



Heavy duty, thick layer, waterproofing and surfacing system for internal and external car park ramps

Triflex DFS-Ramp

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Triflex DFS-Ramp

Heavy duty, thick layer, waterproofing and surfacing system for internal and external car park ramps

Following experiences with the partial collapse and failure of car park structures, owners and operators have become more aware of the modes of decay and failure in structural concrete and the requirement for improved safety and performance of car park structures generally. The adequate waterproofing, surfacing and protection of car parks to both rectify existing faults and prevent further degradation has been acknowledged as a primary factor and the majority of refurbishment and new build projects include surface treatments.

Due to the higher shear forces from vehicle tyres, ramps and ramp aprons are particularly vulnerable to accelerated wear. Through our experience over more than 20 years in this industry, Triflex have developed specialist solutions for ramps and ramp aprons designed to not only deal with the additional forces involved, but to maximise traction and abrasion resistance.

Triflex only offer heavy duty waterproofing and surfacing systems designed to offer long term protection and resistance to sustained trafficking.

The Triflex solution

The Triflex DFS-Ramp system has been developed over the last 15 years upon the successful concept of the Triflex PDS-Ramp which was first introduced in 1981. The Triflex DFS-Ramp is unique in the waterproofing and surfacing industry, featuring a thick layer construction, fully aggregate filled wearing course and resins particularly suited to use in the car park environment.

The system can withstand levels of trafficking which can cause premature failure in the majority of other systems, and with its monolithic construction and 100% chemical bond will not suffer inter layer delamination. The system has been proven in some of the highest trafficked car park ramps in Europe.

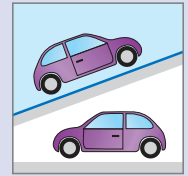
Through the benefit of Triflex experience and technology, the Triflex DFS-Ramp system offers Best Value for multi-storey car park ramp waterproofing and surfacing.

Optional Traction Strips

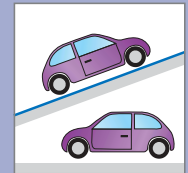
For particularly steep ramps, and ramp aprons with tight turning areas, the optional Traction Strips can be incorporated to provide additional traction and abrasion resistance. Through the use of a contrasting colour, the Traction Strips can also be used for additional demarkation of ramp routes.

Suitable for:

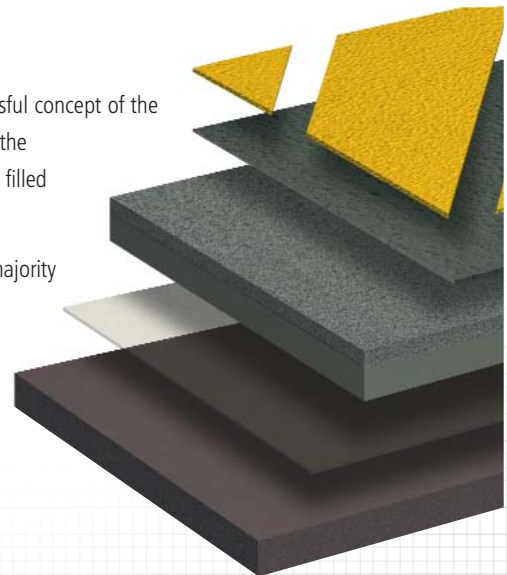
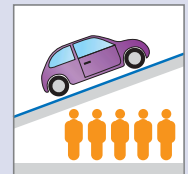
Waterproofing and surfacing of external car park ramps



Waterproofing and surfacing of internal car park ramps



Waterproofing and surfacing of internal car park ramps over occupied premises



Triflex DFS-Ramp

System Benefits

Heavy duty, thick layer, waterproofing and surfacing system for internal and external car park ramps

- DURABILITY AND WATERPROOFING** :: The Triflex DFS-Ramp waterproofing and surfacing system features a heavy duty wearing course fully filled with either basalt or crushed granite. This aggregate is tightly bound within the resin matrix and provides the wearing layer for traffic. Unlike other systems which feature a scattering of anti-skid granules, the Triflex DFS-Ramp fully aggregate filled wearing course provides long term resistance to wear and damage, and maintains the waterproofing integrity of the membrane.

In addition, unlike the more commonly available resins, Triflex resins achieve excellent inter layer adhesion, do not suffer inter layer delamination and have excellent resistance to shear forces from vehicle tyres.

The optional Traction Strips can be incorporated to provide enhanced traction and wear resistance on ramps and ramp aprons.
- COLD APPLIED WITH RAPID CURE TIMES EVEN AT LOW TEMPERATURES** :: All elements of the system are cold applied avoiding the risks and insurance costs associated with hot works.

The rapid cure times ensure that areas are rapidly waterproofed, overall time on site is minimised, weather windows can be maximised and areas can be opened to traffic sooner. The system can be applied at temperatures as low as 0°C ensuring that it can be installed all year round. Critical ramp areas can be treated at night and opened to traffic the next morning.
- HIGH LEVELS OF ANTI-SKID** :: Ensuring that the surface will provide adequate levels of slip resistance for both pedestrians and cars, making the car park safer, reducing the potential for accidents and providing an accepted defensible standard against claims.
- THICK LAYER BUILD UP** :: With a finished thickness in excess of 4mm, the Triflex DFS-Ramp has exceptional durability, helps mask deck imperfections and provides a more aesthetically pleasing, easier to maintain system. The system thickness allows profiled substrates such as brushed concrete and crimped asphalt to be overlaid without the original profile reflecting through.

