ICE East of England Merit Awards Projects 2016
Central Avenue Parking Bays

Sustainability – Highly Commended

Client: Peterborough Highway Services
Design: Skanska UK
Contractor: Durman Stearn Engineering Ltd

The central Avenue parking bay scheme demonstrates Skanska working with Peterborough City Council to implement a sustainable solution to convert an under used shop frontage area to parking bays.

The area benefits from congestion alleviation, better lighting, cycle parking, improved streetscape and support for local businesses.

Bedford Western Bypass

Sustainability – Highly Commended

Client: Bedford Borough Council
Design: Waterman Infrastructure & Environment
Contractor: J Breheny Contractors Ltd

Opening in April 2016, the Bedford Western Bypass was built in only 18 months by Breheny Civil Engineering. It consists of 2.4km of single carriageway road, three new roundabouts and a new road bridge over the Midland Mainline railway. The project also included a new County wildlife site.
Felixstowe Seafront Gardens – Restoration Project

Team Achievement – Highly Commended

Client
Suffolk Coastal District Council

Designer
Mott MacDonald

Contractor
J Breheny Contractors Ltd

Client Project Manager
Concertus Design and Property Consultants

Quantity Surveyor
Gleeds

Emergency Works, Ten Mile Bank

Physical Achievement – Highly Commended
Team Achievement – Highly Commended

Client
Environment Agency

Designer
CH2M (Halcrow)

Contractor
JacksonHyder

Project Manager
Arcadis

During a routine flood bank inspection along the river Great Ouse, it became evident that approximately 300m to 350m of flood bank was showing signs of movement with tension cracks appearing along the rear face. A failure would result in people, property and wildlife being flooded. A solution was quickly formed, planned, designed and implemented to ensure everybody was kept safe. This scheme showed what can be achieved by the right team in a tight timescale and budget.

Felixstowe Seafront Gardens Restoration was built in 13 months by Breheny Civil Engineering and was completed in December 2015. It consisted of the refurbishment of eight individual Victorian gardens on Felixstowe seafront.

Works included reconstruction of retaining walls, pathways and decorative features. A new timber shelter was constructed in the Town Hall Garden as part of the project.
A12-A143 Link Road

Client/Project Manager: Norfolk County Council
Designer: Mott MacDonald
Contractor: Tarmac
Funding Partner: Great Yarmouth Borough Council, Persimmon Homes

The A12-A143 link road is a strategic, 24km long, single carriageway road with new roundabouts and priority junctions, designed to cut congestion in the borough between Great Yarmouth and Lowestoft. The link road has unlocked important residential and commercial areas but also needed several different funding partners to come together to make sure the project was delivered.

Whittlesey Washes Reservoir South Bank Strengthening Works

Client/Project Manager: Environment Agency
Principal Designer: Royal HaskoningDHV
Contractor: Interserve Construction Ltd, Team van Oord
Cost Consultant: Arcadis
Site Supervision: Mott MacDonald

The flood storage reservoir forms part of a major flood defence system for the river Nene, Peterborough. The works required strengthening 16km of the 18km South Barrier bank, placing 300,000 tonnes of material and installing a low level, 250m long concrete wall. The works were completed a year ahead of programmed despite having to comply with a working window of July to October to avoid disturbance to overwintering and ground nesting birds.
Support and development services for ICE members and their families

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Huntingdon Road and Hills Road Cycleway Schemes

Technical Excellence and Innovation – Merit

Client
Cambridgeshire County Council

Designer/Contractor
Skanska UK

These two new Cambridge cycleways showcase how Skanska’s designers (in partnership with Cambridgeshire County Council) are bringing innovation to cycle schemes – using new features such as the ‘Cambridge Kerb’ and ‘Floating’ Bus Stop. These schemes provide safe and sustainable transport routes for Cambridge.

www.ice.org.uk/eastofengland
The Wash Tide Gauge

Technical Excellence and Innovation – Merit

Client
Environment Agency

Designer
Royal HaskoningDHV

Constructor (Fabrication Stage)
Balfour Beatty

Constructor (Installation Stage)
VBA

Designer, fabricator & installer
Tideland Signal

for instrument, telemetry and power system

Steelwork Fabricators
Four Trees Engineers

Cost Consultant/
Contract Manager
Arcadis

The construction of a new tidal gauge 5km offshore in the Wash fills a gap in the UK Tide Gauge Network. The steel monopole structure and the monitoring and telemetry equipment mounted on it will help to protect people and homes in the East of England for at least the next 60 years by improving forecasting and monitoring the effects of climate change.

