Bridge Joints

Thormajoint® BJ300 Tropical

APPLICATION INSTRUCTIONS

PRODUCT

Thormajoint® BJ300 Tropical

DESCRIPTION

- Thormajoint® BJ300 Tropical is a high quality, flexible and waterproof bridge deck expansion joint system which provides a continuous and durable load bearing running surface.
- It uses a range of polymer modified bituminous binders developed for various climatic conditions and single sized aggregate.

MATERIALS

Binder

- Supplied in block form in 4-ply sacks holding approximately 18–20kg.
- It is a heavy duty grade, suitable for use in hot climates with a temperature range of 0°C to +50°C, giving flexibility at low temperatures and flow resistance at higher temperatures.
- It produces a stable and deformation resistant running surface whilst at the same time providing good movement capability for the expansion and contraction of the bridge deck.

Aggregate

- Single sized 14 or 20mm pre-washed aggregate as defined in EN 13043.
- Aggregate should be chosen from the basalt, gabbro or granite groups.

INSTALLATION

Marking Out/Excavation/Preparation

- Mark the joint out to the specified width. (Normally 500mm wide but can be wider on agreement with the site engineer to encompass failed surfaces adjacent to the joint. It is not recommended to increase the width over 750mm). The joint shall be located centrally over the bridge deck expansion gap. If in doubt about the location of the gap, trial holes should be dug in the existing surface to locate it.

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- For joint installation in verges or footways ensure that a CAT scan is carried out first to locate any buried service ducts or cables.
- Using a suitable powered saw cut through the full depth of the carriageway surface to the bridge deck, taking care not to damage the deck concrete.
- Remove all spoil, any bolts etc. from pre-existing joints and any bridge deck waterproofing from the joint recess.
- Ensure that any verge kerbs have a minimum of 50mm clearance between the bottom of the kerb and the bridge deck.
- If service ducts or cables have been exposed in verge or footway locations ensure that there is at least 50mm clearance if possible, between these and the bridge deck. Ensure that they are lagged with a suitable material prior to installing the joint.
- Ensure that the bridge deck is level and in good condition. Carry out any repairs as instructed by the site engineer.
- All loose debris shall be removed from the bridge deck expansion gap. Any temporary fillers can be left in place, but the top of the filler should be removed to allow a maximum depth of 25mm of FEBA HC binder to be applied.
- Clean the joint faces using a wire or rotary brush, or by grit blasting. Then, using a hot compressed air lance, thoroughly clean and dry the joint recess.
- Install Thormafoam caulking into the bridge deck expansion gap deep enough to allow for 25mm of FEBA HC binder between the top of the caulking and the bridge deck arris.
- It is recommended to prime the concrete bridge deck using CP primer.

Heating

- Use a purpose built, temperature controlled, mechanically agitated gas or diesel fired pre-heater.
- Ensure the pre-heater is empty prior to changing binder grades, as any contamination from the residue of other binder grades may have a detrimental effect on the performance of the selected binder grade.

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- Remove the outer packaging and load the blocks of binder into the pre-heater. Initially load 3–5 blocks and once the material is being agitated and has started to melt, gradually add more blocks until the desired amount has been reached.
- Allow the content of the pre-heater to fully melt and reach pouring temperature, ensuring that the binder has been homogeneously mixed, and there are no visible clusters of non-melted material.
- Ensure the material is within the recommended pouring temperature range of 190–200°C.
- Use a calibrated hand-held thermometer with probe immersed in the material to obtain temperature readings as pre-heater temperature gauges may not always give a reliable or accurate temperature reading.
- Do not overheat the material. Maximum safe heating temperature for FEBA HC is 220°C.
- Overheating the material will cause separation of the binder.
- Prolonged heating times and repeated heat cycles may result in degradation of the product. For best performance, maximum heating time is seven hours with one heating cycle.

Pre-filling the joint

- While the joint recess is still warm from cleaning, coat all surfaces with a layer of FEBA HC binder. If the surfaces have cooled between cleaning and tanking, re-heat using the hot compressed air lance before tanking the joint.
- Once the joint has been tanked, place steel plates centrally over the bridge deck expansion gap. The plates must abut to and not overlay each other. The width and thickness of the plates will be determined by the bridge deck expansion gap and joint width. After placing the plates, cover with a layer of FEBA HC binder.
- Heat the aggregate in a suitable drum type mixer using hot compressed air to a temperature of approximately 150°C. Ensure that all visible signs of dust have been removed.
- Place the heated aggregate into the joint recess in layers approximately 40mm thick and immediately flood with FEBA HC binder. Rake each layer to ensure that the stones are fully coated and there are no air voids.

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- (Alternatively, the aggregate can be heated and pre-coated with FEBA HC binder before being placed in the joint recess. Each layer must still be flooded with binder and raked as above).
- Continue filling the joint in this manner until approximately 25mm from the top of the joint recess.
- Allow the joint filling material to cool to approximately 90°C.
- Top up settlement voids in the joint filling material with FEBA HC binder.

Applying the topping layer

- Heat the aggregate in a suitable drum type mixer using hot compressed air to a temperature of approximately 150°C. Ensure that all visible signs of dust have been removed.
- Add enough FEBA HC binder to the mixer to ensure that all the aggregate is coated.
- Place the aggregate into the joint recess and level the material so it is slightly higher than the road surface.
- Using a vibratory compactor plate compact this layer until rendered flush with the road surface. The compactor plate can be slightly dampened to prevent the material sticking to the bottom of the plate.
- Clean and dry the road surface adjacent to the joint, place masking tape on the road surface to obtain a straight edge and apply a thin layer of FEBA HC binder to the joint surface slightly overlapping onto the road surface.

Surface Dressing

- Heat high PSV bauxite (generally 1–3mm in size), in a suitable drum type mixer using hot compressed air to a temperature of approximately 150°C. Ensure that all visible signs of dust have been removed.
- Apply a thin layer of FEBA HC binder to the joint surface.
- Immediately apply a thick layer of the heated high PSV bauxite onto the joint.
- Once the bauxite has cooled the excess can then be swept off.

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