

MECHANICAL ABBREVIATIONS

(E)	EXISTING	DHW	DOMESTIC HOT WATER	INSUL	INSULATION	RH	RELATIVE HUMIDITY
(R)	RELOCATED	DN	DOWN	KW	KILOWATT	RPM	REVOLUTIONS PER MINUTE
(D)	DEMOLISHED	DWG	DRAWING	LAT	LEAVING AIR TEMPERATURE	RPZ	REDUCED PRESSURE ZONE
ACH	AIR CHANGES PER HOUR	EAT	ENTERING AIR TEMPERATURE	LBS	POUNDS	SCHED	SCHEDULE
ADJ	ADJACENT, ADJUSTABLE	ECO	EXTERIOR CLEANOUT	LWT	LEAVING WATER TEMPERATURE	SENS	SENSIBLE
AFF	ABOVE FINISHED FLOOR	EER	ENERGY EFFICIENCY RATIO	MAX	MAXIMUM	SEER	SEASONAL ENERGY EFFICIENCY RATIO
AHJ	AUTHORITY HAVING JURISDICTION	EFF	EFFICIENCY	MBH	THOUSAND BTU'S PER HOUR	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
ALT	ALTERNATE	EQUIP	EQUIPMENT	MECH	MECHANICAL	SPEC	SPECIFICATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	ESP	EXTERNAL STATIC PRESSURE	MC	MECHANICAL CONTRACTOR	SQFT, FT ²	SQUARE FEET
APPROX	APPROXIMATELY	EWT	ENTERING WATER TEMPERATURE	MCA	MINIMUM CIRCUIT AMPACITY	STD	STANDARD
ARCH	ARCHITECT, ARCHITECTURE	EXIST	EXISTING	MFR	MANUFACTURER	SURF	SURFACE
ASHRAE	AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS	F	FAHRENHEIT	MIN	MINIMUM	SUSP	SUSPENDED
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	FDC	FIRE DEPARTMENT CONNECTION	MISC	MISCELLANEOUS	TD	TEMPERATURE DIFFERENTIAL
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS	FPM	FEET PER MINUTE	MOP	MAXIMUM OVER CURRENT PROTECTION	TEMP	TEMPERATURE
Avg	AVERAGE	FSC	FOOD SERVICE CONTRACTOR	MTL	METAL	TJS	THROUGH JOIST SPACE
BAS	BUILDING AUTOMATION SYSTEM	FT	FOOT, FEET	NC	NORMALLY CLOSED	TSP	TOTAL STATIC PRESSURE
BFP	BACKFLOW PREVENTER	FUT	FUTURE	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	TYP	TYPICAL
BJS	BELLOW JOIST SPACE	GAL	GALLON(S)	NO	NORMALLY OPEN	UF	UNDER FLOOR
BLDG	BUILDING	GALV	GALVANIZED	NTS	NOT TO SCALE	UL	UNDERWRITERS LABORATORIES
BTU	BRITISH THERMAL UNITS	GC	GENERAL CONTRACTOR	OPNG	OPENING	UMC	UNIFORM MECHANICAL CODE
BTUH	BRITISH THERMAL UNITS PER HOUR	GPH	GALLONS PER HOUR	PC	PLUMBING CONTRACTOR	UPC	UNIFORM PLUMBING CODE
CAP	CAPACITY	GPM	GALLONS PER MINUTE	PD	PRESSURE DROP	W	WATTS
CFM	CUBIC FEET PER MINUTE	HORIZ	HORIZONTAL	PH, Ø	PHASE	WB	WET BULB
CLG	COOLING	HP	HORSEPOWER	PIV	POST INDICATOR VALVE	WC	WATER COLUMN
CUFT	CUBIC FEET	HTG	HEATING	PLBG	PLUMBING	WG	WATER GAUGE
DB	DRY BULB	HVAC	HEATING, VENTILATION, & AIR CONDITIONING	PRV	PRESSURE REDUCING VALVE	WHT	WEIGHT
DCW	DOMESTIC COLD WATER	IBC	INTERNATIONAL BUILDING CODE	PSI	POUNDS PER SQUARE INCH	WPD	WATER PRESSURE DROP
DECO	DOUBLE EXTERIOR CLEANOUT	IECC	INTERNATIONAL ENERGY CONSERVATION CODE	PSIG	POUNDS PER SQUARE INCH, GAUGE	WSFU	WATER SUPPLY FIXTURE UNITS
DEG, °	DEGREE(S)	IFC	INTERNATIONAL FIRE CODE	QTY	QUANTITY	V	VOLT
DEMO	DEMOLITION	IJS	IN JOIST SPACE	RCP	REFLECTED CEILING PLAN	VERT	VERTICAL
DFU	DRAINAGE FIXTURE UNITS	IN	INCH(ES)	RECIRC	RECIRCULATION	VFD	VARIABLE FREQUENCY DRIVE
DIA, Ø	DIAMETER	IMC	INTERNATIONAL MECHANICAL CODE	REQD	REQUIRED	VTR	VENT THRU ROOF
		IPC	INTERNATIONAL PLUMBING CODE	REV	REVISION		

M.O.O

BEATRICE STATE DEVELOPMENTAL CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
3000 LINCOLN STREET
MECHANICAL ABBREVIATIONS AND SYMBOLS

PLUMBING SYMBOLS

	KEY NOTE	— SAN — SANITARY SEWER PIPING	— HD — HUMIDITY DRAIN PIPING	— N — CHECK VALVE
	CROSS SECTION INDICATOR	— ST — STORM SEWER PIPING	— HWS — HOT WATER HEATING SUPPLY PIPING	— ↓ — STRAINER
	D = DETAIL DRAWING	— DOMESTIC COLD WATER PIPING	— HWR — HOT WATER HEATING RETURN PIPING	— O — VALVE IN VERTICAL PIPING
	P = PARTIAL DRAWING	— DOMESTIC HOT WATER PIPING	— CDS — CONDENSER WATER SUPPLY PIPING	— + — WALL HYDRANT
	R = RISER DIAGRAM	— DOMESTIC HOT WATER CIRCULATING PIPING	— CDR — CONDENSER WATER RETURN PIPING	— II — FLANGE CONNECTION
	S = CROSS SECTION DRAWING	— FW — FILTERED WATER	— J — WASTE PIPING CONNECTION	— ⊗ — BELOW AND ABOVE GRADE CLEAN OUT
	NEW TO EXISTING CONNECTION	— SW — SOFTENED WATER	— L — WASTE PIPING ELBOW 90°	— ○ — FLOOR DRAIN AND COVER
	EXISTING PIPE ABOVE GRADE	— SCW — SOFTENED COLD WATER	— ○ — WASTE PIPING ELBOWS UP AND DOWN	— X — SINK P-TRAP
	EXISTING PIPE BELOW GRADE	— SHW — SOFTENED HOT WATER	— X — PIPING ELBOWS 45° AND 90°	— ⊖ — BELOW AND ABOVE GRADE P-TRAP
	DEMOLITION HATCH	— BGSWP — BELOW GRADE SANITARY WASTE PIPING	— ○ — PIPING ELBOWS UP AND DOWN	— ○ — ROOF DRAIN (REGULAR AND OVERFLOW)
	— X''(E) —	— AGSWP — ABOVE GRADE SANITARY WASTE PIPING	— + — PIPING TEES UP, DOWN AND STRAIGHT	— + — DOWN SPOUT
	EXISTING PIPE ABOVE GROUND/FLOOR	— V — VENT PIPING	— ⊙ — BALL VALVE	— ⊕ — OBSERVATION POINT FOR TESTING
	EXISTING PIPE BELOW GROUND/FLOOR	— G — GAS PIPING	— ⊙ — GATE VALVE	— P — PRESSURE SENSOR IN PIPING
	WATER SERVICE PIPING	— GV — GAS VENT PIPING	— ⊙ — BUTTERFLY VALVE	— T — TEMPERATURE SENSOR IN PIPING
		— CWS — CHILLED WATER SUPPLY PIPING	— ⊙ — CALIBRATED BALANCE VALVE	X-X EQUIPMENT DESIGNATION
		— CWR — CHILLED WATER RETURN PIPING	— — UNION	



GENERAL PROJECT NOTES

- A. ALL EQUIPMENT SHALL BE PROPERLY ALIGNED, LUBRICATED AND OILED BEFORE START UP AND FINAL ACCEPTANCE BY OWNER.
- B. ALL EQUIPMENT SHALL BE THOROUGHLY CLEANED AND ALL BARE, SCRATCHED OR MARRED AREAS SHALL BE PAINTED WITH FACTORY PAINT OR AN OWNER APPROVED EQUAL.
- C. ANY SPECIAL TOOL NEEDED FOR ASSEMBLY, MAINTENANCE OR ADJUSTMENT OF ANY EQUIPMENT SHALL BE SUPPLIED TO THE OWNER AT NO ADDITIONAL COST.
- D. ALL PIPE AND EQUIPMENT (INSTALLED AND NOT INSTALLED) SHALL BE PROTECTED DURING CONSTRUCTION AND CLEANED BEFORE USE. PIPING SHALL BE COVERED AND HAVE THE ENDS TAPE SHUT WHILE BEING STORED.
- E. ALL ROUND PIPE SHOWN MUST BE HARD PIPE. PIPING RUNNING IN THE WEBBING OF THE JOISTS MUST ALSO BE HARD PIPE.
- F. ALL EQUIPMENT ON THE FLOOR SHALL SIT ON A HOUSE KEEPING PAD OR FLAT BLACK ANGLE IRON SUPPORT FRAME.
- G. ALL PIPING SHALL BE CUT TO LENGTH AND REAMED TO FULL INSIDE DIAMETER WITH THE PROPER TOOLS, SPRINGING OR RUBBING OF PIPES ARE NOT ALLOWED.
- H. CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BIDDING TO SEE SPECIFIC JOB SITE CONDITIONS FOR THIS PROJECT.
- I. ALL DUCT, CONDUIT, AND PIPING CONNECTING TO EQUIPMENT SHALL HAVE FLEXIBLE CONNECTIONS INSTALLED AT CONNECTION TO EQUIPMENT.
- J. ALL PRESSURE AND TEMPERATURE PORTS IN PIPING REQUIRED FOR PROPER BALANCING ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- K. ALL ACCESS PANELS SHALL HAVE ADEQUATE CLEARANCE. THE MINIMUM MANUFACTURER RECOMMENDED CLEARANCE OR 36" CLEARANCE, WHICHEVER IS GREATER MUST BE MAINTAINED FOR ALL EQUIPMENT / VALVING NEEDING ACCESS. CONSULT THE ENGINEER IF THIS IS NOT POSSIBLE.
- L. THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, CITY, STATE AND NATIONAL CODES, LAWS, ACTS AND ORDINANCES AND ALL AUTHORITIES HAVING JURISDICTION, THE OWNERS INSURANCE COMPANY REQUIREMENTS, UTILITY COMPANY REQUIREMENTS, APPLICABLE INDUSTRY STANDARDS OF GOOD PRACTICE AND SAFETY, THE MANUFACTURER'S STRICTEST REQUIREMENTS AND RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.
- M. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, STOP WORK IMMEDIATELY AND INFORM THE OWNER'S REPRESENTATIVE IN WRITING. THE OWNER'S REPRESENTATIVE WILL THEN BE

