

Polymer Modified Joint (PMJ) Performance in Ohio



Mike Brokaw, P.E., Bridge Operations Engineer
MWBPP 2016 Annual Meeting, Milwaukee, WI

John R. Kasich, Governor • Jerry Wray, Director

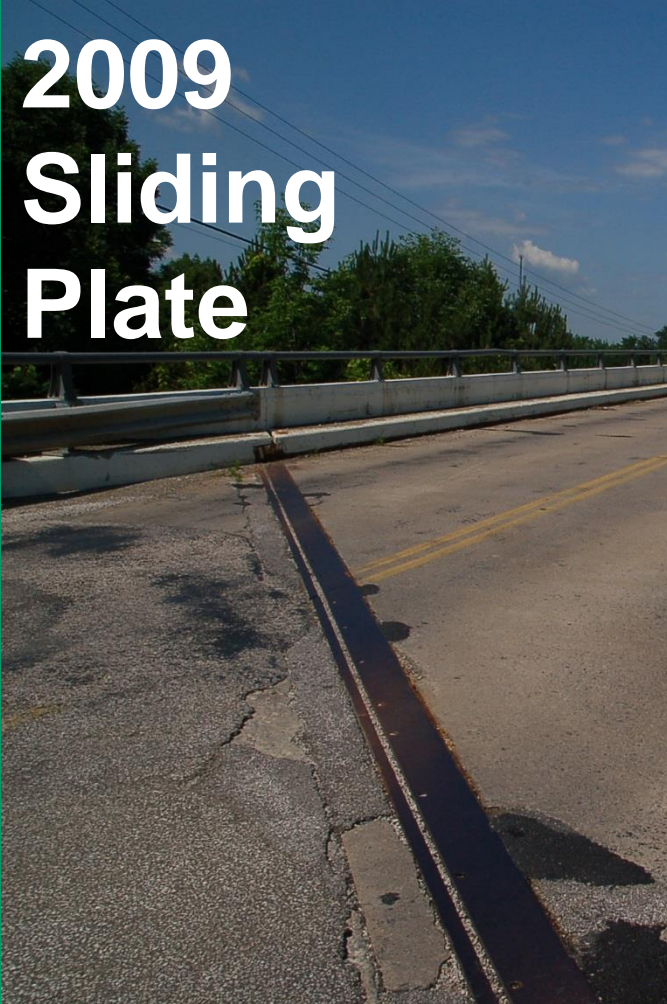
Overview

1. PMJ
2. Change for Inspectors
3. Joint Choice
4. Manufacturer Specifications
5. Direction



1. PMJ?

2009
