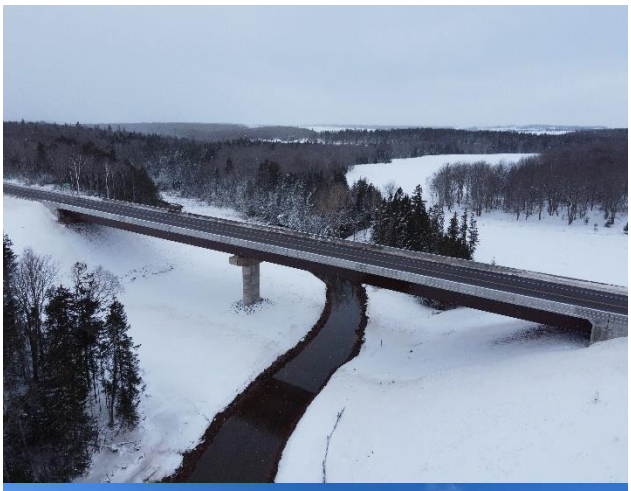
BRIDGE INSPECTION REPORT
2020 INSPECTION YEAR



Prince Edward Island
CANADA

Transportation,
Infrastructure and Energy

Foreword

In 2007, the Department of Transportation and Public Works (currently the Department of Transportation and Infrastructure) commenced a Province wide initiative to inspect all of our major highway and Confederation Trail structures and report on the condition of these structures on a biennial basis. The first set of bridge inspections was conducted in 2008.

The department, in collaboration with Stantec, has developed a Comprehensive Bridge Inspection Training (CBIT) course, which was the first ever course developed in Canada, by Canadian engineers, for Canadian bridge inspectors. It is a full, two-week course, which outlines the importance of bridge inspection work by breaking it down to the element level and material defect level. Inspection teams are to take this course once every five years, with the next course slated in 2022.

The department solicited expression of interest from the local consulting community with a great interest from all parties. Currently there are six (6) local consulting firms contracted out to assist the department in retrieving valuable inspection data.

In conjunction with this, the department purchased a Bridge Management Software (BMS) system, developed by Stantec and based on the Ontario Structures Inspection Manual (OSIM), the standard to which the province inspects their structures.

As of the end of 2020, we have completed our seventh full cycle of major highway and pedestrian structure (257) and Confederation Trail structure (36) inspections. We are also two thirds of the way through the smaller structure inventory; however, the results for these structure inspections are currently excluded from this report.

The success of this program could not be possible without the support of the Minister and Deputy Minister of Transportation and Infrastructure, nor without the work and efforts by our local consulting engineering community.

Inspection Program

The department has been conducting its inspection program since early 2008, using internal staff as well as external consultants.

In 2011, the department had undergone an internal audit by the Auditor General's office, specifically related to capital projects and bridge management. In the report, the Auditor

mentioned that the department is conducting extensive bridge inspection and management practices without it being legislated.

With respect to the actual program, the department has divided the structures into geographical zones for which one of the external consultants is responsible for inspections. These zones are further divided in to even year and odd year inspections.

The inspections were carried out over the Summer/Fall months of 2020 and the inspection data was input into the Bridge Management System (BMS) software. Once the data was entered, checked and verified by each of the consultants, it was given to the department for their checks and verification. Once the department was satisfied with the inspection data, the inspections for each structure were closed to any further changes. The final inspections were completed and closed in early February 2021.

Inspection Results

The inspection data, which was entered into the BMS and verified by both the consultant and the department, is manipulated by the BMS to set forth a series of results based on the inspection data.

The results of the 2020 inspection program are listed below and outline graphically in the appendices. There are currently only 293 (20%) structures which have been inspected biennially over the last 12 years; however, 768 small structures have been inspected in the last three years. This represents a total of 70% of the entire structure network; therefore, the results may not be indicative of the true condition of the entire Provincial network of highway structures; however, we are approaching 100 % of the network being inspected. The 293 structure (20% of the network) represents about 45% of the net replacement value; therefore, they represent a significant investment both fiscally and with respect to risk management.

Bridge Condition Index (BCI) Results.

This report focuses on the 293 structures that represent the most risk. We will report on the smaller structure inventory once the entire network has been inspected.

The results of the inspections yield an overall Bridge Condition Index (BCI) for each structure. This index ranges from a condition index of Poor (BCI less than 60), Fair (60 < BCI < 70), and Good (70 < BCI < 99).

As of the completion of the 2020 inspections, the overall condition of the inspected highway and Confederation Trail network (293 structures) is as follows:

Condition State	Percentage of Inspected Structures
Good (BCI > 70)	50 %
Fair (60 < BCI < 70)	27 %
Poor (BCI < 60)	23 %
Average BCI	73.1

Table 1 – BCI Breakdown of All Inspected Structures

The overall condition of the inspected highway network (IE less the Confederation Trail network and pedestrian bridges, 257 structures) is as follows:

Condition State	Percentage of Inspected Highway Structures
Good (BCI > 70)	56 %
Fair (60 < BCI < 70)	25 %
Poor (BCI < 60)	19 %
Average BCI	75

Table 2 – BCI Breakdown of Inspected Highway Structures

Graphical representations of the BCI breakdown for all inspected highway and Confederation Trail structures and all inspected highway structures are given in Appendices ‘A’ and ‘B’ respectively.

If we consider the BCI distribution (as shown graphically in Appendices ‘C’ and ‘D’ for all inspected structures and all inspected highway structures respectively), we can see that there still exists a significant number of structures in the fair condition state that will soon be moving into the poor condition state. We can see the effects of this distribution on the BCI and risk parameters, which will be discussed later.

Of note, we have met our target Key Performance Indicator of an average BCI > 70 for all inspected structures, as indicated in Appendices ‘A’ and ‘B’; however, with the noted ‘wave’ of fair-to-poor indicated above, this will undoubtedly change.

Bridge Criticality and Urgency (BCU) Results

In 2010, the department initiated a training module to include the assignment of risk parameters to the elements of each structure based on a Bridge Criticality and Urgency (BCU) rating. This is a 1 to 10 rating system, where 1 indicates no risk and 10 indicates very high risk of the element in question. An overview of the Bridge Criticality Rating system can be found in Appendix ‘E’.

The department has been inspecting structures with a BCU rating since 2011 and we have been tracking the risk profile of the inspected network since then. In general, the higher the BCU rating, then the higher the risk rating for the structure in question.

We currently have a matrix of risk from low, medium, medium–high and high risk category. The matrix is shown in Appendix 'F' for all inspected structures and Appendix 'G' for all inspected highway structures. This is summarized in the tables below.

Network Risk Distribution – All Inspected Structures 293 sites		
Risk Level	**# of Structures**	**%**
High	54	18.43
Medium-High	73	24.92
Medium	79	26.96
Low	87	29.69
Total	293	100

Table 3 – Network Risk Distribution All Inspected Structures

Network Risk Distribution – All Inspected Highway Structures 257 sites		
Risk Level	**# of Structures**	**%**
High	38	14.79
Medium-High	66	25.68
Medium	72	28.02
Low	81	31.51
Total	257	100

Table 4 – Network Risk Profile – All Inspected Highway Structures

As can be seen, the tables and graphs indicate that there is a significant amount of bridge infrastructure which is currently at high risk. In light of this, we have been reviewing our five year capital bridge construction plan to include these structures in the program. We are also looking at conducting more periodic reviews of our higher risk structures in order to maintain an acceptable level of safety across the network.

Analogous to the BCI breakdowns, these graphs represent only those structures that are currently being inspected at this time (20% of the network) and do not reflect the overall cross section of highway structures that currently exist across the province.

Condition and Risk Trends

We have been tracking the BCI trend of the network of structures since 2011. We have also tracked the risk profile trend of the structures since 2011. The following table outlines the BCI Trend from 2011 through to 2020.

Network BCI Distribution (%)										
Condition State	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Good (70 < BCI)	35%	32%	37%	40%	43%	47%	53%	50%	54%	50%
Fair (60<BCI<70)	29%	28%	26%	31%	29%	27%	27%	28%	25%	27%
Poor (BCI < 60)	37%	40%	37%	29%	28%	26%	20%	22%	21%	23%
Average BCI	62.8	61.9	66.6	69	69.3	70.3	72.9%	72.6	74.0	73.1

Table 5 – BCI Breakdown over Time

The above table shows the department is making strides in overall bridge condition index. This is due to the maintenance and capital programs over the years; however, it is also due to significant training and calibration efforts within the inspection teams. This trend is graphically represented in Appendix 'H'.

The following table indicates the risk profile trend over time; however, it has been truncated to exclude 2011 and 2012 due to size limitations. A graph is provided in Appendix 'I'.

