

POLICY AND PROCEDURE

FOR

BRIDGE REHABILITATION AND REPLACEMENT

GOAL – It is the goal of the County of Cole to promote public safety and to enhance the quality of life for all its citizens. The failure or closure of a Bridge can be more disruptive to the traveling public than that of any other roadway element and its effect can be life threatening. Bridges are the single most expensive element within our transportation system; therefore, it is imperative that we develop a systematic program to upgrade these deficient structures if we are to meet our goal.

PURPOSE – To provide a formal written procedure for selecting and programming County bridges for rehabilitation or replacement. To provide a policy which will maximize the use of available federal and local funds for the betterment of our County.

ESTABLISHING PRIORITIES – The establishment of priorities for any Capital Improvement Program is a sensitive, important, and necessary process. Priorities are required because funding is limited and in fact insufficient to meet all our Bridge needs. It is necessary that we establish our priorities by a rational process rather than by subjective judgements. The Missouri Highway and Transportation Department (MHTD) has developed a complete inventory of all Major Bridges (with spans greater than 20 feet) within the State. This inventory will be utilized along with the following factors in establishing priorities for our County bridges:

1. **Traffic Factor** – The average daily traffic (ADT) is a measure of the demand for use of a bridge in its present condition. Thus, traffic volume will be a prime indicator of priorities. It should be noted that a bridge improvement can itself generate traffic.
2. **Route Classification Factor** – Roads can be classified several ways. Functional classification indicates the character of use and purpose. The major types of roadway classifications for Cole County are as follows:
 - a. **Type I – Arterials** – Connect center of population and economic activity with each other and State or Municipal highway systems. Occur at reasonably regular intervals to collect traffic from roads of lesser importance. Carry the relatively heavy corridor traffic movements, either present traffic or potential traffic awaiting proper improvements to the route. Generally have an ADT of 1000 vehicles or greater.
 - b. **Type II – Collectors** – Occur at reasonably regular intervals to collect traffic local roads and channels it to the arterial road system. Serve minor population centers not feasibly served by the arterial route. Generally have ADT of 300 vehicles or greater.

- c. Type III – Local Roads – Provide direct access to the abutting properties. Route is either a dead end, or, if continuous, short and serves areas of low population. Generally have an ADT of 100 vehicles or less.

Functional classification is a very useful factor in establishing priorities because it is an indicator of the relative importance of a route to the overall transportation network. Another route classification, which will be used in establishing priorities, is the school route.

3. Structural Condition Factor – The structural condition of a bridge (LWC or Culvert) is a prime indicator of its ability to safely accommodate both present and projected traffic demands. Bridge failures are a inconvenience to the traveling public at best and can result in the loss of life; Structural Condition will be the major factor in establishing bridge priorities.
4. Flood Hazard Factor – The County recognizes that public safety must be a consideration in establishing priorities for Bridge Improvements. Therefore, the systematic elimination of Flood Hazard Areas (i.e. LOW WATER CROSSINGS) will be an important part of our Bridge Program.
5. Alignment Factor – Roadway Geometrics (horizontal and vertical) is an important safety consideration and will be incorporated in our Priority Index Equation.

Budgeting for improvements will be based on the values established by the Priority Index Equation and as set forth in the County's Five (5) Year Capital Improvements Program.

PRIORITY INDEX EQUATION (PI)

The equation for the priority index is:

$$PI = TF + RCF + SCF + FHF + AF$$

TF = TRAFFIC FACTOR

ADT Range	Traffic Factor (TF)
0-50	0
51-100	2
101-150	4
151 - +	6

RCF = ROUTE CLASSIFICATION FACTOR

(Note! Add 4 points for School Route)

Type I = 2
Type II = 1
Type III = 0

SCF = STRUCTURAL CONDITION FACTOR

Structural Condition	SCF
Very Poor	8
Poor	6
Fair	4
Good	2
Excellent	0

FHF = FLOOD HAZARD FACTOR

Condition	(FHF)
Flooding (High Velocity – No Outlet)	5
Flooding (High Velocity)	4
Flooding (Low Velocity – No Outlet)	3
Flooding (Low Velocity)	2
No Flooding	0

AF = ALIGNMENT FACTOR

Alignment	Alignment Factor (AF)
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Very Poor	4
Poor	3
Fair	2
Narrow	1
Good	0

Other Considerations – The danger of using a mathematical calculation for establishing priorities is that it will be taken too literally. Therefore, other considerations will be taken into account in establishing priorities. They are as follows:

Combination of Sections: There may be significant savings to the County from combining Bridges along the same route into a single project. Additionally, the replacement of only one deficient structure may not provide for the continuity we desire in our system.

Regional Balance: A program which has regional balance is desirable; therefore, balancing expenditures to the maximum extent possible between the Eastern and Western Districts of Cole County will be given fair consideration.

ENGINEERING DESIGN STANDARDS – Each project will be designed by a professional engineer experienced in Bridge Engineering utilizing the following standards:

1. American Association of State Highway and Transportation Officials (AASHTO) Design Criteria.
2. Federal-Aid Highway Off-System Bridge Replacement and Rehabilitation Program. (for all Federal Aid Projects)
3. Design standards for replacing LOW WATER CROSSINGS (vented or non-vented) shall be in accordance with ALL sections of this Policy and Procedure.

RIGHT-OF-WAY ACQUISITION – Due to availability of funds County Policy regarding right-of-way acquisition is as follows:

1. The County is requesting that required right-of-way be donated so that all available funding can be utilized for Bridge Rehabilitation or Replacement.
2. Bridge Projects where property owners have donated the necessary rights-of-way will be given preference in the Bridge Rehabilitation and Replacement Program.

3. On those Bridge Projects that effect large numbers of the traveling public, or where safety factors warrant, the County of Cole does reserve the right to acquire right-of-way in accordance with the Missouri Revised Statutes.

REPLACEMENT OR REHABILITATION – Current funding levels warrants Engineering Economy Analysis be completed for those structures where replacement costs greatly exceed other factors in the priority index equation. The decision to rehabilitate, replace or eliminate a given structure will be based in part upon the findings of each study.

ADMINISTRATIVE REVIEW – The County’s Public Works Department will provide the CITIZEN’S ADVISORY COMMITTEE with a complete priority listing of County Bridges for their review. After thorough consideration of all factors the COMMITTEE will submit its recommendation in writing to the County Commission for their review and approval.

DEVELOPMENT OF FIVE YEAR CAPITAL IMPROVEMENTS PROGRAM – The County Commission will direct the Public Works Department to include their recommendations in a Five (5) Year Capital Improvement Program (CIP). Each year prior to budget hearings the CITIZEN’S ADVISORY COMMITTEE will review the current Capital needs and recommend to the County Commission any modifications required to the Capital Improvements Program.