PROJECT SCOPE

THE WORK UNDER THIS CONTRACT IS TO PROVIDE THE LABOR, MATERIAL, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF THE HVAC & ELECTRICAL SYSTEMS DESCRIBED. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION, BALANCING, TESTING, STARTUP, AND OPERATIONAL CHECKOUT FOR A FULLY FUNCTIONAL SYSTEM.

THE DRAWINGS AND WORK SCOPE ARE NOT INTENDED TO BE COMPREHENSIVE OF ALL WORK TO BE DONE UNDER THIS CONTRACT. SPECIFICATIONS, DRAWINGS, AND WORK SCOPE MUST BE USED IN THEIR ENTIRETY TO DEVELOP FULL UNDERSTANDING OF THE WORK TO BE DONE UNDER THIS CONTRACT.

WORK COVERED BY CONTRACT DOCUMENTS

THESE DRAWINGS AND THE SPECIFICATIONS UNION COUNTY SHERIFF'S OFFICE CHILLER REPLACEMENT SUMMARIZE THE WORK. THE REQUIREMENTS OF BOTH MUST BE MET UNDER THIS CONTRACT. THE WORK IS LISTED BY SPECIFICATION DIVISION AND IS SUMMARIZED BELOW. REFER TO BOTH PLANS AND SPECIFICATIONS FOR A COMPLETE DESCRIPTION OF THE WORK.

DIVISION 0 - PROCUREMENT REQUIREMENTS

001116 - INVITATION TO BID

002113 - INSTRUCTIONS TO BIDDERS 004100 - BID FORM

007300 - SUPPLEMENTARY CONDITIONS 007343 - WAGE RATE REQUIRMENTS

DIVISION 1 – GENERAL REQUIREMENTS

011000 - SUMMARY OF WORK

012500 - SUBSTITUTIONS 012976 - APPLICATION FOR PAYMENT

013119 - PROJECT MEETINGS

013216 - CONSTRUCTION SCHEDULING 013300 - SUBMITTALS

013513 - SPECIAL PROJECT PROCEDURES

016000 - MATERIAL AND EQUIPMENT 017329 - CUTTING AND PATCHING

017400 - CLEANING AND WASTE MANAGEMENT 017700 - CONTRACT CLOSEOUT

DIVISION 2 – EXISTING CONDITIONS

024119 - SELECTIVE DEMOLITION

DIVISION 23 – HEATING, VENTILATION, AND AIR CONDITIONING

230100 - BASIC MECHANICAL MATERIALS & METHODS 230500 - HEATING, VENTILATION, AND AIR CONDITIONING

230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC 230900 – HVAC CONTROLS

DIVISION 26 - ELECTRICAL

26 01 00 - BASIC ELECTRICAL REQUIREMENTS

26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL 26 05 19 - CONDUCTORS AND CABLES

26 05 26 - GROUNDING AND BONDING 26 05 33 - BOXES

26 05 39 - RACEWAYS

26 05 48 - ELECTRICAL SUPPORTS & SEISMIC RESTRAINTS 26 05 53 - ELECTRICAL IDENTIFICATION

26 26 00 - POWER DISTRIBUTION UNITS 26 27 26 - WIRING DEVICES

26 28 00 - LOW VOLTAGE CIRCUIT PROTECTIVE DEVICES 26 28 16 - ENCLOSED SWITCHES & CIRCUIT BREAKERS

26 29 00 - LOW VOLTAGE CONTROLLERS

26 40 61 - LOW VOLTAGE TRANSFORMERS 26 90 60 - CHANGES TO EXISTING WORK

OREGON STATE ENERGY CODE CONFORMANCE NOTES

BUILDING OPERATIONS AND MAINTENANCE DOCUMENTS SHALL BE PROVIDED TO THE OWNER. DOCUMENTS WILL COVER MANUFACTURERS' INFORMATION. SPECIFICATIONS. PROGRAMMING PROCEDURES AND MEANS OF ILLUSTRATING TO OWNER

HOW BUILDING, EQUIPMENT AND SYSTEMS ARE INTENDED TO BE INSTALLED, MAINTAINED, AND OPERATED. 2. TOTAL VOLTAGE DROP ACROSS THE COMBINATION OF FEEDERS AND BRANCH CIRCUITS SHALL BE <= 5%

ENVELOPE

3. BUILDING ENVELOPE INSULATION SHALL BE LABELED WITH R-VALUE OR INSULATION CERTIFICATE PROVIDING R-VALUE AND OTHER RELEVANT DATA. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

4. EXTERIOR INSULATION SHALL PROTECTED AGAINST DAMAGE, SUNLIGHT, MOISTURE, WIND, LANDSCAPING AND EQUIPMENT MAINTENANCE ACTIVITIES.

FENESTRATION PRODUCTS SHALL BE RATED IN ACCORDANCE WITH NFRC.

THE BUILDING ENVELOPE SHALL CONTAIN A CONTINUOUS AIR BARRIER THAT IS SEALED IN AN APPROVED MANNER AND EITHER CONSTRUCTED OR TESTED IN AN APPROVED MANNER. AIR BARRIER PENETRATIONS ARE SEALED IN AN APPROVED

7. ALL SOURCES OF AIR LEAKAGE IN THE BUILDING THERMAL ENVELOPE SHALL BE SEALED, CAULKED, GASKETED, WEATHER STRIPPED OR WRAPPED WITH MOISTURE VAPOR-PERMEABLE WRAPPING MATERIAL TO MINIMIZE AIR LEAKAGE.

8. RECESSED LUMINAIRES IN THERMAL ENVELOPE SHALL LIMIT INFILTRATION AND BE IC RATED AND LABELED. SEAL BETWEEN INTERIOR FINISH AND LUMINAIRE HOUSING.

9. ELECTRICAL AND LIGHTING CONTRACTOR/S SHALL PROVIDE PLANS, SPECIFICATIONS, AND/OR CALCULATIONS WITH WHICH COMPLIANCE CAN BE DETERMINED FOR THE INTERIOR LIGHTING AND ELECTRICAL SYSTEMS AND EQUIPMENT AND DOCUMENT WHERE EXCEPTIONS TO THE STANDARD ARE CLAIMED. INFORMATION PROVIDED SHOULD INCLUDE INTERIOR LIGHTING POWER CALCULATIONS, WATTAGE OF BULBS AND BALLASTS, TRANSFORMERS AND CONTROL DEVICES. 10. FURNISHED O&M INSTRUCTIONS FOR SYSTEMS AND EQUIPMENT TO THE BUILDING OWNER OR DESIGNATED

11. FURNISHED AS-BUILT DRAWINGS FOR ELECTRIC POWER SYSTEMS WITHIN 90 DAYS OF SYSTEM ACCEPTANCE.

12. TEST LIGHTING SYSTEMS TO ENSURE PROPER CALIBRATION, ADJUSTMENT, PROGRAMMING, AND OPERATION. 13. PROVIDE OCCUPANCY SENSORS FOR RESTROOMS AND LOUNGES.

14. IN DAYLIT SPACES, PROVIDE LIGHT-REDUCTION CONTROLS THAT HAVE A MANUAL CONTROL THAT ALLOWS THE OCCUPANT

TO REDUCE THE CONNECTED LIGHTING LOAD IN A REASONABLY UNIFORM ILLUMINATION PATTERN >= 50 PERCENT.

15. PROVIDE INDEPENDENT CONTROL OF LIGHTING ASSOCIATED WITH DISPLAY, ACCENT, TASK, CABINET, SALES, AND DEMONSTRATION LIGHTING.

16. EXIT SIGNS DO NOT EXCEED 5 WATTS PER FACE.

MECHANICAL

17. HVAC PIPING SHALL BE INSULATED IN ACCORDANCE WITH TABLE C403.11.3. INSULATION EXPOSED TO WEATHER SHALL BE PROTECTED FROM DAMAGE AND IS PROVIDED WITH SHIELDING FROM SOLAR RADIATION.

18. HEATING AND COOLING SYSTEMS THERMOSTATS SHALL INCLUDE OPTIMUM START CONTROLS. THERMOSTATIC CONTROLS HAVE A 5 °F DEADBAND. EACH ZONE SHALL BE EQUIPPED WITH SETBACK CONTROLS USING AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM. AUTOMATIC CONTROLS SHALL BE CAPABLE OF: SETBACK TO 55°F (HEAT) AND 85°F

(COOL); 7-DAY CLOCK, 2-HOUR OCCUPANT OVERRIDE, 10-HOUR BACKUP. 19. FURNISHED O&M MANUALS FOR HVAC SYSTEMS WITHIN 90 DAYS OF SYSTEM ACCEPTANCE.

20. HVAC EQUIPMENT SHALL BE TESTED TO ENSURE PROPER OPERATION.

21. FURNISH HVAC AS-BUILT DRAWINGS AND SUBMIT WITHIN 90 DAYS OF SYSTEM ACCEPTANCE.

22. ALL AIR OUTLETS AND ZONE TERMINAL DEVICES SHALL HAVE MEANS FOR AIR BALANCING. PROVIDE AN AIR SYSTEM BALANCING REPORT FOR HVAC SYSTEMS.

23. HVAC DUCTS AND PLENUMS SHALL BE INSULATED IN ACCORDANCE WITH C403.11.1 AND CONSTRUCTED IN ACCORDANCE

24. HVAC CONTROL SYSTEMS SHALL BE TESTED TO ENSURE PROPER OPERATION, CALIBRATION AND ADJUSTMENT OF CONTROLS.

HVAC	BASIS OF	DESIGN				
DUTDOOR DESIGN 90.2°F DB SUMMER FEMPERATURES PER 62.0°F WB SUMMER	STATE: OREGON COUNTY: UNION CLIMATE ZONE: 5B					
ASHRAE 9.4°F DB WINTER		DESIGN ALTITUDE 2,	717 FT ABOVE SE	EA LEVEL		
INDOOR AREA DESIGN CONDITIONS	SUM	MER	,	WINTER		
GENERAL SPACE DESIGNATION	Db (°F) % HUMIDITY Db (°F) %		% HUMIDITY	ح		
GENERAL BUILDING	75	50	70	50		
					ے [

THESE DOCUMENTS WERE DEVELOPED USING THE 2019 OREGON MECHANICAL CODE, 2019 OREGON ZERO ENERGY READY COMMERCIAL CODE.

GENERAL CONSTRUCTION NOTES

GENERAL

1. ALL WORK SHALL COMPLY WITH APPLICABLE CODES AND REGULATIONS AS ENFORCED BY THE STATE OF OREGON AND THE LOCAL CODE AUTHORITY.

2. PROVIDE SHOP DRAWINGS OF LAYOUT OF MECHANICAL ROOM HVAC EQUIPMENT, DUCTWORK, AND PIPING. ALSO, OTHER SPACES WHERE SERVICE ACCESS IS REQUIRED FOR MECHANICAL OR PLUMBING EQUIPMENT FOR ENGINEER APPROVAL

3. VISITATION OF THE JOB SITE IS REQUIRED BEFORE BIDDING, EXISTING CONDITIONS MAY AFFECT THE EXTENT OF THE WORK. ADDITIONAL COSTS WILL NOT BE AUTHORIZED DUE TO LACK OF UNDERSTANDING OF THE SCOPE OF WORK AND

4. EXISTING FACILITIES ARE DRAWN AS ACCURATELY AS CAN BE DETERMINED FROM EXISTING DRAWINGS AND ON-SITE INSPECTIONS. VERIFY AT PROJECT.

5. INSTALL ALL WORK PARALLEL AND PLUMB TO BUILDING LINES.

6. ALL DUCTWORK, PIPING, AND EQUIPMENT SHALL BE INSTALLED IN A MANNER AND IN LOCATIONS TO AVOID OBSTRUCTION, PRESERVE HEAD ROOM, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR.

7. NO ATTEMPT HAS BEEN MADE TO SHOW ALL PIPE SUPPORTS, LOCATIONS, AND EXPANSION JOINTS. REFER TO SPECIFICATIONS FOR THIS.

8. TO INSURE THE STRUCTURAL INTEGRITY OF THE BUILDING, ALL CUTTING REQUIRED FOR THE INSTALLATION OF DUCTS, PIPING, AND CONDUIT IS TO BE CLEARED THROUGH THE ENGINEER BEFORE WORK IS DONE. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ROOF MEMBRANE RESULTING FROM THIS WORK

10. ENSURE WATERTIGHT DUCTWORK CONNECTIONS. 11. COORDINATE EQUIPMENT LABELING AND MARKING OF SERVICE POINT ACCESS WITH OWNER/MAINTENANCE STAFF.

12. ALL HOLE CUTTING, FRAMING, PATCHING, PAINTING AND ROOFING BY GENERAL CONTRACTOR (G.C.)

MECHANICAL HVAC

HVAC CONTRACTOR TO PROVIDE MECHANICAL PERMITS

2. HVAC CONTRACTOR SHALL TEST AND BALANCE TO THE AIR QUANTITIES PER PLAN.

CHANGES IN DIRECTION. BRANCH LINES MAY NOT BE USED TO BRACE MAIN LINES.

3. THE HVAC CONTRACTOR SHALL PROVIDE A ONE(1) YEAR PARTS & LABOR WARRANTY. ALL COMPRESSORS SHALL HAVE A ONE(1) YEAR WARRANTY AS PROVIDED BY THE MANUFACTURER.

4. HEATING & COOLING EQUIPMENT SELECTED SHALL BE NO LARGER THAN THE SMALLEST AVAILABLE SIZE EXCEEDING LOAD

5. IN FAN SYSTEMS OVER 2,000 CFM SERVING MORE THAN ONE ROOM, PROVIDE AUTOMATIC FAN SHUTDOWN FOR SMOKE CONTROL PER INTERNATIONAL MECHANICAL CODE (IMC) / OREGON MECHANICAL SPECIALTY CODE.

2-INCH AND SMALLER PIPE TO BE THREADED, OR SLIP JOINT AND SOLDER. 7. 2-1/2-INCH AND LARGER PIPE TO BE THREADED OR WELDED FLANGED OR WELDED AT VALVES, CONNECTIONS, AND

8. GROOVED COUPLINGS ALLOWED ON 2-1/2-INCH OR LARGER IN MECHANICAL ROOMS ONLY [OR ACCESSIBLE LOCATIONS

EXCEPT OVER HARD CEILINGS.] 9. ELECTRICAL TO PROVIDE CONVENIENCE OUTLET WITHIN 25-FEET OF ALL HVAC EQUIPMENT FOR MAINTENANCE SERVICE.

