N22BBM
Review of Progress Made During 2021

Significant progress has been made on the project in 2021 and the following are some of the highlights:

Concrete and Steel:
Great progress has been made with structures, mostly bridges, with 20,000m^3 (16 swimming pools) of concrete poured on the site. The quality of concrete is checked before it is poured and includes slump testing, of which more than 2,500 individual tests were carried out on site by the contractor's technical staff. Following on from pouring the concrete, the compressive strength of the concrete poured is confirmed by crushing concrete cubes, of which more than 3,300 tests were carried out. Both of these tests give quality assurance with regard to the concrete used.

Slump test

Storage of concrete cubes

Compressive strength test

The other critical element of a concrete structure is the use of steel reinforcement. In 2021 we steel-fixed more than 2,000 tons of steel reinforcement (333 African elephants) to complement the 20,000m^3 of concrete poured.

Reinforced concrete under construction

Earthworks: This work involved the excavation of soil and rock from our various Cut areas, transporting this material using our articulated dump-trucks, ranging in size from 20T to 45T, and placing and compacting this material in our various Fill areas, thus forming the shape of the new road network. This earthworks operation, during 2021, was critical to meeting our overall programme of works for the scheme. A total volume of 1,450,000m^3 (580 Olympic swimming pools) was excavated and placed, up to the end of 2021, with the volume reasonably evenly split between Section 1 to the west and Section 3 to the east. Section 1 extends from the Western Tie-in of the project to the Kilnamartyra Road and Section 3 extends from there to the eastern end of the project at Coolcour. The construction of bridges, some of which were record breaking, throughout the scheme at an early stage in the programme, directly facilitated these earthworks. It has to be acknowledged that the dry summer season in 2021 was of great assistance to the contractor in achieving these earthworks targets.

Road Embankment at Kippagh, Baile Bhuirne

An essential part of the earthworks programme is the testing of materials, in order to be in a position to confirm its suitability for reuse as a compliant construction material or otherwise. There were more than 2,000 material samples taken on site during 2021. Our as-placed compacted material is tested using a Density Meter, in order to confirm that the required material density has been achieved, and more than 900 of these tests were completed in 2021. Another test which is widely used on the project is the Plate Load Test (PLT) – this is used to confirm the suitability of the formation for the construction of the road embankments and we carried out in excess of 300 PLT tests in 2021.

Density meter

Plate Load Testing

Significant volumes of rock are present within the scheme, usually encountered in the deeper cut areas of the project, with much of this rock removed by controlled blasting and by rock breaking. To date 41 rock blast events have been completed between 2020 and 2021. Of these, 19 were located in Section 1 to the west and 22 were located in Section 3 to the east.

Rock removal at Cut 1 in An Sliabh Riabhach

Roadworks:

Four new junctions were constructed and opened during 2021:

1. The Clondrohid Road at Tonn Láin with the N22
2. Carrigaphooca Roundabout on the N22
3. Gurteenroe Junction on the Millstreet Road
4. Ballyveerane Local Road with the Ballinagree Road

As part of the scheme, private access roads are provided to landowners or residents whose property has been altered by the layout of the new N22 road, so as to preserve connectivity between the various land parcels or with the public road. 20 of these access roads have been completed in 2021 and made available for use, 5 of which are in Section 1 to the west and 15 of which are in Section 3 to the east. In addition, 12 Local Roads (public roads) have been completed and opened to general traffic, with 6 of these in Section 1 to the west and the remaining 6 in Section 3 to the east. The installation of the mainline drainage and ducting for the scheme has commenced, with 3.8km completed in 2021.

Carrigaphooca Roundabout.

Structures:
In terms of Overbridges or Underbridges completed and open to general traffic, a total of 11 bridges were completed in 2021. 5 of these were in Section 1 and 6 in Section 3. All the bridges incorporate bridge beams to support the bridge deck. These beams are precast off-site and, following delivery to site, are lifted into place. Since December 2020, we have carried out 245 beam lifts. The total length of beams placed in the various structures is more than 5,000m in length, which gives a sense of the scale of the work involved.

Individual highlights include:

- The launch of the 120m long steel deck of S03 bridge at Abha na Biochaille was successfully completed.
- Substantial completion of the S26 Laney River Bridge containing the longest single span concrete beams in Ireland and the UK.
- Substantial completion of the S28 Sullane River Bridge which is the longest two-span concrete bridge in Ireland and the UK.

Many of the structures on the project incorporate reinforced earth retaining walls, with 49 such structures completed in 2021. These 49 walls involved more than 10,000m^2 or almost 4,500 number reinforced earth panels. As part of our works, we are required to construct box culverts - these are used to convey watercourses from one side of the LMA (lands made available) to the other and are substantial structures in their own right. 23 box culverts were installed in 2021.

Beam Lift at S26 Laney Riverbridge

Conclusion:
Significant progress was made across many aspects of the project in 2021, as has been highlighted above. The contractor, working with Cork County Council and Transport Infrastructure Ireland, would like to acknowledge the co-operation and support of the local communities in Macroom and in Baile Bhuirne/Baile Mhic Íre. Without this support, the project to date could not have been delivered so successfully. The great assistance received from Statutory Bodies, and local agencies has also to be acknowledged, and again, this level of support is very helpful towards the successful delivery of the project.

The Contractor is looking forward to another busy year in 2022 with the intention of making further significant progress across the project, with the support of all the stakeholders involved.

Longest concrete bridge beams in Ireland and the UK.

Bridge S03 – Abha na Biochaille