- N. RESPONSIBLE TO TAKE THE APPROPRIATE ACTIONS.
- O. DRAWINGS ARE LARGELY SCHEMATIC IN NATURE. THOUGH A LOT OF DETAILS MAY BE SHOWN THEY ARE NOT INTENDED TO SHOW EVERY DETAIL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL OTHER TRADES AND EXISTING/SITE CONDITIONS TO PROVIDE A FULLY FUNCTIONAL SYSTEM PER THE INTENT OF DESIGN. ALL REQUIRED PIPING, SUPPORTS AND DUCTS SHALL BE PROVIDED FOR A FULLY FUNCTIONAL SYSTEM PER THE DESIGN INTENT. IF ROUTING IS NOT SHOWN ON THE PLANS, COORDINATE WITH THE ENGINEER PRIOR TO BIDDING.
- P. WHEN ALL WORK IS COMPLETED NO MATERIALS SHALL BE LEFT ON SITE UNLESS SPECIFICALLY REQUESTED BY THE OWNER. ALL MATERIALS TO BE DISPOSED OF PROPERLY.
- Q. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE WITH THE ELECTRICAL CONTRACTOR ON ALL ELECTRICAL REQUIREMENTS FOR THE EQUIPMENT PRIOR TO ORDERING. ALL REQUIREMENT CHANGES SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR / SUPPLIER AT NO ADDITIONAL COST TO THE PROJECT.
- R. IF ANY CONFLICTING INFORMATION IS PROVIDED ON THE DRAWINGS, THE MORE STRINGENT/EXPENSIVE SHOULD BE BID UNLESS A ADDENDUM CAN BE ISSUED IN TIME TO CORRECT THE SITUATION.
- S. IT IS THE RESPONSIBILITY OF THE MANUFACTURER / SUPPLIER TO MAKE SURE ALL UNITS FIT IN THE REQUIRED SPACE INTENDED WITH RECOMMENDED MAINTENANCE AND ACCESS CLEARANCES. ANY CHANGES NEEDED WILL BE THE RESPONSIBILITY OF THE MANUFACTURER AT NO ADDITIONAL COST TO THE PROJECT.
- T. ALL EQUIPMENT WITH ELECTRICAL HARD WIRED CONNECTIONS MUST BE UL LISTED ASSEMBLIES OR THE PROPER FIELD TESTING FOR FIELD RATINGS TO A UL LISTED ASSEMBLY MUST BE INCLUDED WITH DOCUMENTATION PROVIDED TO THE AUTHORITY HAVING JURISDICTION, OWNER AND DESIGN TEAM UPON COMPLETION.
- U. PROVIDE A PREVENTATIVE/ PREDICTIVE MAINTENANCE SCHEDULE IN MICROSOFT WORD FORMAT FOR ALL EQUIPMENT TO OWNER/ ENGINEER AT THE COMPLETION OF THE PROJECT.
- V. ALL SHEETS REQUESTED IN CAD (.DWG) FORMAT SHALL BE PROVIDED AT A CHARGE OF \$25/SHEET (MINIMUM \$250). FOR FIRE ALARM AND FIRE SPRINKLER CONTRACTORS. ALL OTHERS REQUESTING CAD FILES SHALL BE CHARGED \$50/SHEET (MINIMUM \$250). PRIOR TO TRANSMISSION OF FILES, THE REQUESTING PARTY MUST SIGN AND RETURN "DOCUMENT DISCLAIMER" TO AES.

- V. PRIOR APPROVAL OF MECHANICAL, ELECTRICAL AND PLUMBING SUBSTITUTION PRODUCTS:
- V.A. PRIOR APPROVAL OF MECHANICAL, ELECTRICAL AND PLUMBING SUBSTITUTION PRODUCTS IS NOT REQUIRED.
- V.B. PROPOSED SUBSTITUTIONS OF MECHANICAL, ELECTRICAL AND PLUMBING PRODUCTS MAY BE SUBMITTED FOR REVIEW DURING THE SHOP DRAWING/ PRODUCT DATA SUBMITTAL STAGE.
- V.C. PROPOSED SUBSTITUTIONS SHALL BE EQUAL TO OR SUPERIOR IN ALL RESPECTS TO THE SPECIFIED PRODUCT.
- V.D. PROPOSED SUBSTITUTIONS SHALL HAVE THE SAME WARRANTY AS THE SPECIFIED PRODUCT.
- V.E. PROPOSED SUBSTITUTIONS WILL HAVE NO ADVERSE EFFECT ON THE OTHER TRADES.
- V.F. PROPOSED SUBSTITUTION WILL NOT AFFECT DIMENSIONS AND FUNCTIONAL CLEARANCES.
- V.G. PRODUCT DATA AND SHOP DRAWING FOR PROPOSED SUBSTITUTIONS MUST BE PROJECT SPECIFIC AND INCLUDING ALL COMPONENTS IDENTIFIED FOR COMPARISON TO THE ORIGINAL PRODUCT.
- V.H. THE BURDEN OF PROOF OF THE EQUIVALENCE ON THE PROPOSED SUBSTITUTION IS ON THE PROPOSER.
- W. EXACT LOCATION OF ALL PIPING AND SUPPORTS SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, CEILING GRID, HVAC, PLUMBING FIXTURES AND FIRE SPRINKLER PIPING. SEE ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS FOR COORDINATION OF LIGHTING FIXTURES AND CEILING GRID.
- X. NO PIPING SHALL BE INSTALLED ABOVE ANY ELECTRICAL PANEL.
- Y. PROVIDE AN ISOLATION VALVE ON BOTH SIDES OF ALL HYDRONIC PIPING SPECIALTIES INCLUDING: BALANCE VALVES, CONTROL VALVES, AIR SEPARATORS, ETC.
- Z. ESCUTCHEONS SHALL BE PROVIDED ON ALL PIPING PENETRATING A FINISHED WALL INTO A PUBLIC SPACE.
- AA. FIELD VERIFY EXACT LOCATION OF EXISTING PIPING BEFORE BEGINNING CONSTRUCTION.
- AB. CONTRACTOR IS RESPONSIBLE FOR ALL TRANSITIONS, ELBOWS, OFFSETS IN PIPING TO MAKE SYSTEMS FIT WITHIN SPACE AND STRUCTURE PROVIDED.
- AC. ALL PIPE PENETRATIONS THROUGH WALLS/FLOOR/STRUCTURE SHALL BE COMPLETELY SEALED. FIRE CAULK SHALL BE USED IN FIRE RATED WALLS AND BEAUTY RINGS (LARGE ENOUGH TO COVER OPENING IN WALL) SHALL BE USED IN ALL EXPOSED LOCATIONS (MECHANICAL ROOMS AND JANITOR'S CLOSET NOT INCLUDED).
- AD. COORDINATE EXACT LOCATION OF ALL WALL/ ROOF PENETRATIONS WITH THE ARCHITECT, ENGINEER, AND EXISTING STRUCTURAL CONDITIONS PRIOR TO INSTALLATION. MAINTAIN ALL ROOF WARRANTIES.
- AE. ALL MOTORS BEING CONTROLLED BY VFDS ON PUMPS, FANS, ETC. SHALL BE COMPATIBLE FOR USE WITH A VFD, SHALL BE INVERTER DUTY RATED AND PROVIDED WITH A SHAFT GROUNDING KIT.

DEMOLITION NOTES

- A. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR VISIT JOB SITE PRIOR TO BIDDING TO SEE SPECIFIC JOB SITE CONDITIONS FOR THIS PROJECT.
- B. DO NOT REMOVE ANY PIPING THAT SERVES ANY PIECE OF EQUIPMENT THAT IS TO REMAIN. COORDINATE ANY DISCREPANCIES WITH ENGINEER.
- C. LOCATION AND SIZES OF ALL EQUIPMENT, PIPING AND DUCTWORK IS APPROXIMATE ONLY. FIELD VERIFY EXACT LOCATION AND SIZES.
- D. ALL PIPING, DUCT AND EQUIPMENT SHOWN IN HATCH IS TO BE REMOVED.
- E. ALL HANGERS, AND SUPPORTS ASSOCIATED WITH DUCT, PIPING AND EQUIPMENT BEING REMOVED SHALL BE REMOVED AS WELL.
- F. REMOVE ALL PLUMBING TO EXTENTS POSSIBLE AND CAP PIPING IN WALL/FLOOR.
- G. RE-SUPPORT ANY PIPING, DUCT OR ELECTRICAL THAT IS CURRENTLY BEING SUPPORTED BY ANY MATERIAL THAT IS BEING REMOVED.
- H. GENERAL CONTRACTOR TO PATCH, REPAIR AND PAINT ALL HOLES LEFT BEHIND FROM REMOVAL OF ALL REGISTERS AND DUCTS. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE WITH THE GENERAL CONTRACTOR PRIOR TO BID.
- I. ANY DAMAGE TO FLOORS, WALLS AND EXISTING PIPING OR EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR BACK TO ORIGINAL CONDITIONS.
- J. COORDINATE THE REMOVAL OF ALL EXISTING CHEMICALS INCLUDING GLYCOL-WATER MIXTURES WITH LOCAL AUTHORITIES. ALL CHEMICALS SHALL BE PROPERLY DISPOSED OF.
- K. OWNERS AND ENGINEERS STRONGLY ENCOURAGE RECYCLING OF DEMOLISHED MATERIALS.
- L. OWNER HAS FIRST RIGHT OF CHEMICALS AND EQUIPMENT TO BE REMOVED.

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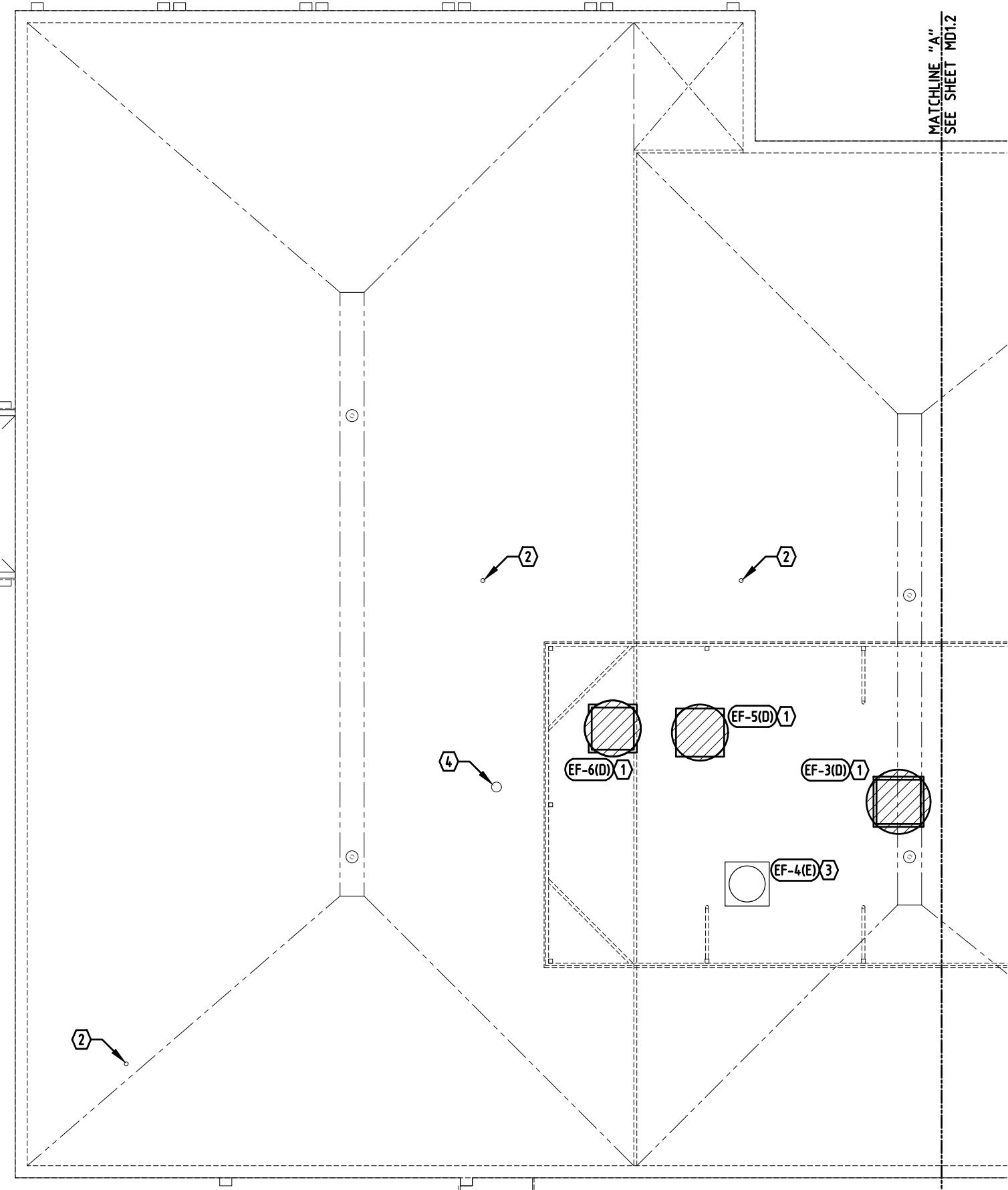
MO.1

BEATRICE STATE DEVELOPMENTAL CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
MECHANICAL GENERAL NOTES

ARCHITECTS


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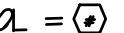




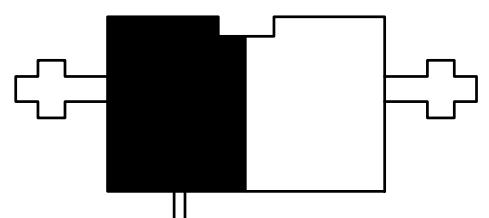
 NORTH
WEST ROOF PLAN - HVAC DEMOLITION
SCALE: 3/32" = 1'-0"

1
MD1.1

KEY NOTES

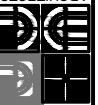
SYMBOL = 

1. REMOVE EXISTING FAN AND ASSOCIATED CURB, DUCT, DAMPER, AND ACCESSORIES AS REQUIRED TO INFILL ROOF PENETRATIONS. CAP AND ABANDON EXISTING DUCT BELOW ROOF DECK.
2. EXISTING VENT TO REMAIN.
3. EXISTING FAN TO REMAIN.
4. REMOVE EXISTING VENT THROUGH ROOF. CAP AND ABANDON EXISTING DUCT BELOW ROOF DECK.



