4.0 SECTION 4(F) EVALUATION

This chapter provides an evaluation of the project in accordance with Section 4(f) of the Department of Transportation Act of 1966 (49 United States Code [USC] 303) and its implementing regulations, found at 23 Code of Federal Regulations (CFR) 774. In general, Section 4(f) protects publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and privately owned historic sites.

This chapter defines different types of Section 4(f) use, and summarizes the project Purpose and Need and the Proposed Action discussed in previous chapters. This chapter also provides temporary occupancy evaluations for four Section 4(f) properties and documents a programmatic evaluation for one historic property.

4.1 Section 4(f) Use Definitions

As defined in 23 CFR 774.15 and 774.17, the use of a protected Section 4(f) property can be classified as a direct use, temporary occupancy, or constructive use.

- **Direct Use.** A direct use of a Section 4(f) resource takes place when the land is permanently incorporated into a transportation facility.

- **Temporary Occupancy.** A temporary occupancy results in a use of a Section 4(f) property when there is a temporary impact to the Section 4(f) property that is considered adverse in terms of the preservationist purposes of the Section 4(f) statute.

- **Constructive Use.** Constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished.

4.2 Project Purpose and Need

The Grand Avenue Bridge serves as a vital link of SH 82 across the Colorado River, I-70, and the Union Pacific Railroad (UPRR), connecting downtown Glenwood Springs and the Roaring Fork Valley with the historic Hot Springs, Hotel Colorado, and I-70. The purpose of the project is to provide a safe, secure, and effective multimodal connection from downtown Glenwood Springs across the Colorado River and I-70 to the historic Glenwood Hot Springs area. This project is critically important because there are only two alternate roadway options to the Grand Avenue Bridge for vehicles to cross the Colorado River. These alternate routes have much lower capacity and require significant out-of-direction travel. In the event of a closure on an alternate route, the bridge must remain a safe and functional connection.

The Colorado Department of Transportation (CDOT) determined that the existing bridge needs to be replaced for the following reasons:

- **Need to improve multimodal connectivity** between downtown Glenwood Springs, and the Roaring Fork Valley, with the historic Hot Springs pool area and I-70. Multimodal connectivity describes the extent to which transportation infrastructure permits (or restricts) movement of people and vehicles in different directions. The Grand Avenue Bridge and the pedestrian bridge connect the Glenwood Hot Springs and Hotel Colorado area to the core downtown commercial corridor located south of the bridge along Grand Avenue. However, the condition of the bridges, as summarized below, impairs this connection for a variety of transportation users. The lack of sufficient alternate routes only underscores the need to improve the Grand Avenue Bridge multimodal connection.

  - **Narrow lanes.** The bridge lane widths are a substandard width (9 feet 4 inches instead of the standard 12 feet) and there are no shoulders. In addition to impairing vehicle safety and mobility, these conditions impair the bridge's ability to provide connectivity because they force larger vehicles (buses, emergency service vehicles, oversized passenger vehicles, etc.) to cross over into the second lane, preventing two full lanes of traffic at all times. These conditions also create an unnerving environment for drivers, limit drivers' ability to make emergency maneuvers, and limit the maneuverability of emergency service vehicles.

  - **Traffic congestion.** Forecasted traffic growth of 2 percent per year would result in increased congestion on the bridge and its connecting streets, and worsen the bridge's ability to provide connectivity.

- **Bridge is functionally obsolete.** The existing bridge was built in 1953 as a two-lane bridge with a sidewalk on each side. In 1969, the sidewalks were removed to add two more lanes. Originally designed for a 50-year lifespan, the 61-year-old bridge has been identified with numerous problems that require either major rehabilitation or replacement. Based on a 2013 bridge inspection and report (CDOT, 2013), CDOT classified the bridge as "functionally obsolete." This classification is the result of geometric deficiencies, all of which must be corrected for the bridge not to be considered functionally obsolete: the bridge is too narrow to accommodate four standard lane widths; vertical clearances are substandard at 7th Street and the UPRR tracks; and horizontal clearances are substandard because of the location of bridge piers related to I-70 travel lanes. Furthermore, the bridge is "scour critical," meaning the bridge foundations have been determined to be unstable under certain scour conditions. These deficiencies resulted in an appraisal rating of 3 out of 9.

In addition, the merging distance onto eastbound I-70 does not meet current standards. The bridge piers adjacent to the eastbound I-70 shoulder limit the length of the on ramp and merge/taper area. As a result, the distance to merge onto I-70 eastbound is too short. The current distance from the end of the ramp to the bridge piers is approximately 300 feet, making the acceleration/merge area less than 150 feet. This is about half of the current standard, which is approximately 300 to 500 feet of acceleration distance for a design speed of 50 mph.

- **Bridge has structural deficiencies.** The existing bridge load-carrying capacity is 55 percent of new bridge design standards. The bridge was designed in 1953 for two lanes of traffic using standards at the time. Current standards for a four-lane bridge require significantly more capacity. The bridge load capacity is substandard, but not low enough to require the bridge to be load posted or to limit the use by legal roadway traffic. The noted load carrying capacity of 55 percent of new bridge design standards is relative to frequent common loads that a bridge experiences. The bridge is capable of carrying higher loads on an infrequent basis, but this bridge frequently carries loads higher than intended for its original design, particularly because it serves as the main route for heavy vehicles.

  The 2013 bridge inspection reported the following additional issues with the bridge's condition:

  - Substandard bridge rail.
  - Deterioration of concrete curbs and piers, exposing reinforcing steel in places.
  - Corrosion on railing, girders, and bridge supports.

  There is also a risk of bridge closure. There is potential that further deterioration of the bridge or damage to the bridge as a result of a collision could result in emergency closures for repairs. An emergency short- or long-term closure of the bridge would result in substantial travel impacts for local and regional SH 82 users, and could impact I-70 traffic. Depending on the types of repairs, traffic could be delayed intermittently or detoured completely. A full closure of I-70 would mean a 141-mile detour through Craig and Meeker via SH 13, US 40, and SH 131.

  The closest alternate SH 82 routes across the river and I-70 are Devereux Road and Midland Avenue (Exit 114). Neither of these routes has the capacity to adequately accommodate traffic volumes.

  In addition, a bridge closure would delay emergency response to the residents and commercial entities located north of the Colorado River from the emergency service providers and facilities located south of river (Glenwood Springs Police Department,

Glenwood Springs Fire Department, Garfield County Sheriff's Office, and Valley View Hospital).

- **Inadequate Pedestrian/Bicycle Facilities.** Existing conditions limit pedestrian and bicyclist connectivity. When it was built in 1953, the Grand Avenue Bridge had sidewalks on both sides. After the bridge was converted from two travel lanes to four lanes and the sidewalks were removed, the City constructed a pedestrian bridge next to the Grand Avenue Bridge. The pedestrian bridge was completed in the mid-1980s, and was not built to be accessible according to current Americans with Disabilities Act (ADA) standards. A 250-foot-long ramp is the only non-stair access to the pedestrian bridge, which is located to the east of the roadway bridge. The width of the ramp is generally 4 feet except where light posts narrow the width to 3.5 feet in several locations, the slope exceeds 5 percent for more than half of the bridge length, and there are no landings.