In contrast, many competitors systems are less than 2.0mm thick, are less durable, and highlight rather than mask profiles and imperfections in the existing substrate. By following the profile of the existing substrate these thin layer systems are subject to accelerated wear on high spots and will collect dirt in low spots.
- SUBSTRATE COMPATIBILITY AND CHEMICAL BOND** :: The Triflex DFS-Ramp system is compatible with virtually all substrates likely to be encountered on car park ramps.

The Triflex DFS-Ramp is suitable for the overlay of existing failed asphalt and Triflex systems are generally acknowledged as the industry leaders in asphalt overlay. In addition, unlike the more commonly available resins, Triflex resins achieve excellent inter layer adhesion, do not suffer inter layer delamination and have excellent resistance to shear forces from vehicle tyres.
- REINFORCED DETAILING** :: All critical details and higher risk areas such as movement zones incorporate our unique reinforcement to provide the maximum security and resistance to flexural fatigue. The detailing material, Triflex prodetail is CE marked, and has a European Technical Approval with a 25 year durability statement.

Less critical details can be economically treated using our specialist fibre reinforced resin.
- AESTHETICS** :: All Triflex resins are UV stable and use UV stable inorganic pigments meaning that colour is retained over time. Optional Traction Strips can be used to highlight ramps and ramp aprons.
- SIMPLE MAINTENANCE** :: The Triflex DFS-Ramp can easily be cleaned and maintained using conventional methods.
- COMMITMENT TO THE ENVIRONMENT** :: The Triflex environmental policy is certified under ISO 14001. All Triflex car park waterproofing, surfacing and protection systems are solvent and isocyanate free.
- RE-USABLE CONTAINERS** :: To minimise the impact on landfill, all core resins are available in re-usable 1,000kg stainless steel containers.
- QUALITY ASSURED MANUFACTURING** :: As all materials are manufactured to ISO9001 you can be assured of consistent quality.
- QUALITY DESIGN AND SPECIFICATION ASSISTANCE** :: The Triflex Technical Team can assist in all areas of the design and specification process from preparing initial rendered visualisations to project specific specifications and sketch details.
- QUALITY INSTALLATION** :: Triflex car park waterproofing and surfacing systems are only installed by our Approved Contracting Partners who have been selected for their ability to provide the highest level of client service.
- WARRANTIED PROTECTION** :: The Triflex DFS-Ramp system is offered as standard with a 10 year materials warranty.

Other warranties are available – please contact Triflex (UK) Limited directly for details.

