NEVADA DOT
SAFE AND CONNECTED

U.S. Department of Transportation
Federal Highway Administration

I-15 Tropicana Environmental Assessment

FHWA-NV-EA 19.02

October 2019

FHWA Project ID: **SPI-015-1(075)**

State TIP ID: **CL20170039**

NDOT Project ID: **74085**

ENVIRONMENTAL ASSESSMENT
for I-15 Tropicana

FHWA-NV-EA 19.02
State TIP ID: CL20170039
NDOT Project ID: 74085

October 2019

Approved by: _____ Date: 10.17.19

Clifford M. Lawson, P.E.
Deputy Director, Project Delivery
Nevada Department of Transportation

Approved by: _____ Date: 10-23-19

Abdelmoez Abdalla, Ph.D.
Environmental Program Manager
U.S. Department of Transportation
Federal Highway Administration

Approved by: _____ Date: 10/23/19

Iyad Alattar, P.E.
Transportation Engineer
U.S. Department of Transportation
Federal Highway Administration

The following persons may be contacted for additional information concerning this document:

Abdelmoez Abdalla, Ph.D.
Environmental Program Manager
U.S. Department of Transportation
Federal Highway Administration
705 North Plaza Street, Suite 220
Carson City, Nevada 89701
775-687-1231

Christopher E. Young, RPA
Environmental Services Manager
Nevada Department of Transportation
1263 South Stewart Street
Carson City, Nevada 89712
775-888-7013

This Environmental Assessment has been prepared in accordance with the provisions and requirements of Chapter 1, Title 23, 23 CFR Part 771, relating to implementation of the National Environmental Policy Act of 1969.

This page intentionally left blank.

Mitigation Measures

The following list describes measures that will be implemented by the Nevada Department of Transportation (NDOT) to avoid, reduce, or otherwise mitigate potential impacts associated with the proposed project. Mitigation measures and requirements for compliance with federal, state, and local laws will be specified in the construction contractor's contract with NDOT. The following list of mitigation measures and commitments are not subject to change without prior written approval of the Federal Highway Administration (FHWA).

Mitigation Measures	
Resource (Section Reference)	**Preferred Alternative**
Biological Resources (Section 3.1.1)	If any active bird nests are found within the vegetation clearing or construction activity footprint, the resident engineer will contact the NDOT biologist to evaluate the situation and determine an appropriately-sized buffer area. If construction that may alter any breeding habitat (vegetation/structure removal) occurs during the migratory bird breeding season (February 15-August 31), the contractor shall employ a qualified biologist (one with experience in bird identification, general nesting behavior, nest and egg identification, and knowledge of habitat requirements for migratory birds) to conduct a migratory bird nest search of all vegetation within seven days prior to commencement of construction activities. This shall include burrowing and ground nesting species in addition to those nesting in vegetation. Vegetation may be removed if it has been surveyed and no active bird nests are present. The contractor shall avoid any active nests. The contractor shall maintain an appropriately-sized buffer area if any active nests (containing eggs or young) are found and must avoid the area until the young birds fledge. The contractor will develop and follow a Noxious Weed Management Plan to prevent the establishment and spread of Nevada State listed noxious weeds per Nevada Revised Statute 555.
Land Use and Socioeconomic Conditions: Right-of-Way and Construction Easements (Section 3.2.3)	Property owners are protected by the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Uniform Act). NDOT will pay fair market value for the loss or use of any property.
Land Use and Socioeconomic Conditions: Traffic and Pedestrian Circulation (Section 3.2.3)	NDOT will develop a plan to communicate with the public and property owners regarding construction schedule, street and sidewalk closures, and detours throughout construction. NDOT will work with Clark County to identify pedestrian route detours that may be needed during construction. Access to residences and businesses will be maintained during construction. NDOT will maintain Americans with Disabilities Act-compliant pedestrian access, including temporary safe street crossings and sidewalks.

Mitigation Measures	
Resource (Section Reference)	**Preferred Alternative**
Land Use and Socioeconomic Conditions: Traffic Circulation and Access (Section 3.2.3)	New traffic patterns will require additional signing to inform drivers of all lane configurations. Directional signage will be utilized to help motorists reach their destinations. Signs will have arrows depicting the required turning direction in advance of the Tropicana Avenue and Dean Martin Drive intersection.
Air Quality: Construction (Section 3.3.3)	Equipment and vehicles used for construction will be required to comply with EPA's emission standards for on-road vehicles and off-road construction equipment. The project will require a Dust Control Permit from Clark County Department of Air Quality.
Water Resources: Waters of the U.S. (Section 3.4.3)	The project will require a U.S. Army Corps of Engineers (USACE) 404 Permit (Nationwide Permit 14). It is also expected that the project will require a Section 401 Water Quality Certification issued by Nevada Division of Environmental Protection (NDEP), Bureau of Water Quality Planning, as required for a USACE 404 Permit.
Water Resources: Clark County Regional Flood Control District Facilities (Section 3.4.3)	A USACE 408 permit will be required.
Water Resources: Water Quality (Section 3.4.3)	NDOT will implement Best Management Practices (BMPs) during construction. As part of the development of BMPs for the project, NDOT's construction contractor must file a Notice of Intent with NDEP's Bureau of Water Pollution Control to obtain coverage under the General Permit for Stormwater Discharges Associated with Construction Activity (NVR100000). A Stormwater Pollution Prevention Plan (SWPPP) will be developed before the Notice of Intent is submitted. The SWPPP will outline temporary and permanent erosion and sediment controls, locate stormwater discharge points, and describe BMPs to be implemented to prevent or reduce stormwater pollutant discharge associated with construction activities to the maximum extent practical. NDOT will implement temporary erosion control and stormwater control measures during construction per the NDOT *Storm Water Quality Manuals* (References 4 and 5). Typical BMPs that may be selected for this project include: ◆ Street sweeping and vacuuming during construction ◆ Storm drain inlet protection ◆ Fiber rolls, silt fences, and gravel bag berms ◆ Stockpile and construction site management

Mitigation Measures	
Resource (Section Reference)	**Preferred Alternative**
Hazardous Materials (Section 3.5.3)	Properties with known contamination will be further evaluated on a site-by-site basis. NDOT will survey all structures to be disturbed or demolished to determine the presence of regulated materials, including universal wastes, asbestos-containing material, and heavy metals. NDOT will remove, manage, and dispose all regulated materials in accordance with applicable regulations. Prior to acquiring properties with known contamination, NDOT may conduct additional levels of assessment to determine if further action is needed to evaluate impacts to the property's value and/or proposed construction. Any further assessment and remedial actions would be subject to the approval of the appropriate regulatory agencies, NDOT, and FHWA, as relevant.
Visual Resources (Section 3.6.3)	Aesthetic treatments required through NDOT's Landscape and Aesthetic program for color and texture will be applied to visually blend proposed facilities into the broader urban background. These measures include applying medium tan colored tints and decorative textures the same as the existing I-15 aesthetics treatments to the south of the Tropicana Avenue interchange on all new structures, including new bridge barrier rails, piers, pier caps, retaining walls, and the flyover, see **Figure 3-25**. Decorative rock consistent in color and texture with the existing I-15 aesthetic treatments to the south shall be placed on all bare ground slopes to the NDOT right-of-way line along I-15 to provide slope protection and to blend new slopes into the visual background. The lighting system will use LED fixtures designed to help mitigate sky glow and light spillover.

This page intentionally left blank.

Table of Contents

Chapter/Section **Page No.**

Appendices

List of Figures

List of Tables

Acronyms and Abbreviations

AADT	Annual average daily traffic
AASHTO	American Association of State Highway and Transportation Officials
Access2040	2017-2040 Regional Transportation Plan
ACS	American Community Survey
ADA	Americans with Disabilities Act
APE	Area of potential effects
APN	Assessor's Parcel Number
BMP	Best Management Practices
CCD	Census county divisions
CCDAQ	Clark County Department of Air Quality
CCRFCD	Clark County Regional Flood Control District
CD	Collector-distributor
CFR	Code of Federal Regulations
CLOMR	Conditional Letter of Map Revision
CO	Carbon monoxide
EA	Environmental Assessment
EO	Executive Order
ESA	Phase 1 Environmental Site Assessment
Feasibility Study	I-15 Tropicana Interchange Feasibility Study
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	Greenhouse gases
HA	Hydrographic Area
HHS	Department of Health and Human Services
HOV	High Occupancy Vehicle
HPS	High-pressure sodium
I-15	Interstate 15
IPaC	Information, Planning and Conservation
MSAT	Mobile source air toxics
MUD	Mixed Use District
NAAQS	National Ambient Air Quality Standard
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NO_2	Nitrogen dioxide
NVCHAT	Nevada Department of Wildlife on-line environmental review tool
O_3	Ozone
Outreach Plan	Public Outreach and Agency Coordination Plan
Pb	Lead
PM	Particulate matter
	- Less than 10 microns in diameter (PM_{10})

	- Less than 2.5 microns in diameter ($PM_{2.5}$)
POAQC	Project of air quality concern
Raiders	National Football League Raiders
REC	Recognized environmental conditions
RTC	Regional Transportation Commission of Southern Nevada
SHPO	Nevada State Historic Preservation Office
SIP	State Implementation Plans
SO_2	Sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
TIP	Statewide Transportation Improvement Plan
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970
UNLV	University of Nevada, Las Vegas
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VMT	Vehicle miles traveled

This page intentionally left blank.

Chapter 1. Why is the Project Needed?

1.1 Project Background

Interstate 15 (I-15) in southern Nevada is the most important tourism and commerce corridor and the lifeblood for the regional economy. The interchange of I-15 with Tropicana Avenue is one of a few crucial points connecting I-15 motorists to the Las Vegas Strip, McCarran Airport, and the University of Nevada, Las Vegas (UNLV). This freeway interchange serves as the southern gateway to the Resort Corridor[1] from I-15 and the Tropicana Avenue corridor west of the interchange.

The I-15 Tropicana Avenue interchange was built in the 1960s when the population of Clark County was about 127,000, whereas with an estimated 2.25 million people[2] in 2017 the interchange is woefully over its capacity to handle the traffic demand. Current high traffic volumes, described below, and projected increases in both passenger vehicles and commercial trucking within the Las Vegas metropolitan area along I-15 and Tropicana Avenue result in major traffic congestion that will worsen over time. The existing Tropicana overpass also restricts future widening of I-15.

The Nevada Department of Transportation (NDOT) and the Federal Highway Administration (FHWA) are proposing a project consisting of reconstructing the I-15 Tropicana Avenue interchange to increase traffic capacity and reduce congestion on Tropicana Avenue and freeway ramps, and further improving local freeway access by providing High Occupancy Vehicle (HOV) ramps at the Harmon Avenue overpass approximately 0.5 mile to the north.[3] The project study limits are shown in **Figure 1-1.**

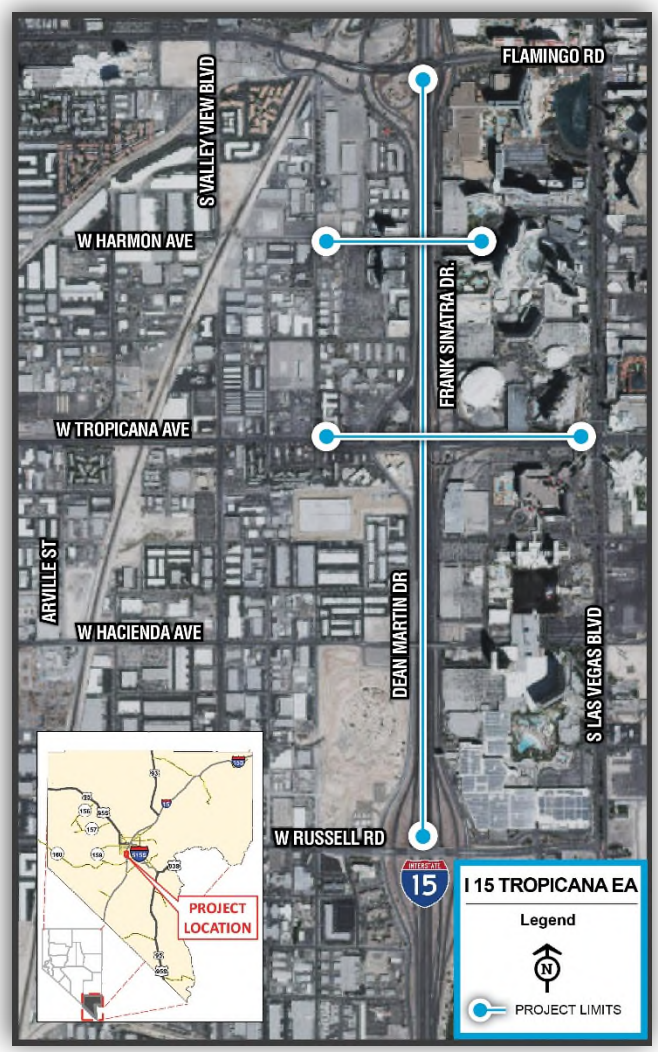


Figure 1-1. Project Limits

[1] The Resort Corridor is generally defined as the Las Vegas Boulevard commercial "Strip," which houses the major concentration of the city's hotels and casinos, bounded by McCarran International Airport and downtown Las Vegas.

[2] Las Vegas Review Journal, February 27, 2018, https://www.reviewjournal.com/news/politics-and-government/clark-county/clark-county-population-approaching-2-25m/.

[3] These HOV ramps would be restricted to only vehicles with two or more people—including buses, carpools and vanpools, as well as motorcycles and emergency vehicles. The I-15/Harmon Avenue HOV ramps would operate on a full-time (24 hours/7 days per week) basis.

The proposed project is an outgrowth of the I-15 Tropicana Interchange Feasibility Study and the Southern Nevada HOV Study Update, both prepared by NDOT in 2015. The study limits are the I-15 freeway corridor bordered by Flamingo Road on the north, Valley View Boulevard on the West, Las Vegas Boulevard on the east, and Russell Road on the South.

The National Environmental Policy Act (NEPA) directs transportation officials to consider balancing engineering and transportation needs with social, economic, and natural environmental factors in making project decisions. The Environmental Assessment (EA) documents the NEPA process for the project undertaken by NDOT and FHWA in accordance with 23 Code of Federal Regulations (CFR) 771 and other applicable regulations.

1.2 What is the Need for the Project?

A combination of the following critical needs demonstrates why improvements must be considered for the I-15 Tropicana Interchange:

- Roadway deficiencies will continue to contribute to congestion and travel delays.
- Existing congestion will worsen with projected increases in passenger vehicles, trucks, and public transit vehicles along I-15 and Tropicana Avenue.
- Traffic safety will further degrade as higher crash rates are experienced along Tropicana Avenue and I-15, compared to similar urban roadways in Nevada, making safety improvements a key need.

1.2.1 Roadway and Operational Deficiencies

Existing roadway deficiencies within the project limits, combined with high traffic volumes during the peak hours (4:00 to 6:00 PM)[4], are the primary contributors to traffic congestion (see **Figures 1-2** through **1-5** and **Table 2-1**) and high crash rates in this corridor (see **Section 1.2.3**).

Tropicana Avenue

The roadway on Tropicana Avenue has limited capacity for the current and predicted future traffic volumes. Tropicana Avenue within the project limits carries an annual average daily traffic (AADT) volume of approximately 80,000 vehicles, with more than half of the traffic using the interchange to get on and off I-15. Tropicana Avenue consists of three through lanes in each direction and dual left-turn pockets (giving cars turning left their own lane at intersections) in each direction.

The short distance (approximately 300 feet) between the southbound I-15 off/on ramps and the Dean Martin Drive intersection also adds to the traffic backup along Tropicana Avenue through the I-15 interchange (**Figure 1-2**). Furthermore, due to the high number of vehicles making left-turns onto I-15, traffic backs up beyond the turn pockets into the through lanes and impedes the flow of traffic along Tropicana Avenue, which also causes the I-15 southbound and northbound off ramps to back up onto I-15, slowing freeway through traffic (**Figure 1-3**).

[4] For the traffic modeling conducted for this project, 4:00 PM to 6:00 PM was identified as the peak congested period. The 3:00 PM to 4:00 PM period is the build-up to peak congested conditions and the 6:00 PM to 7:00 PM period corresponds to the dissipation of peak congested conditions. Therefore, the total traffic modeling period analyzed is four hours from 3:00 PM to 7:00 PM.

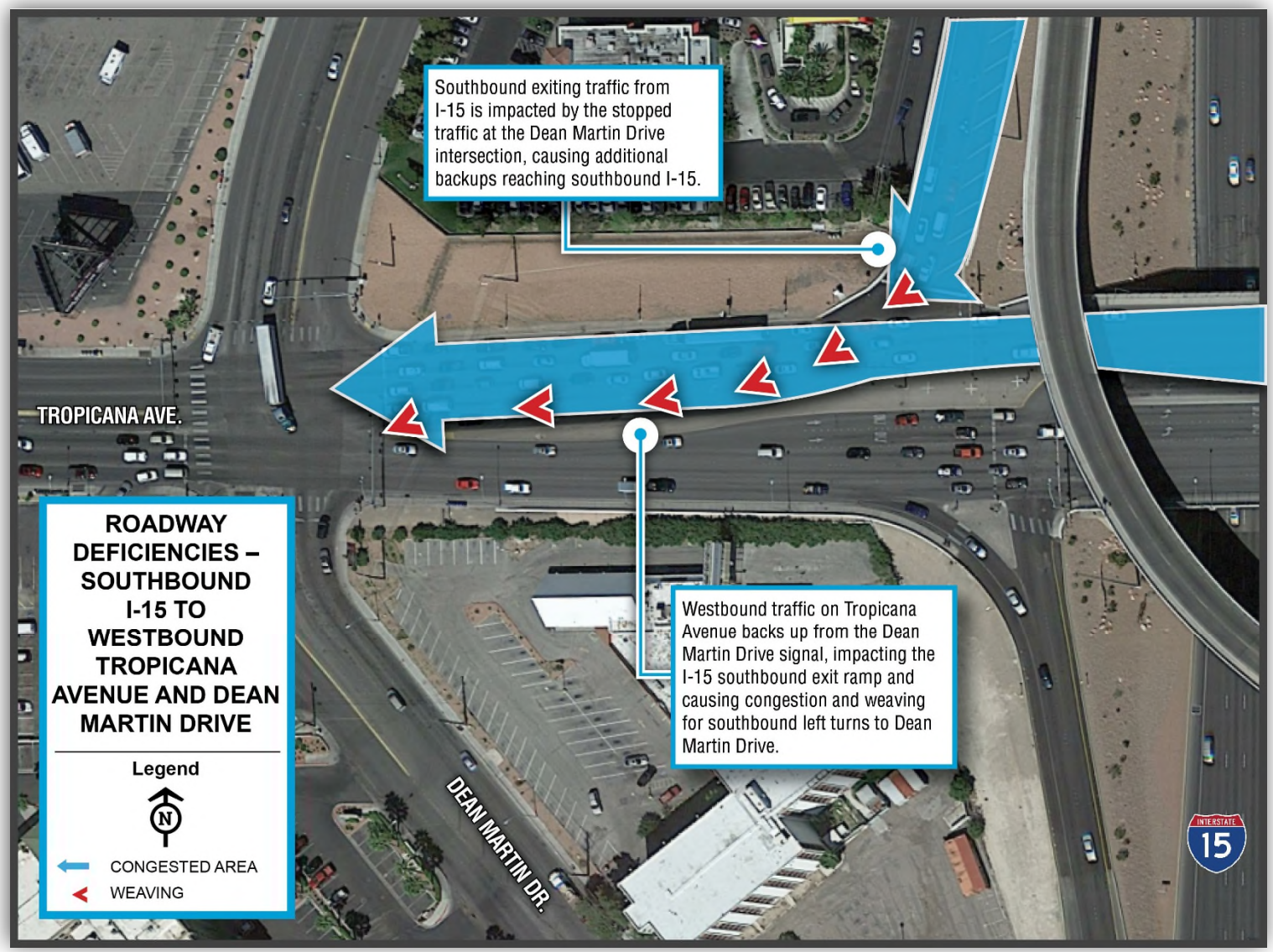


Figure 1-2. Roadway Deficiencies – Southbound I-15 to Westbound Tropicana Avenue and Dean Martin Drive

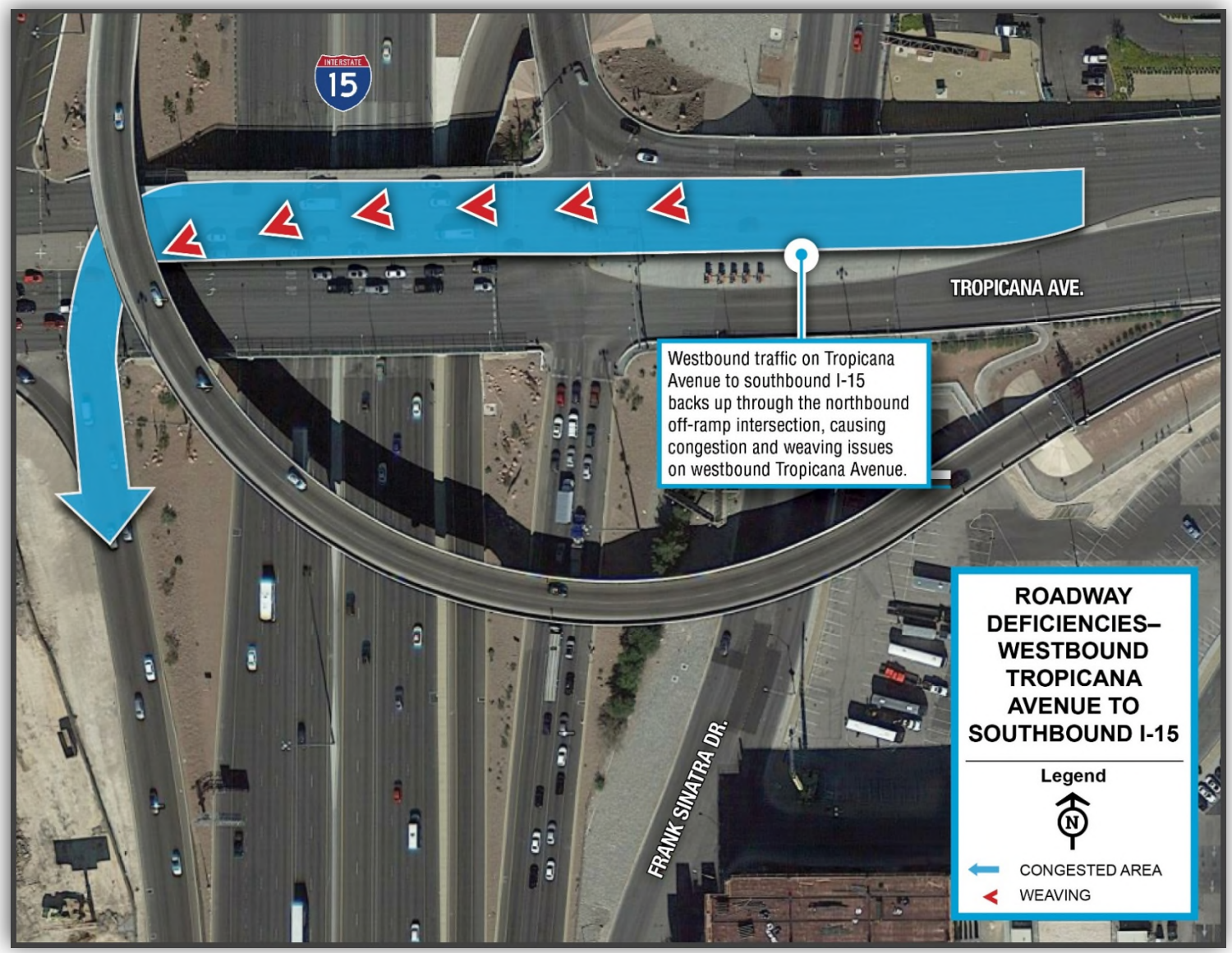


Figure 1-3. Roadway Deficiencies – Westbound Tropicana Avenue to Southbound I-15

I-15

The existing Tropicana Avenue bridge over I-15 provides only enough space for 5 lanes on the northbound freeway. To accommodate future additional lanes on I-15 northbound and southbound, additional through and turning lanes on Tropicana Avenue in each direction, as well as an improved northbound collector-distributor (CD) road[5] entrance to I-15, the existing bridge will need to be replaced with a wider, longer structure. Furthermore, the Tropicana Avenue bridge is the single lowest clearance point on I-15 south of US 95, resulting in the bridge being struck by over-height vehicles multiple times a year. At an existing height of 15.8 feet above I-15, the current bridge does not meet design standards for clearance height as determined by the American Association of State Highway and Transportation Officials (AASHTO). The new vertical clearance under the Tropicana Avenue bridge will be a minimum 16 feet-6 inches.

Traffic from Tropicana Avenue entering northbound I-15 is slowed due to traffic weaving (vehicles traveling in the same direction need to cross paths with other vehicles) between the Tropicana Avenue on ramp and the Flamingo Road off-ramp. This spreads out the distance that vehicles must travel before finding an entry/exit gap in traffic, effectively shortening the distance to enter or exit the freeway between Tropicana Avenue and Flamingo Road (**Figure 1-4**) and slowing through freeway traffic. The large number of vehicles that want to go northbound on I-15 entering against the volume of vehicles exiting to Flamingo Road or Spring Mountain Road creates this conflict.

The CD roads within the project limits are separated lanes paralleling I-15 that circulate traffic between the freeway and local interchanges. The northbound exit traffic to Tropicana Avenue from the CD road has a fork between the high-speed traffic entering northbound I-15 and slowing traffic exiting to either Tropicana Avenue or Frank Sinatra Drive. This speed difference creates congestion on I-15 at the point where the CD road merges to I-15. The existing configuration causes long lines of traffic to back up from this point onto the northbound CD road. This traffic backup often extends as far south as Russell Road and, under worst conditions, all the way south to the Tropicana Avenue and Frank Sinatra Drive CD road exit from I-15 (**Figure 1-5**).

[5] The CD road consists of separated lanes paralleling I-15 that circulate traffic between I-15 and local interchanges.

Figure 1-4. Roadway Deficiencies – Northbound I-15 Traffic from Tropicana Avenue

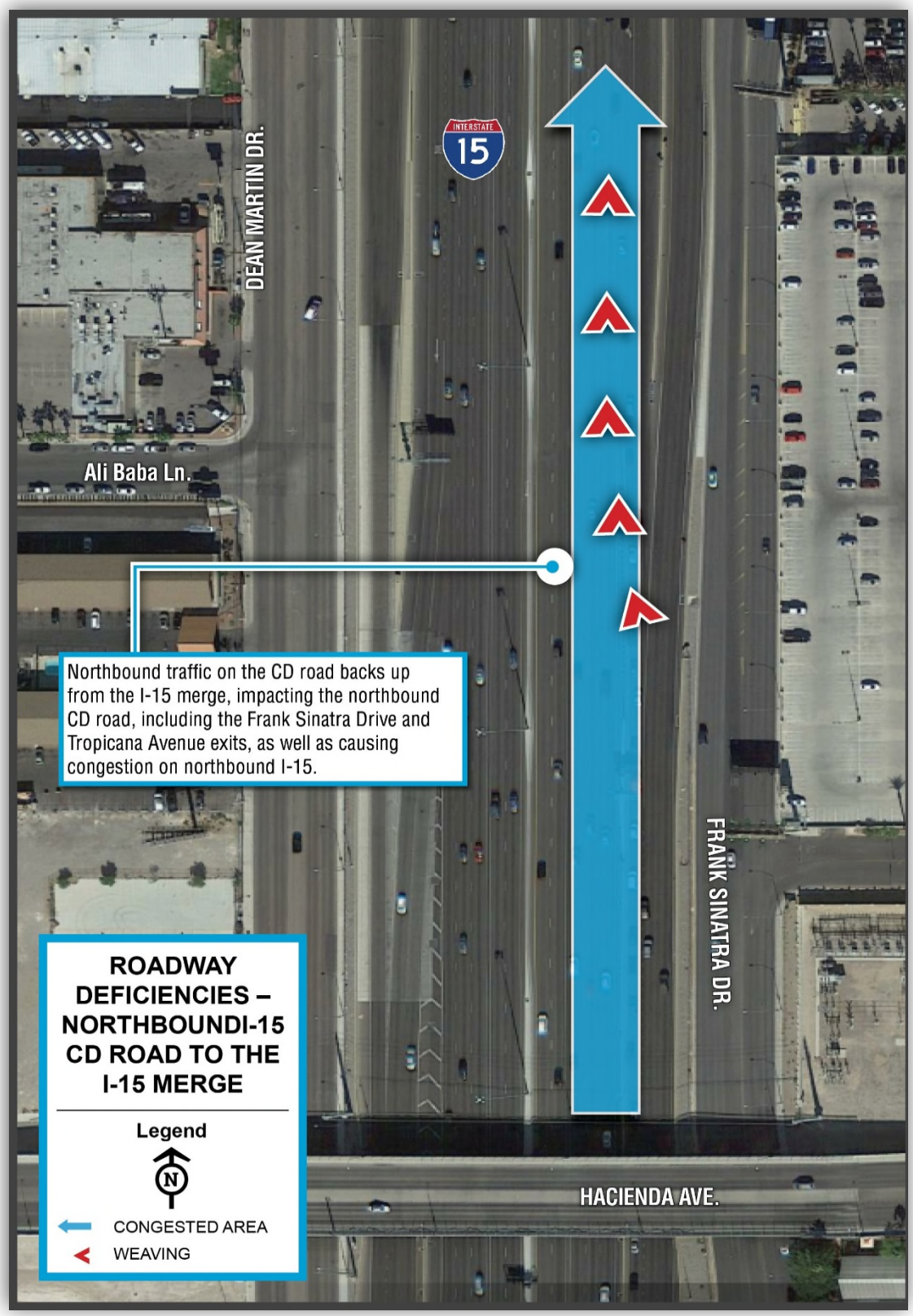


Figure 1-5. Roadway Deficiencies – Northbound I-15 CD Road to the I-15 Merge

1.2.2 Traffic Congestion

1.2.2.1 Tropicana Avenue Congestion

In 2017, the year existing traffic volumes were counted for this project, the annual average daily traffic (AADT) on Tropicana Avenue in the I-15 interchange area ranged from 74,000 vehicles near Dean Martin Drive to 86,000 east of the I-15 northbound on- and off-ramps. Traffic volumes along Tropicana Avenue are highest during the afternoon. Vehicle movement on Tropicana Avenue in the vicinity of I-15 is primarily impacted by the high traffic volumes, vehicles entering and exiting driveways along the roadway, turning movements at the intersection of Dean Martin Drive with Tropicana Avenue, and vehicles entering and exiting from the I-15 northbound and southbound ramps.

Travel time is used to characterize the traffic performance on Tropicana Avenue in the project area.

The average travel times for vehicles on Tropicana Avenue between Polaris Avenue and Excalibur Way (eastbound)/New York-New York driveway entrance (westbound) (**Figure 1-6**) are shown in the following bar chart (**Figure 1-7**). The traffic study for this project compared travel time for ideal conditions, existing conditions (in 2017), and traffic conditions projected in 20 years with no improvements (referred to as no-action). Under ideal conditions, traffic is free flowing with vehicles traveling at posted speed limits without the delays of signals and vehicles entering and exiting driveways. Based on the traffic growth projections and analysis performed for this project, by 2040 the AADT on Tropicana Avenue will increase to 77,000 vehicles near Dean Martin Drive (a 4 percent increase from 2017) to 95,000 east of the I-15 northbound ramps (a 10 percent increase from 2017). The vehicle travel times on Tropicana Avenue in both the eastbound and westbound directions are expected to be nearly twice that of existing conditions.

Figure 1-6. Tropicana Avenue Travel Time Study Limits

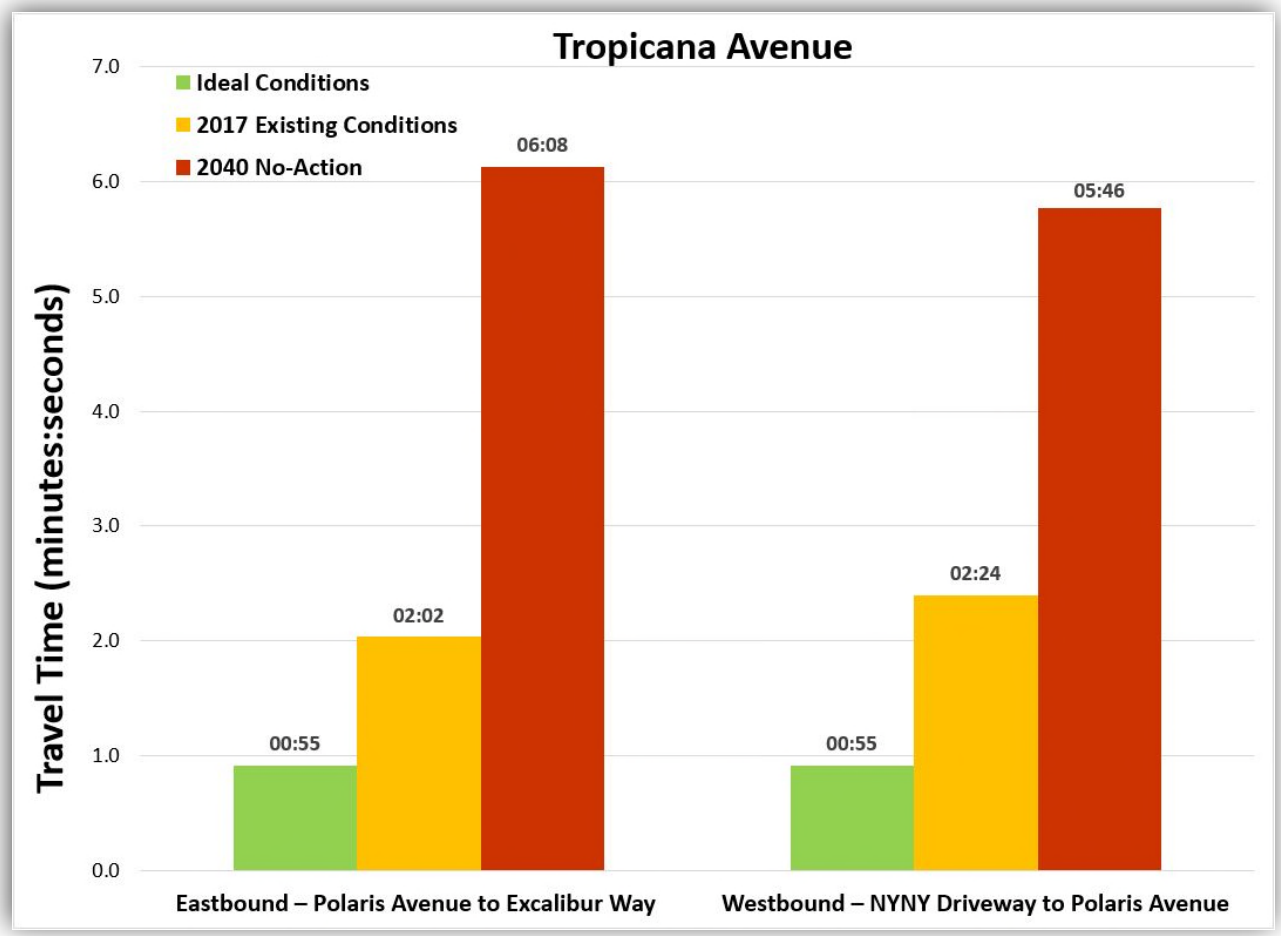


Figure 1-7. Travel Times on Tropicana Avenue

As can be seen in **Figure 1-7**, longer travel times (in yellow) are currently experienced by drivers in the westbound direction on Tropicana Avenue, due primarily to the delays for entry/exit lane changing (weaving) and turn movements between the closely spaced southbound I-15 off-ramps and Dean Martin Drive. The trip between Excalibur/New York-New York and Polaris Avenue should take about 1 minute under ideal conditions. However, with existing congestion along Tropicana Avenue this drive takes an average of over 2.5 minutes in the westbound direction and, based on the traffic study projections, if no improvements are made in the next 20 nears, this same trip will take over 5 minutes.

