PROJECT DESCRIPTION AND SCOPE OF WORK (SOW) SUMMARY

THE FOLLOWING IS A SUMMARY OF THE NATURE AND INTENT OF THE WORK, IT INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

1) REMOVAL OF AN EXISTING ROOF MOUNTED CHILLER/TOWER PACKAGE.

2) PROVIDE (FURNISH AND INSTALL) A NEW AIR COOLED CHILLER/PUMP PACKAGE.

3) MINOR STRUCTURAL/ROOFING WORK TO ACCOMMODATE THE NEW CHILLER.

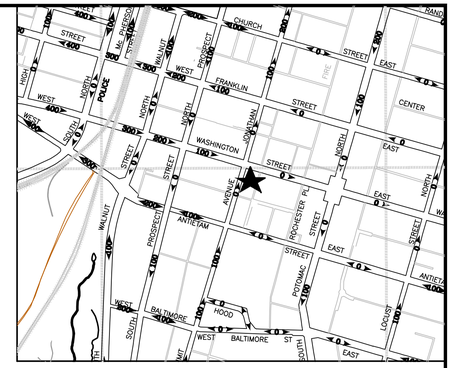
4) ELECTRICAL WORK ASSOCIATED WITH NEW INSTALLATION OF THE NEW CHILLER.

5) COORDINATE WITH OWNER EXISTING BUILDING TEMPERATURE CONTROLS CONTRACTOR TO ACCOMMODATE THE NEW CHILLER.

6) MISC. OTHER WORK AS INDICATED ON THE PLANS OR REQUIRED TO PROVIDE A COMPLETE INSTALLATION READY FOR CONTINUOUS USE.

WASHINGTON COUNTY MARYLAND

BOARD OF COUNTY COMMISSIONERS
CIRCUIT COURT - CHILLER REPLACEMENT
24 SUMMIT AVE HAGERSTOWN, MD 21740
PROJECT #PUR-1625



VICINITY MAP
NOT TO SCALE

L.S. GRIM CONSULTING ENGINEERS
PRIME CONSULTANT AND DESIGNER OF RECORD

MATONAK AND ASSOCIATES
STRUCTURAL CONSULTANT

DRAWING LIST

BOARD OF COUNTY COMMISSIONERS:

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DEREK J. HARVEY.

JOHN M. MARTIRANO, COUNTY ADMINISTRATOR
ANDREW ESHLEMAN, DIRECTOR OF PUBLIC WORKS
DANIEL HIXON, ASSISTANT DIRECTOR OF PUBLIC WORKS BG+F

21-062

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PROJECT COVER SHEET

Professional Certification
I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland
License Number: 14401
Expiration Date: 4/21/2025

LESLIE SCOTT GRIM, P.E.
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REV	DATE	COMMENT
A	5/11/23	BID/ PERMIT SET
B		
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D		
E		
F		
G		

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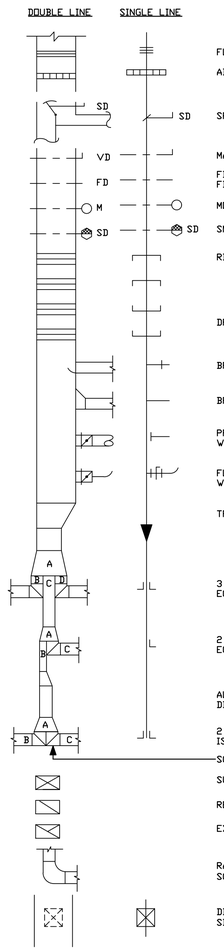
C-0.0
1 OF 8 SHEETS
DATE: MAY 11, 2023

MECHANICAL SYMBOLS

- SUPPLY
- RETURN
- EXHAUST
- FLEXIBLE DUCT
- SPIRAL DUCT
- VOLUME DAMPER
- FIRE DAMPER
- SPLITTER DAMPER
- TURNING VANES
- REFRIGERANT LINES
- CANVAS CONNECTION
- CD — CONDENSATE LINE
- G — NATURAL GAS LINE
- LP — LP GAS LINE
- POINT OF CONNECTION
- D-# SUPPLY DIFFUSER
- R-# RETURN AIR GRILLE WITH FILTER
- G-# SUPPLY GRILLE
- AIR FLOW INDICATION
- GAS COCK
- UNION
- E.F. EXHAUST FAN
- A.H.U. AIR HANDLING UNIT
- ELECTRIC BASEBOARD
- UNIT HEATER
- ELECTRIC WALL HEATER
- THERMOSTAT
- AVERAGING THERMOSTAT REMOTE SENSOR
- C.U. CONDENSING UNIT
- U/D UNDERCUT DOOR

DUCTWORK SYMBOLS



- FLEXIBLE DUCT CONNECTION
- AIR FLOW MEASURING DEVICE
- SPLITTER DAMPER
- MANUAL VOLUME DAMPER
- FIRE DAMPER (PROVIDE TO MATCH FIRE RATING OF ASSEMBLY)
- MOTOR OPERATED DAMPER
- SMOKE DAMPER
- RISE IN DUCT (DIRECTION OF AIR FLOW)
- DROP IN DUCT (DIRECTION OF AIR FLOW)
- BRANCH WITH EXTRACTOR
- BRANCH WITH 45° TAP
- PREFABRICATED ROUND BRANCH FITTING WITH VOLUME DAMPER
- FLEXIBLE DUCTWORK BRANCH FITTING WITH VOLUME DAMPER
- TRANSITION
- 3 WAY SPLIT IN MAINS. AREA "A" IS EQUAL TO SUM OF AREAS "B", "C", "D".
- 2 WAY SPLIT IN MAINS. AREA "A" IS EQUAL TO SUM OF AREAS "B", "C".
- ALL DUCT SIZES ARE NET CLEAR INSIDE DIMENSIONS.
- 2 WAY SPLIT AT END OF MAIN. AREA "A" IS EQUAL TO SUM OF AREAS "B", "C".
- SQUARE ELBOW WITH TURNING VANES.
- SUPPLY
- RETURN
- EXHAUST
- RADIUS ELBOW (MAY BE USED IN LIEU OF SQUARE ELBOW WITH TURNING VANES)
- DIFFUSER (4 WAY UNLESS NOTED) NECK SIZE & CFM NOTED

