



2023 INFRA AND RURAL GRANT PROGRAM APPLICATION



**SAN BERNARDINO COUNTY ROUTE 66
BRIDGE REPLACEMENT PROGRAM
FOR SAFETY, VIABILITY, MILITARY TRANSPORT,
GOODS MOVEMENT AND HISTORIC PRESERVATION**

Route 66 - Bridge Replacement Program

Table of Contents

I: PROJECT DESCRIPTION	4
Background.....	4
Transportation Challenges.....	4
Opportunities	5
Project History.....	7
Community Partners.....	8
II: PROJECT LOCATION	8
III: GRANT FUNDS AND USES OF ALL PROJECT FUNDING	10
Maintenance	11
IV: SELECTION CRITERIA	11
Primary Criteria.....	11
A. Safety.....	11
B. State of Good Repair	12
C. Economic Competitiveness	14
D. Environmental Sustainability	17
E. Quality of Life.....	20
Secondary Criteria.....	20
A. Innovation.....	20
B. Partnership	21
V: DEMONSTRATED PROJECT READINESS	22
Technical Feasibility and Readiness	22
Project Schedule	23
Required Approvals.....	24
Project Risks and Mitigation Strategy.....	27
VI: BENEFIT COST ANALYSIS (BCA).....	26
VII: FEDERAL WAGE RATE CERTIFICATION	29
VIII: OTHER CONSIDERATIONS.....	29

Figures

Figure 1.1. Bridge Improvement Locations	9
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Tables

Table 1.1. Population Characteristics	7
Table 1.2. Total Project Costs.....	10
Table 1.3. Environmental Impact.....	18
Table 1.4. Project Schedule	24
Table 1.5. Project Risk and Strategies	25
Table 1.6. Project Benefits (Present Year).....	27
Table 1.7. Project Cost Estimate.....	28
Table 1.8. Benefit-Cost Analysis Summary	28

Appendices and Attachments

Narrative	
Program Cost Summary	
Vicinity Map	
Location Map	
Appendix A: Vehicles Affected by Weight Restrictions	
Appendix B: Collision Data for Interstate 40	
Appendix C: Interstate 40 Detour Map	
Appendix D: Support Letters	
Appendix E: Benefit Cost Analysis Excel Version	
Appendix F: Benefit Cost Analysis PDF Version	
Federal Wage Rate Certification Letter	

I. PROJECT DESCRIPTION

Background

San Bernardino County, California (County) proposes to reconstruct a vital rural transportation corridor, the full closure of which would have national impacts to interstate commerce, National Security, and the preservation of one of America's historical treasures.

The County is embarking on an ambitious program to rehabilitate a 130-mile stretch of historic U.S. Route 66 (also known as "National Trails Highway" or "Route 66") across the Mojave Desert between Barstow and Needles. This section, the longest remaining original section of Route 66, includes 128 historic timber bridges built between 1929 and 1931. This highway is critical to the economic vitality of an underserved rural region larger than some U.S. States, provides the only bypass to Interstate 40 (I-40) in the event of freeway closure, and serves as the only access to a long stretch of BNSF's principal transcontinental rail line.



National Trails Highway is also a critical access route to the U.S. Marine Corps Air Ground Combat Center near the City of Twentynine Palms. Since 2020, the U.S. Armed Forces are expected to have spent over \$36 million per year in contractor services to haul military loads around National Trails Highway because of the condition of its bridges, an expense which would be reduced by approximately 15 percent with the \$75 million investment of federal dollars that the County is requesting with this 2023 Infrastructure for Rebuilding America (INFRA) and Rural Surface Transportation Grant (Rural) application. To eliminate the full \$36 million will require replacing all the bridges in stages, which will be done through the Highway Bridge Program and the MDPG grants.

Twenty-nine of these bridges are programmed for replacement under the federal Highway Bridge Program within the next two years. However, this portion of Route 66 also contains 27 bridges that are 20 feet or less in length and are therefore ineligible for replacement under the Highway Bridge Program. These 56 bridges have exceeded their design life and are in need of replacement.

The much-needed improvements proposed by the County will prevent additional road closures and eliminate recent weight restrictions to accommodate all modes of travel and the movement of goods and interstate commerce. The County is seeking 2023 INFRA and Rural program funding to provide funding these 27 smaller bridges. See Appendix A for the types of vehicles affected by the weight restrictions.

At several locations, current closures prevent through-traffic due to washed out bridges. The closures and the weight restrictions on the roadway impact the goods movement and services to the region that depends on this road. With the replacement of the 20 bridges funded under the Highway Bridge Program and replacement of the 27 bridges that are 20 feet or less in length funded

under the 2023 INFRA and Rural program funding, the County will be able to remove weight restrictions on this corridor so that an alternate route is created for I-40 freeway closures.

Transportation Challenges

This section of Route 66 is much more than just a nostalgic slice of Americana. The continued viability of this road is essential to National Security and Interstate Commerce, and its closure can have significant repercussions not only for the region, but for the Country:

- There are 33 bridges within the 130-mile stretch that are 20 feet or less in length and not eligible for funding under the Federal Highway Bridge Program. Of these, 27 are within the Project Section from Daggett to Amboy Road. These bridges were constructed from timber and all display the negative impacts of almost 90 years of weather, flash floods, truck traffic, erosion, earthquakes, animal life, and other factors. Six of the 33 bridges are being reconstructed with other funding.
- Route 66 was once characterized as “*the road of opportunity*.” Today, this section of highway between Barstow and Mountain Springs Road, which at one time was the only route for all vehicles traveling west, has weight restrictions due to the structurally deficient bridges that severely restrict use by most trucks, RVs and larger vehicles. . The weight restrictions on the roadway impact the goods movement and services to the area that depends on this road.
- One of the most significant issues affecting this corridor is that these bridges were not sized properly to convey frequent flash floods. Floods in September 2014 caused millions of dollars in damage and washed out three of the bridges. A section of this road remains closed to this day. Five additional bridges were washed out in July 2017 under similar flooding. Proposed replacement structures will need to accommodate 100-year flood thresholds. The County has already completed a comprehensive model of the regional hydrology and has obtained the data needed to correctly size the replacement bridges.
- National Trails Highway offers the only bypass to a 96-mile section of Interstate 40. In case of a catastrophic closure of I-40, motorists could be stranded with no detour road available if National Trails Highway is closed.
- National Trails Highway also offers the only access point to a 73-mile section of the main transcontinental BNSF Railway line out of the Ports of Los Angeles and Long Beach. If a



derailment of a BNSF train along this section occurs while National Trails Highway is closed, BNSF may not be able to get to the site of the accident to restore rail traffic. An extended closure of this BNSF line would impact the delivery of between 25% and 30% of the U.S. interstate commerce originating at the Nation's largest Port complex, valued at between \$122.75 and \$147.3 billion annually. These impacts would be significant, and its rippling effects could be felt throughout the national economy.