Network Risk Trend																
	2013		**2014**		**2015**		**2016**		**2017**		**2018**		**2019**		**2020**	
Risk Level	**No. Str.**	**%**	**No. Str.**	**%**	**No. Str.**	**%**	**No. Str**	**%**	**No. Str.**	**%**	**No. Str.**	**%**	**No. Str.**	**%**	**No. Str.**	**%**
High	74	28.9	68	25.6	63	23.7	45	17.9	54	18.8	58	20.1	56	19.0	54	18.4
Med.-High	68	26.6	74	27.8	72	27.1	72	28.6	71	24.7	79	27.3	79	26.8	73	24.9
Med.	61	23.8	62	23.3	64	24	64	25.4	79	27.4	76	26.3	77	26.1	79	27.0
Low	53	20.7	62	23.3	67	25.2	71	28.2	84	29.2	76	26.3	83	28.1	87	30.0
Total	256	100	266	100	266	100	288	100	288	100	289	100	295	100	293	100

Table 6 – Risk Profile over Time

The risk profile trend graph in Appendix 'I' indicates a significant jump of structures in the high risk category between 2011 and 2012. This is due to calibration training efforts within the inspection teams in order to have better correlation of results between inspection groups.

The risk profile indicates a slight downward trend in the high risk category from 2012 to 2015, with a slight increase of the high risk structures from 2015 to 2016 due to the increase in sample size. Since 2016, the general trend is an increase of structure in the high risk category. This is undoubtedly due to the number of structures that are in the "Fair" condition state moving their way into the "Poor" condition state. We will continue to collect additional inspection information, which will determine whether or not this trend continues. BCI and Risk Trend Graphs are shown in Appendices 'H' & 'I'.

Sufficiency Index (SI)

Currently, the Federal Highways Administration (FHWA) in the US uses a Sufficiency Rating system to better capture the overall sufficiency from an operational and functional perspectives as well as condition. The PEI Bridge Management System calculates a similar overall index referred to as the Sufficiency Index or SI.

The Sufficiency Index (SI) is a compilation of the BCI, BCU as well as other important operational factors; such as, load rating; scour potential; flood potential; fatigue critical elements; approach road geometry; structure lane width; barrier index; etc..

As of 2013, we have been including a rating for SI in our latest structure records; however, we note that no threshold exists for the upper and lower limits for SI. At this time, we are only reporting on the overall index and have arbitrarily chosen the SI limits of less than 70 being poor; between 70 and 80 as fair; above 80 as good.

The results are represented in the table below and graphically represented in Appendix 'J' for the entire inspected highway network. We note that a large portion is below the 70 threshold; however, we caution that there will be a few years of calibration required in order to ensure that the threshold limits for the upper and lower bounds are relatively sound. Therefore, we are only reporting on the actual numbers for information purposes only. Work continues on the calibration of this index.

SI Value	2020 No. of Structures	2020 % of Structures	2019 No. of Structures	2019 % of Structures	2018 No. of Structures	2018% of Structures	2017 No. of Structures	2017 % of Structures
80 < SI	129	50.19%	123	47.67%	112	44.60%	105	41.80%
70 < SI < 80	91	35.41%	96	37.21%	50	19.90%	55	21.90%
SI < 70	37	14.40%	39	15.12%	89	35.50%	91	36.30%
TOTAL	257	100%	258	100%	251	100%	251	100%

Table 7 – Sufficiency Index Results

Performance Deficiencies, Maintenance Needs and Recommended Works

Performance Deficiencies

The consultants are required to report on any suspected performance deficiencies for each element of a structure. Performance deficiencies are identified to supplement the information recorded in the condition states and are generally used when an element is suspected to not be performing as intended. These are outlined in Table 8 below with the number of occurrences for each as of the conclusion of the 2017 inspection period.

Performance Deficiency	No. of Occurrences In 2020	No. of Occurrences In 2019	No. of Occurrences In 2018	No. of Occurrences In 2017	No. of Occurrences In 2016
1-Load Carrying Capacity	1002	1053	1065	990	1033
2-Excessive Deformations	74	82	94	101	86
3-Continuing Settlement	33	36	39	38	45
4-Continuing Movements	84	99	115	120	124
5-Seized Bearings	8	8	10	10	8
6-Brng. not Unif.Load/Unstbl.	10	9	14	20	20
7-Jammed Expansion Joint	12	13	11	9	9
8-Pedestrian/Vehicular Hazard	299	320	349	322	280
9-Rough Riding Surface	122	126	145	117	101
10-Surface Ponding	17	20	17	20	21
11-Deck Drainage	24	25	20	21	20
12-Slippery Surfaces	2	2	0	0	0
13-Flooding/channel Blockage	14	16	19	12	15
14-Undermining of Foundation	18	39	47	34	40
15-Unstable Embankments	72	78	98	96	77
16-Other	243	210	212	198	233
TOTAL	2034	2136	2255	2108	2112

Table 8 – Performance Deficiencies

There is a large quantity of PD-01 – Load Carrying Capacity. This is primarily due to our aging infrastructure, which is not currently constructed to the design standards of today.

Of note, there is a decrease in some areas, with an increase in other areas. These could be further alleviated with a more robust maintenance program. See the next section on Maintenance Needs and Recommended Works.

Maintenance Needs and Recommended Works.

Once a performance deficiency has been selected, the inspection teams are then required to select a Maintenance Need or Recommended Work in order to mitigate the performance deficiency.

A maintenance need is generally selected when the element in question has less than 25 % of its quantity in the poor condition state, or if the required maintenance work can be carried out by our internal maintenance personnel or standing offer crews. A recommended work is generally any works that does not fit in the above definition and is usually classified as a Capital project.

Inspection teams are to assign timing for the maintenance needs or recommended works and recommended works are to include an estimated cost. Maintenance needs and recommended works are not to overlap; that is, if a recommended work is selected for a specific element, there would not be a maintenance need associated with the same element. It will be one or the other.

Table 9 identifies the various maintenance needs with associated timings.

	Now	1 Year	2 Years	No. of Occurences 2020	No. of Occurences 2019	No. of Occurences 2018	No. of Occurences 2017	No. of Occurences 2016
1-Lift/Swing Bridge Maintenance	0	0	0	0	0	0	0	0
2-Bridge Cleaning	7	41	46	94	104	117	105	82
3-Railing System Repair	93	156	384	633	560	499	370	356
4-Painting Steel Bridge Structures	0	8	68	76	67	55	51	62
5-Bridge Deck Joint Repair	1	5	15	21	21	19	22	26
6-Bridge Bearing Maintenance	0	2	7	9	16	18	12	8
7-Structural Steel Repair	0	1	20	21	14	22	24	18
8-Concrete Repair	1	40	417	458	470	475	418	301
9-Timber Repair	14	87	420	521	586	648	556	493
10-Works for Modular Bridges	0	0	0	0	0	0	0	0
11-Animal/Pest Control	2	1	2	5	4	4	6	5
12-Bridge Surface Repair	5	36	73	114	114	111	105	98
13-Erosion Control at Bridges	12	23	77	112	137	126	115	122
14-Concrete Sealing	0	0	0	0	0	5	5	2
15-Rout and Seal – Concrete and Asphalt	4	31	61	96	90	89	81	81
16-Works for Drainage system	3	9	7	19	20	17	19	23
17-Scaling (Loose Concrete or ACR Stee	0	0	0	0	--	--	--	--
18-Other Maintenance	89	124	177	390	384	362	347	373
Totals	**142**	**440**	**1597**	2569	**2587**	**2567**	**2236**	**2050**

Table 9 – Maintenance Needs

As one can see, there is a significant amount of maintenance required for timber repair, concrete repair and handrail maintenance. We do see a slight dip in the total amount of Maintenance Needs required; however, we could significantly alleviated these with the addition of dedicated crews assigned to bridge maintenance, specifically mandated to review and address the maintenance concerns on our structures as outlined by the inspection reports.

Table 10 summarizes the recommended works and includes associated costs with the works. There are too many categories of recommended works to summarize in this report; however, they range from barrier repairs/replacement to girder repairs, abutment repairs, sub-structure repairs, etc., etc..

Timing	2020 No. of Occ.	Cost	2019 No. of Occ.	Cost	2018 No. of Occ.	Cost	2017 No. of Occ.	Cost	2016 No. of Occ.	Cost
Urgent	10	$68,320	10	$50,400	15	$181,315	21	$409,315	28	$904,440
< 1 year	98	$2,496,712	96	$2,503,403	114	$2,841,498	115	$2,373,895	116	$2,639,857
1 - 5 year	465	$11,996,629	497	$10,643,022	522	$10,453,584	475	$10,974,704	463	$9,521,860
6 - 10 year	78	$1,330,485	74	$1,124,470	88	$1,144,029	117	$2,130,124	98	$1,810,235
None	6	$53,700	5	$19,860	4	$19,860	4	$20,200	4	$20,200
Total	657	$15,945,846	682	$14,341,155	743	$14,640,286	732	$15,908,238	709	$14,896,592

Table 10 – Recommended Works

We can see from the tables that there is a significant amount of work required within the next 5 years, with a slight increase in the value of work required urgently and an increase in the overall value of work required. We caution that this trend is likely to continue without any preventative maintenance as suggested above.

