ROADS SUB-COMMITTEE MEETING AGENDA
TUESDAY, DECEMBER 10, 2019 - 1:30 P.M.
MEETING HELD IN THE COUNCIL CHAMBERS

1. Call to Order

2. Additions/Deletions/Approval of Agenda

3. Declaration of Pecuniary Interest or Conflict of Interest

4. Approval of Draft Minutes - November 13th, 2019

5. Business Arising from Minutes

6. Correspondence Items

7. General Business
    1. Monthly Update from Public Works Superintendent
    2. Photos and List of Gaps in Road Management Plan
    2. Email from Kim Goddard in regards to Feral Cat Rescue Driveway Situation
    3. Letter from Harvey Lyon - Road Management Plan
    6. Other/Additions
    7. Unfinished Business
        1. 5 Sideroad Structure - Update (if any)
        2. Winter Staffing and Schedule - Update
        3. Public Works Superintendent - Grader Options and Costing

8. Delegations

    1. 2:00pm - Arunas Kalinauskas, B.Sc., R.J. Burnside and Associates - Road Management Plan

    2. 3:00pm - Chris Knechtel, R.J. Burnside and Associates - Bridge 13 Deck Condition Survey Report

9. Recommendations to Council

10. Public Question Period

11. Confirmation Motion

12. Adjournment and Date of Next Meeting

Denise Holmes

From: Denise Holmes
Sent: Tuesday, November 26, 2019 9:04 AM
To: 'Kim Goddard'
Cc: Roads
Subject: RE: Assistance

Hi Kim,

We have a Roads Sub-Committee meeting on December 11th and I will place this on the Agenda.

Just to confirm, the lot is not zoned Commercial. The property is zoned Rural Residential Exception (RR -164) and a zoning by-law amendment was approved in 2018 to allow a temporary feral cat facility on the property. When the Assessment Office went out to assess the portables on the property (as a result of the building permit), they placed the Commercial designation on them.

Denise B. Holmes, AMCT
CAO/Clerk, Township of Melancthon
519-925-5525 Ext. 101

-----Original Message-----
From: Kim Goddard[redacted]
Sent: Monday, November 25, 2019 12:59 PM
To: Denise Holmes <dholmes@melancthontownship.ca>
Cc: Roads <roads@melancthontownship.ca>
Subject: Assistance

Hello Denise,

I am the landowner of the current commercial lot that the Feral Cat Rescue is situated on. I am not sure how to go about it, but I am wanting to approach council to request extending the culvert on the existing driveway that is owned by Dave Vanderzaag, negotiating to lease a 16' x 36'portion of land at that location, pay for an upgraded culvert to be attached to the existing one on said land and to enter into a shared driveway agreement with Dave Vanderzaag and register it with the town. All expenses will be paid by the Feral Cat Rescue. Liability insurance is covered at 2 million dollars and the lease would also be paid for by the Rescue. I have been using said driveway to access that part of my land since we moved in here in 2011 without issue and have allowed Dave Vanderzaag to store farm equipment on my land via use of his driveway. I also did not dispute the storage of the paving company equipment upon my land upon discovering it had been stored there without my consent during the paving of 3rd line. They also used Dave's driveway to access my land without complaint. I felt it was neighbourly and supportive of our community to do so. I understand that there is a one driveway policy to landowners in our comminity, but the land in question is now zoned commercial and is providing a unique and necessary service to our community. Extending the existing culvert would allow the Rescue to run without disturbing the privacy of my own home and family and without removing any of the beautiful trees that are situated along the ditch. As it stands right now, my driveway has become a busy roadway in order to accommodate the success and maintenance of the Rescue and my privacy is non-existant. I believe in the rescue and have given as much as I can to support it and keep it running. I have studied the environmental impact of feral cats and there is no doubt that there is a need for such a valuable service, especially given the fact that there is no other community service like it. I want to give the Rescue as much autonomy as possible so that Sharon can continue to support our community and the surrounding ones independently of my residential household. I am not sure how to go

about requesting this as it is a rare and unusual situation that I find myself in. If you could direct me to the correct form and protocol to have this considered it would be appreciated.

Thank you for your time and I look forward to hearing from you and to meeting with council.

Sincerely,

Kim Goddard

To: Mayor White & Members of Council
& Roads Subcommittee.

From: ~~Howe Lyon~~

Date: November 19, 2019

Re: Burnside Road Management Plan

Following up on Mr. Kalnauskas' recent presentation to council respecting the above, and my brief review of the draft report, I have the following comments

1 Wrong Starting Point

For more than 25 years there have been 5 key north/south hardtop Township roads: 3rd line OS, 4th line OS, 5th line OS, 4th line NE and 2nd line SW. Most are now in need of major rehabilitation work. That a section of the 4th line NE has been converted to gravel, the first step of a rehabilitation program, just means that the Township got a head start on the required rehabilitation work before an overall Township plan had been developed.

Figure (1) should be modified to recognize the 4th line NE as a key hardtop road with a traffic count of 350. (My notes 2015) Prior to the road breaking up and the 2018 pulverizing traffic counts on this road usually exceeded those on the 5th line OS.

Even the 2018 count of 289 (taken during 1/2 load season and as the asphalt was breaking up badly in the area of Lot 22, both conditions would have the effect of reducing the count somewhat) is higher than those on the 5th line OS as set out on Figure (1).

A simple table setting out the 10 year cost for each of the 5 key roads (including rehabilitation of the 4th line NE) would go a long way to making very clear the challenge facing the Township. (No formulae please)

2. Core Road Section 94, 5th line OS Soonest

Rehabilitation of the 5th line OS, as set out in the plan, is forecast to be, by a significant margin, the most expensive project for the next 10 years. My concern is that the core data indicates that the base work required to meet Burnside specs is more extensive than anticipated with the result that cost skyrocket. If the costs end up being too high then this part of the road will be downgraded to gravel and the whole plan as originally presented falls apart.

3. Lack of Realistic Fiscal Constraints

The 10 year plan was developed at an average cost of $30,000/year. This is an 80% increase over the 2014-2018 average of $291,000. I may be totally out to lunch, but I doubt that this increase is not within the range possibility.

It would appear that Burnside has developed the plan with no clear appreciation of the Township's capacity to handle this level of plan costs. As a very experienced consulting firm (and expensive) their rep should have met with Township staff and wrestled out at least a target range that the Township might, might, might be able to handle. Yes there might be grant money available, but the base case must be developed with no grant money. If grant money becomes available then you do base plus.

4. Where are the costs?

Extensive effort has been put into examining various roads and developing a ranking based on GUPI — not a mention of costs. Cost should probably be the key determinant.

What is not clear, particularly with the major, rehabilitation costs is whether the cost of extensive blade work has been included, or whether it has been assumed that Township staff covered these. Exc?. The costs for extensive blade work must be included. Considering the scope of this work that will be required in the Plan, the Township simply does not have the resources.

5. Hardtop Maintenance

It is noted in the RMP that the Township "does not have an annual budget specific to routine and preventative maintenance for hardtop roads (eg crack sealing, micro surfacing ...)" (Page 44.) However, in the 10-year plan presented the only maintenance option indicated is crack sealing. As far as providing any help for Township staff as to where other options might be used to extend road life the RMP is a failure.

Had more realistic financial constraints been imposed I would have expected the RMP to make more use of the full range of maintenance options to stretch road life until the funding required for full rehabilitation could be handled. This is the real challenge facing every Road Super in the Province.

6. Maintenance of New Gravel

The option of converting some hard top roads, or sections thereof, to gravel should be weighed rather carefully. The recent experience with the 4th line NE provides some observations in this regard.

- the figure of grading 7 times per year as set out in the RMP is not at the height end of what will be required but more likely at the low end.

- Even grading at this frequency together with high applications of calcium has failed to provide a road surface comparable, to say, that of the 5th line OS — a gravel road with significantly higher traffic counts.

- The gravel portion of the 4th line NE is essentially a new gravel road especially with respect to the surface structure. In comparison the 5th line OS has had some 20 years of systematic grooming, gravelling and grading. It will be some years before we can expect a comparable surface. In the meantime such roads will be high maintenance. The biggest problem will be almost unmanageable corrugation — a real safety issue.

If parts of the 2nd line SW are converted to gravel in the short term in order to put off for 2 or 3 years undertaking full rehabilitation it could be a complete disaster. Even if the traffic is reduced by half I seriously doubt the Township has the resources to maintain an acceptable road surface. Will we need another grader and men to operate? It would appear that the traffic count would have to be knocked back to below 200 to have half a chance. How realistic is that?

In conclusion, I find the report as presented at this stage has serious shortcomings. The next time Mr. Kadinauskas pulls out his road degradation curve and opines at length on the key role that timely maintenance plays in extending road life someone should pull the plug on his computer. The Township pays a very handsome sum for an RMP and all he has to offer is that the Township should implement some test projects and talk to our neighbours — Page 44. Is the Township sure that it is talking to the right consultant?

Respectfully

[redacted]

Denise Holmes

From: Chris Knechtel <Chris.Knechtel@rjburnside.com>
Sent: Monday, November 25, 2019 11:14 AM
To: Denise Holmes
Cc: Roads; Wendy Atkinson; Matt Brooks; Mark August
Subject: Deck Condition Survey Results - Melancthon Bridge 13 (260 Sideroad in Riverview)

Morning Denise,

I apologize for the delay in sending this, we were going back and forth a bit with the sub-contractor who completed the core samples and report to clarify some of the information in the Deck Condition Survey (DCS) Report.

Please use the link below to download a copy of the report for the Township's records.

Bridge 13 - DCS Report
Note: Link expires Jan 24/20

We have reviewed the report in detail and below is a brief summary of the procedure and DCS results. Overall, we would consider it a good news story.

- 11 core samples and 9 sawn samples were taken in the concrete deck. One core sample in the concrete approach slab.
- The samples were visually inspected for defects and tested in the lab for chloride (salt) contamination, corrosion, compressive strength and air content.
- Existing asphalt thickness ranged from 20-60 mm (which is considered thin and likely resulted to the severe cracking in the asphalt over the deck).
- Core samples indicated that previous concrete patch repair work had been completed (date unknown), however no waterproofing is present.
- Existing concrete compressive strength and air content is satisfactory.
- A few minor defects were noted in some of the core samples (i.e. delamination, spall, crack, etc.), however defects were not present in all of the samples.
- The average adjusted chloride content (0.051% of mass concrete) was slightly over the threshold of 0.05%, suggesting that the chloride contamination has extended to the upper layer of rebar in localized areas. There is a possibility extensive deck removal and concrete patches will be required in these areas where higher corrosion was noted during the DCS. **However, the good news is the results allow for the existing concrete to be reused through patch repair work and an entire deck replacement is not required.** Once we review in further detail, a thin concrete overlay may be a cost effective solution that we will review as well.
- The remainder of the structure (i.e. barrier, abutments, girders, wingwalls, etc.) were found to be in generally good condition and the minor defects noted matching what was previously observed during the bridge inspection report

In summary:

- The scope of work recommended to rehabilitate Bridge 13 can be limited to the following which will help save the Township money on construction costs for this project, as the results of the DCS indicated the existing concrete is suitable to be reused.
  - Remove existing asphalt
  - Concrete patch repairs to the deck and throughout structure in localized areas
  - Waterproof and pave structure
  - Replace joint seals

- Consider steel beam guide rail on approaches
- Consider replacing bearing pads (provisional)

Unfortunately, until we remove the existing asphalt and review the concrete deck in detail, we are unable to determine the exact extents of the repairs required, however the DCS has provided us with the information required to forecast the repair quantities for Contractors to bid on. We would suggest a contingency item be built into the rehabilitation work to help cover unforeseen repairs to the deck surface.

Please let us know how the Township would to proceed with this project. We can start the engineering design work to prepare a tender ready package for either 2020 or 2021 construction. A topographical survey will likely not be required for this project which will help save on costs as well.

Following our review of the DCS, we anticipate the rehabilitation work can be completed for well under the $420k originally estimated in the bridge inspection report. Let us know if the Township would like us to prepare a detailed cost estimate for budget purposes before proceeding with the rehabilitation design work.

I would be happy to present the findings of the DCS and discuss further at an upcoming Council or Roads Sub-Committee meeting if you feel this would be beneficial.

Give me a call if you would like to discuss further.

Chris

BURNSIDE
Chris Knechtel, P.Eng.
Project Engineer

R.J. Burnside & Associates Limited
15 Townline, Orangeville, Ontario L9W 3R4
Office: +1 800-265-9662 Direct +1 519-938-3012
www.rjburnside.com

BRIDGE CHECK CANADA

Your Bridge & Concrete Inspection Specialists

DETAILED CONDITION SURVEY REPORT

Site No. 13, Township of Melancthon, ON

Prepared for: R.J. Burnside & Associates Limited

BCC Project No.: BCC19079
Report Date: November 2, 2019

Bridge Check Canada Ltd.
200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
T 905-660-6608 F 905-660-6608
www.bridgecheckcanada.com

TABLE OF CONTENTS

Structure Identification Sheet

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

STRUCTURE IDENTIFICATION SHEET

GENERAL INFORMATION

STRUCTURE NAME	***Structure 013***		
SITE NUMBER	13	**DISTRICT NUMBER**	N/A
HIGHWAY **above**	260 Side Rd.	**Below**	Grand River
TYPE OF STRUCTURE	Reinforced cast-in-place concrete slab over precast prestressed concrete I beams		
NUMBER OF SPANS	1	**SPAN LENGTHS**	18.40m
ROADWAY WIDTH	8.60 m	**YEAR BUILT**	1968
DIRECTION OF STRUCTURE	East to West		
SEQUENCE NUMBER	N/A	**TOWNSHIP NUMBER**	N/A
LHRS NUMBER	N/A	**MUNICIPAL BRIDGE NUMBER**	N/A
LOCATION	200m East of 7th Line SW (Lot 21 & 22, Con. 6 & 7 SW)	**JURISDICTION**	Town of Melancthon
INSPECTOR'S NAME	Mohammad Abdollahi, P.Eng.		
PARTY MEMBERS	A.Rashid, E.Elsayed, J.Murray, A.Shantaf, K.Kermani		
DATE OF INSPECTION	7-Oct-19		
TEMPERATURE	13 **°C**	**WEATHER**	sunny
MTO REGION	Central	**AADT**	
DECK RIDING SURFACE	Asphalt		
YEAR LAST REHABILITATED	N/A		

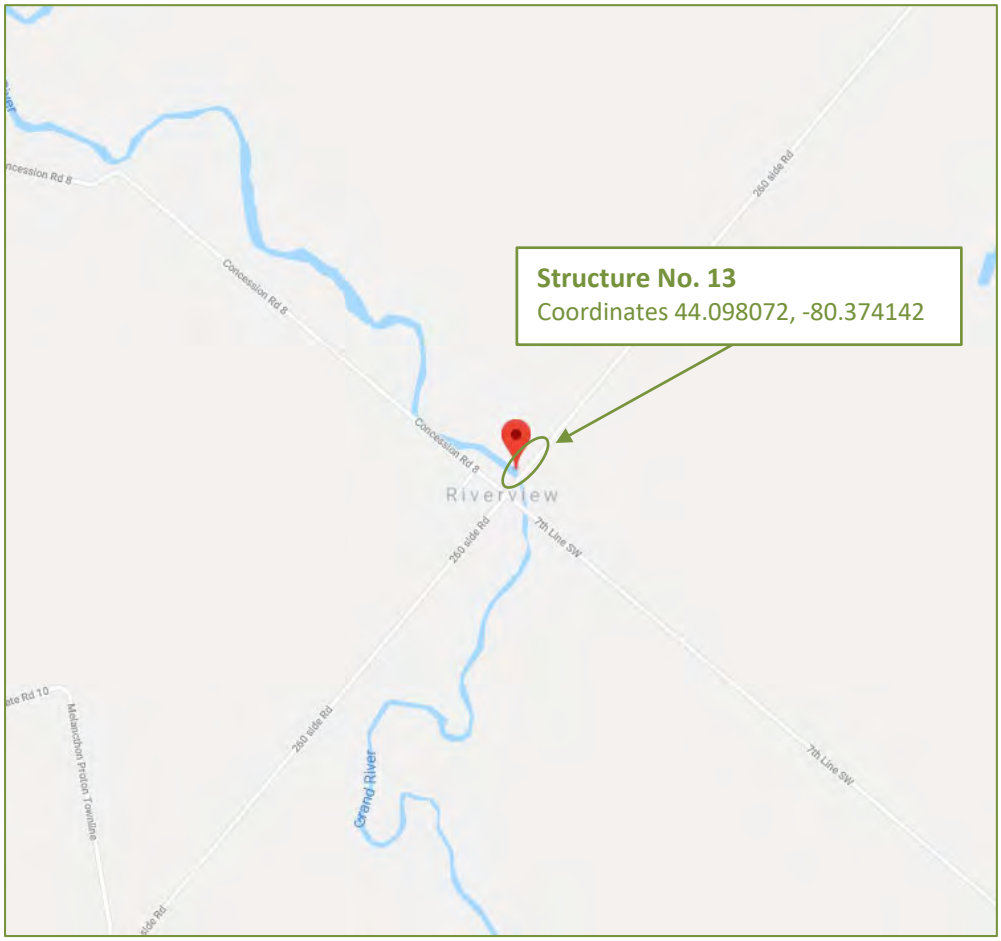
ENGINEER'S STAMP

Key Plan

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

KEY PLAN

Site No. 13, Township of Melancthon



Summary of Significant Findings

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

SUMMARY OF SIGNIFICANT FINDINGS

Bridge 013 – 260 Sideroad over Grand River, Township of Melancthon, Ontario

1.0 INTRODUCTION

Bridge Check Canada Ltd. was retained by R.J. Burnside & Associates Ltd. to carry out detailed bridge condition survey for Bridge 013 – 260 Sideroad over Grand River located on 260 Sideroad, 200m East of 7th Line SW (Lot 21 & 22, Con. 6 & 7 SW) in Township of Melancthon, Ontario. First time field investigations were carried out on October 7, 2019. Field crew used chest waders, ladder, and delam 2000 for the inspection of the substructure components.