- National Trails Highway previously served as a key transportation link to and from the U.S. Marine Corps Air Ground Combat Center at Twentynine Palms, until the recent partial closure and the County's imposition of weight restrictions for most of the bridges.
- Several regionally significant utility corridors can only be accessed from this road, including high-voltage transmission lines, gas and oil pipelines, emerging solar and wind power generation facilities, and fiber-optic lines.

The much-needed improvements proposed by the County will prevent additional road closures and eliminate recent weight restrictions to accommodate all modes of travel and the movement of goods and interstate commerce.

Technical Innovation

Route 66 is designated by the State of California as "Historic Highway Route 66" and is currently considered for designation as an All-American Road or National Scenic Byway by the Federal Highway Administration (FHWA). In consultation with the State Historic Preservation Officer (SHPO) and Caltrans Cultural Resources, the County has agreed to replace the existing timber bridges with modern concrete bridge designs that replicate the original structure type.

The County worked with the Structures Department at Caltrans concrete bridge structure type that meets current codes, including the development of a project-specific seismic design criterion for modern concrete bridges.

Serving Disadvantaged Communities

This project will benefit people living in rural areas of San Bernardino County. Population characteristics of persons living in the project area are shown in **Table 1.1**. There is a large, disadvantaged population that would be served by the project. The median income of all of the study area communities are well below the median income for the County and for the state of California.

Table 1.1 Population Characteristics

Route 66 – Bridge Replacement Program for Safety, Viability, Goods Movement and Historic Provisions			
Geospatial Information	Route 66 Communities	2010 Census Data	
		Total Population	Median Household Income
	San Bernardino County	2,088,371	54,090
Barstow, CA (Nebo Center) 34.878785 -116.968083	Barstow	22,639	\$42,354
	Daggett zip code 92327	632	\$37,000
Mountain Spring Rd 34.830146 -115.051099	Newberry Springs zip code 92365	2,637	\$39,504
	Amboy & Cadiz zip code 92304	17	data not available
	Ludlow zip code 92338	12	data not available
	Essex & Goffs zip code 92332	65	data not available
No Data Found For The Following Communities			
	Chambless Siberia	Bagdad Ragtown	Fenner

Project History

U.S. Route 66 has a long project history. By the mid-1940s, the State of California denoted in its maintenance reports that all U.S. Route 66 timber bridges between Barstow and Mountain Springs Road were quickly approaching the end of their design and economical service life. Yet, seventy years later, the County of San Bernardino is still trying to maintain the same 90-year old bridges resulting in very high annual maintenance costs. This maintenance only patches the failures as they occur without correcting the source of the problem.

Instead of using a piecemeal approach, the County has taken a very progressive corridor-wide approach and views the replacement of all 128 bridges as one large program.

Specifically regarding the 27 bridges for which the County is seeking 2023 INFRA and Rural Surface Transportation program funds, the County is already well underway using its own funds to design their replacements. Engineering for all of the 27 bridges that are 20 feet in length or less has been advanced to 35%, and the Project is close to environmental clearance under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The County is investing \$3.5 million of local funds to bring the project ready for 2023 INFRA and Rural Surface Transportation program funds.

In 2014, the County recognized the importance of treating Route 66 as a corridor and developed a Bridge Management Plan for the corridor. Using its own local funds, the County is progressing several programmatic efforts to advance and expedite the replacement of these bridges, including completion of a corridor-wide topographical mapping and corridor-wide hydrology study.

The next step in the County's strategic program was to divide the corridor into logical, manageable sections, each with independent utility. The 128 "bridges" in the corridor fall into two classifications according to FHWA and Caltrans. Bridges that measure over 20-feet in length are

classified as bona-fide bridges and are fundable under the Highway Bridge Program (HBP). The County has been working with Caltrans to program the replacement of these HBP-eligible bridges. The first group of 10 bridges is under design phase, and another two groups of nine bridges each have already been programmed under HBP, in FYs 19/20 and 20/21, including five that were severely damaged in the July 2017 storms.

However, Caltrans and FHWA do not classify structures that measure less than 20 feet as bridges, and a different type of funding is therefore required for the 27 structures that fall in this classification. The County understands the importance of project readiness when competing for funding grants and has therefore advanced the environmental clearance and design of these 27 bridges using its own funds.

The “Project” for which the County is seeking funding under the 2023 INFRA and Rural Surface Transportation programs is the remaining 27 bridges in this 20 feet or less classification.

Community Partners

Many organizations are dedicated to directing the public’s attention to the importance of U.S. Route 66 in America’s cultural heritage, and acquiring the federal, state, and private support necessary to preserve the historic landmarks and revitalize the economies of communities along the entire 2,400-mile stretch of road. Consistent with these efforts, San Bernardino County has frequently consulted with Route 66 preservation groups and other organizations for its projects along the National Trails Highway corridor and has done so for development of this grant application. The County has engaged a network of regional partners and interested stakeholders, including the following:

BNSF Railroad – first class railroad and operator of rail services through the project corridor, one of North America’s leading freight transportation companies

U.S. Department of the Interior – oversees public lands adjacent to the project corridor, including the Mojave National Preserve and Dead Mountain Wilderness Area

United States Marine Corps – 29 Palms Marine Corps Air Ground Combat Center and Barstow Marine Corps Logistics Base

California Department of Transportation – continuous coordination with Caltrans for bridge replacement detours

National Park Service – including the Joshua Tree National Park - oversees public lands adjacent to the project corridor

Bureau of Land Management – created corridor management plan for Route 66 through the Mojave Desert

Route 66 National Historic Federation – cultural and historic resource, provides consultation to County for Route 66 issues

California Historic Route 66 Association - cultural and historic resources, provides consultation to County for Route 66 issues

II. PROJECT LOCATION

The project location is the length of National Trails Highway (U.S. Route 66) across the Mojave Desert between Daggett and Amboy Road, in rural eastern San Bernardino County, California. It is not within a Census-designated Urban Area. National Trails Highway generally parallels I-40.

Nestled in the heart of Southern California, one of the world's most lucrative economies, the County of San Bernardino is geographically the largest county in the contiguous United States. Its vast borders stretch from the greater Los Angeles area to the Nevada border and the Colorado River encompassing a total area of 20,160 square miles, twice the size of Massachusetts. San Bernardino County has more than 2 million residents, making it more populous than 15 States.

Typically, the County is described as being divided into three regions. The High Desert Region is the largest of the three, containing 93% of the County's total landmass, and includes parts of the Mojave Desert. The Valley Region is adjacent to Los Angeles, Riverside and Orange Counties and is the most populated region in the County. Finally, the Mountain Region is one of the County's recreational "hot spots" and is largely made up of public lands, which are owned and managed by state and federal agencies.