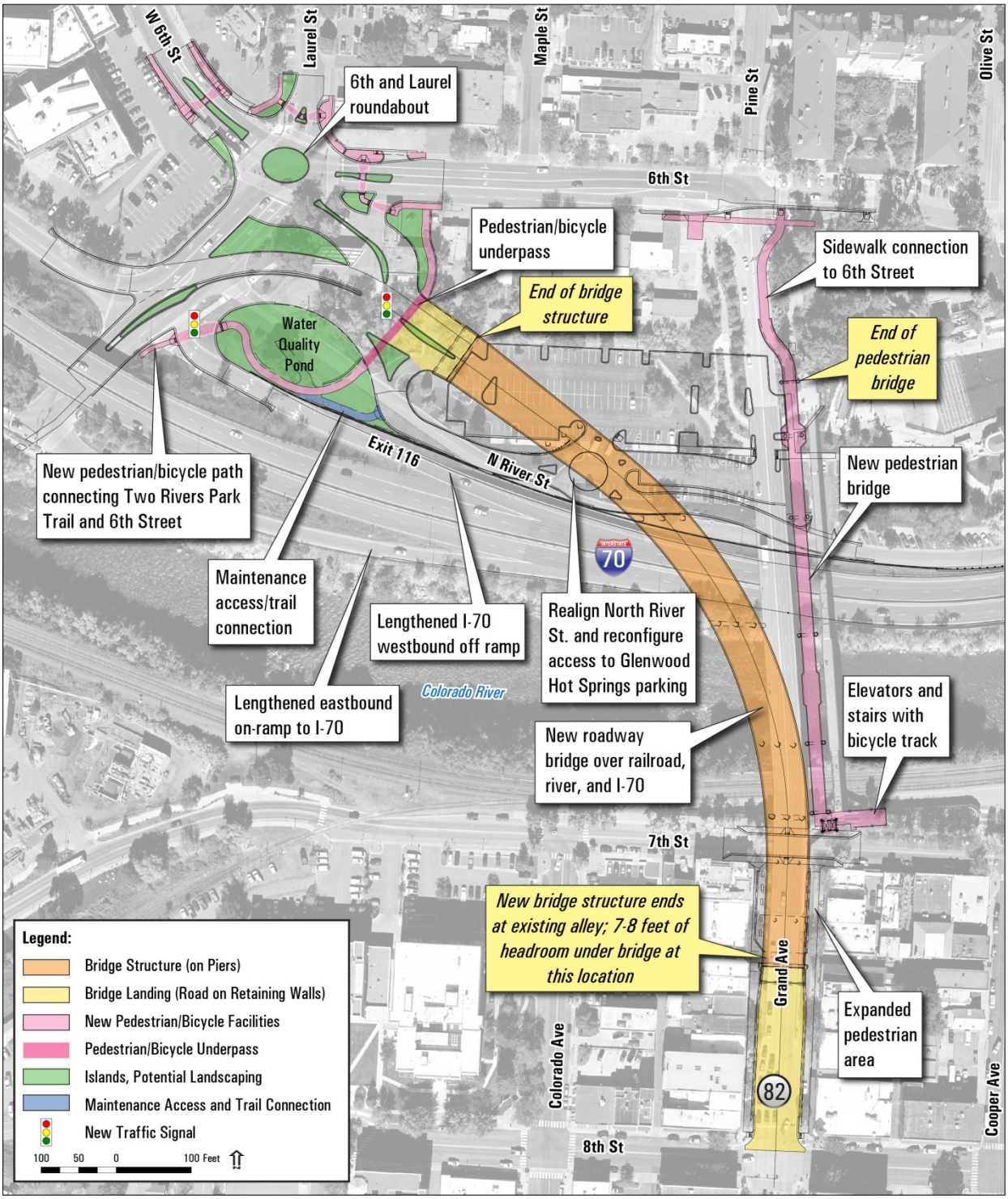
  CDOT is a multimodal transportation agency, and part of its mission is to consider the needs of all users during facilities, planning, design, and operation. CDOT Policy Directive 1602.0 (CDOT, 2009) states, "It is the policy of the Colorado Transportation Commission to provide transportation infrastructure that accommodates bicycle and pedestrian use of the highways in a manner that is safe and reliable for all highway users. The needs of bicyclists and pedestrians shall be included in the planning, design, and operation of transportation facilities, as a matter of routine."

4.3 Build Alternative Description

The Build Alternative would include the improvements described below. Please refer to Section 2.3.2 *Build Alternative* for more detail. The Build Alternative is shown on Figure 4-1.

Replacement of Grand Avenue Bridge. The existing historic Grand Avenue Bridge would be replaced with a wider highway bridge consisting of four lanes, with shoulders and no sidewalks. The bridge deck depth, including girders, would vary. The bridge deck depth south of the Colorado River would be approximately three feet. Across the river and to the north, the bridge deck depth would be approximately seven feet. This compares to the existing bridge deck depth, including girders, of approximately five feet. The new Grand Avenue Bridge would curve west as it crosses the Colorado River, moving its northern touchdown point to the west near the proposed roundabout intersection at Laurel Street/6th Street. The bridge would have either solid or open rail type side barriers per American Association of State Highway and Transportation Officials (AASHTO) requirements, which will be determined during final design. Shielding would be used on side barriers for the portion of the bridge approaching and along Grand Avenue to prevent splash back from the bridge on sidewalks and pedestrians along Grand Avenue, with the added benefit of providing a noise reduction. The bridge would have no overhead structure, no pier in the middle

FIGURE 4-1. BUILD ALTERNATIVE



Source: Jacobs, 2014.

of the river (a pier would be located on the river's edge), and would require up to seven sets of piers and two abutments. The fill supporting the existing bridge's northern touchdown point near 6th Street would be removed. The utilities currently carried under the existing highway bridge would be moved to the new pedestrian bridge. Because the goal of creating a gateway to the Glenwood Springs area would be addressed by the new pedestrian bridge, design of the Grand Avenue Bridge focuses on simplicity and functionality.

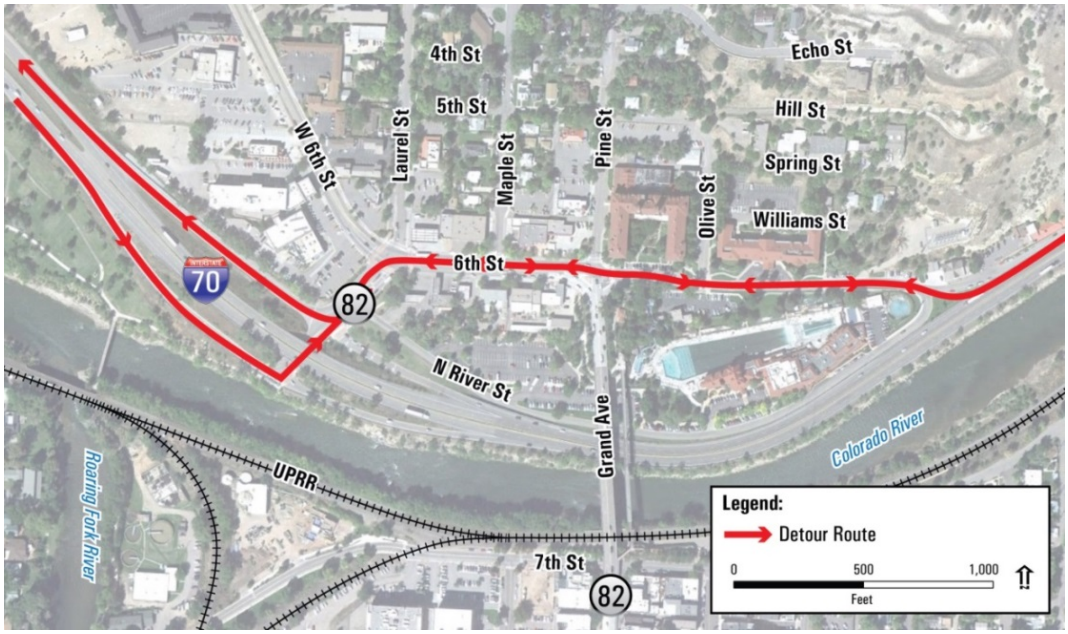
Replacement of Pedestrian Bridge. The existing pedestrian bridge would be replaced with a five-span bridge immediately east of the highway bridge**.** The bridge would cross the Colorado River on a straight alignment in a similar location as the existing bridge, with the northern touchdown point located slightly west of the existing touchdown point. The new bridge would be flatter and wider than the existing bridge, with no overhead structure and a concrete surface. It would include up to five piers and one abutment on the north end. The bridge would include pedestrian overlooks, either solid or open rail type side barriers per AASHTO requirements, and lighting along the bridge and bridge connections. The connection at 7th Street would include a stairway and dual elevators, and 6th Street would connect to the bridge via ramps. The new pedestrian bridge would carry utilities across the river that are currently carried by the existing highway bridge.

6th and Laurel Intersection. The existing 6th and Laurel intersection would be replaced with a new roundabout intersection that would accommodate traffic on Laurel Street, W. 6th Street, 6th Street, I-70 Exit 116, and the new Grand Avenue Bridge. This would require acquisition/removal of the existing Shell station.

Construction Detours. Two detour routes are proposed during construction—one for I-70 traffic during short, nighttime closure periods (I-70 Detour), and a second for SH 82 traffic during the full closure of the Grand Avenue Bridge (SH 82 Detour).

- **I-70 Detour**. Construction of the Grand Avenue Bridge and the pedestrian bridge would require full nighttime closures of I-70 approximately ten times for safety-critical overhead work, such as bridge demolition, construction of bridge components, and concrete installation. During nighttime closures, eastbound and westbound I-70 traffic would be rerouted onto 6th Street at a temporary break in the I-70 barrier near the Yampah Vapor Caves (see Figure 4-2).

FIGURE 4-2. I-70 DETOUR



- **SH 82 Detour on 8th Street.** To accommodate traffic movements during full closure of the Grand Avenue Bridge during construction, SH 82 traffic would be rerouted onto the designated SH 82 Detour, shown in Figure 4-3. The temporary route for regional traffic would begin at Exit 114 on I-70 and proceed south on Midland Avenue to 8th Street across the Roaring Fork River then along a new 8th Street connection into downtown. In the downtown grid, the traffic would be routed through a temporary "square about" for continuation south on SH 82/Grand Avenue to Aspen. The detour would require a shallow cut through the Denver & Rio Grande Railroad – Aspen Branch to construct an extension of 8th Street to provide a detour connection to Midland Avenue. The driveway leading to Vogelaar Park would be temporarily regraded to match the modified grade of 8th Street. The regrading activities would temporarily affect that access point to Vogelaar Park; however, there are other access points to the park that can reasonably accommodate park users during that time. After the Grand Avenue Bridge is reopened and the detour is no longer needed, CDOT would restore the Denver & Rio Grande Railroad – Aspen Branch connection. Further, the driveway to Vogelaar Park would be regraded to match the restored 8th Street grade.

