APPROVED

GENERAL NOTES

THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE SPECIFIED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOB SITE SAFETY; ERECTION MEANS, METHODS, AND SEQUENCES; TEMPORARY SHORING, FORMWORK, BRACING; USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES. PROVIDE ADEQUATE RESISTANCE TO LOADS ON THE STRUCTURES DURING CONSTRUCTION PER SEI/ASCE STANDARD NO. 37-14 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION."

CONSTRUCTION OBSERVATION BY THE STRUCTURAL ENGINEER IS FOR GENERAL CONFORMANCE WITH DESIGN ASPECTS ONLY AND IS NOT INTENDED IN ANY WAY TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

STANDARDS
ALL METHODS, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED AND ADOPTED BY THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION.

DESIGN CRITERIA

VERTICAL LOADS

AREA	DESIGN DEAD LOAD	LIVE LOAD	PARTITION LOAD	CONCENTRATED LOADS
MECHANICAL PLATFORM	ACTUAL	40 PSF	+EQUIPMENT	

SNOW: (MINIMUM ROOF SNOW LOAD = 25 PSF)

LATERAL FORCES

SEISMIC: (ASCE 7-16)

$$Fp = \frac{0.4a_p S_{DS} W_p}{\left(\frac{R_p}{I_p}\right)}\left(1+2\frac{z}{h}\right)$$

MINIMUM = $0.044\, S_{DS} I_E \geq 0.01$

COMPONENT IMPORTANCE FACTOR Ip = 1.5
COMPONENT RESPONSE MODIFICATION FACTOR Rp = 6
COMPONENT AMPLIFICATION FACTOR ap = 2.5
COMPONENT OPERATING WEIGHT Wp = 30k
HEIGHT OF ATTACHMENT z = 52.5ft
AVERAGE ROOF HEIGHT h = 52.5ft
DESIGN SPECTRAL RESPONSE ACCELERATIONS S_{DS} = 1.013
Fp = 0.76Wp
HORIZONTAL FORCE, Fp = 22.8k

PIPES, DUCTS AND MECHANICAL EQUIPMENT SUPPORTED OR BRACED FROM STRUCTURE. CONFORM TO SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC. PUBLICATION "SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS". SPRINKLER LINE ATTACHMENTS SHALL CONFORM TO NFPA PAMPHLET 13.

STRUCTURAL STEEL

DETAILING, FABRICATION AND ERECTION

ALL WORKMANSHIP SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION, 15TH EDITION, THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS JULY 7, 2016, THE AISC CODE OF STANDARD PRACTICE, JUNE 15, 2016 AND THE AISC SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS, JULY 12, 2016.

STEEL MEMBERS ARE EQUALLY SPACED BETWEEN COLUMNS AND/OR DIMENSION POINTS UNLESS NOTED OTHERWISE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDES AND JOINT PREPARATIONS THAT INCLUDE BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES, AND OTHER AIDES, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, WELD EXTENSION TABS, COPES, SURFACE ROUGHNESS VALUES AND TAPERS OF UNEQUAL PARTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH ALL CURRENT OSHA REQUIREMENTS.

HOLES, COPES OR OTHER CUTS OR MODIFICATIONS OF THE STRUCTURAL STEEL MEMBERS SHALL NOT BE MADE IN THE FIELD WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER.

STEEL FABRICATORS

NON-AISC CERTIFIED STEEL FABRICATORS SHALL HAVE FIVE YEARS MINIMUM EXPERIENCE ON SIMILAR PROJECTS OF EQUAL OR LARGER COMPLEXITY AND SCOPE. QUALIFICATIONS SHALL BE SUBMITTED TWO WEEKS PRIOR TO BID.

STEEL ERECTORS

NON-AISC CERTIFIED STEEL ERECTORS SHALL HAVE FIVE YEARS MINIMUM EXPERIENCE ON SIMILAR PROJECTS OF EQUAL OR LARGER COMPLEXITY AND SCOPE. QUALIFICATIONS SHALL BE SUBMITTED TWO WEEKS PRIOR TO BID.

STEEL DETAILERS

ALL STEEL DETAILING SHALL BE PERFORMED BY A DETAILER WITH FIVE YEARS MINIMUM EXPERIENCE ON SIMILAR PROJECTS OF EQUAL OR LARGER COMPLEXITY AND SCOPE. QUALIFICATIONS SHALL BE SUBMITTED TWO WEEKS PRIOR TO BID.

MATERIAL PROPERTIES

WIDE FLANGE SECTIONS: ASTM A992 (Fy = 50 KSI)

OTHER SHAPES AND PLATES: ASTM A36 (Fy = 36 KSI) TYP. U.N.O.; ASTM A572 (Fy = 50 KSI) WHERE INDICATED

HOLLOW STRUCTURAL SECTIONS: RECTANGULAR & SQUARE - ASTM A500 GRADE C (Fy = 50 KSI) ROUND - ASTM A500 GRADE C (Fy = 46 KSI)

STRUCTURAL STEEL PIPES: ASTM A53, GRADE B, TYPE E OR S (Fy = 35 KSI)

MACHINE BOLTS (M.B.): ASTM A307, GRADE A

HIGH-STRENGTH BOLTS: ASTM F3125, GRADE F1852, UNLESS NOTED OTHERWISE, ASTM F3125, GRADE F2280 WHERE INDICATED

WELDING

STRUCTURAL STEEL: WELD IN ACCORDANCE WITH "STRUCTURAL WELDING CODE" AWS D1.1.

CERTIFICATION: ALL WELDING SHALL BE PERFORMED BY WABO/AWS CERTIFIED WELDERS. WELDERS SHALL BE PREQUALIFIED FOR EACH POSITION AND WELD TYPE WHICH THE WELDER WILL BE PERFORMING.

WELD TABS (ALSO KNOWN AS WELD "EXTENSION" TABS OR "RUN OFF" TABS) SHALL BE USED. AFTER THE WELD HAS BEEN COMPLETED THE WELD TABS SHALL BE REMOVED AND THE WELD END GROUND TO A SMOOTH CONTOUR. WELD "DAMS" OR "END DAMS" SHALL NOT BE USED.

THE PROCESS CONSUMABLES FOR ALL WELD FILLER METAL INCLUDING TACK WELDS, ROOT PASS AND SUBSEQUENT PASSES DEPOSITED IN A JOINT SHALL BE COMPATIBLE.

ALL WELD FILLER METAL AND WELD PROCESS SHALL PROVIDE THE TENSILE STRENGTH AND CHARPY V-NOTCH RATINGS AS FOLLOWS:

WELD TYPE	FILLER METAL TENSILE STRENGTH	CHARPY V-NOTCH (CVN) RATING
FILLET	70 KSI	-----
PARTIAL PENETRATION	70 KSI	-----
COMPLETE PENETRATION	70 KSI	20 FT-LBS @ 40 DEG F

WELDED CONNECTIONS INSPECTION:

1. ALL WELDING SHALL BE CHECKED BY VISUAL MEANS AND BY OTHER METHODS DEEMED NECESSARY BY THE WELDING INSPECTOR.
2. ALL FULL PENETRATION WELDS TO MEMBERS WHICH FORM A PORTION OF THE LATERAL FORCE-RESISTING SYSTEM SHALL BE CHECKED 100 PERCENT BY ULTRASONIC TESTING.

THE STANDARDS OF ACCEPTANCE FOR WELDS TESTED BY ULTRASONIC METHODS SHALL CONFORM TO AWS D1.1.

ALL WELDS FOUND TO BE DEFECTIVE SHALL BE REPAIRED AND REINSPECTED BY THE SAME METHODS ORIGINALLY USED, AND THIS REPAIR AND REINSPECTION SHALL BE PAID FOR BY THE CONTRACTOR

GENERAL REQUIREMENTS

HIGH-STRENGTH BOLTS: ALL A325 HIGH-STRENGTH BOLTS (HSB) SHALL BE ASTM F3125, GRADE F1852, UNLESS OTHERWISE DESIGNATED AS A490. ALL HSB DESIGNATED AS A490 SHALL BE ASTM F3125, GRADE F2280. ALL HSB SHALL BE BY "LEJEUNE BOLT COMPANY" OR PRE-APPROVED EQUAL AND SHALL BE INSTALLED PER SECTION 8.2 OF THE "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS", AUGUST 2014 BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC SPECIFICATION). ALL BOLT HOLES SHALL BE STANDARD ROUND HOLES UNLESS NOTED OTHERWISE. THE FAYING SURFACES OF ALL PLIES WITHIN THE GRIP OF SLIP-CRITICAL BOLTS (A325SC OR A490SC) SHALL MEET THE REQUIREMENTS FOR A CLASS A SURFACE PER SECTION 3.2 OF THE RCSC SPECIFICATION.

BOLTED CONNECTIONS INSPECTION: CONNECTIONS MADE WITH BEARING TYPE BOLTS SHALL BE INSPECTED PER SECTION 9.1 AND CONNECTIONS MADE WITH SLIP-CRITICAL TYPE BOLTS (A325SC OR A490SC) SHALL BE INSPECTED PER SECTION 9.3 OF RCSC SPECIFICATION.

FINISH: WHERE STRUCTURAL STEEL IS NOTED TO BE GALVANIZED, IT SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123, A384, AND A385. ALL SURFACES WITHIN TWO INCHES OF ANY FIELD WELD LOCATION SHALL BE FREE OF MATERIALS THAT WOULD PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES. FIELD TOUCH-UP OF PRIMED, PAINTED, AND GALVANIZED SURFACES SHALL BE PERFORMED TO REPAIR COATING ABRASIONS, AS WELL AS TO PROTECT ALL AREAS AT CONNECTIONS.

BAR GRATING: SHALL BE RYERSON "RY-WELD" STEEL GRATING OR PRE-APPROVED EQUAL AND DESIGNED TO OSHA STANDARDS. GRATING SHALL BE DESIGNED TO CARRY THE LOADS LISTED IN THE DESIGN CRITERION AND ANY ADDITIONAL LOADS INDICATED ON THE FRAMING PLAN. PROVIDE SHOP AND INSTALLATION DRAWINGS PRODUCED UNDER THE SUPERVISION OF AND BE STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. DETAIL DRAWINGS TO INDICATE TYPES, SIZE, SPACING, CONNECTIONS, ANCHORING AND OTHER PERTINENT DETAILS.

SHOP DRAWINGS/SUBMITTALS

THE FOLLOWING SHOP DRAWINGS/SUBMITTALS SHALL BE PROVIDED FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION OR DELIVERY.

		STRUCTURAL ENGR.	BLDG. DEPT.
1.	STRUCTURAL STEEL	X	X
2.	CONTRACTOR'S STATEMENT OF RESPONSIBILITY	X	X

SPECIAL INSPECTION: SPECIAL INSPECTION SHALL BE PROVIDED BY AN INDEPENDENT TESTING LABORATORY PER THE REQUIREMENTS OF IBC CHAPTER 17 AND THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION AND THE CONTRACT DOCUMENTS. THE SPECIAL INSPECTOR SHALL SUBMIT INSPECTION REPORTS AND A FINAL SIGNED REPORT TO THE BUILDING OFFICIAL FOR THE ITEMS LISTED IN THE QUALITY ASSURANCE/SPECIAL INSPECTION SECTION:

STATEMENT OF SPECIAL INSPECTIONS:

SPECIAL INSPECTION: SPECIAL INSPECTION SHALL BE PROVIDED PER THE REQUIREMENTS OF IBC SECTION 1704 AND 1705 AND AS NOTED HEREIN.

STRUCTURAL SYSTEM	VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	COMMENTS	REFERENCES
STEEL CONSTRUCTION	MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS		X		AISC 360 CHAPTER N5
	HIGH-STRENGTH BOLTING A. SNUG-TIGHT JOINTS B. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITH MATCHMARKING, TWIST OFF BOLTS OR DIRECT TENSION INDICATOR METHODS OF INSTALLATION		X X		AISC 360 CHAPTER N5 AISC 341 CHAPTER J7
	MATERIAL VERIFICATION OF STRUCTURAL STEEL A. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360 B. MANUFACTURER'S CERTIFIED MILL TEST REPORTS		X X	MANUFACTURER TO PROVIDE CERTIFIED MILL TEST REPORTS	AISC 360 CHAPTER N5 AISC 341 CHAPTER J6
	MATERIAL VERIFICATION OF WELD FILLER MATERIALS A. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATIONS LISTED IN GENERAL NOTES B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE		X X	MANUFACTURER TO PROVIDE CERTIFICATE OF COMPLIANCE	AISC 360 CHAPTER N5
	INSPECTION OF WELDING A. COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	X		SPECIAL INSPECTIONS IN THIS SECTION ARE WAIVED WHERE FABRICATION IS PERFORMED ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED IN ACCORDANCE WITH IBC SECTION 1704.2.5	AISC 360 CHAPTER N5 AISC 341 CHAPTER J6 AWS D1.1

TESTING AND SPECIAL INSPECTION REPORTS SHALL BE PREPARED FOR EACH INSPECTION ITEM ON A DAILY BASIS WHENEVER WORK IS PERFORMED ON THAT ITEM. REPORTS SHALL BE DISTRIBUTED TO OWNER, CONTRACTOR, BUILDING OFFICIAL, ARCHITECT AND STRUCTURAL ENGINEER OF RECORD.

