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# VTRANS RAIL BRIDGE MANAGEMENT PROGRAM

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prepared for the  
SENATE TRANSPORTATION COMMITTEE

on

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BY

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**Dan Delabruere**

Rail & Aviation Bureau Director

**Erin Charbonneau**

Rail Bridge Management Engineer

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# RAIL BRIDGE MANAGEMENT PROGRAM

The FRA established Federal safety requirements for railroad bridges in 2010 under 49 CFR Part 237. VTrans established a Rail Bridge Management Program in September 2012 in accordance with these regulations. The program is responsible for collecting and maintaining an inventory of rail bridges, their condition, and making recommendations on repairs, strengthening or replacement of components or entire structures. These regulations also mandate that annual safety inspections are performed for each bridge, and that all bridges have an initial determination of load capacity completed by September 2017, which has been completed.

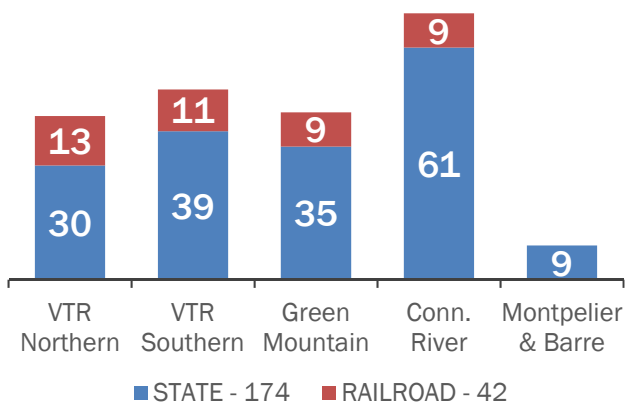
There are 216 rail bridges on State-owned property. The State is responsible for 174 of those bridges, with the railroad operator responsible for the remaining 42 bridges through existing lease agreements.

