Bridge Division Breakout Session

AGC/MoDOT Annual Co-op Meeting

December 5, 2018

Lodge of the Four Seasons

Year in Review
Implemented Changes

Maximum Air Content/Re Dosing

- Any concrete with over 9.0% is rejected.
- It is the intent to have all concrete arrive in the range of 4.5% to 7.5%. Re dosing was implemented to help contractors and concrete suppliers salvage some concrete that had low initial air.
- It is not permissible to have all loads arrive with low air so there is no possibility of rejection for high air then re dose every load on site.

Wet Curing of Decks

- Synthetic material equivalents to burlap will be allowed.
- We will not allow the placement of the mats and then have them wetted. They can be wetted as they are being placed. This is per the manufacturers recommendation.
- Waiting until you can walk on the deck to place the mats is not permissible.

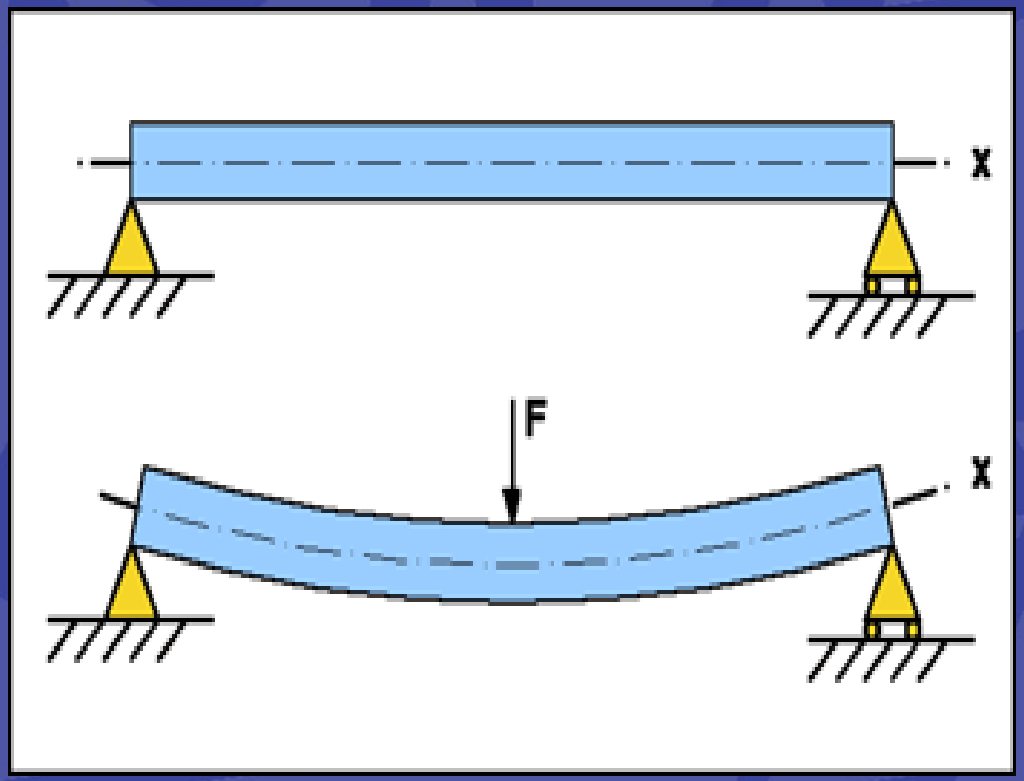
Traffic control restrictions on Holidays

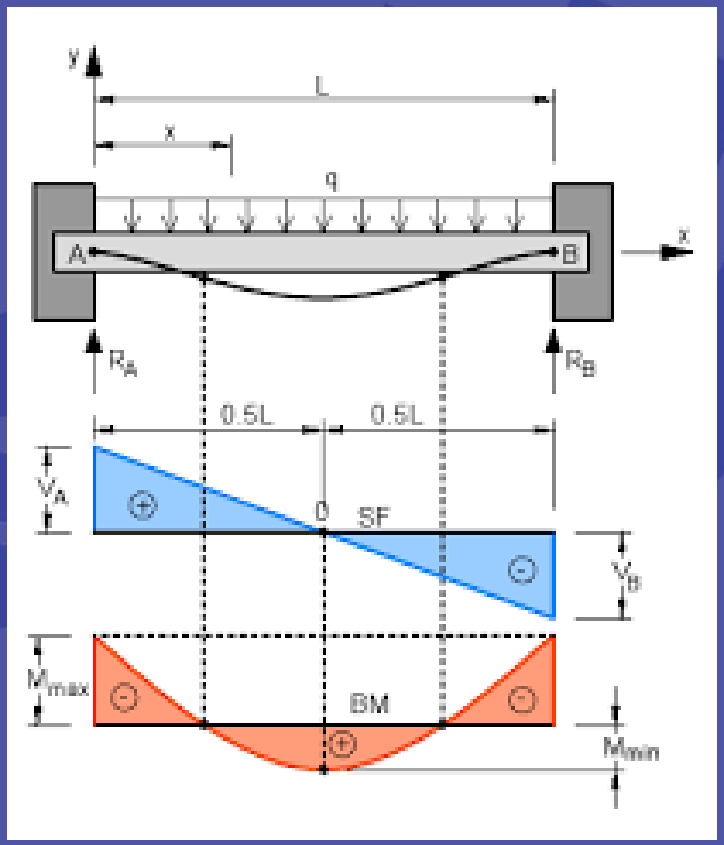
- MoDOT is committed to placing all holiday restrictions in the contracts.
- Occasionally some adjustments may be necessary due to high traffic demands brought on by local events.