- **Exit 114 Improvements**. Improvements would be needed at Exit 114 to accommodate SH 82 Detour traffic during full closure of Grand Avenue Bridge, but would remain as permanent improvements. These improvements would include lengthening the I-70 eastbound off ramp and westbound on ramp to current

standards, and minor changes to curb and gutter and signing/striping at the two roundabouts.

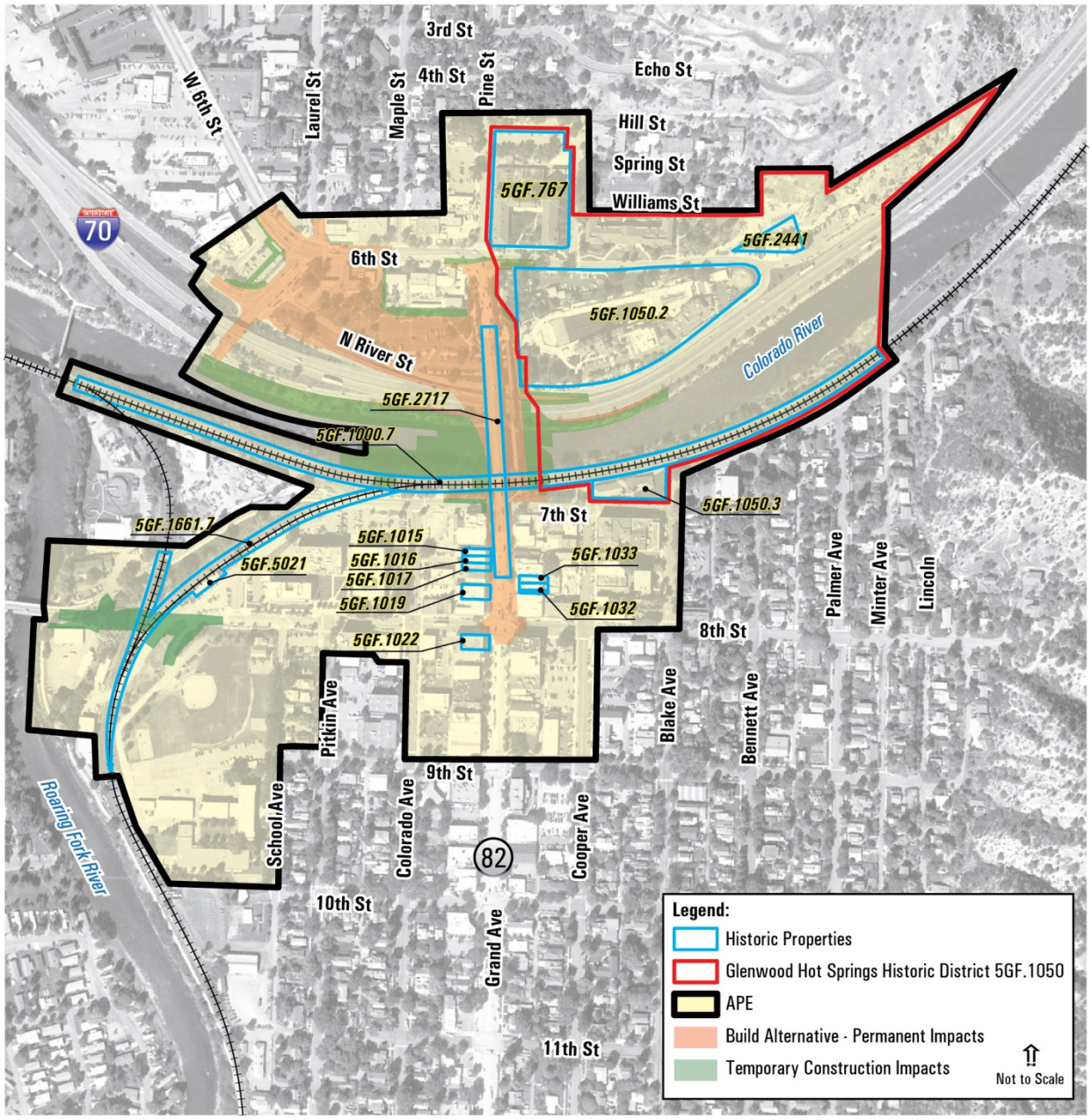
FIGURE 4-3. SH 82 DETOUR ROUTE

4.4 Properties Not Evaluated for Section 4(f) Use

Under the Section 106 process, CDOT determined that the Build Alternative would result in an adverse effect to the following historic properties along the 700 block of Grand Avenue (see Figure 4-4):

- Silver Club Building (Site #5GF.1015)
- Palace Hotel (Site #5GF.1016)
- Parkison Building (Site #5GF.1017)
- Springs Restaurant/Doc Holliday Tavern Site (#5GF.1033)
- Dougan Block (Site #5GF.1019)
- Ore Sample Room (Site #5GF.1032)

FIGURE 4-4. AREA OF POTENTIAL EFFECT AND NATIONAL REGISTER OF HISTORIC PLACES (NRHP)-ELIGIBLE PROPERTIES



Source: Jacobs, 2014.

The adverse effect determination was made based on the fact that the new Grand Avenue Bridge would be between approximately 2 to 12 feet closer than, and approximately 1.5 to 4 feet higher than, the existing bridge in front of these buildings. A small increase in noise would occur for these historic properties as a result of the proximity of vehicles traveling along the proposed bridge.

The Build Alternative would not directly impact or incorporate land from the historic properties listed above. The proposed bridge would not alter the architectural significance of these historic buildings, nor would it restrict access to these properties. The audible and visual changes resulting from the Build Alternative would not substantially interfere with the use of these historic properties. Therefore, they would maintain their significance and continue to portray the characteristics that rendered them eligible for the National Register of Historic Places (NRHP). The Build Alternative would not substantially impair or diminish the aesthetic features or attributes of these properties. Therefore, the Build Alternative would not result in a Section 4(f) use of these historic buildings, and they are not discussed further in this chapter.

23 CFR 774.13(f) provides for exceptions to the requirement for Section 4(f) approval for certain trails, paths, bikeways, and sidewalks. Such facilities that occupy a transportation facility right-of-way without limitation to any specific location within that right-of-way are exempt, so long as the continuity of the facility is maintained. Installation of a storm water outfall near Exit 116 would temporarily impact the Two Rivers Trail (Section 3.18.2 *Pedestrian and Bicycle Facilities Impacts* has more information). The portion of the trail east of the Two Rivers Park and within I-70 right-of-way would require temporary closure, but trail access will be kept open to the extent practical and temporary detours will be provided during construction. Detour routes could include a temporary sidewalk or a detour across the Colorado River south to the Roaring Fork Trail to 7th Street, and then back across the river along the pedestrian connection near Grand Avenue. Because the trail impacts would occur within existing transportation right-of-way and the trail's continuity would be maintained, these temporary impacts are exempt from Section 4(f) evaluation.

23 CFR 774.13(f) also includes an exception for facilities that are part of the local transportation system and which function primarily for transportation. Two on-road bicycle routes along North River Street and 7th Street would experience temporary construction impacts. Both routes function primarily for transportation and would be kept open to the extent feasible, although temporary detours would be necessary during certain periods of construction.

Because the Build Alternative would not result in a Section 4(f) use of these facilities, they are not discussed further in this chapter.

4.5 Temporary Occupancy Evaluations

The Federal Highway Administration (FHWA) has identified various exceptions to the requirement for Section 4(f) approval. One of these exceptions involves temporary occupancies of land that are so minimal as to not constitute a use within the meaning of Section 4(f). Under FHWA and Federal Transit Administration (FTA) regulations (23 CFR 774.13[d]), a temporary occupancy will not constitute a Section 4(f) use when all of the conditions listed in 23 CFR 774.13(d) are satisfied, as listed below:

1. Duration must be temporary; i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land.
2. Scope of the work must be minor; i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal.
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis.
4. The land being used must be fully restored; i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project.
5. There must be documented agreement of the official with jurisdiction (OWJ) over the Section 4(f) resource regarding the above conditions.