Five Year Capital Program

Based on the bridge inspections, Bridge Condition Indices and Risk Profile, we have developed a five (5) year Capital Construction Program, which can be found in Appendix ‘K’.

The program has been created in conjunction with the program set forth from the Bridge Management System (BMS) as well as the BCI (condition) and BCU (risk) profiles. We have also taken into consideration the volume of traffic and the importance of the highway network IE. Arterials, Collectors, etc..

The five year plan includes for the following:

- Some key preservation items for our larger, more important infrastructure sites. Most notably, the Hillsborough and New Dominion (West River) Bridges need to be re-painted in order to lengthen their serviceability lives. These could cost in the order of $5.0 M and $2.0 M respectively. Hillsborough bridge painting is included in the five-year plan.

The five year plan does not allow for the following:

- There are no funds for the smaller, buried type structures which will undoubtedly also require capital expenditures.
- There are no funds dedicated for any major rehabilitation or replacement works for any of the Confederation Trail network of structures.
- Painting of the New Dominion (West River) bridge.

The program is what we plan to have done over the next five years. It is important to note that it may need to be adjusted depending on weather events, further budget constraints, other structural issues throughout the network that is not anticipated, etc., etc..

Conclusions and Recommendations

This report outlines the need for additional funding in order to maintain a serviceability of the highway structure network. There are areas of significant risk that the department is assuming on a number of structures that are currently being inspected. We have no real indicator on how this translates into the remaining portion of the highway network that is not currently being inspected; however, it would be safe to state that a one-to-one ratio would be a conservative estimate of the risk that exists on the remaining uninspected network.

We have included some Forecast scenarios in Appendices ‘L’, ‘M’, ‘N’, ‘O’, ‘P’ and ‘Q’. These indicate the trend of Bridge Condition Index (BCI) over time. The three scenarios that are modeled are: 1) Do Nothing; 2) Unconstrained (or unlimited) Budget; and 3) Constrained Budget. It can be clearly seen the effects of doing nothing versus our currently constrained budgets.

We are continuing to inspect all remaining structures within the entire network and inputting the inspection data into the Bridge Management System (BMS) software, based on the Ontario Structures Inspection Manual (OSIM). This will take another 2 years to complete the first cycle.

The following are some recommendations to be considered:

- To increase funding to a sustainable level for several years to come in order to reduce the department’s liability and to maintain an acceptable level of serviceability to the traveling public. We would also recommend increasing our inspection budgets to include the remaining portion of structures currently not being inspected.

- To increase to compliment of internal bridge maintenance crews to 3 to address the list of maintenance needs that are currently being reported on. We also recommend expanding

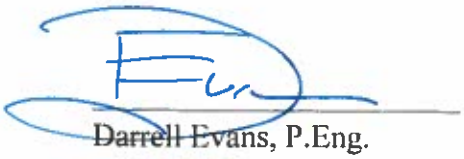
the funding for the standing offer contractors to include those knowledgeable in concrete repair methods and procedures to address the larger structures.

- To set aside some preservation funds for our most important structures in order to extend their service lives.

- Reducing the number of structures on our network by closing or severing non-essential or seasonal roads as required or any roads that have redundancy built into the network. Currently, we have four structures that are weight restricted and 10 that are either closed or have been removed.

In closing, we will continue to conduct routine inspections on our network of structures and will include all our smaller structures as time and budgets permit. We realize that budgets are constrained and we will continue to work within these confines as required; however, the reports show that there will be consequences as a result.

Respectfully Submitted;



Darrell Evans, P.Eng.
A/Asst. Director
Capital Projects Div.
Transportation and Infrastructure

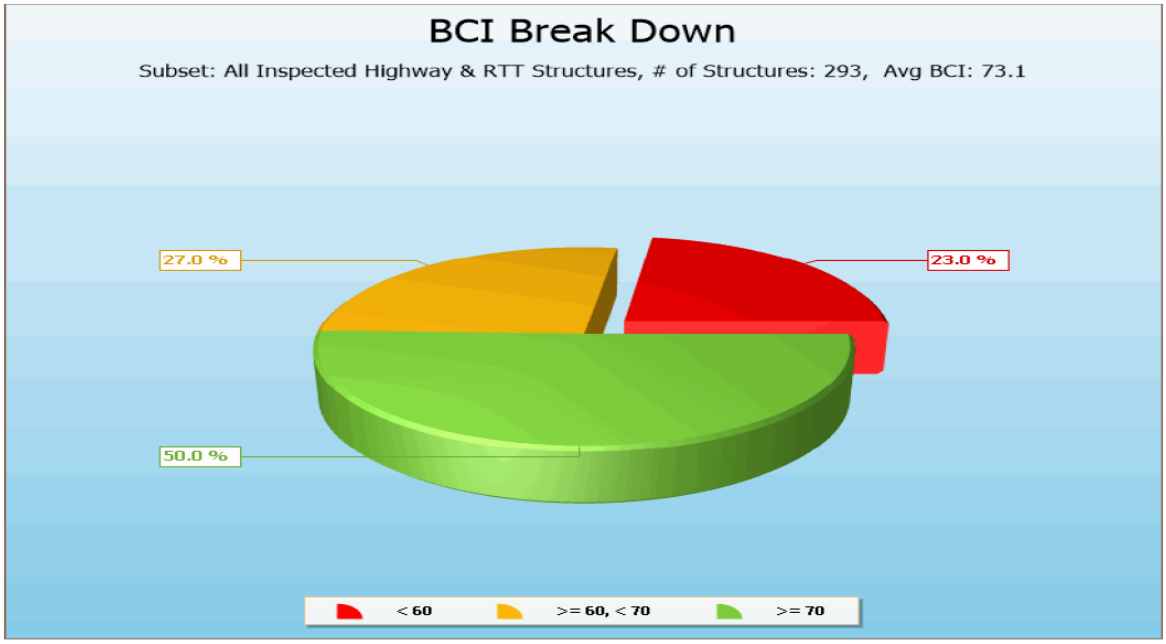
Date Submitted: 27 April, 2021

Appendix 'A'

BCI Breakdown, All Inspected Highway and Confederation Trail Structures

Department of Transportation, Infrastructure & Energy

Key Performance Indicator Report

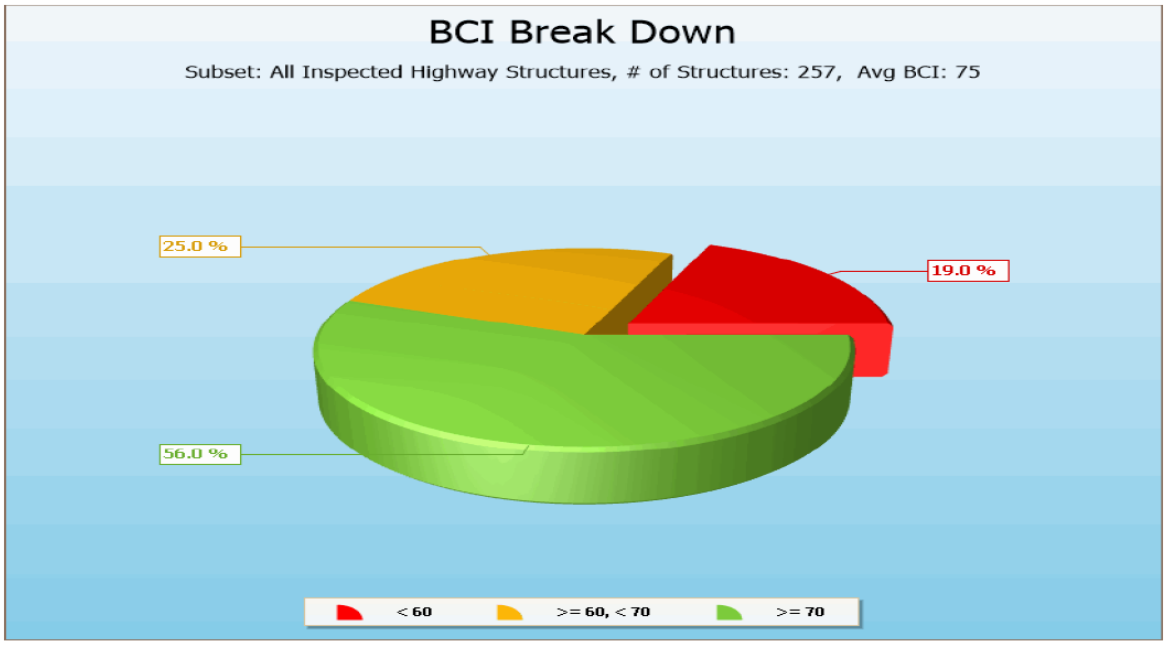


Appendix 'B'

