

**ELECTRICAL PLAN** 5 1/4" = 1'-0"

## **ELECTRICAL SPECIFICATIONS**

- 1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
- 2. MINIMUM SIZE CONDUCTOR SHALL BE #12 THHN, OR THWN WHERE REQUIRED, WITH #14 USED FOR CONTROL WIRING
- 3. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL RACEWAYS.
- 4. CONTRACTOR SHALL VISIT THE SITE TO ASCERTAIN ALL WORK INVOLVED IN THE PROJECT.
- 5. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS ON THE PROJECT.
- 7. CONTRACTOR SHALL MAKE NECESSARY MODIFICATIONS AND ADJUSTMENTS TO ALL ELECTRICAL ITEMS AND EQUIPMENT AS MAY BE REQUIRED BY THIS WORK.
- 8. ALL ELECTRICAL EQUIPMENT MUST MAINTAIN WORKING CLEARANCES AS REQUIRED BY NEC.
- 9. CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR ALL CORING, CUTTING, PATCHING, REPAIRING, REFINISHING AND REMOVAL/REPLACEMENT OF NEW OR EXISTING BUILDING CONSTRUCTION REQUIRED TO ACCOMMODATE THE INSTALLATION OR REMOVAL OF THEIR WORK. REMOVE, STORE AND REINSTALL CEILING TILES AS REQUIRED TO INSTALL WORK ABOVE EXISTING CEILINGS WHICH REMAIN, REPLACE TILES BROKEN OR DAMAGED DURING CONSTRUCTION. ALL PATCHING, REPAIRING AND REFINISHING WORK SHALL BE PERFORMED BY THOSE REGULARLY INVOLVED IN THAT TRADE AND SHALL MATCH THE ADJACENT CONSTRUCTION AS CLOSELY AS POSSIBLE. CARE SHALL BE TAKEN SO AS NOT TO DAMAGE ANY EXISTING BUILDING CONSTRUCTION OR ITEMS THAT ARE TO REMAIN. ANY EXISTING FINISHES THAT ARE DAMAGED DURING THE INSTALLATION OF NEW WORK OR REMOVAL OF EXISTING WORK SHALL BE REPAIRED, REPLACED AND PAID FOR BY THE INSTALLING CONTRACTOR, TO THE SATISFACTION OF THE

# EXISTING 4"CW \$ 2"HW SCW - - -EXISTING 3"CW \$ 2 1/2"SCW **MECHANICAL** B260 EXISTING 1 1/2"HWC EXISTING 2 1/2"CW ŧ 1 1/2"HW PLUMBING DEMOLITION PLAN

