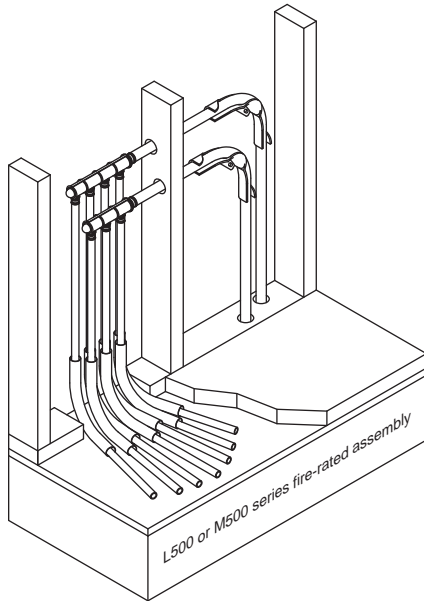


**CEYDC.R25563
Nonmetallic Plumbing System Components Listed for Fire Resistance**

HEATLINK GROUP INC R25563
4603E 13TH ST NE
CALGARY, AB T2E 6M3 CANADA

Types Purelink PEXa, Heatlink PEXa and Purelink Plus nonmetallic tubing for use in Design Nos. J900, M516, W316 and W458.

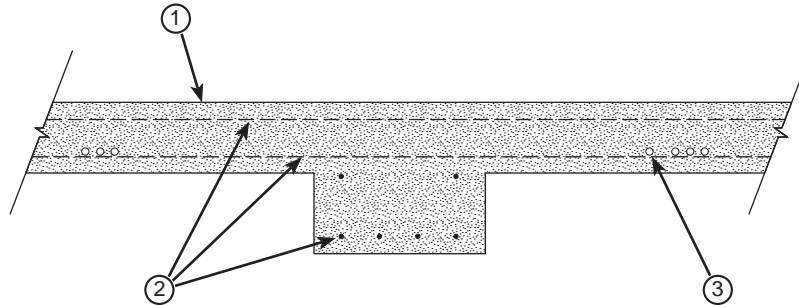


As an option, Purelink PEXa, Heatlink PEXa and Purelink Plus nonmetallic tubing covered with Classified Floor Topping Mixtures or other concrete toppings may be installed over the required floor system components in L500 and M500 series designs.

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of ULC Listed products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by ULC for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear ULC's Mark are considered Listed.

Design No. J900
BXUVC.J900
May 01, 2017
Restrained Assembly Rating — 2 h
Unrestrained Assembly Rating — 1-1/2 and 2 h (See Item 1)



1. **Normal Weight Reinforced Concrete** — Reinforced slab and beam designed in accordance with the current edition of CSA A23.3, Design of Concrete Structures. Carbonate aggregate, minimum compressive strength of 25 MPa. Minimum slab thickness and reinforcement cover specified in the table below:

Restrained Assembly Rating, h	Unrestrained Assembly Rating, h	Min Total Slab Thickness, mm	Min Concrete Cover for Positive Reinforcement, mm
2	2	150	38

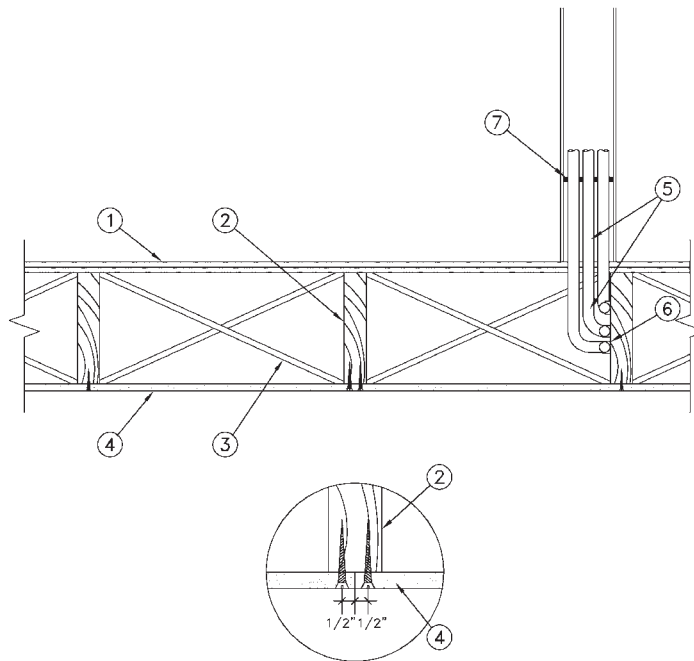
2. **Steel Reinforcement** — Various sized Grade 280 and Grade 420 deformed steel bars located as required by CSA A23.3 for positive and negative reinforcement. Minimum concrete cover for positive reinforcement as described in Item 1.

