ABBREVIATIONS

(E)	EXISTING ITEM
(ED)	EXISTING ITEM TO BE DEMOLISHED
(ER)	EXISTING ITEM TO BE RELOCATED
(F)	FUTURE
(N)	NEW
(RL)	RELOCATED ITEM
AAV	AUTOMATIC AIR VENT
AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
ACD	AUTOMATIC CONTROL DAMPER
ACLC	AIR COOLED LIQUID CHILLER
AD	ACCESS DOOR
AF	AIR FILTER
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
ARCH	ARCHITECT
AS	AIR SEPARATOR
ASC	APPLICABLE SECTION CONTRACTOR
ATC	AUTOMATIC TEMPERATURE CONTROL
B	BOILER
BDD	BACKDRAFT DAMPER
BE	BATHROOM EXHAUST
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STEEL
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
BVC	BOILER VENT AND COMBUSTION AIR
CA	COMBUSTION AIR
CAP	CAPACITY
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CM	CONSTRUCTION MANAGER
CO	CLEAN OUT
CONN	CONNECT
CP	CONDENSATE PUMP
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
CV	CONVECTOR
CVB	CONSTANT VOLUME BOX
D	CONDENSATE DRAIN
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DE	DRYER EXHAUST
DF	DESTRATIFICATION FAN
DHW	DOMESTIC HOT WATER
DIA or Ø	DIAMETER
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECU	EVAPORATIVE CONDENSING UNIT
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EMS	EMERGENCY MANAGEMENT SYSTEM
ER	EXHAUST REGISTER
ERV	EXHAUST ROOF VENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FAN
F&TT	FLOAT & THERMOSTATIC TRAP
FA	FREE AREA
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER
FMS	FLOW MEASUREING STATION
FO	FUEL OIL
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FAN POWERED
FPB	FAN POWERED BOX
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FSD	FIRE SMOKE DAMPER
FT	FEET
FTR	FIN-TUBE RADIATION
FTU	FAN TERMINAL UNIT

ABBREVIATIONS

GAL	GALLONS
GC	GENERAL CONTRACTOR
GE	GENERAL EXHAUST
GPM	GALLONS PER MINUTE
H	HUMIDIFIER
HC	HEATING COIL
HE	HOOD EXHAUST
HF	HEPA FILTER
HP	HORSE POWER
HP	HEAT PUMP
HRB	HEAT RECOVERY BOX
HRC	HEAT RECOVERY COIL
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING VENTILATION AND AIR CONDITIONING
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IN	INCHES
IRV	INTAKE ROOF VENT
KE	KITCHEN EXHAUST
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LBG	LINEAR BAR GRILLE
LD	LINEAR DIFFUSER, LOUVERED DOOR
LS	LOOSE STARTER
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MBH	THOUSAND BTU'S PER HOUR
MC	MECHANICAL CONTRACTOR
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MOD	MOTOR OPERATED DAMPER
MUA	MAKE-UP AIR
MUAU	MAKE-UP AIR UNIT
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
P	PUMP
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PRV	PRESSURE REDUCING VALVE
PS	PACKAGE STARTER
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
RD	RETURN DIFFUSER
RF	RETURN FAN
RG	RETURN GRILLE
RIC	RETURN IN COVER
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SCT	SATURATED CONDENSING TEMPERATURE
SD	SMOKE DAMPER
SDA	SOUND ATTENUATOR
SDC	STAND ALONE DIGITAL CONTROLLER
SF	SQUARE FEET
SF	SUPPLY AIR FAN
SG	SUPPLY GRILLE
SP	STATIC PRESSURE
SPD	SPEED
SR	SUPPLY REGISTER
SST	STATIC SUCTION TEMPERATURE
TA	TRANSFER AIR
TD	TRANSFER DUCT
TE	TOILET EXHAUST
TF	TRANSFER FAN
TG	TRANSFER GRILLE
TOS	TOP OF STEEL
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UC	UNDERCUT DOOR
UF	UNDERFLOOR
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UV	UNIT VENTILATOR
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VI	VIBRATION ISOLATOR
VIF	VERIFY IN FIELD
VRF	VARIABLE REFRIGERANT FLOW
VSD	VARIABLE SPEED DRIVE
WB	WET BULB TEMPERATURE
WMS	WIRE MESH SCREEN
WSHP	WATER SOURCE HEAT PUMP

MECHANICAL VALVES AND ACCESSORIES

- ISOLATION VALVE SEE SPECIFICATIONS FOR TYPE
- 2-WAY CONTROL VALVE (DDC OR PNEUMATIC)
- 2-WAY CONTROL VALVE (MOTORIZED)
- 3-WAY CONTROL VALVE (DDC OR PNEUMATIC)
- 3-WAY CONTROL VALVE (MOTORIZED)
- THERMOSTIC CONTROL VALVE
- SOLENOID VALVE
- DIFFERENTIAL PRESSURE VALVE
- GATE VALVE
- GLOBE VALVE
- OSY VALVE
- PRESSURE REDUCING VALVE
- SAFETY RELIEF VALVE
- ANGLE VALVE
- BALL VALVE
- BALL VALVE WITH MEMORY STOP
- BUTTERFLY VALVE
- BALANCING VALVE WITH TEST PORTS
- CHECK VALVE (LEFT & RIGHT)
- PRESSURE GAUGE WITH COCK
- PRESSURE GAUGE WITH SIPHON AND COCK
- PRESSURE TEMPERATURE GAUGE PORT
- FLOAT & THERMOSTATIC TRAP
- THERMOSTATIC TRAP
- STEAM TRAP SEE SPECIFICATION FOR TYPE
- SITE GLASS
- THERMOMETER
- THERMOMETER WITH WELL
- CONCENTRIC PIPE REDUCER
- ECCENTRIC PIPE REDUCER
- AUTOMATIC AIR VENT (W/ ISOLATION VALVE)
- MANUAL AIR VENT (W/ ISOLATION VALVE AND HOSE END CONNECTION)
- THERMOSTATIC AIR VENT
- VACUUM BREAKER
- PIPE CAP
- CONCENTRIC PIPE REDUCER
- PIPE RISING / OR RISING AND DROPPING
- PIPE CONNECTION TOP OF MAIN
- PIPE TURNING DOWN
- TEE CONNECTION
- UNION
- PIPE CONNECTION BOTTOM OF MAIN
- PIPE ANCHOR
- FLANGED CONNECTION
- PIPE GUIDE
- PIPE UP TO RADIATION
- STRAINER
- STRAINER AND DRAIN VALVE W/ HOSE END CONN AND CAP.
- FLEXIBLE CONNECTOR
- DIRECTION OF FLOW
- FLOW MEASURING DEVICE
- EXPANSION COMPENSATOR

MECHANICAL PIPING LEGEND

BD	(BD) BLOW DOWN
BF	(BF) BOILER FEED
CA	(CA) COMPRESSED AIR
CD	(CD) CONDENSATE DRAIN
CF	(CF) CHEMICAL FEED
CHWR	(CHWR) CHILLED WATER RETURN
CHWS	(CHWS) CHILLED WATER SUPPLY
CLD	(CLD) CONDUIT TANK LEAK
COND	(COND) CONDENSATE
CTR	(CTR) COOLING TOWER RETURN
CTS	(CTS) COOLING TOWER SUPPLY
CW	(CW) COLD WATER CITY WATER MAKE UP
CWR	(CWR) CONDENSER WATER RETURN
CWS	(CWS) CONDENSER WATER SUPPLY
D	(D) DRAIN
DTR	(DTR) DUAL TEMP RETURN
DTS	(DTS) DUAL TEMP SUPPLY
(ED)	PIPING TO BE REMOVED
(E)	EXISTING PIPING
(E)	EXISTING PIPING
FOG	(FOG) FUEL OIL GAUGE
FOR	(FOR) FUEL OIL RETURN
FOS	(FOS) FUEL OIL SUPPLY
FOV	(FOV) FUEL OIL VENT
GR	(GR) GLYCOL WATER RETURN
GS	(GS) GLYCOL WATER SUPPLY
HG	(HG) REFRIG HOT GAS
HPR	(HPR) HIGH PRESS STEAM COND RETURN
HPS	(HPS) HIGH PRESS STEAM SUPPLY
HPWR	(HPWR) HEAT PUMP WATER RETURN
HPWS	(HPWS) HEAT PUMP WATER SUPPLY
HWR	(HWR) HOT WATER RETURN
HWS	(HWS) HOT WATER SUPPLY
LPR	(LPR) LOW PRESS COND RETURN
LPS	(LPS) LOW PRESS STEAM SUPPLY
MPR	(MPR) MED PRESS COND RETURN
MPS	(MPS) MED PRESS STEAM SUPPLY
NPW	(NPW) NON POTABLE WATER
PC	(PC) PUMPED CONDENSATE
PSC	(PSC) PUMPED STEAM CONDENSATE
PHWR	(PHWR) PRIMARY HOT WATER RETURN
PHWS	(PHWS) PRIMARY HOT WATER SUPPLY
RG	(RG) REFRIG GAS
RL	(RL) REFRIG LIQUID
RS	(RS) REFRIG SUCTION
SCHWR	(SCHWR) SECONDARY CHILLED WATER RETURN
SCHWS	(SCHWS) SECONDARY CHILLED WATER SUPPLY
SHWR	(SHWR) SECONDARY HOT WATER RETURN
SHWS	(SHWS) SECONDARY HOT WATER SUPPLY
TSTAT	(TSTAT) THERMOSTAT
V	(V) VENT

DUCTWORK SYMBOLS

- 24 x 8 — RECTANGULAR DUCTWORK - FIRST DIMENSION IS SIZE SHOWN (IN)
- 24 Ø — ROUND DUCTWORK DIAMETER (IN)
- 24 x 8 Ø — FLAT OVAL DUCT
- 24 x 8 — CAPPED DUCT
- 24 x 8 — EXISTING DUCTWORK
- EXISTING DUCTWORK TO BE REMOVED
- SUPPLY/OUTSIDE AIR DUCTWORK UP
- SUPPLY/OUTSIDE AIR DUCTWORK DOWN
- RETURN AIR DUCTWORK UP
- RETURN AIR DUCTWORK DOWN
- EXHAUST AIR DUCTWORK UP
- EXHAUST AIR DUCTWORK DOWN
- IN-DUCT SOUND ATTENUATOR
- FLEXIBLE DUCT
- 24 x 8 / 18 x 8 — RECTANGULAR TO RECTANGULAR TRANSITION
- 24x8 / 12 Ø — RECTANGULAR TO ROUND TRANSITION
- MITERED ELBOW W/TURNING VANES
- MITERED ELBOW
- RADIUSED ELBOW
- SPIN COLLAR
- 90° SPLIT TEE WITH TURNING VANES
- BELL MOUTH BRANCH DUCT TAKE OFF
- BELL MOUTH BRANCH DUCT TAKE OFF WITH DAMPER
- BRANCH DUCT TAKE OFF
- BDD — BACK DRAFT DAMPER
- FSD / DS — COMBINATION FIRE SMOKE DAMPER WITH SMOKE DETECTOR
- FD — FIRE DAMPER
- M — MOTORIZED DAMPER
- SD / DS — SMOKE DAMPER WITH SMOKE DETECTOR
- VOLUME DAMPER
- DS — DUCT MOUNTED SMOKE DETECTOR
- SIDE WALL MOUNTED SUPPLY REGISTER
- SIDE WALL MOUNTED RETURN / EXHAUST REGISTER / GRILLE
- SUPPLY / INTAKE OR DOOR UNDERCUT PRESSURIZATION
- EXHAUST / RETURN / TRANSFER
- LD — LOUVERED DOOR PRESSURIZATION
- EXHAUST REGISTER \ GRILLE
- SUPPLY AIR DIFFUSER BELOW DUCT
- RETURN AIR DIFFUSER BELOW DUCT
- EXHAUST AIR DIFFUSER BELOW DUCT
- LINEAR DIFFUSER
- ACCESS DOOR IN CEILING
- AD / AP — DUCT MOUNTED ACCESS DOOR - ACCESS PANEL

