

REVISIONS:	BY:



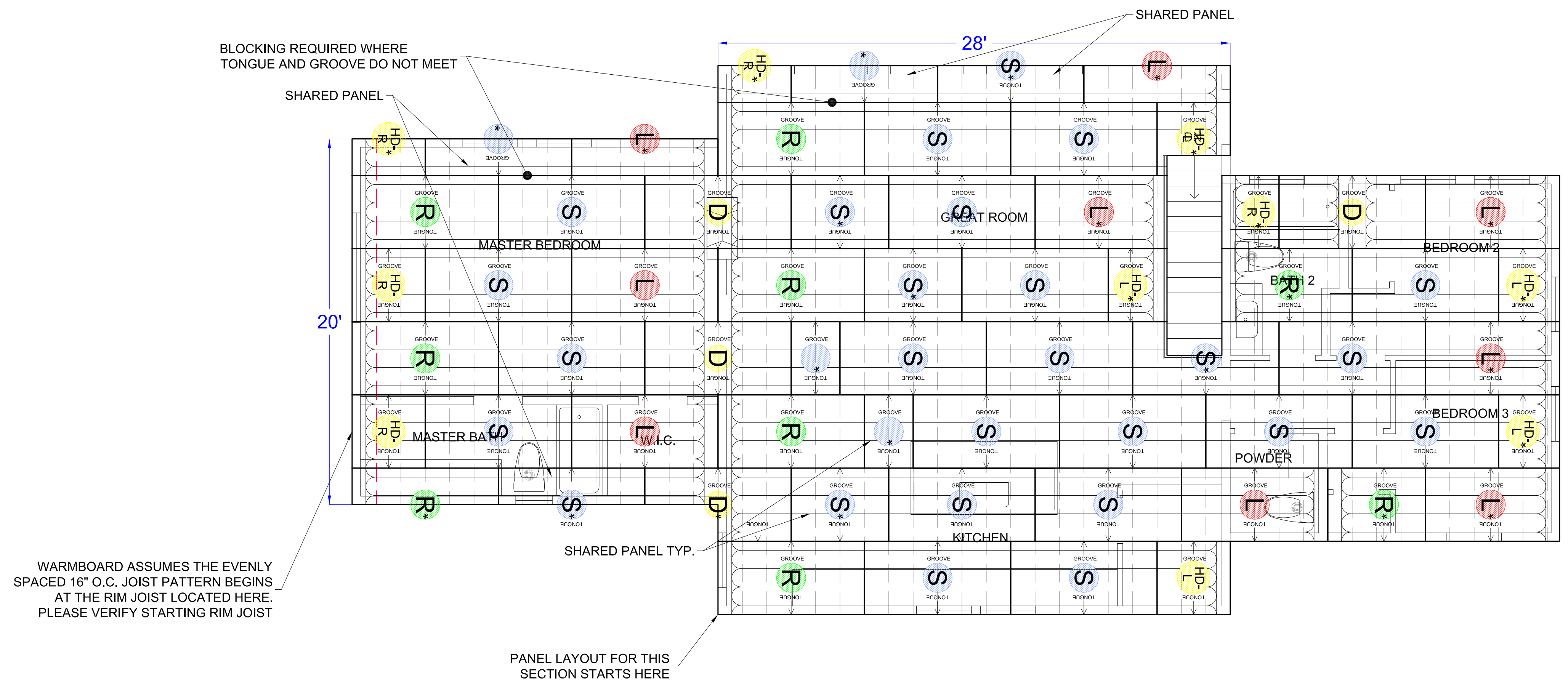
WARMBOARD, INC.
 100 ENTERPRISE WAY, SUITE G300
 SCOTT'S VALLEY, CALIFORNIA 95066
 1.800.556.0595
 WARMBOARD.COM



66 OPHIR ROAD
 JOB# 59721
 OPHIR, CO

PANEL LAYOUT

DATE: 01/19/2023
 SCALE: 1/4" = 1'
 DRAWN: N.M.W.
 REVIEWED: MSH
 SHEET: **WBS 1.0**



MAIN FLOOR PANEL LAYOUT

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

PANEL SCHEDULE		
TYPE	QUANTITY	COMMENTS
S	26	①
L	9	①
R	9	①
D	9	① ②
F	0	③

① ANY PANELS IN THE DRAWING THAT ARE MARKED WITH AN ASTERISK (*) INDICATE A PANEL THAT IS TO BE TRIMMED. A CAREFUL MEASUREMENT SHOULD BE MADE TO GUARANTEE A CORRECT INSTALLATION.

② DOUBLE PANELS WILL CONSIST OF A "HALF DOUBLE-LEFT" PANEL AND A "HALF DOUBLE-RIGHT" PANEL ON THE PANEL LAYOUT. YOU MAY SEE A PANEL MARKED AS "HD-L" OR "HD-R." THIS MEANS THAT YOU CUT ONE OF THESE DOUBLE PANELS IN HALF AND USE THE APPROPRIATE SIDE AS MARKED FOR THE INSTALLATION.

③ CONVENTIONAL TONGUE AND GROOVE PLYWOOD PANELS USED TO FILL IN EMPTY SPACES WHERE WARMBOARD MAY NOT BE APPROPRIATE.

IMPORTANT:
 RETAIN ALL OFF CUTS
 TO FILL IN SECTIONS
 AS NEEDED.

WARMBOARD PANEL LEGEND

- S** STRAIGHT PANEL
- L** LEFT TURN PANEL
- R** RIGHT TURN PANEL
- D** DOUBLE TURN PANEL
- HD-R** HALF DOUBLE PANEL-RIGHT TURN
- HD-L** HALF DOUBLE PANEL-LEFT TURN
- F** FILLER PANEL
- *** DENOTES A TRIMMED PANEL

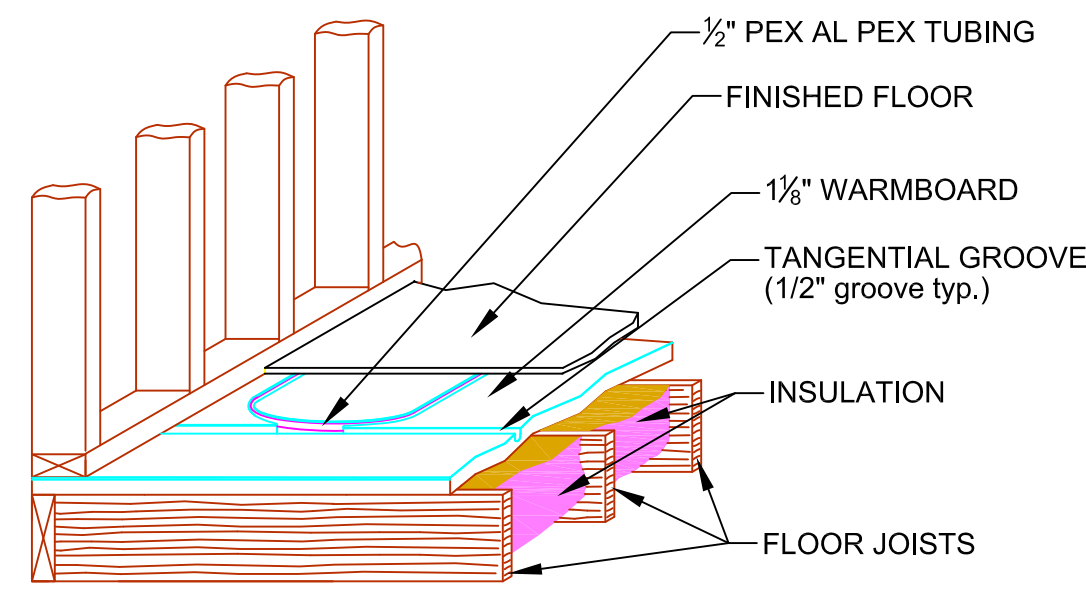
--- JOIST

IMPORTANT NOTE:
 INSULATION BELOW WARMBOARD IS MANDATORY FOR PROPER PERFORMANCE.

MANDATORY STRUCTURAL NOTES

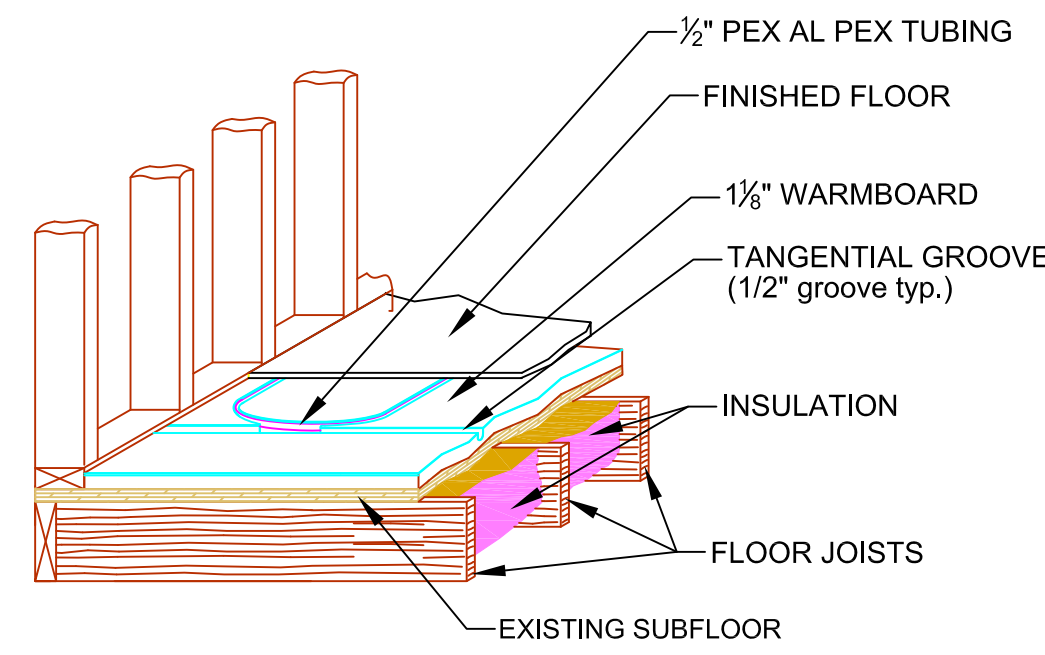
- TO ENSURE OPTIMAL PANEL INSTALLATION, FOLLOW PANEL LAYOUT PLANS, ALL WARMBOARD INSTALLATION INSTRUCTIONS, AND APA GUIDELINES. FAILURE TO DO SO COULD CAUSE PANEL WASTE.
- WARMBOARD PLANS ARE CONCEPTUAL AND DO NOT SUPERSEDE STRUCTURAL PLANS WHICH MAY BE PART OF THE ARCHITECTURAL PLAN SET. SHOULD THERE BE A CONFLICT BETWEEN WARMBOARD PLANS AND THE STRUCTURAL PLANS, CONSULT IMMEDIATELY WITH WARMBOARD CUSTOMER SERVICE BEFORE PROCEEDING.
- INSTALLING CONTRACTOR IS RESPONSIBLE TO VERIFYING ALL MEASUREMENTS PRIOR TO THE INSTALLATION OF WARMBOARD PANELS.