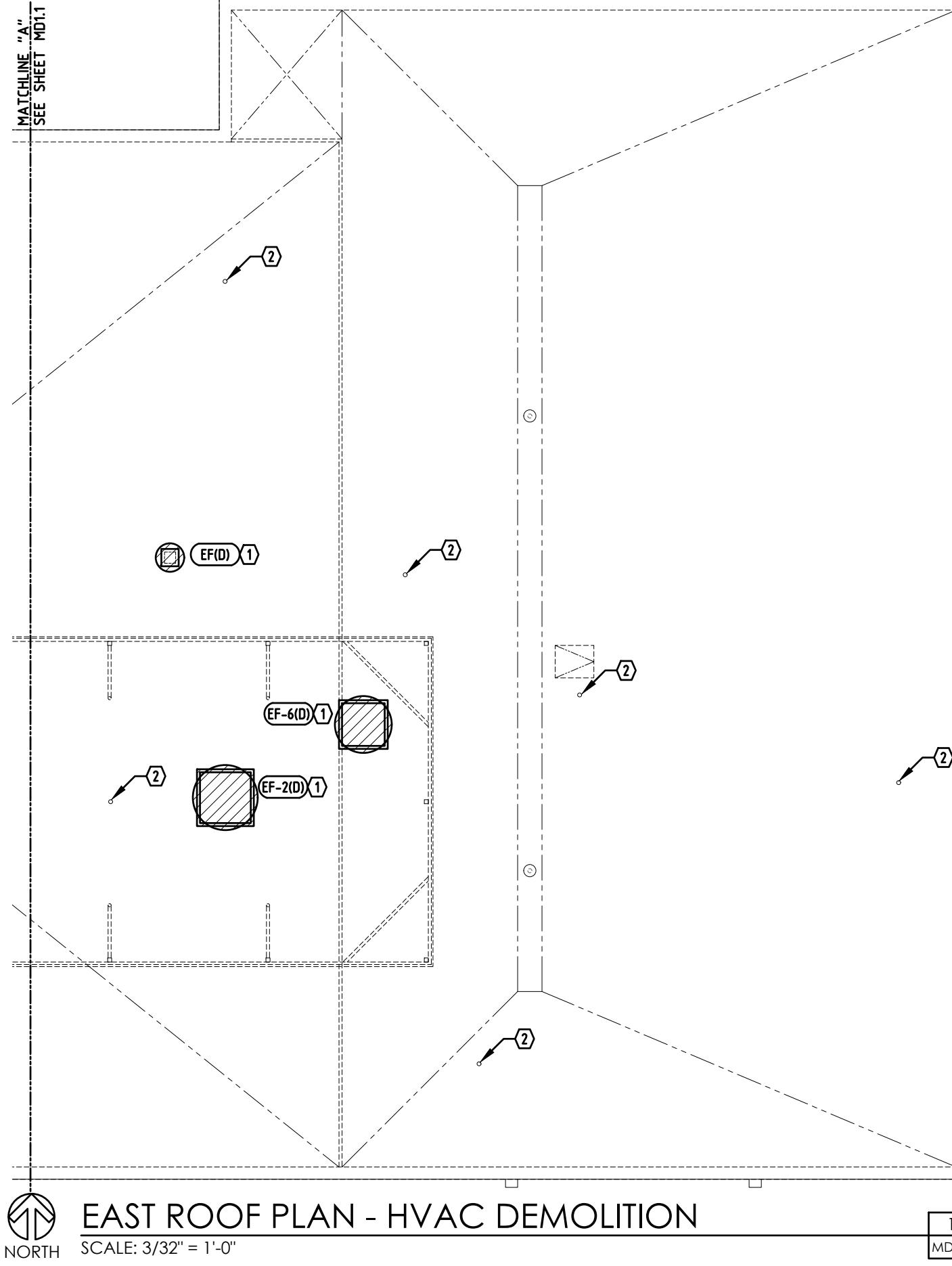
 NORTH
KEY PLAN
SCALE: N.T.S.



JAC K S O N - J A C K S O N & A S S O C I A T E S , I N C .	ARCHITECTS 	BEATRICE STATE DEVELOPMENTAL CENTER FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT BEATRICE, NEBRASKA 3000 UNION STREET
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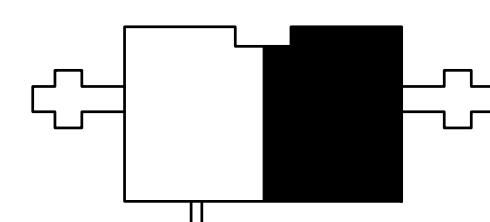


KEY NOTES

- 1. REMOVE EXISTING FAN AND ASSOCIATED CURB, DUCT, DAMPER, AND ACCESSORIES AS REQUIRED TO INFILL ROOF PENETRATIONS. CAP AND ABANDON EXISTING DUCT BELOW ROOF DECK.
- 2. EXISTING VENT TO REMAIN.

SYMBOL =

MD1.2



KEY PLAN
NORTH
SCALE: N.T.S.



BEATRICE STATE DEVELOPMENT CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
3000 UNICORN STREET
EAST ROOF PLAN-HVAC DEMOLITION



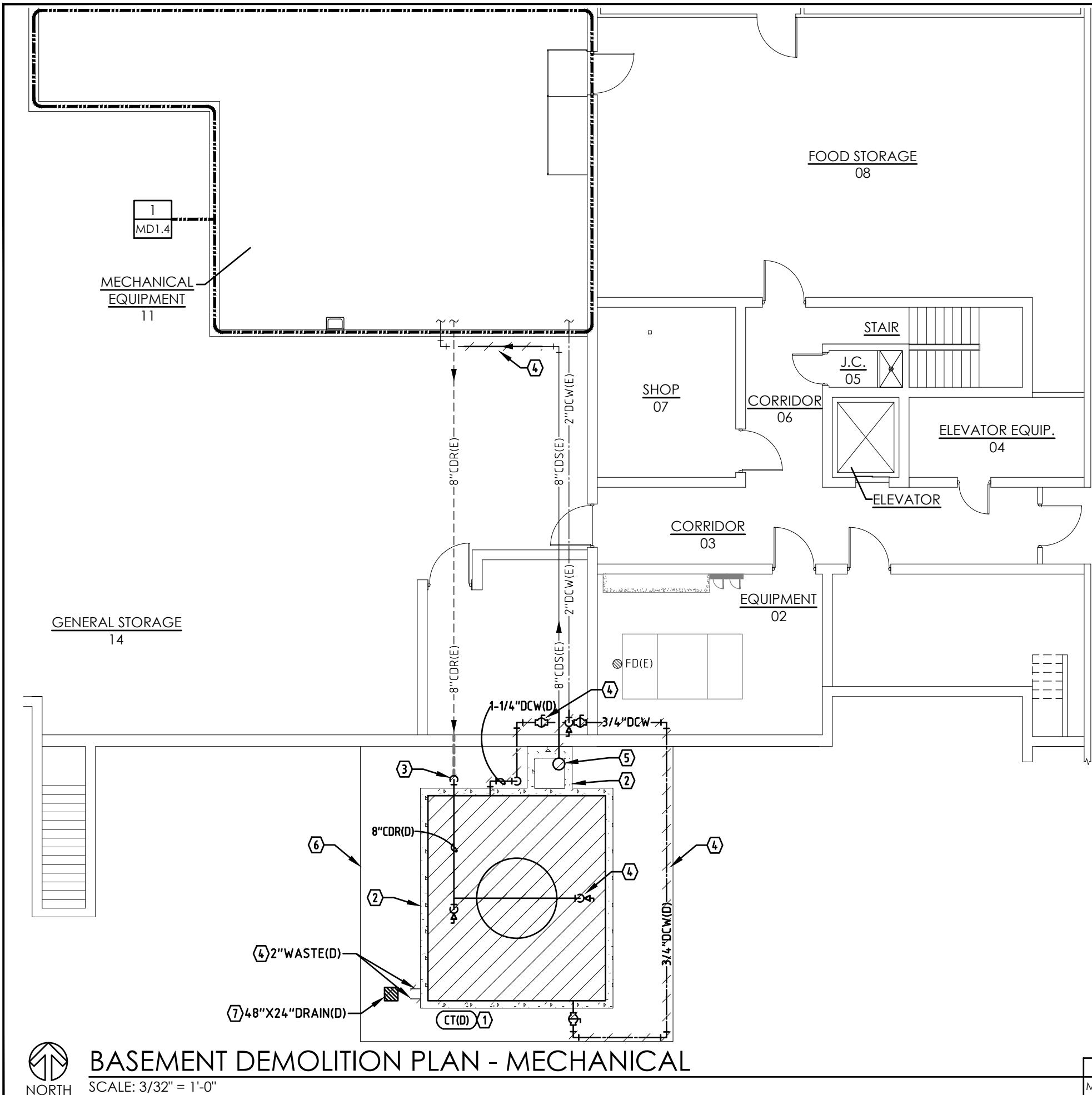
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KEY NOTES

SYMBOL =

1. REMOVE EXISTING COOLING TOWER AND ASSOCIATED ACCESSORIES.
2. INFILL CURB AND WELL WITH CONCRETE TO CREATE A LEVEL EQUIPMENT PAD. NEW CONDENSER RETURN PIPE TO BE INSTALLED PRIOR TO FILLING WELL (REFER TO SHEET M1.1 AND M1.2). REFER TO ARCHITECTURAL PLANS FOR CONCRETE INFILL REQUIREMENTS.
3. REMOVE PIPE. LEAVE BOTTOM 2' OF PIPE ABOVE GROUND. PIPE TO BE RECONNECTED WITH WELDED FLANGE IN THE FUTURE.
4. REMOVE PIPE AND ASSOCIATED ACCESSORIES TO EXTENTS SHOWN.
5. REMOVE PIPE TO FURTHEST EXTENTS. CAP AND ABANDON BURIED SECTION.
6. EXISTING APPROXIMATELY 12'-0" TALL FENCE WITH FABRIC TO REMAIN.
7. REMOVE DRAIN AND FILL WITH CONCRETE.

