

Northern Avenue Bridge Replacement Project

Summary of Alternatives Analysis

| Project Alternative | Pro | Con | Meet Purpose and Need | Decision |
|---|---|--|-----------------------|-------------------------------|
| Project Alternative 1 – No-Action | No immediate impacts to the waterway | <p>Bridge has reached the end of its service life and has been closed to pedestrian and vehicular traffic since 2014.</p> <p>Maintenance costs would continue to increase over time and the various issues associated with the obsolete features would not be addressed.</p> <p>The No Action alternate would likely result in the catastrophic failure of the bridge, causing the structure to collapse into Fort Point Channel.</p> <p>In addition to the safety concerns for people using Fort Point Channel for recreational boating and/ or travel, the US Coast Guard has previously requested to remove the old bridge to avoid potential safety and navigational concerns, and the falling structure would result in direct impacts to marine habitat greater than those that would occur with the benefit of controlled dismantling.</p> | No | Not an acceptable alternative |
| Project Alternative 2 –Removal of Existing Bridge (no new bridge) | Remove dilapidated structure from the waterway | <p>The removal of the existing bridge without the construction of a replacement would likely result adverse impacts on the Fort Point Channel Historical District.</p> <p>Public would not gain access to the waterfront.</p> <p>No additional means of pedestrian access across Fort Point Channel</p> | No | Not an acceptable alternative |
| Project Alternative 3 – Rehabilitate Existing Bridge | Structure would remain in place | <p>Cost would be prohibitive as the bridge has reached the end of its service life, and the existing steel superstructure has steel elements that are severely corroded and would require extensive and expensive rehabilitation that would not provide a 75-year design life.</p> <p>Rehabilitation of the bridge would require the replacement of the steel members and portions of members that are deteriorated and/or do not meet the load carrying capacity and re-using certain parts of the truss that meet load criteria.</p> <p>Rehabilitation would include splicing new steel to the existing steel members and reconstruction of the pin jointed connections which is anticipated not to be feasible since this complexity of steel fabrication is not easily performed and locating a fabricator capable of performing the work may not be possible. Certain load carrying members of the existing truss (for example tension only members) will require replacement due to fatigue life considerations.</p> <p>Bridge piers are in a state of disrepair and would require stabilization. The mechanical components that allow the swing bridge to open and close no longer function and would need to be replaced in their entirety.</p> <p>Rehabilitation of the existing bridge would result in temporary environmental impacts due to the placement of barges and/or work platforms, and dredging to repair bridge piers</p> | No | Not an acceptable alternative |
| Project Alternative 4 – Bridge Replacement Using Existing Pier Footings | Permanent and temporary construction related environmental impacts would be similar to a complete bridge replacement. | <p>Constructing a new bridge along a similar horizontal and vertical alignment while using the existing pier footings would not provide a 75-year design life for the new bridge superstructure. The footings are currently 112 years old and would likely require continual inspections and costly maintenance activities throughout the lifespan of the new bridge.</p> <p>The reuse of the existing pier footings is not an acceptable alternative as the cost for conducting the future inspections and maintenance would be prohibitive.</p> | No | Not an acceptable alternative |

| Project Alternative | Pro | Con | Meet Purpose and Need | Decision |
|---|---|---|-----------------------|--|
| <p>Project Alternative 5 – Complete Bridge Replacement (Selected Alternative and LEDPA)</p> | <p>Full bridge replacement results in the removal of three existing piers and the construction of two new piers, thereby reducing the permanent environmental impacts and restoring a portion of the channel bottom.</p> <p>This approach has advantages with respect to the speed with which bridge reconstruction could be accomplished as the demolition of the existing piers and construction of the new piers would happen nearly simultaneously.</p> <p>The faster that the proposed bridge can be completed, the fewer impacts will be realized to the surrounding area. Full replacement of the bridge will provide safe passage over Fort Point Channel</p> | <p>Requires removal of existing structure</p> | <p>Yes</p> | <p>Full replacement of the bridge will provide safe passage of pedestrian and vehicular traffic, fulfilling the requirements of the Purpose and Need</p> |