

EXPANSION JOINTS

WATERPROOFING

SLAB STABILISATION



Overview Products & Technologies



Content

DANTEX ARMOUR-JOINT	3
GCP ELIMINATOR®	4-6
OAT INJECT GEO-PLUS	7-8
GCP SENTINEL® B	9-10
GCP SENTINEL® EMR	11-12
GCP SENTINEL® NJ	13-14
SENTINEL® ALGAFLEX	15-16

DANTEX ARMOUR-JOINT

PART 3: FLEXIBLE PLUG JOINT (TYPE 2 ASPHALTIC PLUG JOINT)

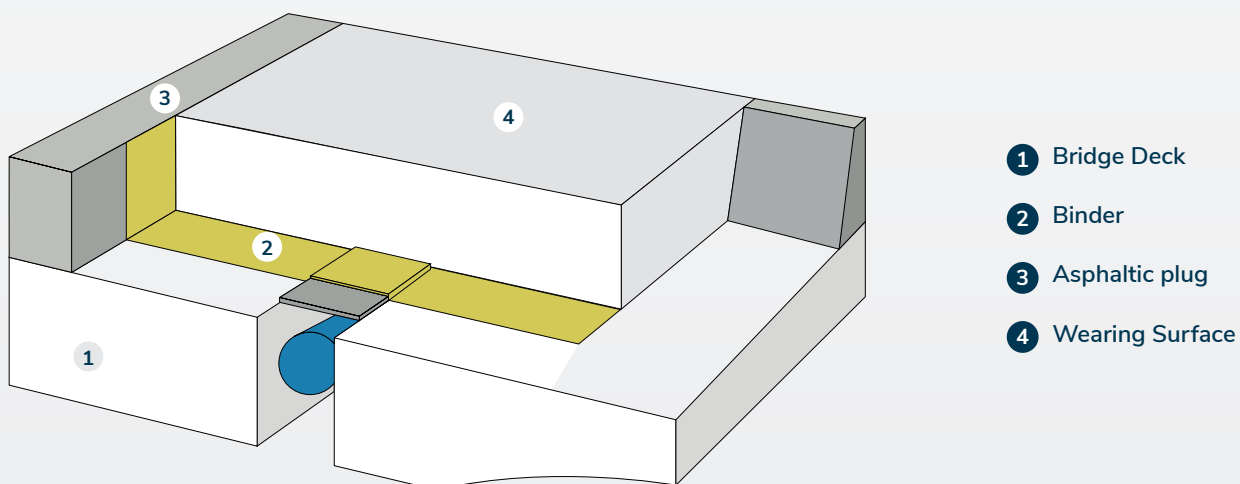
Armour-Joint is flexible bridge jointing comprising a polymer modified bituminous bridge joint binder mixed with graded aggregates to form an asphaltic plug joint (APJ) in concrete and asphalt carriageways.

The Armour-Joint System is a combination of polymer modified binder and selected aggregates. The binder is a compound blend of bitumen's, polymers, fillers and stabilisers, that is specifically formulated to give good fluidity, low and high temperature stability and slump

control. The system offers optimum combination of flexibility and load bearing capacity. Armour-Joint is designed to extend the full depth of the road down to the structural concrete deck and will develop a tenacious bond to concrete as well as the adjacent asphalt arises.

Health & Safety

Please refer to the safety data sheets for more info.



- ① Bridge Deck
- ② Binder
- ③ Asphaltic plug
- ④ Wearing Surface

Key Features

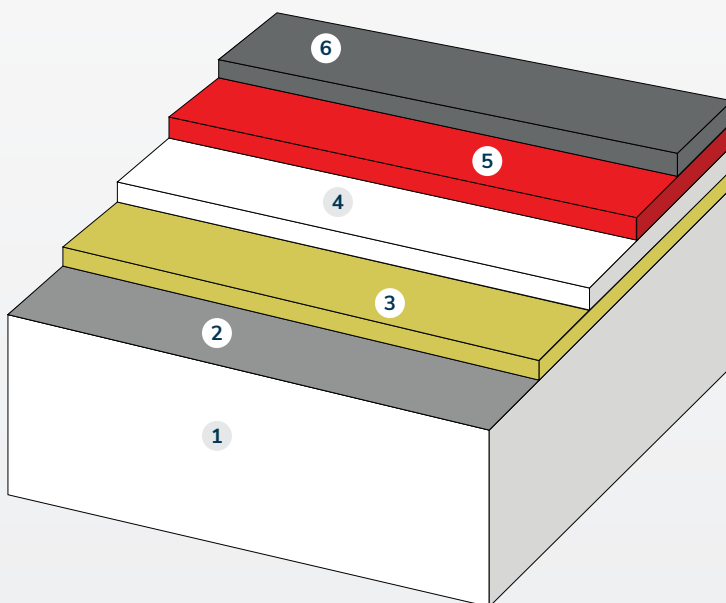
- Flexible
- Complies with CD357 and ETAG032
- Waterproof
- Fast and simple to install
- Load bearing high traffic capacity
- Standard width 500mm
- Optimal Depth 100mm
- Accommodates multi-directional movements
- Low surface noise
- Excellent ride quality
- For use across full depth of deck