Colne Gate & Barrier Refurbishment Scheme

Physical Achievement (Gate) – Merit

Client/ Project Manager
Environment Agency

Project Manager
Atkins

Designer
Interserve Construction Ltd

Contractor

Built in 1992 across the river Colne, the tidal barrier protects 2,092 properties in Wivenhoe from flooding. This project rectified issues with all the civil and mechanical elements to keep the barrier operational. Work included; lifting both 135t mitre gates for repainting; repair to 13 radial gates and a new control room.
Postwick Hub

Team Achievement – Merit

Client/Designer
Norfolk County Council
Mott MacDonald
Balfour Beatty (Birse Civils)

Postwick Hub is an infrastructure scheme designed to bring new jobs and investment to Norwich. It links the proposed Northern Distributor Road with the existing network and involved the construction of a new bridge, the refurbishment of an existing bridge deck, and various highway improvements including three roundabouts and junctions.

Cromer Coast Protection Scheme

Physical Achievement – Merit

Client
North Norfolk District Council
AECOM

Strategy Development, Detailed Design, NEC Project Manager, Site Supervisor & Principal Designer
VolkerStevin Ltd
St La Haye Ltd
Peter Frew Associates

Funding
Environment Agency

The £8m Cromer Coast Protection Scheme is designed to ensure the protection of Cromer for the next 100 years. In this first stage the walls and groynes most seriously at risk have been refurbished. A third of the walls and Promenade are listed and so the design and construction methods had to take this into account and the final finish had to meld with the surrounding buildings.

Storm damage in Cromer, December 2015

Aerial view at the start of the project, October 2014. Courtesy of Mike Page.
A138 Chelmer Viaduct

Physical Achievement – Merit
Technical Excellence and Innovation – Highly Commended

Happisburgh to Winterton, Sea Defence Improvements

Team Achievement – Highly Commended
Physical Achievement – Merit

Client
Environment Agency

Designer/Project Manager
CH2M (Halcrow)

Contractor
Team van Oord

Work was needed to maintain the current standard of coastal protection - safeguarding internationally designated sites, productive agricultural land, 506 homes, numerous commercial properties and a thriving tourist industry.

The scheme included a full assessment of beach levels to provide protection to the concrete seawall, reconstruction of five failed timber and steel groynes, partial reconstruction of a further 12 groynes and construction of one entirely new groyne. The team faced and overcame many challenges in delivering the project: approval, weather conditions, environmental considerations and unexploded bombs.

Client
Highways England

Designer
AECOM

Principal Contractor
Graham Construction

This scheme replaces an existing concrete viaduct and 1.6km length of the A138 between ‘Army and Navy Roundabout’ and the Chelmer Village Way Roundabout in Chelmsford.

Works involved off-line construction of a new 17 span viaduct, with multiple structural forms including a precast flood relief culvert and a 400m long composite steel bridge spanning the River Chelmer and its flood plain.
Dry Fuel Store Building
Sizewell B Power Station

Technical Excellence & Innovation – Exceptional Merit
Physical Achievement – Merit

Client/Project Manager
EDF Energy

Designer
Sir Robert McAlpine Design Group

Contractor
Vinic Construction

Sizewell B is due to continue generating electricity until 2035 and possibly beyond and so to meet the requirements of its operating license it was decided to build a dry fuel store. Once spent fuel rods are safe enough to remove from the cooling pond they are sealed in casks and stored on site. Dry stores are used around the world but this is the first of its kind in the UK.

