MISCELLANEOUS

SYMBOL	DESCRIPTION
SIM / 1 A101	SECTION NO. / SECTION VIEW SHEET NO.
A M1-01	DETAIL DESIGNATION
AHU 1.01	POWERED EQUIPMENT DESIGNATION
VAV 1.01	NON POWERED EQUIPMENT DESIGNATION
TYPE LENGTH	BASEBOARD EQUIPMENT DESIGNATION
2" 1	SHEET KEY NOTES
	POINT OF DISCONNECTION
	ARROW INDICATES DIRECTION OF FLOW
	EXTERIOR WALL LOUVER (UNDER ARCH. SECTION)
UC	UNDERCUT DOOR (UNDER ARCH. SECTION)
D/L	DOOR LOUVER (UNDER ARCH. SECTION)
L/D	LOUVER DOOR FULL HEIGHT. (UNDER ARCH. SECTION)

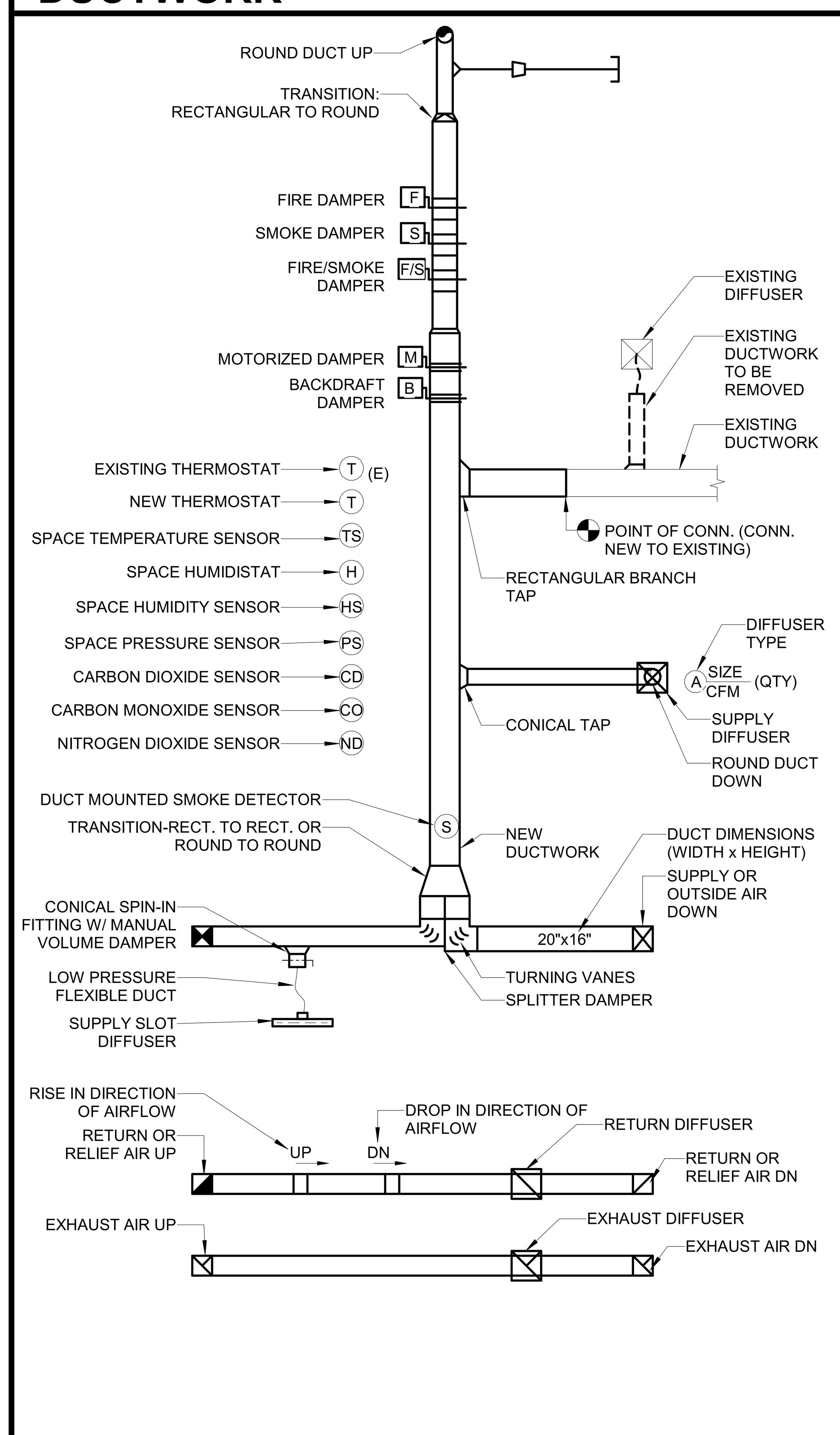
SYMBOL	DESCRIPTION
	SUPPLY DIFFUSER-4-WAY THROW
	SUPPLY DIFFUSER-3-WAY THROW
	SUPPLY DIFFUSER-2-WAY THROW
	SUPPLY DIFFUSER-1-WAY THROW
	CEILING ACCESS PANEL
	RETURN DIFFUSER
	EXHAUST DIFFUSER
H	HUMIDIFIER
	FLEXIBLE DUCT CONNECTION
	SUPPLY AIR FLOW SYMBOL
	RETURN/EXHAUST AIR FLOW SYMBOL
	HEAT TRACE

EQUIPMENT DESIGNATION

LEVEL
01 - LEVEL 01
02 - LEVEL 02
03 - LEVEL 03
04 - LEVEL 04
05 - LEVEL 05
06 - LEVEL 06

FCU 1A-01
- INDICATES TYPE OF EQUIPMENT
- INDICATES UNIT NUMBER WITHIN AREA
- INDICATES AREA (A,B,C,D,E,F,G) ETC.

DUCTWORK



PIPING TYPES

DOUBLE LINE PIPING (2" AND ABOVE)	SINGLE LINE PIPING (UP TO 2")	PIPE TYPE
CHS	CHS	CHILLED WATER SUPPLY
CHR	CHR	CHILLED WATER RETURN
HWS	HWS	HEATING WATER SUPPLY
HWR	HWR	HEATING WATER RETURN
CWS	CWS	CONDENSER WATER SUPPLY
CWR	CWR	CONDENSER WATER RETURN
D	D	CONDENSATE DRAIN
HPS	HPS	HIGH PRESSURE STEAM SUPPLY
MPS	MPS	MEDIUM PRESSURE STEAM SUPPLY
LPS	LPS	LOW PRESSURE STEAM SUPPLY
HPR	HPR	HIGH PRESSURE CONDENSATE RETURN
MPR	MPR	MEDIUM PRESSURE CONDENSATE RETURN
LPR	LPR	LOW PRESSURE CONDENSATE RETURN
RS	RS	REFRIGERANT SUCTION
RL	RL	REFRIGERANT LIQUID
RHG	RHG	REFRIGERANT HOT GAS
A	A	CONTROL AIR (PNEUMATIC)
BD	BD	BOILER BLOW DOWN
BF	BF	BOILER FEED
BO	BO	BLOW OFF
CF	CF	CHEMICAL FEEDER
PCS/R	PCS/R	PROCESS COOLING WATER SUPPLY/RETURN
HTWS/R	HTWS/R	HIGH TEMP. HOT WATER SUPPLY/RETURN
PHWS/R	PHWS/R	PRIMARY OR DISTRICT HEATING WATER SUPPLY/RETURN
PCHS/R	PCHS/R	PRIMARY OR DISTRICT CHILLED WATER SUPPLY/RETURN
PR	PR	PUMPED CONDENSATE RETURN
(E)	(E)	EXISTING PIPING
(E)	(E)	EXISTING PIPING TO BE REMOVED

PIPING SYMBOLS

SYMBOL	ABBREVIATION	DESCRIPTION
FITTINGS:		
	P&T	PRESSURE/TEMPERATURE PORT TAPS
	CR	CONCENTRIC REDUCER
	ER	ECCENTRIC REDUCER
EJ	EJ	EXPANSION JOINT
	U	UNION
	T	THERMOMETER W/ THERMOWELL
	AV	AIR VENT
	FC	FLEXIBLE PIPE CONNECTOR
FS	FS	FLOW SWITCH
PS	PS	PRESSURE SWITCH
	PG	PRESSURE GAUGE W/ GAUGE COCK
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		PIPE CAP OR PLUG
	IV	ISOLATION VALVE, RE: SPECS
	OS&Y	OUTSIDE STEM AND YOKE
	DV	DRAIN VALVE W/ HOSE END CONNECTION
		BALL VALVE W/ HOSE CONNECTION
	CV	CHECK VALVE WITH INDICATION OF FLOW DIRECTION
	PRV	PRESSURE REDUCING VALVE
S	SV	SOLENOID VALVE
F	FCV	AUTO FLOW CONTROL VALVE W/ TEST PORTS
	CS,BV	CIRCUIT SETTER OR BALANCING VALVE
	GLV	GLOBE VALVE (STRAIGHT PATTERN)
	GLV	GLOBE VALVE (ANGLE PATTERN)
	BFV	BUTTERFLY VALVE
	BV	BALL VALVE
	TCV	AUTOMATIC TEMPERATURE CONTROL VALVE, 2-WAY
	TCV	AUTOMATIC TEMPERATURE CONTROL VALVE, 3-WAY
	BV	BALANCING VALVE
	TMP	TEMPERATURE/PRESSURE RELIEF VALVE
		VALVE IN RISER
	STR	STRAINER W/ BLOW-OFF & CAPPED HOSE END CONNECTION
	ST	STEAM TRAP

ABBREVIATIONS:

ABBREVIATION	DESCRIPTION
A	
A	AIR (COMPRESSED)
ABV	ABOVE
A/C	AIR CONDITIONING
AC	ALTERNATING CURRENT
	AIR COMPRESSOR
ACCH	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
	AREA DRAIN
ADJ	ADJUSTABLE
AF	AIR FILTER
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AMB	AMBIENT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ARI	AMERICAN REFRIGERANT INSTITUTE
ARCH	ARCHITECT
AS	AIR SEPARATOR
ASHRAE	AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AV	ACID VENT
	AIR VENT
AVG	AVERAGE
AW	ACID WASTE
AWS	AMERICAN WELDING SOCIETY
AUX	AUXILIARY
B	
B	BOILER
BC	BELOW COUNTER
B/C	BACK OF CURB
BFV	BUTTERFLY VALVE
BH	BOX HYDRANT
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BM	BENCHMARK
BOD	BOTTOM OF DUCT (AFF)
BOF	BOTTOM OF FOOTING
BOS	BOTTOM OF STRUCTURE
BT	BATH TUB
	BREAK TANK
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BWV	BACK WATER VALVE
C	
C	CELSIUS
CAB	CABINET
CAV	CONSTANT AIR VOLUME
CB	CATCH BASIN
CC	COOLING COIL
CD	CONDENSATE DRAIN LINE
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CIRC	CIRCULATING
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMP	CORRIGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CPI	CAST IRON PIPE INSTITUTE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CO	CLEANOUT
COL	COLUMN
COMB	COMBINATION
COMP	COMPRESSOR
CON	CONVERTER
CONC	CONCRETE
	CONCENTRIC
COND	CONDENSER
	CONDENSATE
CONN	CONNECTION
CONT	CONTINUOUS
	CONTINUATION
CONTR	CONTROLLER
	CONTRACTOR
COP	COEFFICIENT OF PERFORMANCE
CRAC	COMPUTER ROOM A/C UNIT
CRT	CATHODE RAY TUBE
CRU	CONDENSATE RETURN UNIT
CT	COOLING TOWER
CTR	CENTER
CU	COPPER
CW	COLD WATER
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CV	CONSTANT VOLUME
D	
dB	DECIBEL
DB	DRY-BULB
DC	DOUBLE DUCT CONSTANT VOLUME
	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DESIG	DESIGNATION
DEFL	DEFLECTION
DTL	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DP	DISCHARGE PLENUM
DPR	DAMPER
DS	DOUNSPOUT
	DOUBLE SUCTION
DV	DOUBLE DUCT VAV
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DWP	DOMESTIC WATER PUMP
DX	DIRECT EXPANSION
E	
(E)	EXISTING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EDB	ENTERING DRY BULB
EDF	ELECTRIC DRINKING FOUNTAIN
EDH	ELECTRIC DUCT HEATER
EDR	EFFECTIVE DIRECT RADIATION
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EJ	EXPANSION JOINT
EL	ELEVATION
EMRG	EMERGENCY
ENCL	ENCLOSURE
ENGR	ENGINEER
ENT	ENTERING
ES	END SUCTION
	EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EVAP	EVAPORATOR
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
EX	EXPLOSION PROOF
EXT	EXTERNAL
EXTG	EXISTING
F	
F	DEGREE FAHRENHEIT
FBO	FURNISHED BY OTHERS
FCO	FLOOR CLEAN OUT
FCS	FLOOR CONTROL SWITCH
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
	FIRE DAMPER
FDS	FIRE DEPARTMENT SIAMESE
FDV	FIRE DEPARTMENT VALVE
FG	FIBERGLASS
FF	FINAL FILTER
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FL	FLOW LINES
FLR	FLOOR
FP	FAN POWERED MIXING BOX
	FIRE PUMP
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FRIC	FRICTION
FRZR	FREEZER
FS	FLOW SWITCH
	FIRE SPRINKLER
FSK	FLOOR SINK
FT	FOOT
	FEET
FT WC	FEET, WATER COLUMN
FUT	FUTURE
G	
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GLV	GLOBE VALVE
GND	GROUND
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GSH	GRAND SENSIBLE HEAT
GV	GATE VALVE
H	
HB	HOSE BIBB
HC	HEATING COIL
HD	HEAD
	HUB DRAIN
HF	HUMIDIFIER
HORIZ	HORIZONTAL
HP	HORSEPOWER
	HALON PANEL
HPU	HEAT PUMP UNIT
HKP	HOUSEKEEPING PAD
HSC	HORIZONTAL SPLIT CASE
HSTAT	HUMIDISTAT
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HU	HUMIDIFIER SECTION
HW	HOT WATER
HWC	HOT WATER CIRCULATOR
HWP	HOT WATER PUMP
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
HZ	HERTZ
I	
ID	INSIDE DIAMTER
IE	INVERT ELEVATION
IH	INFRARED HEATER
IN	INCH
IN WC	INCH, WATER COLUMN
INSUL	INSULATION
INT	INTERNAL
	INTERIOR
IW	INDIRECT WASTE
J	
JB	JUNCTION BOX
JP	JOCKEY PUMP
K	
KEC	KITCHEN EQUIPMENT CONTRACTOR
KO	KNOCKOUT
KVA	KILOVOLT AMPS
KW	KILOWATT
L	
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS	POUNDS
LBS/HR	POUNDS PER HOUR
LF	LINEAR FEET
LP	LOW PRESSURE
LRA	LOCKED ROTOR AMPS
LVG	LEAVING
LVL	LEVEL
LWB	LEAVING WET BULB
LWCO	LOW WATER CUT OFF
LWT	LEAVING WATER TEMPERATURE
M	
MA	MAKE-UP AIR
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTUH
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MI	MALLEABLE IRON
MIN	MINIMUM
MOCP	MAXIMUM OVER CURRENT PROTECTION
MP	MEDIUM PRESSURE
MS	MOP SINK
MTD	MOUNTED
MTL	METAL
MU	MAKE-UP
MUA	MAKE-UP AIR UNIT
MVD	MANUAL VOLUME DAMPER
N	
(N)	NEW
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO	NUMBER
NTS	NOT TO SCALE
O	
OA	OUTSIDE AIR
OAF	OUTSIDE AIR FAN
OAHU	OUTSIDE AIR HANDLING UNIT
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
	OVERFLOW DRAIN
OFCU	OUTSIDE AIR FAN COIL UNIT
OPG	OPENING
OS&Y	OPEN STEM AND YOLK
P	
P	PUMP
	PLUMBING EQUIPMENT
PC	PLUMBING CONTRACTOR
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP
	PLANTER DRAIN
PF	PRE-FILTER
PH	PHASE
	POST HYDRANT
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PNEU	PNEUMATIC
PNL	PANEL
PNTH	PENTHOUSE
PP	POLYPROPYLENE
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRI	PRIMARY
PRS	PRIMARY REDUCING STATION
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	PLUMBING TRIM
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PWL	SOUND POWER LEVEL
Q	
QTY	QUANTITY
R	
(R)	REMOVE
	RELOCATE
RA	RETURN AIR
RAD	REFRIGERATED AIR DRYER
RAF	RETURN AIR FAN
RAG	RETURN AIR GRILLE
RAT	RETURN AIR TEMPERATURE
RCP	REFLECTED CEILING PLAN
	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RE	REFERENCE
	REFER
RECIRC	RECIRCULATE
RED	REDUCER
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCING
REQD	REQUIRED
REV	REVISION
	REVISE
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHG	REFRIGERANT HOT GAS
RKVA	RUNNING KILOVOLT AMPS
RKW	RUNNING KILOWATTS
RL	REFRIGERANT LIQUID
RLA	RUNNING LOAD AMPS
RM	ROOM
	REFRIGERANT MACHINE
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
RV	RELIEF VALVE
S	
SA	SUPPLY AIR
SAF	SUPPLY AIR FAN
SAG	SUPPLY AIR GRILLE
SAN	SANITARY SEWER
SAR	SUPPLY AIR REGISTER
SCHED	SCHEDULE
SCFM	STANDARD AIR CUBIC FEET PER MINUTE
SCR	SILICON CONTROLLED RECTIFIER
SD	STORM DRAIN
SE	SEWAGE EJECTOR
SEC	SECONDARY
SECT	SECTION
SENS	SENSIBLE
SF	SQUARE FEET
SFCS	SPRINKLER FLOOR CONTROL STATION
SH	SHOWER
SHT	SHEET
SIM	SIMILAR
SK	SINK
SKVA	STARTING KILOVOLT AMPS
SKW	STARTING KILOWATTS
SM	SHEET METAL
SP	STATIC PRESSURE
	SUMP PUMP
SPEC	SPECIFICATION
SPR	SPRINKLER
SQ	SQUARE
SS	STAINLESS STEEL
	SERVICE SINK
SSD	SUBSURFACE DRAIN
SSFU	SANITARY SEWER FIXTURE UNITS
SSSC	SOLID STATE SPEED CONTROL
STD	STANDARD
STL	STEEL
STR	STRAINER
SURF	SURFACE
SUSP	SUSPEND
SV	SANITARY VENT
ST	SOUND TRAP
T	
TC	TEMPERATURE CONTROL
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TF	TRANSFER FAN
TG	TRANSFER GRILLE
TH BLK	THRUST BLOCK
TOD	TOP OF DUCT (AFF)
TOP	TOP OF PIPE (AFF)
TP	TRAP PRIMER
TPD	TRAP PRIMER DEVICE
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TYP	TYPICAL
U	
U	URINAL
U/F	UNDERFLOOR
U/S	UNDERSLAB
UCD	UNDERCUT DOOR
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UTR	UP THROUGH ROOF
V	
V	VOLT, VENT
VA	VOLT-AMPERE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VB	VALVE BOX
	VACUUM BREAKER
VCP	VITRIFIED CLAY PIPE
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREUENCY DRIVE
VIB	VALVE IN BOX
VOV	VALVE ON VERTICAL
VP	VACUUM PUMP
VR	VARIABLE AIR VOLUME REHEAT
VSD	VARIABLE SPEED DRIVE
VTR	VENT THROUGH ROOF
W	
W	WATT, WASTE, WIDTH
W/	WITH
W/O	WITHOUT
WB	WETBULB
WC	WATER CLOSET
WCO	WALL CLEANOUT
WF	WATER FILTER
WH	WALL HYDRANT
WM	WATER METER
WP	WEATHERPROOF
WPD	WATER PRESSURE DROP
WWF	WELDED WIRE FABRIC
WT	WATER TIGHT
	WEIGHT
Y	
Y	YARD HYDRANT
Z	
Z	ZONE

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LEE'S SUMMIT FIRE DEPT MISSOURI

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI JEFFREY L. EWENS NUMBER PROFESSIONAL ENGINEER
2020.11.12

FIRE HEADQUARTERS STATION NO. 1

ISSUE DATE:
© NOVEMBER 12, 2020

MECHANICAL LEGEND

SHEET NO.
M001

PROJECT NO.: KC2008.01

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GENERAL MECHANICAL CONTRACT REQUIREMENTS:

GENERAL:

1. UNLESS OTHERWISE NOTED, THE WORK DESCRIBED ON THE PLANS AND SPECIFICATIONS SHALL INCLUDE THE FURNISHING AND INSTALLATION OF ALL LABOR AND MATERIALS NECESSARY FOR COMPLETE AND OPERATIONAL HVAC, FIRE PROTECTION AND PLUMBING SYSTEMS. CONTRACTOR SHALL FURNISH THESE EVEN IF ITEMS REQUIRED TO ACHIEVE THIS (I.E. OFFSETS, ISOLATION AND BALANCING DEVICES, MAINTENANCE CLEARANCES, ETC.) ARE NOT SPECIFICALLY SHOWN.

2. DATA GIVEN ON THE DRAWINGS IS AS EXACT AS COULD BE SECURED. ABSOLUTE ACCURACY IS NOT GUARANTEED AND THE CONTRACTOR SHALL OBTAIN AND VERIFY EXACT LOCATIONS, MEASUREMENTS, LEVELS, SPACE REQUIREMENTS, POTENTIAL CONFLICTS WITH OTHER TRADES, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO THE ACTUAL CONDITIONS OF THE JOB.

3. THE DRAWINGS ARE DIAGRAMMATICAL IN NATURE AND SHALL NOT BE SCALED. THEY SHOW CERTAIN PHYSICAL RELATIONSHIPS WHICH MUST BE ESTABLISHED WITHIN THE DIVISION 21,22 AND 23 WORK AND ITS INTERFACE WITH OTHER WORK. ESTABLISHING THIS RELATIONSHIP IN THE FIELD IS THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR. THIS DIVISION SHALL COORDINATE ITS WORK WITH ALL DIVISIONS OF THE WORK AND ADJUST ITS WORK AS REQUIRED BY THE ACTUAL CONDITIONS OF THE PROJECT.

   A. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING A BID TO BECOME THOROUGHLY FAMILIAR WITH THE ACTUAL CONDITIONS OF THE PROJECT. NO EXTRAS WILL BE ALLOWED DUE TO LACK OF KNOWLEDGE OF EXISTING CONDITIONS.

   B. CERTAIN SYSTEMS REQUIRE ENGINEERING OF INSTALLATION DETAILS BY CONTRACTOR. UNLESS FULLY DETAILED IN THE CONTRACT DOCUMENTS, SUCH ENGINEERING IS THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR.

   C. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHERE CLEARANCES ARE LIMITED, AND WHERE INSTALLATION DRAWINGS OR SCHEMATICS, "CONSTRUCTION DRAWINGS", OR COORDINATION DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH, OR IN EXCESS OF, THOSE REQUIRED BY THE SPECIFICATIONS. THE CONTRACTOR SHALL PREPARE ALL SUCH COORDINATION DRAWINGS AS PART OF THE BASE CONTRACT. SUCH DRAWINGS MAY BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR RECORD AND COMMENT. ANY WORK INSTALLED WITHOUT APPROVED COORDINATION DRAWINGS IS DONE AT THE CONTRACTOR'S RISK.

4. THESE NOTES ONLY SUPPLEMENT, AND DO NOT REPLACE, THE SPECIFICATIONS.

5. DEFINITIONS AND TERMINOLOGY

   A. THE DEFINITIONS OF DIVISION 1 AND THE GENERAL CONDITIONS OF THIS SPECIFICATION ALSO APPLY TO THE DIVISION 21,22 AND 23 CONTRACT DOCUMENTS.

   B. "CONTRACT DOCUMENTS" CONSTITUTE THE DRAWINGS, SPECIFICATIONS, GENERAL CONDITIONS, PROJECT MANUALS, ETC., PREPARED BY ENGINEER (OR OTHER DESIGN PROFESSIONAL IN ASSOCIATION WITH ENGINEER) FOR CONTRACTOR'S BID OR CONTRACTOR'S NEGOTIATIONS WITH THE OWNER. THE DIVISION 21,22 AND 23 DRAWINGS AND SPECIFICATIONS PREPARED BY THE ENGINEER ARE NOT CONSTRUCTION DOCUMENTS.

   C. "CONSTRUCTION DOCUMENTS", "CONSTRUCTION DRAWINGS", AND SIMILAR TERMS FOR DIVISION 21,22 AND 23 WORK REFER TO INSTALLATION DIAGRAMS, SHOP DRAWINGS AND COORDINATION DRAWINGS PREPARED BY THE CONTRACTOR USING THE DESIGN INTENT INDICATED ON THE ENGINEER'S CONTRACT DOCUMENTS. THESE SPECIFICATIONS DETAIL THE CONTRACTOR'S RESPONSIBILITY FOR "ENGINEERING BY CONTRACTOR" AND FOR PREPARATION OF CONSTRUCTION DOCUMENTS.

   D. "(N)" INDICATES "NEW" EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT.

   E. "(E)" INDICATES "EXISTING" EQUIPMENT ON SITE WHICH MAY OR MAY NOT NEED TO BE RELOCATED AS A PART OF THIS WORK.

   F. "(R)" INDICATES EXISTING EQUIPMENT TO BE RELOCATED AS PART OF THIS WORK.

   G. "FURNISH" MEANS TO "SUPPLY" AND USUALLY REFERS TO AN ITEM OF EQUIPMENT.

   H. "INSTALL" MEANS TO "SET IN PLACE, CONNECT AND PLACE IN FULL OPERATIONAL ORDER".

   I. "PROVIDE" MEANS TO "FURNISH AND INSTALL".

   J. "EQUIVALENT" MEANS "MEETS THE SPECIFICATIONS OF THE REFERENCE PRODUCT OR ITEM IN ALL SIGNIFICANT ASPECTS." SIGNIFICANT ASPECTS SHALL BE AS DETERMINED BY THE ARCHITECT/ENGINEER.

   K. "WORK BY OTHER(S) DIVISIONS"; "RE: XX DIVISION", AND SIMILAR EXPRESSIONS MEANS WORK TO BE PERFORMED UNDER THE CONTRACT DOCUMENTS, BUT NOT NECESSARILY UNDER THE DIVISION OR SECTION OF THE WORK ON WHICH THE NOTE APPEARS. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO COORDINATE THE WORK OF THE CONTRACT BETWEEN HIS/HER SUPPLIERS, SUBCONTRACTORS AND EMPLOYEES. IF CLARIFICATION IS REQUIRED, CONSULT ARCHITECT/ENGINEER BEFORE SUBMITTING BID.

   L. BY INFERENCE, ANY REFERENCE TO A "CONTRACTOR" OR "SUB-CONTRACTOR" MEANS THE ENTITY WHICH HAS CONTRACTED WITH THE OWNER FOR THE WORK OF THE CONTRACT DOCUMENTS.

   M. "ENGINEER" MEANS THE DESIGN PROFESSIONAL FIRM WHICH HAS PREPARED THESE CONTRACT DOCUMENTS. ALL QUESTIONS, SUBMITTALS, ETC. OF THIS DIVISION SHALL BE ROUTED THROUGH THE ARCHITECT TO THE ENGINEER (THROUGH PROPER CONTRACTUAL CHANNELS).

EXISTING BUILDING:

1. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING BUILDING WILL BE OCCUPIED BY THE OWNER DURING CONSTRUCTION. CONTINUED OPERATION OF THE FACILITY SHALL NOT BE HINDERED BY THIS WORK. THE CONTRACTOR SHALL ACCOUNT FOR ALL ADDITIONAL COSTS WHICH MAY BE INCURRED BY HIM DUE TO THE DIFFICULTY OF WORKING OVER AND AROUND EMPLOYEES, DESKS, EQUIPMENT, ETC.; AND DUE TO THE HOURS OF THE DAY IN WHICH AN AREA MAY BE AVAILABLE WHEN SUBMITTING HIS BID.

2. MAINTAIN A MARK-UP SET OF DRAWINGS WHICH INDICATE VARIATIONS IN THE ACTUAL INSTALLATION FROM THE ORIGINAL DESIGN. SURRENDER DRAWINGS TO OWNER UPON COMPLETION.

3. ALL CAPACITIES ARE SCHEDULED AT JOBSITE ALTITUDE OF 5300 FT. ABOVE SEA LEVEL.

4. COORDINATE ALL PENETRATIONS OF THE FLOOR SLAB PRIOR TO COMMENCING WORK UTILIZE X-RAY AND VISUAL INVESTIGATION OF EXISTING CONDITIONS AS REQUIRED PRIOR TO DRILLING OR CUTTING. COORDINATE ALL NEW PENETRATIONS WITH OTHER DIVISIONS OF THE WORK. ALL CONTRACTORS ARE INDIVIDUALLY RESPONSIBLE FOR ALL PENETRATIONS REQUIRED BY THEIR DIVISIONS.

ELECTRICAL COORDINATION:

1. VERIFY THE ELECTRICAL SERVICE PROVIDED BY THE ELECTRICAL CONTRACTOR BEFORE ORDERING ANY MECHANICAL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.

2. PROVIDE PREMIUM EFFICIENCY MOTORS WITH 1.15 SERVICE FACTOR ON ALL EQUIPMENT, MOTORS SHALL BE CAPABLE OF OPERATING CONTINUOUSLY AT 105°F UNDER JOBSITE CONDITIONS AND ALTITUDE.

3. UNLESS NOTED OTHERWISE, ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH HOA SWITCH AND STARTER COMPATIBLE WITH EQUIPMENT AND BMS SYSTEM. STARTERS SHALL BE PROVIDED BY DIVISION 21,22 AND 23 UNLESS IN A MOTOR CONTROL CENTER. ALL DISCONNECTS SHALL BE FURNISHED BY DIVISION 26.

4. THE ELECTRICAL POWER FOR CERTAIN EQUIPMENT PROVIDED UNDER DIVISION 21,22 AND 23 HAS NOT BEEN SPECIFICALLY INDICATED ON THE ELECTRICAL DRAWINGS AND MUST BE PROVIDED BY AND FIELD COORDINATED BY THE DIVISION 21,22 AND 23 TRADE REQUIRING SUCH POWER.

   SUFFICIENT POWER FOR THIS PURPOSE SHALL BE FURNISHED AS "SPARE", DEDICATED CIRCUIT CAPACITY IN DIVISION 26'S PANELBOARDS. ALL WIRING, CONDUIT AND ELECTRICAL DEVICES DOWNSTREAM OF THE PANELBOARDS IS THE RESPONSIBILITY OF THE DIVISION 21,22 AND 23 TRADE REQUIRING THE POWER UNLESS OTHERWISE SHOWN ON THE ELECTRICAL DRAWINGS.

