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September 10, 2012

Mr. John Bryson, P.Eng.
Manager, Structures and Expressways
Design & Construction - Linear Infrastructure
City of Toronto
Technical Services
310 Front Street West, Suite 815
Toronto ON M5V 3B5

Dear Mr. Bryson:

F.G. GARDINER EXPRESSWAY, FALLING CONCRETE
INDEPENDENT ASSESSMENT

This report presents the findings of an independent assessment of current City practices in the management of the F.G. Gardiner Expressway (the "Expressway") with particular reference to future maintenance and the actions to be taken in the event of Falling concrete.

As part of the assessment, IBI has reviewed existing documentation provided by the City, listed in Appendix A. Random field investigations were also carried out to assess the current condition of the Expressway and the validity of recent investigations and recommendations contained in these reports.

IBI has also identified and assessed actions to mitigate potential public safety issues.

Maintenance/Rehabilitation Program Development

Detailed field investigations have been carried out in recent years, by different entities, prior to the implementation of repair programs. These investigations have been comprehensive for the specific locations of interest and are considered to be appropriate for the contemplated works at those times. However, it seems that there have been no comprehensive or in depth studies of the Expressway in its entirety carried out in recent years.

The most recent correspondence from MRC (June 24, 2011) during the administration of repair contracts between Bents 48 through 60 recommends that 'a funded strategy to investigate, prioritize, and subsequently repair and or replace the deck over the entire length (of the Expressway) needs to be established without delay'. IBI strongly agrees with this statement. The Strategy development should be initiated immediately based on currently available and visually obtained data. The data must be confirmed by carrying out more in-depth investigations throughout the length of the Expressway, which should also be initiated at this time.

The deck repair/replacement program, as presented in the background material supplied to IBI, appears to be based on a general progression of the works from east to west based on yearly budgets rather than engineering priorities. This is clearly not in the best interest of the Public.

Data Verification by Random Sampling

In order to assess the effectiveness of the recent visual investigations carried out to date (most recently May 2012), a few random inspections were carried out using physical testing methods.

Test locations were selected based on untravelled areas (so as to minimize disruptions to traffic) and locations being accessible. To provide as much representative samplings as possible of the overall condition of the Expressway, areas exhibiting signs of surface distress (based on the 2012 City of Toronto Visual Survey) as well as areas exhibiting no signs of surface distress (based on the 2012 City of Toronto Visual Survey) were included. The surface deterioration surveys (i.e. sounding surveys) were conducted on the soffit and outside faces of parapet walls for the following sections of the highway:

- Bent No. 53-55 (East of Garrison Road)
- Bent No. 85-86 (West of Fort York Boulevard)
- Bent No. 91-92 (West of Fort York Boulevard)
- Bent No. 120-121 (East of Lakeshore Boulevard West Westbound)
- Bent No. 131-132 West of Spadina Avenue)
- Bent No. 301-302 (East of Cherry Street)
- Bent No. 306-307 (East of Cherry Street)

The field investigations were conducted on August 29 and 31, 2012 and on September 4 and 5, 2012.

Delaminations in concrete were detected by striking the surface and noting the change in sound being emitted. It is noted that although generally reliable, this method may not detect all delaminations, or delaminations at a depth greater than 100 millimetres. The hammer sounding method was used for all overhead and vertical surfaces inspected. Access to the substructure components was conducted via articulating zoom booms.

Details of the field investigation, including a comparison between our findings and those in the 2012 City of Toronto Visual Survey, are included in Appendix B, Field Investigation Report. The areas of deterioration (i.e. spalls and delaminations) vary greatly from the 2012 City of Toronto Visual Survey results for the areas investigated. This variance confirms the need for more intensive field investigations during the development of the Expressway Management Strategy and the ongoing proactive controlled chipping program.

This limited substructure delamination survey reveals the importance of conducting a more comprehensive delamination (i.e. sounding) survey of the entire stretch of the subject highway, in order to identify and prioritize all areas that are in immediate need of repair. Additional investigative methods such as corrosion potential surveys, core exfraction, ground penetrating radar and thermography should also be included in the ongoing investigations required for program development.

General overview photographs of the various tested sections of the F.G. Gardiner Expressway are included in Appendix B together with a summary of the surface deterioration noted at each section, with comparison to the 2012 City of Toronto Visual Survey results.

Concrete Spalls/Emergency Response

Currently there is no definitive method of identifying an imminent concrete spall. The proactive controlled chipping program is a means of minimizing the risk of falling concrete but it does not preclude the event.

The identified response in the event of spalling is considered appropriate. However it should be added that the emergency response should, if possible, be carried out by the same team for all events, as the team will have the benefit of previous observations to compare against, and that

will help in providing more consistent informed evaluations. The response should also include hands-on sounding of adjacent areas.

As these events can be precipitated by variables such as ongoing rebar corrosion, thermal loading or shock, impact effects from above, etc., it is appropriate to have documented response procedures in place to address not only concrete spalls and their structural significance, but also the potential for punching failures.

Expressway Management

The Expressway is a major and uniquely identifiable component of the City's Infrastructure requiring major ongoing capital investment to maintain. In view of its importance to the transportation system, it is suggested that the management of the Expressway be assumed by a dedicated entity with associated budgets specifically provided for the management and maintenance of the asset. This is consistent with the management practices for major assets. The dedicated team would be responsible for the development and administration of a detailed and comprehensive maintenance program based on proactive reviews and inspection of the asset, and ongoing coordination with other City groups and emergency response staff. It is important to have consistency in approach through the provision of a dedicated team on a full-time basis, at least for the foreseeable future.

Protective Measures

Many areas of the Expressway and the associated ramps are elevated above areas accessible by the public whether along roadways and pathways or in open unused areas. As such, potential concrete spalls present a significant hazard to public safety. As noted previously, there is no procedure or methodology that can definitively identify an imminent spalling threat. In order to provide protection and reduced risk, a physical barrier is required to contain spalled concrete.

Systems identified with the potential to provide this protection when comprehensive repairs are being carried out include:

Flexible Systems such as:

- Debris Netting Protection
- Translucent corrugated PVC/FRP sheeting
- Plastic Net
- FRP Grid

Rigid Systems such as:

- Galvanized mesh/grid (similar to system in place on I-girder structure at York-Lakeshore intersection)
- Timber (for I-girder sections)

Coatings such as:

- Corrosion inhibitors/anti-spall sealers
- Flexible surface applied membranes

In addition, consideration should be given to securing areas of non-use to prevent public access thus removing the need for containment systems in these areas.

The following table provides a brief comparison of systems considered:

Protection System	Installed Cost	Material Type	Traditional Uses	Remarks	Recommendations
Non-Rigid Systems					
Debris Netting	Material Cost $ 17/SM Installed?	Heavy duty knitted polyethylene net with reinforced border & grommets	Traditionally used for debris containment during construction and used in Montréal for similar application to address bridge deterioration	• Developed for containment • Susceptible to wind damage • Obscures areas of use • Bird habitat may be created • Ease of installation • Negative visual impact/interpretation • Can be used to address parapet walls	Recommended for further consideration
Plastic Net	Material Cost $ 1-10/SM Installed?		Used as construction barrier, similar to snow fence type material	• Low strength, limits containment to relatively small units • Low cost • Applied directly to soffit of deck	Not recommended
FRP Grid	Material Cost $ 2-4/SM Installed?	Fibre reinforced plastic	Developed as geotechnical reinforcement for pavements, reinforced soils applications	• Can be applied directly to deck soffit in girder and box beam areas • Light weight and easy to install • Defined strength • Environmentally stable • Soffit remains visible • Containment limitation depend on grid spacing • Non traditional use • Not suitable barrier walls	Recommended for further consideration in areas excluding barrier walls

Mr. John Bryson, P.Eng. – September 10, 2012

Protection System	Installed Cost	Material Type	Traditional Uses	Remarks	Recommendations
Rigid Systems					
Galvanized Mesh/grid	Material Cost $ 1-50/SM Installed?	Galvanised Steel	Traditional uses included concrete reinforcement, fencing materials (quick fence etc.)	• Can be applied directly to deck soffit in girder and box beam areas • Light weight and easy to install • Environmentally stable • Soffit remains visible • Non traditional use • Containment governed by mesh size selected and anchorage system • Can be installed by any general bridge contractor	Recommended for further consideration
Transparent corrugated PVC/FRP sheeting	Material Cost $ 4-7/SM Installed ?		Roofing and wall cladding	• Relatively low impact strength • Non traditional use • Environmentally stable • Soffit remains visible • Non traditional use	Not recommended
Timber systems	Material Cost $ 16-40/SM Installed?		Similar to traditional forming for concrete work. Can be supported from bottom flanges of girders		

Protection System	Installed Cost	Material Type	Traditional Uses	Remarks	Recommendations
Coating Systems					
Corrosion Inhibiting sealer (Antispall by Dayton Superior)	Material Cost $ _____ Installed?	e.g. Dayton Superior J-29WB	Cleaning surface for installation requires surface preparation recoat 2-4 year required	• Surface preparation required • Can be applied directly to deck soffit in girder and box beam areas • Environmentally stable • Soffit remains visible • No containment value, may slow deterioration and reduce potential for future spalling • non traditional use	Not recommended
Resilient Polyurethane Coating	Material Cost $ _____ Installed?	PTU and PTU-200 (chemical resistant spray applied polythiourea elastomer)	Developed in US for strengthening and maintenance of the integrity of masonry walls during blast and seismic events . Has not been used in this context	• Can be applied directly to deck soffit in girder and box beam areas • Environmentally containment required during installation • Soffit obscured • Non traditional use • Recoating period > 10 years • Requires high pressure (2-3 ksi) equipment to spray-1 gallon covers 100 SF for 16 mill (1/1000 inch) thk.	Recommended for further consideration

Mr. John Bryson, P.Eng. – September 10, 2012

Our reviews have been based upon the limited information provided by the City and represent our professional opinion regarding the management of the F.G. Gardiner Expressway Infrastructure. Should further information become available or if you wish further information or clarification of this report, please contact the undersigned.

Yours truly

Ted Brumfitt, P.Eng.
Associate / Manager Bridge Engineering
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ted.brumfitt@ibigroup.com

encl. Appendix A – Listing of Supplied Documentation
Appendix B – Field Investigation Report

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APPENDICES

Appendix A
Listing of Supplied Documentation

Appendix B
Field Investigation Report

APPENDICES

Appendix A
Listing of Supplied Documentation

TORONTO TECHNICAL SERVICES

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Suite 815
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TRANSMITTAL

To: IBI Group

30 International Boulevard

Toronto, ON, M9W 5P3

Attn.: Mr. Ted Brumfitt, P.Eng.

Date: March 30th, 2012

File no.: W40-424-2012

Project: F.G.Gardiner Spalling Concrete: Review of Existing Procedures

Contract No. TS-DCLI-10-12-004

We are sending out the following by: Mail Courier Hand **Pick-Up**

Item	Description
1	Rehabilitation of F.G. Gardiner Expressway Main Deck, Jarvis Street to the Don Valley Parkway Pred-Design Report *McCormick Rankin Corporation*, November, 2003
2	Rehabilitation of F.G. Gardiner Expressway Main Deck, Jarvis Street to the Don Valley Parkway Volume 2, Deck Condition Survey Summary *McCormick Rankin Corporation*, June 2005
3	F.G. Gardiner Expressway From Lower Jarvis Street to York Street Concrete Box Girder Evaluation Report *McCormick Rankin Corporation*, April 2009
4	F.G. Gardiner Expressway From Lower Jarvis Street to York Street Concrete Box Girder Evaluation Summary *McCormick Rankin Corporation*, April 2009
5	Municipal Structure Inspection Form F.G. Gardiner Expressway York St. to Jarvis St. *McCormick Rankin Corporation*, July 2011
6	F.G. Gardiner Expressway York Street to Lower Jarvis Street - Structure Repairs Box Girder Investigations *McCormick Rankin Corporation*, November 2011
7	F.G. Gardiner Expressway Main Deck, Deck Condition Letter to City of Toronto *McCormick Rankin Corporation*, June 24, 2011
8	2011 Visual Inspection record for the underside of the Expressway identifying the priority of areas for controlled chipping; *City of Toronto*
9	2012 Visual Inspection record of the underside of the Expressway identifying the priority of areas for controlled chipping; *City of Toronto*
10	Listing of Contracts 1956 to 2012 F.G. Gardiner Expressway

11	Layout of F.G. Gardiner Expressway Main Deck
12	Sketch SK001, August 2012 Proposed Construction Rehabilitation From the Don Valley Parkway to Lower Jarvis Street
13	Sketch SK002, August 2012 Proposed Construction Rehabilitation From Lower Jarvis Street to Spadina Avenue
14	Sketch SK003, August 2012 Proposed Construction Rehabilitation From Spadina Avenue to Strachan Avenue
15	Sketch SK004, August 2012 Proposed Construction Rehabilitation From Dowling Avenue to Highway 427

Remarks: Please return these Documents to The City of Toronto upon completion of the assignment

These documents are

for your record for review for approval as you requested X **for your information**

CITY OF TORONTO

Per: Jim Schaffner

Appendix B
Field Investigation Report

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SPECIALISTS MANAGING THE EARTH

LIMITED SUBSTRUCTURE CONDITION SURVEY REPORT

F. G. GARDINER EXPRESSWAY

TORONTO, ON

IBI Group
Toronto, ON

CONCETOB21183AA
September 6, 2012

Coffey Geotechnics Inc.
20 Meteor Drive Etobicoke Ontario M9W 1A4 Canada

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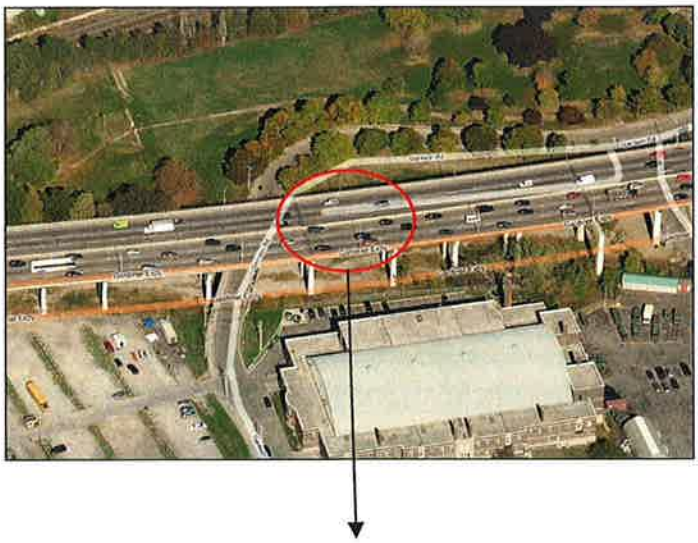
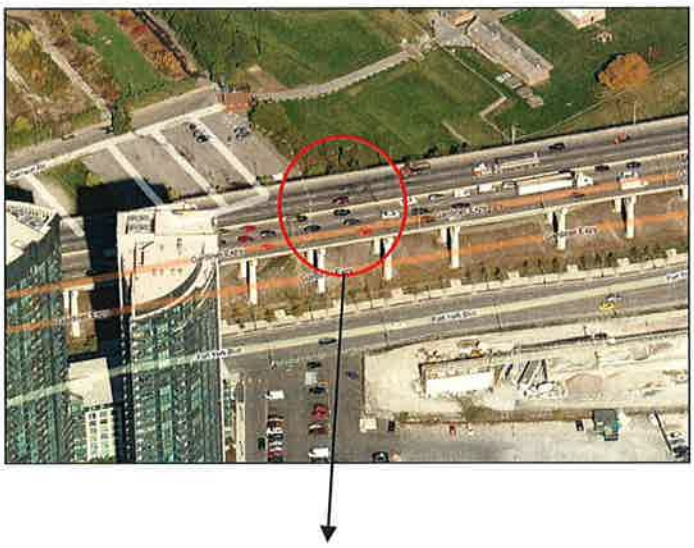
KEY PLAN

F. G. Gardiner Expressway, Toronto, ON



Bent 53-55



Bent 85-86

Bent 91-92

Bent 120-121

Bent 131-132

Bent 301-302

Bent 306-307

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

SUMMARY OF SIGNIFICANT FINDINGS
F. G. Gardiner Expressway, Toronto, ON
REOI 9117-11-7000, Work Assignment No. TS-DCLI-10-12-004

1.0 INTRODUCTION

In August 2012, IBI Group % The City of Toronto contracted *Coffey Geotechnics Inc.* to perform a *limited* detailed substructure condition survey for the above referenced project. This report summarizes the findings of the limited substructure condition survey carried out at the F. G. Gardiner Expressway, Toronto, ON. In general, the procedures followed to conduct the condition survey were those defined in Part 1 of the MTO Structural Rehabilitation Manual. This involved the observation and recording of surface defects, delaminations, surface deterioration; for the items listed hereafter.