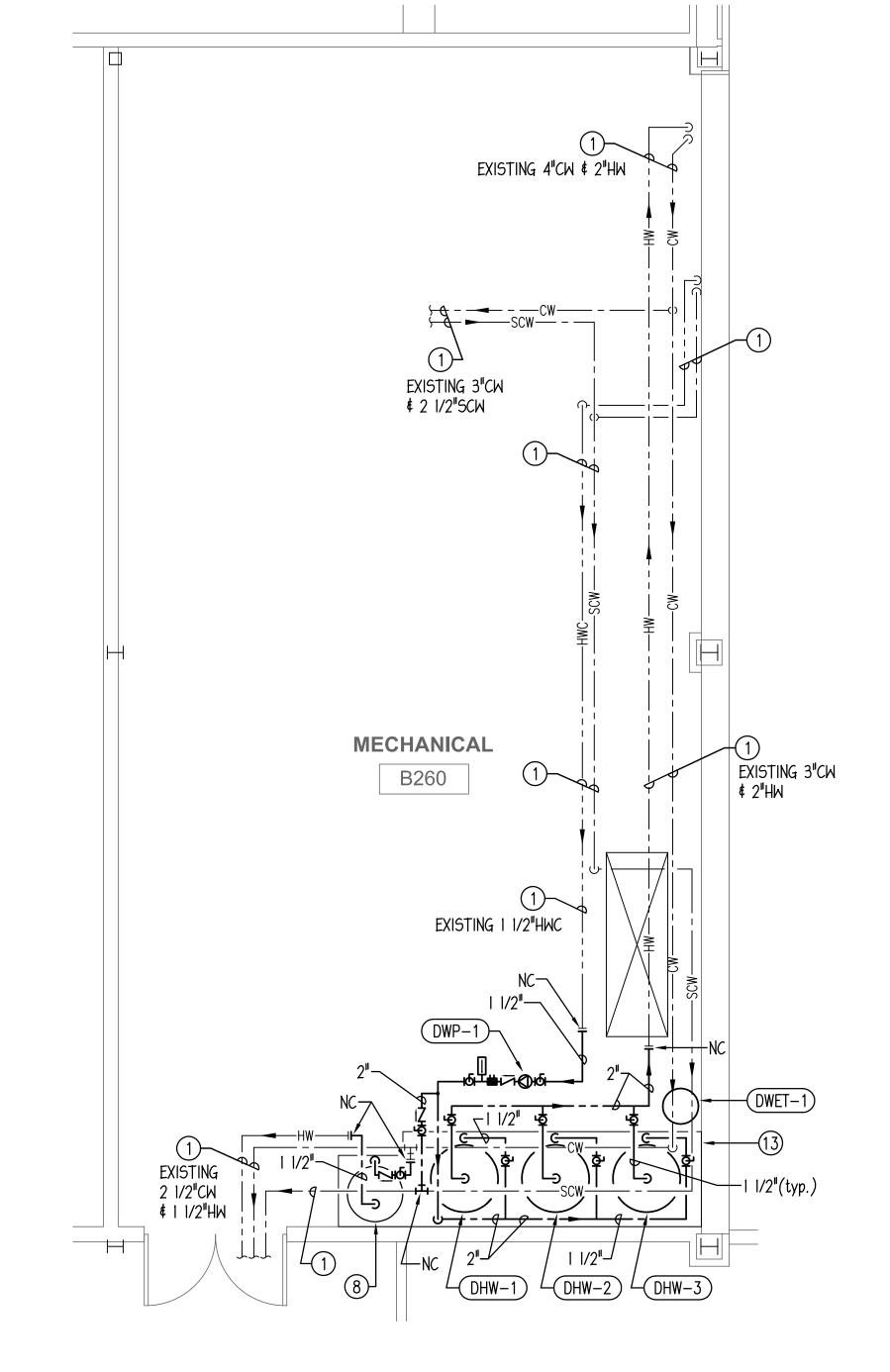
PLUMBING NEW WORK PLAN

## **DRAWING NOTES:**

- (1) EXISTING PLUMBING PIPING TO REMAIN.
- PIPING SHOWN DASHED BEYOND THIS POINT.
- (3) REMOVE ALL PIPING SHOWN DASHED.
- (4) REMOVE EXISTING HOT WATER STORAGE TANK, APPROXIMATE SIZE OF 42" DIA BY 133" TALL, 860 GALLONS. DISCONNECT EXISTING PIPING CONNECTIONS AND REMOVE ALL ASSOCIATED PIPING SHOWN DASHED BACK TO LOCATIONS SHOWN DASHED.
- 30"x27" BY 34" TALL, 399,000 BTUH. DISCONNECT EXISTING PIPING CONNECTIONS AND REMOVE ALL ASSOCIATED PIPING ALL ASSOCIATED PUMPS, POWER, FLUE AND GAS PIPING.
- ASSOCIATED PIPING SHOWN DASHED.

- (8) REINSTALL WATER HEATER IN NEW LOCATION. RECONNECT ALL CW/HW/GAS AND FLUE CONNECTIONS AT EXISTING WATER HEATER. EXTEND ALL PIPING AS REQUIRED TO COMPLETE RELOCATION.
- (9) (MÎRĚ 2#12, ÎHÎ12G. ÎN 3/4"C. TO (1) NEW 15A-IP ČIRCUIT BREAKER OF TYPE AND AIC RATING MATCHING (EXISTING PANEL. UTILIZE SPACE MADE AVAILABLE SFROM THE REMOVAL OF EXISTING PUMP. PROVIDE PUPDATED TYPEWRITTEN DIRECTORY TO REFLECT CHANGES.
- (10) EXTEND EXISTING ELECTRICAL FEED TO NEW WATER HEATER LOCATION WITH WIRE OF MATCHING GAUGE FEED SHALL BE A MINIMUM OF 2#12, 1#12G. IN 3/4" EMT CONDUIT. FIELD VERIFY EXACT REQUIREMENTS
- (1) UTILIZE EXISTING 120V. 20A. BRANCH CIRCUIT MADE AVAILABLE FROM REMOVAL OF EXISTING WATER HEATER TO FEED NEW WATER HEATER. EXTEND EXISTING ELECTRICAL FEED TO NEW WATER HEATER WITH WIRE OF MATCHING GAUGE. FEED SHALL BE A MINIMUM OF 2#12, I#12G. IN 3/4" EMT CONDUIT. FIELD VERIFY EXACT REQUIREMENTS.