## STATEWIDE BRIDGE INVENTORY & LOAD CAPACITY

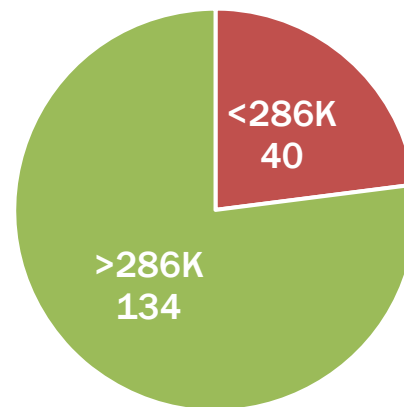
*Summary:*

# Spans	1	2	3	4	5	6	7	8	9	10	11	Total
# Bridges	172	26	9	3	1	2	1	1	0	0	1	216

### Bridge Responsibility

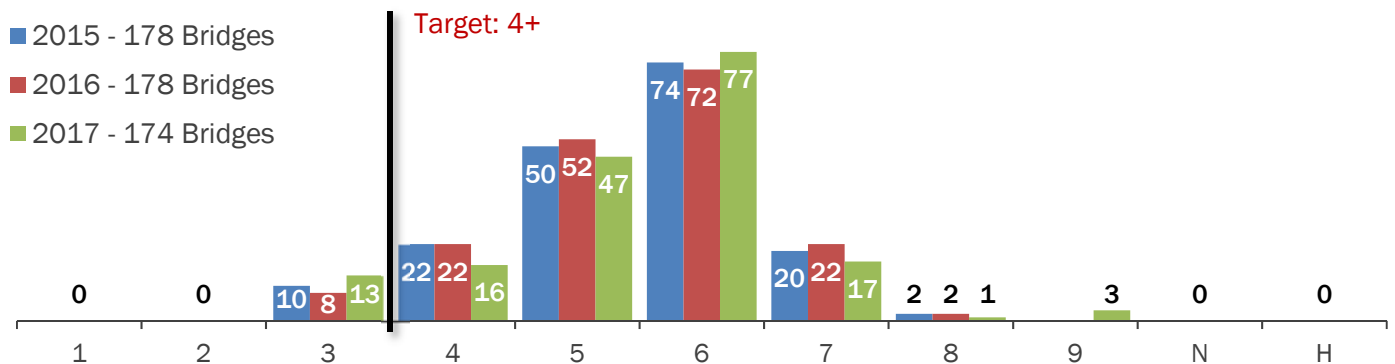


### State Bridge Load Capacity



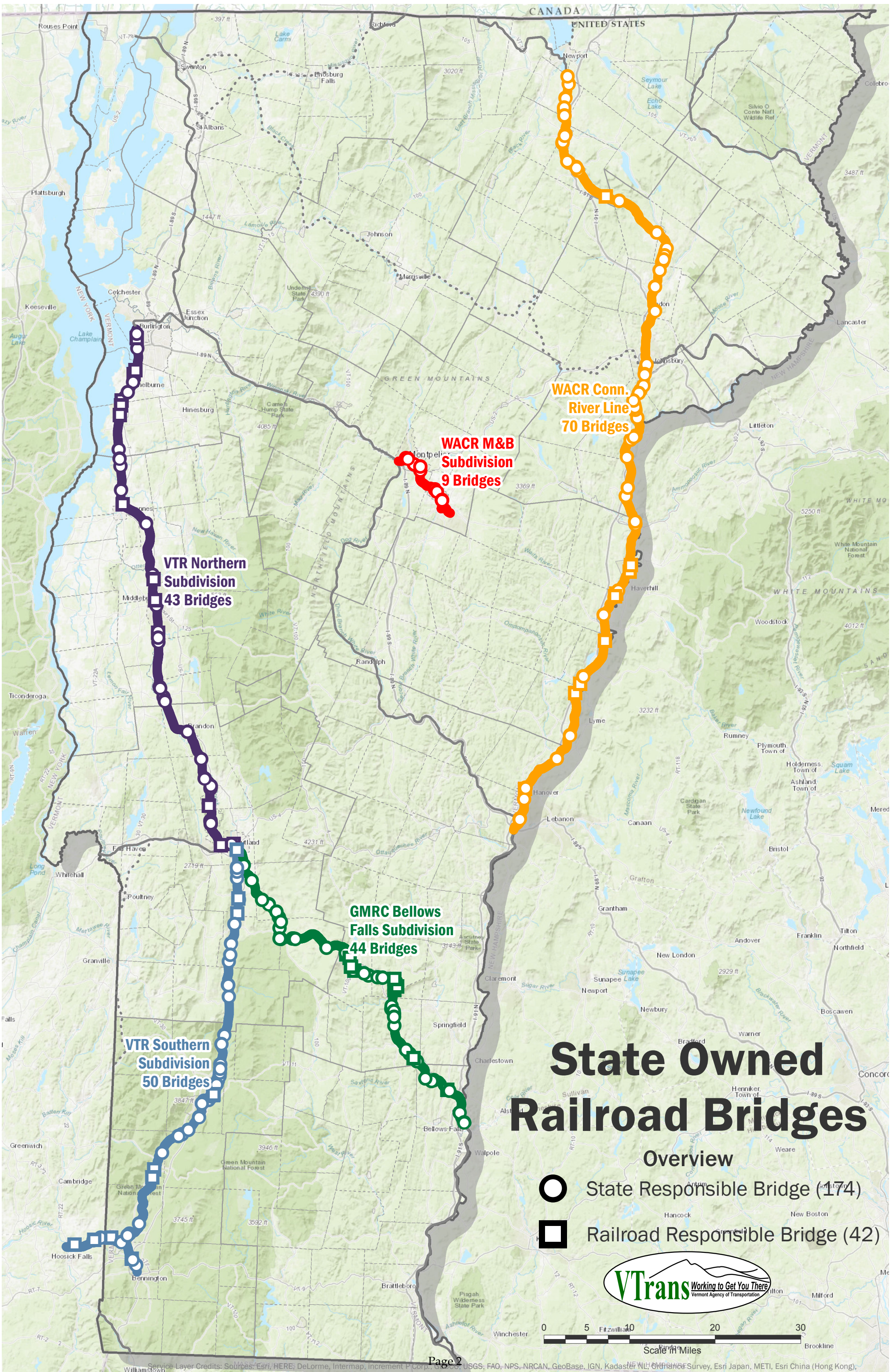
Based on 174 state-responsible bridges

## STATEWIDE INSPECTION CONDITION RATING



**Key:**

1	2	3	4	5	6	7	8	9	N	H
Failure Imminent	Critical	Serious	Poor	Fair	Satisfactory	Good	Very Good	Excellent	Not Applicable	Hidden