Delaminations in concrete were detected by striking the surface and noting the change in sound being emitted. It should be mentioned, that while this method is quite reliable, it may not detect delamination at a depth greater than 100 millimetres. The hammer sounding method was used for all overhead and vertical surfaces inspected. The areas and locations of patches, spalls, delaminations, exposed reinforcement, honey-combing, wet areas, scaling and other observed defects and deteriorations were recorded. Access to the substructure components was conducted via articulating zoom booms.

Test locations were selected based on un-travelled areas, so as to minimize disruptions to traffic; accessible locations; areas exhibiting signs of surface distress based on the 2012 City of Toronto Visual Survey; and areas exhibiting no signs of surface distress based on the 2012 City of Toronto Visual Survey. The surface deterioration surveys (i.e sounding surveys) were conducted on the following components: soffit and outside faces of parapet walls for the following sections of the highway only:

- Bent No. 53-55
- Bent No. 85-86
- Bent No. 91-92
- Bent No. 120-121
- Bent No. 131-132
- Bent No. 301-302
- Bent No. 306-307

The field investigation portion of this assignment was conducted on August 29-31 and Sept. 4-5, 2012.

2.0 SUMMARY OF SIGNIFICANT FINDINGS

General overview photographs of the various tested sections of the F.G. Gardiner Expressway are shown in the Photo Appendix. Below is a summary of the surface deterioration noted at each section, in comparison to the 2012 City of Toronto Visual Survey results. The results of our Surface Deterioration Survey are contained in the Exposed Concrete Component Summary Sheet in the Appendix, and are summarized below. Surface Deterioration Drawings are also included in the Appendix, along with the 2012 City of Toronto Visual Survey results for the areas sounded in this investigation.

2.1 Bent No. 53-55

2.1.1 Soffit Deterioration

Area Surveyed (m^2)	839 m^2		**Delam. (m^2)**	3.1 m^2
Medium Cracks (m)	351.4 m		**Spalls (m^2)**	0.2 m^2
Medium Stained Cracks (m)	1.4 m		**Patches (m^2)**	22.4 m^2
			Light Scaling (m^2)	0.4 m^2
			Wet Areas (m^2)	5.8 m^2
2012 City of Toronto Visual Survey indicated no signs of surface deterioration.				

2.1.2 Outside Face of Parapet Walls Deterioration

Area Surveyed (m^2)	42.3 m^2		**Delam. (m^2)**	0.0 m^2
Medium Cracks (m)	23.3 m		**Spalls (m^2)**	0.0 m^2
Medium Stained Cracks (m)	0.0 m		**Patches (m^2)**	17.8 m^2
2012 City of Toronto Visual Survey indicated no signs of surface deterioration.				

2.2 Bent No. 85-86

2.2.1 Soffit Deterioration

Area Surveyed (m^2)	607 m^2		**Delam. (m^2)**	3.1 m^2
Medium Cracks (m)	188.0 m		**Spalls (m^2)**	0.0 m^2
Medium Stained Cracks (m)	13.4 m		**Patches (m^2)**	11.0 m^2
			Light Scaling (m^2)	0.0 m^2
			Wet Areas (m^2)	0.9 m^2
2012 City of Toronto Visual Survey indicated no signs of surface deterioration.				

2.2.2 Outside Face of Parapet Walls Deterioration

Area Surveyed (m^2)	31.2 m^2		**Delam. (m^2)**	0.05 m^2
Medium Cracks (m)	33.3 m		**Spalls (m^2)**	0.0 m^2
Medium Stained Cracks (m)	0.0 m		**Patches (m^2)**	7.9 m^2
2012 City of Toronto Visual Survey indicated one localized spall on outside face of parapet wall.				

2.3 Bent No. 91-92

2.3.1 Soffit Deterioration

Area Surveyed (m^2)	622 m^2		**Delam. (m^2)**	5.5 m^2
Medium Cracks (m)	157.4 m		**Spalls (m^2)**	0.2 m^2
Medium Stained Cracks (m)	11.1 m		**Patches (m^2)**	18.7 m^2
			Light Scaling (m^2)	0.5 m^2
			Wet Areas (m^2)	1.0 m^2
2012 City of Toronto Visual Survey indicated no signs of surface deterioration.				

2.3.2 Outside Face of Parapet Walls Deterioration

Area Surveyed (m^2)	31.2 m^2		**Delam. (m^2)**	0.0 m^2
Medium Cracks (m)	4.1 m		**Spalls (m^2)**	0.2 m^2
Medium Stained Cracks (m)	0.0 m		**Patches (m^2)**	6.0 m^2
2012 City of Toronto Visual Survey indicated no signs of surface deterioration.				

2.4 Bent No. 120-121

2.4.1 Soffit Deterioration

Area Surveyed (m^2)	519 m^2		**Delam. (m^2)**	1.0 m^2
Medium Cracks (m)	201.9 m		**Spalls (m^2)**	1.1 m^2
Medium Stained Cracks (m)	31.8 m		**Patches (m^2)**	2.0 m^2
			Light Scaling (m^2)	5.5 m^2
2012 City of Toronto Visual Survey indicated one localized spall on soffit.				

2.4.2 Outside Face of Parapet Walls Deterioration

The outside face of the parapet walls was inaccessible and not hammer sounded as part of this investigation.

2.5 Bent No. 131-132

2.5.1 Soffit Deterioration

Area Surveyed (m^2)	624 m^2		**Delam. (m^2)**	0.9 m^2
Medium Cracks (m)	284.1 m		**Spalls (m^2)**	0.5 m^2
Medium Stained Cracks (m)	14.0 m		**Patches (m^2)**	19.6 m^2
			Light Scaling (m^2)	6.8 m^2
2012 City of Toronto Visual Survey indicated no signs of surface deterioration.				

2.5.2 Outside Face of Parapet Walls Deterioration

Area Surveyed (m^2)	39.1 m^2		**Delam. (m^2)**	1.9 m^2
Medium Cracks (m)	15.3 m		**Spalls (m^2)**	4.8 m^2
Medium Stained Cracks (m)	0.0 m		**Patches (m^2)**	0.3 m^2
2012 City of Toronto Visual Survey indicated five localized areas of spalls and 3 localized areas of delaminations on the outside face of the parapet walls.				

2.6 Bent No. 301-302

2.6.1 Soffit Deterioration

Area Surveyed (m^2)	655 m^2		**Delam. (m^2)**	30.4 m^2
Medium Cracks (m)	201.0 m		**Spalls (m^2)**	6.9 m^2
Medium Stained Cracks (m)	10.3 m		**Patches (m^2)**	2.6 m^2
			Light Scaling (m^2)	17.5 m^2
			Wet Areas (m^2)	0.8 m^2
2012 City of Toronto Visual Survey indicated two localized areas of delaminations.				

2.6.2 Outside Face of Parapet Walls Deterioration

Area Surveyed (m^2)	31.5 m^2		**Delam. (m^2)**	7.2 m^2
Medium Cracks (m)	11.9 m		**Spalls (m^2)**	9.2 m^2
Medium Stained Cracks (m)	0.0 m		**Patches (m^2)**	0.1 m^2
2012 City of Toronto Visual Survey indicated three localized areas of spalls on the north parapet wall and the entire south parapet wall exhibited spalls.				

2.7 Bent No. 306-307

2.7.1 Soffit Deterioration

Area Surveyed (m^2)	697 m^2		**Delam. (m^2)**	23.2 m^2
Medium Cracks (m)	420.3 m		**Spalls (m^2)**	7.8 m^2
Medium Stained Cracks (m)	14.0 m		**Patches (m^2)**	5.5 m^2
			Light Scaling (m^2)	41.6 m^2
			Wet Areas (m^2)	1.3 m^2
2012 City of Toronto Visual Survey indicated four localized areas of spalls and eleven localized areas of delaminations				

2.7.2 Outside Face of Parapet Walls Deterioration

Area Surveyed (m^2)	32.5 m^2		**Delam. (m^2)**	0.0 m^2
Medium Cracks (m)	27.6 m		**Spalls (m^2)**	4.4 m^2
Medium Stained Cracks (m)	0.0 m		**Patches (m^2)**	0.5 m^2
2012 City of Toronto Visual Survey indicated two localized areas of spalls and six localized areas of delaminations.				

2.8 Conclusions

It should be mentioned that a delamination is defined as a discontinuity of the surface concrete which is substantially separated but not completely detached from concrete below or above it. Visibly, it appears as a solid surface but can be identified as a hollow sound by tapping with a hammer. A spall is a fragment, which has been detached from a larger concrete mass. Spalling is a continuation of the delamination process whereby the actions of external loads, pressure exerted by the corrosion of reinforcement or by the formation of ice in the delaminated areas results in the breaking off of the delaminated concrete.

Based on our limited substructure delamination survey, it is apparent that the sounding survey is the most accurate means of examining the in-situ condition of the substructure components. The areas of deterioration (i.e spalls and delaminations) vary substantially from the 2012 City of Toronto Visual Survey results, for the areas investigated. This limited substructure delamination survey reveals the importance of conducting a more comprehensive delamintion (i.e. sounding) survey of the entire stretch of the subject highway, in order to prioritize areas that are in immediate need of repair.

3.0 Closure

We trust that this submission is complete. Should you have any further questions, please do not hesitate to contact this office.

On and behalf of Coffey Geotechnics

Savio J. DeSouza, M.A.Sc., P.Eng.
Manager, Materials Engineering & Testing

Sarfraz Khan, M.Eng., P.Eng.
Field Operations Supervisor

DETAILED CONDITION SURVEY SUMMARY SHEET
EXPOSED CONCRETE COMPONENTS (Exposed Deck, Deck Soffit, Curbs, Medians, Sidewalks, Barrier/Parapet Walls, etc.): Use separate form for each component

Site No. F. G. Gardiner Expressway

Component Type & Location Soffit {Bent 53-55} + Outside Face of Parapet Walls **OSIM Identifier** _____

1. Dimensions and Area

Width - m Length - m Height - m
Diameter - m Total Area Surveyed 839 + 42.3^{PW} m^2

2. Cracks (medium and wide)

Remarks

Type		Transverse	Longitudinal	Other	Total	
Medium Width	Clean	241.0+11.2^{PW}	110.4+12.1^{PW}	0.0	352.8+23.3^{PW}	m
	Stained	1.4	0.0	0.0		
Wide Width	Clean	0.0	0.0	0.0	0.0	m
	Stained	0.0	0.0	0.0		

3. Alkali Aggregate Reaction

Area of component with severe to very severe aggregate reaction 0.0 m^2

4. Concrete Cover

Minimum	Maximum	Average	
N/A	N/A	N/A	mm

0 – 20 mm	N/A	40 – 60 mm	N/A	m^2
	N/A		N/A	%
20 – 40 mm	N/A	over 60 mm	N/A	m^2
	N/A		N/A	%

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 53-55} + Outside Face of Parapet Walls

5. Corrosion Activity

Minimum	Maximum	Average	
N/A	N/A	N/A	V

0 to -0.199	-0.200 to -0.299	-0.300 to -0.349	-0.350 to -0.449	< -0.450	
N/A	N/A	N/A	N/A	N/A	V
N/A	N/A	N/A	N/A	N/A	m^2
N/A	N/A	N/A	N/A	N/A	%

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	3.1	0.2	$22.4+17.8^{PW}$
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.350 V	
3.3 m^2	0.4 %	N/A m^2	N/A %

Wet areas = 5.8 m^2.

7. Scaling

Light	Medium	Severe to Very Severe	
0.4	0.0	0.0	m^2
0.05	0.0	0.0	%

8. Honeycombing

Total Area 0.0 m^2

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 53-55} + Outside Face of Parapet Walls

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.199	-0.200 to -0.349	≤ -0.350
Chloride Content*	0-10 mm	-	-	-
	20-30 mm	-	-	-
	40-50 mm	-	-	-
	60-70 mm	-	-	-
	80-90 mm	-	-	-
	100-110 mm	-	-	-

* Average chloride content as % chloride by weight of concrete after deducting background chlorides for all cores taken in each range of corrosion potential.

10. Chloride Content at Rebar Level

Core No.	-	-	-	-
Corrosion Potential	-	-	-	-
Chloride Content *	-	-	-	-

* Chloride content as % chloride by weight of concrete after deducting background chlorides.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
Connection #1	Connection #2					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* See Appendix 1E for calculating AC resistance contributed by individual rebar.

Site No. F. G. Gardiner Expressway

Component & Location: Soffit {Bent 53-55} + Outside Face of Parapet Walls

12. IR Drop and True Half Cell Potential Measurements of Epoxy Coated Rebar

IR Drop Between Connection #1 and #2						True Half Cell Potential *
Connection #1 (positive)	Connection #2 (negative)					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* Half cell reading taken on the same rebar with the ground connection.

13. Concrete Air Entrainment

Concrete Air Entrained? *not tested*

14. Compressive Strength

Average Compressive Strength *not tested*

DETAILED CONDITION SURVEY SUMMARY SHEET
EXPOSED CONCRETE COMPONENTS (Exposed Deck, Deck Soffit, Curbs, Medians, Sidewalks, Barrier/Parapet Walls, etc.): Use separate form for each component

Site No. F. G. Gardiner Expressway

Component Type & Location Soffit {Bent 85-86} + Outside Face of Parapet Walls **OSIM Identifier** _____

1. Dimensions and Area

Width - m Length - m Height - m
Diameter - m Total Area Surveyed 607 + 31.2^{PW} m^2

2. Cracks (medium and wide)

Remarks

Type		Transverse	Longitudinal	Other	Total	
Medium Width	**Clean**	168.4+20.9^{PW}	19.6+12.4^{PW}	0.0	201.4+33.3^{PW}	m
	Stained	13.4	0.0	0.0		
Wide Width	**Clean**	0.0	0.0	0.0	0.0	m
	Stained	0.0	0.0	0.0		

3. Alkali Aggregate Reaction

Area of component with severe to very severe aggregate reaction 0.0 m^2

4. Concrete Cover

Minimum	Maximum	Average	
N/A	N/A	N/A	mm

0 – 20 mm	N/A	**40 – 60 mm**	N/A	m^2
	N/A		N/A	%
20 – 40 mm	N/A	**over 60 mm**	N/A	m^2
	N/A		N/A	%

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 85-86} + Outside Face of Parapet Walls

5. Corrosion Activity

Minimum	Maximum	Average	
N/A	N/A	N/A	V

0 to -0.199	-0.200 to -0.299	-0.300 to -0.349	-0.350 to -0.449	< -0.450	
N/A	N/A	N/A	N/A	N/A	V
N/A	N/A	N/A	N/A	N/A	m^2
N/A	N/A	N/A	N/A	N/A	%

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	$3.1+0.05^{PW}$	0.0	$11.0 + 7.9^{PW}$
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.350 V	
$3.1+0.05^{PW}$ m^2	0.5+0.02 %	N/A m^2	N/A %

Wet areas = 0.9 m^2.