INSTRUMENTATION SYMBOLS

CO2	CARBON DIOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR DUCT MOUNTED
CO	CARBON MONOXIDE SENSOR
CO	CARBON MONOXIDE SENSOR DUCT MOUNTED
TC2	COMBINATION TEMPERATURE AND CARBON DIOXIDE SENSOR
CS	CURRENT SENSOR
FS	FLOW SENSOR
FZ	FREEZE STAT
LD	LEAK DETECTOR
H	HUMIDITY SENSOR
H	HUMIDITY SENSOR DUCT MOUNTED
H2	HYDROGEN SENSOR
R	REFRIGERANT LEAK SENSOR
R	REFRIGERANT LEAK SENSOR DUCT MOUNTED
DS	SMOKE DETECTOR
DS	SMOKE DETECTOR DUCT MOUNTED
DP	DIFFERENTIAL STATIC PRESSURE SENSOR
SP	STATIC PRESSURE SENSOR
T	TEMPERATURE SENSOR
T	TEMPERATURE SENSOR DUCT MOUNTED
T/H	COMBINATION TEMPERATURE RELATIVE HUMIDITY SENSOR
T/H	COMBINATION TEMPERATURE RELATIVE HUMIDITY SENSOR DUCT MOUNTED
E	EMERGENCY POWER REQUIRED
S	SWITCH
PS	PACKAGED STARTER BY MECHANICAL
LS	LOOSE STARTER BY ELECTRICAL
VFD	VARIABLE FREQUENCY DRIVE
FM	FLOW MEASURING STATION

MISC. LEGEND / TAGS

- 2-A / 12X12 / 500 — DIFFUSER, REGISTER, GRILLE DESIGNATION; NECK SIZE OR LENGTH IF LINEAR DIFFUSER; AIR QUANTITY - CFM
- AC / 1 — SCHEDULED EQUIPMENT TYPE (WITH MOTOR); SCHEDULED REFERENCE NUMBER
- FTR-1 / 7'-0" / 63.0 — EQUIPMENT TYPE; EQUIPMENT TYPE; EQUIPMENT LENGTH; EQUIPMENT CAPACITY - MBH/KW
- A / M-1 — SECTION SYMBOL; SECTION DESIGNATION; DRAWING NUMBER LOCATION
- 1 / M-1 — DETAIL SYMBOL; DETAIL NUMBER; DRAWING NUMBER LOCATION
- FSD / HV-1-S / NO — POWERED DAMPER; DAMPER TYPE (FSD OR SD); ASSOCIATED FAN SYSTEM; NORMAL DAMPER (NON-ENERGIZED) POSITION
- CONNECT NEW TO EXISTING
- LIMIT OF REMOVAL
- M — DISTANCE TO FINISH FLOOR (FEET & INCHES) FROM BOTTOM OF DUCT OR PIPE
- TE / R — RISER DESIGNATION TYPE; NUMBER
- X — DEMOLITION SHEET NOTE NUMBER X
- X — NEW WORK SHEET NOTE NUMBER X
- X — REVISION NUMBER X

REVISION LEGEND

○	NEW ISSUE	●	REVISED ISSUE	♦	REVISED, NOT ISSUED
⊠	REMOVED FROM DRAWING SET			□	ISSUED, NOT REVISED

DRAWING LIST - MECHANICAL GARAGE

DRAWING NUMBER	DRAWING TITLE	12-7-2022 GARAGE PERMIT
GM0.01	MECHANICAL LEGENDS	○
GM0.02	MECHANICAL GENERAL NOTES	○
GM0.11	MECHANICAL RISER DIAGRAMS	○
GM0.21	MECHANICAL SCHEDULES	○
GM0.31	MECHANICAL DETAILS	○
GM2.02	MECHANICAL - CLUB LEVEL PLAN	○
GM2.04	MECHANICAL - FIRST FLOOR PLAN	○
GM2.05	MECHANICAL - SECOND FLOOR PLAN	○
GM2.06	MECHANICAL - THIRD FLOOR PLAN	○
GM2.07	MECHANICAL - FOURTH FLOOR PLAN	○
GM2.08	MECHANICAL - ROOF PLAN	○

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PROJECT NO:	1022747

NO.	REVISION	DATE
A	PERMIT SET	12/07/2022

Project Status

MECHANICAL LEGENDS
Granite Run Apartments
MIDDLETOWN TOWNSHIP, PA

SCALE:	AS INDICATED
DATE:	12/07/22

GM0.01

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GENERAL NOTES

1. THE WORK TO BE DONE UNDER THESE SPECIFICATIONS AND THE DRAWINGS CONSISTS OF PROVIDING ALL EQUIPMENT, MATERIALS, LABOR AND SERVICES AND PERFORMING ALL OPERATIONS TO COMPLETE THE CONSTRUCTION WORK FOR THIS PROJECT. ANY WORK NOT SPECIFICALLY COVERED BY THESE SPECIFICATIONS OR INDICATED ON THE CONTRACT DRAWINGS, BUT NECESSARY TO COMPLETE OR PERFECT ANY PART OF THIS INSTALLATION IN A SUBSTANTIAL MANNER, SHALL BE PROVIDED WITHOUT EXTRA COST TO THE OWNER.
2. THE WORK SHALL CONFORM TO THE MORE STRINGENT OF ALL APPLICABLE CODES & REGULATIONS, UL AND FM GUIDELINES, MANUFACTURER'S LITERATURE AND RECOMMENDATIONS, BUILDING OPERATOR'S REQUIREMENTS, AND TO THE REQUIREMENTS OF FEDERAL, STATE AND LOCAL REGULATORY AGENCIES AND AUTHORITIES HAVING JURISDICTION.
3. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE THE EXTENT, GENERAL CHARACTER, LOCATION AND ARRANGEMENT OF THE WORK UNDER THIS CONTRACT. EXACT LOCATIONS OF ALL COMPONENTS ARE TO BE DETERMINED IN THE FIELD AND BY THE ACTUAL BUILDING CONDITIONS. WHERE JOB CONDITIONS REQUIRE MINOR CHANGES OR ADJUSTMENTS IN THE INDICATED LOCATIONS OR ARRANGEMENT OF THE WORK, SUCH CHANGES SHALL BE PROVIDED WITHOUT EXTRA COST. THE CONTRACTOR SHALL RE-INSTALL EQUIPMENT THAT HAS INADEQUATE OR UNSAFE ACCESSIBILITY.
4. INSTALLATION OF WORK SHALL PROVIDE REASONABLE ACCESSIBILITY FOR OPERATION, INSPECTION AND MAINTENANCE OF EQUIPMENT AND ACCESSORIES. PROVIDE CLEARANCES REQUIRED BY MANUFACTURERS AND APPLICABLE CODES. ALL CEILING MOUNTED EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER THAT LIGHTS, PIPING, AND DUCTWORK DO NOT BLOCK ACCESS TO EQUIPMENT AND RELATED ACCESSORIES.
5. THE TERM "FURNISH" SHALL MEAN TO OBTAIN AND SUPPLY TO THE JOB SITE. THE TERM "INSTALL" SHALL MEAN TO FIX IN POSITION AND CONNECT FOR USE. THE TERM "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL. THE TERM "MECHANICAL WORK", "ELECTRICAL WORK", "PLUMBING WORK", ETC. SHALL MEAN ALL LABOR, MATERIAL, EQUIPMENT, SCAFFOLDING, RIGGING, TOOLS, SUPERVISION, SERVICES AND OTHER INCIDENTALS NECESSARY FOR COMPLETE AND OPERABLE INSTALLATION.
6. THE CM/GC SHALL MAKE SETS OF THE BID DOCUMENTS CONSISTING OF COMPLETE SETS OF DRAWINGS AND SPECIFICATIONS; AND ISSUE THEM TO EACH OF THE PRIME AND SUB-CONTRACTORS. EVERY PRIME AND SUB-CONTRACTOR ON EACH BIDDING TEAM SHALL RECEIVE COMPLETE SETS OF DRAWINGS AND SPECIFICATIONS. THERE ARE NOTES AND CROSS REFERENCES FOR VARIOUS TRADE CONTRACTORS IN MULTIPLE TRADE OR DISCIPLINE DRAWINGS AND SPECIFICATIONS, THUS, EACH CONTRACTOR IS TO RECEIVE COMPLETE SETS OF THE BID DOCUMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THESE DRAWINGS FROM CM/GC. EACH CONTRACTOR IS RESPONSIBLE FOR THEIR WORK, AS NOTED ON THE OTHER DISCIPLINE DOCUMENTS. BIDDERS ARE RESPONSIBLE FOR ALL COSTS FOR EACH SET OF BID DOCUMENTS REQUESTED.
7. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A FULL COORDINATION EFFORT IN ORDER TO CREATE A FINALIZED COORDINATED LAYOUT OF ALL EQUIPMENT, SYSTEMS, DUCTWORK, PIPING AND ALL OTHER ITEMS WITHIN THEIR RESPECTIVE SCOPE. THE CONTRACTOR'S COORDINATION EFFORT SHALL INCLUDE COORDINATED INFORMATION FROM ALL OTHER TRADE CONTRACTOR'S INVOLVED IN THE PROJECT SCOPE IN ORDER TO PROVIDE COORDINATION BETWEEN TRADES AND ALL EXISTING CONDITIONS. ALL ERRORS MADE AS A RESULT OF A LACK OF COORDINATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND CORRECTED AT NO ADDITIONAL COST TO THE PROJECT. MINOR RELOCATIONS AND SHIFTS OF EQUIPMENT, DUCTWORK, AND PIPING WHICH DO NOT CHANGE THE DESIGN INTENT INDICATED ON THE CONTRACT DOCUMENTS, REQUIRED TO ACCOMMODATE FIELD CONDITIONS ARE AT THE CONTRACTORS DISCRETION AND DO NOT REQUIRE ENGINEER APPROVAL.
8. CONTRACTOR SHALL ARRANGE AND OBTAIN ALL PERMITS, INSPECTIONS AND APPROVALS, AND PAY ALL RELATED FEES.
9. THE DRAWINGS INDICATE APPROXIMATE LOCATIONS BASED UPON INFORMATION OBTAINED WITHOUT REMOVING CEILING TILES OR WALLS. THEREFORE, THE CONTRACTOR SHALL INCLUDE IN THEIR BID CONTINGENCY COSTS TO ADDRESS CONFLICTS BETWEEN DESIGN AND EXISTING CONDITIONS. ANY CHANGES AND/OR MODIFICATIONS MUST BE REVIEWED AND APPROVED BY THE ENGINEER AND/OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
10. FOR ANY DISCREPANCY BETWEEN DRAWINGS AND/OR SPECIFICATIONS, THE CONTRACTOR SHALL BASE THEIR BID UPON THE MOST STRINGENT REQUIREMENT (QUALITY, QUANTITY, SIZE, ETC.). THE CONTRACTOR SHALL IDENTIFY DISCREPANCIES AS PART OF THEIR BID.
11. THE CONTRACTOR SHALL EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.
12. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK AND/OR PIPING, CAREFULLY COORDINATE SIZES AND LOCATIONS OF THE ELEMENTS BEFORE FABRICATION. COORDINATE WITH FINAL LOCATION OF BEAM PENETRATIONS AND SHEAR WALL PENETRATIONS.
13. CONTRACTOR SHALL COORDINATE LOCATION OF ALL WALL, FLOOR AND ROOF OPENINGS WITH STRUCTURAL AND OTHER TRADES.
14. PROVIDE CUTTING AND PATCHING AS REQUIRED AND WHERE NECESSARY TO ACCOMMODATE NEW WORK AND THE REPAIR OF EXISTING WORK.
15. WHEN WORK INVOLVES CONTACT WITH MATERIALS CONTAINING ASBESTOS, PCB, OR OTHER TOXIC MATERIALS, NOTIFY OWNER, WHO WILL ESTABLISH PROCEDURES FOR REMEDIATION AND REMOVAL.
16. CONTRACTOR SHALL SCHEDULE THE WORK UNDER THIS CONTRACT WITH WORK OF OTHER TRADES AS NOT TO DELAY THE OVERALL PROGRESS OF THE PROJECT.
17. CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS PRIOR TO PURCHASING EQUIPMENT AND PRIOR TO CUTTING OPENINGS.
18. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS PER SPECIFICATIONS PRIOR TO PURCHASING OR INSTALLING EQUIPMENT AND SYSTEMS INDICATED ON CONTRACT DOCUMENTS. PRIOR TO SUBMITTAL, CONTRACTOR SHALL VERIFY THAT ADEQUATE SPACE EXISTS FOR THE SUBMITTED EQUIPMENT. SHOP DRAWINGS MUST BE REVIEWED BY ARCHITECT/ENGINEER.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY OTHER TRADES DUE TO SUBSTITUTION OF OTHER THAN SCHEDULED EQUIPMENT. WHEN EQUIPMENT FURNISHED IS DIFFERENT THAN INDICATED, THE COST OF ADDITIONAL ELECTRICAL SERVICE, STRUCTURAL AND RELATED WORK SHALL BE PAID BY THIS CONTRACTOR.
20. ALL WORK SHALL BE EXECUTED IN A NEAT AND WORKMANLIKE MANNER AND SHALL BE DONE IN ACCORDANCE WITH GOOD TRADE PRACTICE AND IN CONFORMANCE WITH APPLICABLE MANUFACTURERS' RECOMMENDATIONS.
21. CONTRACTOR SHALL REMOVE ALL TRASH, DEBRIS AND DEMOLITION MATERIAL FROM PREMISES AT THE END OF EACH DAY.
22. RESTORE ALL SURFACES (WALLS, CEILINGS, FLOORS AND ROOFS) THAT ARE DAMAGED BY THE WORK OF THIS CONTRACT TO THEIR ORIGINAL CONDITION AT NO EXTRA COST TO THE OWNER.
23. PRIOR TO EQUIPMENT STARTUP, CONTRACTOR SHALL PERFORM THE SPECIFIED STARTUP AND COMMISSIONING PROCEDURES.
24. IN THE ABSENCE OF OTHER SPECIFIC INSTRUCTIONS, ALL WORK AND MATERIALS SUPPLIED SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF THEIR ACCEPTANCE BY THE OWNER.
25. BALA CONSULTING ENGINEERS, INC. (BALA) WILL PROVIDE CONTRACTOR WITH ELECTRONIC CADD FILES OF THE ENGINEERING DESIGNS FOR THE SOLE USE IN EXPEDITING SHOP DRAWINGS. BALA'S FILES SHALL NOT BE DIRECTLY COPIED AND ISSUED AS SHOP DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD COORDINATION, DIMENSIONING AND ADHERENCE TO THE SHOP DRAWING REQUIREMENTS AS NOTED IN THE SPECIFICATIONS. SHOULD THE SHOP DRAWINGS SUBMITTED PROVE TO BE A DIRECT COPY OF OUR FILES WITHOUT THE NECESSARY FIELD COORDINATION, DIMENSIONING AND ADHERENCE TO THE SHOP DRAWING REQUIREMENTS AS NOTED IN THE SPECIFICATIONS, THESE SHOP DRAWINGS WILL BE RETURNED AS REJECTED. BALA'S ELECTRONIC FILES ARE SAVED IN VERSION REVIT 2022 AND ARE COMPATIBLE WITH ALL VERSIONS AFTER THAT. BALA MAKES NO REPRESENTATION AS TO THE COMPATIBILITY OF THESE FILES WITH THE CONTRACTOR'S HARDWARE OR THEIR SOFTWARE. DATA CONTAINED ON THESE ELECTRONIC FILES ARE PART OF BALA'S "INSTRUMENTS OF SERVICE" AND ARE COPYRIGHTED. CONTRACTOR'S USE OF FILES IS FOR THE SOLE PURPOSE AS A CONVENIENCE IN THE PREPARATION OF DRAWINGS FOR THE REFERENCED PROJECT. ANY OTHER USE OR REUSE BY CONTRACTOR IS UNLAWFUL.