BCI Breakdown, All Inspected Highway Structures

Department of Transportation, Infrastructure & Energy

Key Performance Indicator Report

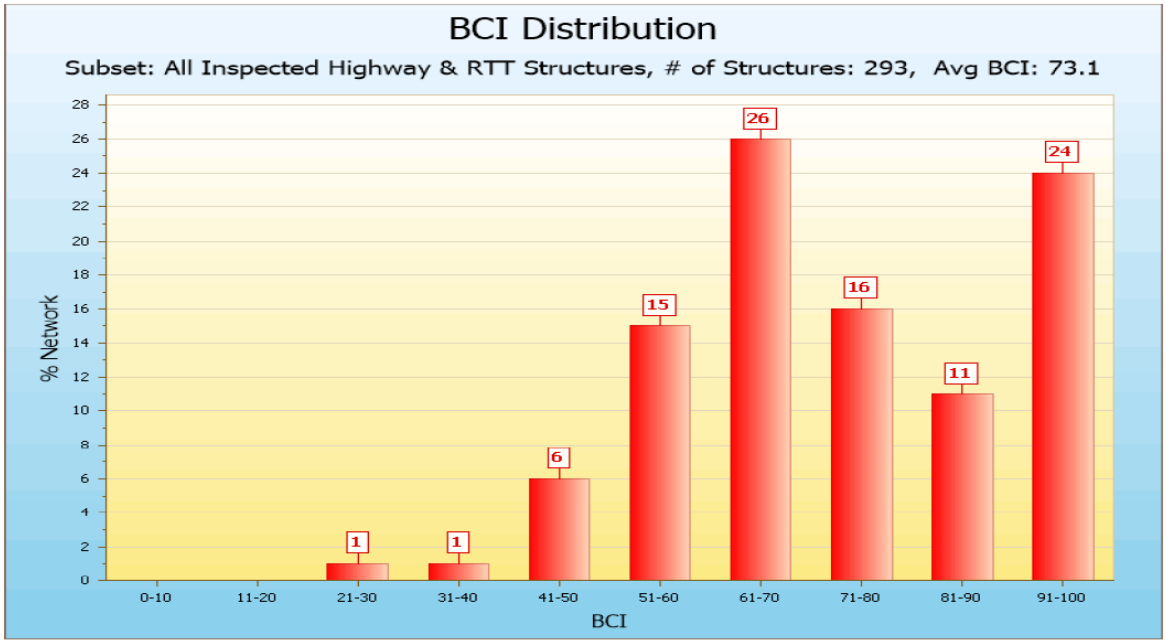


Appendix 'C'

BCI Distribution, All Inspected Highway and Confederation Trail Structures

Department of Transportation, Infrastructure & Energy

Key Performance Indicator Report



Subset: All Inspected Highway & RTT Structures, # of Structures: 293

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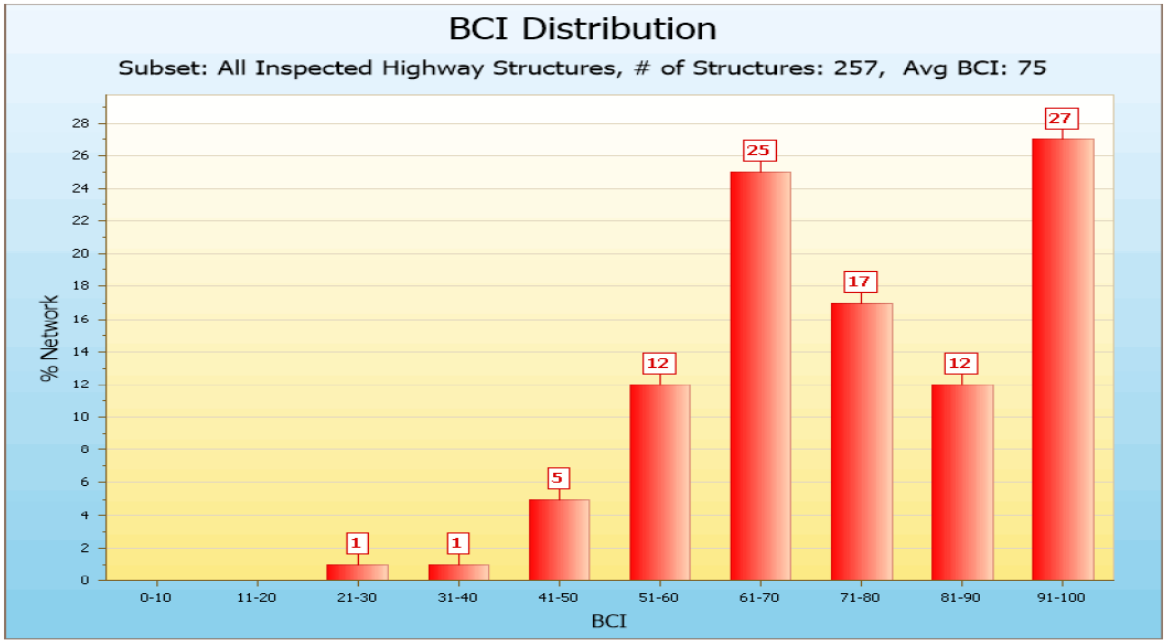
Appendix 'D'

BCI Distribution, All Inspected Highway Structures

Department of Transportation, Infrastructure & Energy

Key Performance Indicator Report



Subset: All Inspected Highway Structures, # of Structures: 257

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Appendix 'E'

Bridge Criticality Rating

Bridge Criticality Rating

1 - No Repairs, No Safety Concerns.
- Strength: Element retains its original design load carrying capacity and requires no repairs at this time. Minor non-structural maintenance.
- Safety: There are no safety concerns on the structure.

2 - No Repairs in foreseeable future, No Safety Concerns.

3 - No Structural Repairs necessary at this time. No Safety concerns.
- Strength: Element retains its original design load carrying capacity but may require minor non-structural repairs in near future.
- Safety: There are no safety concerns on the structure.

4 - Non Structural Repairs, No Safety Concerns.
- Strength: Element retains its original design load carrying capacity but requires non-structural repairs.
- Safety: There are no safety concerns on the structure.

5 - Minor Structural Repairs, No Safety Concerns.
- Strength: The element's design load carrying capacity may be reduced to a minor extent; the element requires some minor structural repairs.
- Safety: There are no safety concerns on the structure.

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6 - Minor Structural Repairs, Minor Safety Concern.
- Strength: The element's design load carrying capacity may be reduced to a minor extent; the element requires some minor structural repairs.
- Safety: There may be a minor safety concern on the structure.

7 - Minor Structural Repairs, Moderate Safety Concern.
- Strength: The element's design load carrying capacity may be reduced to a minor extent; the element requires some minor structural repairs.
- Safety: There is a moderate safety concern.

8 - Moderate Priority Structural Repairs, Moderate Safety Concern.
- Strength: The element's design load carrying capacity is reduced to a moderate extent but load evaluation is not being recommended; the element requires moderate priority structural repairs to remain in long term service.
- Safety: There is a moderate safety concern.

