

REBID

DESIGN & INSTALL NEW DOMESTIC

WATER PLANT

VETERANS HOME BUILDING

ST. JAMES, MISSOURI

CASCO

12 SUNNEN DR. SUITE 100
ST. LOUIS, MO 63143
ARCHITECTS / ENGINEERS
314-821-1100

CASCO DIVERSIFIED CORPORATION
MISSOURI STATE CERTIFICATE OF AUTHORITY #000613 (ENG)
MISSOURI STATE CERTIFICATE OF AUTHORITY #000329 (ARCH)

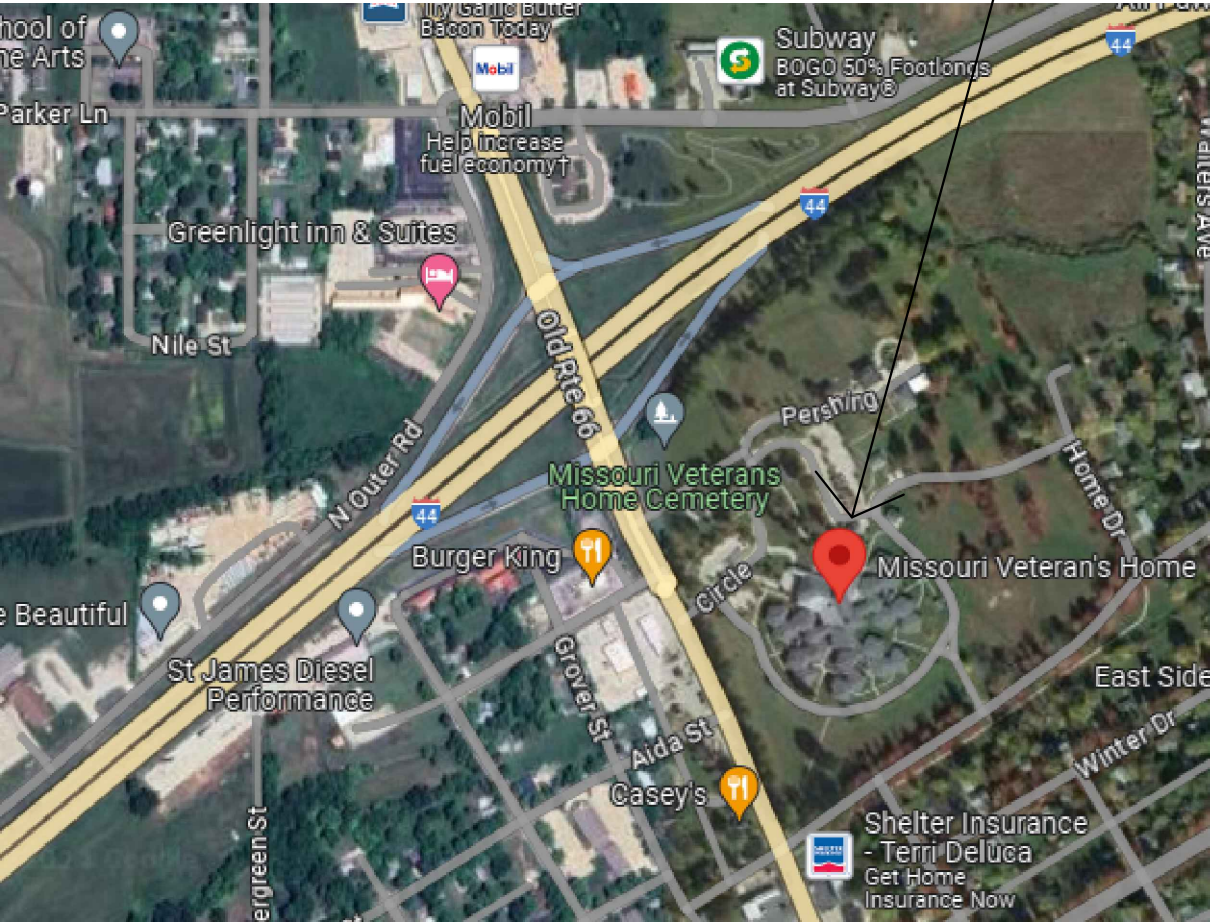
OWNER:

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

DEPARTMENT OF PUBLIC SAFETY

PROJECT
MANAGEMENT:

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION



VICINITY MAP

ADDRESS:
620 NORTH JEFFERSON
ST JAMES, MO 65559

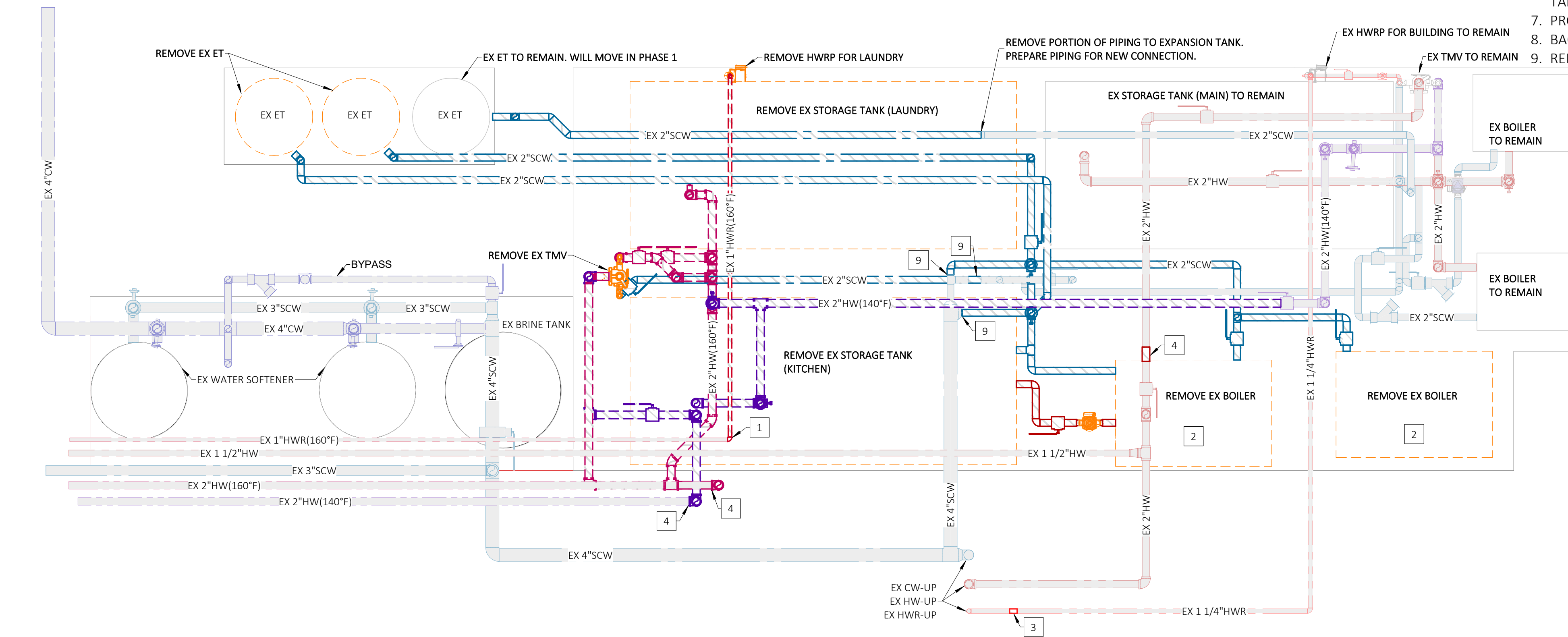
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DESIGNER: CASCO DIVERSIFIED CORP.

PROJECT NUMBER: U2409-01

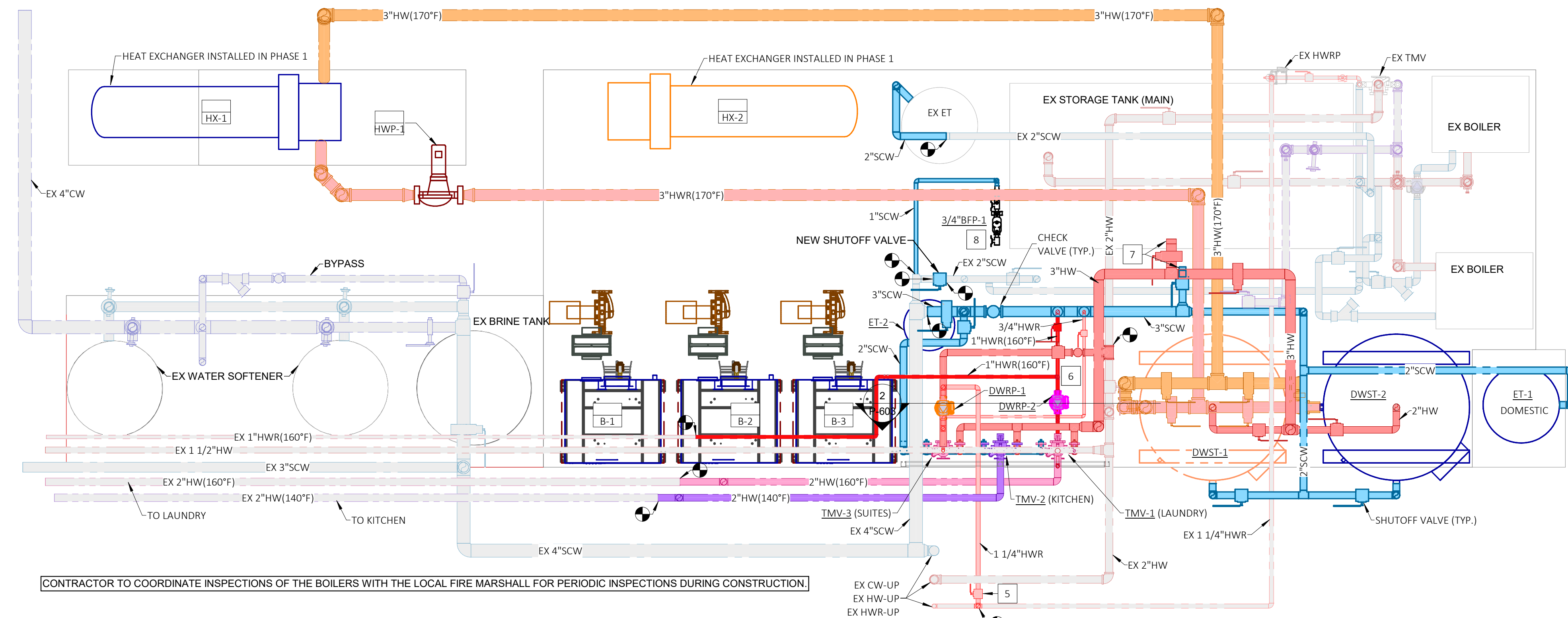
SITE NUMBER: 6801
FACILITY NUMBER: 8136801002



PLUMBING - PHASE 1 DEMOLITION

NOTE: MATTERPORT SURVEY LINK PROVIDED BELOW IS FOR REFERENCE ONLY,
AND IS NOT INTENDED TO BE A SUBSTITUTE FOR FIELD INVESTIGATIONS BY THE CONTRACTOR.

MATTERPORT LINK: <https://my.matterport.com/show/?m=vyscquW6hsr>



PLUMBING - PHASE 1 NEW WORK

KEYED NOTES

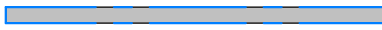







1. REMOVE PORTION OF HOT WATER RETURN PIPING FOR LAUNDRY.
2. REMOVE ALL ASSOCIATED PIPING, VALVES, PUMPS, ETC. FOR EXISTING BOILERS DURING PHASE 1.
3. REMOVE PORTION OF HOT WATER RETURN PIPING FOR MAIN BUILDING. PREPARE PIPING FOR NEW CONNECTION.
4. REMOVE PORTION OF HOT WATER PIPING. PREPARE PIPING FOR NEW CONNECTION IN PHASE 1.
5. VALVE NORMALLY CLOSED UNTIL PHASE 2.
6. ROUTE 1" HOT WATER RETURN (160°F) PIPING TO DWRP-2. ROUTE PIPING DOWNSTREAM OF DWRP-2 TO TMV-1 & 3" SOFT COLD WATER PIPING ROUTING TO THE DOMESTIC WATER STORAGE TANKS.
7. PROVIDE VALVE AND CAP FOR CONNECTION IN PHASE 2.
8. BACKFLOW PREVENTER FOR BOILER MAKE-UP WATER.
9. REMOVE PORTION OF COLD WATER PIPING. PREPARE PIPING FOR NEW CONNECTION.

ALTERNATE #1 (THIS SHEET):

ALTERNATE NO. 1: USE ELECTRONICALLY OPERATED THERMOSTATIC MIXING VALVES IN LIEU OF MECHANICALLY OPERATED MIXING VALVES FOR THE SUITES, KITCHEN AND LAUNDRY AREAS.

- ETMV-1 (SUITES): LEONARD NUCLEUS NV-150-LF, 72 GPM AT 10 PSI PRESSURE DROP, 1-1/4" SUPPLIES, 1-1/2" MIXED OUTLET.
- ETMV-2 (KITCHEN): LEONARD NUCLEUS NV-150-LF, 72 GPM AT 10 PSI PRESSURE DROP, 1-1/4" SUPPLIES, 1-1/2" MIXED OUTLET.
- ETMV-3 (LAUNDRY): LEONARD NUCLEUS NV-150-LF, 72 GPM AT 10 PSI PRESSURE DROP, 1-1/4" SUPPLIES, 1-1/2" MIXED OUTLET.

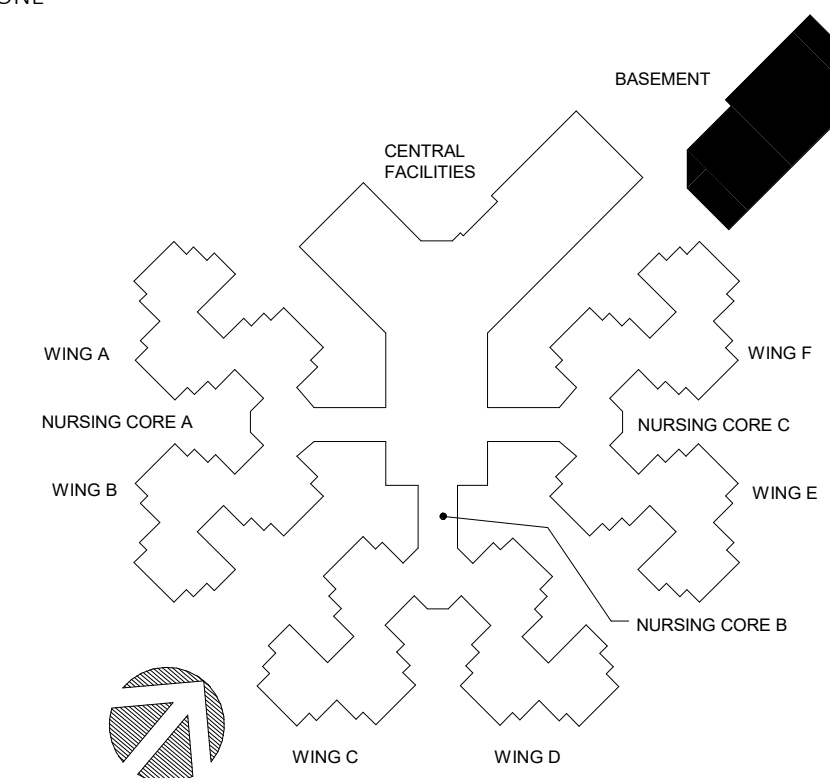
PLUMBING LEGEND

	DEMO SOFT COLD WATER PIPING (EX SCW)
	EXISTING SOFT COLD WATER PIPING (EX SCW)
	NEW SOFT COLD WATER PIPING (SCW)
	DEMO HOT WATER PIPING (EX HW)
	EXISTING HOT WATER PIPING (EX HW)
	NEW HOT WATER PIPING (HW)
	DEMO HOT WATER PIPING (140°F) (EX HW(140°F))
	EXISTING HOT WATER PIPING (140°F) (EX HW(140°F))
	NEW HOT WATER PIPING (140°F) (HW(140°F))
	DEMO HOT WATER RETURN PIPING (EX HWR)
	EXISTING HOT WATER RETURN PIPING (EX HWR)
	NEW HOT WATER RETURN PIPING (HWR)
	DEMO HOT WATER PIPING (160°F) (EX HW(160°F))
	EXISTING HOT WATER PIPING (160°F) (EX HW(160°F))
	NEW HOT WATER PIPING (160°F) (HW(160°F))
	DEMO HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	EXISTING HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	NEW HOT WATER RETURN PIPING (160°F) (HWR(160°F))
	HX: NEW HOT WATER PIPING (170°F) (HW(170°F))
	HX: NEW HOT WATER RETURN PIPING (170°F) (HWR(170°F))

NOTE: HW = HEAT EXCHANGER

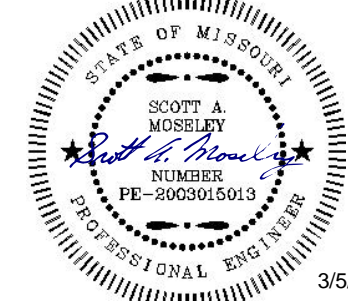


STAGING MAP



NOTE TO PRINTER

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READABILITY, ADJUST PRINTER SETTINGS TO COLOR AND BE
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Professional of Record:
SCOTT A. MOSELEY

LICENSE #: 2003015013
EXPIRATION DATE: 12/31/25
PROFESSIONAL SEAL

CASCO Diversified Corporation
MO Certificate of Authority #000320 A

MO Certificate of Authority #000613 E
Exp. Date: 12/31/25

Exp. Date: 12/31/23

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s, MO 63143

**OFFICE OF
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PROJECT # U2409-01
SITE # 6801
FACILITY # 8136801002

REVISION: _____
DATE: _____
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DATE: _____
ISSUE DATE: 01.21.2025

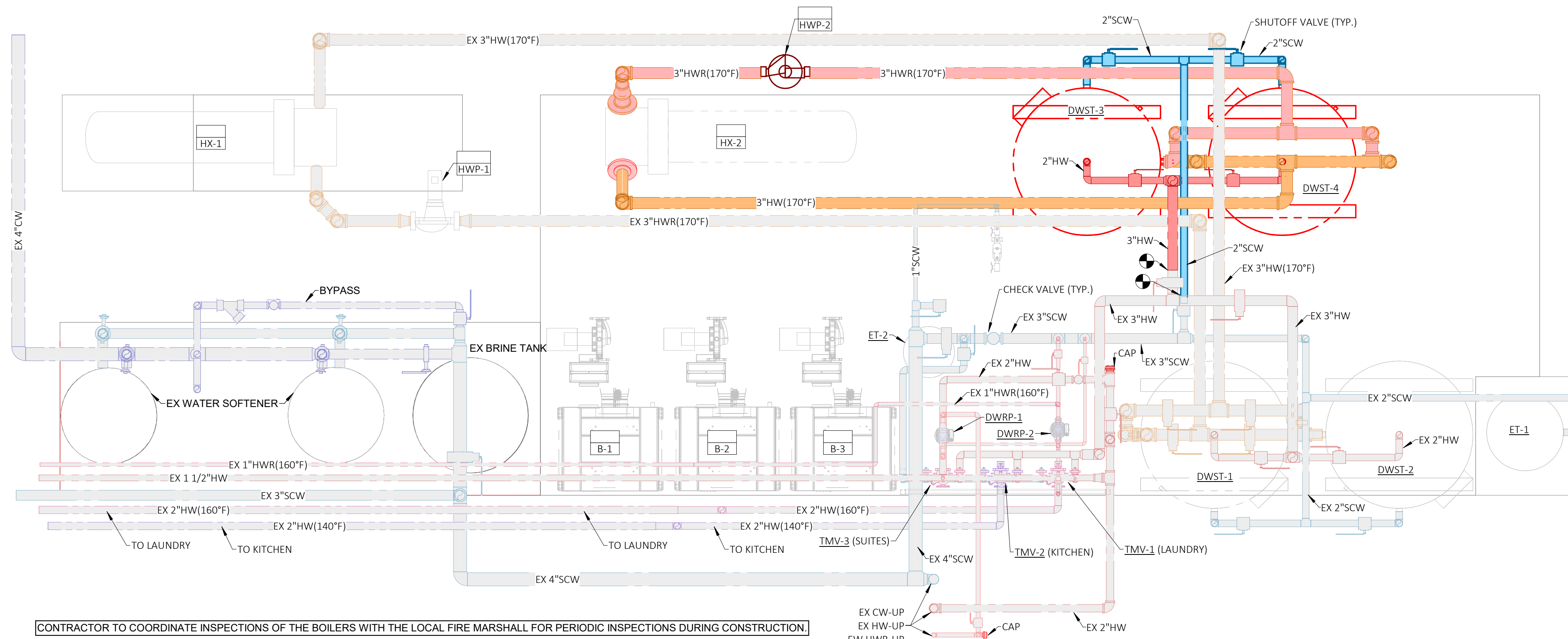
CAD DWG FILE:
DRAWN BY: DDP
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:

PLUMBING - PHASE 1 DEMOLITION & NEW

SHEET NUMBER:

P-101
2 of 18 SHEETS
03.05.2025



PLUMBING - PHASE 2 NEW WORK

SCALE: 1/2" = 1'-0"

CONTRACTOR TO COORDINATE INSPECTIONS OF THE BOILERS WITH THE LOCAL FIRE MARSHALL FOR PERIODIC INSPECTIONS DURING CONSTRUCTION.

**STATE OF MISSOURI
MICHAEL L. KEHOE,
GOVERNOR**



CASCO

1. REMOVE PORTION OF PIPING. PREPARE PIPING FOR NEW CONNECTION.
2. REMOVE EXISTING INTAKE & VENT PIPING FOR EXISTING BOILERS TO BE REMOVED.
3. REMOVE EXISTING CAPS FOR CONNECTION TO PHASE 2 DOMESTIC WATER STORAGE TANKS.

KEY PLAN

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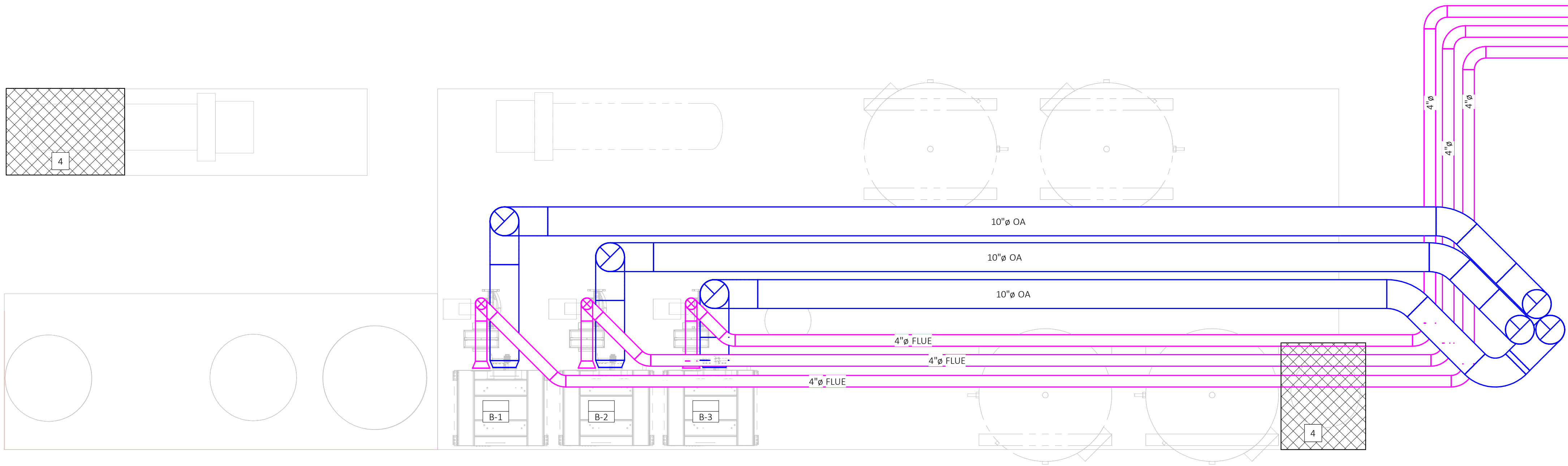
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CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:

PLUMBING - PHASE 2
DEMOLITION & NEW

SHEET NUMBER:

P-102
3 of 18 SHEETS
03.05.2025



GENERAL NOTES

- A. AFTER 10" DIAMETER FLUES FROM BOILERS PENETRATE THE ROOF, THEY SHALL BE OFFSETTED TO ALLOW RAIN CAPS TO BE INSTALLED.
- B. REFER TO THE RISER DIAGRAM LOCATED ON SHEET P-603 FOR LOCATIONS OF ALL VALVES & ACCESSORIES TO THE BOILERS & HEAT EXCHANGERS.
- C. BOILER CONNECTIONS SHALL BE FLANGED TO ALLOW EASE OF MAINTENANCE.

