OKLAHOMA Transportation

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Bridge Data and Selection Criteria for Bridge Reconstruction Using "Preserving and Advancing County Transportation" (PACT) Funding per HB 2758 (2025)

Engineering Report

Prepared by

Oklahoma Department of Transportation

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OKLAHOMA Transportation

"The mission of the Oklahoma Department of Transportation is to provide a safe, economical, and effective transportation network for the people, commerce and communities of Oklahoma."

Contents

SUMMARY

House Bill 2758 of the 2025 Regular Session (HB 2758) creates the "Preserving and Advancing County Transportation Fund" (PACT Fund). A third of the PACT Fund is set aside for the reconstruction of county bridges on major collector routes. Bridge projects are to be submitted to ODOT and evaluated for criteria including project innovation and readiness, bridge essentiality for public use, and bridge condition, safety and functionality.

The criteria set forth in HB 2758 can be organized into three categories – eligibility, bridge scores, and priority multipliers. Projects must reconstruct county bridges[1] on roads classified as major collectors to be considered eligible. Inspection and inventory data for the existing bridge related to structural condition and capacity, serviceability, and traffic safety features can be used to create a numerical bridge score. Priority is emphasized in the legislation by requiring consideration of project innovation, the bridge being ranked "structurally deficient", and factors related to essentiality for public use such as traffic counts, detour length and school bus routes.

The following equation proposes a numerical evaluation of projects by considering the benefits from the proposal and additional multipliers for priority as given in HB 2758.

$$Project\ Score = Bridge\ Area \times Innovation\ Multiplier \times Priority\ Multipliers \times Benefit$$

The benefit of a project is determined by comparing the proposed work to the inspection data of the existing bridge:

$$Benefit = Bridge\ Score_{After} - Bridge\ Score_{Before}$$

and

$$Bridge\ Score = Structure \times 70\% + Functional \times 25\% + Traffic\ Safety \times 5\%$$

Where:

$$Structure = Bridge\ Score\ for\ Structural\ Adequacy\ and\ Safety$$
$$Functional = Bridge\ Score\ for\ Serviceability\ and\ Functional\ Obsolescence$$
$$Traffic = Bridge\ Score\ for\ Traffic\ Safety\ Features$$

[1] The term "county bridges" in this paper includes bridge structures owned or maintained by the counties.

1 Categorizing PACT Funding Criteria

The criteria for bridge project funding can be organized into three categories: basic eligibility, bridge score, and priority multipliers.

Basic Eligibility – Yes/No baseline criteria for whether a project will be considered:

a) Is the project located on a major collector route as defined in Sec. 654 of Title 69 of the Oklahoma State Statutes?

Bridge Score – a 0 to 100 score based on the condition and functionality of the bridge. A perfect bridge would have a score of 100. Lower scores indicate that a replacement project can have a greater benefit. For example, replacing a bridge with a score of 50 is more beneficial than replacing a bridge with a score of 95, other considerations being equal. Factors considered in the bridge score:

a) Structural Adequacy and Safety – Based on the condition and load carrying capacity of the bridge
    i) Condition – ratings for deck, superstructure, substructure or culvert
    ii) Capacity – Load-rating / posting
b) Serviceability and Functional Obsolescence – related to the function of the bridge, particularly in relation to geometry
    i) Approach alignment
    ii) Deck width compared to the number of lanes and traffic count
    iii) Vertical clearances over and under the bridge
c) Traffic Safety
    i) Rail ratings

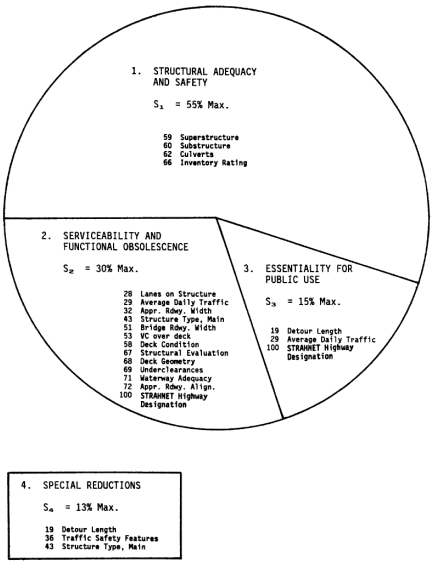
Priority Multipliers – Related to factors not changed by a project (such as detour length) or special considerations in HB 2758 (such as innovation or school bus routes)

