



**THE INSTITUTION  
OF HIGHWAYS &  
TRANSPORTATION**

# Northern Branch 1958 - 2008

**50 years of service in Cumbria**

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representing excellence in the  
environment of transportation



# THE INSTITUTION OF HIGHWAYS & TRANSPORTATION

## Northern Branch 1958—2008

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1976 - 77 Mr. D. Wrathall  
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1978 - 79 Mr. J.B. Thompson  
1979 - 80 Mr. A. Prady  
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1989 - 90 Mr. D.M. Cole  
1990 - 91 Mr. W.A. Swarbrick  
1991 - 92 Mr. I. Rutherford  
1992 - 93 Mr. M. Battersby  
1993 - 94 Mr. J.M. Beattie

1994 - 95 Mr. M. Brenan  
1995 - 96 Mr. J.A. Slee  
1996 - 97 Mr. R.G. Parkins  
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1998 - 00 Mr. E.G. Boardman  
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2005 - 07 Mr. D. Graham  
2007 - 08 Mrs. J. Hunter

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1941 - 43 Mr W Gowling  
1944 - 45 Mr J Singleton-Green  
1946 - 49 Mr DS Callie  
1957 - 62 Mr AN Brant  
1962 - 65 Records unavailable  
1965 - 68 Mr R Green  
1968 - 76 Mr T Graham  
1976 - 78 Mr P R Adamson  
1978 - 82 Mr D S P Bannerman  
1982 - 90 Mr I Rutherford  
1990 - 92 Mr EW Hindle  
1992 - 97 Mr I G Robinson  
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2005 - 08 Mr GS Wheelhouse

### Branch Treasurers

1958 - 83 Records unavailable  
1983 - 90 Mr WA Swarbrick  
1990 - 95 Mr PL Richardson  
1995 - 96 Mr T Hinde  
1996 - 97 Mr A K Raine  
1997 - 08 Mr JM Beattie

# IHT Northern Branch

1938 saw the formation of Branches in the North and Midlands. In April 1949, the Northern Branch was split into two: North Eastern and North Western.

The Northern Branch of the Institution of

Highways and Transportation was founded in 1958 from part of the North Eastern Branch.

For half a century, the Northern Branch has continued to build on the experience of the past and is looking forward to the next 50 years of the Branch and the Institution.

## President's message

I congratulate all in the Northern Branch on reaching your 50<sup>th</sup> birthday. This is a historic year for highway engineers as we will be celebrating the 50<sup>th</sup> year of the opening of the first section of motorway in the UK, and the opening of the final section in your Branch area.

Your Golden Jubilee is an opportunity to celebrate the achievements of the past 50 years and that is exactly what this booklet does. It is not only the physical achievements that we celebrate; it is also all your efforts to encourage new members into our profession and to continue our professional development by providing best practice guidance and examples

of that good practice locally.

I would like to thank all of the many members who have served the Branch over the past 50 years and particularly all those who have worked on the Branch committee to ensure that a regular programme of local activities is offered. It is a truism that the life blood of the Institution resides in the Branches. You have provided a local network that has contributed both professionally and socially to the needs of local members.

I wish of all you great success in the future in serving both IHT members and also the wider community through your professional skills.



**Mike Slinn**

MA MS FIHT MICE CEng  
President of the Institution of  
Highways and Transportation

## Chairman's message



**Jane Hunter**

BEng (Hons) MSc CEng MIHT  
Chairman of the Northern Branch

This year we celebrate the 50th Anniversary of the formation of the Northern Branch of the Institution of Highways and Transportation. Therefore, it is a real honour for me to be presiding over the branch during this landmark year.

We share our anniversary with the opening of the M6 Preston By-pass and 2008 will see completion of the 'Cumberland Gap' between Guard's Mill and the Scottish Border, providing a cross-border route of some 350 miles.

This booklet has been produced to celebrate the many milestones and achievements within our branch area and, on behalf of the Committee, I would

like to thank all those who contributed to its creation.

Exciting times are ahead for aspiring professional engineers and transport planners, as the Institution now awards the national registrations of CEng, PTP and IEng, to those able to demonstrate their skills and professionalism in the engineering community as well as showing dedication to personal development.

Finally, I would like to express my appreciation for the voluntary work of our committee members, past and present, for their valuable effort and contribution as they have continued to serve the needs of our membership.

# A View Over The Garden Fence

by John Slee, Director, Capita Symonds



Above: Thursby Bypass

There was some inevitability about becoming a Civil Engineer when at age 10 our family home in Newton Road, Penrith, was sandwiched between the construction of the M6 and the North section Site offices for the Penrith Bypass.

My earliest memory is my father having to call the fire brigade one evening when the wooden site offices just over our garden fence caught fire when the decorators had left the heaters too near their paint. As well as the site compound, a large static caravan park was established to house the nomad travellers who delivered the 1960's motorway programme.

Big events on the Penrith bypass included an advance contract to build and slide into position three railway bridges, the construction of a huge embankment between Skirsgill and Kemplay and

considerable change to the local landscape both east and west along the A66 corridor as well as north and south.

The M6 and associated link roads from Thrimby Village to the north of Carlisle was designed and supervised by Cumberland County Council under the leadership of T.D.Wilson, Senior Assistant County Surveyor who wallpapered his office walls and ceiling with plans of the new motorway. Tom went on to become the Director of the North West Road Construction Unit of the Department of Transport. Carlisle Bypass followed Penrith with the link between being completed in July 1971.

