



Kinnegad - Kilcock Motorway **News**

Quarterly news on the Kinnegad - Enfield - Kilcock (M 4) Motorway Project

Progress in the past months

During the last three months works on the motorway mainline and side roads have made steady progress. The progression of blacktop in all three sections has mapped out the road alignment further and the completion of all major concrete pours to the bridges has progressed satisfactorily.

removal of the plugs from the old Ballinbrackey and Edenderry Roads.

The construction of the County Roads in all three sections has progressed well and further roads are programmed to open during the spring and summer of 2005.



Snow on the Site



Realigned R401

Earthworks, drainage and ducting have also continued through the winter months, and the weather conditions have been reasonable despite the snowfalls in early February.

December 2004 saw the opening of the new bridge S08 at Kinnegad ahead of schedule which allowed the

All significant concrete pours have been completed to all of the bridges throughout the scheme and finishing works to each are underway.

Consultations with third parties including Local Authorities, the Gardai and Landowners have continued and progressed well and have introduced new phases in order to progress the works.

Due to the size of the scheme the design was split into three sections; west of Kinnegad to the Kinnegad river

DESIGN DEVELOPMENT

crossing, the Kinnegad river crossing to the Boyne river crossing and then from the Boyne river crossing to Kilcock. Each section was broken down into design elements that had to be finalised and issued for construction within a pre-agreed programme. During this article we will outline the development of three elements of the design; Road Layout, Drainage and Accommodation Works whilst during the next newsletter will discuss some of the remaining elements.

The fundamental principles of a scheme are developed under a design element known as 'Road Layout'. The Road Layout defines how a road will look and drive and as such is the element that has the greatest direct interaction with the driver although most do not realise it. The principles of a road are strictly controlled through a series of design standards that are contained in the National Roads Authority's (NRA) 'Design Manual for Roads and Bridges' and directly relate to traffic flows and speed.

The development of any Road starts with the centreline and relates to the design speed. Drivers will appreciate that the higher the speed limit on a road the easier they are to drive. This is because the design standards use increasing horizontal and vertical curve sizes with lower gradients as roads get faster. Using the curves given in the standards allow the location and level of the centre string to be fixed and ensures a consistent, safe approach is taken in road design.

Having developed a centreline the width of a road is built up. In the case of a dual carriageway the central reserve is created first by providing the width given in the standards and also taking into account any additional width required to ensure that a driver can see clearly round a curve in the road. Progressing out, width is added for the traffic lanes and hard shoulders and finally the width of the grass edge verge is added. All the widths added are directly related to the centreline position by means of cross fall and super elevation. Super elevation can be most dramatically seen on a racetrack where at tight curves the road 'banks up' to

allow the cars to travel faster. This also happens on our roads when we approach a curve but as our speeds are lower than on a race track the change in slope is small and it is done over a long length to make driving comfortable and safe.

To complete the design the road must be sat into the natural topography. The embankment and cutting slopes are created using information from our earthworks engineers who analyse the ground information and determine the stable angle that the slopes may be constructed at.



The road is sat in the natural topography

In conjunction with the Road layout there are several other elements that are required to make the design safe for use. One of the more important elements is the 'Drainage'. Without a good drainage system the road would be subject to flooding, damage and ultimately could lead to dangerous driving conditions. The approach to Drainage basically falls into two types; drainage for the road and drainage for the surrounding area. The principle of Drainage for a road is to remove the water from the road as quickly as possible then direct it to a treatment location before it is discharged into the local stream network.

The removal of surface water from a road is done by use of cross fall and super elevation developed as part of the Road Layout. From the edge of the carriageway the water can either be collected in stone filled drains known as

'filter drains', channels or allowed to flow 'over the edge' of an embankment into a ditch at the bottom. If the Drainage network uses a series of filter drains manholes are added into the pipe run at regular intervals to allow maintenance to be carried out. The action of the surface water through filter drains or along open ditches assists in removing sediment from the water. At the end of the ditch or pipe run there is an area known as an 'attenuation ditch or pond' these areas assist in further removal of sediments. A final treatment of the water is required to remove any possible pollutant prior to discharge to the existing stream network and is done so by passing the water through a 'petrol interceptor'. This device skims the surface of the water as it passes through removing any potential traces of petrochemicals due to leakage from vehicles.



