

Structure Name: Highway 3 Underpass	
Structure ID: 6-67	Highway: 401
Structure Type: Two span, concrete rigid frame T-Beam structure	Year of Construction: 1956
Municipality: Chatham Essex	CHER Date: November 2011
CHER Author: Archaeological Services Inc.	
CHER Recommendation: Is an Ontario Heritage Bridge List Candidate.	
The Heritage Bridge Committee (HBC) decided that this structure: Is an Ontario Heritage Bridge List Candidate.	
Rationale for Decision: bridge retains cultural heritage value given the design, contextual and historical values associated with the structure.	
(1) Design/Physical Value: Functional Design: The longest reinforced concrete rigid frame T-Beam bridge in the West Region, at 40 m. Also a unique design detail, within the context of this region, where the T beams transition down into pier columns. Score 16 Visual Appeal: Elements of stylistic merit and which are of particular note are the use of an open concept railing system and concrete end walls with decorative treatment, retaining walls with decorative recessed lines, and slightly curved soffit of each bridge span. Score 12.	
(2) Contextual Value: Landmark: it is considered to be a prominent gateway structure as it signals the beginning and end of Highway 401. Score 15. Character: The bridge contributes to the character of the corridor as a rural divided freeway. Score 6.	
(3) Historic/ Associative Value: Designer: Designed and stamped by R. M. Dillon of M. M. Dillon Co., Ltd, Consulting Engineers to the Department of Highways, Ontario. Score of 15. Association: Associated with a second phase of construction of the Highway 401, which took place in the 1950s. Score 6.	
Final Statements: The Heritage Bridge Committee is in general agreement with the conclusion that the bridge is a Provincial Heritage Property.	

HBC Scoring Matrix:

Category	Criterion	Maximum Score	CHER Score	HBC Score
Design / Physical Value	Functional Design	20	16	16
	Visual Appeal	20	12	12
	Materials	10	0	0
Contextual Value	Landmark	15	15	15
	Character Contribution	10	6	6
Historical/ Associative Value	Designer / Construction Firm	15	15	15
	Association with a historical theme, person or event	10	6	6
Total Score		100	70	70

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Cultural Heritage Evaluation Report:

**Highway 3 Underpass
Highway 401 at Highway 3
Town of Tecumseh, Ontario
Bridge Site No. 6-67
Windsor Essex Parkway Project**

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Cultural Heritage Evaluation Report

Highway 3 Underpass Highway 401 at Highway 3 Town of Tecumseh, Ontario Bridge Site No. 6-67 Windsor Essex Parkway Project

EXECUTIVE SUMMARY

Archaeological Services Inc. (ASI) was contracted by AECOM to conduct a cultural heritage evaluation of the Highway 3 Underpass in order to establish the potential cultural heritage significance of the structure. The bridge carries the westbound lanes of Highway 3 (Talbot Road) over Highway 401 in the **Town of Tecumseh**, Ontario, at its border with the City of Windsor. The existing bridge is a two span, concrete rigid frame T-Beam structure that was built in 1956 and designed by M. M. Dillon and Company Limited, consulting engineers, for the Ontario Department of Highways (DHO).

The Detroit River International Crossing (DRIC) Study Environmental Assessment Report which was approved August 2009 includes realignment of Highway 3 and a significantly modified interchange that requires the Highway 3 underpass structure to be removed. Only conservation option 8 of the Ontario Heritage Bridge Guidelines, bridge removal or replacement, can apply since replacement is required to meet demand requirements that are not achievable through rehabilitation or upgrading of the existing structure.

Based on the results of archival research, an analysis of bridge design and construction in Ontario, field investigations and application of the Ontario Heritage Bridge Guidelines' (MCL & MTO 2008 [Interim]) criteria for evaluating bridges, the Highway 3 Underpass was determined to retain cultural heritage value. The structure achieved a score over the 60 point threshold and is therefore eligible for inclusion on the Ontario Heritage Bridge List.

The following recommendations are based on the identified cultural heritage value of the Highway 3 Underpass:

1. This report should be filed with the MTO Heritage Bridge Committee for review and comment, and considered for inclusion on the Ontario Heritage Bridge List. Once finalized, it should be submitted to the Ministry of Tourism and Culture and the Archives of Ontario as a sufficient level of documentation.
2. Should the subject bridge be included on the Ontario Heritage Bridge List, consultation should be undertaken with the Ontario Ministry of Tourism and Culture to apprise them of this situation and the recommended approach to be undertaken with respect to conservation option 8 of the Ontario Heritage Bridge Guidelines.
3. Original bridge drawings should be placed in the Archives of Ontario.



**ARCHAEOLOGICAL SERVICES INC.
BUILT HERITAGE AND CULTURAL HERITAGE LANDSCAPE PLANNING DIVISION**

PROJECT PERSONNEL

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1.0 INTRODUCTION

Archaeological Services Inc. (ASI) was contracted by AECOM to conduct a cultural heritage evaluation of the Highway 3 Underpass in order to establish the potential cultural heritage significance of the structure. The bridge carries the westbound lanes of Highway 3 (Talbot Road) over Highway 401 in the Town of Tecumseh, Ontario, at its border with the City of Windsor (Figure 1). The existing bridge is a two span, concrete rigid frame T-Beam structure that was built in 1956 and designed by M. M. Dillon and Company Limited, consulting engineers, for the Ontario Department of Highways (DHO).

The following report is presented as part of an approved planning and design process subject to Environmental Assessment (EA) requirements. This portion of the EA study is intended to address the proposed replacement of the subject bridge. The principal aims of this report are to:

- Describe the methodology that was employed and the legislative and policy context that guides heritage evaluations of bridges over forty years old (Section 2.0);
- Provide an historical overview of the design and construction of the bridge within the broader context of the surrounding townships and bridge construction in Ontario (Section 3.0);
- Describe existing conditions and heritage integrity (Section 4.0);
- Evaluate the bridge within the Ontario's Heritage Bridge Program guidelines and draw conclusions about the heritage attributes of the structure (Section 5.0); and
- Ascertain sensitivity to change in the context of identified heritage attributes and recommend appropriate mitigation measures (Section 6.0).

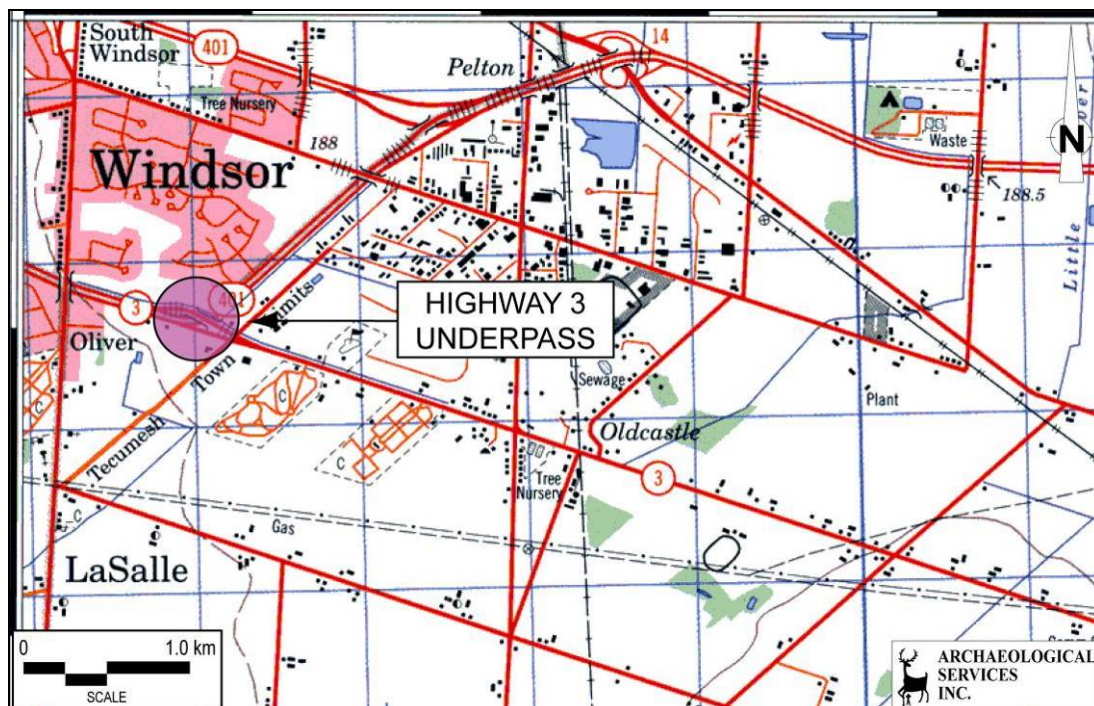


Figure 1: Location of the Highway 3 Underpass in the Town of Tecumseh at its border with the City of Windsor

Base Map: NTS Map Essex, 40-J-02, 1999



Archaeological Services Inc.

The Detroit River International Crossing (DRIC) Study Environmental Assessment Report was submitted January 2009, and was approved through Order in Council No 1457/2009 on August 21, 2009.

The approved EA determined that for Highway 401 to be extended to the international border crossing, Highway 3 would be realigned to the south, Highway 401 would pass under the realigned Highway 3 at a location approximately 380 meters west of the existing bridge location, and the connections between Highway 401 and 3 would be via a totally new and significantly different interchange that includes a roundabout south of Highway 401. The current Highway 3 underpass structure cannot be utilized as part of these significant changes, and it cannot be left in place because its configuration is incompatible with the new roadways and interchange.

2.0 METHODOLOGY

A Cultural Heritage Evaluation Report (CHER) is initiated when the Ministry of Transportation's Regional Structural Section determines that a bridge under provincial ownership requires remedial action and falls under one of the following categories:

- The bridge requiring remedial action is included on the Ontario Heritage Bridge List;
- The bridge requiring remedial action is listed in the document: *Heritage Bridges: Identification and Assessment Guide, Ontario 1945-1965* (List A, B, or C) as a candidate structure;
- The structure is over 40 years old and has not been screened in the 1945-1965 Guide; or
- The structure is locally or regionally unusual.