# VERMONT RAILWAY – NORTHERN

There are 43 Bridges on this line, 30 of which are the responsibility of the State.

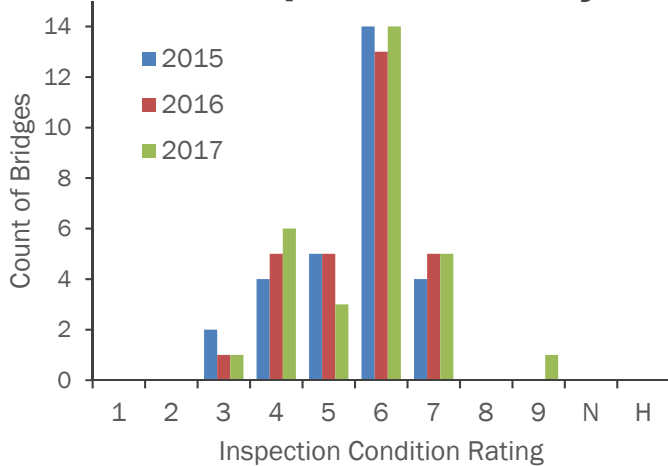
- All 30 State Responsibility bridges had an Annual Inspection during 2017.
- All 30 State Responsibility bridges have a known Safe Load Capacity as of September 2017.
  - BR220 has a safe load capacity of less than 286K.
  - 3 bridges are scheduled to have an in-depth inspection and the load capacity verified/updated in 2018.