Triflex DFS-Ramp

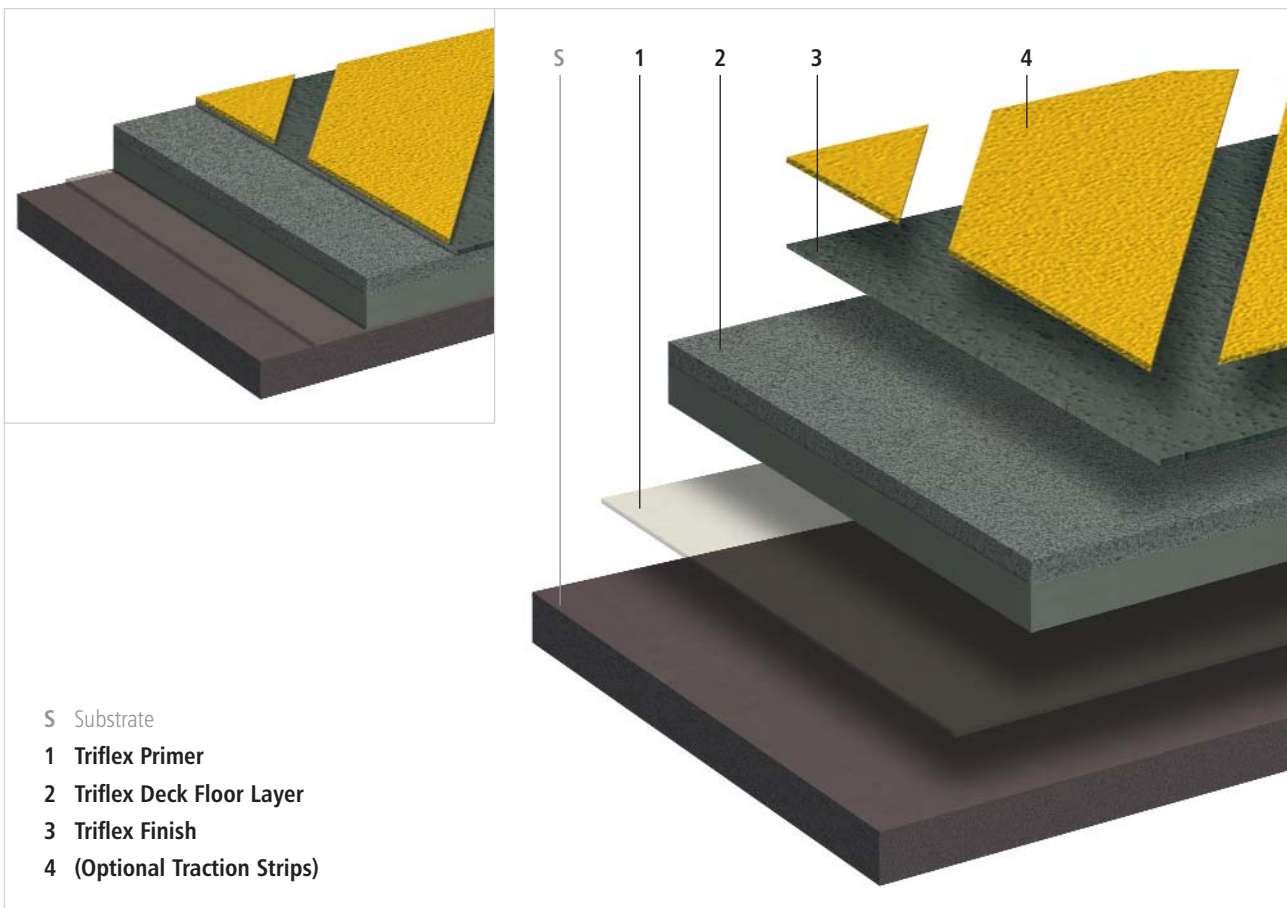
System Data Sheet

Heavy duty, thick layer, waterproofing and surfacing system for internal and external car park ramps

Properties

- Waterproof, thick layer system
- Anti-skid - SRT 81
- Available with the following finish options:
 - 1.0 - 1.6mm basalt with Traffic Grey pigmented seal
 - 1.0 - 2.0mm crushed granite with Traffic Grey pigmented seal
- Tough – highly abrasion resistant
- Exceptionally fast curing
- Cold applied
- Compatible with a wide range of substrates
- Seamless
- Flexible
- Fire resistant EN ISO-11925-2:2002
EN ISO-9239-1:2002
- Chemical resistant
- Resistant to Chloride and Carbon Dioxide ingress
- Vapour permeable
- Low temperature curing-0°c
- UV resistant
- Solvent free
- Isocyanate free
- Tailored design options

System Build Up



System Details

Triflex Primer - Primer for sealing of substrate and to improve adhesion.

Triflex Deck Floor Layer - Waterproof, self levelling surfacing layer with hard wearing basalt, or crushed granite aggregate.

Triflex Finish - Abrasion resistant system seal coat.

Traction Strips - Optional traction and wear strips

Applications

The system is suitable for the waterproofing and surfacing of internal and external car park ramps including internal ramps over occupied premises. For external ramps over occupied premises use Triflex PDS-Ramp.

Triflex DFS-Ramp

System Data Sheet

Substrate preparation and priming

Substrate	Preparation Notes	Priming	
		Triflex DFS-Ramp main area	Triflex prodetail* for details
Asphalt	1	Triflex Cryl Primer 222	Triflex Cryl Primer 222
Hot Rolled Asphalt (HRA)	1 / 8	Triflex Cryl Primer 222	Triflex Cryl Primer 222
Stone Mastic Asphalt (SMA)	1 / 8	Triflex Cryl Primer 222	Triflex Cryl Primer 222
Felt	2	N/A details only	No primer required
SBS Felt	2	N/A details only	No primer required
APP Felt	3	N/A details only	No primer required
Concrete / Screed	1 / 6	Triflex Cryl Primer 276	Triflex Cryl Primer 276
Lightweight concrete	1 / 6	Triflex Cryl Primer 276	Triflex Cryl Primer 276
Polymer modified concrete repair materials	1 / 6	Triflex Cryl Primer 276	Triflex Cryl Primer 276
Steel	4	N/A details only	No primer required
Galvanised steel	4	N/A details only	No primer required
Stainless steel	4	N/A details only	No primer required
Aluminium	4	N/A details only	No primer required
Copper	4	N/A details only	No primer required
Zinc	4	N/A details only	No primer required
Lead	4	N/A details only	No primer required
Glass	4	N/A details only	No primer required
Wood	2	N/A details only	Triflex Cryl Primer 276
Plastics (sheets, coatings, mouldings)			
CPE	4	N/A details only	No primer required
EVA	2	N/A details only	No primer required
PIB	2	N/A details only	No primer required
PVC-P, nB	4	N/A details only	No primer required
UPVC	4	N/A details only	No primer required
GRP	4	N/A details only	No primer required
PU (polyurethane)	5 / 7	No primer required	No primer required
PMMA (acrylic)	5 / 7	No primer required	No primer required
UP (polyester)	5 / 7	No primer required	No primer required
EP (epoxy)	5 / 7	No primer required	No primer required

For other substrates, consult Triflex (UK) Limited for required preparation methods and priming.

Notes:

- 1 = Scarify, grind or lightly bead blast
- 2 = Clean thoroughly
- 3 = Liquefy surface by application of heat and immediately top with quartz
- 4 = Rub down thoroughly with Triflex Cleaners, and sand/grind metals and hard plastics
(steel must be ground or blasted to bright metal)
- 5 = Lightly sand and carry out adhesion test
- 6 = The equilibrium moisture content of cementitious substrates must not exceed 6% or 75% RH. Where moisture levels are in excess of 6% equilibrium moisture or 75% RH refer to Triflex Pox R103.
- 7 = Must be applied over dimensionally stable, fully bonded substrate with a minimum hardness of 25N/mm² and subject to approval by Triflex (UK) Limited.
- 8 = For HRA and SMA, increase primer consumption by 50% and use maximum practical catalyst (minimum 6%).

