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HAP 17-022-L  
K. Gonyou

<b>TO:</b>	<b>CHAIR AND MEMBERS LONDON ADVISORY COMMITTEE ON HERITAGE MEETING ON WEDNESDAY MAY 10, 2017</b>
<b>FROM:</b>	<b>JOHN M. FLEMING MANAGING DIRECTOR, PLANNING AND CITY PLANNER</b>
<b>SUBJECT:</b>	<b>HERITAGE ALTERATION PERMIT APPLICATION AT BLACKFRIARS BRIDGE (2 BLACKFRIARS STREET) BY: CITY OF LONDON</b>

<b>RECOMMENDATION</b>
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That, on the recommendation of the Managing Director, Planning & City Planner, with the advice of the Heritage Planner, the Heritage Alteration Permit application pursuant to Section 42 of the *Ontario Heritage Act* for the Blackfriars Bridge (2 Blackfriars Street) **BE APPROVED** with the following terms and conditions:

- a) Photo and video documentation of the removal, rehabilitation, and reinstatement of the Blackfriars Bridge **BE COMPLETED** as a component of the bridge rehabilitation project and submitted to Planning Services to contribute to the archival record of this important piece of civic infrastructure;
- b) A Protection Plan **BE PREPARED AND IMPLEMENTED** as a component of the bridge rehabilitation project to ensure that heritage designated properties adjacent to the bridge rehabilitation project, including 9 Blackfriars Street, do not suffer adverse impact during the rehabilitation project;
- c) The design of the pedestrian railing for the Blackfriars Bridge **BE REFINED** in consultation with the Heritage Planner to retain as much original material as possible while meeting current requirements of the *Canadian Highway Bridge Design Code*;
- d) The design of the clearance beam **BE REFINED** in consultation with the Heritage Planner to provide a design that is compatible with the Blackfriars/Petersville HCD Plan;
- e) The design of the fencing/guards/hand railings along the Thames River within project area for the Blackfriars Bridge rehabilitation **BE COORDINATED** to match the designs for the West London Dyke project; and,
- f) The proposed Blackfriars Bridge monument/artifact **BE ENDORSED** and **BE REFERRED** to the Culture Office for implementation.

<b>PURPOSE AND EFFECT OF RECOMMENDED ACTION</b>
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The Blackfriars Bridge, is designated under Parts IV and V of the *Ontario Heritage Act*. The purpose of the recommended action is to permit a major rehabilitation of the bridge, including alterations affecting its heritage attributes.

<b>PREVIOUS REPORTS PERTINENT TO THIS MATTER</b>
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**HAP 17-022-L**  
**K. Gonyou**

May 12, 2004. 5<sup>th</sup> Report of the London Advisory Committee on Heritage. Draft Heritage Alteration Permit application for the Blackfriars Bridge.

May 9, 2007. 7<sup>th</sup> Report of the London Advisory Committee on Heritage. LACH comments regarding the repair of the Blackfriars Bridge.

<b>BACKGROUND</b>
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**Location**

The Blackfriars Bridge is located over the North Branch of the Thames River (Appendix A). The first Blackfriars Bridge was erected in 1831, and the current Blackfriars Bridge was erected in 1875. The Blackfriars Bridge provides access across the Thames River between the Blackfriars-Petersville Heritage Conservation District and the Downtown London Heritage Conservation District via Blackfriars Street and Ridout Street North.

**Property**

The Blackfriars Bridge is an individually heritage-designated property under Part IV of the *Ontario Heritage Act* in 1992 by By-law No. L.S.P.-3140-106. The Blackfriars Bridge and its west approach is also included within the boundaries of the Blackfriars/Petersville HCD which was designated under Part V the *Ontario Heritage Act* in 2015. The east approach to the Blackfriars Bridge is included within the Downtown Heritage Conservation District which was designated under Part V of the *Ontario Heritage Act* in 2013. The municipal address of 2 Blackfriars Street has been assigned to the Blackfriars Bridge.

The Blackfriars Bridge is included on the Ontario Heritage Bridge List, a list of provincially-significant bridge structures. In 2016, the Blackfriars Bridge was recognized as a National Historic Civil Engineering Site by the Canadian Society for Civil Engineering. A plaque erected by the Ontario Heritage Foundation (now Ontario Heritage Trust) was damaged by a vehicle several years ago; its replacement is awaiting installation. As a municipally-designated heritage resource, Blackfriars Bridge is also eligible to receive a blue City of London Heritage Property plaque.

**Description**

The Blackfriars Bridge is recognized as a nationally-significant cultural heritage resource (Appendix B). It is a rare example of a wrought iron bowstring arch truss bridge. It was fabricated by the Wrought Iron Bridge Company of Canton, Ohio and assembled under the supervision of Isaac Crouse, noted London bridge builder in 1875. The Blackfriars Bridge is the only known wrought iron bowstring truss bridge in Canada and the longest cast and wrought iron bowstring span known in North America.

The Blackfriars Bridge has been modified over its lifetime. Municipal records dating back to the 1940s document the regular maintenance and repairs to the Blackfriars Bridge. Alterations in the 1950s introduced steel components into the wrought iron structure. These alterations have resulted in a “heavier” appearance. Replacement of the timber deck boards has been the most common alteration to the Blackfriars Bridge; see photographs from the 1986 repair work in Appendix B (bridge deck and railings).

**Environmental Assessment**

Dillon Consulting Limited (Dillon) was retained by the City to complete a Schedule C Class Environmental Assessment (EA) study to determine the future requirements of the river crossing at Blackfriars Street/Ridout Street North, including rehabilitation, replacement,

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**HAP 17-022-L**  
**K. Gonyou**

or removal of the existing bridge structure. Four alternative solutions for the Blackfriars Bridge were considered:

1. Rehabilitation: driver, pedestrian, and cyclist use (including one-way and two-way traffic options);
2. Rehabilitation: pedestrian and cyclist use;
3. Replace bridge; and,
4. Remove bridge.

Rehabilitation of the Blackfriars Bridge for drivers (eastbound only), pedestrians, and cyclists was identified as the preferred alternative. “Do nothing” was not considered a feasible alternative since the current repairs were intended as short-term solutions, leaving the same decision to be made when the repairs have expired.

Notice of Study Commencement for the Blackfriars Bridge EA was issued on July 31, 2014. Notice of Study Completion for the Blackfriars Bridge EA was issued on February 25, 2016. Part II Order requests were received by the Minister of the Environment and Climate Change. On April 19, 2017 the Minister issued a decision on the Part II Order requests, clearing the City to proceed with the project.

**HERITAGE ALTERATION PERMIT APPLICATION**

Given the existing condition of the Blackfriars Bridge, major rehabilitation is required to help extend the life of this significant heritage structure by another 75 years. The intent of the proposed structural rehabilitation design focuses on returning the Blackfriars Bridge, as much as possible, to its original 1875 design, while satisfying the current requirements of the *Canadian Highway Bridge Design Code*. This will require removal of some of the 1950s additions and replacement of the 1980s deck and vehicular guards. In some situations, creative solutions and exemptions from design codes that have an adverse impact or compromise the heritage attributes of the Blackfriars Bridge will be necessary.

A complete Heritage Alteration Permit application was received on April 26, 2017. The Heritage Alteration Permit application includes the following proposed alterations:

- Major rehabilitation of the Blackfriars Bridge structure including (selected Drawings S1-31):
  - Replacement of cover plates on top chord arches;
  - Strengthening of top chord riveted connections (added structural steel section within the original “phoenix” shape);
  - Modification to top chord hangers and diagonal connection details;
  - Strengthening of vertical and diagonal truss members (approximately 15% of original members require replacement);
  - Replacement of longitudinal stringers (from 1986 rehabilitation);
  - Replacement of transverse floor beams (original 1875 construction);
  - Modification to lower panel point connections (below the deck);
  - Replacement of bottom lateral bracing (from 1986 rehabilitation);
  - Repairs to top lateral bracing system;
  - Repairs to pedestrian railing at sidewalk;
  - Rehabilitation of bridge bearings;
  - Repainting of the bridge in green;
  - Replacement of the timber deck with a more durable wood or alternative material;
  - Repair of all primary members of the bridge by bolt or riveting rather than

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**HAP 17-022-L**  
**K. Gonyou**

- welding (due to impurities in the material, welding of wrought iron could result in the failure of the welds by brittle fractures after a number of stress cycles);
  - Replication and installation “Wrought Iron Bridge Company of Canton, Ohio” signs reusing salvaged wrought iron material;
  - Illumination of the bridge structure and its approaches.
- Approach road changes:
  - Blackfriars Street (Blackfriars/Petersville HCD) (Drawing C5, Appendix D):
    - Maintain existing street pattern while limiting access to eastbound-only vehicular traffic on Blackfriars Bridge, no alterations proposed to sidewalk widths;
    - Bike lane and road sharing for cyclists;
    - Installation of a clearance beam;
    - Replacement guards/railing to match the new West London Dyke;
  - Ridout Street North (Downtown HCD) (Drawing C7, Appendix D):
    - Turn around facility to prevent westbound traffic on Blackfriars Bridge
    - Bike lane; and,
    - Parkette with plaques (Ontario Heritage Trust, City of London, Civil Engineering National Historic Site), landscaping, and potential location for monument/artifact installation.

See composite drawing showing elements for removal by age in Appendix C and design drawings for the rehabilitation of the Blackfriars Bridge in Appendix D.

**Methodology of Proposed Rehabilitation**

Dillon provided the following input regarding the methodology for the rehabilitation of Blackfriars Bridge:

*The initially proposed (2016) approach for rehabilitation of Blackfriars Bridge was to keep it in place with member-by-member rehabilitation (requiring interim crane support of the structure while structural members are removed and rehabilitated). After further analysis, including a risk assessment and structural inspection, it was determined that in-place rehabilitation would result in unacceptable potential worker and public safety concerns (e.g., more crane lifts, more working at heights, public access management while the bridge remains in place with reduced structural strength). The current rehabilitation approach comprises removal of the bridge from its supports followed by off-site rehabilitation of the superstructure, and (in-place) rehabilitation of abutments, approaches and municipal works. The rehabilitated superstructure will be reassembled on site and placed back on its supports. Benefits of removal of the bridge and off-site rehabilitation work include reduced worker/public safety concerns, and increased quality of work in a controlled workshop environment.*

*The lift of the bridge in its current state and placement of the rehabilitated bridge back on its supports will be performed using a single long-boom crane sitting on Blackfriars Street immediately west of the bridge. A crane must be used to avoid in-water works as required by the environmental assessment completed for the project. The road/surface at the crane location will be replaced (and improved from current state) as part of the project. The contractor will be required to*

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**HAP 17-022-L**  
**K. Gonyou**

*provide detailed operations plans for the lifting operations to maintain integrity of the bridge. The plans will be reviewed by the City.*

Because of the removal and reinstatement methodology proposed for the rehabilitation of the Blackfriars Bridge, the structure must comply with the current requirements of the *Canadian Highway Bridge Design Code*.