MECHANICAL NOTES AND REQUIREMENTS

1. FOR RENOVATION WORK THE MECHANICAL CONTRACTOR SHALL INSPECT ANY EXISTING MECHANICAL ITEMS TO BE REUSED FOR DEFECTS AND REPORT TO THE ARCHITECT/ENGINEER AND THE OWNER ANY DEFICIENCIES PRIOR TO PERFORMING ANY WORK.
2. CONTRACTOR SHALL BALANCE THE AIR DISTRIBUTION SYSTEM TO AIR QUANTITIES INDICATED ON THE DRAWINGS AND SUBMIT (3) COPIES OF THE BALANCE REPORT TO THE ENGINEER FOR APPROVAL.
3. CONTRACTOR SHALL SPRAY PAINT INSIDE OF DUCT BLACK, BEHIND ALL GRILLES AND REGISTERS.
4. ALL PIPING SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS IN A NEAT WORKMANSHIP-LIKE MANNER AND BE SUPPORTED AS REQUIRED BY CODES. PIPING SHALL BE SET UP AND DOWN AND OFFSET AS REQUIRED TO SUIT FIELD CONDITIONS. DIELECTRIC COUPLINGS SHALL BE USED WHERE DISSIMILAR METALS ARE JOINED.
5. PIPING HANGERS SHALL BE SPACED SO AS TO PREVENT SAG AND PERMIT PROPER DRAINAGE AND SHALL NOT BE SPACED MORE THAN EIGHT FEET APART UNLESS A GREATER SPACE IS INDICATED ON THE DRAWINGS. A HANGER SHALL BE PLACED WITHIN (1) FOOT OF EACH HORIZONTAL ELBOW.
6. ISOLATE AND DRAIN EXISTING PIPING SYSTEM AS REQUIRED TO ACCOMMODATE INSTALLATION OF THE NEW WORK.
7. HOT WATER AND CHILLED WATER SUPPLY AND RETURN PIPING SHALL BE BLACK STEEL PIPE, SCHEDULE 40 FOR 2-1/2 INCH AND LARGER, SEAMLESS COPPER TYPE 'L' FOR 2 INCH AND BELOW.
8. REFRIGERANT PIPING OTHER THAN PRECHARGED TUBING SETS FURNISHED BY AIR CONDITIONING MANUFACTURER SHALL BE TYPE 'ACR' HARD DRAWN COPPER TUBING WITH WROUGHT COPPER FITTINGS. PIPING SHALL BE INSTALLED IN ACCORDANCE WITH ARI STANDARDS. USE EASY-FLO OR SAFETY SILVER BRAZING ALLOY TO MAKE JOINTS. RUN ALL HORIZONTAL LINES DEAD LEVEL TO ENSURE PROPER GAS RETURN TO COMPRESSOR.
9. THE INSTALLATION OF ALL INSULATION SHALL BE PERFORMED BY A EXPERIENCED CRAFTSMAN IN A NEAT WORKMANSHIP-LIKE MANNER AND SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN PUBLISHED RECOMMENDATIONS FOR SERVICE INTENDED.
10. ALL MATERIALS OF INSULATION SHALL BE OF THE TYPE AND QUALITY AS MANUFACTURED BY ARMSTRONG, CERTAINTEED, OWENS-CORNING OR MANVILLE. ALL MATERIAL AND EQUIPMENT SPECIFIED TO BE INSULATED SHALL BE THOROUGHLY TESTED AND APPROVED PRIOR TO APPLYING THE INSULATION.
11. REFRIGERATION SUCTION AND HOT GAS BY-PASS SHALL BE INSULATED WITH 1 INCH THICK ARMSTRONG 'ARMAFLEX' OR EQUAL. EXTERIOR INSULATION SHALL BE COATED WITH ULTRAVIOLET RESISTANT MATERIAL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, OR USE UL RATED PRODUCT. DO NOT INSULATE THE LIQUID LINE.
12. ALL EXTERIOR EXPOSED WATER PIPING SHALL BE INSULATED WITH 2 INCH PREFORMED FIBERGLASS INSULATION WITH VAPOR JACKET AND SELFSEALING TAPE EQUAL TO OWENS-CORNING ASJ/SSL-II. COVER INSULATION WITH .016 INCH THICK ALUMINUM JACKET.
13. MECHANICAL CONTRACTOR SHALL FURNISH A COMBINATION STARTER SIZED IN ACCORDANCE WITH THE MOTOR RATING OF THE MECHANICAL EQUIPMENT STARTER SHALL BE SUPPLIED WITH FUSES OR CIRCUIT BREAKERS, CONTROL TRANSFORMER, OVERLOADS, ONE N.O. AND ONE N.C. AUXILIARY CONTACT AND H.O.A. SWITCH MOUNTED IN THE COVER. STARTER ENCLOSURE SHALL BE NEMA RATED FOR ITS LOCATION. STARTER SHALL BE INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR.
14. CONTRACTOR SHALL PROVIDE ALL AIR TEMPERATURE CONTROLS INCLUDING WIRING, TUBING AND THERMOSTATS (WITH LOCKING COVERS) AND ALL MISCELLANEOUS APPURTENANCES TO MEET THE INTENT OF THESE DOCUMENTS.
15. EQUIPMENT AND MAINS - SHUT OFF VALVES SHALL BE EQUAL TO NIBCO MODEL S-113 LF SOLDERED JOINT, MODEL T-113 LF THREADED JOINT, BRONZE GATE VALVE NONRISING STEM, 300 PSI W.O.G., 125 PSI S.W.P. CONTRACTOR MAY SWAP AN EQUIVALENT BALL VALVE FOR THE GATE VALVE.
16. BALL VALVES SHALL BE EQUAL TO NIBCO, S-585-66-LF, BRONZE, RATED FOR 600 W.O.G.
17. VIBRATION ISOLATORS FOR HANGING EQUIPMENT SHALL BE EQUAL TO MASON INDUSTRIES MODEL 30N, COMBINATION SPRING AND DOUBLE DEFLECTION NEOPRENE HANGER, OR DEFLECTION AS RECOMMENDED BY MANUFACTURER.
18. VIBRATION ISOLATORS FOR BASE MOUNTED EQUIPMENT SHALL BE EQUAL TO MASON INDUSTRIES MODEL SLF, DEFLECTION AS RECOMMENDED BY MANUFACTURER.
19. ALL EQUIPMENT AND MATERIAL FURNISHED SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL. ALL EQUIPMENT AND MATERIALS SHALL MEET THE REQUIREMENTS OF ALL CODES AND STANDARDS OF LOCAL AND STATE AGENCIES HAVING JURISDICTION.
20. WHERE A SUBCONTRACTOR PROPOSES TO USE AN ITEM OR EQUIPMENT OTHER THAN THE SPECIFIED OR DETAILED ITEM ON THE DRAWINGS THAT IS APPROVED BY THE ENGINEER AND THAT REQUIRES REDESIGN OF THE STRUCTURE PARTITIONS, FOUNDATIONS, PIPING, WIRING OR ANY OTHER PART OF THE MECHANICAL, ELECTRICAL, OR ARCHITECTURAL LAYOUT, THEN SUCH REDESIGN, NEW DRAWINGS, AND DETAILING REQUIRED FOR IT SHALL BE PREPARED BY THE SUBCONTRACTOR WITHOUT EXTRA COMPENSATION.
21. THE SUBMITTAL WHICH HAS BEEN REVIEWED BY THE ENGINEER, WITH OR WITHOUT COMMENTS, DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENTS OF COMPLYING WITH THE CONTRACT DOCUMENTS. ONLY SUBMITTALS WHICH EXPLICITY REQUEST THE ENGINEER TO REVIEW DEVIATIONS WITH THE CONTRACT DOCUMENTS RELIEVE THE CONTRACTOR FROM THE SPECIFIC ITEM OF COMPLIANCE.
22. THE LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE, AND ARE TO SERVE AS GUIDE FOR THE INSTALLATION. THE SHIFTING OF LOCATIONS TO MEET CONDITIONS (BEFORE INSTALLATION) WILL BE EXPECTED, AND THIS SHALL DONE AT NO INCREASED COST.
23. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, MECHANICAL DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND INDICATE ONLY SIZES, CONNECTION POINTS, AND ROUTES. IT IS NOT INTENDED OR IMPLIED THAT ALL OFFSETS, RISES, AND DROPS ARE AS SHOWN.

BUILDING AUTOMATIC TEMPERATURE CONTROLS

1. THE OWNER'S ATC CONTRACTOR, CONTROL SYSTEMS INC., IS RESPONSIBLE FOR THE INTERFACE OF THE NEW CHILLER MACHINE WITH THE BUILDING MANAGEMENT/ ATS SYSTEM. THE CHILLER CONTRACTOR SHALL COORDINATE WITH THE OWNER'S ATC CONTRACTOR AND ASSIST WITH THE ATC CONTRACTOR FOR CHILLER START-UP AND COMMISSIONING.

GENERAL MECHANICAL NOTES - WORKMANSHIP/COORDINATION

1. ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION. ISOLATE WORK AREAS BY MEANS OF TEMPORARY PARTITIONS AND/OR TARPS TO DEEP DUST AND DIRT WITHIN THE CONSTRUCTION AREA.
2. NO PIPING, EQUIPMENT, ETC. SHALL BE REMOVED, DISCONNECTED OR SHUT DOWN WITHOUT PRIOR REVIEW WITH THE OWNER AND/OR ENGINEER TO CONFIRM THAT AREAS TO REMAIN IN OPERATION WILL NOT BE AFFECTED. IF ANY AREAS NOT WITHIN THE SCOPE OF WORK ARE AFFECTED BY ANY SHUTDOWN, REMOVAL OR DISCONNECTION, SUFFICIENT ADVANCE NOTICE MUST BE GIVEN TO THE OWNER INDICATING WHICH AREAS WILL BE AFFECTED, WHEN THE PROPOSED SHUTDOWN WILL OCCUR, AND FOR HOW LONG A PERIOD OF TIME.
3. ALL ITEMS REMOVED SHALL BECOME PROPERTY OF THE OWNER AND SHALL BE DISPOSED OF AS PER THE OWNER'S INSTRUCTIONS, UNLESS INDICATED OTHERWISE. ALL ITEMS WHICH ARE NOT TO BE STORED ON SITE BY OWNERS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
4. THIS CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO PROCEEDING WITH ANY WORK. WHERE DISCREPANCIES OCCUR BETWEEN THESE DOCUMENTS AND EXISTING CONDITIONS, THE DISCREPANCY SHALL BE REPORTED TO THE OWNER AND/OR ENGINEER FOR EXPEDITING AND RESOLVE.
5. ALL SHUT DOWNS OF EXISTING SYSTEMS SHALL BE SCHEDULED AND APPROVED BY THE OWNER PRIOR TO COMMENCING WITH WORK.
6. CLEAN THE JOB SITE DAILY AND REMOVE FROM THE PREMISES ANY DIRT AND DEBRIS CAUSED BY THE PERFORMANCE OF THE WORK INCLUDED IN THIS CONTRACT.
7. USE OF THE OWNER'S ELEVATORS AND BUILDING CORRIDORS FOR FOR HANDLING OF THE OWNER AND REMOVED EQUIPMENT AND MATERIALS SHALL BE AT THE DIRECTION OF THE OWNER AND SHALL BE COORDINATED WITH HIS OPERATIONS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFEKEEPING OF HIS OWN PROPERTY ON THE JOB SITE. OWNER ASSUMES NO RESPONSIBILITY FOR PROTECTION OF PROPERTIES AGAINST FIRE, THEFT AND ENVIRONMENTAL CONDITIONS.
9. SUCCESSFULLY PRESSURE TEST ALL PIPING SYSTEMS. TEST SHALL BE PERFORMED AT NORMAL SYSTEM OPERATING PRESSURES. REPAIR AND RETEST AS REQUIRED UNITL SYSTEMS PROVE TIGHT.
10. EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NEW SYSTEMS, EXCEPT WHERE INDICATED AS BEING RELOCATED.
11. PROVIDE ALL NECESSARY TEMPORARY OR PERMANENT CAPS OR PLUGS FOR PIPING. DO NOT LEAVE PIPING OPEN ENDED.
12. WHERE USED, THE TERM 'PROVIDE' SHALL MEAN 'FURNISH AND INSTALL'.
13. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE AND/OR INSTALLATION OF ALL WORK.
14. MECHANICAL CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENT OF ANY EQUIPMENT WITH G.C. AND ELECTRICAL CONTRACTOR PRIOR TO ROUGH-IN.
15. THE CONTRACTOR SHALL REFER TO PROJECT SPECIFICATIONS FOR ANY ADDITIONAL PROJECT REQUIREMENTS

FIRE STOPPING NOTES

ALL PIPES, DUCTS, CONDUITS AND CABLES PASSING THROUGH RATED FLOORS/WALLS/CEILINGS SHALL BE FIRE STOPPED WITH 3M FIRE BARRIER CAULK CP 25 OR EQUAL. INSTALL PER MANUFACTURE'S INSTRUCTIONS AND TO SATISFY THE FIRE RATING REQUIREMENTS OF THE ASSEMBLY:

1) ELEVATOR MACHINE ROOM	2 HOUR FIRE RATING FOR WALLS AND CEILING, UNLESS NOTED OTHERWISE ON THE PLANS
2) MECHANICAL ROOM	1 HOUR FIRE RATING FOR WALLS AND CEILING, UNLESS NOTED OTHERWISE ON THE PLANS
3) STAIR TOWER	2 HOUR FIRE RATING, UNLESS NOTED OTHERWISE ON THE PLANS
4) OTHER FIRE SEPARATIONS	PROVIDE TO MATCH ASSEMBLY RATING INDICATED ON THE PLANS OR REQUIRED BY CODE.