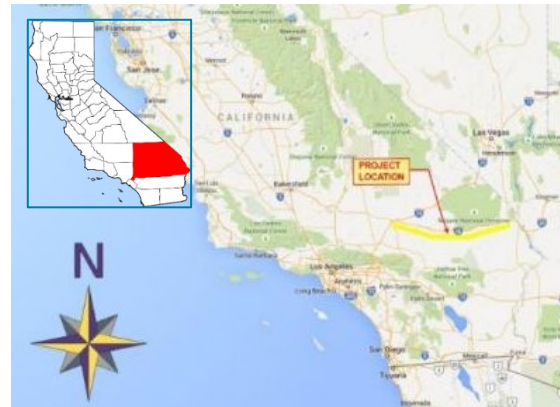


Figure 1.1 Bridge Improvement Locations



The County's \$96 billion-dollar economy is built upon a diverse base of industries ranging from international trade to manufacturing and professional services. One of County's most significant economic drivers, Transportation, Distribution and Logistics (TDL), grew as a result of the County's strategic position within the powerful Southern California market, and as a result of the major interstate transportation corridors that form a nexus within its boundaries along with an unparalleled collection of highways, runways and railways that lead to regional, national and international business centers.

The location of the 27 bridges that are 20 feet or less in length for which the County is seeking 2023 INFRA and Rural Surface Transportation program funds are shown in Figure 1.1. The bridges are all located between Daggett and Amboy Road, on the most critical and heavily used section of National Trails Highway. A certain amount of pavement rehabilitation between closely spaced bridges is also included.

III. GRANT FUNDS AND USES OF ALL PROJECT FUNDING

San Bernardino County seeks **\$30 million in Rural Area 2023 INFRA or Rural Surface Transportation program funds** towards the \$79 million cost to replace 27 timber bridges that are 20 feet or less in length along U.S. Route 66, also known as "National Trails Highway", between Daggett and Amboy Road. The funding will also be used for pavement improvement in between closely spaced bridges. The costs are shown in Table 1.2. The total estimated cost of the project is \$52.5 million, of which \$3.5 million has been spent by the County to advance the project using only local funds.

Table 1.2 Total Project Costs (Table to be revised)

Total Project Costs		Local Funding Only	Local Match (County Gen. Funds)	%	Other Fed. Funds	%	2019 BUILD Grant Funds	%
Project Development Cost								
Program Management	\$429,733	\$429,733						
Programmatic Agreement (PA)	\$131,132	\$131,132						
Corridor-Wide Mapping	\$108,588	\$108,588						
Corridor-Wide Hydrology	\$584,939	\$584,939						
Environmental Clearance	\$723,273	\$723,273						
Final Design	\$1,497,600	\$1,497,600						
TOTAL PRE-BUILD LOCAL FUNDING		\$3,475,265						
Right of Way Costs		\$0	\$0	0%	\$0	0%	\$0	
Construction Costs								
16 Bridges	\$20,803,700		\$4,556,010	21.9%	\$0	0%	\$16,252,891	78.1%
2.3 Miles of Pavement	\$2,390,000		\$523,410	21.9%	\$0	0%	\$1,866,590	78.1%
Mitigation	\$500,000		\$109,500	21.9%	\$0	0%	\$390,500	78.1%
Contingency		\$4,750,000	\$1,040,250	21.9%	\$0	0%	\$3,709,750	78.1%
Construction Management Costs		\$3,556,300	\$770,830	21.9%	\$0	0%	\$2,780,269	78.1%
TOTAL 2019 BUILD GRANT			\$7,000,000	21.9%	\$0	0%	\$25,000,000	78.1%
TOTAL DESIGN AND CONSTRUCTION COSTS		\$35,475,265					\$32,000,000	

Local matching funds provided for the pre-INFRA and Rural Surface Transportation grant components include a mix of federal and local administered by the San Bernardino Transportation Authority (SBCTA). SBCTA is the regional transportation planning organization for the geographic county. There are no conditions for the availability of \$49 million local match. There are no restrictions as to the timing availability of these local funds.

Maintenance

The State of California provides funding to cities, counties, and the state department of transportation for road and bridge purposes through an excise tax on motor fuels. Recently, the Legislature passed, and the voters affirmed, an additional excise tax on motor fuels and an additional vehicle registration fee with revenue allocated to the state, cities, and counties for transportation purposes, including road and bridge maintenance. Passage of the additional excise tax provides an allocation of maintenance revenue essentially doubled over the original motor fuel tax. The County has sufficient revenue and a Bridge Preventative Maintenance Plan to ensure maintenance of the bridges reconstructed with 2023 INFRA and Rural Surface Transportation program funds.

IV. SELECTION CRITERIA

Primary Selection Criteria

A. Safety

Strategic goal: Foster a safe transportation system for the movement of goods and people.

Issue:

One of the County's primary goals with this project is the safe operation of National Trails Highway and restoration of accessibility for all roadway users. The replacement of National Trails Highway bridges between Daggett and Amboy Road, will allow the County to open this section of the roadway safely with no weight restrictions. The bridges will be designed to preserve the historical setting while safely accommodating all legal and permit loads.

Current Status:

It should be noted that the proposed project does not address collisions on National Trails Highway. However, the project seeks to address the consequences of collisions on I-40 by providing National Trails Highway as a detour in the event of an I-40 closure. Using the Transportation Injury Mapping System (TIMS) from the Safe Transportation Research and Education Center, University of California, Berkeley, the County analyzed five years of collision data on I-40, from January 1, 2014 to December 31, 2018. There were 217 collisions on I-40 between Ludlow and Mountain Springs Road during this period. The collisions resulted in 312 injuries and 23 fatalities. In order of frequency, collision types include vehicles overturning (102 collisions), hitting objects (69 collisions), rear end (33 collisions), sideswipe (8 collisions), hitting

pedestrians (two collisions), head-on (one collision), broadside (one collision), and “other” (one collision). The TIMS collects data from the Statewide Integrated Traffic Records System (SWITRS) and provides GIS mapping of injury and fatality collisions. TIMS does not provide information on property damage only collisions. See Appendix B for I-40 Collision Data. (Data will be made current)

Proposed Impact:

1. Project’s ability to reduce the number, rate, and consequences of surface transportation-related accidents, serious injuries, and fatalities among transportation users.

As noted earlier, the project seeks to address the consequences of collisions on I-40 by providing National Trails Highway as a detour in the event of an I-40 closure. Caltrans records indicate an annual average of 23 hours of closures for I-40 relating to collisions or other traffic incidents along the I-40 corridor. Some of these closures would have benefited from a detour through National Trails Highway to manage traffic, eliminate congestion, and ensure continuation of goods mobility. In this rural area there are limited routes available to help manage or detour the traffic during an incident. If Route 66 is was open to traffic without weight restrictions, motorists would only travel an additional 16 miles as a detour around any problems on I-40. In contrast, because Route 66 is closed or restricted, motorists are required to use other highways that add almost 120 miles to their trip. Route 66 provides emergency responders or others required to resolve a problem quickly with an alternate route and permit continued travel along I-40. See Appendix C for the I-40 Detour Map.

