



# Delta College

1961 Delta Rd, University Center MI 48710

## DOMESTIC HOT WATER SYSTEM REPLACEMENT

JUNE 18, 2026

### ENGINEER

MacMILLAN ASSOCIATES  
714 E. MIDLAND ST.  
BAY CITY MI, 48706  
(989) 894-4300

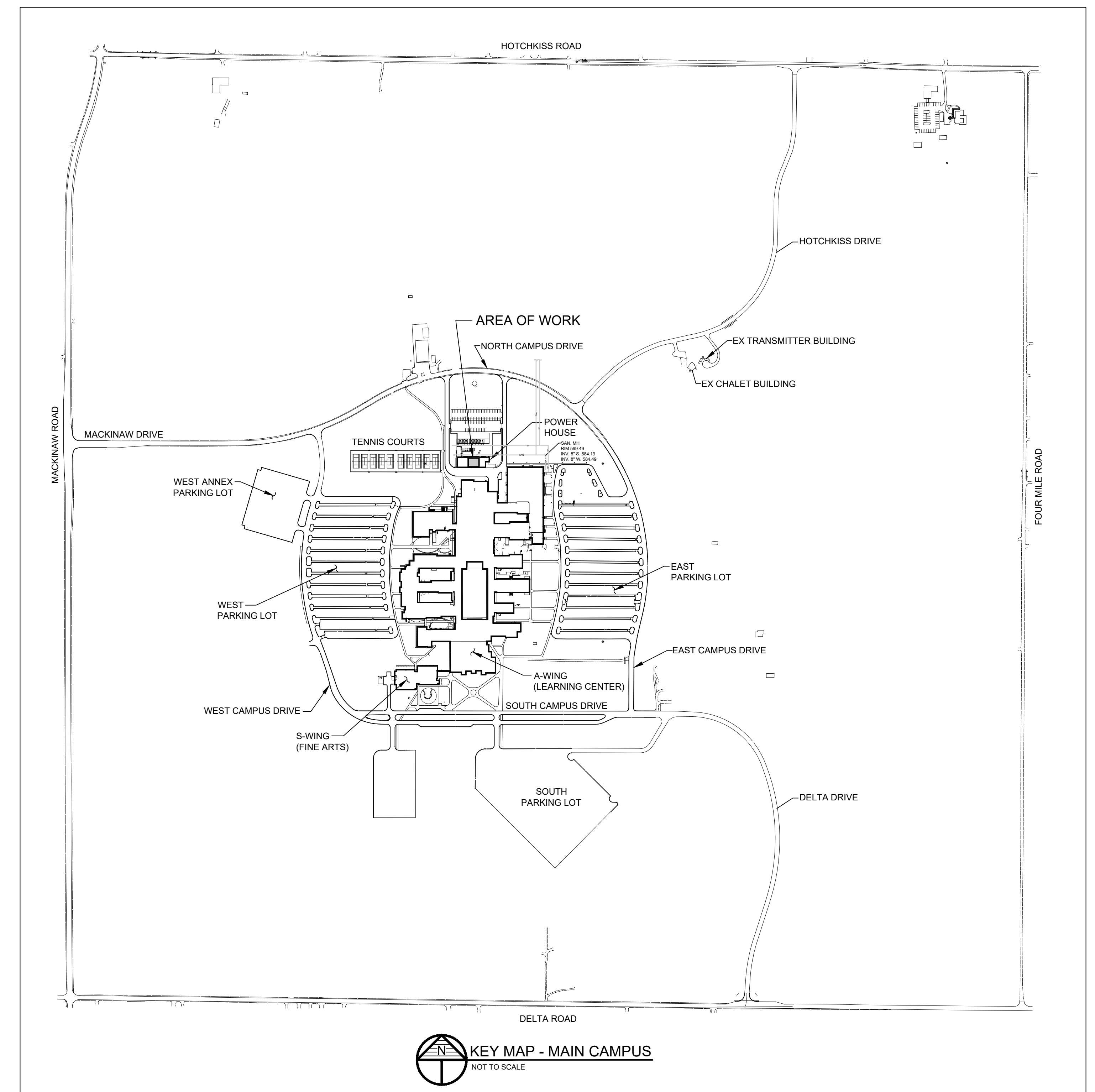
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### CODE INFORMATION








































#### APPLICABLE CODES

- 2023 NATIONAL ELECTRICAL CODE
- 2021 MICHIGAN PLUMBING CODE
- 2021 MICHIGAN MECHANICAL CODE
- 2021 MICHIGAN ENERGY CODE



### LOCATION MAP



MECHANICAL SYMBOLS AND ABBREVIATION LIST	
ABV	ABOVE
ACCU	AIR COOLED CONDENSING UNIT
ACU	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIH	AIR INTAKE HOOD
BF	BARRIER FREE
BFG	BELOW FINISHED GRADE
CA	COMPRESSED AIR
CFM	CUBIC FEET PER MINUTE
CH	CABINET HEATER
CUH	CABINET UNIT HEATER
CI	CAST IRON
CO	CLEAN OUT
COND	CONDENSATE
CONV	CONVECTOR
CP	CIRCULATING PUMP
CT	COOLING TOWER
CW	COLD WATER
DF	DRINKING FOUNTAIN
DI	DEIONIZED WATER
DS	DRAINAGE STACK
DT	DRAIN TILE
DTA	DRAIN TILE CONNECTOR
EA	EXHAUST AIR
EAF	EXHAUST AIR REGISTER
EAR	EXHAUST FAN
EL	ELEVATION
ERU	ENERGY RECOVERY UNIT
EVB	ELECTRIC VARIABLE AIR VOLUME BOX
EWC	ELECTRIC WATER COOLER
EX	EXISTING
FC	FLUID COOLER
FCU	FAN COIL UNIT
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FS	FLOOR SINK
FTR	FIN TUBE RADIATION
FVB	FAN POWERED VARIABLE AIR VOLUME BOX
GI	GREASE INTERCEPTOR
GPM	GALLONS PER MINUTE
HB	INTERIOR HOSE BIB
HP	HEAT PUMP
HW	HOT WATER
HWHR	HOT WATER RETURN
HWRR	HOT WATER RADIANT PANEL
HX	HEAT EXCHANGER
IE	INVERT ELEVATION
JS	JANITORS SINK
L	LAVATORY
MBD	MANUAL BALANCING DAMPER
MJA	MAKE UP AIR UNIT
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
OA	OUTSIDE AIR
PRV	PRESSURE REGULATING OR REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
RADR	RADIANT RETURN PIPING
RADS	RADIANT SUPPLY PIPING
RAH	RELIEF AIR HOOD
RC	RETURN AIR REGISTER
RD	RAIN WATER CONDUCTOR
RO	ROOF DRAIN
RF	RETURN AIR FAN
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAR	SUPPLY AIR REGISTER
SED	SECONDARY EMERGENCY DRAINAGE
SERC	SECONDARY EMERGENCY RAIN WATER CONDUCTOR
SERD	SECONDARY EMERGENCY ROOF DRAIN
SH	SHOWER
SK	SINK
SP	STATIC PRESSURE
SS	SERVICE SINK
TP	TRAP PRIMER
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
UV	UNIT VENTILATOR
V	VENT
VA	VALVE
VAV	VARIABLE AIR VOLUME BOX
VAVR	VARIABLE AIR VOLUME BOX W/ RE-HEAT COIL
VFD	VARIABLE FREQUENCY DRIVE
VT	VITRIFIED TILE
VS	VENT STACK
VTR	VENT THRU ROOF
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WH	WATER HEATER
WHYD	EXTERIOR WALL HYDRANT
	EX. VERTICAL FIRE DAMPER
	EX. HORIZONTAL FIRE DAMPER
	VERTICAL FIRE DAMPER
	HORIZONTAL FIRE DAMPER
	VERTICAL SMOKE DAMPER
	HORIZONTAL SMOKE DAMPER
	VERTICAL COMBINATION FIRE/SMOKE DAMPER
	HORIZONTAL COMBINATION FIRE/SMOKE DAMPER
	SUPPLY AIR DIFFUSER - TYPE "A", 250 CFM
	RETURN OR EXHAUST AIR GRILLE - TYPE "B", 250 CFM
	SLOT DIFFUSER
	MANUAL DAMPER
	MOTORIZED DAMPER
	DUCT SMOKE DETECTOR
	DUCT PRESSURE SENSOR
	FLUSH TANK WATER CLOSET
	FLUSH VALVE FLOOR MOUNTED
	FLUSH VALVE WALL MOUNTED
	SANITARY PIPING BELOW FLOOR OR GRADE
	SANITARY PIPING ABOVE FLOOR
	STORM PIPING BELOW FLOOR OR GRADE
	STORM PIPING ABOVE FLOOR
	SECONDARY EMERGENCY DRAINAGE PIPING
	ACID WASTE PIPING BELOW FLOOR OR GRADE
	ACID WASTE PIPING ABOVE FLOOR
	TRAP PRIMER PIPING BELOW FLOOR
	CO ABOVE FLOOR
	CO UP TO GRADE
	CO UP TO FLOOR
	HEAT PUMP SUPPLY PIPING
	HEAT PUMP RETURN PIPING
	HEATING HOT WATER SUPPLY PIPING
	HEATING HOT WATER RETURN PIPING
	CHILLED WATER SUPPLY PIPING
	CHILLED WATER RETURN PIPING
	COOLING TOWER WATER SUPPLY PIPING
	COOLING TOWER WATER RETURN PIPING
	CONDENSOR WATER RETURN PIPING
	CONDENSOR WATER SUPPLY PIPING