Where there are any doubts as to adhesion, carry out an adhesion test.

Triflex DFS-Ramp

System Data Sheet

Heavy duty, thick layer, waterproofing and surfacing system for internal and external car park ramps

Substrate Assessment

In all cases the condition and stability of the underlying substrate should be assessed prior to the commencement of work. See Substrate Testing section. Concrete structures should be designed in accordance with BS8110/CP110.

Substrate Preparation

Refer to substrate preparation and priming schedule.

Generally:

Remove existing paint and finishes etc. by grinding.

Ensure that the prepared surface is clean, dry and free from dust, laitence, grease, oil and any other contaminants.

Priming

Refer to substrate preparation and priming schedule.

Triflex Cryl Primer 222:

Apply with a lambswool roller (0.4kg/m² min.)

Rainproof after approx. 30 minutes.

Can be walked upon/next coat applied after approx. 45 minutes.

Triflex Cryl Primer 276:

Apply with a lambswool roller (0.4kg/m² min.)

Rainproof after approx. 30 minutes.

Can be walked upon/next coat applied after approx. 45 minutes.

Note: For new cementitious materials where it is not practical to allow the substrate to hydrate to below 6% equilibrium moisture content and 75% RH, or for existing cementitious substrates with higher levels of moisture, Triflex Pox R103 can be used where the equilibrium moisture content is less than 10%.

Triflex Pox R103:

Apply with a lambswool roller (0.5kg/m² min.)

Can be walked on after approx. 8 hours.

Next coat applied after approx. 18 hours.

Able to withstand stress after approx. 24 hours.

Surface Repairs and Filling

Cut out blisters and repair all minor indentations with scratch coat of Triflex Cryl RS 233. Allow to dry for a minimum of 1 hour.

Fill all voids in vertical surfaces and at upstand transitions with Triflex Cryl Paste and allow to dry for a minimum of 1 hour.

Larger indentations can be filled with Triflex RS 240 (cementitious substrates), Triflex Cryl Mortar or Triflex Cryl Paste Mortar (non-cementitious substrates).

Dynamic Cracks and Dayjoints

Remove any existing filler material and fill with Triflex Cryl RS 233.

Apply Triflex Cryl R 210 (1.5kg/m² min.) with a lambswool roller.

Roll a strip of Triflex 110g Reinforcement into the wet resin, pressing trapped air free using the lambswool roller, ensuring a minimum 50mm overlap between the reinforcement sheets.

Apply Triflex Cryl R 210 (1.0kg/m² min.) wet on wet to ensure full saturation of the fleece. Allow to dry for a minimum of 1 hour.

Minimum fleece overlap either side of dynamic crack/dayjoint - 75mm.

Note: Identification of Dynamic Cracks should include a survey of the soffit (where visible).

Interface Details

Apply in accordance with standard and project specific sketch details.

General Details:

Apply Triflex prodetail® (2.0 kg/m² min.) with a lambswool roller.

Roll a strip of Triflex 110g Reinforcement into the wet resin, pressing trapped air free using the lambswool roller, ensuring a minimum 50mm overlap between the reinforcement sheets.

Apply Triflex prodetail® (1.0 kg/m² min.) wet on wet to ensure full saturation of the fleece.

Rainproof after approx. 30 minutes

Can be walked on/next coat applied after approx. 45 minutes.

Complex and Less Critical Details:

Where due to access restrictions, or complexity of the detail, prodetail® is not practical, or for ramps where the detail is less critical:

Apply Triflex Cryl R 295 fibre reinforced resin (1.5 kg/m² min.) with a brush and allow to cure for a minimum of 45 minutes.

Apply a further layer of Triflex Cryl R 295 fibre reinforced resin (1.5 kg/m² min.) by brush.

Rainproof after approx. 30 minutes.

Can be walked upon/next coat applied after approx. 45 minutes.

Notes:

For guidance on the treatment of individual details consult Triflex (UK) Limited.

Where details may be subject to mechanical damage from vehicles, consult Triflex (UK) Limited for mechanical protection solutions.

Main Deck - Deck Floor Layer

Apply Triflex Cryl RS 233 Thixo (4.0kg/m² min.) by trowel.

Embed into the wet Triflex Cryl RS 233 Thixo a full cover of basalt (1.0 - 1.6mm), or crushed granite (1.0 - 2.0mm) (5.0kg/m²) approx. Allow to dry for a minimum of 2 hours, sweep away excess aggregate and vacuum clean.

Rainproof after approx. 30 minutes.

Can be walked upon after approx. 1 hour.

Next coat applied after approx. 2 hours.

Finish

Interface Details

Apply Triflex Cryl Finish 205 (0.5kg/m² min) using a lambswool roller.

Rainproof after approx. 30 minutes.

Can be walked upon after approx. 1 hour.

Note: For interface details in excess of 250mm high, use Triflex Cryl Finish 205 Thixo.

Main Deck

Apply Triflex Cryl Finish 205 (0.80kg/m² min) using a hard squeegee and a dry lambswool roller.

Rainproof after approx. 30 minutes.

Can be walked upon after approx. 1 hour.

Can be driven upon after approx. 3 hours.

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System Data Sheet

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Optional Traction Strips

Apply Triflex Cryl M264 (3.5kg/m² min.) by trowel.
Refer to Triflex DFS-Ramp standard sketch details for traction strip layout recommendations.
Rainproof after approx. 15 minutes.
Can be walked upon after approx. 30 minutes.
Can be driven upon after approx. 1 hour.

