Coleman Bridge – General Information

The Coleman Bridge is a double swing bridge. Swing bridges have an axis at their center and move by spinning horizontally until the bridge is perpendicular to its previous position, therefore creating two channels through which boats can run, as shown in the photograph below. Swing bridges are rarely built today.

Schematic Diagram of a Typical Center-Pivot Swing Bridge

1. Swing Span (Draw)  
2. Pivot Pier  
3. Rest Pier  
4. Center Bearing  
5. Track  
6. Balance Wheel  
7. Axis of Rotation  
8. Rack  
9. Pinion  
10. End Wedges (Extended)  
11. Distribution Framing  
12. Deflected Position (Wedges Withdrawn)  
13. Live Load Wedges

Approximately 10 years ago a vessel hit one of the piers, causing damage to the submarine cables, which had to be replaced.
### Movable Bridges - Major Projects in 30-Year Plan

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Description</th>
<th>Start Year in 30-Year Plan</th>
<th>Cost (2018 Dollars)</th>
<th>Reason for Importance/Potential Consequences of Inaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Balance Wheel and Center Pivot Rehabilitation</td>
<td>1</td>
<td>$3M</td>
<td>• An unbalanced bridge could lead to permanent damage of operational mechanisms</td>
</tr>
<tr>
<td>2</td>
<td>Electrical Rehabilitation</td>
<td>4</td>
<td>$5M</td>
<td>• Electrical systems are the most vulnerable bridge elements with respect to operational risk</td>
</tr>
<tr>
<td>3</td>
<td>Fender System Rehabilitation</td>
<td>11</td>
<td>$36M</td>
<td>• Risk of vessel impact to piers</td>
</tr>
<tr>
<td>4</td>
<td>Overhaul Hydraulics</td>
<td>15</td>
<td>$2M</td>
<td>• Hydraulic system failures can lead to bridge malfunctions and cause secondary consequences</td>
</tr>
<tr>
<td>5</td>
<td>Lock Rehabilitation</td>
<td>19</td>
<td>$3M</td>
<td>• Lock failure could cause damage to bridge leaves</td>
</tr>
<tr>
<td>6</td>
<td>Mechanical and Electrical Rehabilitation</td>
<td>24</td>
<td>$12M</td>
<td>• Regular rehabilitation required to keep mechanical and electrical systems operational and current</td>
</tr>
</tbody>
</table>

**Coleman Bridge 30-Year Plan Total in 2018 Dollars**  
$61M

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**Project #1 - Balance Wheel and Center Pivot Rehabilitation - Start Year 1 in 30-Year Plan**

An unbalanced bridge could lead to permanent damage of operational mechanisms. This project will include rehabilitation of the balance wheels and center pivots (see photos below)

[Image of South and North Pivot Pier Curved Tracks - failing]
Project #2 – Electrical Rehabilitation - Start Year 4 in 30-Year Plan

Electrical systems are among the most vulnerable to failure on movable bridges, and the Coleman Bridge has an aging electrical supply system that is in need of upgrade.

Project #3 - Fender System – Start Year 11 in 30-Year Plan

The Coleman Bridge has inadequate fender systems. In each year there is a risk of vessel impact that could damage the structure. So a new fender system could be readily justified today. The Department of Defense has expressed its desire that the piers be protected. However, due to a prioritization process that recognizes the limitations on resources, this project has been delayed until the 11th year of the program.

Project #4 – Overhaul Hydraulics - Start Year 15 in 30 Year Plan

Hydraulic system failures can lead to bridge malfunctions and cause secondary consequences.

Project #5 – Lock Rehabilitation - Start Year 19 in 30 Year Plan

Lock failure could cause damage to bridge leaves. This project will rehabilitate the locks and lock guides (see photos)

Project #6 - Mechanical and Electrical Rehabilitation – Year 24 in 30-Year Plan

Regular rehabilitation required to keep mechanical and electrical systems operational and current. This project will provide a rehabilitation of the major components of the electrical and mechanical systems.