<div>GENERAL MECHANICAL NOTES</div> <div><div><div>1. THE MECHANICAL TRADES SHALL FAMILIARIZE THEMSELVES WITH ALL EXISTING AND NEW CONDITIONS. THESE DRAWINGS, ADDENDA &amp; RELATED SPECIFICATIONS. THEY SHALL COMPLETELY SATISFY THEMSELVES AS TO THE CONDITIONS TO WHICH THE WORK IS TO BE PERFORMED BEFORE SUBMITTING THEIR BID. NO ALLOWANCES OR CONSIDERATIONS WILL BE GIVEN AT A LATER DATE FOR ALLEGED MISUNDERSTANDINGS AS TO THE REQUIREMENTS OF THE WORK. MATERIALS TO BE FURNISHED, OR CONDITIONS REQUIRED BY THE NATURE OF THIS PROJECT SITE DUE TO NEGLIGENCE ON THE BIDDERS PART TO MAKE SUCH AN EXAMINATION AND COORDINATION.</div><div>2. DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO SHOW APPROXIMATE LOCATION AND GENERAL ARRANGEMENT OF SYSTEMS AND EQUIPMENT. DRAWINGS SHALL NOT BE SCALED FOR LOCATION OF SYSTEMS, EQUIPMENT, ETC. ALL LOCATIONS OF SYSTEMS AND EQUIPMENT SHALL BE VERIFIED IN FIELD AND COORDINATED WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS. SOME SYSTEMS (PIPING, DUCTWORK, ETC.) AND EQUIPMENT LOCATIONS MAY REQUIRE CHANGES IN LOCATION DUE TO FIELD CONDITIONS AND COORDINATION WITH OTHER TRADES. THESE CHANGES SHALL BE MADE WITH NO ADDITIONAL COST TO THE OWNER. FAILURE TO VERIFY AND COORDINATE WILL BE NO REASON FOR ADDITIONAL COMPENSATION.</div><div>3. THE INSTALLATION OF ALL SYSTEMS, EQUIPMENT, ETC., IS SUBJECT TO CLARIFICATION WITH SUBMITTED SHOP DRAWINGS AND FIELD COORDINATION REQUIREMENTS. EQUIPMENT OUTLINES SHOWN ON DRAWINGS OR DIMENSIONED ON DRAWINGS ARE LIMITING DIMENSIONS. ANY EQUIPMENT THAT REDUCES THE INDICATED CLEARANCES OR EXCEEDS SPECIFIED OR SCHEDULED EQUIPMENT DIMENSIONS SHALL NOT BE USED.</div><div>4. THE MECHANICAL CONTRACTOR SHALL COORDINATE FINAL LOCATION OF ALL EQUIPMENT WITH PIPING, DUCTWORK, ETC., AT THE TIME OF ROUGH-IN. ALL EQUIPMENT TO BE SERVICEABLE. ABOVE CEILING EQUIPMENT SHALL BE WITHIN 18" OF CEILING WITHOUT ANY OBSTRUCTIONS AND SHALL HAVE ALL SERVICE AND ACCESS SPACES KEPT CLEAR. PERFORM ABOVE CEILING COORDINATION WITH ALL TRADES.</div><div>5. THESE DRAWINGS AND THE ASSOCIATED SPECIFICATIONS ARE INTENDED TO PROVIDE COMPLETELY FURNISHED, INSTALLED AND OPERATIONAL MECHANICAL SYSTEM (HEATING, VENTILATING, AIR CONDITIONING, PLUMBING AND PIPING, ETC.). IF THESE DRAWINGS AND ASSOCIATED SPECIFICATIONS HAVE INFORMATION OMITTED THAT WOULD NOT ALLOW A COMPLETELY OPERATIONAL SYSTEM AS IS THE INTENT OF THE ENGINEER, THE BIDDER SHALL NOTIFY THE ENGINEER A MINIMUM ONE WEEK PRIOR TO THE BID DATE TO ALLOW FOR ADDENDA. ONCE BIDS HAVE BEEN RECEIVED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIAL, LABOR, ETC., TO FURNISH AND INSTALL A COMPLETELY OPERATIONAL MECHANICAL SYSTEM AS IS THE INTENT OF THESE DRAWINGS AND ASSOCIATED SPECIFICATION. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. IF ANY DISCREPANCIES ARE ON DRAWINGS, AS COMPARED TO MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND INSTALL EQUIPMENT AS REQUIRED AT NO ADDITIONAL COST TO THE PROJECT.</div><div>6. THE MECHANICAL TRADES SHALL TAKE OUT ALL PERMITS AND ARRANGE FOR NECESSARY INSPECTIONS AND SHALL PAY ALL FEES AND COSTS.</div><div>7. THE MECHANICAL TRADES SHALL VERIFY AMOUNT OF EXISTING PIPING, VALVES, DUCTWORK, ETC. TO BE REMOVED OR RELOCATED TO ALLOW FOR INSTALLATION OF NEW PIPING, DUCTWORK, VALVES, EQUIPMENT, WALLS, ETC. ALL ABANDONED PIPING, VALVES, ETC., SHALL BE REMOVED.</div><div>8. THE MECHANICAL TRADES SHALL COORDINATE ALL WORK WITH OTHER TRADES AND SHALL COORDINATE ANY SYSTEMS SHUT-DOWN WITH THE ARCHITECT/ENGINEER AND OWNER.</div><div>9. ALL EXISTING EQUIPMENT, PIPING, DUCTWORK, ETC. THAT IS TO BE REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR SHALL REMOVE AND LOCATE THIS MATERIAL THAT REMAINS THE PROPERTY OF THE OWNER TO A LOCATION DETERMINED BY THE OWNER SOMEWHERE ON SITE. IF THE OWNER DOES NOT WANT TO MAINTAIN POSSESSION OF THE REMOVED MATERIAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING MATERIAL FROM THE SITE AND DISPOSING OF THIS MATERIAL AS NECESSARY TO MEET ALL CODES AND REQUIREMENTS AND SHALL PAY ALL COSTS AS REQUIRED FOR ANY DISPOSAL FEES, INSPECTIONS, PERMITS, ETC.</div><div>10. ATTACHMENTS OF MECHANICAL OR ELECTRICAL EQUIPMENT TO STRUCTURAL MEMBERS ARE THE RESPONSIBILITY OF THE INSTALLING TRADE. STRUCTURAL MEMBERS SHALL NOT BE FIELD CUT, WELDED OR OTHERWISE MODIFIED WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER. ATTACHMENT TO STEEL JOISTS SHALL BE MADE AT PANEL POINTS WHENEVER POSSIBLE. STEEL JOISTS SHALL BE REINFORCED FOR NON-PANEL POINT CONCENTRATED LOADS IN ACCORDANCE WITH THE STRUCTURAL DETAILS. THIS WORK SHALL BE PERFORMED BY CERTIFIED WELDERS AND IS THE RESPONSIBILITY OF THE TRADE INSTALLING THE SUBJECT LOAD. STRUCTURAL MEMBERS SHALL NOT BE OVERLOADED AS A RESULT OF ATTACHMENTS. ATTACHMENT/EQUIPMENT LOADING FOR ALL TRADES RESULTING IN TOTAL LOAD GREATER THAN AN EQUIVALENT UNIFORM 5 PSF FOR ANY MEMBER SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW.</div><div>11. THE MECHANICAL TRADES SHALL FURNISH AND LOCATE CEILING AND/OR WALL ACCESS DOORS AS REQUIRED TO GIVE ACCESS TO VALVES, EQUIPMENT, ETC. COORDINATE WALL OR CEILING FIRE RATINGS AND FURNISH ACCESS DOOR WITH RATING AS NECESSARY. THE GENERAL TRADES SHALL INSTALL ACCESS DOORS.</div><div>12. FURNISH PREFABRICATED ROOF CURB FOR EACH EXHAUST FAN, WITH HEIGHT OF CURB TO GIVE MINIMUM 12" CLEAR FROM FINISHED ROOF TO EXHAUST FAN CURB CAP. THE MECHANICAL TRADE SHALL FURNISH THE ROOF CURB TO THE GENERAL TRADE. THE GENERAL TRADE SHALL LEVEL CURB, PERFORM ALL ROOFING AND FLASHING ETC.</div><div>13. SEE SPECIFICATION FOR FURTHER INFORMATION.</div></div><div><div>SPECIFIED AND SCHEDULED EQUIPMENT NOTE</div><div>EQUIPMENT MANUFACTURERS AND MATERIALS SPECIFIED OR SCHEDULED ON THESE PROJECT DRAWINGS AND SPECIFICATIONS SHALL BE INCLUDED UNDER THE BASE BID PRICE. SUBSTITUTE OR ALTERNATE EQUIPMENT SHALL BE PRICED AS AN ADD OR DEDUCT PRICE TO THE CONTRACTOR'S BASE BID PRICE. IF ONE OR MORE SUBSTITUTIONS ARE ACCEPTED WITH THE PROPOSAL AT THE CORRESPONDING ALTERNATE PRICE, IT SHALL BE UNDERSTOOD THAT APPROVAL OF SAID EQUIPMENT SHALL BE SUBJECT TO STRICT ADHERENCE TO THE PLANS AND SPECIFICATIONS. SHOULD ANY OF THE SUBSTITUTE EQUIPMENT FAIL TO MEET THE SPECIFICATIONS AFTER THE PROPOSAL HAS BEEN ACCEPTED, REGARDLESS IF EQUIPMENT HAS BEEN SHIPPED TO THE SITE AND INSTALLED, THE CONTRACTOR SHALL FURNISH AT NO EXTRA COST TO THE OWNER, THE SPECIFIED EQUIPMENT MEETING THE REQUIREMENTS AS STATED IN THESE SPECIFICATIONS AND COVER ALL COSTS NECESSARY FOR REMOVAL AND REINSTALLATION OF EQUIPMENT.</div></div></div>		
<div>ELECTRICAL SYMBOLS AND ABBRVIATIONS</div> <div><div><div>⬤ POWER CONNECTION</div><div>S SWITCH</div></div></div>		