2. Project’s contribution to the elimination of highway/rail grade crossings

This project does not eliminate at grade-crossings; however, Route 66 runs parallel to a 73-mile section of the BNSF Railway Needles Subdivision and allows access for track inspection and maintenance, which is critical to maintain the safe operations of this line. There are segments of the corridor that equipment (truck, load, and trailer) cannot reach easily due to the weight-restricted bridges or closures along Route 66, which can impede emergency response to a derailment or train collision.

The track that runs alongside Route 66 is a segment of BNSF’s Transcontinental Corridor, a main artery for rail commerce between the West Coast and the Chicago interchange complex, the gateway to the Eastern United States’ rail network. This is a key rail freight corridor but it also accommodates passenger rail. Amtrak’s Southwest Chief route runs on this line once a day in each direction. It travels east late at night and returns westbound in the early morning hours. The Southwest Chief stops at Barstow and Needles only. The majority of the freight traffic on the line consists of intermodal containers and trailers carrying products to market and providing parcel services for customers like UPS and FedEx. There are also unit trains dedicated to hauling one type of freight such as grain, ethanol, steel coils and automobiles. The remaining trains are general merchandise trains carrying mixed freight. The line is also shared with the Union Pacific Railroad for a short distance just east of Barstow to Daggett where the Union Pacific line splits to the north to access Las Vegas and Salt Lake City.

The Marine Corps Logistics Base in Barstow also reports that military equipment and vehicles are shipped to the Base from the east coast via the BNSF rail line at a cost of \$4,000,000 per year.

Previously, equipment and vehicles were hauled in by truck at a cost of \$12,000,000 per year. Base staff indicate that a derailment near National Trails Highway would be catastrophic if the derailment would impede the delivery of military equipment and vehicles.

3. *Project's contribution to preventing unintended releases of hazardous materials.*

There are good reasons other than tourism and community connections to invest in the restoration of Route 66, which is aligned with I-40 and the BNSF railway. National Trails provides the only access to respond to a BNSF derailment within a 73-mile section of this rail line. National Trails Highway is therefore critical quickly mobilize a containment and cleanup response to a potential derailment-caused hazardous material spill. The location provides several benefits in responding to potential truck or tanker spills. Emergency crews can respond and operate using Route 66 to reach either location. They avoid having to travel through stopped or congested interstate traffic. In the event of a required closure on I-40, Route 66 serves as a cost-effective detour versus a regional freeway re-route. However, the availability of Route 66 as a detour depends on the successful restoration of the roadway and its bridges.



B. State of Good Repair

Strategic Goal: Maintain critical transportation infrastructure in a state of good repair.

Issue:

This project is, at its core, a project to maintain National Trails Highway in a state of good repair. As the largest county by area in the continental United States, and consistent with the County's priority to maintain its transportation facilities in a state of good repair, the County continuously seeks to leverage local, state, and federal funds to maintain more than 2,500 miles roads for a county whose encompassing area is larger than the states of Hawaii, Massachusetts, Vermont, New Hampshire, New Jersey, Connecticut, Delaware, and Rhode Island.

The 19,500 square miles of the County's High Desert Region, which comprise 97% of the County's land mass, is likely the most underserved region in the U.S.'s lower 48 States in terms of transportation federal funds per square mile of area.

Because of the number of bridges that need replacement, National Trails Highway represents the most significant challenges in the County's efforts to maintain its road network in a state of good repair.

Current Status:

1. *The project is consistent with relevant plans to maintain transportation facilities or systems in a state of good repair and address current and projected vulnerabilities*

The considerable number of bridges is significant and unique to this segment of Route 66 in California. This 130-mile segment includes about ONE bridge per MILE. The engineered system of berms, dips and 128 timber bridges is found nowhere else along the entire 2,488-mile route from Chicago to Santa Monica. This is a significant engineering feature adapting the road to numerous washes and the topography of the Mojave Desert.

The existing bridges are well beyond their design lifespan. The County's maintenance efforts consist of splicing timber beams that regularly fail, placing temporary scaffolding to support sagging spans, removing regular sediment aggradation under many of the bridges, and repairing damaged piling and lagging. These efforts are a stop-gap measure until the County can obtain funding to replace these bridges.

The proposed 27 bridge replacements to be funded by 2023 INFRA and Rural Surface Transportation program funds will close the last unfunded piece of the project to ***restore the long-term value of the County's annual maintenance expenditures for the critical Ludlow Road to Mountain Springs Road segment of Route 66.*** At this point, the County's annual preventive maintenance budget is spent to provide temporary repairs. As with any infrastructure project, the older the structure, the more maintenance expense is necessary to maintain efficiency and safety. The point in the life cycle of the infrastructure at which it becomes more efficient to replace rather than repair, was passed long ago.

As mentioned throughout this narrative, the County has developed a Bridge Management Plan to guide its activities to replace and maintain the bridges on National Trails Highway to address current and future vulnerabilities under "Bridge Management Plan").



2. *If left unimproved, the poor condition of the asset will threaten future transportation network efficiency, mobility of goods or accessibility and mobility of people, or economic growth.*

because of their structural deficiency, most bridges along Route 66 have weight limit postings as low as three tons, with approximately half of them held up by either additional temporary timber columns or scaffolding at mid-spans. This weight

restriction prevents vehicles such as school buses, recreational vehicles, ambulances, construction equipment, military vehicles, and tractor trailers from using the roadway. Except for the 27 bridges to be funded by 2023 INFRA and Rural Surface Transportation program funds, all these other

washed out or structurally deficient bridges exceed 20 feet in length and will be reconstructed or replaced using HBP funds.

Proposed Impact:

There is no question this roadway impacts the efficiency of the transportation system. If the bridges are not replaced, military transports will continue to have to be detoured, BNSF track inspections vehicles will continue having difficulty performing the safety inspections of the tracks, the planned development of solar and wind power plants in the adjacent Bureau of Land Management (BLM) lands will be curtailed, and the local economy will be severely impacted.

The proposed 27 bridge replacements to be funded by 2023 INFRA and Rural Surface Transportation program funds will help *restore the long-term value of the County's annual maintenance expenditures for Route 66*. At this point, the County's annual preventive maintenance budget is spent to provide temporary repairs. As with any infrastructure project, the older the structure the more maintenance expense is necessary to maintain efficiency and safety. The point in the life cycle of the infrastructure at which it becomes more efficient to replace rather than repair, was passed long ago.