John Dean was drafted in to oversee the construction and was responsible for creating and training a formidable team, many of whom I have had the pleasure to work with and learn from when I also

started working for Cumbria County Council in 1978.

I distinctly remember all the schools in Penrith being given the day off to watch the opening ceremony at Skirsgill on 7<sup>th</sup> Nov 1968 and the excitement of going for a drive on the new road when my father got home from work. My enthusiasm for Civil Engineering was nurtured as the motorway network expanded southward with some masterful engineering through the Tebay Gorge to create what today is still one of the best motorway drives in the country. Minor improvements were also made by me to the paths around our house so that I could cycle more quickly.

Following three years at Salford University I was lucky enough to be offered a Graduate Trainee Engineer job by the then County Surveyor, John Davison. I remember being asked by my interviewer, the late David Lloyd, how I'd improve traffic flow in Penrith. It was perhaps therefore ironic that I was given the job of overseeing many of the improvements made to the town centre in the late 1990's including the introduction of the first ever double mini roundabout in Cumbria – although I must give credit to Rob Lawley, the traffic engineer, who came up with the idea and rather sheepishly came into my office to ask whether Penrith was ready for such innovation.

Having qualified as a Chartered Engineer at the tender age of 24, the attraction of large construction beckoned and I began what were 10 incredibly happy years as Resident Engineer of a number of large projects.

Initially it was off down the west coast to oversee the construction of the Northern Access Road to Sellafield with Eden Construction and fellow committee member Ernie Boardman. Then it was up to Workington Reclamation Work to work with Cumbria Industrials where John Pallister was a young setting out engineer and with Dowsett to construct the Annie Pitt Lane Railway Bridges, whose piles sink 25m into the seemingly bottomless sands.

Three years were then spent constructing Thursby Bypass in two halves, due to delayed funding through political manipulation, before moving to Brampton Bypass where my knowledge of the English language was tested and stretched as the contractual letters between Ian Robinson (site agent for Cumbria Industrials ) and I became a quest to outwit and manoeuvre each other.

Whilst a successful project, which due to extensive planting has blended into the landscape ever so well, lessons in the claim culture that existed in the late 80's and 90's pointed to the need for a better way of working. Hence the need for the Latham Report and to 'Rethink Construction' which

has seen our industry transformed for the better as we now partner and use our skill to mutual rather than individual advantage.

With a pause in new construction I then entered the world of M6 reconstruction under the watchful eye of Ian Beattie. Whilst not as satisfying as new build, the challenges of working within confined spaces and keeping traffic moving added interest. The summer of 93 saw involvement in the longest contract to date with a 13km contraflow through the split carriageway section between

Tebay and Shap. Due to the expense of this contraflow we did everything necessary to give this section of M6 a MOT for the next ten years.

So, there you have it, a few personal thoughts and memories which I hope has reminded you of the considerable progress and contributions Civil Engineers made to Cumbria between the mid 1960's and mid 1990's. It is up to the current and future generations to continue the good work so necessary to the successful development of our beautiful county.



Above: Opening of the Thursby Bypass

# Carlisle Airport 1941 - 2008

## by Ian Beattie and Richard Gordon



*Above: Beaufighter of 9 OUT (John Huggon Collection)*

Carlisle Airport, built by local contractor John Laing & Sons Ltd. And covered 512 acres. The airport cost £879k and was opened as RAF Crosby-on-Eden on 20 February 1941 with the arrival of 59 Operational Training Unit. This Fighter Command unit, with 71 Hawker Hurricanes trained fighter pilots until it moved out in August 1942.

All three runways were then lengthened and three additional hangars built to cater for 9 Operational Training Unit of Coastal Command which moved in on 9<sup>th</sup> September 1942. With 57 Beaufighters and Beauforts on strength, pilots were trained for anti-shipping strike operations supporting the Battle of the Atlantic until it was disbanded in 11<sup>th</sup> August 1944.

From July 1941 to October 1944 RAF Longtown was used as a satellite airfield to reduce the congestion caused by the large number of aircraft based at RAF Crosby, with all the stations aircraft on the ground there where 106 Hurricanes on

the airfield.

On 11<sup>th</sup> August 1944, the Station was transferred to Transport Command and 109 Operational Training Unit was formed with a strength of 40 Dakotas to train aircrew for the re-supply of ground forces in Europe. On 10<sup>th</sup> August 1945, this unit was redesignated as 1383 Transport Conversion Unit and continued to train transport aircrew until disbanded on 6<sup>th</sup> August 1946.

As a training base, accidents were inevitable and a number of aircraft were lost in fatal crashes. The airfield was also used, from time to time, by bombers returning from operations over Europe when their own bases in Lincolnshire and Yorkshire were fogbound.

On 6<sup>th</sup> August 1946, RAF Crosby-on-Eden was disbanded and the RAF left the site.

In 1946/1947 British European Airways operated services from Carlisle to the Isle of Man and Belfast. The airfield then

reverted to agricultural use and the condition of the infrastructure deteriorated rapidly.

In November 1954, Carlisle City Council approached the Ministry of Transport and Civil Aviation regarding the use of Crosby or Great Orton as a Municipal Airport to replace the grass airfield at Kingstown which was becoming untenable due to poor drainage and encroaching development. Following a Public Enquiry, it was announced in December that "The Minister is satisfied that there is a need for such a facility in Cumberland..."