• 3. **Non-Metallic Plumbing Components (CEYDC)** — Nominal 12.7 mm through 50.8 mm O.D. tubing, evenly distributed and tied to the top side of the positive reinforcing bars. The tubing may be placed inside a flexible or rigid polyethelene or rigid PVC sleeve. The tubing may penetrate the floor slab through a sill plate and into a stud cavity of a wall as necessary. Tube bends may be supported by suitably sized PVC elbows. The maximum amount of tubing shall be as specified in the table below:

Restrained Assembly Rating, h	Unrestrained Assembly Rating, h	Max. volume of tube per cubic metre of concrete, %
2	2	0.925

HEATLINK GROUP INC — Types Purelink PEXa, Heatlink PEXa, PureLink Plus

**Design No. M516
BXUVC.M516
May 01, 2017
Unrestrained Assembly Rating - 1 h**



**Combustible Construction
(Finish Rating - 27 minutes)**

1. **Flooring System** — The flooring system shall consist of one of the following:

(a) **Subflooring** — Minimum 12 mm thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered.

(b) **Vapor Barrier** — Nominal 0.25 mm thick commercial rosin-sized building paper.

(c) **Finish Flooring** — Minimum 15 mm thick plywood, minimum grade "Underlayment" or "Single Floor". Face grain of plywood to be perpendicular to the joists with joints staggered.

2. **Wood Joists** — Minimum 38 mm by 235 mm, spaced 406 mm OC and effectively firestopped in accordance with the Building Code.

3. **Cross Bridging** — Minimum 19 mm by 64 mm or minimum 38 mm by 235 mm solid blocking.

• 4. **Gypsum Board** — (CKNXC). 15.9 mm thick, 1220 mm wide gypsum board installed with long dimension perpendicular to joists with end joints located under bottom of joists. End joints in adjacent rows shall be staggered on adjacent joists. Gypsum board secured with 8d cement coated common nails spaced 150 mm OC along the edges and in the field. Nails located 13 mm from butted end joints.

CGC INC — Types C, AR, WRC.

• **5. Non-Metallic Plumbing Components** — (CEYDC). Nominal 6mm, 10 mm, 13mm, 16mm, 19mm, 25 mm, 32 mm, 38 mm and 50 diameter tubing attached to joists with plastic, steel or copper hangers (Item 6), spaced maximum 1015 mm OC. The minimum spacing between the bottom of tubing and the top or backside of the gypsum board shall be 75 mm. The tubing shall penetrate the floor through a sill plate and into a stud cavity of a wall. The maximum amount of tubing shall be 0.31 kg of tube per meter length of joist cavity.

HEATLINK GROUP INC — Types Purelink PEXa, Heatlink PEXa, Purelink Plus

6. **Fasteners** — Nominal 12 mm to 25 mm wide perforated steel or copper straps, or steel or copper U or C shaped brackets with a radius conforming to the outer circumference of the tube to be supported. Plastic fastener supplied by tubing manufacturer may also be used. Fasteners to be nailed to the wood joists using minimum 25 mm long nails.

