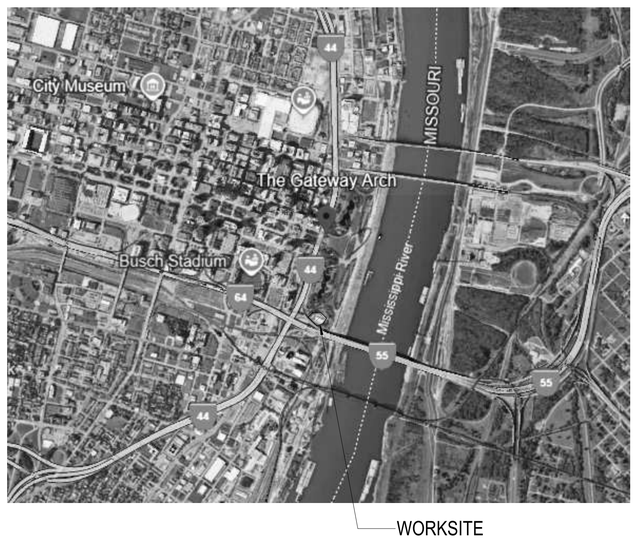
GATEWAY ARCH NATIONAL PARK MAINTENANCE BUILDING

GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

1 SITE MAP
SCALE: 12" = 1'-0"



2 REGION MAP
NOT TO SCALE

DRAWING INDEX

GENERAL

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0 - PH	PHASING PLAN

MECHANICAL

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M002	DEMOLITION FLOOR PLAN - MECHANICAL
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ELECTRICAL

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E701	ELECTRICAL PANEL SCHEDULES

NATIONAL PARK SERVICE
Department of the Interior

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REVISED	
DATE	INITIAL

PREPARED
AJP — DESIGNED
AJP — DRAWN
Checker — CHECKED
02/03/2026 — DATE

TITLE OF SHEET
COVER SHEET
REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **0**

DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **1** OF **16**

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NEW COOLING TOWER TO BE STAGED ON LANDSCAPING WITH PROTECTION AT SQUARE ON AERIAL VIEW.

1 THERMOSTAT DETAIL
NOT TO SCALE

GENERAL PHASING NOTES:

1. CONTRACTOR TO COORDINATE CONSTRUCTION SCHEDULE WITH NPS STAFF.
2. FOR AREAS THAT REQUIRE WORK ABOVE CEILINGS, CONTRACTOR TO DOCUMENT ANY DAMAGE PRIOR TO PROCEEDING WITH WORK.
   A. TO ACCOMMODATE WORK REQUIRED ABOVE FINISH CEILINGS, REMOVE AND REINSTALL PORTIONS OF EXISTING SUSPENDED ACOUSTICAL TILE CEILING SYSTEM TO RESTORE TO ORIGINAL CONDITION. IF ANY CEILING PADS OR CEILING GRID ELEMENTS ARE DAMAGED DURING REMOVAL, REPLACE WITH NEW TO MATCH EXISTING.
3. WORK ASSOCIATED WITH GROUNDS BUILDING TO OCCUR DURING SUMMER SEASON. CONTRACTOR TO COORINDATE SCHEDULE WITH NPS STAFF.
4. WORK ASSOCIATED WITH VISITORS CENTER COOLING TOWER TO OCCUR DURING WINTER MONTHS. CONTRACTOR TO COORINDATE SCHEDULE WITH NPS STAFF.
5. CONTRACTOR TO PROVIDE PORTABLE AIR CONDITIONING UNITS TO SERVE SPACES LISTED ON TEMPORARY COOLING SCHEDULE LOCATED ON SHEET 0-PH.
   A. CAPACITY OF TEMPORARY COOLING REQUIRED IS LISTED ON TEMPORARY COOLING SCHEDULE.
   B. CONTRACTOR TO COORDINATE LOCATIONS WITH NPS STAFF.
   C. PORTABLE AIR CONDITIONING UNITS ARE TO DISCHARGE HOT AIR TO NEAREST CEILING PLENUM.
6. SEE AERIAL SITE LAYOUT VIEW ON 0-PH.
   A. HATCHED LINE INDICATES USABLE PATHWAY TO COOLING TOWER LOCATION. CONTRACTOR TO COORDINATE ALLOWABLE PATHWAYS TO DELIVER NEW COOLING TOWER AND REMOVE EXISTING UNIT PRIOR TO BEGINNING WORK.
   B. SQUARE INDICATED IN VIEW IS TO BE LOCATION OF COOLING TOWER STAGING.
   C. IN NO EVENT IS CONTRACTOR TO DRIVE OVER VISITOR CENTER ROOF.
   D. CONTRACTOR RESPONSIBLE FOR DOCUMENTING SITE CONDITION PRIOR TO CONSTRUCTION. CONTRACTOR RESPONSIBLE FOR REPAIRING SITE TO CONDITION AT START OF CONSTRUCTION.

TEMPORARY COOLING SCHEDULE

EXISTING FAN COIL UNIT SERVING SPACE	SPACE SERVED	TONNAGE REQUIRED
FCU-1	TC	2
FCU-2	TC	2
FCU-3	TC	2
FCU-4	TC	2
FCU-5	TC	2
FCU-6	TC	2
FCU-7	TC	2
FCU-8	NORTH EMR	3
FCU-10	SOUTH EMR	6.5
FCU-11	TC	0.5
FCU-12	TC	0.5
FCU-19	ELEC	3
FCU-20	MECH	6.5
FCU-21	NORTH ELEC	1.5
FCU-28	SOUTH ELEC	2
FCU-34	SW MECH	1
FCU-36	TC	0.5
FCU-38	TC	0.5
FCU-42	EMR	0.75

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SHEET **2** OF **16**

SYMBOL LEGEND

HVAC PIPING

LPS	LOW PRESSURE STEAM
LPR	LOW PRESSURE RETURN
MPS	MEDIUM PRESSURE STEAM
MPR	MEDIUM PRESSURE RETURN
HPS	HIGH PRESSURE STEAM
HPR	HIGH PRESSURE RETURN
PC	PUMPED CONDENSATE
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
HPWS	HEAT PUMP WATER SUPPLY
HPWR	HEAT PUMP WATER RETURN
GHWS	GLYCOL HOT WATER SUPPLY
GHWR	GLYCOL HOT WATER RETURN
BBD	BOILER BLOW DOWN
ES	EXHAUST STEAM
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
GCWS	GLYCOL CHILLED WATER SUPPLY
GCWR	GLYCOL CHILLED WATER RETURN
RL	REFRIGERANT LIQUID LINE
RS	REFRIGERANT SUCTION LINE
RDL	REFRIGERANT DISCHARGE
CS	CONDENSER WATER SUPPLY
CR	CONDENSER WATER RETURN
HCWS	HOT/CHILLED WATER SUPPLY
HCWR	HOT/CHILLED WATER RETURN
CD	CONDENSATE DRAIN
G	NATURAL GAS
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
FOV	FUEL OIL VENT
FOF	FUEL OIL FILL
FOG	FUEL OIL GAGE
LPG	LIQUEFIED PETROLEUM GAS

PLUMBING PIPING

	SANITARY DRAIN (ABOVE FLOOR)
	SANITARY DRAIN (BELOW FLOOR)
ST/OST	STORM DRAIN
ST/OST	STORM DRAIN (BELOW FLOOR)
	SANITARY VENT
AW	ACID WASTE
AV	ACID VENT
- -	DOMESTIC COLD WATER (DCW)
- - -	DOMESTIC HOT WATER (DHW)
	DOMESTIC HOT WATER RECIRCULATING (DHWR)
TW	TEPID WATER
TWR	TEPID WATER RECIRCULATING
DSCW	SOFTENED COLD WATER
DSHW	SOFTENED HOT WATER
W	BURIED EXTERIOR WATER
DS	DISTILLED WATER
DI	DEIONIZED WATER
RO	REVERSE OSMOSIS WATER
A	COMPRESSED AIR
VAC	VACUUM
OX	OXYGEN
N	NITROGEN
WAGD	WASTE AND ANESTHETIC GAS DISPOSAL
MA	MEDICAL AIR

FIRE PROTECTION

D	SPRINKLER DRAIN
F	FIRE SUPPRESSION PIPING
	FIRE DEPARTMENT CONNECTION
FS	FLOW SWITCH
TS	TAMPER SWITCH

VALVES

	MANUAL BALANCING VALVE
	ISOLATION VALVE
	CHECK VALVE
M	CONTROL VALVE (2 WAY)
M	CONTROL VALVE (3 WAY)
	AUTO FLOW CONTROL VALVE
	HOSE END DRAIN VALVE
	PRESSURE REDUCING VALVE
S	SOLENOID VALVE
	TEMP & PRESS RELIEF (OR) SAFETY VALVE-STEAM
	THERMOSTATIC MIXING VALVE

PIPING SPECIALTIES AND FITTINGS

CO WCO	CLEANOUT / WALL CLEANOUT
GCO	GRADE CLEANOUT
DGCO	DOUBLE - GRADE CLEANOUT
VTR	PLUMBING VENT THRU ROOF
FD-	FLOOR DRAIN
FS-	FLOOR SINK
RD-	ROOF DRAIN
ORD-	OVERFLOW ROOF DRAIN
	TRENCH DRAIN
MH	MANHOLE
X	OXYGEN OUTLET
V	VACUUM OUTLET
A	AIR OUTLET
N	NITROGEN OUTLET
V	WASTE AND ANESTHETIC GAS DISPOSAL OUTLET
MA	MEDICAL AIR OUTLET
	PIPE CAP
	ELBOW UP
	ELBOW DOWN
	TEE
	TEE UP
	TEE DOWN
	STRAINER
	UNION
	AIR VENT
	FLEXIBLE PIPE CONNECTION
	EXPANSION JOINT
	PIPE ANCHOR
	PIPE GUIDE
	THERMOMETER
	PRESSURE GAUGE
HB	HOSE BIBB
RHY	ROOF HYDRANT
WH	WALL HYDRANT
	STEAM TRAP

MISCELLANEOUS SYMBOLS

DEMO / EXISTING	DEMO TO EXISTING CONNECTION
NEW / EXISTING	NEW TO EXISTING CONNECTION

HVAC DUCTWORK AND SPECIALTIES

18x10	RECT DUCT-1ST FIG IS SIDE SHOWN
18 Ø	ROUND DUCT
18/10	FLAT OVAL DUCT-1ST FIG IS SIDE SHOWN
	ACOUSTICAL DUCT LINER

HVAC DUCTWORK AND SPECIALTIES (CONT.)

	FLEXIBLE DUCTWORK CONNECTION
	VOLUME DAMPER
	TURNING VANES
	HIGH EFFICIENCY TAKEOFF
	HIGH EFFICIENCY TAKOFF WITH VOLUME DAMPER
	SUPPLY AND FRESH AIR DUCT UP
	SUPPLY AND FRESH AIR DUCT DOWN
	RETURN DUCT UP
	RETURN DUCT DOWN
	EXHAUST DUCT UP
	EXHAUST DUCT DOWN
	ROUND DUCT UP / DOUBLE LINE PIPE
	ROUND DUCT DOWN / DOUBLE LINE PIPE
SIZE/TYPE FLOW	AIR TERMINAL (VERTICAL MOUNTING)
SIZE/TYPE FLOW	ROUND AIR TERMINAL (HORIZONTAL MOUNTING)
SIZE/TYPE FLOW	RECTANGULAR SUPPLY AIR TERMINAL (HORIZONTAL MOUNTING)
SIZE/TYPE FLOW	RECTANGULAR RETURN AIR TERMINAL (HORIZONTAL MOUNTING)
SIZE/TYPE FLOW	RECTANGULAR EXHAUST AIR TERMINAL (HORIZONTAL MOUNTING)
AFS	AIR FLOW STATION
	MOTORIZED DAMPER-PARALLEL BLADE
	MOTORIZED DAMPER-OPPOSED BLADE
	GRAVITY DAMPER
F	FIRE DAMPER-HORIZ FIRE SEPARATION
S	SMOKE DAMPER
FS	FIRE/SMOKE DAMPER
	FLEXIBLE DUCT
T	THERMOSTAT
H	HUMIDISTAT
S	TEMPERATURE SENSOR
CO	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
NO2	NITROGEN DIOXIDE SENSOR
X	SENSOR WITH GUARD

REFERENCE LEGEND

DUCT SIZE	X" ∅ — DIAMETER X"xX" — WIDTH x HEIGHT X"/X" — WIDTH / HEIGHT
PIPE SIZE	X" — PIPE SIZE (DIAMETER)
PLUMBING FIXTURES	XXX-1 — PLUMBING FIXTURE DESIGNATION
ROOM / SPACE NUMBER	ROOM NAME — ROOM NAME DESIGNATION 101 — ROOM NUMBER DESIGNATION
EQUIPMENT NUMBER	XX-1 — EQUIPMENT NUMBER
REFERENCE DEMOLITION NOTE	X — DEMOLITION DESIGNATION
REFERENCE NOTE	X — REFERENCE DESIGNATION
PLAN DETAIL	X — DETAIL NUMBER XXXX — SHEET NUMBER
SECTION/ DETAIL	SIM/OPP X — SECTION/DETAIL NUMBER XXXX — SHEET NUMBER INDICATES DIRECTION OF VIEW
NEW COLUMN	X — LETTER/NUMBER INDICATES NEW COLUMN LINE
EXISTING COLUMN	X — LETTER/NUMBER INDICATES EXISTING COLUMN LINE
MATCHLINE	AREA A AREA B
LEVEL	LEVEL CALLOUT DESIGNATION NAME ELEVATION ELEVATION DESIGNATION
TITLE MARKER	GRAPHIC AREA FOR DRAWING 1 VIEW NAME — DRAWING/DETAIL NUMBER, TITLE SCALE: 1/8" = 1'-0" — SCALE OF THE DRAWING
NORTH ARROW	NORTH PLAN NORTH TRUE NORTH

REF. DEMO NOTES (X)

PROJECT MECHANICAL REFERENCED DEMOLITION NOTES

SEE INDIVIDUAL SHEETS FOR REFERENCE NOTES.

REF. NOTES (X)

PROJECT MECHANICAL REFERENCED NOTES

SEE INDIVIDUAL SHEETS FOR REFERENCE NOTES.

GENERAL DEMOLITION NOTES

A. THE DEMOLITION PLANS WERE PRODUCED BY DUPLICATING THE ORIGINAL DRAWINGS PROVIDED BY THE OWNER AND LIMITED FIELD VERIFICATION. DIMENSIONS AND EXISTING CONDITIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. ITEMS WHICH ARE INTENDED TO BE REMOVED, RELOCATED, OR SALVAGED ARE SHOWN AS FULL-TONE LINES. ALL OTHER ITEMS ARE INTENDED TO REMAIN IN PLACE AND ARE SHOWN AS HALF-TONE.