Sliding
Plate



2014



2. Change for Inspectors

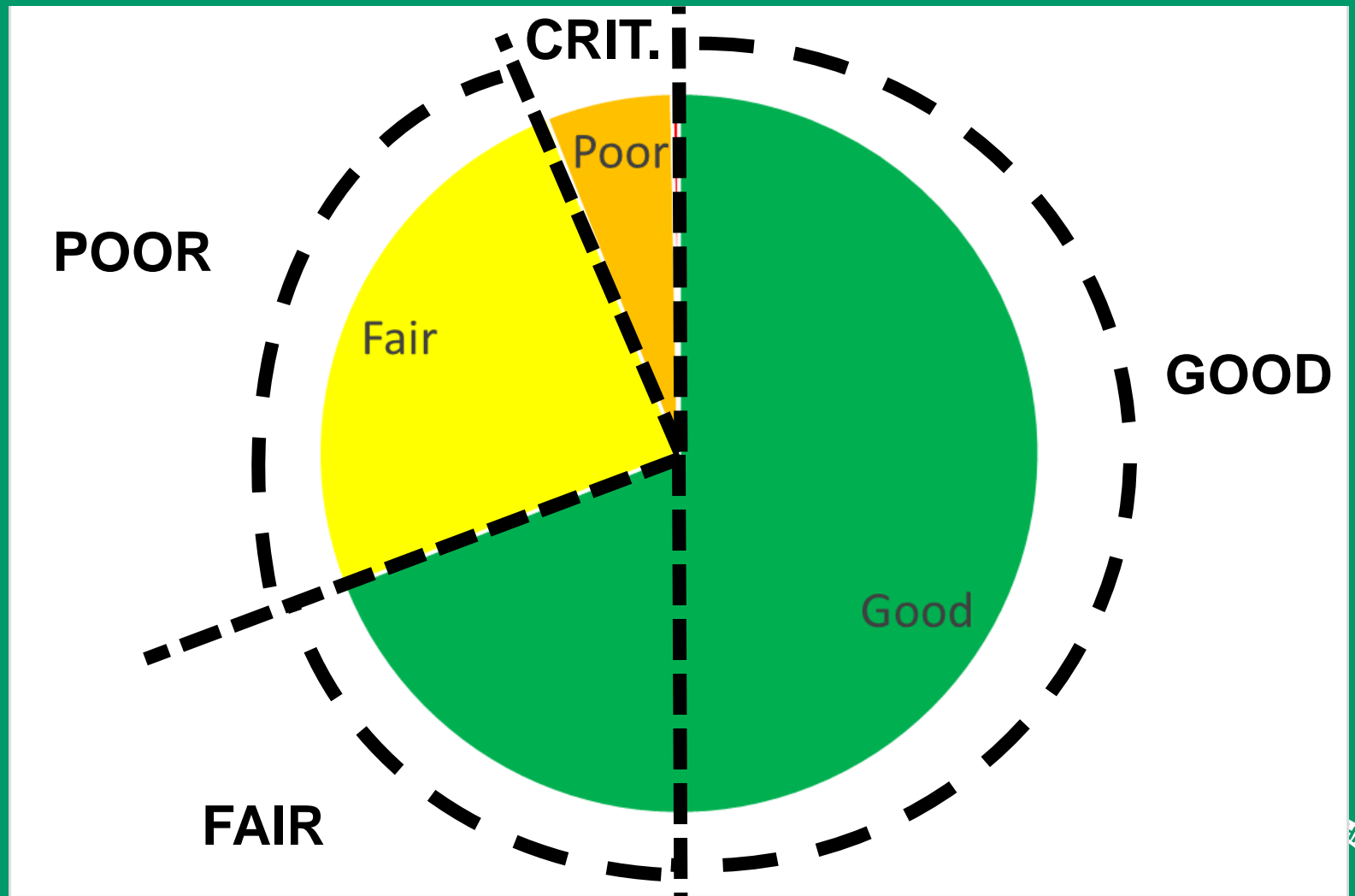
Current

1. **Good - Localized Leaking**
2. **Fair - Widespread Leaking**
3. **Poor -**
4. **Critical -**

Future

1. **Good -**
2. **Fair – Localized Leaking**
3. **Poor - Widespread Leaking, Localized Free-Flow Leaking**
4. **Critical - Steel Plate Exposed**

