BRIDGE INSPECTION REPORT
2024 INSPECTION YEAR




Prince Edward Island
CANADA

Transportation and Infrastructure

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 for 2027.

The department solicited expressions of interest from the local consulting community with great interest from all parties. Currently there are seven (7) local consulting firms contracted 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 2024, the department is through our ninth full cycle of major highway (266) and pedestrian and Confederation Trail structure (35) inspections. Department staff are also completed halfway through the second full round of inspections of the smaller structure inventory, which are now included in this report.

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

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.

Regarding the inventory, the department has divided the structures into categories as well as geographical zones. The categories are Major Structures and Minor Structures. The major structures are inspected by consulting teams (and one internal inspection team) and are comprised of the structures on the highway network and the Confederation Trail network. The minor structures are inspected with a separate internal inspection team.

The major structures are further divided into even year and odd year inspections (that is, biennial inspection regime) while the minor structures are broken into six inspection zones (a sexennial inspection regime) and are comprised of buried structures with a span range of 1200 mm to 3000 mm (4 ft. to 10 ft.). This is per the requirements of OSIM.

The inspections were carried out over the Summer/Fall months of 2024, and the inspection data was input into the department's 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 April 2025.

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 2024 inspection program are listed below and outlined graphically in the appendices. There are currently 301 (20%) bridge structures which have been inspected biennially over the last 18 years (nine cycles) and reported on up to and including 2024; however, 1153 small structures have been inspected in the last six years. This represents a total of 80% of the entire structure network. The 301 structures (20% of the network) represent approximately 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.

While this report focuses on the 301 structures that represent the most risk, we have included the remaining 1135 structures within the report as a baseline.

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).

At the completion of the 2024 inspections, the overall condition of the inspected highway and Confederation Trail network (301 structures) is as follows:

Condition State	Percentage of Inspected Structures
Good (BCI > 70)	58 %
Fair (60 < BCI < 70)	21 %
Poor (BCI < 60)	21 %
Average BCI	75.7

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, 266 structures) is as follows:

Condition State	Percentage of Inspected Highway Structures
Good (BCI > 70)	64 %
Fair (60 < BCI < 70)	19 %
Poor (BCI < 60)	17 %
Average BCI	77.6

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.

The BCI distribution graphs are also shown graphically in Appendices C and D for all inspected structures and all inspected highway structures respectively. These graphs indicate that there still exists a significant number of structures in the fair condition state that will transition into the poor condition state without any intervention.

For the minor structures, at the completion of the 2024 inspection schedule, the overall condition of these structures (1135) is as follows:

Condition State	Percentage of Inspected Structures
Good (BCI > 70)	61 %
Fair (60 < BCI < 70)	21 %
Poor (BCI < 60)	18 %
Average BCI	73.0

Table 3 – BCI Breakdown of Inspected Highway Structures

Graphical representation of the BCI breakdown for the minor highway structures is given in Appendix E. The BCI distribution graph is also shown graphically in Appendix F. This graph indicates a significant number of structures in the fair condition state that will transition into the poor condition state without any intervention. The effects of this distribution can be seen on the BCI and risk parameters, which will be discussed later.

For the entire network, at the completion of the 2024 inspection schedule, the overall condition of these structures (1454) is as follows:

Condition State	Percentage of Inspected Structures
Good (BCI > 70)	61 %
Fair (60 < BCI < 70)	21 %
Poor (BCI < 60)	18 %
Average BCI	73.0

Table 4 – BCI Breakdown of Inspected Highway Structures

Graphical representation of the BCI breakdown for the entire network is given in Appendix G. The BCI distribution graph is also shown graphically in Appendix H. Again, this graph indicates a significant number of structures in the fair condition state that will transition into the poor condition state without any intervention. The effects of this distribution can be seen on the BCI and risk parameters, which will be discussed later.

Our target Key Performance Indicator of an average BCI > 70 for all inspected structures has been met, as indicated in Appendices A, B, E, and G; 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 I.

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

Currently, the matrix indicates low, medium, medium–high, and high-risk categories. The matrix is shown in Appendix J for all inspected highway and confederation trail structures (301), Appendix K for all inspected highway structures (266), Appendix L for all inspected minor structures (1153), and Appendix M for all structures (1454) and are summarized in the tables below.

Network Risk Distribution – All Inspected Highway and Trail Structures 301 sites		
Risk Level	**# of Structures**	**%**
High	57	19
Medium-High	63	21
Medium	88	29.3
Low	92	30.7
Total	300	100

Table 5 – Network Risk Distribution All Inspected Structures

Network Risk Distribution – All Inspected Highway Structures 266 sites		
Risk Level	**# of Structures**	**%**
High	37	13.9
Medium-High	58	21.8
Medium	86	32.3
Low	85	32.0
Total	267	100

Table 6 – Network Risk Profile – All Inspected Highway Structures

Network Risk Distribution – All Inspected Minor Highway Structures 1135 sites		
Risk Level	**# of Structures**	**%**
High	11	1
Medium-High	71	6.2
Medium	158	13.7
Low	911	79.3
Total	1153	100

Table 7 – Network Risk Profile – All Inspected Highway Structures

Network Risk Distribution – All Inspected Structures 1454 sites		
Risk Level	**# of Structures**	**%**
High	68	4.7
Medium-High	134	9.2
Medium	246	17.0
Low	1003	69.1
Total	1451	100

Table 8 – 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. Considering this, department staff have been reviewing our five-year capital bridge construction plan to include these structures in the program. The department is also considering conducting more periodic reviews of our higher risk structures to maintain an acceptable level of safety across the network.

Condition and Risk Trends

The department has been tracking the BCI trend and risk-profile trend of the network of major structures (301) since 2011. The following table outlines the BCI Trend from 2011 through to 2024.

Note, trends for the smaller (1135) structures will be reported as inspection information permits, since this is the first instance where we are reporting condition and risk on these structures.

Network BCI Distribution (%)				
	Condition State			
Year	Good (70 < BCI)	Fair (60<BCI<70)	Poor (BCI < 60)	Average BCI
2011	35%	29%	37%	62.8
2012	32%	28%	40%	61.9
2013	37%	26%	37%	66.6
2014	40%	31%	29%	69
2015	43%	29%	28%	69.3
2016	47%	27%	26%	70.3
2017	53%	27%	20%	72.9
2018	50%	28%	22%	72.9
2019	54%	25%	21%	74
2020	50%	27%	23%	73.1
2021	52%	28%	20%	73.9
2022	54%	23%	23%	74.2
2023	54%	22%	24%	74.5
2024	58%	21%	21%	75.7

Table 9 – BCI Breakdown over Time

The above table shows that the department is making strides in the 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 N.

The following table indicates the risk profile trend over time. A graph is provided in Appendix O.

		Risk Level				
		High	Medium-High	Medium	Low	TOTAL
2011	No	28	28	53	141	250
	%	11.2	11.2	20.2	56.4	99
2012	No	79	66	65	58	268
	%	29.5	24.6	24.3	21.3	100
2013	No	74	68	61	53	256
	%	28.9	26.6	23.8	20.7	100
2014	No	68	74	62	62	266
	%	25.6	27.8	23.3	23.3	100
2015	No	63	72	64	67	266
	%	23.7	27.1	24.0	25.2	100
2016	No	45	72	64	71	252
	%	17.9	28.6	25.4	28.2	100
2017	No	54	71	79	84	288
	%	18.8	24.7	27.4	29.2	100
2018	No	58	79	76	76	289
	%	18.8	24.7	27.4	29.2	100
2019	No	56	79	77	83	295
	%	19.0	26.8	26.1	28.1	100
2020	No	54	73	79	87	293
	%	18.4	24.9	27.0	30.0	100
2021	No	50	67	87	89	293
	%	17.1	22.9	29.7	30.3	100
2022	No	54	60	91	88	293
	%	18.5	20.6	31.1	29.8	100
2023	No	59	60	87	92	298
	%	19.8	20.13	29.19	30.87	100
2024	No	57	63	88	92	301
	%	19.0	21.0	29.3	30.7	100

Table 10 – Risk Profile over Time

The risk profile trend graph in Appendix P indicates a significant jump of structures in the high-risk category from 2011 and 2012. This is due to calibration training efforts within the inspection teams 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. From 2016 and 2018, the general trend is an increase of structure in the high-risk category, which is most likely due to the number of structures that are in the "Fair" condition state moving their way into the "Poor" condition state. From 2019 to 2021, a slight decreasing trend in the high-risk category with an increasing trend in the low-risk category can be observed.

This seems to not be the case from 2021 to present, where we can see the number of structures in the high-risk category and those in the low-risk category stabilize somewhat. Again, this would most likely be attributed to the number of structures in Fair condition state slowly transitioning to Poor condition state. The department will continue to collect additional inspection information, which will determine whether this trend continues. BCI and Risk Trend Graphs are shown in Appendices O and P.

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 condition index (BCI), risk analysis (BCU) and includes 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, the department has been including a rating for SI in our latest structure records. After years of data collection and some study on the outcomes, the department has chosen a lower threshold limit of less than 65 (IE. SI < 65). This lower bound threshold seems to correlate well with the proposed five-year plan; however, currently, only the overall index results are being reported on.

The results are represented in the table below and graphically represented in Appendix P for the entire inspected highway network (367 structures) only. Table 11 below indicates that, from 2017 and 2024, the number of structures below the threshold of 65 is trending downwards. This again suggests that the funding allocation over the last few years has been moderately sufficient to decrease the overall risk to the department. Of note, this index is still in its infancy stages compared

to the other indices; therefore, only the actual numbers are reported for information purposes only. Work on calibrating this index continues and how this may be utilized in determining our capital programs.

Sufficiency Index trend graphs are shown in Appendix Q.

		Sufficiency Index		
		SI <65	65 <= SI < 80	80 < = SI
2017	No. of Structures	39	107	105
	Pcnt. Structures	15.54%	42.63%	41.83%
2018	No. of Structures	39	100	112
	Pcnt. Structures	15.54%	39.84%	44.62%
2019	No. of Structures	39	96	123
	Pcnt. Structures	15.12%	37.21%	47.67%
2020	No. of Structures	37	91	129
	Pcnt. Structures	14.40%	35.41%	50.19%
2021	No. of Structures	33	91	134
	Pcnt. Structures	12.79%	35.27%	51.94%
2022	No. of Structures	32	90	136
	Pcnt. Structures	12.40%	34.88%	52.71%
2023	No. of Structures	33	81	149
	Pcnt. Structures	12.55%	30.80%	56.65%
2024	No. of Structures	35	78	153
	Pcnt. Structures	13.16%	29.32%	57.52%

Table 11 – 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 12 below with the number of occurrences for each as of the conclusion of the 2024 inspection period.

Performance Deficiency	No. of Occurrences In 2024	No. of Occurrences In 2023	No. of Occurrences In 2022	No. of Occurrences In 2021	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	1023	1017	945	927	1002	1053	1065	990	1033
2-Excessive Deformations	51	62	55	45	74	82	94	101	86
3-Continuing Settlement	16	22	21	31	33	36	39	38	45
4-Continuing Movements	50	57	70	69	84	99	115	120	124
5-Seized Bearings	7	8	8	7	8	8	10	10	8
6-Brng. not Unif.Load/Unstbl.	23	25	18	13	10	9	14	20	20
7-Jammed Expansion Joint	9	10	12	13	12	13	11	9	9
8-Pedestrian/Vehicular Hazard	427	429	396	376	299	320	349	322	280
9-Rough Riding Surface	102	104	105	117	122	126	145	117	101
10-Surface Ponding	7	9	12	12	17	20	17	20	21
11-Deck Drainage	22	25	26	24	24	25	20	21	20
12-Slippery Surfaces	0	1	3	2	2	2	0	0	0
13-Flooding/channel Blockage	9	15	13	14	14	16	19	12	15
14-Undermining of Foundation	16	19	19	13	18	39	47	34	40
15-Unstable Embankments	43	55	61	63	72	78	98	96	77
16-Other	166	181	211	253	243	210	212	198	233
TOTAL	1971	2039	1975	1979	2034	2136	2255	2108	2112

Table 12 – Performance Deficiencies

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

Note that 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 work 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 13 identifies the various maintenance needs with associated timings.