The purpose of the CHER is to examine a property as whole, its relationship to surrounding landscapes, and its individual elements. Conducting scholarly research and site visits inform such an examination. Background information is gathered from heritage stakeholders where available, local archives, land registry offices, local history collections at public libraries, and the Ministry of Tourism and Culture when appropriate. Where possible, further information is requested from the Ministry of Transportation. Once background data collection is complete, a site visit is carried out to conduct photographic documentation and site analysis. These components provide a means to soundly establish the resource's cultural heritage value.

Using background information and data collected during the site visit, the resource, in this case a bridge, is evaluated using criteria contained within the Ministry of Transportation and Ministry of Tourism and Culture's Ontario Heritage Bridge Guidelines (Interim), which was published on January 11, 2008 and disseminated to ASI in mid January 2008. If the bridge is evaluated at a score of 60 or higher, it is recommended for inclusion onto the Ontario Heritage Bridge List and a Statement of Cultural Heritage Value and description of the structure's heritage attributes is developed and incorporated into the CHER. The CHER then serves as a conservation manual for the structure/property and also functions as a background document for property managers because it contains useful information about the history of the property and its individual assets.

In cases where a bridge is scored below the threshold score of 60 but does retain elements or attributes that are considered significant from a cultural heritage point of view, the CHER will identify these elements and provide recommendations and mitigation measures as appropriate.



Additionally, during the site visit and as part of the evaluation process, attention is paid to surrounding cultural heritage resources that are situated in close proximity to the bridge. The identification of cultural heritage resources within the study area is based on the following definitions and concepts:

Built heritage resources mean one or more buildings, structures, monuments, installations or remains associated with architectural, cultural, social, political, economic, or military history, identified as being important to a community, or reflective of contextual values.

Cultural heritage landscapes mean a defined geographical area of heritage significance that has been modified by human activities. Such an area is valued by a community, and is of significance to the understanding of the history of a people or place.

In addition, “Significant” is also more generally defined. It is assigned a specific meaning according to the subject matter or policy context, such as wetlands or ecologically important areas. In regard to cultural heritage and archaeology resources, resources of significance are those that are valued for the important contribution they make to our understanding of the history of a place, an event, or a people.

Criteria for determining significance for the resources are recommended by the Province, but municipal approaches that achieve or exceed the same objective may also be used. While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation.

3.0 HISTORICAL CONTEXT AND CONSTRUCTION

3.1 Introduction

The Highway 3 Underpass was built in 1956 to carry two westbound lanes of Highway 3 over Highway 401. Historically, the Highway 3 Underpass is located on Lot 306, in the concession North of Talbot Road, in the former Township of Sandwich South, County of Essex (Figures 2 & 3). Archival research revealed that the future site of the Highway 3 Underpass was located on an important historical thoroughfare through western Ontario. Further, the site was located west of the hamlet of Old Castle, and situated within a former unnamed crossroads community which consisted of a school, church, hotel and several dwellings and farm complexes (see Figures 2 & 3).

3.2 Township Survey and Settlement

Among the counties of Ontario, Essex was one of the first to be settled. The early settlers were French, who initially settled in Detroit at an area which grew around Fort Ponchartrain. Soldiers from the fort began to work the land and grow their own food under the protection of the fort settlement on both sides of the Detroit River (Mika 1977: 689).

When the British conquered New France in 1763, settlement in the county had already reached several hundred inhabitants. The next wave of settlers arrived around the time of the American Revolution. They were United Empire Loyalists who had been granted free land by the British within the County (Mika 1977: 689).



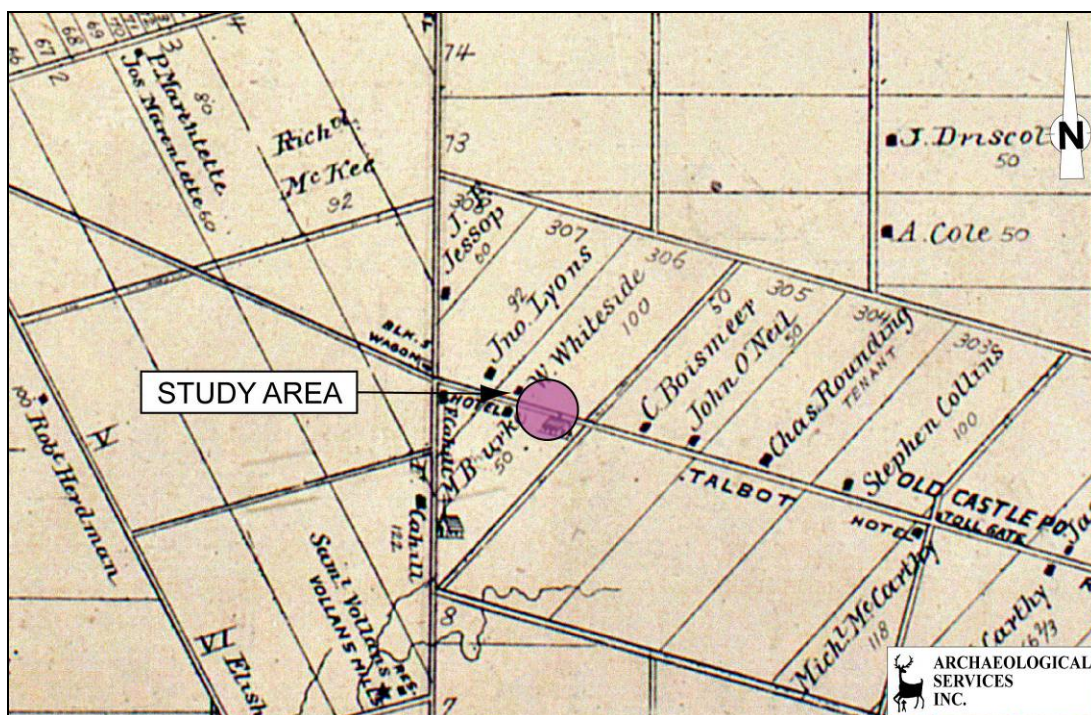


Figure 2: Approximate location of the bridge site in the Township of Sandwich in 1881.
 Base Map: *Illustrated Historical Atlas 1881*

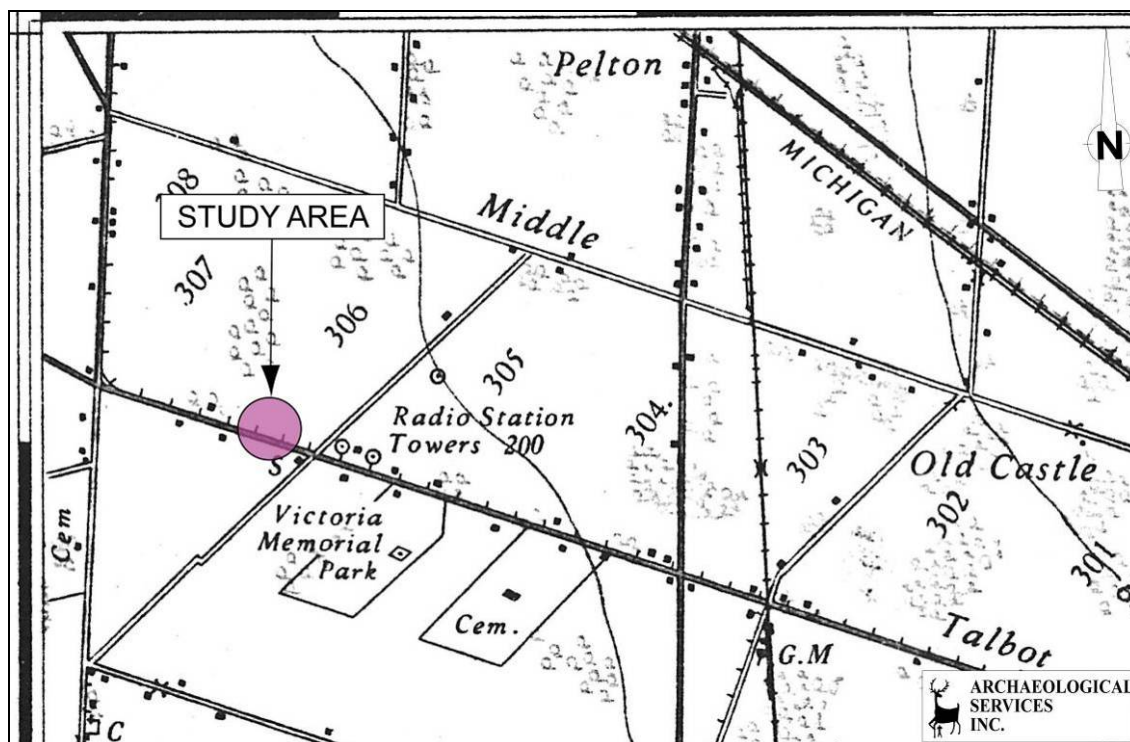


Figure 3: Approximate location of the bridge site in the Township of Sandwich in 1940
 Base Map: National Topographic Series Map, Essex, ON

Detroit remained under British control until 1796, when it was handed over to the Americans under the terms of the Jay's Treaty. To replace their former military post, a fort known as Fort Malden, was immediately built on the site of present day Amherstburg. The fort was strengthened during the War of 1812 and the naval force stationed there allowed the army to retain control of the area (Mika 1977: 689).

By 1824, the county's population had reach 4,274. The completion of the Erie Canal and the Talbot Road, further opened the county to future settlers and entrepreneurs. By the late 1820s, the county's population had increased significantly (Mika 1977: 689).

3.2.1 Old Castle

The historic settlement of Old Castle developed at Oldcastle Road as a rest stop along Talbot Road (Highway 3). A post office was first established at the community in 1862 and was housed in a hotel/tavern located on the southwest corner of Oldcastle Road and Highway 3. The Sandwich South township hall was located on the northwest corner, and until 1896, a toll gate for the Talbot Trail (road) was located on the northeast corner (Langlois 1984: 62).

3.2.2 Talbot Road

Talbot Road, now known as Highway 3, follows an old Indian trail. It was surveyed by Mahlon Burwell and work on the road began in 1809. The first section of road, in Elgin County, was completed in 1811. The road finally reached Essex County in 1818, following a natural ridge of glacial moraine which stretched from Windsor to Point Pelee. It was termed a "corduroy" road for in areas of swampy land, three inch planks, flattened on the upward side, were laid down side by side across the road. Stage coach service was finally introduced in the 1830s between Leamington and Windsor (Langlois 1984:4-5). Responsibility for road maintenance at this time rested with adjacent land-owners, usually farmers, but by the 1890s, the Talbot Road had been leased to Mr. Cameron who agreed to gravel the road and keep it passable for travel. Once the road was deemed "repaired", the owner was then allowed to erect toll gates at various points along the way. However, Cameron and his "Talbot Street Gravel Road Company" collected more tolls compared to the amount of repairs made to the road, and the Talbot Road, riddled with holes and often slick with swamp water, was soon dubbed "Cameron's Creek: Too dirty for bathing, too shallow for navigation" (Langlois 1984: 6).