• **7. Fill Void or Cavity Material - Sealant** — (XHJZC). Minimum 10 mm thickness of fill material applied within the annulus, flush with top surface of the sill plate. Prior to the application of the sealant, 10 mm thickness of 64 kg/m³ mineral wool insulation shall be installed in the annular space and recessed by 10 mm from the top surface of the sill plate. Maximum annular space between tube and edge of opening shall be 6 mm. Tubing (Item 5) intended as a process or supply plumbing component.

3M COMPANY 3M FIRE PROTECTION PRODUCTS — Type CP 25W+.

8. **Finishing System** — (Not shown) — Joint compound, applied in two coats to joints and nail-heads. Nominal 50 mm wide paper tape embedded in first layer of compound over all joints.

**Design No. W458
BXUVC.W458
May 01, 2017
Assembly Rating — 1 h**

1. **Floor and Ceiling Runners** — (not shown) - Channel shaped runners, minimum 92 mm. wide with 32 mm legs, formed from minimum 0.838 mm thick (20 MSG) galvanized steel, attached to floor and ceiling with fasteners spaced maximum 600 mm OC.

2. **Steel Studs** — Channel shaped, minimum 92 mm wide, 32 mm legs, 5 mm folded back returns, formed from minimum 0.838 mm thick (20 MSG) galvanized steel spaced maximum 600 mm OC.

3. **Batts and Blankets** — (Optional, Not shown) - ULC listed mineral wool or glass fibre batts partially or completely filling stud cavity.

• 4. **Gypsum Board** — (CKNXC). 15.9 mm thick, 1220 mm wide, attached to steel studs and floor and ceiling track with 25 mm long, Type S steel screws spaced 204 mm OC. along edges of board and 305 mm OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly.

CGC INC — Types C, AR, WRC, SECUROCK FIRECODE X, Type USGX.

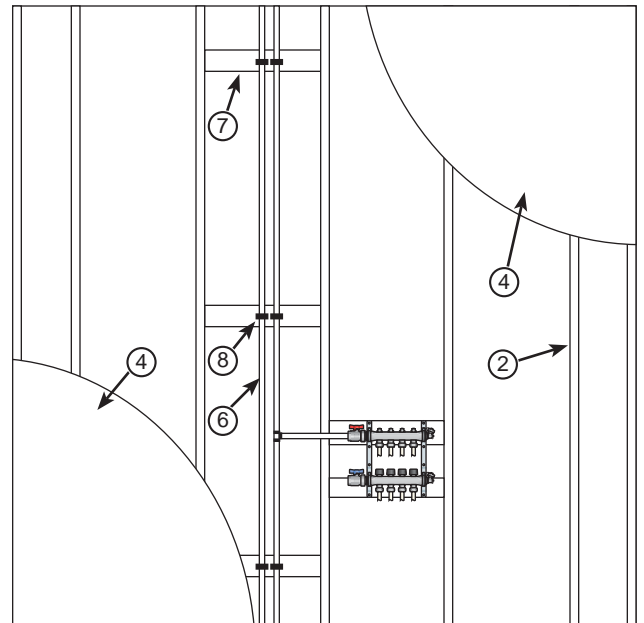
5. **Joint Tape and Compound** — (Not Shown)- Joint compound applied in two coats to joints and screw heads; paper tape, 50 mm wide, embedded in first layer of compound over all joints.

• 6. **Non-Metallic Plumbing System Components** — (CEYDC) Nominal 6mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm, 32 mm, 38 mm and 50 mm diameter tubing attached to cross bracing (item 7) with plastic, steel or copper fasteners (Item 8). The tubing may be connected to standard copper or brass-plumbing components, tees, bend supports and manifolds within the cavity. Plastic manifolds, with a weight not exceeding 2.13 kg per cavity may be used in lieu of or in addition to copper or brass manifolds. The maximum amount of tubing per stud cavity shall be 0.7 kg/m and shall not exceed a total weight of 2.13 kg per stud cavity.