1. NO ATTEMPT HAS BEEN MADE TO SHOW ALL PIPE SUPPORTS, LOCATIONS AND EXPANSION JOINTS. REFER TO SPECIFICATIONS FOR THIS.

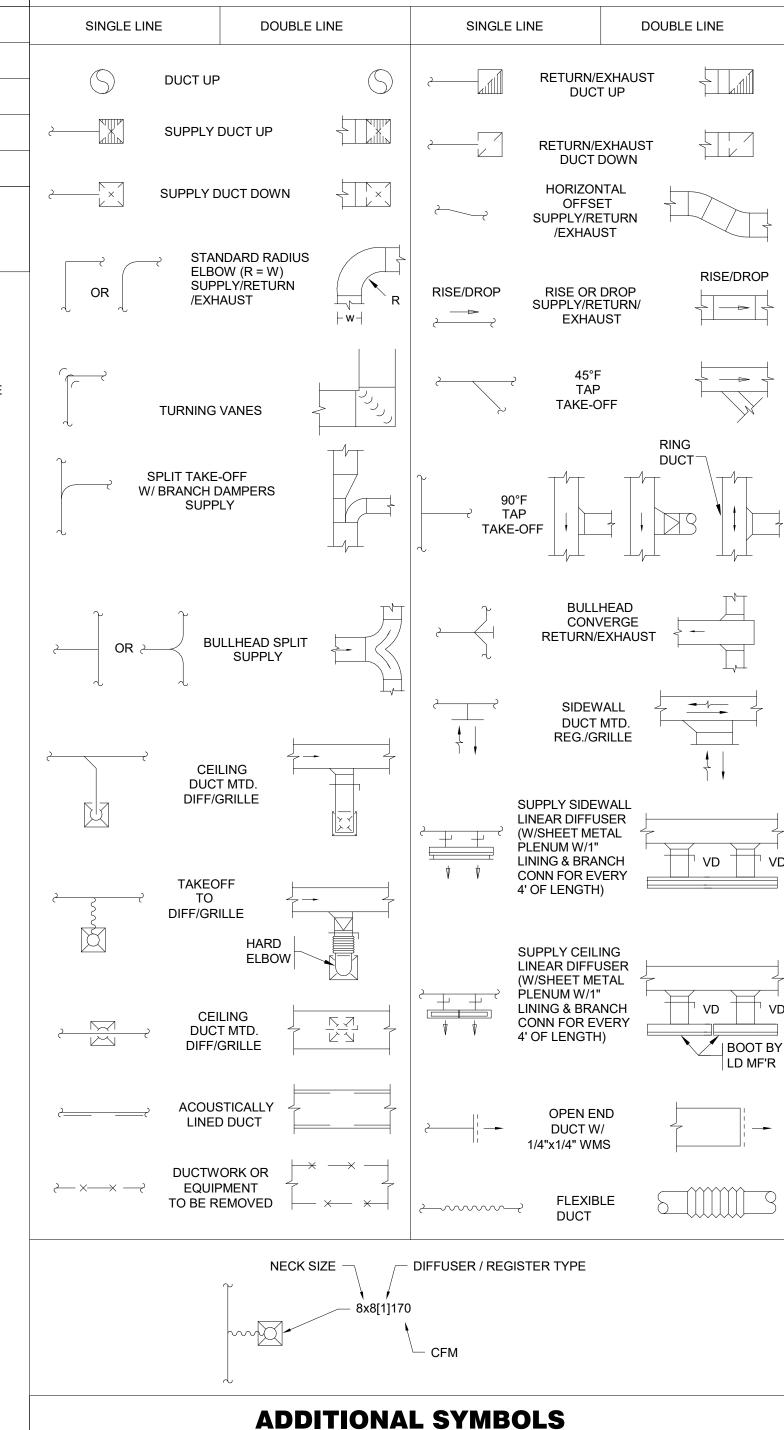
PROVIDE ANGLE STOPS OR SHUT-OFF VALVES AND UNIONS AT ALL EQUIPMENT/FIXTURE CONNECTIONS

SEAL ALL PIPING AT THEIR PERIMETERS TO WALLS, FLOORS WITH AN APPROVED SEALANT. GAS PIPING IN THE MECHANICAL ROOM SHALL COMPLY WITH LOCAL CODES AND A.S.M.E. CSD-1 (LATEST EDITION) AND CONFORM TO THE SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS PER THE BUILDING CODE. SEISMIC BRACING IS REQUIRED ON ALL RULE PIPE AND ALL OTHER PIPING THAT IS 1.25 NOMINAL INCHES AND LARGER IN MECHANICAL ROOM OR 2.5-INCHES AND LARGER OUTSIDE MECHANICAL ROOM. SEISMIC BRACING MUST HAVE A MINIMUM OF TWO TRAVERSE BRACES AND ONE LONGITUDAL BRACE. A RUN IS REFINED AS A LENGTH OF PIPE WITHOUT ANY

ELECTRICAL

1. ALL POWER WIRING INCLUDING FINAL CONNECTIONS AND FUSED DISCONNECT SWITCHES BY ELECTRICAL CONTRACTOR

(E.C.). 110V MECHANICAL SERVICE OUTLETS BY E.C. 2. VERIFY MECHANICAL EQUIPMENT NAMEPLATE AMPERAGES BEFORE MAKING FINAL CONNECTIONS.



→ | AVS AIR VOLUME TRAVERSE STATION

MANUAL VOLUME DAMPER

SELF-CLOSING FIRE DAMPER

AUTOMATIC SMOKE DAMPER

COMBINATION SMOKE/FIRE

DAMPER W/ACCESS DOOR

BLOW SUPPLY DIFFUSER

BLOW SUPPLY DIFFUSER

BACKDRAFT DAMPER

MOTORIZED DAMPER

STANDARD 4-WAY

BLANKED FOR 3-WAY

BLANKED FOR 2-WAY

BLANKED FOR 1-WAY

BLOW SUPPLY DIFFUSER

BLOW SUPPLY DIFFUSER

ACD AUTOMATIC CONTROL DAMPER

W/ACCESS DOOR

W/ACCESS DOOR

W/ACCESS DOOR

SGD SLIDE GATE DAMPER

VD

– SD

DUCTWORK SYMBOLS OWNER UNION COUNTY SHERIFF 'S OFFICE CONTACT: WILL BURNS 1009 K AVENUE LA GRANDE, OR 97850 PHONE: 541 910 4957 MECHANICAL ENGINEER CONTACT: MICHAEL LOVEJOY, PE PO BOX 418 **HELIX, OR 97835** PHONE: 541 379 0271 ELECTRICAL ENGINEER

PHONE: 509 543 7597

CONTACT: JACK GOURLEY, PE

8524 W. GAGE BLVD STE A1 108

KENNEWICK, WA 99336

STRUCTURAL ENGINEER ERIC ANDERSON, PE, SE 5401 RIDGELINE DRIVE SUITE 160 KENNEWICK, WA 99338

PHONE: 509 222 0959

ABBREVIATIONS

AFUE ANNUAL FUEL UTILIZATION EFFICIENCY AIR HANDLING UNIT ALTERNATE AIR PRESSURE DROP, INCH BRITISH THERMAL UNITS PER HOUR CUBIC FEET PER MINUTE EXHAUST AIR EXHAUST FAN ENTERING DRY BULB EXTERNAL STATIC PRESSURE

ENTERING WET BULB **ENTERING WATER** FACE VELOCITY

GALLONS PER MINUTE HORSE POWER KILOWATTS

LOUVER LEAVING AIR TEMPERATURE LEAVING WATER TEMPERATURE MAKEUP AIR UNIT

MINIMUM **MAXIMUM** MINIMUM CIRCUIT AMPACITY

MOTORIZED DAMPER OUTSIDE AIR OCCUPANCY SENSOR PRESSURE RELIEF VALVE

RETURN AIR RETURN **ROOFTOP UNIT** SUPPLY AIR

SUPPLY ~12,000 BTUH (3.5kW) COOLING CAPACITY TEMPERATURE SENSOR VOLUME DAMPER

VENT THROUGH ROOF WATER PRESSURE DROP, INCH

EXISTING NEW

ROOF EXHAUST FAN SHOWN

ROOF EXHAUST FAN SHOWN

ON ROOF

UC 1/2"

─

LVDR 1.5 SF

—

—

ON FLOOR PLAN

UNDERCUT DOOR

LOUVERED DOOR

FLOW DIRECTION

SUPPLY AIR FLOW

RETURN OR EXHAUST AIR

CONNECT NEW TO EXISTING

POINT OF DEMOLITION

SECTION DESIGNATION

TEMPERATURE SENSOR OR

SHEET NUMBER

THERMOSTAT

TIMER SWITCH

SMOKE DETECTOR

OCCUPANCY SENSOR

SHEET INDEX

M0.01 MECHANICAL LEGEND, SYMBOLS, ABBREVIATIONS M0.02 MECHANICAL SCHEDULES M1.01 MECHANICAL BASEMENT LEVEL DEMOLITION PLAN

M2.01 MECHANICAL BASEMENT LEVEL REMODEL PLAN M2.02 MECHANICAL ROOF LEVEL REMODEL PLAN

M5.01 MECHANICAL DETAILS M6.01 MECHANICAL CONTROLS COVER SHEET

SYSTEM CONTROL DIAGRAM E0.01 ELECTRICAL LEGEND, SYMBOLS, SCHEDULES

E1.01 ELECTRICAL - SITE PLAN E1.02 ELECTRICAL - LEVEL B PLAN

ELIX ENERGY PARTNERS, I

HELIX-ENGINEERS.NE

115 MAIN ST BOX 418 HELIX, OR 97835 PHONE: +1 (541) 379-027

DATE

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M1.02 MECHANICAL ROOF LEVEL REMODEL PLAN

M6.02 MECHANICAL CONTROLS, CHILLED WATER

ISSUE DATE 06 JUN 2022 CHECKED BY MAL PHASE 75% CD REVIEW SE SHEET NO.

PROJECT NO. HEP-22-01

DESIGNED BY MAL

DRAWN BY

			CONDENSER		EFFICIE	ENCY		ELECT	RICAL		SHIPPING	OPERATING	
TAG	MODEL NO.	(TONS)	AMB db T	REFRIGERANT	EER	IPLV.IP	VOLT	PHASE	kW	MCA	WEIGHT (LBS)	WEIGHT (LBS)	NO.
CND-1	YLAA0048HE46XCBBXTX	45	93.0	R410A	11.200	17.640	460	3	53.46	119 (3 477	3 300	,
NOTE	<u>S:</u>						•						
TEMP	ERATURES ARE IN DEGR	EES F.									•	\uparrow	
	TYPE: AIR COOLED WATER CHILLER, SPLIT EVAPORATOR												
TYPE:	: AIR COOLED WATER CH	HILLER, SPLI	T EVAPORATOR										
	: AIR COOLED WATER CH PER CONDUCTORS ONLY.		T EVAPORATOR	ł.									
COPP												PROPOS	
COPP	PER CONDUCTORS ONLY.	ACTURERS	RECOMMENDAT									PROPOS CHILLES	
COPP COND GPM=	PER CONDUCTORS ONLY. DUCTOR SIZE PER MANUF	ACTURERS	RECOMMENDAT MINUTE	IONS.	R TEMPERA	TURE						1	
COPP COND GPM=	PER CONDUCTORS ONLY. DUCTOR SIZE PER MANUF. FLUID FLOW RATE IN GA	ACTURERS LLONS PER R TEMPERAT	RECOMMENDAT MINUTE URE LWT=LEAV	IONS.	R TEMPERA	TURE						1	
COPP COND GPM= EWT= PD=FI	PER CONDUCTORS ONLY. DUCTOR SIZE PER MANUF. FLUID FLOW RATE IN GAI ENTERING EVAPORATOR	ACTURERS LLONS PER TEMPERAT FEET OF W	RECOMMENDAT MINUTE URE LWT=LEAV /ATER COLUMN	IONS.	R TEMPERA	TURE						1	
COPP COND GPM= EWT= PD=FI AMBd	PER CONDUCTORS ONLY. PUCTOR SIZE PER MANUF. FLUID FLOW RATE IN GAI ENTERING EVAPORATOR LUID PRESSURE DROP IN	ACTURERS LLONS PER TEMPERAT FEET OF W	RECOMMENDAT MINUTE URE LWT=LEAV /ATER COLUMN	IONS.	R TEMPERA	TURE						1	
COPP COND GPM= EWT= PD=FI AMBd	PER CONDUCTORS ONLY. PUCTOR SIZE PER MANUF. FLUID FLOW RATE IN GAI ENTERING EVAPORATOR LUID PRESSURE DROP IN BT=EXTERIOR AMBIENT D OF DESIGN:	ACTURERS LLONS PER TEMPERAT FEET OF W	RECOMMENDAT MINUTE URE LWT=LEAV /ATER COLUMN	IONS.	R TEMPERA	TURE						1	

		•.	W. I.						
NT.		EV	APOR	ATOR			SHIPPING	OPERATING	
SILY (S)	MAX	MIN	EWT	LWT	MAX PD	REFRIGERANT			NOTES
U)	CDM	CDM	EWT	LWT	(FT)		(LBS)	(LBS)	

IN BASEMENT

CAPACI MODEL NO. EVP-1 100 16 57 45 4.8 R410A 177 177 YLAA-ACH240 NOTES:

TYPE: AIR COOLED WATER CHILLER, SPLIT EVAPORATOR

COPPER CONDUCTORS ONLY.

TEMPERATURES ARE IN DEGREES F.

CONDUCTOR SIZE PER MANUFACTURERS RECOMMENDATIONS.

GPM=FLUID FLOW RATE IN GALLONS PER MINUTE

EWT=ENTERING EVAPORATOR TEMPERATURE LWT=LEAVING EVAPORATOR TEMPERATURE

PD=FLUID PRESSURE DROP IN FEET OF WATER COLUMN

AMBdbT=EXTERIOR AMBIENT DRY BULB TEMPERATURE

BASIS OF DESIGN:

NOTES

		REFRIGERANT PIPING SCHEDULE												
	UNIT	OU	OUTDO	OR UNIT RE	FRIGERANT		INDO	OR COIL	NOTES					
	ID#	ID#	TYPE	LIQUID	GAS	SUPPLY	RETURN	# OF CIRCUITS/EEVS	NOTES					
Ī	EVP-1	CND-1	R410A	1 3/8	1 5/8	1 3/8	1.5/8	2						

MODEL NUMBER BASED ON JOHNSON CONTROLS PRODUCT, REFER TO SPECIFICATIONS FOR ACCEPTABLE MANUF LIQUID IS LIQUID LINE SIZE IN INCHES.

GAS IS GAS LINE SIZE IN INCHES.

SUPPLY IS COIL SUPPLY CONNECTION SIZE (MAY BE MULTIPLE FOR MULTI-CIRCUIT COILS). RETURN IS COIL RETURN CONNECTION SIZE (MAY BE MULTIPLE FOR MULTI-CIRCUIT COILS.