MD1.3

BEATRICE STATE DEVELOPMENT CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
2000 UNICORN STREET
BASEMENT DEMOLITION PLAN - MECHANICAL



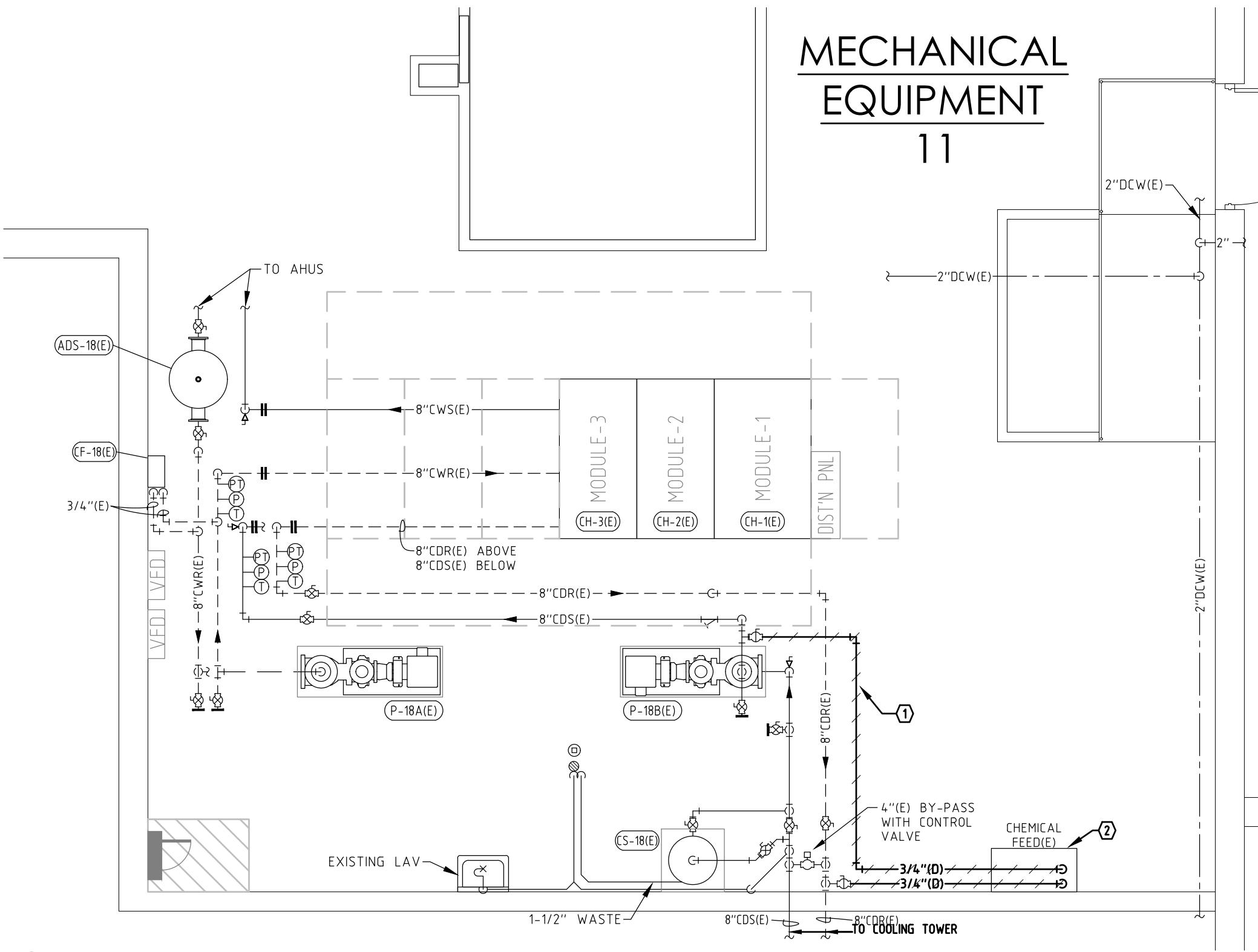
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REV:

REV

MECHANICAL EQUIPMENT

11



MECH ROOM DEMOLITION PLAN - MECHANICAL

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

KEY NOTES

1. REMOVE PIPE TO EXTENTS SHOWN, TYPICAL.
2. CHEMICAL FEED SYSTEM TO REMAIN. COORDINATE WITH OWNER CHEMICAL TREATMENT SUPPLIER AND ADJUST SYSTEM ACCORDINGLY FOR NEW EQUIPMENT.

SYMBOL = *

MD1.4

BEATRICE STATE DEVELOPMENTAL CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
2000 UNION STREET
MECH ROOM DEMOLITION PLAN - MECHANICAL

ARCHITECTS

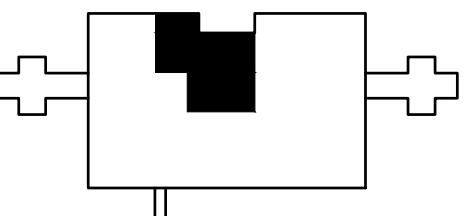
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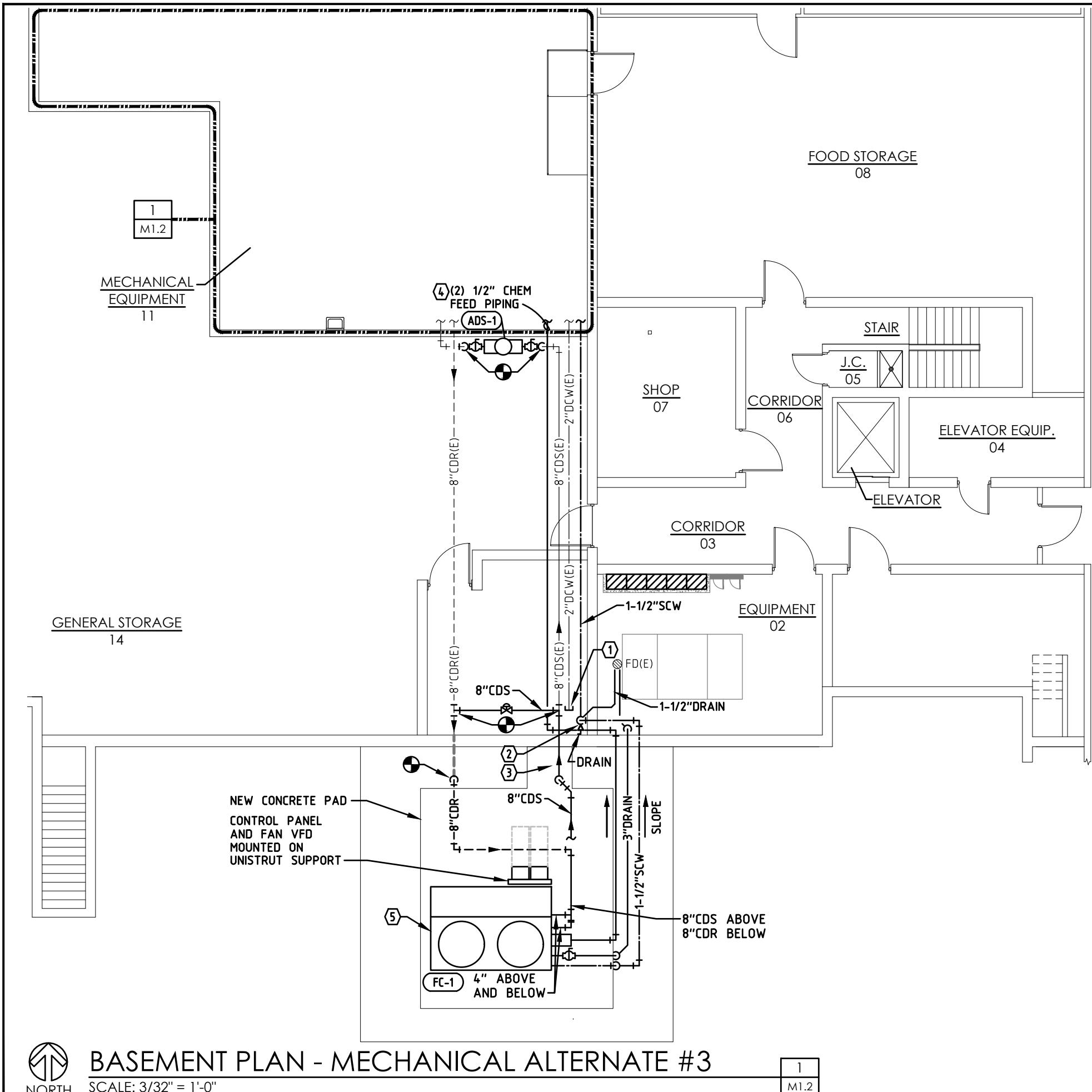
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NORTH



KEY PLAN
SCALE: N.T.S.





KEY PLAN

SCALE: N.T.S.



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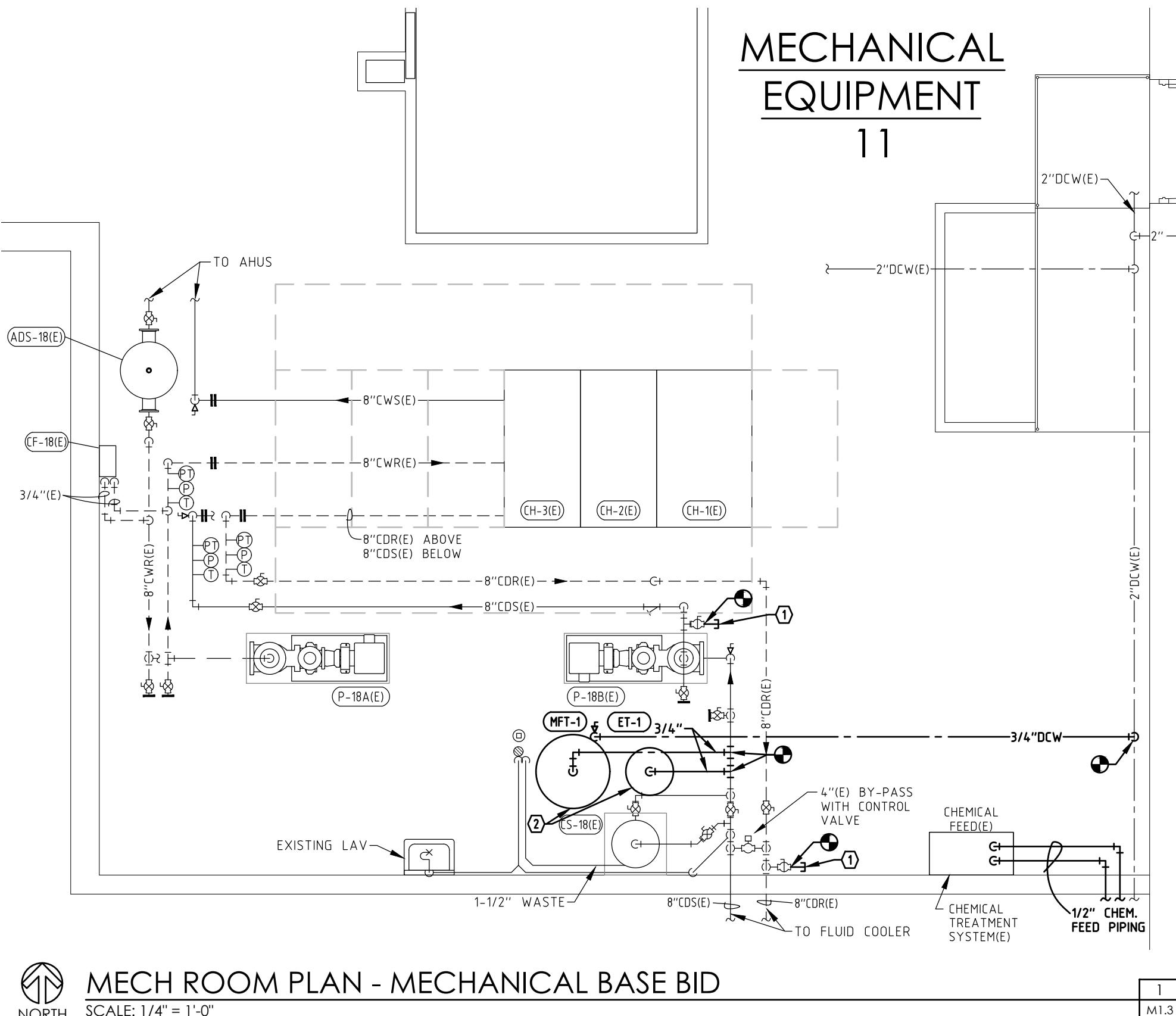
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BEATRICE STATE DEVELOPMENT CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
3000 UNICORN STREET

BASEMENT PLAN - MECHANICAL ALT #3

MECHANICAL EQUIPMENT

11



MECH ROOM PLAN - MECHANICAL BASE BID

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

KEY NOTES

1. CAP PIPE
2. PROVIDE CONCRETE HOUSEKEEPING PAD FOR NEW MECHANICAL EQUIPMENT. REFER TO DETAIL 2 ON M2.1.

SYMBOL =

ALTERNATE DESCRIPTION

BASE BID

FLUID COOLER MAKEUP WATER WILL NOT BE SOFTENED. EXTEND NEW DOMESTIC COLD WATER LINE FROM EXISTING PIPE TO FLUID COOLER.