1.2.2.2 I-15 Freeway Congestion

All freeway segments and on- and off-ramps were analyzed within the project limits. In 2017, the AADT on I-15 within the project limits ranged from 242,000 vehicles south of the I-15 Tropicana Avenue interchange to 322,000 south of the I-15 Flamingo Road interchange. The 2040 AADT on I-15 within these limits is forecasted to range from 272,000 vehicles south of I-15 Tropicana Avenue, which is an increase of over 12 percent, to 344,000 south of I-15 Flamingo Road, which is an increase of 7 percent.

I-15 Northbound

Traffic density and speed are used as indicators of congestion on I-15.

Traffic density on the I-15 northbound segments in the project area are shown in the bar chart in **Figure 1-8.** By 2040, with no improvements (no-action), extremely long queues are expected at the south leg of the I-15 northbound/Tropicana Avenue ramp intersection. These queues are expected to spill back onto the northbound CD road and extend south to the I-15/I-215/CC-215 interchange. Queues are also expected to spill back onto the I-15 northbound mainline through the Tropicana Avenue/Frank Sinatra Drive off-ramp. This results in the high density observed for the I-15 northbound section between the I-215 westbound on-ramp and the Tropicana Avenue/Frank Sinatra Drive off-ramp. This also limits/meters the number of vehicles flowing along the I-15 northbound mainline and masks the downstream issues along the freeway, resulting in lower densities (compared to year 2017) in these downstream segments. The northbound CD on-ramp segment also creates congestion due to merging traffic conflicting with I-15 traffic maneuvering to exit to Flamingo Road/Spring Mountain Road. This segment is worsened by major lane changing (weaving) occurring between the Tropicana Avenue on-ramp and Flamingo Road off-ramp.

I-15 Southbound

Traffic density on I-15 southbound segments is shown in the bar chart in **Figure 1-9.** By 2040, with no improvements (no-action), the project traffic study determined there would be very high vehicle densities for the segments north of I-15 Tropicana Avenue that could be attributed to the following factors:

- Major weaving between the Spring Mountain Road on-ramp and Flamingo Road off-ramp(s)
- Consecutive off-ramps for Flamingo Road eastbound and westbound which back up onto I-15
- Major weaving between the Flamingo Road on-ramp and Tropicana Avenue off-ramp

In the southbound direction, the upstream bottlenecks along I-15 are not as severe as compared to the northbound direction. Therefore, due to an increase in demand by 2040, the I-15 southbound segments have higher densities than in year 2017.

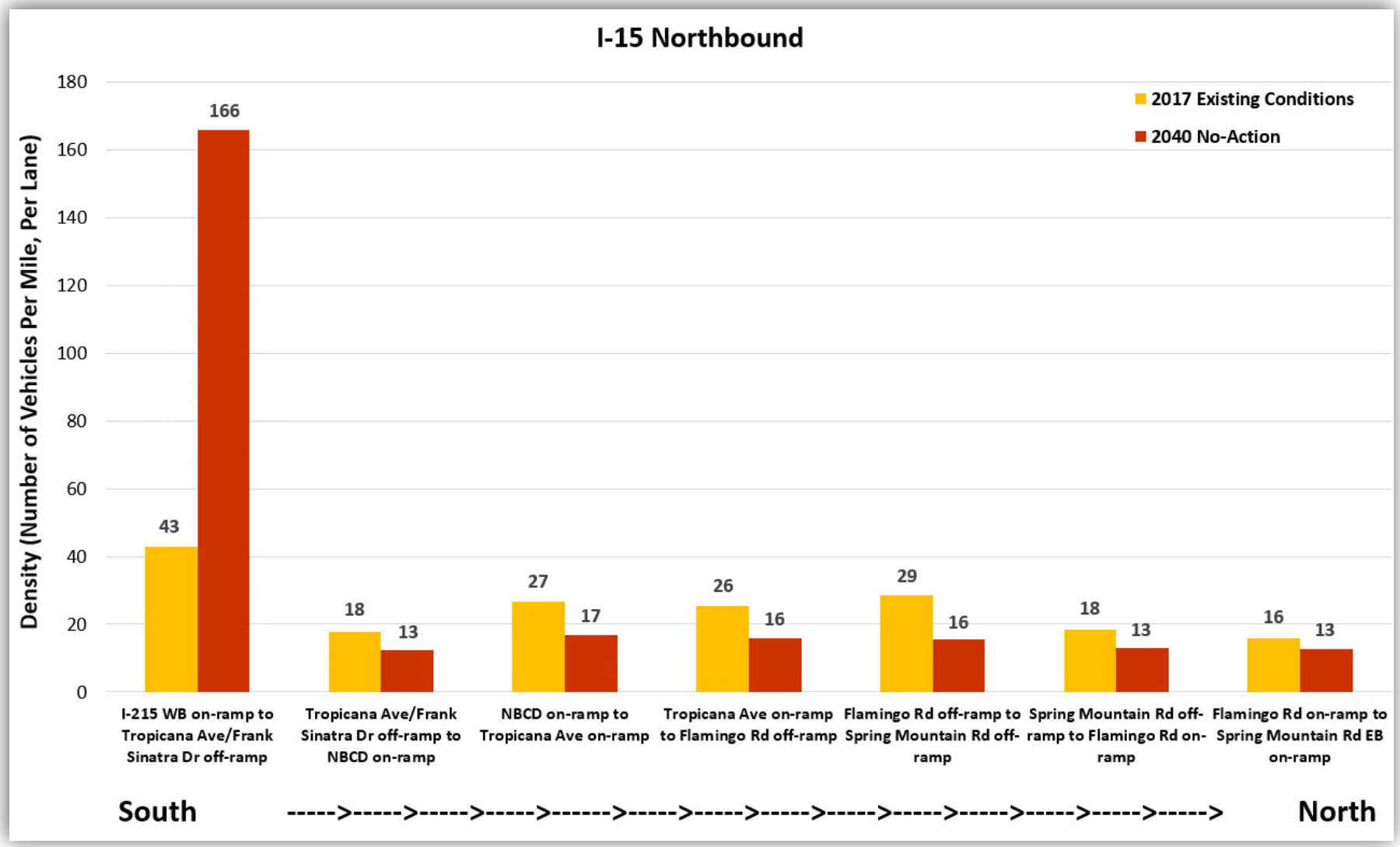


Figure 1-8. Traffic Density on I-15 Northbound Segments

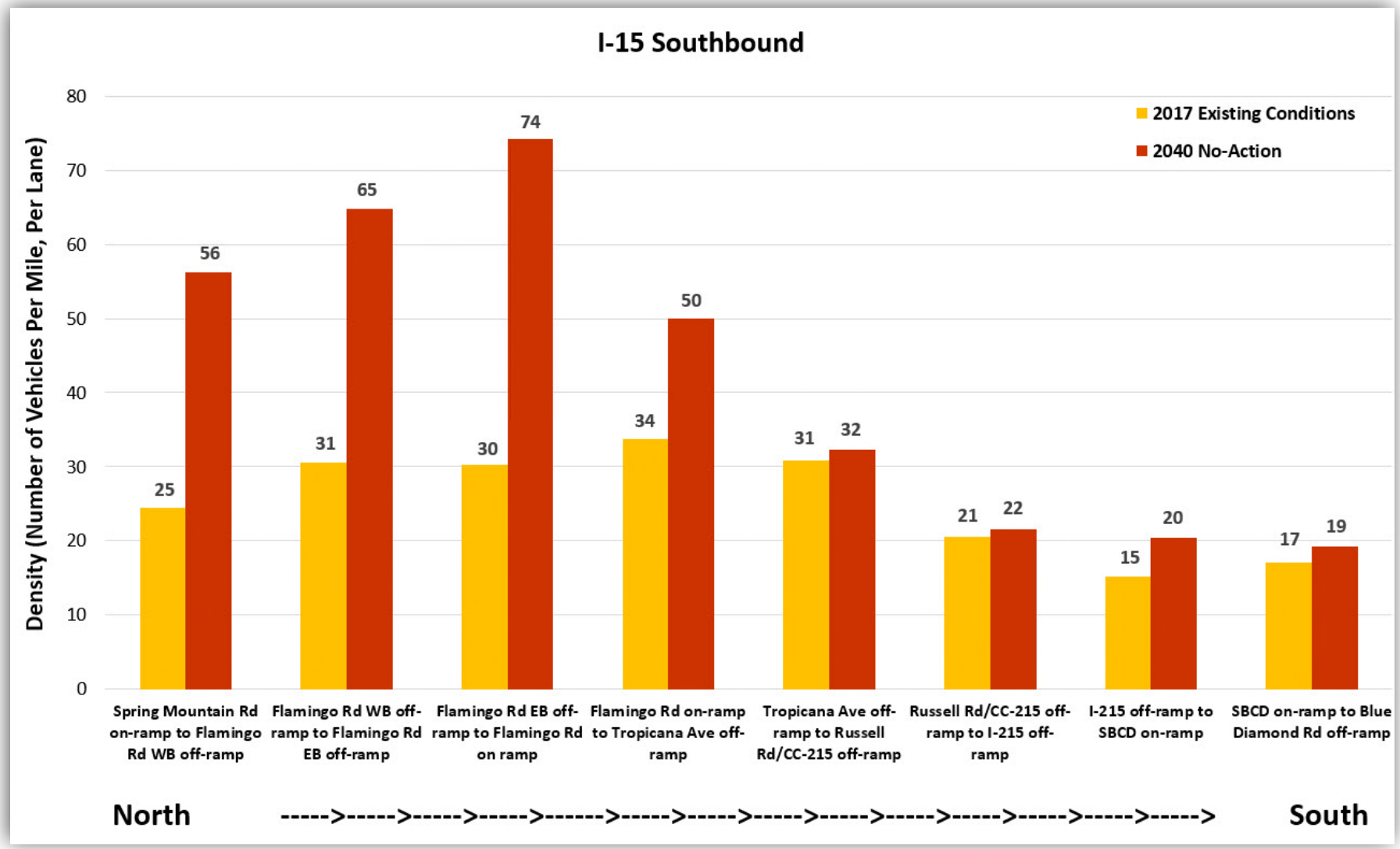


Figure 1-9. Traffic Density on I-15 Southbound Segments

1.2.3 Safety

NDOT measures roadway safety by the frequency and severity of vehicular crashes and pedestrian injuries/fatalities. Crash information for I-15 in the study area was obtained from NDOT Traffic Safety Engineering Division databases for a 3-year period from June 1, 2014 through June 1, 2017. Crash rates are expressed as crashes per million vehicle miles traveled and include all reported crashes that caused a fatality, injury, or property damage only. The crash rates for each of the project's roadways were compared to the NDOT 2015 Functional Classification Crash Rates (statewide) for the same roadway classification.[6]

1.2.3.1. Tropicana Avenue Safety

A crash analysis along Tropicana Avenue was conducted for all intersections between Valley View Boulevard and Las Vegas Boulevard. Tropicana Avenue had a total of 757 crashes in the 3-year time period. Of these crashes, 16 involved pedestrians. The charts shown in **Figure 1-10** provide a breakdown of the types of crashes and severity for this period.

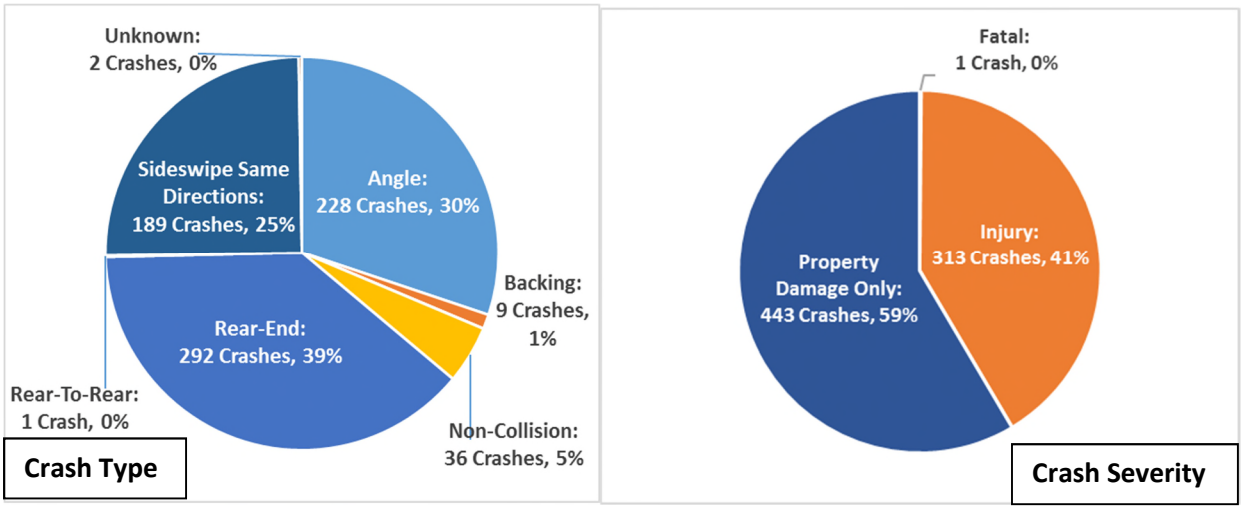


Figure 1-10. Tropicana Avenue: Number of Crashes by Type and Severity

Table 1-1 summarizes the analysis of the Tropicana Avenue corridor crash rates and indicates more than three times as many injury crashes and more than five times as many property damage only crashes compared to similar roads.

[6] The crash analysis for this project was done in March 2018. The 2015 NDOT Functional Classification Crash Rates were the latest available at that point in time.

Table 1-1. Tropicana Avenue Corridor Crash Rates[7]
(Valley View Boulevard to Las Vegas Boulevard)

Crash Severity	Statewide Average NDOT Urban Principal Arterial Other (2015)	Tropicana Avenue
Fatal	0.0193	0.0144
Injury	1.4078	**4.5193**
Property Damage Only	1.2534	**6.3963**
Total	2.6805	**10.9300**

1.2.3.2. I-15 Freeway Safety

The crash data for I-15 northbound was analyzed between the I-15 exit to Russell Road/Tropicana Avenue and the I-15 exit to Flamingo Road. A total of 628 crashes were recorded in the 3-year period. The most common crash types were rear-end and sideswipes, which are typical for congested roadways. There was one recorded pedestrian fatality. The charts shown in **Figure 1-11** provide a breakdown of the types of crashes and severity for this period.

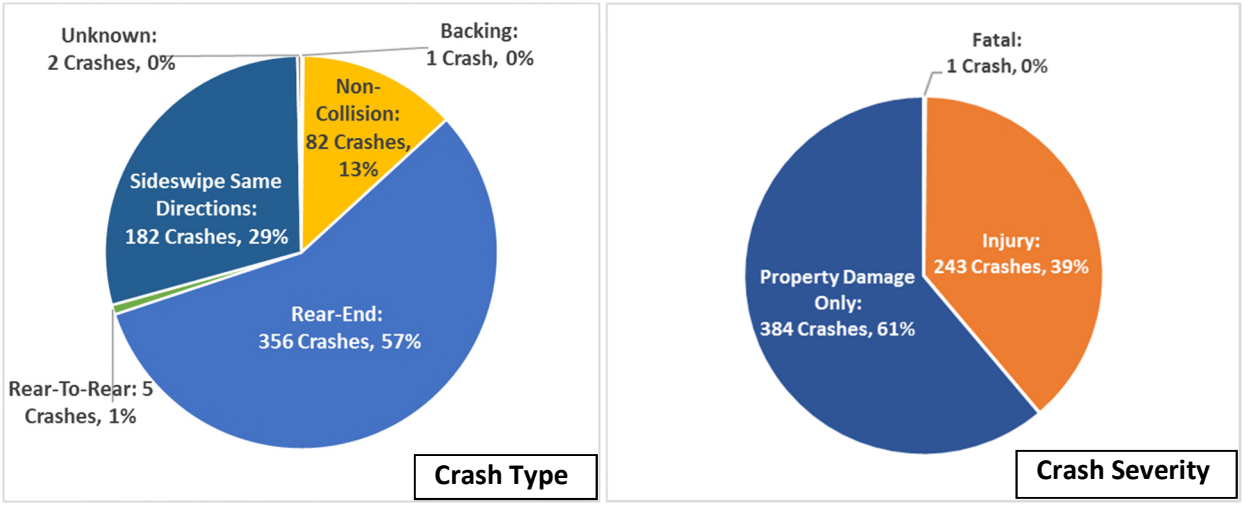


Figure 1-11. I-15 Northbound: Number of Crashes by Type and Severity

The crash data for the I-15 southbound corridor was analyzed between the Flamingo Road on-ramp and the Tropicana Avenue/Russell Road CD road on-ramp to I-15 southbound. A total of 305 crashes were recorded. The predominant crash types were sideswipes and rear-end crashes. Two of the crashes had fatalities. The charts shown in **Figure 1-12** provide a breakdown of the types of crashes and severity for this period.

[7] Crash rates are expressed as crashes per million vehicle miles traveled.

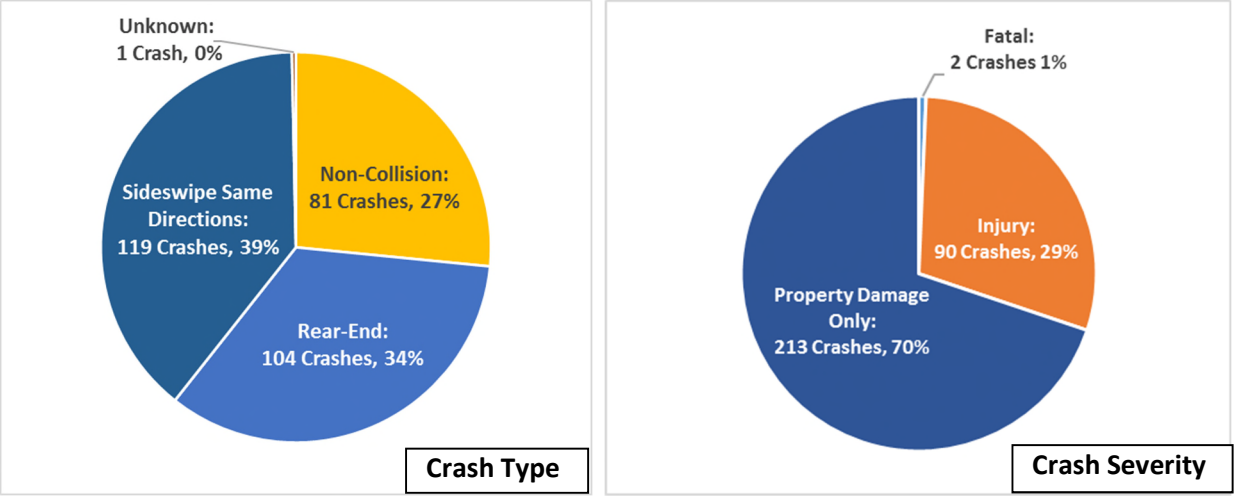


Figure 1-12. I-15 Southbound: Number of Crashes by Type and Severity

Table 1-2 summarizes the NDOT I-15 crash rate data. The I-15 northbound crash rates for injury, property damage only, and the total crash severity (shown in bold) exceed the NDOT average crash rates, which is consistent with the congested PM peak-hour conditions. The crash rates for I-15 southbound were lower compared to the NDOT average crash rates.

Table 1-2. I-15 Northbound and Southbound Crash Rates[8]
(Exit to Russell/Tropicana Avenue CD Road to Flamingo Road Exit)

Crash Severity	NDOT Principal Arterial Interstate (2015)	I-15 Northbound	I-15 Southbound
Fatal	0.0062	0.0041	0.0054
Injury	0.7176	**0.9978**	0.2420
Property Damage Only	1.3422	**1.5768**	0.5728
Total	2.0661	**2.5787**	0.8202

1.2.3.3 I-15 Northbound Collector-Distributor Road Safety

Crashes on the I-15 northbound CD Road were analyzed between the I-15 exit to the Russell Road/Tropicana Avenue and south of the Tropicana Avenue northbound off-ramp. A total of 357 crashes were reported. The most common crash types were rear-end and sideswipes. There were 129 injury crashes, with 212 injuries reported. The charts shown in **Figure 1-13** provide a breakdown of the types of crashes and severity for this period.

[8] Crash rates are expressed as crashes per million vehicle miles traveled.

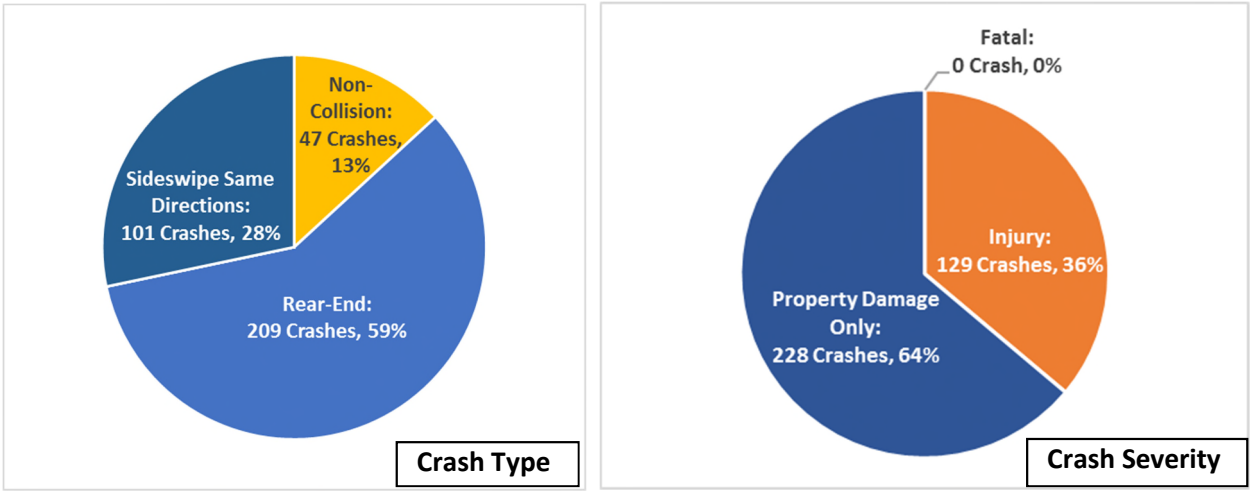


Figure 1-13. I-15 Northbound CD: Number of Crashes by Type and Severity

The crashes on the I-15 southbound CD Road were analyzed between south of the Tropicana Avenue on-ramp and the Tropicana Avenue/Russell Road CD road on-ramp to I-15 southbound and I-215 eastbound. A total of 376 crashes were reported. The most common crashes were rear-end collisions. The charts shown in **Figure 1-14** provide a breakdown of the types of crashes and severity for this period.

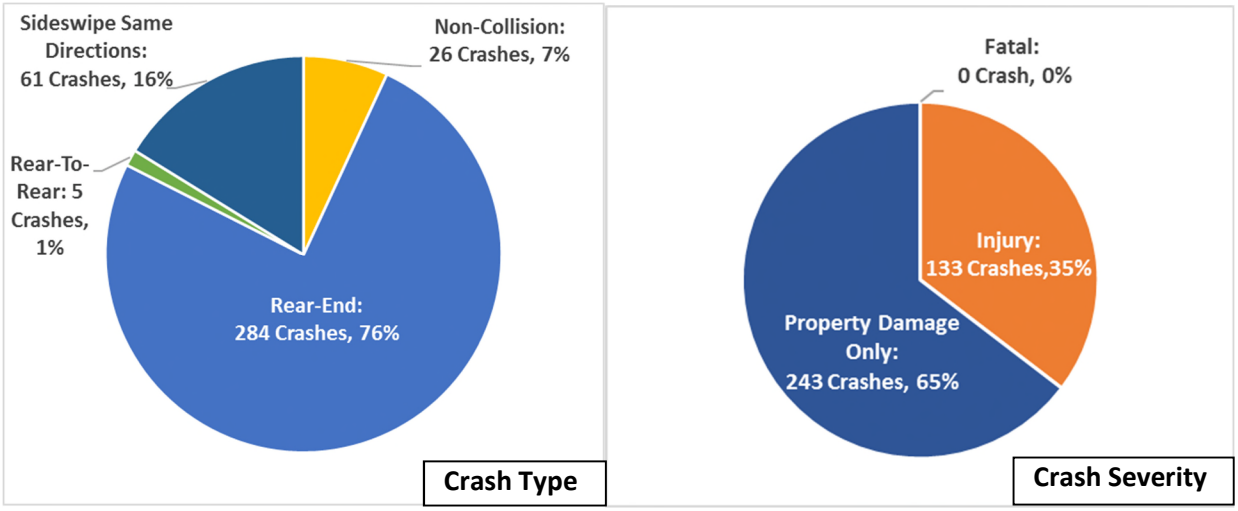


Figure 1-14. I-15 Southbound CD: Number of Crashes by Type and Severity

Table 1-3 summarizes the northbound and southbound CD roads crash rates and indicates more than nine times (northbound) and five times (southbound) as many injury crashes and more than eight times (northbound) and five times (southbound) as many property damage only crashes compared to similar roads.

Table 1-3. I-15 Northbound and Southbound CD Road Crash Rates[9]
(South of Tropicana Avenue On-ramp to Russell Road CD Road On-ramp to I-215 eastbound)

Crash Severity	NDOT Principal Arterial Interstate (2015)	I-15 Northbound CD[10]	I-15 Southbound CD
Fatal	0.0062	0.0000	0.0000
Injury	0.7176	**6.4920**	**3.7222**
Property Damage Only	1.3422	**11.4742**	**6.8007**
Total	2.0661	**17.9661**	**10.5229**

Based on the crash analysis, Tropicana Avenue, I-15, and the CD roads within the project limits have higher crash rates compared to statewide average crash rates for these roadway classifications. The type and severity of crashes result from roadway deficiencies and high traffic volumes, and these volumes will increase exponentially over the next 20 years. This will result in increased congestion and related crashes on all of these roadways.

1.2.4 Pedestrian and Bicycle Use

Pedestrians use Tropicana Avenue to access multiple destinations east and west of I-15. There are 5-foot sidewalks on the north and south sides of Tropicana Avenue from Valley View Boulevard to Dean Martin Drive. At Dean Martin Drive, the north sidewalk has been removed to discourage pedestrians from walking along the north side of Tropicana Avenue. From Dean Martin Drive through the interchange ramp intersections, and over the Frank Sinatra Drive underpass, a sidewalk along the south side of Tropicana Avenue provides a street-side path until the entrance of the southbound to eastbound flyover ramp. There is a defunct sidewalk in this stretch along the north side of the bridge over I-15, and a limited connection at the base of the north wall from Frank Sinatra Drive to the T-Mobile Arena driveway. However, both are only accessible by jaywalking across driveways and interchange ramps or across Tropicana Avenue. At the southbound to eastbound flyover ramp, the sidewalk loops down under the ramp and around to the east side, rejoining the south street-side sidewalk. This maintains a continuous path along the south side of Tropicana Avenue. From there, the sidewalk continues to the pedestrian bridge crossing at Las Vegas Boulevard. There is no sidewalk on the northern side of this stretch. See **Figure 1-15** for locations of existing sidewalks along Tropicana Avenue and adjacent cross streets.

[9] Crash rates are expressed as crashes per million vehicle miles traveled.
[10] NDOT roadway classification designates CD roads as "Principal Arterial Interstate, https://www.nevadadot.com/home/showdocument?id=8519.

Figure 1-15. Existing Pedestrian Facilities – Tropicana Avenue

The Regional Transportation Commission of Southern Nevada's Bike Map identifies one route in the project study area, on a portion of Dean Martin Drive from Russell Road to Tropicana Avenue. Traffic and limited roadway width make Tropicana Avenue undesirable as a travel route for cyclists; however, bicycles have been observed on sidewalks as well as the outside lanes.

1.2.5 HOV/Multimodal Access and Operations

The Southern Nevada HOV Study Update (2015) identified potential interchange locations for HOV ramps on I-15 that should be considered to complete the southern Nevada HOV system. Two of these locations, Hacienda Avenue and Harmon Avenue, would reduce traffic demand, and thereby provide some congestion relief, at the Tropicana Avenue interchange by providing adjacent freeway access for multimodal vehicles (buses, commuter vans, etc.). NDOT reevaluated the HOV Study Update in 2018 and, based on new developments in the project corridor and public input received during NEPA scoping, revised the recommended HOV ramp locations in the vicinity of Tropicana Avenue to include connections only at Harmon Avenue (see **Chapter 2**, **Section 2.1.2**). The HOV connections at Harmon Avenue will be complemented by Clark County's planned extension of Harmon Avenue west over the Union Pacific Railroad (UPRR) tracks to connect with Valley View Boulevard.

1.3 What is the Purpose of the Project?

The purpose of the proposed project is to:

- Resolve roadway and related operational deficiencies on Tropicana Avenue and the northbound CD road south of the interchange.
- Reduce traffic congestion at the I-15 Tropicana Avenue interchange and the northbound CD road.
- Increase safety for vehicles, pedestrians, bicycles, and transit users and operators.
- Improve HOV access and circulation.

1.4 Public Contribution to the Purpose and Need

The first public meeting for the project was held on January 30, 2018 to obtain input from area businesses and residents. Approximately 60 people attended the meeting. NDOT received approximately 10 emails from the public during the public comment period. Commenters expressed concern about pedestrian access in the project area and HOV lanes on I-15. Specifically, residents of Panorama Towers and The Martin on Harmon Avenue west of I-15 requested improved pedestrian and bicycle connectivity from their properties to the Las Vegas Strip. The residents requested stairways connecting the Harmon Avenue overpass to sidewalks below and barrier separation from vehicle traffic. In response to the comments about pedestrian access, the build alternative includes several features to improve and protect pedestrian circulation within the project limits (see **Chapter 2** and **Section 3.2**).

A second public meeting was held on May 2, 2019 and, similar to the first meeting, about 60 people attended. Again, residents from the Harmon Avenue condominiums west of I-15 were among the attendees. A major change to the project since the first public meeting, relocating the proposed I-15 Harmon Avenue HOV ramps to the south side of the Harmon overpass, was well received by the public since the existing sidewalk on the north side of the bridge would not be disrupted by the HOV ramps as it would have been with the ramps connecting to the north side of the structure as originally planned. This was viewed as a positive change for pedestrian safety and foot travel to/from the Las Vegas Strip.

1.5 Logical Termini and Independent Utility

The FHWA environmental regulations and related guidelines outline three general principles (codified at 23 Code of Federal Regulations 771.111[f]) that are used to help justify a transportation improvement project. In conducting an evaluation of a proposed project under NEPA, it must be demonstrated that the project will:

1. Connect logical termini and be of sufficient length to address environmental matters on a broad scope.
2. Have independent utility or independent significance (i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made).
3. Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Project's Logical Termini:

- Tropicana Avenue - Polaris Avenue to Las Vegas Boulevard
- Dean Martin Drive – Tomkins Avenue to Ali Baba Lane
- I-15 – Flamingo Road to just north of Hacienda Avenue

The proposed construction limits or termini of the I-15 Tropicana interchange project (see **Figure 1-16**) encapsulate the traffic operations and safety issues at this location, are of sufficient length to address environmental impacts, provide a section of study that has independent utility, and would neither require nor preclude other future transportation improvements identified in the RTC's regional transportation plan.

