



# CASE STUDY

# Triflex

Delivering solutions together.

18 YEARS OF PROTECTION WITH TRIFLEX  
OVERLAY OF ASPHALTED CAR PARK DECK

# MEADOWHALL SHOPPING CENTRE

**Area:**

91,000m<sup>2</sup>

**Systems**

Triflex DeckFloor  
Triflex Cold Plastic

**Completed:**

2006

**Still providing protection:**

2024

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# 18 YEARS PROTECTING MEADOWHALL



**91,000m<sup>2</sup>**

Protected by Triflex systems



**1990**

Year of opening

**140,000m<sup>2</sup>**

(1.5million sq ft)  
retail & leisure space

**280**

Occupiers



**270,000m<sup>2</sup>**

of parking

**12,000**

Free parking spaces



**55**

EV spaces

**350**

Disabled spaces



**200**

Parent and  
child spaces

**7.4 million**

Vehicles in 2022



**111 minutes**

Average dwell time for 2023

# Introduction

The Meadowhall shopping centre, Sheffield opened in September 1990 to great excitement, as the second largest shopping centre in the UK. In its first year it attracted some 19.8 million visitors to its 139,355m<sup>2</sup> floor area. Now, with some 25 million visitors a year, it continues to attract consumers, bucking high street trends.

Meadowhall offers visitors an experience which starts with their arrival. Built close to the M1, not only is there easy and direct access via road, but also 12,000 free parking spaces, making it an easy choice for car users. Meadowhall owners understand that maintaining the car parks contributes to the visitor experience, with clean, functional, well signed and easy-to-use facilities.





## Car park construction

On site car parks are two storey podium car park decks with access ramps. The extensive parking provision wraps around the shopping centre, enabling pedestrians quick and easy access to the retail spaces from multiple points. The largest car parks, the Red and Yellow are located at the front of the shopping centre, boasting some 6,000 spaces. There are a further 1,800 spaces in the Blue, 1,000 spaces in the Green and 2,500 spaces in the Pink car parks. In addition, the Orange surface car park provides 1,300 spaces.

In 1990 the concrete car parks were protected with a traditional asphalt covering providing the waterproofing and surfacing. By the late 1990's concerns were raised as the upper car park decks were allowing water ingress, with water leaking through to the lower decks. Expansion joints were replaced but issues persisted.

## Waterproofing choices in the 2000's

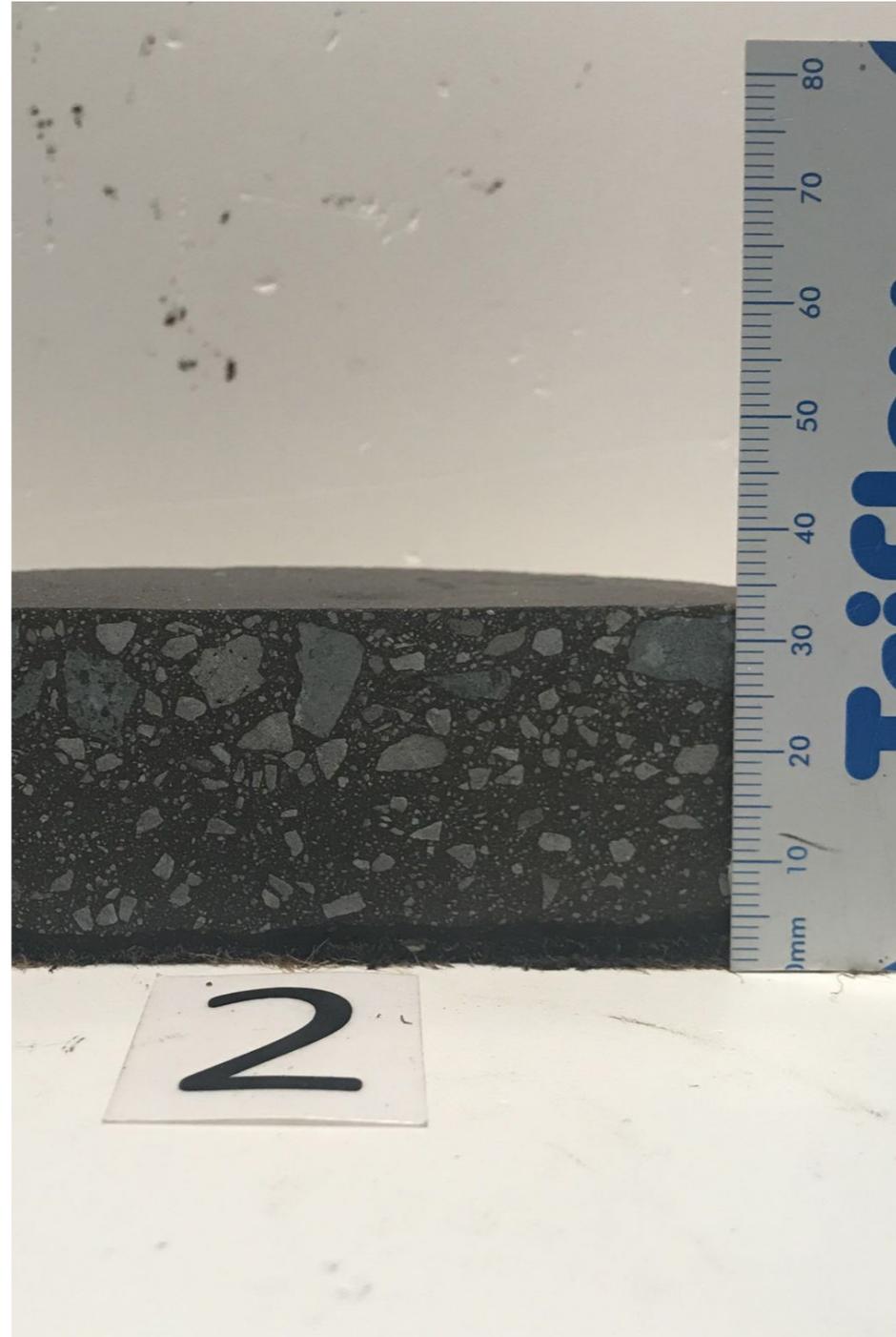
In the early 2000's polyurethane coatings were considered a quick option. Sprayed hot and with associated risks, these were a potential solution evaluated at Meadowhall. Asphalt however can be a difficult substrate and areas failed to satisfactorily adhere when applied. An alternative was sought. Triflex were approached for a solution that would offer longevity with a waterproofing, surfacing and protection system that could overlay the existing asphalt to provide a robust, coloured, anti-skid surface.