B. DEMOLITION SHALL INCLUDE, BUT IS NOT LIMITED TO, THE ITEMS LISTED BELOW OR HERE-IN. THE CONTRACTOR SHALL COORDINATE ALL REQUIRED RENOVATION AND NEW CONSTRUCTION WITH THE EXISTING BUILDING TO IDENTIFY THE TOTAL EXTENT OF THE DEMOLITION REQUIRED AND AS LISTED BELOW.

C. THE REMOVAL OF FIRE PROTECTION, HVAC, AND PLUMBING EQUIPMENT FROM FINISHED AREAS AND THROUGH WEATHER BARRIERS SHALL BE COORDINATED WITH ARCHITECTURAL PLANS AND DETAILS AS WELL AS NOTES ON THE MECHANICAL DRAWING TO ENSURE PROPER PATCHING AND REPAIR IS MADE TO THE BUILDING.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DEMOLITION AND REMOVAL OF ALL EXISTING COMPONENTS, MATERIALS, EQUIPMENT, AND APPURTENANCES TO BUILD, ERECT, INSTALL, OR ACCOMMODATE ALL NEW CONSTRUCTION WITH THE OWNER HAVING FIRST RIGHT OF REFUSAL ON ALL ITEMS.

E. ITEMS NOTED TO BE REMOVED AND SALVAGED OR REINSTALLED SHALL BE CAREFULLY REMOVED BY THE CONTRACTOR WITHOUT DAMAGE AND STORED OR REINSTALLED ON THE SITE AS DIRECTED. REMOVED OR SALVAGED ITEMS SHALL REMAIN THE PROPERTY OF THE OWNER.

F. COORDINATE THE DISCONNECTION OF ELECTRICAL MOTORS AND CONTROLS WITH ELECTRICAL CONTRACTOR PRIOR TO MECHANICAL REMOVALS.

G. IN THE EVENT THE CONTRACTOR ENCOUNTERS ON THE SITE, MATERIAL REASONABLY BELIEVED TO BE ASBESTOS, LEAD-BASED PAINT, OR ANY OTHER HAZARDOUS MATERIAL WHICH HAS NOT BEEN RENDERED HARMLESS, THE CONTRACTOR SHALL IMMEDIATELY STOP WORK IN THE AREA AFFECTED AND REPORT THE CONDITION TO THE OWNER AND ARCHITECT IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT THEREAFTER BE RESUMED EXCEPT BY WRITTEN AGREEMENT OF THE OWNER AND ARCHITECT.

H. ANY UTILITY OR SYSTEMS DISRUPTION OR OUTAGES DURING DEMOLITION SHALL BE COORDINATED WITH THE OWNER AND GENERAL CONTRACTOR.

I. CONTRACTOR RESPONSIBLE FOR PROTECTION OF ALL FINISHES AND WORK AREAS.

GENERAL NOTES

A. EXISTING CONDITIONS ARE BASED ON DRAWINGS PROVIDED BY THE OWNER AND LIMITED FIELD VERIFICATION. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM THOSE SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL ADJUST TO ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.

B. ALL CONTRACTORS ARE RESPONSIBLE FOR REVIEWING ENTIRE SET OF DOCUMENTS TO DETERMINE THEIR FULL SCOPE OF WORK. CONTRACTOR SHALL NOT BE ALLOWED EXTRA COSTS DUE TO FAILURE TO REVIEW ENTIRE SET OF DOCUMENTS.

C. CONTRACTOR SHALL TAKE ALL MEASUREMENTS FOR WORK AND BE RESPONSIBLE FOR SAME. CONTRACTOR SHALL ADJUST FOR ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO OWNER. COORDINATE THE WORK AND SHOP DRAWINGS WITH ALL OTHER TRADES AFFECTED.

D. SCREENED HALF-TONE LINES INDICATE EXISTING CONSTRUCTION TO REMAIN. FULL-TONE LINES INDICATED NEW OR RELOCATED CONSTRUCTION.

E. CONTRACTOR SHALL COORDINATE THE ROUTING OF ALL DUCTWORK WITH STRUCTURE, CEILING, LIGHTING, AND PIPING.

F. MAINTAIN MANUFACTURER'S REQUIRED CLEARANCE AROUND ALL EQUIPMENT TO ALLOW FOR MAINTENANCE ACCESS.

G. ALL PIPING IN CONCEALED LOCATIONS SHALL BE ROUTED AT RIGHT ANGLES AND PARALLEL TO BUILDING WALLS UNLESS OTHERWISE INDICATED.

H. DO NOT ROUTE DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS. MAINTAIN ALL CODE REQUIRED CLEARANCES.

I. IN THE EVENT THE CONTRACTOR ENCOUNTERS ON THE SITE, MATERIAL REASONABLY BELIEVED TO BE ASBESTOS, LEAD-BASED PAINT, OR ANY OTHER HAZARDOUS MATERIAL WHICH HAS NOT BEEN RENDERED HARMLESS, THE CONTRACTOR SHALL IMMEDIATELY STOP WORK IN THE AREA AFFECTED AND REPORT THE CONDITION TO THE OWNER AND ARCHITECT IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT THEREAFTER BE RESUMED EXCEPT BY WRITTEN AGREEMENT OF THE OWNER AND CONTRACTOR.

J. ALL RUNOUTS TO AIR TERMINALS SHALL MATCH INLET SIZE UNLESS OTHERWISE NOTED.

K. ANY UTILITY OR SYSTEM DISRUPTIONS OR OUTAGES DURING CONSTRUCTION SHALL BE COORDINATED WITH THE OWNER AND GENERAL CONTRACTOR.

L. THIS PROJECT UTILIZES A RETURN AIR PLENUM. ALL MATERIALS INSTALLED IN RETURN AIR PLENUM SHALL BE NON-COMBUSTABLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND SMOKE DEVELOPED INDEX NOT TO EXCEED 50 IN ACCORDANCE WITH ASTM E84 OR UL 723.

M. CONTRACTOR RESPONSIBLE FOR PROTECTION OF ALL FINISHES AND WORK AREAS.

N. TO ACCOMMODATE WORK REQUIRED ABOVE FINISH CEILINGS, REMOVE AND REINSTALL PORTIONS OF EXISTING SUSPENDED ACOUSTICAL TILE CEILING SYSTEM TO RESTORE TO ORIGINAL CONDITION. IF ANY CEILING PADS OR CEILING GRID ELEMENTS ARE DAMAGED DURING REMOVAL, REPLACE WITH NEW TO MATCH EXISTING.

O. SEE PHASING PLANS ON SHEET 0-PH. COORDINATE WORK WITH PHASING PLANS.

MECHANICAL SHEET LIST

M 00	MECHANICAL INFO SHEET
M001	DEMOLITION FLOOR PLAN - MECHANICAL
M002	DEMOLITION FLOOR PLAN - MECHANICAL
M101	FLOOR PLAN - MECHANICAL
M102	FLOOR PLAN - MECHANICAL
M401	DETAILS - MECHANICAL
M501	SCHEDULE - MECHANICAL

ABBREVIATIONS

A	COMPRESSED AIR
AC	AIR COMPRESSOR
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	AIR DOOR
AFCV	AUTO FLOW CONTROL VALVE
AHU	AIR HANDLING UNIT
AMP	AMPERE
APD	AIR PRESSURE DROP
ARU	AIR ROTATION UNIT
AS	AIR SEPARATOR
ASHP	AIR SOURCE HEAT PUMP
AV	ACID VENT
AW	ACID WASTE
B	BOILER
BC	BLOWER COIL
BD	BIDET
BFP	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BLKG	BLOCKING
BLV	BALANCING VALVE
BT	BATHTUB
BV	BALL VALVE
BW	BEDPAN WASHER
CH	CHILLER
CC	COOLING COIL
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CMU	COMBINATION UNITS
CR	CONDENSER WATER RETURN
CRAC	COMPUTER ROOM AIR CONDITIONER
CS	CONDENSER WATER SUPPLY
CSS	CLINICAL SERVICE SINKS
CT	COOLING TOWER
CU	CONDENSING UNIT - SPLIT SYSTEM
CUH	CABINET HEATER
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DB	DRY-BULB TEMPERATURE
DCW	DOMESTIC COLD WATER
DEG	DEGREE
DF	DRINKING FOUNTAIN
DGCO	DOUBLE GRADE CLEANOUT
DH	EMERGENCY DRENCH HOSES
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RECIRCULATING
DHWP	DOMESTIC HOT WATER RECIRCULATING PUMP
DI	DEIONIZED WATER
DOAS	DEDICATED OUTDOOR AIR SYSTEM
DS	DISTILLED WATER
DSA	DUCT SOUND ATTENUATORS
DSCW	DOMESTIC SOFT COLD WATER
DSHW	DOMESTIC SOFT HOT WATER
DSHWR	DOMESTIC SOFT HOT WATER RECIRCULATING
DSS	DUCTLESS SPLIT SYSTEM
DST	DOMESTIC STORAGE TANK
DTW	DOMESTIC TEPID WATER
DTWR	DOMESTIC TEPID WATER RECIRCULATING
DWET	DOMESTIC WATER EXPANSION TANK
EA.	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EEW	EMERGENCY EYE WASH
EEWS	EMERGENCY EYE WASH/SHOWER
EF	EXHAUST FAN
EFF	EFFICIENCY
EFW	EMERGENCY FACE WASH
EH	EXHAUST HOOD
ERV	ENERGY RECOVERY VENTILATOR
ES	EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWT	ENTERING WATER TEMPERATURE
F	FIRE SUPPRESSION PIPING
F-_	FURNACE
FC	FLUID COOLER
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOOR SINK
FSD	FIRE/SMOKE DAMPER
FT	FINNED TUBE
G	GAS
GCWR	GLYCOL CHILLED WATER RETURN
GCWS	GLYCOL CHILLED WATER SUPPLY
GD	GARBAGE DISPOSAL
GDH	GAS DUCT HEATER
GHCR	GLYCOL HOT/CHILLED WATER RETURN
GHCS	GLYCOL HOT/CHILLED WATER SUPPLY
GHWR	GLYCOL HOT WATER RETURN
GHWS	GLYCOL HOT WATER SUPPLY
GI	GREASE INTERCEPTOR
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GV	GAS VENT
GWH	GAS WATER HEATER
H	HUMIDIFIER
HB	HOSE BIBB
HC	HEATING COIL
HCR	HOT/CHILLED WATER RETURN
HCS	HOT/CHILLED WATER SUPPLY
HP	HORSEPOWER
HP-_	HEAT PUMP
HPR	HIGH PRESSURE RETURN
HPS	HIGH PRESURE STEAM
HRC	HEAT RECOVERY COIL
HVLS	HIGH VOLUME LOW SPEED
HWR	HOT WATER RETURN (HEATING)
HWS	HOT WATER SUPPLY (HEATING)
HX	HEAT EXCHANGER
HY	HYDRANTS
IH	INTAKE HOOD
IRH	INFRARED RADIANT HEATER
KH	KITCHEN HOOD
KW	KILOWATT
KWH	KILOWATT HOURS
L	LAVATORY
LAT	LEAVING AIR TEMPERATURE
LPR	LOW PRESSURE RETURN
LPG	LIQUIFIED PETROLEUM GAS
LPS	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LS	LAUNDRY SINK
LV	LOUVER
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTUH
MCA	MINIMUM CIRCUIT AMPS
MD	MOTORIZED DAMPER
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MPR	MEDIUM PRESSURE RETURN
MPS	MEDIUM PRESSURE STEAM
MS	MOP SINK
N	NITROGEN
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPCW	NONPOTABLE COLD WATER
NPHW	NONPOTABLE HOT WATER
NPHWR	NONPOTABLE HOT WATER RECIRCULATING
OA	OUTSIDE AIR
OB	OUTLET BOX
OI	OIL INTERCEPTOR
ORD	OVERFLOW ROOF DRAIN
OST	OVERFLOW STORM WATER
OX	OXYGEN
P	PUMP
PHC	PREHEAT COIL
PIV	POST INDICATING VALVE
PRV	PRESSURE REGULATING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
RA	RETURN AIR
RCP	RADIANT CEILING PANEL
RD	ROOF AREA DRAINS
RL	REFRIGERANT DISCHARGE LINE
RF	RETURN FAN
RH	RELIEF HOOD
RHC	REHEAT COIL
RH	ROOF HYDRANT
RL	REFRIGERANT LIQUID LINE
RLA	RELIEF AIR
RLF	RELIEF FAN
RO	REVERSE OSMOSIS WATER
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION LINE
RTU	ROOF TOP UNIT
RV	RELIEF VALVE
S	SINK
SA	SUPPLY AIR
SAN	SANITARY SEWER
SD	SMOKE DAMPER
SF	SUPPLY FAN
SFU	SANITARY FIXTURE UNIT
SH	SHOWER
SOI	SAND OIL INTERCEPTOR
SP	STATIC PRESSURE
SP	SUMP PUMP
SSS	SURGICAL SCRUB SINK
ST	STORM WATER
T	THERMOSTAT
TD	TRENCH DRAIN
TMV	THERMOSTATIC MIXING VALVE
TONS	TONS OF REFRIGERATION
TSP	TOTAL STATIC PRESSURE
UH	UNIT HEATER
UR	URINAL
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF
WB	WET BULB
WC	WATER CLOSETS
WCO	WALL CLEANOUT
WF	WASH FOUNTAINS
WFU	WATER FIXTURE UNITS
WH	WALL HYDRANT
WMB	WASHING MACHINE BOX
WPD	WATER PRESSURE DROP
WS	WATER SOFTENER
WSHP	WATER SOURCE HEAT PUMP
WWHP	WATER TO WATER HEAT PUMP
YH	YARD HYDRANT

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TITLE OF SHEET
MECHANICAL INFO SHEET
REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **M 00**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. 320855
SHEET 3 OF 16