	Now	1 Year	2 Years	No. of Occur. 2024	No. of Occur. 2023	No. of Occur. 2022	No. of Occur. 2021	No. of Occur. 2020	No. of Occur. 2019	No. of Occur. 2018	No. of Occur. 2017	No. of Occur. 2016
1-Lift/Swing Bridge Maintenance	0	0	0	0	0	0	0	0	0	0	0	0
2-Bridge Cleaning	6	28	65	99	100	101	94	94	104	117	105	82
3-Railing System Repair	131	111	381	623	632	653	676	633	560	499	370	356
4-Painting Steel Bridge Structures	1	3	58	62	72	64	77	76	67	55	51	62
5-Bridge Deck Joint Repair	1	6	12	19	22	26	23	21	21	19	22	26
6-Bridge Bearing Maintenance	1	0	5	6	13	14	8	9	16	18	12	8
7-Structural Steel Repair	2	7	28	37	31	26	27	21	14	22	24	18
8-Concrete Repair	13	52	502	567	539	490	463	458	470	475	418	301
9-Timber Repair	15	63	335	413	455	487	501	521	586	648	556	493
10-Works for Modular Bridges	0	0	0	0	0	0	0	0	0	0	0	0
11-Animal/Pest Control	1	1	5	7	8	7	5	5	4	4	6	5
12-Bridge Surface Repair	5	19	60	84	91	109	121	114	114	111	105	98
13-Erosion Control at Bridges	6	31	80	117	117	114	103	112	137	126	115	122
14-Concrete Sealing	0	0	0	0	0	0	0	0	0	5	5	2
15-Rout and Seal – Concrete and Asphalt Pavement on Bridge Decks	2	5	74	81	88	76	79	96	90	89	81	81
16-Works for Drainage system	4	6	15	25	26	23	24	19	20	17	19	23
17-Scaling (Loose Concrete or ACR Steel)	0	1	0	1	2	1	0	0	--	--	--	--
18-Other Maintenance	61	69	364	494	446	394	389	390	384	362	347	373
Totals	**249**	**402**	**1984**	**2635**	**2642**	**2585**	**2590**	**2569**	**2587**	**2567**	**2236**	**2050**

Table 13 – Maintenance Needs

As indicated above, there is a significant amount of maintenance required for timber repair, concrete repair and railing system maintenance. There is also a slight decrease in the total amount of maintenance needs required; however, these could be significantly alleviated with the addition of dedicated crews assigned to bridge maintenance, which would be specifically mandated to review and address the maintenance concerns on our structures as outlined by the inspection reports.

Table 14 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	2024 No. of Occ.	Cost	2023 No. of Occ.	Cost	2022 No. of Occ.	Cost	2021 No. of Occ.	Cost	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	13	$739,550	9	$59,550	0	$0	10	$119,320	10	$68,320	10	$50,400	15	$181,315	21	$409,315	28	$904,440
< 1 year	509	$21,693,220	504	$19,369,059	76	$2,877,959	60	$1,687,990	98	$2,496,712	96	$2,503,403	114	$2,841,498	115	$2,373,895	116	$2,639,857
1 - 5 year	455	$19,462,148	437	$16,519,596	418	$13,899,744	430	$13,651,000	465	$11,996,629	497	$10,643,022	522	$10,453,584	475	$10,974,704	463	$9,521,860
6 - 10 year	50	$1,154,800	57	$746,610	58	$914,670	61	$955,405	78	$1,330,485	74	$1,124,470	88	$1,144,029	117	$2,130,124	98	$1,810,235
None	0	$0	0	$0	6	$48,700	8	$84,700	6	$53,700	5	$19,860	4	$19,860	4	$20,200	4	$20,200
Total	1027	$43,049,718	1007	$36,694,815	558	$17,741,073	569	$16,498,415	657	$15,945,846	682	$14,341,155	743	$14,640,286	732	$15,908,238	709	$14,896,592

Table 14 – Recommended Works

The above tables indicate that there is a significant amount of work required within the next 5 years, with a significant increase in the amount of work required within the next year. This will likely trend into the Urgent category without any preventative maintenance as suggested above.

Five Year Capital Program

Based on the bridge inspections, Bridge Condition Indices and Risk Profile, the department has developed a five (5) year Capital Construction Program, which can be found in Appendix R.

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. It also takes into consideration the volume of traffic and the importance of the highway network IE. Arterials, Collectors, etc., etc..

The five-year plan includes 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 increase their service lives. These could cost in the order of $15.0 M each. Hillsborough bridge painting is included in the five-year plan.
- Some allowance for the smaller, buried structures which will undoubtedly also require additional capital expenditure.
- A very small allowance dedicated to any major rehabilitation or replacement works for any of the Confederation Trail network of structures.

The program is what the department has planned to have done over the next five years; however, it was based on an annual budget that may not be available for all of these projects listed in the plan. It is important to note that it will most likely be adjusted to reflect any future budget constraints, or any unforeseen weather events or other structural issues throughout the network that was not anticipated for.

Conclusions and Recommendations

This report outlines the need for additional funding to maintain the 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. There is 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.

BCI Forecast scenarios are included in Appendices S, T, U, V, W, X, Y, Z and AA. 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. See Table 15 below for a synopsis.

		2025	2030			2035		
		Existing BCI	Do Nothing	Constrained Budget	Unlimited Budget	Do Nothing	Constrained Budget	Unlimited Budget
All Highway and Confederation Trail Structures	% Poor	21%	34%	29%	22%	46%	36%	34%
	% Fair	21%	17%	17%	19%	12%	16%	16%
	% Good	58%	50%	54%	59%	41%	48%	49%
All Minor Structures	% Poor	18%	24%	22%	15%	33%	37%	20%
	% Fair	21%	26%	26%	26%	24%	15%	30%
	% Good	62%	50%	53%	60%	43%	48%	51%
All Structures	% Poor	18%	26%	26%	16%	36%	32%	23%
	% Fair	21%	24%	24%	24%	21%	22%	27%
	% Good	61%	50%	50%	60%	43%	46%	51%

Table 15 – BCI Forecasts

In recent years, the amount of financing has increased to the point of being reasonably sustainable; however, the predictive models require adjustment to account for increasing costs, especially considering the substantial increases in material costs post-COVID. Coupled with this are the potential impacts of US tariffs, as well as the impacts of climate change. These will be part of future work between the department and the software provider.

The following are some recommendations to be considered:

- To increase funding to a sustainable level for several years to come to reduce the department's liability and to maintain an acceptable level of serviceability for the traveling public.

- To increase the complement of internal bridge maintenance crews to 3 to address the list of maintenance needs that are currently being reported on.

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

- To increase funding for a replacement program on the Confederation Trail network to maintain the viability as a tourism destination and recreational vehicle facility. Some of these structures are well beyond their original design life and there are a few significant structures to address.

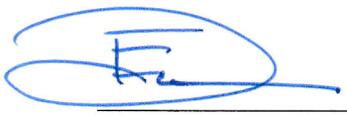
- To set aside some preservation funds for our most important structures to extend their service lives.

- 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, there are three (3) structures that are weight restricted and nine (9) that are either closed or have been removed.

In closing, the department continues to conduct routine inspections of our network of structures and will include all our smaller structures as time and budgets permit. It is understood that budgets may be further constrained, and the department will continue to work within these confines as required; however, the inspection reports indicate that there will be consequences as a result.

Respectfully Submitted.

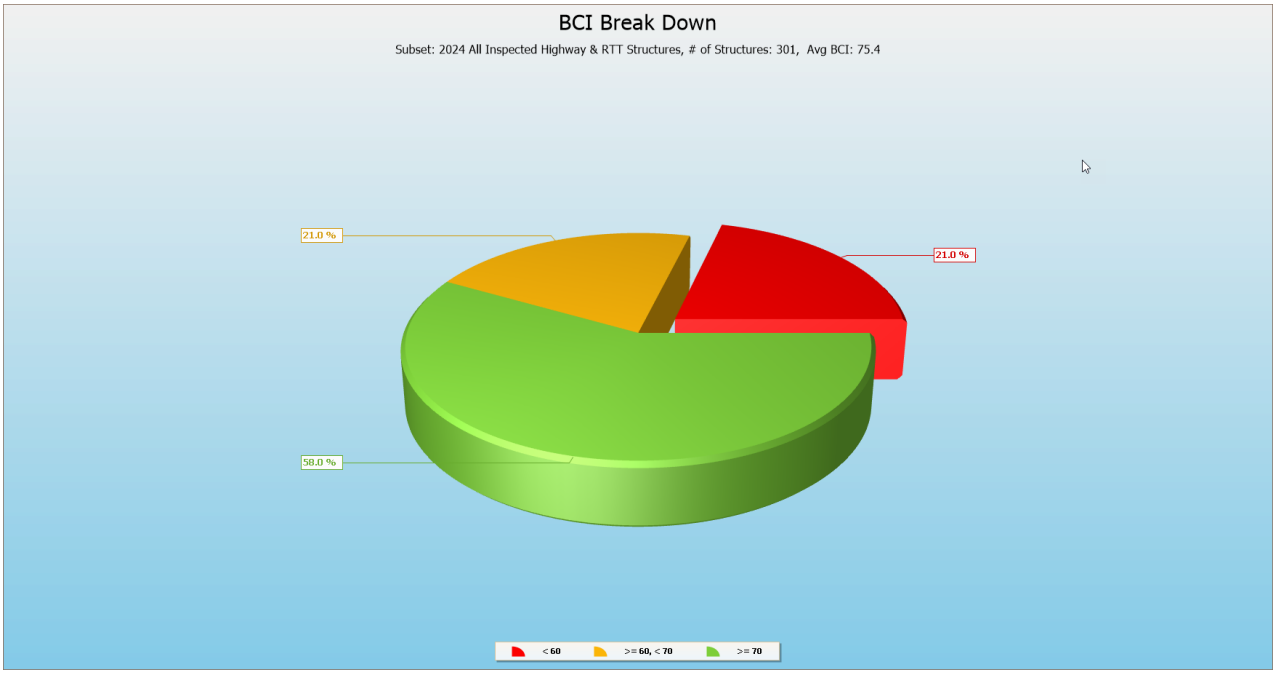


Darrell Evans, P.Eng.
A/Asst. Director
Capital Projects Div.
Transportation and Infrastructure

Date Submitted: 20, January 2026

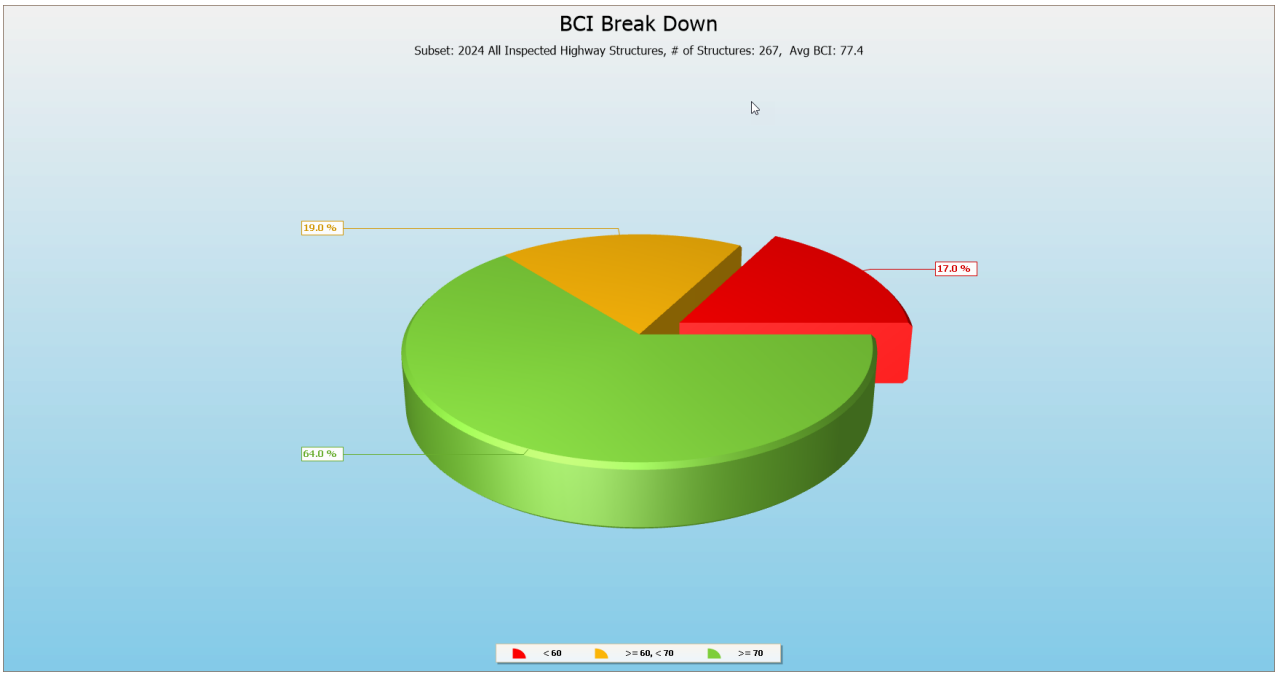
Appendix 'A'

