

Kent Junction Lighting

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TOP: Improving travel into London

BOTTOM: Improving travel into London

Successful Partnerships develop Beneficial Lighting Solutions

Permanent way points and crossings have to be inspected on a weekly basis and this typically involves either night time gangs carrying their own lighting equipment or undertaking undesirable red zone working during the day. Hence, permanent lighting works were proposed by our customer to improve the safety and efficiency of the night working methods and eliminate the need for daytime maintenance inspections.

What initially started with the award of a small junction lighting project for Osborne, turned into a major programme of phased work that would pay for itself in 18 months and significantly improve the safe systems of work for our customer's track inspection and maintenance personnel. Standard designs were developed and lighting installation methods progressively innovated and from one phase of the project to the next. Our solutions allowed us to move from predominantly night time construction to daytime working, by fully remodelling the foundation solutions and developing a bespoke column design collaboratively with our manufacturer and supply partners.

Despite challenging logistics and tight programme constraints, the success of our collaborative multi-discipline partnerships was proven to be so beneficial that the Route Asset Manager was able act quickly to secure additional funds to extend the original scope of works. Having provided innovative solutions to successfully complete the Design and Construction of Phase 1 of the Kent Junction Lighting Scheme, we were again appointed to develop and deliver two further phases. Our success was due to a committed partnership with our supply chain and working closely with our customer to develop logically complex solutions from first principals to light the track junctions. Through continuity and accrued learning of the consistent teams, efficiencies in both design and delivery provided savings in possession requirements, reduced programme durations and safer delivery methods.

Designed to provide Efficient Access Solutions

The same project team designed and delivered all three phases of the lighting schemes from the outset to maximise efficiencies

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“ Our final design included solutions to provide efficiency in construction techniques to maximise off-site activities with pre-cast bases and minimise the requirements for possessions.

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TOP: Innovative design solutions

BOTTOM: Works in progress

through learning and continuous improvement. Our design partner and specialist lighting supplier worked collaboratively with our Design Manager and Network Rail to develop and refine the detailed designs. Access was key to safe and efficient delivery of the lighting schemes and our design team integrated with the operational team and Network Rail to ensure that all designed elements could be installed in the pre-planned possessions using the best possible access measures, plant and equipment.

Proven Delivery-Kent Junction Lighting Phase 1

Through early discussions with our customer it was quite clear that they had experienced a poor level of delivery from others for similar previous projects and from the outset we were determined to understand their concerns and change this perception. Phase 1 of the Kent Junction Lighting works comprised the design and installation of new lighting columns and associated services and service containment to illuminate the rail junctions between Cannon Street, Southwark Bridge and Borough Market Junctions. The works required the construction of reinforced concrete bases, 10m high lighting columns, luminaires onto columns and existing signalling gantries and electrical containment and associated control equipment.

Efficient and Safe “Buildable” Designs to suit the Site Confines

Our final design included solutions to provide efficiency in construction techniques to maximise off-site activities with pre-cast bases and minimise the requirements for possessions. The original design required deep foundations and due to the confines of the site the delivery and removal of materials would have been far from ideal. To overcome this we developed a unique centre-hinged column to reduce the size and depth of foundation required, and then increased the lux level with further lighting fitted to the signal gantries over the tracks.

Design Solution to Expedite Programme and Reduce Possession Requirements

Possession availability for the Phase 1 works was a major issue due to the interface between the Cannon Street and Charring Cross lines and the Borough Market viaduct locations. Our design solution included precast foundation bases which were cast off site, delivered and placed using Mega Railer RRVs. This had the benefit of reducing

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Steve Cassidy- Route Infrastructure Maintenance Director Kent:

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This is a tremendous step forward in terms of improving staff safety and performance. Well done to the team.