C. Economic Competitiveness

Strategic goal: Decrease transportation costs and improve access, especially for rural communities, and improve long-term efficiency, reliability or costs in the movement of workers or goods.

Issue:

Contributing to the economic competitiveness of the United States over the medium to long-term, revitalizing communities and creating and preserving jobs. Second, to decrease transportation costs and improve access especially for rural communities through reliable and timely access to employment centers and job opportunities.

Current Status:

1) Rural Businesses Affected by Potential Route 66 Closure

Rural communities along this corridor have no other access besides I-40 and National Trails Highway. Some of the businesses that utilize this corridor include:

Omya North America - Omya specializes in the production, sale, and delivery of ground natural calcium carbonate from the mining site in Amboy on National Trails Highway. Omya's plant in Lucerne Valley ships finished products in bulk railcars, semi-bulk bags and 50lb bags to paint, plastics, and building products customers throughout the southwestern United States. Output from the Amboy quarry is about 70,000 tons per year.

Chambless Water Company – The Chambless Water Company is a small water supply and distribution company located on National Trails Highway. Chambless Water Company is the sole water supplier of the Omya North America Amboy quarry. The company provides Omya with water, hauled by truck, annually for their salt production. Because of the location of its water

supply, failure of any National Trails Highway bridge in this area would adversely affect this company. In addition, the company wants to establish a recreational vehicle park, but has put its plans on hold due to the many closures on the road.

Cadiz Farms - Cadiz Farms has ongoing organic and sustainable agricultural operations with 1,600 acres in production. The Company is presently evaluating the expansion and diversification of its current farming operations, which have historically emphasized citrus orchards, and table grape vineyards. Cadiz Farms relies on National Trails Highway, both to the east and west, to ship its produce to nationwide market and for its employees to travel to and from the property for work. Loaded delivery trucks typically weigh 80,000 lbs. As the Company moves forward on its business objectives, the safe and sustainable use of National Trails Highway will be of even greater importance.

The construction of new solar projects on BLM land only accessible from National Trails Highway will also create many long-term jobs and bring new economic opportunities to this underserved rural area (refer to discussion below under Environmental Sustainability).

3. *Economic Impacts of Closure*

Findings from a 2011 Route 66 economic impact study indicate that the Route 66 corridor from Santa Monica to Chicago generates approximately \$132 million in benefits, \$38 million from Heritage Tourism alone. When multiplier effects are taken into account the total annual impacts to the *nation* include a net economic gain of 2,401 jobs, \$90 million in income, \$262 million in overall output, \$127 million in Gross Domestic Product (GDP), and \$37 million in tax revenues, 70 to 80 percent of which goes to the *eight Route 66 states*. On an annual basis, the in-state effects to the eight Route 66 states from the annual \$132 million investment in annual Route 66 spending include 1,741 jobs, \$62 million in income, \$173 million in output, \$87 million in gross state product (GSP), and \$27 million in taxes (\$16.5 million federal and \$10.2 million state or local). The net in-state wealth added to the economy is roughly \$79 million annually. (Source: Route 66 Economic Impact Study:

<https://www.wmf.org/sites/default/files/article/pdfs/Route%2066%20Economic%20Impact%20Study%E2%80%9494Synthesis.pdf>).

The Daggett to Amboy Road 73-mile segment of National Trails Highway lie in the project area, which translates to about 3.4 percent of Route 66's 2,200 miles. While no specific data exists for this portion of Route 66, the \$132 million in benefits for Route 66 likely translates to \$4.49 million in economic benefits to the project area (3.4% of \$132 million), 115 jobs, and \$1.26 million in tax revenues from the project.

There are no major population centers along the 144-mile stretch of I-40 between Needles and Barstow. Within this stretch, National Trails Highway provides the only alternative route for the 73-mile section between Ludlow Road and Mountain Springs Road. Route 66 not only generates its own economy, but connects two significant local economies as well. The loss of National Trails Highway as an alternate route for I-40 closures, greatly impacts the economies of Needles and Bartow.

Annually, 4.3 million cars pass along I-40 through the City of Needles, population 4,988 representing a critical component of the local economy and demand for retail products and services. For example, in 2013 the local demand for gas station sales in the City of Needles was \$7.1 million, which is the local demand. However, total gas station sales were \$50.7 million. The 2013 local demand for food & beverage stores was \$10.1 million and the total sales were \$22.6 million. The difference represents the economic benefit of recreational tourism and interstate travelers.

(See <http://www.cityofneedles.com/forms/EconDevStratPlanNeedlesCA042214.pdf>) [Link to be updated](#)

The City of Barstow, population 25,488 serves more than 60 million travelers and 19 million vehicles visiting each year. Barstow is home to the Outlets at Barstow which provides shopping usually only found in metropolitan areas. (See <http://www.barstowca.org/city-hall/city-departments/economic-development>. [Link to be updated](#) Total City of Barstow retail sales in 2012 was \$672 million. <https://www.census.gov/quickfacts/fact/table/barstowcitycalifornia/PST045217>. [Link to be updated](#)

4. *Reliable access is affected by Route 66 closure, especially for rural communities, impacting timely access to employment centers and job opportunities.*

I-40 is the inter-regional route connecting the cities of Barstow and Needles. National Trails Highway is the only alternative travel route in the event that I-40 at any location between the east and west end of National Trails Highway (approximately 73 miles) is subject to closure. It is important to note that Route 66 not only generates its own economy, but connects two significant local economies as well. Loss of National Trails Highway as an alternate route for I-40 closures would have a negative impact on these two local economies.

In case of accidents or interstate closures, the California Highway Patrol frequently re-routes traffic onto National Trails Highway using Goffs Road, Essex Road, Kelbaker Road, Crucero Road, and Hector Mine Road exits. National Trails Highway is the sole alternate route for passenger vehicle and goods movement when I-40 is subject to closure. Unfortunately, the bridges on National Trails Highway were not designed to accommodate the weight of modern trucks. In addition, I-40 has restricted overhead vertical clearances in this section that require very high loads to also detour to National Trails Highway, which is the only paved alternative that does not have any height restriction.

The United States Marine Corps Logistics Base east of Barstow conducts military training exercises several times per year in conjunction with other armed forces branches. These exercises require the movement of personnel and equipment, including heavy military vehicles, from the Base to the Marine Corps Air Ground Combat Center near the City of Twentynine Palms. Logistics Base staff report that it is not currently able to use National Trails Highway because of the condition and weight limitations of the bridges. Instead, they must hire contractors to haul the equipment along unpaved BNSF access roads that parallel the rail line and then over BLM lands south to Twentynine Palms. The Logistics Base reports that it costs \$4,000 to \$7,600 per load to move equipment by contractor with between 90 and 200 loads hauled every three months to the

Combat Center. Averaging these costs and number of loads results in an annual cost to the United States Government of \$3,364,000.