   C. TEMPERATURE CONTROL PANELS, CONTROL AIR COMPRESSORS AND LINE VOLTAGE POWER FOR 24V CONTROL TRANSFORMERS. REQUIRED CONNECTION ARE INCLUDED IN DIVISION 230900 AND WILL BE SHOWN BY THAT CONTRACTOR'S CONTROL SUBMITTAL DRAWINGS.

   D. IT IS NOT PERMISSIBLE TO UTILIZE "SPARE" POWER FROM ADJACENT POWER CIRCUITS TO SERVE ANY OF THE ABOVE LOADS. ALL POWER MUST COME FROM DEDICATED CIRCUITS.

5. SMOKE DETECTORS:

   FOR AIR HANDLING UNITS AND AIR SYSTEMS WITH A CAPACITY EXCEEDING 2000 CFM, PROVIDE UL LISTED SMOKE DETECTORS IN RETURN AIR SYSTEMS IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE AND ELSEWHERE AS SHOWN ON THE DRAWINGS.

   SMOKE DETECTORS WILL BE FURNISHED AND SET IN PLACE UNDER THIS DIVISION. DETECTORS WILL BE WIRED UNDER DIVISION 28. SMOKE DETECTORS MUST BE OF THE SAME MANUFACTURER, AND COMPATIBLE WITH THE FIRE FLARM SYSTEM PROVIDED UNDER DIVISION 28 (IF APPLICABLE).

   CONNECT RELAY(S) TO FAN CONTROL CIRCUIT TO STOP FAN WHEN SMOKE IS DETECTED.

INSTALLATION:

1. SUSPEND EACH TRADE'S WORK SEPARATELY FROM THE STRUCTURE. DUCTWORK SHALL BE HELD TIGHT TO STRUCTURE EXCEPT WHERE OTHERWISE SHOWN.

2. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

3. PROVIDE MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE AROUND ALL EQUIPMENT REQUIRING SAME.

4. PROVIDE FOR SAFE CONDUCT OF THE WORK, CAREFUL REMOVAL AND DISPOSITION OF MATERIALS AND PROTECTION OF PROPERTY WHICH IS TO REMAIN UNDISTURBED.

5. PROVIDE ACCESS DOORS FOR ALL EQUIPMENT, VALVES, CLEANOUTS, ACTUATORS AND CONTROLS WHICH REQUIRE ACCESS FOR ADJUSTMENT OR SERVICING AND WHICH ARE LOCATED IN OTHERWISE INACCESSIBLE LOCATIONS.

   A. FOR EQUIPMENT LOCATED IN "ACCESSIBLE LOCATIONS" SUCH AS LAY-IN CEILINGS: LOCATE EQUIPMENT TO PROVIDE ADEQUATE SERVICE CLEARANCE FOR NORMAL MAINTENANCE WITHOUT REMOVING ARCHITECTURAL, ELECTRICAL OR STRUCTURAL ELEMENTS SUCH AS THE CEILING SUPPORT SYSTEM, ELECTRICAL FIXTURES, ETC. "NORMAL MAINTENANCE" INCLUDES, BUT IS NOT LIMITED TO:FILTER CHANGING; GREASING OF BEARINGS; USING P/T PORTS FOR PRESSURE OR TEMPERATURE MEASUREMENTS; SERVICING CONTROL VALVES AND SERVICING CONTROL PANELS.

6. ISOLATE ALL PRESSURIZED PIPE (WATER, ETC.) AT EACH RISER, BRANCH, PIECE OF EQUIPMENT, AND AREA SERVED.

7. PROVIDE PRIMERS FOR ALL FLOOR DRAINS AND FLOOR SINKS SHOWN ON DRAWINGS. PRIMERS MAY BE CONNECTED TO FLUSH FIXTURES OR BE STAND ALONE. SEE SPECIFICATIONS.

8. NO DOMESTIC WATER, CHILLED WATER, OR HEATING WATER LINES SHALL BE LOCATED EXPOSED IN FINISHED SPACES OR BELOW THE BUILDING SLAB UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

9. NO GAS LINES SHALL BE LOCATED BELOW BUILDING SLAB.

10. ALL CURBS, ROOF JACKS, ROOF THIMBLES, SANITARY VENTS, ROOF DRAINS, ETC. SHALL BE COMPATIBLE WITH ROOFING SYSTEM TO BE PROVIDED. REFERENCE ARCHITECTURAL DIVISION FOR REQUIRED FLASHING DETAILS.

11. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CONCRETE EQUIPMENT PAD DIMENSIONS. BASED ON THE FINAL EQUIPMENT SELECTION, TO THE STRUCTURAL AND GENERAL CONTRACTOR FOR INCLUSION IN THOSE CONTRACTOR'S WORK AS DESCRIBED BY THE GENERAL CONTRACTOR.

12. WARRANTY: AT A MINIMUM, THE ENTIRE MECHANICAL SYSTEM SHALL BE WARRANTED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER ACCEPTANCE OF THE SYSTEM BY THE OWNER. REFER TO INDIVIDUAL SPECIFICATION SECTIONS FOR SPECIFIC WARRANTY REQUIREMENTS.

DUCTWORK INSTALLATION:

1. SEAL ALL SEAMS (LONGITUDINAL AND TRANSVERSE) AIR TIGHT WITH SEALANT PER SPECIFICATIONS.

2. DUCT DIMENSIONS ARE INSIDE CLEAR.

3. DIFFUSER NECK SIZE IS SAME AS FLEXIBLE DUCT SIZE.

4. UNLESS OTHERWISE NOTED, ALL CHANGES IN DIRECTION SHALL BE MADE WITH RADIUS ELBOWS WITH RADIUS TO CENTERLINE EQUAL TO 1.5 DUCT WIDTH.

5. WHERE REQUIRED FOR SPACE CONSTRAINTS, PROVIDE MITERED ELBOWS WITH TURNING VANES AS FOLLOWS:

   A. FOR DUCT WIDTHS OF 36" OR LESS, PROVIDE MANUFACTURED SINGLE WIDTH TURNING VANES, WITH NO TRAILING EDGES AND SPACING IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS FOR "STANDARD SPACING".

   B. USE DOUBLE THICKNESS (AIRFOIL) BLADES WITHOUT TRAILING EDGES FOR DUCT WIDTHS GREATER THAN 36".

6. ALL FLEXIBLE DUCTS SHALL NOT BE LESS THAN 4', OR MORE THAN 10' IN LENGTH. INSTALL FLEXIBLE DUCTWORK SUCH THAT:

   A. MINIMUM OVERALL LENGTH OF 3D, STRAIGHT INTO NECK OF DIFFUSER.

   B. MAXIMUM OF 135° OF TOTAL TURNING IN ENTIRE LENGTH OF FLEXIBLE DUCT.

   C. MINIMUM TURNING RADIUM OF R = 1.5D.

   D. WHERE:
   * D = FLEXIBLE DUCT DIAMETER
   * R = RADIUS OF TURN AS MEASURED TO CENTERLINE OF DUCT.

7. RETURN AIR PLENUM: THE HVAC SYSTEM WILL USE THE SPACE ABOVE THE CEILING AS A RETURN AIR PLENUM. CONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF NFPA AND LOCAL CODE REQUIREMENTS FOR ALL MATERIAL INSTALLED IN THE RETURN AIR PLENUM.

   A. IN ADDITION, THE CONTRACTOR SHALL PROVIDE A COMPLETE RETURN AIR PATH BETWEEN ALL RETURN AIR DEVICES (GRILLES ETC.) AND THEIR RESPECTIVE HVAC UNIT. MAXIMUM VELOCITY OF RETURN AIR IN PLENUM SHALL GENERALLY NOT EXCEED 250 FEET PER MINUTE, NOR EXCEED 750 FEET PER MINUTE AT ANY CROSS-SECTION OF THE RETURN AIR PATH.

8. BRANCH LINES:

   A. MAKE ALL TAPS TO ROUND DUCTWORK WITH CONICAL TEES.

   B. MAKE ALL TAPS TO RECTANGLE DUCTWORK WITH 45° ENTRY OR CONICAL SPIN IN TO ROUND.

   C. INCLUDE DAMPERS AT ALL BRANCH LINES.

CONDENSATE DRAINAGE:

1. PROVIDE CONDENSATE DRAINAGE FOR ALL COOLING COILS AND OVERFLOW PANS.

2. ROUTE CONDENSATE PIPING, FULL SIZE OF DRIP PAN CONNECTION, TO NEAREST CODE APPROVED RECEPTACLE. INSULATE WHERE LOCATED ABOVE FINISHED CEILINGS.

STRUCTURE:

1. DO NOT PENETRATE STRUCTURAL MEMBERS. ALL EQUIPMENT SUPPORTS SHALL BE ATTACHED TO THE LOAD BEARING MEMBERS OF STRUCTURAL ELEMENTS. DO NOT OVER-STRESS ANY STRUCTURAL MEMBERS. CONTACT STRUCTURAL ENGINEER FOR ALLOWABLE LOADS FOR SPECIFIC MEMBERS.

2. DO NOT UTILIZE POWER DRIVEN ANCHORS FOR ANY LOCATIONS WHICH REQUIRE THE LOAD TO BE HELD IN TENSION. SEE STRUCTURAL DIVISION FOR ADDITIONAL RESTRICTIONS.

3. SEE ALSO STRUCTURAL DIVISION FOR ACCEPTABLE ANCHORING AND SUPPORT MEANS, METHODS, AND LOCATIONS.

4. PROVIDE FLEXIBLE CONNECTORS, EXPANSION LOOPS, EXPANSION JOINTS, ADDITIONAL FITTINGS OR EQUIVALENT TO ACCOMMODATE THE THERMAL EXPANSION OF THE BUILDING THROUGH STRUCTURAL EXPANSION JOINTS. PROVIDE SUCH FITTING AT EVERY PIPE, DUCT, CONDUIT, ETC. CROSSING OF A STRUCTURAL EXPANSION JOINT.

CONSTRUCTION VENTILATION:

1. WHERE EXISTING OR NEW MECHANICAL SYSTEMS ARE USED FOR TEMPORARY VENTILATION OR CLIMATE CONTROL, MECHANICAL EQUIPMENT INSTALLER SHALL PROVIDE CONSTRUCTION FILTERS, MAINTAIN EQUIPMENT, AND CLEAN, ADJUST AND PUT IN NEW CONDITION BEFORE BUILDING OCCUPANCY. PARTS AND LABOR WARRANTY SHALL NOT BE CONSIDERED TO START UNTIL ACCEPTANCE OF SYSTEM BY OWNER.

2. PROVIDE CONSTRUCTION FILTERS INSTALLED AT ALL AIR MOVING DEVICES THROUGHOUT THE CONSTRUCTION. REMOVE FILTERS ONLY FOR BALANCING AND FINAL TURNOVER. INSPECT ALL NON-CONSTRUCTION FILTERS AND REPLACE ALL THOSE DEEMED NECESSARY BY THE ENGINEER PRIOR TO ACCEPTANCE OF THE SYSTEM BY THE OWNER.

GAS FIRED VENTING REQUIREMENTS:

1. ALL FLUES SERVING GAS FIRED EQUIPMENT SHALL BE DOUBLE WALL TYPE "B" BY METALBESTOS CO. OR EQUAL. TERMINATE FLUES A MINIMUM HEIGHT ABOVE ROOF (AS DETERMINED BY CODE) WITH WEATHER CAP. SLOPE HORIZONTAL RUNS TOWARD POINT OF ORIGINATION AT MINIMUM 1/4" PER 1'.

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CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

PROJECT TEAM

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Prepared for:

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER PE-2010024537
PROFESSIONAL ENGINEER
2020.11.12

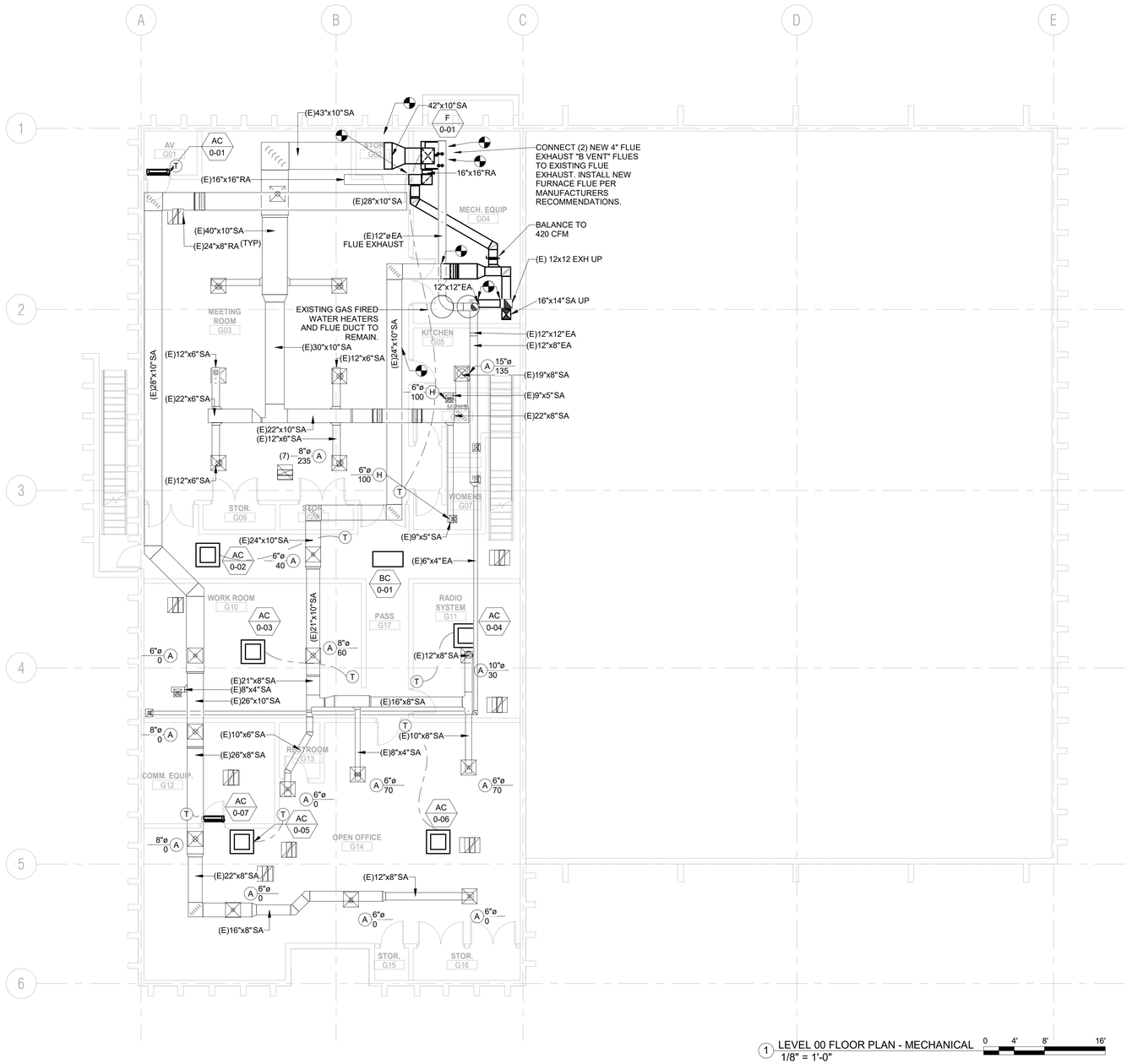
ISSUE DATE:
© NOVEMBER 12, 2020

FIRE HEADQUARTERS STATION NO. 1

MECHANICAL GENERAL NOTES

SHEET NO.
M002

PROJECT NO.: KC2008.01



NORTH

1 LEVEL 00 FLOOR PLAN - MECHANICAL
1/8" = 1'-0"

0 4' 8' 16'

GENERAL NOTES:

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3. REBALANCE EXISTING DIFFUSERS TO AIRFLOWS INDICATED ON PLANS.

4. PROVIDE MANUAL BALANCE DAMPERS IN ALL NEW SUPPLY DUCT BRANCH TAPS AND ALL EXISTING DIFFUSERS WHERE BALANCING DAMPER IS NOT ACCESSIBLE.

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7. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

8. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

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KEYNOTES

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STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER 2004034537
REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

LEVEL 00 FLOOR PLAN - MECHANICAL

SHEET NO.
M100

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

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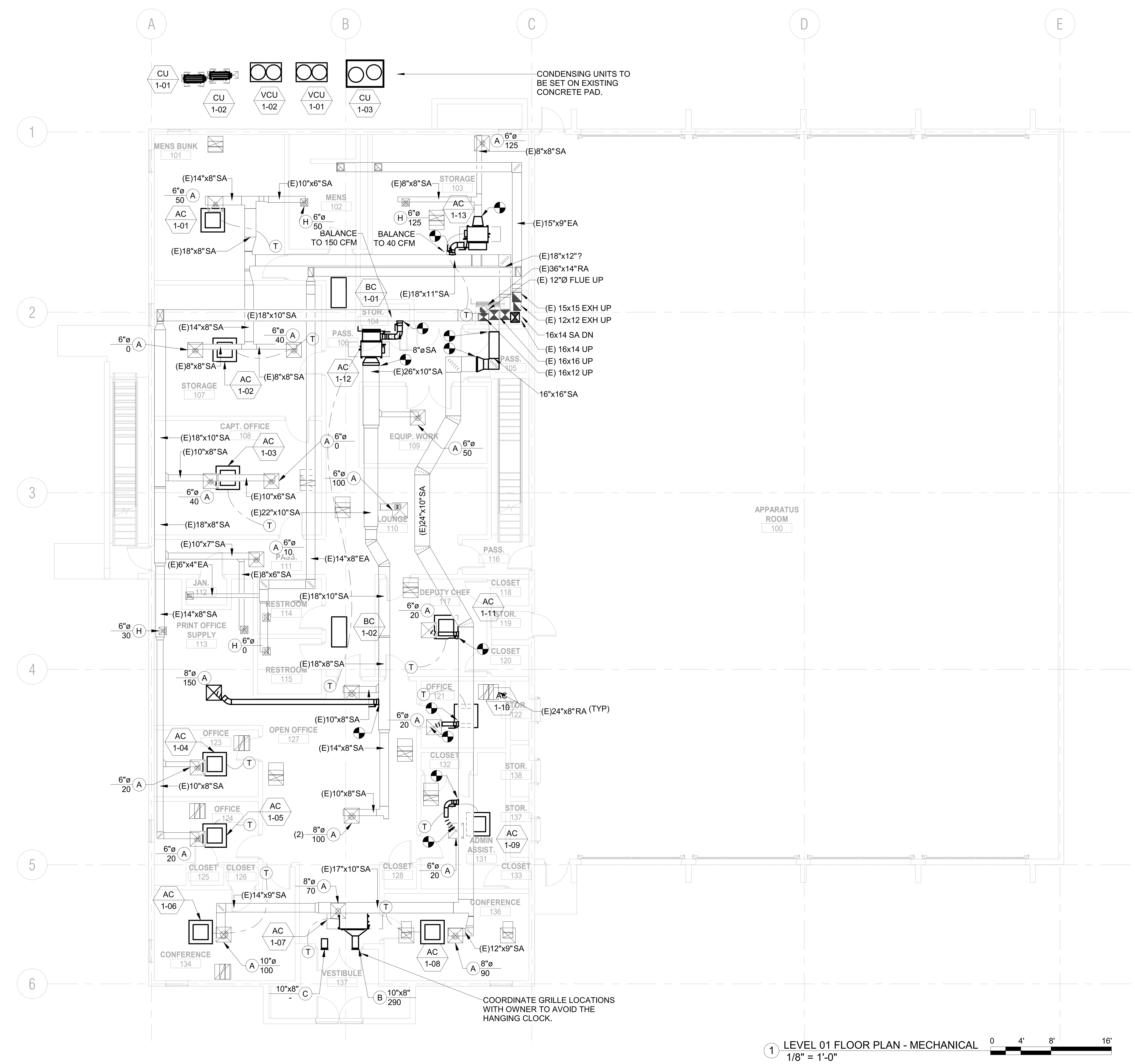
KEYNOTES



1 LEVEL 01 FLOOR PLAN - MECHANICAL
1/8" = 1'-0"

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LEE'S SUMMIT FIRE DEPT MISSOURI

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

PROJECT TEAM

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NO.	DATE	REF. / DESCRIPTION

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STATE OF MISSOURI JEFFREY L. EWENS NUMBER REGISTERED PROFESSIONAL ENGINEER
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ISSUE DATE:
© NOVEMBER 12, 2020

FIRE HEADQUARTERS STATION NO. 1

LEVEL 01 FLOOR PLAN - MECHANICAL

SHEET NO.
M101

PROJECT NO.: KC2008.01

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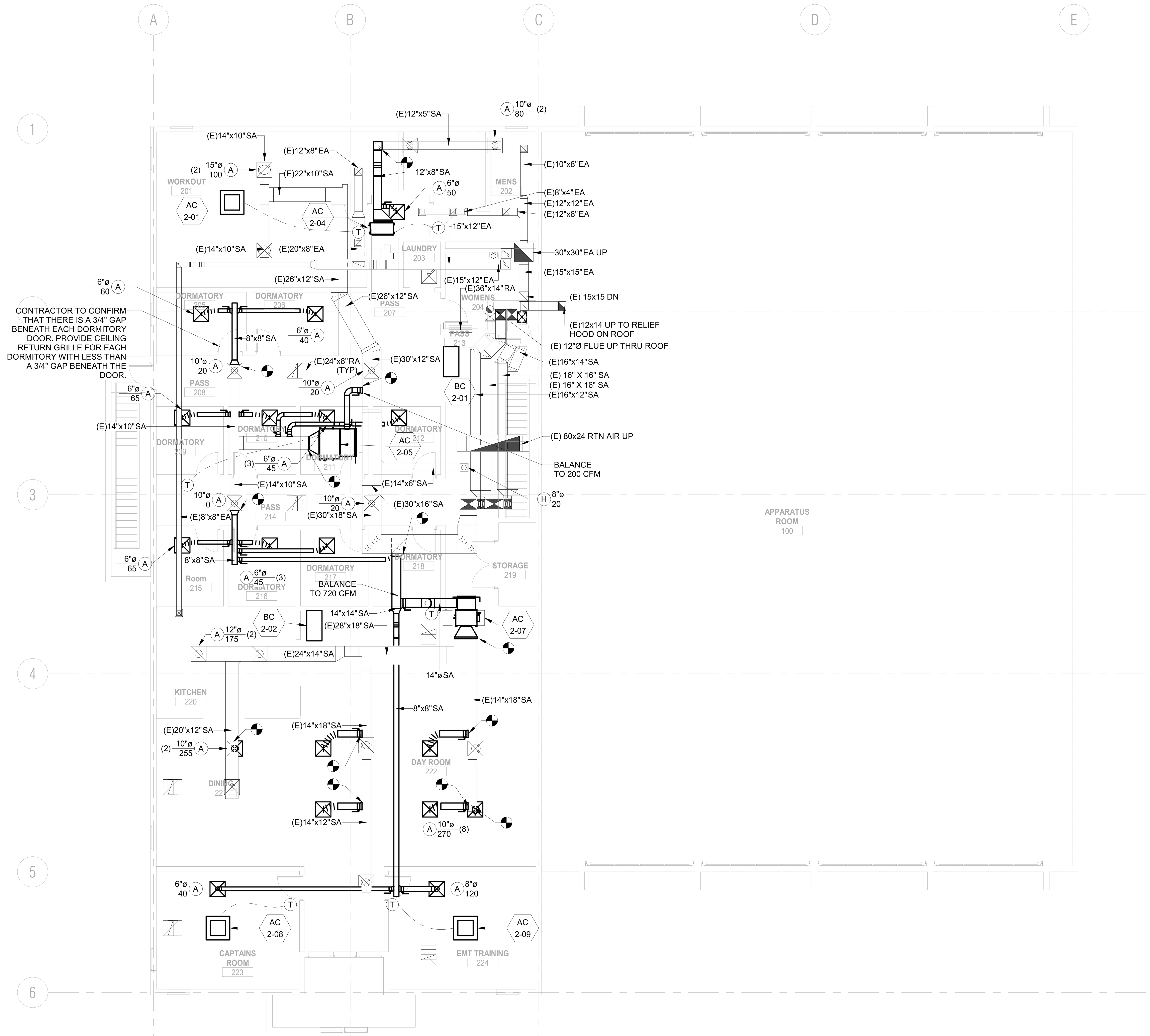

1 LEVEL 02 FLOOR PLAN - MECHANICAL
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NORTH

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JEFFREY L. EWENS
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FIRE HEADQUARTERS STATION NO. 1

ISSUE DATE:
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LEVEL 02 FLOOR PLAN- MECHANICAL

SHEET NO.
M102

PROJECT NO.: KC2008.01

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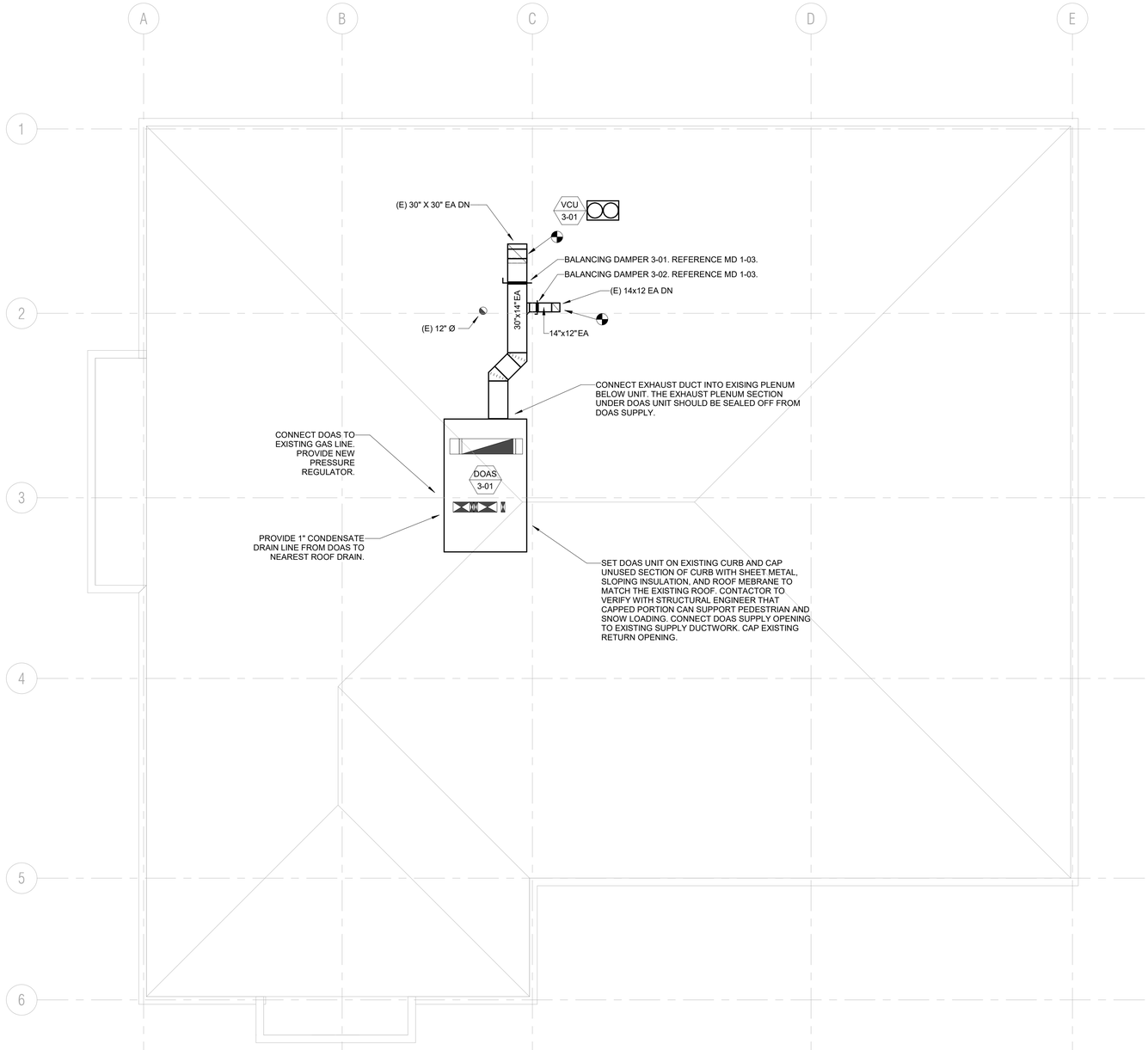

NORTH

1 LEVEL 03 ROOF PLAN - MECHANICAL
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REVISIONS

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STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER E-2003037627
REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

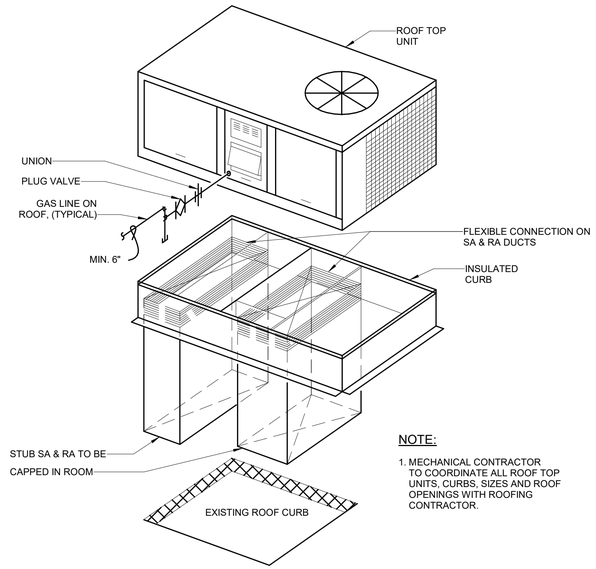
LEVEL 03 ROOF PLAN- MECHANICAL

SHEET NO.
M103

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

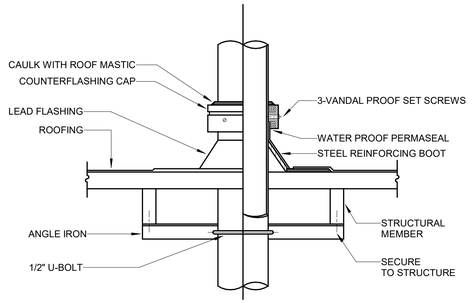
FIRE HEADQUARTERS STATION NO. 1



NOTE:

1. MECHANICAL CONTRACTOR TO COORDINATE ALL ROOF TOP UNITS, CURBS, SIZES AND ROOF OPENINGS WITH ROOFING CONTRACTOR.

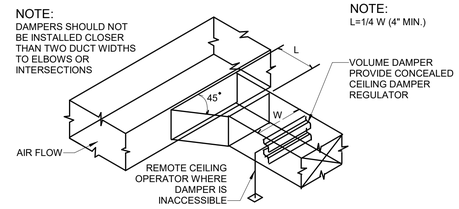
7 ROOFTOP UNIT AND CURB DETAIL
NO SCALE



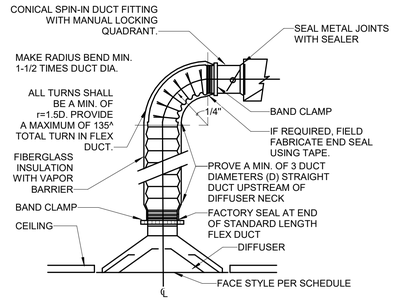
NOTES:

1. OMIT ANGLE IRON AND 1/2" U-BOLT FOR PIPE 1-1/2" AND SMALLER.

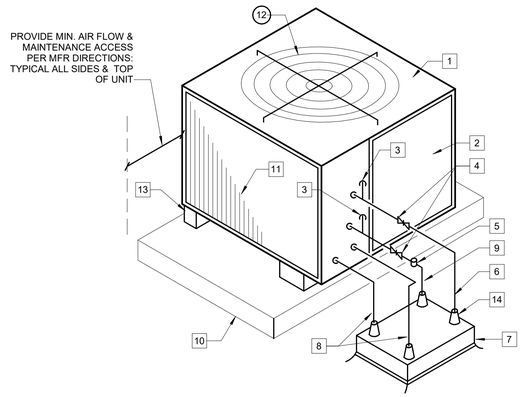
5 PIPE THROUGH ROOF
NO SCALE



1 BRANCH DUCT TAKE-OFF DETAIL
NO SCALE



2 CEILING DIFFUSER DETAIL
NO SCALE



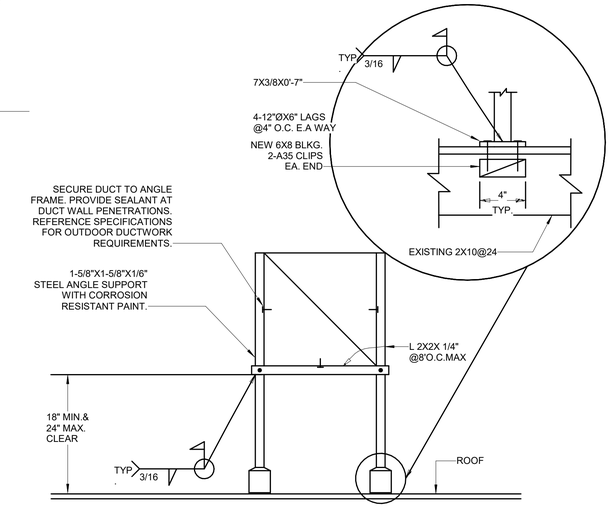
DETAIL NOTES :

1. CONDENSING UNIT
2. COMPRESSOR ACCESS
3. REFRIGERANT GAUGE CONNECTIONS.
4. BACK-SEATED REFRIGERANT VALVE.
5. SIGHT GLASS WITH MOISTURE INDICATOR.
6. SUCTION LINE WITH INSULATION.
7. ROOF CAP AND CURB.
8. CONDUIT - POWER AND CONTROL.
9. REFRIGERANT LIQUID LINE
10. FULL PERIMETER ROOF CURB
11. CONDENSER COIL.
12. FAN GUARD.
13. VIBRATION ISOLATORS.
14. FLASH PENETRATION WATER TIGHT SEE DETAIL.

