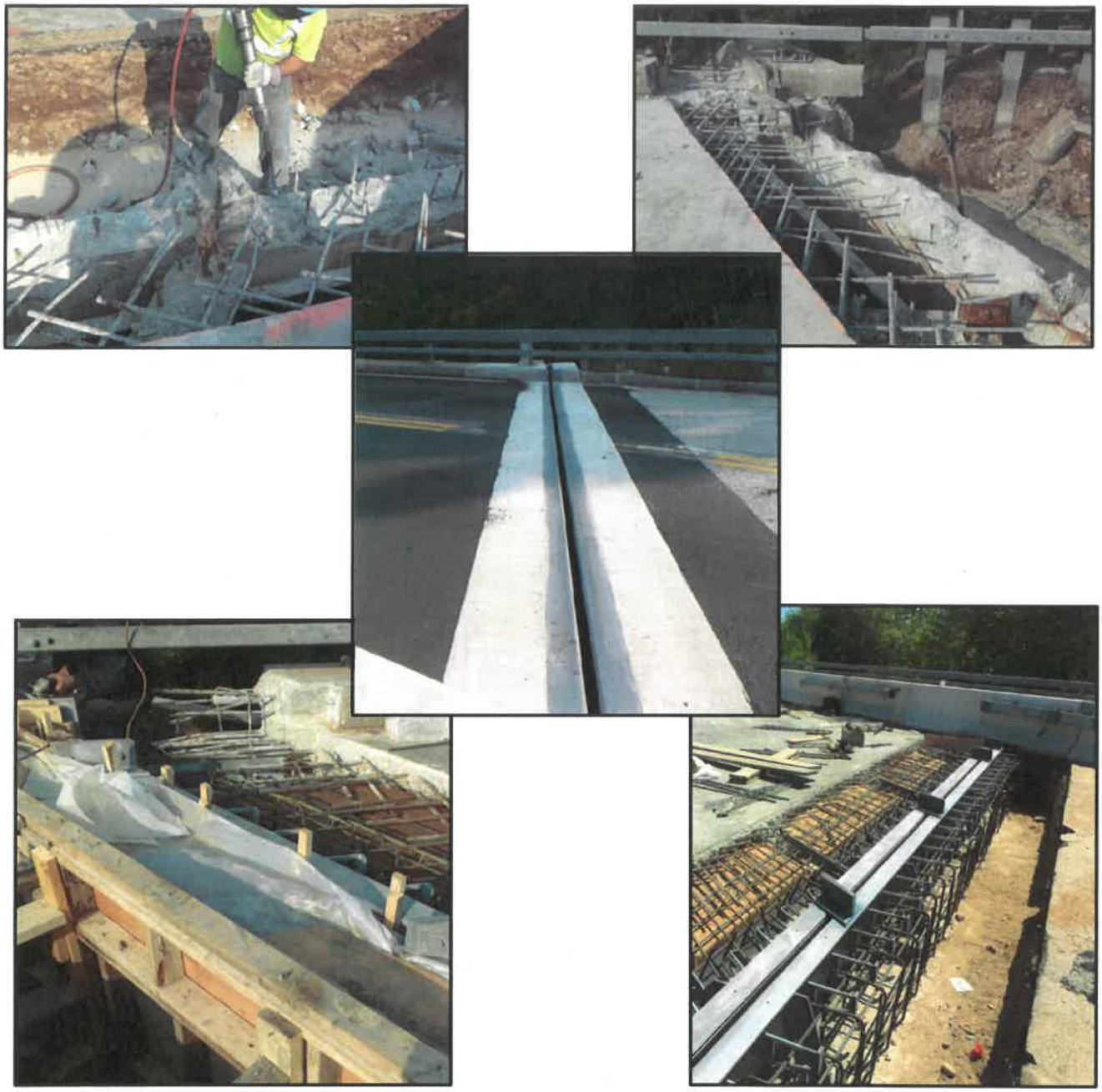

Loudon 41292 - Bridge Preservation – NH Route 106 over Soucook River
Loudon Br. Nos. 056/063 & 074/086

2018 ANNUAL BRIDGE REPORT

NHDOT Bridge Condition and Bridge Program

Based on Bridge Inspection Data through December 31, 2018
and
Bridge Project Data for 2018, 2019, 2020, & 2021 Federal Fiscal Years (October 1st – September 30th)

Approved by: Loretta Girard Doughty
Loretta Girard Doughty, PE
Chair, NHDOT Bridge Management Committee

Date: 9-15-21

Prepared by: Mark W. Richardson, PE

This Report presents Bridge Program data for FFY 2018, 2019, 2020, and 2021
and
Bridge Inspection data for the 2018 calendar year.

Note: Completion of this Report was delayed approximately 18 months, primarily due to the COVID-19 Pandemic.

Contents

1 Executive Summary 1

2 Bridge Condition 10
2.1 Summary of Bridge Inspection Process 10
2.2 Current Condition and Number of Bridges in New Hampshire 11
2.3 Bridge Postings for Weight Restrictions 14
2.4 Comparison of 2018 Bridge Data with Previous 5 Years 16
2.4.1 Bridge Posting List 16
2.4.2 "Red" List 17
2.4.3 "Yellow" List 18
2.4.4 "Green" List 19

3 Bridge and Roadway Tiers 20
3.1 Definition of Roadway Tiers as Applied to Bridges 20
3.2 Red List Bridges and Roadway Tiers (State Non-Turnpike, State Turnpike, & Municipal) 20

4 Strategy and Life Cycle Costs for State Bridges 25
4.1 Bridge Life Cycle – Characteristics and Costs 25
4.2 Bridge Maintenance – Work Tasks 26
4.3 Bridge Preservation – Work Tasks 26
4.4 Bridge Rehabilitation – Work Tasks 26
4.5 Bridge Replacement – Work Tasks 27

5 Bridge Program Accomplishments 2018: Bridge Program Work Plan for Next Three Years 28
5.1 Performance Goals and Results of Efforts of Previous Year 28
5.1.1 Goal 1: Implement the Recommended Investment Strategy (RIS) 29
5.1.1.1 Complete Bridge Preservation efforts annually on State and Turnpike bridges for FFY 2018, 2019, 2020, & 2021 29

(A) 10-Year Plan non-Turnpike Bridge Preservation 29

(B) 10-Year Plan Turnpike Bridge Preservation 30

(C) FFY 2018 Bridge Preservation 31
(C1) Bridge Preservation (Non-Turnpike) – Bridge Design Bureau 31
(C2) Bridge Preservation (Non-Turnpike) – Bridge Maintenance Bureau 32
(C3) Bridge Preservation (Turnpike) – Bridge Design Bureau 33
(C4) Bridge Preservation (Turnpike) – Bridge Maintenance Bureau 33
(C5) SUMMARY – 2018 State and Turnpike Bridge Preservation 34

(D) FFY 2019 Bridge Preservation 34
(D1) Bridge Preservation (Non-Turnpike) – Bridge Design Bureau 34
(D2) Bridge Preservation (Non-Turnpike) – Bridge Maintenance Bureau 36
(D3) Bridge Preservation (Turnpike) – Bridge Design Bureau 37
(D4) Bridge Preservation (Turnpike) – Bridge Maintenance Bureau 37
(D5) SUMMARY – 2019 State and Turnpike Bridge Preservation 38

(E) FFY 2020 Bridge Preservation 38
(E1) Bridge Preservation (Non-Turnpike) – Bridge Design Bureau 38
(E2) Bridge Preservation (Non-Turnpike) – Bridge Maintenance Bureau 39
(E3) Bridge Preservation (Turnpike) – Bridge Design Bureau 40
(E4) Bridge Preservation (Turnpike) – Bridge Maintenance Bureau 40
(E5) SUMMARY – 2020 State and Turnpike Bridge Preservation 40

(F) FFY 2021 Bridge Preservation 41
(F1) Bridge Preservation (Non-Turnpike) – Bridge Design Bureau 41
(F2) Bridge Preservation (Non-Turnpike) – Bridge Maintenance Bureau 42
(F3) Bridge Preservation (Turnpike) – Bridge Design Bureau 42
(F4) Bridge Preservation (Turnpike) – Bridge Maintenance Bureau 42
(F5) SUMMARY – 2021 State and Turnpike Bridge Preservation 43

5.1.1.2 Complete Bridge Rehabilitation efforts annually on State and Turnpike bridges for FFY 2018, 2019, 2020, & 2021 44

(A) 10-Year Plan non-Turnpike Bridge Rehabilitation 44

(B) 10-Year Plan Turnpike Bridge Rehabilitation 44

(C) FFY 2018 Bridge Rehabilitation 44
(C1) Bridge Rehabilitation (Non-Turnpike) – Bridge Design Bureau 44
(C2) Bridge Rehabilitation (Non-Turnpike) – Bridge Maintenance Bureau 45
(C3) Bridge Rehabilitation (Turnpike) – Bridge Design Bureau 46
(C4) Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau 46
(C5) SUMMARY – 2018 State and Turnpike Bridge Rehabilitation 46

(D) FFY 2019 Bridge Rehabilitation 46
(D1) Bridge Rehabilitation (Non-Turnpike) – Bridge Design Bureau 46
(D2) Bridge Rehabilitation (Non-Turnpike) – Bridge Maintenance Bureau 47
(D3) Bridge Rehabilitation (Turnpike) – Bridge Design Bureau 48
(D4) Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau 48
(D5) SUMMARY – 2019 State and Turnpike Bridge Rehabilitation 48

(E) FFY 2020 Bridge Rehabilitation 49
(E1) Bridge Rehabilitation (Non-Turnpike) – Bridge Design Bureau 49
(E2) Bridge Rehabilitation (Non-Turnpike) – Bridge Maintenance Bureau 49
(E3) Bridge Rehabilitation (Turnpike) – Bridge Design Bureau 50
(E4) Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau 50
(E5) SUMMARY – 2020 State and Turnpike Bridge Rehabilitation 50
(F) FFY 2021 Bridge Rehabilitation 50
(F1) Bridge Rehabilitation (Non-Turnpike) – Bridge Design Bureau 50
(F2) Bridge Rehabilitation (Non-Turnpike) – Bridge Maintenance Bureau 51
(F3) Bridge Rehabilitation (Turnpike) – Bridge Design Bureau 52
(F4) Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau 52
(F5) SUMMARY – 2021 State and Turnpike Bridge Rehabilitation 52

5.1.1.3 Complete Bridge Replacement efforts annually on State and Turnpike bridges for FFY 2018, 2019, 2020, & 2021 53

(A) 10-Year Plan non-Turnpike Bridge Replacement 53

(B) 10-Year Plan Turnpike Bridge Replacement 53

(C) FFY 2018 Bridge Replacement 53
(C1) Bridge Replacement (Non-Turnpike) – Bridge Design Bureau 53
(C2) Bridge Replacement (Non-Turnpike) – Bridge Maintenance Bureau 55
(C3) Bridge Replacement (Turnpike) – Bridge Design Bureau 55
(C4) Bridge Replacement (Turnpike) – Bridge Maintenance Bureau 56
(C5) SUMMARY – 2018 State and Turnpike Bridge Replacement 56

(D) FFY 2019 Bridge Replacement 56
(D1) Bridge Replacement (Non-Turnpike) – Bridge Design Bureau 56
(D2) Bridge Replacement (Non-Turnpike) – Bridge Maintenance Bureau 57
(D3) Bridge Replacement (Turnpike) – Bridge Design Bureau 58
(D4) Bridge Replacement (Turnpike) – Bridge Maintenance Bureau 58
(D5) SUMMARY – 2019 State and Turnpike Bridge Replacement 58

(E) FFY 2020 Bridge Replacement 58
(E1) Bridge Replacement (Non-Turnpike) – Bridge Design Bureau 58
(E2) Bridge Replacement (Non-Turnpike) – Bridge Maintenance Bureau 59
(E3) Bridge Replacement (Turnpike) – Bridge Design Bureau 59
(E4) Bridge Replacement (Turnpike) – Bridge Maintenance Bureau 59
(E5) SUMMARY – 2020 State and Turnpike Bridge Replacement 59

(F) FFY 2021 Bridge Replacement 60
(F1) Bridge Replacement (Non-Turnpike) – Bridge Design Bureau 60
(F2) Bridge Replacement (Non-Turnpike) – Bridge Maintenance Bureau 60
(F3) Bridge Replacement (Turnpike) – Bridge Design Bureau 61
(F4) Bridge Replacement (Turnpike) – Bridge Maintenance Bureau 62
(F5) SUMMARY – 2021 State and Turnpike Bridge Replacement 62

5.1.2 Goal 2: Inspect all state and municipal/other bridges 63
5.1.3 Goal 3: Manage all posted (weight restricted) bridges 64
5.1.4 Goal 4: Manage the State's Red List ("poor" condition) bridges 65
5.1.5 Goal 5: Limit the total area of NHS bridge decks in "poor" condition to 7% or less 66
5.1.6 Goal 6: Record and utilize project cost data to calculate cost estimates 67

5.2 Other Efforts Completed by the Bridge Design Bureau 68
5.2.1 Development of Contract Plans and Documents for System Expansion Projects 68
5.2.2 Bridge Load Ratings and Reviews for Overweight Permits 68
5.2.3 Critical Deficiency Notices - State and Municipal Bridges 69
5.2.4 Support of Other Department Actions and Responsibilities 70
5.2.5 Emergency Response for Bridges 70
5.3 Other Efforts Completed by the Bridge Maintenance Bureau 71
5.3.1 Repair Projects for State Bridges 71
5.3.2 Support of Other Department Actions and Responsibilities 71
5.3.3 Emergency Response for Bridges 72

6 Overall Bridge Condition Forecast 73
6.1 Bridge Condition Forecast 73
6.1.1 Red List 2013 – 2021 74
6.1.2 Yellow List 2013 – 2021 75
6.1.3 Green List 2013 – 2021 76

Appendices

Appendix "A" - State Red List and Location Map of all 2018 State Red List Bridges
Appendix "B" - Municipal Red List and Location Map of all 2018 Municipal Red List Bridges
Appendix "C" - Bridge Postings and Weight Restrictions – Definitions, Signs, and Examples
Appendix "D" - List and Location Map of all State Bridges Receiving Preservation Work in FFY 2018
Appendix "E" - List and Location Map of all State Bridges Receiving Rehabilitation Work in FFY 2018
Appendix "F" - List and Location Map of all State Bridges Replaced in FFY 2018

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1 Executive Summary

The NHDOT Bridge Management Committee (BMC) has compiled this Annual Report on the 2018 Bridge Condition and the FFY 2018 Bridge Program. Presented herein are data regarding the condition of all bridges in New Hampshire and the goals and status of the NHDOT Bridge Program. This information is based on bridge inspection data through December 31, 2018, as reported to the Federal Highway Administration (FHWA) in March 2019, and in the Bridge Program expenditures for Federal Fiscal Year (FFY) 2018 (October 1, 2017 - September 30, 2018).

Bridge Program Goals

The overarching goal of the NHDOT Bridge Program is to support "transportation excellence, enhancing the quality of life in New Hampshire" by providing safe and efficient mobility for the efficient movement of people, goods, and services throughout the State by maintaining the bridge inventory in a state of good repair by accomplishing by the following goals:

1. Implement the *Recommended Investment Strategy* (RIS) to attain the maximum service life, which varies from 60 - 120 years based on bridge type, for all types of bridges in New Hampshire.

2. Inspect all state and municipal/other bridges to meet Federal and State inspection and reporting requirements.

3. Manage all posted (weight restricted) bridges to reduce or eliminate constraints affecting the safe and efficient movement of goods and services, including emergency response, on the overall State transportation system. Specifically, the goal is for all High Investment Bridges (HIBs) and all bridges on Tier 1 and 2 roadways to have no weight restrictions, for all Tier 3 bridges with weight restrictions to be included in the 10-Year Plan as projects to address their weight restrictions, and for all weight restricted Tier 4 bridges to be reviewed to ensure that the weight restriction for each bridge does not affect emergency response services. (Please refer to *Appendix C - Bridge Postings and Weight Restrictions* for additional information.)

4. Manage the State's Red List ("poor" condition) bridges to reduce the backlog of bridge rehabilitation and replacement efforts to the maximum extent that can be addressed within the funding constraints of the State's 10-Year Transportation Improvement Plan (10-Year Plan).

5. Apply available bridge funds to limit the total area of bridge decks in "poor" condition on the National Highway System (NHS) in New Hampshire to be less than 7% of the total deck area on this highway category. This goal is more stringent than the 10% limit stipulated by the Federal Highway Administration (FHWA).

6. Record and utilize project cost data to calculate cost estimates through all project development phases (Initial Assessment; Type, Size, & Location (TS&L); Preliminary Plans; PPS&E Plans; and PS&E Plans) to improve cost estimating practices and corresponding project cost results as the *Recommended Investment Strategy* (RIS) is efficiently and effectively implemented. The goal is for Initial Project Assessment cost estimates to be within 25% (±) of the PS&E estimate.

These efforts require effective application of allocated funds to perform scheduled maintenance, preservation, rehabilitation, and replacement activities. This is accomplished by determining the ranking of all bridges based on the following considerations; Condition; Type & Size; Importance; Capacity; Risk; and Engineering Knowledge. Contract documents are then developed to perform appropriate maintenance, preservation, rehabilitation, or replacement activities on specific bridges, within the funding constraints of each fiscal year of both the State and Municipal bridge programs.

Red List Data for 2018

Based on bridge inspection data through December 31, 2018, there are 2,162 state owned bridges and 1,688 municipally owned bridges. Of these, 129 bridges are on the State Red List (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/2019-02-25bridge_state_red_list.pdf) and 241 bridges are on the Municipal Red List (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/2019-03-11municipal_red_list.pdf) for a total of 370 bridges that have at least one major structural element (deck, superstructure, substructure, or culvert) in "poor" condition.

The NHDOT Bridge Statistics for bridge count and bridge deck area are listed below:

NHDOT Bridge Statistics for 2018
(Bridge count; Length = 10 ft. and greater)

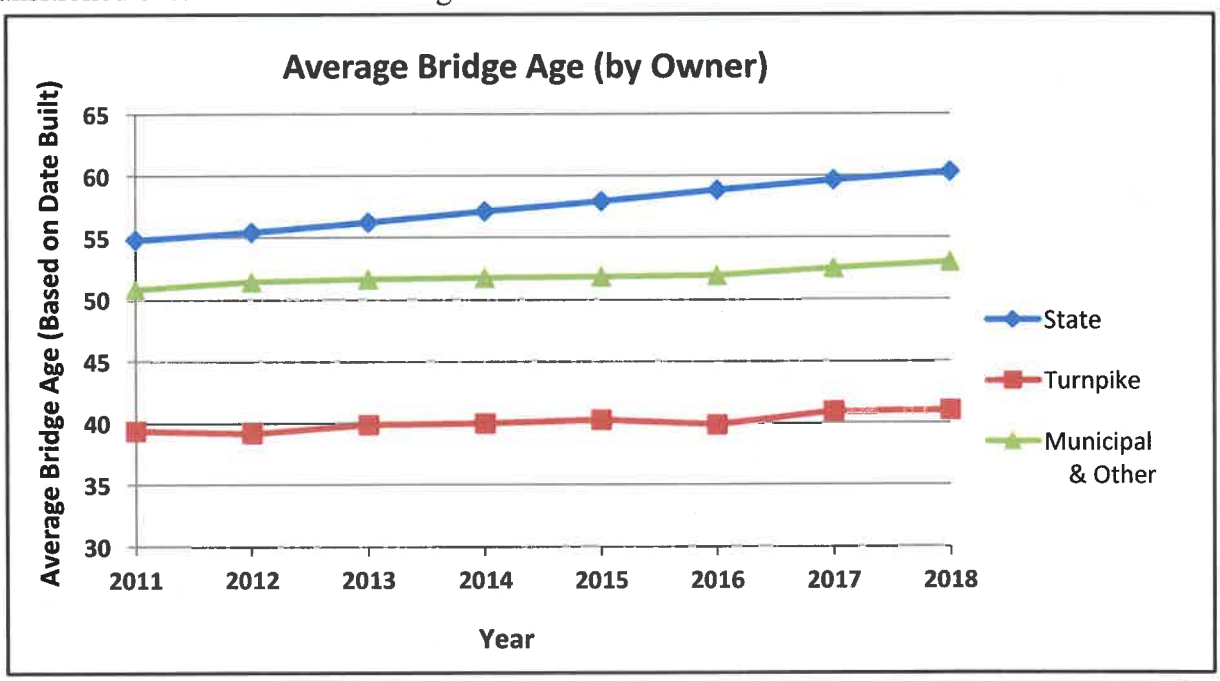
	State	Minicipal/Other	Totals
Red List	129	241	370
Yellow List	882	649	1,531
Green List	1,127	737	1,864
Closed or N/A	24	61	85
Totals:	2,162	1,688	3,850

NHDOT Bridge Statistics for 2018
(Bridge deck area (sq. ft.); Length = 10 ft. and greater)

	State	Municipal/Other	Totals
Red List	652,629	342,698	995,327
Yellow List	3,648,656	949,563	4,598,219
Green List	6,215,302	1,206,883	7,422,185
Closed or N/A	66,795	93,868	160,663
Totals:	10,583,382	2,593,012	13,176,394

See Page 9 for definitions of Red, Yellow, Green, and Closed Lists of Bridges.

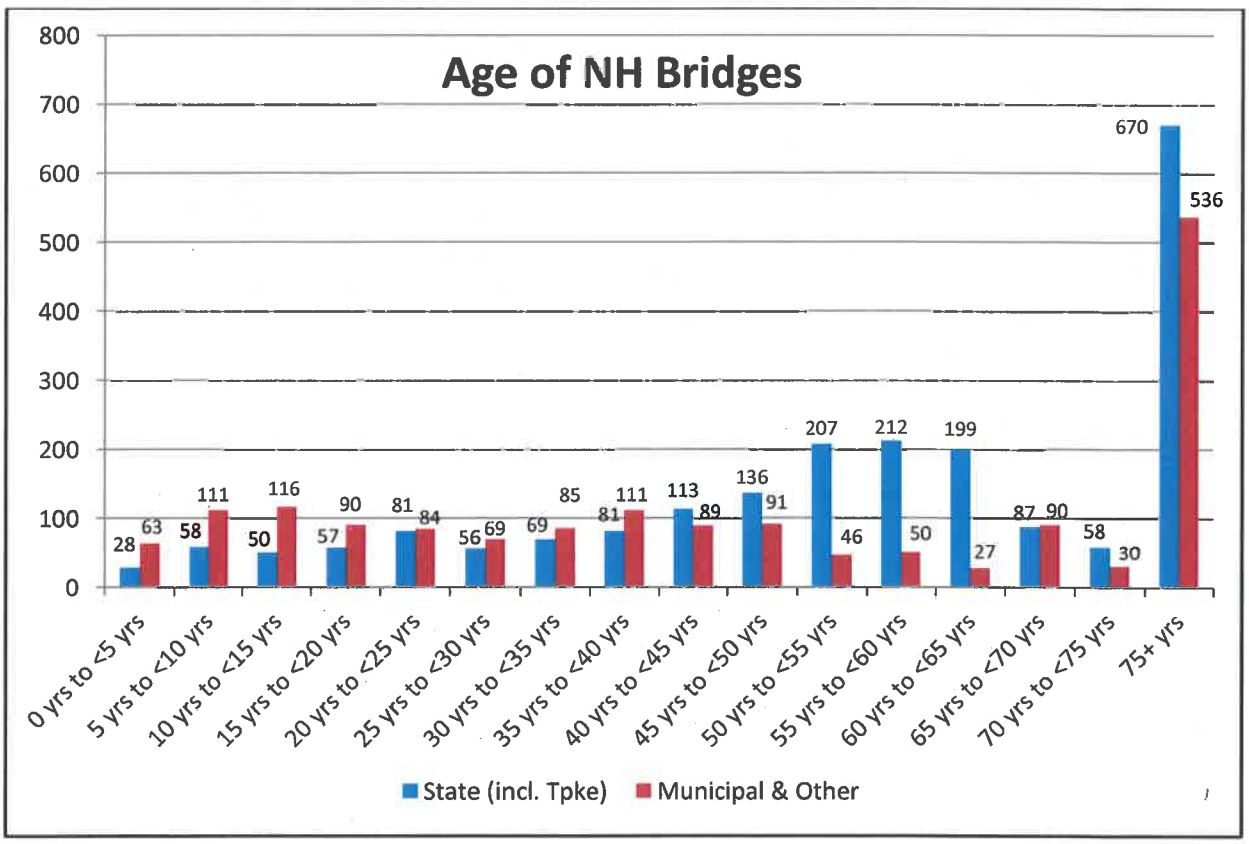
Approximately half of all bridges in New Hampshire were constructed before 1960 and were not designed to carry modern vehicle loads or traffic volumes. Since that time, traffic volumes and vehicle loads have greatly increased, placing additional and sometimes excessive stress on these bridges. Further, many bridges constructed since 1960 are also approaching the end of their originally anticipated 50 to 80 year (depending on bridge type) service life. The Department has been aggressive in efforts to address State Red List bridges, with 107 bridges removed from the State Red List from 2013 through 2018. However, bridges continue to deteriorate and many have transitioned onto the Red List during this same time frame.



	Average Bridge Age (Years) by Owner							
	2011	2012	2013	2014	2015	2016	2017	2018
State (non-Turnpike)	54.8	55.4	56.2	57.1	57.9	58.8	59.6	60.3
Turnpike	39.3	39.1	39.8	39.9	40.2	39.8	40.9	41.0
Municipal & Other	50.8	51.4	51.6	51.7	51.8	51.9	52.5	53.0

Although 102 bridges have been added to the State Red List during this same time period, these efforts still resulted in a net decrease of 5 State Red List bridges. Similar efforts regarding the Municipal Red List from 2013 through 2018 resulted in 147 bridges being removed from the Municipal Red List and 100 bridges being added to the Municipal Red List, for a net decrease of 47 Municipal Red List bridges. Many of these Municipal Red List bridges were addressed using municipal (local) funds only, due in part to the very limited funds available in the State Bridge Aid Program.

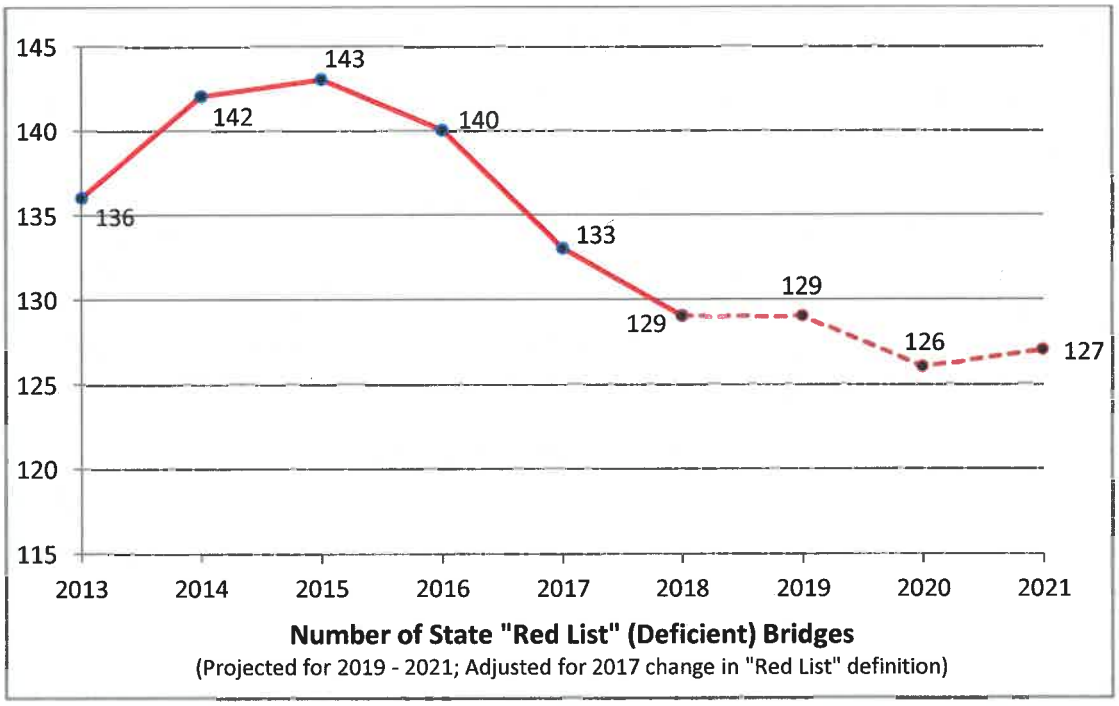
The following chart depicts the number of bridges in each age category, based on bridge data through December 31, 2018, for state bridges (including Turnpikes) and municipal/other bridges. This shows that 1,433 of 2,162 state bridges (about 66.3%) are more than 50 years old with an average age of 58.8 years for all state bridges. Similarly, 779 of 1,688 municipal bridges (about 46.2%) are more than 50 years old with an average age of 53.0 years for all municipal bridges.

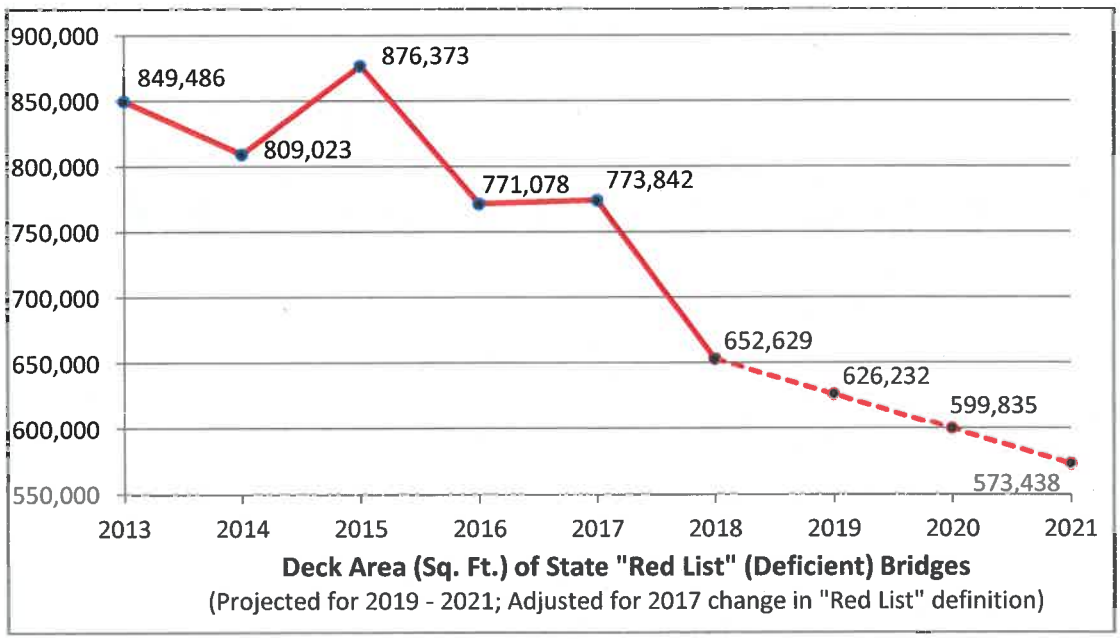


The above data indicates the challenge faced by the Department to obtain and dedicate the resources needed to perform bridge preservation, rehabilitation, or replacement in a timely manner when a clear majority of state bridges have essentially exceeded their originally anticipated 50 year service life. This is especially true when considering that 1,206 state and municipal bridges (about 31.3% or nearly one-third) of the total bridge inventory are more than 75 years old.

Please refer to the NHDOT *Recommended Investment Strategy* (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/bridgeprogramrecommendedinvestmentstrategy.pdf) and the NHDOT *Recommended Network Funding* (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/bridgeprogramrecommendednetworkfunding.pdf) of the NHDOT Bridge Program for further information on the Department's efforts to extend the service life of state bridges and the projected funding needed to accomplish the goals of the Bridge Program.

The graphs below depict the number and deck area of state Red List bridges based on data from 2013 through 2018 and projected for 2019 through 2021.





The above graphs and information imply that the Department has achieved a significant reduction in the number and deck area of Red List bridges over the past 5 years. However, it is important to note that the general consistency in the number of Red List bridges over time is due to the many bridges previously on the Yellow List that deteriorate further each year and thus transition to the Red List. It is the goal of the *Recommended Investment Strategy* to perform timely and appropriate preservation activities on bridges that are still in 5="Fair" to 7="Good" condition, thus keeping them off the Red List. The importance and cost effectiveness of this Strategy cannot be overstated.

Bridge Program Accomplishments for FFY 2018

Significant accomplishments have been made toward establishing criteria and strategies to apply funding and staff to address the maintenance, preservation, rehabilitation, and replacement needs of New Hampshire state bridges. The following table summarizes accomplishments by the Bridge Design Bureau during the 2018 Federal Fiscal Year to meet the Bridge Program goals described above.

FFY 2018 Project Type	Number of Projects	Number of Bridges	Deck Area (Sq. Ft.)	Project Construction Cost
Bridge Preservation (non-Turnpike)	15	18	196,906	$9,999,105
Bridge Preservation (Turnpike)	2	2	16,638	$453,323
Bridge Preservation – Other (non-Turnpike) (Scour, Paint, etc.)	4	28	N/A	$4,839,700
Bridge Preservation - Other (Turnpike) (Scour, Paint, etc.)	1	2	N/A	$1,849,700
Preservation Sub-Total	**22**	**50**	**213,544**	**$17,141,828**
Bridge Rehabilitation (non-Turnpike)	4	4	11,770	$1,286,706
Bridge Rehabilitation (Turnpike)	0	0	0	$0
Rehabilitation Sub-Total	**4**	**4**	**11,770**	**$1,286,706**
Bridge Replacement (non-Turnpike)	8	10	23,215	$34,697,485
Bridge Replacement (Turnpike)	0	0	0	$0
Replacement Sub-Total	**8**	**10**	**23,215**	**$34,697,485**
FFY 2018 Totals:	**34**	**64**	**248,529**	**$53,126,019**

Bridge Inspections for 2018

In addition to the above data, 2,445 bridge inspections were performed and the Bridge Management Database was updated. Emergency response was also provided for 14 specific incidents affecting bridges in various municipalities during calendar year 2018.

Bridge Condition – Projected for 2019 – 2021

It is projected that the number of State Red List bridges will slightly decrease over the next 3 years and the corresponding deficient bridge deck area will decrease by more than 15%. This is primarily due to several large bridges (I-93 NB & SB over the Winnipesaukee River in Northfield and Tilton, 48,278 sq. ft. total; I-293 SB & NH 101 EB over the Merrimack River in Bedford, 50,304 sq. ft. total; I-95 High Level Bridge with approach structure over the Piscataqua River between Portsmouth, NH, and Kittery, ME; 259,575 sq. ft. total) being preserved or rehabilitated. In addition, several smaller bridges will be replaced and removed from the State Red List.

With implementation of the *NHDOT Bridge Program - Recommended Investment Strategy*, the number of State Red List bridges and deficient deck area will continue to decrease over time as the benefits of this strategy become apparent. However, when considering the number of State Yellow List bridges that are essentially one inspection away from moving to the State Red List, this projection is truly uncertain, and the numbers can change quickly.

It is also projected that the number of Yellow List bridges will increase over the next 3 years. By following the *Recommended Investment Strategy*, bridges will remain on the Yellow List (5="Fair" or 6="Satisfactory" condition) for a longer period of time, with preservation activities performed to keep them in this condition, rather than allowing them to deteriorate further without preservation and be added to the Red List more quickly, necessitating more expensive options.

It is important to note that NHDOT Bridge Program is dependent on the amount of resources and funding provided through the 10-Year Plan for projects and staffing for this effort, as approved every two years by the NH Governor and Legislature. The Department strives to balance the funding needs of the Bridge Program and of the Paving Program (for bridge pavement crack sealing and inlays) with the funding needed to address other NHDOT infrastructure deficiencies.

Summary Tables - FFY 2018 Accomplishments and Projections for FFY 2019 - 2021

In this Report, data associated with bridge deck areas refers to the deck area of existing bridges; e.g., the deck area of Red List bridges that have been replaced refers to the deck area of the original (existing) bridges, and not the deck area of the new (replacement) bridges. "Deck area" is just another way to indicate the magnitude of Red List (deficient) bridges, similar to Red List bridge count.

SUMMARY of FFY 2018 Accomplishments and FFY 2019 Projections

FISCAL YEAR	ACTIVITY	CATEGORY	Bridge Design		Bridge Maintenance		Totals		GRAND TOTALS
			State non-Turnpike	Turnpike	State non-Turnpike	Turnpike	State non-Turnpike	Turnpike	
2018 (Actual)	Preservation	No. of Projects	3	0	13	2	**16**	**2**	**18**
		No. of Bridges	6	0	13	2	**19**	**2**	**21**
		Deck Area	131,730	0	70,070	16,638	**201,800**	**16,638**	**218,438**
		Construction Cost	$9,010,100	$0	$1,386,490	$795,317	**$10,396,590**	**$795,317**	**$11,191,907**
		Cost per Sq. Ft.	$68	N/A	$20	$48	**$52**	**$48**	**$51**
	Other	No. of Projects	4	1	0	0	**4**	**1**	**5**
		No. of Bridges	28	2	0	0	**28**	**2**	**30**
		Deck Area	N/A	N/A	N/A	N/A	**N/A**	**N/A**	**N/A**
		Construction Cost	$4,839,700	$1,849,700	$0	$0	**$4,839,700**	**$1,849,700**	**$6,689,400**
		Cost per Sq. Ft.	N/A	N/A	N/A	N/A	**N/A**	**N/A**	**N/A**
	Rehabilitation	No. of Projects	1	0	4	0	**5**	**0**	**5**
		No. of Bridges	1	0	4	0	**5**	**0**	**5**
		Deck Area	2,160	0	10,323	0	**12,483**	**0**	**12,483**
		Construction Cost	$1,436,409	$0	$579,691	$0	**$2,016,100**	**$0**	**$2,016,100**
		Cost per Sq. Ft.	$665	N/A	$56	N/A	**$162**	**#DIV/0!**	**$162**
	Replacement	No. of Projects	7	0	1	0	**8**	**0**	**8**
		No. of Bridges	9	0	1	0	**10**	**0**	**10**
		Deck Area	31,753	0	963	0	**32,716**	**0**	**32,716**
		Construction Cost	$34,434,100	$0	$267,248	$0	**$34,701,348**	**$0**	**$34,701,348**
		Cost per Sq. Ft.	$1,084	N/A	$278	N/A	**$1,061**	**N/A**	**$1,061**
2019 (Projected)	Preservation	No. of Projects	5	1	4	1	**9**	**2**	**11**
		No. of Bridges	18	2	4	1	**22**	**3**	**25**
		Deck Area	86,767	259,575	2,645	14,913	**89,412**	**274,488**	**363,900**
		Construction Cost	$7,652,555	$28,714,200	$316,467	$320,982	**$7,969,022**	**$29,035,182**	**$37,004,204**
		Cost per Sq. Ft.	$88	$111	$120	$22	**$89**	**$106**	**$102**
	Other	No. of Projects	1	0	1	0	**2**	**0**	**2**
		No. of Bridges	6	0	1	0	**7**	**0**	**7**
		Deck Area	N/A	0	N/A	0	**N/A**	**N/A**	**N/A**
		Construction Cost	$2,057,700	$0	$42,653	$0	**$2,100,353**	**$0**	**$2,100,353**
		Cost per Sq. Ft.	N/A	N/A	N/A	N/A	**N/A**	**N/A**	**N/A**
	Rehabilitation	No. of Projects	1	0	8	0	**9**	**0**	**9**
		No. of Bridges	1	0	8	0	**9**	**0**	**9**
		Deck Area	5,064	0	7,120	0	**12,184**	**0**	**12,184**
		Construction Cost	$1,592,500	$0	$1,753,000	$0	**$3,345,500**	**$0**	**$3,345,500**
		Cost per Sq. Ft.	$314	N/A	$246	N/A	**$275**	**N/A**	**$275**
	Replacement	No. of Projects	6	0	2	0	**8**	**0**	**8**
		No. of Bridges	8	0	2	0	**10**	**0**	**10**
		Deck Area	83,808	0	704	0	**84,512**	**0**	**84,512**
		Construction Cost	$66,217,064	$0	$370,000	$0	**$66,587,064**	**$0**	**$66,587,064**
		Cost per Sq. Ft.	$790	N/A	$526	N/A	**$788**	**N/A**	**$788**

Summary Tables - FFY 2018 Accomplishments and Projections for FFY 2019 – 2021 (Continued)

SUMMARY of FFY 2020 and FFY 2021 Projections

FISCAL YEAR	ACTIVITY	CATEGORY	Bridge Design		Bridge Maintenance		Totals		GRAND TOTALS
			State non-Turnpike	Turnpike	State non-Turnpike	Turnpike	State non-Turnpike	Turnpike	
2020 (Projected)	Preservation	No. of Projects	7	0	20	0	27	0	27
		No. of Bridges	12	0	20	0	32	0	32
		Deck Area	124,923	0	56,764	0	181,687	0	181,687
		Construction Cost	$11,800,275	$0	$3,160,000	$0	$14,960,275	$0	$14,960,275
		Cost per Sq. Ft.	$94	N/A	$56	N/A	$82	N/A	$82
	Other	No. of Projects	4	0	0	0	4	0	4
		No. of Bridges	15	0	0	0	15	0	15
		Deck Area	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Construction Cost	$5,320,000	$0	$0	$0	$5,320,000	$0	$5,320,000
		Cost per Sq. Ft.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Rehabilitation	No. of Projects	0	0	7	0	7	0	7
		No. of Bridges	0	0	7	0	7	0	7
		Deck Area	0	0	5,374	0	5,374	0	5,374
		Construction Cost	$0	$0	$3,037,500	$0	$3,037,500	$0	$3,037,500
		Cost per Sq. Ft.	N/A	N/A	$565	N/A	$565	N/A	$565
	Replacement	No. of Projects	3	0	0	0	3	0	3
		No. of Bridges	4	0	0	0	4	0	4
		Deck Area	26,185	0	0	0	26,185	0	26,185
		Construction Cost	$37,317,000	$0	$0	$0	$37,317,000	$0	$37,317,000
		Cost per Sq. Ft.	$1,425	N/A	N/A	N/A	$1,425	N/A	$1,425
2021 (Projected)	Preservation	No. of Projects	4	0	18	0	22	0	22
		No. of Bridges	11	0	18	0	29	0	29
		Deck Area	166,895	0	32,247	0	199,142	0	199,142
		Construction Cost	$9,475,000	$0	$5,150,000	$0	$14,625,000	$0	$14,625,000
		Cost per Sq. Ft.	$57	N/A	$160	N/A	$73	N/A	$73
	Other	No. of Projects	0				0	0	0
		No. of Bridges	0				0	0	0
		Deck Area	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Construction Cost					$0	$0	$0
		Cost per Sq. Ft.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Rehabilitation	No. of Projects	3	0	9	0	12	0	12
		No. of Bridges	3	0	9	0	12	0	12
		Deck Area	26,774	0	17,480	0	44,254	0	44,254
		Construction Cost	$8,550,000	$0	$3,550,000	$0	$12,100,000	$0	$12,100,000
		Cost per Sq. Ft.	$319	N/A	$203	N/A	$273	N/A	$273
	Replacement (Excluding General Sullivan Pedestrian Bridge)	No. of Projects	7	0	2	0	9	0	9
		No. of Bridges	7	0	2	0	9	0	9
		Deck Area	22,328	0	882	0	23,210	0	23,210
		Construction Cost	$30,518,335	$0	$950,000	$0	$31,468,335	$0	$31,468,335
		Cost per Sq. Ft.	$1,367	N/A	$1,077	N/A	$1,356	N/A	$1,356

Summary Tables - FFY 2018 Accomplishments and Projections for FFY 2019 – 2021 (Continued)

SUMMARY of FFY 2018 through FFY 2021 - Annual Report 2018 NHDOT Bridge Condition & Bridge Program

FISCAL YEAR	ACTIVITY	CATEGORY	Bridge Design		Bridge Maintenance		Totals		GRAND TOTALS
			State non-Turnpike	Turnpike	State non-Turnpike	Turnpike	State non-Turnpike	Turnpike	
TOTALS (FFY2018 Through FFY 2021)	Preservation	No. of Projects	11	1	55	3	**66**	**4**	**70**
		No. of Bridges	47	2	55	3	**102**	**5**	**107**
		Deck Area	510,315	259,575	161,726	31,551	**672,041**	**291,126**	**963,167**
		Construction Cost	$37,937,930	$28,714,200	$10,012,957	$1,116,299	**$47,950,887**	**$29,830,499**	**$77,781,386**
		Cost per Sq. Ft.	$74	$111	$62	$35	**$71**	**$102**	**$81**
	Other	No. of Projects	9	1	1	0	**10**	**1**	**11**
		No. of Bridges	49	2	1	0	**50**	**2**	**52**
		Deck Area	N/A	N/A	N/A	N/A	**N/A**	**N/A**	**N/A**
		Construction Cost	$12,217,400	$1,849,700	$42,653	$0	**$12,260,053**	**$1,849,700**	**$14,109,753**
		Cost per Sq. Ft.	N/A	N/A	N/A	N/A	**N/A**	**N/A**	**N/A**
	Rehabilitation	No. of Projects	5	0	28	0	**33**	**0**	**33**
		No. of Bridges	5	0	28	0	**33**	**0**	**33**
		Deck Area	33,998	0	40,197	0	**74,195**	**0**	**74,195**
		Construction Cost	$11,578,909	$0	$8,920,191	$0	**$20,499,100**	**$0**	**$20,499,100**
		Cost per Sq. Ft.	$341	N/A	$222	N/A	**$276**	**N/A**	**$276**
	Replacement	No. of Projects	23	0	5	0	**28**	**0**	**28**
		No. of Bridges	28	0	5	0	**33**	**0**	**33**
		Deck Area	164,074	0	2,549	0	**166,623**	**0**	**166,623**
		Construction Cost	168,486,499	$0	$1,587,248	$0	**$170,073,747**	**$0**	**$170,073,747**
		Cost per Sq. Ft.	$1,027	N/A	$623	N/A	**$1,021**	**N/A**	**$1,021**
GRAND TOTALS (FFY2018 Through FFY 2021)		No. of Projects	48	2	89	3	**137**	**5**	**142**
		No. of Bridges	129	4	89	3	**218**	**7**	**225**
		Deck Area (Excl. "Other" Projects)	708,387	259,575	204,472	31,551	**912,859**	**291,126**	**1,203,985**
		Construction Cost (Excl. "Other" Projects)	$180,575,723	$259,575	$10,669,165	$31,551	**$191,244,888**	**$291,126**	**$191,536,014**
		Construction Cost (All Projects)	$230,220,738	$30,563,900	$20,563,049	$1,116,299	**$250,783,787**	**$31,680,199**	**$282,463,986**

Additional projects may be added to the FFY 2019 – FFY 2021 Bridge Program depending on the funding needed and available as the contract documents for each project are further developed.

For additional information, please refer to the following documents:

- NHDOT 2018 State Red List
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/2019-02-25bridge_state_red_list.pdf
- NHDOT 2018 Municipal Red List
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/2019-03-11municipal_red_list.pdf
- NHDOT 2018 State Rehabilitation & Replacement Priority List
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/bridge-r-r-list.pdf
- NHDOT 2018 State Preservation Priority List
  (To be developed)
- NHDOT 2018 Bridge Summary
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/bridge_summary.pdf
- NHDOT Bridge Program – Definitions of Program Strategies and Terms
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/definitionsofprogramstrategiesandterms.pdf
- NHDOT Bridge Program – Recommended Investment Strategy
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/bridgeprogramrecommendedinvestmentstrategy.pdf
- NHDOT Bridge Program – Recommended Network Funding
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/bridgeprogramrecommendednetworkfunding.pdf
- NHDOT Bridge Program – State Preservation List Ranking Process
  (Under Development)
- NHDOT Bridge Program – State Rehabilitation & Replacement List and Ranking Process
  (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/2018-03-28bridge_r_r_list.pdf)
  (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/stater_rrankingprocess_001.pdf)
- NHDOT Bridge Program – State Red List Ranking Process
  (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/stateredlistrankingprocess.pdf)
- 10-Year Transportation Improvement Plan 2019 – 2028
  (https://www.nh.gov/dot/org/projectdevelopment/planning/typ/documents/TYPFinalBookProjOnly7-2-18.pdf)

2 Bridge Condition

2.1 Summary of Bridge Inspection Process

In accordance with all pertinent state and federal laws and regulations, including the National Bridge Inspection Standards (NBIS), all publically owned bridges associated with highway traffic and recorded in the Bridge Inventory are inspected every two years (24 months) maximum interval. State Red List (deficient) bridges are inspected biannually (6-month interval) and Municipal Red List (deficient) bridges are inspected annually (12-month interval). For additional information on the NBIS, please go to: https://www.fhwa.dot.gov/bridge/nbis.cfm.

Most bridge inspections are performed by NHDOT Bridge Inspectors, although some complex bridges, such as movable bridges, are inspected utilizing consultant engineering services. Underwater inspections are performed by contract divers on specific bridges to check for scour undermining. All bridge inspection efforts are administered by the Bridge Design Bureau.

During the inspection process, a condition rating is assigned to each of the major structural elements (deck, superstructure, substructure, or culvert), according to criteria presented in the NBIS. In addition to the *State Red List* and *Municipal Red List*, a review of this inspection data allows development of "groups" of bridges, as noted below, based on the overall condition of their major structural elements. The NHDOT Bridge Management Committee defined and developed these groups as a means to continually monitor and convey the overall "health" of bridges in New Hampshire. These lists are described as follows:

Highway Bridges:

- "**Red**" – All bridges carrying highway traffic that have one or more major structural elements with an NBIS condition rating of "4 = Poor" or less. These bridges comprise the state/municipal Red Lists.
- "**Yellow**" – All bridges carrying highway traffic that have their lowest rated major structural element with an NBIS condition rating of "5 = Fair" or "6 = Satisfactory".
- "**Green**" – All bridges carrying highway traffic that have all major structural elements with an NBIS rating equal to or greater than "7 = Good".
- "**Closed or N/A**" – All bridges carrying highway traffic that have been closed due to one or more major structural elements with an NBIS rating equal to or less than "1 = Closed".