MECHANICAL GENERAL NOTES

1. MECHANICAL CONTRACTOR SHALL EXAMINE THE DRAWINGS OF ALL TRADES AND COORDINATE THEIR WORK PRIOR TO ANY INSTALLATIONS TO AVOID INTERFERENCE WITH STRUCTURE, AND ALL EQUIPMENT ABOVE AND BELOW THE CEILING.THE MECHANICAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND FIELD CONDITIONS AT THE SITE PRIOR TO BID AND PURCHASE OF EQUIPMENT/MATERIALS. THE CONTRACTOR SHALL PROVIDE VALUE FOR SAME IN THEIR BID. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD CONDITIONS AT THE SITE AND NOTIFY THE OWNER, ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING WITH THE WORK.
2. FOR ANY DISCREPANCY BETWEEN DRAWINGS AND/OR SPECIFICATIONS, THE MECHANICAL, CONTRACTOR SHALL BASE THEIR BID UPON THE MOST STRINGENT REQUIREMENT (QUALITY, QUANTITY, SIZE, ETC.). THE CONTRACTOR SHALL IDENTIFY DISCREPANCIES AS PART OF THEIR BID.
3. THE MECHANICAL CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING OF EXISTING CONSTRUCTION REQUIRED BY THEIR WORK. ALL FINISHES SHALL MATCH EXISTING. STRUCTURAL MEMBERS SHALL NOT BE CUT UNLESS APPROVED BY OWNER'S REPRESENTATIVE. PAINTING SHALL BE BY GENERAL CONTRACTOR. WHERE EQUIPMENT IS REMOVED, CONTRACTOR TO REFINISH AREA TO MATCH EXISTING. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING INTEGRITY OF ALL STRUCTURAL ELEMENTS.
4. THE MECHANICAL CONTRACTOR SHALL EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM ENVIRONMENTAL AND PHYSICAL DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE AND PROTECT ALL OPENINGS DURING CONSTRUCTION. PROVIDE NEW MATERIALS AND EQUIPMENT TO REPLACE ITEMS DAMAGED.
5. ALL MATERIALS, EQUIPMENT AND INSTALLATIONS SHALL BE IN STRICT ACCORDANCE WITH SMACNA AND ASHARE GUIDELINES, UNLESS OTHERWISE NOTED.
6. EQUIPMENT INDICATED ON THE DRAWINGS, TOGETHER WITH ITS BASE AND/OR SUPPORT, DUCTWORK CONNECTIONS, SERVICE CLEARANCES, WALL, FLOOR AND ROOF PENETRATIONS, AND ELECTRICAL REQUIREMENTS IS BASED ON THE MODEL INDICATED IN THE SCHEDULES. IF CONTRACTOR FURNISHES AN EQUIVALENT SUBSTITUTION, THE CONTRACTOR SHALL MAKE THE REQUIRED MODIFICATIONS IN THE WORK WITHOUT CHANGE IN CONTRACT AMOUNT.
7. THE CONTRACTOR SHALL INCLUDE IN THEIR BID ALL COSTS RELATED TO REMOVING AND REPLACING ALL CEILINGS AS REQUIRED FOR THE MECHANICAL WORK ON THIS PROJECT. PROVIDE SELECTIVE CEILING DEMOLITION TO PLACE NEW DUCTWORK AND DIFFUSERS. REPLACE DAMAGED CEILING TILES AND GRIDS RESULTING FROM DEMOLITION. NEW CEILING TILES SHALL MATCH WITH EXISTING.
8. COORDINATE LOCATION OF ALL WALL, FLOOR AND ROOF OPENINGS WITH STRUCTURAL AND OTHER TRADES
9. COORDINATE LOCATION OF NEW DUCTWORK, AIR DEVICES AND EQUIPMENT WITH LIGHT FIXTURES, SPRINKLER PIPING AND HYDRONIC PIPING.
10. COORDINATE THE LOCATIONS OF ALL EQUIPMENT AND REGISTERS WITH THE LATEST ARCHITECTURAL DRAWINGS PRIOR TO PERFORMING AND ROUGH-IN WORK FOR THE UTILITIES.
11. COORDINATE THERMOSTATS WITH FINAL DIFFUSER LOCATIONS. THERMOSTATS SHALL NOT BE MOUNTED IN THE THROW PATTERN OF DIFFUSERS.
12. FIELD VERIFY THE ACTUAL LOCATIONS AND EXACT DIMENSIONS OF ALL EQUIPMENT, CASEWORK, DEVICES, FIXTURES, SWITCHES, SENSORS, STRUCTURAL ELEMENTS, ETC. DURING FIELD VISITS AND PRIOR TO PERFORMING ANY ROUGH-IN WORK FOR DUCTWORK, PIPING AND OTHER AND UTILITIES/SCOPE. MINOR CHANGES TO EQUIPMENT LOCATIONS OR DUCTWORK AND PIPING ROUTING AND DUCTWORK ASPECT RATIO, BASED ON THE FINAL COORDINATION EFFORT, ARE TO BE COMPLETED BY THE CONTRACTOR. REPORT DISCREPANCIES IMMEDIATELY TO ARCHITECT AND/OR ENGINEER.
13. PROVIDE TEMPORARY CONSTRUCTION FILTERS ON ALL RECIRCULATING HVAC EQUIPMENT USED FOR HEATING, COOLING, EXHAUST OR VENTILATION DURING CONSTRUCTION. PROVIDE REGULARLY SCHEDULE FILTER CHANGES DURING CONSTURCTION. PROVIDE FRESH FILTERS PRIOR TO BALANCING. PRIOR TO TURN OVER TO OWNER PROVIDE FRESH FILTERS IN ALL EQUIPMENT.
14. EFFECTIVELY PROTECT ALL MATERIALS AND EQUIPMENT FROM DUST, DIRT AND DAMAGE UNTIL FINAL ACCEPTANCE. CLOSE ALL DUCT AND EQUIPMENT OPENINGS DURING CONSTRUCTION WITH SUITABLE PROTECTIVE COVERING BEFORE, DURING AND FOLLOWING INSTALLATION.
15. UNLESS OTHERWISE NOTED, INSTALL DUCTWORK AND PIPING OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE OR SLAB, WITH ADEQUATE SPACE FOR INSULATION AND GAP TO PREVENT TRANSMISSION OF VIBRATION TO STRUCTURE.
16. ALL MATERIALS AND EQUIPMENT INSTALLED IN RETURN AIR PLENUMS SHALL BE NON-COMBUSTIBLE AND UL APPROVED FOR USE IN A RETURN AIR PLENUM SPACE. ALL WIRING SHALL BE NON-COMBUSTIBLE OR SHALL BE ENCLOSED IN METAL CONDUIT OR PROTECTED BY A SHEET METAL COVER SECURED WITH METAL FASTENERS.
17. PROVIDE ALL OFFSETS, FITTINGS, DOUBLE ELBOWS, RISES, DROPS, DUCTWORK, PIPING, INSULATION AND ALL DUCTWORK OR PIPING AROUND EXISTING CONDITIONS, DUCTWORK, PIPING, EXISTING STEEL, NEW CONSTRUCTION AND ALL OTHER TRADE WORK. COORDINATE WORK WITH ALL OTHER WORK AND ALL OTHER TRADE CONTRACTORS TO VERIFY LOCATIONS REQUIRING CHANGES IN ELEVATION.
18. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT AND PIPE TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
19. INSTALL PIPING SUCH THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, AND OTHER ACCESSORIES ARE ACCESSIBLE.
20. PROVIDE ACCESS PANELS AS REQUIRED FOR ALL VALVES, DAMPERS, CONTROLS, OR OTHER EQUIPMENT. PROVIDE ACCESS PANELS IN NON-LAY-IN-CEILINGS FOR SERVICE AND MAINTENANCE OF ALL CONCEALED EQUIPMENT AND DEVICES, SUCH AS HEAT PUMPS, ELECTRIC DUCT HEATERS, COILS, SMOKE DETECTORS, BALANCING DAMPERS AND FIRE DAMPERS.
21. CONTRACTOR SHALL NOT CONCEAL ANY WORK UNTIL INSPECTED BY MECHANICAL INSPECTOR AND/OR ARCHITECT/ENGINEER. CONTRACTOR SHALL NOTIFY A/E OF A SCHEDULED INSPECTION TIME WITHIN 72 HOURS. GENERAL CONTRACTOR SHALL NOT CONCEAL WORK UNTIL APPROVED, REGARDLESS OF SCHEDULE.
22. REMOVE ALL TRASH, DEBRIS AND DEMOLITION MATERIAL FROM PREMISES AT THE END OF EACH DAY.
23. PROVIDE ALL ROOFING OPENINGS, FLASHING, CURBS, COUNTER FLASHING, ETC. REQUIRED FOR THE INSTALLATION OF ROOF MOUNTED EQUIPMENT OR CURBS. COORDINATE OPENING WITH ROOFING CONTRACTOR AND CM/GC. ALL ROOFING WORK SHALL BE PERFORMED BY AUTHORIZED ROOFING CONTRACTOR TO MAINTAIN ROOF WARRANTY.
24. ALL DUCT DIMENSIONS ARE INSIDE CLEAR DIMENSIONS.
25. SHEETMETAL FITTINGS SHOWN SHALL BE PROVIDED. NO SUBSTITUTES WILL BE ALLOWED WITHOUT PRIOR CONSENT FROM ENGINEER.
26. PROVIDE BALANCING DAMPERS IN ALL DUCT BRANCHES AND TO AIR DEVICES.
27. PROVIDE COMBINATION FIRE/SMOKE DAMPERS AND SMOKE DAMPERS IN DUCTS PASSING THROUGH FIRE OR SMOKE RATED ASSEMBLIES AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
28. DUCTWORK SHALL NOT BE ROUTED ABOVE ELECTRICAL PANELS. COORDINATE WITH ELECTRICAL CONTRACTOR. DUCTWORK SHALL NOT COVER OR LIMIT ACCESS TO EXISTING J-BOXES.
29. PROVIDE HEAVY DUTY FLEXIBLE CONNECTIONS AT ALL FANS INLET AND OUTLET CONNECTIONS.