HEATLINK GROUP INC — Types Purelink PEXa, Heatlink PEXa, Purelink Plus

7. **Bracing** — Minimum 0.838 mm thick (20 MSG) galvanized steel, minimum 92 mm wide, 32 mm legs, 5 mm folded back returns, or 38 mm by 89 mm lumber cut to fit within the stud cavity. The maximum spacing between bracing in cavities that contain tubing shall be 1015 mm OC. The bracing shall be screw attached to the studs using two standard 25 mm long Type S screws at each end of bracing member.

8. **Fasteners** — Standard copper, brass, steel or plastic plumbing fasteners. The fasteners shall be screw attached to the bracing using a minimum 22 mm long screw.



Nonbearing Wall

Design No. W316
BXUVC.W316
May 01, 2017
Assembly Rating - 1 Hr

1. **Wood Studs** — Nominal 38 mm by 89 mm spaced 406 mm on center, effectively cross braced at mid-height and fire stopped at top and bottom.

2. **Batts and Blankets** — (Optional, Not shown) - ULC listed mineral wool or glass fibre batts partially or completely filling stud cavity.

• 3. **Gypsum Board** — (CKNXC). 15.9 mm thick wall-board applied vertically. Wallboard nailed 175 mm OC with 6d cement coated nails 48 mm long, 2.5 mm shank diameter and 6 mm diameter heads.

CGC INC — Type C, AR, WRC, SECUROCK FIRECODE X, Type USGX

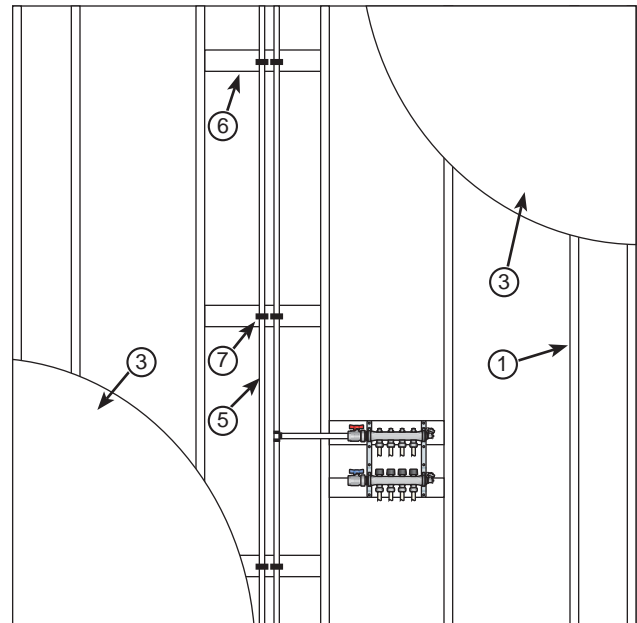
4. **Joint Tape and Compound** — (Not Shown). Joint compound, applied in two coats to joints and nails heads; paper tape, 50 mm wide, embedded in first layer of compound over all joints.

• 5. **Non-Metallic Plumbing System Components** — (CEYDC). Nominal 6mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm, 32 mm, 38 mm and 50 mm diameter tubing attached to cross bracing (Item 6) with plastic, steel or copper fasteners (Item 7). The tubing may be connected to standard copper or brass-plumbing components, tees, bend supports and manifolds within the cavity. Plastic manifolds, with a weight not exceeding 2.13 kg per cavity may be used in lieu of or in addition to copper or brass manifolds. The maximum amount of tubing per stud cavity shall be 0.83 kg/m and shall not exceed a total weight of 2.54 kg per stud cavity.

HEATLINK GROUP INC — Types Purelink PEXa, Heatlink PEXa, Purelink Plus

6. **Bracing** — Nominal 38 mm by 89 mm lumber cut to fit within the stud cavity. The maximum spacing between bracing in cavities that contain tubing shall be 1015 mm OC. The bracing shall be screw attached to the studs using standard 25 mm long Type S screws or nailed with nails suitable for wood framing construction.

7. **Fasteners** — Standard copper, brass, steel or plastic plumbing fasteners. The fasteners shall be screw attached to the bracing using a minimum 22 mm long screw.



Bearing Wall - (Finish Rating — 23 Min)