The Logistics Base will be conducting a special training event from October to December in 2019 that will require 1,900 hauled loads. If the event is successful, the Base intends to conduct this additional event three times per year, resulting in an additional annual cost of \$33,060,000 to hire contractors to haul the loads between the Base and the Center. The annual cost for these training events would then be \$36,424,000 using the previously mentioned figures. The County intends to reconstruct all bridges to accommodate the weight of military vehicles. **Data to be updated**

5. Help the United States compete in a global economy by facilitating efficient and reliable freight movement

BNSF Railway has joined in the County's efforts to repair and restore the National Trails Highways aging timber bridges required to re-open the highway and remove vehicle weight restrictions, because National Trails Highway provides the access and connections to BNSF's service roads. This access is required for crews and equipment to perform repairs or conduct safety reviews of the tracks. In the event of a train emergency, National Trails Highway would be critical to all emergency responders. BNSF has informed the County that the current closures and weight restrictions impact the freight lines maintenance operations on a daily basis, and potentially could have a significant negative impact on freight costs if not restored to access by all vehicles.

Proposed Impact:

National Trails Highway plays a significant role in serving rural transportation needs and emergency transportation needs across the Mojave Desert. The economic benefits of this project include:

- By reconstructing the bridges in the proposed project area, the vitality and accessibility to Route 66, one of the America's national treasures, will be reinstated.
- The restoration of Route 66 will also bring back heritage tourism to the area, creating economic opportunities for the communities along the route.
- Restoring the safe operation of this road will decrease transportation costs by providing a usable and safe alternative route to I-40. It will also decrease the cost of BNSF's access to its rail lines for maintenance of its transcontinental lines.
- Replacing the deficient bridges along Route 66 will restore a viable and shorter route to the military operations in the area, and save the U.S. Government \$36 million per year.
- By reconstructing Route 66, this alternate route for I-40 would eliminate any negative impact from I-40 closures on the local economies of Needles and Barstow.

D. Environmental Sustainability

Strategic goal: Improve energy efficiency and reduce congestion-related emissions.

Issue:

Reduce energy use and air pollution through congestion mitigation strategies.

Current Status:

Air quality benefits are associated with the reduction in vehicle hours, vehicle miles, fuel consumption and pollutants associated with major accidents that cause the closure of I-40, during which National Trails Highway is the only viable detour for the Interstate. According to Caltrans, this happens on average 23 hours per year. A second environmental concern is the length of travel required due to the closure for travel from the City of Twentynine Palms to the I-15 uses Amboy Road to National Trails Highway to Kelbaker Road as a direct route, a 139-mile trip. The alternative if National Trails Highway is closed would be to drive to Barstow to I-15, a 211-mile trip.

Proposed Impact:

By acting as a bypass to I-40, National Trails Highway will relieve congestion, and reduce emissions on the Interstate and also provide an important north-south connection for traffic to-and-from Twentynine Palms, provided that it is repaired to remove the weight restrictions and its bridges are replaced. The environmental benefits of the project for the **current year** are shown below. Over a 25-year period, the environmental benefits of a functioning Route 66 are significant. These savings, shown in Table 1.3, may be quantified over 25 years as: 340,000 gallons of fuel and a reduction of more than 3,000 tons of CO₂ emissions (see Appendix C (Excel file) and Appendix D (PDF file) for detailed Benefit-Cost Analysis).

Table 1.3 Environmental Impact **Table to be revised**

Environmental Factor	Existing	Construct Bridges	Change
Vehicle Hours	33,627	25,757	7,870
Vehicle Miles	2,017,603	1,545,398	472,205
Fuel Consumption (gal.)	1,194,917	854,236	340,681
NO _x Emissions (kg)	4,134	2,773	1,361
Particulate Matter (kg)	484	323	161
CO ₂ Emissions (tons)	10,942	7,827	3,115

Issue: Avoid adverse environmental impacts to air or water quality, wetlands, and endangered species

Current Status and Proposed Impact:

The High Desert of San Bernardino County is home to the desert tortoise, an endangered species. The project includes measures to protect this resource.

Water quality will be protected by working with the two Regional Water Quality Control Boards (RWQCB) that encompass the area (Colorado and Lahontan).

Proposed Impact:

The environmental resources potentially most impacted by this project are cultural resources. The County has been working with Caltrans Structures, Caltrans Cultural Resources, SHPO, and the U.S. Department of Forestry to design a replacement structure type for these historic bridges that replicates the original timber elements with a state-of-the-art modern concrete bridge replacement system that will satisfy the SHPO's concerns for preserving the historic fabric, look, and context of this national treasure, while being designed to be compliant with the latest AASHTO and Caltrans design codes, including seismic. A Section 106 consultation process will address impacts to the historic nature of the bridges for the replacement of the bridges for which the County is requesting 2023 INFRA and Rural Surface Transportation program funds.

Current Status and Proposed Impact:

Route 66 serves a large area of private and BLM land that is being considered for future renewable energy projects, including large-scale solar projects. As the major access road to the desert lands being considered, without this route or with current weight restrictions, construction of new solar projects will be limited. The BLM has prepared the federally funded Route 66 CMP (<http://cmp.route66ca.org>) and is preparing the DRECP (<http://www.drecp.org/whatisdrecp/>). Both documents discuss current efforts on managing the renewable energy projects. **Verify links are current**

Cognizant of the potential impact of renewable energy facilities on Route 66, the Route 66 Corridor Management Plan notes that BLM has completed two programmatic environmental impact statements to identify lands where solar and wind energy could be permitted, and a number of potential energy transmission corridors have been identified. Multi-purpose transmission corridors have been identified along I-15 and I-40. These could include pipelines and/or above ground transmission facilities. The Historic Route 66 corridor between Needles and Barstow has potential solar and wind resources and entities will need to work together to ensure the compatibility of the historic nature of Route 66 and the placement of renewable energy facilities. Given the potential for placement of renewable energy facilities along I40 per the DRECP, the need for ensuring an alternate east/west travel route to access these facilities is important.

In addition, included among the recommendations in the Route 66 Corridor Management Plan is "Seek funding from federal and non-federal sources to provide a means of financing road modifications through partnerships with heavy users of the route (BNSF Railway, resource extraction, utilities, renewable energy developers, etc.)... Develop and work with San Bernardino County to adopt design and preservation guidelines for the route addressing renewable energy projects."

E. Quality of Life

Strategic goal: Increase transportation choices for individuals to provide more freedom on transportation decisions, expand access to essential services for communities across the United States, particularly for rural communities, and improve connectivity for citizens to jobs, health care, and other critical destinations, particularly for rural communities.

Issue:

Without National Trails Highway, there is only one transportation choice available for people traveling between Barstow and Needles, which is I-40. The National Trails Highway provides the only alternative to this section of the Interstate. For those who dislike driving on freeways, or who may want to rely on non-motorized modes of travel, National Trails Highway is the only alternative. The new bridges and roadway are being designed to accommodate bicycles in these rural conditions.