STRUCTURAL OBSERVATIONS SHALL BE PERFORMED BY THE STRUCTURAL ENGINEER OF RECORD OR DESIGNATED REPRESENTATIVE IN ACCORDANCE WITH IBC 1704.6.
STRUCTURAL OBSERVATION SHALL BE PERFORMED AS FOLLOWS:

- PERIODIC VISUAL OBSERVATION OF STRUCTURAL SYSTEMS FOR GENERAL CONFORMANCE TO CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES.
- REVIEW OF TESTING AND INSPECTION REPORTS.
- REPORTS SHALL BE PREPARED FOR EACH SITE VISIT AND SHALL BE DISTRIBUTED TO ARCHITECT.

GENERAL CONTRACTOR SHALL SUBMIT A WRITTEN CONTRACTOR'S STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL INCLUDE ACKNOWLEDGMENT OF AWARENESS OF THE SPECIAL INSPECTION REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.

THE APPROVED CONSTRUCTION PLANS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.FULL SIZED LEDGIBLE COLOR PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITTEE ON SITE FOR ALL INSPECTIONS (MIN. PLAN SIZE 24" X 36")

Reviewed for Building Code Compliance
By David Leahy ✔
Building Permit No. B-21-0700
Date of Approval 1/12/2022

Authorized to Begin Construction

Construction Review Services has authorized this project to begin construction.

- See accompanying project comment form for review status and corrections.
- This is not a building permit, check with your local building department.

11/16/2021 6:06:18 PM

ABBREVIATION LIST			
@	AT	HDR	HEADER
A.B.	ANCHOR BOLT	HGR	HANGER
ADD'L	ADDITIONAL	HORIZ.	HORIZONTAL
A.F.F.	ABOVE FINISH FLOOR	HSS	HOLLOW STRUCTURAL SECTION
ALT.	ALTERNATE	HT	HEIGHT
ARCH.	ARCHITECTURAL	INT.	INTERIOR
BLD'G	BUILDING	JST	JOIST
BLK'G	BLOCKING	JT	JOINT
BM	BEAM	L	ANGLE
B.O.F.	BOTTOM OF FOOTING	L.F.R.S.	LATERAL FORCE-RESISTING SYSTEM
BOT.	BOTTOM	L.L.	LIVE LOAD
BRB	BUCKLING RESTRAINED BRACE	LLH	LONG LEG HORIZONTAL
BRG	BEARING	LLV	LONG LEG VERTICAL
BTWN	BETWEEN	LOC.	LOCATION
B.U.	BUILT UP	LSL	LAMINATED STRAND LUMBER
(C=)	CAMBER	LVL	LAMINATED VENEER LUMBER
CANT.	CANTILEVER	MAX.	MAXIMUM
CFS	COLD-FORMED STEEL	M.B.	MACHINE BOLT
C.J.	CONTROL/CONSTRUCTION JOINT	MECH.	MECHANICAL
℄	CENTERLINE	MEZZ.	MEZZANINE
CLR.	CLEARANCE	MFR	MANUFACTURER
CMU	CONCRETE MASONRY UNIT	MIN.	MINIMUM
COL.	COLUMN	MISC.	MISCELLANEOUS
CONC.	CONCRETE	MTL	METAL
CONN.	CONNECTION	N.F.	NEAR FACE
CONST.	CONSTRUCTION	N.S.	NEAR SIDE
CONT.	CONTINUOUS	NTS	NOT TO SCALE
CONTR.	CONTRACTOR	O.C.	ON CENTER
COORD.	COORDINATE	OPN'G	OPENING
C.P.	COMPLETE PENETRATION	OPP.	OPPOSITE
CTR'D	CENTERED	P.A.F.	POWDER ACTUATED FASTENER
C.Y.	CUBIC YARD	PERP.	PERPENDICULAR
DBL.	DOUBLE	℄	PLATE
DCW	DEMAND CRITICAL WELD	P.P.	PARTIAL PENETRATION
D.F.	DOUGLAS FIR	P.P.T.	PRESERVATIVE PRESSURE TREATED
DIA. OR ⌀	DIAMETER	P.S.F.	POUNDS PER SQUARE FOOT
DIAG.	DIAGONAL	PSL	PARALLAM
DIM.	DIMENSION	P.T.	POST TENSION
D.L.	DEAD LOAD	PW.	PLYWOOD
DNG	DRAWING	REINF.	REINFORCEMENT
DWL	DOWEL	REQ'D	REQUIRED
(E)	EXISTING	SCHED.	SCHEDULE
EA.	EACH	SCL	STRUCTURAL COMPOSITE LUMBER
E.F.	EACH FACE	SHT'G	SHEATHING
EL.	ELEVATION	SIM.	SIMILAR
ELEV.	ELEVATOR	S.O.G.	SLAB ON GRADE
ENGR	ENGINEER	SQ.	SQUARE
EQ.	EQUAL	STD	STANDARD
E.W.	EACH WAY	STIFF.	STIFFENER
EXP.	EXPANSION	STL	STEEL
EXT.	EXTERIOR	STRUCT.	STRUCTURAL
FDN	FOUNDATION	T&B	TOP & BOTTOM
F.F.	FAR FACE	T&G	TONGUE AND GROOVE
FLR	FLOOR	THR'D	THREADED
F.O.M.	FACE OF MASONRY	T.O.F.	TOP OF FOOTING
F.O.S.	FACE OF STUD	T.O.S.	TOP OF STEEL
FRM'G	FRAMING	TRT'D	TREATED
F.R.T.	FIRE RETARDANT TREATED	TYP.	TYPICAL
F.S.	FAR SIDE	U.N.O.	UNLESS NOTED OTHERWISE
FTG	FOOTING	U.T.	ULTRASONIC TESTED
GA.	GAGE/GAUGE	VERT.	VERTICAL
GALV.	GALVANIZED	W/	WITH
GL.	GLULAM	W.P.	WORK POINT
GR.	GRADE	WT	WEIGHT
GWB	GYPSUM WALL BOARD	W.W.R.	WELDED WIRE REINFORCING

STRUCTURAL DRAWING INDEX	
SHEET NUMBER	SHEET DESCRIPTION
S0.00	GENERAL NOTES
S1.00	ROOF FRAMING PLAN AND DETAILS
Grand total: 2	

B-21-0700

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STAMP

Donald R. Scott — State of Washington — 22917 — Professional Engineer

PROJECT

MULTICARE - GSH CENTER WING AHU REPL
GOOD SAMARITAN HOSPITAL
401 15TH AVE SE
PUYALLUP, WA 98372

REVISION

DATE	08-31-21
JOB #	21-476
DRAWN	RSC
CHECKED	KDK

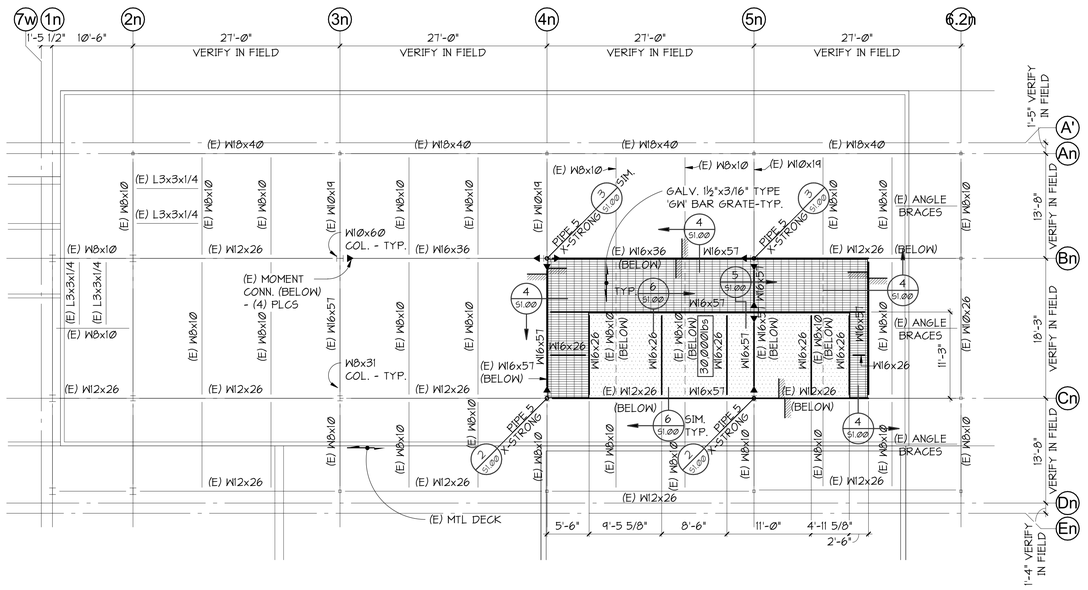
TITLE

GENERAL NOTES

SHEET

S0.00

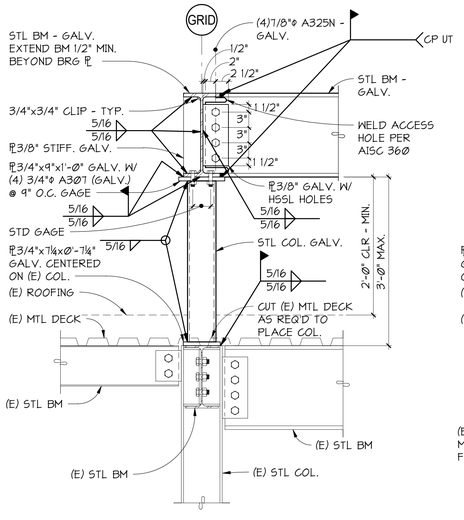
8/31/2021 3:15:26 PM C:_Revit Models\21476 MHS Good Sam North Wing AHU Installation v2017 (Central)_scowsert@pcs-structural.com.rvt



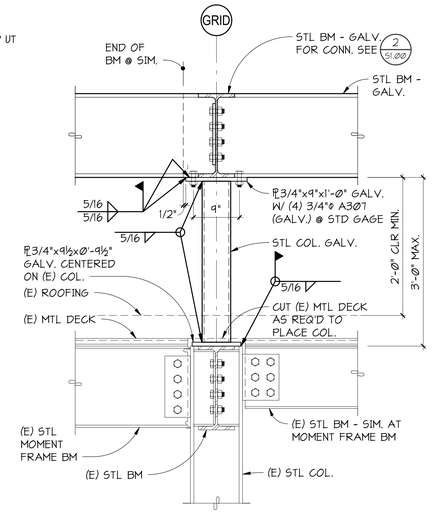
1 51.00 ROOF FRAMING PLAN
1/8" = 1'-0"

PLAN NOTES

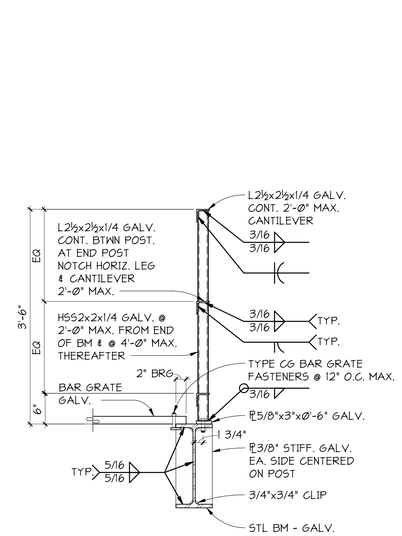
1. COORDINATE ALL DIMENSIONS WITH MECHANICAL.
2. FIELD VERIFY ALL MEMBER SIZES AND DIMENSIONS PRIOR TO FABRICATION.
3. ALL NEW MEMBERS AND THEIR CONNECTIONS SHALL BE GALVANIZED.
4. ▶— INDICATES MOMENT CONNECTION.
5. XXXX# INDICATES MECHANICAL UNIT ON NEW ELEVATED DECK WITH MAXIMUM WEIGHT SHOWN.
6. COORDINATE ATTACHMENT OF MECHANICAL UNIT TO PLATFORM STRUCTURE WITH MANUFACTURER.
7. ←→ INDICATES DIRECTION OF SPAN FOR METAL DECK.
8. PIPE INDICATES COLUMN POSTING DOWN TO EXISTING ROOF STRUCTURE.