BCI Breakdown, All Inspected Highway and Confederation Trail Structures



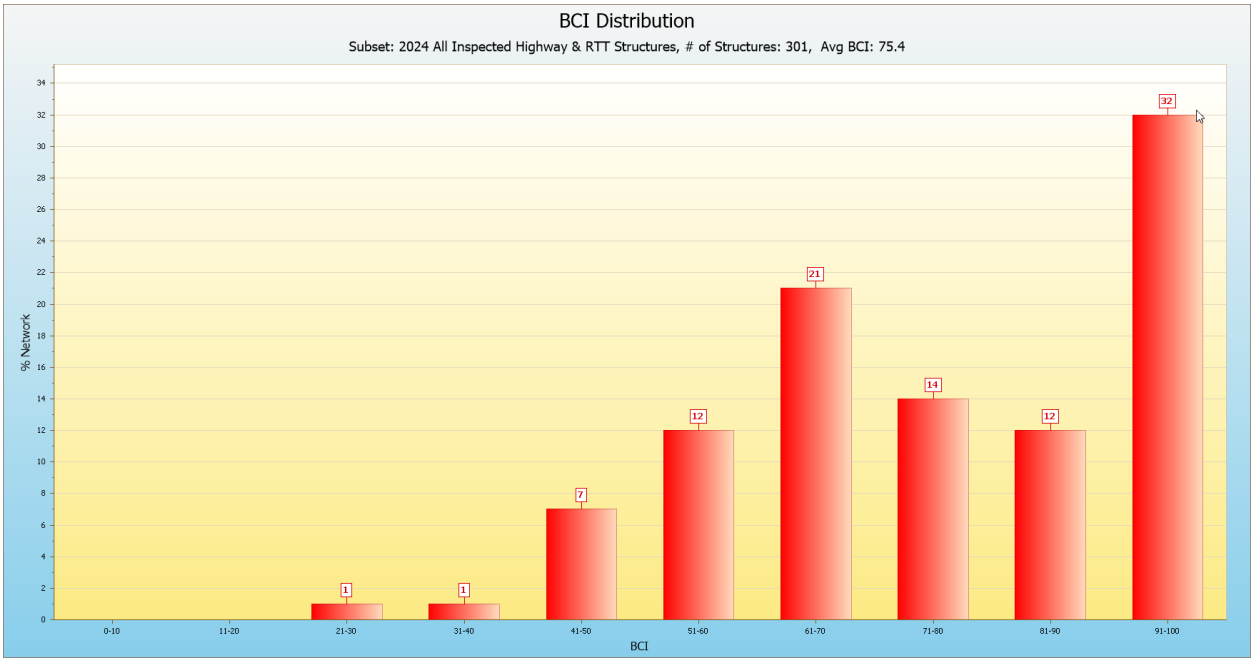
Appendix 'B'

BCI Breakdown, All Inspected Highway Structures



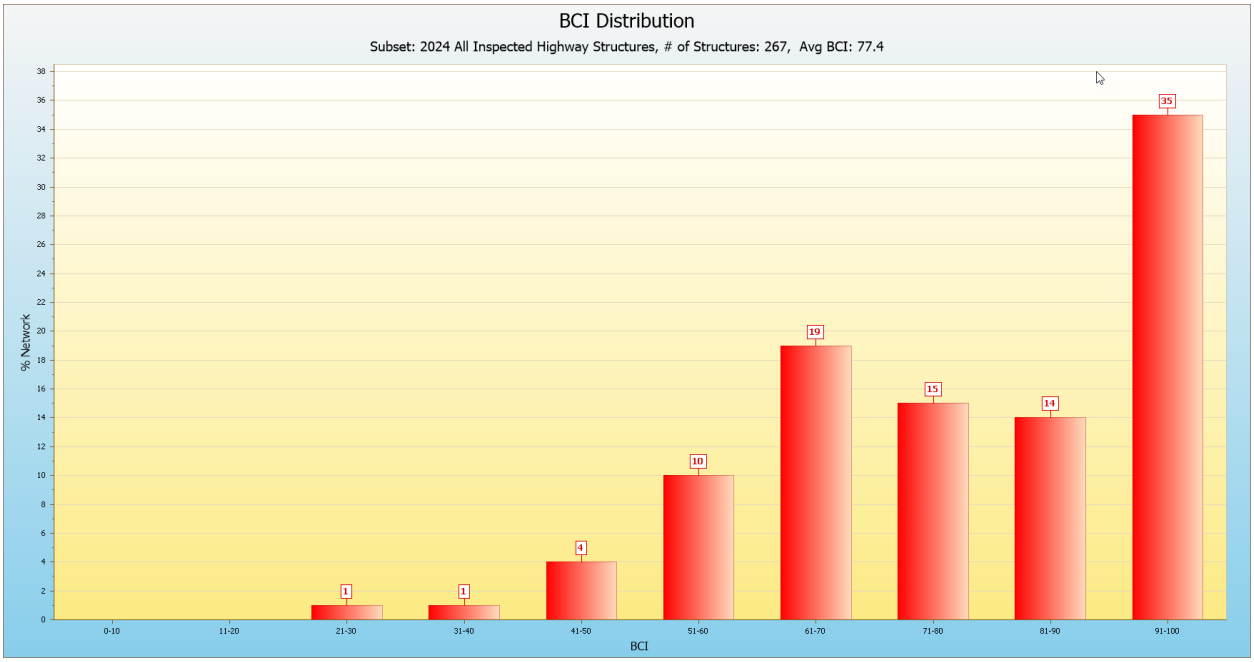
Appendix 'C'

BCI Distribution, All Inspected Highway and Confederation Trail Structures



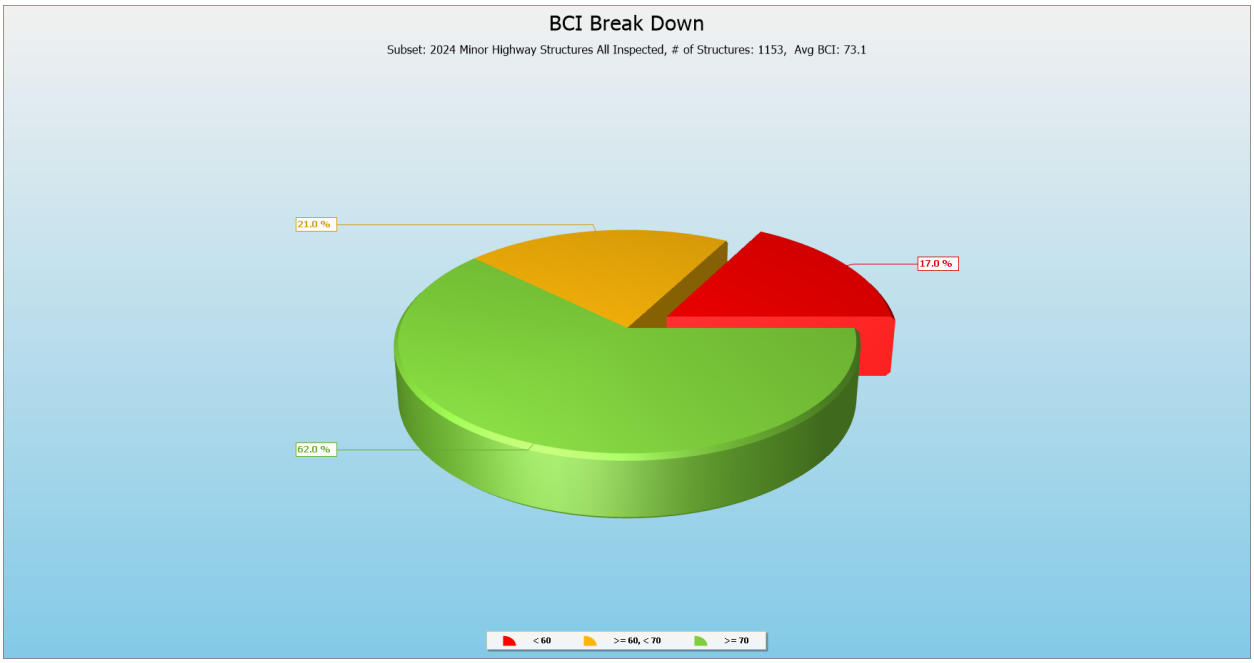
Appendix 'D'

BCI Distribution, All Inspected Highway Structures



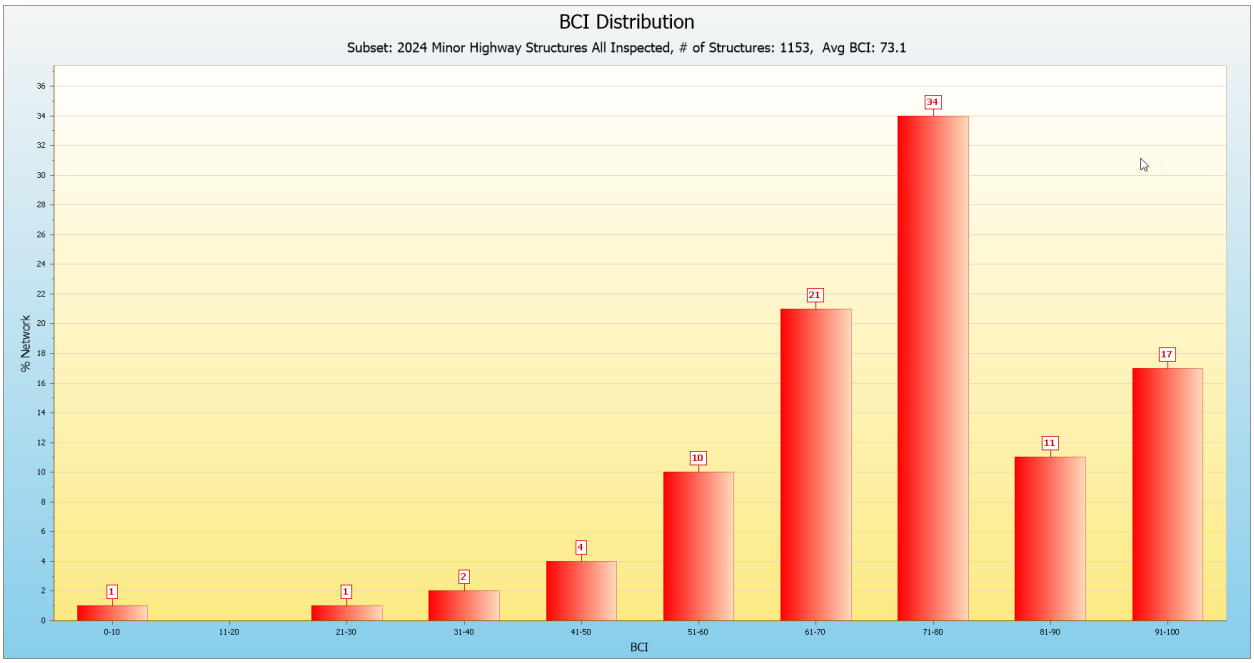
Appendix 'E'

BCI Breakdown, All Minor Structures



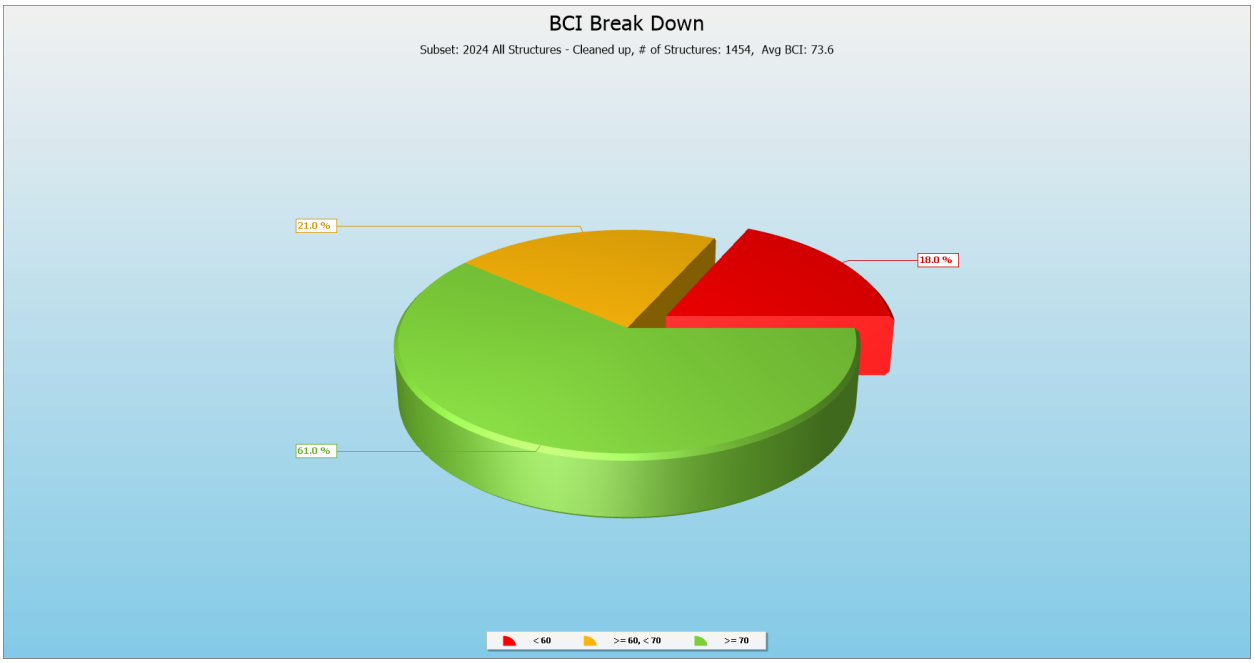
Appendix 'F'