## ANALYSIS

Section 2.6.1 of the *Provincial Policy Statement* (2014) directs that “significant built heritage resources and significant cultural heritage landscapes shall be conserved.” “Significant” is defined in the *Provincial Policy Statement* (2014) as, in regards to cultural heritage and archaeology, “resources that have been determined to have cultural heritage value or interest for the important contribution they make to our understanding of the history of a place, and event, or a people.” The objectives of Chapter 13 (Heritage) of the City of London’s *Official Plan* (1989, as amended), as well as the policies of *The London Plan* (adopted 2016), comply with these policies.

Policy 200 of *The London Plan* (July 2016) states: “Neighbourhoods should be designed such that heritage designated properties and distinctive historical elements are conserved to contribute to the character and sense of place for the neighbourhood.”

Heritage conservation is an integral part of Building a Sustainable City, which is a strategic area of focus in the *Strategic Plan 2015-2019*. This includes managing and upgrading transportation including heritage bridges through the Heritage Bridge Preservation Strategy and protecting and celebrating London’s heritage for current and future generations.

*Our Move Forward: London’s Downtown Plan* acknowledges the important contributions of connections between the east and west side of the Thames River, which includes Blackfriars Bridge.

### **Designating By-law (Part IV, Ontario Heritage Act)**

Blackfriars Bridge is individually designated under Part IV of the *Ontario Heritage Act* by By-law No. L.S.P.-3140-106 (1992). As the designating by-law was passed prior to amendments to the *Ontario Heritage Act* in 2005, the heritage attributes of the Blackfriars Bridge are included within the narrative of the by-law. Its heritage attributes are understood to include:

- Bowed truss construction;
- Stone foundations;
- Low parabolic chord and suspended roadway;
- Pin connections;
- Timber deck, including its texture;
- Lattice girders;
- Wrought iron;
- Ornamental characteristics including rosettes and knobs of the pedestrian barriers;
- Original plaque identifying the manufacturer (noted as “recently disappeared” in 1992).

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The contextual reasons noted for the designation of Blackfriars Bridge are worthy of repeating:

*The gentle curve of Ridout Street (east side) on to the bridge augments the experiential qualities inherent in the structure including its narrow width, the texture of the wooden deck, and the streamlined elegance of its bowed profile. These characteristics and the steep, well-treed riverbanks and parkland create a rural feel in this downtown location.*

Analysis of the impact of the proposed rehabilitation on the heritage attributes is contained within Table 1 (below).

Table 1: Analysis of impact on heritage attributes of the Blackfriars Bridge.

<b>Blackfriars Bridge (By-law No. L.S.P.-3140-106)</b>	
<b>Heritage Attribute</b>	<b>Analysis</b>
Bowed truss construction	No change proposed. Proposed alterations will remove alterations from the 1950s which resulted in a bulkier appearance to the Blackfriars Bridge.
Stone foundations	Removal of the top course (approximately 1m) of stone abutment wall is required to replace the bearings of the Blackfriars Bridge. Detail 2 of Drawing S8 (Appendix D) shows the installation of salvaged stone veneer applied to the abutment.
Low parabolic chord and suspended roadway	No change proposed. The truss top chord will maintain its original “phoenix” shape with an added structural steel section within the chord (see Drawing S11, Appendix D).
Pin connection	Off-site (in-shop) rehabilitation work will include riveting as much as possible to replicate the original design. On-site rehabilitation work during placement of the rehabilitation bridge will use bolt technology that appears similar to rivets.  In areas of the Blackfriars Bridge structure that are highly visible, the use of rivets should be prioritized over the use of bolts for historical accuracy.
Timber deck, including its texture	Replacement of the timber deck of the Blackfriars Bridge has been the most common maintenance requirement of the structure, often resulting in closures of the structure on an annual basis, with escalating costs for the labour intensive repairs required. Transportation Planning & Design desires a material which requires less maintenance. The replacement of the timber deck of the Blackfriars Bridge will have an adverse impact on this heritage attribute, as well as the contextual values noted for the Blackfriars Bridge.  “Fiberspan” (or equivalent) has been proposed as the replacement material for vehicular deck of the Blackfriars Bridge (Appendix E). The proposed material is a fiber reinforced polymer composite that was developed to be lightweight, corrosion resistant, and long lifespan wearing surface. “Fiberpsan” was developed in 1998 and has an anticipated lifespan of 75 years.

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**HAP 17-022-L**  
**K. Gonyou**

	<p>This material was used on the Minto East Bridge in Ottawa, Ontario (Appendix F). The Minto East Bridge is a steel camelback through truss bridge structure and was built in 1900 by the Dominion Bridge Company of Montreal. The timber deck of Minto East Bridge was removed in the 1970s, and was replaced again in the 1990s with an open steel grating deck. The open steel grating deck exposed all of the structural steel members below the deck to road salts which caused deterioration to the structure. The replacement of the deck structure using the “Fiberspan” product was successful because it provided proper deck drainage to direct road salts away from structural members and it was a lightweight alternative (to avoid strengthening required by other material options).</p> <p>To mitigate this impact, the timber deck of the pedestrian sidewalk of the Blackfriars Bridge will be replaced with new timber. This will retain the authenticity of the timber material at the Blackfriars Bridge, and allow pedestrian users to experience the intangible values attributed to the wooden deck of the Blackfriars Bridge. Should the Blackfriars Bridge be decommissioned from vehicular service in the future, the timber road deck should be reinstated.</p>
Lattice girders	<p>Many of the original wrought iron structural truss members have deteriorated over time. Elements beyond repair will be replaced with salvaged materials from other parts of the bridge (where appropriate) or replaced with sympathetic elements in structural steel. Wrought iron cannot be used for new structural members; it does not provide the structural strength (and other characteristics) required to satisfy current requirements of the <i>Canadian Highway Bridge Design Code</i>. Retention of wrought iron material should be prioritized where possible.</p>
Wrought iron	
Ornamental characteristics including rosettes and knobs of the pedestrian barriers	<p>The existing railings on the pedestrian sidewalk of the Blackfriars Bridge are original to its 1875 construction, with minor modifications. The wrought iron railings are composed of metal lattice panels with rhombus/diamond shaped openings, with the centre joints of the lattice accented by rosettes. The lattice panels are between 13’7½” to 13’9”. Panels of the railing are affixed to fluted, Victorian-style wrought iron posts. A subsequent rail was added on top of the original railing, believed to have been installed as part of the 1950s alterations. Historic photographs of Blackfriars Bridge show bracing along the railings, between the posts, however these are no longer present.</p> <p>Based on the requirements of the <i>Canadian Highway Bridge Design Code</i>, the existing railings are deficient. Dillon has recommended the post spacing has to be reduced to 2085mm (6’¾”).</p> <p>Alterations to the existing railing may be required. As a heritage attribute of the Blackfriars Bridge, alterations must be</p>

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**HAP 17-022-L**  
**K. Gonyou**

	<p>carefully considered. Preservation of original wrought iron material must be prioritized, including the elements which comprise the railing: lattice with rosettes, fluted posts with knob detail, rails. Alterations should be compatible, sympathetic, subordinate, and distinguishable from the original. Radically contrasting designs may be distinguishable, but not sympathetic or subordinate and not compatible with the Blackfriars Bridge’s defined heritage attributes. Even the top rail can be seen to have cultural heritage value or interest as it contributes to an understanding of the evolution of the Blackfriars Bridge.</p> <p>Further design refinement of the proposed pedestrian railing detail (see Drawing S25, Appendix D) in consultation with the Heritage Planner for the Blackfriars Bridge is required to ensure the alterations are compatible.</p>
<p>Original plaque identifying the manufacture</p>	<p>This plaque, noting the Wrought Iron Bridge Company of Canton, Ohio and the patent for the design of the Blackfriars Bridge, was identified as missing in the designating by-law (1992), will be replicated based on photographic documentation and reinstated as part of the rehabilitation work. The replication of these plaques is proposed to be completed with wrought iron material salvaged from portions of the Blackfriars Bridge that require replacement. See Appendix B, Image 6.</p>
<p>Gentle curve of Ridout Street (east side) on to the bridge</p>	<p>Alterations are proposed to the east approach to Blackfriars Bridge, particularly to facilitate east bound-only vehicular traffic across the structure. See below.</p>
<p>Experimental qualities inherent in the structure including its narrow width, the texture of the wooden deck, and the streamlined elegance of its bowed profile</p>	<p>No alteration proposed to the existing width of Blackfriars Bridge.</p> <p>Regarding the timber deck, see above.</p> <p>The rehabilitation of Blackfriars Bridge seeks to eliminate some of the 1950s alterations which have minimized its “streamlined elegance of its bowed profile.” The intent is to achieve an appearance as close to the 1875 original structure as possible.</p>
<p>The steep, well-treed riverbanks and parkland “create a rural feel in this downtown location.”</p>	<p>The landscape plans (see Drawings L1, L3, &amp; L4, Appendix D) seek to retain existing trees where feasible. The proposed alterations may diminish the “rural feel” of the environs, however interventions are intended to celebrate this significant cultural heritage resource through plaques, interpretation, and viewing areas.</p>

While many of the alterations to the Blackfriars Bridge will not be visible to the general public (e.g. the strengthening of the top chord), the proposed alterations will have an impact on the heritage attributes of the Blackfriars Bridge. Some alterations are positive, including the removal of later alterations which obscured the bowed truss construction. The loss of the timber deck will have an adverse impact on this heritage attribute, however its intangible values will be conserved as the timber deck of the pedestrian sidewalk will be conserved to mitigate this impact. Potential alterations to the pedestrian railing could



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**HAP 17-022-L**  
**K. Gonyou**

have the greatest adverse impact on the cultural heritage value of the Blackfriars Bridge and must be carefully considered.

**Blackfriars/Petersville HCD**

The Blackfriars Bridge is a heritage attribute of the Blackfriars/Petersville HCD and is noted as a “prominent gateway” to the community. Its significance lies in its landmark status, as well as its contextual qualities which help to define the area.

Goals of the *Blackfriars/Petersville HCD Plan* encourage the retention and maintenance of significant streetscapes and landscape features that contribute to the area’s cultural heritage value or interest. Section 7.9 of the *Blackfriars/Petersville HCD Plan & Guidelines* addresses the lands along the west bank of the Thames River. It notes, “The relationship of the Thames River is of particular importance to the history of the Blackfriars/Petersville Heritage Conservation District” (p.29). Long, narrow streets with uniform street edges frame the terminus views of the Blackfriars Bridge and numerous public green spaces and parks that line the Thames River (Section 7.7, p.27).

Using the examples of the Blackfriars Bridge and the Queens Avenue Bridge, the *Blackfriars/Petersville HCD Plan* states in Section 12.9 that “gateways to the district should be marked with defining elements that are sensitive to the heritage character of the district.” The applicable guidelines for gateways and views and visits from the *Blackfriars/Petersville HCD Plan* was used in the analysis of the proposed rehabilitation of the Blackfriars Bridge (Table 2, below)

Table 2: Analysis of guidelines of the *Blackfriars/Petersville HCD* for the proposed alteration.

