

# THE N25 WATERFORD BYPASS PPP SCHEME

## Construction Progress

**MILESTONES FOR THE PPP SCHEME**

|                                    |                        |
|------------------------------------|------------------------|
| Contract Award                     | ..... April 21st 2006  |
| Design & Construction Commencement | ..... April 21st 2006  |
| Design & Construction Period       | ..... 42 months Target |
| Completion Date                    | ..... August 2010      |

Since our last issue in November 2008 progress on the Project has advanced in all areas. On the Old Kilmeaden road the last of the projects overbridges was opened to traffic. The Toll Plaza canopy is now in place with just the finishes remaining. The various complex steel structures which will eventually form the new Grannagh Interchange can be seen crossing the Black Water River. The daily commute into Waterford from both the Dublin and Limerick approaches now takes the newly constructed Newrath Link Road into Sally Park. At Slieverue the new entrance to Belview Port is completed with Heavy Goods Vehicles using the realigned Port Road.

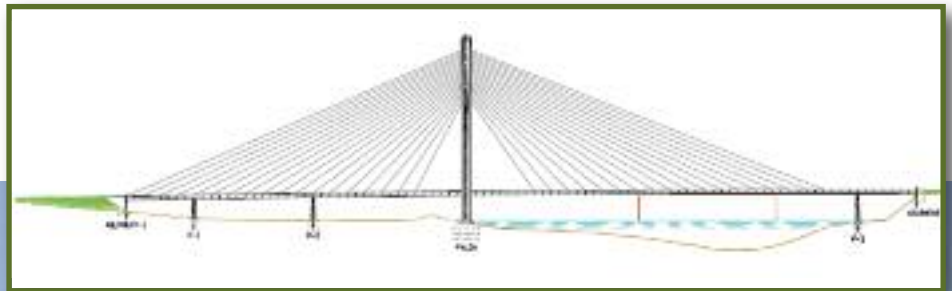
*Main photograph: the proposed River Suir Bridge & inset is a diagram of the cable-stayed bridge.*

### THE SUIR BRIDGE

The structure chosen to carry the new N25 Waterford Bypass across the River Suir is a cable-stayed bridge and is currently under construction just north of the city centre. It is located upstream from the existing disused railway bridge and is over looked by Grannagh Castle which dates back to the 14th Century.

The bridge consists of three key elements which are

- The Pylon.
- The Deck.
- The Cables.



1.



2.



# The Pylon

The Pylon is the dominant feature of the bridge. It can be clearly seen from the quays in Waterford City and as far as Mooncoin in County Kilkenny, 5km away. It is an imposing structure that stands at a staggering height of 110m and is almost as tall as the Spire in Dublin. It sits on a new man made peninsula that juts out slightly from the south bank of the river. This peninsula protects the pylon from being struck by passing boats. The shape of the pylon is like an upside down “Y”. There was almost 7000m<sup>3</sup> of concrete used to construct the pylon and its foundations. That’s nearly enough concrete to fill three Olympic size swimming pools. A tower crane taller than the pylon itself was used to lift the concrete into place.

Most of the pylon is hollow. There are ladders fitted on the inside running all the way from deck level to the top. Elevators will also be installed and will be capable of carrying two people and equipment. These will be used for maintenance purposes. There is also a hatch in the roof of the pylon giving access to the outer faces and cables.

The ground under the pylon was considered too soft by the Designers to support the heavy weight of the pylon and bridge. To overcome this there were over 100 small piles bored 30m down into rock below the riverbed. These piles have a diameter slightly larger than an average ESB pole and are able to transfer the heavy loads of the structure directly to the strong rock. The large foundations needed for the pylon legs were then built on top of the piles.

*Pictured:*

1. Drivers View of Pylon
2. Aerial View of Pylon
3. Bridge Under Construction
4. Steel Frame of Deck
5. Pylon with Cables
6. Steel Frame of Deck

3.



4.



## The Deck

The deck is close to 0.5 km long. It can be considered as two halves. The first half spans the south bank of the river. Its sits on two sets of piers located below the deck and out of sight to the motorist. The second half is the main span that crosses the river itself. The bridge deck will provide an air clearance of approximately 14m over the river. The span lengths were chosen to give a balanced appearance to the structure.