Current vs. Predicted Conditions



Good to Good



Fair to Poor



Fair to Poor



Fair to Poor



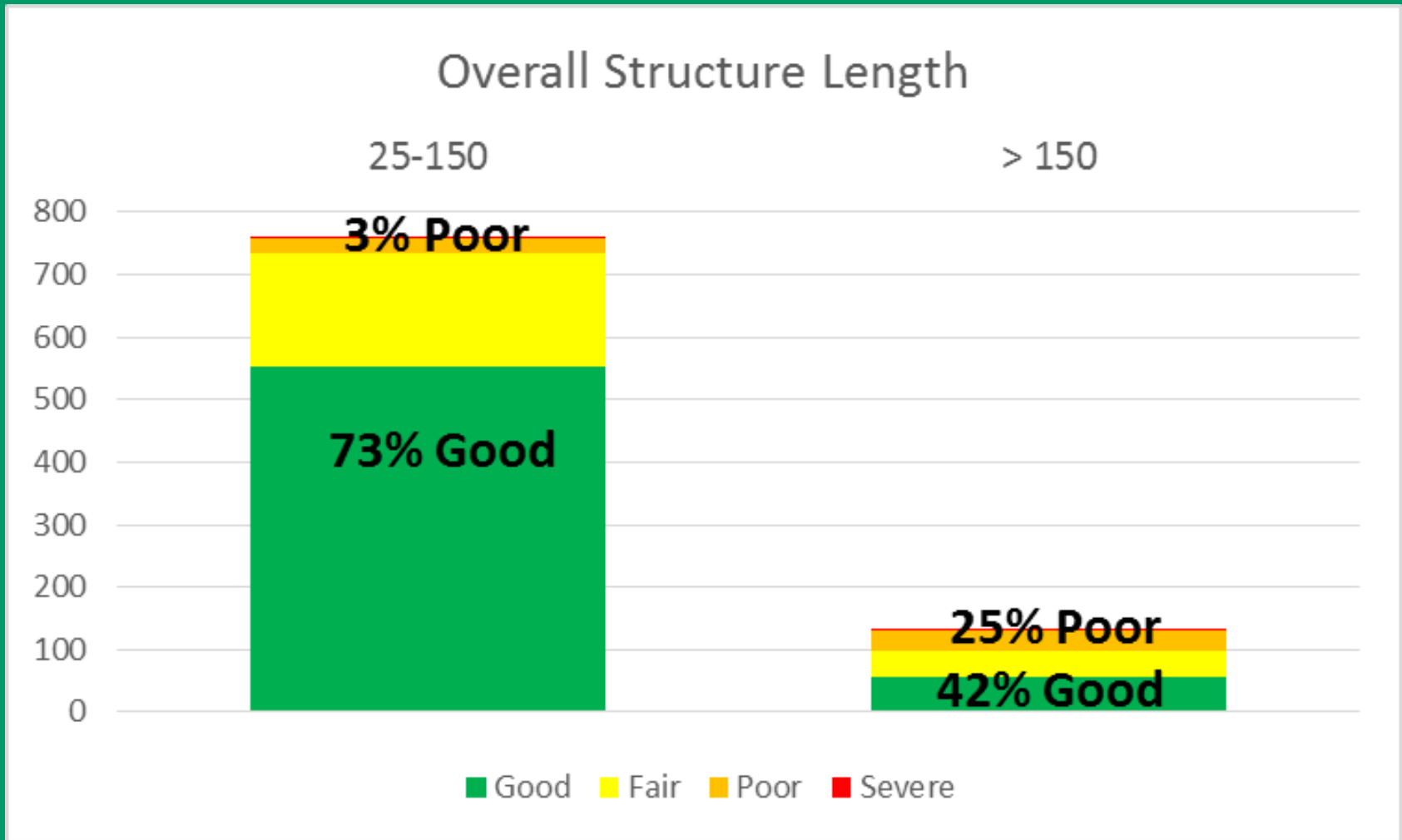
Poor to Critical



3. Joint Choice



