

## RAPID SET CASE STUDY– A12 Margarettng

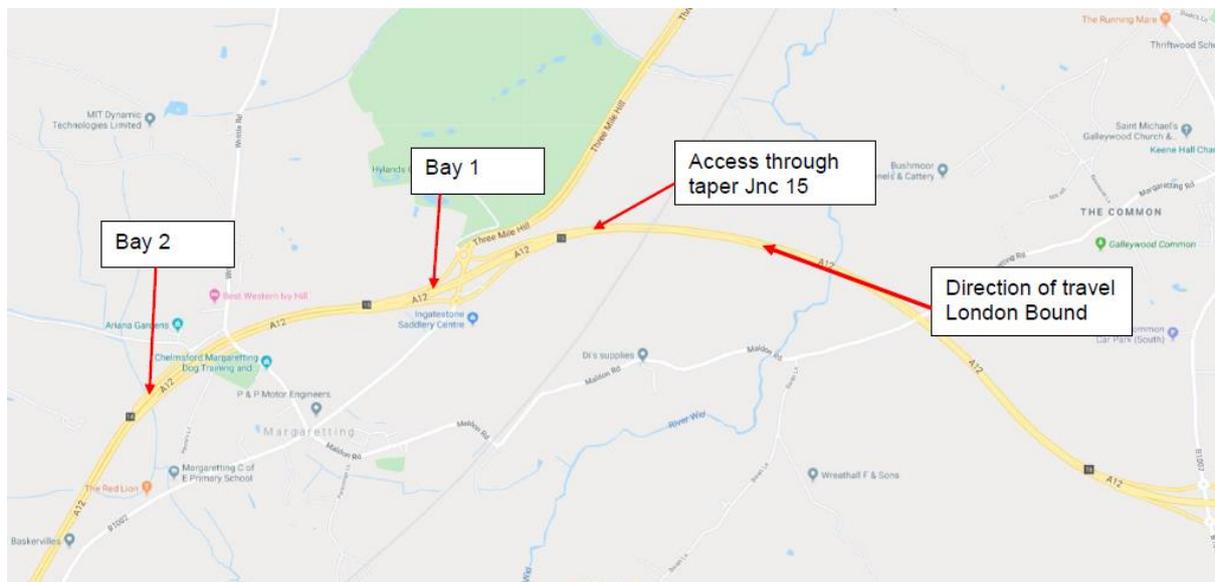
**DATE:** 24.01.2020

**CONTRACTOR:** Tag Construction

**CLIENT:** Graham

### **DESCRIPTION:**

Tag Construction to remove and replace two no. slabs on Southbound carriageway between Jnc 15 & 14. Pouring approximately 13m<sup>3</sup> of Rapid Set concrete via volumetric supply. All during night time possession



### **RESOURCE:**

ECL supplied three volumetric trucks. Two to mix & discharge Rapid Set, with third for redundancy.



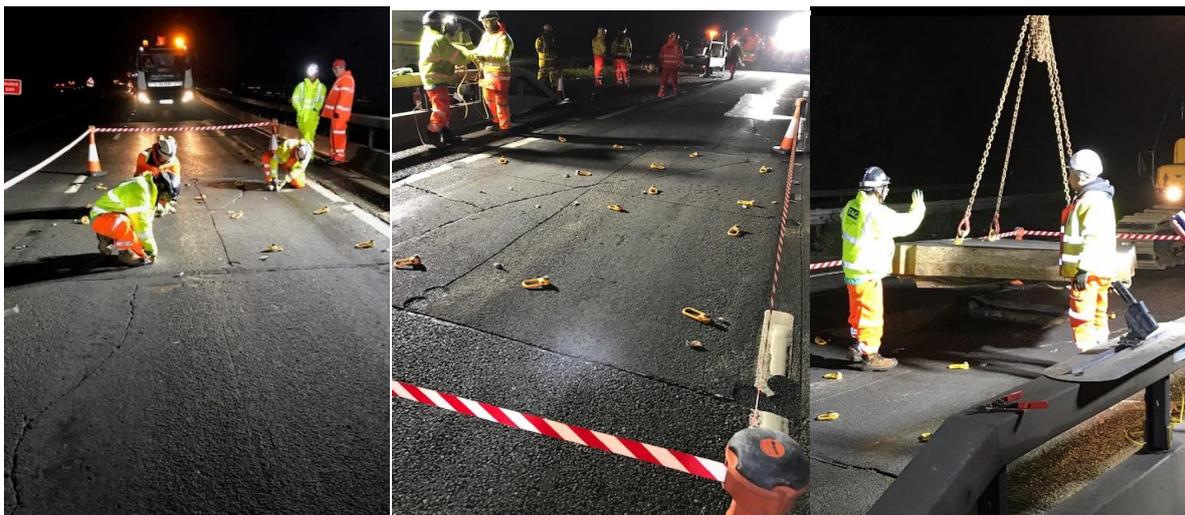
Each vehicle had 8m<sup>3</sup>+ capacity and all water was pre heated to @ 40 Deg C prior to travelling to site.