ALTERNATE #3

FLUID COOLER MAKEUP WATER AND CONDENSER WATER SHALL BE SOFTENED. INSTALL NEW WATER SOFTENER AND EXTEND SOFT WATER LINES TO FC-1 AND MFT-1.

M1.3

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MECH ROOM PLAN - MECHANICAL BASE BID

ARCHITECTS

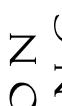
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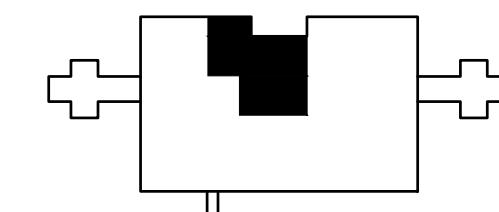
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KEY PLAN
SCALE: N.T.S.



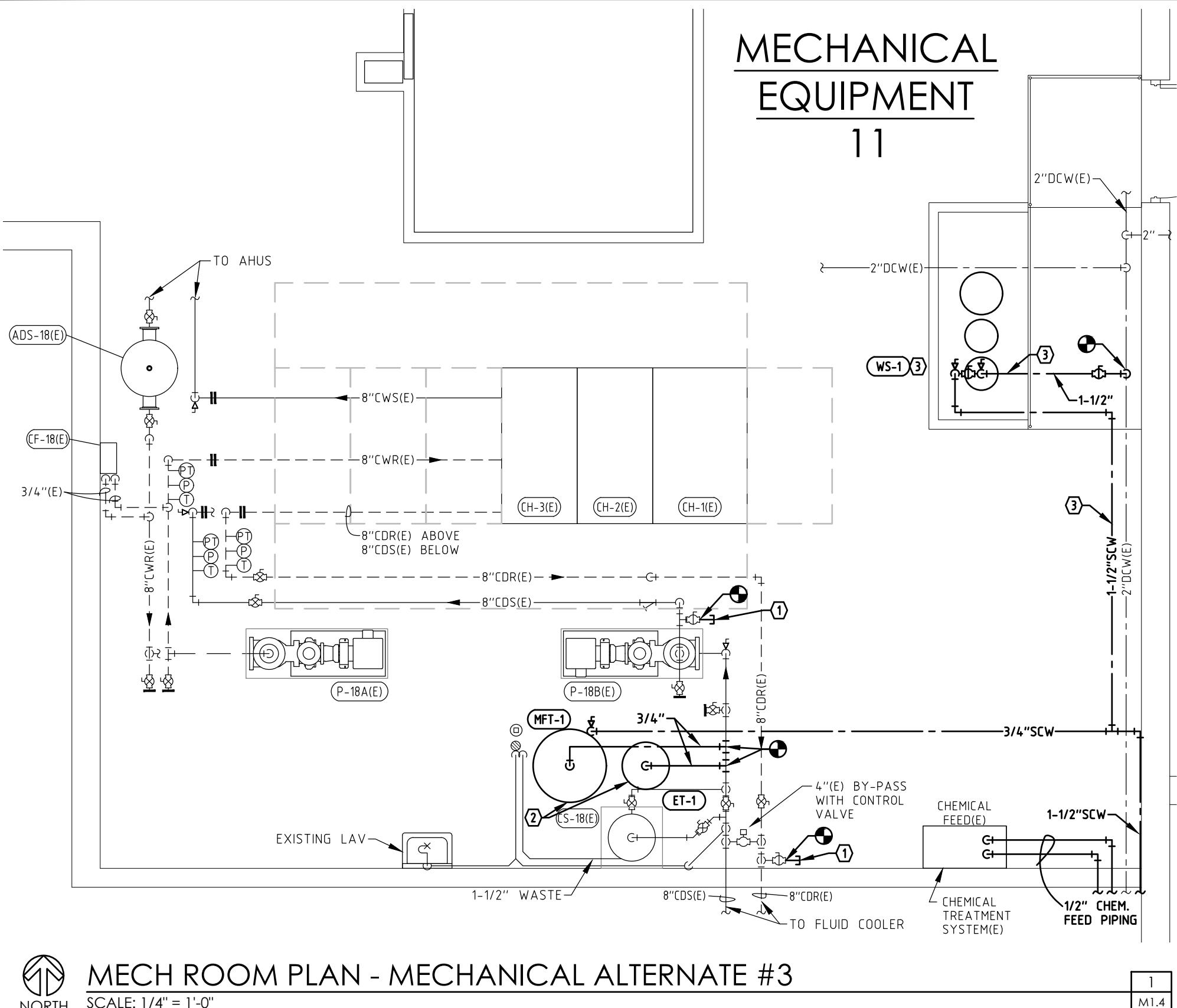
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P: 402-488-0075
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MECHANICAL EQUIPMENT

11



MECH ROOM PLAN - MECHANICAL ALTERNATE #3

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

KEY NOTES

- CAP PIPE
- PROVIDE CONCRETE HOUSEKEEPING PAD FOR NEW MECHANICAL EQUIPMENT. REFER TO DETAIL 2 ON M2.1.
- PROVIDE WATER SOFTENER (WS-1) AND ALL ASSOCIATED PIPING AND ACCESSORIES.

SYMBOL = *

M1.4

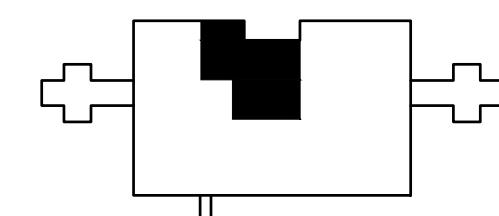
ALTERNATE DESCRIPTION

BASE BID

FLUID COOLER MAKEUP WATER WILL NOT BE SOFTENED. EXTEND NEW DOMESTIC COLD WATER LINE FROM EXISTING PIPE TO FLUID COOLER.

ALTERNATE #3

FLUID COOLER MAKEUP WATER AND CONDENSER WATER SHALL BE SOFTENED. INSTALL NEW WATER SOFTENER AND EXTEND SOFT WATER LINES TO FC-1 AND MFT-1.



KEY PLAN
NORTH

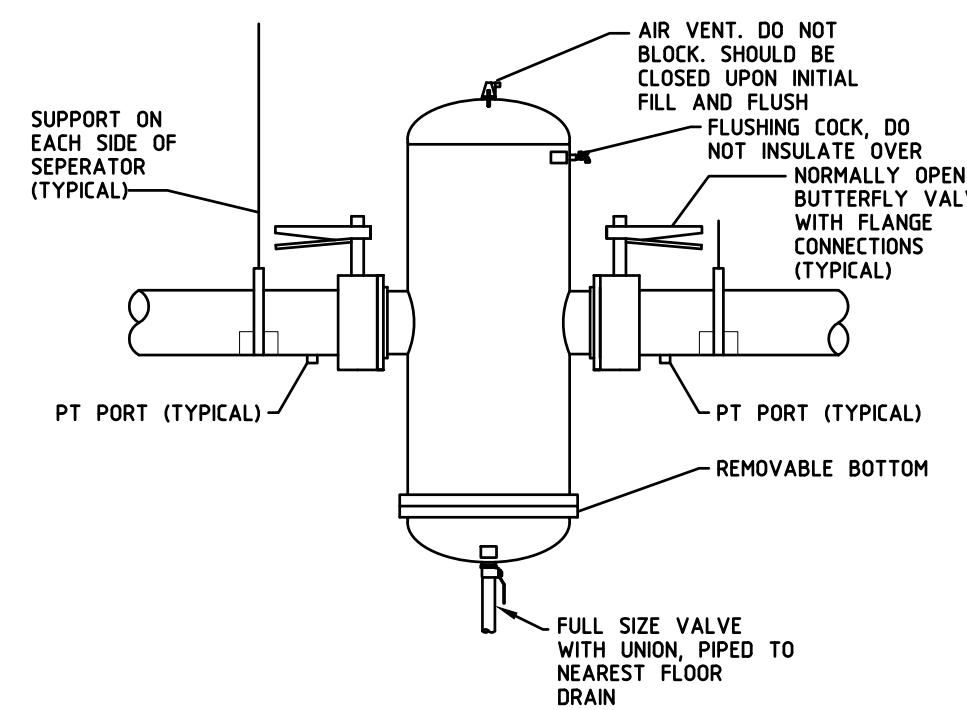
SCALE: N.T.S.



M1.4

BEATRICE STATE DEVELOPMENTAL CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
3000 UNION STREET
MECH ROOM PLAN - MECHANICAL ALTERNATE #3

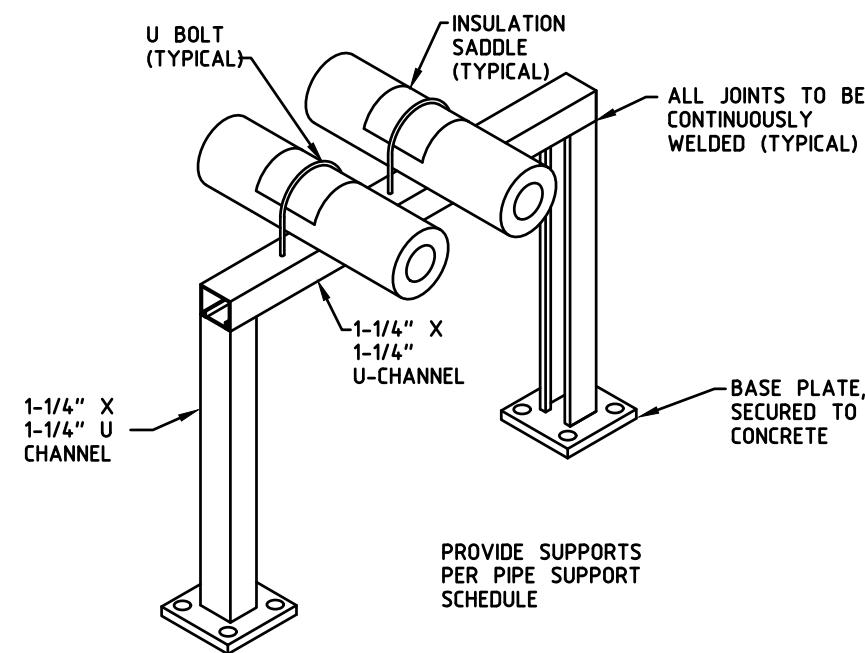
ARCHITECTS	JACKSON - JACKSON ASSOCIATES, INC.
DATE	09/22/23
DESIGN:	
SP. BY:	
CHECKED:	