MECHANICAL DRAWING LIST

21-062

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MECHANICAL COVER SHEET

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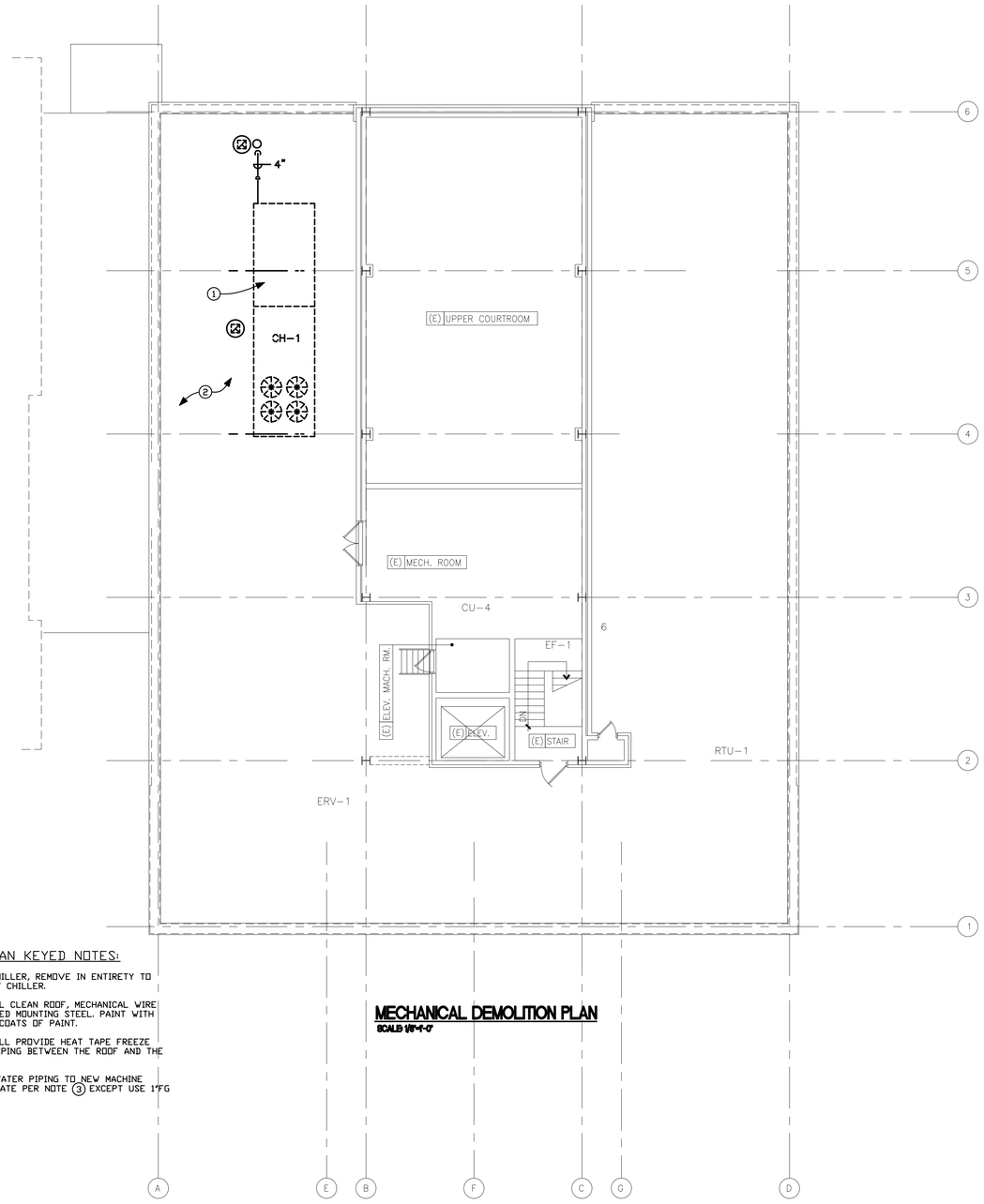
M-0.0
2 OF 8 SHEETS
DATE: MAY 11, 2023

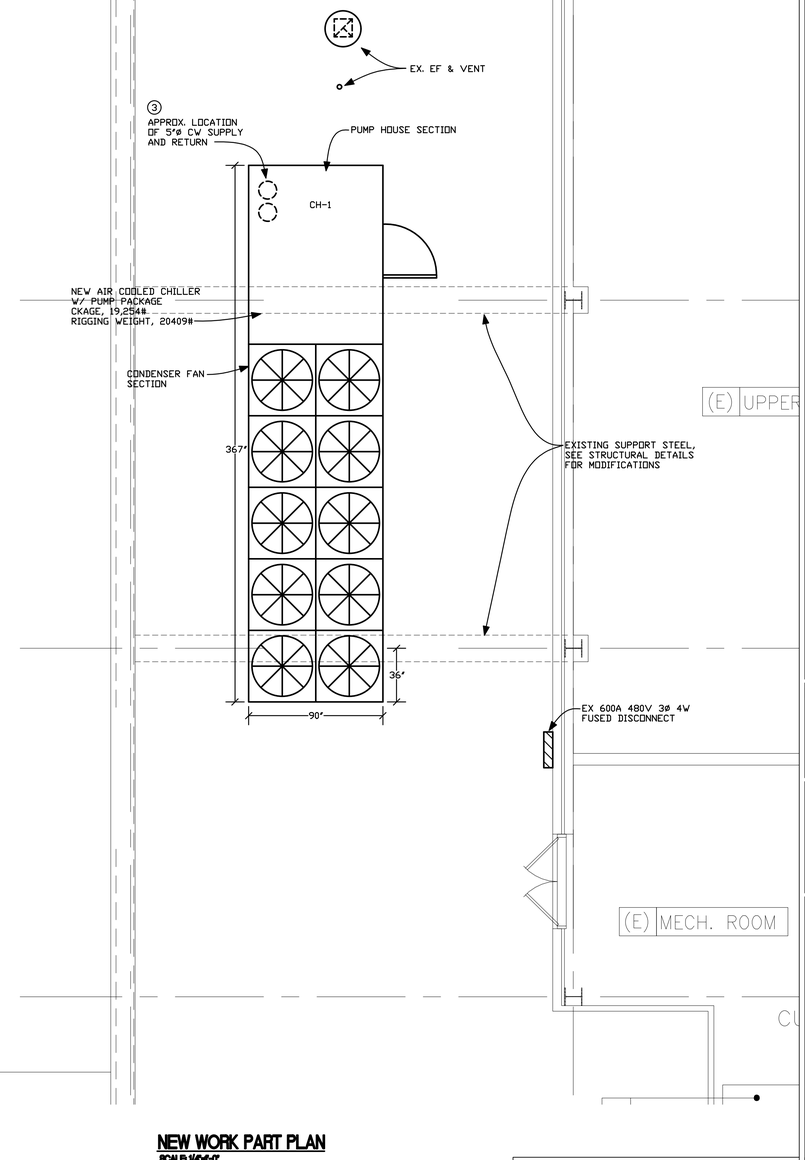


MECHANICAL DEMOLITION PLAN

SCALE: 1/8"=1'-0"

MECHANICAL PLAN KEYED NOTES:

1. EXISTING AAON CHILLER, REMOVE IN ENTIRETY TO ACCOMMODATE NEW CHILLER.
2. CONTRACTOR SHALL CLEAN ROOF, MECHANICAL WIRE BRUSH AND EXPOSED MOUNTING STEEL. PAINT WITH PRIMER AND TWO COATS OF PAINT.
3. CONTRACTORS SHALL PROVIDE HEAT TAPE FREEZE PROTECTION OF PIPING BETWEEN THE ROOF AND THE CHILLER MACHINE.
4. EXTEND MAKEUP WATER PIPING TO NEW MACHINE PENTHOUSE, INSULATE PER NOTE 3 EXCEPT USE 1"FG INSULATION



NEW WORK PART PLAN

SCALE: 1/4"=1'-0"

21-062

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MECHANICAL NEW WORK ROOF PLAN

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3 OF 8 SHEETS

DATE: MAY 11, 2023

YORK fisen — **YVAA** — JCI Air Cooled Screw Chiller — Date: 5/5/2022 — Order No: BODF-01 — Page: 1-1 — Ver. 1.0
Project Name: Washington County Courthouse
Quantity: 1 — Tag #: CH-1 — Model No: YVAA0183AOV46BHVBXX

Unit Tag	Qty	Model No.	Capacity (Tons)	Volts/Ph/Hz	Refrigerant
CH-1	**1**	**YVAA0183AOV46BHVBXX**	**185.9**	**460/3/60**	**R-513A**

PIN								
YVAA0183AO	V46BHVBXXX	SAXLAXXX60	44XOTXXV21	0X1DXDA2BM	XVXRXXGXXX	XXXSXX	-	-
....5...10	....5...20	....5...30	....5...40	....5...50	....5...60	....5...70	....5...80	....5...90

Evaporator Data		Evaporator Data (Cont.)		Performance Data	
EWT (°F)	54.3	Min. Flow Rate	200.0	EER	9.8
LWT (°F)	44.0	Max. Flow Rate	790.0	IPLV	18.3
Design Flow Rate (gpm)	430.0			NPLV	18.2
Total Pressure Drop (ft.)	12.4	**Condenser Data**		**Physical Data**	
Fluid	Water	Ambient Temp. Design (°F)	95.0	Rigging Wt. (lbs.)**	19254
Fouling Factor	0.000100	Altitude (ft.)	0.0	Operating Wt. (lbs.)**	20409
Number Passes	2	Compressor Type	VSD Screw – Semi - Hermetic	Refrigerant Charge (lbs.)	330.7
Fluid Volume (gal)	48.1	Minimum Ambient (°F)	0.0		

Piping Package Data			
Piping Package Fluid Volume (gal)	95.3	Combined Fluid Volume (gal)	143.4
Piping Package Pressure Drop (ft)	4.6	Combined Fluid Pressure Drop(ft)	17.0

