

and 7. The abatement of these materials would be performed in accordance with appropriate regulations to ensure that there would be no adverse effects such as releases or misdirected wastes. Therefore, this would be considered a minor direct impact.

No new piers would be installed under Alternative 9 and no sediments would be generated. Therefore, there would be no permanent impacts to marine sediments under this alternative.

Impacts related to releases from construction-related equipment and potential to encounter impacted soils and/or groundwater would be the same as Alternative 1. As with all alternatives, new materials would be used as applicable during construction, and standard marine construction BMPs would be implemented wherever feasible to mitigate the potential for suspension of sediments and consequent siltation.

3.11.2.2 Indirect Impacts

No-Action Alternative

There would be no indirect impacts to hazardous materials for the No-Action Alternative.

Action Alternatives

Minor indirect impacts are possible under the Action Alternatives due to the potential amount of construction debris generated. Construction debris would require proper disposal; the movement of contaminated materials could have a minor adverse indirect impact during the transportation, disposal, and management of contaminated media due to the potential for improper handling or misdirection of wastes. This potential effect is proportionate to the amount of waste generated by each alternative. Alternatives 1 and 3 would have the least potential for such effects, whereas Alternatives 6 and 7 would have the most due to the work related to the replacement of GSB Pier 1.

3.11.3 Mitigation

As noted throughout this section, the primary impacts associated with the Action Alternatives is the generation of potentially hazardous building materials. Hazardous materials (asbestos, lead-based paint, PCBs, mercury, etc.) will be inventoried prior to any structural demolition or renovation work in accordance with Section 5.2 of the NHDOT *Standard Specifications for Road and Bridge Construction*. If these hazardous materials are found to be present in the structures, they would be properly abated by a licensed contractor in accordance with state and local regulations and shipped to a receiving facility licensed to handle the specific type of solid waste under the appropriate shipping documents such as manifests.

A Soil Management Plan (SMP) shall be developed in accordance with NHDOT specifications that would be based upon the results of subsurface investigations for the Project. These investigations should be conducted in order to pre-characterize soils that are designated for excavation during construction phases of the Project. A typical SMP outlines standards and procedures for the identification and disposal of contaminated materials that may be encountered during construction. Tracking protocols for contaminated soils will be detailed from the point of excavation to designated testing areas and to the ultimate disposal site.

Furthermore, a Health and Safety Plan shall be developed which provides the minimum health and safety specifications that contractors must meet during construction including requirements for environmental monitoring, personnel protective equipment, site control and security, and training.

The Project would also require excavation of Limited Reuse Soils (LRS), which are soils that are likely (based on "generator knowledge") and/or demonstrated (through laboratory analyses) to contain contaminant concentrations in the range of the NHDOT specific Acceptable Reuse Concentrations. Roadside LRS commonly encountered at NHDOT construction projects include:

- › Soils with elevated concentrations of several polynuclear aromatic hydrocarbons and a few common metals; and
- › Soils with petroleum residue (total petroleum hydrocarbons) related to the normal operation of motor vehicles and asphalt pavement.

The NHDOT has determined that roadside LRS may be encountered in all topsoil within the limits of the existing right-of-way, regardless of its depth. In instances where topsoil is not present, soil from the top of ground to a depth of 6 inches is considered to be LRS. Soils excavated from beyond and/or below the specified LRS limits that do not exhibit visual or olfactory evidence of potential contamination shall not require handling as impacted material.

Contractors will be advised that roadside LRS occurs within the limits of disturbance. The previously mentioned SMP will provide guidance for the identification, handling, storage, reuse, and disposal of LRS soils generated during construction activities.

In the event that PFAS-impacted groundwater is encountered during construction phases, dewatering activities shall be conducted in accordance with applicable NHDES rules and/or Groundwater Management Plans.

The Contractor will develop a Project Operations Plan, which shall specify the Contractor's means and methods for handling and managing LRS, and Contaminated Soil and Groundwater. This will include the implementation of the BMPs described in the SMP. No excavation would take place until the Project Operations Plan has been approved by the NHDOT. In addition, following approval of the Project Operations Plan, the Contractor shall be required to notify the NHDOT's Bureau of Environment at least two weeks prior to beginning excavation.