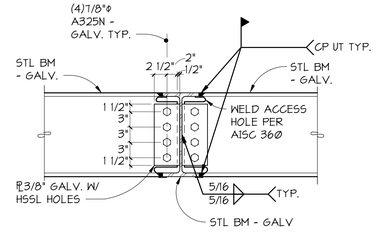
2 51.00 SECTION
1" = 1'-0"



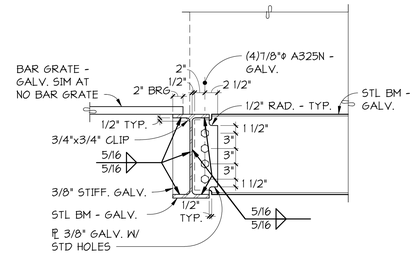
3 51.00 SECTION
1" = 1'-0"



4 51.00 SECTION
1" = 1'-0"



5 51.00 SECTION
1" = 1'-0"



6 51.00 SECTION
1" = 1'-0"

B-21-0700

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STAMP

PROJECT

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PUYALLUP, WA 98372

REVISION

DATE	08-31-21
JOB #	21-476
DRAWN	RSC
CHECKED	KDK

TITLE

ROOF FRAMING PLAN AND DETAILS

SHEET

S1.00

MECHANICAL GENERAL ABBREVIATIONS

ABBV	FULL NAME	ABBV	FULL NAME	ABBV	FULL NAME
AC	AIR CONDITIONING UNIT	FCU	FAN COIL UNIT	NOM	NOMINAL
AFF	ABOVE FINISHED FLOOR	FD	FIRE DAMPER	NTS	NOT TO SCALE
AHU	AIR HANDLING UNIT	FLA	FULL LOAD AMPS	OBD	OPPOSED BLADE DAMPER
AL	ALUMINUM	FOB	FLAT ON BOTTOM	OD	OUTSIDE DIMENSION
BAS	BUILDING AUTOMATION SYSTEM	FOT	FLAT ON TOP	POC	POINT OF CONNECTION
BDD	BACK DRAFT DAMPER	FSD	FIRE SMOKE DAMPER	PRV	PRESSURE REDUCING VALVE
BI	BLACK IRON	GALV	GALVANIZED	PVC	POLYVINYL CHLORIDE
BOD	BOTTOM OF DUCT	GC	GENERAL CONTRACTOR	REQ'D	REQUIRED
BOTT	BOTTOM	GENX	GENERATOR EXHAUST	RPBA	REDUCED PRESSURE BACKFLOW ASSY
BTU	BRITISH THERMAL UNITS	GLVNL	GALVANNEAL	RTU	ROOFTOP UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR	GPM	GALLONS PER MINUTE	SA	SUPPLY AIR
CAT1	CATEGORY ONE VENT	GREASE	GREASE DUCT	SD	SMOKE DAMPER
CAT4	CATEGORY FOUR VENT	GWB	GYPSUM WALL BOARD	SL	SOUND LINED
CFM	CUBIC FEET PER MINUTE	HP	HORSE POWER, HEAT PUMP	SM	SHEET METAL
CPVC	CPVC MATERIAL	HVAC	HEATING, VENTILATION AND AIR COND.	SP	STATIC PRESSURE
DB	DUCTBOARD	HX	HEAT EXCHANGER	SS	STAINLESS STEEL
DDC	DIRECT DIGITAL CONTROLS	ID	INSIDE DIMENSION	SUSP	SUSPENDED
DEMO	DEMOLISH	LAT	LEAVING AIR TEMPERATURE	T	THERMOSTAT
DIFF	DIFFUSER	LBS	POUNDS	TOD	TOP OF DUCT
DMPR	DAMPER	LWT	LEAVING WATER TEMPERATURE	TV	TURNING VANES
DN	DOWN	MAT	MIXED AIR TEMPERATURE	TYP	TYPICAL
E	EXISTING	MBH	ONE THOUSAND BTUH	UNO	UNLESS NOTED OTHERWISE
EAT	ENTERING AIR TEMPERATURE	MCA	MINIMUM CIRCUIT AMPACITY	VAV	VARIABLE AIR VOLUME
EC	EGGCRATE	MD	MOTORIZED DAMPER	VD	VOLUME DAMPER
EER	ENERGY EFFICIENCY RATIO	MIN	MINIMUM	VFD	VARIABLE FREQUENCY DRIVE
EF	EXHAUST FAN	M-M	MACDONALD-MILLER	W	DUCT INSULATION WRAP
ELEV	ELEVATION	NC	NORMALLY CLOSED	W/	WITH
ESP	EXTERNAL STATIC PRESSURE	NIC	NOT IN CONTRACT	WELD	WELDED
EWT	ENTERING WATER TEMPERATURE	NO	NORMALLY OPEN	Ø	VOLTAGE PHASE & DUCT DIAMETER

HVAC SYSTEM ABBREVIATIONS

ABBV	FULL NAME	ABBV	FULL NAME	ABBV	FULL NAME
COMB-GALV	COMBUSTION AIR	EA AL	EXHAUST ALUMINUM	OA	OUTSIDE AIR
SA	SUPPLY AIR LP	EA SS	EXHAUST SS 304	OA-KOOL	OUTSIDE AIR KOOLDUCT
SA-KOOL	SUPPLY AIR LP KOOLDUCT	EA AL WELD	EXHAUST ALUMINUM WELDED	RLF	RELIEF AIR
SA AL	SUPPLY AIR LP ALUMINUM	EA GALV WELD	EXHAUST GALV WELDED	RA	RETURN AIR
SA SS	SUPPLY AIR LP SS 304 2B	EA GLVNL WELD	EXHAUST GALVANNEAL WELDED	DB	DUCTBOARD
SA AL WELD	SUPPLY AIR LP ALUMINUM WELDED	EA SS WELD	EXHAUST SS 304 WELDED	FLU-CAT1	FLUE VENT - CATEGORY 1
SA GALV WELD	SUPPLY AIR MP GALV WELDED	EA BI GREASE	EXHAUST GREASE BLACK IRON WELD	FLU-CAT4	FLUE VENT - CATEGORY 4
SA GLVNL WELD	SUPPLY AIR MP GALVANNEAL WELD	EA GALV GREASE	EXHAUST GREASE GALV WELDED	FLU-CPVC	FLUE VENT - CPVC MATERIAL
SA SS WELD	WELDED SUPPLY AIR LP SS 304 2B	EA GALV GREASE	EXHAUST GREASE SS 304 WELDED	FLU-SS	FLUE VENT - SHOP BUILT SS 304
EA	EXHAUST AIR	MUA	MAKE-UP AIR	FLU-GALV	FLUE VENT - SHOP BUILT GALV

PIPING SYSTEM ABBREVIATIONS

ABBV	FULL NAME	ABBV	FULL NAME	ABBV	FULL NAME
C	CONDENSATE INDIRECT DRAIN	HHWR	HEATING HOT WATER RETURN	NGV	NATURAL GAS VENT
CA	AIR COMPRESSED	HHWS	HEATING HOT WATER SUPPLY	PA	AIR PNEUMATIC
CDWR	CONDENSER WATER RETURN	HPC	STEAM CONDENSATE HIGH PRESS	PC	CONDENSATE PUMPED
CDWS	CONDENSER WATER SUPPLY	HPS	STEAM HIGH PRESS	PCHR	CHILLED WATER (PROCESS) RETURN
CHRV	CHILLER RELIEF VENT	HRR	HEAT RECOVERY RETURN	PCHS	CHILLED WATER (PROCESS) SUPPLY
CHWR	CHILLED WATER RETURN	HRS	HEAT RECOVERY SUPPLY	RGAS	REFRIGERANT HOT GAS
CHWS	CHILLED WATER SUPPLY	LPC	STEAM CONDENSATE LOW PRESS	RLIQ	REFRIGERANT LIQUID
CLN STM	STEAM CLEAN	LPG	LIQUID PROPANE	RSUC	REFRIGERANT SUCTION
CLR	CLOSED LOOP WATER RETURN	LPS	STEAM LOW PRESS	SCHR	CHILLED WATER (SECONDARY) RETURN
CLS	CLOSED LOOP WATER SUPPLY	LTCR	CHILLED WATER (LOW TEMP) RETURN	SCHS	CHILLED WATER (SECONDARY) SUPPLY
COMB-PVC	AIR COMBUSTION PVC	LTCS	CHILLED WATER (LOW TEMP) SUPPLY	SCV	STEAM CONDENSATE VENT
CRYV	CRYO VENT	MPC	STEAM CONDENSATE MEDIUM PRESS	SPC	STEAM CONDENSATE PUMPED
FOC	FUEL OIL SECONDARY CONTAINMENT	MPS	STEAM MEDIUM PRESS	SV	STEAM VENT
FOF	FUEL OIL FILL	MUW	MAKE-UP WATER	VAC	VACUUM
FOR	FUEL OIL RETURN	NG-2PSI	NATURAL GAS 2PSI	VAC-E	VACUUM EXHAUST
FOS	FUEL OIL SUPPLY	NG-5PSI	NATURAL GAS 5PSI	VRFG	VRF HOT GAS
FOV	FUEL OIL VENTS	NG-CONDUIT	NATURAL GAS CONDUIT	VRFL	VRF HIGH PRESS LIQUID
GENX	GENERATOR EXHAUST	NG-H	NATURAL GAS HIGH PRESS	VRFS	VRF LOW PRESS SUCTION
GLWR	GLYCOL WATER RETURN	NG-L	NATURAL GAS LOW PRESS		
GLWS	GLYCOL WATER SUPPLY	NG-M	NATURAL GAS MEDIUM PRESS		

PIPING SYMBOL LEGEND

SYMBOL	DESCRIPTION	ABBV	SYMBOL	DESCRIPTION	ABBV
	BALANCING VALVE	BALV		GAS COCK	GC
	GATE VALVE	GV		CIRCUIT SETTER VALVE	CS
	GLOBE VALVE	GLV		HORIZONTAL EXPANSION TANK	HET
	BALL VALVE - FULL PORTED	BV		VERTICAL EXPANSION TANK	VET
	SILENT CHECK VALVE	CV		AIR SEPARATOR	AIR SEP
	BUTTERFLY VALVE	BFV		AIR PURGER	AP
	BUTTERFLY VALVE W/ MEMORY STOP	BFVM		END SUCTION CENTRIFUGAL PUMP	ES PUMP
	FLEXIBLE CONNECTION			VERTICAL IN-LINE CENTRIFUGAL PUMP	VI PUMP
	REDUCED PRESS. BACKFLOW PREVENTER	RPBP		SUCTION DIFFUSER	SUC DIFF
	BACKFLOW PREVENTER	BFP		TEMPERATURE GAUGE	TG
	UNION	UNION		THERMOMETER	THERM
	STRAINER	STRN		BALL VALVE W/ 3/4" HOSE ADAPTOR	BV W/ HA
	PRESSURE RELIEF VALVE	RV		CONCENTRIC REDUCER	CR
	PRESSURE REDUCING VALVE	PRV		ECCENTRIC REDUCER	ER
	PRESSURE / TEMPERATURE PORT	P&T		TWO-WAY CONTROL VAVLE	2WAY
	BULB WELL	BW		THREE-WAY CONTROL VALVE	3WAY
	MANUAL AIR VENT	MAV		POINT OF CONNECTION	P.O.C.
	AUTOMATIC AIR VENT	AV		PIPE BREAK - PIG TAIL	
	PRESSURE GAUGE	PG		PIPE - SIZE & ABBREVIATION	
	SOLENOID VALVE	SV		PIPE - SIZE & ABBREVIATION WITH INSULATION	
	PIPE - HEAT TRACE			PUMP	
	HOSE BIB	HB		FLEX PIPE	
	SUB-METER WATER FLOW	MTR		ROOF DRAIN	RD
	METER BTU	BTU MTR		OVER-FLOW DRAIN	OD
	WATER HAMMER ARRESTOR	WHA		EXPANSION THERMAL	EXP
	SENSOR PRESSURE DIFFERENTIAL	PDIF		DOMESTIC PEX MANIFOLD	MFLD

HVAC SYMBOL LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
BARE RECTANGULAR SHEETMETAL	14x12 SA	FLEX DUCT	14ø 14ø
SOUNDLINE SHEETMETAL (GENERAL NOTES)	14x12 SA-SL	EQUIPMENT FLEX ROUND CONNECTOR	24ø
SHEETMETAL W/ INSULATION (GENERAL NOTES)	14x12 SA-W	EQUIPMENT FLEX RECTANGULAR CONNECTOR	24x24
BARE ROUND SHEETMETAL	12ø SA	SUPPLY DUCT UP/DOWN	
ROUND SHEETMETAL W/ INSULATION (GENERAL NOTES)	12ø SA-W	EXHAUST DUCT UP/DOWN	
BARE OVAL SHEETMETAL	14x12ø SA	RETURN DUCT UP/DOWN	
OVAL SHEETMETAL W/ INSULATION (GENERAL NOTES)	14x12ø SA-W	SUPPLY AIR TERMINAL RECTANGULAR AND SQUARE	
EXAMPLE OF EXISTING	14x12 SA	RETURN AIR TERMINAL RECTANGULAR AND SQUARE	
EXAMPLE OF DEMO		EXHAUST AIR TERMINAL RECTANGULAR AND SQUARE	
EXAMPLE OF NEW	14x12 SA	RADIAL AIR TERMINAL	
EXAMPLE OF FUTURE (N.I.C.)	14x12 SA	SUPPLY AIR SLOT DIFFUSER	
EXPOSED QUALITY SHEETMETAL	14x12 SA-Q	RETURN AIR SLOT DIFFUSER	
CLEANROOM QUALITY DUCTWORK	14x12 SA-C	EXHAUST AIR SLOT DIFFUSER	
DUCTBOARD (1" FIBERGLASS)	14x12 SA-DB	POINT OF CONNECTION	
CONTINUATIION OF ROUND DUCT		CENTER LINE	
CONTINUATION OF RECTANGULAR DUCT		THERMOSTAT	T
AIR FLOW IN SYMBOL		CARBON MONOXIDE SENSOR	CO
AIR FLOW OUT SYMBOL		NITROGEN DIOXIDE SENSOR	NO2
MECHANICAL EQUIPMENT TAG	AHU-001	OTHER SENSOR	S
KEYED NOTE	1	ELECTRICAL SWITCH	$
ACCESS DOORS		MITERED ELBOW WITH TURNING VANES	
RATED ENCLOSURE			

NOTE: SIZE REFLECTS ACTUAL SHEET METAL DIMENSION AND DOES NOT ACCOUNT FOR INSULATION OR LINING

PIPING GENERAL NOTES

PIPING MATERIAL SCHEDULE:

PIPING	SIZE	MATERIAL	JOINT
HEATING HOT WATER	1/2" - 2"	COPPER TYPE L	LEAD FREE SOLDER, PRESSED MECH JOINT
	2-1/2" - 10"	SCH 40 BLK STL, ASTM A53 A OR B	GROOVED, FLANGED, BUTT WELDED
	12"+	STD WT BLK STL, ASTM A53 A OR B	GROOVED, FLANGED, BUTT WELDED
CHILLED WATER	1/2" - 2"	COPPER TYPE L	LEAD FREE SOLDER, PRESSED MECH JOINT
	2-1/2" - 10"	SCH 40 BLK STL, ASTM A53 A OR B	GROOVED, FLANGED, BUTT WELDED
	12"+	STD WT BLK STL, ASTM A53 A OR B	GROOVED, FLANGED, BUTT WELDED
HEAT RECOVERY	1/2" - 2"	COPPER TYPE L	LEAD FREE SOLDER, PRESSED MECH JOINT
	2-1/2" - 10"	SCH 40 BLK STL, ASTM A53 A OR B	GROOVED, FLANGED, BUTT WELDED
	12"+	STD WT BLK STL, ASTM A53 A OR B	GROOVED, FLANGED, BUTT WELDED
INDIRECT DRAIN	1/2" - 2-1/2"	COPPER/DWV/TYPE M	LEAD FREE SOLDER