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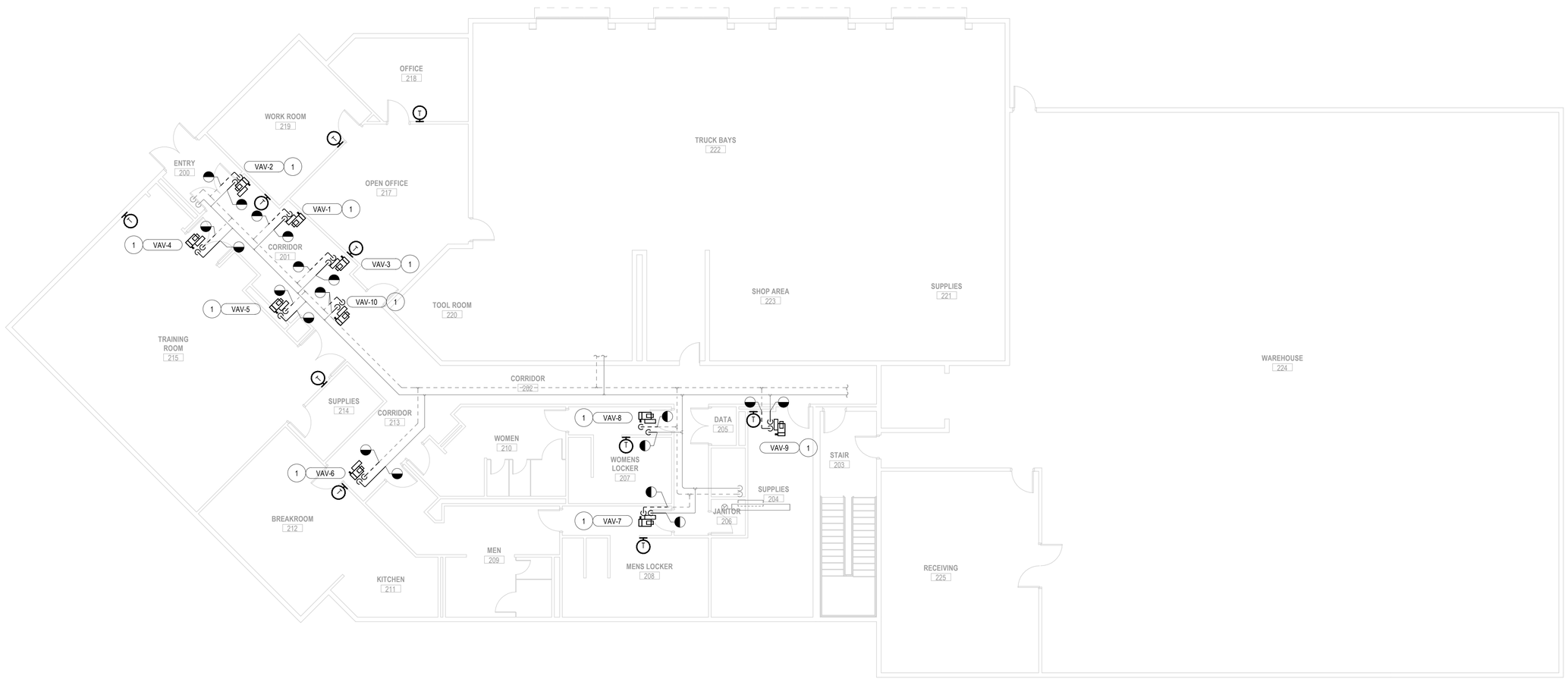
REF. DEMO NOTES (X):

1 REMOVE EXISTING VAV BOX AND ASSOCIATED PIPING SPECIALTIES. PROTECT CONNECTED DUCTWORK FOR RECONNECTION TO NEW VAV BOX. SEE M101 FOR ADDITIONAL INFORMATION. REMOVE ASSOCIATED THERMOSTAT.



2 FIRST FLOOR PLAN - DEMO HVAC - OPTION 1
SCALE: 1/8" = 1'-0"

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TITLE OF SHEET
DEMOLITION FLOOR PLAN - MECHANICAL
REPLACE COOLING TOWER AND BOILER UNITS

GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **M001**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **4** OF **16**

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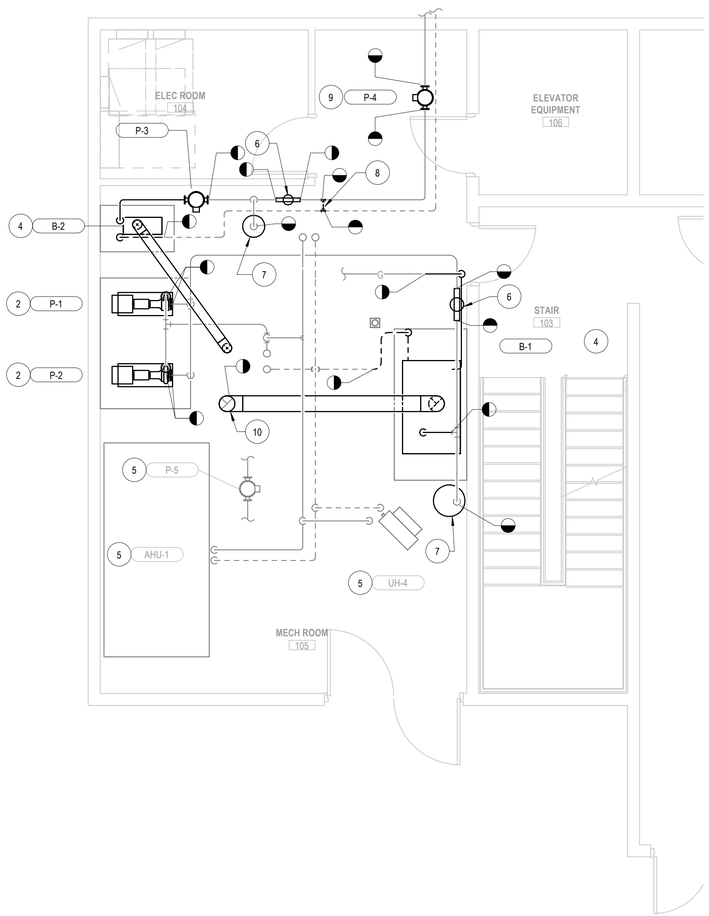
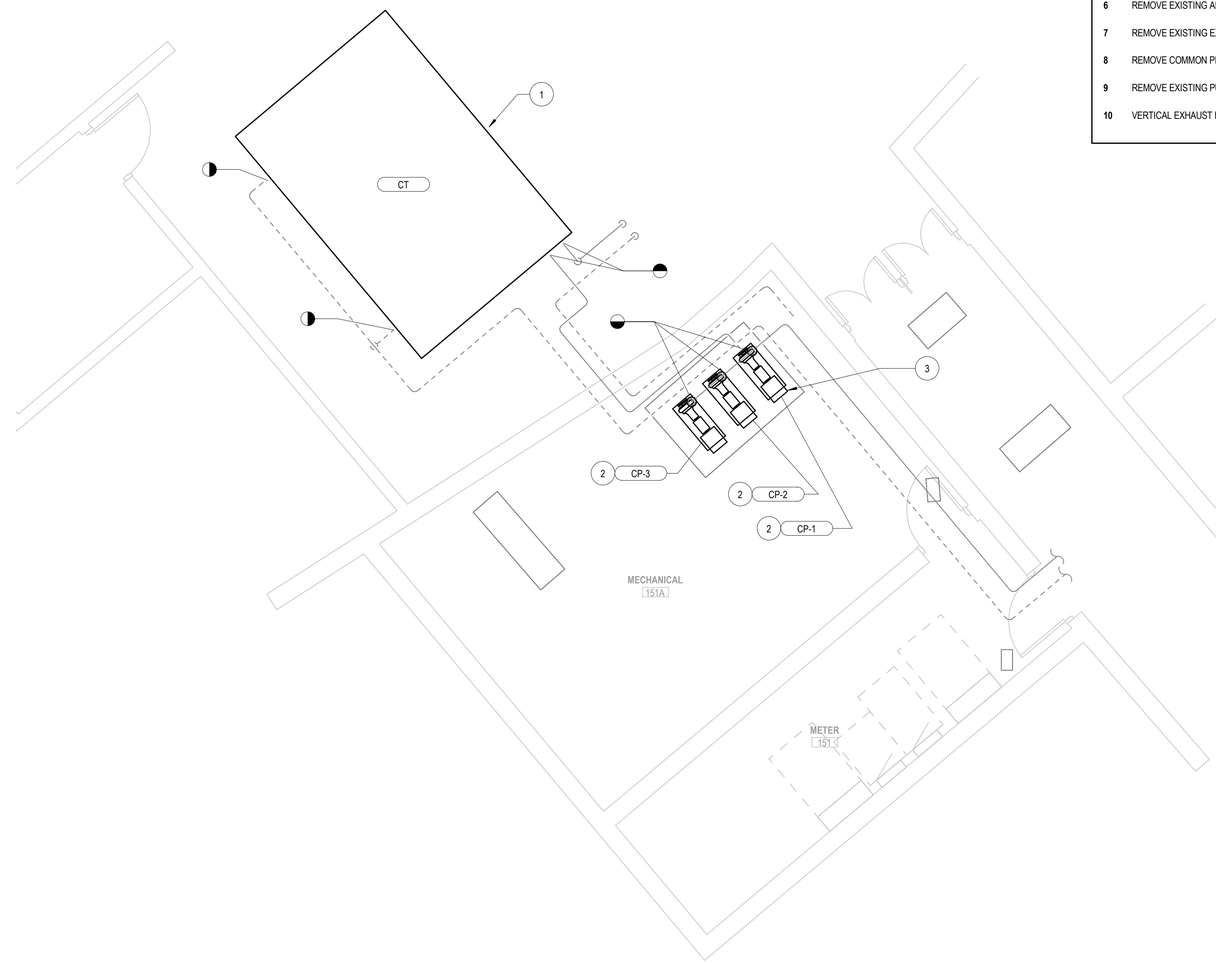
REF. DEMO NOTES (X):

1. REMOVE EXISTING COOLING TOWER. ASSOCIATED PIPING AND BY-PASS SYSTEM IS TO BE REUSED. CONTRACTOR TO DOCUMENT PIPING LAYOUT PRIOR TO REMOVAL OF COOLING TOWER.
2. REMOVE EXISTING PUMPS AND ASSOCIATED ACCESSORIES.
3. EXISTING WATER METER CONNECTED TO CONDENSER DRAIN LINE TO BE REUSED FOR WITH NEW PUMPS. TEMPORARILY DISCONNECT DURING CONSTRUCTION.
4. REMOVE BOILER AND ASSOCIATED FLUE, CONDENSATE DRAIN LINE, AND ASSOCIATED ACCESSORIES. REMOVE GAS PIPING BACK TO MAIN AND CAP. REMOVE GAS FLUE BACK TO VERTICAL STACK. VERTICAL STACK TO BE REUSED.
5. EXISTING EQUIPMENT TO REMAIN.
6. REMOVE EXISTING AIR/DIRT SEPARATOR AND PREPARE FOR INSTALLATION OF NEW UNIT.
7. REMOVE EXISTING EXPANSION TANK AND PREPARE FOR INSTALLATION OF NEW UNIT.
8. REMOVE COMMON PIPE SECTION OF EXISTING IN-FLOOR RADIANT HEAT SYSTEM.
9. REMOVE EXISTING PUMP AND PREPARE FOR INSTALLATION OF NEW UNIT.
10. VERTICAL EXHAUST FLUE TO BE REUSED. PROTECT DURING CONSTRUCTION.



1 SUB-GRADE PLAN - DEMO HVAC
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR PLAN - AREA 3.4 - DEMO HVAC
SCALE: 1/4" = 1'-0"

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TITLE OF SHEET
DEMOLITION FLOOR PLAN - MECHANICAL
REPLACE COOLING TOWER AND BOILER UNITS

GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **M002**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **5** OF **16**

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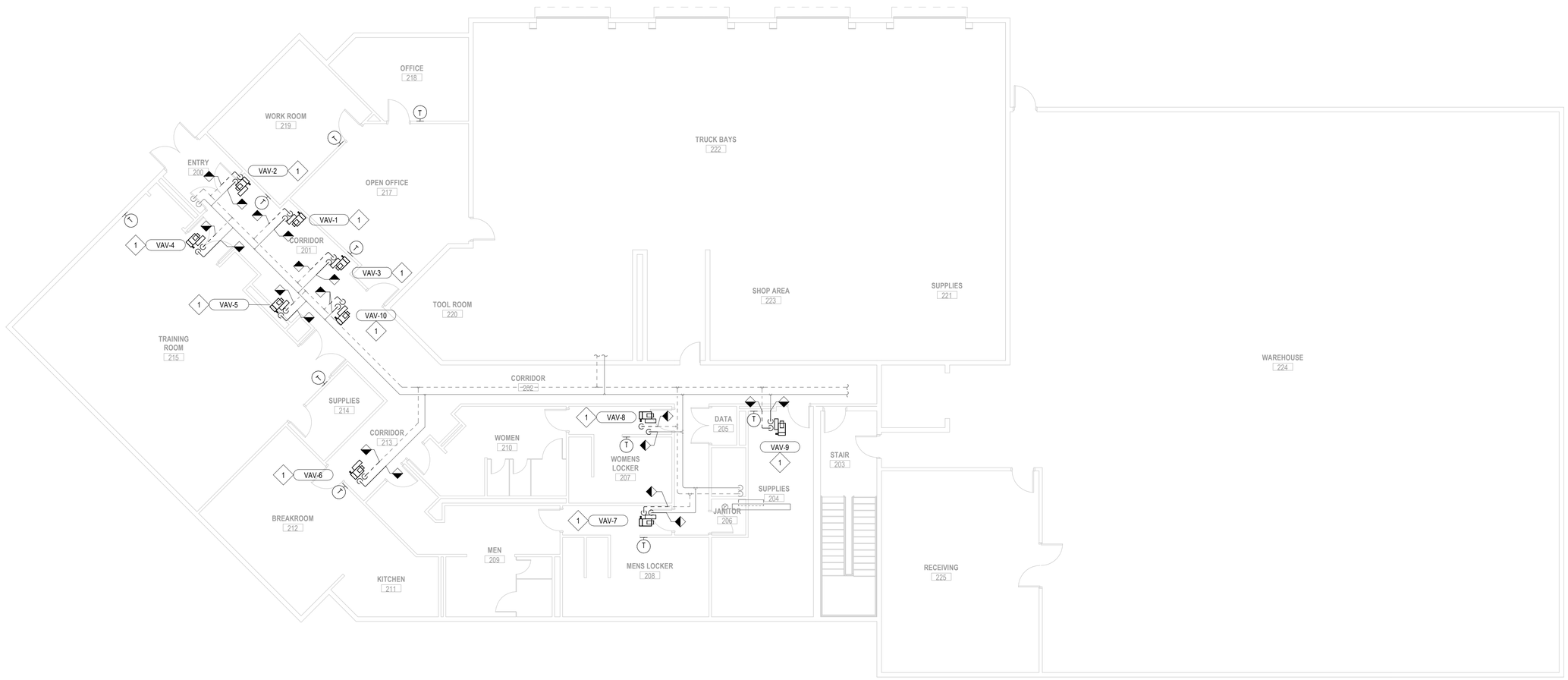
REF. NOTES (X):

1 REPLACE VAV BOX AS SHOWN. PROVIDE NEW PIPING SPECIALTIES AND CONNECT TO EXISTING PIPING AND DUCTWORK. INSTALL NEW THERMOSTAT IN PREVIOUS THERMOSTAT LOCATION.



