a

Adobe Brick
: An unfired, sun-dried brick made from adobe, clay, and straw.

Aerated Concrete
: Concrete with air bubbles incorporated into the mix, making it relatively lightweight.

Aggregate Base
: Inert filler material made up of sand, stone, or gravel, which is used to strengthen cement and form concrete. New pour applications for radiant heat or heated driveways often use an aggregate base.

Air Duct
: A large, thin-walled conduit, usually sheet metal or fiberglass, used for directing the passage of air through buildings in a traditional HVAC system. Radiant heating systems can often eliminate the need for air ducts for heating. Air ducts may still be needed for a cooling system in a home(...)

Air Elimination Vent
: Device which automatically eliminates trapped air in the "closed-loop" hydronic system.

Air Expansion Tank
: A tank which provides an air cushion for pressure build-up in a closed system as the water is heated. It helps to maintain the system pressure at a constant level when the system is operating.

Air Pocket
: A void where a poured commodity, such as concrete or insulating foam, has failed to flow evenly and fill the space as it should. This is particularly important when pouring concrete around electric radiant heating cables. Radiant heating cables need to be completely encased in concrete to act(...)

Air Relief Valve
: A valve to vent air out of a water system such as a hydronic radiant heating system.

Alternating Current (AC)
: An electrical current that reverses its direction at regularly recurring intervals. Electric radiant heating systems, depending on their design, can be either AC or DC systems.

Ambient Sensor
: A sensor that will measure the ambient temperature. Can be used as a trigger to turn on a Radiant Heat System.

Ambient Temperature
: The temperature of the air in a location. Radiant heating systems can be designed to work from an ambient or floor temperature.

American National Standards Institute (ANSI)
: The sponsor/publisher of many standards used in industry.

American Wire Gauge (AWG)

A series of numbers used to identify the diameters of electrical wire manufactured in the U.S. This standard can apply for stranded or non-stranded varieties.

Amperage

A measured amount of electrical current expressed in amps. Radiant snow melting systems require a large amount of amperage and should be considered in the design phase of any project. Snow melting systems generally require about 10-12 amps per 100 square feet of snow melting.

Ampere (amp)

A unit of electrical current, analogous to the amount of flow in a hydraulic circuit measured in gallons per minute.

Anchor

A sturdy attachment point. An anchor may refer to a cable clip with a nail that secures an electric snow melting cable to asphalt or a hot glue bead on an interior basement floor prior to a self-leveling compound application.

Apron

A section of pavement or concrete outside the entrance to a building or residence such as a loading dock or approach to a road.

Aquastat

A temperature-sensing device on the boiler which controls the water temperature that is supplied to the radiant panel.

Architect

A person trained in building design and building strength analysis who uses that knowledge to design structures.

Architects Scale

A type of ruler that shows smaller units representing feet, such as 1/2" or 1/4" equals 1 foot. The units are used so that all building measurements will be of equal proportions to the actual measurements, but on a smaller size scale for the drawings. This gives the architect an accurate(...)

Architectural Drawings

Floor plans with the foundation details; the wall, floor, ceiling, and roof construction details; door, window and partition locations; and sketches of the proposed exterior face of the building.

Area

The surface measure of a defined shape expressed in square units, such as square feet; 2) A defined space; 3) A building site; 4) Land around a building. The Net Area for radiant heating design refers to the total heatable area. A bathroom, for example, refers to the floor space minus the(...)

Asphalt

A black, thick, hydrocarbon (bituminous) substance found in the earth naturally and manmade as a by-product of oil refining. It is commonly used for waterproofing and paving.

Automatic Air Vent

See: Air Elimination Vent

Automatic Sensor

A self-regulating device, such as a snow sensor, that detects precipitation and temperature and activates a snow melting system during storms to clear a driveway or walkway.

b

Backerboard
: A gypsum wallboard designed to be the first layer in a multiple-layer wall system or the base layer to which acoustical ceiling tile is applied. Backerboard is also referred to as backing board, cement board, or Hardibacker board. Backerboard is recommended for under tile projects using(...)

Base Material
: Material used in paving to compensate for ground swell, provide drainage, and to support brick pavers. Base material might be gravel, concrete, or asphalt. Radiant heating cables for snowmelt systems are often installed on the base material for asphalt and brick paver projects.

Baseboard, Radiant
: A system of using the hydronic method of radiant heating that is often used to augment heat in an area where the floor coverings have already been installed. Often used in remodeling projects.

Basement
: The lowermost portion of a building, located partially or completely below ground level. Basements are a prime candidate for radiant heating because of the inherently cold floors and ineffective forced air heating systems.

Bidet
: A bidet bathroom fixture is a sit-down wash basin, similar to a toilet, that features a nozzle or spigot which is used for cleansing the genital and perineal areas. Bidets are especially common in Europe and Asia, but are gaining popularity in Northern America.

Binder
: An additive, usually starch, used to increase cohesion in the gypsum core of wallboard. A binder coat also refers to a thinset mortar to bind tile to the backerboard.

Blacktop
: Asphalt paving.

BlueHeat
: BlueHeat is a ” cable that is used for interior heating projects and exterior snow melting applications. Due to its durability and thickness, it is preferable to incorporate this product during new construction. BlueHeat is often installed in new pour concrete but can also be used in asphalt(...)

Boiler
: An appliance used to heat water for radiant panel and domestic hot water heating systems. Sometimes referred to as a hot water heater, it differs dramatically from the common domestic hot water heater used to heat service water. This is a somewhat antiquated term in the context of radiant heat(...)

BTU

Abbreviation for "British Thermal Unit." It is a traditional measurement for the amount of heat needed to raise one pound of water 1□F from a starting point of 39.2□F. BTUH stands for British Thermal Unit Per Hour to measure BTU input or output over time. MBH stands for 1,000 BTUH.

Building Code

The requirements to be met during construction as set forth by a recognized authority, usually the city in which the building will take place. The Uniform Building Code is a nationally recognized code and is widely used throughout the country. Laws in individual municipalities or other(...)

Building Permit

An authorization from the local building inspection agency to construct or modify a building from an approved set of plans.

C

Cable Box

An electrical box which protects wire terminations and connections and serves as a mounting device for outlets and switches.

Cable Plan

A drawing that shows cable routing, electrical terminations, and the number of wires for each box. The drawing is made by the architect, building designer, or electrical system designer for the electrician to use in wiring the building.

CADD

Computer aided design and drafting. AutoCad is a common program for viewing layouts and plot plans by Warmzone.

California Title 24 Energy Requirements

California building regulations for energy design requirements for new and remodeled homes.