3.12 Visual Resources

Visual and aesthetic resources include naturally occurring landscape features as well as man-made resources or structures. The anticipated visual and aesthetic impacts of the Project - both beneficial and adverse - are discussed in this section. Both impacts to visual resources and viewers (the population affected by the Project) are considered. The visual resources analysis is consistent with the following list of laws, regulations, guidance and plans pertaining to the protection and enhancement of scenic qualities.

- › Federal-aid Highway Act of 1970
- › FHWA's Guidelines for Visual Impact Assessments of Highway Projects (2015)
- › FHWA's NEPA procedures codified in 23 CFR 771

- › Intermodal Surface Transportation Efficiency Act of 1991
- › Wild and Scenic Rivers Act of 1968
- › National Trails Systems Act of 1968
- › Antiquities Act of 1906
- › Section 106 of the National Historic Preservation Act of 1966⁵⁰
- › Section 4(f) of the USDOT Act of 1966⁵¹
- › Section 6(f) of the Land and Water Conservation Fund (LWCF)
- › City of Dover, New Hampshire Master Plan: 2009 Update to the Recreation Chapter

State public land management programs and plans may contain measures to protect the visual quality of protected areas (e.g., forests and parks, public landscapes, restoration areas, and others). Refer to **Section 3.9, Parks, Recreation and Conservation Land** for information on these protected areas.

3.12.1 Affected Environment

A visual assessment was completed using site photographs and aerial mapping programs. The visual Study Area was identified through these efforts, and includes adjacent areas visible from the GSB, and areas from which the GSB can be seen by viewers, including the Spaulding Turnpike, LBBs, Piscataqua River and Hilton Park. The visual inventory within the Study Area includes existing buildings and infrastructure, visually sensitive resources, as well as the general components that form the basis of all landscapes. The inventory includes:

- › Landscape features - such as topographic features, vegetation, and landscapes such as wetlands and farmlands.
- › Manmade development – such as urban centers, industrial, commercial, institutional and residential areas, and utilities lines.
- › Parks and recreation facilities – including properties protected by Section 4(f) and Section 6(f).
- › Historic and archaeological resources – such as properties protected under Section 106.
- › Other protected or iconic cultural resources – such as scientific or natural areas, scenic byways, routes, and vistas.

This visual impact assessment identifies areas that would be impacted by the alternatives.

3.12.1.1 Visual Resources and Viewshed Overview

The project viewshed is primarily centered around the GSB, LBBs, Piscataqua River and Hilton Park. The GSB center arched truss is highly visible to vehicular traffic traveling northbound or southbound over the LBBs, marine vessels, and viewers in Hilton Park (see **Appendix A, Site Photo 1**). The GSB has a distinctive and aesthetically-pleasing composition of a center arched through truss with deck side trusses. The addition of the LBB in 2011 directly adjacent to the GSB has affected the setting of the GSB, impeding viewsheds to and from the GSB on the east side.

⁵⁰ Visual impacts to historic resources are also discussed in **Section 3.10, Cultural Resources**.

However, the setting on the west side of the GSB, overlooking the Little Bay, Dover Point, and Hilton Park, is largely intact, so while the integrity of setting has been diminished, it has not been eliminated. Subsequent deterioration has affected the physical integrity of the bridge, but the historically significant features of the structure are still evident.