Current Status:

Route 66 (the National Trails Highway) is currently closed between east of Cadiz Road and Mountain Springs Road. San Bernardino County has begun the process to replace these bridges under the federal Highway Bridge Program or with local funds. While these bridges are not part of the project area, it illustrates the challenges the County with this corridor. If I-40 were closed or unavailable due to an incident, then those who live and work in the Mojave Desert may not be able to access their jobs and services and will have to travel 120 miles out of their way. Moreover, National Trails Highway is used to access important north-south routes as well. Amboy Road in the project vicinity is an important north-south route that uses a section of National Trails Highway to connect the City of Twentynine Palms with I-40. Moreover, in the event of an I-40 closure due to traffic incidents or inclement conditions, the inability to use Route 66 as an alternate route impacts interstate commerce. As noted before, 25% to 30% of the Ports of Los Angeles and Long Beach cargo uses I-40 for shipping eastward.

Proposed Impact:

Complete the bridge replacement project to enable a secondary access route for people who live and work in the Mojave Desert and may not be able to access their jobs and services. Secondly, provide this active transportation linkage to help complete the regional active transportation network.

Secondary Criteria

A. Innovation

Innovative Technologies

1. The County completed a corridor-wide topographical effort using aerial-based LiDAR. This provided the basis for the hydrology studies and to assess locations where the roadway will need to be raised to accommodate design flows to ensure a long term solution to flood hazards to motorists.

2. The 27 bridges located along this section of Route 66 are located in six watersheds, for which no hydrology had previously been determined. Using local funds, the County created 2D hydrological models of these six watersheds. This pioneering programmatic effort resulted in previously non-existing hydraulic data for each of the 128 bridge locations. This information was used to determine the adequate length for each bridge replacement, identify locations where the roadway needs to be raised to remain out of the flood zones, identify locations where berms or levees are needed to channel the storm flows to the bridges, and identify locations where new bridges or culverts are required to properly convey all waters in the corridor.

B. Partnership

This section provides a list of all project parties and details about public and private parties who are involved in delivering the project. This project is a great example of a cooperative endeavor among many diverse stakeholders. This project will provide a route to local communities, historic sites, railroad and utility crews, military transport, tribal lands, environmental projects and national resources. Because of its multiple benefits, the project has the support of many entities including the Bureau of Land Management, the United States Marine Corps, Caltrans, U.S. Congressman Paul Cook, BNSF Railway, Town of Yucca Valley, California Historic Route 66 Association, Adventure Cycling Association, California Construction and Industrial Materials Association, National Historic Route 66 Federation, County of San Bernardino Land Use Services Department, The Sun Runner/The Journal of the Real Desert and other entities. **To be updated**

The California Historic Route 66 Association (CHR66A) and the Bureau of Land Management California Desert District have teamed up with their local and state agency and non-governmental organization partners to help preserve the history of Route 66 through the desert. The County of San Bernardino is a participant in these planning efforts. This plan recognizes the need to complete the roadway improvements on Route 66 as a factor in the success of any planned economic development balanced with the need to design bridges that preserve the historical setting of the region. The plan provides strategies for educating visitors about its significant cultural and natural landscape features. The effort will also look for ways to increase economic activity through enhanced recreation and heritage tourism opportunities.

V. DEMONSTRATED PROJECT READINESS

Technical Feasibility and Readiness

The County has invested \$3.5 million to advance this project with its own funds, topographically mapping the entire corridor, developing hydrologic models for all drainages that impact the corridor, inspecting and cataloguing its bridge assets, and developing a strategy of what work

needs to be done at each bridge. The County summarized this program and bridge replacement strategy in a Bridge Management Plan

The County has also already begun the design for the replacement of the 33 bridges that are 20 feet or less in length (including the 27 bridges that are the subject of this application), again using its own funds.

The County is also well underway to environmentally clear these 27 bridges. Technical studies are either complete, in draft form awaiting review by Caltrans, or will be submitted to Caltrans. The draft environmental document (EIR/EA) is also complete and under review by Caltrans

In an effort to minimize impacts to historic and biological resources, and to streamline the design and construction through the life of the replacement program, the County developed a Bridge Design Alternative Analysis and Bridge Design Guidelines (DAAR) document. The document evaluated various bridge designs, and identified which designs would constitute the least environmentally damaging alternative for historic and biological resources.

The DAAR has evaluated viable structure types to replace the existing bridges, and considered impacts on historic resources, structural safety ratings, AASHTO standards, and compliance with the environmental processes necessary to complete the project funding process. The DAAR identified goals for the long-term replacement/rehabilitation program, as follows:

- **Ensure Public Safety**
- **AASHTO Code Compliance**
- **Structural Design Adequacy**
- **Cost-Effective for Construction and Maintenance**
- **Construction Cost**
- **Durability and Maintenance Costs**
- **Minimize Disturbance to Biological Resources**
- **Length of Time Required for Construction**
- **Construction Schedule**
- **Detour Requirements**
- **Minimize Disturbance to Historic Resources**
- **Hydrology**
- **General Preservation Compliance Issues**
- **Environmental Impact**

Project Schedule

Because the County has significantly advanced the engineering and the environmental clearance with its own funds to establish readiness for 2023 INFRA and Rural Surface under “35% Plans”), the project schedule is shown in Table 1.4. Schedule and cost risks have been properly mitigated

(see section below on Risk). The County owns all required right-of-way for the construction of the project. **To be updated**

Table 1.4 Project Schedule

	2014-2018					2019				2020				2021				2022				2023				2024				2025			
	14	15	16	17	18	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Library of Timber Structural Details																																	
Section 106 Programmatic Agreement																																	
Corridor-Wide Studies (Mapping, Hydrology)																																	
CEQA/NEPA Clearance of Demo Bridges (Dola/Lanzit)																																	
Final Design of Demo Bridges (Dola/Lanzit)																																	
Construction of Demo Bridges (Dola/Lanzit)																																	
Biological Surveys for 33 Bridges																																	
Preliminary Design of 33 Bridges																																	
CEQA Clearance for 33 Bridges																																	
NEPA Clearance for 33 Bridges																																	
Notification of 2019 BUILD Funds																																	
Final Design of 33 Bridges																																	
Regulatory Permitting																																	
Obtain E-76 for Construction																																	
Construction of 16 Bridges (2019 BUILD)																																	

1. Environmental Permits and Reviews

The County has had discussions with the regulatory agencies from which permits will be required. Permits anticipated to be required include a Clean Water Act Section 404 Nationwide Permit from the U.S. Army Corps of Engineers (USACE), a Clean Water Act Section 401 Certification from the Lahontan and Colorado Regional Water Quality Control Boards, and a Section 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife. Not all washes appear to have connectivity to navigable waters of the United States and therefore these washes will not fall under the jurisdiction of the USACE.