<b>Section 12.9 Gateways and Section 12.9.1 Views and Vistas</b>	
<b>Guidelines</b>	<b>Analysis</b>
Gateways to the district should be marked with defining features that are sensitive to the heritage character of the district.	<p>The Blackfriars Bridge is an important gateway to the Blackfriars/Petersville HCD, and makes significant contributions to the character and sense of place for the area. The rehabilitation of the Blackfriars Bridge has been designed to be sympathetic to its heritage fabric, and recognize its landmark status. Landscape alterations have been designed to be compatible with the Blackfriars/Petersville HCD (and Downtown HCD).</p> <p>A clearance beam (frame, collision protection beam) is required at the east approach to prevent large vehicles from damaging the Blackfriars Bridge. The clearance beam is designed to withstand vehicle impact loads.</p> <p>The required clearance beam provides (see Drawing S31, Appendix D) the opportunity to reinforce and mark this gateway location. Design elements which celebrate the Blackfriars Bridge (such as those depicted in Drawing L3, Appendix D, for example) should be implemented. Further refinement of the design details and finishes of the required clearance beam are necessary to ensure compatibility with the Blackfriars/Petersville HCD.</p>

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**HAP 17-022-L**  
**K. Gonyou**

Preserve and maintain the existing views and sightlines to and from significant built heritage and cultural heritage landscape elements, including views to the Thames River, associated dyke system, and Blackfriars Bridge	Existing views to the Blackfriars Bridge within the Blackfriars/Petersville HCD along Blackfriars Street and the West London Dyke will be maintained. There will be impact from the introduction of new, required safety signage and clearance beam which may result in visual clutter.
Protect and maintain features, such as the dyke system and mature street trees that define the views and viewsheds	Alterations to the West London Dyke has been approved through HAP16-021. Trees feasible for retention have been identified on the landscape plans (see Drawings L1, L3, & L4, Appendix D), with tree removals noted in Drawing C2 (Appendix D). Replanting on the west side of the Thames River at the Blackfriars Bridge is anticipated to occur after the completion of work on the West London Dyke.

The proposed alterations comply, in principle, with the guidelines of the *Blackfriars/Petersville HCD Plan* for gateways, views and vistas. Further refinement of the proposed design of the clearance beam is required to ensure compatibility with the objectives of the Blackfriars/Petersville HCD Plan and celebrate the cultural heritage value of the Blackfriars Bridge.

**Adjacent Properties**

The proposed laydown area and staging area for the disassembly/reassembly of the Blackfriars Bridge after lifting it from its supports, as well as reassembly before placing it on its supports (see Drawing S6 – Construction Laydown Area) is adjacent to the property located at 9 Blackfriars Street.

9 Blackfriars Street is designated both individually, by By-law No. L.S.P.-3071-126, and as part of the Blackfriars/Petersville HCD. The building was constructed in 1877. By-law No. L.S.P.-3071-126 notes the “village atmosphere is particularly evident around Blackfriars Bridge.”

A Protection Plan (or equivalent) should be prepared by the contractor and implemented to the satisfaction of the City to ensure that the property at 9 Blackfriars Street, located adjacent to the laydown area, is not damaged nor suffers adverse impact during the bridge rehabilitation project. Protective measures could include, but are not limited to, preconstruction survey, hoarding, high visibility fencing, increased security, etc. Similar measures should be implemented for other adjacent properties, such as 10 Blackfriars Street, or nearby properties as necessary.

**Downtown HCD**

The *Downtown London HCD Plan* articulates the objectives of the designation of the Downtown London HCD under the *Ontario Heritage Act*. Physical goals and objectives and social goals and objectives provide guidance on undertaking actions that ultimately support the conservation of the Downtown HCD’s significant cultural heritage value or interest.

The *Downtown London HCD Plan* identifies the institutional and public realm landscape characteristics of Harris Park and the Thames Valley Parkway as a significant heritage

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**HAP 17-022-L**  
**K. Gonyou**

attribute (character defining element). These guidelines were used to analyse the proposed alterations to the east approach to the Blackfriars Bridge (Table 3, below).

Table 3: Analysis of *Downtown HCD Plan* Institutional and Public Realm Landscape Guidelines

<b>Section 6.2.4 Institutional and Public Realm Landscape Guidelines</b>	
<b>Guidelines</b>	<b>Analysis</b>
Municipal work projects that contradict the objectives of this Plan shall follow the Heritage Alteration Permit process	As a significant public asset, the alteration of the Blackfriars Bridge (and its setting) met the Conditions for Referral to the LACH for consultation.
Encourage the conservation and/or re-introduction of historic cultural landscape elements into public and private realms	Alterations to the approaches to the Blackfriars Bridge are designed to be sympathetic and compatible, but are not based on documentation of historic conditions of these areas.  The proposed monument/artifact from the Blackfriars Bridge provides an opportunity to interpret the significance of the structure to the general public. While the details of this element require refinement, its intent should be implemented.
Preserve and reinforce significant historic cultural gardens and landscapes, their features and characteristics	This project does not include any historic cultural gardens or landscapes affected by this objective.
Discourage the placement of non-heritage service facilities such as service boxes, parking and utilities in highly visible locations or within view sheds. These should be placed in inconspicuous locations, incorporated into structures and/or concealed into the heritage character of the District by implementing techniques of appropriate scale, materials, screening and finishes	Utilities, etc. will be placed in discrete locations, particularly within the parkette area at the north end of Ridout Street North.
New landscaping should complement the existing landscapes of the District, screen parking areas, and improve the overall pedestrian experience	The landscape plans (see Drawings L1, L3, & L4, Appendix D) seek to improve the pedestrian experience at the Blackfriars Bridge. Improvements include historical plaques, interpretive signage, and viewing opportunities as part of the parkette feature at the north end of Ridout Street North. Interventions at the Blackfriars Bridge also provide the opportunity to consolidate the different design programs found in the vicinity. Apart from the historic pedestrian railing of the Blackfriars Bridge, the fence/guard/railing design of the West London Dyke should be used for continuity and compliance with the objectives of the applicable HCD Plans

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**HAP 17-022-L**  
**K. Gonyou**

Existing street patterns and historic materials in streets, sidewalks, lands, pathways and boulevards (e.g. asphalt roads, concrete curbs and sidewalks, grass boulevards) shall be preserved/protected. In areas of new construction, development and civic ‘improvement’, the heritage character of streetscapes should be controlled by the guidance of traditional patterns, materials and elements	The existing street pattern will be altered as an outcome of the Environmental Assessment for the Blackfriars Bridge. These alterations include elimination of westbound traffic on Blackfriars Bridge, which necessitates a turn around facility at the north end of Ridout Street North and alteration to the existing street pattern (see Drawing C7, Appendix D).
Retention of existing grass boulevard and street trees throughout the District is strongly encouraged wherever repairs or improvements are made to roads, sidewalks or underground services. Should removal of trees and boulevards be unavoidable as part of the infrastructure work, every effort should be made to replace them upon completion of the work	While retention of the existing grass boulevard was strongly encouraged, the grass boulevards were eliminated to allow for a minor widening of the road platform of Ridout Street North to allow for street bike lanes.
The City is encouraged to adopt a heritage tree designation policy. The process for selecting and designating a heritage tree should be a collaborative process between the Forestry Group and LACH	Noted. The landscape plans (see Drawings L1, L3, & L4, Appendix D) have identified trees for retention, including the implementation of a tree protection zone.
The City is encouraged to implement a street tree planting program to fill in gaps that exist in the residential streetscapes of the District in order to enhance canopy coverage	The landscape plans (see Drawings L1, L3, & L4, Appendix D) identifies the planting schedule for the approaches to the Blackfriars Bridge.

The proposed alteration to the east approach to the Blackfriars Bridge is generally compliant with the institutional and public realm landscape guidelines of the *Downtown HCD Plan*. The design of the bridge-approach fencing/guards/railings on both sides of the Thames River should be coordinated with one another to match the designs for the West London Dyke project. This is intended, to achieve design continuity consistent with the objectives of the applicable HCD Plans.

Further refinement of the plans for the parkette feature at the north end of Ridout Street North, particularly in the implementation of the monument/artifact of the Blackfriars Bridge (and its interpretation), is required. The monument/artifact is proposed to be comprised of original elements from the Blackfriars Bridge that will be replaced for structural reasons as part of the rehabilitation project (see Drawing L4, Appendix D). The “cruciform” and “phoenix” elements of the Blackfriars Bridge are examples of the patents referenced on the Wrought Iron Bridge Company of Canton, Ohio sign that was affixed to the Blackfriars Bridge and contribute to its cultural heritage value. The inclusion of truss end bearings and floor beams provide context for these elements. Interpretive signage to explain these elements, and their importance to the history of Blackfriars Bridge, is required. The base of this monument will also provide the opportunity for the National Historic Civil Engineering Site plaque and the blue City of London Heritage Property plaque to be affixed. As the monument/artifact would become part of the City’s Public Art/Monument Policy, this item should be referred to the Culture Office for implementation.

**Documentation**

As an important piece of civic infrastructure, the documenting the rehabilitation of the Blackfriars Bridge should be documented through video and photography as a component

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**K. Gonyou**

of the bridge rehabilitation project. This will contribute to the archival record of the Blackfriars Bridge and become part of its enduring history. The removal and reinstatement of the Blackfriars Bridge will be important events in the structure’s history worthy of documentation.

<b>CONCLUSION</b>
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Blackfriars Bridge is a nationally-recognized significant cultural heritage resource. As a 142 year old wrought iron structure, rehabilitation is required to ensure its longevity. Carefully and sensitively-planned interventions are designed to remove less sympathetic alterations and addition while meeting contemporary safety requirements for bridges.

**Acknowledgements**

This report was prepared with the assistance of Jane Fullick, Senior Technologist and Karl Grabowski, Transportation Design Engineer, Transportation Planning & Design.

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<b>RECOMMENDED BY:</b>	
<b>JOHN M. FLEMING, MCIP, RPP MANAGING DIRECTOR, PLANNING AND CITY PLANNER</b>	

2017-04-28

Attach:

- Appendix A – Map
- Appendix B – Images
- Appendix C – Composite Drawing Showing Elements for Removal by Age
- Appendix D – Design Drawings for the Rehabilitation of the Blackfriars Bridge
- Appendix E – Product Information Sheet – “Fiberspan”
- Appendix F – Minto East Bridge, Ottawa, Ontario.

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APPENDIX A — Map



Map 1: Aerial image of the location of the Blackfriars Bridge (2 Blackfriars Street), included within the Blackfriars/Petersville HCD and adjacent to the Downtown HCD.



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**APPENDIX B — Images**



Image 1: Blackfriars Bridge in the late 1870s (courtesy Department of Special Collections, Stanford University (MSS Photo 0409: Wrought Iron Bridge Photographs, 18721874)).