a) Ranking as “Structurally Deficient”
b) Innovations

c) ADT
d) School bus routes
e) Detour Length

2 Origins of the Language

Many of the criteria for bridge projects to receive PACT funds as listed in House Bill 2758 evidently have their origins in the "sufficiency rating" according to the 1995 *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*, with a few additional considerations such as project readiness and innovation. Figure 1 compares the language used in the sufficiency rating and HB 2758.



Sufficiency Rating Data

2. One-third (1/3) of the monies deposited to the credit of the PACT Fund shall be used as necessary for the reconstruction of county bridges on the portion of the county highway system defined as major collector routes in accordance with the provisions of Section 654 of Title 69 of the Oklahoma Statutes. Prior to any funds for such projects being allocated, the counties shall submit the proposed projects to the Department of Transportation, which shall evaluate and confirm whether the proposed projects are in accordance with the criteria provided for in this subsection. Bridges proposed for reconstruction will be generally evaluated based on the state of project innovation, readiness, structural

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adequacy, safety, serviceability, functional obsolescence, essentiality for public use, structural deficiency ranking as captured in the most recent ODOT Bridge Summary Report at the time of submission, and special reductions for characteristics such as detour length, traffic safety features, and current school bus routes. Upon confirmation by the Department of Transportation that a proposed project is in accordance with the criteria provided for in this subsection, funds shall be allocated to the county for use in such project.

House Bill 2758

Figure 1. Comparing Language of Sufficiency Rating and House Bill 2758

Using the sufficiency rating directly is not possible as it has been removed from federal consideration, some of the data items necessary for calculating the rating will not be collected or stored after 2025 and the bulky calculations necessary to determine the sufficiency rating will not be included in the Bridge Management software being adopted in 2025 to meet new federal regulations for bridge inspections. Nevertheless, this background provides helpful guidance in developing a method for evaluating project proposals. As it is based on data collected and stored in the Bridge

Management system, a data-driven scoring method can reduce the need for subjective evaluation.

The sufficiency rating uses some of the same information in multiple places. For example, the inventory rating is used directly in “Structural Adequacy and Safety” and indirectly in “Serviceability and Functional Obsolescence” as part of the Structural Evaluation. While it’s understandable to say that the ability to carry legal loads is both a matter of safety and of serviceability, a scoring method without redundancies is preferable.

The sufficiency rating incorporates items that a project typically wouldn’t change such as detour length and ADT. As such, current best practices in bridge asset management treat such importance/priority factors as a multiplier for project benefits instead of an evaluation of a bridge’s condition or functionality.

3 Proposed Bridge Score

3.1 Overall

The Bridge Score is on a 0 to 100 scale and based on factors related to structural adequacy and safety, serviceability and functional obsolescence as well as consideration for traffic safety features. The following equation and chart demonstrate the overall score determination is the weighted average of three category scores. Each of the three sub-scores is also on a 0 to 100 scale, and they are factored into the overall score with the following weights.

$$Bridge\ Score = (Structural) \times 70\% + (Functional) \times 25\% + (Traffic\ Safety) \times 5\%$$