The County already obtained the same permits from these regulatory agencies for the construction of the demonstration projects at Dola and Lanzit, and expects a similar permitting process for this project.

The County has been working closely with Caltrans' Division of Environmental Analysis, who is the lead agency under NEPA as the FHWA delegate. As part of the public consultation effort for the Programmatic Agreement, Caltrans has contacted a multitude of stakeholders and interested parties, including the Bureau of Land Management, the USACE, the Lahontan and Colorado Water Quality Control Boards, the National Park Service, twelve (12) Native American tribes and historic preservation groups with demonstrated interest in the preservation of Route 66 under "Programmatic Agreement" for list of historical groups contacted, and Consultation Letters).

2. State and Local Approvals

The project has broad public support as demonstrated by many support letters received from various stakeholders and interested parties all the way back to 2015 (See "Letters of Support" at Among these letters, the County has received support from Hon. Col. Paul Cook (Ret.), U.S.

Representative, 8th District, Hon. Jean Fuller, California State Senator 6th District, and Hon. Jay Obernolte, California Assemblyman 33rd District.

3. Federal Transportation Requirements

The project is included in the 2023 Federal Transportation Improvement Program (FTIP) as Project ID 20151302, see

http://ftip.scag.ca.gov/Documents/19FTIP_LocalAmend19_01_08SBD.pdf

4. Project Risks and Mitigation Strategy

The County has carefully assessed project risks and developed realistic mitigation strategies to ensure that the project can be delivered within the statutory timing requirements of 2023 INFRA and Rural Surface Transportation Grant program funds. The project risks and strategies are summarized in Table 1.5.

Table 1.5 Project Risk and Strategies

Project Risk	Mitigation Strategy	Status
Right-of-Way Acquisition Risk	The County has advanced engineering to 35% and has determined that it currently owns all the Right-of-Way required to construct the project.	Mitigation Complete
Historical Feasibility Risk due to Timber Construction	The County designed and constructed a demonstration project that replaced two of the National Trails Highway bridges, Dola Ditch and Lanzit Ditch. Project demonstrated historical replication feasibility.	Mitigation Complete
Delay in SHPO Section 106 Consultation	The SHPO has no statutory deadline to respond to submittal. The County will be in regular communication with the SHPO to facilitate and expedite the review.	Mitigation Underway
Uncertainty of cost to build innovative timber bridges	The County has bid and constructed a demonstration project that replaced two of the National Trails Highway bridges, Dola Ditch and Lanzit Ditch. Cost data from this demonstration project was used to refine cost estimates.	Mitigation Complete
Delay in environmental clearance		Mitigation Underway
Hydrology	The County has completed a corridor-wide topographical mapping and hydrology study of the six impacted watersheds to obtain design flows at each bridge.	Mitigation Complete

Delay due to Utility Relocations	The County has determined that utilities along this corridor are very minimal, primarily one buried communication line.	Mitigation Complete
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VI. BENEFIT COST ANALYSIS (BCA)

This Benefit Cost Analysis (BCA) quantifies the expected benefits of the proposed project against the no-build alternative. In order to provide a realistic benefit cost analysis, the County has had to make realistic assumptions and probabilistic estimates, based on actual, tangible, published, or calculated parameters. Assumptions and estimates are denoted and explained on the assumptions tab in the BCA. See Appendices E and F. **To be updated**

Operational benefits compared include:

- Vehicle hours of travel (VHT) with costs per mile computed for private vehicles and trucks
- Vehicle miles of travel (VMT) with costs per hour of travel computed for private vehicles and trucks
- Fuel consumption with costs of fuel
- Costs associated with the maintenance of bridges and
- Probabilistic Costs associated with railroad derailment or maintenance issue, including crew cost, operation of locomotive, fuel, cars, and intermodal lading
- Costs related to military operations to move between Base and the Command Center for training exercises and for special exercises.

The project's operational benefits for the present year are shown in Table 1.6. The cost estimate for the 16 bridges is provided in Table 1.7. The present value of project benefits over a 25 year period with a 7% discount rate are shown in Table 1.8. The project achieves a benefit-cost ratio of 1.45. Additional cost and benefit calculation detail is provided in Appendix C and assumptions detailed in Appendix D.

Table 1.6 Project Benefits (Present Year) **To be updated**

Project Variables	No-Build	Build	Benefit (Cost Savings)
Operational Benefits I-40	\$ 5,312,448	\$ 4,069,109	\$ 1,243,339
Operational Benefits N-S Travel	\$ 35,407,865	\$ 25,057,874	\$ 10,349,991
Operational Benefits BNSF	\$ 19,087,431	\$ 3,290,936	\$ 15,796,495
Environmental Benefits	\$ 1,385,970	\$ 969,961	\$ 416,009
Maintenance Costs for Bridges	\$ 4,121,414	\$0	\$ 4,121,414
Military Exercise Hauling Costs	\$ 69,638,347	\$ 59,192,595	\$10,445,752
Residual Value of Improvements at 25%	\$0	\$ 4,812,871	\$ 4,812,871
Total	\$134,953,475	\$ 97,393,346	\$ 47,185,871

Table 1.7 Project Cost Estimate **To be updated**

Total Project Costs	
Project Development Cost	
Program Management	\$429,733
Programmatic Agreement (PA)	\$131,132
Corridor-Wide Mapping	\$108,588
Corridor-Wide Hydrology	\$584,939
Environmental Clearance	\$723,273
Final Design	\$1,497,600
Right of Way Costs	\$0
Construction Costs	
16 Bridges	\$20,803,700
2.3 Miles of Pavement	\$2,390,000
Mitigation	\$500,000
Contingency	\$4,750,000
Construction Management Costs	\$3,556,300
TOTAL DESIGN AND CONSTRUCTION COSTS	\$35,475,265

Table 1.8 Benefit-Cost Analysis Summary **To be updated**

Benefit Cost Analysis

Project Benefits	Present Value at 7%
Operational Benefits (I-40 Bypass)	\$1,243,339
Operational Benefits (N-S Route to Twentynine Palms)	\$10,349,991
Operational Benefits (BNSF)	\$15,796,495
Environmental Benefits	\$416,009
Maintenance Savings Benefits	\$4,121,414
Reduction in Cost of USMC Military Exercises	\$10,445,752
Residual Value of Improvements at 25%	\$4,812,871
Total	\$47,185,871

Total Project Cost	\$32,493,015
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Benefit Cost Ratio	1.45
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VII. FEDERAL WAGE RATE CERTIFICATION

The County certifies that it will comply with the requirements of Subchapter IV of Chapter 31 of Title 40, United States Code (Federal Wage Rate Requirements), as required.