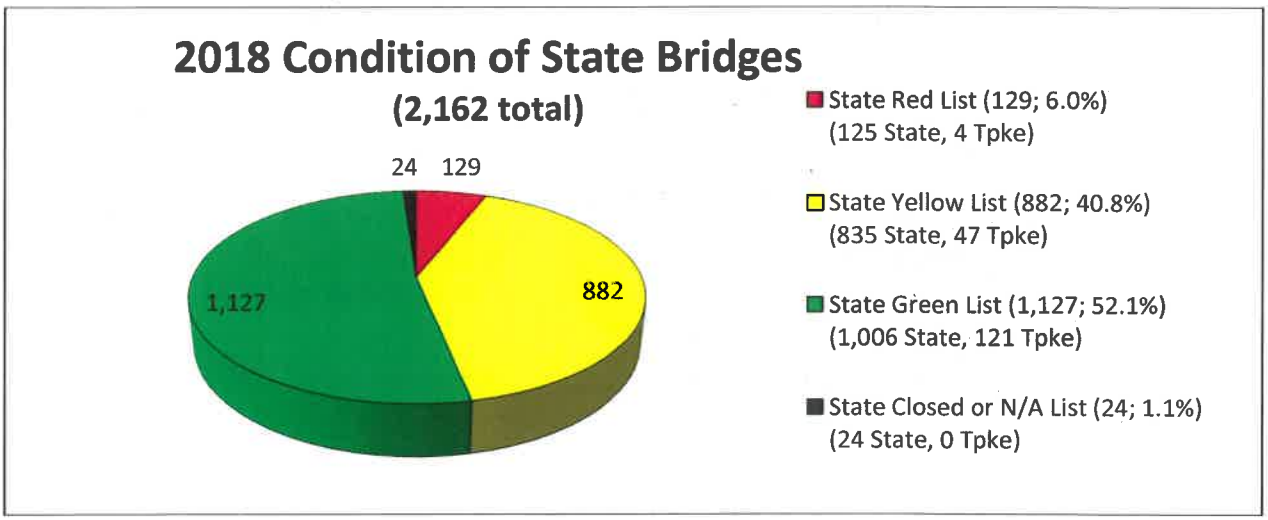
Non-Highway Bridges:

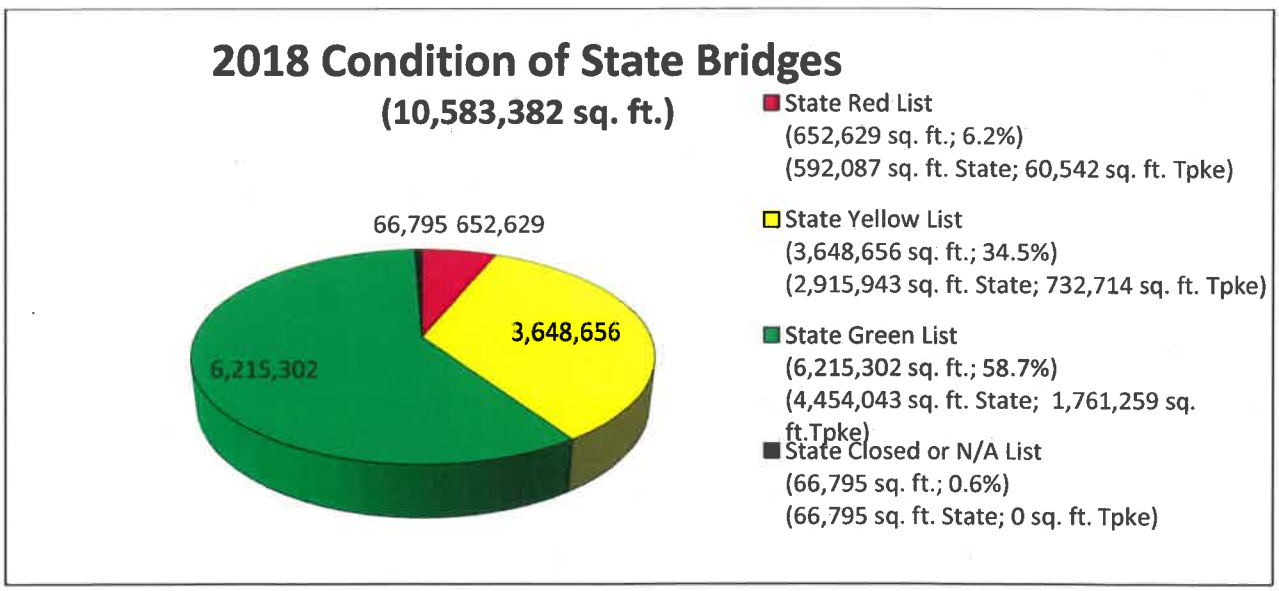
- "**Red**" – All non-highway bridges used as pedestrian, recreational, or railroad crossings that have one or more major structural elements with an NBIS rating of "4 = Poor" or less. These bridges comprise the corresponding Red List.
- "**Yellow**" – All non-highway bridges used as pedestrian, recreational, or railroad crossings that have their lowest rated major structural element with an NBIS condition rating of "5 = Fair" or "6 = Satisfactory".
- "**Green**" – All non-highway bridges used as pedestrian, recreational, railroad, etc., crossings that have all major structural elements with an NBIS rating equal to or greater than "7 = Good".
- "**Closed or N/A**" – All non-highway bridges used as pedestrian, recreational, or railroad crossings that have been closed due to one or more of their major structural elements with an NBIS rating equal to or less than "1 = Closed".

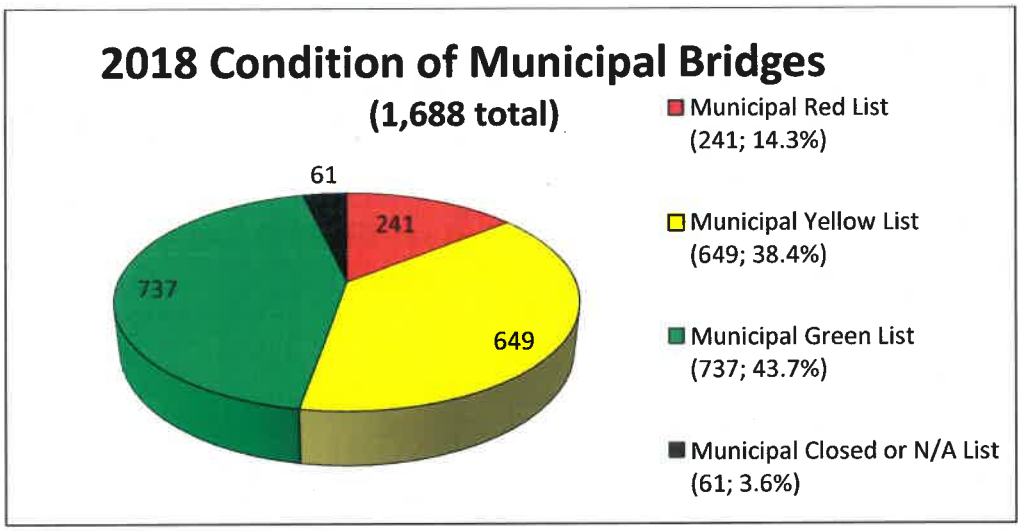
2.2 Current Condition and Number of Bridges in New Hampshire

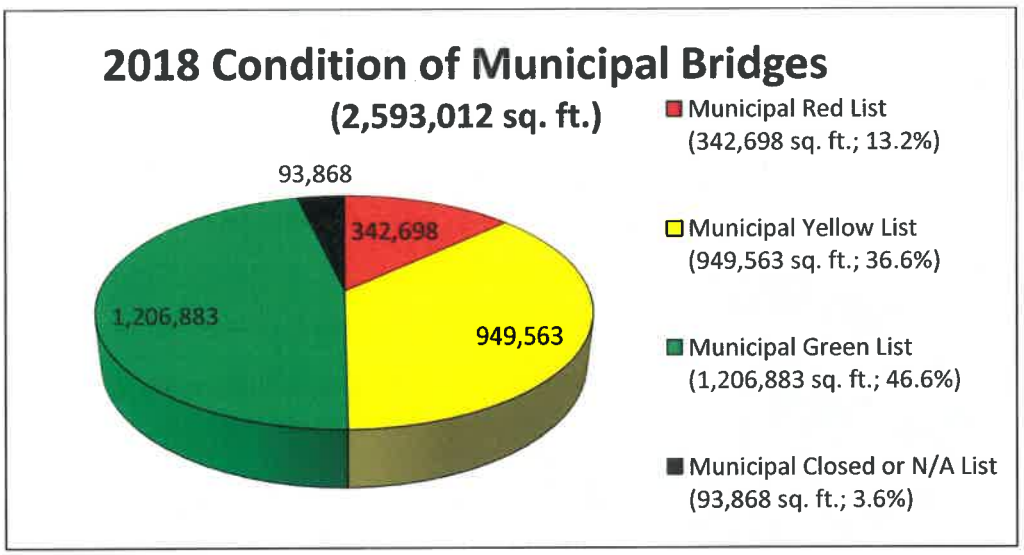
The table below presents a summary of the current number of bridges and deck area by bridge ownership in their respective condition categories through December 31, 2018, as reported to the Federal Highway Administration (FHWA) in March 2019. Please note that this data includes the entire deck area of bridges shared with adjoining states, as required by the FHWA.

Bridge Condition	State Non-Turnpike		State Turnpike		State Totals		Municipal and Others	
	Number	Deck Area (Sq. Ft.)	Number	Deck Area (Sq. Ft.)	Number	Deck Area (Sq. Ft.)	Number	Deck Area (Sq. Ft.)
Red List ("Poor")	125	592,087	4	60,542	129	652,629	241	342,698
Yellow List ("Fair")	835	2,915,943	47	732,714	882	3,648,657	649	949,563
Green List ("Good")	1,006	4,454,043	121	1,761,259	1,127	6,215,302	737	1,206,883
Closed or N/A	24	66,795	0	0	24	66,795	61	93,868
Totals:	**1,990**	**8,028,868**	**172**	**2,554,515**	**2,162**	**10,583,383**	**1,688**	**2,593,012**









For more information and maps regarding the data and locations of all state and municipal/other Red List bridges, please see Appendices "A" and "B".

Appendix "A"

- **2018 State Red List** (Based on bridge inspection data through December 31, 2018)
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/2019-02-25bridge_state_red_list.pdf

- **Location Map of 2018 State Red List Bridges** (Based on bridge inspection data through December 31, 2018)
  (provide new link for this year's data)

Appendix "B"

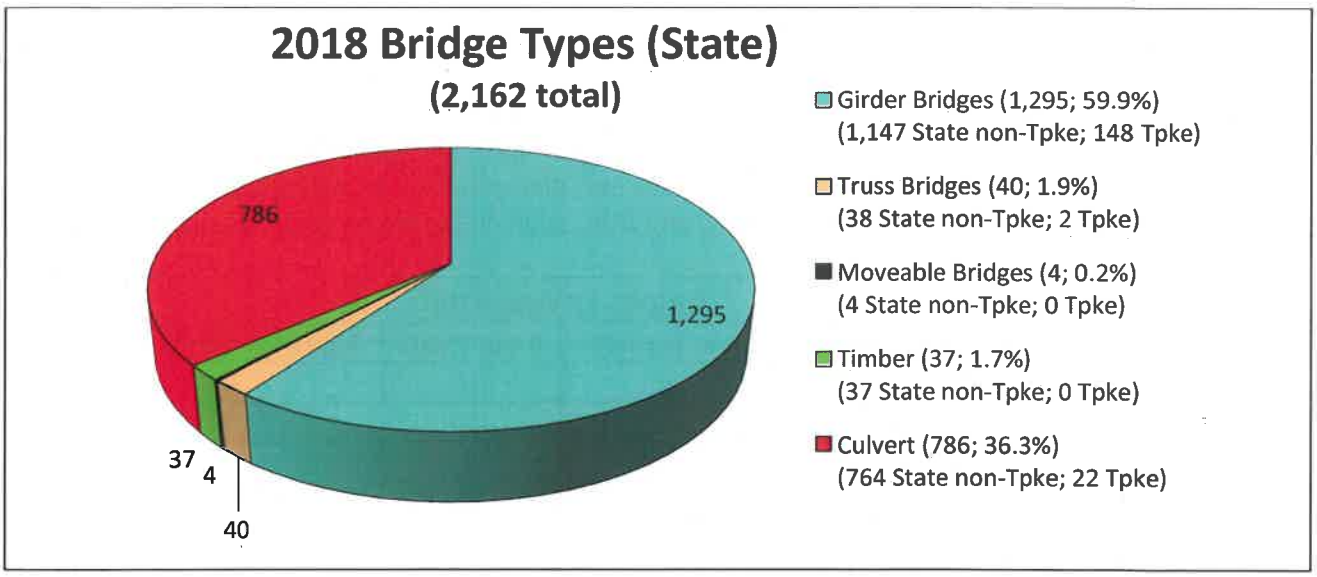
- **2018 Municipal Red List** (Based on bridge inspection data through December 31, 2018)
  https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/2019-03-11municipal_red_list.pdf

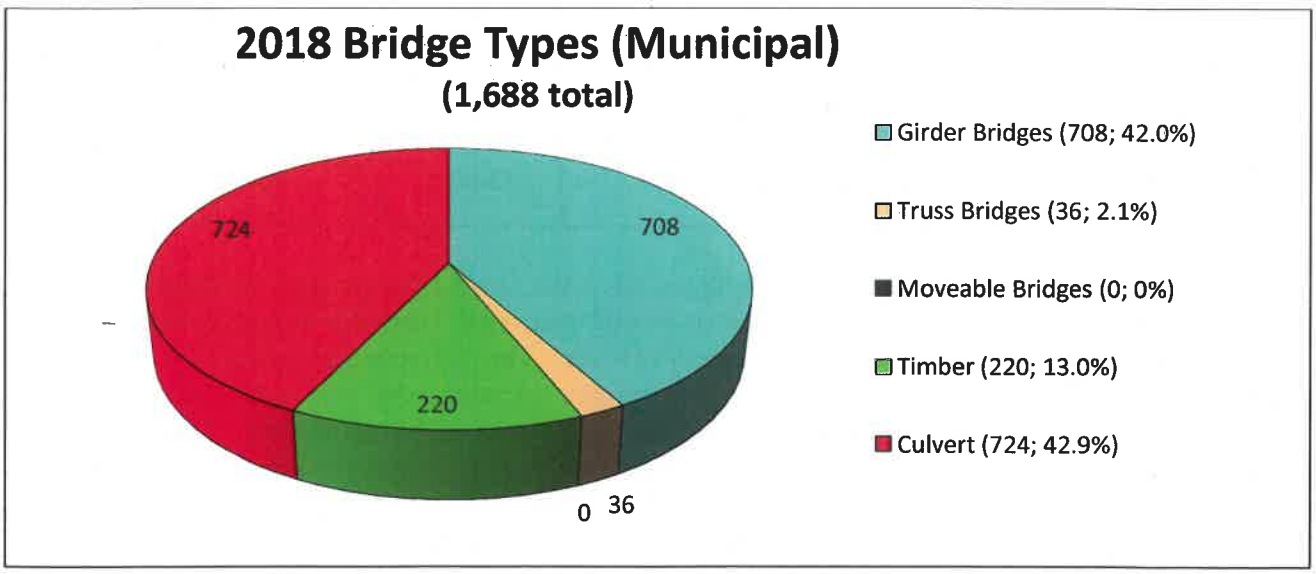
- **Location Map of all 2018 Municipal Red List Bridges** (Based on bridge inspection data through December 31, 2018)
  (provide new link for this year's data)

The table below presents a summary of the current number of bridges and deck area according to bridge type, based on data compiled through December 31, 2018.

Bridge Type	State Non-Turnpike		State Turnpike		State Totals			Municipal and Other	
	Number	Deck Area* (Sq. Ft.)	Number	Deck Area* (Sq. Ft.)	Number	Deck Area* (Sq. Ft.)	Percentage (Number)	Number	Deck Area* (Sq. Ft.)
Girder	1,147	6,654,348	148	2,273,040	1,295	8,927,388	59.9%	708	1,765,376
Truss	38	239,149	2	189,061	40	428,210	1.9%	36	173,825
Moveable	4	192,796	0	0	4	192,796	0.2%	0	0
Timber	37	50,416	0	0	37	50,416	1.7%	220	209,794
Culvert	764	892,158	22	92,414	786	984,572	36.4%	724	444,017
Totals:	**1,990**	**8,028,867**	**172**	**2,554,515**	**2,162**	**10,583,382**	**100.0%**	**1,688**	**2,593,012**

* These totals only include the NH portion of the deck area for bridges shared with adjoining states, which results in a total deck area slightly smaller than the totals shown in the table further above.





2.3 Bridge Postings for Weight Restrictions

The tables below present a summary of current bridge postings for weight restrictions according to the bridge type, ownership, and roadway tier on which the bridge is located, all based on data compiled through December 31, 2018. This data includes bridges whose structural condition or configuration is such that, according to current design standards, vehicle and load configurations, and/or state law, the bridge requires a load posting to indicate the reduced safe and/or legal load capacity of the structure in its current condition.

Although the tonnage postings are the most restrictive, all bridge weight postings restrict the movement of more heavily loaded vehicles to those roadways having bridges of sufficient load capacity to safely allow these vehicles to travel. This includes "permitted" vehicles carrying excessive loads (greater than legal loads) supported by multiple axles to distribute the total load.

For more information regarding bridge postings and weight restrictions for bridges, please refer to *Appendix "C" - Bridge Postings and Weight Restrictions for Certified Vehicles: Posting Definitions and Examples*; or; *RSA 266:18 Equipment of Vehicles.* (http://www.gencourt.state.nh.us/rsa/html/XXI/266/266-18.htm)

NOTE: If vehicles and loads exceed the posted weight restriction on any bridge, structural damage may occur to the bridge deck and/or superstructure, up to and possibly including complete failure and collapse of the bridge. The safety issues and disruption to the transportation network, especially to emergency response vehicles, resulting from such an incident cannot be overstated.

Bridge Posting	BRIDGE OWNERSHIP			
	State non-Turnpike	State Turnpike	State Totals	Municipal and Other
E-1	41	0	41	3
E-2	176	0	176	620
C-1	7	0	7	0
C-2	20	0	20	3
C-3	5	0	5	1
Tonnage	21	0	21	120
Closed	11	1	12	67
No Posting	1,709	171	1,880	874
Total Posted	281	1	282	814
Total Bridges	1,990	172	2,162	1,688
Percent Posted of Total Bridges	**14.1%**	**0.6%**	**13.0%**	**48.2%**

The above data show that Turnpike bridges have the lowest percentage of weight posted bridges, essentially 0%, since the only closed or weight restricted Turnpike bridge is the General Sullivan pedestrian bridge between Newington and Dover. This reflects the commitment to bond holders to appropriately and effectively maintain Turnpike infrastructure. The data also show that municipalities have the greatest percentage of bridges that have weight restrictions. This is due in part to the fact that municipal bridges were not load rated in the 1980s when the Department, through the Bridge Design Bureau, performed load ratings on all state bridges to ensure that certified and permitted loads could safely travel on the state transportation network.

Bridge Posting	BRIDGE TYPE					Totals
	Girder	Truss	Moveable	Timber	Culvert	
E-1	30	1	0	1	12	44
E-2	399	9	1	47	340	796
C-1	7	0	0	0	0	7
C-2	22	1	0	0	0	23
C-3	5	0	0	0	1	6
Tonnage	40	7	1	72	21	141
Closed	25	11	0	24	19	79
No Posting	1,475	47	2	113	1,117	2,754
Total Posted	528	29	2	144	393	1,096
Total Bridges	2,003	76	4	257	1,510	3,850
Percent Posted of Bridge Type	26.4%	38.2%	50.0%	56.0%	26.0%	28.5%

The above data show that even though culvert and girder bridges are the most common type of bridge structure in the state, they have the lowest percentage of weight posted bridges.

Bridge Posting	ROADWAY TIER*							Totals
	HIB	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	
E-1	0	0	7	22	12	3	0	44
E-2	1	0	39	72	63	620	1	796
C-1	0	0	3	4	0	0	0	7
C-2	0	0	4	10	6	3	0	23
C-3	0	0	0	4	1	1	0	6
Tonnage	1	0	0	0	17	120	3	141
Closed	0	0	0	0	3	67	9	79
No Posting	49	511	538	412	318	865	61	2,754
Total Posted	2	0	53	524	102	814	13	1,096
Total Bridges	51	511	591	936	420	1,679	74	3,850
Percent Posted of Bridges on Tier	3.9%	0.0%	9.0%	56.0%	24.3%	48.5%	17.6%	28.5%

*See Section 3.1, Page 19 for definitions and information regarding roadway tiers.

The above data show that Tier 1 bridges have the fewest (0.0%) of bridges posted with weight restrictions, which reflects the commitment of the Department to maintain the bridges on major transportation corridors of the State infrastructure to the highest order. The remaining data demonstrate the efforts of the Department to appropriately and effectively maintain bridges according to their importance and the roadway tier on which each bridge is located.

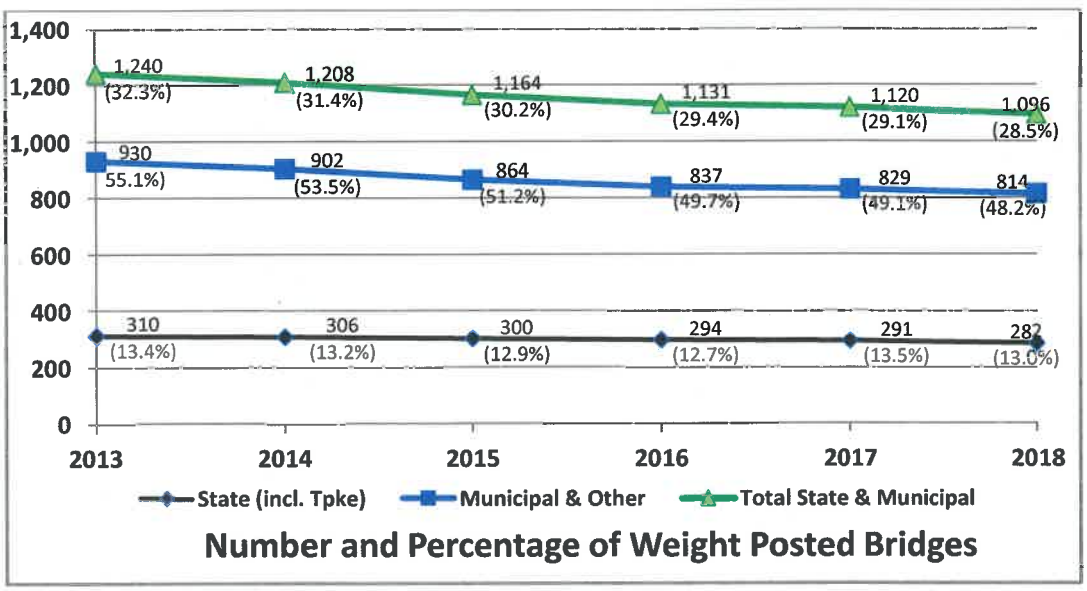
2.4 Comparison of 2018 Bridge Data with Previous 5 Years

The tables below compare state and municipal bridge data according to bridge posting (weight restriction) and bridge condition rating ("Red", "Yellow", and "Green") for the current (2018) and previous five years.

2.4.1 **Bridge Posting List** – A list of bridges whose structural configuration or condition is such that the bridge requires a load posting to indicate the reduced safe and/or legal load capacity of the structure in its current condition, according to current design standards, vehicle and load configurations, and/or state law. Please note that this list is different from the Red List since the majority of posted bridges are in acceptable condition, but their structural configuration is such that they are unable to safely support all legal loads. Clearly, however, some bridges are posted for weight restrictions due to their poor structural condition.

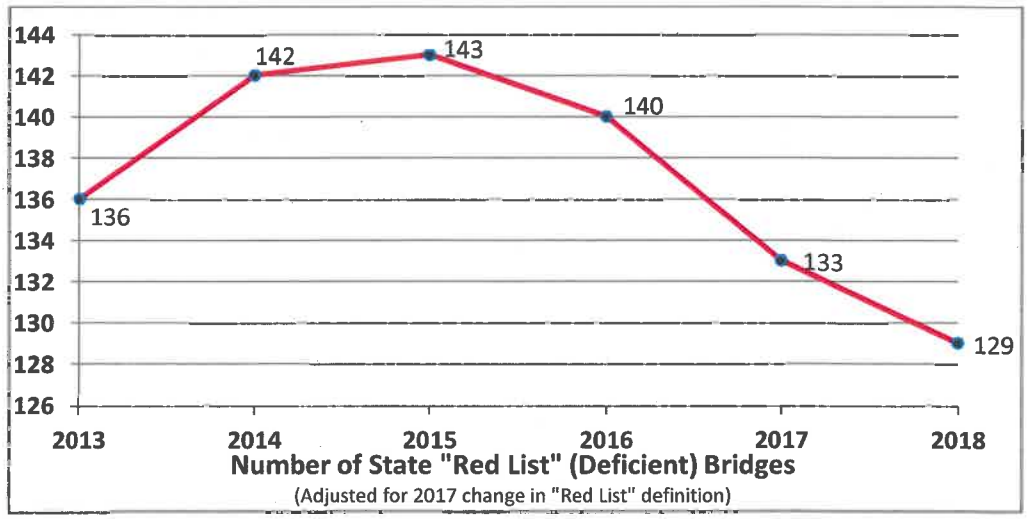
Bridge Posting	2013	2014	2015	2016	2017	2018
E-1	53	52	50	50	49	44
E-2	875	856	823	816	808	796
C-1	4	4	4	4	4	7
C-2	25	23	22	22	21	23
C-3	6	6	6	6	6	6
Tonnage	180	170	165	151	151	141
Closed	97	97	94	82	81	79
No Posting	2,603	2,639	2,684	2,711	2,729	2,754
Total Posted	1,240	1,208	1,164	1,131	1,120	1,096
Total Bridges	3,843	3,847	3,848	3,842	3,849	3,850
Percent Posted of Total Bridges per Year	**32.3%**	**31.4%**	**30.2%**	**29.4%**	**29.1%**	**28.5%**

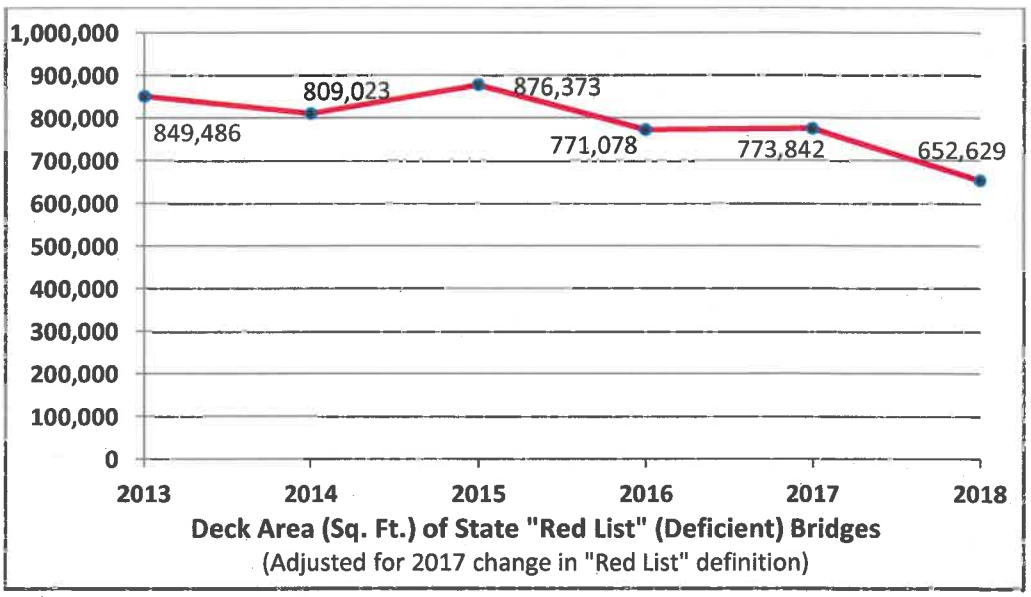
The above data show that over the past five (5) years, there are 144 fewer bridges (state and municipal) that are posted with weight restrictions, a reduction from 32.3% to 28.5% of total bridges posted during this time period, as depicted in the graph below.



2.4.2 **"Red" List** – A list of bridges having at least one major structural element (deck, superstructure, substructure, or culvert) classified as being in "poor" condition (NBIS rating of "4 = Poor" or less), and thus are categorized as "deficient". Bridges in "poor" condition are still considered safe for use by the public, in accordance with posted weight restrictions.

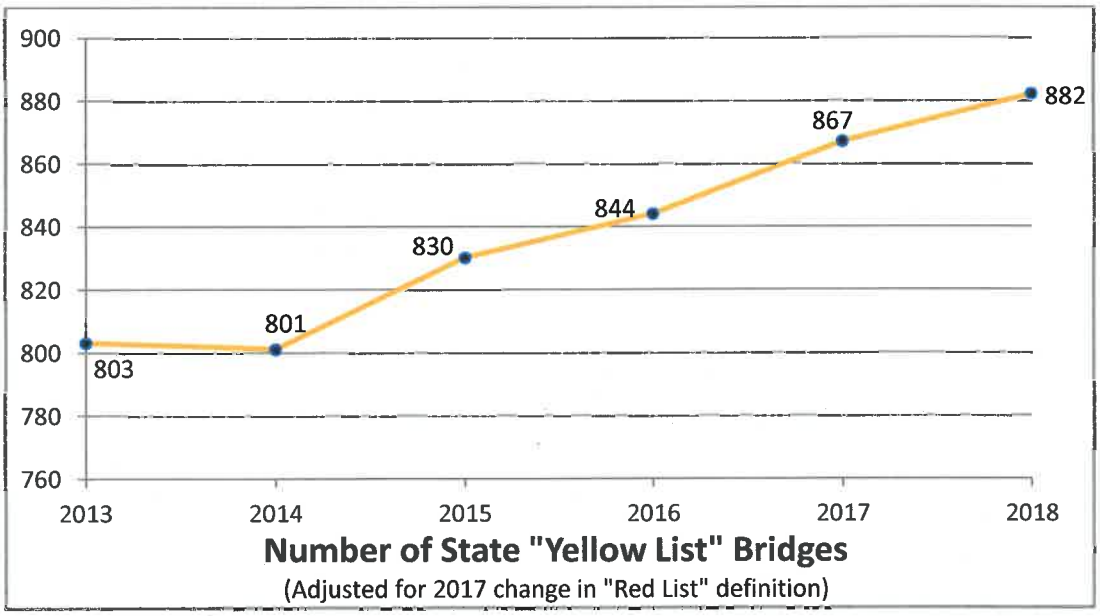
Change in "Red List" definition - Senate Bill 38 (effective on July 1, 2017) narrowed the definition of a "Red List Bridge" as defined in RSA 234:25-a. Due to this revision, the Red Lists now include only structurally deficient (poor) bridges (one or more major elements in poor or worse condition), thereby excluding all bridges posted with weight restrictions that are in fair or better condition that were previously included due to their weight restriction posting. State bridge counts and deck areas shown in the "Red", "Yellow", and "Green" Lists have been adjusted to account for the new Red List definition.

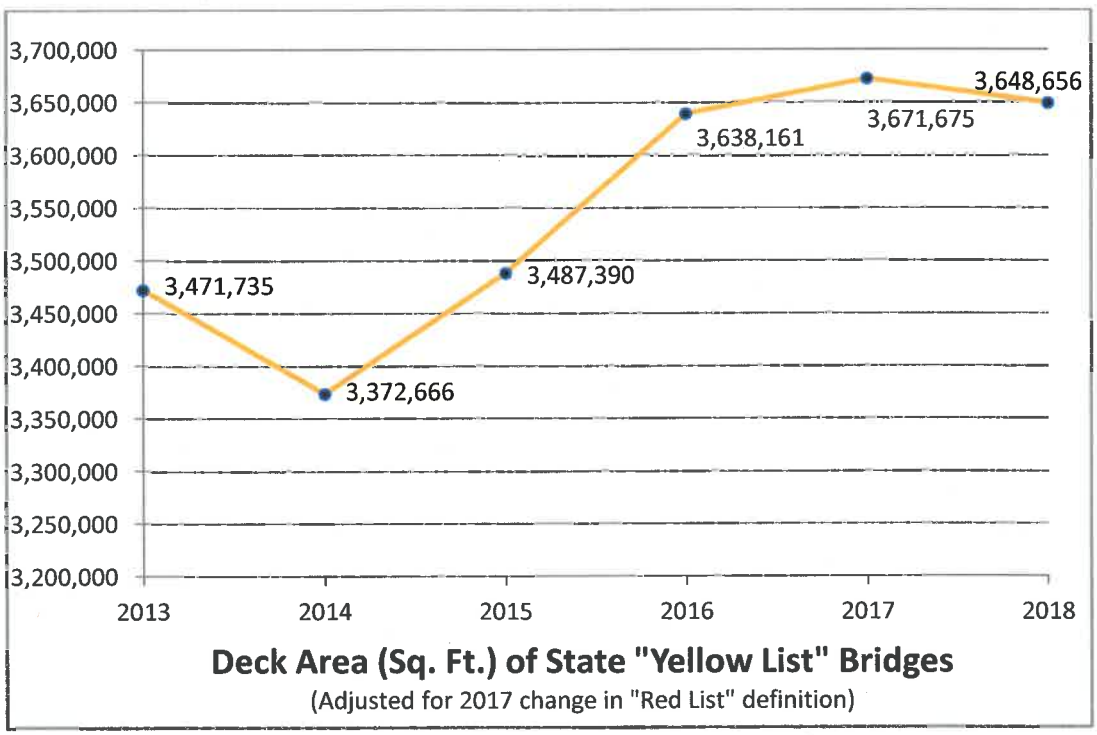




The above data show that over the past five (5) years a number of bridges have been added to and removed from the State Red List, with the overall number of Red List bridges decreasing by 7 bridges. Although the number and specific Red List bridges changed somewhat, the overall deck area of Red List bridges was reduced significantly during this time period, a 196,857 sq. ft., (23.2%) reduction. This is the result of addressing several Red List bridges having very large deck areas during calendar years 2015 – 2017.

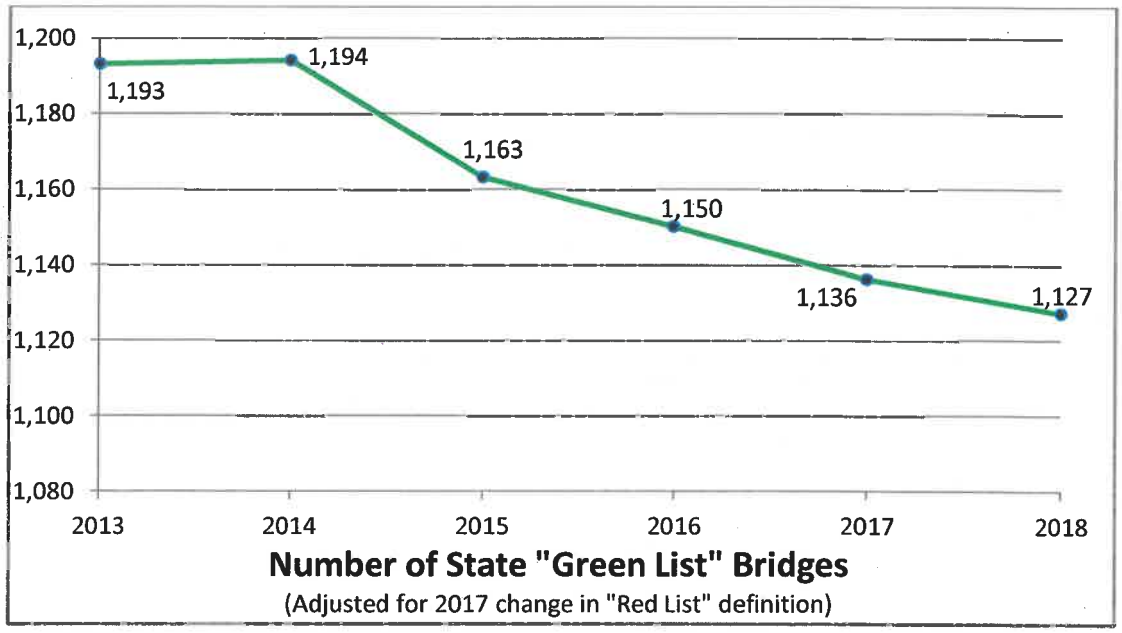
2.4.3 **"Yellow" List** – A list of bridges that have their lowest rated major structural element (deck, superstructure, substructure, or culvert) classified as being in "fair" or "satisfactory" condition (NBIS rating of "5" or "6").

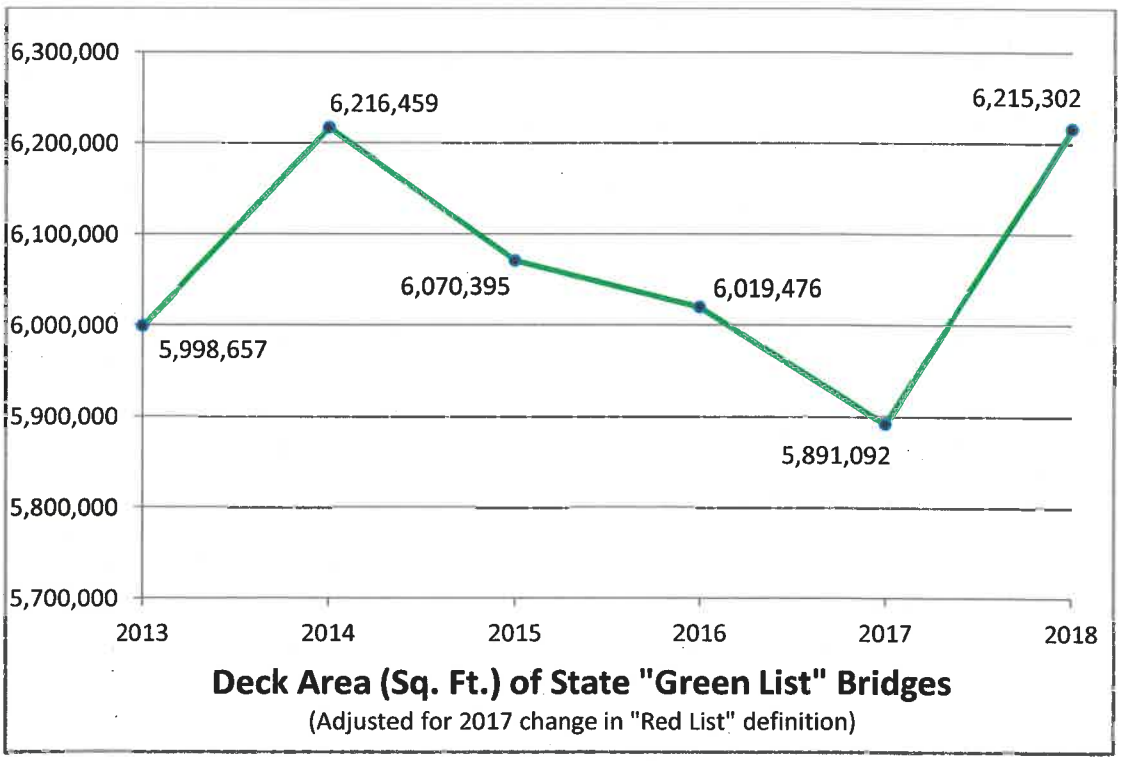




The above data show that over the past five (5) years there has been a net increase of 79 bridges added to the Yellow List and the corresponding deck area increased by 176,921 sq. ft. (5.1%) during this time period. This data also indicates that state bridges are now receiving needed preservation work. By following the *Recommended Investment Strategy*, this upward trend should continue as many bridges will remain on the Yellow List (5="Fair" or 6="Satisfactory" condition) for a longer period of time, with preservation activities performed to keep them in this condition, rather than allowing them to deteriorate further without preservation and be added to the Red List more quickly, necessitating more expensive rehabilitation or replacement options.

2.4.4 **"Green" List** – A list of bridges that have their lowest rated major structural element (deck, superstructure, substructure, or culvert) classified as being in "good", "very good", or "excellent" condition (NBIS rating of "7", "8", or "9").





The above data show that over the past five (5) years, there has been a net decrease of 66 bridges removed from the Green List and shifted to the Yellow List. Although the specific Green List bridges changed during this time period, the corresponding deck area increased by 216,645 sq. ft. (3.6%). This trend supports the *Recommended Investment Strategy* to perform timely maintenance and preservation activities on Green List bridges to extend their service life, rather than following a "worst bridge first" strategy. Again, this is the result of addressing several Red List bridges having very large deck areas during calendar years 2015 – 2017.

3 Bridge and Roadway Tiers

3.1 Definition of Roadway Tiers as Applied to Bridges

Each bridge is located on a specific roadway tier, as defined below for bridges, which is an important characteristic to consider when allocating bridge funds.

Roadway Tier	Roadway Tier Definitions - Bridges
HIB	**High Investment Bridges** – Bridges in this group have a deck area of 30,000 sq. ft. or greater; or; a movable bridge, regardless of the type of roadway on which it is located.
1	**Interstates, Turnpikes, Divided Highways** – Multi-lane divided highways supporting the highest traffic volumes and speeds, and conveying the majority of commuter, tourist, and freight traffic.
2	**Statewide Corridors** – State numbered routes with moderate to high traffic volumes and speeds, especially during commuter hours.
3	**Regional Transportation Corridors** – These roadways support travel within regions, access statewide corridors, and support moderate traffic volumes and speeds.
4	**Local Connectors** – These secondary roadways and unnumbered routes provide local connection between and within communities, and usually support low volume and low speed traffic.
5	**Local Roads** – Locally owned roadways, or state owned roadways within compact limits; provide local connections for travel between and within communities; usually support low volume and low speed traffic.
6	**Off Network** – These are non-highway assets of the transportation network, e.g., Park 'n' Rides, pedestrian or railroad bridges, patrol sheds, and Rest Stops.

3.2 Red List Bridges and Roadway Tiers (State Non-Turnpike, State Turnpike, & Municipal)

The table below shows the number of bridges by ownership for the roadway tier on which the bridge is located, all based on data compiled through December 31, 2018.

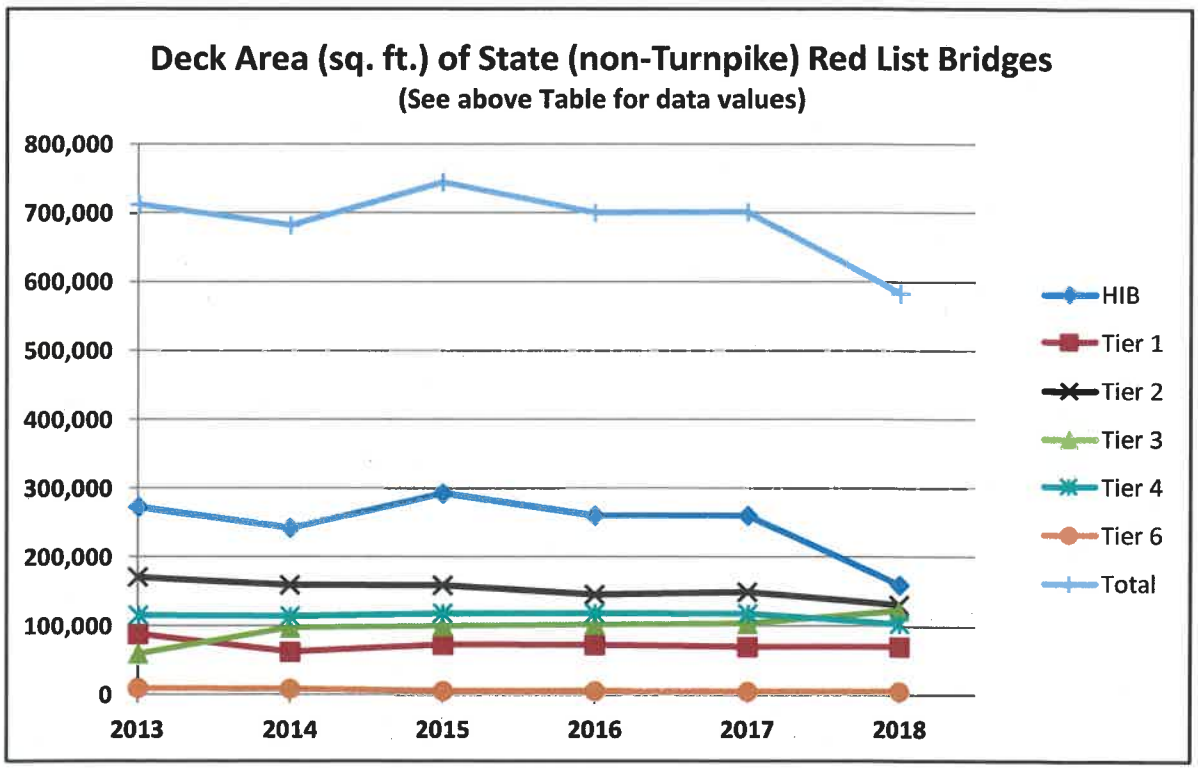
Roadway Tier	State non-Turnpike		State Turnpike		State Totals		Municipal and Others	
	Number on Red List	Total State non-Turnpike Bridges on Tier	Number on Red List	Total Turnpike Bridges on Tier	Number on Red List	Total State Bridges on Tier	Number on Red List	Total Municipal Bridges on Tier
HIB	5	31	0	11	5	42	3	9
Tier 1	8	401	2	110	10	511	0	0
Tier 2	42	579	0	12	42	591	0	0
Tier 3	32	512	0	12	32	524	0	0
Tier 4	31	398	1	22	32	420	0	0
Tier 5	0	0	0	0	0	0	238	1,679
Tier 6	7	69	1	5	8	74	0	0
Totals:	**125**	**1,990**	**4**	**172**	**129**	**2,162**	**241**	**1,688**

As expected, this data shows that the majority of bridges of high importance and/or located on high volume roadways are the responsibility of the NH Department of Transportation. These bridges are eligible to receive state, turnpike, and federal funds, as appropriate.

Bridges on local roadways, which typically have lower traffic volumes, are the responsibility of the municipalities and are eligible to receive state and/or federal funds to supplement local funds through the State Aid Bridge (SAB) Program and the Municipally Owned Bridge Rehabilitation and Replacement (MOBRR) Program. Funding for these programs is allocated through the State's 10-Year Plan.

The Table and Chart below show a comparison of the **2018 State Non-Turnpike Red List bridges** by roadway Tier with those of the previous 5 years.

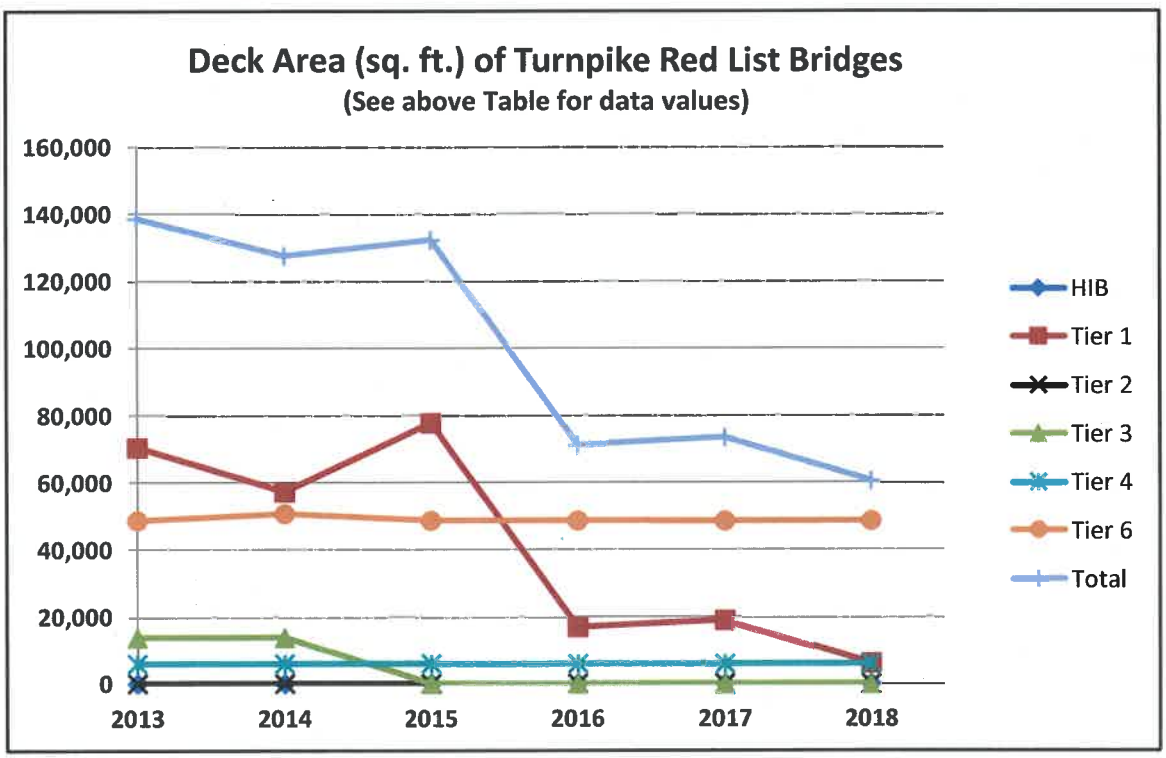
State Red List (non-Turnpike)		2013	2014	2015	2016	2017	2018
HIB	Number	7	6	7	6	6	5
	Deck Area (Sq. Ft.)	272,065	242,047	292,356	259,846	259,834	158,889
Tier 1	Number	12	8	11	10	8	8
	Deck Area (Sq. Ft.)	87,350	61,878	71,776	71,583	68,554	68,554
Tier 2	Number	34	40	42	43	42	42
	Deck Area (Sq. Ft.)	170,417	158,612	158,452	145,007	148,735	129,667
Tier 3	Number	31	35	32	36	34	32
	Deck Area (Sq. Ft.)	58,812	97,241	99,321	101,020	102,703	121,230
Tier 4	Number	33	34	32	32	30	31
	Deck Area (Sq. Ft.)	114,504	113,971	117,850	117,850	116,824	109,919
Tier 5	(Municipal)	N/A	N/A	N/A	N/A	N/A	N/A
Tier 6	Number	8	7	7	7	7	7
	Deck Area (Sq. Ft.)	8,623	7,809	4,524	4,524	3,828	3,828
Totals:	Number	125	130	131	134	127	125
	Deck Area (Sq. Ft.)	**711,771**	**681,558**	**744,279**	**699,830**	**700,478**	**592,087**



The above data show that, overall, the number of State (non-Turnpike) Red List bridges has remained fairly consistent for the past five years. Efforts to address Red List bridges have prevented these numbers from increasing, but continued efforts are warranted if the deck areas of deficient bridges on all roadway tiers are to be decreased. However, progress has clearly been made since the total deck area of State (non-Turnpike) Red List bridges has been reduced by 16.8% from 711,771 sq. ft. to 592,087 sq. ft. during the 2013 - 2018 time frame.

The Table and Chart below show a comparison of the **2018 State Turnpike Red List bridges** by roadway Tier with those of the previous 5 years.