EEV = ELECTRONIC EXPANSION VALVE.

HELIX ENERGY PARTNERS, LLC



HELIX-ENGINEERS.NET

115 MAIN ST BOX 418 HELIX, OR 97835 PHONE: +1 (541) 379-0271

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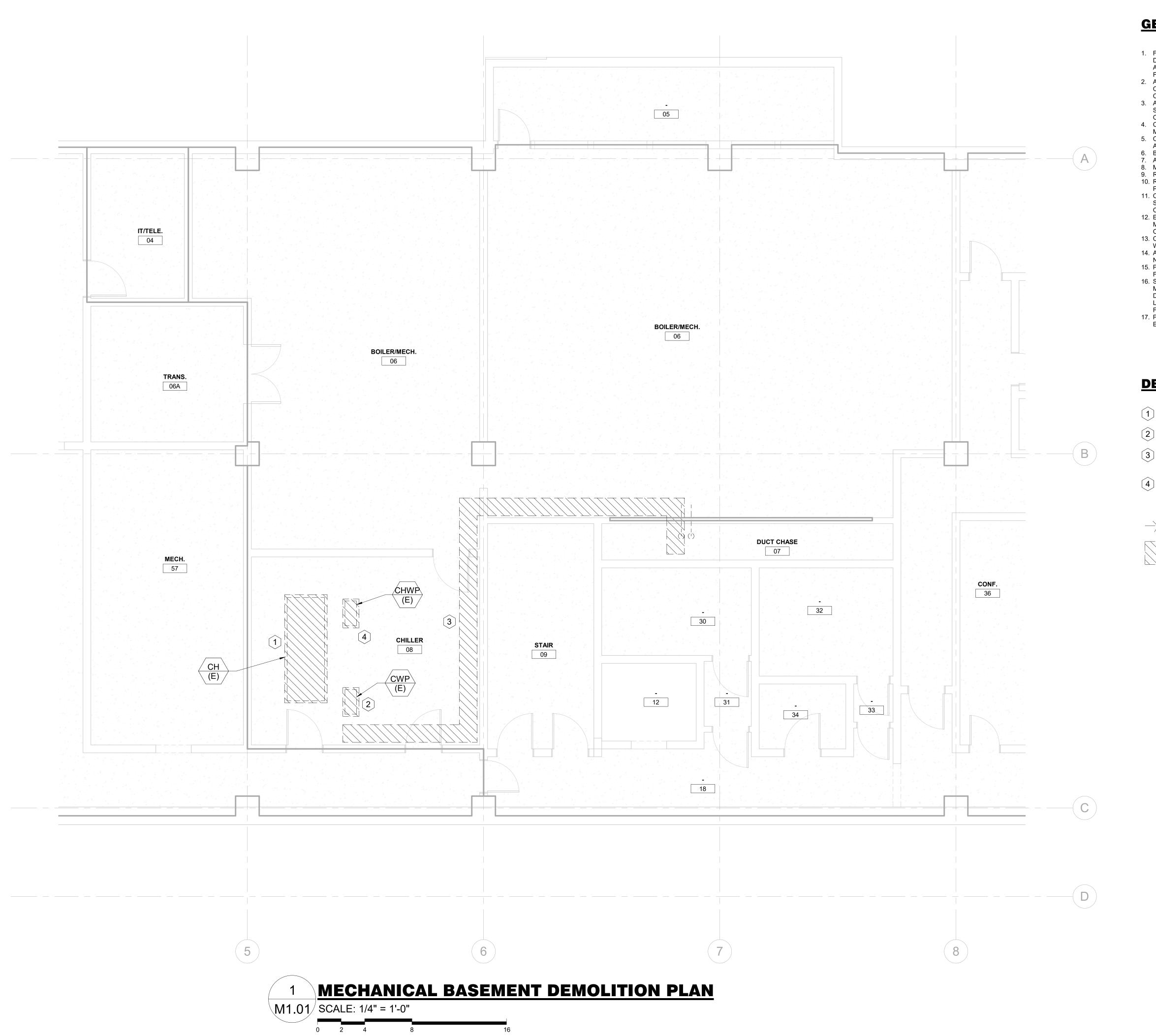
EPLACEMENT

PROJECT NO. HEP-22-01

DESIGNED BY MAL DRAWN BY YD ISSUE DATE 06 JUN 2022

CHECKED BY MAL 90% CD REVIEW SET SHEET NO.

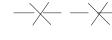
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- 1. FOR THE PURPOSES OF CLEARNESS AND LEGIBILITY, DRAWINGS ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR MUST VERIFY ALL DIMENSIONS BY FIELD MEASUREMENT BEFORE BEGINNING ANY
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- 5. COORDINATION BETWEEN TRADES IS NECESSARY. MECHANICAL, ELECTRICAL, AND CONTROLS.
- 6. BALANCE AIR SYSTEMS WITHIN 10% OF CAPACITIES LISTED. 7. ALL ROTATING EQUIPMENT SHALL BE SUSPENDED WITH VIBRATION HANGERS.
- 8. MAINTAIN WORK SPACE IN ORDERLY CONDITION. 9. REMOVE ALL DEMOLITION DEBRIS FROM SITE.
- 10. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, BEST PRACTICES AND WARRANTY.
- 11. CONTRACTOR IS RESPONSIBLE FOR IDENTIFING AND PROTECTING STRUCTURAL AND PRESTRESSED REINFORCEMENT PRIOR TO DRILLING ANY CONCRETE STRUCTURE.
- 12. EQUIPMENT BEING REPLACED SHALL MATCH COLOR, STYLE, AND MANUFACTURER OF EXISTING OR ADJACENT EQUIPMENT EXCEPT AS CALLED
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- 17. PROVIDE FLEXIBLE DUCT, PIPING, AND CONDUIT CONNECTIONS AT

DEMOLITION NOTES

- 1 REMOVE AND DISPOSE OF EXISTING CHILLER AND PREPARE EXISTING LECTRICAL POWER CONNECTIONS FOR CONNECTION TO NEW EQUIPMENT.
- 2 REMOVE AND DISPOSE OF EXISTING CONDENSER WATER PUMP AND DECOMMISSION EXISTING ELECTRICAL POWER CONNECTIONS.
- (3) REMOVE AND DISPOSE OF EXISTING CONDENSER WATER PIPING. PREPARE ROUTE FOR NEW REFRIGERANT LINES AND REPURPOSE HANGERS AS
- [4] REMOVE AND DISPOSE OF EXISTING CHILLED WATER PUMP. PREPARE FOR INSTALLATION OF NEW.



DENOTES DEMOLITION ITEMS



DENOTES DEMOLITION AREAS

HELIX ENERGY PARTNERS, LL



HELIX-ENGINEERS.NET

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DATE

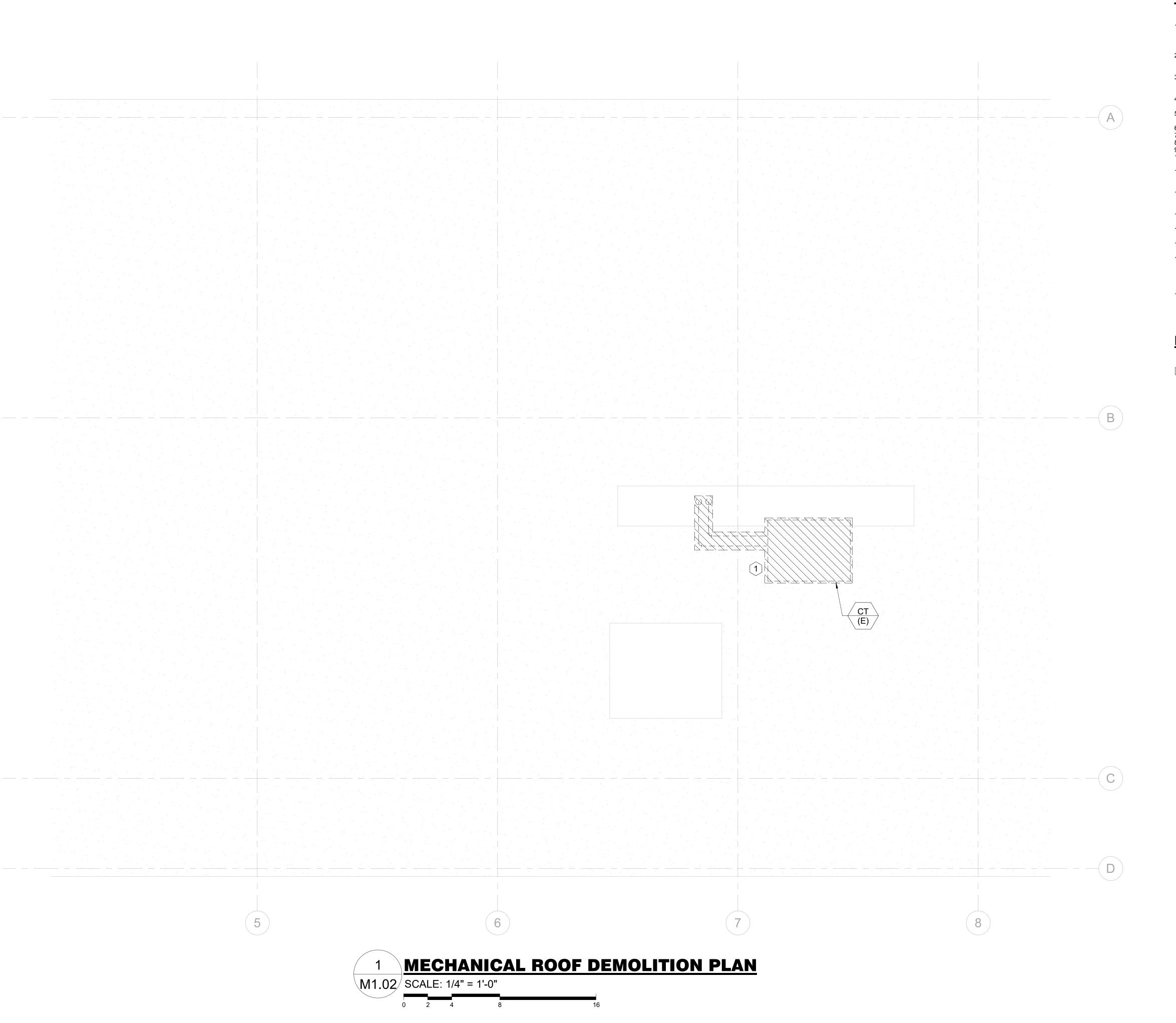
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OFFICE CHILLER RE

CHECKED BY MAL

M1.01



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- FOR SEISMIC BRACING. 17. PROVIDE FLEXIBLE DUCT, PIPING, AND CONDUIT CONNECTIONS AT EQUIPMENT.

DEMOLITION NOTES

1 REMOVE EXISTING COOLING TOWER AND CONDENSER WATER SUPPLY AND RETURN PIPES. PREPARE FOR INSTALLATION OF NEW EQUIPMENT ROOF CURBING. ONE OF THE EXISTING PENETRATIONS CAN BE REPURPOSED FOR THE NEW REFRIGERANT LINES AND POWER. PROVIDE WATER TIGHT PATCH TO ANY ADDITIONAL PENETRATIONS.



DENOTES DEMOLITION ITEMS

DENOTES DEMOLITION AREAS

HELIX ENERGY PARTNERS, LL



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115 MAIN ST BOX 418

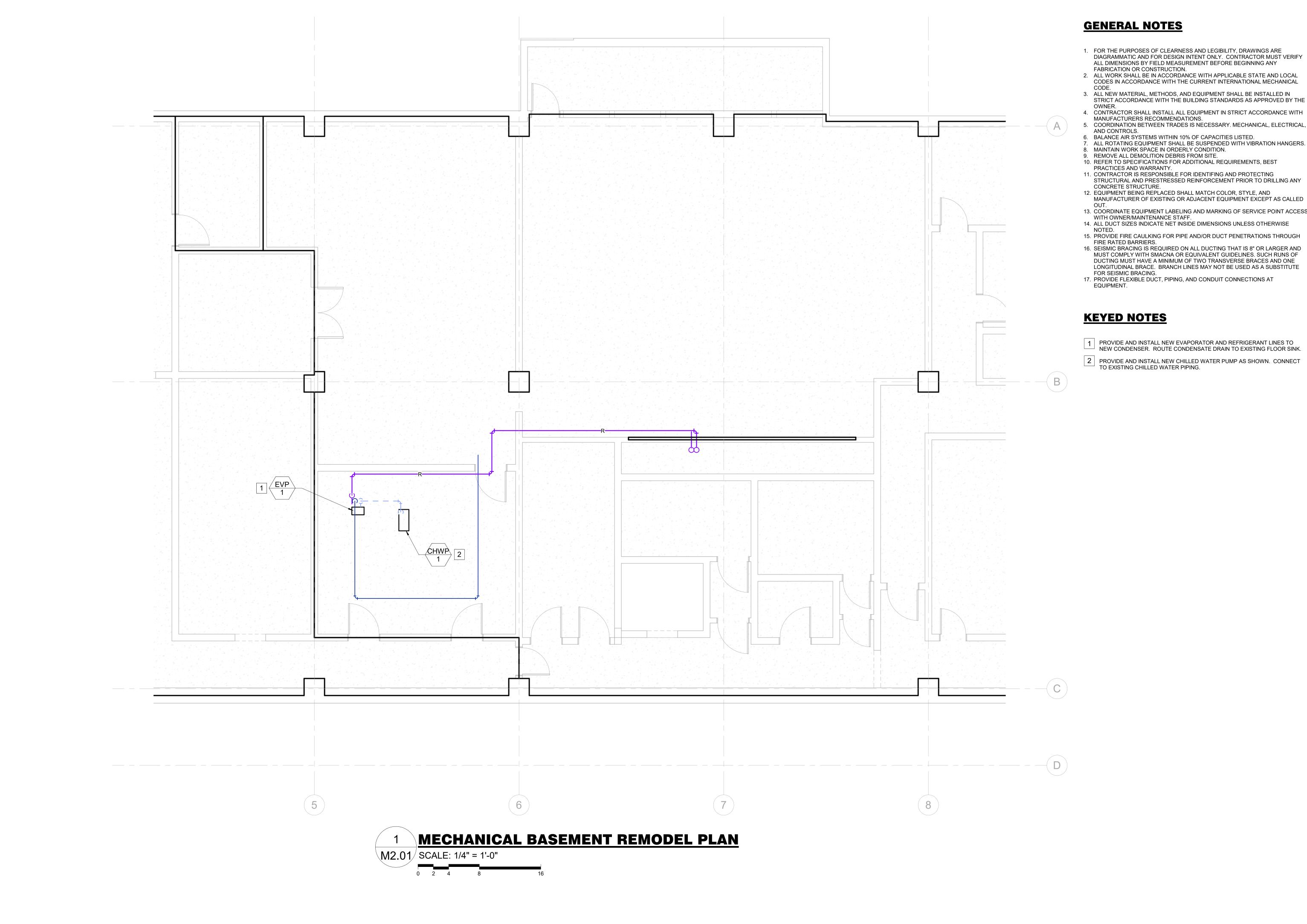
HELIX, OR 97835 PHONE: +1 (541) 379-0271