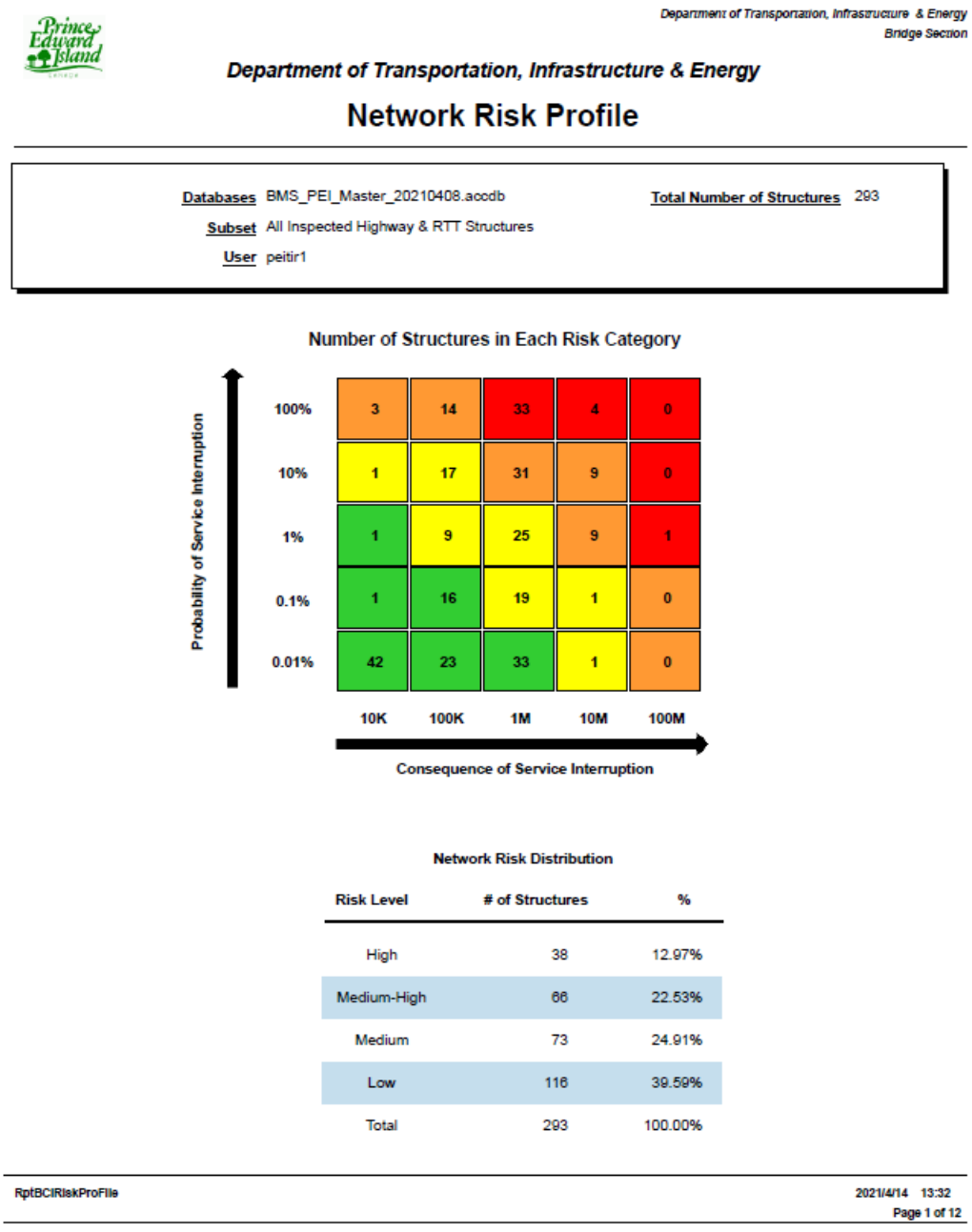
9 - Moderate Priority Structural Repairs, Significant Safety Concern.
- Strength: The element's design load carrying capacity is reduced to a moderate extent, load evaluation is recommended, but lane closure is not recommended; the element requires moderate priority structural repairs to remain in long term service.
- Safety: There is a significant safety concern

10 - High Priority Structural Repairs, Significant Safety Concern.
- Strength: The element's design load carrying capacity is reduced significantly; a bridge or lane closure, load posting, or load evaluation is recommended; the element requires high priority structural repairs to remain in service.
- Safety: There is a significant safety concern

Stantec Consulting Ltd.
January 2010

Appendix 'F'

Network Risk Profile, All Inspected Highway and Confederation Trail Structures



Department of Transportation, Infrastructure & Energy
Bridge Section

Department of Transportation, Infrastructure & Energy

Network Risk Profile

Databases	BMS_PEI_Master_20210408.accdb	**Total Number of Structures**	293
Subset	All Inspected Highway & RTT Structures		
User	peitir1		

Number of Structures in Each Risk Category

Probability of Service Interruption	10K	100K	1M	10M	100M
100%	3	14	33	4	0
10%	1	17	31	9	0
1%	1	9	25	9	1
0.1%	1	16	19	1	0
0.01%	42	23	33	1	0

Consequence of Service Interruption

Network Risk Distribution

Risk Level	# of Structures	%
High	38	12.97%
Medium-High	66	22.53%
Medium	73	24.91%
Low	116	39.59%
Total	293	100.00%

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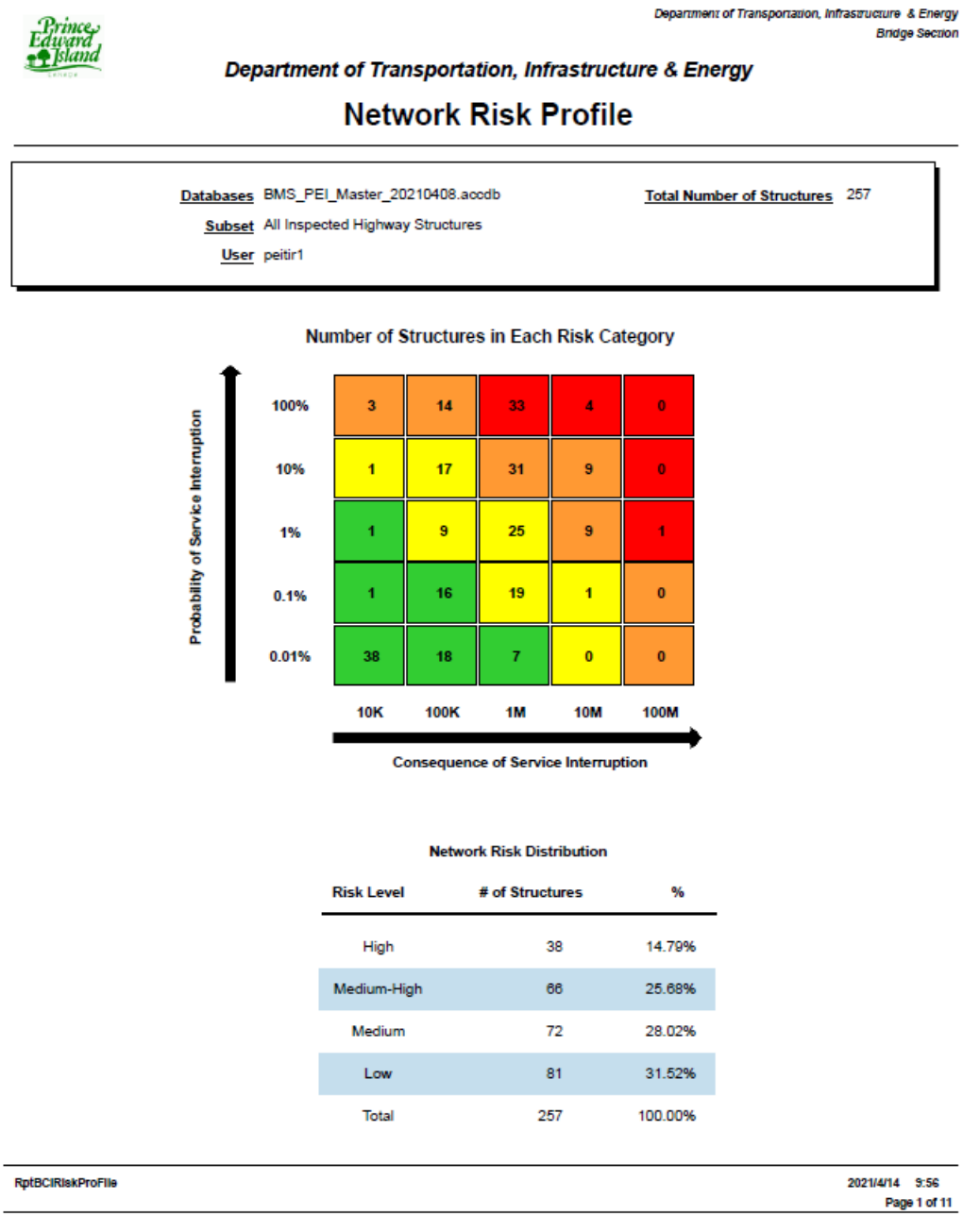
Appendix 'G'

Network Risk Profile, All Inspected Highway Structures



Department of Transportation, Infrastructure & Energy
Bridge Section

Department of Transportation, Infrastructure & Energy

Network Risk Profile

Databases	BMS_PEI_Master_20210408.accdb	**Total Number of Structures**	257
Subset	All Inspected Highway Structures		
User	peitir1		

Number of Structures in Each Risk Category

Network Risk Distribution

Risk Level	# of Structures	%
High	38	14.79%
Medium-High	66	25.68%
Medium	72	28.02%
Low	81	31.52%
Total	257	100.00%