Image 2: Blackfriars Bridge circa 1880.



Image 3: Blackfriars Bridge Postcard (c.1901)



Image 4: View of Blackfriars Bridge, circa 1930 (courtesy London Room).



Image 5: Blackfriars Bridge (1983).



Image 6: Detail of Wrought Iron Bridge Company sign (1983).

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Image 7: Blackfriars Bridge (1986).



Image 8: View looking southeast of Blackfriars Bridge.



Image 9: West approach to Blackfriars Bridge.



Image 10: East approach to Blackfriars Bridge.



Image 11: Detail of existing pedestrian guard/hand railing.



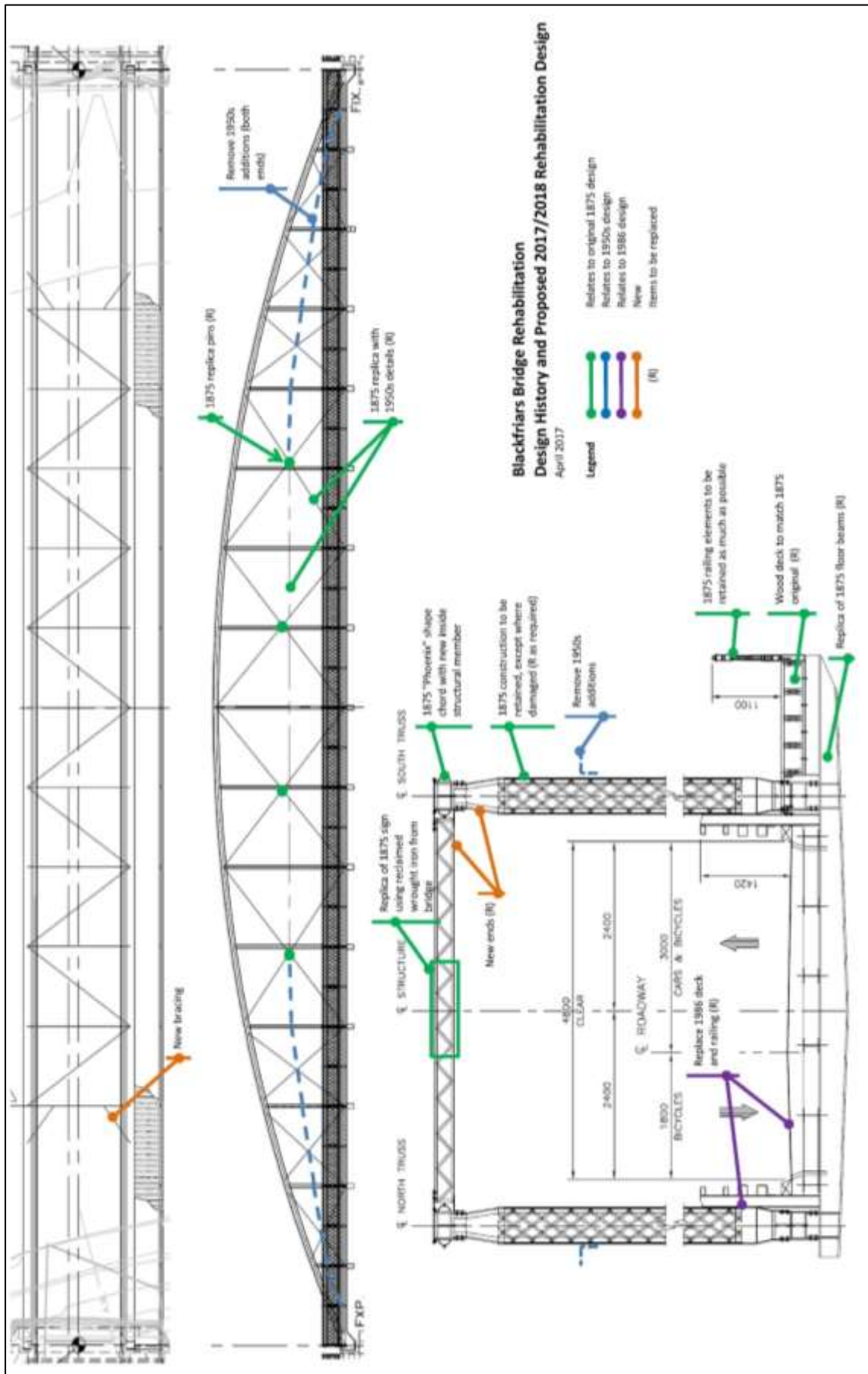
Image 12: Detail of (east) stone abutment of Blackfriars Bridge.



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**APPENDIX C — Composite Drawing Showing Elements for Removal by Age**

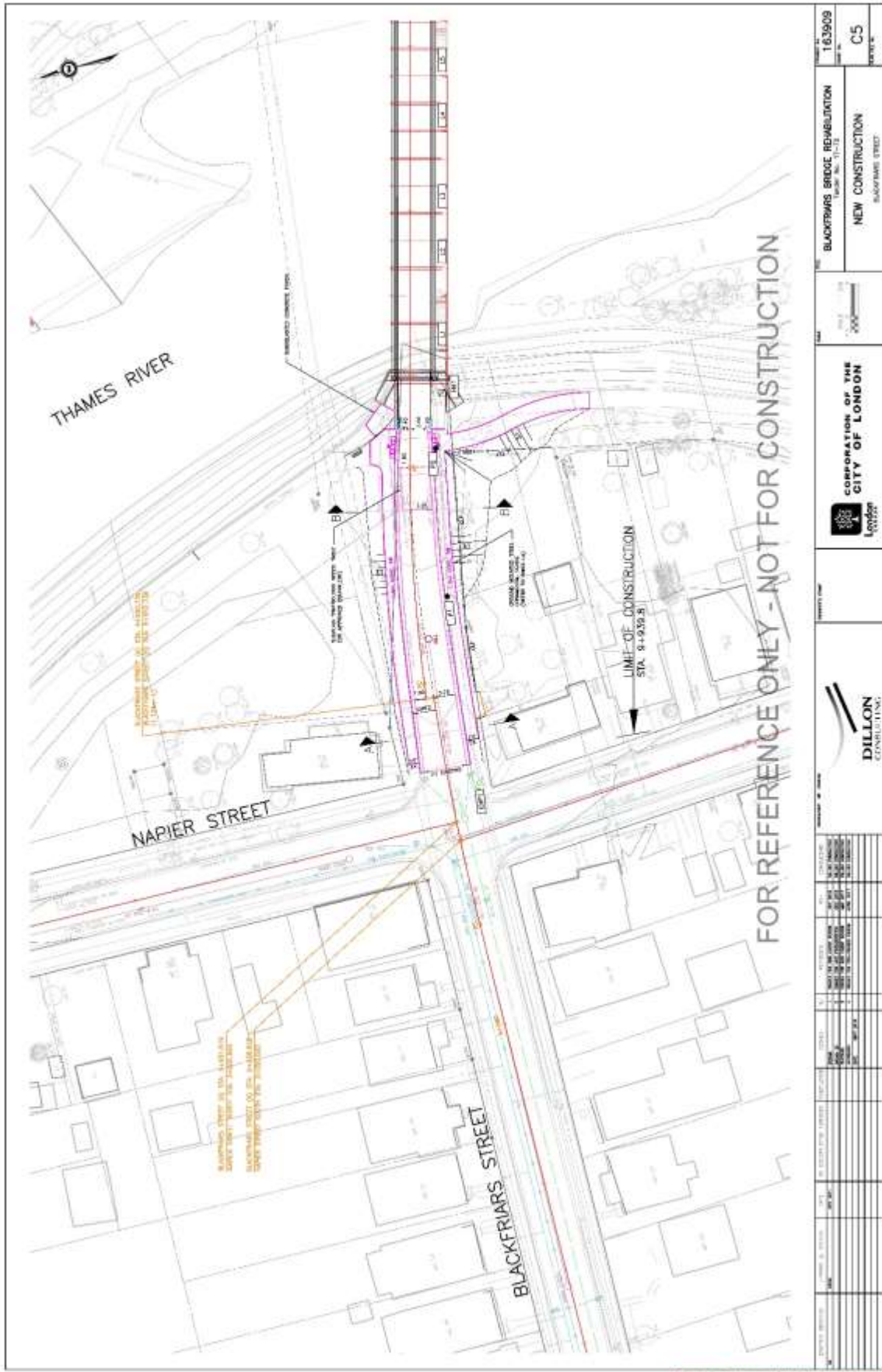


Courtesy Dillon.

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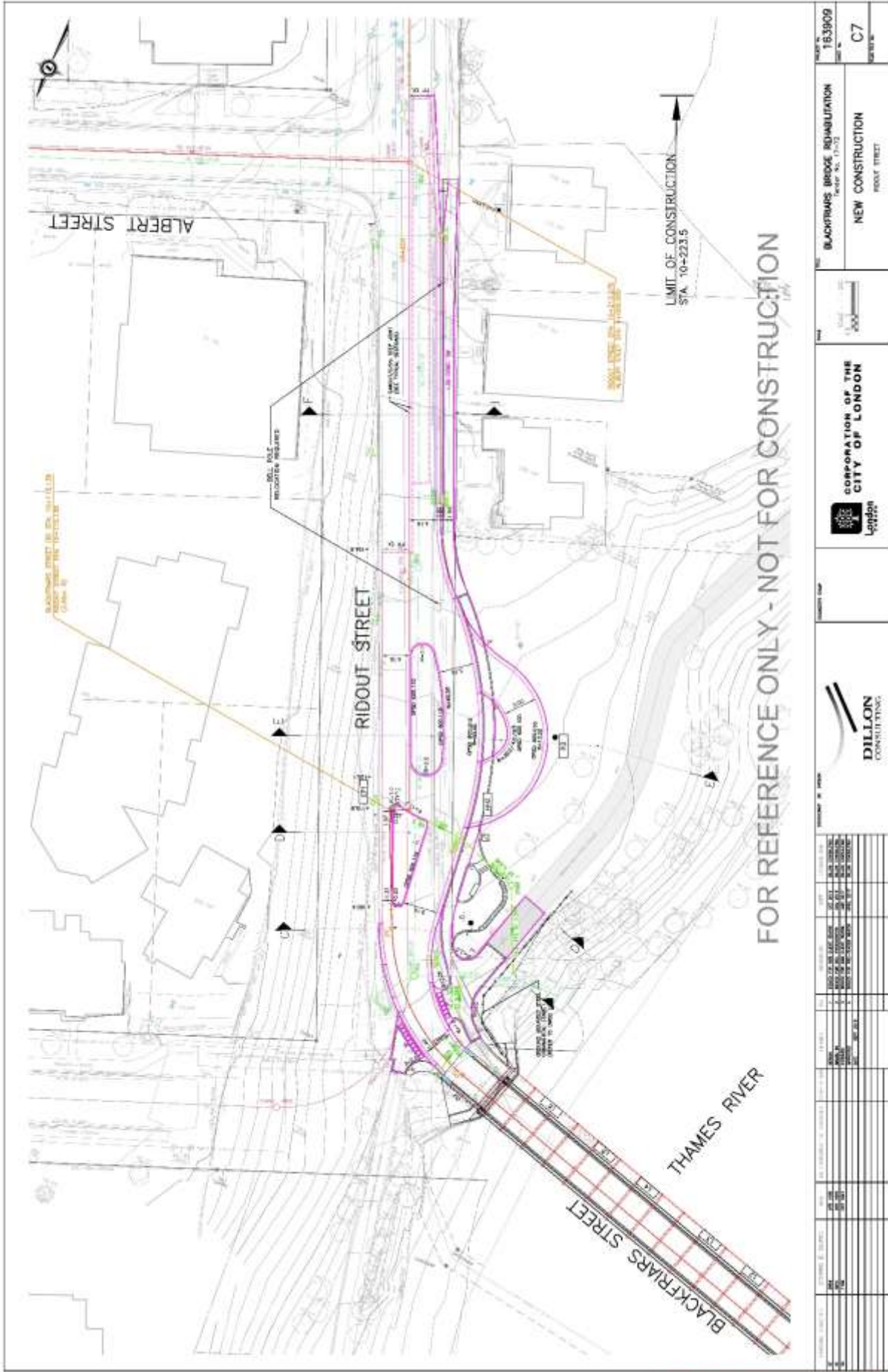
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**APPENDIX D — Selected Design Drawings for the Rehabilitation of the Blackfriars Bridge**