The specific project characteristics and attributes that justify its logical termini and independent utility are as follows:

- I-15 Tropicana is a spot improvement needed to increase capacity/resolve congestion within the interchange at this critical southern gateway to the Resort Corridor and McCarran Airport
- The project is independent of future I-15 improvement alternatives, but does not preclude or restrict them by virtue of its design—providing a longer, higher bridge allowing sufficient room for future freeway improvements—nor does it require other adjacent roadway improvements to be fully functional

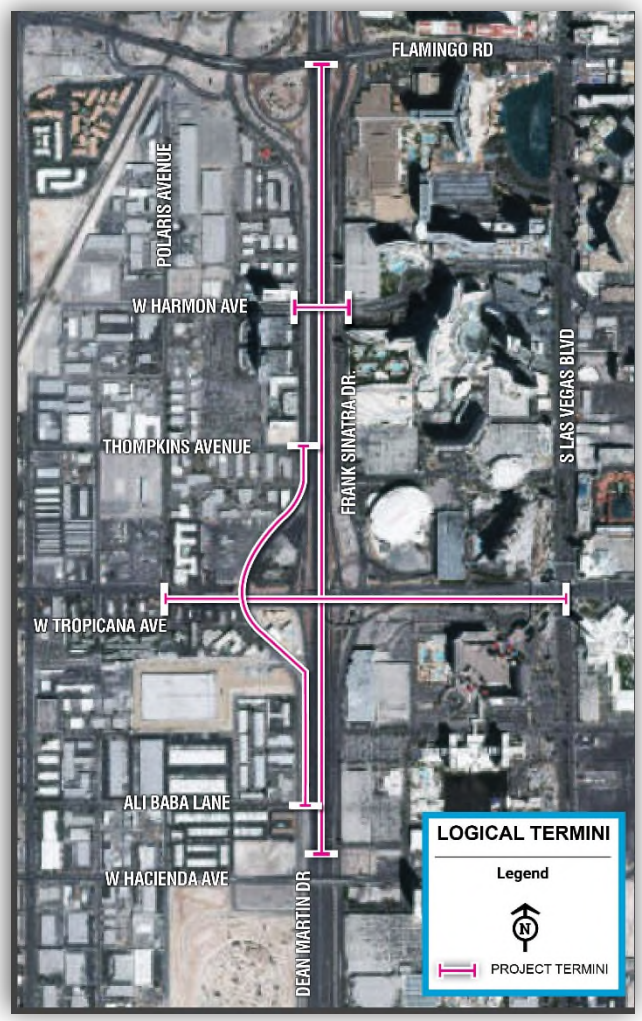


Figure 1-16. Logical Termini

- The project termini are the necessary limits to meet design parameters and traffic movement needs of the proposed interchange improvements, but they are sufficient to address the environmental issues—specifically socioeconomic effects (pedestrian and traffic circulation).
- The Harmon HOV ramps are a necessary component of the interchange capacity improvements, and can stand alone if other elements in the HOV Plan (e.g., other drop ramps) are not built.

The traffic congestion and safety issues identified on Tropicana Avenue and on I-15 in the project vicinity are all tied to the I-15 Tropicana Avenue interchange, with the exception of the northbound CD road congestion at its merge point with I-15 just south of the interchange. This specific roadway deficiency is an artifact of a previous I-15 South Corridor Improvements project, including widening I-15 to ten lanes from Silverado Ranch Boulevard to Tropicana Avenue, which also impacts the northbound traffic exiting to I-15 Tropicana **(Table 3-16** and **Figures 1-5** and **3-28**). However, that congestion and related high crash rates will also be resolved by the proposed I-15 Tropicana improvements (see discussion in **Chapter 2, Section 2.4**).

As presented in **Section 3.7.3**, NDOT is currently conducting a separate planning study to determine what I-15 freeway improvements are needed north of Tropicana Avenue—the *I-15 Sahara to Flamingo Feasibility Study*. However, the I-15 Tropicana Project can be considered a usable and reasonable expenditure even if no additional transportation improvements are made to I-15 within this reach of the interstate.

1.6 Project Cost

During the Feasibility Study, cost estimates were developed for the interchange alternatives using NDOT's Wizard estimation spreadsheet. It was anticipated that the project could cost as much as $180 million during the study, using high-level item quantity estimates and the Wizard cost adders and escalation. For this EA, more detailed estimates of quantities were prepared for the Preferred Alternative, totaling approximately $187 million (including anticipated right-of-way and engineering costs). NDOT subsequently prepared an initial estimate of right-of-way costs of approximately $22.7 million. Additionally, an independent cost estimate was prepared to check and confirm the approximate costs. The resulting total project cost is estimated to be between $185 and $191 million.

These quantity and cost estimates were used as the base for a cost risk assessment and will be the basis for an updated cost range for the project. The Cost Risk Assessment report[11] will be available separately on the project website.[12]

The project is listed in the 2019 Statewide Transportation Improvement Program (STIP) as project CL20170039. Total funding programmed under Version 2 of Funding History is $206 million[13].

[11] Golder Associates, Inc. 2019. Cost and Schedule Risk Analysis for I-15 Tropicana Project May 2019 Workshop. August.
[12] https://www.nevadadot.com/projects-programs/road-projects/i-15-tropicana-interchange-reconstruction/public-involvement/studies-reports.
[13] https://estip.nevadadot.com/

This page intentionally left blank.

Chapter 2. Alternatives

2.1 Alternatives Development and Evaluation Process

2.1.1 Introduction

This chapter describes the development and evaluation of alternative solutions to improve the I-15 Tropicana interchange to meet the project purpose and need described in **Chapter 1**. This project has been defined and refined through two stages of development: the Feasibility Study and the Environmental Assessment. These two stages are described in detail in the following sections, and can be summarized as follows:

I-15 Tropicana Project Development

1. Feasibility Study (Section 2.1.2)
   - Project definition
   - Alternatives screening
   - Preferred alternative recommendation
2. Environmental Assessment (Section 2.1.3)
   - Addition of multimodal and no-build alternatives
   - 2040 traffic modeling
   - Preferred alternative refinement and analysis

2.1.1.1 *Feasibility Study*

The *I-15 Tropicana Interchange Feasibility Study*[1] (Feasibility Study) was completed in 2015 and developed a full range of project concepts through a design workshop and stakeholder meetings. Initial concepts were screened and resulting project alternatives were subjected to traffic analysis and design refinement. This study resulted in a recommended Preferred Alternative to be advanced to the National Environmental Policy Act (NEPA) process.

2.1.1.2 *Environmental Assessment*

The NEPA Environmental Assessment (EA) was initiated in 2017 following completion of the Feasibility Study and subsequent stakeholder outreach. The EA evaluates the recommended project, referred to as the build alternative (or Preferred Alternative), and the no-build (or no-action) alternative, the latter of which serves as the baseline for comparison of impacts on the environment. The EA has further refined the Preferred Alternative based on additional public outreach and expands the project scope to include multimodal improvements in the form of a High Occupancy Vehicle (HOV) interchange on I-15 in close proximity to Tropicana Avenue.

2.1.2 Feasibility Study

The Feasibility Study identified over 50 alternative concepts to address the existing design deficiencies and safety concerns at the I-15 Tropicana Avenue interchange. Throughout the study process, workshops and one-on-one meetings were held with agency representatives from the Federal Highway Administration (FHWA), Nevada Department of Transportation (NDOT), Clark County, and the Regional Transportation Commission of Southern Nevada (RTC). Meetings were held at key milestones with the technical team, project stakeholders and the public to review the study results and provide direction.

[1] CA Group, I-15 Tropicana Interchange Feasibility Study, January 2015, https://www.nevadadot.com/projects-programs/road-projects/i-15-tropicana-interchange-reconstruction/public-involvement/studies-reports

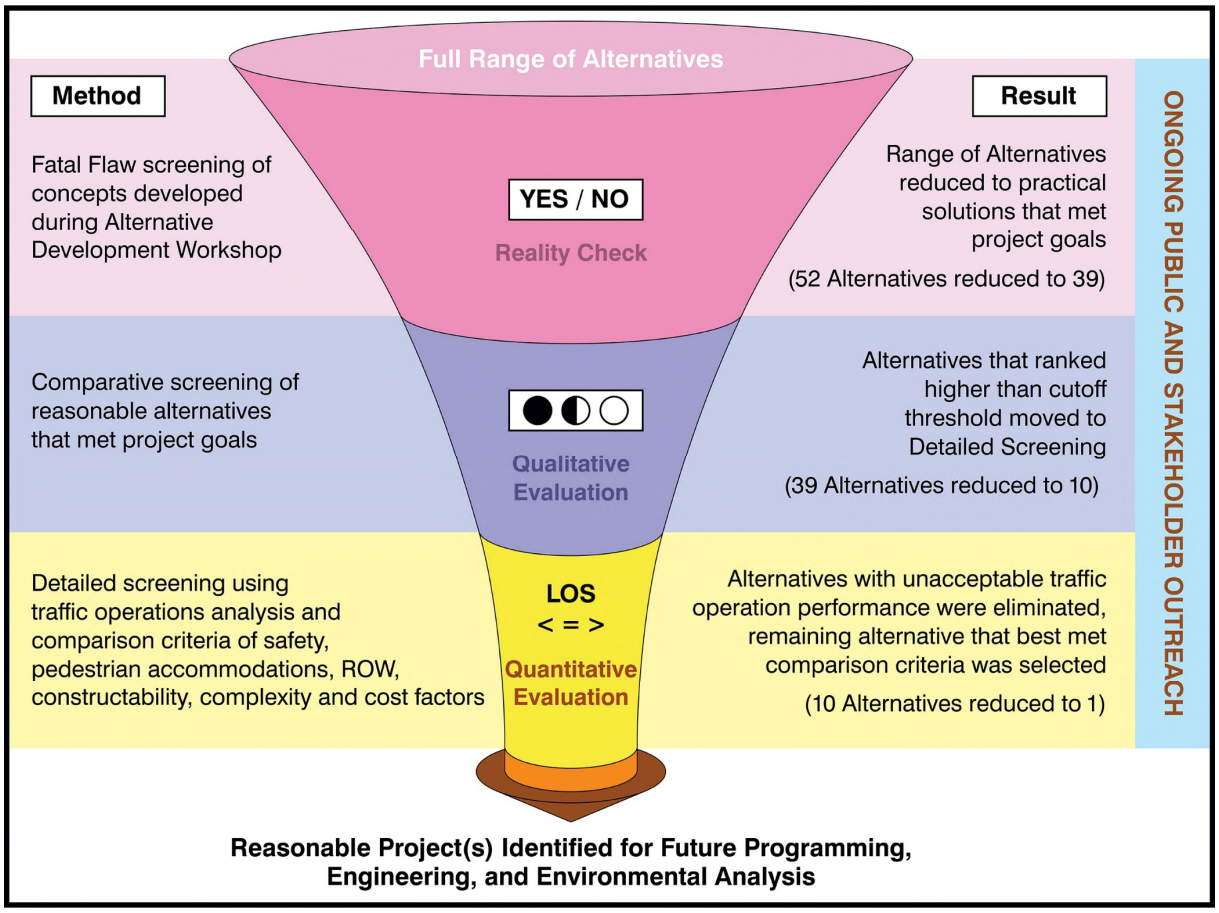
2.1.1.3 *Range of Alternatives Studied in the Feasibility Study*

The Feasibility Study provides a detailed summary of the project alternatives considered and rejected, as well as an explanation of the alternatives development and evaluation process that was followed. A large number of ideas considered were identified during an alternatives development workshop. All of the design improvement concepts identified during the alternatives development workshop were evaluated and ranked under a specific set of evaluation criteria (see text box). These concepts were grouped as: I-15 Northbound Improvements, I-15 Southbound Improvements, Tropicana Interchange Improvements, and Tropicana Corridor Improvements.

Feasibility Study Alternatives Evaluation Criteria

- ***NEPA Action****:* refers to the anticipated National Environmental Policy Act action of the specific concept. NEPA actions are from Categorical Exclusion (no impacts) to Environmental Impact Statement (significant impacts).
- ***Operations:*** the anticipated or modeled traffic movement characteristics of the specific concept, determined by comparison of Level of Service (LOS).
- ***Safety:*** the ability for users of the system to reach their destination safely on any given trip.
- ***Accessibility:*** the ability of the concept alternative to connect people to desired destinations through the study corridor.
- ***Reliability****:* refers to the ability of the concept to meet anticipated needs/demand and offers flexibility in adverse circumstances.
- ***Implementability****:* refers primarily to project development and construction costs relative to the available funding for the proposed improvements.

The workshop concepts were ranked under these criteria as follows: Poor (0), Neutral (1), Good (2), Better (3), and Best (4). They were then compared by overall performance average across the evaluation criteria and total score using a three-step process (see diagram below). All concepts were screened by their evaluation score, with those scoring 14 or higher deemed to best meet the evaluation criteria. Higher scoring concepts were carried forward for more detailed analysis. (Refer to the Alternatives Evaluation Matrix in the Feasibility Study [pages 31 through 35] for the full list of concepts considered and how they were initially screened and ranked under the evaluation criteria.)



The transportation improvements concepts that passed the initial screening process were then grouped as initial concepts, interim concepts, and ultimate concepts. The initial concepts were those identified as meeting immediate needs (e.g., replacing the northbound I-15 Tropicana Avenue exit ramp sign to provide drivers with improved lane use information) and that could be implemented at the present time; interim concepts could be implemented within the near future as either stand-alone projects or as part of another project (e.g., restriping for a 2nd northbound collector-distributor (CD) road merge lane onto I-15); and ultimate concepts for major reconstruction of the I-15 Tropicana interchange to meet 20-year traffic growth forecasts (consisting of three-level and two-level interchange concepts).

The ultimate concepts evolved into the "build" alternatives deemed to best address the overall project purpose and need (see **Chapter 1**). Several ultimate concepts involved complicated geometry or large footprint (right-of-way) impacts. Those concepts were identified as less desirable than smaller footprint, more conventional concepts, and were deferred in the evaluation process pending the results of evaluation of more conventional concepts. The first wave of concept evaluation therefore consisted of conventional interchange types, and combinations of complimentary concepts from the alternatives workshop. These ultimate build alternatives were grouped into two-level and three-level interchange types.

Two-Level Interchanges

Two-level interchange concepts (with I-15 below and Tropicana Avenue above, all freeway ramps intersecting with Tropicana Avenue, and no southbound I-15 to eastbound Tropicana Avenue flyover ramp) were considered to be less complicated to design and build and would have lower construction and infrastructure costs than three-level interchanges. The concepts consisted of a Single Point Diamond Interchange, a Diverging Diamond Interchange, and a Tight Diamond Interchange.

- **Single Point Diamond Interchange** – with a wider Tropicana Avenue bridge providing space for a single traffic signal controlled intersection with the northbound and southbound freeway ramps
- **Diverging Diamond Interchange** – with the two directions of traffic on Tropicana Avenue crossing to the opposite sides over the bridge to eliminate left turns across opposing traffic for freeway ingress and egress.
- **Tight Diamond Interchange** – a design with relatively closely spaced northbound and southbound freeway on- and off-ramp ramp traffic intersections on Tropicana Avenue

Ultimately, it was demonstrated through traffic analysis that a two-level interchange would not meet the traffic demands for all movements because without an I-15 to Tropicana Avenue flyover ramp the heavy traffic bound for the Resort Corridor would cause backups on both I-15 and Tropicana Avenue.

Three-Level Interchanges

For these concepts, the existing Tropicana Avenue flyover ramp would be either maintained or reconstructed as necessary to support the forecasted traffic volumes. (See **Figures 2-1** through **2-3.**)

The following three-level interchange types were evaluated:

- Single point diamond
- Diverging diamond
- Tight diamond

*Single Point Diamond Interchange (**Figure 2-1**)*

A single point interchange concept with flyover was initially developed to determine the feasibility and footprint of this interchange type within the existing right-of-way. This layout was evaluated before the other two types (diverging diamond and tight diamond) were developed. With the absence of the left turns in the southbound ramp direction, a single point interchange design does not justify the additional costs of the wider bridge structure. There is also a conflict where a support column

for the flyover and the I-15 northbound off-ramp right-turn lanes are located, eliminating the single point diamond interchange configuration from consideration.

During this concept's development, the traffic analysis identified the segment between the southbound Tropicana Avenue exit ramp and the Dean Martin Drive intersections as a critical link in the performance of traffic operations for the entire interchange. Resolving the Dean Martin Drive/Tropicana Avenue intersection congestion (see **Chapter 1**) was not included in this concept but would have been necessary had the concept been carried forward for further development. The remaining concepts were evaluated to include modifications to the Dean Martin Drive/Tropicana Avenue intersection, including grade separating the north-south Dean Martin Drive traffic over or under Tropicana Avenue.

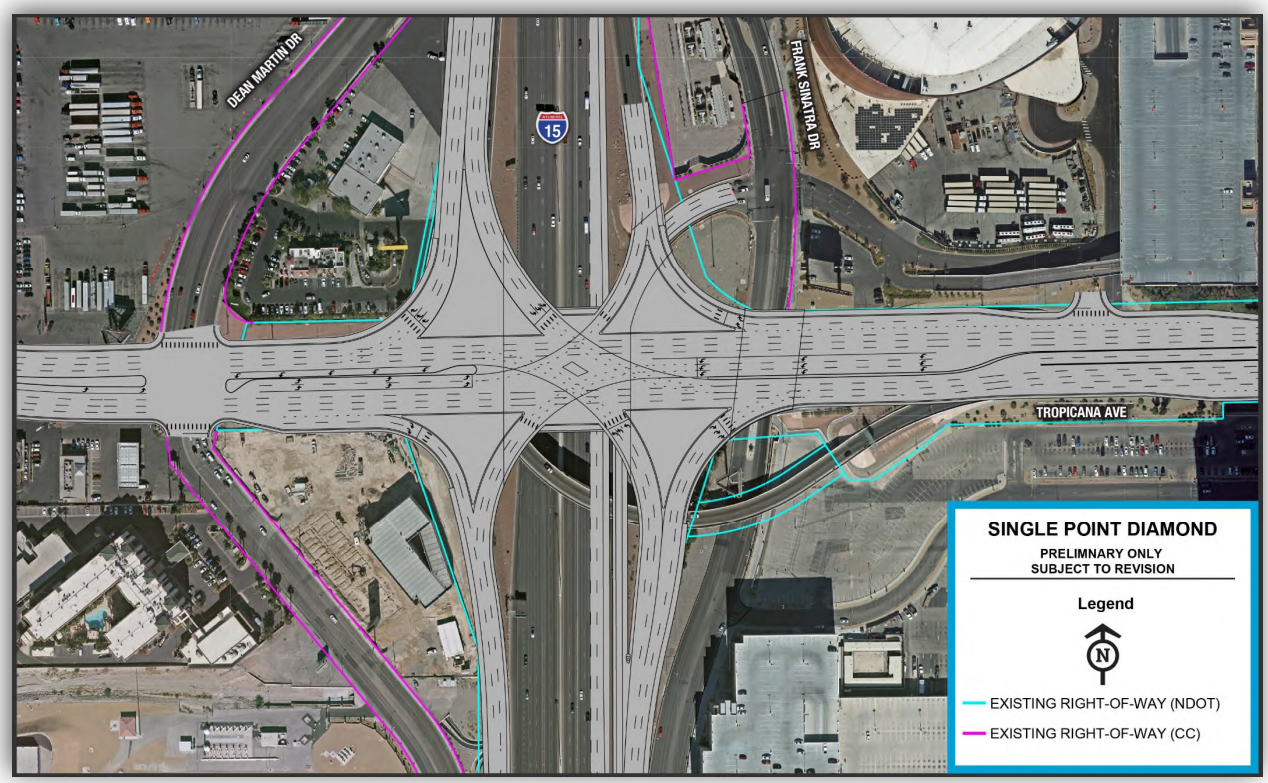


Figure 2-1. Single Point Diamond

*Diverging Diamond Interchange (**Figure 2-2**)*
Diverging diamond interchanges require greater queueing (vehicles waiting in line) distances between crossover intersections to support the traffic volumes. This concept was developed further than the single point concept, including the Dean Martin Drive through movement separation from Tropicana Avenue[2]. Further evaluation of the diverging diamond interchange type was abandoned as it did not support the projected traffic volumes to an acceptable level and would require more right-of-way than the single point diamond, having potentially greater impact on existing businesses.

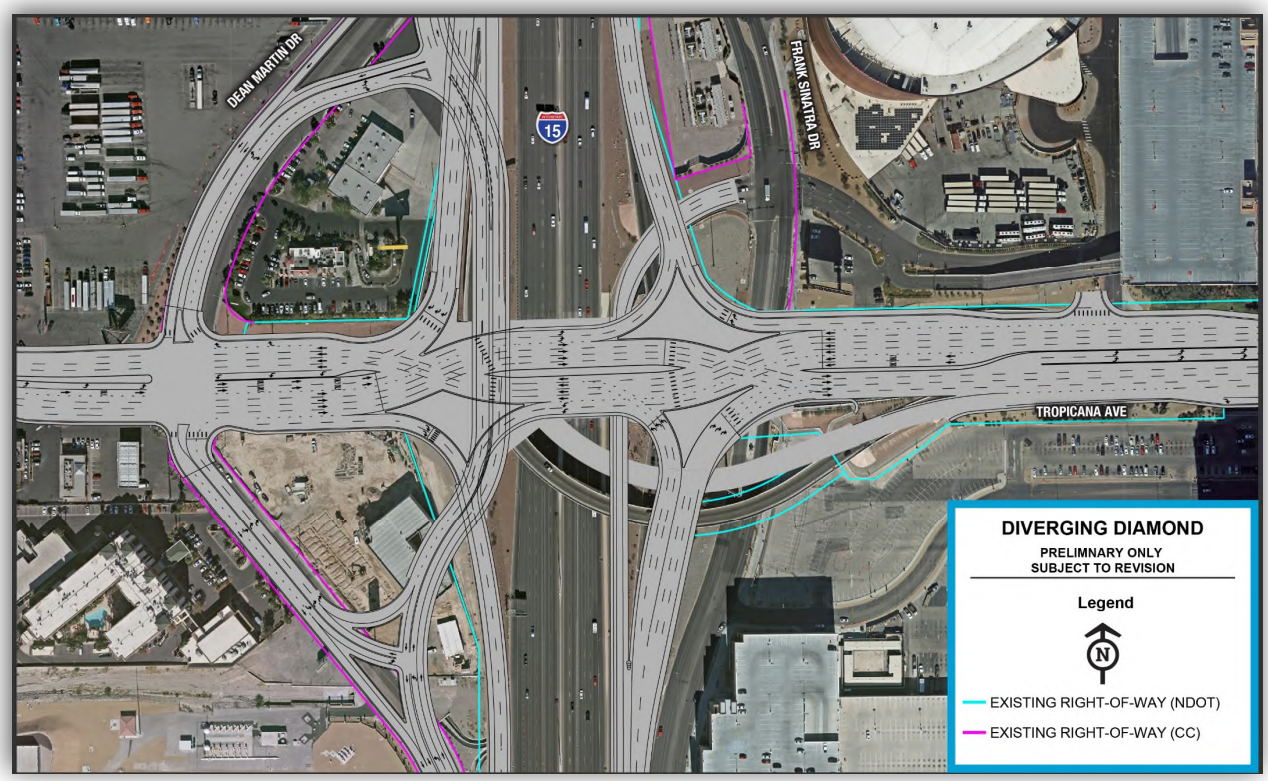


Figure 2-2. Diverging Diamond

[2] This refers to the traffic moving north and south along Dean Martin Drive bound for destinations beyond (not requiring turning onto) Tropicana Avenue.

*Tight Diamond Interchange (**Figure 2-3**)*
The "tight diamond" with flyover is a similar configuration to the existing interchange, provides comparable traffic movements, and the improvements mostly fit within existing right-of-way. A tight diamond is appropriate in areas like the I-15 Tropicana Avenue interchange where there is dense adjacent development and insufficient existing freeway right-of-way, necessitating the on- and off-ramp intersections to be relatively closely spaced on the crossing roadway. This concept further refined the Dean Martin Drive through movement separation from Tropicana Avenue, including median islands on Tropicana Avenue to prevent the conflicting (left-turn and through) traffic movements at the Tropicana Avenue/Dean Martin Drive intersection. The close spacing requires the crossing street, Tropicana Avenue, to be wider with more turning lanes at the freeway interchange than would be required with a standard diamond configuration having greater spacing between the ramp intersections.

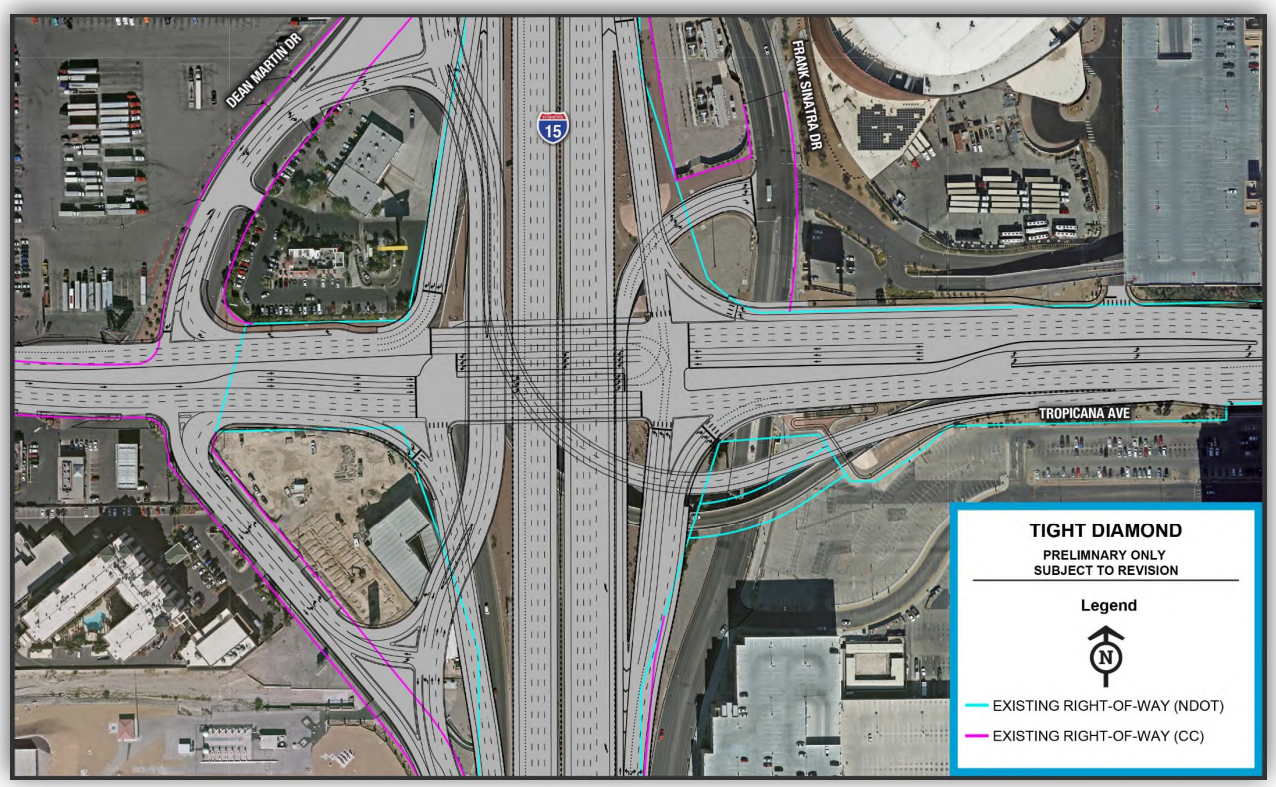


Figure 2-3. Tight Diamond

The tight diamond interchange with flyover configuration is the recommended alternative from the Feasibility Study and is being further refined during this NEPA Environmental Assessment (EA) phase (see **Section 2.1.3**).

Considering safety, pedestrian circulation, overall footprint and right-of-way needs, traffic operations, complexity, constructability and cost, the Feasibility Study recommended the three-level tight diamond alternative. The two-level interchange concepts were unable to meet demand, and the other three-level interchange alternatives introduced complicated structures or unfamiliar interchange movements coupled with less desirable pedestrian movements.

Table 2-1 summarizes the alternatives analysis conducted during the Feasibility Study.

Table 2-1. Feasibility Study Alternative Analysis Summary

Alternative	Analysis Results	Recommendation
Two-level Interchanges		
Tight Diamond Interchange	Did not meet the traffic demand of all movements at acceptable levels of service (LOS)[3].	Not recommended for further study.
Single Point Diamond Interchange	Did not meet the traffic demand of all movements at acceptable LOS.	Not recommended for further study.
Diverging Diamond Interchange	Did not meet the traffic demand of all movements at acceptable LOS.	Not recommended for further study.
Three-level Interchanges		
Tight Diamond Interchange with flyover ramp	The tight diamond interchange with flyover provides similar operation to today's interchange, which operates at a reasonable LOS. The improvements mostly fit within existing right-of-way.	Recommended to be included in the NEPA process.
Single Point Diamond Interchange with flyover ramp	With the absence of the left turns in the southbound ramp direction, considering a SPDI with a southbound to eastbound flyover at this interchange doesn't justify the additional costs of the complicated bridge structure. It also introduces challenging geometry where the flyover and right turn ramp radii conflict.	Not recommended for further study.
Diverging Diamond Interchange with flyover ramp	Diverging diamond interchanges require greater queueing distances between crossover intersections to support anticipated traffic volumes. With the acceptable performance of the tight diamond interchange, further evaluation of the diverging diamond interchange type was abandoned as it would require additional right-of-way and would potentially impact existing businesses. The diverging diamond interchange geometry that fit within a similar footprint as that of the tight diamond interchange does not support the traffic demand volumes with an acceptable LOS.	Not recommended for further study.

2.1.1.4 *Multimodal Alternatives in the Feasibility Study*

The Feasibility Study included a review of the Southern Nevada High Occupancy Vehicle (HOV) Plan Update,[4] outlining the plan for the number of HOV lanes that will be required on I-15 in the vicinity of the Tropicana Avenue interchange. Use of HOV lanes is restricted to only vehicles with two or more people—including buses, carpools and vanpools, as well as motorcycles and emergency vehicles. This analysis included other planned connectivity options, specifically HOV ramps to/from I-15 at the Hacienda Avenue and Harmon Avenue overpasses, which would affect the traffic volumes at the Tropicana Avenue interchange ramps.

[3] Level of service (LOS) is used by traffic engineers to explain how effectively a roadway segment or intersection operates as perceived by the transportation system user. The six traffic levels of service range from LOS A (high speed and high capacity with minimal delay) to LOS F (low speed and no capacity with high levels of delay).

[4] Jacobs, Southern Nevada HOV Plan Update, July 2015.

2.1.3 Environmental Assessment

After conclusion of the I-15 Tropicana Feasibility Study, NDOT initiated this Environmental Assessment to assess the impacts of the tight diamond interchange with flyover ramp at the I-15 Tropicana interchange.

NDOT, in consultation with FHWA, also determined that the decisions made during the I-15 Tropicana Feasibility Study should be reviewed to address changes that have occurred after completion of the Feasibility Study that had relevance to the study area. Relevant changes included the following:

1. A 65,000-seat stadium, which will be home to the NFL's Raiders, UNLV Football Team, and other major events, is being constructed along the west side of I-15 between Russell Road and Hacienda Avenue.
2. The Las Vegas Monorail Company is proposing an extension of their system to a new station near the Mandalay Bay Hotel and Casino.
3. The Regional Transportation Plan for Clark County was updated from the year 2035 to 2040, including a new travel demand forecast model.
4. NDOT's Project NEON improvements to I-15, including removal of the 2 express lanes and addition of 1 HOV lane in each direction of I-15, was completed in 2019.

2.1.3.1 Multimodal Alternatives in the Environmental Assessment

Harmon Avenue and Hacienda Avenue HOV Ramps
In addition to analyzing the previous stated relevant changes, NDOT also determined that to minimize disruption to the I-15 corridor and expedite the HOV ramp construction at Harmon Avenue and Hacienda Avenue, these adjacent I-15 HOV ramp projects should be developed concurrently with the Tropicana Avenue interchange improvements. Although these improvements were originally included in the No-Build analysis during the Feasibility Study, it was determined that they would be compatible with the Tropicana Avenue interchange improvements, and that it would be advantageous to construct these as one project.

*Hacienda Avenue HOV Ramps (**Figure 2-4**)*
During public outreach and stakeholder coordination, and specifically in coordination with the MGM Grand, Clark County Public Works and the Raiders, concern was raised regarding the HOV access at Hacienda Avenue and safety of road users along Hacienda Avenue from Aldebaran Avenue to Las Vegas Boulevard. Clark County facilitated a joint discussion as part of its review of the Raiders' Traffic Impact Assessment. MGM Grand was concerned about roadway safety due to additional traffic volumes that would be generated passing through the Shoppes at Mandalay Bay Place overpass of the roadway, and the Raiders plan to use the Hacienda Avenue bridge as a pedestrian walkway during events. Furthermore, the Raiders stadium is to be completed before the I-15 Tropicana project, raising substantial concerns about the Hacienda Avenue ramps impacting event access and mobility during construction.

Public input was received during scoping meetings at the initiation of this EA, and specifically meetings with:

- The Raiders
- MGM Grand
- Clark County

Based on this input, NDOT reconsidered the HOV ramp location at Hacienda Avenue due to concerns about interstate traffic impacting pedestrians and local traffic on Hacienda Avenue.