QUESTIONS? FOR IMMEDIATE ASSISTANCE CALL: 1.800.556.0595 (8AM - 5PM PT)



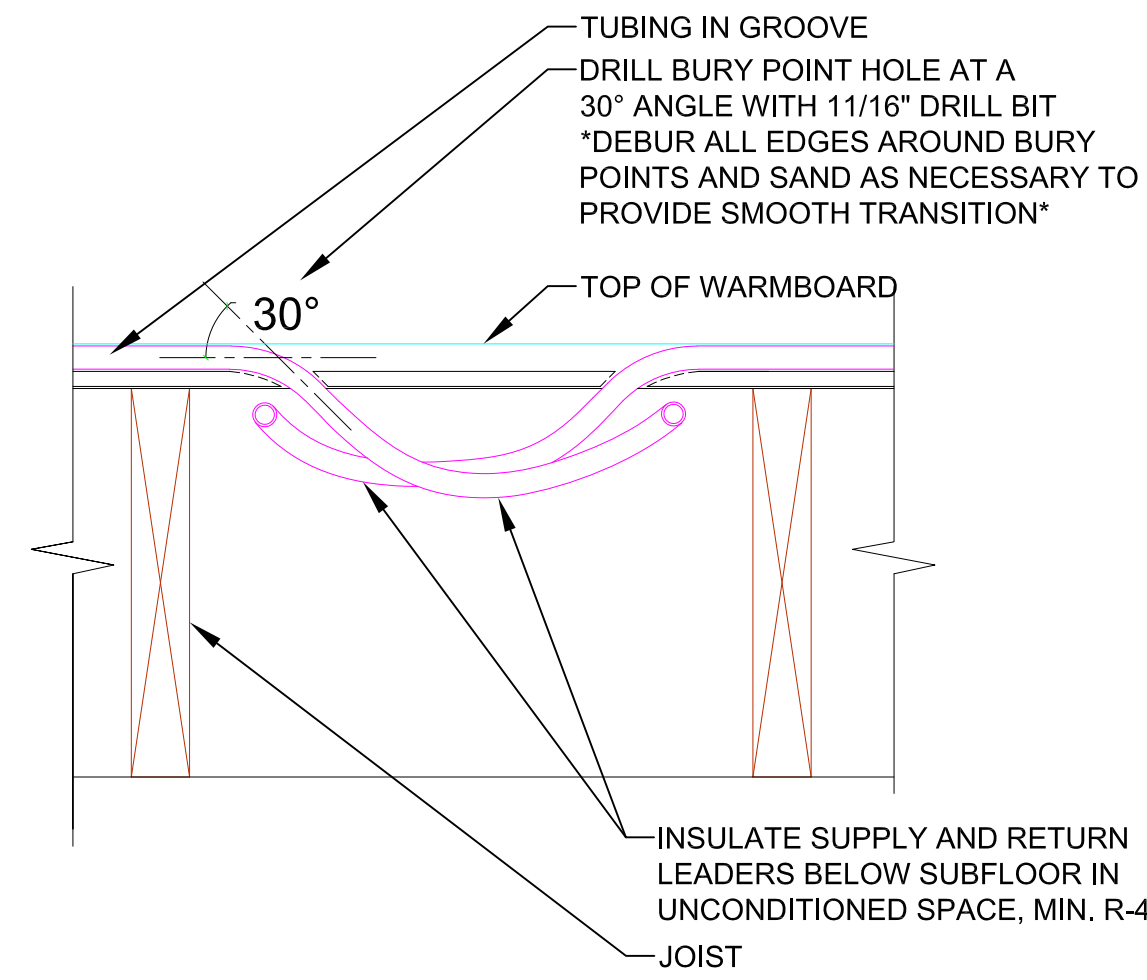
PANELS OVER JOIST/TJI

Scale: N/S



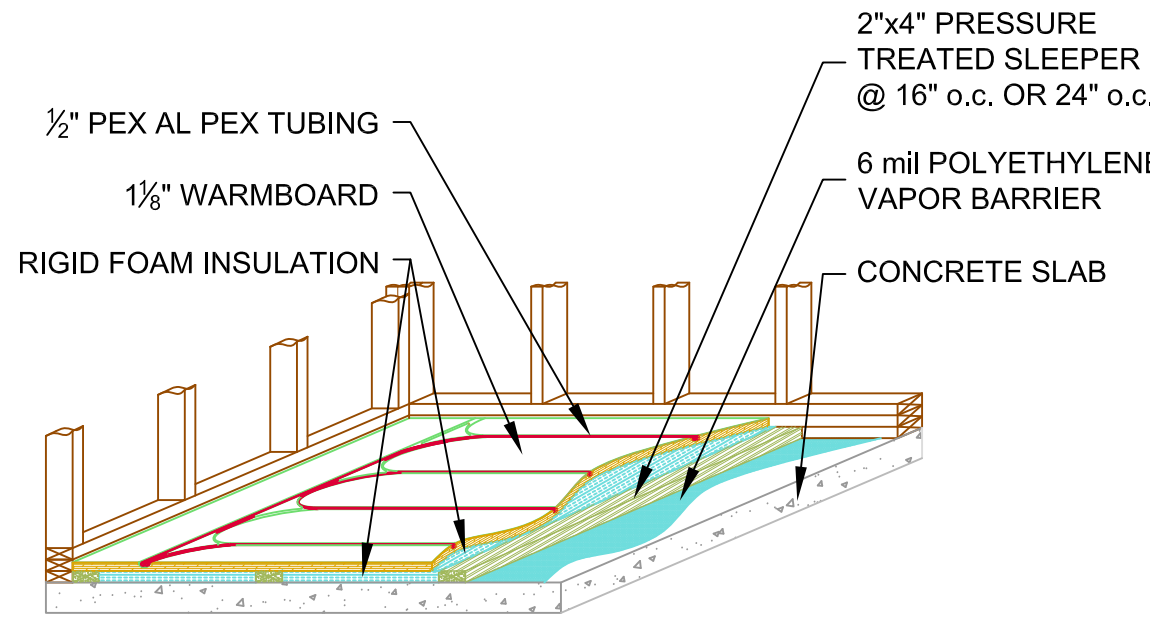
PANELS OVER EXISTING SUBFLOOR

Scale: N/S



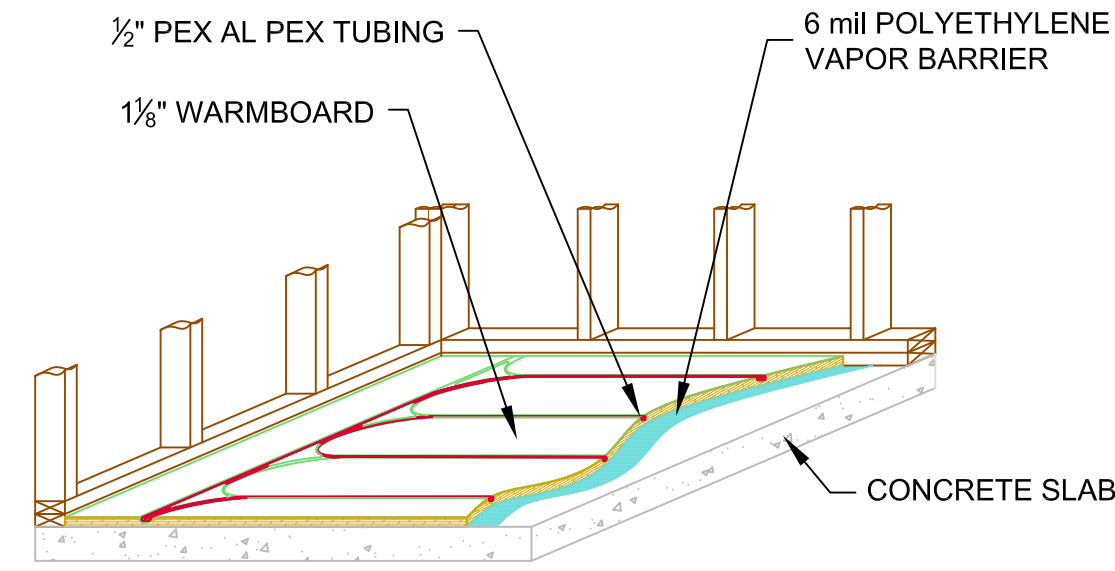
BURY POINT DETAIL

Scale: N/S



PANELS OVER CONCRETE W-SLEEPERS

Scale: N/S



PANELS OVER CONCRETE SLAB

Scale: N/S

WARMBOARD INSTALLATION NOTES - MANDATORY:

The contractor(s) responsible for the installation of the Warmboard panels, as well as any hydronic tubing supplied by other, shall review these plans for accuracy and completeness. These contractors will also be responsible to verify all measurements prior to any Warmboard installations. Any discrepancy between these plans and the framing of the project for which they apply shall be brought to the immediate attention of Warmboard, Inc.

WHEN IN DOUBT, ASK!