As part of the construction of the new LBB, the north and south approaches to the adjacent GSB were re-routed in 2011. At the south end of the GSB in the Town of Newington, a paved curvilinear path provides access for pedestrians and bicycles between Shattuck Way and the GSB (Site Photo 2). The south approach to the GSB in Newington is an on-grade pedestrian path. The north abutment, located in Hilton Park in the City of Dover, was reconstructed in 2010 along with a new north approach bridge (Site Photo 3). Prior to 2015, pedestrians and bicyclists traveling on the GSB had open, picturesque views of the Little Bay to the west (Site Photo 4). In 2015, chain link fencing was added to the center of the bridge along the entire length, as a safety measure to keep pedestrians away from the outside deck extremes, which impeded the view to the west. The subsequent closure of the bridge in September 2018 eliminated the views of the Little Bay to the west. However, as previously discussed in **Section 2.4**, NHDOT established a temporary detour along northbound LBB in August 2019. For pedestrians using the temporary detour over the northbound LBB, the lanes of traffic of the southbound bridge and the GSB block the view of Little Bay to the west but provide open views of the Piscataqua River and Hilton Park to the east.

3.12.1.2 Views from the Highway

Roadway travelers heading north on the Spaulding Turnpike (NH 16) from Newington into Dover get a very picturesque and panoramic view of mountains in the distance and the arched GSB and LBBs in the foreground. Roadway travelers have an exceptional view of the broad waters of the Piscataqua River and Hilton Park. In the summer months, the manicured lawns of Hilton Park and its pier, as well as boats in the river, provide a very scenic viewscape. Crossing over the northbound LBB, the lanes of traffic of the southbound bridge and the GSB partially block the view of Little Bay to the west. In this area of the City of Dover, the main visual components include suburban residences, small pockets of forest, open space, and shoreline. The Spaulding Turnpike (NH 16) and associated approach roadways and ramp infrastructure, noise barriers, visually characterize this area for both roadway travelers and other viewers, such as residents or boaters.

Roadway travelers heading south on the Spaulding Turnpike (NH 16) from Dover into Newington can see the GSB center arch once they are within a half mile of the GSB. The Spaulding Turnpike (NH 16) and associated ramp infrastructure, also visually characterize this area. Sound walls limit roadway travelers' views as they drive south. Crossing over the southbound LBB, roadway travelers have relatively unobstructed views of Little Bay and the GSB center arched truss to the west. In this area of the Town of Newington, the main visual components include Trickys Cove, shoreline, pockets of forested areas, vegetation, and local roadways. Rockingham Electrical Supply is visible to the east, along with a few other commercial developments. As in Dover, the Spaulding Turnpike (NH 16), and associated approach roadways and ramp infrastructure, also visually characterizes this area for roadway travelers.

⁵¹ For information on Section 4(f) properties, refer to **Chapter 4, Programmatic Section 4(f) Evaluation for the Use of Historic Bridges**.

3.12.1.3 Views from the Water

Marine traffic is prevalent in this coastal area of New Hampshire. Because the GSB crosses the Piscataqua River, marine vessels are allowed to pass under the center arched truss, providing boaters with exceptional views of the GSB structure (Site Photo 6). Boaters traveling east toward the GSB get an unobstructed, picturesque and panoramic view of the entire GSB superstructure and stone masonry piers (Site Photo 7).

3.12.1.4 Views from Hilton Park

In its description of Hilton Park, the *2009 Dover Recreation Master Plan* states that, "There are outstanding views of the Piscataqua River and Little Bay."⁵² In addition to views of these waterways, the entire GSB is visible from the west side of Hilton Park (Site Photo 8). Looking southwest, viewers in Hilton Park also experience exceptional views of marine vessels and Newington's distant shoreline (Site Photo 9). The built features of Hilton Park, including benches, picnic tables, and the pavilion, are described in **Section 3.9, Parks, Recreation and Conservation Land**. The paved access road into the west side of Hilton Park is lined with mature trees and a few shrubs, which provide shade for park users (Site Photo 10).

The visual landscape from the east side of Hilton Park are more centered around unobstructed views of the marine environment and marine vessels, the shoreline of the Piscataqua River, as well as the LBBs and associated roadway infrastructure (Site Photo 11). The top of the GSB center arched truss is barely visible from this side of the 16-acre Hilton Park. As described in **Section 3.9, Parks, Recreation and Conservation Land**, the east side of Hilton Park provides more recreational opportunities for park visitors than the west side of Hilton Park (*i.e.*, boat launch, fishing dock, and play area).