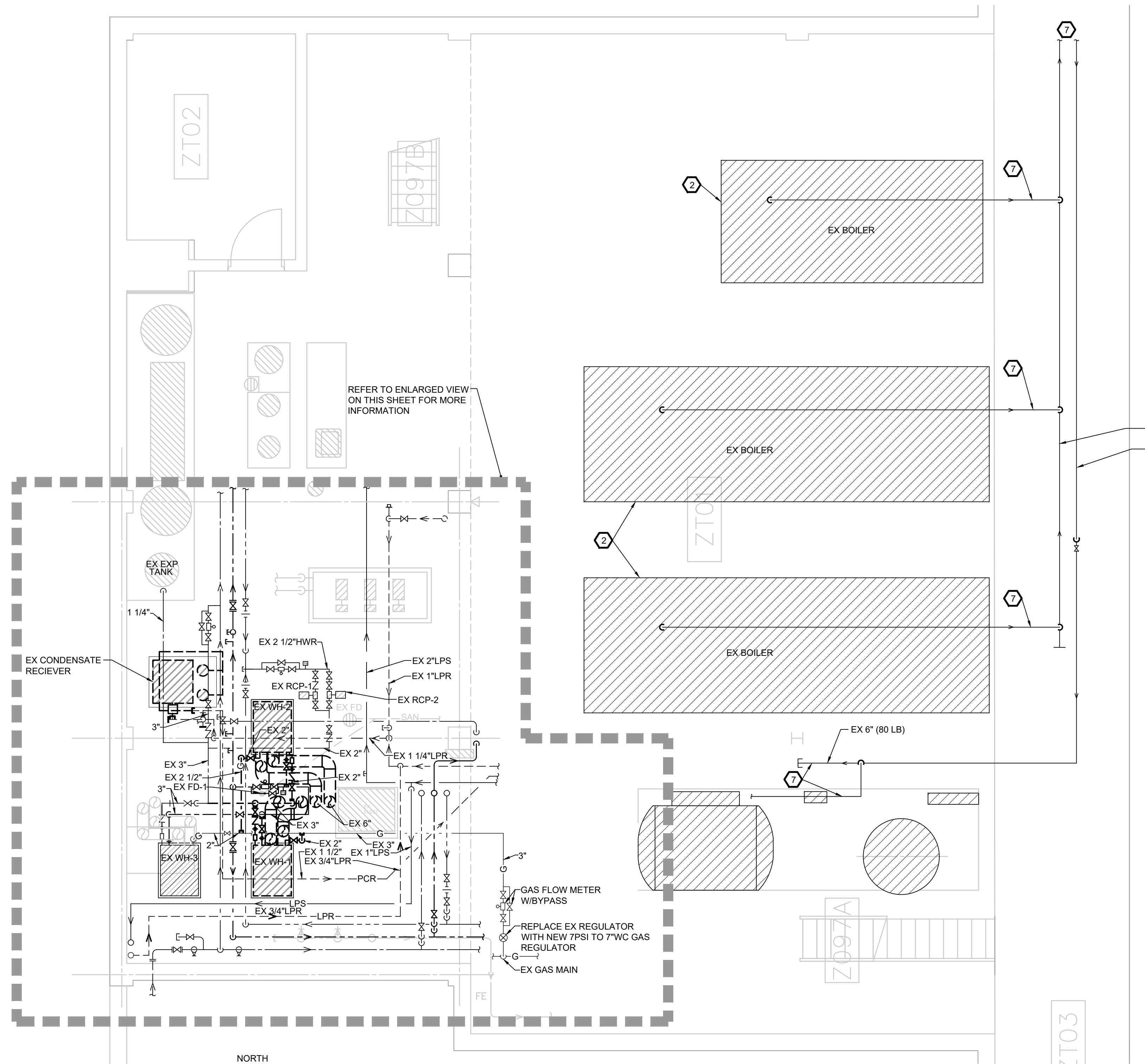
MASTER ELECTRICAL DRAWINGS SPECIFICATIONS	
<b>BASIC ELECTRICAL REQUIREMENTS</b>	<b>INSTALLATION</b>
<p>A. FURNISH ALL EQUIPMENT, MATERIALS, ARTICLES, ITEMS, OPERATIONS OR METHODS LISTED, MENTIONED OR SCHEDULED ON DRAWINGS, THESE SPECIFICATIONS, MANUFACTURER'S INSTALLATION INSTRUCTIONS AND INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY FOR COMPLETE INSTALLATION AND OPERATION.</p> <p>B. LAYOUT OF THE WORK EXAMINE THE SITE AND ALL THE DRAWINGS BEFORE PROCEEDING WITH THE LAYOUT AND INSTALLATION OF THIS WORK. CONFER AND COOPERATE WITH THE OTHER TRADES ON THE JOB SO ALL PARTS WILL BE INSTALLED IN PROPER RELATIONSHIP. PRECISE LOCATIONS OF PARTS TO COORDINATE WITH OTHER WORK IS THE RESPONSIBILITY OF THE CONTRACTOR.</p> <p>C. INTERFERENCES THE CONTRACTOR SHALL CONFER WITH OTHER TRADES REGARDING THE LOCATION OF EQUIPMENT, FIXTURES, CONDUIT, SWITCHES, OUTLETS, ETC., IN ORDER THAT THERE MAY BE NO INTERFERENCE IN THE INSTALLATION OF THE WORK OF ANY TRADE ORS DELAY IN THE PROGRESS OF ANY WORK.</p> <p>D. MATERIALS AND WORKMANSHIP ALL MATERIALS AND EQUIPMENT FURNISHED FOR INSTALLATION ON THIS PROJECT SHALL BE NEW AND IN STRICT ACCORDANCE WITH THIS SPECIFICATION. ALL PACKAGED MATERIALS SHALL BE IDENTICAL TO THE ORIGINAL CONTAINERS WHICH SHOW THE MANUFACTURER'S NAME AND THE IDENTIFYING DESIGNATIONS AS TO SIZE, QUALITY, ETC. MATERIALS DELIVERED TO THE JOB IN UNMARKED OR MUTILATED PACKAGES WILL BE ORDERED TO BE REMOVED FROM THE SITE AT ONCE. MATERIALS OR EQUIPMENT JUDGED AS "DAMAGED" BY THE ARCHITECT OR ENGINEER SHALL BE REMOVED FROM THE JOB. ALL ELECTRICAL EQUIPMENT SHALL BEAR THE UNDERWRITER'S LABEL.</p> <p>E. GUARANTEES ALL EQUIPMENT AND WORK PERFORMED SHALL BE GUARANTEED FOR ONE YEAR FROM TIME OF SUBSTANTIAL COMPLETION OF PROJECT, UNLESS DIRECTED OTHERWISE IN DIVISION 1.</p> <p>F. SUBMITTALS SUBMIT ELECTRONIC FILES.</p> <p>PROPOSED PRODUCTS LIST- INCLUDE PRODUCTS SPECIFIED IN THE FOLLOWING SECTIONS</p> <p>G. REGULATORY REQUIREMENTS CONFORM TO APPLICABLE BUILDING CODE.</p> <p>CONFORM TO REQUIREMENTS OF NFPA 70, 2023 NATIONAL ELECTRIC CODE, 2021 MICHIGAN BUILDING CODE, 2023 STATE OF MICHIGAN ELECTRICAL CODE AND RULES PART 8, 2009 ANSI 117.1, 2021 MICHIGAN ENERGY CODE, AND LOCAL CODES.</p> <p>EQUIPMENT: U.L. TESTED AND APPROVED FOR ITS PURPOSE.</p> <p>THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION FEES. COPIES OF THE CERTIFICATE OF INSPECTION ARE TO BE PROVIDED TO THE OWNER AFTER FINAL INSPECTION AND APPROVAL FROM AUTHORITIES HAVING JURISDICTION.</p> <p>H. PROJECT/SITE CONDITIONS ALL BIDDERS SHALL PERSONALLY INSPECT THE SITE AND ACQUAINT THEMSELVES WITH ALL EXISTING CONDITIONS INVOLVED IN EXECUTION OF THIS CONTRACT, AND MAKE ALL NECESSARY MEASUREMENTS. NO "EXTRA" WILL BE CONSIDERED FOR ADDITIONAL WORK REQUIRED BECAUSE OF BIDDERS' FAILURE TO DO SO.</p> <p>I. TEMPORARY SERVICES THE CONTRACTOR SHALL PROVIDE AND MAINTAIN WIRING FOR ALL INTERIOR CONSTRUCTION LIGHTING AND POWER TO MEET OSHA STANDARDS. CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL REQUIRED LUMPS AND GUARDS. CONTRACTOR'S POWER TOOLS, CORDS, ETC. SHALL BE IN STRICT ACCORDANCE WITH NATIONAL ELECTRICAL CODE 2023, ARTICLE 590.</p> <p>J. OPERATION AND MAINTENANCE MANUALS TWO (2) BOUND SETS OF OPERATING AND MAINTENANCE MANUALS ARE TO BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR APPROVAL. MANUALS ARE TO INCLUDE ELECTRICAL DISTRIBUTION PARTS LISTS AND ALL OTHER PARTS LISTS AND MAINTENANCE PROCEDURES AS WELL AS OPERATING INSTRUCTIONS ON ALL EQUIPMENT SUPPLIED.</p>	<p>A. USE CONDUCTOR SIZE NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS.</p> <p>B. USE 16 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS LONGER THAN 100 FEET.</p> <p>C. NEATLY TRAIN AND LACE WIRING INSIDE BOXES, EQUIPMENT, AND PANELBOARDS.</p> <p>D. ALL POWER WIRING SHALL BE INSTALLED IN CONDUIT.</p> <p><b>FIELD QUALITY CONTROL</b></p> <p>A. VERIFY CONTINUITY OF EACH BRANCH CIRCUIT CONDUCTOR.</p> <p><b>BOXES</b></p> <p>A. BRANCH DEVICE BOXES: SHEET METAL BOXES: AS THE GENERAL PROJECT REQUIREMENT FOR BRANCH POWER AND LOW VOLTAGE SYSTEMS. USE 4" SQUARE STEEL BOX, WITH SINGLE GANG DEVICE. NON-METALLIC BOX IS NOT ACCEPTABLE IN FIRE RATED WALLS AND OR GENERAL PROJECT INSTALLATION.</p> <p>B. PULL AND JUNCTION BOXES: NEMA 1 ENCLOSURE FOR INTERIOR LOCATIONS. NEMA 3R FOR EXTERIOR LOCATIONS.</p> <p><b>INSTALLATION</b></p> <p>A. COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF OUTLETS MOUNTED ABOVE COUNTERS, BENCHES, AND BACKSPLASHES.</p> <p>B. USE FLUSH MOUNTING DEVICE BOX IN FINISHED AREAS.</p> <p>C. DO NOT INSTALL FLUSH MOUNTING BOX BACK-TO-BOX IN WALLS; PROVIDE MINIMUM 6 INCHES SEPARATION. PROVIDE MINIMUM 24 INCHES SEPARATION IN ACOUSTIC RATED WALLS.</p> <p>D. DO NOT FASTEN BOXES TO CEILING SUPPORT WIRES.</p> <p>E. SUPPORT BOXES INDEPENDENTLY OF CONDUIT.