

An aerial photograph of a modern highway interchange. A concrete bridge with metal railings spans over a multi-lane asphalt road. The road curves through a lush green landscape with rolling hills, fields, and a large body of water in the distance under a blue sky with scattered white clouds. The bridge is supported by several concrete pillars. The overall scene is bright and clear, showcasing a well-engineered infrastructure project.

Roughan & O'Donovan
Trusted engineering since 1974

About Roughan & O'Donovan

Over the past 50 years, Roughan & O'Donovan (ROD) has built a reputation for expert engineering skills, forged strong working relationships with clients and contractors, and delivered high quality bridge and highway projects that create real and lasting value for our clients and the communities they serve. Starting in Dublin, our client base has spread throughout the island of Ireland and Great Britain, leading to the establishment of our Leeds office in 2019.

Our engineers are passionate about design, skilled at coping with challenging sites, and experienced in delivering projects with restricted budgets and tight timescales. Our willingness to adopt new technologies and manipulate new and traditional materials allows us to create structures that push the boundaries of design to deliver world-class, sustainable solutions.

While we are justly proud of our work on high-profile projects, such as the iconic Northern Spire Bridge in Sunderland, we treat smaller projects with the same level of respect, recognising that they too present unique, technical challenges.

Alongside our prestigious projects, we are particularly proud of our various commissions to develop the Irish Design Manual for Roads and Bridges, the Manual of Contract Documents for Road Works and the Irish National Annexes to the Eurocodes, in each case dissecting the established UK standards and adapting them to Irish conditions. This work provided the backbone for the Irish motorway and inter-urban road network, which has been designed and delivered over the past 20 years, giving our teams based in Ireland a detailed knowledge and understanding of the UK standards.

We are strongly committed to supporting our clients through the complex development process to create structures that are environmentally, economically and socially sustainable. We use the latest technologies and techniques to reduce material consumption and embedded carbon, increase flexibility of use and extend the lifespan of our solutions. Our experts ensure real value is extracted from infrastructure assets by reducing premature replacement of existing structures, optimising maintenance expenditure, improving asset reliability and availability and extending the service life of assets.

Our experience of liaising with architects, local authorities, contractors, and planning and heritage agencies allows us to develop practical infrastructure solutions that meet the needs of our clients and sit comfortably within their environment and surrounding communities.

Our work has been recognised for its design excellence, with our projects winning many prestigious industry awards in the UK and Ireland.



Jim Thorpe
Managing Director, ROD

A snapshot of our UK projects





Our experience

ROD has been at the forefront of bridge and highway design for 50 years.

Our experience extends from iconic bridge structures, such as the Northern Spire Bridge in Sunderland and the Rosie Hackett Bridge in Dublin, to complex highway schemes, such as the A6 Randalstown to Castledawson ECI in Northern Ireland and M8/M73/M74 in Scotland.

1974



Founders

Derry Roughan and Joe O'Donovan form Roughan & O'Donovan Consulting Engineers.

1980s



M50 Motorway

We design six bridges on the M50, the busiest motorway in Ireland.

2002



William Dargan Bridge

We provide full engineering design services for this 162m long, cable-stayed bridge in Dublin.

2003



Mary McAleese Boyne Valley Bridge

We bring this high level, cable-stayed bridge on the M1 motorway near Drogheda through every phase of the planning and design process.

2008



Limerick PPP scheme

We undertake, in alliance with AECOM, the bridges/structures, road alignment, earthworks, drainage and pavement design for the non-tunnel elements of this scheme.

2009



Samuel Beckett Bridge

We act as the Irish partner and independent checker for the Santiago Calatrava-designed Samuel Beckett Bridge in Dublin.

2014



Rosie Hackett Bridge

We undertake the design of this simple and elegant public transport priority bridge connecting the north and south of Dublin city centre.

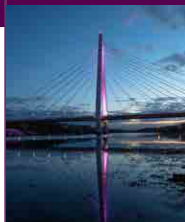
2015



A2 Shore Road to Greenisland Upgrade

We provide civil engineering and design services for this major urban infrastructure project in Northern Ireland.

2018



Northern Spire Bridge

We provide consultancy services - from tender through to completion of construction - for the permanent works structures on this large-scale infrastructure design & build scheme in Sunderland.

2019



Roughan & O'Donovan UK Ltd.

We open our first UK office in Leeds to expand our reach of world-class design and planning work across the region.

2020



Motorway Operations Control Centre

We develop, in alliance with AECOM, a new, state-of-the-art motorway operations control centre for Transport Infrastructure Ireland.