GCP ELIMINATOR®

BRIDGE DECK WATERPROOFING MEMBRANE

ELIMINATOR® is a GCP high performance system for the protection of concrete and steel decks. The Waterproofing Membrane is based on GCP's unique ESSELAC® advanced resin technology and extensive experience in the development of coatings for specialist waterproofing.

ELIMINATOR® Membrane cures rapidly to provide a tough, flexible seamless coating and has an unparalleled track record with thousands of structures waterproofed successfully throughout the world.



- 1 Deck (steel or concrete)
- 2 Primer
- 3 Eliminator® Membrane - 1st coat
- 4 Eliminator® Membrane - 2nd coat (dependent on specification)
- 5 GCP Bond / Tack Coat (Road system only)
- 6 Ballast or Paving



Key Features

- Unaffected by high humidity and cures rapidly even at low temperatures enabling all year-round application
- Fully reactive and does not contain solvents
- Can bridge shrinkage cracks in concrete over a wide temperature range
- Excellent chemical and abrasion resistance and intercoat adhesion
- High bond strength to substrate
- Overcoating time not critical
- Complies with CD358 and ETAG033
- Withstands 250°C pavement placement on the cured membrane
- Range of Bond/Tack Coats available to suit asphalt mix design
- High resistance to ballast and backfill materials
- No critical overcoating time between coats
- Rapid cure allows for early ability to carry load (after 1 hour)
- BBA HAPAS-approved on-site quality assurance programme, including Wet Film Thickness testing during application

GCP ELIMINATOR® BRIDGE DECK WATERPROOFING MEMBRANE



Uses

ELIMINATOR® protects concrete and steel structures from the corrosive effects of water and chloride ions. Typical applications include:

- Concrete Bridge Decks
- Steel Bridge Decks
- Bridge Piers
- Bridge Service Ducts
- Culverts

ELIMINATOR® is installed in conjunction with GCP Applied Technologies proprietary primers, ensuring a high bond between substrate and membrane. For highway bridges a range of compatible tack coats promote adhesion between membrane and surfacing. The membrane can be trafficked for limited durations when required. Please discuss with GCP Technical Services if considering this application.

The system can be adapted to accommodate both high and low ambient temperatures without any detriment to the performance of the system (See table below).

Application

Primer

The substrate must be primed with an appropriate GCP primer prior to application of the ELIMINATOR® membrane. A choice of primers are available depending on the type of substrate and weather conditions.

Membrane

ELIMINATOR® is typically spray applied. The membrane is applied when the primer has cured, typically within 20 minutes. Two distinct color coats are used to aid quality assurance. ELIMINATOR® is typically applied in two coats for maximum security of protection to give a total thickness of 120 mils (3 mm). Single-coat application and aggregate broadcasts can also be provided as required.

Tack Coat / Bond Coat

A tack coat or bond coat must be applied to ELIMINATOR® when it is being used as a waterproofing membrane on road bridges underneath asphalt paving. A range of tack coats and bond coats are available depending upon the pavement specification.

Cleaning

All tools and equipment should be cleaned with acetone before the material is allowed to cure.

Precautions

ELIMINATOR® liquid resin components are classified as flammable liquid (flashpoint 52.7°F, 11.5°C) and must be handled accordingly. Workers should wear appropriate protective clothing. Adequate ventilation must be provided. Please refer to the most recent Safety Data Sheet (SDS) for recommendations.

Safety and Handling

The system is fully compliant with USA Volatile Organic Compound (VOC) regulations and independent risk assessments, carried out in accordance with the UK Control of Substances Hazardous to Health (COSHH) regulations, indicate the application of Eliminator to be a low risk process.

The materials Safety Data sheet must be read, understood and available on site.

Packaging & Storage

Primer - Refer to separate datasheets

ELIMINATOR® Membrane (Part A and Part B) - 46.7 Gallon Drum

All components of ELIMINATOR® system should be stored in cool, dry, protected conditions, out of direct sunlight and accordance with the relevant site Health & Safety regulations. Storage conditions must not exceed 77°F. Do not store near open flames or food.