3.3 History of Highway 401

Construction of Highway 401, a controlled access highway spanning Southern Ontario from Windsor to the Ontario/Quebec boundary, began after World War II and reached completion by 1968. Plans to build Highway 401, originally known as the MacDonald-Cartier Highway, were realized in the late 1930s; however, construction was delayed due to the outbreak of World War II. The highway was built to relieve heavy traffic congestion on Highway 2, the main east-west transportation corridor in southern Ontario during the first half of the twentieth century. Certain areas of Highway 2 were of particular concern, and therefore the highway was built in sections to relieve traffic congestion where it was needed the most. The first section to be completed was the Toronto-Oshawa Highway in 1947. Construction began on the Toronto Bypass in the 1950s, reaching completion by 1956 (Ministry of Transportation and Communications 1967).



The next phase in the construction of Highway 401 took place in the late 1950s and early 1960s (Bever [...]). This phase included the following sections: Windsor to Tilbury; London to Woodstock; Milton to Toronto; Oshawa to Port Hope; Trenton to Belleville; and Kingston to Gananoque. The remaining phases were completed in the mid- to late 1960s. The final section of Highway 401 was completed between Gananoque and Brockville by 1968. The DHO *Annual Reports* indicate that interchange structures were completed first, and grade separations were subsequently eliminated through the construction of underpass and overpass structures.

The significance of Highway 401 as a transportation corridor across southern Ontario is best summarized by Professor E. G. Preva of the University of Western Ontario, as quoted in the document ‘401’ *The MacDonald-Cartier Freeway*: “Highway 401 is the most important single development changing the social and economic pattern of Ontario. It is still transforming the province’s economy and the social, work and spending habits of its people” (Ministry of Transportation and Communications [...]: 1).

3.4 Bridge Construction

3.4.1 Early Bridge Building in Ontario

Up until the 1890s, timber truss bridges were the most common bridge type built in southern Ontario. Stone and wrought iron materials were also employed, but due to their higher costs and a lack of skilled craftsman, these structures were generally restricted to market towns. By the 1890s, steel was becoming the material of choice when constructing bridges given that it was less expensive and more durable than its wood and wrought iron predecessors. Steel truss structures were very common by 1900, as were steel girder bridges. The use of concrete in constructing bridges was introduced at the beginning of the twentieth century, and by the 1930s, it was challenging steel as the primary bridge construction material in Ontario (Ministry of Culture and Ministry of Transportation [...]:7-8).

The increased use of automobiles in the 1930s directly impacted the course of highway design and planning, which in turn affected the design and construction of highway bridges. In an effort to reduce traffic congestion and improve the province’s tourism initiatives, the DHO began to work towards introducing the controlled access freeways concept to Ontario. The Middle Road, connecting Highway 27 to Hamilton and located north of the heavily used Highway 2, was redesigned in the mid 1930s and extended to St. Catharines as a dual-lane, divided highway. Upon its completion in 1939, it was dedicated as the Queen Elizabeth Way (QEW). The QEW was still considered to be a limited controlled access highway. While it featured some grade separations, such as the cloverleaf intersection built at Highway 10, many local roads still had direct, at grade access to the highway. The development and construction of controlled access highways continued in the 1940s and 1950s with the Toronto-Oshawa Highway in Oshawa, the Toronto-Barrie Highway, and the Toronto Bypass (Bever [...]; Cuming 1983).

The first standard grade separation structure to be developed was the rigid frame bridge, which first appeared on Ontario’s divided highways in the 1930s. This was later replaced by other bridge designs, including slab, structural steel girder and pre-stressed concrete girder structures. Bridge engineers had to meet an increasing number of design needs resulting from an evolving highway program in Ontario. Factors impacting bridge design included increasing road allowances and clearance requirements, heavier traffic, higher speeds, safety standards, and most importantly, cost limitations (Cuming 1983:56).



3.4.2 Construction of the Highway 3 Underpass

The Highway 3 Underpass is a two span, concrete rigid frame T-beam bridge that carries two westbound lanes of Highway 3 over Highway 401 in the Town of Tecumseh at its border with the City of Windsor. The bridge, originally identified as the Sandwich South Township Bridge No. 13, was built in 1956 by the DHO and designed by M. M. Dillon & Co., Ltd., consulting engineers. The designs date to 1955 and are attributed to R. M. Dillon (Appendix A).

Col. Richard Maurice Dillon, the eldest son of Marmaduke Murray Dillon who co-founded M. M. Dillon Company Limited in 1946, is a well-known engineer, public servant, and Canadian army veteran. In 1986, R. M. Dillon was awarded the Order of Canada for his significant achievements and community service. The Order of Canada describes R. M. Dillon as “former army careerist, well-known structural design engineer and prominent businessman, he is a founder and former Dean of the Engineering Science Faculty at the University of Western Ontario and has served in many high-profile engineering- and energy-related positions at the provincial and national levels of government.” (Office of the Governor General of Canada 1987). R. M. Dillon passed away in April 2008 in Toronto. A death notice posted on *The Globe and Mail* website (Anon. 2008) described his numerous achievements: he joined the Royal Canadian Regiment in 1939 and served in World War II, and received the Military Cross for his bravery in the field; he graduated from the University of Western Ontario with a BA in Honours Mathematics and from the Massachusetts Institute of Technology with a M. Sc. in Engineering, beginning his career as a civil engineer; in the 1960s he served as the first Dean of Engineering at the University of Western Ontario; in 1971, he began his service as deputy minister of a number of ministries for the Ontario government; served as President of Professional Engineers of Ontario, President of the Canadian Corps of Commissionaires and as a founding director of The Schmeelk Canada Foundation; was appointed a member of the Order of Canada in 1986; and served as Colonel of the Royal Canadian Regiment from 1993 until 1997.

The 1945-1965 *Heritage Bridges: Identification and Assessment Guide, Ontario* (MCL & MTO [...]:56) describes the bridge as a two span, reinforced concrete T-beam bridge that was built in 1956. The Department of Highways (DHO) Annual Report for 1955 indicated that “in addition to the concrete paving there was considerable asphalt paving and work was started on ten structures for the Windsor entrance. Shortage of some types of materials was quite acute, with the result that progress on many projects was impeded by lack of reinforcing steel, cement and cement products.” (DHO 1956: 34). The 1956 DHO Annual Report recorded that the subject bridge had been completed, along with four other structures in District 1 (Chatham) on Highway 401 (DHO 1957:36, 41). The MTO West Region Structural Section also indicated that the structure has a unique design detail, within the context of this region, where the T-beams transition down into pier columns.

Previous rehabilitation/repair efforts at the Highway 3 Underpass include:

1998 – Patch, waterproof and pave.

4.0 EXISTING CONDITIONS AND INTEGRITY

A field review was undertaken by Lindsay Popert, ASI, on August 15th, 2011, to conduct photographic documentation of the bridge crossing and to collect data relevant for completing a heritage evaluation of the structure. Results of the field review and bridge inspection reports received from the client were then utilized to describe the existing conditions of the bridge crossing. This section provides a general



description of the bridge crossing and associated cultural heritage features. Photographic documentation of the bridge crossing is provided in Section 7.0. The bridge is considered to be oriented in an east-west direction for ease of description.

The Highway 3 Underpass is located in the northern part of the Town of Tecumseh at its border with the City of Windsor. It was built to carry the westbound lanes of Highway 3 over Highway 401. Highway 3 (Talbot Road) continues to the northwest and southeast of the subject underpass. The area located north of the bridge features a residential subdivision protected by a sound barrier wall, wooded area and a small creek. The banks of the eastern bridge approach are steep and densely wooded. Commercial properties are located to the east of the study area, Highway 401 extends to the west, and the eastbound lanes of Highway 3 and agricultural fields beyond are located to the south.

The bridge is located at the junction of Highway 401 and Highway 3. The current western terminus of Highway 401 is located just west of the subject bridge, at Howard Avenue, at which point Highway 3/Talbot Road continues westerly into the City of Windsor and towards the Windsor-Detroit international border crossing. As such, the Highway 3 Underpass serves as a gateway structure signalling the beginning/end of Highway 401 and marking the entrance on to one of the main thoroughfares into the City of Windsor and towards the Ambassador Bridge at the Windsor-Detroit international border crossing.

The Highway 3 Underpass is located in the West Region of the MTO. The bridge is not listed on the Ontario Heritage Bridge List and it is not designated under Part IV of the *Ontario Heritage Act*. A review of the Town of Tecumseh Municipal Register of Cultural Heritage Properties (last updated April 2009) confirmed that this bridge is not identified by the municipality as a heritage structure. Further, it is not identified as a Class A, B or C Bridge (candidates for the Ontario Heritage Bridge List) in the *Heritage Bridges Identification and Assessment Guide 1945 – 1965* screening document prepared by the MCL and the MTO.

The Highway 3 Underpass is a two span, concrete rigid frame T-beam bridge. The existing bridge features a concrete deck supported by eight concrete T-type beams, eight concrete rectangular columns and concrete abutments (legs of rigid frame) and wingwalls. The abutments are flanked by retaining walls. The concrete retaining walls located southwest and northeast of the structure feature recessed lines that form a square and curved ends. The asphalt wearing surface of the bridge deck is bounded by wide, paved shoulders, wide concrete curbs, and DHO standard steel railings. The railings are bounded by concrete parapet walls that feature curved edges and stepped/terraced decorative detailing in the concrete. The bridge approaches are bounded by steel beam guide rails which are secured to the interior side of the concrete parapet walls. There are no date/site markers located on the bridge. According to the 2009 *Inspection Form* (MTO 2009) for the subject bridge, the total overall deck length is 40.0 m, the span lengths are 20 m each, and the overall structure width is 15.7 m.