AIR & DIRT SEPERATOR DETAIL

SCALE: NONE

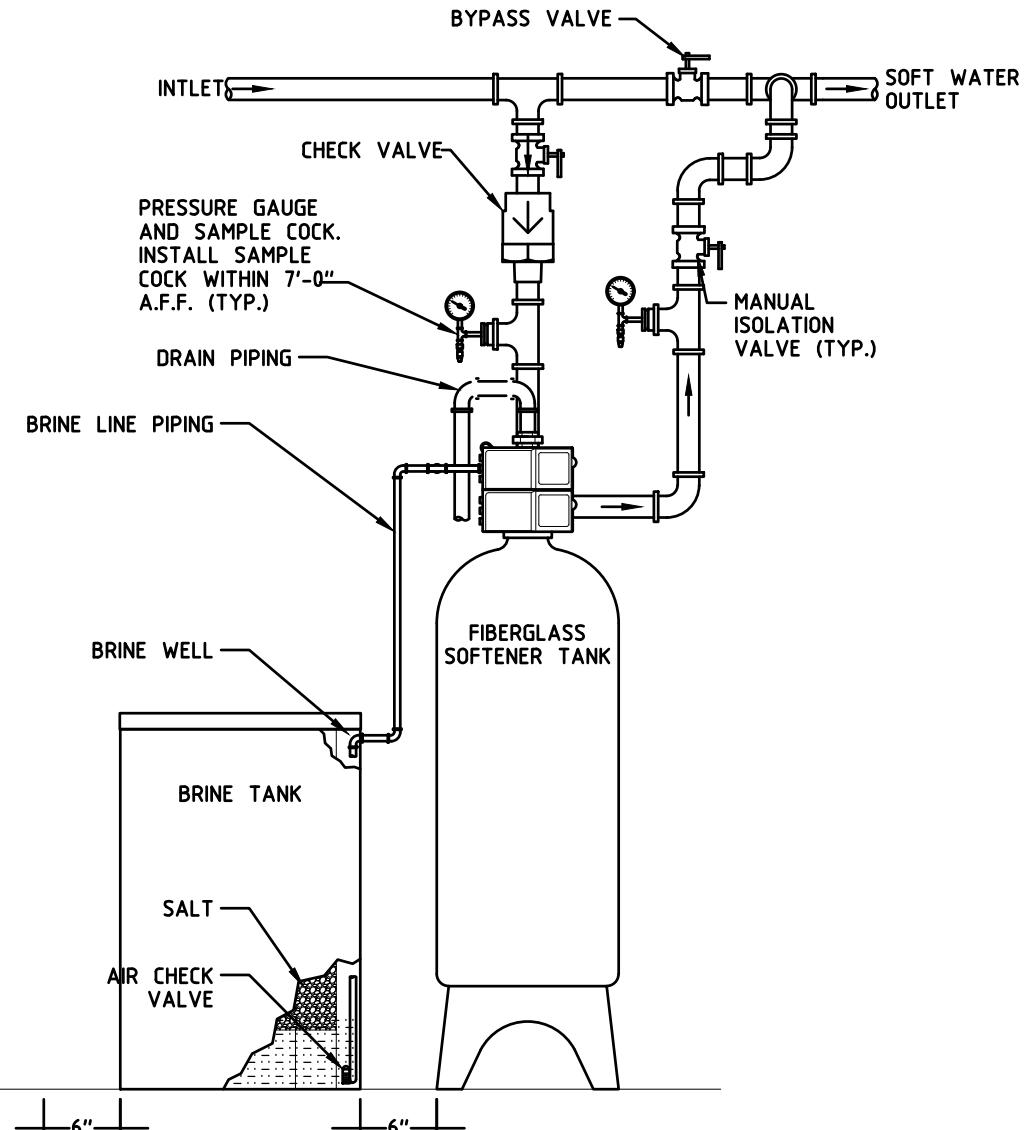
2



PIPING SUPPORT DETAIL

SCALE: NONE

3
M2.

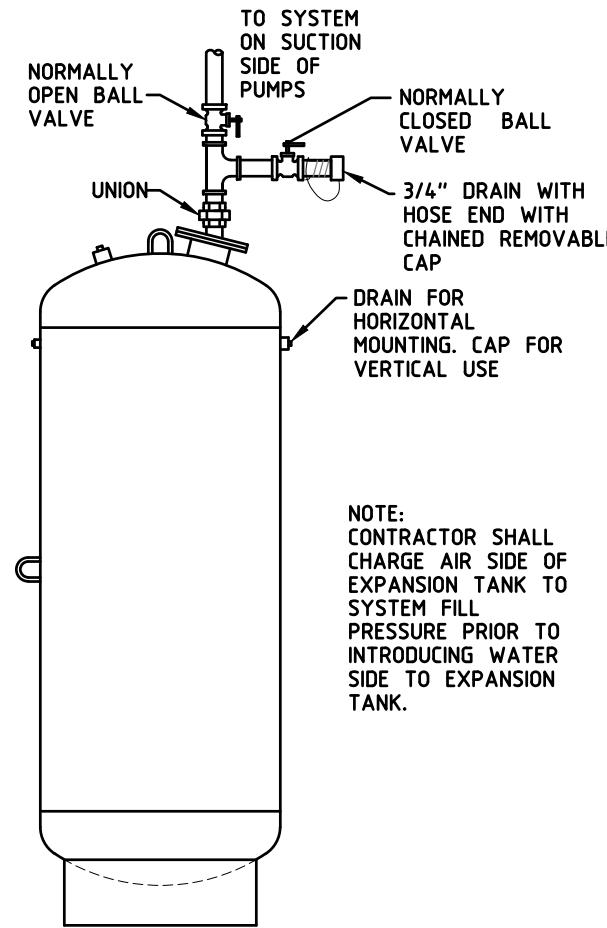


WATER SOFTENER DETAIL (ALTERNATE #3 ONLY)

SCALE: NONE

A circular professional seal for a mechanical engineer. The outer ring contains the text "PROFESSIONAL MECHANICAL ENGINEER" at the top and "STATE OF NEBRASKA" at the bottom. In the center, it features a signature "Kyle J. Wilkinson" over "WILKINSON", the identifier "E-12957", and the date "09-22-2023".



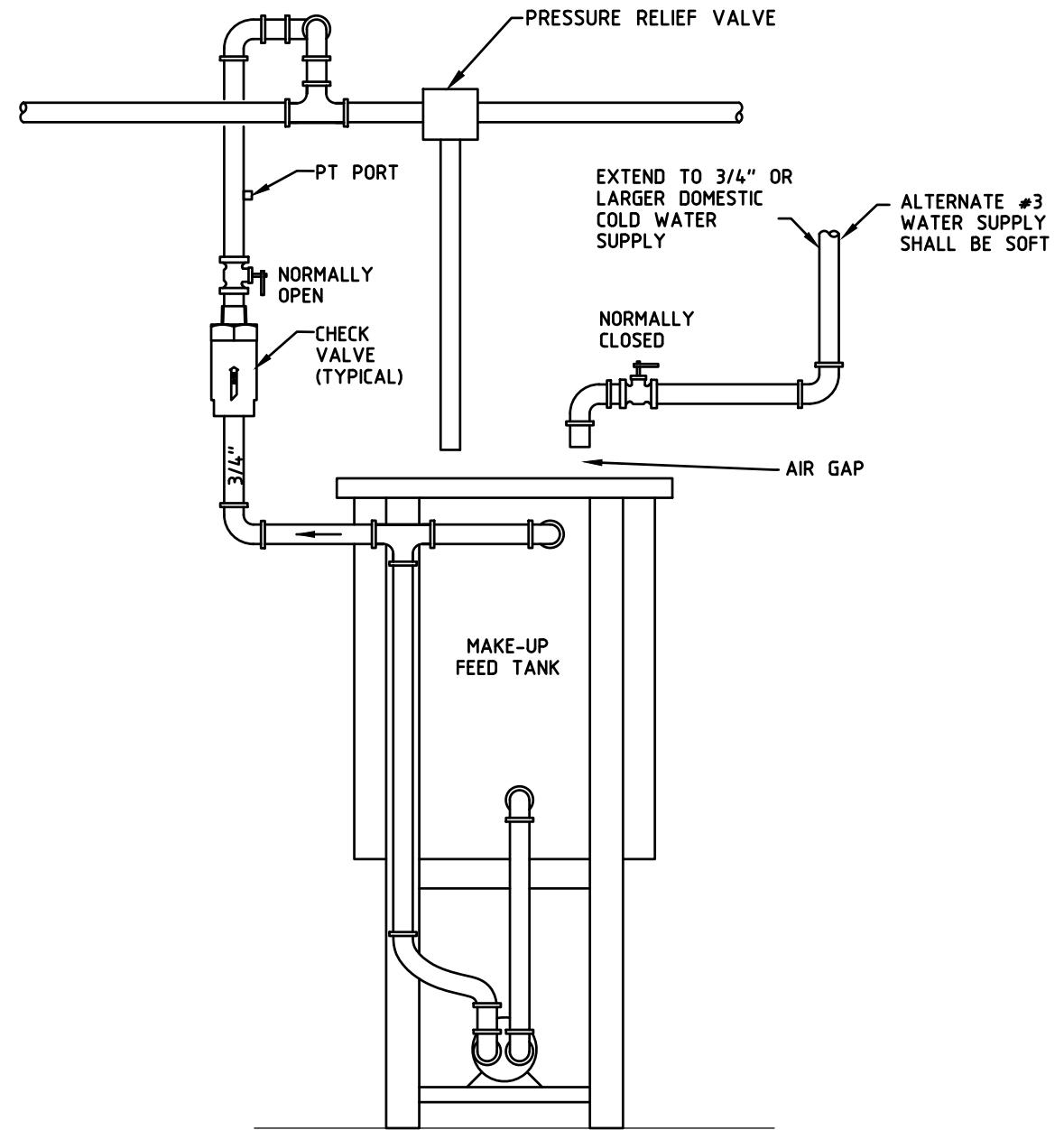


EXPANSION TANK DETAIL

SCALE: NONE

2

M2.2



MAKE UP WATER FEED TANK DETAIL

SCALE: NONE

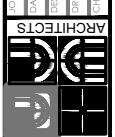
1

M2.2



BEATRICE STATE DEVELOPMENTAL CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
2000 UNION STREET
MECHANICAL DETAILS 2

M2.2

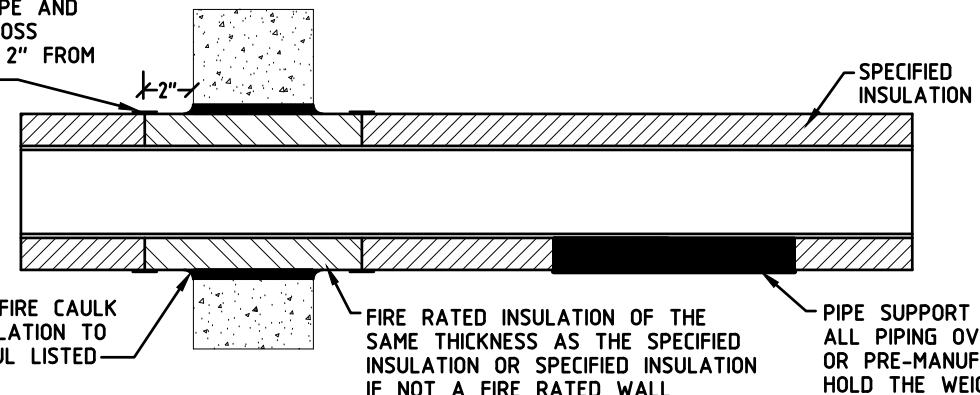


JACKSON - JACKSON & ASSOCIATES, INC.



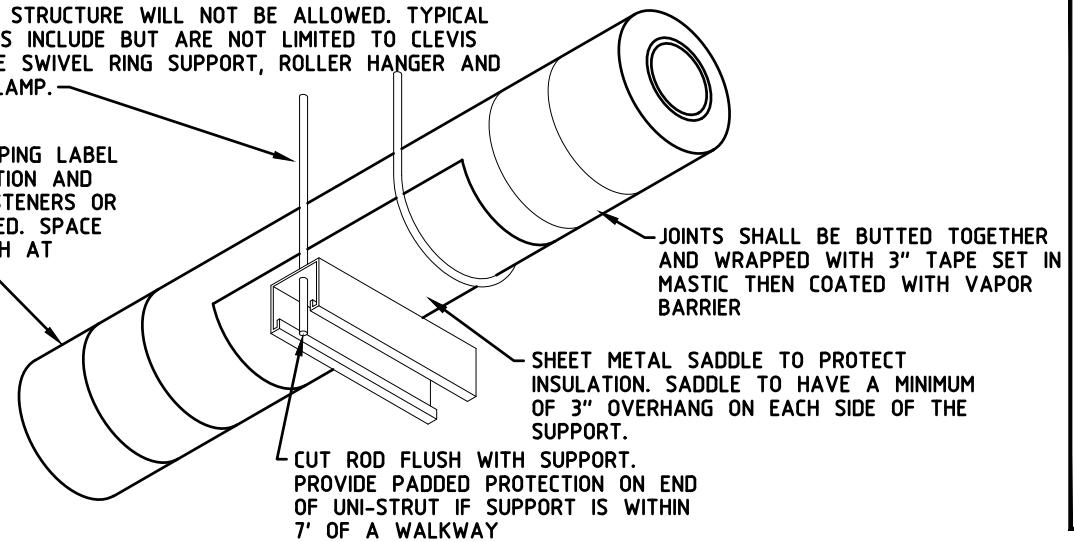
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WRAP JOINTS WITH 3" TAPE AND
SEAL VAPOR BARRIER ACROSS
INSULATION (ONLY NEEDED 2" FROM
WALL AT FIRE WALLS)



ALL SUPPORTS SHOULD BE ANCHORED SECURELY TO THE STRUCTURE BUT NOT THE PIPING. THE SUPPORT SHOULD ALLOW FREE MOVEMENT CAUSED BY THERMAL EXPANSION. THE SUPPORT ROD SHALL BE INSTALLED VERTICAL. PIPING STRAPS AND CLAMPS THAT HOLD THE PIPING TIGHT TO THE STRUCTURE WILL NOT BE ALLOWED. TYPICAL ACCEPTABLE SUPPORTS INCLUDE BUT ARE NOT LIMITED TO CLEVIS HANGERS, ADJUSTABLE SWIVEL RING SUPPORT, ROLLER HANGER AND DOUBLE BOLT PIPE CLAMP.