2021



A6 Randalstown to Castledawson ECI

We deliver, in 50:50 design joint venture with ARUP, the detailed design for this £189m dual carriageway scheme between Castledawson and Randalstown on the A6 in Northern Ireland.

2022



enhancing Motorway Operations Services

We deliver, in alliance with AECOM, the structures and equipment to support the introduction of ITS on the M50 motorway.



Our Approach

Director-led

Our company directors are actively involved in our projects, working closely with project engineers and project technicians on all aspects of project delivery.

Collaborative

Building strong working relationships with clients, local authorities, contractors and architects is central to how we do business.

Pragmatic

By making pragmatic design choices that minimise construction and whole-life maintenance costs, we create real and lasting value for our clients.

Innovative

Our readiness to push the boundaries of design allows us to create structures that define new standards in engineering.

Sustainable

We use the latest technologies and techniques to reduce material consumption and embedded carbon, increase flexibility of use, and extend the lifespan of our solutions.

Principled

We care about the communities we serve, hold ourselves to a high standard and strive to do the right thing on all our projects.

Making a positive impact

Our inclusive culture

We foster a supportive and open culture, embracing diversity, championing inclusivity and treating everyone with respect. We use events such as International Women's Day to engage with our people on the positive behaviours we want to encourage, shape and reward.

A diverse workforce

We believe that a good mix of talents and skills makes for a stronger, more collaborative company and brings more effective results to our clients. We are growing our diverse workforce of over 20 nationalities by increasing our international recruitment efforts and working harder to attract women into the company.

Continuing professional development

We have designed our apprenticeship, graduate development and charterhip support programmes to address key learning needs identified across our business and to ensure we remain at the forefront of industry innovations.

Sustainability

We are committed to maximising our sustainability performance and reducing our carbon emissions, not just in our own operations and supply chain, but in the way we advise and support our clients in developing solutions that are environmentally, economically and socially sustainable.

Raising standards

We are committed to ensuring the highest consideration towards the community, the environment and our workforce in all our projects. We were the first consulting engineers in Ireland to become a registered professional with the Considerate Constructors Scheme.

Promoting the profession

We take an active role in industry-wide initiatives aimed at raising the profile of the engineering profession and invest considerable resources in schools' initiatives aimed at encouraging more students into engineering, such as Engineers Ireland's STEPS programme.

Our people

At ROD, we believe that it is the talent, energy and commitment our people bring to our business that make us who we are. We offer wellness packages, flexible working, mental health and life event supports, a pension scheme and more, to help our people maintain their focus on meeting clients' needs.

Our duty to the community

We encourage our team to make their skills, experience and time available to those in society who are most in need, wherever they are in our global community. Employees wishing to volunteer for charities such as Engineers Without Borders, Bridges to Prosperity and Habitat for Humanity are supported in carrying out non-fee-paying work during regular work time.



Northern Spire Bridge

Client Farrans Victor Buyck Construction JV

JV partner Buro Happold

Value £120m

Services provided Bridge engineering design, structural engineering design, geotechnical, temporary works, electrical, lightning protection, road engineering design

Overview

Northern Spire Bridge arcs imperiously over the River Wear in Sunderland. It carries two lanes of traffic in each direction, together with dedicated cycleways and footpaths. ROD provided consultancy services, from tender through to completion of construction, for the permanent works structures on this large-scale infrastructure design and build scheme.

Solution

The bridge is 340m long and comprises a 24m-wide steel concrete composite deck, supported by a 1,550 tonne, 105m-high A-frame pylon, with sections of concrete and concrete/steel composite construction.

Structures

140m long x 25m wide piled basal mattress

Reinforced earth wall retained embankment, up to nine metres in height

Retaining walls of sheet pile, contiguous bored pile and reinforced earth construction

Innovations

The central pylon was fabricated off site and transported by sea to the bridge site. Its deck was assembled in two sections and launched in two separate phases across the river. These innovations provided substantial benefits, in terms of construction and whole-life maintenance costs, to our client.

Challenges

The raising of the A-frame pylon marked the culmination of two years of design and planning and 12 months of fabrication. A complex process, it required stringent geometric control and monitoring procedures.

The pylon was raised into the vertical position using cables. Temporary hinges were provided on top of the concrete 'tusks' at the base of the pylon to facilitate the lift. A temporary back mast was fitted to the pylon and hoisted vertical from a barge using 4 No. 450t capacity strand jacks.