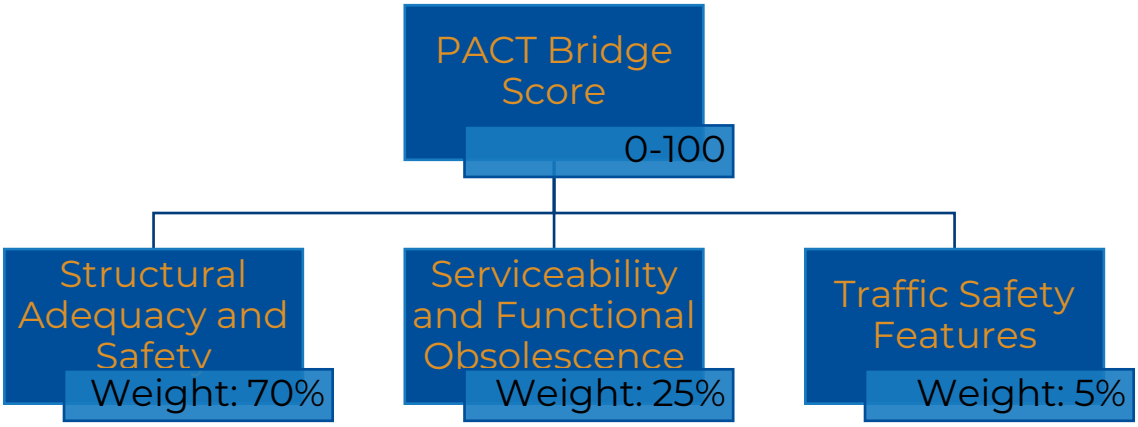


Figure 2. Overall Bridge Score Distribution.

For each data item, the item name will be given from both the 1995 *Coding Guide*[2] and the 2022 *Specifications*[3].

[2] *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges* Report No. FHWA-PD-96-001. (United States Department of Transportation 1995)
[3] *Specifications for the National Bridge Inventory* Publication No. FHWA-HIF-22-017 (United States Department of Transportation 2022)

3.2 Structural Adequacy and Safety

The score for structural adequacy is based on the general condition ratings for the major components of the bridge (deck, superstructure, substructure or culvert) and its capacity to safely carry legal loads.

$$Structural\ Adequacy\ and\ Safety\ Score = Condition\ Score \times 60\% + Capacity\ Score \times 40\%$$

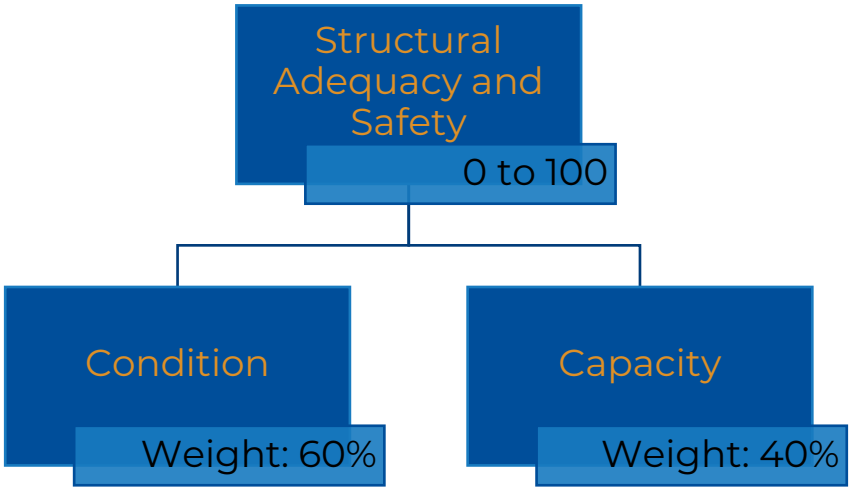


Figure 3. Structural Adequacy and Safety Score Distribution.

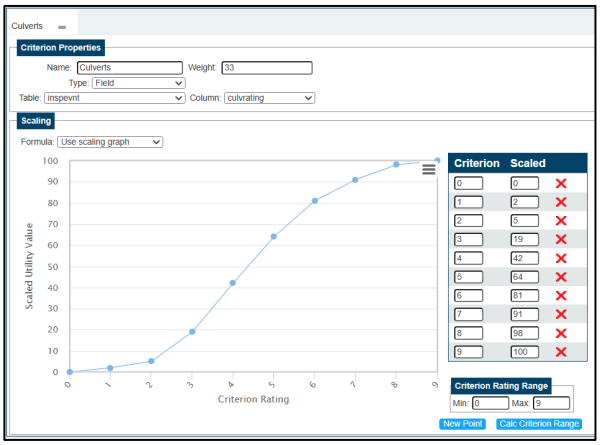
3.2.1 *Structural Condition Score*

The condition score is based on the General Condition Ratings for Deck, Superstructure and Substructure or Culvert.