- When placing a bridge deck with concrete girders there is a requirement that the diaphragms be placed in advance of the bridge deck. There are specific requirements in the plans that are very important.

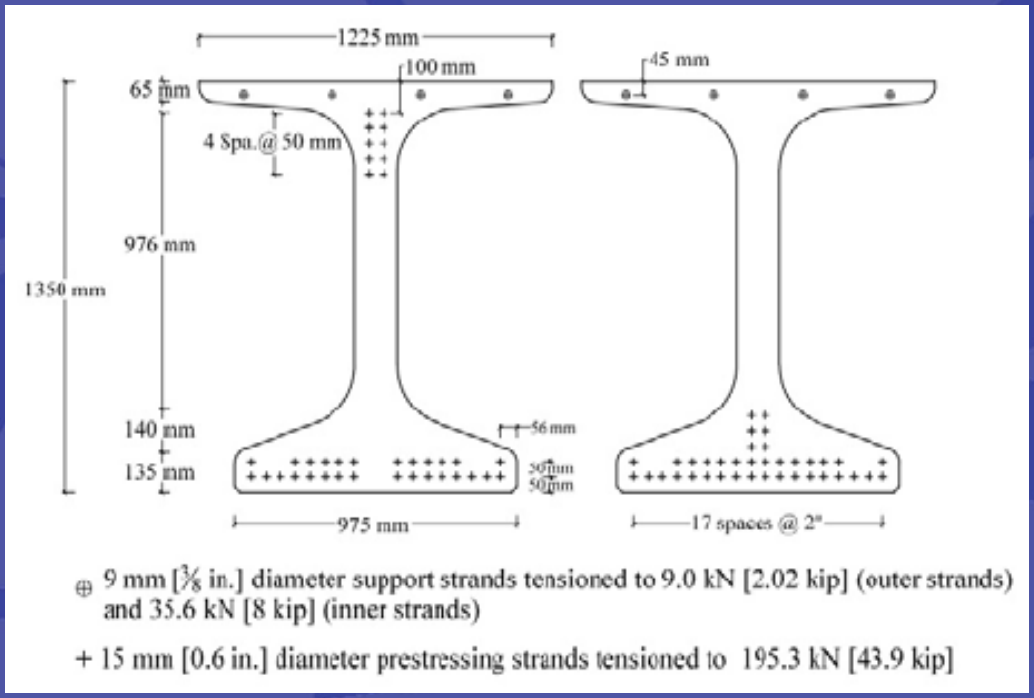
- The plans state that diaphragm concrete should not be placed less than 2 hours ahead of the deck placement and no less than 30 minutes.
- The concrete is placed in advance so that any settlement of the concrete in the diaphragm can occur.
- It cannot be placed too far in advance because you need the concrete to be fluid so the girders can rotate.
- This is also why a minimum pour rate is important. If you don't maintain a good pour rate the diaphragm concrete will begin to set before full deflection of the girders occur. An approved retarder must be used to delay the set by at least 2.5 hours.

- Now that you know what the requirements are why are they important.
- First lets look at what happens to the girders when the concrete deck load is placed.
- The girders at the ends will rotate.
- If the diaphragm concrete is set the girder is locked in and cannot rotate.





- The locked in girders will distribute loading through the girders differently than if it were allowed to rotate.
- If they are locked in the top of the girders will be put in tension instead of compression.
- As shown in the diagram there is very little rebar in the top flange. Rebar is utilized to take the tension loading since concrete is very weak in tension.
- Therefore if put in tension the girders will not perform as intended.