The site, constructed in 1968, is a single span reinforced cast-in-place concrete slab over precast concrete I beams, overlain with an asphalt wearing surface and carries one traffic lane per direction of 260 Sideroad. The bridge spans over Grand River. The deck cross section consists of seven concrete I beams.

The total span length of the bridge is 18.40 m. The roadway width is 8.60 m. The structure has an east-to-west orientation. The outer limits of the structure have concrete curb with concrete parapet wall at south side and concrete sidewalk with concrete parapet wall at north side. Photo P1 shows a view of the north elevation of the site. Photo P2 shows the south elevation.

North Elevation of Bridge 013 – 260 Sideroad over Grand River

The rehabilitation history of the bridge was not available.

2.0 METHODOLOGY

In general, the procedures followed to conduct the condition survey and delamination survey were those defined in Part 1 of the MTO Structure Rehabilitation Manual (2007). This assignment involved the observation and recording of surface defects, delamination detection, grid layouts (1.5 m x 1.5 m), concrete cores (100 mm ø), sawn asphalt samples, corrosion potential survey, and physical testing of the concrete cores.

The delaminations in the concrete were detected by striking the surface with a heavy hammer and noting the type of sound being emitted. It should be mentioned that, while this method is quite reliable, it may not detect delaminations at a depth greater than 100 mm. The hammer sounding method was used for all accessible vertical and overhead surfaces. The areas and locations of patches, spalls, delaminations, exposed reinforcement, honey-combing, wet areas, scaling and other observed defects were recorded.

A corrosion potential survey was conducted for the asphalt covered bridge deck, curbs, and handrails. The survey was performed in accordance with the requirements of ASTM C876 and the MTO Structure Rehabilitation Manual. A positive ground connection was made directly to the reinforcing steel, at the locations shown on the accompanying drawings.

Twelve (12) cores (11 cores in asphalt covered deck and one core in the west approach) and 9 sawn asphalt samples were extracted from this structure, in compliance with the requirements for selecting cores and sawn asphalt samples from deteriorated and sound areas. The inside of the coreholes were examined carefully for cracks and the condition of the concrete. The exposed surface of the concrete at the sawn asphalt samples was carefully examined for evidence of deterioration. All the test holes were reinstated to their original condition using MTO-approved products.

Enclosed with this report are detailed condition survey summary sheets, survey equipment and calibration procedures, core photos/sketches, core logs, sawn asphalt sample photos, sawn asphalt sample logs, site photos, laboratory test results, and drawings.

3.0 BRIDGE STRUCTURE

3.1 Asphalt Covered Deck

The width of the asphalt covered bridge deck at abutments is 8.60 m, with a total surveyed area of 163.40 m^2. The condition of the asphalt wearing surface on the bridge deck was identified through visual field observations and review of cores and sawn asphalt samples. Drawing 1 shows the deteriorations as well as the location of the cores and sawn asphalt samples. The general pavement surface condition is shown in Photos P3 to P8. The asphalt wearing surface on the concrete deck was generally in poor condition with unsealed transverse cracks (30.0 m), longitudinal (17.0 m), and random cracks (134.0 m), and potholes/patches (3.10 m^2). The total asphalt depth, measured in the drilled holes, coreholes, and sawn asphalt samples, varied from 20 mm to 60 mm with an average thickness of 38 mm (refer to Drawing 2).

3.2 Waterproofing

The structure does not have any waterproofing system.

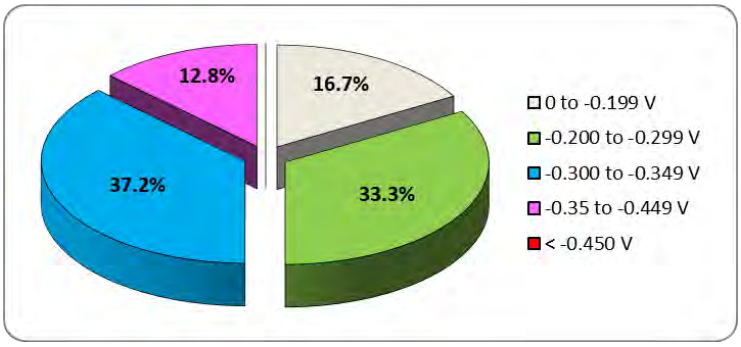
3.3 Concrete Deck

The concrete deck consists of a single span reinforced cast-in-place concrete slab over precast concrete I beams, supported by abutments. The condition of the concrete deck was observed at 11 core locations and 9 sawn asphalt sample locations. The inside of the coreholes and the exposed concrete surface at the sawn asphalt sample locations were examined carefully for cracks and other defects. Several asphalt cores were damaged during extraction from the coreholes as identified in the core logs. Photos P81 to P85 show the inside of the coreholes. A review of the concrete cores revealed delamination in cores C5, C8, C9 and spalling on the top of core C11. Visual review of the exposed concrete surface at the sawn asphalt samples revealed severe scaling at SS3, spalling at SS4 and SS7, and rough surface at SS9. Asphalt sawn samples SS1 and SS6 were taken over the west and east abutment joints, respectively. Asphalt sawn samples SS2 and SS8 were taken adjacent to the south curb and north sidewalk, respectively. Refer to the core and sawn asphalt sample logs and photos.

Full depth core C3 identified a 160 mm thickness for the deck slab at this corehole location. Presence of concrete patch was noted in cores C5, C8, C11. The concrete patch varied in depth from 45 mm to 65 mm. The concrete cover to the upper rebar layer measured in the cores and sawn asphalt samples ranged from 34 to 75 mm with an average cover of 48 mm. A review of the reinforcing steel revealed light rusting in cores C2 and C7 and severe rusting in core C11.

Core C3 was tested for compressive strength of the hardened concrete in accordance with CSA A23.2-14-14C. The compressive strength of the hardened concrete for this core was found to be 62.2 MPa.

Corrosion potential values obtained from the half-cell test carried out on the asphalt covered deck ranged from –0.101 V to –0.427 V with an average value of –0.282 V. The half-cell survey indicated that 16.7% of the deck area likely had no corrosion activity, with corrosion potential values between 0.000 V and -0.199 V. The half-cell survey indicated uncertain low corrosion activity for 70.5% (33.3%+37.2%) of the deck area, with values ranging from -0.200 V to -0.349 V. Probable active corrosion was detected for 12.8% (12.8%+0.0%) of the deck area with corrosion potential values more negative than -0.350 V. Drawing 3 shows the corrosion potential readings in deck.



Corrosion potential distribution in deck

The chloride ion content was determined for four cores using MTO LS-417 "Method of Test for Determination of Total Chloride Ion in Concrete – Acid Soluble". These core samples were located at areas prone to salt exposure (e.g. high corrosion potential areas, along construction joints, low points of the deck, asphalt cracks). In addition, samples from other moderately exposed areas were also taken. The chloride ion content values, at the average concrete cover or at rebar level are summarized below.

Core No.	C2	C7	C8	C10
Corrected Chloride Content (%)*	0.077	0.026	0.010	0.021
Corrosion Potential (V)	-0.369	-0.401	-0.338	-0.215

* Background chloride ion content was estimated to be 0.022 for parent concrete and 0.029 for concrete patch.

The chloride threshold value necessary to depassivate embedded steel and to allow the onset of corrosion (in the presence of oxygen and moisture) is generally taken as 0.025% by mass of concrete. The background chloride content is the lowest chloride content value for all of the cores tested for chloride content. The "background" chlorides do not contribute to corrosion, and thus the results are corrected for the background chloride content. The corrected chloride content, at the rebar level, was above the chloride threshold level of 0.025% in cores C2 and C7. Overall, the results indicate that chloride contamination has extended to the upper rebar level in some areas of deck.

Based on the concrete removal policy outlined in the Structure Rehabilitation Manual, the following comments can be made:

- Since more than 10% of the deck area is more negative than -0.350 V, the average chloride content at the reinforcing level is calculated using only the cores with corrosion potential more negative than -0.350 V. Therefore, the average adjusted chloride content at the reinforcing steel level is 0.051%.
- Based on the above, since the average adjusted chloride content at the top reinforcement level is more than 0.05% by mass of concrete, concrete deck removal is recommended to include delaminated areas (18.1 m + 20.3 m = 38.4 m) plus areas with corrosion potential more negative than -0.350 V (10.5 m).

Core C6 was tested to determine the air void system of the hardened concrete in accordance with ASTM C457 using the Modified Point Count Method. Test results are summarized below:

Core No.	Air Content (%)	Specific Surface (mm^{-1})	Spacing Factor (mm)
C6	5.1	32.1	0.151

Concrete is normally considered to be properly air entrained if the air content exceeds 3.0%, the specific surface exceeds 24 mm^{-1}, and the average spacing factor is less than 0.200 mm. Therefore, the air void system for core C6 is considered air entrained.

3.4 Deck Soffit, Girders, Diaphragms

The visual inspection of deck soffit, girders, and diaphragms was carried out and deteriorations were recorded. Drawing 4 and Photos P9 to P20 show the general condition of the soffit, girders, and diaphragms.

The bridge deck soffit, with a total surveyed area of 220.50 m^2, was in fair-to-good condition with clean/stained medium width cracks (22.0 m), delaminations (1.35 m^2), spalls (0.65 m^2), honeycombing (0.20 m^2), and wet areas (1.70 m^2).

The concrete I girders, with a total surveyed area of 291.00 m^2, were in fair-to-good condition with clean medium width cracks (6.0 m), delaminations (0.10 m^2), spalls (0.15 m^2) and wet areas (0.10 m^2).

The diaphragms, with a total surveyed area of 61.00 m^2, were in fair condition with clean medium width cracks (4.0 m), delaminations (0.75 m^2), and honeycombing (0.35 m^2).

3.5 Bridge Approaches

Photos P21 and P22 show the general condition of the bridge approaches. The asphalt on the approaches was in fair condition with unsealed cracks and patches. Observation of corehole C1, located in the west approach, confirmed the presence of granular materials beneath 60 mm of asphalt. Photo P80 shows the inside of the corehole C1.

3.6 Deck Drainage

A total of 4 steel drain pipes were located on bridge deck, each having a 170 mm diametre and a 1000 mm length (Photos P23 and P24). No catch basins were found in the vicinity of the structure.

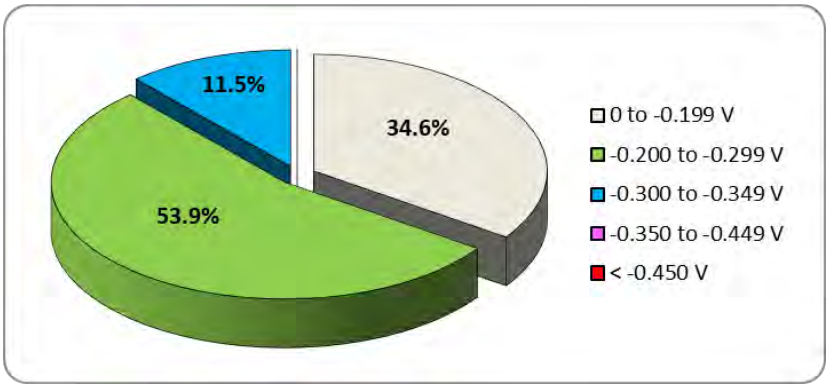
3.7 Deck Joints

The joints were paved over and the overlay was exhibiting unsealed cracks and potholes, as shown in Photos P25 and P26.

3.8 Parapet Walls

The interior face of the concrete parapet walls, with a total surveyed area of 53.32 m^2, was in fair-to-good condition with clean medium width crack 4.0 m, spalls (0.42 m^2) and light scaling (60.60 m^2). The surface deterioration is shown on Drawing 1, and in Photos P27 to P32. The concrete cover ranged from 39 mm to 72 mm with an average cover of 53 mm, as shown on Drawing 2.

Corrosion potential values obtained from the half-cell test carried out on the parapet walls ranged from –0.124 V to –0.324 V with an average value of –0.218 V. The half-cell survey indicated that 34.6% of the parapet walls area likely had no corrosion activity, with corrosion potential values between 0.000 V and -0.199 V. The half-cell survey indicated uncertain low corrosion activity for 65.4% (53.9%+11.5%) of the parapet walls area, with values ranging from -0.200 V to -0.349 V. Drawing 3 shows the corrosion potential readings in the concrete parapet walls.

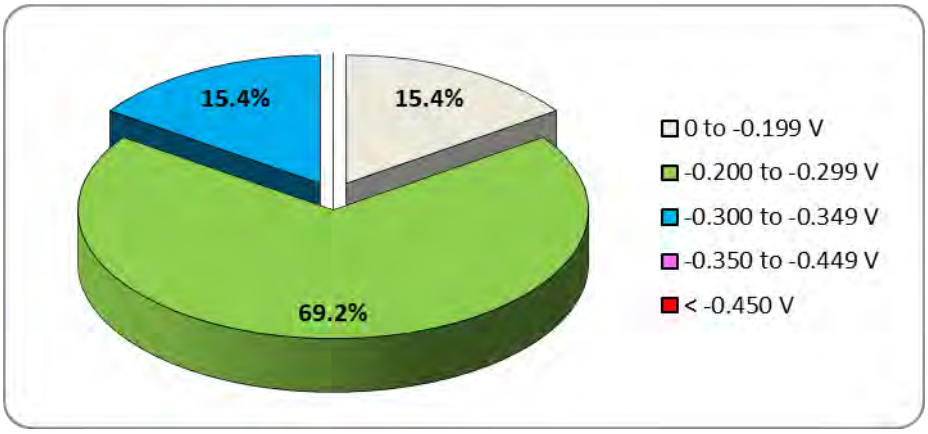


Corrosion potential distribution in the concrete parapet walls

3.9 Concrete Curb

The concrete curb, with a total surveyed area of 15.50 m^2, was in fair-to-good condition with clean medium width cracks (1.0 m), spalls (0.10 m^2), light scaling (9.20 m^2). The surface deterioration is shown on Drawing 1 and in Photos P30 to P32. The cracks were mainly transverse. Spalling was observed on the exterior face of the curb. The concrete cover ranged from 34 mm to 83 mm with an average cover of 56 mm, as shown on Drawing 2.