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M1.02



- 1. FOR THE PURPOSES OF CLEARNESS AND LEGIBILITY, DRAWINGS ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR MUST VERIFY ALL DIMENSIONS BY FIELD MEASUREMENT BEFORE BEGINNING ANY
- 2. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL CODES IN ACCORDANCE WITH THE CURRENT INTERNATIONAL MECHANICAL
- 3. ALL NEW MATERIAL, METHODS, AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE BUILDING STANDARDS AS APPROVED BY THE
- 4. CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH
- 7. ALL ROTATING EQUIPMENT SHALL BE SUSPENDED WITH VIBRATION HANGERS.
- 9. REMOVE ALL DEMOLITION DEBRIS FROM SITE.
- 10. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, BEST
- STRUCTURAL AND PRESTRESSED REINFORCEMENT PRIOR TO DRILLING ANY
- MANUFACTURER OF EXISTING OR ADJACENT EQUIPMENT EXCEPT AS CALLED
- 13. COORDINATE EQUIPMENT LABELING AND MARKING OF SERVICE POINT ACCESS
- 15. PROVIDE FIRE CAULKING FOR PIPE AND/OR DUCT PENETRATIONS THROUGH
- 16. SEISMIC BRACING IS REQUIRED ON ALL DUCTING THAT IS 8" OR LARGER AND MUST COMPLY WITH SMACNA OR EQUIVALENT GUIDELINES. SUCH RUNS OF DUCTING MUST HAVE A MINIMUM OF TWO TRANSVERSE BRACES AND ONE LONGITUDINAL BRACE. BRANCH LINES MAY NOT BE USED AS A SUBSTITUTE
- 17. PROVIDE FLEXIBLE DUCT, PIPING, AND CONDUIT CONNECTIONS AT
- NEW CONDENSER. ROUTE CONDENSATE DRAIN TO EXISTING FLOOR SINK.
- PROVIDE AND INSTALL NEW CHILLED WATER PUMP AS SHOWN. CONNECT TO EXISTING CHILLED WATER PIPING.

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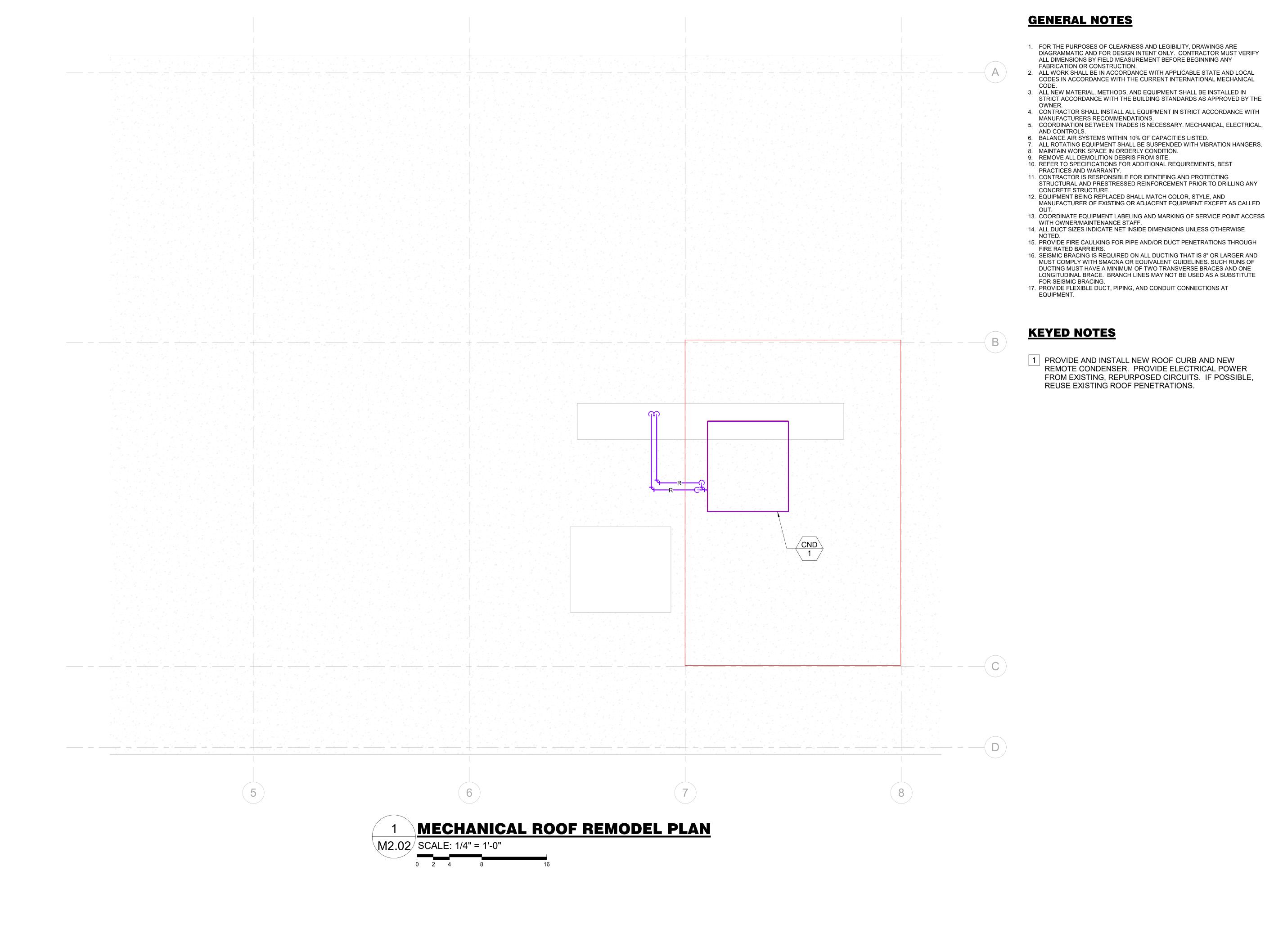
DATE

978 OFFICE CHILLER RE

UNION COUNTY

ISSUE DATE 06 JUN 2022 CHECKED BY MAL

M2.01



- 1. FOR THE PURPOSES OF CLEARNESS AND LEGIBILITY, DRAWINGS ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR MUST VERIFY ALL DIMENSIONS BY FIELD MEASUREMENT BEFORE BEGINNING ANY
- 2. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL CODES IN ACCORDANCE WITH THE CURRENT INTERNATIONAL MECHANICAL
- STRICT ACCORDANCE WITH THE BUILDING STANDARDS AS APPROVED BY THE
- 4. CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
- 5. COORDINATION BETWEEN TRADES IS NECESSARY. MECHANICAL, ELECTRICAL,
- 6. BALANCE AIR SYSTEMS WITHIN 10% OF CAPACITIES LISTED.
- 8. MAINTAIN WORK SPACE IN ORDERLY CONDITION.
- 10. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, BEST PRACTICES AND WARRANTY.
- 11. CONTRACTOR IS RESPONSIBLE FOR IDENTIFING AND PROTECTING STRUCTURAL AND PRESTRESSED REINFORCEMENT PRIOR TO DRILLING ANY
- MANUFACTURER OF EXISTING OR ADJACENT EQUIPMENT EXCEPT AS CALLED
- 13. COORDINATE EQUIPMENT LABELING AND MARKING OF SERVICE POINT ACCESS
- 14. ALL DUCT SIZES INDICATE NET INSIDE DIMENSIONS UNLESS OTHERWISE
- 15. PROVIDE FIRE CAULKING FOR PIPE AND/OR DUCT PENETRATIONS THROUGH
- 16. SEISMIC BRACING IS REQUIRED ON ALL DUCTING THAT IS 8" OR LARGER AND MUST COMPLY WITH SMACNA OR EQUIVALENT GUIDELINES. SUCH RUNS OF DUCTING MUST HAVE A MINIMUM OF TWO TRANSVERSE BRACES AND ONE LONGITUDINAL BRACE. BRANCH LINES MAY NOT BE USED AS A SUBSTITUTE
- 17. PROVIDE FLEXIBLE DUCT, PIPING, AND CONDUIT CONNECTIONS AT

1 PROVIDE AND INSTALL NEW ROOF CURB AND NEW REMOTE CONDENSER. PROVIDE ELECTRICAL POWER FROM EXISTING, REPURPOSED CIRCUITS. IF POSSIBLE, REUSE EXISTING ROOF PENETRATIONS.

HELIX ENERGY PARTNERS, LLO



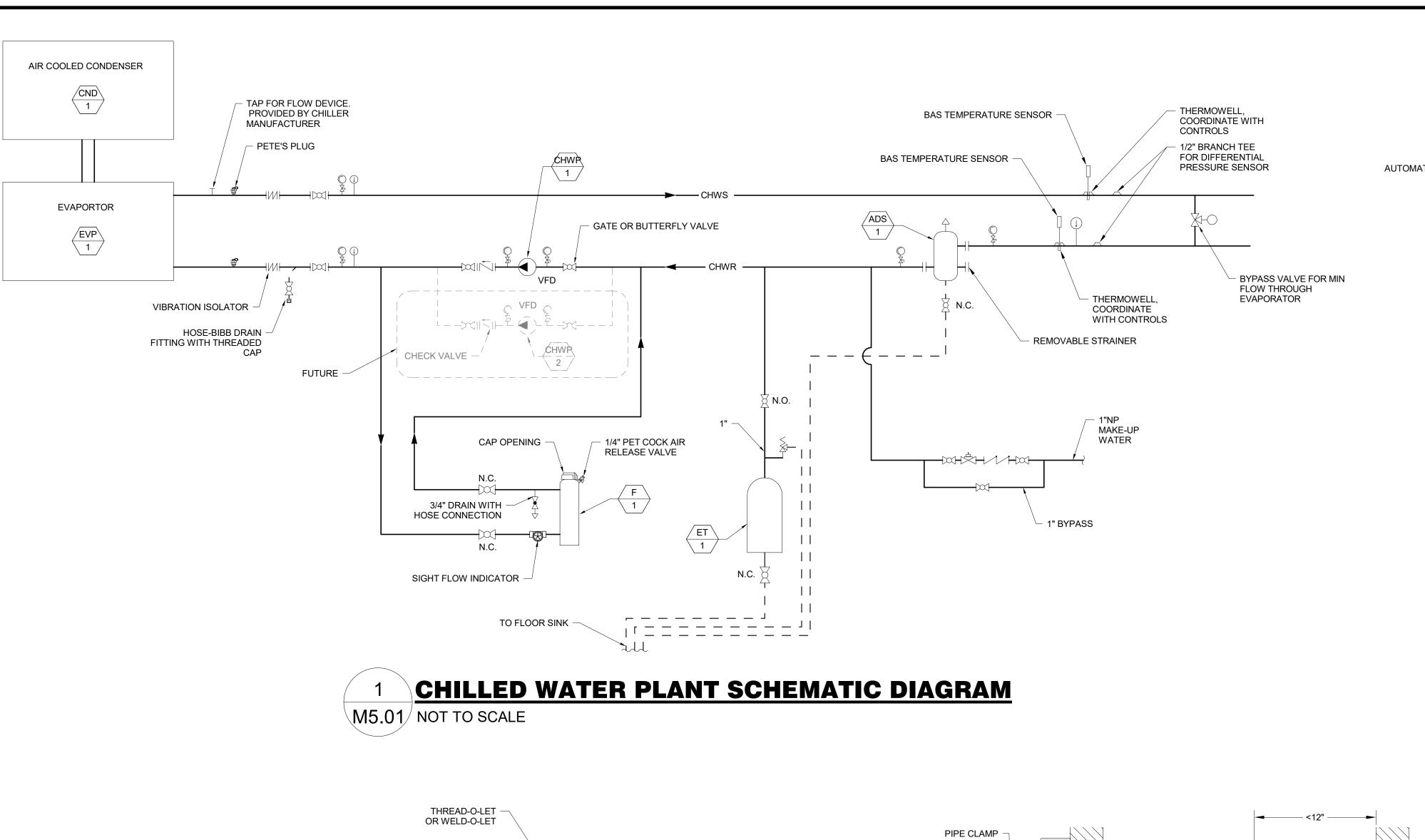
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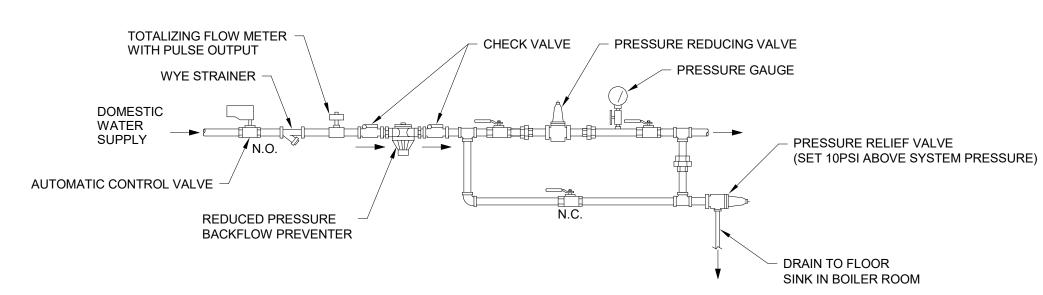
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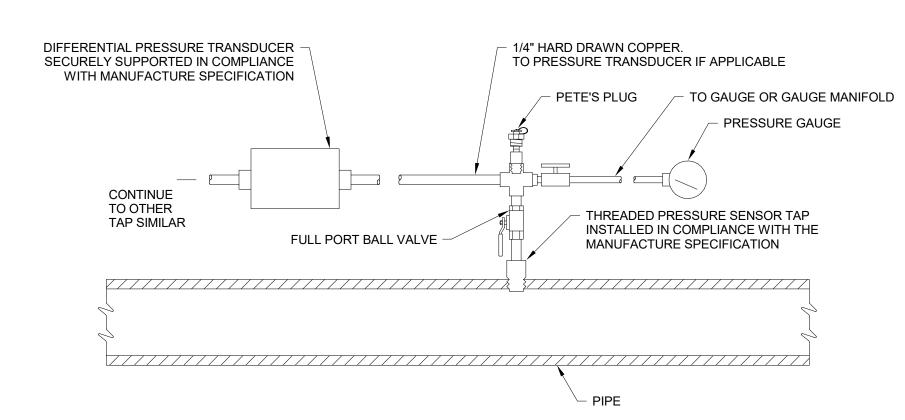
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M2.02





2 MAKE-UP WATER DETAIL
NOT TO SCALE



TYPICAL PRESSURE SENSOR TAP DETAIL
M5.01 NOT TO SCALE

THREAD-O-LET
OR WELD-O-LET

PIPE

1. SENSORS AND WELLS PROVIDED BY OTHERS (CONTROL CONTRACTOR) UNDER SEPARATE CONTRACT SHALL TO BE INSTALLED BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR IS REQUIRED TO COORDINATE INSTALLATION OF SENSORS AND WELLS WITH THE CONTROLS CONTRACTOR.

