WSDOT's Bridge Management and Performance Measures

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Definition of a “Performance Measure”

Performance measurement has been defined as:

- “the process of quantifying the efficiency and effectiveness of past actions”

- "the process of evaluating how well organizations are managed and the value they deliver for customers and other stakeholders”.

Performance measures are a tool to help us understand, manage and make improvements.

WSDOT Bridge Network Performance Measure

% of bridges in Good / Fair / Poor condition by Deck area

Deck Condition Code

Superstructure Condition Code

Substructure Code

NBI

8

Good

7

6

Fair

5

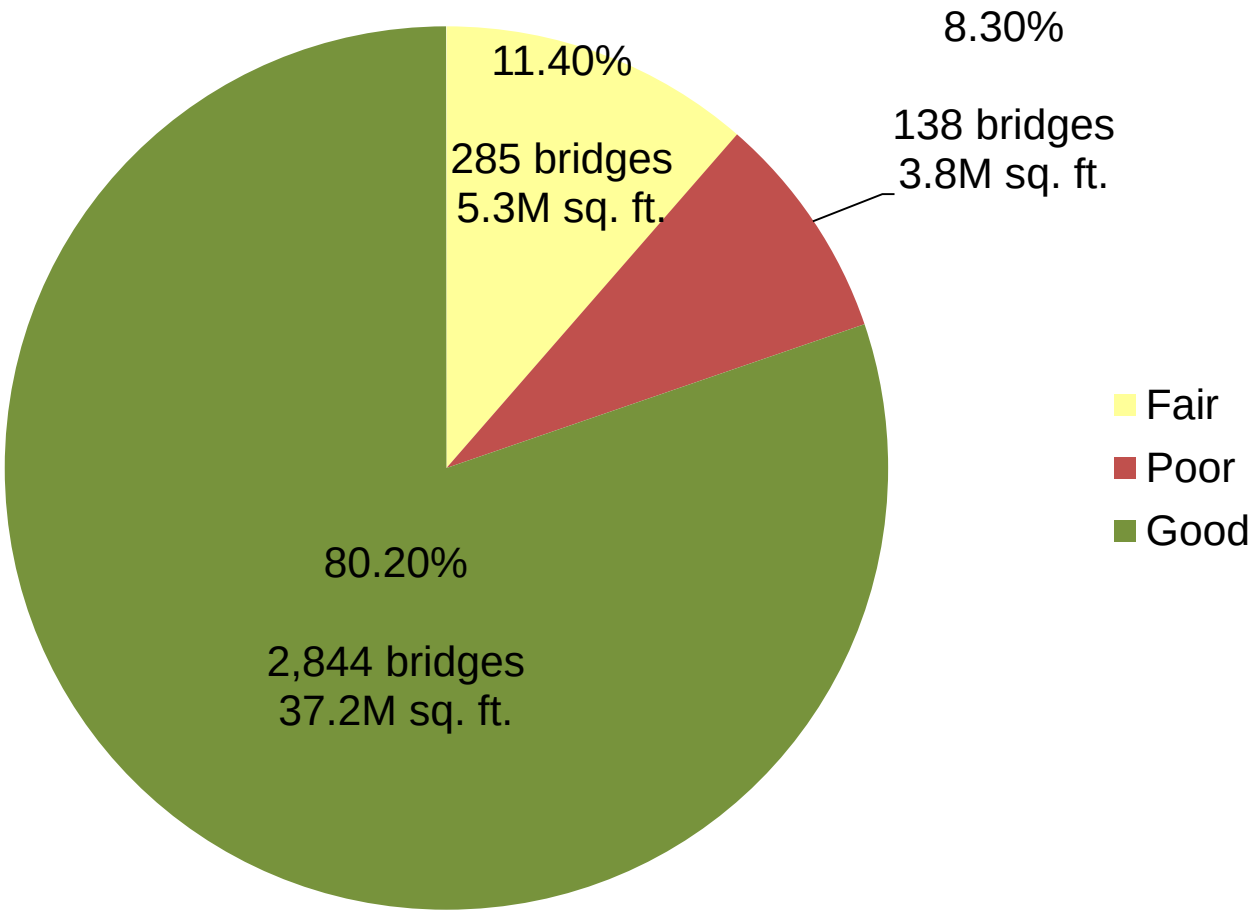
4

Poor

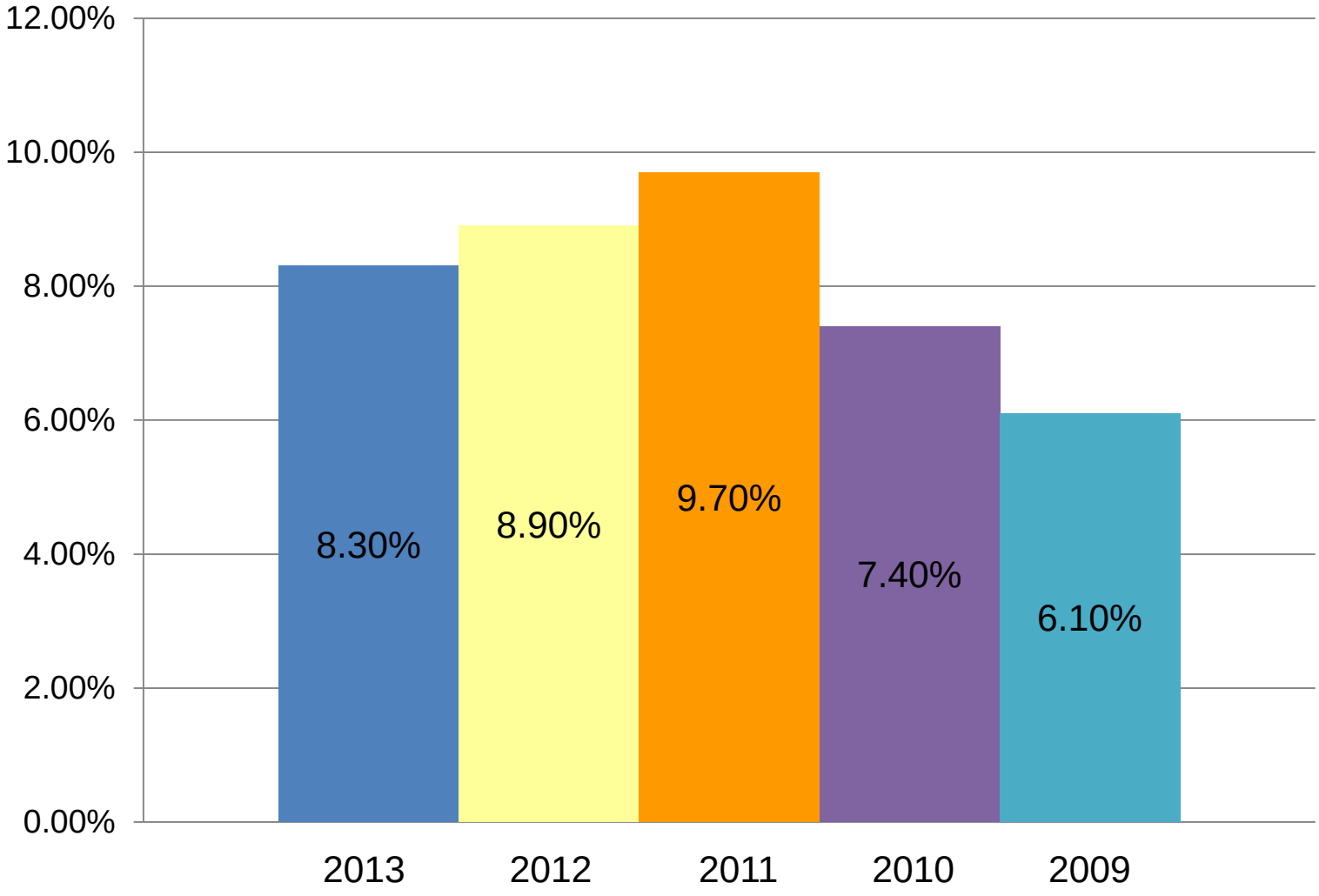
3

2013

% of bridges in Good / Fair / Poor condition by Deck area



% of bridges in Poor condition by Deck area



Steel Bridge Painting

Steel Structures Painting Council

"*All coating systems will fail eventually.*"

The question is – "When?"