PIPING INSULATION SCHEDULE

PIPING TYPE	PIPE SIZE	INSULATION TYPE	INSULATION THICKNESS	CONDUCTIVITY RANGE
HEATING HOT WATER (105°-140°F)	1/2" - 1-1/4"	FIBERGLASS, ELASTOMERIC FOAM	1"	0.21 - 0.28
	1-1/2"+	FIBERGLASS, ELASTOMERIC FOAM	1-1/2"	0.21 - 0.28
HEATING HOT WATER (141°-200°F)	1/2" - 1-1/4"	FIBERGLASS, ELASTOMERIC FOAM	1-1/2"	0.25 - 0.29
	1-1/2"+	FIBERGLASS, ELASTOMERIC FOAM	2"	0.25 - 0.29
CHILLED WATER COOLING (40°-60°F)	1/2" - 1-1/4"	FIBERGLASS, ELASTOMERIC FOAM	1/2"	0.21 - 0.27
	1-1/2"+	FIBERGLASS, ELASTOMERIC FOAM	1"	0.21 - 0.27
CHILLED WATER COOLING (<40°F)	<1"	FIBERGLASS, ELASTOMERIC FOAM	1/2"	0.20 - 0.26
	>1" AND <8"	FIBERGLASS, ELASTOMERIC FOAM	1"	0.20 - 0.26
	8" +	FIBERGLASS, ELASTOMERIC FOAM	1-1/2"	0.20 - 0.26

- ALL PIPING INSULATION AND COVERINGS SHALL HAVE AN ASTM FLAME SPREAD RATING OF 25 OR LESS AND AN ASTM SMOKE DEVELOPED RATING OF 50 OR LESS.
- ELASTOMERIC INSULATIONS SHALL BE CLOSED CELL.
- ELASTOMERIC INSULATIONS WHICH MEET THESE RATINGS MAY BE USED AS A SUBSTITUTE FOR FIBERGLASS.
- PROVIDE A VAPOR BARRIER COVERING ON ALL CHILLED WATER PIPING AND COIL CONDENSATE PIPING INSULATION.
- PROVIDE A COVERING FOR ALL FIBERGLASS INSULATION WITHIN THE BUILDING.
- PROVIDE A VINYL JACKET FOR ALL INSULATION EXPOSED TO SIGHT WITHIN THE BUILDING EXCEPT MECHANICAL ROOMS.
- PROVIDE REMOVABLE LACED INSULATION PAD OVER ALL CONTROL VALVES, WHERE NOT LOCATED WITHIN A MECHANICAL ROOM.
- PROVIDE ALUMINUM JACKET ON ALL INSULATED PIPING OUTSIDE BUILDING.
- AT PIPE HANGERS PROVIDE RIGID INSULATION BETWEEN PIPE AND HANGER.

1. THESE PLANS ARE SCHEMATIC AND DO NOT SHOW EXACT ROUTING OR EVERY OFFSET WHICH MAY BE REQUIRED. THE MECHANICAL CONTRACTOR IS TO COORDINATE WITH ALL OTHER TRADES AND IS TO VERIFY ALL CLEARANCES BEFORE COMMENCING WORK.
2. MATERIALS, METHODS, AND INSTALLATION SHALL COMPLY WITH THE PROVISIONS OF THE 2018 INTERNATIONAL BUILDING CODE (IBC), INTERNATIONAL MECHANICAL CODE (IMC), INTERNATIONAL ENERGY CODE (IEC) AND UNIFORM PLUMBING CODE (UPC) AS AMENDED BY THE STATE OF WASHINGTON AND LOCAL AUTHORITIES.
3. ALL PIPE SIZES NOTED ON DRAWINGS ARE MINIMUMS.
4. SLOPE ALL INDIRECT DRAINS AT 2% UNLESS OTHERWISE NOTED ON DRAWINGS. OBTAIN APPROVAL FROM THE CODE AUTHORITY BEFORE INSTALLING PIPING AT LESS THAN 2% (EVEN IF LESSER SLOPE IS INDICATED ON DRAWINGS).
5. HANGERS AND SUPPORTS FOR PIPING SHALL BE IN ACCORDANCE WITH THE 2018 IMC AND IBC AS AMENDED BY THE STATE OF WASHINGTON AND LOCAL AUTHORITIES.
6. PIPING PENETRATIONS OF FIRE RATED WALLS OR FLOORS SHALL BE SLEEVED AND FIRE STOPPED WITH LISTED MATERIALS SO AS TO MAINTAIN THE INTEGRITY AND RATING OF THE FLOOR OR WALL.
7. PROVIDE CHROME PLATE ESCUTCHEON PLATES AT ALL EXPOSED WALL AND CEILING PENETRATIONS.
8. PROVIDE SHUT-OFF VALVES AT ALL EQUIPMENT CONNECTIONS.
9. PROVIDE UNION, GROOVED OR FLANGED CONNECTION AT EQUIPMENT FOR FUTURE REMOVAL AND SERVICING.
10. FOR CONDENSATE PIPING PROVIDE TRAPS WITH A MINIMUM SEAL 2" GREATER THAN THE FAN OPERATING STATIC PRESSURE AT ALL COOLING COIL CONNECTIONS.
11. PROVIDE MINIMUM 1" AIR BREAK FOR ALL CONDENSATE PIPE TERMINATIONS AT DRAINS.
12. PROVIDE DIELECTRIC CONNECTIONS BETWEEN DISSIMILAR METALS.
13. HEAT TRACING OF PIPING, WHERE INDICATED, SHALL BE PROVIDED AND INSTALLED BY THE MECHANICAL CONTRACTOR. COORDINATE ELECTRICAL SUPPLY FOR HEAT TRACE WITH ELECTRICAL CONTRACTOR.

HVAC GENERAL NOTES - 2018 WA STATE

1. THESE PLANS ARE SCHEMATIC AND DO NOT SHOW EXACT ROUTING OR EVERY OFFSET WHICH MAY BE REQUIRED. THE HVAC CONTRACTOR IS TO COORDINATE WITH ALL OTHER TRADES AND IS TO VERIFY ALL CLEARANCES BEFORE COMMENCING WORK.
2. MATERIALS, METHODS, AND INSTALLATION SHALL COMPLY WITH THE PROVISIONS OF THE 2018 EDITIONS OF THE INTERNATIONAL MECHANICAL CODE, INTERNATIONAL BUILDING CODE, INTERNATIONAL FIRE CODE 2018 WSEC, AND LOCAL CODES AND ORDINANCES.
3. DUCT CONSTRUCTION AND HANGING SHALL COMPLY WITH CHAPTER 6 OF THE 2018 IMC AND WITH CURRENT SMACNA STANDARDS. EARTHQUAKE BRACE ALL DUCTS 28" DIA AND LARGER WHICH ARE SUSPENDED MORE THAN 12" BELOW STRUCTURAL SYSTEM.
4. JOINTS OF MEDIUM AND HIGH VELOCITY DUCT SYSTEMS SHALL BE SEALED WITH GASKETS OR LISTED MASTIC TYPE DUCT SEALANT.
5. DUCTS SHALL BE INSULATED AS INDICATED ON PLANS, PER 2018 WASHINGTON STATE ENERGY CODE, COMMERCIAL PROVISIONS

   - DUCT WRAP, WHERE INDICATED, SHALL BE 0.75 LB/CU FT FIBERGLASS DUCT INSULATION WITH A FACTORY APPLIED REINFORCED ALUM. FOIL VAPOR BARRIER.

   - SUPPLY DUCT WHICH CONVEYS SUPPLY AIR AT TEMPERATURES LESS THAN 55 DEG F OR GREATER THAN 105 DEG F WHEN LOCATED IN CONDITIONED SPACE SHALL BE INSULATED WITH A MINIMUM OF R-3.3 , WHEN LOCATED IN UNCONDITIONED SPACE R-6 AND WHEN LOCATED OUTSIDE THE BUILDING R-8 (CLIMATE ZONE 4) OR R-12 (CLIMATE ZONE 5) PER WSEC C403.10.1 AND TABLE C403.10.1.2. DUCTWORK EXPOSED TO VIEW WITHIN A ZONE THAT SERVES THAT ZONE IS NOT REQUIRED TO BE INSULATED.

   - OUTSIDE AIR DUCT INSULATION INSIDE THE BUILDING SHALL BE INSULATED PER C403.10.1 AND TABLE C403.10.1.1 AS FOLLOWS:
   IF >= 2800 CFM INSULATE TO R-16 UPSTREAM OF AUTOMATIC SHUTOFF DAMPERS AND R-8 (CLIMATE ZONE 4C) OR R-12 (CLIMATE ZONE 5B) DOWNSTREAM OF AUTOMATIC SHUTOFF DAMPERS.
   IF < 2800 CFM INSULATE TO R-7.
6. FLEX DUCTS SHALL CONSIST OF A REINFORCED VAPOR BARRIER, 1 1/2" FIBERGLASS INSULATION, AND NON-PERFORATED INTERIOR LINER WITH WIRE HELIX. DUCT SHALL BE A UL 181 LISTED CLASS 1 AIR DUCT. FLEX DUCTS SHALL ONLY BE USED WHERE SHOWN AND SHALL NOT EXCEED 12' IN LENGTH UNLESS NOTED OTHERWISE.
7. PROVIDE EARTHQUAKE RESTRAINT FOR HVAC EQUIPMENT IN ACCORDANCE WITH SECTION 1613 OF THE 2018 IBC.
8. PROVIDE FIRE DAMPERS, SMOKE DAMPERS AND FIRE/SMOKE DAMPERS WHERE INDICATED ON PLANS AND AS REQUIRED BY SECTION 717.5 OF THE 2018 IBC. PROVIDE CEILING FIRE DAMPERS WHERE INDICATED ON PLANS AND AS REQUIRED BY SECTION 717.6.2.1 OF THE 2018 IBC. INSTALL FIRE DAMPERS SMOKE DAMPERS AND FIRE/SMOKE DAMPERS IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS, THE TERMS OF THEIR LISTING, AND THE REQUIREMENTS OF THE CODE.
9. PIPING PENETRATIONS OF FIRE RATED WALLS OR FLOORS SHALL BE SLEEVED AND FIRE STOPPED WITH LISTED MATERIALS SO AS TO MAINTAIN THE INTEGRITY AND RATING OF THE FLOOR OR WALL.
10. PROVIDE RETURN DUCT SMOKE DETECTOR AUTOMATIC SHUT DOWN OF ALL NEW HEATING, COOLING, OR VENTILATION EQUIPMENT MOVING IN EXCESS OF 2000 CFM IN ACCORDANCE WITH SECTION 606 OF THE 2018 IMC. POWER AND INTERLOCK WIRING WITH THE BUILDING FIRE ALARM SYSTEM IS BY THE ELECTRICAL CONTRACTOR. BAS TO MONITOR FIRE ALARM CONTROL PANEL AND SHUT DOWN ALL FAN TERMINAL UNITS DURING ANY BUILDING FIRE ALARM EVENT, IN ACCORDANCE WITH 2018 IMC 606.2.2.
11. HVAC EQUIPMENT, VALVES AND DAMPERS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS. UNLESS SHOWN ON ARCHITECTURAL DRAWINGS, REQUIRED ACCESS PANELS SHALL BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR. MINIMUM ACCESS DOOR SIZE FOR VALVES AND DAMPERS TO BE 18" X 18".
12. HEAT TRACING OF PIPING, WHERE INDICATED, SHALL BE PROVIDED AND INSTALLED BY THE HVAC CONTRACTOR. THE HVAC CONTRACTOR IS TO COORDINATE THE HEAT TRACE POWER WIRING WITH ELECTRICAL CONTRACTOR.
13. MOTORS STARTERS NOT LISTED AS BEING PROVIDED IN THE HVAC EQUIPMENT SCHEDULES ARE TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
14. WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION TO BE PROVIDED TO THE BUILDING OWNER. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM, INCLUDING SIZES, AND THE TERMINAL AIR AND WATER DESIGN FLOW RATES.
15. OPERATING AND MAINTENANCE MANUALS TO BE PROVIDED TO THE BUILDING OWNER THAT INCLUDE: SUBMITTAL DATA, NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY, HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION AND A COMPLETE OPERATIONAL NARRATIVE FOR EACH SYSTEM.
16. COMMISSIONING IS REQUIRED ON THIS PROJECT IN ACCORD WITH 2018 WASHINGTON STATE ENERGY CODE (WSEC), COMMERCIAL PROVISIONS AND SECTION C408.
17. A COMPLETE REPORT OF TEST PROCEDURES AND RESULTS SHALL BE PREPARED AND FILED WITH THE OWNER
18. DAMPERS USED FOR OUTDOOR AIR INTAKE, EXHAUST, OR RELIEF SHALL HAVE THE FOLLOWING MAXIMUM LEAKAGE RATES AT 1" W.G. (PER AMCA STANDARD 500D): MOTORIZED DAMPERS: 4 CFM/S.F. GRAVITY DAMPERS: 20CFM/S.F. (40 CFM/S.F. FOR DAMPERS SMALLER THAN 24" IN EITHER DIMENSION) PER 2018 WSEC C403.7.8.3.
19. OUTSIDE AIR INTAKE, EXHAUST, AND RELIEF DAMPERS SERVING CONDITIONED SPACES MUST BE MOTORIZED (FAIL CLOSED) PER WSEC, COMMERCIAL PROVISIONS, 2018 WSEC SECTION C403.7.8. EXCEPT AS ALLOWED BY WSEC.
20. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABELED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723, EXCEPT AS NOTED IN SECTION 602.2.1 OF THE 2018 IMC.