7. Scaling

Light	Medium	Severe to Very Severe	
0.0	0.0	0.0	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.0 m^2

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 85-86} + Outside Face of Parapet Walls

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.199	-0.200 to -0.349	≤ -0.350
Chloride Content*	0-10 mm	-	-	-
	20-30 mm	-	-	-
	40-50 mm	-	-	-
	60-70 mm	-	-	-
	80-90 mm	-	-	-
	100-110 mm	-	-	-

* Average chloride content as % chloride by weight of concrete after deducting background chlorides for all cores taken in each range of corrosion potential.

10. Chloride Content at Rebar Level

Core No.	-	-	-	-
Corrosion Potential	-	-	-	-
Chloride Content *	-	-	-	-

* Chloride content as % chloride by weight of concrete after deducting background chlorides.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
Connection #1	Connection #2					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* See Appendix 1E for calculating AC resistance contributed by individual rebar.

Site No. F. G. Gardiner Expressway

Component & Location: Soffit {Bent 85-86} + Outside Face of Parapet Walls

12. IR Drop and True Half Cell Potential Measurements of Epoxy Coated Rebar

IR Drop Between Connection #1 and #2						True Half Cell Potential *
Connection #1 (positive)	Connection #2 (negative)					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* Half cell reading taken on the same rebar with the ground connection.

13. Concrete Air Entrainment

Concrete Air Entrained? *not tested*

14. Compressive Strength

Average Compressive Strength *not tested*

DETAILED CONDITION SURVEY SUMMARY SHEET
EXPOSED CONCRETE COMPONENTS (Exposed Deck, Deck Soffit, Curbs, Medians, Sidewalks, Barrier/Parapet Walls, etc.): Use separate form for each component

Site No. F. G. Gardiner Expressway

Component Type & Location Soffit {Bent 91-92} + Outside Face of Parapet Walls **OSIM Identifier** _____

1. Dimensions and Area

Width - m Length - m Height - m
Diameter - m Total Area Surveyed $622 + 31.2^{PW}$ m^2

2. Cracks (medium and wide)

Remarks

Type		Transverse	Longitudinal	Other	Total	
Medium Width	**Clean**	$122.7+3.5^{PW}$	$34.7+0.6^{PW}$	0.0	$168.5+4.1^{PW}$	m
	Stained	11.1	0.0	0.0		
Wide Width	**Clean**	0.0	0.0	0.0	0.0	m
	Stained	0.0	0.0	0.0		

3. Alkali Aggregate Reaction

Area of component with severe to very severe aggregate reaction 0.0 m^2

4. Concrete Cover

Minimum	Maximum	Average	
N/A	N/A	N/A	mm

0 – 20 mm	N/A	**40 – 60 mm**	N/A	m^2
	N/A		N/A	%
20 – 40 mm	N/A	**over 60 mm**	N/A	m^2
	N/A		N/A	%

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 91-92} + Outside Face of Parapet Walls

5. Corrosion Activity

Minimum	Maximum	Average	
N/A	N/A	N/A	V

0 to -0.199	-0.200 to -0.299	-0.300 to -0.349	-0.350 to -0.449	< -0.450	
N/A	N/A	N/A	N/A	N/A	V
N/A	N/A	N/A	N/A	N/A	m^2
N/A	N/A	N/A	N/A	N/A	%

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	5.5	$0.2+0.2^{PW}$	$18.7+6.0^{PW}$
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.350 V	
$5.7+0.2^{PW}$ m^2	$0.9+0.6^{PW}$ %	N/A m^2	N/A %

Wet areas = 1.0 m^2.

7. Scaling

Light	Medium	Severe to Very Severe	
0.5	0.0	0.0	m^2
0.1	0.0	0.0	%

8. Honeycombing

Total Area 0.0 m^2

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 91-92} + Outside Face of Parapet Walls

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.199	-0.200 to -0.349	≤ -0.350
Chloride Content*	0-10 mm	-	-	-
	20-30 mm	-	-	-
	40-50 mm	-	-	-
	60-70 mm	-	-	-
	80-90 mm	-	-	-
	100-110 mm	-	-	-

* Average chloride content as % chloride by weight of concrete after deducting background chlorides for all cores taken in each range of corrosion potential.

10. Chloride Content at Rebar Level

Core No.	-	-	-	-
Corrosion Potential	-	-	-	-
Chloride Content *	-	-	-	-

* Chloride content as % chloride by weight of concrete after deducting background chlorides.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
Connection #1	Connection #2					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* See Appendix 1E for calculating AC resistance contributed by individual rebar.

Site No. F. G. Gardiner Expressway

Component & Location: Soffit {Bent 91-92} + Outside Face of Parapet Walls

12. IR Drop and True Half Cell Potential Measurements of Epoxy Coated Rebar

IR Drop Between Connection #1 and #2						True Half Cell Potential *
Connection #1 (positive)	Connection #2 (negative)					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* Half cell reading taken on the same rebar with the ground connection.

13. Concrete Air Entrainment

Concrete Air Entrained? *not tested*

14. Compressive Strength

Average Compressive Strength *not tested*

DETAILED CONDITION SURVEY SUMMARY SHEET

EXPOSED CONCRETE COMPONENTS (Exposed Deck, Deck Soffit, Curbs, Medians, Sidewalks, Barrier/Parapet Walls, etc.): Use separate form for each component

Site No. F. G. Gardiner Expressway

Component Type & Location Soffit {Bent 120-121} + Outside Face of Parapet Walls **OSIM Identifier** _____

1. Dimensions and Area

**The outside face of the parapet walls was inaccessible and not hammer sounded.*

Width - m Length - m Height - m
Diameter - m Total Area Surveyed 519 + 32.7^{PW} m^2

2. Cracks (medium and wide)

Remarks

Type		Transverse	Longitudinal	Other	Total	
Medium Width	**Clean**	198.3	3.6	0.0	233.7	m
	Stained	31.8	0.0	0.0		
Wide Width	**Clean**	0.0	0.0	0.0	0.0	m
	Stained	0.0	0.0	0.0		

3. Alkali Aggregate Reaction

Area of component with severe to very severe aggregate reaction 0.0 m^2

4. Concrete Cover

Minimum	Maximum	Average	
N/A	N/A	N/A	mm

0 – 20 mm	N/A	**40 – 60 mm**	N/A	m^2
	N/A		N/A	%
20 – 40 mm	N/A	**over 60 mm**	N/A	m^2
	N/A		N/A	%

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 120-121} + Outside Face of Parapet Walls

5. Corrosion Activity

Minimum	Maximum	Average	
N/A	N/A	N/A	V

0 to -0.199	-0.200 to -0.299	-0.300 to -0.349	-0.350 to -0.449	< -0.450	
N/A	N/A	N/A	N/A	N/A	V
N/A	N/A	N/A	N/A	N/A	m^2
N/A	N/A	N/A	N/A	N/A	%

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	1.0	1.1	2.0

Total Delaminations and Spalls				Total Delaminations and Spalls in Areas ≤-0.350 V			
2.1	m^2	0.4	%	N/A	m^2	N/A	%

7. Scaling

Light	Medium	Severe to Very Severe	
5.5	0.0	0.0	m^2
1.1	0.0	0.0	%

8. Honeycombing

Total Area 0.0 m^2

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 120-121} + Outside Face of Parapet Walls

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.199	-0.200 to -0.349	≤ -0.350
Chloride Content*	0-10 mm	-	-	-
	20-30 mm	-	-	-
	40-50 mm	-	-	-
	60-70 mm	-	-	-
	80-90 mm	-	-	-
	100-110 mm	-	-	-

* Average chloride content as % chloride by weight of concrete after deducting background chlorides for all cores taken in each range of corrosion potential.

10. Chloride Content at Rebar Level

Core No.	-	-	-	-
Corrosion Potential	-	-	-	-
Chloride Content *	-	-	-	-

* Chloride content as % chloride by weight of concrete after deducting background chlorides.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
Connection #1	Connection #2					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* See Appendix 1E for calculating AC resistance contributed by individual rebar.

12. IR Drop and True Half Cell Potential Measurements of Epoxy Coated Rebar

IR Drop Between Connection #1 and #2						True Half Cell Potential *
Connection #1 (positive)	Connection #2 (negative)					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* Half cell reading taken on the same rebar with the ground connection.

13. Concrete Air Entrainment

Concrete Air Entrained? *not tested*

14. Compressive Strength

Average Compressive Strength *not tested*

DETAILED CONDITION SURVEY SUMMARY SHEET
EXPOSED CONCRETE COMPONENTS (Exposed Deck, Deck Soffit, Curbs, Medians, Sidewalks, Barrier/Parapet Walls, etc.): Use separate form for each component

Site No. F. G. Gardiner Expressway

Component Type & Location Soffit {Bent 131-132} + Outside Face of Parapet Walls **OSIM Identifier** _____

1. Dimensions and Area

Width - m Length - m Height - m
Diameter - m Total Area Surveyed $624 + 39.1^{PW}$ m^2

2. Cracks (medium and wide)

Remarks

Type		Transverse	Longitudinal	Other	Total	
Medium Width	Clean	$248.1+1.3^{PW}$	$36.0+14.0^{PW}$	0.0	$298.1+15.3^{PW}$	m
	Stained	14.0	0.0	0.0		
Wide Width	Clean	0.0	0.0	0.0	0.0	m
	Stained	0.0	0.0	0.0		

3. Alkali Aggregate Reaction

Area of component with severe to very severe aggregate reaction 0.0 m^2

4. Concrete Cover

Minimum	Maximum	Average	
N/A	N/A	N/A	mm

0 – 20 mm	N/A	40 – 60 mm	N/A	m^2
	N/A		N/A	%
20 – 40 mm	N/A	over 60 mm	N/A	m^2
	N/A		N/A	%

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 131-132} + Outside Face of Parapet Walls

5. Corrosion Activity

Minimum	Maximum	Average	
N/A	N/A	N/A	V

0 to -0.199	-0.200 to -0.299	-0.300 to -0.349	-0.350 to -0.449	< -0.450	
N/A	N/A	N/A	N/A	N/A	V
N/A	N/A	N/A	N/A	N/A	m^2
N/A	N/A	N/A	N/A	N/A	%

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	$0.9+1.9^{PW}$	$0.5+4.8^{PW}$	$19.6+0.3^{PW}$
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.350 V	
$1.4+6.7^{PW}$ m^2	$0.2+17.1^{PW}$ %	N/A m^2	N/A %

7. Scaling

Light	Medium	Severe to Very Severe	
6.8	0.0	0.0	m^2
1.1	0.0	0.0	%

8. Honeycombing

Total Area 0.0 m^2

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 131-132} + Outside Face of Parapet Walls

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.199	-0.200 to -0.349	≤ -0.350
Chloride Content*	0-10 mm	-	-	-
	20-30 mm	-	-	-
	40-50 mm	-	-	-
	60-70 mm	-	-	-
	80-90 mm	-	-	-
	100-110 mm	-	-	-

* Average chloride content as % chloride by weight of concrete after deducting background chlorides for all cores taken in each range of corrosion potential.

10. Chloride Content at Rebar Level

Core No.	-	-	-	-
Corrosion Potential	-	-	-	-
Chloride Content *	-	-	-	-

* Chloride content as % chloride by weight of concrete after deducting background chlorides.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
Connection #1	Connection #2					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* See Appendix 1E for calculating AC resistance contributed by individual rebar.

Site No. F. G. Gardiner Expressway

Component & Location: Soffit {Bent 131-132} + Outside Face of Parapet Walls

12. IR Drop and True Half Cell Potential Measurements of Epoxy Coated Rebar

IR Drop Between Connection #1 and #2						True Half Cell Potential *
Connection #1 (positive)	Connection #2 (negative)					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* Half cell reading taken on the same rebar with the ground connection.

13. Concrete Air Entrainment

Concrete Air Entrained? *not tested*

14. Compressive Strength

Average Compressive Strength *not tested*

DETAILED CONDITION SURVEY SUMMARY SHEET
EXPOSED CONCRETE COMPONENTS (Exposed Deck, Deck Soffit, Curbs, Medians, Sidewalks, Barrier/Parapet Walls, etc.): Use separate form for each component

Site No. F. G. Gardiner Expressway

Component Type & Location Soffit {Bent 301-302} + Outside Face of Parapet Walls **OSIM Identifier** _____

1. Dimensions and Area

Width - m Length - m Height - m
Diameter - m Total Area Surveyed 655 + 31.5^{PW} m^2

2. Cracks (medium and wide)

Remarks

Type		Transverse	Longitudinal	Other	Total	
Medium Width	**Clean**	156.0+3.2^{PW}	45.0+8.7^{PW}	0.0	211.3+11.9^{PW}	m
	Stained	10.3	0.0	0.0		
Wide Width	**Clean**	0.0	0.0	0.0	0.0	m
	Stained	0.0	0.0	0.0		

3. Alkali Aggregate Reaction

Area of component with severe to very severe aggregate reaction 0.0 m^2

4. Concrete Cover

Minimum	Maximum	Average	
N/A	N/A	N/A	mm

0 – 20 mm	N/A	**40 – 60 mm**	N/A	m^2
	N/A		N/A	%
20 – 40 mm	N/A	**over 60 mm**	N/A	m^2
	N/A		N/A	%

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 301-302} + Outside Face of Parapet Walls

5. Corrosion Activity

Minimum	Maximum	Average	
N/A	N/A	N/A	V

0 to -0.199	-0.200 to -0.299	-0.300 to -0.349	-0.350 to -0.449	< -0.450	
N/A	N/A	N/A	N/A	N/A	V
N/A	N/A	N/A	N/A	N/A	m^2
N/A	N/A	N/A	N/A	N/A	%

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	$30.4+7.2^{PW}$	$6.9+9.2^{PW}$	$2.6+0.1^{PW}$
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.350 V	
$37.3+16.4^{PW}$ m^2	$5.7+52.1^{PW}$ %	N/A m^2	N/A %

Wet areas = 0.8 m^2.

7. Scaling

Light	Medium	Severe to Very Severe	
17.5	0.0	0.0	m^2
2.7	0.0	0.0	%

8. Honeycombing

Total Area 0.0 m^2

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 301-302} + Outside Face of Parapet Walls

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.199	-0.200 to -0.349	≤ -0.350
Chloride Content*	0-10 mm	-	-	-
	20-30 mm	-	-	-
	40-50 mm	-	-	-
	60-70 mm	-	-	-
	80-90 mm	-	-	-
	100-110 mm	-	-	-

* Average chloride content as % chloride by weight of concrete after deducting background chlorides for all cores taken in each range of corrosion potential.

10. Chloride Content at Rebar Level

Core No.	-	-	-	-
Corrosion Potential	-	-	-	-
Chloride Content *	-	-	-	-

* Chloride content as % chloride by weight of concrete after deducting background chlorides.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
Connection #1	Connection #2					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* See Appendix 1E for calculating AC resistance contributed by individual rebar.

Site No. F. G. Gardiner Expressway

Component & Location: Soffit {Bent 301-302} + Outside Face of Parapet Walls

12. IR Drop and True Half Cell Potential Measurements of Epoxy Coated Rebar

IR Drop Between Connection #1 and #2						True Half Cell Potential *
Connection #1 (positive)	Connection #2 (negative)					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* Half cell reading taken on the same rebar with the ground connection.