Expansion Joints

Consult Triflex (UK) Limited for confirmation of design details required.

Interruptions During Works

If work is interrupted for more than 12 hours, use Triflex Cleaner to clean and reactivate the transition area.
Evaporation time: at least 20 minutes - overlay within 60 minutes.
For reinforced details, the subsequent waterproofing layers must overlap by at least 100 mm, including the Reinforcement.

System Components

Please see the appropriate Product Data Sheet for details about areas of application/application conditions/mixing instructions (available on request):

Triflex Cryl Primer 222
Triflex Cryl Primer 276
Triflex Pox R103
Triflex Cryl Paste
Triflex RS 240
Triflex Cryl Mortar
Triflex Cryl Paste Mortar
Triflex Cryl R 210
Triflex 110g Reinforcement
Triflex prodetail®
Triflex Cryl R 295
Triflex Cryl RS 233 Thixo
Triflex Cryl Finish 205
Triflex Cryl M264

Quality Standard

All products are manufactured to ISO 9001.

Substrate Testing

Prior to the commencement of work the Contractor must check and only proceed if he has satisfied the following requirements.

Hardness: All concrete substrates, concrete repair materials, screeds and mortars shall be cured and allowed to achieve a minimum hardness of 25N/mm².

Moisture: Prior to overlay with Triflex systems, the equilibrium moisture content of the substrate must not exceed 6% and 75% RH. For cementitious substrates with higher levels of moisture (less than 10% equilibrium) refer to Triflex Pox R103.

Adhesion: Trial areas to be prepared to ensure that the System achieves a minimum bond to the substrate of:

Concrete, concrete repair materials, screeds and mortars: 1.5N/mm²

All other substrates: 0.8N/mm²

Health and Safety

Refer to product Health and Safety data prior to using the materials.

Coverage Rates

The coverage rates given are guidelines based on smooth, level substrates. Allowances must be made if the substrate is uneven, rough or porous.

Drying Times

The drying times stated are at +20°C and are dependent upon weather conditions.

Important Notes

It is the Contractors' responsibility to ensure that the substrate is suitable and that the system is applied in all areas in accordance with Technical Data Sheets and Application Guidelines in force at the time.

The advice we can provide on the application of our products is based on extensive development work as well as many years of experience and is given to the best of our knowledge. However, the wide variety of requirements for a building under the most diverse conditions mean that it is necessary for the Contractor to test the product for suitability in any given case. We reserve the right to make alterations in keeping with technical developments or improvements.

Triflex DFS-Ramp

Model specification

Heavy duty, thick layer, waterproofing and surfacing system for internal and external car park ramps

J31 Liquid Applied Waterproof Roof Coatings

To be read with Preliminaries / General Conditions.

Liquid Applied Waterproof Roof Coating reference

Triflex DFS-Ramp

Manufacturer:

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Web: www.triflex.co.uk

Generally

Apply Triflex DFS-Ramp system fully in accordance with Manufacturer's System Data Sheet (Appendix), standard Sketch Details (Appendix) and project specific Sketch Details (Appendix).

Substrate Assessment

Assess substrate in accordance with Triflex DFS-Ramp System Data Sheet.

Substrate Preparation

Prepare substrate in accordance with Triflex DFS-Ramp System Data Sheet.

Priming

Apply Triflex primer in accordance with Triflex DFS-Ramp System Data Sheet.

Primer reference: Triflex Cryl Primer 222 / Triflex Cryl Primer 276 / Triflex Pox R103.

Surface Repairs and Filling

Repair and fill surface in accordance with Triflex DFS-Ramp System Data Sheet.

Filling reference: Triflex Cryl RS233 / Triflex Cryl Paste / Triflex Cryl RS240 / Triflex Cryl Mortar / Triflex Cryl Paste Mortar.

Dynamic Cracks and Dayjoints

Treat dynamic cracks and dayjoints in accordance with Triflex DFS-Ramp System Data Sheet.

Filling reference: Triflex Cryl RS233.

Overbanding reference: Triflex Cryl R210 with 110g Reinforcement.

Interface Details

Apply interface details in accordance with Triflex DFS-Ramp System Data Sheet, standard Sketch Details and project specific Sketch Details.

General details reference: Triflex prodetail with 110g Reinforcement.

Complex details reference: Triflex Cryl R295.

Main Deck

Apply waterproofing and surfacing to main deck area in accordance with Triflex DFS-Ramp System Data Sheet.

Waterproofing reference: Triflex Cryl RS233 Thixo.

Aggregate reference: basalt / crushed granite.

Finish

Apply finish in accordance with Triflex DFS-Ramp System Data Sheet.

Finish reference: Triflex Cryl Finish 205.

Finish colour reference: RAL 7043 Traffic Grey.

Optional Traction Strips

Apply optional traction strips in accordance with Triflex DFS-Ramp System Data Sheet and Traction Strip Layout recommendations.

Traction strip reference: Triflex Cryl M264

Installation

The works shall be executed by a Triflex Approved Contracting Partner licensed to install Triflex car park waterproofing, surfacing and protection systems.