Electrical Data				
Circuit	1	2	3	4
Compressor kW	120.0	90.3		
Compressor RLA	159.0	119.0		
Fan QTY/FLA (each)	6/2.4	6/2.4		
Pump(s) QTY/FLA (each)	2 / 27.0			
Control Voltage Transformer	6.5			
120V Subsystem Transformer	4.3			

Single Point Connection				
Circuit	#1			
Min. Circuit Ampacity	362.8			
Max. Overcurrent Protection	500			
Unit Short Circuit Withstand (STD)	65 kA [kA]			
Wire Lugs Per Phase*	2	3	3	
Wire Range (Lug Size)	#1 - 500 kcmil			
Displacement Power Factor	0.95		**Operating Condition Electrical Data**	
Control kVA	2		Compressor kW	210.3
			Pump kW(1)	11.6
			Total kW	227.3

YORK fisen — **YVAA** — JCI Air Cooled Screw Chiller — Date: 5/5/2022 — Order No: BODF-01 — Page: 1-2 — Ver. 1.0
Project Name: Washington County Courthouse
Quantity: 1 — Tag #: CH-1 — Model No: YVAA0183AOV46BHVBXX

Certified in accordance with the AHRI Air-Cooled Water-Chilling Packages Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at www.ahridirectory.org.
Unit contains freeze protection fluids in the evaporator with a leaving chilled fluid temperature above 32 DEG F [0 DEG C] and is certified when rated per the Standard with water. Auxiliary components included in total KW - Oil heaters, Chiller controls.
Auxiliary power is already included in the compressor and fan power

Min DSD (Factory Purpose/Use only): 80 psig
Displacement Power Factor refers to compressor only. Unit Power Factor depends on fan optionselected. Calculated value is available by request.

Minimum and maximum evaporator flow information are for full load ratings with Propylene Glycol.
Evaporator Passes: 2, Condenser Type: M, Fan Type: V
Actuated suction service valves ARE selected
Exclusion of actuated suction service valves will require incorporation of additional freeze protection including use of glycol, pump control or draining the evaporator.
This unit does not have a coil coating selected.
Minimum Chilled Water Flow Rate is for full load selections; Variable Primary Flow ratings as low as 50% of the minimum are permitted. Glycol limits are higher. To obtain minimum flow with Variable Primary Flow, run rating with Variable Primary Flow Partload Type.

ASHRAE Standard 90.1-2010 and ASHRAE Standard 90.1-2013 & 2016 Compliant.

IECC 2012 and IECC 2015/2018 Compliant.

* Use Copper Conductors only
**Weight is +/- 10%
(1)Pump power excluded from total kW

YORK fisen — **YVAA** — JCI Air Cooled Screw Chiller — Date: 5/5/2022 — Order No: BODF-01 — Page: 1-3 — Ver. 1.0
Project Name: Washington County Courthouse
Quantity: 1 — Tag #: CH-1 — Model No: YVAA0183AOV46BHVBXX

Part Load Rating Data				
Load %	Ambient (°F)	Capacity (Tons)	Total kW	Unit Efficiency
100	95.0	185.9	227.3	9.8
75	80.1	139.4	117.6	14.2
50	65.1	92.9	55.1	20.3
25	55.0	46.5	22.1	25.3

Estimated Sound Pressure Levels at 30 Feet (Derived from AHRI 370 Sound Power using Hemispherical Method)										
Load %	Ambient (°F)	63	125	250	500	1K	2K	4K	8K	LpA
100	95.0	96	96	97	99	95	90	85	80	100
75	80.1	94	95	95	94	91	85	81	76	95
50	65.1	90	90	90	90	87	81	77	72	91
25	55.0	85	86	85	86	82	76	72	67	87

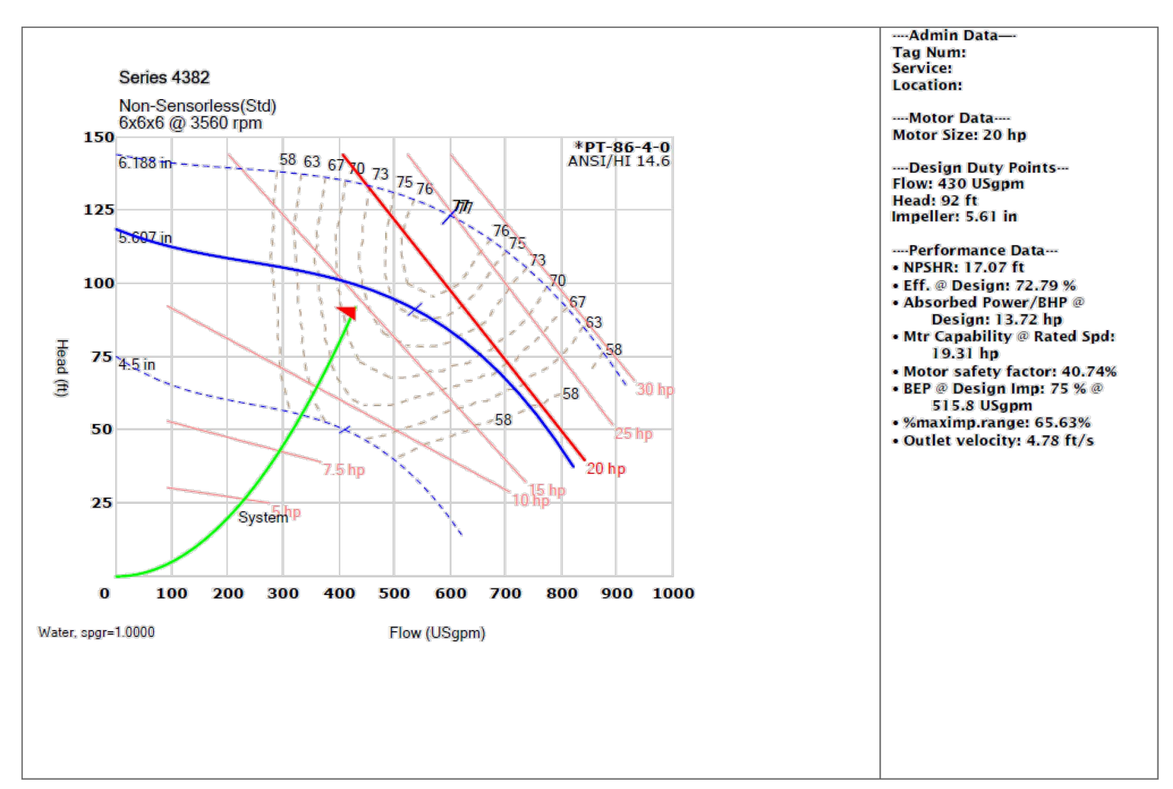
** Chiller is assumed to be a point source on a reflecting surface (hemispherical radiation)
**Sound Data does not reflect final finisher options.
Note: Unit is equipped with Low Sound Kit(Level 1 Reduction) with Variable Speed Control.
Measurement of sound pressure used to obtain the sound power data presented is based on AHRI-370.
Air-cooled chillers are rated in terms of sound power not sound pressure. Johnson Controls provides estimates of sound pressure, but this is not the rating metric.
For an air-cooled chiller, sound pressure calculated from sound power varies depending on how the chiller is assumed to behave, i.e. the radiation model. In other words, determining sound pressure from sound power requires making assumptions that result in different answers at a given distance from the chiller. The environment also influences sound pressure in the field installation. Sound pressure estimation radiation models pertaining to aircooled chillers include the 'traditional' hemispherical model, parallelepiped model and equivalent hemispherical model. Regarding sound power, Johnson Controls references tolerance limits based on ASHRAE guidelines. These are +/- 6dB in the 63Hz octave band, +/- 4dB in all other octave bands and +/- 3dB for the overall dBA.
Tolerance limits are based on uncertainties associated with:
1. Measurement Test Procedure
2. Repeatability
3. Production / Manufacturing Variability
Standard deviation associated with air-cooled chiller sound data is a measure of spread i.e. it indicates the range of probability of sound levels. Note that for operating conditions other than AHRI's Standard Rating Condition, higher levels of uncertainty can be expected.
Lead times for factory performance testing depend on test laboratory availability. Please confirm with Johnson Controls Customer Service.

Performance at AHRI Conditions					
Evaporator Data		**Condenser Data**		**Performance Data**	
EWT (°F)	54.0	Ambient Temp. (°F)	95.0	EER / COP	9.8
LWT (°F)	44.0	Altitude (ft.)	0.0	EER IPLV/COP IPLV	18.3
Flow Rate (gpm)	444.8			Capacity (Tons)	185.9
Pressure Drop (ft.)	13.2				
Fluid	Water				
Fouling Factor	0.000100				
Water Volume (gal)	48.1				

Note: Unit rated at design condition capacity.

