



1. GENERAL DESCRIPTION:

Armourjoint is flexible bridge jointing comprising a polymer modified bituminous bridge joint binder mixed with graded aggregates to form an asphaltic plug joint (APJ) in concrete and asphalt carriageways.

2. PRODUCT:

Armourjoint Systems can accommodate a thermal movement range of ± 20 mm in a standard APJ of 500mm width x100mm depth. In service, they exhibit excellent adhesive and compressive properties for improved resistance to wheel track deformation over a wide range of service temperatures. The system is normally applied when the ambient air temperature is above 5°C however the material is designed for application at temperatures of 0°C and rising providing the surface is dry and free of frost and salt deposits.

3. SURFACE PREPARATION:

- 3.1 The client engineer or the installer shall establish the traffic management system to comply with Chapter 8 of the Traffic Signs Manual.
- 3.2 The client engineer shall provide sufficient information to establish the line of the joint and full depth of surfacing and structural air gap.
- 3.3. Suitable boilers, fitted with agitators and thermostatic temperature controls, are lit and as soon as the agitators are engaged the Armourjoint binder material is carefully loaded into the pre-heater. Regular checks shall be made during the heating/melting process to ensure that the recommended safe heating temperature is not exceeded.
- 3.4 The surface is removed by saw cutting vertically along each side of the marked joint line using a diamond bladed floor saw. The saw should be set to cut through the full depth of the bituminous or concrete surfacing without damage to the bridge deck.
- 3.5 Using pneumatic tools carefully break out the surfacing between the parallel saw cuts and remove all loose materials including waterproofing to expose the concrete bridge deck. Remove the joint seal and caulking in the bridge deck expansion joint. If conditions allow, in certain cases a mechanical excavator can be used.
- 3.6 Thoroughly clean the base of the concrete bridge deck, expansion joint and vertical sides of the formed recess using Hot Compressed Air equipment to remove any slurry deposits formed during the sawing process taking care not to damage the saw asphalt faces. Remove all debris and loose material.

NOTE: Where **Armourjoint** APJ's are to be installed into concrete surfacing, the concrete surfaces shall be primed using a suitable bituminous primer, which should be applied by either spraying or brushing at an applied rate of 10/20m² per litre depending on the porosity of the concrete surface. The applied primer should be completely dry prior to the installation process. The suggested primer is Probit Road Stud Grout and Thermoplastic Primer or similar.



4. INSTALLATION PROCEDURE:

- 4.1 The **Armourjoint** binder should be heated in a suitable sized boiler fitted with thermostatic controls and horizontally mounted agitator. The application temperature ($160 \pm 10^{\circ}\text{C}$) and maximum safe heating temperature (185°C) of the material shall be controlled in accordance with the manufacturers recommendations.
- 4.2 Re-caulk the bridge deck expansion joint and re-seal using hot **Armourjoint** binder material.
- 4.3 Tank out the APJ recess using hot **Armourjoint** binder to form a waterproof seal.
- 4.4 Whilst the tanking is still warm, insert the bridging plate and locate it centrally along the joint to cover the joint gap. The type and size of the bridging plate used shall be in accordance with the following requirements:

Joint Gap up to 20mm	Aluminium Plate	150mm x 18 gauge
Joint Gap 20mm - 40mm	Steel Plate	150mm wide x 3mm
Joint Gap 40mm +	Steel Plate	200mm wide x 6mm

- 4.5 Fix a suitable heat resistant masking tape along each side of the APJ to form a neat finishing edge and to prevent hot material spreading on to the adjacent road surfacing.
- 4.6 Using the Hot Compressed Air lance, heat the graded aggregate in suitably sized concrete mixer to a temperature of ($150 - 170^{\circ}\text{C}$) and coat with hot **Armourjoint** binder. The amount of binder used should be sufficient to coat all the aggregate to a consistence of wet concrete, an approximate ratio of 7:1.
- 4.7 Place the hot matrix in the APJ recess and build up the joint in successive layer not exceeding 50mm, flooding each layer in turn with hot binder until the **Armourjoint** is approximately 20 mm below the surrounding road surface.
- 4.8 The final 20 mm of the **Armourjoint** is completed using coated aggregate + hot binder mixed in the ratio of 7:1 and placed in the APJ to a level which is slightly proud of the adjacent road surface.
- 4.9 Allow the joint to cool and whilst it is still warm, tamp the surface of the joint to the profile of the surrounding road surface using a wacker plate or vibrating roller. When the finished joint is compacted it should have an aggregate to binder ratio of 3:1.
- 4.10 A final screed application of hot **Armourjoint** binder is applied to the joint surface filling up any voids, which may have formed during tamping.
- 4.11 Allow the joint to cool to ambient temperature, remove the masking tape and the installation can be opened to traffic.

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NOTE: Where the surface of the APJ is required to have a skid resistance finish, the joint should be dressed with a 1 - 3mm basalt or granite aggregate (PSV 55 - 60) which has been heated to 150 - 170°C, and applied immediately following the final screed application (4.8). Alternatively where a higher SRV is required by the client engineer then a 1 - 3mm calcined bauxite (PSV 70) should be used. The aggregate dressing should be lightly rolled into the surface of the APJ.

5. OPTIONAL DRAINAGE SYSTEM:

When specified the in-joint drainage system should be fitted at the appropriate time during the installation procedure, detailed as follows:

Longitudinal drainage systems should be installed before the tanking operation (4.3). The 25mm square box section should be placed in a continuous length along one side of the **Armourjoint** with the drainage slots facing the vertical cut face of the adjacent highway surfacing and fixed to this face using masonry nails. The drainage system is discharged via a hole cut to accommodate the outlet pipe at the lowest end of the joint, in front of the existing kerb line using prefabricated 'L' and 'T' pieces to connect the box drainage system.

Transverse drainage systems should be installed, after the joint has been tanked (4.3), by fixing a pair of telescopic tubes approximately 25/27mm in diameter at one metre centres or as otherwise directed into 25mm drill holes cut immediately above the existing waterproofing membrane on each side of the vertical face of the highway surfacing to accommodate drainage from one side of the **Armourjoint** to the other.

6. SYSTEM INSTALLATION CHECKS:

A visual check should be carried out to determine the installation is uniform and level with the adjacent road surfacing.

7. SAFETY CLOTHING & EQUIPMENT:

The following safety clothing and equipment must be worn **AT ALL TIMES** when handling, mixing or applying **Armourjoint** materials:

Hand Protection: Gloves - Industrial type, heat resistant with elasticated sleeves.

Eye Protection: Safety Glasses, Goggles, Face Shield (When Transferring Molten Material).

Skin Protection: High Visibility Jacket, Hard Safety Helmet, Overalls (Flame retardant), Closed Safety Boots.

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