KEYED NOTES

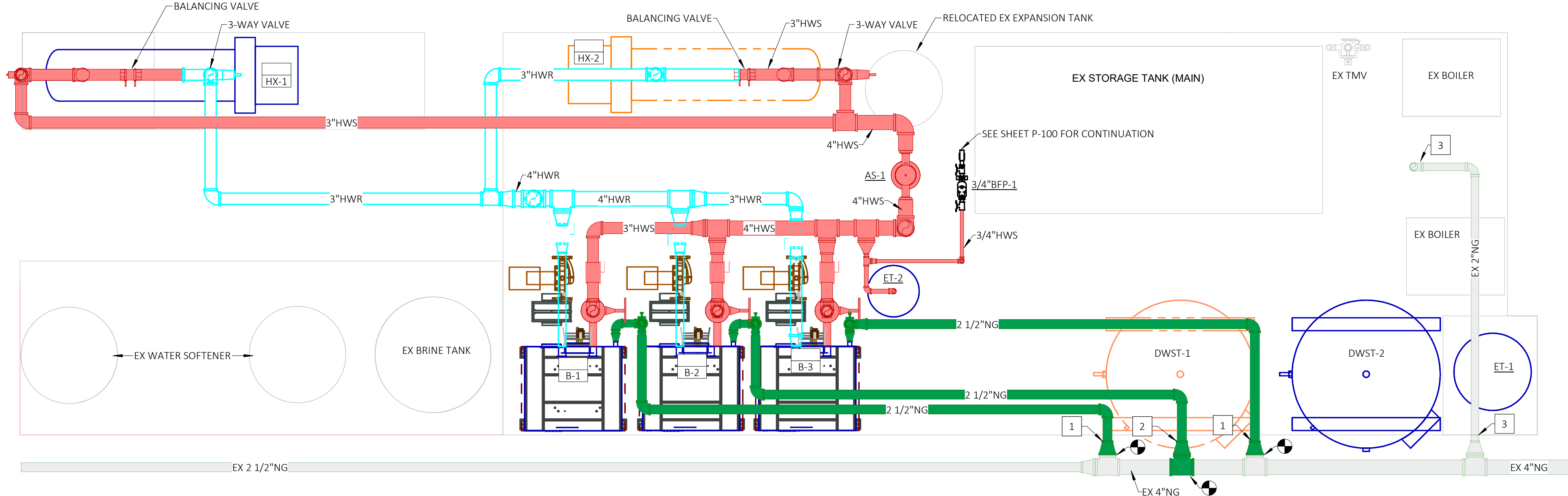
1. CONNECT NEW 2" NATURAL GAS TO EXISTING NATURAL GAS TEE IN PHASE 1.
2. INSTALL NEW 2" NATURAL GAS TAP INTO EXISTING 4" NATURAL GAS MAIN IN PHASE 1.
3. REMOVE EXISTING 2" NATURAL GAS PIPING IN PHASE 2 BACK TO ACTIVE MAIN & CAP.
4. EXTEND 4" HOUSEKEEPING PAD AS SHOWN. BLOCK OUT EXISTING FLOOR DRAIN(S) AS REQUIRED TO MAINTAIN PROPER DRAINAGE.

PLUMBING LEGEND & ABBREVIATIONS

	EX NG	DEMOLISHED NATURAL GAS PIPING
	EX NG	EXISTING NATURAL GAS PIPING
	NG	NEW NATURAL GAS PIPING
	HWS	BOILER: NEW HOT WATER SUPPLY PIPING
	HWR	BOILER: NEW HOT WATER RETURN PIPING

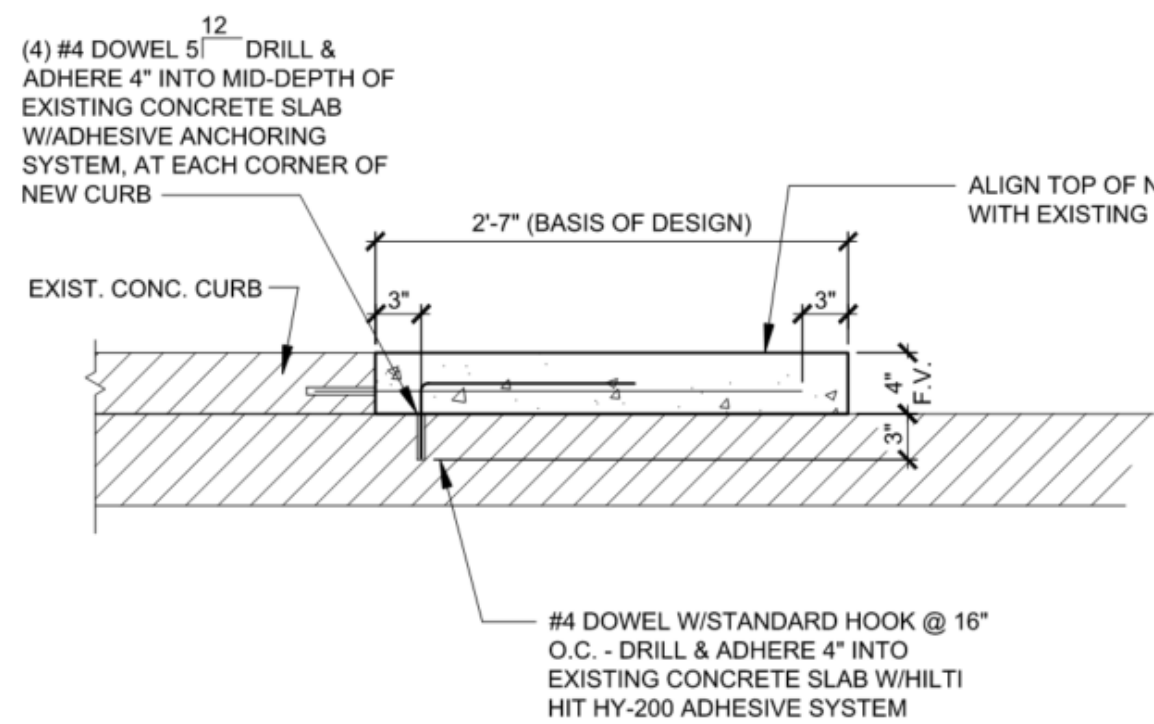
1 ENLARGED FLOOR PLAN - DOMESTIC WATER SOURCE HEATING EXHAUST, FLUE & PAD ENLARGEMENT - PHASE 1

SCALE: 1/2" = 1'-0"



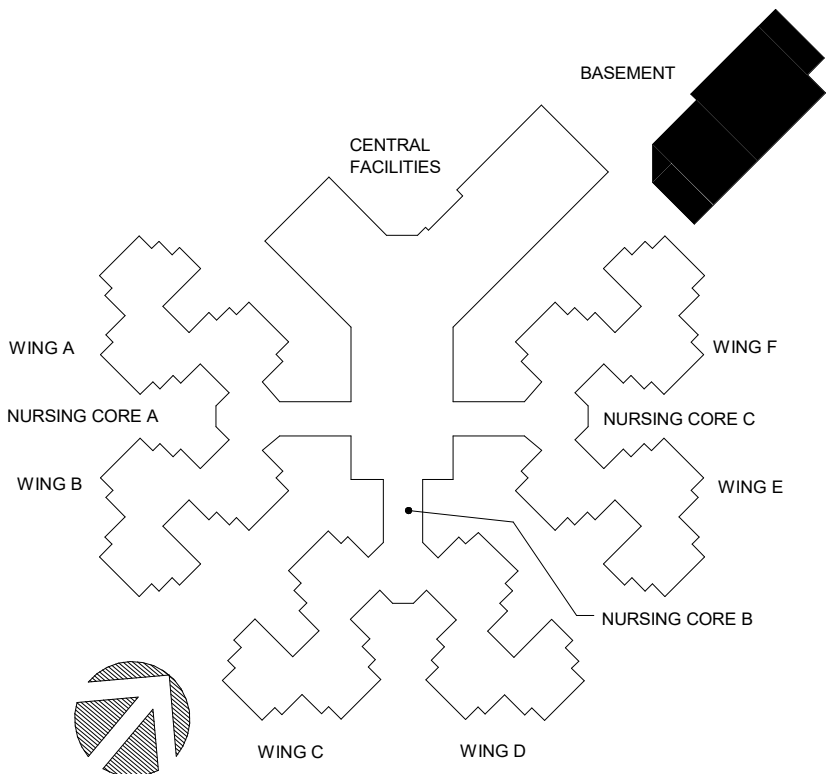
2 ENLARGED FLOOR PLAN - DOMESTIC WATER SOURCE HEATING - PHASE 1

SCALE: 1/2" = 1'-0"



3 NEW CONC. CURB DETAIL

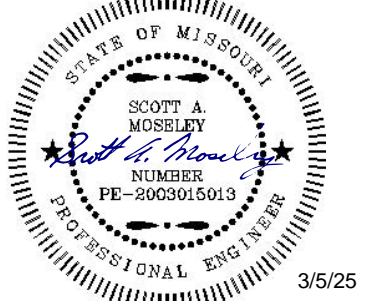
SCALE: NONE



KEY PLAN

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MICHAEL L. KEHOE,
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Exp. Date: 12/31/25

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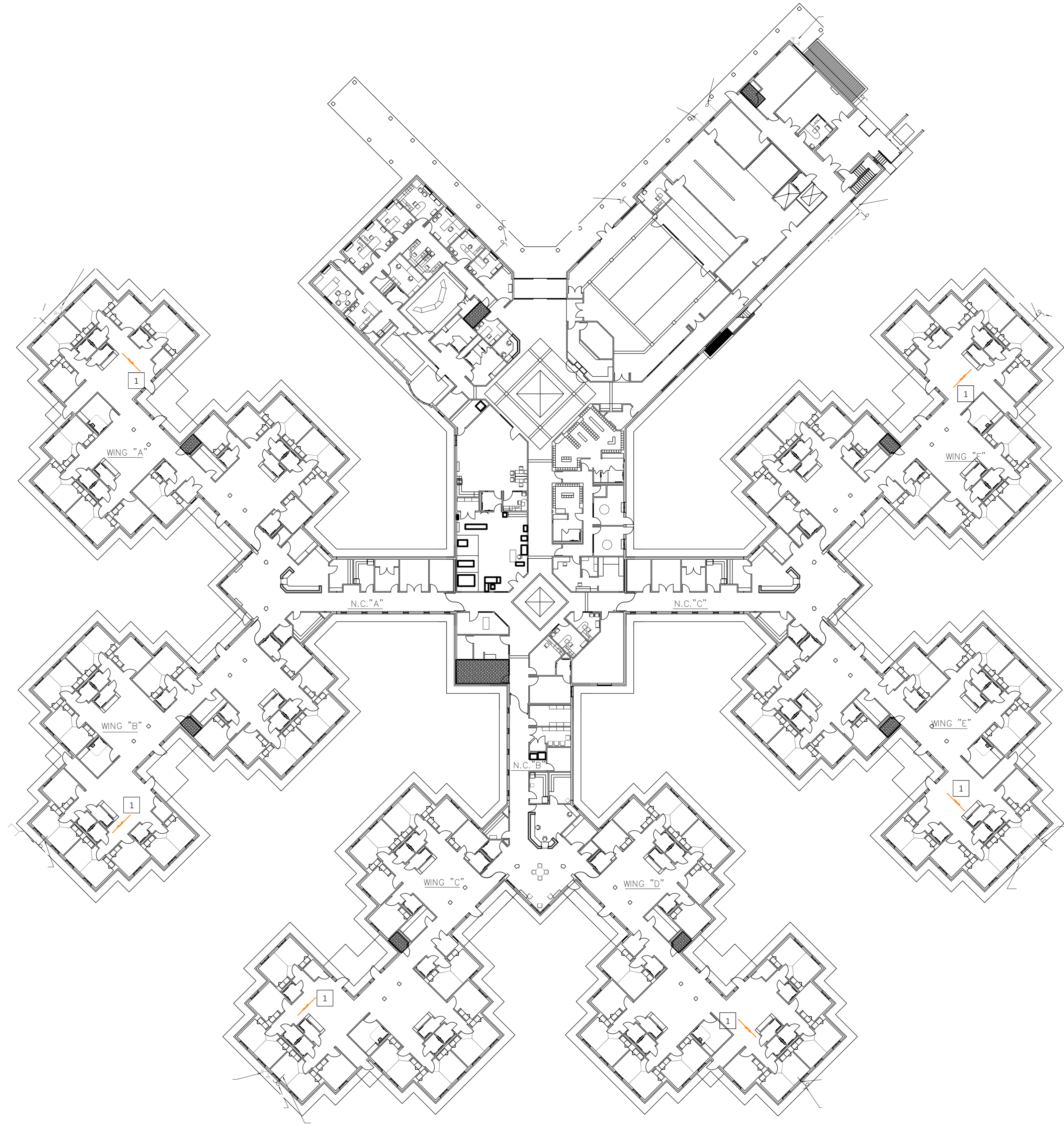
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SHEET TITLE:

PLUMBING
BASEMENT FLOOR
PLANS

SHEET NUMBER:

P-103
4 of 18 SHEETS
03.05.2025

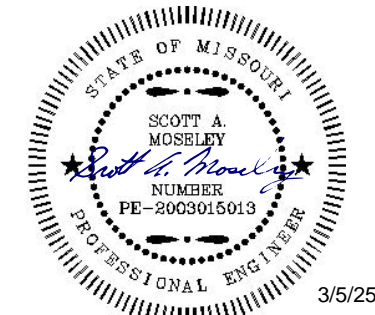


ALTERNATE #2 (THIS SHEET):

- 1
- ALTERNATE NO. 2: REPLACE THE EXISTING BALANCING VALVES WITH THERMOSTATICALLY OPERATED BALANCING VALVE STATIONS, INCLUDING CHECK VALVES, THERMOMETER, AND STOP VALVES.

NOTE: CONTRACTOR TO FIELD VERIFY EXACT LOCATIONS OF EXISTING BALANCING VALVES.

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PROJECT # U2409-01
SITE # 6801
FACILITY # 8136801002

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DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 01.21.2025

CAD DWG FILE: _____
DRAWN BY: DDP
CHECKED BY: SAM
DESIGNED BY: _____

SHEET TITLE:
PLUMBING FIRST
FLOOR PLAN -
ALTERNATE #2

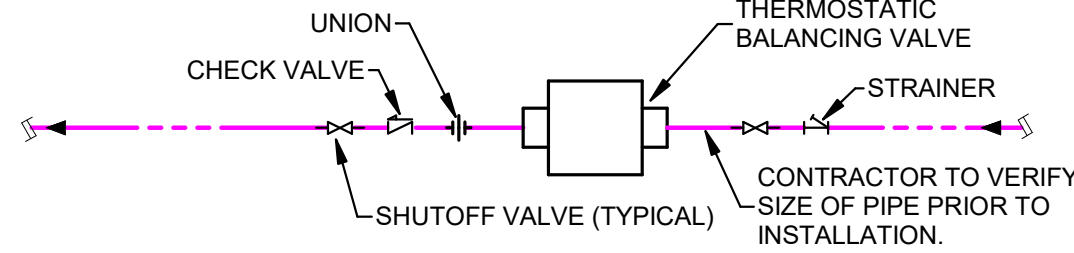
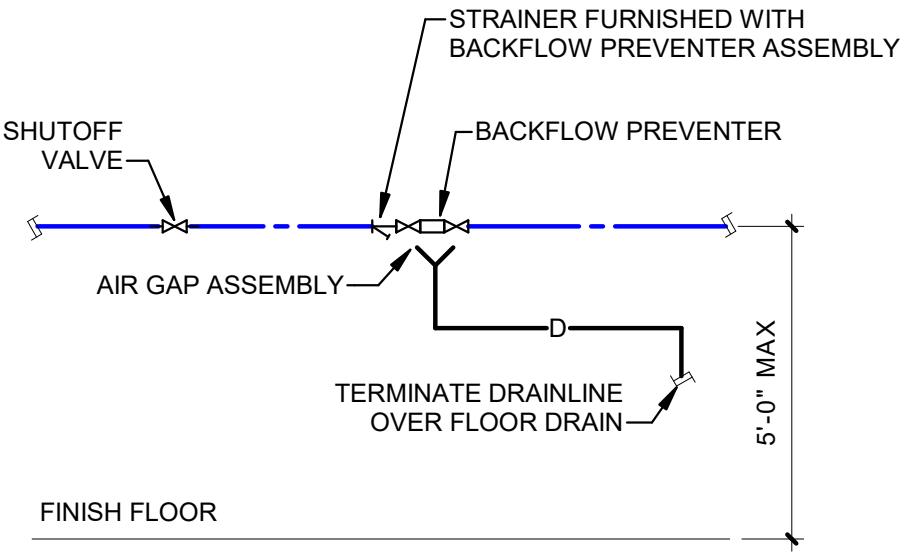
SHEET NUMBER:
P-104
5 of 18 SHEETS
03.05.2025

1

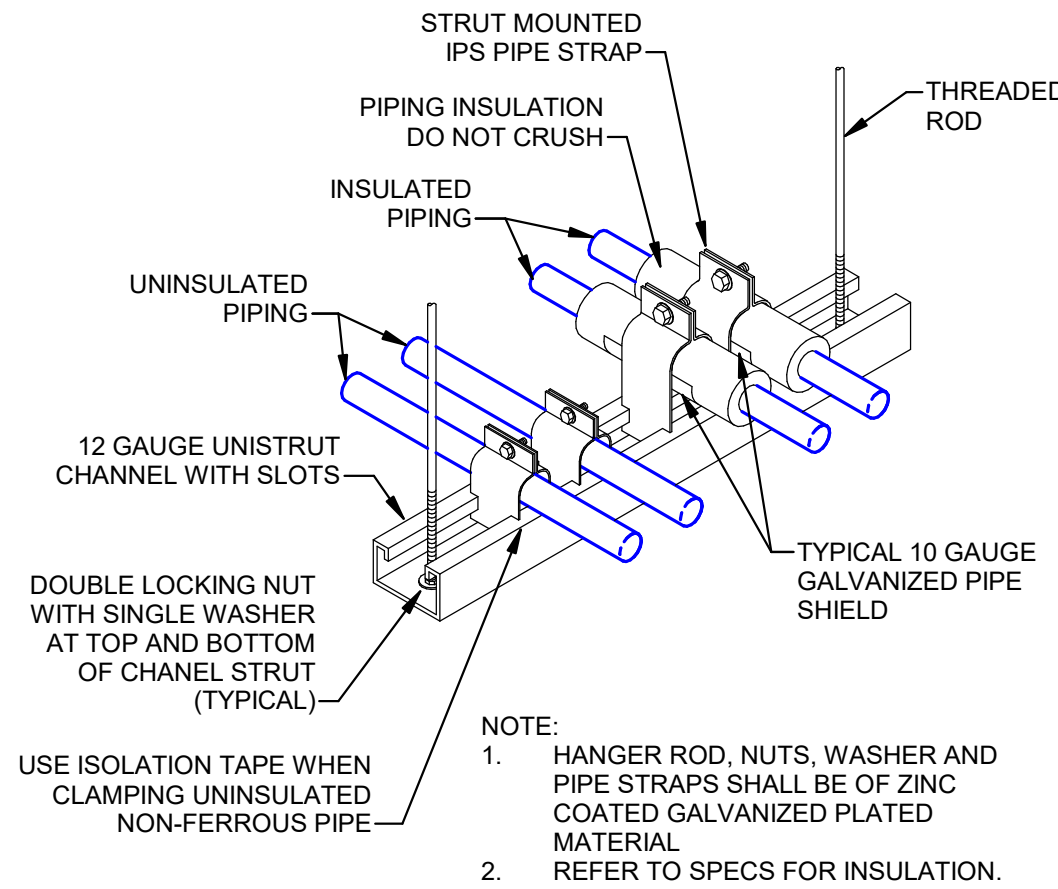
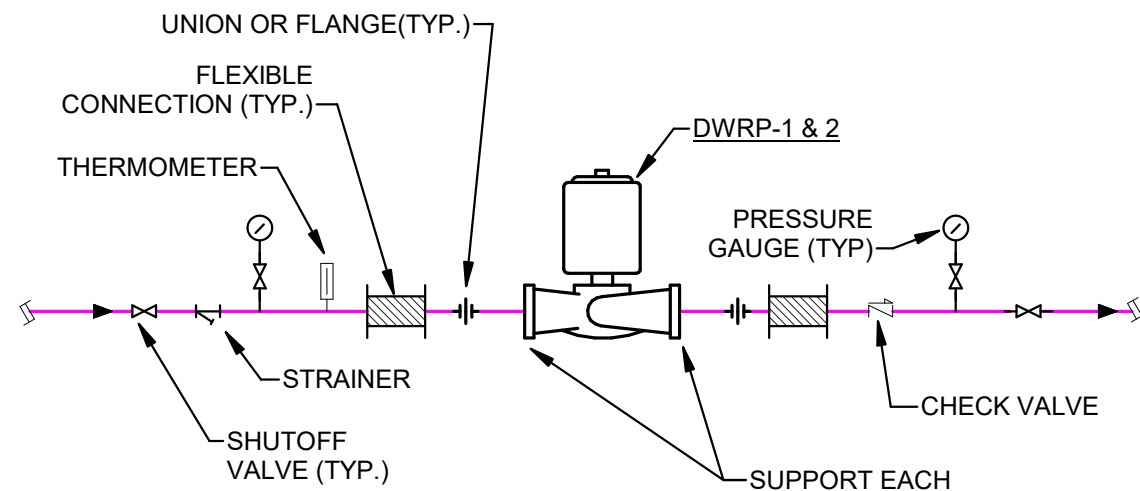
P-104

FIRST FLOOR OVERALL - PLUMBING - ALTERNATE #2

SCALE: 3/32" = 1'-0"



NOTE: THERMOSTATIC BALANCING VALVE MAY BE PROVIDED WITH PACKAGED CHECK VALVE, STRAINER, & SHUTOFF VALVES.



1 BACKFLOW PREVENTER

SCALE: NONE

2 THERMOSTATIC BALANCING VALVE - ALTERNATE #2

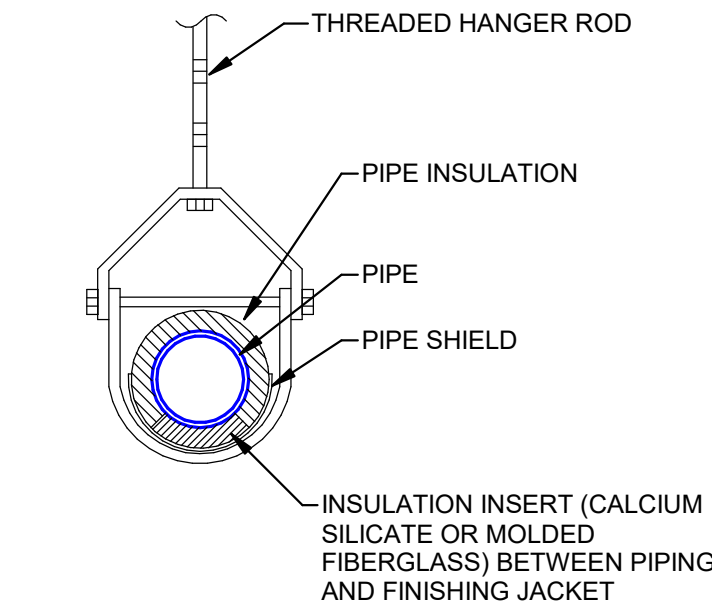
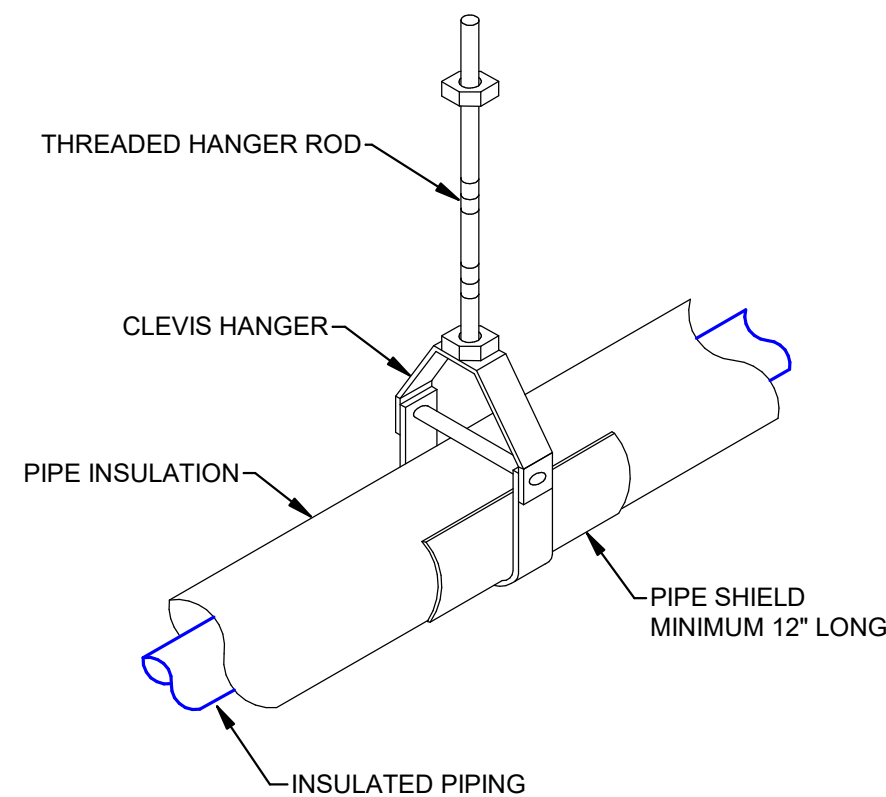
SCALE: NONE