## INSPECTION CONDITION RATING

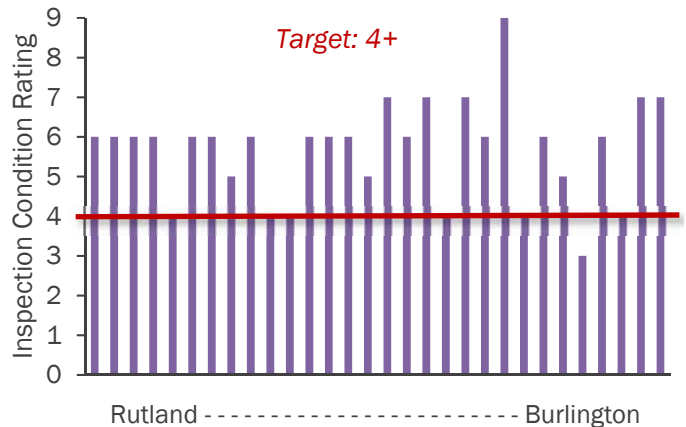
*Summary:*

# Spans	1	2	3	4	Total
# Bridges	19	7	3	1	30

### Inspection History

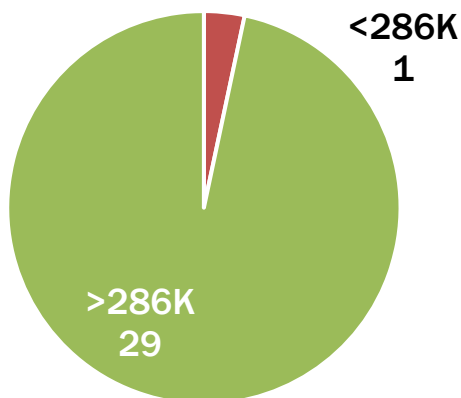


### Rating by Bridge



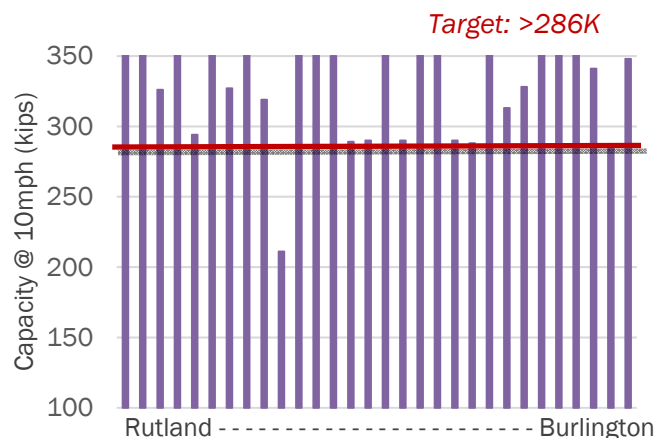
## LOAD CAPACITY

### Load Capacity Summary



### Capacity by Bridge

(based on 286K load configuration)



# VERMONT RAILWAY – SOUTHERN

The VTR “Southern” is a combination of the B&R and Hoosick Subdivisions and the Bennington Branch.

There are 50 Bridges on this line, 39 of which are the responsibility of the State.

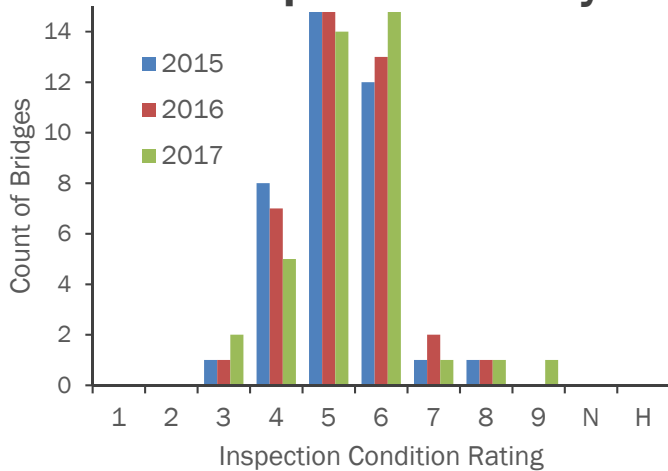
- All 39 State Responsibility bridges had an Annual Inspection during 2017.
- All 39 State Responsibility bridges have a known Safe Load Capacity as of September 2017.
  - 3 bridges are scheduled to have an in-depth inspection and the load capacity verified/updated in 2018.