Data items:

	SNBI Item	NBI Item
▪ **Deck Condition Rating**	**B.C.01**	**Item 58**
▪ **Superstructure Condition Rating**	**B.C.02**	**Item 59**
▪ **Substructure Condition Rating**	**B.C.03**	**Item 60**
or		
▪ **Culvert Condition Rating**	**B.C.04**	**Item 62**

Each of these data items is scored 0 to 9, with 9 being the best and representing a bridge in perfect condition. The scaled score for a perfect bridge is 100%. Figure 4 shows the scoring for the culvert rating data item, which is typical for all four general condition rating items.



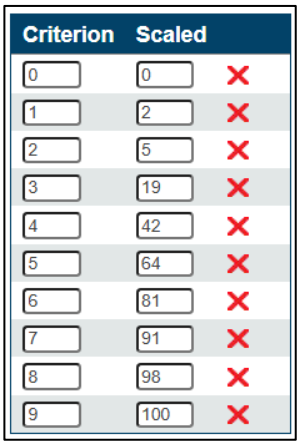


Figure 4. NBI Condition Rating to Scaled Scoring.

The lowest score from the superstructure, substructure, deck and culvert rating items determines the structural condition score.

$$Structural\ Condition\ Score = Minimum \begin{vmatrix} Scaled\ Superstructure\ Score \\ Scaled\ Substructure\ Score \\ Scaled\ Deck\ Score \\ Scaled\ Culvert\ Score \end{vmatrix}$$

3.2.2 Structural Capacity Score

The capacity score is 0 or 100 based on the posting status. Permanent bridges which do not require posting are scored 100. All other bridges (temporary bridges, permanent bridges that are posted or need to be) will be scored at 0.

Data items:

	SNBI Item	NBI Item
▪ **Structure Posted**	**B.PS.01**	**Item 41**

$$Posting\ Score = \begin{cases} If\ the\ bridge\ is\ permanent\ and\ not\ posted & 100 \\ Otherwise & 0 \end{cases}$$

3.3 Serviceability and Functional Obsolescence

The score for serviceability and functional obsolescence is based on geometric factors.

$$Serviceability\ Score = Approach \times 25\% + Deck\ Geometry \times 25\% + Overhead \times 25\% + Underclearance \times 25\%$$

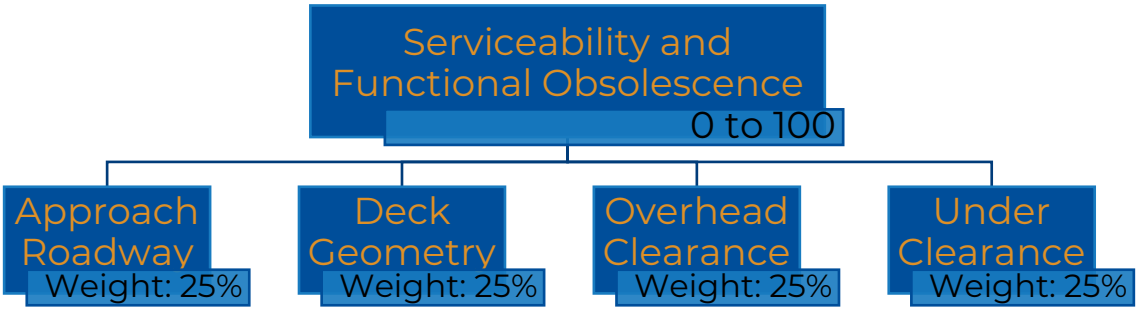


Figure 5. Serviceability and Functional Obsolescence Score Distribution.

3.3.1 Approach Roadway

The approach roadway score is based on the alignment data. This assessment is intended to identify bridges which cause traffic to slow down relative to the roadway.

Data items

	SNBI Item	NBI Item
▪ **Approach Roadway Alignment**	**B.AP.01**	**Item 72**

Table 1. Approach Roadway Scoring.

1995 NBIS	>= 8	4-7	<= 3
2022 SNBI	"Good" No speed difference	"Fair" Noticeably Different	"Poor" Substantially Different
Score	**100**	**50**	**0**

3.3.2 Traveled Way Width

Narrow bridges present a functionality and safety concern. The width score is based on determining a minimum width using data for the ADT and number of lanes carried over the structure and comparing the actual width to that minimum. For structures under fill, the minimum value of the approach roadway width and structure deck width (if available) is used for evaluation and scoring.