Carpet

A floor covering made of natural or synthetic woven fibers. Not the preferred floor covering for to conduct radiant heat, but can work if carpet and carpet pad have a low R-Value. See: R-Value, Carpet Pad.

Carpet Pad

Cushion used between the carpet and slab or subfloor. Radiant heating systems encourage a carpet pad with an R-Value of 2 or less.

Caulk

A sealant used to fill small gaps in surfaces or between joints. The compound is available in tubes or in cartridges that fit a caulking gun. Caulk is used as a sealant in retrofit snow melting systems to seal grooves that have been saw cut into concrete or asphalt.

Cement Board

A □"-thick sheet material of concrete and fiberglass used as underlayment in showers, on countertops, and other places where a moisture barrier is desired.

The sheets are installed in much the same manner as gypsum drywall. The 3'x5' sheets are cut to size and fastened to the structural(...)

Cement Mortar

A mixture of Portland cement, sand, and water.

Center-to-Center

A measurement from the centerline of one object to the centerline of another.

Ceramic Tile

Flat tiles made from clay and other silicon materials, such as sand or quartz. Most popular floor covering used for bathrooms and ideal for single-zoned, electric floor heating systems.

Chalk Line

The straight line formed by snapping a string covered with chalk powder against a surface. Chalk lines are often used to guide the installation of straight runs of radiant heating tubing or electric radiant elements.

Circuit Breaker

An automatic electrical switch that interrupts an electrical circuit when the current exceeds safe limits. The circuit breaker can be reset when the problem that caused it to interrupt the current has been corrected.

Circuit Voltage

The amount of voltage in a specific electrical circuit. 110 voltage is used for small electric radiant projects while 220 voltage is used for larger areas and snow melting systems.

Climastar

Climastar manufactures unique, stone facade wall-mounted heaters. The heaters are designed to use about one-fourth of the power that is used by conventional heaters. Climastar also produces energy-efficient towel warmers.

Closed Circuit

An electrical circuit that is complete and continuous.

Cobble

A paving stone used most often today in decorative applications, such as for masonry walls or walkways. Radiant snow melting is recommended for these areas to prevent plow scarring in winter or chemical damage from salts.

Cold Joint

A mortar or concrete joint where mortar or concrete is placed against mortar or concrete that has already set.

ComfortTile

ComfortTile is a radiant heating product from Warmzone that is one of the thinnest heating systems available for under tile. ComfortTile uses a stainless steal metal braid for protection and has no detectable EMFs. This electric radiant heating cable has been pre-assembled and is(...)

Concealed Tubing Leak

A condition where a "closed-loop" radiant panel tube embedded in the concrete loses water. 90% of all home radiant leaks are never visible and require a pressure test for detection.

Concrete

A mixture of cement, sand, and aggregate which, when mixed with the proper proportion of water, solidifies through chemical reaction into a structural material with good compressive strength.

Concrete Saw

A power saw, with a Carborundum or diamond blade, used for cutting hardened concrete. This type of saw is often water-cooled. Saw cutting into an existing area of concrete is the only way to effectively heat a driveway without tearing it out.

Conduction

The transfer of heat between objects of different temperature; 2) The flow of electricity or fluid.

Conductor

A material that allows electricity to pass through it; 2) A material that conducts heat, sound, or other energy forms.

Conduit

A tube made of metal, plastic, or other material used to protect electrical wiring from damage or moisture. Conduits are often required by the NEC to run wires back to a junction box for exterior radiant heating systems.

Conduit Box

An electrical box at which electrical conduit is terminated. The conduit box serves as both the termination point for the conduit and as a container in which electrical wires can be terminated, redirected, or joined. Also called a junction box.

Control Joint

A joint between sections of a structure designed to permit differential movement between the structures. Control joints and expansion joints need to be considered in any heated driveway or walkway design to allow for enough material to dip down below them for slack if movement occurs.

Convection Heat

The transfer of heat from your body caused by the movement of air around you.

Crimping Tool

A tool designed to crimp or squeeze an electrical connector tightly around a conductor.

Current, Electrical

The quantity of electrical flow.

d

Degradation

The disintegration or deterioration of the tubing metal beyond a repairable condition.

Direct Current (DC)

Electrical current that flows in one direction, from the negative to the positive terminal of the source.

Distribution Manifold

A device used to connect the system distribution piping to a common source. It is usually located on the return side of the system within a closet or the garage and contains valves used to change the water flow rate in the piping. Each area of the home will normally have an individual balance(...)

Domestic Water Retrofit

The replacement of the domestic hot and cold water system with a new piping system.

Downspout

The pipe or duct used to carry water from a gutter to the ground.

Duct

Thin-wall sheet metal or lightweight tubular conduit used for conveying air at low pressure; may be round, square, or rectangular. Ducts are used in HVAC heating systems while radiant heating systems bypass them by circulating water under the floor surface.

e

Eave

The edge of a roof that projects beyond the exterior walls of a structure. Eaves are problem areas for ice damming and other ice problems. Heating eaves can be done using electric heating cables.

Eave Flashing

Roofing material that is laid along the eave line and extended up the roof under the shingles.

Electrician

A person trained, skilled, and licensed in electrical wiring installations. License requirements and other regulations regarding the electrical profession vary in different locations.

Electrolysis

A chemical reaction resulting in the degradation of the tubing metals.

Electronic Ignition

An intermittent device that automatically lights the pilot flame and main burner of the boiler when the system calls for heat.

Energy Efficiency

The use of less fuel to make your home comfortably warm.

Equipment Ground

A grounding wire, separate from the system ground, to a piece of equipment or to a receptacle. The equipment ground will direct electricity from a faulty motor or other piece of electrical equipment to the grounding wire, thus preventing a person touching the defective equipment from(...)

Evaporation

The transfer of heat from your body caused by water drying on your skin.

Expansion Joint

Strips of rubber or flexible material used to separate units of concrete. Because they can be compressed, they give the concrete room to expand with

temperature changes. Expansion joints prevent cracking. When designing a new pour concrete area for snow removal, tell your Warmzone(...)

Expansion Tank

A closed tank in a hot water system or radiant heating system that provides space for the expansion of water in the system as it is heated. The tank contains both water and air. As the water expands, the air in the tank is compressed.

f

Fast Response

There is always a time delay between when a thermostat calls for heat and when any heating system responds to that need. In traditional slab-based radiant systems, this can take hours. Low-mass systems, like InfloorBoard, that use aluminum to transfer heat are fast response materials that(...)

Fault

Failure in part of an electrical circuit; 2) A break and dislocation in the continuity of the earth's structure.