YORK fisen — **YVAA** — JCI Air Cooled Screw Chiller — Date: 5/5/2022 — Order No: BODF-01 — Page: 1-4 — Ver. 1.0
Project Name: Washington County Courthouse
Quantity: 1 — Tag #: CH-1 — Model No: YVAA0183AOV46BHVBXX

Hydro Kit Data					
Flow	430			Impeller Diameter	5.6
Total Head	92.0	Fluid	Water	NPSHR	17.1
Hydro Kit Performance Data					
Pump Motor Size	20	Pump Motor BHP	13.7	Chiller Total PD	12.4
Pump Motor Speed	3560	Efficiency	72.8	Pump Package PD	4.6
Pump Motor Enclosure	ODP	Pump QTY	2	Available Head	75.0
		Head Safety Factor	0.0		



YORK fisen — **YVAA** — JCI Air Cooled Screw Chiller — Date: 5/5/2022 — Order No: BODF-01 — Page: 1-5 — Ver. 1.0
Project Name: Washington County Courthouse
Quantity: 1 — Tag #: CH-1 — Model No: YVAA0183AOV46BHVBXX

Factory Installed Options

R513a
SP Circuit Breaker w/Lockable Handle
Connected Services Ready – BACnet/Modbus/N2
High Pressure Cut-off Switch (High Ambient)
Actuated Suction Service Valves
Optimized Part Load (IPLV) Efficiency
Insulation 1 1/2" (38mm) applied to Evaporator, Waterboxes, & Suction Line, 3/4" (18mm) Insulation applied to Flash Tank, Suction Flanges, and Evaporator Tube Sheets
Low Sound Fans with Variable Speed Control NOTE: Possible Additional Lead Time
Low Sound Kit (Level 1 Reduction)
GPS Tracker

YORK fisen — **YVAA** — JCI Air Cooled Screw Chiller — Date: 5/5/2022 — Order No: BODF-01 — Page: 1-6 — Ver. 1.0
Project Name: Washington County Courthouse
Quantity: 1 — Tag #: CH-1 — Model No: YVAA0183AOV46BHVBXX

Fisen Installed Options

(Refer to Construction Details for Additional Information)

Enclosed Extension
- Solution Air Handling Unit Enclosure
  - XTO Enclosure Construction
  - Floor Drain
  - Outdoor Air Intake Louver
  - Exhaust Fan Ventilation Package
  - (2) Vapor Proof Service Light(s)
  - Powered Convenience Outlet
  - 5kW Electric Heat
  - NEMA 3R Non-Fused Disconnect
- Structural Steel Base Rails
- Chiller Base Rail Reinforcement
- Chiller Isolation Mounting Point Reinforcement
  - Vibration Isolation is not provided by Fisen and will require resizing due to increased weight load

Pumping Package
- Variable Speed Close Coupled Dual Arm Pump
- Variable Frequency Drive w/ Integral Fused Disconnect without Bypass
  - No Controls or Programming

Piping Package
- Single Entering and Leaving Fluid Connection
- ANSI/AWWA C-606 Piping
- Discharge Combination Valve
- Suction Diffuser
  - Upstream Strainer Isolation Valve
- Pressurized Expansion Tank
- Air Separator
  - Manual Air Vent
- Make-up Water Connection
  - Pressure Reducing Valve
- Chemical Pot Feeder
- ¾" Elastomeric Insulation on Chilled Water Piping and Specialties

YORK fisen — **YVAA** — JCI Air Cooled Screw Chiller — Date: 5/5/2022 — Order No: BODF-01 — Page: 1-7 — Ver. 1.0
Project Name: Washington County Courthouse
Quantity: 1 — Tag #: CH-1 — Model No: YVAA0183AOV46BHVBXX

Field Installed Accessories

** - Provided by Fisen
Only Items marked ** are provided by Fisen

One Differential Pressure Switch per Chiller
Vibration Isolation *Must be sized for revised weights.*

21-062

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CIRCUIT COURT
CHILLER REPLACEMENT
24 SUMMIT AVE HAGERSTOWN, MD 21740
MECHANICAL SCHEDULE

Professional Certification
I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland
License Number: 14401
Expiration Date: 4/21/2025

LESLIE SCOTT GRIM, P.E.
CO PROF. ENG. NO. PE0050461
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NY PROF. ENG. NO. 075414
PA PROF. ENG. NO. PE032636E
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REV.	DATE	COMMENT
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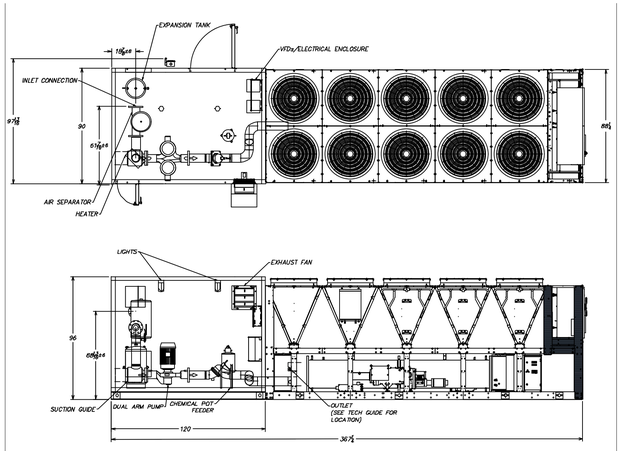
M-1.1
4 OF 8 SHEETS
DATE: MAY 11, 2023



Sequence of Operation

Chilled Water Pump and Variable Frequency Drive
The pump and variable frequency drive are provided without controls or programming. All controls and programming required for proper operation of the pump shall be provided by others.

Enclosure Heater
An electric heater installed in the enclosure will turn on when the temperate falls below adjustable setpoint from wall mounted thermostat. When temperature rises above setpoint, the heater shall be disabled.

Enclosure Exhaust Fan
An exhaust fan mounted in the enclosure shall enable if enclosure temperature rises above setpoint. When temperature falls below setpoint, the exhaust fan shall be disabled. Backdraft damper on the outdoor air louver shall open when fan is on.

Valve Schedule[1]

Valve Tag	Style	Size[2]	Configuration	Notes
BV1	Full Port Ball Valve	1”	NC	Lever Operated
BV2	Full Port Ball Valve	1”	NO	Lever Operated
BV3	Full Port Ball Valve	3/4”	NC	Lever Operated
BV4	Full Port Ball Valve	3/4”	NC	Lever Operated
BV5	Full Port Ball Valve	3/4”	NC	Lever Operated
BV6	Full Port Ball Valve	3/4”	NC	Lever Operated
TDV1	Discharge Combination Valve	6”	Field Set	Tool Operated
PRV1	Pressure Reducing Valve	½”	NO	Dial-Up Pressure Setting
HB	Hose Bibb	¾”	NC	

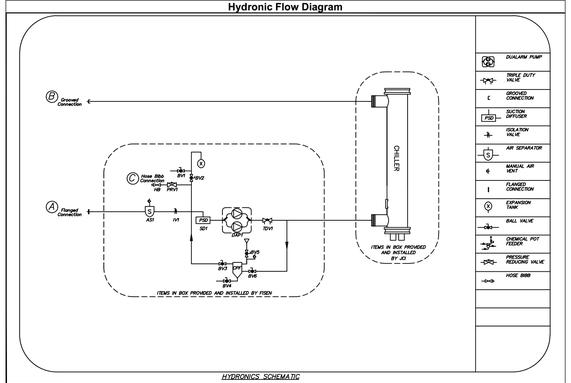
Notes:
1. Schedule only indicates valves typically added by Fisen. Additional items may and do exist as provided by JCI and Fisen.
2. Sizing is typical and will be validated at time of fabrication. Refer to IOM, As Built drawings, and/or hydronic prints for final sizing data.
3. Provided by JCI on some units. Installed by Fisen on others. May not be installed on all units.

Hydronic Specialty Schedule [1]

Item Tag	Style/Description	Size[2]	Configuration	Notes
DAP1	Close-Coupled Vertical In-Line DualArm Pump	20 hp	6”x6”x6”	
XT1	Expansion Tank	25 Gal		
AS1	Air Separator	6”		
CPF	Chemical Pot Feeder	5 Gal		

Notes:
1. Schedule only indicates hydronic specialties typically added by Fisen. Additional items may and do exist as provided by JCI and Fisen.
2. Sizing is typical and will be validated at time of fabrication. Refer to IOM, As Built drawings, and/or hydronic prints for final sizing data.
3. Provided by JCI on some units. Installed by Fisen on others. May not be installed on all units.

Hydronic Flow Diagram

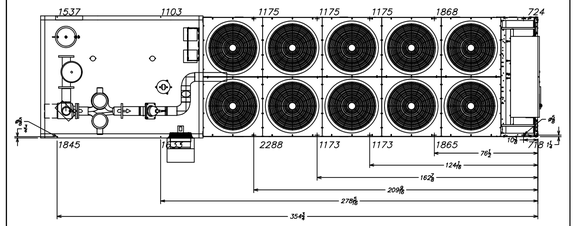


HYDRONICS SCHEMATIC

Piping Connections

Connection	Designation	Size
Inlet	A	6”
Outlet	B	6”

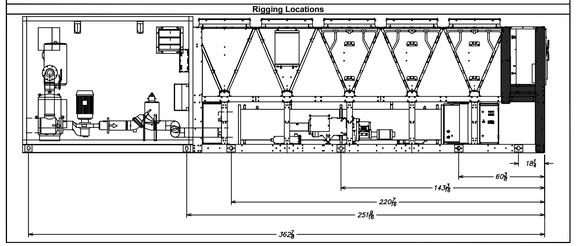
Rigging and Weight Distribution



Item	Weight
Base Unit	13245
Base Structure	503
Enclosure	2397
Pumping Package	1255
Piping Package (Excluding Buffer Tank)	3486
Hardware, Brackets, and Connectors	605

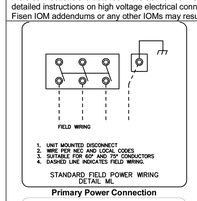
Total Estimated Rigging Weight: 19254 lbs.

Rigging Locations



Field Connections

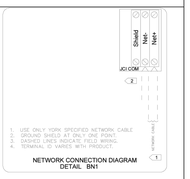
Field connections are detailed in the JCI IOM or Technical Guide other than those listed in this document. Refer to the JCI provided documents for detailed instructions on high voltage electrical connections. Failure to follow the instructions in that document as supplemented by the instructions in the Fisen IOM addendums or any other IOMs may result in equipment damage or personnel injury.



STANDARD FIELD POWER WIRING
DETAIL ML

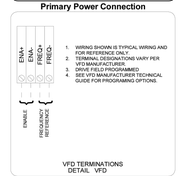
1. NO SECONDARY POWER CONNECTION FOR UNIT POWERED.
2. DOES NOT APPLY TO UNPOWERED CONVENIENCE OUTLETS.

