

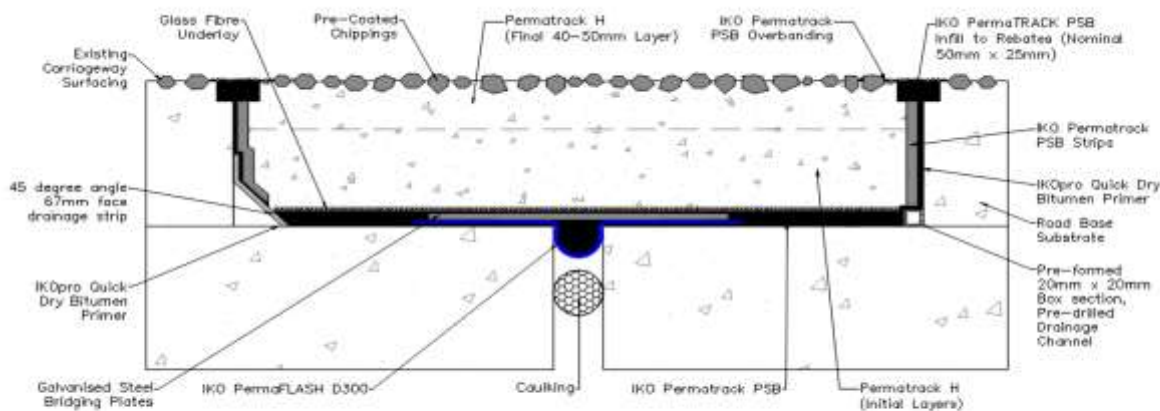
IKO PERMATRACK H BRIDGE DECK EXPANSION JOINT SYSTEM

1.0 GENERAL

- 1.1 *The Technical Installation, Composition and System requirements of the IKO Permatrack H Bridge Deck Expansion Joint System shall be stated in:*
- 1.1.1 *The relevant in-house specifications and codes of practice.*
 - 1.1.2 *This method statement.*
- 1.2 *Installation of the IKO Permatrack H Bridge Deck Expansion Joint System shall be carried out by registered trained installers, under competent supervision, in accordance with the method detailed in section 6.0 of this document.*
- 1.3 *A programme of the works shall be agreed with the purchaser / client prior to commencement of the installation. Requirements for the provision of sufficient working area, plant, safety and (if required) testing and protection of the system agreed.*
- 1.4 *This document, together with all the necessary Health, Safety and Environment data, relevant COSHH and specific Risk Assessments for the works shall be agreed and submitted to the purchaser / client, and copies held on site.*

2.0 SYSTEM COMPONENTS

TYPICAL SECTION



- 2.1 **IKO Permatrack H (BJ)(High Modulus):**
Manufactured in accordance with the in-house Quality Plan. Utilised as the trench in-fill material, providing joint trafficking surface and giving a high resistance to rutting and deformation under loading. Addition of specified PSV coated chippings (2.4 and 2.5) to provide the specified Skid Resistance Values (SRV).
- 2.2 **IKO Permatrack PSB Strip (100mm x 15m x 1000mm)**
High movement, pre-formed strip, providing the majority of the design movement for the expansion joint system.

- 2.3 **Permatrack PSB (Penetrates, Seals and Bonds):**
Highly flexible material, utilised for tanking the trench prior to the application of further system components and hot poured sealer in the 50mm x 25mm surface rebates.
- 2.4 **20mm Pre-coated aggregate chippings:**
Specified Polished Stone Value (PSV)*
- 2.5 **14mm Pre-coated aggregate chippings:**
Specified Polished Stone Value (PSV)*
- 2.6 **IKOpro Quick Dry Bitumen Primer:**
Solvent based. Quick drying
- 2.7 **Galvanised Steel Plate (Specified in Table 1):**
Complying with BS EN ISO 1461:2009 installed over the movement gap, providing support to the Permatrack H in-fill.
- 2.8 **Pre-formed Drainage Channel (1):**
Nominal 67mm x 10mm once-bent angled plate placed along the length of the joint (kerb to kerb at an angle of approximately 45°).
- 2.9 **Pre-formed Drainage Channel (2):**
20mm x 20mm box section used for cross joint drainage or kerb to kerb drainage in particularly shallow joints (<80mm)
- 2.10 **Glass Fibre Tissue (Anti-Migration Matting):**
Prevents base PSB layer from migrating into the Permatrack H on application.
- 2.11 **Joint Gap Caulking (Heat Resistant):**
Polyethylene foam, cellulose rope or other suitable material used to pack the movement gap to prevent transfer of molten materials through the gap whilst not effecting joint movement.
- 2.12 **Permaflash D300 (20m):**
Provides secondary seal to the movement gap over the movement gap caulking. For movement gaps >30mm.
- 2.13 **6mm Granite (Bagged):**
Used when manual mixing on site.
- 2.14 **IKO Permatrack HS (Heat-sink):**
Pre-formed gritted material used in trenches to aid cooling. Spacing criteria detailed in Table 2.