Corrosion potential values obtained from the half-cell test carried out on the south curb ranged from –0.146 V to –0.324 V with an average value of –0.248 V. The half-cell survey indicated that 15.4% of the curb area likely had no corrosion activity, with corrosion potential values between 0.000 V and -0.199 V. The half-cell survey indicated uncertain low corrosion activity for 84.6% (69.2%+15.4%) of the curb area, with values ranging from -0.200 V to -0.349 V. Drawing 3 shows the corrosion potential readings in the concrete curb.

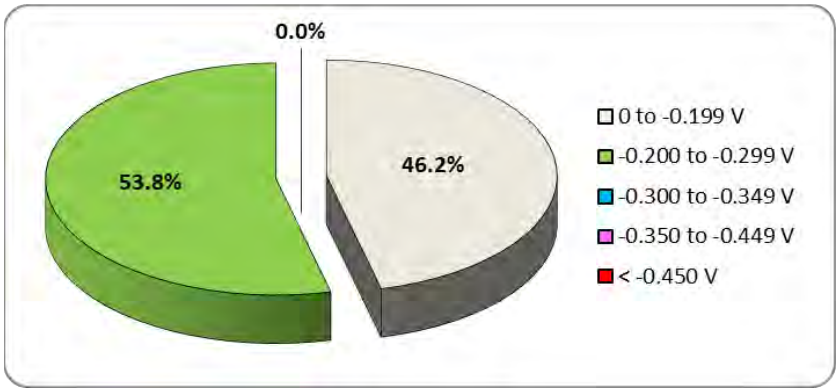


Corrosion potential distribution in the concrete south curb

3.10 Concrete Sidewalk

The concrete sidewalk, with a total surveyed area of 31.00 m^2, was in fair-to-good condition with spalls (0.15 m^2), light scaling (37.10 m^2). The surface deterioration is shown on Drawing 1 and in Photos P27 to P29. The concrete cover ranged from 57 mm to 92 mm with an average cover of 75 mm, as shown on Drawing 2.

Corrosion potential values obtained from the half-cell test carried out on the north sidewalk ranged from –0.142 V to –0.261 V with an average value of –0.212 V. The half-cell survey indicated that 46.2% of the sidewalk area likely had no corrosion activity, with corrosion potential values between 0.000 V and -0.199 V. The half-cell survey indicated uncertain low corrosion activity for 53.8% (53.8%+0.0%) of the sidewalk area, with values ranging from -0.200 V to -0.349 V. Drawing 3 shows the corrosion potential readings in the concrete sidewalk.



Corrosion potential distribution in the concrete north sidewalk

3.11 End Posts

The concrete end posts were generally in good condition with light scaling and localized spalls (Photos P33 to P36).

4.0 SUBSTRUCTURE COMPONENTS

The abutment walls and wingwalls were inspected and hammer sounded, where accessible, to check for delaminations. Field measurements are presented in the field summary sheets.

4.1 Abutment Walls and Bearings

The exposed surfaces of the abutment walls were inspected and sounded to check for delaminations. The total surveyed area for the east and west abutment walls were 37.70 m^2 and 37.40 m^2, respectively. The deterioration is shown on Drawing 5. General views of the abutment walls and bearings are shown in Photos P37 to P71. The abutment walls were generally in fair-to-good condition. The field investigation of the east abutment wall revealed clean medium width cracks (12.0 m) and wet areas

(10.10 m^2). The field investigation of the west abutment wall revealed clean medium width cracks (10.0 m) and wet areas (7.40 m^2).

The abutment elastomeric bearings were in fair condition with narrow cracks, bulging, and compression (Photos P40 to P53 and P58 to P71).

4.2 Ballast Walls

The exposed surfaces of the ballast walls were inspected and sounded to check for delaminations. The total surveyed area for the east and west ballast walls were 1.35 m^2, each. The deterioration is shown on Drawing 5. The visible section of ballast walls was generally in good condition. The field investigation of the east ballast wall did not reveal any deterioration. The field investigation of the west ballast wall revealed wet areas (0.13 m^2).

4.3 Bearing Seats

The total surveyed area for the east and west bearing seats was 6.50 m^2, each. The deterioration is shown on Drawing 5. The east bearing seat was in good condition with wet areas (4.80 m^2). The west bearing seat was in good condition with wet areas (4.80 m^2).

4.4 Wingwalls

A detailed visual inspection and hammer sounding of the wingwalls were carried out. The deterioration is shown on Drawing 5 and in Photos P72 to P75.

The wingwalls, with a total surveyed area of 60.50 m^2, were in fair-to-good condition. The deteriorations included clean/stained medium width cracks (11.0 m), light scaling (7.40 m^2), and wet areas (1.10 m^2).

4.5 Slopes

The embankment slopes were in fair condition with evidence of soil erosion and aggradation (Photos P76 to P79).

Appendix A:

Detailed Condition Survey Summary Sheets

Asphalt Covered Deck, Exposed Concrete Components, Expansion Joint, Drainage

ASPHALT COVERED DECK

DECK RIDING SURFACE

Site No. 13

1. Dimensions and Area of Survey

Width between E abutment curbs	8.60 m	Width between W abutment curbs	8.60 m
Length between abutment joints	19.00 m	Area of deck riding surface	163.40 m²

Remarks

Deck dimensions were taken from the structural drawings

2. Asphalt Surface Cracks

Orientation	Unsealed	Sealed	
Transverse	30.0	0.0	**m**
Longitudinal	17.0	0.0	**m**
Random	134.0	0.0	**m**

* Asphalt potholes/patches = 3.10 m²
* Asphalt Alligator Cracks = 0.00 m²
* Asphalt Ravelling = 0.00 m²

3. Asphalt Depth

Remarks

Condition *	Depth			
	Min	Max	Avg	
F to P	20	60	38	**mm**

* G – Good, F – Fair, P – Poor, V - Variable Good to Poor

Remarks

4. Waterproofing

Type	Condition *	Conc. Bond *	Thickness (mm) **			
			Min	Max	Avg	
N/A	N/A	N/A	N/A	N/A	N/A	**mm**

* G – Good, F – Fair, P – Poor, V - Variable Good to Poor

** Report only thickness of waterproofing membrane but note presence of protection board

Site No. 13

5. Concrete Cover – Cores and Sawn Samples

Remarks

Minimum	Maximum	Average	
34	75	48	mm

Note: Only include covers for upper layer of rebars.

6. Corrosion Activity

Remarks

Minimum	Maximum	Average	
-0.101	-0.427	-0.282	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
27.3	54.4	60.8	20.9	0.0	m^2
16.7	33.3	37.2	12.8	0.0	%

Remarks

7. Defective Cores and Sawn Samples

Corrosion Activity (Volts)	Cores and Sawn Samples						
	Total in Each Area	Delaminated, Spalled, Severe Scaling and Disintegration *			Medium Scaling *		
		No.	m^2	%	No.	m^2	%
0 to -0.20	3	0	0.0	0.0	0	0.0	0.0
-0.20 to -0.30	3	1	18.1	11.1	0	0.0	0.0
-0.30 to -0.35	6	2	20.3	12.4	0	0.0	0.0
-0.35 to -0.45	8	4	10.5	6.4	0	0.0	0.0
<-0.45	0	0	0.0	0.0	0	0.0	0.0

* The percent calculation should be of the entire deck area investigated. The values obtained should be used with caution as large errors may occur when a small number of samples are used for the calculation or when the samples are not randomly distributed over the entire deck area.

Site No. 13

8. Adjusted Chloride Content Profile

*Background (original concrete) chloride content = 0.067
*Background (overlay concrete) chloride content = 0.058

Corrosion Activity at Core Location		0 to -0.20	-0.20 to -0.35	≤-0.35
Chloride Content*	0-10 mm	-	0.045	0.081
	20-30 mm	-	0.029	0.059
	40-50 mm	-	0.016	0.052
	60-70 mm	-	0.028	0.054
	80-90 mm	-	0.008	-
	100-110 mm	-	0.000	-

Remarks

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

9. Chloride Content at Rebar Level

Core No.	C2	C7	C8	C10			
Chloride Content*	0.077	0.026	0.010	0.021			
Corrosion Potential	-0.369	-0.401	-0.338	-0.215			
Core No.							
Chloride Content*							
Corrosion Potential							
Core No.							
Chloride Content*							
Corrosion Potential							

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

10. 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	-

Remarks
Table # 10 is Not Applicable.

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

Site No. 13

Remarks
Table # 11 is Not Applicable.

11. 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.

12. Concrete Air Entrainment

		Yes	No	Marginal
Concrete Air Entrained?	C6	X		

13. Compressive Strength

Average Compressive Strength **62.2 MPa**

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: 13

Component Type & Location: Soffit and Fascia

OSIM Identifier: Decks

1. Dimensions and Area

Width	-	Length	-	Height	-
Diameter	-	Total Area Surveyed	220.50 m²		

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Transverse	Longitudinal	Other	Total	
Medium Width	Clean	1.0	0.0	3.0	22.0	m
	Stained	4.0	4.0	10.0		
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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: 13

Component Type & Location: Soffit and Fascia **OSIM Identifier: Decks**

Remarks
Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	1.35	0.65	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
2.00 m²	0.9 %	N/A	N/A

*Wet areas = 1.70 m²

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.20 m²

Site No: 13

Component Type & Location: Soffit and Fascia **OSIM Identifier: Decks**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: Soffit and Fascia **OSIM Identifier: Decks**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: Girders **OSIM Identifier: Piers**

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 291.00 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	Clean	0.0	5.0	1.0	6.0	m
	Stained	0.0	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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: 13

Component Type & Location: Girders **OSIM Identifier: Piers**

Remarks
Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.10	0.15	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.25 m²	0.1 %	N/A	N/A

*Wet areas = 0.10 m²

Remarks

7. Scaling

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: **13**

Component Type & Location: Girders **OSIM Identifier: Piers**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: Girders **OSIM Identifier: Piers**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: Diaphragms **OSIM Identifier: Retaining Walls**

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 61.00 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	Clean	2.0	1.0	1.0	4.0	m
	Stained	0.0	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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: 13

Component Type & Location: Diaphragms

OSIM Identifier: Retaining Walls

5. Corrosion Activity

Remarks

Table # 5 is Not Applicable.

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.75	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.75 m²	1.2 %	N/A	N/A

*Wet areas = 0.00 m²

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.35 m²

Site No: **13**

Component Type & Location: Diaphragms **OSIM Identifier: Retaining Walls**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: Diaphragms

OSIM Identifier: Retaining Walls

Remarks
Table # 12 is Not Applicable.

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

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

Site No: **13**

Component Type & Location: North & South Parapet Walls **OSIM Identifier: Barriers**

1. Dimensions and Area

Width	0.25 m	Length	31.00 m	Height	0.61 m
Diameter	-	Total Area Surveyed		53.32 m²	

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	**Clean**	2.0	1.0	1.0	4.0	**m**
	Stained	0.0	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 m²

4. Concrete Cover

Remarks

Minimum	Maximum	Average	
39	72	53	**mm**

0 – 20 mm	0.0	**40 – 60 mm**	47.6	m^2
	0.0		89.3	%
20 – 40 mm	1.9	**over 60 mm**	3.8	m^2
	3.6		7.1	%

Site No: 13

Component Type & Location: North & South Parapet Walls **OSIM Identifier: Barriers**

Remarks

5. Corrosion Activity

Minimum	Maximum	Average	
-0.124	-0.324	-0.218	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	V
18.4	28.7	6.1	0.0	0.0	m^2
34.6	53.9	11.5	0.0	0.0	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.42	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.42 m²	0.8 %	N/A	N/A

*Wet areas = 0.00 m²

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
60.60	0.00	0.00	m^2
113.7	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: **13**

Component Type & Location: North & South Parapet Walls **OSIM Identifier: Barriers**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

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: **13**

Component Type & Location: North & South Parapet Walls **OSIM Identifier: Barriers**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: **13**

Component Type & Location: South Curb **OSIM Identifier: Sidewalks/curbs**

1. Dimensions and Area

Width	0.32 m	Length	31.00 m	Height	0.18 m
Diameter	-	Total Area Surveyed		15.50 m²	

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Transverse	Longitudinal	Other	Total	
Medium Width	**Clean**	1.0	0.0	0.0	1.0	**m**
	Stained	0.0	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 m²

4. Concrete Cover

Remarks

Minimum	Maximum	Average	
34	83	56	**mm**

0 – 20 mm	0.0	**40 – 60 mm**	11.1	m^2
	0.0		71.4	%
20 – 40 mm	2.2	**over 60 mm**	2.2	m^2
	14.3		14.3	%

Site No: 13

Component Type & Location: South Curb

OSIM Identifier: Sidewalks/curbs

Remarks

5. Corrosion Activity

Minimum	Maximum	Average	
-0.146	-0.324	-0.248	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
2.4	10.7	2.4	0.0	0.0	m^2
15.4	69.2	15.4	0.0	0.0	%

Remarks

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.10	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.10 m²	0.6 %	N/A	N/A

*Wet areas = 0.00 m²

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
9.20	0.00	0.00	m^2
59.4	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: **13**

Component Type & Location: South Curb **OSIM Identifier: Sidewalks/curbs**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

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: **13**

Component Type & Location: South Curb

OSIM Identifier: Sidewalks/curbs

Remarks
Table # 12 is Not Applicable.

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

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

Site No: **13**

Component Type & Location: North Sidewalk **OSIM Identifier: Sidewalks/curbs**

1. Dimensions and Area

Width	1.25 m	Length	31.00 m	Height	0.21 m
Diameter	-	Total Area Surveyed		45.26 m²	

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Transverse	Longitudinal	Other	Total	
Medium Width	**Clean**	0.0	0.0	0.0	0.0	**m**
	Stained	0.0	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 m²

4. Concrete Cover

Remarks

Minimum	Maximum	Average	
57	92	75	**mm**

0 – 20 mm	0.0	**40 – 60 mm**	6.5	m^2
	0.0		14.3	%
20 – 40 mm	0.0	**over 60 mm**	38.8	m^2
	0.0		85.7	%

Site No: 13

Component Type & Location: North Sidewalk **OSIM Identifier: Sidewalks/curbs**

Remarks

5. Corrosion Activity

Minimum	Maximum	Average	
-0.142	-0.261	-0.212	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	V
20.9	24.3	0.0	0.0	0.0	m^2
46.2	53.8	0.0	0.0	0.0	%

Remarks

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.15	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.15 m²	0.3 %	N/A	N/A

*Wet areas = 0.00 m²

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
37.10	0.00	0.00	m^2
82.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: **13**

Component Type & Location: North Sidewalk **OSIM Identifier: Sidewalks/curbs**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

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: **13**

Component Type & Location: North Sidewalk **OSIM Identifier: Sidewalks/curbs**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: East Abutment Wall **OSIM Identifier: Abutments**

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 37.70 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	Clean	7.0	0.0	5.0	12.0	m
	Stained	0.0	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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: **13**

Component Type & Location: East Abutment Wall **OSIM Identifier: Abutments**

Remarks
Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

Remarks

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.00 m²	0.0 %	N/A	N/A

*Wet areas = 10.10 m²

Remarks

7. Scaling

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: **13**

Component Type & Location: East Abutment Wall **OSIM Identifier: Abutments**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: East Abutment Wall **OSIM Identifier: Abutments**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: West Abutment Wall **OSIM Identifier: Abutments**

1. Dimensions and Area

Width	-	Length	-	Height	-
Diameter	-	Total Area Surveyed		37.40 m²	

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	Clean	3.0	0.0	4.0	10.0	m
	Stained	3.0	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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m²
	-		-	%
20 – 40 mm	-	over 60 mm	-	m²
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: **13**

Component Type & Location: West Abutment Wall **OSIM Identifier: Abutments**

Remarks
Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.00 m^2	0.0 %	N/A	N/A

*Wet areas = 7.40 m^2

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m^2

Site No: 13

Component Type & Location: West Abutment Wall **OSIM Identifier: Abutments**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

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: **13**

Component Type & Location: West Abutment Wall **OSIM Identifier: Abutments**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: East Ballast Wall **OSIM Identifier: Abutments**

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 1.35 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	Clean	0.0	0.0	0.0	0.0	m
	Stained	0.0	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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: 13

Component Type & Location: East Ballast Wall **OSIM Identifier: Abutments**

Remarks
Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.00 m²	0.0 %	N/A	N/A

*Wet areas = 0.00 m²

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: **13**

Component Type & Location: East Ballast Wall **OSIM Identifier: Abutments**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: East Ballast Wall **OSIM Identifier: Abutments**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: West Ballast Wall **OSIM Identifier: Abutments**

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 1.35 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	Clean	0.0	0.0	0.0	0.0	m
	Stained	0.0	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 m²

4. Concrete Cover

Remarks

Table # 4 is Not Applicable.