Stored in unopened containers, under the correct conditions, the components have a minimum shelf life of twelve months. If your product is more than twelve months old contact GCP Technical Services before use.

GCP ELIMINATOR®
BRIDGE DECK WATERPROOFING
MEMBRANE



Physical Properties

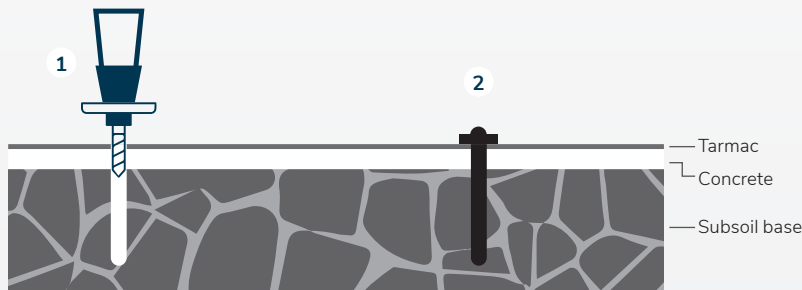
PROPERTY	TEST METHOD	RESULT
Application Temperature		-10°F to 120°F (-23°C to 50°C)*
Gel Time	Internal	6-11 minutes @ 68°F (20°C)
Overcoating Time	Internal	45 minutes @ 68°F (20°C)
Water Absorption	ASTM D570-81	< 3.5%
Water Vapor Transmission	ASTM E96-00	1 gm/m2/day (≤1.0 perms)
Tensile Strength (typical)	ASTM D638-91	1,700 psi (11.8MPa)
Elongation At Break (typical)	ASTM D638-91	130%
Low Temperature Flexibility	CAN CGSB	
@ -13°F (-25°C)	37.5 M89, ¼ inch Mandrel	Pass
Resistance To Aggregate Indentation	BD 47	Recovered
Thickness**		
@ 104°F (40°C)		100%
@ 104°F (40°C)		100%
@ 257°F (125°C)		100%
Dynamic Ballast Impact	SNCF 181kN/2x106 cycles	No damage or leak
Tensile Bond Strength (minimum)		
Concrete	ASTM D4541-89	100psi (0.7Mpa)
Steel	ASTM D4541-89	290 psi (2.0 MPa)
Shore Hardness	ASTM D6132	≥40D
Volume Resistivity		8.27E+14 Ohms-cm (ER295A)
Surface Resistance		2.45E+13 Ohms (ER295A)

MINOVA/OAT INJECT GEO-PLUS

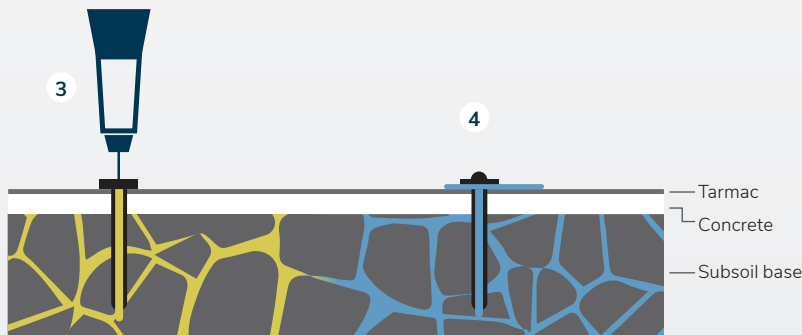
TWO-COMPONENT SILICATE RESIN

MINOVA/OAT Inject Geo-plus is a two-component silicate resin used for stabilisation and leveling of heavily trafficked concrete slabs. The Silicate Resin is mixed on a one to one ratio, its quick curing process makes the MINOVA/OAT Inject Geo-plus an ideal solution for repair and maintenance projects.

The resin cures to 90% full strength within 15 minutes and achieves compressive strength of $c.50\text{n/mm}^2$ within the hour. It's injected through ports drilled into in the concrete slab at 0.4 centres per m^2 . The resin is 1.4 times the density of water and forces out excess water while levelling and stabilising the slab.



- 1 Slab Drilling
- 2 Packer Installation
- 3 Resin Injection
- 4 Excess water forced out



Key Features

- High compression strength
- Density 1.4 times that of water
- 90% of final strength achieved after 15 min
- High module of elasticity
- Non-foaming
- Increases Dynamic Loading
- Conforms to CD227

Application & Use

- Grout and uplift slabs in road construction
- Grout and stabilise road structures
- Stabilise and consolidate loose rock and soil
- Fill minor cavities

MINOVA/OAT INJECT GEO-PLUS TWO-COMPONENT SILICATE RESIN



Product description

MINOVA/OAT Inject Geo-plus is a fast reacting, non-foaming, flexible, flame-resistant two-component silicate resin with good adhesive properties and a high final strength.