SR 141 White Salmon River Bridge

Steel Bridge Painting

Painting Cycles

Steel Truss Bridges

- Lead based Paint — 15-20yrs
- Zinc/Moisture Cured Urethane Paint — 20-25yrs

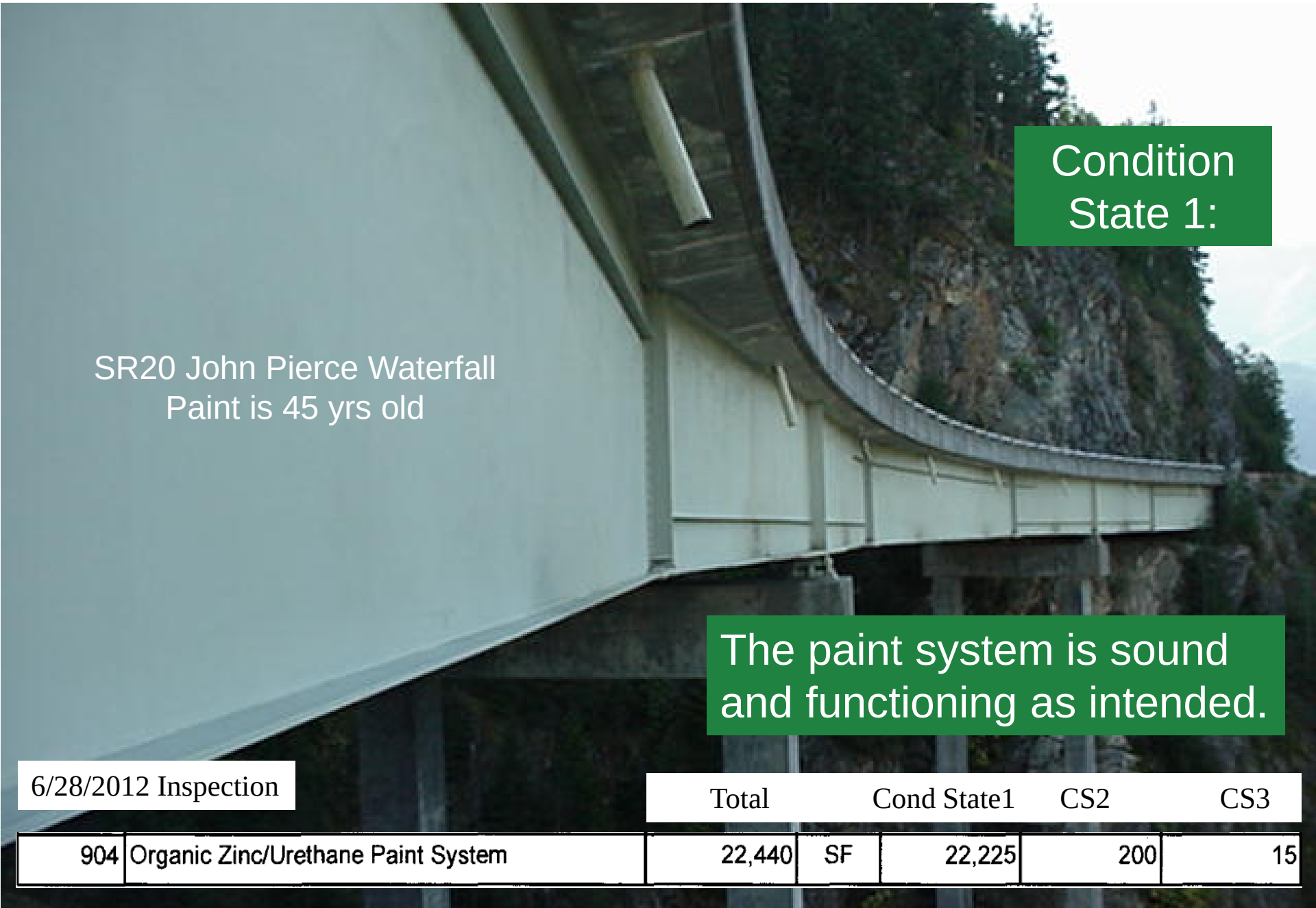
Steel Girder Bridges

- Lead based Paint — 20-25yrs
- Zinc/Moisture Cured Urethane Paint — 30-35yrs

BMS Paint Condition States

"Good"	Condition State 1:	The paint system is sound and functioning as intended.