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Site No: 13

Component Type & Location: West Ballast Wall **OSIM Identifier: Abutments**

Remarks
Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.00 m^2	0.0 %	N/A	N/A

*Wet areas = 0.13 m^2

Remarks

7. Scaling

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m^2

Site No: **13**

Component Type & Location: West Ballast Wall **OSIM Identifier: Abutments**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: West Ballast Wall **OSIM Identifier: Abutments**

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: East Abutment Bearing Seat

OSIM Identifier: Abutments

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 6.50 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Transverse	Longitudinal	Other	Total	
Medium Width	Clean	0.0	0.0	0.0	0.0	m
	Stained	0.0	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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: 13

Component Type & Location: East Abutment Bearing Seat

OSIM Identifier: Abutments

Remarks

Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

Remarks

6. Delaminations and Spalls

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.00 m²	0.0 %	N/A	N/A

*Wet areas = 4.80 m²

Remarks

7. Scaling

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: 13

Component Type & Location: East Abutment Bearing Seat

OSIM Identifier: Abutments

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: East Abutment Bearing Seat

OSIM Identifier: Abutments

Remarks
Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: West Abutment Bearing Seat

OSIM Identifier: Abutments

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 6.50 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Transverse	Longitudinal	Other	Total	
Medium Width	Clean	0.0	0.0	0.0	0.0	m
	Stained	0.0	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 m²

4. Concrete Cover

Remarks

Table # 4 is Not Applicable.

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Site No: 13

Component Type & Location: West Abutment Bearing Seat

OSIM Identifier: Abutments

5. Corrosion Activity

Remarks

Table # 5 is Not Applicable.

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.00 m^2	0.0 %	N/A	N/A

*Wet areas = 4.80 m^2

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
0.00	0.00	0.00	m^2
0.0	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m^2

Site No: 13

Component Type & Location: West Abutment Bearing Seat

OSIM Identifier: Abutments

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: West Abutment Bearing Seat

OSIM Identifier: Abutments

Remarks

Table # 12 is Not Applicable.

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

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

Site No: 13

Component Type & Location: Wingwalls **OSIM Identifier: Abutments**

1. Dimensions and Area

Width - Length - Height -

Diameter - Total Area Surveyed 60.50 m²

Remarks

Dimensions were taken from the structural drawings & site measurements

2. Cracks (medium and wide)

Type		Vertical	Horizontal	Diagonal	Total	
Medium Width	Clean	0.0	0.0	1.0	11.0	m
	Stained	1.0	4.0	5.0		
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 m²

4. Concrete Cover

Minimum	Maximum	Average	
-	-	-	mm

0 – 20 mm	-	40 – 60 mm	-	m^2
	-		-	%
20 – 40 mm	-	over 60 mm	-	m^2
	-		-	%

Remarks

Table # 4 is Not Applicable.

Site No: **13**

Component Type & Location: Wingwalls **OSIM Identifier: Abutments**

Remarks
Table # 5 is Not Applicable.

5. Corrosion Activity

Minimum	Maximum	Average	
-	-	-	V

0 to -0.20	-0.20 to -0.30	-0.30 to -0.35	-0.35 to -0.45	< -0.45	
-	-	-	-	-	V
-	-	-	-	-	m^2
-	-	-	-	-	%

6. Delaminations and Spalls

Remarks

Defect Type	Delaminations	Spalls	Patches
Area (m^2)	0.00	0.00	0.00
Total Delaminations and Spalls		Total Delaminations and Spalls in Areas ≤-0.35 V	
0.00 m²	0.0 %	N/A	N/A

*Wet areas = 1.10 m²

7. Scaling

Remarks

Light	Medium	Severe to Very Severe	
7.40	0.00	0.00	m^2
12.2	0.0	0.0	%

8. Honeycombing

Total Area 0.00 m²

Site No: **13**

Component Type & Location: Wingwalls **OSIM Identifier: Abutments**

Remarks
Table # 9 and 10 are Not Applicable.

9. Adjusted Chloride Content Profile

Corrosion Activity at Core Location (volts)		0 to -0.20	-0.20 to -0.35	≤ -0.35
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.	-	-	-	-	-	-
Chloride Content*	-	-	-	-	-	-

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

Remarks
Table # 11 is Not Applicable.

11. AC Resistance Test Data of Epoxy Coated Rebar

Measured AC Resistance between Connection #1 and #2						Calculated AC Resistance *
	Connection #2					
Connection #1	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: **13**

Component Type & Location: Wingwalls

OSIM Identifier: Abutments

Remarks
Table # 12 is Not Applicable.

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

CONDITION SURVEY SUMMARY SHEET - EXPANSION JOINTS

Site No. 13

Dimension	Abutments		Intermediate		Remarks
	Joint 1	Joint 2	Joint 3	Joint 4	
	E	W			
a (mm)	250+1250	250+1250	-	-	
b (mm)	205	205	-	-	
b' (mm)	210	210	-	-	No expansion joints present in structure.
c (mm)	8600	8600	-	-	
d (mm)	175	175	-	-	
d' (mm)	180	180	-	-	
e (mm)	250+320	250+320	-	-	

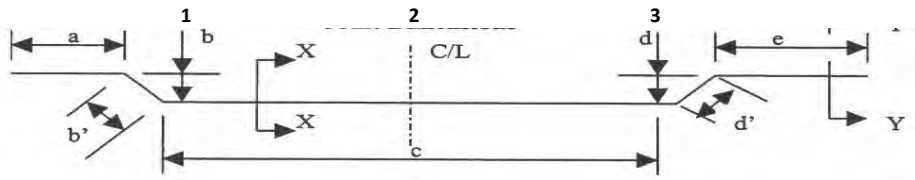
Depth of Asphalt @ Deck Side			N/E	S/E	N/E	S/W
1 (mm)	35	35	-	-	-	-
2 (mm)	35	30	-	-	-	-
3 (mm)	55	60	-	-	-	-

Width: Top of Ballast Wall and End Dams								
	Ballast Wall	End Dam	Ballast Wall	End Dam	N/E	S/W	N/E	S/W
1 (mm)	-	-	-	-	-	-	-	-
2 (mm)	-	-	-	-	-	-	-	-
3 (mm)	-	-	-	-	-	-	-	-

Gap Dimensions				
1 (mm)	-	-	-	-
2 (mm)	-	-	-	-
3 (mm)	-	-	-	-

Misc. Joint Details		Skew Angle	00° 00' 00"	
Exp	-	-	-	-
Fixed	-	-	-	-
Type	-			-
Leaking	-	-	-	-
Angle size	-	-	-	-
Temp °C	Deck	13˚C	Ambient	13˚C

N JOINT DIMENSIONS S



Typical Sections at Joints:

DRAINAGE

Site No. 13

	Number	Type	Length	Angle	Depth *
Deck Drains	4	170mm steel pipe	1000	30	75

* For asphalt covered decks, recess depth in mm between top of asphalt and top of drain.

Catch Basins	NO	

* Identify location of catch basins as N/E, N/W, S/E etc. using the same direction of north as shown on the drawings.

Drainage Tubes	NO	**Void Drains**	NO

Typical Condition of South Deck Drain – 1st from west

Appendix B:

Survey Equipment and Calibration Procedures

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

SURVEY EQUIPMENT AND CALIBRATION PROCEDURES

Component Type: Asphalt Covered Bridge Deck **Site Number:** 13

1. Delaminations:

Weight of Chain: 2.2 **kg/m**
Other Equipment: Hammer

2. Concrete Cover:

Covermeter Make and Model: ELCOMETER Protovale 331

Battery Check:	**Reading at Start of Test:**	OK
	Reading at End of Test:	OK
Concrete Cover Check:	**Location of Check:**	@ 'SS1'
	Actual Depth and Rebar Diameter:	-
	Reading Before Test:	41 mm
	Readings Each 30 minutes During Test:	41 mm
	Reading at End of Test:	41 mm

3. Corrosion Activity:

Half Cell Make and Model: MC MILLER Electrode RE-3a (3" ø)
Multimeter Make and Model: Mastercraft Digital Multimeter 3R93
Length and Gauge of Lead Wires: 150 m of 18 gauge

Deck Temperature:	**Start of Test:**	13	**°C**	**End of Test:**	13	**°C**
Ambient Temperature:	**Start of Test:**	13	**°C**	**End of Test:**	13	**°C**

Battery Check: O.K.

Ground Check:	**Method of Connection:**	self-tapping screw		
	Ground Location:	@ Core C2	**Check Location:**	@ Core C7
	Lead Resistance:	1.8 - 1.9 Ω	**Voltage Drop (mV's):**	0.1
	Resistance [c]:	1.8 - 1.9 Ω	**Resistance Reversed:**	1.8 - 1.9 Ω

Grid Point Potential Readings Check – See Table Below

Location	Initial Reading	Check Reading [a]	Check Reading – Latex Concrete Overlay [b]
A1	-0.378	-0.378	-
A2	-0.325	-0.325	-
A3	-0.271	-0.271	-
A4	-0.244	-0.244	-
A5	-0.173	-0.173	-

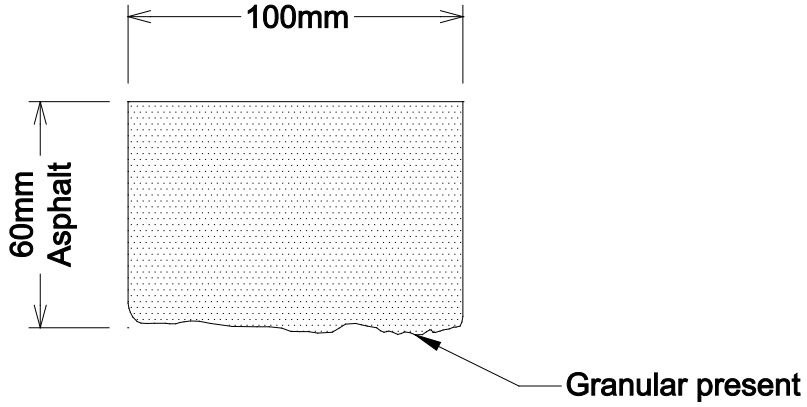
[a] Check at least five readings at beginning of test and each change in ground.
[b] On decks with latex modified concrete overlay, check at least five locations by drilling holes through the latex concrete overlay into the original concrete substrate.
[c] Resistance is the net resistance after deducting the lead resistance.

Appendix C:

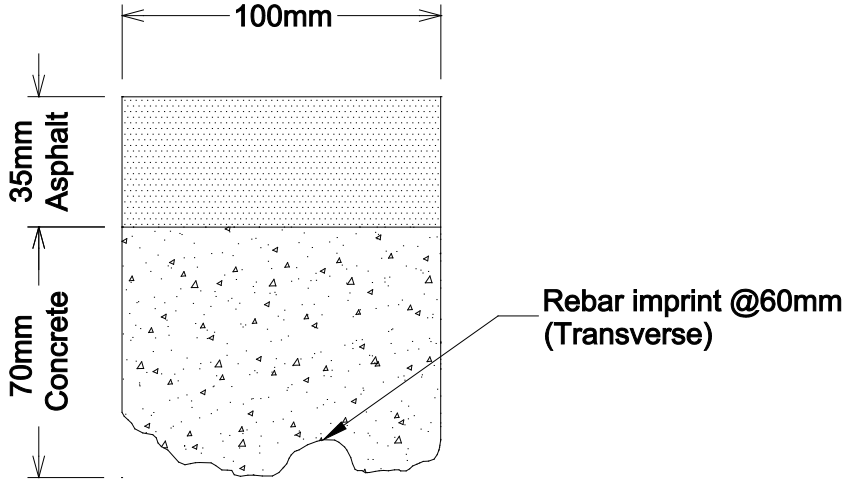
Core Photographs and Sketches

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C1

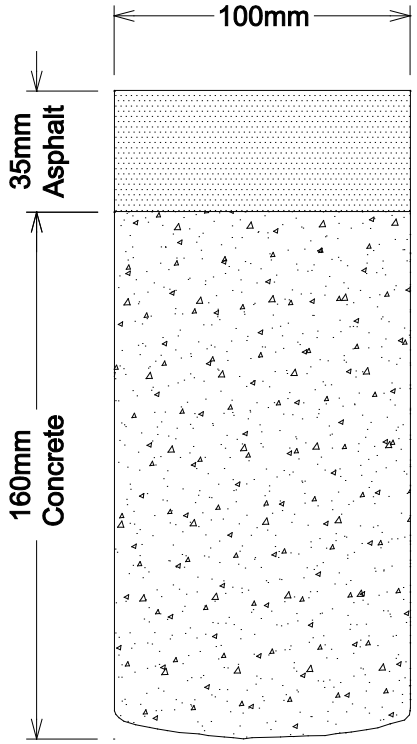


Core C2



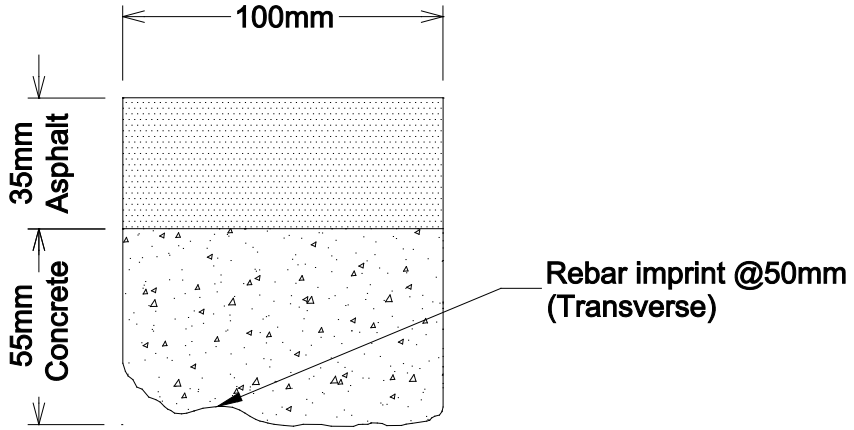
200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C3