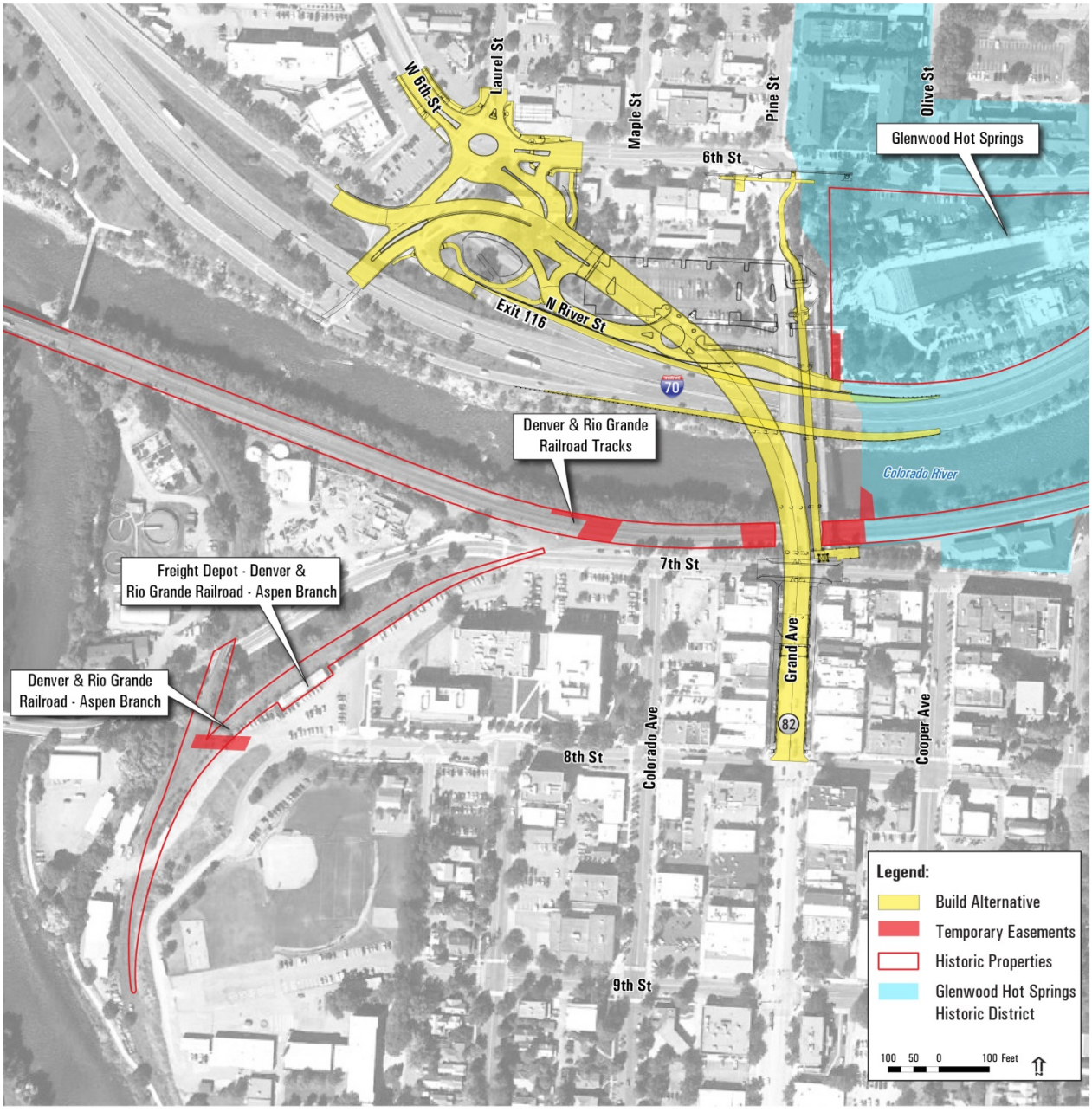
The following Section 4(f) resources were evaluated for the temporary occupancy exception as a result of temporary construction activities associated with the project as shown on Figure 4-5:

- Glenwood Hot Springs Historic District (5GF.1050)
- Glenwood Hot Springs Bathhouse/Natatorium (5GF.1050.2)
- Denver & Rio Grande Railroad Tracks (5GF.1000.7)
- Denver & Rio Grande Railroad – Aspen Branch (5GF.1661.7) and associated Freight Depot (5GF.5021).

4.5.1 Glenwood Hot Springs Historic District (5GF.1050)

The Glenwood Hot Springs Historic District encompasses the historic properties directly associated with the growth and development of the Glenwood Hot Springs resort. It includes the Hot Springs Bathhouse and Natatorium (5GF.1050.2) designed and constructed by noted architect Theodore Von Rosenberg. It also includes the Hotel Colorado (5GF.767), which provided elegant lodging for visitors who came to the hot springs, and the Glenwood

FIGURE 4-5. TEMPORARY CONSTRUCTION IMPACTS TO HISTORIC PROPERTIES



Source: Jacobs, 2014.

Hydroelectric Plant, which was instrumental in providing much needed electric power. Also included in the district are the Yampah Hot Springs Vapor Caves, located directly east of the Hot Springs Pool. The district also includes the Denver and Rio Grande Railroad tracks and the Denver & Rio Grande Station on the south side of the Colorado River. These structures supported the hot springs development by facilitating the transport of visitors to and from the hot springs. All of these properties are in physical proximity and all support the eligibility of the historic district.

The Glenwood Hot Springs District would be temporarily impacted during construction of the project. Temporary impacts would occur from construction activities located within several temporary easements (see below). Also, construction of the Grand Avenue Bridge and the pedestrian bridge would require full nighttime closures of I-70 approximately ten times for safety-critical overhead work, such as bridge demolition, construction of bridge components, and concrete installation. During these nighttime closures, eastbound and westbound I-70 traffic would be detoured onto 6th Street at a temporary break in the I-70 barrier near the Yampah Vapor Caves. However, this detour would occur within existing transportation right-of-way and not require temporary property acquisition.

Under the Section 106 process, FHWA determined that the Build Alternative would result in *no adverse effect* to this resource. Because of the temporary nature of the construction activities, this historic resource was evaluated for the temporary occupancy exception under Section 4(f) according to the five criteria listed under Section 4.5 as follows:

1. **Criterion 1.** Temporary construction effects to the district and its associated properties include construction activities, visual changes related to construction of the new highway and pedestrian bridges, and temporary noise impacts. Temporary construction activities within the historic district boundary include one temporary easement of approximately 14,795 square feet along the north riverbank to serve as a staging area for construction activities associated with lengthening of the eastbound on-ramp to I-70. Another temporary easement of approximately 2,625 square feet would be required on the south side of the river to serve as an on-ground staging area (temporary construction pad built within the river) for construction activities associated with building the new pedestrian bridge. Further, an approximate 973 square-foot temporary easement would be required over the Denver & Rio Grande Railroad Tracks within the historic district to accommodate overhead construction activities associated with replacement of the pedestrian bridge. Figure 4-5 shows the temporary easement locations, shown as temporary impacts on the figure. CDOT would acquire these temporary construction easements.

There would be no change in ownership of the historic district or railroad property, and the duration of the construction activities within the district would be shorter than the overall project construction duration.

2. **Criterion 2.** For the historic district and its associated properties described above, the project would involve temporary construction activity, a temporary detour on an existing roadway, and temporary visual and noise effects. Three temporary construction easements would be required within the historic district boundary. One approximately 14,795 square-foot easement would be required along the north bank of the river to lengthen the eastbound I-70 on-ramp. The second would be an approximately 2,625-square-foot easement located within the south side of the river (construction pad built within the river) to accommodate demolition and construction of the pedestrian bridge. The third would be an approximately 973-square-foot easement located over the railroad (5GF.1000.7) to accommodate overhead activities associated with replacement of the pedestrian bridge. These temporary impacts would result in minor and temporary effects that would not adversely affect the historic district or its contributing properties.

3. **Criterion 3.** There would be no permanent adverse impacts to the Glenwood Hot Springs Historic District or its associated properties. All areas within the temporary construction easements would be restored to pre-construction conditions after project construction. The effects to the district would be temporary and would not interfere with its activities, features, and attributes.

4. **Criterion 4.** The effects to the Glenwood Springs Historic District and its contributing/individually eligible properties include temporary construction activities and a temporary detour along 6th Street. Some changes would occur to views from the Historic District and associated Hot Springs pool as a result of the new pedestrian and highway bridges. However, those structures already exist in the viewshed. Three temporary construction easements would be required within the historic district boundary, including one approximately 14,795 square-foot easement along the north bank of the river to lengthen the eastbound I-70 on-ramp; one approximately 2,625-square-foot easement located within the south side of the river (construction pad built within the river) to accommodate demolition and construction of the pedestrian bridge, and one approximately 973-square-foot easement located over the railroad (5GF.1000.7) to accommodate overhead activities associated with replacement of the pedestrian bridge. For the overall Historic District and its contributing/individually eligible features, the properties would be returned to a condition as good as that which existed prior to construction.