ECL have purpose built water heating trailer which utilises a towable heat exchange boiler which can be run on dual fuel if required as a stand-alone solution.

Tag prepped the two areas on the previous night by cutting bays into manageable slabs and mounting lifting fittings ready for mechanical removal on the following evening. (24<sup>th</sup>)

Pad 1:

Removal started at @ 22:00hrs – Batching at 00:30hrs



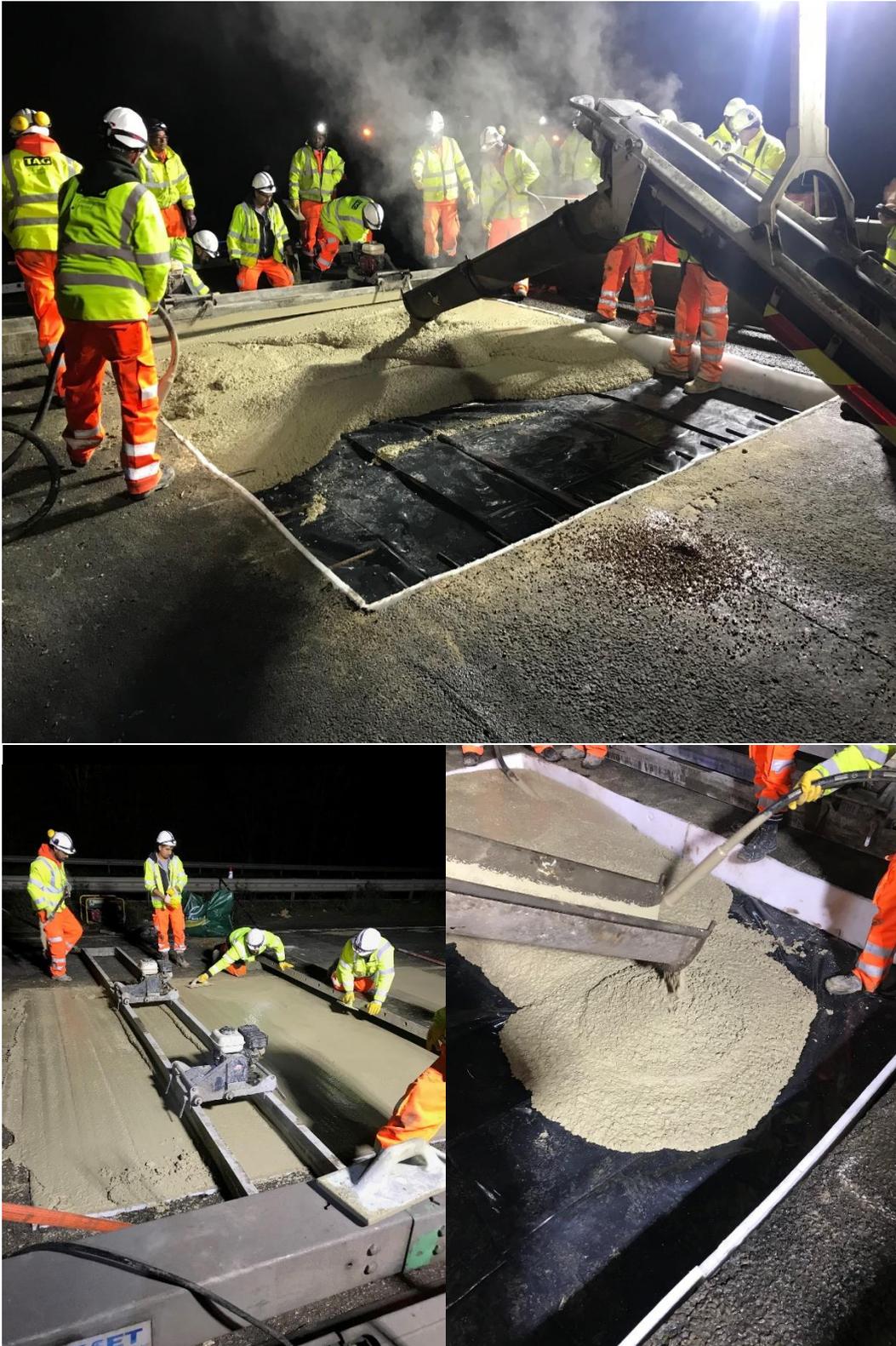
Bridge deck slab was revealed after initial slabs removed, which delayed concrete placement, whilst this was removed. ECL supplied “dry” ballast mix to form sub base in replacement once nib was broken out.



