CONCRETE STEP BARRIER®

SIAC Construction

SIAC Construction Ltd has been the leading installer of slipform barrier throughout Ireland for many years now. We have been involved in many contracts involving barrier works over the past few years and most of these works have been carried out on the major routes linking Dublin with the rest of the country.

The construction of these routes has been part of an infrastructural scheme known as Transport 21, which was announced by the Irish Government in November 2005, which sets out a comprehensive development programme for the network of national roads over a period from 2006 to 2015. The funding available to the Authority over the 10 years is in the order of €16.5 billion.

This National Road Development strategy includes the completion of the development of the five major interurban motorways, linking Dublin with Belfast, Cork, Galway, Limerick and Waterford by the end of 2010.

It is on these routes that most of SIAC's Slipform works have been carried out.

Some of these contracts include the M50 Upgrade which saw the 10 km section from the N7 to the N4 go from 4 to 6 lanes with new free-flowing interchanges at the Red Cow, Liffey Valley and Ballymount roundabouts. These slipform works were quite difficult at times with restricted working space being a big problem due to the adjacent live traffic conditions. This issue was overcome in many instances by SIAC's ability to allocate some of the smaller plant in their fleet to these tight working areas.

On the M8, the main Cork to Dublin route, SIAC Slipform installed the entire concrete median barrier required on 3 consecutive contracts between Cullahill and Fermoy.

This barrier was laid to both NRA and Britpave specifications. Just under 100 kilometres of barrier was slipformed on this route, utilising approximately 34,000m^3 of concrete. The most recent of these contracts, the Fermoy to Mitchelstown section, was officially opened to traffic on 25th May, 2009.

Interestingly, within these 3 adjacent contracts, 3 different approaches were used to run the median barrier around the central piers at the structures.

The Cullahill to Cashel contract resolved the problem by the use of bifurcations on the approach to the piers which were installed by SIAC with the use of purposely made steel shutters.

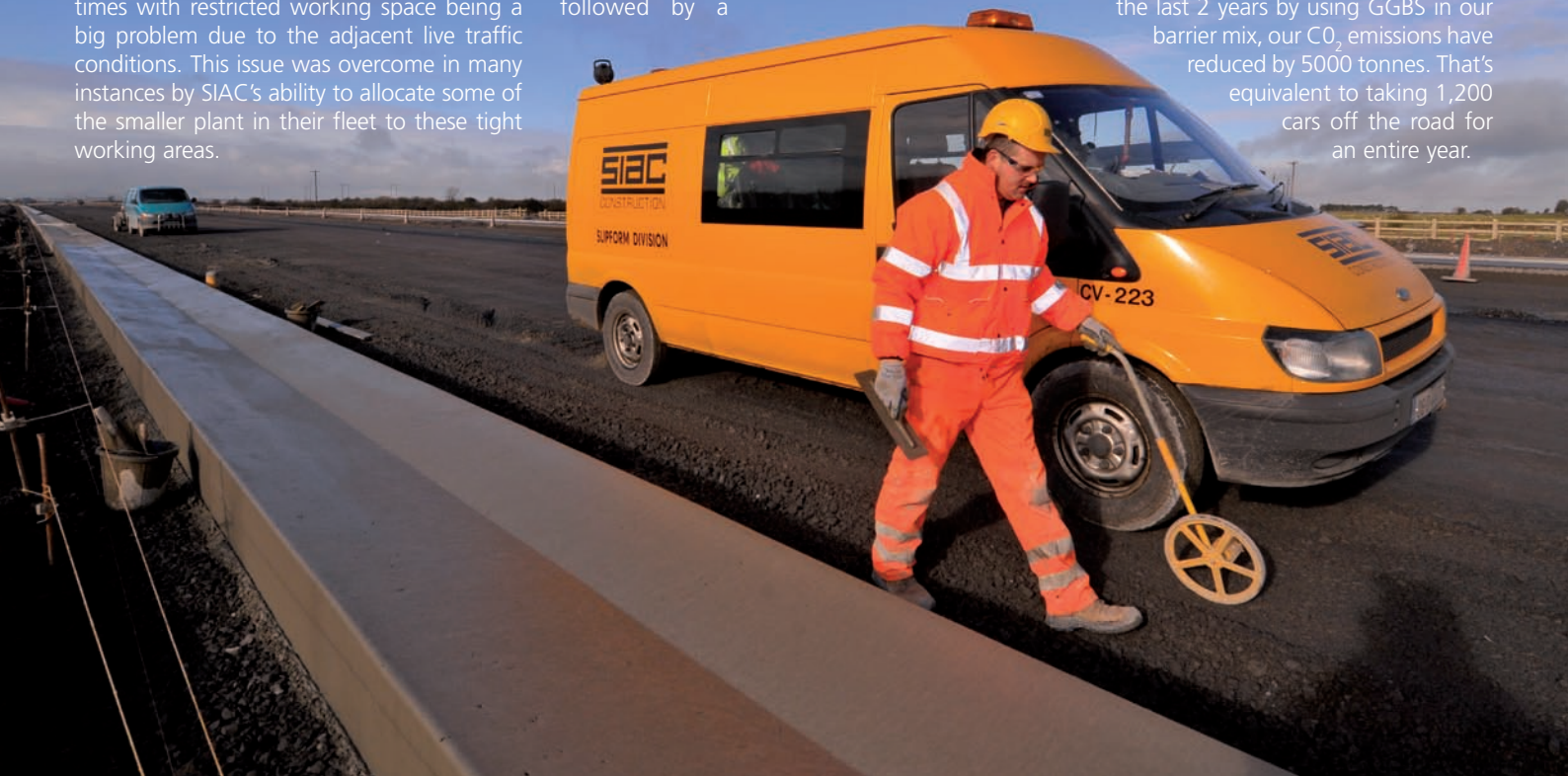
The next section, Cashel to Mitchelstown, saw the barrier simply overlap with it running either side of the piers with the use of terminations.