5. **Criterion 5.** In an August 27, 2014 letter to the State Historic Preservation Officer (SHPO), CDOT described how the project would meet the criteria for temporary

occupancy for the Glenwood Hot Springs Historic District, and requested written agreement with the temporary occupancy exception under Section 4(f). The SHPO agreed in correspondence dated September 5, 2014. Therefore, the Build Alternative satisfies the temporary occupancy criteria listed in Section 4.5 and would not result in a Section 4(f) use of the Glenwood Hot Springs Historic District.

4.5.2 Glenwood Hot Springs Bathhouse/Natatorium (5GF.1050.2)

The prominent bathhouse building was the first main building constructed at the hot springs resort. Completed in 1890, it was designed and constructed by noted architect Theodore Von Rosenberg. The bathhouse, natatorium (a swimming pool, typically indoors), and adjacent springs have been visited by millions of visitors over the years, and used by many military personnel after World War II as a place for recuperation and relaxation. The development of a resort at the hot springs played an important part in the settlement of Glenwood Springs. The bathhouse is an excellent example of the Richardsonian Romanesque style of architecture and exhibits a high degree of integrity. This property was determined officially eligible for the NRHP and would also be a supporting element of the Glenwood Hot Springs Historic District.

The Glenwood Hot Springs Bathhouse/Natatorium would be temporarily impacted during construction of the project. Under the Section 106 process, FHWA determined that the Build Alternative would result in *no adverse effect* to this resource. Because of the temporary nature of the construction activities, this historic resource was evaluated for the temporary occupancy exception under Section 4(f) according to the five criteria listed under Section 4.5 as follows:

1. **Criterion 1.** The project would require an approximately 2,730-square-foot temporary easement within the Glenwood Hot Springs Bathhouse/Natatorium historic boundary. Due to a boundary discrepancy, this area is located outside the larger Glenwood Hot Springs District (5GF.1050) boundary. The area of the temporary easement is currently a paved parking lot and would be used for temporary storage of materials and reconstruction of the hot springs parking lot. The parking lot does not contain any of the major features of the bathhouse and natatorium property. Construction activities would include grading, paving, and concrete sidewalk work. CDOT would acquire the temporary construction easement. There would be no change in ownership of the property, and duration of work within the easement would be less than the time needed for construction of the project.

2. **Criterion 2.** The area of the approximately 2,730-square-foot temporary easement is currently a paved parking lot and would be used for temporary storage of materials and reconstruction of the hot springs parking lot. Activities would include grading,

paving, and concrete sidewalk work. The nature of any changes to the property would be minimal and temporary.

3. **Criterion 3.** There would be no permanent adverse physical impacts to the Glenwood Hot Spring Bathhouse and Natatorium. An approximately 2,730-square-foot temporary construction easement would be required within the resource boundary in an area that is currently a paved parking lot. Work within the easement would include grading, paving, and concrete sidewalk work. This work would not interfere with the features and attributes of the bathhouse and natatorium property within the larger historic district.

4. **Criterion 4.** There would be temporary construction activities within the boundary of the Glenwood Hot Spring Bathhouse and Natatorium. This includes a temporary construction easement of approximately 2,730 square feet in an area that is currently a paved parking lot. Temporary construction activities that would occur within the temporary construction easement would include grading, paving, and concrete sidewalk work. Once the work is completed, this property would be returned to a condition as good as that which existed prior to construction.

5. **Criterion 5.** In an August 27, 2014 letter to the SHPO, CDOT described how the project would meet the criteria for temporary occupancy for the Glenwood Hot Springs Bathhouse/Natatorium, and requested written agreement with the temporary occupancy exception under Section 4(f). The SHPO agreed in correspondence dated September 5, 2014. Therefore, the Build Alternative satisfies the temporary occupancy criteria listed in Section 4.5 and would not result in a Section 4(f) use of Glenwood Hot Springs Bathhouse/Natatorium.

4.5.3 Denver & Rio Grande Railroad Tracks (5GF.1000.7)

This railroad line was built in 1887 by the Denver & Rio Grande Railroad. It was the first railroad to be built in Glenwood Springs. It is currently under the ownership and operation of the UPRR and is in operation and well maintained. The Amtrak trains stop daily at the Denver & Rio Grande Station adjacent to this segment of line. This rail line is significant under Criterion A for its key role in the settlement and commercial growth of Glenwood Springs and the State of Colorado. The continual maintenance of the tracks, ties, and grade have helped preserve the character of this segment, which contributes to the eligibility of the entire resource. Other segments of this railroad were determined officially eligible for the NRHP in 1988 and 2000. This segment of railroad is assessed as supporting the eligibility of the entire resource.

The Denver & Rio Grande Railroad would be temporarily impacted during construction of the project. Under the Section 106 process, FHWA determined that the Build Alternative would result in *no adverse effect* to this resource. Because of the temporary

nature of the construction activities, this historic resource was evaluated for the temporary occupancy exception under Section 4(f) according to the five criteria listed under Section 4.5 as follows:

1. **Criterion 1.** Temporary construction activities within the Denver & Rio Grande Railroad historic boundary would include temporary grade crossings of the railroad for intermittent access to construction areas. Figure 4-5 shows crossing locations. Also, limited overhead construction and removal of bridge elements would occur over the railroad, but would be confined to limited times within an approximate 3- to 6-month period, which is less than the 18- to 24-month construction duration. CDOT would acquire temporary construction easements for this work (as shown in Figure 4-5). This would include four temporary easements for the temporary railroad crossings totaling approximately 0.19 acre, and an approximately 3,838 square-foot temporary easement for overhead construction activities associated with demolition and construction of the new pedestrian bridge, including operation of heavy machinery. There would be no change in ownership of the Denver & Rio Grande Railroad tracks. In the long term, a permanent easement of approximately 0.01 acre would be required from the UPRR to widen the Grand Avenue Bridge (see Figure 3-11). This easement would not affect property access, signage, or the property owner's current use of the property.

2. **Criterion 2.** The project would involve temporary construction activities within the railroad's historic boundary. This would include temporary construction easements totaling approximately 0.19 acre for at-grade crossings of the railroad to provide access to construction areas. A temporary easement of approximately 3,838 square feet would also be required to facilitate overhead construction activities associated with demolition and construction of the new pedestrian bridge. The railroad crossings would protect the railroad grade during construction. The nature of any changes to the railroad property would be minimal and temporary.

3. **Criterion 3.** There would be no permanent adverse physical impacts to the railroad. Temporary construction activities that would occur within the railroad historic boundary include four temporary construction easements totaling approximately 0.19 acre to provide access to construction areas, and an approximately 3,838 square-foot temporary easement to facilitate overhead construction activities associated with pedestrian bridge demolition and construction, which would involve operation of heavy machinery. However, these elements would not interfere with the features and attributes of the railroad that qualify it for protection under Section 4(f).

4. **Criterion 4.** Upon construction completion, the temporary construction easements and at-grade railroad crossings will be fully restored to preconstruction conditions.

5. **Criterion 5.** In letters to the SHPO dated August 2, 2013 and August 27, 2014, CDOT described how the project would meet the criteria for temporary occupancy for the Denver & Rio Grande Railroad Tracks, and requested written agreement with the temporary occupancy exception under Section 4(f). The SHPO agreed in correspondence dated August 14, 2013 and September 5, 2014. Therefore, the Build Alternative satisfies the temporary occupancy criteria listed in Section 4.5 and would not result in a Section 4(f) use of the Denver & Rio Grande Railroad Tracks (Site #5GF.1000.7).

4.5.4 Denver & Rio Grande Railroad – Aspen Branch (5GF.1661.7) and Associated Freight Depot (5GF.5021)

The Denver & Rio Grande Railroad – Aspen Branch was built in 1887 by the Denver & Rio Grande Railroad, and was the first rail line to reach the lucrative silver mining operations. The entire Aspen Branch of the Denver & Rio Grande railroad was determined eligible for listing on the NRHP in 1988. In 2005, the 41-mile resource was determined to retain its eligibility even though the rails and railbed of much of the entire Aspen Branch line were removed for conversion to a recreational trail. The Denver & Rio Grande – Aspen Branch Railroad is significant under Criterion A for its key role in the settlement and commercial growth of Glenwood Springs and the State of Colorado, and for its association with the settlement of the Roaring Fork Valley and the 19th century development of Aspen's mining industry.

The Freight Depot is significant for its association with the Denver & Rio Grande Railroad – Aspen Branch. The depot was built by the Denver & Rio Grande Railroad to supports its rail operations and is eligible under Criterion A for the reasons stated above for the railroad. The original Freight Depot on this site was removed and replaced with the current structure after 1947. That depot has been further modified over the years and is not eligible under Criterion C. Under Section 106, the Freight Depot was documented separately but is an associated feature of the overall railroad, and is included in the boundary for the railroad.