MINOVA/OAT Inject Geo-plus Component A is a special sodium silicate. MINOVA/OAT Inject Geo-plus Component B is a polyisocyanate.

When both components are sufficiently mixed, the resulting viscous emulsion does not absorb water (e.g. from the soil) or mix with water.

Cured MINOVA/OAT Inject Geo-plus is resistant to acids, salt solutions and many organic solvents.

Technical data

The data below are laboratory values. In practice they may vary due to the heat exchange between the resin and the structure/soil as well as other external influences such as pressure, moisture and other factors.

Material data

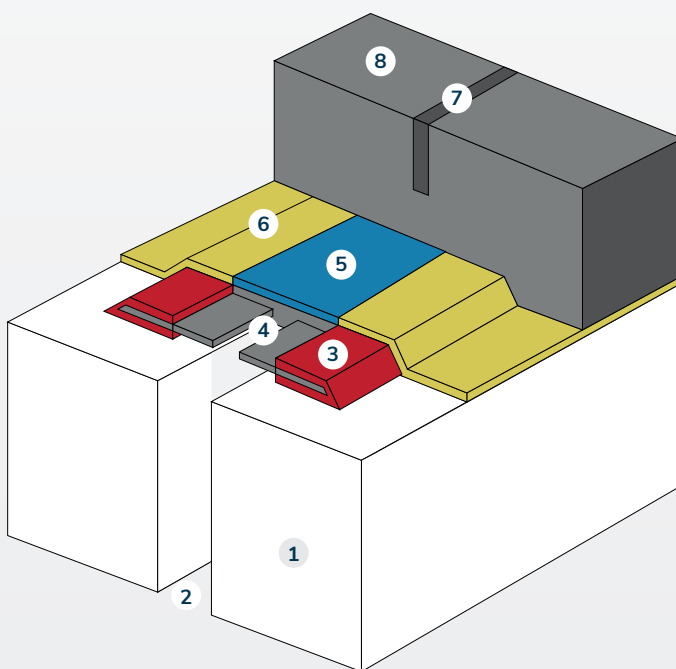
Parameter	Unit	Comp. A	Comp. B	Standard
Density at 25°C	kg/m ³	1470 ± 30	1185 ± 30	DIN 12701
Colour	-	yellowish	dark brown	-
Flash point	°C	-	> 100	DIN 53213
Viscosity at 5°C	mPa*s	995 ± 150	880 ± 150	DIN EN ISO 3219
Viscosity at 10°C	mPa*s	650 ± 100	530 ± 100	DIN EN ISO 3219
Viscosity at 15°C	mPa*s	450 ± 80	345 ± 80	DIN EN ISO 3219
Viscosity at 20°C	mPa*s	330 ± 80	235 ± 60	DIN EN ISO 3219
Viscosity at 25°C	mPa*s	275 ± 75	190 ± 50	DIN EN ISO 3219
Viscosity at 35°C	mPa*s	160 ± 50	90 ± 20	DIN EN ISO 3219
Viscosity at 40°C	mPa*s	140 ± 40	70 ± 10	DIN EN ISO 3219

GCP SENTINEL® B

PART 2: BURIED EXPANSION JOINT (TYPE 1 BURIED JOINT UNDER CONTINUOUS SURFACING)

Incorporating a proprietary PVC flashing strip the expansion joint is designed for horizontal movements in the range of 0 – 20mm. SENTINEL® B is bonded across the expansion gap and is compatible with the ELIMINATOR® waterproofing system to form a continuous waterproofing detail below the asphalt surfacing.

The expansion joint is supplied in 4 sizes; type 5, 10, 15 and 20.



- 1 Bridge Deck
- 2 Expansion Gap
- 3 Metaset® Structural Adhesive
- 4 Sentinel® B20 Expansion Joint
- 5 Bridge Plate Bedded on Metaset® Flex Sealant
- 6 Eliminator® Membrane
- 7 Surface Sealant
- 8 Wearing Surface

Key Features

- Expansion Joint for highway bridges
- Complies with CD357 and ETAG032
- Fast and simple to install
- Cost effective
- Maintenance free
- Installed to the 'as built' geometry of the structure
- Movements of 5mm to 20mm accommodated
- Gap widths up to 50mm
- Installed with ELIMINATOR Bridge Deck Waterproofing system

Movement range

Type	Horizontal Movement	Optimum Gap width
B5	5mm	30mm
B10	10mm	22-32mm
B15	15mm	22-40mm
B20	20mm	30-50mm

Application

The PVC Extrusions used within the Sentinel Buried Joint range contain polymeric plasticisers which ensure excellent resistance to embrittlement over time. The performance of the Sentinel B Buried Joint range is enhanced by the fact that the PVC Joint is bonded onto the substrate with Stirling Lloyd adhesive CW1 which forms a chemical bond with the PVC Compound and the Stirling Lloyd Primer (PA1, PAR1 & ZED S94 as appropriate). The CW1 also forms a chemical bond with the Stirling Lloyd waterproofing system.