The 2009 *Ontario Structure Inspection Form* for the Highway 3 Underpass on Highway 401 reported the following deficiencies: “Bridge is in fair to poor condition currently showing no signs of structural distress. With advanced concrete deterioration throughout” (Burgess Engineering Inc 2009: 5).

4.1 Comparative Geographic and Historic Context of T-Beam Rigid Frame Bridges

According to data provided by the bridge office at the West Region of the MTO, the Highway 3 Underpass is one of 18 concrete rigid frame T-Beam bridges in the West Region of Ontario that are



owned and maintained by the province (Appendix B). The date of construction of these bridges ranges from 1953 to 2009, with the majority being built in the 1950s. Of the 18 structures, the Belle River Bridge and the Ruscom River Bridge feature the earliest construction date of 1953. While the subject bridge is not notable for having the earliest construction date, or longest individual span length, it is of particular note given that at 40 m (20 m each span) it has the longest overall span of a reinforced rigid frame T-beam bridge in the West Region of MTO. The Highway 4 Underpass features the longest span at 37 m.

4.2 Additional Cultural Heritage Resources

There are no known additional heritage resources in the vicinity of the subject bridge.

5.0 HERITAGE EVALUATION

5.1 Introduction

This section evaluates the significance of the structure within the guidelines of the Ontario Heritage Bridge Guidelines (MCL & MTO 2008 [Interim]). Although the Highway 3 Underpass is not listed on the Ontario Heritage Bridge List, it is over forty years old and is required to be evaluated as a potential heritage structure.

The rehabilitation or replacement of a bridge has the potential to affect cultural heritage resources in a variety of ways. These include the loss or displacement of resources through removal or demolition and the disruption of resources by introducing physical, visual, audible or atmospheric elements that are not in keeping with the resources and/or their setting. This cultural heritage assessment considers cultural heritage resources in the context of improvements to specified areas, pursuant to the *Environmental Assessment Act*. The following section provides a summary of the context for conducting heritage assessments of bridges over forty years old. Subsequently, a summary of the steps taken to evaluate the Highway 3 Underpass is provided. The Ontario Heritage Bridge Guidelines (MCL & MTO 2008 [Interim]) were employed to evaluate the heritage significance of the structure and to appropriately inform the Environmental Assessment process.

5.2 The Ontario Heritage Bridge Program and Ontario Heritage Bridge Guidelines

The Ontario Heritage Bridge Program was established in July 1983 in order to provide a framework for the consistent and considered decisions in allocating funds for the conservation of heritage road bridges. Key elements of the program comprise: a formal system of listing; the use of evaluation criteria; and consideration and application of a number of conservation strategies for any listed bridge subject to repair or replacement, including those subject to environmental assessment. Listing in the Ontario Heritage Bridge Program is intended to be a serious statement of heritage status. Listing does not confer outright protection.

The Ontario Heritage Bridge Program has been supplemented with the Ontario Heritage Bridge Guidelines, which was released as an 'interim' document in January 2008. The evaluation criteria prescribed through this document consist of three scoring categories, which have been derived from Ontario Regulation 9/06 and include: Design/Physical Value, Contextual Value and Historic/Associative



Value. A bridge that is evaluated with these criteria and achieves a score of 60 or greater is considered provincially significant and is a candidate for inclusion on the Ontario Heritage Bridge List.

The three categories and sub-criteria used to evaluate bridges with their maximum scores are as follows:

Table 1: Ontario Heritage Bridge Guidelines' Evaluation Criteria (MCL & MTO 2008 [Interim])

Criteria	Details	Maximum Score	Instructional Comments
Design/Physical Value		50	
Functional Design	Excellent	20	Displays a high degree of technical merit or scientific achievement <u>and</u> ; - Is one of a kind or prototype (first or earliest example of this kind), <u>or</u> - Is exemplary for its kind (i.e. the longest, highest etc. of its kind).
	Very Good	16	Displays a high degree of technical merit or scientific achievement <u>and</u> ; - Includes types in which fewer than five survive within a Region.
	Fair	12	This category includes types of which fewer than five survive within a Region, regardless of degree of technical merit or scientific achievement, even if many were originally constructed.
	Common	0	Of little value from a technical or scientific perspective. Many were built, many remain.
Visual Appeal	Excellent	20	High degree of craftsmanship or stylistic merit for most of the elements of the bridge; the design elements are well balanced and overall the structure is well proportioned; modifications are sympathetic.
	Good	12	Well-proportioned bridge that has a general massing that is appropriate to the landscape in which it is situated.
	Fair	4	Structure has only one or two noteworthy elements or is severely altered from its original form.
	None	0	No noteworthy features.
Materials	Excellent	10	Provincially rare or unusual materials. Stone and wrought iron are examples.
	Very Good	8	Regionally rare or unusual materials. Wood and riveted steel are examples.
	Good	5	Unusual combinations of materials.
	Common	0	Common materials or combinations.
Contextual Value		25	
Landmark	Excellent	15	Physically prominent: The bridge is highly significant physically and a primary symbol in the area. This includes 'gateway' structures. - It is a critical element in understanding a family of bridges within a corridor.
	Good	9	Locally significant: The bridge is perceived in the community as having symbolic value rather than purely visual or aesthetic value. - It is an important element in understanding a family of bridges within a corridor.
	Fair	3	A familiar structure in the context of the area. - It is a contributory element in understanding a family of bridges within a corridor.
	Common	0	No prominence in the area.



Character Contribution	Excellent	10	The bridge is the critical element in defining the character of the area and is of great important in establishing or protecting this character.
	Good	6	Maintains or contributes to the overall character of the area and is of municipal importance in establishing or protecting this character.
	Common	0	Character contribution is minimal.
Historic/Associative Value		25	
Designer/Construction Firm	Excellent	15	Known influential designer-builder: structure demonstrates or reflects the innovative work or ideas of companies, engineers, and/or builders having major impacts on the development of a community. For this item, community is broadly defined to include professional groups who have been demonstrably affected by the work in question.
	Good	9	Known prolific builder-designer: companies, engineers, and/or builders directly responsible for a large number of structures whose activities led to design or construction refinements and the establishment of standard forms.
	Fair	3	Known undetermined contribution: companies, engineers, and/or builders who have made a limited/minor contribution to the community.
	Unknown	0	Those responsible for design/construction are unknown.
Association with a historical theme, person or event	Excellent	10	Direct association with a theme or event that is highly significant in understanding the cultural history of the nation, province, or municipality.
	Good	6	Close association with a theme or event within an area.
	Common	0	Limited or no association with historic themes or events.

A listed bridge will not necessarily be conserved irrespective of technical, financial or other consideration. Nonetheless, decisions and strategies concerning the conservation of a listed bridge should take into account the evaluation criteria and the individual score the bridge has achieved. The higher the score, the more diligent should be the efforts to conserve the bridge in the most desirable manner possible.

5.2.1 Ontario Heritage Bridge Programs' Conservation Options

For all bridges included on the Ontario Heritage Bridge List or bridges eligible to be listed that are subject to repair, rehabilitation or proposed for replacement, a number of conservation/mitigation options are to be considered. The following options are arranged according to level or degree of intervention from minimum to maximum (MCL & MTO 2008 [Interim]:20):

1. Retention of existing bridge with no major modifications undertaken;
2. Restoration of missing or deteriorated elements where physical or documentary evidence (e.g. photographs or drawings) exists for their design;
3. Retention of existing bridge with sympathetic modification;
4. Retention of existing bridge with sympathetically designed new structure in proximity;
5. Retention of existing bridge no longer in use for vehicular purposes but adapted for a new use. For example, prohibiting vehicle or restricting truck traffic or adapting for pedestrian walkways, cycle paths, scenic viewing, etc.;
6. Retention of bridge as heritage monument for viewing purposes only;
7. Relocation of smaller, lighter single span bridges to an appropriate new site for continued use or adaptive re-use;



8. Bridge removal and replacement with a sympathetically designed structure:
 - a. Where possible, salvage elements/members of bridge for incorporation into new structure or for future conservation work or displays; and
 - b. Undertake full recording and documentation of existing structure.

5.3 Highway 3 Underpass: Evaluation

Using the Ontario Heritage Bridge Guidelines' (MCL & MTO 2008 [Interim]) criteria for evaluating bridges, the overall heritage evaluation resulted in a score of 70 with score summaries noted below.

Table 2: Heritage Evaluation of the Highway 3 Underpass (Site No. 6-67)

Criteria	Details	Maximum Score	Instructional Comments
Design/Physical Value		50	
Functional Design	Excellent	20	<p>16– A review of the MTO West Region bridge inventory revealed that there are 17 other concrete rigid frame T-Beam bridges in the region. Of these, the Belle River Bridge and the Ruscom River have the earliest construction date of 1953. While the subject bridge is not notable for having the earliest construction date, or longest individual span length, it is of particular note given that at 40 m (20 m each span) it has the longest overall span of a reinforced concrete rigid frame T-beam bridge in the West Region of MTO.</p> <p>The MTO West Region Structural Section also indicated that the structure has a unique design detail, within the context of this region, where the T-beams transition down into pier columns. As a result, the subject bridge was found to display moderate technical merit given its unique design detail and long overall bridge length, and considered to be 'very good' in terms of functional design.</p>
	Very Good	16	
	Fair	12	
	Common	0	
Visual Appeal	Excellent	20	<p>12 – It is a well-proportioned bridge that has a general massing that is appropriate to the landscape in which it is situated. Previous rehabilitation work has been minor and therefore the original design/visual intent of the bridge remains intact. Elements of stylistic merit and which are of particular note are the use of an open concept railing system and concrete end walls with decorative treatment, retaining walls with decorative recessed lines, and slightly curved soffit of each bridge span.</p>
	Good	12	
	Fair	4	
	None	0	
Materials	Excellent	10	<p>0 – The use of concrete and steel is common in twentieth-century bridge construction.</p>
	Very Good	8	
	Good	5	
	Common	0	
Contextual Value		25	



Table 2: Heritage Evaluation of the Highway 3 Underpass (Site No. 6-67)