3.12.2 Environmental Consequences

Potential impacts to visual resources were evaluated based on noticeable changes in the physical characteristics of the existing environment, types of project features and construction impacts that are proposed, and whether the Project would complement or contrast with the visual character of the existing environment.

3.12.2.1 Direct Impacts

Potential direct impacts to visual resources and viewers are described in this section. Direct visual impacts, or changes to a visual landscape, may be either temporary or permanent. According to FHWA's *Guidelines for Visual Impact Assessments of Highway Projects*, temporary impacts are those impacts resulting from construction or short-term activities that fall within a period of two years or less. The guidelines also define permanent impacts as those resulting from construction activities lasting for two or more years, the built project, or the operations and maintenance associated with the built project.

⁵² Department of Planning and Community Development. *City of Dover, New Hampshire Master Plan: 2009 Update to the Recreation Chapter*. Accessed from <https://www.dover.nh.gov/government/city-operations/planning/master-plan/index.html>. Accessed on July 19, 2019.

No-Action Alternative

Under the No-Action Alternative, there would be no permanent, noticeable visible changes to visual resources, viewers, or visual quality. The existing physical characteristics and structural components of the GSB would remain unchanged from the bridge's current, deteriorated conditions.⁵³ The GSB would continue to be closed to pedestrians and bicyclists, as it has been since September 2018.

Alternative 1

Under Alternative 1, the existing physical characteristics of the GSB would remain, as the bridge would be rehabilitated and visually consistent with the present structure. The rehabilitation of the GSB would include the replacement of the bridge deck and repairs to the substructure and truss superstructure. On truss elevations, approximately 39 members and 54 gusset plates would require repairs or replacement in kind. In addition, eight of the nine spans of the upper lateral bracing and all nine spans of the lower lateral bracing would require repairs or replacement in kind. A pedestrian bridge railing would be installed, and the Newington abutment would need to be rehabilitated, maintaining visual consistency with the existing Newington abutment. Work would also include cleaning, repainting, and repointing bridge elements.

As a beneficial impact, Alternative 1 would enhance views of the natural visual resources (*e.g.*, land, water, and vegetation) and landscape characteristics of the surrounding area (see **Figure 2.3-1**). The portions of open deck and safety rail design would benefit viewers by providing views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline. The visually prominent arched central spans would be retained, further benefiting the visual character of the bridge.

Temporary, direct visual impacts would occur under Alternative 1 due to the 3-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park. Once construction is complete and all staging areas restored, there would be no permanent, noticeable visible changes to visual resources, viewers, or visual quality.

Alternative 3

Under Alternative 3, there would be no permanent, noticeable visible changes to visual resources, viewers, or visual quality. The existing physical characteristics of the GSB would remain. Under Alternative 3, the GSB's central spans (Spans 4, 5, and 6) would be retained, while the approach spans (Spans 1, 2, 3, 7, 8, and 9) would be replaced with visually consistent spans. The substructure piers would be retained, the Newington abutment would be rehabilitated, and the Dover abutment would be reused. This alternative would retain the visually prominent arched central spans, as well as the aesthetically-pleasing continuous deck truss/through-truss configuration (see **Figure 2.3-2**).

⁵³ Note, however, that the USCG would likely require removal of the GSB if it no longer serves a transportation purpose. See November 30, 2006 letter from Gary Kassof, USCG, to Marc G. Laurin, NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 Project.

Similar to Alternative 1, Alternative 3 would enhance views of the natural visual resources (e.g., land, water, and vegetation) and landscape characteristics of the surrounding area, resulting in a beneficial impact to pedestrians and bicyclists crossing the bridge.

Temporary, direct visual impacts would occur under Alternative 3 due to the 2-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

Alternative 6

Under Alternative 6, there would be permanent, substantial visible changes to visual resources, viewers, or visual quality. Except for the original stone masonry piers, the GSB, a key visual resource, would be removed. The removal of the superstructure would be highly noticeable to viewers and would remove a key visual resource within the Study Area. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB.