State Red List (Turnpike)		2013	2014	2015	2016	2017	2018
HIB	Number	0	0	0	0	0	0
	Deck Area (Sq. Ft.)	0	0	0	0	0	0
Tier 1	Number	9	8	10	4	4	2
	Deck Area (Sq. Ft.)	70,347	57,161	77,659	16,813	18,935	6,112
Tier 2	Number	0	0	0	0	0	0
	Deck Area (Sq. Ft.)	0	0	0	0	0	0
Tier 3	Number	1	1	0	0	0	0
	Deck Area (Sq. Ft.)	13,781	13,781	0	0	0	0
Tier 4	Number	1	1	1	1	1	1
	Deck Area (Sq. Ft.)	5,929	5,929	5,929	5,929	5,929	5,929
Tier 5	(Municipal)	N/A	N/A	N/A	N/A	N/A	N/A
Tier 6	Number	1	2	1	1	1	1
	Deck Area (Sq. Ft.)	48,506	50,594	48,506	48,506	48,501	48,501
Totals:	Number	12	12	12	6	6	4
	Deck Area (Sq. Ft.)	**138,563**	**127,465**	**132,094**	**71,248**	**73,365**	**60,542**

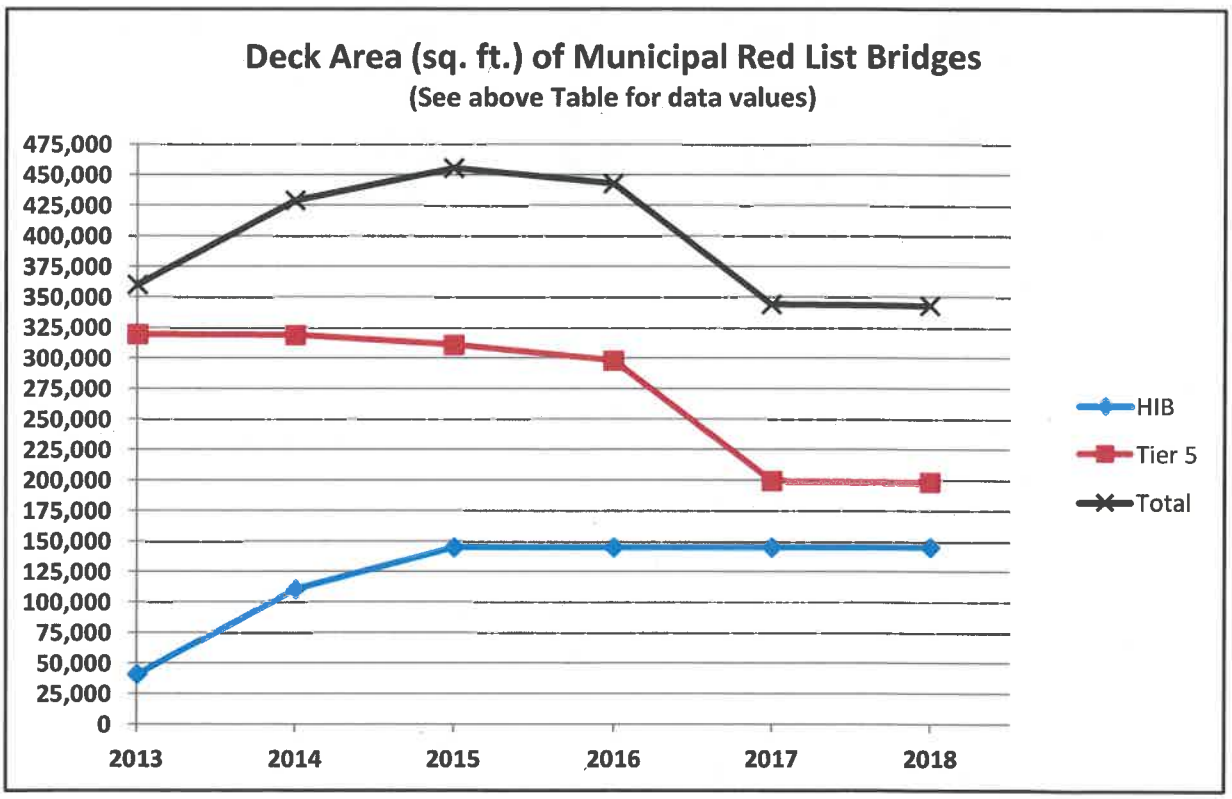


The above data show a 91.3% reduction in the Tier 1 deck area of Turnpike Red List bridges from 2013 to 2018, mostly due to replacement of the I-293 Mill Yard bridges in Manchester. There was also a reduction in the deck areas of Turnpike Red List bridges on Tier 3 during this same time, with an overall reduction in the deck area of Turnpike Red List bridges of 56.4%.

The Table below shows a comparison of the **2018 Municipal (and Other) Red List Bridges** by tier with those of the previous 5 years. Please note that the values for 2013 - 2016 have **NOT** been adjusted for the change in the Red List definition that occurred in 2017. (See RSA 234:25-a.)

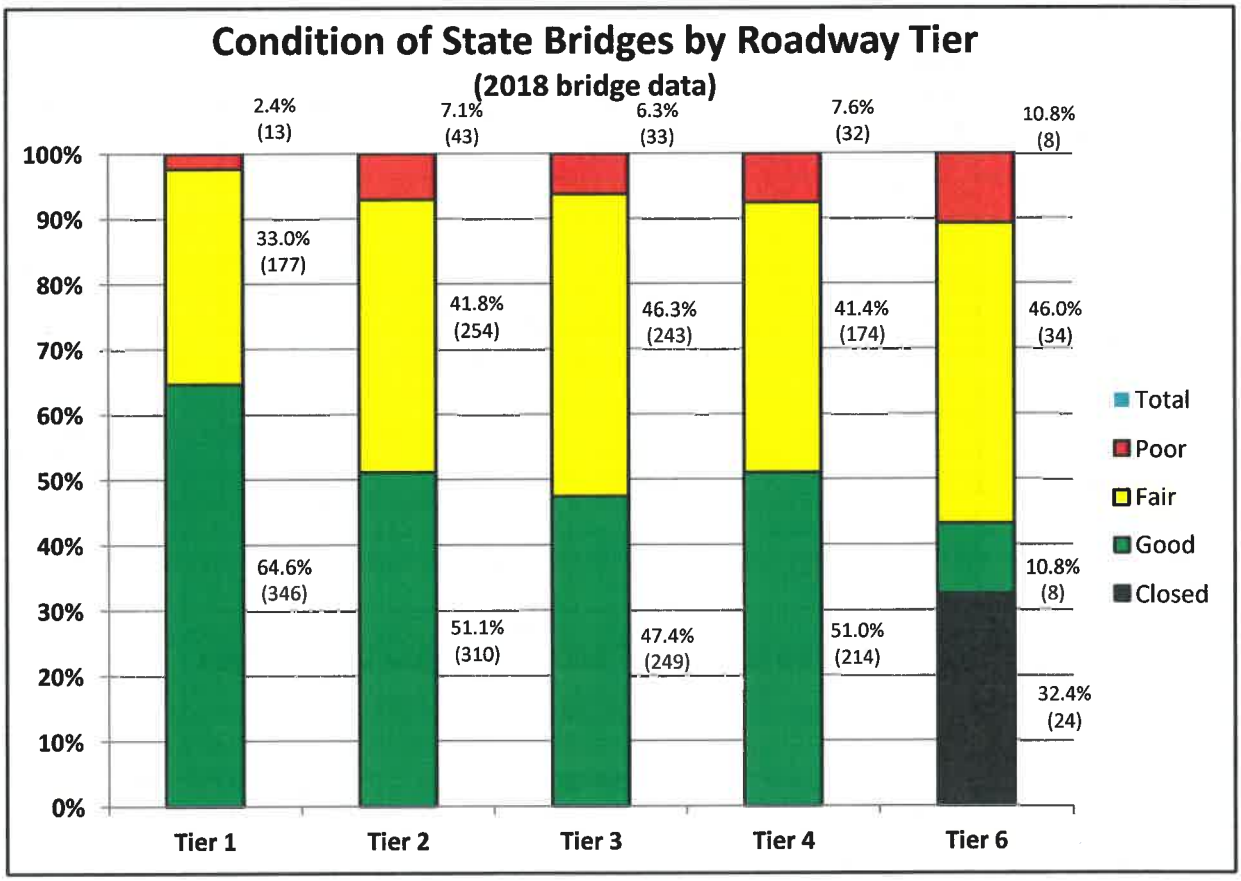
Municipal Red List		2013**	2014**	2015**	2016**	2017	2018
HIB	Number	1	2	3	3	3	3
	Deck Area (Sq. Ft.)	40,586	110,447	144,718	144,718	144,704	144,704
Tier 1	(State)	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2	(State)	N/A	N/A	N/A	N/A	N/A	N/A
Tier 3	(State)	N/A	N/A	N/A	N/A	N/A	N/A
Tier 4	(State)	N/A	N/A	N/A	N/A	N/A	N/A
Tier 5	Number	350	342	335	321	249	238
	Deck Area (Sq. Ft.)	319,151	318,291	310,475	297,762	199,038	197,993
Tier 6	(State)	N/A	N/A	N/A	N/A	N/A	N/A
Totals:	Number	351	344	338	324	252	241
	Deck Area (Sq. Ft.)	359,737	428,738	455,193	442,480	343,742	342,697

** Values in these columns have **NOT** been adjusted for 2017 change in Red List definition. (See RSA 234:25-a.)



From the data displayed in the Chart above, it appears that the amount of deck area of municipal Red List bridges, which are on Tier 5 roadways, decreased significantly in 2017. However, this graphic misrepresentation is a result of displaying the 2013 – 2016 bridge data that has not been adjusted for the 2017 change in Red List definition, with the 2017 and 2018 bridge data that adheres to the 2017 change in Red List definition.

The following graphic displays the relative number of total state-owned (including Turnpikes) Red, Yellow, and Green List bridges, based on 2018 bridge inspection data, for all State owned roadway Tier levels. In this graphic the HIBs are included in their respective roadway Tier classifications.



Red List Bridge Count by Roadway Tier (2018)					
Tier 1	Tier 2	Tier 3	Tier 4	Tier 6	Total
13	43	33	32	8	129

4 Strategy and Life Cycle Costs for State Bridges

A strategy has been developed to estimate funding needs for state bridges based on specific tasks to address deficiencies within each work category (maintenance, preservation, rehabilitation, or replacement). Costs and frequency schedules have been developed to perform these tasks and applied according to each type of bridge (girder, truss, moveable, timber, culvert), so that project and program funding can be estimated and allocated. Specific goals have been established for various work efforts that, when applied to the state bridge inventory, are intended to improve the overall condition of New Hampshire bridges over time and provide the lowest life cycle cost. Please refer to *NHDOT Bridge Program – Recommended Investment Strategy* (https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/bridgeprogramrecommendedinvestmentstrategy.pdf) for further information.

4.1 Bridge Life Cycle – Characteristics and Costs

As each bridge goes through various life cycle stages, specific needs and deficiencies develop that should be addressed. Timely investment to address deficiencies and perform specific tasks at prescribed time intervals can greatly extend their service life at an overall lower cost than only performing major element repairs. The four categories of work activities are:

- Maintenance – These tasks are performed routinely, usually on an annual or bi-annual basis, to prevent conditions from developing that would accelerate bridge deterioration.
- Preservation – These tasks are performed at specified intervals over the service life of the bridge and address specific conditions to prevent deterioration from developing or expanding. This work is generally performed in two different areas; Pavement Preservation and Bridge Preservation, with each addressing specific deficiencies and preservation needs.
- Rehabilitation – These tasks are performed at specified intervals over the service life of the bridge and address more extensive deterioration of the major bridge elements.
- Replacement – This effort involves complete replacement of the entire bridge structure or complete replacement of the superstructure (e.g., girders and deck).

Estimated costs for each work task are shown below for the five bridge types.

Activity*		Time Interval	Costs per Sq. Ft. for each Bridge Type				
			Girder	Truss	Moveable	Timber	Culvert
Maintenance	Clean & Seal Substructure	Annual	$0.10	$0.10	$0.10	$0.10	$0.10
Preservation	Crack Seal Pavement**	5 yrs	$0.07	$0.07	$0.07	$0.07	N/A
	Pavement In-lay**	10 yrs	$1.60	$1.60	$1.60	N/A	N/A
	Install/Repair Concrete Invert	10 yrs	N/A	N/A	N/A	N/A	$50.00
	Patch Deck, Replace Exp. Joints, Membrane, & Pvmt; Rehab Bearings	20 yrs	$50.00	$100.00	$200.00	$50.00	$100.00
Rehabilitation	Replace Deck, Rehabilitate Bridge	40-60 yrs	$100.00	$250.00	$350.00	$100.00	N/A
Replacement	Replace Bridge Superstructure***	80-120 yrs	$325.00	$375.00	$500.00	$250.00	$250.00
	Replace Complete Bridge (Slope Intercept Method)	80-120 yrs	$650.00	$750.00	$1,000.00	$500.00	$500.00

* Specific work activity varies by bridge type. See *Recommended Investment Strategy* for more information on each bridge type.
** These preservation tasks are performed by the Highway Design Bureau's Pavement Program; thus their costs are not included here.
*** For initial estimating purposes the superstructure replacement cost is taken to be one-half of the complete bridge replacement cost.

Based on experience with the above activities on past bridge projects, the Bridge Management Committee determined that a 60-year to 120-year service life is achievable, depending on the bridge type, for bridges that receive sufficient funds and attention to complete the recommended work tasks at the prescribed intervals.

Cost multipliers were developed for each activity, e.g., maintenance, preservation, rehabilitation, or replacement, based on various characteristics of the specific bridge and site, such as type of bridge and roadway tier (including the traffic volume considerations) of the bridge. When preparing the "global" bridge program funding needs, these multipliers are applied as appropriate for the specific characteristics of the proposed bridge activity.

4.2 Bridge Maintenance – Work Tasks

This effort includes: Cleaning the bridge to remove dirt, debris, and deicing (road salt) residue; Sealing bridge substructure to prevent road salt infiltration; Cleaning bridge drainage systems; Clearing vegetation; Etc. Maintenance also includes the repair of expansion plug joints and bearings, which are performed at intervals of up to 5 years. These combined tasks ($0.10 per sq. ft.) should be performed annually to prevent conditions from developing that would accelerate bridge deterioration. All maintenance tasks are usually performed by the NHDOT Bridge Maintenance Bureau.

4.3 Bridge Preservation – Work Tasks

Pavement Preservation – This includes crack sealing of the pavement ($0.07 per sq. ft.) every 5 years or installing a 1" pavement inlay ($1.60 per sq. ft.) every 10 years. This work is completed as part of the Pavement Program administered by the Highway Design Bureau.

Bridge Preservation – This includes; repairs to the substructure; deck patching; replacement of bridge copings; replacement of expansion joints; replacement of waterproofing membrane and bridge pavement; and; replacement or rehabilitation of bearings. These combined efforts ($50.00 per sq. ft. to $200.00 per sq. ft.; varies by bridge type) should be performed every 20 years and are completed as part of the Bridge Preservation Program administered by the Bridge Management Committee, completed through Bridge Design contracts or Bridge Maintenance efforts. Touch-up painting of the structural steel is also a preservation effort and is included in the above cost estimate.

For a list and location map of all state bridges that received Preservation work during FFY 2018, please see Appendix "D".

4.4 Bridge Rehabilitation – Work Tasks

Replace Bridge Deck – This includes replacing the bridge pavement and membrane, concrete deck, bridge rail & bridge approach rail, expansion joint(s), and bridge bearings, and performing substructure patching/repair. These combined efforts ($100.00 per sq. ft. to $350.00 per sq. ft.; varies by bridge type) should be performed every 40 to 60 years and are completed as part of the Bridge Rehabilitation and Replacement Program administered by the Bridge Management Committee, completed through Bridge Design contracts or Bridge Maintenance efforts.

The base cost to remove all lead based paint and apply a new paint coating is usually handled under a separate program and therefore is not included in the above cost estimate.

For a list and location map of all state bridges that received Rehabilitation work during FFY 2018, please see Appendix "E".

4.5 Bridge Replacement – Work Tasks

Replace Superstructure – This involves replacing the bridge superstructure, including the deck, girders, bridge & approach rail, bearings, expansion joints, and major substructure rehabilitation. These combined efforts ($325.00 per sq. ft. to $500.00 per sq. ft., varying by bridge type) should be performed once at the end of the projected 60 to 120-year life of the bridge. Depending on the overall condition of the bridge, the best solution may be to replace the entire bridge, instead of only replacing the superstructure.

Replace Bridge – This involves completely removing the existing bridge and replacing it with a new bridge ($650.00 per sq. ft. to $1,000.00 per sq. ft.; varies by bridge type). This effort should be performed at the end of the projected 60 to 120-year life of the bridge. Depending on the overall condition of the bridge, the best solution may be to replace just the bridge superstructure as noted above, instead of replacing the entire bridge.

The "per square foot" cost estimate is an average of the costs required to perform either superstructure replacement or complete replacement of a girder bridge. During development of the project the scope of work may change from a superstructure replacement to a complete bridge replacement, as the specific condition and needs of a deficient bridge are fully identified and quantified. Further, there may be roadway capacity issues that need to be addressed as well, which could require a larger bridge, thereby necessitating a complete bridge replacement. Using this averaged value for replacement actions provides the best "global" estimate for planning and funding purposes for projects in the overall Bridge Program.

These combined efforts should be performed at the end of the projected service life of the bridge and are completed as part of the Bridge Rehabilitation and Replacement Program administered by the Bridge Management Committee, completed through Bridge Design contracts or Bridge Maintenance efforts.

For a list and location map of all state bridges that were Replaced during FFY 2018, please see Appendix "F".

5 Bridge Program Accomplishments in 2018 and Bridge Program Work Plan for the Next Three Years (2019 – 2021)

As can be seen from the information presented in Sections 2 & 3, the Department is making some progress toward reducing the deck area of deficient Red List bridges in the state. Bridge projects, completed through Bridge Design contracts or Bridge Maintenance efforts, that collectively perform maintenance, preservation, and rehabilitation activities, are also important, as these efforts address identified bridge deficiencies before they become more costly bridge replacements.

5.1 Performance Goals and Results of Efforts of Previous Year

As previously stated, the Bridge Performance Goals as set forth by the Bridge Management Committee (BMC) and the Performance Workgroup, are:

1. Implement the *Recommended Investment Strategy* (RIS) to attain the maximum service life, which varies from 60 - 120 years based on bridge type, for all types of bridges in New Hampshire.

2. Inspect all state and municipal/other bridges to meet Federal and State inspection and reporting requirements.

3. Manage all posted (weight restricted) bridges to reduce or eliminate constraints affecting the safe and efficient movement of goods and services, including emergency response, on the overall State transportation system. Specifically, the goal is for all High Investment Bridges (HIBs) and all bridges on Tier 1 and 2 roadways to have no weight restrictions, for all Tier 3 bridges with weight restrictions to be included in the 10-Year Plan as projects to address their weight restrictions, and for all weight restricted Tier 4 bridges to be reviewed to ensure that the weight restriction for each bridge does not affect emergency response services. (Please refer to *Appendix C - Bridge Postings and Weight Restrictions* for additional information.)

4. Manage the State's Red List ("poor" condition) bridges to reduce the backlog of bridge rehabilitation and replacement efforts to the maximum extent that can be addressed within funding constraints of the State's 10-Year Transportation Improvement Plan (10-Year Plan).

5. Apply available bridge funds to limit the total area of bridge decks in "poor" condition on the National Highway System (NHS) in New Hampshire to be less than 7% of the total deck area on this highway category. This goal is more stringent than the 10% requirement stipulated by the Federal Highway Administration (FHWA).

6. Record and utilize project cost data to calculate cost estimates through all project development phases (Initial Assessment; Type, Size, & Location (TS&L); Preliminary Plans; PPS&E Plans; and PS&E Plans) to improve cost estimating practices and corresponding project cost results as the *Recommended Investment Strategy* (RIS) is efficiently and effectively implemented. The goal is for Initial Project Assessment cost estimates to be within 25% (±) of the PS&E estimate.

The Bridge Management Committee tracks the yearly accomplishments of each performance measure and reviews the anticipated funding allocations to develop future bridge projects to meet these goals to the extent possible within funding and staffing constraints. The yearly accomplishments of each of these goals are presented in more detail on the following pages.

5.1.1 Goal 1: Implement the *Recommended Investment Strategy* (RIS) to attain the maximum bridge service life, which varies from 60 - 120 years based on bridge type, for all types of bridges in New Hampshire

The accomplishments of this goal during the previous year (FFY 2018) and for the next 3 years (FFY 2019, 2020, & 2021) for State and Turnpike bridges are depicted through the following items:

5.1.1.1 Complete Bridge Preservation efforts annually on 267,629 sq. ft. or more of deck area on State (non-Turnpike) bridges and annually on 85,150 sq. ft. or more of deck area on Turnpike bridges, for FFY 2018, 2019, 2020, & 2021

(A) 10-Year Plan non-Turnpike Bridge Preservation:

Preservation efforts for State non-Turnpike bridges are funded through several different federal and state programs in the 10-Year Plan for 2019 – 2028, as outlined below:

Funding Program	Effort	Roadway Tier	Annual Funding (10-Year Plan)	Responsible Bureau
BRDG-HIB-M&P	Maintenance & Presevation	HIB	$2,920,000	Bridge Design
BRDG-T1/2-M&P*	Maintenance & Presevation	1 & 2	$7,125,000	Bridge Design
BRDG-T3/4-M&P*	Maintenance & Presevation	3 & 4	$2,560,000	Bridge Design
BET-BMT-BD	Statewide Betterment Program	State Bridges (Federal definition)	$1,500,000	Bridge Design
BET-BMT-HQ	Statewide Betterment Program for Preservation, Rehab, & Replacement	State Bridges (Federal definition)	$750,000	Bridge Maintenance
BRDG-T1/2-M&P*	Maintenance & Presevation	1 & 2	$1,000,000	Bridge Maintenance
BRDG-T3/4-M&P*	Maintenance & Presevation	3 & 4	$1,000,000	Bridge Maintenance
Annual Funding Program for Maintenance & Preservation			**$16,855,000**	

* Funds in these categories are allocated to both Bridge Design and Bridge Maintenance.

When referencing project data, it can be determined that the $16,855,000 available in FFY 2018 for state non-Turnpike bridge preservation efforts has been expended when PE, ROW, and CONST costs are included for each project. Efforts by the Bridge Design Bureau and the Bridge Maintenance Bureau ensured full application of all State non-Turnpike Bridge Preservation Program funds for FFY 2018.

The numerical value of this State non-Turnpike preservation annual goal is determined by dividing the total deck area of all bridges for each roadway tier, according to bridge type, and then dividing those totals by the projected life cycle of the specific work activity, i.e., preservation. For example, for preservation efforts on State non-Turnpike girder bridges:

There are 27 state non-Turnpike girder HIBs having a total deck area = 1,299,765 sq. ft.
There are 295 state non-Turnpike Tier 1 girder bridges having a total deck area = 2,135,097 sq. ft.
There are 288 state non-Turnpike Tier 2 girder bridges having a total deck area = 1,561,128 sq. ft.
There are 279 state non-Turnpike Tier 3 girder bridges having a total deck area = 847,766 sq. ft.
There are 235 state non-Turnpike Tier 4 girder bridges having a total deck area = 788,972 sq. ft.
All Tier 5 bridges are owned by the municipalities.
There are 23 state non-Turnpike Tier 6 girder bridges having a total deck area = 21,620 sq. ft.

Total State non-Turnpike girder bridge deck area = 6,654,348 sq. ft.

The *Recommended Investment Strategy* (RIS) states that preservation activities should be performed 4 times on each girder bridge over its projected 120-year life cycle. This means that 1/30th of the state non-Turnpike girder bridge inventory, i.e., 6,654,348 / 30 = 221,812 sq. ft., should receive bridge preservation work each year. For all bridge types the total non-Turnpike bridge preservation annual goal is 8,028,867 / 30 = 267,629 sq. ft. The 221,812 sq. ft. goal for girder bridges is clearly a major portion of this total non-Turnpike bridge preservation annual goal.

Based on the 10-Year Plan allocation of funds for non-Turnpike bridge preservation efforts, it is projected that up to 6 projects per year, with each project bundling 3 to 4 bridges, can be advertised by the Bridge Design Bureau, with similar efforts by the Bridge Maintenance Bureau, to utilize this funding and work toward accomplishing State non-Turnpike bridge preservation annual goals.

(B) 10-Year Plan Turnpike Bridge Preservation:

Preservation efforts for Turnpike bridges are funded solely through the Turnpike program in the 10-Year Plan for 2019 – 2028. When referencing project data, it can be determined that programmed Turnpike bridge preservation funds have been expended by the Bridge Design Bureau and the Bridge Maintenance Bureau, with PE, ROW, and CONST costs included for each project. These combined efforts ensured full application of all Turnpike Bridge Preservation Program funds during FFY 2018.

The numerical value of this Turnpike bridge preservation goal for FFY 2018 is determined by dividing the total deck area of all Turnpike bridges for each roadway tier, according to bridge type, and then dividing those totals by the projected life cycle of the specific work activity, i.e., preservation.

For example, for preservation efforts on Turnpike girder bridges:

There are 10 Turnpike girder HIBs having a total deck area = 725,476 sq. ft.
There are 88 Turnpike Tier 1 girder bridges having a total deck area = 993,430 sq. ft.
There are 12 Turnpike Tier 2 girder bridges having a total deck area = 169,576 sq. ft.
There are 12 Turnpike Tier 3 girder bridges having a total deck area = 156,076 sq. ft.
There are 22 Turnpike Tier 4 girder bridges having a total deck area = 209,391 sq. ft.
All Tier 5 bridges are owned by the municipalities.
There are 4 Turnpike Tier 6 girder bridges having a total deck area = 19,091 sq. ft.
Total Turnpike girder bridge deck area = 2,273,040 sq. ft.

The *Recommended Investment Strategy* (RIS) states that preservation activities should be performed 4 times on each girder bridge over its projected 120-year life cycle. This means that 1/30th of the Turnpike girder bridge inventory, i.e., 2,273,040 / 30 = 75,768 sq. ft., should receive preservation work each year. For all bridge types the total Turnpike bridge preservation annual goal is 2,554,515 / 30 = 85,150 sq. ft. The 75,768 sq. ft. goal for girder bridges is clearly a major portion of this total Turnpike bridge preservation annual goal.

Based on the 10-Year Plan allocation of funds for Turnpike bridge preservation efforts, it is projected that up to 5 projects per year, with each project bundling 2 to 6 bridges, can be advertised by the Bridge Design Bureau, with similar efforts by the Bridge Maintenance Bureau, to utilize this funding and work toward accomplishing Turnpike bridge preservation annual goals.

(C) FFY 2018 Bridge Preservation

(C1) FFY 2018 Bridge Preservation (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2018, the Bridge Design Bureau advertised 3 projects to perform preservation work on 6 State non-Turnpike bridges having a total deck area of 131,730 sq. ft., which is 49.2% of our 267,629 sq. ft. State non-Turnpike bridge preservation annual goal for all bridge types. Details for these projects advertised by Bridge Design in FFY 2018 are listed below.

FFY 2018 State non-Turnpike Bridge Preservation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Barnstead (131/108 & 097/089)	41301	2	2	Girder	5,866	$992,900	$169
Bedford - Manchester (Bedford 199/128; Bedford 199/129)	40731	2	1	Girder	100,607	$5,088,300	$51
Hopkinton (049/096 & 086/084)	41303	2	2	Girder	25,257	$2,928,900	$116
FFY 2018 Bridge Preservation Totals:	**3 Projects**	**6**			**131,730**	**$9,010,100**	
Bridge Design - FFY 2018 Average Bridge Preservation Cost per Sq. Ft. =					**$68**		

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

A review of this project data shows an average cost of ($9,010,100/131,730 sq. ft.) = $68/sq. ft. for State non-Turnpike bridge preservation, which is greater than but close to the system-wide $50 per sq. ft. base cost estimate described in the *NHDOT Bridge Program – Recommended Network Funding* for bridge preservation work on Tier 1 girder bridges.

The cost differences are likely the result of the following considerations:

- Some of the projects above include bridge painting activities, which increases the average project cost per sq. ft.
- The 4 bridges in the Barnstead 41301 and Hopkinton 41303 projects listed above are located on Tier 2 roadways, which necessitate application of the Preservation multiplier of 2.0 for Tier 2 girder bridges. Thus, for these 4 bridges the $116 per sq. ft. and $169 per sq. ft. actual costs should be compared to a base estimated Preservation cost of (2.0 x $50/sq. ft. =) $100 per sq. ft. for girder bridges.
- The Bedford-Manchester 40731 project performed preservation work on 2 very long bridges on the Interstate system. This effort resulted in all traffic control and other typical "highway" items being included with the bridge costs, which generally increases the average project cost per sq. ft. However, the large deck areas of these bridges result in $51/sq. ft., which is essentially the same as the $50 per sq. ft. cost estimated in the *NHDOT Bridge Program – Recommended Network Funding* for girder bridges on Tier 1 roadways.
- The Bridge Preservation Program is just recently implemented, and thus the above projects likely include bridges that have not received recommended preservation work in the past, and now may require more extensive bridge preservation activities than would be expected for a bridge that has received such work as is recommended.

Based on the above summary, the average project costs for bridge preservation appear close to the costs estimated in the *NHDOT Bridge Program – Recommended Network Funding*, especially when considering the roadway Tiers on which these bridges are located.

This data also demonstrates the importance of annually reviewing and updating cost data used to develop bridge preservation estimates for future projects, so that over time the estimated costs and actual costs will be more in line with each other. Some of these considerations may also apply to the estimated and actual costs for bridge rehabilitation and replacement projects, necessitating the review and update of those costs as well.

FFY 2018 - Other non-Turnpike Preservation Projects – Bridge Design Bureau

In addition to the previously noted bridge preservation projects, during FFY 2018 the Bridge Design Bureau also advertised 4 other bridge related projects, as listed below.

FFY 2018 State non-Turnpike Bridge - Other Projects (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Preservation Task	Project/Bridge Construction Cost
Concord (163/024; 164/024; 165/029; 166/029)	41704	4	1	Bridge painting	$1,360,200
Seabrook - Hampton (Hampton 235/025)	41510	1	2	Interim repairs to coupling mechanism of bascule lift bridge	$602,800
Statewide (Lebanon 097/112; Lebanon 098/111; Lebanon 099/111; Peterborough 108/116; Westmoreland 109/124; Hinsdale 132/113; Plainfield 162/100; Cornish 172/148)	27287	8	1, 2, & 3	Scour protection	$1,099,600
Statewide (Amherst 135/109; Bow 132/160; Concord 142/116; Concord 150/107; Concord 152/107; Concord 154/121; Gilford 114/066; Lebanon 093/109; Lebanon 094/108; Lebanon 103/116; Manchester 176/106; Merrimack 107/131; Merrimack 114/140; Warner 202/136)	41611	15	1, 2, 3, & 4	Install protective shielding under poor bridge decks	$1,777,100
Bridge Design - FFY 2018 "Other" Totals:	**4 Projects**	**28**			**$4,839,700**

The information presented in the table above shows that on State non-Turnpike bridge preservation projects in FFY 2018, a Project/Bridge Construction funding total of ($9,010,100 + $4,839,700) = $13,849,800 was expended by Bridge Design.

(C2) FFY 2018 Bridge Preservation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2018, the Bridge Maintenance Bureau performed preservation work on 13 State non-Turnpike bridges in its 2018 Work Plan having a total deck area of 70,070 sq. ft., which is 26.2% of our 267,629 sq. ft. State non-Turnpike bridge preservation annual goal for all bridge types. Details for the bridges that received preservation activities by Bridge Maintenance in FFY 2018 are listed below.

FFY 2018 State non-Turnpike Bridge Preservation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Candia	084/069	1	4	Girder	6,412	$111,943	$17
Concord	152/108	1	1	Girder	15,665	$123,464	$8
Conway	173/062	1	2	Girder	1,815	$50,776	$28
Gilford	114/066	1	2	Girder	4,896	$101,848	$21
Gorham	092/058	1	2	Girder	6,489	$120,695	$19
Gorham	044/113	1	4	Girder	1,654	$124,471	$75
Hampton	207/094	1	2	Girder	5,859	$380,674	$65
Haverhill	219/178	1	2	Truss	8,371	$23,194	$3
Marlborough	090/127	1	2	Culvert	250	$166,361	$665
Orford	062/124	1	3	Truss	11,126	$32,386	$3
Peterborough	121/127	1	3	Culvert	594	$53,254	$90
Randolph	040/044	1	4	Girder	1,630	$41,396	$25
Sanbornton	124/074	1	1	Girder	5,309	$56,028	$11
FFY 2018 non-Turnpike Bridge Preservation Totals:	**13 Projects**	**13**			**70,070**	**$1,386,490**	
Bridge Maintenance - FFY 2018 Average Bridge Preservation Cost per Sq. Ft. =						**$20**	

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

In addition to the Preservation work noted above for FFY 2018, the Bridge Maintenance Bureau also performed 334 bridge repairs, including work on joints, decks, substructures, rail, etc., on State non-Turnpike bridges. This work is in addition to the activity schedules listed in the *Recommended Investment Strategy.*

A review of this project data shows that Bridge Maintenance performed preservation tasks on these comparatively smaller bridges very cost effectively as compared to "traditional" design-bid-build preservation projects developed by the Bridge Design Bureau. However, it is also important to recognize that Bridge Maintenance efforts frequently involve preservation work on specific elements, such as curbs, piers, or expansion joints, rather than preservation work on the entire bridge deck. When the costs for preservation work on these specific items are distributed over the area of the entire bridge deck, it can result in exceptionally low per sq. ft. costs, perhaps making a direct comparison with Bridge Design projects inaccurate.

It is also important to note the staffing and funding constraints of the Bridge Maintenance Bureau, which is one reason that large preservation projects with high traffic volumes are usually handled by Bridge Design and are not typically undertaken by Bridge Maintenance crews.

(C3) FFY 2018 Bridge Preservation (Turnpike) – Bridge Design Bureau:

There were no Bridge Preservation projects for Turnpike bridges programmed for advertising by the Bridge Design Bureau for FFY 2018.

FFY 2018 - Other Turnpike Preservation Projects – Bridge Design Bureau

In FFY 2018 the Bridge Design Bureau advertised other bridge related Turnpike projects, as listed below.

FFY 2018 State Turnpike Bridge - Other Projects (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Preservation Task	Project/Bridge Construction Cost
Hampton (113/168; 118/129)	40603	2	3, 4	Bridge painting	$1,849,700
FFY 2018 Turnpike Bridge - Other Totals:	**1 Project**	**2**			**$1,849,700**

(C4) FFY 2018 Bridge Preservation (Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2018, the Bridge Maintenance Bureau performed preservation work on 2 Turnpike bridges in its 2018 Work Plan having a total deck area of 16,638 sq. ft., which is 19.5% of our 85,150 sq. ft. Turnpike bridge preservation annual goal for all bridge types. In addition, Turnpike bridge repair efforts were performed during this time. Details for the Turnpike bridges that received preservation work by Bridge Maintenance in FFY 2018 are listed below. This effort utilizes Turnpike funds.

FFY 2018 Turnpike Bridge Preservation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project Construction Cost	Cost Per Sq. Ft.
Concord	201/096	1	1	Girder	10,160	$224,681	$22
Portsmouth	199/139	1	1	Girder	6,478	$570,636	$88
FFY 2018 Turnpike Bridge Preservation Totals:	**2 Projects**	**2**			**16,638**	**$795,317**	
Bridge Maintenance - FFY 2018 Average Turnpike Bridge Preservation Cost per Sq. Ft. =					**$48**		
*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)							

The $48 per sq. ft. average cost is very comparable to the $50 per sq. ft. base preservation cost estimated in *NHDOT Bridge Program – Recommended Network Funding*. For further information, please refer to the explanation provided above for non-Turnpike bridge preservation work performed by Bridge Maintenance in FFY 2018.

(C5) FFY 2018 Preservation Summary – State and Turnpike Bridges

During FFY 2018 the Bridge Design and Bridge Maintenance Bureaus performed preservation activities on a total of 22 bridges, having a combined deck area of 218,438 sq. ft. This effort represents 61.9% of our combined (267,629 sq. ft. + 85,150 sq. ft. = 352,779 sq. ft.) total Bridge Preservation annual goal for all bridge types. In addition, 4 bridges were painted, 1 bridge received mechanical repairs, 8 bridges received scour protection, and 15 bridges had protective shielding installed under bridge decks in poor condition, as summarized in the following table. Also, 334± bridges received repair efforts.

FFY 2018 State & Turnpike Bridge Preservation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Types*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	16	19	1, 2, 3, & 4	Girder, Truss, Culvert	201,800	$10,396,590	$52
State non-Turnpike - Other (Painting, Mechanical, Scour, Shielding)	4	28	1, 2, 3, & 4		N/A	$4,839,700	N/A
Turnpike	2	2	1, 2, 3, & 4	Girder	16,638	$795,317	$48
Turnpike - Other (Painting)	1	2	3, 4		N/A	$1,849,700	N/A
FFY 2018 SUMMARY - Bridge Preservation Totals:	**22 Projects**	**51**			**218,438**	**$17,881,307**	
					Total Cost Excluding "Other" Projects =	**$11,191,907**	
FFY 2018 Average Bridge Preservation Cost per Sq. Ft. = (Excluding "Other" Projects)					**$51**		

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

The above data, which compiles the FFY 2018 bridge preservation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in an average bridge preservation cost of $51 per sq. ft., which compares well with the $50 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding* for girder bridges located on Tier 1 roadways. It should be noted, however, that the efforts by Bridge Maintenance can at times significantly lower the average per sq. ft. cost when combined with Bridge Design project data. Regardless, when considering that the FFY 2018 bridge preservation efforts involve bridges on Tier 1, 2, 3, & 4 roadways, these data show a favorable comparison with the per sq. ft. costs estimated in the *NHDOT Bridge Program – Recommended Network Funding*. However, it is important to annually re-evaluate the estimated cost per sq. ft. for all bridge activities. This effort helps to ensure that values are up to date, with the goal of developing accurate project cost estimates.

(D) FFY 2019 Bridge Preservation

(D1) FFY 2019 Bridge Preservation (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Design Bureau has programmed funds to advertise 5 projects to perform bridge preservation work on 18 State non-Turnpike bridges having a total deck area of 86,767 sq. ft., which is 32.4% of our 267,629 sq. ft. bridge preservation annual goal for all State non-Turnpike bridge types. Details for the bridge preservation projects scheduled to be advertised by Bridge Design in FFY 2019 are listed below.

Additional projects may be added to the FFY 2019 Bridge Preservation Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2019 State non-Turnpike Bridge Preservation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Bethlehem (111/064)	41901	1	2	Girder	14,630	$1,435,100	$98
Haverhill (067/092)	41297	1	2	Girder	3,176	$1,164,900	$367
Lebanon (097/112; 098/111; Bridge portions only; no Roadway items.)	41191 (partial)	2	1	Girder	22,908	$1,270,455	$55
Portsmouth - New Castle (Portsmouth 241/053; New Castle 031/142)	41253	2	3	Girder	35,115	$2,205,500	$63
Warner (expansion/plug joints only; 164/103; 164/104; 166/103; 166/104; 184/113; 185/112; 195/122; 196/121; 199/128; 202/136; 204/136; 206/141 (20 ft. wide work area assumed across width of each bridge)	42546	12	1	Girder, Culvert	10,938	$1,576,600	$144
Estimated FFY 2019 Bridge Preservation Totals:	**5 Projects**	**18**			**86,767**	**$7,652,555**	
Bridge Design - FFY 2019 Projected Average Bridge Preservation Cost per Sq. Ft. =					**$88**		

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

The above data results in an average per sq. ft. cost of $88 estimated for these 18 bridges on Tier 1, 2, & 3 roadways. The *NHDOT Bridge Program – Recommended Network Funding*, lists per sq. ft. costs of $50 for preservation work on bridges on Tier 1 roadways, along with a Preservation multiplier of 2.0 for Tier 2 roadways and 1.5 for Tier 3 roadways.

Thus, the estimated $98 per sq. ft. for the Bethlehem 41901 project and the $367 per sq. ft. for the Haverhill 41297 project, should be compared to the (2.0 x $50) = $100 per sq. ft. for bridges on Tier 2 roadways. Similarly, the estimated $63 per sq. ft. for the Portsmouth-New Castle 41253 project should be compared to the (1.5 x $50) = $75 per sq. ft. for bridges located on Tier 3 roadways.

The Lebanon 41191 project cost estimate of $55 per sq. ft. compares favorably to the $50 per sq. ft. system-wide cost estimated for bridges on Tier 1 roadways. Since the cost listed above is only for the bridge work, i.e., roadway costs removed, this comparison supports the current $50 per sq. ft. estimated Preservation cost for girder bridges on Tier 1 roadways.

The Warner 42546 project involves preservation work to replace the expansion/plug joints on 12 bridges on I-89, a Tier 1 roadway. The work is estimated to only affect an assumed 20-ft. section across each bridge deck. This activity is tedious and time consuming, and results in an estimated $144 cost per sq. ft., much greater than the $50 per sq. ft. base preservation cost for Tier 1 girder bridges. With the traffic control costs and specific deck area affected, the project costs are much higher than average, likely due to applying the full project cost to the specific area of the deck affected by the work, rather than applying the project cost to the entire deck, which would skew the comparison in the opposite manner.

The above data and comparisons should be kept in mind when estimating future project costs for similar specific bridge preservation work.

FFY 2019 - Other non-Turnpike Preservation Projects – Bridge Design Bureau

In addition to the previously noted bridge preservation projects scheduled for FFY 2019, the Bridge Design Bureau also anticipates advertising other bridge related projects, as shown in the following table.

FFY 2019 State non-Turnpike Bridge - Other Projects (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Preservation Task	Estimated Project Construction Cost
Sanbornton - New Hampton (Sanbornton 124/074; Sanbornton 125/075; New Hampton 137/060; New Hampton 138/060; New Hampton 147/082; New Hampton 148/081)	41705	6	1	Bridge Painting	$2,057,700
Estimated FFY 2019 non-Turnpike Bridge - Other Totals:	**1 Project**	**6**			**$2,057,700**

The information presented in the tables above show that on non-Turnpike bridge preservation projects in FFY 2019, a Project/Bridge Construction funding total of ($7,652,555 + $2,057,700) = $9,710,255 is anticipated to be expended by Bridge Design.

(D2) FFY 2019 Bridge Preservation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Maintenance Bureau anticipates performing preservation activities on 4 State non-Turnpike bridges in its 2019 Work Plan having a total deck area of 2,645 sq. ft., which is 1.0% of our 267,629 sq. ft. bridge preservation annual goal for all State non-Turnpike bridge types. Project details for these bridge preservation efforts are listed below. In addition, 250± bridge repair efforts are anticipated. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2019 State non-Turnpike Bridge Preservation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Brookline	091/076	1	3	Culvert	959	$49,644	$52
Franconia	069/049	1	3	Girder	670	$122,181	$182
Landaff	124/043	1	3	Girder	573	$54,332	$95
Marlborough	089/127	1	2	Girder	443	$90,310	$204
Estimated FFY 2019 Bridge Preservation Totals:	**4 Projects**	**4**			**2,645**	**$316,467**	
Bridge Maintenance - FFY 2019 Projected Average Bridge Preservation Cost per Sq. Ft. =						**$120**	

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

The $120 per sq. ft. cost is much greater than the $50 per sq. ft. base preservation cost estimated in *NHDOT Bridge Program – Recommended Network Funding* for girder bridges located on Tier 1 roadways. Since the majority of the above listed bridges are located on Tier 3 and 4 roadways, the $120 per sq. ft. should be compared to (1.5 x $50) = $75 per sq. ft. when the Tier Multiplier is applied.

In addition to the Preservation work noted above for FFY 2019, the Bridge Maintenance Bureau also anticipates performing 250± bridge repairs, including work on joints, decks, substructures, rail, etc., on State non-Turnpike bridges. This work is in addition to the activity schedules listed in the *NHDOT Bridge Program - Recommended Investment Strategy*.

FFY 2019 - Other non-Turnpike Preservation Projects – Bridge Maintenance Bureau

In addition to the previously noted bridge preservation projects scheduled for FFY 2019, the Bridge Maintenance Bureau also anticipates performing other bridge related projects, as shown below.

FFY 2019 State non-Turnpike Bridge - Other Projects (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Preservation Task	Estimated Project Construction Cost
Hampton	235/025	1	2	Scour Protection	$42,653
Estimated FFY 2019 non-Turnpike Bridge - Other Totals:	**1 Project**	**1**			**$42,653**

The information presented in the tables above show that on non-Turnpike bridge preservation projects in FFY 2019, a Project/Bridge Construction funding total of ($316,467 + $42,653) = $359,120 is anticipated to be expended by Bridge Maintenance.

(D3) FFY 2019 Bridge Preservation (Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Design Bureau has programmed funds to advertise 1 project to perform bridge preservation work on 1 Turnpike girder bridge having a deck area of 189,295 sq. ft., and 1 Turnpike truss bridge having a deck area of 70,280 sq. ft. (NH portion), for a total deck area of 259,575 sq. ft., which is 304.8% of our 85,150 sq. ft. Turnpike bridge preservation annual goal for all bridge types. Details for this Turnpike bridge preservation project, co-developed by Bridge Design and Maine DOT and to be advertised by Maine DOT in FFY 2019, are listed below. This effort utilizes Turnpike funds.

FFY 2019 Turnpike Bridge Preservation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost (NH portion)	Cost Per Sq. Ft.
Portsmouth, NH - Kittery, ME (NH portion only)							
(Portsmouth 257/127 (girder))	16189	2	HIB	Girder	189,295	$20,939,800	$111
(Portsmouth 258/128 (truss; 70,280 sq. ft. = NH portion))				Truss	70,280	$7,774,400	$111
FFY 2019 Turnpike Bridge Preservation Totals:	**1 Project**	**2**			**259,575**	**$28,714,200**	
Bridge Design - FFY 2019 Projected Average Turnpike Bridge Preservation Cost per Sq. Ft.					**$111**		
*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)							

The Portsmouth 257/127 (girder) and 258/128 (truss) bridges have a combined estimated preservation cost of ($28,714,200 / 259,575 sq. ft.) = $111/sq. ft., which is much greater than the system-wide $50 per sq. ft. preservation cost for a HIB girder bridge and slightly higher than the system-wide $100 per sq. ft. preservation cost for a HIB truss bridge, as described in the *NHDOT Bridge Program – Recommended Network Funding*. This increased cost is most likely due to the exceptionally difficult traffic control methods required to shift lanes on this high volume Interstate highway bridge, which involves two states, a long river crossing, and an interchange. In addition, construction is restricted to specific calendar "windows" over multiple construction seasons to accommodate high seasonal traffic volumes, contributing further to the high per sq. ft. project cost.

(D4) FFY 2019 Bridge Preservation (Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Maintenance Bureau anticipates performing preservation activities on 1 Turnpike bridge in its 2019 Work Plan having a total deck area of 14,913 sq. ft., which is 17.5% of our 85,150 sq. ft. bridge preservation annual goal for all Turnpike bridge types. Project details are listed below for this bridge preservation effort, which utilizes Turnpike funds.

FFY 2019 Turnpike Bridge Preservation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
North Hampton	089/123	1	4	Girder	14,913	$320,982	$22
Estimated FFY 2019 Bridge Preservation Totals:	**1 Project**	**1**			**14,913**	**$320,982**	
Bridge Maintenance - FFY 2019 Projected Average Bridge Preservation Cost per Sq. Ft. =					**$22**		
*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)							

The $22 per sq. ft. average cost is much less than the $50 per sq. ft. base preservation cost estimated in *NHDOT Bridge Program – Recommended Network Funding*. For further information, please refer to the explanation provided above for non-Turnpike bridge preservation work performed by Bridge Maintenance in FFY 2018.

(D5) FFY 2019 Preservation Summary – State and Turnpike Bridges

During FFY 2019 the Bridge Design and Bridge Maintenance Bureaus anticipate performing preservation activities on a total of 32 bridges, having a combined deck area of 363,900 sq. ft. This effort represents 103.2% of our combined (267,629 sq. ft. + 85,150 sq. ft. = 352,779 sq. ft.) total Bridge Preservation annual goal for all bridge types. In addition, 6 bridges will be painted, 1 bridge will receive scour protection, and 260± bridges are anticipated to receive repair efforts.

FFY 2019 State & Turnpike Bridge Preservation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	9	22	1, 2, 3	Girder, Culvert	89,412	$7,959,022	$89
State non-Turnpike - Other	2	7	1, 2	N/A	N/A	$2,100,353	N/A
Turnpike	2	3	HIB, 4	Girder, Truss	274,488	$29,035,182	$106
Turnpike - Other	0	0	N/A	N/A	N/A	N/A	N/A
FFY 2019 SUMMARY - Bridge Preservation Totals:	**13 Projects**	**32**			**363,900**	**$39,094,557**	
					Total Cost Excluding "Other" Projects =	**$36,994,204**	
Projected FFY 2019 Average Bridge Preservation Cost per Sq. Ft. = (Excluding "Other" Projects)					**$102**		
*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)							

The above data, which compiles the FFY 2019 bridge preservation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in an average bridge preservation cost of $102 per sq. ft. This is much greater than the $50 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding* for girder bridges located on Tier 1 roadways, and comparatively greater than the (1.5 x $50 =) $75 per sq. ft. cost for bridges on Tier 2, 3, and 4 roadways. A more detailed explanation of costs is provided further above specifically for these Bridge Design and Bridge Maintenance preservation projects scheduled for FFY 2019.

(E) FFY 2020 Bridge Preservation

(E1) FFY 2020 Bridge Preservation (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2020, the Bridge Design Bureau has programmed funds to advertise 7 projects to perform bridge preservation work on 12 bridges (non-Turnpike) having a total deck area of 124,923 sq. ft., which is 46.7% of our 267,629 sq. ft. State non-Turnpike bridge preservation annual goal for all bridge types. Details for the bridge preservation projects scheduled to be advertised by Bridge Design in FFY 2020 are listed below. Additional projects may be added to the FFY 2020 Bridge Preservation Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2020 State non-Turnpike Bridge Preservation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Bethlehem - Carroll (Bethlehem 125/177; Carroll 173/141)	42501	2	2	Girder	26,853	$2,850,000	$106
Boscawen (131/035; 139/040)	42440	2	2	Girder	24,519	$1,910,670	$78
Columbia - Colebrook (Columbia 108/167; Colebrook 051/098)	42313	2	2	Girder, Culvert	7,248	$775,000	$107
Littleton (187/065)	42376	1	2	Girder	18,560	$1,649,670	$89
Ossipee (194/146)	41916	1	2	Girder	4,558	$615,850	$135
Plymouth - Campton (Plymouth 142/145; Campton 104/059; Campton 106/058)	42364	3	1, 2	Girder	20,394	$2,149,085	$105
Walpole, NH - Rockingham,VT (058/043; NH portions)	42277	1	2	Girder	22,791	$1,850,000	$81
FFY 2020 Bridge Preservation Totals:	**7 Projects**	**12**			**124,923**	**$11,800,275**	
Bridge Design - FFY 2020 Projected Average Bridge Preservation Cost per Sq. Ft. =						**$94**	

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

The above data result in an average "per sq. ft." cost of $94 estimated for these 12 bridges on Tier 1 & 2 roadways. Since nearly all of these bridges are located on Tier 2 roadways, and since the *NHDOT Bridge Program – Recommended Network Funding* lists per sq. ft. preservation costs as $50 with a 2.0 multiplier for Tier 2 roadways, the $94 per sq. ft. should be compared to (2.0 x $50) = $100 per sq. ft. Thus, the $94 per sq. ft. cost estimated for these FFY 2020 projects is very close to the $100 per sq. ft. system-wide estimated base cost for preservation of girder bridges on Tier 2 roadways.