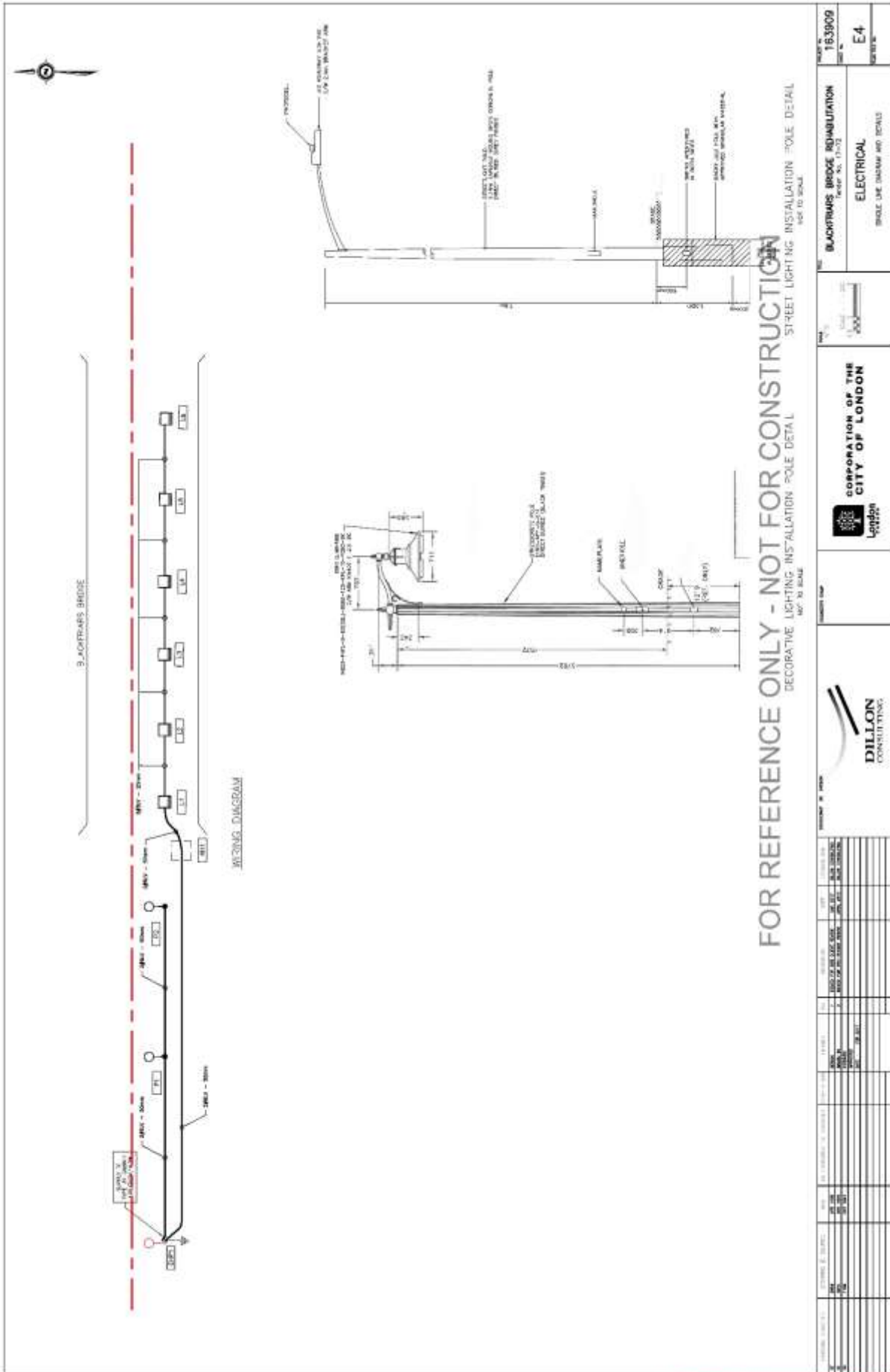
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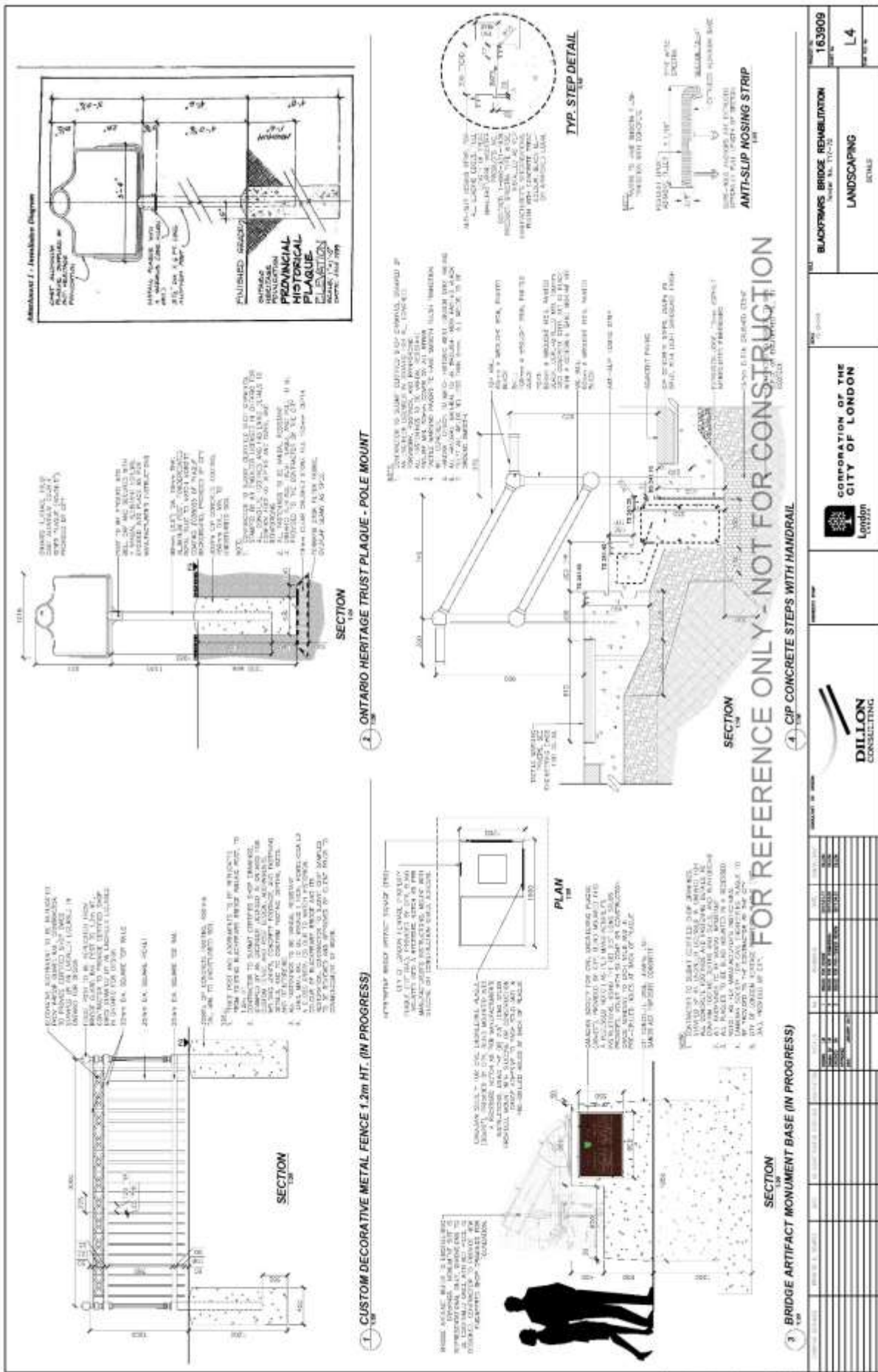
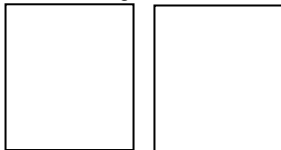