</p> <p>F. USE CAST ALUMINUM BOX IN EXTERIOR LOCATIONS. PROVIDE METALLIC "IN-WIRE" COVER.</p> <p><b>WIRING DEVICES</b></p> <p>A. WALL SWITCHES.</p> <p>B. RECEPTACLES.</p> <p>C. DEVICE PLATES.</p> <p><b>WALL SWITCHES</b></p> <p>A. MANUFACTURERS: 1. PASS &amp; SEYMOUR 2. LEVITON 3. BRYANT.</p> <p>B. DESCRIPTION: NEMA WD 1, HEAVY-DUTY, AC ONLY GENERAL-USE SNAP SWITCH.</p> <p>C. BODY AND HANDLE: DEVICE COLOR SHALL BE FROM STANDARD COLORS.</p> <p>D. RATINGS 1. VOLTAGE: 120/277 VOLTS, AC. 2. CURRENT: 20 AMPERES.</p> <p><b>EQUIPMENT WIRING SYSTEMS</b></p> <p>A. MECHANICAL EQUIPMENT</p> <p>B. FOOD SERVICE</p> <p>C. LIGHTING CONTROLS</p> <p><b>INSTALLATION</b></p> <p>A. ELECTRICAL TRADES SHALL PROVIDE POWER TO THE EQUIPMENT AS NOTED, SHOWN OR SCHEDULED ON THE DRAWINGS.</p> <p><b>SUPPORTING DEVICES</b></p> <p>A. CONDUIT AND EQUIPMENT SUPPORTS.</p> <p>B. ANCHORS AND FASTENERS.</p> <p><b>PRODUCT REQUIREMENTS</b></p> <p>A. MATERIALS AND FINISHES: PROVIDE ADEQUATE CORROSION RESISTANCE.</p> <p>B. PROVIDE MATERIALS, SIZES, AND TYPES OF ANCHORS, FASTENERS AND SUPPORTS TO CARRY THE LOADS OF EQUIPMENT AND CONDUIT. CONSIDER WEIGHT OF WIRE IN CONDUIT WHEN SELECTING PRODUCTS.</p> <p>C. ANCHORS AND FASTENERS: 1. CONCRETE STRUCTURAL ELEMENTS: USE EXPANSION ANCHORS. 2. STEEL STRUCTURAL ELEMENTS: USE BEAM CLAMPS. 3. CONCRETE SURFACES: USE SELF-DRILLING ANCHORS AND EXPANSION ANCHORS. 4. SOLID MASONRY, PLASTER, AND GYPSUM BOARD PARTITIONS: USE TOGGLE BOLTS AND HOLLOW WALL FASTENERS. 5. SOLID MASONRY WALLS: USE EXPANSION ANCHORS. 6. SHEET METAL: USE SHEET METAL SCREWS. 7. WOOD ELEMENTS: USE WOOD SCREWS.</p> <p><b>INSTALLATION</b></p> <p>A. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.</p> <p><b>ELECTRICAL IDENTIFICATION</b></p> <p>A. NAMEPLATES AND LABELS.</p> <p>B. WIRE AND CABLE MARKERS.</p> <p>C. PANELBOARD DIRECTORY.</p> <p><b>NAMEPLATES AND LABELS</b></p> <p>A. NAMEPLATES: ENGRAVED THREE-LAYER LAMINATED PLASTIC. BLACK LETTERS ON WHITE BACKGROUND, 1/4" LETTER HEIGHT, 1 1/2" MINIMUM TAG WIDTH AND 4 1/2" MAXIMUM TAG LENGTH.</p> <p>B. LOCATIONS: 1. PANELBOARDS 2. DISCONNECT SWITCHES 3. VFDs 4. MOTOR STARTERS</p> <p>C. CIRCUIT LABELS: BLACK LETTERING ON CLEAR OR WHITE POLYESTER ADHESIVE LABEL. USE BRADY HARSH ENVIRONMENT MULTI-PURPOSE #B-430 OR EQUAL.</p> <p>D. LOCATIONS 1. DEVICE FACEPLATES</p> <p><b>WIRE MARKERS</b></p> <p>A. MANUFACTURERS: 1. BRADY OR EQUAL.</p> <p>B. DESCRIPTION: TAPE OR TUBING TYPE WIRE MARKERS.</p> <p>C. LOCATIONS: EACH CONDUCTOR AT PANELBOARD.</p> <p><b>PANELBOARD DIRECTORY</b></p> <p>A. USE FACTORY SUPPLIED DIRECTORY CARDS. PROVIDE TYPEWRITTEN CIRCUIT LOADS PER CODE REQUIREMENTS. HAND WRITTEN DIRECTORY IS NOT ACCEPTABLE.</p>
<b>CONDUIT</b>	
<p>A. METAL CONDUIT.</p> <p>B. LIQUIDTIGHT FLEXIBLE RIGID STEEL CONDUIT.</p> <p>C. ELECTRICAL METALLIC TUBING.</p> <p>D. NONMETAL CONDUIT, SCH 40 OR HDPE.</p> <p>E. 3/4" MINIMUM SIZE.</p> <p>F. UNDERGROUND INSTALLATIONS: 1. USE SCHEDULE 40 PVC NON-METALLIC CONDUIT OR SEAMLESS HDPE DIRECT BURIAL CONDUIT.</p> <p>G. EXTERIOR LOCATIONS: USE GALVANIZED RIGID STEEL CONDUIT FOR ALL OUTSIDE INSTALLATION. USE APPLICABLE FITTINGS.</p> <p>H. DRY INTERIOR LOCATIONS: 1. USE EMT TYPE CONDUIT, SET SCREW COUPLINGS AND CONNECTORS. 2. USE RIGID STEEL FOR DRY INTERIOR WITH APPLICABLE FITTINGS AS NOTED OR SHOWN ON THE DRAWINGS.</p> <p>I. ONE 1" MINIMUM SIZE FOR DATA.</p>	
<b>INSTALLATION</b>	
<p>A. INSTALL NONMETALLIC CONDUIT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.</p> <p>B. ARRANGE SUPPORTS TO PREVENT MISALIGNMENT DURING WIRING INSTALLATION.</p> <p>C. SUPPORT CONDUIT USING COATED STEEL OR MALLEABLE IRON STRAPS. LAY IN ADJUSTABLE HANGERS, CLEVIS HANGERS, AND SPLIT HANGERS.</p> <p>D. GROUP RELATED CONDUITS, SUPPORT USING CONDUIT RACK. CONSTRUCT RACK USING STEEL CHANNEL. PROVIDE SPACE ON EACH FOR 25 PERCENT ADDITIONAL CONDUITS.</p> <p>E. FASTEN CONDUIT SUPPORTS TO BUILDING STRUCTURE AND SURFACES.</p> <p>F. DO NOT SUPPORT CONDUIT WITH WIRE OR PERFORATED PIPE STRAPS. REMOVE WIRE USED FOR TEMPORARY SUPPORTS.</p> <p>G. DO NOT ATTACH CONDUIT TO CEILING SUPPORT WIRES.</p> <p>H. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND PRESENT NEAT APPEARANCE.</p> <p>I. ROUTE CONDUIT PARALLEL AND PERPENDICULAR TO WALLS OR BUILDING CENTERLINES.</p> <p>J. ROUTE CONDUIT INSTALLED ABOVE ACCESSIBLE CEILINGS PARALLEL AND PERPENDICULAR TO WALLS.</p> <p>K. MAINTAIN ADEQUATE CLEARANCE BETWEEN CONDUIT AND PIPING.</p>	
<b>INTERFACE WITH OTHER PRODUCTS</b>	
<p>A. USE FIRESTOP CAULK WHERE CONDUIT PASSES THROUGH FIRE RATED FLOORS AND WALLS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.</p>	
<b>BUILDING WIRE AND CABLE</b>	
<p>A. BUILDING WIRE AND CABLE.</p> <p>B. METAL CLAD CABLE (MC).</p> <p>C. DESCRIPTION: SINGLE CONDUCTOR INSULATED WIRE.</p> <p>D. CONDUCTOR: COPPER.</p> <p>E. INSULATION VOLTAGE RATING: 600 VOLTS.</p> <p>F. INSULATION: TYPE THHN/THWN 75°C.</p>	