MECHANICAL GENERAL NOTES

30. PROVIDE ACOUSTICALLY LINED DUCTWORK 15 FEET DOWNSTREAM OF ALL FANS.
31. ALL OPEN-ENDED DUCTS IN CEILING PLENUMS OR EXPOSED SHALL BE UNOBSTRUCTED FOR A MINIMUM DISTANCE OF 24 INCHES FROM THE OPENING TO ALLOW FREE FLOW OF AIR. UNLESS OTHERSIES NOTED, EACH OPENING SHALL TERMINATE WITH ¾" WIRE MESH SCREEN.
32. LOCATE CEILING DIFFUSERS, GRILLES AND REGISTERS AS SHOWN ON THE ARCHITECURAL REFLECTED CEILING PLANS.
33. UNLESS OTHERWISE NOTED, ALL HYDRONIC PIPING RUNOUTS AND CONDENSATE DRAIN PIPING SHALL BE ¾".
34. CONTRACTOR SHALL PROVIDE FIRE STOPPING WHERE EQUIPMENT, DUCTWORK AND PIPING PENETRATE FIRE AND SMOKE RATED BARRIERS/PARTITIONS. INSTALL FIRE STOPPING IN ACCORDANCE WITH UL RATED ASSEMBLY REQUIREMENTS AFTER EQUIPMENT, DUCTWORK AND PIPING HAVE BEEN INSTALLED.
35. PROVIDE ALL MISCELLANEOUS STEEL, THREADED RODS, REINFORCEMENT, VIBRATION ISOLATORS, TURNBUCKLES, ETC. TO SUPPORT MECHANICAL EQUIPMENT ON OR FROM BUILDING STRUCTURE. ALL SUPPORTS AND ASSOCIATED ANCHORS SHALL BE SIZED BASED ON THE WEIGHT OF THE RESPECTIVE EQUIPMENT BEING SUPPORTED.
36. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. OTHERWISE ADHERE TO THE DETAILS IN THE CONTRACT DOCUMENTS. NOTIFY ARCHITECT AND/OR STRUCTURAL ENGINEER OF ALL WEIGHTS AND METHODS OF SUPPORT. PROVIDE DETAILS TO COORDINATE CONCRETE PADS AND STEEL PLATFORMS REQUIRED FOR MECHANICAL WORK.
37. PROVIDE VIBRATION ISOLATION FOR ROTATING, REVOLVING OR RECIPROCATING EQUIPMENT, INCLUDING DUCTWORK CONNECTIONS TO THIS EQUIPMENT TO PREVENT TRANSMISSION OF NOISE AND VIBRATION TO BUILDING STRUCTURE AND OCCUPIED SPACES. VIBRATION ISOLATION DEVICES SHALL INCLUDE SPRING VIBRATION ISOLATORS, NEOPRENE PADDING AND DUCT/PIPE FLEXIBLE CONNECTIONS.
38. CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC, INTERNATIONAL BUILDING CODES AND ELECTRICAL SPECIFICATIONS. PLENUM RATED CABLE SHALL BE PROVIDED IN ALL PLENUM CEILINGS. CONTRACTOR TO COORDINATE LOCATION OF ALL PLENUM CEILINGS.
39. ALL WALL MOUNTED CONTROL DEVICES SHOWN ON DRAWINGS ARE DIAGRAMMATIC IN LOCATION AND SHOWN FOR GENERAL WIRING PURPOSES ONLY. ALL DEVICES SHALL BE MOUNTED 46" ABOVE FINISHED FLOOR. DEVICES INDICATED TO BE INSTALLED IN THE SAME LOCATIONS WITH DIFFERENT ELEVATIONS SHALL BE ALIGNED VERTICALLY AND HORIZONTALLY. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAILS OF SWITCHES, OUTLETS, FIRE ALARM STROBES, AUDIBLE AND VISUAL DEVICES, FIRE ALARM PULL STATION, CLOCKS, SECURITY DEVICES, CARD READERS, THERMOSTATS, SENSORS, ETC. COORDINATE FINAL LOCATIONS WITH EQUIPMENT, FURNITURE, TENANT, AND ARCHITECT PRIOR TO INSTALLATION.
40. REMOVE TEMPORARY AIR FILTERS AND PROVIDE NEW FILTERS IN ALL AIR CONDITIONING EQUIPMENT WITHIN THE SCOPE OF WORK UPON COMPLETION OF CONSTRUCTION AND BEFORE BALANCING.

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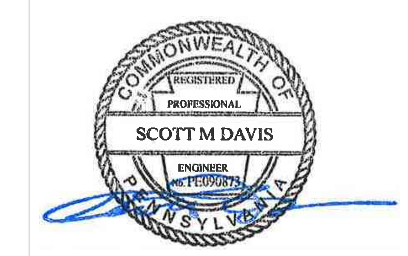

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PROJECT NO:	1022747

NO.	REVISION	DATE
A	PERMIT SET	12/07/2022

Project Status

MECHANICAL GENERAL NOTES

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

SCALE:	AS INDICATED
DATE:	12/07/22

GM0.02

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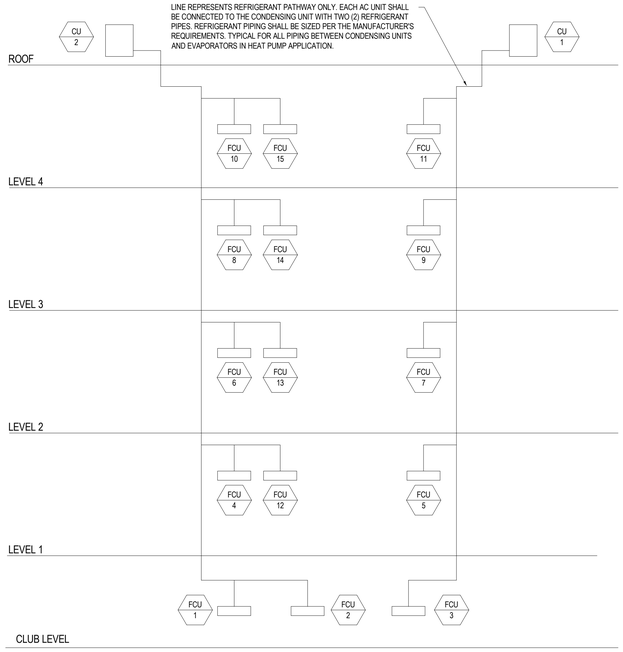
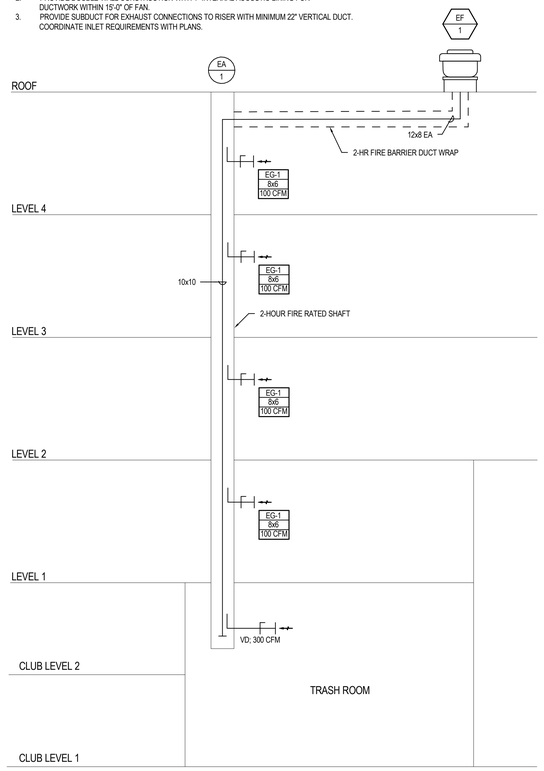


1 GM0.11 **VRF RISER**
NTS

EXHAUST GENERAL NOTES:

1. 2-HOUR FIRE WRAP IS REQUIRED ON ALL HORIZONTAL OFFSET DUCTWORK LOCATED OUTSIDE 2-HOUR FIRE RATED SHAFT.
2. PROVIDE DOUBLE-WALL CONSTRUCTION WITH 1" INTERNAL ACOUSTIC LINING FOR DUCTWORK WITHIN 15'-0" OF FAN.
3. PROVIDE SUBDUCT FOR EXHAUST CONNECTIONS TO RISER WITH MINIMUM 22" VERTICAL DUCT. COORDINATE INLET REQUIREMENTS WITH PLANS.