The Denver & Rio Grande Railroad – Aspen Branch and associated Freight Depot would be temporarily impacted during construction of the project under the SH 82 Detour (see Section 4.3 *Build Alternative*). Under the Section 106 process, FHWA determined that the detour would result in *no adverse effect* to these resources. Because of the temporary nature of the construction activities, these historic resources were evaluated for the temporary occupancy exception under Section 4(f) according to the five criteria listed under Section 4.5 as follows:

1. **Criterion 1.** The extension of 8th Street and the associated detour would be in operation during the approximately 90-day closure of the Grand Avenue Bridge. When the bridge is reopened, the temporary construction detour will be removed

and the railroad bed and tracks restored. Overall, detour construction, operation and restoring the detour area to its preconstruction condition would last between five and six months, less than the time required for the overall Grand Avenue Bridge construction project. There would be no change in ownership to any of the railroad property.

2. **Criterion 2.** The project would involve the extension of 8th Street as a temporary detour while the Grand Avenue Bridge is being replaced. The work would involve construction of the temporary detour that would extend across four segments of the Denver & Rio Grande Railroad. This would involve removal of between approximately 70 and 102 feet of track for each of the four segments of track, and excavation of the railbed to accommodate construction of a temporary paved two-lane road. A temporary easement of the railroad would be required. Once the bridge replacement is completed, the detour would be removed and the railbed and tracks restored. This would involve backfill of the removed portion of the railbed and reinstalling the removed tracks. The nature of the change to the railroad property would be minimal and temporary, and the railroad would be restored to its functionality. The nature of changes to the railroad property would be minimal and temporary.

3. **Criterion 3.** There would be no permanent adverse physical impacts to the Denver & Rio Grande Railroad – Aspen Branch or the associated Freight Depot (5GF.5021). Temporary removal of between approximately 70 and 102 feet of track for each of the four segments of track and excavation of the railbed would be required to accommodate the temporary two-lane paved road detour. However, the railbed would be restored and the tracks would be reinstalled once the detour is no longer needed. This temporary effect would not interfere with the features and attributes of the railroad property, which is significant under National Register Criterion A for its role in the settlement and commercial growth of Glenwood Springs and the state of Colorado, and for its association with the settlement of the Roaring Fork Valley and 19th century development of Aspen's mining industry. A finding of *no adverse effect* under Section 106 has been made for this property.

4. **Criterion 4.** The project would involve the extension of 8th Street as a temporary detour while the Grand Avenue Bridge is being replaced. The work would involve construction of the temporary detour that would extend across four segments of the Denver & Rio Grande railroad. This would involve removal of between approximately 70 and 102 feet of track for each of the four segments of track, and excavation of the railbed to accommodate construction of a temporary paved two-lane road. Once the bridge replacement is completed, the detour will be removed and the railbed and tracks restored. This will involve backfill of the removed portion of the railbed and reinstalling the removed tracks. The tracks will be installed in their previous alignment and the connection restored. A temporary easement would be

required for this work. The land within the railroad's historic boundary will be returned to a condition as good as that which existed prior to construction.

5. **Criterion 5.** Under the Section 106 process, FHWA has consulted with the SHPO regarding effects to the Denver & Rio Grande Railroad – Aspen Branch and Freight Depot. In letters to the SHPO dated March 28, 2014, and August 27, 2014, CDOT described how the project would meet the criteria for temporary occupancy for this resource, and requested written agreement with the temporary occupancy exception under Section 4(f). The SHPO agreed in correspondence dated April 22, 2014, and September 5, 2014. Therefore, the Build Alternative satisfies the temporary occupancy criteria listed in Section 4.5 *Temporary Occupancy Evaluations* and would not result in a Section 4(f) use of the Denver & Rio Grande Railroad – Aspen Branch (Site #5GF.1661.7) and associated Freight Depot (5GF.5021).

4.6 Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges.

This section documents the Historic Bridges Programmatic Section 4(f) Evaluation that was conducted for the Glenwood Springs Viaduct/SH 82/Grand Avenue Bridge (Site #5GF.2717) (referred to as the Grand Avenue Bridge in this evaluation). A Programmatic Section 4(f) Evaluation is a procedural alternative to preparing individual Section 4(f) evaluations for certain uses of Section 4(f) property. Programmatic Section 4(f) evaluations are developed by FHWA based on experience with a specific set of conditions that includes project type, degree of use and impact, and evaluation of avoidance alternatives. An approved programmatic Section 4(f) evaluation may be used only if the specific conditions in the programmatic evaluation are met.

Through the Section 106 process, it has been determined that the Build Alternative would result in an *adverse effect* to the Grand Avenue Bridge.

4.6.1 Section 4(f) Property

The Glenwood Springs Viaduct/SH 82/Grand Avenue Bridge was officially determined NRHP-eligible in July 2002. It is NRHP-eligible under Criterion A because it has functioned historically as a primary crossing of the Colorado River and is historically significant for its role in regional traffic. The bridge is also NRHP-eligible under Criterion C because it is technologically significant as a long-span example of its structural type. During the 1920s and 1930s, the Colorado Highway Department (CHD) began building steel deck girder structures in lieu of trusses. These were detailed similarly to the agency's earlier steel stringer bridges, with the principal difference being the beam configuration and the span length. The CHD did not build many steel girder bridges, however, limiting their use to particular circumstances such as long-span urban crossings. The bridge is distinguished as a well-preserved, large-scale example of CHD beam bridge construction.

4.6.2 Applicability

A Historic Bridges Programmatic Section 4(f) Evaluation may be applied to projects that meet certain criteria. Five criteria are used to determine if a project qualifies for the Historic Bridges Programmatic Section 4(f) evaluation and approval. Those criteria, and ways in which the project meets them, are described below:

1. **The bridge is to be replaced or rehabilitated with federal funds.** Federal or federally-secured funds are being used to complete the NEPA and preliminary engineering phase of this project. Funding for later phases, such as right-of-way acquisition and construction, would come from a combination of funding sources and will include funds from CDOT's Regional Project Priority program, which includes federal funding.
2. **The project will require the use of a historic bridge structure that is on or is eligible for listing on the NRHP.** The project would replace the existing Grand Avenue Bridge, which was officially determined NRHP-eligible in 2002 under Criterion A and Criterion C.
3. **The bridge is not a National Historic Landmark.** The Grand Avenue Bridge is officially eligible for the NRHP under Criterion A and Criterion C. It is not a National Historic Landmark.
4. **The FHWA Division Administrator determines that the facts of the project match those set forth in this document.**
5. **Agreement among the FHWA, SHPO, and Advisory Council on Historic Preservation (ACHP) has been reached through procedures pursuant to Section 106 of the NHPA, as amended.** FHWA and CDOT consulted with the SHPO during the Section 106 process conducted for this Environmental Assessment. FHWA provided their determinations of eligibility and effects for historic properties to the SHPO on August 2, 2013, and updated effects on March 28, 2014, and August 27, 2014, and requested concurrence. The SHPO concurred in letters dated August 14, 2013, April 22, 2014, and September 5, 2014, included in Appendix D *Agency Coordination*. FHWA, CDOT, and SHPO are developing a Memorandum of Agreement (MOA) that will outline measures to mitigate adverse effects. SHPO will be invited to be a signatory to the MOA.

4.6.3 Avoidance Alternatives

The Grand Avenue Bridge was identified as a Section 4(f) resource at the onset of the study. Consequently, early in the study process, the study team identified and evaluated alternatives that would avoid use of this resource. The Historic Bridges Programmatic Section 4(f) lists three types of alternatives that avoid any use of the historic bridge:

- Do nothing.
- Build a new structure at a different location without affecting the historic integrity of the old bridge, as determined by procedures implementing the NHPA.
- Rehabilitate the historic bridge without affecting the historic integrity of the structure, as determined by procedures implementing the NHPA.

The study team developed alternatives based on the above general alternative types to avoid any use of the Grand Avenue Bridge, which are described below.

Do Nothing

The Do Nothing Alternative, or No Action Alternative, would leave the existing bridge in place and construct no other alternate options for connecting the Hot Springs pool and Hotel Colorado area to the core commercial corridor located south of the bridge along Grand Avenue. This alternative would not address the safety issues caused by traffic congestion, narrow lanes, and deterioration of the bridge structure and resulting falling debris hazard. Keeping the bridge would result in continued unacceptable safety risks and limit vehicular, pedestrian, and bicyclist connectivity.

While there are two alternate route options to the Grand Avenue Bridge, both alternate routes would have a much lower capacity and require out-of-direction travel. Closing the bridge and relying on the other two alternative route options would result in extensive delays and safety concerns while traveling through Glenwood Springs over the Colorado River. These delays and safety concerns would reduce connectivity between downtown Glenwood Springs and the Roaring Fork Valley with the historic Glenwood Hot Springs, the iconic Hotel Colorado, and I-70. Based on this assessment, the Do Nothing Alternative was determined to not be a prudent avoidance alternative because it would not address the Purpose and Need for the project and would result in unacceptable safety and operational problems.