Overall Structure Length & PMJ Condition



Outlier- SUM-261-0419



Outlier- JAC-32-1255L



Outlier- JAC-32-1255L



Outlier- JAC-32-1255L

🕒 Right Joint

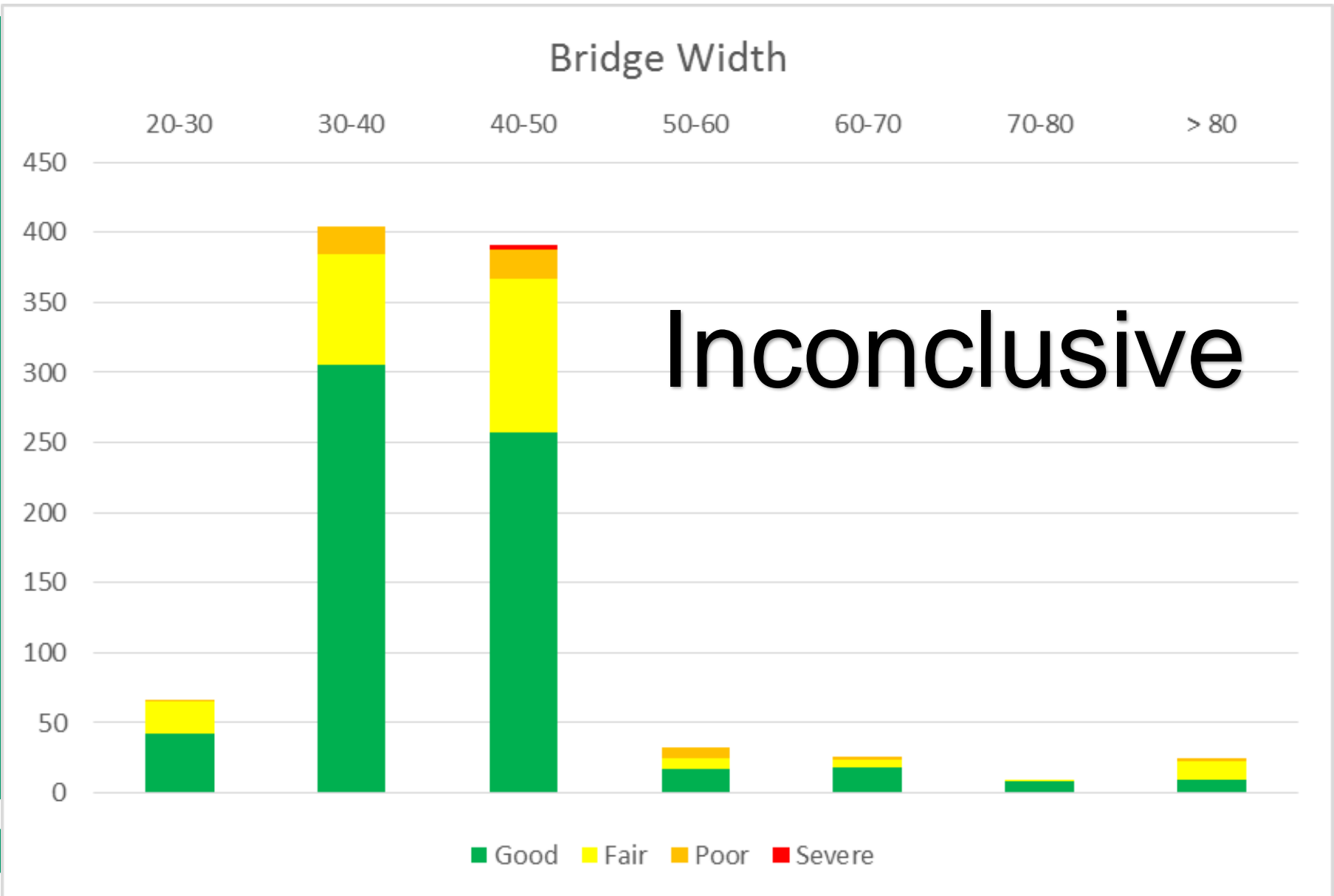
🕒 17 Years Old

c13. Expansion Joint (LF)

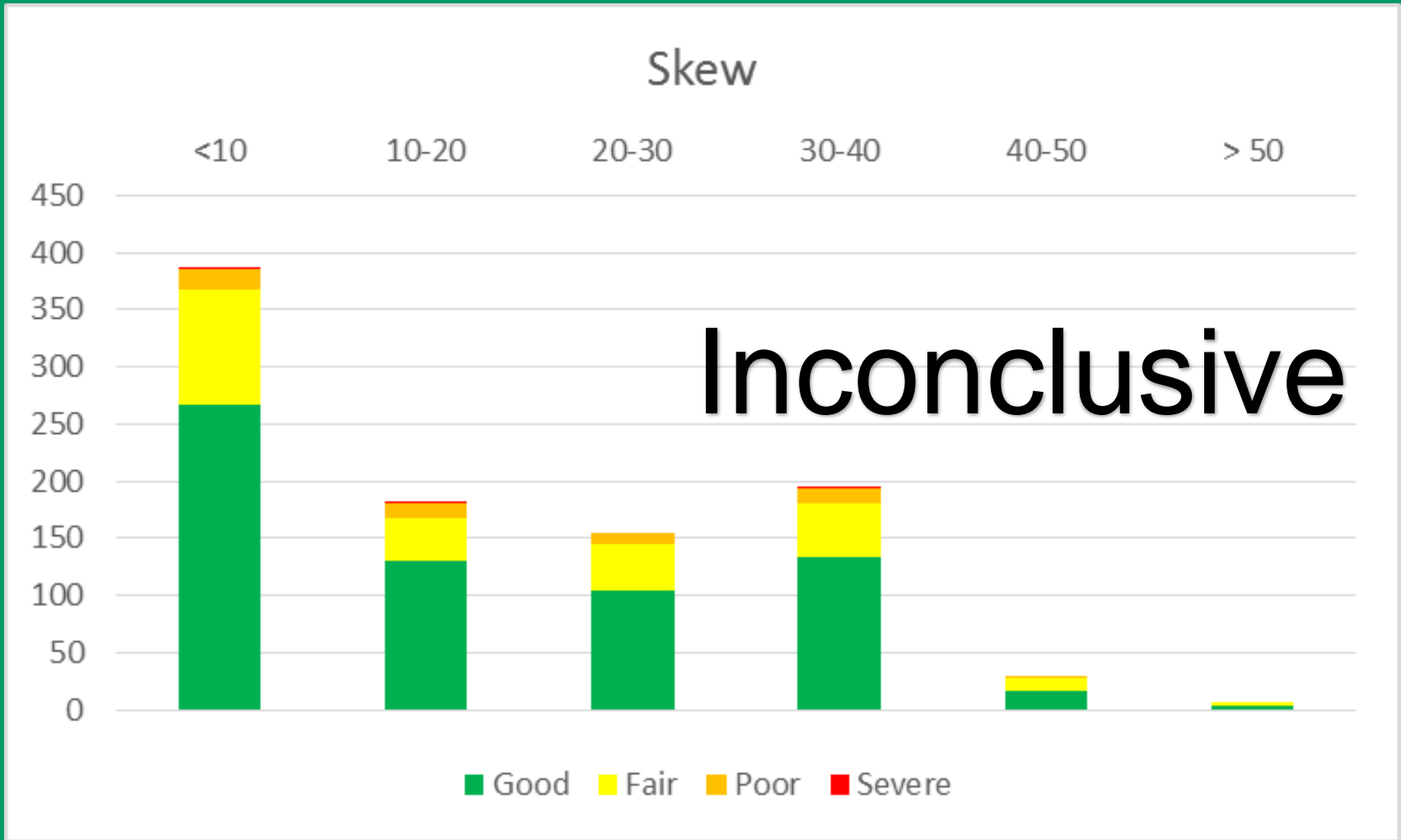
Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
80	35	20	20	5	3.00