13. Concrete Air Entrainment

Concrete Air Entrained? *not tested*

14. Compressive Strength

Average Compressive Strength *not tested*

DETAILED CONDITION SURVEY SUMMARY SHEET
EXPOSED CONCRETE COMPONENTS (Exposed Deck, Deck Soffit, Curbs, Medians, Sidewalks, Barrier/Parapet Walls, etc.): Use separate form for each component

Site No. F. G. Gardiner Expressway

Component Type & Location Soffit {Bent 306-307} + Outside Face of Parapet Walls **OSIM Identifier** _____

1. Dimensions and Area

Width - m Length - m Height - m
Diameter - m Total Area Surveyed $697 + 32.5^{PW}$ m^2

2. Cracks (medium and wide)

Remarks

Type		Transverse	Longitudinal	Other	Total	
Medium Width	Clean	$269.2+6.2^{PW}$	$151.1+21.4^{PW}$	0.0	$434.3+27.6^{PW}$	m
	Stained	11.7	2.3	0.0		
Wide Width	Clean	0.0	0.0	0.0	0.0	m
	Stained	0.0	0.0	0.0		

3. Alkali Aggregate Reaction

Area of component with severe to very severe aggregate reaction 0.0 m^2

4. Concrete Cover

Minimum	Maximum	Average	
N/A	N/A	N/A	mm

0 – 20 mm	N/A	40 – 60 mm	N/A	m^2
	N/A		N/A	%
20 – 40 mm	N/A	over 60 mm	N/A	m^2
	N/A		N/A	%

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 306-307} + Outside Face of Parapet Walls

5. Corrosion Activity

Minimum	Maximum	Average	
N/A	N/A	N/A	V

0 to -0.199	-0.200 to -0.299	-0.300 to -0.349	-0.350 to -0.449	< -0.450	
N/A	N/A	N/A	N/A	N/A	V
N/A	N/A	N/A	N/A	N/A	m^2
N/A	N/A	N/A	N/A	N/A	%

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	23.2	$7.8+4.4^{PW}$	$5.5+0.5^{PW}$
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.350 V	
$31.0+4.3^{PW}$ m^2	$4.4+13.5^{PW}$ %	N/A m^2	N/A %

Wet areas = 1.3 m^2.

7. Scaling

Light	Medium	Severe to Very Severe	
41.6	0.0	0.0	m^2
6.0	0.0	0.0	%

8. Honeycombing

Total Area 0.0 m^2

Site No. F. G. Gardiner Expressway

Component Type & Location: Soffit {Bent 306-307} + Outside Face of Parapet Walls

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.199	-0.200 to -0.349	≤ -0.350
Chloride Content*	0-10 mm	-	-	-
	20-30 mm	-	-	-
	40-50 mm	-	-	-
	60-70 mm	-	-	-
	80-90 mm	-	-	-
	100-110 mm	-	-	-

* Average chloride content as % chloride by weight of concrete after deducting background chlorides for all cores taken in each range of corrosion potential.

10. Chloride Content at Rebar Level

Core No.	-	-	-	-
Corrosion Potential	-	-	-	-
Chloride Content *	-	-	-	-

* Chloride content as % chloride by weight of concrete after deducting background chlorides.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
Connection #1	Connection #2					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* See Appendix 1E for calculating AC resistance contributed by individual rebar.

Site No. F. G. Gardiner Expressway

Component & Location: Soffit {Bent 306-307} + Outside Face of Parapet Walls

12. IR Drop and True Half Cell Potential Measurements of Epoxy Coated Rebar

IR Drop Between Connection #1 and #2						True Half Cell Potential *
Connection #1 (positive)	Connection #2 (negative)					
	G1	G2	G3	G4	G5	
G1	N/A	-	-	-	-	-
G2	-	N/A	-	-	-	-
G3	-	-	N/A	-	-	-
G4	-	-	-	N/A	-	-
G5	-	-	-	-	N/A	-

* Half cell reading taken on the same rebar with the ground connection.

13. Concrete Air Entrainment

Concrete Air Entrained? *not tested*

14. Compressive Strength

Average Compressive Strength *not tested*

Photo P1 – Elevation (Bent 53-55) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P2 – Aerial Overview of Structure (Bent 53-55) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P3 – Typical Condition of Soffit (Bent 53-55) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P4 – Typical Condition of Soffit (Bent 53-55) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P5 – Typical Condition of Soffit (Bent 53-55) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P6 – Typical Condition of Soffit (Bent 53-55) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P7 – Typical Condition of Soffit (Bent 53-55) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P8 – Typical Condition of Fascia (Bent 53-55) (fair condition –cracking and patches)

Photo P9 – Elevation (Bent 85-86) (fair condition – stained and unstained cracking, delaminations and patches)

Photo P10 – Aerial Overview of Structure (Bent 85-86) (fair condition – stained and unstained cracking, delaminations and patches)

Photo P11 – Typical Condition of Soffit (Bent 85-86) (fair condition – stained and unstained cracking, delaminations and patches)

Photo P12 – Typical Condition of Soffit (Bent 85-86) (fair condition – stained and unstained cracking, delaminations and patches)

Photo P13 – Typical Condition of Soffit (Bent 85-86) (fair condition – stained and unstained cracking, delaminations and patches)

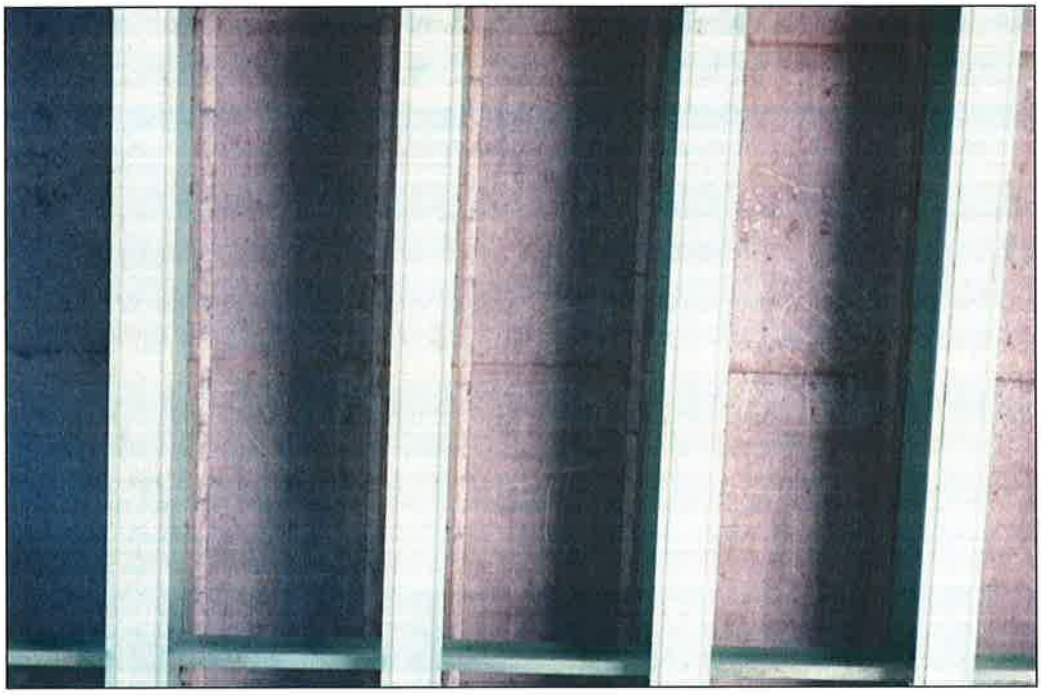


Photo P14 – Typical Condition of Soffit (Bent 85-86) (fair condition – stained and unstained cracking, delaminations and patches)

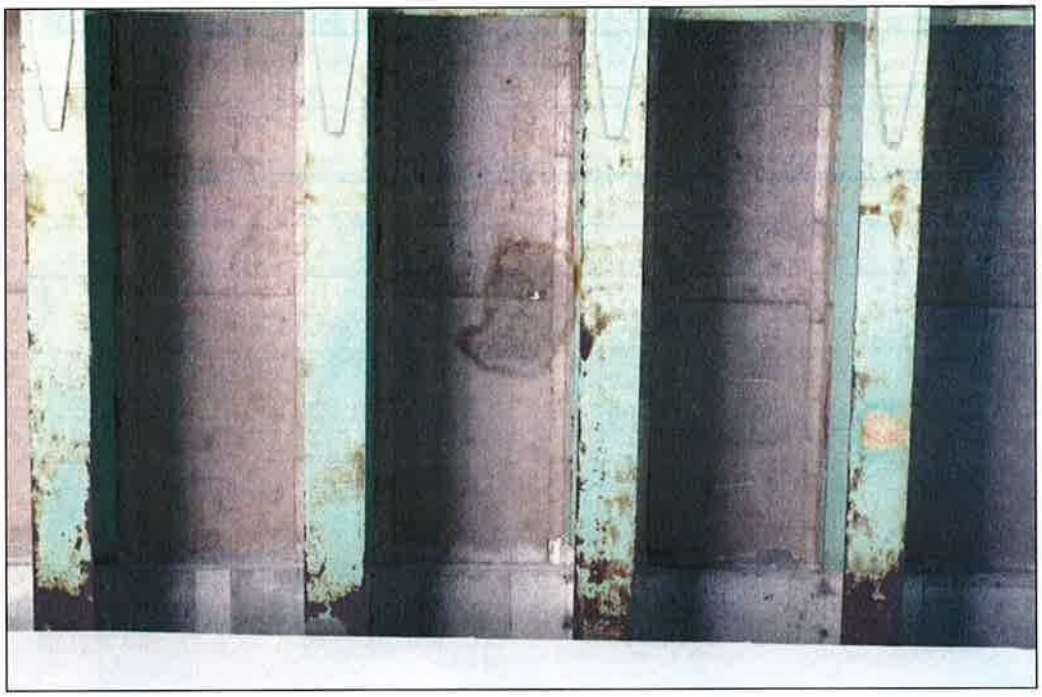


Photo P15 – Typical Condition of Soffit (Bent 85-86) (fair condition – stained and unstained cracking, delaminations and patches)

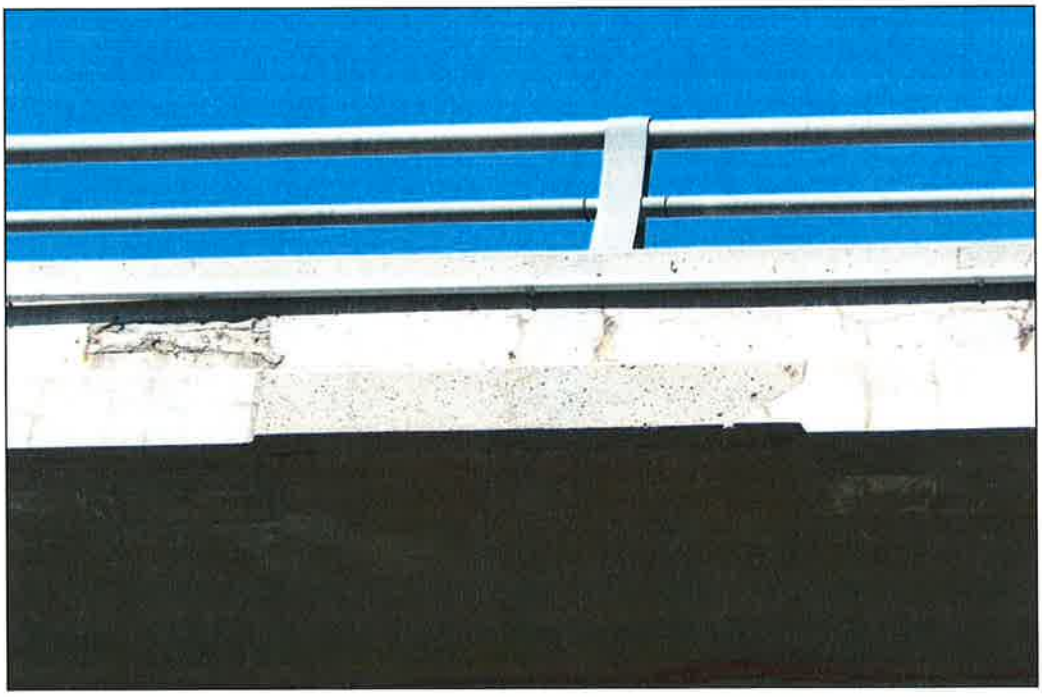


Photo P16 – Typical Condition of Fascia (Bent 85-86) (fair condition –cracking, isolated delaminations and patches)

Photo P17 – Elevation (Bent 91-92) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P18 – Aerial Overview of Structure (Bent 91-92) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P19 – Typical Condition of Soffit (Bent 91-92) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P20 – Typical Condition of Soffit (Bent 91-92) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P21 – Typical Condition of Soffit (Bent 91-92) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P22 – Typical Condition of Soffit (Bent 91-92) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

Photo P23 – Typical Condition of Soffit (Bent 91-92) (fair condition – stained and unstained cracking, delaminations, isolated spalls, patches, wet areas and light scaling)

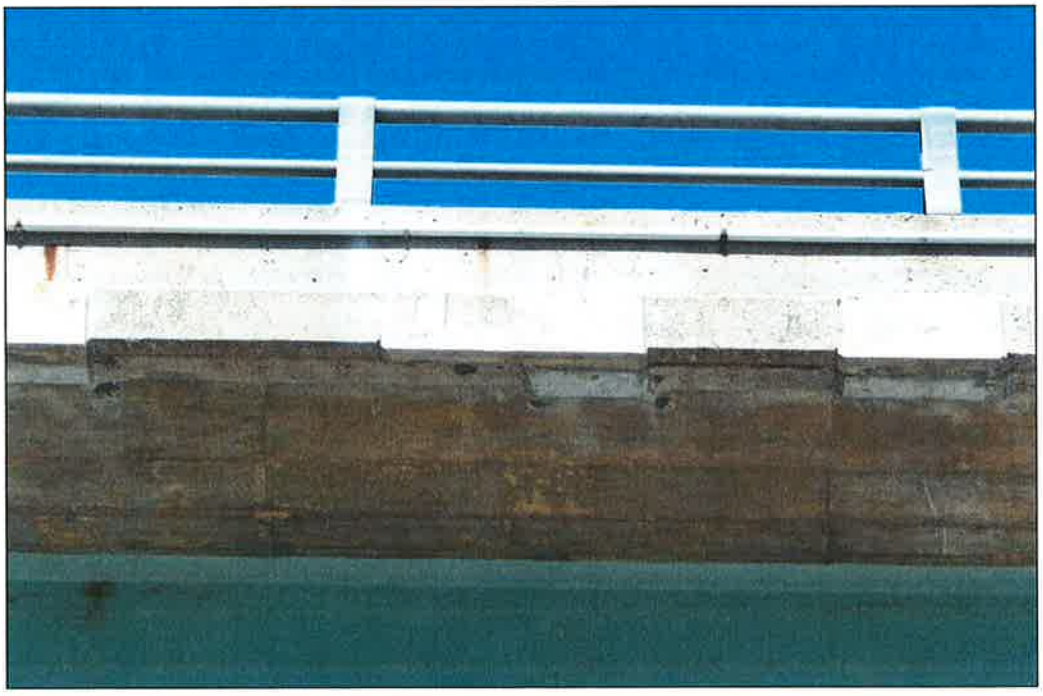


Photo P24 – Typical Condition of Fascia (Bent 91-92) (fair condition – cracking, isolated spalls and patches)

Photo P25 – Elevation (Bent 120-121) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P26 – Aerial Overview of Structure (Bent 120-121) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P27 – Typical Condition of Soffit (Bent 120-121) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P28 – Typical Condition of Soffit (Bent 120-121) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