Coverage

For the coverage rates for Primers and Adhesive please refer to the relevant product datasheets.

Health & Safety

Please refer to the safety data sheets for more info.

Packaging & Storage

Sentinel PVC Extrusions are supplied in the following rolls:

795 (loop) PVC strip 20m roll x 225mm width, loop section is 23mm wide x 17mm deep

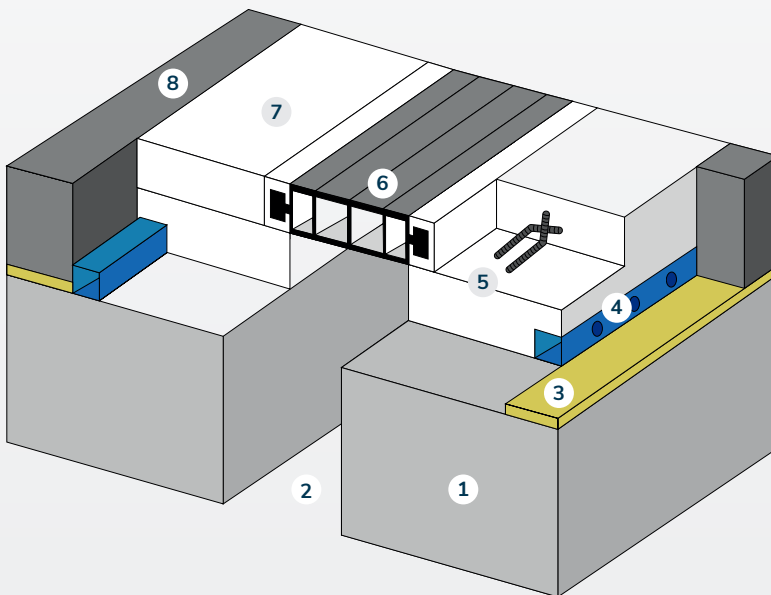
794 (flat) PVC strip 20m roll x 190mm width



GCP SENTINEL® EMR

PART 8: MODULAR EXPANSION JOINT (TYPE 6 ELASTOMERIC IN METAL RUNNERS)

SENTINEL® EMR is an Elastomeric seal in metal rails type joint, designed for high wear situations on new and refurbishment projects. The carrier rails have special sinusoidal shaped reinforcements welded to the rear face, which locks the carrier rails into the Sentinel® Nosing Mortar. The expansion joint requires no mechanical fixing to the substrate. It is available with a range of load bearing seals to accommodate varied movement and gap widths, up to 150mm of horizontal movement.



- 1 Bridge Deck
- 2 Expansion Gap
- 3 Eliminator® Membrane
- 4 Hydrostatic Pressure Relief
- 5 Sentinel® EMR Carrier Rail with Sinusoidal Reinforcement
- 6 Sentinel® EMR Elastomeric Seal
- 7 Sentinel® Nosing Mortar
- 8 Road Surface

Key Features

- Developed to withstand heavy volume trafficking on bridges and viaducts
- Complies with CD357 and ETAG032
- Rapid installation
- No mechanical fixings
- Can be installed on both concrete and concrete substrates containing steel
- Can be installed one lane at a time
- Suitable for expansion joint replacement or new works
- Allows horizontal and vertical movement
- Waterproof
- Can be supplied with an in-joint drainage system and secondary membrane

Movement range

	EMR35	EMR50	EMR80	EMR100	EMR150
Horizontal Movement	35mm	50mm	80mm	100mm	150mm
Vertical Movement	+/- 12mm	+/- 15mm	+/- 15mm	+/- 15mm	+/- 20mm
Joint gap at total Compression	25mm	30mm	30mm	40mm	50mm
Joint gap at mid-range	45mm	55mm	70mm	90mm	125mm
Joint gap at total expansion	60mm	80mm	110mm	140mm	200mm

Standard Nosing Dimensions

	EMR35	EMR50	EMR80	EMR100	EMR150
Minimum nosing width	120mm	120mm	140mm	160mm	200mm
Minimum nosing depth	60mm	60mm	70mm	70mm	70mm

Application

Primer

Prior to application of the Sentinel® Nosing Mortar FC the prepared substrate should be primed with the appropriate GCP primer. Refer to relevant datasheet.