FFY 2020 - Other non-Turnpike Preservation Projects – Bridge Design Bureau

In addition to the previously noted bridge preservation projects scheduled for FFY 2020, the Bridge Design Bureau also anticipates advertising other bridge related projects, as shown below.

FFY 2020 State non-Turnpike Bridge - Other Projects (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Preservation Task	Estimated Project Construction Cost
Conway (167/067 Covered Bridge)	25103	1	4	Scour Protection	$800,000
Cornish, NH - Windsor, VT (064/108 Covered Bridge; NH portion)	25067	1	4	Scour Protection	$2,500,000
Statewide (Dorchester 138/064; Dorchester 155/088; Easton 139/148; Landaff 079/156; Lyme 075/106; Rumney 105/063; Thornton 203/088; Woodstock 195/093; Woodstock 203/079)	41915	9	1, 2, 3, 4	Scour Protection	$1,245,000
Woodstock - Lincoln (Lincoln 202/100; Lincoln 205/100; Lincoln 207/099; Woodstock 195/103)	42534	4	3	Scour Protection	$775,000
Bridge Design - FFY 2020 "Other" Totals:	**4 Projects**	**15**			**$5,320,000**

The information presented in the tables above shows that for State non-Turnpike bridge preservation projects in FFY 2020, a Project/Bridge Construction funding total of ($10,750,000 + $5,320,000) = $16,070,000 is anticipated to be expended by Bridge Design.

(E2) FFY 2020 Bridge Preservation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2020, the Bridge Maintenance Bureau anticipates performing preservation activities on 20 State non-Turnpike bridges in its 2020 Work Plan having a total deck area of 56,764 sq. ft., which is 21.2% of our 267,629 sq. ft. bridge preservation annual goal for all State non-Turnpike bridge types. Project details for these bridge preservation efforts are listed below. In addition, 250± bridge repair efforts are anticipated. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2020 State non-Turnpike Bridge Preservation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Types*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Acworth	095/060	1	3	Girder	576	$150,000	$260
Barrington	073/127	1	2	Culvert	373	$200,000	$536
Candia	084/069	1	4	Girder	6,413	$250,000	$39
Columbia	233/128	1	4	Girder	504	$200,000	$397
Dixville	206/101	1	2	Culvert	503	$20,000	$40
Durham	093/080	1	4	Timber	720	$100,000	$139
Enfield	078/139	1	4	Girder	13,283	$150,000	$11
Gilsum	088/117	1	4	Culvert	1,120	$20,000	$18
Gorham	092/058	1	2	Girder	6,489	$150,000	$23
Hooksett	092/059	1	4	Girder	11,315	$150,000	$13
Jefferson	092/073	1	4	Culvert	1,138	$250,000	$220
Madbury	120/096	1	3	Girder	3,720	$100,000	$27
Monroe	125/113	1	3	Girder	542	$150,000	$277
Newmarket	098/079	1	4	Culvert	797	$150,000	$188
Plainfield	083/098	1	4	Culvert	918	$200,000	$218
Salem	098/049	1	6	Culvert	555	$200,000	$360
Sunapee	067/078	1	2	Girder	4,430	$120,000	$27
Sutton	112/126	1	4	Culvert	608	$200,000	$329
Tamworth	139/109	1	3	Girder	2,046	$150,000	$73
Wentworth	147/136	1	2	Culvert	714	$250,000	$350
FFY 2020 State non-Turnpike Bridge Preservation Totals:	**20 Projects**	**20**			**56,764**	**$3,160,000**	$56
Bridge Maintenance - FFY 2020 Projected Bridge Preservation Cost per Sq. Ft. =						**$56**	

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

The $56 per sq. ft. average cost compares favorably with the $50 per sq. ft. base preservation cost estimated in *NHDOT Bridge Program – Recommended Network Funding* for girder bridges located on Tier 1 roadways. Since the majority of the above listed bridges are located on Tier 3 and 4 roadways, the $56 per sq. ft. could be compared to (1.5 x $50 =) $75 per sq. ft. when the Tier Multiplier is applied. As previously stated, Bridge Maintenance is able to complete bridge preservation tasks on a variety of bridge types at a cost close to or less than the estimated base preservation cost of $50 per sq. ft.

(E3) FFY 2020 Bridge Preservation (Turnpike) – Bridge Design Bureau:

There are no Bridge Preservation projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2020.

(E4) FFY 2020 Bridge Preservation (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Preservation projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2020.

(E5) FFY 2020 Preservation Summary – State and Turnpike Bridges

During FFY 2020 the Bridge Design and Bridge Maintenance Bureaus anticipate performing preservation activities on a total of 32 bridges (excluding "Other" projects), having a combined deck area of 181,687sq. ft. This effort represents 51.5% of our combined (267,629 sq. ft. + 85,150 sq. ft. = 352,779 sq. ft.) total Bridge Preservation annual goal for all bridge types. In addition, 15 bridges will receive scour protection, as summarized below.

FFY 2020 State & Turnpike Bridge Preservation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	27	32	1, 2, 3, 4	Girder, Culvert	181,687	$14,960,275	$82
State non-Turnpike - Other	4	15	1, 2, 3, 4	N/A	N/A	$5,320,000	N/A
Turnpike	0	0	N/A	N/A	N/A	$0	N/A
Turnpike - Other	0	0	N/A	N/A	N/A	$0	N/A
FFY 2020 SUMMARY - Bridge Preservation Totals:	**31 Projects**	**47**			**181,687**	**$20,280,275**	
				Total Cost Excluding "Other" Projects =		**$14,960,275**	
Projected FFY 2020 Average Bridge Preservation Cost per Sq. Ft. = (Excluding "Other" Projects)					**$82**		
*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)							

The above data, which compiles the FFY 2020 bridge preservation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in an average bridge preservation cost of $82 per sq. ft. This is greater than the $50 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding* for girder bridges located on Tier 1 roadways, and slightly greater than the (1.5 x $50 =) $75 per sq. ft. cost for girder bridges on Tier 2 & 3 roadways. A more detailed explanation of costs is provided further above specifically for these Bridge Design and Bridge Maintenance preservation projects scheduled for FFY 2020.

(F) FFY 2021 Bridge Preservation

(F1) FFY 2021 Bridge Preservation (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2021, the Bridge Design Bureau has programmed funds to advertise 4 projects to perform bridge preservation work on 11 State non-Turnpike bridges having a total deck area of 166,895 sq. ft., which is 56.0% of our 297,958 sq. ft. bridge preservation annual goal for all State non-Turnpike bridge types. Details for the bridge preservation projects scheduled to be advertised by Bridge Design in FFY 2021 are listed below. Additional projects may be added to the FFY 2021 Bridge Preservation Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2021 State non-Turnpike Bridge Preservation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Bartlett - Jackson (Bartlett 153/108; Jackson 092/130)	41989	2	2	Culvert	3,847	$425,000	**$110**
Charlestown (181/058)	42484	1	2	Culvert	3,183	$400,000	**$126**
Manchester - Hooksett (Hooksett 095/048; Manchester 102/108; Manchester 119/115; Manchester 124/119; Manchester 127/122)	41475	5	1, 2	Girder	151,484	$7,500,000	**$50**
Meredith - Gilford (Meredith 184/138; Gilford 102/099; Gilford 138/137)	41483	3	2, 3	Girder, Culvert	8,381	$1,150,000	**$137**
FFY 2021 Bridge Preservation Totals:	**4 Projects**	**11**			**166,895**	**$9,475,000**	
Bridge Design - FFY 2021 Projected Bridge Preservation Cost per Sq. Ft. =					**$57**		
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

The above data result in an average "per sq. ft." cost of $57 estimated for these 11 bridges. Since nearly all of these bridges are located on Tier 2 roadways, and since the *NHDOT Bridge Program – Recommended Network Funding* lists per sq. ft. preservation costs as $50 with a 2.0 multiplier for Tier 2 roadways, the $57 per sq. ft. could be compared to (2.0 x $50) = $100 per sq. ft. Thus, the $57 per sq. ft. cost estimated for these FFY 2020 projects is less than the $100 per sq. ft. system-wide estimated base cost for preservation of girder bridges on Tier 2 roadways.

(F2) FFY 2021 Bridge Preservation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2021, the Bridge Maintenance Bureau anticipates performing preservation activities on 18 State non-Turnpike bridges in its 2021 Work Plan having a total deck area of 32,247 sq. ft., which is 12.1% of our 267,629 sq. ft. bridge preservation annual goal for all State non-Turnpike bridge types. Project details for these bridge preservation efforts are listed below. In addition, 250± bridge repair efforts are anticipated. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2021 State non-Turnpike Bridge Preservation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Types*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Bridgewater	161/171	1	4	Culvert	418	$250,000	$598
Concord	188/029	1	3	Culvert	648	$300,000	$463
Durham	100/143	1	4	Girder	7,624	$250,000	$33
Eaton	084/114	1	4	Culvert	336	$300,000	$893
Francestown	139/102	1	3	Girder	551	$300,000	$544
Franconia	132/079	1	3	Girder	7,114	$300,000	$42
Goffstown	054/116	1	2	Culvert	704	$300,000	$426
Hampton	146/087	1	2	Girder	1,995	$150,000	$75
Hampton	163/184	1	2	Girder	4,800	$250,000	$52
Haverhill	070/083	1	2	Girder	534	$200,000	$375
Jefferson	109/061	1	2	Culvert	484	$250,000	$517
Madison	163/048	1	3	Girder	945	$300,000	$317
Moultonborough	165/257	1	2	Culvert	510	$250,000	$490
Salem	095/052	1	6	Culvert	555	$350,000	$631
Sandwich	203/029	1	2	Culvert	468	$500,000	$1,068
Strafford	182/106	1	3	Culvert	584	$250,000	$428
Stratford	107/074	1	4	Girder	1,755	$200,000	$114
Woodstock	171/153	1	2	Culvert	2,222	$450,000	$203
FY 2021 State non-Turnpike Bridge Preservation Totals:	**18 Projects**	**18**			**32,247**	**$5,150,000**	
Bridge Maintenance - FFY 2021 Projected Bridge Preservation Cost per Sq. Ft. =						**$160**	

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

The $160 per sq. ft. cost is much greater than the $50 per sq. ft. base preservation cost estimated in *NHDOT Bridge Program – Recommended Network Funding* for girder bridges located on Tier 1 roadways. Since the majority of the above listed bridges are located on Tier 3 and 4 roadways, the $160 per sq. ft. could be compared to (1.5 x $50) = $75 per sq. ft. when the Tier Multiplier is applied. However, the variability of the preservation cost per sq. ft. listed above could be due to the mobilization costs being similar for each project, regardless of deck size. When the mobilization is combined with the cost of the preservation work for a small bridge deck, the resulting cost per sq. ft. is extremely high when compared to the system-wide $50 per sq. ft. base preservation cost.

(F3) FFY 2021 Bridge Preservation (Turnpike) – Bridge Design Bureau:

There are no Bridge Preservation projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2021.

(F4) FFY 2021 Bridge Preservation (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Preservation projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2021.

(F5) FFY 2021 Preservation Summary – State and Turnpike Bridges

During FFY 2021 the Bridge Design and Bridge Maintenance Bureaus anticipate performing preservation activities on a total of 29 bridges, having a combined deck area of 199,142 sq. ft. This effort represents 56.5% of our combined (267,629 sq. ft. + 85,150 sq. ft. = 352,779 sq. ft.) total Bridge Preservation annual goal for all bridge types.

FFY 2021 State & Turnpike Bridge Preservation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	22	29	1, 2, 3, 4, 6	Girder. Culvert	199,142	$14,625,000	$73
State non-Turnpike - Other	0	0	N/A	N/A	N/A	N/A	N/A
Turnpike	0	0	N/A	N/A	N/A	N/A	N/A
Turnpike - Other	0	0	N/A	N/A	N/A	N/A	N/A
FFY 2021 SUMMARY - Bridge Preservation Totals:	**22 Projects**	**29**			**199,142**	**$14,625,000**	
				Total Cost Excluding "Other" Projects =		**$14,625,000**	
Projected FFY 2021 Average Projected Bridge Preservation Cost per Sq. Ft. = (Excluding "Other" Projects)					**$73**		

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

The above data, which compiles the FFY 2021 bridge preservation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in an average bridge preservation cost of $73 per sq. ft. This is greater than the $50 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding* for girder bridges located on Tier 1 roadways, and very close to the (1.5 x $50 =) $75 per sq. ft. cost for girder bridges on Tier 2 & 3 roadways.

5.1.1.2 Complete Bridge Rehabilitation efforts on 66,907 sq. ft. or more of deck area annually on State non-Turnpike bridges and on 21,288 sq. ft. or more of deck area annually on Turnpike bridges, for FFY 2018, 2019, 2020, & 2021

(A) 10-Year Plan non-Turnpike Bridge Rehabilitation:

Following the same methodology previously presented for Bridge Preservation efforts, the *Recommended Investment Strategy* (RIS) states that bridge rehabilitation activities should be performed once on each girder bridge over their projected 120-year life cycle. This means that 1/120th of the state non-Turnpike girder bridge inventory should receive bridge rehabilitation work each year, i.e., 6,654,348 / 120 = 55,453 sq. ft. This is a major portion of the total non-Turnpike Bridge Rehabilitation goal of 66,907 sq. ft. for all bridge types.

Based on the 10-Year Plan allocation of funds for non-Turnpike bridge rehabilitation efforts, it is projected that up to 10 projects per year can be advertised by the Bridge Design Bureau, with similar efforts by the Bridge Maintenance Bureau, to utilize this funding and work toward accomplishing non-Turnpike bridge rehabilitation goals.

(B) 10-Year Plan Turnpike Bridge Rehabilitation:

Following the same methodology presented above for Turnpike Bridge Preservation efforts, the *Recommended Investment Strategy* (RIS) states that rehabilitation activities should be performed once on each girder bridge during their projected 120-year life cycle. This means that 1/120th of the Turnpike girder bridge inventory should be rehabilitated each year, i.e., 2,273,040 / 120 = 18,942 sq. ft. This is a major portion of the total Turnpike Bridge Rehabilitation annual goal of 21,288 sq. ft. for all bridge types.

Based on the 10-Year Plan allocation of funds for Turnpike bridge rehabilitation efforts, it is projected that up to 10 projects per year can be advertised by the Bridge Design Bureau, with similar efforts by the Bridge Maintenance Bureau, to utilize this funding and work toward accomplishing Turnpike bridge rehabilitation goals.

(C) FFY 2018 Bridge Rehabilitation

(C1) FFY 2018 Bridge Rehabilitation (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2018, the Bridge Design Bureau advertised 1 project to perform rehabilitation work on 1 State non-Turnpike bridge (Red List) having a total deck area of 2,160 sq. ft., which is 3.9% of our 66,907 sq. ft. State non-Turnpike bridge rehabilitation annual goal for all bridge types. Details for this project are listed below.

FFY 2018 State non-Turnpike Bridge Rehabilitation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Portsmouth (192/106) (Red List)	27690	1	2	Culvert	2,160	$1,436,409	$665
FFY 2018 Bridge Rehabilitation Totals:	**1 Project**	**1**			**2,160**	**$1,436,409**	
Bridge Design - FFY 2018 Bridge Rehabilitation Cost per Sq. Ft. =					**$665**		

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

A review of this project data shows an approximate cost of $665 per sq. ft. for Bridge Design to perform bridge rehabilitation. The *NHDOT Bridge Program – Recommended Network Funding* for bridge rehabilitation does not include a system-wide base cost per sq. ft. for culvert bridges, since rehabilitation work is not generally performed on culverts.

However, this project cost of $665 per sq. ft. could be compared to the system-wide $500 per sq. ft. base cost estimated for replacement of culvert bridges on Tier 1 roadways. Since this bridge is located on a Tier 2 roadway, a Tier Multiplier of 2.0 would be applied to the base cost for replacement. Thus, the project cost of $665/sq. ft. could be compared to ($500 per sq. ft. base cost x 2.0 Multiplier =) $1,000 per sq. ft. for replacement of a culvert bridge on a Tier 2 roadway.

It is important to note that this project is located on the US Route 1 Bypass just south of the Portsmouth traffic circle, thus requiring difficult traffic control phases for construction involving very high volumes of traffic. Also, the structure is a 5-span concrete box culvert with water levels potentially several feet deep and deposits of silt in the culvert due to the slow water velocity. These conditions required redirecting water to close off each box opening, cleaning out the silt and debris before the rehabilitation work could start, completing the work, then shifting to the next cell, clearly a very tedious process. Even with these conditions, this culvert was still rehabilitated at a cost per sq. ft. considerably less than the $1,000 per sq. ft. replacement cost as listed in the NHDOT Bridge Program – Recommended Network Funding for culvert bridges located on Tier 2 roadways.

(C2) FFY 2018 Bridge Rehabilitation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2018, the Bridge Maintenance Bureau performed rehabilitation work on 4 State non-Turnpike bridges in its 2018 Work Plan having a total deck area of 10,323 sq. ft., which is 15.4% of our 66,907 sq. ft. State non-Turnpike bridge rehabilitation annual goal for all bridge types. Details for the bridges that received rehabilitation activities by Bridge Maintenance in FFY 2018 are listed below.

FFY 2018 State non-Turnpike Bridge Rehabilitation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
Gilford	164/050	1	2	Culvert	440	$208,765	$474
Gorham	087/050	1	2	Culvert	408	$88,348	$217
Pinkham's Grant	080/094	1	2	Girder	8,762	$60,686	$7
Tamworth	095/162	1	3	Girder	713	$221,892	$311
FFY 2018 non-Turnpike Bridge Rehabilitation Totals:	**4 Projects**	**4**			**10,323**	**$579,691**	
Bridge Maintenance - FFY 2018 Bridge Rehabilitation Cost per Sq. Ft. =					**$56**		

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

A review of this project data shows an approximate cost of $56 per sq. ft. for Bridge Maintenance to perform bridge rehabilitation tasks. The *NHDOT Bridge Program – Recommended Network Funding* for bridge rehabilitation does not include a system-wide base cost per sq. ft. for culvert bridges, since rehabilitation work is not generally performed on culverts. However, the $346 average cost per sq. ft. for rehabilitation of the 2 culvert bridges listed above could be compared to the $500 per sq. ft. x 2.0 Tier multiplier = $1,000 per sq. ft. cost for replacement of culvert bridges located on Tier 2 roadways.

The $159 average cost per sq. ft. for the 2 girder bridges compares well with the $100 per sq. ft. x 1.5 Tier multiplier = $150 per sq. ft. cost for rehabilitation of girder bridges located on Tier 2 or 3 roadways, as listed in the *NHDOT Bridge Program – Recommended Network Funding*.

(C3) FFY 2018 Bridge Rehabilitation (Turnpike) – Bridge Design Bureau:

There were no Bridge Rehabilitation projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2018.

(C4) FFY 2018 Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau:

There were no Bridge Rehabilitation projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2018.

(C5) FFY 2018 Rehabilitation Summary – State and Turnpike Bridges

During FFY 2018 the Bridge Design and Bridge Maintenance Bureaus performed rehabilitation activities on a total of 5 bridges (1 Red List) having a combined deck area of 11,770 sq. ft. This effort represents 14.2% of our combined 66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft. total Bridge Rehabilitation annual goal for all bridge types.

FFY 2018 State & Turnpike Bridge Rehabilitation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Types*	Existing Deck Area (Sq. Ft.)	Project/Bridge Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	5	5	2, 3	Girder, Culvert	12,483	$2,016,100	$162
Turnpike	0	0	N/A		0	$0	
FFY 2018 SUMMARY - Bridge Rehabilitation Totals:	**5 Projects**	**5**			**12,483**	**$2,016,100**	
FFY 2018 Average Bridge Rehabilitation Cost per Sq. Ft. =					**$162**		

*Girder, Truss, Moveable, Timber, Culvert (See *NHDOT Bridge Program - Recommended Investment Strategy* for bridges included in these categories.)

The above data, which compiles the FFY 2018 bridge rehabilitation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in an average bridge rehabilitation cost of $146 per sq. ft. This compares very favorably with the $100 per sq. ft. x 1.5 multiplier for girder bridges on Tier 2 roadways = $150 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding*.

However, the efforts by Bridge Maintenance can at times result in lower average per sq. ft. costs, depending on the specific rehabilitation tasks, when combined with Bridge Design project data. Regardless, when considering that the FFY 2018 bridge rehabilitation efforts involve bridges on Tier 2 roadways, these data show a favorable comparison with the per sq. ft. costs estimated in the *NHDOT Bridge Program – Recommended Network Funding*.

(D) FFY 2019 Bridge Rehabilitation

(D1) FFY 2019 Bridge Rehabilitation (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Design Bureau has programmed funds for FFY 2019 to advertise 1 project to perform rehabilitation work on 1 State non-Turnpike bridges (1 Red List) having a total deck area of 5,064 sq. ft., which is 7.6% of our 66,907 sq. ft. State non-Turnpike bridge rehabilitation annual goal for all bridge types. Details for this project are listed below. Additional projects may be added to the FFY 2019 Bridge Rehabilitation Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2019 State non-Turnpike Bridge Rehabilitation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Jackson (144/056) (Red List)	27709	1	2	Culvert	5,064	$1,592,500	$314
Estimated FFY 2019 Bridge Rehabilitation Totals:	**1 Project**	**1**			**5,064**	**$1,592,500**	
Bridge Design - FFY 2019 Projected Bridge Rehabilitation Cost per Sq. Ft. =						**$314**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

A review of this data shows the average rehabilitation cost to be about 3 times greater than the $100 per sq. ft. system-wide costs for rehabilitation of girder bridges on Tier 1 roadways, as described in the *NHDOT Bridge Program – Recommended Network Funding.*

The Jackson 27709 project rehabilitates a concrete rigid frame structure. Although this bridge is included in the "Culvert" category, it is important to note that typical culvert-type structures are usually not rehabilitated due to their material and configuration. However, concrete rigid frames could generally require rehabilitation work. For this project, the bridge is located on a Tier 2 roadway which necessitates application of a 2.0 multiplier. Thus, the calculated $314 projected cost per sq. ft. could be compared to the $100 per sq. ft. x 2.0 = $200 per sq. ft. system-wide rehabilitation cost. Please refer to the *NHDOT Bridge Program – Recommended Network Funding* for further information.

(D2) FFY 2019 Bridge Rehabilitation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Maintenance Bureau anticipates performing rehabilitation activities on 8 State non-Turnpike bridges (3 Red List) in its 2019 Work Plan having a total deck area of 7,120 sq. ft., which is 10.6% of our 66,907 sq. ft. bridge rehabilitation annual goal for all State non-Turnpike bridge types. Project details for these bridge rehabilitation efforts are listed below. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2019 State non-Turnpike Bridge Rehabilitation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Brookline	116/058	1	4	Culvert	322	$175,500	$545
Carroll	240/174	1	2	Culvert	798	$123,500	$155
Jackson	148/050	1	4	Timber	3,116	$90,000	$29
Kingston (Red List)	099/106	1	2	Culvert	528	$170,000	$322
Lempster	122/167	1	3	Girder	714	$642,000	$899
Randolph (Red List)	088/048	1	2	Culvert	748	$180,000	$241
Waterville Valley	119/087	1	3	Culvert	512	$170,000	$332
Westmoreland (Red List)	109/061	1	3	Culvert	382	$202,000	$529
Estimated FFY 2019 Bridge Rehabilitation Totals:	**8 Projects**	**8**			**7,120**	**$1,753,000**	$246
Bridge Maintenance - FFY 2019 Projected Bridge Rehabilitation Cost per Sq. Ft. =						**$246**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

These projects involve 1 timber covered bridge, 4 metal pipe culvert bridges, 1 concrete slab bridge, 1 concrete rigid frame bridge, and 1 concrete box culvert bridge. The culvert bridges often result in higher per sq. ft. costs due to small deck areas and relatively short project duration, combined with full mobilization costs. An initial comparison shows that the $246 per sq. ft. average rehabilitation cost for these projects is greater than the system-wide $100 per sq. ft. rehabilitation cost fir girder bridges located on Tier 1 roadways, as presented in the *NHDOT Bridge Program – Recommended Network Funding.*

It should be noted that rehabilitation work is often not performed on culverts since it can sometimes be more cost effective to replace the structure than to repair/rehabilitate it. However, Bridge Maintenance frequently restores metal culverts to service by installing reinforced concrete inverts in the culverts to address deterioration along the culvert waterline. This level of work could be considered as rehabilitation, rather than preservation or replacement.

The bridges listed above are located on Tier 2, 3, and 4 roadways, which necessitates application of Tier multipliers; 2.0 for Tier 2 roadways and 1.5 for Tier 3 and 4 roadways. Using the specific project data above:

- The $239 per sq. ft. average cost of the 3 culvert bridges located on Tier 2 roadways should be compared to the 2.0 x $100 = $200 per sq. ft. cost for rehabilitation as listed in the *NHDOT Bridge Program – Recommended Network Funding*.
- The $899 per sq. ft. cost of the 1 girder bridge, located on a Tier 3 roadway, should be compared to 1.5 x $100 = $150 per sq. ft.
- The $430 per sq. ft. cost of the 2 culvert bridges located on Tier 3 roadways should be compared to 1.5 x $100 = $150 per sq. ft.
- The $545 per sq. ft. cost of the 1 culvert bridge located on a Tier 4 roadway should be compared to 1.5 x $100 = $150 per sq. ft.
- The $29 per sq. ft. cost of the 1 timber bridge located on Tier 4 roadway should be compared to 1.5 x $100 = $150 per sq. ft. This very low value represents the limited rehabilitation that can be performed on timber bridges, just to keep them in service.

Clearly, many of these projected costs per sq. ft. are much greater than anticipated. This overall cost comparison indicates that the small deck areas of the bridges rehabilitated by Bridge Maintenance result in high per sq. ft. costs, since all subsidiary costs, such as mobilization, are still required, even though a comparatively small amount of rehabilitation work is being performed. Thus, the size and scope of the bridge and project should be kept in mind when estimating and comparing bridge rehabilitation project costs.

(D3) FFY 2019 Bridge Rehabilitation (Turnpike) – Bridge Design Bureau:

There are no Bridge Rehabilitation projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2019.

(D4) FFY 2019 Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Rehabilitation projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2019.

(D5) FFY 2019 Rehabilitation Summary – State and Turnpike Bridges

During FFY 2019 the Bridge Design and Bridge Maintenance Bureaus anticipate performing rehabilitation activities on a total of 9 bridges (4 Red List) having a combined deck area of 12,184 sq. ft. This effort represents 13.8% of our combined (66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft.) total Bridge Rehabilitation annual goal for all bridge types.

FFY 2019 State & Turnpike Bridge Rehabilitation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	9	9	1, 2, 3, 4	Girder, Timber, Culvert	12,184	$3,345,500	$275
Turnpike	0	0	N/A		0	$0	
FFY 2019 SUMMARY - Bridge Rehabilitation Totals:	**9 Projects**	**9**			**12,184**	**$3,345,500**	
FFY 2019 Projected Average Bridge Rehabilitation Cost per Sq. Ft. =						**$275**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

The above data, which compiles the proposed FFY 2019 bridge rehabilitation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in an average bridge rehabilitation cost of $275 per sq. ft. For culvert bridges located on Tier 2 roadways, this is compared to the $100 per sq. ft. x 2.0 multiplier for culverts on Tier 2 roadways = $200 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding*.

(E) FFY 2020 Bridge Rehabilitation

(E1) FFY 2020 Bridge Rehabilitation (non-Turnpike) – Bridge Design Bureau:

There are no Bridge Rehabilitation projects for State non-Turnpike bridges programmed by the Bridge Design Bureau for FFY 2020.

(E2) FFY 2020 Bridge Rehabilitation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2020, the Bridge Maintenance Bureau anticipates performing rehabilitation activities on 7 State non-Turnpike bridges (5 Red List) in its 2020 Work Plan having a total deck area of 5,374 sq. ft., which is 8.0% of our 66,907 sq. ft. bridge rehabilitation annual goal for all State non-Turnpike bridge types. Project details for these bridge rehabilitation efforts are listed below. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2020 State non-Turnpike Bridge Rehabilitation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Chester	126/066	1	3	Girder	477	$400,000	$839
Freedom (Red List)	205/041	1	2	Culvert	682	$400,000	$587
Gilford (Red List)	097/094	1	3	Culvert	474	$400,000	$844
Meredith (Red List)	131/105	1	4	Girder	2,126	$837,500	$394
Moultonborough (Red List)	140/251	1	3	Girder	448	$400,000	$893
Westmoreland	111/069	1	3	Culvert	382	$300,000	$785
Wilton (Red List)	094/162	1	3	Culvert	785	$300,000	$382
FFY 2020 Bridge Rehabilitation Totals:	**7 Projects**	**7**			**5,374**	**$3,037,500**	
Bridge Maintenance - FFY 2020 Projected Bridge Rehabilitation Cost per Sq. Ft. =						**$565**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

The project data show the average rehabilitation cost to be $565 per sq. ft., which is significantly greater than the $100 per sq. ft. system-wide costs for rehabilitation of girder bridges on Tier 1 roadways, as described in the *NHDOT Bridge Program – Recommended Network Funding*. For the 3 girder bridges located on Tier 3 and 4 roadways, the $565 per sq. ft. cost should be compared to ($100 x 1.5 Tier multiplier =) $150 per sq. ft. As previously noted, the higher cost per sq. ft. is attributed to the mobilization costs being distributed over these very small deck areas.

(E3) FFY 2020 Bridge Rehabilitation (Turnpike) – Bridge Design Bureau:

There are no Bridge Rehabilitation projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2020.

(E4) FFY 2020 Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Rehabilitation projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2020.

(E5) FFY 2020 Rehabilitation Summary – State and Turnpike Bridges

During FFY 2020 the Bridge Design and Bridge Maintenance Bureaus anticipate performing rehabilitation activities on a total of 7 bridges (5 Red List) having a combined deck area of 5,374 sq. ft. This effort represents 6.1% of our combined 66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft. total Bridge Rehabilitation annual goal for all bridge types.

FFY 2020 State & Turnpike BridgeRehabilitation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	7	7	2, 3, 4	Girder, Culvert	5,374	$3,037,500	$565
Turnpike	0	N/A	N/A	N/A	N/A	N/A	N/A
FFY 2020 SUMMARY - Bridge Rehabilitation Totals:	**7 Projects**	**7**			**5,374**	**$3,037,500**	
FFY 2020 Projected Average Bridge Rehabilitation Cost per Sq. Ft. =						**$565**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

The above data, which compiles the proposed FFY 2020 bridge rehabilitation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in an average bridge rehabilitation cost of $565 per sq. ft. For girder bridges located on Tier 2 roadways, this is much greater than the $100 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding*. For culvert bridges located on Tier 2 roadways, this is compared to the $100 per sq. ft. x 2.0 multiplier = $200 per sq. ft. This higher per sq. ft. cost is most likely due to the cost of mobilization and other similar items being applied to the comparatively small deck areas of culvert bridges rehabilitated by Bridge Maintenance.

(F) FFY 2021 Bridge Rehabilitation

(F1) FFY 2021 Bridge Rehabilitation (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2021, the Bridge Design Bureau has programmed funds for FFY 2021 to advertise 3 projects to perform bridge rehabilitation work on 3 State non-Turnpike bridges (all Red List) having a total deck area of 26,774 sq. ft., which is 40.0% of our 66,907 sq. ft. State non-Turnpike bridge rehabilitation annual goal for all bridge types. Details for these projects are listed below. Additional projects may be added to the FFY 2021 Bridge Rehabilitation Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2021 State non-Turnpike Bridge Rehabilitation (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Amherst (135/109) (Red List)	41413	1	3	Girder	4,277	$2,000,000	$468
Lyme, NH - Thetford, VT (053/112; NH portions) (Red List)	14460	1	4	Truss	10,047	$4,050,000	$403
Manchester (176/106) (Red List)	41414	1	4	Girder	12,450	$2,500,000	$201
FFY 2021 Bridge Rehabilitation Totals:	**3 Projects**	**3**			**26,774**	**$8,550,000**	$319
Bridge Design - FFY 2021 Projected Bridge Rehabilitation Cost per Sq. Ft. =						**$319**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

A review of this project data shows the average rehabilitation cost to be about 3 times greater than the $100 per sq. ft. system-wide rehabilitation costs for girder bridges on Tier 1 roadways, as described in the *NHDOT Bridge Program – Recommended Network Funding*. Since the Lyme–Thetford 14460 project involves rehabilitation of a truss bridge on a Tier 4 roadway, the $403 per sq. ft. project cost should be compared to $250 per sq. ft. x 1.1 multiplier for a Tier 4 roadway = $275 per sq. ft. Also, the Manchester 41414 project replaces the deck of a bridge over I-293 with interchanges on each bridge approach, significantly complicating traffic control and thus increasing the cost per sq. ft.

(F2) FFY 2021 Bridge Rehabilitation (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2021, the Bridge Maintenance Bureau anticipates performing rehabilitation activities on 9 State non-Turnpike bridges (7 Red List) in its 2021 Work Plan having a total deck area of 17,480 sq. ft., which is 26.1% of our 66,907 sq. ft. bridge rehabilitation annual goal for all State non-Turnpike bridge types. Project details for these bridge rehabilitation efforts are listed below. In addition, 250± bridge repair efforts are anticipated. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2021 State non-Turnpike Bridge Rehabilitation (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Alton	076/277	1	3	Girder	512	$350,000	$684
Barrington (Red List)	075/122	1	2	Girder	1,892	$550,000	$291
Canaan (Red List)	177/123	1	3	Culvert	977	$450,000	$461
Cornish (Red List)	064/108	1	4	Timber	9,294	$350,000	$38
Dublin (Red List)	176/072	1	3	Girder	582	$300,000	$515
Easton	139/148	1	3	Culvert	648	$350,000	$540
Littleton (Red List)	133/094	1	1	Culvert	891	$300,000	$337
Northwood (Red List)	045/099	1	3	Culvert	676	$400,000	$592
Plainfield (Red List)	096/079	1	4	Girder	2,008	$500,000	$249
FFY 2021 Bridge Rehabilitation Totals:	**9 Projects**	**9**			**17,480**	**$3,550,000**	
Bridge Maintenance - FFY 2021 Projected Bridge Rehabilitation Cost per Sq. Ft. =						**$203**	

The project data show the average rehabilitation cost to be $203 per sq. ft., which is greater than the $100 per sq. ft. system-wide costs for rehabilitation of girder bridges on Tier 1 roadways, as described in the *NHDOT Bridge Program – Recommended Network Funding*.

For the 4 girder bridges located on Tier 2, 3, and 4 roadways, the $435 per sq. ft. projected average cost should be compared to $100 x 1.5 Tier multiplier = $150 per sq. ft. As previously noted, the higher cost per sq. ft. may be attributed to the mobilization costs being distributed over these very small deck areas.

The $38 per sq. ft. projected average cost of the 1 timber bridge located on Tier 4 roadway should be compared to 1.5 x $100 = $150 per sq. ft. This very low value represents the limited rehabilitation that can be performed on timber bridges, just to keep them in service.

The $531 per sq. ft. projected average cost of the 3 culvert bridges located on Tier 3 roadways should be compared to the 1.5 x $100 = $150 per sq. ft.

The $545 per sq. ft. projected rehabilitation cost of the 1 culvert bridge located on a Tier 4 roadway could be compared to the 1.2 x $500 = $600 per sq. ft. culvert replacement cost.

(F3) FFY 2021 Bridge Rehabilitation (Turnpike) – Bridge Design Bureau:

There are no Bridge Rehabilitation projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2021.

(F4) FFY 2021 Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Rehabilitation projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2021.

(F5) FFY 2021 Rehabilitation Summary – State and Turnpike Bridges

During FFY 2021 the Bridge Design and Bridge Maintenance Bureaus anticipate performing rehabilitation activities on a total of 12 bridges (10 Red List) having a combined deck area of 17480 sq. ft. This effort represents 19.8% of our combined 66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft. total Bridge Rehabilitation annual goal for all bridge types.

FFY 2021 State & Turnpike Bridge Rehabilitation (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	12	12	1, 2, 3, 4	Girder, Timber, Culvert	44,254	$12,100,000	$273
Turnpike	0	0	N/A	N/A	0	$0	N/A
FFY 2021 SUMMARY - Bridge Rehabilitation Totals:	**9 Projects**	**12**			**44,254**	**$12,100,000**	
FFY 2021 Projected Average Bridge Rehabilitation Cost per Sq. Ft. =					**$273**		

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

The above data, which compiles the FFY 2021 bridge rehabilitation efforts of the Bridge Design and Bridge Maintenance Bureaus, result in a projected average bridge rehabilitation cost of $203 per sq. ft. This this is greater than the $100 per sq. ft. x 1.5 multiplier for girder bridges on Tier 2, 3, and 4 roadways = $150 per sq. ft. presented in the *NHDOT Bridge Program – Recommended Network Funding*. However, it is lower than the $531 per sq. ft. projected average rehabilitation cost of the 3 culvert bridges located on Tier 3 roadways, and also lower than the $545 per sq. ft. projected rehabilitation cost of the 1 culvert bridge located on a Tier 4 roadway. The $38 per sq. ft. projected average cost of the 1 timber bridge located on Tier 4 roadway represents the limited rehabilitation that can be performed on timber bridges, just to keep them in service.

5.1.1.3 Complete Bridge Replacement efforts on 66,907 sq. ft. or more of deck area annually on State non-Turnpike bridges and on 21,288 sq. ft. or more of deck area annually on Turnpike bridges, for FFY 2018, 2019, 2020, & 2021

(A) 10-Year Plan non-Turnpike Bridge Replacement

Based on the 10-Year Plan (2019 – 2028) allocation of funds for bridge replacement efforts (non-Turnpike), there are 16 bridge replacement projects scheduled to advertise during the next 3 years (FFY 2019 – FFY 2021) by the Bridge Design Bureau. These projects replace 19 bridges and address 132,321 sq. ft. of deck area to utilize this funding and work toward accomplishing bridge replacement goals over this time period.

Following the same methodology previously presented for Bridge Preservation efforts, the *Recommended Investment Strategy* (RIS) states that bridge replacement activities will be performed once on each girder bridge at the end of their projected 120-year life. This means that 1/120th of the state non-Turnpike girder bridge inventory should be replaced each year, i.e., 6,654,348 / 120 = 55,453 sq. ft. This is a major portion of the total non-Turnpike Bridge Replacement annual goal of 66,907 sq. ft. for all bridge types.

Based on the 10-Year Plan allocation of funds for non-Turnpike bridge replacement efforts, it is projected that up to 8 projects per year can be advertised by the Bridge Design Bureau, with similar efforts by the Bridge Maintenance Bureau, to utilize this funding and work toward accomplishing non-Turnpike bridge replacement goals.

(B) 10-Year Plan Turnpike Bridge Replacement

Following the same methodology presented above for Turnpike Bridge Preservation efforts, the *Recommended Investment Strategy* (RIS) states that bridge replacement activities will be performed once on each girder bridge at the end of their projected 120-year life. This means that 1/120th of the Turnpike girder bridge inventory should be replaced each year, i.e., 2,273,040 / 120 = 18,942 sq. ft. This is a major portion of the total Turnpike Bridge Replacement annual goal of 21,288 sq. ft. for all bridge types.

Based on the 10-Year Plan allocation of funds for Turnpike bridge replacement efforts, it is projected that up to 4 projects per year can be advertised by the Bridge Design Bureau, with similar efforts by the Bridge Maintenance Bureau, to utilize this funding and work toward accomplishing Turnpike bridge replacement goals.

(C) FFY 2018 Bridge Replacement

(C1) FFY 2018 Bridge Replacement (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2018, the Bridge Design Bureau advertised 7 projects for replacement of 9 State non-Turnpike bridges having a total deck area of 22,252 sq. ft., which is 33.3% of our 66,907 sq. ft. State non-Turnpike bridge replacement annual goal for all bridge types. Details for this project are listed below.

FFY 2018 State non-Turnpike Bridge Replacement (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project Construction Cost	Cost Per Sq. Ft.
Acworth (113/064)	16301	1	3	Girder	465	$1,419,600	$3,053
Alstead (073/163) (Red List)	20817	1	3	Girder	1,000	$1,297,200	$1,297
Durham (145/116; Design-Build)	16236	1	2	Girder	630	$8,028,900	$12,744
Franconia (089/099) (superstructure replacement) (Red List)	24497	1	3	Girder	1,631	$1,132,000	$694
Haverhill (215/158)	16238	1	4	Timber	2,764	$1,430,300	$517
Ossipee (137/297; 137/299; 152/268) (all Red List)	14749	3	2	Girder	20,994	$18,331,400	$873
Tamworth (150/106)	16239	1	3	Girder	4,269	$2,794,700	$655
FFY 2018 Bridge Replacement Totals:	**7 Projects**	**9**			**31,753**	**$34,434,100**	
FFY 2018 Bridge Replacement Cost per Sq. Ft. =						**$1,084**	

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

A review of this data shows an approximate cost of $1,084 per sq. ft. for bridge replacement. The *NHDOT Bridge Program – Recommended Network Funding* lists $650 per sq. ft. for girder bridge replacement on a Tier 1 roadway. When this amount is adjusted for Tier 2 and 3 roadways, the system-wide base cost per sq. ft. becomes $650 x 1.4 Tier multiplier = $910 per sq. ft. The above data show an average replacement cost slightly higher (19.1%) than this amount. However, the Franconia 24497 project cost of $694 per sq. ft. is 23.7% less than the $910 base cost for a girder bridge on a Tier 3 roadway, and the Tamworth 16239 project cost of $655 per sq. ft. is 28.0% less than the base cost of $910 per sq. ft. for girder bridge replacement on a Tier 1 roadway.

The exceptionally greater costs per sq. ft. for the other projects listed above are likely the result of the following considerations:

- The Acworth 16301 project cost of $3,053 is considerably greater (235.5%) greater than the $910 base cost for bridge replacement. This is due, at least in part, to the use of accelerated bridge construction (ABC) techniques utilizing precast concrete bridge segments to complete construction within a limited number of days to lessen the impact of a long detour. The ABC method of project delivery is generally considered to increase construction costs by at least 10%. Thus, the project cost of $3,053 per sq. ft. could be compared to $910 x 10% increase = $1,001 per sq. ft. However, the $3,053 project cost is still 205% greater than this amount.

- The Alstead 20817 project cost of $1,297 is 42.5% greater than the $910 base cost for bridge replacement. This project was pretty straightforward and reasons for the larger cost per sq. ft. are not immediately apparent.

- The Durham 16236 project replaces a 630 sq. ft. concrete slab bridge having an 18-ft. span, utilizing the Design-Build procurement process, with a girder-type structure having a span of 60 ft. and a deck area of 2,294 sq. ft. Considerable road reconstruction and widening through a tidal area is required and accelerated bridge construction (ABC) techniques are being applied to reduce the closure of US Route 4 as much as is reasonably possible. When all these factors are applied to the small deck area of the existing bridge, it results in an immensely high $12,744 per sq. ft. cost, and thus, this is not an "average" bridge replacement effort. If the project cost is applied to the deck area of the new bridge, it results in a cost of $8,028,900 / 2,294 = $3,500 per sq. ft., which is still exceptionally high. When this project data is removed from the above comparison of all FFY 2018 bridge replacement projects, the adjusted average cost becomes $848 per sq. ft., which is close to the $910 per sq. ft. base replacement cost

- The Haverhill 16238 project replaced a timber trestle bridge over an abandoned railway, now a recreational trail, with a precast concrete culvert. Thus, the project cost of $517 per sq. ft. compares very favorably with the $500 per sq. ft. system-wide base cost for replacement of a culvert bridge (the new bridge) on a Tier 4 roadway.

- The Ossipee 14749 project involves replacement of 3 bridges along NH Routes 16 & 25 utilizing accelerated bridge construction (ABC) techniques during limited roadway closures. This method of project delivery can be used to reduce the duration of roadway closures, but is generally considered to increase construction costs by at least 10%. However, the project cost of $873 per sq. ft. compares favorably with the $910 per sq. ft. system-wide base cost for replacement of girder bridges on a Tier 2 roadway.

The above data includes several unique project characteristics that increase project costs. Since effective project delivery and reduced construction duration lower the impact of a project on the traveling public, similar project delivery methods will likely be considered for future projects whenever feasible. This perspective supports frequently reviewing and updating the system-wide base costs for bridge replacement in the *NHDOT Bridge Program – Recommended Network Funding*, with the goal of providing more accurate project estimates for future projects.

(C2) FFY 2018 Bridge Replacement (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal, during the 2018 Federal Fiscal Year (FFY 2018) the Bridge Maintenance Bureau replaced the superstructure of 1 State non-Turnpike bridge having a total deck area of 963 sq. ft., which is about 1.4% of our 66,907 sq. ft. non-Turnpike bridge replacement annual goal for all bridge types. Project details for the bridge replacement efforts completed by Bridge Maintenance for FFY 2018 are listed below.

FFY 2018 State non-Turnpike Bridge Replacement (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project Construction Cost	Cost Per Sq. Ft.
Grantham (superstructure/slab replacement)	140/069	1	3	Girder	963	$267,248	$278
FFY 2018 Bridge Replacement Totals:	**1 Project**	**1**			**963**	**$267,248**	
FFY 2018 Bridge Replacement Cost per Sq. Ft. =					**$278**		

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

The *NHDOT Bridge Program – Recommended Network Funding* lists $650 per sq. ft. x 1.4 Tier 3 multiplier = $910 per sq. ft. for girder bridge replacement. A review of the above data shows $278 per sq. ft. as the cost for this bridge replacement effort. This indicates that Bridge Maintenance can replace comparatively small bridges in a much more cost effective manner than "traditional" design-bid-build replacement projects developed by the Bridge Design Bureau. However, it is also important to recognize the staffing and funding constraints of the Bridge Maintenance Bureau, which is one reason that large projects with high traffic volumes are not typically undertaken by these crews.

(C3) FFY 2018 Bridge Replacement (Turnpike) – Bridge Design Bureau:

There were no Bridge Replacement projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2018.

C4) FFY 2018 Bridge Replacement (Turnpike) – Bridge Maintenance Bureau:

There were no Bridge Replacement projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2018.

(C5) FFY 2018 Replacement Summary – State and Turnpike Bridges

During FFY 2018 the Bridge Design and Bridge Maintenance Bureaus performed replacement of a total of 10 bridges (5 Red List) having a combined deck area of 32,716 sq. ft. This effort represents 37.1% of our combined 66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft. total Bridge Replacement annual goal for all bridge types.

FFY 2018 State & Turnpike Bridge Replacement Projects (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	8	10	2, 3, 4	Girder, Timber	32,716	$34,701,348	$1,061
Turnpike	0	0			0	$0	
FFY 2018 SUMMARY - Bridge Replacement Totals:	**8 Projects**	**10**			**32,716**	**$34,701,348**	
FFY 2018 Average Bridge Replacement Cost per Sq. Ft. =					**$1,061**		

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

The *NHDOT Bridge Program – Recommended Network Funding* lists $650 per sq. ft. x 1.4 Tier 2, 3, and 4 multiplier = $910 per sq. ft. for girder bridge replacement. The $1,061 per sq. ft. listed in the FFY 2018 Summary table above is 16.6% greater than the $910 per sq. ft. system-wide base cost.

(D) FFY 2019 Bridge Replacement

(D1) FFY 2019 Bridge Replacement (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Design Bureau has programmed funds for FFY 2019 to advertise 6 projects to replace 8 State non-Turnpike bridges (7 Red List) having a total deck area of 83,808 sq. ft., which is 125.3% of our 66,907 sq. ft. State non-Turnpike bridge replacement annual goal for all bridge types. Details for these projects are listed below. Additional projects may be added to the FFY 2019 Bridge Replacement Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2019 State non-Turnpike Bridge Replacement (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Conway (158/137) (Red List)	15864	1	2	Girder	3,498	$3,631,300	$1,038
Laconia (131/154; Superstructure replacement) (Red List)	16144	1	2	Girder	1,354	$1,339,300	$989
Lancaster, NH - Guildhall, VT (111/129; NH portion) (Red List)	16155	1	2	Truss (new = Girder)	11,247	$8,813,200	$784
Lebanon (093/109 Red List; 094/108, both superstructure replacements) (Bridge portions only; no Roadway items.)	41191 (partial)	2	1	Girder	14,801	$3,237,964	$219
Lebanon (103/116; superstructure replacement) (Red List)	25821	1	4	Girder	6,845	$2,779,300	$406
Lebanon, NH - Hartford, VT (044/103; 044/104; NH portions) (Superstructure replacement & widening; Substructure widening) (both Red List)	16148	2	1	Girder	46,063	$46,416,000	$1,008
Estimated FFY 2019 Bridge Replacement Totals:	**6 Projects**	**8**			**83,808**	**$66,217,064**	
Bridge Design - FFY 2019 Projected Bridge Replacement Cost per Sq. Ft. =					**$790**		

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

A review of this data shows an approximate cost of $66,217,064 / 83,808 sq. ft. = $790 per sq. ft. for bridge replacement. The *NHDOT Bridge Program – Recommended Network Funding* lists $650 per sq. ft. for girder bridge replacement on a Tier 1 roadway. When this amount is adjusted for Tier 2 and 4 roadways, the system-wide base cost becomes 1.4 Tier multiplier x $650 = $910 per sq. ft. For the projects listed above located on Tier 2 and 4 roadways, the projected average project cost becomes $722 per sq. ft., which is less than the estimated system-wide base cost of $910 per sq. ft. for bridge replacement on Tier 2 roadways.

The Lancaster, NH – Guildhall, VT 16155 project replaces a steel truss bridge with a steel girder bridge. Thus, the projected $784 per sq. ft. should be compared with the $910 per sq. ft. system-wide base cost for replacement of a girder bridge on a Tier 2 roadway, i.e., not truss bridge replacement, as listed in the *NHDOT Bridge Program – Recommended Network Funding*.

The Lebanon, NH – Hartford, VT 16148 project involves superstructure replacement and widening, as well as substructure widening with tall piers, for I-89 with interchanges located near each end of the project limits. These factors contribute to the project cost of $1,008 per sq. ft., which is 55% greater than the estimated system-side base cost of $650 per sq. ft. for a girder bridge Again, similar characteristics should be considered and evaluated when preparing estimates for future projects.