Lastly, Mitchelstown to Fermoy chose the option of running the barrier straight through the central piers by means of a 1:20 taper to increase its width which was then followed by a transition section. This sees the barrier profile become vertical before joining up to a collar that is poured around anti-collision central piers. Again, all of the taper and transition works were carried out by SIAC with specially fabricated shutters.

After carrying out all of the barrier works on these contracts it was required that we also installed moveable steel step barrier sections at emergency crossover points. These were installed as per Britpave specifications and allow the authorities to implement a traffic contra flow system in the event of an accident. These were usually installed in areas where the nearest slip road was at least 5 kilometres away.

Currently, SIAC Slipform are operating on 2 major contracts on the main Dublin to Waterford route, the M9/M10, by installing all median barrier works with the use of 3 full crews. These contracts will see over 20,000m^3 of concrete being slipformed over the course of the next few months.

The concrete mix design we use for the barrier on all our contracts includes a percentage of GGBS and this is for a number of reasons. Not only does it provide a more uniform and lighter colour but it also improves the quality and durability of the barrier. But perhaps most importantly, it's also eco friendly. In the last 2 years by using GGBS in our barrier mix, our CO_2 emissions have reduced by 5000 tonnes. That's equivalent to taking 1,200 cars off the road for an entire year.



We are also at present operating on the N6 Galway to Ballinasloe project which is our biggest contract to date. The route is over 55 kilometres long and we are responsible for slipforming all of the barrier, surface water channel and slot drain on the contract. We are also slipforming all kerbing works on both the mainline and associated sideroads which has a quantity of well in excess of 80 kilometers.

On this project, there are sections of barrier being poured on top of a concrete base as per the Britpave minimum foundation requirement detail. This particular detail is becoming more popular with our clients as it allows them to save on the cost of the bituminous material that would otherwise be placed under the barrier. It also means that, because we are not pouring directly onto blacktop, it takes the operation off the critical path which is good news for both the main contractor and SIAC Slipform alike.

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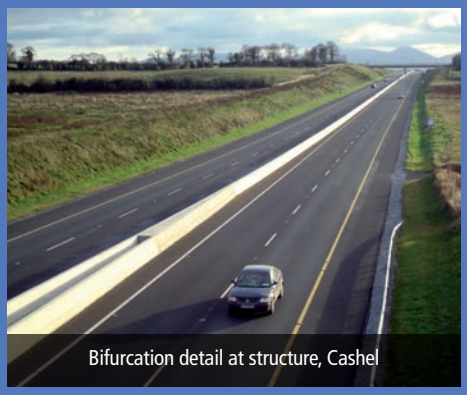
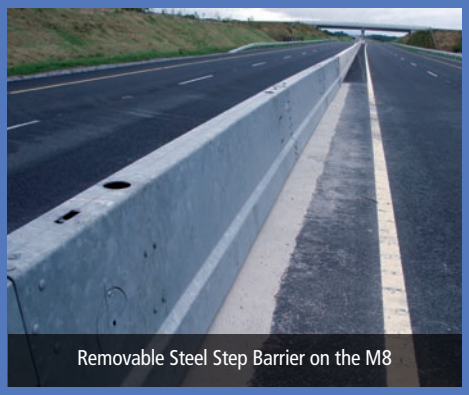
These works commenced in mid January and are due to be completed in late October '09. To ensure that we achieve our deadline, SIAC Slipform has dedicated 5 full crews to carry out these works. With these resources in place we are currently laying over 350m^3 of concrete per day on this contract alone. Because we are pouring such large quantities of concrete and because of the sheer size of the contract, we are utilising 3 separate concrete suppliers to accommodate the works. Over the 9 month duration of the contract we will have slipformed more than a staggering 30,000m^3 of concrete.