The deck consists of a large number of steel beams of varying sizes. All the beams were manufactured at a steel workshop in Wales. They were delivered to site by specialised haulage trucks capable of carrying large abnormal loads. Upon arrival on site they were lifted into place by crane and bolted together to create one large steel frame. There is approximately 3,000 tonnes of steel used in the deck. This is equivalent to the weight of 150 double decker buses. Sitting on the steel frame is a 250mm thick reinforced concrete slab. This concrete slab is made up of a large number of smaller panels joined together on site. It is on this slab that the new road surface will be laid. Suspended below the deck there will be a working platform that will be used by maintenance crews. It will run on rails and will be able to travel the full length of the deck.

6.



5.



## The Cables

The cables are the main support for the deck. These cables may look slender in appearance but they are strong enough to carry the full weight of the deck and traffic. They are so strong that the bridge can stay open to traffic when one of the cables is being replaced. The cable stays are arranged in a semi fan pattern which are stressed and anchored inside the pylon head and along the deck. There are 76 cables in total. They all have to be installed by a specialist contractor. Each cable has three layers of weather protective coating.

Long before the cables arrived on site they had to be tested. Because of the size and unique nature of the tests there were only two laboratories available. The tests were carried out in Nantes (France) and Zurich (Switzerland). The testing process took two years to complete.



## Traffic Management & Temporary Diversions

A number of traffic management measures are still installed along the route and we shall install a few of them in the next three months. These are summarised below. These measures are a necessary part of the construction works; we have kept their impact to a minimum.

| ROAD   | MANAGEMENT MEASURES               |
|--|-----------------------------------|
| Nicholastown Rd.....   | Lane Restriction (Traffic Lights) |
| Kilmacow Rd.....   | Lane Restriction (Traffic Lights) |
| Ballyrobin Rd.....   | Road Closure                      |
| Mullinabro Rd.....   | Lane Restriction (Traffic Lights) |
| Bawnfune rd.....   | Road Closure                      |
| Coppers lane.....  | Road Closure (permanent)          |
| Cloone Road.....   | Lane Restriction (Traffic Lights) |
| Old kilmeaden road.....                                      | Traffic Lights                    |
| Cloone Road Section 2 Tie-in.....                            | Lane Restriction (Traffic Lights) |
| Kilmacow Rd.....   | Traffic Lights                    |
| Carrick road.....  | Traffic Lights                    |
| Airmount Road (S32).....                                     | Road Closure                      |
| Cloone Road.....   | Road Closure                      |
| Airmount Connection.....                                     | Road Closure                      |
| Old kilmeaden road.....                                      | Road Diversion (Lanes kept)       |
| Ferrybank Tie-In.....  | Hard Shoulder Closure             |
| Carrick road.....  | Traffic Lights                    |
| N25 New Ross Rd.....   | Hard Shoulder Closure             |
| Carrick Road.....  | Lane Restriction (Traffic Lights) |
| N29 Port Road Tie In.....                                    | Hard Shoulder Closure             |
| N24 Tie In.....  | Lane Restriction                  |
| N24 Granny.....  | Road Diversion (Lanes kept)       |
| N24 (Texaco/ Autobolands).....                               | Road Diversion (Lanes kept)       |
| Closure of N9 at Grannagh for Construction of S20,21,22..... | Road Diversion (Lanes kept)       |
| Opening of Newrath Link 2 (single carriageway).....          | Road Diversion (Lanes kept)       |
| N29 Port Road Tie In.....                                    | Lane Restriction (Traffic Lights) |

Where traffic measures are in place we ask for your co-operation with the operators and thank you for your understanding.

## The Team

### The PPP Company



CELTIC ROADS GROUP  
WATERFORD LTD.

### The Construction



As from the 31st October 2008  
Ascon Contractors Ltd.  
became Bam Contractors Ltd.



WATERFORD JOINT VENTURE

### The Design



CARLOS FERNANDEZ CASADO S.L.  
OFICINA DE PROYECTOS

### The Authority



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