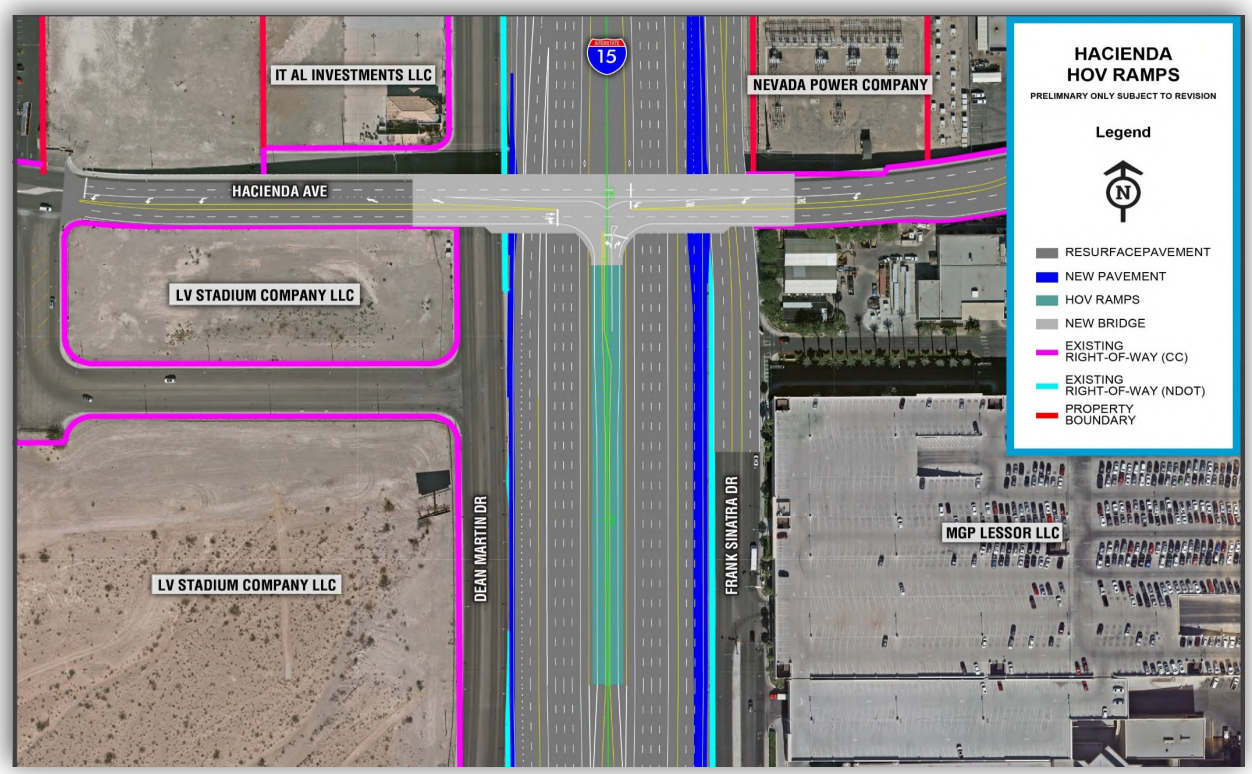


Figure 2-4. Hacienda Avenue HOV Ramps

As a result of this coordination, NDOT initiated a reevaluation of the Southern Nevada HOV Plan, to determine appropriateness of the plan's recommendations. NDOT's 2018 addendum to the HOV Plan Update[5] considered these additional factors and revised the recommended HOV ramp locations in the vicinity of Tropicana Avenue to remove the HOV connections at Hacienda Avenue and change the orientation of access to and from I-15 at Harmon Avenue to the south rather than the north.

2.1.3.2 Traffic Analysis Update and Decision Verification

As part of the analysis of relevant changes, the traffic modeling that was used during the I-15 Tropicana Feasibility Study was updated to reflect the 2040 RTP and travel demand forecast model. In addition, NDOT's new AIMSUN traffic operations model was used instead of the previous CORSIM model. With the updated traffic modeling methodology, the factors used to determine traffic performance changed from those used in the Feasibility Study. Instead of Level of Service (LOS), other measures of effectiveness were used for this EA, consisting of travel time and traffic density, as described in **Chapter 1**. The team performed a reevaluation of the previously dismissed two-level alternatives using the 2040 traffic forecasts to validate the previous analysis results. The reevaluation effort confirmed the traffic operational performance results from the Feasibility Study. Therefore, it was agreed that the tight diamond with flyover would continue as the recommended alternative.

[5] HDR-CA Group, 2018 Southern NV HOV Plan Addendum, https://www.nevadadot.com/safety/roadway-safety-improvements/high-occupancy-vehicle-hov-lanes-express-lanes

2.2 No-Build Alternative

The No-Build Alternative would take no action to address the existing deficiencies and safety concerns within the project limits. The No-Build Alternative provides a baseline for evaluating future conditions and for evaluating impacts of the Preferred Alternative.

The No-Build Alternative assumes other planned/permitted transportation improvements proposed by others in proximity to the project area, such as Clark County's projects to connect Harmon Avenue and Valley View Boulevard with a grade separation over the Union Pacific Railroad (UPRR) tracks and add a westbound lane on Tropicana Avenue from Polaris Avenue to Decatur Boulevard, will be constructed.

The No-Build Alternative does not meet the project's purpose and need, as discussed in **Chapter 1**.

2.3 Preferred Alternative

In addition to the meetings with the Raiders organization, MGM Grand, and Clark County, ongoing stakeholder outreach has occurred since completion of the Feasibility Study and initiation of this EA.

Input received from affected property owners has led to additional refinements to the tight diamond interchange with flyover alternative recommended from the Feasibility Study. These refinements address the input received and are reflected in the Preferred Alternative described in **Section 2.1.3**.

Following on the recommendation of the Feasibility Study and based on ongoing stakeholder and public outreach, the Preferred Alternative is a tight diamond interchange with a flyover from southbound I-15 to eastbound Tropicana Avenue. The Preferred Alternative consists of the following design details:

The preferred alternative includes the following major elements:

- Four westbound and four eastbound through (continuous) lanes on Tropicana Avenue with dual left-turn lanes at Las Vegas Boulevard, and a 2-lane entrance from the flyover to Tropicana Avenue.
- HOV ramps at the Harmon Avenue overpass to and from the south.
- A 2-lane entrance to I-15 from the northbound CD road (the separated lanes paralleling I-15 that circulate traffic between the freeway and local interchanges).

Tropicana Avenue – Limited widening of I-15 for the northbound CD road merge, along with providing room for future widening for additional through lanes and creating standard vertical bridge clearance (16'-6"), requires the existing Tropicana Avenue overpass bridge to be replaced with a new, longer structure. The I-15 Tropicana Avenue interchange would be reconstructed to add capacity for all ramps in all directions. The existing interchange configuration is replicated in the proposed layout, with replacement of the flyover ramp for I-15 southbound traffic exiting to Tropicana Avenue eastbound and Las Vegas Boulevard. From west to east, the project matches the existing intersection at Polaris Avenue and widens to accommodate the four through lanes (see **Figures 2-5 through 2-8**).

The Tropicana Avenue bridge would be raised approximately 3 feet to provide enough vertical clearance over I-15, while allowing for the additional size of the new longer, wider overpass structure. The new southbound flyover bridge would be horizontally shifted and approximately 7 feet higher than the existing flyover to provide adequate vertical clearance, as well as aid in the staging of flyover construction.

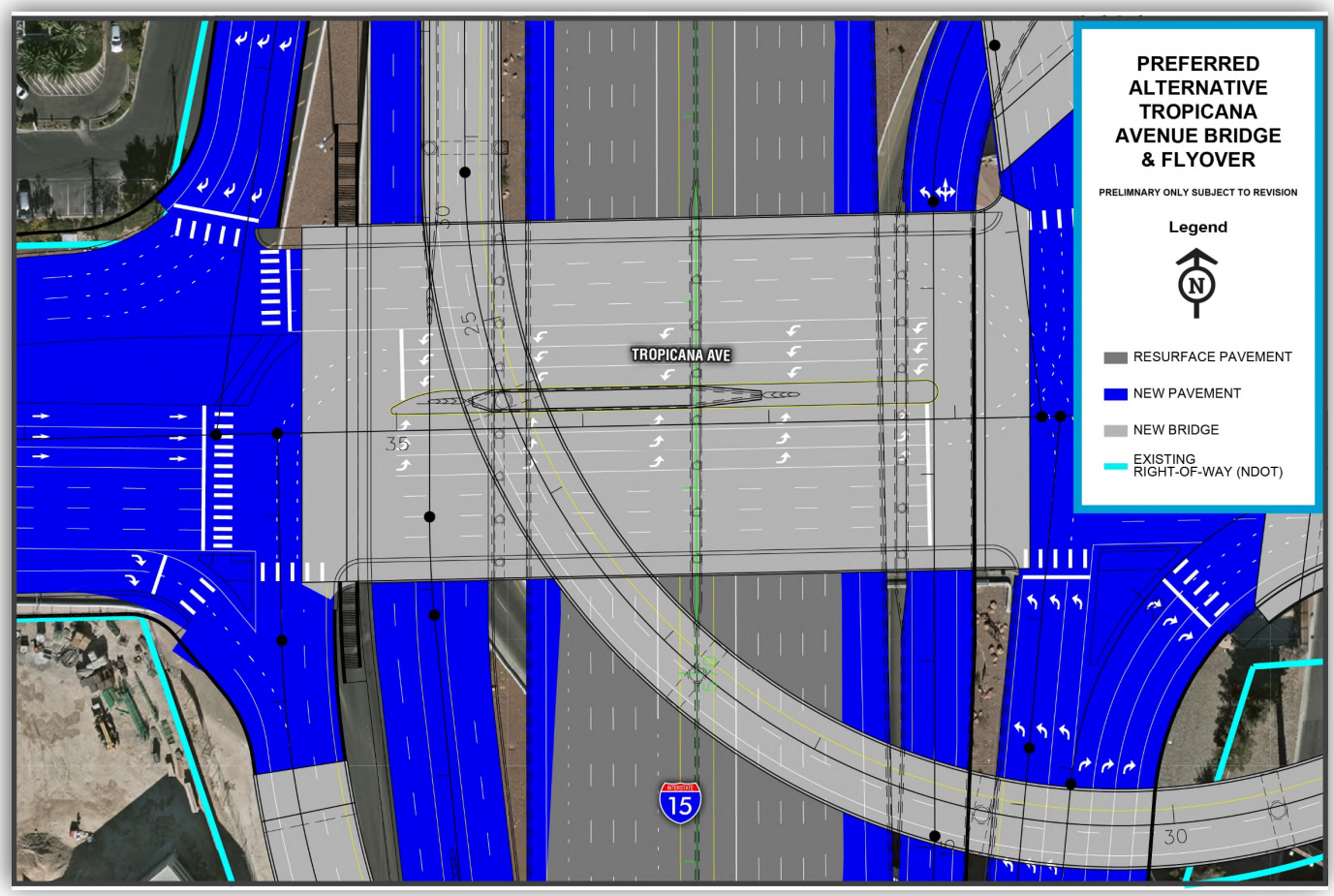


Figure 2-5. Preferred Alternative Tropicana Avenue Bridge and Flyover

Tropicana Avenue would be widened from Polaris Avenue on the west to Las Vegas Boulevard to the east and include:

- 10-foot sidewalks on both sides of the bridge
- 8 lanes (existing is 6 lanes) featuring:
  - 4 through (continuous) lanes in each direction consisting of one additional lane in each direction from Polaris Avenue to the New York New York intersection, for a distance of 2,800 feet
  - Multiple turn pocket lanes at the interchange ramps and other street intersections

At the existing Dean Martin Drive intersection, the project would relocate the Dean Martin Drive north-south through traffic movements with destinations beyond the interchange, carrying them instead under Tropicana Avenue alongside I-15, while eliminating the north-south through movements on Dean Martin Drive from the existing signal location. This would convert the existing Dean Martin Drive intersection into two right-in right-out intersections with Tropicana Avenue, improving traffic flow between Dean Martin Drive and the I-15 southbound ramp terminal intersection (see **Figures 2-6** and **2-7**). New traffic patterns in this area would require additional signing to inform drivers of lane configurations.

The left turn from Tropicana Avenue westbound to Dean Martin Drive southbound was evaluated during the Feasibility Study and it was shown to cause unavoidable traffic congestion on Tropicana Avenue and the I-15 southbound exit ramp. Additional evaluation was performed as part of the traffic study for this EA using the updated 2040 traffic volumes, and the conclusion of the Feasibility Study to remove the left turn was confirmed.

*Tropicana Avenue Interchange Southwest Quadrant (**Figure 2-6**)* – Development plans for the site of the previous Golden Palm casino changed between completion of the Feasibility Study and initiation of this EA. A proposed site plan changed from a high-rise condominium hotel, which was accommodated by the Feasibility Study design, to a site plan including two hotels and a common parking garage. Accommodating

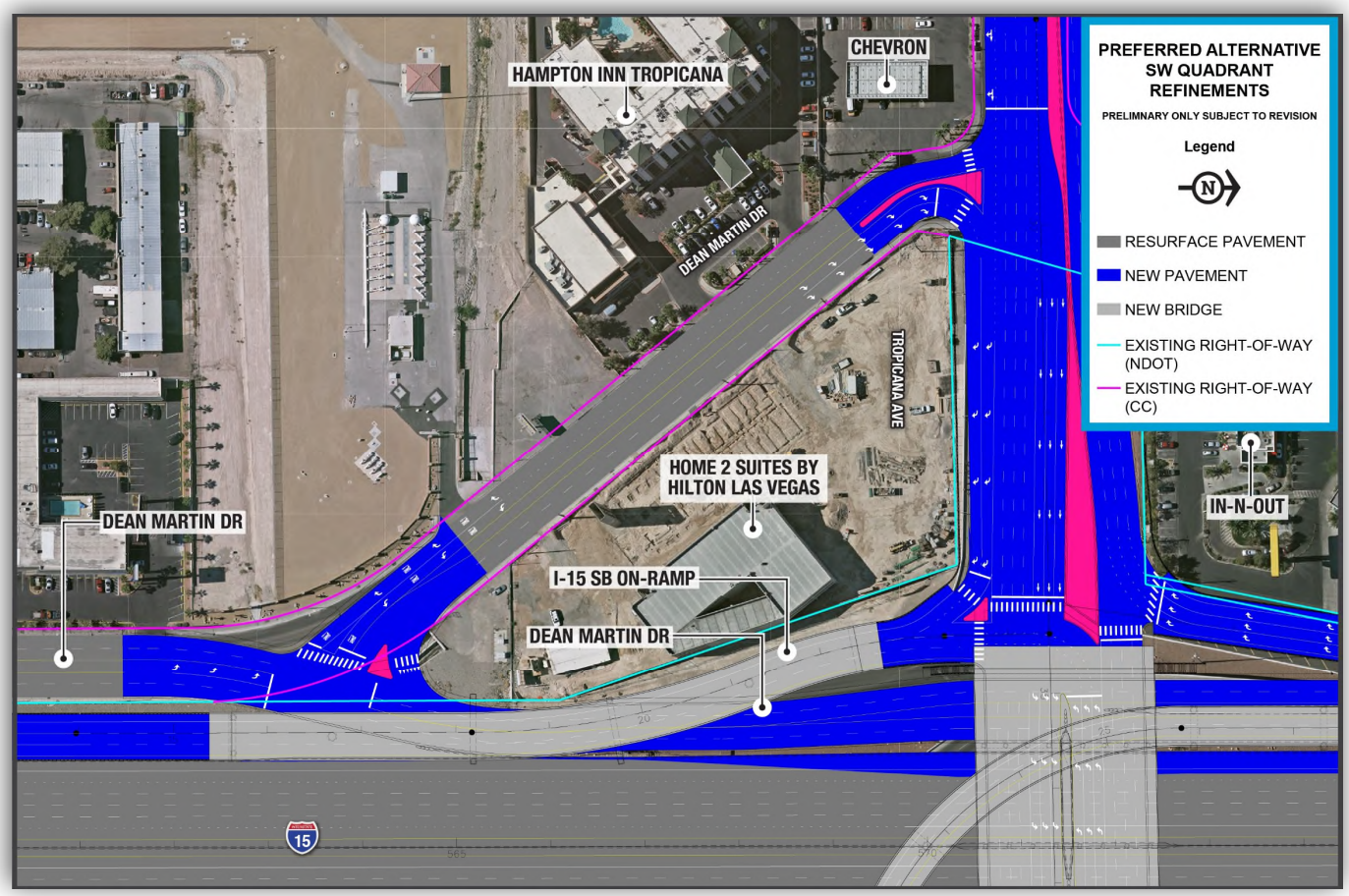


Figure 2-6. Preferred Alternative Southwest Quadrant Refinements

the latest development plan involved re-aligning the proposed I-15 southbound entrance ramp and shifting the Tropicana Avenue widening to the north.

In addition to the coordination to minimize right-of-way impacts, commercial property owners and managers along the south leg of the Dean Martin Drive and Tropicana Avenue intersection were concerned about the potential impacts on their businesses from removal of the westbound left turn from Tropicana Avenue to southbound Dean Martin Drive (**Figure 2-6**). Meetings with these property owners and managers are ongoing to resolve these concerns.

Tropicana Avenue Interchange Northwest Quadrant (**Figure 2-7**) – Coordination with In-N-Out Burger led to a change of the design to reduce the radius of the Dean Martin Drive connector intersection and to minimize the intrusion of the project into the northern portion of the property.

Meetings with the J. A. Tiberti Construction Company and the Wild Wild West Casino properties personnel resulted in concurrence with the recommended build alternative. Minor adjustments to the north leg of the Dean Martin Drive intersection were made at the request of Station Casinos, the developer of a potential site improvement, which would occupy several of the private parcels in the

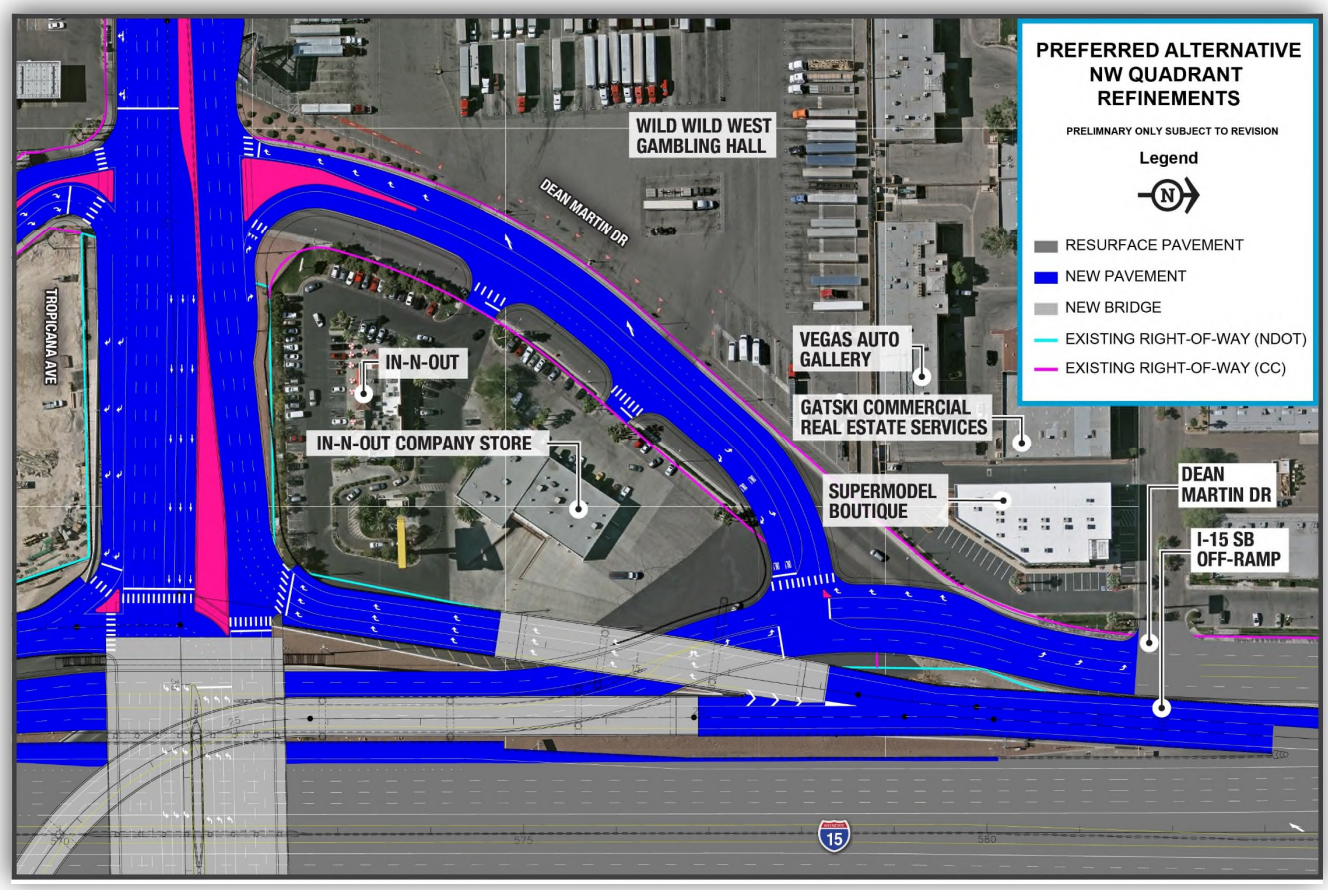


Figure 2-7. Preferred Alternative Northwest Quadrant Refinements

area.

Tropicana Avenue Interchange East Side ***(Figure 2-8)*** - New right-of-way would be required on the north side of Tropicana Avenue (see **Figure 3-9**), comprising a rectangular-shaped area along the edge of the avenue. Additional right-of-way would also be required for a proposed bus turn out at the existing eastbound bus stop location.[6]

East of the interchange, all existing driveways are maintained, with minimal changes to driveway approaches from widening. Tropicana Avenue transitions back to the existing width prior to crossing Las Vegas Boulevard.

Traveling east, triple lane turn pockets allow for greater traffic capacity at all ramp intersections.

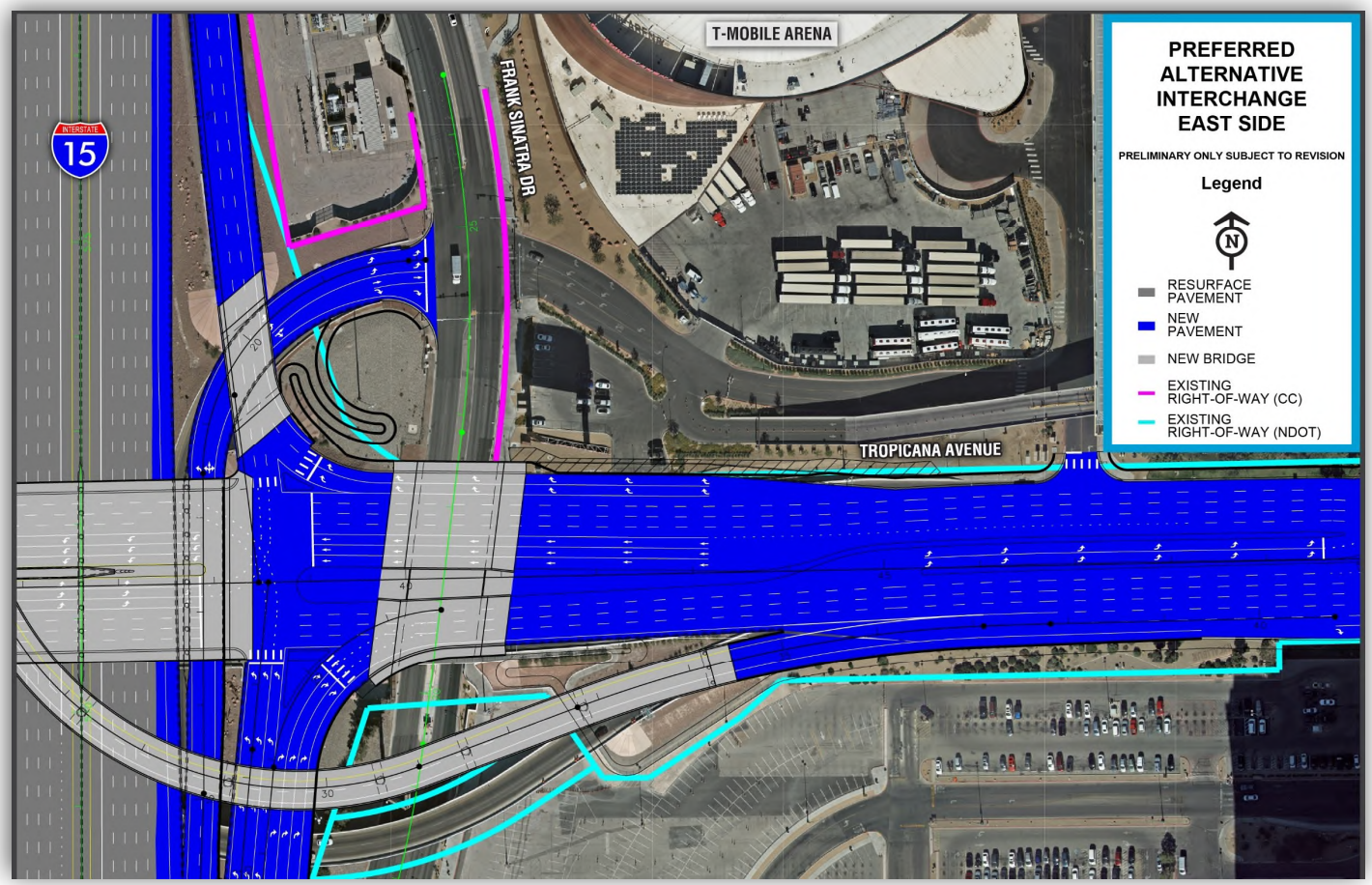


Figure 2-8. Preferred Alternative Interchange East Side

[6] Refer to Section 3.2.2, and specifically Table 3-5, for a detailed description of new right-of-way that would be needed for the Preferred Alternative.

Harmon Avenue - In addition to the removal of the Hacienda Avenue HOV access location, the 2018 Southern Nevada HOV Study Update reevaluation recommended a reconfiguration of the I-15/Harmon Avenue HOV ramps, reorienting them to the south side of Harmon Avenue (**Figure 2-9**). This changes the directional access at Harmon Avenue from the north to the south, providing the southerly connection removed from Hacienda Avenue, and assuming the northerly HOV access to the vicinity will be provided by the proposed Meade Avenue HOV interchange which is located north of this project and will be built as part of separate project at a later date.

Key features of Harmon Avenue HOV Ramps:

- Relocate some high mast lighting (maximum 120 feet high)
- Maintain the existing sidewalk, which varies from 5 to 6 feet wide, on the north side of the bridge
- Restripe the lanes on Harmon Avenue and signalize the HOV ramps

The HOV ramps would be constructed in the median of I-15 connecting to the Harmon Avenue bridge structure. The travel lanes on Harmon Avenue would be restriped to align with the new HOV ramp intersection. The existing bridge piers at Harmon Avenue can accommodate the freeway lanes being shifted outward for the ramps and the bridge would not be replaced. Existing high mast lighting that conflicts with the HOV ramps would be relocated. Improvements on Harmon Avenue would extend from Aldebaran Avenue to Aria Way.

For the I-15/Harmon Avenue HOV interchange, the FHWA has the responsibility to approve new or revised access points to the Interstate System under Title 23, United States Code (U.S.C.), Section 111. A separate technical report was submitted to FHWA for determination of safety, operations, and engineering acceptability of the changes to the Interstate access proposed by this project (**Appendix D**). Consideration of all the social, economic, and environmental impacts and planning considerations are addressed in the NEPA documentation of this project.

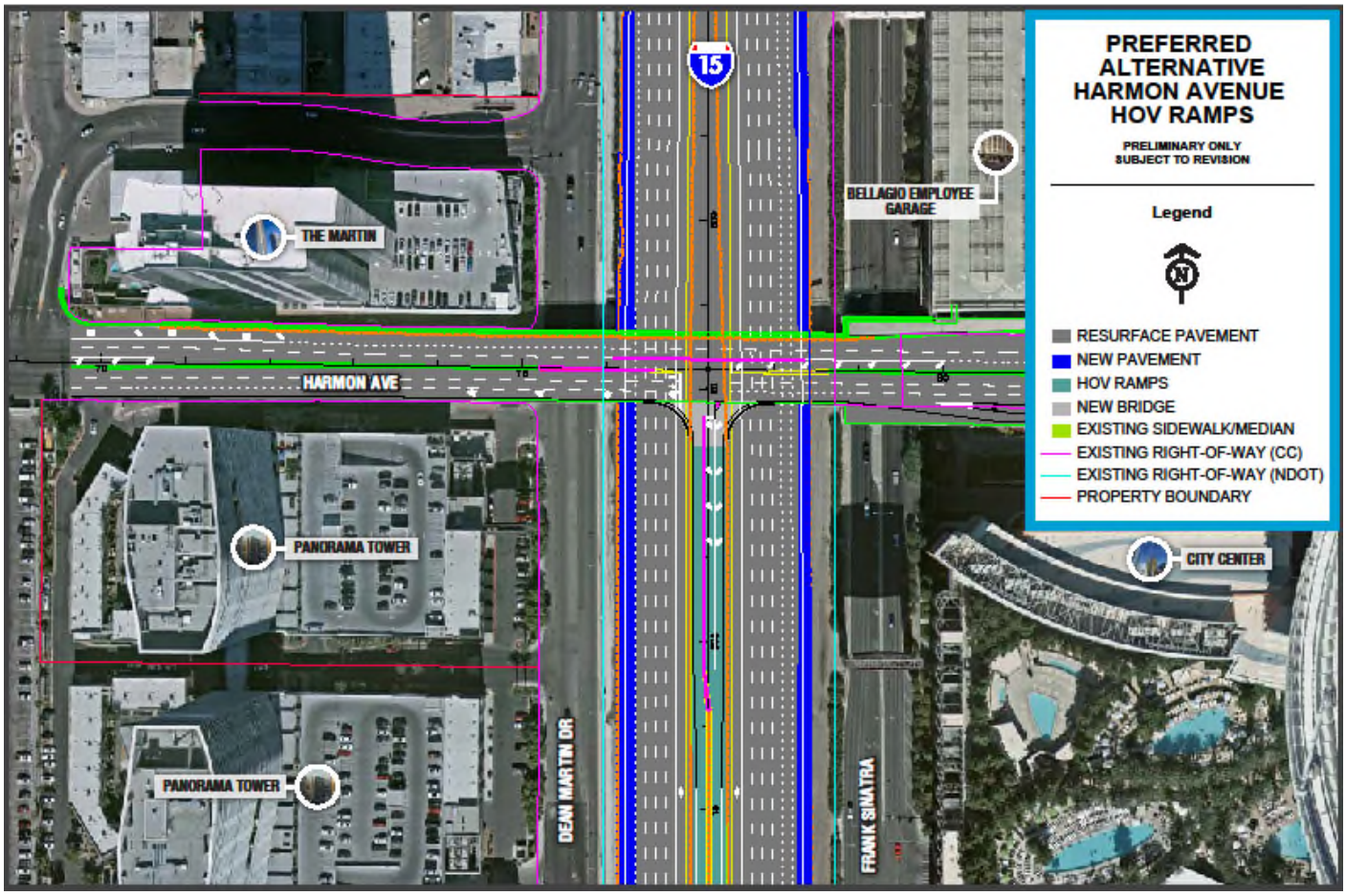


Figure 2-9. Preferred Alternative Harmon Avenue HOV Ramps

Northbound CD Road – South of the Tropicana Avenue interchange, the northbound I-15 CD road merges onto I-15 in a one-lane entrance configuration. This configuration would be improved to a two-lane entrance from the CD road to I-15, with the two CD lanes subsequently merging into a single through lane that would pass under the Tropicana Avenue overpass. That single through lane would then merge into the I-15 general purpose lanes prior to the northbound entrance ramp from Tropicana Avenue (see **Figure 2-10**). The limits of the CD road improvements are from approximately 2,300 feet south of Tropicana Avenue to 1,000 feet north of Tropicana Avenue.

Improvements to existing bottleneck at I-15 northbound collector-distributor (CD) road merge lane:

- Add second northbound merge lane to I-15
- Continue second merge lane past the Tropicana Avenue overpass

Figure 2-10. Preferred Alternative Northbound CD Road Merge Lanes

2.4 How Does the Preferred Alternative Meet the Need and Purpose of the Project?

As discussed in **Chapter 1**, purpose of the project is to:

- Resolve roadway and operational deficiencies on Tropicana Avenue and the northbound CD road south of the interchange.
- Reduce traffic congestion at the I-15 Tropicana Avenue interchange and the northbound CD road.
- Increase safety for vehicles, pedestrians, bicycles, and transit users and operators.
- Improve HOV access and circulation.

The primary transportation improvement needs driving the purpose of the project are the roadway deficiencies on Tropicana Avenue and I-15 south of the interchange. The Preferred Alternative corrects those deficiencies, thereby reducing congestion, improving safety, and increasing network capacity.

Resolve Roadway and Operational Deficiencies

The Preferred Alternative has been developed to correct the existing roadway deficiencies that result in congestion along Tropicana Avenue, Dean Martin Drive, and I-15 in the immediate vicinity of the interchange. These roadway deficiencies are described in detail in **Section 1.2.1. Table 2-2** summarizes the roadway deficiencies and identifies the component of the Preferred Alternatives that corrects these deficiencies.

Table 2-2. Summary of Roadway Deficiencies

	Location		
	Tropicana Avenue	**Dean Martin Drive**	**I-15**
Key Deficiencies	• 4-lane bridge and approaches limit capacity • Close intersection spacing impedes westbound traffic flow • Northbound on-ramp restricts traffic flow causing backups • Westbound weaving through the interchange impedes access to Dean Martin Drive and I-15 southbound	• Signal at Tropicana Avenue backs up through traffic	• Inadequate vertical clearance under Tropicana Avenue bridge • Tropicana Avenue bridge limits future widening • Northbound traffic on CD road backs up from 1-lane I-15 merge • Southbound off-ramp backs up from Dean Martin Drive signal • Northbound off-ramp delayed due to Tropicana Avenue backups
Preferred Alternative	• Adds one through and one left-turn lane in each direction at the interchange. • Converts the Dean Martin Drive intersection to right in right out, reducing weaving and improving Tropicana Avenue traffic. • Additional turn lanes at the ramp intersection allows more storage and throughput, preventing backups.	• Relocates the through movements on Dean Martin Drive under Tropicana Avenue, reducing backup.	• New Tropicana Avenue bridge provides proper vertical clearance over I-15. • New bridge is longer, providing more width for I-15 underneath. • Extended merge length and two-lane entrance from the northbound CD road to I-15 reduces backups on the CD road. • Converting the Dean Martin Drive intersection to right-in right-out greatly improves the throughput of the interchange ramp intersections. • Additional turn lanes at the ramp intersections allow more storage and throughput, preventing backups onto I-15.