Under Alternative 6, the multi-use path would be immediately adjacent to the LBB deck. Chain link fencing would be installed on top of a 2-foot wide concrete barrier; this would provide a measure of safety but would not shield users of the path from noise and wind generated by vehicles passing at highway speeds on the LBB. The lack of separation between vehicular traffic and recreational and non-motorized travelers, and the associated noise, wind, and perception of risk is a substantial disadvantage of this alternative which the public has viewed unfavorably. Pedestrians and bicyclists would be located directly adjacent to high speed vehicle traffic, thus adversely affecting safety and user experience, in addition to negatively impacting views of the Piscataqua River to the east.

Additionally, Alternative 6 would involve reconstruction of the Dover approach span from Hilton Park, including relocation of an existing pier. Removal and replacement of one of the eight original stone masonry piers would create an inconsistent, or incoherent, visual effect. This change would be most noticeable to viewers on the west side of Hilton Park. The visual character of the stone piers would be permanently altered due to the removal and replacement; the seven remaining stone masonry piers would be left in place for support of the pier extensions, resulting in a visual change in superstructure alignment from the existing GSB (see **Figure 2.3-3**).

As a beneficial impact, Alternative 6 would enhance pedestrians' and bicyclists' views of the natural visual resources (e.g., land, water, and vegetation) and landscape characteristics of the surrounding area. The open deck and safety rail design and chain link fencing on the west facing side of the new bridge would benefit viewers by providing views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline.

Temporary, direct visual impacts would occur under Alternative 6 due to the 1.5-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

Alternative 7

Substantial alteration of visual environment would occur under Alternative 7, similar to the impacts described for Alternative 6. The removal of the superstructure would be highly

noticeable to viewers and would remove a key visual resource within the Study Area. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB.

Alternative 7 is similar to Alternative 6 but would construct a new, separate multi-use path adjacent to the existing southbound LBB superstructure rather than extend the LBB deck. A new multi-use path deck would be constructed approximately 7.5 feet from the existing southbound LBB superstructure. Pedestrians and bicyclists would be located further from high speed vehicle traffic than Alternative 6. However, views of the Piscataqua River to the east would be reduced by the addition of chain link fencing on the east side of the new bridge (see **Figure 2.3-4**).

Similar to the impacts described for Alternative 6, Alternative 7 would involve reconstruction of the Dover approach span from Hilton Park, including relocation of an existing pier. Removal and replacement of one of the eight original stone masonry piers would create an inconsistent, or incoherent, visual effect. This change would be most noticeable to viewers on the west side of Hilton Park. The visual character of the stone piers would be permanently altered due to the removal and replacement; the seven remaining stone masonry piers would be left in place for support of the pier extensions, resulting in a visual change in superstructure alignment from the existing GSB.

As a beneficial impact, Alternative 7 would enhance pedestrians' and bicyclists' views of the natural visual resources (e.g., land, water, and vegetation) and landscape characteristics of the surrounding area. The open deck and safety rail design would benefit viewers by providing unobstructed, expansive views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline.

Temporary, direct visual impacts would occur under Alternative 7 due to the 1.5-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

Alternative 9 (Preferred Alternative)

Substantial alteration of visual environment would occur under Alternative 9. Under Alternative 9, the GSB superstructure would be replaced with a steel girder superstructure with a structural steel frame, in the form of a "V" longitudinally, extending from the bottom of the girders to the top of the existing GSB piers (see **Figure 2.3-5**). This alternative follows the existing GSB alignment, thereby allowing the reuse of the existing repointed GSB stone masonry piers without requiring substantial modifications.

The removal of the superstructure would be highly noticeable to viewers and would remove a key visual resource within the Study Area. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. However, unlike Alternatives 6 and 7, the recently constructed approach span at the Dover end of the bridge would be retained and reused as part of Alternative 9, and the alignment of the existing GSB would be maintained. Additionally, unlike Alternatives 6 and 7, all eight of the original stone masonry piers would be retained, adding to the substructure's coherent and harmonious visual character.