## INSPECTION CONDITION RATING

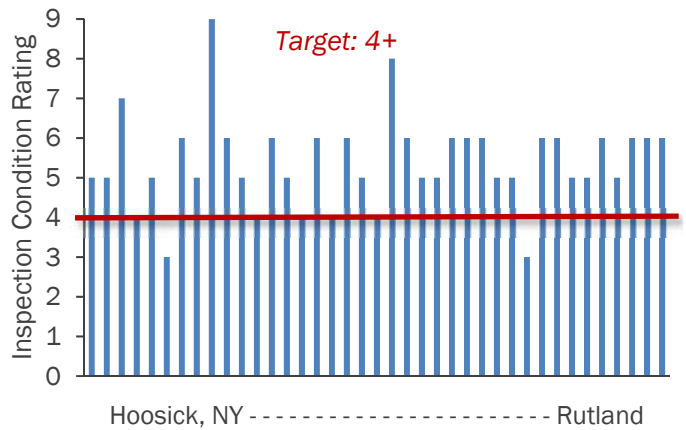
**Summary:**

# Spans	1	2	3	4	5	6	Total
# Bridges	31	5	1	0	0	2	39

### Inspection History

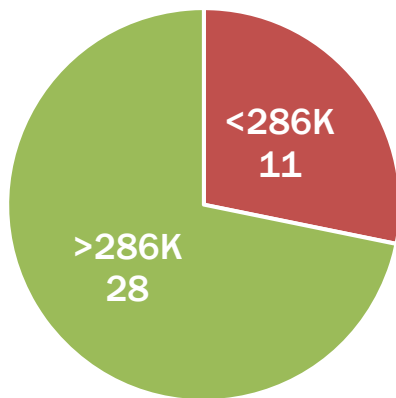


### Rating by Bridge



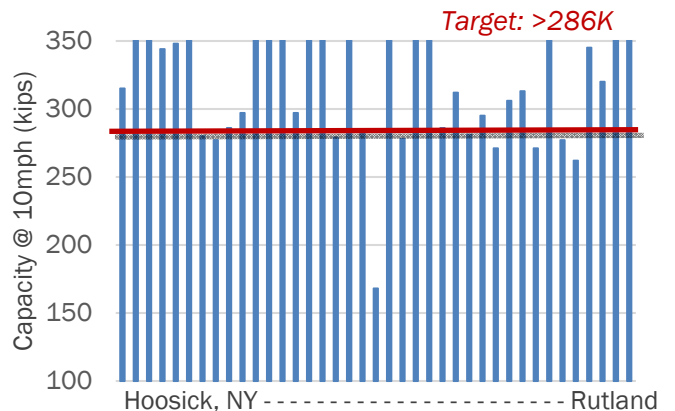
## LOAD CAPACITY

### Load Capacity Summary



### Capacity by Bridge

(based on 286K load configuration)



# GREEN MOUNTAIN

There are 44 Bridges on this line, 35 of which are the responsibility of the State.

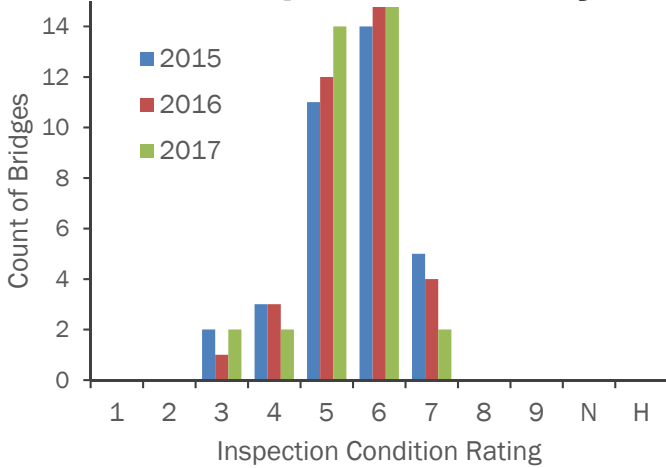
- All 35 State Responsibility bridges had an Annual Inspection during 2017.
- All 35 State Responsibility bridges have a known Safe Load Capacity as of September 2017.
  - 1 bridge is scheduled to have an in-depth inspection and the load capacity verified/updated in 2018.