3 DOMESTIC HOT WATER RECIRCULATING PUMP

SCALE: NONE

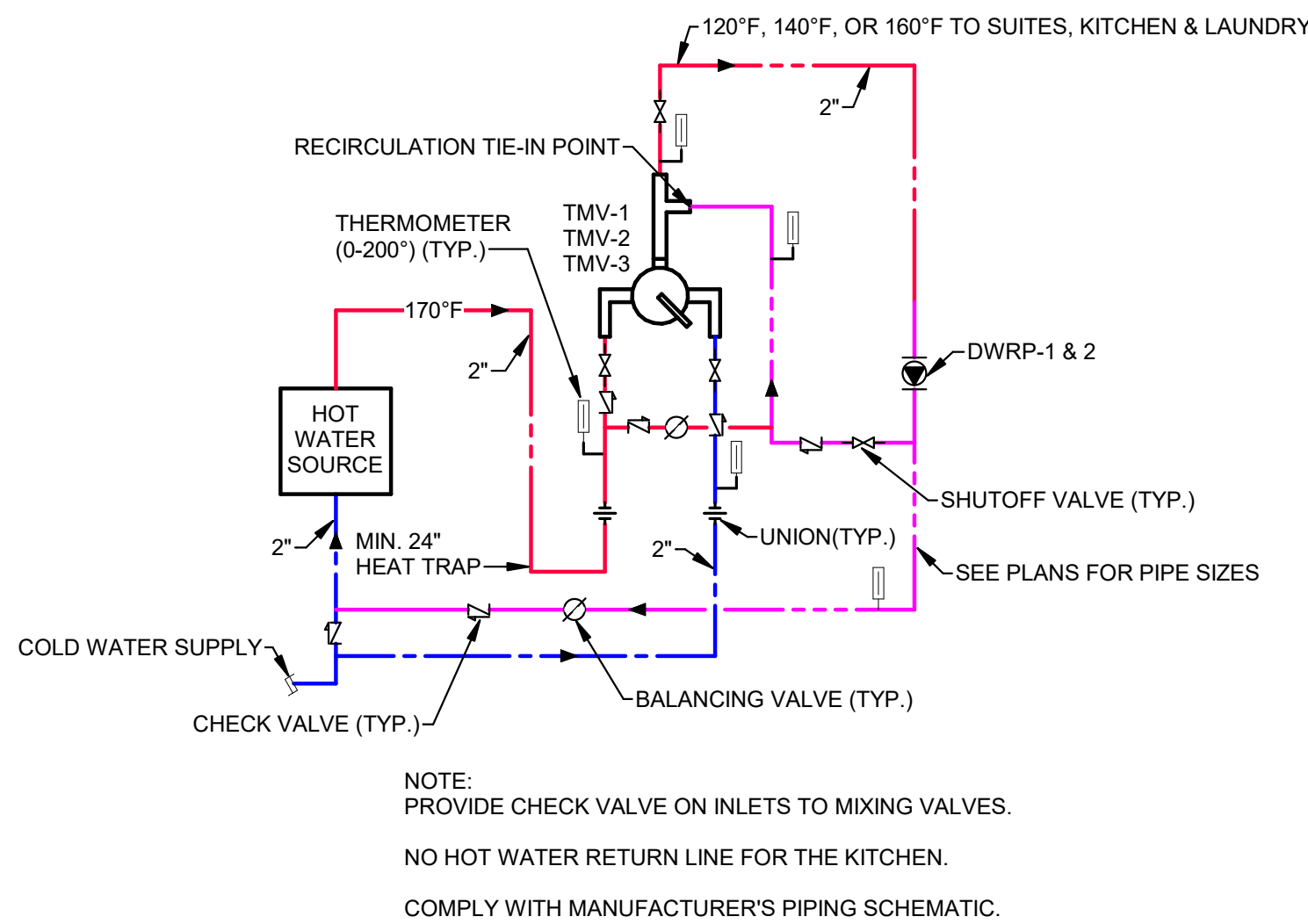
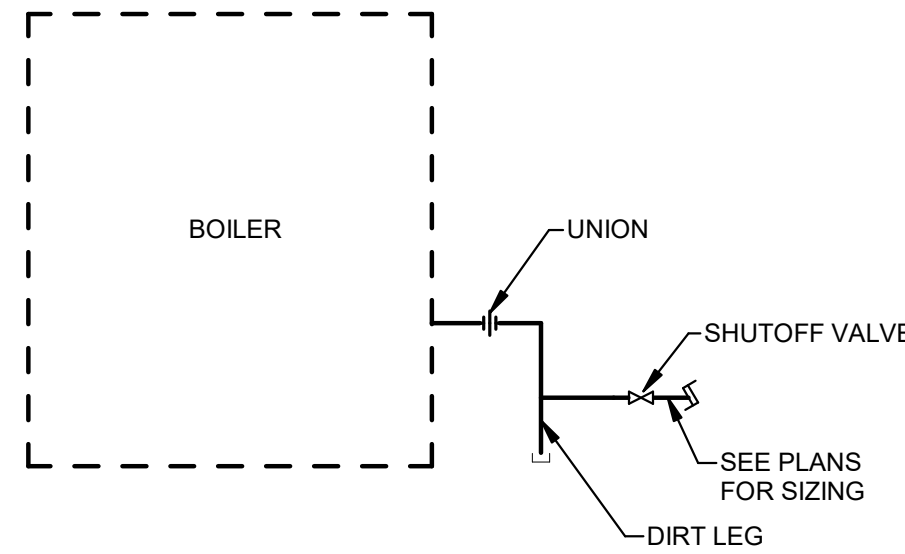
4 TRAPEZE PIPE SUPPORT

SCALE: NONE



SECTION THRU HANGER

REFER TO SPECS FOR INSULATION AND HANGER SUPPORTS.



5 INSULATED PIPE HANGER SUPPORT

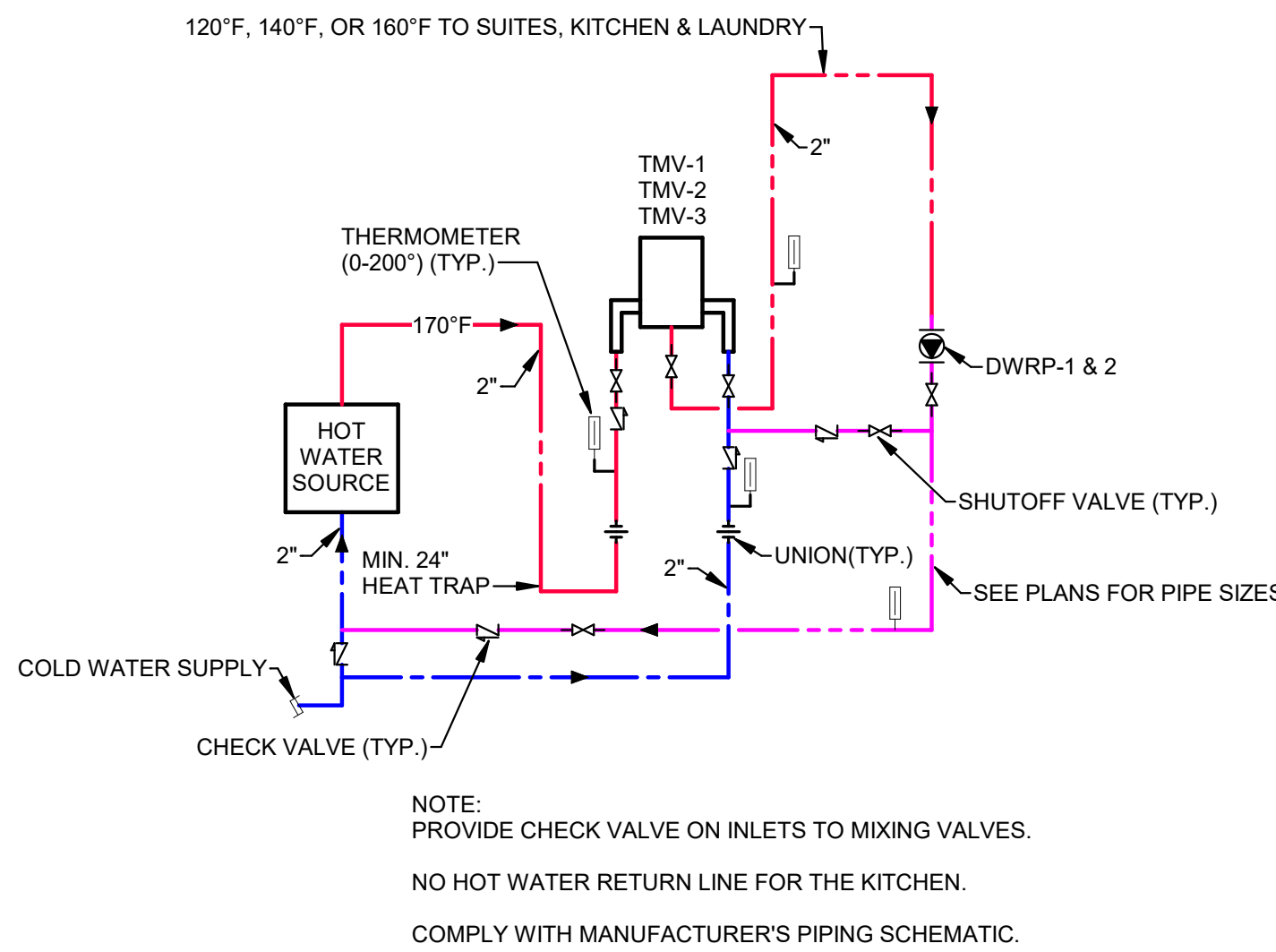
SCALE: NONE

6 GAS CONNECTION AT BOILERS

SCALE: NONE

7 THERMOSTATIC MIXING VALVE (TMV-1, 2, & 3)

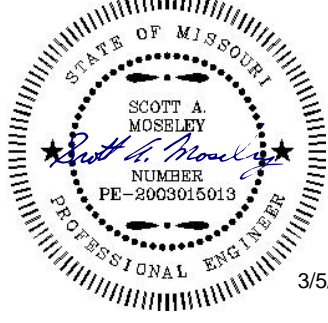
SCALE: NONE



8 ELECTRONIC THERMOSTATIC MIXING VALVE (TMV-1, 2, & 3) - ALTERNATE #1

SCALE: NONE

STATE OF MISSOURI
MICHAEL L. KEHOE,
GOVERNOR



3/5/25

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ISSUE DATE: 01.21.2025

CAD DWG FILE:
DRAWN BY: DDP
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:

PLUMBING DETAILS

SHEET NUMBER:

P-501
6 of 18 SHEETS
03.05.2025

SEQUENCES OF OPERATION - DOMESTIC WATER HEATING SYSTEM:

SYSTEM GENERAL DESCRIPTION:

THIS PRIMARY DOMESTIC WATER HEATING SYSTEM SHALL BE CONTROLLED BY THE BOILER MANUFACTURER'S PACKAGED CONTROL SYSTEM. ALL SYSTEM ALARMS AND TEMPERATURE SENSORS SHALL REPORT BACK TO THE OWNER'S EXISTING SCHNEIDER ELECTRIC BUILDING AUTOMATION SYSTEM (BAS).

SCHNEIDER ELECTRIC CONTACT: C&C GROUP - BRIAN SCHEPPERS

THE SYSTEM SHALL BE BROKEN UP INTO TWO CIRCUITS- THE PRIMARY DOMESTIC WATER HEATING LOOP, AND THE DOMESTIC HOT WATER SYSTEM.

THE PRIMARY DOMESTIC WATER HEATING SYSTEM SHALL CONSIST OF THREE BOILERS, THREE PUMPS, TWO HEAT EXCHANGERS, PIPING AND VARIOUS CONTROL VALVES, DAMPERS AND OTHER CONTROL COMPONENTS.

THE DOMESTIC HOT WATER SYSTEM SHALL CONSIST OF FOUR DOMESTIC WATER STORAGE TANKS, TWO DOMESTIC WATER PUMPS, THREE DOMESTIC WATER TEMPERATURE SYSTEMS WITH ASSOCIATED THERMAL MIXING VALVES, AND TWO DOMESTIC WATER RECIRCULATING PUMPS.

PRIMARY DOMESTIC WATER HEATING SYSTEM:

BOILERS:

MANUFACTURER'S BOILER CONTROL SYSTEM SHALL STAGE BOILERS AND MODULATE HEATING INPUT AS REQUIRED TO PROVIDE A 190F (ADJUSTABLE) SUPPLY WATER TEMPERATURE IN THE PRIMARY LOOP AS SENSED BY TS-1. BOILERS SHALL BE STAGED TO ENSURE EQUAL RUN TIME / LOADING ON ALL THREE BOILERS AND THEIR ASSOCIATED PUMPS.

A MINIMUM OF ONE BOILER AND ONE PUMP SHALL PROVIDE CONTINUOUS CIRCULATION THROUGH THE PRIMARY LOOP AT ALL TIMES.

WHEN A DISABLED BOILER IS REQUIRED TO BE ENERGIZED, THE MANUFACTURERS PROGRAM SHALL:

- 1. OPEN THE ASSOCIATED BOILER MOTORIZED ISOLATION VALVE (CV-1, CV-2, OR CV-3),
- 2. ENERGIZE THE ASSOCIATED BOILERS PUMP (BP-1, BP-2, OR BP-3),
- 3. OPEN THE ASSOCIATED OUTSIDE AIR AND FLUE DAMPERS (WHILE ENERGIZING BURNER BLOWER).
- 4. ENERGIZE BURNER SEQUENCE.

WHEN A BOILER IS REQUIRED TO BE DE-ENERGIZED, A REVERSE SEQUENCE SHALL BE FOLLOWED.

WHEN ONE OR MORE BOILERS ARE OPERATING TOGETHER, THE MANUFACTURER'S CONTROL SYSTEM SHALL MODULATE HEATING OUTPUT AS REQUIRED AND STAGE THE BOILERS TO MAINTAIN PROPER PRIMARY LOOP TEMPERATURE.

BOILER SAFETIES:

BOILERS SHALL OPERATE WITH THEIR OWN SAFETIES AND CONTROLS. MASTER ALARMS SHALL BE ANNUNCIATED IN OWNERS EXISTING BAS.

BOILER PUMP FAILURE- IF AN ASSOCIATED PUMP IS ENABLED AND THE CURRENT SWITCH IS OFF FOR MORE THAN 30 SECONDS (ADJ), THE SYSTEM SHALL ANNUNCIATE A BOILER CIRCULATION PUMP FAILURE ALARM TO THE BAS AND DISABLE THE ASSOCIATED BOILER.

HEAT EXCHANGERS:

THE HEAT EXCHANGERS THREE WAY VALVES SHALL MODULATE THE PRIMARY DOMESTIC WATER FLOW TO MAINTAIN THE TEMPERATURE INSIDE THEIR RESPECTIVE DOMESTIC HOT WATER STORAGE TANKS (DWST-1, DWST-2, DWST-3, & DWST-4). THE TEMPERATURE INSIDE THE TANKS SHALL BE MAINTAINED AT 170F (ADJ) AT ALL TIMES AS SENSED BY TS-3, TS-4, TS-14, & TS-15 (DWST TEMPERATURES).

DOMESTIC HOT WATER SYSTEM:

DOMESTIC HOT WATER PUMPS (HWP-1 AND HWP-2) SHALL RUN CONTINUOUSLY.

DOMESTIC HOT WATER RECIRCULATION PUMPS (DWRP-1 AND DWRP-2) SHALL RUN CONTINUOUSLY. CONTROLLER SHALL MODULATE PUMP SPEED VIA VFD TO MAINTAIN A MINIMUM RECIRCULATION TEMPERATURE OF 105°F & 140°F (ADJ) AS SENSED BY TS-12 AND TS-13.

ADDITIONAL SYSTEM MONITORING AND ALARMS:

TS-5 / TS-7 / TS-6 / (DWST'S ENTERING WATER TEMPERATURE) AND TS-6 / TS-8 (DWST'S LEAVING WATER TEMPERATURE) SHALL BE MONITORED FOR TREND ANALYSIS.

TS-9 / TS-10 / TS-11 (DOWNSTREAM THERMAL MIXING VALVE TEMPERATURES) SHALL BE MONITORED FOR TREND ANALYSIS.

- TS-3 / TS-4 / TS-14 / TS-15 (DWST TEMPERATURES):
- HIGH TEMPERATURE ALARM 175F (ADJ).
 - HIGH TEMPERATURE SAFETY: ABOVE 185F (ADJ), THE APPROPRIATE PRIMARY HEATING VALVE (CV-4 OR CV-5) FOR THE HEAT EXCHANGER SHALL BE MOVED TO FULL BYPASS POSITION. ABOVE 190F, ALL BOILERS SHALL BE DE-ENERGIZED.
 - LOW TEMPERATURE ALARM 160F (ADJ).

NOTE: MATTERPORT SURVEY LINK PROVIDED BELOW IS FOR REFERENCE ONLY, AND IS NOT INTENDED TO BE A SUBSTITUTE FOR FIELD INVESTIGATIONS BY THE CONTRACTOR.

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OFFICE OF
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MANAGEMENT,
DESIGN AND
CONSTRUCTION

REBID
DESIGN & INSTALL
NEW DOMESTIC WATER
PLANT
VETERANS HOME
BUILDING

ST. JAMES VETERANS HOME
620 NORTH JEFFERSON
ST. JAMES, MO

PROJECT # U2409-01
SITE # 6801
FACILITY # 8136801002

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 01.21.2025

CAD DWG FILE: _____
DRAWN BY: DDP
CHECKED BY: SAM
DESIGNED BY: _____

SHEET TITLE:

PLUMBING
SEQUENCE OF
OPERATIONS

SHEET NUMBER:

P-601
7 of 18 SHEETS
03.05.2025

DIMENSIONS OF BOILERS:
HEIGHT = 61"
WIDTH = 30"
DEPTH = 32"

235233 FIRE TUBE BOILER SCHEDULE																		
PLAN DESIG.	SERVES	LOCATION	MFGR	MODEL	TYPE	FUEL	INPUT (MBH)	OUTPUT (MBH)	DESIGN PRESS. (PSIG)	EWT (F)	LWT (F)	FLOWRATE (GPM)	MAX WPD (FT HD)	POWER			OPERATING WEIGHT (LBS)	NOTES
														VOLTAGE	PHASE	MCA		
B-1	DOMESTIC HOT WATER	SEE PLAN	-	-	NOTE 1	NAT GAS	1,250	1,078	ASME 160	170	190	100	2.5	120	1	9	780	1-5
B-2	DOMESTIC HOT WATER	SEE PLAN	-	-	NOTE 1	NAT GAS	1,250	1,078	ASME 160	170	190	100	2.5	120	1	9	780	1-5
B-3	DOMESTIC HOT WATER	SEE PLAN	-	-	NOTE 1	NAT GAS	1,250	1,078	ASME 160	170	190	100	2.5	120	1	9	780	1-5
NOTES: 1. TYPE: NON-CONDENSING COPPER FIN TUBE. 2. BACNET INTERFACE. 3. PROVIDE GAS TRAIN: ASME CSD-1. 4. OPTIONAL ACCESSORIES SHALL INCLUDE: ASME RELIEF VALVE, FULL MODULATING CONTROLS WITH OUTPUTS TO OWNERS BUILDING AUTOMATION SYSTEM, MULTI-BOILER STAGING, AND CODE REQUIRED BOILER SAFETIES. 5. ALL FITTINGS, VALVES, AND SURFACES TOUCHING FLUIDS SHALL MEET AWWA STANDARDS FOR USE IN DOMESTIC WATER SYSTEMS.																		

232123 HYDRONIC PUMP SCHEDULE															
PLAN DESIG.	MFGR	MODEL	TYPE	SERVICE	CAPACITY (GPM)	TOTAL HEAD (FT)	MAX FLUID TEMP. (F)	FLUID TYPE	MOTOR HP	RPM	EFFICIENCY (%)	VOLTS / PHASE /...	PUMP SIZE		NOTES
BP-1	-	-	INLINE	190F...	100	80	190	DOMESTIC	5	1760	72.5	480/3	2	2	1, 3, 4
BP-2	-	-	INLINE	190F...	100	80	190	DOMESTIC	5	1760	72.5	480/3	2	2	1, 3, 4
BP-3	-	-	INLINE	190F...	100	80	190	DOMESTIC	5	1760	72.5	480/3	2	2	1, 3, 4
HWP-1	-	-	INLINE	190F...	150	55	190	DOMESTIC	5	1760	67	480/3	3	3	1, 3, 4
HWP-2	-	-	INLINE	190F...	150	55	190	DOMESTIC	5	1760	67	480/3	3	3	1, 3, 4
DWRP-1	-	-	INLINE	120 F...	15	25	140	DOMESTIC	1/6	-	-	115/1	1.25	1.25	1, 2, 3, 4, 5
DWRP-2	-	-	INLINE	160 F...	3	12	160	DOMESTIC	1/12	-	-	115/1	1.25	1.25	1, 2, 3, 4, 5
NOTES: 1. MOTOR STARTER AND LOCAL NON-FUSED DISCONNECT SHALL BE PROVIDED BY MANUFACTURER. 2. ECM AND DRIVE SHALL BE PROVIDED. 3. SUCTION DIFFUSER WITH INTEGRAL STRAINER. 4. ALL FITTINGS, VALVES, AND PUMP COMPONENTS TOUCHING FLUIDS SHALL MEET AWWA STANDARDS FOR USE IN DOMESTIC WATER SYSTEMS. 5. DWRP-1 & DWRP-2 SHALL BE OPERATED PER TEMPERATURE BASED (MINIMUM RETURN TEMPERATURE) MODE.															

ALL DIMENSIONS SHOWN ARE BASED ON DESIGN LAYOUT. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING PROPOSED EQUIPMENT AND MANUFACTURERS' REQUIRED CLEARANCES WILL FIT WITHIN ALLOWED SPACE. CONTRACTOR SHALL PROVIDE MECHANICAL ROOM DRAWINGS (@ 1/4" PER FOOT SCALE) TO SHOW LOCATIONS OF ALL THE PROPOSED EQUIPMENT AND MANUFACTURERS MAINTENANCE CLEARANCES PRIOR TO SUBMITTAL OF EQUIPMENT SHOP DRAWINGS.

DIMENSIONS OF AIR SEPARATOR:
HEIGHT = 32"
DIAMETER = 12.75"

232116 AIR SEPARATOR SCHEDULE													
PLAN DESIG.	MFGR	MODEL	TYPE	SERVICE	FLOWRATE (GPM)	TANK VOL (GAL)	MAX HEAD LOSS (FT)	CONNECTION (IN)	TK. DIAMETER (IN)	MAXIMUM DESIGN TEMP (F)	MAXIMUM DESIGN PRESS. (PSIG)	OPERATING WEIGHT (LBS)	NOTES
AS-1	-	-	TANGENTIAL	DOMESTIC	300	13	3	4	12.75	350	125	287	1
NOTES: 1. ALL FITTINGS AND VALVES SHALL MEET AWWA STANDARDS FOR USE IN DOMESTIC WATER SYSTEMS.													

232116 EXPANSION TANK SCHEDULE										
PLAN DESIG.	MFGR	MODEL	TYPE	SERVICE	TANK VOL (GAL)	ACCEPTANCE VOL (GAL)	TK. HEIGHT (IN)	TK. DIAMETER (IN)	MAXIMUM DESIGN TEMP (F)	MAXIMUM DESIGN PRESS. (PSIG)
ET-1	-	-	DIAPHRAGM	DOMESTIC	90	60	53	24	240	150
ET-2	-	-	DIAPHRAGM	DOMESTIC	15	10	25	16	240	150
NOTES: 1. ALL FITTINGS, VALVES, AND SURFACES TOUCHING FLUIDS SHALL MEET AWWA STANDARDS FOR USE IN DOMESTIC WATER SYSTEMS.										

THERMOSTATIC MIXING VALVE SCHEDULE						
PLAN MARK	DESCRIPTION	MANUFACTURER	MODEL	FLOW		LEAVING TEMPERATURE
				MINIMUM GPM	GPM @ 10 PSI LOSS	
TMV-1	THERMOSTATIC MIXING VALVE	-	-	0.5	113	160°F
TMV-2 & 3	THERMOSTATIC MIXING VALVE	-	-	0.5	40	SUITES: 120°F & KITCHEN: 140°F

DIMENSIONS OF VERTICAL DOMESTIC WATER STORAGE TANKS:
HEIGHT = 75"
DIAMETER = 46"

ELECTRONIC THERMOSTATIC MIXING VALVE SCHEDULE - ALTERNATE #1						
PLAN MARK	DESCRIPTION	MANUFACTURER	MODEL	FLOW		LEAVING TEMPERATURE
				MINIMUM GPM	GPM @ 10 PSI LOSS	
ETMV-1	ELECTRONIC THERMOSTATIC MIXING VALVE	-	-	0.25	72	120°F
ETMV-2	ELECTRONIC THERMOSTATIC MIXING VALVE	-	-	0.25	72	140°F
ETMV-3	ELECTRONIC THERMOSTATIC MIXING VALVE	-	-	0.25	72	160°F

223450 DOMESTIC HOT WATER STORAGE TANK SCHEDULE						
PLAN DESIG.	MFGR	MODEL	TYPE	SERVICE	GAL	REMARKS
DWST-1	-	-	DOMESTIC	HOT	300	1, 2, 3, 4
DWST-2	-	-	DOMESTIC	HOT	300	1, 2, 3, 4
DWST-3	-	-	DOMESTIC	HOT	300	1, 2, 3, 4
DWST-4	-	-	DOMESTIC	HOT	300	1, 2, 3, 4
REMARKS: 1. PROVIDE UNIT WITH THE FOLLOWING OPTIONS: ASME RATED VESSEL, INSULATION. 2. DIFFUSER TUBES ON COLD WATER MAKEUP AND HEATED WATER RETURN CONNECTIONS (1.0 PSI MAX PRESSURE DROP). 3. MANWAY ACCESS. 4. ALL FITTINGS, VALVES, AND SURFACES TOUCHING FLUIDS SHALL MEET AWWA STANDARDS FOR USE IN DOMESTIC WATER SYSTEMS.						