Reduce Traffic Congestion

Added Network Capacity - The modeling of future traffic conditions for this project used the concept of "latent vehicles." Latent vehicles refers to the number of vehicles that are expected to enter and use the simulated roadway network, but are delayed from entering the network due to the limited capacity or bottlenecks at the boundary/entry locations of the network. The traffic simulation model for this study (called Aimsun Next) analyzed the roadway network shown in **Figure 2-11.**

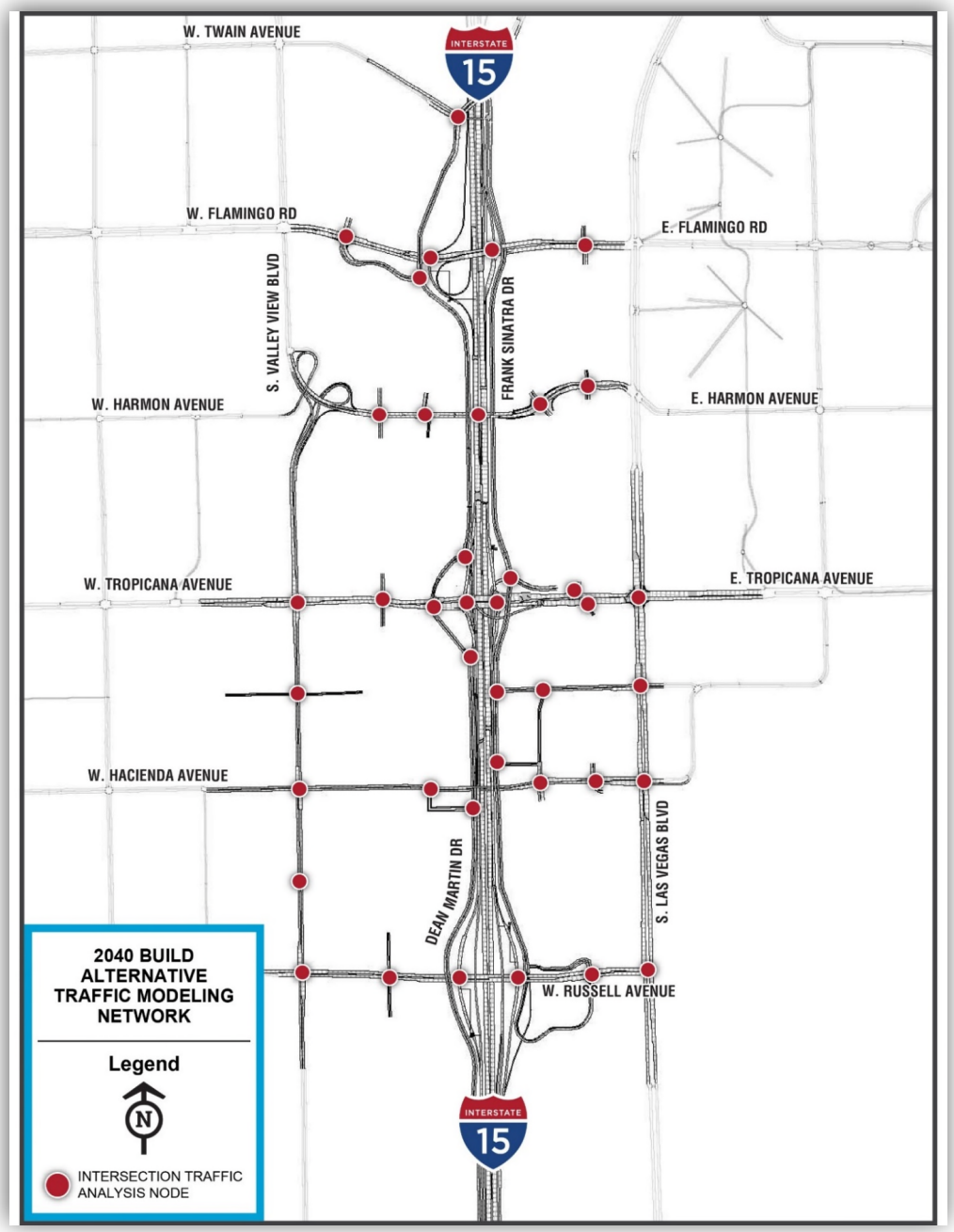


Figure 2-11. 2040 Build Alternative Traffic Modeling Network

The Aimsun Next modeling network mainly included:

- I-15 at Tropicana Avenue Interchange
- Harmon Avenue HOV Ramps to/from I-15

In addition, the modeling network included segments of I-15 (including the CD roads), Tropicana Avenue, Flamingo Road, Harmon Avenue, Hacienda Avenue, and Russell Road in the vicinity of the facilities listed above. The Aimsun Next modeling network also included the following intersections (highlighted in **Figure 2-12**):

1. Flamingo Road and Rio Drive
2. Flamingo Road and I-15 Southbound Ramps
3. Flamingo Road and I-15 Northbound Ramps
4. Flamingo Road and Caesars Palace/Via Del Nord
5. Harmon Avenue and Polaris Avenue
6. Harmon Avenue and Aldebaran Avenue
7. Harmon Avenue and Aria/Vdara
8. Harmon Avenue and Cosmopolitan/City Center
9. Tropicana Avenue and Valley View Boulevard
10. Tropicana Avenue and Polaris Avenue
11. Tropicana Avenue and Dean Martin Drive
12. Dean Martin Drive and New North Intersection (to be constructed as part of the proposed project)
13. Dean Martin Drive and New South Intersection (to be constructed as part of the proposed project)
14. Tropicana Avenue and I-15 Southbound Ramps
15. Tropicana Avenue and I-15 Northbound Ramps
16. Tropicana Avenue and I-15 Southbound to Tropicana Avenue Eastbound (Direct Connector)
17. Tropicana Avenue and New York New York/Excalibur
18. Tropicana Avenue and Las Vegas Boulevard
19. Hacienda Avenue and Valley View Boulevard
20. Hacienda Avenue and Luxor Drive
21. Hacienda Avenue and Road to Mandalay
22. Russell Road and Polaris Avenue
23. Russell Road and I-15 Southbound Ramps
24. Russell Road and I-15 Northbound Ramps
25. Russell Road and Frank Sinatra Drive

Traffic modeling results in **Table 2-3** show that the year 2040 No-Build Alternative has 29,956 latent vehicles, whereas the year 2040 Build (preferred) alternative is expected to have only 222 latent vehicles, indicating a substantial improvement in vehicle carrying capacity and reduction in congestion within the network resulting from the proposed project improvements. Correspondingly, the year 2040 Build alternative total network travel time delay is expected to be about half of the year 2040 No-Build Alternative travel time delay.

Table 2-3. Tropicana EA – Network Performance PM Peak Period (4:00 PM to 6:00 PM)

Parameter	2040 No-Build	2040 Build	Percent Decrease
Latent Vehicles (number of vehicles)	29,956	222	99%
Total Network Delay[7] (hours)	32,244	14,800	54%
Average Network Delay[8] (minutes:seconds per vehicle)	8:07	3:43	54%

Reduced Travel Time - The average travel times for traffic moving through segments of the study area on Tropicana Avenue for the year 2040 No-Build (No-Action) and 2040 Build (Preferred) alternatives is shown in the following bar chart (**Figure 2-12**). The Preferred Alternative is expected to significantly reduce travel times on Tropicana Avenue compared to the No-Build (No-Action) Alternative (lower is better).

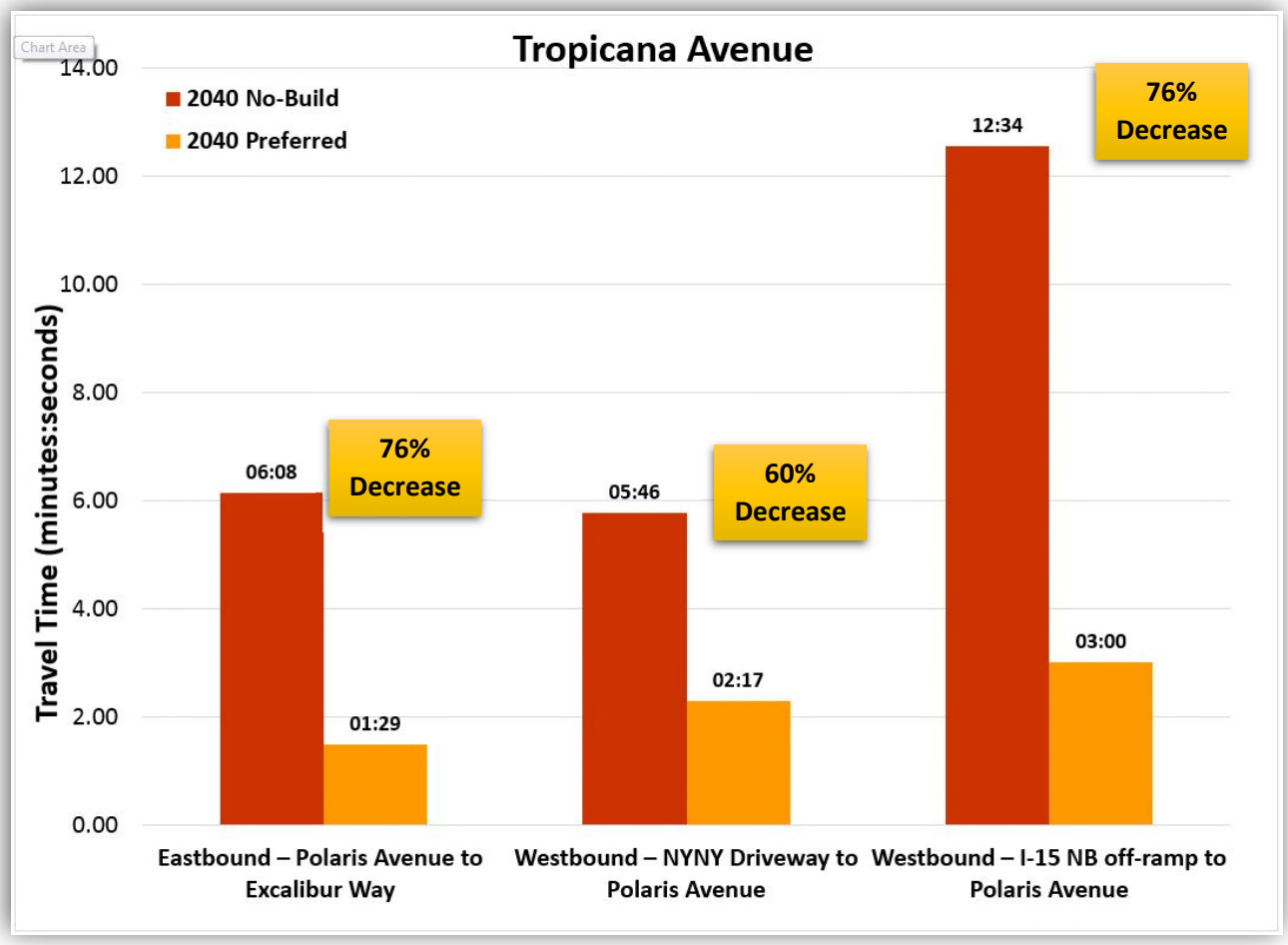


Figure 2-12. Future Average Travel Time on Tropicana Avenue

[7] Total Network Delay – This measures the amount of time each vehicle is delayed in the simulation and sums them all together into a single delay time. The better the network operates, the lower the delay time.

[8] This is a measure of the amount of (average) delay experienced by each vehicle in the simulation. The better the network operates, the lower the delay time.

Reduced Traffic Delay - The average traffic delay experienced at study intersections along Tropicana Avenue, and the new intersections introduced along Dean Martin Drive and Harmon Avenue (at the proposed HOV ramp intersection) are shown in **Table 2-4.** The delays associated with the Preferred Alternative are significantly lower than with the No-Build Alternative. Additionally, the average intersection delay at the new intersections on Dean Martin Drive and the Harmon HOV Ramp intersection is that which can generally be expected at traffic signal controlled intersections.

Table 2-4. Average Peak-Hour Intersection Delay (minutes:seconds/vehicle)

Intersection	2040 No-Build	2040 Build
Tropicana Avenue and Valley View Boulevard	22:16	0:59
Tropicana Avenue and Polaris Avenue	2:24	0:20
Tropicana Avenue and Dean Martin Drive	9:32	0:22
Tropicana Avenue and I-15 southbound ramps	1:33	0:39
Tropicana Avenue and I-15 northbound ramps	3:42	0:38
Tropicana Avenue and NY NY/Excalibur	0:51	0:17
Tropicana Avenue and Las Vegas Boulevard	8:28	1:57
Dean Martin Drive and New South Intersection	-	0:15
Dean Martin Drive and New North Intersection	-	0:29
Harmon Avenue Ramp Intersection	-	1:04

Increased Safety for Vehicles and Pedestrians

As discussed in **Section 1.1.2.3**, Tropicana Avenue, I-15, and the CD roads within the project limits have higher crash rates compared to statewide average crash rates. The type and severity of crashes result from the roadway deficiencies and high traffic volumes, and these volumes are projected to increase exponentially over the next 20 years. The Preferred Alternative will result in reduced congestion and related crashes on all of these roadways as compared to the No-Build Alternative.

The Preferred Alternative also includes major improvements for pedestrian circulation on both the Tropicana and Harmon avenue bridges over I-15. For the Tropicana Avenue, the proposed project would replace an existing 5-foot sidewalk on the south side of the bridge with wider 10-foot-wide sidewalks on both sides of Tropicana Avenue and connected to T-Mobile Arena/Frank Sinatra Drive and Dean Martin Drive. For the Harmon Avenue bridge, a safety barrier rail would also be added to the existing sidewalk. (See **Section 3.2.2** for further details.)

Improve HOV Access and Circulation

Reduced Traffic Demand at Tropicana Avenue Interchange - A purpose of the project is to improve multimodal vehicle (buses, commuter vans, carpools, etc.) access and circulation in the corridor. This is achieved by addition of the HOV ramps at Harmon Avenue. This new freeway access for HOVs at Harmon Avenue has the added benefit of reducing traffic otherwise destined for the Tropicana Avenue interchange. As the diagram below (**Figure 2-13**) shows, the HOV ramps to/from I-15 on the south side of the Harmon Avenue overpass are projected to accommodate nearly 2,000 buses and other multi-passenger vehicles during the afternoon peak hour by 2040. The 2040 traffic projections with the new HOV ramp intersection on the Harmon Avenue bridge, when compared to the 2040 No-Build (No-Action) Alternative, also show that westbound traffic on Harmon Avenue by the Panorama Towers and

The Martin condominiums will be reduced by approximately 180 vehicles in the afternoon peak hour; however, eastbound traffic will increase by approximately 180 vehicles in that same time period.

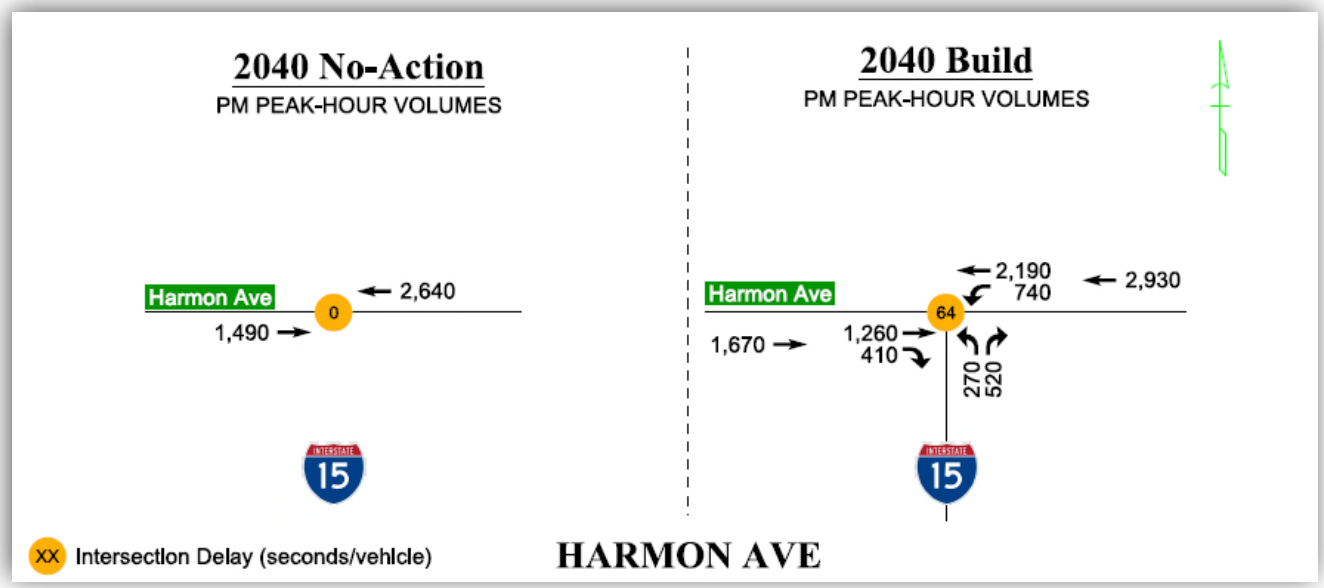


Figure 2-13. Future Afternoon Peak-Hour Traffic Volumes at HOV Ramps

I-15 Congestion Relief – Under the Southern Nevada HOV Plan,[9] in May 2019 the I-15 express lanes were converted by NDOT's Project NEON project to one HOV lane and one general purpose lane in each direction from Silverado Ranch Boulevard to Sahara Avenue. The HOV ramps at Harmon Avenue will reduce the traffic volumes at the Tropicana Avenue and Flamingo Road interchanges and improve traffic flow on I-15 by allowing buses, commuter vans, and carpools to enter and exit the freeway from the inside HOV lane rather than having to weave (change lanes) across multiple lanes to/from adjacent entry/exit points, such as the northbound HOVs that would otherwise exit at the Flamingo Road off-ramp.

Preferred Alternative Provides Key Benefits to Traffic and Pedestrian Movement

- Removes traffic chokepoints on Tropicana Avenue and Dean Martin Drive and provides pedestrian connectivity.
- Minimizes lane changing for HOVs on I-15 with the Harmon Avenue HOV ramps.
- Reduces traffic at the Tropicana Avenue and Flamingo Road interchanges with Harmon Avenue HOV Ramps.
- Reduces northbound CD road backup with second I-15 merge lane.
- Releases bottleneck on northbound CD road with improvements at Tropicana Avenue interchange.

[9] Jacobs, Southern Nevada HOV Plan Update, July 2015.

This page intentionally left blank.

Chapter 3. Existing Conditions, Environmental Impacts, and Mitigation

3.1 Areas of No Impact

The Federal Highway Administration (FHWA) and Nevada Department of Transportation (NDOT) considered all relevant environmental and social issues during the environmental analysis. Data collection and analysis determined that the environmental resources and other factors listed below are not applicable to the study area or would only be very minimally affected by the proposed project.

3.1.1 Biological Resources

The project would occur within an urban transportation corridor, in the central area of metropolitan Las Vegas. A field reconnaissance survey was conducted[1].

The United States Fish and Wildlife Service (USFWS) provided a project-specific list of species listed under the Endangered Species Act as threatened, endangered, proposed, and candidate through the Information, Planning and Conservation (IPaC) system (Consultation Code: 08ENVS00-2018-SLI-0083). Species included in the IPaC list for the project area but excluded from further evaluation due to the degree of development in the study area are Southwestern willow flycatcher (*Empidonax trailii extimus*), Yuma clapper rail (*Rallus longirostris yumanensis*), Yellow-billed cuckoo (*Coccyzus americanus*), and Pahrump poolfish (*Empetrichthys latos*). No designated critical habitat for any listed species occurs in the project area.

One species, Mojave desert tortoise (*Gopherus agassizii),* has the potential to occur in the study area, but the highly disturbed and sparsely vegetated vacant ground throughout the project limits would not support tortoises. No direct, indirect or cumulative effects to the Mojave desert tortoise or designated critical habitat would occur as a result of this project.

The Nevada Department of Wildlife on-line environmental review tool (NVCHAT) was accessed to determine special status species known to occur in the project vicinity. Three at-risk species were recorded within the project limits or a 1.25-mile (two kilometers) radius: Las Vegas buckwheat (*Eriogonum corymbosum var. nilesii*), Banded Gila monster (*Heloderma suspectum cinctum*), and Western burrowing owl (*Athene cunicularia hypugaea*). In addition, the spotted bat (*Euderma maculatum*) was noted as having potential habitat within the project vicinity. Habitat is not present for these species within the project limits. No additional protection of state sensitive species is necessary.

Nevada Administrative Code 503.050 protects migratory birds and their nests (with eggs or young). The proposed project is not be expected to result in any loss of nesting vegetation for protected migratory birds. To prevent undue harm, habitat-altering activities for construction of the Preferred Alternative (vegetation/structure removal) should be scheduled outside bird breeding season, which generally occurs from February 15 through August 31. Raptors and owls may begin nesting as early as January.

The following commitments will be included in the contract documents:

- If any active bird nests are found within the vegetation clearing or construction activity footprint, the resident engineer will contact the NDOT biologist to evaluate the situation and

[1] Jacobs. 2018. Biological Resources Technical Memorandum. May.

determine an appropriately-sized buffer area.

- If construction that may alter any breeding habitat (vegetation/structure removal) occurs during the migratory bird breeding season (February 15 through August 31), the contractor shall employ a qualified biologist (one with experience in bird identification, general nesting behavior, nest and egg identification, and knowledge of habitat requirements for migratory birds) to conduct a migratory bird nest search of all vegetation within seven days prior to commencement of construction activities. This shall include burrowing and ground nesting species in addition to those nesting in vegetation. Vegetation may be removed if it has been surveyed and no active bird nests are present. The contractor shall avoid any active nests.
- The contractor shall maintain an appropriately-sized buffer area if any active nests (containing eggs or young) are found and must avoid the area until the young birds fledge.

The contractor will develop and follow a Noxious Weed Management Plan to prevent the establishment and spread of Nevada State listed noxious weeds per Nevada Revised Statute 555.

3.1.2 Floodplains

While the project does cross Federal Emergency Management Agency (FEMA) designated floodplains indicated by Zone A and Zone AE Floodzones, these areas do not have natural vegetation and uneven topography that would provide the floodplain benefits of stormwater attenuation and erosion control[2]. Therefore, the project does not have negative impacts to the FEMA designated floodplains.

The project includes the design for the ultimate facility for the Tropicana Wash-North Branch, which lies in a Zone AE FEMA Floodzone. A Conditional Letter of Map Revision (CLOMR) is necessary for proposed improvements within the 100-year flood plain limits if the improvements result in a water surface increase of 1 foot or more. It is expected that the ultimate facility would not cause an increase of more than 1 foot in the height of the 100-year floodplain elevation. Therefore, it is not anticipated that this project would require a CLOMR.

3.1.3 Cultural Resources

NDOT and FHWA consulted with the Nevada State Historic Preservation Office (SHPO) to determine if the project would have an adverse effect on cultural resources within the project's area of potential effects (APE). The SHPO reviewed and approved the project screening form on May 22, 2018 and concurred with the boundaries of the proposed APE. Based on a field and literature survey conducted for the proposed project, it was concluded there are no historic properties within the APE; therefore, a finding of No Historic Properties Affected was recommended. SHPO concurred with this finding on January 17, 2019. See **Appendix B** for SHPO documentation.

3.1.4 Traffic Noise

NDOT conducted a qualitative traffic noise analysis.[3] Most of the project area immediately adjacent to I-15 is not zoned as noise sensitive. The high-rise condominiums near Harmon Avenue are more than 425 feet laterally away from the closest lane of I-15 traffic. The condominiums also have multi-story parking garages and commercial development in front of them to act as a barrier of sound coming from the freeway. The NDOT Traffic and Construction Noise Analysis and Abatement Policy (May 2018) states that "receptor locations for highway traffic noise analysis shall typically be at ground level, or first-floor;

[2] Jacobs. 2018. Floodplain and Water Resources. May.
[3] NDOT, 2019. Traffic Noise Analysis Technical Memorandum. April 30.

and, at an exterior area where frequent human activity occurs, between the right-of-way line and building". These residential high-rise buildings do not have such facilities, and as such, did not qualify for further analysis.

3.1.5 Energy Resources and Minerals

Energy resources and mineral resources were not subject to detailed evaluation since no energy sources or minerals are present within or near the study area.

3.1.6 Environmental Justice

Environmental justice analyses are required by Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that federal actions, such as the I-15 Tropicana project, do not result in disproportionately high and adverse impacts on minority and low-income populations. According to FHWA environmental justice policy (Order 6640.23A), minority means a person who is black or African American, Asian American, American Indian/Alaskan Native, Native Hawaiian and other Pacific Islander, or Hispanic or Latino (of any race). Low-income refers to a person whose median household income is at or below the Department of Health and Human Services (HSS) poverty guideline, which was $25,750 for a family of four in 2019.

To address potential impacts on minority and low-income populations for the I-15 Tropicana project, race, ethnicity, and income data from the 2013-2017 American Community Survey were compiled for the demographic study area and compared to a reference area (the Las Vegas Census County Division) to determine the existence of environmental justice populations in the demographic study area. The demographic study area consists of the Census tracts covering the project limits and is much larger than the project area. Environmental justice populations are considered to exist in any Census tract in which the minority population exceeds 50 percent, or the minority or low-income population is meaningfully greater than the population of the reference area. For purposes of this assessment, "meaningfully greater" is considered to be a population 10 percentage points higher than the reference area population.

The minority population within the demographic study area is generally consistent with the overall minority population within the Las Vegas Census County Division reference area (see **Section 3.2.1.2**, Population Characteristics, and Tables 3-2 and 3-3). According to the threshold criteria identified above, minority environmental justice populations reside in Census tract 29.56, block group 2 (Asian population meaningfully greater than the reference area population) and Census tract 68.00, block group 4 (Hispanic/Latino population exceeding 50 percent). These populations, however, are not located adjacent or near the project area. For example, the area with the largest percentage of Hispanic or Latino residents within the demographic study area is located at Maryland Parkway and Hacienda Avenue, which is approximately 2.5 miles east of the project area. Similarly, any low-income populations within the demographic study area reside some distance from the project area. Because of the distance from the project area, no minority or low-income environmental justice populations would experience disproportionately high and adverse project impacts. In accordance with the provisions of EO 12898 and FHWA Order 6640.23A, no further environmental justice analysis is required.

3.1.7 Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 (49 United States Code [U.S.C.] 303 and 23 U.S.C. 138) states that FHWA and other DOT agencies cannot approve the use of land from a publicly owned park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless it is determined that there is no feasible and prudent alternative to the use of land from such properties. There are no Section 4(f) resources within the APE/study area.

3.2 Land Use and Socioeconomic Conditions

3.2.1 Existing Conditions

3.2.1.1 Land Use and Planning

The study area is located within the Winchester/Paradise Planning Area of unincorporated Clark County. The study area is bordered by Flamingo Road on the north, Las Vegas Boulevard on the east, Russell Road on the south, and Valley View Boulevard on the west. Land uses in the study area are shown in **Figure 3-1**.

Existing land uses west of I-15 consist of light manufacturing, hotels, casinos, commercial businesses, and high-rise residential condominiums. The new Raiders Football Stadium is currently under construction within the southern limits of the study area west of I-15 between Russell Road and Hacienda Avenue. The land uses between Hacienda Avenue and Tropicana Avenue consist of non-casino hotels, automotive commercial businesses, and public utilities (see **Figures 3-2** and **3-3**). Between Tropicana Avenue and Harmon Avenue, the land uses consist of non-casino hotels and retail commercial businesses.

The area along Harmon Avenue west of I-15 is dominated by high-rise condominiums on both sides of the street—the Panorama Towers and The Martin—located between Dean Martin Drive and Polaris Avenue. The Panorama Towers, high-rise residential condominiums (see **Figure 3-4**), are located south of Harmon Avenue, and The Martin is located north of Harmon Avenue. The Panorama Towers is a condominium complex consisting of two 33-floor towers, which were constructed in 2006 and 2007, with 650 residential units. The Martin, consisting of 45 floors and 372 residential units, was originally known as Panorama Tower North and was rebranded as The Martin in 2011. Amenities at these properties include valet parking, 24-hour guard gated security, fitness centers, and spa facilities.

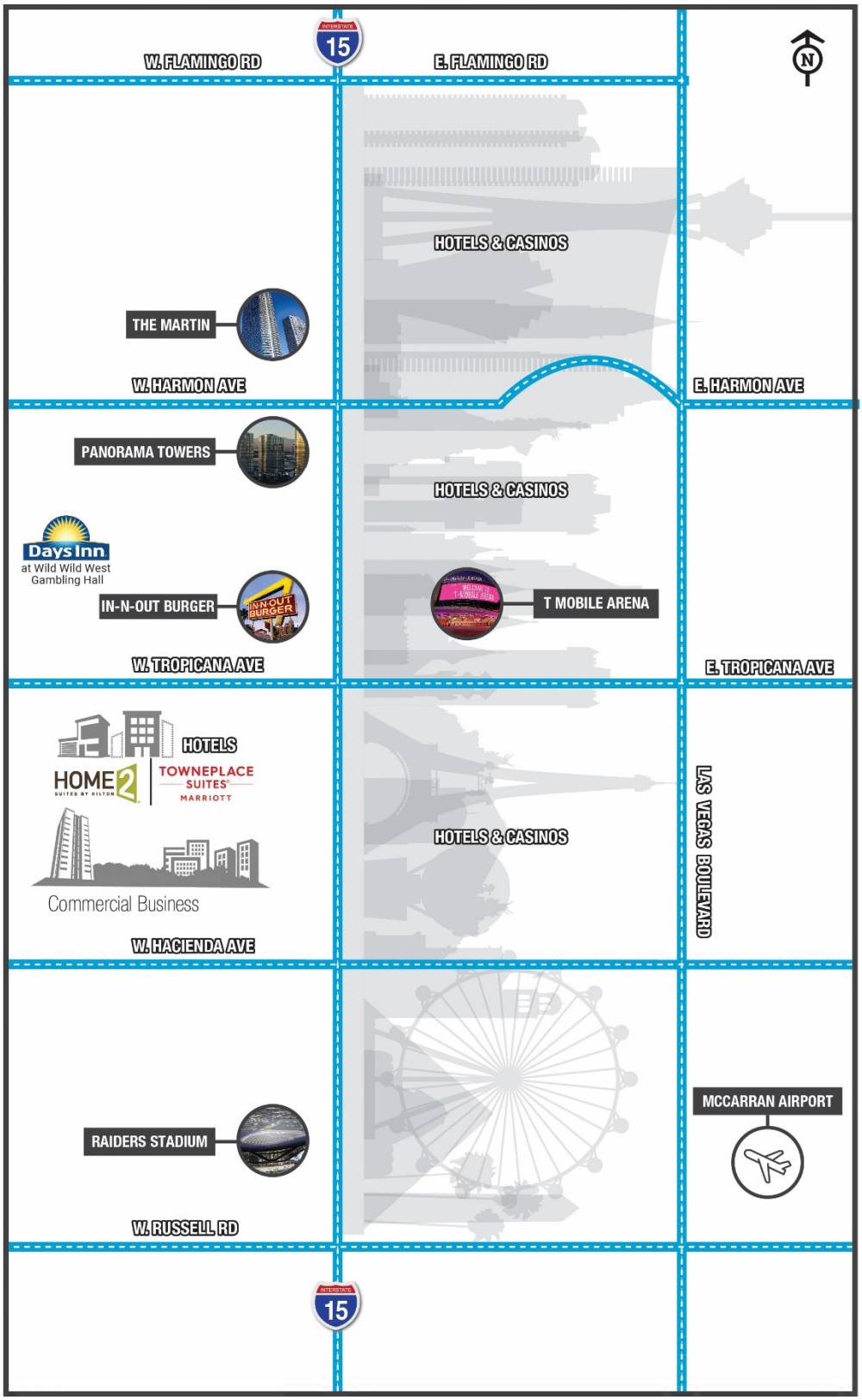


Figure 3-1. Land Uses in Study Area

Figure 3-2. Example of the Commercial Businesses on Dean Martin Drive West of I-15

Figure 3-3. Example of the Non-Casino Hotel on Dean Martin Drive between Tropicana Avenue and Hacienda Avenue

Figure 3-4. Panorama Towers on Harmon Avenue

Very large hotels and casinos, with large parking structures, are the predominant uses east of I-15 throughout the study area (see **Figure 3-5**). The T-Mobile Arena is located northeast of the I-15 Tropicana Avenue interchange. This area is commonly known as the Resort Corridor. The Bellagio Hotel and Casino, The Cosmopolitan of Las Vegas, Aria Resort and Casino, City Center, New York New York Hotel and Casino, Excalibur Hotel and Casino, and Luxor Hotel and Casino are located within the study area.

There are no schools, parks, publicly owned recreation areas, houses of worship, or libraries within the study area.

Figure 3-5. Facing Northeast from Tropicana Avenue Overpass with T-Mobile Arena on the Right

Clark County land use policies are documented in the Clark County Nevada Comprehensive Master Plan (2017) and the Winchester/Paradise Land Use Plan[4], which was adopted November 8, 2017. The Winchester/Paradise planning area consists of approximately 30,233 acres or 47.2 square miles. As of June 2017, Winchester and Paradise had approximately 27,842 developed acres or approximately 92% of the planning area. Data from 2016 shows most of the residential population in the Winchester/ Paradise planning area is concentrated east of Las Vegas Boulevard. Land uses within the Winchester/Paradise planning area consist of a combination of single and multi-family residences, commercial and industrial development, as well as a concentration of hotels and casinos along Las Vegas Boulevard.

[4] Clark County Department of Comprehensive Planning. 2017. Winchester/Paradise Land Use Plan. Adopted November 8.

The Land Use Element of the Clark County Nevada Comprehensive Master Plan identifies several goals and policies to guide the development of compatible land uses. Representatives from the Enterprise, Laughlin, Paradise, Spring Valley, Whitney, and Winchester Town Advisory Boards and Lone Mountain Citizens Advisory Council worked with county planning staff to consolidate land use policies into a uniform set of policies that are common to all these planning areas. The consolidated policies were adopted in April 2015 for these areas and are now available as part of the Land Use Element of the Comprehensive Plan. These policies address the need for a comprehensive land use plan to promote economic viability, employment opportunities with development that is compatible with adjacent land uses, the natural environment, and one that is well integrated with appropriate circulation systems, services, and facilities[5]. The land use plan map guides development of compatible land uses and is intended to be used in line with the goals and policies in the Land Use Element of the Comprehensive Plan. Planned Land Use in the study area is shown on **Figure 3-6**.