LEGAL DESCRIPTION

PARCEL NUMBER: 9810000014

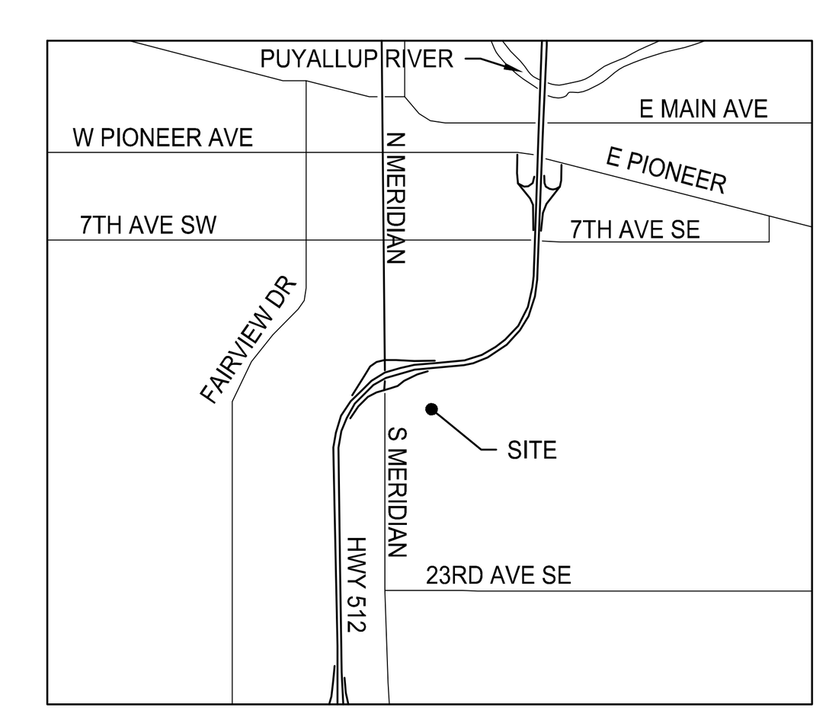
LEGAL DESCRIPTION: Section 34 Township 20 Range 04 Quarter 23 WOODS 1ST CANNOT BE SOLD OR SUBD WITHOUT 001-5 & 001-6 LOT 1 OF BLA 2010-06-15-5001 DESC AS BEG AT A PT 30 FT E & 151.05 FT N OF INTER OF 15TH AV SE & 3RD ST SE TH N 322.08 FT TH N 305.27 FT TH E 692.45 FT TH S 78 DEG 58 MIN 52 SEC E 0.44 FT TH S 49.97 FT TH E 40.98 FT TH S 43.29 FT TH N 41.04 FT TH S 181.78 FT TH W 30 FT TH S 196.6 FT TO BEG CURVE CONCAVE TO NW HAVING A RAD OF 19.5 FT & C/A OF 59 DEG 50 MIN 20 SEC & BEING SUBTENDED BY A CHORD WHICH BEARS S 56 DEG 53 MIN 06 SEC W 19.45 FT TH SWLY & WLY ALG SD CURVE 20.37 FT TO PT OF REVERSE CURV TH WLY & SWLY & SLY 90.9 FT CONCAVE TO SE HAVING A RAD OF 60.5 FT & C/A OF 86 DEG 05 MIN 15 SEC TH S 3.26 FT TH SLY, SWLY & WLY 14.92 FT ALG CURVE CONCAVE TO NW HAVING A RAD OF 9.5 FT & C/A OF 89 DEG 59 MIN 59 SEC TH W 107.24 FT TO BEG OF CURVE CONCAVE TO NW HAVING A RAD OF 55.98 FT & C/A OF 81 DEG 57 MIN 04 SEC & BEING SUBTENDED BY CHORD WHICH BEARS S 49 DEG 34 MIN 17 SEC W 73.42 FT TH SLY, SWLY & WLY ALG SD CURVE 80.07 FT TH W 6.43 FT TH S 131.8 FT TH SLY & SELY 14.27 FT ALG SD CURVE CONCAVE TO E HAVING A RAD OF 25 FT & C/A OF 32 DEG 42 MIN 11 SEC TH N 88 DEG 06 MIN 01 SEC W 77.46 FT TO BEG OF CURVE CONCAVE TO N HAVING A RAD OF 40 FT & A C/A OF 43 DEG 31 MIN 52 SEC & BEING SUBTENDED BY CHORD WHICH BEARS S 70 DEG 08 MIN 03 SEC W 29.66 FT TH SWLY & WLY ALG SD CURVE 30.39 FT TH N 88 DEG 06 MIN 01 SEC W 238.87 FT TO BEG OF A CURVE CONCAVE TO NE HAVING A RAD OF 63 FT & A C/A OF 65 DEG 47 MIN 29 SEC & BEING SUBTENDED BY CHORD WHICH BEARS N 48 DEG 11 MIN 19 SEC W 68.43 FT TH WLY, NWLY & NLY ALG SD CURVE 72.34 FT TH N 12 DEG 28 MIN 32 SEC W 81.31 FT TO POB TOG/W POR CYD TO CY OF PUY PER ETN 4234255 EXC THOSE POR DETER EXEMPT UNDER DOR REG # 01777-001 & 09663-004 ALSO EXC POR CYD TO CY OF PUYALLUP PER ETN 4232324 TOG/W VAC ORD 2958 EASE OF RECORD OUT OF 981000-042-0, 043-0, 044-0, 045-0, 046-0, 047-0, 048-0, 049-0, 050-0, 051-0, 052-0, 053-0, 054-0, 066-0, 067-0 SEG 2011- 0091 BB 10/11/10 BB DC00354165 5/2/2014 KG

SCOPE OF WORK

SCOPE OF WORK: DEMO AND REMOVE EXISTING AIR HANDLING UNIT WITH SINGLE SUPPLY FAN. INSTALL ONE NEW AIR HANDLING UNIT WITH 35,000 CFM OF SUPPLY AIR WITH HEAT RECOVERY COILS, REHEAT COILS AND CHILLED WATER COILS. THE NEW AIR HANDLING UNIT HAS A FAN MATRIX CONFIGURATION WITH ONE VFD PER FAN. DEMO EXISTING HEATING, PREHEAT AND CHILLED WATER PUMPS. PROVIDE NEW HEATING, PREHEAT AND CHILLED WATER INLINE PUMPS WITH VFD AND CONNECT TO EXISTING MAIN SYSTEMS LOCATED IN PENTHOUSE MECHANICAL ROOM. INSULATE ALL NEW PIPING AND ASSOCIATED EQUIPMENT AND REPAIR ANY INSULATION CUT BACK OR DAMAGED DURING DEMO.

DRAWING SHEET INDEX - FITTING

NUMBER	TITLE
TM0.01	LEGEND, ABBREVIATIONS, GENERAL NOTES, VICINITY MAP, AND DRAWING SHEET INDEX - HVAC
TM0.01S	SITE PLAN - HVAC
TM0.02	SCHEDULES - HVAC
DM2.05	CENTER WING MECHANICAL PENTHOUSE DEMO PLAN - HVAC
TM2.05	CENTER WING MECHANICAL PENTHOUSE PLAN - HVAC
TM4.01	CENTER WING SEQUENCE OF OPERATION AND DDC POINTS LIST - HVAC
DF2.05	CENTER WING MECHANICAL PENTHOUSE DEMO PLAN - FITTING
TF2.05	CENTER WING MECHANICAL PENTHOUSE PLAN - FITTING
TF4.01	CENTER WING HEAT REOVERY AND HEATING SYSTEM DIAGRAM - FITTING
TF6.01	CENTER WING DETAILS - FITTING



VICINITY MAP
NO SCALE

MacDonald-Miller
FACILITY SOLUTIONS
7717 Detroit Avenue SW, Seattle, WA 98106
Phone: 206-763-9400 Fax: 206-767-6773
www.macmiller.com
WA Lic No: MACDOFS980RU

TODD E. BOVEY, STATE OF WASHINGTON, 23133, REGISTERED PROFESSIONAL ENGINEER, 08/30/21

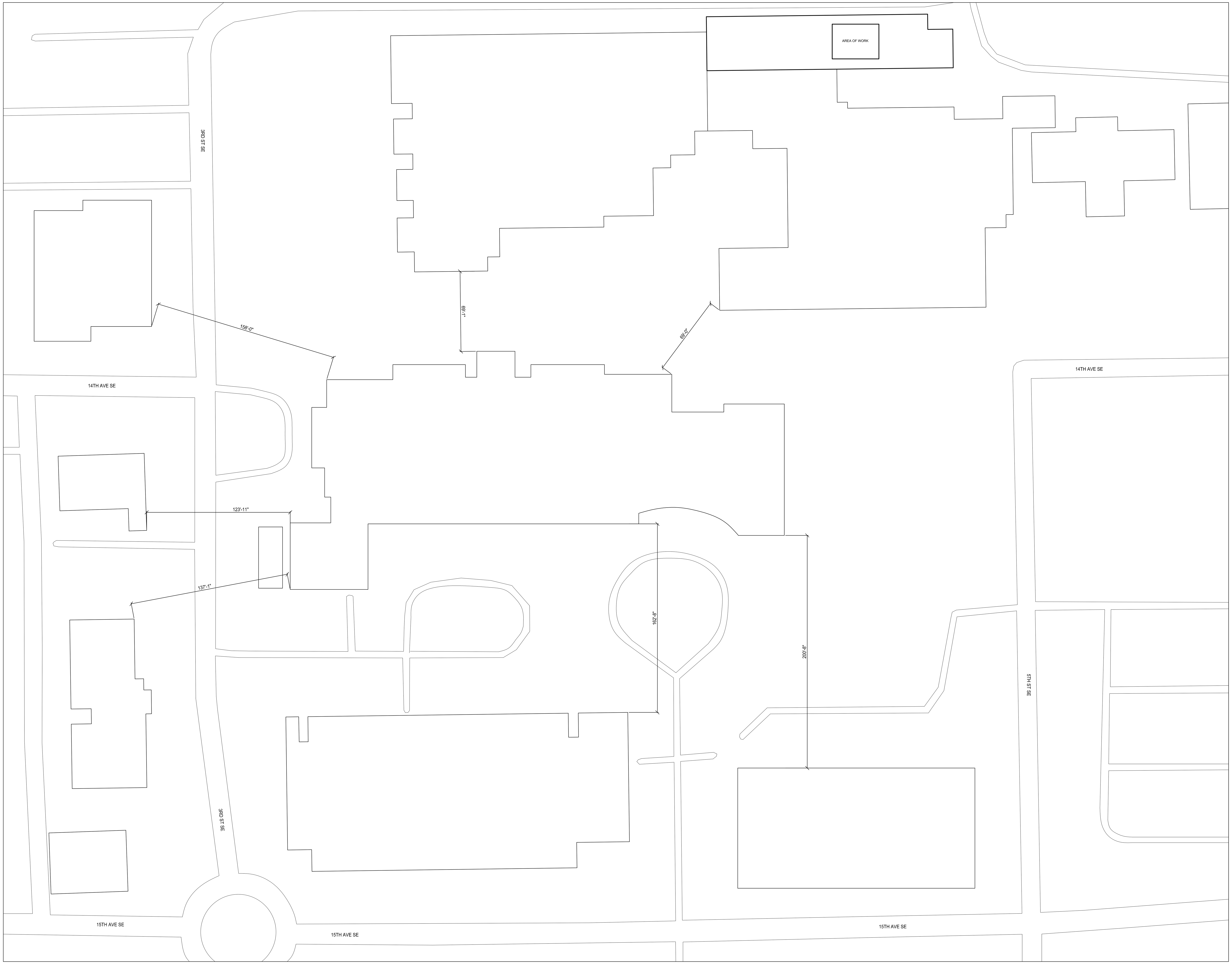
REVISIONS:	DATE
ISSUED FOR PERMIT	08-30-21

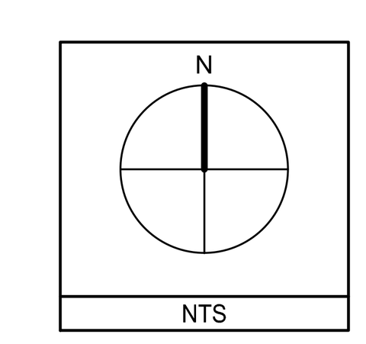
MULTICARE - GSH CENTER WING AHU REPLACEMENT
GOOD SAMARITAN HOSPITAL
401 15TH AVE SE
PUYALLUP, WA 98372

LEGEND, ABBREVIATIONS, GENERAL NOTES, VICINITY MAP, AND DRAWING INDEX
HVAC

ISSUED FOR PERMIT

ENGINEER: D VU	LAST REVISED: 07-28-21
CHECKED BY: T BOVEY	DATE PLOTTED: 07-28-21
CAD: D VU	ISSUE DATE:
DRAWING NUMBER: D-4044-77212214-00	
SHEET NUMBER: TM0.01	