## INSPECTION CONDITION RATING

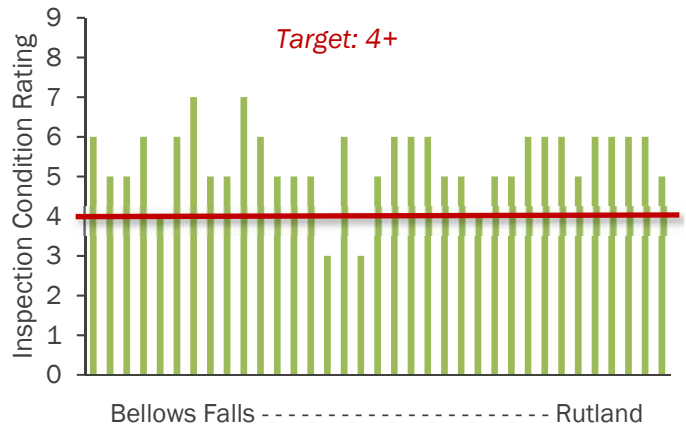
**Summary:**

# Spans	1	2	3	4	Total
# Bridges	29	5	0	1	35

**Inspection History**

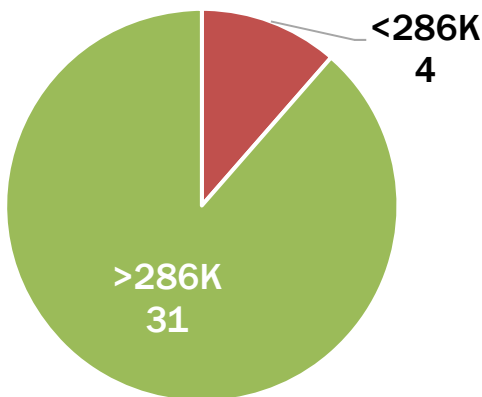


**Rating by Bridge**



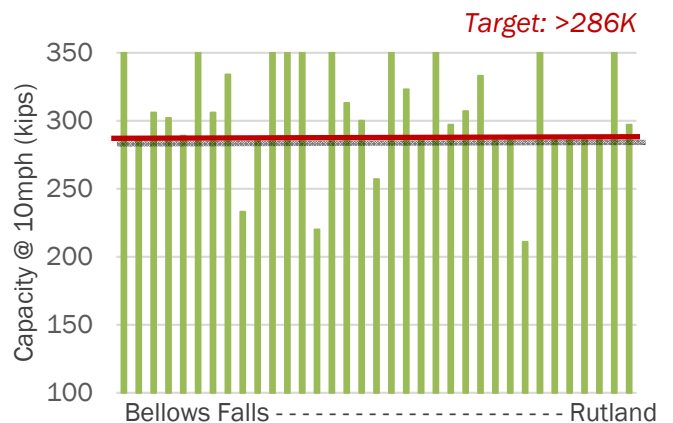
## LOAD CAPACITY

**Load Capacity Summary**



**Capacity by Bridge**

(based on 286K load configuration)



# WACR – CONNECTICUT RIVER

There are 70 Bridges on this line, 61 of which are the responsibility of the State.

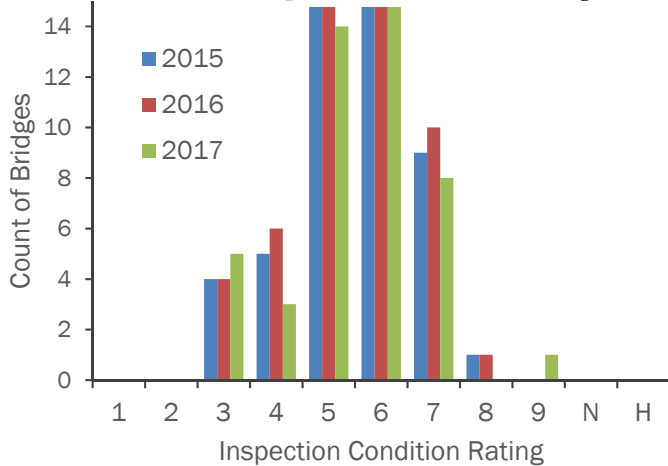
- All 61 State Responsibility bridges had an Annual Inspection during 2017.
- All 61 State Responsibility bridges have a known Safe Load Capacity as of September 2017.
  - 12 bridges are scheduled to have an in-depth inspection and the load capacity verified/updated in 2018.