"Fair"	Condition State 2:	The paint system may be chalking, peeling, curling, or showing distress with no exposure of metal.
"Poor"	Condition State 3:	The paint system is no longer effective. The metal substrate is exposed.

BMS Paint Condition States



Condition State 1:

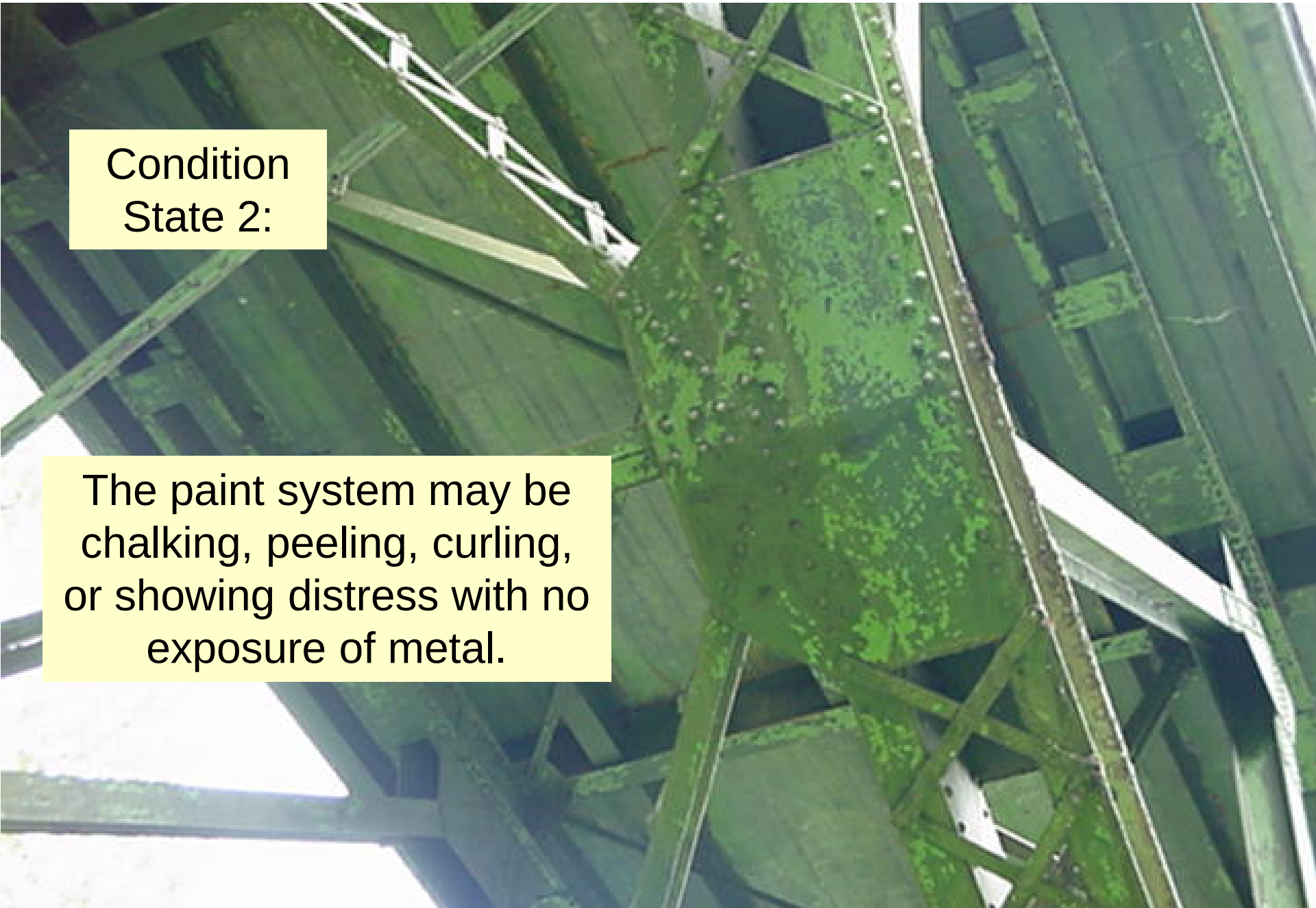
SR20 John Pierce Waterfall
Paint is 45 yrs old

