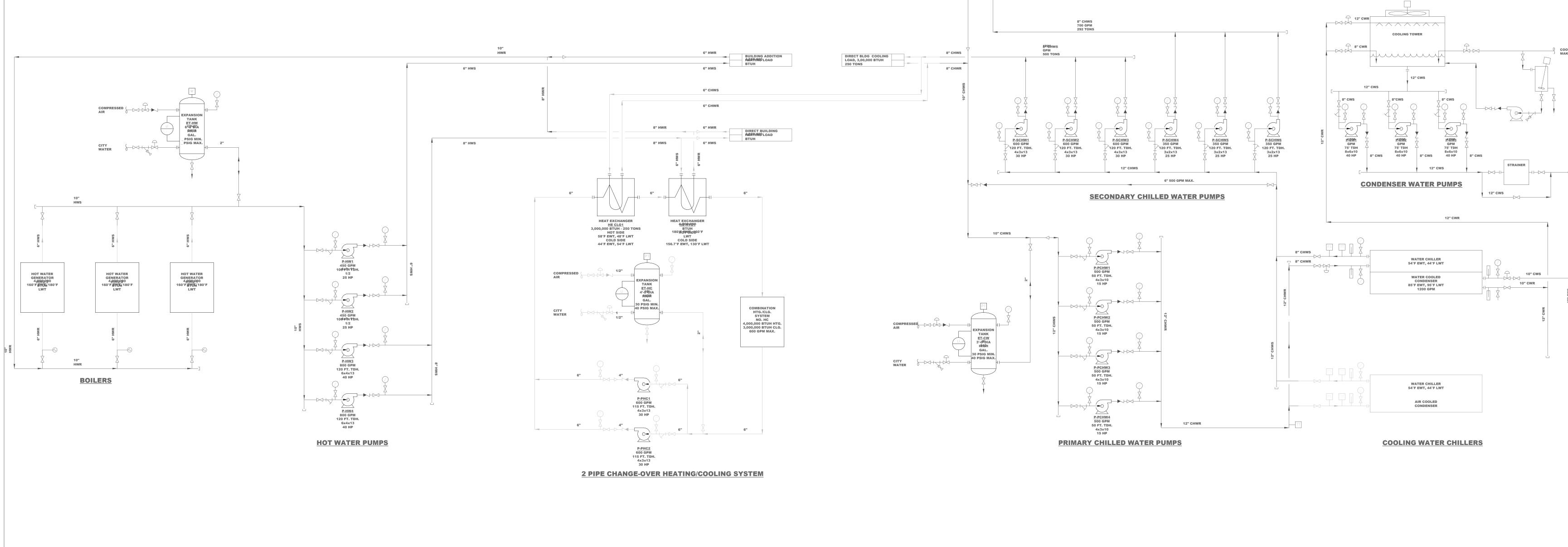
VARIABLE AIR VOLUME BOX CONTROL DIAGRAM SCALE: NONE











BLDG ADDITION COOLING LOAD, 3,500,000 BTUH 292 TONS 8" CHWR