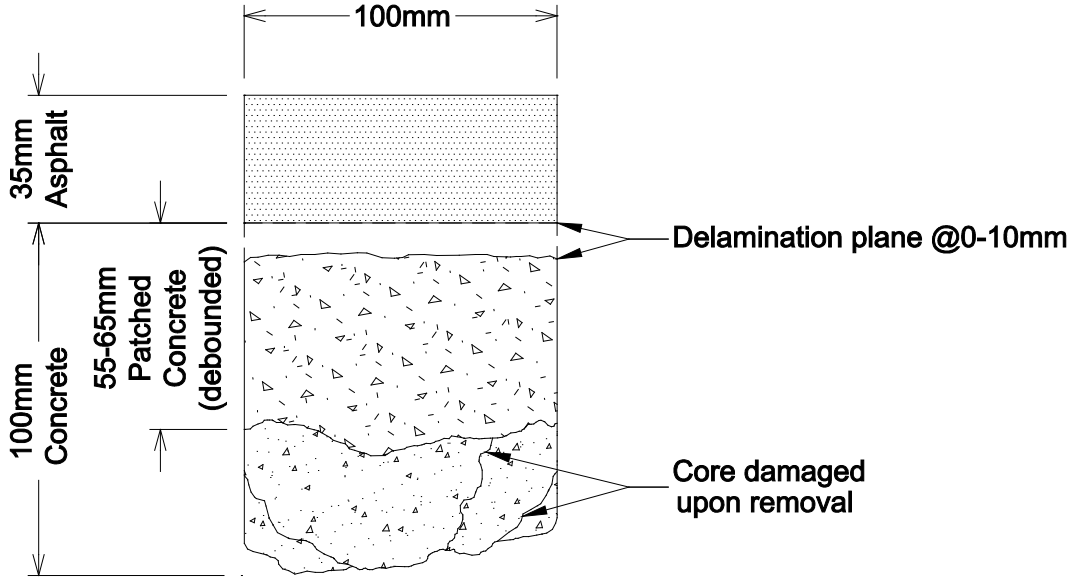
200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C4

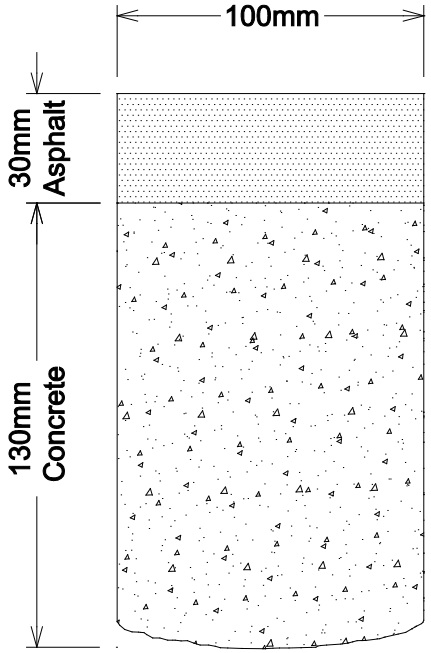


200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C5

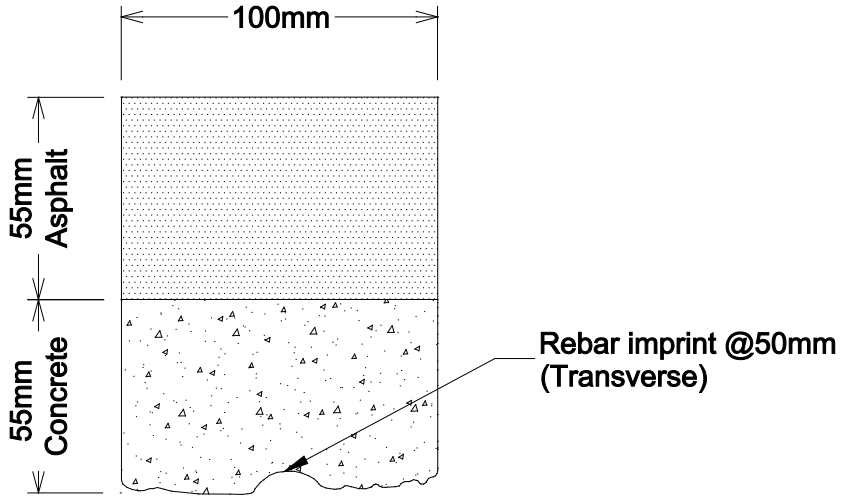

100mm
35mm Asphalt
100mm Concrete
55-65mm Patched Concrete (debounded)
Delamination plane @0-10mm
Core damaged upon removal

Core C6



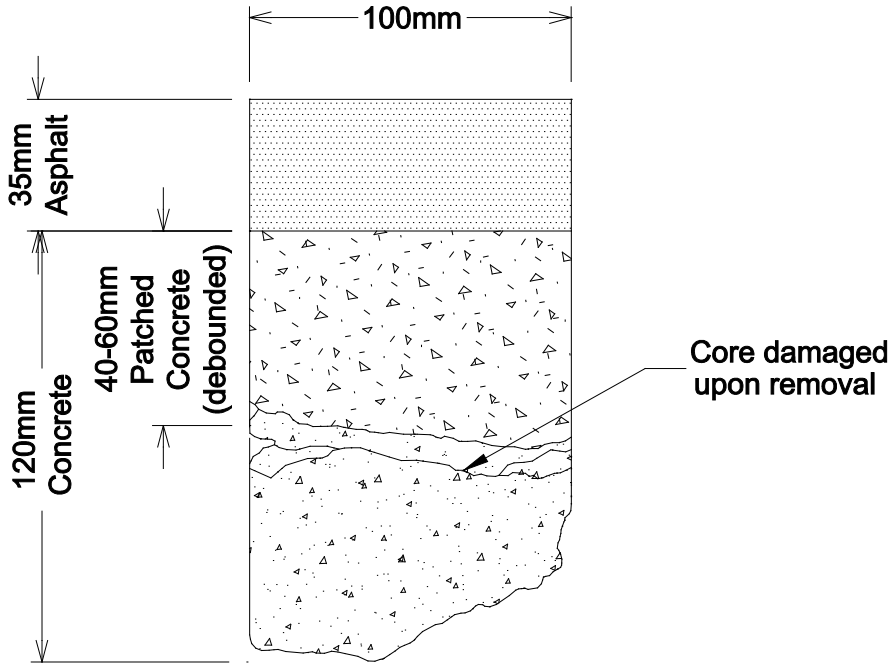
200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C7



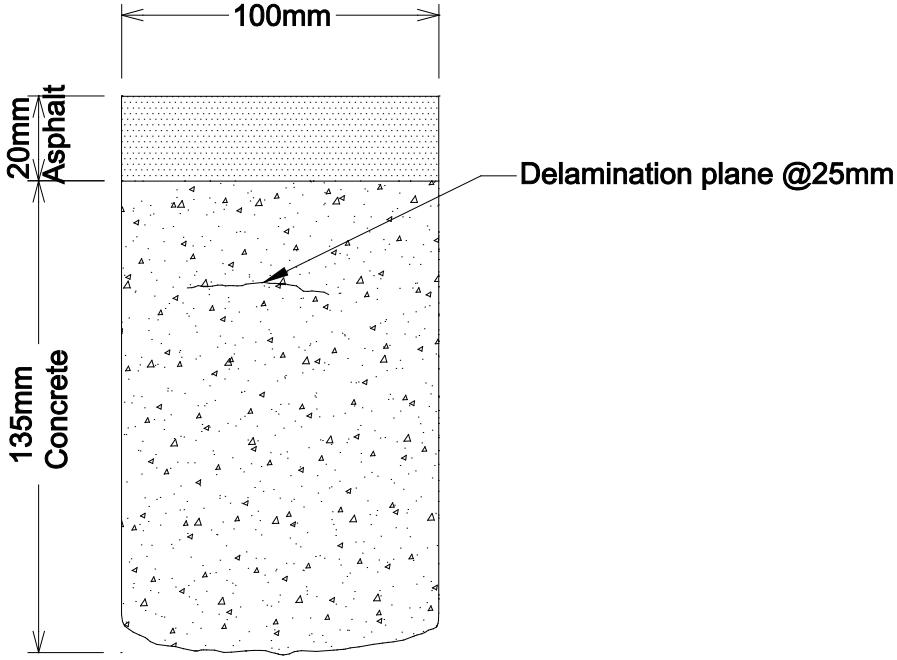
200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C8



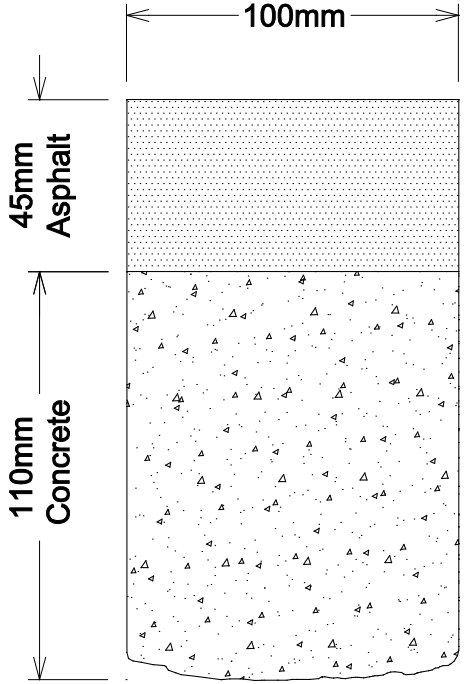
200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C9



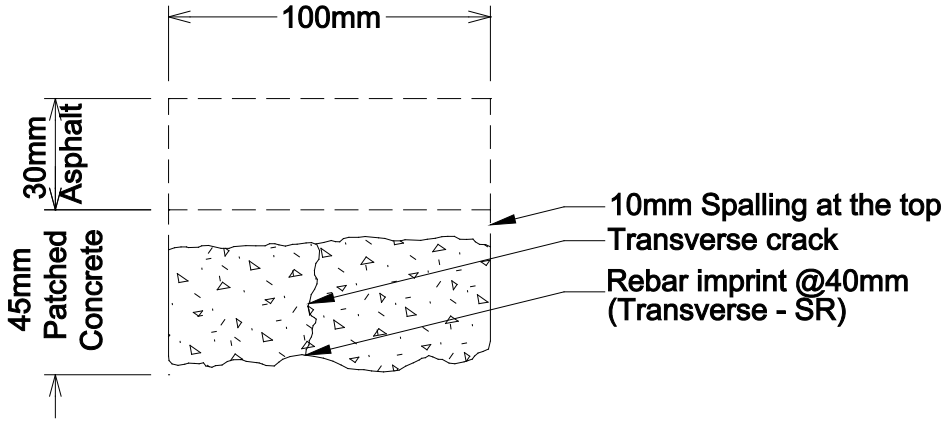
200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C20

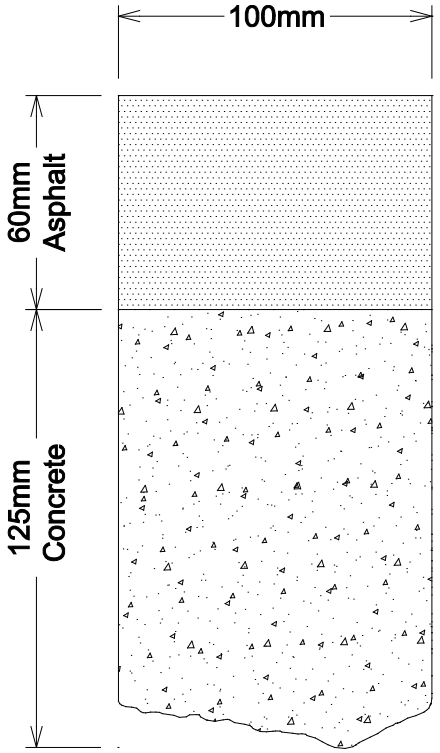


200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Core C31


100mm
30mm
Asphalt
45mm
Patched
Concrete
10mm Spalling at the top
Transverse crack
Rebar imprint @40mm
(Transverse - SR)

Core C42



200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Appendix D:

Core Logs

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

CORE LOG ASPHALT COVERED BRIDGE DECKS

 Site: **13**

Core No.		C1		C2		C3	
Location (between gridlines)		West Approach		'F' and '1'		'D' and '6'	
Diameter, mm		100.0		100.0		100.0	
Thickness of Asphalt, mm		60.0		35.0		35.0	
Thickness of Asphalt @ Nearest Grid Point		N/A		35.0		35.0	
Thickness of Concrete, mm		*		70.0		160.0	
Full Depth (yes/no)		No		No		Yes	
Condition of Asphalt [1]		F		F		F	
Waterproofing (W/P) Type		N/A		N/A		N/A	
Condition of W/P [1]		N/A		N/A		N/A	
W/P Thickness, mm		N/A		N/A		N/A	
Bond of Asphalt or W/P to Concrete		N/A		F		F	
Defects in Concrete [2]		-		-		-	
Condition of Rebar [3]		N/A		LR		N/A	
Corrosion Potential				-0.369		-0.171	
Compressive Strength, MPa						62.2	
		Total	Corrected	Total	Corrected	Total	Corrected
Chloride Content % Chloride by Weight of Concrete	0-10 mm			0.170	0.103		
	20-30 mm			0.154	0.087		
	40-50 mm			0.144	0.077		
	60-70 mm			0.121	0.054		
	80-90 mm						
AIR VOIDS	Air Content,%						
	Spec. Surf.,mm^2/mm^3						
	Spacing Factor, mm						
TEST LABORATORY				BCC		BCC	
REMARKS - orientation of rebars and cover - presence of overlay, patch and thickness - other observed defects		*Granular present.		Rebar imprint @60mm (Transverse).			

1. Condition - G = Good, F = Fair, P = Poor.
2. Defects - C = Cracked, D = Delamination, R = Rough, Sc = Scaling, S = Spalling
3. Condition Rebar - G = Good, LR = Light Rust, SR = Severe Rust, N/A = No rebar exposed
   Condition of Epoxy Coating – ECG = Good, ECF = Fair, ECP = Poor-rusted & debonded areas

CORE LOG ASPHALT COVERED BRIDGE DECKS

 Site: 13

Core No.		C4		C5		C6	
Location (between gridlines)		'E' and '9'		'D' and '11'		'F' and '12'	
Diameter, mm		100.0		100.0		100.0	
Thickness of Asphalt, mm		35.0		35.0		30.0	
Thickness of Asphalt @ Nearest Grid Point		35.0		35.0		30.0	
Thickness of Concrete, mm		55.0		100.0		130.0	
Full Depth (yes/no)		No		No		No	
Condition of Asphalt (1)		F		F		F	
Waterproofing (W/P) Type		N/A		N/A		N/A	
Condition of W/P (1)		N/A		N/A		N/A	
W/P Thickness, mm		N/A		N/A		N/A	
Bond of Asphalt or W/P to Concrete		F		F		F	
Defects in Concrete (2)		-		D		-	
Condition of Rebar (3)		G		-		-	
Corrosion Potential		-0.315		-0.355		-0.315	
Compressive Strength, MPa							
Chloride Content % Chloride by Weight of Concrete	0-10 mm	Total	Corrected	Total	Corrected	Total	Corrected
	20-30 mm						
	40-50 mm						
	60-70 mm						
	80-90 mm						
AIR VOIDS	Air Content,%					5.1	
	Spec. Surf.,mm^2/mm^3					32.1	
	Spacing Factor, mm					0.151	
TEST LABORATORY						BCC	
REMARKS - orientation of rebars and cover - presence of overlay, patch and thickness - other observed defects		Rebar imprint @50mm (Transverse).		55-65mm Patched concrete (debounded). Delamination plane @0-10mm. Core damaged upon removal.			

1. Condition - G = Good, F = Fair, P = Poor.
2. Defects - C = Cracked, D = Delamination, R = Rough, Sc = Scaling, S = Spalling
3. Condition Rebar - G = Good, LR = Light Rust, SR = Severe Rust, N/A = No rebar exposed
   Condition of Epoxy Coating – ECG = Good, ECF = Fair, ECP = Poor-rusted & debonded areas

CORE LOG ASPHALT COVERED BRIDGE DECKS

 Site: **13**

Core No.		**C7**		**C8**		**C9**	
Location (between gridlines)		'A' and '13'		'B' and '10'		'C' and '8'	
Diameter, mm		100.0		100.0		100.0	
Thickness of Asphalt, mm		55.0		35.0		20.0	
Thickness of Asphalt @ Nearest Grid Point		55.0		35.0		20.0	
Thickness of Concrete, mm		55.0		120.0		135.0	
Full Depth (yes/no)		No		No		No	
Condition of Asphalt (1)		F		F		F	
Waterproofing (W/P) Type		N/A		N/A		N/A	
Condition of W/P (1)		N/A		N/A		N/A	
W/P Thickness, mm		N/A		N/A		N/A	
Bond of Asphalt or W/P to Concrete		F		F		F	
Defects in Concrete (2)		-		D		D	
Condition of Rebar (3)		LR		-		-	
Corrosion Potential		-0.401		-0.338		-0.324	
Compressive Strength, MPa							
Chloride Content % Chloride by Weight of Concrete		Total	Corrected	Total	Corrected	Total	Corrected
	0-10 mm	0.125	0.058	0.082	0.024		
	20-30 mm	0.097	0.030	0.058	0.000		
	40-50 mm	0.093	0.026	0.068	0.010		
	60-70 mm			0.107	0.040		
	80-90 mm			0.080	0.013		
AIR VOIDS	**Air Content,%**						
	Spec. Surf.,mm^2/mm^3						
	Spacing Factor, mm						
TEST LABORATORY		BCC					
REMARKS **- orientation of rebars and cover** **- presence of overlay, patch and thickness** **- other observed defects**		Rebar imprint @50mm (Transverse).		45-60mm Patched concrete (debounded). Delamination plane @0-10mm. Core damaged upon removal.		Delamination plane @25mm.	