Build on New Location Without Using the Old Bridge

SH 82 Bypass. The study team evaluated a SH 82 bypass alternative that was proposed by various stakeholders, which would avoid use of the Grand Avenue Bridge. This alternative was eliminated because it would not meet the project Purpose and Need for the following reasons:

- A SH 82 bypass would not improve connectivity from downtown Glenwood Springs with the historic Hot Springs pool area and I-70 or fix the functional and structural deficiencies of the bridge.
- Relocation of SH 82 is related to mobility, whereas replacement of the existing bridge is needed to address safety and operational problems of the bridge. Therefore, a

bypass would not address the bridge's functional and structural deficiencies or improve public safety (including emergency service response).

- Even with a SH 82 bypass, the Grand Avenue Bridge would need to carry four lanes of traffic, as indicated in the 2010 *SH 82 Corridor Optimization Plan*.
- Relocating SH 82 would cost five to ten times as much as the available funding for the Grand Avenue Bridge project, which is funded through the Colorado Bridge Enterprise (CBE). Currently, no funding has been identified to reroute SH 82. Therefore, it would not be a practical and financially realistic alternative.

The Grand Avenue Bridge project would not preclude consideration of a SH 82 relocation as part of another future study.

Alternate Bridge Alignments. The study team also evaluated alternative bridge alignments east and west of Grand Avenue Bridge to avoid use of the existing bridge.

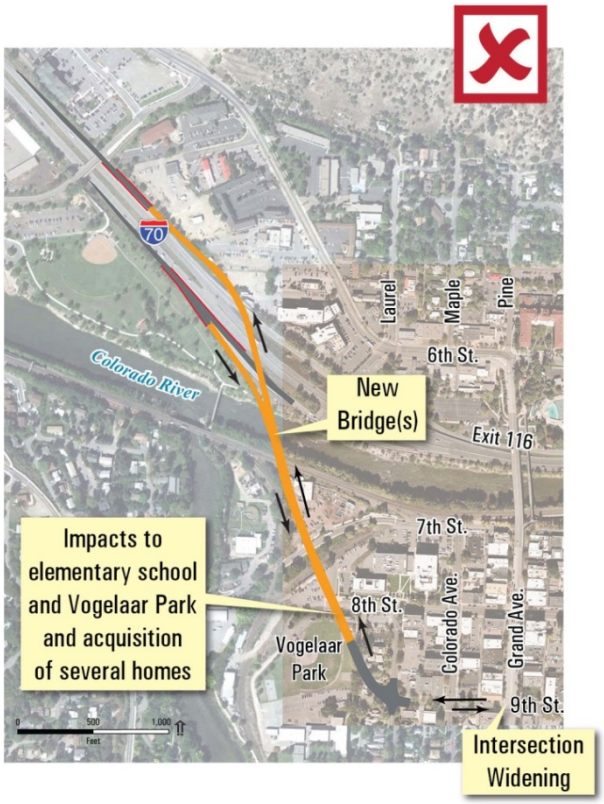
Bridge alignments east of the existing bridge would need to follow Cooper or Blake Avenues. In evaluating eastern bridge options, it became apparent that any bridge in this area would directly impact several historic Section 4(f) properties, including the Glenwood Hot Springs Historic District (Site #5GF1050), Glenwood Hot Springs Bathhouse/Natatorium (Site #5GF 1050.2), Denver & Rio Grande Railroad Station (Site #5GF 1050.3), and possibly the Glenwood Springs Hydroelectric Plant (Site #5GF 2441), Hotel Colorado (Site #5GF 767) and Yampah Hot Springs Vapor Caves (Site #5GF 1258), Also, a new bridge touchdown along Cooper Avenue would result in a high level of impacts to adjacent businesses, and bridge alignments along Cooper or Blake Avenue would move SH 82 into neighborhoods east of SH 82, increasing traffic in residential areas and resulting in a high level of social impacts. Further, the steep topography would complicate construction of a new bridge, resulting in higher construction costs. It was also determined that alignments east of Cooper Avenue would not meet the Purpose and Need element to connect downtown Glenwood Hot Springs and I-70.

For these reasons, alternatives east of the existing bridge were determined to not be feasible and prudent avoidance alternatives because they would result in adverse effects to a higher number of other Section 4(f) resources, alter existing travel and traffic patterns that would result in a higher level of economic and social impacts than replacement of the Grand Avenue Bridge, and would not meet the Purpose and Need.

Alternative bridge alignments west of the Grand Avenue Bridge that were evaluated are summarized below:

Alternative 15. This alternative would provide a direct connection between downtown and I-70 to the west via one bridge or a pair of bridges connecting to either 8th Street or 9th Street near Bolitho Elementary School. The bridge would span over I-70, the Colorado River, and the railroad "wye" section located west of the 7th Street/Colorado Avenue intersection. Under this alignment, the bridge would not be able to descend adequately to provide a direct connection to 8th or 9th Street. The bridge would therefore touch down between 8th and 9th Street with a slight curve to the east to meet street grade at 9th Street. This alignment would result in direct impacts to the elementary school and Vogelaar Park (a Section 4[f] and Section 6[f] resource), and require the acquisition of several homes near the Pitkin Avenue/9th Street intersection.

Alternative 15



In addition, the intersection of 9th Street and Grand Avenue would need to be widened, requiring the acquisition of the historic Colorado National Bank building. Existing traffic volumes and patterns along Grand Avenue, 6th Street, and 9th Street would change as a result of this alignment. To accommodate the increase in traffic volumes of approximately 12,000 to 15,000 vehicles per day, all on-street parking along 9th Street would need to be removed. However, it would provide better traffic flow between 9th Street and the west side of I-70.

This alternative would not address the functional and structural deficiencies of the Grand Avenue Bridge, which would still be in use for traffic traveling to or from the east on I-70. Even though an alternate alignment would divert some traffic from the Grand Avenue Bridge, past studies conducted by CDOT and the City, including the *SH 82 Corridor Optimization Study* (City of Glenwood Springs, 2007) have determined that the Grand Avenue Bridge would still need to have four lanes that meet current design standards to accommodate the continued traffic demand on the bridge. Further, the two new bridge structures to the west by themselves would not provide connectivity

between downtown to the Glenwood Hot Springs area, which is the purpose of the project. To fully meet the Purpose and Need of the project, and because the Grand Avenue Bridge would still need to be brought up to current design standards, the bridge would still require rehabilitation or replacement under this alternative. Work required to rehabilitate the bridge is described below under the *Rehabilitate Without Affecting the Historic Integrity of the Bridge* alternative. This would result in higher costs and impacts. Also, this alternative would result in changes to the appearance and architecture of the bridge that would result in a change to the historic integrity of the bridge, resulting in an adverse effect to the historic structure.

This alternative was determined to not be a prudent and feasible avoidance alternative because it would:

- Not fully meet Purpose and Need.
- Impact existing travel patterns within Glenwood Springs on the south side of the river.
- Still require rehabilitation or replacement of the existing bridge to meet current design standards and accommodate travel demand on the bridge. The level of rehabilitation efforts required would adversely affect the historic integrity of the bridge.
- Result in higher costs because the existing Grand Avenue Bridge would be rehabilitated or replaced, and one or two additional bridges would be constructed.
- Result in a high level of impacts to residential, commercial, recreational areas, and other Section 4(f) resources from acquisition of several homes, removal of on-street parking along 9th Street, and direct impacts to an elementary school and Vogelaar Park, which is a Section 4(f) and Section 6(f) resource. It would also require acquisition of the historic Colorado National Building, which is another Section 4(f) resource. These changes therefore would result in a high level of social and economic impacts.
- **Alternative 16.** This alternative would avoid the existing Grand Avenue Bridge by using a two-way, four-lane bridge west of the existing bridge. The concept would include a Colorado Avenue alignment and an S-curve connecting Colorado Avenue via 9th Street to Grand Avenue. There are two options on the north side of the river – connecting at 6th Street and Laurel Street, or connecting at 6th Street and Maple Street. This alignment would require additional right-of-way from Glenwood Springs on the south side of the river. Existing travel patterns and volumes along Grand Avenue between 9th Street and 6th Street would change. Also, the intersection options at 6th Street and Laurel Street are limited because of the steep grade. This grade would be over 6 percent because of the short distance to gain the elevation needed to cross over I-70 and the railroad tracks.