Ownership of the airfield was transferred to Carlisle City Council on 7<sup>th</sup> December 1960 and Cumberland Air Services of Silloth was appointed to manage it, on the 3<sup>rd</sup> January 1961 the airfield became licensed Category 2. The first scheduled services were flown by Silver City Airways to the Isle of Man. Northern Air Schools was founded only to be taken over in 1969 by CSE Aviation which won contracts to train pilots for various Middle East countries.

From 1961 to 1979, various airlines operated services to a number of destinations none of which turned out to be commercially viable .

The Solway Aviation Society members have been on the airfield since 1961. In the early days the members provided many services to the airport including baggage handling and fire fighting service, supply personnel and fire fighting vehicles, since then the museum has been developed into one of the leading private

museums in the country.

In 1980 CSE Aviation took over the management of the airport for a short period before Carlisle City terminated their contract later in the same year.

In 1982, airline services restarted but again failed in 1987. 1983 saw a major investment .in the strengthening and resurfacing of the main runway and the arrival of Specialist Flying Training Ltd. who trained foreign military pilots (mainly Iraqis) until 1985.

In December 1988, the airport dealt with over 196 aircraft movements in the 24 hours after the Lockerbie disaster. From time to time the airport has been used as a base by military aircraft and helicopters working on the Training Ranges at Spadeadam and Otterburn.

In 1989, plan for the construction of new passenger terminal facilities adjacent to the A689 Brampton Road received Planning Permission but never materialised. The application was for Car Parking, a Travelodge, petrol station and of course a terminal.

In 2001 Carlisle City Council sold the airport to Edward Haughey (later Lord Ballyedmund) of Corby Castle whose plans for major redevelopment and airline services came to nothing.

In 2006, Andrew Tinkler, owner of the Eddie Stobart Group and WA Developments took ownership of the airport with proposals for major redevelopment including a new main runway, new terminal buildings and the establishment of HQ facilities for both of his business companies.

At the time of writing, the planning application for these major development works, with a total cost of over £25million, is under consideration by Carlisle City Council. If approved, construction work will commence early in 2008 with a view of being operational by the summer of 2009.

The airport envisages perhaps five rotations per day within a short period, starting with twice daily services to London. The core catchment area for the airport is relatively sparsely populated – perhaps 250,000 – so no one expects the low cost airlines to be attracted, with their need to achieve an average 70% plus load factor on every flight of 150 seat aircraft.

But Carlisle Airport has as its vision being a shining example of a small regional airport, serving the local community and its businesses with all the advantages of a speedy, friendly and personal local service, without the disadvantages of high passenger throughput and lengthy check-in and security queues.

The aviation facilities, including navigational aids and passenger handling will be new. New skills will be required from airport fire-fighters to the technical maintenance of sophisticated lighting and air traffic control equipment.

Stobart Air, the airport operating company, makes no bones that this is the last opportunity for the airport. It has received resounding support for the development from a wide range of businesses and the general public and feels that it has demonstrated its commitment to sustainable development by the most comprehensive Environmental Assessment, including traffic, noise and archaeology, reflecting its proximity to Hadrian's Wall.

The Cumbria Chamber of Commerce, Cumbria Tourism, Cumbria Vision, the North West Development Agency, West Cumbria Business Cluster and Hadrian's Wall Heritage have all recorded their support for the proposed development. The benefits that will accrue are not just for today, but for generations to come.



*Above: Bombardier Global Express (John Huggon Collection)*

# Bus Services in Cumbria 1958-2008

## by Bob Barlow, Technical Director, Gifford



Above: Leyland National Bus, manufactured in Workington and shown here at Flatt Walks, Whitehaven on 11th May 1988 (Photo courtesy of Postlethwaite)

Over the past 50 years the bus has been the main mode of public transport in Cumbria – and this situation is unlikely to change in the next 50 years.

In the late 50's people who had access to a car were the minority. What's more, people travelled less, they lived near their places of work and most children walked to school or used the bus and not a 4 x 4. Protection of the natural environment and resources was way down people's agendas. How times have changed.

In 1958, Cumbria's three main bus operators were Cumberland Motor Services (CMS), Ribble Motor Services (RMS) and Barrow Corporation (the sole municipal operator). Eleven years later the 1968 Transport Act led to the creation of the state owned National Bus Company (NBC) which commenced business on 1 January 1969. Buses and services were however managed locally and possessed their own fleet names and logos. In Cumbria the two NBC companies that operated were Cumberland and Ribble.

A milestone date in the bus industry in Cumbria, and the UK for that matter at this time was *D Day Sunday* 26<sup>th</sup> October 1986 when the bus industry shook off its shackles to flex its muscles in the face of changing socio-economic conditions and ever increasing car use.

Over the past two decades Stagecoach has emerged as the key bus operator in Cumbria, having first acquired Cumberland Motor Services (CMS) in 1987, the first English bus operator to be acquired by this Perth based company.

Historically in Cumbria the revenue generated in Carlisle and the bigger urban areas has always enabled the county's many rural settlements such as Seatoller, Patterdale and Borrowdale, to be connected to the bus network.

Since its involvement in Cumbria, Stagecoach has adopted an all embracing policy aimed at providing reliability, quality and value for money in a contrasting operating and socio-economic environment to that of

its predecessors.

Significantly since 2004, there has been consistent year on year growth in patronage in Cumbria across throughout rural and urban areas. The concessionary fare scheme introduced in 2006 has contributed towards this positive trend.

The avoidance of knee jerk reactions, a long term carefully planned approach and close working with key public sector stakeholders are the key factors that Stagecoach believes have helped to attract more people on to the network. This is in a part of the UK where the development of a viable network requires a long term commitment and more effort compared the company's business activities in the dense metropolitan areas of the UK.

