

# CONCRETE BAY REPLACEMENT SUCCESS FOR NORFOLK TRUNK ROAD

LMS Highways Civil Solutions division has once again, successfully proven the case for their efficient and precision concrete bay replacement service on behalf of a major contractor for Highways England.

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The work which took place on an already planned overnight closure for other scheduled maintenance also included specialist pressure grouting work and LMS Highways proven concrete repair systems.



- 3 bays replaced over 2 nights, fitted into existing closures.
- 10 year expected lifespan.
- Minimal noise and disruption to adjacent housing estate.
- Further 5 bays lifted level using pressure grouting.
- Further 25 bays spot repaired using cost-effective BBA HAPAS approved system.

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#### **THE CHALLENGES**

The work took place in Norfolk on a busy trunk road with concrete sections. While overnight closures had already been earmarked for other essential maintenance, three of the bays were damaged beyond economical repair with a



further 5 having dropped due to ground conditions and a further 25 requiring spot repairs.

On damaged concrete bays, a repair and maintain approach is normally preferred to the undesirable disruption of closing a major trunk road for a week or more to completely refurbish the surface. However, for concrete bays that have reached a certain level of decay, repair can be unsafe and is most likely uneconomical – the lifespan of these repairs is likely to be between 3-6 months due to the underlying condition of the bay.

As the bays requiring replacement were situated on a single carriageway stretch, access was limited, compounded by other scheduled maintenance work carried out.

The work was also adjacent to a housing estate so there was a pressing need for noise nuisance to be kept to a minimum.

## *"It appears to be a very viable longterm structural solution for the concrete sections."*



## **OUR SOLUTION**

As well as the obvious cost savings compared to repeated repairs, our highly refined and efficient concrete bay replacement process perfectly solved the needs for the three bays requiring replacement.

The team started promptly at 8.30pm when the closure was initiated, ensuring that the noisier parts of the process were completed early.

To remove the bay, a vacuum-lift system is used to remove large sections of the slab in complete pieces. Not only is this a quick process but avoids the need for noisy jackhammer and other breaking equipment. If the slab is in a poor condition, two other sophisticated plant systems are used to efficiently remove smaller sections and debris.

The empty bay area is then drained of any residual water, cleared and prepared with a damp proof course and a high-performance drilling rig drills the holes for the horizontal steel dowels.





High specification concrete is poured and a friction screed applied before a drying tent is erected over the bay sealing in the heat from high-performance gas burners which will dry the concrete to the point it can be trafficked within 3-5 hours depending on ambient temperature conditions. The temperature of the concrete is measured continuously throughout the drying process. When it reaches the required temperature, the drying profile is analysed and only after strict checks is the bay certified for use by traffic.

Operations causing a noise nuisance were complete well before midnight, meeting the requirements of the customer.

### **THE RESULTS**

- Bay replacements completed and ready to be trafficked in less than 5 hours.
- Expected lifespan of the replacement is 10 years.
- Savings of over 85% over continuous repair regime.
- The customer was extremely satisfied with the process.



"I was very impressed with the process. The level of coordination between the gangs is very impressive to watch and there is clearly a very strong leadership from the site supervisor. I observed the pre-shift briefing and was impressed with the level of detail and evident safety culture.

In addition, I was very pleased with the limited noise from the vacuum lifting system and how quick this part was completed, as I'm sure the local residents would agree!

To remove a damaged bay and to reinstate a brand new one in such a short period of time is an amazing achievement and we have identified a number of further projects that will benefit from this process. It appears to be a very viable long-term structural solution for the concrete sections."

## **Customer Project Manager**



The Concrete Bay Replacement process is implemented within a short period of time and provides a long expected service life.