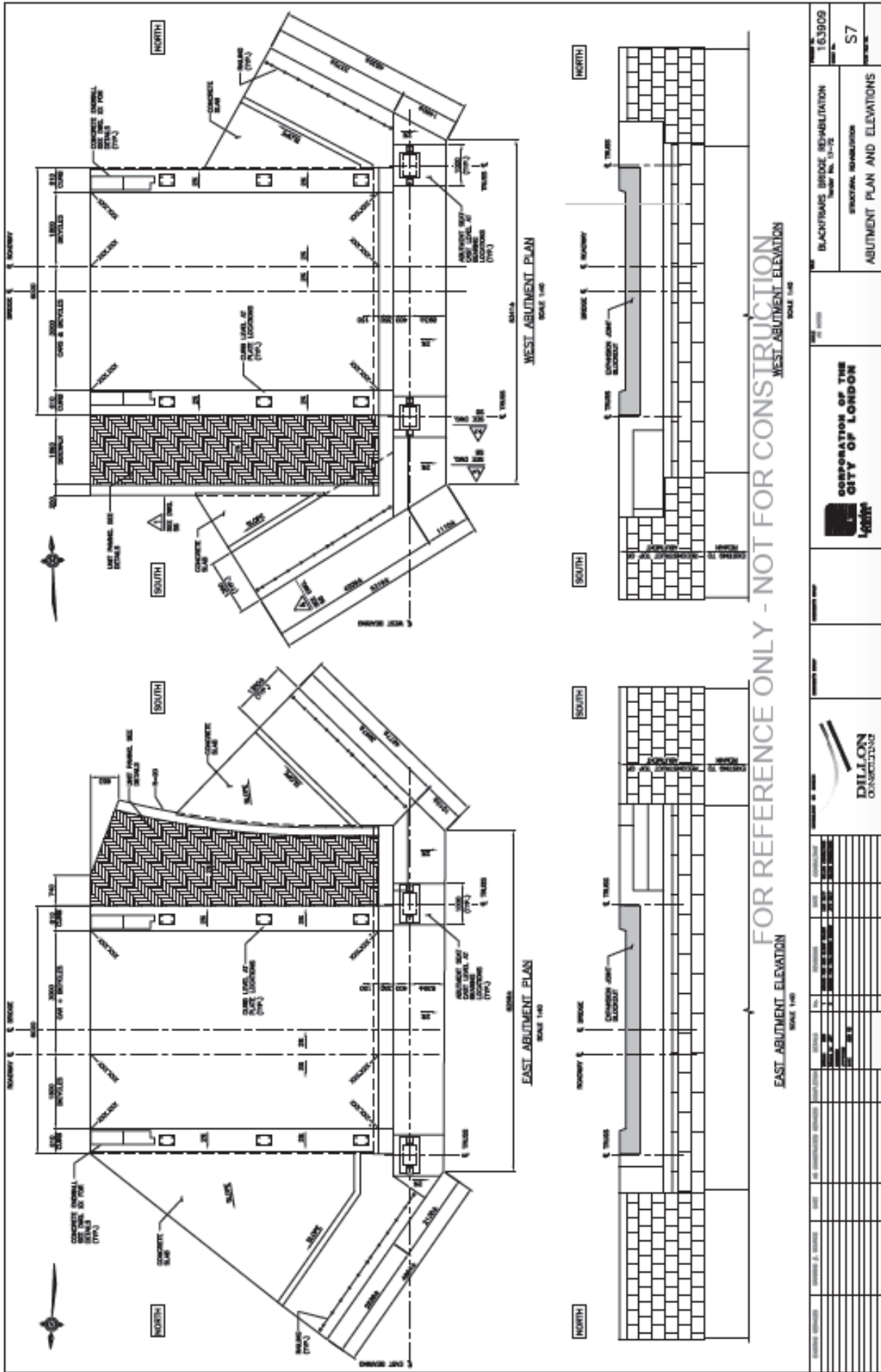






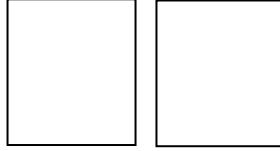
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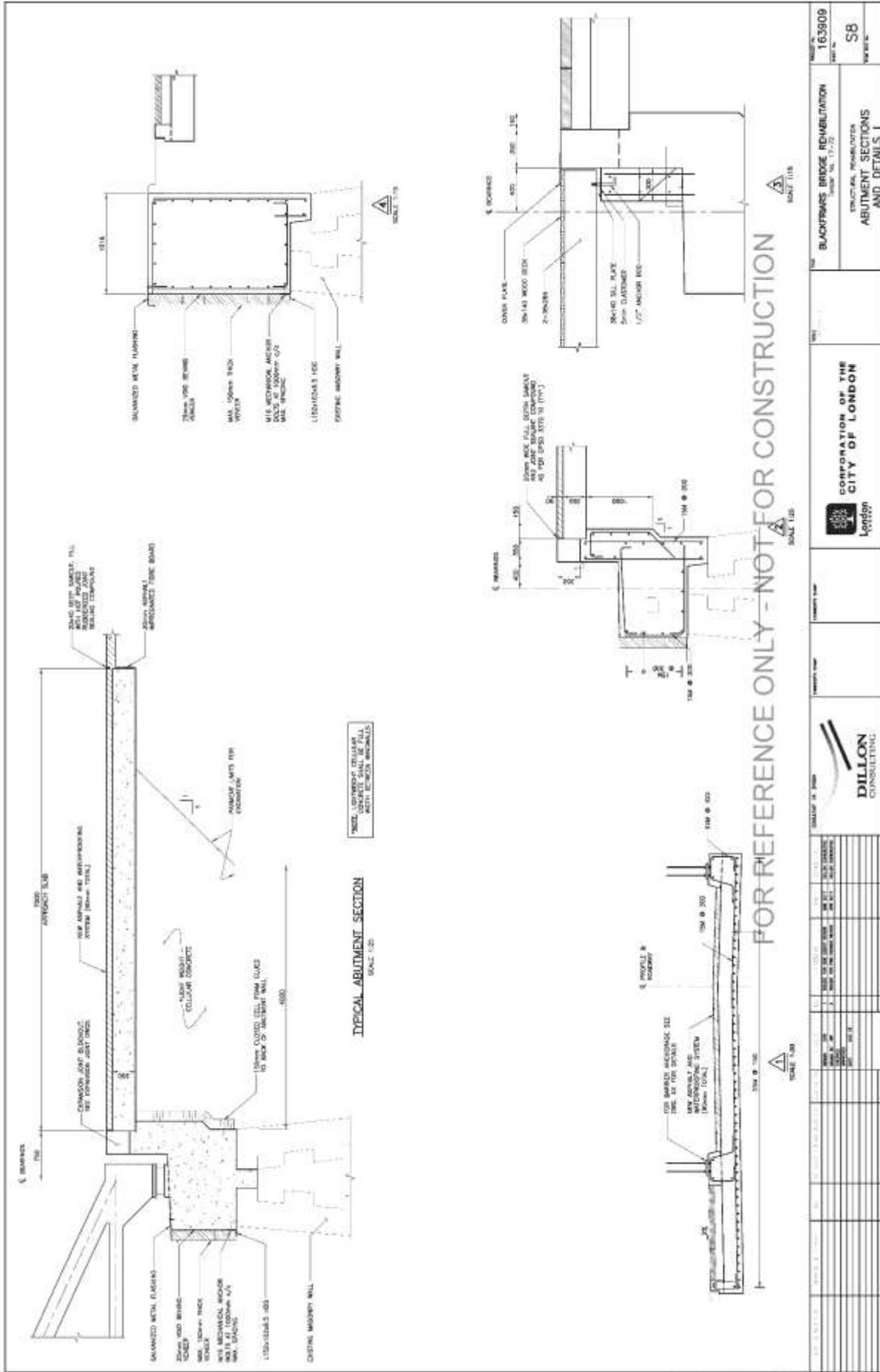


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CHECKED BY	
APPROVED BY	
DATE	
PROJECT NO.	
PROJECT NAME	
DATE	
SCALE	
DESIGNED BY	
CHECKED BY	
APPROVED BY	
DATE	