Like the old operators CMS, Ribble and Barrow Corporation Transport, the majority of the staff employed by Stagecoach are people who are local to Cumbria and are in tune with local transport issues and needs.

The introduction of low-floor buses is proving to be a winner with passengers in Cumbria. Carlisle was the first key centre in Cumbria to benefit from these buses which mostly arrived on the city's network after the catastrophic floods in 2005 that wiped out most of this company's fleet in Carlisle. Perhaps unique to Stagecoach at this time was its ability to quickly pull in resources from other part of the group which enabled the public and the local economy in Carlisle to move again. As an aside this illustrates a key feature of the bus insofar as it is a highly flexible mode of transport that can respond quickly to changing situations





Above: Low floor easy access double deckers at their launch for the X35 Service on 28th February 2006 (Photo courtesy of H Postlethwaite).

unlike for example the train.

Cumbria is no stranger to distinctive and new types of buses. Between 1972 and 1985 West Cumberland became a bus manufacturing centre for the mass production of a distinctive single decker bus known as the Leyland National from a purpose-built factory on the Lillyhall Industrial Estate in Workington. The first production model to enter service was one owned by CMS and took to the road on 16 March 1972 between Workington and Whitehaven.

Overall Stagecoach operates a substantial fleet of buses in Cumbria with an average age of 7 years. This helps underpin high levels of reliability coupled with low emissions, which is particularly important in the home to the Lake District National Park.

Pockets of congestion however do still present operational problems in urban areas. In Kendal gridlock is common and this creates considerable difficulties in terms of maintaining regularity and reliability which are vital components of successful bus

operations and operators such as Stagecoach welcome the development of initiatives on the highway that can alleviate delay and congestion and give the bus an advantage over cars

The development and introduction of corridor based bus priority initiatives that promote reliability and regularity of services and raise the profile of the bus have been made possible through partnership arrangements for example the

corridor based improvements on the A6 London Road in Carlisle.

A partnership arrangements set up in association with the Government's Rural Bus Challenge Scheme led to the significant step change improvements on the X35 Kendal to Barrow Service. Since 1999 this service has generated considerable passenger growth as a result of a number of interventions. These have included the purchase of 3 new double deckers in 2006 that are owned by the County Council and operated by Stagecoach.

From an economic and environmental perspective the future is likely to present many challenges for bus services in Cumbria. Continued partnership and a genuine pro active approach to passenger growth from the public and private sectors should give the bus a firm footing in terms of serving the County's transport requirements and supporting the economy over the next 50 years.

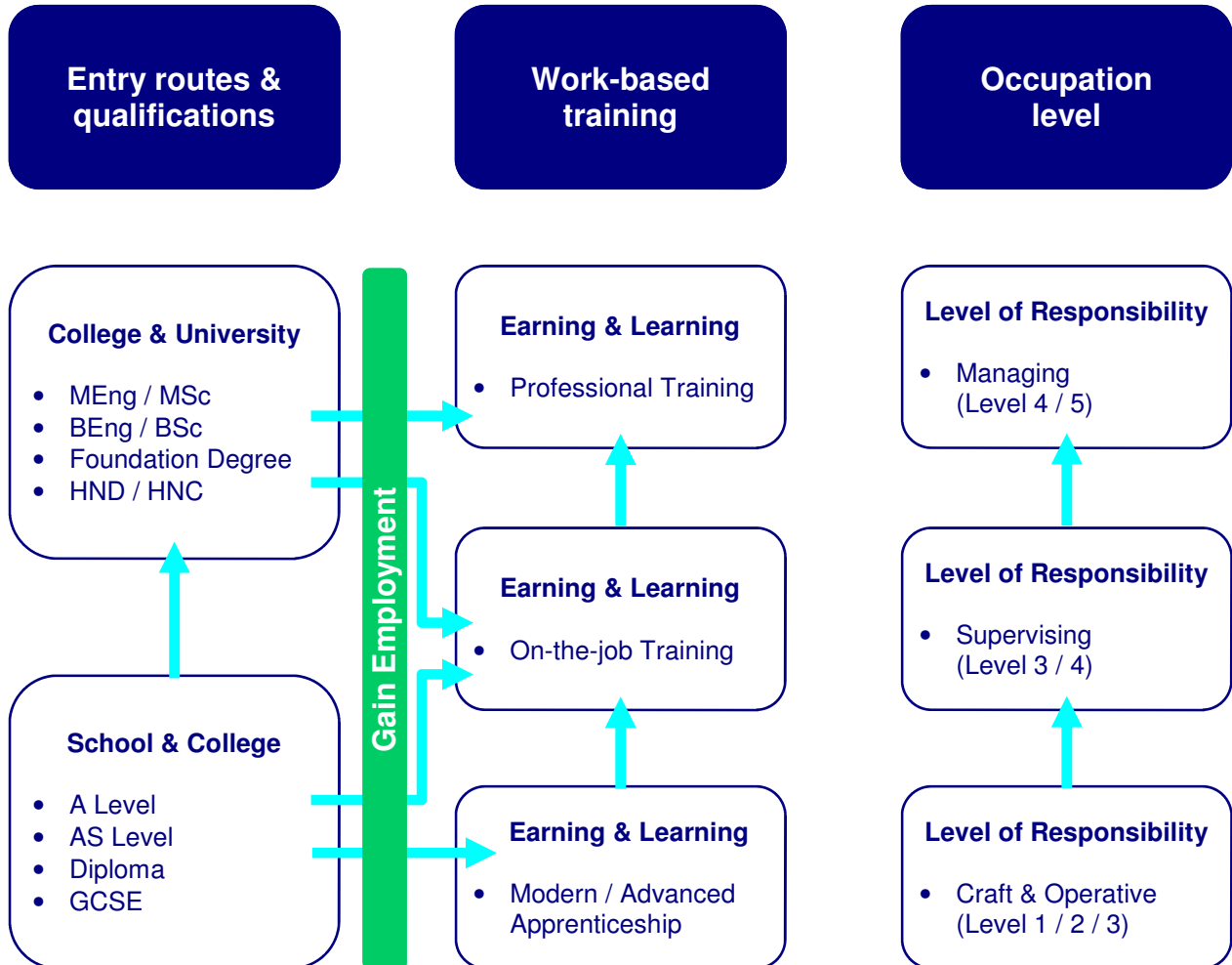
Acknowledgements: Christopher Bowles, Managing Director of Stagecoach North West, and transport historian and writer Harry Postlethwaite.