The paint system is sound and functioning as intended.

6/28/2012 Inspection

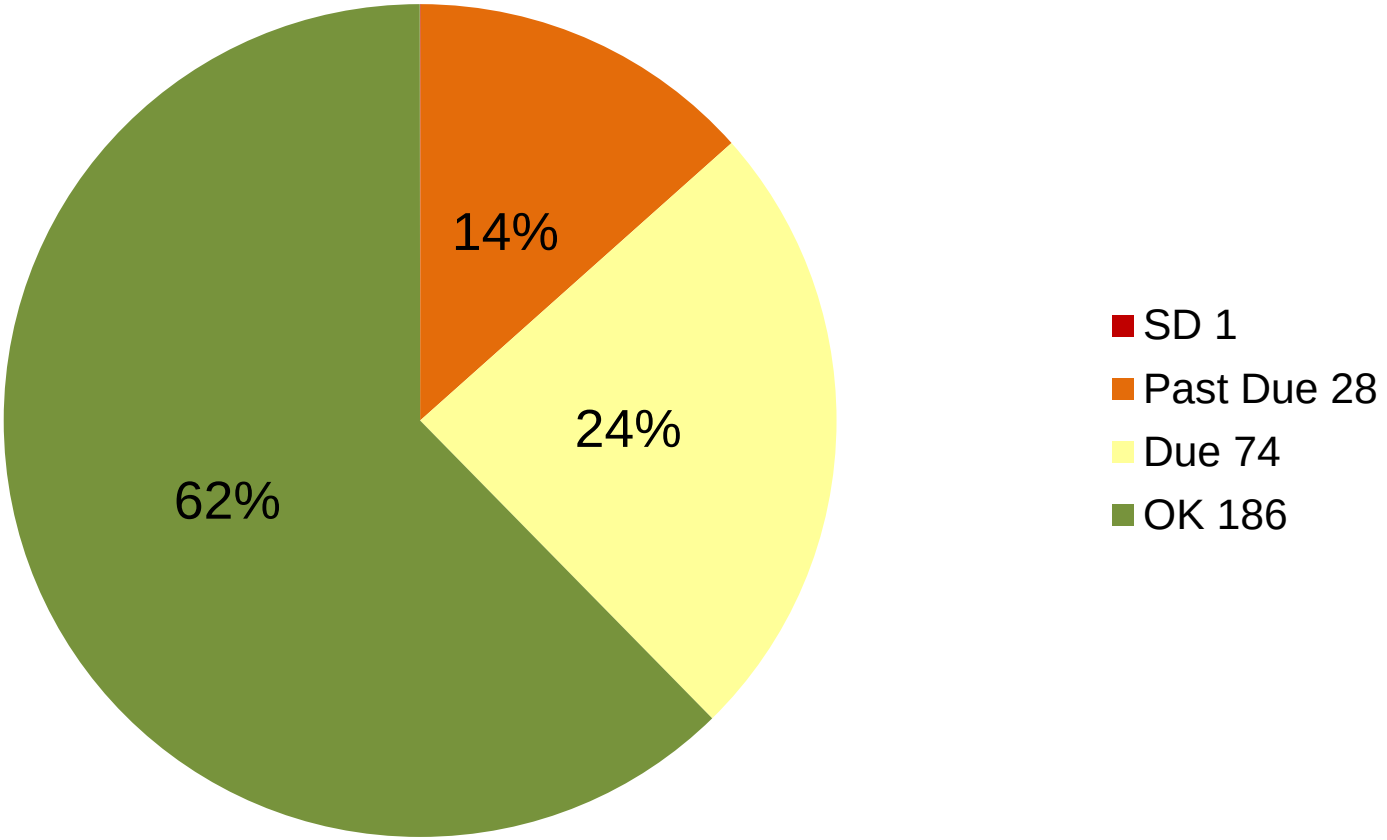
		Total		Cond State1	CS2	CS3
904	Organic Zinc/Urethane Paint System	22,440	SF	22,225	200	15