2. INSTALL WIRING, PRESSURE SENSOR, AND WELD-O-LET IN COMPLIANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

- ISOLATOR PAD

NOISE ISOLATOR

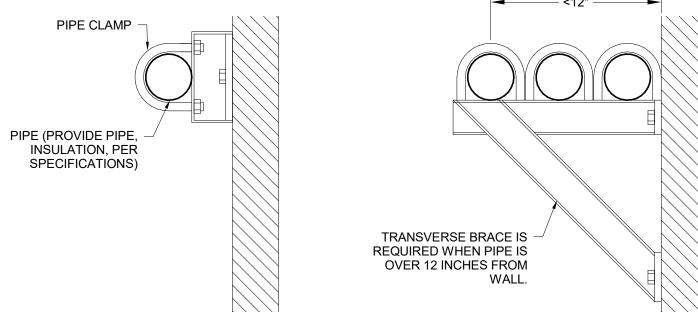
PIPE (PROVIDE PIPE

INSULATION, PER

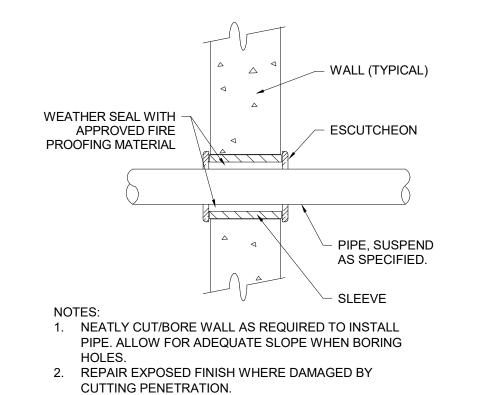
SPECIFICATIONS)

PIPE SADDLE

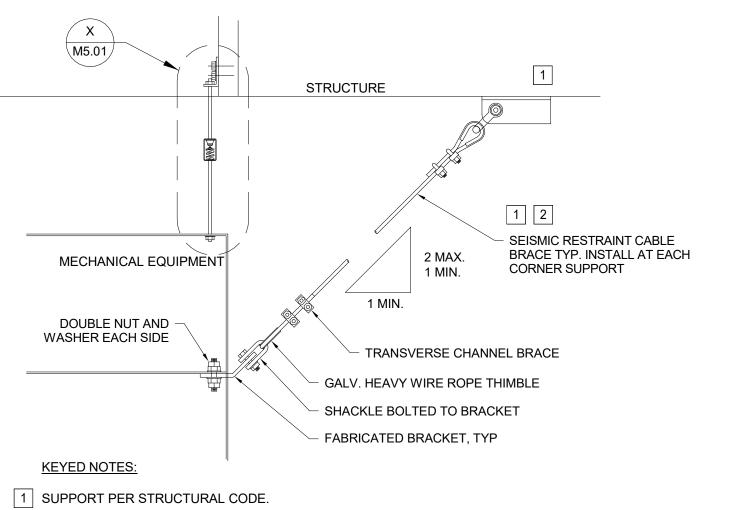




M5.01 WALL MOUNT PIPE SUPPORT DETAIL
NOT TO SCALE



7 PIPE PENETRATION DETAIL
M5.01 NOT TO SCALE



SUPPORT PER STRUCTURAL CODE.TENSION CABLES ONLY ENOUGH TO REMOVE SAG.

6 PIPE SUPPORT DETAIL
NOT TO SCALE

ROD TO SUPPORT -PIPE DEAD LOAD

HANGER BRACKET

NOTE: 1. WHERE BEAM

ATTACHMENT IS

AVAILABLE - USE

SPECIAL BEAM CLAMPS, DO NOT

DRILL THROUGH

MECH EQUIPMENT SEISMIC RESTRAINT DETAIL

NOT TO SCALE

HELIX ENERGY PARTNERS, LL

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BOX 418
HELIX, OR 97835
PHONE: +1 (541) 379-0271

REV DATE BY

Y SHERIFF'S OFFICE CHILLER REPLACEMENT 9 K AVENUE LA GRANDE, OR 97850

NOINO

PROJECT NO. HEP-22-01
DESIGNED BY MAL
DRAWN BY YD
ISSUE DATE 06 JUN 2022

DESIGNED BY MAL
DRAWN BY YD
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M5.01

1. REFER TO MECHANICAL DRAWINGS FOR LOCATION OF EQUIPMENT. COORDINATE EQUIPMENT WIRING AND SENSOR INSTALLATION WITH EQUIPMENT SUPPLIER AND MECHANICAL CONTRACTOR.

2. BAS POINTS LIST WITH INTERFACE LEGEND INDICATES BASIC COMPONENT REQUIRED FOR INTERFACE BUT DOES NOT DETAIL ALL NECESSARY WIRING, POWER SUPPLIES, AND AUXILIARY DEVICES REQUIRED FOR FULL IMPLEMENTATION. INSTALLATION SHALL INCLUDE ALL REQUIRED COMPONENTS TO FULLY IMPLEMENT THE POINT FUNCTION.

3. FURNISH AND INSTALL ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED BUT NECESSARY TO PROVIDE A COMPLETE AND

4. FOR ANY CONFLICT IN THE DRAWINGS AND/OR THE SPECIFICATIONS. THE MORE STRINGENT REQUIREMENT SHALL APPLY. ANY SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO INSTALLATION OF

5. SCHEMATIC DIAGRAMS SHOWING SENSOR POSITIONS ARE DIAGRAMMATIC. CONFIRM LOCATION AND INSTALLATION PROCEDURE WITH ENGINEER.

6. ALL CONTROL WIRING IN BUILDING SPACES, SHALL BE INSTALLED IN CONDUIT. CONTROL WIRING ABOVE ACCESSIBLE CEILING MAY BE INSTALLED WITHOUT CONDUIT. INSTALL PLENUM RATED WIRE NEATLY BUNDLED. SUPPORT AT 5 FOOT INTERVAL. ALL WIRE AND CONDUIT INSTALLATION PER NEC CODE.

7. ALL CONTROL POINTS AND SEQUENCES OF OPERATION ARE DIAGRAMATIC AND MAY DIFFER BASED ON FINAL EQUIPMENT SELECTIONS OR SUBSTITUTIONS. ANY PROPOSED OR INCIDENTAL CHANGES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. CONTRACTOR IS RESPOSIBLE FOR A FULLY OPERATION SYSTEM.

SCOPE OF WORK:

THE WORK UNDER THIS CONTRACT IS TO PROVIDE THE LABOR, MATERIAL, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF THE SYSTEMS DESCRIBED. FULLY CONNECT ALL POINTS AS OUTLINED IN THE POINTS LIST IN THE DRAWINGS, AND MEET THE SYSTEM REQUIREMENTS SPECIFIED. PROVIDE CONDUIT AND WIRING IN QUANTITIES AND LOCATIONS AS REQUIRED TO MEET THE FUNCTIONS AND PERFORMANCE SPECIFIED AND INDICATED ON THE DRAWINGS.

PROVIDE ALL LABOR, WIRE, CONDUIT, AND PANELS NECESSARY TO COMPLETE A FULLY FUNCTIONAL SYSTEM. PANELS ARE LOCATED IN MECHANICAL AND FAN ROOMS, COORDINATE WITH OWNER.

LOW VOLTAGE CONTROL WIRING AND LINE VOLTAGE WIRING AND CONDUIT TO CONTROL PANELS, DAMPER ACTUATORS, VFDS. AND MOTORS: AS SHOWN ON THE DRAWINGS. ARE WORK OF THE CONTRACT. COORDINATE WITH OWNER TO DETERMINE ACCEPTABLE ELECTRICAL PANELS AND CIRCUITS AT WHICH TO OBTAIN POWER.

ALL MOTORIZED VALVES SHALL USE SPRING RETURN ACTUATORS, CONFIGURED TO FAIL AS NOTED. ACTUATORS SHALL BE SIZED FOR ACTUAL REQUIRED DAMPER TORQUE.

MOTOR STARTERS AND LINE VOLTAGE MOTOR CONTACTORS ARE DEPICTED GENERICALLY BUT NOT DIFFERENTIATED ON THE DRAWINGS. CONTRACTOR TO VERIFY AND REUSE EXISTING MOTOR STARTERS OR REPLACE AT CONTRACTORS OPTION AND EXPENSE. REPLACEMENT OF VERIFIED FAULTY EXISTING COMPONENTS TO BE MADE ON A TIME AND MATERIAL BASIS.

WORK TO COMPLY WITH CURRENT NATIONAL, STATE, AND LOCAL CODES. OBTAIN PERMITS NECESSARY FOR WORK. ALL WORK MUST SATISFY CODE AUTHORITY WITH JURISDICTION.

COMMUNICATION TRUNK: COORDINATE PANEL LOCATION AND WIRE REQUIREMENTS WITH OWNER.

REMOVE NONFUNCTIONAL CONTROL PANELS AND CONTROL WIRE IN MECHANICAL ROOMS. CONTROL PANELS CONTAINING LIGHTING OR OTHER EXISTING FUNCTIONAL CONTROLS WILL BE RETAINED. REMOVE NONFUNCTIONAL CONTROLS, SENSORS, ACTUATORS, WIRE (UNLESS WIRE IS TO BE REUSED), CONDUIT (UNLESS CONDUIT IS TO BE REUSED), AND TUBING IN MECHANICAL ROOMS. REMOVE NONFUNCTIONAL CONTROL WIRE, CONDUIT, AND TUBING ABOVE DROP CEILINGS. REMOVE NONFUNCTIONAL ROOM THERMOSTATS AND SENSORS. ABANDON IN PLACE CONTROL WIRE, CONDUIT, AND TUBING ABOVE HARD CEILINGS AND IN WALLS. PROVIDE COMPLETE IDENTIFICATION OF ALL COMPONENTS AND CONDUCTORS. COLOR CODE AND NUMBER CONDUCTORS AND TERMINALS ACCORDING TO CONSISTENT SCHEME THROUGHOUT PROJECT. PROVIDE ENGRAVED IDENTIFICATION OR EQUIVALENT PERMANENCE ON PANEL FRONTS. USE EQUIPMENT IDENTIFICATION SAME AS INDICATED ON SUBMITTED POINTS LIST.

CONTRACTOR SHALL CONDUCT A POINT TO POINT CHECKOUT TO RESOLVE ISSUES WITH WIRING, COMPONENTS, SENSORS. ACTUATORS, OR EQUIPMENT INSTALLED UNDER THIS CONTRACT.

CONTROLS SEQUENCE OF OPERATIONS:

GENERAL NOTES

DEVICE AND THE INDICATION FROM THE PROOF POINT.

1. PROVIDE AUTOMATIC CONTROL FOR SYSTEM OPERATION AS DESCRIBED HEREIN, ALTHOUGH WORD "AUTOMATIC" OR

2. PROVIDE CONTROL DEVICES, CONTROL SOFTWARE AND CONTROL WIRING AS REQUIRED FOR AUTOMATIC OPERATION OF EACH SEQUENCE SPECIFIED. 3. ANY REFERENCE TO MAKING A POINT ADJUSTABLE REQUIRES THAT THE POINT CAN BE MANIPULATED DIRECTLY FROM THE

GRAPHIC DISPLAY WITHOUT ACCESSING OR MODIFYING THE CONTROL CODE. 4. WORK OF THIS SECTION REQUIRES THAT A FULLY FUNCTIONAL SEQUENCE OF OPERATION BE IMPLEMENTED IN THE BMS. THE SEQUENCES OUTLINED HERE ARE PROVIDED AS A MINIMUM GUIDE TO ASSIST PROGRAMMING. SYSTEM OR OPERATIONAL CONSTRAINTS MAY REQUIRE ADDITIONAL LOGIC AND SEQUENCING FOR PROPER OPERATION. THE CONTROL CONTRACTOR SHALL IMPLEMENT CHANGES TO THE SEQUENCE, REQUIRED FOR PROPER OPERATION, AS WORK OF THIS SECTION FOR A FULLY FUNCTIONAL SYSTEM. A STEPPED SUBMITTAL, REVIEW, AND APPROVAL APPROACH SHALL BE EMPLOYED TO MODIFY, ADD, AND DELETE SEQUENCES. ALL ADDITIONS AND MODIFICATIONS OF SEQUENCE PROGRAMMING SHALL BE INCLUDED AS WORK OF THIS SECTION AT NO ADDITIONAL COST TO THE OWNER.

UNIT PROOF POINTS: A.PROVIDE UNIT PROOF POINTS FOR DEVICES (MOTORS, ETC.) WITH ANALOG CURRENT (AMPS) SENSORS AS INDICATED. UNIT PROOF POINTS SHALL BE VIRTUAL DIGITAL POINTS (SOFTWARE VARIABLES THAT FUNCTION AS REAL POINTS). PROOF POINTS SHALL INDICATE ON WHEN ANALOG CURRENT SENSOR IS ABOVE A SET (ADJUSTABLE) LEVEL AND OFF WHEN BELOW (ADJUSTABLE) LEVEL. THE MODIFICATION OF THE TRIP LEVEL SHALL BE READILY AVAILABLE AND EASY TO ADJUST BY THE

B. WHERE THE CURRENT INDICATION IS PROVIDED BY A VFD, SET THE LEVEL SUCH THAT, AT 50 PERCENT SPEED, LOSS OF FAN BELT, PUMP COUPLING, OR FREEWHEELING OF MOTOR WILL INDICATE AN OFF CONDITION. USE VFD PROOF POINT PREVENT FALSE LOW AMP ALARMS BELOW 50% SPEED.