Title 30, the Clark County Unified Development Code, is the implementation tool of the Comprehensive Plan of Clark County. It sets forth the regulations that govern the subdivision, use, and/or development of land, divides the county into Zoning

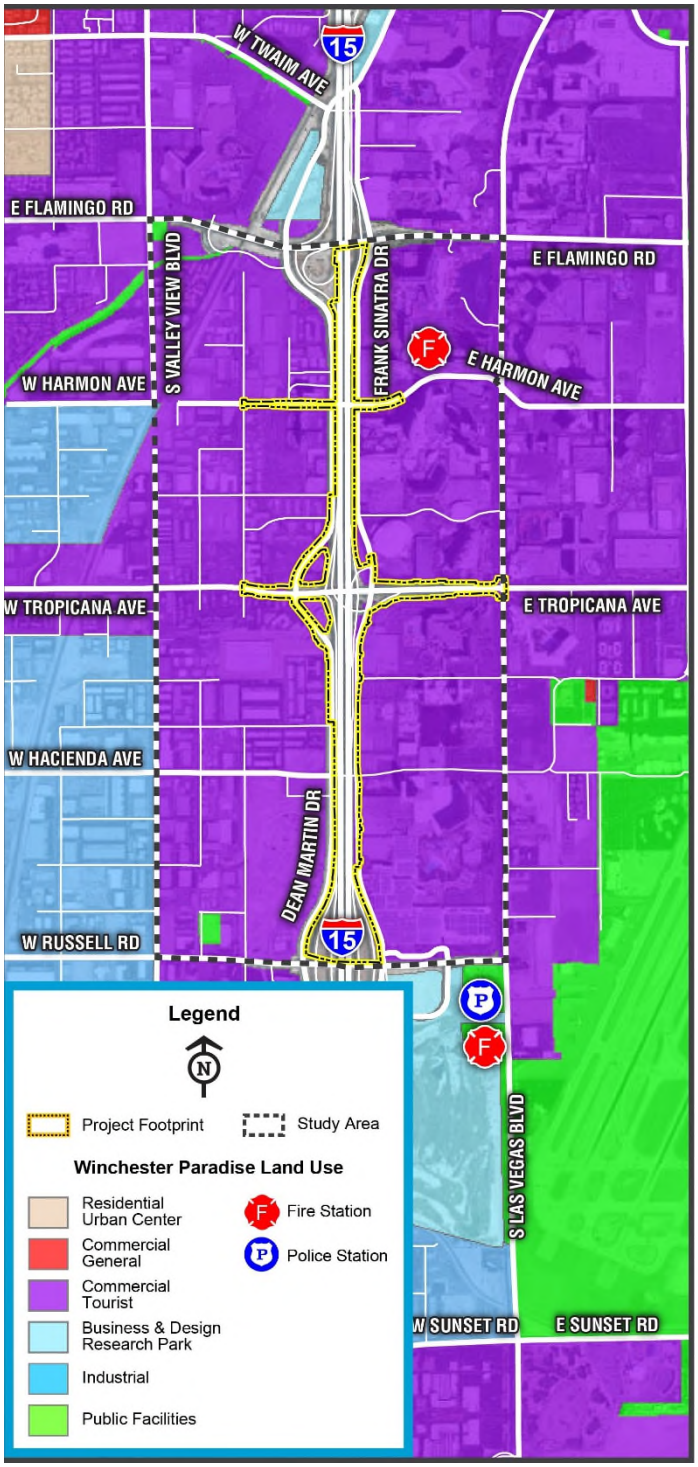
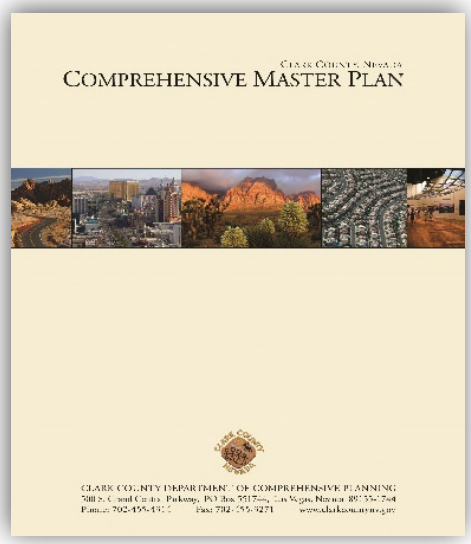


Figure 3-6. Planned Land Use

[5] Clark County Department of Comprehensive Planning. 2017. Clark County Comprehensive Master Plan – Land Use Element, February.

Districts, and sets the regulations pertaining to such districts. Current zoning within the study area allows for light manufacturing, urban village, and limited resort and apartment.

Most of the project study area is zoned suitable for gaming, thereby avoiding incompatible development with residential, schools, or places of worship while providing for development with resort hotels and the impacts associated with such intense uses.



The Mixed Use District (MUD) identifies areas which are supported or will be supported by adequate infrastructure to allow more intensive and/or interactive forms of development.

Planning goals and policies of Clark County are described in the Clark County Comprehensive Master Plan – Land Use Element[6], Transportation Element[7], and the Southern Nevada HOV Plan Update[8]. Future growth and development in the study area are guided by land use policies and programs set forth in the aforementioned planning documents.

The proximity to McCarran International Airport mandates only uses not detrimental to the general health, safety, and welfare.

Community services are provided by several agencies within Clark County. The Las Vegas Metropolitan Police Department is an independent agency and a joint city-county police force for the City of Las Vegas and Clark County. West of I-15, the study area is located within the Enterprise Area Command and east of I-15 it is within the Convention Center Area Command. The Clark County Fire Department provides fire protection and emergency medical services for the unincorporated areas of Clark County. Fire Station 32 is located within the study area at 2550 West Harmon Avenue, while Fire Station 11 is located immediately outside the study area at 5150 South Las Vegas Boulevard. A Las Vegas Valley Water District facility is located at 4995 Dean Martin Drive.

[6] Clark County Department of Comprehensive Planning. 2017. Clark County Comprehensive Master Plan – Land Use Element, February.

[7] Clark County Department of Comprehensive Planning. 2016. Clark County Comprehensive Master Plan – Transportation Element, August.

[8] Nevada Department of Transportation. 2018. Southern Nevada HOV Study Update.

3.2.1.2 Population Characteristics

The following discussion of the demographic characteristics of the study area is based on the 2013 – 2017 American Community Survey[9] (ACS) data. Demographics is the statistical study of populations. The American Community Survey is a nationwide survey that collects local demographic data every year, rather than every 10 years like the Census. The project study area is covered by several Census Tracts and Block Groups as shown in **Figure 3-7.** The area covered by these Census Tracks and Block Groups extends further than the project study area and is referred to as the demographic study area.

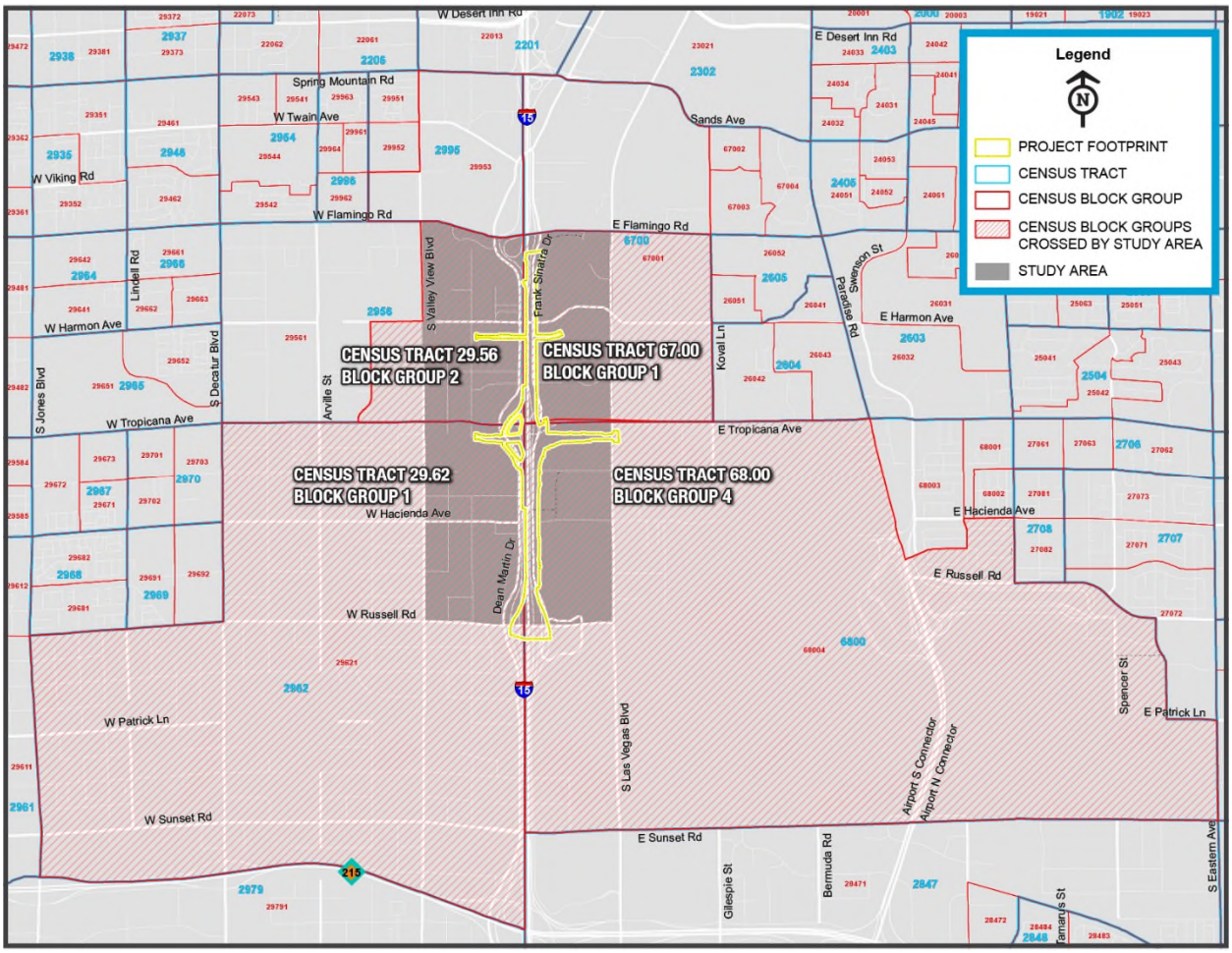


Figure 3-7. Census Tracts and Block Groups in the Demographic Study Area

There is a residential population concentrated in three condominium towers within the study area, which is otherwise dominated by commercial and manufacturing uses. Census county divisions (CCDs) are areas delineated by the Census Bureau in cooperation with state, tribal, and local officials for statistical purposes. CCDs have no legal function and are not governmental units. CCD boundaries usually follow visible features and usually coincide with census tract boundaries[10]. Because the project is located within unincorporated Clark County, the Las Vegas CCD data is used for regional comparison. The Las Vegas CCD covers the metropolitan area of Las Vegas, North Las Vegas, urban unincorporated

[9] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.
[10] U.S. Census Bureau. 2010 Census redistricting Data (Public Lay 94-171) Summary File. Appendix A Geographic Terms and Concepts.

Clark County, Henderson, and Boulder City. Census tracts are small, relatively permanent statistical subdivisions of a county and the primary purpose of census tracts is to provide a stable set of geographic units for the presentation of statistical data. Census block groups are the smallest geographic area for which sample data is published.

Census Tracts 29.56 Block Group 2, 29.62 Block Group 1, 67.00 Block Group 1, and 68.00 Block Group 4 cover the demographic study area. Based on the ACS data, the total population within the demographic study area is 4,388 people, while the total population of the Las Vegas CCD is 1,902,867 (see **Table 3-1**). The population within the demographic study area represents approximately 0.23 percent of the total population within the Las Vegas metropolitan area.

Table 3-1. Total Population

	Las Vegas CCD, Clark County, Nevada	**Total Census Tracts in Demographic Study Area**	Census Tract 29.56, Block Group 2, Clark County, Nevada	Census Tract 29.62, Block Group 1, Clark County, Nevada	Census Tract 67.00, Block Group 1, Clark County, Nevada	Census Tract 68.00, Block Group 4, Clark County, Nevada
Total	1,902,867	**4,388**	1074	1,789	423	1,102

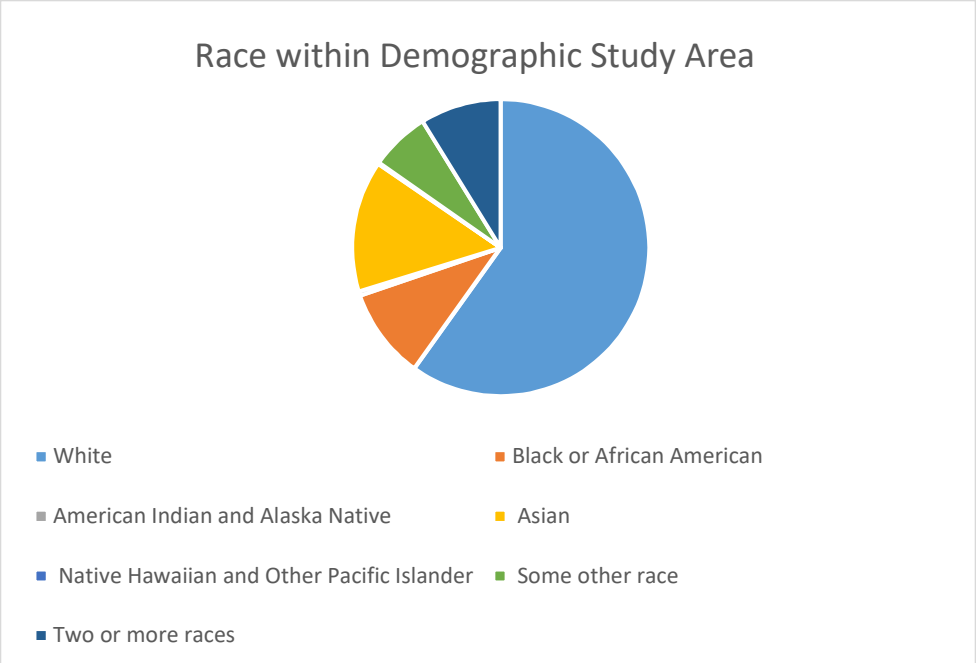
Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-year Estimates

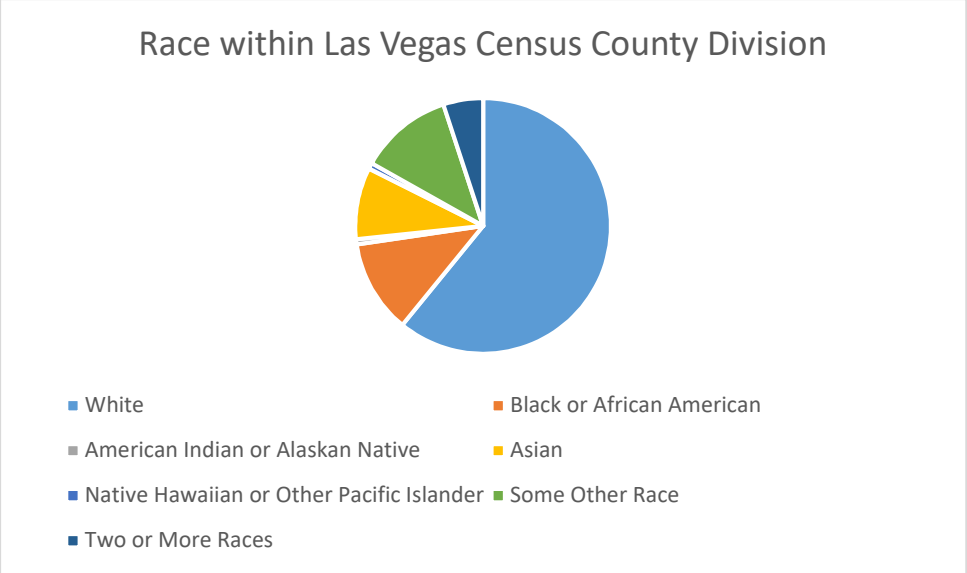
The minority population within the demographic study area is generally consistent with the overall minority population within the Las Vegas CCD, as shown in **Table 3-2** and the accompanying pie charts. The percentage of Asian population within the study area is slightly higher at 14 percent than the 9 percent in the overall Las Vegas CCD. Census Tract 29.56, Block Group 2 has approximately 25 percent Asian population.

Table 3-2. Race

	Las Vegas CCD, Clark County, Nevada		**Total Census Tracts in Demographic Study Area**		**Census Tract 29.56,** Block Group 2, **Clark County, Nevada**	**Census Tract 29.62,** Block Group 1, **Clark County, Nevada**	**Census Tract 67**.00, Block Group 1, **Clark County, Nevada**	**Census Tract 68**.00, Block Group 4, **Clark County, Nevada**
Total	**1,902,867**	**Percent**	**4,388**	**Percent**	**1,074**	**1,789**	**423**	**1,102**
White	1,158,828	**61%**	2,628	**60**	609	1,026	315	678
Black or African American	224,066	**12%**	433	**10**	97	273	11	52
American Indian or Alaskan Native	12,251	**1%**	21	**0.5**	0	21	0	0
Asian	173,086	**9%**	628	**14**	277	161	73	117
Native Hawaiian and Other Pacific Islander	14,256	**1%**	7	**0.16**	7	0	0	0
Some Other Race	224,678	**12%**	284	**6**	64	68	0	152
Two or More Races	95,702	**5%**	387	**9**	20	240	24	103

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-year Estimates





Within the Las Vegas CCD, 32 percent of the population is of Hispanic or Latino origin, as shown in **Table 3-3**. Within the demographic study area, the Hispanic or Latino population is lower at 24 percent. Census Tract 68.00, Block Group 4 has the largest percentage of Hispanic or Latino residents within the demographic study area. However, the residential area of this Block Group is located at Maryland Parkway and Hacienda Avenue, which is approximately 2.5 miles east of the project area.

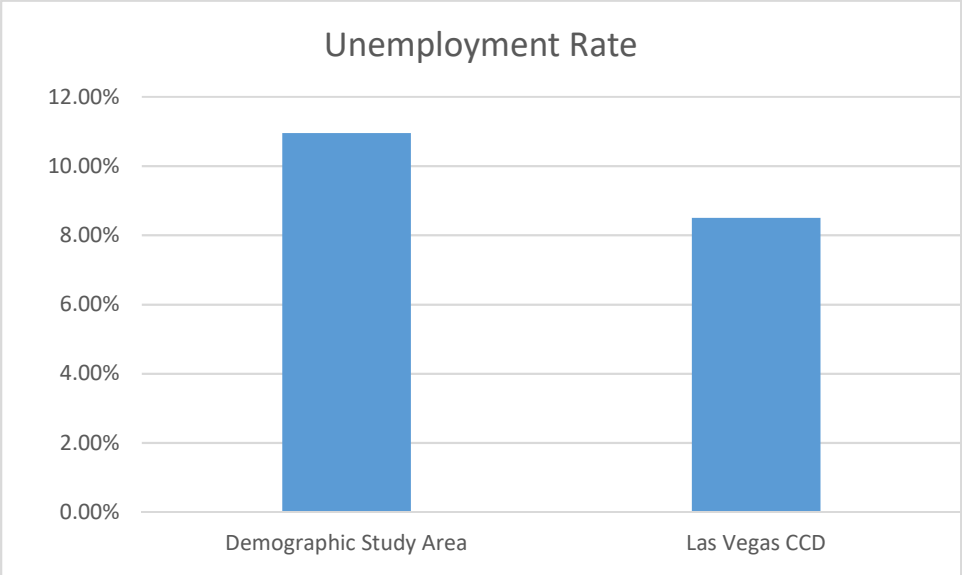
Table 3-3. Hispanic or Latino Origin

	Las Vegas CCD, Clark County, Nevada		**Total Census Tracts in Study Area**		**Census Tract 29.56,** Block Group 2, **Clark County, Nevada**	**Census Tract 29.62,** Block Group 1, **Clark County, Nevada**	**Census Tract 67**.00, Block Group 1, **Clark County, Nevada**	**Census Tract 68**.00, Block Group 4, **Clark County, Nevada**
Total	**1,902,867**	**Percent**	**4,388**	**Percent**	**1,074**	**1,789**	**423**	**1,102**
Not Hispanic or Latino	1,289,947	**68%**	3,321	**76%**	930	1,483	390	518
Hispanic or Latino	612,920	**32%**	1,067	**24%**	144	306	33	584

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-year Estimates

Based on the 2013-2017 American Community Survey Data, the median household income for the Las Vegas CCD is $52,985 per year. The median household income for the demographic study area is $49,706 per year, which is approximately 6 percent lower than the median income for the Las Vegas CCD, but well above the U.S. Department of Health and Human Services 2019 national guideline of $25,750 per year as the poverty level for a four-person household.

3.2.1.3 Employment Characteristics



According to ACS data over the 5-year period from 2013-2017, the civilian labor force within the demographic study area had an unemployment rate of 11 percent. The unemployment rate of the Las Vegas CCD for this same time period was 8.5 percent. As of March 2019, the estimated unemployment rate for the Las Vegas metropolitan area decreased to 3.9 percent, and a similar decrease is assumed for the demographic study area.

The Resort Corridor on the east side of I-15 serves as a major employment center for the Las Vegas metropolitan area. Major employers within the study area include Bellagio Hotel and Casino, The Cosmopolitan of Las Vegas, Aria Resort and Casino, City Center, New York New York Hotel and Casino, T-Mobile Arena, Excalibur Hotel and Casino, and Luxor Hotel and Casino.

3.2.1.4 Circulation and Access

Pedestrians use Tropicana Avenue to access multiple destinations east and west of I-15. There are 5-foot-wide sidewalks on the north and south sides of Tropicana Avenue from Valley View Boulevard to Dean Martin Drive. At Dean Martin Drive, pedestrians should use the sidewalk on the south side of Tropicana Avenue where the north sidewalk ends. There is a sidewalk on the south side of Tropicana Avenue from Dean Martin Drive through the interchange ramp intersections, and over the Frank Sinatra Drive underpass, until the entrance of the southbound to eastbound flyover ramp. At the eastbound flyover ramp entrance, the sidewalk loops down under the ramp and back up on the east side. This maintains a continuous path along the south side of Tropicana Avenue. From there, the sidewalk continues to the pedestrian bridge crossing at Las Vegas Boulevard.

The sidewalk along the north side of Tropicana Avenue ends at Dean Martin Drive. There are isolated sections of sidewalk along the north side of Tropicana Avenue on the bridge over I-15, and then again from Frank Sinatra Drive, ramping up to meet at Tropicana Avenue. However, both sections of sidewalk are only accessible by jaywalking within the I-15 Tropicana Avenue interchange. There is no sidewalk on the north side of Tropicana Avenue from the eastbound flyover ramp entrance to Las Vegas Boulevard.

Along Harmon Avenue, there is an existing 5-foot-wide sidewalk from Aldebaran Avenue/Jerry Lewis Way to the Bellagio. Existing and proposed new sidewalks are shown in **Figures 3-12** through **3-14**.

There are no officially designated bicycle facilities within the study area. The RTC's 2017 Regional Bicycle and Pedestrian Plan for Southern Nevada[11] identified a proposed enhanced bicycle facility along Hacienda Avenue and Valley View Boulevard within the study area, and a shared use path along Russell Road and Las Vegas Boulevard.

3.2.2 Impacts

A summary of land use and socioeconomic conditions impacts is presented below in **Table 3-4.**

Table 3-4. Land Use and Socioeconomic Conditions Impacts

Resource	No-Build Alternative	Preferred Alternative
Land Use and Planning	Traffic congestion and delay would continue to worsen. Improvements would not be made to pedestrian and mass transit facilities.	• Meets goals and policies specifically identified in the Clark County Comprehensive Mast Plan – Land Use Element and Transportation Element and in the Southern Nevada HOV Plan Update.
Land Use: Right-of-Way Acquisition	No impact.	• Partial acquisition of 14 parcels totaling 2.06 acres (see **Figures 3-8 and 3-9**). • No relocation of homes or businesses.

[11] Regional Transportation Commission of Southern Nevada. 2017. Regional Bicycle and Pedestrian Plan for Southern Nevada.

Table 3-4. Land Use and Socioeconomic Conditions Impacts

Resource	No-Build Alternative	Preferred Alternative
Land Use: Right-of-Way Acquisition (continued)		• Construction would result in temporary construction easements on 21 parcels totaling 2.18 acres. One permanent construction easement of 0.06 acre. • Loss of 24 of the 272 commercial parking spaces from the Days Inn Las Vegas Wild Wild West Gambling Hall located at the northwest corner of Tropicana Avenue and Dean Martin Drive. Four out of 24 parking spaces at T-Mobile Arena would be permanently removed from a delivery/service parking lot.
Population: Community Cohesion,[12] Community Facilities, and Services	No impact.	• Improved pedestrian facilities along Harmon Avenue would be provided with barrier separation for the residents of the Panorama Towers and The Martin. • The improved pedestrian facilities along Tropicana Avenue and Dean Martin Drive would provide a continuous pedestrian linkage east and west of I-15. • The improved traffic operations would result in shorter response times for emergency services providers.
Traffic Circulation and Access	The existing traffic congestion is predicted to worsen.	• The project would relocate the Dean Martin Drive north-south through movements, carrying them under Tropicana Avenue and eliminating the through movements from the existing Dean Martin Drive signal location. The existing westbound left-turn from Tropicana Avenue to Dean Martin Drive would also be eliminated. Vehicles heading westbound on Tropicana Avenue would instead make a right turn at Dean Martin Drive and loop around

[12] Community cohesion is the ability of neighborhoods to function together in ways that lead to a sense of community. Due to the limited number of residential areas, community facilities, and services within the study area, the overall community cohesion is low.

Table 3-4. Land Use and Socioeconomic Conditions Impacts

Resource	No-Build Alternative	Preferred Alternative
Traffic Circulation and Access (continued)		and under Tropicana Avenue to head south on Dean Martin Drive (see **Figure 3-10**). Vehicles heading eastbound on Tropicana Avenue would make a right turn at Dean Martin Drive and loop around and under Tropicana Avenue to head north on Dean Martin Drive (see **Figure 3-11**). • All existing driveway access would be maintained for businesses located on Dean Martin Drive north and south of Tropicana Avenue, including Hampton Inn, Home2Suites, Townplace Suites, and In-N-Out Burger, although routes to access some businesses would change as described above.
Pedestrian Access	No impact.	**Tropicana Avenue** • Wider, 10-foot-wide sidewalks along both sides of Tropicana Avenue for enhanced pedestrian safety (see **Figures 3-12** and **3-13**). Due to physical constraints, 5-foot-wide sidewalks would be constructed along the north side of Tropicana Avenue from Dean Martin Drive to Polaris Avenue and from just west of the pedestrian overpass to Las Vegas Boulevard, and along the south side of Tropicana Avenue from the Excalibur access to Las Vegas Boulevard. • The existing sidewalk would be maintained between the Excalibur access and Tropicana Avenue, and Excalibur and T-Mobile Arena. A new pedestrian access point would be provided in the northeast quadrant of the I-15 Tropicana Avenue interchange, providing pedestrian connectivity between T-Mobile Arena/Frank Sinatra Drive and Tropicana Avenue. Two staircases are proposed in the northwest and

Table 3-4. Land Use and Socioeconomic Conditions Impacts

Resource	No-Build Alternative	Preferred Alternative
Pedestrian Access (continued)		southwest quadrants of the intersection between Dean Martin Drive and the interchange ramps (shown on **Figure 3-12**). There is a new pedestrian connection proposed along the south side of Tropicana Avenue continuing south at Dean Martin Drive. A similar pedestrian connection between Dean Martin Drive and Tropicana Avenue would also be on the north side of Tropicana Avenue. These new connections would be Americans with Disabilities Act (ADA) compliant. All existing pedestrian connections are maintained along the east and west sides of Dean Martin Drive. A 5-foot-wide sidewalk would be constructed on the west side of the new Dean Martin Drive under Tropicana Avenue. **Harmon Avenue** • Includes a continuous 5-foot-wide sidewalk on the north side of Harmon Avenue from Aldebaran Avenue/Jerry Lewis Way to the Bellagio (see **Figure 3-14**). A barrier rail would be placed adjacent to the existing sidewalk on the north side of Harmon Avenue from just east of Aldebaran Avenue to the edge of the Bellagio property. This barrier would provide physical separation between pedestrians and vehicles on Harmon Avenue, similar to others used within the Resort Corridor.

Right-of-Way Acquisition

Right-of-way impacts would occur along Tropicana Avenue and Dean Martin Drive under the Preferred Alternative. There would be no right-of-way impacts along Harmon Avenue. The Preferred Alternative would result in partial acquisitions of 2.06 acres of land along property frontages, as summarized in **Table 3-4** and shown in **Table 3-5** and **Figures 3-8** and **3-9.** These partial acquisitions would not affect operation of the properties because they do not include the acquisition of any buildings necessary for operation. The overall use and operation of the properties identified below would not be impacted. The transportation improvements included in the project are all within existing public transportation

corridors and are therefore consistent with regional and local land use planning and zoning documents. The estimated cost for right-of-way and construction easements is $22.7 million.

Table 3-5. Areas of New Right-of-Way

Assessor Parcel Number	Zoning/Land Use	Current Use	Acquisition (Acre)
162-20-403-001	Commercial Living Accommodations. Deluxe Motels	Landscaping	0.11
162-20-403-006	Commercial Living Accommodations. Deluxe Motels	Landscaping, Parking	0.34
162-20-404-001	General Commercial. Automotive	Open pavement	0.42
162-20-810-003	General Commercial. Entertainment	Landscaping, Driveway	0.06
162-20-801-009	Casino or Hotel Casino. Hotels - Class 1 Resort	Landscaping, Driveway	0.12
162-29-510-006	Casino or Hotel Casino. Hotels - Class 1 Resort	Landscaping, Driveway	0.25
162-29-510-001	Vacant - Commercial	Vacant	0.33
162-29-101-016	Commercial Living Accommodations. Motels	Landscaping, sidewalk	0.02
162-29-101-008	General Commercial. Restaurants and Cocktail Lounges	Landscaping, sidewalk	0.01
162-20-899-001	Clark County	Transportation	0.09
162-20-899-006	Public Right-of-Way	Transportation	0.06
162-20-899-007	Public Right-of-Way	Transportation	0.04
162-29-599-022	Clark County	Transportation	0.08
162-29-196-002 162-29-199-029 162-29-599-017	Clark County Public Right-of-Way Public Right-of-Way	Transportation	0.14
Total			**2.06**

Temporary and permanent construction easements would be required under the Preferred Alternative from some of the adjacent parcels to construct and maintain the project. The easements are identified in **Table 3-6** and **Figures 3-8** and **3-9**.