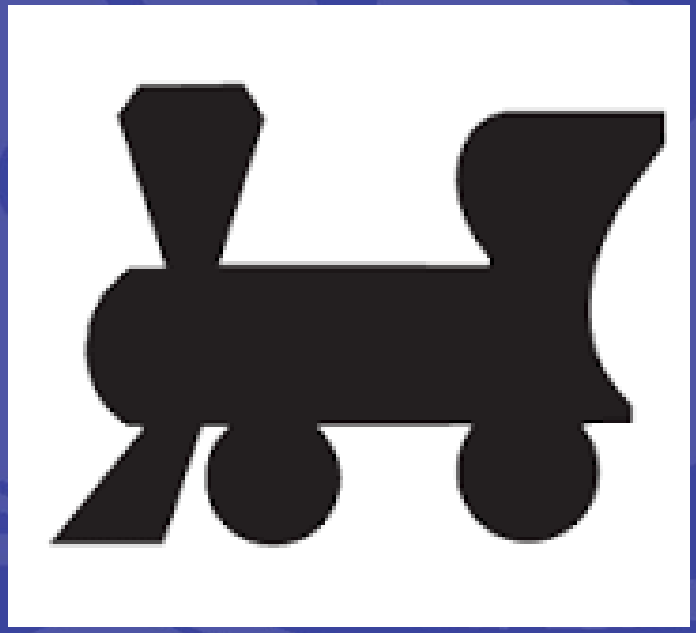


- It is important to remember to never place diaphragm concrete more than one diaphragm in advance of the deck pour. In the event of a breakdown or other delay in the pour the diaphragm concrete will set and lock the girders in before deflection. The only remediation will be to completely remove all of the diaphragm concrete! It is also important to be aware of where the plans allow any transverse joints can be placed. These emergency header locations should be reviewed before the deck placement in case they need to be utilized.

BNSF Sign and Seal Requirement

- Still no agreement.
- MoDOT is placing a pay item for known requirements.

Railroad Issues



Latex Overlays and Diamond Grinding

- Latex overlays inherently tend to have a rougher ride than conventional concrete.
- MoDOT is placing a JSP on some projects where there is a need to assure a good riding bridge surface.
- This JSP will have a line item for diamond grinding. However it will be stated in the JSP that it may be under-run if there is an acceptable smoothness at the discretion of the Resident Engineer.

Steel Price index & Tariffs

- While steel prices have risen they are stable and no index will be implemented.

Buy America

- “Minor usage” of foreign steel, iron, or coating processes will be permitted, provided the cost of such products does not exceed 1/10 of one percent of the total contract cost or $2,500, whichever is greater.

- Foreign Tie Wire must be counted toward your minor usage allotment. However Maxx has now started using domestic wire in their guns.

Buy America

FHWA's guidance, states “A review of the Congressional Record pages pertaining to this legislation indicate that Congress' primary concern for Section 165 was to protect the domestic steel industry.” Therefore, the determination on when Buy America applies to a manufactured item should keep that in consideration.

The intent is not to create a loophole for products, either. Thus, the term “predominately steel or iron” is used as what qualifies for Buy America. The example given by FHWA in the "policy response" is that of a bridge bearing. It is manufactured and “predominately” steel. Therefore, do not claim it has some rubber gaskets or other minute non-steel components to bypass the Buy America requirement.

Determining the exact amount of steel and iron in a manufactured product is not practical. Additionally, determining the origin of each of the steel and iron components is not feasible. As a rule of thumb, any manufactured item that is composed of approximately 75% steel or iron is a threshold to begin considering Buy America application. Items such as metal cabinets and steel light poles would be predominantly steel and iron and would be subject to the Buy America guidelines. Most routine items such as traffic cameras, light fixtures, electrical components, etc. would contain minor amounts of steel and iron and therefore Buy America requirements do not apply. If you are unsure contact your liaison engineer for guidance.

Mobilization

- MoDOT does not prohibit a contractor from placing over 10% of the contract amount into mobilization.
- However any mobilization amount over 10% will not be paid until the project is accepted for maintenance.
- Mobilization payments are made at 5%,10%, 25% and 50% of the original contract amount.