Seals

Seals should be applied in one continuous length. Joints in the seal must be avoided. We recommend that the length ordered is at least 1 metre longer than the proposed joint length to allow for variations on site.

Sentinel® Nosing Mortar FC & Safetrack HW

Sentinel® Nosing Mortar FC should be mixed and applied in accordance with the Sentinel® Nosing Mortar FC datasheet. Safetrack HW, a HAPAS Type 1 High Friction surfacing system should be applied over the Sentinel® Nosing Mortar FC to enhance skid resistance.

Steel Rail Corrosion Protection

The steel rails are manufactured from structural grade steel (corrosion resistant weathering grade) and are provided with a temporary holding primer, ZED S94.

Coverage

Please refer to the relevant product datasheets for the coverage rates.

Health & Safety

Please refer to the safety data sheets for more info.

Packaging & Storage

Sentinel® EMR Seals:

Types 35, 50 & 80 – 60lm rolls

Type 100 – 40lm rolls

Type 150 – 25lm rolls

Sentinel® EMR Rails: 3.75m length

All components of the sentinel EMR System should be stored off the ground in cool, dry, protected conditions, out of direct sunlight and in accordance with the relevant Health and Safety regulations.

Sentinel® Nosing Mortar FC should be stored below 25°C. Do not store near naked flames or foodstuffs. Stored in unopened containers, under the correct conditions the components have a minimum shelf life of six months. If product is more than 6 months old you must contact GCP before use.

GCP SENTINEL® NJ

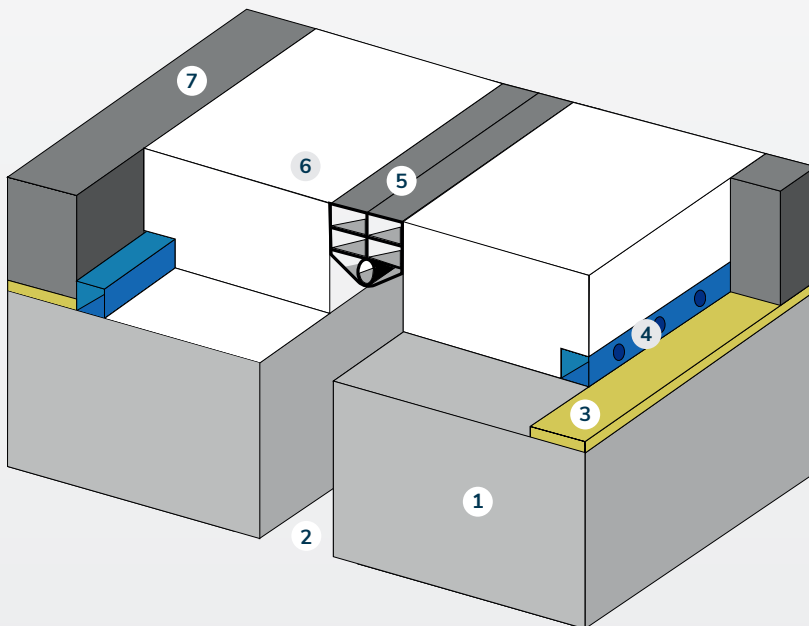
PART 4: NOSING EXPANSION JOINT

(TYPE 4 NOSING WITH PERFORMED COMPRESSION SEAL)

The SENTINEL® NJ is an ideal match for high load and high wear situations such as highway bridges, footbridges, car parks and building applications. The Type 4 joint is surface mounted, comprising a central preformed load bearing compression seal, bonded between high strength elastomeric nosings.

Note: Metaset Structural Adhesive is applied as a layer on the faces of the Sentinel® Nosing Mortar FC and into the ribs of the Sentinel® NJ seals.

The expansion joint is supplied with 4 seal sizes: type 10, 12, 20 and 40.



- 1 Bridge Deck
- 2 Expansion Gap
- 3 Eliminator® Membrane
- 4 Hydrostatic Pressure Relief
- 5 Sentinel® NJ Seal Bonded to Nosing Mortar with Metaset® Structural Adhesive
- 6 Sentinel® Nosing Mortar
- 7 Road Surface

Key Features

- Small movement expansion joint system for highway bridges, car parks, footbridges and building applications
- Complies with CD357 and ETAG032
- Rapid installation
- No mechanical fixings
- Can be installed one lane at a time
- Resists deformation from heavy traffic loading
- Installed to the 'as built' geometry of the structure
- Allows horizontal and vertical movement
- Waterproof

GCP SENTINEL® NJ
PART 4: NOSING EXPANSION JOINT
 (TYPE 4 NOSING WITH PERFORMED COMPRESSION SEAL)