Above: One of many Stagecoach low floor accessible buses seen here in Carlisle at one of the high quality accessible bus stops on English Street.

# Careers Map

This map shows the different pathways to a career in construction and engineering from secondary, further and higher level education.



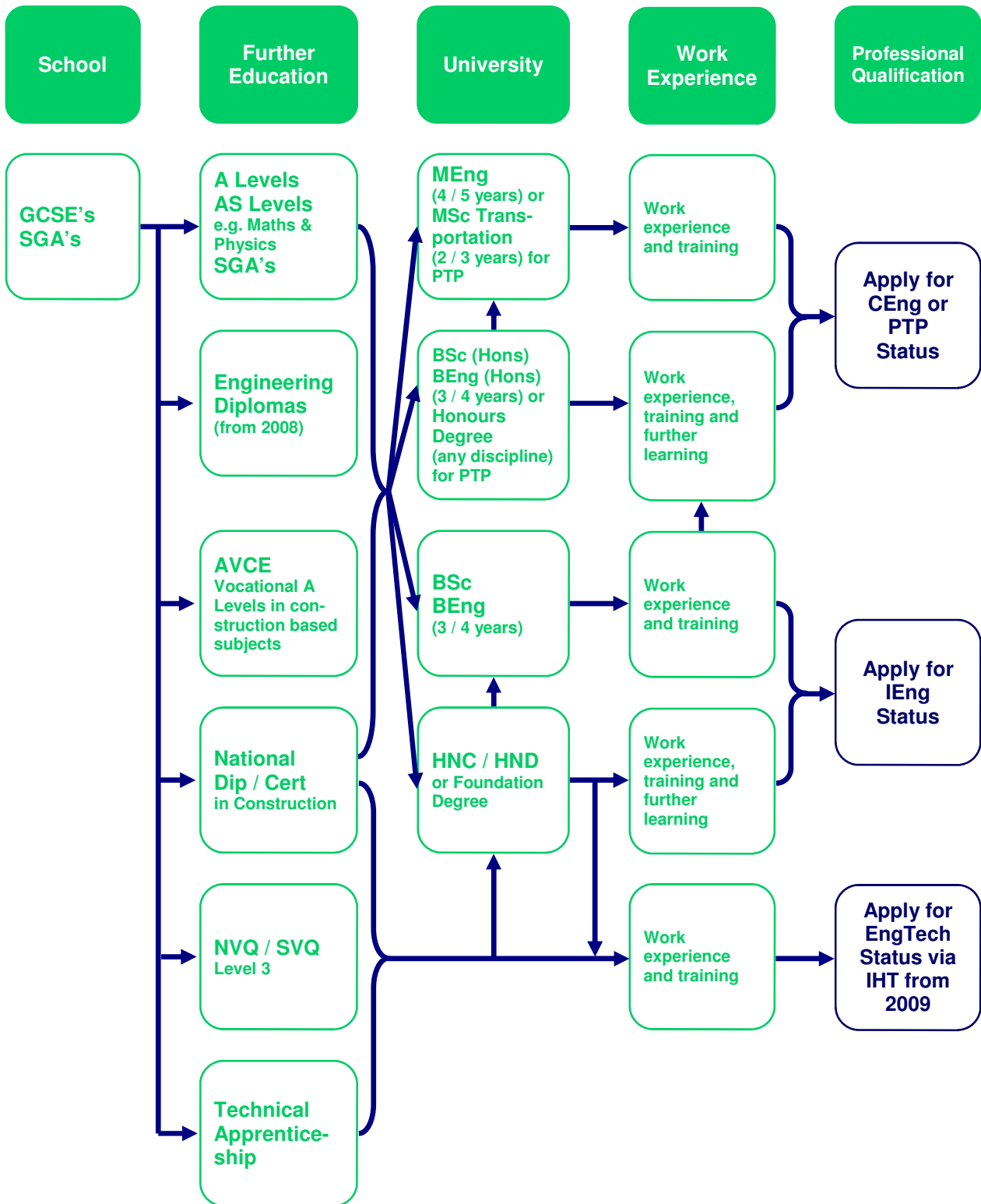
## THE WORLD IS YOUR OYSTER

You will always have the opportunity to progress to a higher level, with extra training and experience. You can reach the top of your profession no matter where you started from.

Whatever you do, the important thing to remember is that you can switch between employment and full or part-time education, or you can combine them at any point in your career.

# Professional Qualifications

This map shows the different pathways to IEng, CEng and PTP status through IHT.