2 GM0.11 **TRASH ROOM EXHAUST RISER**
NTS

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Project Status

MECHANICAL RISER DIAGRAMS

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

SCALE:	AS INDICATED
DATE:	12/07/22

GM0.11

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FAN — EF

UNIT NO	LOCATION	SERVICE	FAN TYPE	CONST CLASS	AIRFLOW CFM	SP IN WG	FAN RPM	BLADE TYPE	DRIVE TYPE	CONTROL	BHP (W)	MOTOR SIZE HP	MOTOR SPEED MAX/MIN RPM	MOTOR ELECT CONN V/PH	VIBRATION ISOLATION TYPE	VIBRATION ISOLATION DEFLEC IN.	BASIS OF DESIGN	NOTES
EF-1	PLAN C ROOF	TRASH ROOM EXHAUST	CENTRIFUGAL ROOF	1	700	1.00	1,725	BACKWARDS INCLINED	DIRECT	ECM	0.25	0.33	1725	115/1	NEOPRENE PAD	0.25	GREENHECK G-099-A	1,2,3,4,5,6,7
TF-1	CLUB LEVEL ELECTRICAL ROOM	TRANSFER AIR	INLINE	1	200	0.25	930	BACKWARDS INCLINED	DIRECT	ECM	0.03	0.07	1725	115/1	SPRING	1	GREENHECK CSP-A250	2,4,8,9

NOTES:

1. UNIT SHALL HAVE WEATHER PROOF CONSTRUCTION.
2. PROVIDE WITH DISCONNECT SWITCH.
3. PROVIDE TEFC MOTOR.
4. THE BRAKEHORSE POWER LISTED IS THE MAXIMUM ALLOWABLE WHICH SHALL INCLUDE ALL DRIVE LOSSES AND UNIT SPECIFIC FAN SYSTEM EFFECTS.
5. PROVIDE WITH 24" HIGH CURB.
6. PROVIDE WITH INTEGRAL BACKDRAFT DAMPER.
7. PROVIDE WITH BIRD SCREEN.
8. PROVIDE WITH REMOTE WALL MOUNTED THERMOSTAT. FAN SHALL OPERATE TO MAINTAIN THERMOSTAT SETPOINT OF 80 DEG F.
9. PROVIDE WITH FLEXIBLE DUCTWORK CONNECTIONS TO EACH FAN INLET/OUTLET.

AIR COOLED VRF CONDENSING UNIT SCHEDULE — CU

TAG NO	SYSTEM	LOCATION	NOMINAL CAPACITY TONS	RATED COOLING MBH	CORRECTED COOLING MBH	RATED HEATING MBH	REFRIGERANT TYPE	REFRIGERANT CONTROL	NUMBER OF MODULES	CONDENSER COIL AMBIENT DESIGN TEMP. COOLING °F	CONDENSER COIL AMBIENT DESIGN TEMP. HEATING °F	ELECTRICAL V/PH	ELECTRICAL MCA	ELECTRICAL RLA	ELECTRICAL MOCP	SOUND PRESSURE (CLG/HTG) dB(A)	BASIS OF DESIGN	NOTES
CU-1	GARAGE VESTIBULE	AREA B ROOF	6	72	71.6	65.7	R-410A	EEV	1	95	10	208/3	27.6	15.7	35.0	58/58	DAIKIN RXYQ72XAT3A	ALL
CU-2	GARAGE VESTIBULE	AREA C ROOF	10	120	119.2	110	R-410A	EEV	1	95	10	208/3	36.3	26.2	45.0	61/61	DAIKIN RXYQ72XAT3A	ALL

NOTES:

1. MECHANICAL CONTRACTOR SHALL COORDINATE A SEPARATE DISCONNECT SWITCH PROVIDED BY THE ELECTRICAL CONTRACTOR.
2. CONDENSING UNIT SHALL BE CAPABLE OF OPERATING DOWN TO 0 DEG F VIA LOW AMBIENT CONTROL.
3. PROVIDE WITH ITOUCH CONTROLLER INTERFACE FOR EQUIPMENT STATUS, MONITORING, AND ALARMS OR APPROVED EQUAL. PROVIDE ALL CONTROL WIRING BETWEEN CONDENSER, EVAPORATOR, BRANCH SELECTOR, THERMOSTAT, AND CONTROLLERS PER MANUFACTURER'S RECOMMENDATIONS.
4. LOCATE UNITS WITHIN MANUFACTURER'S WRITTEN REQUIRED SERVICE AND OPERATION CLEARANCE.
5. UNIT SHALL BE COMPLETE PACKAGE WITH REFRIGERATION SPECIALTIES.
6. LOCATE UNITS ON RAILS.
7. CONTRACTOR SHALL FURNISH AND INSTALL ROOF EQUIPMENT SUPPORTS FOR CONDENSING UNITS WITH POSITIVE ATTACHMENT TO THE EQUIPMENT IN ACCORDANCE WITH THE IBC 2018 WIND REQUIREMENTS.
8. REFRIGERANT PIPING LINE LENGTHS SHALL NOT EXCEED MANUFACTURER'S MAXIMUM ALLOWABLE LENGTHS.
9. REFRIGERANT PIPING CONNECTIONS AND ROUTING SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. REFER TO BEST PRACTICES DOCUMENT PROVIDED BY MANUFACTURER.
10. EQUIPMENT REPRESENTATIVE SHALL BE PRESENT ON START-UP AND PROVIDE A START-UP SUMMARY REPORT FOR VRF SYSTEM TO ENGINEER UPON COMPLETION
11. PROVIDE FUSED DISCONNECT WITH NEMA 3R ENCLOSURE.
12. PROVIDE HIGH PRESSURE SWITCH, INVERTER OVER-CURRENT AND OVER-HEAT PROTECTION, COMPRESSOR OVER-HEAT PROTECTION, AND PCB OVER-CURRENT PROTECTION.
13. PROVIDE 100% HEATING CAPACITY DOWN TO 5°F.

VRF FAN COIL UNIT SCHEDULE — FCU

TAG NO	TYPE	LOCATION/SERVING	VRF CONDENSING UNIT	NOMINAL TONS	AIRFLOW CFM	COOLING EAT (DB) °F	COOLING EAT (WB) °F	COOLING LAT (DB) °F	COOLING LAT (WB) °F	COOLING TOTAL MBH	COOLING SENS MBH	HEATING EAT (DB) °F	HEATING MAX. LAT (DB) °F	HEATING MBH	REFR.	ELECTRICAL V/PH	ELECTRICAL MCA AMPS	ELECTRICAL MOCP AMPS	BASIS OF DESIGN	NOTES
FCU-1	ROUND FLOW CASSETTE	WEST CLUB LEVEL VESTIBULE	CU-2	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-2	WALL MOUNTED	TRASH ROOM	CU-2	1.0	290	80.0	67.0	55	48	12.0	8.7	68.0	85.0	14.0	R-410A	208/1	0.40	15	DAIKIN FXAQ12PVJU	ALL
FCU-3	ROUND FLOW CASSETTE	EAST CLUB LEVEL VESTIBULE	CU-1	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-4	ROUND FLOW CASSETTE	WEST LEVEL 1 VESTIBULE	CU-2	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-5	ROUND FLOW CASSETTE	EAST LEVEL 1 VESTIBULE	CU-1	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-6	ROUND FLOW CASSETTE	WEST LEVEL 2 VESTIBULE	CU-2	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-7	ROUND FLOW CASSETTE	EAST LEVEL 2 VESTIBULE	CU-1	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-8	ROUND FLOW CASSETTE	WEST LEVEL 3 VESTIBULE	CU-2	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-9	ROUND FLOW CASSETTE	EAST LEVEL 3 VESTIBULE	CU-1	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-10	ROUND FLOW CASSETTE	WEST LEVEL 4 VESTIBULE	CU-2	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-11	ROUND FLOW CASSETTE	EAST LEVEL 4 VESTIBULE	CU-1	1.0	435	80.0	67.0	55	48	12.0	9.4	68.0	85.0	14.0	R-410A	208/1	0.30	15	DAIKIN FXFQ12TVJU	ALL
FCU-12	ROUND FLOW CASSETTE	LEVEL 1 TRASH ROOM	CU-2	1.0	290	80.0	67.0	55	48	12.0	8.7	68.0	85.0	14.0	R-410A	208/1	0.40	15	DAIKIN FXAQ12PVJU	ALL
FCU-13	ROUND FLOW CASSETTE	LEVEL 2 TRASH ROOM	CU-2	1.0	290	80.0	67.0	55	48	12.0	8.7	68.0	85.0	14.0	R-410A	208/1	0.40	15	DAIKIN FXAQ12PVJU	ALL
FCU-14	ROUND FLOW CASSETTE	LEVEL 3 TRASH ROOM	CU-2	1.0	290	80.0	67.0	55	48	12.0	8.7	68.0	85.0	14.0	R-410A	208/1	0.40	15	DAIKIN FXAQ12PVJU	ALL
FCU-15	ROUND FLOW CASSETTE	LEVEL 4 TRASH ROOM	CU-2	1.0	290	80.0	67.0	55	48	12.0	8.7	68.0	85.0	14.0	R-410A	208/1	0.40	15	DAIKIN FXAQ12PVJU	ALL

NOTES:

1. MECHANICAL CONTRACTOR SHALL COORDINATE A SEPARATE DISCONNECT SWITCH PROVIDED BY THE ELECTRICAL CONTRACTOR.
2. PROVIDE WITH TEMPERATURE CONTROLLER WITH BACNET INTERFACE.
3. PROVIDE WITH SPRING ISOLATION TO MITIGATE VIBRATION FROM UNIT TO STRUCTURE.
4. PROVIDE WITH INTEGRAL CONDENSATE PUMP.
5. PROVIDE CONDENSATE OVERFLOW SWITCH. SWITCH SHALL SHUT DOWN UNIT AND ALARM FRONT END BMS UPON DETECTION.

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

TAG NO	SERVICE	TYPE	MOUNTING	MAX NC	MATERIAL OF CONSTRUCTION	FACE SIZE (IN.) OR SLOT WIDTH	ACCESSORIES	BASIS OF DESIGN	NOTES
EG-1	EXHAUST	35 DEG FIXED LOUVER	SIDEWALL	30	ALUMINUM	SEE DWGS	OBD	TITUS 350FL	1,2,3,4
TG-1	TRANSFER	35 DEG FIXED LOUVER	SIDEWALL	30	ALUMINUM	SEE DWGS	OBD	TITUS 355FL	1,2,3,4

NOTES:

1. ALL GRDs MOUNTED IN CEILINGS, SOFFITS, OR WALLS SHALL HAVE BAKED WHITE ENAMEL FINISH OR COLOR SELECTED BY THE ARCHITECT.
2. FRAME BORDER SHALL MATCH CEILING/WALL TYPE. COORDINATE WITH THE ARCHITECTURAL PLANS.
3. SEE DRAWINGS FOR NECK SIZE
4. PROVIDE SQUARE TO ROUND NECK ADAPTERS WHERE REQUIRED.