Not one critical trigger level was reached during the launch, which is testament to the joint venture's expertise in the design and interface coordination of complex permanent and temporary works on major bridge structures.

Project contact



Tony Dempsey, Technical Director
BA BAI PhD CEng MIEI

A fellow of the International Association for Bridge and Structural Engineering (IABSE), Tony has over 25 years' bridge engineering experience. As chief bridge engineer at ROD, he manages all stages of the bridge development lifecycle from feasibility study, preliminary and detailed design to construction supervision.



Awards

Special 30th Anniversary Robert Stephenson Award
Institution of Civil Engineers North East Awards 2021

International Project of the Year 2020
Belgian Steel Bridge Awards

Transport Project of the Year 2019
British Construction Industry Awards



Great Yarmouth Third River Crossing

Client BAM Farrans Joint Venture

Project partners Hardesty & Hanover and Lanpro

Value £121m

Services provided Engineering design services for bridges, structures, mechanical and electrical, highways, geotechnics, environmental, drainage, flooding and temporary works. Tender design, project management, planning stage inputs, designer's site representative

Overview

ROD is the lead designer of the Great Yarmouth Third River Crossing project in Norfolk. The scheme is being delivered on behalf of BAM Farrans, a joint venture between BAM Nuttall and Farrans Construction.

Solution

The main feature of the scheme is a 50m clear span, twin bascule bridge providing a new link across the River Yare to ease traffic congestion, reduce journey times and improve journey reliability.

Design elements

New junctions to the east and west

A47 Harfrey's Roundabout improvements

Dual carriageway approach road

Two single span bridges

Pile-supported, reinforced-earth approach embankments

New landscaped public realm and green routes

Flood protection works

Extensive soft ground engineering

Challenges

The scheme is centred in an operational marine port, with commercial and residential properties along the approaches to the river crossing. Soft ground conditions, extensive existing utilities and flood risk add further complexity.

Highlight

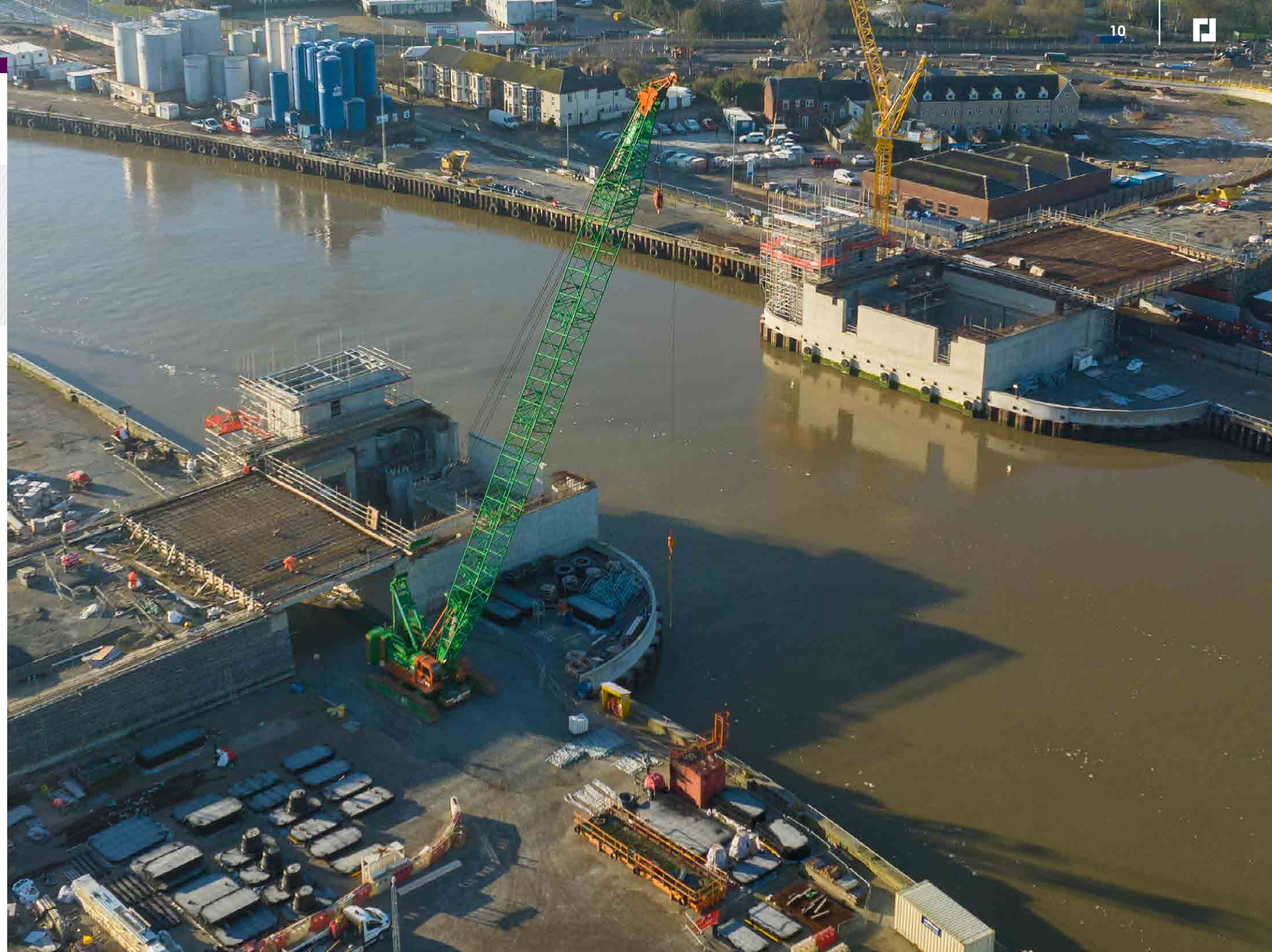
The tender design by ROD and Hardesty & Hanover was integrated with the wider scheme design for the planning stage. In November 2020, the UK government approved funding of £98 million for this "nationally significant infrastructure project". This followed the Planning Inspectorate's decision in September 2020 to grant Norfolk County Council development consent for the construction, operation and maintenance of the bridge.