But of course not all of SIAC Slipforms activity revolves around motorway construction and a huge amount of work has been carried out in the last few years in different areas such as railway, car parks, drainage improvement schemes, road widening projects, etc…

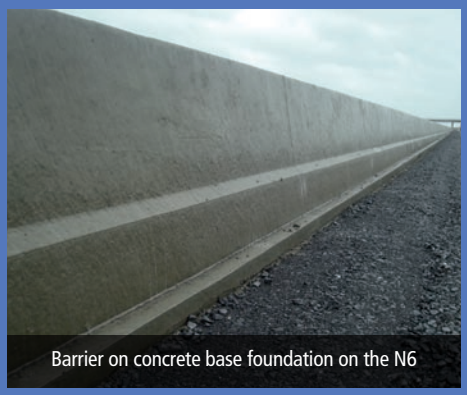
It is because of this versatility and desire to explore new aspects of these works that SIAC still remain the leading force in slipforming and will continue to do so well into the future.



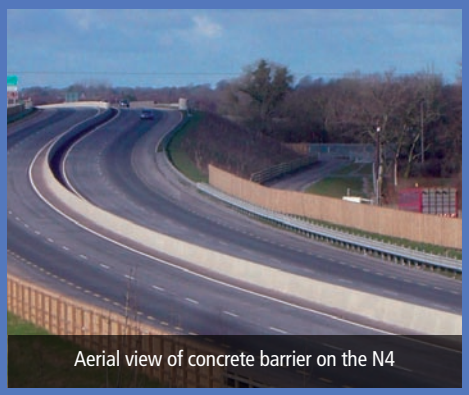
Bifurcation detail at structure, Cashel



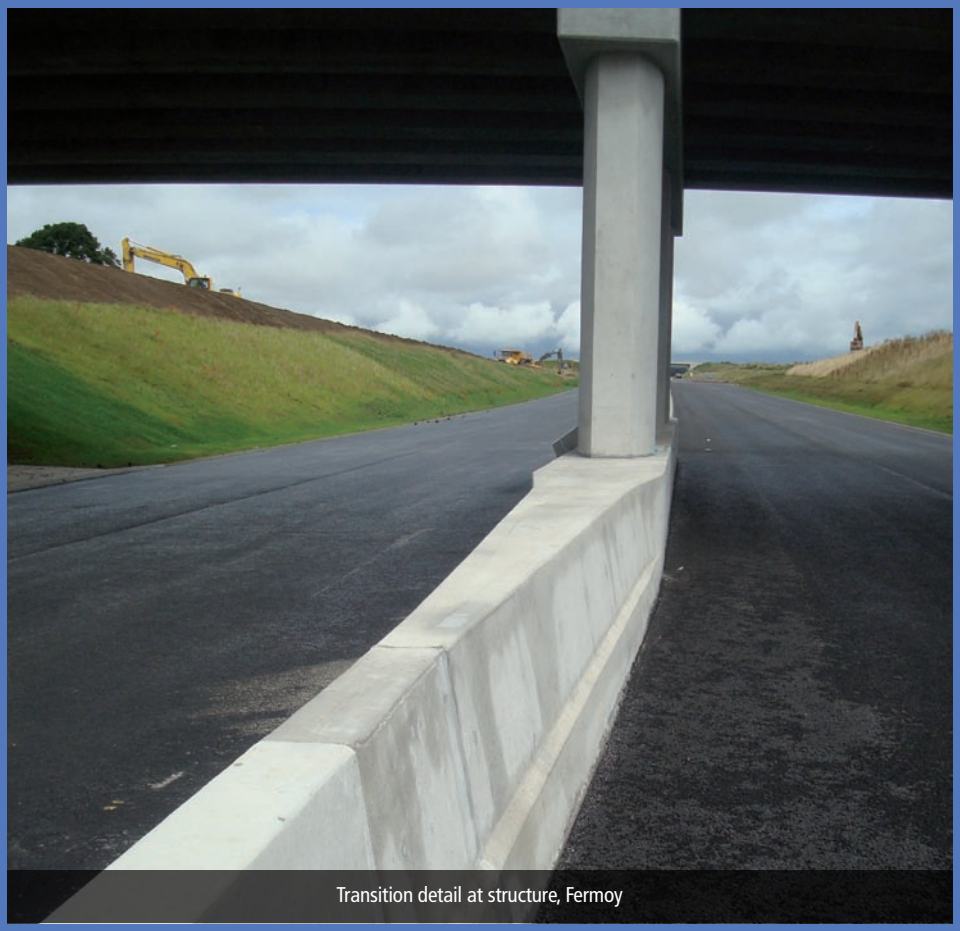
Removable Steel Step Barrier on the M8



Barrier on concrete base foundation on the N6



Aerial view of concrete barrier on the N4



Transition detail at structure, Fermoy