Landmark	Excellent	15	15 – It is an important structure in the context of the area given that it is an underpass structure accommodating the intersection of two significant provincial highways: Highway 3 (Talbot Road) and Highway 401. Further, it is considered to be a prominent gateway structure as it signals the beginning and end of Highway 401 and marks the entrance on to one of the main thoroughfares into Windsor.
	Good	9	
	Fair	3	
	Common	0	
Character Contribution	Excellent	10	6 – The subject bridge contributes to the character of the highway corridor as a rural divided freeway. It is an original underpass and part of a series or family of rigid frame T-beam underpasses built within this phase of construction of the 401, and as such this structure maintains and contributes to this character.
	Good	6	
	Common	0	
Historic/Associative Value		25	
Designer/Construction Firm	Excellent	15	15 – Designed and stamped by R. M. Dillon of M. M. Dillon Co., Ltd, Consulting Engineers to the Department of Highways, Ontario. R. M. Dillon is noted for his military service, various public service roles at the provincial and national levels, his appointment into the Order of Canada, and his contributions to civil engineering in Ontario through his work as a civil engineer and involvement in high profile projects, as Dean of Engineering at the University of Western Ontario, and as President of Professional Engineers of Ontario.
	Good	9	
	Fair	3	
	Unknown	0	
Association with a historical theme, person or event	Excellent	10	6 - Associated with a second phase of construction of the Highway 401, which took place in the 1950s. The construction of Highway 401 was a significant, mid-twentieth century transportation initiative that extended across the province. Impacts range from altering local rural landscapes and road patterns to improving the economic and social networks at the regional and provincial levels.
	Good	6	
	Common	0	

Total Points = 70

6.0 CONCLUSIONS AND MITIGATION RECOMMENDATIONS

6.1 Conclusions

Following application of the Ontario Heritage Bridge Guidelines' (MCL & MTO 2008 [Interim]) criteria for evaluating bridges, the Highway 3 Underpass scored 70. This evaluation indicates that the subject bridge retains cultural heritage value given the design, contextual and historical values associated with the structure. Given that this structure achieved a score over the 60 point threshold, it is eligible for inclusion on to the Ontario Heritage Bridge List.



The Highway 3 Underpass is a two span, concrete rigid frame T-Beam bridge built to carry the westbound lanes of Highway 3 over Highway 401 in the Town of Tecumseh at its border with the City of Windsor. The structure was designed by M. M. Dillon Co. Ltd., consulting engineers, and drawings date to 1955. The engineer stamp found on the drawings belongs to R. M. Dillon, an important civil engineer, public servant and veteran. The bridge opened to vehicular traffic in 1956. Since its construction in 1956, the bridge has undergone some limited rehabilitation work which has resulted in waterproofing and repaving the bridge deck. As such, the original appearance and design of the bridge remains intact.

The structure retains important associations with the construction of Highway 401, a significant province-wide transportation corridor, and the construction of a series of other concrete rigid frame T-Beam underpasses built to carry local township roads over the new highway. Further, it functions as the current western beginning and end of Highway 401.

In addition, the subject bridge was found to display excellent functional design attributes, given its unique design detail and exemplary bridge length.

In summary, significant design elements associated with the Highway 3 Underpass include, but are not limited to:

- two span scale;
- concrete rigid frame T-Beam design;
- concrete construction materials;
- retaining walls with decorative recessed lines;
- open concept pedestrian rail design with decorative concrete end walls;
- curved soffit; and
- functions as a “gateway” for the westerly terminus of Highway 401 and for the entrance to the City of Windsor.

6.2 Statement of Cultural Heritage Value and Description of Heritage Attributes

6.2.1 Description of Property

The Highway 3 Underpass (Site No. 6-67) is a two span, concrete rigid frame T-Beam bridge built to carry the westbound lanes of Highway 3 over Highway 401 in the Town of Tecumseh at its border with the City of Windsor, Ontario. Further, the 40 metre long bridge is located at the western entrance/terminus to Highway 401.

6.2.2 Statement of Cultural Heritage Value or Interest

The Highway 3 Underpass was designed and stamped in 1955 by R. M. Dillon of M. M. Dillon Co. Ltd., consulting engineers to the Department of Highways, Ontario. A prominent engineer, Richard Maurice Dillon is noted for his military service, various public service roles at the provincial and national levels, his appointment into the Order of Canada, and his contributions to civil engineering in Ontario through his work as a civil engineer, his involvement in high profile projects, as Dean of Engineering at the University of Western Ontario, and as President of Professional Engineers of Ontario.



The bridge opened to vehicular traffic in 1956. The structure displays technical merit given its overall bridge length at 40 metres, the longest of this bridge type in the West Region of MTO, and unique two span and pier configuration where the T-beams transition down into pier columns. Since its construction in 1956, the bridge has undergone only minor rehabilitation work. As such, the original appearance and design of the bridge remains intact.

The Highway 3 Underpass retains important associations with the construction of Highway 401, a significant province-wide transportation corridor, and the construction of a series of other concrete rigid frame T-Beam underpasses built to carry local township roads over the new highway. Further, it is an important structure in the context of the area given that it is an underpass structure accommodating the intersection of two significant provincial highways: Highway 3 (Talbot Road) and Highway 401. The structure also serves as a prominent gateway structure signaling the beginning and end of Highway 401 and marking the entrance on to one of the main thoroughfares into the City of Windsor.

6.2.3 Description of Heritage Attributes

Attributes that contribute to the design value of the bridge as a unique T-Beam structure in the region include:

- two span scale and pier configuration where T-beams transition down into individual pier columns;
- decorative treatment applied to enhance the bridge as a gateway structure, including: retaining walls with decorative recessed lines, open concept pedestrian rail design with decorative concrete end walls, and curved soffits of each span; and
- concrete rigid frame T-Beam design.

Attributes that contribute to the historical and contextual values of the bridge as a prominent gateway structure on Highway 401 associated with prominent engineer R. M. Dillon include:

- physical relationship with other T-Beam bridges in the region built to carry roads over Highway 401;
- function and location of the bridge at the junction of two significant provincial highways, Highway 3 (Talbot Road) and Highway 401; and
- functions as the current western beginning and end of Highway 401.

6.3 Recommendations

Based on the results of archival research, an analysis of bridge design and construction in Ontario, field investigations and application of the Ontario Heritage Bridge Guidelines' (MCL & MTO 2008 [Interim]) criteria for evaluating bridges, the Highway 3 Underpass was determined to retain cultural heritage value. The structure achieved a score over the 60 point threshold and as such, it is eligible for inclusion on the Ontario Heritage Bridge List.

As indicated in Section 1 of this report, the Detroit River International Crossing (DRIC) Study Environmental Assessment Report which was approved August 2009 includes realignment of Highway 3 and a significantly modified interchange. Only conservation option 8 of the Ontario Heritage Bridge



Guidelines, bridge removal or replacement, can apply since replacement is required to meet demand requirements that are not achievable through rehabilitation or upgrading of the existing structure.

The following recommendations are based on the identified cultural heritage value of the Highway 3 Underpass:

1. This report should be filed with the MTO Heritage Bridge Committee for review and comment, and considered for inclusion on the Ontario Heritage Bridge List. Once finalized, it should be submitted to the Ministry of Tourism and Culture and the Archives of Ontario as a sufficient level of documentation.
2. Should the subject bridge be included on the Ontario Heritage Bridge List, consultation should be undertaken with the Ontario Ministry of Tourism and Culture to apprise them of this situation and the recommended approach to be undertaken with respect to conservation option 8 of the Ontario Heritage Bridge Guidelines.
3. Original bridge drawings should be placed in the Archives of Ontario.



7.0 PHOTOGRAPHIC DOCUMENTATION



Plate 1: View of underpass from the west.



Plate 2: West approach.





Plate 3: North elevation, from the northeast.



Plate 4: East approach.





Plate 5: Oblique view of the south elevation, from the east.



Plate 6: South elevation.





Plate 7: View of the eight rectangular column shafts from the northeast.



Plate 8: View of the rectangular column shafts from the southeast.





Plate 9: Detail of
central pier, south
elevation.



Plate 10: Detail of
west abutment.





Plate 11: Detail of T-beams.



Plate 12: View of southwest retaining wall with recessed lines.





Plate 13: View of curved end of northeast retaining wall.



Plate 14: Detail of DHO standard steel railings.





Plate 15: View of south curb and shoulder and interior detail of concrete parapet walls with curved edge and terraced/stepped decorative treatment.



Plate 16: View of bridge deck, wide shoulders and wide curb on north side of structure.





Plate 17: Exterior detail of parapet wall.



Plate 18: View of Highway 401, looking east.





Plate 19: View of
Highway 3/Highway
401, looking west.