Please review all installation instructions. If there are any questions or need for technical assistance call: 1.800.556.0595

TO ORDER PRODUCT PLEASE CALL: 1.800.556.0595

A. GENERAL INFORMATION

1. WARMBOARD IS ONE COMPONENT OF A HYDRONIC SYSTEM. THIS CONCEPTUAL PLAN COVERS ONLY PANEL AND TUBING LAYOUTS AND DOES NOT CONSTITUTE A COMPLETE INSTALLATION GUIDE FOR A HYDRONIC SYSTEM. Installation of a hydronic system employing Warmboard-R panels requires a combination of carpentry and plumbing skills. The general contractor shall be responsible for the skills, training, and experience of the installers. Warmboard refers to floor framing information supplied by the customer. Deviations should be brought to the immediate attention of Warmboard, Inc. The hydronic contractor shall follow the tubing layout plan and tubing installation instructions supplied. They shall also be responsible for providing an accurate heat loss analysis and the installation of the hydronic system as a whole in accordance with Radiant Panel Association (RPA) guidelines. Design floor and supply water temperatures for a given floor covering will follow RPA guidelines and the Warmboard recommended water temperatures chart.
2. It is the installer's responsibility to assure the system functions properly, safely, and meets all local, state, and regional codes.
3. The installer is to supply and install all materials shown on this plan; as well as all other materials needed to complete this hydronic system and any incidental work not shown or specified, which can be reasonably inferred as belonging to the work necessary to provide the complete system.
4. Warmboard makes no guarantee for any material to be installed in this hydronic system other than the Warmboard panels.

B. WARMBOARD INSTALLATION

1. WARMBOARD shall verify the compatibility of their layout with the attached floor framing plan. Special attention shall be given to the compatibility of Warmboard panels and joist layout.
2. All supply and return tubing below subfloor in unconditioned space shall be insulated with R-4.0 pipe insulation.
3. Custom grooves shall be routed as indicated on the plans using supplied router templates, a properly sized router equipped with a template guide, and the supplied 5/8" core box router bit. All router use shall conform to supplied instructions, and all safety instructions provided by manufacturer of the router you plan to use.
4. When applicable, installation contractor shall coordinate with the plumbing contractor so as to have all plumbing stubbed out 12" above sub-floor prior to installation.
5. Alignment pins shall be used for proper alignment of panels.
6. Any excess adhesive that may interfere with tubing installation shall be removed.
7. All burrs left by custom routing and on angle holes shall be removed.
8. Refer to manufacturer's installation manual for additional guidelines for this product.

C. TUBING INSTALLATION

1. Holes for routing below sub-floor shall be drilled using an 1 1/16" bit at the correct location and in the appropriate direction, so that the end of the tube can be passed from the groove to under the floor area in the right direction, leading to the appropriate manifold location or the boiler panel.
2. All grooves shall be inspected and cleaned of any debris prior to tubing installation.
3. Tubing for radiant floor heating shall be 1/2" PEX approved by Warmboard, Inc. (See approved tubing list).
4. Tubing shall be and remain pressurized immediately following installation into the panel diaphragm for the duration of all construction. **Caution**, do not install silicone or other types of adhesives in tubing channel
5. Installer is responsible for protecting tubing from freezing during construction. Should climatic conditions occur, this would require adding antifreeze and corrosion inhibiting fluids upon completion of work.
6. Installer to record length of every pipe and photograph completed installation.
7. Special note for carpeted areas: Short pieces of PEX tubing (typically offcuts) shall be pressed into any unused groove areas. This provides support for the pad & carpet.

WARMBOARD SPECIFICATIONS

A. GENERAL INFORMATION

1. Warmboard Radiant Subfloor is manufactured in the USA, and supplied by: Warmboard Inc. 100 Enterprise Way, Suite G300 Scotts Valley, CA 95066 1.800.556.0595
2. Warmboard panels shall be 4'x8' plywood, tongue and groove, with a thickness of 1-1/8". Panels shall have 5/8" depth channels, consisting of straights and turns patterns, such channels on 12" centers to interface with 1/2" PEX aluminum PEX tubing. 4 Limber slots per panel, 2 limber slots cut on the bottom of the 4' end. Limber slots located 12" from the outside. Each slot is 5"x3/8"x 3/8"

The entire top skin (4'x8') of plywood shall have a highly conductive continuous sheet of 1100 series aluminum alloy, bonded to the entire surface.

The continuous sheet of aluminum shall completely contour in all channels depths: both turns and straight runs.

Panels shall be (4'x8') in one of the four tubing channel pattern options. - Straight, Double, Turns (turns at one end), Left or Right - (See Detail A.1).

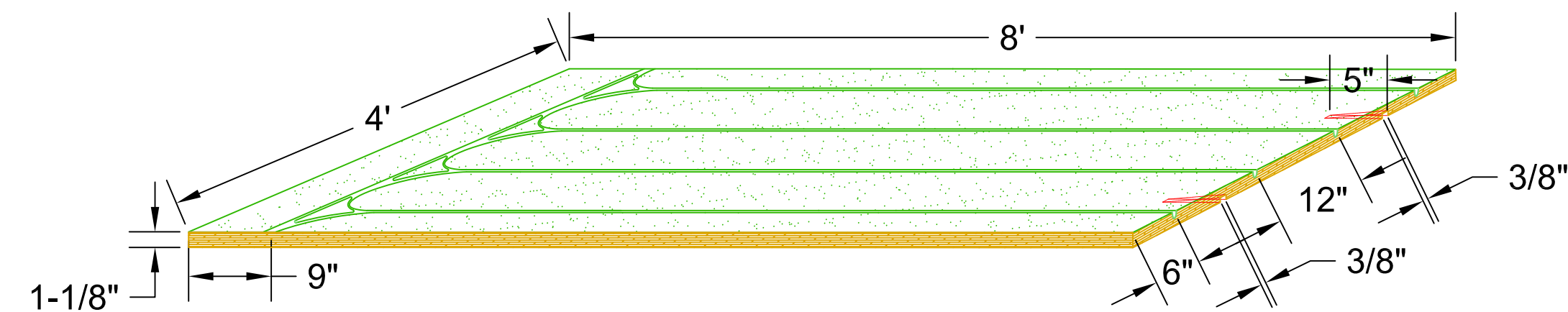
3. All panels installed will meet or exceed all specifications documented on Warmboard engineered AutoCAD drawings and Warmboard Installation manual.

Supplied panels will meet or exceed APA certification and report #T2002Q-37

Supplied panels will meet or exceed ICC Evaluation ESR# 1421 and CSA0325 (Canadian Standards Association).

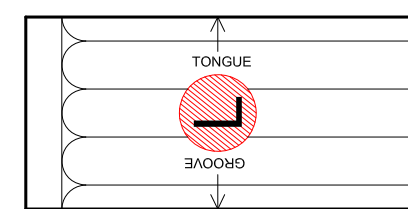
4. Panel assembly shall be one of the following:

- Warmboard structural subfloor installed over existing Joist or TJI. (See Detail B)
- Warmboard structural subfloor installed over existing concrete slab (See Detail C)
- Warmboard structural subfloor installed over existing concrete slab with sleepers (See Detail D)
- Warmboard Structural subfloor installed over existing structural plywood, decking or OSB. (See Detail E)

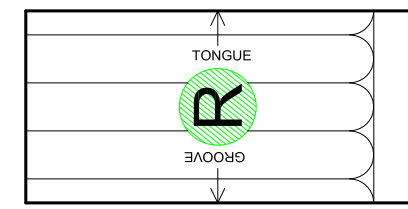


A - WARMBOARD PANEL DETAIL

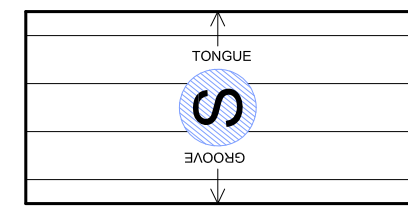
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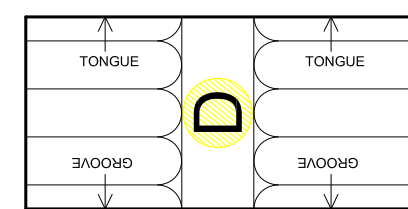
L LEFT TURN PANEL



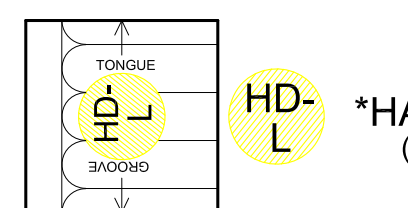
R RIGHT TURN PANEL



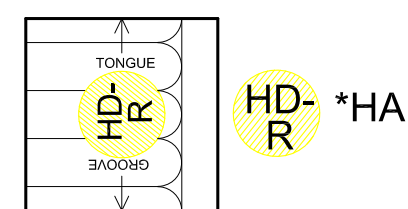
S STRAIGHT PANEL



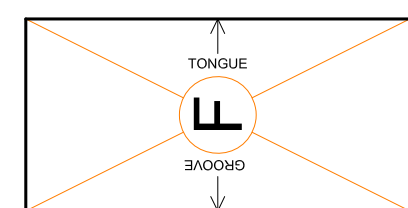
D DOUBLE TURN PANEL



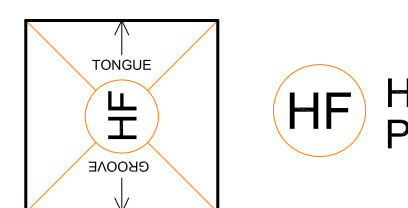
HD-L *HALF DOUBLE PANEL-LEFT TURN
(Cut a Double panel in half to get this piece)



HD-R *HALF DOUBLE PANEL-RIGHT TURN
(Cut a Double panel in half to get this piece)



F CONVENTIONAL PLYWOOD PANEL



HF HALF CONVENTIONAL PLYWOOD PANEL

A.1 - WARMBOARD PANEL DETAIL

Scale: N/S

REVISIONS: BY:



WARMBOARD, INC.
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SCOTTS VALLEY, CALIFORNIA 95066
1.800.556.0595
WARMBOARD.COM



66 OPHIR ROAD
JOB# 59721
OPHIR, CO

SPECIFICATION & INSTALLATION INSTRUCTIONS

DATE: 01/19/2023

SCALE: NTS

DRAWN: N.M.W.