BCI Distribution, All Minor Structures



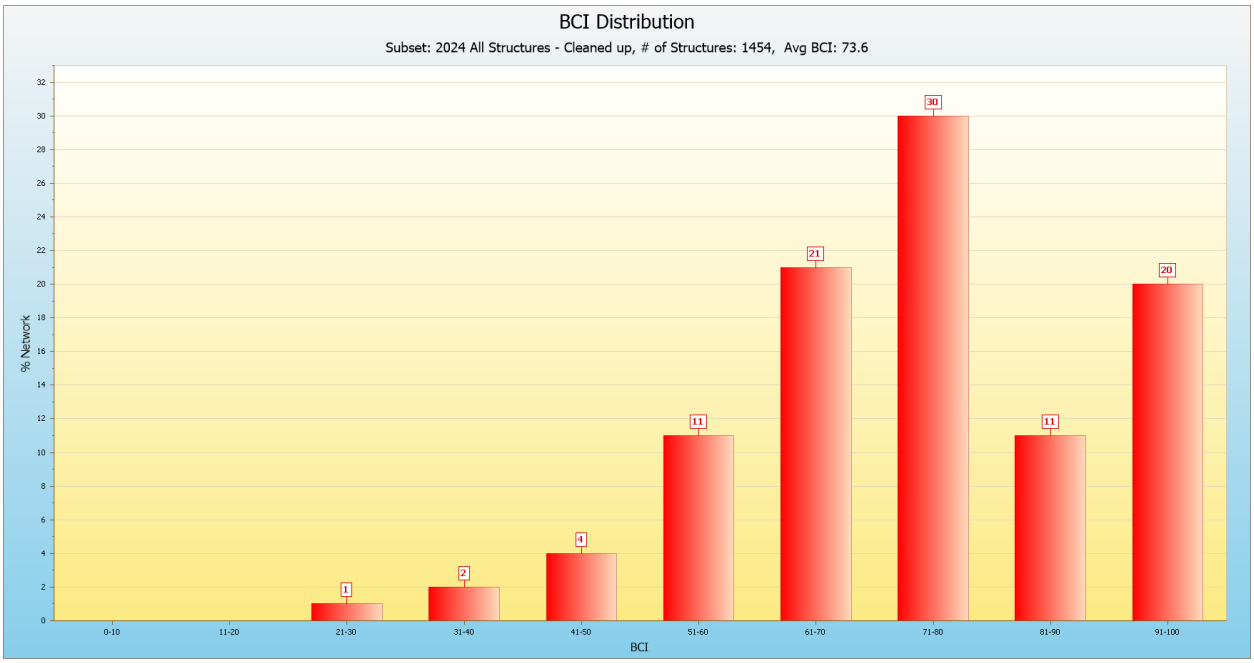
Appendix 'G'

BCI Breakdown, All Structures



Appendix 'H'

BCI Distribution, All Structures



Appendix 'I'

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.

---

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 'J'

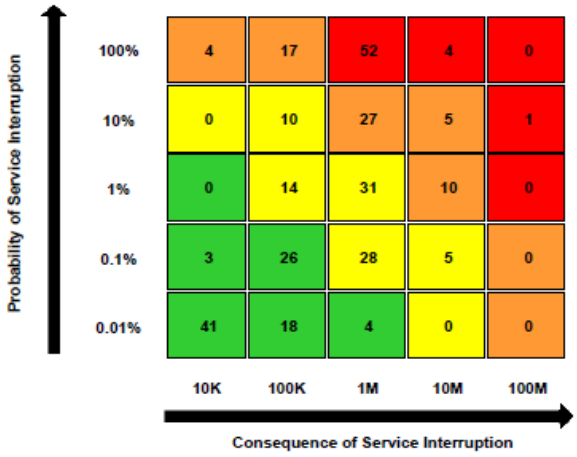
Network Risk Profile, All Inspected Highway and Confederation Trail Structures

Department of Transportation, Infrastructure & Energy

Network Risk Profile

Databases	BMS_PEI_Master_20250402.accdb	**Total Number of Structures**	301
Subset	2024 All Inspected Highway & RTT Structures		
User	peitir1		

Number of Structures in Each Risk Category

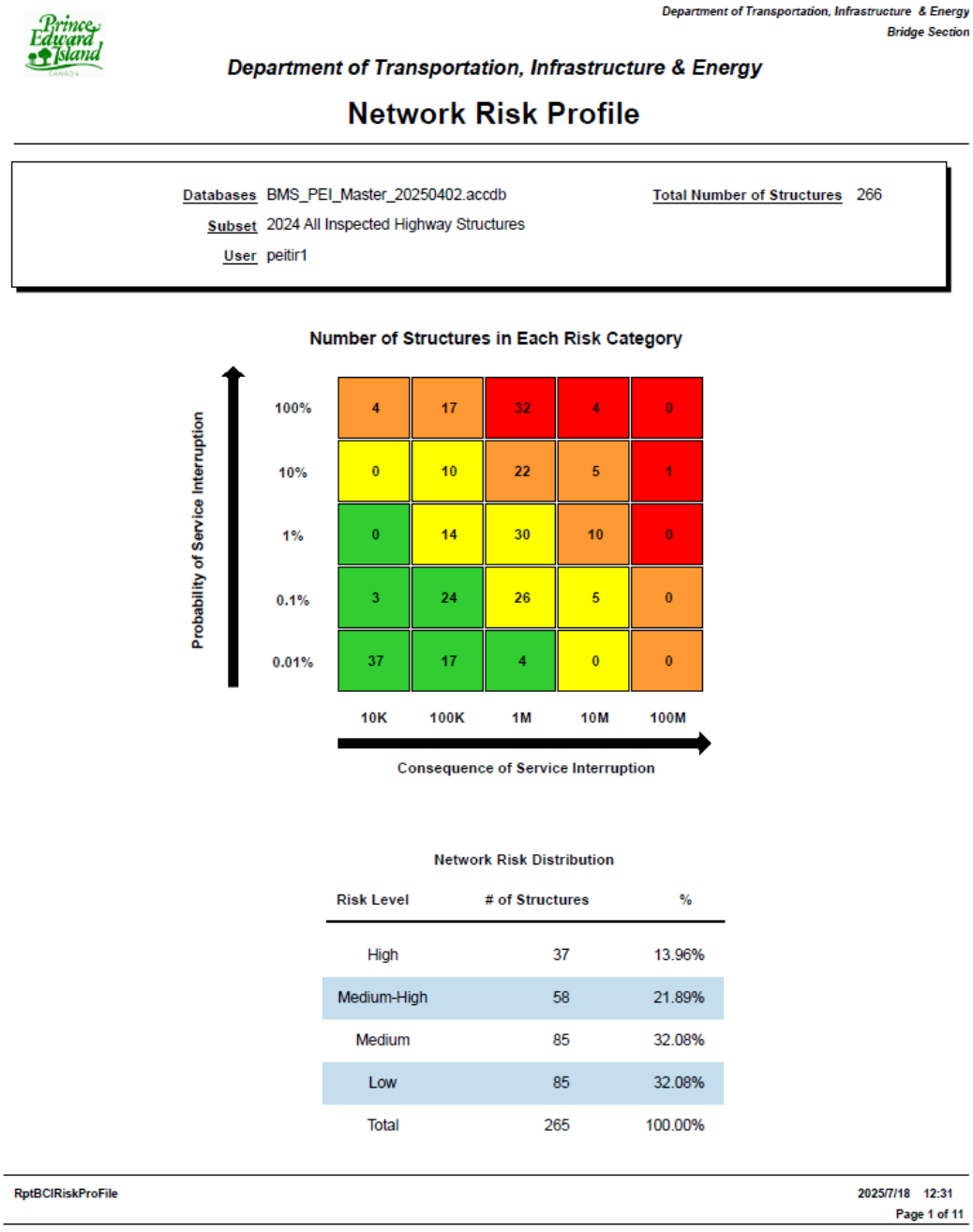


Network Risk Distribution

Risk Level	# of Structures	%
High	57	19.00%
Medium-High	63	21.00%
Medium	88	29.33%
Low	92	30.67%
Total	300	100.00%

Appendix 'K'

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_20250402.accdb
Subset 2024 All Inspected Highway Structures
User peitir1

Total Number of Structures 266

Number of Structures in Each Risk Category

Probability of Service Interruption	10K	100K	1M	10M	100M
100%	4	17	32	4	0
10%	0	10	22	5	1
1%	0	14	30	10	0
0.1%	3	24	26	5	0
0.01%	37	17	4	0	0

Consequence of Service Interruption

Network Risk Distribution

Risk Level	# of Structures	%
High	37	13.96%
Medium-High	58	21.89%
Medium	85	32.08%
Low	85	32.08%
Total	265	100.00%

RptBCIRiskProFile 2025/7/18 12:31
Page 1 of 11

Appendix 'L'

Network Risk Profile, All Inspected Minor Structures

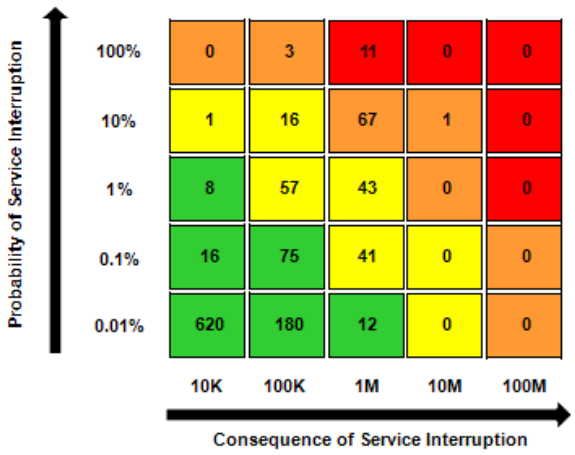
Department of Transportation, Infrastructure & Energy
Bridge Section

Department of Transportation, Infrastructure & Energy

Network Risk Profile

Databases BMS_PEI_Master_20250402.accdb
Subset 2024 Minor Highway Structures All Inspected
User peitir1
Total Number of Structures 1,153

Number of Structures in Each Risk Category



Network Risk Distribution

Risk Level	# of Structures	%
High	11	0.96%
Medium-High	71	6.17%
Medium	158	13.73%
Low	911	79.15%
Total	1,151	100.00%

RptBCIRiskProFile 2025/6/2 14:16
Page 1 of 39

Appendix 'M'

Network Risk Profile, All Inspected Structures

Department of Transportation, Infrastructure & Energy
Bridge Section

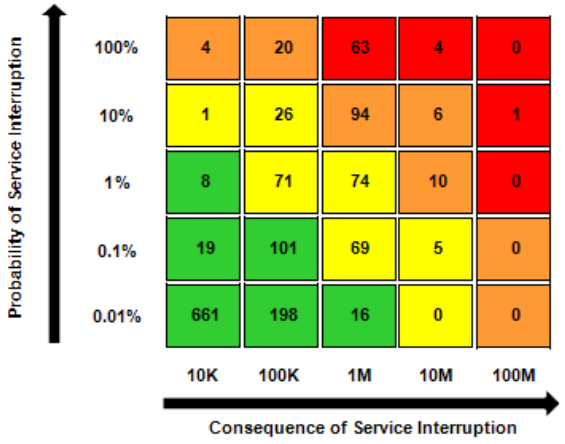
Department of Transportation, Infrastructure & Energy

Network Risk Profile

Databases BMS_PEI_Master_20250402.accdb
Subset 2024 All Structures - Cleaned up
User peitir1