Piling

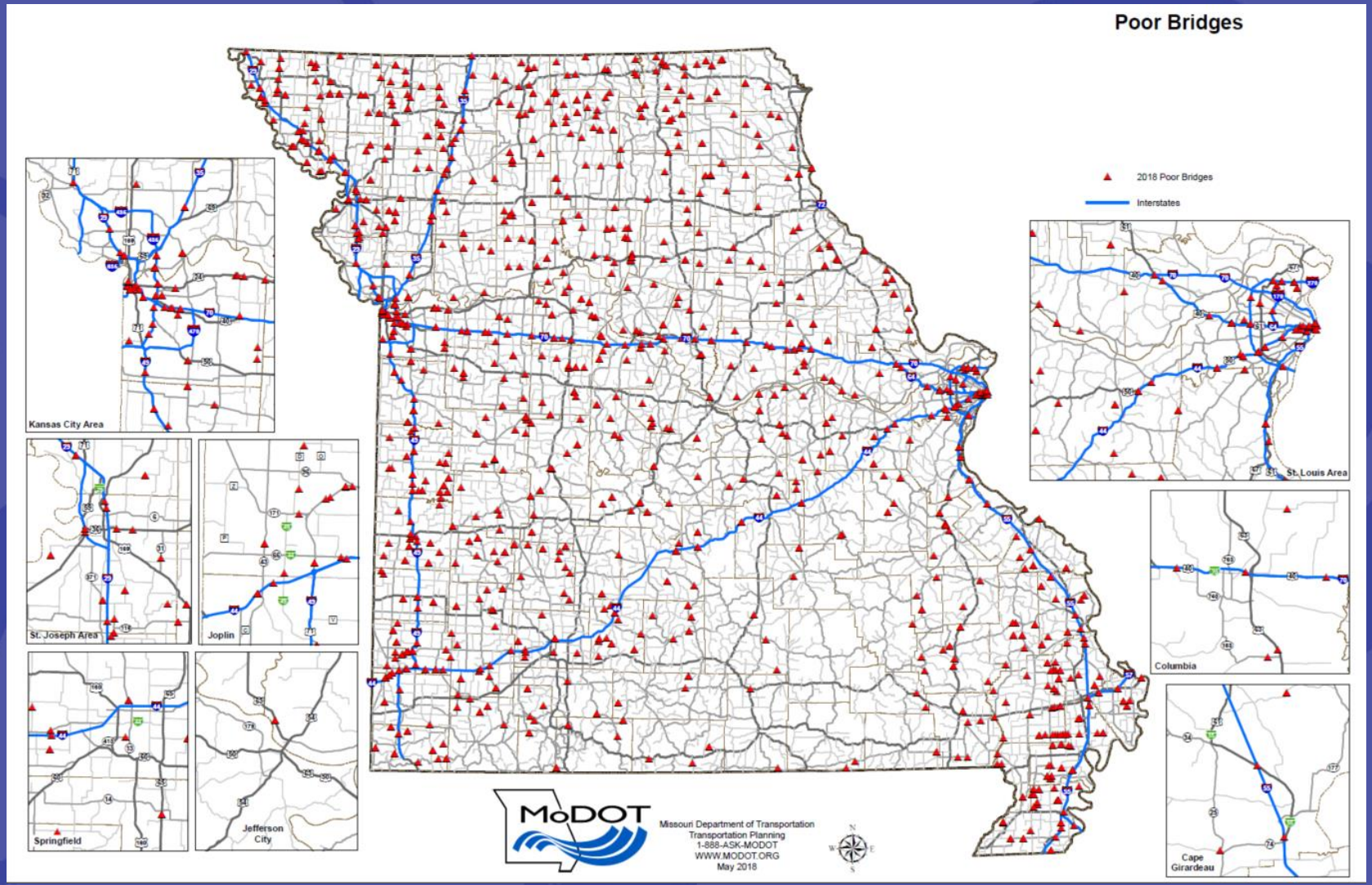
- Most piling is now galvanized.
- Use of HP10x42 is being phased out.
- Vast majority will be HP12x53.
- 14” CIP changing from Grade 2 to 3.
- Maintain your pile hammers.
- Less Dynamic Testing with shallow rock.

Bridge Division Approval

- DO NOT make any structural changes to the Bridge Design without Bridge Division approval.
- If you aren't sure if it is a "structural" change, contact the Bridge Division.

MoDOT Bridge Inventory

922 Poor Bridges



Stoddard Co., Route 91

- 4 poor condition bridges on this route
- All were built in 1933 – 82 years old
- Carry 800 vehicles per day
- Agriculture access to SEMO Port and I-55