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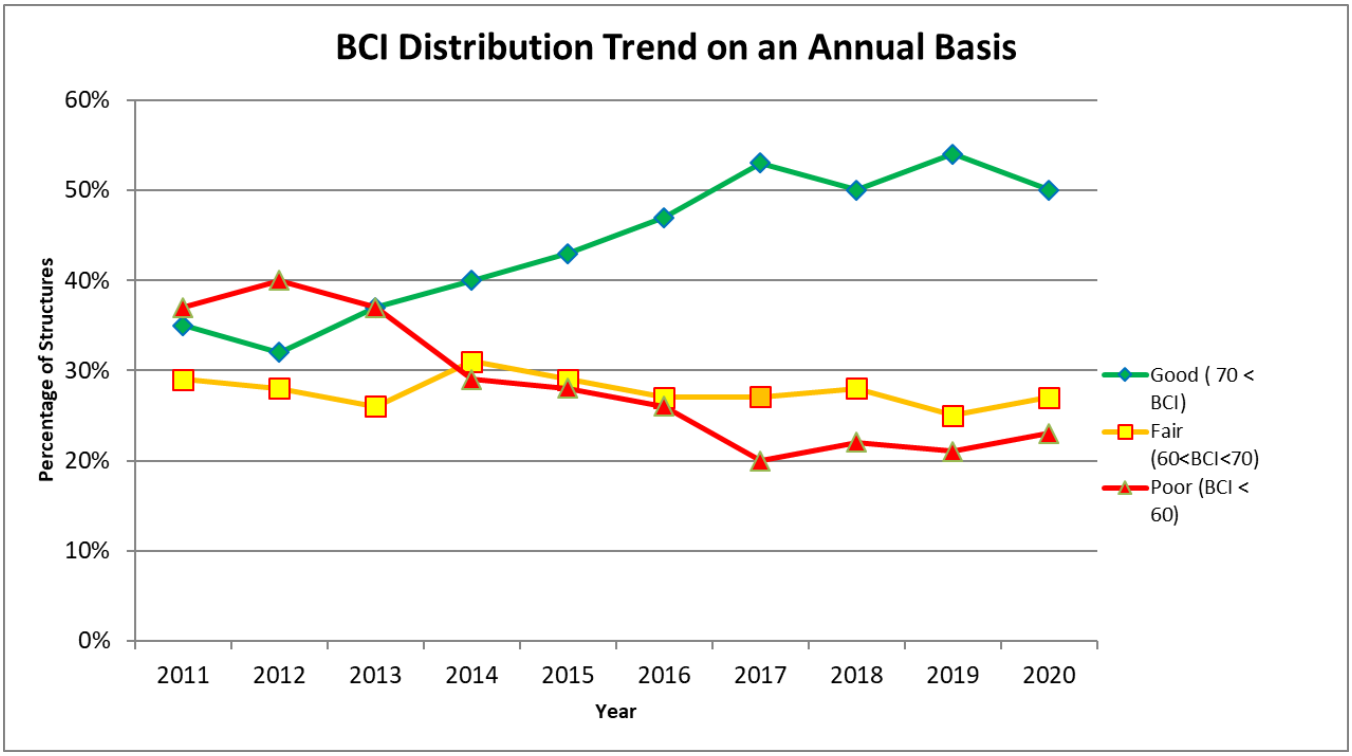
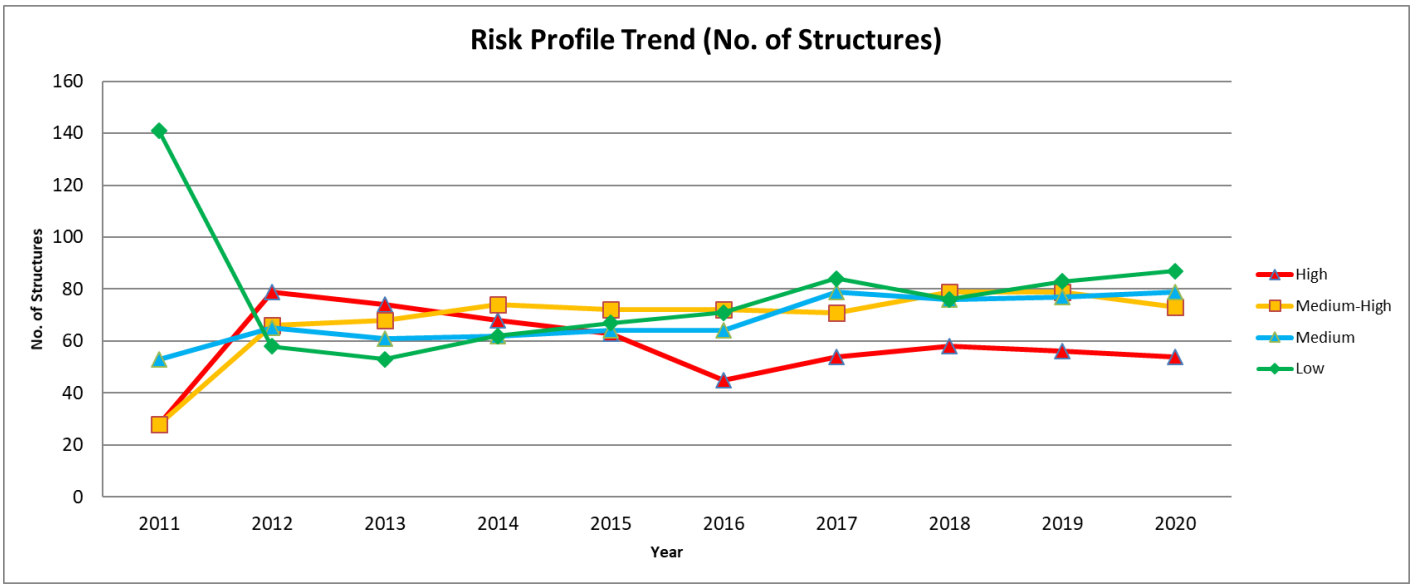
Appendix 'H'

BCI Trend Graph over Time



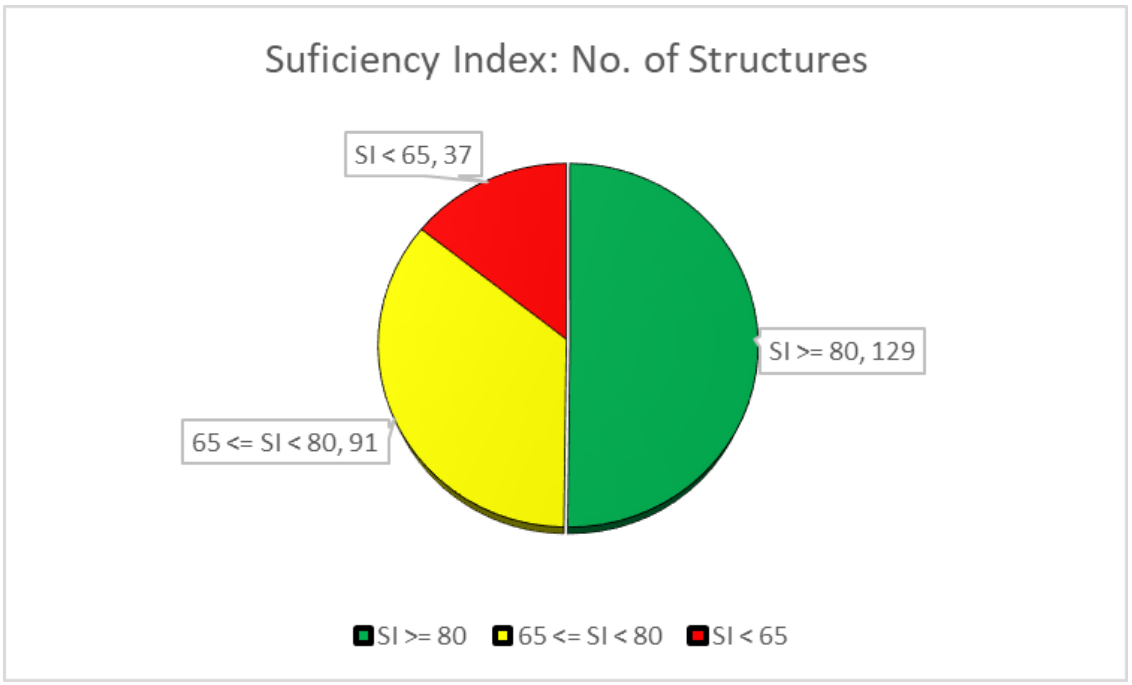
Appendix 'I'