B-21-0700

MacDonald-Miller
FACILITY SOLUTIONS
7717 Detroit Avenue SW, Seattle, WA 98106
Phone: 206-763-9400 Fax: 206-767-6773
www.macmiller.com
WA Lic No: MACDOFS980RU

TODD E. BOVEY — STATE OF WASHINGTON — 23133 — REGISTERED PROFESSIONAL ENGINEER
08/30/21

REVISIONS: - ISSUED FOR PERMIT — DATE 08-30-21

REVISIONS: — DATE

DATE

MULTICARE - GSH CENTER WING AHU REPLACEMENT
GOOD SAMARITAN HOSPITAL
401 15TH AVE SE
PUYALLUP, WA 98372

SITE PLAN

ISSUED FOR PERMIT

ENGINEER: D VU
LAST REVISED: 07-28-21
CHECKED BY: T BOVEY
DATE PLOTTED: 07-28-21
CAD: D VU
ISSUE DATE:
DRAWING NUMBER: D-4044-77212214-00
SHEET NUMBER: TM0.01S

DPD STAMP

AIR HANDLING UNIT SCHEDULE

UNIT NO	AREA SERVED	MFG & MODEL	LOCATION	WEIGHT (LBS)	DIMENSIONS L (IN)	DIMENSIONS W (IN)	DIMENSIONS H (IN)	SUPPLY FAN AIRFLOW (CFM)	SUPPLY FAN TSP (IN)	SUPPLY FAN ESP (IN)	SUPPLY FAN QTY (HP)
CWSF-1	CENTER-WING	CLIMATE CRAFT	ROOF	30000	407	135	135	35000	6.96	4.3	4 (25)

UNIT NO	CHILLED WATER COOLING COIL CAPACITY TOTAL/SENS (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	EWT (°F)	LWT (°F)	GPM	WATER ΔP (FT)MAX
CWSF-1	1835/1432	89 / 68	51.1 / 50.5	42	56	260	14

UNIT NO	HOT WATER PREHEAT COIL CAPACITY (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	GPM	WATER ΔP (FT) MAX
CWSF-1	1172	10	41	52	42	246	5.6

UNIT NO	HOT WATER REHEAT COIL CAPACITY (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	GPM	WATER ΔP (FT) MAX
CWSF-1	2288	16	75	120	100	200	7

UNIT NO	PRE-FILTERS TYPE	PRE-FILTERS SIZE	PRE-FILTERS QTY	FINAL FILTERS TYPE	FINAL FILTERS SIZE	FINAL FILTERS QTY	ELECTRICAL V/PH	MCA	MOP	SCCR	SOUND POWER (LwA)	NOTES
CWSF-1	MERV 8	24x24x4 24x12x4	21 10	MERV 14	24x24x12 24x12x12	21 10	460/3	144.5	175	100K	95	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16

NOTES:
1. REPLACE EXISTING CWSF-1. OPERATES CONTINOUSLY 24/7
2. FAN MATRIX DIRECT DRIVE SUPPLY FANS WITH PREMIUM EFFICIENT TEFC MOTORS AND INDEPENDENT VFDS (ONE VFD PER FAN MOTOR), FANS WITH 2" SPRING ISOLATION.
3. FULLY REDUNDANT SUPPLY FAN MATRIX WITH BALANCE AIRSTREAM. SUPPLY FANS SIZED TO PROVIDE MAXIMUM AIRFLOW WITH ONE FAN FAILED AND FULLY LOADED FILTERS AT 35,000 CFM.
4. NEMA 3R ENCLOSURE FOR VFDS AND UNIT DISCONNECT SWITCH.
5. AIRFLOW METERING STATION ON SUPPLY AIR DISCHARGE.
6. DOUBLE WALL CONSTRUCTION WITH 2" FOAM INSULATION IN WALLS AND CEILING.
7. SEPARATE 120V/1PH POWER FEED FOR LIGHTS AND GFI OUTLET. POWER WIRING BY ELECTRICAL CONTRACTOR.
8. INDEPENDENT MAGNEHELIC GAUGE FOR PRE-FILTER AND FINAL-FILTER.
9. CONTROLS PROVIDED AND INSTALLED BY CONTROLS CONTRACTOR.
10. FACTORY CLEAN INSIDE OF AHU AND SHRINK WRAPPED FOR HEALTH CARE INSTALLATION.
11. FIRE ALARM CONTRACTOR TO INTERLOCK UNIT WITH EXISTING SMOKE DETECTION SYSTEM TO AUTOMATICALLY SHUTDOWN UNIT.
12. UV LIGHTS PROVIDED AND INSTALLED DOWNSTREAM OF COOLING COILS.
13. 304 STAINLESS STEEL DRAIN PAN PROVIDED IN COOLING COIL SECTION.
14. FACTORY PROVIDED RAIN HOODS FOR OUTSIDE AIR OPENINGS.
15. FACTORY PROVIDED MATRIX MONITOR FAN AIRFLOW SYSTEM.
16. POWER WIRING BY ELECTRICAL CONTRACTOR. FACTORY INSTALLED NON-FUSED DISCONNECT SWITCH.

PUMP SCHEDULE

UNIT NO.	UNIT SERVED	MFG & MODEL NO.	TYPE	GPM DUTY	GPM MIN	TDH (FT)	IMP DIA IN	SUCTION (IN)	DISCHARGE (IN)	HP	VFD	RPM	VOLT/PH	WT LBS	NOTES
CRCP-1	PRE HEATING WATER	BELL&GOSSETT E-80 3x3x9.5C	INLINE	250	60	60	8.75	3	3	7.5	YES	1800	460/3	200	1,2,3,4,5,6
CRCP-2	PRE HEATING WATER	BELL&GOSSETT E-80 3x3x9.5C	INLINE	250	60	60	8.75	3	3	7.5	YES	1800	460/3	200	1,2,3,4,5,6
CHLP-1	HEATING WATER	BELL&GOSSETT E-80 3x3x9.5C	INLINE	200	50	50	7.625	3	3	7.5	YES	1800	460/3	200	1,2,3,4,5,6
CHLP-2	HEATING WATER	BELL&GOSSETT E-80 3x3x9.5C	INLINE	200	50	50	7.625	3	3	7.5	YES	1800	460/3	200	1,2,3,4,5,6
CCLP-1	CHILLED WATER	BELL&GOSSETT E-80 3x3x9.5C	INLINE	260	60	50	8	3	3	7.5	YES	1800	460/3	200	1,2,3,4,5,6
CCLP-2	CHILLED WATER	BELL&GOSSETT E-80 3x3x9.5C	INLINE	260	60	50	8	3	3	7.5	YES	1800	460/3	200	1,2,3,4,5,6

NOTES:
1. ELECTRICAL CONTRACTOR TO PROVIDE MOTOR STARTER AND DISCONNECT
2. WITH 125 # FLANGES & P&T TAPS AT EACH FLANGE
3. WITH VFD AND SHAFT GROUNDING RING.
4. 125 PSI MAX. WORKING PRESSURE
5. NORMAL AND EMERGENCY POWER
6. VFD SHALL BE ABB

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TODD E. BOVEY
STATE OF WASHINGTON
23133
REGISTERED PROFESSIONAL ENGINEER
08/30/21

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MULTICARE - GSH CENTER WING AHU REPLACEMENT
GOOD SAMARITAN HOSPITAL
401 15TH AVE SE
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SCHEDULES

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TM0.02

R Q P N M L K J

5 6 7 8 9 10 11 12 13 14 15 16 17

ROOF

ELEV MACH RM

UPS

DATA

ROOF

CENTER WING MECH. PENTHOUSE

CWPF-01

MECH.

DEMO EXISTING SF-1

16'-0"

MD-1

M

MD-1

EXISTING DUCTWORK TO REMAIN

B-21-0700

KEY PLAN

1/8" = 1'-0"

N

DM2.05

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CENTER WING -MECHANICAL PENTHOUSE DEMO PLAN
HVAC

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TODD E. BOVEY — STATE OF WASHINGTON — 37133 — REGISTERED PROFESSIONAL ENGINEER
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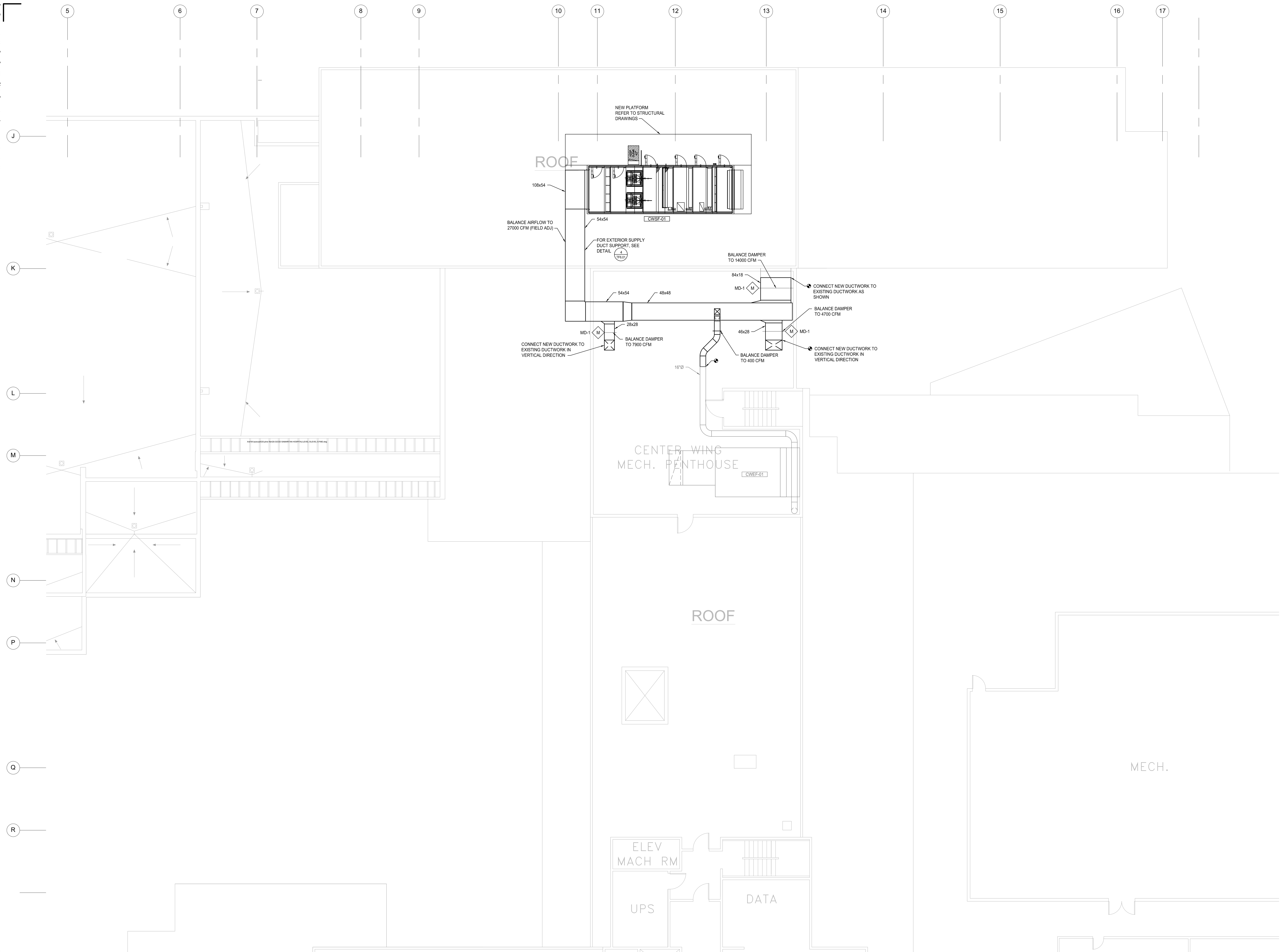

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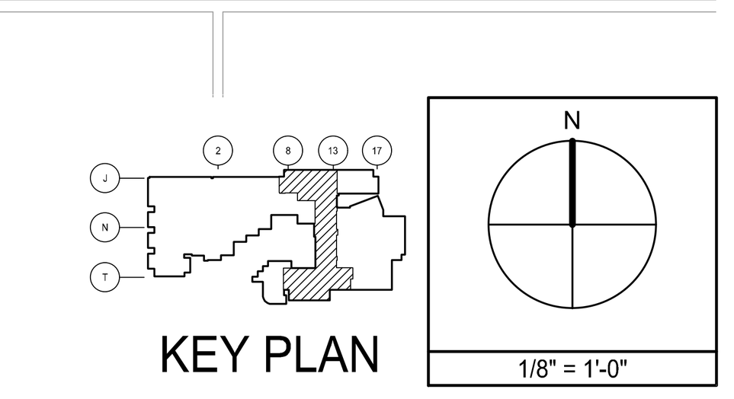

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CENTER WING MECHANICAL PENTHOUSE PLAN

HVAC

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SHEET NUMBER: TM2.05	

1. GENERAL

1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE BAS. THE UNIT WILL NORMALLY OPERATE 24 HOURS/DAY. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION, "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF" D-1 SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON" D-1 SHALL BE FULLY OPENED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:

2. TEMPERATURE CONTROL

2.1 SUPPLY AIR TEMPERATURE SETPOINT (AS SET BY BAS), SENSED BY SENSOR TT-5, SHALL BE MAINTAINED BY SEQUENCING V-1, V-2, AND V-3. HEATING AND COOLING CONTROL VALVE SHALL BE MODULATED VIA PID CONTROL LOOP TO MAINTAIN THE SUPPLY AIR TEMPERATURE. VALVES V-2 AND V-3 SHALL NOT BE OPENED SIMULTANEOUSLY.

