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Ref: 23072

7th September 2023

JCDecaux
Level 6, 1 York Street
Sydney, New South Wales 2000

Att: Brett Hutton

RE: Castlereagh Rd, Penrith, NSW
Supersite LED screen, Structural Feasibility Statement

This Structural Feasibility Statement has been conducted by Dennis Bunt Consulting Engineers Pty Ltd (DBCE) at the request of JCDecaux.

The proposed sign is documented in the DA drawing by DBCE 23072 / DA01(D).

A survey of the site was commissioned by JCDecaux.

The visual screen dimensions of the LED sign will be 12480mm horizontally x 3200mm vertically. The sign will be fixed to the side of an existing railway bridge located over Castlereagh Rd, Penrith.

There is currently no existing sign fixed to the side of the bridge.

Site Description

The existing railway bridge that will support the LED sign is a concrete bridge. The main girders of the bridge are 3140mm deep and post tensioned.

There is an existing anti-graffiti screen fixed to the side of the girder.

The LED steel box will have an internal walkway so the rear of the LED screen can be accessed for maintenance without affecting the traffic below. There will be a hatch in the top

of the box and an internal ladder, the hatch will be accessed from the deck of the railway bridge.

Access will be done under the supervision of a protection officer and most likely at night when the trains are not running.

The existing anti-graffiti screen will be increased in height approximately 600mm, so the top of the screen matches the top of the sign box by adding additional structure to the top of the existing screen. Exposed steel around the perimeter of the digital screen will be painted the same colour as the anti-graffiti screen.

Structural Description

The sign structure will consist of a fully welded three-dimensional (3D) steel box.

Steel support frames will be fixed to the side of the bridge's girder. The fixing locations will need to be coordinated with the bridge's structural drawings to ensure they are a safe distance from the pretension strands or post tension cables in the bridge's girder. The frame outriggers will need to pass through holes made in the anti-graffiti screen.

New horizontal rails will be fixed to the support frames.

Z brackets fixed to the back of the 3D box slot over the top of the rails when the 3D box and LED screen are lifted into position by crane and are screw fixed to the rails at each end.

The frames and rails can be lifted into position with a cherry picker and the box by crane.

Both will be lifted into place at night during a road closure.

The LED screen will be assembled in the contractor's factory and clamped to the welded 3D box so it can be transported to site as one unit.

The extension to the anti-graffiti screen will consist of a welded frame that will be bolted to the top of the existing frame. It will also be lifted into position by crane during the road closure.

Feasibility of Additional Loading

The weight of the digital screen, 3D steel box, cladding and support structure is approximately 6 tonnes.

The additional dead and live load imposed by the signage are expected to be significantly less than the combined dead load of the bridge and the live load from the trains. The proposed additional loading represents an increase of approximately 1-2% of the current design load of the bridge. DBCE have undertaken a desk top review of the bridge structure only, however in our professional opinion we anticipate this load increase will be allowable considering the capacity of the existing structure.

The sign is to be designed for a wind load for region A, terrain category 2.5 and a 50-year design life in accordance with AS1170.2. The height of the sign and anti-graffiti screen will be approximately 600mm above the top of the existing girder. DBCE also anticipate the extra wind load to be minor considering the capacity of the existing structure.

Recommendations

Based on our understanding of the structure to date and the above discussed loads, we see no reason why the existing bridge could not feasibly support the additional loads imposed by a new sign fixed parallel to the bridge edge.

Further structural engineering needs to be undertaken for complete engineering analysis of the existing bridge structure and design of the proposed sign framing and connections. A full set of as-built structural drawings will be required for this analysis.

This letter is intended to provide structural feasibility advice only and does not constitute a structural engineering approval. Signage details are yet to be determined, and further work is required to provide structural analysis and approval for construction.

If you have any questions, please do not hesitate to ring the undersigned on 0400 023 714.

Yours Faithfully,

A handwritten signature in blue ink, appearing to read 'John Linsell', is written over a light blue rectangular background.

John Linsell BE(Hons), MIEAust, CPEng, NPER(Struct)
for Dennis Bunt Consulting Engineers Pty Ltd