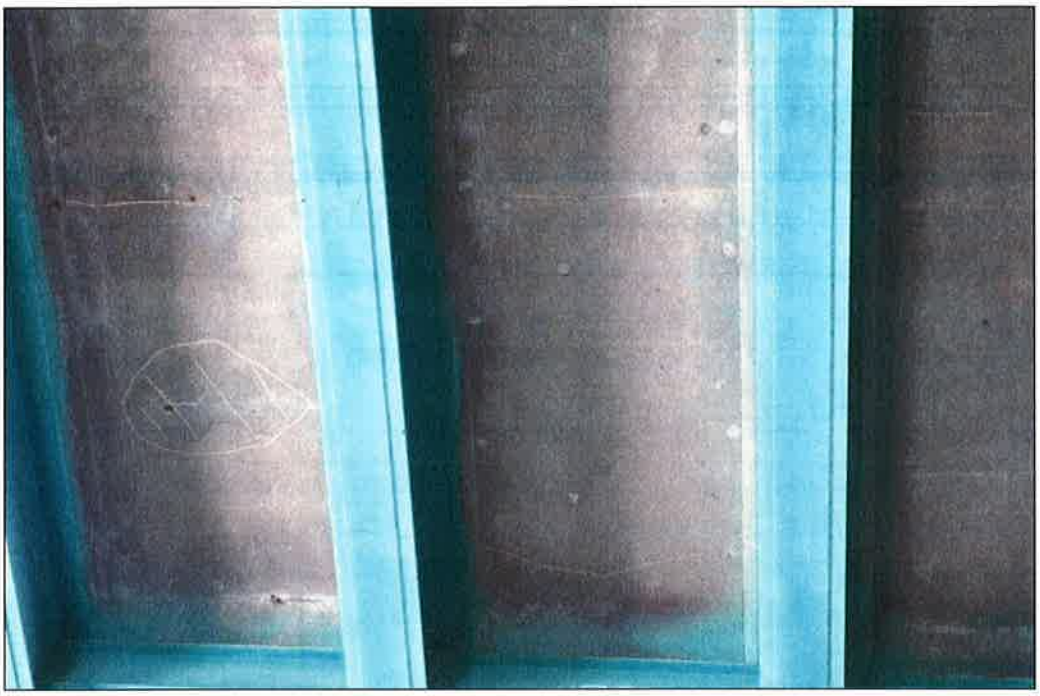


Photo P29 – Typical Condition of Soffit (Bent 120-121) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P30 – Typical Condition of Soffit (Bent 120-121) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P31 – Typical Condition of Soffit (Bent 120-121) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P32 – Typical Condition of Fascia (Bent 120-121)

Photo P33 – Elevation (Bent 131-132) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P34 – Aerial Overview of Structure (Bent 131-132) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P35 – Typical Condition of Soffit (Bent 131-132) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P36 – Typical Condition of Soffit (Bent 131-132) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P37 – Typical Condition of Soffit (Bent 131-132) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P38 – Typical Condition of Soffit (Bent 131-132) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P39 – Typical Condition of Soffit (Bent 131-132) (fair condition – stained and unstained cracking, isolated delaminations and spalls, patches and light scaling)

Photo P40 – Typical Condition of Fascia (Bent 131-132) (poor condition – cracking, delaminations, spalls and isolated patches)

Photo P41 – Elevation (Bent 301-302) (fair-to-poor condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P42 – Aerial Overview of Structure (Bent 301-302) (fair-to-poor condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P43 – Typical Condition of Soffit (Bent 301-302) (fair-to-poor condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P44 – Typical Condition of Soffit (Bent 301-302) (fair-to-poor condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P45 – Typical Condition of Soffit (Bent 301-302) (fair-to-poor condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P46 – Typical Condition of Soffit (Bent 301-302) (fair-to-poor condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

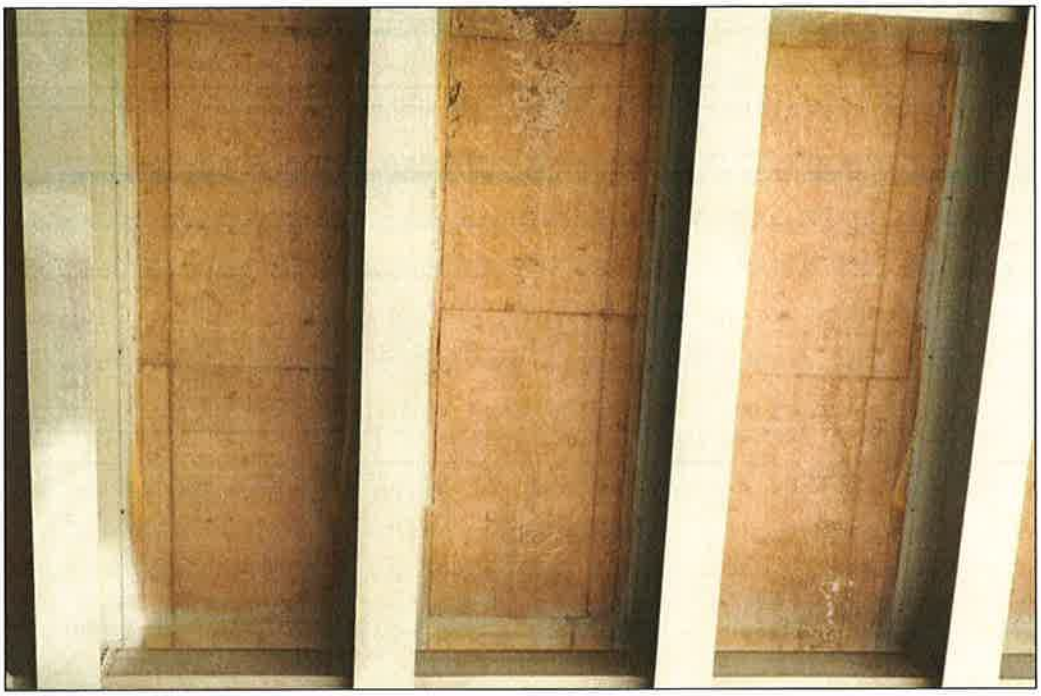


Photo P47 – Typical Condition of Soffit (Bent 301-302) (fair-to-poor condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P48 – Typical Condition of Fascia (Bent 301-302) (poor condition –cracking, delaminations and spalls)

Photo P49 – Elevation (Bent 306-307) (fair condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P50 – Aerial Overview of Structure (Bent 306-307) (fair condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P51 – Typical Condition of Soffit (Bent 306-307) (fair condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

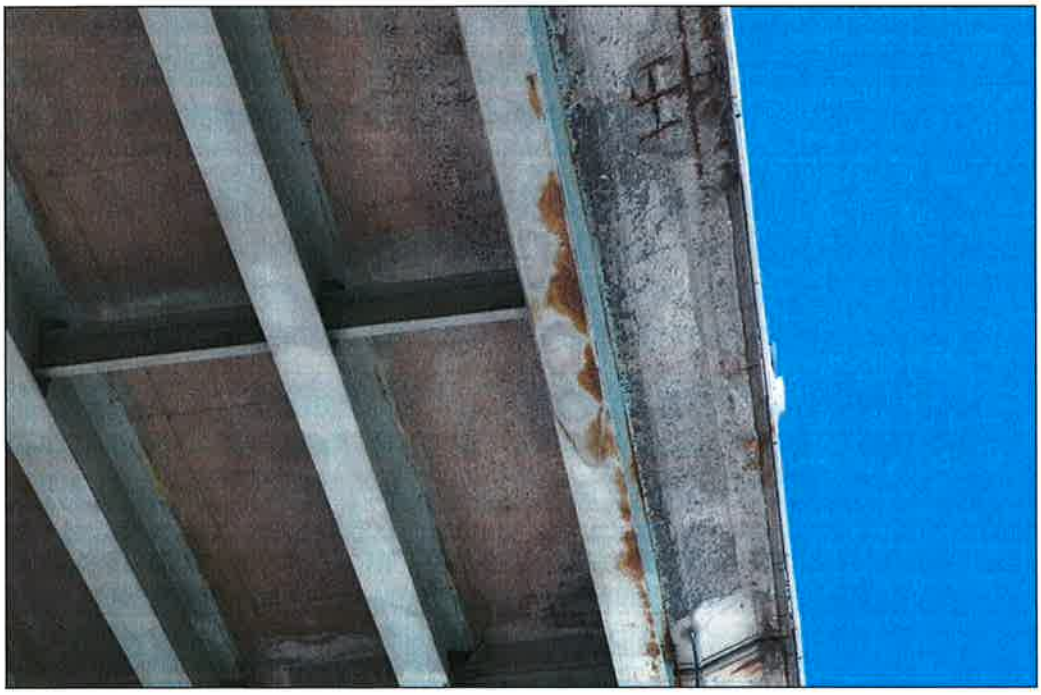


Photo P52 – Typical Condition of Soffit (Bent 306-307) (fair condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

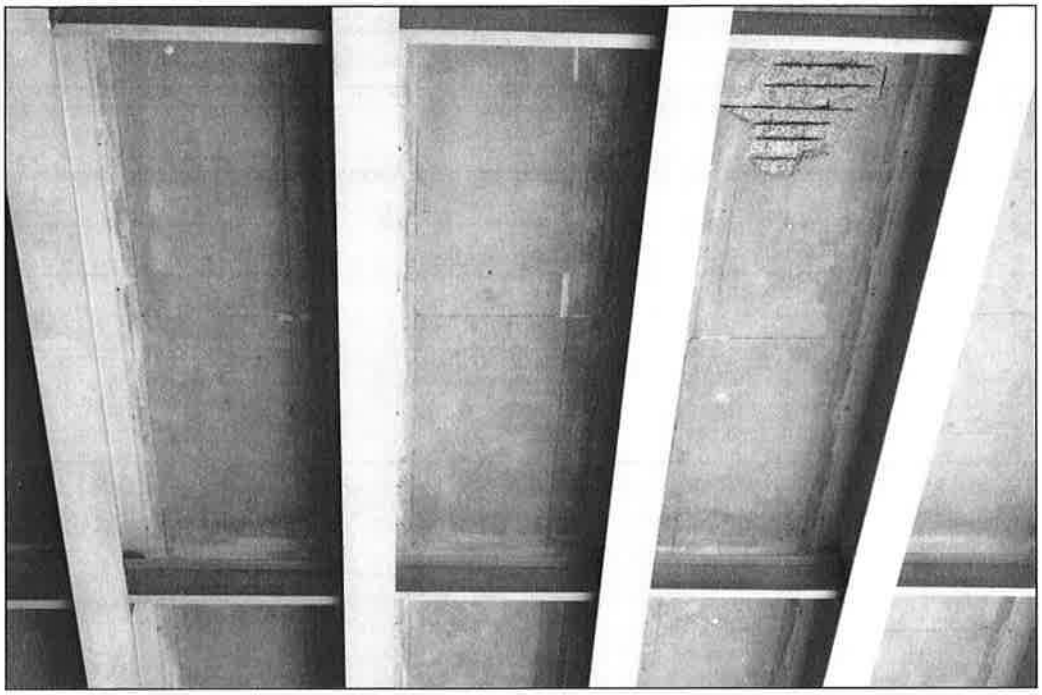


Photo P53 – Typical Condition of Soffit (Bent 306-307) (fair condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

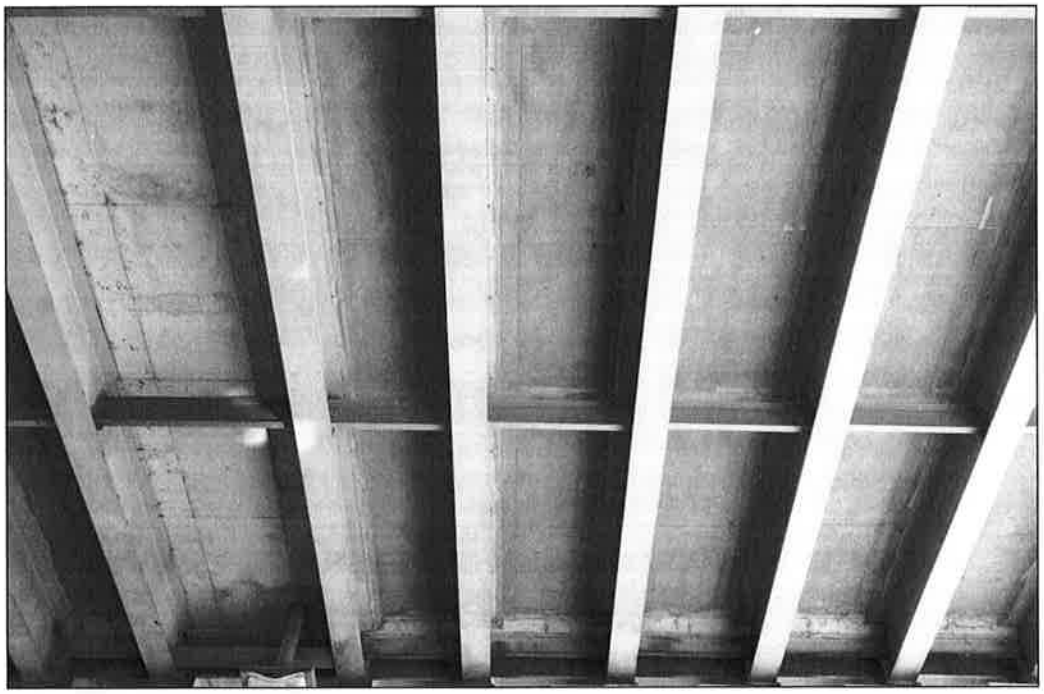
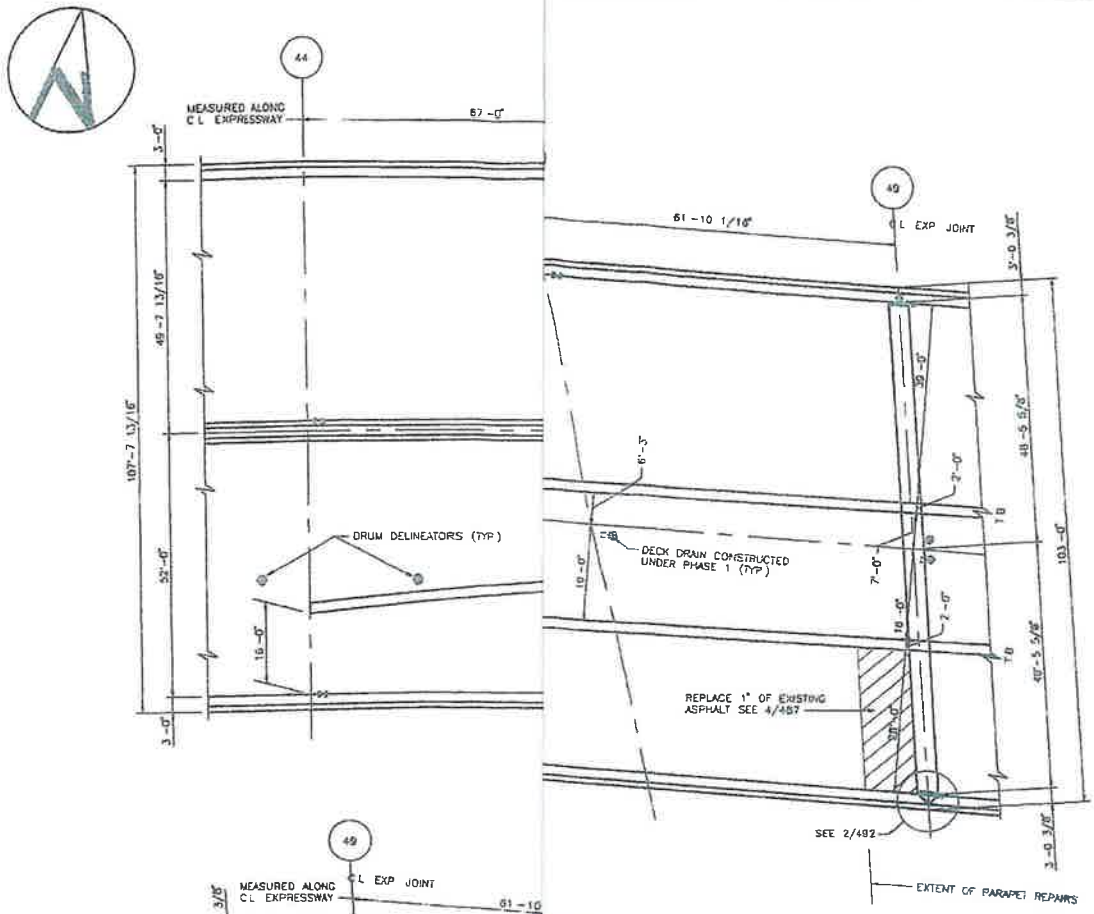