1 FIRST FLOOR PLAN - HVAC - OPTION 1
SCALE: 1/8" = 1'-0"

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REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
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ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **M101**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **6** OF **16**

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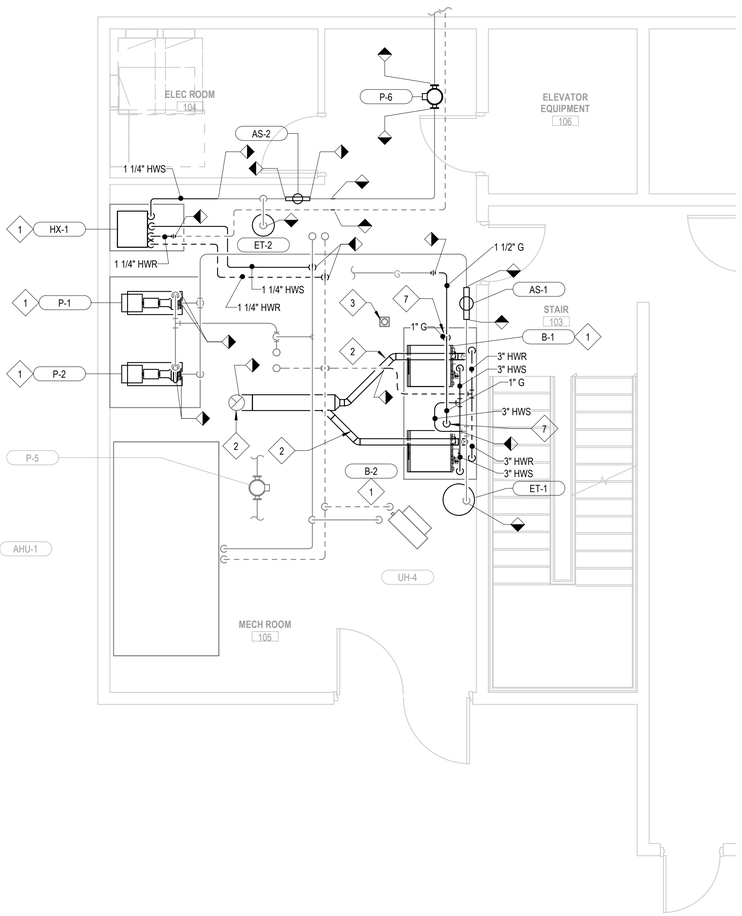
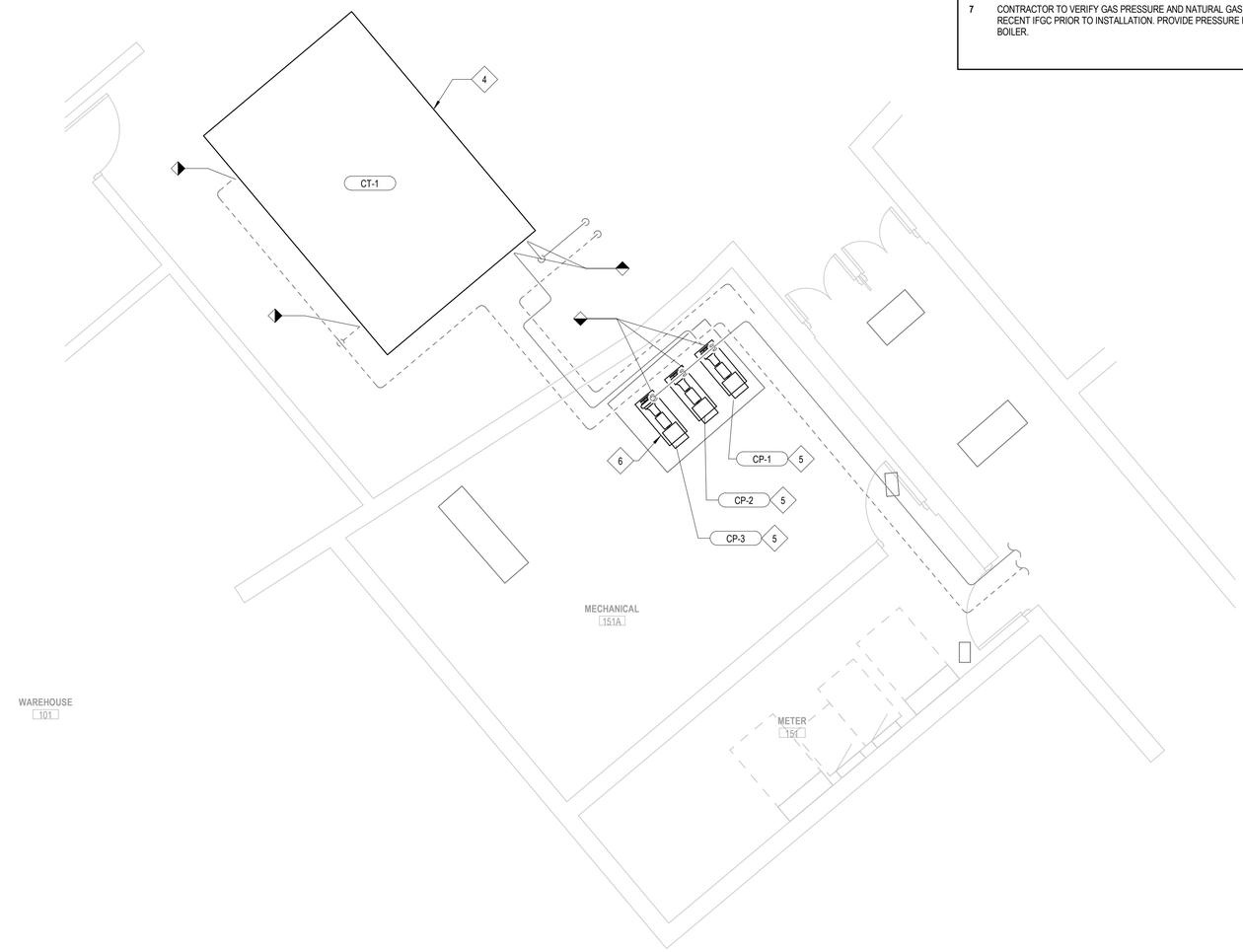
REF. NOTES (X):

1. INSTALL EQUIPMENT ON EXISTING HOUSEKEEPING PAD.
2. SIZE AND INSTALL EXHAUST FLUE PIPING PER MANUFACTURER REQUIREMENTS. CONNECT TO EXISTING 10" Ø FLUE UP THROUGH ROOF.
3. ROUTE FULL SIZE CONDENSATE FROM BOILER TO EXISTING FLOOR DRAIN. PROVIDE CONDENSATE NEUTRALIZER FOR EACH BOILER.
4. INSTALL NEW COOLING TOWER IN PREVIOUS UNITS LOCATION. EXISTING PIPING TO BE REUSED. CONTRACTOR TO MODIFY PIPING AS REQUIRED FOR NEW EQUIPMENT CONNECTIONS. CONTRACTOR TO DOCUMENT ANY PIPING LAYOUTS PRIOR TO REMOVAL OF COOLING TOWER. COOLING TOWER BYPASS LOOP TO BE USED FOR NEW COOLING TOWER.
5. INSTALL NEW PUMPS ON EXISTING HOUSEKEEPING PAD.
6. REINSTALL CONDENSER WATER METER AS PREVIOUSLY INSTALLED.
7. CONTRACTOR TO VERIFY GAS PRESSURE AND NATURAL GAS PIPE SIZE WITH MOST RECENT IFGC PRIOR TO INSTALLATION. PROVIDE PRESSURE REGULATOR AT EACH BOILER.



1 SUB-GRADE PLAN - HVAC
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR PLAN - AREA 3.4 - HVAC
SCALE: 1/4" = 1'-0"

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FLOOR PLAN - MECHANICAL
REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
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ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **M102**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **7** OF **16**

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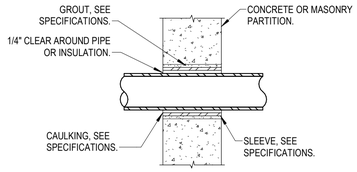
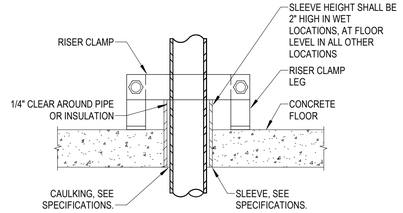


NOTE:
1. CAULK FULL PERIMETER OF PIPE AT BOTH INSIDE & OUTSIDE OF WALL.

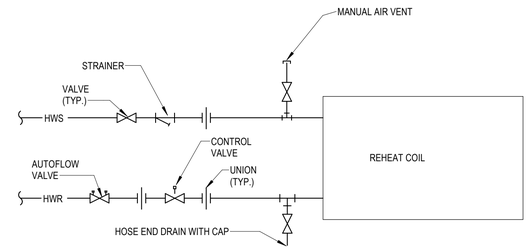
DETAIL OF SLEEVE FOR PIPING PENETRATION OF VERTICAL PARTITIONS



NOTE:
1. CAULK FULL PERIMETER OF PIPE AT BOTH TOP AND BOTTOM OF FLOOR.

DETAIL OF SLEEVE FOR PIPING PENETRATION OF FLOOR

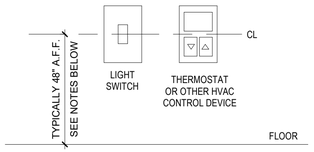
1 INTERIOR PIPE SLEEVE DETAILS
SCALE: NOT TO SCALE



NOTE: SEE PLANS FOR PIPE SIZE, MINIMUM 3/4".

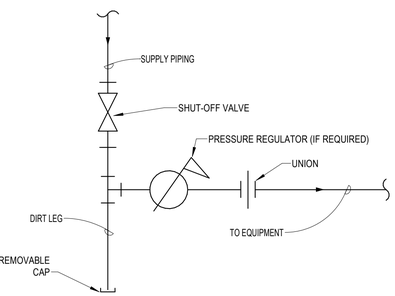
2 REHEAT COIL PIPING DETAIL
SCALE: NOT TO SCALE

TYPICAL HVAC CONTROL DEVICE INSTALLATION

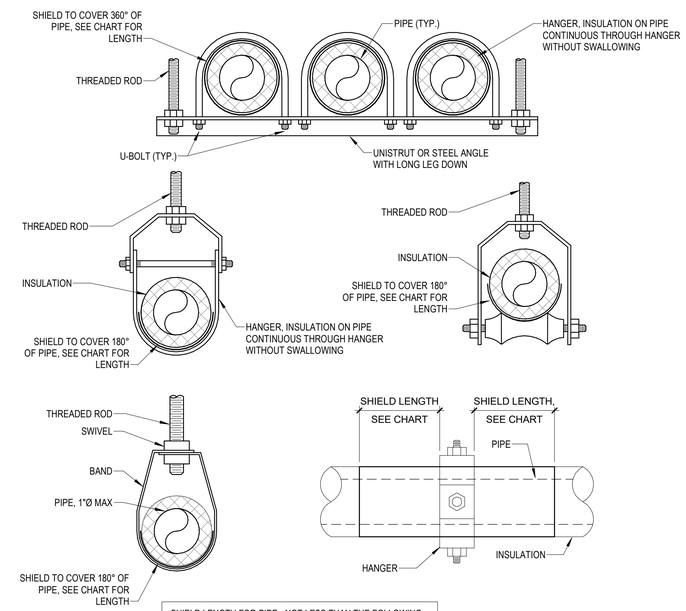


NOTES:
1. WHEN THERMOSTAT IS LOCATED ADJACENT TO LIGHT SWITCH OR OTHER WALL MOUNTED ELECTRICAL OR CONTROL DEVICE, DEVICES TO BE INSTALLED AT THE SAME ELEVATION.
2. ALL USER INPUT BUTTONS OR SWITCHES ON CONTORL DEVICE TO BE LOCATED BELOW 48" A.F.F. TO MEET ADA REQUIREMENTS.
3. WHEN INSTALLED NEAR DOOR, LIGHT SWITCH SHALL BE DEVICE CLOSEST TO DOOR FRAME.
4. IF DEVICE IS LOCATED ABOVE COUNTER, INSTALL AT 40" A.F.F.

3 THERMOSTAT DETAIL
SCALE: 12" = 1'-0"



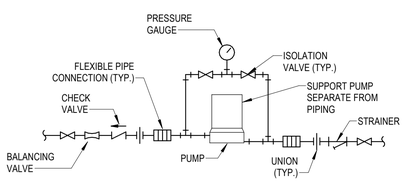
4 TYPICAL GAS PIPING DETAIL
SCALE: NOT TO SCALE



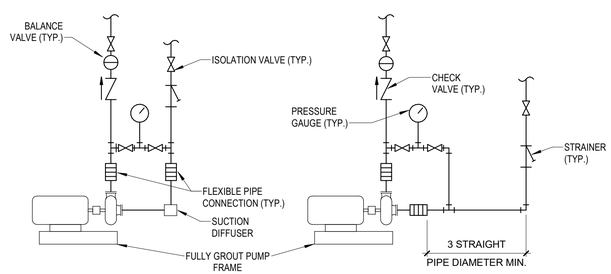
SHIELD LENGTH FOR PIPE - NOT LESS THAN THE FOLLOWING:		
a.	NPS 1/4" TO 3-1/2"	12" LONG AND .048" THICK
b.	NPS 4"	12" LONG AND .06" THICK
c.	NPS 5" TO 6"	18" LONG AND .06" THICK
d.	NPS 8" TO 14"	24" LONG AND .075" THICK
e.	NPS 16" TO 24"	24" LONG AND .105" THICK

NOTE:
1. PIPES NPS 8" AND LARGER: INCLUDE WOOD OR REINFORCED CALCIUM-SILICATE-INSULATION INSERTS OF LENGTH AT LEAST AS LONG AS PROTECTIVE SHIELD.
2. THERMAL-HANGER SHIELDS: INSTALL WITH INSULATION SAME THICKNESS AS PIPING INSULATION.