- (12) WIRE 2#12, I#12G. IN 3/4"C. TO (1) NEW 20A-IP CIRCUIT BREAKER OF TYPE AND AIC RATING MATCHING EXISTING PANEL "2LC" UTILIZING AVAILABLE BUSSED SPACE. PROVIDE UPDATED TYPEWRITTEN DIRECTORY TO REFLECT CHANGES.
- (13) EXTEND SIZE OF EXISTING CONCRETE PAD TO ADD APPROXIMATELY 25 SQ.FT OF PAD TO ACCOMMODATE NEW WATER HEATERS. EXTEND A MINIMUM OF 6" PAST EDGES OF NEW EQUIPMENT. PAD THICKNESS SHALL MATCH EXISTING.



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- (2) NEW CONNECTION TO BE MADE AS THIS LOCATION, REMOVE ALL
- (5) REMOVE EXISTING HOT WATER HEATER, APPROXIMATE SIZE OF SHOWN DASHED BACK TO LOCATIONS SHOWN DASHED. REMOVE
- (6) REMOVE EXISTING IN-LINE RECIRC PUMP. REMOVE ALL
- (7) DISCONNECT ALL CW/HW/GAS AND FLUE CONNECTIONS AT EXISTING 100 GALLON WATER HEATER AND RETAIN WATER HEATER FOR RELOCATION. WATER HEATER SHALL BE SHIFTED APPROXIMATELY 36" TO THE WEST. SEE NEW WORK PLAN FIR ADDITIONAL INFORMATION.

<u> DTES:</u> I. OTHER ACCEPTABLE MANUFACTURERS: NONE.

2. FURNISH A.O. SMITH MODEL 9003910405 VERTICAL CONCENTRIC VENT KIT FOR EACH WATER HEATER.

3. VENTING SYSTEM TO BE PROVIDED WITH FACTORY SIZED ACID DILUTION SYSTEM ON CONDENSATE DRAIN FROM VENTING PIPING, EACH WATER HEATER.

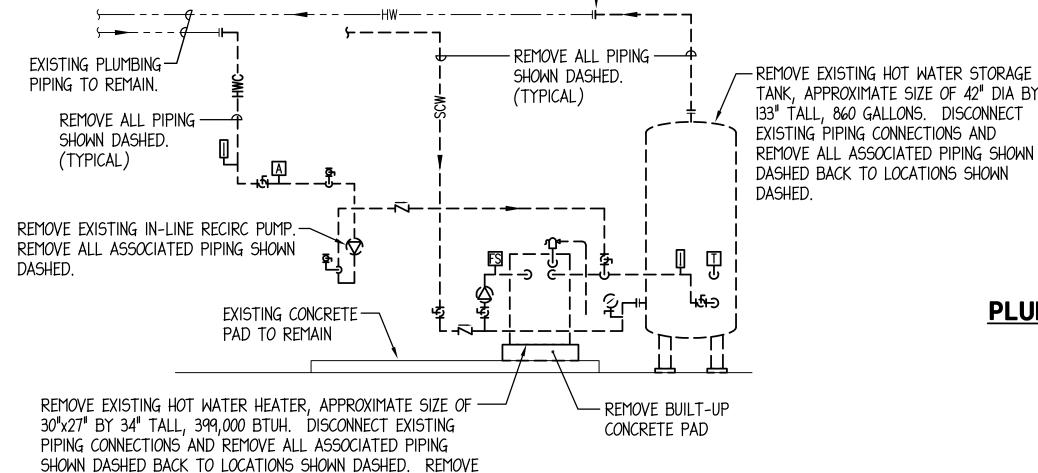
4. ASME CONSTRUCTION.