REVIEWED: MSH

SHEET:

WB-S SPEC

REVISIONS:	BY:



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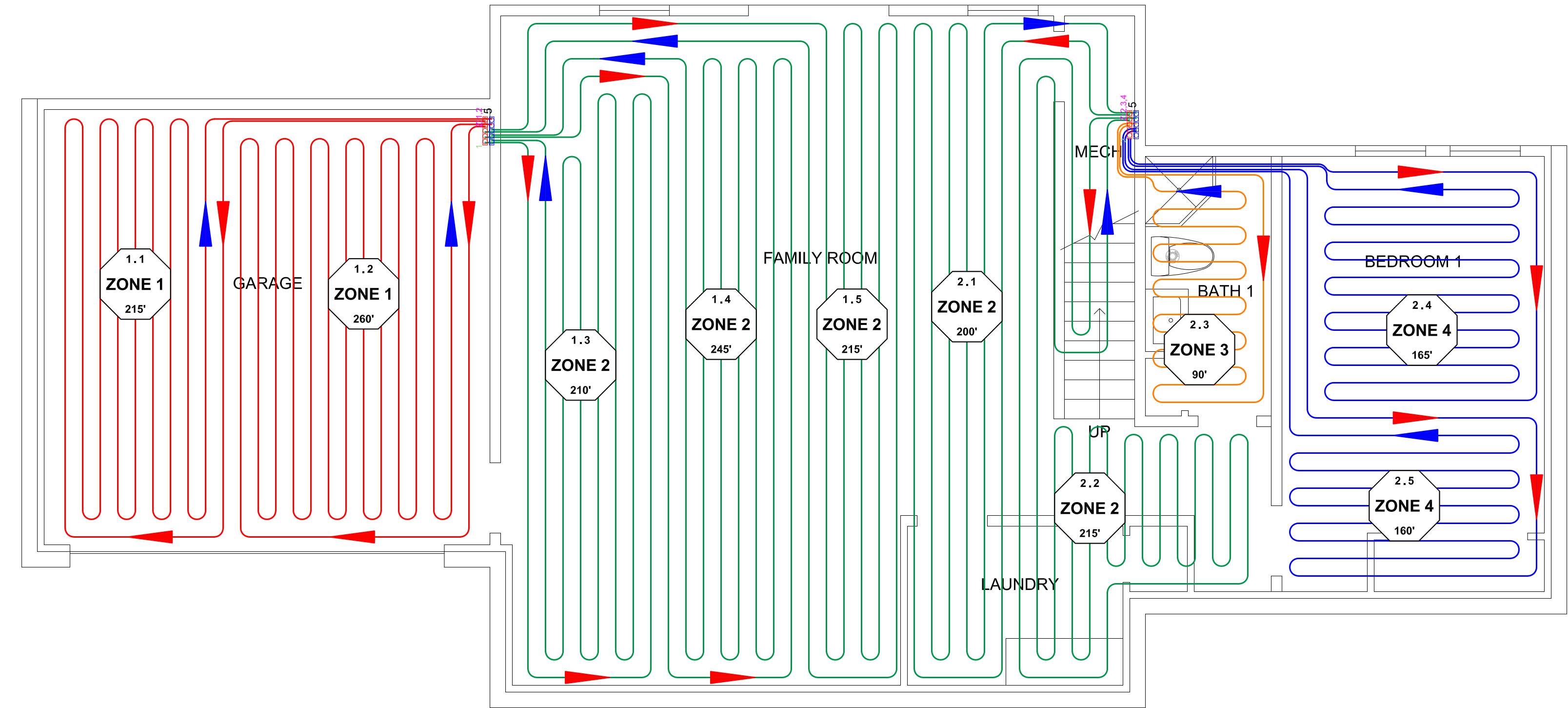
TUBING LAYOUT

DATE: 01/19/2023
 SCALE: 1/4" = 1'
 DRAWN: N.M.W.
 REVIEWED: MSH
 SHEET:
WBM 2.0

MANDATORY TUBING NOTES

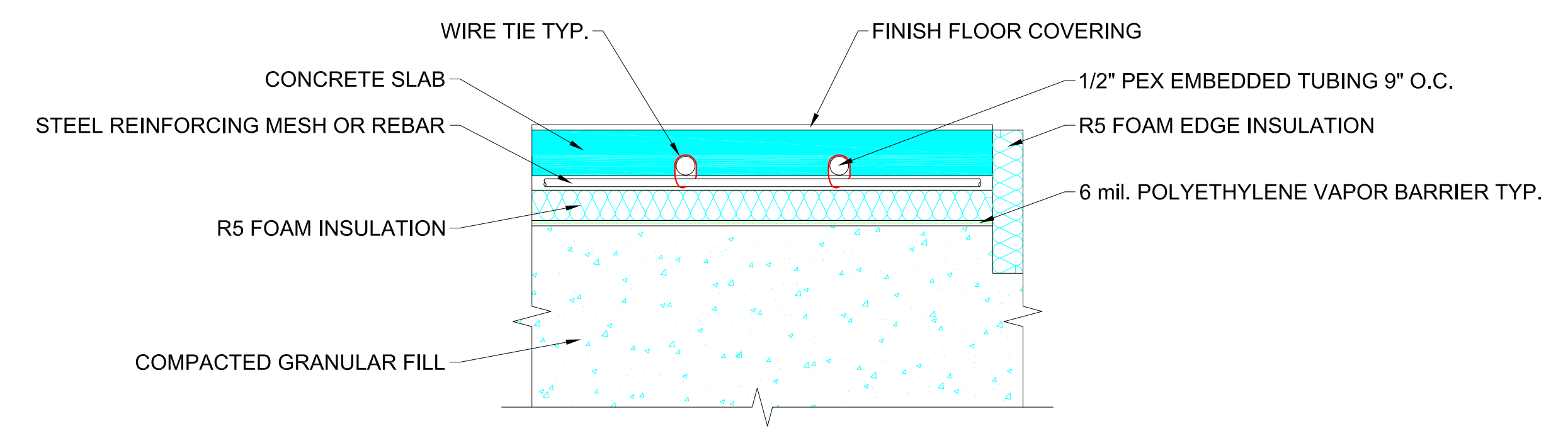
- ALL SLAB TUBING IS TO BE 1/2" BARRIER PEX 9" O.C.
- ALWAYS CONFIRM THESE SPECIFICATIONS MEET AND EXCEED LOCAL BUILDING CODES.
- MINOR FIELD MODIFICATION OF TUBING PLAN IS WELCOME AND TYPICAL. WHEN IN DOUBT CALL WARMBOARD CUSTOMER SERVICE.

QUESTIONS? FOR IMMEDIATE ASSISTANCE CALL: 1.800.556.0595 (8AM - 5PM PT)



LOWER FLOOR TUBING LAYOUT (SLAB - TUBING 9" O.C.)
 Scale: 1/4"=1'-0"

CONFIGURATION SHOWN IS CONCEPTUAL. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR EXACT CONFIGURATION AND DIMENSIONS.



EMBEDDED TUBING AND SLAB DETAIL
 Scale: NTS

**INTERNATIONAL MECHANICAL CODE
 SLAB ON GRADE INSTALLATION**

Radiant piping utilized in slab-on-grade applications shall be provided with insulating materials installed beneath the piping having a minimum R-value of 5.

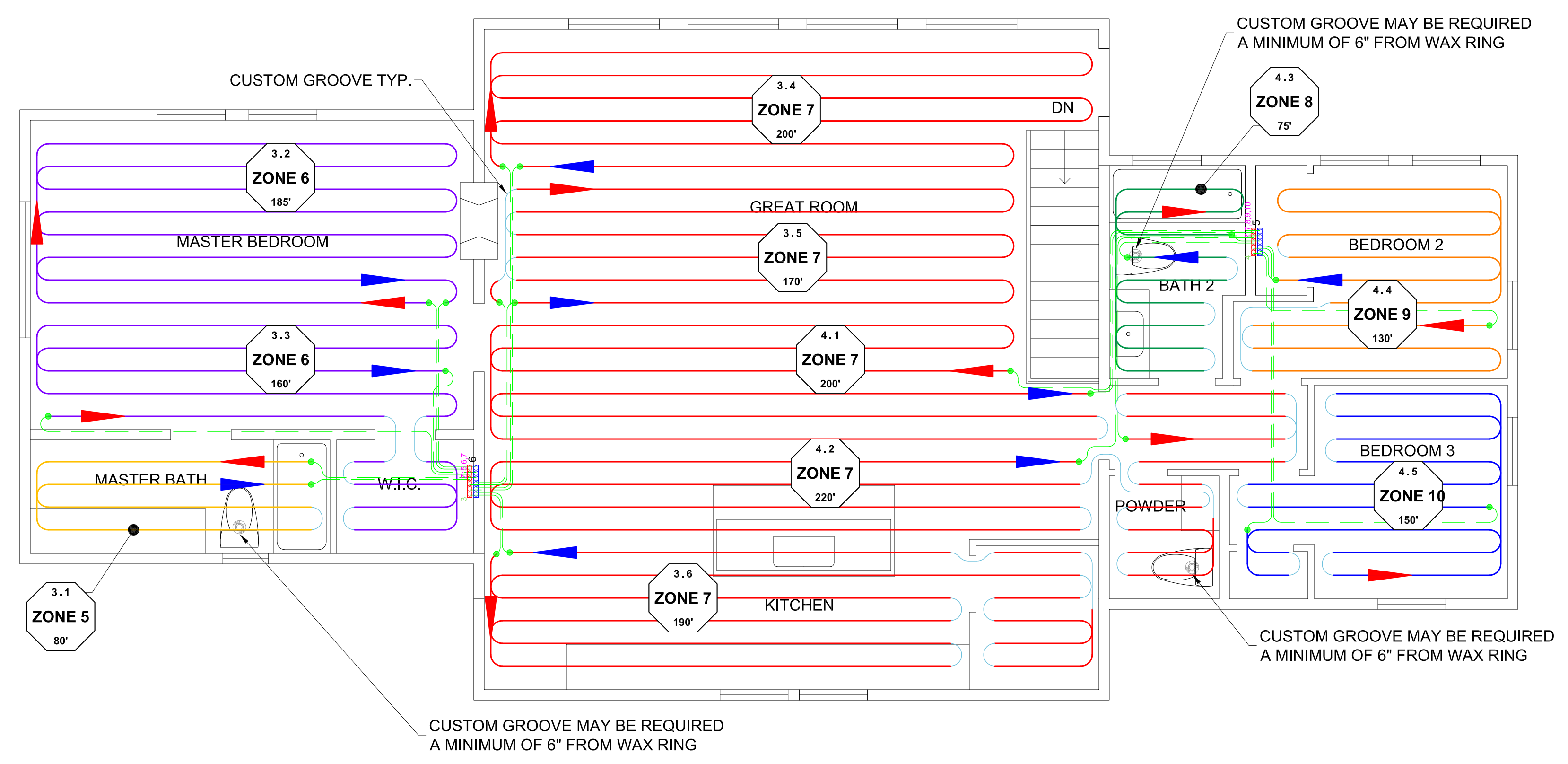
Other building departments may require additional insulation. Check with your local building department to meet code.