BMS Paint Condition States



BMS Paint Condition States

2013 - Current Steel Bridge Paint Condition



% by steel surface area

Past Due (Steel Corrosion) = >2% CS3
Due (Paint failed with little steel corrosion) = <2% CS3
OK (Paint in Good condition)

Performance measurement has been defined as "the process of quantifying the efficiency and effectiveness of past actions"

WSDOT Steel Bridge Inventory
313 Bridges
Total surface Area of Steel = 24.2 M sq. ft.

Steel Bridge Painting 2003 thru 2012
18 Bridges
Total surface Area of Steel = 2.6 M sq. ft.

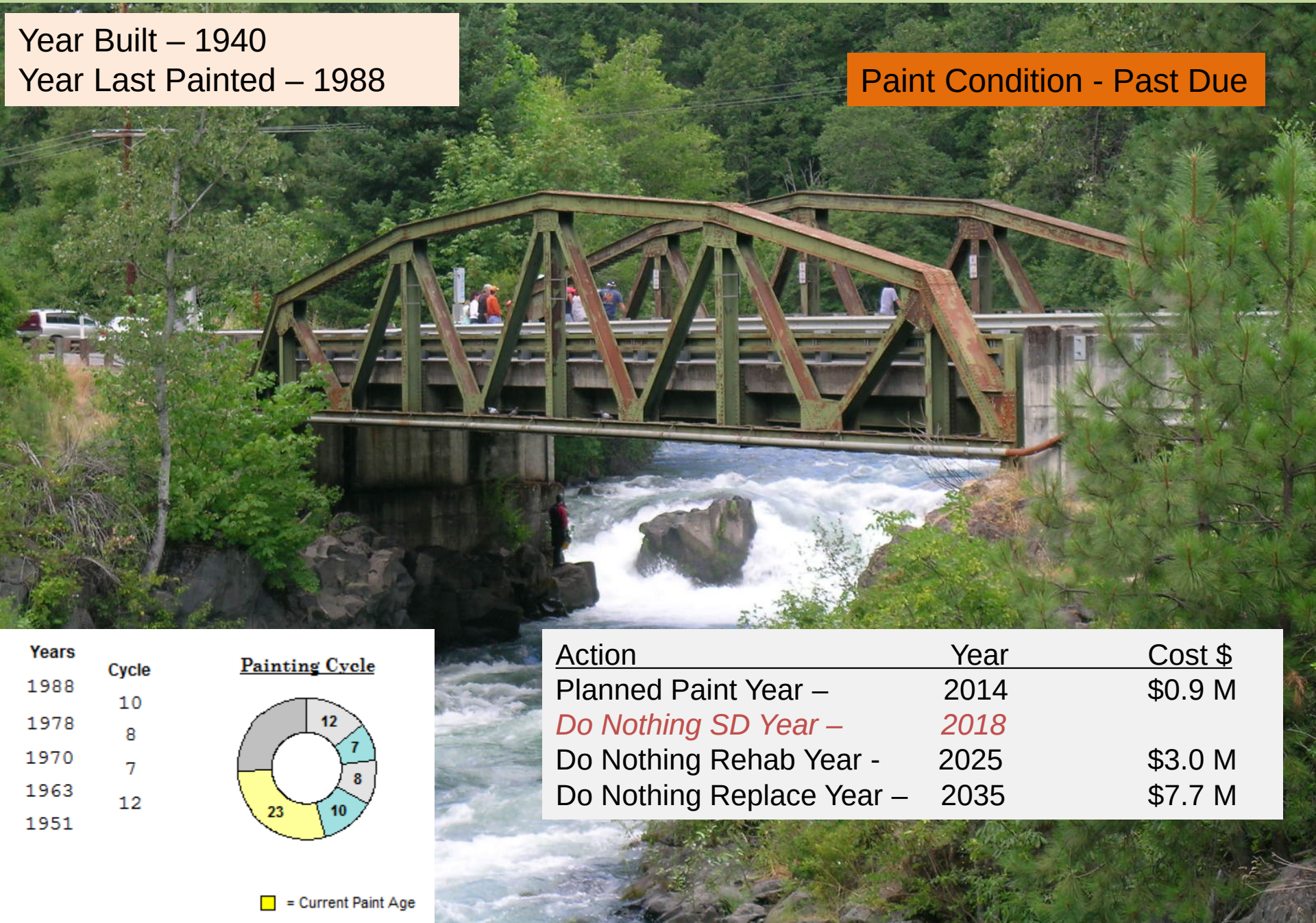
Steel Bridge Painting (on Average)
Total surface Area of Steel = 9.7 M sq. ft.