MECHANICAL DRAWING INDEX	
M0.0	MECHANICAL SYMBOL LIST, ABBREVIATIONS AND GENERAL NOTES
M1.1	PARTIAL LOWER LEVEL PLAN-DOMESTIC HOT WATER HEATER DEMOLITION
M2.1	PARTIAL LOWER LEVEL PLAN-DOMESTIC WATER PIPING REVISIONS
M3.1	PARTIAL LOWER LEVEL PLAN-STEAM AND CONDENSATE PIPING REVISIONS
M4.1	MECHANICAL SCHEDULES AND DETAILS
NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN ON SHEET MAY NOT BE USED IN THIS PROJECT.	



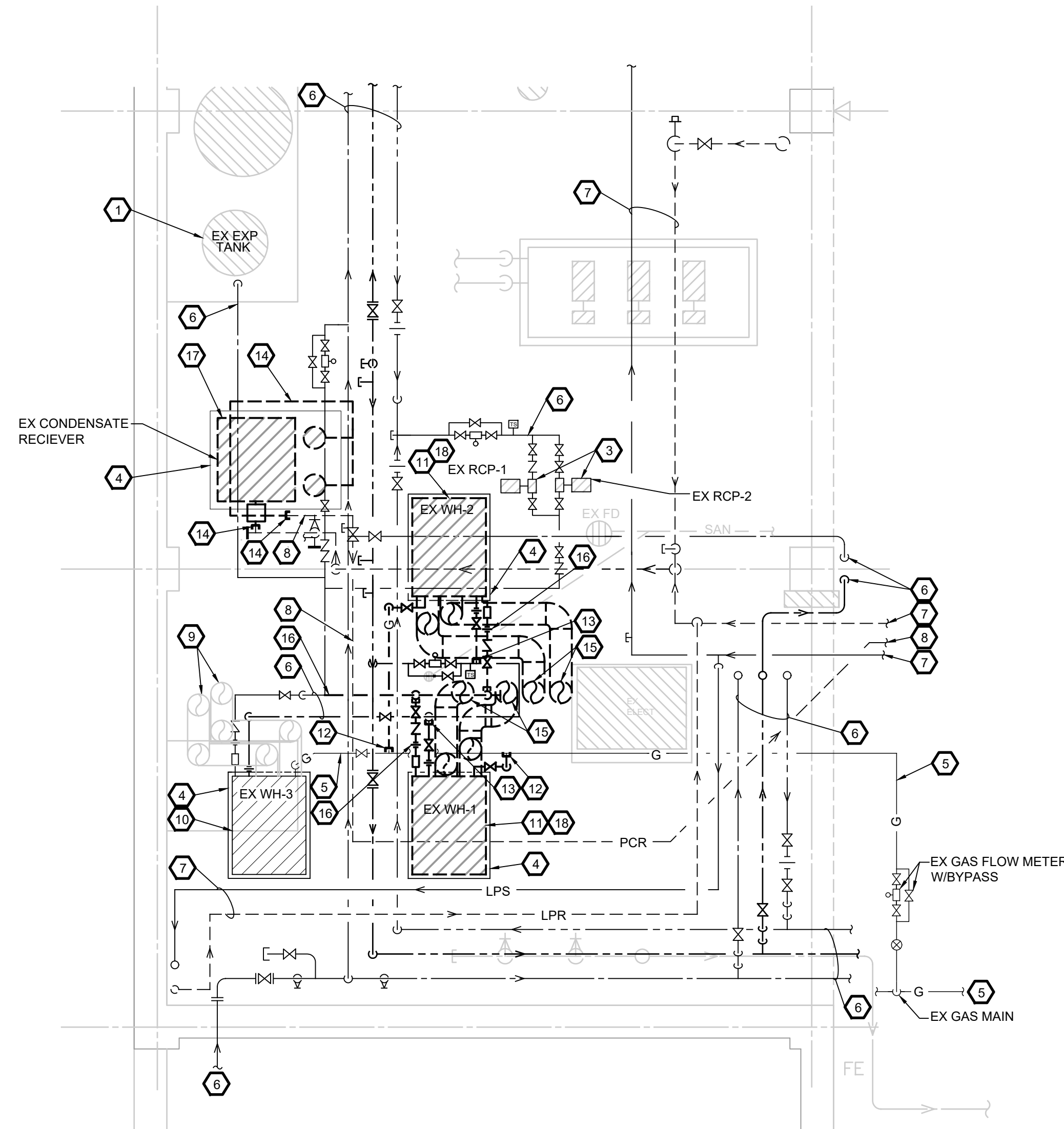


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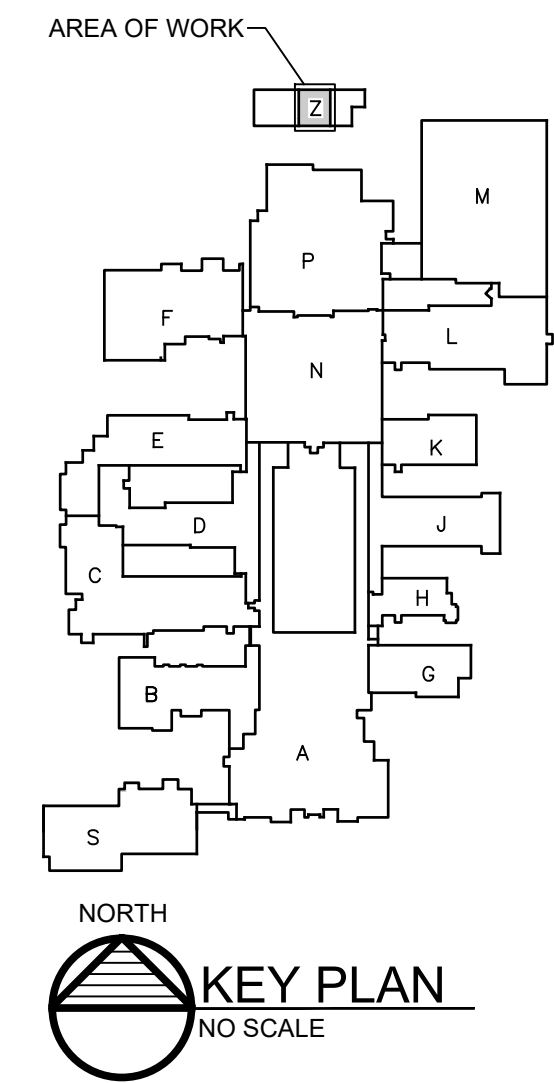
PARTIAL LOWER LEVEL PLAN - DOMESTIC WATER HEATER DEMOLITION

1/4"=1'-0"



PARTIAL ENLARGED LOWER LEVEL PLAN - DOMESTIC WATER HEATER DEMOLITION

3/8"=1'-0"



KEYED NOTES

- EXISTING EXPANSION TANK TO REMAIN.
- EXISTING BOILER TO REMAIN.
- EXISTING DOMESTIC HOT WATER RECIRCULATION PUMP TO REMAIN.
- EXISTING CONCRETE HOUSEKEEPING PAD TO REMAIN.
- EXISTING NATURAL GAS PIPING TO REMAIN.
- EXISTING DOMESTIC WATER PIPING TO REMAIN.
- EXISTING STEAM PIPING TO REMAIN.
- EXISTING STEAM CONDENSATE PIPING TO REMAIN.
- EXISTING 6" COMBUSTION AIR INTAKE AND FLUE TO REMAIN.
- EXISTING WATER HEATER TO REMAIN.
- REMOVE EXISTING WATER HEATER. REMOVE ALL EXISTING PIPING, VALVES, FITTINGS, INSULATION, COMBUSTION INTAKE AIR/FLUE, ETC. AS INDICATED ON DRAWINGS.
- REMOVE EXISTING GAS PIPING UP TO APPROXIMATE LOCATION.
- REMOVE EXISTING DOMESTIC WATER PIPING UP TO APPROXIMATE LOCATION. INTENT IS TO RECONNECT TO NEW WATER HEATERS. REFER TO MECHANICAL REVISIONS PLAN FOR MORE INFORMATION.
- REMOVE EXISTING STEAM CONDENSATE PIPING UP TO APPROXIMATE LOCATION. INTENT IS TO RECONNECT TO NEW CONDENSATE RECEIVER. REFER TO MECHANICAL REVISIONS PLAN FOR MORE INFORMATION.
- REMOVE EXISTING PVC FLUE AND COMBUSTION AIR VENTING. REMOVE VENTING FROM MECHANICAL ROOM ALL THE WAY UP TO FLOOR ABOVE AND ON ROOF. PATCH OPENINGS IN FLOORS AND ROOF.
- REMOVE EXISTING DOMESTIC COLD WATER PIPING.
- REMOVE EXISTING STEAM CONDENSATE RECEIVER. COORDINATE DISCONNECT OF ELECTRICAL POWER WITH OWNER.
- DISCONNECT EXISTING 120 VOLT POWER CIRCUIT FROM EXISTING WATER HEATER BEING REMOVED. REMOVE CIRCUIT BACK TO LOCAL JUNCTION BOX.

GENERAL NOTES

- CONTRACTOR SHALL FIELD VERIFY ALL MATERIALS AND EQUIPMENT SHOWN TO BE REMOVED BEFORE STARTING WORK.
- WHERE PIPING IS TO BE REMOVED AND CAPPED AT EXISTING MAINS/BRANCHES, THE CAP SHALL BE AIR/WATER TIGHT AND MATERIAL SHALL MATCH EXISTING. NO DISSIMILAR METALS SHALL BE USED.
- COORDINATE ALL DEMOLITION WORK WITH NEW WORK, ESPECIALLY IN REGARDS TO NEW CONNECTIONS.
- THE INTENT OF THE DRAWING IS TO REMOVE ALL MATERIALS AND EQUIPMENT WITH A DASHED AND DARKER LINE TYPE.
- PIPING REMOVED SHALL ALSO INCLUDE THE REMOVAL OF ALL FITTINGS, SUPPORTS, AND INSULATION ASSOCIATED WITH PORTIONS OF PIPE SHOWN TO BE REMOVED.

REV.	DESCRIPTION	BY	DATE
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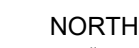
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CONSULTING ENGINEERS  
714 EAST MIDLAND STREET  
BAY CITY, MICHIGAN 48706  
WWW.MACMILLANASSOCIATES.COM  
(989) 894-4300  
SINCE 1963

PROJECT DESCRIPTION  
**DELTA COLLEGE**  
**DOMESTIC HOT WATER SYSTEM**  
**REPLACEMENT**

SHEET DESCRIPTION  
**PARTIAL LOWER LEVEL PLAN -**  
**DOMESTIC WATER HEATER**  
**DEMOLITION**

DRAWN BY	CHW	JOB No.	2025-2303
DESIGNED BY	DSF	SHEET No.	M1.1
APPROVED BY	GRS		




$$1/4'' = 1' - 0''$$


NO SCAL

- ### GENERAL NOTES

- ## ELECTRICAL NOTES

- |      |                 |    |            |
|------|-----------------|----|------------|
|      |                 |    |            |
|      |                 |    |            |
|      |                 |    |            |
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|      | ISSUED FOR BIDS |    | 06.18.2026 |
| REV. | DESCRIPTION     | BY | DATE       |



*SINCE 1963*

DELTA COLLEGE  
DOMESTIC HOT WATER SYSTEM  
REPLACEMENT

## PARTIAL LOWER LEVEL PLAN - DOMESTIC WATER PIPING REVISIONS

## M2.1





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AREA OF WORK

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S

NORTH

KEY PLAN

NO SCALE

1. COORDINATE ROUTING AND LOCATION OF PIPING PRIOR TO INSTALLING. THE MECHANICAL TRADER SHALL BE RESPONSIBLE FOR REMOVAL AND REINSTALLATION OF ANY PIPING, ETC. THAT HAS NOT BEEN PROPERLY COORDINATED AS NECESSARY, TO ALLOW INSTALLATION OF ALL TRADES WORK, AND TO ALLOW PROPER COORDINATION/LOCATION OF ALL SYSTEMS.
2. ALL PLUMBING PIPING SHALL BE INSTALLED PER STATE/LOCAL CODES.
3. COORDINATE ROUTING OF PIPING WITH ALL OTHER TRADES. DETERMINE LOCATION OF ALL PIPING, PIPING, DUCTWORK, CONDUIT, CABLE, ETC. PRIOR TO INSTALLING PIPING IN FINAL LOCATION.
4. NO PIPING SHALL BE LOCATED DIRECTLY ABOVE ELECTRICAL PANELS OR DEVICES. NO PIPING SHALL BE ALLOWED WITHIN 3'-0" OF PANELS, UNLESS PIPING IS HIGHER THAN 7'-0" ABOVE FINISHED FLOOR. VERIFY ALL PIPE ROUTING WITH ELECTRICAL TRADES.
5. COORDINATE OPERATION OF STEAM MAIN SHUT-OFF VALVE WITH DELTA COLLEGE MAINTENANCE STAFF. CONTRACTOR SHALL DETERMINE WHICH VALVE IS NECESSARY TO SHUT OFF STEAM FOR THE INSTALLATION OF THE NEW STEAM CONNECTED TO AND COORDINATE THIS DECISION WITH DELTA COLLEGE. THE TIMING OF THIS VALVE SHUT-OFF SHALL BE COORDINATED WITH DELTA COLLEGE, AS WELL.



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CONSULTING ENGINEERS

714 EAST MIDLAND STREET  
BAY CITY, MICHIGAN 48706  
[WWW.MACMILLANASSOCIATES.COM](http://WWW.MACMILLANASSOCIATES.COM)  
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RAWN BY	CHW	JOB No.	2025-2303
DESIGNED BY	DSF	SHEET No.	M3.1
APPROVED BY	GRS		

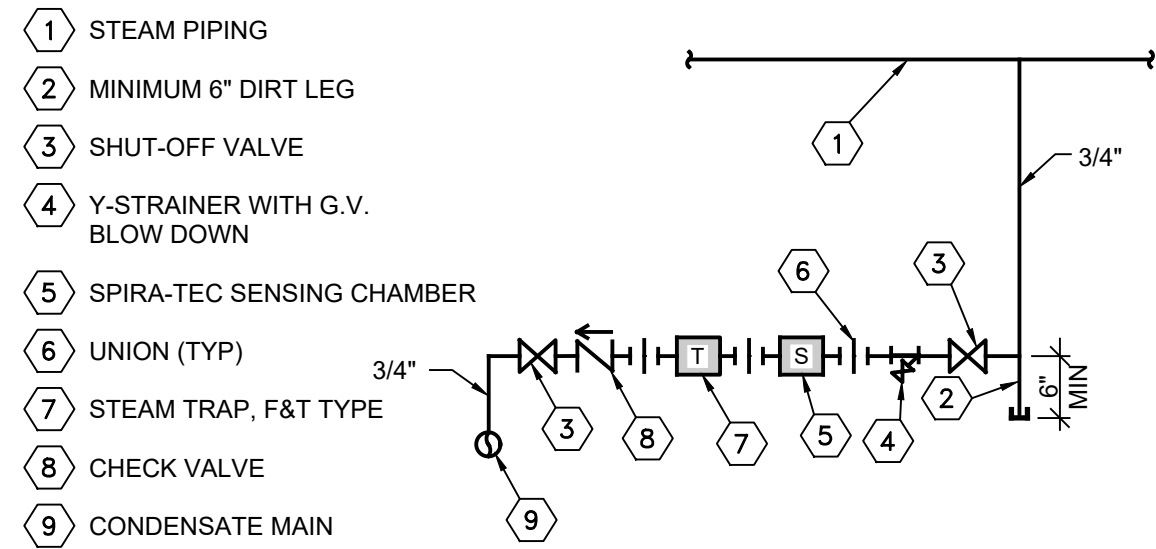
## M3.1

WATER HEATER SCHEDULE	
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MARK	MANUFACTURER	MODEL	ORIENTATION	TYPE	HEAT EXCHANGER DIAMETER	INLET STEAM		OUTPUT (MBH)	GPH @ 100F RISE	FLOW (GPM)	EWT (°F)	LWT (°F)	TURN DOWN	SKID DIMENSIONS (L x W x H)	ELEC FLA	ELECTRICAL
						PRESSURE (PSIG)	STEAM CAPACITY (LBS/HR)									
WH-1,2	ARMSTRONG	DFS15DW40	VERTICAL	STEAM SEMI-INSTANTANEOUS	7"	15	756	726	840	14	40	140	100:1	44"x45"x86" H	3	120/1/60

**NOTES:**

2. SELECTION BASED ON ARMSTRONG, WATSON-MCDANIEL, PATTERSON-KELLEY, OR CEMLINE SHALL BE CONSIDERED EQUAL IF ALL REQUIREMENTS ARE MATCHED OR EXCEEDED.
2. 150 PSI WORKING PRESSURE @ 400°F. PROVIDE WITH ASME TEMPERATURE AND PRESSURE RELIEF VALVE.
3. SINGLE POINT CONTROL PANEL CONNECTION.
4. ASME CONSTRUCTION.
5. TEMPERATURE CONTROLLER (DRV) WITH DISPLAY OF DELIVERED TEMPERATURE, ERROR CODES, AND ALARM CONDITIONS. COMPLIANT WITH ASSE STANDARD 1017 AND CSA B125.
6. ENABLE/DISABLE, STATUS, SET-POINT ADJUSTMENT, AND WATER TEMPERATURE FEEDBACK AVAILABLE AT OWNER'S BMS THROUGH BACNET NETWORK COMMUNICATIONS PROTOCOLS. PROVIDE SAGE (BS) MODULE WITH SPECIFIC PROTOCESSOR CARD TO CONNECT TO BACNET.
7. DOUBLE WALL CONSTRUCTION. GROOVED COPPER OUTER TUBE EXPANDED INTO STEEL, 304 STAINLESS STEEL TUBE SHEETS, AND A DUPLEX 2205 STAINLESS STEEL SHELL.
8. MECHANICAL TEMPERATURE/PRESSURE (T/P) RELIEF VALVE.
9. PROGRAMMABLE THERMAL DISINFECTION. UNIT SHALL BE PROGRAMMED TO BE DISINFECTED ONCE DAILY.
10. AUTOMATIC CLOSURE FOR HOT WATER INLET IN RESPONSE TO POWER FAILURE.
1. 1-YEAR LIMITED WARRANTY FROM DATE OF INSTALLATION. 5-YEAR DRV COMPONENT WARRANTY. 2-YEAR PRE-PACKAGED SKID WARRANTY.