The site for the new store was used as a heavy laydown area when Sizewell A was built and, more recently, as a car park. One of the first activities was the demolition of over 7,500t of legacy concrete foundations to provide a uniform subbase for the store’s foundation slab. This material was crushed and reused on site for earthworks.

The foundation slab is a seismically qualified and detailed in accordance with the American Concrete Institute (ACI) 349. The slab also needs to cope with the heat created by the dry storage casks that can result in temperatures above the code guidance limit of 65°C.

The floor slab needed a high cement content concrete mix to meet the required strength. This, coupled with the 750mm slab thickness, meant that there was a risk of early age thermal cracking. To overcome this 35% of the cement content was replaced with pulverised fly ash and limestone aggregate was used due to its low coefficient of thermal expansion. This also helped the slab to cope with the heat from the storage casks.

The building is a conventional steel frame, clad with insulated aluminium panels with louvres to provide passive ventilation. The 100-year design life for the building has been achieved through galvanizing and painting combined with careful detailing and fabrication.

The project was delivered on an operating nuclear power station with no impact on safety or generation. Over 250,000 man hours were safely completed with no lost time incidents.
Wallasea Island Wild Coast Project Phase 1

Physical Achievement – Exceptional Merit
Sustainability – Merit
Team Achievement – Merit
Technical Excellence and Innovation – Highly Commended

Wallasea Island Wild Coast Project, located on the Essex coast, is a landmark conservation and engineering scheme on a scale never before tried in the UK. It combines ecological research and environmental vision with commerce and innovative industrial engineering. A mutually beneficial partnership between the RSPB and Crossrail is creating replacement wetland habitats whilst disposing of excavated material.

Movement of material from London on this scale by water had never been attempted before but BAM Nuttall – who were contracted by Crossrail - were able to prove that this could be done.

A new transfer station in London to receive and load material showed it was possible to turnaround vehicle loads within a three-minute period and shipping 3 million tonnes of excavated material prevented 150,000 lorry journeys. So reduced carbon emissions along with new wetland habitat has minimised the impact of Crossrail while enhancing the environment.

The 162 hectare Phase 1 site, known as ‘Jubilee Marsh’, was designed to have creeks, pools, lagoons and islands to create varied intertidal habitats. This formed the network, which allows a 1.1Mm³ tidal volume across Jubilee Marsh behind newly built flood banks.

ABPMer modelled the short, medium and long-term effects on the surrounding river estuaries, fish and oyster populations. Monitoring to verify the flow and silt accretion also provides data that has informed a technical paper. The monitoring will continue in the future.

The earthworks were formed using GPS-controlled plant and a procedure was introduced when checking of the works to keep workers and the plant separate. The GPS-controlled plant allowed for a ‘right-first-time’ approach and minimised rework.

Initially problems with moving tunnelled clay by conveyer belt causing blockages and increased maintenance. Following modifications to the unloading system at Wallasea, the tunnelled clay was successfully conveyed with increased reliability and safety. Lessons learnt have been shared with other Crossrail sites that use tunnel conveyors.

The project was completed 12 months early and the bird and ecology population have already started to increase. The tidal flows are acting as planned, visitor numbers have increased, and the area has renewed flood protection indicating the works are performing as planned.

[Image of the project site]
ICE East of England Merit Awards Projects 2016

ICE East of England presents its Merit Awards every year to celebrate and recognise outstanding civil engineering.

The aim of the awards is to:
- Recognise merit within the practising profession
- Encourage excellence and pride in the work of civil engineers
- Promote the values demonstrated in the best projects
- Raise awareness of the contribution that civil engineering makes to society
- Deliver a better future for people and the environment through teamwork and ingenuity

There are four Merit Awards for projects that demonstrate:
- Physical Achievement
- Technical Excellence and Innovation
- Sustainable Construction/Engineering
- Team Achievement

For further information on any of the projects included in this booklet, please visit: www.ice.org.uk/eastofengland