Last 10 years Painted about 25% of the Average

SR 141 White Salmon River

Year Built – 1940
Year Last Painted – 1988

Paint Condition - Past Due



Years	Cycle
1988	10
1978	8
1970	7
1963	12
1951	

Painting Cycle

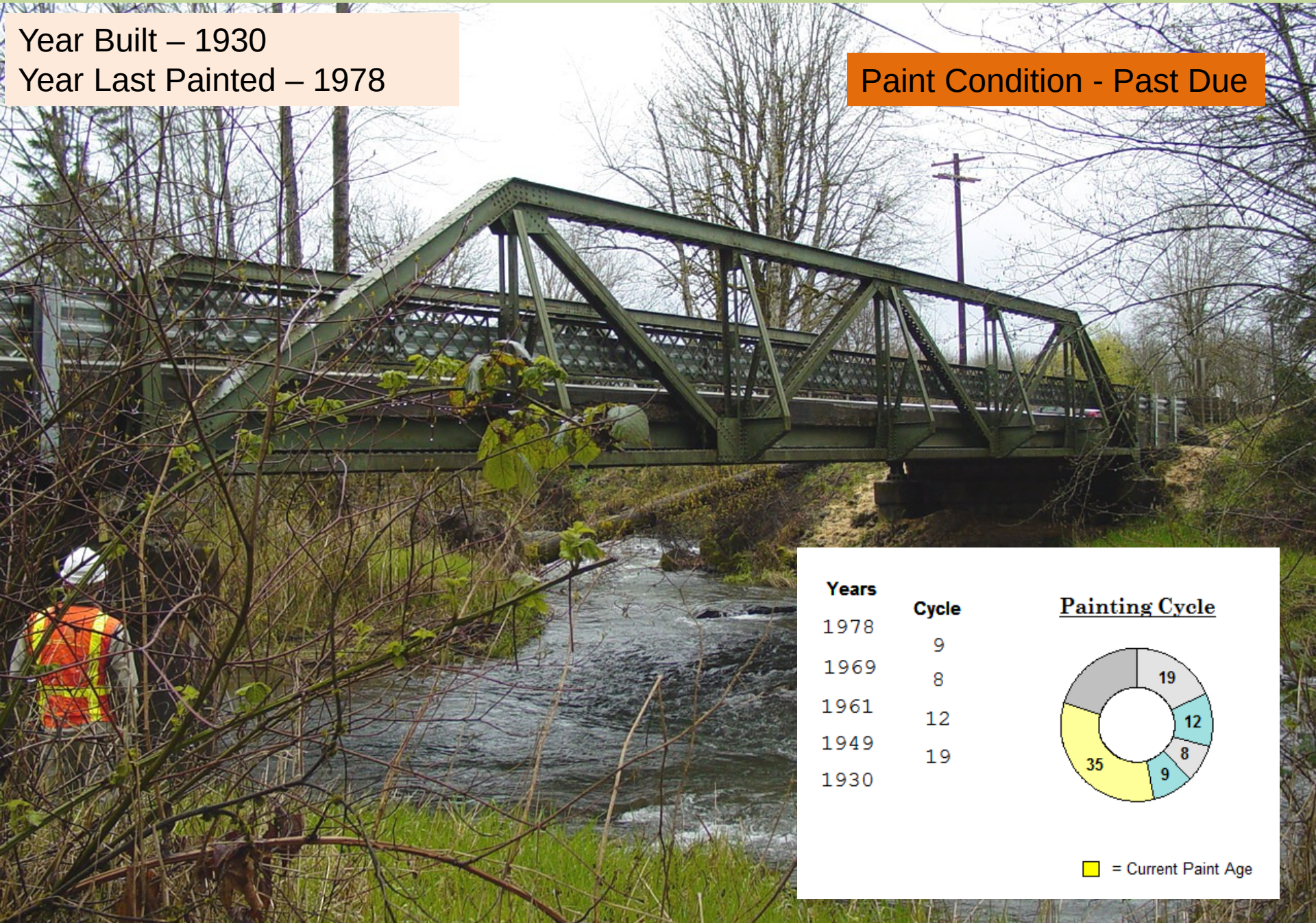
= Current Paint Age

Action	Year	Cost $
Planned Paint Year –	2014	$0.9 M
Do Nothing SD Year –	*2018*	
Do Nothing Rehab Year -	2025	$3.0 M
Do Nothing Replace Year –	2035	$7.7 M