3. AIR FLOW CONTROL

3.1 THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN MATRIX VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN THE TOTAL SUPPLY CFM AND DUCT STATIC PRESSURE.

3.2 USING HIGH PRESSURE SENSOR (PSH) LOCATED AT THE SUPPLY FAN MATRIX DISCHARGE SHALL PREVENT THE SUPPLY FAN MATRIX FROM DEVELOPING OVER 4.0" OF STATIC PRESSURE (FIELD ADJUSTABLE). IF DUCT STATIC PRESSURE AT PSH DOES EXCEED 4.0", THE SUPPLY FAN MATRIX SHALL STOP. PSH SHALL BE HARDWIRED TO THE SUPPLY FAN MATRIX AND SHALL BE SHUTDOWN IN HAND OR AUTO MODE. PSH WILL REQUIRE MANUAL RESET AT THE DEVICE.

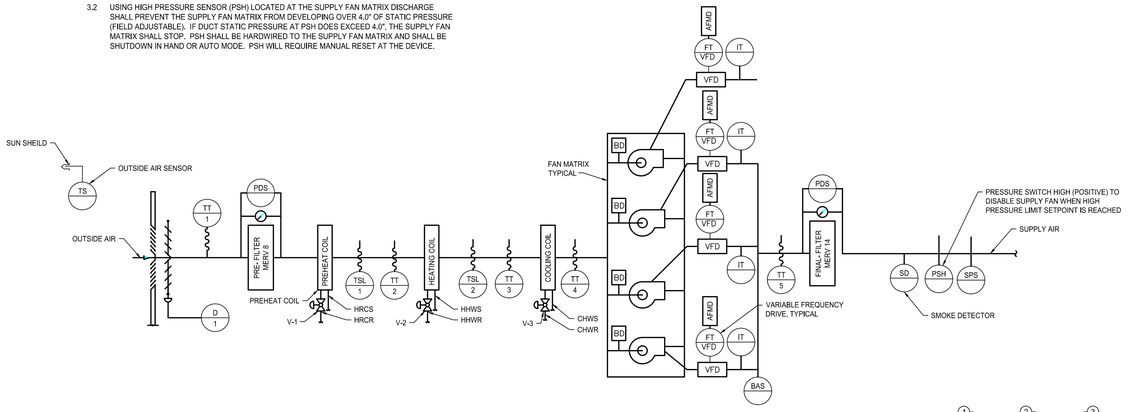
4. FREEZE PROTECTION

4.1 IF THE AIR TEMPERATURE AS SENSED BY TT-3 FALLS BELOW 40°F (FIELD ADJUSTABLE), AN ALARM SIGNAL SHALL INDICATE AT THE DCP AND BAS. IF THIS TEMPERATURE FALLS BELOW 35°F (FIELD ADJUSTABLE), AS SENSED BY THE TSL-2 THE SUPPLY FAN MATRIX SHALL SHUT DOWN AND A CRITICAL ALARM SHALL INDICATE AT THE DIGITAL CONTROL PANEL AND BAS. TSL SHALL BE HARDWIRED TO THE SUPPLY FAN AND RETURN FAN AND BOTH SHALL BE SHUTDOWN IN HAND OR AUTO. TSL WILL REQUIRE MANUAL RESET AT THE DEVICE.

5. AUTOMATIC SMOKE SHUTDOWN / RESTART

5.1 WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, SD, THE SUPPLY FAN MATRIX FAN SHALL SHUT "OFF" AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM. ALL SMOKE DAMPERS IN THE SUPPLY AIR DUCTS SHALL CLOSE.

5.2 EXISTING EXHAUST FANS SERVING AREA OF THE SUPPLY FAN SHALL CONTINUE TO RUN. SUPPLY FAN MATRIX SHALL RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.

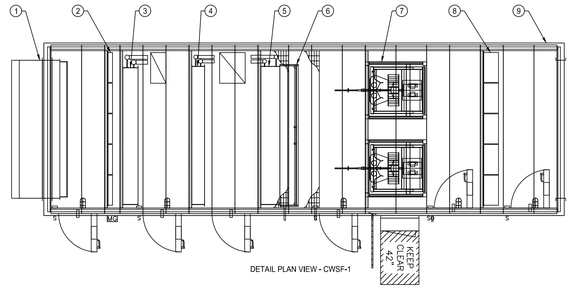


BAS POINTS LIST

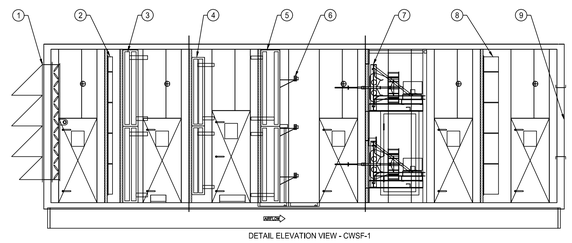
EQUIP TAG	DESCRIPTION	DEVICE	BAS INPUTS		BAS OUTPUTS		BAS ALARMS		NOTES
			ANALOG	DIGITAL	ANALOG	DIGITAL	ANALOG	DIGITAL	
CWSF-1	AIR HANDLING UNIT, CENTER WING								
	SUPPLY FAN VFD START/STOP (ONE VFD PER FAN)					X			
	SUPPLY FAN VFD FAN SPEED CONTROL (ONE VFD PER FAN)				X				
	SUPPLY FAN VFD ALARM			X				X	
	SUPPLY FAN VFD FEEDBACK (HZ AND %)		X				X		
	SUPPLY AIR AIRFLOW (CFM)	MATRIX MONITOR	X						INDIVIDUAL FANS AND TOTAL FAN MATRIX
	SUPPLY AIR TEMP (DOWNSTREAM OF PREHEAT COIL)		X						
	SUPPLY AIR TEMP (DOWNSTREAM OF REHEAT COIL)		X						
	SUPPLY AIR TEMP (DOWNSTREAM OF COOLING COIL)		X						
	SUPPLY AIR TEMP (UNIT DISCHARGE)		X				X		
	OUTSIDE AIR TEMP		X						
	OUTSIDE AIR DAMPER				X				
	CHILLED WATER CONTROL VALVE				X				
	PREHEAT WATER CONTROL VALVE				X				
	HEATING WATER CONTROL VALVE				X				
	SUPPLY AIR STATIC PRESSURE		X						
	PRE-FILTER DIFFERENTIAL PRESSURE SWITCH			X				X	
	FINAL FILTER DIFFERENTIAL PRESSURE SWITCH			X				X	
	SUPPLY AIR SMOKE DETECTOR			X				X	
	SUPPLY FAN HIGH STATIC PRESSURE SHUTDOWN			X			X		
	FREEZE PROTECTION THERMOSTAT			X			X		
CW-CHWP	CENTER WING SF-1 CHILLED WATER PUMP (TYPICAL)								
	PUMP VFD PUMP START/STOP					X			
	PUMP VFD SPEED CONTROL				X				
	PUMP VFD SPEED (HZ AND %)		X				X		
	PUMP VFD ALARM			X				X	
	CHW DIFFERENTIAL WATER PRESSURE		X						
CW-HRWP	CENTER WING SF-1 PREHEAT WATER PUMP (TYPICAL)								
	PUMP VFD PUMP START/STOP					X			
	PUMP VFD SPEED CONTROL				X				
	PUMP VFD SPEED (HZ AND %)		X				X		
	PUMP VFD ALARM			X				X	
	PREHEAT DIFFERENTIAL WATER PRESSURE		X						
CW-HHWP	CENTER WING SF-1 HEATING WATER PUMP (TYPICAL)								
	PUMP VFD PUMP START/STOP					X			
	PUMP VFD SPEED CONTROL				X				
	PUMP VFD SPEED (HZ AND %)		X				X		
	PUMP VFD ALARM			X				X	
	HW DIFFERENTIAL WATER PRESSURE		X						

CONTROLS SYMBOLS

- (T) ROOM THERMOSTAT/TRANSMITTER - WALL MOUNT
- (M) ROOM HUMIDISTAT (MOISTURE)/TRANSMITTER - WALL MOUNT
- (TT) TEMPERATURE TRANSMITTER
- (TT) TEMPERATURE TRANSMITTER, AVERAGING ELEMENT
- (MT) MOISTURE (HUMIDITY) TRANSMITTER
- (PT) PRESSURE TRANSMITTER
- (SPS) STATIC PRESSURE SENSOR
- (FT) FLOW TRANSMITTER
- (IT) CURRENT TRANSMITTER
- (CT) CONDUCTIVITY TRANSMITTER
- (SD) SMOKE DETECTOR
- (PDT) PRESSURE DIFFERENTIAL TRANSMITTER
- (PDS) PRESSURE DIFFERENTIAL SWITCH
- (HS) HAND SWITCH (HAND-OFF-AUTO SWITCH)
- (D) MOTORIZED OPERATING DAMPER
- (TSL) TEMPERATURE SWITCH, LOW (FREEZESTAT)
- (TSH) TEMPERATURE SWITCH, HIGH (FREEZESTAT)
- (PSH) PRESSURE SWITCH HIGH
- (PSL) PRESSURE SWITCH LOW
- VFD VARIABLE FREQUENCY DRIVE
- (BAS) INTEGRATE CONTROL POINT ON REMOTE GRAPHICS WORKSTATION AT BUILDING MANAGEMENT SYSTEM



DETAIL PLAN VIEW - CWSF-1



DETAIL ELEVATION VIEW - CWSF-1

1. OUTSIDE AIR DAMPER WITH RAINHOOD
2. PRE-FILTER 4" MERV 8 PLEATED
3. HEAT RECOVERY COILS
4. HOT HEATING COILS
5. CHILLED WATER COOLING COILS
6. UV LIGHT
7. SUPPLY FAN MATRIX
8. FINAL FILTER MEVR 14
9. SUPPLY AIR DISCHARGE

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CENTER WING SEQUENCE OF OPERATIONS AND DDC POINTS LIST
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Wednesday, September 1, 2021 11:04:28 AM

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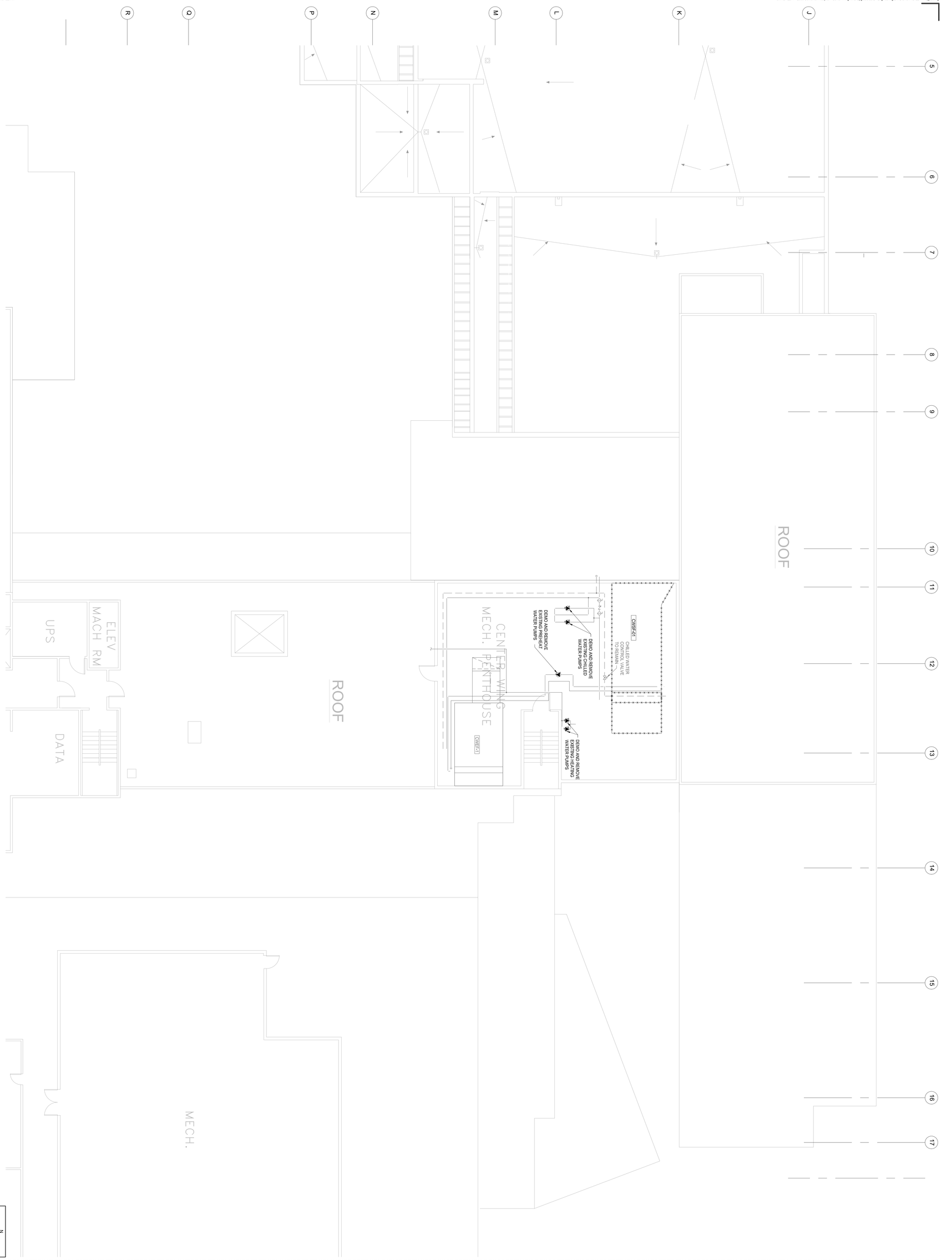

