

South Carolina Department of Transportation

Engineering Directive

Directive Number: ED-80 **Effective:** November 22, 2021

Subject: Closed and Load Restricted Bridge Project Prioritization Process for Primary Routes

References: Section 57-1-370 of South Carolina Code of Laws, 1976 as amended; S.C. Code of Regulations 63-10, as amended

Primary Department: Maintenance

In 2007, the South Carolina General Assembly enacted Act 114. One of the landmark items in Act 114 was the requirement that the South Carolina Department of Transportation (SCDOT) establish a project prioritization process. In 2016, the General Assembly enacted Act 275. Act 275 eliminated some of Act 114's requirements but it retained the requirement for project prioritization. This requirement is codified in Section 57-1-370 of the South Carolina Code of Laws, 1976, as amended. Additional detail on the process is found in S.C. Code of Regulations 63-10, as amended.

This engineering directive details the process for ranking **bridge needs for primary routes** using objective and quantifiable criteria.

SCDOT has approximately 8,500 state owned bridges. Bridges will be ranked on a statewide priority basis for the three route systems: interstate, primary, and secondary. If a bridge is closed to traffic, an evaluation will be performed to determine the need to restore traffic. If restoration of traffic is required, then the closed bridge will be prioritized over other ranked bridges for that route system.

The following **relevant** criteria and associated weightings will be used when calculating the scores to rank bridge candidates on a scale of 0 to 100 points. The higher the point value a bridge receives, the higher the priority for replacement or rehabilitation. An initial candidate list will be generated using a scale of 0 to 90 points, not to include local significance. Details specifying how to determine points for the initial candidate list are provided in appendix A of this directive.

- **Average Daily Truck Traffic (ADTT) (20% weight)** – ADTT is the percentage of Average Daily Traffic that is truck traffic, converted to truck volume.
- **Load Rating Factor (20% weight)** – This criterion is a numerical representation of the bridge's ability to adequately carry legal loads based on the design and condition of the bridge. The load rating factor is an indicator of the need to post the bridge to restrict the loads.
- **Condition (20% weight)** – This criterion is a composite score based on the three major components of a bridge: deck, superstructure, and substructure. Deck, superstructure, and substructure score is based on the most recent bridge inspection. For bridge length

culverts, this score is based on the condition of the culvert as indicated in the most recent inspection.

- **Average Daily Traffic (ADT) (10% weight)** – This criterion is a score based on the average traffic volume per day, including trucks.
- **Average Daily Traffic (ADT) and Detour Length (10% weight)** – This criterion is a composite score based on the average traffic volume per day, including trucks and the additional distance required for travel if the bridge is closed or load restricted.
- **Evacuation Route (5% weight)** – Routes that are officially designated as evacuation routes.
- **Freight Network Route (5% weight)** – Routes that are officially designated as a part of the freight network.

Once the bridge candidates have been identified, bridges will be sorted by engineering district and sent to the District Engineering Administrators for the completion of the local significance criterion, which will be worth 0 to 10 points.

- **Local Significance (10% weight)** – Local significance is a value determined by the district based on the significance of the structure to the local community and the impacts to local mobility. This criterion should take into account the district repair feasibility, emergency services need, commercial impacts, school impacts, and economic development impacts.

Bridges will then be ranked from highest total score to the lowest total score.

The following Act 114 criteria were considered but deemed **not relevant** as they relate to the bridge program category priority list, as they do not support the **purpose and need** of this program category.

- **Financial Viability** – Not relevant as part of the prioritization process since rehabilitation and replacement are normal steps in the life cycle of a bridge. Replacement cost is considered when determining the type of replacement structure, but not in the ranking process.
- **Pavement Quality Index (PQI)** – Not relevant as part of the prioritization process since PQI is not calculated for, nor applicable to bridge decks.
- **Environmental Impact** – Not relevant as part of the prioritization process. The environmental permitting process is a part of every bridge replacement project and may have a large impact on the time it takes to develop the project, but it is not used to prioritize bridge replacements.
- **Alternative Transportation Solutions** – Not relevant as part of the bridge prioritization process. There are no viable alternative transportation solutions for bridges.
- **Consistency with Local Land Use Plans** – Not relevant to the prioritization process since this program category consists of the rehabilitation and replacement of existing bridge structures.

All data used for project prioritization will be kept on file as required by Departmental Directive 51 and SCDOT's record retention schedules.

Recommended by: Andrew T. Leaphart, P.E.
Chief Engineer for Operations

Approved by: Leland Colvin, P.E.
Deputy Secretary for Engineering

History: Issued on November 22, 2021

APPENDIX A
FOR ENGINEERING DIRECTIVE 80

Bridge Ranking Criteria

Total Available Points			100
Category	Criteria		Points
ADTT	Lower Range	Upper Range	Score
ADTT>400		400.00	20
>200ADTT<=400	200.00	400.00	15
>100 ADTT<=200	100.00	200.00	10
>50ADTT<=100	50.00	100.00	5
ADTT<=50	0.00	50.00	0
Load Rating			
OPR >= 1.0		1.00	0
0.90=<OPR<1.0	0.90	1.00	2.5
0.80=<OPR<0.90	0.80	0.90	7.5
0.60=<OPR<0.80	0.60	0.80	12.5
0.30=<OPR<0.61	0.30	0.61	17.5
OPR<0.3	0.00	0.30	20
ADT			
ADTT>1250		1250.00	10
>750ADTT<=1250	750.00	1250.00	7.5
>250 ADTT<=750	250.00	750.00	5
>100ADTT<=250	100.00	250.00	2.5
ADTT<=100	0.00	100.00	0
Deck Condition			
Deck>=6		6.00	0
Deck=5		5.00	2.5
Deck<=4		4.00	5
Superstructure Condition			
Super>=6		6.00	0
Super=5		5.00	5
Super<=4		4.00	7.5
Substructure Condition			
Sub>=6		6.00	0
Sub=5		5.00	5
Sub<=4		4.00	7.5
Culvert Condition			
Culvert>=6		6	0
Culvert=5		5	5
Culvert=4		4	7.5
Culvert<=3		3	10
District/BMO Input			10
Freight Network			
Yes		Yes	5
No		No	0
Evacuation Route			
Yes		Yes	5
No		No	0
Detour Length/ADT Total			10

OR

Detour Length

		2.5	5	7.5	10	
ADT	250	0.0000	1.2500	2.5000	3.7500	5.0000
	750	1.2500	2.5000	3.7500	5.0000	6.2500
	2500	2.5000	3.7500	5.0000	6.2500	7.5000
	8800	3.7500	5.0000	6.2500	7.5000	8.7500
		5.0000	6.2500	7.5000	8.7500	10.0000