## Triflex assessment fully characterised each two storey car park

The successful overlay of asphalt with a Triflex liquid applied waterproofing and surfacing system is thanks to our expertise, experience and approach to each individual project. It was no different nearly 20 years ago, when in 2005 Triflex determined the asphalt build-up and condition to each of the upper podium car park decks through extensive core sampling and visual condition surveys. It was then found that there were asphalt waterproofing failures at dayjoints, detail interfaces and at expansion joints, which were exacerbated by poor drainage in some locations. Water and chlorides were entering the structure which over time could potentially damage the underlying steel reinforcement and concrete, as well as provide a nuisance to those parking below.

## Asphalt overlay with Triflex DeckFloor: 91,000m<sup>2</sup>

The resulting bespoke project specification proposal recommended the Triflex DeckFloor system with local reinforcement to joints and interfaces for the Red, Yellow, Pink, Blue and Green car parks. The PMMA based solution is formulated for high space change, heavily trafficked car parks and is suitable for the overlay of both asphalt, concrete and even existing coatings. The Red and Yellow car parks historically have been the most used, exposed to the highest traffic volumes due to their location by the main entrance. On this basis, a heavier duty basalt aggregate was utilised for the driving aisles and ramps, providing a super tough, highly anti-skid surface. As part of the installation in 2005 / 2006, Triflex Cold Plastic line markings were also installed to the driving lanes, which are the same heavy duty, highly visible markings widely used on the German Autobahn.





# 18 years and still protecting

Some 18 years after the Triflex systems were originally installed, the car parks are still surfaced, protected and remain watertight thanks to the Triflex DeckFloor systems installed back in the early 2000's.

# Waymarking that lasts for decades

The original driving lane markings remain in situ, with Triflex Cold Plastic waymarking standing the test of time. These PMMA based markings easily out-perform thermoplastic and paint type alternatives, which would typically last less than a few years in a similar high space change rate environment.

## Proven long lasting asphalt overlay solutions

At 91,000m<sup>2</sup>, Meadowhall was the largest asphalt overlay project in the UK. Today in 2024, the Triflex systems remain in situ, protecting the structural integrity of the multi-storey car park.

Triflex expertise ensured that the surface preparation, primers, repairs and overlay solutions were up to the task, delivering waterproofing longevity for the longest practicable time. For the owners and visitors, that's decades of hassle-free car parking.

Triflex PMMA based systems only require cleaning before they may be overlaid again and with Triflex PMMA based repair materials also available, it's easy to address any local issues. The technologically advanced resins cure rapidly, even at low temperatures, meaning that maintenance and repairs can be achieved efficiently even in winter, ensuring areas can be swiftly reopened.





“I was involved in the original procurement for the car park waterproofing and surfacing works back in 2005 / 2006. Given the scale of the facility this was a significant investment for the centre and its owners. Since being installed, the Triflex systems have provided a long lasting solution for Meadowhall’s multi-storey car parks. The waterproofing and surfacing of the upper decks have consistently and continually provided protection, ensuring the integrity of the car park structures over the decades. With some 7.4 million vehicles visiting in 2022, any surface has to work hard here, and Triflex has stood the test of time. It’s been a cost effective and hassle free solution for such a demanding environment.