Data items

	SNBI Item	NBI Item
▪ **ADT**	**B.H.09**	**Item 29**
▪ **Lanes**	**B.H.08**	**Item 28**
▪ **Bridge Roadway Width**	**B.G.06**	**Item 51**
▪ **Structure Type**	**B.SP.01 or 05**	**Item 43**

Oklahoma Statutes and the County Design Standards set an absolute minimum width of 24 feet for County Bridges.[4,5]

The following criteria are based on traveled way width found in the County Bridge Standards. The score is 100 for structures with traveled way widths equal to or greater than the minimum and 0 for structures less than the minimum width.

Table 2. Traveled Way Width Score.

ADT	ADT < 400	400 – 1999	>=2000
Min. Width (ft)	(10)x(Lanes)+4	(11)x(Lanes)+6	(12)x(Lanes)+12
Score	100 or 0	100 or 0	100 or 0

[4] County-built bridges using County Bridge and Road Improvement Funds shall be twenty-four feet or greater. Oklahoma State Statutes §69-662. "Approval of projects – County-built projects."

[5] Chapter 9 "Geometric Design Criteria" in the 2022 County "Design Guidelines Manual" references Section 662 to set a minimum bridge width of 24 feet. Chapter 12 states further that bridge width should take into consideration the approach roadway width and special considerations of the traffic to be carried. Table 6-1 in the County Design Guidelines provides a range of roadway widths for various traffic and design speeds. Table 2 in this report is based on Table 6-1.

3.3.3 Overhead Clearance

The overhead clearance score is 100 when the overhead clearance is sufficient or if there is nothing overhead.

Data items

	SNBI Item	NBI Item
▪ **Overhead Clearance**	**B.H.13 (on)**	**Item 53**

Minimum overhead clearance is 16-9.

Table 3. Overhead Clearance Score.

Overhead Clearance	Equal to or greater than 16’-9”	Less than 16’-9”
Score	100	0

3.3.4 Under Clearance

Clearance for traffic under the bridge is scored 100 for bridges with sufficient under clearance or which do not cross vehicular or rail traffic. The minimum clearances are 16'-9" for bridges over vehicular traffic and 23'-10" for bridges over trains. Bridges without sufficient clearance are scored 0.

	SNBI Item	NBI Item
▪ **Under Clearance**	**B.H.13 (under)**	**Item 54**

For bridges over vehicular traffic, the minimum under clearance is 16'-9"

For bridges over railroads, the minimum under clearance is 23'-10"

Table 4. Under Clearance Score.

Under Clearance	Equal to or greater than Minimum	Less than minimum
Score	100	0

3.4 Traffic Safety Features

The PACT Fund factors include "special reductions for traffic safety features." The reductions in the retired sufficiency rating are based on the rail appraisals. The proposed is a 0 to 100 score for traffic safety features is also based on the traffic rail data.

$$Traffic\ Score = Bridge\ Rail\ \times 80\% + Transition\ Rail \times 10\% + Approach\ Rail \times 10\%$$

Figure 6. Traffic Safety Feature Score Distribution.

	SNBI Item	NBI Item
▪ **Bridge Railing**		**Item 36A**
▪ **Transition Railing Rating**		**Item 36B**
▪ **Approach Railing Rating**		**Item 36C**

Appraisals according to the 1995 Coding Guide have three possibilities:

▪ **0**	**Does not meet current standards**
▪ **1**	**Meets current standards**
▪ **2**	**Not applicable or required**

Where the rail appraisals meet current standards or are not required (codes 1 and 2), the traffic score is 100. Rail appraisals which do not meet current standards (code 0) are scored 0.