Project contact



Aonghus O'Keeffe, Director
BE MEngSc MBA CEng MIEI FConsEI

A leading member of ROD's bridges team, Aonghus oversees the delivery of major infrastructure projects from feasibility through to construction supervision. He has over 18 years' experience serving public and private sector clients in Ireland, the UK and Europe.





Humber Bridge Maintenance Operation

Client Humber Bridge Board and AECOM

Completed 2021

Services provided Bridge inspection, bridge monitoring and repair, civil and structural engineering design, site support

Overview

When a post-storm inspection of the Humber Bridge identified an issue with its side span rocker bearings, ROD was engaged to carry out an intensive programme of inspection followed by an initial repair.

The Humber Bridge Board accepted the recommendation that structural mitigation works be undertaken, and we were subsequently engaged to carry out the works while ensuring traffic flows were maintained. The works included immediate and targeted steelwork strengthening, structural health monitoring, a load trial and temporary bearing replacement.

Solution

When the A-frame rocker bearings supporting the deck box at the Barton Tower were found to be defective, a 'Stage 1' temporary repair was rapidly designed and installed, allowing the bridge to remain open to a single lane of traffic in both directions.

'Stage 2' steelwork was subsequently designed and installed to support the end of the deck box, replace the repaired rocker bearings, and allow the bridge to operate with two lanes of traffic in both directions again.

Highlight

As a result of careful design and preparation, the load transfer was successfully completed in less than four hours. The work involved jacking load into the new steelwork, cutting through the rocker bearings to take them out of service before bolting anti-uplift steelwork in place.



ROD's ability to react to our needs couldn't be better, and the works have been delivered quickly and efficiently, with minimum disruption to the travelling public.

James Barnes
Engineering manager, Humber Bridge Board



Project contact



John Collins, Associate
MEng (Hons) CEng MICE MWeldI

A chartered civil engineer, John leads our UK bridges team. His 16 years' experience has focused on complex works with existing bridges, including the Humber Bridge, Forth Road Bridge and Network Rail structures. In 2016, he was awarded the RAEng Engineers Trust Young Engineer of the Year prize and co-authored the CIRIA guide, 'Hidden Defects in Bridges.' His current projects include the Great Yarmouth Third River Crossing and DART+ West.





Holywell Bridge Refurbishment

Client Cumbria County Council

Project partner JBA Bentley

Value £17k

Services provided On-site visual inspection, preliminary and detailed structural assessment and arch analysis, intrusive investigations, inspection for assessment, remedial works, drawings and specification

Overview

ROD was engaged by Cumbria County Council to restore Holywell Bridge, a masonry arch bridge built c.1860, to full capacity through the design and construction of a concrete saddle.

Solution

Our initial visual inspection of the bridge found insufficient evidence of structural distress to merit the installation of a concrete saddle. We scoped intrusive investigations, observed these on site and carried out an assessment for inspection.