STANDARD FIELD POWER WIRING
DETAIL NSC



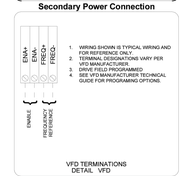
NETWORK CONNECTION DIAGRAM
DETAIL BN1

Primary Power Connection



VFD TERMINATIONS
DETAIL VFD

Secondary Power Connection



VFD TERMINATIONS
DETAIL VFD

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REV.	DATE	COMMENT
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M-1.2
5 OF 8 SHEETS
DATE: MAY 11, 2023

GENERAL ELECTRICAL NOTES

1. MATERIALS, EQUIPMENT, AND SYSTEMS SHALL MEET ALL PERTINENT REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM), **2017 NATIONAL ELECTRIC CODE (N.E.C.)**, THE UNDERWRITERS LABORATORY (UL), THE NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION (NEMA), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), AND OTHER NATIONALLY RECOGNIZED AGENCIES AS WELL AS APPLICABLE LOCAL CODES.

2. ANYTHING DRAWN OR SPECIFIED SHALL NOT BE CONSTRUED TO CONFLICT WITH ANY LOCAL, MUNICIPAL OR STATE LAW, REGULATION OR ORDINANCE WHICH GOVERNS THE INSTALLATION OF ANY ELECTRICAL OR RELATED WORK. ITEMS SHALL NOT BE INSTALLED IN CONFLICT WITH THE **N.E.C.** RESOLVE ANY AND ALL CONFLICTS BEFORE INSTALLATION AT NO ADDITIONAL EXPENSE TO THE OWNER.

3. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED AND LABELED FOR THE QUALIFIED USE. VERIFY CIRCUIT BREAKER INTERRUPT CAPACITY NEEDED FOR EACH PANEL WITH LOCAL UTILITY. FOR BID PURPOSES, ASSUME **65,000** AIC FOR SERVICE ENTRANCE EQUIPMENT, AND **25,000** AIC ELSEWHERE. BALANCE THE POWER EQUALLY (± 10%) ON ALL PHASES.

4. THE SYSTEMS SHOWN ON DRAWINGS SHALL BE PROVIDED TO SERVE ALL FIXTURES, EQUIPMENT, AND AREAS WITHIN THE CONTRACT LIMIT LINES AS SET FORTH BY THE ARCHITECTURAL SOLUTION FOR THE PROJECT. THE BIDDING AND CONTRACT REQUIREMENTS, GENERAL REQUIREMENTS, AND GENERAL PROVISIONS SHALL APPLY TO THIS SECTION. SYSTEMS SHALL INCLUDE ALL EQUIPMENT, APPURTENANCES, SAFETY DEVICES, AND CONTROLS NECESSARY FOR THE INTENDED SERVICE.

5. ALL PERMITS AND FEES REQUIRED FOR THE WORK SHALL BE SECURED AND PAID FOR BY THE ELECTRICAL CONTRACTOR AND INCLUDED IN BID PRICE.

6. WHERE JOB CONDITIONS REQUIRE CHANGES FROM THE CONTRACT DOCUMENTS THAT DO NOT CHANGE THE SCOPE OF INSTALLATION OR NATURE OF WORK REQUIRED, THE CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT ADDITIONAL COST TO THE OWNER. NO OTHER CHANGES MAY BE MADE WITHOUT WRITTEN PERMISSION OF THE OWNER.

7. BIDDERS SHALL BE LICENSED CONTRACTORS IN ACCORDANCE WITH LOCAL AND STATE LAWS.

8. ALL EQUIPMENT SHALL BE NEW AND UNUSED. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT CONFORMANCE TO MANUFACTURER'S RECOMMENDATIONS, EXCEPT WHERE THESE SPECIFICATIONS REQUIRE A HIGHER QUALITY INSTALLATION THAN RECOMMENDED BY THE MANUFACTURER.

9. ALL INSTALLED SYSTEMS, DEVICES AND RELATED ITEMS SHALL BE TESTED IN PLACE ON SITE. REPLACE ANY AND ALL CONTRACTOR-SUPPLIED DEFECTIVE DEVICES, ITEMS OR SYSTEMS AT CONTRACTOR'S OWN EXPENSE BEFORE COMPLETION OF THE PROJECT.

10. CONTRACTOR SHALL GUARANTEE ALL WORK FOR WHICH MATERIALS ARE FURNISHED, FABRICATED OR FIELD ERECTED, ALL FACTORY ASSEMBLED EQUIPMENT FOR WHICH NO SPECIFIC MANUFACTURER'S GUARANTEE IS FURNISHED, AND ALL WORK IN CONNECTION WITH INSTALLING MANUFACTURER'S GUARANTEED EQUIPMENT. THIS CONTRACTOR'S GUARANTEE SHALL EXIST FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL OWNER ACCEPTANCE OF THE WORK AND SHALL APPLY TO DEFECTS IN MATERIAL AND TO DEFECTIVE WORKMANSHIP OF ANY KIND.

11. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.

12. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING-IN THE BUILDING. COORDINATE THE CUTTING AND PATCHING OF BUILDING COMPONENTS TO ACCOMMODATE INSTALLATION OF ELECTRICAL EQUIPMENT AND MATERIALS.

13. COORDINATE THE INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT ABOVE CEILINGS WITH SUSPENSION SYSTEM, MECHANICAL EQUIPMENT AND SYSTEMS, AND STRUCTURAL COMPONENTS. COORDINATE ELECTRICAL EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.

14. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL ELECTRICAL SERVICES AND OVERHEAD EQUIPMENT TO PROVIDE THE MAXIMUM HEADROOM POSSIBLE. INSTALL ELECTRICAL EQUIPMENT TO FACILITATE MAINTENANCE AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.

15. COORDINATE CONNECTION OF ELECTRICAL SYSTEMS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH SERVICE.

16. DO NOT ENDANGER OR DAMAGE INSTALLED WORK THROUGH PROCEDURES AND PROCESSES OF CUTTING AND PATCHING. ARRANGE FOR REPAIRS REQUIRED TO RESTORE OTHER WORK, BECAUSE OF DAMAGE CAUSED AS A RESULT OF ELECTRICAL INSTALLATIONS.

17. BIDDERS SHALL THOROUGHLY ACQUAINT THEMSELVES WITH THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THEY SHALL EXAMINE ALL SERVICES, EQUIPMENT, SURFACES, ETC., WHICH THIS WORK IS IN ANY WAY DEPENDENT UPON, AND BRING ANY DISCREPANCIES DETERMINED OR OMISSIONS FOUND IN THE DRAWINGS TO THE OWNER'S ATTENTION BEFORE SUBMITTING BID.

18. VERIFY MECHANICAL EQUIPMENT SWITCH AND CONNECTION REQUIREMENTS, ITEM BY ITEM, WITH THE MECHANICAL CONTRACTOR, BEFORE WIRING EQUIPMENT. RESOLVE ALL DISCREPANCIES WITHOUT FURTHER COST TO OWNER.

19. ALL WIRING SHALL BE IN MC CABLE OR CONDUIT, ½" EMT MINIMUM WITH SET SCREW FITTINGS SUPPORTED AT 10'-0" INTERVALS.

20. ALL WIRING SHALL BE THHN/THWN COPPER (NO. 12 AWG MINIMUM) UNLESS OTHERWISE NOTED. WIRE AND CONDUIT SIZES ARE SHOWN ON THE PANEL SCHEDULE.

21. ALL LIGHTS SHALL BE SUPPORTED AND SECURED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THE SUPPORT SHALL BE FROM A BUILDING SUPPORT MEMBER AND NOT THE FIRE PROTECTION SYSTEM OR OTHER PIPES.

22. ALL PANELS, CONTROL DEVICES AND MISCELLANEOUS ELECTRICAL APPARATUS SHALL BE CLEARLY MARKED FOR EASY IDENTIFICATION AND SAFETY. USE BLACK PLASTIC OR BAKELITE NAME PLATE ENGRAVED WITH WHITE LETTERS ¼" HIGH. PUNCHED TAPE IS NOT ACCEPTABLE.

23. PANELS SHALL BE PROVIDED WITH A TYPEWRITTEN DIRECTORY AFFIXED TO INSIDE OF PANEL DOOR WITH A CLEAR PLASTIC SLEEVE.

24. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND ARE FOR CIRCUIT ALLOCATION ONLY. DO NOT SCALE DRAWINGS.

25. ELECTRICAL CONTRACTOR SHALL FURNISH RECORD SET OF DRAWINGS WITH ANY DEVIATIONS MARKED IN RED INK.

ELECTRICAL NOTES:

1. SCOPE OF WORK:

A. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING. BIDS SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS TO THE EXTENT POSSIBLE, CONCEALED CONDITIONS EXCLUDED. FIELD VERIFY ALL ELECTRICAL EQUIPMENT.

B. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND TOOLS TO PERFORM ELECTRICAL WORK SHOWN, NOTED OR SCHEDULED FOR A COMPLETE AND FINISHED INSTALLATION.

* MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SUCH AS APPEAR ON THE UNDERWRITERS LABORATORIES LIST OF APPROVED ITEMS AND SHALL BE SIZED IN CONFORMITY WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND OTHER APPLICABLE CODES, WHICHEVER ARE MORE STRINGENT.

C. ALL WORK TO BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE (2015) AND THE UNIFORM CONSTRUCTION CODE (LATEST EDITION).

D. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION PROCEDURES.

E. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM, WHETHER SPECIFIED OR IMPLIED.

2. PERMITS:

A. SECURE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES.

3. SHOP DRAWINGS:

A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ARCHITECT FOR APPROVAL. SUBMITTALS SHALL BE IN ACCORDANCE WITH GENERAL CONDITIONS AND SHALL BEAR STAMP OF THE GENERAL CONTRACTOR SHOWING THAT HE HAS REVIEWED AND APPROVED THEM. LACK OF SUCH CONTRACTOR'S APPROVAL WILL BE CAUSE FOR REJECTION WITHOUT REVIEW BY THE ARCHITECT OR ENGINEER.