#### PLUMBING PUMP SCHEDULE HEAD (FT.) **EQUIPMENT GPM** LOCATION **SERVICE MANUFACTURER** MODEL TYPE NOTES PHASE VOLT INLINE, ALL BRONZE 2ND FLOOR DOMESTIC HOT WATER 8.0 1725 120 1, 2 (DWP-1 BELL & GOSSETT PR SERIES MECH ROOM RECIRCULATION OIL LUBRICATED NOTES I. OTHER ACCEPTABLE MANUFACTURERS: NONE. 2. I 1/2" FLANGED CONNECTIONS.

3. BLADDER SHALL BE MADE OF BUTYL RUBBER.

DOMESTIC WATER EXPANSION TANK SCHEDULE **EQUIPMENT** LOCATION SERVICE MANUFACTURER MODEL TYPE CAPACITY NOTES 11.4 GAL. ACCEPT 2ND FLOOR (DWET-1 DWH-1,2,3 ST-70VC BLADDER 1,2,3,4 MECH ROOM 34 GAL. TANK NOTES: I. OTHER ACCEPTABLE MANUFACTURERS: WESSELS, WATTS, A.O. SMITH. 4. ASME CONSTRUCTION. 2. TANK TO BE SPECIFICALLY FOR USE IN POTABLE WATER SYSTEMS.

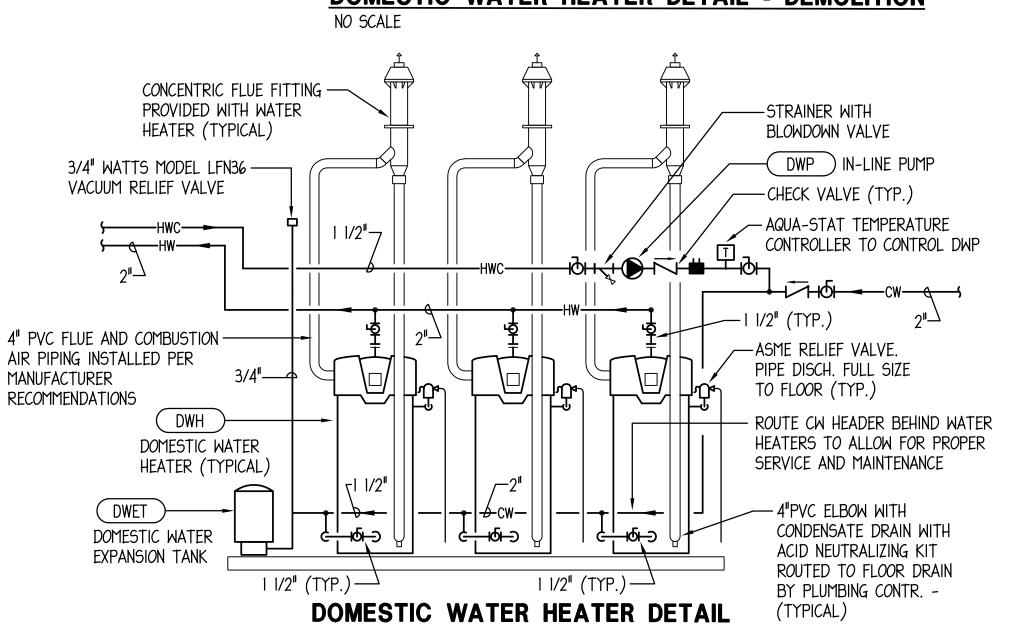
NEW CONNECTION TO BE MADE AS THIS LOCATION, — REMOVE ALL PIPING SHOWN DASHED BEYOND THIS POINT.



ALL ASSOCIATED PUMPS, POWER, FLUE AND GAS PIPING.