Table 3-6. Construction Easements

Assessor Parcel Number	Zoning/Land Use	Current Use	Acquisition (Acre)
162-20-403-001	Commercial Living Accommodations. Deluxe Motels	Landscaping	0.10
162-20-403-004	Commercial Living Accommodations. Deluxe Motels	Landscaping, Sidewalk	0.11
162-20-403-006	Commercial Living Accommodations. Deluxe Motels	Landscaping, Parking	0.30
162-20-404-001	General Commercial. Automotive	Open pavement	0.28

Table 3-6. Construction Easements

Assessor Parcel Number	Zoning/Land Use	Current Use	Acquisition (Acre)
162-20-411-010	Light Manufacturing	Landscaping, Sidewalk	0.11
162-20-810-003	General Commercial. Entertainment	Landscaping, Driveway	0.18
162-20-801-009	Casino or Hotel Casino. Hotels - Class 1 Resort	Landscaping, Driveway	0.15
162-29-101-009	General Commercial. Restaurants and Cocktail Lounges	Landscaping, Sidewalk	0.02
162-29-510-006	Casino or Hotel Casino. Hotels - Class 1 Resort	Landscaping, Driveway	0.39
162-29-101-019	Casino or Hotel Casino. Hotels - Class 3	Landscaping, Sidewalk	0.10
162-29-101-011	General Commercial. Retail Stores and Shops	Landscaping, Sidewalk	0.01
162-29-101-010	General Commercial. Retail Stores and Shops	Landscaping, Sidewalk	0.07
162-29-101-016	Commercial Living Accommodations. Motels	Landscaping, Sidewalk	0.01
162-29-101-008	General Commercial. Restaurants and Cocktail Lounges	Landscaping, Sidewalk	0.02
162-29-101-041	Commercial Living Accommodations. Motels	Landscaping, Sidewalk	0.09
162-29-101-020	Minor Improvements on Commercial zoned land	Open pavement	0.04
162-29-101-049	Utilities	Landscaping, Sidewalk	0.04
162-29-101-033	Commercial Living Accommodations. Motels	Landscaping, Sidewalk	0.03
162-20-899-007	Public Right-of-Way	Transportation	0.04
162-29-196-001	Clark County	Transportation	0.02
162-29-196-002 162-29-199-029 162-29-599-017	Clark County Public Right-of-Way Public Right-of-Way	Transportation	0.06
Total Temporary Construction Easements			**2.18**
162-20-810-003	General Commercial. Entertainment	Landscaping, parking	0.06
Total Permanent Construction Easement			**0.06**

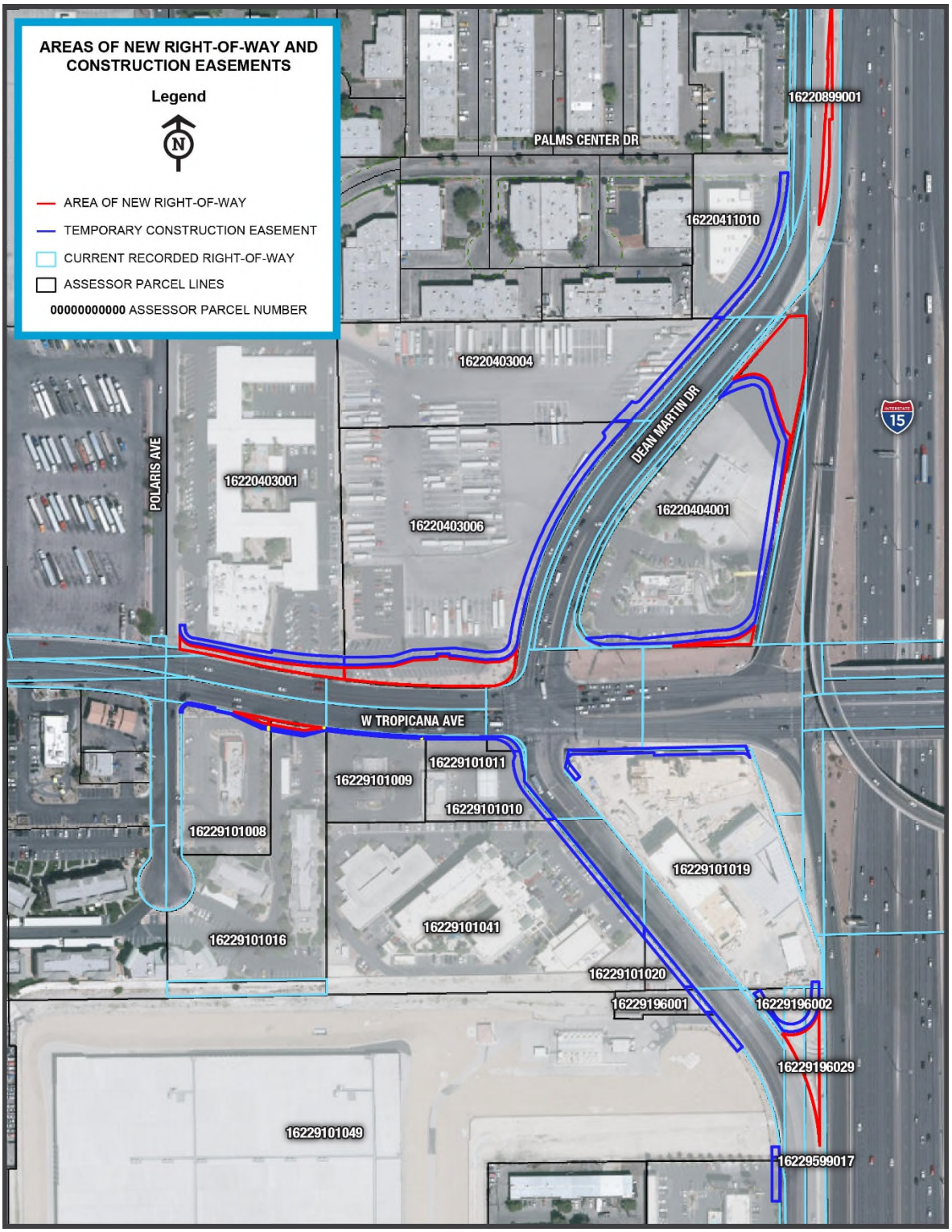


Figure 3-8. Areas of New Right-of-Way and Construction Easements, West of I-15

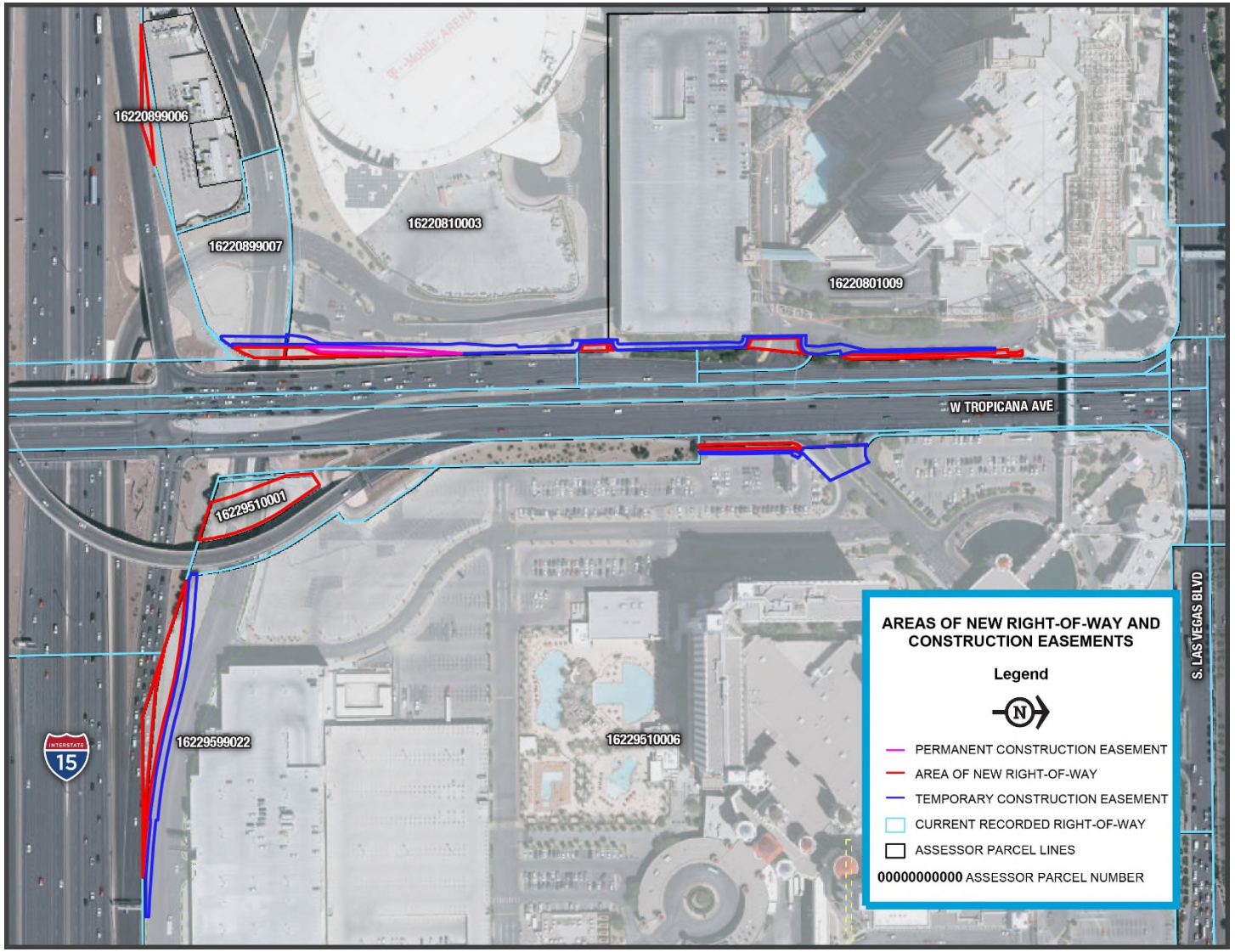


Figure 3-9. Areas of New Right-of-Way and Construction Easements, East of I-15

Traffic Circulation

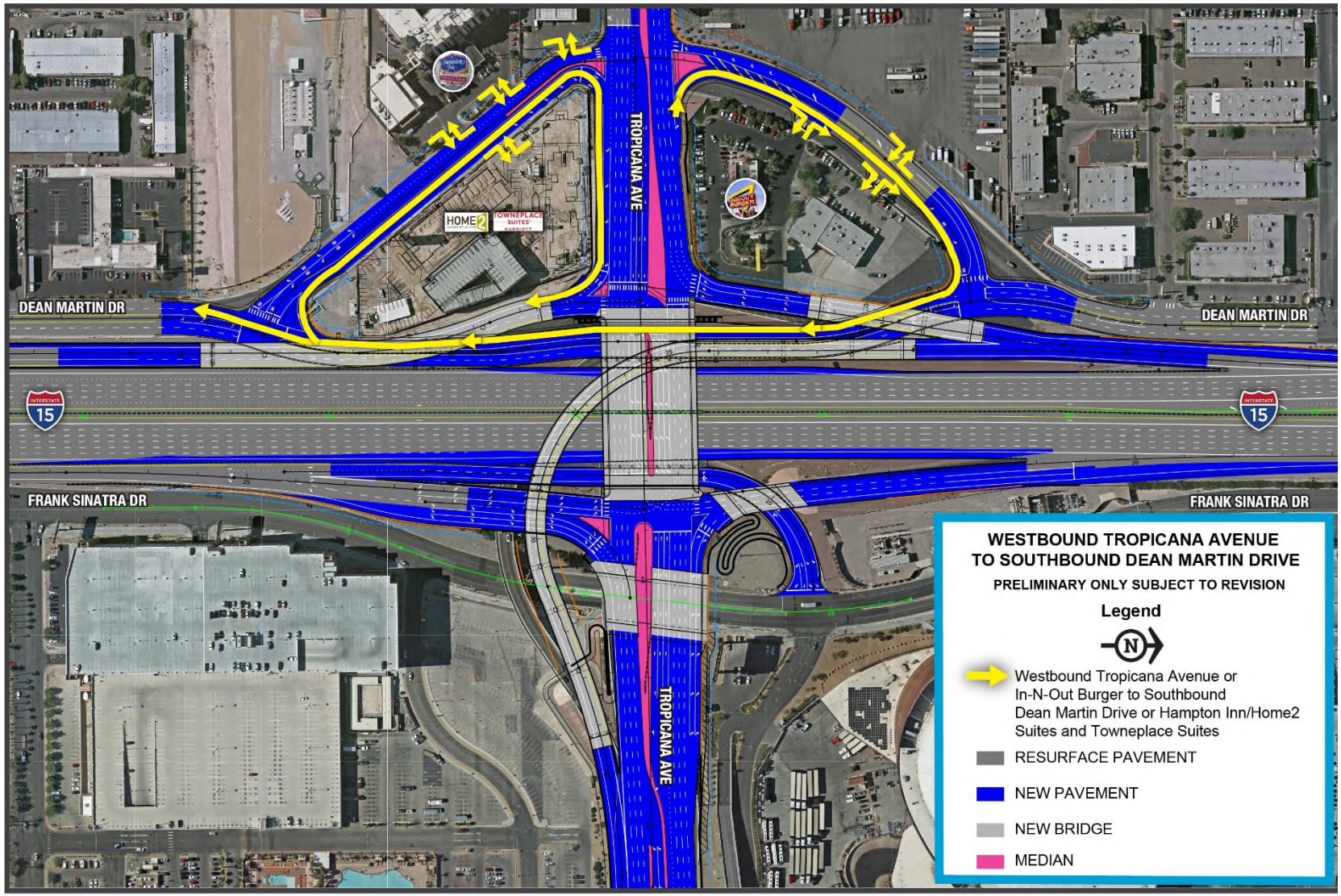


Figure 3-10. Westbound Tropicana Avenue Access to Local Businesses and Southbound Dean Martin Drive

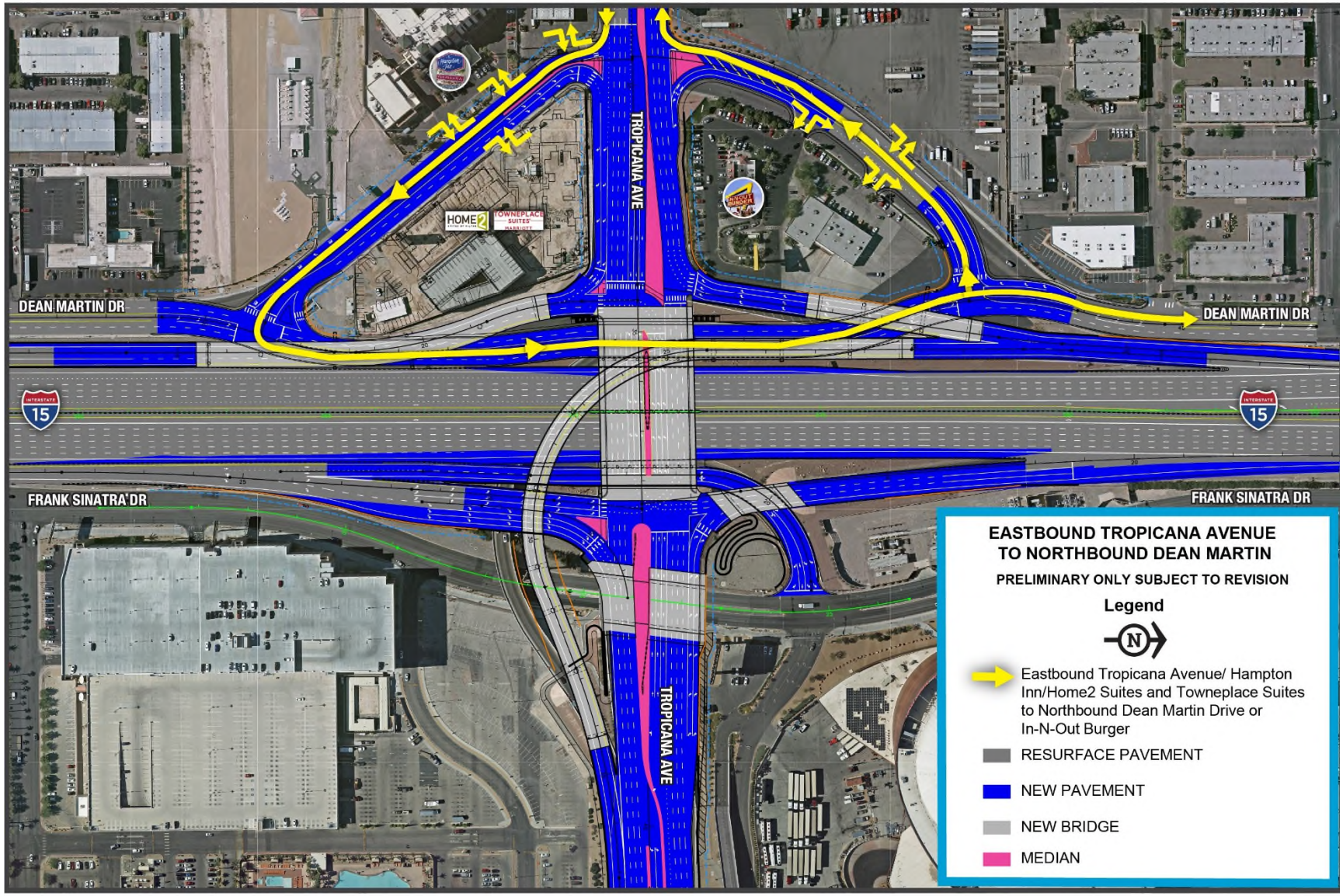


Figure 3-11. Eastbound Tropicana Avenue Access to Local Businesses and Northbound Dean Martin Drive

Pedestrian Access

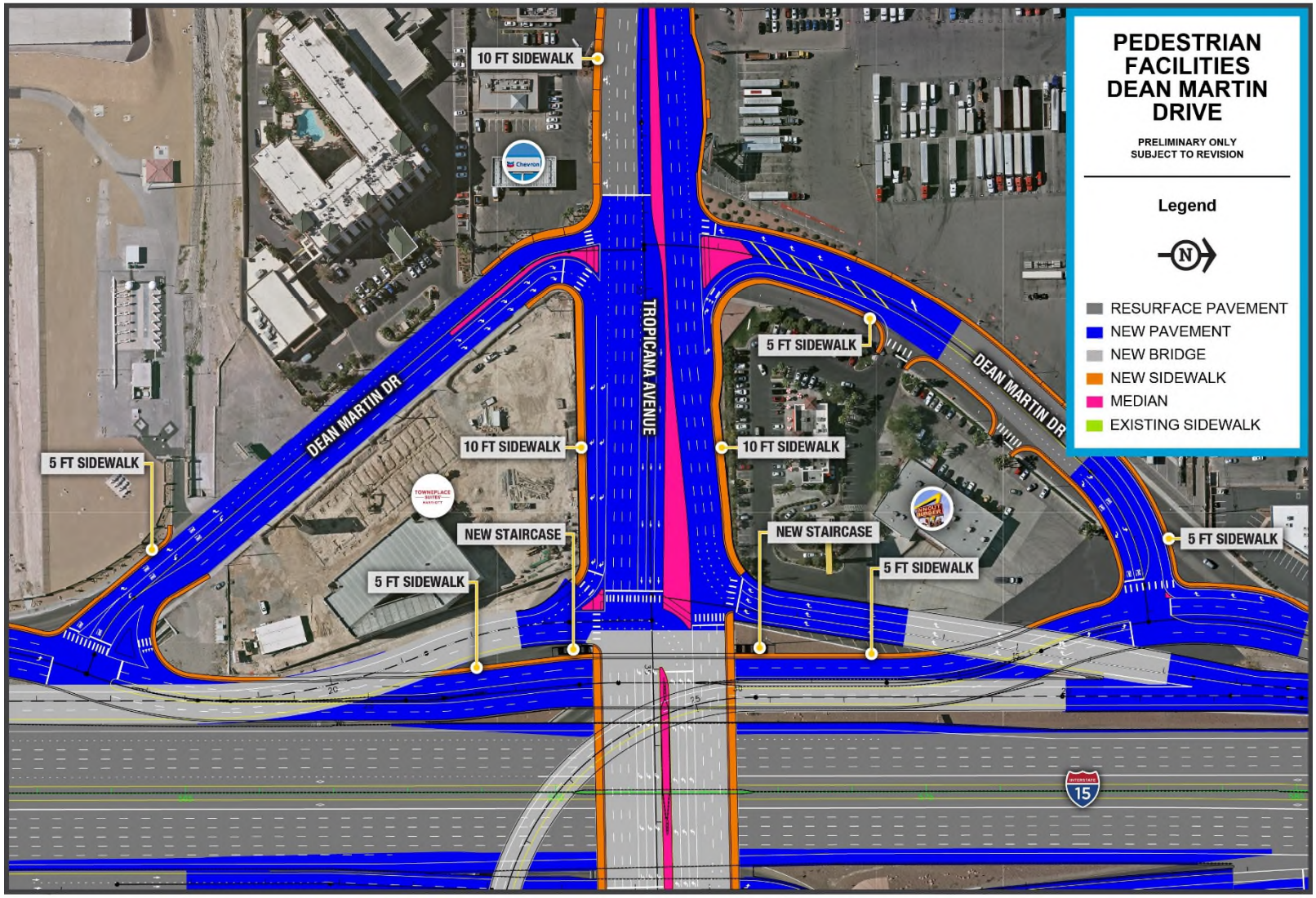


Figure 3-12. Pedestrian Facilities - Tropicana Avenue and Dean Martin Drive West of I-15

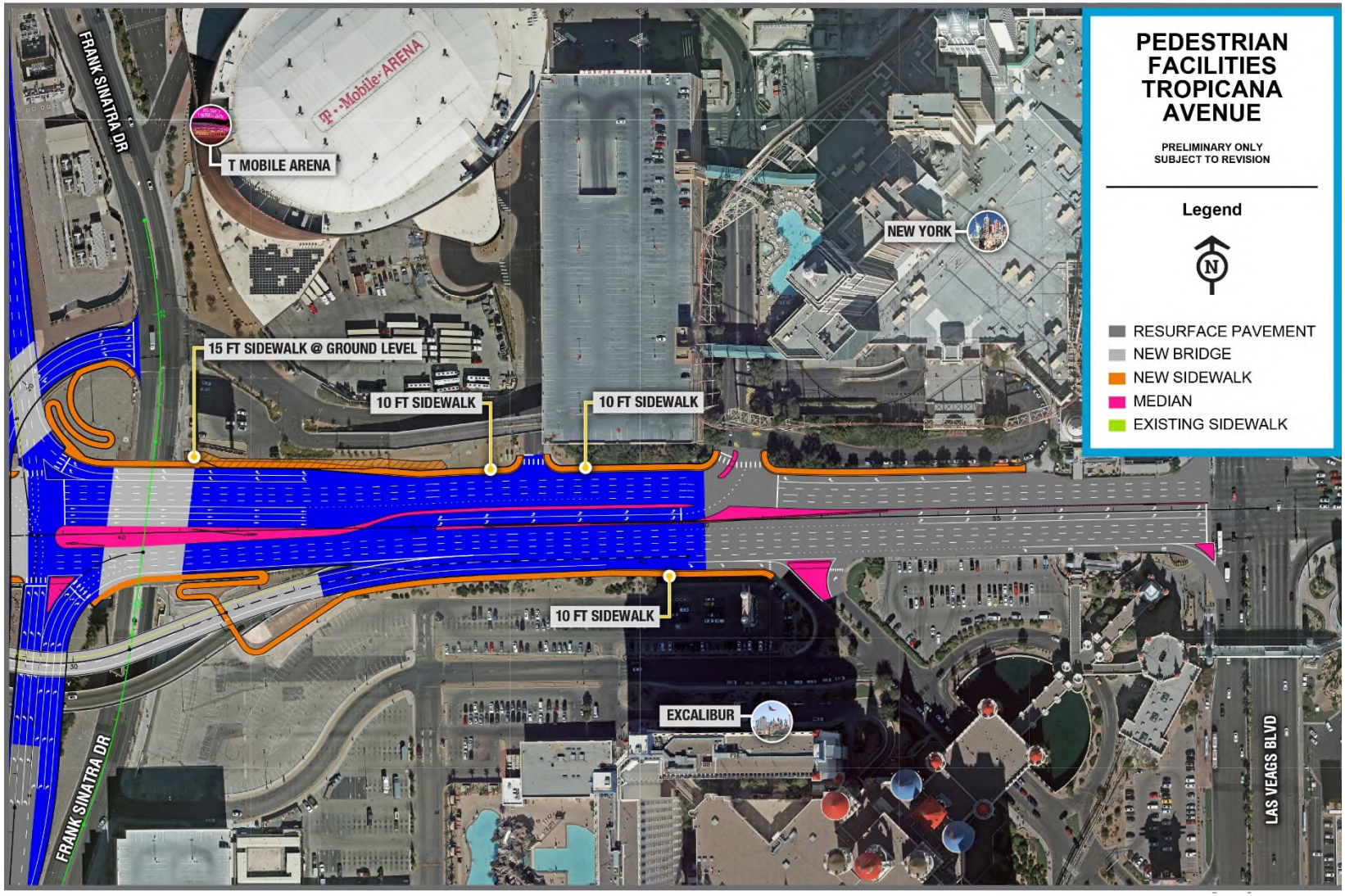


Figure 3-13. Pedestrian Facilities - Tropicana Avenue East of I-15

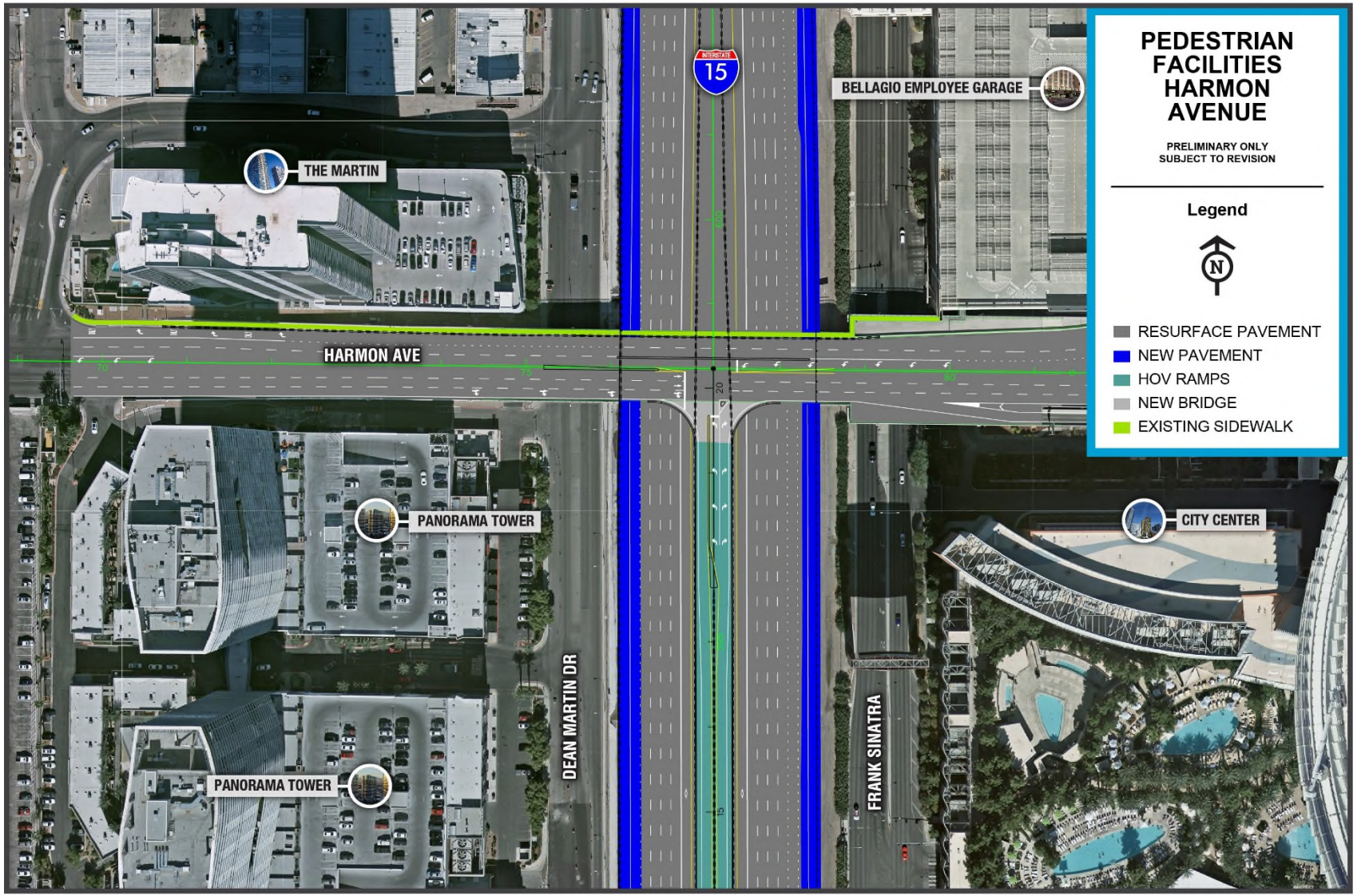


Figure 3-14. Pedestrian Facilities - Harmon Avenue

3.2.3 Mitigation Measures

Mitigation measures for land use and socioeconomic conditions are presented in **Table 3-7**.

Table 3-7. Land Use and Socioeconomic Conditions Mitigation Measures

Resource	Preferred Alternative
Right-of-Way and Construction Easements	Property owners are protected by the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Uniform Act). NDOT will pay fair market value for the loss or use of any property.
Traffic and Pedestrian Circulation	NDOT will develop a plan to communicate with the public and property owners regarding construction schedule, street and sidewalk closures, and detours throughout construction. NDOT will work with Clark County to identify pedestrian route detours that may be needed during construction. Access to residences and businesses will be maintained during construction. NDOT will maintain Americans with Disabilities Act-compliant pedestrian access, including temporary safe street crossings and sidewalks.
Traffic Circulation and Access	New traffic patterns will require additional signing to inform drivers of all lane configurations. Directional signage will be utilized to help motorists reach their destinations. Signs will have arrows depicting the required turning direction in advance of the Tropicana Avenue and Dean Martin Drive intersection.

3.3 Air Quality

3.3.1 Existing Conditions

The Clark County Department of Air Quality (CCDAQ) is the air pollution control agency for Clark County, Nevada. CCDAQ administers the permitting of stationary sources and oversees regulatory compliance, air quality monitoring, and the air pollution control program for Clark County under provisions of the Clark County Air Quality Regulations.[13]

The proposed project is located in Las Vegas in Clark County and Hydrographic Area 212 (HA 212) and HA 163. The area HA 212 is designated by U.S. Environmental Protection Agency (EPA) as maintenance for carbon monoxide (CO) and particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), and was in maintenance for the 1997 ozone National Ambient Air Quality Standard (NAAQS) that was revoked in 2015. As of mid-2018, HA 212 is designated as nonattainment for the 2015 ozone standard. The area is either in attainment or unclassifiable status for all other criteria pollutants.

During the past three years, CO concentrations monitored in Las Vegas have not exceeded the 1-hour and 8-hour CO NAAQS. The monitoring data indicate that PM_{10} concentrations did not exceed the 24-hour PM_{10} NAAQS. $PM_{2.5}$ concentrations have been less than the NAAQS for both the 24-hour and annual standards. Based on monitoring conducted from 2016 through 2018, maximum ozone concentrations measured in Las Vegas exceeded the 8-hour ozone NAAQS in all 2018.

Criteria Pollutants – The EPA regulates federal air quality policies through the Clean Air Act. EPA established primary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect public health. The six criteria pollutants are:

1. Ozone (O_3)
2. Nitrogen dioxide (NO_2)
3. Carbon monoxide (CO)
4. Particulate matter (PM)
   - Less than 10 microns in diameter (PM_{10})
   - Less than 2.5 microns in diameter ($PM_{2.5}$)
5. Sulfur dioxide (SO_2)
6. Lead (Pb)

In addition to the criteria pollutants, EPA regulates air toxic emissions. Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that the EPA regulate 188 hazardous air pollutants. EPA has identified the high-priority mobile source air toxics (MSAT), pollutants with significant emission contributions from mobile sources that are among the national and regional-scale cancer risk drivers and/or non-cancer hazard contributors in the 1999 National Air Toxics Assessment. These high-priority MSATs are:

- Acrolein
- Benzene
- 1,3-butadiene
- Diesel particulate matter plus diesel exhaust organic gases (diesel particulate matter [DPM])
- Ethyl Benzene
- Formaldehyde
- Naphthalene
- Polycyclic organic matter

[13] Jacobs. 2019. Draft Air Quality Technical Memorandum. May.

Transportation projects may affect the regional or local air toxics concentrations due to the MSAT emissions from vehicles. Nationwide MSAT emissions are expected to be lower than present levels in future years as a result of EPA's national emissions control programs and improving fuel economy standards. Using EPA's MOVES2014a model, FHWA estimates even if vehicle miles traveled (VMT) increases by 45 percent from 2010 to 2050 as is forecasted, a combined reduction of 91 percent in the total annual emissions for the priority MSATs is projected for the same period.

Sensitive air quality receptors (land uses) include receptors such as residences, schools, daycare centers, nursing homes, and hospitals. Land uses in or near the project area are mixed commercial and residential. The nearest residences are directly west of I-15 on Harmon Avenue.

3.3.2 Impacts

The project would not have an adverse impact on air quality or cause a violation of the CO NAAQS and would not be a project of air quality concern for PM_{10}. Overall, the project would have minimal impacts from MSAT emissions, greenhouse gas emissions, and construction activities. Air quality impacts are summarized in **Table 3-8.**[14].

Table 3-8. Air Quality Impacts

Resource	No-Build Alternative	Preferred Alternative
Regional Transportation Conformity	No impact.	The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) completed their review of the conformity determination for the Regional Transportation Commission of Southern Nevada's (RTC) 2017-2040 Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP). A joint FTA/FHWA air quality conformity determination for the RTP and TIP is required by the Environmental Protection Agency (EPA) Transportation Conformity Rule (40 Code of Federal Regulations (CFR) Parts 51 and 93) and the FTA/FHWA Metropolitan Planning Rule (23 CFR 450). On September 12, 2019, the RTC Board approved the 2017-2040 RTP/TIP determination of the air quality conformity analysis for the RTP/TIP and the revised analysis and results have been incorporated into the 2017-2040 RTP/TIP as submitted to FTA and FHWA. On September 13, 2019, FHWA and FTA, after consultation with the EPA Region 9 Office provided joint approval of the 2017-2040 RTP/TIP air quality conformity determination. By virtue of this project's (CL20170039) inclusion on the RTC RTP/TIP, the project demonstrated it meets the planning and regional requirements for air quality.

[14] Additional air quality information and analysis of potential impacts is available in the *Draft Air Quality Technical Memorandum* (Jacobs, 2019).

Table 3-8. Air Quality Impacts

Resource	No-Build Alternative	Preferred Alternative
Project Level Conformity: Carbon Monoxide Hot Spot Analysis	No impact.	A CO hot-spot analysis was performed to evaluate whether the project would cause localized increases of CO concentrations that would violate the NAAQS due to traffic delays at congested intersections. The CO hot-spot analysis followed EPA's *Guideline for Modeling Carbon Monoxide from Roadway Intersections* and *Using MOVES in Project-Level Carbon Monoxide Analyses* as guidance (EPA 1992; 2010). A screening analysis was conducted to identify three intersections requiring quantitative modeling analysis. These intersections are Tropicana Avenue and the I-15 northbound ramps, Tropicana Avenue and Dean Martin Drive, and Harmon Avenue and I-15 HOV ramp. Hot spot modeling results showed that CO concentrations at the three intersections would not exceed the 1-hour or 8-hour CO air quality standards (see **Table 3-9**). The proposed project meets project-level conformity requirements.
Project Level Conformity: PM_{10} Hot Spot Analysis	No impact.	The PM_{10} analysis was performed following the criteria listed in FHWA and EPA's *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (FHWA and EPA, 2015). EPA specified in 40 CFR 93.123(b)(1) that project of air quality concern (POAQC) are certain highway and transit projects that involve significant levels of diesel vehicle traffic, such as major highway projects and projects at congested intersections that handle significant diesel traffic. It was determined that the project would not be a POAQC. As described above, the project is not expected to cause or contribute to new localized PM_{10} violations or increase the frequency or severity of existing violations. As such, the project would meet the conformity requirements of 40 CFR 93.116 without a quantitative hot-spot analysis. Therefore, the Preferred Alternative is not expected to cause or contribute to new localized PM_{10} violations. The proposed project meets project-level conformity requirements.