Required system properties

- Waterproof
- Dry film thickness > 4mm
- Anti-skid – SRT 81
- Fast curing (maximum 3 hours before trafficking)
- Totally cold applied
- Compatible with a wide range of substrates
- Seamless
- Flexible
- Fire resistant
- Chemical resistant
- Resistant to Chloride and Carbon Dioxide ingress
- Vapour permeable
- Suitable for application at temperatures as low as 0°c
- UV resistant
- Solvent free
- Isocyanate free
- Optional traction strips
- Standard 10 year materials warranty
- Optional extended warranty

General notes

The Triflex DFS-Ramp System Data Sheet, standard Sketch Details and project specific Sketch Details are to be read as an integral part of this specification.

The Triflex Approved Contracting Partner is to install all details to comply with the Triflex DFS-Ramp standard Sketch Details, any project specific Sketch Details and Triflex project specific recommendations. Should any detail arise where the treatment is not clear, the Contractor must seek advice and approval from Triflex (UK) Limited prior to commencing the works.

It is the Contractor's responsibility to ensure that the substrate is suitable and that the system is applied in all areas in accordance with System Data Sheets and Application Guidelines in force at the time.

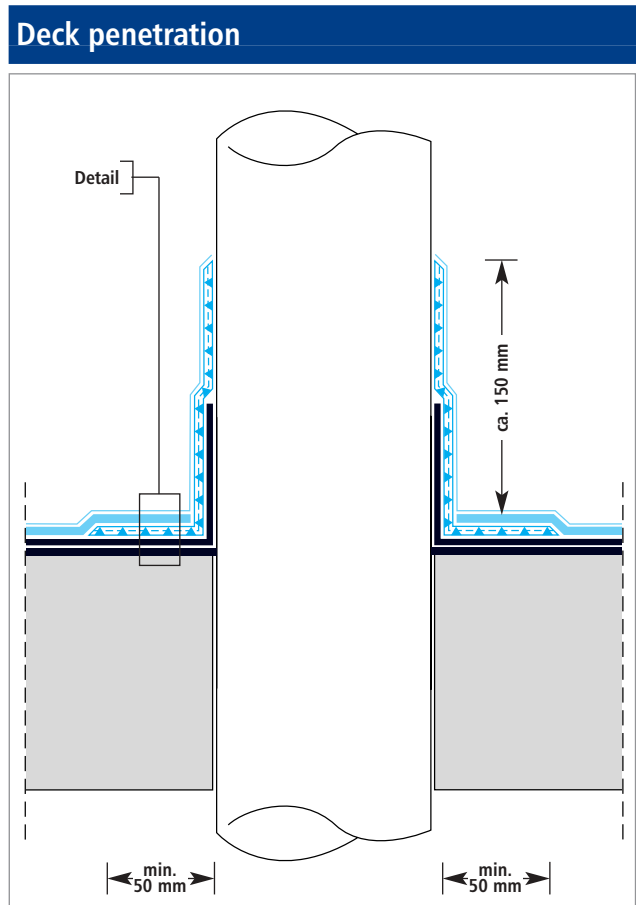
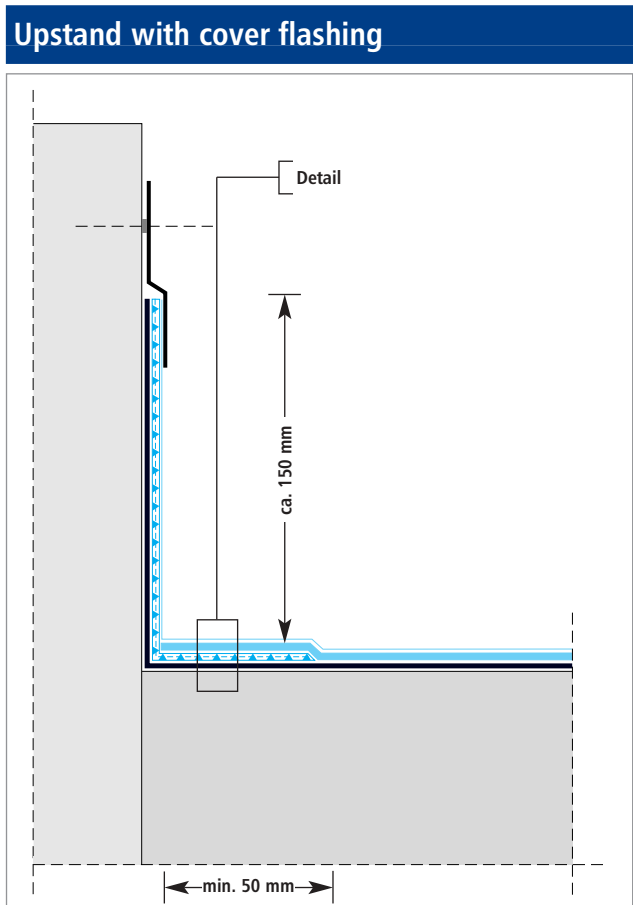
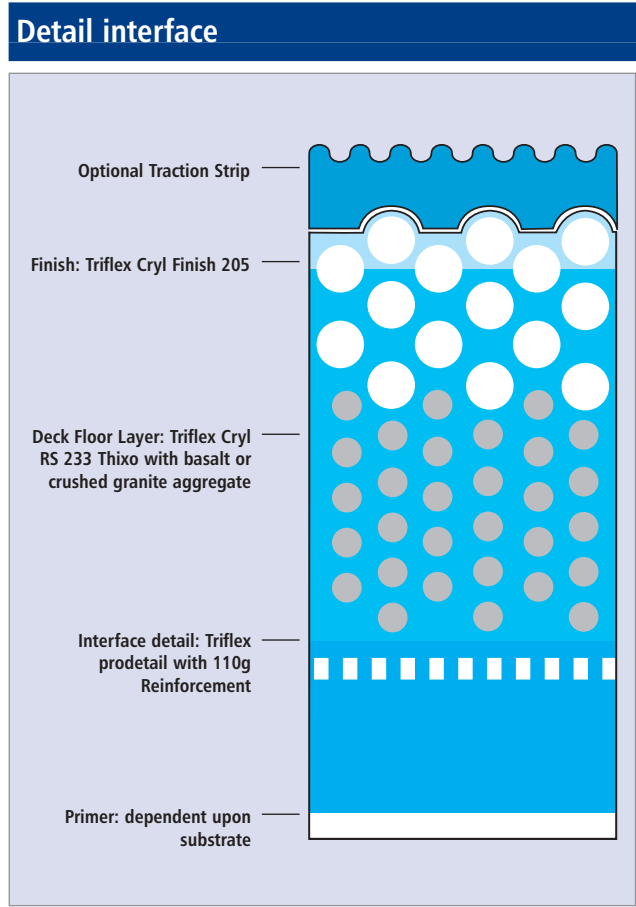
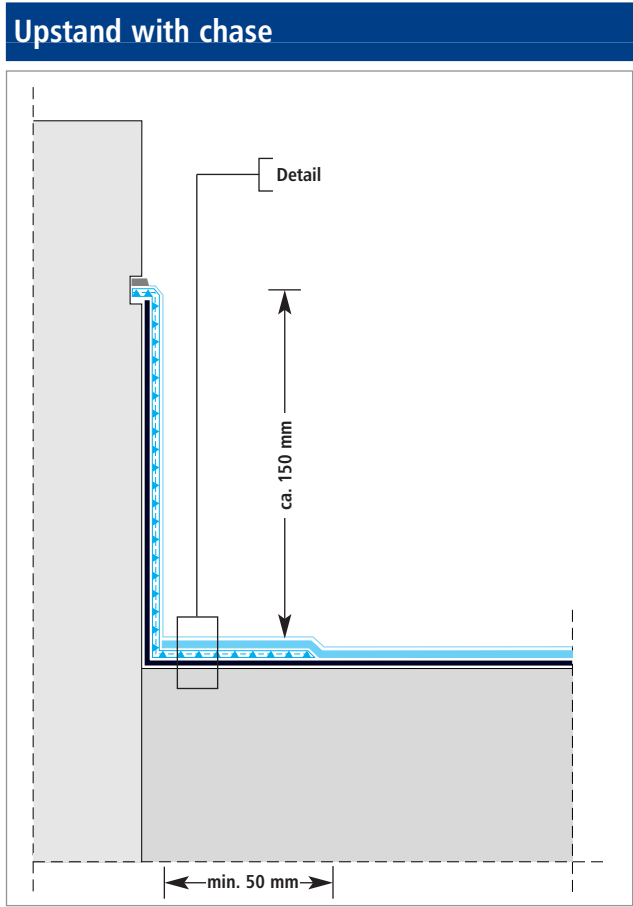
Notes to specifiers