B. SUBMIT SIX(6) SETS OF SHOP DRAWINGS.

4. CONDUITS:

A. THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOR ALL FEEDERS AND DISTRIBUTION CIRCUITS, UNLESS OTHERWISE SPECIFIED:

APPLICATION	TYPE OF CONDUIT
BURIED IN CONCRETE	PVC - SCHEDULE 40
IN MASONRY	EMT OR IMC
EXPOSED ABOVE GRADE	ARC
UNDERGROUND	PVC - SCHEDULE 40
SUPPLY TO DISTRIBUTION PANELS	EMT
INTERIOR BRANCH CIRCUITS (CONCEALED)	MC
INTERIOR BRANCH CIRCUITS (EXPOSED)	EMT

5. WIRE:

A. WIRE SHALL BE SINGLE CONDUCTOR COPPER WITH 600 VOLT INSULATION. #10 AND SMALLER SHALL BE SOLID. #8 AND LARGER SHALL BE STRANDED. MINIMUM WIRE SIZE SHALL BE #12 EXCEPT #14 MAY BE USED FOR CONTROL. ALL WIRE AND CABLE SHALL BE NEW AND SHALL BE BROUGHT TO THE SITE IN UNBROKEN PACKAGES. ALL WIRING OF ANY TYPE SHALL BE IN CONDUIT.

* GENERAL WIRING SHALL BE THW OR THHN (ALUMINUM CONDUCTORS ARE NOT PERMITTED).

B. WIRE CONNECTORS SHALL BE EQUAL BY SCOTCHLOCK FOR #6 AND SMALLER AND T & B "LOCK-LITE" FOR #8 AND LARGER.

6. LIGHTING:

A. LIGHTING FIXTURES AND LAMPS (UNLESS NOTED OTHERWISE) SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL INSTALL ALL FIXTURES AND LAMPS.

7. WIRE DEVICES:

A. RECEPTACLES SHALL BE 20 AMP, 3-WIRE GROUNDING TYPE EQUAL TO HUBBELL 5362 (MOUNTING @ 18"A.F.F.).

B. SWITCHES SHALL BE STANDARD GRADE RATED 20 AMP AT 120 VOLT (MOUNTING @48"A.F.F.)

C. SPECIAL DEVICES SHALL BE A SPECIFICATION GRADE.

8. SAFETY SWITCHES:

A. PROVIDE SAFETY AND DISCONNECT SWITCHES, FUSED OR NONFUSED, AS CALLED FOR ON DRAWINGS AND AS REQUIRED BY CODE. SWITCHES SHALL BE HEAVY DUTY, LOAD AND HORSEPOWER RATED AS MANUFACTURED BY SQUARE D, GOULD, ITE OR EQUAL.

B. MANUAL MOTOR STARTERS WITH OVERLOAD PROTECTION MAY BE USED FOR FRACTIONAL HORSEPOWER MOTORS. SINGLE PHASE STARTERS SHALL BE SQUARE D OR EQUAL. THREE PHASE STARTERS SHALL BE PROVIDED WITH OVERLOAD DEVICES IN EACH PHASE. MAGNETIC MOTOR STARTERS SHALL BE USED FOR INTEGRAL HORSEPOWER MOTORS, COMBINATION STARTERS, WHEN USED, SHALL CONTAIN FUSIBLE SWITCHES.

9. BOXES:

A. OUTLET BOXES AND COVERS SHALL BE GALVANIZED, ONE-PIECE PRESSED STEEL KNOCKOUT.

B. JUNCTION, PULL BOXES AND COVERS SHALL BE GALVANIZED STEEL, CODE GAUGE SIZE.

10. SERVICES:

A. PROVIDE ELECTRICAL SERVICE AS SHOWN ON THE DRAWINGS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OWNER OR POWER COMPANY SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. CLOSELY CO-ORDINATE ENTIRE INSTALLATION WITH OWNER AND POWER COMPANY AS REQUIRED.

11. INSTALLATION:

A. ALL ELECTRICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING AND REPAIRING. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS CHANNELS, RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK AND SHALL BE FASTENED TO STEEL, CONCRETE OR WOOD, BUT NOT TO PIPING. ALL CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE. EXPOSED CONDUIT SHALL BE IN STRAIGHT LINES PARALLEL WITH OR AT RIGHT ANGLES TO COLUMN LINES OR BEAMS AND SEPARATED AT LEAST 3 INCHES FROM WATER LINES WHEREVER THEY RUN ALONG SIDE OR ACROSS SUCH LINES. CONDUCTORS SHALL BE IN CONDUIT, DUCTS OR APPROVED RACEWAYS.

B. THE CONTRACTOR SHALL DO ALL CUTTING, CHASING OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS DIVISION. ANY CUTTING SHALL HAVE PRIOR APPROVAL OF OWNER. SLEEVES SHALL EXTEND AT LEAST TWO (2") INCHES ABOVE FINISHED FLOOR AND ALL SLEEVES, OPENINGS, ETC., THROUGH FIRE RATED WALLS AND FLOORS SHALL BE SEALED AFTER CONDUIT INSTALLATION TO REMAIN THEIR FIRE RATING.

C. THE FOLLOWING EQUIPMENT SHALL BE IDENTIFIED WITH ENGRAVED BAKELITE NAMEPLATES AS TO NAME AND/OR FUNCTION; DISTRIBUTION PANEL, LIGHTING PANELS, MOTOR STARTERS, TIME CLOCKS, AND DISCONNECT SWITCHES.

D. THE LOCATION OF OUTLETS AND EQUIPMENT SHOWN ON THE DRAWINGS ARE APPROXIMATE AND THE ARCHITECT SHALL HAVE THE RIGHT TO RELOCATE ANY OUTLETS OR FIXTURES BEFORE THEY ARE INSTALLED WITHOUT ADDITIONAL COST.

E. ELECTRICAL CONTRACTOR SHALL RECORD ALL FIELD CHANGES IN HIS WORK AS THE JOB PROGRESSES.

12. GUARANTEE:

A. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE.

B. FOR THE SAME PERIOD, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

13. FINALLY:

A. IT IS THE INTENT THAT THE FOREGOING WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT ANY MATERIAL OR WORK NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS, BUT NECESSARY TO FULLY COMPLETE THE WORK SHALL BE FURNISHED.

FIRE STOPPING NOTES

ALL PIPES, DUCTS, CONDUITS AND CABLES PASSING THROUGH RATED FLOORS/WALLS/CEILINGS SHALL BE FIRE STOPPED WITH 3M FIRE BARRIER CAULK CP 25 OR EQUAL. INSTALL PER MANUFACTURE'S INSTRUCTIONS AND TO SATISFY THE FIRE RATING REQUIREMENTS OF THE ASSEMBLY:

1) ELEVATOR MACHINE ROOM	2 HOUR FIRE RATING FOR WALLS AND CEILING - UNLESS NOTED OTHERWISE ON THE PLANS
2) MECHANICAL ROOM	1 HOUR FIRE RATING FOR WALLS AND CEILING - UNLESS NOTED OTHERWISE ON THE PLANS
3) STAIR TOWER	2 HOUR FIRE RATING - UNLESS NOTED OTHERWISE ON THE PLANS
4) OTHER FIRE SEPARATIONS	PROVIDE TO MATCH ASSEMBLY RATING INDICATED ON THE PLANS OR REQUIRED BY CODE.

ELECTRICAL POWER SYMBOLS

	POWER WIRING LEG
	HOME RUN TO PANEL/CKT, NUMBER OF TICK MARKS = NUMBER OF CONDUCTORS EXCLUDING GROUND, PROVIDE 'GREEN' GROUND WIRE FOR ALL CIRCUITS, NUMBER OF ARROW HEADS = NUMBER OF HOME RUNS
	DUPLEX GROUNDED RECEPTACLE
G.F.I.	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER
	QUAD DUPLEX GROUNDED RECEPTACLE
	SPECIAL PURPOSE OUTLET, CONFIRM OUTLET CONFIGURATION (TYPE) WITH EQUIPMENT TO BE SERVED PRIOR TO INSTALLATION
	DISCONNECT SWITCH
	JUNCTION BOX
EF	EXHAUST FAN
	MOTOR OR MISCELLANEOUS LOAD
	TELEPHONE/DATA/TV BOX
M	CEILING MOUNTED MOTION SENSOR
M	WALL MOUNTED MOTION SENSOR
D	RADIO POWER SAVER WIRELESS DAYLIGHT SENSOR
PP	LUTRON POWPAK DIMMING MODULE WITH 0-10V DIMMING
$	SINGLE POLE SWITCH
$$	DOUBLE SWITCH
$3	THREE WAY SWITCH
$4	FOUR WAY SWITCH
$D	DIMMER SWITCH
$K	KEYED SWITCH
$J	JAMB SWITCH
$T	TIMER SWITCH
$M	MOTION SWITCH
$DM	DIMMING MOTION SWITCH
	TOUCHLESS WAVE LIGHT SWITCH
	LED EMERGENCY EXIT LIGHT
	LED COMBINATION EXIT/EMERGENCY LIGHT
	LED EMERGENCY LIGHT

ELECTRICAL DRAWING LIST

NAME PLATES

'EQUIPMENT NO.' FED FROM 'PANEL NO.'

← INSERT ACTUAL EQUIPMENT NO.
← INSERT SOURCE PANEL NO.