Filter drain construction

process Consultation was undertaken with affected landowners and agreements were reached between the NRA and landowners that make provision for 'Accommodation Works'. Accommodation Works are items that the affected landowners require to ensure they may continue their way of life after the road is completed. As the design builds up the designer must take on board all the agreements made and incorporate them into the design. Agreements may result in the inclusion of additional structures or new access tracks to allow farmers to work divided lands. There may be the provision of new gates, water sources, replacement of walls or fences or provision of earthen bunds with planting to assist in screening or noise reduction to properties.



A trench is being excavated

The design team must ensure at all times that compliance with the standards and the Contract requirements are met but at the same time they need to be sensitive to the affected landowners, local community needs and the environment to ensure a successful and beneficial scheme is delivered for all.

Dealing with drainage for the surrounding area requires a simpler approach in that if the road crosses a ditch or stream then an assessment is made of it's flow and once approval has been obtained from the Office of Public Works (OPW) the ditch or stream is passed through a new culvert under the road. By keeping the culvert on the existing line and complying with OPW requirements designers endeavour to minimise disruption whilst maintaining the flow capacity of the stream or ditch. Should a stream prove to be ecologically sensitive the designers must also consult with the Fisheries Board and are required to comply with strict requirements carrying out any work at non-sensitive times of the year.



Channel is set in situ

As the design and Construction progresses it has a major impact on the people who live and work in the area immediately beside the works. During the Contract

Upcoming Works

Over the coming months mainline works will continue in earnest with the progression of pavement in all three sections. The commencement of wearing course macadam which is the final layer of tarmac to the motorway will be introduced in tandem with the county roads when required. In order for this to happen drainage, ducting and finishing works will have to progress significantly to make way for the final layer of blacktop.

Finishing works will include top soiling to the side slopes and verges and the topsoil that was originally removed during August/September 2003, and neatly stored for the past 18 months will be resurrected and re spread throughout the countryside of Kildare, Meath and Westmeath within the CPO which will give life to future landscaping and seeding along the proposed route in the Spring/Summer of 2006.

The final phase in the completion of the bridges will also progress with the laying of waterproofing and the completion of the parapet railings and mesh.

At the Central Section, the Kilmore and Kilmorebrannagh County Roads are programmed to open to public traffic during this period. Advanced works were carried out on these routes since January 2005, during short closure periods taking cognisance of reducing the inconvenience to all local traffic. Temporary road closures for short durations are also programmed for Ballina, Broadford and Clonard County Roads over the coming months.

At East and West Sections, it is hoped to divert traffic onto the realigned Enfield to Johnstownbridge Road, Cappagh and Cloncurry County Roads during the coming months and to open Buaille Boreen and Ticroghan County Roads in the summer of 2005. This will enable the removal of the plugs that contain the existing roads and the material will be used for mainline bulk and completion works.

The two interchanges at Kilcock and Enfield will

continue to progress weather permitting and traffic diversions at the Kilcock Interchange are programmed to advance in the coming weeks.

Laying of the hard landscaping under the bridges is also programmed to commence in the coming months. Works will also progress on the accommodation roads



Works at side roads

throughout the scheme and it is hoped to have significant progress on these routes by the late autumn of 2005.

Works on the Toll Plaza and associated buildings will also continue on the mainline at Killickaweeny and it is hoped to commence with the construction of the Maintenance Facilities over the summer months.

Weather conditions in the last period have been reasonable and it is hoped that the weather during the spring and summer of 2005 will remain favourable to allow works to continue. Dry weather is critical for pavement and top soiling works.

Third party consultations have continued with all affected parties during the last period and the ongoing co-operation from landowners and the local communities is greatly appreciated and assists the progression of constructions works. The opening of some new routes over the coming months will introduce some traffic management and diversions and we apologise in advance for any disruption that may be experienced.

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