Note: Each zone corresponds to a single thermostat

WARMBOARD TUBING LEGEND	
TUBING	
MANIFOLD	LOOP
MANIFOLD #	LOOP #
LENGTH	ZONE
MANIFOLD	ZONES
PORTS	

LOOP SCHEDULE			
ZONE	MANIFOLD	LOOP	LENGTH
1	1	1	215'
1	1	2	260'
2	1	3	210'
2	1	4	245'
2	1	5	215'

2	2	1	200'
2	2	2	215'
3	2	3	90'
4	2	4	165'
4	2	5	160'
Total			1975'-0"



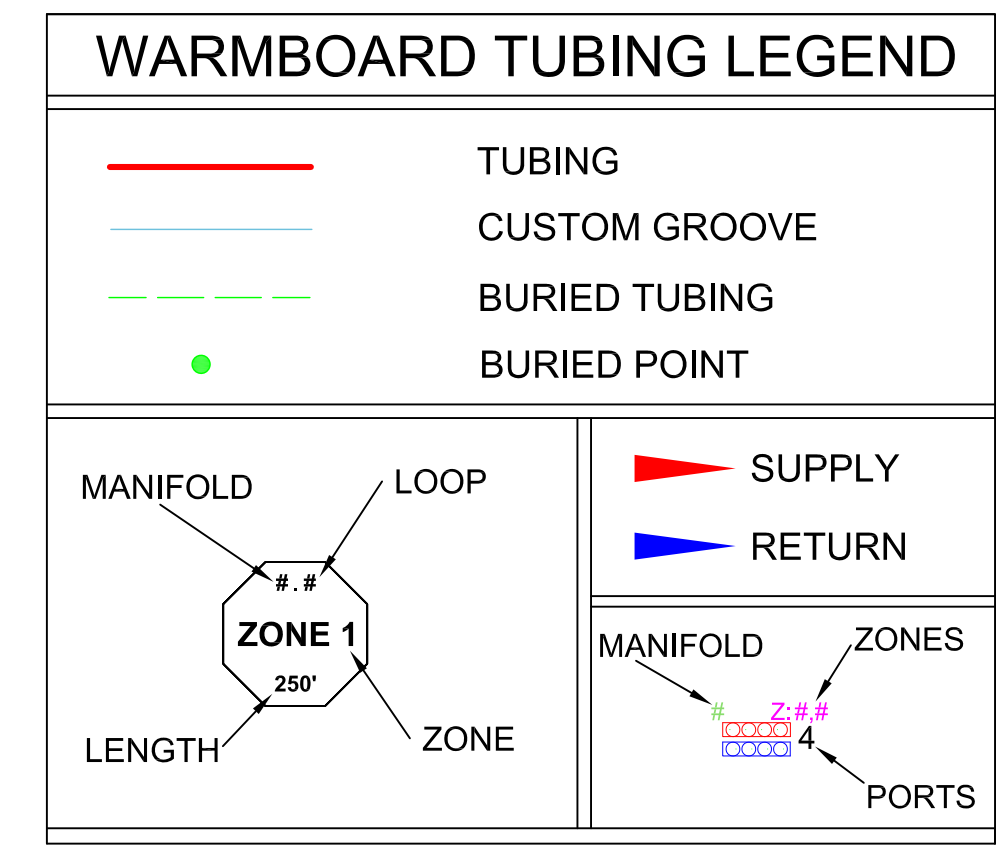
MAIN FLOOR TUBING LAYOUT

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

ESTIMATED CUSTOM ROUTES	
TURNS	50
TOTAL LINEAR LENGTH OF STRAIGHT ROUTES	19'

Note: Each zone corresponds to a single thermostat

LOOP SCHEDULE			
ZONE	MANIFOLD	LOOP	LENGTH
5	3	1	80'
6	3	2	185'
6	3	3	160'
7	3	4	200'
7	3	5	170'
7	3	6	190'
7	4	1	200'
7	4	2	220'
8	4	3	75'
9	4	4	130'
10	4	5	150'
Total			1760'-0"



- MANDATORY TUBING NOTES**
- USE ONLY WARMBOARD APPROVED TUBING. SEE INSTALLATION MANUAL
 - USE A 16 OZ. RUBBER Mallet TO SECURE TUBING INTO CHANNELS.
 - MINOR FIELD MODIFICATION OF TUBING PLAN IS WELCOME AND TYPICAL. WHEN IN DOUBT CALL WARMBOARD CUSTOMER SERVICE.
- QUESTIONS?** FOR IMMEDIATE ASSISTANCE CALL: 1.800.556.0595 (8AM - 5PM PT)

NOTE: TUBING IS REQUIRED TO BE INSTALLED AFTER WALLS ARE FRAMED

REVISIONS: BY:

WARMBOARD, INC.
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 SCOTT'S VALLEY, CALIFORNIA 95066
 1.800.556.0595
 WARMBOARD.COM



66 OPHIR ROAD
 JOB# 59721
 OPHIR, CO

TUBING LAYOUT

DATE: 01/19/2023
 SCALE: 1/4" = 1'
 DRAWN: N.M.W.
 REVIEWED: MSH
 SHEET:
WBM 2.1

WHEN IN DOUBT, ASK!

Please review all installation instructions. If there are any questions or need for technical assistance call: 1.800.556.0595

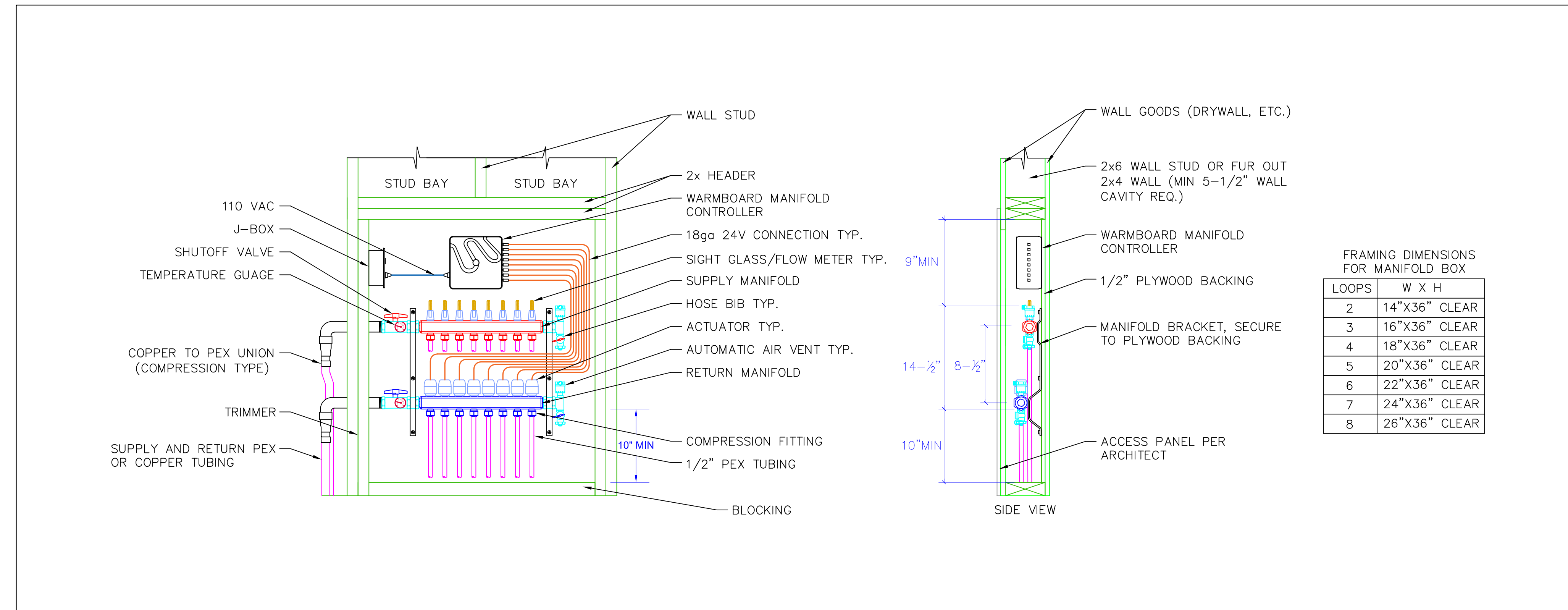
MANIFOLD & TUBING MATERIALS LIST

QTY	DESCRIPTION	NOTES
4	1000' X 1/2" AL PEX ROLL	(1.1,1.2,1.3,1.4) 930' (1.5,2.1,2.2,2.3,2.4) 885' (3.1,3.2,3.3,3.4,3.5,3.6) 985' (4.1,4.2,4.3,4.4,4.5) 775'
	500' X 1/2" AL PEX ROLL	
1	300' X 1/2" AL PEX ROLL	(2.5) 160'
	SINGLE SUPPLY & RETURN	
	2 PORT SUPPLY & RETURN MANIFOLD KIT	
	3 PORT SUPPLY & RETURN MANIFOLD KIT	
	4 PORT SUPPLY & RETURN MANIFOLD KIT	
3	5 PORT SUPPLY & RETURN MANIFOLD KIT	
1	6 PORT SUPPLY & RETURN MANIFOLD KIT	
	7 PORT SUPPLY & RETURN MANIFOLD KIT	
	8 PORT SUPPLY & RETURN MANIFOLD KIT	
42	1/2" COMPRESSION FITTINGS	
21	24 VOLT ACTUATORS	

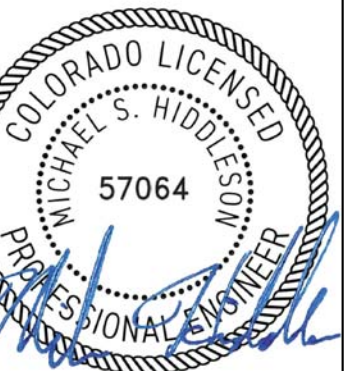
Materials above to be provided by Warmboard.