As a beneficial impact, Alternative 9 would enhance pedestrians' and bicyclists' views of the natural visual resources (*e.g.*, land, water, and vegetation) and landscape characteristics of the surrounding area. The open deck and safety rail design would benefit viewers by providing fully unobstructed, expansive views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline.

Temporary, direct visual impacts would occur under Alternative 9 due to the 1.5-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

3.12.2.2 Indirect Impacts

Under the No-Action Alternative and Alternatives 1, 3, 6, 7, and 9 there would be no visual impacts to the historic GSB, as all potential impacts would be physical in nature. Therefore, the Project would result in no indirect visual impacts, either permanent or temporary.

3.12.3 Mitigation

This section identifies possible mitigation measures for impacts to visual resources, viewers, or visual quality. Both construction-related and design-related mitigation are described, as well as potential visual enhancements to Hilton Park.

Disturbed areas in Dover and Newington used for construction staging would be restored to as near pre-existing conditions as practicable once construction is complete. As needed, the visual character of the disturbed areas would be restored with replacement plantings. Replacement plantings should be native and indigenous to the area for visual consistency with the surrounding landscape and natural environment.

Additional design-related treatments that could be implemented for the purpose of enhancing and improving bridge aesthetics include:

- › Design structural features to blend with the surrounding built and natural environments to complement the visual landscape.
- › Select low-sheen and non-reflective surface materials to reduce potential for glare.
- › Choose durable paint colors with a dull, flat, or satin finish (not glossy) to reduce potential for glare.
- › Develop an aesthetically pleasing design to minimize effects of visual intrusion upon the natural and built landscape.
- › Design bridge lighting to maximize energy efficiency, safety and security, and be aesthetically pleasing.

The list above is meant to provide examples of final-design features that could benefit viewers, visual resources, and visual quality.

3.13 Construction Impacts

Construction activities have the potential to adversely impact adjacent populations or natural resources by exposing them to impacts or hazards they are otherwise not regularly exposed to.

This section describes anticipated construction period impacts resulting from the Project and proposes mitigation measures for those impacts. Potential construction impacts include noise and vibration, air quality, truck traffic, construction staging areas, and traffic control measures.

3.13.1 Affected Environment

See each resource section within **Chapter 3, *Affected Environment and Environmental Consequences***, for a discussion of what specific resources are present within the Study Area.

3.13.2 Environmental Consequences

All construction-related impacts are temporary, since construction would take place for a limited duration. Potential construction impacts are related to potential noise and vibration, air quality emissions, water quality impacts, generation of truck traffic, use of property for construction staging areas, and implementation of traffic control measures. The resources affected by the Project are generally the same for all Action Alternatives, with additional transportation and noise impacts under Action Alternatives 6 and 7. It is important to note there are no statewide noise regulations that relate to construction activities in New Hampshire. NHDOT would coordinate construction activities with the Town of Newington and City of Dover.

Construction phasing and contractor access would be further defined during the final design and construction phases of the GSB Project. While conceptual construction plans show the placement of temporary structures in Little Bay (**Appendix D**), the final design of these structures is dependent on contractor means and methods.

3.13.2.1 Direct Impacts

Direct temporary impacts were evaluated for each alternative. As noted above, construction impacts are resource specific and largely dependent on the activities necessary to build each alternative. For example, Action Alternatives which propose superstructure replacement would result in similar construction impacts. The potential impacts from construction are also dictated by the estimated construction duration, which vary from 1.5 to 3 years depending on the alternative.

No-Action Alternative

No construction would take place under the No-Action Alternative; therefore, no direct construction impacts would occur.

Alternative 1

Alternative 1 has the longest construction period of the five Action Alternatives evaluated for the Project with an estimated construction period of 3 years. Predominant work under this alternative would involve removal and replacement of the existing bridge floor system, removal and replacement in-kind of upper and lower lateral braces, in-kind replacement of several sway braces, rehabilitation of the Newington abutment, steel truss repair work, repointing the existing stone masonry piers, cleaning and painting existing structural steel, and installing a pedestrian