(D2) FFY 2019 Bridge Replacement (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2019, the Bridge Maintenance Bureau anticipates replacing 2 State non-Turnpike bridges (1 Red List) in its 2019 Work Plan having a total deck area of 704 sq. ft., which is 1.1% of our 66,907 sq. ft. bridge replacement annual goal for all State non-Turnpike bridge types. Project details for these bridge replacement efforts are listed below. In addition, 250± bridge repair efforts are anticipated. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2019 State non-Turnpike Bridge Replacement (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Brookline	116/058	1	4	Culvert	322	$180,000	$559
Westmoreland (Red List)	109/061	1	3	Culvert	382	$190,000	$497
Estimated FFY 2019 Bridge Replacement Totals:	**2 Projects**	**2**			**704**	**$370,000**	
Bridge Maintenance - FFY 2019 Projected Bridge Replacement Cost per Sq. Ft. =					**$526**		
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

A review of this data shows an approximate cost of $370,000 / 704 sq. ft. = $526 per sq. ft. for culvert bridge replacement. The *NHDOT Bridge Program – Recommended Network Funding* lists $500 per sq. ft. x 1.4 Tier multiplier = $700 per sq. ft. for culvert bridge replacement on a Tier 3 or 4 roadway. This indicates that Bridge Maintenance can replace culvert bridges in a more cost effective manner than "traditional" design-bid-build replacement projects developed by the Bridge Design Bureau. However, it is also important to recognize the staffing, capability, and funding constraints of the Bridge Maintenance Bureau, which is one reason that large projects with high traffic volumes are not typically undertaken by these crews.

(D3) FFY 2019 Bridge Replacement (Turnpike) – Bridge Design Bureau:

There are no Bridge Replacement projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2019.

(D4) FFY 2019 Bridge Replacement (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Replacement projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2019.

(D5) FFY 2019 Replacement Summary – State and Turnpike Bridges

During FFY 2019 the Bridge Design and Bridge Maintenance Bureaus anticipate replacing a total of 10 bridges (8 Red List) having a combined deck area of 84,512 sq. ft. This effort represents 95.8% of our combined 66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft. total Bridge Replacement annual goal for all bridge types.

FFY 2019 State & Turnpike Bridge Replacement Projects (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	8	10	1, 2, 3, 4	Girder, Truss, Culvert	84,512	$66,587,064	$788
Turnpike	0	0			0	$0	
FFY 2019 SUMMARY - Bridge Replacement Totals:	**8 Projects**	**10**			**84,512**	**$66,587,064**	
FFY 2019 Projected Average Bridge Replacement Cost per Sq. Ft. =						**$788**	

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

The *NHDOT Bridge Program – Recommended Network Funding* lists $650 per sq. ft. x 1.4 Tier 2, 3, and 4 multiplier = $910 per sq. ft. for girder bridge replacement. However, since the $788 per sq. ft. listed in the FFY 2019 Summary table above includes culvert replacement, it should be adjusted to obtain a more accurate comparison. Please refer to data above for FFY 2019 bridge replacement projects for a more detailed explanation of the cost comparison.

(E) FFY 2020 Bridge Replacement

(E1) FFY 2020 Bridge Replacement (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2020, the Bridge Design Bureau has programmed funds for FFY 2020 to advertise 3 projects to replace 4 State non-Turnpike bridges (all Red List) having a total deck area of 26,185 sq. ft., which is 38.0% of our 66,907 sq. ft. State non-Turnpike bridge replacement annual goal for all bridge types. Details for these projects are listed below. Additional projects may be added to the FFY 2020 Bridge Replacement Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2020 State non-Turnpike Bridge Replacement (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Allenstown - Pembroke (Allenstown 107/098) (Red List) (superstructure replacement)	40362	1	2	Girder	9,330	$2,670,000	$286
Danbury (156/104) (Red List)	16303	1	2	Girder	3,335	$2,200,000	$660
Hinsdale, NH - Brattleboro, VT (bypasses 041/040 & 042/044; NH portions) (both Red List)	12210C	2	3	Truss (new I-gider)	13,520	$32,447,000	$2,400
FFY 2020 Bridge Replacement Totals:	**3 Projects**	**4**			**26,185**	**$37,317,000**	
Bridge Design - FFY 2020 Projected Bridge Replacement Cost per Sq. Ft. =						**$1,425**	

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

When initial project cost estimates are prepared, the deck area of the replacement bridge is usually unknown. Therefore, the cost per sq. ft. for a bridge replacement, as presented in the *NHDOT Bridge Program – Recommended Network Funding*, is applied to the deck area of the existing bridge for estimating purposes since that is the deck area being replaced. For most projects, this method of estimating project costs results in reasonable values that are used to program funds. However, unique projects often have characteristics that make estimating the project cost a challenging task.

The cost per sq. ft. calculated above for FFY 2020 is significantly skewed by the magnitude of the Hinsdale-Brattleboro 12210C replacement bridge. This project bypasses two existing shorter steel truss bridges (297 ft. + 339 ft. = 636 ft.; combined deck area = 13,520 sq. ft.) with a single multi-span I-girder bridge on a new location (total length = 1,798 ft. ctr.-to-ctr. brgs.; total deck area = 89,935 sq. ft.). Further, a portion of the new bridge is curved and tapered outward, and very tall piers are required. All these factors contribute to an extremely large project cost when compared to more typical bridge replacement projects. When a comparison is made between the program-level cost per sq. ft. of $650/sq. ft. x 1.4 Tier 3 multiplier = $910 for replacement of a girder bridge, and the projected project cost $32,447,000 / 89,935 sq. ft. = $361 per sq. ft. of the proposed bridge, a more accurate evaluation of bridge replacement costs can be made, rather than performing this comparison using only the deck areas of the existing bridges being replaced. Thus, the large size of this new bridge results in an economical $361 per sq. ft. project cost.

(E2) FFY 2020 Bridge Replacement (non-Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Replacement projects for State non-Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2020.

(E3) FFY 2020 Bridge Replacement (Turnpike) – Bridge Design Bureau:

There are no Bridge Replacement projects for Turnpike bridges programmed by the Bridge Design Bureau for FFY 2020.

(E4) FFY 2020 Bridge Rehabilitation (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Replacement projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2020.

(E5) FFY 2020 Replacement Summary – State and Turnpike Bridges

During FFY 2020 the Bridge Design and Bridge Maintenance Bureaus anticipate replacing a total of 4 bridges (all Red List) having a combined deck area of 26,185 sq. ft. This effort represents 29.7% of our combined 66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft. total Bridge Replacement annual goal for all bridge types.

FFY 2020 State & Turnpike Bridge Replacement Projects (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	3	4	2, 3	Girder, Truss	26,185	$37,317,000	$1,425
Turnpike	0	0	N/A	N/A	0	$0	N/A
FFY 2020 SUMMARY - Bridge Replacement Totals:	**3 Projects**	**4**			**26,185**	**$37,317,000**	
FFY 2020 Projected Average Bridge Replacement Cost per Sq. Ft. =						**$1,425**	

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

A review of this data shows an approximate projected cost of $1,425 per sq. ft. for bridge replacement. The *NHDOT Bridge Program – Recommended Network Funding* lists $650 per sq. ft. x 1.4 Tier 2 and 3 multiplier = $910 per sq. ft. for girder bridge replacement. However, since the $1,425 per sq. ft. listed in the FFY 2020 Summary table above includes replacement (bypass) of a truss bridge with a girder bridge, it should be adjusted to obtain a more accurate comparison. Please refer to the above bridge replacement project data for FFY 2020 provided above in *(E1) FFY 2020 Bridge Replacement (non-Turnpike) – Bridge Design Bureau.*

(F) FFY 2021 Bridge Replacement

(F1) FFY 2021 Bridge Replacement (non-Turnpike) – Bridge Design Bureau:

To meet this Bridge Program goal for FFY 2021, the Bridge Design Bureau has programmed funds for FFY 2021 to advertise 7 projects to replace 7 State non-Turnpike bridges (all Red List) having a total deck area of 20,328 sq. ft., which is 30.4% of our 66,907 sq. ft. State non-Turnpike bridge replacement annual goal for all bridge types. Details for these projects are listed below. Additional projects may be added to the FFY 2021 Bridge Replacement Program depending on the amount of funding needed and available as the contract documents for each project are further developed.

FFY 2021 State non-Turnpike Bridge Replacement (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Andover (143/077) (Red List)	40392	1	2	Girder	2,000	$3,500,000	$1,750
Bedford (090/065) (Red List)	13692C	1	2	Culvert	500	$3,076,500	$6,153
Center Harbor - New Hampton (Center Harbor 080/040) (Superstructure replacement) (Red List)	24579	1	4	Girder	276	$793,085	$2,873
New Castle - Rye (066/071) (Red List)	16127	1	3	Moveable	7,807	$8,099,450	$1,037
North Hampton (148/132) (Red List)	24457	1	2	Girder	1,777	$4,500,000	$2,532
Orford (217/112) (Red List)	40366	1	3	Girder	1,427	$2,000,000	$1,402
Peterborough (087/077) (Red List)	15879	1	2	Girder	8,541	$8,549,300	$1,001
FFY 2021 Bridge Replacement Totals:	**7 Projects**	**7**			**22,328**	**$30,518,335**	
Bridge Design - FFY 2021 Projected Bridge Replacement Cost per Sq. Ft. =						**$1,367**	

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

A review of this data shows an approximate cost of $30,518,335 / 22,328 sq. ft. = $1,367 per sq. ft. for bridge replacement. The *NHDOT Bridge Program – Recommended Network Funding* lists $650 per sq. ft. for girder bridge replacement on a Tier 1 roadway. When this amount is adjusted for Tier 2, 3, and 4 roadways, the system-wide base cost becomes 1.4 Tier multiplier x $650 = $910 per sq. ft. In addition, the New Castle – Rye 16127 project may construct a new moveable bridge, rather than a "fixed" (non-moveable) bridge, to replace the existing bascule span. If so, the projected $1,037 per sq. ft. cost for this project should be compared to the $1,000 per sq. ft. bridge replacement cost listed in the *NHDOT Bridge Program – Recommended Network Funding*.

(F2) FFY 2021 Bridge Replacement (non-Turnpike) – Bridge Maintenance Bureau:

To meet this Bridge Program goal for FFY 2021, the Bridge Maintenance Bureau anticipates replacing 2 State non-Turnpike bridges (both Red List) in its 2021 Work Plan having a total deck area of 882 sq. ft., which is 1.3% of our 66,907 sq. ft. bridge replacement annual goal for all State non-Turnpike bridge types. Project details for these bridge replacement efforts are listed below. In addition, 250± bridge repair efforts are anticipated. This overall effort is funded with $2,000,000 of federal funds programmed for bridges on Tier 1 – 4 roadways, supplemented each year with $750,000 of State Betterment Funds.

FFY 2021 State non-Turnpike Bridge Replacement (Bridge Maintenance)	Bridge Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
Boscawen (Red List)	068/145	1	4	Culvert	540	$500,000	$926
Errol (Red List)	071/030	1	2	Girder	342	$450,000	$1,316
FFY 2021 State non-Turnpike Bridge Replacement Totals:	**2 Projects**	**2**			**882**	**$950,000**	
Bridge Maintenance - FFY 2021 Projected Bridge Replacement Cost per Sq. Ft. =						**$1,077**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

A review of this data shows an approximate cost of $950,000 / 882 sq. ft. = $1,077 per sq. ft. for bridge replacement. The *NHDOT Bridge Program – Recommended Network Funding* lists $500 per sq. ft. x 1.5 Tier multiplier = $750 per sq. ft. for girder bridge replacement on a Tier 4 roadway, and $500 per sq. ft. x 1.4 Tier multiplier = $700 per sq. ft. for culvert bridge replacement on a Tier 4 roadway.

This indicates that Bridge Maintenance can replace comparatively small bridges in a more cost effective manner than "traditional" design-bid-build replacement projects developed by the Bridge Design Bureau. However, it is also important to recognize the staffing, capability, and funding constraints of the Bridge Maintenance Bureau, which is one reason that large projects with high traffic volumes are not typically undertaken by these crews.

(F3) FFY 2021 Bridge Replacement (Turnpike) – Bridge Design Bureau:

The Bridge Design Bureau has programmed funds to advertise 1 project to replace 1 Turnpike pedestrian bridge (Red List) having a total deck area of 48,501 sq. ft. However, since this is a pedestrian bridge, it will not be compiled with highway bridges programmed to be replaced in FFY 2021.

Details for the programmed Turnpike pedestrian bridge replacement project to be advertised by Bridge Design in FFY 2021 are listed below.

FFY 2021 State Turnpike Bridge Replacement (Bridge Design)	Project Number	No. of Bridges	Roadway Tiers	Bridge Type*	Existing Deck Area (Sq. Ft.)	Project Construction Cost	Cost Per Sq. Ft.
Newington - Dover (Dover 200/023) (superstructure replacement) General Sullivan Bridge (pedestrian) (Red List)	11238S	1	N/A	Truss	48,501	$30,250,000	$624
FFY 2021 Turnpike Bridge Replacement Totals:	**1 Project**	**1**			**48,501**	**$30,250,000**	
Bridge Design - FFY 2021 Projected Turnpike Pedestrian Bridge Replacement Cost per Sq. Ft. =						**$624**	
*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)							

Although data from this project to replace a pedestrian bridge is not included with the cost per sq. ft. of other bridge replacement projects, it is important to note the magnitude of this effort. The existing steel deck truss and steel arch through truss will be removed due to its extremely deteriorated condition, and the new pedestrian bridge will be constructed on the rehabilitated substructure. Both the truss removal and substructure reconstruction efforts will be challenging due to the strong tidal currents at the site, the extremely poor condition of the existing bridge, and the close proximity of the adjacent highway bridge. For these reasons, it may not be suitable to compare the construction cost per sq. ft. of this project with the cost per sq. ft. of other more typical pedestrian bridges.

(F4) FFY 2021 Bridge Replacement (Turnpike) – Bridge Maintenance Bureau:

There are no Bridge Replacement projects for Turnpike bridges scheduled by the Bridge Maintenance Bureau for FFY 2021.

(F5) FFY 2021 Replacement Summary – State and Turnpike Bridges

During FFY 2021 the Bridge Design and Bridge Maintenance Bureaus anticipate replacing a total of 9 Highway bridges (all Red List) having a combined deck area of 23,210 sq. ft. This effort represents 26.3% of our combined 66,907 sq. ft. + 21,288 sq. ft. = 88,195 sq. ft. total Bridge Replacement annual goal for all bridge types. This effort also includes replacement of 1 Pedestrian bridge (Red List) having a deck area of 48,501 sq. ft.

FFY 2021 State & Turnpike Bridge Replacement Projects (Bridge Design & Bridge Maintenance)	Number of Projects	No. of Bridges	Roadway Tiers	Bridge Types*	Existing Deck Area (Sq. Ft.)	Estimated Project Construction Cost	Cost Per Sq. Ft.
State non-Turnpike	9	9	2, 3, 4	Girder, Moveable, Culvert	23,210	$31,468,335	**$1,356**
Turnpike (General Sullivan Bridge - pedestrian)	1	1	N/A Pedestrian	Deck Truss, Through-Arch Truss	48,501	$30,250,000	**$624**
FFY 2021 SUMMARY - Bridge Replacement Totals:	**10 Projects**	**10**			**71,711**	**$61,718,335**	
FFY 2021 Projected Average Bridge Replacement Cost per Sq. Ft. = (Excluding General Sullivan Pedestrian Bridge)					**$1,356**		

*Girder, Truss, Moveable, Timber, Culvert (See NHDOT Bridge Program - Recommended Investment Strategy for bridges included in these categories.)

5.1.2 Goal 2: Inspect all state and municipal/other bridges to meet all Federal and State inspection and reporting requirements.

The Bridge Design Bureau has a staff of 9 Bridge Inspectors and 4 Engineers assigned to the Existing Bridge Section that work to ensure the Department meets the above goal. In addition, this effort is supplemented by Consultant inspections (5 to 10 inspections per year) of specific complex bridges, such as moveable bridges, and by contracted divers performing underwater inspections (30 to 50 inspections per year) of specific bridge foundations. In Calendar Year 2018, these individuals performed 2,474 bridge inspections and submitted all required reporting in accordance with all Federal and State inspection and reporting requirements. In addition to the evaluation of the condition of each bridge, the inspection process also includes a review of whether any postings currently required for weight or clearance limits are in place, accurate, and visible to the traveling public as required.

The following table presents a comparison of the 2018 bridge inspection activities, which includes semi-annual inspections of State Red List bridges, with those of the previous 5 years.

Calendar Year	Number of State Bridge Inspection Events	Number of Municipal and Other Bridge Inspection Events	Total Bridge Inspection Events
2013	1,524	1,102	2,626
2014	1,597	1,071	2,668
2015	1,444	1,101	2,545
2016	1,560	1,070	2,630
2017	1,422	1,052	2,474
2018	1,401	1,044	2,445

A review of the above data would seem to indicate that the number of inspections has greatly reduced over the past five years, from 2,668 to 2,445 inspections, i.e., a reduction of 181 inspections (6.9%). However, as previously noted, Senate Bill 38 (effective on July 1, 2017) narrowed the definition of a "Red List Bridge" (RSA 234:25-a). The revised definition now only includes structurally deficient bridges (one or more major elements in poor or worse condition), thereby eliminating tonnage posted bridges in fair-or-better condition from the Red List and returning them to the standard biennial inspection cycle.

Red List bridge counts and deck areas back to 2010 were then adjusted to account for bridges meeting this new Red List definition. This adjustment resulted in an immediate (in 2017) reduction of about 11 bridges from the State Red List and 71 from the Municipal Red List. Since state Red List bridges are inspected twice per year and municipal Red List bridges are inspected once per year, this change also resulted in a corresponding reduction in the number of bridges inspected each calendar year.

In addition to those removed due to the Red List definition change, continuing efforts by the Department and the municipalities to improve overall bridge conditions have reduced these numbers further, for a net reduction of xx state bridges and xxx municipal bridges from their respective Red Lists from 2013 through 2018. Consequently, this resulted in a corresponding reduction in the number of inspections to be performed each year.

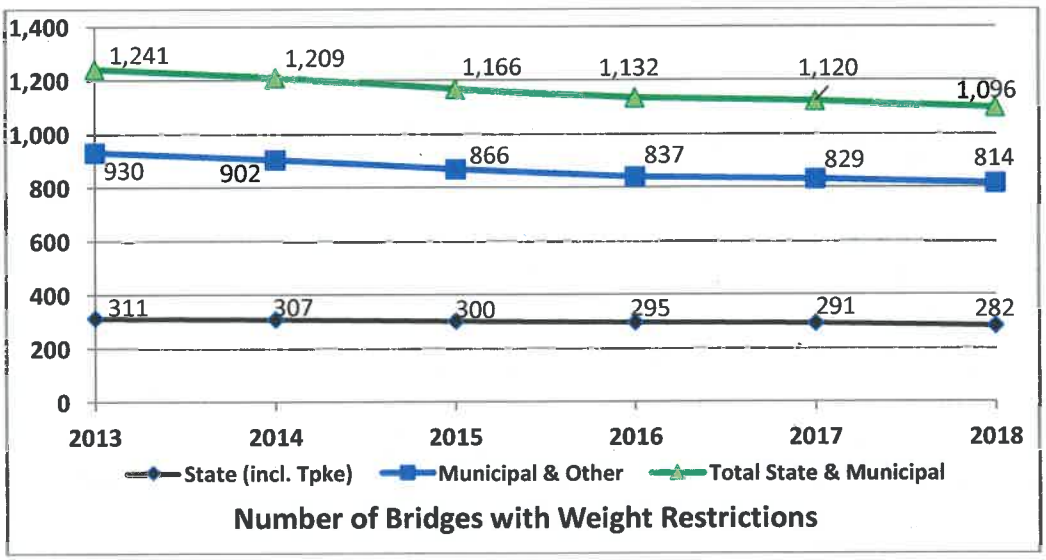
For these reasons, the number of bridge inspections required to be performed each calendar year has been reduced considerably since 2013.

5.1.3 Goal 3: Manage all posted (weight restricted) bridges to reduce or eliminate constraints affecting the safe and efficient movement of goods and services, including emergency response, on the overall State transportation system.

Specifically, the goal is for all bridges on Tier 1 and Tier 2 roadways to have no weight restrictions, for all Tier 3 bridges with weight restrictions to be included in the 10-Year Plan as projects to address their weight restrictions, and for all Tier 4 bridges with weight restrictions to be reviewed to ensure that the weight restriction for each bridge does not affect emergency response services.

Under the ranking criteria for the Rehabilitation & Replacement Priority List and for the Bridge Preservation Priority List, the Bridge Management Committee assigns additional points to each bridge based on whether it has a weight restriction. These additional points shift all weight restricted bridges to a higher priority. Over time, this consideration will gradually reduce the number of bridges with weight restrictions, especially on Tier 2 roadways, and hopefully Tier 3 and Tier 4 roadways as well. These efforts will serve to improve the efficiency and safety of the overall transportation system in New Hampshire.

The following graph presents data regarding the number of state and municipal bridges posted with weight restrictions. The data show that these numbers are gradually being reduced, which will improve the overall functionality of the transportation system and facilitate the movement of people, goods, and services in New Hampshire.



Please refer to *Section 2.3 – Bridge Postings for Weight Restrictions* for additional information on the current posting of existing NH bridges at the completion of the 2018 inspection cycle (December 31, 2018). *Appendix "C" - Bridge Postings and Weight Restrictions: Posting Definitions and Examples* also provides general information on this topic.

5.1.4 Goal 4: Manage the State's Red List ("poor" condition) bridges to reduce the backlog of bridge rehabilitation and replacement to the maximum extent that can be addressed within the State's 10-Year Transportation Improvement Plan (10-Year Plan).

The Bridge Management Committee reviews all State Red List bridges to determine if the Bridge Design Bureau or the Bridge Maintenance Bureau will assume the responsibility of addressing each State Red List bridge. Once this review and determination is complete, the BMC initiates efforts for projects being developed by Bridge Design and, through the 10-Year Plan process, recommends the projects, estimated costs, and fiscal years for inclusion. The Bridge Maintenance Bureau schedules and allocates resources toward efforts for State Red List bridges that they will address during this time period.

In the 10-Year Plan for 2019 – 2028, there are 128 of the current 133 State Red List bridges included as projects by the Bridge Design Bureau or the Bridge Maintenance Bureau. Of the 5 State Red List bridges not included, 2 are located on Tier 4 roadways and 3 are located on Tier 6 roadways, as follows:

Municipality/Br. No	Owner	Feature Carried/Crossed	State Red List Status	Roadway Tier
Bennington 093/094	NHDOT	NHRR (ABD) / Antrim Road	2002	6
Franklin 162/100	NHDOT	NHRR (ABD) / NH Route 127	1997	6
Pinkham's Grant 076/081	NHDOT	Old NH Route 16 / Brook	2012	6
Pittsburg 099/034	NHDES	Murphy Dam Rd./Dam Spillway	1991	4
Raymond 083/154	NHDOT	Dudley Road / Lamprey River	1990	4

The 10-Year Plan also allocates funding for this effort through the *Statewide Red List Bridges 40817* project "to rehabilitate and reconstruct State Red List Bridges". This project allocates $10,800,000 to address future State Red List bridges that are identified during upcoming inspection years, prior to development and approval of the next 10-Year Plan.

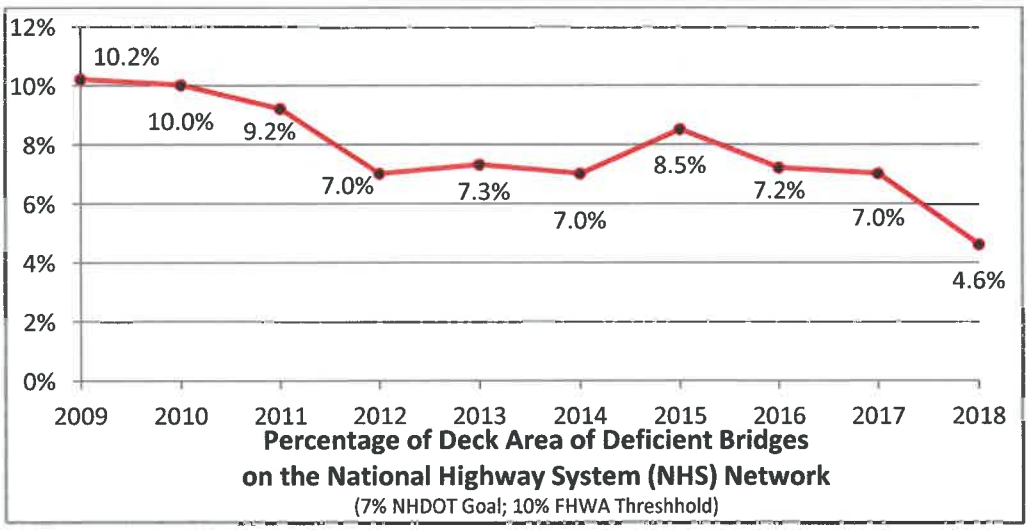
Please refer to *Section 2.2 – Current Condition and Number of Bridges in New Hampshire* for additional information on the number and deck area of NH's "poor" condition bridges at the completion of the 2018 inspection cycle (December 31, 2018).

5.1.5 Goal 5 - Apply available bridge funds to limit the total area of bridge decks in "poor" condition on the National Highway System (NHS) to be less than 7% of the total deck area on this highway category. This goal is more stringent than the 10% limit stipulated by the Federal Highway Administration.

Under the ranking criteria for the Bridge Rehabilitation & Replacement Priority List and for the Bridge Preservation Priority List, the Bridge Management Committee assigns additional points for Tier 1 and Tier 2 bridges that typically comprise the bridges on the NHS system. These additional points shift bridges on the NHS to a higher priority. As these bridges are addressed over time, the number of "poor" condition NHS bridges will gradually be reduced, thereby improving the efficiency and safety of the state's overall transportation system.

In an effort to reduce deficient bridges nationwide, recent changes in FHWA requirements (MAP-21 in 2012 and FAST ACT in 2015) stipulate that each state must keep the deck area of all deficient bridges (one or more major structural elements with an NBIS condition rating of "4=Poor" or less) located on the National Highway System (NHS) below 10% of the state's total deck area of all NHS bridges. The FHWA generally allows some flexibility regarding the types of projects to which federal funds may be applied. However, if the 3-year average of the deck area of deficient bridges on the NHS rises above the 10% threshold, then FHWA limits the state's flexibility with funding and requires that funds be dedicated to address the deficiencies of bridges on the NHS. As can be seen in the following graphic, NHDOT is well below the 10% threshold.

Through past efforts, NHDOT has been successful in keeping the combined deck area of deficient NHS bridges below 10%, even before this metric became a requirement. The progress made over the past several years, depicted in the following graph, shows the variability of this effort as several large NHS bridges were added to and then removed from the Red List as deficiencies were identified and then addressed.



The percentage of deck area of deficient NHS bridges dropped from 7.0% in 2017 to 4.6% in 2018, a reduction of 350,000 sq. ft., including replacement of the Sarah Long Bridge, which removed 100,000 sq. ft. of deck area from the total area of deficient NHS bridges. The percentage of deficient NHS deck area is now well below the Bridge Program goal of 7.0%.

It is important to note that, as with all FHWA requirements, this metric only applies to federal definition bridges, i.e., those bridges having a total length greater than 20 feet. (State definition bridges are those having a total length of 10 feet or greater.)

5.1.6 Goal 6 - Record and utilize project cost data to calculate cost estimates through all project development phases (Initial Assessment, Preliminary Plans, PPS&E Plans, and PS&E Plans) to improve cost estimating practices and corresponding project results as the *Recommended Investment Strategy* (RIS) is efficiently and effectively implemented. The goal is for Initial Assessment estimates to be within 25% (±) of the PS&E.

The Bridge Management Committee reviews bridge cost data to develop and update better mechanisms to improve the accuracy of cost estimates of bridge projects that are prepared at the initial project development for the 10-Year Plan phase, at the Alternatives Analysis phase, at the Preferred Alternative phase, at the 60% Plan development phase, at the Preliminary Plans, Specification, and Estimate (80%) (PPS&E) development phase, and at the Final Plans, Specification, and Estimate (90%) (PS&E) development phase.

The ultimate goal of this effort is to develop bridge project estimates that maintain funding consistency throughout all phases of the project development process. This would allow the Department to more accurately determine the overall funding needs of the Bridge Program. The Department's goal is for the initial assessment estimate to be within 25% +/- of the PS&E estimate.

A process has been developed and a draft document to provide explanation and direction on developing project cost estimates is currently under review. Once this document has been approved it will be appropriately applied when developing cost estimates for the various development stages for bridge projects and will be posted for reference on the Bridge Design Document Library page.

Project cost estimates are developed and updated at various stages of the project development process, as noted below:

(1) Initial Project Assessment Estimate - Prepared for developing the 10-Year Plan
(2) Project Agreement Estimate - At project start-up to program and authorize funds in ProMIS
(3) Preliminary plans estimate - At 40% to 50% plan completion
(4) Preliminary plans, specifications, and estimate (PPS&E) - At 80% plan completion
(5) Plans, specifications, and estimate (PS&E) - At 90% plan completion
(6) Contract plans estimate - At 100% plan completion (advertising project for bids)
(7) Project Agreement Estimate (Based on bids) - After bid opening

This is an extremely challenging and optimistic goal, especially when considering the current market conditions with tariffs affecting steel and material prices, the constant fluctuation of fuel prices, and the ever-changing labor market and associated costs.

5.2 Other Efforts Completed by the Bridge Design Bureau

5.2.1 Development of Contract Plans and Documents for System Expansion Projects

In addition to the Performance Goals presented in *Section 5.1 – Performance Goals and Results of Efforts of Previous Year*, the Bridge Design Bureau is also responsible for the development of bridge plans and contract documents required for expansion efforts of the overall transportation system, such as:

- I-93 expansion from Salem to Manchester
- Spaulding Turnpike expansion from 4 lanes to 8 lanes between Newington and Dover, including the Little Bay bridges
- FE Everett Turnpike expansion from 2 lanes to 3 lanes between Nashua and Bedford
- Manchester Exit 6 and 7 expansion / reconfiguration
- I-93 expansion from 2 lanes to 3 lanes in Bow and Concord, including the I-89 / I-93 and the I-93 / I-393 interchanges

It is recognized that portions of these projects will address bridge preservation and rehabilitation needs, as outlined in the *NHDOT Bridge Program – Recommended Investment Strategy*, which would typically be anticipated for the bridges located within the limits of these projects. However, most bridge work associated with these projects address these needs through bridge replacement as part of the overarching goal to provide additional capacity on these critical segments of the transportation network.

5.2.2 Bridge Load Ratings and Reviews for Overweight Permits

The Existing Bridge Section of the Bridge Design Bureau is responsible for determining load capacity ratings for overweight permit applications. This effort ensures that vehicles and loads in excess of legal limits are utilizing competent bridges capable of safely carrying these non-conforming vehicles and loads without causing damage to the bridges being crossed.

During the 2018 calendar year, the Existing Bridge Section of Bridge Design, in partnership with the Highway Maintenance Bureau, performed 1,123 bridge rating reviews of overweight permit applications and audited 8,080 self-validated overweight permit applications, using the Bridge Overweight Permit Review (BOPR) software solution that was developed by the NHDOT Existing Bridge Section.

This effort will gradually be discontinued during the next fiscal year once the newly developed "*NHDOT Permits*" online permitting software and web site for NHDOT is completed and fully implemented, enabling applicants to review proposed routes of travel and obtain their own OS/OW permits through a more automated process.

For more information regarding bridge postings and weight restrictions for bridges, please refer to *Appendix "C" - Bridge Postings and Weight Restrictions for Certified Vehicles: Posting Definitions and Examples*; or; *RSA 266:18 Equipment of Vehicles*.

http://www.gencourt.state.nh.us/rsa/html/XXI/266/266-18.htm

5.2.3 Critical Deficiency Notices - State and Municipal Bridges

The Existing Bridge Section of the Bridge Design Bureau reviews bridge inspection data and determines whether any postings for weight restrictions need to be revised or have become necessary since the previous inspection. This is especially applicable to state and municipal Red List bridges as these are already in "poor" condition and the rate of deterioration may accelerate. When this occurs, it becomes more likely that the condition of the deficient major bridge element has deteriorated to the extent that the bridge can no longer safely carry all legal loads and must now be down-posted to a new and reduced safe load capacity. Occasionally, deterioration reaches a point at which the bridge is determined to have no remaining safe live load carrying capacity, in which case the bridge is immediately closed and barricaded.

When the safe load capacity of a state bridge is reduced, a posting change notice is prepared and submitted to the NHDOT Commissioner. Upon approval, it is distributed to the Traffic Bureau and the Bridge Maintenance Bureau to prepare and install new weight limit signs. In addition, data for the Overweight Permit process is updated to ensure that approvals for overweight permits prevent these loads from traveling over the affected bridge, again avoiding damage to the bridge and ensuring the safety of the transportation network.

When the safe load capacity of a municipal bridge is reduced, a "Critical Bridge Deficiency" notice is prepared and submitted to the NHDOT Municipal Highways Engineer for approval and for notification to the municipal officials that own the affected bridge. It is the responsibility of the municipal officials to implement the required posting or closure.

In some instances, where an inspection finding warrants additional emphasis but does not yet warrant a "Critical Bridge Deficiency Notice", the Existing Bridge Section prepares a "Bridge Deficiency Notice" to be sent to the municipality to ensure that local officials are aware of this condition. A metal culvert pipe with accelerating deterioration, a bridge with severely deteriorated bridge railing, or a bridge with substantial undermining are examples of potentially unsafe conditions that may warrant action by the municipality before the next bridge inspection occurs. This advanced notice enables municipal officials to initiate actions and/or to secure funding to address the bridge deficiency before it becomes a travel constraint or a greater safety concern for the roadway users.

During the 2018 calendar year, the Existing Bridge Section prepared 3 *Deficiency Notices* and 9 *Critical Deficiency Notices* for municipal bridges, as noted below.

Date	Type of Deficiency	Bridge ID	Bridge Owner	Facility Carried	Feature Intersected	Description of Deficiency
January 22, 2018	Critical Deficiency	Meredith 180/144	Municipality	Parking Lot Access	Waukewan Lake Outlet	Decay in longitudinala deck panels
January 30, 2018	Critical Deficiency	Windham 057/051	Municipality	Castle Hill Road	Beaver Brook	Closed metal pipe culvert with severe corrosion and perforations
February 28, 2018	Critical Deficiency	Bradford 104/141	Municipality	Johnson Hill Road	West Branch Brook	"Weight Limit 12 Tons" and "One Lane Bridge" signs missing at east approach
March 22, 2018	Critical Deficiency	Francestown 091/142	Municipality	Old County Road North	Collins Brook	Temporary IB-W requires weight limit posting for insufficient deck capacity
October 30, 2018	Deficiency	Milford 089/106	Municipality	Mason Road	Great Brook	Metal pipe culvert with advanced section losses
November 2, 2018	Critical Deficiency	Milford 103/163	Municipality	Hartshorn Road	Hartshorn Brook	Masonry slab with missing signage
November 6, 2018	Critical Deficiency	Windsor 064/138	Municipality	North Star Road	White Pond Brook	"Weight Limit 6 Tons" and "One Lane Bridge" signs missing at south approach
November 8, 2018	Critical Deficiency	Hillsborough 158/080	Municipality (Local Village District)	Red Fox Crossing	Nelson Brook	Partially collapsed concrete slab over failing corrugated metal pipe
December 19, 2018	Critical Deficiency	Rindge 154/069	Municipality	Wellington Road	Converseville Brook	Metal pipe culvert with advanced deterioration and perforations

5.2.4 Support of Other Department Actions and Responsibilities

In addition to the Performance Goals presented in *Section 5.1 – Performance Goals and Results of Efforts of Previous Year*, the Bridge Design Bureau supports the efforts of other NHDOT Bureaus. Some of these nominal efforts are noted below:

- Highway Design Bureau
  - Design, development, and reviews of contract plans for culvert headwalls
  - Review plans / specifications for projects constructing large concrete culverts
  - Provide contract plans and specifications for plug joint replacement as part of the Pavement Preservation efforts
  - Provide contract plans / specifications for replacement of bridge rail and approach rail as part of the Department's efforts to update guardrail statewide

- Traffic Bureau and Transportation Systems Management & Operations (TSMO)
  - Provide support involving structural design, contract plans & specifications, and shop drawing review for traffic sign structures and other related structures

5.2.5 Emergency Response for Bridges

The staff of the Bridge Design Bureau, including inspectors, technicians, and engineers, respond as needed when an emergency occurs to evaluate damage to bridges due to:

- Impact from vehicles or vessels
- Oversized loads
- Overweight loads
- Flooding and scour
- Failure of a major structural element
- Other bridge-related emergencies

When these emergencies occur, Bridge Design staff coordinates with the Transportation Systems Management & Operations (TSMO), Emergency Operations Center (EOC), other NHDOT Bureaus, emergency response personnel, federal, state, and local agencies, and the media as needed to initially assess the situation and to initiate any actions that are immediately needed to ensure public safety until long term repairs or actions can be undertaken.

During calendar year 2018, Bridge Design staff responded to the following emergencies:

Date	Bridge ID	Bridge Owner	Facility Carried	Feature Intersected	Description of Incident
January 17, 2018	Campton 153/147	NHDOT	NH Route 175	Mad River	Plow damage to rail
February 12, 2018	Lebanon 049/100	NHDOT	I-89 NB	Plaza Connector Road	Overheight vehicle impact
March 1, 2018	Auburn 060/134	NHDOT	NH Route 101	King Street	Overheight vehicle impact
March 21, 2018	Nashua 123/073	NHDOT Tpkes	East Dunstable Road	FE Everett Turnpike ramp	Vehicle impact damage
April 10, 2018	Hampton Falls 174/040	NHDOT	NH Route 84	I-95	Vehicle impact damage
April 29, 2018	Conway 167/067 Saco River Covered Bridge	NHDOT	East Side Road	Saco River	Vehicle accident
June 5, 2018	Newton 064/107	NHDOT	Pond Street	Pan Am Railway	Holes in timber deck
July 1, 2018	Jackson 148/050 Honeymoon Covered Bridge	NHDOT	NH Route 16A	Ellis River	Vehicle impact damage
July 19, 2018	Cornish 064/108 Cornish-Windsor Covered	NHDOT	Cornish Toll Bridge Road	Connecticut River	Vehicle impact damage
July 24, 2018	Jackson 148/050 Honeymoon Covered Bridge	NHDOT	NH Route 16A	Ellis River	Vehicle impact damage
July 30, 2018	Littleton 188/080	NHDOT	I-93 SB	NH Route 18	Vehicle impact damage
July 26, 2018	Salem 060/088	NHDOT	Brookdale Road	I-93	Vehicle impact damage
August 7, 2018	Cornish 064/108 Cornish-Windsor Covered	NHDOT	Cornish Toll Bridge Road	Connecticut River	Vehicle impact damage
September 14, 2018	Hopkinton 055/112 Rowell's Covered Bridge	Municipality	West Hopkinton Road	Contoocook River	Vehicle impact damage

5.3 Other Efforts Completed by the Bridge Maintenance Bureau

5.3.1 Repair Projects for State Bridges

In addition to the Performance Goals presented in *Section 5.1 – Performance Goals and Results of Efforts of Previous Year*, the Bridge Maintenance Bureau routinely performs repairs to state bridges to ensure that these bridges can safely remain in service until more extensive preservation, rehabilitation, or replacement activities can be funded, developed, and completed, in accordance with the *NHDOT Bridge Program - Recommended Investment Strategy (RIS)*.

These repair efforts typically involve the following types of activities:

- Repair expansion joints
- Patch bridge decks
- Initial repair (safety) of impact damage due to errant, over-sized, or over-weight vehicles
- Patch abutments, piers, wingwalls, and bearing seats
- Repair bearings

These repairs are tracked by the Bridge Maintenance Bureau to maintain the historical record of work performed on each specific bridge. The time needed for these types of repairs range from a few days to a few months, depending on the scope of work appropriate for the needed repair. These activities address immediate concerns and keep the bridge in service until more comprehensive projects are funded, developed, and completed, in accordance with the *Recommended Investment Strategy (RIS)*. They are not intended to be long term solutions and do not "reset" the RIS schedule of work activities.

During FFY 2018 the Bridge Maintenance Bureau completed repair activities on 334 bridges involving the following tasks:

- Repaired expansion joints
- Patched bridge decks
- Patched bridge abutments and/or piers
- Removed granite bridge curb and replaced it with concrete curb
- Cleared debris from the waterways of bridges

5.3.2 Support of Other Department Actions and Responsibilities

In addition to the Performance Goals presented in *Section 5.1 – Performance Goals and Results of Efforts of Previous Year*, the Bridge Maintenance Bureau supports the efforts of other NHDOT Bureaus, some of which are noted below:

- Traffic Bureau – Repair of drainage structure at Traffic Bureau facilities
- Materials & Research Bureau – Repair of barrier wall near M&R offices

5.3.3 Emergency Response for Bridges

The staff of the Bridge Maintenance Bureau responds as needed when an emergency occurs to support efforts to address damage to bridges due to:

- Impact from vehicles or vessels
- Oversized loads
- Overweight loads
- Flooding and scour
- Failure of a major structural element
- Other bridge-related emergencies

When these emergencies occur, Bridge Maintenance staff coordinates with the Transportation Systems Management & Operations (TSMO), Emergency Operations Center (EOC), other NHDOT Bureaus, emergency response personnel, federal, state, and local agencies, and the media as needed to initially address the situation and to ensure public safety.

In FFY 2018 the Bridge Maintenance Bureau responded to 9 bridge emergencies.

In addition, the Bridge Maintenance Bureau regularly responds to numerous calls from members of the public expressing concern regarding specific bridge-related conditions or situations they have observed. These concerns are generally communicated through the Highway Maintenance Districts or the Transportation Management Center.

6 Overall Bridge Condition Forecast

It is challenging to predict the near-term condition and anticipated deterioration of state bridges, as well as the number of bridge projects scheduled and funds programmed over the next three years to address their maintenance, preservation, rehabilitation, and replacement needs. Such projections are based on current data from bridge inspection records made over time. Although the Department strives to follow all adopted procedures for selection of bridge projects, it is recognized that the projects and efforts actually put forth during this reported time period could be different from the original projections, possibly due to funding or staffing shortfalls, unanticipated delays during development of the project, or any emergency situations that may have developed.

Regardless, it is projected that the number of State Red List bridges will slightly decrease over the next 3 years and the corresponding amount of deficient bridge deck area will decrease by more than 10%. This is primarily due to a few large bridges, including the I-93 NB & SB bridges over the Winnipesaukee River in Northfield and Tilton (48,278 sq. ft. total), being rehabilitated, thus removing them from the State Red List. In addition, several smaller State Red List bridges are scheduled to be replaced.

However, other bridges will deteriorate further to where they are added to the Red List. When considering the number of State Yellow List bridges that are essentially one inspection away from moving onto the State Red List, this projection is truly uncertain, and the numbers can change quickly. With implementation of the *Recommended Investment Strategy*, the number of State Red List bridges and deficient deck area are expected to decrease over the long-term as the benefits of this strategy show the anticipated results.

The amount and availability of resources remain the biggest factors that affect the Department's progress towards the goal of significantly improving the overall condition of bridges in New Hampshire. There are many demands on the use of the limited transportation funds (federal, state, turnpike, and local) available for all transportation needs statewide, including bridges, and although engineering consultants can be utilized to supplement Department staff, it is uncertain whether existing staffing levels in Bridge Design are sufficient to develop, coordinate, review, and manage the annual number of bridge projects potentially required to meet the needs of the *Recommended Investment Strategy* as it applies to New Hampshire bridges.

The following information shows the extent of progress toward the above-described effort anticipated by projects that are under development and will be advertised for bids within the next three (3) years, should all programmed funds become available. Although the efforts presented on the following pages may not explicitly follow all aspects of the *Recommended Investment Strategy* for all bridges, considerable progress is being made by addressing the deficiencies of several large and very costly bridges, as noted above.

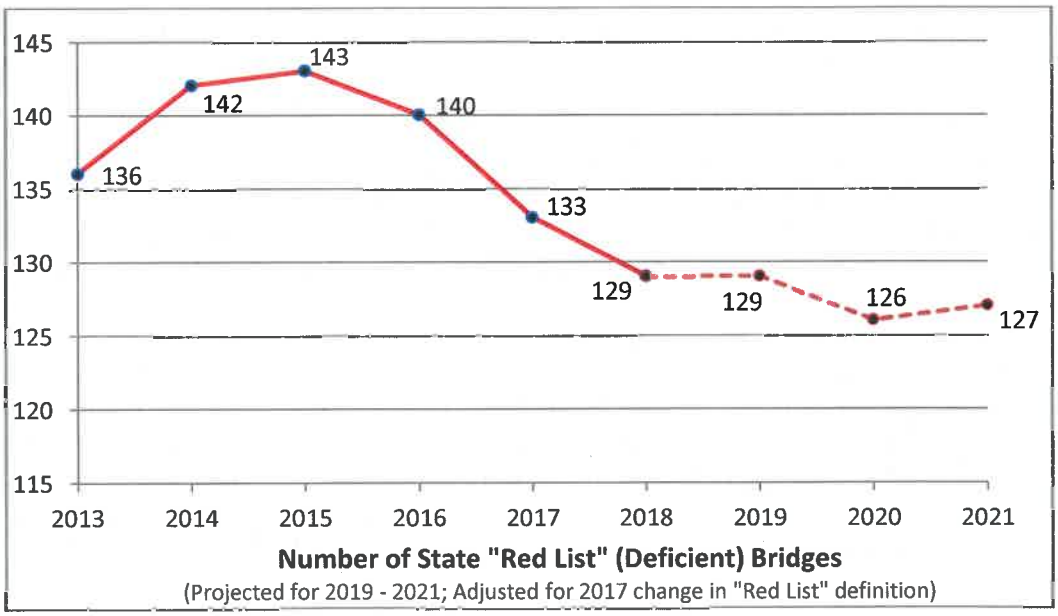
6.1 Bridge Condition Forecast

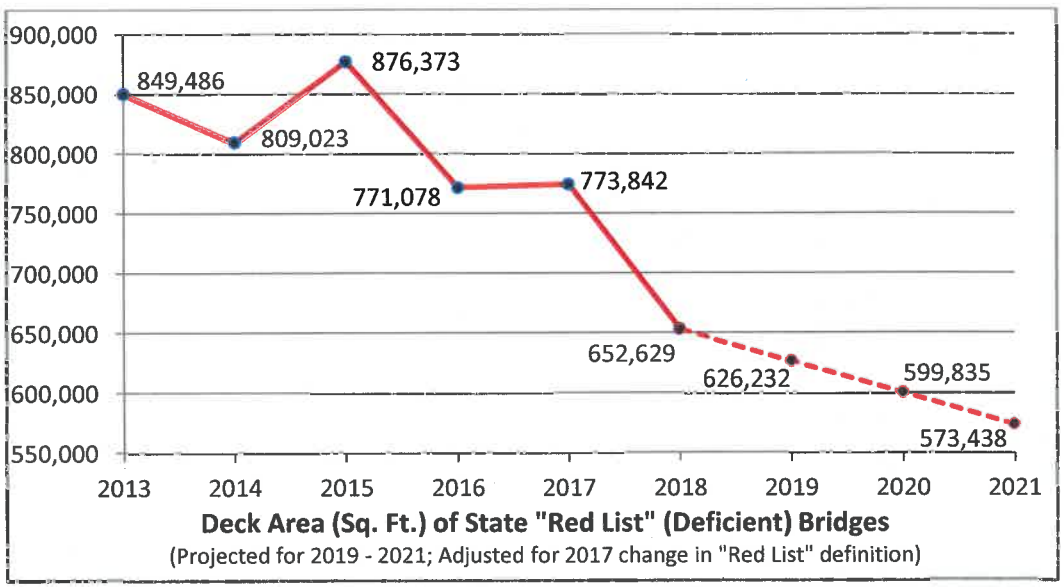
The overarching goal of the *Recommended Investment Strategy* is to improve the overall condition of New Hampshire bridges over time through appropriate, timely, and effective maintenance, preservation, rehabilitation, and replacement activities. In referencing the projects and data summarized in *Section 5.1 - Performance Goals and Results of Efforts of Previous Year* for preservation, rehabilitation, and replacement, it can be determined that although considerable expenditure of resources is being made, these efforts generally fall short of the RIS goals.

The following graphs depict past, current, and projected data for Red List, Yellow List, and Green List bridges from 2013 through 2021.

6.1.1 Red List 2013 - 2021

The graphs below depict the number and deck area of state Red List bridges based on data from 2013 through 2018 and projected for 2019 through 2021.

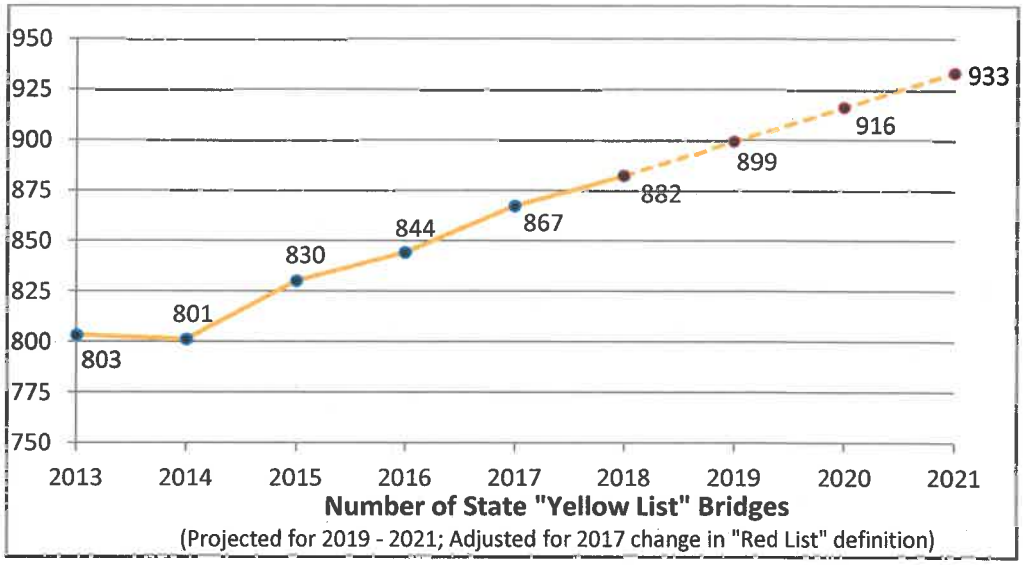


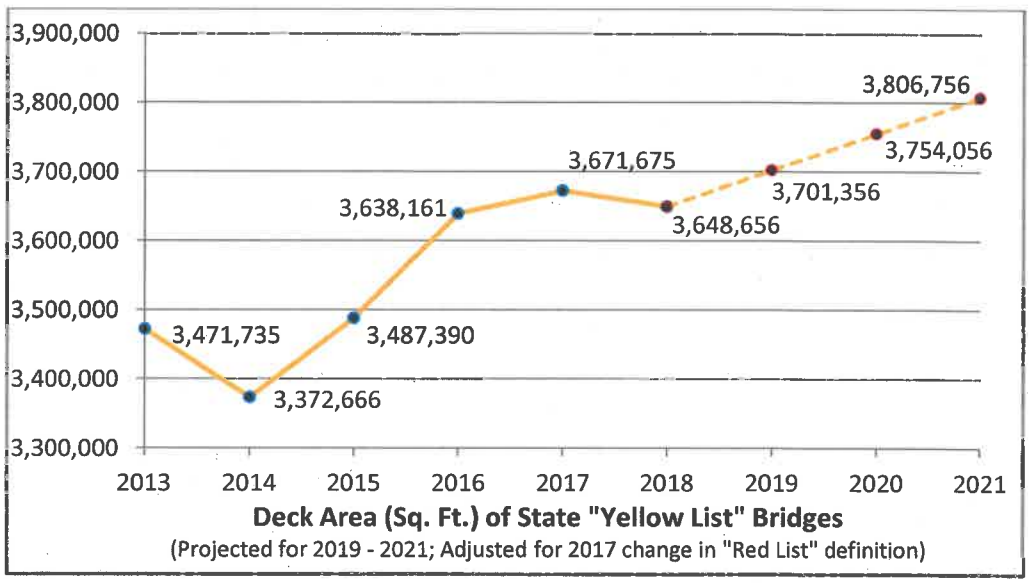


The above graphs and information show that the Department has achieved a reduction in the number and deck area of Red List bridges over the past 5 years. However, it is important to note that the general consistency in the number of Red List bridges over time is due to the many bridges previously on the Yellow List that deteriorate further each year and thus transition to the Red List. It is the goal of the *Recommended Investment Strategy* to perform timely and appropriate preservation activities on bridges that are still in 5="Fair" to 7="Good" condition, thus keeping them off the Red List. The importance and cost effectiveness of this Strategy cannot be overstated.