235700 SHELL AND TUBE HEAT EXCHANGER SCHEDULE												
PLAN DESIG.	MFGR	MODEL	SHELL DIAM. / LENGTH (IN)	# OF PASSES	FLUID 1 / FLUID 2	FLOWRATE		TEMP. (F) / PRESS. (#)		MAX PRESSURE LOSS (PSI)		CAPACITY (MBH)
						FLUID 1 (GPM)	FLUID 2 (GPM)	FLUID 1	FLUID 2	FLUID 1	FLUID 2	
HX-1	-	-	26 / 73	4	WATER / WATER	150	150	190/170	140/160	0.5	0.12	1,500
HX-2	-	-	26 / 73	4	WATER / WATER	150	150	190/170	140/160	0.5	0.12	1,500
NOTES: 1. BASED ON A FOULING FACTOR OF 0.001. 2. ALL FITTINGS, VALVES, AND SURFACES TOUCHING FLUIDS SHALL MEET AWWA STANDARDS FOR USE IN DOMESTIC WATER SYSTEMS. 3. DOUBLE WALL HEAT EXCHANGER.												

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DESIGNED BY:

SHEET TITLE:

PLUMBING
SCHEDULES

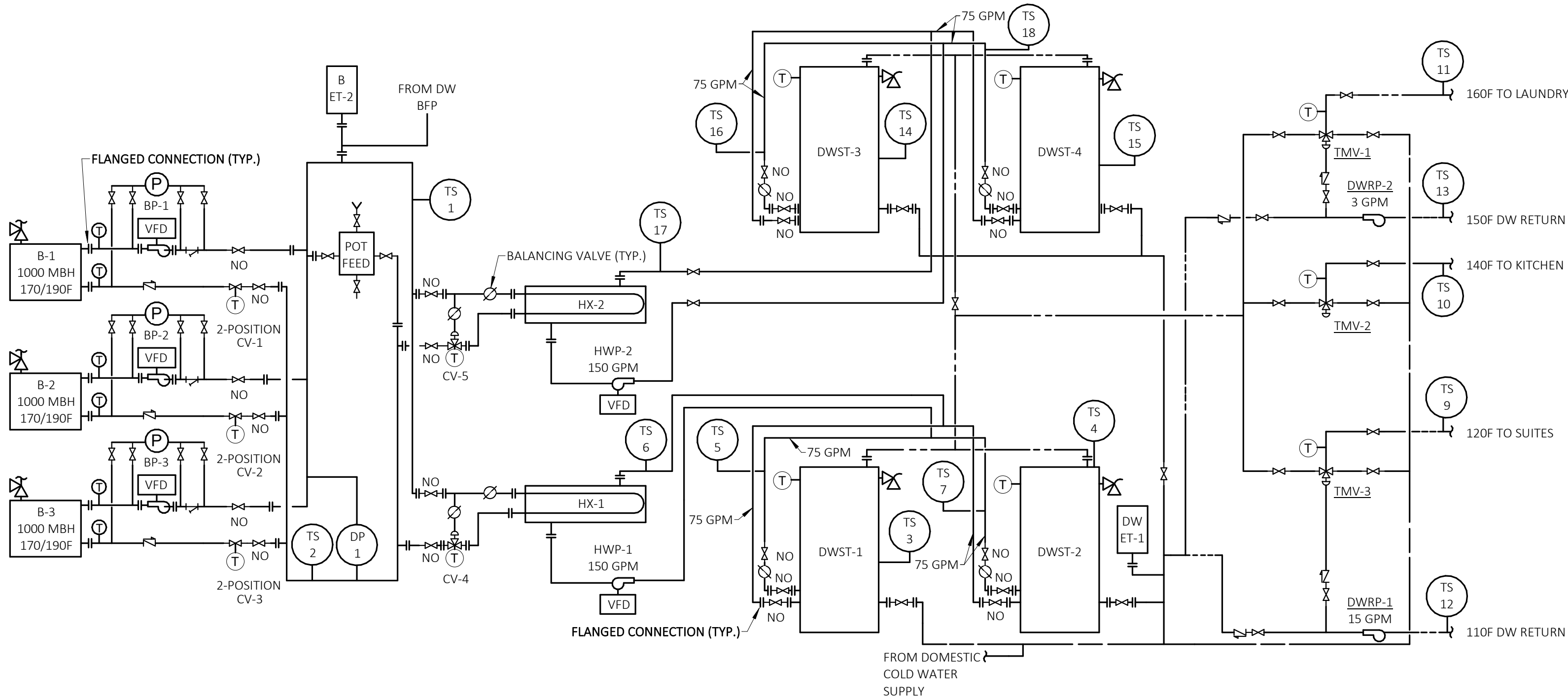
SHEET NUMBER:

P-602
8 of 18 SHEETS
03.05.2025

WATER TREATMENT SYSTEM:

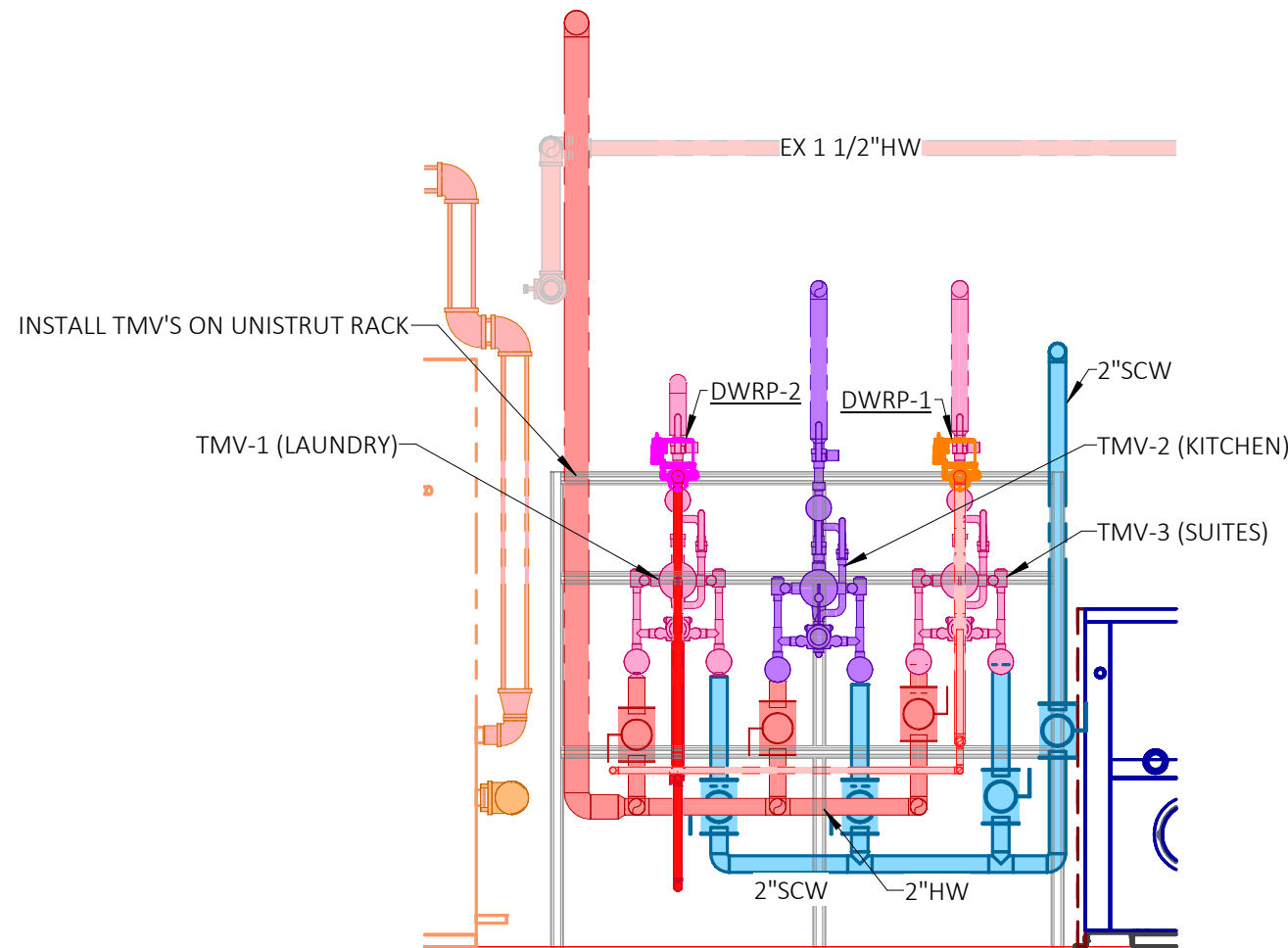
THE WINNING CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING WALTER LOUIS FLUID TECHNOLOGIES FOR THE WATER TREATMENT CONTRACTOR AND INCLUDE ALL COSTS ASSOCIATED WITH INSTALLATION, EQUIPMENT, LABOR AND CHEMICALS ASSOCIATED WITH PROVIDING A COMPLETE AND OPERATIONAL SYSTEM AS DESCRIBED ON THESE DOCUMENTS AND SPECIFICATIONS.

CONTACT INFO: WALTER LOUIS FLUID TECHNOLOGIES, SALES@WALTERLOUIS.COM, PH (217)-223-2017.



1 RISER DIAGRAM

P-603 SCALE: 12" = 1'-0"



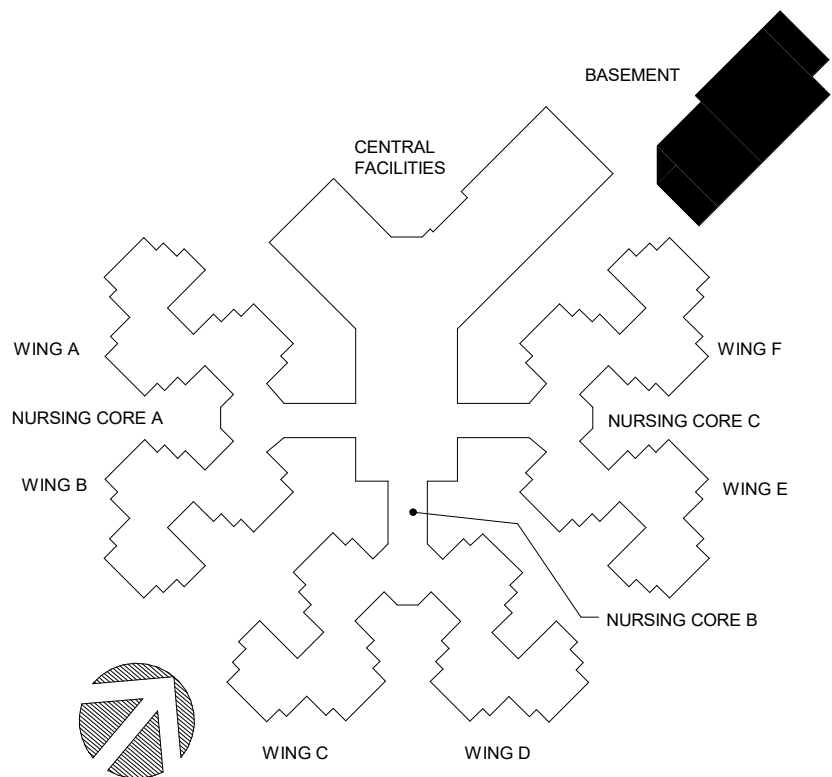
NOTE: SEE DETAIL #7 ON SHEET P-501 FOR THERMOSTATIC MIXING VALVE PIPING SCHEMATIC.

SEE DETAIL #8 ON SHEET P-501 FOR ALTERNATE #1 ELECTRONIC MIXING VALVE PIPING SCHEMATIC.

2 ELEVATION AT TMV'S

P-603 SCALE: 1/2" = 1'-0"

Points List: HEATING PLANT SYSTEM																
System Point Description	Tag	Points									Alarms					
		GRAPHIC	ANALOG HARDWARE INPUT (AI)	BINARY HARDWARE INPUT (BI)	ANALOG HARDWARE OUTPUT (AO)	BINARY HARDWARE OUTPUT (BO)	SOFTWARE POINT (SFT)	HARDWARE INTERLOCK (HDW)	TREND DATA	NETWORK (NET)	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL
BOILER 1 ALARM	B1 ALM	X		X				X				X				
BOILER 1 ENABLE COMMAND	B1 ENB	X				X			X							
BOILER 1 STATUS	B1 STS	X		X				X								
BOILER 2 ALARM	B2 ALM	X		X				X				X				
BOILER 2 ENABLE COMMAND	B2 ENB	X				X		X								
BOILER 2 STATUS	B2 STS	X		X				X								
BOILER 3 ALARM	B3 ALM	X		X				X				X				
BOILER 3 ENABLE COMMAND	B3 ENB	X				X		X								
BOILER 3 STATUS	B3 STS	X		X				X								
BOILER LOOP ENTERING TEMPERATURE	TS-1	X	X					X		X	X				X	
BOILER LOOP LEAVING TEMPERATURE	TS-2	X	X					X		X	X				X	
BOILER PUMP 1 START STOP OUTPUT	BP-1	X				X										
BOILER PUMP 1 STATUS	BP-1	X		X												
BOILER PUMP 2 START STOP OUTPUT	BP-2	X				X										
BOILER PUMP 2 STATUS	BP-2	X		X												
BOILER PUMP 3 START STOP OUTPUT	BP-3	X				X										
BOILER PUMP 3 STATUS	BP-3	X		X												
BOILER ISOLATION VALVE OPEN SHUT	CV-1	X				X										
BOILER ISOLATION VALVE STATUS	CV-1	X		X												
BOILER ISOLATION VALVE OPEN SHUT	CV-2	X				X										
BOILER ISOLATION VALVE STATUS	CV-2	X		X												
BOILER ISOLATION VALVE OPEN SHUT	CV-3	X		X												
BOILER ISOLATION VALVE STATUS	CV-3	X				X										
HOT WATER DIFFERENTIAL PRESSURE	DP-1	X		X											X	
DOMESTIC WATER STORAGE TANK 1 TEMP	TS-3	X	X					X								
DOMESTIC WATER STORAGE TANK 2 TEMP	TS-4	X	X					X								
DOMESTIC WATER STORAGE TANK 3 TEMP	TS-14	X	X					X								
DOMESTIC WATER STORAGE TANK 4 TEMP	TS-15	X	X					X								
3-WAY CONTROL VALVE MODULATION	CV-4	X				X		X								
3-WAY CONTROL VALVE POSITION	CV-4	X	X													
3-WAY CONTROL VALVE MODULATION	CV-5	X				X		X								
3-WAY CONTROL VALVE POSITION	CV-5	X	X					X								
DOMESTIC HOT WATER PUMP 1 START STOP	DWP-1	X				X										
DOMESTIC HOT WATER PUMP 1 STATUS	DWP-1	X		X												
DOMESTIC HOT WATER PUMP 2 START STOP	DWP-2	X				X										
DOMESTIC HOT WATER PUMP 2 STATUS	DWP-2	X		X												
DWST-1 ENTERING TEMP	TS-5	X	X					X								
DWST-1/2 LEAVING TEMP	TS-6	X	X					X								
DWST-2 ENTERING TEMP	TS-7	X	X					X								
DWST-3 ENTERING TEMP	TS-16	X	X					X								
DWST-3/4 LEAVING TEMP	TS-17	X	X					X								
DWST-4 ENTERING TEMP	TS-18	X	X					X								
110F LOOP SUPPLY TEMPERATURE	TS-9	X	X					X								
140F LOOP SUPPLY TEMPERATURE	TS-10	X	X					X								
150F LOOP SUPPLY TEMPERATURE	TS-11	X	X					X								
DOM HOT WATER RECIRC PUMP 1 START STOP	DWRP-1	X				X										
DOM HOT WATER RECIRC PUMP 1 STATUS	DWRP-1	X		X												
DOM HOT WATER RECIRC PUMP 1 SPEED	DWRP-1					X										
DOM HOT WATER RECIRC PUMP 2 START STOP	DWRP-2	X				X										
DOM HOT WATER RECIRC PUMP 2 STATUS	DWRP-2	X		X												
DOM HOT WATER RECIRC PUMP 2 SPEED	DWRP-1					X										
BAS COMMUNICATION STATE	BAS COM							X								
BOILER PUMP 1 FAILURE	BP1 FAIL	X						X					X			
BOILER PUMP 1 FAILURE	BP2 FAIL	X						X					X			
BOILER PUMP 1 FAILURE	BP3 FAIL	X						X					X			
DOMESTIC HOT WATER PUMP 1 FAIL	DWP1 FAIL	X						X					X			
DOMESTIC HOT WATER PUMP 2 FAIL	DWP2 FAIL	X						X					X			
110F HOT WATER RESET HIGH LIMIT	110F HW RES HL	X						X								
110F HOT WATER RESET LOW LIMIT	110F HW RES LL	X						X								
110F HOT WATER SUPPLY TEMP SETPOINT	110F HW SP	X						X								
140F HOT WATER RESET HIGH LIMIT	140F HW RES HL	X						X								
140F HOT WATER RESET LOW LIMIT	140F HW RES LL	X						X								
140F HOT WATER SUPPLY TEMP SETPOINT	140F HW SP	X						X								
150F HOT WATER RESET HIGH LIMIT	150F HW RES HL	X						X								
150F HOT WATER RESET LOW LIMIT	150F HW RES LL	X						X								
150F HOT WATER SUPPLY TEMP SETPOINT	150F HW SP	X						X								



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LICENSE #: 2003015013
EXPIRATION DATE: 12/31/25
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MO Certificate of Authority #000329 Arch.
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ISSUE DATE: 01.21.2025

CAD DWG FILE:
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CHECKED BY: SAM
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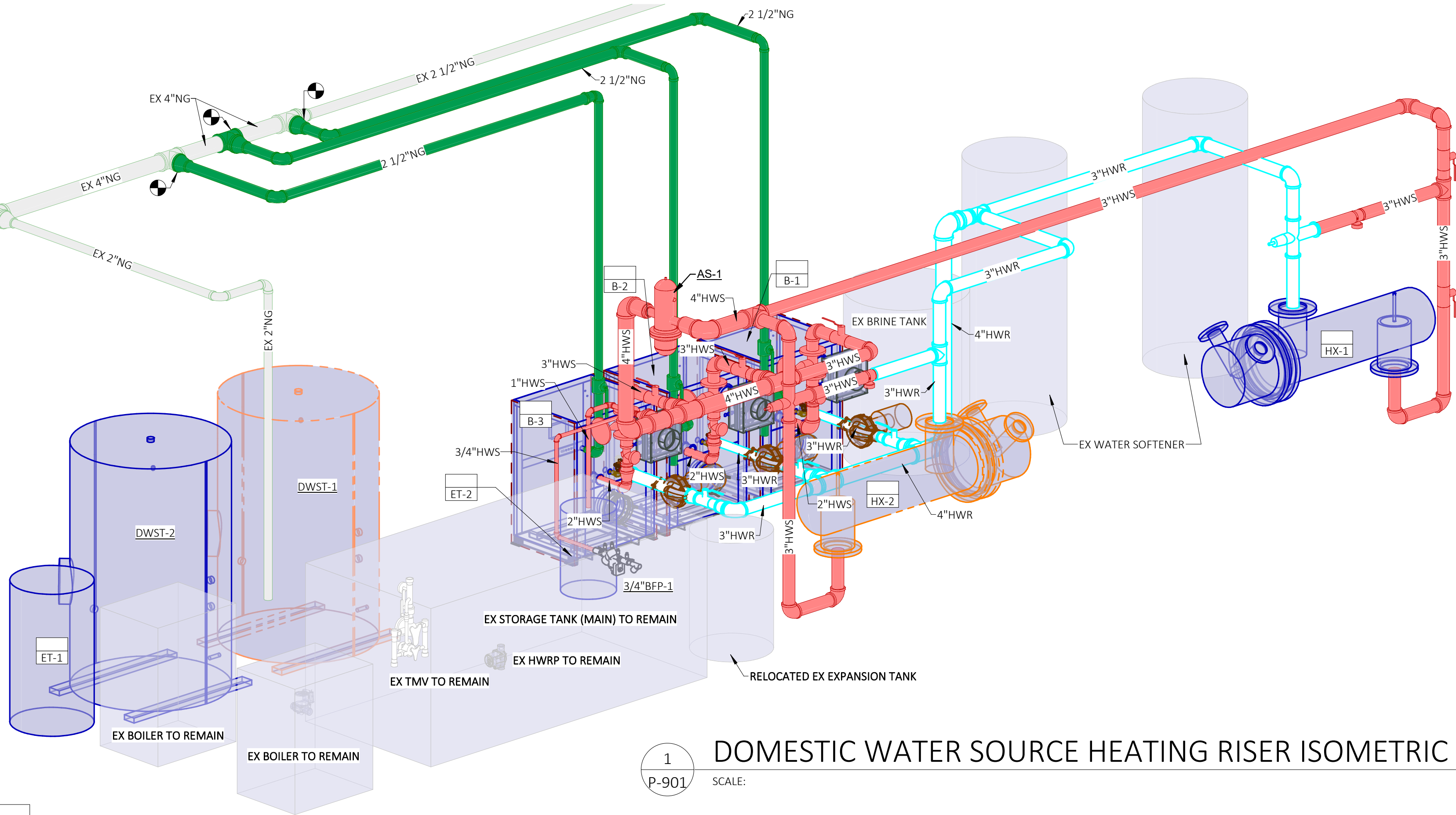
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PLUMBING
DIAGRAMS

SHEET NUMBER:

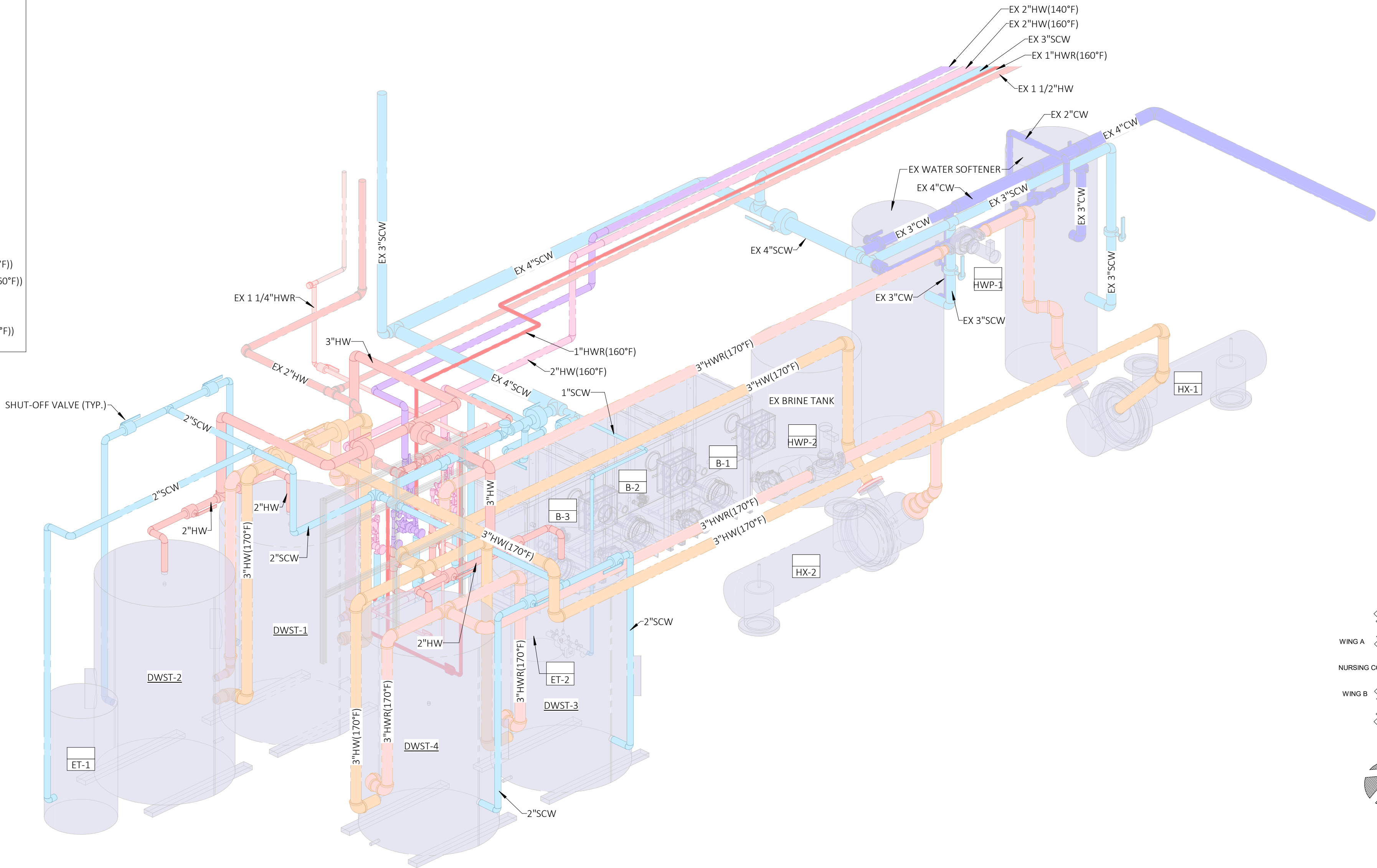
P-603
9 of 18 SHEETS
03.05.2025

PLUMBING LEGEND & ABBREVIATIONS	
	DEMOLISHED NATURAL GAS PIPING
	EXISTING NATURAL GAS PIPING
	NEW NATURAL GAS PIPING
	BOILER: NEW HOT WATER SUPPLY PIPING
	BOILER: NEW HOT WATER RETURN PIPING