MANIFOLD INSTALLATION

SCALE: NONE



REVISIONS: BY:



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66 OPHIR ROAD
JOB# 59721
OPHIR, CO

**TUBING/
MANIFOLDS**

DATE: 01/19/2023
SCALE: NTS
DRAWN: N.M.W.
REVIEWED: MSH
SHEET:

WBM 2.2

WARMBOARD MANIFOLD LAYOUT

INSTALLING CONTRACTOR

INSTALLATION OF THE BOILER IS TO BE DONE BY A LICENSED PLUMBER OR LICENSED CONTRACTOR ONLY.

INSTALLING CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT THE MATERIALS AND INSTALLATION OF THE SYSTEM MEETS OR EXCEEDS ALL STATE AND LOCAL CODE REQUIREMENTS.

LOCATION OF BOILER

- ALL GAS FIRED HIGH EFFICIENCY APPLIANCES DO CREATE A MINOR LEVEL OF COMBUSTION NOISE.
- FOR HOMEOWNERS WHO MAY BE SENSITIVE TO MINOR COMBUSTION NOISE, GARAGES AND BASEMENTS ARE BEST LOCATIONS FOR THE BOILER.

MANIFOLD DISTRIBUTION

ALL MANIFOLD DISTRIBUTION LINES ARE TO BE TYPE L OR M COPPER PIPE, OR PEX TUBING.

TUBING

- DO NOT MAKE ANY LOOP LONGER THAN EXISTING LONGEST LOOP THAT IS DRAWN ON THE WARMBOARD PLANS.
- PRESSURE TEST ALL TUBING LOOPS USING AIR WITH 60 PSI DURING CONSTRUCTION, AND AT LEAST FOR 24 HOURS BEFORE INSTALLING FINISH FLOOR.

RADIANT DESIGN SUMMARY

PROJECT INFORMATION

Project #: 59721 Warmsource Spec (Btu/hr): 68,000
 Project Name: 66 OPHIR ROAD Fuel Type: Electric
 Project Location: OPHIR, CO Pump: Taco

PROJECT SUMMARY

Conditioned Floor Area (ft²): 3,124 Total Number Loops: 21
 Minimum Tubing Required (ft): 3,735 Total Number Manifolds: 4
 Total Flowrate (USGPM): 6.4 Total Number Zones: 10
 Maximum Head Loss (ft (H₂O)): 8.8 Proj. Heating Load (Btu/hr): 59,240
 Fluid Type: 30% Glycol Design ΔT (°F): 20

CLIMATE ASSUMPTIONS

- 9 °F Outside design temperature
- 70 °F Indoor design temperature (Garages could be less)
- 9,690 ft. site altitude

NOTES

- Max surface temperature of finish floor not to exceed 85 °F.

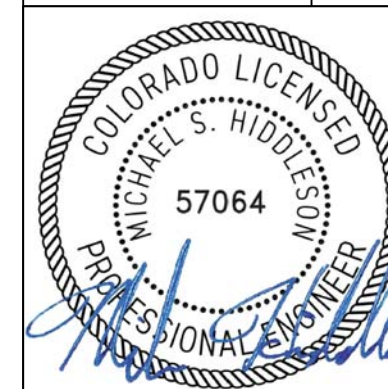
RADIANT DESIGN VALUES

- Minimum Wall R Value: 23
- Minimum Block Wall R Value: 15
- Minimum Window U Value: 0.3
- Minimum Skylight U Value: N/A
- Minimum Exterior Door R Value: 2
- Minimum Ceiling R Value: 49
- Minimum Slab R Value: 10
- Minimum Floor R Value: 30
- Supplemental Heat: None Required
- Typical New Construction: Natural Air Changes per Hour (ACHnat) of 0.5

RADIANT DESIGN DATA

Room/Floor/Level	Zone	Thermostat Type	Manifold	Loop #	Loop Length (ft)	Est. Flow Rate (USGPM)	Supplemental Heat Suggested (≥30 Btu/hr/ft ²) (Btu/hr)
Garage	1	Heating	1	1	215	0.2	0
				2	260	0.3	
Family Room	2	Heating		3	210	0.2	0
				4	245	0.3	
				5	215	0.2	
Family Room	2		2	1	200	0.2	0
				2	215	0.2	
Bath 1	3	Heating		3	90	0.2	0
Bedroom 1	4	Heating		4	165	0.2	0
				5	160	0.2	
Master Bath	5	Warming	3	1	80	0.2	0
Master Bedroom	6	Heating		2	185	0.4	0
				3	160	0.4	
Great Room	7	Heating		4	200	0.5	0
				5	170	0.4	
Kitchen				6	190	0.4	0
Great Room	7		4	1	200	0.5	0
Kitchen				2	220	0.5	0
Bath 2	8	Heating		3	75	0.2	0
Bedroom 2	9	Heating		4	130	0.3	0
Bedroom 3	10	Heating		5	150	0.4	0

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DESIGN SUMMARY

DATE: 01/19/2023

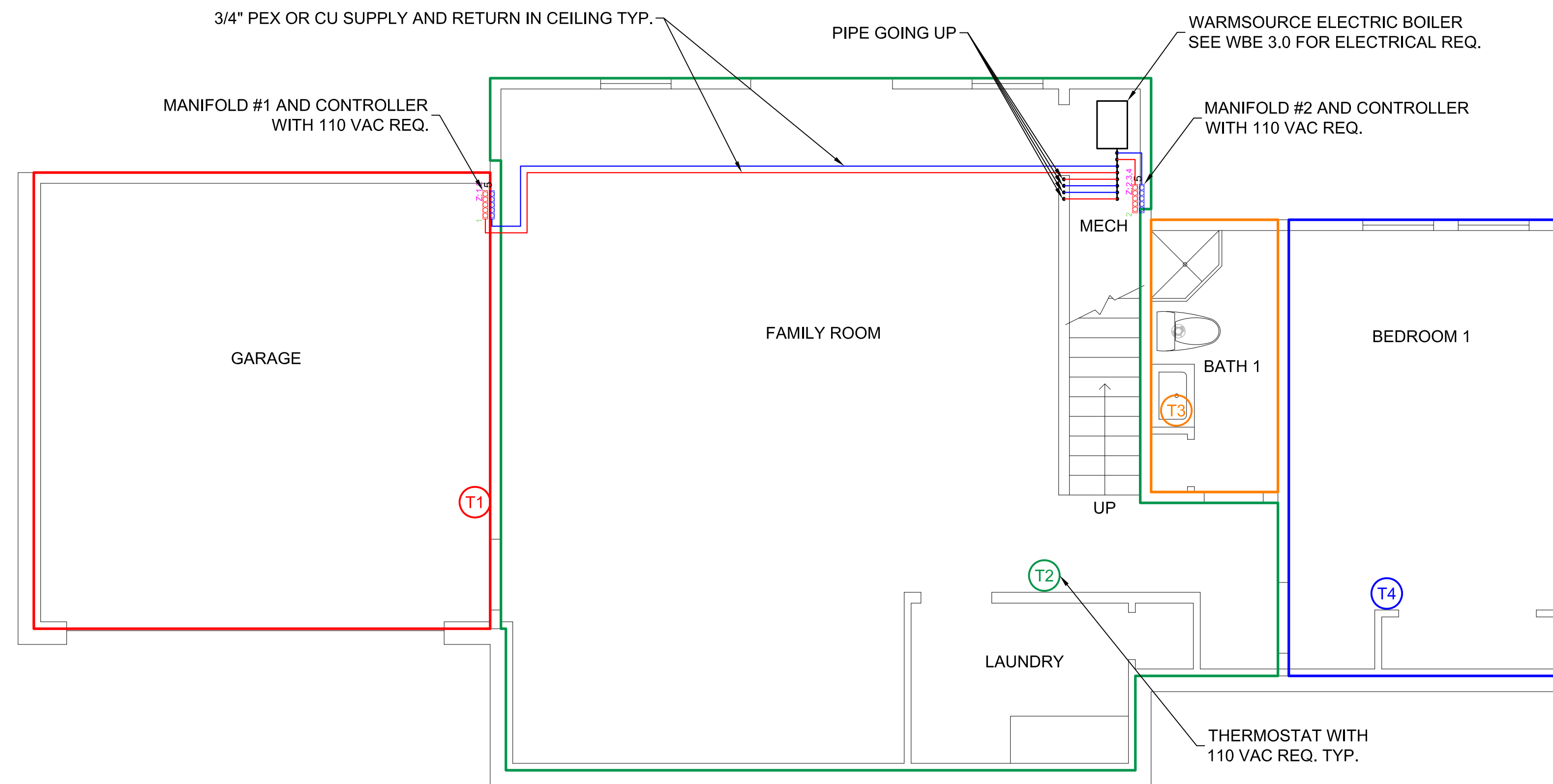
SCALE:

DRAWN: N.M.W.