After coring through the intrados of the arch to confirm the ring thickness, we found reinforced concrete in all three cores, which suggested a concrete saddle had previously been installed. Meanwhile, trial pits progressed on top of the bridge found concrete below the existing surfacing.

While no major strengthening works were required, sections of the existing parapet walls needed to be rebuilt due to significant bulging, leaning and misalignment. ROD produced the drawings and specifications for this rebuilding work.

Benefits of approach

In addition to minimising the risk of damage to the aging structure, our approach reduced the contractor's works, which resulted in less time spent on site, less materials used and less associated carbon.

Project contact



Peter Campbell

BSc (Hons) MSc (Eng) CEng MICE

A chartered engineer, Peter has more than 16 years' experience in civil and structural engineering. A senior structural engineer in our bridges team, he has worked in many engineering sectors, including bridges, rail, healthcare, further education, residential and industrial. His recent project work includes the Humber Bridge, the Great Yarmouth Third River Crossing and DART+ West.





A6 Randalstown to Castledawson ECI

Client Grahams Farrans JV (GFJV)

JV partner ARUP

Value £189m

Services provided Civil and structural engineering design, construction monitoring, construction supervision, geotechnics, environmental engineering, technical appraisal

Overview

ROD, in 50:50 design joint venture with ARUP, delivered the detailed design of this strategically important road scheme between Castledawson and Randalstown on the A6 in Northern Ireland. We had a full-time designer's site team working closely with the design offices and a contracting team monitoring construction of the works.

Solution

The scheme comprised 14.7km of high-quality dual carriageway, with a 7.4km section between Toome and Castledawson and a 7.3km section between Randalstown and Toome, each connected by the Toome Bypass.

Design elements

Tie-ins to the existing M22 at the eastern end and the A6 at the western end

Five new grade-separated junctions

Upgrade and replacement of numerous existing side roads

Environmental mitigation measures

11 overbridges, four footbridges, one river bridge, five underpasses and 50+ culverts

Park and ride facility

Accommodation works for over 171 plots

Multiple utility diversions

Approach

Our project director chaired fortnightly design development meetings across all design phases. This collaborative approach to design delivery addressed the buildability requirements of the construction joint venture, preventing abortive work and ensuring adherence to the programme.

Challenge

Complex ground conditions presented a significant challenge, with 20+m of loose sands and gravels, over soft clays to bedrock, at a location requiring a grade-separated junction and overbridge.

During Phase 1, we completed supplemental topographical, environmental and geotechnical investigations to further inform detailed design. Data gathering proved vital to enhancing our understanding of the constraints imposed on the roadworks and structures design by the ground conditions. This enabled us to work with GFJV to develop a range of ground improvement techniques that addressed phasing requirements.

Project contact



Marc Jones, Director
BE CEng MICE MIEI FConsEI

Marc has extensive experience, both nationally and internationally, in the delivery of multidisciplinary civil infrastructure schemes for the employer and contractor under traditional, D&B, ECI and PPP forms of contract.



Awards

CEEQUAL Excellent Sustainability Whole Team Award 2022

Infrastructure Project of the Year Award 2020
UK National Government Opportunities (GO)
Excellence in Public Procurement Awards

Social and Community Benefit Award 2019
UK National Government Opportunities (GO)
Excellence in Public Procurement Awards

A6 Dungiven to Drumahoe Dualling scheme

Client Sacyr-Wills-Somague JV

Value £220m

Services provided Civil and structural engineering design, construction monitoring, construction supervision, geotechnics, environmental engineering, landscape design

Overview

ROD delivered the detailed design for 25.5km of dual carriageway between Dungiven and Drumahoe on the A6 in Northern Ireland. We have a full-time designer's site team working closely with the design offices and a contracting team monitoring construction of the works.

Design elements

25.5km of new dual carriageway (D2AP)

Four new compact grade-separated junctions and three new roundabouts

22 bridges, including 10 overbridges, four underbridges, seven river bridges and an underpass, and 68 culverts

Five retaining walls and four environmental barriers

Five VMS and 150+ ADS

Earthworks design

Ecological surveys and reporting

Environmental mitigation works

Online widening of existing single carriageway

Health and safety duties

Challenges

Securing the approval of a diverse range of stakeholders and delivering the detailed design of the structures, earthworks and road alignment to an ambitious time frame presented key project challenges. Varied and complex ground conditions with soft ground to significant depths and environmental issues added further complexity.