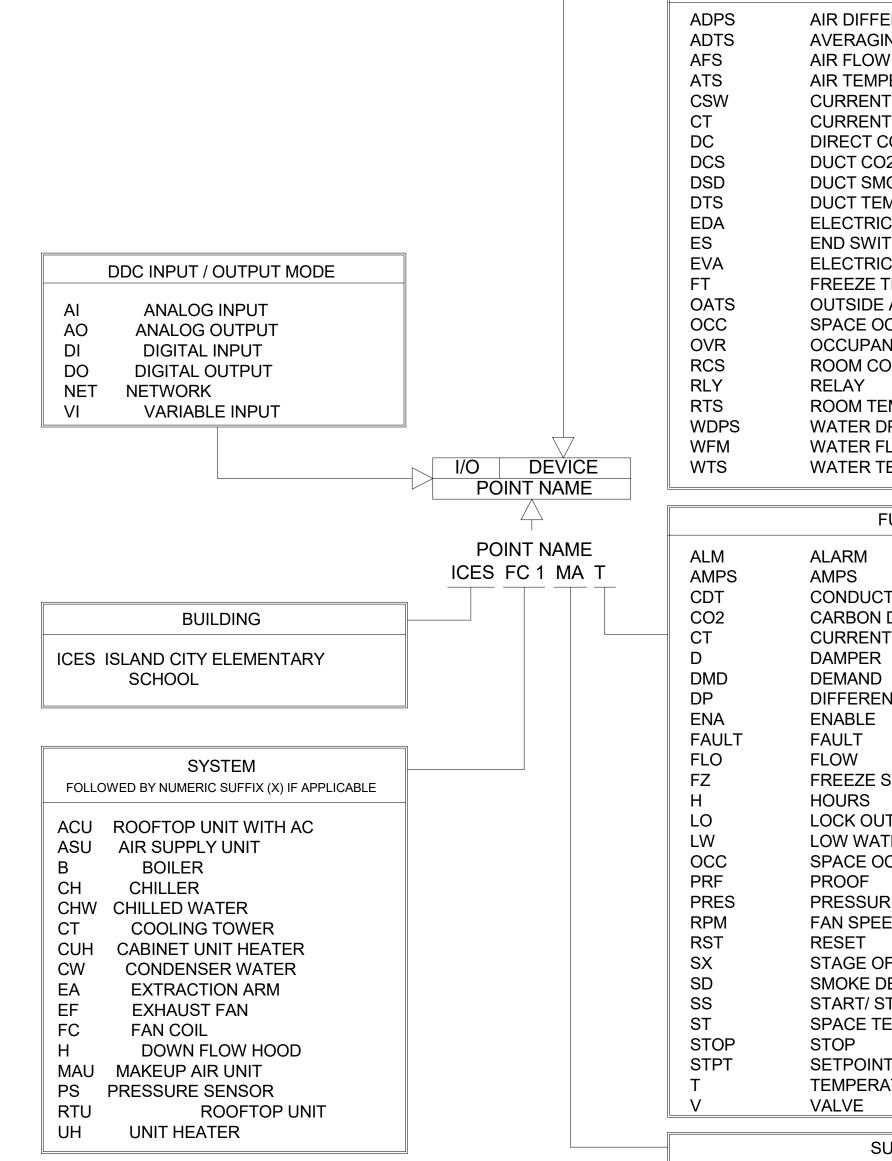
C. FOR NON-VFD APPLICATIONS, ADJUST THE ON / OFF LEVEL TO REFLECT UNIT OPERATION. SET THE LEVEL SUCH THAT LOSS OF FAN BELT, PUMP COUPLING, OR FREEWHEELING OF MOTOR WILL INDICATE OFF CONDITION. 6. UNIT PROOF ALARMS: ANY DISCREPANCY BETWEEN THE COMMANDED STATE OF A DEVICE AND ITS UNIT PROOF POINT WILL INITIATE A PROOF FAILURE ALARM. TO ELIMINATE NUISANCE ALARMS DUE TO COMMUNICATIONS DELAYS, A CONTINUOUS DISCREPANCY IS REQUIRED FOR 5 MINUTES (ADJUSTABLE) BEFORE INITIATING THE ALARM. A UNIT PROOF ALARM WILL IDENTIFY THE DEVICE THAT DOES NOT AGREE WITH ITS PROOF POINT AS WELL AS BOTH THE COMMANDED STATE OF THE

7. ALL ANALOG INPUT POINTS SHALL BE PROVIDED WITH HIGH AND LOW VALUE LIMITS THAT WILL NOTIFY THE OPERATOR INTERFACE OF SENSOR READINGS BEYOND NORMAL LIMITS.

A. THE LIMITS SHALL BE IN EFFECT ONLY WHEN THE ASSOCIATED UNIT IS OPERATING. DURING START-UP OF A SYSTEM, AN ADJUSTABLE TIME DELAY, INITIALLY SET AT 30 MINUTES, SHALL PREVENT THE REPORTING OF OUT OF LIMIT SENSORS UNTIL THE SYSTEM OPERATION IS STABILIZED.

B. TEMPERATURE SENSOR LIMITS SHALL BE INITIALLY SET TO THE FOLLOWING TABLE UNLESS SPECIFIED OTHERWISE OR SYSTEM CHARACTERISTICS OF THE SENSOR LOCATION REQUIRE DIFFERENT VALUES:

Sensor Type	Low Value	High Value
Duct Sensor	40	140
Room Temperature Sensor	67	82
Heating Water Sensors	60	220
Chilled Water Sensors	40	65



A.THE SEQUENCES OF OPERATION FOR THE MECHANICAL EQUIPMENT ARE OUTPUT OBJECT ORIENTED. THEY ARE GROUPED. FIRST ACCORDING TO TYPE OF UNIT, THEN LISTED BY THE PHYSICAL OUTPUT POINTS CONTROLLING THAT UNIT. LISTED AFTER EACH OUTPUT ARE THE SEQUENCES THAT OPERATE THAT OUTPUT IN THE ORDER OF PRIORITY. ITEMS LISTED FIRST TAKE PRECEDENCE OVER SUBSEQUENT ITEMS. FOR EXAMPLE, WHEN REFERENCING THE SUPPLY FAN START/STOP OF A UNIT. THE FIRE ALARM IS LISTED AHEAD OF THE SCHEDULE MODE SINCE IT TAKES PRECEDENCE. IF A FIRE ALARM INPUT IS ACTIVATED REQUIRING A SUPPLY FAN TO STOP, THE OUTPUT IS STOPPED AND ALL FURTHER ITEMS OF CONTROL BELOW AND OF A LOWER

B. OFTEN MODES ARE THE BASIS FOR ACTIVATION OF AN OUTPUT. MODES DEFINE A SPECIAL OPERATIONAL CONDITION THAT THE OVERALL SYSTEM HAS ACTIVE (SUCH AS FIRE ALARM MODE). MODES ARE GLOBAL IN NATURE AND THEIR SEQUENCE OF ACTIVATION IS DEFINED SEPARATELY. 9. WHERE INDICATED ON THE FLOOR PLAN DRAWINGS, MULTIPLE SPACE SENSORS SHALL BE AVERAGED TO DETERMINE THE

UNIT SHALL STOP WHEN ITS SPACE TEMPERATURE IS LESS THAN THE UNOCCUPIED COOLING SETPOINT MINUS 5°F (USER ADJUSTABLE).

10. CONTROL ACTION BASED ON VALVES OR DAMPERS AT 0% OR 100% MAY NEED TO BE ADJUSTED IF MINIMUM ACTUATOR TRAVEL LIMITS OR OTHER SYSTEM LIMITATIONS PREVENT THE DEVICE FROM RELIABLY ATTAINING 0% OR 100%. 0% AND 100% POSITIONS REPRESENT THEORETICAL VALUES FOR THE CONTROL SEQUENCE. DEVIATION FROM THESE VALUES SHALL BE DOCUMENTED AND EXPLAINED ON THE GRAPHICS DISPLAY SO THAT AN OPERATOR CAN TROUBLESHOOT THE SYSTEM WITHOUT REFERENCE TO ADDITIONAL DOCUMENTS.

11. PUMP AND FANS WITH VFDS SHALL RAMP SLOWLY USING A 120 SECOND FULL SCALE RAMP UNLESS INDICATED OTHERWISE OR REQUIRED FOR PROPER SEQUENCE OPERATION. PUMPS SHALL RAMP DOWN ON SHUT OFF TO PREVENT WATER HAMMER. FANS SHALL SHUT OFF WITHOUT RAMP DOWN ON FAN STOP.

12. STAGE VALVING AND PUMPING TO PREVENT DEADHEADING AT THE PUMPS. ALWAYS OPEN A NEW CIRCUIT BEFORE CLOSING ALL EXISTING CIRCUITS. ALWAYS OPEN A CIRCUIT BEFORE STARTING A PUMP.

13. STAGE EQUIPMENT WITH VALVING, DAMPERS, FANS, AND PUMPS SO THAT IT STARTS AFTER AIR OR WATER LOOPS HAVE ATTAINED MINIMUM FLOW VALUES AND STOP EQUIPMENT BEFORE SHUTTING DOWN FLOW.

14. SHUTDOWN OF AN INDIVIDUAL PIECE OF EQUIPMENT DUE TO ANY ALARM, FAILURE, OR EQUIPMENT PROTECTION MODE SHALL CREATE AND RECORD AN ALARM THAT IDENTIFIES THE AFFECTED UNIT AND REASON FOR STOPPAGE. INDIVIDUAL EQUIPMENT ALARMS SHALL NOT BE DISPLAYED OR RECORDED FOR STOPPAGE DUE TO SYSTEM WIDE ALARMS UNLESS THE EQUIPMENT INITIATED THE ALARM.

1. A CALL FOR HEAT IS CREATED IF AT LEAST 20 MINUTES (USER ADJUSTABLE) HAS PASSED SINCE THE PREVIOUS CALL FOR HEAT WAS CANCELED AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE HEAT LOCK OUT TEMPERATURE (HLT), 65°F

2. A CALL FOR HEAT IS CANCELED IF AT LEAST 15 MINUTES (USER ADJUSTABLE) HAS PASSED SINCE THE CALL FOR HEAT WAS INITIATED AND OUTSIDE AIR TEMPERATURE IS GREATER THAN HLT +5°F (USER ADJUSTABLE).

1. DURING UNOCCUPIED PERIODS, UNOCCUPIED LOW LIMIT OPERATION SHALL BE TRIGGERED BY A SPACE TEMPERATURE

THAT INDICATES LESS THAN THE UNOCCUPIED HEATING SETPOINT, 55°F (USER ADJUSTABLE ZONE BY ZONE) 2. DURING UNOCCUPIED LOW LIMIT OPERATION, ALL UNITS WITH INDICATED SPACE TEMPERATURES LESS THAN THEIR UNOCCUPIED HEATING SETPOINT WILL START AND RUN. 3. DURING UNOCCUPIED LOW LIMIT OPERATION, EACH RUNNING UNIT SHALL STOP WHEN ITS SPACE TEMPERATURE IS GREATER THAN THE UNOCCUPIED HEATING SETPOINT PLUS 5°F (USER ADJUSTABLE).

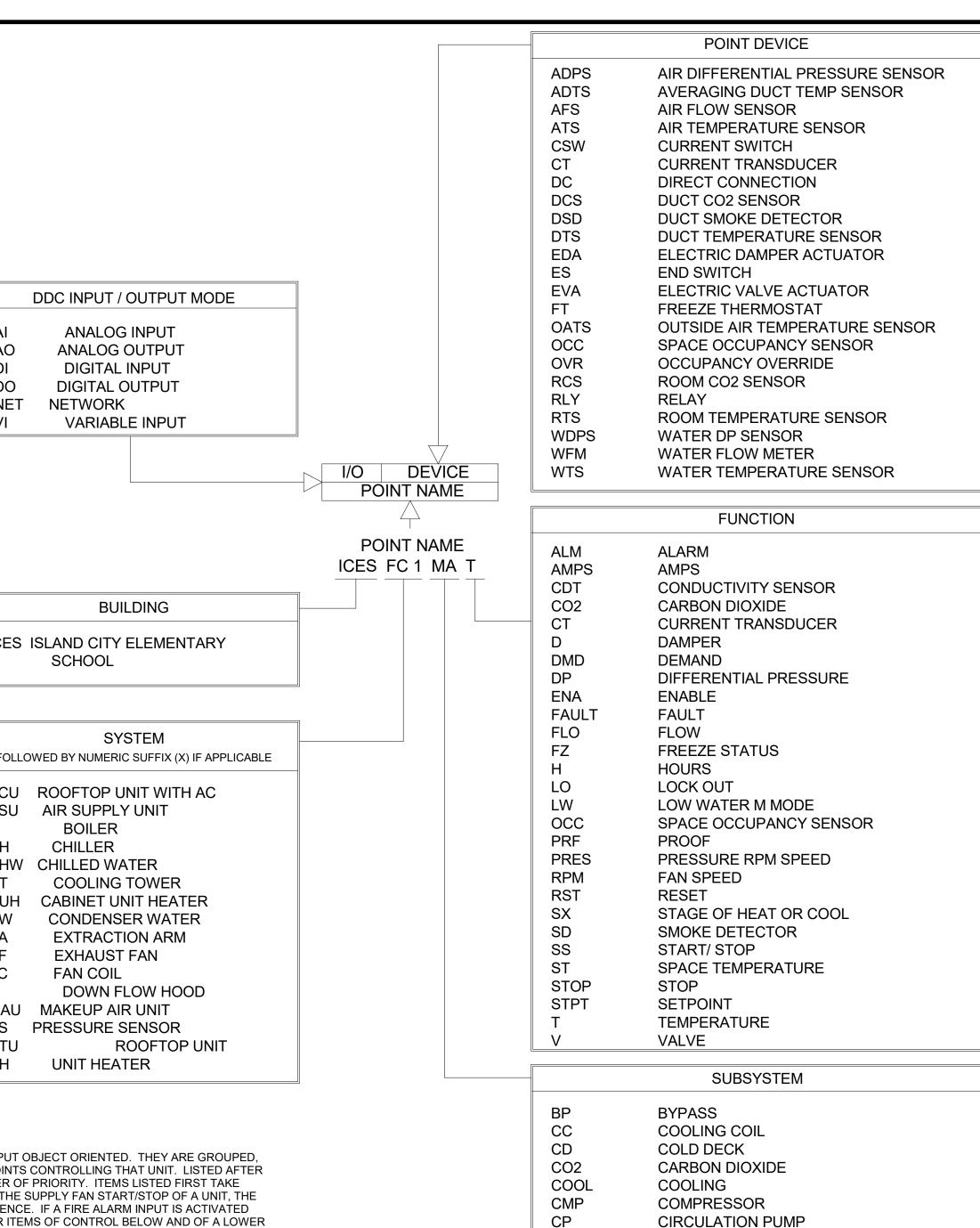
UNOCCUPIED HIGH LIMIT OPERATION:

1. DURING UNOCCUPIED PERIODS, UNOCCUPIED HIGH LIMIT OPERATION SHALL BE TRIGGERED BY A SPACE TEMPERATURE THAT INDICATES GREATER THAN THE UNOCCUPIED COOLING SETPOINT 85□ F (USER ADJUSTABLE AT ZONE BY ZONE). 2. DURING UNOCCUPIED HIGH LIMIT OPERATION, ALL UNITS WITH INDICATED SPACE TEMPERATURES GREATER THAN THEIR UNOCCUPIED COOLING SETPOINT WILL START AND RUN.

