



OUELLET

BRITECH



INSTRUCTION MANUAL

INS645-202307-01



**Single Conductor Series Resistance
Custom Cable Assembly
for Snow Melting and De-Icing Applications**

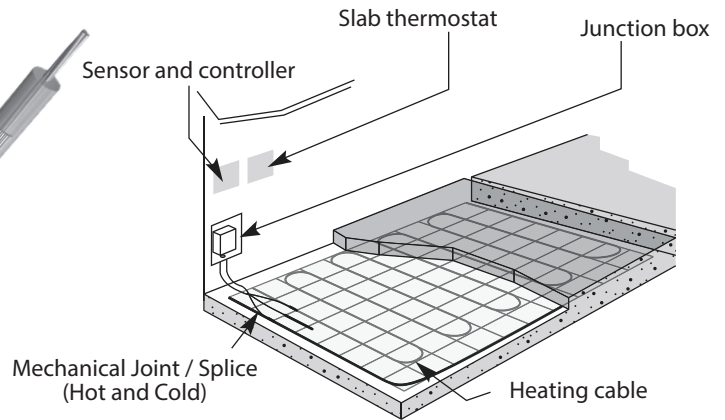
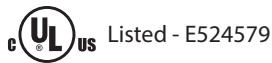
TXLP1 Series

TXLP1 Series Heating Cable System Surface De-icing & Snow Melting Installation Manual

TXLP1 Custom snow melting and de-icing system

120V to 600V - Series resistance single conductor heating cable for residential and commercial outdoor applications only.

Canada: -W (Wet test) Certification



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Please read through these instructions carefully before you begin installing & check that you are aware of all the components required.

CAUTION!

De-energize all power circuits before installation or servicing.

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1 Warnings and cautions



Risks of electrical shocks and fire



- **De-energize all power circuits before installation or servicing of this snow melting system.**
- **Heating cables must be used for outdoor applications only.**
- **Operate snow melting systems only as required to melt snow and ice.**
- **Custom series resistance (TXLP1) heating cables cannot be cut or altered in any way.**
- **For safe installation and efficient performance of this system, read the instruction manual thoroughly and keep it handy.**
- **Where applicable, installation must meet requirements of the following codes:**
 - Canadian Electrical Code;
 - National Electrical Code (NFPA 70);
 - Any other applicable local and/or national code.
- **Where required by law, this product must be installed by a qualified individual.**
- **To prevent any possibility of electrical shocks, the power supply must be turned off before handling the heating cables.**
- **This product must be installed with a ground fault circuit interrupter (GFCI), in compliance with the Canadian Electrical Code and the National Electrical Code.**
- **Reinforcing bars, wire mesh and other conducting material used for support or on which heating cables are installed, must be grounded, in compliance with the Canadian Electrical Code and the National Electrical Code.**
 - The conductive layer of this heating device must be connected to a suitable grounding/earthing terminal.
 - For conductive layers not intended as a ground path, the conductive layer of this device shall not be utilized as a grounding conductor but must be bonded to ground.
- **Heating cables must be installed and fully embedded in concrete, asphalt, stone dust or other similar material, before the system is connected.**

SAVE THESE INSTRUCTIONS



CAUTION!

A ground fault protection device must be used with this heating device.

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2 Product specifications and details

The snow melting system is designed exclusively for outdoor applications.

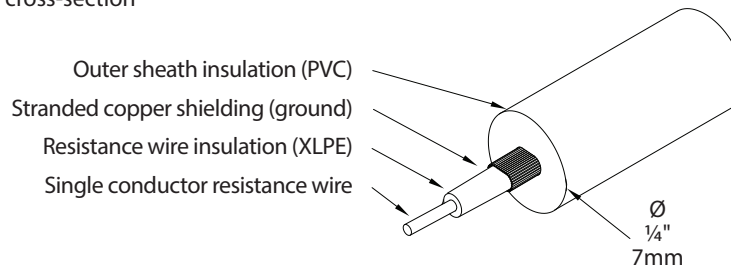
Maximize safety and security in residential, commercial and public areas by reducing slips and falls caused by snow and ice. Eliminate the use of salt and chemicals used to remove snow and ice. The TXLP1 heating cable system is normally used due to high loads and varying lengths required for many different applications. There is no need to shovel or chip off ice when installed properly on driveways, walkways, ramps, stairs, parking lots and other outdoor spaces. The snow melting system offers maximum flexibility for installation in large spaces, irregular shaped areas, and can be installed under asphalt, concrete, and pavers.

The TXLP1 cable is a single conductor, series resistance cable designed specifically for the application. The cable shall have the ability to be in contact with metallic mesh or wire in accordance with NEC regulations. Manufacturer's instructions must be followed.

The heating cable consists of a series resistance heating wire, insulated by a crosslinked polyethylene (XLPE), covered with a metallic sheathing (aluminum) and an outer PVC jacket. Each cable includes a multi-stranded copper ground conductor running the full length of the cable. RWU-90 or Type XHHW-2 or lead wire, length as required, shall be factory crimped to the cable. Cable shall be UL listed and meet the latest NEC regulations when properly installed.


- To ensure maximum snow melting rate, heat output shall not decrease as the temperature of the slab increases. Heating cables that modulate their thermal output and cannot be checked for circuit integrity, or are characterized by high inrush currents at start-up are not acceptable.
- Custom series resistance (TXLP1) heating cables cannot be cut or altered in any way.
- Heating cables will be designed for operation on one supply voltage up to 600V max.
- This system must be used with an approved control device. For selection of weather proof thermostats, snow sensors and controls available contact the manufacturer.

Figure 1: Cable cross-section



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2.1. Technical features

Features	
Type	Series heating cable set, single conductor
Usage	For outdoor embedded applications
Voltage	120V-600V
Maximum wattage	15.2W/ft. (50W/m)
Maximum watt density (3" [76 mm] spacing)	50W/sq. ft. (538W/sq. m) at 120V-600V
Heating cable diameter	1/4" (7 mm)
Minimum bend radius	2" (50 mm)
Cold lead length	6 ft. or 15 ft. (longer lengths available)
Cold lead gauge	8, 10, or 12 AWG (according to maximum allowable load)
Resistance wire insulation	Cross linked polyethylene (XLPE) 0.014" (0.35 mm) thick
Outer sheath insulation	PVC 0.03" (0.76 mm) thick
Ground	Stranded copper shielding (8, 10 or 12 AWG)
Tolerance on conductor resistance	-5 to +10%
Maximum operating temperature continuous	90 °C (194 °F)
Maximum exposure temperature intermittent	90 °C (194 °F) 85 °C (185 °F) under asphalt
Maximum operating ambient temperature	5 °C (41 °F)
Minimum installation temperature	-10 °C (5 °F)
Certification	 Listed - E524579
Marking	Canada: -W

2.2. Accessories

Available accessories for installation of the TXLP1 heating cable.

BRIPPS-75	Galvanized steel strapping (clip strip)
KIT-SP3	Repair kit
HT-2 Sign	Lamacoid snow melt warning sign

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3 Heating cable insulation and electrical resistance tests



CAUTION!

Dangerous test. Measurements must be taken by a qualified electrician.

Perform all insulation and resistance test steps required during installation:

1. Before opening the product.
Note: *Once product is opened, you are then in charge of the cable integrity throughout the entire installation process. Be sure to follow instructions and observe all precautionary measures.*
2. After the installation of the heating cable
3. Before embedding the heating cable.
4. After embedding the heating cable.
5. After the final installation of coating (for installations under asphalt and paving only).
6. Before connecting the heating cable system.
 - Record results. A measurement table is included on the control card at the end of this manual.
 - Affix a copy of the measurement table to the electrical panel, once completed.

Insulation test

- Only use a calibrated megohmmeter.
- Measure the insulation resistance at the free end of the cold lead, between the conductor and the ground wire. Record results.
- The value should be greater than 1,000,000 ohms.
- If the value is inferior to 1,000,000 ohms, postpone the work and contact the manufacturer's technical support.

Resistance test

- Only use a calibrated multimeter.
- Measure the resistance at the free end of the cold lead, between both conductors. Record results.
- Check the integrity of the heating cable by comparing the value measured with the value specified on the cold lead cable.
- If the value measured is null or very different from the resistance rating at any stage of the installation, postpone the work and contact the manufacturer's technical support.



CAUTION!

For the warranty to be applicable, you must fill the measurement table and ensure that measurements have been correctly recorded.

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4 Construction planning

Installation of the heating cable system for snow melting is only one step in the construction of a surface to be heated. It is therefore important that all trade professionals involved in the various construction steps be informed of the heating cable system installation instructions and made aware of precautions to be taken throughout the entire project.

The quality of the coating material and granular base must be compliant with construction standards. All work must be done according to good

engineering practices so as to ensure the long-term structural stability of the surface to be heated. Settling, cracking or crumbling of the coating could damage the cable.

Improper installation that could result in a breakage or malfunctioning of the cable will not be covered by the warranty.



CAUTION!

*Damaged cables may cause an electrical arc or fire.
Do not energize a damaged cable.*

Work stages should be planned so the cable does not remain uncovered between the installation and the coating stages. If the project encounters any delay between these stages, special precautions should be taken to mechanically protect the cable against any breakage.

Installation photographs should be taken before embedding the heating cable. They will serve as a reminder for the installation of any future elements and the detection of any breakage.



CAUTION!

*Do not roll over uncovered cables with any equipment.
Special precautions should be taken while walking over the cable and while handling sharp tools during the installation process.*

4.1. Installation plan

A detailed installation plan that takes into account all project specifications and installation requirements (see Sections 5 and 7) should be drawn up before installing the heating cable system for snow melting.

Be sure you are familiar with the following information and ensure all elements are included in your installation plan:

- Supply voltage of system.
- Precise measurements of surface to be heated.
- Position and dimensions of elements to be bypassed
Note: Also plan for future elements that could be added afterwards (ex: handrails, lampposts, etc.).
- The type of coating the heating cable will be embedded in: concrete, asphalt or stone dust under paving.
- The position of control joints, construction joints and expansion joints. The heating cable should not cross any expansion joints. (See section 7.1, figure 8).

- Installation or not of curbs in an asphalt application.
- Position and dimensions of drain to collect and evacuate melted snow and ice.
- Position of junction boxes.
- Position of controller and sensor.

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In order to know precisely the measurement of the surface to be heated, calculate the total area and subtract all clearance areas. Choose nearest suitable cable from the available range. When calculated size required is

between two sizes of offered cables, select the smallest of the two. Combine multiple cables if necessary.



Need help to optimize your work plan? Contact our technical support. Clearly indicate all dimensions. A minimum of one horizontal and one vertical dimensions are necessary to validate the scale.

CAUTION!



Never cut or shorten the heating cable.

4.2. Required materials

To install your heating cable system for snow melting, you will need the following materials:

Materials provided by the manufacturer

- Heating cable.
- Instruction manual.
- Measurement table control card.
- Caution sign.

Required material (not provided)

- **Note:** All materials used (including conduit, fittings, junction boxes, and controllers) must be rated suitable for the application and be Certified for Canada and Listed for the US.
- Electrical fault indicator.
- Calibrated megohmmeter and multimeter.
- Control device (available at the manufacturer).
- Ground fault circuit interrupter (GFCI).
- Junction box approved for the environment in which it is used.
- Conduit approved for cold leads (high voltage electric cable).
- Conduit approved for ground sensor (where required).
Note: Conduits could be of the same type; however, cold lead and ground sensor cable should be in separate conduits.
For asphalt coating, make sure the conduit can withstand hot asphalt.
- Welded wire mesh or reinforcing bars for installation in concrete slabs.
- Steel clip strip strapping for cable installation (strapping available at the manufacturer as an option).
- Concrete anchors or nails to set the galvanized steel strapping.
- Plastic tie-wraps for framework installations (can be used as an option).
- Angle irons, 1" x 1" (25 mm x 25 mm) (protection of cable under control joints for a concrete slab installation).
- RTV silicone rubber (protection of cable under control joints for a concrete slab installation and to seal the ground sensor).
- Measuring and leveling tools.
- Scissors.
- Spray paint to outline clearances.

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5 General installation guidelines

Unless otherwise specified, guidelines specified in this section apply, regardless of the type of coating used for embedding the heating cable.

Review guidelines before starting the installation. Be sure to adhere to all construction codes and regulations applicable in your area.

De-energize all power circuits before installation or servicing of this snow melting system.

5.1. Preparation of foundation

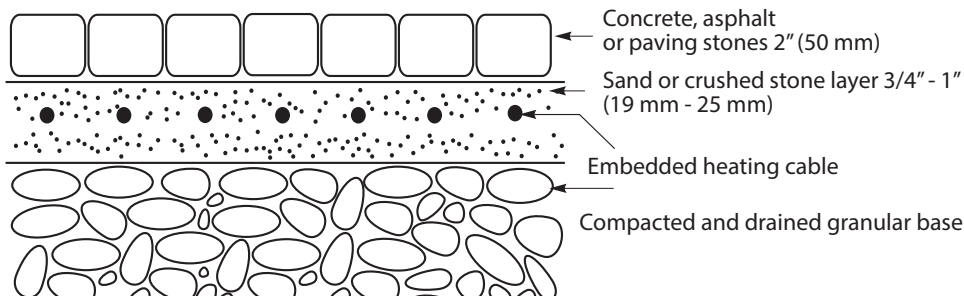
- The heating cable system for snow melting should be installed on a foundation capable of withstanding environmental conditions as intended for the application while also providing a long-term structural stability.
- If the heating cable is installed on an insulated base, a wire netting should be used in order to prevent the cable from being compressed into the insulation. The structural base should be frost free in order to prevent uneven frost heaving.

Note: Electric surface heaters must be embedded or covered to a depth of minimum 2 in. (50 mm) from the finished surface of asphalt, concrete, or paving stones.

- The granular foundation should allow for adequate drainage of melting snow and ice. Provide an additional drain where necessary.

Note: Thermal insulation is not required but could improve the performance and energy efficiency of the snow melting system. Consult with an architect or engineer to ensure the structural integrity of the thermal insulation and its appropriate location. The cable should not come into contact with thermal insulation.

Figure 2: Surface layers



Note:

Electric surface heaters must be embedded or covered to a depth of minimum 2 in. (50 mm) from the finished surface of asphalt, concrete, or paving stones.

5.2. Equipment verification

- Be sure the heating cable power output is sufficient for the area to be heated.
- Be sure the heating cable rated voltage is equivalent to the system's rated voltage.
- Perform all insulation and resistance tests and record results. (Control card includes a measurement table at the end of this manual).
- Connect the electrical fault indicator to the free end of the cold lead to ensure the integrity of the heating cable throughout the entire construction period. Reconnect the electrical fault indicator to the cold lead after each test phase.



CAUTION!

Never cut or shorten the heating cable.
Never connect a product designed for 208/240V to 347V.

CAUTION!



If the electric fault indicator sounds during installation or embedding procedures, mark the location where the cable was damaged. Delineate an area of at least 2 sq. ft. (0.2 sq. m) around the damaged section of the cable and do not cover that area. Proceed with the installation. Repair the cable with the repair kit. If you need assistance with the repair, contact the manufacturer's technical support.

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5.3. Cable spacing, clearance and bypass distances

- To determine cable spacing multiply the surface area (sq. ft.) by 12 and divide by the heating cable length (ft.).
Spacing calculation example: $170 \text{ sq. ft.} \times 12 \div 340 \text{ ft.} = 6''$
- Always maintain a minimum distance of 3" (76 mm) between heating cables.
Note: Failure to use the correct spacing along the entire length of the cable may result in burnout, cable failure and will void the warranty.
- Spacing should not be greater than 6" (152 mm) to ensure reasonably uniform distribution of heat.
- Install heating cables at a minimum distance of 6" (152 mm) from the edge of the surface to be heated or from an exterior wall.
Note: For embedding in asphalt (without curbs), install the heating cable at 12" (305 mm) from the edge.
- Install heating cables at a minimum distance of 6" (152 mm) from fixed elements.
Note: Plan for future elements which could be added afterwards (handrails, lampposts, etc.).
- If the cable must cover a distance greater than 10 ft. (3 m), a U-shaped loop must be used to minimize conductor thermal expansion and prevent it from breaking, while respecting the minimum bending radius of the cable.



CAUTION! Maintain a minimum spacing of 3" (76 mm) between cables.



CAUTION!

Never cross, overlap or bundle cables.

5.4. Anchoring heating cable to foundation base

- For applications where the cable must be anchored to a solid foundation base such as asphalt coating or concrete stairs, use galvanized steel strapping (steel clip strips available as an option, sold separately).
- Strapping must be installed perpendicular to the cable.
 - Maintain a minimum space of 36" (914 mm) to 48" (1219 mm) between strapping.
 - Firmly anchor strapping to the foundation base using concrete anchors or nails.
 - Attach the cable to the strapping (see figures 3 & 4). Do not fasten cables too tightly to avoid any damage. Cable should have some slack.

Figure 3: Position of strapping

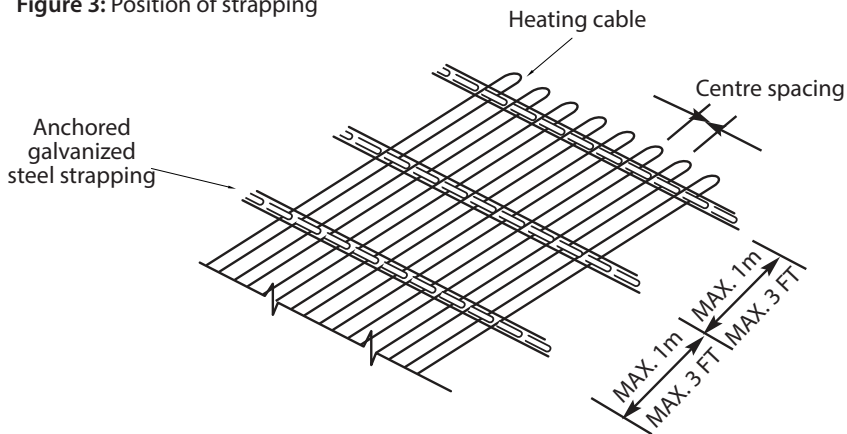
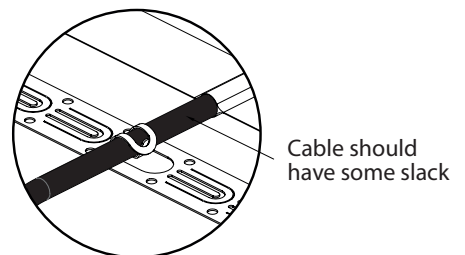


Figure 4: Strapping fastening method



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5.5. Sizing and load

The amount of load to be installed is determined principally from what is required of the installation with regard to the climatic conditions and the control system. Consult the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) or other guidelines for local conditions and requirements.

- For continuous operation and manual control, the following loads may be used as an example:
Surface of road, sidewalks and similar: environ approximately 377 W/m^2 (35 W/sq. ft.).
External stairs: $377\text{-}430 \text{ W/m}^2$ ($35\text{-}40 \text{ W/sq. ft.}$).
Wheel tracks: Track width of 457 mm ($18''$), approximately 377 W/m^2 (35 W/sq. ft.) or more for a single track.
- For instantaneous operation or fully automatic control, the installed loads need to be in the range of 377 to 430 W/m^2 (35 to 40 W/sq. ft.) or even up to 484 W/m^2 (45 W/sq. ft.). Consult the manufacturer for specific heat requirements.

5.6. Controls

All heating circuits shall be controlled by the following methods:

- A high limit slab sensing thermostat and / or timer to prevent overheating.
- An automatic snow / ice sensor that detects precipitation occurring at temperatures below $4 \text{ }^\circ\text{C}$ ($38 \text{ }^\circ\text{F}$).
- The maximum operating ambient temperature is $5 \text{ }^\circ\text{C}$ ($41 \text{ }^\circ\text{F}$). The heating system shall not be energized when temperature is above $5 \text{ }^\circ\text{C}$ ($41 \text{ }^\circ\text{F}$).
- Where the rating of the controller would be exceeded, it shall be used in conjunction with a relay or contactor.

For more information, please follow the manufacturer's instructions supplied with the product.

5.7. Terminations

All junction boxes are required to be located in accessible areas. Junction boxes shall not be located in the heated slab, but located above grade level. Covers shall be kept on boxes at all times when not working therein.

All terminations shall be protected from the weather and from physical damage and bonded to the system ground.

Any field alterations or deviations shall proceed only after the engineer has issued authorization. All changes are required to be accurately recorded by the contractor and turned over to the engineer upon completion of that phase of the work.

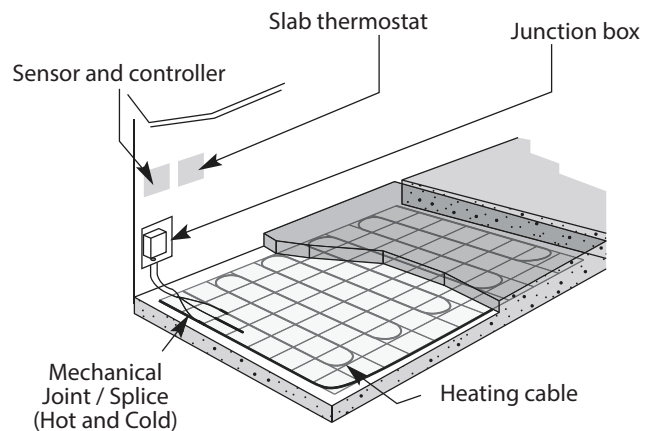
5.8. System identification

The presence of outdoor electric de-icing and snow-melting equipment shall be made evident by posting appropriate caution signs indicating electric heating cable system and must be posted where clearly visible. (NEC. 426.13)

A weather-proof caution sign for the electric snow-melting system will be provided from the manufacturer. The signage must be posted where clearly visible in the area of the electric heating cable system.

For additional caution signs please contact the manufacturer.

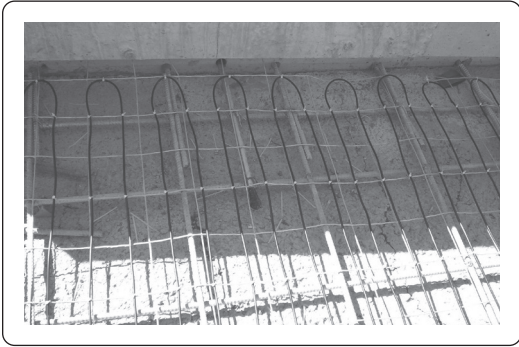
Figure 5: General installation



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6 Installation examples

Typical cable installation on driveway



Heating cables are tied onto rebar or reinforcing mesh and the finished surface is installed (asphalt, interlock, or concrete).

Asphalt: Rake in first layer by hand, roll lightly, then apply second layer.

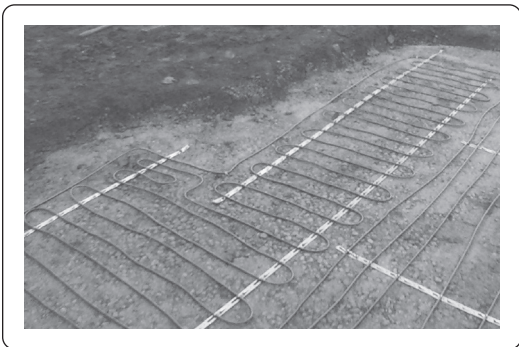
Pavers: Install 1" minimum sand or crush over cable. Compact and install pavers.

Concrete: Lift mesh to centre of pour. Pour concrete.

Finished installation on interlock walkway



Strapping installation on driveway



A cost effective alternative to reinforcing mesh or rebar, galvanized steel strapping (clip strips) are nailed into the surface to hold cable in place during installation of the surfacing material. Clip Strips are spaced on 2 - 3' (0.6 - 0.9 m) centres and have tabs that are bent over the cable to make installation fast and easy. Strips can be arrayed to suit any layout and will not harm cable when installed properly.

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Cable installation on stairs



Heating cables on stairs and landings are engineered for the location and application. They can be installed in new construction or renovation applications under tile, marble, stone or any approved exterior surface.

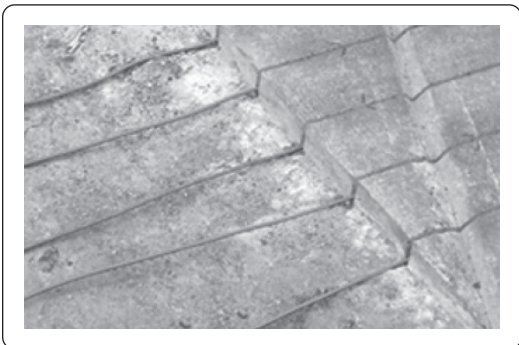
Simply tie onto rebar for poured steps or attach steel strapping to the exterior of the stair, clip cable in and attach step coverings as usual.

Cold leads extended to buried box



This ramp retrofit is a two-pour concrete installation. The upper level was stripped to remove the old corroded metal clad cables and install new corrosion resistant cables. Since the heating cable connections had to be made on only one side of the ramp it was necessary to make custom cables with extra long cold leads to reach the cables on the far side and connect to the junction boxes.

Cable in retrofit installation



The ramp as shown was previously heated with a metal clad cable that corroded. To avoid disruption to the traffic flow on the ramp and keep costs down only the most seriously damaged parts of the ramp were removed. Slots were sawn in the ramp and the heating cables were installed. The slots will be filled with grout to maintain the strength of the ramp and protect the cable.

The result is a new heating system with minimum downtime and cost.

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7 Installation guidelines per type of coating

Guidelines specified in this section are specially formulated for each type of coating. Be sure to conform to minimum and maximum embedding and coating thickness specifications to ensure optimum system performance. Review all guidelines before you begin. Be sure to adhere to all construction codes and regulations applicable in your area. ***De-energize all power circuits before installation of the snow melting system.***


7.1. Concrete slab

- Be sure to have the site cleared of any sharp objects that could damage cables during the installation process.
- Install the welded wire mesh or reinforcing bars so the upper part of the cable is at a minimum distance of 2" (50 mm), and maximum distance of 3.5" (89 mm) from the finished surface of the coating. Refer to figure 6.
- The concrete slab should be adequately reinforced to ensure its integrity. Settling, cracking or crumbling of the coating could damage the cable. The concrete slab should have a minimum thickness of 6" (152 mm) when used for vehicles or 4" (101 mm) when there are no vehicles being used on it.
- Use enough levelling pads to maintain a uniform depth for embedding the heating cable. Be sure not to apply any excessive pressure by walking on the cable.
- Indicate, with spray paint, the position of fixed elements, expansion and control joints to be bypassed.
Note: Also plan for future elements that could be added afterwards.
- Install the cold lead conduit at the planned location. The opening of the conduit should be embedded.
Note: Cold lead and ground sensor conduits must be separated by a minimum of 6" (152 mm) where exiting the heated surface.
- Insert the cold lead in the conduit.
Note: The cold lead can be shortened if needed. Be sure to leave the nameplate label near the connection.
- Keep the end of the cold lead dry and protected throughout the entire installation process.
- Place the mechanical joint/splice between the cold lead and heating cable at a minimum of 6" (152 mm) inside the surface to be heated. The mechanical joint/splice should be entirely embedded. The conduit must protect the cold lead all the way inside (3" (76 mm)) the surface to be heated. The exit point of the conduit must be completely embedded. Never bend the mechanical joint/splice. Never insert the mechanical joint/splice or any part of the heating cable inside the conduit.
- Attach the cable to the framework using plastic tie-wraps. Do not use metal tie-wraps. Be sure to firmly anchor the cable to the framework to prevent any movement when pouring the concrete.
Note: Conform to clearances during the entire installation process (see section 5.3).
- Install the heating cable at a minimum distance of 3" (76 mm) and maximum distance of 6" (152 mm) from the expansion joint. The heating cable should not cross an expansion joint.
Note: Where it is not possible to avoid crossing an expansion joint, bypass the joint by routing the heating cable under the slab (see figure 8).
- Where the construction of the surface to be heated requires a sawn joint, protect the cable where it crosses the control joints (see figure 9). Limit the number of locations where the cable crosses the control joint. The control joint should not exceed a maximum depth of 1" (25 mm).
- Perform insulation and resistance tests after the installation of the cable and before pouring the concrete. Record results.

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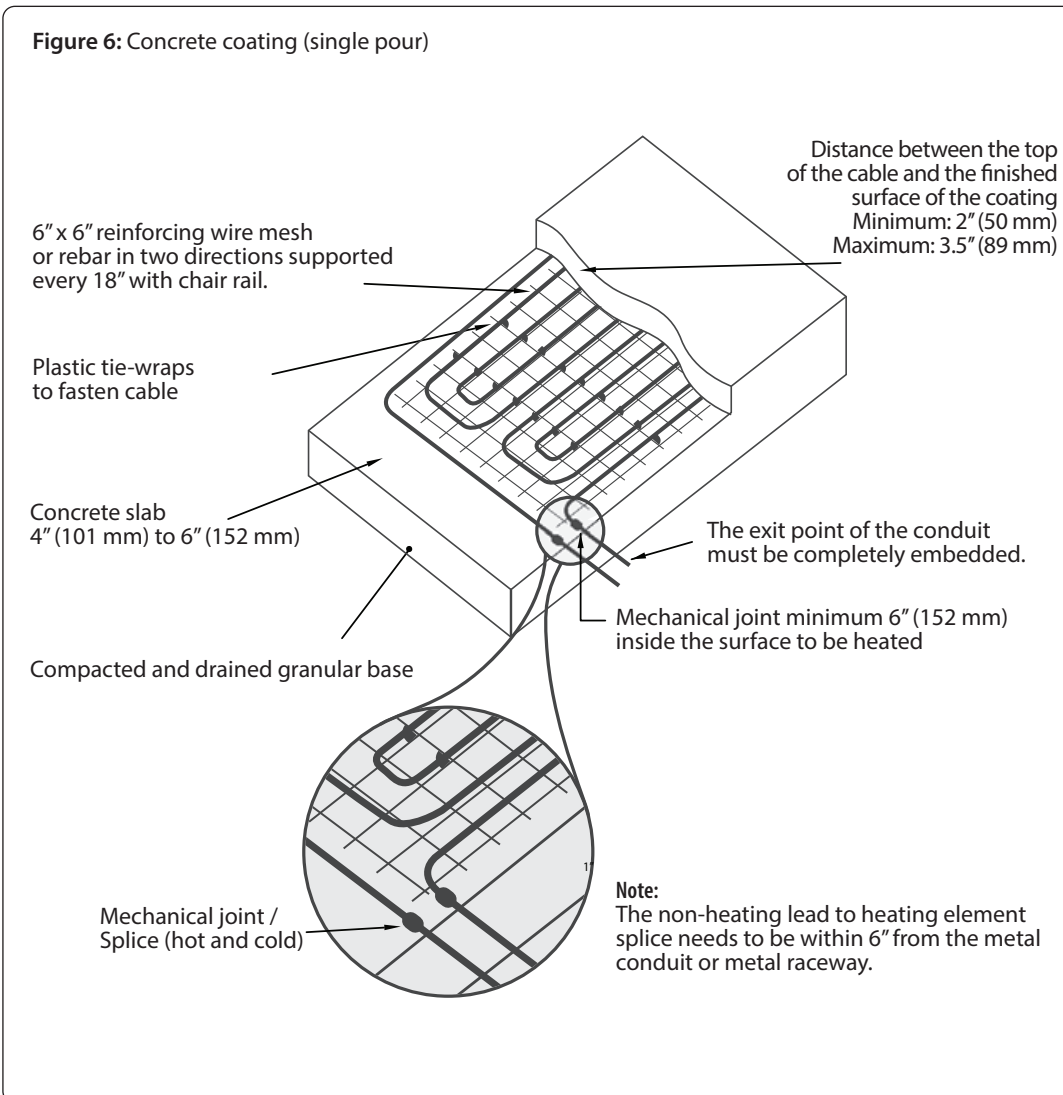
- Proceed with the pour. Be sure not to move the cable while the concrete is being poured.
- For double pour method a maximum 3" (75 mm) concrete cap is required to be poured as soon as possible after the base pour using the same water cement ratio (see figure 7).
- Perform the insulation and resistance tests after the concrete is poured and record results.
- Be sure to conform to the curing period of the coating as specified by the manufacturer, before powering up the system.

CAUTION!



Do not roll over uncovered cables with any equipment. Special precautions should be taken while walking over the cable and while handling sharp tools during the installation process.

Figure 6: Concrete coating (single pour)



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CAUTION!

Work stages should be planned so the cable does not remain uncovered between the installation and the coating stages.

Where the project encounters any delay between these stages, special precautions should be taken to mechanically protect the cable against any breakage.

Figure 7: Concrete coating (double pour)

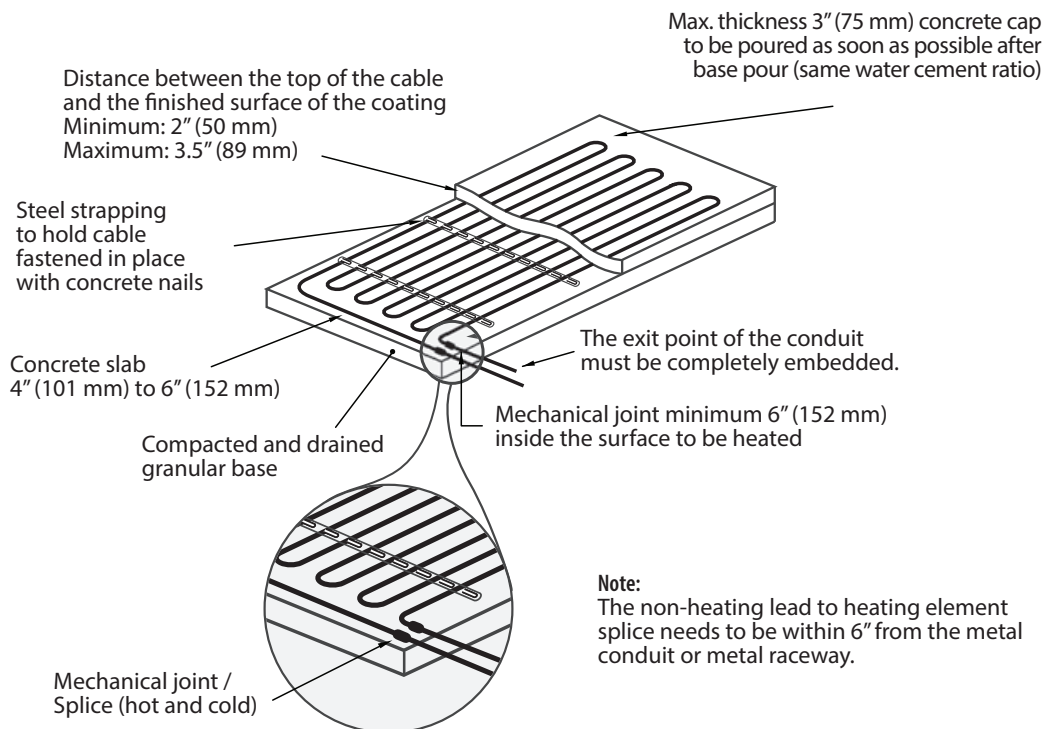


Figure 8: Bypass of expansion joint

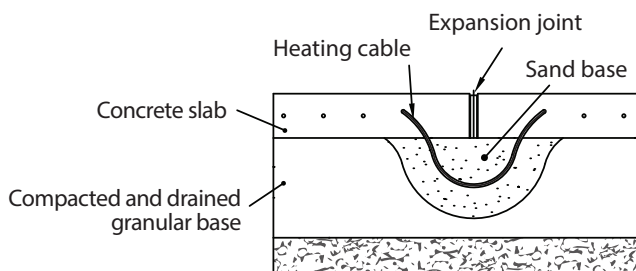
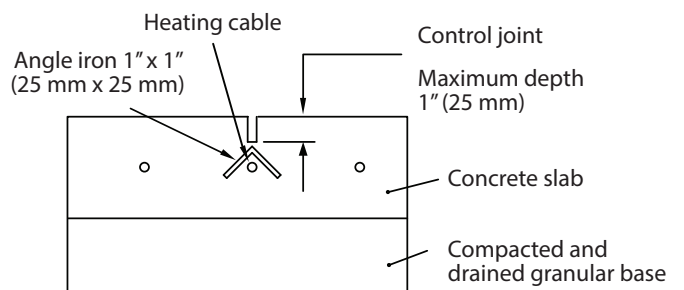


Figure 9: Crossing a control joint



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7.2. Asphalt

- Be sure to have the site cleared of any sharp objects that could damage cables during the installation process.
- Lay a base layer of asphalt over the granular base a minimum thickness of 2" (50 mm) after compaction (see figures 10 and 11). It should be sufficiently thick to support the intended loads. Let the base coat set. Do not install cables directly on the granular base.
- Indicate, with spray paint, the position of fixed elements to be bypassed.
Note: Also plan for future elements that could be added afterwards.
- Install the cold lead conduit at the planned location. The opening of the conduit should be embedded. The conduit should be capable of withstanding hot asphalt.
Note: Cold lead and ground sensor conduits must be separated by a minimum of 6" (152 mm) where exiting the heated surface. For asphalt coating, make sure the conduit can withstand hot asphalt.
- Insert the cold lead in the conduit.
Note: The cold lead can be shortened if needed. Be sure to leave the nameplate label near the connection.
- Keep the end of the cold lead dry and protected throughout the entire installation process.
- Place the mechanical joint/splice between the cold lead and heating cable at a minimum of 6" (152 mm) inside the surface to be heated. The mechanical joint/splice should be entirely embedded. The conduit must protect the cold lead all the way inside the surface to be heated. The exit point of the conduit must be completely embedded. Never bend the mechanical joint/splice. Never insert the mechanical joint/splice or any part of the heating cable inside the conduit.
- Attach the cable to the base layer using galvanized steel strapping (see section 5.4). Be sure to firmly anchor the cable to the base layer to prevent any movement when embedding.
Note: Conform to clearances during the entire installation process (see section 5.3).
- Perform insulation and resistance tests after the installation of the cable and before the manually applied coat and record the results. (Measurement table included on the control card at the end of this manual).
Note: Maximum exposure asphalt temperature is 90°C. This means the system will need a maximum exposure temperature rating of 85°C and the elevated temperature exposure test (IEEE 515.1, Clause 4.2.5) would be done at 85°C + 5°C = 90°C.
- Manually cover the heating cable with a layer of asphalt a minimum thickness of 0.5" (13 mm) after compaction. Use a roller compactor (maximum 1.5 ton).
- Lay an asphalt wearing course a minimum thickness of 1.5" (38 mm), maximum 3" (89 mm), after compaction. Only use pneumatic equipment. Refer to figures 10 and 11.
- Perform insulation and resistance tests after the laying of the asphalt wearing course is complete and cold and record results.
Note: Resistance value may have changed slightly due to asphalt temperature.
- Be sure to conform to the curing period of the coating as specified by the manufacturer, before powering up the system.

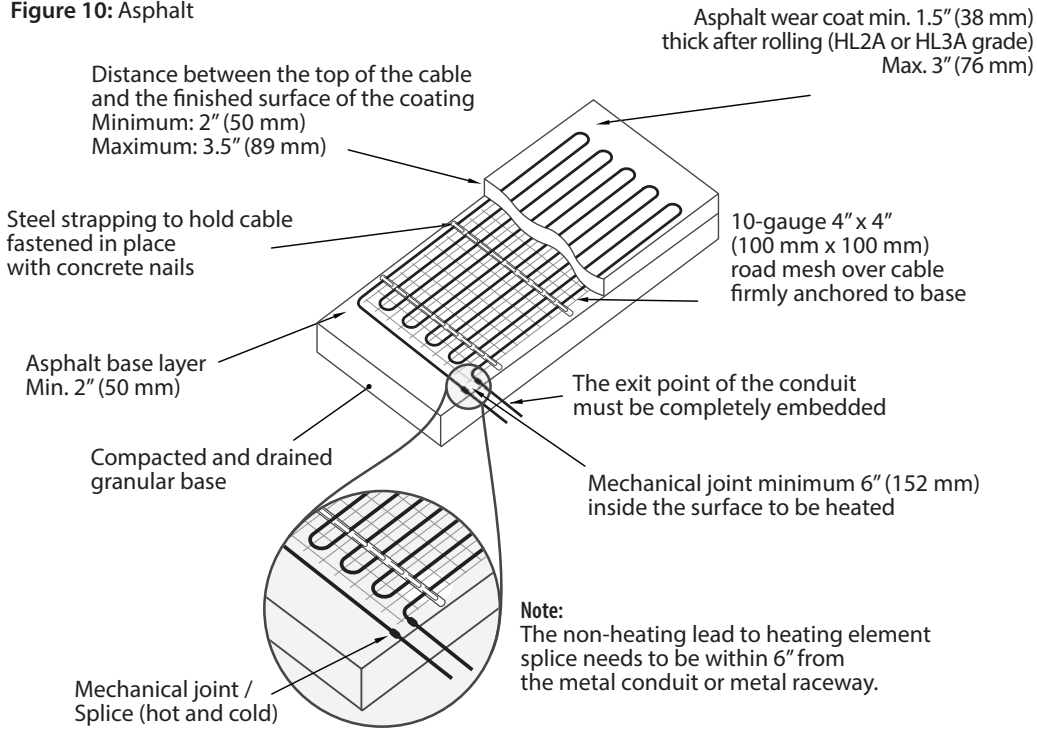
CAUTION!



Do not roll over uncovered cables with any equipment. Special precautions should be taken while walking over the cable and while handling sharp tools during the installation process.

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Figure 10: Asphalt

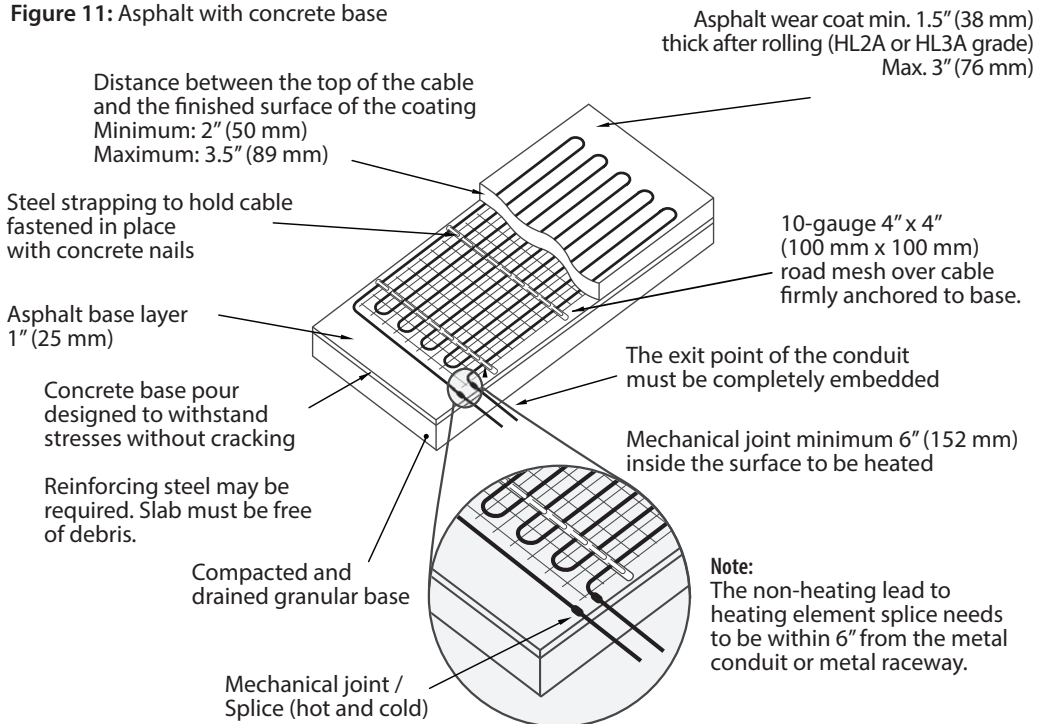


Note:

Maximum exposure asphalt temperature is 90°C

This means the system will need a maximum exposure temperature rating of 85°C and the elevated temperature exposure test (IEEE 515.1, Clause 4.2.5) would be done at 85°C + 5°C = 90°C.

Figure 11: Asphalt with concrete base



CAUTION!

Work stages should be planned so cable does not remain uncovered between the installation and coating stages.

Where a project encounters any delay between these stages special precautions should be taken to mechanically protect the cable against any breakage.

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7.3. Brick, concrete or stone pavers

- Be sure to have the site cleared of any sharp objects that could damage cables during the installation process.
- Lay the first layer of stone dust over the granular base a minimum thickness of 1" (25 mm). Do not install the cable directly over the granular base. Refer to figures 12 and 13.
- Indicate, with spray paint, the position of fixed elements to be bypassed.
Note: *Also plan for future elements that could be added afterwards.*
- Install the cold lead conduit at the planned location. The opening of the conduit should be embedded.
Note: *Cold lead and ground sensor conduits must be separated by a minimum of 6" (152 mm) where exiting the heated surface.*
- Insert the cold lead in the conduit.
Note: *The cold lead can be shortened if needed. Be sure to leave the nameplate near the connection.*
- Keep the end of the cold lead dry and protected, throughout the entire installation process.
- Place the mechanical joint/splice between the cold lead and heating cable at a minimum of 6" (152 mm) inside the surface to be heated. The mechanical joint/splice should be entirely embedded. The conduit must protect the cold lead all the way inside the surface to be heated. The exit point of the conduit must be completely embedded. Never bend the mechanical joint/splice. Never insert the mechanical joint/splice or any part of the heating cable inside the conduit.
- Attach the cable to the base layer using galvanized steel strapping (see section 5.4). Be sure to firmly anchor the cables to the framework to prevent any movement when embedding.
Note: *Conform to clearances during the entire installation process (see section 5.3).*
- Perform insulation and resistance tests after the installation of the cable and before laying the second coat of stone dust. Record the results. (Measurement table is included on the control card at the end of this manual).
- Lay a second layer of stone dust over the heating cable a minimum thickness of 1" (25 mm). Be sure not to move the cable during the second application of stone dust. Refer to figures 12 and 13.
- Install paving and stabilize the installation using a plate compactor. Fill all joints in compliance with the manufacturer's recommendations.
- Perform insulation and resistance tests after the laying of paving is complete and record the results.



CAUTION!

Work stages should be planned so the cable does not remain uncovered between the installation and the coating stages. Where the project encounters any delay between these stages, special precautions should be taken to mechanically protect the cable against any breakage.



CAUTION!

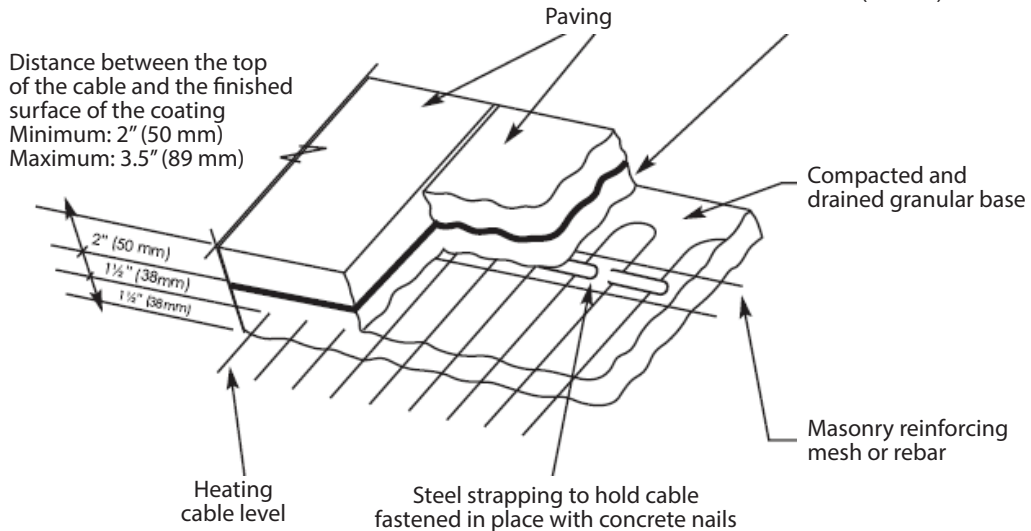
Do not roll over uncovered cables with any equipment. Special precautions should be taken while walking over the cable and while handling sharp tools during the installation process.

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Figure 12: Pavers on concrete

*Note: The exit point of the conduit must be completely embedded.
Mechanical joint (splice) minimum 6" (152 mm) inside the surface
to be heated.*

Install layer of stone dust,
compact sand or limestone
after cables are installed
Minimum: 1" (25 mm)

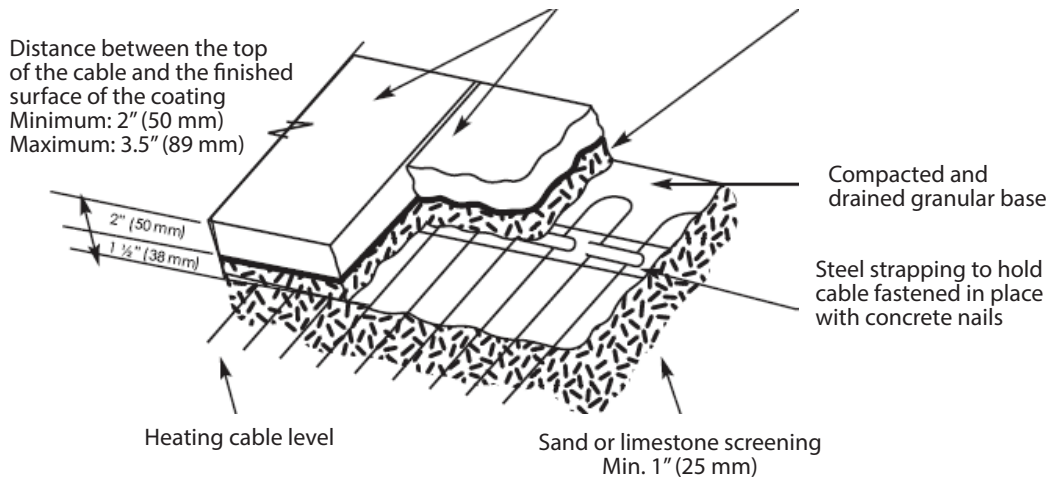


Note: The non-heating lead to heating element splice needs to be within 6" from the metal conduit or metal raceway.

Figure 13: Pavers on crush run

*Note: The exit point of the conduit must be completely embedded.
Mechanical joint (splice) minimum 6" (152 mm) inside the surface
to be heated.*

Install layer of stone dust,
compact sand or limestone
after cables are installed
Minimum: 1" (25 mm)



Note: The non-heating lead to heating element splice needs to be within 6" from the metal conduit or metal raceway.

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7.3. Concrete stairs

- Be sure to have the site cleared of any sharp objects that could damage cables during the installation process.
- Calculate the dimensions for the first pour so the top of the cable is located at a minimum distance of 2" (50 mm), and maximum distance of 3.5" (89 mm) from the finished surface of the stairs (see figure 14).
- Proceed with the first pour. Let the concrete set. Remove all forms to clear the surface of the riser.
- The concrete stairs should be adequately reinforced to ensure their integrity. Settling, cracking or crumbling of the coating could damage the cable.
- Round off the step nosing where the cable will run.
- Indicate, with spray paint, the position of fixed elements to be bypassed.
Note: Also plan for future elements that could be added afterwards.
- Install the cold lead conduit at the planned location. The opening of the conduit should be embedded.
Note: Cold lead and ground sensor conduits must be separated by a minimum of 6" (152 mm) where exiting the heated surface.
- Insert the cold lead into the conduit.
Note: The cold lead can be shortened if needed. Be sure to leave the nameplate near the connection.
- Keep the end of the cold lead dry and protected, throughout the entire installation process.
- Place the mechanical joint/splice between the cold lead and heating cable at a minimum of 6" (152 mm) inside the surface to be heated. The mechanical joint/splice should be entirely embedded. The conduit must protect the cold lead all the way inside the surface to be heated. The exit point of the conduit must be completely embedded. Never bend the mechanical joint/splice. Never insert the mechanical joint/splice or any part of the heating cable inside the conduit.
- Attach the cable to the base layer using galvanized steel strapping (see Section 5.4). Be sure to firmly anchor the cables to the base layer to prevent any movement when embedding.
Note: Conform to clearances during the entire installation process (see Section 5.3).
- Perform insulation and resistance tests after the concrete is poured and record the results.
- Proceed with the second pour. Use an appropriate method to prepare the surface before the second pour is done and be sure adherence is adequate between the two layers. Delaminating of concrete layers could damage the cable. Be sure not to move the cable during the pouring process.
Note: When using the two pour method, base slab must be clean, wetted and then coated with a cement slurry. Slurry must not dry before the top cap is poured.
- Perform insulation and resistance tests after the installation of the cable and before pouring the concrete. Record the results.
- Be sure to conform to the curing period of the coating as specified by the manufacturer before powering up the system.

CAUTION!



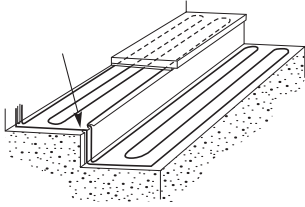
Do not roll over uncovered cables with any equipment. Special precautions should be taken while walking over the cable and while handling sharp tools during the installation process.



CAUTION!

Work stages should be planned so the cable does not remain uncovered between the installation and the coating stages. Where the project encounters any delay between these stages, special precautions should be taken to mechanically protect the cable against any breakage.

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Installing cable on stairs:

The heating cable on stairs should be laid lengthways on the steps so that they only lie on the horizontal surfaces. The cables are embedded in mortar covered with a 50 mm (2") screed or paving slabs. For small stairs, the single conductor cable is used with 3-5 cable runs in each step.

Note: When using the two pour method, base slab must be clean, wetted and then coated with a cement slurry. Slurry must not dry before the top cap is poured.

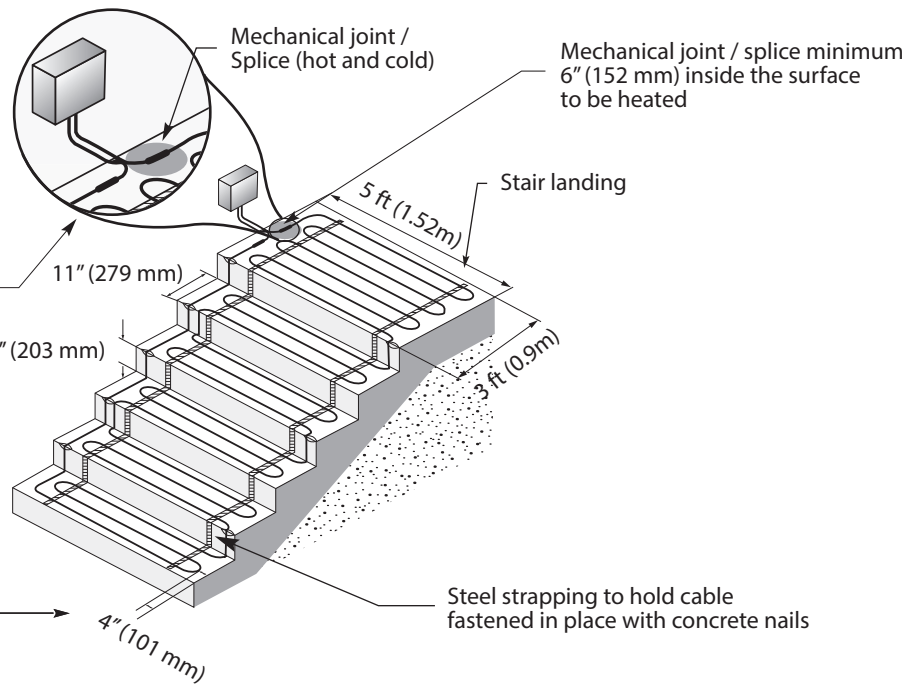
Figure 14: Concrete stairs

Note:

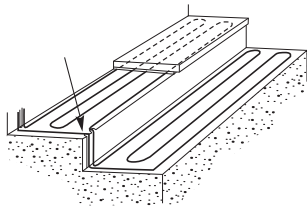
The non-heating lead to heating element splice needs to be within 6" from the metal conduit or metal raceway.

The exit point of the conduit must be completely embedded

Cable must be 4" (101 mm) from fixed element or edge



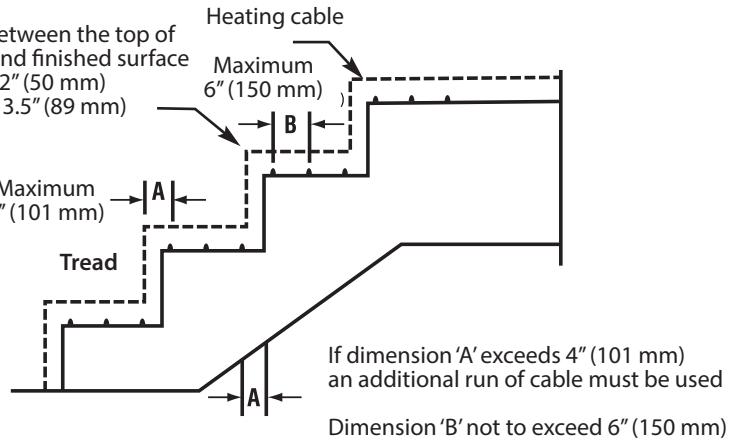
Corner removed



Distance between the top of the cable and finished surface
Minimum: 2" (50 mm)
Maximum: 3.5" (89 mm)

Maximum 4" (101 mm) → A ←

Riser
Maximum 3.5" (89 mm) from riser



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8 Electrical connection



CAUTION!

Electrical connection should be performed by a master electrician.



CAUTION!

System connection should be performed once the heating cable is completely embedded and the curing period for coatings is complete. Follow the manufacturer's recommendations.



CAUTION!

This product must be installed with a ground fault circuit interrupter (GFCI) in compliance with the Canadian Electrical Code and the National Electrical Code.

- Perform insulation and resistance tests before connecting the system to the controller and enter results in the control card measurement table.
- Follow the controller manufacturer's instructions for connecting the heating cable system. Instructions are part of your product packaging.
- Ensure that thermostats and controls used are double pole, i.e. they cut off both power lines to the cable(s).
- If code allows it, we recommend using a GFCI that can be adjusted up to 30mA
Note: *If you need assistance with the connection of your heating cable system for snow melting, please contact the manufacturer's technical support.*

WARRANTY INFORMATION

Policy Summary / Terms & Conditions

Warranty

Subject to provisions stipulated in the Consumer Protection Act's legal requirements respecting the quality and durability of goods: Britech guarantees its TXLP1 series heating cables for a period of 20 years from the date of purchase against any manufacturing defect or malfunction.

Limitations and exclusions

The above mentioned guarantees are limited to the reimbursement of the original purchase cost or replacement of the heating cables (hereinafter called "equipment") excluding any other part and also excluding any cost or any expense relating to connection, removal or installation of aforesaid equipment, including all workmanship costs.

The buyer may choose between the reimbursement of the original purchase cost and the replacement of defective equipment, subject to the aforementioned restrictions. This warranty is provided to the original buyer of the equipment as well as subsequent owners of the building where the equipment was installed.

Warranty terms

The above mentioned warranties are subject to the following conditions:

- i. The buyer must provide the original purchase invoice for the defective equipment, to the manufacturer or to one of their authorized dealer.
- ii. The buyer must report promptly in writing to the manufacturer any malfunction of equipment covered by the present warranties, in a reasonable time frame, from the time the malfunction occurred or the malfunction was brought to their knowledge thereby enabling the manufacturer's representatives enough time to verify the defective equipment, if need be.
- iii. Equipment covered under the present warranties must be installed in compliance with the manufacturer's instructions.
- iv. Equipment covered under the present warranties must be used under normal conditions of use and be maintained on a regular basis from the date of purchase.

Name and address of the person providing the present warranties:

17 Pullman Court
Toronto, Ontario
Telephone: 1 877 335-779

Customer service: If you have any questions about this product, please contact our technical support team:



OUELLET

Canada: 1 800 463-7043 • info@ouellet.com • ouellet.com
USA: 1 800 525-3622 • USAinfo@ouellet.com • ouellet.com



BRITECH

1 877 335-7790 • info@britech.ca • britech.ca



DELTA-THERM
CORPORATION*

1 800 526-7887 • info@delta-therm.com • delta-therm.com

Control Card

Heating Cable System

Product Name: _____

Model #: _____ Watts: _____ Volts: _____

Supplier/Purchased from: _____

APPLICATION: Pavement de-icing Surface snow and ice melting Stair snow and ice melting

LOCATION: _____

TEST	Before commencing installation	After installation but before final surface	After final surface installation
Continuity			
Resistance of Cable (OHMS)			
Insulation Resistance (M OHMS)			

Address of Installation: _____

Date of Installation: / / (MM/DD/YY)

Name of Qualified Electrician: _____

Signature of Qualified Electrician: _____

IMPORTANT: The system warranty is not valid without evidence that the system resistance has been tested. Control Card must be completed and given to the property owner upon completion of installation and required testing.