Movement range

	NJ10	NJ12	NJ20	NJ40
Horizontal Movement	10mm	12mm	20mm	40mm
Minimum Gap depth	40mm	45mm	70mm	90mm
Optimum Gap width	20mm	25mm	35mm	50mm
Seal Width Fully closed	15mm	19mm	25mm	31mm
Seal Width Fully opened	25mm	31mm	45mm	71mm

Metaset Structural Adhesive Dark Grey

Application temperature range	Value
Standard grade	0-30°C
Tropical range	25-50°C
Cure Time	15-40 minutes

Standard Nosing Dimensions

	NJ10	NJ12	NJ20	NJ40
Minimum nosing width	100mm	100mm	100mm	100mm
Minimum nosing depth	40mm	40mm	60mm	60mm

Application

Primer

Prepared substrates must be primed with PAR1 Primer in accordance with data sheet MA038.

Seals

Seals can be ordered in 12.5m and 25m lengths and should be cut to length suitable for the joint length. Butt joints in the seal must be avoided. We recommend that the ordered length is at 1m longer than that proposed to allow for variations on site.

Sentinel® Nosing Mortar FC & Safetrack HW

Sentinel® Nosing Mortar FC should be mixed and applied in accordance with the Sentinel® Nosing Mortar FC datasheet. Safetrack HW, a HAPAS Type 1 High Friction surfacing system should be applied over the Sentinel® Nosing Mortar FC to enhance skid resistance.

Coverage

Please refer to the relevant product datasheets for the coverage rates.

Health & Safety

Please refer to the safety data sheets for more info.

Packaging & Storage

PAR1 Primer – 5kg kit

Sentinel® Nosing Mortar FC – 49.4kg kit

Metaset Structural Adhesive – 5kg pack

Sentinel® NJ Seals – supplied in 12.5m & 25m lengths

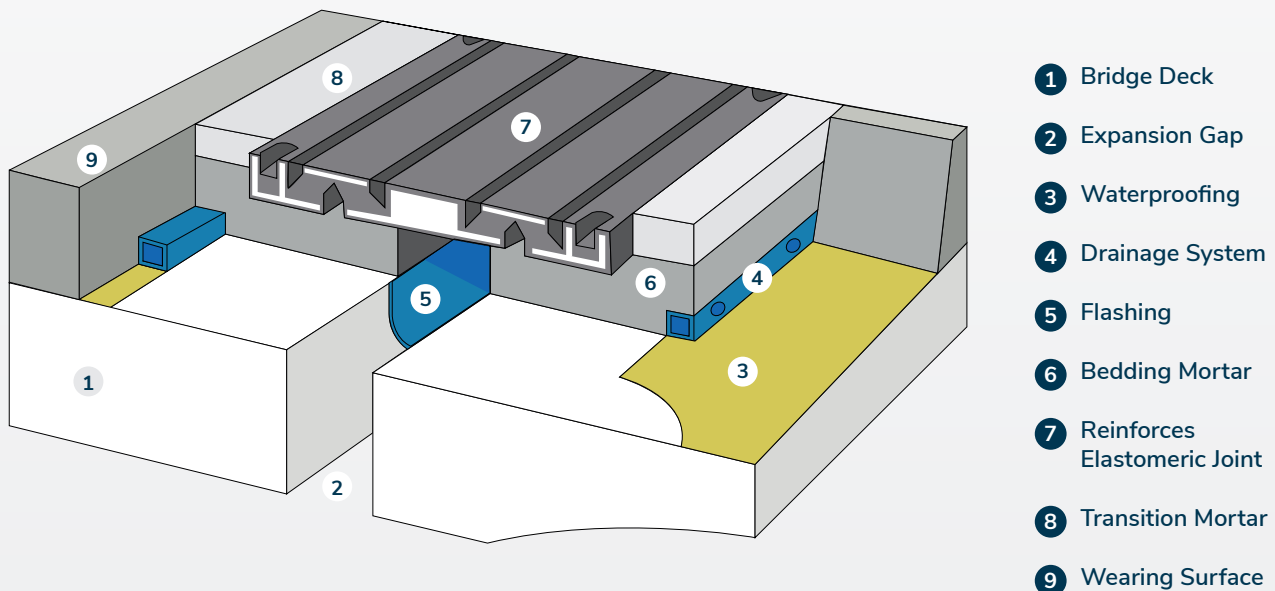
Safetrack HW – Patch Pack

All components of the sentinel NJ System should be stored off the ground in cool, dry, protected conditions, out of direct sunlight and in accordance with the relevant Health and Safety regulations. Storage temperature must not exceed 25°C for the Metaset Structural Adhesive, Nosing Mortar FC and Safetrack HW PP. These components should not be stored near naked flames or foodstuffs. Stored under these conditions Metaset Structural Adhesive and Sentinel® Nosing Mortar FC have a shelf life of six months, while Safetrack HW PP has a shelf life of twelve months.

