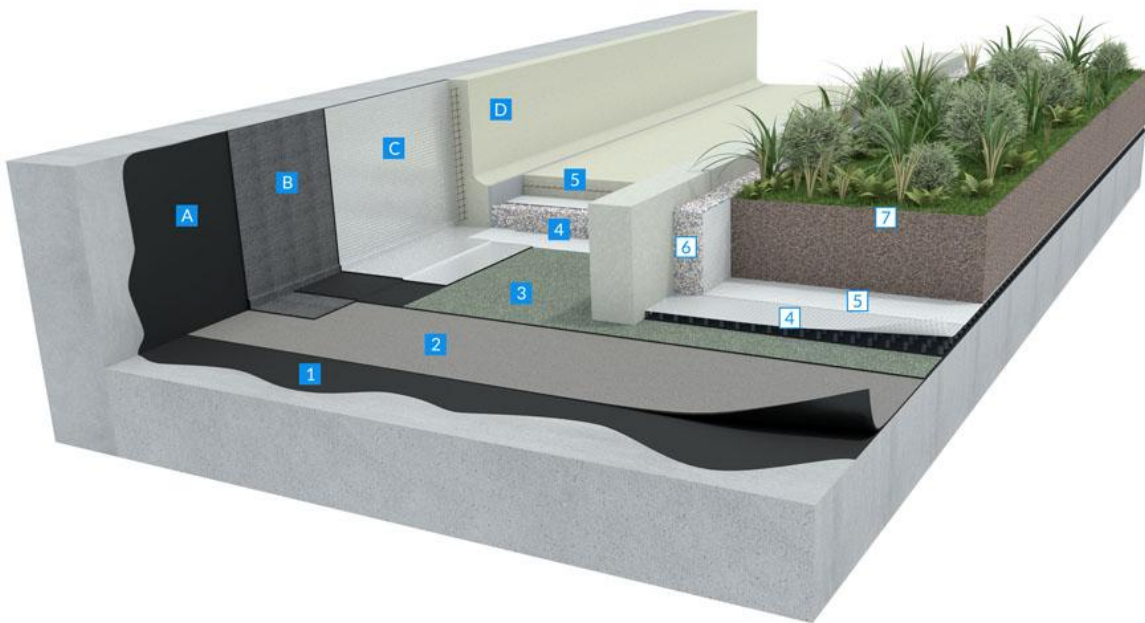


Light vehicle accessible multi-use terraces & plaza decks
Double layer SBS bitumen waterproofing system:
PREFLEX + GRAVIFLEX

Substrate & Use of roof	Finishing	Standard warm roof / inverted roof
Concrete Mixed-use terraces and podium/plaza decks with planted areas: accessible for light vehicles and pedestrians	Reinforced concrete slab & Planted areas	Without thermal insulation



- **Substrate**

The load bearing structure (concrete) must comply with all associated national standards and regulations, ensuring that the load bearing capacity is sufficient for any additional loads imposed upon the construction. It is important to consider the possibility of future deflection of the construction when designing roof drainage.

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- **Preparation:** The bearing elements and substrates must comply with local technical standards.
After proper cleaning of the roof area, a complete level control shall be carried out by the Contractor. Slope and planarity shall be carried out with the following tolerances:
- **Slope:**
2-5 % on concrete decks (depending on the type of terrace, please contact the BMI Technical Department).
 - Water ponding areas shall be identified clearly.
- **Levels:**
Tolerances for planarity shall be:
 - 7 mm with a 2 m straight edge.
 - 2 mm with a 200 mm straight edge.
- **Surface:**
Prepare substrate surfaces thoroughly prior to application of new roofing materials. This is particularly important for refurbishment applications. Providing a smooth, even, sound, free of dust, grease and oil, foreign chemicals, curing compound, clean and dry substrate minimises the likelihood that underlying deficiencies will cause premature deterioration or even failure of the new roofing system.

Concrete:

Masonry bearing elements and substrates in compliance with local technical standards.

Are not accepted: slope screeds of lightweight concrete.

- **Upstands/Parapets:**

Siplast Primer: cold-applied, quick drying, universal elastomeric bitumen primer. Approx. coverage 0.15 litre/m² on steel and approx. coverage 0.30 litre/m² on concrete (depending on concrete porosity, please consult the supplier's technical documentation).

Preflex: 3.0 mm thick, polyester-reinforced modified SBS elastomeric bitumen underlayer membrane for upstands on roof gardens and green roofs, upstands on flat roofs accessible to pedestrians or light vehicles. Thermofusible film on both sides. Fully torched on primer.