Photo P54 – Typical Condition of Soffit (Bent 306-307) (fair condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P55 – Typical Condition of Soffit (Bent 306-307) (fair condition – stained and unstained cracking, delaminations, spalls, patches, wet areas and light scaling)

Photo P56 – Typical Condition of Fascia (Bent 306-307) (poor condition – cracking, spalls and localized patches)



ROPOLITAN TORONTO TRANSPORTATION DEPARTMENT

F G GARDINER EXPRESSWAY
MAIN DECK REHABILITATION
STRACHAN AVENUE TO WEST OF BATHURST STREET

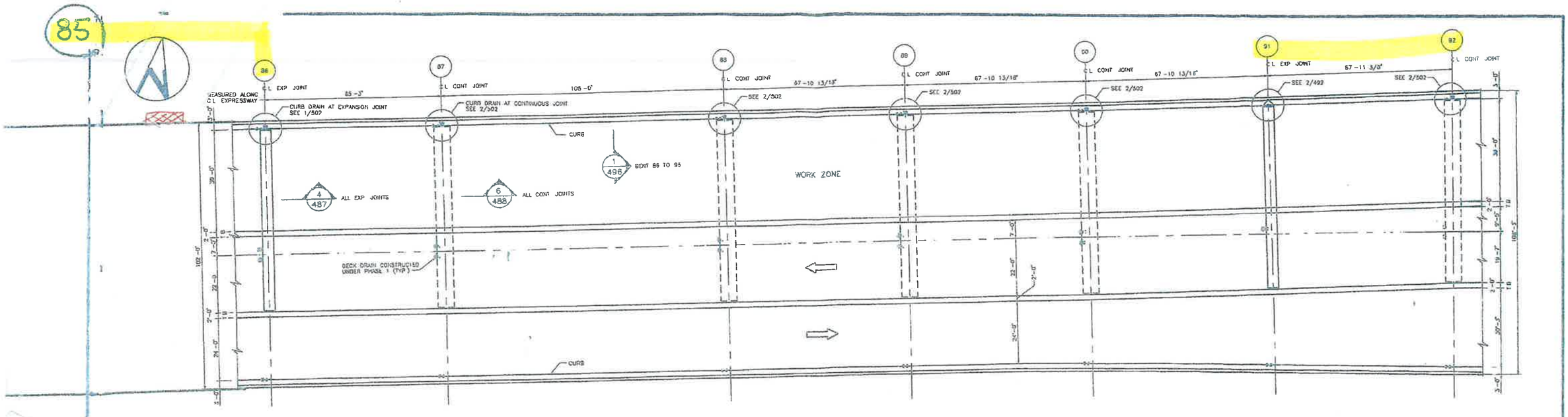
PHASE 3, BENT 44 TO 56
DECK LAYOUT

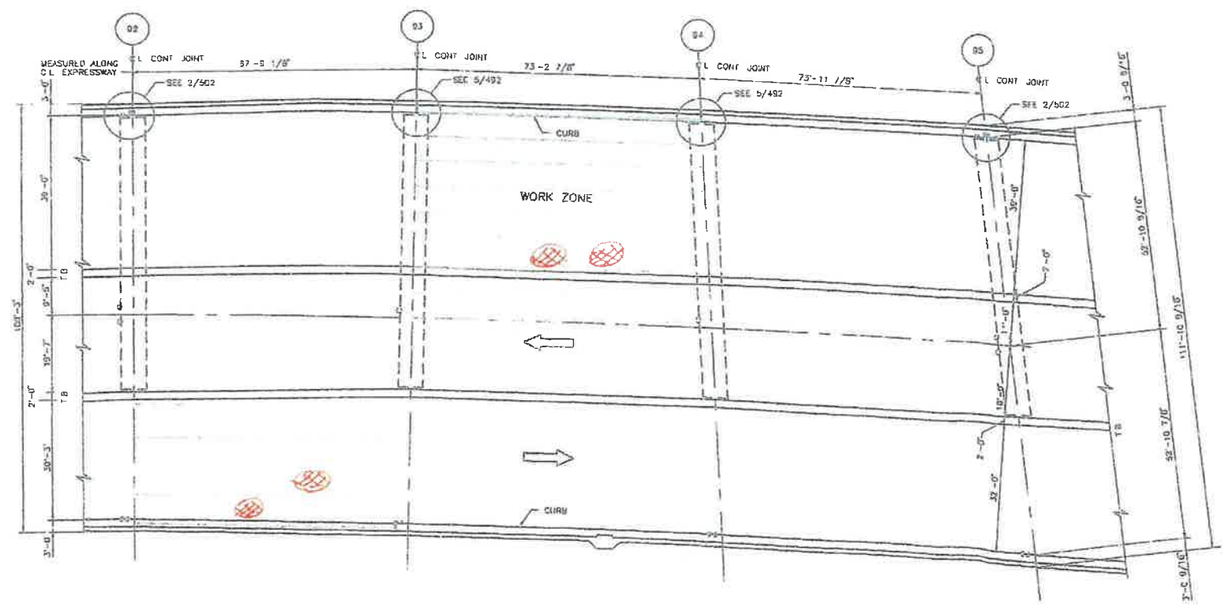
DESIGN	E L	DRAWN	T L C.	CHECK	A.T	
SCALES	1/16"=1'-0"			DRAWING NUMBER	S-375-478	
DATE	JANUARY 6, 1992					

PLOT DATE 29 DEC 1991

MH 12 30100 (1-1192) 692-29-A

85





FOR GENERAL NOTES AND ABBREVIATIONS SEE DWG 469

MUNICIPALITY OF METROPOLITAN TORONTO TRANSPORTATION DEPARTMENT

APPROVED

Consultants — for Commissioner of Transportation

F G GARDINER EXPRESSWAY
MAIN DECK REHABILITATION
STRACHAN AVENUE TO WEST OF BATHURST STREET

PHASE 2, BENT 86 TO 95
DECK LAYOUT

Morrison Hershfield Limited
Consulting Engineers

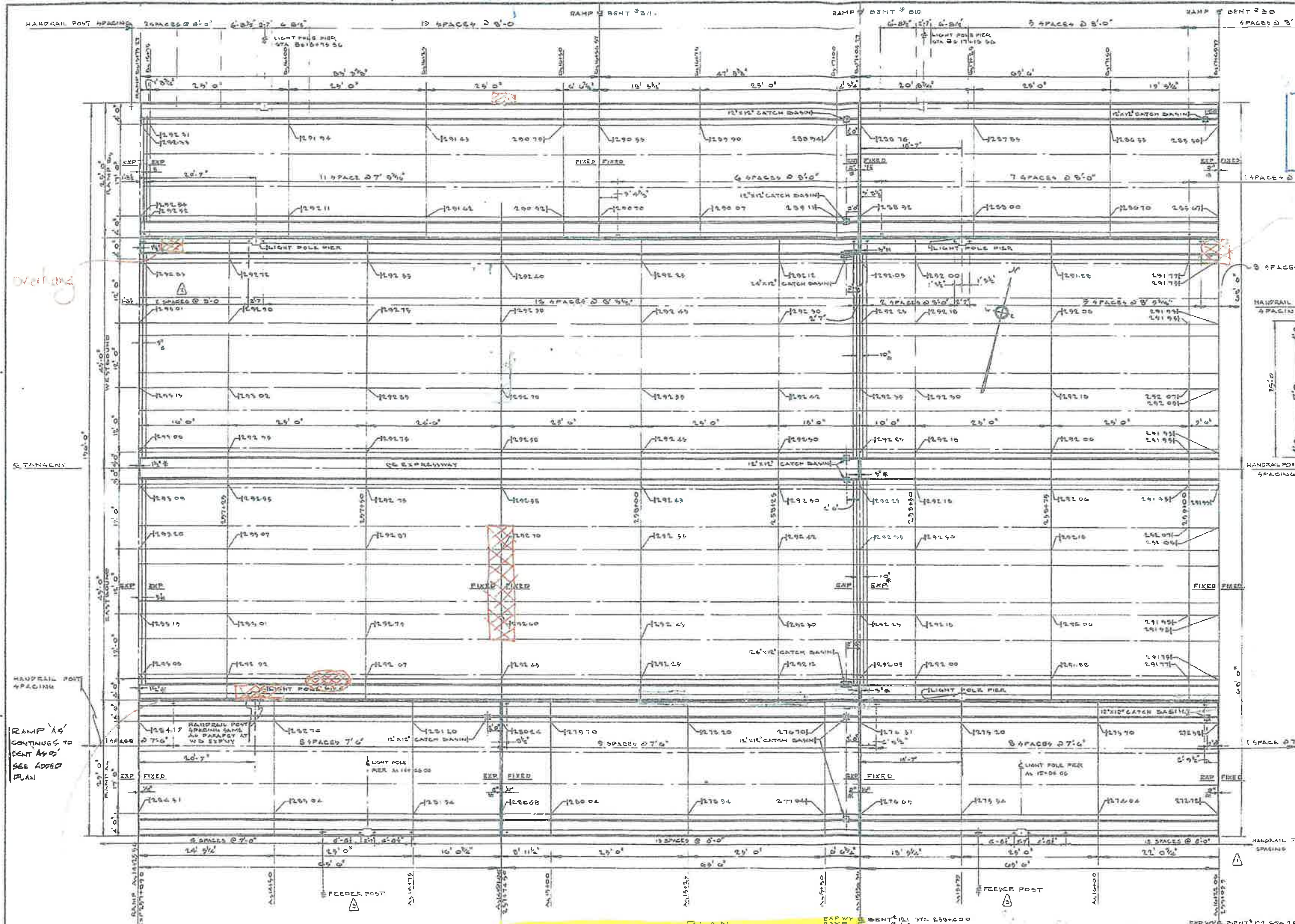
DESIGN	E L	DRAWN	T L C	CHECK	A T
SCALE	1/15" = 1'-0"				
DATE	JANUARY 6, 1992	DRAWING NUMBER	S-375-476		

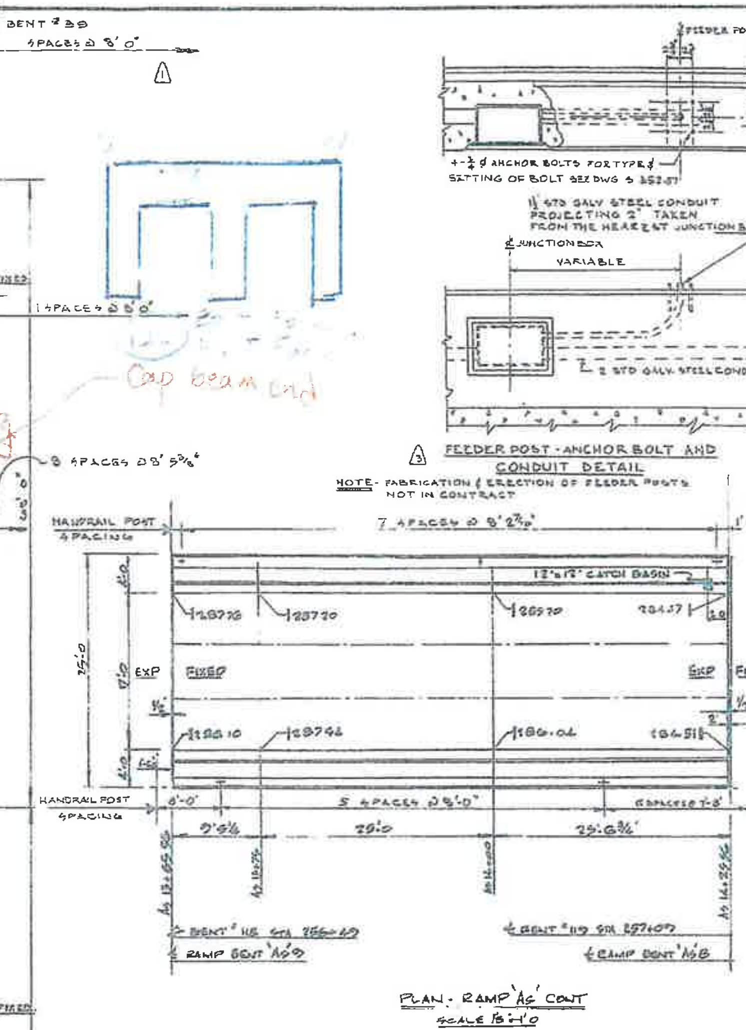
REF. DWG.	TITLE	No.	DATE	REVISIONS	BY
		2	FEB 93	"AS BUILT"	DT
		1	3.2.92	ISSUED FOR CONSTRUCTION	TLC

A TORK (112-301)

SEAL

PLOT DATE 29 DEC 1991





NOTE

HANDRAIL UNITS FROM STA 'AS' 16+35.56 TO END OF RAMP SOUTH SIDE AND FROM STA. B5 15+73.27 TO END OF RAMP NORTH SIDE NOT IN THIS CONTRACT ANCHOR BOLTS TO BE SUPPLIED & SET IN THIS CONTRACT ON THE SPACING SHOWN ON CONCRETE DECK LAYOUT DWGS

DWG. NO	REFERENCE DWG'S FOR DECKSLABS BETWEEN STA 257+09.0 TO STA 259+05.5 (RAMPS INCL)
P-1082-86	GENERAL NOTES.
S-375-173	SLAB REINFORCING DETAILS.
S-375-207	BAR LISTS
S-375-190	CATCH BASINS AND DRAINAGE
S-375-175	LIGHT POLE PIERS
S-375-145	HAND RAILING
S-375-184	EXPANSION AND FIXED JOINTS
S-375-169	TYPICAL SECTIONS AND DETAILS
31305-SK1	GUTTER AND PAVEMENT DETAILS

Date	Issue No.	Rev No.	Description	Drawn By
DEC 1963	5		AS CONSTRUCTED	R.R.
OCT 25/61	4	3	HANDRAIL LIGHTING FEEDER POST & DETAILS ADDED	AK
APR 21/61	3	2	H'RAIL POST SPACING ON EXP'T - DIMENSIONS ADDED NOTES DELETED	AK
OCT 11/60	2	1	FOR CONSTRUCTION H'RAIL & LP PIER LOCATION REVISED	AK
JUNE 30/60	1		FOR TENDER	L.N.