REVIEWED: MSH

SHEET:

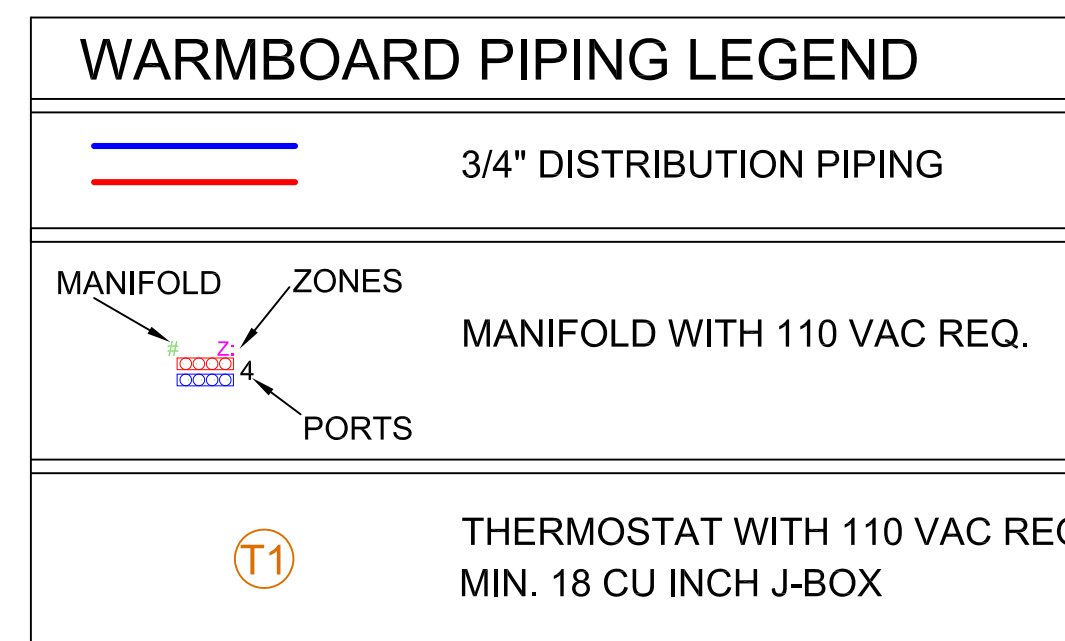
WBM 2.3



LOWER FLOOR PIPING AND CONTROLS LAYOUT:

- MANIFOLDS
- DISTRIBUTION LINES
- THERMOSTATS

3/4" PEX OR COPPER PIPING SCHEDULE	
MANIFOLD	LENGTH (FT) (S/R 2-WAY)
1	80'
2	25'
3	104'
4	85'
TOTAL	294'



NOTES

1. INSULATE ALL PEX/COPPER PIPING
2. PRESSURE TEST ALL DISTRIBUTION LINES

QUESTIONS? FOR IMMEDIATE ASSISTANCE
CALL: 1.800.556.0595 (8AM - 5PM PT)

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OPHIR, CO

PIPING LAYOUT

DATE: 01/19/2023
SCALE: 1/4" = 1'
DRAWN: N.M.W.
REVIEWED: MSH
SHEET:
WBM 2.4

REVISIONS:	BY:



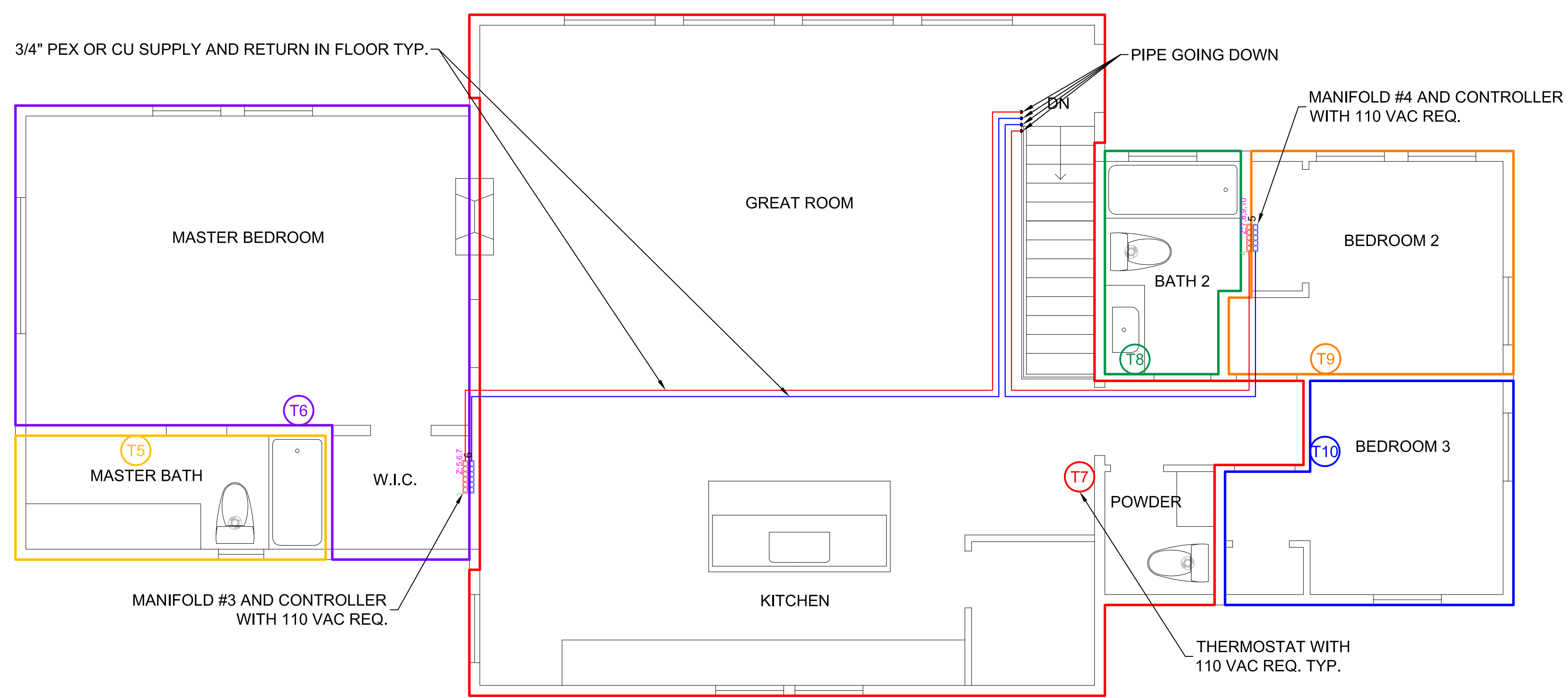
WARMBOARD, INC.
 100 ENTERPRISE WAY, SUITE G300
 SCOTT'S VALLEY, CALIFORNIA 95066
 1.800.556.0595
 WARMBOARD.COM



66 OPHIR ROAD
 JOB# 59721
 OPHIR, CO

PIPING LAYOUT

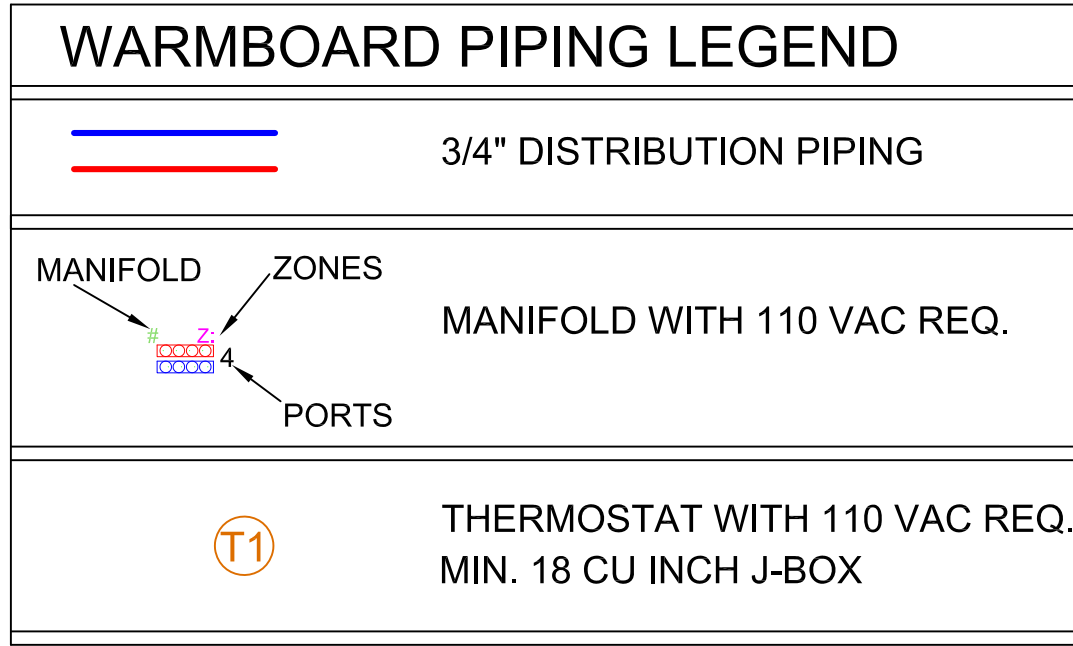
DATE: 01/19/2023
 SCALE: 1/4" = 1'
 DRAWN: N.M.W.
 REVIEWED: MSH
 SHEET:
WBM 2.5



MAIN FLOOR PIPING AND CONTROLS LAYOUT:

- MANIFOLDS
- DISTRIBUTION LINES
- THERMOSTATS

3/4" PEX OR COPPER PIPING SCHEDULE	
MANIFOLD	LENGTH (FT) (S/R 2-WAY)
1	80'
2	25'
3	104'
4	85'
TOTAL	294'



NOTES

1. INSULATE ALL PEX/COPPER PIPING
2. PRESSURE TEST ALL DISTRIBUTION LINES

QUESTIONS? FOR IMMEDIATE ASSISTANCE
 CALL: 1.800.556.0595 (8AM - 5PM PT)