7 PIPE HANGER DETAIL
SCALE: NOT TO SCALE



5 IN-LINE CIRCULATING PUMP PIPING (VFD) DETAIL
SCALE: NOT TO SCALE



6 BASE MOUNTED END SUCTION PUMP DETAIL
SCALE: NOT TO SCALE

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DETAILS - MECHANICAL
REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **M401**
DRAWING NO. 366 / 80034
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SHEET **8** OF **16**

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GAS FIRED HOT WATER BOILER SCHEDULE

				HEATING DATA					WATERSIDE DATA				ELECTRICAL DATA			PHYSICAL DATA					
MARK	LOCATION	TYPE	FUEL	INPUT (MBH)	OUTPUT (MBH)	MIN OUTPUT (MBH)	TURNDOWN	MAX EFFICIENCY (%)	GPM	EWT (°F)	LWT (°F)	MAX PD (FT WAT)	VOLT	PHASE	FLA	LENGTH...	WIDTH (IN)	HEIGHT (IN)	OPERATING WEIGH...	BASIS OF DESIGN	REMARKS
B-1,2	MECH	FIRETUBE	NAT. GAS	650	625.95	48.15	13:1	96.3	62	160	180	3.23	120	1	8	29	27	74	674	FULTON ENDURA EXE-650	1-7

NOTES:
1. PROVIDE BOILER WITH CONDENSATE NEUTRILIZATION KIT. VENT AND COMBUSTION AIR TO BE INSTALLED PER THE MANUFACTURER'S REQUIREMENTS SEE PLANS FOR INSTALLATION.
2. BOILER TO OPERATE ON ITS OWN INTERNAL CONTROLS WITH CONNECTION TO BAS, SEE SEQUENCE OF OPERATIONS FOR DETAILS.
3. PROVIDE WITH ROOM AIR KIT FOR COMBUSTION AIR. CONTRACTOR TO VERIFY EXISTING COMBUSTION AIR INLET CONDITIONS MEET REQUIREMENTS OF BOILER.
4. PROVIDE WITH SYSTEM TEMP SENSOR, OUTDOOR AIR SENSOR, SYSTEM PUMP RELAY AND ALARM BELL.
5. PROVIDE CSD-1 EMERGENCY SHUTOFF SWITCH(ES) AT EACH MECH ROOM EXIST. SWITCH TO SHUTOFF GAS AND ELECTRICAL TO BOILERS.
6. CONFIGURE AS LEAD/LAG IN CASCADE MODE.
7. CONNECT TO EXISTING BACNET-IP BAS SYSTEM.

BRAZED PLATE HEAT EXCHANGER SCHEDULE

					HOT-SIDE DATA						COLD-SIDE DATA							
MARK	SERVES	TYPE	LOAD (MBH)	# OF PLATES	FLUID	FLOWRATE (GPM)	EWT (°F)	LWT (°F)	# OF PASSES	MAX PD (PSI)	FLUID	FLOWRATE (GPM)	EWT (°F)	LWT (°F)	# OF PASSES	MAX PD (PSI)	MANUFACTURER AND MODEL NUMBER	REMARKS
HX-1	RADIANT FLOOR	COUNTER-CURRENT	59.6	16	WATER	6.095	180	160	7	1.53	WATER	8	90	105	8	2.16	TACO TB10Tx16	---

COOLING TOWER SCHEDULE

										ELECTRICAL					PHYSICAL DATA						
MARK	LOCATION	SERVES	FAN CFM	FLUID FLOW (GPM)	EWT (°F)	LWT (°F)	MAX PD (PSI)	WET BULB TEMP (°F)	TOTAL CAPACITY (MBH)	FAN HP	FAN QTY	BASIN HEATER (kW)	VOLT	PH	CONFIGURATION	HEIGHT (FT)	WIDTH (FT)	DEPTH (FT)	OPERATING WEIGHT (LB)	BASIS OF DESIGN	REMARKS
CT-1	SEE PLANS	CH-1,2	170,300	2400	95	85	7.81	78	12,000	50	2	2x10	460	3	COUNTERFLOW	16'-2.25"	11'-10"	24'-0.5"	34,170	BAC VT1-800-Q	1-7

NOTES:
1. PROVIDE WITH SOUND REDUCING OULET, VIBRATION ISOLATION AND VIBRATION CUT-OFF SWITCH.
2. PROVIDE WITH ACCCESS LADDERS FOR TOWER MAINTENANCE. PROVIDE WITH JIB CRANE HOIST FOR MOTOR AND FAN REPLACEMENT
3.BASIN HEATER TO BE STAINLESS STEEL CONSTRUCTION WITH AUTOMATIC LOW VOLTAGE CONTROL AND TEMPERATURE SENSOR.
4. PROVIDE COOLING TOWER WITH BASIN FLOAT.
5. PROVIDE INDIVIDUAL ELECTRICAL CONNECTIONS FOR EACH COOLING TOWER FAN, AND SINGLE POWER CONNECTION FOR AMBIENT HEATERS. SEE ELECTRICAL FOR ADDITIONAL INFORMATION
6. PROVIDE ALL STAINLESS STEEL CONSTRUCTION OPTION.
7. CONNECT UNIT TO EXISTING BACNET-IP BAS SYSTEM.

PUMP SCHEDULE

								ELECTRICAL DATA							
MARK	LOCATION	SERVES	TYPE	FLUID TYPE	FLOW GPM	HEAD FT WG	MIN % EFF	RPM	HP	VOLTS	PH	HZ	CONTROL TYPE	BASIS OF DESIGN	REMARKS
CP-1,2,3	ARCH	CT-1	BASE MOUNTED END SUCTION	WATER	1200	65	87	1160	25	460	3	60	VFD	TACO FI6013D	1,2,3
P-1,2	GROUNDS	SECONDARY LOOP	BASE MOUNTED END SUCTION	WATER	86	65	56	1760	3	208	3	60	VFD	TACO FI1209C	1,2,3
P-6	GROUNDS	RADIANT FLOOR	INLINE	WATER	8	30	5	3450	1/3	115	1	60	BAS	TACO 2400-45	1

NOTES:
1. UNIT IS TO BE CONNECTED TO EXISTING BACNET-IP BAS SYSTEM.
2. PROVIDE PUMP WITH UPRIGHT PIPING CONFIGURATION WITH 3 STRAIGTH DIAMETERS AT INLET AND OULET. PUMP TO BE LASTER ALIGNED AFTER INSTALLATION.
3. VFD PROVIDED BY MECHANICAL CONTRACTOR. CONTRACTOR TO COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR.

AIR TERMINAL UNIT SCHEDULE

			CFM		STATIC PRESSURE (IN WG)		NC LEVELS		REHEAT COIL DATA										
MARK	AHU	INLET SIZE (IN)	MAX	MIN	MIN	INLET	RAD	DIS	CFM	EAT (°F)	LAT (°F)	CAP (MBH)	NO ROWS	MAX PD	LWT (°F)	GPM	PRESS DROP FT WAT	BASIS OF DESIGN	REMARKS
VAV-1	AHU-1	05	250	160	0.15	1	13	25	160	55	96.7	7.2	1	0.05	165.1	1	0.43	KRUEGER LMHS	1,2
VAV-2	AHU-2	07	410	200	0.13	1	16	20	200	55	97.4	9.2	1	0.07	161.1	1	0.56	KRUEGER LMHS	1,2
VAV-3	AHU-3	07	390	120	0.12	1	16	20	170	55	95.6	7.5	1	0.07	149.2	0.5	0.19	KRUEGER LMHS	1,2
VAV-4	AHU-4	12	1080	960	0.28	1	15	13	960	55	100.2	47.1	2	0.23	141.3	2.5	0.48	KRUEGER LMHS	1,2
VAV-5	AHU-5	12	960	960	0.23	1	15	11	960	55	100.2	47.1	2	0.19	141.3	2.5	0.48	KRUEGER LMHS	1,2
VAV-6	AHU-6	12	1060	500	0.16	1	16	13	500	55	94.7	21.5	1	0.12	165.3	3	1.1	KRUEGER LMHS	1,2
VAV-7	AHU-7	10	370	370	0.04	1	-	-	370	55	92.3	15	1	0.03	162.4	1.8	0.32	KRUEGER LMHS	1,2
VAV-8	AHU-8	12	455	455	0.03	1	12	-	455	55	94.6	19.5	1	0.02	160	2	0.51	KRUEGER LMHS	1,2
VAV-9	AHU-9	09	600	250	0.11	1	12	15	250	55	96.9	11.4	1	0.07	156.7	1	0.13	KRUEGER LMHS	1,2
VAV-10	AHU-10	05	200	200	0.09	1	11	20	200	55	93	8.3	1	0.03	166.5	1.3	0.66	KRUEGER LMHS	1,2
VAV-11	AHU-11	08	500	250	0.15	1	16	19	250	55	92.5	10.2	1	0.1	159.1	1	0.56	KRUEGER LMHS	1,2

NOTES:
1. PROVIDE UNIT WITH INSULATION AND FOIL FACED LINER, CROSS-FLOW AIR SENSOR, AND CONTROL ENCLOSURE.
2. CONNECT UNITS TO EXISTING BACNET-IP BAS SYSTEM.

EXPANSION TANK SCHEDULE

MARK	SERVES	LOCATION	TYPE	TEMP RANGE (°F)	FILL PRESSURE (PSIG)	MAX OPER. PRESSURE (PSIG)	TANK VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	BASIS OF DESIGN	REMARKS
ET-1	HW SYSTEM	BOILER ROOM	DIAPHRAGM	40-200	15	125	57	27	TACO CX215-125	---
ET-2	RADIANT FLOOR	BOILER ROOM	DIAPHRAGM	40-200	15	125	8	5	TACO CX30-125	---

MISCELLANEOUS MECHANICAL EQUIPMENT SCHEDULE

MARK	FUNCTION	SERVES	LOCATION	OPERATING CONDITIONS	BASIS OF DESIGN	REMARKS
AS-1	AIR SEPARATOR	HOT WATER SYSTEM	BOILER ROOM	86 GPM @ 1 FT WAT PD	SPIROTHERM VDT-300	1
AS-2	AIR SEPARATOR	RADIANT FLOOR	BOILER ROOM	8 GPM @ 0.1 FT WAT PD	SPIROTHERM VDT-200	1

NOTES:
1. PROVIDE UNIT WITH ACCESSORIES TO SUPPORT UNIT FROM STRUCTURE.

EXISTING BAS SYSTEM: ASV'S, BACNET-IP AUTOMATED LOGIC SYSTEMS.
LOCAL PROVIDER: AUTOMATIC CONTROLS.

ALL NEW EQUIPIMENT IS TO BE PROGRAMMED TO MATCH EXISTING CONTROL SEQUENCES.

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JEFFREY E KULHANEK
NUMBER
PE-2022017087
2/3/26
PROFESSIONAL ENGINEER

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TITLE OF SHEET
SCHEDULE - MECHANICAL
REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **M501**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **9** OF **16**

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REFERENCE LEGEND

ROOM NUMBER
ROOM NAME — ROOM NAME DESIGNATION
101 — ROOM NUMBER DESIGNATION
150 SF — ROOM AREA DESIGNATION

SCHEDULED EQUIPMENT
XX — EQUIPMENT SIZE (WHERE APPLICABLE)
XXXX — EQUIPMENT NUMBER
XX-XX — PANEL & CIRCUIT NUMBER

NON-SCHEDULED EQUIPMENT
EQUIPMENT — EQUIPMENT NAME/NUMBER
XX-XX — PANEL & CIRCUIT NUMBER

REFERENCE DEMOLITION NOTE
DX — DEMOLITION DESIGNATION

REFERENCE NOTE
X — REFERENCE DESIGNATION

PLAN DETAIL
X — DETAIL NUMBER
XX-XX — SHEET NUMBER

SECTION/ DETAIL
SIM
X — SECTION/DETAIL NUMBER
XX-XX — SHEET NUMBER
INDICATES DIRECTION OF VIEW

NEW COLUMN
X — LETTER INDICATES NEW COLUMN LINE

EXISTING COLUMN
X — LETTER INDICATES EXISTING COLUMN LINE

MATCHLINE
AREA A
AREA B

LEVEL
NAME
ELEVATION
LEVEL CALLOUT DESIGNATION
ELEVATION DESIGNATION

TITLE MARKER
1
VIEW NAME
SCALE: 1/8" = 1'-0"
GRAPHIC AREA FOR DRAWING
DETAIL NUMBER
TITLE
SCALE OF THE DRAWING

NORTH ARROW
NORTH
PLAN NORTH
TRUE NORTH

SYMBOL LEGEND

LIGHTING
- LUMINAIRE
- WALL MOUNTED LUMINAIRE
- WALL MOUNTED LUMINAIRE
- RECESSED LUMINAIRE
- SURFACE MOUNTED LUMINAIRE
- PENDANT MOUNTED LUMINAIRE
- STRIP / INDUSTRIAL LUMINAIRE
- WALL MOUNTED STRIP LUMINAIRE
- LUMINAIRE - NIGHT LIGHTING
- LUMINAIRE - EMERGENCY SYSTEM
- WALL WASH LUMINAIRE
- EMERGENCY BATTERY PACK LUMINAIRE
- REMOTE EMERGENCY HEAD
- TRACK LIGHTING
- EXIT LIGHT - WALL MOUNT WITH DIRECTIONAL ARROWS AS INDICATED, FILLED-IN QUARTERS INDICATE ILLUMINATION SIDES
- EXIT LIGHT - CEILING OR PENDANT MOUNT WITH DIRECTIONAL ARROWS AS INDICATED, FILLED-IN QUARTERS INDICATE ILLUMINATION SIDES
- EMERGENCY EXIT LIGHT COMBO
- POLE MOUNTED SITE LUMINAIRE
- FLOOD LIGHT
- CEILING FAN
- PHOTOCELL
- OCCUPANCY SENSOR

WIRING DEVICES - SWITCHES
- S — SINGLE POLE SWITCH
- S_2 — TWO POLE SWITCH
- S_3 — THREE-WAY SWITCH
- S_4 — FOUR-WAY SWITCH
- S_D — DIMMER SWITCH
- S_K — KEY OPERATED SWITCH
- S_P — SINGLE POLE SWITCH WITH PILOT
- S_{TE} — THERMAL ELEMENT SWITCH
- S_T — TIMER SWITCH
- S_{FT} — FUSIBLE SWITCH (FUSETRON)
- $_X$ — LOW VOLTAGE MOMENTARY CONTACT SWITCH

WIRING DEVICES - RECEPTACLES
- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- QUADRUPLEX RECEPTACLE
- EMERGENCY RECEPTACLE
- CONTROLLED RECEPTACLE
- SPECIAL PURPOSE RECEPTACLE, NEMA CONFIGURATION NOTED
- PLUG-IN STRIP - LENGTH AND QUANTITY OF OUTLETS AS SHOWN
- POWER POLE
- DROP CORD RECEPTACLE ASSEMBLY