NOTES :

1. REFRIGERANT LIQUID LINE & SUCTION LINE TO BE SIZED PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE OIL TRAPS AT RS LOW POINTS AND/OR PITCH HORIZONTAL PIPING FOR PROPER OIL RETURN.

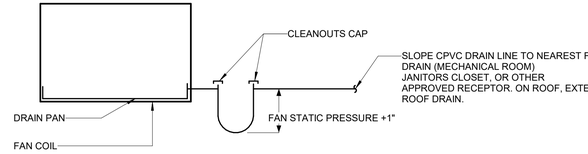
8 AIR-COOLED CONDENSING UNIT
NO SCALE



NOTES:

1. DUCT SUPPORT MUST COMPLY WITH APPLICABLE CODES.
2. PROVIDE LATERAL BRACING AS REQUIRED.

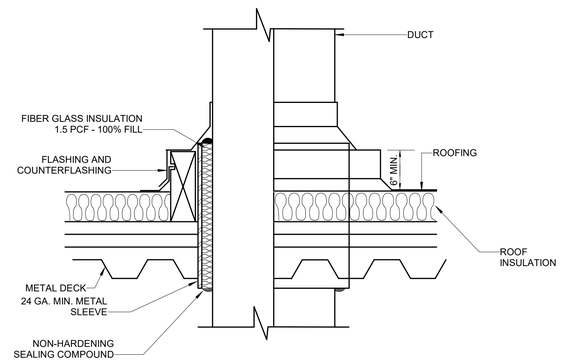
6 ROOF DUCT SUPPORT
NO SCALE



NOTE:

1. INSULATE CONDENSATE DRAIN WHEN ABOVE CEILINGS.

3 CONDENSATE DRAIN DETAIL
NO SCALE



4 DUCT PENETRATION THROUGH ROOF
NO SCALE

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CITY OF LEES SUMMIT
207 S. DOUGLAS
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PROJECT TEAM

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PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
JEFFREY L EWENS
NUMBER 2010004537
REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

MECHANICAL DETAILS

SHEET NO.
M400

PROJECT NO.: KC2008.01

FIRE HEADQUARTERS STATION NO. 1

ASHRAE 62.1 VENTILATION CALCULATIONS

System Name and Number	Condition Analyzed (impacts Ez)	Occupancy Category	Zone Floor Area *Az* (sq ft)	Are you using default value for zone population?	Zone Population *Pz* people	People Outdoor Air Rate *Rp* (cfm per person)	Area Outdoor Air Rate *Ra* (cfm per sq ft)	Breathing Zone Outdoor Airflow *Vbz* (cfm)	Zone Air Distribution Effectiveness *Ez*	Zone Outdoor Airflow *Voz* (cfm)	Outdoor air intake flow provided (measured or design) (cfm)
								Rp Pz + Ra Az		Vbz / Ez	
G03 - MEETING ROOM	Cooling	Conference / meeting	1,600	No	40.00	5.00	0.06	296.00	0.80	370	370
G05 - KITCHEN	Cooling	Kitchen (cooking)	133	Yes	2.66	7.50	0.12	35.91	0.80	45	50
G10 - WORKROOM	Cooling	Office space	516	Yes	2.58	5.00	0.06	43.86	0.80	55	60
G11 - RADIO SYSTEM	Cooling	Office space	253	Yes	1.27	5.00	0.06	21.50	0.80	27	30
G12 - COMM EQUIP	Cooling	Occupiable storage room...	232	Yes	0.46	5.00	0.06	16.24	0.80	20	20
G14 - OPEN OFFICE	Cooling	Office space	1,252	Yes	6.26	5.00	0.06	106.42	0.80	133	140
G17 - PASS	Cooling	Corridors	454	Yes	0.00	0.00	0.06	27.24	0.80	34	40
101 - MENS BUNK	Cooling	Bedroom / living room	336	Yes	3.36	5.00	0.06	36.96	0.80	46	50
105 - PASS	Cooling	Corridors	161	Yes	0.00	0.00	0.06	9.66	0.80	12	20
106 - PASS	Cooling	Corridors	237	Yes	0.00	0.00	0.06	14.22	0.80	18	20
107 - STORAGE	Cooling	Occupiable storage room...	388	Yes	0.78	5.00	0.06	27.16	0.80	34	40
108 - CAPT OFFICE	Cooling	Office space	338	Yes	1.69	5.00	0.06	28.73	0.80	36	40
109 - EQUIP WORK	Cooling	Occupiable storage room...	168	Yes	0.34	5.00	0.06	11.76	0.80	15	20
110 - LOUNGE	Cooling	Main entry lobbies	371	Yes	3.71	5.00	0.06	40.81	0.80	51	60
111 - PASS	Cooling	Corridors	106	Yes	0.00	0.00	0.06	6.36	0.80	8	10
113 - PRINT OFFICE SUPPLY	Cooling	Office space	229	Yes	1.15	5.00	0.06	19.46	0.80	24	30
117 - DEPUTY CHEF	Cooling	Office space	185	Yes	0.93	5.00	0.06	15.72	0.80	20	20
121 - OFFICE	Cooling	Office space	100	Yes	0.50	5.00	0.06	8.50	0.80	11	20
123 - OFFICE	Cooling	Office space	123	Yes	0.62	5.00	0.06	10.45	0.80	13	20
124 - OFFICE	Cooling	Office space	125	Yes	0.63	5.00	0.06	10.62	0.80	13	20
127 - OPEN OFFICE	Cooling	Office space	593	Yes	2.97	5.00	0.06	50.40	0.80	63	70
131 - ADMIN ASSIST	Cooling	Office space	182	Yes	0.91	5.00	0.06	15.47	0.80	19	20
134 - CONFERENCE	Cooling	Conference / meeting	239	Yes	11.95	5.00	0.06	74.09	0.80	93	100
136 - CONFERENCE	Cooling	Conference / meeting	224	Yes	11.20	5.00	0.06	69.44	0.80	87	90
137 - VESTIBULE	Cooling	Corridors	131	Yes	0.00	0.00	0.06	7.86	0.80	10	10
						0.00	0.00	0.00		0	
201 - WORKOUT	Cooling	Health club / weight	597	Yes	5.97	20.00	0.06	155.22	0.80	194	200
203 - LAUNDRY	Cooling	Laundry rooms, central	29	Yes	0.29	5.00	0.12	4.93	0.80	6	10
205 - DORMATORY	Cooling	Bedroom / living room	91	Yes	0.91	5.00	0.06	10.01	0.80	13	20
206 - DORMATORY	Cooling	Bedroom / living room	84	Yes	0.84	5.00	0.06	9.24	0.80	12	20
207 - PASS	Cooling	Corridors	268	Yes	0.00	0.00	0.06	16.08	0.80	20	20
208 - PASS	Cooling	Corridors	143	Yes	0.00	0.00	0.06	8.58	0.80	11	20
209 - DORMATORY	Cooling	Bedroom / living room	79	Yes	0.79	5.00	0.06	8.69	0.80	11	20
210 - DORMATORY	Cooling	Bedroom / living room	79	Yes	0.79	5.00	0.06	8.69	0.80	11	20
211 - DORMATORY	Cooling	Bedroom / living room	79	Yes	0.79	5.00	0.06	8.69	0.80	11	20
212 - DORMATORY	Cooling	Bedroom / living room	79	Yes	0.79	5.00	0.06	8.69	0.80	11	20
213 - PASS	Cooling	Corridors	237	Yes	0.00	0.00	0.06	14.22	0.80	18	20
214 - PASS	Cooling	Corridors	228	Yes	0.00	0.00	0.06	13.68	0.80	17	20
215 - ROOM	Cooling	Bedroom / living room	88	Yes	0.88	5.00	0.06	9.68	0.80	12	20
216 - DORMATORY	Cooling	Bedroom / living room	89	Yes	0.89	5.00	0.06	9.79	0.80	12	20
217 - DORMATORY	Cooling	Bedroom / living room	89	Yes	0.89	5.00	0.06	9.79	0.80	12	20
218 - DORMATORY	Cooling	Bedroom / living room	89	Yes	0.89	5.00	0.06	9.79	0.80	12	20
220 - KITCHEN	Cooling	Kitchen (cooking)	252	Yes	5.04	7.50	0.12	68.04	0.80	85	85
221 - DINING	Cooling	Restaurant dining rooms	369	Yes	25.83	7.50	0.18	260.14	0.80	325	325
222 - DAYROOM	Cooling	Day room	1,156	Yes	34.68	5.00	0.06	242.76	0.80	303	310
223 - CAPTAINS ROOM	Cooling	Office space	291	Yes	1.46	5.00	0.06	24.73	0.80	31	40
224 - EMT TRAINING ROOM	Cooling	Conference / meeting	299	Yes	14.95	5.00	0.06	92.69	0.80	116	120

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
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2020.11.12

ISSUE DATE:
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MECHANICAL CALCULATIONS

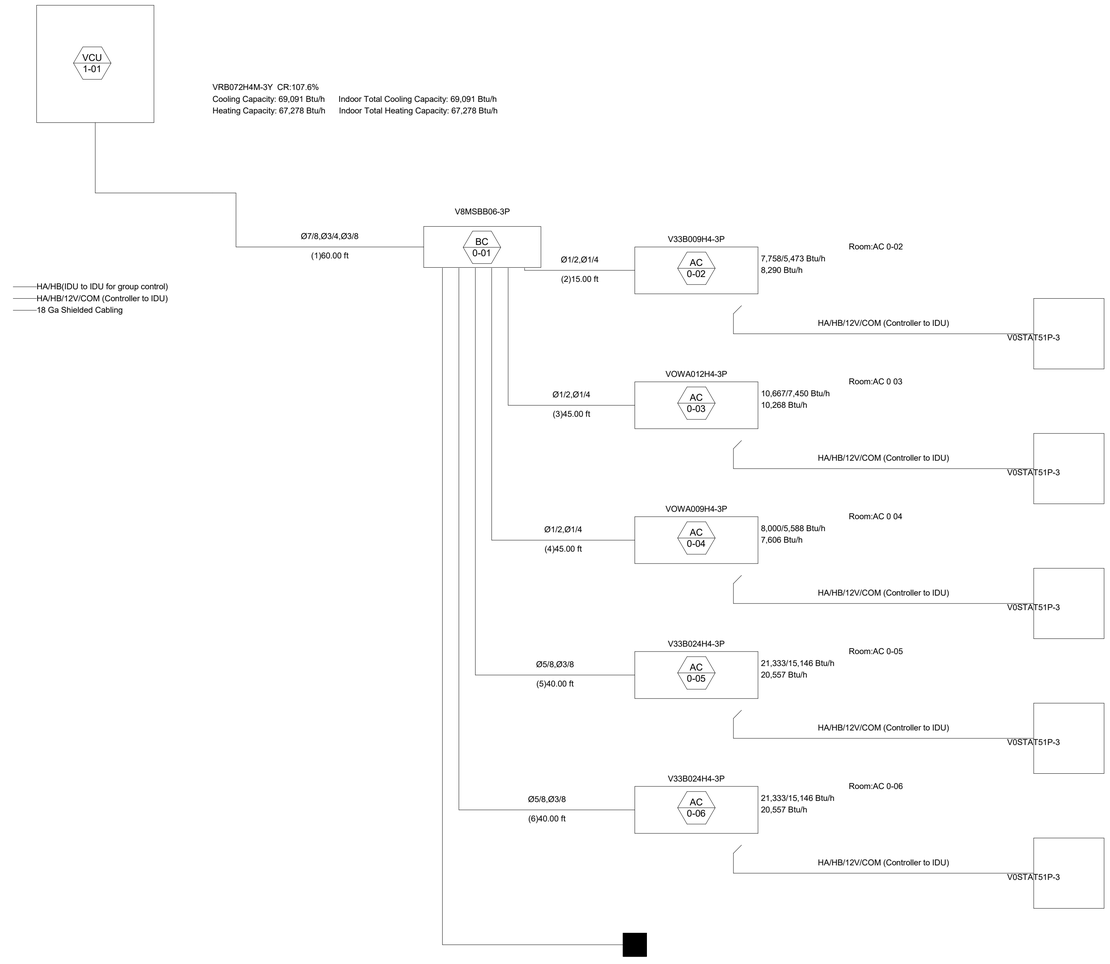
SHEET NO.

M500

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1



NOTES:
PIPING LENGTHS ON PIPING DIAGRAMS ARE ESTIMATES. REFRIGERANT LINE ROUTING IS TO BE COMPLETED BY THE MECHANICAL CONTRACTOR. FINAL REFRIGERANT PIPE SIZES AND ROUTING ARE TO BE REVIEWED AND VERIFIED BY VRF MANUFACTURER AND SUBMITTED TO DESIGN ENGINEER FOR REVIEW. PROVIDE ISOLATION VALVES IN REFRIGERANT PIPING AT EACH PIECE OF EQUIPMENT.

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CITY OF LEES SUMMIT
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PROJECT TEAM

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
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REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
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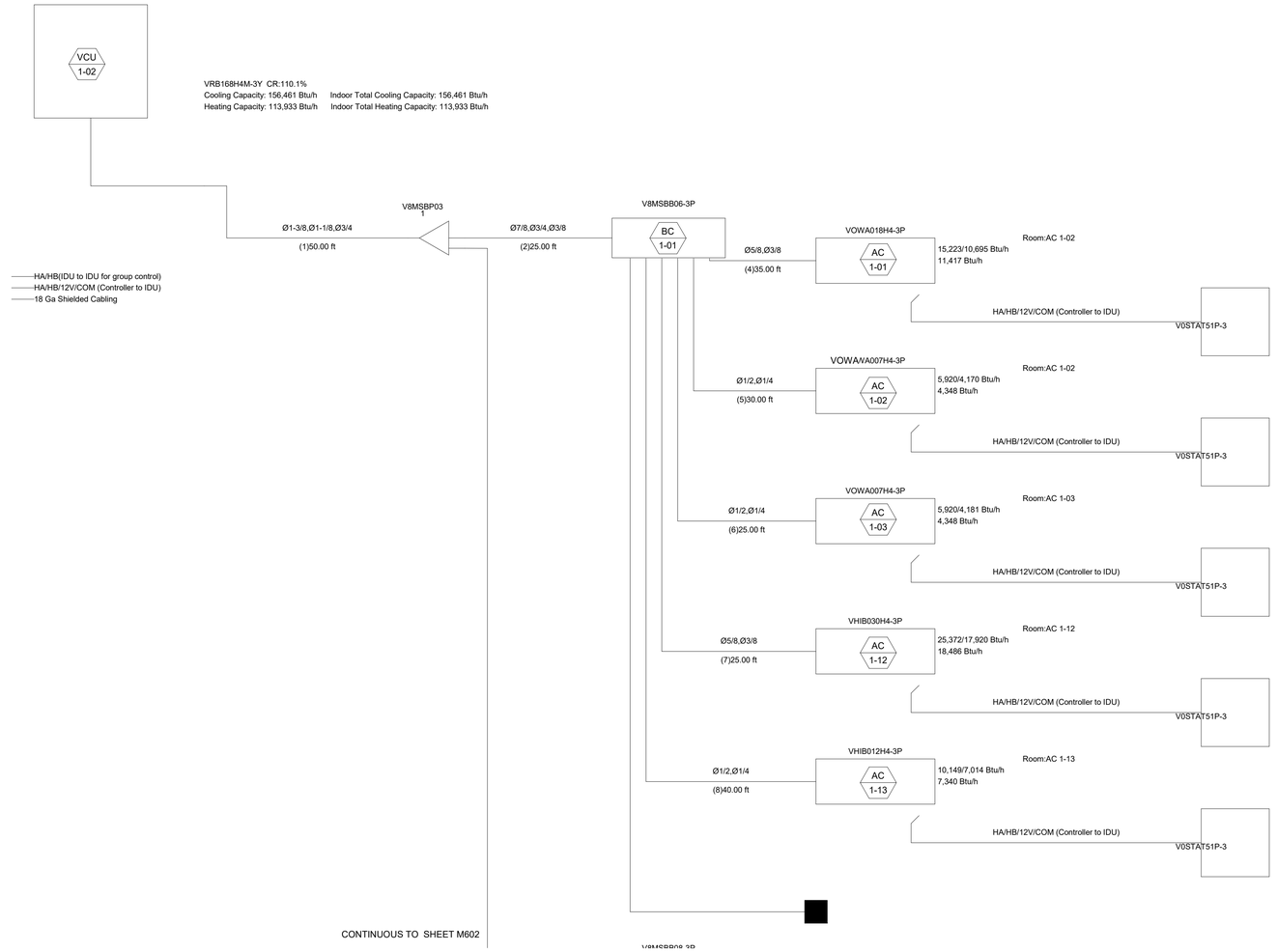
FIRE HEADQUARTERS STATION NO. 1

MECHANICAL VRF LADDERS

SHEET NO.

M600

PROJECT NO.: KC2008.01



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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

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2020.11.12

ISSUE DATE:
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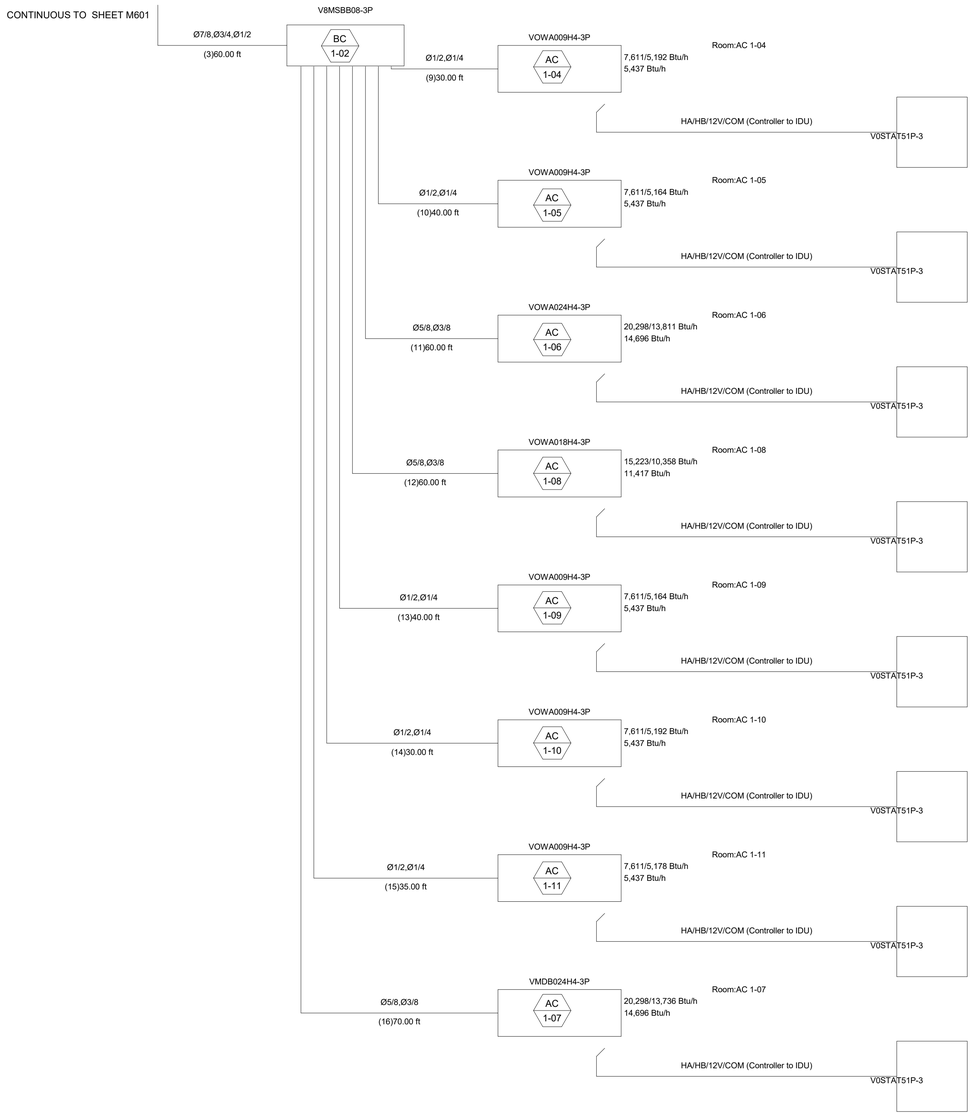
CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

MECHANICAL VRF LADDERS

SHEET NO.
M601

PROJECT NO.: KC2008.01



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CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

LEE'S SUMMIT FIRE DEPT MISSOURI

PROJECT TEAM

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
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REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
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FIRE HEADQUARTERS STATION NO. 1

MECHANICAL VRF LADDERS

SHEET NO.
M602

PROJECT NO.: KC2008.01

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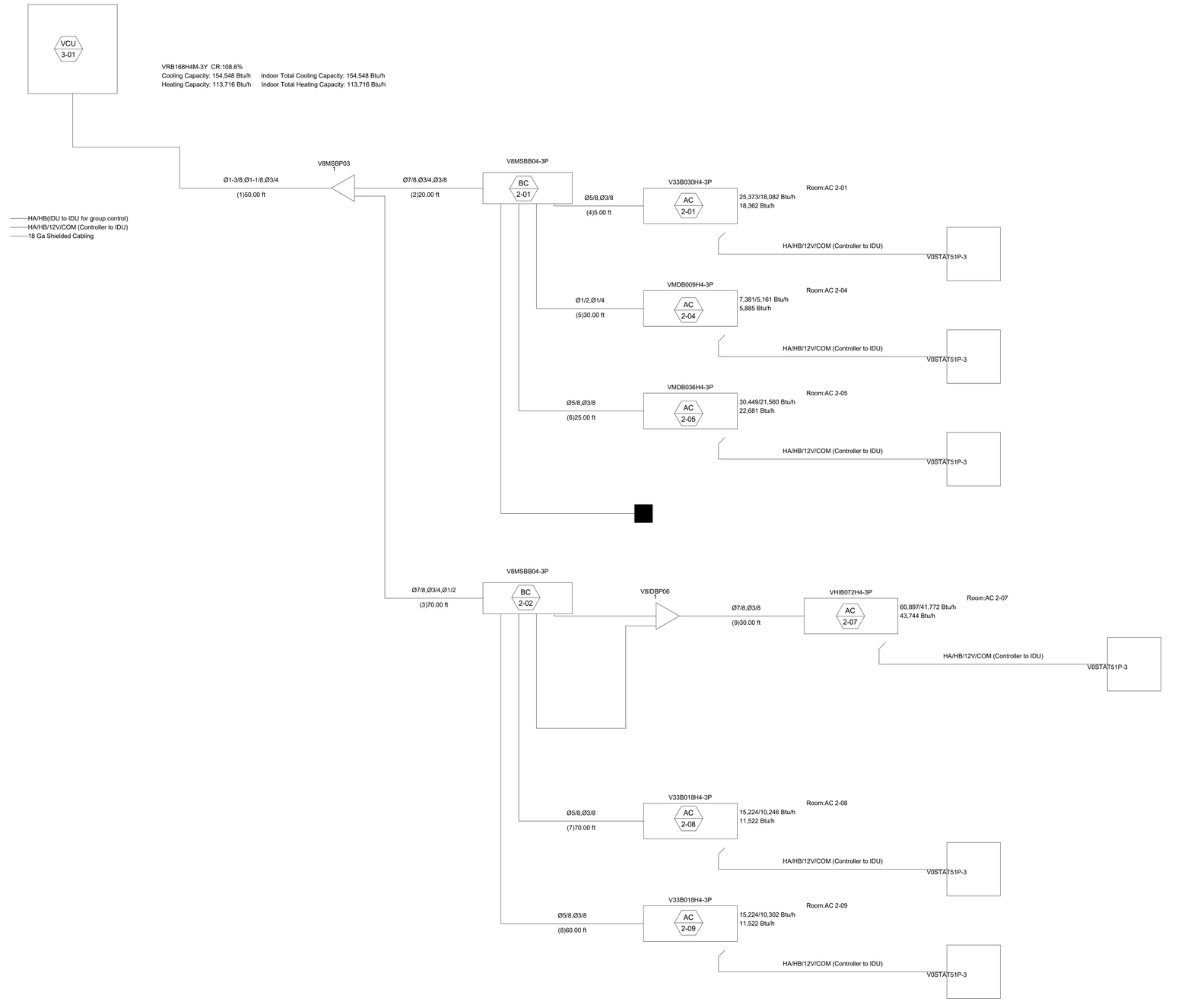

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CITY OF LEES SUMMIT
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LEES SUMMIT, MO

PROJECT TEAM

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER 2004024527
REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
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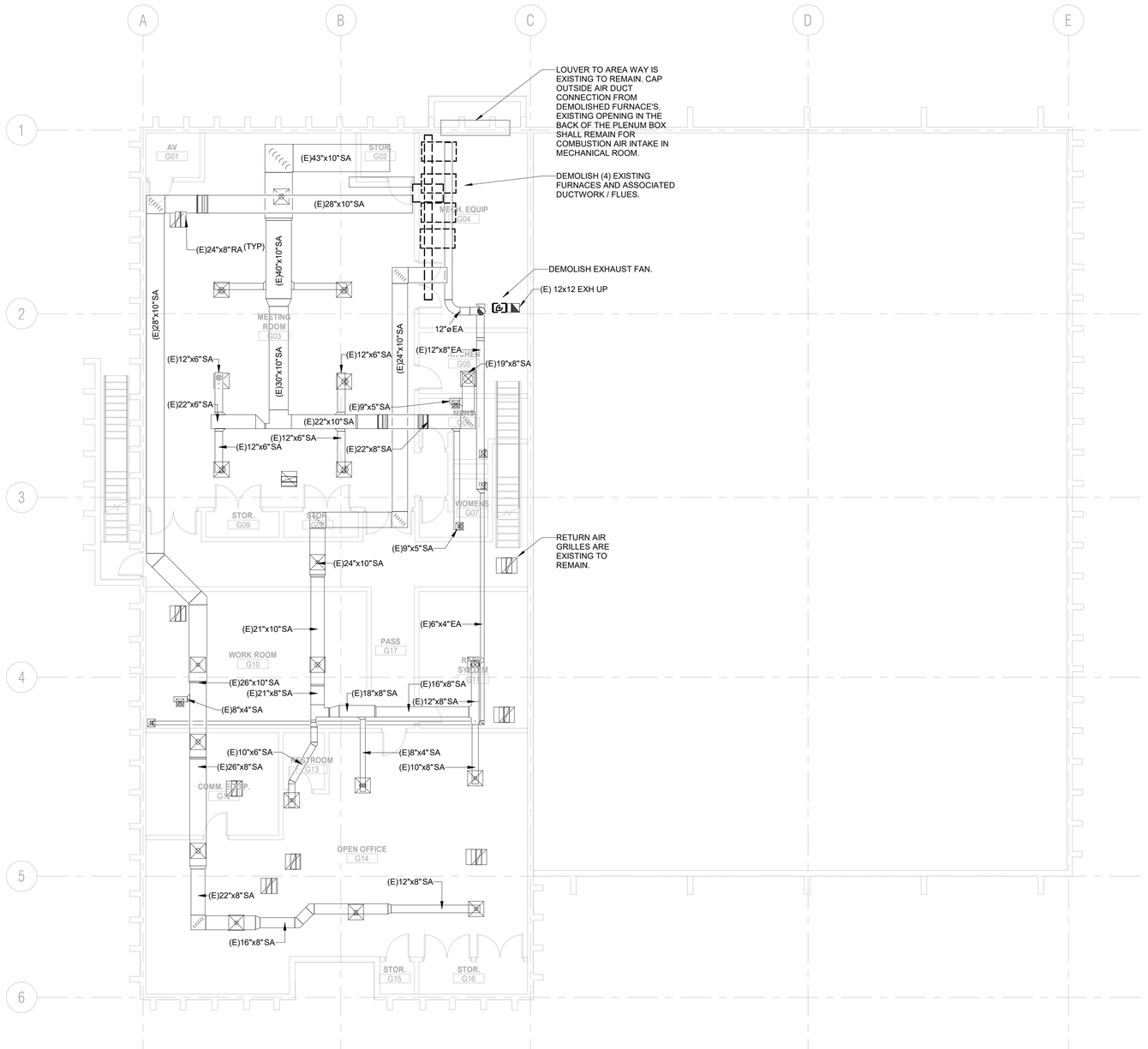
FIRE HEADQUARTERS STATION NO. 1

MECHANICAL VRF LADDERS

SHEET NO.
M603

PROJECT NO.: KC2008.01



1 LEVEL 00 FLOOR PLAN - MECHANICAL DEMO
1/8" = 1'-0"

0 4' 8' 16'

NORTH

GENERAL NOTES:

1. EXISTING DUCTWORK, PIPING, EQUIPMENT, ETC. SHOWN HAS BEEN COMPILED FROM RECORD DRAWINGS AND PREVIOUS DESIGN PLANS. NEITHER THE ACCURACY OF THESE PLANS NOR THE EXTENT OF UNDOCUMENTED CHANGES SINCE HAS BEEN FIELD VERIFIED. THIS INFORMATION IS SHOWN TO HELP IDENTIFY THE "SCOPE OF WORK," BUT ANY PRICING EXERCISE OR BID SHOULD INVOLVE A THOROUGH REVIEW OF FIELD CONDITIONS PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

3. SOME NOTES AND CALLOUTS ARE FROM RECORD DRAWINGS AND REFLECT EXISTING DUCTWORK, PIPING, AND EQUIPMENT FOR CLARITY.

4. PATCH AND SEAL EXISTING DUCTS TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK.

5. CAP ALL EXISTING PIPING TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK.

6. CAP OR COVER DUCT OPENINGS DURING DEMOLITION AND CONSTRUCTION (TYPICAL).

7. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS, RELOCATING AS NECESSARY.

8. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED. REPLACE ALL DAMAGED DIFFUSERS / GRILLES.

9. CONTRACTOR TO PROVIDE FULL AIR AND WATER BALANCE FOR ALL AFFECTED SYSTEMS, PROVIDE BALANCING PRIOR TO CONSTRUCTION AND FOR FINAL TAB REPORT AT END OF CONSTRUCTION, RE: SCHEDULE.

10. REBALANCE ALL AFFECTED (E) EXHAUST FAN SYSTEMS, WHERE DEMO/REWORK IS SHOWN ON THE DRAWINGS, REFER TO PLANS FOR LOCATIONS.

11. RECONNECT (E) PIPING TO REPLACED EQUIPMENT.

12. EXTEND (E) PIPING TO RELOCATED EQUIPMENT.

13. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

14. SIZING AND ROUTING OF THE REFRIGERANT PIPING FOR THE MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.

KEYNOTES

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LEE'S SUMMIT FIRE DEPT MISSOURI

PROJECT TEAM

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER 2004024597
REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
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LEVEL 00 FLOOR PLAN - MECHANICAL DEMO

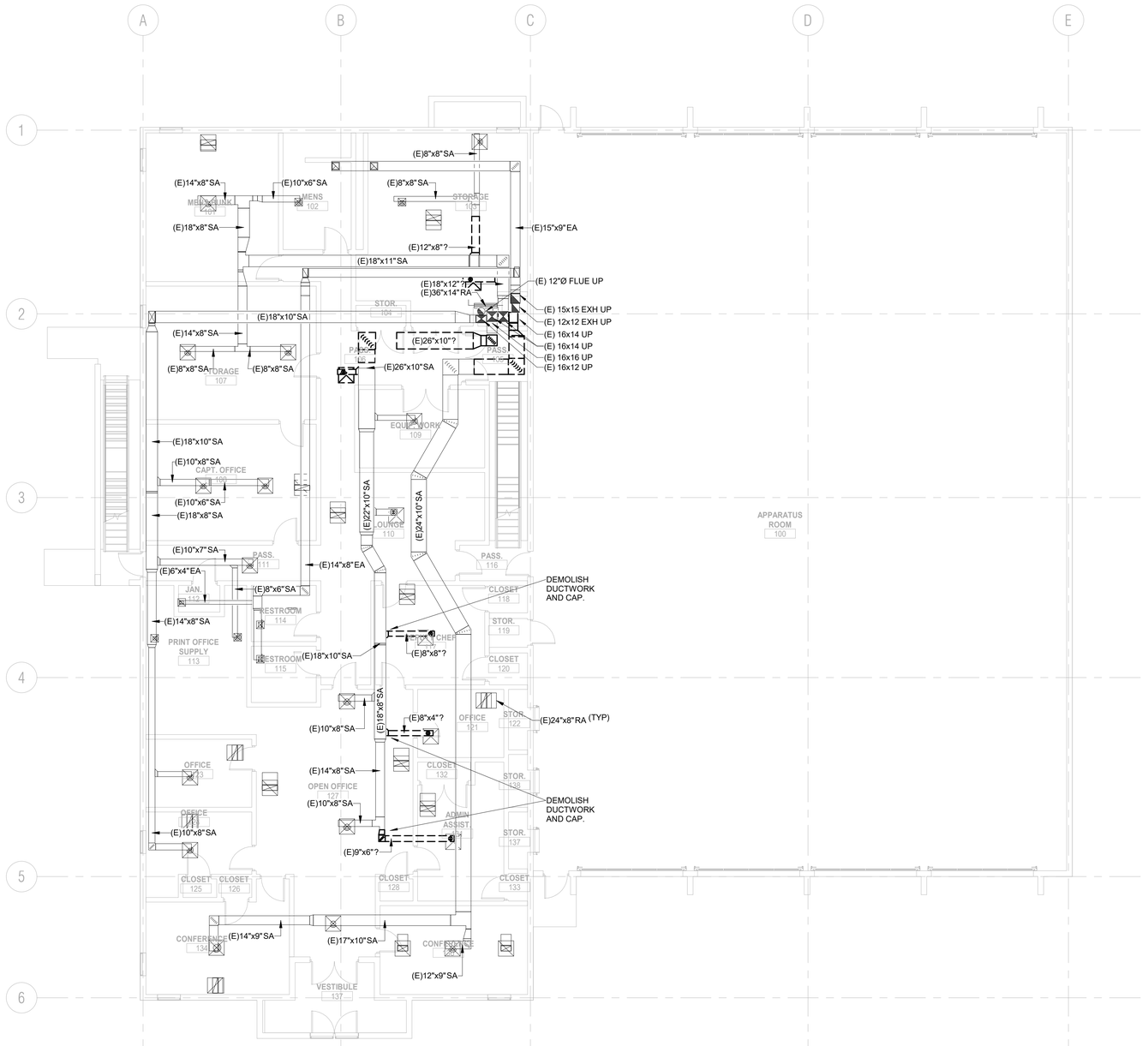
SHEET NO.

MD100

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1



NORTH

1 LEVEL 01 FLOOR PLAN - MECHANICAL DEMO
1/8" = 1'-0"

0 4' 8' 16'

GENERAL NOTES:

1. EXISTING DUCTWORK, PIPING, EQUIPMENT, ETC. SHOWN HAS BEEN COMPILED FROM RECORD DRAWINGS AND PREVIOUS DESIGN PLANS. NEITHER THE ACCURACY OF THESE PLANS NOR THE EXTENT OF UNDOCUMENTED CHANGES SINCE HAS BEEN FIELD VERIFIED. THIS INFORMATION IS SHOWN TO HELP IDENTIFY THE "SCOPE OF WORK," BUT ANY PRICING EXERCISE OR BID SHOULD INVOLVE A THOROUGH REVIEW OF FIELD CONDITIONS PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

3. SOME NOTES AND CALLOUTS ARE FROM RECORD DRAWINGS AND REFLECT EXISTING DUCTWORK, PIPING, AND EQUIPMENT FOR CLARITY.

4. PATCH AND SEAL EXISTING DUCTS TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK.

5. CAP ALL EXISTING PIPING TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK.

6. CAP OR COVER DUCT OPENINGS DURING DEMOLITION AND CONSTRUCTION (TYPICAL).

7. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS, RELOCATING AS NECESSARY.

8. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED. REPLACE ALL DAMAGED DIFFUSERS / GRILLES.

9. CONTRACTOR TO PROVIDE FULL AIR AND WATER BALANCE FOR ALL AFFECTED SYSTEMS, PROVIDE BALANCING PRIOR TO CONSTRUCTION AND FOR FINAL TAB REPORT AT END OF CONSTRUCTION, RE: SCHEDULE.

10. REBALANCE ALL AFFECTED (E) EXHAUST FAN SYSTEMS, WHERE DEMO/REWORK IS SHOWN ON THE DRAWINGS, REFER TO PLANS FOR LOCATIONS.

11. RECONNECT (E) PIPING TO REPLACED EQUIPMENT.

12. EXTEND (E) PIPING TO RELOCATED EQUIPMENT.

13. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

14. SIZING AND ROUTING OF THE REFRIGERANT PIPING FOR THE MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.

KEYNOTES

ME Engineers
2480 Pershing Road, Suite 100
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Phone: 816.474.1056
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PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

Vasquez Commercial Contracting, LLC
3303 Gillham Road
Kansas City, Missouri 64109
(816) 569-6869

REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER 2004034537
REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

LEVEL 01 FLOOR PLAN - MECHANICAL DEMO

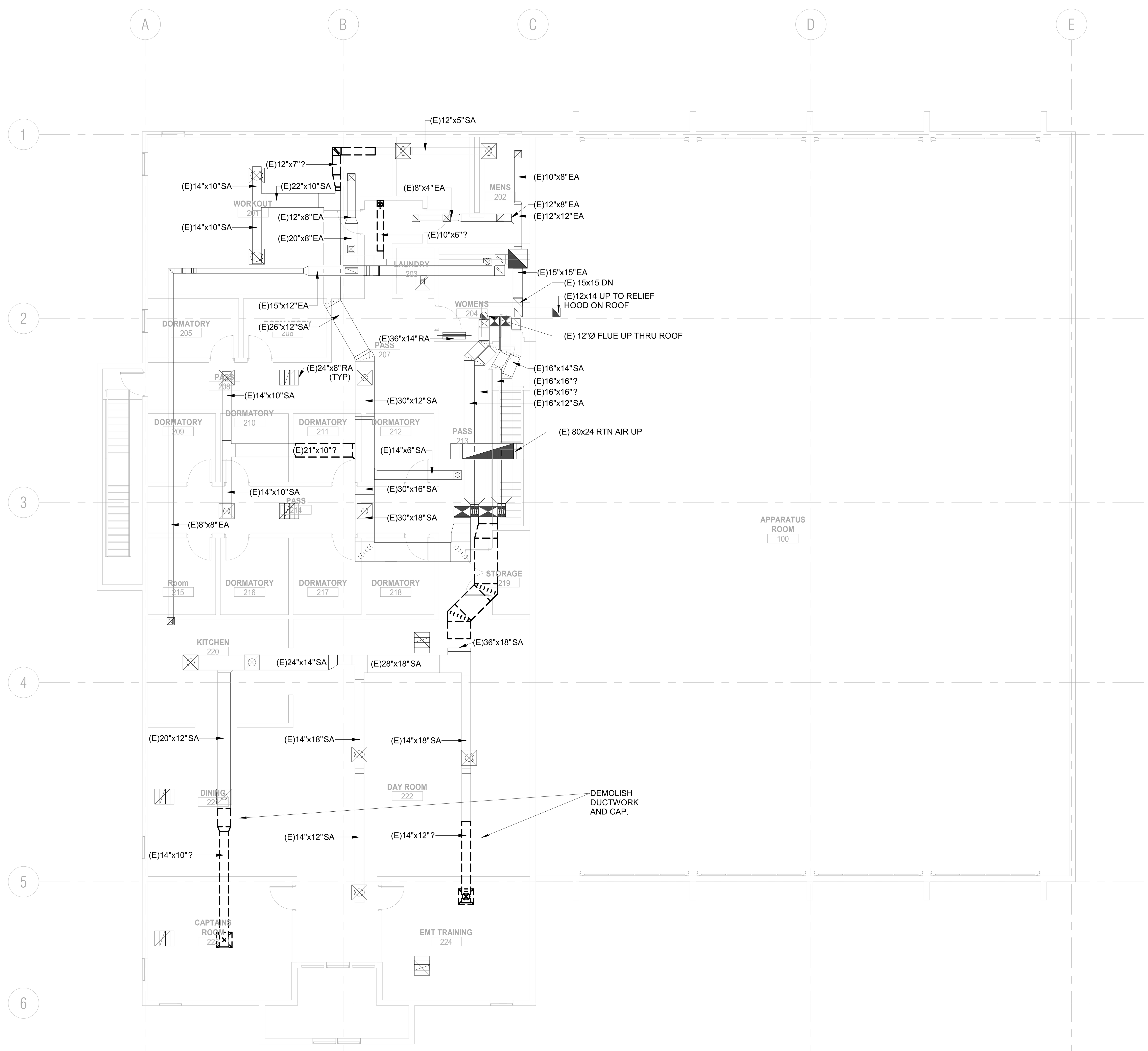
SHEET NO.
MD101

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

11/12/2020 3:32:40 PM C:\Revit Projects\2020\KC2008 Fire Station_FD1_MEP20_kenton.rvgj.rvt



1 LEVEL 02 FLOOR PLAN - MECHANICAL DEMO
1/8" = 1'-0"

GENERAL NOTES:

1. EXISTING DUCTWORK, PIPING, EQUIPMENT, ETC. SHOWN HAS BEEN COMPILED FROM RECORD DRAWINGS AND PREVIOUS DESIGN PLANS. NEITHER THE ACCURACY OF THESE PLANS NOR THE EXTENT OF UNDOCUMENTED CHANGES SINCE HAS BEEN FIELD VERIFIED. THIS INFORMATION IS SHOWN TO HELP IDENTIFY THE "SCOPE OF WORK," BUT ANY PRICING EXERCISE OR BID SHOULD INVOLVE A THOROUGH REVIEW OF FIELD CONDITIONS PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

3. SOME NOTES AND CALLOUTS ARE FROM RECORD DRAWINGS AND REFLECT EXISTING DUCTWORK, PIPING, AND EQUIPMENT FOR CLARITY.

4. PATCH AND SEAL EXISTING DUCTS TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK.

5. CAP ALL EXISTING PIPING TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK.

6. CAP OR COVER DUCT OPENINGS DURING DEMOLITION AND CONSTRUCTION (TYPICAL).

7. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS, RELOCATING AS NECESSARY.

8. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED. REPLACE ALL DAMAGED DIFFUSERS / GRILLES.

9. CONTRACTOR TO PROVIDE FULL AIR AND WATER BALANCE FOR ALL AFFECTED SYSTEMS, PROVIDE BALANCING PRIOR TO CONSTRUCTION AND FOR FINAL TAB REPORT AT END OF CONSTRUCTION, RE: SCHEDULE.

10. REBALANCE ALL AFFECTED (E) EXHAUST FAN SYSTEMS, WHERE DEMO/REWORK IS SHOWN ON THE DRAWINGS, REFER TO PLANS FOR LOCATIONS.

11. RECONNECT (E) PIPING TO REPLACED EQUIPMENT.

12. EXTEND (E) PIPING TO RELOCATED EQUIPMENT.

13. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

14. SIZING AND ROUTING OF THE REFRIGERANT PIPING FOR THE MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.

KEYNOTES

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CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

LEE'S SUMMIT FIRE DEPT MISSOURI

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI JEFFREY L. EWENS NUMBER REGISTERED PROFESSIONAL ENGINEER
2020.11.12

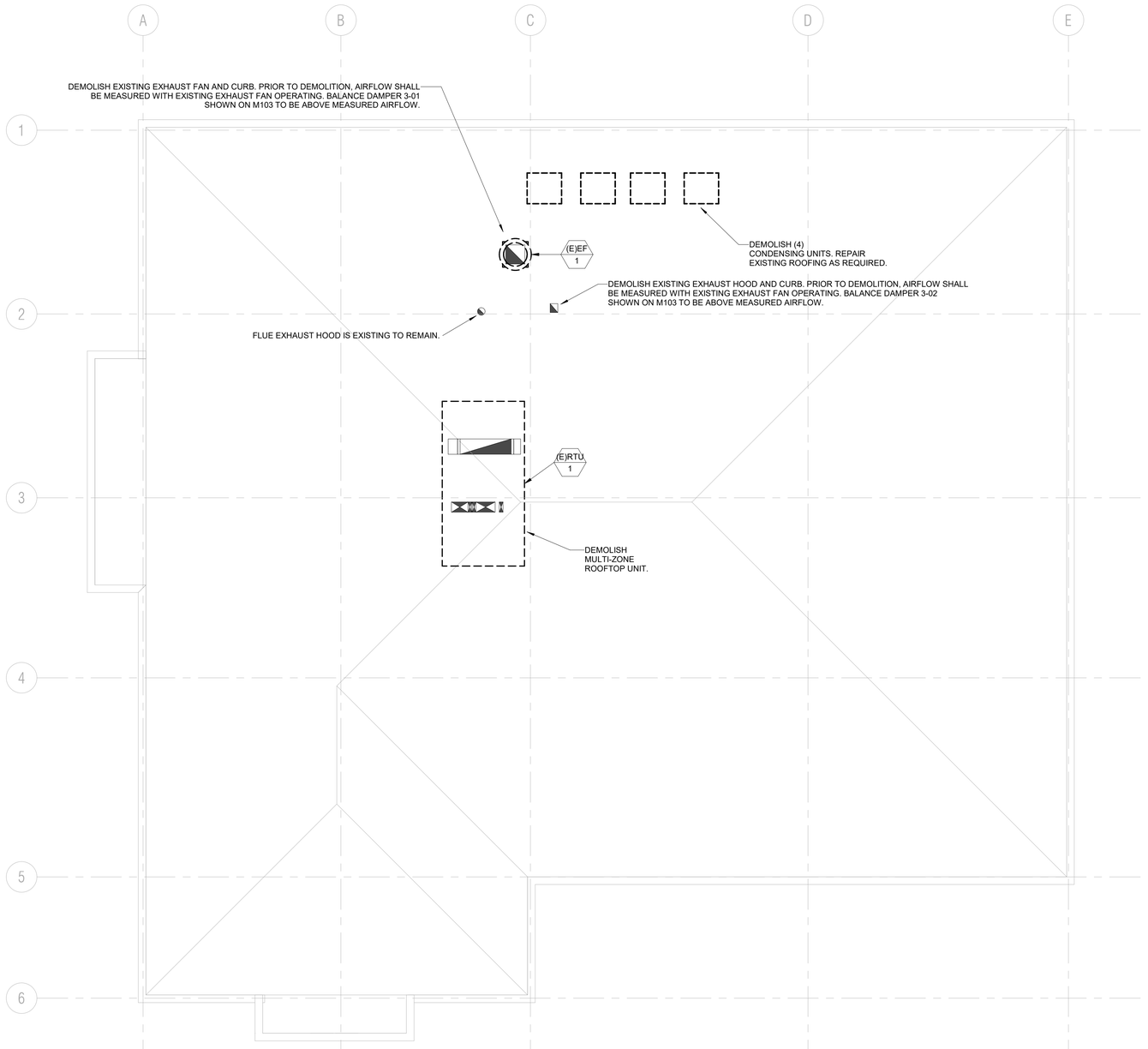
FIRE HEADQUARTERS STATION NO. 1

ISSUE DATE:

LEVEL 02 FLOOR PLAN- MECHANICAL DEMO

SHEET NO.
MD102

PROJECT NO.: KC2008.01



NORTH

1 LEVEL 03 ROOF PLAN - MECHANICAL DEMO
1/8" = 1'-0"

0 4' 8' 16'

GENERAL NOTES:

1. EXISTING DUCTWORK, PIPING, EQUIPMENT, ETC. SHOWN HAS BEEN COMPILED FROM RECORD DRAWINGS AND PREVIOUS DESIGN PLANS. NEITHER THE ACCURACY OF THESE PLANS NOR THE EXTENT OF UNDOCUMENTED CHANGES SINCE HAS BEEN FIELD VERIFIED. THIS INFORMATION IS SHOWN TO HELP IDENTIFY THE "SCOPE OF WORK," BUT ANY PRICING EXERCISE OR BID SHOULD INVOLVE A THOROUGH REVIEW OF FIELD CONDITIONS PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

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6. CAP OR COVER DUCT OPENINGS DURING DEMOLITION AND CONSTRUCTION (TYPICAL).

7. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS, RELOCATING AS NECESSARY.

8. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED. REPLACE ALL DAMAGED DIFFUSERS / GRILLES.

9. CONTRACTOR TO PROVIDE FULL AIR AND WATER BALANCE FOR ALL AFFECTED SYSTEMS, PROVIDE BALANCING PRIOR TO CONSTRUCTION AND FOR FINAL TAB REPORT AT END OF CONSTRUCTION, RE: SCHEDULE.

10. REBALANCE ALL AFFECTED (E) EXHAUST FAN SYSTEMS, WHERE DEMO/REWORK IS SHOWN ON THE DRAWINGS, REFER TO PLANS FOR LOCATIONS.

11. RECONNECT (E) PIPING TO REPLACED EQUIPMENT.

12. EXTEND (E) PIPING TO RELOCATED EQUIPMENT.

13. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

14. SIZING AND ROUTING OF THE REFRIGERANT PIPING FOR THE MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.

KEYNOTES

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PROJECT TEAM

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Q.C.:	ME-Engineers

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER 2004037
REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

LEVEL 03 ROOF PLAN- MECHANICAL DEMO

SHEET NO.

MD103

PROJECT NO.: KC2008.01

FAN COIL SCHEDULE (HEAT PUMP)

GENERAL NOTES:

1.CAPACITIES ARE LISTED FOR AMBIENT AIR TEMPERATURE OF 100 DEG F.
2. PROVIDE DUCT SMOKE DETECTORS IN THE SUPPLY DUCT OF ALL UNITS 2000 CFM OR GREATER. TIE SMOKE DETECTOR IN TO EXISTING FIRE ALARM SYSTEM.
3. ROUTE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN, MOP SINK, OR LAVATORY TAILPIECE. SLOPE HORIZONTAL CONDENSATE PIPING AT 1/8" PER FOOT. PROVIDE CONDENSATE PUMP AS REQUIRED. CONDENSATE PUMP POWER TO BE FED FROM AC UNIT.
4. PROVIDE CONDENSATE OVERFLOW SENSOR INTERLOCKED TO SHUT DOWN UNIT.
5. SIZING AND ROUTING OF THE ASSOCIATED REFRIGERANT PIPING IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.
6. CONTRACTOR & MANUFACTURER SHALL REFER TO PLANS FOR DIFFERENT CONFIGURATIONS, ARRANGEMENTS AND DUCT REQUIREMENTS. EXACT UNIT LOCATIONS TO BE FINALIZED BY MECHANICAL CONTRACTOR AFTER DEMOLITION.
7. UNITS ARE TO PROVIDE WITH MANUFACTER'S PACKAGED CONTROLS AND MONITORED VIA EXISTING BMS.
8. EACH INDOOR UNIT IS TO BE PROVIDED WITH MANUFACTURER'S WALL MOUNTED HEATING/COOLING THERMOSTAT.
9. PROVIDE 24V BIPOLAR IONIZATION FOR EACH UNIT.

REMARK NOTES:

A. POWER FED FROM OUTDOOR CONDENSING UNIT.
B. UNIT IS TO BE CONTROLLED BASED ON RETURN AIR TEMPERATURE VIA THE WALL MOUNTED THERMOSTAT SHOWN ON THE PLANS. .

						FAN		COOLING COIL			ELECTRICAL			ELECTRICAL				
RL	MARK	MANUFACTURER	MODEL NO.	AREA SERVED	MATCHING OUTDOOR UNIT	AIRFLOW (CFM)	ESP (IN.)	TOTAL (MBH)	SENS (MBH)	HEATING CAPACITY (MBH)	VOLT	PH	MCA	DISCON.	FUSE	FEEDER	Mech E-PWR	REMARKS
AC	0-01	Lennox Industries Inc.	MWMA009S4-3P	AV - G01	CU 0-01	370	0.00	9	8	9.0	208	1	1	$TO	-	(2#12,#12G) 3/4"C	Y	A
AC	0-02	Lennox Industries Inc.	V33B009H4-39	G17 - PASS	VCU 1-01	140	0.12	7.7	5.4	8.3	208	1	1	$TO	-	(2#12,#12G) 3/4"C	Y	
AC	0-03	Lennox Industries Inc.	VOWA012H4-3P	G10 - WORK ROOM	VCU 1-01	230	0.04	10.6	7.4	10.2	208	1	1	$TO	-	(2#12,#12G) 3/4"C	Y	
AC	0-04	Lennox Industries Inc.	VOWA009H4-39	G11 - RADIO SYSTEM	VCU 1-01	175	0.04	8	5.6	7.6	208	1	1	$TO	-	(2#12,#12G) 3/4"C	Y	
AC	0-05	Lennox Industries Inc.	V33B024H4-3P	G14 - OPEN OFFICE	VCU 1-01	500	0.12	21.3	15.1	20.5	208	1	2	$TO	-	(2#12,#12G) 3/4"C	Y	
AC	0-06	Lennox Industries Inc.	V33B024H4-3P	G14 - OPEN OFFICE	VCU 1-01	300	0.12	21.3	15.1	20.5	208	1	2	$TO	-	(2#12,#12G) 3/4"C	Y	
AC	0-07	Lennox Industries Inc.	3WMB036S4-1P	COMM EQUIP - G12	CU 0-02	790	0.00	36	33	36.0	208	1	1	$TO	-	(2#12,#12G) 3/4"C	Y	A
AC	1-01	Lennox Industries Inc.	VOWA018H4-3P	101 - MENS BUNK	VCU 1-02	350	0.04	5.9	4.1	4.3	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-02	Lennox Industries Inc.	VOWA009H4-39	107 - STORAGE	VCU 1-02	200	0.04	15.2	10.7	11.4	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-03	Lennox Industries Inc.	VOWA009H4-39	108 - CAPT OFFICE	VCU 1-03	125	0.04	5.9	4.1	4.3	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-04	Lennox Industries Inc.	VOWA012H4-3P	123 - OFFICE	VCU 1-03	100	0.04	7.6	5.2	5.4	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-05	Lennox Industries Inc.	VOWA012H4-3P	124 - OFFICE	VCU 1-03	180	0.04	7.6	5.1	5.4	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-06	Lennox Industries Inc.	VOWA024H4-3P	134 - CONFERENCE	VCU 1-03	410	0.04	20.3	13.8	14.7	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-07	Lennox Industries Inc.	VMDB024H4-39	137 - VESTIBULE	VCU 1-03	350	0.60	20.3	13.7	14.7	208	1	3	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-08	Lennox Industries Inc.	VOWA018H4-3P	136 - CONFERENCE	VCU 1-03	250	0.04	15.2	10.3	11.4	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-09	Lennox Industries Inc.	VOWA012H4-3P	131 - ADMIN ASSIS	VCU 1-03	75	0.04	7.6	5.1	5.4	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-10	Lennox Industries Inc.	VOWA012H4-3P	121 - OFFICE	VCU 1-03	50	0.04	7.6	5.1	5.4	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-11	Lennox Industries Inc.	VOWA012H4-3P	117 - DEPUTY CHEF	VCU 1-03	75	0.04	7.6	5.1	5.4	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-12	Lennox Industries Inc.	VHIB030H4-3P	127 - OPEN OFFICE	VCU 1-02	400	0.80	25.3	17.9	18.4	208	1	7	$TO	-	(2#12,#12G) 3/4"C	N	
AC	1-13	Lennox Industries Inc.	VHIB012H4-3P	103 - STORAGE	VCU 1-02	250	0.80	10.1	7	7.3	208	1	4	$TO	-	(2#12,#12G) 3/4"C	N	
AC	2-01	Lennox Industries Inc.	V33B030H4-3P	201 - WORKOUT	VCU 3-01	690	0.12	25.3	18	18.3	208	1	2	$TO	-	(2#12,#12G) 3/4"C	N	
AC	2-04	Lennox Industries Inc.	VMDB009H4-3P	202 - MENS	VCU 3-01	210	0.32	7.3	5.1	5.8	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	2-05	Lennox Industries Inc.	VMDB036H4-3P	209 - DORMATORY	VCU 3-01	540	0.60	30.4	21.5	22.7	208	1	5	$TO	-	(2#12,#12G) 3/4"C	N	B
AC	2-07	Lennox Industries Inc.	VHIB072H4-3P	222 - DAYROOM	VCU 3-02	3020	1.00	60.9	41.7	43.7	208	1	10	30A/2P	LPS-RK-15SPI	(2#12,#12G) 3/4"C	N	
AC	2-08	Lennox Industries Inc.	V33B018H4-3P	223 - CAPTAINS ROOM	VCU 3-02	300	0.12	15.2	10.3	11.5	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	
AC	2-09	Lennox Industries Inc.	V33B018H4-3P	224 - EMT TRAINING	VCU 3-02	250	0.12	15.2	10.3	11.5	208	1	1	$TO	-	(2#12,#12G) 3/4"C	N	

VRF CONDENSING UNIT SCHEDULE

GENERAL NOTES:

1.COOLING CAPACITIES ARE LISTED AT AMBIENT AIR TEMPERATURE OF 100 DEG F. HEATING CAPACITIES ARE LISTED AT AMBIENT AIR TEMPERTURE OF -2 DEG F.
2. PROVIDE MANUFACTURER REQUIRED CLEARANCES AROUND EQUIPMENT.
3. ALL VRF SYSTEMS ARE TO BE HEAT RECOVERY TYPE WITH SIMULTANEOUS HEATING AND COOLING.
4. SIZING AND ROUTING OF THE ASSOCIATED REFRIGERANT PIPING IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.
5. UNITS ARE TO OPERATE WITH MANUFACTER'S PACKAGED CONTROLS AND MONITORED VIA EXISTING BMS.