SR 508 South Fork Newaukum River

Year Built – 1930
Year Last Painted – 1978

Paint Condition - Past Due



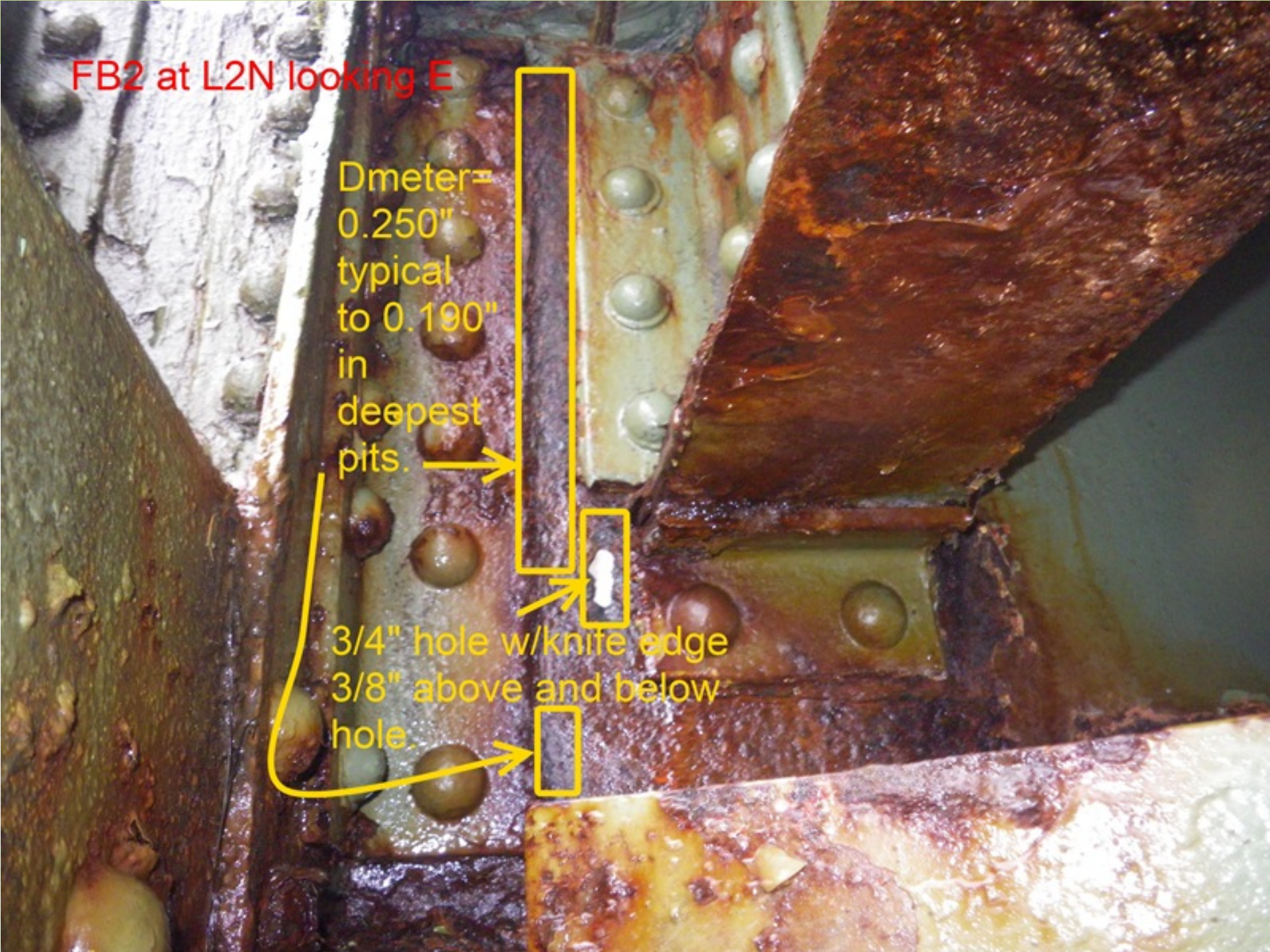
Years	Cycle
1978	9
1969	8
1961	12
1949	19
1930	

Painting Cycle

= Current Paint Age

SR 508 South Fork Newaukum River

SR 508 South Fork Newaukum River


FB2 at L2N looking E
Dmeter=
0.250"
typical
to 0.190"
in
deepest
pits.
3/4" hole w/knife edge
3/8" above and below
hole.

SR 508 South Fork Newaukum River

Year Built – 1930

Suff Rating 2.0 SD

Options	Year	Cost $
Paint Bridge	NA	~~$0.4 M~~
Rehab Bridge	NA	~~$??? M~~
Replace Bridge	????	$8.1 M