CONDUIT AND BOXES
- J — JUNCTION BOX - CEILING MOUNT
- J — JUNCTION BOX - WALL MOUNT
- FB — FLOOR BOX
- P — FLOOR POKE-THROUGH DEVICE
- WB — WALL AV BOX
- CONDUIT DOWN
- CONDUIT UP
- INDICATES BUSHED CONDUIT

POWER EQUIPMENT
- SAFETY SWITCH
- COMBINATION STARTER SAFETY SWITCH
- R — RELAY - CONTROL AS NOTED
- M — MOTOR CONNECTION
- PB — PUSHBUTTON STATION
- M — METER SOCKET

PANELS AND CABINETS
- BRANCH CIRCUIT PANEL
- DISTRIBUTION PANEL
- SWITCHBOARD, SWITCHGEAR, MCC
- EQUIPMENT OR TERMINAL CABINET
- T — DRY TYPE TRANSFORMER

FIRE ALARM SYSTEM
- F — MANUAL PULL STATION
- F — STROBE
- F — HORN
- F — HORN STROBE
- FS — SPEAKER
- FS — SPEAKER STROBE
- DH — MAGNETIC DOOR HOLDER
- S — SMOKE DETECTOR
- H — HEAT DETECTOR
- S_D — DUCT SMOKE DETECTOR
- FS — FLOW SWITCH
- FS — SPRINKLER TAMPER SWITCH
- PS — POST INDICATING VALVE SWITCH
- REMOTE INDICATOR LIGHT

VOICE AND DATA
- VOICE OUTLET
- DATA OUTLET
- VOICE/DATA OUTLET
- WIRELESS ACCESS POINT

SOUND, TELEVISION, AND SECURITY
- S — SPEAKER
- S — HORN (PA, PUBLIC ADDRESS)
- C — INTERCOM SPEAKER STATION
- SVC — VOLUME CONTROL STATION
- M — MICROPHONE JACK
- TV — TELEVISION OUTLET
- CCTV CAMERA
- MS — MOTION SENSOR

NURSE CALL
- N — BEDSIDE STATION
- N_2 — DOUBLE BED BEDSIDE STATION
- N_E — EMERGENCY PULL STATION
- N_S — STAFF STATION
- N_D — DUTY STATION
- N_P — PILLOW SPEAKER
- N — DOME LIGHT
- N_M — MASTER STATION

POWER DISTRIBUTION ONE LINE
- G — EMERGENCY GENERATOR
- FUSE
- DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- DRAW OUT VACUUM CIRCUIT BREAKER
- PLUG-IN OR DRAWOUT CONNECTOR
- CIRCUIT BREAKER
- THERMAL OVERLOAD RELAY
- K1 — KIRK KEY INTERLOCK
- LIGHTNING SURGE ARRESTOR
- A — AMMETER
- V — VOLTMETER
- TRANSFORMER
- X:Y — CURRENT TRANSFORMER - (RATIO)

SYMBOL NOTES:
"C" INDICATES CEILING MOUNTED
"F" INDICATES FLOOR MOUNTED
"S" INDICATES SURFACE MOUNTED
"G" INDICATES GROUND FAULT INTERRUPTING
"IG" INDICATES ISOLATED GROUND
"AC" INDICATES MOUNTING 6" ABOVE COUNTERTOP OR BACKSPLASH
"WP" INDICATES WEATHERPROOF
"XP" INDICATES EXPLOSION PROOF
"U" INDICATES USB CHARGER
"R" INDICATES EXISTING DEVICE REMOVED AND RELOCATED
LOWER CASE LETTER BY SWITCHES AND FIXTURES INDICATE ASSOCIATED UNIT FOR SWITCHING

ABBREVIATIONS

ACSR	ALUMINUM CONDUCTOR STEEL REINFORCED
AFF	ABOVE FINISH FLOOR
AIC	AMPS INTERRUPTING CAPACITY (SYM RMS)
AL	ALUMINUM
ALT	ALTERNATE
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
AUTO	AUTOMATIC
AVG	AVERAGE
AWG	GAUGE
L	ANGLE
BKR	BREAKER
C OR CL	CENTER LINE
C OR CND	CONDUIT (ELECTRICAL SHEETS)
CKT	CIRCUIT
CLG	CEILING
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE
CPT	CONTROL POWER TRANSFORMER
CUH	CABINET UNIT HEATER
DC	DIRECT CURRENT
DEG	DEGREE
DEMO	DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DISC	DISCONNECT
DIST	DISTRIBUTION
DN	DOWN
DWG	DRAWING
E	EAST
EA	EACH
EL OR ELEV	ELEVATION - GRADE OR BUILDING
ELEC	ELECTRIC OR ELECTRICAL
ELEV	ELEVATOR
EMD	ESTIMATED MAXIMUM DEMAND
EMI	ELECTROMAGNETIC INTERFERENCE
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
EST	ESTIMATE
EWC	ELECTRIC WATER COOLER
EXIST, EXTG	EXISTING
EXP	EXPOSED
EXT	EXTERIOR
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FAEP	FIRE ALARM EXTENDER PANEL
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSE POWER
HR	HOUR
HTG	HEATING
HTR	HEATER
HZ	HERTZ
ID	INSIDE DIAMETER
IES	ILLUMINATING ENGINEERING SOCIETY
IN	INCH
INSUL	INSULATION
INT	INTERIOR
KCMIL KCM	KILO CIRCULAR MIL
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
LBS	POUNDS
LRA	LOCKED ROTOR AMPS
LTG	LIGHTING
MAX	MAXIMUM
MECH	MECHANICAL
MCCB	MOLDED CASE CIRCUIT BREAKER
MFR	MANUFACTURER
MG	MOTOR GENERATOR
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO	NUMBER
NTS	NOT TO SCALE
OCPD	OVERCURRENT PROTECTIVE DEVICE
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OPNG	OPENING
PH	PHASE
PIV	POST INDICATING VALVE
PNL	PANEL
PSI	POUNDS PER SQUARE IN.
QTY	QUANTITY
REC	RECEPTACLE
REFR	REFRIGERATOR
REINF	REINFORCEMENT
REQD	REQUIRED
RFI	RADIO FREQUENCY INTERFERENCE
S	SOUTH
SCHED	SCHEDULE
SCCR	SHORT CIRCUIT CURRENT RATING
SF	SQUARE FOOT (FEET)
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SPEC	SPECIFICATIONS
SPKR	SPEAKER
SQ	SQUARE
STD	STANDARD
STL	STEEL
SW	SWITCH
SWBD	SWITCH BOARD
SYM	SYMMETRICAL
TEL	TELEPHONE
TEMP	TEMPERATURE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SYSTEM
VFD	VARIABLE FREQUENCY DRIVE
VFC	VARIABLE FREQUENCY CONTROLLER
W	WEST
W/	WITH
W/O	WITHOUT
WHM	WATTHOUR METER
WT	WEIGHT
XFMR	TRANSFORMER

ELECTRICAL SHEET LIST

E 00	ELECTRICAL INFO SHEET
E 01	ELECTRICAL INFO SHEET
E001	FLOOR PLAN - DEMOLITION
E002	FLOOR PLAN - DEMOLITION
E201	FLOOR PLAN - POWER
E601	EQUIPMENT SCHEDULE
E701	ELECTRICAL PANEL SCHEDULES

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GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

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GENERAL DEMO NOTES

A. ITEMS WHICH ARE INTENDED TO BE REMOVED, RELOCATED, OR SALVAGED ARE SHOWN AS FULL-TONE LINES ON DEMO PLANS. ALL OTHER ITEMS ARE INTENDED TO REMAIN IN PLACE AND ARE SHOWN AS HALF-TONE.

B. DEMOLITION SHOWN IS AS REQUIRED FOR THE COMPLETE PROJECT. COORDINATE DEMOLITION WITH THE WORK OF OTHER TRADES. PROVIDE TEMPORARY POWER AND LIGHTS AS REQUIRED TO ALLOW THE WORK OF OTHER TRADES TO PROCEED OR AS REQUIRED TO ALLOW THE OWNER TO OCCUPY THE SPACE.

C. ALL OF THE EQUIPMENT AND DEVICES SHOWN ON THIS DRAWING ARE EXISTING. THE LOCATIONS OF THE EQUIPMENT AND DEVICES WERE OBTAINED FROM EXISTING DRAWING AND FIELD INVESTIGATION. THE LOCATIONS OF THE EXISTING EQUIPMENT AND DEVICES ARE SHOWN FOR THE CONVENIENCE. ACCURACY OF THE INFORMATION SHOWN IS NOT GUARANTEED. VERIFICATION OF EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS IS ENCOURAGED. SITE VISITS PRIOR TO SUBMISSION OF BIDS NEED TO BE FULLY COORDINATED WITH THE OWNER.

D. CIRCUIT INFORMATION FOR ALL AFFECTED CIRCUITS SHALL BE VERIFIED PRIOR TO COMMENCING WORK. ACCURACY OF THE INFORMATION SHOWN AND INCLUDED ON THE PANEL SCHEDULES IS NOT GUARANTEED.

E. LUMINAIRES AND DEVICES INDICATED TO BE REMOVED, WHICH ARE LOCATED ON CEILINGS OR WALLS, SHALL HAVE LUMINAIRES, DEVICE AND ALL ASSOCIATED CIRCUIT WIRING AND CONDUIT REMOVED BACK TO NEAREST JUNCTION BOX, OR DEVICE NOT INDICATED TO BE REMOVED. ACTUAL CIRCUITING MUST BE DETERMINED IN THE FIELD. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY WIRE, CONDUIT, DEVICES AND CONNECTIONS NECESSARY TO ENSURE CIRCUIT CONTINUITY OF THE REMAINING DEVICES.

F. 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 PROPERLY DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS. REMOVE ALL PCB BALLAST OR HAZARDOUS LAMPS.

G. LABEL ALL SPARE OR ABANDONED CIRCUITS AND/OR CIRCUIT BREAKERS IN ALL PANELBOARDS AFFECTED BY THE DEMOLITION. SPARE CIRCUITS AND/OR CIRCUIT BREAKERS MAY BE REUSED FOR THE CIRCUITING OF THE NEW OR REMODELED AREA AS SPACE AND PANEL LOADING WILL ALLOW.

H. RESTORE ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING, PAINTING AND/OR OTHER REPAIR DUE TO THE DEMOLITION WORK, UNDER THE TERMS OF THIS SPECIFICATION. CLOSE AND SEAL ALL OPENINGS, REPAIR ALL SURFACES, ETC., AS REQUIRED.

I. EXISTING FIRE ALARM DEVICES, EMERGENCY LIGHTS, AND EXIT SIGNS SHALL BE COMPLETE AND OPERABLE AT ALL TIMES. PROVIDE TEMPORARY DEVICES IN AREAS BEING WORKED ON TO ALLOW FOR A WORKABLE SYSTEM DURING CONSTRUCTION.

J. PROVIDE MINIMUM [2] DAYS ADVANCE NOTICE OF OUTAGES. COORDINATE WITH OWNER FOR ALL ANTICIPATED OUTAGES. OWNER HAS FINAL APPROVAL ON TIME AND EXTENT OF POWER OUTAGE.

K. PROTECT EXISTING FURNITURE, CARPET, EQUIPMENT, DEVICES, AND OTHER APPURTENANCES FROM DAMAGE DURING THE COURSE OF CONSTRUCTION. REPLACE DAMAGED ITEMS FREE OF COST TO THE OWNER.

GENERAL NOTES

A. DRAWINGS DO NOT SHOW TOTAL NUMBER OF CONDUCTORS FOR CIRCUITS REQUIRED. PROVIDE THE NUMBER OF CONDUCTORS NEEDED TO COMPLETE INSTALLATION OF SPECIFIC EQUIPMENT FURNISHED. A GREEN GROUND CONDUCTOR, SIZED PER NEC, SHALL ALSO BE INCLUDED IN EACH CIRCUIT. ADJUST CONDUCTOR SIZES AS NEEDED TO LIMIT VOLTAGE DROP TO LEVELS RECOMMENDED BY NEC. COORDINATE INSPECTIONS WITH THE OWNER AND AHJ.

B. SEE ARCHITECTURAL SHEETS FOR REFLECTED CEILING PLANS.

C. ALL CIRCUITS SHALL HAVE SEPARATE NEUTRAL WIRES BUT CAN SHARE AN INSULATED GREEN GROUND WIRE IN MINIMUM 3/4" EMT CONDUIT.

D. SEAL ALL PENETRATIONS THROUGH FIRE OR FIRE/SMOKE RATED WALLS AND FLOORS.

E. ALL RACEWAYS SHALL BE SEALED AS REQUIRED BY AND IN ACCORDANCE WITH NEC PARAGRAPHS 230.8, 300.5(G) AND 300.7(A). ALL RACEWAYS SHALL BE SEALED AS REQUIRED BY NEC AND NFPA.

F. CABLE AND CONDUIT SHALL NOT INTERFERE WITH EQUIPMENT ACCESS.

G. ALL CABLING ABOVE CEILING SHALL BE PROPERLY SUPPORTED (NOT FROM CEILING SYSTEM).

H. COORDINATE FINAL PANELBOARD DIRECTORIES WITH ENGINEER AND OWNER.

GENERAL LIGHTING NOTES

GEN. POWER & AUX SYS. NOTES

A. ALL DEVICES SHOWN SHALL BE MOUNTED AT 18" A.F.F. UNLESS INDICATED OTHERWISE.

B. ALL AUXILIARY CABLE ABOVE CEILING SHALL BE PLENUM RATED WHERE REQUIRED.

C. CEILING MOUNTED DEVICES SHALL BE CENTERED IN CEILING TILE WHERE INSTALLED IN ACOUSTICAL TILE CEILING.

D. PROVIDE 120 VOLT POWER CIRCUIT(S) FOR AUXILIARY SYSTEMS AS REQUIRED FOR COMPLETE AND OPERATIONAL SYSTEMS.

REF. DEMO NOTES (DX)

PROJECT ELECTRICAL REFERENCED DEMOLITION NOTES

D1 DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY MECHANICAL. EXISTING CIRCUIT MAY BE REUSED TO EXTENT POSSIBLE FOR NEW EQUIPMENT INSTALLATION AT THIS LOCATION.

D2 REMOVE AND REINSTALL, OR PROVIDE SUPPORT FOR, LIGHTING AND DEVICES IN/ON CEILING AS REQUIRED FOR CEILING WORK ASSOCIATED WITH REMOVAL AND INSTALLATION OF VAVS BY MECHANICAL.

D3 DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY MECHANICAL.

D4 DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY MECHANICAL. EXISTING CIRCUIT FOR BASIN HEATER MAY BE REUSED TO EXTENT POSSIBLE FOR NEW EQUIPMENT INSTALLATION AT THIS LOCATION.

REF. NOTES (X)

PROJECT ELECTRICAL REFERENCED NOTES

1 REUSE EXISTING CONDUIT AND CONDUCTORS TO PREVIOUSLY SERVING EQUIPMENT AT THIS LOCATION, TO EXTENT POSSIBLE. EXTEND CIRCUITING AS REQUIRED FOR NEW EQUIPMENT CONNECTION.

2 CONNECT TO EXISTING CIRCUIT BREAKER MADE SPARE BY DEMOLITION.

3 PROVIDE NEW CIRCUIT BREAKER IN SPACE MADE AVAILABLE BY DEMOLITION TO SERVE NEW EQUIPMENT.

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JOSEPH C. BINGE
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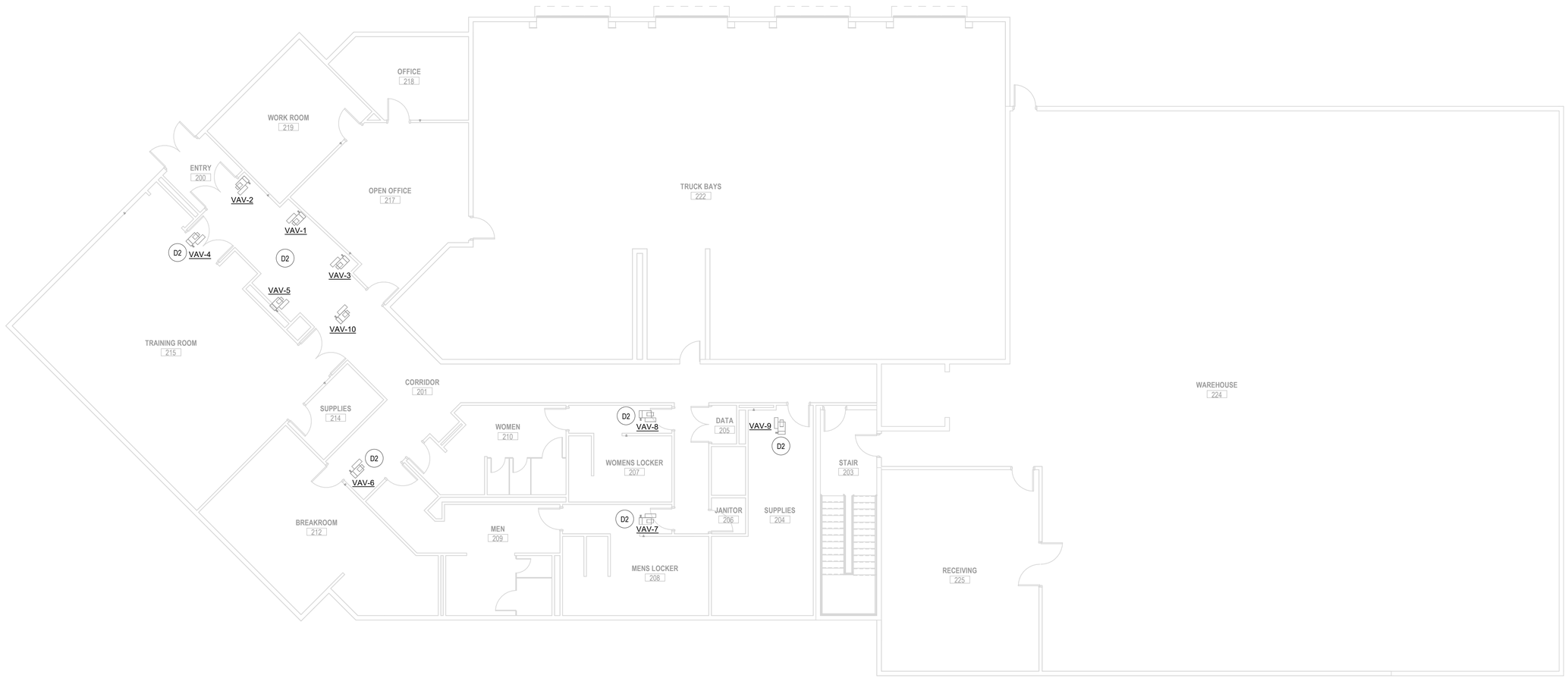
REF. DEMO NOTES (DX):

D2 REMOVE AND REINSTALL, OR PROVIDE SUPPORT FOR, LIGHTING AND DEVICES IN/ON CEILING AS REQUIRED FOR CEILING WORK ASSOCIATED WITH REMOVAL AND INSTALLATION OF VAVS BY MECHANICAL.



2 FIRST FLOOR PLAN - ELECTRICAL DEMOLITION - OPTION 1
SCALE: 1/8" = 1'-0"

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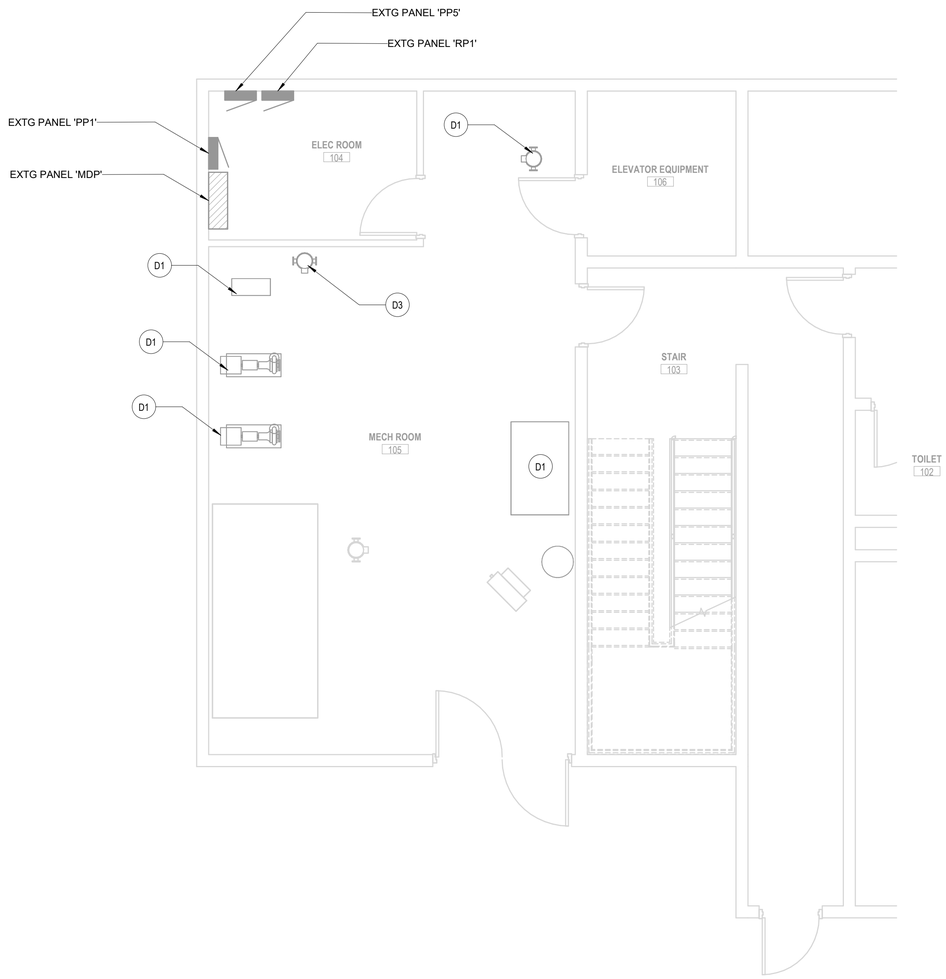
REF. DEMO NOTES (DX):

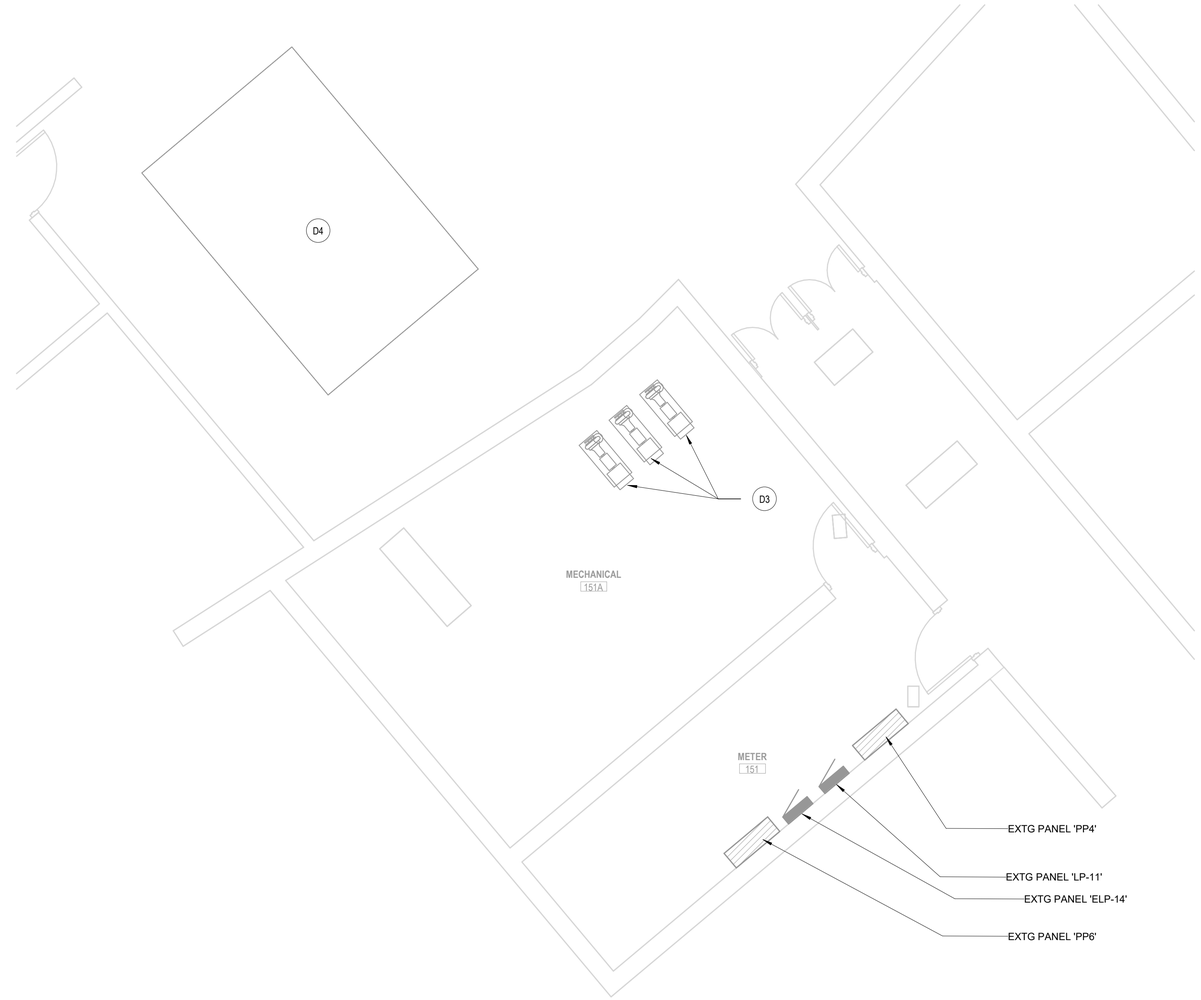
D1 DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY MECHANICAL. EXISTING CIRCUIT MAY BE REUSED TO EXTENT POSSIBLE FOR NEW EQUIPMENT INSTALLATION AT THIS LOCATION.

D3 DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY MECHANICAL.

D4 DISCONNECT EXISTING EQUIPMENT FOR REMOVAL BY MECHANICAL. EXISTING CIRCUIT FOR BASIN HEATER MAY BE REUSED TO EXTENT POSSIBLE FOR NEW EQUIPMENT INSTALLATION AT THIS LOCATION.



1 BASEMENT FLOOR PLAN - ELECTRICAL DEMOLITION
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR PLAN - AREA 3.4 - ELECTRICAL DEMOLITION
SCALE: 1/4" = 1'-0"

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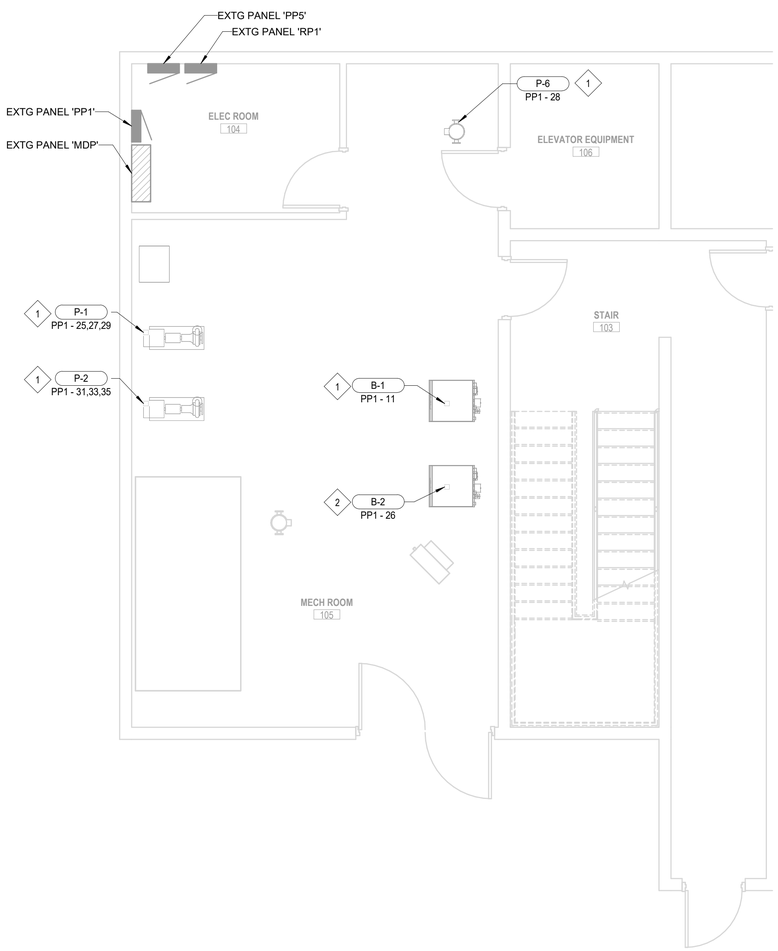
ALL POWERED RECEPTACLES, DEVICES, AND EQUIPMENT SHOWN SHALL BE CIRCUITED AS OUTLINED IN THIS NOTE, UNLESS INDICATED OTHERWISE. PANELBOARD CIRCUITING, INCLUDING IDENTIFYING SEPARATE PANELBOARDS' BRANCH CIRCUIT AREAS, IS DELINEATED WITH A DASH-DOT LINE BOUNDARY, WITH PANEL NAMES IDENTIFIED AT BOUNDARY LINE. CIRCUIT NUMBERS ARE IDENTIFIED ADJACENT TO RECEPTACLE, DEVICE, OR EQUIPMENT. REFER TO PANEL SCHEDULES FOR ADDITIONAL INFORMATION.