This alternative was determined to not be a prudent and feasible avoidance alternative for the following reasons:

Alternative 16

- It would have higher costs compared to alternatives on the Grand Avenue alignment.
- It would result in greater impacts to downtown properties.
- It would result in more noise and air quality impacts than other alternatives.
- It would result in Section 4(f) impacts to the historic Denver & Rio Grande Railroad and potentially affect historic resources along Colorado Avenue.
- It could have negative effects on the Safe Routes to School route along 9th Street to the Bolitho Elementary School by increasing the amount of traffic on Colorado Avenue.
- It would require a grade of over 6 percent to cross over I-70 and the railroad tracks.
- It would not meet the project Need of addressing the functional and structural deficiencies of the bridge, which include substandard lane widths, substandard clearances, deficient load carrying capacity, and scour issues.
- The existing bridge would still have a very limited design life, and the extensive rehabilitation required would compromise the historic integrity of the bridge, resulting in an adverse effect to the structure.

Alternative 17. A member of the public submitted this alternative for consideration. It would remove the need for the existing Grand Avenue Bridge to accommodate SH 82 traffic. This alternative is almost entirely elevated, requiring multiple bridges and connections that do not exist today. It would require two separate bridge structures over the river—one northbound bridge located one level above I-70, the railroad, and the interchange; and one southbound bridge that would be one level above the

northbound bridge (as it crosses over the I-70 on-ramp from the northbound structure and crosses over the northbound ramp from 9th Street).

North of the river, the alignment would cross over I-70, the westbound off-ramp, and 6th Street. It would continue north across 6th Street to the Laurel/ 5th Street intersection, then head east on 5th Street, descending to street level at the Maple/5th intersection. An additional ramp would be built on Laurel Street about half a block north of the Laurel/5th Street intersection to ascend and merge with the new 5th/Laurel ramp.

A ramp would provide direct access for northbound traffic to westbound I-70, which would be grade-separated below the southbound movement. Eastbound I-70 traffic would use the existing Exit 116 interchange and the new ramp along 5th Street. South of the river, the new alignment would connect to 8th and 9th Streets. 8th Street would ascend to meet the new elevated alignment to the west. Northbound 9th Street would remain at grade until it rises to cross over the railroad, and southbound 9th Street would be elevated to cross 8th Street.

Alternative 17

This alternative was determined to not be a prudent and feasible avoidance alternative for the following reasons:

- It would result in greater impacts to downtown properties.
- It would result in higher noise and air quality impacts than other alternatives.
- It would have greater potential for Section 4(f) impacts to both park and historic resources, including Vogelaar Park, the historic Denver & Rio Grande Railroad-Aspen Branch and associated Freight Depot, the historic Denver & Rio Grande Railroad, and other potentially historic properties along the alignment.

- It could result in negative effects on the Safe Routes to School route along 9th Street to the Bolitho Elementary School by increasing the amount of traffic on Colorado Avenue.
- It would require much more elevated structure through residential areas, which would result in a high level of visual impacts to neighborhoods in these areas.
- It would create circuitous traffic routes.
- It would remove access from several properties along Laurel Street and require more right-of-way than other alternatives.
- It would not meet Purpose and Need as well as other alternatives because it would result in more out-of-direction travel.
- It would result in environmental, social, and economic impacts of an extraordinary magnitude.
- To better meet the Purpose and Need of the project, and because the Grand Avenue Bridge would still need to be brought up to current design standards, preservation of the Grand Avenue Bridge is not an avoidance alternative. This is because rehabilitation of the existing bridge would still be required to meet current design standards and accommodate travel demand on the bridge. The level of rehabilitation efforts required would compromise the historic integrity of the bridge, resulting in an adverse effect to the historic structure.
- It would result in higher costs.

Rehabilitate Without Affecting the Historic Integrity of the Bridge

Rehabilitation of the existing structure would require major improvements that would alter the bridge's "well-preserved" state – a characteristic that contributed to the bridge's NRHP eligibility.

As mentioned previously, the existing Grand Avenue Bridge is NRHP-eligible under Criterion C because it is technologically significant as a long-span example of its structural type. The Grand Avenue Bridge is distinguished as a well-preserved, large-scale example of CHD beam bridge construction. Rehabilitating the bridge would affect its historic integrity, as described below:

- The existing bridge is too narrow and considered functionally obsolete. To widen the bridge, the deck and rail would need to be replaced, and additional exterior girders would need to be installed that would block the view of the existing girders.

- Rehabilitating the existing girders to meet current design standards would require major retrofitting and potential replacement of some sections of girders, thereby altering their historic integrity.

In addition to the issues described above, the entire superstructure of the bridge would be required to be lifted one foot to provide adequate vertical clearance over 7th Street and the UPRR. While this would not affect the bridge's historic integrity, it would result in very high costs. Additional repairs for spalling, delamination, and corrosion would also be required. The cost of rehabilitation would be significant and could cost as much as a new structure. Also, rehabilitation might reveal additional unknown deficiencies, which would require repair and add unexpected cost. Further, under the Rehabilitation Alternative, the bridge would still stand on its original piers and foundations, which are "scour critical," meaning that they have been determined to be unstable under certain scour (erosion) conditions. Therefore, the existing bridge would have a shorter 30-year design life compared to a 75-year design life of a new bridge.

Based on the analysis above, FHWA has determined that rehabilitating the existing Grand Avenue Bridge is not prudent for the following reasons:

- The bridge is so structurally and functionally obsolete that it cannot be rehabilitated without rebuilding large parts or all of the bridge, which would affect the historic integrity of the bridge.

- Cost of rehabilitation would not be prudent because rehabilitation could cost as much or more than a new structure and only provide a 30-year design life, compared to a 75-year design life of a new structure.

- Rehabilitation would not address some bridge deficiencies and, therefore, would not fully meet the Purpose and Need of the project.

4.6.4 Measures to Minimize Harm

The Historic Bridges Programmatic Section 4(f) evaluation and approval may be used only for projects where FHWA ensures that the Proposed Action includes all possible planning to minimize harm. This has occurred when:

- For bridges that are to be replaced, the existing bridge is made available for an alternative use, provided a responsible party agrees to maintain and preserve the bridge.

- For bridges that are adversely affected, agreement among the SHPO, ACHP, and FHWA is reached through the Section 106 process of the NHPA on measures to minimize harm and those measures are incorporated into the project.

Relocation and repurposing of the SH 82 bridge would prove costly and difficult. It would require removal of the lights, bridge rail, and concrete deck. The steel portion of the superstructure would require deconstruction of key bridge elements (e.g., splices, bracing, and secondary members) and rehabilitation and reconstruction of many other elements, including dealing with potential lead paint issues. This effort would involve a substantial design and construction effort. The reassembled bridge would require reconstruction on new piers and abutments, and new reinforced concrete deck, railing, drains, expansion devices, and lighting. Although it is technically feasible to reconstruct and relocate the steel portion of the superstructure, it would not be prudent given the costs, logistics, and construction impacts to the downtown area.

Repurposing the bridge in place would not address existing bridge deficiencies, such as bridge piers in the Colorado River resting on sand and rock with the potential to erode over time, substandard vertical clearances at 7th Street and the UPRR tracks, and substandard horizontal clearances because of bridge pier locations related to I-70 travel lanes. If vehicles traveling on I-70 strike the piers, they could cause damage or even pier failure because the piers won't withstand the high-speed impact. Further, without substantial rehabilitation, as described in the *Rehabilitate Without Affecting the Historic Integrity of the Bridge* alternative, the bridge would still have a very limited design life, and the extensive rehabilitation work that would be required would compromise the historic integrity of the bridge, resulting in an adverse effect to the historic structure.

The FHWA has consulted with the SHPO and consulting parties under Section 106 of the NHPA regarding the adverse effect to the Grand Avenue Bridge, as described in Section 4.6.5.

4.6.5 Coordination

Under Section 106, the FHWA consulted with the SHPO and historic consulting parties, and has determined that this project would have an *adverse effect* on the Glenwood Springs Viaduct/SH 82/Grand Avenue Bridge (Site #5GF.2717). The SHPO concurred with FHWA's determination of effect in correspondence dated August 14, 2013. FHWA and CDOT will prepare an MOA that will outline measures to mitigate adverse effects. SHPO will be invited to be a signatory to the MOA.

4.6.6 Determination

Based upon an examination of project documentation, circumstances, studies, and consultations completed as of this writing, as summarized in the foregoing, FHWA anticipates that this project will meet the criteria for use of the Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges, and that there are no feasible and prudent alternatives for the use of the Glenwood Springs Viaduct/Grand Avenue Bridge, which is eligible to the National Register of Historic Places. FHWA expects that it will:

1. determine that the project meets the Applicability criteria set forth above;
2. determine that all of the alternatives set forth in the Findings section have been fully evaluated;
3. determine from the findings in this document that there are no feasible and prudent alternatives to the use of the historic bridge is clearly applicable
4. determine that the project complies with the Measures to Minimize Harm section of this document; and
5. assure that implementation of the measures to minimize harm have been or will be completed.

FHWA's final determination of the above will be provided in the decision document prepared for the project.