1. Condition - G = Good, F = Fair, P = Poor.
2. Defects - C = Cracked, D = Delamination, R = Rough, Sc = Scaling, S = Spalling
3. Condition Rebar - G = Good, LR = Light Rust, SR = Severe Rust, N/A = No rebar exposed
   Condition of Epoxy Coating – ECG = Good, ECF = Fair, ECP = Poor-rusted & debonded areas

CORE LOG ASPHALT COVERED BRIDGE DECKS

 Site: **13**

Core No.		C10		C11		C12	
Location (between gridlines)		'A' and '4'		'C' and '3'		'A' and '1'	
Diameter, mm		100.0		100.0		100.0	
Thickness of Asphalt, mm		45.0		30.0		60.0	
Thickness of Asphalt @ Nearest Grid Point		45.0		30.0		60.0	
Thickness of Concrete, mm		110.0		45.0		125.0	
Full Depth (yes/no)		No		No		No	
Condition of Asphalt (1)		F		F		F	
Waterproofing (W/P) Type		N/A		N/A		N/A	
Condition of W/P (1)		N/A		N/A		N/A	
W/P Thickness, mm		N/A		N/A		N/A	
Bond of Asphalt or W/P to Concrete		F		P		F	
Defects in Concrete (2)		-		S		-	
Condition of Rebar (3)		N/A		SR		N/A	
Corrosion Potential		-0.215		-0.418		-0.378	
Compressive Strength, MPa							
		Total	Corrected	Total	Corrected	Total	Corrected
Chloride Content % Chloride by Weight of Concrete	0-10 mm	0.133	0.066				
	20-30 mm	0.125	0.058				
	40-50 mm	0.088	0.021				
	60-70 mm	0.082	0.015				
	80-90 mm	0.070	0.003				
	100-110 mm	0.067	0.000				
AIR VOIDS	Air Content,%						
	Spec. Surf.,mm^2/mm^3						
	Spacing Factor, mm						
TEST LABORATORY		BCC					
REMARKS - orientation of rebars and cover - presence of overlay, patch and thickness - other observed defects				All Patched concrete. 10mm spalling at the top. Rebar imprint @40mm (Transverse - SR). Transverse crack. Asphalt core damaged upon removal.			

1. Condition - G = Good, F = Fair, P = Poor.
2. Defects - C = Cracked, D = Delamination, R = Rough, Sc = Scaling, S = Spalling
3. Condition Rebar - G = Good, LR = Light Rust, SR = Severe Rust, N/A = No rebar exposed
   Condition of Epoxy Coating – ECG = Good, ECF = Fair, ECP = Poor-rusted & debonded areas

Appendix E:

Sawn Asphalt Sample Photographs

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Photo S1 – Sawn Sample SS1 (over the joint)

Photo S2 – Sawn Sample SS2

Photo S3 – Sawn Sample SS3 (severe scaling)

Photo S4 – Sawn Sample SS4 (spall)

Photo S5 – Sawn Sample SS5

Photo S6 – Sawn Sample SS6 (over construction joint)

Photo S7 – Sawn Sample SS7 (spall)

Photo S8 – Sawn Sample SS8

Photo S9 – Sawn Sample SS9 (rough surface)

Appendix F:

Sawn Asphalt Sample Logs

SAWN ASPHALT SAMPLE LOG

Site No: **13**

Sample No.	SS1	SS2	SS3
Location (between gridlines)	'B' and '1'	'A' and '6'	'B' and '6'
Size, mm X mm	300 x 340	290 x 310	260 x 290
Thickness of Asphalt, mm	45	60	35
Thickness of Asphalt @ Nearest Grid Point	45	60	35
Condition of Asphalt (1)	F	F	F
Waterproofing (W/P) Type	N/A	N/A	N/A
W/P Thickness, mm	N/A	N/A	N/A
Condition of W/P (1)	N/A	N/A	N/A
Bond of W/P to Asphalt	N/A	N/A	N/A
Bond of Asphalt or W/P to Concrete	F	F	P
Concrete Cover to Reinf., mm	41T	49T	45T
Defects in Concrete Surface (2)	-	-	Sc
Corrosion Potential on Concrete Surface	-0.415	-0.181	-0.205
Remarks	Over construction joint.		Severe scaling.

1. Condition - G = Good, F = Fair, P = Poor.
2. Defects - C = Cracked, D = Delamination, R = Rough, Sc = Scaling, S = Spalling

SAWN ASPHALT SAMPLE LOG

Site No: **13**

Sample No.	SS4	SS5	SS6
Location (between gridlines)	'B' and '9'	B' and '12'	'E' and '13'
Size, mm X mm	290 x 270	310 x 300	270 x 270
Thickness of Asphalt, mm	40	60	35
Thickness of Asphalt @ Nearest Grid Point	40	60	35
Condition of Asphalt (1)	F	F	F
Waterproofing (W/P) Type	N/A	N/A	N/A
W/P Thickness, mm	N/A	N/A	N/A
Condition of W/P (1)	N/A	N/A	N/A
Bond of W/P to Asphalt	N/A	N/A	N/A
Bond of Asphalt or W/P to Concrete	P	F to G	F
Concrete Cover to Reinf., mm	48T	34T	75T
Defects in Concrete Surface (2)	S	-	-
Corrosion Potential on Concrete Surface	-0.380	-0.275	-0.322
Remarks	Spall		Over construction joint.

1. Condition - G = Good, F = Fair, P = Poor.
2. Defects - C = Cracked, D = Delamination, R = Rough, Sc = Scaling, S = Spalling

SAWN ASPHALT SAMPLE LOG

Site No: **13**

Sample No.	SS7	SS8	SS9
Location (between gridlines)	'D' and '9'	'F' and '8'	'D' and '4'
Size, mm X mm	270 x 290	330 x 310	310 x 300
Thickness of Asphalt, mm	40	25	30
Thickness of Asphalt @ Nearest Grid Point	40	25	30
Condition of Asphalt (1)	F	F	F
Waterproofing (W/P) Type	N/A	N/A	N/A
W/P Thickness, mm	N/A	N/A	N/A
Condition of W/P (1)	N/A	N/A	N/A
Bond of W/P to Asphalt	N/A	N/A	N/A
Bond of Asphalt or W/P to Concrete	P	F	F to P
Concrete Cover to Reinf., mm	34T	51T	45T
Defects in Concrete Surface (2)	S	-	R
Corrosion Potential on Concrete Surface	-0.355	-0.175	-0.318
Remarks	Spall.		Rough surface.

1. Condition - G = Good, F = Fair, P = Poor.
2. Defects - C = Cracked, D = Delamination, R = Rough, Sc = Scaling, S = Spalling

Appendix G:

Site Photographs

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

Photo P1 North Elevation

Photo P2 South Elevation

Photo P3 Deck General View, looking east

Photo P4 Deck General View, looking west

Photo P5 **Deck Wearing Surface** (poor condition –unsealed cracks, pot holes and patched area)

Photo P6 **Deck Wearing Surface** (unsealed cracks, pot holes and patched area)

Photo P7 **Deck Wearing Surface** (unsealed cracks, pot holes and patched area)

Photo P8 **Deck Wearing Surface** (unsealed cracks, pot holes and patched area)

Photo P9 **Soffit between East Abutment and West Abutment** (fair-to good condition – cracks, spall, delamination, honeycombing and wet area) **and Girders** (good condition – cracks, spall, delamination and wet area)

Photo P10 **Soffit at East Abutment** (cracks, spall, delamination and wet area) **and Girders** (cracks)

Photo P11 Soffit at East Abutment (cracks and delamination)

Photo P12 Soffit between East Abutment and West Abutment (spall and delamination)

Photo P13 Soffit between East Abutment and West Abutment (spall and wet area)

Photo P14 Soffit between East Abutment and West Abutment (cracks) **and Girders**

Photo P15 Soffit between East Abutment and West Abutment, south edge (spall and delamination)

Photo P16 Soffit between East Abutment and West Abutment, south edge (spall)

Photo P17 Soffit at West Abutment (honeycombing) **and Girders**

Photo P18 Typical Diaphragm at East Abutment

Photo P19 Typical Diaphragm at West Abutment (cracks and honeycombing)

Photo P20 South Elevation – Fascia (light scaling)

Photo P21 East Approach Wearing Surface (fair to good condition - unsealed cracks and patched area)

Photo P22 West Approach Wearing Surface (fair condition - unsealed cracks and patched area)

Photo P23 North Deck Drainage – 1st from west

Photo P24 South Deck Drainage – 1st from west

Photo P25 Condition of Pavement over East Abutment (unsealed cracks, pot holes and patched area)

Photo P26 Condition of Pavement over West Abutment (unsealed cracks, pot holes and patched area)

Photo P27 North Sidewalk (fair to good condition – cracks, spall and light scaling) **and Parapet Wall** (fair to good condition – cracks, spall, and light scaling)

Photo P28 North Barrier Wall (spall) note, light corrosion on handrail

Photo P29 North Sidewalk (light scaling) **and Parapet Wall** (spall, and light scaling)

Photo P30 South Curb (fair to good condition – cracks, spall, and light scaling) **and Parapet Wall** (fair to good condition – cracks, spall, and light scaling)

Photo P31 **South Curb** (spall and, light scaling) **and Parapet Wall** (cracks, and light scaling) and note, light corrosion on handrail

Photo P32 **South Curb** (spall and, light scaling) **and Parapet Wall** (cracks, and light scaling) and note, light corrosion on handrail

Photo P33 **Northeast End Post** (fair to good condition – cracks, spall and light scaling) note, spall on the sidewalk

Photo P34 **Northwest End Post** (fair to good condition – cracks, spall and light scaling)

Photo P35 **Southeast End Post** (good condition –light scaling) note, settlement beyond the approach

Photo P36 **Southwest End Post** (good condition – light scaling)

Photo P37 **East Abutment** (good condition – cracks and wet area)

Photo P38 **East Abutment** (cracks and wet area)

Photo P39 **East Abutment Bearing Seat** (wet area) note-debris on bearing seat

Photo P40 **East Abutment Elastomeric Bearing - 1st bearing from north** (fair to good condition – squeezed)

Photo P41 **East Abutment Elastomeric Bearing - 1st bearing from north** (squeezed)

Photo P42 **East Abutment Elastomeric Bearing – 2nd bearing from north** (fair to good condition – squeezed)

Photo P43 East Abutment Elastomeric Bearing - 2nd bearing from north (squeezed)

Photo P44 East Abutment Elastomeric Bearing – 3rd bearing from north (fair to good condition – squeezed)

Photo P45 **East Abutment Elastomeric Bearing - 3rd bearing from north** (squeezed)

Photo P46 **East Abutment Elastomeric Bearing – 4th bearing from north** (fair to good condition – squeezed)

Photo P47 **East Abutment Elastomeric Bearing - 4th bearing from north** (squeezed)

Photo P48 **East Abutment Elastomeric Bearing – 5th bearing from north** (fair to good condition – squeezed)

Photo P49 East Abutment Elastomeric Bearing – 5th bearing from north (squeezed)

Photo P50 East Abutment Elastomeric Bearing – 6th bearing from north (fair to good condition – squeezed)

Photo P51 **East Abutment Elastomeric Bearing – 6th bearing from north** (squeezed)

Photo P52 **East Abutment Elastomeric Bearing – 7th bearing from north** (fair condition – squeezed and moved out)

Photo P53 **East Abutment Elastomeric Bearing – 7th bearing from north** (squeezed and moved out)

Photo P54 **West Abutment** (fair to good condition – cracks and wet area)

Photo P55 **West Abutment** (cracks and wet area)

Photo P56 **West Abutment** (cracks and wet area)

Photo P57 **West Abutment Ballast Wall and Bearing Seat** (wet area) note- debris on bearing seat

Photo P58 **West Abutment Elastomeric Bearing - 1st bearing from north** (fair to good condition – squeezed)

Photo P59 **West Abutment Elastomeric Bearing - 1st bearing from north** (squeezed)

Photo P60 **West Abutment Elastomeric Bearing – 2nd bearing from north** (fair to good condition – squeezed)

Photo P61 West Abutment Elastomeric Bearing - 2nd bearing from north (squeezed)

Photo P62 West Abutment Elastomeric Bearing – 3rd bearing from north (fair to good condition – squeezed)

Photo P63 **West Abutment Elastomeric Bearing - 3rd bearing from north** (squeezed)

Photo P64 **West Abutment Elastomeric Bearing – 4th bearing from north** (fair to good condition – squeezed)

Photo P65 **West Abutment Elastomeric Bearing - 4th bearing from north** (squeezed)

Photo P66 **West Abutment Elastomeric Bearing - 5th bearing from north** (fair to good condition – squeezed)

Photo P67 **West Abutment Elastomeric Bearing - 5th bearing from north** (squeezed)

Photo P68 **West Abutment Elastomeric Bearing - 6th bearing from north** (fair to good condition – squeezed)

Photo P69 **West Abutment Elastomeric Bearing - 6th bearing from north** (squeezed)

Photo P70 **West Abutment Elastomeric Bearing - 7th bearing from north** (fair to good condition – squeezed)

Photo P71 **West Abutment Elastomeric Bearing - 7th bearing from north** (squeezed)

Photo P72 **Northeast Wingwall** (good condition – cracks, and light scaling)

Photo P73 **Northwest Wingwall** (good condition – cracks, light scaling and wet area)

Photo P74 **Southeast Wingwall** (good condition – cracks and light scaling)

Photo P75 **Southwest Wingwall** (good condition – cracks and light scaling)

Photo P76 **Northeast Embankment** (Aggradation)

Photo P77 **Northwest Embankment** (erosion)

Photo P78 **Southeast Embankment** (soil erosion)

Photo P79 **Southwest Embankment** (soil erosion)

Photo P80 **Typical Condition of Inside Core – C1** (west approach)

Photo P81 Typical Condition of Inside Core – C3

Photo P82 Typical Condition of Inside Core – C5

Photo P83 Typical Condition of Inside Core – C8

Photo P84 Typical Condition of Inside Core – C10

Photo P85 Typical Condition of Inside Core – C12

Appendix H:

Laboratory Test Results

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

AIR VOID TEST RESULTS

(Modified Point Count – ASTM C457, Procedure B)

Project No.:	BCC19079
Site No.:	Structure 13
Location:	Township of Melancthon

Core ID	**C6**	**-**
Lab No.	L19-1263	-
Air Content (%)	5.1	-
Specific Surface (mm^{-1})	32.1	-
Spacing Factor (mm)	0.151	-
Length of Traverse (mm)	3819	-
Dimensions of Tested Sample	125mm x 90mm	-
Area Traversed (mm^2)	11076	-
Average Chord Length	0.12	-
Number of Stops	1364	-
No. of Voids per mm	0.41	-
Paste-Air Ratio	5.7	-
Paste Content (%)	28.60	-
Aggregate Content (%)	66.40	-

Tested By: Brad Wiersma
Date Tested: Oct 24, 2019

Savio DeSouza, M.A.Sc., P.Eng.
Senior Principal Engineer

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

COMPRESSIVE STRENGTH OF CONCRETE CORES

(CSA A23.2-14C)

Project No.:	**BCC19079**
Site No.:	**13**
Location:	***Township of Melancthon***

Core ID	**C3**
Location	Deck
Lab No.	L19-1262
Date Cast	-
Date Cored	Oct 7, 2019
Date Tested	Oct 21, 2019
Capped Height (mm)	147
Average Diameter (mm)	100.0
Density (kg/m^3)	2435
Corrected Compressive Strength (MPa)	62.2
*** Direction of Loading**	Same as
Moisture Content at Time of Test	Moist
Remarks	

*Relative to the direction of original placement.