WSDOT steel bridge painting needs

Ten-year plan FY2013 - FY2023; Dollars in millions

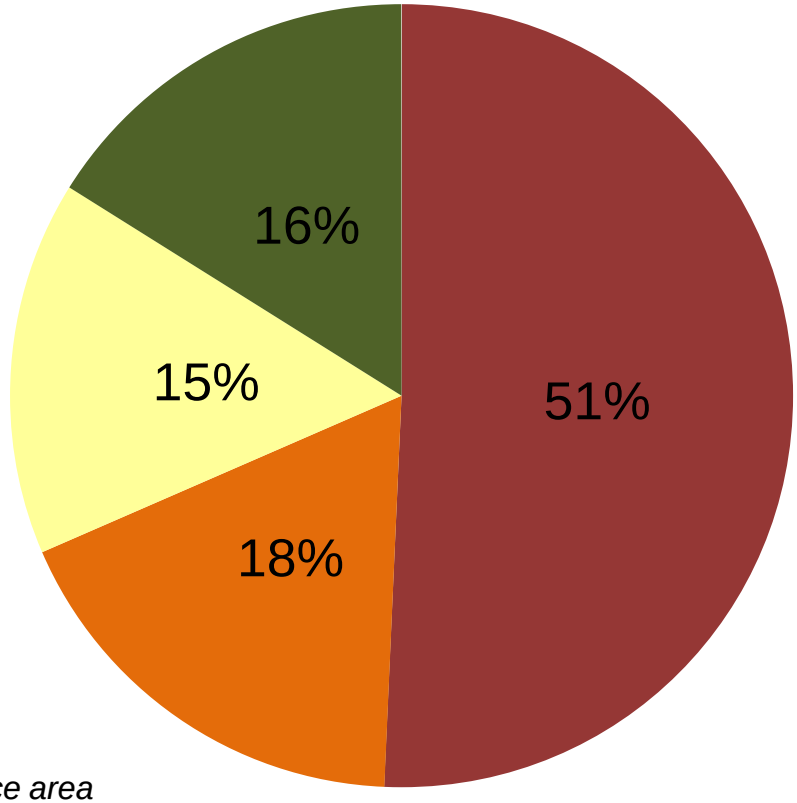
Category	Number of bridges	Cost to repaint
Past due for painting	28	$150
Due for painting	74	$200
Steel trusses – due within next ten years	51	$192
Unpainted weathering steel	5	$3
Oregon-owned border bridges	2	$21
Ten-year total	**160**	**$566**

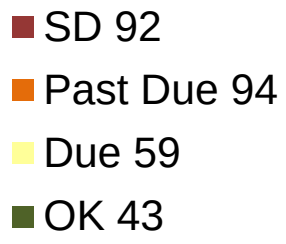
Data source: WSDOT Bridge and Structures Office.

Bridges on Primary Freight Routes: **80** **$415**

2023
(Projected Steel Bridge and Paint Condition with - No Funding)

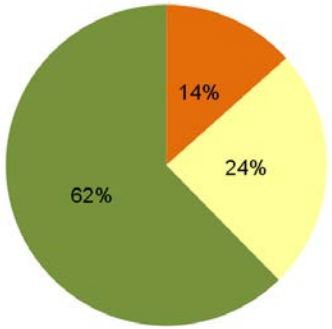
10 year Need = $566 million



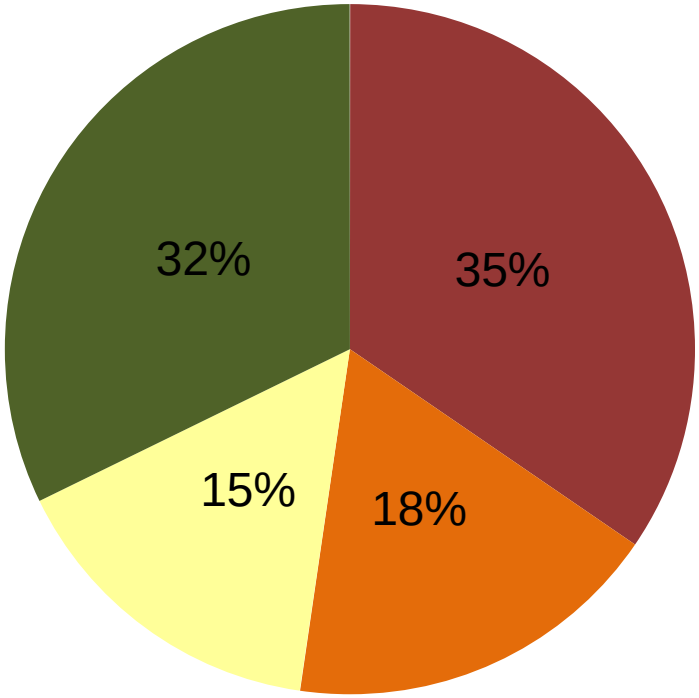


% by steel surface area

2013



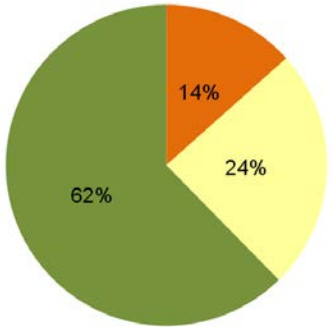
2023
(Projected Steel Bridge and Paint Condition with - $185M Funding)



10 year Need = $566 million

SD 67
Past Due 94
Due 59
OK 68

2013



“Performance Measure”

Performance measures are a tool to help us understand, manage and make improvements.

Performance measures with good assumptions can help us make predictions on future bridge conditions.

Thank You