POURED JOINTS WERE INSTALLED IN 1999. BOTH JOINTS ARE RUTTING OUT IN THE LT LANE WITH THE REAR BEING WORSE. THERE ARE A FEW GAPS ALONG BERMS IN BOTH. THE RT LANE OF FWD HAS A 1' LONG TRANSVERSE CRACK. 5/12 THE JOINTS HAVE RUTTING OUT IN THE WHEEL TRACK. 7/14 REAR HAS TWO SPOTS IN JOINT THAT HAVE RUTTED OUT. CAN SEE THE METAL UNDER THE JOINT. THE METAL IS RUSTY AND BROKEN IN PLACES. 6/16 THESE AREAS

Bridge Width & PMJ Condition



Bridge Skew & PMJ Condition



Outlier- LOR-90-1355L



Outlier- LOR-90-1355L



Outlier– LOR-90-1355L

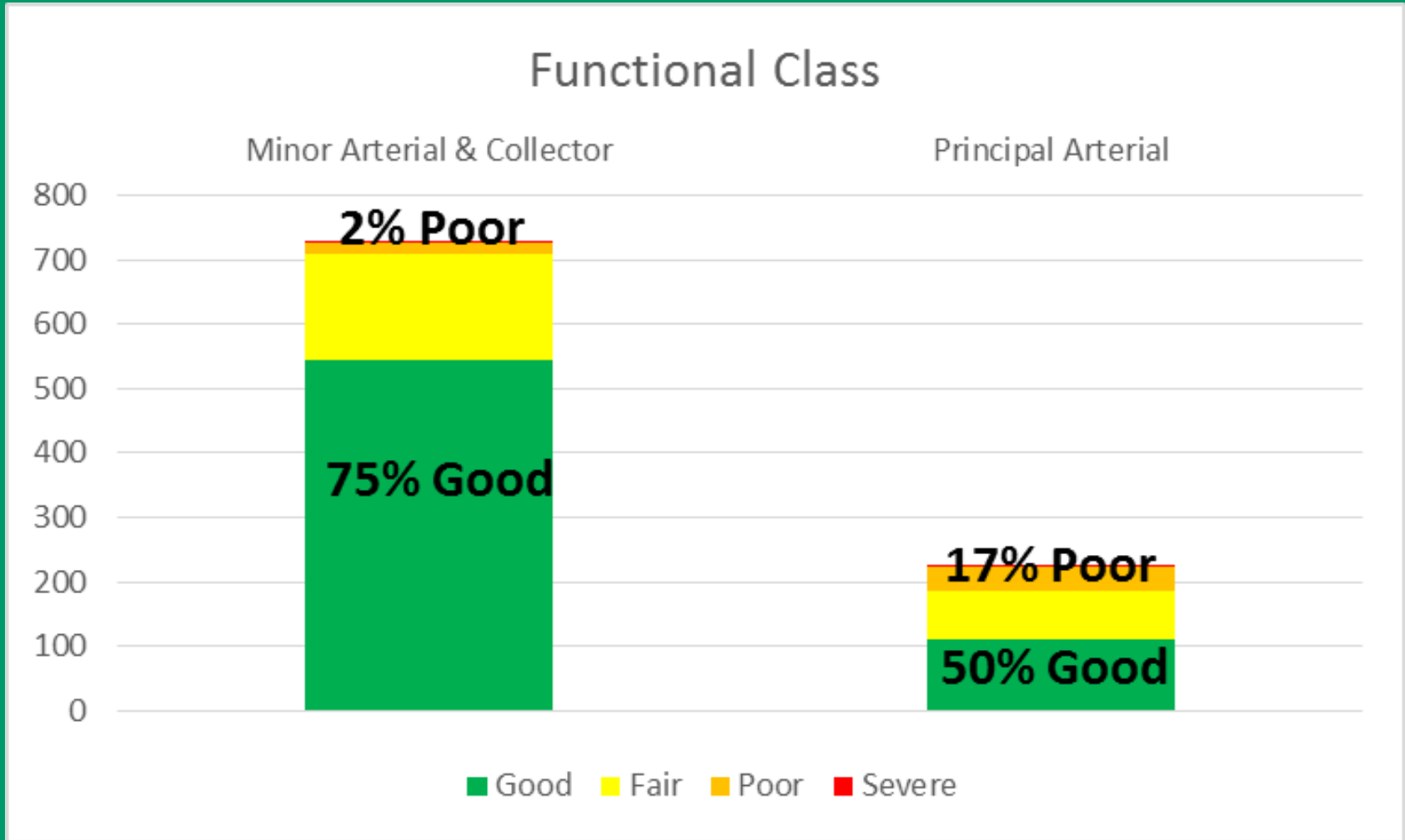
- ☉ Good condition for High ADT, ADTT, Steel Beam, Longer Structure
- ☉ It is New

c13. Expansion Joint (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
114.8	114.8				1.00

NEW POLY MOD JOINT SYSTEM. 2015.