Graviflex: 3.2 mm thick at the selvedge, polyester-reinforced, modified SBS elastomeric bitumen granule-surfaced cap sheet with anti-root additive for roof garden waterproofing. Surfaced with slate flakes, thermofusible film on the underside. Fully torched on top of the Preflex. OR alternatively;

Paradial S: 3.5 mm thick at the selvedge (thickness without aluminium foil self-protection), composite reinforced modified SBS elastomeric bitumen cap sheet protected by embossed thermo-stable aluminium foil. It is used as a cap-sheet layer for vertical upstands waterproofing works and in a two-layer system for non-accessible roofs. Thermo-fusible film on the underside, nominal width 70 mm at longitudinal selvedge.

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Upstands protection with wire mesh cement mortar

Vegetation barrier between parapets and soil is carried out with gravel (or with Draina G10 and/or Canopia Drain boards for surfaces <100 m² with Canopia Filtre).

- **Waterproofing**

Siplast Primer: cold-applied, quick drying, universal elastomeric bitumen primer. Approx. coverage approx. coverage 0.30 litre/m² on concrete (depending on concrete porosity, please consult the supplier's technical documentation).

Preflex: Polyester-reinforced, 3 mm thick, modified SBS elastomeric bitumen underlayer membrane for roof gardens/green roofs and multi-use flat roofs accessible to pedestrians or light vehicles. Thermofusible film on both sides. Fully torched on primer.

Graviflex: Polyester-reinforced, 3.2 mm thick, modified SBS elastomeric bitumen root resistant cap sheet for double layer waterproofing systems, used for waterproofing of green roofs/roof gardens or flat roofs with different uses: planted areas, access for pedestrians, access for light vehicles. Granule-surfaced with slate flakes, thermofusible film on the underside. Fully torched on top of Preflex.

The GRAVIFLEX System comprises two waterproofing membranes: Preflex and Graviflex bonded together by torching. It is a universal system for different uses on the same flat roof or podium/plaza decks that can be used on a combination of areas: roof gardens for pedestrians, blue roofs, access for light vehicles, inaccessible areas with gravel or self-protected.

- **Separation & Protection layers for planted areas**

Draina G10: Composite drainage and separation layer with embossed form made from polypropylene and covered with a permeable non-woven polyester filter layer. It is used:

- as a separating layer between the waterproofing and the heavy ballast made of concrete screed, prefabricated slabs of concrete or hard stone.
- as a drainage and filtering layer in green roof systems with slope < 20% and including no puddling (depression) more than 10 mm deep.

Canopia Filtre: 200 g/m² non-woven polyester fleece used as a protection layer on green roofs between the drainage layer and substrate (soil) and/or separation layer between peddle strips and substrate. Loose-laid horizontally on top of drainage boards before the substrate and vertically along the upstands when necessary.

Protection: Soil and landscaping

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- **Separation & Protection layers for vehicle access zones**

Drainage layer: Drainage layer is provided with 300 mm thick gravels (3/15) between 2 layers of **Canopia Filtre** (nonwoven geotextile).

1st layer of Canopia Filtre loosely laid + 300 mm thick gravel layer + 2nd layer of Canopia Filtre.

OR alternatively, **Draina G10:** drainage and separating layer to apply under heavy ballast made of concrete screed, prefabricated slabs of concrete or hard stone.

Reinforced concrete slab: complying with local technical standards and scope of application.

In this case, circulation zones should be disconnected from the planted areas by placing or constructing low walls on-the-site on the separation and protection layers (Canopia Filtre and Draina G10). For on the site application of low walls, please consult the detailed technical documentation.

- **Expansion Joints:**

Expansion joints have to be planned by the architects and are project specific.

Recommendation: The expansion joints will be prepared in compliance with the **NEODYL System** technical assessment. The Neodyl System comprises lyre-shaped the **Cordon Neodyl**, non-reinforced **Joint Neodyl** waterproofing strip and a protection system (depends on type of roof: in case of green roofs, it is GRAVIFLEX to be torched, for other types metallic surfaced Paradiat S torched or Supradial GS; or protective slabs). For more information please consult the "**Roof Details and Connections**".

It will have a kerb, raised flat, flat, with upstands-in certain cases.

The Neodyl System is used for structural expansion joints on accessible roofs (pedestrians), roof gardens and non-accessible exposed roofs. Suitable for all roof substrates.