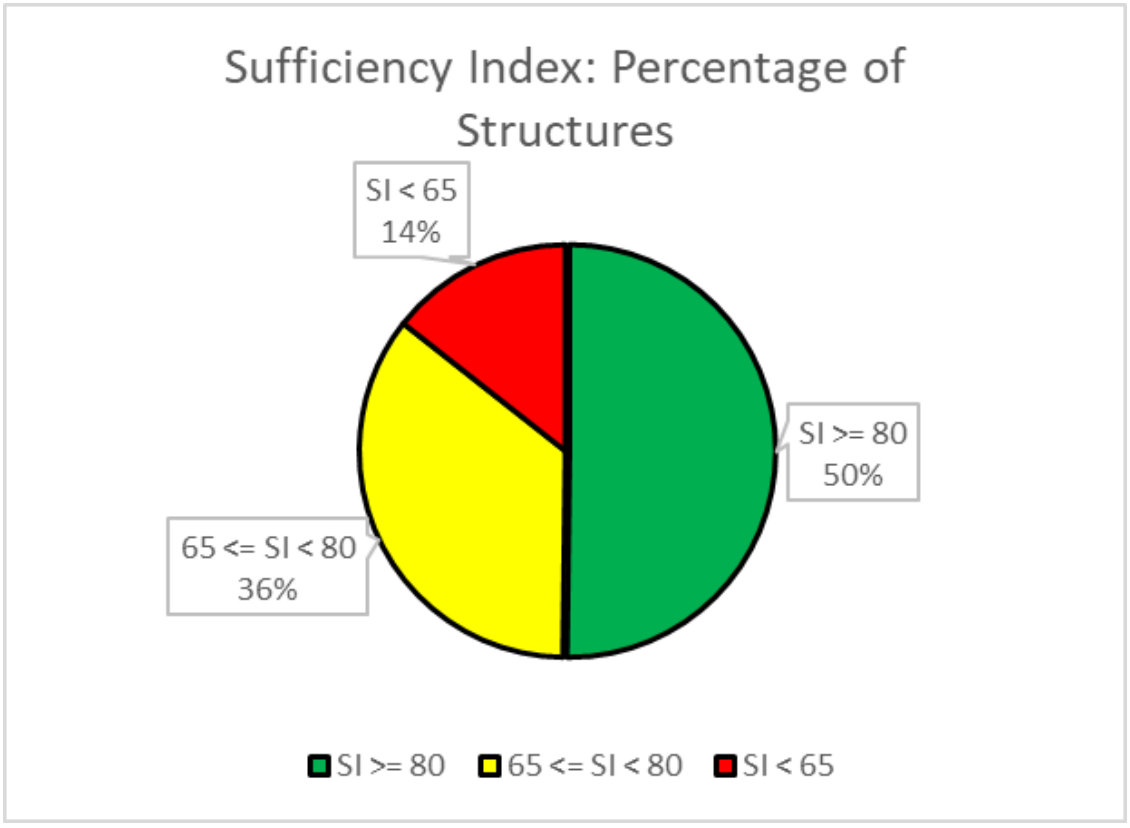
Risk Profile Trend Table Over Time



Appendix 'J'

Structure Sufficiency Index (SI) Breakdown





Appendix 'K'

2021/22 Bridge Projects

Region	Bridge ID	Project Name	District	Route/ Section	Description of Work
East	K1-030	Chepstow	1	01601	Replacement
West	Q1-036	Millvale	18	23902	Replacement
East	K3-065	St. Theresa	2	02202	Replacement
West	AP-058	Roxbury	26	01211	Replacement
East	K-0002	Morell RTT Bridge	7	Confederation Trail	Replacement
East	Q-0012	Vernon Bridge RTT Bridge	5	Confederation Trail	Replacement
West	AQ-107	New Glasgow	18	01304	Replacement
West	P2-077	Stewart's Creek (Dunblane) (S	25	14101	Replacement
West	Q2-024	Rustico Bridge	18	00607	Replacement
East	K2-015	Morell Bridge	7	00205	Replacement
East	K1-033	Little Harbour	1	01601	Replacement

2022/23 Bridge Projects

Region	Bridge ID	Project Name	District	Route/ Section	Description of Work
East	K2-019	Southhampton	2	31303	Replacement
East	K2-037	Five Houses	2	32701	Replacement
West	P1-010	Coleman Bridge	26	13701	Replacement
West	P1-019	Mill River East	26	14501	Replacement
West	P1-036	Doyles	26	01215	Replacement
West	P1-093	Campbellton Bridge	25	14302	Replacement
West	P2-035	Ox River	25	01102	Replacement
West	P3-009	Cabot Park	20	10501	Replacement
West	P4-001	Tryon Bridge	19	01001	Replacement
West	P4-055	Tryon Bridge	19	Maint ID 40526	Replacement
East	Q3-047	French Village Bridge	7	35001	Replacement
East	K3-008	Bridgetown	2	00402	Replacement
West	Q1-002	Bayview Bridge	18	00609	Replacement
West	P4-112	Albany 'Y' Overpass	19	00102	Replacement

2023/24 Bridge Projects

Region	Bridge ID	Project Name	District	Route/ Section	Description of Work
East	K3-060	Upton Bridge	2	33902	Replacement
West	P-0001	Ascension Road RTT	27	16001	Replacement
West	P-0003	Carruthers	25	Confederation Trail	Replacement
West	P-0008	Tyne Valley (Hayes) RTT	23	Confederation Trail	Replacement
West	P1-144	Haywood Road	27	Maint. ID 40184	Replacement
West	P2-029	Alaska	24	13801	Replacement
West	P2-033	Victoria West	25	01103	Replacement
West	P2-034	Sheep River	25	13501	Replacement
West	P2-093	Gains Creek	25	17401	Replacement
West	P3-035	Mill Creek Bridge	23	01205	Replacement
West	Q-0004	North River 2 RTT	15	Confederation Trail	Replacement
West	Q1-071	Simpsopn Mill Road	18	Maint ID 50325	Replacement
East	Q3-030	Donagh	7	25701	Replacement
East	Q4-007	Wood Islands Bridge	4	31501	Replacement
East	Q3-028	Corran Ban Bridge	8	00601	Replacement
West	P2-060	Coleman Corner Bridge	25	00217	Replacement
West	Q1-061	New London Bridge	20	02003	Replacement
West	P1-003	Cain's Bridge	26	00220	Replacement
East	Q5-009	Hillsborough Bridge	6	00111	Bridge Painting

2024/25 Bridge Projects

Region	Bridge ID	Project Name	District	Route/ Section	Description of Work
East	AQ-095	Green Road	17	Maint. ID 50120	Replacement
East	K2-030	Peakes Bridge	7	32302	Replacement
East	K2-039	Peakes Road	7	32001	Replacement
West	P-0014	Wilmot	19	Confederation Trail	Replacement
West	P1-108	Tignish Harbour	27	Maint. ID 50208	Replacement
West	P2-016	Bideford Bridge	23	01207	Replacement
West	P2-027	Brae Bridge	25	13801	Replacement
West	P2-039	Enmore Bridge	25	Maint ID 40127	Replacement
West	P2-048	Mill Road Bridge	25	Maint. ID 40283	Replacement
West	P2-062	Tory Road	25	Maint. ID 40548	Replacement
West	P2-064	Foxley River	25	01209	Replacement
West	P3-012	St. Nicholas Bridge	24	01107	Replacement
West	P4-038	Norboro	19	Maint. ID 40514	Replacement
West	Q-0003	North River	15	Confederation Trail	Replacement

2025/26 Bridge Projects

Region	Bridge ID	Project Name	District	Route/ Section	Description of Work
West	P3-029	Haldimand's Bridge	24	01106	Replacement
West	P4-006	Bedeque Bridge	19	17102	Replacement
West	P4-098	Kinkora Bridge	19	Maint. ID 41288	Replacement
West	Q-0002	Hunter River	18	Confederation Trail	Replacement
West	Q1-074	Riverdale Bridge	17	Maint. ID 50027	Replacement
East	K1-037	Basin Head Bridge	1	Maint. ID 60011	Replacement
East	K2-017	Bangor Bridge	7	Maint ID 60114	Replacement
East	K2-038	Five Houses	2	Maint ID 60187	Replacement

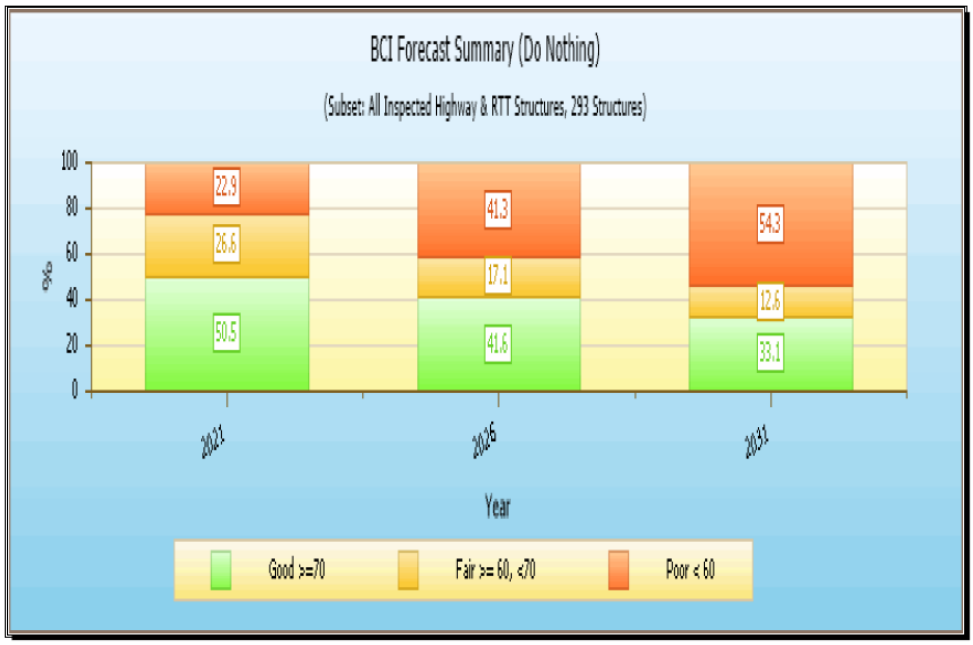
Appendix 'L'