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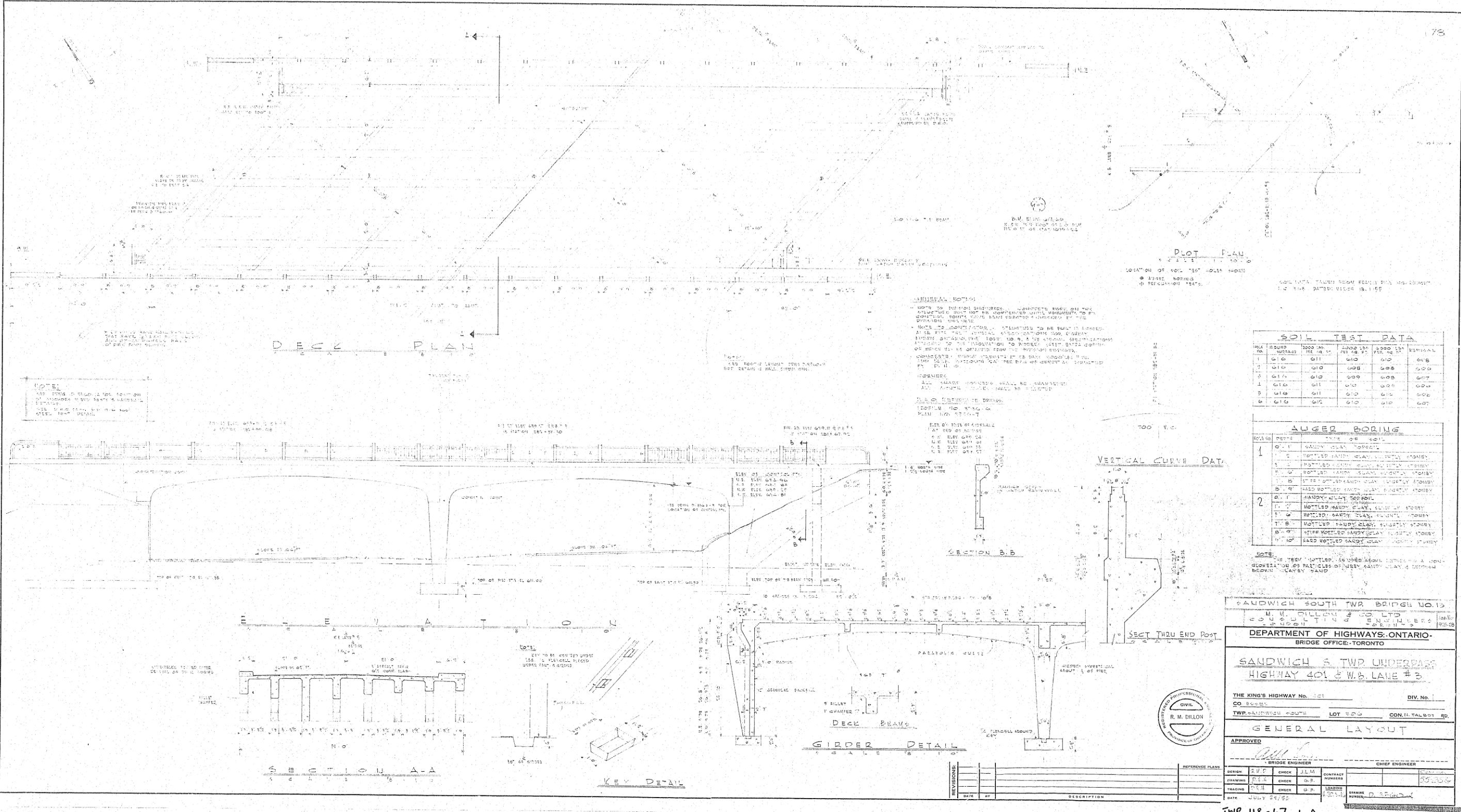
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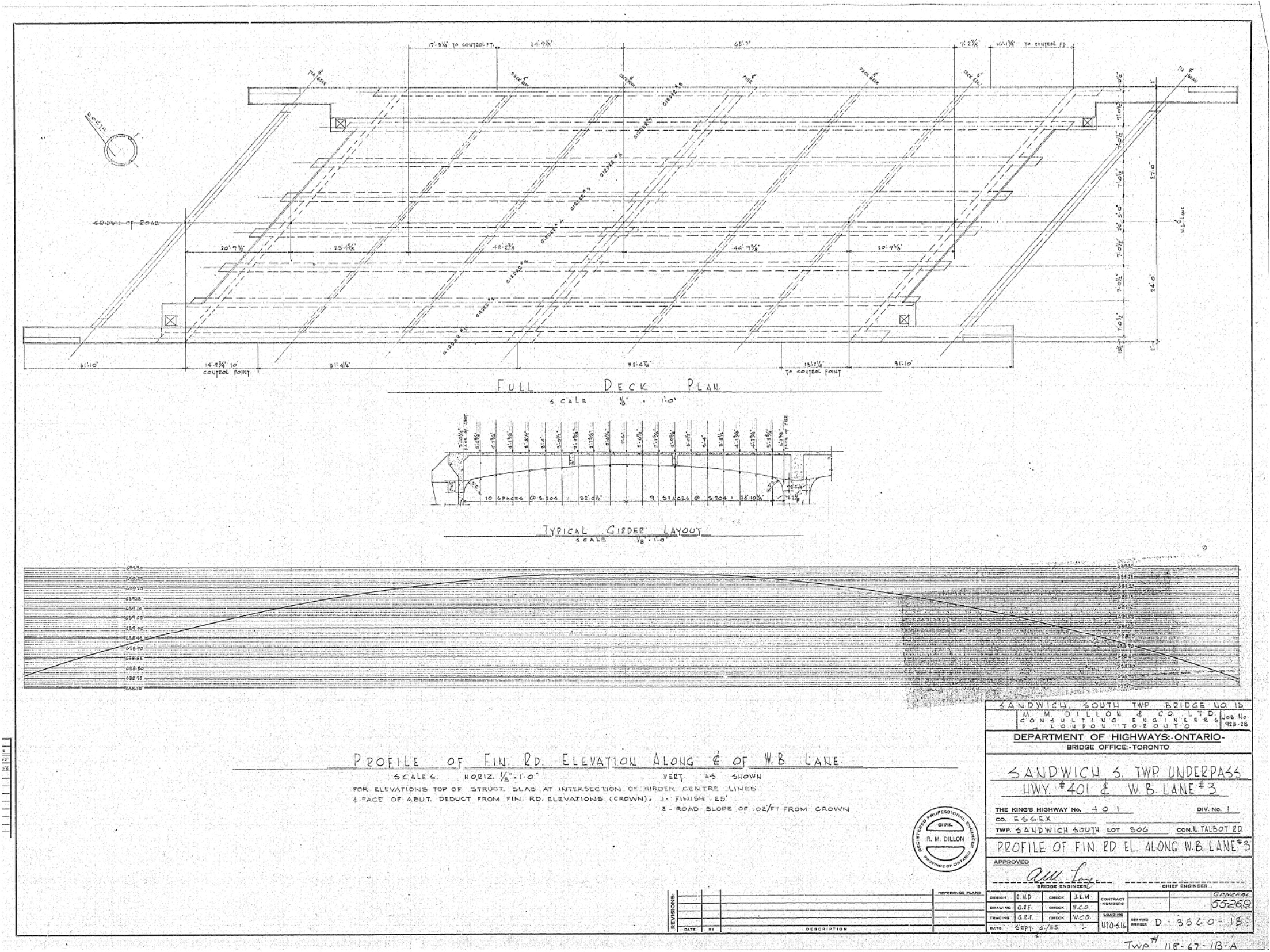
APPENDIX A

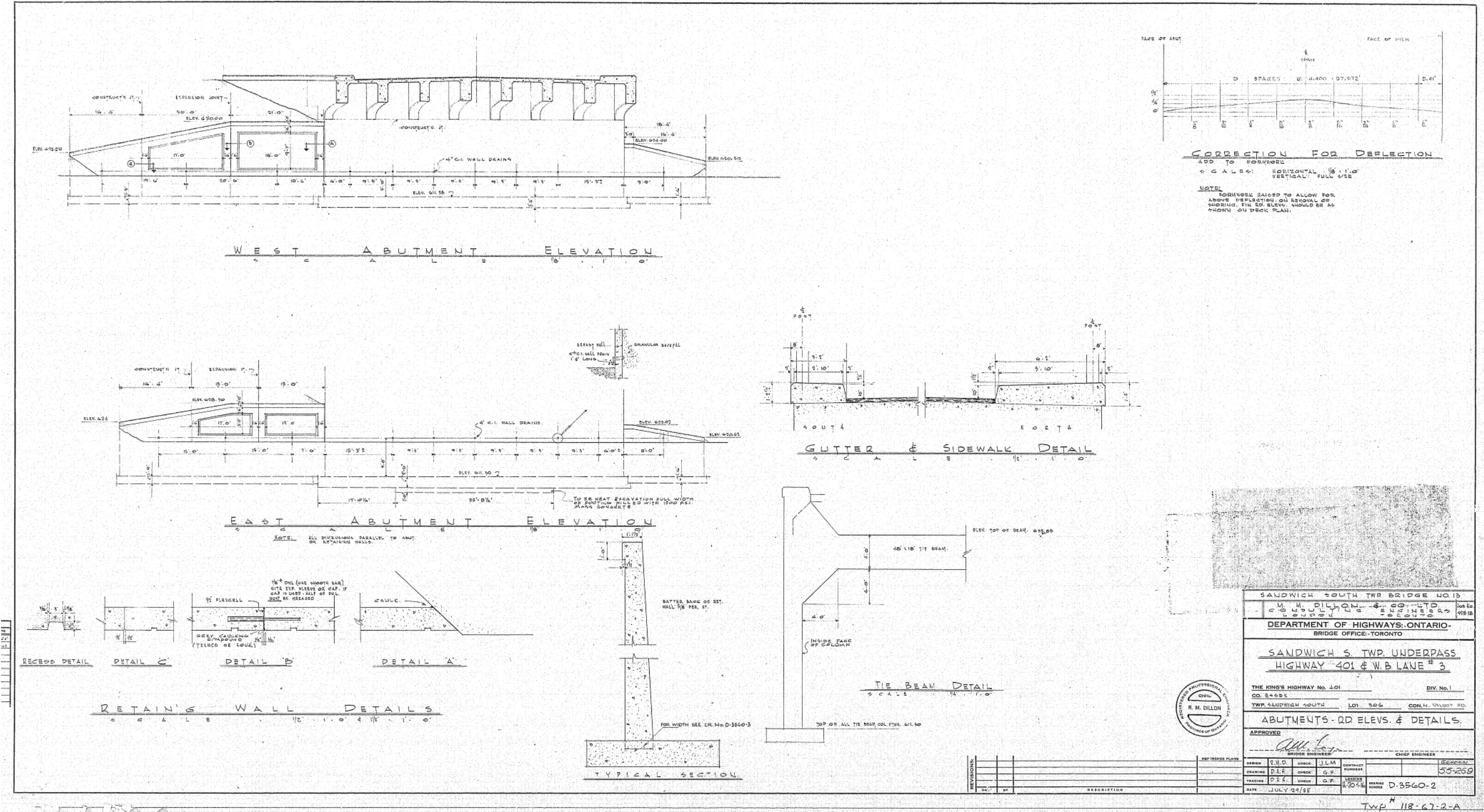
Original Structural Drawings: Highway 3 Underpass