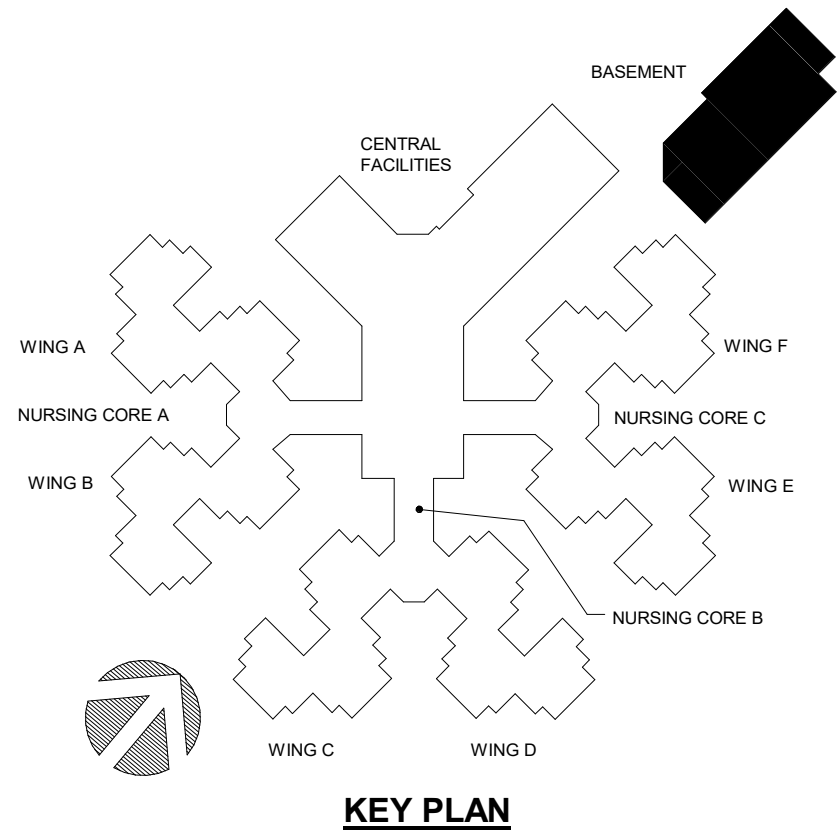


1 DOMESTIC WATER SOURCE HEATING RISER ISOMETRIC - PHASE 1
P-901 SCALE:

PLUMBING LEGEND	
	DEMO SOFT COLD WATER PIPING (EX SCW)
	EXISTING SOFT COLD WATER PIPING (EX SCW)
	NEW SOFT COLD WATER PIPING (SCW)
	DEMO HOT WATER PIPING (EX HW)
	EXISTING HOT WATER PIPING (EX HW)
	NEW HOT WATER PIPING (HW)
	DEMO HOT WATER PIPING (140°F) (EX HW(140°F))
	EXISTING HOT WATER PIPING (140°F) (EX HW(140°F))
	NEW HOT WATER PIPING (140°F) (HW(140°F))
	DEMO HOT WATER RETURN PIPING (EX HWR)
	EXISTING HOT WATER RETURN PIPING (EX HWR)
	NEW HOT WATER RETURN PIPING (HWR)
	DEMO HOT WATER PIPING (160°F) (EX HW(160°F))
	EXISTING HOT WATER PIPING (160°F) (EX HW(160°F))
	NEW HOT WATER PIPING (160°F) (HW(160°F))
	DEMO HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	EXISTING HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	NEW HOT WATER RETURN PIPING (160°F) (HWR(160°F))
	HX: NEW HOT WATER PIPING (170°F) (HW(170°F))
	HX: NEW HOT WATER RETURN PIPING (170°F) (HWR(170°F))
NOTE: HX = HEAT EXCHANGER	

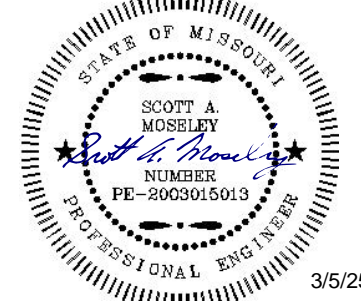


2 DOMESTIC HOT WATER RISER ISOMETRIC - PHASE 1 & 2
P-901 SCALE:



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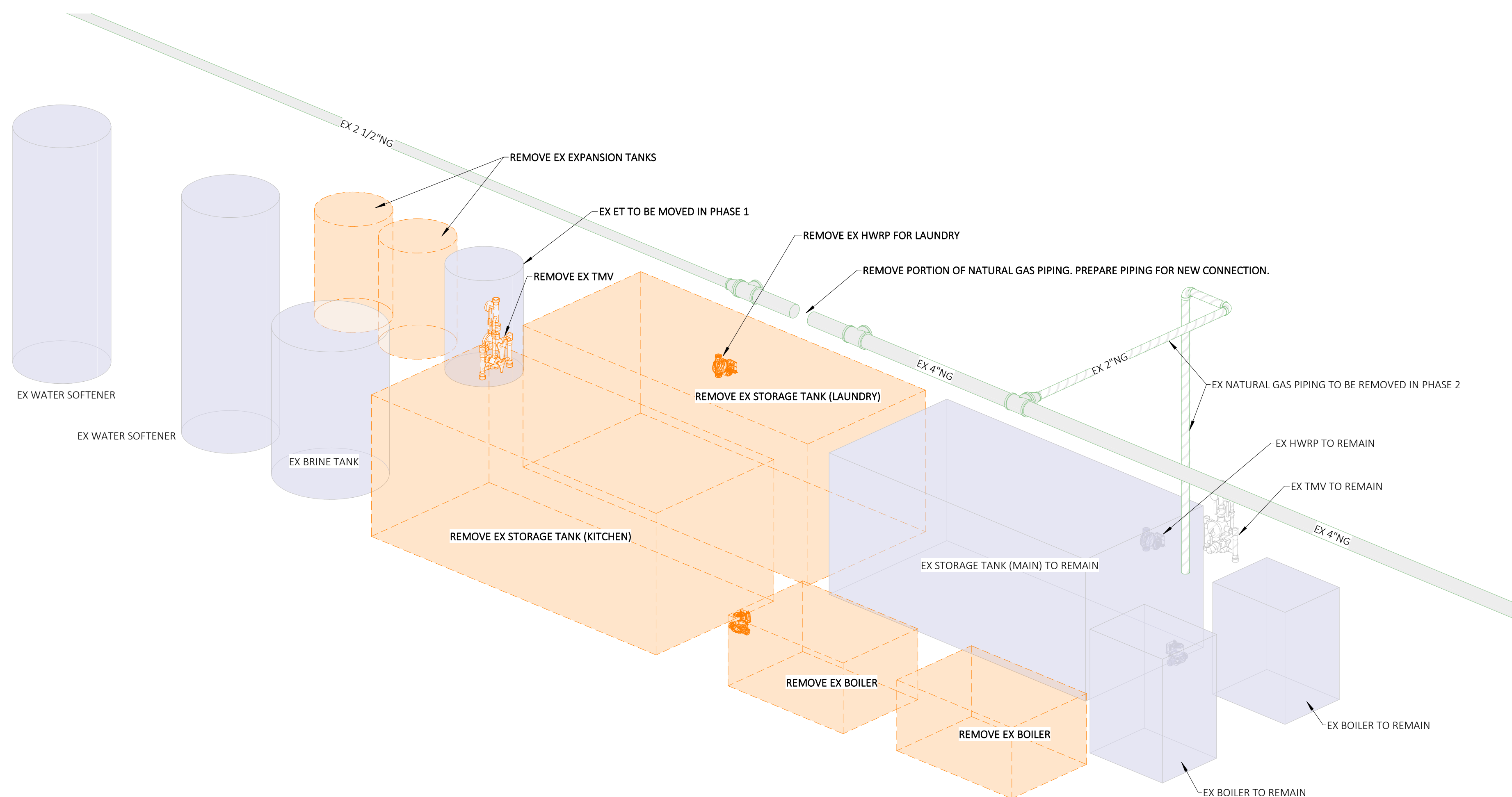
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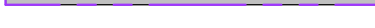









PLUMBING RISER
ISOMETRICS

SHEET NUMBER:

P-901
10 of 18 SHEETS
03.05.2025



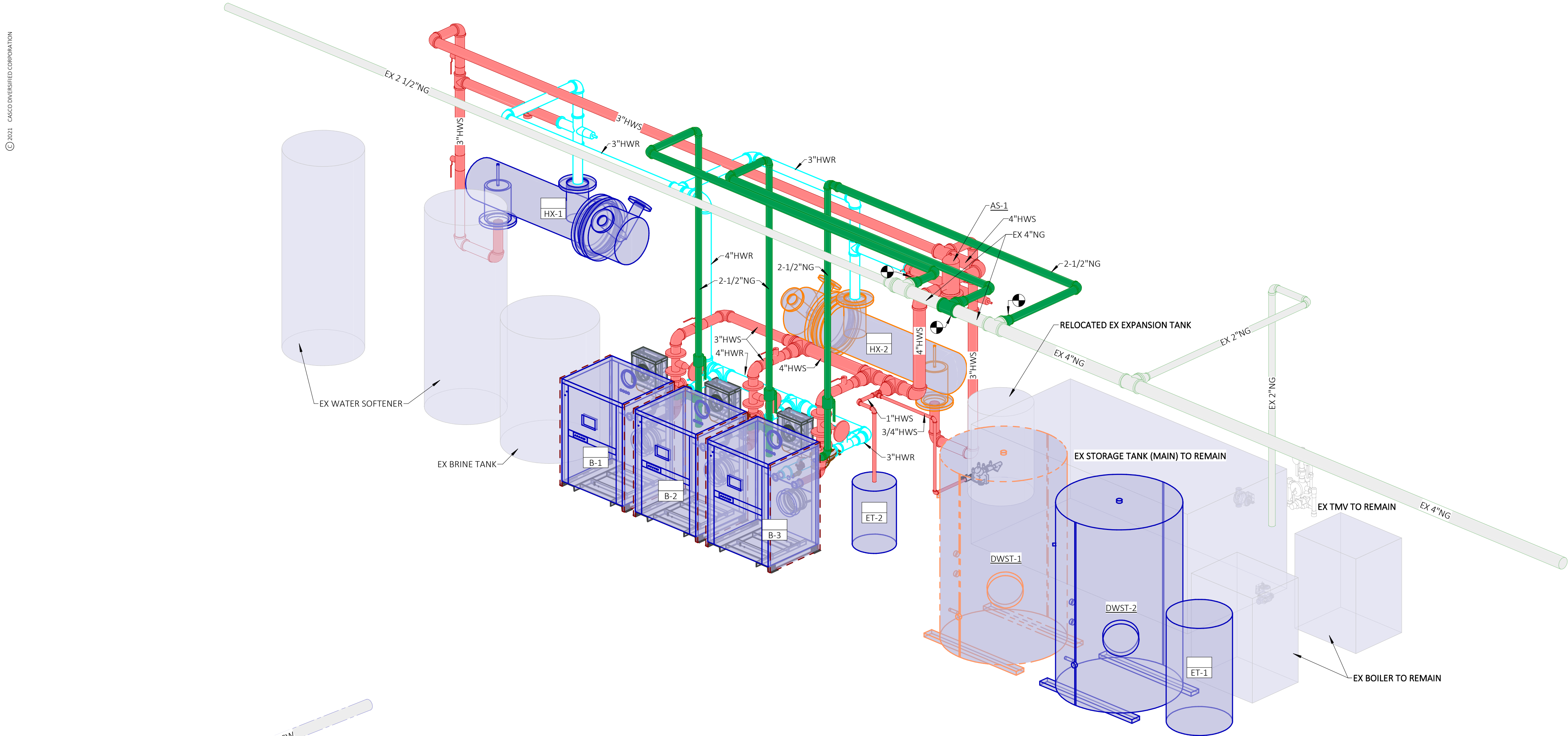
PLUMBING LEGEND

	DEMO SOFT COLD WATER PIPING (EX SCW)
	EXISTING SOFT COLD WATER PIPING (EX SCW)
	NEW SOFT COLD WATER PIPING (SCW)
	DEMO HOT WATER PIPING (EX HW)
	EXISTING HOT WATER PIPING (EX HW)
	NEW HOT WATER PIPING (HW)
	DEMO HOT WATER PIPING (140°F) (EX HW(140°F))
	EXISTING HOT WATER PIPING (140°F) (EX HW(140°F))
	NEW HOT WATER PIPING (140°F) (HW(140°F))
	DEMO HOT WATER RETURN PIPING (EX HWR)
	EXISTING HOT WATER RETURN PIPING (EX HWR)
	NEW HOT WATER RETURN PIPING (HWR)
	DEMO HOT WATER PIPING (160°F) (EX HW(160°F))
	EXISTING HOT WATER PIPING (160°F) (EX HW(160°F))
	NEW HOT WATER PIPING (160°F) (HW(160°F))
	DEMO HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	EXISTING HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	NEW HOT WATER RETURN PIPING (160°F) (HWR(160°F))
	HX: NEW HOT WATER PIPING (170°F) (HW(170°F))
	HX: NEW HOT WATER RETURN PIPING (170°F) (HWR(170°F))

NOTE: HX = HEAT EXCHANGER



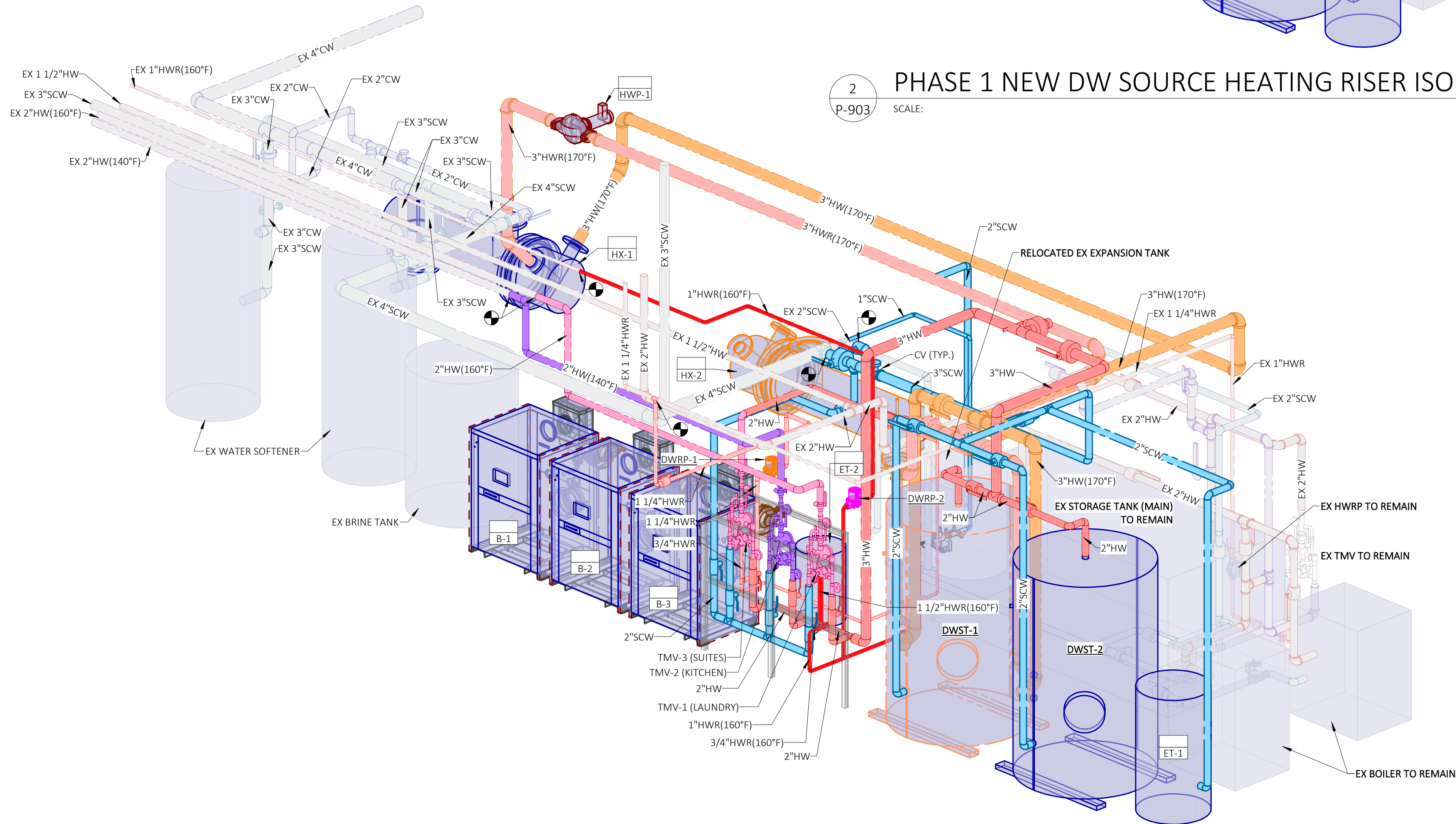
P-902
11 of 18 SHEETS
03.05.2025



2
P-903

PHASE 1 NEW DW SOURCE HEATING RISER ISOMETRIC ROTATED

SCALE:



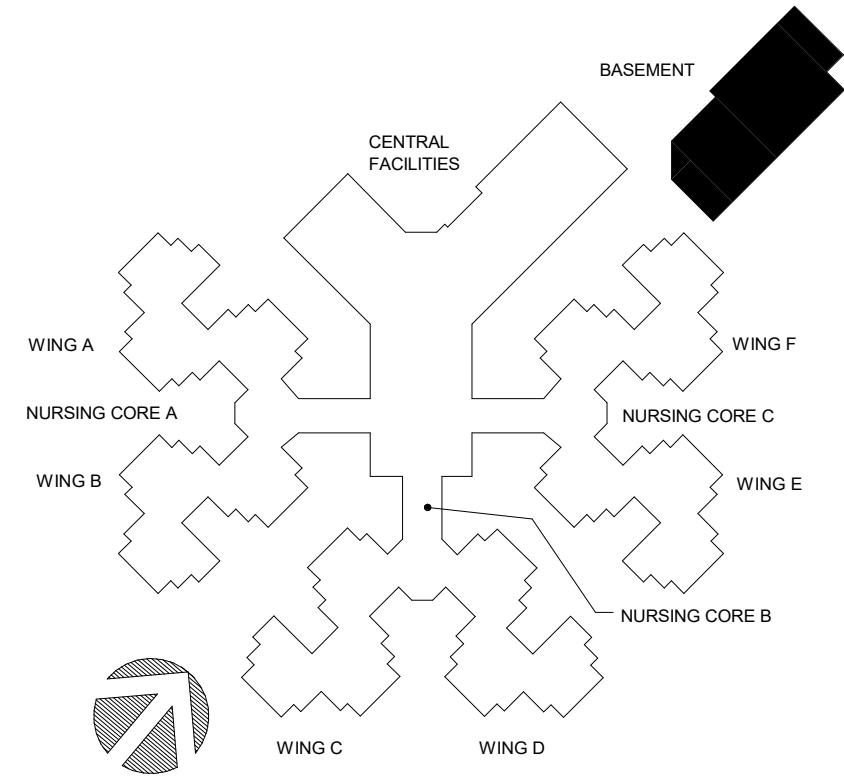
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P-903

PHASE 1 NEW DW HOT WATER RISER ISOMETRIC ROTATED

SCALE:

PLUMBING LEGEND & ABBREVIATIONS	
	DEMOLISHED NATURAL GAS PIPING
	EXISTING NATURAL GAS PIPING
	NEW NATURAL GAS PIPING
	BOILER: NEW HOT WATER SUPPLY PIPING
	BOILER: NEW HOT WATER RETURN PIPING

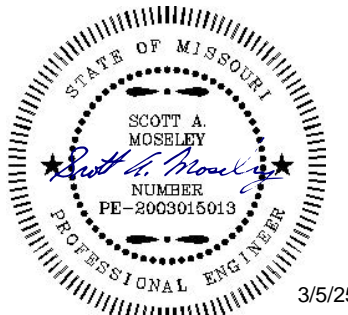
PLUMBING LEGEND	
	DEMO SOFT COLD WATER PIPING (EX SCW)
	EXISTING SOFT COLD WATER PIPING (EX SCW)
	NEW SOFT COLD WATER PIPING (SCW)
	DEMO HOT WATER PIPING (EX HW)
	EXISTING HOT WATER PIPING (EX HW)
	NEW HOT WATER PIPING (HW)
	DEMO HOT WATER PIPING (140°F) (EX HW(140°F))
	EXISTING HOT WATER PIPING (140°F) (EX HW(140°F))
	NEW HOT WATER PIPING (140°F) (HW(140°F))
	DEMO HOT WATER RETURN PIPING (EX HWR)
	EXISTING HOT WATER RETURN PIPING (EX HWR)
	NEW HOT WATER RETURN PIPING (HWR)
	DEMO HOT WATER PIPING (160°F) (EX HW(160°F))
	EXISTING HOT WATER PIPING (160°F) (EX HW(160°F))
	NEW HOT WATER PIPING (160°F) (HW(160°F))
	DEMO HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	EXISTING HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	NEW HOT WATER RETURN PIPING (160°F) (HWR(160°F))
	HX: NEW HOT WATER PIPING (170°F) (HW(170°F))
	HX: NEW HOT WATER RETURN PIPING (170°F) (HWR(170°F))
NOTE: HX = HEAT EXCHANGER	



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STATE OF MISSOURI
MICHAEL L. KEHOE,
GOVERNOR



3/5/25

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CONSTRUCTION

REBID
DESIGN & INSTALL
NEW DOMESTIC WATER
PLANT
VETERANS HOME
BUILDING

ST. JAMES VETERANS HOME
620 NORTH JEFFERSON
ST. JAMES, MO

PROJECT # U2409-01
SITE # 6801
FACILITY # 8136801002

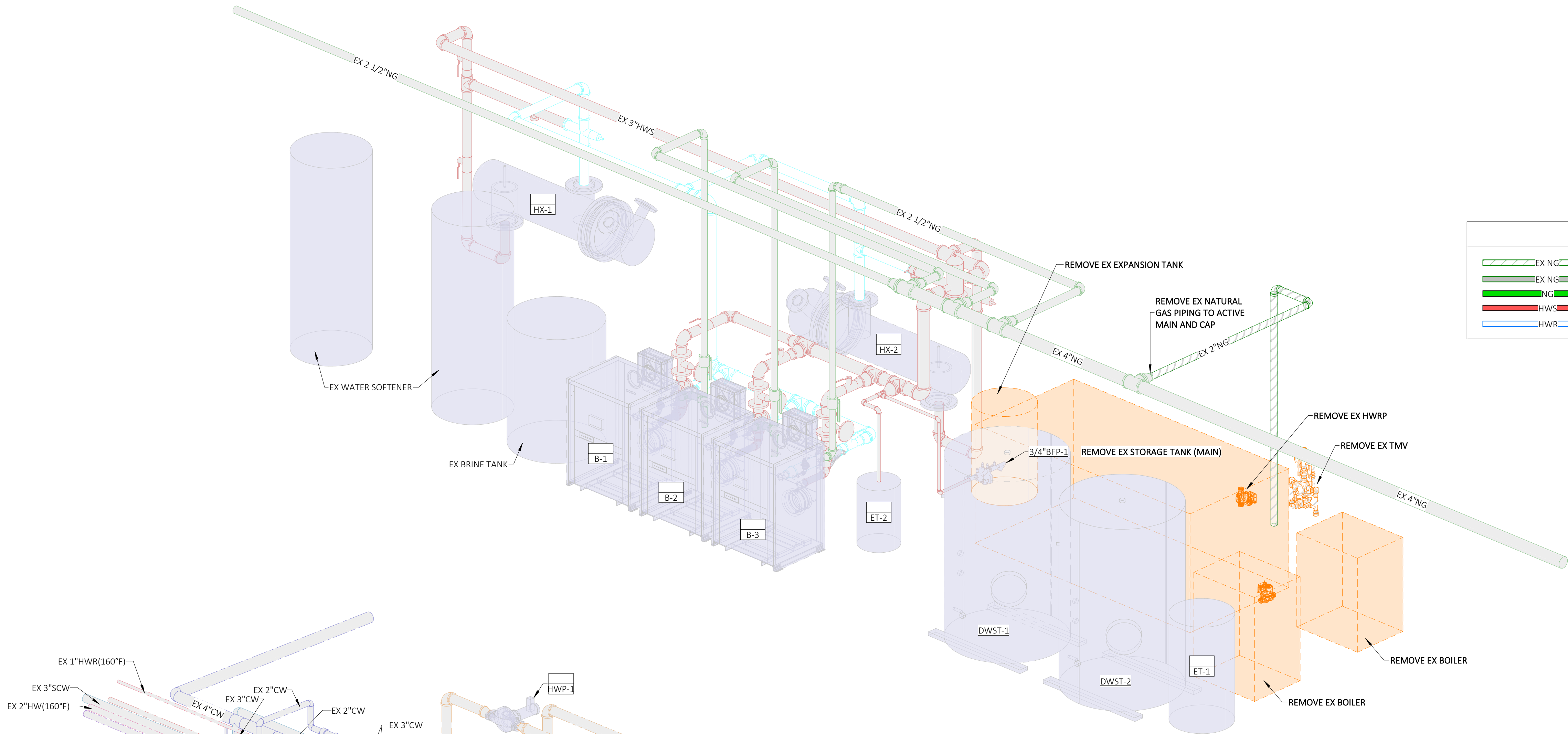
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ISSUE DATE: 01.21.2025

CAD DWG FILE:
DRAWN BY: DDP
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:
PLUMBING PHASE 1
NEW RISER
ISOMETRICS
ROTATED

SHEET NUMBER:

P-903
12 of 18 SHEETS
03.05.2025



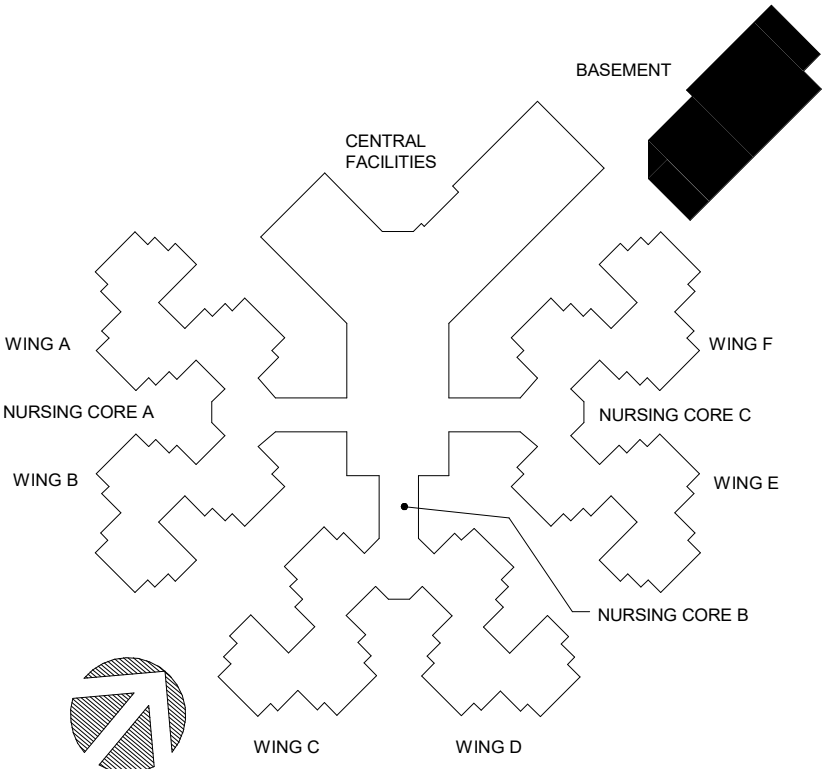
PLUMBING LEGEND & ABBREVIATIONS	
	EX NG- DEMOLISHED NATURAL GAS PIPING
	EX NG- EXISTING NATURAL GAS PIPING
	NG- NEW NATURAL GAS PIPING
	HWS- BOILER: NEW HOT WATER SUPPLY PIPING
	HWR- BOILER: NEW HOT WATER RETURN PIPING

2
P-904

PHASE 2 DEMO DW SOURCE HEATING RISER ISOMETRIC ROTATED

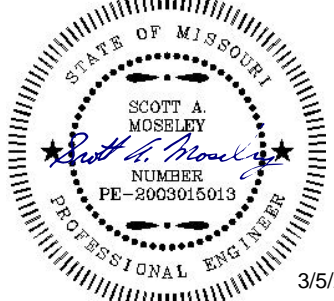
SCALE:

PLUMBING LEGEND	
	DEMO SOFT COLD WATER PIPING (EX SCW)
	EXISTING SOFT COLD WATER PIPING (EX SCW)
	NEW SOFT COLD WATER PIPING (SCW)
	DEMO HOT WATER PIPING (EX HW)
	EXISTING HOT WATER PIPING (EX HW)
	NEW HOT WATER PIPING (HW)
	DEMO HOT WATER PIPING (140°F) (EX HW(140°F))
	EXISTING HOT WATER PIPING (140°F) (EX HW(140°F))
	NEW HOT WATER PIPING (140°F) (HW(140°F))
	DEMO HOT WATER RETURN PIPING (EX HWR)
	EXISTING HOT WATER RETURN PIPING (EX HWR)
	NEW HOT WATER RETURN PIPING (HWR)
	DEMO HOT WATER PIPING (160°F) (EX HW(160°F))
	EXISTING HOT WATER PIPING (160°F) (EX HW(160°F))
	NEW HOT WATER PIPING (160°F) (HW(160°F))
	DEMO HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	EXISTING HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
	NEW HOT WATER RETURN PIPING (160°F) (HWR(160°F))
	HX: NEW HOT WATER PIPING (170°F) (HW(170°F))
	HX: NEW HOT WATER RETURN PIPING (170°F) (HWR(170°F))
NOTE: HX = HEAT EXCHANGER	



KEY PLAN

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ST. JAMES, MO

PROJECT # U2409-01
SITE # 6801
FACILITY # 8136801002

REVISION:
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REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 01.21.2025

CAD DWG FILE:
DRAWN BY: DDP
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:
PLUMBING PHASE 2
DEMO RISER
ISOMETRICS
ROTATED

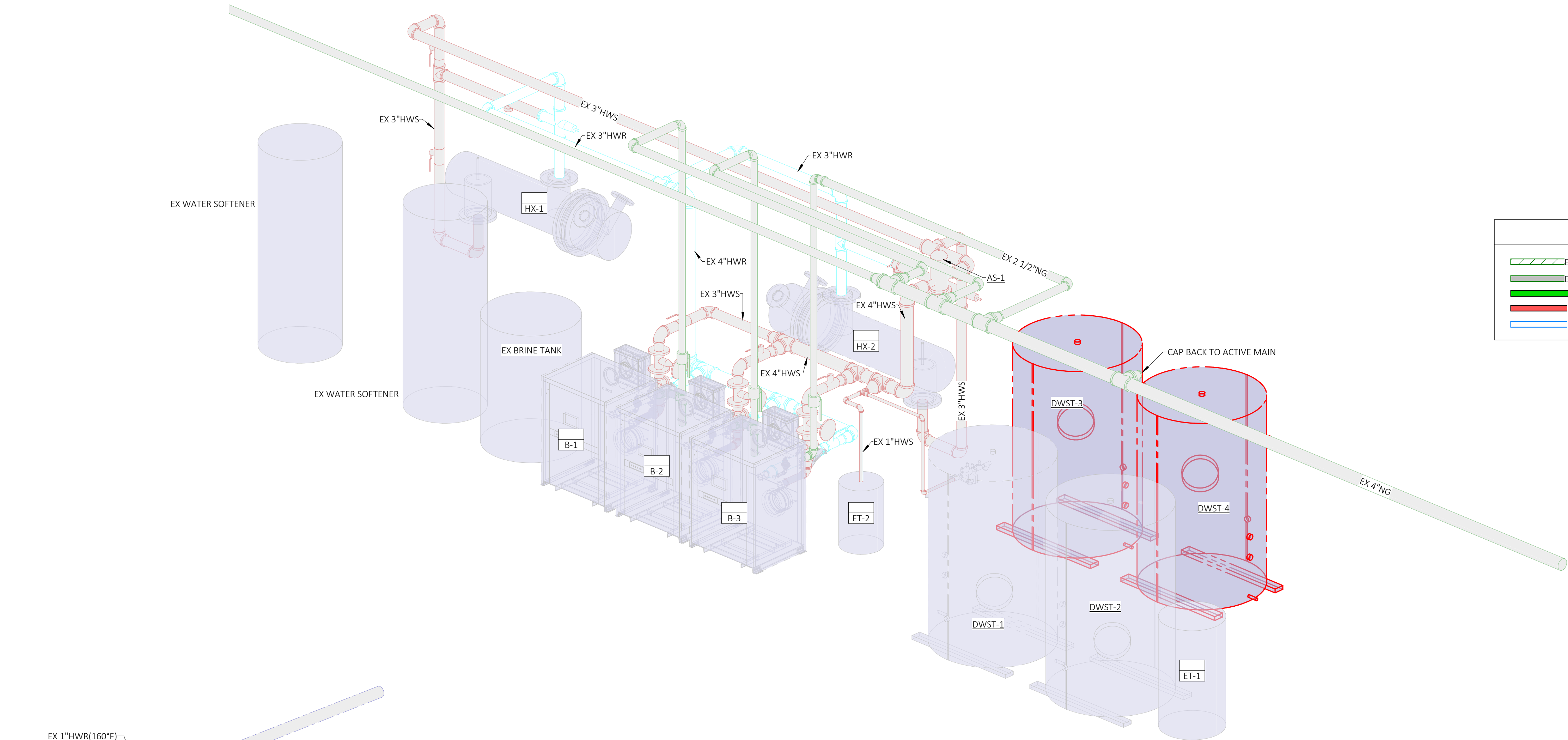
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P-904
13 of 18 SHEETS
03.05.2025

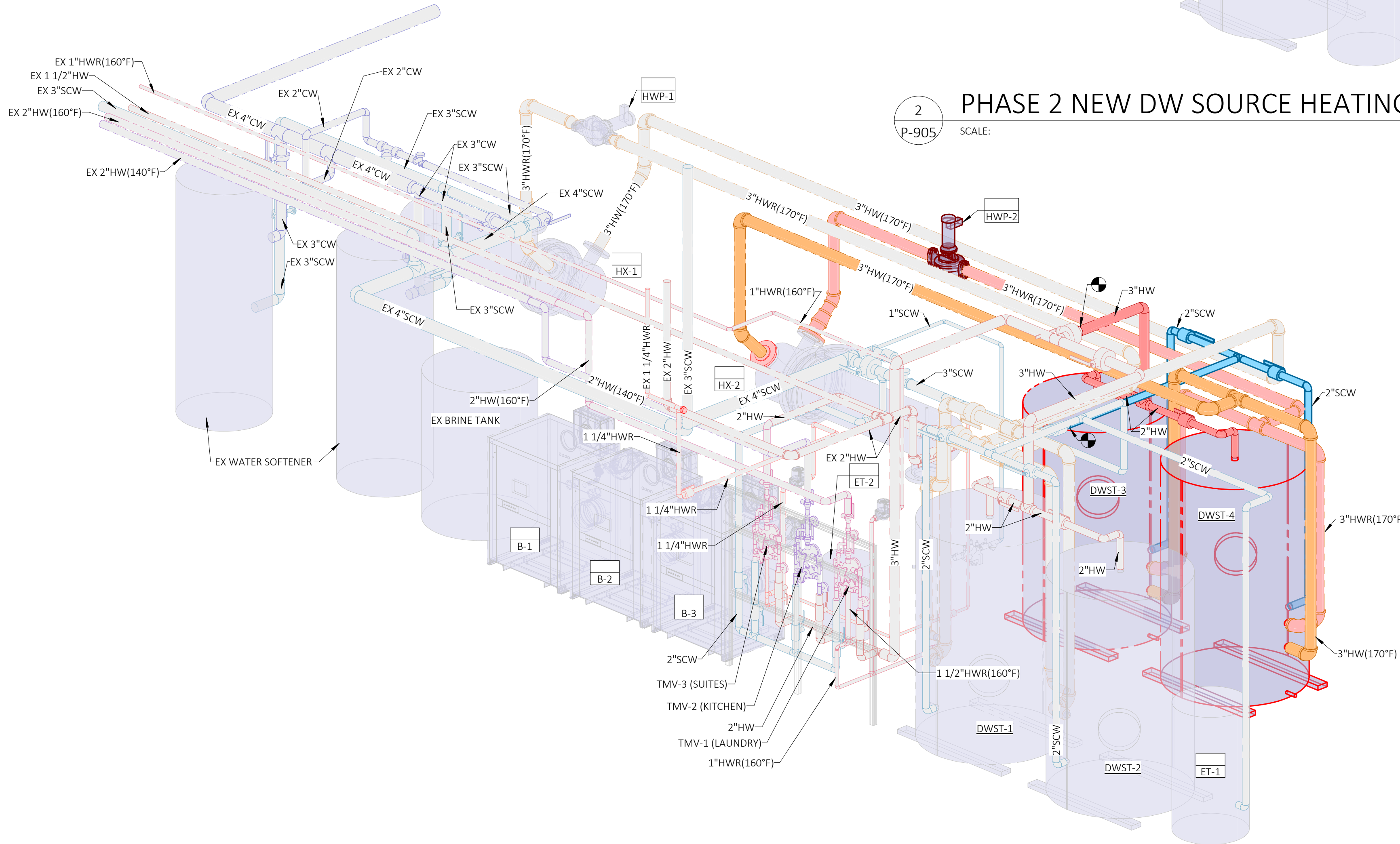
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P-904

PHASE 2 DEMO DW HOT WATER RISER ISOMETRIC ROTATED

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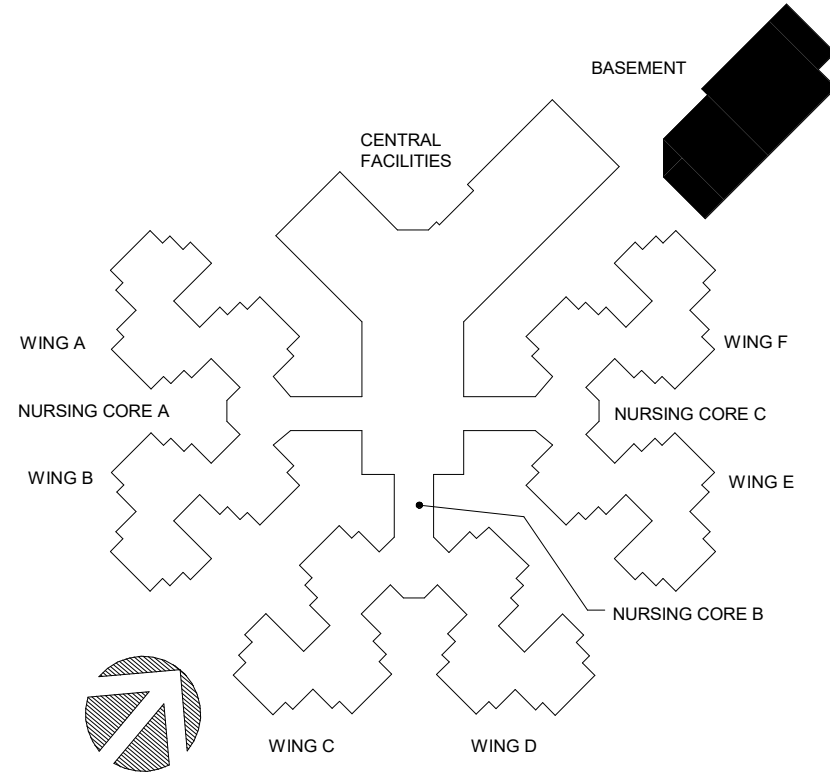


PLUMBING LEGEND & ABBREVIATIONS	
	DEMOLISHED NATURAL GAS PIPING
	EXISTING NATURAL GAS PIPING
	NEW NATURAL GAS PIPING
	BOILER: NEW HOT WATER SUPPLY PIPING
	BOILER: NEW HOT WATER RETURN PIPING



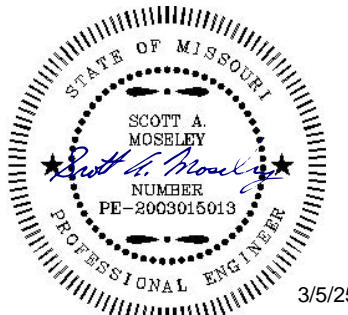
2 PHASE 2 NEW DW SOURCE HEATING RISER ISOMETRIC ROTATED
P-905 SCALE:

PLUMBING LEGEND	
	DEMO SOFT COLD WATER PIPING (EX SCW)
	EXISTING SOFT COLD WATER PIPING (EX SCW)
	NEW SOFT COLD WATER PIPING (SCW)
	DEMO HOT WATER PIPING (EX HW)
	EXISTING HOT WATER PIPING (EX HW)
	NEW HOT WATER PIPING (HW)
	DEMO HOT WATER PIPING (140°F) (EX HW(140°F))
	EXISTING HOT WATER PIPING (140°F) (EX HW(140°F))
	NEW HOT WATER PIPING (140°F) (HW(140°F))
	DEMO HOT WATER RETURN PIPING (EX HWR)
	EXISTING HOT WATER RETURN PIPING (EX HWR)
	NEW HOT WATER RETURN PIPING (HWR)
	DEMO HOT WATER PIPING (160°F) (EX HW(160°F))
	EXISTING HOT WATER PIPING (160°F) (EX HW(160°F))
	NEW HOT WATER PIPING (160°F) (HW(160°F))
	DEMO HOT WATER RETURN PIPING (160°F) (EX HWR(160°F))
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NOTE: HX = HEAT EXCHANGER	



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CAD DWG FILE:
DRAWN BY: DDP
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:
PLUMBING PHASE 2
NEW RISER
ISOMETRICS
ROTATED

SHEET NUMBER:

P-905
14 of 18 SHEETS
03.05.2025

1 PHASE 2 NEW DW HOT WATER RISER ISOMETRIC ROTATED
P-905 SCALE:

ELECTRICAL SYMBOLS LEGEND













ELECTRICAL GENERAL NOTES

1. ALL MOUNTING HEIGHTS ARE TO THE CENTER OF THE REFERENCED FIXTURE/DEVICE, UNLESS OTHERWISE NOTED
2. ALL MOUNTED HEIGHTS ARE STANDARD UNLESS OTHERWISE NOTED.

LIGHTING FIXTURE GENERAL NOTES

1. ALPHA-NUMERIC DESIGNATIONS DENOTES TYPE; SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION
2. SEE LIGHTING FIXTURE SCHEDULE FOR FIXTURE DESCRIPTION AND MOUNTING HEIGHTS.








LIGHTING FIXTURES

A1		CEILING MOUNTED LUMINAIRE
B2		WALL MOUNTED LUMINAIRE
C3		CEILING MOUNTED OR PENDANT MOUNTED LUMINAIRE
D4		WALL MOUNTED LUMINAIRE
		CEILING MOUNTED (LEFT) AND WALL MOUNTED (RIGHT) EXIT SIGNS. SHADED PORTION INDICATES FACE; WITH DIRECTIONAL ARROWS) AS INDICATED
		COMBINATION EXIT LIGHT WITH EMERGENCY LIGHTING HEADS
		WALL MOUNTED EMERGENCY LIGHT
		BOLLARD FIXTURE
		LIGHT POLE WITH SINGLE HEAD LUMINAIRE
		LIGHT POLE WITH MULTIPLE HEADS (NUMBER OF HEADS AS INDICATED BY SYMBOL)
		SHADING DENOTES NIGHT LIGHT (NL) FIXTURE
		SHADING DENOTES EMERGENCY LIGHT (EM) FIXTURE












FIXTURE CIRCUITRY NOTATION: LB-1 - PANEL AND CIRCUIT NUMBER TO WHICH FIXTURE IS CONNECTED
 a-b - LETTER(S) OF SWITCH(ES) CONTROLLING FIXTURE
 NL - NIGHT LIGHT (UNSWITCHED CIRCUIT)

WIRING DEVICES



2	XX	SWITCH - "XX" INDICATES SWITCH TYPE, EACH TYPE IS DESCRIBED AS BELOW:	
3	1	DOUBLE POLE WALL SWITCH - AS ABOVE	D DIMMER SWITCH - AS ABOVE, 1000 WATT RATINGS OR 10-15W AS REQUIRED
3	3	THREE-WAY SWITCH - AS ABOVE	OS WALL MOUNTED OCCUPANCY SENSOR SWITCH - AS ABOVE. "OS2" INDICATES DUAL RELAY
4	4	FOUR-WAY SWITCH - AS ABOVE	FC FAN CONTROL SWITCH - AS ABOVE
4	K	KEY OPERATED SWITCH - AS ABOVE	P SWITCH WITH PILOT LIGHT - AS ABOVE
5	5	WALL BOX TIMER SWITCH - AS ABOVE	M MANUAL MOTOR STARTER WITH OVERLOAD PROTECTION - MOUNT ON SIDE OF UNIT OR AT 46" AFF

	DIMMER CONTROLLER, AS NOTED ON PLAN
	TIME SWITCH - MOUNT 60" AFF
	PHOTOCELL WALL MOUNTED (LEFT) OR CEILING MOUNTED (RIGHT)
	LIGHTING CONTROLLER
	CEILING MOUNTED OCCUPANCY SENSOR SWITCH. "OS2" INDICATES DUAL RELAY
	JUNCTION BOX OR POINT OF CONNECTION - MOUNT 18" AFF OR AT HEIGHT REQUIRED BY RESPECTIVE EQUIPMENT ITEM MFR CEILING MOUNTED VACCANCY SENSOR. MANUAL-ON / AUTO-OFF
	DUPLEX RECEPTACLE - MOUNT 18" AFF
	QUADPLEX RECEPTACLE - AS ABOVE
	SINGLEPLEX RECEPTACLE - AS ABOVE
	DUPLEX RECEPTACLE AS ABOVE - SPLIT WIRED, TOP HALF SWITCHED
	GFI DUPLEX RECEPTACLE - AS ABOVE
	GFI QUADPLEX RECEPTACLE - AS ABOVE
	CEILING MOUNTED DUPLEX RECEPTACLE, FLUSH IN CEILING
	FLOOR MOUNTED DUPLEX RECEPTACLE WITH BRASS PLATE AND CARPET FLANGE
	RECEPTACLE - "XX" INDICATES RECEPTACLE TYPE, EACH TYPE IS DESCRIBED BELOW: AC - ABOVE COUNTER RECEPTACLE - AS ABOVE, 42" AFF UNLESS NOTED OTHERWISE CR - CONTROLLED RECEPTACLE GFI - GROUND FAULT CURRENT INTERRUPTING HG - HOSPITAL GRADE TP - TEMPER PROOF USB - RECEPTACLE WITH USB OUTLETS WP - WEATHER PROOF
	SPECIAL PURPOSE OUTLET - AS ABOVE, TYPE AS REQUIRED BY RESPECTIVE EQUIPMENT MFR
	PLUG-IN STRIP - AS ABOVE























MOTORS AND EQUIPMENT

30/20/5	DISCONNECT SWITCH, FUSED (LEFT) OR NON-FUSED (RIGHT) AS INDICATED - MOUNT 60" AFF. 30/20/5 INDICATES SWITCH AMPS/FUSE AMPS/POLES
	MOTOR STARTER, NEMA SIZE TO SUIT EQUIPMENT SERVED, WITH HAND-OFF-AUTO SELECTOR SWITCH
	COMBINATION MOTOR STARTER, AS ABOVE AND DISCONNECT SWITCH
30/20/5	ENCLOSED CIRCUIT BREAKER; AMPS/POLES RATING AS INDICATED
	CONTROL PANEL FOR EQUIPMENT ITEM INDICATED ON PLAN
	VARIABLE FREQUENCY DRIVE FOR EQUIPMENT ITEM INDICATED ON PLAN
	MULTIPLE PUSH BUTTONS - MOUNT 46" AFF, AS INDICATED
	ELECTRIC MOTOR
	NEW BRANCH CIRCUIT PANELBOARD - MOUNT TOP 78" AFF
	EXISTING BRANCH CIRCUIT PANELBOARD
	SWITCHBOARD, DISTRIBUTION PANEL OR MOTOR CONTROL CENTER
	DRY-TYPE TRANSFORMER
	KILOWATT HOUR METER BASE

CIRCUITRY DESIGNATIONS

	BRANCH CIRCUITRY. ARROW INDICATES HOME RUN TO PANEL. SHORT SLASH MARKS INDICATE "HOT" WIRES, LONG SLASH MARK INDICATES "NEUTRAL" WIRE, LONG SLASH WITH SOLID CIRCLE INDICATES GREEN GROUNDING CONDUCTOR
	BRANCH CIRCUITRY AS ABOVE, CONCEALED IN FLOOR SLAB OR UNDERGROUND
	BRANCH CIRCUITRY AS ABOVE, CONCEALED IN WALLS OR ABOVE CEILINGS
	CIRCUITRY UP (LEFT) AND CIRCUITRY DOWN (RIGHT)

AUXILIARY SYSTEMS

	SPEAKER - CEILING MOUNTED
	SPEAKER - WALL MOUNT 84" AFF
	SPEAKER - CEILING MOUNTED SOUND MASKING
	INTERCOM STATION - MOUNT 46" AFF
	VOLUME CONTROL - MOUNT 46" AFF
	DUPLEX MICROPHONE OUTLET - MOUNT 18" AFF
	DUPLEX MICROPHONE OUTLET - FLOOR MOUNTED
	MICROPHONE OUTLET - CEILING MOUNTED FOR CORD HUNG DEVICE
	TIME CLOCK
	PUSHBUTTON, TRIPLE (LEFT) AND SINGLE (RIGHT) AS INDICATED - MOUNT 46" AFF
	BELL - MOUNT 84" AFF
	VOICE OUTLET - MOUNT 18" AFF; W INDICATES WALL MOUNT 46" AFF
	DATA OUTLET - MOUNT 18" AFF
	FLOOR MOUNTED DATA OUTLET
	COMBINATION VOICE & DATA OUTLET - MOUNT 18" AFF
	FLOOR MOUNTED COMBINATION VOICE & DATA OUTLET
	WIRELESS ACCESS POINT - CEILING MOUNTED
	TELEPHONE TERMINAL BOARD - 3/4" FIRE RETARDANT PLYWOOD, 4' x 8'
	TELEPHONE TERMINAL CABINET 24" x 36" x 6" (UNO) WITH FIRE RETARDANT BACK AND HINGED DOOR WITH KEY LOCK
	RECESSED T.V. OUTLET - MOUNT BEHIND TV LOCATION
	CLOCK OUTLET - MOUNT 78" AFF
	GENERATOR ANNUNCIATOR PANEL