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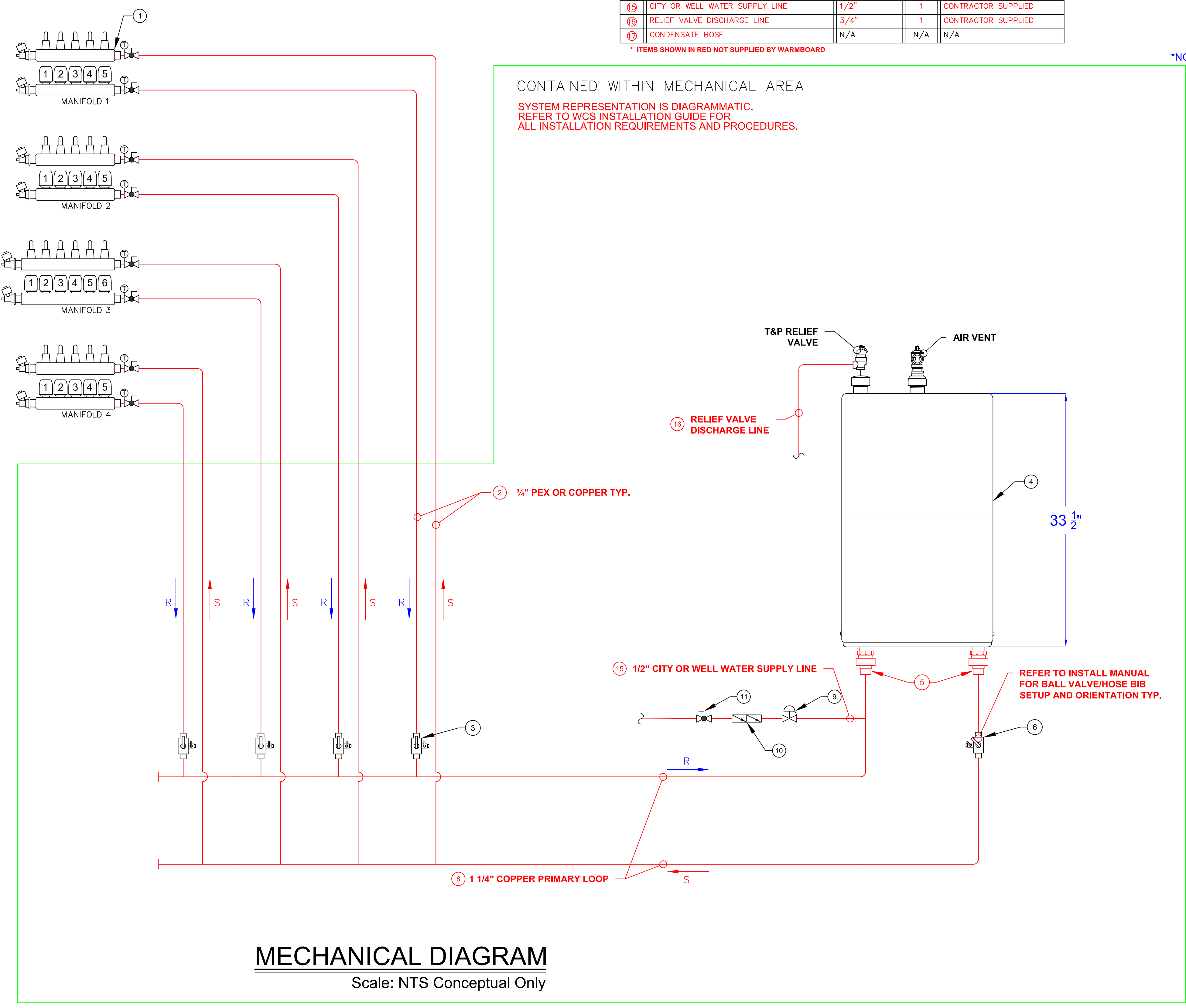
**MECHANICAL
 DIAGRAM**

DATE:	01/19/2023
SCALE:	NTS
DRAWN:	N.M.W.
REVIEWED:	MSH
SHEET:	WBM 2.5

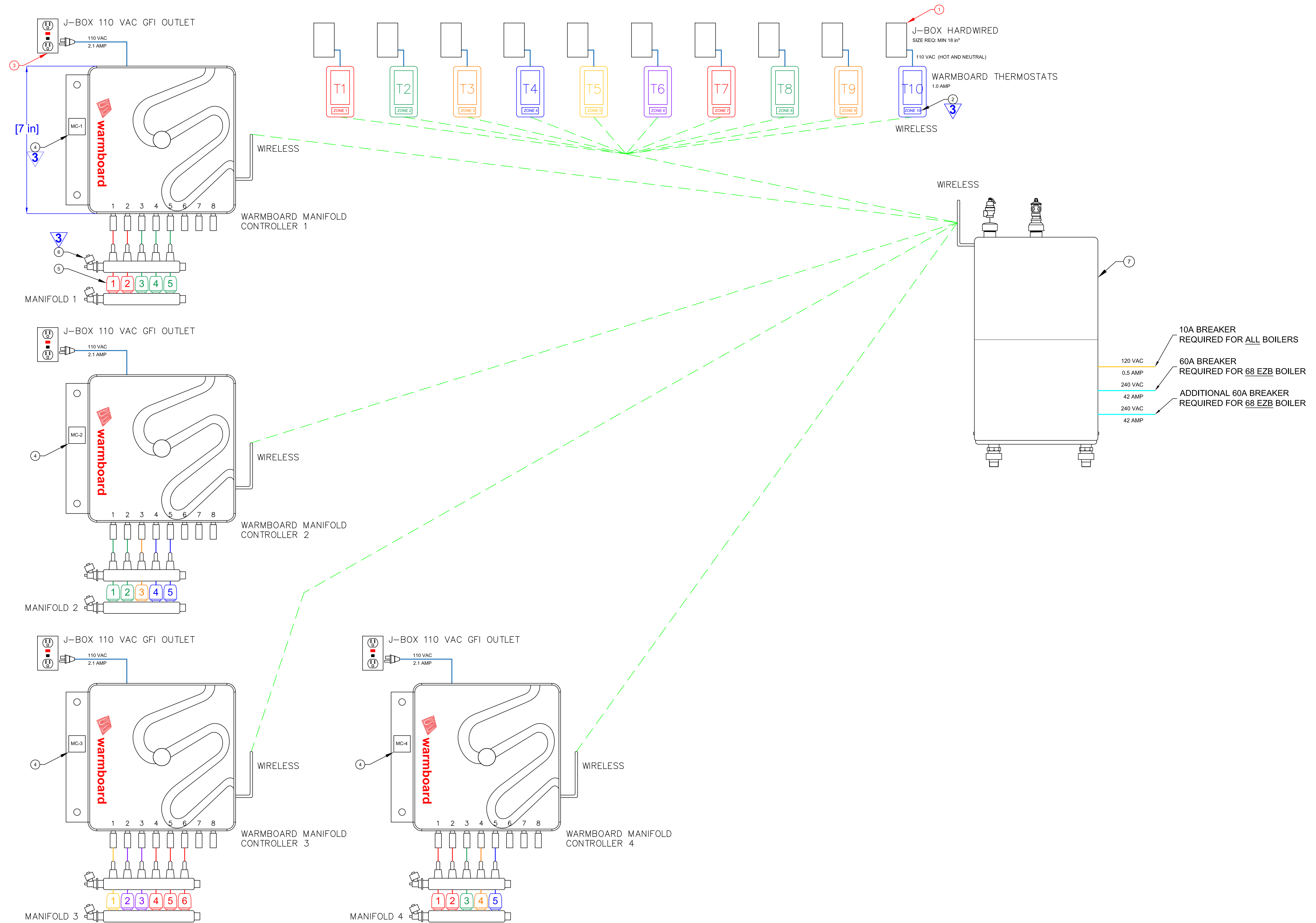
SYSTEM COMPONENTS				
ITEM	COMPONENT	SIZE	QTY	SUPPLIER
①	WARMBOARD SUPPLY/RETURN MANIFOLD TYP.		4	WARMBOARD
②	COPPER OR PEX SUPPLY/RETURN LINES TYP.	3/4"	294'	CONTRACTOR SUPPLIED
③	BALL VALVE/HOSE BIB COMBO	3/4"	4	WARMBOARD
④	WARMSOURCE UNIT (Electric Boiler)	68 EZB	1	WARMBOARD
⑤	BRASS UNION	1 1/4"	2	CONTRACTOR SUPPLIED
⑥	BALL VALVE/HOSE BIB COMBO	1 1/4"	1	WARMBOARD
⑦	CONDENSATE NEUTRALIZER	N/A	N/A	N/A
⑧	COPPER PRIMARY LOOP PIPES	1 1/4"	N/A	CONTRACTOR SUPPLIED
⑨	PRESSURE REDUCING VALVE	1/2"	1	WARMBOARD
⑩	DUAL CHECK BACKFLOW PREVENTER	1/2"	1	WARMBOARD
⑪	BALL VALVE	1/2"	1	WARMBOARD
⑫	PVC INTAKE/EXHAUST	N/A	N/A	N/A
⑬	CONDENSATE DRAIN LINE	N/A	N/A	N/A
⑭	GAS LINE	N/A	N/A	N/A
⑮	CITY OR WELL WATER SUPPLY LINE	1/2"	1	CONTRACTOR SUPPLIED
⑯	RELIEF VALVE DISCHARGE LINE	3/4"	1	CONTRACTOR SUPPLIED
⑰	CONDENSATE HOSE	N/A	N/A	N/A

* ITEMS SHOWN IN RED NOT SUPPLIED BY WARMBOARD

*NOT TO SCALE.



**IMPORTANT DESIGN NOTE:
 WARMBOARD INC.
 REQUIRES 30% PROPYLENE
 GLYCOL BE USED IN THIS
 HEATING SYSTEM FOR
 FREEZE PROTECTION.
 IF THIS RADIANT SYSTEM
 DOES NOT CONTAIN
 FREEZE PROTECTION
 WARMBOARD INC. CANNOT
 ASSUME RESPONSIBILITY.**



WIRING LEGEND

- 110 VAC
- 24 VAC
- Wireless SIGNAL

SYSTEM COMPONENTS

ITEM	COMPONENT	SIZE	QTY	SUPPLIER
①	THERMOSTAT J-BOX TYP. (18 cubic in.)		10	FIELD SUPPLIED
②	WARMBOARD THERMOSTAT TYP.		10	WARMBOARD
③	GFI OUTLET TYP. (PER LOCAL CODE)		5	FIELD SUPPLIED
④	WARMBOARD MANIFOLD CONTROLLER		4	WARMBOARD
⑤	WARMBOARD 4-WIRE THERMAL ACTUATOR TYP.		21	WARMBOARD
⑥	WARMBOARD SUPPLY/RETURN MANIFOLD TYP.		4	WARMBOARD
⑦	WARMSOURCE UNIT (Electric Boiler)		1	WARMBOARD

* ITEMS SHOWN IN RED NOT SUPPLIED BY WARMBOARD

- NOTES**
- FOR MANIFOLD INSTALLATION DETAILS, REFER TO PAGE WB 2.0
 - DEDICATED CIRCUITS ARE NOT REQUIRED
- IT IS CRITICAL THAT MANIFOLD, THERMOSTAT (ZONE), AND LOOP NUMBERS CORRESPOND CORRECTLY TO TUBING LAYOUT PAGES

CONTROLS DIAGRAM
Scale: NTS Conceptual Only

REVISIONS: BY:



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CONTROLS DIAGRAM

DATE: 01/19/2023
SCALE: NTS
DRAWN: N.M.W.
REVIEWED: MSH
SHEET:
WBE 3.0