Total Number of Structures 1,454

Number of Structures in Each Risk Category



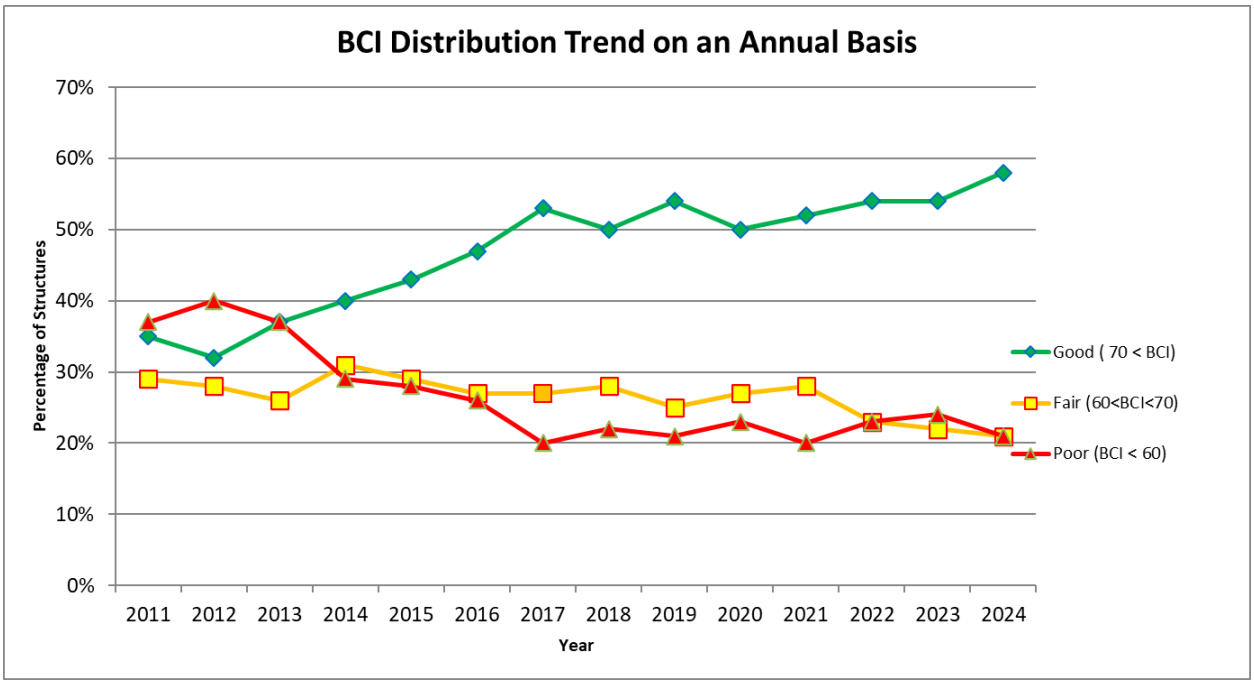
Network Risk Distribution

Risk Level	# of Structures	%
High	68	4.69%
Medium-High	134	9.24%
Medium	246	16.95%
Low	1,003	69.12%
Total	1,451	100.00%

RptBCIRiskProFile 2025/6/2 14:30
Page 1 of 48

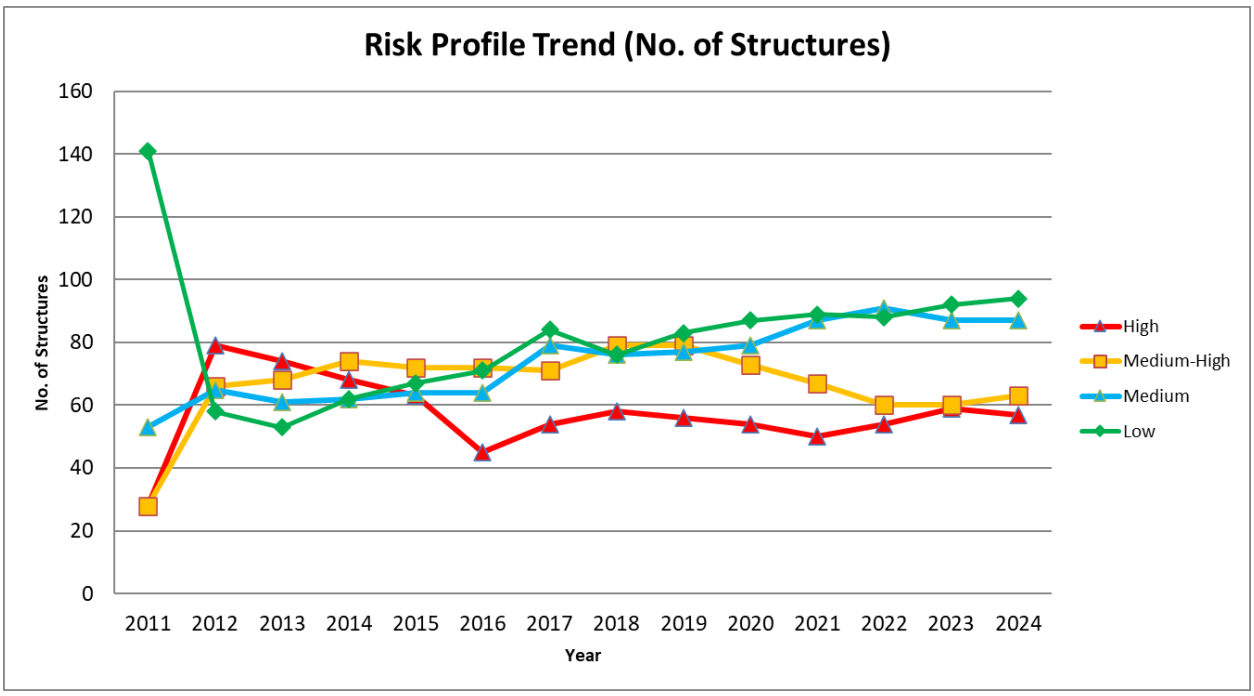
Appendix 'N'

BCI Trend Graph over Time – All Inspected Highway and Confederation Trail Structures



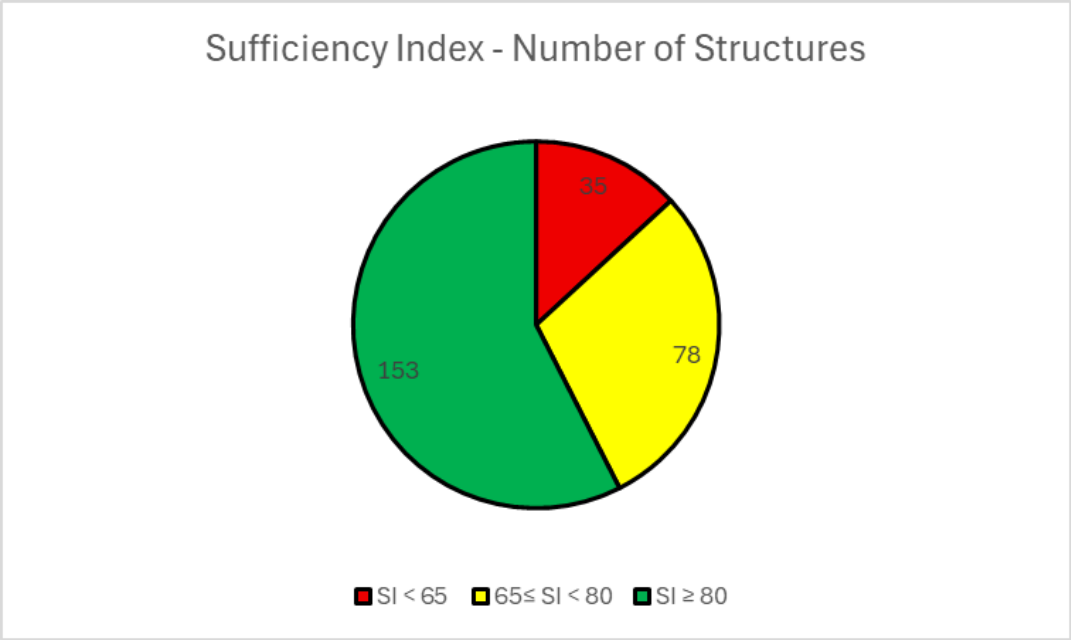
Appendix 'O'

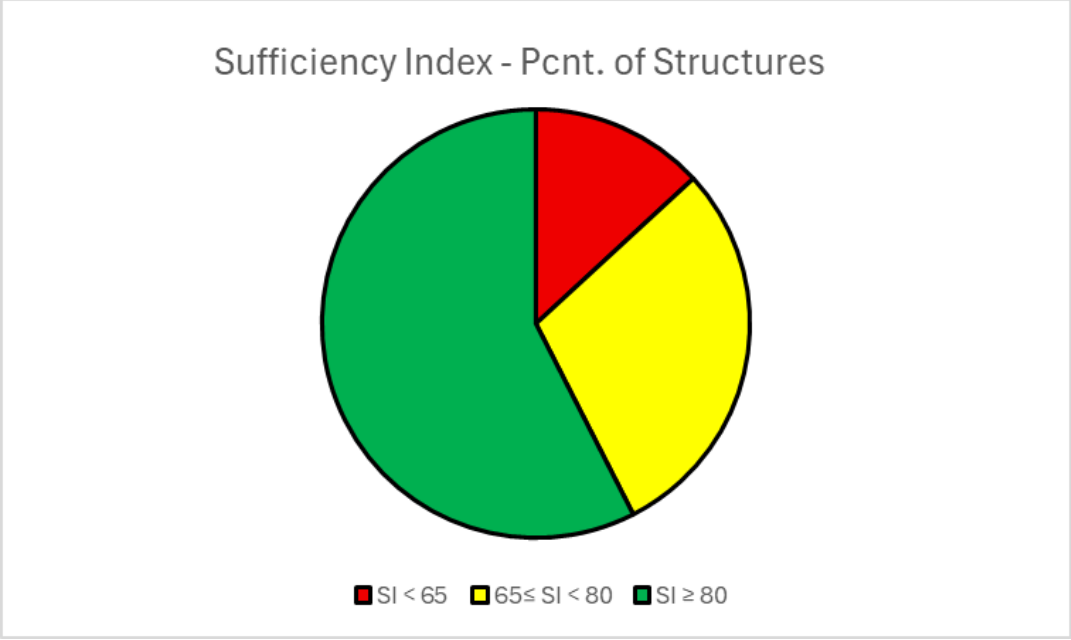
Risk Profile Trend Table Over Time– All Inspected Highway and Confederation Trail Structures



Appendix 'P'

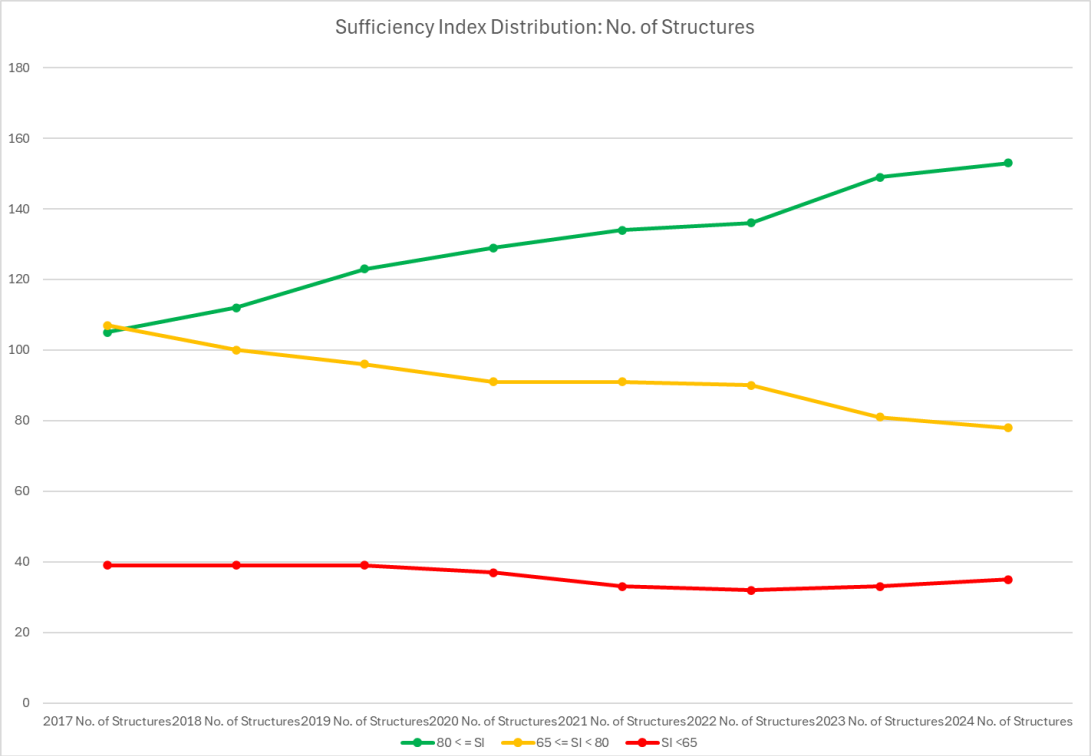
Structure Sufficiency Index (SI) Breakdown – All Highway Structures