Flash Water Heater

See: Tankless Water Heater

Flat Grain

Wood that has been sawn at a tangent to the growth rings of the tree.

Flooring, Parquet

Wood flooring in patterns.

Flooring, Strip

Wood flooring in narrow strips.

Flooring, Vinyl

A floor covering made primarily of polyvinyl chloride (PVC).

Forced Air Heating

A heating system using fans, ducts, and a furnace/heat pump. An area is heated by convection when warm air is forced and circulated into the living space. Only the air is heated by this system. Warm air is "blown" into the living space at 110-115□F.

Forced Air Heating System

A heating system that circulates warm air from a heat source through the ducting by means of a blower fan.

Foundation

The base or portion of a structure that is in contact with the ground, usually extending below grade.

Frost Heave

The upward movement of an object or structure caused by the freezing and consequent expansion of water in the soil under the object or structure.

Fuel Source

The medium used by the boiler to heat water or liquid. This can be natural gas, propane, oil, electricity, wood, coal, or a combination of these.

Furnace

A device in which heat is generated by burning a fuel. The heat may be used to process something, such as refining an ore, or for heating air for comfort.

g

General Contractor
: The contractor who has overall responsibility for a construction project. Subcontractors work under the direct control of the general contractor who makes up the schedules, coordinates the tasks, and supervises the activities of everyone on the job.

Geo Thermal
: The earth itself can be a source of heat. Geo Thermal appliances are used in conjunction with a closed tubing loop that is installed underground. This type of an alternative energy pulls heat from the earth in the form of water and compresses it to higher temperatures.

GPM
: Gallons per minute.

Gradient
: The amount of slope to a grade, usually expressed as a percentage. The percentage is determined by dividing the rise of the grade in feet over a 100-foot length by 100. For example, a 5-foot rise in grade over a distance of 100 feet is a 5% gradient.

Gravel
: A coarse aggregate of small rocks.

Gravity Warm Air Heating System
: A system that uses natural convection to circulate warm air through ducting on the principle that warm air, being lighter than cold air, rises.

Green Concrete
: Concrete that has not yet set up.

Grommet
: A ring used as reinforcement for a hole in metal or fabric, such as the reinforcement around the holes in a tarp. See: WarmTrax.

Ground Fault Circuit Interrupter (GFCI)
: A circuit breaker designed to protect people from electrical shock.

Ground Fault Equipment Protector (GFEP)
: A circuit breaker specifically designed to protect equipment from tripping too often by allowing a higher tolerance of milliamps.

Ground Fault Interrupter (GFI)
: A type of circuit breaker designed to protect equipment from continued electrical current in case of a circuit fault. The current in the hot wire and the neutral wire of an AC circuit are normally the same. However, if a fault in the circuit allows some of the current to leak to a ground,(...)

Ground Wire
: A wire used in an electrical circuit to connect the circuit to the ground.

Ground, Electrical

A conductive connection which provides a path for electrical current to pass from an electrical component into the earth.

Grout

A thin, fluid mortar made of a mixture of Portland cement, fine aggregate, lime, and water, and used for finishing mortar joints and filling voids.

Gutter

A trough at, or slightly below, the eaves of a building which catches and redirects the flow of rain water from the roof; 2) The water-gathering depression at the curb edge of a street. See: Gutter Melt Systems, ways to prevent ice damming and gutter damage.

Gyp Board

A term for gypsum wallboard. See: Tile Heat.

Gypsum

Hydrous calcium sulfate used as a core for drywall.

Gypsum Concrete

A mix of gypsum aggregates and water.

h

Hazardous Electrical Location Classifications

The National Electrical Code (NEC) includes Class I – areas which have flammable gases or vapors in explosive or burnable quantities; Class II – areas with combustible dust; Class III – areas with easily-ignitable fibers or particles.

Heat Exchanger

A device inside a boiler that transfers heat from the burning fuel to the boiler water. The hot water in the boiler is then circulated to radiators, indirect water heaters, hydro-air coils, radiant floor tubing, or other heat-distribution devices.

Heat Sink

A metal shape with good heat conductivity used to draw heat away from an area or component. Heat sinks are used widely in electronics to keep heat from sensitive circuit parts during soldering.

Heat Transfer

The movement of heat energy by radiation, convection, or evaporation from one source to another.

Heat, Hydronic Radiant Panel

A radiant panel system using hot water from a boiler or other source to heat the radiant panel. The boiler distributes the heat to the panel by circulating hot water through copper, steel, plastic, or rubber tubing usually embedded in the panel. The living space is heated by radiation.

Heated Bidet

A bidet with heated toilet seat and temperature controlled water (for use with the bidet nozzle). See also: bidet.

Heater Baseboard

A heating unit with a low profile that fits along the baseboard.

Heating Panel

A heating system using a panel, usually of concrete which, when heated, provides warmth into the living space by absorbing heat from one source and radiating it to another source.

Heating, Ventilating, and Air Conditioning (HVAC)

The system and process of regulating temperatures and atmosphere inside residential or commercial buildings.

Helium Spectrographic Analysis

Helium gas is injected into the distribution tubing at low pressure and the spectrograph "sniffs" the helium molecule. If there is a leak in the system, because of the properties of the helium molecule, the small size allows it to leak from the closed radiant system and penetrate into the home(...)

Hertz (Hz)

Cycles per second in electricity and acoustics.

High Mass

High mass refers to systems that use various heavy (high mass) materials, such as concrete, to store heat. High mass is a form of passive control for a heating system that can be very effective when used with solar heating. These systems can store solar heat during the day, when you may need(...)

Hot Wire

The high-voltage electrical conductor in an electrical circuit.

Hydronic

Any form of hot water-based heating system is referred to as hydronic.

Hydronic Baseboard Retrofit

The installation of a new heating system when the existing radiant panel or other heating system is no longer usable. It distributes the heat into the living space through hot water baseboard enclosures installed around the inside perimeter. The heating of the space is by convection without(...)

i

ICC

The International Code Council is the largest and most respected organization in charge of regulating the building industry. They are responsible for the International Building Code (IBC). Their evaluation service (ICC-ES) evaluates and certifies the safety and effectiveness of building materials.

Indirect Water Heating

The heating of water with a storage tank using an internal heat exchanger to separate the system water from the house supply water. An external heating source, such as a boiler, is required for this extremely efficient hot water heating system.

Insulating Properties

The ability of a material to impede the transfer of heat.

Insulation Rating

The number assigned to a form of insulation to denote its effectiveness.

Insulation, Reflective

A type of insulation material employing a surface that reflects heat. Aluminum foil, sheet metal, and paper products coated with a reflective oxide compound are some of the reflective materials used to back insulating surfaces.

Insulation, Thermal

Materials used to minimize the flow of heat in or out of objects, such as steam pipes, refrigeration units, or buildings. Heat transfer through an insulator occurs by conduction or radiation. Although no material can completely prevent this transfer, materials can be selected which give the(...)

j

Joist

A horizontal structural member that supports the load of a floor or ceiling.

Jumper

A wire used between two points in an electrical circuit to make a connection and/or to temporarily bypass part of the circuit.

Junction Box (J-Box)

A metallic or nonmetallic box designed with knockouts in the sides and back, used to support and protect electrical wire connections or conductor splices. One or more connections can be made within one box. There are several sizes and configurations of boxes available for use with different(...)

k

Kilowatt

1000 watts.

Kilowatt-hour

Measurement of electrical energy usage equal to one thousand watts in one hour. National average is about $.08.

Knockout

Circles of various sizes, factory-stamped into the sides of an electrical box, which can easily be punched out to form a hole through which wiring can be fed.

l

Lag Period

The time between when the concrete slab (radiant panel) is warmed by the boiler water and heat is radiated into the living space.

Lead

Electric current that escapes its boundaries.

Leads

Electrical wires connected on one end to a meter, instrument, battery, or other electrical or electronic item and on the other end to a circuit or component.

Leveling Bed

A bed of mortar in which pavers are set. A self leveler is often used for uneven concrete floors and for embedding radiant heating cables that might otherwise be too thick for the thinset.

Leveling Course

A layer of course pavement used to prepare the surface for a clean level surface for the final pavement course which is a finer finishing mixture.

License

A formal authorization granted by a legal agency to perform specific tasks in a project. An inspection or license may be required for the installation of a radiant heating system.

Lift

The height or thickness of concrete that can be placed in one continuous pour or a vertical layer of concrete as placed in a tall form.

Lightweight Concrete

A concrete that weighs 90 to 110 pounds per cubic foot because of the use of lightweight aggregate. Regular concrete weighs approximately 150 pounds per cubic foot.

Lime

A caustic form of calcium oxide used in cement, mortar and plaster.

Linear Foot

A foot of distance (12 inches) measured in a line along a surface, or the surface of a material such as conduit or piping. Also called a lineal foot.

Lineman's Pliers

Pliers with a tapered blunt nose and side cutters as part of the jaws. They are a multi-purpose tool, but used primarily for working with wire. The handles are covered with insulated vinyl to protect electricians and linemen from shock when cutting live wire. Also called elctrician's pliers or(...)

Linoleum

A tile or sheet floor covering of ground cork, wood filler and pigment, held together by linseed oil or other binders which solidify, and then backed with felt.

Live

An electrical circuit or connection with power applied.

Load Distribution Center

An electrical panel, containing circuit protection devices, from which circuits are routed throughout a house or building. Also called a service panel.

Loops

Hydronic radiant systems heat a home by circulating hot water through tubing placed in evenly spaced layouts under the finished floor of the home. There are limits to the length of a tube that water can be efficiently pumped through. It is accepted hydronic practice to limit the length of any(...)

Low Mass

Low mass refers to a system where the weight of panel material is specifically reduced in order to speed up the reaction time between when heat is called for and when it is delivered. A low-mass, radiant floor heating system has performance qualities that include fast response time, easy to(...)

m

Manifold

A main header or run of piping from which auxiliary or branch piping is run to distribute liquids and gases to multiple locations. Headers are generally larger in diameter than branch piping. A junction at which various tubing loops meet. Made of brass, copper, or plastic, with a header and(...)

Manufacturer

To make something from raw materials, either by hand or machine. Having parts made elsewhere and then assembled does not constitute a manufacturer.

Marble

Crystallized limestone valued in architecture and sculpture for its durability and beauty. Marble is brittle and must be carefully installed and well supported in any application. Radiant heat conducts very well under marble and is often used to remove the chill they are known to have.

Mastic Spreader

A hand tool with a thin metal blade. The blade has a serrated edge for spreading mastic in ridges. The spaces between the ridges permit the mastic to spread out when the pieces to be joined are pressed together. Also called mastic trowel.

Mat

a smooth, flat layer of concrete, asphalt, or similar material forming a structural surface. 2) Radiant Heating Mat uses electric resistance wires that are usually sewn into a webbing or mat for proper spacing. See: QuickNet.

MBH

Gas inputs are expressed in MBH, which is thousands of BTU/hour.

Medium Curing Cutback

Asphalt which is thinned with kerosene to keep it liquid at lower temperatures.

Membrane

A thin coating or sheet of material, usually water-resistant, such as the thin polyethylene sheets used to water-proof roof or floor surfaces. Membrane sheets can limit vapor release from concrete once it is heated with radiant heating tubing or electric radiant heating cables.

Metal Drip Edge

A preformed piece of sheet metal placed along the edge of a roof to encourage water runoff to drip off the edge of the roof rather than flow back under the shingles or eaves.

Metal Lath

Thin metal sheets that have been expanded or stretched and then stamped through with a slotted pattern giving them a screen-like appearance. Metal lath is used as backing and structural support for plaster and mortar. Metal lat is not recommended with electric radiant heating wires or cables.(...)

Mineral Insulated, Metal Sheathed Cable (MI Cable)

Electrical cable in which the electrical conductors are insulated with compressed mineral refractory material and enclosed in a liquid and gas-tight copper

sheathing. The type of cable can be embedded, used on the interior or exterior of buildings in wet or dry locations, used in hazardous or(...)

Moisture

Water in small and diffused quantities.

Moisture Vapor Transmission

A measure, in perms, of the amount of water vapor that passes though a material. A perm is one grain of water vapor per square foot, per hour, per inch of mercury pressure differential (.491 psid).

Mortar

A mixture of Portland cement, lime and sand used to fill voids in masonry units, bond them together, and add support.

Mounted Tile

Ceramic tile that has been manufactured and factory-assembled into sheets to hold the pieces of tile together and evenly spaced. Mounted tile is easy to work with and can save you time during your installation.

Mud

Construction slang for mortar or gypsum wallboard joint compound.

n

Natural Gas

Methane, a gas formed in the earth in oil-bearing areas, that is used to fuel furnaces, water heaters, and radiant heating boilers.

NEC

National Electrical Code.

Net Floor Area

The floor area not covered by partitions, stairs, and other construction features; usable floor area.

Neutral

not transmitting power; 2) not reactive; 3) neither acid nor base.

Neutral Conductor

The second wire (white) of a two-wire AC electrical system that carries the return electrical current from an electrical load.

Non corrosive Flux

A flux and its residue that do not corrode the base metal. For example, chemicals are used which isolate heated metal from oxygen in the air and so prevent, dissolve, or aid in the removal of oxidation during welding, brazing, or soldering. Preventing oxidation permits better metal flow in the(...)

Nonconductor

An insulator; a material that does not conduct much electricity or heat. Carpet can be considered a poor conductor of heat for any radiant heating system. Carpet pad designed with a low R-Value coupled with carpet that is not extremely thick will promote better conductivity.

Nonmetallic Sheathed Electrical Cable (NM)

Cable used for electrical wiring within the building structure. It consists of individually insulated conductors within an outer protective insulating sheath.

Nonmetallic Sheathed Electrical Cable (NMC)

Cable used for electrical wiring in moist areas. This wire consists of individually insulated conductors within an outer protective insulating sheath that is cast tightly around the insulation of the inner conducting wires. This type of cable can be used inside in damp or wet areas or outside(...)

Notch

A cut or recess, often V-shaped, in the surface of an object made from that metal.

o

Ohm

A unit of electrical resistance.

Ohm's Law

A series of formulas describing the relationship between current, voltage, and resistance. Current (I) equals voltage (E) divided by resistance □, or I=E/R. This relationship can be used to solve for any one of these three values if the other two are known. Ohm's law applies to all electrical(...)

Ohmmeter

A device for measuring electrical resistance.

On Center (OC)

The distance between items as measured from the centerline of one item to the centerline of the next. For example, floor joists that are placed 24" on center, measure 24" from the centerline of one joist to the centerline of the next. This measurement is used to determine which size of our(...)

Open Circuit

An electrical circuit that has a break, or is "open," so that the current cannot flow through.

Open Valley

A type of roof installation in which the valley flashing is left exposed rather than being covered over by shingles. Water running off the shingles will be directed into the valley and run down the metal flashing and off the roof.

Overcurrent

Electrical current that exceeds the limit of the equipment or amperage load of the circuit.

Overcurrent Protection

A device that interrupts an electrical circuit if the current, or current and temperature, in the circuit exceeds a preset amount.

Overload

An electrical current demand that is greater than the rated current. An electrical overload causes protective devices to actuate, such as burning out a fuse or tripping a circuit breaker.

p

Panelboard

An electrical cabinet in which circuit breakers are mounted and connected to wiring. In a residence, the three wires from the service entrance conduit enter the panelboard and are connected to three bus bars in the panel. Two of the leads are hot and one is neutral. The circuit neutral and(...)

Parallel Lines

Straight lines that remain the same distance apart along their lengths. Snow melting cables and other radiant heating cables or wires are used in a parallel lines for their layout.

Parquet Flooring

Wood flooring in which pieces of wood are positioned at angles to one another to form patterns. They are laid on a subfloor or underlayment.

Paving Brick

Brick used for outdoor paving applications. They are made of clay or shale and sometimes burned hard so they vitrify, providing a wear-resistant surface. Snow melting systems are popular under paving bricks for convenience and protection from snow plow scarring or harsh chemicals. Snow melting(...)

Paving Brick Base, Flexible

A paving brick base that can move easily, such as compacted sand or gravel. It is often used where brick is installed without mortar. It provides a stable base, good drainage, and prevents moisture from working its way up from the soil beneath.

Paving Brick Base, Rigid

A non-moving base, such as a reinforced concrete slab.

Paving Brick Base, Semi-rigid

A base, such as asphalt paving, that provides some degree of flexibility for brick laid without mortar.

Paving Machine

An asphalt placing machine that spreads and levels asphalt to a predetermined depth. The paving machine rides on either movable tracks or tires. Ask a Warmzone representative what types of paving machines are acceptable for installation over snow melting systems.

Paving or Pavement

Road or parking lot surface intended to provide wear resistance and smoothness. Paving usually consist of a wear surface, such as concrete, over aggregate subbase material, such as gravel, placed over compacted subgrade soil. Asphaltic concrete, a common paving material, is a mixture of(...)

Percent Grade

The rise or fall of the grade divided by the distance over which the rise or fall is measured. This calculation yields a decimal figure which is then multiplied by 100 to obtain the percent grade. The percent grade is important in evaluating the proposed slope of a parking lot, driveway road(...)

Perimeter Heat Loss

Heat loss through the perimeter, or outside surfaces, of a building which are exposed to the exterior elements. Effective wall insulation, double-pane windows, and insulated doors can be used to help control this heat loss.

Permeability

A measure of the ability of water to flow through a material, such as concrete.

PEX Tubing

PEX is an acronym for cross linked polyethylene. PE refers to polyethylene, and the X refers to the cross linking across its molecular chains. This type of tubing is used for domestic plumbing and radiant floor heating. Used since 1973, with many billions of feet installed, it is proven to be(...)

Pigtail

A length of electrical wire with a plug on the end attached to the electrical terminals of an appliance, such as a clothes dryer, to bring power to that appliance. Commonly called the cord or electrical cord. Warmzone products like our electric radiant towel warmers from Zehnder can be hard(...)

Pigtail Splice

A simple electrical wire splice in which the ends of the wires are twisted together. It is used to connect new wiring to old wiring. The wires are insulated so that no bare wire is left exposed.

Pilot

A small flame which ignites the main burner when the system calls for heat.

Plank

A rectangular cross section board that is more than 6" wide and more than 1" thick.

Plastic Conduit

Electrical conduit made from PVC or other plastic material. It is more economical and easier to work with than metal conduit.

Plastic Electrical Boxes

Electrical boxes made of polyester, fiberglass or PVC designed for use with nonmetallic cable.

Plot Plan

A plan view drawing of a structure which includes the dimensions of the building site, the location of the structure in relation to the property boundaries, elevation of key points, existing and finish contour lines, utility services, and compass directions.

Pneumatic Roller

A paving machine with wide, smooth, air-filled tires used to compact the surface by rolling over it. It is used for compacting clay soils because the clay does not adhere to the roller.

Polarity

The direction of electric current flow through a circuit indicating the positive or negative charge of the current. In direct current, there are two poles, one positive and one negative. Current flow is from negative to positive.

Pole

The number of hot wires that are connected to an electrical circuit breaker. For example, a single-pole switch has one hot wire and a double-pole switch has two hot wires.

Pole, Single Pole and Double Pole

The number of hot wires that are connected to an electrical circuit breaker. For example, a single-pole switch has one hot wire, and a double-pole switch has two hot wires.

Potentiometer

A variable resistor that is used for control, such as the volume control on a radio. It divides the voltage in a way that is proportional to its resistance. It consists, in one form, as a wiper or slider that can be moved across fixed contacts, which varies the resistance. The greater the(...)

Pounds per Square Inch (PSI)

Pounds per square inch is a measure of pressure, a load applied by one commodity on another. Fluid pressure, which includes both liquid and gas, is measured in terms of either pounds per square inch absolute or pounds per square inch gauge. This measurement should be considered for insulation(...)

PowerBlanket

The PowerBlanket is an extremely durable outdoor heating blanket typically used for concrete curing, ground thaw, engine warming, bucket and barrel heating, snow melting, and even as heaters for small work areas.

Pressure Reducing Valve

A safety device which supplies the boiler with reduced water pressure from the city supply. The normal pressure setting is 12 PSI. It also maintains the boiler water level should a loss of water occur in the panel.

Pressure Relief Valve

A safety device which releases boiler and system pressure should it exceed a preset level. The normal pressure setting of these devices for the low pressure boiler is 30-45 PSI. The preset level should never exceed the operating pressure of the boiler.

Pressure Switch

An adjustable safety device which prevents boiler operation when the system pressure falls below the preset level, usually 5 PSI. It helps prevent boiler coil and heat exchanger damage by preventing the boiler from firing during an unsafe low water pressure condition.

Pressure Test

A hydrostatic (water) test of the concealed radiant panel used to determine the "tightness" and "leak-free" condition of the tubing. The test should always result in "no loss" of the pressure and be performed in accordance with Code-approved procedures. The introduction of helium, nitrogen,(...)

Pressure/Temperature Gauge

A device which monitors water pressure and temperature of the heating system.

Primary Heat

Primary heating systems are intended to be used as the sole source of heating or at least the main source of heating. Ambient Thermostats are generally used for

primary radiant heating opposed to a floor sensor that thermostatically controls a system based on floor temperature.

PSI

Pounds per square inch.

Pump

A device used to circulate water throughout the boiler and distribution tubing. The unit can be water or oil lubricated. Proper pump sizing is essential to provide adequate heat for the home; 2) A device that raises, moves, or compresses fluids by pressure or suction. Electric pumps are(...)

q

Quarter Sawn

Wood that has been cut from a log quartered lengthwise and at an angle of at least 45 degrees between the board face and the annular growth rings. This method of cutting lessens the warpage and shrinkage of the lumber. Radiant heating systems under hardwood should use a quarter sawn selection(...)

QuickNet

A radiant heating mat product that uses a high quality resistance wire and a mat that has an adhesive on the back for easy installation. QuickNet is ideal for small to medium sized areas and can be easily zoned for separate thermostats.

r

R-Value

A unit of measure of thermal resistance. The higher the value, the better the heat-insulating capabilities of the material. For example, an 8" lightweight concrete block has an R-Value of 2.00 and a 1/2" sheet of plywood has an R-Value of .63. The concrete block has far better heat-insulating(...)

Radiant Barrier

Generally a paper thin, pure aluminum material used to reflect 97% of the infrared heat spectrum back up to the heated floor.

Radiant Baseboard

A heat distribution device containing hot water inside a cast-iron or copper-finned radiator that runs along a wall's baseboard.

Radiant Flooring

Special polymer tubing that is run underneath the subfloor or fastened down on top of the subfloor or onto a wire grid imbedded in lightweight concrete. Low-temperature water is circulated through the tubing to produce radiant heat.

Radiant Heat

A type of heating that warms objects instead of air, the floor being the largest object, to heat a home. The air in the room is warmed when it comes into contact with the warmed objects. Heat loss is reduced and the radiant heat remains in the lower part of the room, warmer near feet level and(...)

Radiant Operating Temperature

The floor temperature should never exceed 85□F.

Radiant Panel

The mass of concrete or other material which, when heated, stores and releases radiant heat energy into the living space. All objects, people, furniture, walls, etc., are warmed by absorbing and transferring the radiated energy. All areas within the living space are evenly heated.

Radiation

The transfer of heat by direct rays from your body to cooler objects around you.

Radiator

A cast iron heat distribution device containing hot water or steam that can be a free-standing unit or recessed into a wall.

Rebar

See: reinforcing bar.

Rebar Ties

Wires used to connect two or more lengths of rebar so they form a continuous length, or to tie lengths of rebar together where they cross. BlueHeat snow melting cables are often tied down to rebar for support and proper spacing.

Recovery Rate

Basically, how fast a water heater or boiler can heat water. Recovery rates are generally measured by how many gallons of water can be raised 90□ in one hour. If a water heater, for example, stores 50 gallons of water, a recovery rate suitable for radiant heating would be the ability to heat 1(...)

Reflective Insulation

A type of insulation employing a surface that reflects heat, such as foil backing. Used in wall insulation or with various radiant heating projects to direct heat. Snow melting systems do not require using insulation due to the fact that it can actually prevent the Earths warmth contribute to(...)

Regulator

A device used to control voltage, flow, or pressure.

Reinforced Concrete

Concrete to which reinforcement has been added in the form of steel rods, bars or mesh to increase its strength and resistance to cracking. BlueHeat snow melting cables are often tied down to rebar for support and proper spacing.

Reinforcing Bar

Steel bar designed to be placed in concrete for reinforcement. Concrete has compression strength; reinforcing bar adds resistance to breaking when other types of forces are applied. The bars have a patterned, or textured exterior, which allows them to bond or interlock with the concrete mix.(...)

Relay-Transformer

The control system for the boiler which provides electrical power to the pump and gas valve when the thermostat calls for heat.

Remodel

To alter or restore an existing structure.

Repair Coupling

A brass fitting used to repair a damaged section of radiant tubing, generally in a slab application. The coupling is double clamped with stainless steel hose clamps

and sheathed in a piece of clear vinyl tubing to prevent the concrete from corroding the metal fitting.

Resistance

The opposition offered by a body or substance to the passage of a steady electric current through it. Internal friction slows the passage of electrons within a conductor and causes heat. The larger the diameter of electrical wire, the less friction there is per foot. Resistance is the(...)

Retro Heat

Is a unique radiant panel product that has a conductive material in the middle to create safe resistance heat between your floor joists. RetroHeat is stapled between the joists and then insulated from underneath to direct the heat upward through ceiling and floor above. This product is ideal(...)

Retrofit

The act of installing something after the primary area has already been constructed. RetroHeat, for example, is a product installed between floor joists to provide heat to the floor above without taking up the flooring.

Return Line

An insulated copper line leading back to the heat source.

Romex

A trade name for non-metallic sheathed electrical cable.

Roof Heating

Radiant heat products designed to heat the roof eave to prevent ice damming and icicles that can be dangerous to people below. Roof heating systems use electric radiant heat cables or PEX tubing from a hydronics system to bring heat to the roof and/or gutters.

Roofer

A contractor who installs roofing material or makes repairs to existing roofing.

Roughing In

Is the installation of part of a radiant heating system. Heating cables, wires, or PEX tubing can often be ?roughed-in? to concrete or under any floor covering and then electrical controls or boilers can be hooked up at a later time for convenience or for budgeting reasons. Warmzone electric(...)

RPA

The "Radiant Panel Association" has been created to facilitate communication and cooperation among those interested in the advancement of the radiant panel heating and cooling industry, primarily in North America.

Run

Width of a step; 2) Horizontal distance covered by a flight of stairs.

S

Schematic

A diagram of a plumbing system or electrical wiring routing or circuit.

Screed

A rigid, straight piece of wood or metal used to level concrete or other materials that have been poured into forms, and to remove the excess material. Snow melting systems under sand and pavers or in concrete use a screed to level and remove excess material.

Service Panel

An electrical panel containing circuit breakers and serving as a distribution point for the electrical service enter the building. Large electric snow melting systems will require a connection between a contactor box and the service panel.

Slab Manifold

A copper manifold used to distribute heated fluid to a concrete slab. Slab manifolds come in many configurations, the simplest being the "1-loop" manifold. This is simply a supply connection to a single loop of tubing and its return. A "6-loop" manifold is generally the largest. Bigger than(...)

Sleepers

Strapping placed on an existing floor to create "sleeper bays" in which to run radiant tubing. Most often, 2X4's laying flat, 16" on center, act as the best sleepers. They raise the floor 1 1/2" and allow adequate room for even the largest tubing. Sand or concrete is generally placed over the(...)

Solar Collector

A device used to capture heat from the sun and turn it into energy. Solar energy captured by collectors is most commonly used for home water or pool heating. The collector may consist of a variety of materials in different forms, such as a coil of copper or plastic tubing, straight lengths of(...)

Solar Heating

Using solar energy to heat a structure or to heat the water to be used in a structure or swimming pool.

Solder

Metal alloys with relatively low melting points used for joining metals. The liquid point of solder is 450 degrees centigrade (840 degrees Fahrenheit) or less.

Solid Wire

Electrical wire in which the conductor is a single conductor, as opposed to a stranded wire of multiple conductors.

Space Heater

An individual heating unit, usually electric, designed to heat a small area.

Specific Heat

The number of calories required to raise 1 gram of a substance by 1 degree centigrade, or the number of Btu needed to raise 1 pound of a substance by 1 degree Fahrenheit.

Specifications

Detailed requirements to be met in the manufacture or purchase of an item.

Spectrographic Analysis

The use of a spectrograph to determine the location of a concealed tube leak by "sniffing" a particular gas.

Splice

To join two pieces together.

Standing Pilot Burner

A device which always burns a small amount of fuel to maintain a flame. The flame lights the main burner when the system calls for heat.

Staple-up System

Tubing stapled to the underside of the subfloor.

Stapling Hammer

A stapling machine shaped similar to a hammer. It places staples when the head of the stapler is struck against the surface being stapled.

Stranded Wire

Electrical wire in which there are multiple conductors bunched or braided together.

Stratification

A term referring to the uneven heat distribution of most forced air systems. Hot air is blown around your living space creating pockets of warm, then colder, air. Hot air also tends to collect near the ceiling where it is needed the least.

Structural

Pertaining to load-carrying parts or members; a solid part of a structure or building that is designed and installed to carry a load. Adding a hydronic system on additional floors using gypsum should consider the structural weight load.

Subcontractor

A contractor performing work for another contractor.

Subfloor

The layer of flooring that is fastened directly to the floor joists, and to which the finish flooring is applied. It is constructed of plywood sheathing or 2 x 6 planks, and may be a single or double layer.

Subgrade

Soil structure below grade level, before any surfacing material is placed; 2) compacted soil on which a concrete slab or other structure is placed 3) the elevation at the bottom of a pipe trench.

Substrate

The underlying surface or material; 2) The supporting material to which a finish is applied.

Supplemental Heat

Supplemental heating systems are used to augment a primary heating source or add comfort to an area that is not sufficiently warm. Radiant heating systems in bathrooms, kitchens and basements are generally defined as supplemental systems and function is the warm the floor. Forced air systems(...)

Supply Line

Generally, an insulated copper line used to feed multiple circuits of tubing. Or, any water line running from the discharge side of a radiant circulator pump.

Suspended Slab

A radiant floor system installed on top of an existing floor.

Switch

An electrical device for opening or closing a circuit which allows a light or motor to be turned off or on.

t

Tamp
A manual device with a long handle and a steel grid or mesh base used for compacting wet concrete and forcing large aggregate below the surface. 2) A manual or mechanical device used for compacting soil, asphalt or other material by repeatedly striking the surface with a flat plate.

Tankless Coil
: A coil of tubes immersed into the boiler's hot water. Fresh water contained safely inside the coil picks up heat from the boiler water. The coil's hot water is then piped for use in the kitchen, bathroom, or elsewhere.

Tankless Water Heater
: Powered by gas or electrical power, these small units give you the benefit of on-demand hot water by bringing in cold water and then passing it through a heat exchanger. These systems are electronically controlled to the inflow of water and maximize efficiency. Since a holding tank is not(...)

Tarmac
: A trade name for an asphalitc binder used in paving.

Therm
: The mesasurement of a unit of heat equal to 1000,000 Btu.

Thermal
: Of, or relating to, heat.

Thermal Coefficient of expansion
: A factor designating the amount of contraction or expansion that takes place in a material as the result of temperature changes. It provides a means for the designer to determine the amount of change that will occur in something. Concrete, for example, uses expansion joints to compensate for(...)

Thermal Conductor
: A solid or fluid, such as a metal or water, that allows heat to flow through it.

Thermal Insulator
: A material that resists the transfer or passage of heat. Carpet or carpet pad is a thermal insulator to radiant heat and needs to be carefully specified before installing.

Thermal Mass
: In the context of radiant heat, materials capable of absorbing and storing heat energy. Concrete, sand, slate, and tile possess a greater thermal mass than wood. The greater the mass, the longer stored heat will remain in the floor.

Thermoplastic
: A type of plastic that can be easily softened by heat and that cools to a hard material Thermoplastics are used for many products.

Thermostat
: A device which senses "air or floor" temperature, controls operation of the heating source, and maintains the room temperature within the living space. Because of the effects of the heating system, the settings with hydronic radiant panels are 3-5□F lower than with forced warm air for the same(...)

Three-Phase Electrical Current or Power

Power that is generated with three armature coils (in an alternator), which is the optimum number for generation, balancing output efficiency against mechanical input energy. The three phases follow each 1/180th of a second apart in a 60 cycle AC circuit. This type of power is most often used(...)

Tile

Flat square shaped sheets or slabs of material used as a surface covering. Common tile materials are clay, metal, various types of stone, asphalt and plastic. Tile is optimal for incorporating a radiant heating system.

Towel Warmers

Towel Warmers are a fashionable way to augment heating in any bathroom. These towel racks are comprised of metal tubing that traditionally uses a glycol water mixture and is either hard wired to 110V or is plugged into a socket. The fluid is heated and warms the entire rack and then radiates(...)

Trade Association

An organization of manufacturers, distributors, service contractors or other groups with similar goals or needs. Such associations are usually formed to promote uniform standards within their particular industry and to standardize documents or codes for common benefit. Warmzone is a member of(...)

Trowel

A hand tool with a flat rectangular or triangular metal surface. The rectangular trowel is used for smoothing and finishing tile. A notched trowel can be lightly used over the top of ComfortTile and QuickNet for spreading a layer of thinset in a tile installation.

Tubing Materials

The following are common examples of materials which have been and are currently used for the distribution piping: Copper, Type "L"; Armco Plastic Coated Steel; Cold Rolled or Extruded Steel; Non-Barrier Polybutylene; PEX Non-Barrier Polyethylene; PEX Cross-Linked Barrier Polyethylene; Rubber.

Tubing Sizes

For most practical applications, two tubing sizes are best. 7/8" Poly and 1/2" PEX offer the greatest flexibility. The 7/8" Poly provides the highest heat output (50 BTUs per ft.) and can be spaced 16" on center. But a compromise is made when it comes to bending diameter. However, in a wide(...)

Tuff Cable

Is a resistance heating wire that has been engineered to work as a low-voltage system. Because of its size it can be used as a retrofit snow melting solution when grooves are saw cut in asphalt or concrete. This system requires a control box and transformer for each of the respective zones(...)

Two-Wire System

An AC electrical system having a hot lead and a neutral lead, both wires needed to complete the electrical circuit in all 120 volt AC electrical systems.

Type "L" Tube

An industry standard for copper tubing defined by the tube wall thickness and identified by a "blue" stripe. Type "L" copper tube wall is approximately 50% greater thickness than Type "M".

Type "M" Tube
: An industry standard for copper tubing defined by the tube wall thickness and identified by a "red" stripe.

u

U-Value
: A unit of measure of heat transfer through a material of known thickness determined by the number of Btu lost per square foot per hour, assuming a 1 degree F difference between the sides of the material. The lower the U-value, the greater the insulating value of the material.

UF Wire
: Underground feeder wire or cable. It is a type of plastic insulated copper wire that is manufactured without fiber spacers that can absorb moisture. It is used in outdoor and underground applications, such as wiring for outdoor lighting, particularly with 120 volt AC supply power.

Underwriter's Laboratories (UL)
: An independent testing agency which can be hired to test and assess the operation and safety of almost any item or product. Once the item has been tested and approved by Underwriter's Laboratories, the manufacturer can put a UL sticker or tag on the item to show that it has been tested.(...)

Uniform Mechanical Code (94)
: A system of procedures designed to provide consumers with complete requirements for the installation and maintenance of heating, ventilating, cooling, and refrigeration systems and used throughout the United States by local jurisdictions.

Universal Plumbing Code (94)
: A system of procedures designed to provide consumers with safe and sanitary plumbing systems and used throughout the United States by local jurisdictions.

v

Valley
: The inside corner junction where two roof slopes meet.

Vapor Barrier
: A water-resistant material used on a surface or structure to stop or retard the movement of moisture through the surface. Commonly used in walls under drywall, between concrete and wood flooring and under concrete slabs.

Volt (V)
: A measure of the electromotive force that causes current to flow through a circuit, analogous to system pressure in a hydraulic system.

Volt-Ampere
: A unit of apparent power in an AC electrical circuit, and a unit equal to a watt in a DC circuit.

Voltage Drop

The loss in voltage between the electrical supply and the electrical load because of resistance in the wire.

Voltage Regulator

A control device used to maintain voltage at a set value.

Voltmeter

A meter that indicates the number of volts across electrical terminals. Used to test batteries, electrical circuits and receptacles to determine if they are live.

w

WarmTrax

Is a portable snow melting mat that can be plugged directly into a 110V socket. WarmTrax is made of a durable rubber and uses embedded wires to create a non-slipping strip that can be used in front of doorways, loading docks, handicap ramps, and even pathways to an outdoor hot tub.

Warmzone

Warmzone is a trusted, leading provider of radiant heat products and services. Built on a commitment to providing the best customer service in the industry, Warmzone provides complete solutions and works closely with customers to match the best radiant heat products and prices possible for(...)

Watt (W)

The common measurement unit for electric power, named for Sir James Watt (1736-1819) who suggested that the unit of power be the rate at which a horse performs work. A watt is equal to volts multiplied by amps in a DC circuit and in an AC circuit with a purely resistive load. One watt is the(...)

Wire Gauge

A standardized numbering system assigned to represent the diameter of a wire. The smaller the wire, the larger the number.

Wrought Copper Fittings

Plumbing fittings used to connect copper tubes. They are composed of cast copper metal.

y

Y-Connection

An electrical connection in which all three coils in a three-phase generator meet at one point. Also called a wye connection.

z

Zehnder

Manufacturer of radiant bathroom heaters and towel warmers.

Zmesh

Used for roof deicing, Zmesh is installed under shingle roofs to effectively melt snow and ice. The 9-inch wide mesh is rolled out on the roof and can be nailed or

stapled through. The Zmesh low-voltage system can be installed under new or existing asphalt, shake or tile shingles, and is ideal(...)

Zone Manifold

Most often a factory built manifold that contains the circulator pumps, ball valves, check valves, in-line thermometers, pump flanges, drain valves, and all the plumbing hardware necessary to effectively distribute heated fluid to multiple heating zones.

Zones

A zone generally refers to a given area controlled by a thermostat. Radiant heat allows you to have variable control of each zone unlike a forced air system. Any room or area in a radiant heat home can be zoned by using a separate tubing loop and manifold to control the heat of the individual(...)

Zoning

The ability to individually select and control the area in the home to be heated.