SENTINEL® ALGAFLEX

PART 5: MAT EXPANSION JOINT (TYPE 5 REINFORCED ELASTOMERIC)

The Sentinel Algaflex expansion joints are manufactured with rubber elements and are restrained to the structure with proper anchor bolts. The reinforcing metal profiles made of steel are completely inserted and vulcanised to the rubber. The Algaflex joint is also able to compensate height differences or vertical movements.

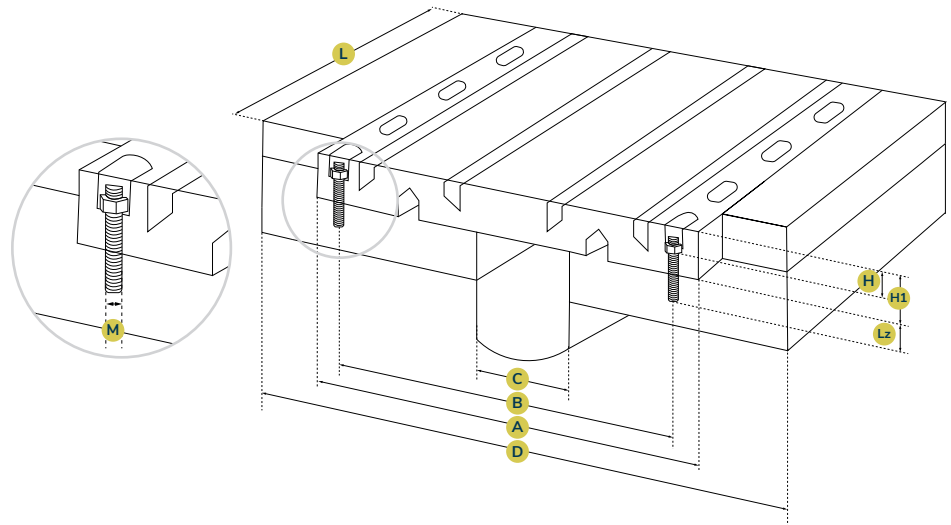


Key Features

- Simple and Linear Design
- Total impermeable
- Easy assembling on concrete or steel bridges
- Suitable for the replacement of existing joints
- Good resistance to vehicle sliding
- Vertical movements absorption
- Developed to withstand heavy volume trafficking on bridges and viaducts.
- Complies with CD357 and ETAG032
- Installed only by authorised and trained contractors

Physical Properties

Polymer	Natural Rubber		
Hardness	Shore A3	56/65	UNI ISO 7619-1
Tensile Strength	MPa	> 15,5	ISO 37
Elongation Break	%	> 350	ISO 37
Compression set of 25% - 24h at 70°C	%	< 20	ISO 815
Ozone resistance 50 p.p.h.m. 20% elongation after 96h at 40°C	No cracks at visual sight		ISO 1431-1
Brittleness temperature	°C	<-25	UNI ISO 812
Bond Test	N/mm	>10	UNI ISO 813
G Modulus	N/mm	0.9 + 15%	EN 1337-3 Annex F
Variation at going for 96h at 70°C- ISO 188-90			
Hardness	Shore A3	Max +10	ISO 7619-1
Tensile Strength	%	Max -15	ISO 37
Elongation Break	%	Max - 20	ISO 37



Movement range

Joint	Longitudinal Movement	Transversal Movement	A (mm)	B (mm)	C (mm)	D (mm)	L (mm)	Lz (mm)	H (mm)	H1 (mm)	M	OF (mm)
T50	+25	+25	280	220	45	450	2000	135	32	60	M12X190	14
T80	+40	+40	275	220	50	450	2000	140	42	70	M12X190	14
T100	+50	+50	355	280	60	520	2000	145	46	70	M14X200	16
T120	+60	+60	390	300	70	560	2000	140	53	80	M16X200	18
T160	+80	+80	470	370	90	640	2000	130	78	100	M16X200	18
T180	+90	+90	500	400	100	670	2000	130	82	110	M16X200	18
T140	+70	+70	590	500	80	750	2000	140	55	80	M16X200	18
T220	+110	+110	800	700	120	980	2000	150	69	100	M20X230	24
T270	+135	+135	890	790	150	1070	2000	150	78	110	M20X230	24
T330	+165	+165	1105	985	220	1290	1000	200	100	130	M24X300	27
T345	+160/185	+160/185	1260	1140	420	1450	1000	200	95	120	M24X300	27