## INSPECTION CONDITION RATING

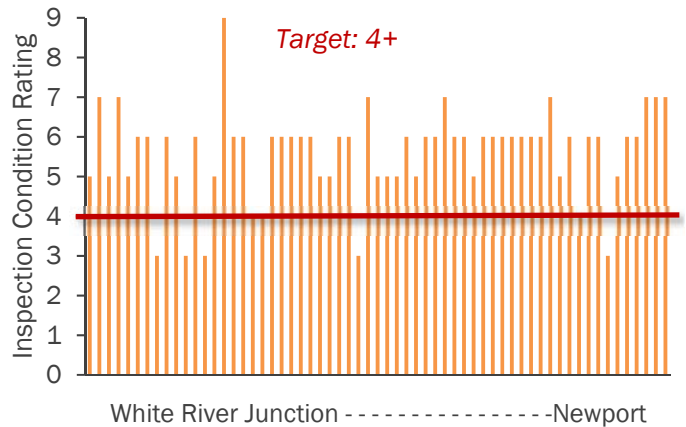
**Summary:**

# Spans	1	2	3	4	5	6	7	8	9	10	11	Total
# Bridges	49	6	1	1	1	0	1	1	0	0	1	61

**Inspection History**

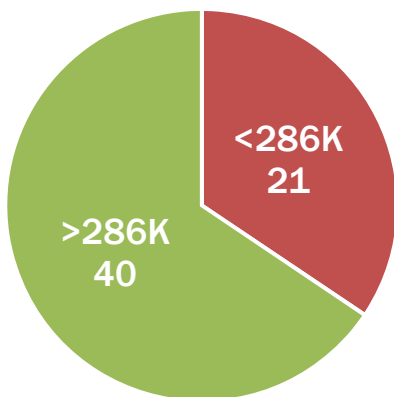


**Rating by Bridge**



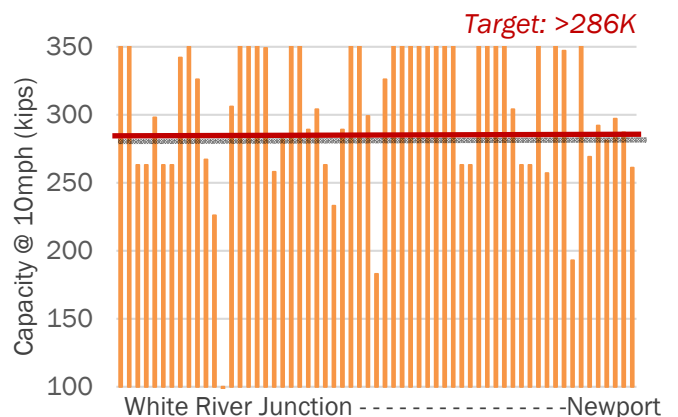
## LOAD CAPACITY

**Load Capacity Summary**



**Capacity by Bridge**

(based on 286K load configuration)



# WACR – MONTPELIER & BARRE

There are 9 Bridges on the WACR – Montpelier & Barre Line, all of which are the responsibility of the State.

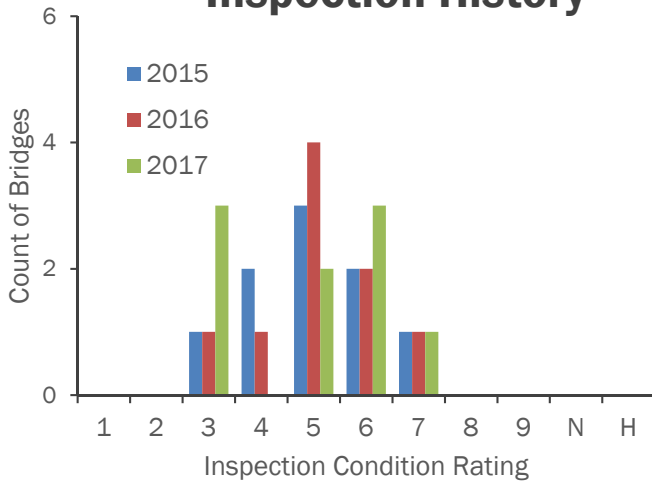
- All 9 State Responsibility bridges had an Annual Inspection completed during 2017.
  - BR304, BR305 & BR306 all have an inspection condition rating = 3 (Serious). These bridges are seeing particularly rapid rates of deterioration and critical repairs are necessary.
- All 9 State Responsibility bridges have a known Safe Load Capacity as of September 2017.
  - BR304 has a safe load capacity <263K. BR308 & BR310 have a safe load capacity <286K.