3.0 QUALITY CONTROL

- 3.1 IKO Permatrack H (BJ)(High Modulus) is tested in accordance with the agreed requirements of the Quality Plan and the relevant in-house test specifications for process control.
- 3.2 IKO Permatrack PSB Strips are tested in accordance with the requirements of the Quality Plan.
- 3.3 IKO Permatrack PSB is tested in accordance with the agreed requirements of the Quality Plan.
- 3.4 Each component received on site shall be logged and stored in such a way as to prevent contamination or deterioration, in accordance with the manufacturers instructions.

4.0 SUITABILITY FOR INSTALLATION

- 4.1 The IKO Permatrack H Bridge Deck Expansion Joint System is suitable for movement joint applications with an overall design horizontal movement range of 40mm (+/- 20mm), and overall vertical movement of 3mm in accordance with BD33/94 Expansion Joints For Use In Highway Bridge Decks. The Permatrack H Bridge Deck Expansion Joint System is registered with Highways England
- 4.2 The IKO Permatrack H Bridge Deck Expansion Joint System is suitable for minimum joint depths of 70mm (Pre-formed Drainage Channel 2) or minimum 80mm if Drainage Channel 1 is used. Minimum thickness of Permatrack H material required in all cases is 50mm
- 4.3 The system is deemed suitable for installation to non-porous, bituminous and concrete surfaces that have been prepared in accordance with Section 7.0 of this document

5.0 TRAFFIC MANAGEMENT

- 5.1 Traffic Management shall be in accordance with Department of Transport Traffic Signs Manual – Chapter 8 : 1991, or as agreed between the purchaser / client and the installer.

6.0 WEATHER CONDITIONS

- 6.1 Installation of the system should only be carried out at a road surface temperature in excess of -5°C.
- 6.2 Ambient and road surface temperatures shall be recorded at the start and, if the weather is variable, during the installation process. When possible this shall be recorded on the relevant Site Assessment and Installation Report. If this is not possible then the site supervisor should log the required temperatures.
- 6.3 The joint and surrounding surfaces shall be suitably dry prior to and during the installation of the system. The curing period for the prevailing weather conditions shall be established with the purchaser / client.

7.0 PREPARATION OF EXPANSION JOINT

- 7.1 The area into which the system is to be installed shall be clearly defined by the purchaser / client prior to commencement of the on-site work.
- 7.2 The joint is saw cut either side of the movement gap, giving the width of the joint as specified by the purchaser / client.



- 7.3 The material between the saw cuttings is removed, by suitable means to form the joint trench.
- 7.4 A further saw cut is made 25mm away from the edge of the joint trench and to a depth of 25mm. This cut area of material is then removed to form a rebate at the top of the trench.



- 7.5 Any loose material is removed from the trench and rebate and the area dried and cleaned further using hot compressed air equipment.
- 7.6 Clean out any debris from the deck joint movement gap.
- 7.7 All surfaces of the trench and rebate are wire brushed to remove all dust, slurry etc. A further application of the hot air equipment may be required to fully dry and clean the joint.

8.0 INSTALLATION 1 – JOINT TRENCH TANKING

- 8.1 The gap is then tight sealed utilising suitable pack material as detailed in section 2.11. So as to form a 25mm rebate from deck level.
- 8.2 IKOpro Quick Dry Primer is applied to all joint surfaces. Particular attention paid to the top edges of the rebate. A slight overrun of primer onto the existing road surface is satisfactory in order to ensure adequate coverage of the primer. Allow the primer to dry, this can be facilitated by a gentle heating with hot air equipment.



- 8.3 Permatrack PSB is melted in a mechanically agitated cauldron or similar to a suitable installation temperature of between 150 -190°C. At no stage must the temperature exceed 200°C.
- 8.4 Permatrack PSB (molten) is applied to the base of the trench, filling the movement gap level with the existing deck. The thickness of the PSB at deck level should be 5mm (nominal) maximum 10mm.
- 8.5 For movement gaps in excess of 30mm, Permaflash D300 Joint Gap Sealer Membrane (2.12) is placed over the movement gap and sealed down on the molten Permatrack PSB, and a further 3-5mm nominal coat of Permatrack PSB is applied over the Permaflash D300.
- 8.6 Pre-formed Drainage Channel as detailed in Section 2.8 or 2.9 is installed into the trench.

- 8.6.1 Trench face-to-face drainage (2.9 cross joint) – Shall be installed as low as possible on the joint face and raised at the leading end so as to provide a suitable fall across the joint.



- 8.6.2 Trench Kerb to Kerb (Length of joint) – Drainage holes placed against the trench faces with the base of the PRD resting on the 5mm tanked base.
 - 8.6.3 Drainage specified in section 2.9 is installed when the application requires kerb-to-kerb drainage. Drainage specified in section 2.8 is installed when the application requires kerb-to-kerb drainage in rebates greater than 80mm deep.
 - 8.6.4 Alternative drainage systems / design may be required in agreement with the client / specifier.
 - 8.6.5 Surface of all drainage channel to be primed with IKOpro Quick Dry Primer.
- 8.7 The specified (See table 1) bridging plate is applied to the still molten PSB, centrally over the movement gap.



TABLE 1 – GALVANISED STEEL BRIDGING PLATE

| Max Joint Gap (mm) | Plate Thickness (mm) | Plate Width (mm) |
|--------------------|----------------------|------------------|
| 5 to 50 | 1.50 | 200 |
| > 75 | 5 | 250 |
| > 100 | 10 | 300 |
| 100+ | 15 | Special* |

* To be agreed with the purchaser / client

8.8 A further layer of Permatrack PSB is applied to all surfaces of the trench to a nominal thickness of 3 - 5mm. This should ensure a nominal thickness on the base of 9-15mm and 3-5mm on the vertical surfaces.

9.0 INSTALLATION 2 – IKO PERMATRACK PSB STRIP

8.9 IKO Permatrack PSB Strips in accordance with section 2.2 are applied to the vertical faces of the trench, level with the bottom of the 25mm rebate and to the base of the trench face, covering the installed drainage. The strips are heated (with a gentle flame) on the marked side (coloured dot) and this side is applied to the prepared face of the trench while the PSB is still warm. If the depth of the trench is less than the width of a single, or combined strip, then the strips can be continued onto the base of the trench. **A physical check of the bond shall be conducted** and when applicable the findings detailed in the relevant Site Assessment and Installation Report. If this is not possible the installation supervisor shall document that he has checked the physical bond.



8.10 A further 3mm (nominal) layer of IKO Permatrack PSB is applied to the interior face of the fixed IKO Permatrack Movement Strips.



10.0 INSTALLATION 3 – GFT ANTI-MIGRATION MAT

10.1 A layer of Anti-migration membrane as detailed in Section 2.10 is applied to the base. On trenches that are wider than the membrane then 'lapping' of the membrane may be required.



11.0 INSTALLATION 4 – IKO PERMATRACK H (HIGH MODULUS)

11.1 Stage 1 application – For deep joint trenches the joint is filled using a staged layering technique. This is done in order to facilitate the material cooling process. The Permatrack layers are installed at nominal 100mm depths with a finishing layer of 50mm.



11.2 The addition of Heat Sink (HSB) pre-formed Permatrack H material in accordance with section 2.14 may be applicable in certain applications in order to further facilitate the joint cooling process.

TABLE 2 – HEAT SINK BLOCK SPACING CRITERIA

| Location of Heat Sink Block | Minimum Spacing Requirement (mm) |
|-----------------------------|----------------------------------|
| From edge of rebate | 100 |
| From base of rebate | 100 |
| Between HSB same layer | 50 |
| Between HSB layers | 100 |

11.3 Molten Permatrack H (BJ) is installed into the trench at a temperature not exceeding 180°C (Target 170+/- 10°C).

11.4 The joint trench is in filled using the layering technique, with the surface of each layer being allowed to become semi-firm prior to the application of further layers. This is conducted until the material is approximately 50mm below the road surface level.

11.5 Ensure that the IKO Permatrack Movement Strips remain in position throughout the application of the IKO Permatrack H (BJ) into the trench.

11.6 Stage 2 application – Once the stage infill Permatrack H (BJ) has reached an approximate surface temperature of 50°C the remaining volume of material can be installed into the trench at a temperature, again not exceeding 180°C.



- 11.7 Once the Permatrack H (BJ) is approximately 50mm below the road surface level, then 25mm x 50mm steel Form-work is placed on the step and into the joint by 25mm and held in place by dabs of Permatrack H (BJ), then the remaining Permatrack H (BJ) is installed to the carriageway surface level. Permatrack H (BJ) will shrink slightly on cooling, a slight overfill is required in order to maintain surface levels once chipping and rolling has been conducted.



- 11.8 The required surface treatment (Sections 2.4 or 2.5), in order to meet the required SRV and surface appearance criteria is applied to the joint. The frequency / spread rate is detailed in table 3.



TABLE 3 – SURFACE TREATMENT SPREAD RATES¹

| Type of Surface Treatment | Frequency / Spread Rate (Kg/m ²) |
|---|--|
| 20mm Pre-Coated Chippings (Section 2.4) | 10 – 14 |
| 14mm Pre-Coated Chippings (Section 2.5) | 7.5 – 10 |
| Alternative surface treatment and spread frequency may be agreed with the purchaser / client Prior to installation. | |

- 11.9 The surface of the joint is rolled or tamped until satisfactory embedment of the surface treatment is achieved. The texture depth can be checked (once cooled) in accordance with BS EN 13036-1:2002. Results of the texture depth shall be recorded on the Site Assessment and Installation Report.

The tolerance for the level of the rolled expansion joint and the existing carriageway is 3mm maximum in accordance with BD33/94.

12.0 INSTALLATION 5 – IKO PERMATRACK PSB REBATES & OVERBANDING APPLICATION

- 12.1 Once the joint has cooled sufficiently, the 20mm x 50mm steel formwork can be removed to leave 20mm deep by 50mm wide rebates.
- 12.2 The rebates are checked and a further application of bitumen primer is applied if necessary* to all rebate surfaces and allowed to dry.
- * If the joint rebates are to be left for any period of time prior to PSB application (10.3) e.g. overnight.
- 12.3 Permatrack PSB (temperature criteria as Section 8.3) is poured into the rebates and allowed to cool.
- 12.4 The 50mm wide PSB rebates are overbanded with 75mm wide, 3mm (nominal) thickness application of Permatrack PSB Overbanding material. To provide additional Skid Resistance (if required) Bauxite, or similar agreed with the purchaser / client can be applied to the surface of the hot Permatrack PSB overbanding.



13.0 SYSTEM INSTALLATION CHECKS CARRIED OUT BY THE INSTALLER

13.1 A visual check shall be carried out for uniform surface texture, blemishes and any other discernable faults.

14.0 AFTERCARE

14.1 Allow to cool to ambient temperature. During the cooling period no disturbance or trafficking of the system shall be permitted. Assisted cooling during the installation by means of industrial fans may be required.

14.2 Before opening to traffic at the end of the cooling period, any excess aggregate shall be removed by sweeping or other suitable means.

15.0 INSTALLATION CHECKS ON THE SYSTEM

15.1 When testing is included in the program of work agreed with the purchaser / client, tests for Skid Resistance Value (SRV) in accordance with TRL Report 176: Appendix E, and Texture Depth to BS EN 13036-1:2002 should be conducted on the finished expansion joint.

INSTALLATION GUIDELINES



AMENDMENT SUMMARY

| A/ment No. | Description of Amendment | Sections affected | Amendment Date | Signed |
|------------|---|-------------------|----------------|--------|
| 1 | Wording change only 'Permatrack' to 'Permatrack H' to reflect title as 'Permatrack H' Bridge Joint. | All | 18/11/2020 | WP |
| 2 | Wording change only 'Permatrack H' to 'Permatrack H (BJ)' to reflect the name of the core material used in the joint. | All | 18/11/2020 | WP |
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