PRE-COILED COLORED PIPING LABEL WITH PIPING IDENTIFICATION AND FLOW ARROWS. NO FASTENERS OR ADHESIVES ARE ALLOWED. SPACE LABELS EVERY 25' WITH AT LEAST 1 PER ROOM.

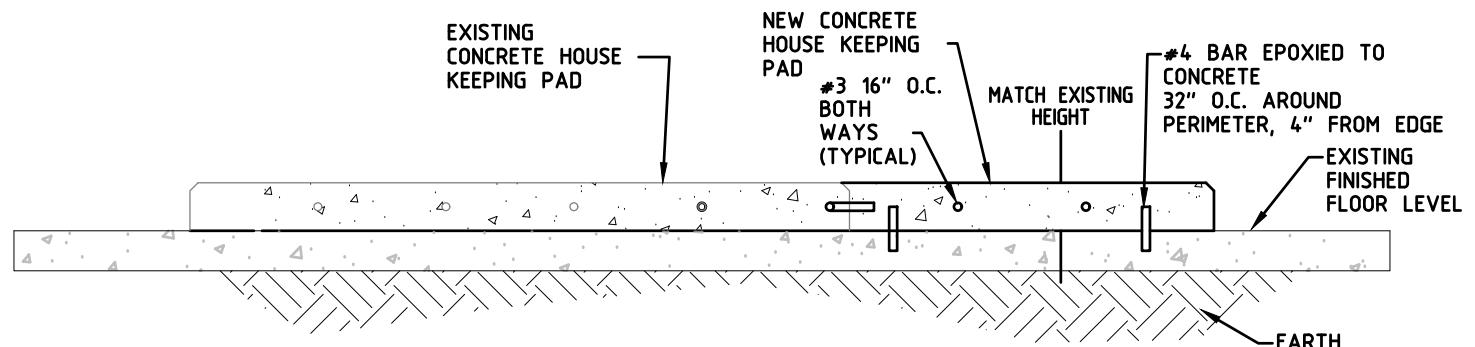


DETAIL NOTES

1. INSULATION SHOULD BE INSTALLED IN A NICE, CLEAN WORKMANSHIP LIKE MANNER.
2. INSULATION SHOULD NOT BE APPLIED UNTIL AFTER THE PIPING SYSTEM HAS BEEN PROPERLY TESTED.
3. VAPOR BARRIER IS REQUIRED ON ALL INSULATION.
4. INSULATION SHOULD BE FULL THICKNESS WITH NO JOINTS THROUGH WALLS. INSULATION SHALL BE CARRIED THROUGH ALL WALLS.
5. FITTINGS:
 - 2" AND SMALLER SHALL BE WRAPPED WITH INSULATION AND COVERED WITH PVC.
 - OVER 2" SHALL HAVE PREMOLDED INSULATION FITTINGS AND WRAPPED WITH PVC.
6. PIPING SLEEVES ARE NOT TO BE USED AS SUPPORTS.
7. INSULATION SHALL BE WRAPPED WITH A ONE-PIECE PVC JACKET SEALED WITH PVC TAPE IN EXPOSED APPLICATIONS.

TYPICAL FIBERGLASS PIPE INSULATION DETAIL

SCALE: NONE

1
M2.3

DETAIL NOTES

1. COORDINATE EXACT PERIMETER DIMENSION WITH MANUFACTURER'S RECOMMENDATIONS.

HOUSE KEEPING PAD DETAIL

SCALE: NONE

2
M2.3

MECHANICAL SCHEDULES

PROVIDE SPECIFIED OR APPROVED EQUAL

PIPE SUPPORT SCHEDULE

PIPE MATERIAL	1/2"	- 1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"	10"	12"- UP	MAX. SPACING	ROD SIZE	NOTES								
STEEL	8'	3/8"	9'	3/8"	10'	3/8"	11'	1/2"	12'	1/2"	12'	5/8"	12'	3/4"	12'	7/8"	12'	7/8"	12'	7/8"	1,2,3	
COPPER	6'	3/8"	6'	3/8"	8'	3/8"	10'	1/2"	10'	1/2"	10'	5/8"	10'	3/4"	10'	7/8"	10'	7/8"	10'	7/8"	1,2,3	
PVC / CPVC	4'	3/8"	4'	3/8"	4'	3/8"	4'	3/8"	4'	3/8"	4'	1/2"	4'	1/2"	4'	5/8"	4'	3/4"	4'	7/8"	1,2,3	
POLYETHYLENE	3'	3/8"	3'	3/8"	3'	3/8"	NA	3/8"	4.5'	3/8"	6'	1/2"	6'	1/2"	6'	5/8"	6'	3/4"	6'	7/8"	1,2,3	

PIPE SUPPORT SCHEDULE NOTES

1. PIPING SUPPORT VERTICALLY EVERY 12' OR EVERY LEVEL WHICH EVER IS LESS.
2. SPACING SCHEDULED IS THE MAXIMUM DISTANCE, SUPPORTS CAN BE INSTALLED IN SMALLER INTERVALS AND MAY NEED TO BE IF THE STRUCTURE CAN NOT HANDLE THE LOAD AT THE MAXIMUM SPACING, VERIFY WITH STRUCTURAL. A MINIMUM OF ONE SUPPORT FOR EVERY BRANCH OR PIPE SEGMENT IN EACH DIRECTION CHANGE SHALL BE PROVIDED. TWO (2) HANGERS MUST BE PROVIDED ON ALL LENGTH OF PIPE LONGER THAN 10'.
3. ALL SUPPORTS SHOULD BE ANCHORED SECURELY TO THE STRUCTURE BUT NOT THE PIPING. THE SUPPORT SHOULD ALLOW FREE MOVEMENT CAUSED BY THERMAL EXPANSION. PIPING STRAPS AND CLAMPS THAT HOLD THE PIPING TIGHT TO THE STRUCTURE WILL NOT BE ALLOWED. TYPICAL ACCEPTABLE SUPPORTS INCLUDE BUT ARE NOT LIMITED TO CLEVIS HANGERS, ADJUSTABLE SWIVEL RING SUPPORT, ROLLER HANGER AND DOUBLE BOLT PIPE CLAMP.

M3.1

BEATRICE STATE DEVELOPMENTAL CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
3000 UNICORN STREET
MECHANICAL SCHEDULES 1

ARCHITECTS


DESIGNER


REV.


DATE:
09/22/23

REVISION:
0

BY:
KYLE J. WILKINSON

E-12957

CHECKED:
09-22-2023

PROJECT # 23-083

CERTIFICATE OF AUTHORIZATION # CA1800
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MECHANICAL SCHEDULES

PIPE MATERIAL AND INSULATION

PROVIDE SPECIFIED OR APPROVED EQUAL

PIPE	PIPING							MATERIAL TYPE	PIPING INSULATION				"K VALUE"	
	PIPE SIZE	RELATION TO GRADE	MATERIAL	FITTING TYPE	MINIMUM SLOPE	VALVES	MUST COMPLY WITH		INSULATION TYPE	MATERIAL TYPE	THICKNESS INCH	DENSITY LBS/FT ³	MIN. VALUE	AT TEMP
DOMESTIC COLD WATER	1/2" - 1-1/2"	ABOVE	TYPE "L" COPPER	LEAD FREE SOLDER	-	BALL	ASTM B 88	MOLDED SECTION	JACKETED FIBERGLASS	1/2"	3	.22	75°	1,3
DOMESTIC COLD WATER	2" - UP	ABOVE	TYPE "L" COPPER	BRAZED	-	BALL, BUTTERFLY	ASTM B 88	MOLDED SECTION	JACKETED FIBERGLASS	1"	3	.22	75°	1,3
DOMESTIC WATER	1/2" - UP	BELOW	TYPE "K" SOFT COPPER	NONE	-	NONE	ASTM B 88	-	-	-	-	-	-	2
SANITARY WASTE	2" - 3"	BELOW	TYPE "L"	LEAD FREE SOLDER	1/4" FOOT	-	ASTM B 88	-	-	-	-	-	-	2,4
SANITARY WASTE	1-1/2" - 3"	ABOVE	TYPE "L"	BRAZED	1/4" FOOT	-	ASTM B 88	-	-	-	-	-	-	2,4
CONDENSER WATER	1/2" - 2"	ABOVE	SCHEDULE 40 BLACK STEEL	THREADED	-	BALL, BUTTERFLY	ASTM A 53	MOLDED SECTION	JACKETED FIBERGLASS	1"	3	.22	75°	1
CONDENSER WATER	2-1/2" - UP	ABOVE	SCHEDULE 40 BLACK STEEL	CONTINUOUSLY WELDED	-	BALL, BUTTERFLY	ASTM A 53	MOLDED SECTION	JACKETED FIBERGLASS	1"	3	.22	75°	1

PIPE MATERIAL AND INSULATION GENERAL NOTES

- INSTALL ALL PIPING ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. ALL INSTALLERS SHALL BE CERTIFIED, WITH DOCUMENTATION SUBMITTED WITH SHOP DRAWINGS.
 - ALL PIPING SHALL BE TESTED, CLEANED AND CERTIFIED FOR INTENDED USE. ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED WITH 1-1/2 TIMES THE OPERATING PRESSURE FOR NO LESS THAN 4 HOURS. PIPING TO BE CLEANED AND FLUSHED WITH CRITICAL CONTROL VALVES BYPASSED.
 - DIELECTRIC FITTINGS SHALL BE USED AT ALL CONNECTIONS BETWEEN DISSIMILAR METALS. FITTINGS SHALL BE SOFT SOLDERED TO THE PIPING.
 - ALL WELDED PIPE AND FUSION WELDED PIPE SHALL BE WELDED BY A CERTIFIED WELDER/ FUSION CONTRACTOR. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER (CERTIFICATES MUST BE SUBMITTED) AND ALL WORK SHALL BE STAMPED. BOLTED FLANGES SHALL BE INSTALLED ON 2" AND LARGER PIPE TO SECTIONALIZE THE SYSTEM INTO WORKABLE SECTIONS. INSULATION SHALL GO AROUND FLANGES.

VALVE SCHEDULE

- CALIBRATED BALANCE VALVES: SHALL BE A BRONZE OR BRASS BALL VALVE WITH A SET SCREW STOP.
 - BALL VALVE: SHALL BE NSF RATED FOR POTABLE WATER, BRASS OR BRONZE BODY WITH CHROME PLATED BRONZE BALL.
 - BUTTERFLY VALVE: SHALL BE CAST IRON BODY WITH FLANGED ENDS, WAFFER STYLE VALVES ARE NOT ALLOWED.
 - GATE VALVE: SHALL BE A BRONZE OR CAST IRON BODY WITH A RISING STEM AND SOLID BRONZE WEDGE.
 - GLOBE VALVE: SHALL BE A BRONZE OR CAST IRON BODY WITH A BRONZE DISC
 - ALL VALVES SHALL BE LINE SIZE FULL PORT INSTALLED WITH FULL STEM/HANDLE MOVEMENT. HANDLES SHALL NEVER BE INSTALLED VERTICALLY DAWN.