NO SCALE

**DOMESTIC WATER HEATER DETAIL - DEMOLITION** 



## **PLUMBING SPECIFICATIONS**

#### GENERAL

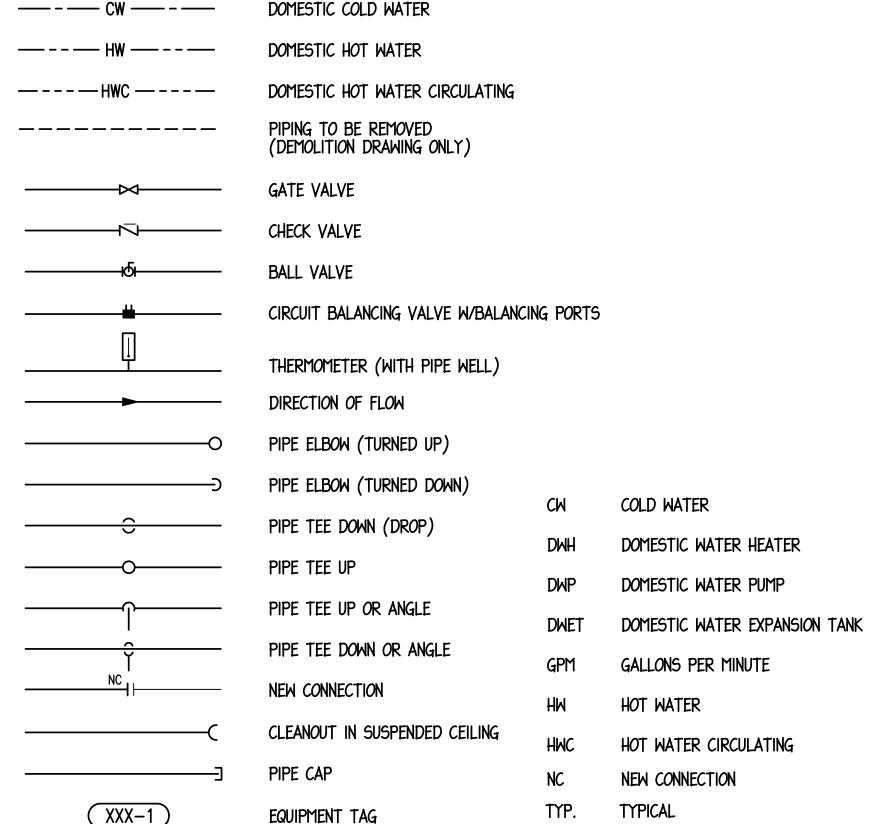
- I.I ALL WORK SHALL BE INSTALLED AND ALL MATERIALS SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS OF ILLINOIS DEPARTMENT OF PUBLIC HEALTH ILLINOIS PLUMBING CODE 2014 EDITION, INTERNATIONAL PLUMBING CODE 2012 EDITION AND ALL LOCAL AMENDMENTS TO THE PLUMBING CODE.
- 1.2 IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE ALL INSPECTIONS WITH THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH STATE PLUMBING INSPECTORS AND THE LOCAL PLUMBING INSPECTOR HAVING JURISDICTION.
- 1.3 DRAWINGS ARE GENERALLY DIAGRAMMATIC. ROUTING OF PIPING, ETC., AS SHOWN ON DRAWINGS, DOES NOT INTEND TO SHOW EVERY RISE, DROP, OFFSET, FITTING NOR EVERY STRUCTURAL ELEMENT THAT MAY BE ENCOUNTERED DURING THE INSTALLATION OF THIS WORK. CONTRACTOR SHALL MAKE ANY REQUIRED CHANGES FROM THE GENERAL ROUTING SHOWN ON THESE DRAWINGS, SUCH AS OFFSETS, BENDS OR CHANGES IN ELEVATION DUE TO COORDINATION WITH THE WORK OF OTHER TRADES AND BUILDING CONSTRUCTION. ALL CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER OR DELAY IN COMPLETION DATE OF THE PROJECT.
- 1.4 PITCH ALL SUPPLY AND RETURN WATER LINES TO DRAIN COMPLETELY THROUGH LOWER EQUIPMENT FIXTURES, UNIONS, OR DRAIN VALVES. INSTALL A 1/2" DRAIN VALVE WITH 3/4" HOSE THREAD OUTLET IN ALL MAIN PIPING RUNS WHICH WOULD NOT BE ABLE TO DRAIN THRU A LOWER PIECE OF EQUIPMENT.
- 1.5 STERILIZATION: UPON COMPLETION OF TESTING AND FLUSHING OF NEW DOMESTIC WATER PIPING, THE CONTRACTOR SHALL STERILIZE ALL WATER PIPING INCLUDING ALL DOMESTIC HOT WATER SUPPLY AND RETURN AND ALL DOMESTIC COLD WATER PIPING. CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY TAPPINGS, VALVE OPENINGS, DRAIN FITTINGS, ETC., AS REQUIRED TO STERILIZE THE WATER PIPING, INCLUDING ALL REQUIRED EXCAVATION WORK, FITTING AND LABOR. WATER PIPING SHALL BE FLUSHED AND CHLORINATED AS SPECIFIED IN AWWA-C-601-54 STANDARD PROCEDURE FOR DISINFECTING WATER MAINS AND AS REQUIRED BY ILLINOIS DEPARTMENT OF PUBLIC HEALTH. DISINFECTING SHALL NOT BE DEEMED COMPLETED UNTIL SATISFACTORY BACTERIOLOGICAL ANALYSIS REPORTS ARE RECEIVED FOR SAMPLES OF WATER COLLECTED AND TESTED FROM THE NEW WATER PIPING SYSTEM ALL BY PLUMBING CONTRACTOR.
- 1.6 ALL EXISTING PIPING INFORMATION SHOWN ON THIS DRAWING HAS BEEN OBTAINED FROM OWNER'S EXISTING CONSTRUCTION DOCUMENTS AND LIMITED FIELD SURVEY. EXACT LOCATION OF EXISTING SANITARY/STORM LINES, WATER LINES, VENT LINES, VALVES AND ALL PIPE SIZES SHALL BE FIELD VERIFIED BEFORE STARTING INSTALLATION.
- 1.7 PROVIDE 4" THICK CONCRETE HOUSE KEEPING PAD AT ALL FLOOR MOUNTED PLUMBING EQUIPMENT INCLUDING WATER HEATERS, STORAGE TANKS, PRESSURE BOOSTER SYSTEMS, WATER SOFTENING OR TREATMENT EQUIPMENT. PAD SHALL EXTEND A MINIMUM OF 6" BEYOND EACH SIDE OF EQUIPMENT
- 1.8 PROVIDE ACCESS TO ALL VALVES AND SYSTEM COMPONENTS REQUIRING ACCESS. ALL PIPING ACCESSORIES AND EQUIPMENT SUCH AS ISOLATION VALVES AND IN-LINE PUMPS SHALL BE INSTALLED AT A REASONABLE HEIGHT AND POSITION IN ORDER TO FACILITATE MAINTENANCE.

