



Erskine Bridge Lighting and Electrical Refurbishment Contract 2016

Lightways (Contractors) Limited were awarded the Contract for the Lighting and Electrical Refurbishment of the Erskine Bridge by Transport Scotland in March 2016, with Scotland Transerv acting as Engineer for the Works and Clayton-Fourie Consultancy as sub-consultant designer. The Contract period was 20 weeks and works commenced on May 31st 2016.

Lightways (Contractors) Limited were the Principal Contractor and partnered with Marmac Services Limited who undertook the internal works whilst Lightways carried out the external works.

Other sub-contractors involved in the works were Traffic Management - Contraflow Ltd; Vehicle Recovery - M8 Recovery; Crane Hire - Horizon Reinforcing & Crane Hire Co. Ltd; Bluetooth Monitoring - Tracsis; Man-rider overhaul and operating to access tower tops - Skyform (Scotland) Ltd; Barrier removal / re-erection - James Strang Ltd.

The scope of the works was the refurbishment and upgrading of the existing 40 year old lighting and electrical network from the Erskine Bridge Administration Building and high mast lighting at the south end through to the A82/A898 high mast lighting at the north end.

The works included:

1. The replacement and upgrading of Road Lighting Installation and associated electrical installation south of the bridge.
2. The replacement and upgrading of Road Lighting installation and associated electrical installation on the bridge.
3. Replacement of High Mast Luminaires and electrical network north of the bridge.
4. All the new road lighting together with the high mast lighting will be fitted with an Intelligent Road Lighting management system.
5. Installation of new supply pillars and associated sub mains cabling.

 Erskine Bridge

 22 weeks to complete

 £3.23 million



6. Replacement of internal and electrical installation inside the Erskine Bridge Box girder structure.
7. Replacement of Aircraft Obstruction lights at the top of both towers and associated electrical installation.
8. Replacement of north abutment underpass lighting and electrical installation.
9. Installation of new car park lighting and associated electrical installation at the administration building.

External

Phase One of the project was to improve lighting levels and reduce energy usage on the North and South approaches to the bridge. Fifty-six Mallatite aluminium columns complete with TRT Lighting Aspect LED road lanterns were installed on the A898 South approach to the Bridge, a further twelve aluminium columns and LED lanterns were installed within the carpark & compound of the Administration building, all with associated trench with duct / cable for electrical supplies. On completion of the commissioning of the lighting the existing centre reserve lighting columns and high mast lighting units were decommissioned and removed.

A total of 128 high mast luminaires were replaced with TRT lighting Aspect LED lanterns to upgrade the existing high mast columns on the North approach with full replacement of the high mast cable network.

The Erskine Bridge, part of the A898, is a large multi-span cable-stayed bridge spanning the River Clyde, Forth and Clyde Canals, and North Clyde railway line. Starting on 30th May 2016, Lightways completed Phase One in just 17 nights.

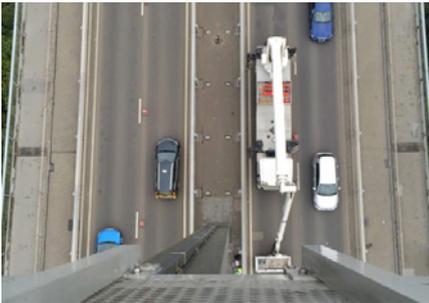
By working at night and using effective traffic management, Lightways were able to keep one lane open in each direction, keeping the 42,000 vehicles that use the bridge each day moving.





Phase Two of the refurbishment project was to replace the majority of the twin armed columns on the deck of the bridge. All of the existing lanterns were upgraded to LED as part of the works. To deliver the project ahead of schedule and budget it was imperative that the new columns would pick up on the existing deck foundations. Mallatite manufactured bespoke flange plated columns to fit perfectly on to the existing foundations, enabling Lightways to replace the initial 27 columns in just five nights completed in August, with a further nine replacements completed in one night in October 2016.

At the top of both 40m high towers 2 aircraft obstruction lights with associated cabling were replaced with new LED obstruction lights. This work had to be carried out during the hours of daylight and was planned to over two weekends however Lightways achieved this in only one weekend which greatly reduced the disruption to the travelling public.



Internal

These works included the following scope:

- Removal of 6 number 100mm steel pipes previously used as cable conduits throughout the length of the bridge.
- Removal of existing lighting and small power accessories and cabling.
- Survey and recognition of bridge systems and connection points that should remain.
- Supply and installation off 2 x 300mm heavy gauge post galvanised ladder rack (as a replacement cable containment system for the 6 in number pipes noted above).
- Supply and installation of "U" channel cable ways as support systems for lighting and small power accessories.
- Supply and installation of a full ATEX category 2 approved electrical system (this categorisation excludes existing equipment that remained).
- Supply and installation of 679 in number ATEX Cat 2 LED luminaires with integral emergency lighting back up.
- Supply and installation of 17 internal lighting and small power distribution boards.
- Supply and installation of 17 street lighting distribution boards.
- Supply and installation of 110 volt sockets.
- Supply and installation of north abutment lighting.
- Cable tray within tunnel at administration area.
- Sump pump.
- Bird ingress prevention works (Rentokil).
- Diaphragm painting.