REMARK NOTES:

TYPE	MARK	Manufacturer	MODEL NO.	ACTUAL COOLING CAPACITY (MBH)	IEER	COP (47F)	ACTUAL HEATING CAPACITY (MBH)	VOLT	PH	MCA	DISCONNECT	FUSE	FEEDER	E-PWR	REMARKS
VCU	1-01	Lennox Industries Inc.	VRB072H4M-3Y	69	22.8	3.84	67	208	3	39	60A/3P	LPS-RK-45SPI	(3#8,#10G) 3/4"C	Y	
VCU	1-02	Lennox Industries Inc.	VRB168H4M-3Y	156	22	3.5	114	208	3	70	100A/3P	LPS-RK-80SPI	(3#4,#8G) 1-1/4"C	N	
VCU	3-01	Lennox Industries Inc.	VRB168H4M-3Y	158	22	3.5	114	208	3	70	100A/3P	LPS-RK-80SPI	(3#4,#8G) 1-1/4"C	N	

CONDENSING UNIT SCHEDULE

GENERAL NOTES:

1. AMBIENT AIR TEMPERATURE = 100 DEG. F.
2. PROVIDE SYSTEM WITH R410A OR R407C REFRIGERANT.
3. PROVIDE MANUFACTURER'S REQUIRED MINIMUM CLEARANCE AROUND UNIT.
4. SIZING AND ROUTING OF THE ASSOCIATED REFRIGERANT PIPING IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.
5. UNITS ARE TO OPERATE WITH MANUFACTER'S PACKAGED CONTROLS AND MONITORED VIA EXISTING BMS.

REMARK NOTES:

TYPE	MARK	MANUFACTURER	MODEL NO.	MATCHING INDOOR UNIT	COOLING CAPACITY (MBH)	HEATING CAPACTIY (MBH)	ELECTRICAL						E-PWR	REMARKS
							VOLT	PH	MCA	DISC	FUSE	FEEDER		
CU	1-01	Lennox Industries Inc.	MPB009S4S-1P	AC 0-01	9	8.0	208	1	10	30A/2P	LPS-RK-15SPI	(2#12,#12G) 3/4"C	Y	
CU	1-02	Lennox Industries Inc.	3PB036S4S-1P	AC 0-07	36	30.0	208	1	25	60A/2P	LPS-RK-35SPI	(2#8,#10G) 3/4"C	Y	
CU	1-03	Lennox Industries Inc.	ELS090S4ST1Y	F 0-01	90	0.0	208	3	37	60A/3P	LPS-RK-50SPI	(3#8,#10G) 3/4"C	Y	

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CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

LEE'S SUMMIT FIRE DEPT MISSOURI

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

Vasquez Commercial Contracting, LLC
3303 Gillham Road
Kansas City, Missouri 64109
(816) 569-6869

REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI — JEFFREY L. EWENS — NUMBER 2006037 — REGISTERED PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

MEP SCHEDULES

SHEET NO.
MEP001

PROJECT NO.: KC2008.01

FIRE HEADQUARTERS STATION NO. 1

FURNACE WITH AC SCHEDULE

GENERAL NOTES:

1. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER NEMA STANDARD MG1-2009, TABLES 12-12 AND 12-13.
2.CAPACITIES ARE LISTED FOR AMBIENT AIR TEMPERATURE OF 100 DEG F.
3. PROVIDE DUCT SMOKE DETECTORS IN THE SUPPLY DUCT OF ALL UNITS 2000 CFM OR GREATER. TIE SMOKE DETECTOR IN TO EXISTING FIRE ALARM SYSTEM.
4. ROUTE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN, MOP SINK, OR LAVATORY TAILPIECE. SLOPE HORIZONTAL CONDENSATE PIPING AT 1/8" PER FOOT. PROVIDE CONDENSATE PUMP AS REQUIRED. CONDENSATE PUMP POWER TO BE FED FROM AC UNIT.
5. PROVIDE CONDENSATE OVERFLOW SENSOR INTERLOCKED TO SHUT DOWN UNIT.
6.FINAL SIZING AND ROUTING OF THE ASSOCIATED REFRIGERANT PIPING IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.
7. PROVIDE SUCTION ACCUMULATORS AS REQUIRED FOR PROPER OPERATION.
8. CONTRACTOR & MANUFACTURER SHALL REFER TO PLANS FOR DIFFERENT CONFIGURATIONS, ARRANGEMENTS AND DUCT REQUIREMENTS. EXACT UNIT LOCATION TO BE FINALIZED BY MECHANICAL CONTRACTOR AFTER DEMOLITION.
9. PROVIDE WITH 1" THROW AWAY FILTER.
10. PROVIDE 24V BIPOLAR IONIZATION IN SUPPLY DUCT.

REMARK NOTES:

A. FURNACE IS TWINNED TOGETHER WITH TWO OF THE MODELS LISTED TO ACHEIVE THE LISTED CAPACITIES.

						FAN		COOLING COIL		HEATING CAPACITY OUTPUT (MBH)	ELECTRICAL							
TYPE	MARK	MANUFACTURER	MODEL NO.	AREA SERVED	MATCHING OUTDOOR UNIT	AIRFLO W (CFM)	ESP (IN.)	TOTAL (MBH)	SENS (MBH)		VOLT	PHASE	FLA	DISCON.	FUSE	FEEDER	E-PWR	REMARKS
F	0-01	Lennox Industries Inc.	2X ML196UH090XE48C	G03 - MEETING ROOM	CU 1-01	2000	0.50	88	85.6	85.0	120 120	1 1	8.4 8.4	30A/1P 30A/1P	LPS-RK-15SPI LPS-RK-15SPI	(2#12,#12G) 3/4"C (2#12,#12G) 3/4"C	Y	A

ENERGY RECOVERY VENTILATOR SCHEDULE

GENERAL NOTES:

1. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER NEMA STANDARD MG1-2003, TABLES 12-12 AND 12-13
2. PROVIDE FACTORY MOUNTED AND COMMISSIONED STARTER WIRED TO MOTORS. PROVIDE WITH AUXILIARY CONTACTS AND HOA SWITCH ON ALL THREE PHASE MOTORS.
3. INSTALL UNITS WITH ADEQUATE CLEARANCE FOR COIL PULL, FILTER REPLACEMENT, AND TO FULLY OPEN ACCESS DOORS.
4. PROVIDE CONDENSATE OVERFLOW SENSOR INTERLOCKED TO SHUTDOWN UNIT UPON ALARM. MONITOR BY DDC.
5. ALL FANS TO BE VARIABLE SPEED ECM TYPE.
6. PROVIDE POWER CIRCUIT FOR MARINE LIGHTS AND UNIT MOUNTED RECEPTACLES, AS NEEDED.
7. LISTED COOLING CAPACITY BASED ON 100F AMBIENT TEMPERTURE.
8. PROVIDE PREFABRICATED 14" ROOF CURB.
9. PROVIDE HOT GAS REHEAT.
10. PROVIDE MODULATING GAS HEATING CONTROL.

CONTROL:

1. UNIT IS TO BE PROVIDED WITH FACTORY CONTROLS AND MONITORED VIA EXISTING BMS. UNIT IS TO RUN CONTINUOUSLY WITH A DISCHARGE AIR TEMPERATURE OF 72 DEGREES. WHEN DX COOLING COIL IS REQUIRED, THE COOLING COIL LAT IS TO BE 53 DEGREES WITH HOT GAS REHEAT ACTIVATED FOR A LEAVING UNIT TEMPERATURE OF 72 DEGREES. COOLING MODE SHALL BE ENABLED WHEN OUTDOOR AIR TEMPERATURE EXCEEDS 72 DEGREES. HEATING MODE SHALL BE ENABLED WHEN THE OUTDOOR AIR TEMPERATURE FALLS BELOW 65 DEGREES. UNIT SHALL OPERATE CONTINUOUSLY. PROVIDE TEMPERTURE SENSORS IN SUPPLY DUCT SYSTEM AND AT THE OUTDOOR AIR INTAKE.

						SUPPLY FAN						EXHAUST FAN			HEAT RECOVERY (COOLING)							COOLING CAPACITY (DX)					
															OA (F)		RA (F)		LAT (F)			EAT (F)					
TYPE	MARK	AREA SERVED	LOCATION	MANUFACTURER	MODEL NO.	AIRFLOW (CFM)	MIN. OA (CFM)	TYPE	FAN DISCH. CONFIG.	TSP "WC (ALT)	ESP "WC (ALT)	AIRFLOW (CFM)	TYPE	ESP "WC (ALT)	DB	WB	DB	WB	DB	WB	HX EFF. (%)	DB	WB	COIL LAT (F)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	HOT GAS REHEAT LAT (F)
DOAS	3-01	VENTILATION / EXHAUST	ROOF	DAIKIN	DPS012A	2800	2800	SWSI AF	DOWN	2.65	1.30	2200	SWSI AF	0.50	98	76	75	62	85	51	54	85	69	53	145	101	72

				HEATING CAPACITY (NATURAL GAS)			MERV FILTER	ELECTRICAL							DIMENSIONS				
HEAT RECOVERY (HEATING)																			
OA (F)	RA (F)	LAT (F)	HX EFF. (%)	EAT (F)	LAT (F)	CAP OUTPUT (MBH)		VOLT S	PH	MCA	FUSE	DISC	BRANCH CIRCUIT	E-POWER (Y/N)	HEIGHT	LENGTH	WIDTH	UNIT APPROX. WEIGHT	REMARKS
DB	DB	DB					PRE												
0	70	40	60	40	90	160	8.00	208	3	56	LPS-RK-70SPI	100A/3P	(3#4,#8G) 1-1/4"C	N	4' - 9"	9' - 3"	8' - 1"	2800	

VRF BRANCH CONTROLLER SCHEDULE

GENERAL NOTES:

1. FINAL SIZING AND ROUTING OF THE ASSOCIATED REFRIGERANT PIPING IS THE RESPONSIBILITY OF THE MANUFACTURER. SUBMIT REFRIGERANT PIPING PLANS TO DESGIN TEAM FOR REVIEW.

REMARK NOTES:

							ELECTRICAL							
TYPE	MARK	MANUFACTURER	MODEL NO.	TYPE	NUMBER OF PORTS	VOLT	PH	MCA	DISC	FUSE	FEEDER	E-PWR	REMARKS
BC	0-01	Lennox Industries Inc.	V8MSBB04-3P1	MAIN	4	230	1	0.63	$TO	-	(2#12,#12G) 3/4"C	Y	
BC	1-01	Lennox Industries Inc.	V8MSBB04-3P1	MAIN	4	230	1	0.63	$TO	-	(2#12,#12G) 3/4"C	N	
BC	1-02	Lennox Industries Inc.	V8MSBB08-3P2	MAIN	8	230	1	0.75	$TO	-	(2#12,#12G) 3/4"C	N	
BC	2-01	Lennox Industries Inc.	V8MSBB04-3P1	MAIN	4	230	1	0.63	$TO	-	(2#12,#12G) 3/4"C	N	
BC	2-02	Lennox Industries Inc.	V8MSBB04-3P2	MAIN	4	230	1	0.38	$TO	-	(2#12,#12G) 3/4"C	N	

GRILLE REGISTER DIFFUSER SCHEDULE

GENERAL NOTES:

1. EXISTING GRILLES / DIFFUSERS CAN BE REUSED WHERE APPLICABLE WHEN IN GOOD AESTHETIC AND WORKING CONDITION. THE SCHEDULED GRILLES AND DIFFUSERS BELOW ARE TO BE UTILIZED WHERE EXISTING GRILLES AND DIFFUSERS ARE NOT IN GOOD CONDITION AND WHERE NEW GRILLES AND DIFFUSERS NEED TO BE ADDED AS SHOWN ON THE MECHANICAL PLANS.
2. COLOR OF NEW GRILLES AND DIFFUSERS TO MATCH EXISTING GRILLES AND DIFFUSERS.

REMARK NOTES:

MARK	MANUFACTURER	MODEL NO.	SERVICE	TYPE	ACCESSORIES	FACE SIZE	REMARKS
A	TITUS	OMNI	SUPPLY	PLAQUE		24x24	
B	TITUS	272 RS	SUPPLY	SIDEWALL		SEE PLANS	
C	TITUS	272 RS	RETURN	SIDEWALL		SEE PLANS	
H	TITUS	OMNI	SUPPLY	LOUVERED		12X12	

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CITY OF LEES SUMMIT
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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
JEFFREY L. EWENS
NUMBER 2010004537
PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

FIRE HEADQUARTERS STATION NO. 1

MEP SCHEDULES

SHEET NO.
MEP002

PROJECT NO.: KC2008.01

NOTES

1. ALL EXPOSED RACEWAYS ARE TO BE INSTALLED PARALLEL OR PERPENDICULAR TO WALLS OR STRUCTURAL MEMBERS SUCH THAT THEY FOLLOW STRUCTURAL SURFACE CONTOURS AND SHALL BE INSTALLED SUCH THAT THEY DO NOT OBSTRUCT PASSAGEWAYS OR ACCESS TO EQUIPMENT. MULTIPLE RACEWAYS SHOULD BE INSTALLED GROUPED TOGETHER. THE LOCATION OF PUBLICLY VISIBLE RACEWAYS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION. (EXTRA TIME SHOULD BE ALLOWED FOR THIS REVIEW AND APPROVAL.)
2. THE DISCONNECTING MEANS FOR ALL MECHANICAL EQUIPMENT SHALL BE ACCESSIBLE AND HAVE THE CLEARANCE IN FRONT AS REQUIRED BY NEC AMENDMENTS.
3. ALL CEILING ATTACHED OBJECTS AND FLOOR ATTACHED EQUIPMENT INCLUDING BUT NOT LIMITED TO PENDANT LIGHTING FIXTURES, GENERAL LIGHTING, MULTIPLE RACEWAYS, GENERATOR, TRANSFORMER ELECTRICAL SWITCHGEAR, AND SWITCHBOARDS SHALL BE INSTALLED IN ACCORDANCE WITH SUPPORTING OBJECTS FOR SEISMIC ZONE AS REQUIRED BY STATE AND LOCAL CODES.
4. ALL SWITCHGEAR, SWITCHBOARDS AND TRANSFORMERS SHALL HAVE A 4 INCH HOUSE KEEPING PAD. UNDER NO CONDITION SHALL THE HIGHEST SWITCH OR BREAKER EXCEED 6'-6" AFF.
5. DATA GIVEN ON THE DRAWINGS IS AS EXACT AS COULD BE SECURED. ABSOLUTE ACCURACY IS NOT GUARANTEED AND THE CONTRACTOR SHALL OBTAIN AND VERIFY EXACT LOCATIONS, MEASUREMENTS, LEVELS, SPACE REQUIREMENTS, POTENTIAL CONFLICTS WITH OTHER TRADES, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO ACTUAL CONDITIONS AT THE BUILDINGS. THE DRAWINGS ARE DIAGRAMMATICAL IN NATURE AND SHALL NOT BE SCALED. HOWEVER THIS DOES NOT RELIEVE ANY SUB-CONTRACTOR FROM COORDINATING HIS WORK WITH ALL OTHER TRADES AND FROM ADJUSTING HIS WORK AS REQUIRED BY THE ACTUAL CONDITIONS OF THE PROJECT. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING COSTS TO BECOME THOROUGHLY FAMILIAR WITH THE ACTUAL CONDITIONS OF THE PROJECT.
6. COORDINATE AND ADJUST ALL WORK BETWEEN TRADES AND EXISTING CONDITIONS IN ORDER TO ACCOMPLISH A NEAT, INTEGRATED AND EFFICIENT INSTALLATION WHICH INCLUDE BUT ARE NOT LIMITED TO:

   a. EXAMINE THE CONTRACT DOCUMENTS OF ALL TRADES (IE. THE ARCHITECTURAL REFLECTED CEILING PLAN, MECHANICAL HVAC DRAWINGS, ELECTRICAL LIGHTING PLAN, FIRE PROTECTION PLAN, ETC.).

   b. COORDINATE NECESSARY EQUIPMENT, FIXTURES, ETC. SO THAT THE FINAL INSTALLATION IS COMPATIBLE WITH THE MATERIALS AND EQUIPMENT OF THE OTHER TRADES.

   c. THIS CONTRACTOR SHALL ASSIST THE DIVISION 23 CONTRACTOR IN PREPARING SHOP DRAWINGS FOR COORDINATING INSTALLATION OF ALL WORK (IE. LOCATING ALL LIGHTING FIXTURES IN CEILING WITH CEILING CLEARANCES, RACEWAYS, PIPING, EQUIPMENT FOR CLEARANCE THROUGHOUT).

   d. THE ELECTRICAL DRAWINGS INDICATE THE ELECTRICAL REQUIREMENTS FOR A SIGNIFICANT PORTION OF THE MECHANICAL AND PLUMBING SYSTEMS. ADDITIONAL MECHANICAL AND PLUMBING EQUIPMENT IS INDICATED ON THE DIVISION 23 DRAWINGS. REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION. PROVIDE COMPLETE WIRING AND FUSIBLE DISCONNECTING MEANS FOR ALL MECHANICAL AND PLUMBING EQUIPMENT.
7. DEFINITIONS:

   a. "FURNISH" MEANS TO "SUPPLY" AND USUALLY REFERS TO AN ITEM OF EQUIPMENT.

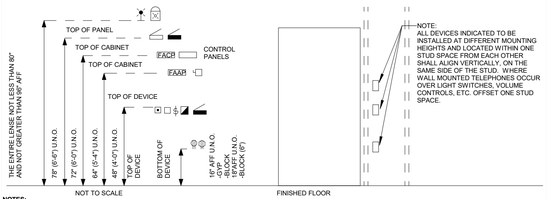
   b. "INSTALL" MEANS TO "SET IN PLACE, CONNECT AND PLACE IN FULL OPERATIONAL ORDER".

   c. "PROVIDE" MEANS TO "FURNISH AND INSTALL".

   d. "EQUIVALENT" MEANS "MEETS THE SPECIFICATIONS OF THE REFERENCE PRODUCT OR ITEM IN ALL SIGNIFICANT ASPECTS." SIGNIFICANT ASPECTS SHALL BE DETERMINED BY THE ENGINEER.

   e. "RE:_____DIVISION", AND SIMILAR EXPRESSIONS MEANS WORK TO BE PERFORMED UNDER THE CONTRACT DOCUMENTS, BUT NOT NECESSARILY UNDER THE DIVISION OR SECTION OF THE WORK ON WHICH THE NOTE APPEARS. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO COORDINATE THE WORK OF THE CONTRACT BETWEEN HIS/HER SUPPLIERS, SUBCONTRACTORS, AND EMPLOYEES. IF CLARIFICATION IS REQUIRED, CONSULT ARCHITECT.
8. "FIRESTOPPING" REQUIREMENT. ALL PENETRATIONS THROUGH RATED WALLS AND FLOORS SHALL BE SEALED WITH MATERIAL CAPABLE OF PREVENTING THE PASSAGE OF FLAMES AND HOT GASSES WHEN SUBJECTED TO THE REQUIREMENTS OF THE TEST STANDARD SPECIFIC FOR FIRE STOPS ASTM-E-814. ALL PENETRATIONS SHALL MEET F AND T RATINGS AS REQUIRED BY THE BUILDING CODE.
9. WHERE DISCONNECTS ARE INDICATED ON DRAWINGS CONTRACTOR SHALL PROVIDE FINAL CONNECTION FROM DISCONNECT TO EQUIPMENT BEING SERVED.
10. CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTS AS REQUIRED FOR A COMPLETE OPERABLE ELECTRICAL INSTALLATION INCLUDING MISCELLANEOUS STEEL, UNI-STRUT, ALL-THREAD, AIRCRAFT CABLE, ETC.
11. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR ALL SINGLE PHASE CIRCUITS. A SHARED NEUTRAL CONDUCTOR IS NOT ACCEPTABLE ON SINGLE PHASE CIRCUITS.
12. EQUIPMENT INTERRUPTING RATINGS INDICATED ON THE DRAWINGS ARE BASED ON PRELIMINARY INFORMATION AND ARE SHOWN FOR BIDDING PURPOSES ONLY. VERIFY EQUIPMENT INTERRUPTING CAPACITY REQUIREMENTS PRIOR TO ORDERING ANY RELATED ELECTRICAL DISTRIBUTION EQUIPMENT.
13. PROVIDE NEW TYPE WRITTEN DIRECTORIES FOR ALL PANELBOARDS INSTALLED OR MODIFIED UNDER THIS CONTRACT.
14. ALL CIRCUIT BREAKER LUGS SHALL BE RATED FOR A MINIMUM OF 75 DEGREES CELSIUS.
15. ALL MATERIALS IN CEILING PLENUMS NOT ENCLOSED IN METALLIC CONDUIT SHALL HAVE CLASS, FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS AS REQUIRED FOR USE IN OPEN PLENUMS.
16. VOLTAGE DROP: THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT VOLTAGE DROP FOR FEEDERS TO DISTRIBUTION EQUIPMENT DOES NOT EXCEED 2% AND VOLTAGE DROP IN BRANCH CIRCUITING DOES NOT EXCEED 3% FOR OVERALL VOLTAGE DROP OF 5% (MAXIMUM). FEEDERS LISTED ON SCHEDULES AND THE ELECTRICAL ONE-LINE DIAGRAM ARE A BASE FEEDER/BRANCH CIRCUIT SIZE AND SHALL BE ADJUSTED AS NEEDED BASED ON ACTUAL LENGTH OF CONDUCTORS.
17. REFER TO GENERAL NOTES FOR NUMBER OF PANEL SECTIONS AND QUANTITY OF CIRCUIT BREAKERS PANEL SCHEDULES SUPERCEDE ALL NOTES.
18. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS.

TYPICAL DEVICE MOUNTING HEIGHTS



NOTE: ALL DEVICES INDICATED TO BE INSTALLED AT DIFFERENT MOUNTING HEIGHTS AND LOCATED WITHIN ONE STUD SPACE FROM EACH OTHER SHALL ALIGN VERTICALLY, ON THE SAME SIDE OF THE STUD. WHERE WALL MOUNTED TELEPHONES OCCUR OVER LIGHT SWITCHES, VOLUME CONTROLS, ETC. OFFSET ONE STUD SPACE.

NOTES:

1. MOUNTING HEIGHTS SHOWN ON ARCHITECTURAL ELEVATIONS SHALL GOVERN OVER THOSE SHOWN ABOVE.
2. CONTRACTOR SHALL ENSURE THAT ALL MOUNTING HEIGHTS COMPLY WITH CURRENT ADA AND A117.1 REQUIREMENTS.
3. WHERE EVER DEVICES ARE INDICATED TO BE ABOVE DOORS, DEVICE SHALL BE CENTERED BETWEEN TOP OF DOOR TRIM AND CEILING LINE.
4. ALL ABOVE COUNTER (DESIGNATED BY "AC") SHALL BE MOUNTED 8" ABOVE COUNTER OR MAXIMUM HEIGHT OF 44" TO TOP OF DEVICE. VERIFY HEIGHTS WITH ARCHITECT.
5. FOR CEILINGS BELOW 7'-4", FIRE ALARM STROBE OR HORN/STROBES SHALL BE WALL MOUNTED 6" BELOW FINISHED CEILING.
6. RESIDENTIAL LOAD CENTER TO BE INSTALLED WITH BREAKERS BETWEEN 15" AND 48" ABOVE FINISHED FLOOR.
7. SWITCH TO BE MOUNTED ON LATCH SIDE OF THE DOOR WITHIN 12" OF THE DOOR.
8. DEVICES AT SAME HEIGHT LOCATED NEXT TO EACH OTHER TO BE ALIGNED VERTICALLY TO THE BOTTOM OF THE DEVICE.

CODES AND STANDARDS

DESIGNED UNDER THE FOLLOWING CODES AND STANDARDS:
2017 NATIONAL ELECTRICAL CODE
2018 INTERNATIONAL BUILDING CODE
2018 LEE'S SUMMIT AMENDMENTS TO THE 2018 INTERNATIONAL BUILDING CODES
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL FIRE CODE
2009 ANSI A117.1, ACCESSIBILITY REQUIREMENTS
ANSI/ASME A17.1, SAFETY CODE FOR ELEVATORS
NFPA 72 NATIONAL FIRE ALARM CODE

CITY OF LEE'S SUMMIT REQUIREMENTS

NO ELECTRICAL MATERIALS, APPARATUS, DEVICES, APPLIANCES, FIXTURES OR EQUIPMENT SHALL BE SOLD OR INSTALLED IN THE CITY UNLESS THEY ARE IN CONFORMANCE WITH PROVISIONS OF THIS CODE, THE LAWS OF THE STATE OF MISSOURI AND ANY APPLICABLE RULES AND REGULATIONS ISSUED UNDER THE AUTHORITY OF THE STATE STATUTES. THE MAKER'S NAME, TRADEMARK, OR OTHER IDENTIFICATION SYMBOL SHALL BE PLACED ON ALL ELECTRICAL MATERIALS, APPARATUS, DEVICES, APPLIANCES, FIXTURES AND EQUIPMENT USED OR INSTALLED UNDER THE PROVISIONS OF THIS CODE. ALL ELECTRICAL MATERIAL AND EQUIPMENT SHALL BE LISTED AND LABELED FOR THE INTENDED USE AND SHALL BE INCLUDED IN A LIST PUBLISHED BY AN APPROVED AGENCY.

ABBREVIATIONS

A

A/AMP	AMPERE
AC	ABOVE COUNTER
AF	AMPERE FUSE/FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AVAILABLE INTERRUPT CURRENT
AL	ALUMINUM
AM	AMMETER
ANN	ANNUNCIATOR
ANT	ANTENNA
ASC	AVAILABLE SHORT-CIRCUIT CURRENT
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE

B

BCST	BROADCAST
BFC	BELOW FINISHED CEILING
BFG	BELOW FINISHED GRADE
BKR	BREAKER
BOH	BACK OF HOUSE
BW	BUS-WAY

C

C	CONDUIT
CAB	CABINET
CAM	CAMERA
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CO	CONDUIT ONLY
COMB	COMBINATION
COMP	COMPUTER
COND	CONDUCTOR
CT	CURRENT TRANSFORMER
CU	COPPER

D

D	DEMOLISH
DAS	DISTRIBUTED ANTENNA SYSTEM
dB	DECIBEL
DEMARC	DEMARCATION
DISC	DISCONNECT
DL	DAMP LABEL
DP	DISTRIBUTION PANEL
DPDT	DOUBLE POLE, DOUBLE THROW
DWG	DRAWING
DVR	DIGITAL VIDEO RECORDER

E

E/EX	EXISTING
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EG	EQUIPMENT GROUND
EHC	ELECTRIC HEATING COIL
ELEC	ELECTRIC OR ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
ENG	ELECTRONIC NEWS GATHERING
EOL	F/A END OF LINE RESISTOR
EQP	EQUIPMENT
ER	EXISTING TO BE REMOVED/RELOCATED
EV	ELECTRIC VEHICLE
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXH	EXHAUST

F

F	FUSE
F/A	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAPS	FIRE ALARM POWER SUPPLY
FATC	FIRE ALARM TERMINAL CABINET
FBO	FURNISHED BY OTHERS
FC	FOOTCANDLES
FDR	FEEDER
FCU	FAN COIL UNIT
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FPB	FAN POWERED BOX
FUT	FUTURE

G

GALV	GALVANIZED
GB	GROUNDING BUS
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND

H

HC	HORIZONTAL CROSS CONNECT
HD	HEAVY DUTY
HH	HAND HOLE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HPF	HIGH POWER FACTOR
HTR	HEATER

I

IC	INTERMEDIATE CROSS CONNECT
ID	INSIDE DIAMETER
IDF	INTERMEDIATE DISTRIBUTION FRAME
IMC	INTERMEDIATE GRADE METALLIC CONDUIT

J

J-BOX	JUNCTION BOX
JBA	AUDIO CONNECTION BOX
JBC	COACHES JUNCTION BOX
JBE	ENG BROADCAST BOX
JBT	NETWORK BROADCAST CONNECTION BOX

K

KCMIL/MCM	THOUSAND OF CIRCULAR MILLS
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR

L

LA	LIGHTNING ARRESTOR
LAN	LOCAL AREA NETWORK
LCP	LIGHTING CONTROL PANEL
LED	LIGHT EMITTING DIODE
LFC	LIQUID TIGHT FLEXIBLE CONDUIT
LT	LOW TEMPERATURE RATED DEVICES OR SIMILAR
LTG	LIGHTING
LV	LOW VOLTAGE

M

MA	MILLIAMPERE
MAX	MAXIMUM
MB	MAIN BREAKERS
MC	MECHANICAL CONTRACTOR OR METAL CLAD
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDF	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MOV	MOTOR OPERATED VALVE
MPOE	MAIN POINT OF ENTRY
MTG	MOUNTING HEIGHT
MTS	MANUAL TRANSFER SWITCH
MS	MOTOR STARTER
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MTG	MOUNTING
MTGB	MAIN TELECOMMUNICATIONS GROUND BUS
MTR	MAIN TELECOM ROOM
MV	MEDIUM VOLTAGE

N

N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON FUSED
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE

O

OC	ON CENTER
OCP	OVERCURRENT PROTECTION
OD	OUTSIDE DIAMETER
OH	OVERHEAD

P

P	POLE
PA	PUBLIC ADDRESS
PB	PUSH BUTTON
PE	PHOTOELECTRIC
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
PWR	POWER

Q

QE	QUADRANT ELECTRICAL (ARENA SPECIFIC)
QT	QUADRANT TELECOM (ARENA SPECIFIC)

R

R	EXISTING TO RELOCATE
REC	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RPM	REVOLUTIONS PER MINUTE

S

SCP	SECURITY CONTROL PANEL
SEC	SECONDARY/SECOND
SECT	SECTION
SHT	SHEET
SEC	SECONDARY CONNECTION CABINET
SMPOE	SECONDARY MAIN POINT OF ENTRY
SP	SERVICE PROVIDER
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
ST	SHUNT TRIP
STD	STANDARD
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHEAR

T

T	TWIST LOCK
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TC	TIME CLOCK
TEL	TELEPHONE
TELCO	TELEPHONE COMPANY
TELCOM	TELECOMMUNICATIONS
TEMP	TEMPERATURE
TGB	TELECOMMUNICATIONS GROUND BUS
TO	THERMAL OVERLOAD
TR	TAMPER RESISTANT
TYP	TYPICAL

U

UC	UNDER COUNTER
UG	UNDERGROUND
UGP	UNDERGROUND PRIMARY
UGS	UNDERGROUND SECONDARY
UH	UNIT HEATER
UL	UNDERWRITER LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS

V

V	VOLT
VA	VOLT-AMPERE
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLTMETER

W

W	WATT
W/	WITH
W/O	WITHOUT
WH	WATT HOUR
WHM	WATT HOUR METER
WLAN	WIRELESS-LOCAL AREA NETWORK
WP	WEATHERPROOF
WPL	WEATHER PROOF LOCKABLE ENCLOSURE.
WT	WATERTIGHT

X

XFMR	TRANSFORMER
XP	EXPLOSION PROOF

SYMBOLS

LIGHTING

	STRIP LIGHT
	WALL MOUNTED STRIP LIGHT
	WALL MOUNTED LINEAR
	RECESSED LINEAR
	RECESSED LIGHTING FIXTURE W/DOWNLIGHTS
	RECESSED 2'X2'
	RECESSED 2'X4'
	SURFACE MOUNTED 2'X4'
	SURFACE MOUNTED 2'X2'
	SURFACE MOUNTED 1'X4'
	RECESSED WALL / STEP LIGHT
	WALL MOUNTED FLOODLIGHT
	WALL MOUNTED SCONCE
○	SURFACE MOUNTED DOWN LIGHT
	SURFACE MOUNTED WALL WASH
	RECESSED DOWN LIGHT
	RECESSED WALL WASH
	RECESSED 1X4 WALL WASH
	LINEAR PENDANT
	LINEAR PENDANT W/DOWNLIGHTS
	PENDANT LIGHT
	MONOPOINT TRACKHEAD
	LINEAR LIGHT
	TRACK WITH TRACKHEADS
	BURIAL FIXTURE
	POLE MOUNTED LIGHT WITH ARM
	POLE MOUNTED LIGHT POST TOP MOUNTING/BOLLARD
	CEILING MOUNTED EXIT SIGN
	EXIT SIGN WITH DIRECTIONAL
	WALL MOUNTED EXIT SIGN ARROWS (CHEVRONS)
	EMERGENCY LIGHTING UNIT
EM	UL924 EMERGENCY AUTOMATIC TRANSFER DEVICE
PS	POWER SUPPLY
	OCCUPANCY SENSOR - CEILING MOUNTED
	DAYLIGHT SENSOR - CEILING MOUNTED
	OCCUPANCY SENSOR - 180°
	OCCUPANCY SENSOR - WALL SWITCH
	DIMMER SWITCH / STATION
DS	DIMMER / OCCUPANCY SENSOR COMBINATION SWITCH
LV	DIMMER SWITCH LOW VOLTAGE OVERRIDE
S	SCENE CONTROL STATION
TP	TOUCH PANEL CONTROL STATION
$	SINGLE POLE SWITCH
$3	3-WAY SWITCH
$4	4-WAY SWITCH
	SHADED SYMBOLS DENOTE EMERGENCY FIXTURES

POWER

	WALL SIMPLEX RECEPTACLE
	WALL DUPLEX RECEPTACLE
U	WALL DUPLEX WITH USB
Ω	WALL DUPLEX WITH CONTROL OF ONE OUTLET
	WALL DUPLEX RECEPTACLE (EMERGENCY)
	WALL FOURPLEX RECEPTACLE
	WALL FOURPLEX RECEPTACLE (EMERGENCY)
X	WALL SPECIAL RECEPTACLE (FOR "X" SEE RECEPTACLE MODIFER TAGS TABLE)
X	WALL SPECIAL RECEPTACLE (EMERGENCY) (FOR "X" SEE RECEPTACLE MODIFER TAGS TABLE)
FP	FLAT PANEL BACK BOX - POWER MOUNTED WITHIN AV BACK BOX
TV	WALL COMBINATION TV / POWER OUTLET
	WALL CLOCK RECEPTACLE
J	WALL JUNCTION BOX
J	WALL FURNITURE FEED
	FLOOR DUPLEX RECEPTACLE
	FLOOR FOURPLEX RECEPTACLE (POWER/DATA/COMBO DEVICE. REFER TO TECHNOLOGY DRAWINGS)
AV	FLOOR FOURPLEX RECEPTACLE WITH AV (POWER/DATA/AV COMBO DEVICE. REFER TO TECH. DRAWINGS)
	CONVENTION CENTER FLOOR BOX.
J	JUNCTION BOX
J	FLOOR FURNITURE FEED
	CEILING RECEPTACLE
	CEILING DUPLEX RECEPTACLE
	CEILING FOURPLEX RECEPTACLE
X	CEILING / FLOOR SPECIAL RECEPTACLE (FOR "X" SEE RECEPTACLE MODIFER TAGS TABLE)
J	CEILING JUNCTION BOX
TV	CEILING TV OUTLET
	POWER POLE
$	SINGLE TOGGLE SWITCH
	PLUGMOLD
EPO	EMERGENCY POWER OFF
	SINGLE PUSH BUTTON
	DUPLEX PUSH BUTTON

DEVICE GENERAL NOTES:

1. REFER TO SPECIFICATION SECTION 26 27 26 FOR SPECIFIC FLOOR DEVICE PRODUCT INFORMATION.
2. REFER TO TECHNOLOGY AND/OR AV LEGEND AND FLOOR PLANS TO CONFIRM ALL LOCATIONS THAT HAVE DATA OR DATA/AV REQUIREMENTS COMBINED WITH POWER IN FLOOR BOXES.
3. REFER TO TECHNOLOGY (AND/OR AV) DRAWINGS FOR DEDICATED LOW VOLTAGE CONDUIT AND FLOOR BOX DEVICE MOUNTING PLATE REQUIREMENTS. LOW VOLTAGE CONDUIT REQUIREMENTS ARE NOT DOCUMENTED ON POWER DRAWINGS.
4. REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS OF TVS. MOUNT BEHIND TV DISPLAY OR ON TV MOUNTING BRACKET/SUPPORT"

EQUIPMENT

	MOTOR
	MOTOR AND DISCONNECT
	MOTOR AND FUSED DISCONNECT
	MOTOR AND CIRCUIT BREAKER DISCONNECT
	VARIABLE FREQUENCY DRIVE/MOTOR CONTROLLER
	NON-FUSED DISCONNECT
	FUSED DISCONNECT
	CIRCUIT BREAKER
	BRANCH CIRCUIT OR POWER PANEL
	LIGHTING CONTROL PANEL
	ELECTRICAL EQUIPMENT FREESTANDING OR WALL MOUNT
M	METER
	CURRENT TRANSFORMER
	GROUND
	DELTA/WYE WITH GROUND
T	POWER TRANSFORMER
	FUSE & SWITCH
	CIRCUIT BREAKER
	DRAWOUT CIRCUIT BREAKER
K	KIRK-KEY INTERLOCK
G	GROUND FAULT INTERRUPTER BREAKER
D	CIRCUIT MONITORING DEVICE
	MECHANICAL EQUIPMENT IDENTIFICATION TAG
X	SHORT CIRCUIT FAULT CALCULATION TAG REFER TO TABLE ON ONE-LINE DIAGRAM
SPD	SURGE PROTECTION DEVICE
$TO	THERMAL OVERLOAD
$TO	MOTOR AND THERMAL OVERLOAD
	COMPANY SWITCH OR CAM-LOK PANEL
	AUTOMATIC TRANSFER SWITCH
	GENERATOR DOCKING STATION
NAME (#)	ELECTRICAL PLANEL (NUMBER OF SECTIONS)
EQ-#	EQUIPMENT IDENTIFICATION TAG REFER TO ELECTRICAL EQUIPMENT SCHEDULE

FIRE ALARM

	SMOKE DETECTOR
	WALL SMOKE DETECTOR
CO	SMOKE/CARBON MONOXIDE DETECTOR
CO	WALL SMOKE/CARBON MONOXIDE DETECTOR
	HEAT DETECTOR
	DUCT DETECTOR
BR	BEAM DETECTOR RECEIVER
BT	BEAM DETECTOR TRANSMITTER
EVAC	VOICE EVAC PANEL
ESR	ELEVATOR STATUS PANEL
	CEILING MOUNTED HORN
	WALL MOUNTED HORN
	CEILING MOUNTED HORN/STROBE
	WALL MOUNTED HORN/STROBE
S	WALL MOUNTED SILENTONE
H	FIRE SERVICE PHONE
J	FIREMAN'S PHONE JACK
	ROTATING BEACON
	MANUAL PULL STATION
DH	MAGNETIC DOOR HOLD OPEN DEVICE
	TAMPER SWITCH
	FLOW SWITCH
RTS	CEILING MOUNTED REMOTE INDICATOR LIGHT
RTS	WALL MOUNTED REMOTE INDICATOR LIGHT
	WALL MOUNTED ADA STROBE
	CEILING MOUNTED STROBE
IM	ADDRESSABLE INPUT MODULE
FR	FIRE ALARM ADDRESSABLE RELAY
	ALARM BELL
	FIRE SMOKE DAMPER
FR	SMOKE CONTROL DAMPER
CO	CARBON MONOXIDE DETECTOR
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
TWC	TWO-WAY COMMUNICATION / AREA OF RESCUE ASSISTANCE CALL BUTTON
TWCP	TWO-WAY COMMUNICATION / AREA OF RESCUE ASSISTANCE (BASE STATION)

RACEWAY LEGEND

A:2,4	BRANCH CIRCUIT HOMERUN TO PANELBOARD, NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS, NUMERICAL INDICATES CIRCUIT NUMBER.
A:2,4 A	BRANCH CIRCUIT HOMERUN CONTROLLED BY LIGHTING CONTROL SYSTEM. FIRST HEXAGON LETTER CORRESPONDS TO FIRST CIRCUIT NUMBER. (ie. CIRCUIT #2 IS ON ZONE A). REFER TO LIGHTING CONTROL MATRIX FOR LIGHTING ZONES.
	MOTOR CONNECTION
	UNDERGROUND FEEDER
	UNDERGROUND BRANCH CIRCUIT HOMERUN
	CONDUIT UP
	CONDUIT DOWN
	CONDUIT RUNS UNDERFLOOR OR BELOW GRADE
OR	CONDUIT RUN CONCEALED IN WALLS OR CEILING, OR EXPOSED WHEN CEILING ARE NOT PRESENT.

RECEPTACLE MODIFIER TAGS

TAG	OUTLET RATING	NEMA/CAT NO	FEEDER (NOTE 1)	WIRING NOTES
A	NOT USED	-	-	-
B	NON-LOCKING, 30A, 125V, 1PH	5-30R	2#10,#10G,3/4"C (60FT)	HOT-NEUT-GND
C	NON-LOCKING, 20A, 250V, 1PH	6-20R	2#12,#12G,3/4"C (100FT)	HOT-HOT-GND
D	NON-LOCKING, 30A, 250V, 1PH	6-30R	2#10,#10G,3/4"C (120FT)	HOT-HOT-GND
E	NON-LOCKING, 50A, 250V, 1PH	6-50R	2#6,#10G,3/4"C (150FT)	HOT-HOT-GND
F	NOT USED	-	-	-
G	NON-LOCKING, 20A, 125/250V, 1PH	14-20R	3#12,#12G,3/4"C (100FT)	HOT-HOT-NEUT-GND
H	NOT USED	-	-	-
I	NOT USED	-	-	-
J	LOCKING, 20A, 125V, 1PH	L5-20R	2#12,#12G,3/4"C (50FT)	HOT-NEUT-GND
K	LOCKING, 30A, 125V, 1PH	L5-30R	2#10,#10G,3/4"C (60FT)	HOT-NEUT-GND
L	LOCKING, 20A, 250V, 1PH	L6-20R	2#12,#12G,3/4"C (100FT)	HOT-HOT-GND
M	LOCKING, 30A, 250V, 1PH	L6-30R	2#10,#10G,3/4"C (120FT)	HOT-HOT-GND
N	NOT USED	-	-	-
O	NOT USED	-	-	-
P	LOCKING, 20A, 125/250V, 1PH	L14-20R	3#12,#12G,3/4"C (100FT)	HOT-HOT-NEUT-GND
Q	LOCKING, 30A, 125/250V, 1PH	L14-30R	3#10,#10G,3/4"C (120FT)	HOT-HOT-NEUT-GND
R	NOT USED	-	-	-
S	LOCKING, 20A, 208Y/120V, 3PH	L21-20R	4#12,#12G,3/4"C (120FT)	HOT-HOT-HOT-NEUT-GND
T	LOCKING, 30A, 208Y/120V, 3PH	L21-30R	4#10,#10G,3/4"C (130FT)	HOT-HOT-HOT-NEUT-GND
V	LOCKING, 50A, 250V, 3PH	HBL CS8369	3#6,#10G,1"C (175FT)	HOT-HOT-HOT-GND
W	PIN & SLEEVE, 60A, 208Y/120V, 3PH	HBL 560R9W	4#4,#10G,1-1/4"C (200FT)	HOT-HOT-HOT-NEUT-GND
X	PIN & SLEEVE, 100A, 208Y/120V, 3PH	HBL 5100R9W	4#1,#8G,1-1/2"C (250FT)	HOT-HOT-HOT-NEUT-GND
Y	NOT USED	-	-	-
Z	NOT USED	-	-	-

NOTE: DISTANCE NOTED IS MAXIMUM RUN LENGTH FOR WIRE SIZE.
INCREASE PER NEC, INCLUDING GROUND, FOR LONGER RUNS OR FOR DERATING FACTORS (AMB TEMP, EXTERIOR, ETC.)

---

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CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
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Q.C.:	ME-Engineers

Prepared for:

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

FIRE HEADQUARTERS STATION NO. 1

ELECTRICAL LEGEND

SHEET NO.
E001

PROJECT NO.: KC2008.01

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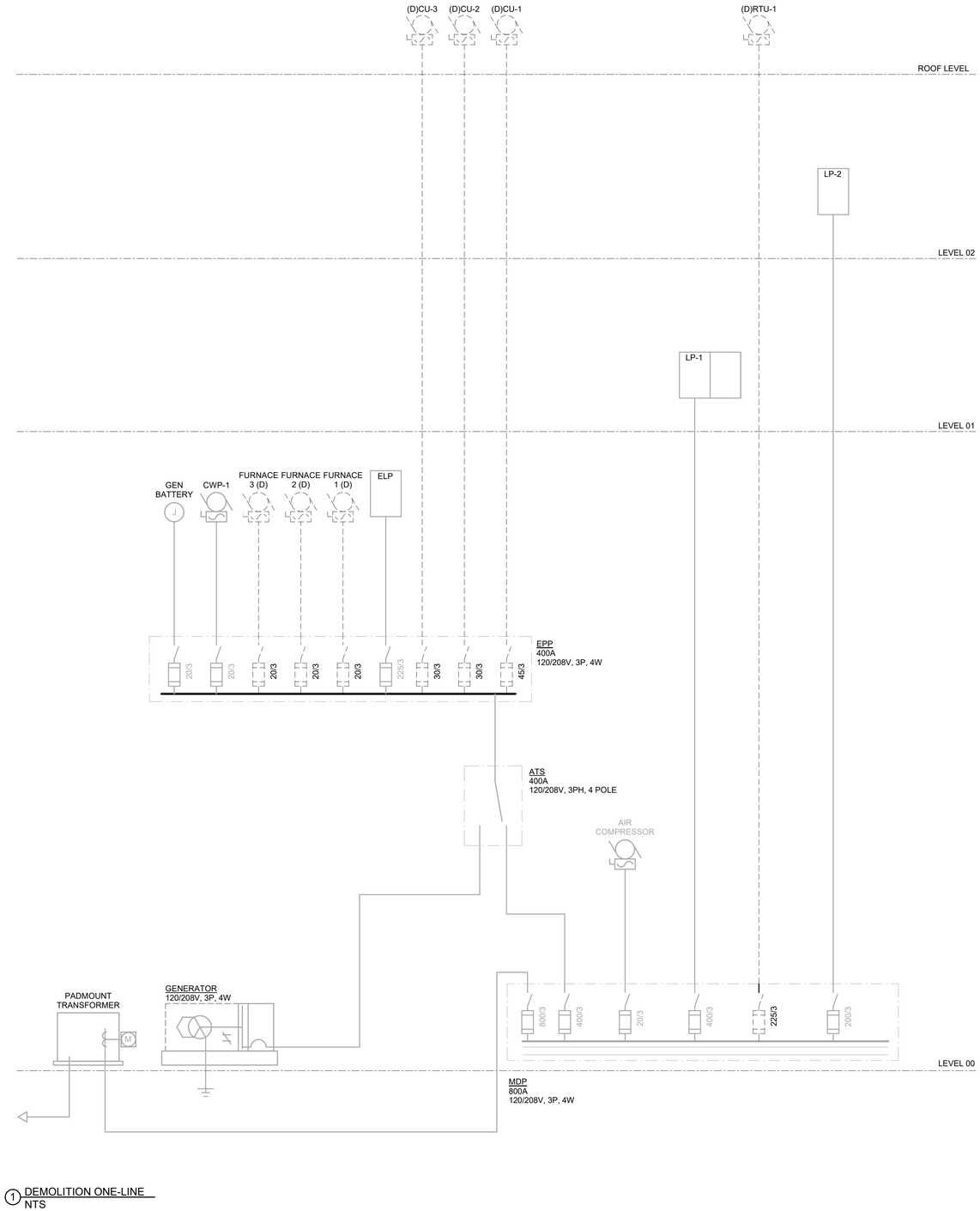

1 DEMOLITION ONE-LINE
NTS

GENERAL NOTES:

1. ALL FEEDERS AND TERMINATIONS SHALL BE COPPER 75 DEGREE RATED.

2. FEEDER LENGTHS ARE INDICATED FOR CALCULATION PURPOSES ONLY. THIS DRAWING IS NOT TO SCALE. FEEDERS LENGTHS MUST BE CONFIRMED WITH THE CONTRACTOR.

3. ALL CONDUIT RUNS SHALL BE RAN PERPENDICULAR AND PARALLEL TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT RUNS SHALL BE COORDINATED WITH ARCHITECT PRIOR TO INSTALLATION.

4. PROVIDE FULL BUSSING FOR ALL SPACES INDICATED ON PANEL BOARDS AND DISTRIBUTION BOARDS.

5. REFER TO FEEDER TABLE FOR FEEDER SIZE CORRESPONDING TO OVERCURRENT PROTECTION DEVICE (BREAKER OR FUSE) SHOWN ON ONE-LINE.

6. ALL NEW EQUIPMENT TO BE FULLY RATED FOR THE AVAILABLE FAULT. ASSUME 75,045 AMPS AVAILABLE AT THE MAIN SERVICE.

7. REFER TO DETAIL 2 ON SHEET E400 FOR PANELBOARD NAMEPLATE DETAILS.

8. PROVIDE SURGE PROTECTION DEVICE FOR ALL NEW EMERGENCY PANELBOARDS AND SWITCHBOARDS PER NEC 700.

9. DASHED DEVICES AND TAGGED WITH (D) ARE EXISTING TO BE DEMOLISHED. SOLID THIN LINE WEIGHT DEVICES ARE EXISTING TO REMAIN. SOLID DEVICES AND TAGGED WITH (N) ARE NEW DEVICES.

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

ELECTRICAL ONE-LINES

SHEET NO.
E002

PROJECT NO.: KC2008.01

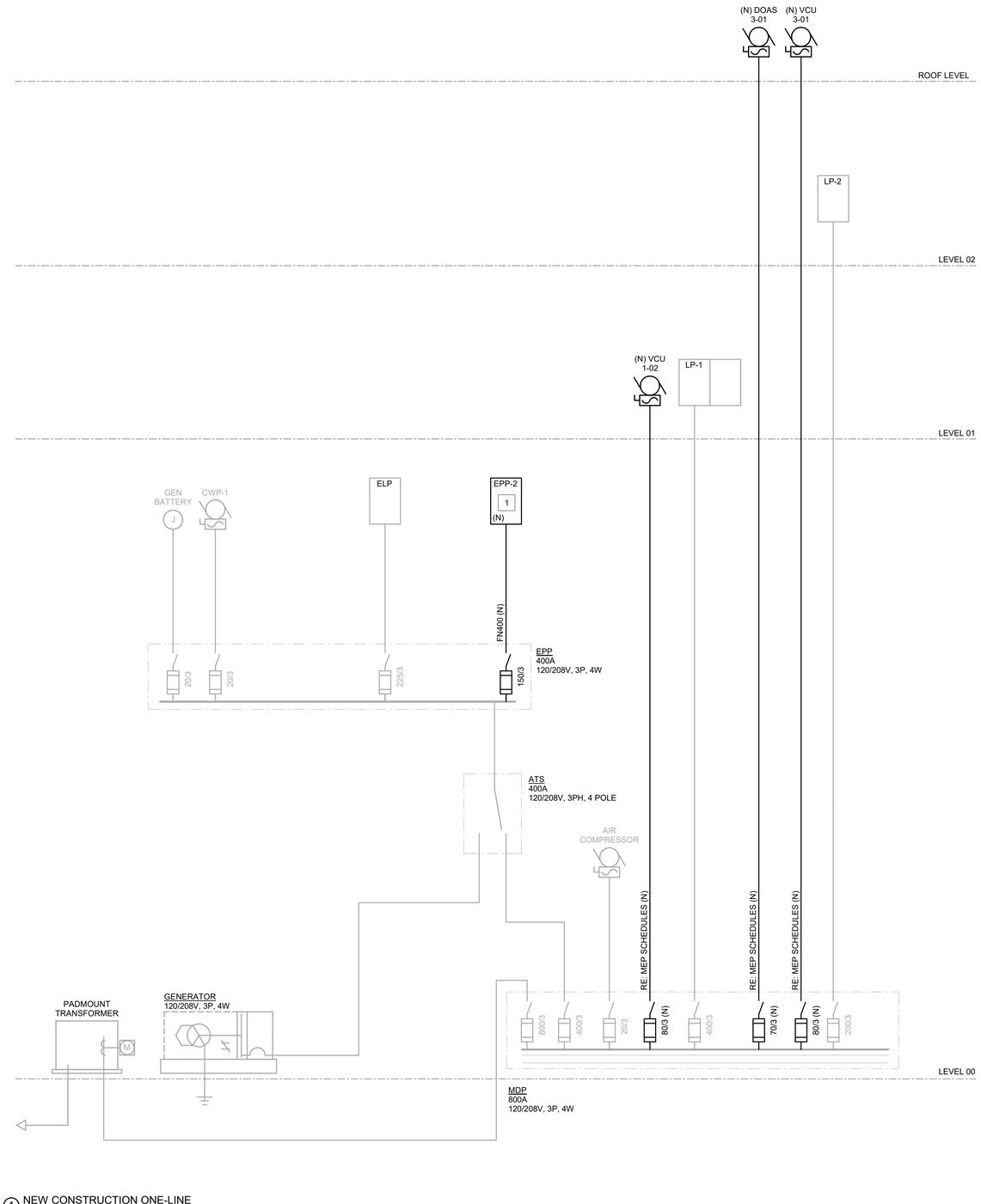
CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

ME FEEDER TABLE

BKR/OC...	TAG	SETS	COPPER FEEDER/PIPE [3W]	ALUMINUM FEEDER/PIPE [3W]	TAG	SETS	COPPER FEEDER/PIPE [4W]	ALUMINUM FEEDER/PIPE [4W]
20	F20	1	(3#12,#12G) 3/4"C	-	FN20	1	(4#12,#12G) 3/4"C	-
30	F30	1	(3#10,#10G) 3/4"C	-	FN30	1	(4#10,#10G) 3/4"C	-
40	F40	1	(3#8,#10G) 3/4"C	-	FN40	1	(4#8,#10G) 3/4"C	-
50	F50	1	(3#8,#10G) 3/4"C	-	FN50	1	(4#8,#10G) 3/4"C	-
50	-	-	-	-	FN50A	1	(4#8,#8G) 1"C	-
50	-	-	-	-	FD50A	1	(5#8,#8G) 1"C	-
60	F60	1	(3#6,#8G) 1"C	-	FN60	1	(4#6,#8G) 1"C	-
70	F70	1	(3#4,#8G) 1-1/4"C	-	FN70	1	(4#4,#8G) 1-1/4"C	-
80	F80	1	(3#4,#8G) 1-1/4"C	-	FN80	1	(4#4,#8G) 1-1/4"C	-
90	F90	1	(3#3,#8G) 1-1/4"C	-	FN90	1	(4#3,#8G) 1-1/4"C	-
100	F100	1	(3#3,#8G) 1-1/4"C	(3#1,#6G) 1-1/2"C	FN100	1	(4#3,#8G) 1-1/2"C	(4#1,#6G) 2"C
100	-	-	-	-	FN100A	1	(4#2,#6G) 1-1/2"C	(4#1/0,#4G) 2"C
100	-	-	-	-	FD100A	1	(5#2,#6G) 1-1/2"C	(5#1/0,#4G) 2"C
110	F110	1	(3#1,#6G) 1-1/2"C	(3#1/0,#6G) 1-1/2"C	-	-	-	-
125	F125	1	(3#1/0,#6G) 1-1/2"C	(3#3/0,#4G) 2"C	FN125	1	(4#1,#6G) 2"C	(4#3/0,#4G) 2"C
150	F150	1	(3#1/0,#6G) 1-1/2"C	(3#3/0,#4G) 2"C	FN150	1	(4#1/0,#6G) 2"C	(4#3/0,#4G) 2"C
175	F175	1	(3#2/0,#6G) 2"C	(3#4/0,#4G) 2"C	FN175	1	(4#2/0,#6G) 2"C	(4#4/0,#4G) 2"C
200	F200	1	(3#3/0,#6G) 2"C	(3#250,#6G) 2-1/2"C	FN200	1	(4#3/0,#6G) 2-1/2"C	(4#250,#6G) 2-1/2"C
225	F225	1	(3#4/0,#4G) 2-1/2"C	(3#300,#4G) 2-1/2"C	FN225	1	(4#4/0,#4G) 2-1/2"C	(4#300,#4G) 2-1/2"C
250	F250	1	(3#250,#4G) 2-1/2"C	(3#350,#4G) 2-1/2"C	FN250	1	(4#250,#4G) 3"C	(4#350,#4G) 3"C
250	-	-	-	-	FN250A	1	(4#250,#2G) 3"C	(4#350,#2G) 3"C
250	-	-	-	-	FD250A	1	(5#250,#2G) 3"C	(5#350,#2G) 3"C
300	F300	1	(3#350,#4G) 3"C	(3#500,#4G) 3"C	FN300	1	(4#350,#4G) 3"C	(4#500,#4G) 3"C
350	F350	1	(3#500,#3G) 3"C	(3#700,#3G) 3-1/2"C	FN350	1	(4#500,#3G) 3-1/2"C	(4#700,#3G) 3-1/2"C
400	F400	2	(3#3/0,#3G) 2"C	(3#250,#2G) 2-1/2"C	FN400	2	(4#3/0,#3G) 2-1/2"C	(4#250,#3G) 2-1/2"C
400	-	-	-	-	FN400A	2	(4#3/0,#1/0G) 2-1/2"C	(4#250,#1/0G) 2-1/2"C
400	F400B	1	(3#600,#3G) 4"C	-	FN400B	1	(4#600,#3G) 4"C	-
400	-	-	-	-	FD400A	2	(5#3/0,#1/0G) 2-1/2"C	(5#250,#1/0G) 2-1/2"C
450	F450	2	(3#4/0,#2G) 2-1/2"C	(3#300,#2G) 2-1/2"C	FN450	2	(4#4/0,#2G) 2-1/2"C	(4#300,#2G) 2-1/2"C
500	F500	2	(3#250,#2G) 2-1/2"C	(3#350,#2G) 2-1/2"C	FN500	2	(4#250,#2G) 3"C	(4#350,#2G) 3"C
500	-	-	-	-	FN500A	2	(4#250,#1/0G) 3"C	(4#350,#1/0G) 3"C
500	-	-	-	-	FD500A	2	(5#250,#1/0G) 3"C	(5#350,#1/0G) 3"C
600	F600	2	(3#350,#1G) 3"C	(3#500,#1G) 3"C	FN600	2	(4#350,#1G) 3"C	(4#500,#1G) 3"C
700	F700	2	(3#500,#1/0G) 3"C	(3#700,#1/0G) 3-1/2"C	FN700	2	(4#500,#1/0G) 3-1/2"C	(4#700,#1/0G) 3-1/2"C
750	F750	2	(3#500,#1/0G) 3"C	(3#700,#1/0G) 3-1/2"C	-	-	-	-
800	F800	3	(3#300,#1/0G) 3"C	(3#400,#1/0G) 3"C	FN800	3	(4#300,#1/0G) 3"C	(4#400,#1/0G) 3"C
800	-	-	-	-	FN800A	3	(4#300,#2/0G) 3"C	(4#400,#2/0G) 3"C
800	F800B	2	(3#600,#1/0G) 3-1/2"C	-	FN800B	2	(4#600,#1/0G) 4"C	-
800	-	-	-	-	FD800A	3	(5#300,#2/0G) 3"C	(5#400,#2/0G) 3"C
1000	F1000	3	(3#400,#2/0G) 3"C	(3#600,#2/0G) 3"C	FN1000	3	(4#400,#2/0G) 3-1/2"C	(4#600,#2/0G) 3-1/2"C
1000	-	-	-	-	FN1000A	3	(4#400,#3/0G) 3-1/2"C	(4#600,#3/0G) 3-1/2"C
1000	-	-	-	-	FD1000A	3	(5#400,#3/0G) 3-1/2"C	(5#600,#3/0G) 3-1/2"C
1200	F1200	4	(3#350,#3/0G) 3"C	(3#500,#3/0G) 3"C	FN1200	4	(4#350,#3/0G) 3"C	(4#500,3/0G) 3"C
1200	F1200A	3	(3#600,#3/0G) 3-1/2"C	-	FN1200A	3	(4#600,#3/0G) 4"C	-
1600	F1600	5	(3#400,#4/0G) 3"C	(3#600,#4/0G) 3-1/2"C	FN1600	5	(4#400,#4/0G) 3-1/2"C	(4#600,#4/0G) 3-1/2"C
1600	-	-	-	-	FN1600A	5	(4#400,#250G) 3-1/2"C	(4#600,#250G) 3-1/2"C
1600	F1600B	4	(3#600,#4/0G) 3-1/2"C	-	FN1600B	4	(4#600,#4/0G) 4"C	-
1600	-	-	-	-	FD1600A	5	(5#400,#250G) 3-1/2"C	(5#600,#250G) 3-1/2"C
2000	F2000	6	(3#400,#250G) 3"C	(3#600,#250G) 3-1/2"C	FN2000	6	(4#400,#250G) 3-1/2"C	(4#600,#250G) 3-1/2"C
2000	F2000A	5	(3#600,#250G) 4"C	-	FN2000A	5	(4#600,#250G) 4"C	-
2500	F2500	7	(3#500,#350G) 3-1/2"C	(3#700,#350G) 3-1/2"C	FN2500	7	(4#500,#350G) 3-1/2"C	(4#700,#350G) 3-1/2"C
2500	-	-	-	-	FN2500A	7	(4#500,#500G) 4"C	(4#700,#500G) 4"C
2500	F2500B	6	(3#600,#350G) 4"C	-	FN2500B	6	(4#600,#350G) 4"C	-
3000	F3000	8	(3#500,#400G) 3-1/2"C	(3#700,#400G) 3-1/2"C	FN3000	8	(4#500,#400G) 4"C	(4#700,#400G) 4"C
3500	F3500	10	(3#500,#500G) 3-1/2"C	(3#700,#500G) 4"C	FN3500	10	(4#500,#500G) 4"C	(4#700,#500G) 4"C
3500	F3500A	9	(3#600,#500G) 4"C	-	FN3500A	9	(4#600,#500G) 4"C	-
4000	F4000	11	(3#500,#500G) 4"C	(3#700,#500G) 4"C	FN4000	11	(4#500,#500G) 4"C	(4#700,#500G) 4"C
4000	F4000A	10	(3#600,#500G) 4"C	-	FN4000A	10	(4#600,#500G) 4"C	-

ALL CONDUCTORS ARE WITH THHN/THWN WIRE WITH 75DEG TERMINATIONS.
ALL ALUMINUM FEEDERS SHALL INCLUDE COPPER EQUIPMENT GROUND CONDUCTORS.
ALL ALUMINUM FEEDERS TO UTILIZE COMPRESSION TERMINATIONS.
ALL FEEDERS AND BRANCH CIRCUITS TO MECHANICAL AND VIBRATING EQUIPMENT SHALL BE COPPER CONDUCTORS
ALL EMERGENCY FEEDERS TO BE COPPER CONDUCTORS.
FEEDERS STARTING WITH "FD" CONTAIN DOUBLE NEUTRAL.