21-062

L.S. GRIM, INC.
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DC METRO OFFICE
2275 RESEARCH BLVD., SUITE 500, ROCKVILLE, MD 20850

CIRCUIT COURT
CHILLER REPLACEMENT
24 SUMMIT AVE HAGERSTOWN, MD 21740

ELECTRICAL COVER SHEET

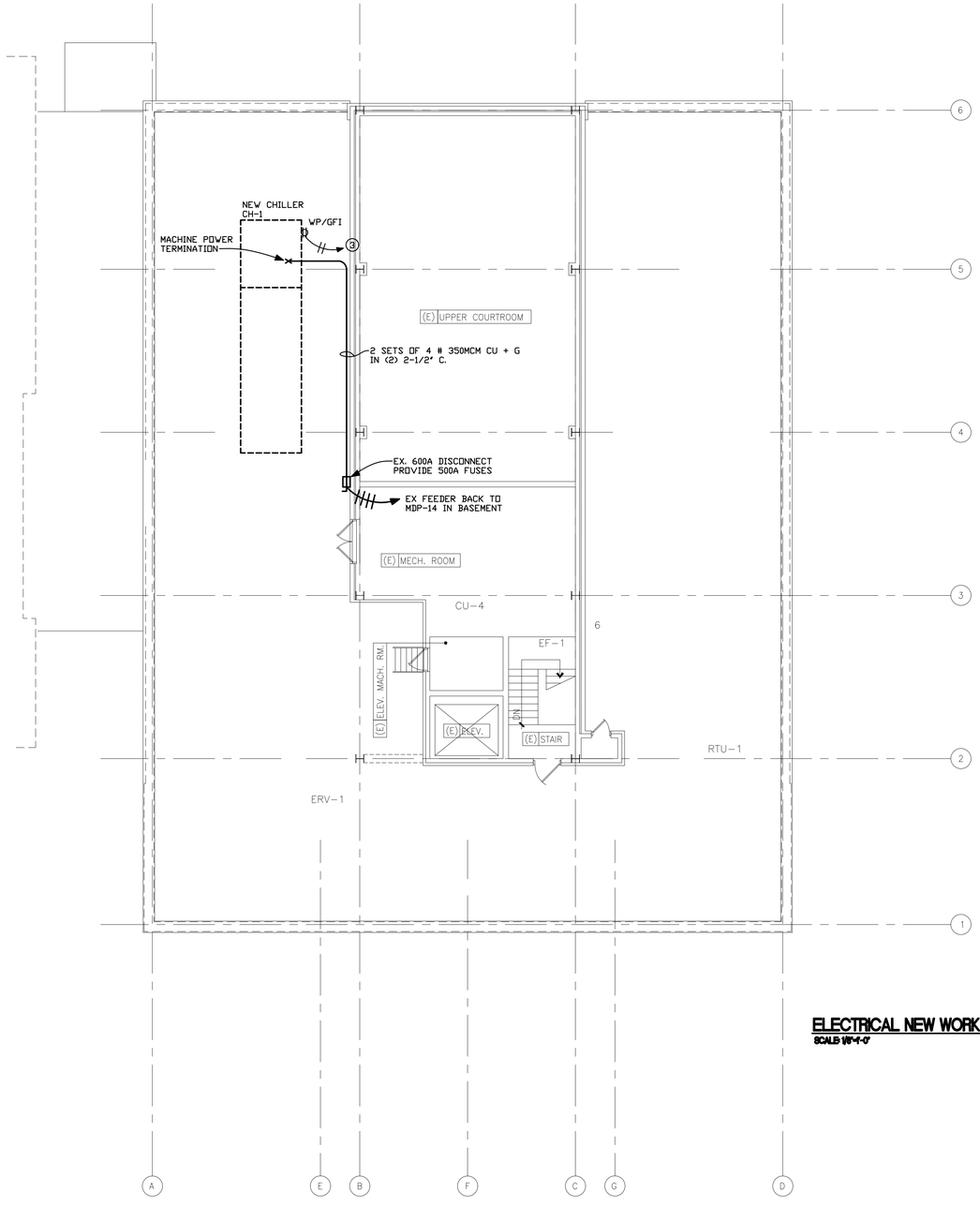
Professional Certification
I certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland
License Number: 14401
Expiration Date: 4/21/2025

LESLIE SCOTT GRIM, P.E.
CO PROF. ENG. NO. PE0050461
DC PROF. ENG. NO. PE901201
DE PROF. ENG. NO. 19513
GA PROF. ENG. NO. PE032582
HI PROF. ENG. NO. PE13943
MD PROF. ENG. NO. 14401
NC PROF. ENG. NO. 033364
NJ PROF. ENG. NO. 39497
NY PROF. ENG. NO. 075414
PA PROF. ENG. NO. PE032636E
VA PROF. ENG. NO. 023240
WV PROF. ENG. NO. 10764

REV.	DATE	COMMENT
	5/11/23	BID/ PERMIT SET

DRAWN BY: TMH

E-0.0
6 OF 8 SHEETS
DATE: MAY 11, 2023



ELECTRICAL PLAN KEYED NOTES:

1. EX 600A W/P FUSED DISCONNECT, CLEAN, SERVICE AND REFUSE AT 500 AMPS
2. CONTRACTOR SHALL REUSE EXISTING CHILLER IN ENTIRETY AND MAKE SAFE.
3. PROVIDE 20A 120V HOME RUN BACK TO NEAREST POWER PANEL, PROVIDE 20A 1 POLE DEVICE. PROVIDE WP/GFI OUTLET TO ACCOMMODATE HEAT TAPE FOR PIPING FREEZE PROTECTION.

ELECTRICAL NEW WORK ROOF PLAN

SCALE: 1/8"-1'-0"

21-062

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ELECTRICAL NEW WORK ROOF PLAN

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Expiration Date: 4/21/2025

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REV.	DATE	COMMENT
	5/11/23	BID/ PERMIT SET

DRAWN BY: LSG

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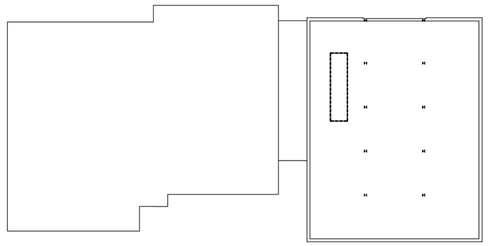
7 OF 8 SHEETS
DATE: MAY 11, 2023



KEY PLAN
N.T.S.

STRUCTURAL NOTES

GENERAL

1) THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.

2) NOTES AND DIMENSIONS ON DRAWINGS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS.

3) ALL WORK SHALL BE IN ACCORDANCE WITH THE MORE STRINGENT REQUIREMENTS OF THE MINIMUM STANDARDS LISTED IN THE GOVERNING CODE OR AS INDICATED HEREON. GOVERNING CODE SHALL BE I.B.C. 2018.

4) COORDINATE THESE DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS WITH REGARD TO DIMENSIONS, OPENINGS, LOCATION OF EQUIPMENT, ETC.

5) THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION, INCLUDING ALL BRACING AND SHORING REQUIRED TO RESIST THE ACTUAL CONSTRUCTION LOADS.

6) ASTM SPECIFICATIONS LISTED SHALL BE THE LATEST EDITION.

7) DESIGN LIVE LOADS:

STRUCTURAL STEEL

1) STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (LATEST EDITION).

2) ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A-992 , GRADE 50 FOR W SHAPES AND ASTM A-36 FOR MISC. STRUCTURAL SHAPES UNLESS OTHERWISE NOTED.

3) PIPE COLUMNS SHALL CONFORM TO ASTM DESIGNATION A-53 GRADE 'B'. ALL STEEL TUBES SHALL CONFORM TO ASTM DESIGNATION A-500 GRADE 'B' COLD FORMED TUBES WITH FY = 46 KSI.

4) BEAM CONNECTIONS SHALL BE LONGEST PERMITTED BY BEAM WEB DEPTH. ALL BOLTS SHALL BE A325-N EXCEPT AS NOTED. ALL WELDS SHALL BE MADE WITH 70KSI ELECTRODES. ALL WELDS SHALL BE SHOP PAINTED, FIELD WELDS SHALL BE PAINTED TO MATCH.

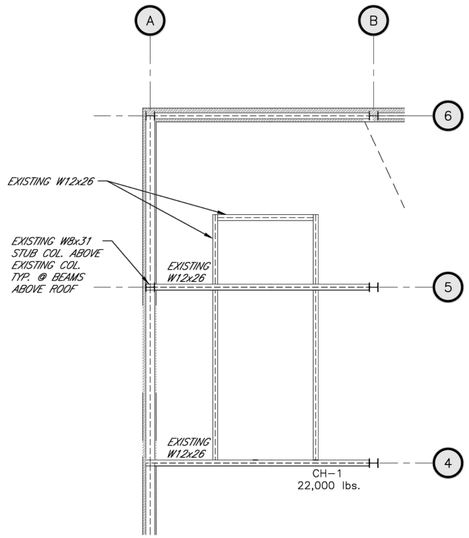
5) THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY BRACING FOR NEW AND EXISTING STRUCTURAL STEEL. THE FABRICATOR SHALL FURNISH SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.

6) BOLT HOLES SHALL BE 1/16 INCH LARGER DIAMETER THAN NOMINAL SIZE OF BOLT USED, UNLESS OTHERWISE NOTED.

7) ALL STRUCTURAL STEEL SURFACES THAT ARE ENCASED IN CONCRETE OR ARE ENCASED BY BUILDING FINISH, SHALL BE LEFT UNPAINTED. PRIMER SHALL BE USED ELSEWHERE, SEE SPECIFICATIONS.

8) ALL WELDS SHALL BE IN CONFORMANCE WITH THE STRUCTURAL WELDING CODE (AWS D1.1) OF THE AMERICAN WELDING SOCIETY.

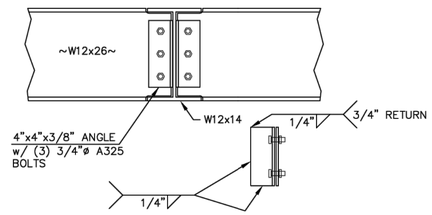
9) ALL BOLTED CONNECTIONS ARE DESIGNED FOR THE BEARING-TYPE CONDITION WITH THREADS INCLUDED IN THE SHEAR PLANE. BOLTS SHALL BE TIGHTENED TO THE SNUG-TIGHT CONDITION.



EXISTING RTU FRAMING PLAN
1/8"=1'-0"

RTU FRAMING PLAN
1/8"=1'-0"

1 S-1 SECTION - BEAM CANTILEVER
1"=1'-0"



2 S-1 SECTION - BEAM TO BEAM CONN.
N.T.S.

M&A
Matonak & Associates
STRUCTURAL ENGINEERS

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M&A PROJECT # 23-110

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE: 11953
EXPIRES: 6 MAY 2024

DATES:
PERMIT 8 MAY 2023

Proposed RTU Framing Design for
L.S. Grimm
24 Summit Ave Hagerstown, Maryland

Chiller Replacement

RTU FRAMING PLAN & NOTES

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S-1
8 OF 8 SHEETS