PIPE MATERIAL AND INSULATION SCHEDULE NOTES

1. INSULATION & ADHESIVE SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS ACCORDING TO ASTM STANDARD AND NFPA 255. INSULATION SHALL BE INSTALLED BY A SKILLED INSTALLER IN A CLEAN WORKMANSHIP LIKE MANNER AFTER THE SYSTEM HAS BEEN PROPERLY TESTED. ALL JOINTS SHALL BE PROPERLY SEALED TO KEEP INTEGRITY OF VAPOR BARRIER INTACT. ALL INSULATION SHALL HAVE PVC JACKETS ON ALL ELBOWS AND THE ENTIRE PIPING SHALL BE JACKETED WITH PVC WHERE EXPOSED IN PUBLICLY ACCESSIBLE AREAS.
 2. NO INSULATION IS REQUIRED UNLESS PIPING IS A PLASTIC MATERIAL NOT MEETING 25 / 50 FLAME AND SMOKE RATING IN A RETURN AIR PLENUM (SEE NOTE 1 IF INSULATION IS REQUIRED).
 3. CROSS-LINKED POLYETHYLENE (PEX) PIPING WITH CRIMPED FITTINGS IS AN ACCEPTABLE ALTERNATIVE ONLY IF ALLOWED BY LOCAL CODES. INSULATION WILL STILL BE REQUIRED.
 4. ALL UNDERGROUND PIPING SHALL BE INSTALLED PER ASTM D2321



BEATRICE STATE DEVELOPMENTAL CENTER
D SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
EAGLE CREEK, NEBRASKA
CONTRACTOR: TREC
MECHANICAL SCHEDULES 2

MECHANICAL SCHEDULES

PROVIDE SPECIFIED OR APPROVED EQUAL

WATER SOFTENER (ALTERNATE #3 ONLY)

MARK	MANUFACTURER	MODEL #	QNTY	CONTINUOUS GPM		PIPE SIZE	EXCHANGE CAPACITY		SOFTENER TANK		BRINE TANK		SOFTENER LOCATION	NOTES
				GRAINS	LB SALT		DIA.	HEIGHT	DIA.	HEIGHT	DIA.	HEIGHT		
WS-1	EASYWATER	SP-1465-1C	2	22	25	1"	110,000	1500	14"	72"	18"	42"	MECHANICAL 11	1,2

WATER SOFTENER SCHEDULE NOTES

1. TO BE SUPPLIED AS PART OF ALTERNATE #3 ONLY.
2. ALL DIMENSIONS IF NOT SPECIFIED ARE IN INCHES.
3. EXCHANGE CAPACITIES BASED ON TREATING WATER CONTAINING 10 GRAIN HARDNESS PER GALLON AND AT 50% OF PEAK FLOW RATE.
4. DIMENSIONS OF TANKS ARE MAXIMUM ALLOWED SIZES.
5. SOFTENER SHALL BE CONTROLLED BY PROGRESS FLOW DUPLEX METERED REGENERATION.
6. PROVIDE TWO (2) SOFTENER TANKS AND ONE (1) BRINE TANK.
7. SOFTENER BRINE TANK SHALL BE FILLED WITH SALT TO ABOVE THE NORMAL WATER LEVEL AT SUBSTANTIAL COMPLETION.

FLUID COOLER

MARK	MANUFACTURER	MODEL #	CLOSED CIRCUIT WATER					AIR CONDITIONS		ELECTRICAL DATA				OPERATING WEIGHT LBS	SYSTEM SERVED	NOTES	
			GPM	EWT °F	LWT °F	PRESSURE DROP PSI	GLYCOL %	CFM	EAT DB/WB	SPRAY WATER GPM	FAN HP	PUMP HP	FAN V/Ø	PUMP V/Ø			
FC-1	MARLEY	MHF7105QAEC	387	95	85	5.9	40.0	78160	89° / 78°	5	20	5	208/3	208/1	15450	CHILLER	1-7

FLUID COOLER SCHEDULE NOTES

1. COOLER CONSTRUCTION SHALL BE GALVANIZED STEEL WITH A COPPER COIL, STAINLESS STEEL HOT AND COLD WATER BASINS, ALUMINUM WORK LADER, INTERNAL WORKING PLATFORM, AND BALL FLOAT MAKE UP WATER CONTROLLER.
2. ALL MOTORS 10 HP AND GREATER SHALL BE PROVIDED WITH A NEMA 3R, OUTDOOR RATED VARIABLE FREQUENCY DRIVE (VFD).
3. SHALL BE PROVIDED WITH A NON-STICK, WATER CLEANING MESH SCREEN OVER AIR INLET AREAS TO KEEP UNIT CLEAN.
4. PROVIDE 208V 1 PHASE, 9 KW BASIN HEATER. HEATER TO HAVE INDEPENDENT ELECTRICAL CONNECTION.
5. PROVIDE 208V 1 PHASE PUMP. PUMP TO RUN ON INDEPENDENT CONTROLS. PUMP TO HAVE INDEPENDENT ELECTRICAL CONNECTION.
6. PROVIDE FLUID COOLER WITH VIBRATION ISOLATION RAILS
7. PROVIDE 4" CONCRETE EQUIPMENT PAD, REFER TO ARCHITECTURAL PLANS FOR PAD REQUIREMENTS.

HYDRONIC ACCESSORIES

MARK	PART DESCRIPTION	MANUFACTURER	MODEL #	MAX. WORKING PRESSURE PSIG	TEMP °F	CONSTRUCTION	MAX HEAD LOSS	VOLUME GALLON	DESIGN FLOW GPM	UNIT SIZE (INCHES)	DIAMETER	LENGTH	HEIGHT	SYSTEM SERVED	NOTES
ET-1	FULL ACCEPTANCE BLADDER TYPE EXPANSION TANK	TACO	CA90-125	125	240	STEEL PER ASME VIII, DIV 1	-	23	-	20	-	29	CONDENSER WATER	-	
ADS-1	AIR & DIRT SEPARATOR	TACO	AC08-125	125	270	STEEL PER ASME VIII, DIV 1	2 FT	-	-	20	-	45.5	CONDENSER WATER	2	
MFT-1	MAKE-UP FEED TANK	JL WINGERT	GL50-E1	100	85	POLYETHYLENE	-	50	2	24	-	60	CONDENSER WATER	1	

HYDRONIC ACCESSORIES SCHEDULE NOTES

1. MAKE-UP FEED TANK SHALL BE PROVIDED WITH 1/3 HP GEAR PUMP, STRAINER, REMOVABLE LID, STEEL SUPPORT STAND AND A NEMA 4X CONTROL PANEL.
2. UNIT SHALL BE TESTED BY A INDEPENDENT THIRD PARTY AND CAPABLE OF REMOVING DEBRIS DOWN TO 35 MICRON AT 100 PASSES OR LESS. THE AIR AND DIRT REMOVAL DEVICE SHALL REMOVE 100% OF THE FREE AIR, 100% OF THE ENTRAINED AIR, AND UP TO 99.6% OF THE DISSOLVED AIR IN THE SYSTEM FLUID.



SEQUENCE OF OPERATION

CONDENSER WATER SYSTEM

CONTROLS:

- MODIFY EXISTING METASYS BUILDING CONTROL SYSTEM BY JOHNSON CONTROLS INC. TO REMOVE ALL DEMOLISHED EQUIPMENT AND ADD NEW EQUIPMENT.

ALARMS:

- ALL MANUFACTURERS ALARMS ARE TO BE REPORTED TO THE BAS WITH EMAILS BEING SENT OUT TO THE RESPECTIVE PARTIES, LIST OF EMAIL ADDRESSES IS TO BE PROVIDED BY OWNER.
- ALARMS SHALL INCLUDE BUT NOT LIMITED TO:
 - CHILLED WATER PUMP FAILURE VIA MOTOR CURRENT SWITCH AND FLOW SWITCH
 - CONDENSER WATER PUMP FAILURE VIA MOTOR CURRENT SWITCH AND FLOW SWITCH
 - VFD FAULTS
 - PUMPS OPERATING IN HAND
 - LOW AND HIGH CONDENSER WATER TEMPERATURE / PRESSURE
 - LOW FLUID COOLER BASIN WATER ALARM
 - HIGH BASIN WATER LEVEL ALARM
 - COOLING TOWER VIBRATION ALARM

GENERAL:

- ALL POINTS SHALL HAVE STATUS CLEARLY IDENTIFIED ON THE CONTROLS SCREEN.
- ALL SET POINTS SHALL BE ADJUSTABLE AND CLEARLY IDENTIFIED AS SET POINTS AND NOT READ ONLY VALUES.
- IT IS THE CONTROLS CONTRACTORS TO COORDINATE WITH THE MECHANICAL/HVAC CONTRACTOR TO INSTALL ALL CONTROL VALVES, DAMPERS, SENSORS, WELLS, ETC.
- ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS FOR OPTIMAL PERFORMANCE.

FLUID COOLER (FC-1):

- FIRST STAGE OF COOLING THE CONDENSER WATER SHALL BE TO CIRCULATE WATER THROUGH THE FLUID COOLER WITH THE FAN OFF.
- SECOND STAGE OF COOLING, IF THE WATER TEMPERATURE LEAVING THE UNIT CANNOT BE MAINTAINED, TURN ON THE OPEN LOOP WATER PUMP FOR EVAPORATIVE COOLING. DO NOT OPERATE WATER PUMP IF THE OUTSIDE AMBIENT TEMPERATURE IS BELOW°F (ADJ).
- THIRD STAGE OF COOLING, IF THE WATER LEAVING THE UNIT (COND SUPPLY) CANNOT BE MAINTAINED BELOW 85° F (ADJ). THE FANS (CONTROLLED AS ONE) SHALL MODULATE TO MAINTAIN THE WATER LEAVING THE FLUID COOLER (COND SUPPLY) AT 85° F (ADJ).
- THE SUMP WATER LEVEL SHALL BE MAINTAINED BY MONITORING THE WATER LEVEL WITH A FLOAT SWITCH AND OPENING/CLOSING A VALVE IN THE DOMESTIC WATER MAKE-UP FEED LINE.
- THE CONDENSER WATER BYPASS VALVE SHALL BE NORMALLY CLOSED AND MODULATED OPEN AS REQUIRED IS THE CONDENSER SUPPLY WATER CANNOT BE MAINTAINED AT THE MINIMUM TEMPERATURE (COORDINATE WITH THE CHILLER MANUFACTURER)

CONDENSER WATER PUMPS (P-18B):

- SHALL OPERATE WHEN THE CHILLER IS ON.
- SHALL BE MODULATED BY THE VARIABLE FREQUENCY DRIVE (VFD) TO THE MINIMUM SPEED AS NECESSARY TO MAINTAIN THE CONDENSER WATER SUPPLY AT 85° F (ADJ).
- PUMPS SHALL NEVER BE SLOWED TO LESS THAN THE CHILLER MINIMUM FLOW RATE. (COORDINATE WITH MANUFACTURER). WHEN THE CONDENSER WATER IS LESS THAN 65°F, THE VFD SHALL MODULATE BASED ON A SIGNAL FROM THE CHILLER TO MAINTAIN THE CONDENSER WATER PRESSURE TO ALLOW THE CONDENSER TEMPERATURE TO RISE.

PRESSURE RELIEF VALVE:

- SHALL REMAIN CLOSED DURING NORMAL OPERATION AND ONLY OPEN WHEN THE SYSTEM PRESSURE AT THE VALVE RISES TO 75 PSI (ADJ).
- CONTRACTOR SHALL INSTALL A NEW PRESSURE RELIEF VALVE IN THE NEW CHILLED WATER PIPING

INITIAL SYSTEM FILL:

- SYSTEM SHALL BE FILLED WITH A PRESSURE REDUCING VALVE AT 20 PSI (ADJ).

M3.4

BEATRICE STATE DEVELOPMENTAL CENTER
FOOD SERVICE BUILDING - COOLING TOWER & ROOF REPLACEMENT
BEATRICE, NEBRASKA
3000 UNICORN STREET
SEQUENCE OF OPERATION - MECHANICALARCHITECTS


DESIGN:

BY:

REV:

CHECKED: