DEVI Frost Heave System - Specification.

This section relates to the supply and installation of **DEVI™** Heating Systems Ltd electric frost heave prevention heating system and controls for normal and blast freezers.

**1. DOCUMENTS.**

* 1. **Product Installation and Compliance Documents.**

 Compliance with the following documents is required during the installation, commissioning, and testing of installed Devi products:

 [NZBC G9](http://www.masterspec.co.nz/redirect.aspx?pl=251)/VM1 Electricity, 1.0 Electrical installations.

 NZS 6110 Electrical installations: Floor and ceiling heating systems.

 AS/NZS3000 Electrical installation (Act approved).

 IEC60800:2009 DEVIflex™ inslab heating cables DTIP.

 IEC 60730-2-9 DEVIreg™ thermostat.

### **Manufacturers Documentation.**

 **DEVI™** Heating Systems product information, installation instructions and warranty documents are supplied with all products.

 Additional copies of these instructions are available from:

 Web: [www.devi.co.nz](http://www.devi.co.nz)

 Email: info@devi.co.nz

 Telephone: South Island 03 348 0070 or 0800 468 356

 North Island 09 415 7250 or 0800 927 635

* 1. **Warranty – Supplier/Manufacturer.**

 The manufacturer’s warranty is:

 **DEVI™** DEVFlex™ Heating elements 20 years.

 **DEVI™** DEVIreg™ Manual thermostats 2 years.

 Warranties must be provided using the manufacturer/supplier standard forms as supplied. Warranties commence from the date of installation of the elements.

 Work undertaken by each subtrade shall be covered by their own warranty.

### **2**. **RELATED WORKS.**

 Electrical specification.

 Foundation specification.

 Freezer builder.

**3. CONDITIONS.**

All work and materials must comply with **DEVI™** installation instructions.

### **4.** **QUALIFICATIONS.**

###  Installation must be undertaken by a competent practitioner, electrical trades person, or by a **DEVI™** approved installer.

###  Refer section 7.3 for livening.

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## 5. DEVI™ PRODUCTS AND DESIGN INFORMATION

5.1 Substitutions are not permitted to any **DEVI™** system, associated products, components, or accessories.

5.2 DEVIflex™ DTIP is a twin conductor fully screened heating element in ready-made lengths with a UV stabilized PVC outer sheath with a PEX conductor insulator. Elements are available from 10M to 210M in length. Multiple cables may be installed to one circuit for larger freezers.

5.3 Element size to be measured from plans to fit floor area or as per specified.

5.4 Normal freezers type floors are to be heated at 25W/SQM.

 Blast freezer type floors are to be heated at 45W/SQM.

 (Delete freezer type that are not applicable then delete this line).

5.5 Elements may be installed in 2 different techniques.

 Tie element to the reinforcing mesh of the base slab prior to concrete pour.

 Lay elements onto the surface of the base slab using DEVIfast securing strips.

 (Delete technique that is not applicable then delete this line).

5.6 For each zone, an active and a passive element(s) shall be installed, controlled each with autonomous DEVIreg 330 thermostats. Elements are not to cross one another.

5.7 **Thermostat and Control.**

 DEVIreg™ 330 Thermostat, -10/+10 degrees Celsius, manual, distribution board

 mounted,.16A complete with sensor floor sensor.

 PlllM275DS Surge diverter, one per phase to which frost heave is connected.

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## 6. EXECUTION.

### 6.1 **Confirm Layout.**

 Before commencing work confirm the proposed location of heating cables.

### 6.2 **Co-ordinate Services.**

 Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system.

6.3 **Preliminary Work.**

 Ensure reinforcing mesh is installed and properly set on chairs, where required.

 Ensure all walls, doorways, windows, fixed furnishings, and floor penetrations are clearly and accurately marked out on the polystyrene floor insulation.

### 6.4 **Install DEVIflex****™ DTIP Cables.**

 Install the DEVIflex™ elements ,as shown on plans / **DEVI™** schedule and in accordance to **DEVI™**  instructions. Cable to be secured to the reinforcing mesh using cable ties or DEVIfast™ fixing strip.

6.5 Ensure the **DEVIflex**™element is evenly spaced, minimum 50mm separation between element runs, do not cross or touch and are installed in accordance with the manual.

### 6.6 **Install Thermostat Sensors.**

 Install 2 thermostat sensors for each zone as per the **DEVI™** schedule. Install sensors within a single rigid 20mm conduit. Seal floor end of conduit with tape. All sensor conduit bends must be 50mm radius or greater to ensure sensor can be easily replaced. Sensors to be installed equidistantly between heating element loops.

### 6.7 **Pouring Foundation.**

 Where applicable, liaise with the concrete placers to ensure that **DEVI™** elements are not hooked to the surface or damaged during the pour.

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### 6.8 **Cold Tail Connections.**

 Terminate all cold tails not less than 300 mm above floor level on outer wall of freezer.

6.9 **Thermostat Installation.**

 Install and connect all thermostats and control accessories as per the **DEVI™** schedule and thermostat installation instructions. (An optional alarm trigger may be taken from the passive thermostat).

### **7.** **TEST PROCEDURES AND COMMISSIONING.**

7.1 Refer AS/NZS3000 section 8 Verification.

7.2 Complete visual inspection, conductor resistance and insulation resistance test prior to installation. Repeat tests after installation (post-pour) and immediately before livening the circuit. Record the tests in the record panel in the installation manual. The manual is to be given to whomever the electrician is contracted to.

7.3 An electrician registered person must complete the test result panel and associated Certificate of Compliance and forward these to the property owner or project manager.

### **8. CONTROLS SETTINGS.**

 Active thermostat to be set for 6 degrees Celsius.

 Passive thermostat to be set for 4 degrees Celsius.

 Leave thermostats in off state.

### **9. CLEANING.**

 Check site for safety and remove all surplus materials.