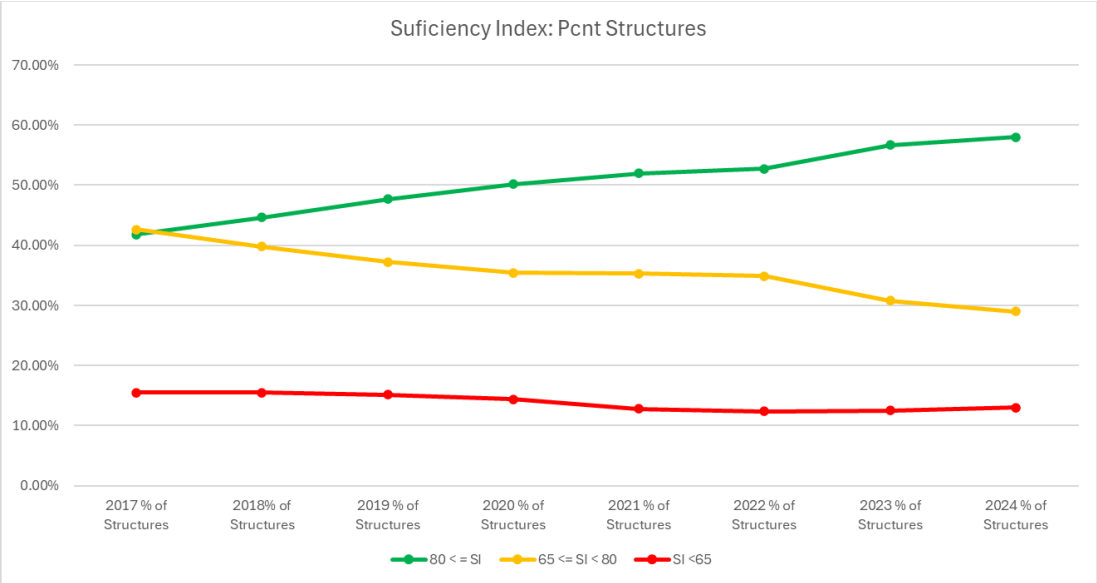




Appendix 'Q'

Structure Sufficiency Index (SI) Trends – All Highway Structures





Appendix 'R'

Five Year Capital Bridge Program

2026/27 Bridge Projects

Region	Bridge ID	Project Name	District No.	Route/ Section	Description of Work
West	AP-074	Rosebank	26	14901	Replacement
West	AP-080	Central Kildare	26	01214	Replacement
West	AQ-095	Green Road	17	Maint. ID 50120	Replacement
East	K3-032	County Line Road - Head of Montaque	2	32503	Replacement
East	Q4-012	Little Sands	4	00409	Replacement
West	P1-019	Mill River East	26	14501	Replacement
West	P2-016	Bideford Bridge	23	01207	Replacement
West	P2-029	Alaska Bridge	24	13801	Replacement
West	P2-046	Portage Bridge	25	00219	Relining
West	P2-064	Foxley River Bridge	25	01209	Replacement
West	P4-005	Cape Traverse Bridge	19	01001	Replacement
West	Q1-005	Emyvale	17	23702	Replacement
West	Q1-060	Springbrook	20	02003	Replacement
West	Q1-071	Simpson Mill Road	18	Maint. ID 50325	Replacement
East	Q3-030	Donagh	7	25701	Replacement
East	Q3-037	Auburn	7	25502	Replacement
East	Q5-009	Hillsborough Bridge	6	00111	Pier Repairs
East	AK-014	Annandale	2	Maint. ID 60005	Replacement
East	AQ-052	Blooming Point	8	21802	Replacement
East	AQ-054	Tracadie Cross	8	00206	Replacement
East	K3-060	Upton Bridge	2	33902	Replacement
West	P2-060	Coleman Corner Bridge	25	00217	Replacement

2027/28 Bridge Projects

Region	Bridge ID	Project Name	District No.	Route/ Section	Description of Work
West	AK-017	East Baltic (P. 46, L-16)	1	30401	Replacement
West	AP-091	Carleton Siding P 20, H-7	19	Unknown	Replacement
West	AQ-043	Sea View (P. 17, K-14)	20	02002	Replacement
East	K1-037	Basin Head	1	Maint. ID 60011	Replacement
East	K2-026	Peakes Road	7	32001	Replacement
East	K2-030	Peakes Bridge	7	32302	Replacement
East	K2-039	Peakes Road	7	32001	Replacement
East	K3-027	Mellish Pond Bridge	2	Maint. ID 60182	Replacement
East	K3-038	Sorrey Bridge	3	35301	Replacement
West	P1-018	Meggison's Creek Bridge	26	14501	Replacement
West	P2-027	Brae Bridge	25	13801	Replacement
West	P2-034	Sheep River Bridge	25	13501	Replacement
West	P2-035	Ox River Bridge	25	01102	Replacement
West	P2-039	Enmore Bridge	25	Maint. ID 40127	Replacement
West	P3-031	Egmont Bay Bridge	24	01105	Replacement
West	P3-040	Rennies Road Bridge	24	Maint. ID 40367	Replacement
West	P4-001	Tryon Bridge	19	01001	Replacement
East	Q5-009	Hillsborough Bridge	6	00111	Structural Coating

2028/29 Bridge Projects

Region	Bridge ID	Project Name	District	Route/ Section	Description of Work
West	P4-076	Emerald Bridge	19	Maint. ID 40517	Replacement
West	Q1-063	Breadalbane Bridge	18	24604	Replacement
East	Q4-007	Wood Islands	4	31501	Replacement
West	Q1-061	New London Bridge	20	02003	Replacement
East	K-0003	Marie RTT Bridge	3	Confed. Trail	Replacement
West	AP-071	Burton P 2, I-7	25	Maint. ID 40416	Replacement
East	K2-017	Bangor Bridge	7	Maint. ID 60114	Replacement
East	K3-047	Peakes Road	2	32001	Replacement
East	K3-068	Knox's Dam Bridge	2	32004	Replacement
East	K3-074	Brudenell Park	2	Maint. ID 60024	Replacement
West	P1-035	Myrick's	27	01215	Replacement
West	P1-038	Kildare Capes	27	01215	Replacement
West	P1-040	Steel Bridge	27	15301	Replacement
West	P1-136	Adams Road Bridge	25	Maint. ID 40001	Replacement
West	P2-053	Canadian Creek Bridge	25	16802	Replacement
West	P2-058	Hebron	25	16401	Replacement
West	P2-069	Hebron Bridge	25	16401	Replacement
West	P2-095	Burton	25	14401	Replacement
West	P3-018	Cross River Bridge	23	13101	Replacement
West	P3-022	Southwest Lot 16	23	01203	Replacement

2029/30 Bridge Projects

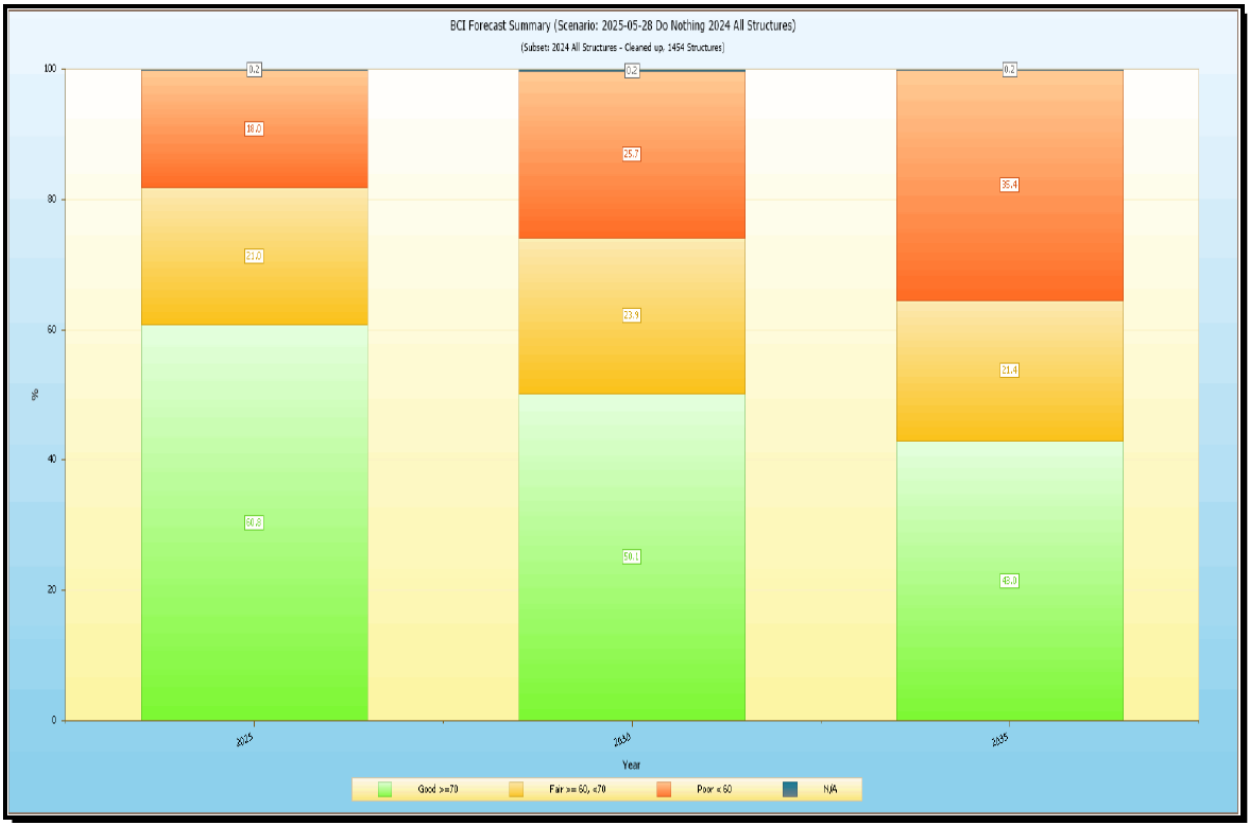
Region	Bridge ID	Project Name	District No.	Route/ Section	Description of Work
West	P3-029	Haldimand's Bridge	24	01106	Replacement
West	P4-042	Schurman Point Road Bridge	19	Maint. ID 40383	Replacement
West	P4-055	Tryon Bridge	19	11603	Replacement
West	P4-098	Kinkora Bridge	19	Maint. ID 41288	Replacement
West	Q1-074	Riverdale	17	Maint. ID 50027	Replacement
West	Q1-089	Old Mill Road Bridge	17	Maint. ID 50365	Replacement
West	Q2-038	Springvale	15	00211	Replacement
West	Q2-052	Church Road Bridge	17	Maint. ID 50368	Replacement
East	Q3-044	Point DeRoche	8	Maint. ID 50181	Replacement
East	Q4-004	Belle River Bridge	4	00116	Deck Replacement
East	Q4-060	Munn's Road Belle River	4	Maint. ID 50236	Replacement
West	AK-009	Riverton (P. 35, K-10)	7	Maint. ID 60194	Replacement
East	K1-026	Hermanville / Rock Barra	1	30501	Replacement
East	K1-045	Lakeville	1	01603	Replacement
East	K1-053	New Harmony	1	30302	Replacement
East	K2-003	Goose River	2	01605	Replacement
East	K2-038	Five Houses	2	Maint. ID 60187	Replacement
East	K4-043	Peter's Road	4	Maint. ID 60092	Replacement
East	K5-013	Eglington	1	33201	Replacement
West	P1-041	St. Felix Bridge	27	15301	Replacement
West	P1-049	Green Bridge	26	01403	Replacement