B-21-0700

KEY PLAN

1/8" = 1'-0"

DF2.05

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CENTER WING MECHANICAL PENTHOUSE DEMO PLAN

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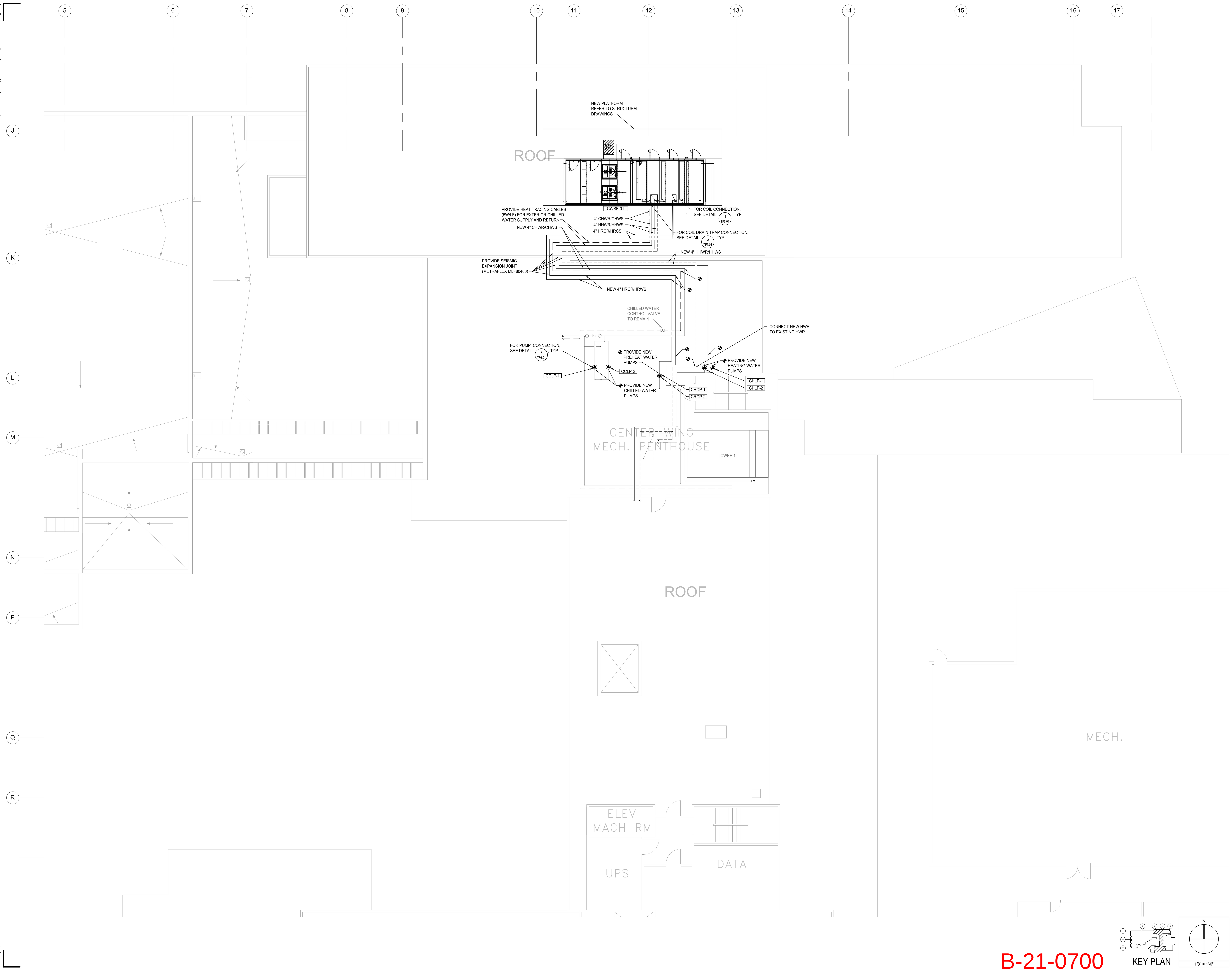

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CENTER WING MECHANICAL PENTHOUSE PLAN

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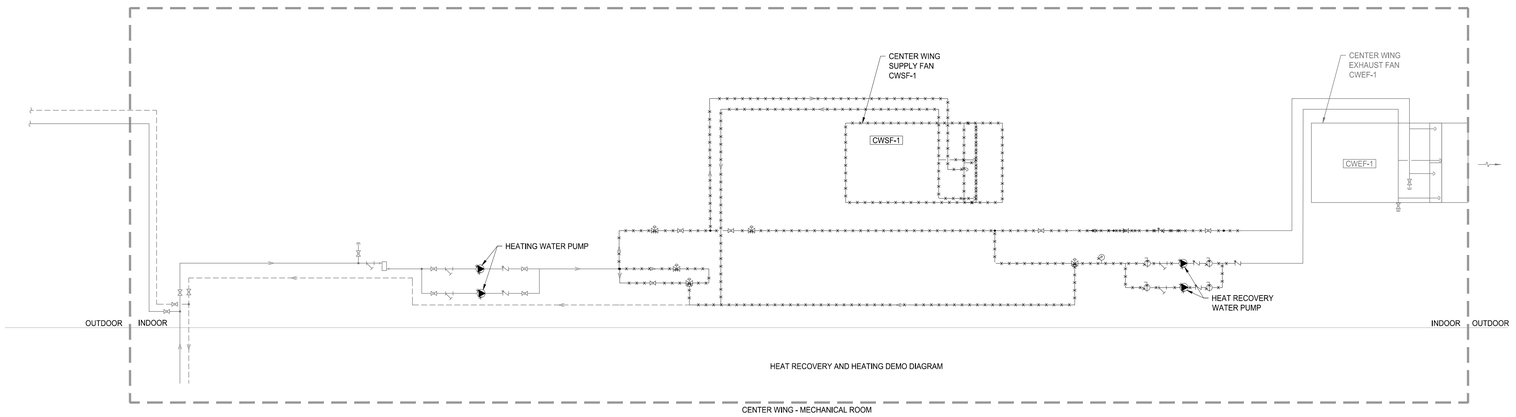

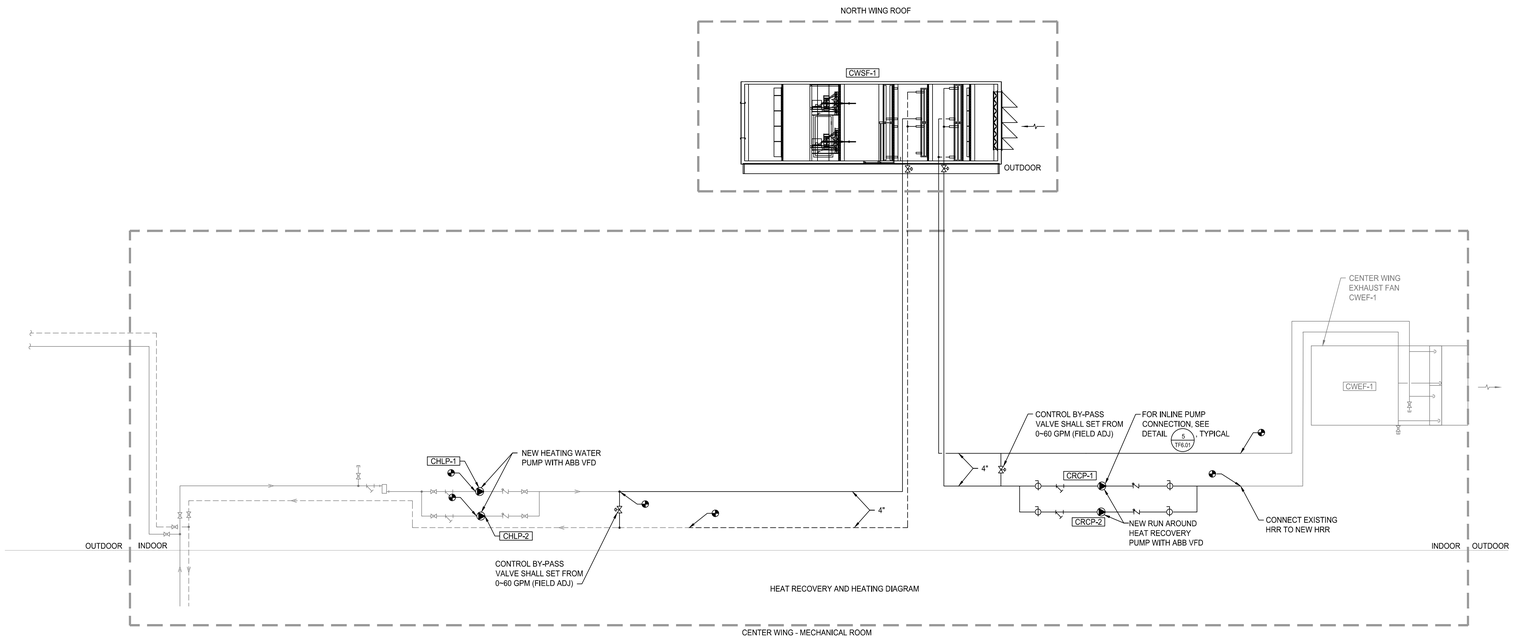

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CENTER WING HEAT RECOVERY AND HEATING SYSTEM DIAGRAM

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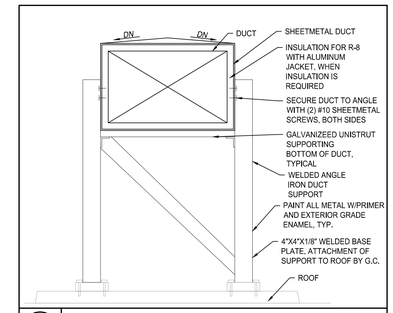
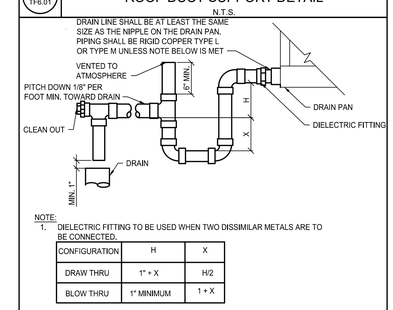


4 / TF6.01 — ROOF DUCT SUPPORT DETAIL
N.T.S.

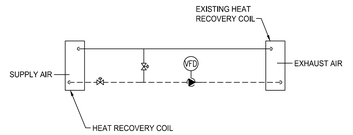


NOTE:
1. DIELECTRIC FITTING TO BE USED WHEN TWO DISSIMILAR METALS ARE TO BE CONNECTED.

CONFIGURATION	H	X
DRAW THRU	1" + X	H/2
BLOW THRU	1" MINIMUM	1 + X

WHERE X = FAN TOTAL STATIC PRESSURE

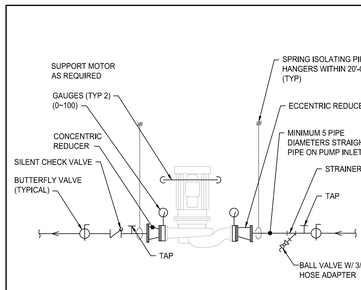
3 / TF6.01 — AIR HANDLING UNIT DRAIN TRAP
N.T.S.



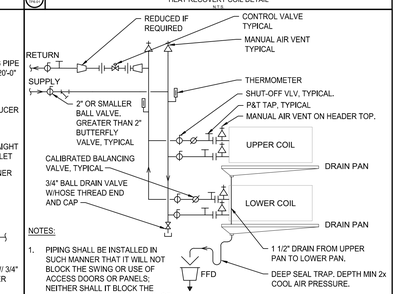
HEAT RECOVERY DESCRIPTION

DESCRIPTION: THE CENTER WING HEAT RECOVERY SYSTEM TRANSFERS HEAT BETWEEN THE EXISTING EXHAUST UNIT (CWEF-1) AND THE NEW OUTSIDE AIRSTREAM SUPPLY FAN (CWSF-1). DDC CONTROLLED EQUIPMENT INCLUDED VARIABLE HEAT RECOVERY PUMPS, CONTROL VALVES AND A BYPASS VALVE, TEMPERATURE SENSORS AND DIFFERENTIAL PRESSURE SENSORS ARE INCLUDED FOR WATER FLOW MEASUREMENT AND CONTROL AS INDICATED.

2 / TF6.01 — RUN AROUND HEAT RECOVERY COIL DETAIL
N.T.S.



5 / TF6.01 — SUSPENDED VERTICAL IN-LINE PUMP DETAIL
N.T.S.



NOTES:
1. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS; NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALES, OR EQUIPMENT.

1 / TF6.01 — MULTIPLE-COIL BANK W/2-WAY CONTROL VALVE PIPING DIAGRAM
N.T.S.

MacDonald-Miller
FACILITY SOLUTIONS
7717 Detroit Avenue SW, Seattle, WA 98106
Phone: 206-763-9400 Fax: 206-767-6773
www.macmiller.com
WA Lic No: MACDOFS880RU

REVISIONS:	DATE
- ISSUED FOR PERMIT	08-30-21
REVISIONS:	DATE

MULTICARE - GSH CENTER WING AHU REPLACEMENT
GOOD SAMARITAN HOSPITAL
401 15TH AVE SE
PUYALLUP, WA 98372

DETAILS
FITTING
ISSUED FOR PERMIT

ENGINEER:	LAST REVISED:
D VU	07-28-21
CHECKED BY:	DATE PLOTTED:
T BOVEY	07-28-21
CAD:	ISSUE DATE:
D VU	

DRAWING NUMBER:
D-4044-77212214-00

SHEET NUMBER:
TF6.01