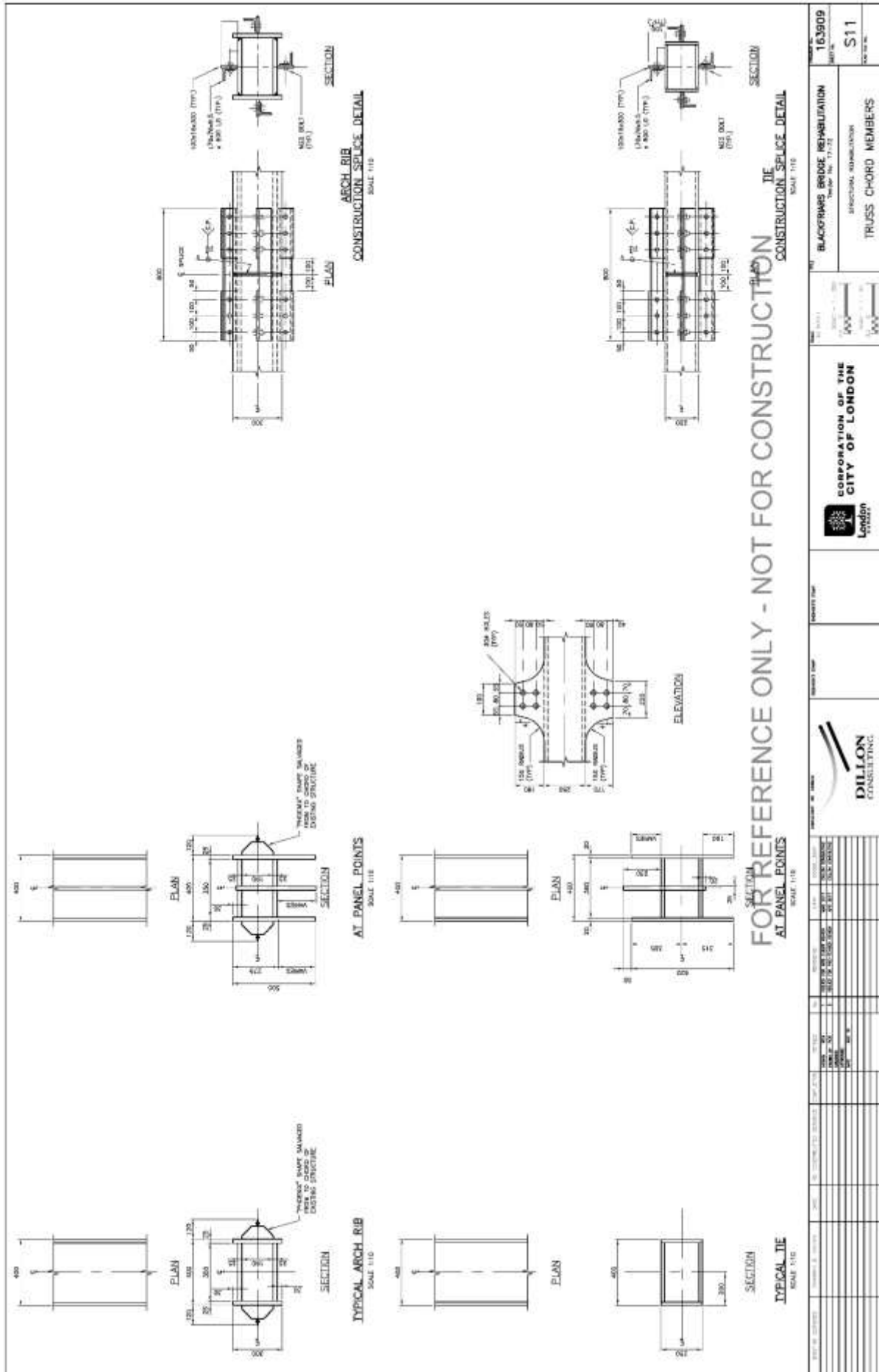


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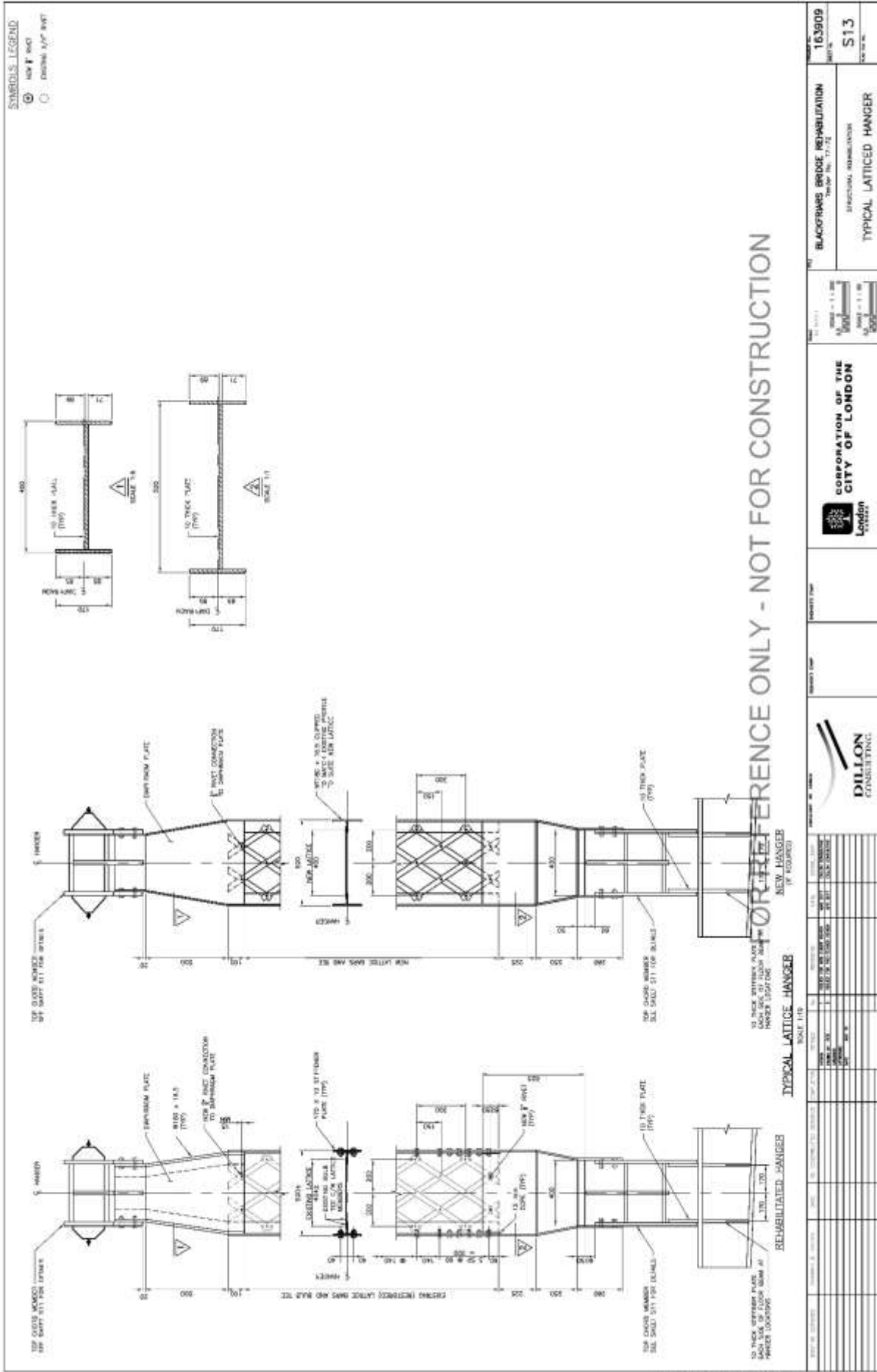
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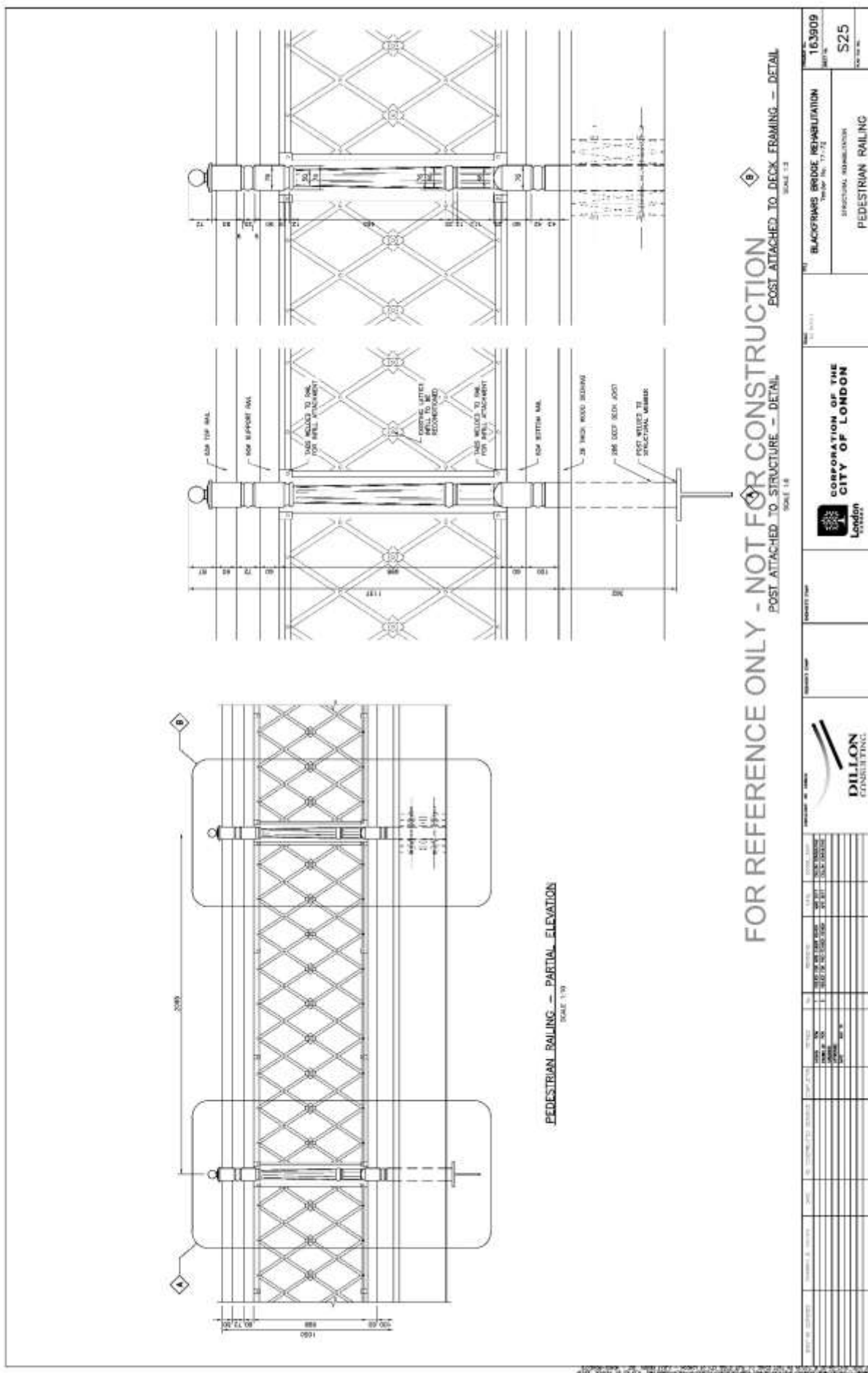
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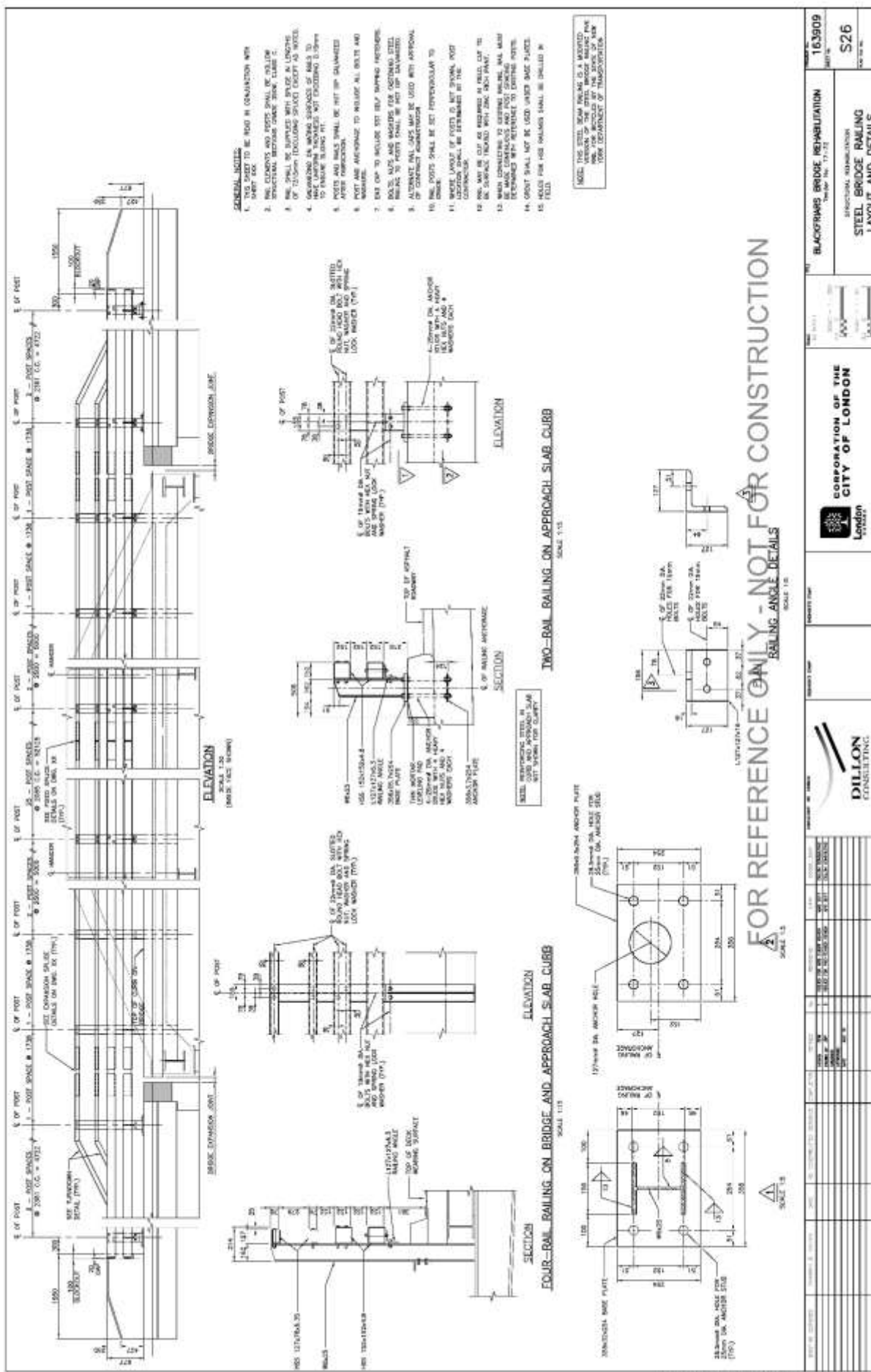