# Leven Viaduct Deck Replacement Project by Mat Wyld, Project Engineer, Carillion Rail



Above: Leven Viaduct crossing the north end of Morecambe Bay

incorporates the first significant use of track directly fastened to the steel bridge deck. This pioneering solution involved detailed analysis of the interaction between the structure, sub-structure and the elements that support the track.

The decision to use direct track fixing was a significant departure from the traditional method of track fixing on non-ballasted steel bridges, which uses large timber baulks to support the rails. From an environmental perspective these timbers are hard to obtain from sustainable sources, and introduce significant maintenance liabilities to the structure.

## Introduction

By the end of 2005 Network Rail's Leven Viaduct had been identified as needing substantial work to ensure its future viability. Using a combination of imaginative and original techniques, the delivery team were able to replace the existing deck during a single 16 week blockade in 2006, to a high level of quality and with an excellent safety record.

The hostile environment of Morecambe Bay, formidable logistical challenges and an extremely tight programme were all tests that the team overcame to deliver the project 12 months ahead of the original programme.

## Background

Leven Viaduct is located on the Carnforth to Barrow line, at the north end of Morecambe Bay. The effects of weather, tides, wear and tear had, by the end of 2005, rendered the 460m long structure needing substantial attention.

This railway line provides a strategic link for the people of Cumbria to the West Coast main-line, and also provides a key route for rail freight.

In July 2005 Carillion Rail were awarded the design and construction contract.

## Design

The replacement bridge deck has been designed as a series of fully welded "battledeck" type structures and

The design also lent itself to a production line type process and allowed for the decks and walkway units to be fully fabricated off site, using modern robotic welding techniques for many of the substantial welds.



Above: Bespoke lifting gantry installing new battledeck type deck unit.



*Above: Two lifting gantries were key to delivery in half the original timescale*

### **Main Deck Construction Methodology**

The key aspect of the Carillion methodology was in the use of two bespoke lifting gantries to undertake the removal and installation of the deck units. These custom made gantries straddled the width of the bridge, standing on a temporary, moveable track system, that in turn sat on the new walkway units.

The original programme envisaged completing one line in 2006, and the other in 2007. By utilising two gantries, Carillion were able to deliver the project in a single blockade. This gave Network Rail significant savings, as well as reducing disruption to the local community.

### **Safety**

During the blockade the project team clocked up over 105,000 man hours without serious accident or injury, which clearly demonstrates the successful safety culture that existed.

### **Environment**

Morecambe Bay is an extremely environmentally sensitive area. It holds SSSI status, and also a number of

other protections which recognise its importance to the bird population. This was recognised by the projects Environmental Management Plan, which was developed in association with all key regulatory bodies.

In order to minimise disruption and disturbance to the environment, Carillion's inventive strategy involved delivering the project from deck level, rather than from large floating pontoons in the river.

### **Conclusion**

During a 13 month design and construct contract, the Leven Viaduct deck replacement project team has successfully implemented a significant number of heavy civil engineering activities and through innovation in the methodologies adopted were able to overcome significant programme, engineering, safety, logistical and environmental constraints to deliver the project 12 months ahead of Network Rail's initial aspiration, providing them and the communities affected by the closure, with significant benefits.



*Centre Most works were undertaken from top down, to avoid disturbing the environment of Morecambe Bay*

*Below: The completed viaduct*

# A66 Temple Sowerby Bypass

by John Harman, Project Director, Skanska Construction UK Lim-



*Above: Temple Sowerby Village*

The A66 Temple Sowerby Bypass finally came to fruition for its residents following over 30 years of campaigning. The Bypass not only results in an immeasurable improvement of the lives of the residents, it reunites the community that has long been bisected by the A66 road; and enhances protection to the internationally important River Eden and integrates seamlessly into the local landscape. It can truly be considered as an 'Environmental Bypass'.

The original opening programme of the bypass was March 2008, with a budget cost of £39.6m however, the project was open to traffic in October 2007 with an anticipated final cost of £36.6m.

Temple Sowerby had a very poor environment due to the traffic flow of over 15,000 vehs/day with over 25% being HGV's, generating noise, vibration and air pollution. There was also a poor vehicle accident record. The bypass removes over 95% of traffic from the centre of the village.

The AST, a Highways Agency measure of environmental quality, shows that there is no net decrease in the quality of the

environment in the location of the bypass.

The Project has been a model of co-operation between all parties i.e. the client, his supervisor, the contractor and their designer, and the local community; it epitomises the 'Partnering' concept.

The economic model for 'whole life costing' drove the selection of construction materials / techniques and was core to decision making (e.g. structural weathering steel was used over

the internationally important river habitat).

The core team generally remained the same throughout the process, i.e. from design concept to agreeing a Target Price, through to completion of construction. This process was also instrumental in the project's excellent safety record, which culminated in the project winning the HA's Target Zero safety award.

A key feature of the project was its integration into the environment. Acton Lodge, a green bridge, with a surface of grass and bramble, encourages use by wildlife and badger fencing keeps wildlife away from the carriageway.

Mitigation to offset impact on local ecology was also paramount. Provision was made to relocate resident badger populations and alternative habitats created for bats and crayfish. The construction programme was aligned to protect birds and migratory fish.

Planting merged into the local environment and addressed



*Above: Acton Lodge Bridge*



Above: River Eden Bridge under construction  
 Below: Dry stone walling

pre-cast cantilever units and environmentally friendly waterproofing products were chosen. These also reduce the amount of future maintenance. Significant effort was expended to ensure that the aesthetics of the structure were acceptable. Computer visualisations of options were produced nearly a year before completion of the design, to allow debate within the team and with stakeholders.