Our tender design team formed the core of the design delivery team. They worked closely with the contractor to consult with stakeholders and achieve technical acceptance across disciplines.

Our geotechnical and environmental teams team scoped and delivered required supplemental investigation and surveys to realise efficient earthworks design and further inform constraints which were addressed by design.

Project contact



Marc Jones, Director

BE CEng MICE MIEI FConsEI

Marc has extensive experience, both nationally and internationally, in the delivery of multidisciplinary civil infrastructure schemes for the employer and contractor under traditional, D&B, ECI and PPP forms of contract.

Approach

We developed the detailed design in accordance with the Design Manual for Roads and Bridges and relevant technical memoranda, including Eurocodes and their UK National Annexes, as implemented in Northern Ireland.



M8/M73/M74 Motorway Upgrade

Client Ferrovial Lagan JV

Value £310m

Services provided Independent check,
Category III

Overview

ROD acted as independent design checker on this ambitious project to upgrade the core of Scotland's motorway network between Glasgow and Edinburgh. The project included major motorway construction, widening and other works.

Solution

We were responsible for the detailed check of all disciplines, from the stabilisation of historic mine workings through to intelligent transport systems (ITS).

Design elements

16km of improvements to the existing motorway network

12km of new build motorway

Upgrades to 12 existing motorway junctions

New build / modifications to five bridges over operational railways

Braehead Railway Bridge, a 2,000-tonne rail over road bridge

Several three and four span steel composite bridges

70m clear span crossing of the environmentally designated North Calder Water

Extensive mineworkings, subsurface voids and remediation measures

Pavement design and assessment

ITS, including lane, speed and variable message signs, vehicle detection and CCTV

5km of new pedestrian and cycle routes

Challenges

The presence of significant areas of mineworkings throughout the scheme presented a challenge for our team.

Together with our mineworkings specialist, Mason Evans, we developed independent geologic interpretations and assessments of shallow mining and instability to identify areas and depths of remediation.

Highlight

Working closely with the scheme designers, RPS and Amey, and the contractor, Ferrovial Lagan JV, we checked over 1200 separate design packages to facilitate the signing of over 900 design check certificates in a timely manner.

Project contact



Edward Warren, Technical Director
BE Civil CEng MIEI

A chartered engineer, Edward has more than 20 years' experience in civil engineering. His expertise encompasses all aspects of highway/road design, network management, public procurement and the preparation of tender documents for Public Works Contracts.



Galway to Dublin Cycleway

Client Westmeath County Council

JV partner AECOM

Services provided Engineering and design, planning and environmental, construction management

Overview

ROD, in joint venture with AECOM, was engaged by Westmeath County Council to plan and design this dedicated coast-to-coast cycleway stretching 276km across the country and linking Dublin to Galway.

Solution

In delivering the project, the team drew upon international best practice in cycling infrastructure to overturn the conventional wisdom that the 'shortest route is best' and champion the 'slow and interesting' route instead.

The cycleway therefore takes an indirect route across the midlands, along an historic railway and canal teeming with wildlife, and away from traffic. The engineering of the route is small in scale, low-key, discreet and perfectly in tune with its rural, historic surrounds.

Design elements

91km of towpath along the Royal Canal Network

45km of disused railway line from Mullingar to Athlone

140km of new build cycleway from Athlone to Galway

New bridges across the River Shannon

Approach

We adopted a holistic approach to the planning of the project, assembling a multidisciplinary design team comprising engineers, ecologists, archaeologists and landscape architects.

With the depth and breadth of expertise within the team, we could identify how best to showcase the natural and cultural heritage environment along the route to appeal to the cycling and walking tourist and day-tripper.

Sustainability

To limit the amount of machinery required to access a long and narrow route corridor with widely spaced access points, thin foundation and pavement construction was adopted, with machine pavers laying the sub-base to achieve a high-quality ride for cyclists.

Project contact



Seamus MacGearailt, Director
BE CEng FIEI FConsEI

A fellow of Engineers Ireland, Seamus is responsible for managing our transportation and buildings teams. His project experience encompasses rural and urban road design, public transport infrastructure, bridges, building structures and public transport infrastructure.





ROD UK LTD.

82-87 Pegholme
Wharfebank Mills
Ilkley Road
Otley
LS21 3JP, UK

+44 (0) 113 360 1720

contact@rod.group

www.rod.group

www.linkedin.com/company/roughan-&-o'donovan/

www.instagram.com/rodengineers/

twitter.com/RODEngineers