Savio DeSouza, M.A.Sc., P.Eng.
Senior Principal Engineer

TOTAL CHLORIDE ION CONTENT

(Testing Method: MTO LS-417)

Project No.:	BCC19079
Site No.:	Structure 13
Location:	Township of Melancthon

Core ID	Lab No.	Horizon from the Top of the Core (mm)	Chloride Ion Content (%)	Chloride Ion Content Corrected for Background* (%)
C2	L19-1261	0-10 20-30 40-50 60-70	0.170 0.154 0.144 0.121	0.103 0.087 0.077 0.054
C7	L19-1264	0-10 20-30 40-50	0.125 0.097 0.093	0.058 0.030 0.026
C8	L19-1265	0-10 20-30 40-50 60-70 80-90	0.082 0.058 0.068 0.107 0.080	0.024 0.000 0.010 0.040 0.013
C10	L19-1266	0-10 20-30 40-50 60-70 80-90 100-110	0.133 0.125 0.088 0.082 0.070 0.067	0.066 0.058 0.021 0.015 0.003 0.000

**Background chloride (original) = 0.067%*
**Background chloride (patched) = 0.058%*
***The threshold of chloride ion generally regarded to be able to initiate reinforcing bar corrosion is 0.025%.*

Tested By: Shervin M.
Date Tested: 22 October 2019

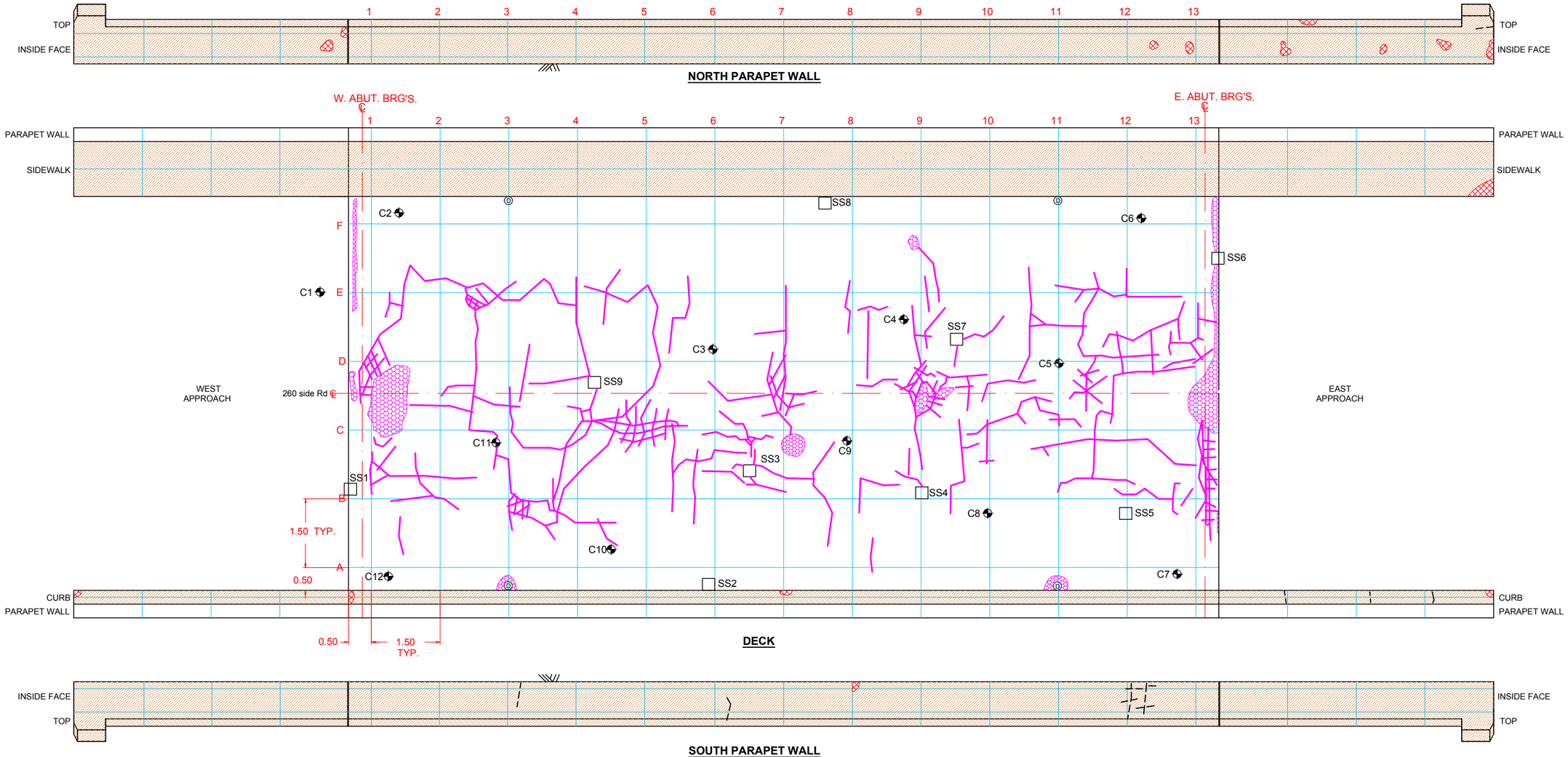
Savio DeSouza, M.A.Sc., P.Eng.
Senior Principal Engineer

Appendix I:

ACAD Drawings

200 Viceroy Road, Unit 4, Vaughan, ON L4K 3N8
www.bridgecheckcanada.com
Tel: 905-660-6608 Fax: 905-660-6609
info@bridgecheckcanada.com

CONSTRUCTION NORTH



LEGEND:

Ⓓ Drain	Medium Scaling	Medium Concrete Cracks
C1 Core Sample Location	Severe Scaling	W Wide Concrete Cracks
SS1 Sawn Sample Location	Honeycombed Areas	Medium Stained/ Efflorescence Cracks
Patched Spalls	Wet Areas	Unsealed Asphalt Cracks
Delaminations	Concrete Pattern cracks	SC Sealed Asphalt Cracks
Spalls	Raveling	Rutting
Light Scaling	Pot Hole/ Asphalt Patch	

BRIDGE CHECK CANADA

200 Viceroy Road, Unit 4
Vaughan, ON L4K 3N8
T: 905-660-6608 F: 905-660-6609

PROJECT:

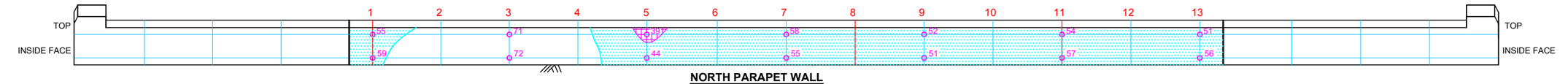
Structure 013 Township of Melancthon, ON

TITLE:

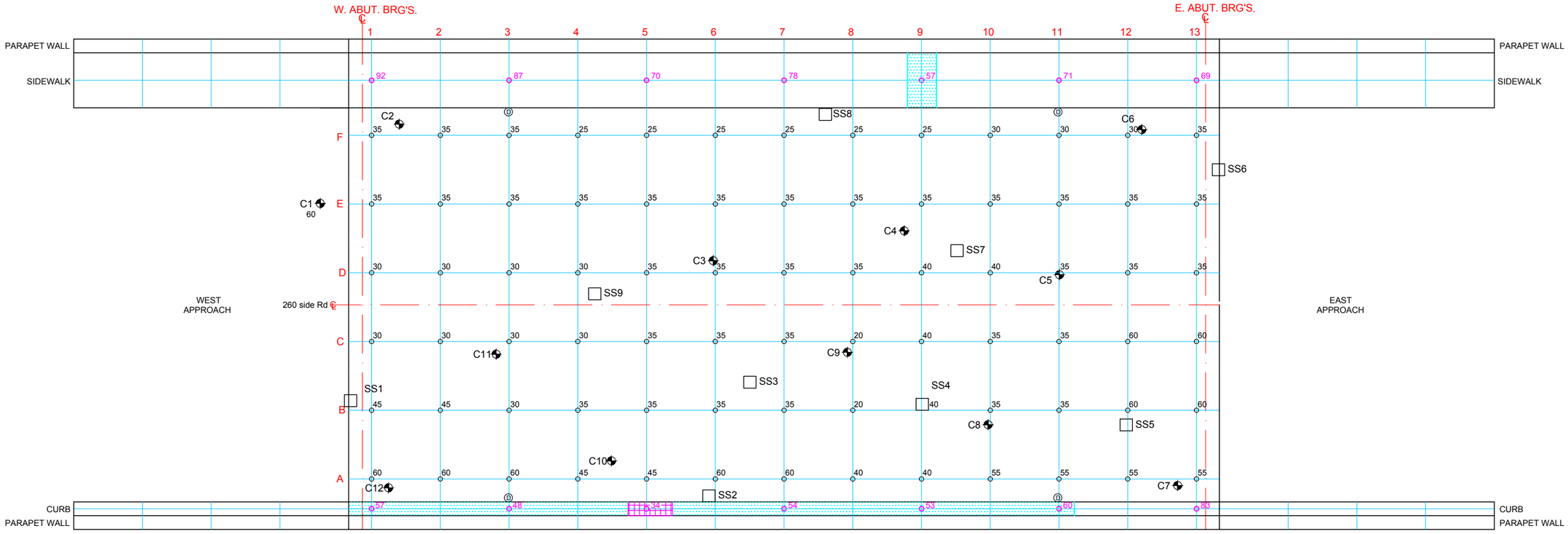
SURFACE DETERIORATION OF ASPHALT ON DECK, CONCRETE SIDEWALK, CURB AND PARAPET WALLS

Drawing No.:	1
Project No.:	BCC19079
Date:	November 2019
Scale:	1:100
Drawn by:	JL
Checked by:	MA

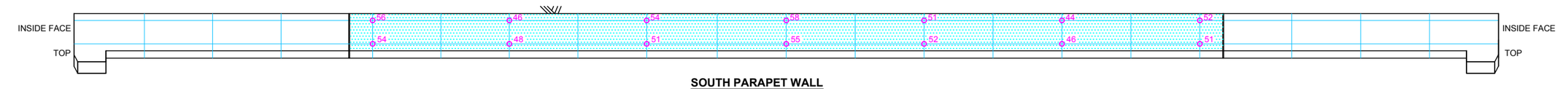
CONSTRUCTION NORTH



NORTH PARAPET WALL



DECK



SOUTH PARAPET WALL

LEGEND:

- Drain
- C1 Core Sample Location
- SS1 Sawn Sample Location
- 80 Asphalt Thickness-mm
- 80 Concrete cover-mm
- Cover over 60mm
- Cover from 40mm to 60mm
- Cover from 20mm to 39mm
- Cover less than 20mm

BRIDGE CHECK CANADA

200 Viceroy Road, Unit 4
Vaughan, ON L4K 3N8
T: 905-660-6608 F: 905-660-6609

PROJECT:

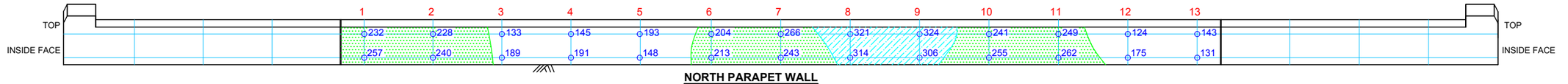
Structure 013 Township of Melancthon, ON

TITLE:

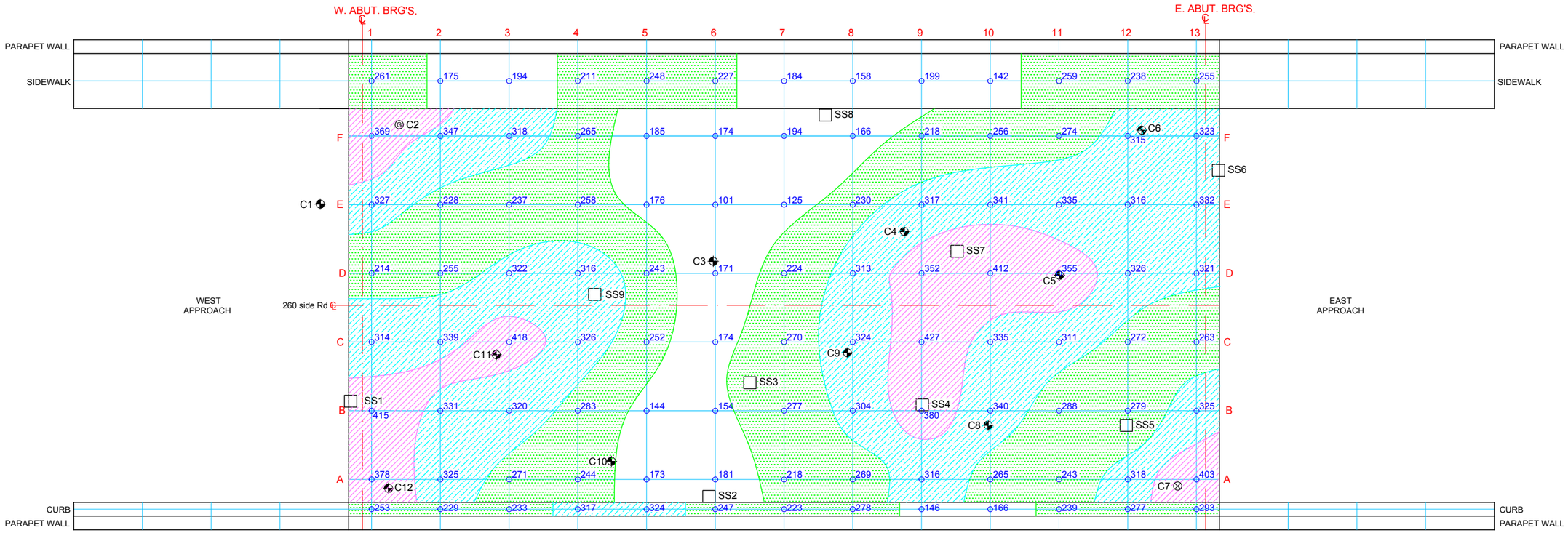
ASPHALT THICKNESS OF DECK, CONCRETE COVER OF SIDEWALK, CURB AND PARAPET WALLS

Drawing No.:	2
Project No.:	BCC19079
Date:	November 2019
Scale:	1:100
Drawn by:	JL
Checked by:	MA

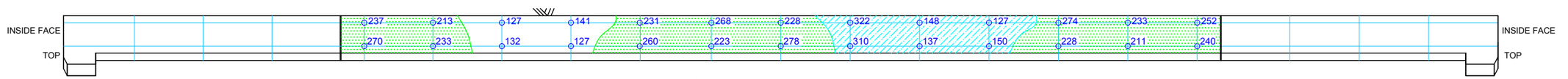
CONSTRUCTION NORTH



NORTH PARAPET WALL



DECK



SOUTH PARAPET WALL

LEGEND:

- Drain
- C1 Core Sample Location
- SS1 Sawn Sample Location
- G1 AC Resistance test Location
- G Ground Location
- ⊗ Ground Check Location
- -0.200 to -0.299 volts
- -0.300 to -0.349 volts
- -0.350 to -0.449 volts
- more negative than -0.450 volts
- 460 Copper-Copper Sulphate Half-Cell Potential (negative volts x10^{-3})