6.1.2 Yellow List 2013 – 2021

The graphs below depict the number and deck area of state Yellow List bridges based on data from 2013 through 2018 and projected for 2019 through 2021.



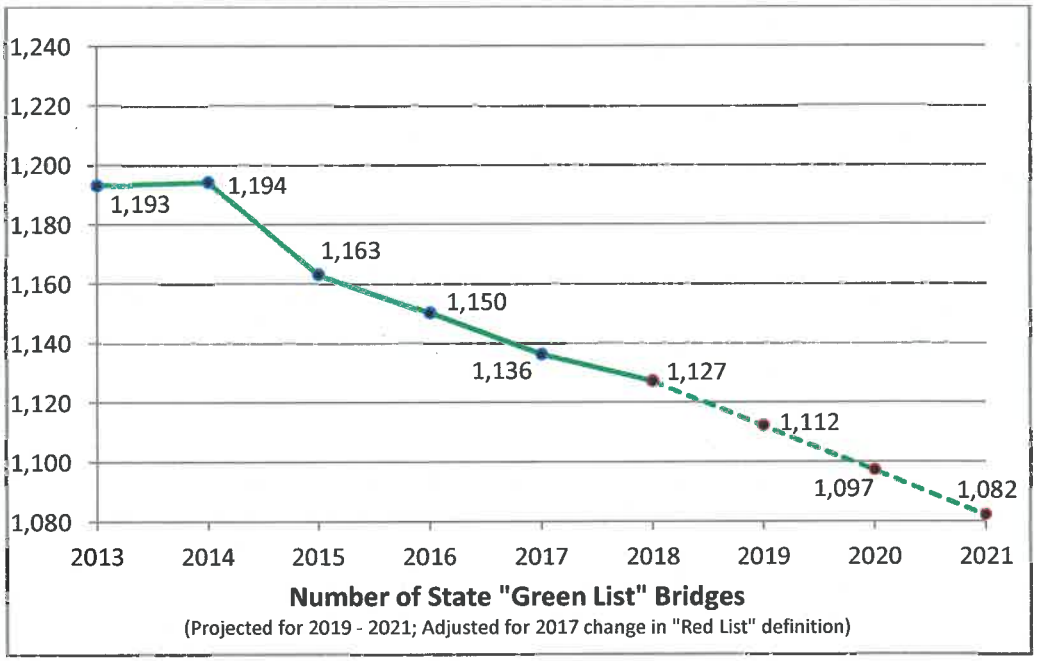


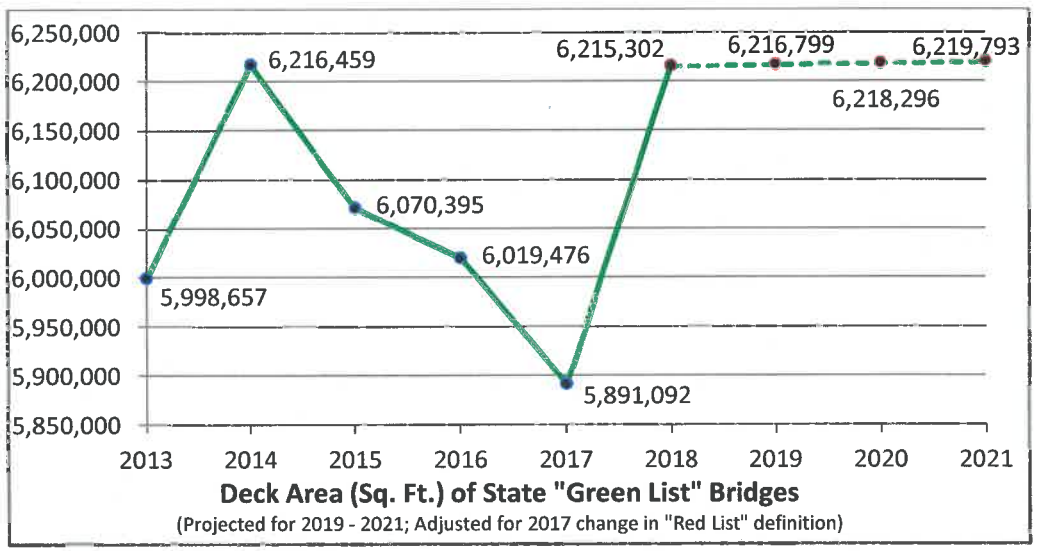
The previous graph and information shows that the Department has seen an increase in the number and deck area of Yellow List bridges over the past 5 years. If current and projected funding levels are maintained, this trend is expected to continue since bridges are now receiving needed preservation work. By following the *Recommended Investment Strategy*, bridges will remain on the Yellow List (5 = "Fair" or 6 = "Satisfactory" condition) for a longer period of time, rather than being allowed to deteriorate further and be added to the Red List, which would require more expensive rehabilitation or replacement options.

As bridges age and deteriorate, their condition will transition from "Green" to "Yellow". The goal of the *Recommended Investment Strategy* is to allocate sufficient funding to address their deficiencies through appropriate and timely preservation activities before they deteriorate further, and thus keep them from being added to the Red List. The result of this effort would be a consistent number (range) of Yellow List bridges.

6.1.3 Green List 2013 – 2021

The graphs below depict the number and deck area of state Green List bridges based on data from 2013 through 2018 and projected for 2019 through 2021.





The above graph and information shows that the Department is realizing an overall decrease in the number of Green List bridges over the past 5 years; but is realizing an increase in the overall deck area of Green List bridges during this same time period.

Appendices

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Appendix "A"

2018 State Red List
Numerical Ranking and Alphabetical Listing
(Based on bridge inspection data through December 31, 2018)

and

Location Map of all 2018 State Red List Bridges
(Based on bridge inspection data through December 31, 2018)

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2018 STATE BRIDGE RED LIST by Priority

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
1	Hampton (Seabrook-Hampton)	235/025	NHDOT	15904	NH 1A	HAMPTON RIVER	1999	2	9,466-17	2023	Deck 8 Very Good Superstructure 4 Poor Substructure 6 Satisfactory	L=1199.0 W=33.5 13-span	40,167	11/8/2018	E-2	BAS	1984/1949
2	Lebanon, NH - Hartford, VT	044/104	NHDOT	16148	I-89 NB	CONNECTICUT RIVER,NECRR	2012	1	20,734-17	2019	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=847.0 W=35.8 6-span	30,323	12/4/2018	NPR	IB-C	1966
3	Lebanon, NH - Hartford, VT	044/103	NHDOT	16148	I-89 SB	CONNECTICUT RIVER,NECRR	2011	1	19,960-17	2019	Deck 5 Fair Superstructure 4 Poor Substructure 6 Satisfactory	L=846.0 W=35.8 6-span	30,288	12/4/2018	NPR	IB-C	1966
4	Dover (Newington-Dover) General Sullivan Bridge	200/023	Tpk Bureau, NHDOT	11238S	ROAD	LITTLE BAY	1979	6	0-03	2019	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=1585.0 W=30.6 9-span	48,501	11/7/2018	BRC	HT	1950/1934
5	Concord (Bow-Concord)	152/108	NHDOT	13742	I-393,US 4,US202	I-93	2011	1	45,231-17 62,000-14	2024	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=167.0 W=93.8 2-span	15,665	11/29/2018	NPR	IB-C	1981/1958
6	New Castle-Rye	066/071	NHDOT	16127	NH 1B	LITTLE HARBOR	1994	3	3,803-17	2019	Deck 6 Satisfactory Superstructure 3 Serious Substructure 5 Fair	L=253.5 W=30.8 6-span	7,807	11/26/2018	15 Tons	BAS	1975/1942
7	Lyme, NH-Thetford, VT	053/112	NHDOT	14460	EAST THETFORD ROAD	CONNECTICUT RIVER	2013	4	1,729-17	HB 1817 2020	Deck 5 Fair Superstructure 4 Poor Substructure 4 Poor	L=471.0 W=23.7 2-span	11,163	11/29/2018	15 Tons	HT	1937
8	Littleton, NH-Waterford, VT	109/134	NHDOT	27711	NH 18	CONNECTICUT RIVER	2014	3	1,295-17	SB 367 2025	Deck 6 Satisfactory Superstructure 4 Poor Substructure 4 Poor	L=533.0 W=30.6 5-span	16,310	12/5/2018	NPR	DPG	1980/1934
9	Manchester	099/066	Tpk Bureau, NHDOT	16099	I-293,NH 3A,TPK S	BLACK BROOK	2012	1	21,848-17	2026	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=74.0 W=41.3 1-span	3,056	11/8/2018	NPR	IB-C	1956
10	Concord (Bow-Concord)	150/107	NHDOT	13742	US202	NHRR,CONSTITUTION AV.	2011	2	45,231-17 2,100-14	2024	Deck 3 Serious Superstructure 7 Good Substructure 4 Poor	L=156.0 W=81.8 2-span	12,761	11/29/2018	NPR	IB-C	1981/1958
11	Andover	143/077	NHDOT	40392	US 4	BLACKWATER RIVER	2014	2	2,362-17	2023	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=75.0 W=26.7 1-span	2,000	12/3/2018	NPR	TPG	1933
12	Hampton	163/184	NHDOT		US 1	PAR(ABD)	2017	2	15,822-17	Not Included	Deck 6 Satisfactory Superstructure 4 Poor Substructure 4 Poor	L=120.0 W=40.0 1-span	4,800	43412	E-2	TPG	1977/1936
13	Deerfield	137/116	NHDOT	24477	NH107	FREESE'S POND	2010	3	2,705-17	SB 367 2022	Culvert 3 Serious	L=13.0 W=22.0 1-span	286	11/5/2018	NPR	MP	1973
14	Lee	073/084	NHDOT	41322	NH125	LITTLE RIVER	2014	2	19,768-17	2023	Culvert 3 Serious	L=18.0 W=39.0 1-span	702	11/5/2018	NPR	MP	1972
15	Peterborough	108/116	NHDOT	27712	US202,NH123	CONTOOCOOK RIVER	2012	2	6,847-17	2025	Deck 4 Poor Superstructure 5 Fair Substructure 4 Poor	L=179.0 W=51.8 2-span	9,272	8/28/2018	NPR	IB-C	1974/1942
16	Sanbornton	127/099	NHDOT	BOBM	I-93 NB	SALMON BROOK	2001	1	13,512-17	Bridge Maintenance 2019	Culvert 4 Poor	L=28.0 W=38.0 1-span	1,064	11/20/2018	NPR	CB	1962
17	Sandwich	203/029	NHDOT	BOBM	NH 25	WEED BROOK	2016	2	5,243-17	Bridge Maintenance 2019	Culvert 3 Serious	L=13.0 W=36.0 1-span	468	11/15/2018	NPR	CB	1946
18	Westmoreland	113/163	NHDOT	BOBM	NH 12	ALDRICH BROOK	2012	2	8,444-17	Bridge Maintenance 2021	Culvert 3 Serious	L=10.0 W=41.0 1-span	410	11/7/2018	NPR	CB	1960
19	Errol	071/030	NHDOT	BOBM	NH 16	OUTLET MOOSE POND	2013	2	1,232-17	Bridge Maintenance 2020	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=12.0 W=28.5 1-span	342	11/7/2018	C-2	IB-C	1931

2018 STATE BRIDGE RED LIST by Priority

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
20	Manchester	099/067	Tpk Bureau, NHDOT	16099	I-293,NH 3A,TPK N	BLACK BROOK	2012	1	23,929-17	2026	Deck 5 Fair Superstructure 6 Satisfactory Substructure 4 Poor	L=74.0 W=41.3 1-span	3,056	11/8/2018	NPR	IB-C	1956
21	Woodstock	177/148	NHDOT	27713	NH175	PEMIGEWASSET RIVER	2014	3	645-17	SB 367 2024	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=183.0 W=30.9 1-span	5,655	11/15/2018	E-2	SA	1939
22	Concord	147/028	NHDOT		US202,NH 9	ASH BROOK	2018	2	2,677-17	Not Included	Culvert 3 Serious	L=30.0 W=25.0 3-span	750	9/13/2018	NPR	MP	1970
23	Laconia	131/154	NHDOT	16144	US 3	NHRR	2009	2	14,952-17	Prior To	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=32.0 W=35.3 1-span	1,130	11/21/2018	E-1	CS	1933
24	Bow	132/160	NHDOT	13742	I-89	SOUTH STREET	2016	1	47,817-17 7,000-13	2024	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=58.0 W=97.8 1-span	5,672	11/14/2018	NPR	CRF	1959
25	North Hampton	148/132	NHDOT	24457	US 1	PAR	2009	2	16,356-17	2021	Deck 3 Serious Superstructure 4 Poor Substructure 5 Fair	L=42.0 W=42.3 1-span	1,777	11/8/2018	E-2	CTB	1935
26	Concord (Bow-Concord)	154/121	NHDOT	13742	I-393,US 4,US202	FORT EDDY RD	2015	1	43,592-17 16,000-15	2024	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=70.0 W=97.0 1-span	6,790	11/14/2018	NPR	IB-C	1980
27	Hinsdale	042/044	NHDOT	12210D	NH119	CONNECTICUT RIVER	2018	3	8,492-17	Not Included	Deck 7 Good Superstructure 4 Poor Substructure 5 Fair	L=297.0 W=21.0 3-span	6,237	6/29/2018	E-2	HT	1988/1920
28	Littleton	133/094	NHDOT	BOBM	I-93	MULLIKIN BROOK	2015	1	7,905-17	Bridge Maintenance 2020	Culvert 4 Poor	L=11.0 W=81.0 1-span	891	11/1/2018	NPR	MP	1984
29	Troy	089/114	NHDOT	40370	NH 12	S BRANCH ASHUELOT RIVER	2013	2	8,600-15	SB 367 2021	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=36.0 W=32.3 1-span	1,163	11/1/2018	NPR	CRF	1941
30	Moultonborough	140/251	NHDOT	BOBM	NH109	BERRY POND BROOK	2010	3	828-17	Bridge Maintenance 2020	Deck 3 Serious Superstructure 3 Serious Substructure 4 Poor	L=17.0 W=26.3 1-span	448	11/1/2018	E-1	CS	1927
31	Jefferson	140/097	NHDOT	BOBM	US 2	PRISCILLA BROOK	2014	2	2,716-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=13.0 W=47.5 1-span	617	11/30/2018	E-2	Jack	1979/1900
32	Lebanon	093/109	NHDOT	41191	I-89 NB	US 4,NH 10	2009	1	22,328-17 14,000-13	HB 1817 2019	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=115.0 W=61.3 1-span	7,049	11/29/2018	NPR	IB-C	1966
33	Swanzey	149/072	NHDOT	27692	NH 32	MARTIN BROOK	2000	3	3,252-17	SB 367 2022	Deck 4 Poor Superstructure 4 Poor Substructure 3 Serious	L=27.0 W=23.7 1-span	640	11/1/2018	E-1	CS	1929
34	Madison	163/048	NHDOT	BOBM	NH153	PURITY POND BROOK	2013	3	2,574-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=27.0 W=35.0 1-span	945	11/29/2018	E-2	Jack	1967/1900
35	Hinsdale, NH-Brattleboro, VT	041/040	NHDOT	12210D	NH119	CONNECTICUT RIVER	2018	3	8,492-17	Not Included	Deck 7 Good Superstructure 4 Poor Substructure 6 Satisfactory	L=339.0 W=23.1 1-span	7,830	6/29/2018	E-2	HT	1988/1920
36	Sunapee	067/078	NHDOT	BOBM	NH103	SUGAR RIVER	2015	2	2,786-17	Bridge Maintenance 2019	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=100.0 W=44.3 3-span	4,430	11/9/2018	NPR	CS	1979/1957
37	Troy	096/091	NHDOT	40371	NH 12	NHRR(ABD)	2013	2	7,993-17	2021	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=71.0 W=41.3 2-span	2,934	11/1/2018	NPR	IB-C	1957
38	Orford	219/112	NHDOT	41390	NH 25A	BAKER POND BROOK	2016	3	782-17	2026	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=24.0 W=35.7 1-span	857	11/9/2018	E-2	CS	1980/1929
39	Dixville	206/101	NHDOT	BOBM	NH 26	CLEAR STREAM	2015	2	1,436-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=15.0 W=33.5 1-span	503	11/7/2018	NPR	CA	1970/1929

2018 STATE BRIDGE RED LIST by Priority

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
40	Westmoreland	159/125	NHDOT	BOBM	NH 12	MILL BROOK	2016	2	7,408-17	Bridge Maintenance 2021	Culvert 4 Poor	L=21.0 W=30.0 1-span	630	11/7/2018	NPR	CACUL	1941
41	Shelburne	075/113	NHDOT	40551	NORTH ROAD	ANDROSCOGGIN RIVER	2013	4	496-17	2026	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=182.0 W=24.0 5-span	4,368	12/4/2018	NPR	IB-C	1959/1900
42	Bristol	100/082	NHDOT	BOBM	NH 3A	NEWFOUND RIVER	2013	3	6,600-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=60.0 W=33.0 1-span	1,980	11/20/2018	C-2	CTB	1965/1924
43	Allenstown	107/098	NHDOT	40362	NH 28	SUNCOOK RIVER	2013	2	8,553-17	SB367 2021	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=214.0 W=43.6 3-span	9,330	11/5/2018	NPR	IB-C	1995/1958
44	Bedford	090/065	NHDOT	13692C	NH101	PULPIT BROOK	2008	2	19,727-17	2019	Culvert 4 Poor	L=12.5 W=40.0 2-span	500	11/21/2018	NPR	CP	1936
45	Shelburne	049/089	NHDOT	40363	US 2	PEA BROOK	2013	2	3,239-17	SB 367 2022	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=28.0 W=43.9 1-span	1,229	12/4/2018	NPR	CTB	1932
46	Campton	124/129	NHDOT		NH 49	PEMIGEWASSET RIVER	2018	3	2,269-17	Not Included	Deck 5 Fair Superstructure 4 Poor Substructure 6 Satisfactory	L=217.0 W=25.7 2-span	5,577	11/14/2018	NPR	TPG	1928
47	Danbury	156/104	NHDOT	16303	US 4	NHRR(ABD)	2016	2	2,260-17	2019	Deck 4 Poor Superstructure 6 Satisfactory Substructure 5 Fair	L=117.0 W=28.5 3-span	3,335	11/19/2018	NPR	IB-C	1964/1929
48	Bethlehem	099/152	NHDOT		NH142	AMMONOOSUC RIVER	2017	3	1,157-17	Not Included	Deck 6 Satisfactory Superstructure 4 Poor Substructure 6 Satisfactory	L=124.0 W=24.0 1-span	2,976	11/20/2018	E-2	HT	1998/1927
49	Harrisville	056/058	NHDOT		CHESHAM ROAD	MINNEWAWA BROOK	2002	4	1,512-17	Not Included	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=90.0 W=27.0 3-span	2,430	11/1/2018	E-2	CS	1984/1939
50	Barrington	073/127	NHDOT	BOBM	US202	OUTLET AYERS POND	2016	2	5,409-17	Bridge Maintenance 2020	Culvert 4 Poor	L=15.6 W=24.0 1-span	373	11/9/2018	NPR	MP	1978
51	Peterborough	087/077	NHDOT	15879	US202,NH101	CONTOOCOOK RIVER	2006	2	14,555-17	2020	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=195.0 W=43.8 3-span	8,547	11/6/2018	NPR	IB-C	1958
52	Weare	137/043	NHDOT	BOBM	NH114	OTTER BROOK	2018	2	8,170-17	Bridge Maintenance 2022	Culvert 4 Poor	L=12.0 W=27.0 2-span	324	7/17/2018	NPR	MP	1950
53	Orford	217/112	NHDOT	40366	NH 25A	BRACKETT BROOK	2013	3	782-17	2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=40.0 W=35.7 2-span	1,428	11/9/2018	E-2	CS	1979/1929
54	Jackson	144/056	NHDOT	27709	NH 16	ELLIS RIVER	2011	2	6,964-17	HB 1817 2019	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=139.9 W=36.2 2-span	5,065	12/3/2018	NPR	CRF	1938
55	Pelham	111/090	NHDOT	16145	MAIN STREET	BEAVER BROOK	2010	4	5,618-17	SB 367 2023	Culvert 3 Serious	L=11.0 W=24.0 1-span	264	11/28/2018	NPR	MP	1988
56	Andover	208/137	NHDOT	20650	NH 11	SUCKER BROOK	2014	2	2,568-17	2020	Culvert 4 Poor	L=28.0 W=24.0 1-span	672	11/15/2018	NPR	CACUL	1929
57	Barrington	181/047	NHDOT	41415	US 4	OYSTER RIVER	2016	2	12,047-17	2023	Culvert 4 Poor	L=10.0 W=44.0 1-span	440	11/9/2018	NPR	MP	1980
58	Meredith	189/150	NHDOT	BOBM	NH 25	SWAMP OUTLET	2015	2	22,020-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=16.0 W=200.0 1-span	3,200	11/1/2018	NPR	CB	1955/1946
59	Alton	163/184	NHDOT	40624	NH 11	MERRYMEETING RIVER	2014	2	8,178-17	2023	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=35.0 W=37.6 1-span	1,316	11/9/2018	NPR	CRF	1934

2018 STATE BRIDGE RED LIST by Priority

(based on bridge inspection data through 12/31/2018)

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60	Thornton	239/152	NHDOT	40613	NH 49	MAD RIVER	2014	3	1,992-17	SB 367 2024	Deck 4 Poor Superstructure 7 Good Substructure 7 Good	L=540.0 W=39.5 5-span	21,330	11/14/2018	NPR	IB-C	1979
61	Gilford	115/147	NHDOT		NH 11	POOR FARM BROOK	2017	2	4,762-17	Not Included	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=30.0 W=55.9 1-span	1,677	43423	NPR	PVS	2000/1966
62	Danbury	138/094	NHDOT	40395	US 4	SMITH RIVER	2014	2	1,746-17	2022	Deck 6 Satisfactory Superstructure 4 Poor Substructure 5 Fair	L=70.0 W=26.5 1-span	1,855	11/19/2018	NPR	TPG	1991/1929
63	Woodstock	195/093	NHDOT		NH175	PEMIGEWASSET RIVER	2018	3	455-17	Preservation	Deck 7 Good Superstructure 7 Good Substructure 4 Poor	L=320.0 W=34.5 3-span	11,040	7/23/2018	NPR	IB-C	1976
64	Nottingham	141/127	NHDOT	40612	NH152	NORTH RIVER	2012	3	3,180-17	SB 367 2024	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=23.0 W=32.7 1-span	752	11/5/2018	C-1	IB-C	1970/1925
65	Northwood	045/099	NHDOT	BOBM	NH107	NARROWS BROOK	2016	3	1,144-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=19.0 W=35.6 1-span	676	11/5/2018	NPR	CS	2000/1922
66	Barrington	075/122	NHDOT	BOBM	US202	ISINGLASS RIVER	2014	2	5,409-17	Bridge Maintenance 2020	Deck 7 Good Superstructure 4 Poor Substructure 7 Good	L=53.0 W=35.7 1-span	1,892	11/9/2018	C-1	CTB	1984/1934
67	Raymond	116/052	NHDOT	BoBM	NH102	FORDWAY BROOK	2018	3	6,745-17	Bridge Maintenance 2023	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=19.0 W=36.0 1-span	684	11/26/2018	E-2	IB-C	1972/1900
68	Westmoreland	109/061	NHDOT	BOBM	NH 63	BRANCH PARTRIDGE BROOK	2016	3	875-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=12.0 W=31.8 1-span	382	11/7/2018	NPR	CB	1978/1935
69	Merrimack	107/131	Tpk Bureau, NHDOT	13761	BABOOSIC LAKE ROAD	FEE TPK	2011	4	8,566-17 68,000-15	2022	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=167.0 W=35.5 4-span	5,929	11/21/2018	NPR	IB-C	1954
70	Rollinsford-Dover	069/046	NHDOT		OAK STREET	PAR	2017	4	9,497-17	Not Included	Deck 5 Fair Superstructure 3 Serious Substructure 5 Fair	L=65.0 W=26.5 1-span	1,723	10/5/2018	6 Tons	LT	1928/1890
71	Webster	099/123	NHDOT	41429	NH127	BLACKWATER RIVER	2013	3	1,420-17	2026	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=166.0 W=34.0 3-span	5,644	11/16/2018	E-2	CRF	1941
72	Dublin	176/072	NHDOT	BOBM	NH137	STANLEY BROOK	2016	3	1,007-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=21.0 W=27.7 1-span	582	11/5/2018	NPR	CS	1936
73	Bristol	109/061	NHDOT	BOBM	NH 3A	NEWFOUND RIVER	2015	3	2,893-17	Bridge Maintenance 2022	Deck 4 Poor Superstructure 5 Fair Substructure 7 Good	L=72.0 W=51.2 2-span	3,685	11/20/2018	NPR	IB-C	1949
74	Center Harbor	080/040	NHDOT	24579	WAUKEWAN ROAD	LAKE WAUKEWAN INLET	2010	4	438-17	2021	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=13.0 W=21.2 1-span	276	11/1/2018	NPR	CS	1928
75	Manchester	176/106	NHDOT	41414	HUSE ROAD	I-293,NH101	2015	4	8,038-17 83,000-15	2025	Deck 4 Poor Superstructure 7 Good Substructure 6 Satisfactory	L=300.0 W=41.5 5-span	12,450	11/9/2018	NPR	IB-C	1979/1960
76	Colebrook	102/083	NHDOT	BOBM	CARLETON HILL ROAD	MOHAWK RIVER	2012	4	483-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=56.0 W=23.5 1-span	1,316	11/7/2018	NPR	CTB	1935
77	Plainfield	096/079	NHDOT	BOBM	STAGE ROAD	BLOW-ME-DOWN BROOK	2012	4	681-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=73.0 W=27.5 1-span	2,008	11/5/2018	E-2	IB-C	1954
78	Antrim	133/132	NHDOT		NH 31	STEEL POND BROOK	2017	3	735-17	Not Included	Culvert 4 Poor	L=13.0 W=32.0 1-span	416	11/7/2018	NPR	MP	1977
79	Bennington	099/080	NHDOT	29486	S BENNINGTON ROAD	RUSSELL BROOK	2012	4	458-17	2024	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=12.0 W=29.6 1-span	355	11/7/2018	NPR	CB	1925

2018 STATE BRIDGE RED LIST by Priority

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80	Sandwich	226/162	NHDOT	BOBM	NH113A	MILL BROOK	2018	4	220-17	Bridge Maintenance 2022	Culvert 4 Poor	L=14.0 W=22.0 1-span	308	11/15/2018	NPR	MP	1957
81	Surry	101/142	NHDOT	BOBM	GILSUM ROAD	THOMPSON BROOK	2014	4	293-17	Bridge Maintenance 2021	Culvert 4 Poor	L=12.0 W=21.0 1-span	252	11/1/2018	NPR	MP	1972
82	Dover, NH- South Berwick, ME	182/123	NHDOT	41433	GULF ROAD	SALMON FALLS RIVER	2008	4	5,826-17	2028	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=489.0 W=32.1 27-span	15,697	11/7/2018	NPR	IB-C	1982/1950
83	Amherst	135/109	NHDOT	41413	NH122,MAIN ST	NH101	2011	3	15,030-17 13,000-14	2024	Deck 3 Serious Superstructure 6 Satisfactory Substructure 7 Good	L=91.0 W=47.0 1-span	4,277	11/6/2018	NPR	IB-C	1969
84	Freedom	205/041	NHDOT	BOBM	NH 25	OUTLET LOON POND	2018	2	3,249-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=22.0 W=31.0 1-span	682	11/29/2018	E-2	CB	1941
85	Claremont	072/127	NHDOT	27691	NH 12A	SUGAR RIVER	2011	3	926-17	SB 367 2022	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=281.0 W=32.7 3-span	9,189	11/21/2018	NPR	IB-C	1991/1967
86	Eaton	084/114	NHDOT	BOBM	BROWNFIELD ROAD	SNOW BROOK	2018	4	501-17	Bridge Maintenance 2020	Culvert 4 Poor	L=16.0 W=21.0 1-span	336	11/29/2018	NPR	MP	1975
87	Warner	254/180	NHDOT	15907	NH127	WARNER RIVER	2005	3	1,438-17	SB 367 2021	Deck 3 Serious Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=123.0 W=28.2 3-span	3,468	11/30/2018	C-2	IB-C	1937
88	Boscawen	068/145	NHDOT	BOBM	LONG STREET	BEAVER DAM BROOK	2015	4	1,157-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=18.0 W=30.0 1-span	540	11/16/2018	E-2	CRF	1931
89	Salem	095/052	NHDOT	BOBM	I-93 REST EXIT	POLICY BROOK	2015	6	1,800-00	Bridge Maintenance 2020	Culvert 4 Poor	L=26.4 W=21.0 2-span	555	11/19/2018	NPR	MP	1967
90	Springfield	091/048	NHDOT	20509	GEORGES MILLS ROAD	STAR LAKE OUTLET	2008	4	1,157-17	2020	Culvert 4 Poor	L=12.3 W=22.0 2-span	270	11/9/2018	NPR	MP	1951
91	Tamworth	061/091	NHDOT	41434	NH113A	SWIFT RIVER	2015	4	546-17	2024	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=156.0 W=27.4 3-span	4,277	11/15/2018	NPR	IB-C	1956
92	Hancock-Greenfield	158/068	NHDOT	BOBM	FOREST ROAD	CONTOOCOOK RIVER	2018	4	1,170-17	Bridge Maintenance 2024	Deck 7 Good Superstructure 5 Fair Substructure 4 Poor	L=88.0 W=26.0 1-span	2,288	6/29/2018	8 Tons	TB-C	1937
93	Canaan	177/123	NHDOT	BOBM	NH118	INDIAN RIVER	2016	3	1,233-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=35.0 W=27.9 1-span	977	11/6/2018	E-1	CRF	1948
94	Wilton	094/162	NHDOT	BOBM	NH 31	STONY BROOK	2016	3	3,596-17	Bridge Maintenance 2022	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=22.0 W=35.7 1-span	785	11/9/2018	NPR	CRF	1983/1929
95	Concord (Bow-Concord)	142/116	NHDOT	13742	DELTA DRIVE	I-93,US 4	1997	4	699-17 48,000-14	2024	Deck 3 Serious Superstructure 6 Satisfactory Substructure 7 Good	L=192.0 W=38.6 4-span	7,411	11/29/2018	NPR	IB-C	1958
96	Gilford	097/094	NHDOT	BOBM	NH 11B	MEADOW BROOK	2017	3	7,123-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=13.0 W=36.5 1-span	474	43423	E-2	CB	1930
97	Pelham	110/090	NHDOT	16145	MAIN STREET	BEAVER BROOK	1988	4	5,618-17	SB 367 2023	Deck 4 Poor Superstructure 5 Fair Substructure 4 Poor	L=46.0 W=35.7 2-span	1,642	11/28/2018	E-2	MA	1929/1900
98	Walpole, NH- Rockingham, VT (Bellows Falls) (Vilas Bridge)	062/052	NHDOT	41720	BRIDGE STREET	CONNECTICUT RIVER	1986	4	6,100-17	2028	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=230.0 W=32.5 2-span	7,475	11/21/2018	BRC	CA	1974/1930
99	Warner	202/136	NHDOT	40622	NH103	I-89 NB	2014	3	1,416-17 9,500-13	SB 367 2023	Deck 4 Poor Superstructure 7 Good Substructure 7 Good	L=81.0 W=38.0 1-span	3,078	11/30/2018	NPR	IB-C	1993/1966

2018 STATE BRIDGE RED LIST by Priority

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
100	Lebanon	103/116	NHDOT	25821	MASCOMA STREET	I-89,NH 10	2011	4	1,510-17 29,400-13	HB 1817 2019	Deck 4 Poor Superstructure 7 Good Substructure 6 Satisfactory	L=185.0 W=37.0 2-span	6,845	11/8/2018	NPR	IB-C	1993/1966
101	Laconia	126/163	NHDOT	24181	CENTENARY AVENUE	NHRR	1991	4	92-17	2025	Deck 3 Serious Superstructure 3 Serious Substructure 4 Poor	L=121.0 W=22.6 7-span	2,734	11/21/2018	7 Tons	TB	1940
102	Cornish (Covered Bridge)	064/108	NHDOT	25067	CORNISH TOLL BR RD	CONNECTICUT RIVER	1991	4	2,774-17	Programmatic 2020	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 2 Critical	L=449.0 W=20.7 2-span	9,294	11/5/2018	10 Tons	TB-C	1989/1866
103	Bennington	093/094	NHDOT	41430	NHRR(ABD)	ANTRIM ROAD	2002	6	- 2,700-14	Not Included	Deck 4 Poor Superstructure 4 Poor Substructure 3 Serious	L=19.0 W=9.8 1-span	187	11/7/2018	NPR	TB	1930
104	Pittsburg	099/034	NHDES		MURPHY DAM ROAD	DAM SPILLWAY	1991	4	92-17	Not Included	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=38.0 W=20.5 1-span	779	11/5/2018	15 Tons	BGB	1938
105	Newton	064/107	NHDOT	41436	POND ROAD	PAR	2001	4	482-17	Not Included	Deck 3 Serious Superstructure 6 Satisfactory Substructure 7 Good	L=41.0 W=25.0 1-span	1,025	11/28/2018	8 Tons	TB	2003/1920
106	Franklin	162/100	NHDOT		NHRR(ABD)	NH127	1997	6	- 1,700-13	Not Included	Deck 4 Poor Superstructure 5 Fair Substructure 4 Poor	L=72.0 W=12.0 1-span	864	11/6/2018	NPR	TPG	1928
107	Durham	093/080	NHDOT	41432	BENNETT ROAD	PAR	2013	4	604-17	2028	Deck 3 Serious Superstructure 6 Satisfactory Substructure 5 Fair	L=33.5 W=21.5 1-span	720	11/7/2018	10 Tons	TB	2003/1910
108	Raymond	083/154	NHDOT	41437	DUDLEY ROAD	LAMPREY RIVER	1990	4	606-17	Not Included	Deck 5 Fair Superstructure 5 Fair Substructure 2 Critical	L=52.0 W=21.0 2-span	1,092	11/26/2018	10 Tons	CS	1972/1914
109	New Hampton	240/104	NHDOT	25365	SMITHS CROSSING	NHRR	1990	6	0-08	2025	Deck 1 Closed - Failing Superstructure 4 Poor Substructure 5 Fair	L=82.0 W=16.0 3-span	1,312	5/22/2017	BRC	TB	1940
110	Pinkhams Grant	076/081	NHDOT		OLD NH 16	BROOK	2012	6	10-07	Not Included	Culvert 4 Poor	L=10.0 W=8.0 1-span	80	11/8/2018	NPR	CB	1931
111	Lyndeborough	108/070	NHDOT	41435	NHRR	GLASS FACTORY ROAD	2014	6	- 20-00	2028	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=23.0 W=12.0 5-span	276	11/9/2018	NPR	IB-W	1920
Under Construction	Alstead	073/163	NHDOT	20817	NH123A	WARREN BROOK	2002	3	1,095-17	Prior To	Deck 3 Serious Superstructure 6 Satisfactory Substructure 5 Fair	L=34.0 W=29.1 1-span	989	11/21/2018	C-1	CTB	1935
Under Construction	Bedford	199/128	NHDOT	40731	I-293 SB,NH101 EB	MERRIMACK RIVER,PAR	2015	1	41,616-17	Programmatic 2019	Deck 7 Good Superstructure 6 Satisfactory Substructure 4 Poor	L=923.0 W=54.5 7-span	50,304	11/26/2018	NPR	IB-C	1991/1960
Under Construction	Conway	158/137	NHDOT	15864	US302,NH113	CONWAY LAKE OUTLET	2010	2	11,767-17	SB367 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=106.0 W=33.0 3-span	3,498	11/26/2018	NPR	CTB	1955
Under Construction	Franconia	089/099	NHDOT	24497	NH 18	LAFAYETTE BROOK	2010	3	650-17	HB 1817 2018	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=56.0 W=29.2 1-span	1,633	11/2/2018	E-2	CTB	1932
Under Construction	Kingston	099/106	NHDOT	BOBM	NH111,NH125	POWWOW RIVER	2018	2	13,525-17	Bridge Maintenance 2018	Culvert 4 Poor	L=12.0 W=44.0 1-span	528	11/28/2018	NPR	MP	1964
Under Construction	Lancaster, NH-Guildhall, VT (Rogers Rangers)	111/129	NHDOT	16155	US 2	CONNECTICUT RIVER	2013	2	3,592-17	SB 367 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=404.0 W=34.8 2-span	14,059	11/28/2018	E-1	HT	1950
Under Construction	Meredith	131/105	NHDOT	BOBM	MEREDITH CENTER RD	OUTLET WICKWAS POND	2010	4	3,984-17	Bridge Maintenance 2018	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=63.0 W=33.8 1-span	2,126	11/1/2018	E-2	IB-C	1937
Under Construction	Northfield-Tilton	118/158	NHDOT	16147	I-93 NB	NHRR,WINNIPESAUKEE RIVER	2009	1	15,253-17	Prior To	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=333.0 W=42.5 4-span	14,152	3/26/2018	NPR	IB-C	1980/1960

2018 STATE BRIDGE RED LIST by Priority

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Under Construction	Northfield-Tilton	117/157	NHDOT	16147	I-93 SB	NHRR,WINNIPESAUKEE RIVER	2009	1	15,178-17	Prior To	Deck 3 Srious Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=342.0 W=50.5 4-span	17,271	3/26/2018	NPR	IB-C	1980/1960
Under Construction	Ossipee	137/297	NHDOT	14749	NH 16,NH 25	BEARCAMP RIVER	2004	2	10,601-17	SB 367 2018	Deck 3 Serious Superstructure 4 Poor Substructure 5 Fair	L=396.0 W=33.2 5-span	13,147	11/6/2018	NPR	IB-C	1955
Under Construction	Ossipee	137/299	NHDOT	14749	NH 16,NH 25	RELIEF BEARCAMP RIVER	2004	2	10,601-17	SB 367 2018	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=172.0 W=33.2 4-span	5,705	11/6/2018	NPR	IB-C	1955
Under Construction	Ossipee	152/268	NHDOT	14749	NH 16,NH 25	LOVELL RIVER	1999	2	10,601-17	SB 367 2018	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=62.0 W=34.5 1-span	2,139	11/6/2018	C-2	IB-C	1950
Under Construction	Portsmouth	192/106	NHDOT	27690	US 1 BYPASS	HODGSON BROOK	2011	2	12,000-17	Prior To	Culvert 4 Poor	L=45.0 W=48.0 5-span	2,160	11/26/2018	NPR	CB	1966/1940
Under Construction	Portsmouth	205/116	NHDOT	13455D	WOODBURY AVENUE	US 1 BYPASS	2001	4	6,277-17 11,000-15	2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=90.0 W=52.0 1-span	4,680	11/8/2018	BRC	CRF	1950
Under Construction	Portsmouth	211/114	NHDOT	13455D	STARK STREET	US 1 BYPASS	1998	4	93-17 14,000-12	2021	Deck 2 Critical Superstructure 3 Serious Substructure 4 Poor	L=123.0 W=30.7 4-span	3,776	11/8/2018	15 Tons	IB-C	1940
Under Construction	Randolph	088/048	NHDOT	BOBM	US 2	MOOSE RIVER	2016	2	5,400-17	Bridge Maintenance 2018	Culvert 4 Poor	L=17.0 W=44.0 1-span	748	11/30/2018	NPR	MP	1966
Under Construction	Salem	098/049	NHDOT	BOBM	I-93 REST ENTRANCE	POLICY BROOK	2011	6	1,800-00	Bridge Maintenance 2019	Culvert 3 Serious	L=26.4 W=21.0 2-span	555	11/19/2018	NPR	MP	1967
Under Construction	Sullivan (Roxbury-Sullivan)	093/061	NHDOT	10439	NH 9	OTTER BROOK	2004	2	8,778-17	Prior To	Deck 4 Poor Superstructure 7 Good Substructure 5 Fair	L=92.0 W=27.8 2-span	2,558	11/26/2018	NPR	CTB	1932

2018 STATE BRIDGE RED LIST by Town/City

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
43	Allenstown	107/098	NHDOT	40362	NH 28	SUNCOOK RIVER	2013	2	8,553-17	SB367 2021	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=214.0 W=43.6 3-span	9,330	11/5/2018	NPR	IB-C	1995/1958
Under Construction	Alstead	073/163	NHDOT	20817	NH123A	WARREN BROOK	2002	3	1,095-17	Prior To	Deck 3 Serious Superstructure 6 Satisfactory Substructure 5 Fair	L=34.0 W=29.1 1-span	989	11/21/2018	C-1	CTB	1935
59	Alton	163/184	NHDOT	40624	NH 11	MERRYMEETING RIVER	2014	2	8,178-17	2023	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=35.0 W=37.6 1-span	1,316	11/9/2018	NPR	CRF	1934
83	Amherst	135/109	NHDOT	41413	NH122,MAIN ST	NH101	2011	3	15,030-17 13,000-14	2024	Deck 3 Serious Superstructure 6 Satisfactory Substructure 7 Good	L=91.0 W=47.0 1-span	4,277	11/6/2018	NPR	IB-C	1969
11	Andover	143/077	NHDOT	40392	US 4	BLACKWATER RIVER	2014	2	2,362-17	2023	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=75.0 W=26.7 1-span	2,000	12/3/2018	NPR	TPG	1933
56	Andover	208/137	NHDOT	20650	NH 11	SUCKER BROOK	2014	2	2,568-17	2020	Culvert 4 Poor	L=28.0 W=24.0 1-span	672	11/15/2018	NPR	CACUL	1929
78	Antrim	133/132	NHDOT		NH 31	STEEL POND BROOK	2017	3	735-17	Not Included	Culvert 4 Poor	L=13.0 W=32.0 1-span	416	11/7/2018	NPR	MP	1977
50	Barrington	073/127	NHDOT	BOBM	US202	OUTLET AYERS POND	2016	2	5,409-17	Bridge Maintenance 2020	Culvert 4 Poor	L=15.6 W=24.0 1-span	373	11/9/2018	NPR	MP	1978
57	Barrington	181/047	NHDOT	41415	US 4	OYSTER RIVER	2016	2	12,047-17	2023	Culvert 4 Poor	L=10.0 W=44.0 1-span	440	11/9/2018	NPR	MP	1980
66	Barrington	075/122	NHDOT	BOBM	US202	ISINGLASS RIVER	2014	2	5,409-17	Bridge Maintenance 2020	Deck 7 Good Superstructure 4 Poor Substructure 7 Good	L=53.0 W=35.7 1-span	1,892	11/9/2018	C-1	CTB	1984/1934
44	Bedford	090/065	NHDOT	13692C	NH101	PULPIT BROOK	2008	2	19,727-17	2019	Culvert 4 Poor	L=12.5 W=40.0 2-span	500	11/21/2018	NPR	CP	1936
Under Construction	Bedford	199/128	NHDOT	40731	I-293 SB,NH101 EB	MERRIMACK RIVER,PAR	2015	1	41,616-17	Programmatic 2019	Deck 7 Good Superstructure 6 Satisfactory Substructure 4 Poor	L=923.0 W=54.5 7-span	50,304	11/26/2018	NPR	IB-C	1991/1960
79	Bennington	099/080	NHDOT	29486	S BENNINGTON ROAD	RUSSELL BROOK	2012	4	458-17	2024	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=12.0 W=29.6 1-span	355	11/7/2018	NPR	CB	1925
103	Bennington	093/094	NHDOT	41430	NHRR(ABD)	ANTRIM ROAD	2002	6	- 2,700-14	Not Included	Deck 4 Poor Superstructure 4 Poor Substructure 3 Serious	L=19.0 W=9.8 1-span	187	11/7/2018	NPR	TB	1930
48	Bethlehem	099/152	NHDOT		NH142	AMMONOOSUC RIVER	2017	3	1,157-17	Not Included	Deck 6 Satisfactory Superstructure 4 Poor Substructure 6 Satisfactory	L=124.0 W=24.0 1-span	2,976	11/20/2018	E-2	HT	1998/1927
88	Boscawen	068/145	NHDOT	BOBM	LONG STREET	BEAVER DAM BROOK	2015	4	1,157-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=18.0 W=30.0 1-span	540	11/16/2018	E-2	CRF	1931
24	Bow	132/160	NHDOT	13742	I-89	SOUTH STREET	2016	1	47,817-17 7,000-13	2024	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=58.0 W=97.8 1-span	5,672	11/14/2018	NPR	CRF	1959
42	Bristol	100/082	NHDOT	BOBM	NH 3A	NEWFOUND RIVER	2013	3	6,600-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=60.0 W=33.0 1-span	1,980	11/20/2018	C-2	CTB	1965/1924
73	Bristol	109/061	NHDOT	BOBM	NH 3A	NEWFOUND RIVER	2015	3	2,893-17	Bridge Maintenance 2022	Deck 4 Poor Superstructure 5 Fair Substructure 7 Good	L=72.0 W=51.2 2-span	3,685	11/20/2018	NPR	IB-C	1949
46	Campton	124/129	NHDOT		NH 49	PEMIGEWASSET RIVER	2018	3	2,269-17	Not Included	Deck 5 Fair Superstructure 4 Poor Substructure 6 Satisfactory	L=217.0 W=25.7 2-span	5,577	11/14/2018	NPR	TPG	1928

2018 STATE BRIDGE RED LIST by Town/City

(based on bridge inspection data through 12/31/2018)

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93	Canaan	177/123	NHDOT	BOBM	NH118	INDIAN RIVER	2016	3	1,233-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=35.0 W=27.9 1-span	977	11/6/2018	E-1	CRF	1948
74	Center Harbor	080/040	NHDOT	24579	WAUKEWAN ROAD	LAKE WAUKEWAN INLET	2010	4	438-17	2021	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=13.0 W=21.2 1-span	276	11/1/2018	NPR	CS	1928
85	Claremont	072/127	NHDOT	27691	NH 12A	SUGAR RIVER	2011	3	926-17	SB 367 2022	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=281.0 W=32.7 3-span	9,189	11/21/2018	NPR	IB-C	1991/1967
76	Colebrook	102/083	NHDOT	BOBM	CARLETON HILL ROAD	MOHAWK RIVER	2012	4	483-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=56.0 W=23.5 1-span	1,316	11/7/2018	NPR	CTB	1935
22	Concord	147/028	NHDOT		US202,NH 9	ASH BROOK	2018	2	2,677-17	Not Included	Culvert 3 Serious	L=30.0 W=25.0 3-span	750	9/13/2018	NPR	MP	1970
26	Concord (Bow-Concord)	154/121	NHDOT	13742	I-393,US 4,US202	FORT EDDY RD	2015	1	43,592-17 16,000-15	2024	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=70.0 W=97.0 1-span	6,790	11/14/2018	NPR	IB-C	1980
95	Concord (Bow-Concord)	142/116	NHDOT	13742	DELTA DRIVE	I-93,US 4	1997	4	699-17 48,000-14	2024	Deck 3 Serious Superstructure 6 Satisfactory Substructure 7 Good	L=192.0 W=38.6 4-span	7,411	11/29/2018	NPR	IB-C	1958
5	Concord (Bow-Concord)	152/108	NHDOT	13742	I-393,US 4,US202	I-93	2011	1	45,231-17 62,000-14	2024	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=167.0 W=93.8 2-span	15,665	11/29/2018	NPR	IB-C	1981/1958
10	Concord (Bow-Concord)	150/107	NHDOT	13742	US202	NHRR,CONSTITUTION AV.	2011	2	45,231-17 2,100-14	2024	Deck 3 Serious Superstructure 7 Good Substructure 4 Poor	L=156.0 W=81.8 2-span	12,761	11/29/2018	NPR	IB-C	1981/1958
Under Construction	Conway	158/137	NHDOT	15864	US302,NH113	CONWAY LAKE OUTLET	2010	2	11,767-17	SB367 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=106.0 W=33.0 3-span	3,498	11/26/2018	NPR	CTB	1955
102	Cornish (Covered Bridge)	064/108	NHDOT	25067	CORNISH TOLL BR RD	CONNECTICUT RIVER	1991	4	2,774-17	Programmatic 2020	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 2 Critical	L=449.0 W=20.7 2-span	9,294	11/5/2018	10 Tons	TB-C	1989/1866
47	Danbury	156/104	NHDOT	16303	US 4	NHRR(ABD)	2016	2	2,260-17	2019	Deck 4 Poor Superstructure 6 Satisfactory Substructure 5 Fair	L=117.0 W=28.5 3-span	3,335	11/19/2018	NPR	IB-C	1964/1929
62	Danbury	138/094	NHDOT	40395	US 4	SMITH RIVER	2014	2	1,746-17	2022	Deck 6 Satisfactory Superstructure 4 Poor Substructure 5 Fair	L=70.0 W=26.5 1-span	1,855	11/19/2018	NPR	TPG	1991/1929
13	Deerfield	137/116	NHDOT	24477	NH107	FREESE'S POND	2010	3	2,705-17	SB 367 2022	Culvert 3 Serious	L=13.0 W=22.0 1-span	286	11/5/2018	NPR	MP	1973
39	Dixville	206/101	NHDOT	BOBM	NH 26	CLEAR STREAM	2015	2	1,436-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=15.0 W=33.5 1-span	503	11/7/2018	NPR	CA	1970/1929
4	Dover (Newington-Dover) General Sullivan Bridge	200/023	Tpk Bureau, NHDOT	11238S	ROAD	LITTLE BAY	1979	6	0-03	2019	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=1585.0 W=30.6 9-span	48,501	11/7/2018	BRC	HT	1950/1934
82	Dover, NH-South Berwick, ME	182/123	NHDOT	41433	GULF ROAD	SALMON FALLS RIVER	2008	4	5,826-17	2028	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=489.0 W=32.1 27-span	15,697	11/7/2018	NPR	IB-C	1982/1950
72	Dublin	176/072	NHDOT	BOBM	NH137	STANLEY BROOK	2016	3	1,007-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=21.0 W=27.7 1-span	582	11/5/2018	NPR	CS	1936
107	Durham	093/080	NHDOT	41432	BENNETT ROAD	PAR	2013	4	604-17	2028	Deck 3 Serious Superstructure 6 Satisfactory Substructure 5 Fair	L=33.5 W=21.5 1-span	720	11/7/2018	10 Tons	TB	2003/1910
86	Eaton	084/114	NHDOT	BOBM	BROWNFIELD ROAD	SNOW BROOK	2018	4	501-17	Bridge Maintenance 2020	Culvert 4 Poor	L=16.0 W=21.0 1-span	336	11/29/2018	NPR	MP	1975