ISSUE OR REVISION

MUNICIPALITY OF METROPOLITAN TORONTO
DEPARTMENT OF ROADS

FREDERICK G GARDINER EXPRESSWAY

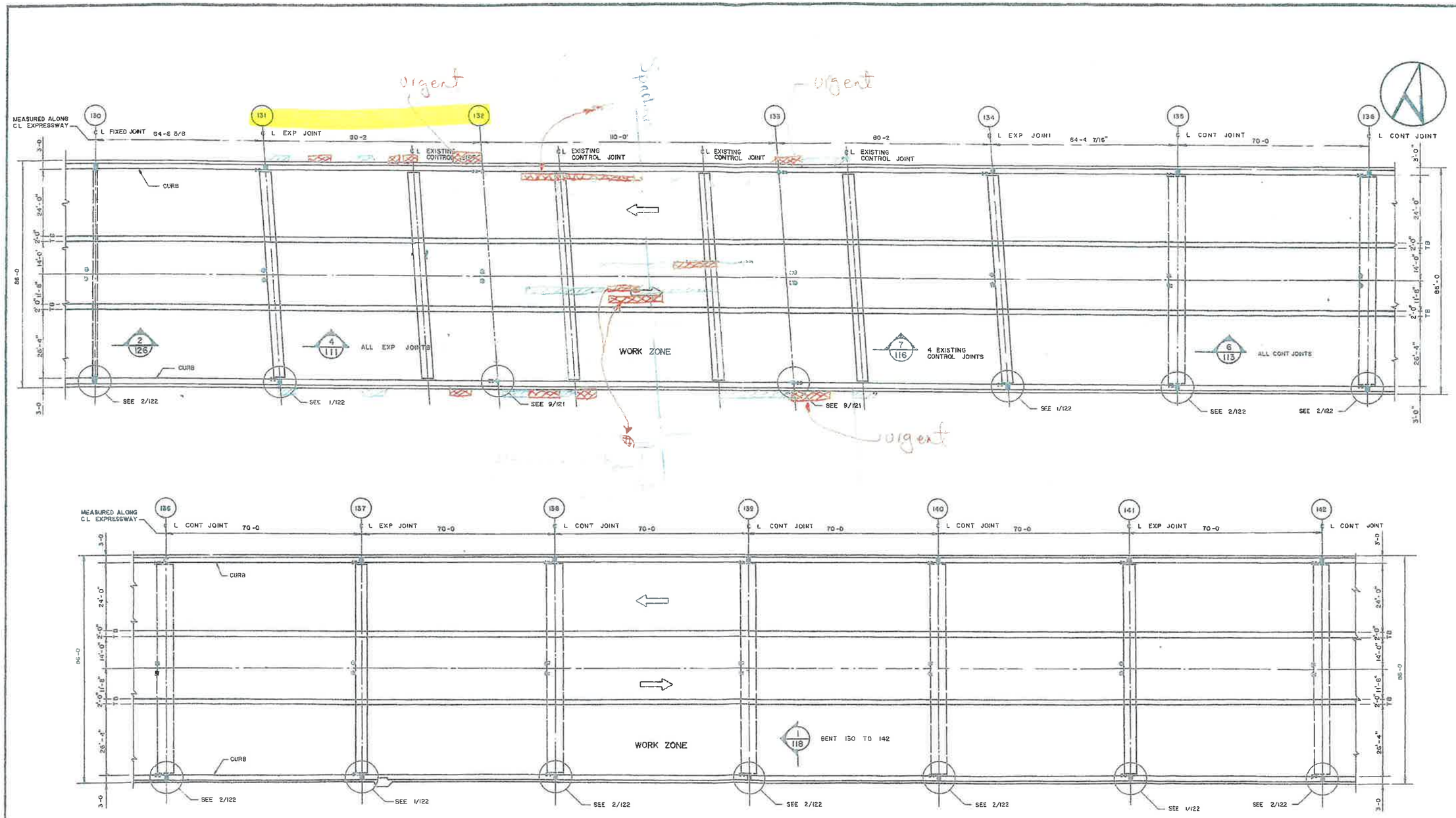
ELEVATED STRUCTURE FROM STA 257+09 TO STA 267+64.39
CONCRETE DECK LAYOUT BENT 119 TO BENT 122

CONSULTING ENGINEERS
H. G. ACRES AND ASSOCIATES LIMITED
DE LEUW CATHER AND CO OF CANADA LIMITED

CHIEF DESIGN ENGINEER
COMMISSIONER OF ROADS

DWN By W. KURYCH | CHD By L. N.
DATE JUNE 30/60 | SCALE AS NOTED
DWG No. S-375-168

31305



FOR GENERAL NOTES AND ABBREVIATIONS SEE DWG 419

MUNICIPALITY OF METROPOLITAN TORONTO DEPARTMENT OF ROADS AND TRAFFIC

APPROVED

Commissioner of Roads and Traffic

F. G GARDINER EXPRESSWAY
MAIN DECK REHABILITATION
BATHURST STREET TO REES STREET

PHASE 3 BENT 130 TO 142
DECK LAYOUT

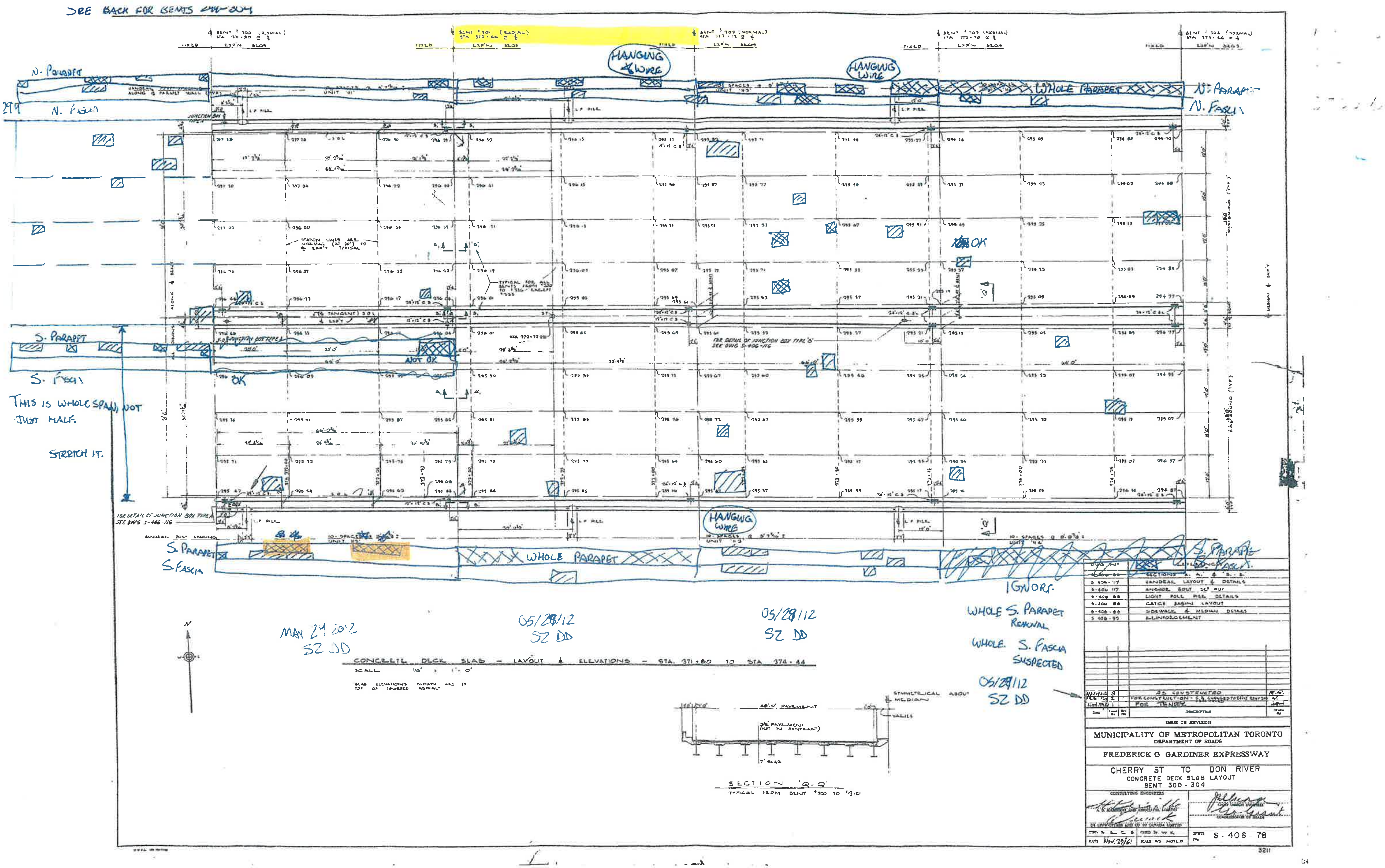
REF DWG.	TITLE

No.	DATE	REVISIONS	BY
2	FEB 91	AS BUILT	A P
1	3 1 90	ISSUED FOR CONSTRUCTION	L Y

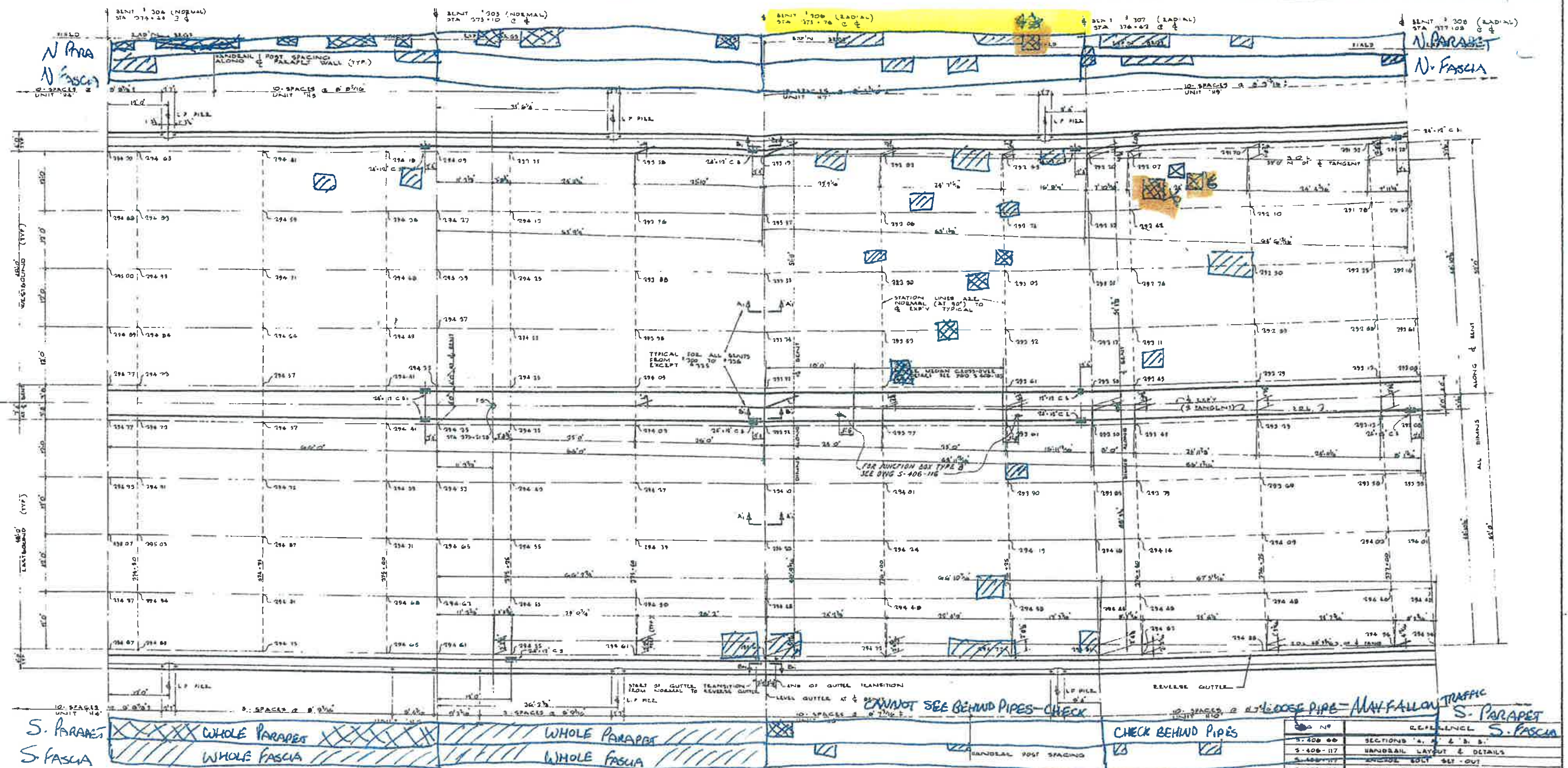
PROFESSIONAL ENGINEERS PROVINCE OF ONTARIO
A TOM
10-201
SEAL

Marshall Macklin Monaghan Limited
Consulting Engineers

DESIGN	TH	DRAWN	LY	CHECK	AT
SCALES	1/16" = 1'-0"				
DATE	JANUARY 15, 1990			DRAWING NUMBER	S-375-428


SEE BACK FOR BENTS 2??-304
N. PARAPET
N. FASCIA
HANGING WIRE
WHOLE PARAPET
S. PARAPET
S. FASCIA
NOT OK
OK
THIS IS WHOLE SPAN, NOT JUST HALF.
STRETCH IT.
FOR DETAIL OF JUNCTION BOX TYPE 'A' SEE DWG S-406-116
HANDRAIL POST SPACING
UNIT '81'
UNIT '83'
UNIT '84'
FOR DETAIL OF JUNCTION BOX TYPE 'B' SEE DWG S-406-116
STATION LINES ARE NORMAL (AT 90°) TO ℄ EXPY TYPICAL
WHOLE S. PARAPET REMOVAL
WHOLE S. FASCIA SUSPECTED
IGNORE
MAY 24 2012 SZ JD
05/28/12 SZ DD
05/28/12 SZ DD
05/28/12 SZ DD
CONCRETE DECK SLAB — LAYOUT & ELEVATIONS — STA. 371+80 TO STA 374+44
SCALE 1/8" = 1'-0"
SLAB ELEVATIONS SHOWN ARE TO TOP OF FINISHED ASPHALT
SYMMETRICAL ABOUT ℄ MEDIAN
48'-0" PAVEMENT
SECTION 'Q-Q'
TYPICAL FROM BENT #300 TO #310
S 406-117 HANDRAIL LAYOUT & DETAILS
S-406-117 ANCHOR BOLT SET OUT
S-406-88 LIGHT POLE PIER DETAILS
S-406-88 CATCH BASIN LAYOUT
S-406-68 SIDEWALK & MEDIAN DETAILS
S 406-99 REINFORCEMENT
AS CONSTRUCTED
FOR CONSTRUCTION
FOR TENDER
DESCRIPTION
ISSUE OR REVISION
MUNICIPALITY OF METROPOLITAN TORONTO
DEPARTMENT OF ROADS
FREDERICK G GARDINER EXPRESSWAY
CHERRY ST TO DON RIVER
CONCRETE DECK SLAB LAYOUT
BENT 300 - 304
CONSULTING ENGINEERS
DATE Nov. 29/61
SCALE AS NOTED
DWG No S-406-78
3211

SEE BACK FOR BENTS 305-308



CONCRETE DECK SLAB - LAYOUT & ELEVATIONS - STA 374 + 44 TO STA 377 + 08

SCALE 1/8" = 1' 0"

SLAB ELEVATIONS SHOWN ARE TO TOP OF FINISHED ASPHALT

DWG Nº	REFERENCE
S-406-66	SECTIONS 'A. A' & 'B. B.'
S-406-117	HANDRAIL LAYOUT & DETAILS
S-406-117	ANCHOR BOLT SET-OUT
S-406-99	LIGHT POLE PILE DETAILS
S-406-88	CATCH BASIN LAYOUT
S-406-60	SIDEWALK & MEDIAN DETAILS
S-406-94	REINFORCEMENT

Date	Issue No	Rev No	Description	Drawn By
NOV/66	3		AS CONSTRUCTED	R.R.
FEB 1/61	2		FOR CONSTRUCTION	A.K.
NOV/61	1		FOR TENDER	

ISSUE OR REVISION

MUNICIPALITY OF METROPOLITAN TORONTO
DEPARTMENT OF ROADS

FREDERICK G GARDINER EXPRESSWAY

CHERRY ST TO DON RIVER
CONCRETE DECK SLAB LAYOUT
BENT 304 - 308

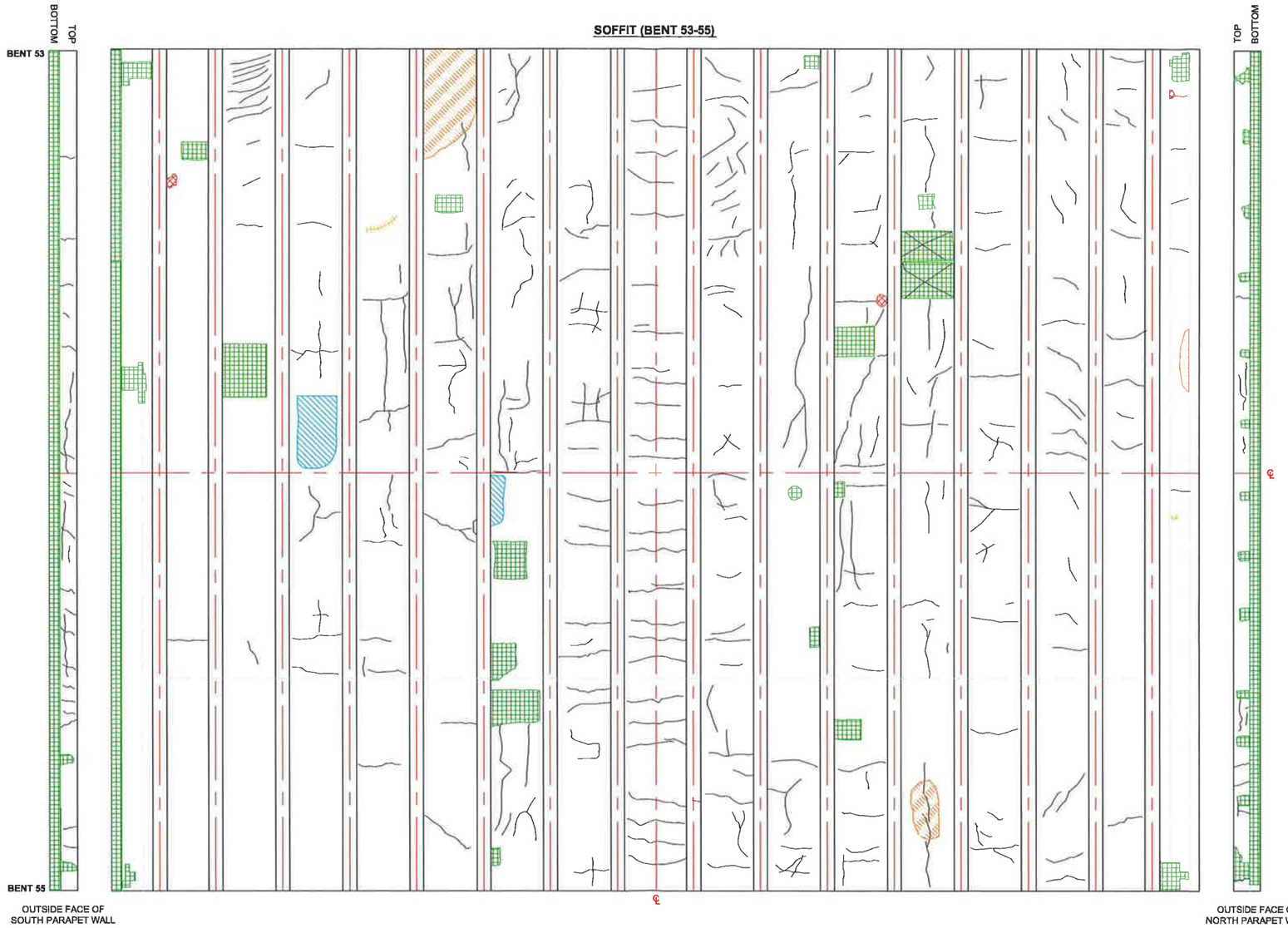
CONSULTING ENGINEERS

DRWN By L.C.S. | CHKD By W.K. | DWG No. S-406-79
DATE Nov.29/61 | SCALE AS NOTED

3211

CONSTRUCTION NORTH

SOFFIT (BENT 53-55)



NOTE: 2012 City of Toronto Visual Survey indicated no signs of surface deterioration.

KEY PLAN

legend:

- Drain
- Delamination
- Spall
- Honey-combed Area
- Light Scaling
- Wet Area
- Patched Spall
- Medium Stained Crack
- Medium Concrete Crack

drawn	JP
approved	SD
date	SEPT. 2012
scale	1:150
original size	Tabloid

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

client: IBI GROUP

project: F. G. GARDINER EXPRESSWAY TORONTO, ON

title: SURFACE DETERIORATION OF SOFFIT / FASCIA (BENT 53-55)

project no: CONCETOB21183AA

drawing no:/figure no: 1

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CONSTRUCTION NORTH

SOFFIT (BENT 85-86)

NOTE: 2012 City of Toronto Visual Survey indicated one small spall on outside face of parapet wall.

KEY PLAN

legend:

- Drain
- Delamination
- Spall
- Honey-combed Area
- Light Scaling
- Wet Area
- Patched Spall
- Medium Stained Crack
- Medium Concrete Crack

drawn	JP
approved	SD
date	SEPT. 2012
scale	1:150
original size	Tabloid

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

client: IBI GROUP

project: F. G. GARDINER EXPRESSWAY TORONTO, ON

title: SURFACE DETERIORATION OF SOFFIT / FASCIA (BENT 85-86)

project no: CONCETOB21183AA

drawing no:/figure no: 2

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CONSTRUCTION NORTH

SOFFIT (BENT 91-92)

NOTE: 2012 City of Toronto Visual Survey indicated no signs of surface deterioration.

KEY PLAN

legend:

- Drain
- Delamination
- Spall
- Honey-combed Area
- Light Scaling
- Wet Area
- Patched Spall
- Medium Stained Crack
- Medium Concrete Crack

drawn	JP
approved	SD
date	SEPT. 2012
scale	1:150
original size	Tabloid

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

client: IBI GROUP

project: F. G. GARDINER EXPRESSWAY TORONTO, ON

title: SURFACE DETERIORATION OF SOFFIT / FASCIA (BENT 91-92)

project no: CONCETOB21183AA

drawing no:/figure no: 3

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CONSTRUCTION NORTH

SOFFIT (BENT 120-121)

NOTE: 2012 City of Toronto Visual Survey indicated one localized spall area.

legend:

- Drain
- Delamination
- Spall
- Honey-combed Area
- Light Scaling
- Wet Area
- Patched Spall
- Medium Stained Crack
- Medium Concrete Crack
- Inaccessible Area

drawn	SWA
approved	SD
date	SEPT. 2012
scale	1:150
original size	Tabloid

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

client: IBI GROUP

project: F. G. GARDINER EXPRESSWAY TORONTO, ON

title: SURFACE DETERIORATION OF SOFFIT / FASCIA (BENT 120-121)

project no: CONCETOB21183AA

drawing no:/figure no: 4

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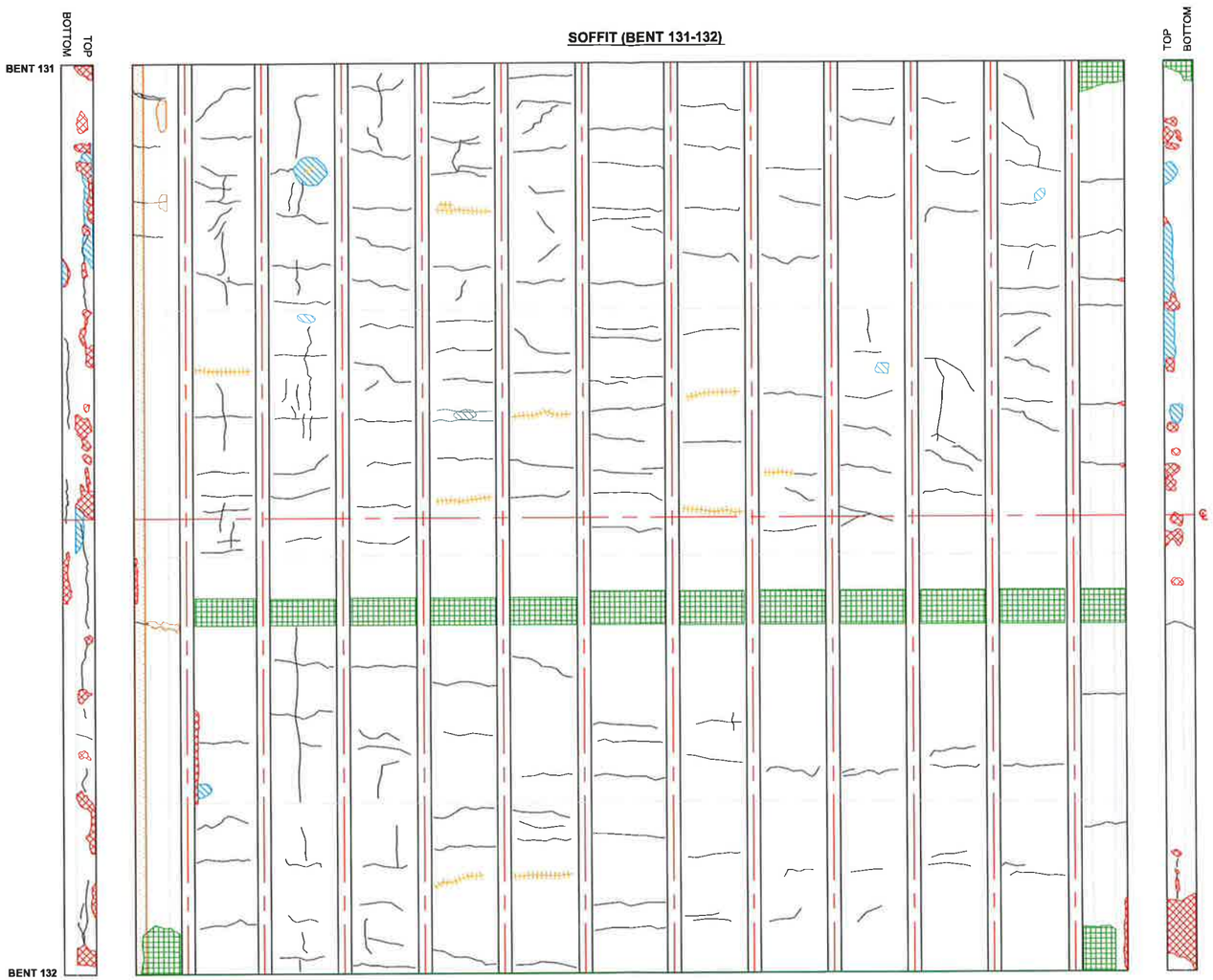
CONSTRUCTION NORTH

SOFFIT (BENT 131-132)



NOTE: 2012 City of Toronto Visual Survey indicated no signs of surface distress on soffit; and three localized areas of delaminations and five localized areas of spalls on outside face of parapet walls.

KEY PLAN

legend:

- Drain
- Delamination
- Spall
- Honey-combed Area
- Light Scaling
- Wet Area
- Patched Spall
- Medium Stained Crack
- Medium Concrete Crack

drawn	JP
approved	SD
date	SEPT. 2012
scale	1:150
original size	Tabloid

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

client: IBI GROUP

project: F. G. GARDINER EXPRESSWAY TORONTO, ON

title: SURFACE DETERIORATION OF SOFFIT/ FASCIA (BENT 131-132)

project no: CONCETOB21183AA

drawing no:/figure no: 5

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CONSTRUCTION NORTH

SOFFIT (BENT 301-302)

NOTE: 2012 City of Toronto Visual Survey indicated two localized areas of delaminations on the soffit; and three localized area of spalls on the north parapet wall and the entire south parapet wall indicated spalls.

legend:

- Drain
- Delamination
- Spall
- Honey-combed Area
- Light Scaling
- Wet Area
- Patched Spall
- Medium Stained Crack
- Medium Concrete Crack

drawn	JP
approved	SD
date	SEPT. 2012
scale	1:150
original size	Tabloid

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

client: IBI GROUP

project: F. G. GARDINER EXPRESSWAY TORONTO, ON

title: SURFACE DETERIORATION OF SOFFIT / FASCIA (BENT 301-302)

project no: CONCETOB21183AA

drawing no:/figure no: 6

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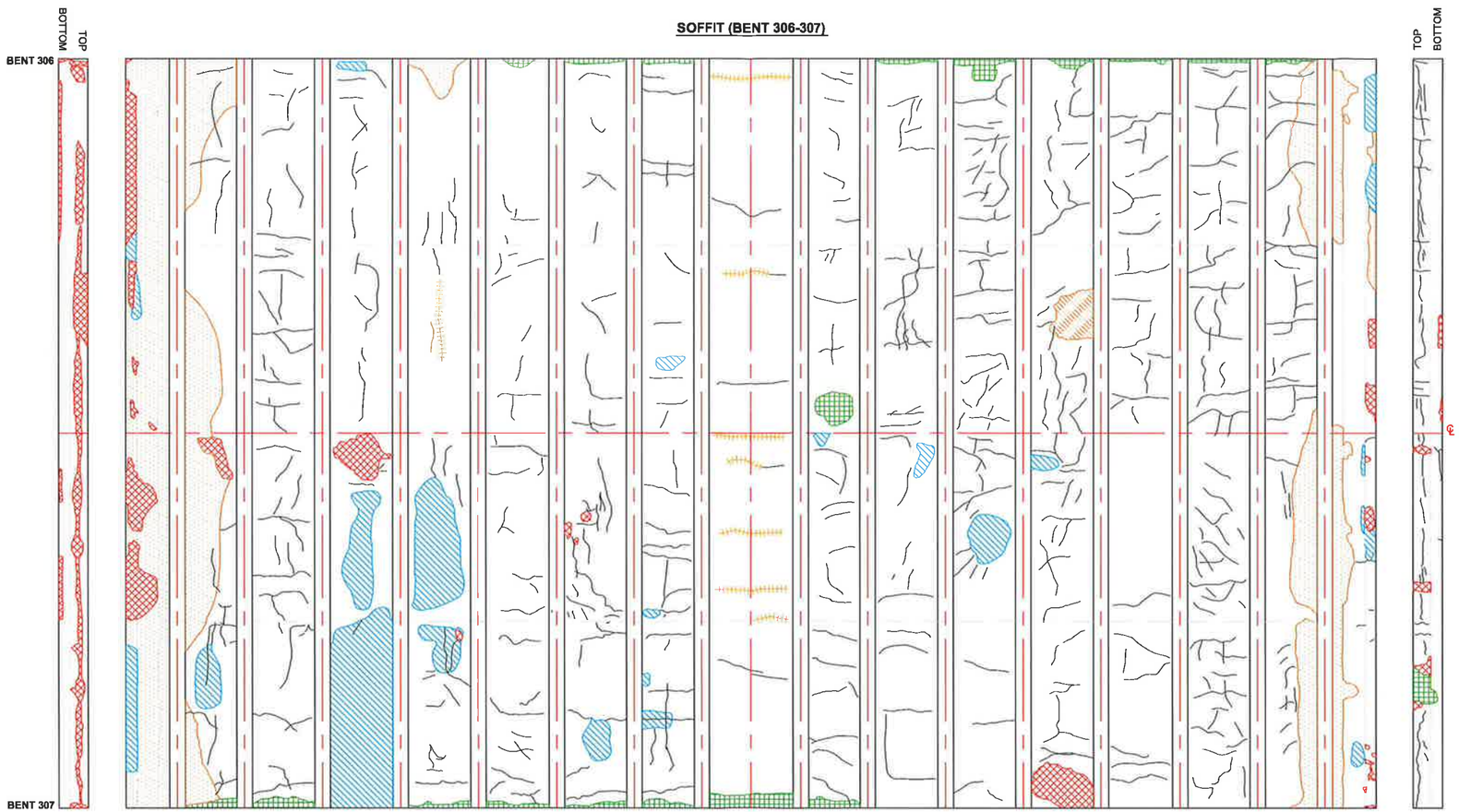
CONSTRUCTION NORTH

SOFFIT (BENT 306-307)



NOTE: 2012 City of Toronto Visual Survey indicated four small spalls and eleven small delaminations on soffit; two small areas of spalls and six small areas of delaminations on outside face of parapet walls.

legend:

- Drain
- Delamination
- Spall
- Honey-combed Area
- Light Scaling
- Wet Area
- Patched Spall
- Medium Stained Crack
- Medium Concrete Crack

drawn	JP
approved	SD
date	SEPT. 2012
scale	1:150
original size	Tabloid

coffey geotechnics
SPECIALISTS MANAGING THE EARTH

client: IBI GROUP

project: F. G. GARDINER EXPRESSWAY TORONTO, ON

title: SURFACE DETERIORATION OF SOFFIT / FASCIA (BENT 306-307)

project no: CONCETOB21183AA

drawing no:/figure no: 7

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