We recommend that for all car park projects, the actual specification clauses for the Triflex waterproofing, surfacing and protection systems are prepared by the Triflex Technical Team.

This information can then be provided in a text format for insertion into Word and other documents.

Triflex DFS-Ramp

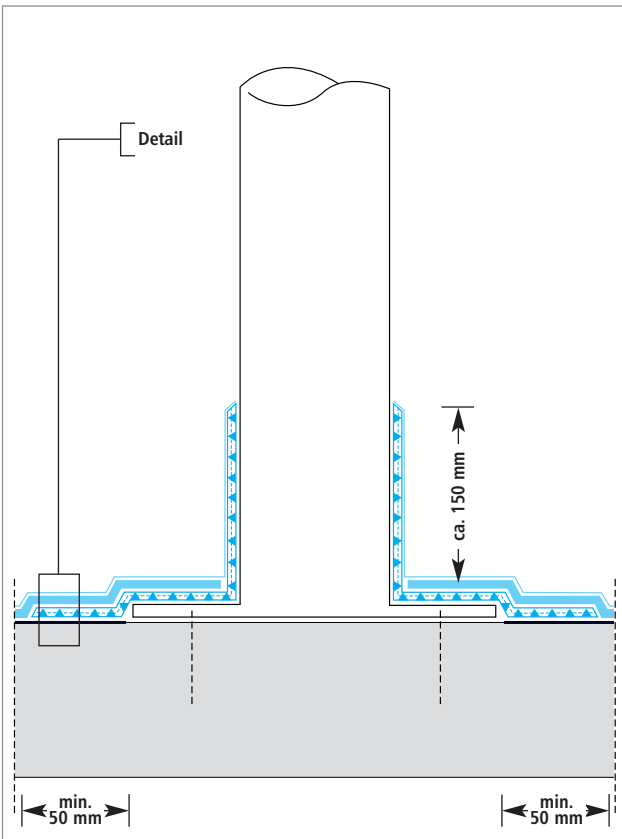
Sketch Details



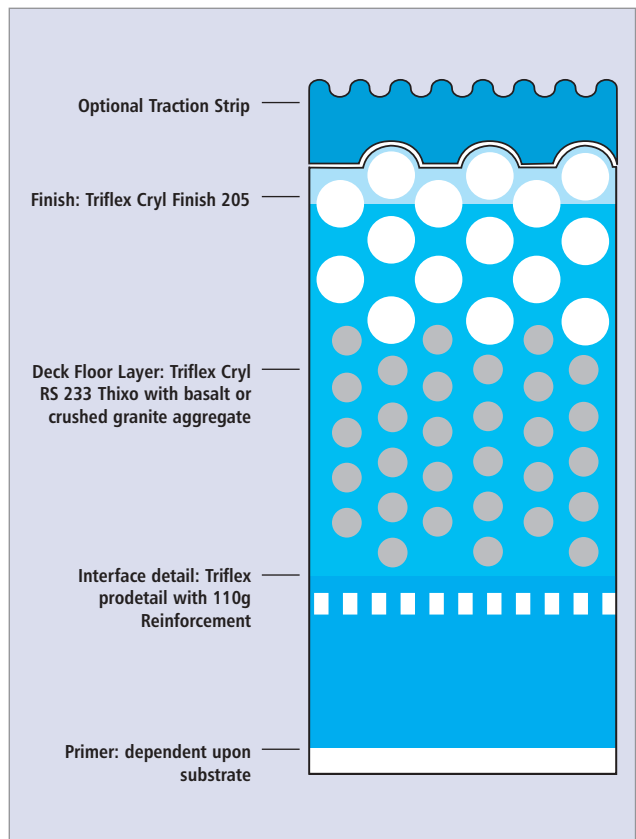
Triflex DFS-Ramp

Sketch Details

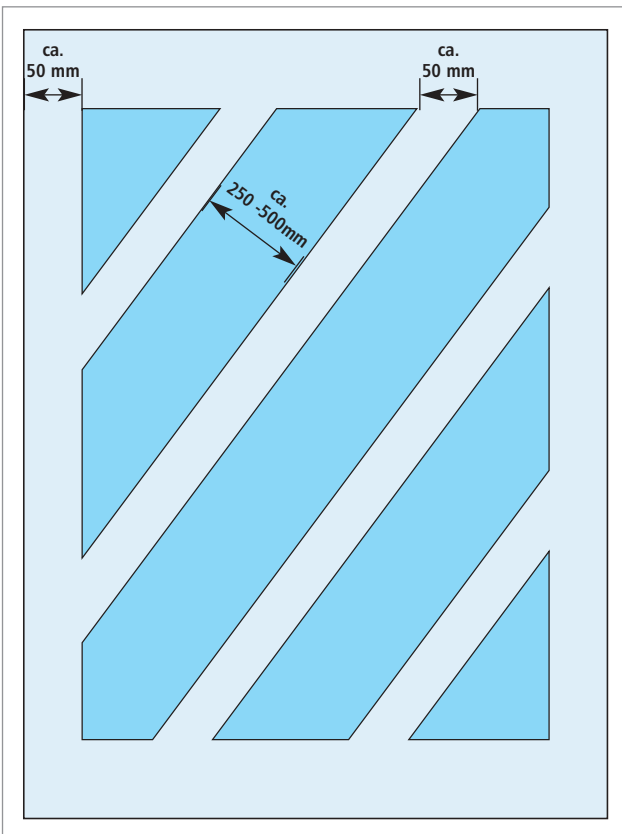
Surface mounted detail



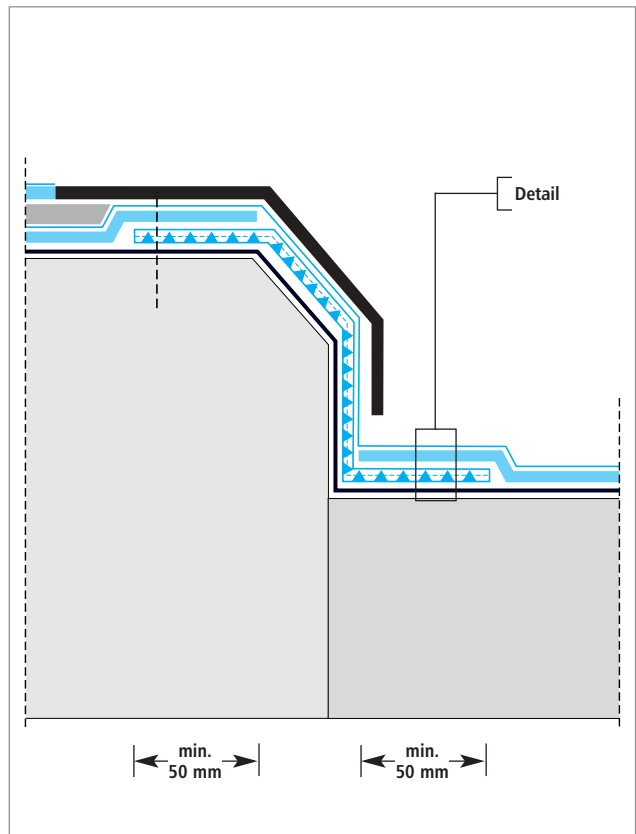
Detail interface



Traction strip layout



Cast insitu kerb



Triflex DFS-Ramp

Sketch Details