# STEAM MAIN DRIP TRAP DETAIL

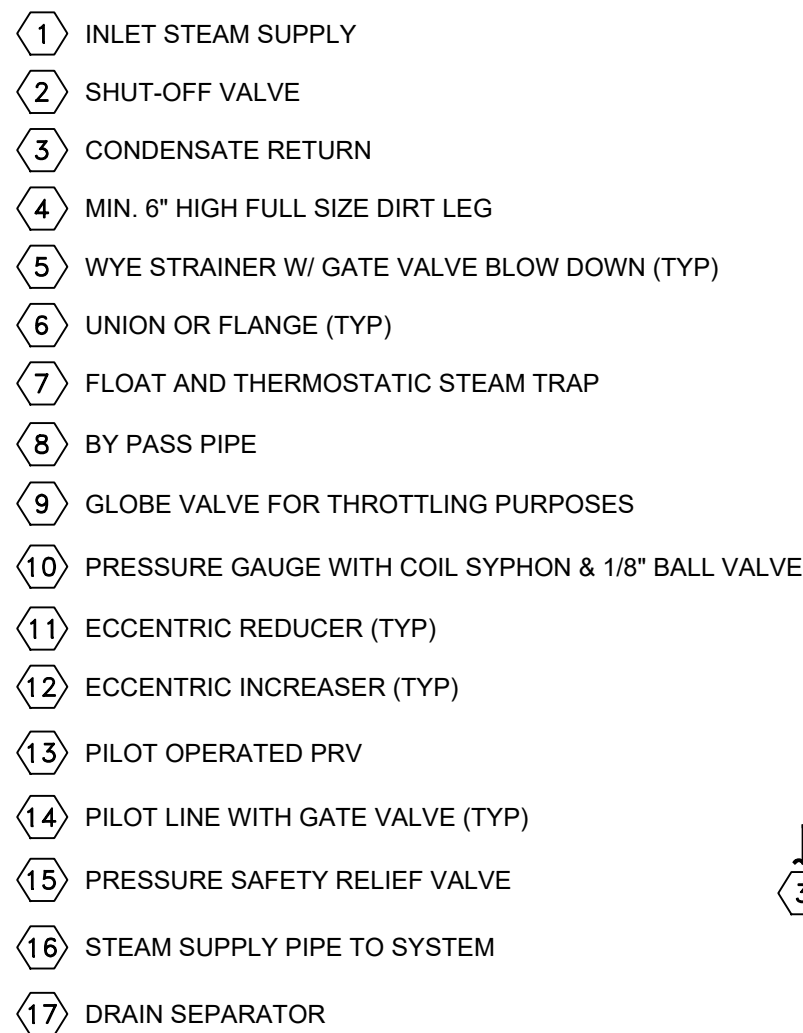
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## PRESSURE REDUCING VALVE

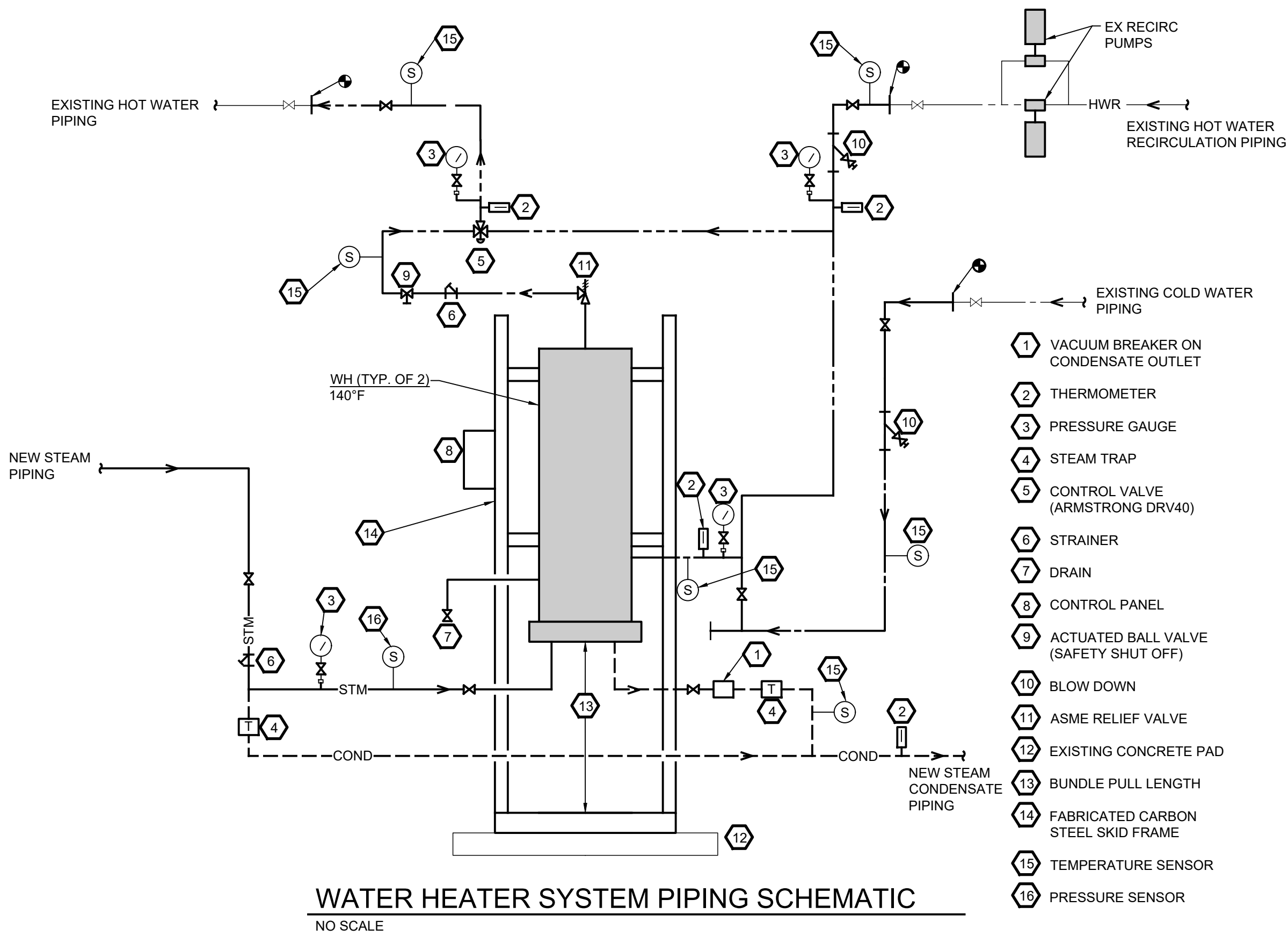
MARK	MANUFACTURER	MODEL	INLET PRESSURE (PSIG)	OUTLET PRESSURE (PSIG)	CONNECTION SIZE (IN)	CAPACITY (LB/HR)	CV FACTOR
PRV-1	ARMSTRONG	GP-2000	80	15	1"	1512	10.9

NOTES:

1. INSTALL VALVE AS RECOMMENDED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.

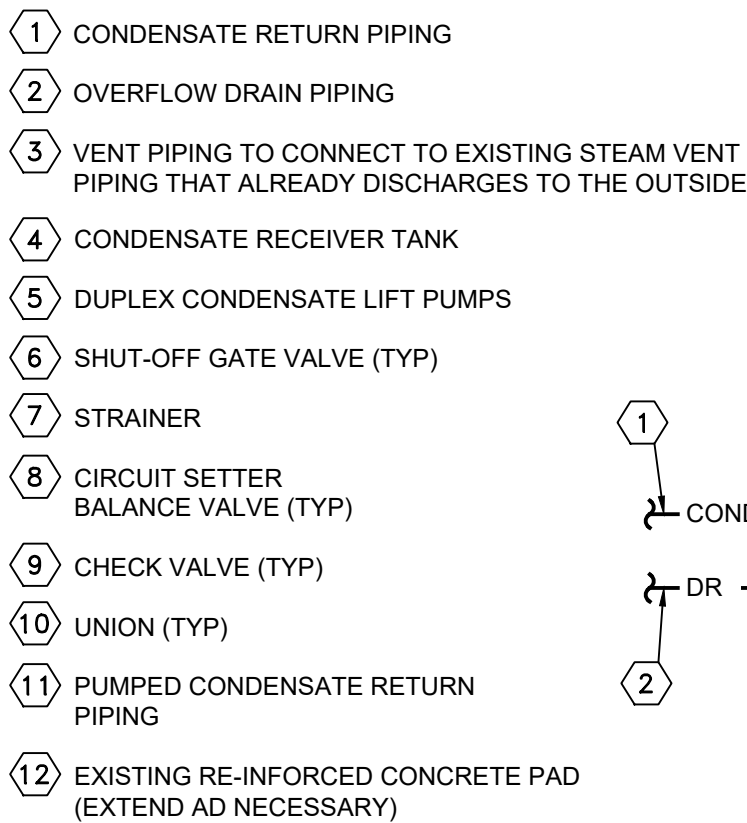


# STEAM PRESSURE REDUCING STATION PIPING DETAIL

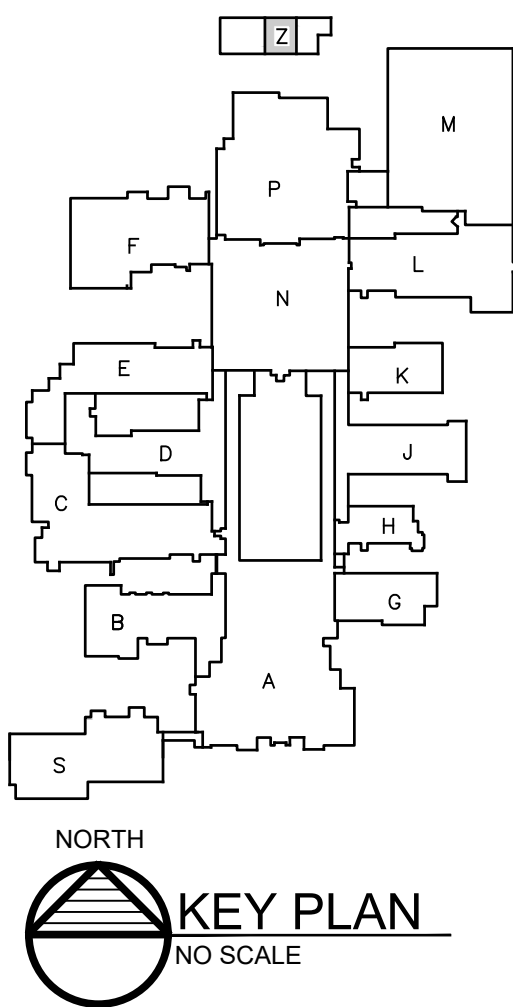
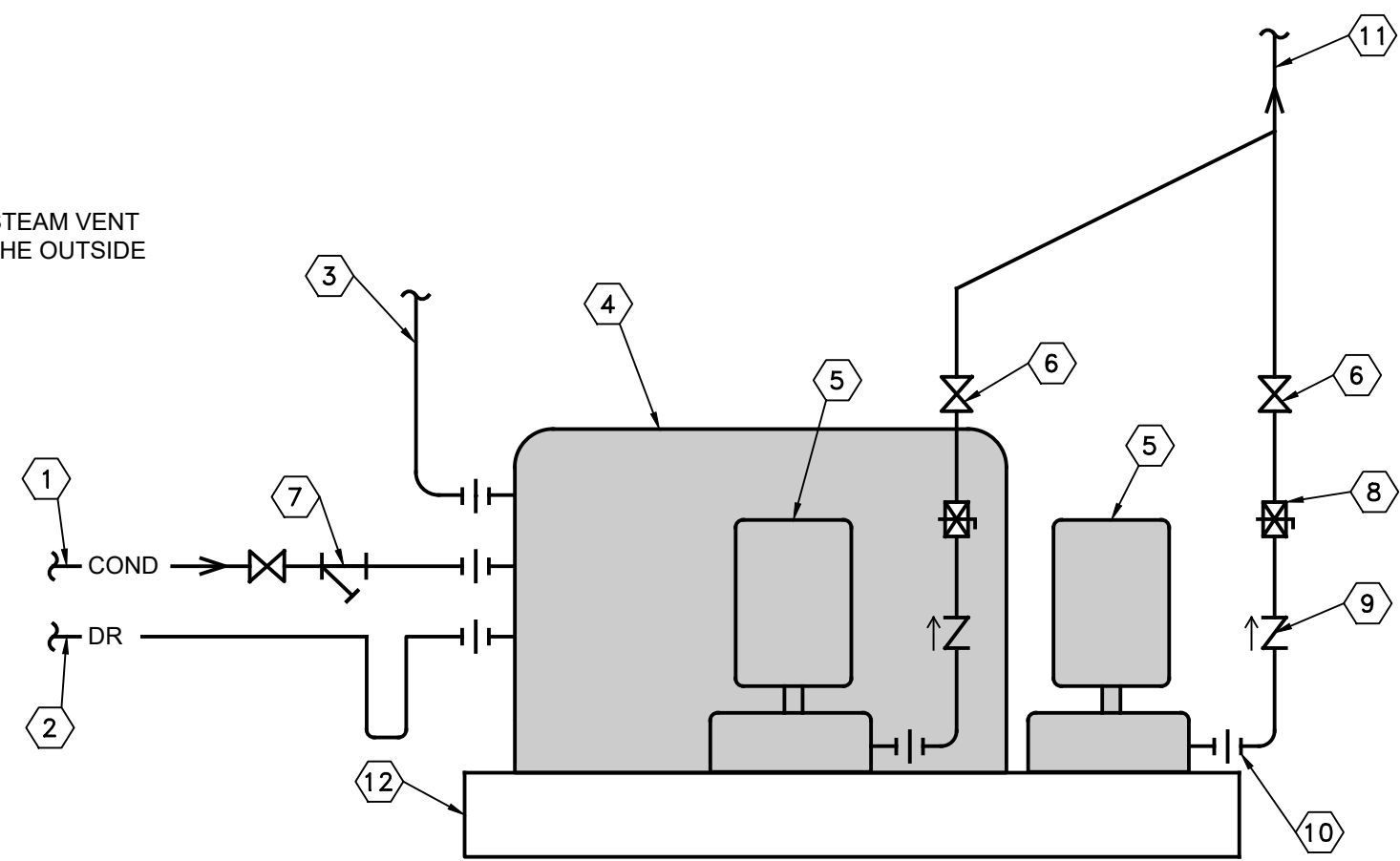


# WATER HEATER SYSTEM PIPING SCHEMATIC

NO SCALE



# DUPLEX CONDENSATE RECEIVER UNIT PIPING DETAIL



### TEMPERATURE CONTROLS

TEMPERATURE CONTROLS CONTRACTOR (TRANE) SHALL PROVIDE NEW GRAPHICS FOR THE DOMESTIC HOT WATER SYSTEM.

THIS SYSTEM SHALL INCORPORATE NEW AND EXISTING CONTROLS POINTS AND DISPLAY ALL OF THE INFORMATION ON THE BMS WITH A NEW GRAPHICS DISPLAY.

UTILIZE EXISTING TRANE CONTROL PANEL IN POWERHOUSE (OR FURNISH AND INSTALL A NEW CONTROL PANEL, IF NECESSARY).

- DOMESTIC HOT WATER SYSTEM SHALL MONITOR, DISPLAY AND CONTROL (FROM NOTED) THE FOLLOWING POINTS FOR EACH WATER HEATER:
- 1. SYSTEM ENABLE/DISABLE (STATUS AND CONTROL)
  - 2. DISCHARGE HOT WATER TEMPERATURE (VALUE AND CONTROL ADJUSTMENT)
  - 3. DISCHARGE HOT WATER TEMPERATURE (FROM HX)
  - 4. HOT WATER RETURN TEMPERATURE
  - 5. COLD WATER INLET TEMPERATURE
  - 6. MIXED WATER INLET TEMPERATURE
  - 7. STEAM INLET PRESSURE
  - 8. STEAM CONDENSATE OUTLET TEMPERATURE
  - 9. REGIOIR PUMP STATUS AND PUMP SPEED
  - 10. FLOW READING FROM INLET COLD WATER (EXISTING FLOW METER)
  - 11. FLOW READING FROM INLET HOT WATER RETURN (EXISTING FLOW METER)
  - 12. FLOW READING FROM OUTLET HOT WATER (EXISTING FLOW METER)
- STATUS OF ANY AND ALL POINTS AND ALARMS THAT ARE SHAREABLE BY MANUFACTURER CONTROL PANEL.

NOTE: GRAPHICS SHALL INCLUDE FLOW DIRECTIONS WITH ARROWS

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REV.	DESCRIPTION	BY	DATE



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714 EAST MIDLAND STREET  
BAY CITY, MICHIGAN 48706  
[WWW.MACMILLANASSOCIATES.COM](http://WWW.MACMILLANASSOCIATES.COM)  
(989) 894-4300

*SINCE 1963*

## PROJECT DESCRIPTION

DELTA COLLEGE  
DOMESTIC HOT WATER SYSTEM  
REPLACEMENTMECHANICAL  
SCHEDULES AND DETAILS

DRAWN BY	CHW	JOB No.	2025-2303
DESIGNED BY	DSF	SHEET No.	M4.1
APPROVED BY	GRS		