1 NEW CONSTRUCTION ONE-LINE
NTS

GENERAL NOTES:

1. ALL FEEDERS AND TERMINATIONS SHALL BE COPPER 75 DEGREE RATED.

2. FEEDER LENGTHS ARE INDICATED FOR CALCULATION PURPOSES ONLY. THIS DRAWING IS NOT TO SCALE. FEEDERS LENGTHS MUST BE CONFIRMED WITH THE CONTRACTOR.

3. ALL CONDUIT RUNS SHALL BE RAN PERPENDICULAR AND PARALLEL TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT RUNS SHALL BE COORDINATED WITH ARCHITECT PRIOR TO INSTALLATION.

4. PROVIDE FULL BUSSING FOR ALL SPACES INDICATED ON PANEL BOARDS AND DISTRIBUTION BOARDS.

5. REFER TO FEEDER TABLE FOR FEEDER SIZE CORRESPONDING TO OVERCURRENT PROTECTION DEVICE (BREAKER OR FUSE) SHOWN ON ONE-LINE.

6. ALL NEW EQUIPMENT TO BE FULLY RATED FOR THE AVAILABLE FAULT. ASSUME 75,045 AMPS AVAILABLE AT THE MAIN SERVICE.

7. REFER TO DETAIL 2 ON SHEET E400 FOR PANELBOARD NAMEPLATE DETAILS.

8. PROVIDE SURGE PROTECTION DEVICE FOR ALL NEW EMERGENCY PANELBOARDS AND SWITCHBOARDS PER NEC 700.

9. DASHED DEVICES AND TAGGED WITH (D) ARE EXISTING TO BE DEMOLISHED. SOLID THIN LINE WEIGHT DEVICES ARE EXISTING TO REMAIN. SOLID DEVICES AND TAGGED WITH (N) ARE NEW DEVICES.

ONE-LINE KEYNOTES

1	PROVIDE INTERALLY MOUNTED SPD, RE: SPECIFICATION 264314.

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LEES SUMMIT, MO

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

Vasquez Commercial Contracting, LLC
3303 Gillham Road
Kansas City, Missouri 64109
(816) 569-6869

REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

FIRE HEADQUARTERS STATION NO. 1

ELECTRICAL ONE-LINES

SHEET NO.
E003

PROJECT NO.: KC2008.01

FIRE HEADQUARTERS STATION NO. 1 — ME Engineers Inc.

120/208 Wye 3 Phase, 4 Wire + Gnd. 60Hz. SCCR:	BUS: **400 A** MAINS: **MLO** GROUND BAR: **Copper**	PANEL:	**(E)LP-1**
		ENCLOSURE:	**Type 1**
		MOUNTING:	**RECESSED**
		FED FROM:	**(E)MDP**
NOTES: 1 - EXISTING CIRCUIT TO REMAIN. 2 - DEMO EXISTING CIRCUIT AND SPARE BREAKER. 3 - PROVIDE NEW BREAKER.	OPTIONS: FEED THROUGH LUGS EXISTING PANELBOARD	LEVEL:	**LEVEL 01**
		LOCATION:	**EQUIP. WORK 109**
		ISSUE DATE:	**NOVEMBER 12, 2020**
		REFER TO DETAILS AND SPECIFICATION SECTION FOR PANELBOARD LAMINATED PLAQUE REQUIREMENTS.	

N	DESCRIPTION	P	OCP	CKT	A		B		C		CKT	OCP	P	DESCRIPTION	N
1	EXISTING CIRCUIT	1	20	1	0	0					2	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	3			0	0			4	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	5					0	0	6	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	30	7	0	0					8	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	9			0	0			10	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	11					0	0	12	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	13	0	0					14	40	2	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	15			0	0			16	--	--	--	--
1	EXISTING CIRCUIT	2	50	17					0	0	18	40	2	EXISTING CIRCUIT	1
--	--	--	--	19	0	0					20	--	--	--	--
2	SPARE	1	20	21			0	0			22	40	2	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	2	20	23					0	0	24	--	--	--	--
--	--	--	--	25	0	0					26	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	27			0	0			28	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	29					0	0	30	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	31	0	0					32	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	33			0	0			34	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	35					0	0	36	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	37	0	0					38	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	39			0	0			40	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	41					0	0	42	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	43	0	0					44	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	45			0	0			46	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	47					0	0	48	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	49	0	0					50	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	51			0	0			52	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	2	20	53					0	0	54	20	1	EXISTING CIRCUIT	1
--	--	--	--	55	0	0					56	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	2	60	57			0	0			58	40	2	EXISTING CIRCUIT	1
--	--	--	--	59					0	0	60	--	--	--	--
1	SPARE	1	20	61	0	0					62	20	1	SPARE	1
1	SPARE	1	20	63			0	0			64	20	1	SPARE	1
1	SPARE	1	20	65					0	0	66	20	1	SPARE	1
1	SPARE	1	20	67	0	0					68	20	1	SPARE	1
1	SPARE	1	20	69			0	0			70	20	1	SPARE	1
1	SPARE	1	20	71					0	0	72	20	1	SPARE	1
3	AC 1-07 & BC 1-02	2	15	73	280	363					74	15	2	AC 1-13 & BC 1-01	3
--	--	--	--	75			280	363			76	--	--	--	--
3	AC 1-08 - 1-11	2	15	77					332	583	78	15	2	AC 1-12	3
--	--	--	--	79	332	583					80	--	--	--	--
3	AC 1-01 - 1-06	2	15	81			498	0			82	--	--	SPACE	--
--	--	--	--	83					498	0	84	--	--	SPACE	--

PER PHASE VA WITH DOWNSTREAM LOADS

PHASE	A	B	C	TOTALS
CALC	28322	27904	28176	84402
CNNCTD	28224	27808	28079	84111

DOWNSTREAM FEED THROUGH LUG PANELS

CONDUCTOR COLORS (EC TO LABEL IN PANEL)

	208Y/120	480Y/277
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	WHITE	WHITE/GRAY STRIPE
G	GREEN	GREEN

LOAD SUMMARY WITH DOWNSTREAM LOADS INCLUDED

CATEGORY	CONNECTED	FACTOR	CALC. V-A	AMPS @ 120/208 Wye
LIGHTING				
RECEPTACLE				
MOTOR	4111	107%	4402	12
MISCELLANEOUS	80000	100%	80000	222
KITCHEN				
ELECTRIC HEAT				
EV CHARGING				
TOTAL	84111		84402	234

FIRE HEADQUARTERS STATION NO. 1 — ME Engineers Inc.

120/208 Wye 3 Phase, 4 Wire + Gnd. 60Hz. SCCR:	BUS: **225 A** MAINS: **MLO** GROUND BAR: **Copper**	PANEL:	**(E)LP-2**
		ENCLOSURE:	**Type 1**
		MOUNTING:	**Surface**
		FED FROM:	**(E)MDP**
NOTES: 1 - EXISTING CIRCUIT TO REMAIN. 2 - REUSE EXISTING SPARE BREAKER. 3 - DEMO EXISTING BREAKER, REUSE SPACE FOR NEW BREAKER. 4 - PROVIDE NEW BREAKER.	OPTIONS: EXISTING PANELBOARD	LEVEL:	**LEVEL 02**
		LOCATION:	**STORAGE 219**
		ISSUE DATE:	**NOVEMBER 12, 2020**
		REFER TO DETAILS AND SPECIFICATION SECTION FOR PANELBOARD LAMINATED PLAQUE REQUIREMENTS.	

N	DESCRIPTION	P	OCP	CKT	A		B		C		CKT	OCP	P	DESCRIPTION	N
1	EXISTING CIRCUIT	1	20	1	0	0					2	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	3			0	0			4	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	5					0	0	6	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	7	0	0					8	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	9			0	0			10	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	11					0	0	12	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	13	0	0					14	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	15			0	0			16	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	17					0	0	18	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	19	0	0					20	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	21			0	0			22	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	23					0	0	24	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	25	0	0					26	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	27			0	0			28	20	1	EXISTING CIRCUIT	1
3	SPARE	1	20	29					0	0	30	60	2	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	31	0	0					32	--	--	--	--
1	EXISTING CIRCUIT	1	20	33			0	0			34	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	35					0	0	36	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	37	0	0					38	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	39			0	0			40	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	41					0	0	42	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	43	0	0					44	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	45			0	0			46	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	47					0	0	48	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	49	0	0					50	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	51			0	0			52	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	53					0	0	54	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	55	0	0					56	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	57			0	0			58	20	1	EXISTING CIRCUIT	1
1	SPARE	1	20	59					0	0	60	20	1	SPARE	1
1	SPARE	1	20	61	0	0					62	20	1	SPARE	1
1	SPARE	1	20	63			0	0			64	20	1	SPARE	1
1	SPARE	1	20	65					0	0	66	20	1	SPARE	1
1	SPARE	1	20	67	0	0					68	20	1	SPARE	1
1	SPARE	1	20	69			0	0			70	20	1	SPARE	1
--	SPACE	--	--	71					0	0	72	--	--	SPACE	--
--	SPACE	--	--	73	0	0					74	--	--	SPACE	--
--	SPACE	--	--	75			0	0			76	--	--	SPACE	--
--	SPACE	--	--	77					0	0	78	--	--	SPACE	--
--	SPACE	--	--	79	0	0					80	--	--	SPACE	--
--	SPACE	--	--	81			0	0			82	--	--	SPACE	--
--	SPACE	--	--	83					0	0	84	--	--	SPACE	--

PER PHASE VA WITH DOWNSTREAM LOADS

PHASE	A	B	C	TOTALS
CALC	12188	12383	12193	36764
CNNCTD	12050	12243	12056	36348

DOWNSTREAM FEED THROUGH LUG PANELS

CONDUCTOR COLORS (EC TO LABEL IN PANEL)

	208Y/120	480Y/277
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	WHITE	WHITE/GRAY STRIPE
G	GREEN	GREEN

LOAD SUMMARY WITH DOWNSTREAM LOADS INCLUDED

CATEGORY	CONNECTED	FACTOR	CALC. V-A	AMPS @ 120/208 Wye
LIGHTING				
RECEPTACLE	360	100%	360	1
MOTOR	3156	113%	3572	10
MISCELLANEOUS	32832	100%	32832	91
KITCHEN				
ELECTRIC HEAT				
EV CHARGING				
TOTAL	36348		36764	102

(E)MDP

LOCATION MECH. EQUIP G04 — **VOLTAGE** 120/208 Wye — **BUS:** 800 A
SUPPLY FROM — **SCCR:** — **MAINS:** 800 A - FUSE

LOADS SUMMARY	LTG	RCPT	MOTOR	MISC.	KITCHEN	ELECTRIC HEAT	EV CHARGE	Load	
(E)EPP			34912	54124				89036 VA	247 A
(E)LP-1			4111	80000				84111 VA	233 A
(E)LP-2		360	3156	32832				36348 VA	101 A
AIR COMPRESSOR			3000					3000 VA	8 A
DOAS 3-01			18612					18612 VA	52 A
VCU 1-02			20016					20016 VA	56 A
VCU 3-01			20016					20016 VA	56 A
CONNECTED TOTALS (V-A)		360	103823	166956				271139 VA	753 A
DIVERSITY FACTORS		100%	105%	100%				--	--
DEMAND TOTAL (V-A)		360	108827	166956				276143 VA	766 A

(E)EPP

LOCATION MECH. EQUIP G04 — **VOLTAGE** 120/208 Wye — **BUS:** 400 A
SUPPLY FROM (E)MDP — **SCCR:** — **MAINS:** FUSE

LOADS SUMMARY	LTG	RCPT	MOTOR	MISC.	KITCHEN	ELECTRIC HEAT	EV CHARGE	Load	
(E)EM COLD WATER PUMP			3960					3960 VA	11 A
(E)GENERATOR BATTERY CHARGER				2000				2000 VA	6 A
(E)ELP				52124				52124 VA	145 A
EPP-2			30952					30952 VA	86 A
CONNECTED TOTALS (V-A)			34912	54124				89036 VA	247 A
DIVERSITY FACTORS			108%	100%				--	--
DEMAND TOTAL (V-A)			37720	54124				91844 VA	255 A

FIRE HEADQUARTERS STATION NO. 1 — ME Engineers Inc.

120/208 Wye 3 Phase, 4 Wire + Gnd. 60Hz. SCCR:	BUS: **225 A** MAINS: **MLO** GROUND BAR: **Copper**	PANEL:	**(E)ELP**
		ENCLOSURE:	**Type 1**
		MOUNTING:	**Surface**
		FED FROM:	**(E)EPP**
NOTES: 1 - EXISTING CIRCUIT TO REMAIN. 2 - REUSE EXISTING SPARE BREAKER. 3 - EXISTING CIRCUIT DEMOED, SPARE EXISTING BREAKER.	OPTIONS: EXISTING PANELBOARD	LEVEL:	**LEVEL 00**
		LOCATION:	**COMM. EQUIP. G12**
		ISSUE DATE:	**NOVEMBER 12, 2020**
		REFER TO DETAILS AND SPECIFICATION SECTION FOR PANELBOARD LAMINATED PLAQUE REQUIREMENTS.	

N	DESCRIPTION	P	OCP	CKT	A		B		C		CKT	OCP	P	DESCRIPTION	N
1	EXISTING CIRCUIT	1	20	1	0	0					2	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	3			0	0			4	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	5					0	0	6	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	7	0	0					8	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	9			0	0			10	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	11					0	0	12	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	13	0	0					14	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	15			0	0			16	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	17					0	0	18	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	19	0	0					20	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	21			0	0			22	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	23					0	0	24	40	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	25	0	0					26	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	40	27			0	0			28	20	1	EXISTING CIRCUIT	1
3	SPARE	1	20	29					0	0	30	60	2	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	31	0	0					32	--	--	--	--
1	EXISTING CIRCUIT	1	20	33			0	0			34	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	35					0	0	36	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	37	0	0					38	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	39			0	0			40	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	41					0	0	42	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	43	0	0					44	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	45			0	0			46	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	47					0	0	48	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	49	0	0					50	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	51			0	0			52	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	53					0	0	54	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	55	0	0					56	20	1	EXISTING CIRCUIT	1
1	EXISTING CIRCUIT	1	20	57			0	0			58	20	1	EXISTING CIRCUIT	1
1	SPARE	1	20	59					0	0	60	20	1	SPARE	1
1	SPARE	1	20	61	0	0					62	20	1	SPARE	1
1	SPARE	1	20	63			0	0			64	20	1	SPARE	1
1	SPARE	1	20	65					0	0	66	20	1	SPARE	1
1	SPARE	1	20	67	0	0					68	20	1	SPARE	1
1	SPARE	1	20	69			0	0			70	20	1	SPARE	1
--	SPACE	--	--	71					0	0	72	--	--	SPACE	--
--	SPACE	--	--	73	0	0					74	--	--	SPACE	--
--	SPACE	--	--	75			0	0			76	--	--	SPACE	--
--	SPACE	--	--	77					0	0	78	--	--	SPACE	--
--	SPACE	--	--	79	0	0					80	--	--	SPACE	--
--	SPACE	--	--	81			0	0			82	--	--	SPACE	--
--	SPACE	--	--	83					0	0	84	--	--	SPACE	--

PER PHASE VA WITH DOWNSTREAM LOADS

PHASE	A	B	C	TOTALS
CALC	17375	17375	17375	52124
CNNCTD	17375	17375	17375	52124

DOWNSTREAM FEED THROUGH LUG PANELS

CONDUCTOR COLORS (EC TO LABEL IN PANEL)

	208Y/120	480Y/277
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	WHITE	WHITE/GRAY STRIPE
G	GREEN	GREEN

LOAD SUMMARY WITH DOWNSTREAM LOADS INCLUDED

CATEGORY	CONNECTED	FACTOR	CALC. V-A	AMPS @ 120/208 Wye
LIGHTING				
RECEPTACLE				
MOTOR				
MISCELLANEOUS	52124	100%	52124	145
KITCHEN				
ELECTRIC HEAT				
EV CHARGING				
TOTAL	52124		52124	145

ME Engineers
2480 Pershing Road, Suite 100
Kansas City, MO 64108
Phone: 816.474.1056
me-engineers.com

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

Vasquez Commercial Contracting, LLC
3303 Gillham Road
Kansas City, Missouri 64109
(816) 569-6869

REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
PROFESSIONAL ENGINEER
STATE OF MISSOURI
2020.11.12

ISSUE DATE:

ELECTRICAL PANEL SCHEDULES

SHEET NO.
E004

PROJECT NO.: KC2008.01

FIRE HEADQUARTERS STATION NO. 1

FIRE HEADQUARTERS STATION NO. 1	ME Engineers Inc.	PANEL:	EPP-2
120/208 Wye 3 Phase, 4 Wire + Gnd. 60Hz. SCCR: 10 kAIC	BUS: 150 A MAINS: MLO GROUND BAR: Copper	ENCLOSURE: MOUNTING: FED FROM:	Type 1 Surface (E)EPP
NOTES:	OPTIONS: NEW PANELBOARD	LEVEL: LOCATION: ISSUE DATE:	LEVEL 00 MECH. EQUIP G04 NOVEMBER 12, 2020
		REFER TO DETAILS AND SPECIFICATION SECTION FOR PANELBOARD LAMINATED PLAQUE REQUIREMENTS.	

N	DESCRIPTION	P	OCP	CKT	A		B		C		CKT	OCP	P	DESCRIPTION	N
	CU 1-01	2	20	1	832	3744					2	45	3	VCU 1-01	
--	--	--	--	3			832	3744			4	--	--	--	--
	CU 1-02	2	35	5					2080	3744	6	--	--	--	--
--	--	--	--	7	2080	3552					8	50	3	CU 1-03	
	AC 0-02 & BC 0-01	2	15	9			113	3552			10	--	--	--	--
--	--	--	--	11					113	3552	12	--	--	--	--
	AC 0-03	2	15	13	83	1008					14	20	1	F 0-01	
--	--	--	--	15			83	1008			16	20	1	F 0-01	
	AC 0-04	2	15	17					83	0	18	--	--	SPACE	--
--	--	--	--	19	83	0					20	--	--	SPACE	--
	AC 0-05 & 0-06	2	15	21			333	0			22	--	--	SPACE	--
--	--	--	--	23					333	0	24	--	--	SPACE	--
--	SPACE	--	--	25	0	0					26	--	--	SPACE	--
--	SPACE	--	--	27			0	0			28	--	--	SPACE	--
--	SPACE	--	--	29					0	0	30	--	--	SPACE	--
--	SPACE	--	--	31	0	0					32	--	--	SPACE	--
--	SPACE	--	--	33			0	0			34	--	--	SPACE	--
--	SPACE	--	--	35					0	0	36	--	--	SPACE	--
--	SPACE	--	--	37	0	0					38	30	3	SPD	
--	SPACE	--	--	39			0	0			40	--	--	--	--
--	SPACE	--	--	41					0	0	42	--	--	--	--

PER PHASE VA WITH DOWNSTREAM LOADS

PHASE	A	B	C	TOTALS
CALC	12415	10542	10804	33760
CNNCTD	11382	9665	9905	30952

DOWNSTREAM FEED THROUGH LUG PANELS

LOAD SUMMARY WITH DOWNSTREAM LOADS INCLUDED

CATEGORY	CONNECTED	FACTOR	CALC. V-A	AMPS @ 120/208 Wye
LIGHTING				
RECEPTACLE				
MOTOR	30952	109%	33760	94
MISCELLANEOUS				
KITCHEN				
ELECTRIC HEAT				
EV CHARGING				
TOTAL	30952		33760	94

CONDUCTOR COLORS (EC TO LABEL IN PANEL)

	208Y/120	480Y/277
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	WHITE	WHITE/GRAY STRIPE
G	GREEN	GREEN

ME Engineers
2480 Pershing Road, Suite 100
Kansas City, MO 64108
Phone: 816.474.1056
me-engineers.com

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

PROJECT TEAM

PRINCIPAL: Jeff Ewens
PROJ. DIR.: Josh Franke
PROJ. MGR.: Brian Paxton
DRAWN BY: ME-Engineers
Q.C.: ME-Engineers

Prepared for:

Vasquez
Commercial Contracting, LLC
3303 Gillham Road
Kansas City, Missouri 64109
(816) 569-6869

REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

ISSUE DATE:
© NOVEMBER 12, 2020

FIRE HEADQUARTERS STATION NO. 1

ELECTRICAL PANEL SCHEDULES

SHEET NO.
E005

PROJECT NO.: KC2008.01

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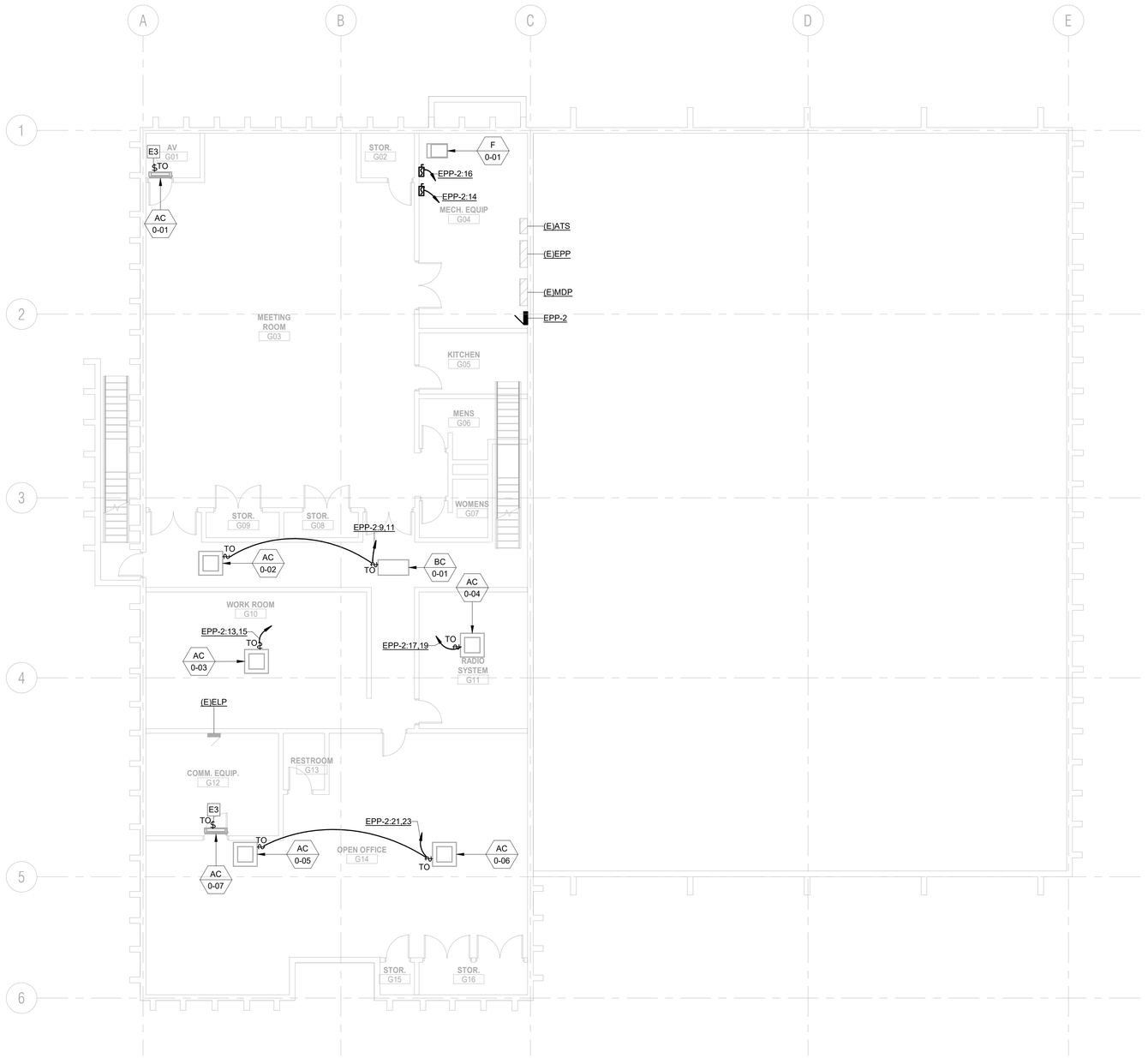

NORTH

1 LEVEL 00 FLOOR PLAN - ELECTRICAL
1/8" = 1'-0"

0 4' 8' 16'

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR.

2. ALL EXPOSED CONDUIT SHALL BE ROUTED PERPENDICULAR, PARALLEL, AND TIGHT TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT ROUTING SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION AND INSTALLED IN A NEAT AND CONSISTENT MANNER. NO ADDITIONAL COST TO OWNER WILL BE ALLOWED FOR RELOCATING CONDUIT DUE TO THE LACK OF COORDINATION WITH ARCHITECT. ALL SURFACE MOUNTED CONDUIT WHERE EXPOSED TO PUBLIC AREAS SHALL BE PAINTED. PAINT COLOR TO BE DETERMINED BY THE ARCHITECT.

3. ALL BACK BOXES SHALL BE FLUSH MOUNTED UNLESS NOTED OTHERWISE. ALL VERTICAL SECTIONS OF CONDUIT SHALL BE CONCEALED. CONTRACTOR SHALL COORDINATE INSTALLATION OF CONDUIT AND BACK BOXES IN CONCRETE, MASONRY AND GYP. WALLS.

4. THIS CONTRACTOR SHALL REFER TO "MEP" SERIES DRAWINGS FOR ALL MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS.

5. CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.

KEYNOTES

E3	INDOOR UNIT FED FROM ASSOCIATED OUTDOOR UNIT, RE: MEP SCHEDULES.

ME Engineers
2480 Pershing Road, Suite 100
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Phone: 816.474.1056
me-engineers.com

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

Vasquez
Commercial Contracting, LLC
3303 Gillham Road
Kansas City, Missouri 64109
(816) 569-6869

REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

LEVEL 00 FLOOR PLAN - MECHANICAL POWER

SHEET NO.

E100

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

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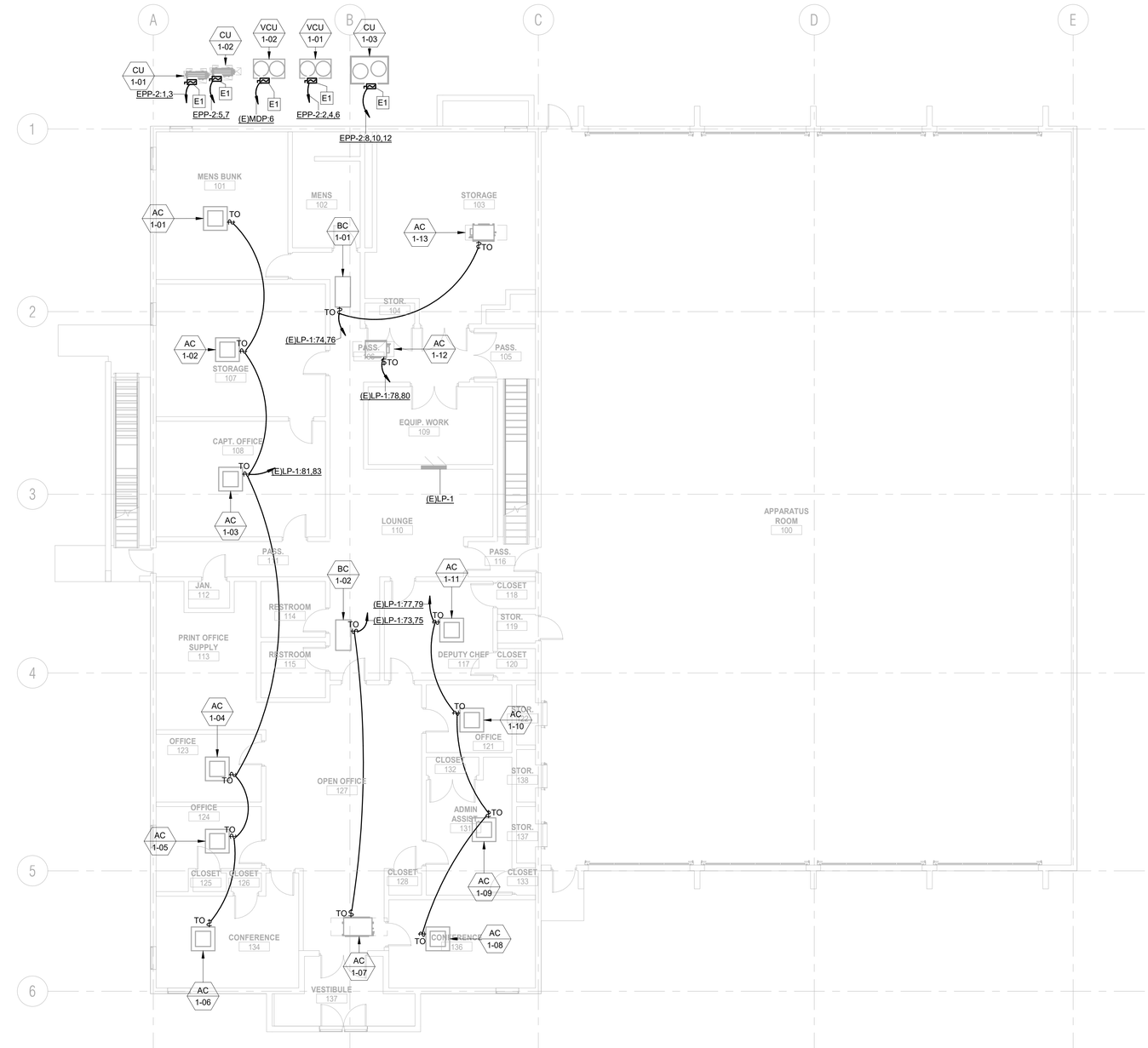

NORTH

1 LEVEL 01 FLOOR PLAN - ELECTRICAL
1/8" = 1'-0"

0 4' 8' 16'

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR.

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4. THIS CONTRACTOR SHALL REFER TO "MEP" SERIES DRAWINGS FOR ALL MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS.

5. CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.

KEYNOTES

E1	PROVIDE NEMA 3R DISCONNECT.

ME Engineers
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me-engineers.com

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
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Q.C.:	ME-Engineers

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

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DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
PROFESSIONAL ENGINEER
STATE OF MISSOURI
2020.11.12

ISSUE DATE:
© NOVEMBER 12, 2020

LEVEL 01 FLOOR PLAN - MECHANICAL POWER

SHEET NO.

E101

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

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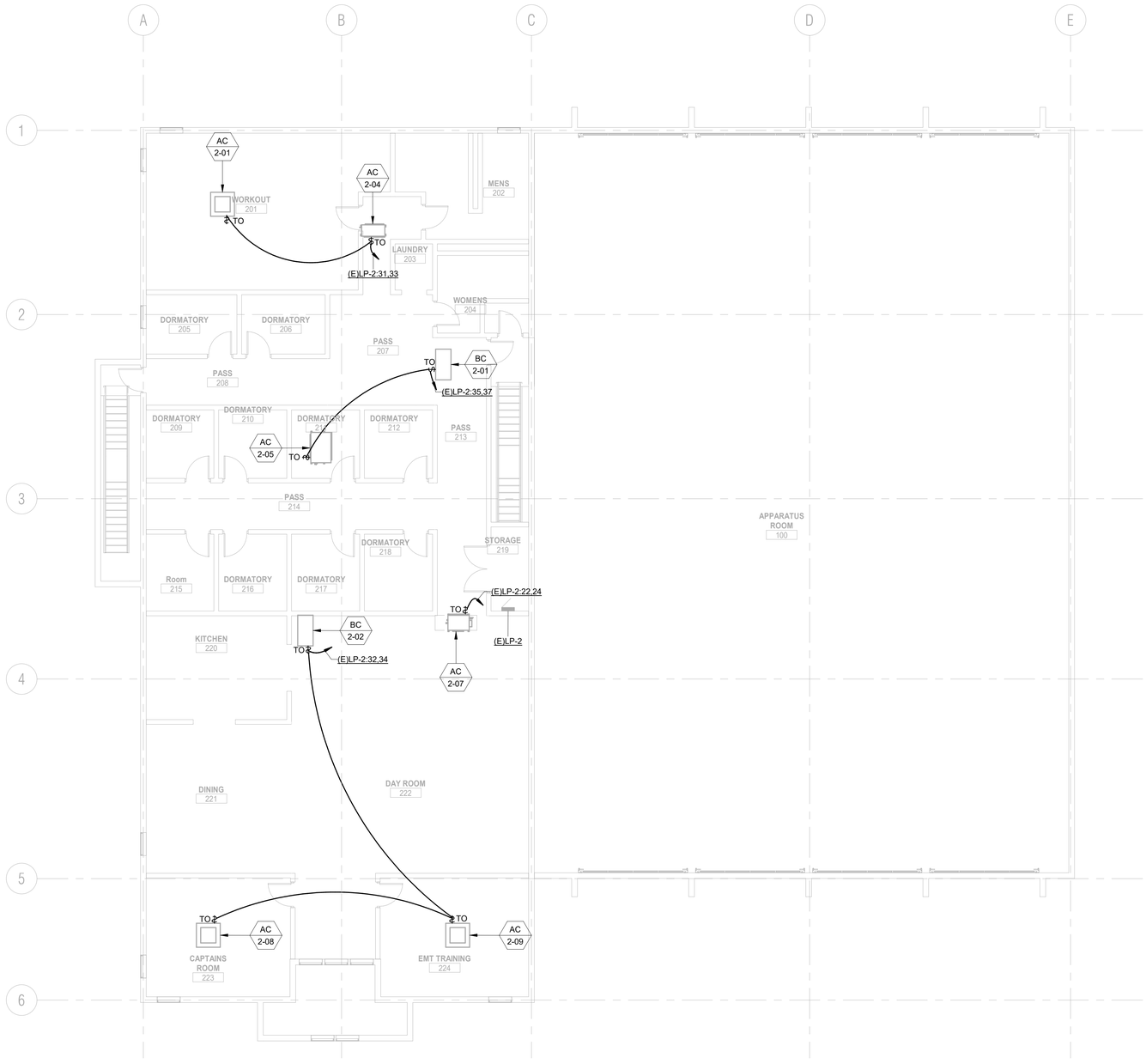

NORTH

1 LEVEL 02 FLOOR PLAN - ELECTRICAL
1/8" = 1'-0"

0 4' 8' 16'

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR.

2. ALL EXPOSED CONDUIT SHALL BE ROUTED PERPENDICULAR, PARALLEL, AND TIGHT TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT ROUTING SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION AND INSTALLED IN A NEAT AND CONSISTENT MANNER. NO ADDITIONAL COST TO OWNER WILL BE ALLOWED FOR RELOCATING CONDUIT DUE TO THE LACK OF COORDINATION WITH ARCHITECT. ALL SURFACE MOUNTED CONDUIT WHERE EXPOSED TO PUBLIC AREAS SHALL BE PAINTED. PAINT COLOR TO BE DETERMINED BY THE ARCHITECT.

3. ALL BACK BOXES SHALL BE FLUSH MOUNTED UNLESS NOTED OTHERWISE. ALL VERTICAL SECTIONS OF CONDUIT SHALL BE CONCEALED. CONTRACTOR SHALL COORDINATE INSTALLATION OF CONDUIT AND BACK BOXES IN CONCRETE, MASONRY AND GYP. WALLS.

4. THIS CONTRACTOR SHALL REFER TO "MEP" SERIES DRAWINGS FOR ALL MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS.

5. CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.

KEYNOTES

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PROJECT TEAM

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Q.C.:	ME-Engineers

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DONALD ELLIOT ROBERTS, II
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PROFESSIONAL ENGINEER
2020.11.12

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LEVEL 02 FLOOR PLAN - MECHANICAL POWER

SHEET NO.

E102

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

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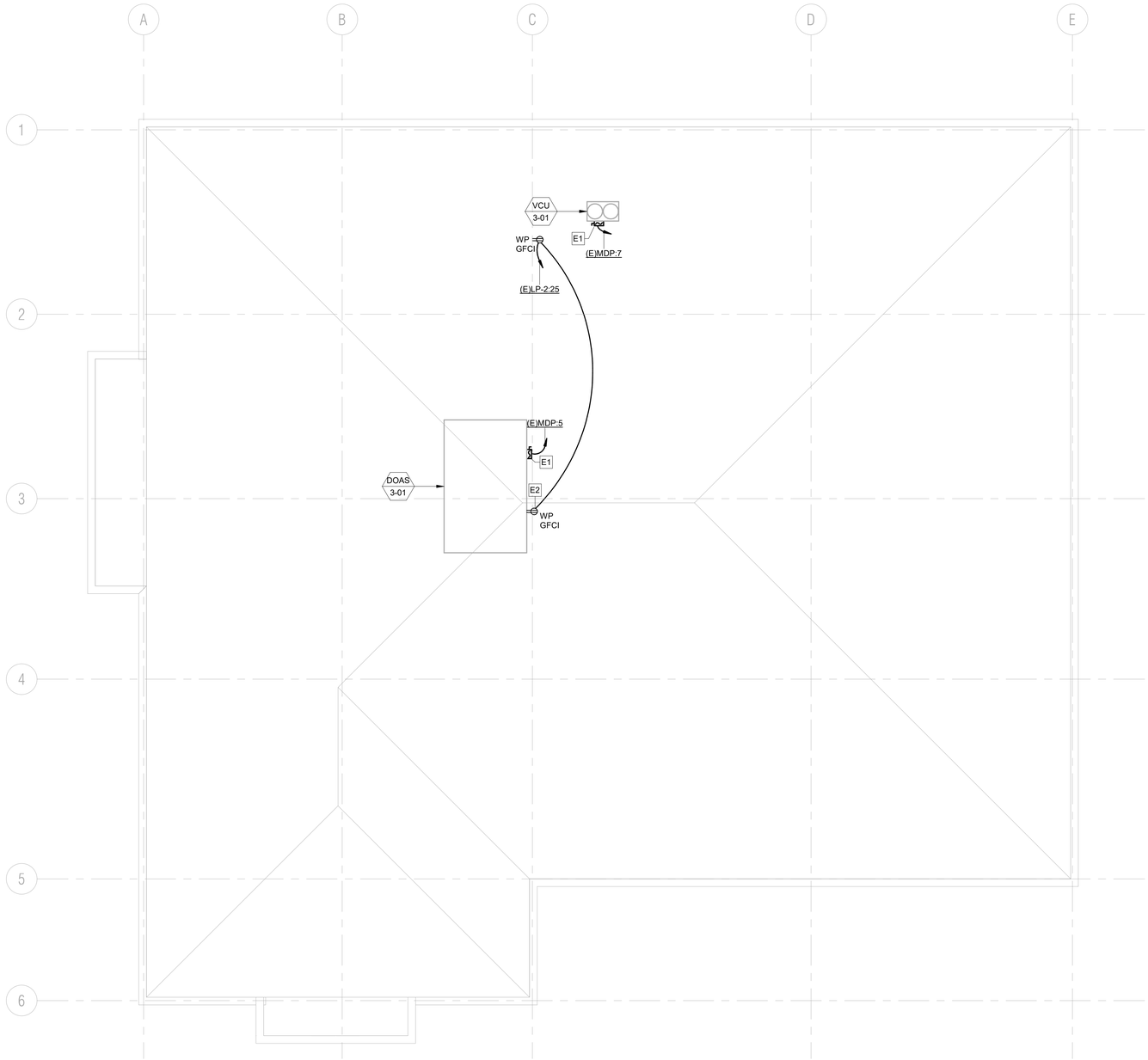

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR.

2. ALL EXPOSED CONDUIT SHALL BE ROUTED PERPENDICULAR, PARALLEL, AND TIGHT TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT ROUTING SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION AND INSTALLED IN A NEAT AND CONSISTENT MANNER. NO ADDITIONAL COST TO OWNER WILL BE ALLOWED FOR RELOCATING CONDUIT DUE TO THE LACK OF COORDINATION WITH ARCHITECT. ALL SURFACE MOUNTED CONDUIT WHERE EXPOSED TO PUBLIC AREAS SHALL BE PAINTED. PAINT COLOR TO BE DETERMINED BY THE ARCHITECT.

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4. THIS CONTRACTOR SHALL REFER TO "MEP" SERIES DRAWINGS FOR ALL MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS.

5. CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.

KEYNOTES

E1	PROVIDE NEMA 3R DISCONNECT.
E2	UNIT MOUNTED DEVICE. COORDINATE WITH DIVISION 23.

NORTH

1 LEVEL 03 ROOF PLAN - ELECTRICAL
1/8" = 1'-0"

0 4' 8' 16'

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REVISIONS

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2020.11.12

ISSUE DATE:
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LEVEL 03 ROOF PLAN - MECHANICAL POWER

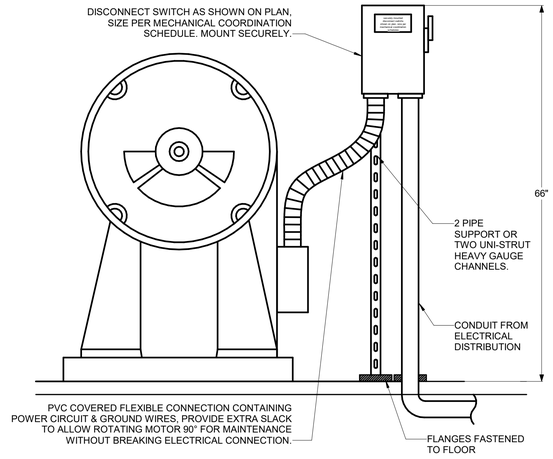
SHEET NO.

E103

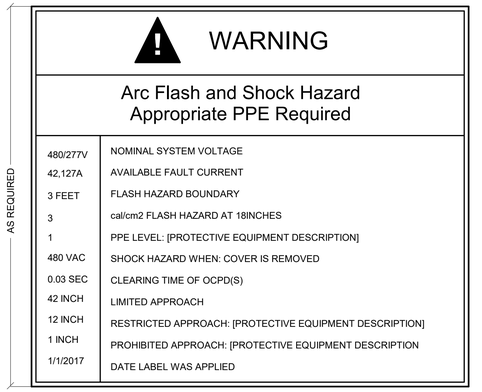
PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

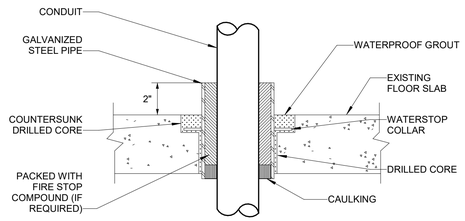


4 (DT) CONNECTION TO FLOOR MOUNTED MOTORS
NO SCALE



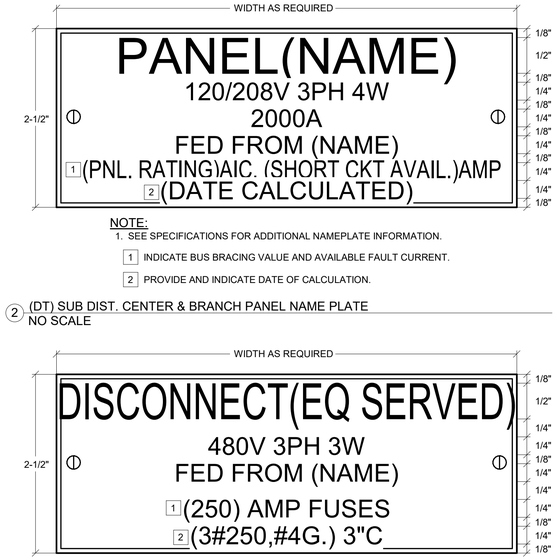
NOTE:
1. SEE SPECIFICATIONS FOR ADDITIONAL NAMEPLATE INFORMATION.

1 (DT) ARC FLASH LABEL
NO SCALE



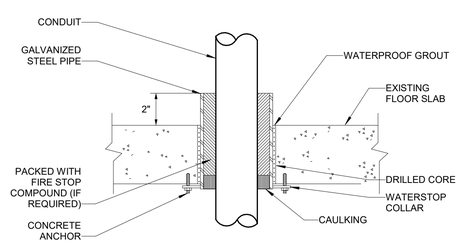
NOTE:
1. ALL CONDUIT PENETRATIONS THROUGH HORIZONTAL OR VERTICAL EXISTING STRUCTURAL MEMBER (WALL, FLOOR, CEILING, ETC.) SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. PROVIDE DRAWINGS FOR APPROVAL.

5 (GE) CONDUIT PENETRATION (CORE DRILLED & COUNTERSUNK)
NO SCALE



NOTE:
1. SEE SPECIFICATIONS FOR ADDITIONAL NAMEPLATE INFORMATION.
1 INDICATE BUS BRACING VALUE AND AVAILABLE FAULT CURRENT.
2 PROVIDE AND INDICATE DATE OF CALCULATION.

2 (DT) SUB DIST. CENTER & BRANCH PANEL NAME PLATE
NO SCALE



NOTE:
1. ALL CONDUIT PENETRATIONS THROUGH HORIZONTAL OR VERTICAL EXISTING STRUCTURAL MEMBER (WALL, FLOOR, CEILING, ETC.) SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. PROVIDE DRAWINGS FOR APPROVAL.

6 (GE) CONDUIT PENETRATION (CORE DRILLED)
NO SCALE

NOTE:
1. SEE SPECIFICATIONS FOR ADDITIONAL NAMEPLATE INFORMATION.
1 INDICATE FUSE SIZE, IF APPLICABLE
2 INDICATE BRANCH CIRCUIT WIRESIZE

3 (DT) DISCONNECT NAMEPLATE
NO SCALE

ME Engineers
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me-engineers.com

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
PROJ. DIR.:	Josh Franke
PROJ. MGR.:	Brian Paxton
DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

Vasquez Commercial Contracting, LLC
3303 Gillham Road
Kansas City, Missouri 64109
(816) 569-6869

REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
PROFESSIONAL ENGINEER
2020.11.12

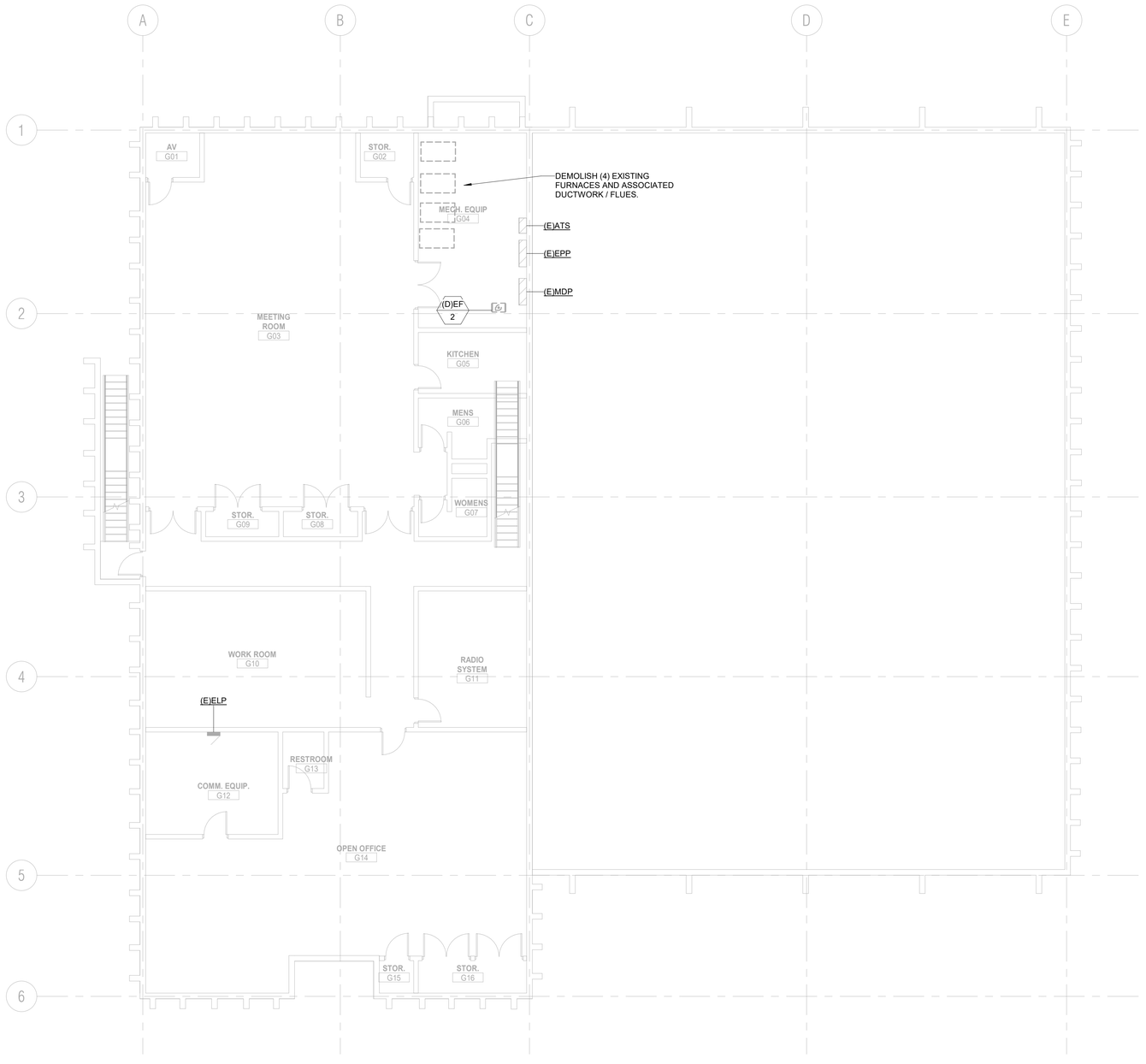
ISSUE DATE:
© NOVEMBER 12, 2020

FIRE HEADQUARTERS STATION NO. 1

ELECTRICAL DETAILS

SHEET NO.
E400

PROJECT NO.: KC2008.01



1 LEVEL 00 FLOOR PLAN - ELECTRICAL DEMO
1/8" = 1'-0"

0 4' 8' 16'

NORTH

GENERAL NOTES:

1. THE LOCATION OF EXISTING EQUIPMENT AND DEVICES ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. ACCURACY OF THE INFORMATION SHOWN IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR THE VERIFICATION OF ALL EXISTING CONDITIONS PRIOR TO SUBMITTING THE PROJECT BID. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CHANGES WHICH OCCUR AFTER BIDS ARE SUBMITTED WHICH ARE A RESULT OF EXISTING CONDITIONS. SITE VISITS PRIOR TO SUBMISSION OF BIDS MUST BE FULLY COORDINATED WITH THE OWNER.

2. DURING DEMOLITION AND NEW CONSTRUCTION THE CONTINUATION OF BUILDING SYSTEMS MAY BE NECESSARY. TRACE AND IDENTIFY EXISTING ELECTRICAL SYSTEM (POWER, LIGHTING AND FIRE ALARM) WIRING IN AREAS PRIOR TO DEMOLITION. ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL NECESSARY EQUIPMENT TO MAKE IT SAFE FOR DEMOLITION. WHERE LIVE BRANCH CIRCUITS OR FEEDERS PASS THROUGH A REMODEL AREA, CONTRACTOR SHALL MAINTAIN ELECTRIC CONTINUITY TO AND PROTECT BRANCH CIRCUITS AND/OR FEEDERS PASSING THROUGH. WHERE FEEDERS AND/OR BRANCH CIRCUITS FEED BOTH LOADS IN A REMODELED AREA AND OUTSIDE OF A REMODELED AREA, CONTRACTOR SHALL DISCONNECT AND REMOVE PORTIONS OF THE ELECTRICAL BRANCH CIRCUITS AND/OR FEEDERS WITHIN THE REMODELED AREA AND REWORK BRANCH CIRCUITS AND/OR FEEDERS TO MAINTAIN ELECTRICAL CONTINUITY TO LOADS OUTSIDE OF THE REMODELED AREA.

3. DEVICES AND EQUIPMENT TO BE DEMOLISHED SHALL BE REMOVED, INCLUDING ALL RELATED CONDUCTORS, RACEWAY, JUNCTION AND SPLICE BOXES UP TO THE PANELBOARD/ SWITCHBOARD. ALL CONDUITS AND BOXES THAT ARE SURFACE MOUNTED AND NO LONGER REQUIRE ACTIVE CIRCUITS SHALL BE COMPLETELY REMOVED. DEVICES TO BE REMOVED ON DRY WALL OR PLASTER TYPE WALLS THAT ARE TO REMAIN SHALL HAVE THE WALL SURFACE PATCHED TO MATCH THE EXISTING FINISH. THE CONTRACTOR SHALL IDENTIFY ALL DEMOLISHED AND ABANDONED BRANCH CIRCUITS. THESE SHALL BE NOTED AS SPARE ON PANELBOARD DIRECTORIES. THIS INCLUDES IDENTIFYING EXISTING ABANDONED AND SPARE CIRCUITS THAT ARE CURRENTLY IDENTIFIED AS USED. THE CONTRACTOR SHALL FURNISH NEW TYPED DIRECTORIES FOR ALL PANELBOARDS.

4. THE OWNER HAS THE RIGHT TO RETAIN ALL SALVAGEABLE MATERIAL. ANY MATERIAL THE OWNER CHOOSES NOT TO ACCEPT SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR.

5. FULLY COORDINATE MECHANICAL EQUIPMENT ELECTRICAL CONNECTION REMOVAL AND RELOCATION WITH THE MECHANICAL CONTRACTOR.

6. REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING DEMOLITION DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION.

7. DASHED DEVICES AND TAGGED WITH (D) ARE EXISTING TO BE DEMOLISHED. SOLID THIN LIGHTWEIGHT DEVICES AND TAGGED WITH (E) ARE EXISTING TO REMAIN.

8. WHERE DEVICES OR EQUIPMENT IS TO BE RELOCATED, CONTRACTOR SHALL EXTEND EXISTING CIRCUITING TO NEW LOCATION. ENSURE CIRCUIT CONTINUITY FOR OTHER DEVICES OR EQUIPMENT ON THE SAME BRANCH CIRCUIT.

KEYNOTES

ME Engineers
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me-engineers.com

PROJECT TEAM

PRINCIPAL:	Jeff Ewens
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DRAWN BY:	ME-Engineers
Q.C.:	ME-Engineers

Prepared for:

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REVISIONS

NO.	DATE	REF. / DESCRIPTION

PERMIT SET

STATE OF MISSOURI
DONALD ELLIOT ROBERTS, II
NUMBER PE-2015000596
PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
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LEVEL 00 FLOOR PLAN - ELECTRICAL DEMO

SHEET NO.

ED100

PROJECT NO.: KC2008.01

CITY OF LEES SUMMIT
207 S. DOUGLAS
LEES SUMMIT, MO

FIRE HEADQUARTERS STATION NO. 1

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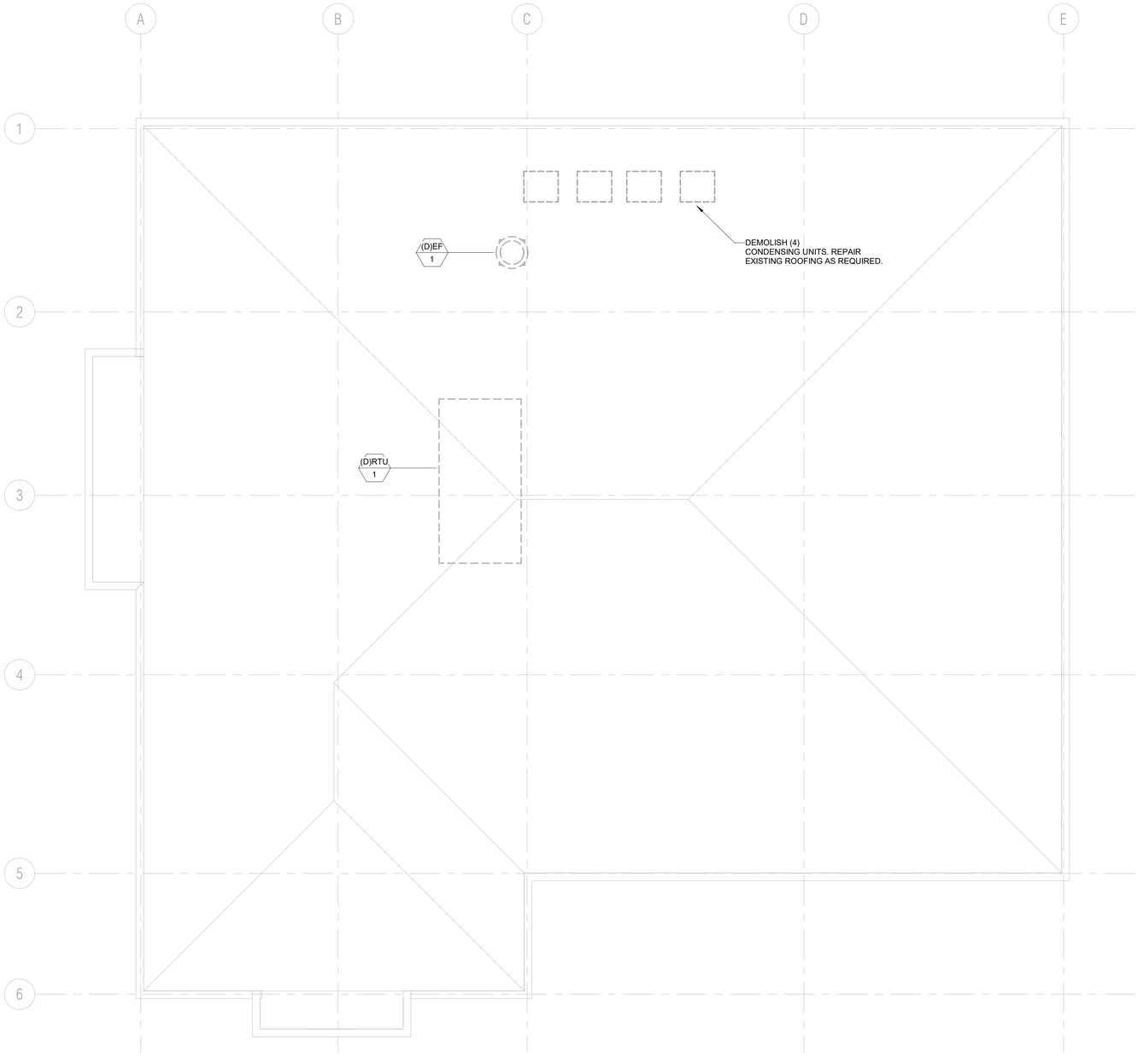

GENERAL NOTES:

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5. FULLY COORDINATE MECHANICAL EQUIPMENT ELECTRICAL CONNECTION REMOVAL AND RELOCATION WITH THE MECHANICAL CONTRACTOR.

6. REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING DEMOLITION DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION.

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KEYNOTES

NORTH

1 LEVEL 03 ROOF PLAN - ELECTRICAL DEMO
1/8" = 1'-0"

0 4' 8' 16'

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PROFESSIONAL ENGINEER
2020.11.12

ISSUE DATE:
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FIRE HEADQUARTERS STATION NO. 1

LEVEL 03 ROOF PLAN - ELECTRICAL DEMO

SHEET NO.

ED103

PROJECT NO.: KC2008.01