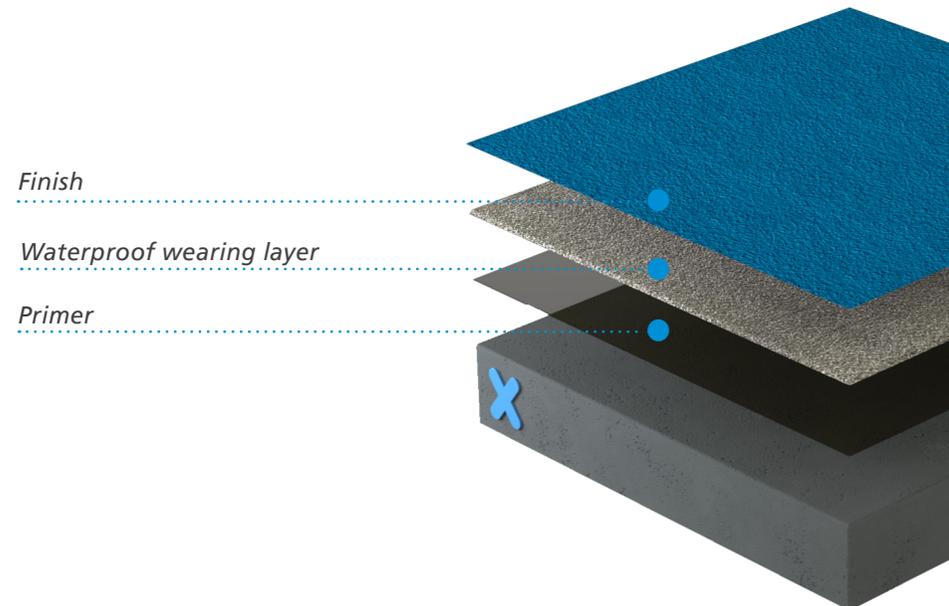
With very minimal maintenance, the car parks continue to look good and provide an attractive gateway for visitors to Meadowhall.”

Gary Wright, Property Services Director,  
Meadowhall

## System benefits

# Triflex DeckFloor

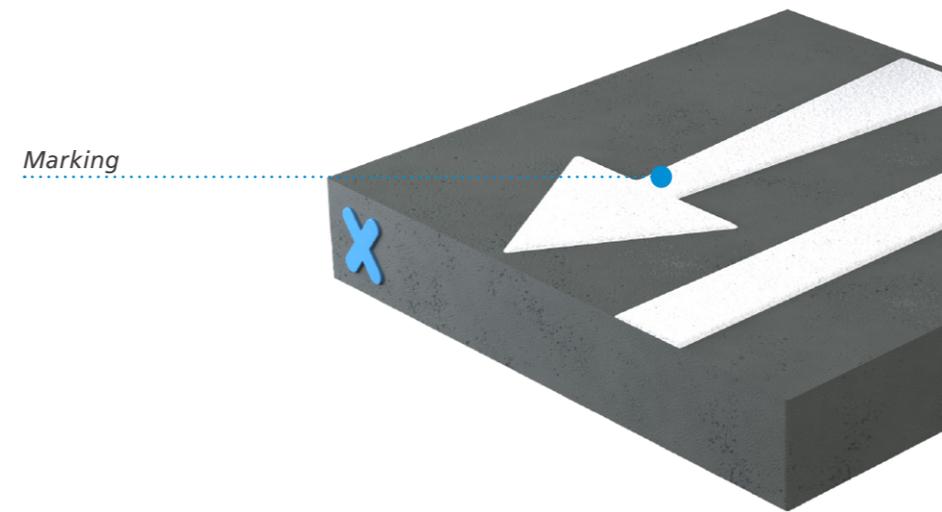
- PMMA system for external and internal decks and ramps
- Compatible with a wide range of substrates, including asphalt and concrete
- Locally reinforced with dynamic crack bridging membrane
- High levels of long term skid resistance
- Exceptionally rapid curing, even at low temperatures
- Solvent and isocyanate free
- Totally cold applied, with no risk from hot works
- Impact and load resistant wearing layer and durable surface finish



## System benefits

# Triflex Cold Plastic

- Our toughest and most durable marking system
- Withstands high mechanical loads including HGV traffic on service yards
- Totally cold applied, with no risk from hot works
- Exceptionally fast curing, even at low temperatures
- Anti-skid
- Weather and UV resistant
- Toluene and xylene free
- Available in a wide range of colours
- Tested and approved by the German Federal Highway Research Institute (BASt)



# Triflex

Delivering solutions together.

Triflex is the leading European specialist in cold liquid applied waterproofing, surfacing and marking resins. Our high-quality systems provide reliable and lasting waterproofing, surfacing, protection and markings for roofs, walkways, balconies, terraces, car parks, roads and infrastructure.

We are a family owned and operated company that provides tailored solutions worldwide. From our production facilities based in Minden, Germany, we have been researching and developing solutions designed to protect and repair the built environment for more than 40 years.

From our UK and Ireland headquarters based in Stone, Staffordshire we pride ourselves on providing our clients with tailored solutions and exceptional levels of service and support throughout all stages of their project. From conducting in-depth site surveys to our comprehensive testing and off-site and on-site support, Triflex delivers the highest standards.

Triflex solutions are certified to the highest standards, ensuring peace of mind for years to come.

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