BCI Forecast Summary All Inspected Structures
Do Nothing

Department of Transportation, Infrastructure & Energy
Bridge Section

Department of Transportation, Infrastructure & Energy

BCI Forecast Summary



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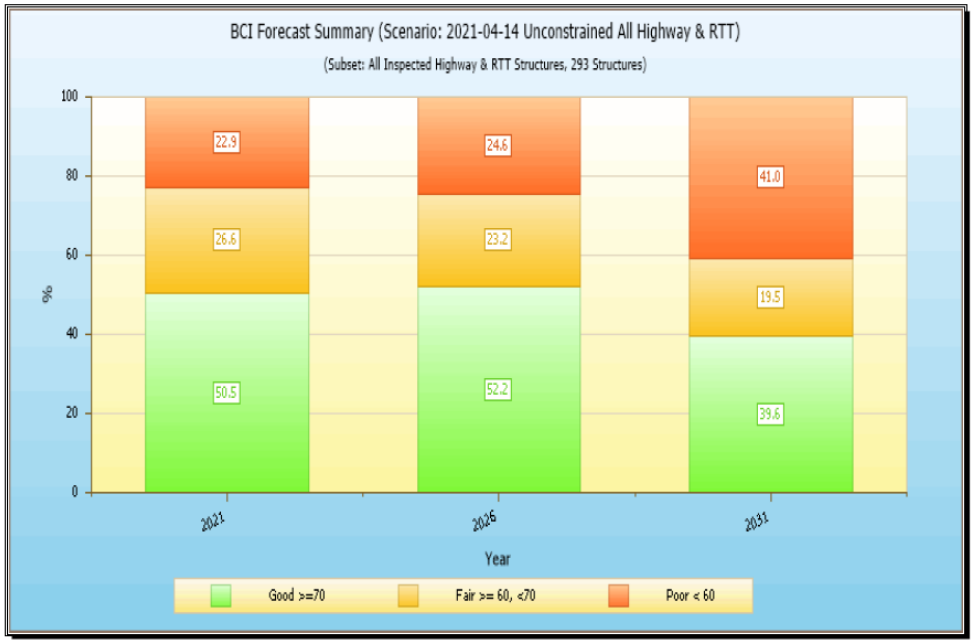
Appendix 'M'

BCI Forecast Summary All Inspected Structures
Unconstrained Budget

Department of Transportation, Infrastructure & Energy

BCI Forecast Summary

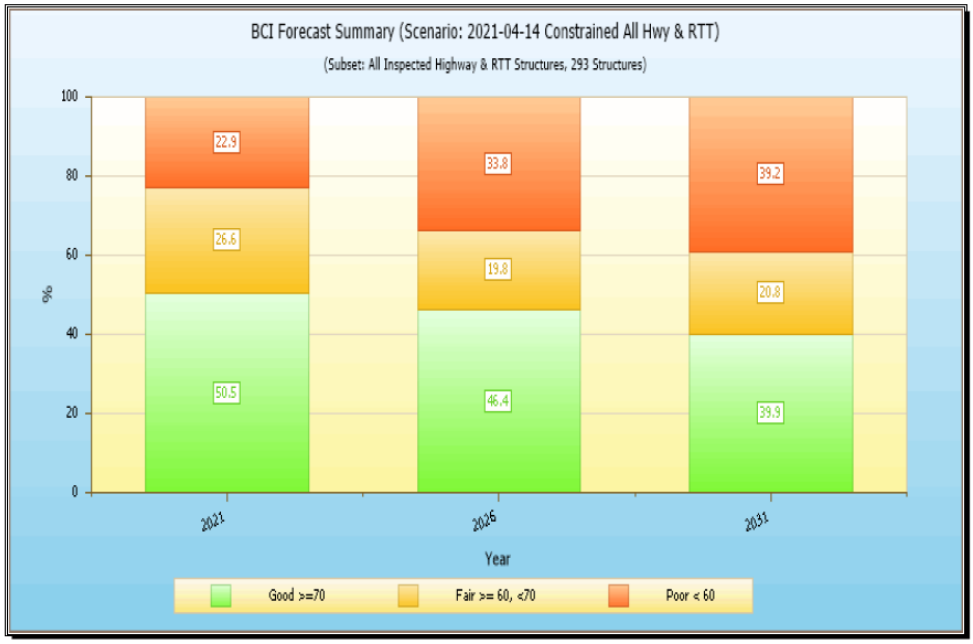


Appendix 'N'

BCI Forecast Summary All Inspected Structures
Constrained Budget

Department of Transportation, Infrastructure & Energy

BCI Forecast Summary



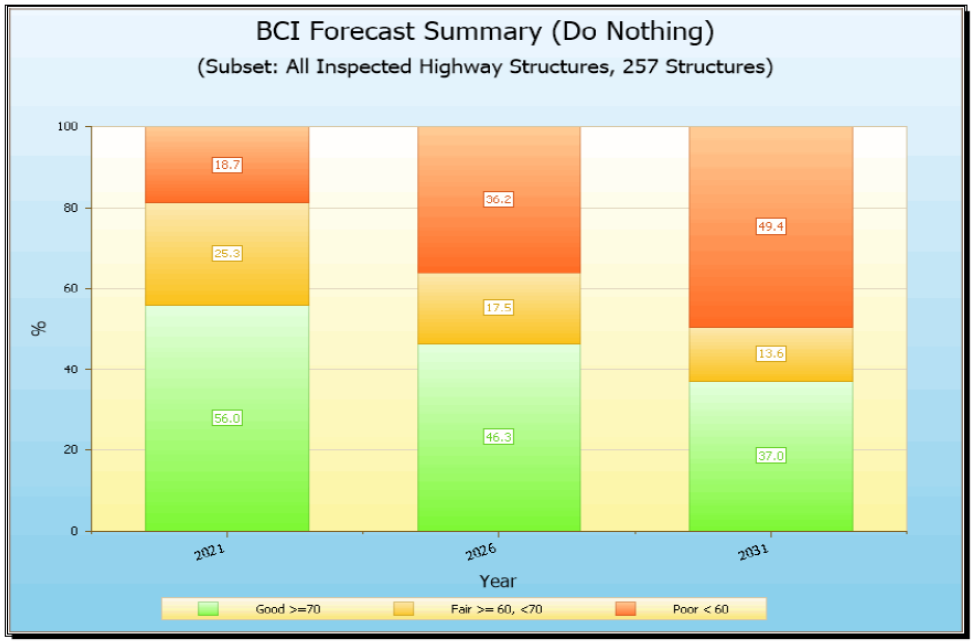
Appendix 'O'

BCI Forecast Summary All Inspected Highway Structures
Do Nothing

Department of Transportation, Infrastructure & Energy
Bridge Section

Department of Transportation, Infrastructure & Energy

BCI Forecast Summary



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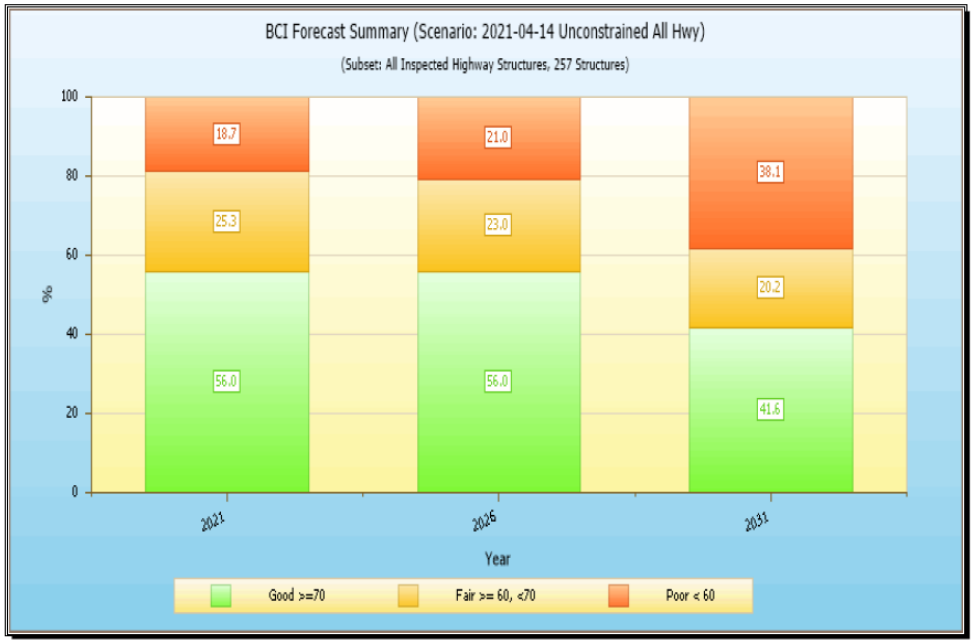
Appendix 'P'

BCI Forecast Summary All Inspected Highway Structures
Unconstrained Budget

Department of Transportation, Infrastructure & Energy

BCI Forecast Summary



Appendix 'Q'

BCI Forecast Summary All Inspected Highway Structures
Constrained Budget

Department of Transportation, Infrastructure & Energy

BCI Forecast Summary