2030/31 Bridge Projects

Region	Bridge ID	Project Name	District No.	Route/ Section	Description of Work
West	P1-090	Rix Rd. Bridge	26	Maint. ID 40373	Replacement
West	P1-094	Roseville	26	01403	Replacement
West	P1-108	Tignish Harbour	27	Maint. ID 40208	Replacement
West	P1-138	Wedge Road Bridge	26	Maint. ID 40487	Replacement
West	P3-028	Mont Carmel Bridge	24	01106	Replacement
West	P3-032	Egmont Bay Bridge	24	12601	Replacement
West	P4-038	Norboro Bridge	19	Maint. ID 40514	Replacement
West	Q1-020	Stanley Bridge	18	00610	Replacement
West	Q1-053	Old Town Rd. Bridge	17	Maint. ID 40529	Replacement
West	Q1-094	Clyde Road	18	Maint. ID 50067	Replacement
West	Q2-089	New Dominion	17	01904	Deck Replacement
East	Q4-040	Pownal	5	02603	Replacement
West	Q-0004	North River 2 RTT Bridge	15	Confed. Trail	Replacement
West	P-0007	Ellerslie	23	Confed. Trail	Replacement
West	P-0014	Wilmot	19	Confed. Trail	Replacement
West	P-0008	Hayes	23	Confed. Trail	Replacement

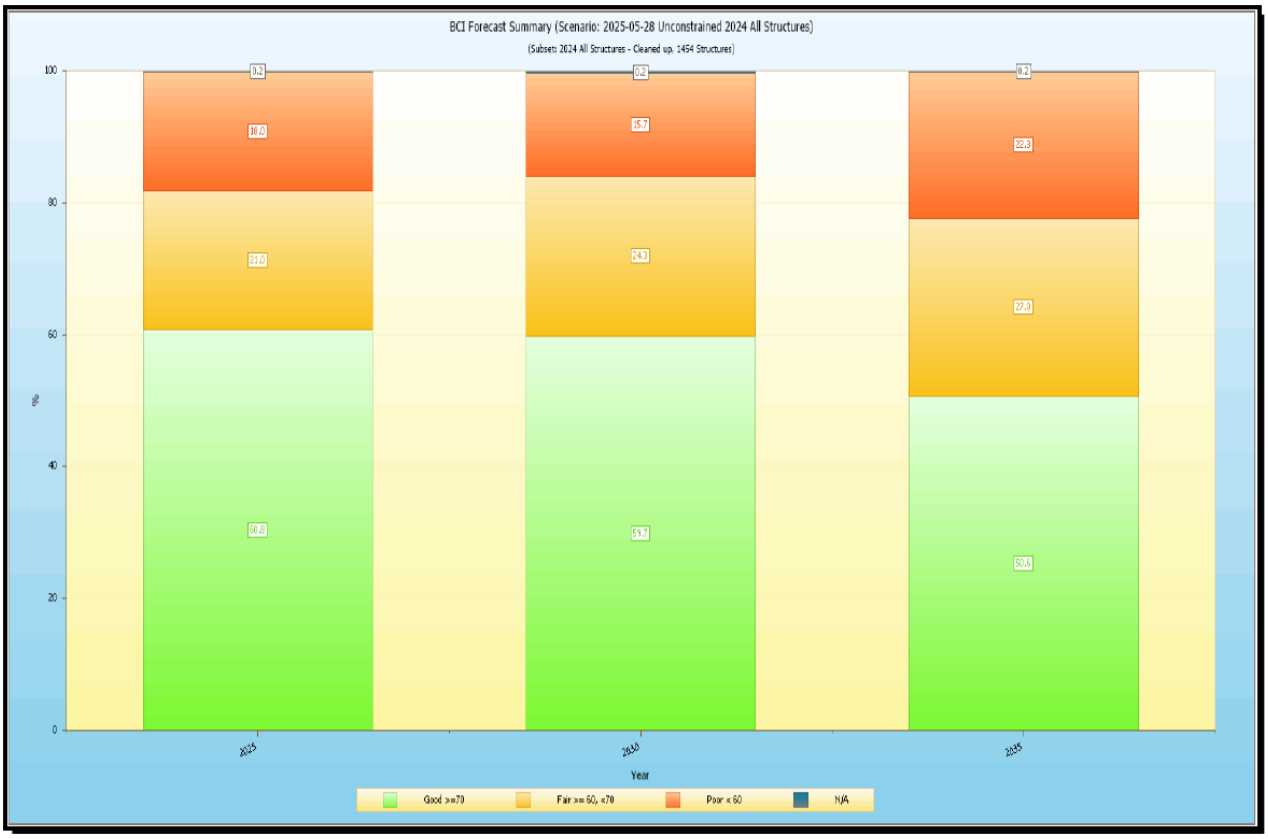
Appendix 'S'

BCI Forecast Summary All Inspected Structures
Do Nothing



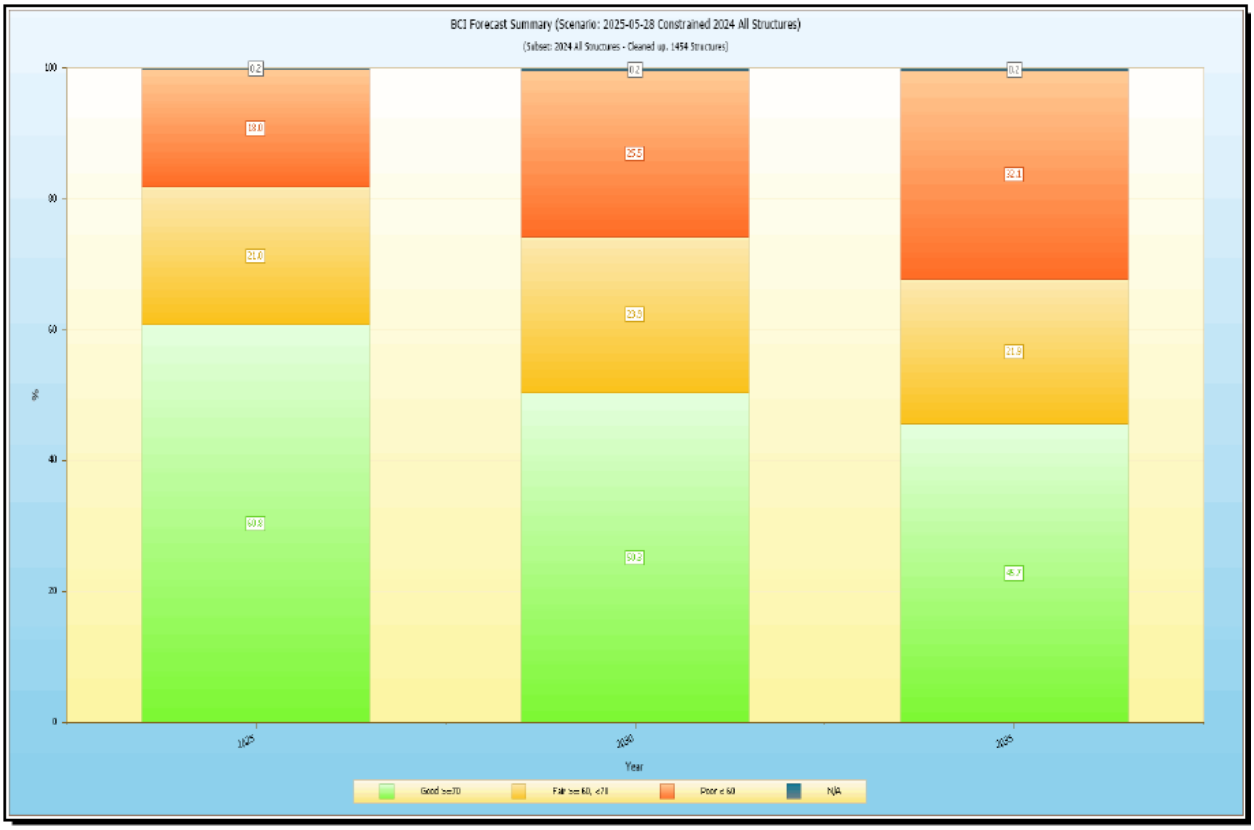
Appendix 'T'

BCI Forecast Summary All Inspected Structures
Unconstrained Budget



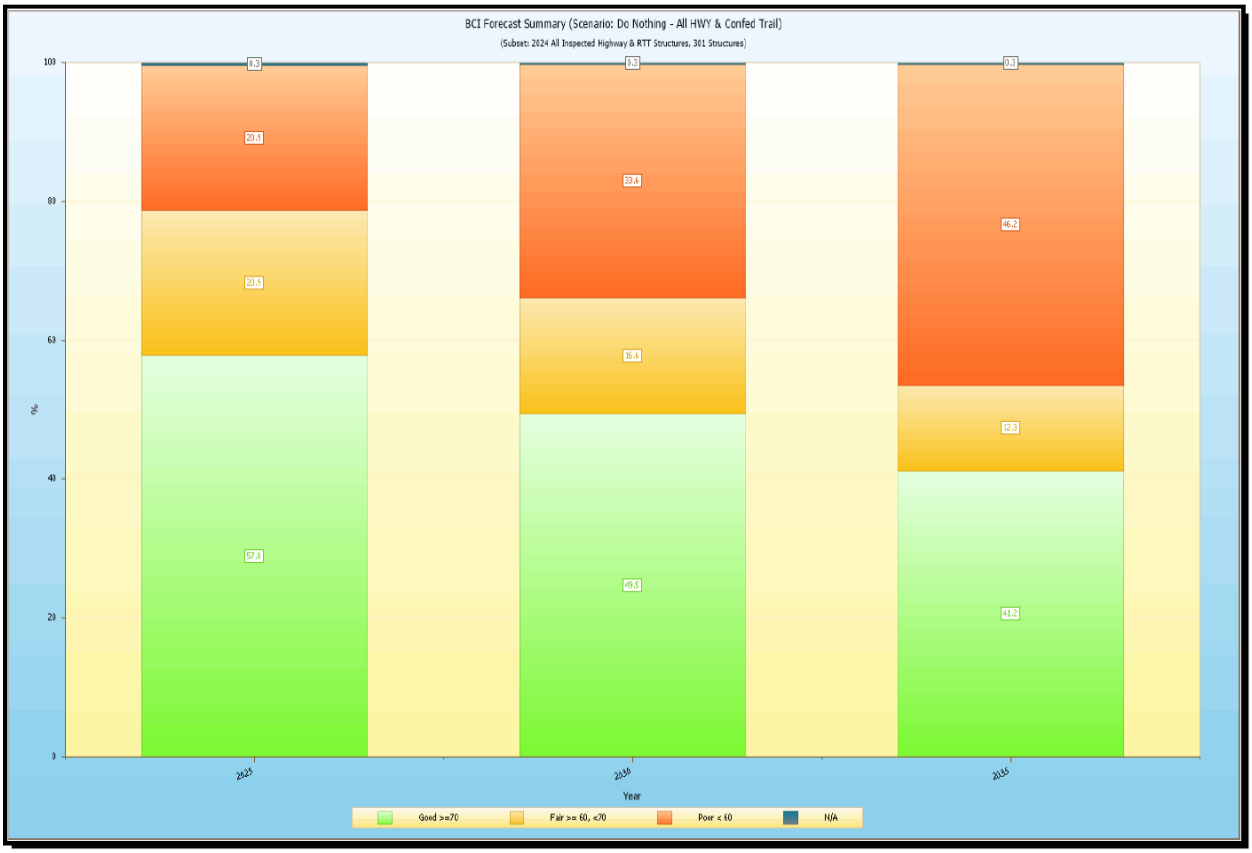
Appendix 'U'