### PIPE INSULATION

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- 2.1 ALL DOMESTIC COLD WATER AND DOMESTIC HOT WATER SUPPLY/RETURN PIPING SHALL BE INSULATED WITH I" THICK ASTM C547 FIBERGLASS PIPE INSULATION WITH ASTM C1136 VAPOR BARRIER JACKET COMPLETE WITH PVC FITTING COVERS. INSULATE ALL DOMESTIC WATER SUPPLY PIPING TO THE FIXTURE CONNECTION. INSULATE ALL WATER SUPPLY PIPING IN CEILINGS, PLUMBING CHASES AND WALLS.
- 2.2 PATCH AND REFINISH ALL DAMAGED INSULATED SURFACES OF ALL EXISTING PLUMBING PIPING AND ASSOCIATED FITTINGS WHERE NEW CONNECTIONS ARE MADE. INCLUDING BUT NOT LIMITED DOMESTIC COLD WATER, HOT WATER SUPPLY/RETURN AND WASTE.

## PLUMBING SYMBOLS AND ABBREVIATIONS



#### PIPE HANGERS AND SUPPORTS

- 3.1 ALL SANITARY, VENT, STORM, DOMESTIC SUPPLY AND RETURN PIPING SHALL BE SUSPENDED WITH CLEVIS AND/OR TRAPEZE PIPE HANGERS. ALL HORIZONTAL STORM, DOMESTIC SUPPLY AND RETURN PIPING SHALL BE INSULATED AND REST ON SHEET METAL INSULATION SHIELDS. SEE DETAIL ON MECHANICAL/ELECTRICAL COORDINATION DRAWINGS FOR ADDITIONAL INFORMATION. SWIVEL JOINT HANGERS MAY BE USED ONLY ON WASTE AND VENT PIPING WHEN PIPING IS NOT INSULATED. HANGER MATERIAL SHALL BE OF COMPATIBLE MATERIAL TO PIPING MATERIAL TO PREVENT CORROSION. HANGERS SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS ONLY. SUPPORTING PIPING FROM METAL DECK SHALL NOT BE PERMITTED.
- 3.2 HANGER SPACING SHALL BE AS FOLLOWS.