CABINET UNIT HEATER (ELECTRIC) — CUH,UH

UNIT NO	CONFIGURATION	CAPACITY MBH	CAPACITY CONTROL METHOD	AIRFLOW (CFM)	ELECTRIC KW	ELECTRIC FLA	ELECTRIC VOLT/ PH	BASIS OF DESIGN	NOTES
UH-A	CEILING HUNG	17.1	INTEGRAL T-STAT	350	5	24	208/1	QMARK MUH PRO	1,2,3
CUH-A	SURFACE WALL MOUNTED	17.1	INTEGRAL T-STAT	250	5	15	208/1	QMARK CUH 900 SERIES	1,2

NOTES:

1. PROVIDE WITH DISCONNECT SWITCH.
2. PROVIDE WITH MANUFACTURER'S INTEGRAL THERMOSTAT ACCESSORY.
3. PROVIDE WITH MANUFACTURER'S HANGER BRACKET.

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P.A.: JTG
P.M.: TRT
DRAWN BY: AAK
PROJECT NO: 1022747

NO.	REVISION	DATE
A	PERMIT SET	12/07/2022

Project Status

MECHANICAL SCHEDULES

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

SCALE: AS INDICATED
DATE: 12/07/22

GM0.21

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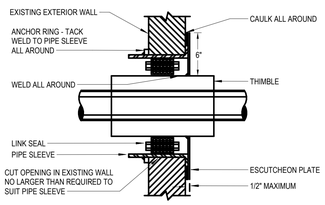
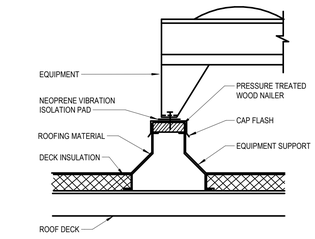


1 GM0.31 **PIPE SLEEVE THRU WALL**
NOT TO SCALE



2 GM0.31 **EQUIPMENT CURB**
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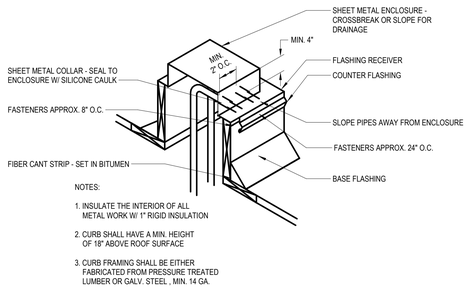

3 GM0.31 **ROOF PIPE CURB**
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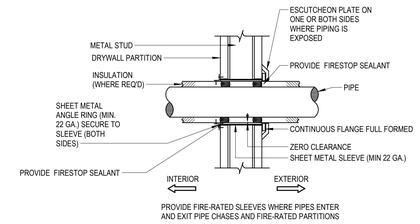
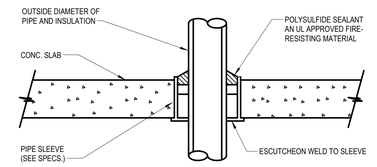
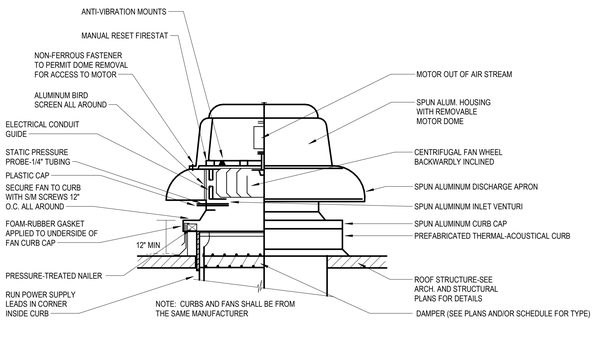


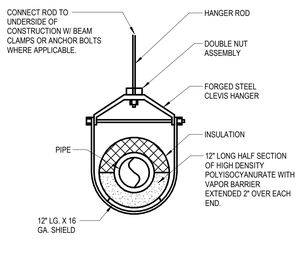
4 GM0.31 **FIRE RATED PIPE SLEEVE**
NOT TO SCALE



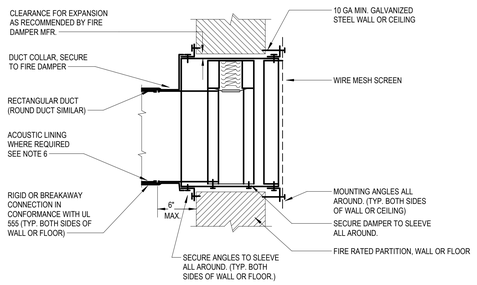
5 GM0.31 **PIPE SLEEVE THRU FLOOR**
NOT TO SCALE



6 GM0.31 **DIRECT DRIVE CENTRIFUGAL EXHAUST FAN**
NOT TO SCALE



7 GM0.31 **PIPE HANGERS**
NOT TO SCALE



8 GM0.31 **VERTICAL/HORIZONTAL MOUNTED FIRE DAMPER WITH GRILLE**
NOT TO SCALE

NOTES:
1. VERTICAL ORIENTATION SHOWN, HORIZONTAL ORIENTATION IS SIMILAR. INSTALL ALL DAMPERS IN STRICT ACCORDANCE WITH ALL PROCEDURES INSTALLATION REQUIRED BY THE UNDERWRITERS LABORATORY INC. AS FURNISHED BY DAMPER MFR.

2. WHERE DAMPER IS TO BE MOUNTED WITHIN EXISTING WALL OR FLOOR, CUT OPENING AS REQUIRED TO MAINTAIN CLEARANCES STIPULATED BY THE MFR. BETWEEN WALL OR CEILING AND SLEEVE.

3. WHERE DAMPER DOES NOT FIT IN WALL/FLOOR ASSEMBLY, DAMPERS RATED FOR OUTSIDE THE WALL/CEILING TYPE USE MAY BE PROVIDED.

4. ACCESS DOORS SHALL BE AS LARGE AS POSSIBLE UP TO 18x18 MAX. LOCATE ON MOST ACCESSIBLE SIDE OF DAMPER AND LABEL ACCESS DOORS "ACCESS FOR FIRE DAMPER".

5. GAUGE OF SHEET METAL SLEEVE, MOUNTING ANGLES, METHODS OF ATTACHMENT, ETC. AS DIRECTED BY DAMPER MFR.

6. EXTERNAL INSULATION IS REQUIRED FROM BREAKAWAY CONNECTION TO WALL/FLOOR WHEN DUCTWORK IS ACOUSTICALLY LINED.

7. DAMPER SHALL HAVE A FIRE RATING EQUAL OR GREATER THAN RATING OF WALL/CEILING BEING INSTALLED IN AND SHALL BE UL LISTED AND CONFORM TO UL 555 AND UL 555S.

8. SEE DRAWINGS FOR THE MOUNT AND LOCATION OF ALL FIRE/SMOKE DAMPERS.

9. MECHANICAL CONTRACTOR TO PROVIDE BAS INTERFACE WITH DAMPER MOTOR TO INDICATE DAMPER POSITION. THE BAS SHALL MONITOR THE DAMPER STATUS AT EACH LOCATION AND INDICATE THE POSITION AND LOCATION ON THE GRAPHIC FLOOR PLANS AT OPERATORS INTERFACE. ALL OTHER DAMPER CONTROLS AND ALARMS SHALL BE BY THE ELECTRICAL CONTRACTOR/FIRE ALARM CONTRACTOR.

10. SMOKE DETECTOR TO FURNISHED BY THE ELECTRICAL CONTRACTOR/FIRE ALARM CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR TO PROVIDE DAMPER ASSEMBLY. SMOKE DETECTOR SHALL BE COMPATIBLE WITH THE BUILDING FIRE ALARM SYSTEM AND REMOTELY RESETTABLE FROM THE FIRE ALARM CONTROL PANEL.

11. DAMPER INTERFACE AND WIRING PROVIDED BY ELECTRICAL CONTRACTOR/FIRE ALARM CONTRACTOR. INTERLOCK DAMPER WITH FIRE ALARM SYSTEM.

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PROJECT NO:	1022747

NO.	REVISION	DATE
A.	PERMIT SET	12/07/2022

Project Status

MECHANICAL DETAILS
Granite Run Apartments
MIDDLETOWN TOWNSHIP, PA

SCALE:	AS INDICATED
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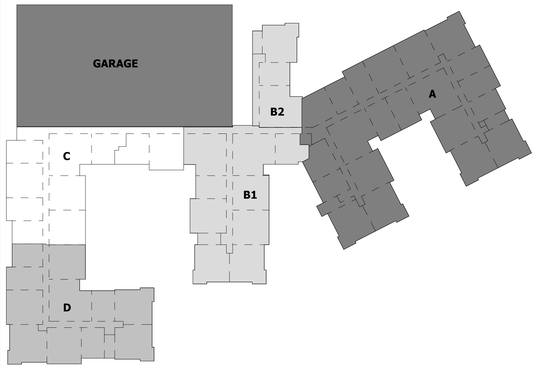

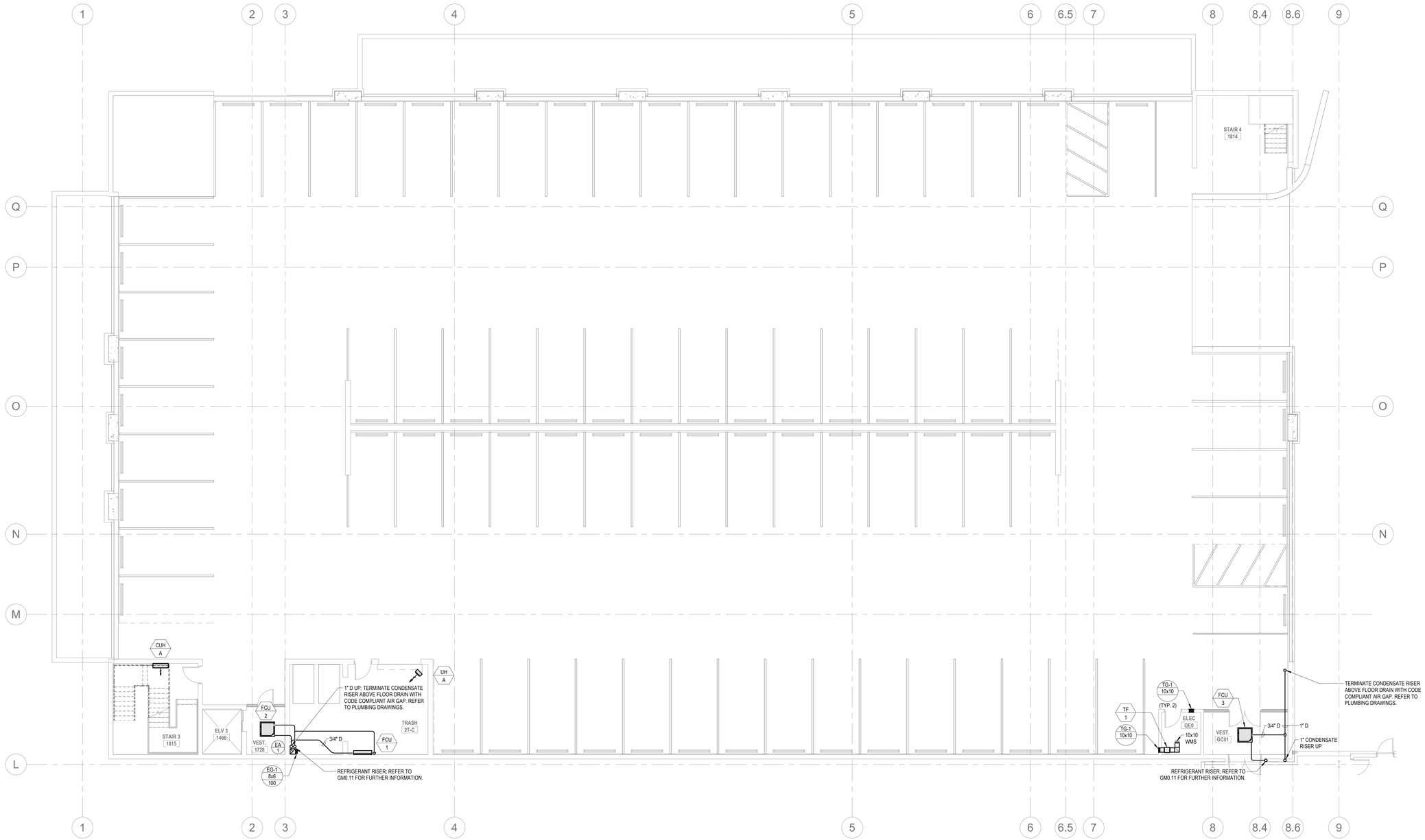

1 GM2.02 **G-MECHANCIAL - CLUB LEVEL PLAN**
1/8" = 1'-0"

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Project Status

MECHANICAL - CLUB LEVEL PLAN

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

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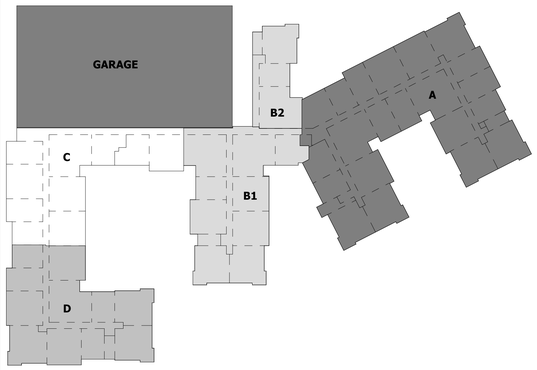

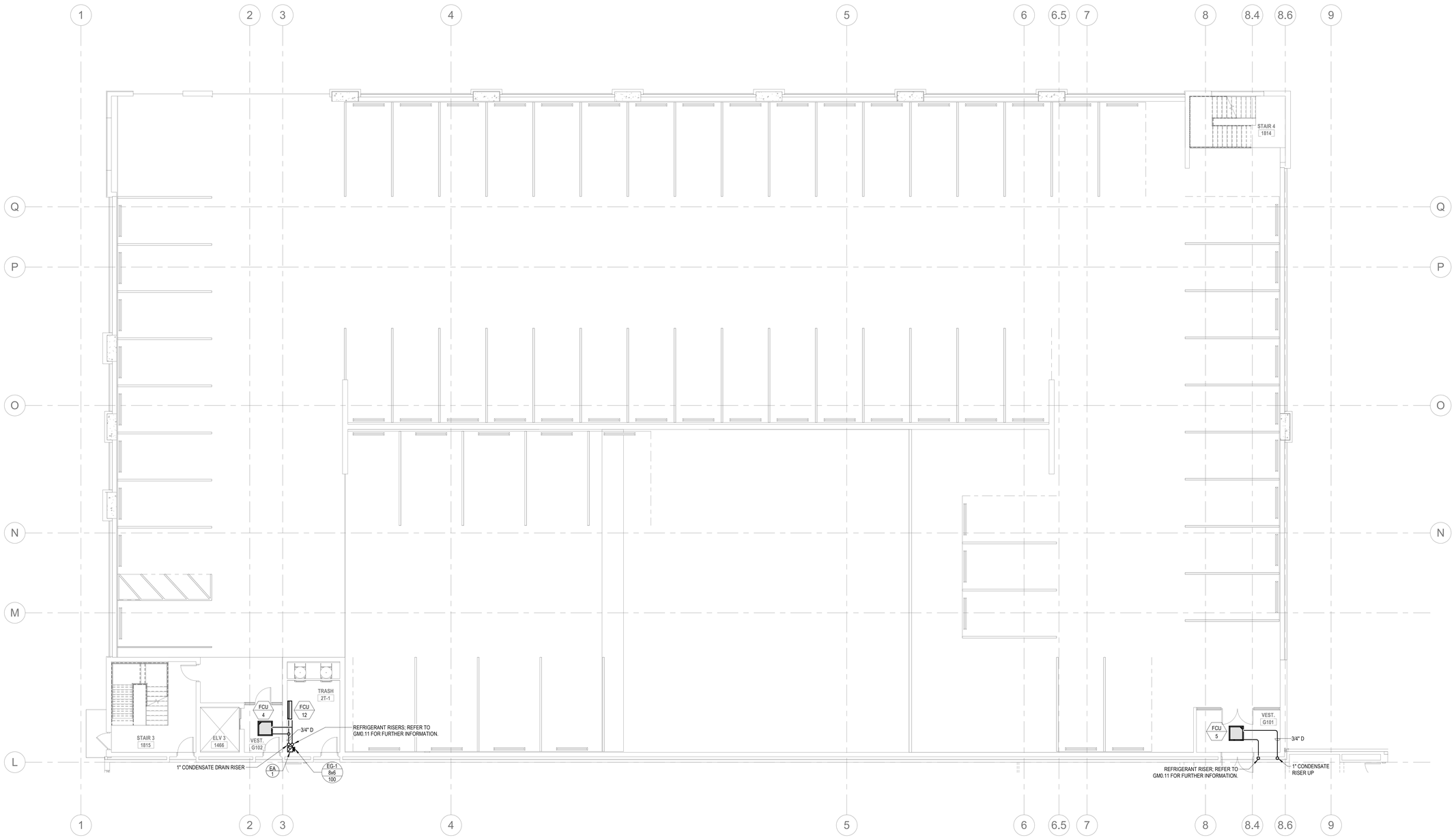

1 GM2.04 **G-MECHANCIAL - FIRST FLOOR PLAN**

1/8" = 1'-0"

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MECHANICAL - FIRST FLOOR PLAN

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

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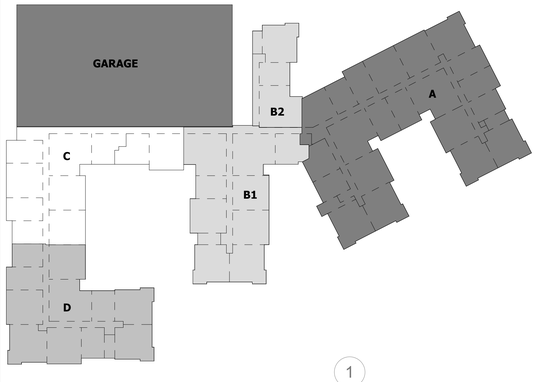

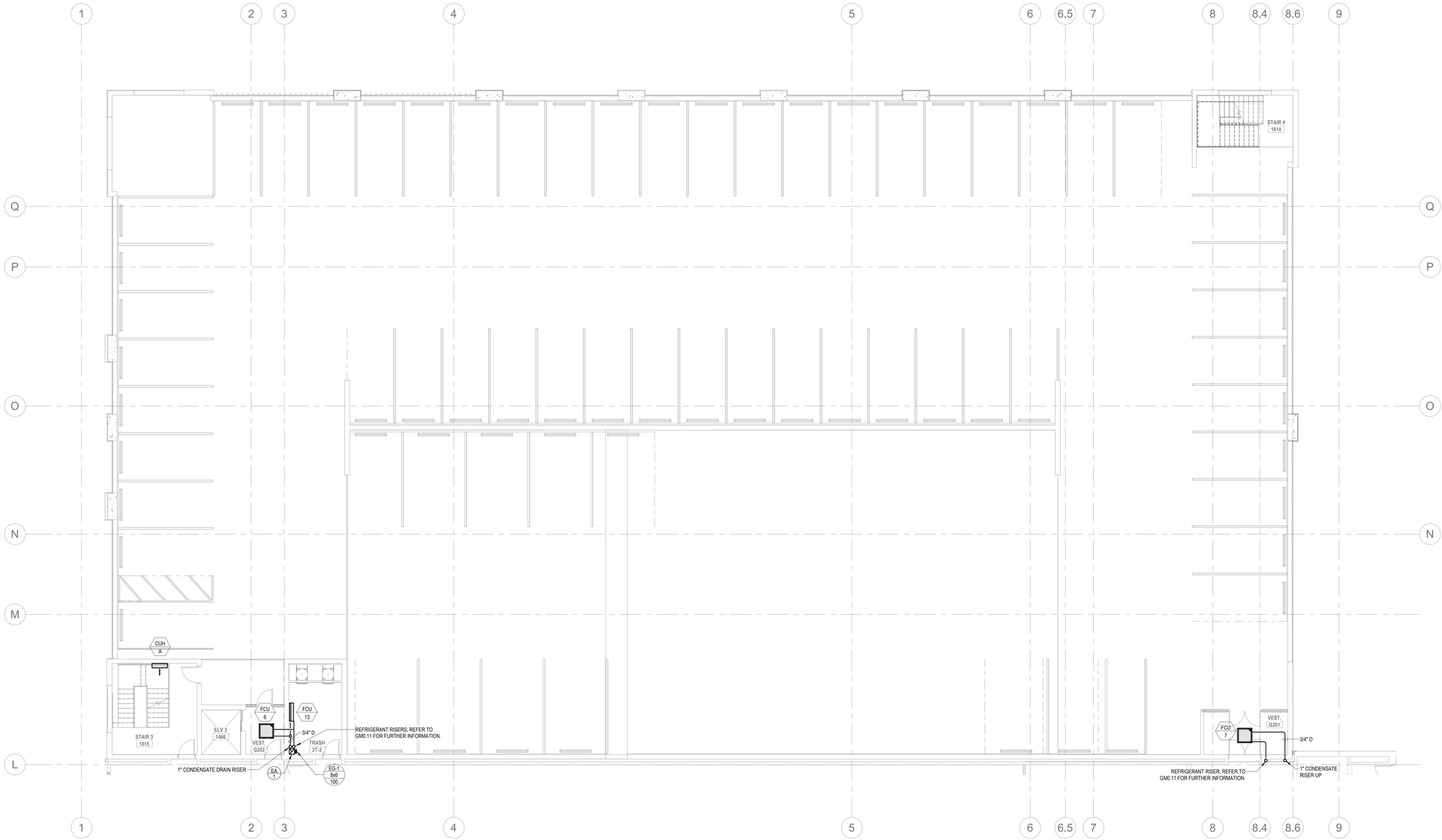

1 GM2.05 **G-MECHANICAL - SECOND FLOOR PLAN**

1/8" = 1'-0"

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MECHANICAL - SECOND FLOOR PLAN

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

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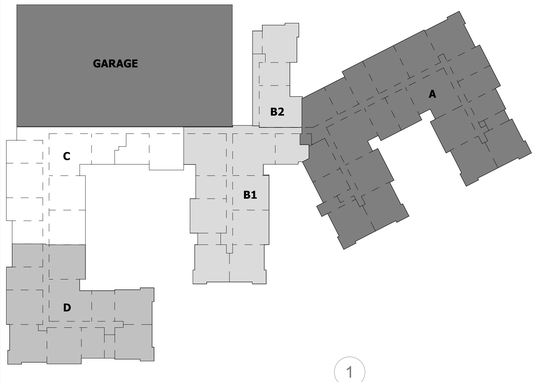