4 Priority Multipliers

4.1 Structural Deficiency Ranking

The legislative intent of the fund is to address structurally deficient (SD) bridges on the county system. While non-SD bridges may be considered, a strong preference is given to SD ranked bridges.

$$SD\ Factor = \begin{vmatrix} SD & 5.0 \\ Not\ SD & 1.0 \end{vmatrix}$$

4.2 State of Project Innovation

The PACT Fund requirements give priority to projects with innovations.

$$Innovation\ Factor = \begin{vmatrix} Innovations & 1.5 \\ No\ innovations & 1.0 \end{vmatrix}$$

4.3 Detour Length

Bridges with longer detours receive a priority factor.

$$Detour\ Factor = \begin{vmatrix} Detour\ 2\ miles\ or\ less & 1.0 \\ Detours\ between\ 2\ and\ 10\ miles & 0.0625 \times Detour\ Length\ (miles) + 0.875 \\ Detours\ 10\ miles\ or\ longer & 1.5 \end{vmatrix}$$

4.4 Traffic

Bridges with higher traffic are prioritized.

$$Traffic\ Factor = \begin{vmatrix} ADT\ 100\ or\ less & 1.0 \\ ADT\ between\ 100\ and\ 500 & 0.00125 \times ADT + 0.875 \\ ADT\ 500\ or\ greater & 1.5 \end{vmatrix}$$

4.5 School Bus Route

School Bus Routes are prioritized.

$$Bus\ Factor = \begin{vmatrix} Not\ a\ Current\ or\ Desired\ Bus\ Route & 1.0 \\ Current\ or\ Desired\ Bus\ Route & 1.5 \end{vmatrix}$$

5 PROJECT SCORING

5.1 PROJECT BENEFIT SCORE

A project's "Benefit score" is a product of the bridge's area, innovation and essentiality factors, and the estimated project benefit. The following equations lay out the calculation of the proposed project benefit score, with the essentiality priority multipliers and the bridge score components specified.

$$Project\ Score = Area \times Innovation\ Factor \times F_T \times F_D \times F_B \times Benefit$$

$$Benefit = Bridge\ Score_{After} - Bridge\ Score_{Before}$$

and

$$Bridge\ Score = B_{SAS} \times 70\% + B_{FO} \times 25\% + B_{TS} \times 5\%$$

Where:

$Area = Bridge\ Area\ (square\ feet)$
$F_T = Priority\ factor\ based\ on\ ADT$
$F_D = Priority\ factor\ based\ on\ detour\ length\ (miles)$
$F_B = Priority\ factor\ based\ on\ school\ bus\ route$
$B_{SAS} = Bridge\ score\ for\ Structural\ Adequacy\ and\ Safety$
$B_{FO} = Bridge\ score\ for\ Serviceability\ and\ Functional\ Obsolescence$
$B_{TS} = Bridge\ score\ for\ Traffic\ Safety\ Features$

The worse the condition or capacity of an existing bridge, the lower its "before" bridge score will be and therefore the higher the project's potential benefit. Proposed work detailed in the application will specify for each score component (condition, capacity, serviceability and traffic) whether and how the project will improve the bridge. The "after" bridge score is based on evaluation of the proposed work.

Application Illustration

NBI: XX156 – North Road over Clear Mud Creek

General Information

County	Sample County
Contact person	John Sample
Contact title	Sample County Public Works Officer
Contacts phone number	(555) 555-5210
Address	No. 42 County Way Sample City, OK 79999

Bridge Inventory and Inspection Information

NBI	XX156
Local ID	SCM156x3215
Location	2 Miles North of County Way and Justice Lane
Facility Carried	North Road
Feature Intersected	Clear Mud Creek
ADT	100
Detour Length	3.1
Bus Route	Current & Desired
Structure Area	4736 s.f.
Structure Type	Through Truss
Is it SD?	Yes
Is it FO?	No

Project Information

Engineer's Estimate	$1,750,000
Repair Type	Full Replacement
Readiness	Plans ready to construct
Bundled Project?	No
Other Funds	None
Innovations	None

Structural Adequacy and Safety Score

Bridge Condition Data:

Data Item	Condition Rating	Condition Score
Deck Rating	6	81
Superstructure Rating	4	42
Substructure Rating	4	42

The lowest score is 42.:

$$Condition\ Score = 42$$

How will the project impact condition?
The project will completely replace the existing bridge with a new structure.