**FOR REFERENCE ONLY - NOT FOR CONSTRUCTION**  
 POST ATTACHED TO STRUCTURE - DETAIL  
 POST ATTACHED TO DECK FRAMING - DETAIL  
 SCALE 1:8  
 SCALE 1:2

 <b>DILLON CONSULTING</b>	 <b>CORPORATION OF THE CITY OF LONDON</b>	PROJECT NAME BLACKHARRIS BRIDGE REHABILITATION	DATE 16/09/09
		DRAWING NUMBER PEDESTRIAN RAILING	SCALE S25



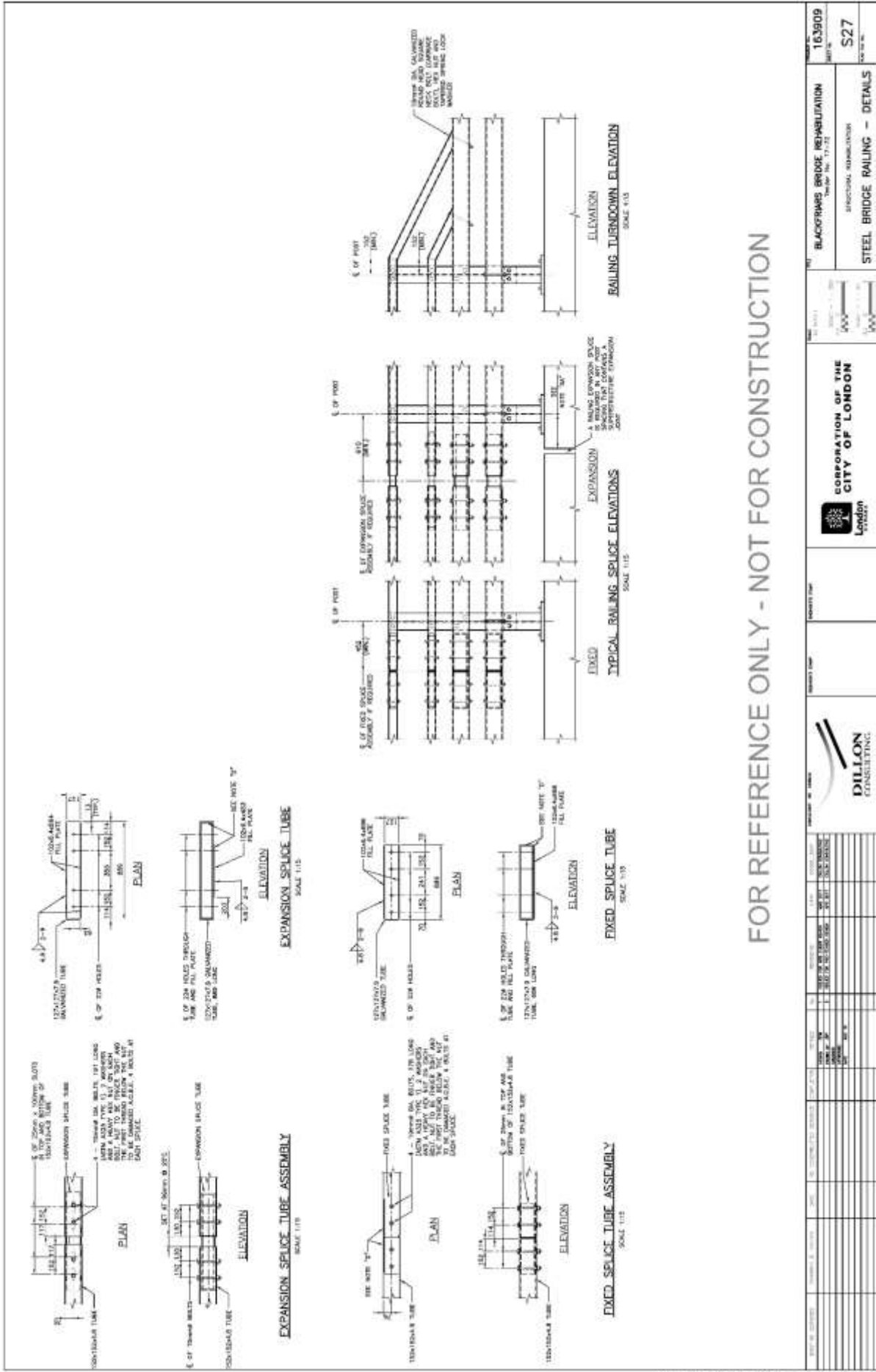
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PROJECT NO.	163909
DATE	11/12
PROJECT NAME	BLACKHARRIS BRIDGE REHABILITATION
PROJECT LOCATION	ST. JOHN'S, N.S.
PROJECT NO.	526
DATE	11/12
PROJECT NAME	STEEL BRIDGE RAILING
PROJECT LOCATION	LAYOUT AND DETAILS
CLIENT	CORPORATION OF THE CITY OF LONDON
CONSULTANT	DILLON CONSULTING



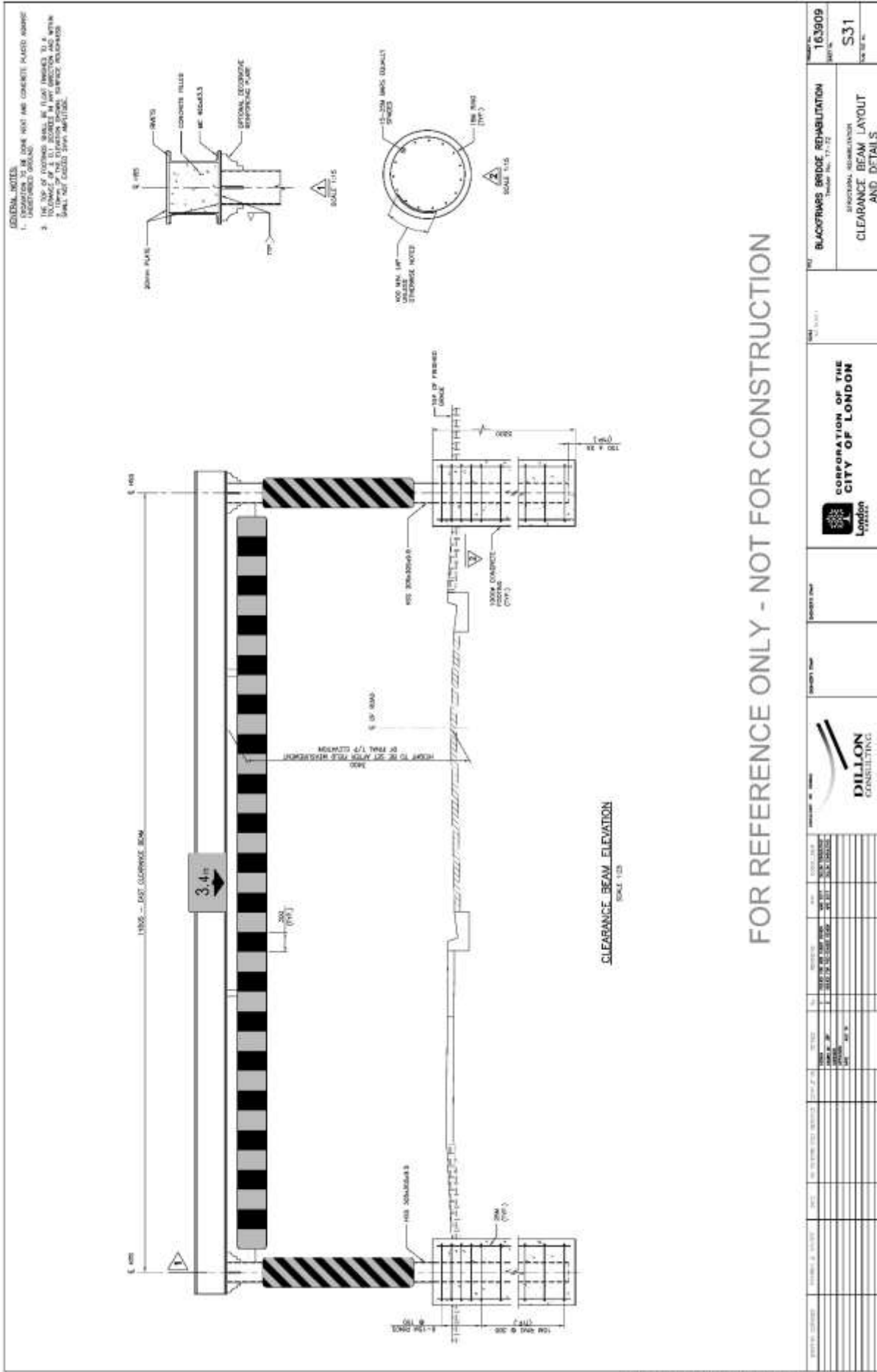
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**APPENDIX E — Product Information Sheet – “Fiberspan”\***



**Composite Advantage**

**FRP Decks for Vehicle Bridges**




**FiberSPAN™**

**LIGHT WEIGHT AND LONG LASTING**

**Performance Advantages**

- Light weight (one-fifth the weight of concrete)
- Ideal for movable bridges and load-rated trusses
- Corrosion resistant
- Durable with low maintenance
- High strength
- Comes to site as fully pre-fabricated product
- Fast installation without the need for heavy crane equipment
- Options
  - Built-in crown
  - Expansion joints
  - Railing attachments
  - Shop applied wear surface
  - Any color







Composite Advantage understands that each vehicular bridge deck comes with its own unique set of specifications. FiberSPAN™, combines molded sandwich construction and manufacturing flexibility to provide the right solution for any bridge configuration.

Able to optimize designs, CA gives customers the structure they need to meet performance requirements. Decks can be molded with a crown and to any size. Internal structure allows for railing attachments.

FiberSpan™ bridge decks are available in standard depths, but can also be built to custom depths. Standard deck depths are 5, 6, 7, 8, 9 and 10 inches. Weights are 16 to 20 psf.

Deck panels come to the site as fully pre-fabricated bridge elements ready to connect to the superstructure. This reduces the contractor’s overall installation time and cost.

401 Kiser Street, Dayton, OH 45404 Tel 937.723.9031

[info@compositeadvantage.com](mailto:info@compositeadvantage.com)

[www.compositeadvantage.com](http://www.compositeadvantage.com)

\*Or equivalent

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**APPENDIX F – Minto East Bridge, Ottawa, Ontario**



Image 1: Minto East Bridge on April 23, 2017 (courtesy Dillon).



Image 2: Minto East Bridge on April 23, 2017, showing asphalt paving on the left and the "Fiberspan" product on the right at the expansion joint (courtesy Dillon).