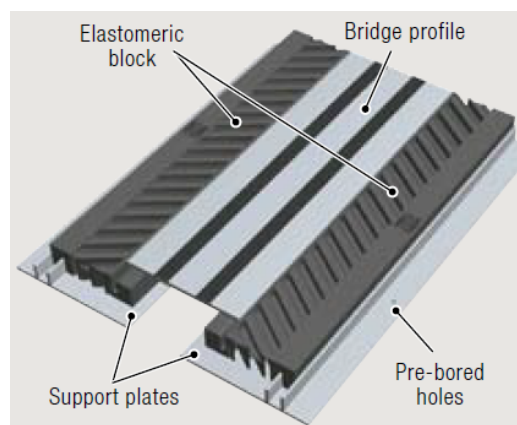
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- **Expansion Joints for car parks**

PARADYL System: Protection system on the waterproofing of flat expansion joints for light vehicle traffic (loads $\leq 2t$ per axle) and suitable for parking areas with occasional access for fire fighting vehicles and trucks. Paradyl flat expansion joint, built in compliance with the Paradyl ATEX in association with the Neodyl system.



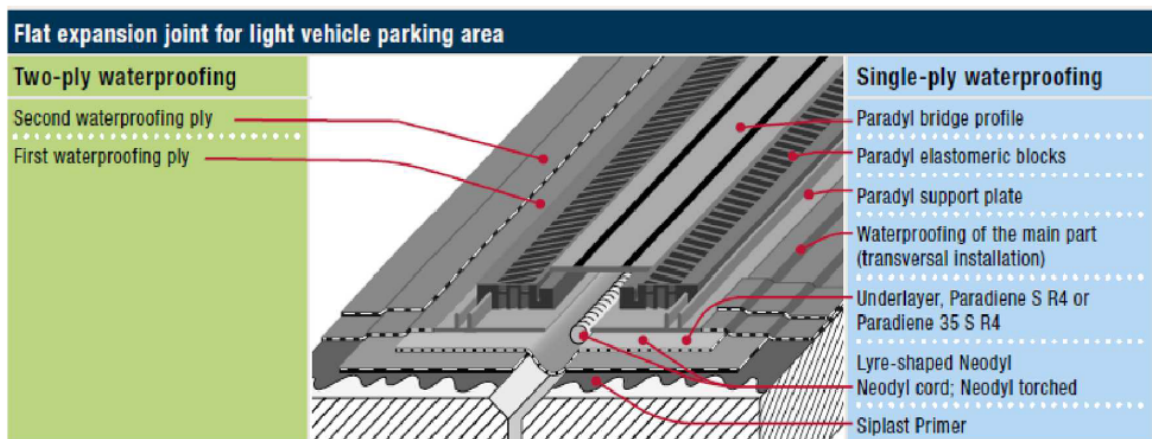
The flat joint seal is protected by PARADYL system: supporting plates of pultruded resin, supplemented by vulcanised elastomeric blocks with differentiated deformability, fitted onto the support plates plus installation of the pultruded resin covering bridge, fitted onto the elastomeric blocks.



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Installation: Installing the Paradyl joint requires a careful preparation of the substrate that is to be flat (flattening down when necessary with resin mortar, planing, etc.). For the installation, refer to the installation manual that comes with each kit of 1m:

- **SIPLAST PRIMER** applied on concrete on both sides of the expansion joint opening.
- **PARADIENE 35 S R4** (polyester reinforced modified SBS elastomeric membrane), fully torched on SIPLAST PRIMER on both sides of the expansion joint opening
- **NEODYL**, non-reinforced SBS joint with 1000% of elongation is fully torched above PARADIENE 35 S R4 bridging the expansion joint opening
- **NEODYL Cord** (Butyl cord) is placed in the V-shaped joint.



● Details

All details shall be finalised before roofing works start:

Rainwater drains shall be well located, in sufficient number and ready to receive waterproofing membranes.

Expansion joints shall be located at the highest roof points, on reinforced concrete curbs chamfered as shown on drawings.

All pipes, cables and other penetrations shall be in place. Provision for proper waterproofing of roof equipment and machinery shall be made.

All parapets shall be in place, with provision for groove or counter flashing at an acceptable height (150 mm above finished roof level).

All other planted area details, dilatation joints etc..please consult the detailed green roof catalogues, technical documents, installation manuals or contact directly the BMI Technical Department.

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