## INSPECTION CONDITION RATING

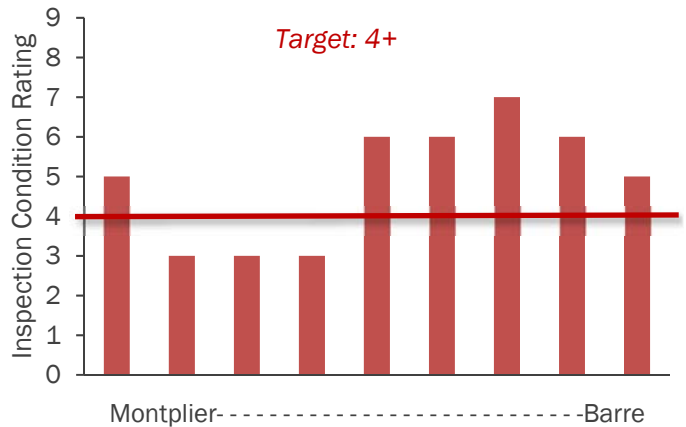
**Summary:**

# Spans	1	2	3	Total
# Bridges	6	1	2	9

### Inspection History

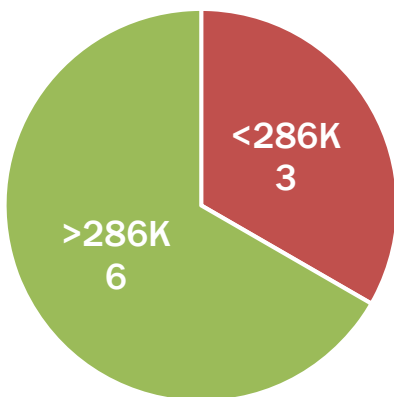


### Rating by Bridge



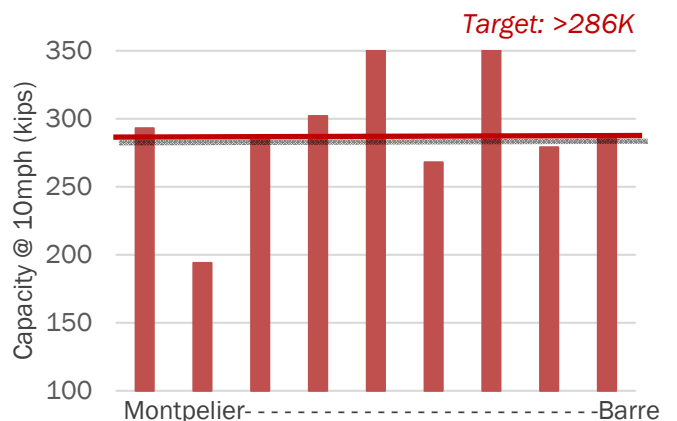
## LOAD CAPACITY

### Load Capacity Summary



### Capacity by Bridge

(based on 286K load configuration)





# STATEWIDE LOAD CAPACITY

Load Capacity Analyses have been performed on all 174 State Responsible Bridges.

- 134 (77%) have a load capacity equal to or greater than 286 kips\*.
- 40 (23%) have a load capacity less than 286 kips\*.

The VTrans Rail Bridge Management Program requires that all bridges have the load capacity verified once every ten years. Generally, this includes performing an in-depth inspection of the bridge which is compared to the conditions found during the previous load capacity analysis. If member conditions have changed, or if the AREMA code has changed, an updated analysis may be required as prescribed by a railroad bridge engineer.

- 19 bridges are scheduled to have an in-depth inspection and have the load rating verified/updated in 2018.
- The goal is to have the backlog of older capacity analyses cleared and to get on the 10yr cycle during FY19.

\* A kip is a US customary unit of force, and is labeled with either “kip(s)” or “K” throughout this report.  
1 kip equals 1,000 pounds-force.

## LOOKING AHEAD

### Estimated yearly activities:

Task	Historic	FY18	FY19	FY20	FY21	FY22	FY23	FY24 - 29
Initial Load Capacity Analysis	174	0	0	0	0	0	0	0
Updated Load Capacity Analysis		19	15	15	15	15	15	15
Annual Inspection		174	174	174	174	174	174	174
Detailed Inspection*		19	18	18	18	18	18	18
Underwater Inspection*		5	5	5	5	5	5	5
Bridge Maintenance		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data Maintenance		Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>*Estimated 10-year cycle</i>								