ONE-LINE DIAGRAMS

	TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	PANEL (1 OR 2 SECTIONS AS INDICATED)
	FUSE - 30 = DISCONNECT SWITCH AM RATING (20) = FUSE RATING
	MOLDED CASE CIRCUIT BREAKER - 30 = AMP FRAME "AF" RATING (20) = AMP FRAME "AT" RATING
	CIRCUIT BREAKER, DRAWOUT TYPE - AS ABOVE
	KILOWATT HOUR METER
	SHUNT TRIP
	GROUND FAULT RELAY
	GROUND FAULT PROTECTION
	AUTOMATIC TRANSFER SWITCH
	POTHEAD
	STRESS CONES
	LIGHTNING ARRESTER
	VOLTMETER
	VOLTMETER SWITCH
	AMMETER
	AMMETER SWITCH
	PLUG-IN DISCONNECT SWITCH, FUSED: 30 = DISCONNECT SWITCH AMP RATING (20) = FUSE RATING
	MOTOR STARTER, SINGLE SPEED, 0 = STARTER SIZE
	MOTOR STARTER, MULTIPLE SPEED, 0 = STARTER SIZE
	ALTERNATING MOTOR CONTROLLER
	KIRK KEY INTERLOCK

SECURITY SYSTEM

IAP	INTRUSION ALARM PANEL
KP	KEY PAD
MD	MOTION DETECTOR
C	DOOR CONTACT
DH	MAGNETIC DOOR HOLD
PP	PUSH PLATE
ADO	AUTOMATIC DOOR OPERATOR
CR	CARD READER/PROX READER
SCP	SECURITY CONTROL PANEL
RT	REQUEST TO EXIT
IT	INTERCOM
ES	ELECTRIC STRIKE (FURNISHED BY DIVISION 8)
EH	ELECTRIFIED HARDWARE (FURNISHED BY DIVISION 8)
ML	MAGNETIC LOCK (FURNISHED BY DIVISION 8)
GB	GLASS BREAK SENSOR
	VIDEO SURVEILLANCE CAMERA
A	DURESS/HOLD UP ALARM
P	PANIC BUTTON
PB	PUSH BUTTON

NURSE CALL SYSTEMS

	NURSE CALL PUSH BUTTON, UNLESS NOTED OTHERWISE
	NURSE CALL CONTROL PANEL
	NURSE CALL LIGHT MOUNTED AT 90° UNLESS NOTED OTHERWISE




FIRE ALARM SYSTEM

FACP	FIRE ALARM CONTROL PANEL - MOUNT TOP 72" AFF
FAAP	FIRE ALARM ANNUNCIATOR PANEL - MOUNT TOP 72" AFF
DACP	DIGITAL ALARM COMMUNICATOR TRANSMITTER
FAPS	FIRE ALARM POWER SUPPLY - MOUNTED 72" AFF
E	MANUAL PULL STATION - MOUNT 46" AFF
SD	SMOKE DETECTOR - CEILING MOUNTED
SS CO	SINGLE STATION SMOKE ALARM - CEILING MOUNTED - "CO" INDICATES COMBINATION CARBON MONOXIDE ALARM
SD	DUCT MOUNTED SMOKE DETECTOR WITH SAMPLING TUBES
FA	DUCT MOUNTED SMOKE DETECTOR'S REMOTE ANNUNCIATOR LAMP AND TEST SWITCH-MOUNT ON CEILING, (UNO)
H	HEAT DETECTOR - CEILING MOUNTED
CO	CARBON MONOXIDE DETECTOR - CEILING MOUNTED
0 cd	WALL MOUNTED VISUAL STROBE - MOUNT 80" AFF TO BOTTOM OF FLASHER; (NUMERALS INDICATE CANDELA)
0 cd	WALL MOUNTED HORN OR SPEAKER - MOUNT 80" AFF; SHADING DENOTES COMBINATION AUDIBLE/VISUAL APPLIANCE (NUMERALS INDICATE CANDELA)
0 cd	VISUAL STROBE - CEILING MOUNTED; (NUMERALS INDICATE CANDELA) - FINISH TO MATCH CEILING
0 cd	HORN OR SPEAKER - CEILING MOUNTED; SHADING DENOTES COMBINATION AUDIBLE/VISUAL APPLIANCE, (NUMERALS INDICATE CANDELA) - FINISH TO MATCH CEILING
0 cd	CHIME - MOUNT 90" AFF, AS ABOVE
F	EXTERIOR FA BELL - MOUNT 90" AFF
DH	FIRE ALARM MAGNETIC DOOR HOLDER
FR	INTERFACE RELAY FOR CODE REQUIRED ACTION, OR AS NOTED ON PLANS; SEE SPECIFICATION
FM	CONTROL MODULE FOR CODE REQUIRED ACTION; SEE SPECIFICATION
MM	MONITOR MODULE FOR CODE REQUIRED ACTION, OR AS NOTED ON PLANS; SEE SPECIFICATION
TS	SPRINKLER TAMPER SWITCH (FURNISHED BY FPC)
FS	SPRINKLER FLOW SWITCH (FURNISHED BY FPC)
PS	SPRINKLER PRESSURE SWITCH (FURNISHED BY FPC)

ABBREVIATIONS

AC	ABOVE COUNTER; +42" AFF UNLESS NOTED OTHERWISE
AIC	AMP INTERRUPTING CURRENT
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFI/AFCI	ARC FAULT CIRCUIT INTERRUPTER TYPE DEVICE
ATS	AUTOMATIC TRANSFER SWITCH
CATV	CABLE TELEVISION
EC	ELECTRICAL CONTRACTOR
ELEV	ELEVATOR CONTRACTOR
EM	EMERGENCY
EWC	ELECTRIC WATER COOLER
EWB	ELECTRIC WATER HEATER
EX	EXISTING
FLA	FULL LOAD AMPS
FPC	FIRE PROTECTION CONTRACTOR
FSS	FUSIBLE SAFETY SWITCH
GC	GENERAL CONTRACTOR
GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER TYPE DEVICE
HID	HIGH INTENSITY DISCHARGE
IG	ISOLATED GROUND TYPE DEVICE
KEC	KITCHEN EQUIPMENT CONTRACTOR
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MFR	MANUFACTURER
MH	MOUNTING HEIGHT
MIN	MINIMUM
NF	NON-FUSED SWITCH
NTS	NOT TO SCALE
PC	PLUMBING CONTRACTOR
RT	RAINTIGHT
TP	TAMPER PROOF TYPE DEVICE
TCC	TEMPERATURE CONTROL CONTRACTOR
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTABLE POWER SUPPLY
USB	UNIVERSAL SERIES BUS PORT
WP	WEATHERPROOF

MISCELLANEOUS

	MECHANICAL EQUIPMENT ITEM IDENTIFICATION PER EQUIPMENT SCHEDULE ON DRAWINGS
	MISCELLANEOUS EQUIPMENT NUMBER. SEE MISCELLANEOUS EQUIPMENT SCHEDULE
	KEYNOTE SYMBOL

**STATE OF MISSOURI
MICHAEL L. KEHOE,
GOVERNOR**



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**OFFICE OF
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NEW DOMESTIC WATER
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ST. JAMES VETERANS HOME
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PROJECT # U2409-01
SITE # 6801
FACILITY # 8136801002

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ISSUE DATE: 03.05.2025

CAD DWG FILE:
DRAWN BY: AJS
CHECKED BY: DAT
DESIGNED BY: KJC

SHEET TITLE:

ELECTRICAL LEGEND & SYMBOLS

SHEET NUMBER:

E-001
15 of 18 SHEETS
03.05.2025

GENERAL CONSTRUCTION NOTES

- ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR NECESSARY PERMITS, LICENSES, INSPECTIONS AND FEES FROM THE LOCAL AUTHORITIES HAVING JURISDICTION. CONTRACTOR SHALL BE LICENSED BY LOCAL AND/OR STATE AUTHORITIES HAVING JURISDICTION.
- ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), NATIONAL ELECTRICAL CODE (NEC), INTERNATIONAL BUILDING CODE (IBC) AND OTHER APPLICABLE LOCAL, STATE AND NATIONAL CODES.
- ALL ELECTRICAL MATERIALS USED ON THIS PROJECT SHALL BE "UL" LISTED AND LABELED.
- THE ENTIRE ELECTRICAL SYSTEM AND ALL ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND AS SHOWN ON THE DRAWINGS. PROVIDE A GROUND WIRE IN EACH POWER CONDUIT, SIZED PER THE NEC.
- CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING A COMPLETE SYSTEM PER CONTRACT DRAWINGS AND ENSURING THAT THE SYSTEM IS OPERATIONAL UPON JOB COMPLETION, PRIOR TO TURNOVER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL OTHER TRADES AND DISCIPLINES TO AVOID CONFLICTS AND TO VERIFY ALL EQUIPMENT CONNECTIONS. COORDINATE ALL WIRING DEVICE LOCATIONS AND ELEVATIONS INDICATED ON THE PLANS WITH THE OWNER, ARCHITECT AND FINAL FURNITURE/EQUIPMENT LAYOUTS, PRIOR TO ROUGH-IN.
- CONTRACTOR SHALL GUARANTEE ALL LABOR AND MATERIALS INSTALLED OR FURNISHED UNDER THIS CONTRACT FOR A PERIOD OF NOT LESS THAN ONE YEAR AFTER FINAL ACCEPTANCE OF THE BUILDING.
- MAINTAIN AND VERIFY ELECTRICAL EQUIPMENT CLEARANCES AND WORKING SPACE PER NEC.
- PROVIDE ELECTRICAL SYSTEMS WITH IDENTIFICATION AS INDICATED IN THE SPECIFICATIONS AND REQUIRED BY THE NEC.
- IF ANYTHING ON THE PLANS IS NOT IN COMPLIANCE WITH NATIONAL, STATE OR LOCAL CODES, THE ENGINEER SHALL BE ADVISED BY THE ELECTRICAL CONTRACTOR DURING THE BIDDING PROCESS. THERE ARE TO BE NO CHANGES TO THE CONTRACT DOCUMENTS WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS FOR NEW WORK, SAFETY, ETC., IN ACCORDANCE WITH ALL AUTHORITIES HAVING JURISDICTION. (I.E. OSHA, NEC, ETC.)
- THE CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR PHASING AND SCHEDULING OF THIS PROJECT. COORDINATE WITH OWNER'S FIELD REPRESENTATIVE.
- VERIFY ALL INDICATED DIMENSIONS BY FIELD MEASUREMENTS. NOTIFY ENGINEER OF ANY DISCREPANCIES.
- PROVIDE ACCESS PANELS OR DOORS WHERE EQUIPMENT OR DEVICES ARE REQUIRED TO BE ACCESSIBLE ARE CONCEALED BEHIND INACCESSIBLE SURFACES.
- PRIOR TO TURNOVER, THE CONTRACTOR SHALL REMOVE ALL RUBBISH, DIRT, DEBRIS AND STAINS ON THEIR WORK OR CAUSED BY THEIR WORK AND SHALL THOROUGHLY CLEAN ALL EQUIPMENT, FIXTURES, DEVICES, ETC. CONTRACTOR SHALL REPLACE, TOUCH-UP OR REFINISH THE FACTORY FINISH ON EQUIPMENT, FIXTURES, DEVICES, ETC. MARRED DURING SHIPMENT, INSTALLATION OR CONSTRUCTION.
- PANELBOARD SHALL BE EQUIPPED WITH BOLT-ON TYPE BREAKERS, PHENOLIC NAME TAGS AND KEYED LOCK AND LATCH. EACH PANEL SHALL BE PROVIDED WITH TWO KEYS WITH ALL PANELS KEYED ALIKE. ALL CIRCUIT BREAKERS USED TO SWITCH LIGHT FIXTURES SHALL BE TYPE SWD AND SHALL BE APPROVED FOR THE PURPOSE. ALL CIRCUIT BREAKERS SERVING HVAC EQUIPMENT SHALL BE HACR TYPE.
- ALL CIRCUITS INDICATED ON THESE DRAWINGS ARE 20A, 1P CIRCUIT BREAKERS IN PANELS UNLESS NOTED OTHERWISE. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER IDENTIFICATION AND LABELING OF ALL CIRCUIT BREAKERS. EACH PANELBOARD SHALL BE EQUIPPED WITH A TYPE WRITTEN CIRCUIT DIRECTORY.
- MINIMUM WIRE SIZE SHALL BE #12 AWG UNLESS OTHERWISE NOTED. MINIMUM CONDUIT SIZE SHALL BE 1/2" UNLESS OTHERWISE NOTED. ALL CONDUIT BELOW SLABS OR EXTERIOR TO BUILDING SHALL BE MINIMUM 1". PROVIDE A NYLON/POLY PULL CORD IN ALL EMPTY CONDUITS.
- ELECTRICAL CONTRACTOR SHALL PROVIDE TYPE THHN OR THWN COPPER CONDUCTORS FOR ALL INTERIOR BUILDING WIRE AND SHALL PROVIDE TYPE XHHW-2 COPPER CONDUCTORS FOR ALL EXTERIOR FEEDERS AND BRANCH CIRCUITS.
- VOLTAGE DROP MINIMUM WIRE SIZING (20A CIRCUIT) USE: 120V CIRCUIT OVER 100' SHALL BE #10 MINIMUM; 120V CIRCUIT OVER 175' SHALL BE #8 MINIMUM; 208V CIRCUIT OVER 200' SHALL BE #10 MINIMUM; 277V CIRCUIT OVER 200' SHALL BE #10 MINIMUM. MINIMUM WIRE SIZE FOR ANY 20A BRANCH CIRCUIT SHALL BE #12. FURTHERMORE, CONSIDER ALL DERATING OF CONDUCTORS AS REQUIRED IN ACCORDANCE WITH THE APPLICABLE NEC.
- ELECTRICAL CONTRACTOR SHALL HAVE THE OPTION OF GROUPING HOME RUNS IN ONE CONDUIT, PER THE REQUIREMENTS OF SECTION 310 OF THE NATIONAL ELECTRICAL CODE. NO MORE THAN FOUR (4) CIRCUITS SHALL BE ALLOWED TO BE GROUPED AND INSTALLED IN A SINGLE JUNCTION BOX. EC SHALL BE RESPONSIBLE FOR INCREASING CONDUCTOR SIZE AND DERATING. HOME RUNS WITH MORE THAN THREE CIRCUITS SHALL BE #10 AWG. CONDUCTOR MINIMUM. PROVIDE DEDICATED NEUTRALS FOR EACH PHASE CONDUCTOR AND CONSIDER THEM AS A CURRENT CARRYING CONDUCTOR FOR DERATING.
- ALL HOME RUNS SHALL BE IN EMT CONDUIT, MC CABLE IS PERMITTED ABOVE CEILINGS FROM HOMERUNS TO FIXTURES AND WIRING DEVICES WITHIN WALLS AND FURRED COLUMNS. REFER TO ELECTRICAL SPECIFICATIONS FOR MORE DETAILED INFORMATION.
- SUPPORT ALL CONDUITS FROM STRUCTURAL WALLS, SLABS, MEMBERS AND ROOF JOISTS. DO NOT SUPPORT CONDUITS FROM CEILING TIE WIRES, DUCTWORK, PIPING, ROOF DECK OR OTHER NON-STRUCTURAL MEMBERS.
- SUPPORTING OF ELECTRICAL CONDUITS: THE INDIVIDUAL BRANCH CIRCUIT CONDUIT AND ASSOCIATED 4" X 4" JUNCTION BOXES MAY BE SUPPORTED FROM FLOOR/ROOF JOISTS. ALL LARGER FEEDER CONDUITS AND/OR CLUSTER OR GROUPS OF BRANCH CIRCUIT CONDUITS SHALL BE SUPPORTED ON STEEL TRAPEZE WITH STEEL CHANNEL ATTACHED TO STEEL OR WOOD JOIST/BEAMS WITH PROPER ATTACHMENTS. NO SUPPORT SHALL BE ATTACHED TO THE ROOF DECK (NO EXCEPTIONS). HANG CONDUIT FROM TOP CHORD OF BAR JOIST WHEN ATTACHING HOME RUNS TO JOIST.
- INTERIOR AND EXTERIOR LIGHT FIXTURES SHALL BE FURNISHED AND INSTALLED AS SHOWN ON THE DRAWINGS AND AS CALLED OUT IN THE LIGHTING FIXTURE SCHEDULE.
- ALL WIRING DEVICES SHALL BE FLUSH MOUNTED, UNLESS NOTED OTHERWISE. ALL CONDUIT SHALL BE RUN WITHIN WALL CAVITIES, BELOW FLOOR AND ABOVE CEILINGS. SURFACE MOUNTED ELECTRICAL WORK SHALL NOT BE USED UNLESS SPECIFICALLY NOTED ON THE PLANS.
- ALL WALL AND CEILING FIXTURES AND DEVICES SHALL BE INDEPENDENTLY AND SECURELY MOUNTED SO THEY ARE NOT DEPENDENT ON CEILING FINISH FOR SUPPORT AND CAN NOT BE ROTATED OR DISPLACED. FIXTURES AND DEVICES MOUNTED IN SUSPENDED ACOUSTICAL CEILING TILE SHALL HAVE CHANNEL SUPPORTS ACROSS THE MAIN GRID RUNNERS OR GRID SUPPORTS SECURELY ANCHORED SO AS NOT TO CAUSE TILE TO SAG OR SO FIXTURE OR DEVICE CAN NOT BE LIFTED, ROTATED OR DISPLACED.
- ALL OPENINGS IN FIRE AND/OR SMOKE RATED WALLS, FLOORS, AND PARTITIONS FOR CONDUITS SHALL BE SEALED WITH RED FIRE RESISTANT FOAM OR PUTTY TO MAINTAIN THE FIRE AND/OR SMOKE RATING. ALL OPENINGS IN FIRE RATED AND/OR SMOKE WALLS, FLOORS, AND PARTITIONS FOR CABLING SHALL BE SEALED WITH WIREMOLD FLAMESTOPPER, STI EZ-PATH, HILTI SPEED SLEEVE OR EQUIVALENT.
- RECEPTACLES/WIRING DEVICES SHALL NOT BE INSTALLED BACK-TO-BACK, INSTALL ON OPPOSITE SIDES OF WALL STUDS; WHERE DEVICES EXIST ALONG FIRE WALLS, COVER WITH UL LISTED PUTTY PACKS.
- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LIGHT FIXTURES, DIMENSIONAL LOCATION OF FIXTURES IN DRYWALL CEILING, ETC. LOCATION OF FLOOR BOXES AND RECEPTACLES, INCLUDING MOUNTING HEIGHTS. ALL RECEPTACLES AND COVER PLATE COLORS SHALL BE APPROVED BY ARCHITECT.
- OWNER RESERVES THE RIGHT TO RELOCATE ANY LIGHT FIXTURE, RECEPTACLE, ETC., BEFORE BEING INSTALLED 10'-0" FROM LOCATION AS SHOWN ON PLANS AT NO ADDITIONAL EXPENSE TO THE OWNER.
- NO CONDUIT OR CABLES SHALL BE INSTALLED EXPOSED IN FINISHED AREA. NON-CEILING AREA CONDUITS SHALL BE INSTALLED EXPOSED IN A NEAT WORKMAN LIKE MANNER AND SHALL BE PAINTED TO MATCH ADJACENT FINISHES.
- TELEPHONE, IT, AUDIO, VIDEO, SECURITY AND FIRE ALARM CABLE WIRING IN WALLS AND FLOOR SHALL BE ROUTED IN CONDUIT FROM DEVICE/JUNCTION BOX TO ABOVE AN ACCESSIBLE CEILING OR IN ATTIC SPACE; 1" EMT MINIMUM. NO SPICING OF TELEPHONE OR DATA CABLES SHALL BE PERMITTED. ALL CABLES SHALL BE BUNDLED AND SUPPORTED FROM STRUCTURE ABOVE, NO MORE THAN 60" O.C. DO NOT LAY CABLES ON CEILING SYSTEM. PROVIDE J-HOOKS AND/OR CABLE TRAY SYSTEM. MAINTAIN 12" CLEARANCE ABOVE CEILING. COLOR CODE EACH CABLE BY USAGE.
- ALL SIGNAL AND CONTROL CABLES SHALL BE MINIMUM #18 STRANDED COPPER, UNLESS NOTED OTHERWISE. ALL CONNECTIONS AND SPLICES TO BE MADE BY USE OF "STA-KON" CONNECTORS AND TERMINAL STRIPS. PROVIDE SHORT CIRCUIT RATING OF REPLACEMENT EQUIPMENT TO MATCH EXISTING OR AS NOTED ON THESE DRAWINGS. PROVIDE ARC-FLASH LABEL FOR REPLACEMENT AND NEW EQUIPMENT. PROVIDE COORDINATION STUDY DEMONSTRATING NEW AND REPLACEMENT EQUIPMENT IS COORDINATED WITH EXISTING EQUIPMENT THAT IS IMMEDIATELY UPSTREAM AND DOWNSTREAM.

GENERAL DEMO NOTES

- THE ELECTRICAL CONTRACTOR SHALL REMOVE, CAP AND/OR RELOCATE EQUIPMENT, OUTLETS, CONDUIT, WIRE, TC., AS SHOWN AND SPECIFIED ON THE DRAWINGS, AND AS MAY BECOME NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO VISIBLY EXAMINE ALL EXISTING WALLS DESIGNATED FOR REMOVAL OR MODIFICATION TO DETERMINE THE CONDUIT AND THE WIRING THAT WILL REQUIRE CAPPING AND/OR REMOVAL. THE CONTRACTOR SHALL BE HELD TO HAVING VISITED THE SITE AND TAKEN ALL EXISTING CONDITIONS INTO CONSIDERATION.
- PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE PROTECTION AND BARRIERS AFTER DEMOLITION OPERATIONS ARE COMPLETE.
- LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.
- MAINTAIN AND PROTECT EXISTING BUILDING SERVICES WHICH TRANSIT THE AREA AFFECTED BY SELECTIVE DEMOLITION.
- MAINTAIN CIRCUIT CONTINUITY TO ALL EXISTING FIXTURES, EQUIPMENT, OUTLETS, ETC., TO REMAIN IN USE WHETHER NOTED ON THE PLANS OR NOT. FIELD VERIFY EXISTING ITEMS TO REMAIN IN USE. WIRING FOR EXISTING CIRCUITS WHICH MUST BE RE-ROUTED OR WHICH ARE PARTIALLY ABANDONED, SHALL BE RECONNECTED TO SERVICE THE REMAINING OUTLETS ON THE CIRCUIT.
- IN THE DEMOLITION WORK, REMOVE ALL UNUSED WIRING AND CABLES AND UNUSED CONDUIT THAT IS EXPOSED OR WITHIN ACCESSIBLE CEILINGS WHICH IS AFFECTED BY AND IS IN THE AREA OF THE WORK OF THIS CONTRACT.
- THE INTENTION OF THE ELECTRICAL DEMOLITION IS TO DISCONNECT AND REMOVE ALL ELECTRICAL WORK MADE VOID BY THE SCOPE OF THE CONSTRUCTION AND ALTERATION. FIELD VERIFY EXACT MATERIAL QUANTITIES REQUIRED TO BE REMOVED.
- WHERE ELECTRICAL EQUIPMENT, CONDUIT, BOXES, AND SUPPORTING HARDWARE ARE REMOVED, PATCH, AND FINISH THE SURFACE AS REQUIRED TO MATCH THE EXISTING, UNLESS OTHERWISE NOTED.
- WHERE BURIED CONDUITS EXTENDING OUT OF A CONCRETE SLAB BECOME ABANDONED, CUT AND GRIND THE CONDUITS OFF FLUSH WITH TOP OF SLAB AND PLUG WITH NON-SHRINK WATERPROOF GROUT FILL.
- ALL REMOVED MATERIALS, OTHER THAN REMOVED MATERIALS TO BE RELOCATED, OR STORED, OR TURNED OVER TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE.
- ACCEPTANCE OF CONTRACT MEANS INSTALLER ACCEPTS EXISTING CONDITIONS.
- CONTRACTOR SHALL COORDINATE ALL DEMOLITION WORK WITH ALL OTHER TRADES.
- IN WALLS OR FLOORS WHERE A FLUSH DEVICE IS BEING REMOVED, BUT THE WALL OR FLOOR REMAINS OR FOR ANY OUTLET WHICH MUST REMAIN, BUT HAS A DEVICE REMOVED, PROVIDE A BLANK COVER OVER THE OUTLET. MATCH THE COLOR AND MATERIAL OF EXISTING REMAINING COVERS IN THE ROOM OR SPACE.
- LEGALLY DISPOSE OF HAZARDOUS MATERIALS AND BALLASTS OR OTHER EQUIPMENT CONTAINING PCB'S AND LAMPS CONTAINING MERCURY. COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS.
- MODIFY EXISTING PANEL DIRECTORIES (OR REPLACE) FOR PANELS WHICH HAVE HAD ALTERATIONS TO THE CIRCUITS ORIGINATING THEREIN. DESCRIBE THE LOAD AND LOCATION.
- WHERE WORK IS TO BE PERFORMED ABOVE EXISTING ACCESSIBLE CEILINGS, CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING CEILING TILES AND GRID WITHOUT DAMAGE; STORAGE OF EXISTING TILES AND GRID WHILE WORK IS BEING PERFORMED, AND INSTALLATION OF EXISTING GRID AND TILES AFTER DIVISION 26, 27 AND 28 WORK IS COMPLETED.
- ALL EXISTING ELECTRICAL WORK AND ASSOCIATED RACEWAY AND WIRING WHICH HAS BEEN MADE OBSOLETE BY THE WORK AND/OR IS SHOWN DASHED ON THE ELECTRICAL DEMOLITION DRAWINGS, SHALL BE DISCONNECTED AND REMOVED, UNLESS OTHERWISE NOTED. ALTHOUGH AN ATTEMPT HAS BEEN MADE TO INDICATE ALL OF THIS WORK, TOTAL ACCURACY IS NOT GUARANTEED. CONTRACTOR SHALL VISIBLY EXAMINE ALL AREAS AND WALLS AND CEILINGS SCHEDULED FOR REMOVAL TO DETERMINE EXISTING ELECTRICAL ITEMS TO REMAIN.