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Poor Bridges

- Route 13 over Truman Lake in Henry County
- Getting new overhangs and Barriers

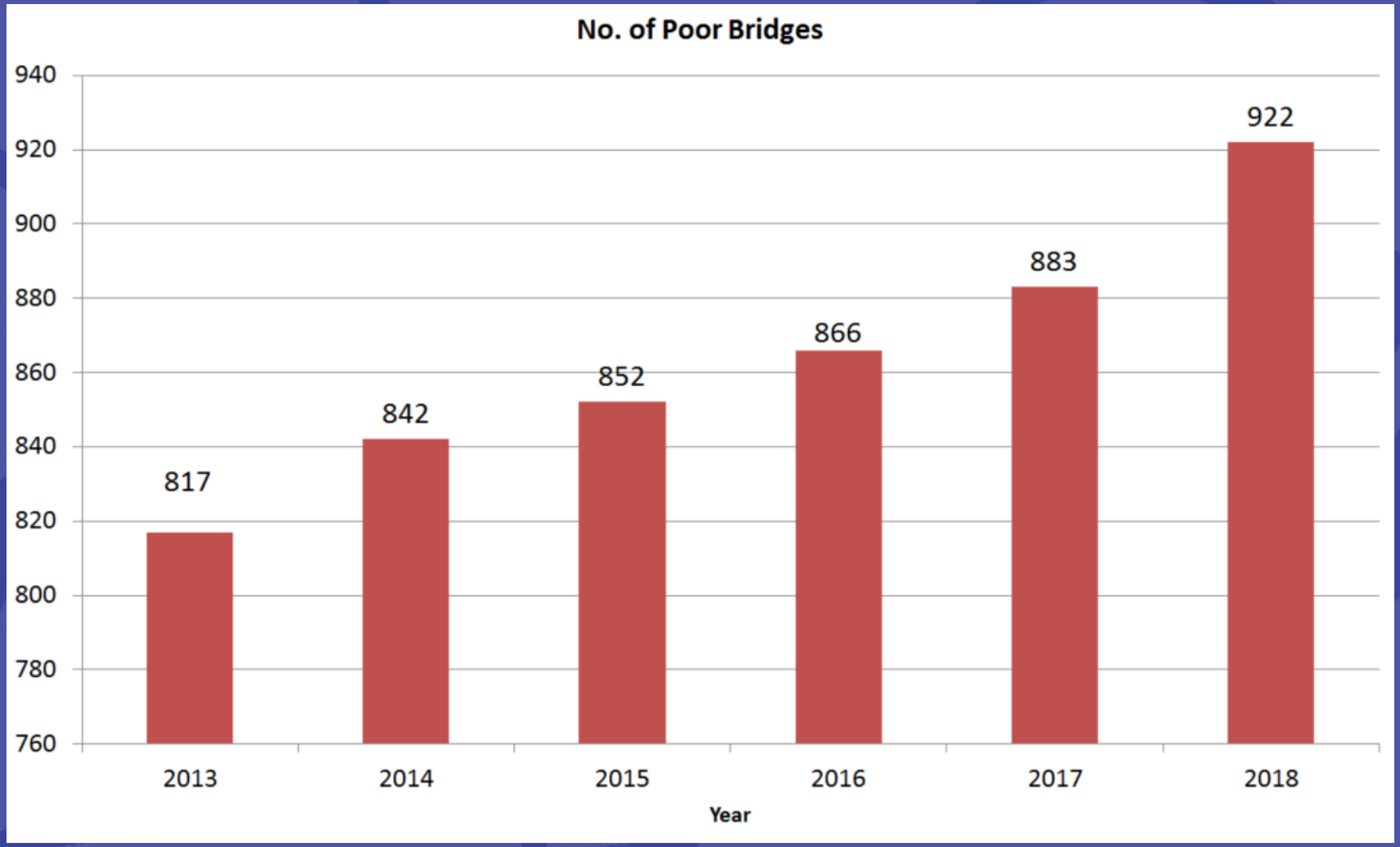
Butler Co., Bus. Route 60

- In Poplar Bluff
- Built in 1934
- ADT of 6,700
- Fracture critical

Poor Bridges

- County Road 113 over Sons Creek in Dade County
- Currently closed to traffic

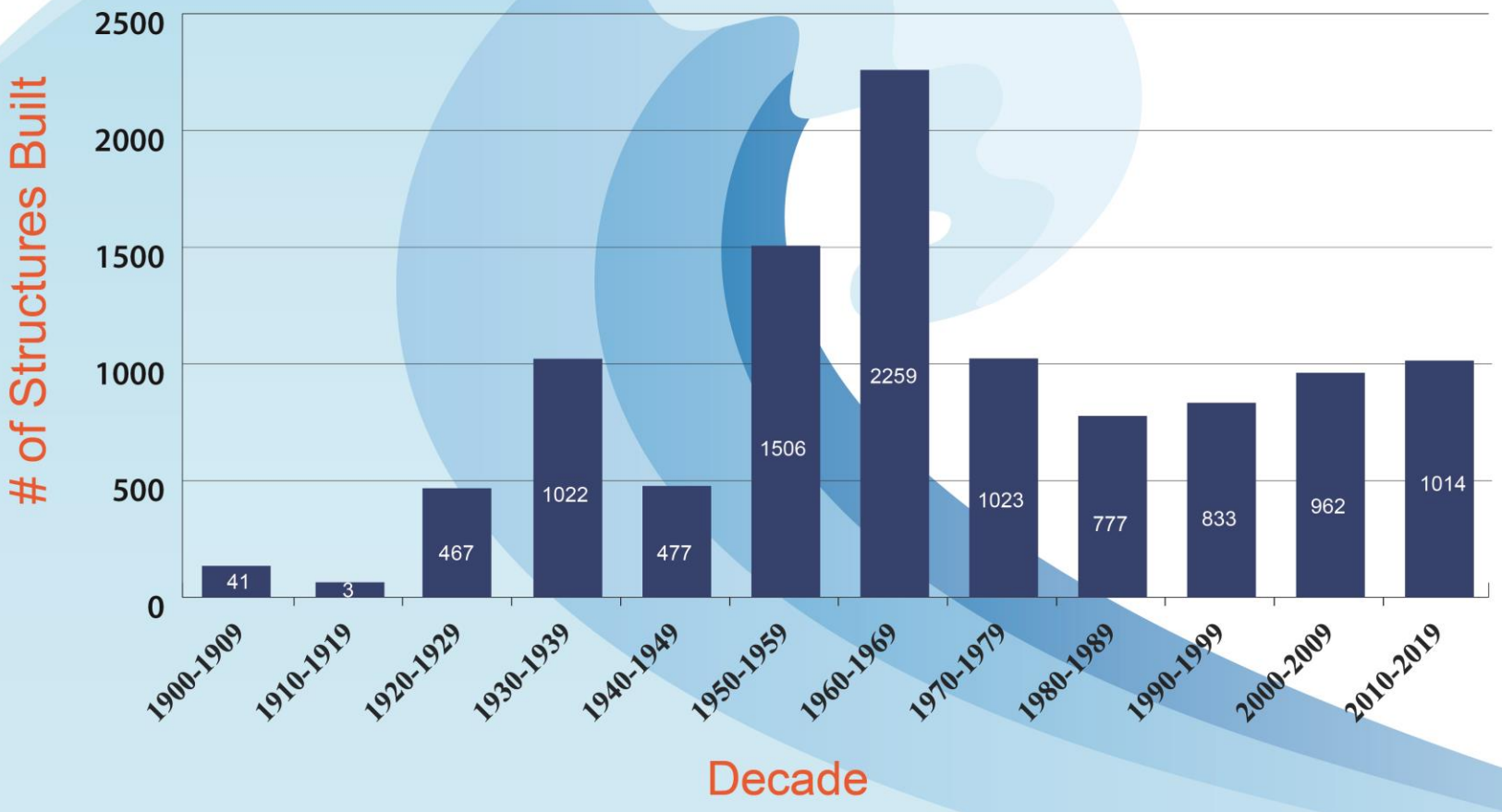
922 Poor Bridges



Poor Bridges

- We spent about $400 million on Bridges over the last two years.
- Why is the number of Poor bridges still increasing?