2018 STATE BRIDGE RED LIST by Town/City

(based on bridge inspection data through 12/31/2018)

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19	Errol	071/030	NHDOT	BOBM	NH 16	OUTLET MOOSE POND	2013	2	1,232-17	Bridge Maintenance 2020	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=12.0 W=28.5 1-span	342	11/7/2018	C-2	IB-C	1931
Under Construction	Franconia	089/099	NHDOT	24497	NH 18	LAFAYETTE BROOK	2010	3	650-17	HB 1817 2018	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=56.0 W=29.2 1-span	1,633	11/2/2018	E-2	CTB	1932
106	Franklin	162/100	NHDOT		NHRR(ABD)	NH127	1997	6	- 1,700-13	Not Included	Deck 4 Poor Superstructure 5 Fair Substructure 4 Poor	L=72.0 W=12.0 1-span	864	11/6/2018	NPR	TPG	1928
84	Freedom	205/041	NHDOT	BOBM	NH 25	OUTLET LOON POND	2018	2	3,249-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=22.0 W=31.0 1-span	682	11/29/2018	E-2	CB	1941
61	Gilford	115/147	NHDOT		NH 11	POOR FARM BROOK	2017	2	4,762-17	Not Included	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=30.0 W=55.9 1-span	1,677	43423	NPR	PVS	2000/1966
96	Gilford	097/094	NHDOT	BOBM	NH 11B	MEADOW BROOK	2017	3	7,123-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=13.0 W=36.5 1-span	474	43423	E-2	CB	1930
12	Hampton	163/184	NHDOT		US 1	PAR(ABD)	2017	2	15,822-17	Not Included	Deck 6 Satisfactory Superstructure 4 Poor Substructure 4 Poor	L=120.0 W=40.0 1-span	4,800	43412	E-2	TPG	1977/1936
1	Hampton (Seabrook-Hampton)	235/025	NHDOT	15904	NH 1A	HAMPTON RIVER	1999	2	9,466-17	2023	Deck 8 Very Good Superstructure 4 Poor Substructure 6 Satisfactory	L=1199.0 W=33.5 13-span	40,167	11/8/2018	E-2	BAS	1984/1949
92	Hancock-Greenfield	158/068	NHDOT	BOBM	FOREST ROAD	CONTOOCOOK RIVER	2018	4	1,170-17	Bridge Maintenance 2024	Deck 7 Good Superstructure 5 Fair Substructure 4 Poor	L=88.0 W=26.0 1-span	2,288	6/29/2018	8 Tons	TB-C	1937
49	Harrisville	056/058	NHDOT		CHESHAM ROAD	MINNEWAWA BROOK	2002	4	1,512-17	Not Included	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=90.0 W=27.0 3-span	2,430	11/1/2018	E-2	CS	1984/1939
27	Hinsdale	042/044	NHDOT	12210D	NH119	CONNECTICUT RIVER	2018	3	8,492-17	Not Included	Deck 7 Good Superstructure 4 Poor Substructure 5 Fair	L=297.0 W=21.0 3-span	6,237	6/29/2018	E-2	HT	1988/1920
35	Hinsdale, NH-Brattleboro, VT	041/040	NHDOT	12210D	NH119	CONNECTICUT RIVER	2018	3	8,492-17	Not Included	Deck 7 Good Superstructure 4 Poor Substructure 6 Satisfactory	L=339.0 W=23.1 1-span	7,830	6/29/2018	E-2	HT	1988/1920
54	Jackson	144/056	NHDOT	27709	NH 16	ELLIS RIVER	2011	2	6,964-17	HB 1817 2019	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=139.9 W=36.2 2-span	5,065	12/3/2018	NPR	CRF	1938
31	Jefferson	140/097	NHDOT	BOBM	US 2	PRISCILLA BROOK	2014	2	2,716-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=13.0 W=47.5 1-span	617	11/30/2018	E-2	Jack	1979/1900
Under Construction	Kingston	099/106	NHDOT	BOBM	NH111,NH125	POWWOW RIVER	2018	2	13,525-17	Bridge Maintenance 2018	Culvert 4 Poor	L=12.0 W=44.0 1-span	528	11/28/2018	NPR	MP	1964
23	Laconia	131/154	NHDOT	16144	US 3	NHRR	2009	2	14,952-17	Prior To	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=32.0 W=35.3 1-span	1,130	11/21/2018	E-1	CS	1933
101	Laconia	126/163	NHDOT	24181	CENTENARY AVENUE	NHRR	1991	4	92-17	2025	Deck 3 Serious Superstructure 3 Serious Substructure 4 Poor	L=121.0 W=22.6 7-span	2,734	11/21/2018	7 Tons	TB	1940
Under Construction	Lancaster, NH-Guildhall, VT (Rogers Rangers)	111/129	NHDOT	16155	US 2	CONNECTICUT RIVER	2013	2	3,592-17	SB 367 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=404.0 W=34.8 2-span	14,059	11/28/2018	E-1	HT	1950
32	Lebanon	093/109	NHDOT	41191	I-89 NB	US 4,NH 10	2009	1	22,328-17 14,000-13	HB 1817 2019	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=115.0 W=61.3 1-span	7,049	11/29/2018	NPR	IB-C	1966
100	Lebanon	103/116	NHDOT	25821	MASCOMA STREET	I-89,NH 10	2011	4	1,510-17 29,400-13	HB 1817 2019	Deck 4 Poor Superstructure 7 Good Substructure 6 Satisfactory	L=185.0 W=37.0 2-span	6,845	11/8/2018	NPR	IB-C	1993/1966

2018 STATE BRIDGE RED LIST by Town/City

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
3	Lebanon, NH - Hartford, VT	044/103	NHDOT	16148	I-89 SB	CONNECTICUT RIVER,NECRR	2011	1	19,960-17	2019	Deck 5 Fair Superstructure 4 Poor Substructure 6 Satisfactory	L=846.0 W=35.8 6-span	30,288	12/4/2018	NPR	IB-C	1966
2	Lebanon, NH - Hartford, VT	044/104	NHDOT	16148	I-89 NB	CONNECTICUT RIVER,NECRR	2012	1	20,734-17	2019	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=847.0 W=35.8 6-span	30,323	12/4/2018	NPR	IB-C	1966
14	Lee	073/084	NHDOT	41322	NH125	LITTLE RIVER	2014	2	19,768-17	2023	Culvert 3 Serious	L=18.0 W=39.0 1-span	702	11/5/2018	NPR	MP	1972
28	Littleton	133/094	NHDOT	BOBM	I-93	MULLIKIN BROOK	2015	1	7,905-17	Bridge Maintenance 2020	Culvert 4 Poor	L=11.0 W=81.0 1-span	891	11/1/2018	NPR	MP	1984
8	Littleton, NH-Waterford, VT	109/134	NHDOT	27711	NH 18	CONNECTICUT RIVER	2014	3	1,295-17	SB 367 2025	Deck 6 Satisfactory Superstructure 4 Poor Substructure 4 Poor	L=533.0 W=30.6 5-span	16,310	12/5/2018	NPR	DPG	1980/1934
7	Lyme, NH-Thetford, VT	053/112	NHDOT	14460	EAST THETFORD ROAD	CONNECTICUT RIVER	2013	4	1,729-17	HB 1817 2020	Deck 5 Fair Superstructure 4 Poor Substructure 4 Poor	L=471.0 W=23.7 2-span	11,163	11/29/2018	15 Tons	HT	1937
111	Lyndeborough	108/070	NHDOT	41435	NHRR	GLASS FACTORY ROAD	2014	6	- 20-00	2028	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=23.0 W=12.0 5-span	276	11/9/2018	NPR	IB-W	1920
34	Madison	163/048	NHDOT	BOBM	NH153	PURITY POND BROOK	2013	3	2,574-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=27.0 W=35.0 1-span	945	11/29/2018	E-2	Jack	1967/1900
9	Manchester	099/066	Tpk Bureau, NHDOT	16099	I-293,NH 3A,TPK S	BLACK BROOK	2012	1	21,848-17	2026	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=74.0 W=41.3 1-span	3,056	11/8/2018	NPR	IB-C	1956
20	Manchester	099/067	Tpk Bureau, NHDOT	16099	I-293,NH 3A,TPK N	BLACK BROOK	2012	1	23,929-17	2026	Deck 5 Fair Superstructure 6 Satisfactory Substructure 4 Poor	L=74.0 W=41.3 1-span	3,056	11/8/2018	NPR	IB-C	1956
75	Manchester	176/106	NHDOT	41414	HUSE ROAD	I-293,NH101	2015	4	8,038-17 83,000-15	2025	Deck 4 Poor Superstructure 7 Good Substructure 6 Satisfactory	L=300.0 W=41.5 5-span	12,450	11/9/2018	NPR	IB-C	1979/1960
58	Meredith	189/150	NHDOT	BOBM	NH 25	SWAMP OUTLET	2015	2	22,020-17	Bridge Maintenance 2020	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=16.0 W=200.0 1-span	3,200	11/1/2018	NPR	CB	1955/1946
Under Construction	Meredith	131/105	NHDOT	BOBM	MEREDITH CENTER RD	OUTLET WICKWAS POND	2010	4	3,984-17	Bridge Maintenance 2018	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=63.0 W=33.8 1-span	2,126	11/1/2018	E-2	IB-C	1937
69	Merrimack	107/131	Tpk Bureau, NHDOT	13761	BABOOSIC LAKE ROAD	FEE TPK	2011	4	8,566-17 68,000-15	2022	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=167.0 W=35.5 4-span	5,929	11/21/2018	NPR	IB-C	1954
30	Moultonborough	140/251	NHDOT	BOBM	NH109	BERRY POND BROOK	2010	3	828-17	Bridge Maintenance 2020	Deck 3 Serious Superstructure 3 Serious Substructure 4 Poor	L=17.0 W=26.3 1-span	448	11/1/2018	E-1	CS	1927
6	New Castle-Rye	066/071	NHDOT	16127	NH 1B	LITTLE HARBOR	1994	3	3,803-17	2019	Deck 6 Satisfactory Superstructure 3 Serious Substructure 5 Fair	L=253.5 W=30.8 6-span	7,807	11/26/2018	15 Tons	BAS	1975/1942
109	New Hampton	240/104	NHDOT	25365	SMITHS CROSSING	NHRR	1990	6	0-08	2025	Deck 1 Closed - Failing Superstructure 4 Poor Substructure 5 Fair	L=82.0 W=16.0 3-span	1,312	5/22/2017	BRC	TB	1940
105	Newton	064/107	NHDOT	41436	POND ROAD	PAR	2001	4	482-17	Not Included	Deck 3 Serious Superstructure 6 Satisfactory Substructure 7 Good	L=41.0 W=25.0 1-span	1,025	11/28/2018	8 Tons	TB	2003/1920
25	North Hampton	148/132	NHDOT	24457	US 1	PAR	2009	2	16,356-17	2021	Deck 3 Serious Superstructure 4 Poor Substructure 5 Fair	L=42.0 W=42.3 1-span	1,777	11/8/2018	E-2	CTB	1935
Under Construction	Northfield-Tilton	118/158	NHDOT	16147	I-93 NB	NHRR,WINNIPESAUKEE RIVER	2009	1	15,253-17	Prior To	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=333.0 W=42.5 4-span	14,152	3/26/2018	NPR	IB-C	1980/1960

2018 STATE BRIDGE RED LIST by Town/City

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Under Construction	Northfield-Tilton	117/157	NHDOT	16147	I-93 SB	NHRR,WINNIPESAUKEE RIVER	2009	1	15,178-17	Prior To	Deck 3 Srious Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=342.0 W=50.5 4-span	17,271	3/26/2018	NPR	IB-C	1980/1960
65	Northwood	045/099	NHDOT	BOBM	NH107	NARROWS BROOK	2016	3	1,144-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=19.0 W=35.6 1-span	676	11/5/2018	NPR	CS	2000/1922
64	Nottingham	141/127	NHDOT	40612	NH152	NORTH RIVER	2012	3	3,180-17	SB 367 2024	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=23.0 W=32.7 1-span	752	11/5/2018	C-1	IB-C	1970/1925
38	Orford	219/112	NHDOT	41390	NH 25A	BAKER POND BROOK	2016	3	782-17	2026	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=24.0 W=35.7 1-span	857	11/9/2018	E-2	CS	1980/1929
53	Orford	217/112	NHDOT	40366	NH 25A	BRACKETT BROOK	2013	3	782-17	2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=40.0 W=35.7 2-span	1,428	11/9/2018	E-2	CS	1979/1929
Under Construction	Ossipee	137/297	NHDOT	14749	NH 16,NH 25	BEARCAMP RIVER	2004	2	10,601-17	SB 367 2018	Deck 3 Serious Superstructure 4 Poor Substructure 5 Fair	L=396.0 W=33.2 5-span	13,147	11/6/2018	NPR	IB-C	1955
Under Construction	Ossipee	137/299	NHDOT	14749	NH 16,NH 25	RELIEF BEARCAMP RIVER	2004	2	10,601-17	SB 367 2018	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=172.0 W=33.2 4-span	5,705	11/6/2018	NPR	IB-C	1955
Under Construction	Ossipee	152/268	NHDOT	14749	NH 16,NH 25	LOVELL RIVER	1999	2	10,601-17	SB 367 2018	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=62.0 W=34.5 1-span	2,139	11/6/2018	C-2	IB-C	1950
55	Pelham	111/090	NHDOT	16145	MAIN STREET	BEAVER BROOK	2010	4	5,618-17	SB 367 2023	Culvert 3 Serious	L=11.0 W=24.0 1-span	264	11/28/2018	NPR	MP	1988
97	Pelham	110/090	NHDOT	16145	MAIN STREET	BEAVER BROOK	1988	4	5,618-17	SB 367 2023	Deck 4 Poor Superstructure 5 Fair Substructure 4 Poor	L=46.0 W=35.7 2-span	1,642	11/28/2018	E-2	MA	1929/1900
15	Peterborough	108/116	NHDOT	27712	US202,NH123	CONTOOCOOK RIVER	2012	2	6,847-17	2025	Deck 4 Poor Superstructure 5 Fair Substructure 4 Poor	L=179.0 W=51.8 2-span	9,272	8/28/2018	NPR	IB-C	1974/1942
51	Peterborough	087/077	NHDOT	15879	US202,NH101	CONTOOCOOK RIVER	2006	2	14,555-17	2020	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=195.0 W=43.8 3-span	8,547	11/6/2018	NPR	IB-C	1958
110	Pinkhams Grant	076/081	NHDOT		OLD NH 16	BROOK	2012	6	10-07	Not Included	Culvert 4 Poor	L=10.0 W=8.0 1-span	80	11/8/2018	NPR	CB	1931
104	Pittsburg	099/034	NHDES		MURPHY DAM ROAD	DAM SPILLWAY	1991	4	92-17	Not Included	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=38.0 W=20.5 1-span	779	11/5/2018	15 Tons	BGB	1938
77	Plainfield	096/079	NHDOT	BOBM	STAGE ROAD	BLOW-ME-DOWN BROOK	2012	4	681-17	Bridge Maintenance 2021	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=73.0 W=27.5 1-span	2,008	11/5/2018	E-2	IB-C	1954
Under Construction	Portsmouth	192/106	NHDOT	27690	US 1 BYPASS	HODGSON BROOK	2011	2	12,000-17	Prior To	Culvert 4 Poor	L=45.0 W=48.0 5-span	2,160	11/26/2018	NPR	CB	1966/1940
Under Construction	Portsmouth	205/116	NHDOT	13455D	WOODBURY AVENUE	US 1 BYPASS	2001	4	6,277-17 11,000-15	2021	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=90.0 W=52.0 1-span	4,680	11/8/2018	BRC	CRF	1950
Under Construction	Portsmouth	211/114	NHDOT	13455D	STARK STREET	US 1 BYPASS	1998	4	93-17 14,000-12	2021	Deck 2 Critical Superstructure 3 Serious Substructure 4 Poor	L=123.0 W=30.7 4-span	3,776	11/8/2018	15 Tons	IB-C	1940
Under Construction	Randolph	088/048	NHDOT	BOBM	US 2	MOOSE RIVER	2016	2	5,400-17	Bridge Maintenance 2018	Culvert 4 Poor	L=17.0 W=44.0 1-span	748	11/30/2018	NPR	MP	1966
67	Raymond	116/052	NHDOT	BoBM	NH102	FORDWAY BROOK	2018	3	6,745-17	Bridge Maintenance 2023	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=19.0 W=36.0 1-span	684	11/26/2018	E-2	IB-C	1972/1900

2018 STATE BRIDGE RED LIST by Town/City

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
108	Raymond	083/154	NHDOT	41437	DUDLEY ROAD	LAMPREY RIVER	1990	4	606-17	Not Included	Deck 5 Fair Superstructure 5 Fair Substructure 2 Critical	L=52.0 W=21.0 2-span	1,092	11/26/2018	10 Tons	CS	1972/1914
70	Rollinsford-Dover	069/046	NHDOT		OAK STREET	PAR	2017	4	9,497-17	Not Included	Deck 5 Fair Superstructure 3 Serious Substructure 5 Fair	L=65.0 W=26.5 1-span	1,723	10/5/2018	6 Tons	LT	1928/1890
89	Salem	095/052	NHDOT	BOBM	I-93 REST EXIT	POLICY BROOK	2015	6	1,800-00	Bridge Maintenance 2020	Culvert 4 Poor	L=26.4 W=21.0 2-span	555	11/19/2018	NPR	MP	1967
Under Construction	Salem	098/049	NHDOT	BOBM	I-93 REST ENTRANCE	POLICY BROOK	2011	6	1,800-00	Bridge Maintenance 2019	Culvert 3 Serious	L=26.4 W=21.0 2-span	555	11/19/2018	NPR	MP	1967
16	Sanbornton	127/099	NHDOT	BOBM	I-93 NB	SALMON BROOK	2001	1	13,512-17	Bridge Maintenance 2019	Culvert 4 Poor	L=28.0 W=38.0 1-span	1,064	11/20/2018	NPR	CB	1962
17	Sandwich	203/029	NHDOT	BOBM	NH 25	WEED BROOK	2016	2	5,243-17	Bridge Maintenance 2019	Culvert 3 Serious	L=13.0 W=36.0 1-span	468	11/15/2018	NPR	CB	1946
80	Sandwich	226/162	NHDOT	BOBM	NH113A	MILL BROOK	2018	4	220-17	Bridge Maintenance 2022	Culvert 4 Poor	L=14.0 W=22.0 1-span	308	11/15/2018	NPR	MP	1957
41	Shelburne	075/113	NHDOT	40551	NORTH ROAD	ANDROSCOGGIN RIVER	2013	4	496-17	2026	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=182.0 W=24.0 5-span	4,368	12/4/2018	NPR	IB-C	1959/1900
45	Shelburne	049/089	NHDOT	40363	US 2	PEA BROOK	2013	2	3,239-17	SB 367 2022	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=28.0 W=43.9 1-span	1,229	12/4/2018	NPR	CTB	1932
90	Springfield	091/048	NHDOT	20509	GEORGES MILLS ROAD	STAR LAKE OUTLET	2008	4	1,157-17	2020	Culvert 4 Poor	L=12.3 W=22.0 2-span	270	11/9/2018	NPR	MP	1951
Under Construction	Sullivan (Roxbury-Sullivan)	093/061	NHDOT	10439	NH 9	OTTER BROOK	2004	2	8,778-17	Prior To	Deck 4 Poor Superstructure 7 Good Substructure 5 Fair	L=92.0 W=27.8 2-span	2,558	11/26/2018	NPR	CTB	1932
36	Sunapee	067/078	NHDOT	BOBM	NH103	SUGAR RIVER	2015	2	2,786-17	Bridge Maintenance 2019	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=100.0 W=44.3 3-span	4,430	11/9/2018	NPR	CS	1979/1957
81	Surry	101/142	NHDOT	BOBM	GILSUM ROAD	THOMPSON BROOK	2014	4	293-17	Bridge Maintenance 2021	Culvert 4 Poor	L=12.0 W=21.0 1-span	252	11/1/2018	NPR	MP	1972
33	Swanzey	149/072	NHDOT	27692	NH 32	MARTIN BROOK	2000	3	3,252-17	SB 367 2022	Deck 4 Poor Superstructure 4 Poor Substructure 3 Serious	L=27.0 W=23.7 1-span	640	11/1/2018	E-1	CS	1929
91	Tamworth	061/091	NHDOT	41434	NH113A	SWIFT RIVER	2015	4	546-17	2024	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=156.0 W=27.4 3-span	4,277	11/15/2018	NPR	IB-C	1956
60	Thornton	239/152	NHDOT	40613	NH 49	MAD RIVER	2014	3	1,992-17	SB 367 2024	Deck 4 Poor Superstructure 7 Good Substructure 7 Good	L=540.0 W=39.5 5-span	21,330	11/14/2018	NPR	IB-C	1979
29	Troy	089/114	NHDOT	40370	NH 12	S BRANCH ASHUELOT RIVER	2013	2	8,600-15	SB 367 2021	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=36.0 W=32.3 1-span	1,163	11/1/2018	NPR	CRF	1941
37	Troy	096/091	NHDOT	40371	NH 12	NHRR(ABD)	2013	2	7,993-17	2021	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=71.0 W=41.3 2-span	2,934	11/1/2018	NPR	IB-C	1957
98	Walpole, NH-Rockingham, VT (Bellows Falls) (Vilas Bridge)	062/052	NHDOT	41720	BRIDGE STREET	CONNECTICUT RIVER	1986	4	6,100-17	2028	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=230.0 W=32.5 2-span	7,475	11/21/2018	BRC	CA	1974/1930
87	Warner	254/180	NHDOT	15907	NH127	WARNER RIVER	2005	3	1,438-17	SB 367 2021	Deck 3 Serious Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=123.0 W=28.2 3-span	3,468	11/30/2018	C-2	IB-C	1937

2018 STATE BRIDGE RED LIST by Town/City

(based on bridge inspection data through 12/31/2018)

2018 Priority from Ranking Sheet	Town / City	Bridge Number	Owner	State Project No.	Facility Carried	Feature Crossed	State Red List Status	Roadway Tier	ADT (Year)	2019-2028 10-Year Plan	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
99	Warner	202/136	NHDOT	40622	NH103	I-89 NB	2014	3	1,416-17 9,500-13	SB 367 2023	Deck 4 Poor Superstructure 7 Good Substructure 7 Good	L=81.0 W=38.0 1-span	3,078	11/30/2018	NPR	IB-C	1993/1966
52	Weare	137/043	NHDOT	BOBM	NH114	OTTER BROOK	2018	2	8,170-17	Bridge Maintenance 2022	Culvert 4 Poor	L=12.0 W=27.0 2-span	324	7/17/2018	NPR	MP	1950
71	Webster	099/123	NHDOT	41429	NH127	BLACKWATER RIVER	2013	3	1,420-17	2026	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=166.0 W=34.0 3-span	5,644	11/16/2018	E-2	CRF	1941
18	Westmoreland	113/163	NHDOT	BOBM	NH 12	ALDRICH BROOK	2012	2	8,444-17	Bridge Maintenance 2021	Culvert 3 Serious	L=10.0 W=41.0 1-span	410	11/7/2018	NPR	CB	1960
40	Westmoreland	159/125	NHDOT	BOBM	NH 12	MILL BROOK	2016	2	7,408-17	Bridge Maintenance 2021	Culvert 4 Poor	L=21.0 W=30.0 1-span	630	11/7/2018	NPR	CACUL	1941
68	Westmoreland	109/061	NHDOT	BOBM	NH 63	BRANCH PARTRIDGE BROOK	2016	3	875-17	Bridge Maintenance 2019	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=12.0 W=31.8 1-span	382	11/7/2018	NPR	CB	1978/1935
94	Wilton	094/162	NHDOT	BOBM	NH 31	STONY BROOK	2016	3	3,596-17	Bridge Maintenance 2022	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=22.0 W=35.7 1-span	785	11/9/2018	NPR	CRF	1983/1929
21	Woodstock	177/148	NHDOT	27713	NH175	PEMIGEWASSET RIVER	2014	3	645-17	SB 367 2024	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=183.0 W=30.9 1-span	5,655	11/15/2018	E-2	SA	1939
63	Woodstock	195/093	NHDOT		NH175	PEMIGEWASSET RIVER	2018	3	455-17	Preservation	Deck 7 Good Superstructure 7 Good Substructure 4 Poor	L=320.0 W=34.5 3-span	11,040	7/23/2018	NPR	IB-C	1976

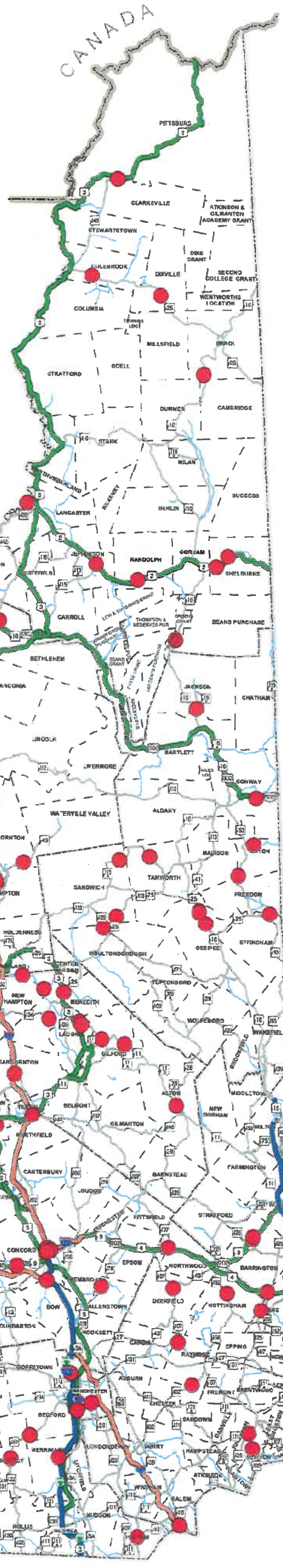
State Bridge Conditions

2018 Red List

New Hampshire DOT
Department of Transportation

- State Red List Bridges (129)
- Turnpikes
- Interstates
- US Routes
- State Routes
- State Routes-Non Numbered

*All Tiers, State
Data Source: ASSET_2019_BRIDGE_POINTS



Appendix "B"

2018 Municipal Red List

(Based on bridge inspection data through December 31, 2018)

and

Location Map of all 2018 Municipal Red List Bridges

(Based on bridge inspection data through December 31, 2018)

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2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Acworth	105/035	FOREST ROAD	GREAT BROOK	92-17	Culvert 1 Closed - Failing	L=18.0 W=20.0 1-span	360	8/15/2018	E-2	MP	1977
Albany	213/094	DRAKE HILL ROAD	MEADOW BROOK	129-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=24.0 W=26.3 1-span	632	10/22/2018	E-2	CS	1930
Alexandria	136/131	COLE HILL ROAD	FOWLER RIVER	92-17	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 4 Poor	L=43.0 W=11.9 1-span	512	8/28/2018	E-2	IB-W	1930
Alexandria	178/141	BAILEY ROAD	BOG BROOK	480-17	Deck 8 Very Good Superstructure 4 Poor Substructure 7 Good	L=58.0 W=20.6 1-span	1,195	10/29/2018	15 Tons	IB-W	1989
Alstead	058/132	DREWSVILLE ROAD	DARBY BROOK	292-17	Culvert 4 Poor	L=16.0 W=20.0 1-span	320	8/16/2018	E-2	MP	1979
Alstead	058/136	HILL ROAD	DARBY BROOK	92-17	Culvert 2 Critical	L=19.3 W=21.0 1-span	405	8/16/2018	E-2	MP	1974
Alstead	059/134	HILL ROAD	DARBY BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=30.0 W=24.1 1-span	723	8/16/2018	E-2	IB-BP	1970
Amherst	112/071	MONT VERNON ROAD	CEASARS BROOK	151-17	Culvert 4 Poor	L=14.0 W=22.0 2-span	308	10/24/2018	NPR	MP	1956
Andover	083/098	BRIDGE ROAD	BLACKWATER RIVER	92-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 7 Good	L=65.0 W=19.0 1-span	1,235	10/4/2018	E-2	TB-C	1882
Andover	104/078	HALL ROAD	BRADLEY BROOK	16-17	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=16.0 W=18.9 1-span	302	10/5/2018	10 Tons	IB-C	1970/1932
Andover	125/129	ELBOW POND ROAD	MOUNTAIN BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=20.0 W=18.7 1-span	374	10/2/2018	6 Tons	IB-C	1964
Andover	216/139	LAST STREET	SUCKER BROOK	92-17	Deck 3 Serious Superstructure 4 Poor Substructure 4 Poor	L=26.0 W=19.5 1-span	507	10/3/2018	6 Tons	TB	1997/1936
Antrim	113/143	LIBERTY FARM ROAD	NORTH BRANCH RIVER	92-17	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=33.0 W=16.0 2-span	528	10/18/2018	E-2	PVS	1991
Antrim	173/075	WEST STREET	GREAT BROOK	92-17	Culvert 4 Poor	L=14.0 W=22.8 1-span	320	10/18/2018	E-2	MP-B	1988
Antrim	174/070	HIGH STREET	GREAT BROOK	244-17	Culvert 4 Poor	L=18.0 W=26.0 1-span	468	6/26/2018	NPR	MP-A	1960
Antrim	179/084	ELM STREET	MILLER BROOK	92-17	Deck 7 Good Superstructure 4 Poor Substructure 4 Poor	L=16.0 W=16.1 1-span	258	10/18/2018	10 Tons	IB-W	1997/1935

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Auburn	095/127	GRIFFIN MILL ROAD	MAPLE FALLS BROOK	151-17	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=29.0 W=14.3 1-span	415	7/31/2018	BRC	IB-W	1991/1850
Barnstead	128/056	GRAY ROAD	CROOKED RUN BROOK	172-17	Culvert 4 Poor	L=12.0 W=18.0 1-span	216	9/13/2018	NPR	MP	1970
Barrington	139/116	MALLEGO ROAD	MALLEGO BROOK	981-17	Culvert 4 Poor	L=12.0 W=18.0 1-span	216	12/3/2018	E-2	MP	1970
Bath	130/162	TOWN ROAD	PETTYBORO BROOK	5-08	Deck 8 Very Good Superstructure 5 Fair Substructure 4 Poor	L=24.0 W=16.3 1-span	390	11/1/2018	4 Tons	IB-W	1930
Bedford	105/055	BEALS ROAD	BABOOSIC BROOK	511-17	Deck 7 Good Superstructure 7 Good Substructure 4 Poor	L=24.0 W=22.7 1-span	545	8/13/2018	E-2	CS	1984/1928
Belmont	078/132	UNION ROAD	DURGIN BROOK	2,097-17	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=19.0 W=33.3 1-span	633	8/16/2018	E-2	CTB	1960
Bennington	095/093	ANTRIM ROAD	MONADNOCK MILL CANAL	2,465-17	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=28.0 W=32.0 1-span	896	10/16/2018	E-2	CTB	1922
Berlin	238/055	MASON STREET	CANAL	4,957-17	Deck 6 Satisfactory Superstructure 7 Good Substructure 4 Poor	L=121.0 W=37.1 2-span	4,494	10/17/2018	E-2	IB-C	1977/1967
Bow	065/140	PAGE ROAD	BELA BROOK	1,150-17	Culvert 3 Serious	L=12.0 W=23.0 1-span	276	10/17/2018	E-2	MP	1950
Bow	182/113	DUNKLEE ROAD	BOW BOG BROOK	2,213-17	Culvert 4 Poor	L=21.9 W=24.0 1-span	526	10/11/2018	NPR	CRF-P	2006
Bradford	098/117	WEST MEADOW ROAD	HOYT BROOK	92-17	Deck 3 Serious Superstructure 5 Fair Substructure 6 Satisfactory	L=24.0 W=20.2 1-span	485	8/31/2018	6 Tons	IB-BP	1950
Bradford	104/141	JOHNSON HILL ROAD	WEST BRANCH BROOK	92-17	Deck 2 Critical Superstructure 5 Fair Substructure 5 Fair	L=27.0 W=12.1 1-span	327	8/31/2018	12 Tons	IB-BP	1950
Bradford	168/162	BLAISDELL LAKE RD	STREAM	92-17	Deck 5 Fair Superstructure 6 Satisfactory Substructure 3 Serious	L=20.0 W=12.2 1-span	244	8/31/2018	15 Tons	IB-BP	1950
Brentwood	060/054	MILL ROAD	EXETER RIVER	504-17	Culvert 3 Serious	L=30.7 W=18.0 1-span	553	10/23/2018	E-2	MP-A	1967
Bridgewater	156/172	RIVER ROAD	CLAY BROOK	530-14	Culvert 4 Poor	L=21.0 W=21.0 2-span	441	12/7/2018	E-2	CACUL	1960/1900

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Bridgewater	166/093	HAMMOND HILL ROAD	WOODMAN BROOK	92-17	Deck 7 Good Superstructure 7 Good Substructure 4 Poor	L=17.0 W=25.0 1-span	425	12/7/2018	E-2	CS	1975
Bristol	123/079	DANFORTH BROOK RD	DANFORTH BROOK	125-17	Culvert 4 Poor	L=17.0 W=21.0 1-span	357	12/7/2018	E-2	MP	1960
Brookfield	096/070	MOUNTAIN ROAD	HANSON BROOK	225-17	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=22.0 W=23.0 1-span	506	8/6/2018	E-2	CS	1920
Brookline	065/085	DUPAW GOULD ROAD	LANCY BROOK	543-17	Culvert 4 Poor	L=22.1 W=24.0 1-span	530	8/14/2018	NPR	MP-B	1987
Campton	170/075	PERCH POND ROAD	RYAN BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=26.0 W=25.0 1-span	650	10/23/2018	E-2	CS	1940
Canaan	147/055	POTATO ROAD	INDIAN RIVER	491-17	Deck 5 Fair Superstructure 4 Poor Substructure 7 Good	L=54.0 W=22.1 1-span	1,193	9/20/2018	15 Tons	IB-W	1994/1930
Canaan	172/070	GRIST MILL HILL RD	INDIAN RIVER	363-17	Deck 4 Poor Superstructure 7 Good Substructure 6 Satisfactory	L=51.0 W=21.0 1-span	1,071	9/20/2018	E-2	IB-C	1956
Candia	151/123	OLD DEERFIELD ROAD	BROOK	141-17	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=24.0 W=21.3 2-span	511	10/30/2018	5 Tons	MS	1920
Candia	188/105	BEANE ISLAND ROAD	BEAN BROOK	5-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=13.0 W=22.5 1-span	292	10/30/2018	E-2	IB-C	1930
Canterbury	111/101	CLOUGH TAVERN ROAD	FOREST POND BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=19.0 W=20.0 1-span	380	8/2/2018	NPR	IB-G	1990/1940
Charlestown	152/053	BRIDGE STREET	NECRR	848-17	Deck 5 Fair Superstructure 4 Poor Substructure 4 Poor	L=72.0 W=19.8 3-span	1,426	10/22/2018	10 Tons	IB-W	1992
Charlestown	248/060	OLD CHESHIRE TPK	HACKETT BROOK	92-17	Culvert 4 Poor	L=10.0 W=15.0 1-span	150	10/22/2018	NPR	MP	1940
Chester	169/122	SHEPARD HOME ROAD	EXETER RIVER	481-17	Culvert 4 Poor	L=28.0 W=22.0 2-span	616	7/31/2018	NPR	MP	2007/1986
Chester	170/135	HANSON ROAD	EXETER RIVER	1,767-17	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=31.0 W=28.2 1-span	874	7/31/2018	E-2	IB-C	1932
Claremont	091/118	PLAINS ROAD	SUGAR RIVER	1,438-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 7 Good	L=194.0 W=36.4 2-span	7,065	8/30/2018	E-2	IB-C	1974
Colebrook	167/120	BEAR ROCK ROAD	W BR MOHAWK RIVER	70-17	Culvert 3 Serious	L=13.0 W=18.0 2-span	234	10/19/2018	6 Tons	MP	1950

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Colebrook	190/109	HARVEY SWELL ROAD	E BRANCH MOHAWK RIVER	92-17	Culvert 4 Poor	L=14.0 W=24.0 1-span	336	10/19/2018	E-2	MP	1969
Columbia	228/109	BUNGY ROAD	EAST BRANCH SIMMS STREAM	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=17.0 W=24.0 1-span	408	10/19/2018	E-2	CS	1932
Concord	048/082	WASHINGTON STREET	CANAL INLET	2,830-17	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=76.0 W=34.4 1-span	2,614	10/25/2018	E-2	IB-C	1975
Concord	163/111	NH 9(LOUDON ROAD)	MERRIMACK RIVER	15,606-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 5 Fair	L=525.0 W=77.3 4-span	40,583	10/25/2018	NPR	IB-C	1996/1966
Concord	190/067	IRON WORKS ROAD	TURKEY RIVER	1,248-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=15.0 W=29.0 1-span	435	10/17/2018	E-2	CS	1925
Concord	193/027	BIRCHDALE ROAD	BELA BROOK	750-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=22.0 W=24.2 1-span	532	10/17/2018	E-2	CRF	1928
Concord	200/015	HOOKSETT TURNPIKE	BELA BROOK	614-17	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=16.0 W=24.4 1-span	390	10/17/2018	E-2	CRF	1928
Conway	065/057	CONWAY SCENIC RR	RIVER ROAD	0-80 2,200-15	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=75.0 W=9.8 8-span	738	10/3/2018	NPR	TB	1931
Croydon	104/069	BRIGHTON ROAD	BEAVER BROOK	92-17	Culvert 4 Poor	L=16.0 W=18.0 1-span	288	8/29/2018	E-2	MP	1985
Danbury	112/108	BOHONNON ROAD	WILD MEADOW BROOK	92-17	Culvert 3 Serious	L=16.0 W=20.0 1-span	320	7/2/2018	E-2	MP	1960
Danbury	178/057	WALKER BROOK ROAD	FRAZIER BROOK	62-17	Deck 7 Good Superstructure 4 Poor Substructure 6 Satisfactory	L=28.0 W=16.2 1-span	454	7/12/2018	6 Tons	IB-W	1950
Danbury	224/074	JACK WELLS ROAD	FRAZIER BROOK	42-17	Deck 8 Very Good Superstructure 7 Good Substructure 4 Poor	L=25.0 W=12.5 1-span	313	7/12/2018	NPR	IB-W	2016/1950
Deerfield	139/127	BLAKES HILL ROAD	LAMPREY RIVER	92-17	Deck 5 Fair Superstructure 4 Poor Substructure 5 Fair	L=19.0 W=20.9 1-span	397	12/4/2018	12 Tons	Jack	1930
Dover	057/173	SIXTH STREET	BLACKWATER BROOK	3,027-17	Culvert 4 Poor	L=16.0 W=18.0 1-span	288	9/7/2018	E-2	CRF	1937
Dummer	042/043	OLD NH110	UPPER AMMONOOSUC RIVER	102-17	Deck 3 Serious Superstructure 6 Satisfactory Substructure 4 Poor	L=70.0 W=24.3 1-span	1,701	10/4/2018	E-2	IB-C	1944
Durham	150/065	DURHAM POINT ROAD	CROMMET CREEK	333-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=23.0 W=23.0 1-span	529	12/4/2018	15 Tons	IB-C	1970/1930

2018 MUNICIPAL BRIDGE RED LIST

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Eaton	058/130	POTTER ROAD	SNOW BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=19.0 W=18.2 1-span	346	12/10/2018	E-2	IB-S	1965
Effingham	165/112	SNOW ROAD	SOUTH RIVER	84-17	Culvert 3 Serious	L=32.0 W=20.0 4-span	640	10/31/2018	E-2	MP	1972
Effingham	166/082	GRANITE ROAD	SOUTH RIVER	92-17	Deck 5 Fair Superstructure 2 Critical Substructure 5 Fair	L=36.0 W=18.5 2-span	666	10/26/2018	BRC	IB-C	1950/1920
Enfield	198/103	OAK HILL ROAD	GRAFTON POND OUTLET	92-17	Culvert 3 Serious	L=11.0 W=21.0 1-span	231	9/5/2018	NPR	MP	1994
Exeter	068/083	GARRISON LANE	LITTLE RIVER	15-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=27.0 W=18.0 1-span	486	8/9/2018	NPR	IB-W	1976/1930
Farmington	071/089	HORNETOWN ROAD	MAD RIVER	92-17	Deck 5 Fair Superstructure 4 Poor Substructure 5 Fair	L=24.0 W=24.0 1-span	576	11/30/2018	E-2	IB-BP	1984
Farmington	076/135	SPRING STREET	COCHECO RIVER	849-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 5 Fair	L=39.0 W=30.0 1-span	1,170	11/30/2018	E-2	CTB	1926
Farmington	080/108	RIVER ROAD	MAD RIVER	189-17	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=35.0 W=24.3 1-span	851	10/29/2018	NPR	IB-BP	1986
Farmington	142/050	SHEEPBORO ROAD	BERRYS RIVER	20-87	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 4 Poor	L=21.5 W=20.0 1-span	430	11/30/2018	E-2	IB-W	2007/1983
Fitzwilliam	147/054	TEMPLETON TURNPIKE	PRIEST BROOK	122-17	Culvert 2 Critical	L=10.0 W=22.0 1-span	220	10/17/2018	NPR	MP	1987
Fitzwilliam	147/080	TEMPLETON TURNPIKE	PRIEST BROOK	122-17	Culvert 2 Critical	L=21.0 W=18.0 3-span	378	10/17/2018	3 Tons	MP	1984
Francestown	091/142	OLD COUNTY RD N	COLLINS BROOK	92-17	Culvert 3 Serious	L=30.0 W=15.0 2-span	450	10/1/2018	E-2	MP	1981
Francestown	114/062	RUSSELL STATION RD	RAND BROOK	92-17	Deck 6 Satisfactory Superstructure 5 Fair Substructure 3 Serious	L=29.0 W=19.5 1-span	566	10/3/2018	6 Tons	TB	1930
Francestown	149/058	SO NEW BOSTON ROAD	S BR PISCATAQUOG RIVER	319-17	Deck 5 Fair Superstructure 4 Poor Substructure 4 Poor	L=51.0 W=23.0 1-span	1,173	10/2/2018	E-2	IB-C	1926
Franconia	055/101	BICKFORD HILL ROAD	HAM BRANCH	92-17	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=47.0 W=21.4 1-span	1,006	10/26/2018	E-2	IB-G	1973
Franconia	057/083	LAFAYETTE ROAD	HAM BRANCH	490-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 6 Satisfactory	L=52.0 W=22.2 1-span	1,154	10/26/2018	E-2	IB-G	1979/1920

2018 MUNICIPAL BRIDGE RED LIST

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Fremont	086/055	SANDOWN ROAD	EXETER RIVER OVERFLOW	1,284-17	Deck 6 Satisfactory Superstructure 3 Serious Substructure 7 Good	L=22.0 W=24.3 1-span	535	10/22/2018	BRC	IB-C	1930
Fremont	106/076	SCRIBNER ROAD	EXETER RIVER	257-17	Deck 3 Serious Superstructure 5 Fair Substructure 5 Fair	L=47.0 W=24.3 1-span	1,142	10/23/2018	E-2	IB-C	1941
Fremont	155/133	MARTIN ROAD	PISCASSIC RIVER	565-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 3 Serious	L=18.0 W=20.5 1-span	369	10/22/2018	15 Tons	IB-C	1930
Gilford	106/099	OLD LAKE SHORE RD	GUNSTOCK RIVER	807-17	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=33.0 W=23.2 2-span	765	8/16/2018	E-2	CS	1927
Gilford	139/093	RECREATION TRAIL	GUNSTOCK RIVER	0-00	Deck 7 Good Superstructure 7 Good Substructure 4 Poor	L=42.0 W=10.5 1-span	441	8/10/2018	NPR	TB-C	1995
Gilsum	097/139	BANKS ROAD	HAYWARD BROOK	92-17	Culvert 4 Poor	L=12.0 W=18.0 1-span	216	10/25/2018	NPR	MP	1994
Goffstown	136/106	HENRY BRIDGE ROAD	PISCATAQUOG RIVER	7,699-17	Deck 5 Fair Superstructure 6 Satisfactory Substructure 4 Poor	L=126.0 W=32.5 1-span	4,095	8/23/2018	NPR	LT	1996/1937
Goshen	082/083	BALL PARK ROAD	TROW BROOK	92-17	Deck 6 Satisfactory Superstructure 5 Fair Substructure 3 Serious	L=15.0 W=18.0 1-span	270	8/30/2018	NPR	IB-BP	1994/1930
Grantham	083/108	OLDE FARMS ROAD	SAWYER BROOK	92-17	Culvert 3 Serious	L=13.0 W=20.0 1-span	260	8/29/2018	NPR	MP	1965
Grantham	108/147	FRYE LANE	STONY BROOK	50-00	Culvert 3 Serious	L=12.0 W=12.0 1-span	144	10/9/2018	NPR	MP	1972
Greenfield	151/089	SCHOOL HOUSE RD	BROOK	92-17	Culvert 1 Closed - Failing	L=14.0 W=14.0 1-span	196	8/9/2018	BRC	MP	1988
Greenville	075/114	WILTON ROAD	SOUHEGAN RIVER	2,081-17	Deck 7 Good Superstructure 5 Fair Substructure 4 Poor	L=173.0 W=32.1 1-span	5,553	7/27/2018	E-2	HT	1986/1938
Groton	123/057	SCULPTURED ROCKS R	ATWELL BROOK	30-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=21.0 W=21.9 1-span	460	12/6/2018	E-2	CS	1935
Hancock	107/074	MIDDLE HANCOCK RD	SMALL BROOK	92-17	Culvert 4 Poor	L=13.0 W=22.0 1-span	286	8/7/2018	NPR	MP	1982
Hanover	116/097	HANOVER CENTER RD	MONAHAN BROOK	1,157-17	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=12.0 W=23.7 1-span	284	10/18/2018	E-2	CRF	1929
Hanover	118/080	RUDDSBORO ROAD	MINK BROOK	92-17	Culvert 4 Poor	L=37.0 W=22.0 2-span	814	10/18/2018	E-2	MP-A	1940

2018 MUNICIPAL BRIDGE RED LIST

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Harrisville	061/060	SOUTH ROAD	MINNEWAWA BROOK	92-17	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 4 Poor	L=31.0 W=20.2 1-span	626	11/1/2018	NPR	PTB	1950
Haverhill	095/046	FLAT IRON ROAD	NORTH BRANCH	92-17	Culvert 4 Poor	L=12.0 W=12.0 1-span	144	10/10/2018	E-2	MP	1985
Hill	131/080	BUNKER HILL ROAD	NEEDLE SHOP BROOK	92-17	Culvert 4 Poor	L=17.0 W=17.0 1-span	289	7/10/2018	E-2	MP	1978
Hill	140/099	BUNKER HILL ROAD	NEEDLE SHOP BROOK	124-17	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 6 Satisfactory	L=25.0 W=24.3 1-span	608	7/10/2018	BRC	PVS	1960
Hill	171/105	SHOP ROAD	NEEDLE SHOP BROOK	92-17	Deck 6 Satisfactory Superstructure 3 Serious Substructure 5 Fair	L=35.0 W=12.2 1-span	427	7/10/2018	3 Tons	IB-W	1930
Hillsborough	088/093	GLEASON FALLS ROAD	BEARDS BROOK	0-93	Culvert 4 Poor	L=34.0 W=11.0 1-span	374	10/15/2018	6 Tons	MA	1900
Hillsborough	100/070	JONES ROAD	BEARDS BROOK	92-17	Culvert 3 Serious	L=45.0 W=12.0 2-span	540	10/15/2018	6 Tons	MA	1900
Hillsborough	107/056	BEARD ROAD	BEARDS BROOK	473-17	Deck 5 Fair Superstructure 4 Poor Substructure 7 Good	L=27.0 W=23.3 1-span	629	10/15/2018	E-2	IB-C	1965
Hillsborough	146/102	COLBY ROAD	NELSON BROOK	92-17	Culvert 4 Poor	L=12.0 W=12.0 1-span	144	10/15/2018	E-2	MS	1900
Hillsborough	154/113	BOG ROAD	SAND BROOK	92-17	Culvert 3 Serious	L=11.0 W=16.0 1-span	176	10/15/2018	E-2	MP	1985
Hillsborough	158/080	RED FOX CROSSING	NELSON BROOK	100-93	Culvert 2 Critical	L=14.0 W=18.0 1-span	252	12/3/2018	BRC	MP	1984
Hillsborough	171/064	CONTOOCOOK FALLS R	CONTOOCOOK RIVER	462-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 7 Good	L=222.0 W=29.0 2-span	6,438	8/27/2018	C-2	TPG	1991/1933
Hopkinton	057/111	NH127	PENSTOCK (UNIT 1)	3,121-17	Culvert 2 Critical	L=10.0 W=23.0 1-span	230	6/16/2014	NPR	MP	1980
Hopkinton	178/039	STICKNEY HILL ROAD	BOUTWELL MILL BROOK	500-17	Culvert 3 Serious	L=10.0 W=20.0 1-span	200	10/26/2018	6 Tons	MP	1984
Jaffrey	159/094	NUTTING ROAD	CONTOOCOOK RIVER	1,747-17	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=29.0 W=27.5 1-span	797	7/23/2018	E-2	MA	1905