BRIDGE CHECK CANADA

200 Viceroy Road, Unit 4
Vaughan, ON L4K 3N8
T: 905-660-6608 F: 905-660-6609

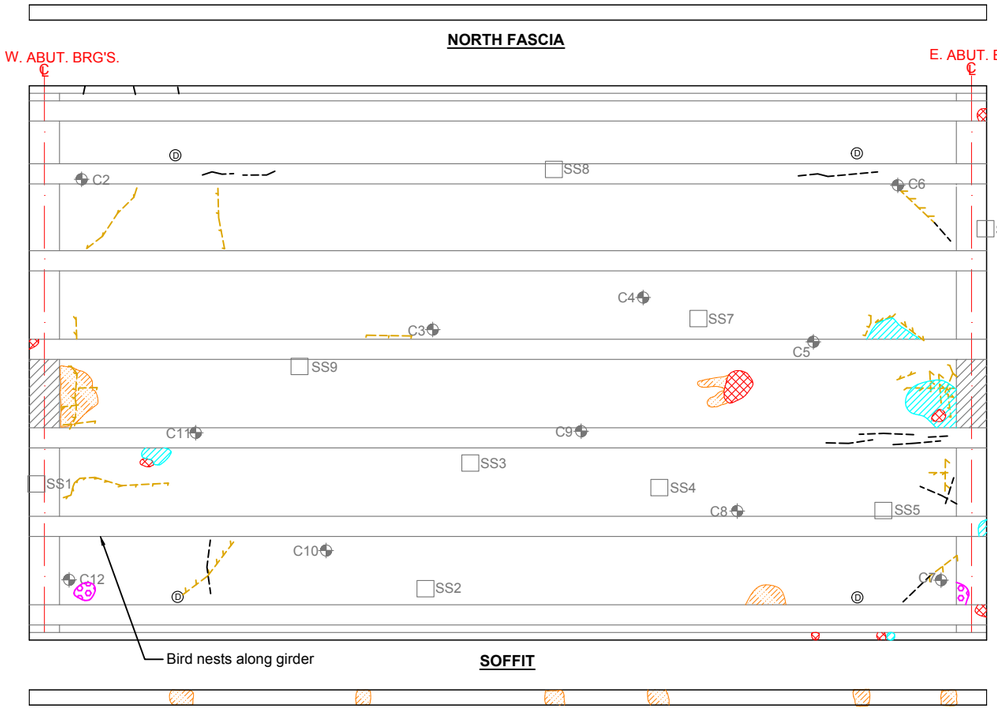
PROJECT:

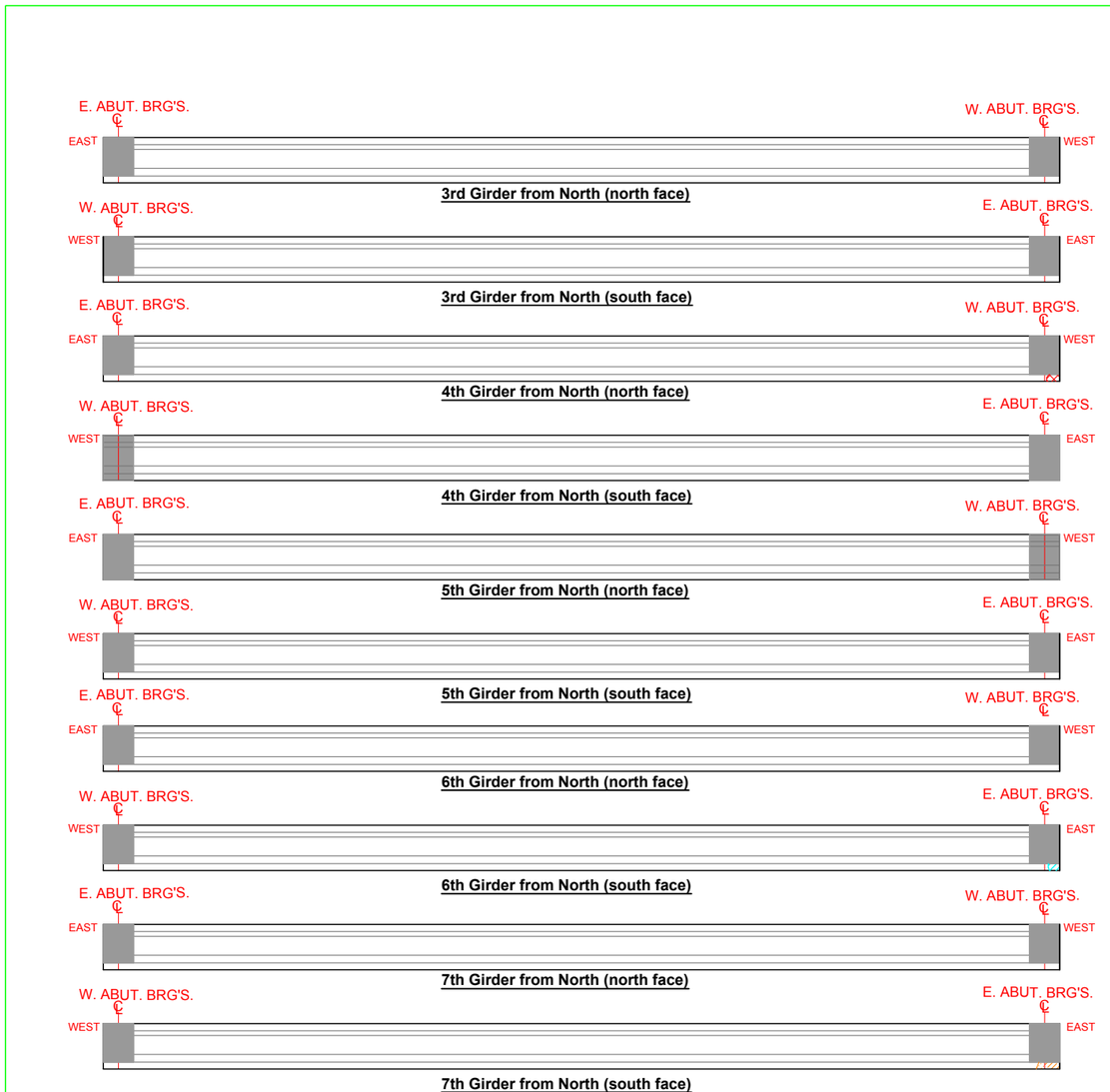
Structure 013 Township of Melancthon, ON

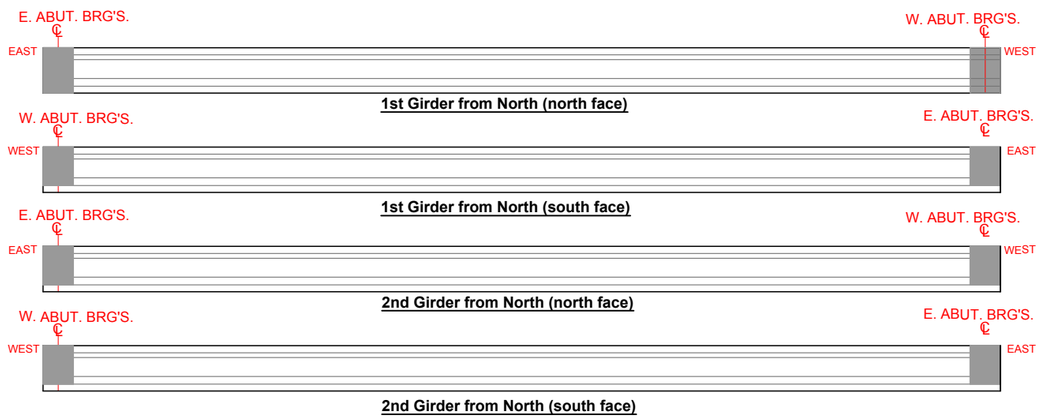
TITLE:

CORROSION POTENTIAL OF DECK , SIDEWALK, CURB AND PARAPET WALLS

Drawing No.:	3
Project No.:	BCC19079
Date:	November 2019
Scale:	1:100
Drawn by:	JL
Checked by:	MA







LEGEND:

- Drain
- C1 Core Sample Location
- SS1 Sawn Sample Location
- Patched Spalls
- Delaminations
- Spalls
- Light Scaling
- Medium Scaling
- Severe Scaling
- Honeycombed Areas
- Wet Areas
- Concrete Pattern cracks
- Medium Concrete Cracks
- W Wide Concrete Cracks
- Medium Stained/ Efflorescence Cracks

BRIDGE CHECK CANADA
200 Viceroy Road, Unit 4
Vaughan, ON L4K 3N8
T: 905-660-6608 F: 905-660-6609

PROJECT:

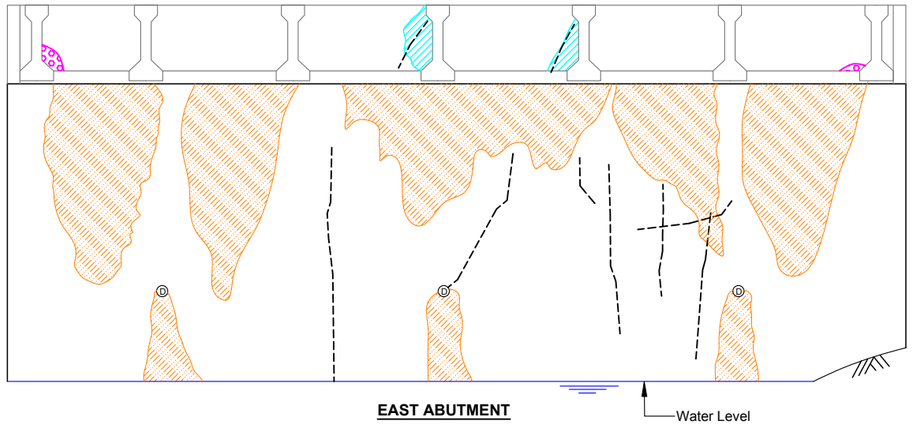
Structure 013 Township of Melancthon, ON

TITLE:

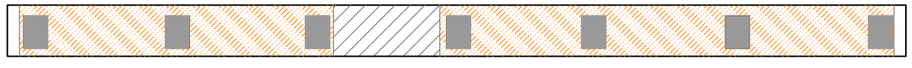
SURFACE DETERIORATION OF SOFFIT AND GIRDERS

Drawing No.:	4
Project No.:	BCC19079
Date:	November 2019
Scale:	1:125
Drawn by:	JL
Checked by:	MA

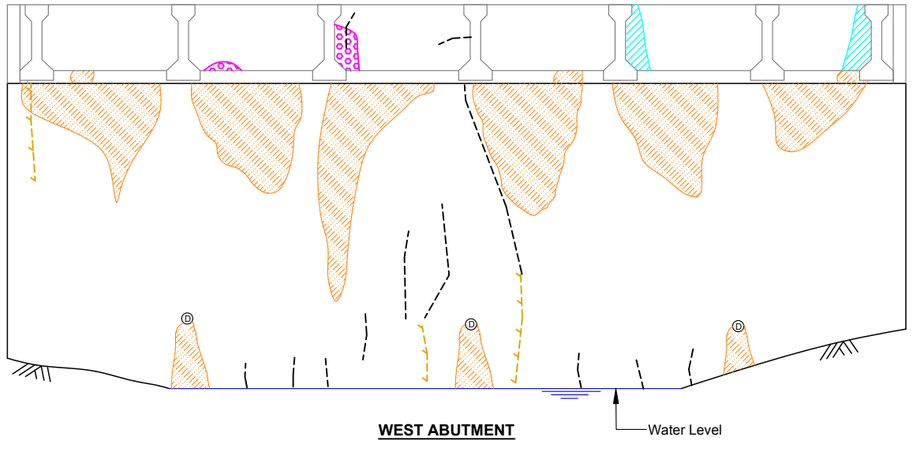
EAST ABUTMENT BEARING SEAT



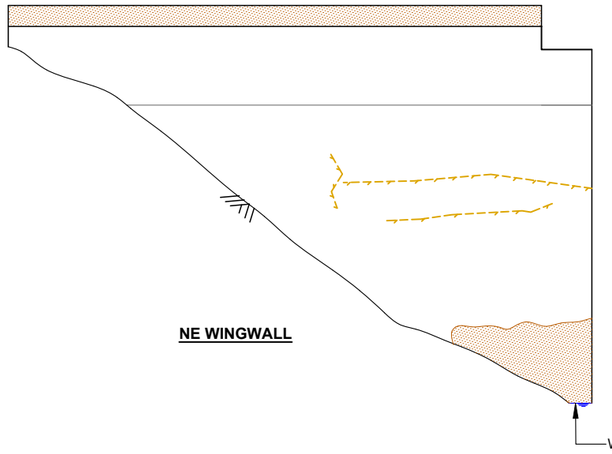
EAST ABUTMENT



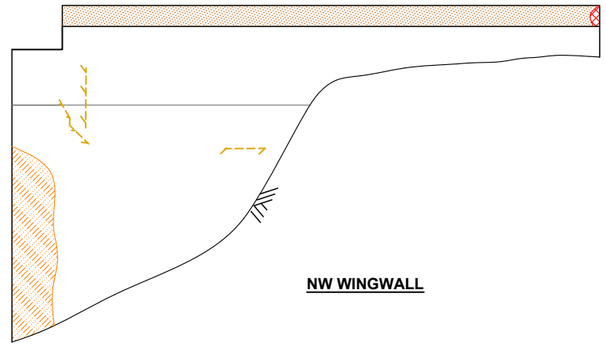
WEST ABUTMENT BEARING SEAT



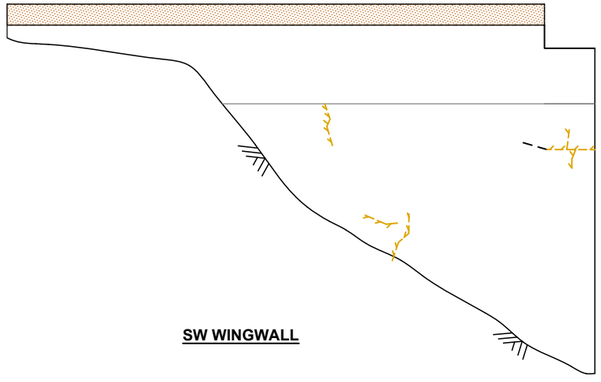
WEST ABUTMENT



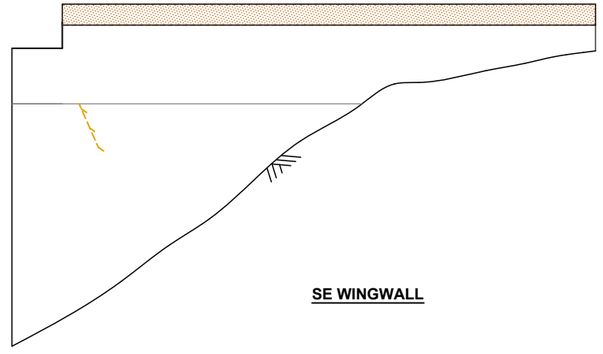
NE WINGWALL



NW WINGWALL



SW WINGWALL



SE WINGWALL

LEGEND:

- Drain
- Patched Spalls
- Delaminations
- Spalls
- Light Scaling
- Medium Scaling
- Severe Scaling
- Honeycombed Areas
- Wet Areas
- Concrete Pattern cracks
- Medium Concrete Cracks
- Wide Concrete Cracks
- Medium Stained/ Efflorescence Cracks

BRIDGE CHECK CANADA

200 Viceroy Road, Unit 4
Vaughan, ON L4K 3N8
T: 905-660-6608 F: 905-660-6609

PROJECT:

Structure 013 Township of Melancthon, ON

TITLE:

SURFACE DETERIORATION OF ABUTMENTS AND WINGWALLS

Drawing No.:	5
Project No.:	BCC19079
Date:	November 2019
Scale:	1:75
Drawn by:	JL
Checked by:	MA