Of particular significance was the use of site won excavated material. Unacceptable material was conditioned by the addition of lime to make acceptable, and 'capping' was produced with the addition of lime and cement. This, along with balancing the cut / fill of earthworks on site, resulted in a reduction of over 50,000 tonnes of imported material and a disposal of over 150,000 tonnes to landfill. We were also able to utilise site won Penrith Sandstone for special fill to structures.

residents concerns about screening. Use of low maintenance grasslands were aligned with indigenous wildflower seed varieties.

Over £10m of the construction cost was reinvested in the local economy, with roadstone, drainage, concrete and drystone walling materials coming from local suppliers. Local labour and plant suppliers were used wherever possible.



We are especially proud that no site arisings have been sent to landfill, but were re-used in the works.

Four kilometres of dry stone walling and random stone paving to bridge slopes and outfalls, all improve the 'fit' of the scheme in the landscape.

Extensive landscaping with some 50,000 trees and shrubs also add to the environment.

Innovative design reduced impact of construction on the customers. At Spitals Farm Underpass, permanent steel sheet piles were used to facilitate 'top down' construction, hence avoiding extensive temporary works and major disruption to A66 traffic.

The River Eden Bridge spans a habitat of international importance. To protect this, weathering steel,

In February, Skanska were awarded the ICE North West Merit Award 2008 for the project.



Above: River Eden Bridge

# A595 Parton to Lillyhall Improvement

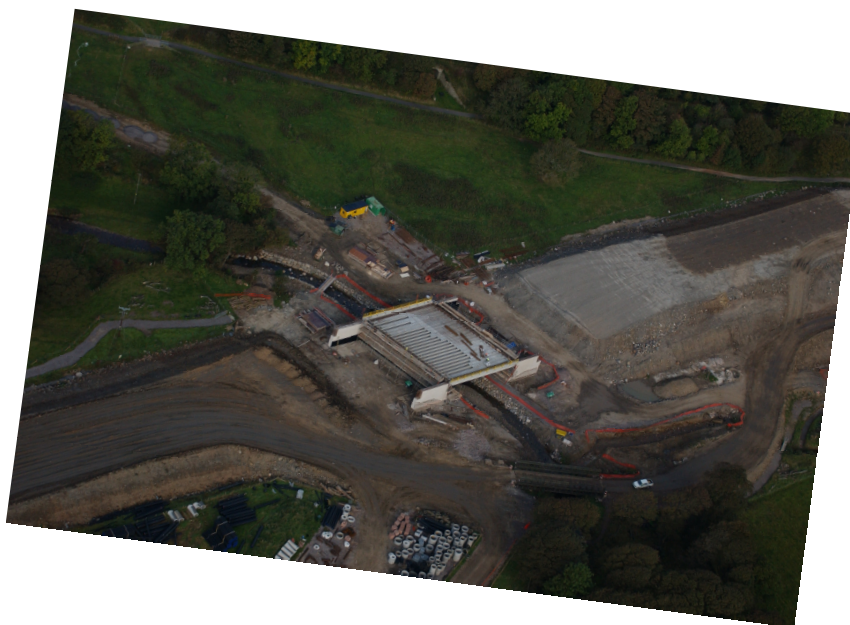
by John Atkinson, Project Manager, Highways Agency



uninterrupted for 4 km down to a new roundabout at Howgate being constructed off-line and linking in to the existing A595 and the U4009 Lower Moresby Road.

The scheme has to cross existing watercourses and ensure that farm accesses, footpaths cycleways and bridleways are preserved. Two structures at Ullgill and at the Lowca Beck crossing will be provided and an overbridge and underpass will be created in Distington.

Work on this 5km long two lane dual carriageway between Workington and Whitehaven began in January 2007. The Highways Agency appointed Morrison Construction as contractor for the £35m scheme. Hyder Consulting are MCLs designer for the project whilst Capita Symonds provide support to the HA as their Agents on site.



Work has gone well in 2007 despite the awful summer weather and the scheme is on course to meet its target of road opening in Autumn 2008.

The scheme provides a much needed bypass for Distington, Common End and Howgate taking 17000 vehicles a day away from the existing single carriageway A595 as it winds through these communities.

At its northerly end the scheme starts at the A596 junction with on-line widening for 1km down to the A597 junction to Workington where a new five arm roundabout will replace the current signalised junction. The new road then runs



Top: Aerial view of A595 Parton to Lillyhall Improvement  
 Centre: Lowca Beck Bridge  
 Bottom: Ullgill Bridge



# A590 High & Low Newton Bypass in Cumbria

by Simon Russell, Laing O'Rourke Infrastructure



*Above: The scheme is located entirely within the Lake District National Park*

The A590 trunk road provides a strategic link between south and west Cumbria and the national motorway and trunk road network. It provides direct access to the important commercial and industrial centres at Barrow-in-Furness and Sellafield. The A590 has been subject to a number of major improvement schemes over the past thirty years. The notable exception being the section that severs the communities of High and Low Newton that are located in the Lake District National Park. This length of the A590 is narrow and twisting and is characterised by stone walls flanking narrow verges. It has many uncontrolled accesses to properties and minor road junctions with poor visibility. The resulting poor accident record together with noise, pollution and visual intrusion create a very poor environment for the people living in these communities. The Highways Agency are currently constructing a four and a half kilometre dual two-lane all purpose bypass to solve the problem.