After remedial's where completed, dowels were drilled and placed on three sides of the bay.

Batching of Rapid Set was commenced at 00:30hrs. Initial slump was batched and discharged into “waste” bag until the mix was at correct consistency before main pour started.

First loads came from KX65 RBV – see batching report for full details



Batching took 20 minutes and 6.3m<sup>3</sup> were produced. Initial placing, compacting, finishing and curing were applied before slab was covered and left to cure further. Covering of the concrete enables the hydration process to accelerate and generate its own heat.





Pad 2:

During this process the second slab was removed and area prepped to receive concrete.

The second batch was started at 01:44am finishing at 02:00am. Same process then followed of compacting, finish applied, cured then covered.



Concrete temperatures were taken at point of batching which reached 13 Deg c. After approximately 40 minutes the slab reaches 36 – 40 Deg C. Full hydration process has “kicked off” and strength is building. During this time no bleed water is witnessed as the mix uses all available moisture for growth of entrenite strands in the mix matrix.



Surface hardness testing takes place by use of Schmidt hammer test. Using a pre calibrated hammer to ascertain in situ concrete strength, with actual cubes taken and recorded at the same time for testing back in the lab. All testing in line with BS Standards

**Slump - Sample Method BS EN 12350-1 (Spot = S) From Initial Discharge Unless Stated Otherwise**  
**Cube - Sample Method BS EN 12350-1 (Spot Method) From Full Discharge Unless Otherwise Stated**

Target strength for handover was (in excess of) **25 N/mm<sup>2</sup>**

Schmidt results in situ were:

Test Location Vertical Down											Average	Comparative
	1	2	3	4	5	6	7	8	9	10	Reading (Median)	Strength (N/mm <sup>2</sup> )
Bay 1 03:00 Testing	28	28	24	28	26	28	28	30	26	26	28.0	26.1

Test Location Vertical Down											Average	Comparative
	1	2	3	4	5	6	7	8	9	10	Reading (Median)	Strength (N/mm <sup>2</sup> )
Bay 2 04:20 Testing	32	34	30	28	28	34	32	32	30	30	31.0	30.8



Final sign off of Slab no. 2 was at 0420am. Due to nature of the product, white line reinstatement could be undertaken immediately due to low surface moisture content. Which is another feature of the Rapid Set product. After a few hours the surface moisture is low enough to apply other surface elements and treatments such as waterproofing etc.



Final view of texture achieved. This is more than adequate for surface skid resistance.

**Summary:**

Two number bay replacements were undertaken and “handed back” within the allotted time scales on the road closure. A total of 12.9m3 were supplied and finished over the two installations.

The Rapid Set performed as promised, offering an approved and proven strength within 2-3 hours. The mix is one that allows placement and finishing, but still has the ability to hit structural strengths in a shot period of time. There was no shrinkage and therefore no cracking evident. All parties on site including HE scheme partner engineers; Mott MacDonald. Scheme managers - Graham Construction & TAG Contractors, where happy with all the products characteristics.

For further information on this product please contact:

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