ELECTRICAL EQUIPMENT SCHEDULE									
PLAN MARK	VOLTAGE	PHASE	FED BY	MCA/HP	MOCP	DISC BY	DISC. TYPE	FEEDER	
BP-3	480 V	3	MCC-C	5 HP	20	FWU		3 #12 & #12 GRD, 3/4" C.	
BP-2	480 V	3	MCC-C	5 HP	20	FWU		3 #12 & #12 GRD, 3/4" C.	
BP-1	480 V	3	MCC-C	5 HP	20	FWU		3 #12 & #12 GRD, 3/4" C.	
B-1	120 V	1	CJ	9 MCA	20	EC	30A/NF	2 #12 & #12 GRD, 3/4" C.	
B-2	120 V	1	CJ	9 MCA	20	EC	30A/NF	2 #12 & #12 GRD, 3/4" C.	
B-3	120 V	1	CJ	9 MCA	20	EC	30A/NF	2 #12 & #12 GRD, 3/4" C.	
HWP-1	480 V	3	MCC-C	5 HP	20	FWU		3 #12 & #12 GRD, 3/4" C.	
HWP-2	480 V	3	MCC-C	5 HP	20	FWU		3 #12 & #12 GRD, 3/4" C.	
DWRP-1	120 V	1	CJ	1/6 HP	20	FWU		2 #12 & #12 GRD, 3/4" C.	
DWRP-2	120 V	1	CJ	1/12 HP	20	FWU		2 #12 & #12 GRD, 3/4" C.	
TMV-3		1	CJ	1 MCA	20	EC	RECP	2 #12 & #12 GRD, 3/4" C.	
TMV-2		1	CJ	1 MCA	20	EC	RECP	2 #12 & #12 GRD, 3/4" C.	
TMV-1		1	CJ	1 MCA	20	EC	RECP	2 #12 & #12 GRD, 3/4" C.	

FWU: FURNISHED WITH UNIT

STATE OF MISSOURI
MICHAEL L. KEHOE,
GOVERNOR



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SITE # 6801
FACILITY # 8136801002

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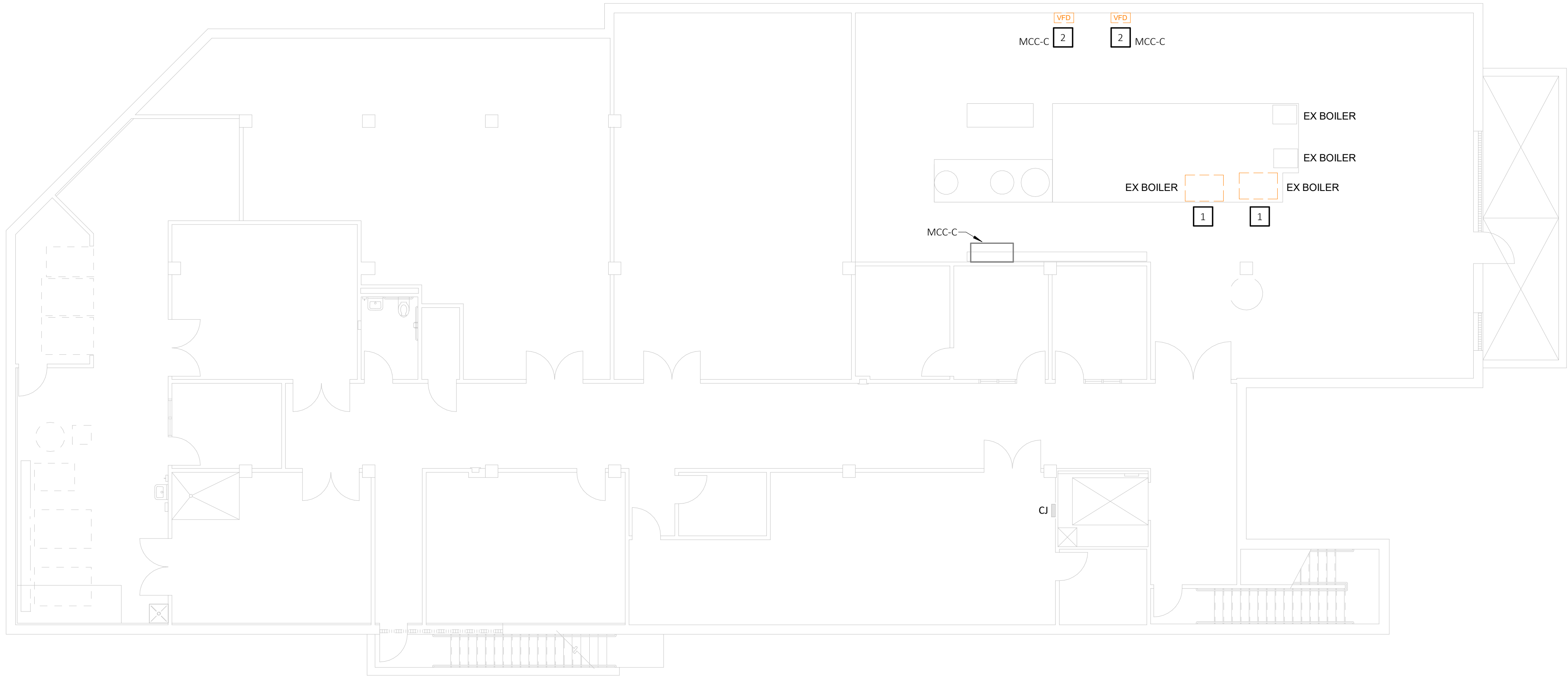
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DESIGNED BY: KJC _____

SHEET TITLE:

ELECTRICAL
GENERAL NOTES &
SCHEDULES

SHEET NUMBER:

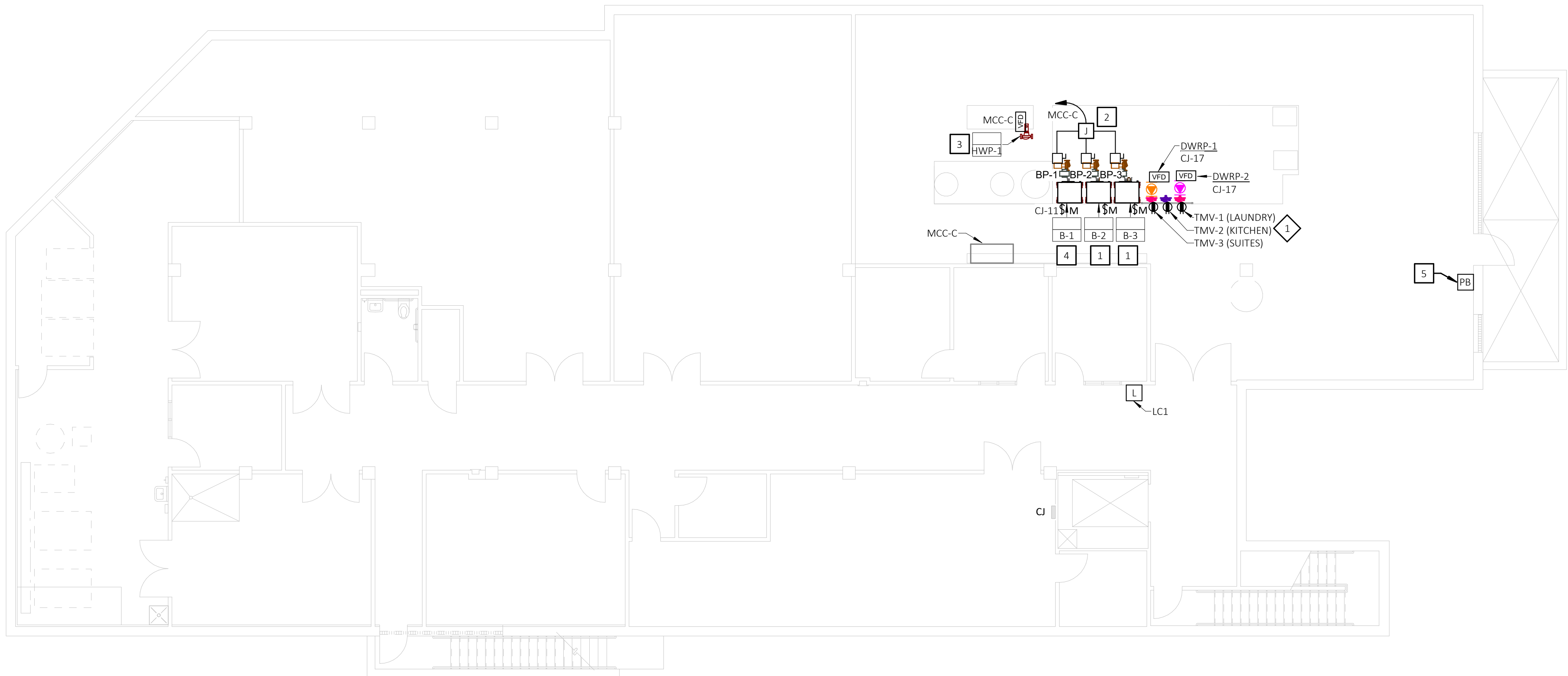
E-002
16 of 18 SHEETS
03.05.2025



1
E-101

BASEMENT FLOOR PLAN - ELECTRICAL DEMOLITION - PHASE 1

SCALE: 1/8" = 1'-0"



2
E-101

BASEMENT FLOOR PLAN - ELECTRICAL RENOVATION - PHASE 1

SCALE: 1/8" = 1'-0"

Keynotes - Demo

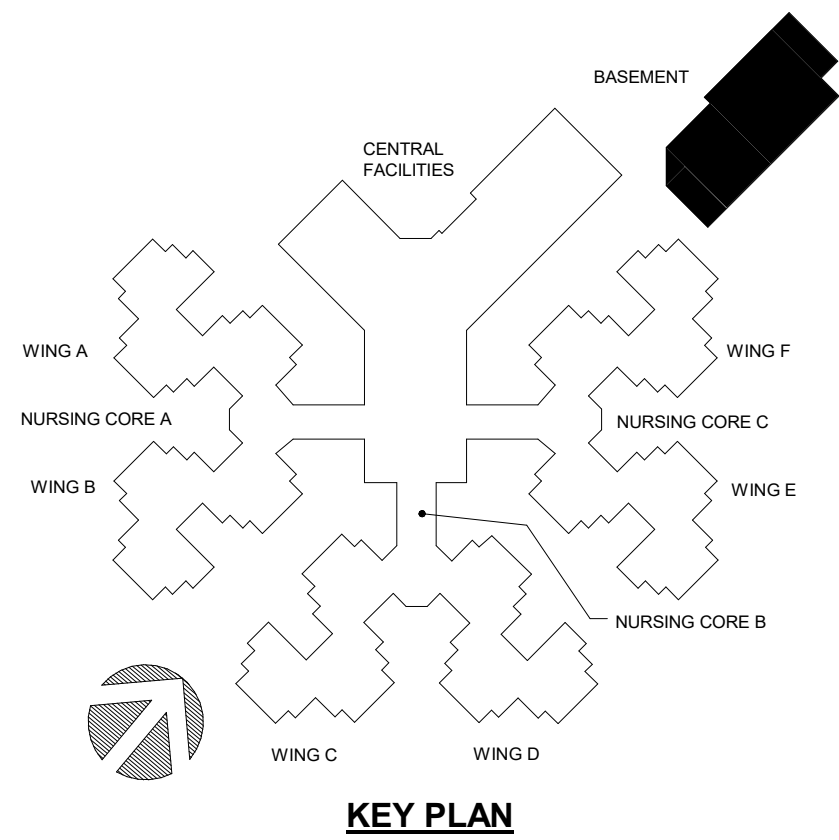
- 1 EXISTING BOILER TO BE DEMOLISHED. EC SHALL DISCONNECT EXISTING BOILER WIRING AND MAINTAIN CIRCUIT FOR RECONNECTION WITH NEW BOILER.
- 2 EXISTING HOT WATER PUMP AND VFD TO BE DEMOLISHED. EC SHALL DISCONNECT EXISTING CIRCUIT FROM VFD AND MAINTAIN FOR RECONNECTION WITH NEW PUMP.

Keynotes - Reno

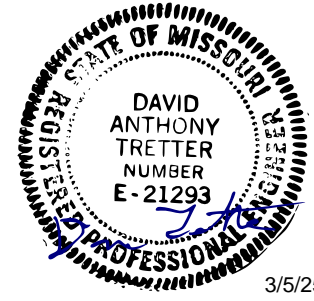
- 1 EC SHALL MAINTAIN EXISTING WATER HEATER WIRING AND EXTEND IF NEED FOR RECONNECTION WITH NEW BOILER. VERIFY EXISTING CIRCUIT IS ROUTED THROUGH CONTACTOR "LC1" FOR SHUTDOWN SEQUENCE.
- 2 EC SHALL PROVIDE CIRCUIT FROM MCC-C SPARE BUCKET FOR (3) NEW BOILER PUMPS. PROVIDE 3#8 CU & 1#8 GND, 3/4"C. FROM MCC-C TO JUNCTION BOX WITH TERMINAL BLOCK. EC SHALL PROVIDE 30A FUSED DISCONNECT WITH 20A FUSES FOR EACH BOILER PUMP.
- 3 EC SHALL EXTEND EXISTING HOT WATER PUMP CIRCUIT AND MAKE CONNECTION TO NEW HOT WATER PUMP FACTORY FURNISHED VFD.
- 4 EC SHALL PROVIDE NEW 20A, 120V CIRCUIT FROM SPARE BREAKER IN PANEL "CJ" FOR NEW BOILER. ROUTE CIRCUIT THROUGH CONTACTOR "LC1" FOR SHUTDOWN SEQUENCE.
- 5 EXISTING EMERGENCY BOILER SHUTDOWN BUTTON INTERLOCKS WITH CONTACTOR "LC1" SO THAT GAS FIRED EQUIPMENT IN BOILER ROOMS SHUTS DOWN UPON ACTIVATION.

Keynotes - Reno Alternate #1

- 1 EC SHALL PROVIDE NEW 20A, 120V CIRCUIT FROM SPARE BREAKER IN PANEL "CJ" FOR (3) NEW THERMOSTATIC MIXING VALVES.



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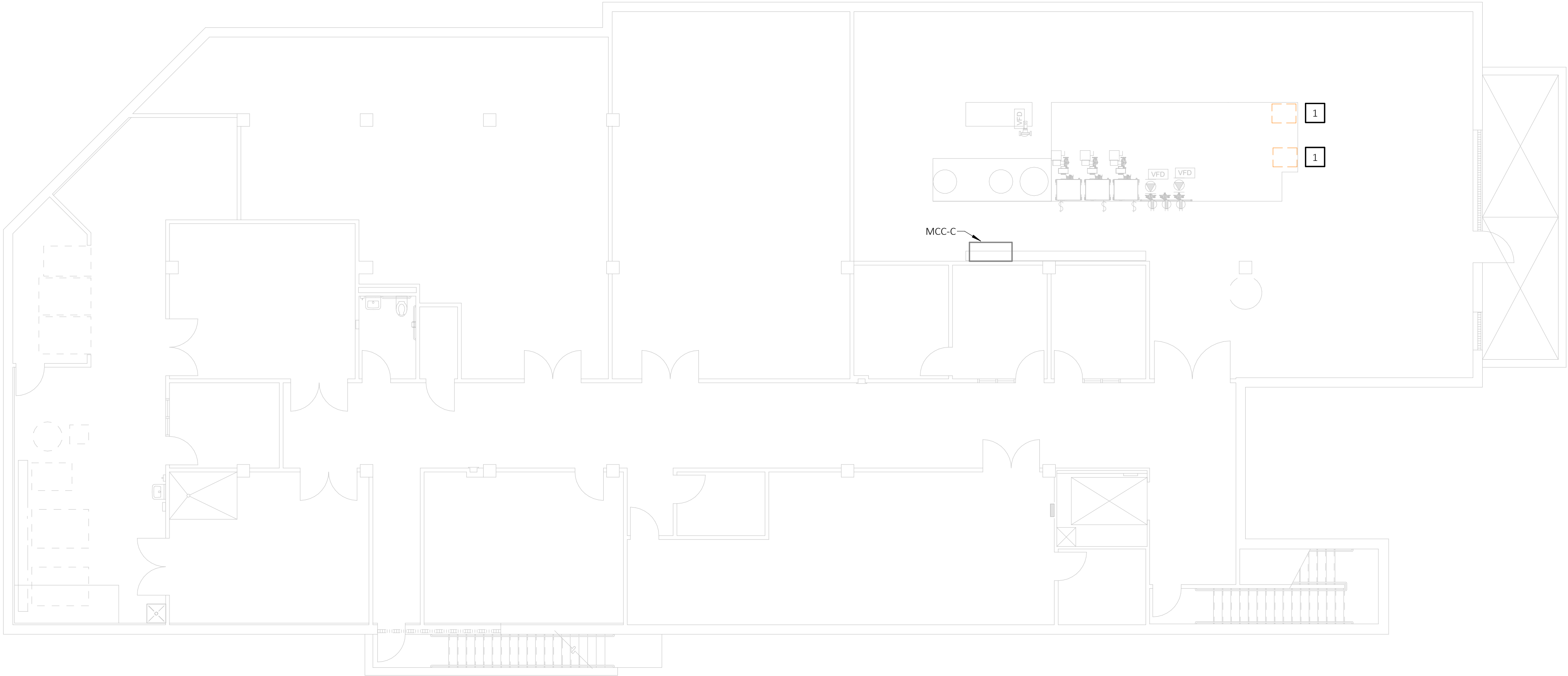
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DESIGNED BY: KJC

SHEET TITLE:

**ELECTRICAL
BASEMENT FLOOR
PLAN - PHASE 1**

SHEET NUMBER:

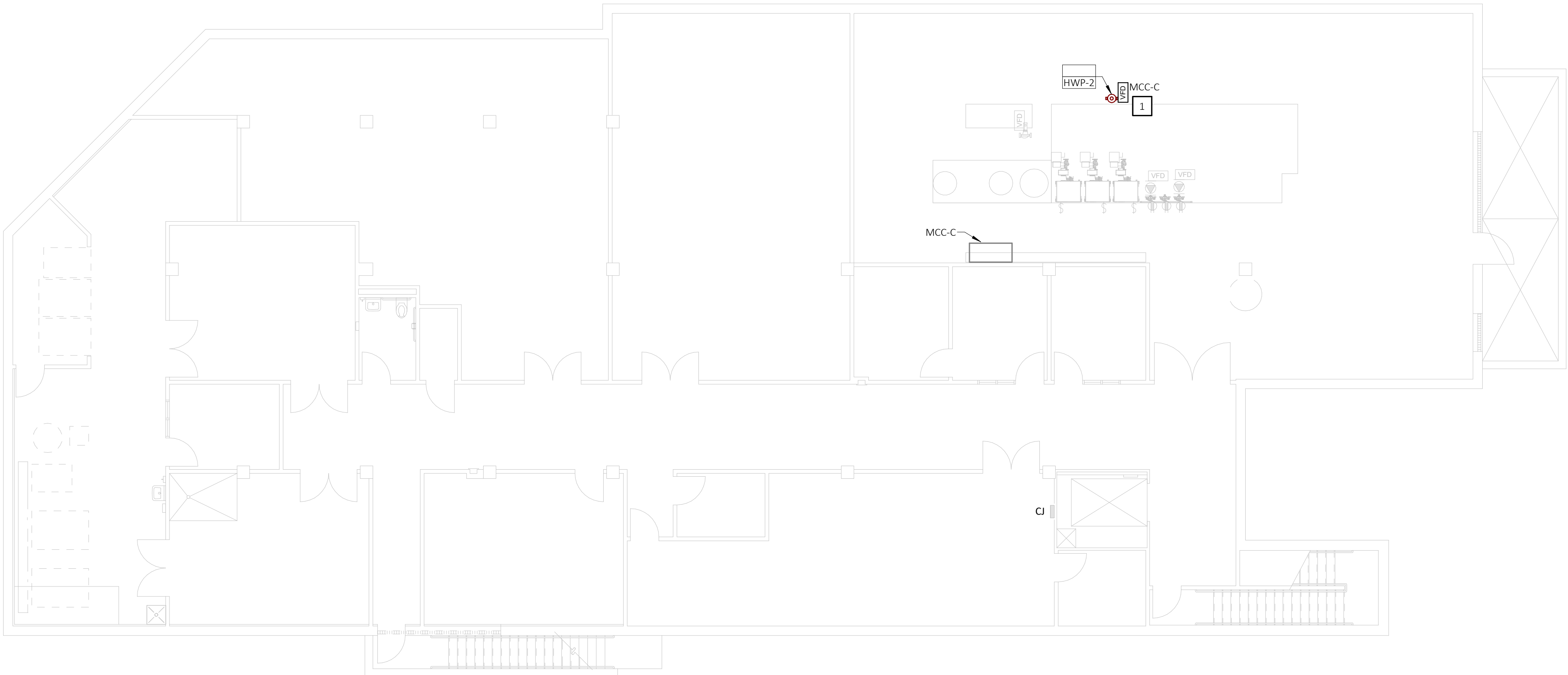
E-101
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03.05.2025



1
E-102
BASEMENT FLOOR PLAN - ELECTRICAL DEMOLITION - PHASE 2
SCALE: 1/8" = 1'-0"

Keynotes - Demo

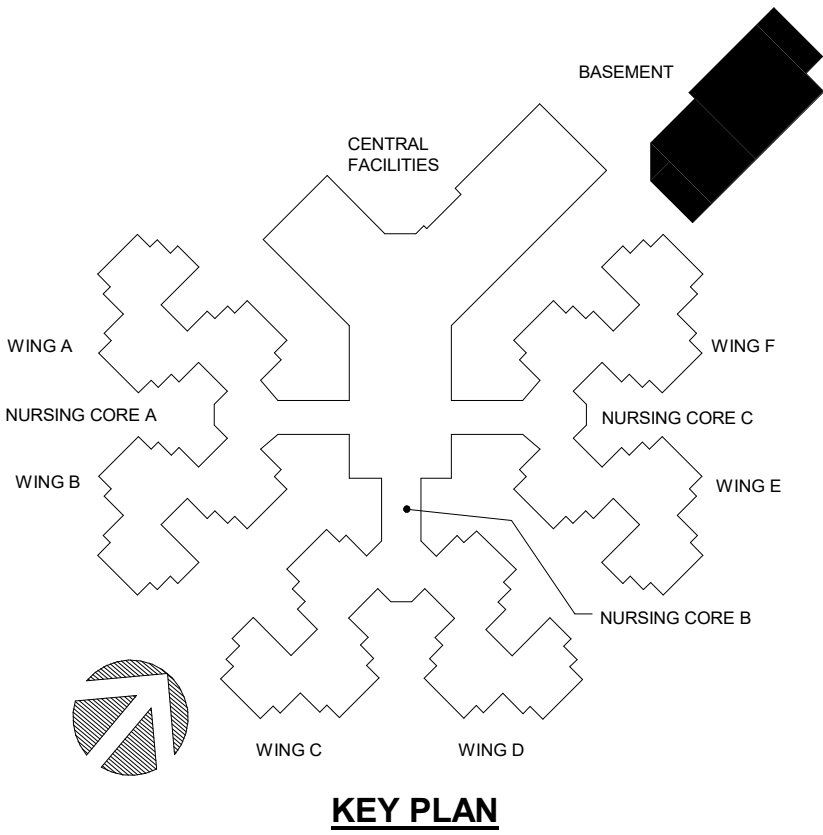
- 1 EXISTING BOILER TO BE DEMOLISHED. EC SHALL DISCONNECT BOILER AND REMOVE CONDUIT AND WIRING BACK TO SOURCE PANEL.



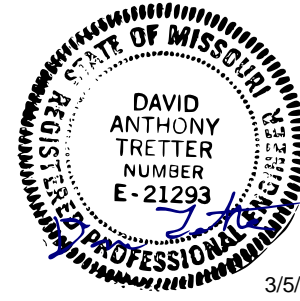
Keynotes - Reno

- 1 EC SHALL EXTEND EXISTING HOT WATER PUMP CIRCUIT AND MAKE CONNECTION TO NEW HOT WATER PUMP FACTORY FURNISHED VFD.

2
E-102
BASEMENT FLOOR PLAN - ELECTRICAL RENOVATION - PHASE 2
SCALE: 1/8" = 1'-0"



STATE OF MISSOURI
MICHAEL L. KEHOE,
GOVERNOR



Professional of Record:
DAVID A. TRETTER
LICENSE # 021293
EXPIRATION DATE: 12/31/25
PROFESSIONAL SEAL

CASCO Diversified Corporation
MO Certificate of Authority #000329 Arch.
MO Certificate of Authority #000813 Eng.
Exp. Date: 12/31/25

CASCO

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OFFICE OF
ADMINISTRATION
DIVISION OF
FACILITIES
MANAGEMENT,
DESIGN AND
CONSTRUCTION

REBID
DESIGN & INSTALL
NEW DOMESTIC WATER
PLANT
VETERANS HOME
BUILDING

ST. JAMES VETERANS HOME
620 NORTH JEFFERSON
ST. JAMES, MO

PROJECT # U2409-01
SITE # 6801
FACILITY # 8136801002

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 03.05.2025

CAD DWG FILE: _____
DRAWN BY: AJS
CHECKED BY: DAT
DESIGNED BY: KJC

SHEET TITLE:

**ELECTRICAL
BASEMENT FLOOR
PLAN - PHASE 2**

SHEET NUMBER:

E-102
18 of 18 SHEETS
03.05.2025