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Jefferson	104/078	LARCOMB ROAD	ISRAEL RIVER OVERFLOW	92-17	Culvert 4 Poor	L=10.0 W=12.0 1-span	120	9/28/2018	NPR	MP	1979
Keene	079/080	WHITCOMB MILLS RD	WHITE BROOK	1,643-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=23.0 W=16.3 1-span	375	11/26/2018	6 Tons	IB-C	1940
Keene	090/101	MAPLE AVE	BLACK BROOK	3,270-17	Culvert 3 Serious	L=23.0 W=22.0 3-span	506	10/15/2018	E-2	MP	1961
Keene	091/099	SUMMIT ROAD	BLACK BROOK	2,465-17	Culvert 4 Poor	L=12.0 W=24.0 1-span	288	10/15/2018	E-2	CB	1979/1948
Keene	118/051	NH 10	ASH SWAMP BROOK	18,594-17	Deck 4 Poor Superstructure 4 Poor Substructure 6 Satisfactory	L=21.0 W=25.0 1-span	525	10/15/2018	E-2	CB	1941
Keene	137/059	NH 12	BEAVER BROOK	19,630-17	Culvert 2 Critical	L=27.0 W=65.0 2-span	1,755	11/26/2018	NPR	MP	1961
Keene	140/075	CHURCH STREET	BEAVER BROOK	658-17	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=20.0 W=37.0 1-span	740	11/26/2018	E-2	IB-C	1940
Keene	140/077	ROXBURY STREET	BEAVER BROOK	4,007-17	Deck 4 Poor Superstructure 4 Poor Substructure 3 Serious	L=19.0 W=50.0 1-span	950	11/28/2018	E-2	CS	1950
Keene	140/078	SPRING STREET	BEAVER BROOK	688-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=22.0 W=34.2 1-span	752	11/28/2018	E-2	CTB	1923
Keene	140/079	BEAVER STREET	BEAVER BROOK	2,827-17	Deck 4 Poor Superstructure 4 Poor Substructure 3 Serious	L=15.0 W=40.5 1-span	608	11/28/2018	E-2	CS	1923
Keene	142/092	GEORGE STREET	BEAVER BROOK	880-17	Deck 4 Poor Superstructure 4 Poor Substructure 3 Serious	L=17.0 W=40.0 1-span	680	11/28/2018	E-2	CS	1923
Keene	173/135	FERRY BROOK ROAD	FERRY BROOK	62-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=14.5 W=17.1 1-span	248	11/28/2018	E-2	CS	1940
Laconia	121/037	ACADEMY STREET	DURKEE BROOK	1,258-17	Deck 4 Poor Superstructure 3 Serious Substructure 5 Fair	L=22.0 W=67.0 1-span	1,474	10/18/2018	E-2	IB-C	1930
Laconia	123/049	RECREATION TRAIL	WINNIPESAUKEE RIVER	0-08	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=131.0 W=8.0 2-span	1,048	10/3/2018	NPR	IB-C	1960
Laconia	135/128	US 3,WEIRS BLVD	LANGLEY BROOK	9,647-17	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=12.0 W=60.0 1-span	720	10/24/2018	NPR	IB-C	1933
Lancaster	218/076	MCGARY HILL ROAD	BONE BROOK	113-17	Culvert 4 Poor	L=14.0 W=19.0 2-span	266	9/28/2018	E-2	MP	1953

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Manchester	107/072	SALMON STREET EB	MERRIMACK R,PAR,RD,RAMP	12,485-17 7,800-13 7,500-03	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=1023.0 W=33.5 8-span	34,267	10/30/2018	NPR	IB-C	1999/1970
Manchester	151/065	US 3,NH 3A	I-293,NH 3A,PAR,MERR R	26,010-17 61,000-15 36,500-12	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=1190.0 W=58.7 14-span	69,854	9/24/2018	NPR	DT	1995/1923
Manchester	188/092	GOFFS FALLS ROAD	PAR(ABD)	4,423-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 4 Poor	L=89.0 W=34.3 3-span	3,053	10/26/2018	NPR	IB-C	1979/1948
Marlborough	088/133	OLD ROXBURY ROAD	MINNEWAWA BROOK	544-17	Deck 6 Satisfactory Superstructure 5 Fair Substructure 4 Poor	L=38.0 W=21.1 1-span	802	8/14/2018	E-2	IB-C	1932
Marlborough	128/077	OLD DUBLIN ROAD	MOUNTAIN BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=22.0 W=20.2 1-span	444	8/13/2018	E-2	IB-C	1965
Meredith	106/128	BLAKE ROAD	BROOK	84-17	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=13.0 W=23.0 1-span	299	12/5/2018	E-2	CS	1929
Meredith	180/144	PARKING LOT ACCESS	WAUKEWAN LK OUTLET	200-01	Deck 4 Poor Superstructure 7 Good Substructure 7 Good	L=27.5 W=15.8 1-span	433	12/5/2018	15 Tons	TB	2000
Merrimack	113/159	BEDFORD ROAD	BABOOSIC BROOK	7,517-17	Culvert 4 Poor	L=21.0 W=26.0 1-span	546	10/24/2018	E-2	MP	1984
Merrimack	116/120	US 3	SOUHEGAN RIVER	14,402-17	Deck 5 Fair Superstructure 4 Poor Substructure 5 Fair	L=113.0 W=42.0 2-span	4,746	10/30/2018	E-2	MA	1934/1921
Merrimack	118/135	US 3	BABOOSIC BROOK	14,110-17	Culvert 4 Poor	L=30.0 W=32.0 1-span	960	10/29/2018	E-2	CACUL	1933
Milan	219/126	CHICKWOLNEPY ROAD	CHICKWOLNEPY STREAM	92-17	Deck 7 Good Superstructure 4 Poor Substructure 6 Satisfactory	L=38.8 W=16.0 1-span	621	10/4/2018	6 Tons	IB-W	1950
Milan	254/038	STEARNS BROOK ROAD	STEARNS BROOK	92-17	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=39.0 W=16.0 1-span	624	10/4/2018	NPR	BAIB	1950
Milford	089/106	MASON ROAD	GREAT BROOK	3,396-17	Culvert 4 Poor	L=11.0 W=18.0 1-span	198	6/14/2018	E-2	MP	1982
Milford	102/165	HARTSHORN ROAD	HARTSHORN BROOK	27-17	Culvert 3 Serious	L=13.0 W=18.0 1-span	234	10/22/2018	E-2	MP	1980
Milford	103/163	HARTSHORN ROAD	HARTSHORN BROOK	27-17	Culvert 3 Serious	L=18.0 W=16.0 2-span	288	10/22/2018	6 Tons	MS	1910

2018 MUNICIPAL BRIDGE RED LIST

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Milton-Lebanon	168/152	TOWNHOUSE ROAD	NORTHEAST POND	482-17	Deck 0 Failed - Closed Superstructure 0 Failed - Closed Substructure 0 Failed - Closed	L=94.0 W=26.2 4-span	2,463	12/3/2018	BRC	TB	1948
Milton	190/101	WINDING ROAD	LYMAN BROOK	92-17	Deck 5 Fair Superstructure 4 Poor Substructure 4 Poor	L=21.0 W=33.5 1-span	704	12/3/2018	E-2	IB-BP	1995
Mont Vernon	142/089	BEAVER BROOK ROAD	BEAVER BROOK	811-17	Deck 4 Poor Superstructure 4 Poor Substructure 7 Good	L=28.0 W=22.2 1-span	622	8/9/2018	E-2	CS	1932
Nashua	139/115	CANAL STREET	NASHUA RIVER	17,687-17	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 4 Poor	L=160.0 W=53.0 2-span	8,480	10/29/2018	E-2	CA	1928
Nelson	142/126	OLD STODDARD ROAD	BAILEY BROOK	92-17	Culvert 2 Critical	L=13.5 W=16.0 1-span	216	7/5/2017	NPR	MP	1988
New Boston	091/155	DOUGHERTY LANE	MID BR PISCATAQUOG RIVER	92-17	Deck 8 Very Good Superstructure 8 Very Good Substructure 1 Closed - Failing	L=21.7 W=20.0 1-span	435	10/4/2018	BRC	CRF-P	2004
New Hampton	061/069	BROOK ROAD	BLAKE BROOK	92-17	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 4 Poor	L=22.0 W=15.3 1-span	337	12/5/2018	12 Tons	TB	1960/1920
New Ipswich	108/070	TAYLOR ROAD	WEST BR SOUHEGAN RIVER	92-17	Culvert 3 Serious	L=10.0 W=18.0 1-span	180	7/27/2018	BRC	MP	1981
New London	132/067	BROOKSIDE DRIVE	LION BROOK	92-17	Culvert 3 Serious	L=28.3 W=18.5 3-span	524	10/31/2018	NPR	MP	1990
Newport	086/095	CHANDLER MILL ROAD	CUTTS BROOK	534-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 5 Fair	L=20.0 W=20.0 1-span	400	7/9/2018	E-2	IB-BP	1973
Newport	097/139	GREENWOOD ROAD	DODGE BROOK	92-17	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=18.0 W=23.6 1-span	424	7/11/2018	BRC	IB-BP	1989
Newport	103/136	OAK STREET	SUGAR RIVER	624-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 4 Poor	L=112.0 W=19.1 1-span	2,137	7/11/2018	E-2	HT	1989/1937
Newport	147/036	COON BROOK ROAD	SO BR SUGAR RIVER	92-17	Deck 3 Serious Superstructure 7 Good Substructure 6 Satisfactory	L=52.0 W=21.9 1-span	1,139	7/9/2018	E-2	IB-BP	1960/1900
Newport	154/129	SAND HILL ROAD	BROOK	180-17	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=27.0 W=24.3 1-span	656	7/26/2018	E-2	IB-BP	1984

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Newport	177/117	PARADISE ROAD	SUGAR RIVER	92-17	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=39.0 W=18.0 1-span	702	7/27/2018	BRC	IB-BP	1976
Newton	053/105	WILDERS GROVE RD	COUNTRY POND	481-17	Culvert 2 Critical	L=12.0 W=12.0 2-span	144	12/4/2018	NPR	MP	1989
Northwood	095/113	BOW LAKE ROAD	SHERBURNE BROOK	567-17	Deck 3 Serious Superstructure 3 Serious Substructure 3 Serious	L=14.0 W=25.0 1-span	350	10/17/2018	E-2	CS	1938
Orange	107/046	BROCK HILL ROAD	BROWN BROOK	92-17	Culvert 4 Poor	L=17.2 W=24.0 1-span	413	10/9/2018	E-2	MP	1980
Orford	080/120	ARCHERTOWN ROAD	JACOBS BROOK	390-17	Deck 4 Poor Superstructure 5 Fair Substructure 5 Fair	L=52.0 W=18.3 1-span	952	10/30/2018	E-2	IB-C	1930
Orford	087/108	HIGH BRIDGE ROAD	ARCHERTOWN BROOK	92-17	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=24.0 W=14.0 1-span	336	10/30/2018	BRC	IB-W	1940
Orford	114/133	TOWN ROAD #100	ARCHERTOWN BROOK	92-17	Culvert 3 Serious	L=13.0 W=12.0 1-span	156	10/30/2018	E-2	MP	1997
Ossipee	147/235	MILL HILL ROAD	DAN HOLE RIVER	32-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 6 Satisfactory	L=24.0 W=22.1 1-span	530	10/26/2018	E-2	IB-C	1940
Peterborough	092/089	MAIN STREET	CONTOOCOOK RIVER	8,415-17	Deck 3 Serious Superstructure 3 Serious Substructure 5 Fair	L=86.0 W=41.5 1-span	3,569	10/16/2018	15 Tons	CRF	1940
Peterborough	132/134	SLAB ROAD	OTTER BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=26.0 W=19.5 1-span	507	10/16/2018	E-2	Jack	1940
Pittsburg	134/057	HILL ROAD	PERRY STREAM	236-17	Deck 7 Good Superstructure 5 Fair Substructure 4 Poor	L=78.0 W=18.3 2-span	1,427	11/5/2018	E-2	TB-C	1991/1860
Portsmouth	198/107	CATE STREET	HODGSON BROOK	1,420-17	Deck 2 Critical Superstructure 5 Fair Substructure 6 Satisfactory	L=37.0 W=28.0 1-span	1,036	12/6/2018	15 Tons	IB-C	1940
Portsmouth	231/103	MAPLEWOOD AVENUE	NORTH MILL POND	6,474-17	Culvert 3 Serious	L=25.0 W=32.0 1-span	800	12/6/2018	E-2	MA-CA	1976/1940
Portsmouth	240/132	KEARSARGE WAY	PAR	534-17	Deck 4 Poor Superstructure 7 Good Substructure 8 Very Good	L=152.0 W=40.5 2-span	6,156	12/6/2018	E-2	IB-C	1979

2018 MUNICIPAL BRIDGE RED LIST

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Randolph	080/047	DURAND ROAD	MOOSE RIVER	92-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=14.0 W=28.0 1-span	392	11/6/2018	E-2	CB	1920
Richmond	065/083	WHIPPLE HILL ROAD	ROARING BROOK	231-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 6 Satisfactory	L=43.0 W=20.5 3-span	882	10/24/2018	NPR	IB-BP	1983/1950
Richmond	155/066	TULLY BROOK ROAD	TULLY BROOK	92-17	Culvert 4 Poor	L=14.0 W=18.0 1-span	252	10/24/2018	15 Tons	MP	1990
Rindge	154/069	WELLINGTON ROAD	CONVERSEVILLE BROOK	781-17	Culvert 3 Serious	L=28.0 W=24.0 2-span	672	7/19/2018	3 Tons	MP	1950
Rochester	114/046	FOUR ROD ROAD	RICKERS BROOK	1,011-17	Culvert 4 Poor	L=11.2 W=23.0 1-span	257	12/3/2018	E-2	MP	1965
Rollinsford	090/052	OLD MILL LANE	ROLLINS BROOK	151-17	Deck 4 Poor Superstructure 2 Critical Substructure 3 Serious	L=21.0 W=18.5 1-span	389	8/15/2018	NPR	TB	1900
Rumney	093/082	BUFFALO ROAD	BROOK	449-17	Culvert 2 Critical	L=13.0 W=21.0 1-span	273	10/31/2018	E-2	MP	1972
Salem	115/097	BRIDGE STREET	SPICKET RIVER	5,663-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=29.0 W=35.3 1-span	1,024	11/19/2018	E-2	Jack	1959/1900
Salem	116/116	BLUFF STREET EXT	WIDOW HARRIS BROOK	4,503-17	Culvert 0 Failed - Closed	L=23.2 W=24.8 3-span	577	11/19/2018	NPR	MP	1960
Sanbornton	118/089	BROOK ROAD	SALMON BROOK	92-17	Deck 8 Very Good Superstructure 8 Very Good Substructure 4 Poor	L=35.0 W=16.0 1-span	560	12/5/2018	NPR	CS	2012/1900
Sandwich	157/101	BASKET STREET	BEARCAMP RIVER	92-17	Deck 7 Good Superstructure 5 Fair Substructure 4 Poor	L=24.0 W=18.1 1-span	434	9/21/2018	E-2	IB-C	1940
Sandwich	203/138	QUAKER WHITEFACE R	WHITEFACE RIVER	92-17	Deck 4 Poor Superstructure 6 Satisfactory Substructure 5 Fair	L=48.0 W=21.5 1-span	1,032	9/21/2018	E-2	IB-C	1953
Sharon	071/056	SWAMP ROAD	GRIDLEY RIVER	92-17	Deck 7 Good Superstructure 7 Good Substructure 4 Poor	L=19.2 W=16.0 1-span	307	7/18/2018	NPR	IB-G	1991/1938
Shelburne	114/104	VILLAGE ROAD	CLEMENT BROOK	54-17	Deck 5 Fair Superstructure 5 Fair Substructure 4 Poor	L=45.0 W=30.1 2-span	1,354	11/6/2018	E-2	CS	1971/1929
South Hampton	069/066	HILLDALE AVE	POWWOW RIVER	151-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=31.0 W=18.6 1-span	577	10/30/2018	15 Tons	IB-C	1920
South Hampton	099/062	WHITEHALL ROAD	POWWOW RIVER	562-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 7 Good	L=33.0 W=22.0 1-span	726	10/30/2018	E-2	IB-C	1976

2018 MUNICIPAL BRIDGE RED LIST

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Springfield	071/138	GEORGE HILL ROAD	GOVE BROOK	92-17	Culvert 4 Poor	L=12.0 W=21.0 1-span	252	9/21/2018	E-2	MP	1970
Stark	068/173	LEIGHTON MEADOW RD	PHILLIPS BROOK	92-17	Deck 5 Fair Superstructure 5 Fair Substructure 3 Serious	L=40.0 W=13.6 1-span	544	10/2/2018	6 Tons	CTB	1970/1940
Stewartstown	109/100	BISHOP BROOK ROAD	CEDAR BROOK	92-17	Culvert 4 Poor	L=12.0 W=19.0 1-span	228	11/5/2018	E-2	MP	1960
Strafford	057/135	BARN DOOR GAP ROAD	BIG RIVER	92-17	Culvert 4 Poor	L=14.0 W=16.0 1-span	224	8/23/2018	E-2	MP	1984
Sugar Hill	202/128	CRANE HILL ROAD	GALE RIVER	92-17	Deck 4 Poor Superstructure 4 Poor Substructure 5 Fair	L=108.0 W=18.9 1-span	2,041	8/29/2018	8 Tons	HT	1960/1928
Sugar Hill	208/125	STREETER POND ROAD	INDIAN CREEK	467-17	Culvert 3 Serious	L=11.5 W=16.0 1-span	184	11/2/2018	NPR	CRF-P	2010
Sunapee	069/069	TRASK BROOK ROAD	WENDELL BROOK	92-17	Culvert 4 Poor	L=11.0 W=16.0 2-span	176	9/26/2018	NPR	MP	1983
Swanzey	098/122	CHRISTIAN HILL RD	NHRR(ABD)	3,020-17	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=74.0 W=20.8 3-span	1,539	8/21/2018	BRC	TB	1960/1930
Swanzey	120/072	RABBIT HOLLOW ROAD	PERRY BROOK	92-17	Culvert 4 Poor	L=16.0 W=18.0 2-span	288	8/1/2018	E-2	MP	1979
Tamworth	037/157	SCOTT ROAD	CHOCORUA RIVER	92-17	Culvert 3 Serious	L=11.0 W=14.0 1-span	154	12/10/2018	NPR	MP	1995
Tamworth	110/072	BUNKER HILL ROAD	MILL BROOK	92-17	Deck 7 Good Superstructure 4 Poor Substructure 4 Poor	L=34.0 W=16.0 1-span	544	12/10/2018	6 Tons	IB-W	1960/1930
Tamworth	168/070	MOUNTAIN ROAD	COLD BROOK	56-17	Deck 6 Satisfactory Superstructure 4 Poor Substructure 5 Fair	L=38.0 W=16.0 1-span	608	12/10/2018	E-2	IB-W	1983/1900
Temple	107/117	POWERS ROAD	BLOOD BROOK	92-17	Deck 4 Poor Superstructure 5 Fair Substructure 3 Serious	L=24.0 W=16.0 1-span	384	10/12/2018	3 Tons	IB-C	1920
Temple	116/139	PUTNAM ROAD	BROOK	92-17	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 3 Serious	L=25.0 W=17.0 1-span	425	10/12/2018	6 Tons	IB-C	1930
Temple	117/138	PUTNAM ROAD	BROOK OVERFLOW	92-17	Deck 5 Fair Superstructure 6 Satisfactory Substructure 4 Poor	L=15.0 W=19.0 1-span	285	10/12/2018	6 Tons	IB-C	1930

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Troy	093/084	PROSPECT STREET	BROOK	243-17	Deck 6 Satisfactory Superstructure 6 Satisfactory Substructure 4 Poor	L=19.0 W=23.7 1-span	450	10/17/2018	15 Tons	IB-C	1940
Wakefield, NH-Acton, ME	186/118	CANAL ROAD	GREAT EAST LAKE OUTLET	452-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=19.0 W=25.3 1-span	481	9/24/2018	3 Tons	MA	1920
Wakefield	290/064	MAPLE STREET	BRANCH RIVER	92-17	Deck 1 Closed - Failing Superstructure 1 Closed - Failing Substructure 1 Closed - Failing	L=35.0 W=22.3 1-span	781	9/17/2018	BRC	CTB	1972/1940
Walpole	122/067	MAIN STREET	OLD MILL POND BROOK	3,025-17	Culvert 4 Poor	L=10.0 W=40.0 1-span	400	11/26/2018	E-2	MP	1979
Walpole	213/076	WENTWORTH ROAD	HOUGHTON BROOK	133-17	Culvert 4 Poor	L=18.0 W=18.0 1-span	324	11/26/2018	NPR	MP-A	1955
Warner	189/099	NORTH VILLAGE ROAD	SILVER BROOK	92-17	Culvert 4 Poor	L=13.0 W=18.0 1-span	234	10/12/2018	E-2	MP	1979
Warren	106/086	LUND LANE	ORE HILL BROOK	92-17	Culvert 3 Serious	L=17.0 W=18.0 1-span	306	10/9/2018	E-2	MP	1970
Warren	120/058	FISH HATCHERY ROAD	PATCH BROOK	61-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=33.0 W=23.3 1-span	769	10/9/2018	E-2	Jack	1930
Washington	186/126	AYERS POND ROAD	WOODWARD BROOK	92-17	Deck 6 Satisfactory Superstructure 5 Fair Substructure 4 Poor	L=17.0 W=16.0 1-span	272	9/12/2018	NPR	IB-W	1980
Weare	082/045	LULL ROAD	PEACOCK BROOK	110-17	Culvert 3 Serious	L=10.0 W=21.0 1-span	210	10/10/2018	E-2	MP	1973
Weare	084/040	OLD FRANCESTOWN RD	PEACOCK BROOK	253-17	Culvert 3 Serious	L=11.0 W=21.0 1-span	231	10/10/2018	E-2	MP	1973
Weare	110/150	RIVER ROAD	PISCATAQUOG RIVER	1,950-17	Deck 6 Satisfactory Superstructure 3 Serious Substructure 5 Fair	L=117.0 W=29.5 1-span	3,452	10/10/2018	NPR	LT	1997/1940
Webster	066/113	WHITE PLAINS ROAD	MEADOW BROOK	490-17	Culvert 3 Serious	L=13.0 W=18.0 3-span	234	10/30/2018	E-2	MP	1989/1930
Webster	121/103	CLOTHESPIN BR ROAD	BLACKWATER RIVER	496-17	Deck 3 Serious Superstructure 5 Fair Substructure 4 Poor	L=73.0 W=20.6 1-span	1,504	10/30/2018	E-2	IB-C	1954
Westmoreland	089/100	RIVER ROAD SOUTH	PARTRIDGE BROOK	1,157-17	Deck 4 Poor Superstructure 4 Poor Substructure 4 Poor	L=147.3 W=25.3 6-span	3,727	10/25/2018	E-2	CTC	1937

2018 MUNICIPAL BRIDGE RED LIST

Town / City	Bridge Number	Facility Carried	Feature Crossed	Est. ADT (Year)	Condition of Deck, Superstructure, Substructure, or Culvert	Total Length (ft); Total Width (ft); No. of Spans	Gross Deck Area (sf)	Date of Most Recent Inspection	Bridge Posting	Structure Type	Year Modified / Year Built
Whitefield	159/098	HAZEN ROAD	JOHNS RIVER	92-17	Culvert 1 Closed - Failing	L=13.0 W=16.5 1-span	215	10/8/2018	E-2	MP	1973
Wilmot	081/066	PIPER POND RD	BROOK	92-17	Deck 6 Satisfactory Superstructure 7 Good Substructure 4 Poor	L=27.0 W=16.5 1-span	445	8/3/2018	6 Tons	IB-W	1983
Wilton	060/118	OLD COUNTY FARM RD	BLOOD BROOK	92-17	Deck 8 Very Good Superstructure 8 Very Good Substructure 3 Serious	L=26.0 W=18.1 1-span	471	7/24/2018	NPR	CS	2013/1950
Wilton	063/105	TEMPLE ROAD	BLOOD BROOK	1,157-17	Deck 3 Serious Superstructure 3 Serious Substructure 4 Poor	L=49.0 W=23.2 2-span	1,137	10/23/2018	10 Tons	MA	1901
Wilton	074/060	KING BROOK ROAD	KING BROOK	92-17	Culvert 3 Serious	L=10.0 W=22.0 1-span	220	7/27/2018	E-2	MA	1901
Wilton	080/145	FRYE MILL ROAD	BURTON POND OUTLET	41-17	Deck 8 Very Good Superstructure 8 Very Good Substructure 4 Poor	L=38.0 W=16.2 1-span	614	10/12/2018	NPR	PVS	2014/1920
Windham	057/051	CASTLE HILL ROAD	BEAVER BROOK	278-17	Culvert 1 Closed - Failing	L=14.5 W=23.0 1-span	334	11/15/2018	BRC	MP	1984
Windham	099/044	MOECKEL ROAD	ROCK POND	124-17	Deck 4 Poor Superstructure 5 Fair Substructure 6 Satisfactory	L=18.0 W=18.0 1-span	324	11/15/2018	E-2	Jack	1940
Windsor	064/138	NORTH STAR ROAD	WHITE POND BROOK	92-17	Deck 7 Good Superstructure 6 Satisfactory Substructure 3 Serious	L=22.0 W=14.2 1-span	312	8/24/2018	6 Tons	IB-W	1950
Wolfeboro	116/072	PLEASANT VALLEY RD	HEATH BROOK	969-17	Culvert 3 Serious	L=20.0 W=22.0 2-span	440	8/6/2018	E-2	MP	1960

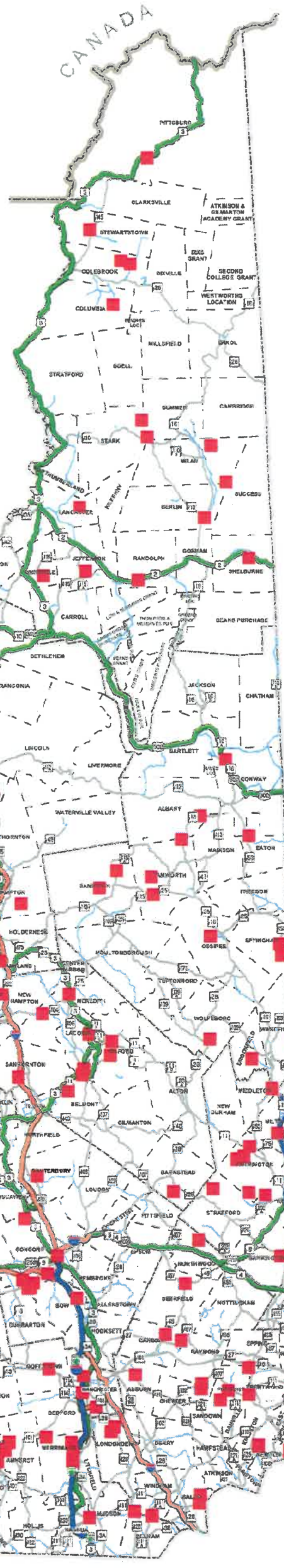
Municipal Bridge Conditions

2018 Red List

New Hampshire DOT
Department of Transportation

- Municipal Red List Bridges (241)
- Turnpikes
- Interstates
- US Routes
- State Routes
- State Routes-Non Numbered

* All Tiers, State
Data Source: ASSET_2019_BRIDGE_POINTS



Appendix "C"

Bridge Postings and Weight Restrictions

Definitions, Signs, and Examples

http://www.gencourt.state.nh.us/rsa/html/XXI/266/266-18.htm

https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/definitionsofweightrestrictions.pdf

https://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/signs_postingsforcertifiedloads.pdf

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TITLE XXI - MOTOR VEHICLES
CHAPTER 266 - EQUIPMENT OF VEHICLES
Weight - Section 266:18

266:18 Weight on Interstate and Defense Highway System. – The driving on the interstate and defense highway system of this state of any vehicle or combination of vehicles exceeding the limitations of this section is hereby prohibited.

I. Maximum tire and axle gross weights allowable:

(a) The manufacturer's load rating for the tires.

(b) When being driven with a gross weight in excess of 73,280 pounds:

(1) 20,000 pounds per axle on axles more than 8 feet apart;

(2) 17,000 pounds per axle on axles not more than 8 feet apart;

(c) When being driven with a gross weight not in excess of 73,280 pounds:

(1) 22,400 pounds per axle on 3-axle single unit vehicles and on all other vehicles with axles 10 feet or more apart, including combination vehicles;

(2) 18,000 pounds per axle on axles of vehicles less than 10 feet apart, except 3-axle single unit vehicles.

(d) Two axles less than 40 inches apart shall be considered as a single axle unit.

II. Maximum allowable vehicle gross weights:

(a) For 2-axle vehicles, 33,400 pounds.

(b) For single unit 3-axle vehicles, 47,500 pounds, or a gross weight not in excess of that produced by application of the weight formula as defined in subparagraph (h), whichever is greater, as shown in table III.

(c) For single unit 4-axle vehicles, provided that such vehicles shall have drive on 2 rear axles, and the tridem may contain not more than one retractable axle and, if not factory installed and load equalizing, must provide a system of load equalization by hydraulic, pneumatic, or mechanical means, and be equipped with brakes:

(1) 47,500 pounds, or a gross weight not in excess of that produced by application of the weight formula as defined in subparagraph (h), whichever is the greater; or

(2) If a heavy duty recovery vehicle, 75,000 pounds, or a gross weight not in excess of that produced by application of the weight formula as defined in subparagraph (h), whichever is the greater.

(d) For a single unit 5-axle heavy duty recovery vehicle, 80,000 pounds, or a gross weight not in excess of that produced by application of the weight formula as defined in subparagraph (h), whichever is the greater. Such vehicles shall have drive on 2 rear axles, and the tridem may contain not more than one retractable axle and, if not factory installed and load equalizing, must provide a system of load equalization by hydraulic, pneumatic, or mechanical means, and be equipped with brakes.

(e) For a combination of truck-tractor and semi-trailer equipped with 3 axles, the gross weight shall not exceed that set forth in table I as follows:

Table I.

Distance Between Extreme Axles in Feet	Maximum Gross Weight in Pounds
25	54,500
26	55,500
27	56,000
28	57,000
29	57,500
30	58,000
31	59,000
32	60,000

Further provided that the maximum tire and axle gross weights as provided in paragraph I shall apply and the maximum load in pounds carried on any group of 2 or more consecutive axles shall not exceed that produced by application of the weight formula as defined in subparagraph (h).

(f) For a combination of truck-tractor and semi-trailer equipped with 4 axles, the gross weight shall not exceed that set forth in table II as follows:

Table II.	
Distance Between Extreme Axles in Feet	**Maximum Gross Weight in Pounds**
28	60,500
29	61,500
30	62,000
31	62,500
32	63,500
33	64,000
34	64,500
35	65,500
36	66,000
37	66,500
38	67,500
39	68,000

Further provided that the maximum tire and axle gross weights as provided in paragraph I shall apply, and the maximum load in pounds carried on any group of 2 or more consecutive axles shall not exceed that produced by application of the weight formula as defined in subparagraph (h).

(g) For a combination of truck-tractor and single semi-trailer with 5 or more axles with gross weight not in excess of 73,280 pounds, the weight on any single axle shall not exceed 22,400 pounds and the weight on any tandem axle shall not exceed 36,000 pounds.

(h) For a combination of truck-tractor and single semi-trailer equipped with 5 or more axles with a gross weight in excess of 73,280 pounds or a combination of truck-tractor and more than one trailing unit, the total gross weight shall not exceed 80,000 pounds including all law enforcement tolerances, and the overall gross weight on a group of 2 or more consecutive axles shall not exceed that produced by application of the following formula, known as the weight formula:

$$W = 500 \left\{ \frac{LN}{N-1} + 12N + 36 \right\}$$

(In which W equals overall gross weight on any group of 2 or more consecutive axles to the nearest 500 pounds; L equals the distance measured to the nearest foot between the extreme of any group of 2 or more consecutive axles; and N equals the number of axles in the group under consideration.) Except that 2 consecutive sets of tandem axles may carry a gross load of 34,000 pounds each, provided the overall distance between the first and last axles of such consecutive sets of tandem axles is 36 feet or more and provided that such gross weight shall not exceed 80,000 pounds, including all law enforcement tolerances.

The formula

$$W = 500 \left\{ \frac{LN}{N-1} + 12N + 36 \right\}$$

when expressed in tabular form results in maximum allowable load in pounds carried on any group of 2 or more consecutive axles as follows in table III.

Table III.						
Distance*	**2 axles**	**3 axles**	**4 axles**	**5 axles**	**6 axles**	**7 axles**
4	34,000					
5	34,000					
6	34,000					
7	34,000					
8 and less	34,000	34,000				
more than 8	38,000	42,000				
9	39,000	42,500				
10	40,000	43,500				
11		44,000				
12		45,000	50,000			
13		45,500	50,500			
14		46,500	51,500			
15		47,000	52,000			
16		48,000	52,500	58,000		
17		48,500	53,500	58,500		
18		49,500	54,000	59,000		
19		50,000	54,500	60,000		
20		51,000	55,500	60,500	66,000	
21		51,500	56,000	61,000	66,500	
22		52,500	56,500	61,500	67,000	
23		53,000	57,500	62,500	68,000	
24		54,000	58,000	63,000	68,500	74,000
25		54,500	58,500	63,500	69,000	74,500
26		55,500	59,500	64,000	69,500	75,000
27		56,000	60,000	65,000	70,000	75,500
28		57,000	60,500	65,500	71,000	76,500
29		57,500	61,500	66,000	71,500	77,000
30		58,500	62,000	66,500	72,000	77,500
31		59,000	62,500	67,500	72,500	78,000
32		60,000	63,500	68,000	73,000	78,500
33			64,000	68,500	74,000	79,000
34			64,500	69,000	74,500	80,000
35			65,500	70,000	75,000	
**36			66,000	70,500	75,500	
**37			66,500	71,000	76,000	
**38			67,500	71,500	77,000	
39			68,000	72,500	77,500	
40			68,500	73,000	78,000	
41			69,500	73,500	78,500	
42			70,000	74,000	79,000	
43			70,500	75,000	80,000	
44			71,500	75,500		
45			72,000	76,000		
46			72,500	76,500		
47			73,500	77,500		
48			74,000	78,000		
49			74,500	78,500		
50			75,500	79,000		
51			76,000	80,000		
52			76,500			
53			77,500			
54			78,000			
55			78,500			
56			79,500			
57			80,000			

* Distance in feet between the extremes of any group of 2 or more consecutive axles.
**Distance in feet between the extremes of 4 axles. (2 sets of 2 axles) 68,000 gross weight exception.
The permissible loads are computed to the nearest 500 pounds.

(i) The following loaded vehicles shall not be driven over H15-44 bridges:
  (1) A combination vehicle equipped with 5 axles in the configuration of 3-axle truck-tractor and 2-axle semi-trailer with wheel base less than 38 feet or 2-axle truck-tractor with 1-axle semi-trailer and 2-axle full trailer with wheel base less than 45 feet.
  (2) A loaded single unit vehicle with full trailer equipped with axles with wheel base less than 45 feet.
  (3) Vehicles with 7, 8, or 9 axles.

(j) Coupled vehicles consisting of a truck together with a trailer attached to the truck by a pintle hook or similar coupling device with adequate breakaway protection as provided in RSA 266:63 may be driven, provided the total combined gross weight of the vehicles does not exceed 80,000 pounds and provided that each unit of the coupled vehicles shall be limited to the maximum permissible axle weights and gross weights of the individual units, and further provided that the weight of 2 or more consecutive axles of the coupled vehicle shall not be in excess of that produced by application of the weight formula as defined in subparagraph (h) and shall be limited to a total combined gross weight not in excess of 80,000 pounds, a single axle limit of 20,000 pounds and a tandem axle limit of 34,000 pounds:

III. Notwithstanding paragraphs I and II, for as long as exemptions exist in 23 U.S.C. section 127 that allow maximum gross weights of up to 99,000 pounds on interstate routes 89, 93, and 95 of the interstate and defense highway system, the provisions of RSA 266:18-a regarding weight on the non-interstate and general highway system shall also apply to vehicles or combination vehicles while being operated on any sections of interstate routes 89, 93, or 95 not posted by the commissioner of transportation for lower weights. Such vehicles shall not exceed the weight limits in paragraphs I and II unless they have been certified pursuant to RSA 266:18-d for the higher weights and paid the required fee the same as vehicles operating on the non-interstate highways as provided in RSA 266:18-d.

Source. 1921, 119:25. PL 103:22. 1927, 77:1. 1929, 33:1. 1933, 157:1. 1935, 133:1. 1937, 82:1. 1939, 131:1. 1941, 169:1. RL 119:37. 1947, 11:1. 1949, 104:1. 1950, 11:1, 2. 1951, 20:11. RSA 263:61. 1955, 230:1; 310:2. 1963, 189:1, 3; 202:1. 1973, 468:2. 1977, 487:1, 2. 1979, 219:1; 220:2; 239:1; 358:12. 1981, 55:1; 146:1. 1983, 434:15. 1986, 121:2. 1987, 404:20. 2005, 203:9, eff. July 1, 2005. 2018, 74:2, eff. July 24, 2018.

The following information provides a summary pertaining to load limitations imposed on Certified Vehicles crossing posted bridges. For more detailed information, refer to the referenced State Regulations, or you may contact New Hampshire Department of Safety, Division of Motor Vehicles, or the New Hampshire Department of Transportation, Bureau of Bridge Design.

DEFINITIONS – VEHICLE WEIGHT LIMITS

Certified Vehicle: A vehicle that has certification under:
RSA 266:18-d Additional Certification and Registration; and
is registered for the weight limits in:
RSA 266:18-b Weight on Non-interstate and General Highway System for Vehicles With Additional Registration; and
is traveling at a weight limit in excess of the weight limit in:
RSA 266:18-a Weight on Non-interstate and General Highway System: or
RSA 266:18 Weight on Interstate and Defense Highway System. (if applicable)

Single Unit Vehicle: A vehicle traveling without a trailer.

Combination Vehicle: A combination of a truck and one or more trailers.

Excluded Bridge: A bridge with a sign 'E-1' or 'E-2'. These signs Exclude Certified Vehicles from crossing the bridge, and are authorized in:
RSA 266:18-c General Weight Provisions:

Caution Crossing: A bridge with a sign 'C-1', 'C-2' or 'C-3'. These signs indicate that Caution Crossing Procedures are to be used by Certified Vehicles, and are authorized in:
RSA 266:18-b-III-h Weight on Non-interstate and General Highway System for Vehicles With Additional Registration and **RSA 266:18-c General Weight Provisions:**

RSA 266:18-b-III-(h) The commissioner of Transportation may restrict at his discretion the crossing of certain bridges or other structures, which he determines to have insufficient strength to safely carry multiple legal loads, by limiting vehicles to a caution crossing, whereby the bridge is restricted to one vehicle certified under RSA 266:18-d exceeding 37,400 pounds on the bridge at any one time. When multiple vehicles of more than 2 axles are located on the designated bridge, all loaded certified vehicles shall be required to stop and wait until other traffic passes before crossing the bridge. A bridge so restricted shall be posted according to RSA 266:18-c.

E-2 Sign: This sign indicates an Excluded Bridge. Certified Vehicles, both Single Unit and Combination Vehicles, are excluded from crossing the bridge.

E-1 Sign: This indicates an Excluded Bridge for Single Unit Vehicles only. A Certified Vehicle that is a Single Unit Vehicle is excluded from crossing the bridge.

C-2 Sign: This indicates Caution Crossing Bridge. Certified Vehicles, both Single Unit and Combination Vehicles, are required to wait until they can cross the bridge with no other trucks on the bridge.

C-1 Sign: This indicates Caution Crossing Bridge, for Single Unit Vehicles only. A Certified Vehicle that is a Single Unit Vehicle is required to wait until they can cross the bridge with no other trucks on the bridge.

C-3 Sign: This indicates an Excluded Bridge for Single Unit Vehicles only; and a Caution Crossing Bridge for Combination Vehicles only. A Certified Vehicle that is a Single Unit Vehicle is excluded from crossing the bridge. A Certified Vehicle that is a Combination Vehicle is required to wait until they can cross the bridge with no other trucks on the bridge.

SIGNS AND POSTINGS FOR CERTIFIED LOADS

Drivers will see one of the following signs as they approach a bridge that is posted to restrict Certified Vehicles:

E-1 Sign: This indicates an Excluded Bridge for Single Unit Vehicles only. A Certified Vehicle that is a Single Unit Vehicle is excluded from crossing the bridge.

E-2 Sign: This sign indicates an Excluded Bridge. Certified Vehicles, both Single Unit and Combination Vehicles, are excluded from crossing the bridge.

C-1 Sign: This indicates a Caution Crossing Bridge, for Single Unit Vehicles only. A Certified Vehicle that is a Single Unit Vehicle is required to wait until they can cross the bridge with no other trucks on the bridge.

C-2 Sign: This indicates a Caution Crossing Bridge. All Certified Vehicles, both Single Unit and Combination Vehicles, are required to wait until they can cross the bridge with no other trucks on the bridge.

C-3 Sign: This indicates an Excluded Bridge for Single Unit Vehicles only; and a Caution Crossing Bridge for Combination Vehicles only. A Certified Vehicle that is a Single Unit Vehicle is excluded from crossing the bridge. A Certified Vehicle that is a Combination Vehicle is required to wait until they can cross the bridge with no other trucks on the bridge.

Appendix "D"

List and Location Map of all State Bridges Receiving Preservation Work in FFY 2018

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State Bridges receiving Preservation work in FFY 2018

(For additional information on these FFY 2018 Bridge Preservation projects, please see Section 5.1.1.1.)

BRIDGE DESIGN BUREAU

(BARNSTEAD 41301)	**CONCORD 41704 (Bridge Painting)**
• BARNSTEAD 097/089 – NH Route 28 over Beauty Hill Road	• CONCORD 163/024 – I-89 SB over Stickney Hill Road
• BARNSTEAD 131/108 – NH Route 28 over Suncook River	• CONCORD 164/024 – I-89 NB over Stickney Hill Road
BEDFORD – MANCHESTER 40731	**HAMPTON 40603 (Turnpike) (Bridge Painting)**
• BEDFORD 199/128 - I-293 SB, NH Route 101 EB over Merrimack River, and Pan Am Railroad	• HAMPTON 113/168 – NH Route 27 over I-95 NB & SB
• BEDFORD 199/129 - I-293 NB, NH Route 101 WB over Merrimack River, and Pan Am Railroad	• HAMPTON 118/129 – Towle Farm Road over I-95 NB & SB
HOPKINTON 41303	**STATEWIDE 41611 (Install Protective Shielding Under Poor Bridge Decks)**
• HOPKINTON 049/096 – US Route 202 & NH Route 9 over Contoocook River	• AMHERST 135/109 – NH Route 122 & Main Street over NH Route 101
• HOPKINTON 086/084 – US Route 202 & NH Route 9 over Elm Brook	• BOW 132/160 – I-89 NB & SB over South Street
	• CONCORD 142/116 – Delta Drive over I-93 NB & SB & US Route 4
STATEWIDE 27287 (Scour Protection)	• CONCORD 150/107 – US Route 202 over NHRR & Constitution Avenue
• LEBANON 097/112 – I-89 NB & NH Route 10 NB over Mascoma River and Truck Road (gated)	• CONCORD 152/107 – I-93 SB ON-RAMP over NHRR & Constitution Avenue
• LEBANON 098/111 - I-89 SB & NH Route 10 SB over Mascoma River and Truck Road (gated)	• CONCORD 154/121 – I-393 EB & WB, US Route 4, US Route 202 over Fort Eddy Road
• LEBANON 099/111 - I-89 SB & NH Route 10 SB Ramp over Mascoma River and Truck Road (gated)	• GILFORD 114/066 – US Route 3 & NH Route 11 Bypass over US Route 3 & NH Route 11
• PETERBOROUGH 108/116 – US Route 202 & NH Route 123 over CONTOOCOOK RIVER	• LEBANON 093/109 – I-89 NB over US Route 4 & NH Route 10
• WESTMORELAND 109/124 – NH Route 63 over Mill Brook	• LEBANON 094/108 - I-89 SB over US Route 4 & NH Route 10
• HINSDALE 132/113 – NH Route 63 over Ashuelot River	• LEBANON 103/116 – Mascoma Street over I-89 & NH Route 10
• PLAINFIELD 162/100 – NH Route 120 over Bloods Brook	• MANCHESTER 176/106 – Huse Road over I-293 & NH Route 101
• CORNISH 172/148 – NH Route 120 over Blow-Me-Down Brook	• MERRIMACK 107/131 – Baboosic Lake Road over Everett Turnpike
	• MERRIMACK 114/140 – Wire Road over Everett Turnpike
SEABROOK – HAMPTON 41510 (Interim Repairs to Coupling Mechanism on Bascule Lift Bridge)	• WARNER 202/136 – NH Route 103 over I-89 NB
HAMPTON 235/025 – NH Route 1A over Hampton River	

BRIDGE MAINTENANCE BUREAU

• CANDIA 084/069 – Chester Turnpike over NH Route 101	• ORFORD 062/124 – NH Route 25A over Connecticut River
• CONCORD 152/108 – I-393, US Route 4, US Route 202 over I-93	• PETERBOROUGH 121/127 – NH Route 136 over Boglie Brook
• CONWAY 173/062 – NH Route 16, NH Route 113 over Pequawket Pond	• RANDOLPH 040/044 – Valley Road over Israel River
• GILFORD 114/066 – US Route 3, NH Route 11 over US Route 3, NH Route 11	• SANBORNTON 124/074 – I-93 SB over NH Route 127
• GORHAM 092/058 – NH Route 16 over Peabody River	
• GORHAM 044/113 – Jim Town Road over Moose Brook	**TURNPIKE**
• HAMPTON 207/094 – NH Route 101 over Tide Mill Creek	• CONCORD 201/096 -
• HAVERHILL 219/178 – US Route 302 over Connecticut River	• PORTSMOUTH 199/139 – US Route 4, NH Route 16, Spaulding Turnpike NB On-Ramp
• MARLBOROUGH 090/127 – NH Route 101 over Robbins Brook	

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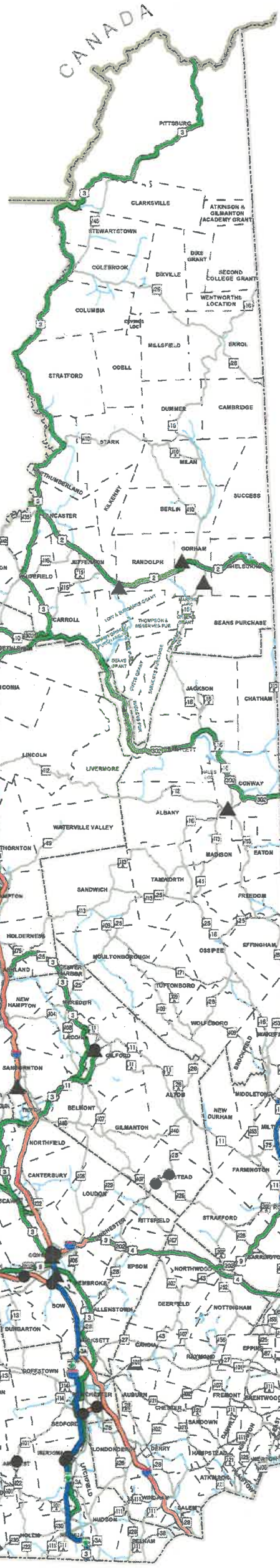
State Bridges-Preservation Work in FFY 2018

New Hampshire DOT
Department of Transportation

- Bridge Design Bureau Projects (33)
- Bridge Maintenance Bureau Projects (15)
- Turnpikes
- Interstates
- US Routes
- State Routes
- State Routes-Non Numbered

* All Tiers, State
Data Source: ASSET_2019_BRIDGE_POINTS



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Appendix "E"

List and Location Map of all State Bridges Receiving Rehabilitation Work in FFY 2018

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State Bridges receiving Rehabilitation work in FFY 2018

(For additional information on these FFY 2018 Bridge Rehabilitation projects, please see Section 5.1.1.2.)

BRIDGE DESIGN BUREAU	BRIDGE MAINTENANCE BUREAU
PORTSMOUTH 27690	• GILFORD 164/050 – US Route 3, NH Route 11 over Jewett Brook
• PORTSMOUTH 192/106 – US Route 1 Bypass over Hodgson Brook	• GORHAM 087/050 – NH Route 16 over Brook
	• PINKHAM'S GRANT 080/094 – NH Route 16 over Peabody River
	• TAMWORTH 095/162 – NH Route 113 over Chocorua River

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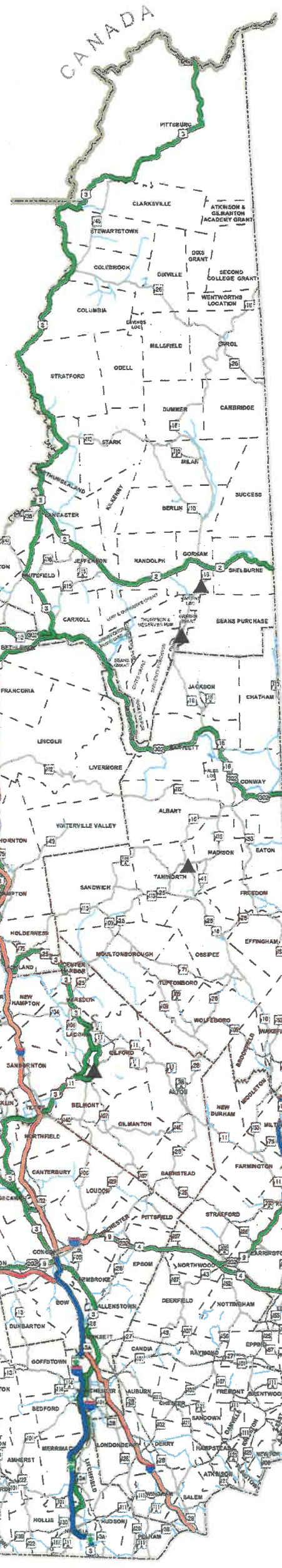
State Bridges-Rehabilitation Work in FFY 2018

New Hampshire DOT
Department of Transportation

- Bridge Design Bureau Projects (1)
- Bridge Maintenance Bureau Projects (4)
- Turnpikes
- Interstates
- US Routes
- State Routes
- State Routes-Non Numbered

* All Tiers, State
Data Source: ASSET_2019_BRIDGE_POINTS



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Appendix "F"

List and Location Map of all State Bridges

Replaced in FFY 2018

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State Bridges Replaced in FFY 2018

(For additional information on these FFY 2018 Bridge Replacement projects, please see Section 5.1.1.3.)

BRIDGE DESIGN BUREAU	BRIDGE MAINTENANCE BUREAU
ACWORTH 16301	• GRANTHAM 140/069 – NH Route 114 over Stocker Pond Outlet
• ACWORTH 113/064 – NH Route 123A over Bowers Brook	
ALSTEAD 20817	
• ALSTEAD 073/163 – NH Route 123A over Warren Brook	
DURHAM 16236 (Design-Build)	
• DURHAM 145/116 – US Route 4 over Bunker Creek	
FRANCONIA 24497	
• FRANCONIA 089/099 – NH Route 18 over Lafayette Brook	
HAVERHILL 16238	
• HAVERHILL 215/158 – Mill Street over Ammonoosuc Rail Trail	
OSSIPEE 14749	
• OSSIPEE 137/297 - NH Route 16 & NH Route 25 over Bearcamp River	
• OSSIPEE 137/299 – NH Route 16 & NH Route 25 over Relief, Bearcamp River	
• OSSIPEE 152/268 - NH Route 16 & NH Route 25 over Lovell River	
TAMWORTH 16239	
• TAMWORTH 150/106 – NH Route 113 over Bearcamp River	

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State Bridges-Replaced in FFY 2018

New Hampshire DOT
Department of Transportation

- Bridge Design Bureau Projects (9)
- Bridge Maintenance Bureau Projects (1)
- Turnpikes
- Interstates
- US Routes
- State Routes
- State Routes-Non Numbered

* All Tiers, State
Data Source: ASSET_2019_BRIDGE_POINTS and ASSET_2018_BRIDGE_POINTS