The bridge is posted, so the capacity score is

$$Capacity\ Score = 0$$

How will the project impact capacity?
The new bridge design will carry legal loads and not require posting.

The before score for safety and structural adequacy is determined to be

$$Structural\ Score_{Before} = (42) \times 60\% + (0) \times 40\% = 25.2$$

The after score for safety and structural adequacy is determined to be

$$Structural\ Score_{After} = (100) \times 60\% + (100) \times 40\% = 100$$

Serviceability and Functional Obsolescence

Geometric Data

Data Item	Data Value	Score
Approach Roadway Alignment	8	100
Lanes	2	
ADT	100	
Width	22 feet	0
Structure Type	Through Truss	
Overhead Clearance	13.3 feet	0
Under Clearance	Over a Creek	100

For the deck width, first find the minimum width

$$Minimum\ Width = max \begin{vmatrix} 24\ ft \\ 10ft * 2Lanes + 4ft = 24ft \end{vmatrix} = 24\ ft$$

Because 22-ft is less than 24 ft, the Deck Geometry score is 0

The vertical clearance overhead is 13.33 ft which is less than 16-ft 9-in, therefore the score for overhead clearance is 0.

The bridge is over a creek, therefore under clearance does not factor into the score.

The serviceability and functional obsolescence score is determined to be

$$Serviceability\ Score_{Before} = (100) \times 25\% + (0) \times 25\% + (0) \times 25\% + 100 \times 25\% = 50$$

How will the project impact functionality and serviceability?
The proposed bridge is a 24-foot wide multiple girder bridge. There will be no truss or overhead issues with the proposed bridge.

$$Serviceability\ Score_{After} = (100) \times 25\% + (100) \times 25\% + (100) \times 25\% + 100 \times 25\% = 100$$

Serviceability and Functional Obsolescence

Railing Appraisal Data

Data Item	Data Value	Score
Bridge Rail Appraisal	0	0
Transition Rail Appraisal	0	0
Approach Rail Appraisal	0	0

The traffic safety score is determined to be:

$$Traffic\ Safety\ Score_{Before} = (0) \times 80\% + (0) \times 10\% + (0) \times 10\% = 0$$

How will the project impact traffic safety features?
The proposed bridge will have modern standard rails and transition.

$$Traffic\ Safety\ Score_{After} = (100) \times 80\% + (100) \times 10\% + (100) \times 10\% = 100$$

Bridge Score

The total bridge score is determined to be:

$$Bridge\ Score_{Before} = (25.2) \times 70\% + (50) \times 25\% + (0) \times 5\% = 30.14$$

$$Bridge\ Score_{After} = (100) \times 70\% + (100) \times 25\% + (100) \times 5\% = 100$$

$$Benefit = 100 - 30.14 = 69.86$$

Essentiality Factors

Data Item	Data Value	Score
ADT	100	1.0
Detour	3.1	1.069
School Bus	Current & Desired	1.5
SD?	SD	5.0

Project Scores

Evaluate the proposal's project score:

$$Project\ Score = Area \times Innovation\ Factor \times F_T \times F_D \times F_B \times F_{SD} \times Benefit$$

$$Project\ Score = (4736\ s.f) \times (1.5) \times (1.0) \times (1.069) \times (1.5) \times (5.0) \times (69.86) = 3{,}978{,}969$$

Dividing the project score by the estimate / funding request:

$$Project\ Score\ to\ Cost\ Ratio = \frac{3{,}978{,}969}{\$1{,}750{,}000} = 2.27$$

RESOURCES

Oklahoma Department of Transportation and the Oklahoma Cooperative Circuit Engineering Districts Board. 2022. "State of Oklahoma County Highway System Design Guidelines Manual 2022."

Oklahoma Statutes. n.d. "§69-662. Approval of projects – County-built projects." *Oklahoma State Statutes - Title 69. Roads, Bridges, and Ferries*. Oklahoma.

United States Department of Transportation. 1995. "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges." Office of Engineering Bridge Division, Federal Highway Administration, Washington, D.C.

United States Department of Transportation. 2022. "Specifications for the National bridge Inventory." Office of Bridges and Structures, Federal Highway Administration, Washington, D.C.