3. DURING UNOCCUPIED HIGH LIMIT OPERATION, EACH RUNNING UNIT SHALL STOP WHEN ITS SPACE TEMPERATURE IS LESS THAN THE UNOCCUPIED COOLING SETPOINT MINUS 5°F (USER ADJUSTABLE).

OPTIMAL START/STOP

1. THE BUILDING AUTOMATION SYSTEM SHALL CALCULATE OPTIMAL START AND STOP TIMES BASED ON HISTORICAL SYSTEM PERFORMANCE AND FORECASTED TEMPERATURES OR TEMPERATURE EXTREMES OF THE PREVIOUS DAY.



CW

DC

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EC

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EW

EWBP

FLO

FLT

FAN

HEAT

HC

HD

HW

OA

PH

PX

RA

RFG

RW

SSP

SW

SUMP

EDH

CHILLED WATER

DUST COLLECTOR

ELECTRIC DUCT HEAT

ENERGY WHEEL BYPASS

THERMOSTAT FAN CONTROL

EXHAUST AIR

ECONOMIZER

EXHAUST FAN

EFFECTIVE

FAN

GAS

FLOW

FILTER

HOOD

HEATING

HOT DECK

ISOLATION

INTAKE AIR MIXED AIR

OUTSIDE AIR

RETURN AIR RETURN FAN

REFRIGERANT

RETURN WATER

SUPPLY WATER **THERMOSTAT**

SOLIDS SEPARATOR

ROOF HEAD

SUPPLY AIR

SUPPLY FAN

RELIEF AIR

ROOM

SUMP

PRE HEAT

PUMP X

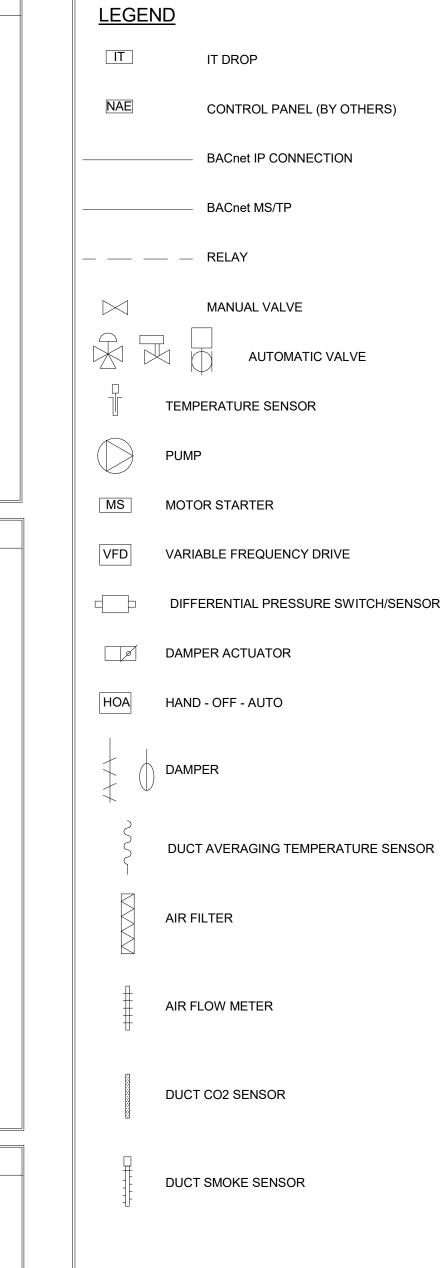
HEATING COIL

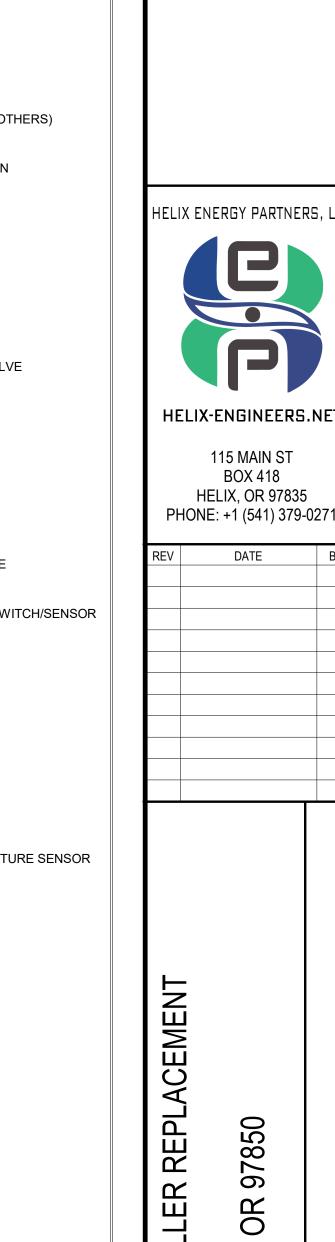
HEATING WATER

END OF LINE

ENERGY WHEEL

DUCT





 ∞ 0 0 RAND C Ш ENO \leq 600

115 MAIN ST

BOX 418

HELIX, OR 97835

DATE

PROJECT NO. HEP-22-01 DESIGNED BY MAL DRAWN BY ISSUE DATE 06 JUN 2022 CHECKED BY

SHEET NO.

90% CD REVIEW SE

PHASE

CONTROLS SEQUENCE OF OPERATIONS:

NETWORK CONNECTION DI CSW UCS CHW P2 PRF NETWORK CONNECTION CHWP-2 DO RLY
UCS CHW CH ENA
AI CT
UCS CHW CH AMPS DI CSW UCS CHW P1 PRF TO SYSTEM CHWP-1 SUCTION AI WDPS TUCS CHW CP DP AO EVA UCS CHW BP V LIQUID 1 CND-1 LIQUID 2 **─** FROM SYSTEM EVP-1 AI WTS USC CHW RW T

CHILLED WATER SYSTEM CONTROL DIAGRAM

M6.02 NOT TO SCALE

BAS		POIN	IT NAME			POIN	IT	
DESCRIPTION	bldg	system	sub-sys	function	Device	Туре	Connection	INSTRUCTIONS
								Connect to VFD with appropriate network connection to ensure all required points operate from
PROVIDE AND INSTALL VFD WITH Supply Pump Variable Frequ				MOTORS	GREATE	ER THAN	3HP	DDC system. Map all points requested by Owner. Minimum required points for control listed points list:
Supply Pump start/stop	UCS		CHWP	SS	None	DO	NET	Connect to start/stop VFD.
Supply Pump speed	UCS		CHWP	RPM	None	AO	NET	Connect to start/stop VI D. Connect to control VFD speed.
	UCS		CHWP	AMPS	None	Al	NET	Connect to indicate VFD amps.
Supply Pump amps	UCS		CHWP	FAULT	None	DI	NET	Connect to indicate vi b amps. Connect to indicate fault condition of drive.
Supply Pump fault	UCS		P1	PRF	CSW	DI	Direct	Connect to indicate Pump operation.
Pump proof	003	CHIV	FI	FKI	COW	_ DI	Direct	Connect to indicate Fullip operation.
Chiller Control								
Chiller Enable/Disable	UCS		CH	ENA	RLY	Al	Direct	Connect to enable/disable chiller
Chiller amps	UCS		CH	AMPS	CT	Al	Direct	Connect to indicate chiller amps.
Chiller BACNet - Provide all ap	propri	iate BA	Cnet po	oints				
The following points shall be pro-								
Active setpoint	UCS		CHW	Т	None	Al	NET	Program to display the chilled water setpoint
Actual Capacity	UCS	CHW	CAP	•	None	Al	NET	Program to display chiller capacity.
Capacity Limit	UCS		CAP	LM	None	Al	NET	Program to display chiller capacity limit.
Capacity Limit Setpoint	UCS		CAP	STPT	None	AO	NET	Program to set the chiller capacity limit.
Chiller Enable	UCS			ENA	None	BV	NET	Program to set the chiller status.
Chiller Limited		CHW		LIM	None	BI	NET	Program to display if chiller capacity is limited.
Chiller Local/Remote	UCS			LR	None	BI	NET	Program to display if chiller is under local or remote control.
Chiller Status BACnet	UCS			STAT	None	MSI	NET	Program to display chiller run status.
Compressor x Current	UCS		CMPx	AMPS	None	Al	NET	Program to display compressor amperage.
Compressor x Discharge Temperatur	UCS		CMPx	DT	None	Al	NET	Program to display compressor discharge temperature.
Compressor x Percent RLA	UCS		CMPx	RLA	None	Al	NET	Program to display compressor current.
Compressor x Power	UCS		CMPx	P	None	Al	NET	Program to display compressor power.
Compressor x Run Hours	UCS		CMPx	<u>.</u> Н	None	Al	NET	Program to display compressor run hours.
Compressor x Select	UCS		CMP		None	MSO	NET	Program to select compressor to display.
Compressor x Starts	UCS		CMPx	S	None	Al	NET	Program to display compressor starts.
Compressor x Suction Line Tempera			CMPx		None	Al	NET	Program to display suction line temperature (compressor inlet temperature).
Compressor x Voltage	UCS		CMPx	VOLT	None	Al	NET	Program to display compressor voltage.
Condenser Entering Water Temperat			CW	IT	None	Al	NET	Program to display temperature (inlet temperature).
Condenser Flow Switch Status	UCS		CW	FLOSW	None	BI	NET	Program to display condenser water minimum flow status.
Condenser Leaving Water Temperatu			CW	DT	None	Al	NET	Program to display the condenser water discharge temperature.
Condenser Refrigerant Pressure	UCS		CND	PRES	None	Al	NET	Program to display the condenser refrigerant pressure.
Condenser Saturated Refrigerant Ten			CND	T	None	Al	NET	Program to display the condenser saturated refrigerant temperature.
Condenser Water Flow Rate	UCS		CW	FLO	None	Al	NET	Program to display the condenser water flow.
Cool Setpoint	UCS		CHW	STPT	None	AO	NET	Program to set the evaporator water discharge temperature (chilled water supply setpoint).
Evaporator Entering Water Temperate			CHW	IT	None	Al	NET	Program to display the evaporator water inlet temperature (chilled water return temp).
Evaporator Flow Switch Status	UCS		CHW	FLOSW	None	BI	NET	Program to display the evaporator water minimum flow status.
Evaporator Leaving Water Temperatu			CHW	DT	None	Al	NET	Program to display the evaporator water discharge temperature (chilled water supply temp).
Evaporator Leaving Water Temp for O			CMP	DWT	None	Al	NET	Program to display the evaporator discharge temperature for compressor
Evaporator Refrigerant Pressure	UCS		EVP	PRES	None	Al	NET	Program to display the evaporator refrigerant pressure.
Evaporator Saturated Refrigerant Ten			EVP	Т	None	Al	NET	Program to display the evaporator saturated refrigerant temperature.
Evaporator Water Flow Rate	UCS		EVP	FLO	None	Al	NET	Program to display the evaporator water flow.
Liquid Line Refrigerant Pressure	UCS		LRFG	PRES	None	Al	NET	Program to display the liquid refrigerant temperature.
Liquid Line Refrigerant Temperature	UCS		LRFG	Т	None	Al	NET	Program to display the liquid refrigerant temperature.
Warning Alarms, Multi-state Input Ob			WRN	ALM	None	MSI	NET	Program to display warning code and description
Problem Alarms, Multi-state Input Ob			PRB	ALM	None	MSI	NET	Program to display problem code and description
Fault Alarms, Multi-state Input Object			FALT	ALM	None	MSI	NET	Program to display fault code and description
BACnet Clear Alarm	UCS		CLR	ALM	None	BV	NET	Program to clear alarms
Control Valves / Dampers / E	auin	ment						
Bypass Valve		CHW	BP	V	EVA	AO	Direct	Install and connect to modulate valve.
-) -	550	5.111		•			Direct	

DP WDPS AI

WTS AI

Al

Direct Install and connect to indicate differential pressure between supply and return.

Direct Install and connect to indicate temperature.

Direct Install and connect to indicate temperature.

Direct Install and connect to indicate temperature.