Various schemes to bypass this section of the A590 have been under consideration since the early 1970s. Following a public consultation in late 1975 on the route of a bypass and a subsequent Public Inquiry, Line and Side Road Orders were made in June 1981. However, the scheme was not taken forward at this time and a second Public Inquiry was held in December 1993 to an outline design produced by Jacobs.

The scheme was subsequently included as part of the Bradford to Cumbria DBFO project and tenders invited in 1996. The project was abandoned and the tenders withdrawn in 1997 following a Government review of the road building programme. Following further consultation, the 1993 dual carriageway bypass proposal was added to the Highways Agency's Targeted Programme of Improvements in October 2003 and the Orders were made in December 2004.

The local communities were therefore delighted when the Highways Agency awarded the contract to design and construct the £36.6m scheme to Laing O'Rourke and their designer, Pell Frischmann, in August 2005. The first year of the project was spent developing the engineering design and Target Cost for the construction phase of the project. The integrated team worked collaboratively to rigorously value engineer the scheme proposals and to mitigate the effects of the changes in



*Above: 450,000m<sup>3</sup> of earthworks material were moved in just one summer period.*

standards and guidance that had occurred over the schemes lengthy development. The team were also very sensitive to the need to engage all stakeholders such as the Lake District National Park Authority and Natural England to ensure that the scheme proposals were developed in a manner that was appropriate for its location within the National Park.

Many environmental mitigation measures were incorporated into the design during the scheme development. These include: sympathetic grading of earthworks slopes; provision of earthworks bunds to form false cuttings screens; converting a former pig sty into a bat habitat to replace roost sites lost when an existing property was demolished; badger and otter tunnels; sixty five thousand new trees and shrubs.

Most significantly eight kilometres of dry stone wall have been constructed to better integrate the scheme into the existing landscape in the National Park. Laing O'Rourke used the experience that they had gained constructing the A470 improvement scheme in

*Below: The village of High Newton*



the Snowdonia National Park and appointed the same sub-contractor that had constructed the walls in Snowdonia to develop a design for the walls that was most suitable for this sensitive location.

Construction commenced in August 2006. The scheme involved over four hundred and fifty thousand cubic metres of earthworks and one of the first challenges was to deal with thirty thousand cubic metres of peat that lay beneath the footprint of the scheme. The

team considered different methods of crossing the peat areas, but opted to remove the material, replace it with imported rock and use the excavated peat to form landscape areas adjacent to the scheme.

One of the most significant challenges faced by the construction team was that the start and end dates of the construction phase meant that the works would need to be undertaken in two winter periods with only one summer season. This required a regimented approach to controlling silty run-off from the site and a rigorous approach to risk management particularly in relation to managing reduced outputs and downtime experienced during the winter periods.

Despite this, the collaborative approach to solving problems adopted by the integrated project team (Highways Agency, Laing O'Rourke, Pell Frischmann and Jacobs) has enabled construction work to progress as planned and the scheme is due to open on time in Spring 2008.



*Above: One reinforced concrete overbridge and four underpasses have been constructed.*

## The 'Cumberland Gap' by Jane Hunter, Principal Engineer, Gifford



*Above: Aerial view of the M6 Guards Mill Project, with the new Mossband Viaduct under construction.*

After a 15-year wait, the government finally gave the green light to complete the 'Cumberland Gap' between Guard's Mill near Carlisle and the Scottish border at Gretna. This project completes the motorway network from London to Glasgow, by upgrading 9km of the A74 dual carriageway to dual 3-lane motorway.

Work began on site on the 3rd July 2007 and the link is due to open on the 5th December 2008.

The £174.6m scheme involves the construction of a new road bridge, which crosses the River Esk, just upstream of a site designated of national and international importance and required the translocation of a reptile population. The river Esk bridge structure has now been completed and will open to traffic in the spring of 2008.

A second major structure is required at Mossband, where the road crosses the West Coast Main Line. A new viaduct has now been constructed and will be completed in the near future. The existing life-expired viaduct is due for demolition between Christmas 2008 and the New Year. Ironically this bridge was built by Tarmac. Approximately 6,000 piles have

been installed to support the new Mossband embankments. Earthworks are now completed, with the new embankment awaiting final settlement before the roadworks are constructed. The viaduct is due to be opened to traffic in summer 2008.

The scheme has already won its first award when it clinched the 'Contractor of the Year' award for Carillion at the Highways Magazine Excellence Awards. The judges described the project as 'setting new standards for the

construction industry' and praised the contract for its commitment to continuous improvement. Carillion Roads Director, Tony Gates described it as 'an inspiring project with an inspiring team'.

Striving to minimise disruption, the team used an innovative idea in the form of the development of a travelling gantry system on the Mossband railway viaduct, used for the first time to install main supporting walls without the need for a railway possession or disruption to the busy main line. A further initiative was the use of a hydraulic jacking system on the River Esk bridge, which avoided the use of cranes adjacent to a live carriageway. This technique adopted lessons learned from Carillion's A249 Sheppey crossing.

The building up of a 'knowledge bank' has been key to the delivery of over £4.5m in project savings so far and a further £1m are expected before the project opens in December 2008, 50 years after the first section of the M6 Preston Bypass. Contract completion is April 2009.

The M6 Guards Mill Project is being carried out by Carillion, on behalf of the Highways Agency.



*Above: New bridge crossing the River Esk; the third new crossing since Telford's original 'metal bridge' in 1815*



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