Functional Class & PMJ Condition



4. Manufacturer Specifications



Qualified Product List

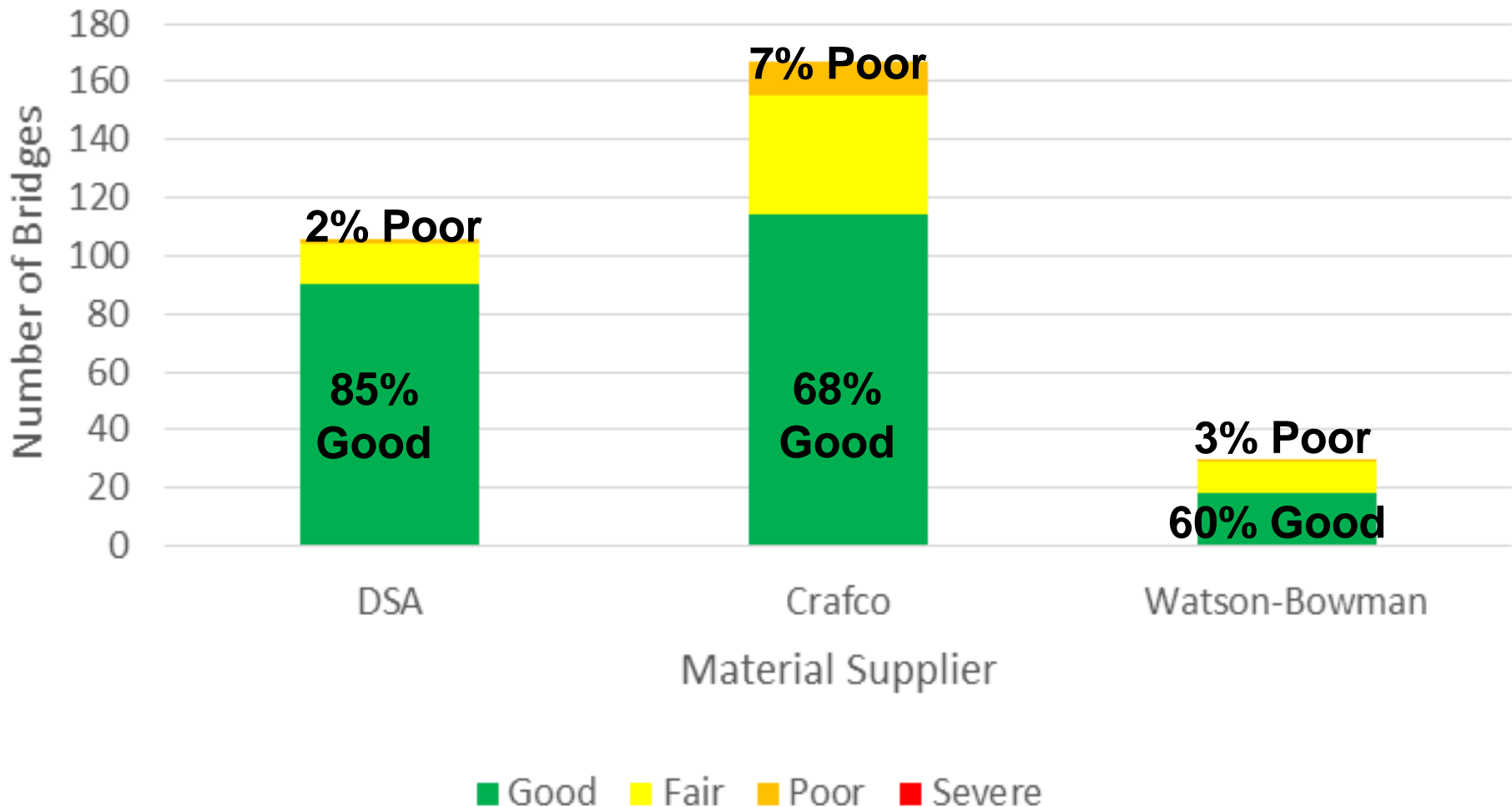
Ohio Department of Transportation

Click on Brand Name for any additional information

Sample Id	PS CD	Mtl Cd	Mtl Name	Brand Name	P/S Name
QPLITEMS146N142827	06646-01	101P	POLYMER MODIFIED EXPANSION JOINT BINDER	MATRIX 501 (P.N. 33345)	CRAFECO INC @ CHANDLER, AZ
QPLITEMS144E150005	09639-01	101P	POLYMER MODIFIED EXPANSION JOINT BINDER	MATRIX 502 (P.N. 34528)	CRAFECO/ALLENTOWN PA
QPLITEMS142R075323	05606-01	101P	POLYMER MODIFIED EXPANSION JOINT BINDER	THERMA-JOINT	DYNAMIC SURFACE/PA
QPLITEMS143V124345	09579-01	101P	POLYMER MODIFIED EXPANSION JOINT BINDER	FIBREJOINT	FIBRECRETE TECHNOLOGIES @ MOUNT AIRY/NC
QPLITEMS15AK090356	06561-01	101P	POLYMER MODIFIED EXPANSION JOINT BINDER	WABO EXPANDEX	WATSON BOWMAN/NY

The Last 6 Years

PMJ Condition Rating by Material Supplier



Aggregate Gradation

Screen Size	Mfg. Aggregate Gradation				
	Crafco 501	Crafco 502	DSA Thorma	WB Waboflex	
				B	C
1-1/2					100
1		95-100		100	90-100
7/8			95-100		
3/4		90-100			
5/8			40-60		
1/2	100	20-55	15-40	90-100	0-40
3/8	80-100	0-15	0-15		
1/4			0-7	0-40	
1/16 (8,10,16)	0-18				
(4)		0-5			

Aggregate Heating



SS846

- 🕒 2013: Rep Onsite
- 🕒 2015: QC Plan with Signature
- 🕒 Future: Aggregate? Means and Methods?

Conclusion

- ④ Keep using PMJ's
- ④ Training - Quality Control
- ④ Update Bridge Inspection Manual
- ④ Add two-fields – Joint Date & Joint Supplier
- ④ Edit Supplemental Specification again?

Contact

Mike Brokaw, P.E.
Ohio Department of Transportation
Bridge Operations Engineer
1980 West Broad Street MS5180
Columbus, OH 43223
O: (614) 387-6210
mbrokaw@dot.ohio.gov