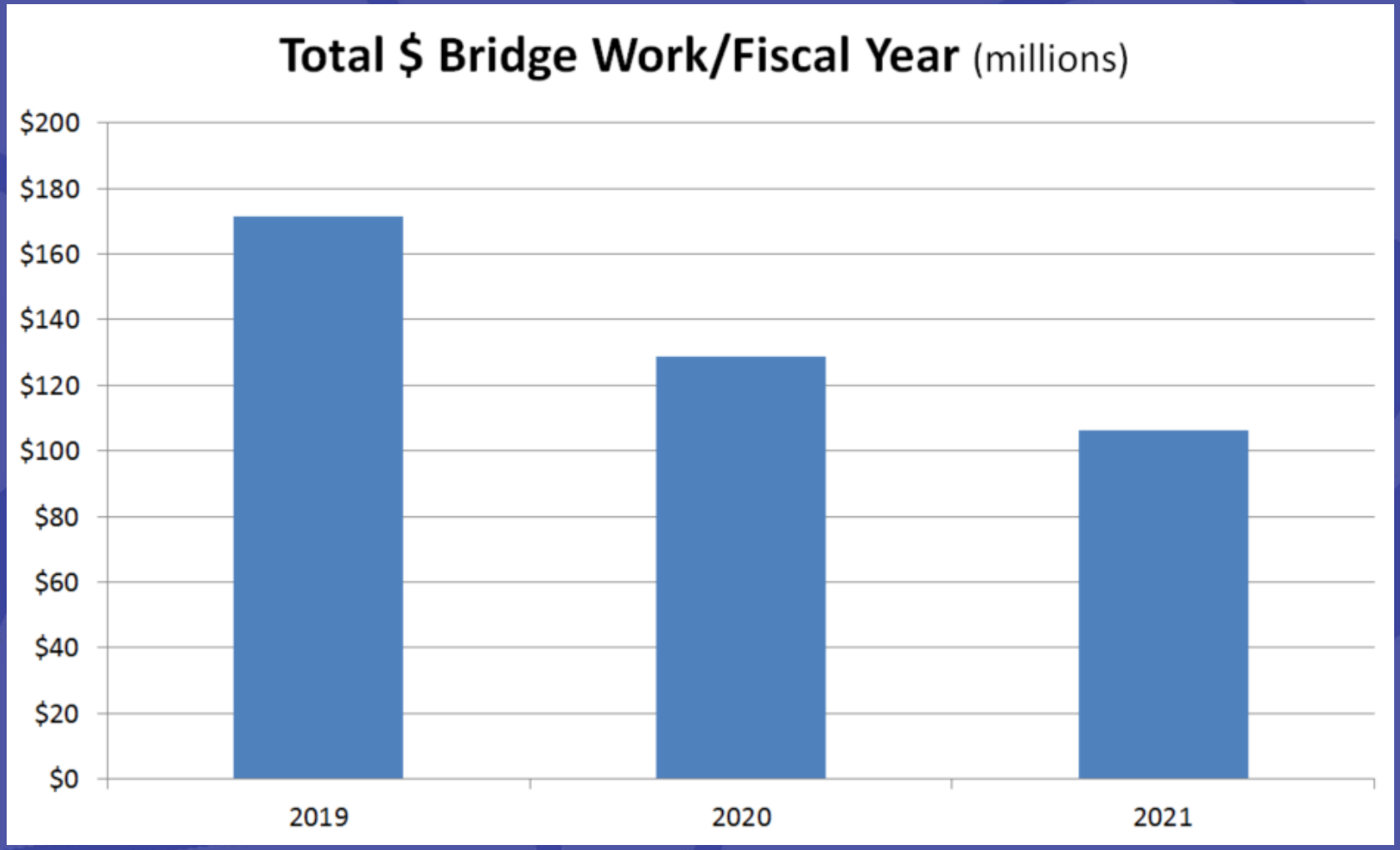
Distribution by Decade



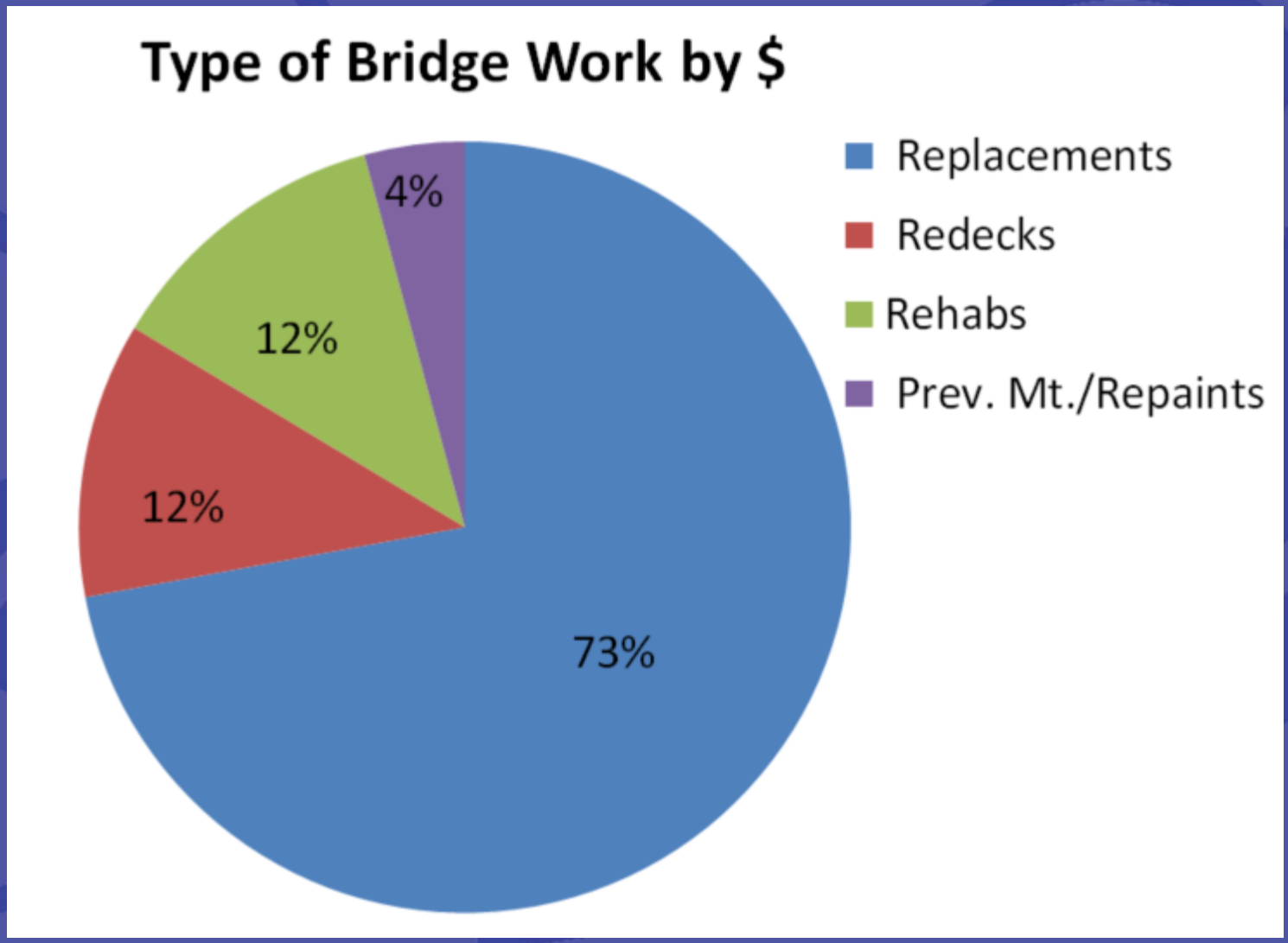
About 60% of our bridges are older than their intended useful life of 50 years (those built prior to 1969).

Based on 2018 NBI Data

Bridge Work in STIP



Bridge Work in STIP



Bridge Program

Bridge Work is Typically 25% of the Construction Program:

- 25% of $900 million is $225 million
- We can produce $50 million in plans per year in-house
- Need to outsource $175 million in plans per year

What's on the Bridge Horizon?

Bridge Cost Review

- We continue to do less steel bridges compared to prestressed.
- MoDOT wants both steel and prestressed to be competitive.
- Reviewing 10 years of letting information.
- With our turnover, several engineers lack experience designing steel bridges.
- Looking for feedback from contractors.

MASH Bridge Barriers

- By December 31, 2019 all bridge barriers constructed on NHS routes must meet the new MASH (Manual for Assessing Safety Hardware) standards.