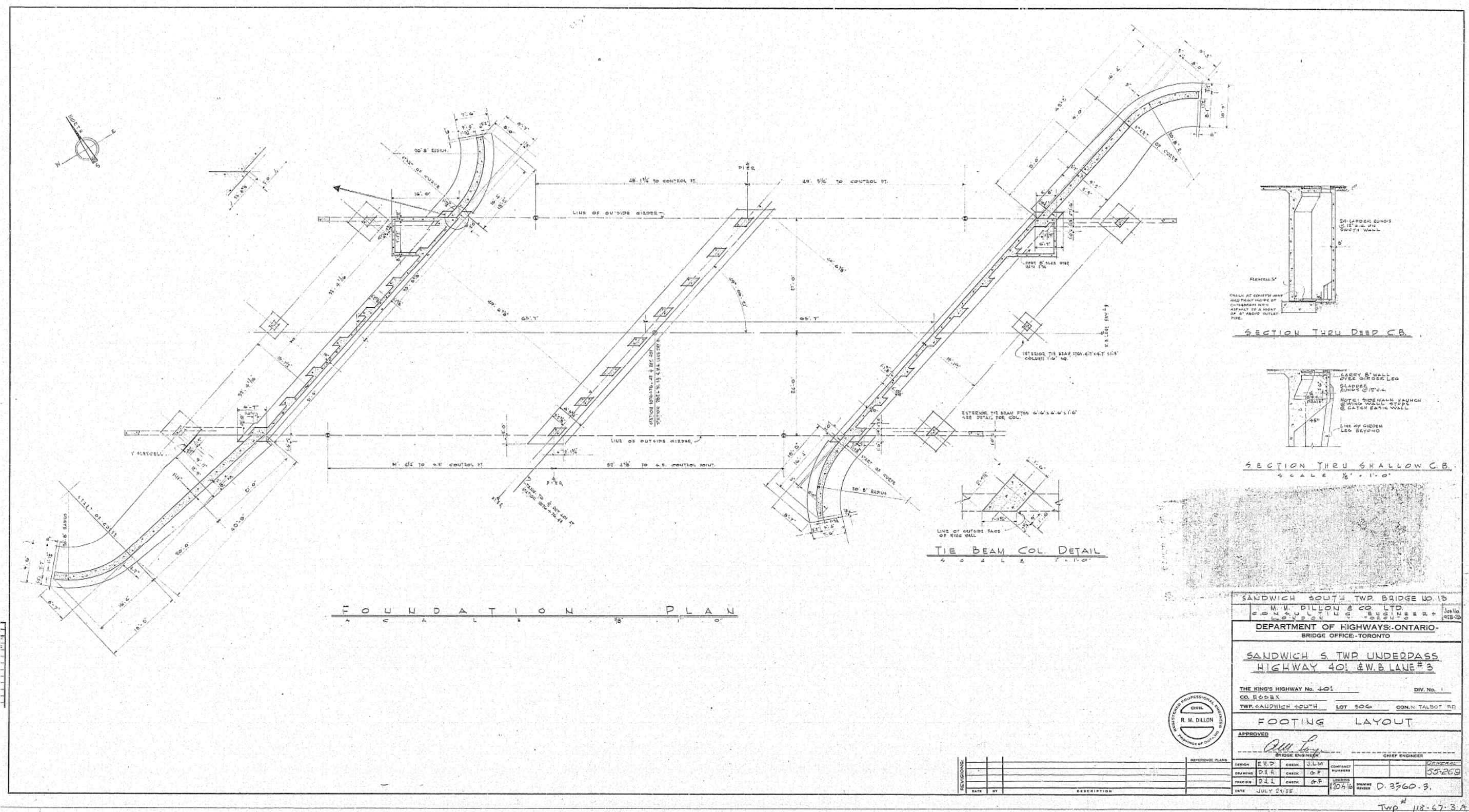


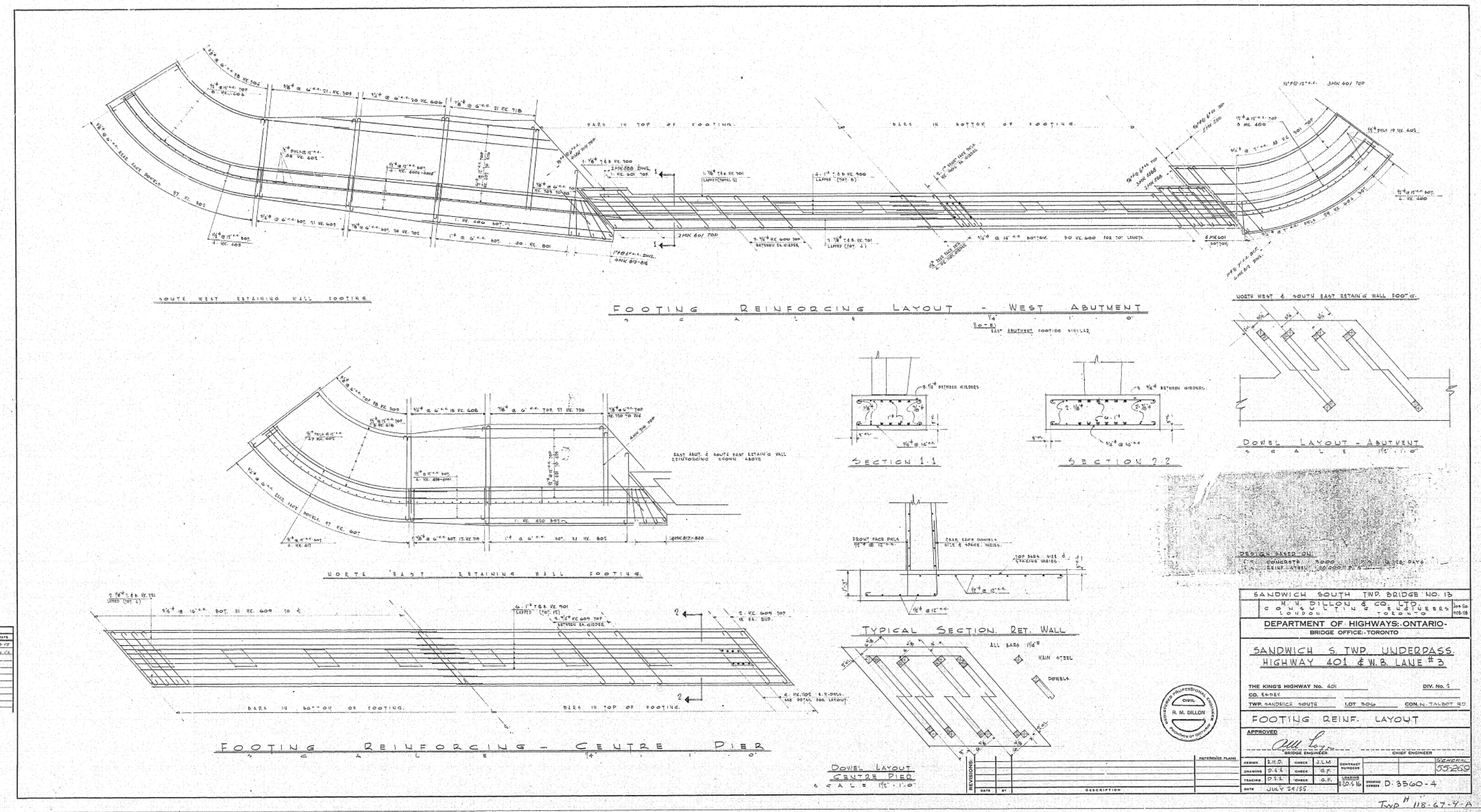


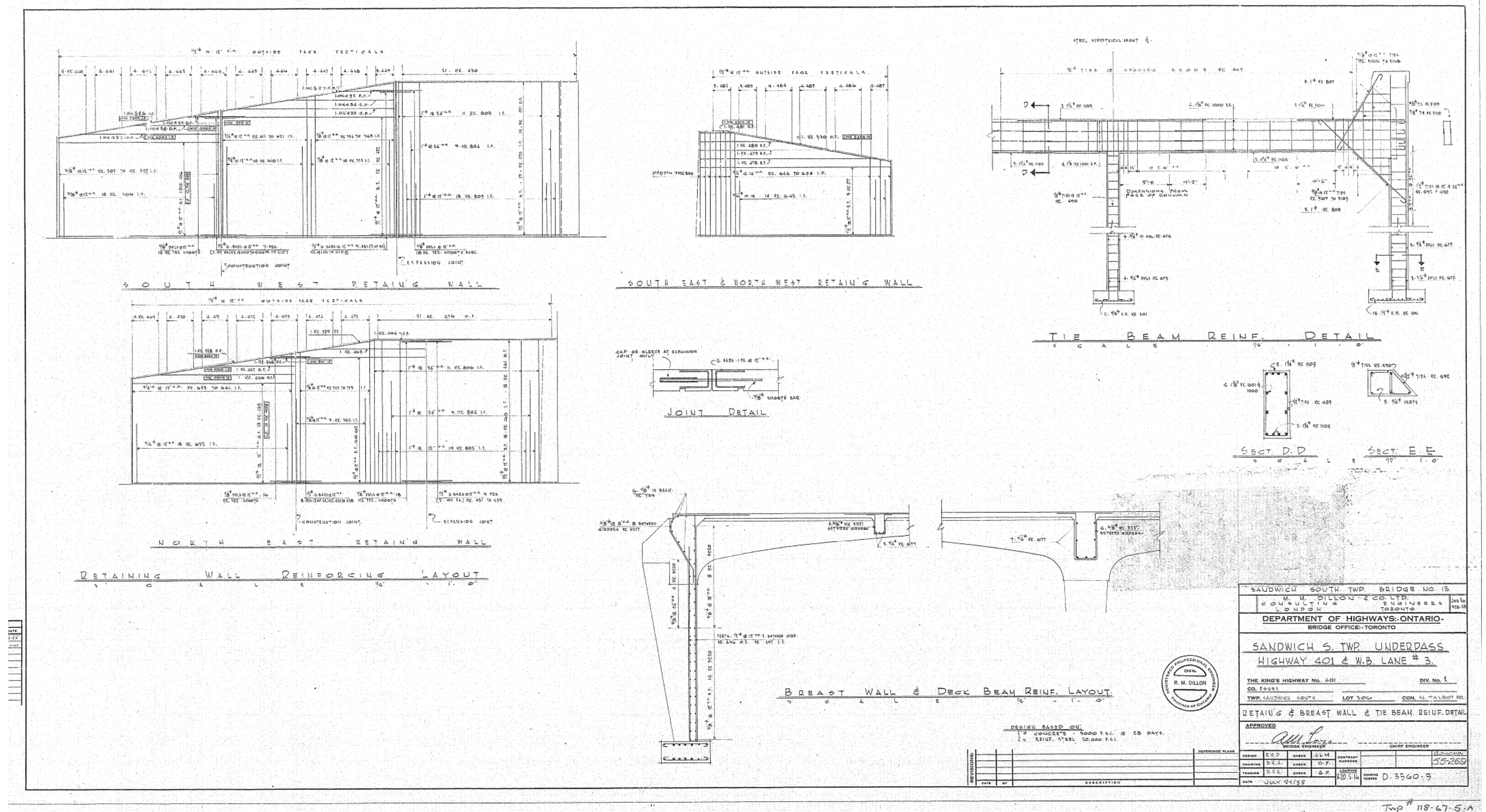
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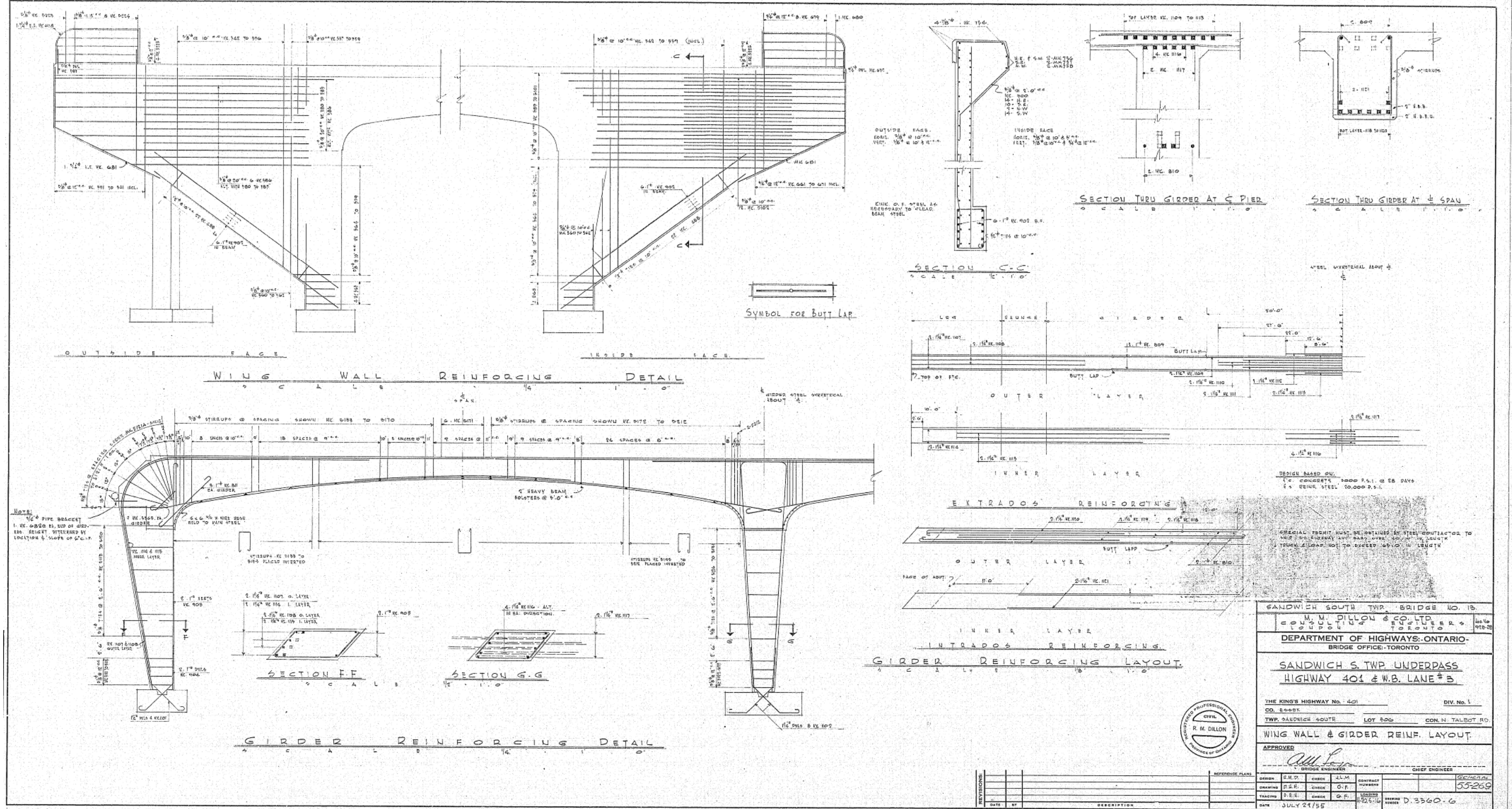


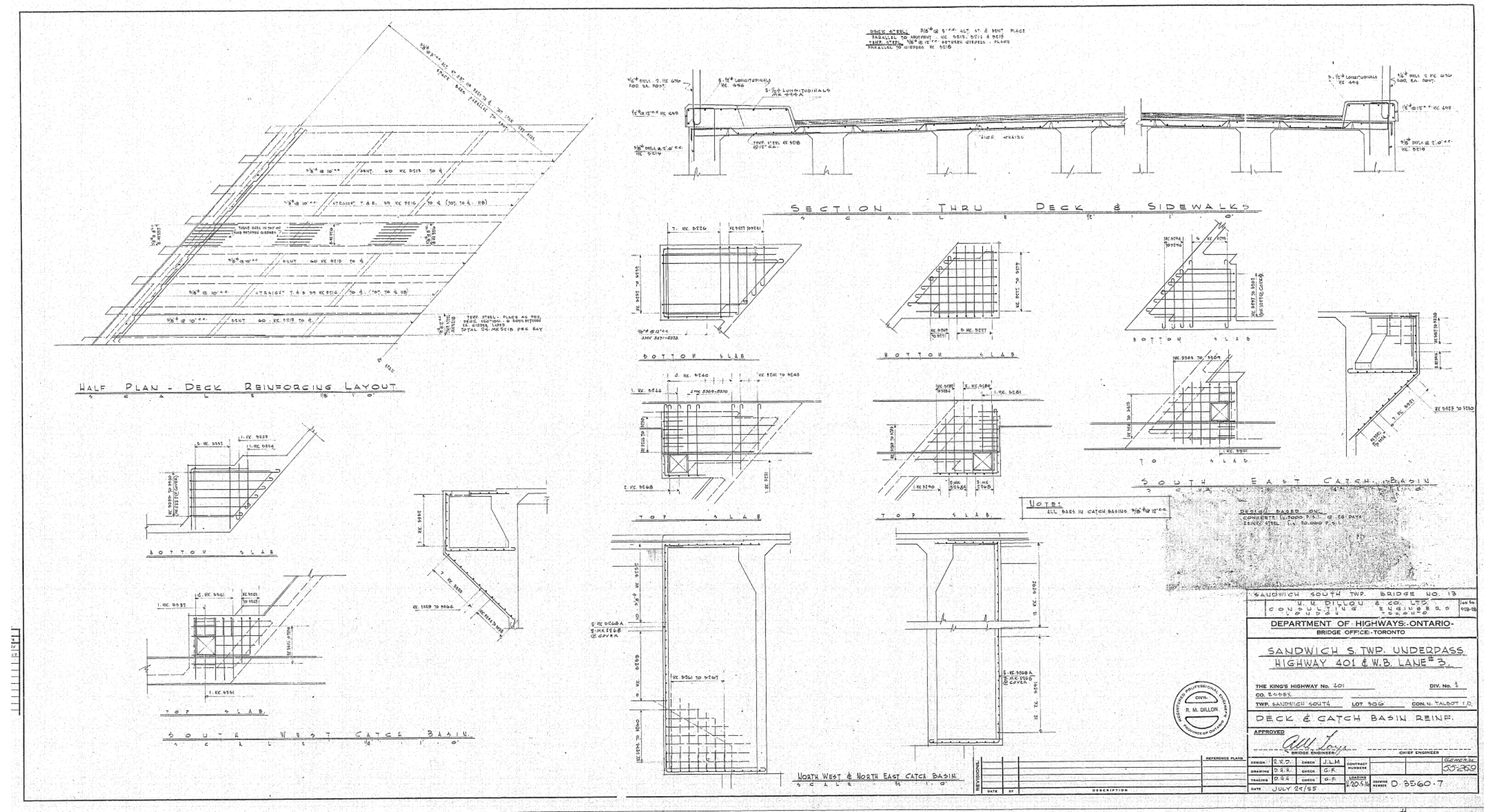












APPENDIX B

Inventory of Concrete Rigid Frame T-Beam Bridges in MTO's West Region

ID	STRUCTURE	HWY	YEAR BUILT	# of SPANS	MAX. SPAN LENGTH	DECK LENGTH
6 - 84/	BELLE R. BR.	401	1953	1	24	24
6 - 88/	RUSCOM RIVER BRIDGE	401	1953	1	24	24
23 - 170/	HIGHWAY #59 UNDERPASS.....	401	1955	1	35	35
19 - 303/	DORCHESTER ROAD UNDERPASS	401	1955	1	33	33
6 - 74/	COUNTY ROAD #46 OVERPASS	401	1955	1	18	18
19 - 375/	WESTCHESTER BOURNE (HWY#74) UNDERPASS	401	1956	1	35	353
19 - 405/	HIGHWAY #4 UNDERPASS	401	1956	1	37	37
6 - 67/	HIGHWAY #3 UNDERPASS	401	1956	2	20	40
6 - 68/	NORTH TALBOT ROAD UNDERPASS	401	1956	1	34	34
23 - 167/	SWEABURG ROAD OVERPASS.....	401	1956	1	17	17
19 - 304/	ELGIN ROAD (HWY #73) UNDERPASS	401	1957	1	33	33
25 - 139/	WHIRL CREEK BRIDGE	8	1959	1	24	24
33 - 142/	Waterloo Regional Road #8 Overpass	401	1960	2	17.4	34.8
9 - 15/	BOSTON CREEK BRIDGE	6	1960	1	24	24
25 - 265/	BLACK CREEK BRIDGE (SEBRINGVILLE)	8	1984	1	21	21
6 - 85/	BELLE RIVER RD. O/P ¹	401	1954	1	13	13
23-117-E	Horner Creek Bridge E.B.L.	401	1960	2	14	28
23-117-W	Horner Creek Bridge W.B.L.	401	1960	2	14	28

¹ Site 6-85 was built in 1954 as a rigid frame tee bridge. It was demolished in 2009 and replaced with a CPCI girder bridge.