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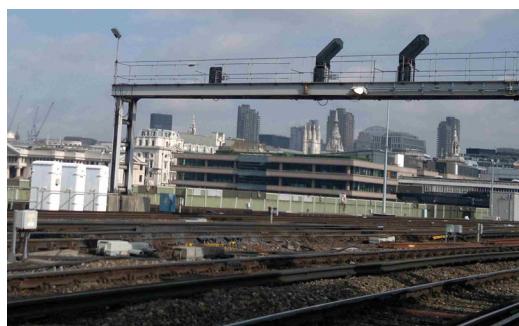


Fiona Taylor - Route Managing Director, Kent:

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Brilliant work, well done to all involved.

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TOP: Operational signalling

BOTTOM: Signalling into the capital

the number of possessions required, expediting the programme, ensuring consistency and quality throughout.

Safer Maintenance, Paid for in 18 Months

So successful was our understanding of our customers concerns that the completed programme paid for itself in only 18 months from the savings in possessions alone. The Route Asset Manager (RAM) was also impressed with the scheme design and our understanding of the end-user requirements. The lighting will eliminate the need for Red Zone working to complete their necessary infrastructure checks, increasing the safety of his teams.

Four more Junctions to light for Phase 2 Success

For Phase 2 of the lighting schemes, junction upgrades were required at Peckham Rye, Brixton, Old Kent Road and Loughborough Junctions. Using the accrued learning from our Phase 1 schemes, the same team from our design and lighting partners worked together with our customer and the Route Asset Manager (RAM) to develop design solutions to meet the needs and requirements of all stakeholders.

Beneficial Methods at 16 further Locations Enhances Efficiencies

The innovations demonstrated in Phase 2 resulted in the Phase 3 works being single sourced with Osborne for the design and installation of junction lighting at a further 16 locations in South East London. The individual projects included scoping of the junction lighting works, possession searches and further honing the generic designs. Using the learning from the previous two phases, we achieved solutions that could be delivered using more day time working. In many cases, the erection of segregation fencing resulted in all activities being performed during normal working hours, the only exception being the actual fencing itself!

Access Efficiencies

Consideration of the construction methodology in the solution development stage, allowed our team to meticulously plan the schemes from start to end. Through early involvement with our supply partners and manufacturers we were able to consider the full package of works in terms of maximising the use of all access opportunities.

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We worked with Network Rail and local stakeholders to ensure that our promises would still be met. The asset and technical knowledge and experience of the project team allowed new methods to be quickly re-developed and re-planned around utilising the network closure over Christmas and Boxing Day.

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Scoping, and design development included possession searches to ensure efficiency of our access solutions across the various sites. By coordinating access onto the railway, the completed work during this time was maximised to increase efficiency, and minimise the impact to the public and other stakeholders. Twelve of the sixteen sites benefitted from the same possession regime and we ensured that the design, precast and pre-fabrication priorities were programmed around delivering these sites simultaneously.

Efficiency from Standard Solutions

Working closely with Network Rail to review the available information allowed us to establish the requirements and success criteria to outline a generic Form 01 initial design. Upon approval, this was developed to consider the specifics of the individual sites, whilst looking to provide efficiencies through the benefits of standard designs. It was recognised that five types of bases would satisfy the requirements of the whole scheme to reduce: design time due to standardisation leading to reduced cost of design stage; approval time; manufacturing cost when producing standard units; construction cost due to standard solutions and methods being adopted; safety risks due to increased familiarity with the solution; site time due to repetitive elements and knowledge share; overall development and implementation duration and cost due to sharing of lessons learnt at an early stage; number of construction defects and errors.

Innovative Bespoke Designs

The centre-hinged columns were developed such that for any embankment or cutting circumstance, a pre-approved "off-the-shelf" lighting column solution was readily available.

Access Solution to Mitigate Possession Loss

Due to a situation beyond our control a critical pre-planned November possession was cancelled putting completion of the scheme in serious jeopardy. We worked with Network Rail and local stakeholders to ensure that our promises would still be met. The asset and technical knowledge and experience of the project team allowed new methods to be quickly re-developed and re-planned around utilising the network closure over Christmas and Boxing Day.

IMAGE: Innovative design work