BCI Forecast Summary All Inspected Structures
Constrained Budget



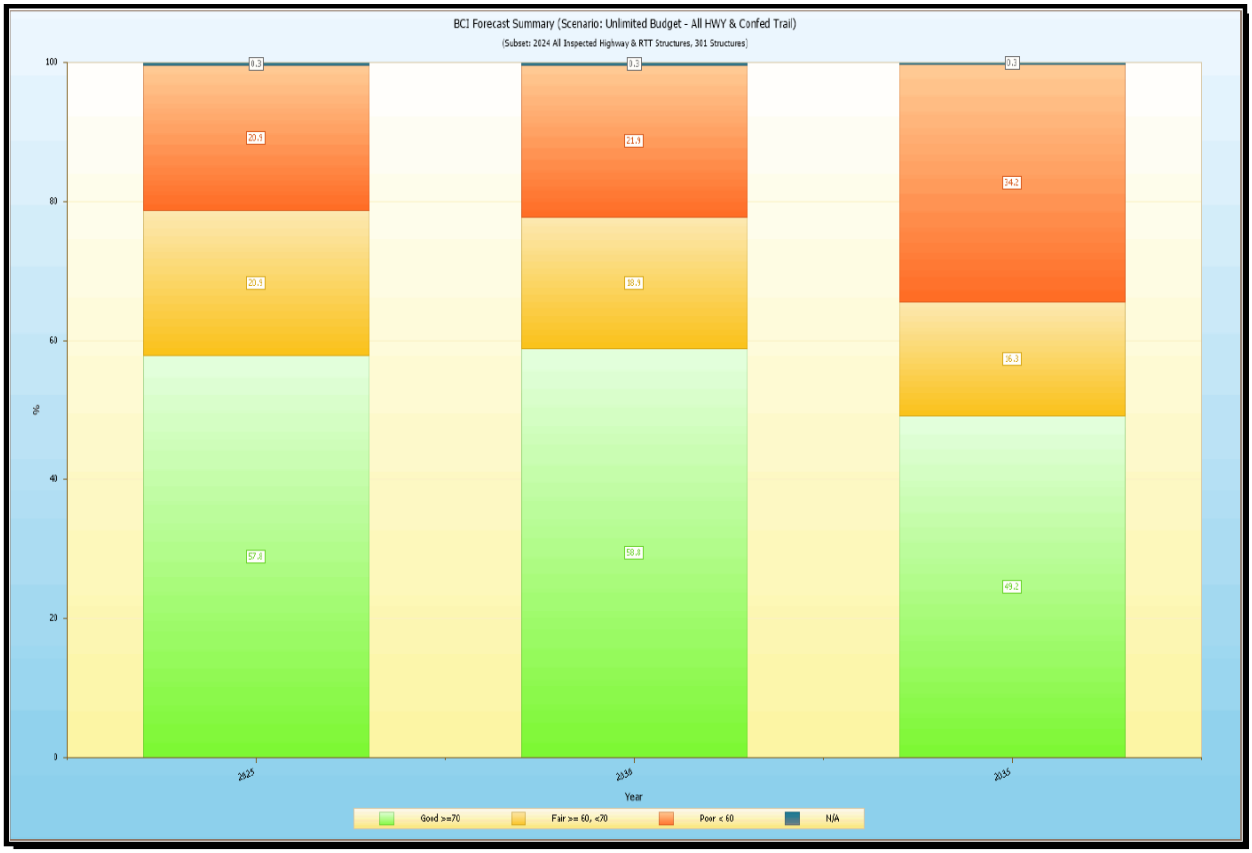
Appendix 'V'

BCI Forecast Summary All Inspected Highway and Confederation Trail Structures - Do Nothing



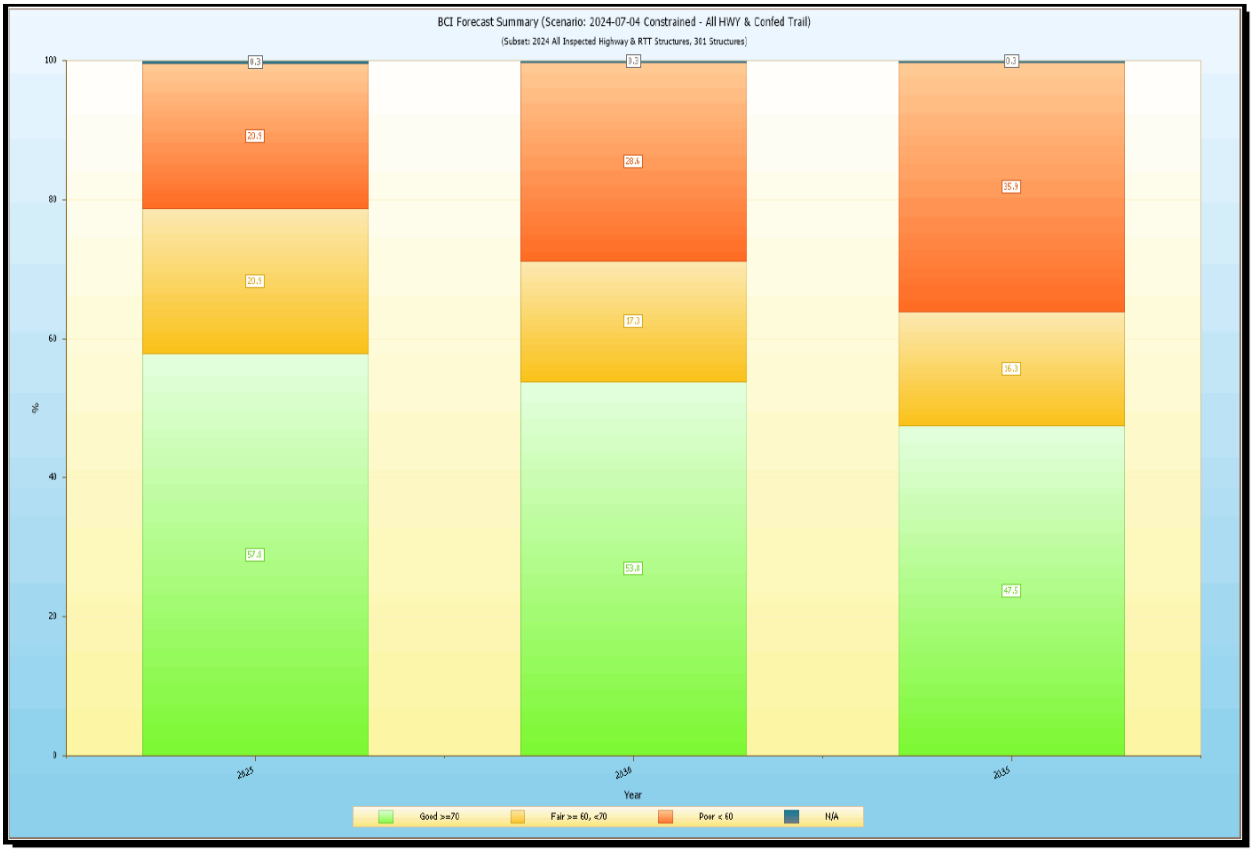
Appendix 'W'

BCI Forecast Summary All Inspected Highway and Confederation Trail Structures - Unconstrained Budget



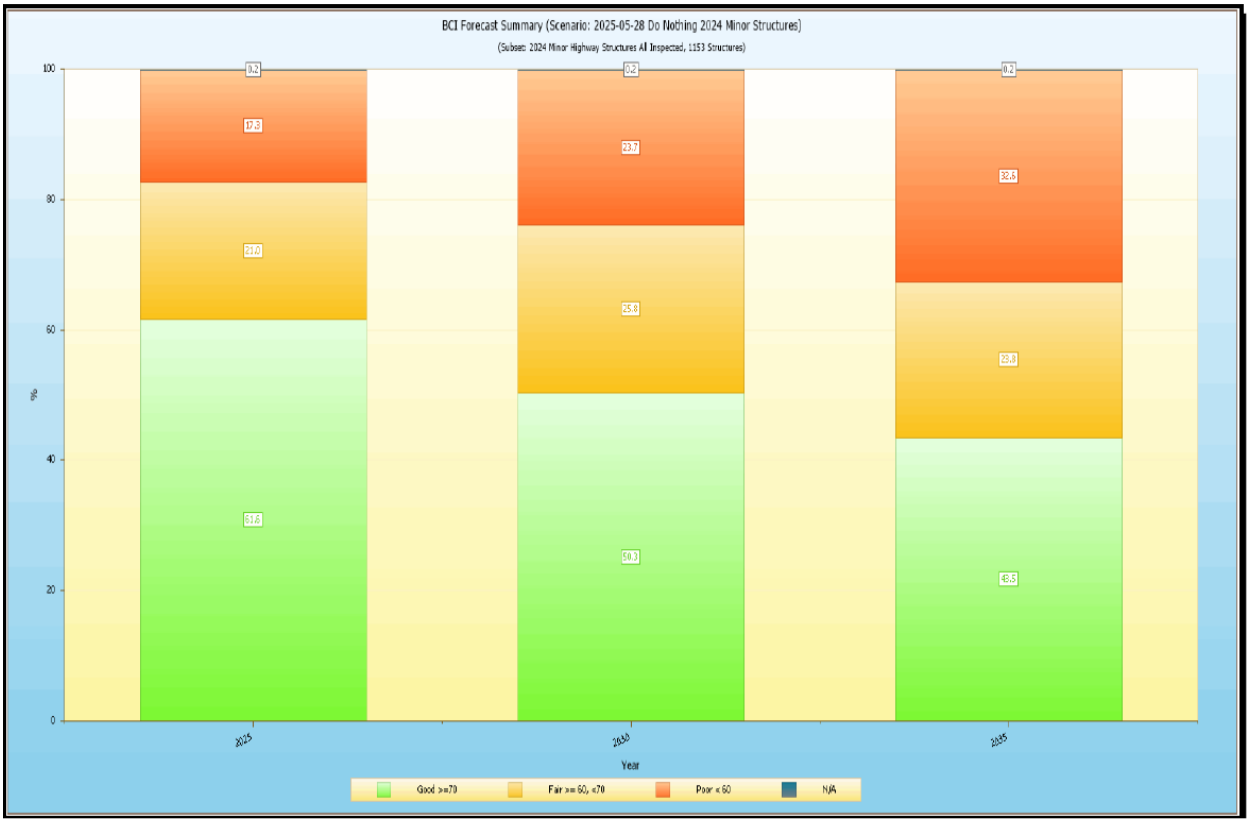
Appendix 'X'

BCI Forecast Summary All Inspected Highway and Confederation Trail Structures - Constrained Budget



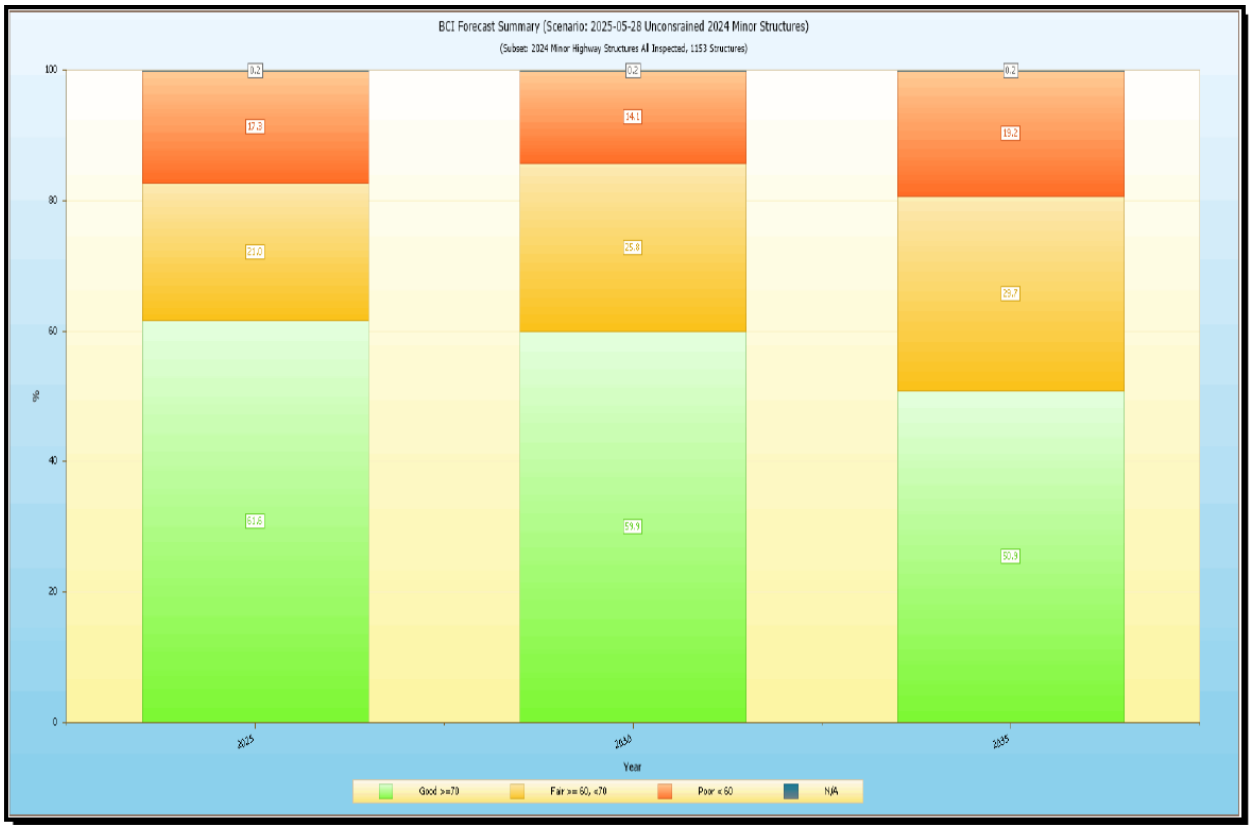
Appendix 'Y'

BCI Forecast Summary All Inspected Minor Structures
Do Nothing



Appendix 'Z'

BCI Forecast Summary All Inspected Minor Structures
Unconstrained Budget



Appendix 'AA'

BCI Forecast Summary All Inspected Minor Structures
Constrained Budget