<u>PIPE MATERIAL</u>	MAX HANGER SPACING	ROD DIAMETE
CAST IRON (ALL SIZES)	5 FEET	5/8"
CAST IRON (ALL SIZES) WITH	10 FEET	5/8 <b>"</b>
10 FOOT LENGTH OF PIPE		
COPPER TUBE, I INCH AND SMALLER	8 FEET	1/2"
COPPER TUBE, I 1/4 INCH AND LARGER	10 FEET	1/2"
PVC (ALL SI7FS)	4 FFFT	3/8

#### PIPE AND VALVE IDENTIFICATION

4.1 PROVIDE PIPE LABELING IDENTIFICATION PER ASME AI3.1.

4.2 PROVIDE VALVE TAGS ON ALL VALVES INSTALLED UNDER THIS CONTRACT. PROVIDE A SUMMARY OF VALVE TAG NUMBERS, VALVE SIZES AND LOCATIONS ON A DURABLE MATERIAL FOR MOUNTING IN BOILER/MECHANICAL ROOM.

#### **VALVES**

- 5.1 INSTALL BALL VALVES ON PIPING 2 1/2" AND SMALLER AND BUTTERFLY VALVES ON PIPING 3" AND LARGER IN EACH RISER OR BRANCH TAKEOFF FROM MAINS, RISERS AND AS INDICATED ON DRAWINGS.
- 5.2 BALL VALVES SHALL BE MILWAUKEE, NIBCO, STOCKHAM, APOLLO, KITZ, WATTS, OR JOMAR; LEAD FREE NFS-61 CERTIFIED, WITH BRONZE TWO PIECE BODY, STAINLESS STEEL BALL, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE, SOLDER ENDS, FULL PORT AND CONFORM TO MSS SP-110. WHEN PRESS FITTINGS ARE USED, VIEGA OR NIBCO SHALL BE AN ACCEPTABLE MANUFACTURER OF BALL VALVES.
- 5.3 BUTTERFLY VALVES SHALL BE VICTAULIC, GRINNELL, MILWAUKEE, NIBCO, STOCKHAM, APOLLO, KITZ, WATTS, OR JOMAR; LEAD FREE NFS-61 CERTIFIED, DUCTILE IRON OR BRONZE BODY, STAINLESS STEEL DISC, LEVER HANDLE, GROOVED OR FLANGED ENDS, FULL PORT AND CONFORM TO MSS-SP67 OR MSS-SP25.
- 5.4 CHECK VALVES SHALL BE MILWAUKEE, NIBCO, STOCKHAM, APOLLO, KITZ, WATTS, OR JOMAR; LEAD FREE NFS-61 CERTIFIED WITH BRONZE BODY, BRONZE HORIZONTAL SWING DISC AND CONFORM TO MSS SP-80.
- 5.5 STRAINERS SHALL BE WATTS, KECKLEY, LESLIE, WILKINS, KITZ, OR NIBCO; LEAD FREE NFS-61 CERTIFIED, BRONZE BODY, WITH 1/32 INCH STAINLESS STEEL PERFORATED SCREEN AND 3/4" BLOW DOWN VALVE.
- 5.6 CIRCUIT SETTER SHALL BE BELL & GOSSETT, NIBCO, WATTS, ARMSTRONG, ILLINOIS, HCI; LEAD FREE NFS-61 CERTIFIED, CALIBRATED BALL TYPE BALANCING VALVE WITH PRECISION MACHINED ORIFICE, READOUT VALVES EQUIPPED WITH INTEGRAL CHECK VALVES AND GASKETED CAPS, CALIBRATED, NAMEPLATE AND INDICATING POINTER.
- 5.7 CONTRACTOR SHALL PROVIDE ALL MEANS TO SHUT-DOWN EXISTING PIPING SYSTEMS WHERE REQUIRED TO COMPLETE WORK UNDER THIS CONTRACT. CONTRACTOR SHALL PROVIDE ALL NECESSARY VALVES TO ISOLATE RENOVATED SECTIONS OF THE BUILDING WITHOUT DISTURBING SECTIONS OF THE BUILDING NOT UNDER RENOVATION.
- 5.8 INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED.
- 5.9 INSTALL VALVES WITH CLEARANCE FOR INSTALLATION OF INSULATION AND ALLOWING ACCESS.