	DDC EQUIPMENT LIST -	Union County Sheriff's Office	- Chilled Water System
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	Equipment	Equipment	New/		
quipment Type	Designation	Model	Existing	Location	Notes
ondenser & Evaporator	CND/EVP-1		New	Roof/Basement	

Sensors

Chilled Water Supply Temp

Chilled Water Return Temp

Chilled Water DP at Central Plant UCS CHW

Chiller Mixed Return Water Temp UCS CHW MRW

UCS CHW SW

UCS CHW RW

HELIX ENERGY PARTNERS, LLO



HELIX-ENGINEERS.NET 115 MAIN ST BOX 418

HELIX, OR 97835 PHONE: +1 (541) 379-0271 DATE

ONTROL DIAGRAM

EPLACEMENT

PROJECT NO. HEP-22-01

DESIGNED BY MAL DRAWN BY YD ISSUE DATE 06 JUN 2022

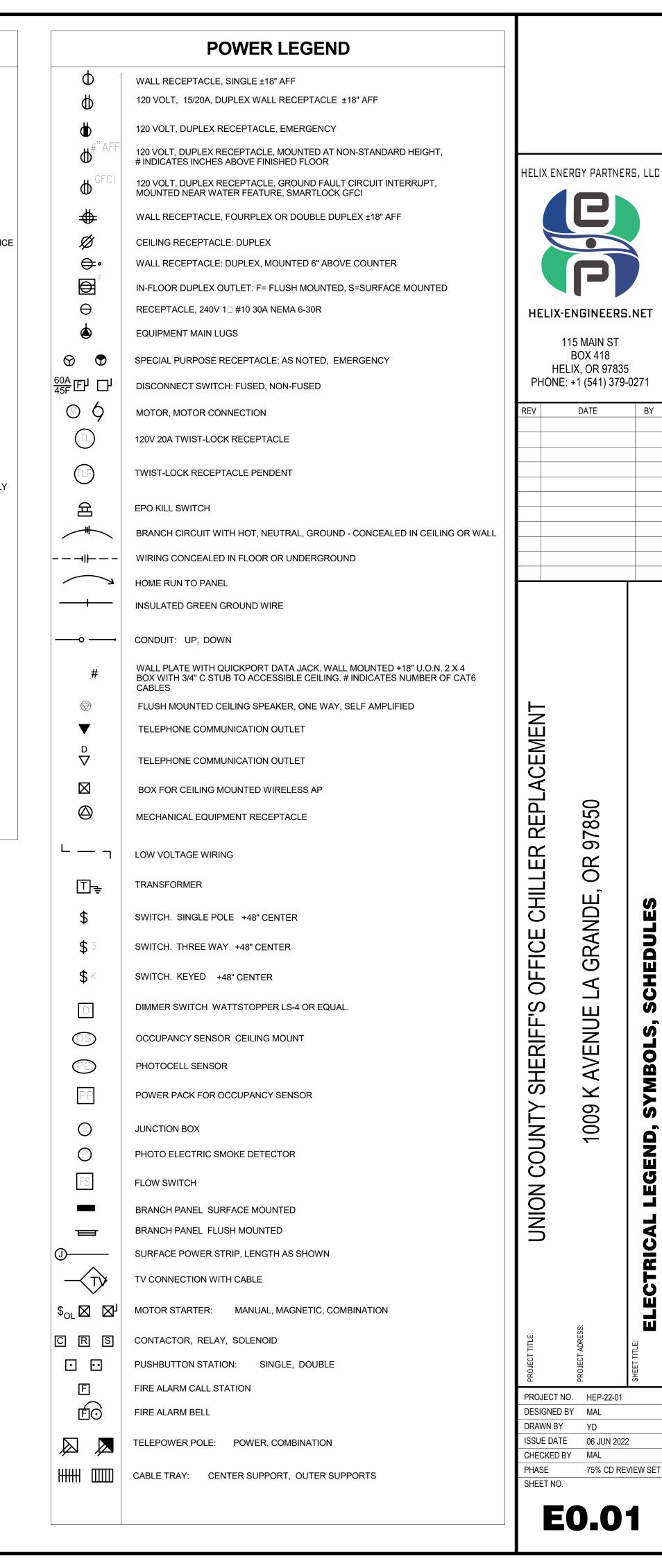
CHECKED BY MAL PHASE SHEET NO.

M6.02

FEEDER SCHEDULE			
FEEDER	CONDUIT & WIRE SIZE		
30B	1/2" 4#10		
40A	3/4" 3#8		
40B	3/4" 4#8		
60B	1" 4#6		
70B	1-1/4" 4#4		
100A	1-1/4" 3#3		
100B	1-1/4" 4#3		
150B	2" 4#1/0		
150D	2" 4#1/0, 1#8 GRD		
150E	2" 3#1/0, 1#3		
175B	2" 4#2/0		
200B	2" 4#3/0		
400D	3-1/2" 4#500MCM, 1#3 GRD		
500A	(2) 2-1/2" 3#250MCM		
600A	(2) 2-1/2" 3#350MCM		
600B	(2) 3" 4#350MCM		
600D	(2) 3-1/2" 4#350MCM, 1#1 GRD		
1200E	(4) 3" 3#350, 1#1/0		
1600B	(3) 4" 8#400MCM THHN		

	MECHANICAL EQUIPMENT LIST				
Nº	DESCRIPTION	VOLTAGE	PHASE	KVA	MCA
1	CND-1	480	3	98.93	119

Г	ABBRE		10
AFF	ABOVE FINISHED FLOOR	KVA KVAR	KILOVOLT AMP KILOVAOLT AMPS REACTIVE
A	AMPERE (AMP)	LA	LIGHTING ARRESTOR
AL	ALUMINUM	LV	LOW VOLTAGE
ARCH	ARCHITECTURAL/ ARCHITECT	MATV MCA	MASTER ANTENNA TELEVISION MINIMUM CIRCUIT AMPS
ATS	AUTOMATIC TRANSFER SWITCH	MCB	MAIN CIRCUIT BREAKER
BOF	BOTTOM OF FIXTURE	MCC MDP	MOTOR CONTROL CENTER MAIN DISTRIBUTION PANEL
СВ	CIRCUIT BREAKER	MECH	MECHANICAL
С	CONDUIT	MH MLO	METAL HALIDE MAIN LUGS ONLY
CCTV	CLOSED CIRCUIT TELEVISION	MV	MERCURY VAPOR
СКТ	CIRCUIT	MTS	MANUAL TRANSFER SWITCH
CLG	CEILING	(N) (NL)	NEW NEW LOCATION OF EXISTING D
СТ	CURRENT TRANSFORMER	NIC	NOT IN CONTRACT
CU	COPPER	PA PE	PUBLIC ADDRESS PHOTOELECTRIC CELL
DN (E)	DOWN EXISTING TO REMAIN	PF	POWER FACTOR
(=)	EXISTING TO REIVING	PNL PCV	PANEL POLYVINYL CHLORIDE CONDU
ECH	ELECTRIC HEATER	PWR	POWER POWER
EF	EXHAUST FAN	R	REMOVE (DEMOLISH) RELOCATE EXISTING DEVICE
EMERG	EMERGENCY	(RL) SDP	SUB-DISTRIBUTION PANEL
EMT	ELECTRIC METALLIC TUBING	SF	SUPPLY FAN
EP	EXPLOSION PROOF	STR SV	STARTER SOLENOID VALVE
EPO	EMERGENCY POWER OFF	SW	SWITCH
EWC	ELECTRIC WATER COOLER	TD TP	TIME DELAY TAMPERPROOF
FA	FIRE ALARM	TTB	TELEPHONE TERMINAL BOARD
FC	FAN COIL	TTC TV	TELEPHONE TERMINAL CABINI TELEVISION
FAP	FIRE ALARM PANEL	TYP	TYPICAL
FANN	FIRE ALARM ANNUNCIATOR	UG UNO	UNDERGROUND UNLESS OTHERWISE NOTED
FLA	FULL LOAD AMPS	UPS	UNINTERRUPTIBLE POWER SL
FLUOR	FLUORESCENT	V VA	VOLTAGE VOLT AMPERES
FCIC	FURNISHED BY CONTACTOR	VP	VAPOR PROOF
	INSTALLED BY CONTRACTOR	W WP	WATTS WEATHERPROOF
FOIC	FURNISHED BY OWNER	XFMR	TRANSFORMER
	INSTALLED BY CONTRACTOR	XFSW	TRANSFER SWITCH
FOIO	FURNISHED BY OWNER		
	INSTALLED BY OWNER		
GFP	GROUND FAULT PROTECTION		
GFI	GROUND FAULT INTERRUPTER		
GRC	GALVANIZED RIGID CONDUIT		
GRD	GROUND		
HP	HORSEPOWER		
HPS	HIGH PRESSURE SODIUM		
HV	HIGH VOLTAGE		
HZ	HERTZ		
IG	ISOLATED GROUND		
INC	INCANDESCENT		
JB	JUNCTION BOX		
KW	KILOWATT		
KWH	KILOWATT HOUR		
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- ALL WORK TO MEET NATIONAL ELECTRIC CODE. MAINTAIN ACCESSIBILITY OF EQUIPMENT AND JUNCTION BOXES AS PER NEC AND TO OWNERS

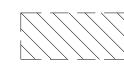
 SATISFACTION
- 2. THE WORD "PROVIDE" WHEN USED ON THESE ELECTRICAL PLANS IS INTENDED TO MEAN THAT THE ELECTRICALCONTRACTOR IS TO FURNISH AND INSTALL THE RELATED WORK DESCRIBED. COORDINATE WITH OTHER TRADES AS NECESSARY DURING ALL PHASES OF WORK.
- 3. MOUNT ALL DUPLEX RECEPTACLES AND COMMUNICATION OUTLETS UP +18" UNLESS OTHERWISE NOTED.
- MATCH ALL DEVICE PLATES.
 PROVIDE SEPARATE NEUTRAL WITH EACH RECEPTACLE CIRCUIT. CARRY
- GROUND WIRE WITH ALL CIRCUITS.
 6. UNLESS OTHERWISE NOTED, INTERIOR CONDUIT SHALL BE MIN. 1/2" EMT.
- CONDUCTORS SHALL BE #12 THWN, 600V,CU.

 7. REUSE EXISTING CIRCUITS AS MUCH AS PRACTICAL. HOME RUNS ARE NOT DETAILED. UNLESS NOTED OTHERWISE, FOLLOW THE BEST ROUTE.
- COORDINATE LOCATIONS WITH OWNER AND OTHER TRADES.

 8. PROVIDE TYPEWRITTEN UPDATED PANEL SCHEDULES TO REFLECT CONNECTED LOAD.
- 9. COORDINATE CONDUIT, JUNCTION BOXES, SUPPORTING EQUIPMENT, ETC. AFFECTING NORMAL OPERATING AND MAINTENANCE ACTIVITES RELATED TO MECHANICAL EQUIPMENT, PIPING, VALVES, ACCESSORIES, ETC.
- 10. ALL HOLES REMAINING DUE TO DEMOLITION TO BEPATCHED AND FINISHED TO MATCH ADJACENT CEILING, WALL FLOOR AND ROOF SURFACES AS REQUIRED.
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- 12. SEE DRAWING M0.01 FOR ADDITIONAL NOTES.

DEMOLITION NOTES

1 EXISTING AIR HANDLER, BOOSTER FAN, AND ORIGINAL MAIN FAN WILL BE REMOVED. DISCONNECT POWER, REMOVE BREAKERS FROM PANEL, AND MARK AS EMPTY.



DENOTES DEMOLITION AREAS

KEYED NOTES

- 1 PROVIDE CIRCUIT, CONDUIT, AND CONDUCTORS TO NEW EQUIPMENT.
- 2 UPGRADE MAIN SERVICE PANEL LOCATED INSIDEOLD BOILER ROOM.
- 3 UPGRADE (POTENTIALLY) UTILITY TRANSFORMER AND OVERHEAD LINES.
- 4 PROVIDE NEW CONDUIT AND CONDUCTORS FROM MAIN PANEL.

HELIX ENERGY PARTNERS, LLO



HELIX-ENGINEERS.NET

115 MAIN ST BOX 418 HELIX, OR 97835 PHONE: +1 (541) 379-0271

REV	DATE	BY

HILLER REPLACEMENT E, OR 97850

1009 K AVENUE LA GRANDE, OR

ECTRICAL - SITE PLAN

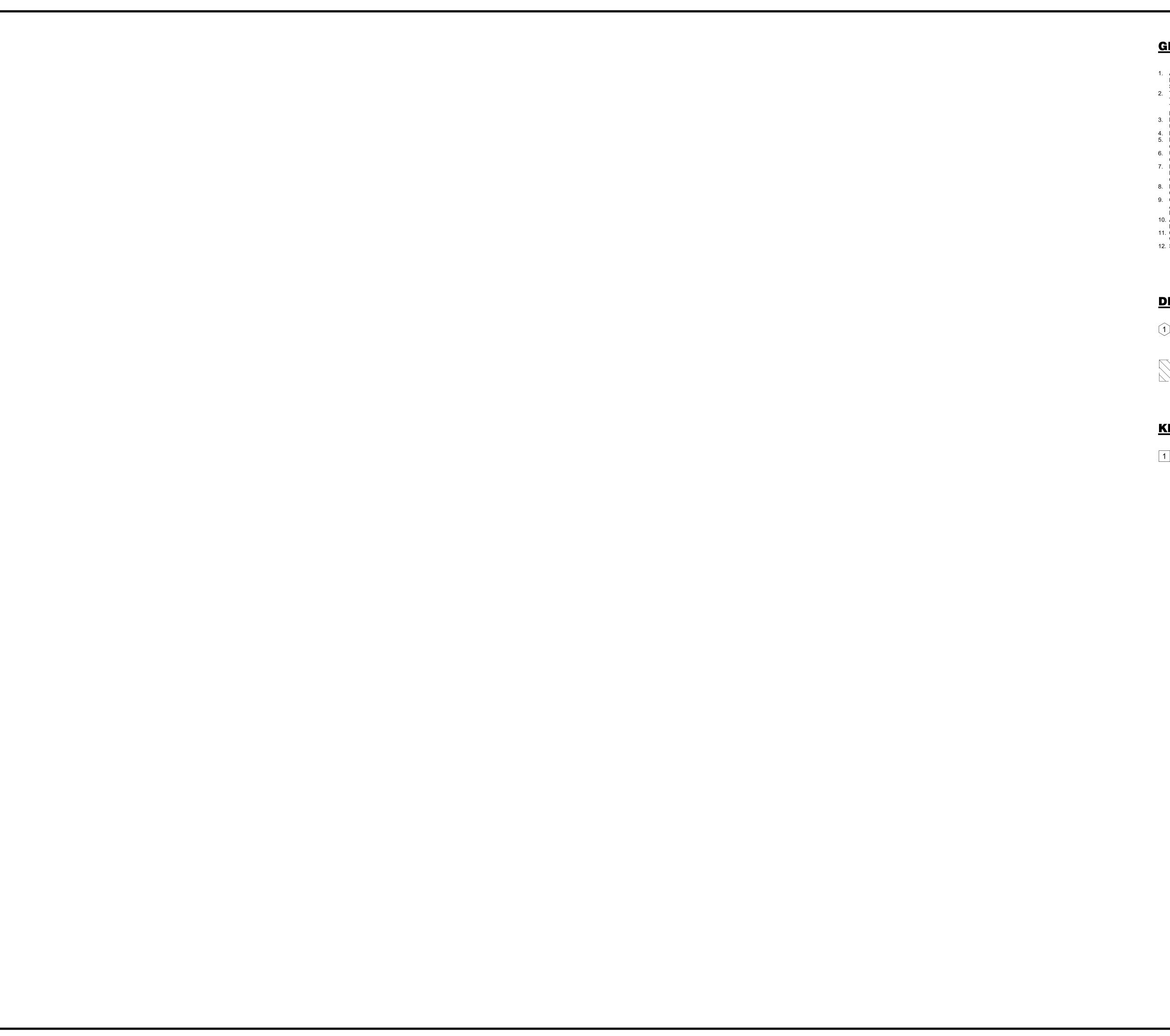
IO. HEP-22-0

ROJECT NO. HEP-22-0 ESIGNED BY MAL RAWN BY YD

ISSUE DATE 06 JUN 2022
CHECKED BY MAL
PHASE 90% CD REVIE
SHEET NO.

10.

E1.01



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HELIX ENERGY PARTNERS, LLC



HELIX-ENGINEERS.NET

115 MAIN ST BOX 418 HELIX, OR 97835 PHONE: +1 (541) 379-0271

DATE

EPLACEMENT 978 UNION COUNTY SHERIFF'S OFFICE CHILLER RE GRANDE,

1009 K AVENUE LA

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