- Our “go to” bridge barrier will likely be 42” tall, single slope and 12” wide at the base.

- We’ll need a shorter one for sight distance problem areas.

Single Span Bridge Standards

- More and more single span bridges.
- Less complicated than multi-span.
- How many designs would it take to cover 80%?
- Would include steel and prestressed concrete.

Missouri Bridge Conference

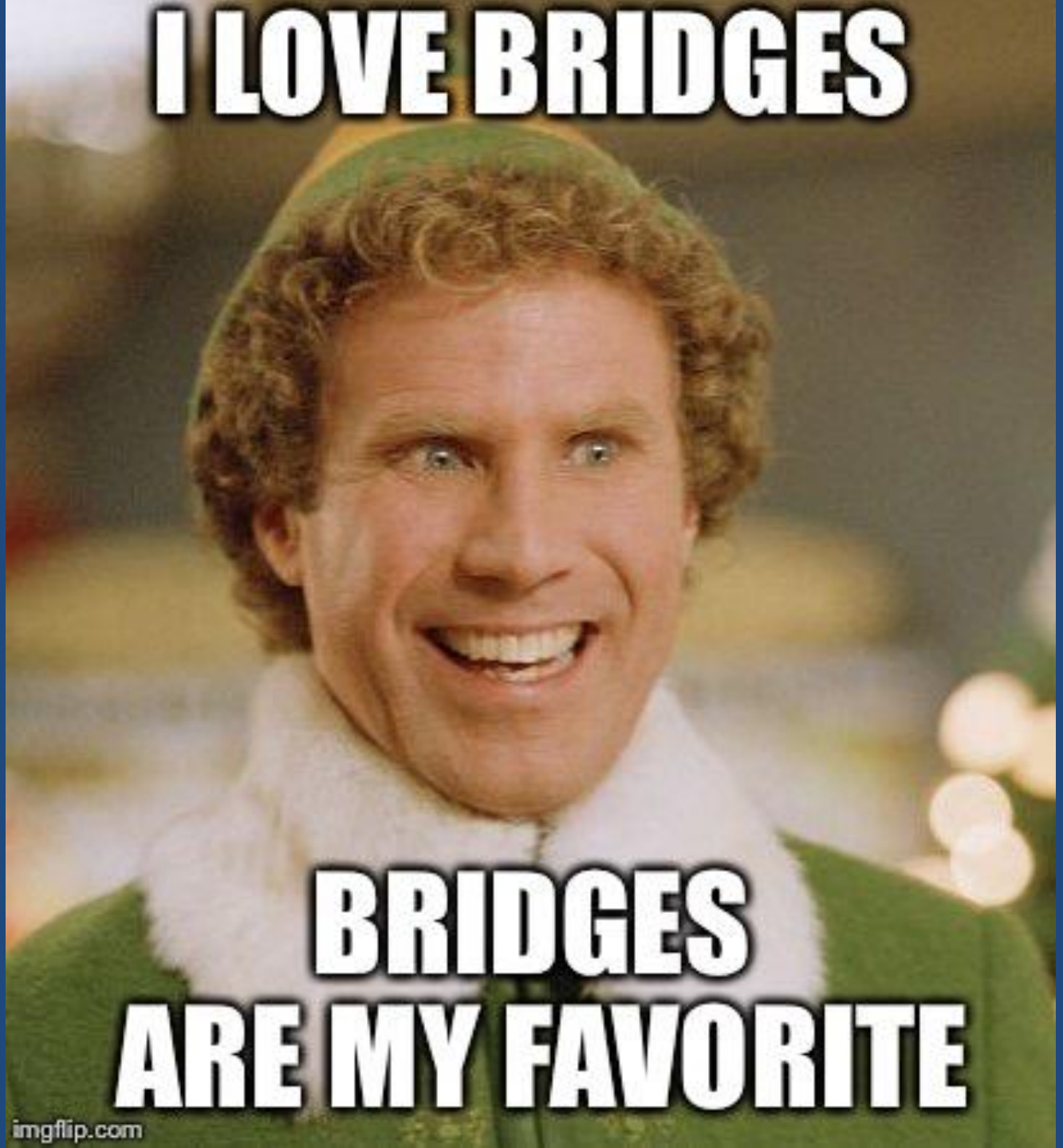
- Held every other year (odd years).
- May 22, 2019.
- Hilton Garden Inn in Columbia.
- Looking for topics/ideas.
- Encourage contractors to attend and present.

Annual AASHTO Bridge Meeting

- Held in a different state each year.
- Determines bridge design and construction specifications.
- 4 days/600 people.
- Missouri will host June 1 – 4, 2020.
- Branson Convention Center.

Sales Pitch for AGC Bridge Committee

- Meet about 3 times per year in Jefferson City.
- Great forum for letting MoDOT know what is and isn't working.
- Showcase innovation and best practices.
- Big "Thank You" to the individuals and companies that participate.


I LOVE BRIDGES
BRIDGES
ARE MY FAVORITE
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Questions?

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