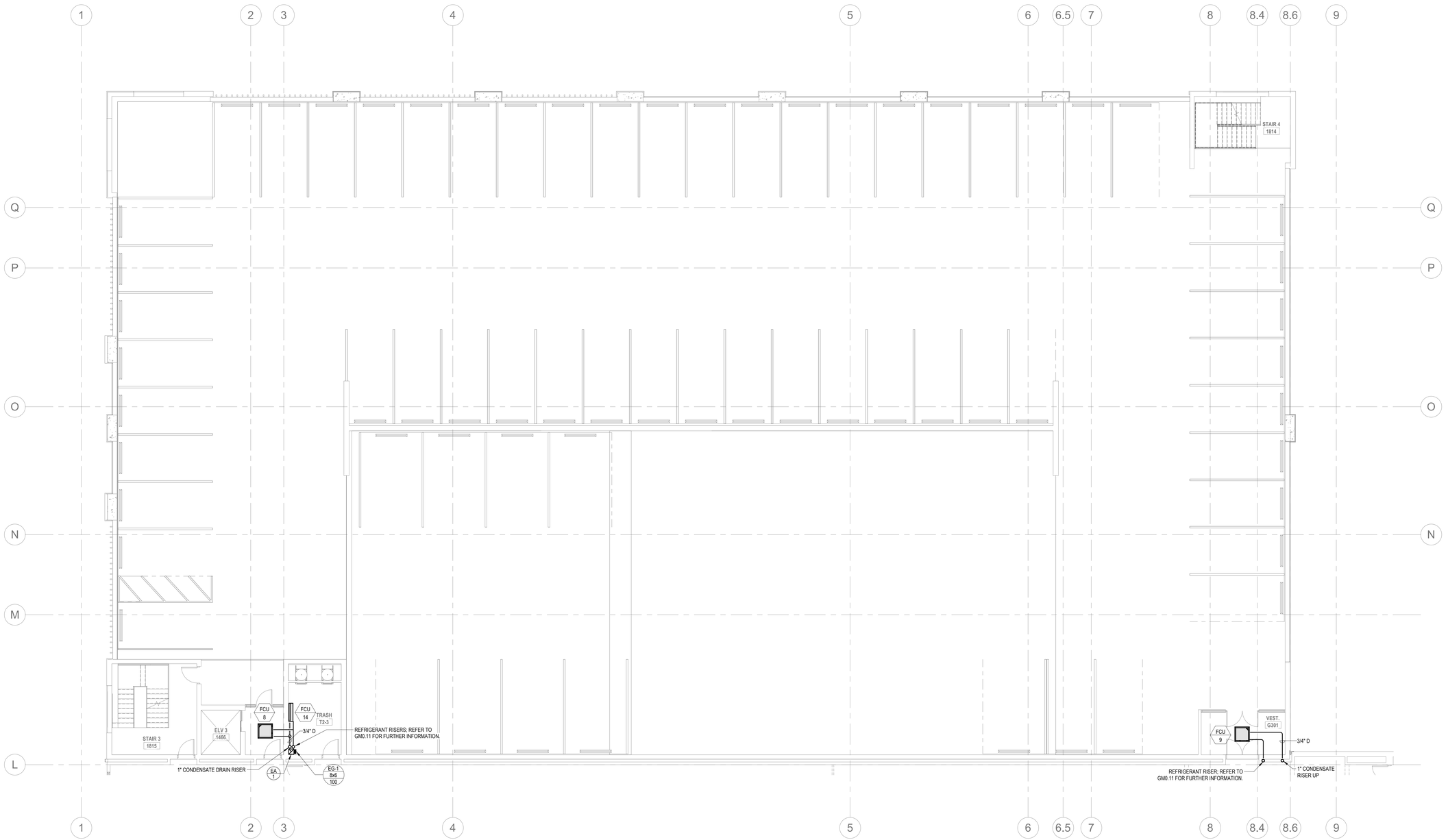

1 GM2.06 **G-MECHANICAL - THIRD FLOOR PLAN**

1/8" = 1'-0"

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MECHANICAL - THIRD FLOOR PLAN

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

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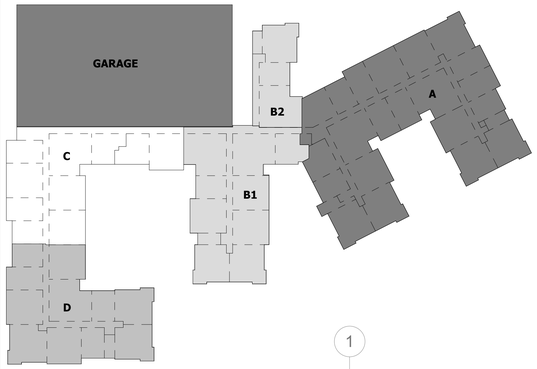

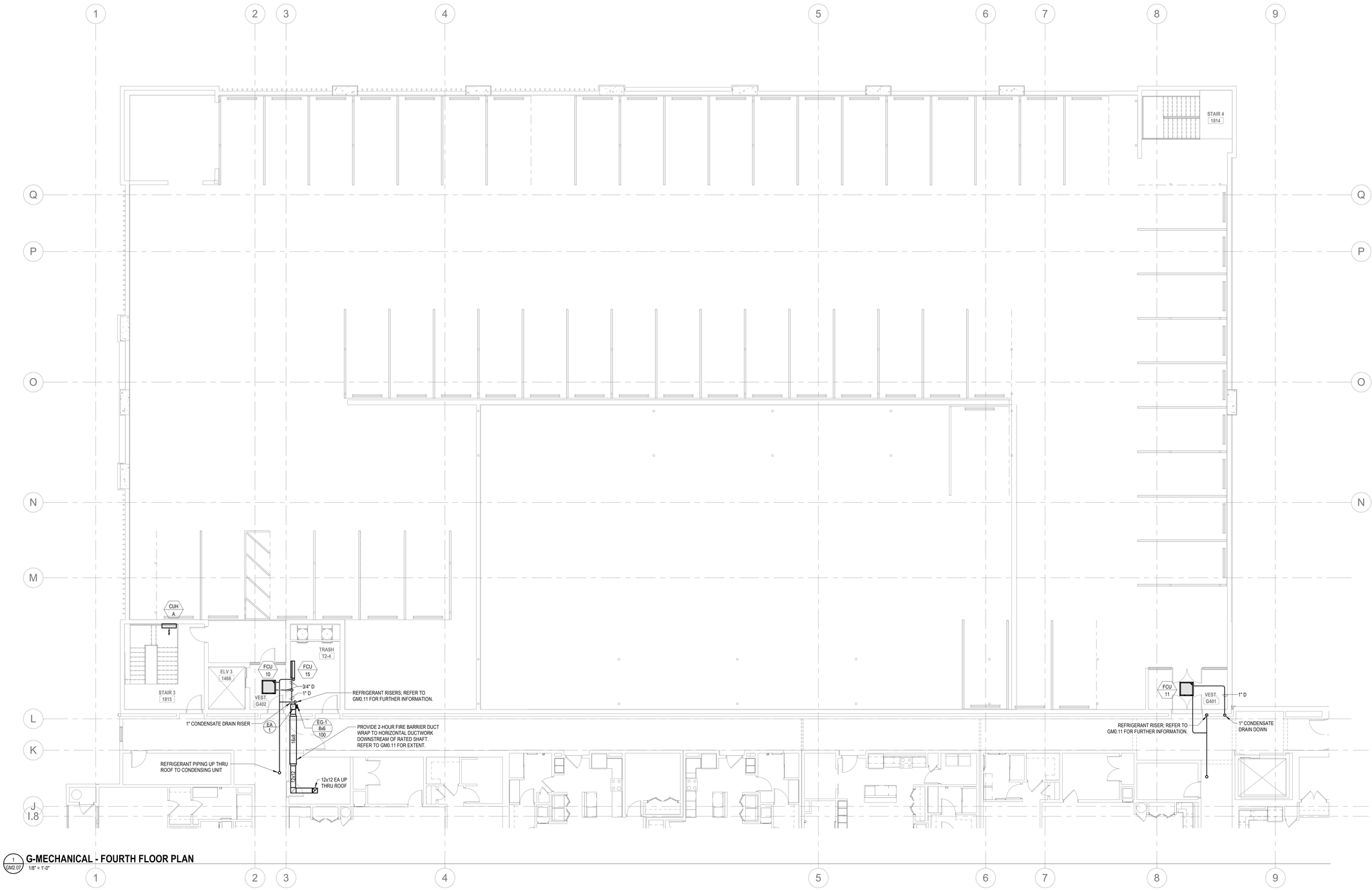

1 GM2.07 **G-MECHANICAL - FOURTH FLOOR PLAN**
1/8" = 1'-0"

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MECHANICAL - FOURTH FLOOR PLAN

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

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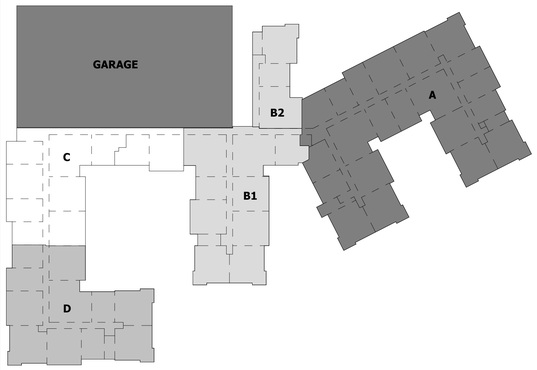

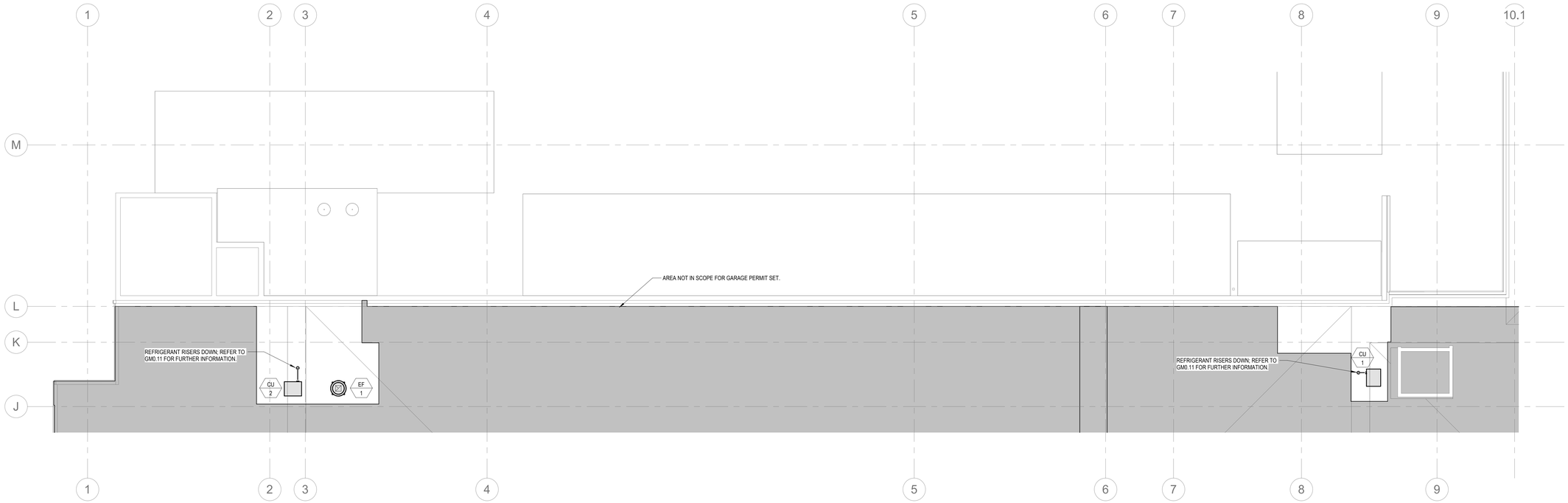

1 GM2.08 **G-MECHANCIAL - ROOF PLAN**
1/8" = 1'-0"

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MECHANCIAL - ROOF PLAN

Granite Run Apartments

MIDDLETOWN TOWNSHIP, PA

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