## PIPE SPECIFICATIONS

ALL PIPING, FITTINGS AND JOINTS SHALL COMPLY WITH THE LOCAL AMENDMENTS AND THE AUTHORITY HAVING JURISDICTION. MATERIALS LISTED IN THE SPECIFICATION THAT DO NOT COMPLY WITH THESE AMENDMENTS SHALL NOT BE USED IN THE BIDDING PROCESS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THESE ADOPTED AMENDMENTS.

PLUMBING PIPING SHALL BE AS FOLLOWS:

WATER PIPING, ABOVE GRADE

A. COPPER TUBING: ASTM B88, TYPE L, HARD DRAWN.

FITTINGS: ASME BI6.18, CAST COPPER ALLOY OR ASME BI6.22, WROUGHT COPPER AND BRONZE.

JOINTS: ASTM B32, SOLDER, GRADE 95TA.

B. COPPER TUBING: ASTM B88, TYPE L, HARD DRAWN.
PRESS FITTINGS: VIEGA PROPRESS; ASME BI6.18 CAST COPPER ALLOY, ASME BI6.22 WROUGHT COPPER ASME BI6.26 FLARED COPPER, EPDM O-RING.
FITTINGS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

## SHOP DRAWING SUBMITTALS AND CLOSE-OUT DOCUMENTS REQUIREMENTS

- CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS OF ALL PIPING, VALVES, PIPE HANGERS, PIPE INSULATION, MISC DEVICES, PUMPS, MIXING VALVES, PLUMBING FIXTURES, ACCESS PANELS, EQUIPMENT, DIFFUSERS, REGISTERS, TEMPERATURE CONTROL SYSTEM, LIGHTING FIXTURES, PANELBOARDS, ELECTRICAL DEVICES TO ENGINEER FOR APPROVAL PRIOR TO ORDERING ANY ITEMS OR FABRICATING ANY DUCTWORK. SUBMITTALS SHALL BE RETURNED WITH 10 BUSINESS DAYS.
- CONTRACTOR SHALL PROVIDE OWNER TRAINING ON ALL EQUIPMENT AND BUILDING SYSTEMS PROVIDED/ALTERED BY HIS WORK. TRAINING SHALL BE ACCOMPLISHED DURING TIME DEDICATED FOR THAT PURPOSE, NOT IN CONJUNCTION WITH SERVICE WORK.
- 3. AT COMPLETION OF PROJECT, CONTRACTOR SHALL SUBMIT 3 (THREE) COPIES OF OPERATION AND MAINTENANCE MANUALS FOR ALL WORK PROVIDED BY HIM ON PROJECT. MANUALS SHALL BE CLEARLY ORGANIZED AND CONTAIN COPIES OF APPROVED EQUIPMENT, SHOP DRAWINGS, EQUIPMENT PARTS LISTS, SERVICE CONTACTS, CONTRACTOR AND MANUFACTURER WARRANTEES, AND "AS BUILT" FLOOR PLANS.
- CONTRACTOR SHALL PROVIDE WARRANTY FOR ALL MATERIAL AND GUARANTEE ALL WORKMANSHIP PROVIDED BY HIM FOR I (ONE) YEAR FROM SUBSTANTIAL COMPLETION OF WORK INVOLVED.

Mechanical - Electrical Engina 1216 Tower R Schaumburg, Illinois 60 847.882.2 Fax 847.882.2

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ENGINE GROUP

BING DETAILS,
DULES AND GENERAL

ATER HEATER REPLACEMEN
HENRY COUNTY COLLEGE
O U.S. HIGHWAY 14
'STAL LAKE, ILLINOIS 60012

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