PANELBOARD CIRCUITING

REF. NOTES (X):

1. REUSE EXISTING CONDUIT AND CONDUCTORS TO PREVIOUSLY SERVING EQUIPMENT AT THIS LOCATION, TO EXTENT POSSIBLE. EXTEND CIRCUITING AS REQUIRED FOR NEW EQUIPMENT CONNECTION.
2. CONNECT TO EXISTING CIRCUIT BREAKER MADE SPARE BY DEMOLITION.
3. PROVIDE NEW CIRCUIT BREAKER IN SPACE MADE AVAILABLE BY DEMOLITION TO SERVE NEW EQUIPMENT.



1 BASEMENT FLOOR PLAN - POWER
SCALE: 1/4" = 1'-0"

2 FIRST FLOOR PLAN - AREA 3.4 - POWER
SCALE: 1/4" = 1'-0"

STATE OF MISSOURI
JOSEPH C. BINGE
NUMBER PE-2014012014
02/03/2026
PROFESSIONAL ENGINEER

NATIONAL PARK SERVICE
Department of the Interior

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DATE	INITIAL

PREPARED	
JCB	DESIGNED
JCB	DRAWN
KJS	CHECKED
02/03/2026	DATE

TITLE OF SHEET
FLOOR PLAN - POWER
REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **E201**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **14** OF **16**

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EQUIPMENT SCHEDULE

DEVICE	DEVICE DESCRIPTION	VOLTAGE	PH	KW	FLA	HP	STARTER / DISCONNECT TYPE	STARTER / DISCONNECT SIZE	STARTER / DISCONNECT FUSE	PLUG CONFIG	RECEPT CONFIG	FEEDER SIZE	NOTES
B-1	BOILER	120 V	1	-	8	-	NFD	30A/2P	-	-	-	2#12, 1#12G - 3/4"C	
B-2	BOILER	120 V	1	-	8	-	NFD	30A/2P	-	-	-	2#12, 1#12G - 3/4"C	
BH-1	BASIN HEATER	480 V	3	20	-	-	INT	-	-	-	-	3#8, 1#10G - 1"C	
CP-1	CONDENSING PUMP	480 V	3	-	-	25	VFD	-	-	-	-	3#4, 1#10G - 1-1/4"C	1
CP-2	CONDENSING PUMP	480 V	3	-	-	25	VFD	-	-	-	-	3#4, 1#10G - 1-1/4"C	1
CP-3	CONDENSING PUMP	480 V	3	-	-	25	VFD	-	-	-	-	3#4, 1#10G - 1-1/4"C	1
CTF-1	COOLING TOWER	480 V	3	-	-	50	INT	-	-	-	-	3#2, 1#8G - 1-1/4"C	
CTF-2	COOLING TOWER	480 V	3	-	-	50	INT	-	-	-	-	3#2, 1#8G - 1-1/4"C	
P-1	SECONDARY LOOP PUMP	208 V	3	-	-	3	VFD	-	-	-	-	3#10, 1#10G - 3/4"C	1
P-2	SECONDARY LOOP PUMP	208 V	3	-	-	3	VFD	-	-	-	-	3#10, 1#10G - 3/4"C	1
P-6	REDIANT FLOOR PUMP	120 V	1	-	-	1/3	CS/FD	NEMA 0/1P	15	-	-	2#12, 1#12G - 3/4"C	

GENERAL EQUIPMENT SCHEDULE NOTES:

A. THIS SCHEDULE DISPLAYS SIZING INFORMATION THAT IS GENERIC IN NATURE. SCHEDULE DOES NOT ITEMIZE ALL INSTANCES OF EQUIPMENT. CONTRACTOR SHALL REFER TO THE PLANS FOR FINAL QUANTITIES AND LOCATIONS.

B. MOUNT ALL DISCONNECTS AND STARTERS ON ASSOCIATED EQUIPMENT UNLESS SHOWN OTHERWISE. MAINTAIN WORKING CLEARANCES PER NEC; COORDINATE WITH MECHANICAL CONTRACTOR.

C. NFD OR FD = NON-FUSED OR FUSED DISCONNECT SWITCH.

D. CS/NFD, FD = COMBINATION STARTER/ NON OR FUSED DISCONNECT SWITCH.

E. INT = INTEGRAL DISCONNECT FURNISHED WITH EQUIPMENT.

F. EXP = DEVICE TO BE EXPLOSION-PROOF.

G. ALL SWITCHES, DISCONNECTS, ETC SHALL BE LOCKABLE.

H. ALL SWITCHES, DISCONNECTS, ETC SHALL BE NEMA 3R WHERE REQUIRED.

I. PROVIDE FUSES AS SHOWN; REVISE SIZES PER ACTUAL NAMEPLATE DATA.

J. STARTER ACCESSORIES:STARTER ACCESSORIES:
   1. CONTROL TRANSFORMER
   2. H-O-A SWITCH
   3. RED RUN LIGHT
   4. 2 NO CONTACTS; 2 NC CONTACTS

K. PROVIDE DUCT DETECTOR, SHUTDOWN RELAY, AND ACCESSORIES AS REQUIRED TO SHUTDOWN HVAC EQUIPMENT 2000 CFM OR HIGHER PER NFPA AND AHJ.

EQUIPMENT SCHEDULE NOTES:

1. VFD PROVIDED BY MECH, INSTALLED BY ELEC.

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TITLE OF SHEET
EQUIPMENT SCHEDULE
REPLACE COOLING TOWER AND BOILER UNITS
GATEWAY ARCH NATIONAL PARK
11 NORTH 4TH STREET
ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. E601
DRAWING NO. 366 / 80034
PMIS / PKG. NO. 320855
SHEET 15 OF 16

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Extg Branch Panel: PP1

Location: ELEC ROOM 104 **Volts:** 208Y/120 **A.I.C. Rating:** UNKNOWN
Supply From: MDP **Phases:** 3 **MLO / MCB:** MLO
Mounting: SURFACE **Wires:** 4 **FCB / MCB Rating:** 225 A

CKT	Circuit Description	Trip	P	A		B		C		P	Trip	Circuit Description	CKT
1	RECEPTACLES	20 A	1	0	0					1	20 A	ACCESS CONTROL	2
3	RECEPTACLES	20 A	1			0	0			1	20 A	FACP	4
5	RECEPTACLES	20 A	1					0	0	1	20 A	LIGHTING	6
7	O.H. DOORS	20 A	1	0	0					1	20 A	LIGHTING	8
9	DOCK LOCKS	20 A	1			0	0			1	20 A	LIGHTING	10
11	**EQP_CONT MECH ROOM 105 B-1**	20 A	1					960	0	1	20 A	LIGHTING	12
13	CCTV	20 A	1	0	0					1	20 A	LIGHTING	14
15	ELEVATOR PIT RECEPTACLE / FLAG LIGHT	20 A	1			0	0			1	20 A	ELEVATOR CAR LIGHTS	16
17	RP1, UH-1,2,3,4,CUH1	20 A	1					0	0	1	20 A	ELEVATOR SHAFT LIGHTS	18
19	EF1	30 A	3	0	0					1	20 A	AC CONTROL UNIT	20
21	--	--	--			0	0			1	20 A	SPARE	22
23	--	--	--					0	0	1	20 A	BIG FAN	24
25	**EQP_CONT MECH ROOM 105 P-1**	30 A	3	167	960					1	20 A	**EQP_CONT MECH ROOM 105 B-2**	26
27	--	--	--			167	864			1	20 A	**EQP_CONT MECH ROOM 105 P-6**	28
29	--	--	--					167	0	1	20 A	P5	30
31	**EQP_CONT MECH ROOM 105 P-2**	30 A	3	167	0					3	30 A	RF1	32
33	--	--	--			167	0			--	--	--	34
35	--	--	--					167	0	--	--	--	36
37	SF1	20 A	1	0	0					3	20 A	ROLLING GRILLE	38
39	EWC	20 A	1			0	0			--	--	--	40
41	EXT. RECEPTACLE	20 A	1					0	0	--	--	--	42
			Total Load:	1293 VA		1197 VA		1293 VA					
			Total Amps:	11 A		10 A		11 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
EQP_CONT	3784 VA	100.00%	3784 VA	**Total Est. Demand:**	3784 VA
				Total Est. Demand Current (100% Rated):	11 A
				Non-Cont. Current @ 100%:	0 A
				Continuous Current @ 125%:	13 A
				Total Est. Demand Current (80% Rated):	13 A

Legend:
FCB: Feeder Circuit Breaker
GFI: GFCI Circuit Breaker
LOCK: Lockable Circuit Breaker
MCB: Main Circuit Breaker
MCCB: Molded Case Circuit Breaker
MLO: Main Lug Only
EXTG: Existing Circuit Breaker

Notes:
1. VERIFY CIRCUIT LOADS AND CONFIRM EACH CIRCUIT IS IN ACTIVE USE. SUBMIT FINDINGS TO PROJECT ENGINEER PRIOR TO FINAL LOAD ASSESSMENT AND BALANCING.
2. EXISITNG LOADS ARE SHOWN FOR CONVENIENCE AND ARE NOT CALCULATED IN FINAL LOADING.
3. NEW LOADS/CIRCUIT BREAKERS SHOWN IN BOLD TEXT.

Extg Power Panel: PP4

Location: METER 151 **Volts:** 480Y/277 **A.I.C. Rating:** UNKNOWN
Supply From: **Phases:** 3 **MLO / MCB:** MLO
Mounting: **Wires:** 4 **FCB / MCB Rating:** 400 A

CKT	Circuit Description	# of Poles	Trip Rating	Load	Remarks
1	**EQP_CONT MECHANICAL 151A CP-3**	3	**45 A**	28254 VA	
2	**EQP_CONT MECHANICAL 151A CP-1**	3	**45 A**	28254 VA	
3	**EQP_CONT COOLING TOWER FAN 1**	3	**90 A**	54000 VA	
4	T3 / LP11	3	40 A	0 VA	
5	**EQP_CONT COOLING TOWER FAN 2**	3	**90 A**	54000 VA	
6	SPARE	3	30 A	0 VA	
7	SPARE	3	40 A	0 VA	
8	DAYTON HEATER	3	50 A	0 VA	
9	NW GEN. BLDG. WALL DISCONNECT	3	100 A	0 VA	
10	SPARE	3	20 A	0 VA	
11	SPACE HEATER GEN. BLDG.	3	40 A	0 VA	
12	**EQP_CONT MECHANICAL 151A CP-2**	3	**45 A**	28254 VA	
13					
14					
15					
				192762 VA	
				232 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
EQP_CONT	192762 VA	100.00%	192762 VA	**Total Est. Demand:**	192762 VA
				Total Est. Demand Current (100% Rated):	232 A
				Non-Cont. Current @ 100%:	0 A
				Continuous Current @ 125%:	290 A
				Total Est. Demand Current (80% Rated):	290 A

Legend:
FCB: Feeder Circuit Breaker
GFI: GFCI Circuit Breaker
LOCK: Lockable Circuit Breaker
MCB: Main Circuit Breaker
MCCB: Molded Case Circuit Breaker
MLO: Main Lug Only
EXTG: Existing Circuit Breaker

Notes:
1. VERIFY CIRCUIT LOADS AND CONFIRM EACH CIRCUIT IS IN ACTIVE USE. SUBMIT FINDINGS TO PROJECT ENGINEER PRIOR TO FINAL LOAD ASSESSMENT AND BALANCING.
2. EXISITNG LOADS ARE SHOWN FOR CONVENIENCE AND ARE NOT CALCULATED IN FINAL LOADING.
3. NEW LOADS/CIRCUIT BREAKERS SHOWN IN BOLD TEXT.

Extg Power Panel: PP6

Location: METER 151 **Volts:** 480 **A.I.C. Rating:** UNKNOWN
Supply From: **Phases:** 3 **MLO / MCB:** MCB
Mounting: **Wires:** 3 **FCB / MCB Rating:** 150 A

CKT	Circuit Description	# of Poles	Trip Rating	Load	Remarks
1	NORTH STORM PUMP PANEL	3	125 A	0 VA	
2	CHILL WATER RECIRCULATING PUMP	3	30 A	0 VA	
3	**COOLING TOWER BASIN HEATER BH-1**	3	40 A	20000 VA	
4	WATER HEATER	3	60 A	0 VA	
5	TRANSFORMER T-4 PUMP ROOM	3	30 A	0 VA	
6	TRANFORMER T-5 GENERATOR BUILDING	3	20 A	0 VA	
				20000 VA	
				24 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
EQP_CONT	20000 VA	100.00%	20000 VA	**Total Est. Demand:**	20000 VA
				Total Est. Demand Current (100% Rated):	24 A
				Non-Cont. Current @ 100%:	0 A
				Continuous Current @ 125%:	30 A
				Total Est. Demand Current (80% Rated):	30 A

Legend:
FCB: Feeder Circuit Breaker
GFI: GFCI Circuit Breaker
LOCK: Lockable Circuit Breaker
MCB: Main Circuit Breaker
MCCB: Molded Case Circuit Breaker
MLO: Main Lug Only
EXTG: Existing Circuit Breaker

Notes:
1. VERIFY CIRCUIT LOADS AND CONFIRM EACH CIRCUIT IS IN ACTIVE USE. SUBMIT FINDINGS TO PROJECT ENGINEER PRIOR TO FINAL LOAD ASSESSMENT AND BALANCING.
2. EXISITNG LOADS ARE SHOWN FOR CONVENIENCE AND ARE NOT CALCULATED IN FINAL LOADING.
3. NEW LOADS/CIRCUIT BREAKERS SHOWN IN BOLD TEXT.

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TITLE OF SHEET
ELECTRICAL PANEL SCHEDULES
REPLACE COOLING TOWER AND BOILER UNITS
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ST. LOUIS, MO 63102

ARCH/ENG PROJ # 09258.012
SUB SHEET NO. **E701**
DRAWING NO. 366 / 80034
PMIS / PKG. NO. **320855**
SHEET **16** OF **16**

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