Table 3-8. Air Quality Impacts

Resource	No-Build Alternative	Preferred Alternative
Mobile Source Air Toxics	No impact.	Although the forecasted 2040 Preferred Alternative VMT is approximately 20-percent greater than the 2040 No-Build Alternative, emissions are virtually certain to be lower than present levels in 2040 as a result of the EPA's national emissions control programs that are projected to reduce annual MSAT emissions by more than 90 percent from 2010 to 2050. Emissions between the No-Build and Preferred Alternative in 2040 would be similar despite the 20-percent increase in VMT. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future than they are under the existing conditions.
Greenhouse Gases		To date, no national standards have been established regarding GHGs, nor has EPA established criteria or thresholds for ambient GHG emissions under its authority to establish motor vehicle emission standards for CO_2 under the CAA. GHGs differ from other air pollutants evaluated in federal environmental reviews because their impacts are not localized or regional because of the rapid dispersion into the global atmosphere that is characteristic of these gases. The affected environment for CO_2 and other GHG emissions is the entire planet. Also, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad-scale actions, such as those involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts of a particular transportation project. Furthermore, no scientific methodology currently exists for attributing specific climatological changes to a particular transportation project's emissions. Therefore, it is not meaningful or useful to try and correspond those relatively small emission differences and attempt to translate

Table 3-8. Air Quality Impacts

Resource	No-Build Alternative	Preferred Alternative
Greenhouse Gases (cont.)		them into climate outcomes (e.g., temperature changes, drought/flooding severity). The GHG emissions were evaluated qualitatively by comparing the VMT of the existing, No-Build and the Preferred Alternative. The difference in VMT between the opening year No-Build Alternative and the Preferred Alternative is minimal, and it is expected GHG emissions between the two alternatives would be similar. However, the 2040 Preferred Alternative VMT is 20 percent greater than the No-Build Alternative. Because the impacts from GHG emissions are difficult to assess, it is assumed that any increase in GHG from the project would result in some minimal effect when combined with all other global sources of GHG.
Construction	No impact.	Project construction activities would result in short-term increases in fugitive dust and equipment-related exhaust emissions. Exhaust emissions during construction would be generated by fuel combustion in motor vehicles and construction equipment, and particulate emissions would result from soil disturbance, earthwork, and other construction activities. Vehicle travel on unpaved, gravel detour routes or nearby roadways with potential for deposited fugitive dust from construction would generate particulate emissions. Construction vehicle activity and disruption of normal traffic flow may result in increased motor vehicle emissions within certain areas. However, potential air quality impacts of the Preferred Alternative would be short-term, occurring only while construction is in progress.

Carbon Monoxide Hot Spot Analysis

A CO hot-spot analysis was performed to evaluate whether the project would cause localized increases of CO concentrations that would violate the NAAQS due to traffic delays at congested intersections. Hot-spot modeling results showed that CO concentrations at the three intersections would not exceed the 1-hour or 8-hour CO air quality standards (see **Table 3-9**).

Table 3-9. CO Hot-spot Modeling (CAL3QHC) Results

Intersection		Maximum 1-hour CO Design Values (ppm)			Maximum 8-hour CO Design Values (ppm)		
		Existing 2017	Interim 2020	Horizon 2040	Existing 2017	Interim 2020	Horizon 2040
Preferred Alternative	Tropicana Avenue and Dean Martin Drive	4.3	4.0	3.3	3.2	3.0	2.5
	Tropicana Avenue and I-15 Northbound ramp	4.5	4.0	3.3	3.3	3.0	2.5
	Harmon Avenue and I-15	--	3.9	3.2	--	2.9	2.4
No-Build	Tropicana Avenue and Dean Martin Drive	4.3	4.2	3.3	3.2	3.1	2.5
	Tropicana Avenue and I-15 Northbound ramp	4.5	4.3	3.3	3.3	3.2	2.5
	Harmon Avenue and I-15	--	--	--	--	--	--
NAAQS (ppm)		35			9		

Note: 1-hour CO and 8-hour CO design values include background concentrations of 2.9 and 2.2, respectively.

CO – carbon monoxide
NAAQS – National Ambient Air Quality Standards
ppm – parts per million

3.3.3 Mitigation Measures

Table 3-10. Air Quality Mitigation Measures

Resource	Preferred Alternative
Construction	Equipment and vehicles used for construction will be required to comply with EPA's emission standards for on-road vehicles and off-road construction equipment. The project will require a Dust Control Permit from Clark County Department of Air Quality.

3.4 Water Resources

3.4.1 Existing Conditions

The project area is within the Tropicana/Flamingo Subwatershed, part of the Las Vegas Valley Watershed that is a tributary to the Las Vegas Wash located northeast of the project area. The upstream tributary drainage and project area are highly developed with industrial, commercial, and hospitality businesses, parking lots, and roadways[15, 16].

Waters of the U.S.

Perennial waterways or ephemeral stream channels are included in the definition for Waters of the U.S. Ephemeral streams only exist for a short time after precipitation. The Tropicana Wash and Tropicana Wash-North Branch facilities qualify as Waters of the U.S. features and are identified in **Figure 3-15.**

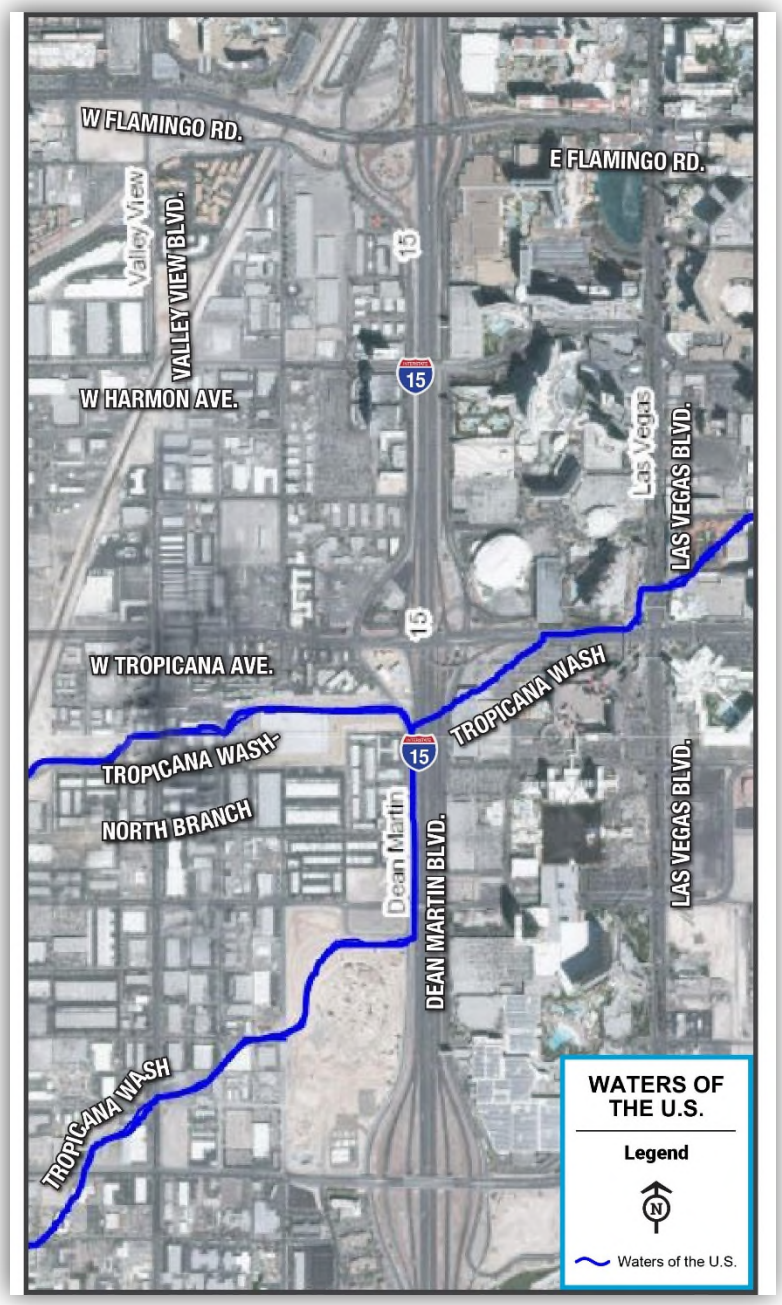


Figure 3-15. Waters of the U.S.

[15] Jacobs. 2018. Floodplains and Water Resources, May.
[16] Jacobs. 2019. Memorandum Update to Floodplains and Water Resources, March.

Clark County Regional Flood Control District Facilities

Within the Tropicana/Flamingo Subwatershed, the Clark County Regional Flood Control District (CCRFCD) employs a flood control system that intercepts and conveys much of the flood flow through a series of channels, box culverts, storm drains, and detention basins to reduce peak storm runoff.

Stormflows enter the project at two main locations, via the Tropicana Wash facilities and Tropicana Wash-North Branch facilities. These CCRFCD facilities, as well as smaller facilities designed to intercept and convey local stormflows, discharge flows to the downstream Tropicana Wash facilities.

Water Quality

Because the drainages within the project limits convey stormwater infrequently, precipitation typically results in pulses (i.e., loads and concentrations) of sediment and of typical urban roadway pollutant constituents (e.g., heavy metals, hydrocarbons, pesticides, debris) conveyed downstream. The final discharge point of the Tropicana Wash is the Flamingo Wash, approximately 2.4 miles downstream of the project. The Flamingo Wash in turn discharges to the Las Vegas Wash, approximately 8.5 miles downstream of the project area.

3.4.2 Impacts

Potential impacts to water resources may occur because existing drainage facilities would require relocation or reconfiguration to accommodate the Preferred Alternative. The overall drainage patterns for the project area would be perpetuated with the proposed project. The Preferred Alternative would not adversely affect existing flow patterns, thereby avoiding impacts to downstream Tropicana Wash facilities and adjacent properties. Potential impacts are summarized in **Table 3-11**.

Table 3-11. Water Resource Impacts

Resource	No-Build Alternative	Preferred Alternative
Waters of the U.S.	No impact	• Modifications to the Tropicana Wash – North Branch Facility TRNB0030/TRNB0031.
Clark County Regional Flood Control District Facilities	No impact	• The project requires modifications to the Tropicana Wash – North Branch Facility TRNB0030/TRNB0031. The modifications consist of removing existing open channel facilities and replacing with rectangular box storm drain (see Figure 3-16). This facility also falls under the jurisdiction of USACE.
Water Quality	No impact	• The project would result in an increase of impervious surface (new pavement and structures) of approximately 6.5 acres or about 0.5 percent of the 2-square-mile upstream urbanized watershed. This small increase in impervious surface is not expected to adversely affect water quality.

Figure 3-16. Modifications to Tropicana Wash Facility

3.4.3 Mitigation Measures

Avoidance, minimization, and mitigation measures will be implemented, as practical, to reduce or eliminate impacts to water resources and water quality (see **Table 3-12**).

Table 3-12. Water Resource Mitigation Measures

Resource	Preferred Alternative
Waters of the U.S.	The project will require a U.S. Army Corps of Engineers (USACE) 404 Permit (Nationwide Permit 14). It is also expected that the project will require a Section 401 Water Quality Certification issued by Nevada Division of Environmental Protection (NDEP), Bureau of Water Quality Planning, as required for a USACE 404 Permit.
Clark County Regional Flood Control District Facilities	A USACE 408 permit will be required.
Water Quality	NDOT will implement Best Management Practices (BMPs) during construction. As part of the development of BMPs for the project, NDOT's construction contractor must file a Notice of Intent with NDEP's Bureau of Water Pollution Control to obtain coverage under the General Permit for Stormwater Discharges Associated with Construction Activity (NVR100000). A Stormwater Pollution Prevention Plan (SWPPP) will be developed before the Notice of Intent is submitted. The SWPPP will outline temporary and permanent erosion and sediment controls, locate stormwater discharge points, and describe BMPs to be implemented to prevent or reduce stormwater pollutant discharge associated with construction activities to the maximum extent practical. NDOT will implement temporary erosion control and stormwater control measures during construction per the NDOT *Storm Water Quality Manuals* (References 4 and 5). Typical BMPs that may be selected for this project include: • Street sweeping and vacuuming during construction • Storm drain inlet protection • Fiber rolls, silt fences, and gravel bag berms • Stockpile and construction site management

3.5 Hazardous Materials

3.5.1 Existing Conditions

A Phase 1 Environmental Site Assessment (ESA) was prepared for the project in May 2018[17]. The purpose of the Phase I ESA was to identify, to the extent feasible, recognized environmental conditions (REC) in the study area. REC means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. A site survey noted soil staining, unlabeled 55-gallon drums, and storage tanks, along with numerous gas and petroleum pipeline signposts.

The regulatory database review identified 774 records for facilities within the search boundaries from the study area, 12 of which were listed in the study area.[18] Further review revealed all 12 were actually on adjoining parcels and not within the project footprint.

Seven REC locations were identified within the hazardous materials study area. The REC locations are identified on **Figure 3-17** and are listed below:

1. An electrical substation located adjacent to the east of Frank Sinatra Drive north of Mandalay Bay Road included surface staining across the unpaved ground consistent in appearance with petroleum hydrocarbons.
2. Based on observations made during the site reconnaissance, pipes transporting an unknown fluid from a maintenance building west of the Delano Hotel and Casino onto soil resulted in the flow of material downgradient.
3. Rebel Oil Company, Facility ID 8-001587, a gas station with an open NDEP case file, was reported at 3785 West Tropicana Avenue, Las Vegas Nevada 89103, upgradient of the subject site.
4. Al Phillips the Cleaner, Facility ID 8-000744, was reportedly located 0.126 miles southwest and upgradient of the subject site at 3250 West Ali Baba Lane, Las Vegas Nevada 89118.
5. Regency Dry Cleaning and Laundry, Facility ID H-000119, was reported 0.082 miles west and upgradient of the subject site at 4575 South Procyon Avenue, Las Vegas Nevada 89103.
6. A release of approximately 100 gallons of diesel fuel along the southbound I-15 shoulder was reported for Roadway Express Mobile Source, Facility ID H-000698, at I-15 and Tropicana Avenue on July 23, 2006. The release location is associated with Assessor's Parcel Number (APN) 162-20-899-001, where 0.09 acre would be acquired by NDOT for additional right-of-way.
7. Wild Wild West Gambling Hall and Hotel, Facility ID 8-000961, located at 3330 West Tropicana Avenue, Las Vegas Nevada 89118, is associated with APN 162-20-403-001, where 0.11 acre would be acquired by NDOT for additional right-of-way. This site has three active underground storage tanks onsite and a history of spills of petroleum hydrocarbons to soil.

[17] BEC Environmental. 2018. Phase 1 Environmental Site Assessment, May.

[18] The project study area at the time the Phase 1 ESA was performed included a proposed I-15 High Occupancy Vehicle (HOV) ramp structure connecting I-15 median HOV lanes to the Hacienda Avenue overpass. This ramp structure was subsequently eliminated from the Preferred Alternative (see Chapter 2).

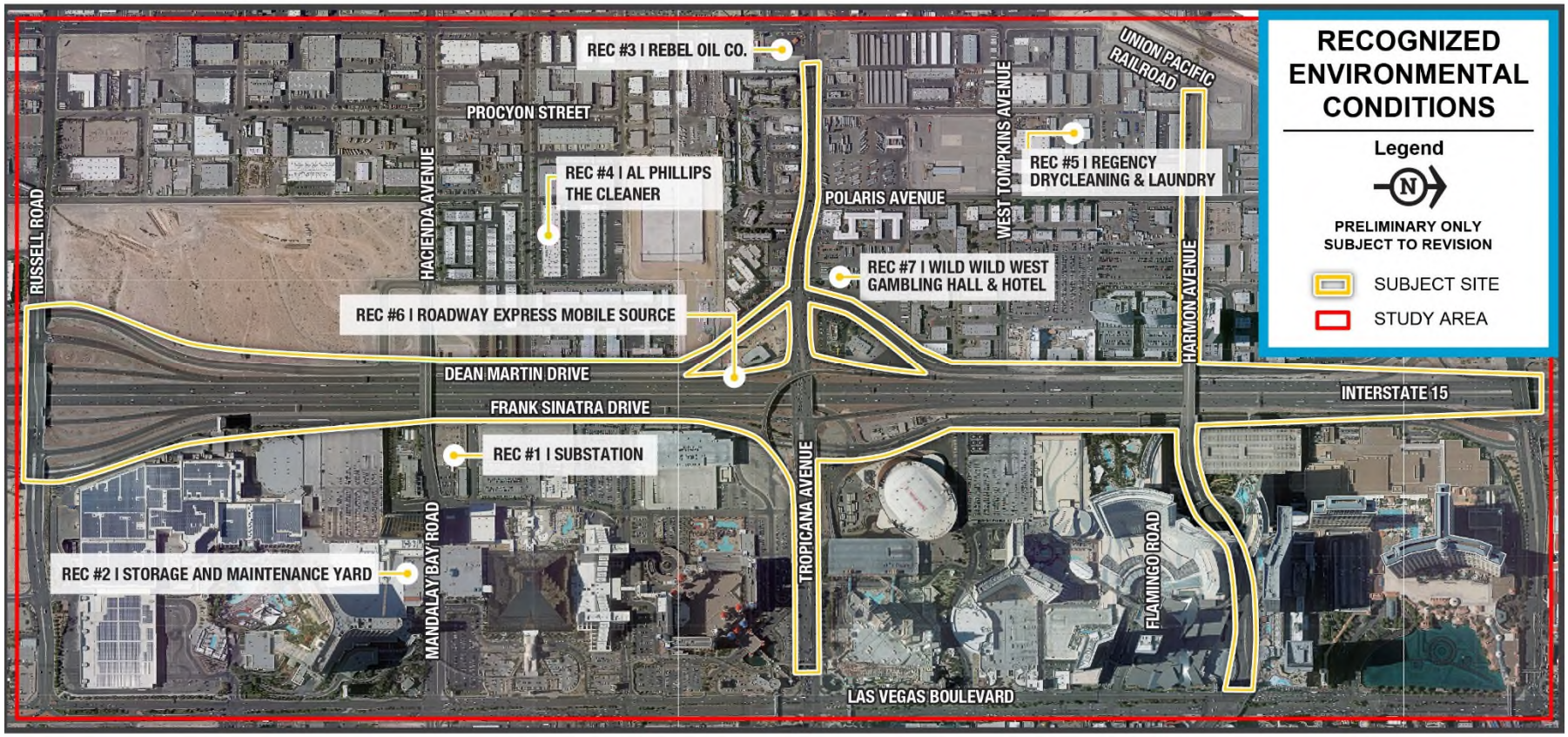


Figure 3-17. Recognized Environmental Conditions

3.5.2 Impacts

Table 3-13 summarizes the impacts for the No-Build and Preferred Alternatives.

Table 3-13. Hazardous Materials Impacts

Resource	No-Build Alternative	Preferred Alternative
Recognized Environmental Conditions (REC)	No impact.	• Partial acquisition of two properties, REC 6 – Roadway Express Mobile Source and REC 7 – Wild Wild West Gambling Hall and Hotel (see **Figure 3-17**).

3.5.3 Mitigation Measures

Avoidance, minimization, and mitigation measures will be implemented, as practical, to reduce or eliminate impacts to hazardous materials. Mitigation measures are identified below in **Table 3-14**.

Table 3-14. Hazardous Materials Mitigation

Resource	Preferred Alternative
Hazardous Materials	Properties with known contamination will be further evaluated on a site-by-site basis. NDOT will survey all structures to be disturbed or demolished to determine the presence of regulated materials, including universal wastes, asbestos-containing material, and heavy metals. NDOT will remove, manage, and dispose all regulated materials in accordance with applicable regulations. Prior to acquiring properties with known contamination, NDOT may conduct additional levels of assessment to determine if further action is needed to evaluate impacts to the property's value and/or proposed construction. Any further assessment and remedial actions would be subject to the approval of the appropriate regulatory agencies, NDOT, and FHWA, as relevant.

3.6 Visual Resources

3.6.1 Existing Conditions

Visual impacts of the project were analyzed following the FHWA Guidelines. This visual assessment methodology requires that visual impacts be determined by assessing changes to the landscape as seen both by people traveling on the freeway (to determine how people traveling on the proposed project might be affected) and by neighbors adjacent to it (to determine how people near the proposed project would be affected). Changes to the visual environment are measured by determining how a proposed project would alter the visual quality for selected representative views, called key viewpoints.

Because of the proposed project's location within an existing freeway corridor in a highly developed, urbanized setting, minimal visual impacts are anticipated. Accordingly, the FHWA guidelines for an Abbreviated Visual Impact Analysis were implemented.

The project study area is developed with high-rise hotels, casinos, high-density residential and commercial uses, and illuminated signs. There are no natural features. Parking structures are located east of I-15, south of Tropicana Avenue, and north of Harmon Avenue. Adjacent land uses include the T-Mobile Arena northeast of Tropicana Avenue and I-15 and the new Raiders Stadium, which is under construction within the southern limits of the study area between Russell Road and Hacienda Avenue. Existing freeway and roadway features include the following characteristics:

- The Tropicana Avenue interchange bridge overpasses the I-15 freeway and it underlies a flyover ramp connecting I-15 southbound to Tropicana Avenue eastbound. The flyover is visible from both I-15 and Tropicana Avenue. Slopes above I-15 are earthen with intermittent landscaping.
- Tropicana Avenue is a wide, 6-lane roadway.
- The 6-lane Harmon Avenue bridge overpasses the I-15 freeway, about ½-mile north of the Tropicana Avenue bridge.
- Freeway and roadway structures, bridges and roadway barrier rails, piers, and walls are white with earth-tone brown colors.

Roadway lighting is visible from within the project area, which can result in potential visual impacts to travelers on I-15, adjacent hotels, and residential neighbors. Existing lighting along I-15 within the study area includes 100-foot-tall high mast light poles in the freeway median that are visible from Tropicana and Harmon avenues. Additionally, 30-foot-tall light poles with 15-foot arms are located on the existing bridges set on the concrete barriers, at on/off ramps, and along the adjacent roadways. The existing roadway lighting consists of yellow high-pressure sodium (HPS) bulbs or white LED bulbs, both of which are commonly used for outdoor area lighting. The fixtures have full cut offs that direct the light downwards onto the roadway and reduce light spillover from the freeway.

Analyzed together, the visual character elements described above establish the existing visual quality. The existing visual quality is highly vivid and is associated with distinctive, contrasting, and diverse structures and illuminated signs. The visual quality of specific representative views or key viewpoints is discussed below.

Key Viewpoints

Key viewpoints were selected to show views that would most clearly demonstrate the change to existing conditions resulting from the proposed project and to represent the sensitive viewer groups. The area of project visibility and key viewpoints locations is shown on **Figure 3-18.**

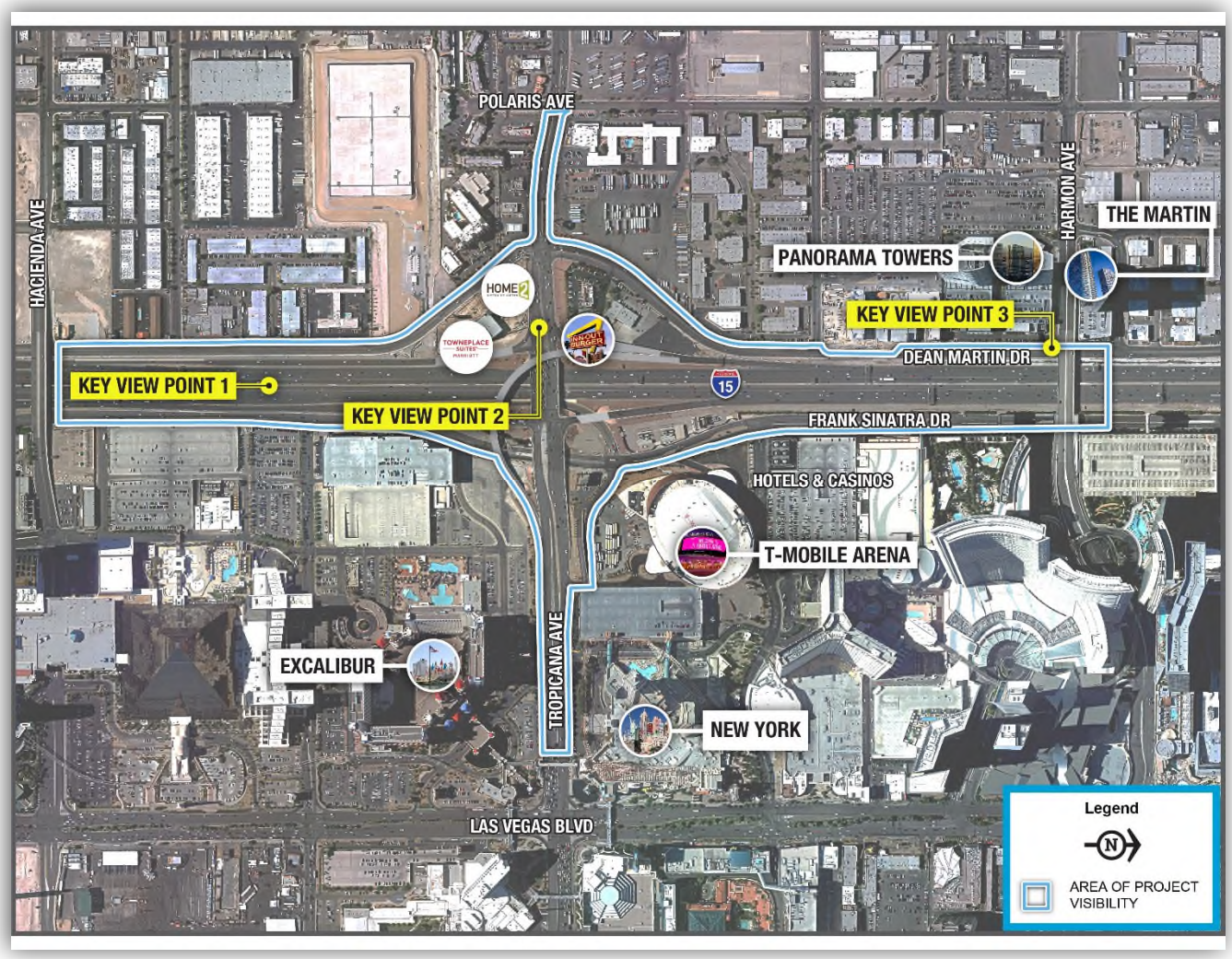


Figure 3-18. Area of Project Visibility and Key Viewpoints

Key Viewpoint 1 – Existing Visual Character – I-15 looking north towards Tropicana Avenue Interchange

The visual character of the area visible from Key Viewpoint 1 is defined by the strong curving form of the I-15 southbound to Tropicana Avenue eastbound flyover structure, strong linear form of the Tropicana Avenue interchange bridge, and I-15 extending away from the key viewpoint, with the backdrop of tall structures beyond the bridge and flyover. Viewers from Key Viewpoint 1 are primarily motoring commuters and tourists with some commercial trucking travelers. The visual quality from Key Viewpoint 1 is disorderly due to the high level of visual complexity of structures, roadway facilities, and lighting. There is a low to moderate level of coherence of the project area due to the varied character of existing features. The existing view from Key Viewpoint 1 is shown on **Figure 3-19.**

Figure 3-19. Key Viewpoint 1 - Existing Condition - I-15 Looking North Toward Tropicana Avenue Interchange

Key Viewpoint 2 – Existing Visual Character – Tropicana Avenue view from commercial property looking east

The visual character of the area visible from Key Viewpoint 2 is defined by the strong linear forms of the two visible roadways—Tropicana Avenue extending away from Key Viewpoint 2 and the existing flyover—and the backdrop of tall structures beyond the flyover. Viewers from Key Viewpoint 2 are commercial neighbors occupying hotels and businesses properties. The visual quality from Key Viewpoint 2 is somewhat orderly due to the moderate level of visual complexity of structures, roadway facilities, and lighting. There is a moderate level of coherence of the project due to varied character of existing features. The existing view from Key Viewpoint 2 is shown on **Figure 3-20**.

Figure 3-20. Key Viewpoint 2 - Existing Condition - Tropicana Avenue from Commercial Property Looking East

Key Viewpoint 3 – Existing Visual Character – View from Panorama Towers northeast towards Harmon Avenue

The visual character of the area visible from Key Viewpoint 3 is defined by the strong horizontal form of Harmon Avenue bridge over I-15 and the strong converging forms of the Dean Martin Drive and I-15 roadways with the backdrop of tall structures beyond the Harmon Avenue bridge. Viewers from Key Viewpoint 3 are residential neighbors living in Panorama Towers with views from their units and also from a single outdoor use area in each tower facing east. Some residential neighbors living in The Martin Tower have views looking southeast. The visual quality from Key Viewpoint 3 is somewhat orderly due to the moderate level of visual complexity of structures, roadway facilities, and lighting. There is a moderate level of coherence of the project due to varied character of existing features. The existing view from Key Viewpoint 3 is shown on **Figure 3-21.**

Figure 3-21. Key Viewpoint 3 - Existing Condition - View From Panorama Towers Looking Northeast Toward Harmon Avenue

3.6.2 Impacts

Visual resource impacts are defined by how the visual character of the corridor would change as a result of the project and the experience of viewers to the changes. This analysis was done by comparing photo simulations of the proposed project to the existing conditions at each key viewpoint. **Table 3-15** summarizes the impacts at the three key viewpoints.

Table 3-15. Visual Resources Impacts

Resource	No-Build Alternative	Preferred Alternative
Key Viewpoint 1	No impact	The overall change to visual resources as seen in Key Viewpoint 1 would be low. Given the diverse visual character of existing views, changes would not be substantial. See **Figure 3-22**.
Key Viewpoint 2	No impact	The overall change to visual resources as seen in Key Viewpoint 2 would be low. Given the diverse visual character of existing views, changes would not be substantial. See **Figure 3-23**.
Key Viewpoint 3	No impact	The overall change to visual resources as seen in Key Viewpoint 3 would be low. Given the diverse visual character of existing views, changes would not be substantial. See **Figure 3-24**.

Key Viewpoint 1 – Preferred Alternative

The proposed Tropicana Avenue bridge would be approximately 3 feet higher than the existing bridge and the new flyover ramp would be 10 feet higher than the existing flyover. The Tropicana Avenue roadway would be widened from six to eight lanes; however, the roadway barrier rails would be similar to the existing condition. The high mast lighting would be removed and replaced using LED white lights with heights and placement similar to the existing condition. There would be no added light spillover. Color brightness for the proposed bridge, flyover, barrier rails, and retaining walls would be more subdued compared to the existing condition with use of medium tan color. Texture on the proposed flyover and retaining walls would be decorative compared to the existing smooth texture (see **Section 3.6.3** Mitigation Measures). Key Viewpoint 1 – Preferred Alternative is shown in **Figure 3-22.**

Figure 3-22. Key Viewpoint 1 - Preferred Alternative, Looking North

Key Viewpoint 2 – Preferred Alternative

The proposed flyover ramp would be 10 feet higher than the existing flyover. Tropicana Avenue would be widened to eight lanes with 10-foot-wide sidewalks. These features are similar to existing conditions. Roadway lighting would be white LED with no added light spillover. Color brightness for the proposed flyover and barrier rails would be more subdued compared to the existing condition with use of medium tan color. Texture on the proposed flyover would be decorative compared to the existing texture (see **Section 3.6.3** Mitigation Measures). Key Viewpoint 2 – Preferred Alternative is shown in **Figure 3-23**.

Figure 3-23. Key Viewpoint 2 - Preferred Alternative, Looking East

Key Viewpoint 3 – Preferred Alternative

The proposed retaining walls at the new HOV ramps have medium sized shapes within the viewpoint. Horizontal lines where the HOV lanes connect to the Harmon Avenue bridge are the same as existing condition. The converging visual lines of the roadway barrier rails, HOV lanes, and high mast and roadway lighting are the same as visible under existing conditions. The high mast lighting and roadway lighting would be removed and replaced using white LED lights with heights and placement similar to the existing condition. There will be no added light spillover. Color brightness for the proposed bridge, barrier rails, and retaining walls will be more subdued compared to the existing condition with use of medium tan color. Texture on the proposed HOV retaining walls would be decorative compared to the existing texture (see **Section 3.6.3** Mitigation Measures). Key Viewpoint 3 – Preferred Alternative is shown in **Figure 3-24**.

Figure 3-24. Key Viewpoint 3 - Preferred Alternative, Looking Northeast

3.6.3 Mitigation Measures

Mitigation measures for visual resources are summarized in **Table 3-16.**

Table 3-16. Mitigation Measures for Visual Resources

Resource	Preferred Alternative
Visual Resources	Aesthetic treatments required through NDOT's Landscape and Aesthetic program for color and texture will be applied to visually blend proposed facilities into the broader urban background when compared to the existing facilities. These measures include applying medium tan colored tints and decorative textures the same as the existing I-15 aesthetics treatments to the south of the Tropicana Avenue interchange on all new structures, including new bridge barrier rails, piers, pier caps, retaining walls, and the flyover, see **Figure 3-25**. Decorative rock consistent in color and texture with the existing I-15 aesthetic treatments to the south shall be placed on all bare ground slopes to the NDOT right-of-way line along I-15 to provide slope protection, and to blend new slopes into the visual background. The lighting system will use LED fixtures designed to help mitigate sky glow and light spillover.

Figure 3-25. Example of Existing Colors and Textures Along the I-15 Freeway South of the Tropicana Avenue Interchange

3.7 Cumulative Impacts

In addition to consideration of direct project effects, NEPA also requires that the potential indirect (also known as secondary) and cumulative impacts of federally funded or approved projects must be evaluated. Indirect impacts under NEPA are those effects resulting from an action but occurring later in time or effects that are farther removed in distance but still predictable. Based on the analysis of the proposed project in this Environmental Assessment (EA), the I-15 Tropicana project has no discernable indirect impacts.

3.7.1 Background

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the present project. A cumulative impact assessment looks at the collective impacts posed by individual land use actions and projects. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place over a period of time. If a given project does not directly or indirectly impact a specific environmental resource (e.g., air quality) or factor (e.g., environmental justice), that project would not contribute to a cumulative impact on that resource or factor.

3.7.2 Geographic Area

The boundary of the cumulative impact analysis area approximates the geographic area potentially affected by the project, as well as other reasonably foreseeable improvements that affect the transportation network. Given that the proposed project's environmental effects are limited to socioeconomic conditions including traffic circulation and pedestrian safety, the specific area considered for this cumulative impact analysis coincides with the traffic simulation network used for this study. That network (see **Chapter 2, Figure 2-12.**) is essentially the I-15 corridor bordered by Flamingo Road on the North, Valley View Boulevard on the West, Las Vegas Boulevard on the east, and Russell Road on the south.

3.7.3 Past, Present, and Reasonably Foreseeable Future Actions/Projects

Table 3-17 summarizes the past, present and planned future projects within the geographic area considered for this cumulative impact analysis. See **Figure 3-26** for the locations of these projects.

Table 3-17. Past, Present, and Reasonably Foreseeable Projects

No.	Project	Project Description	Status of Project	Location
1	T-Mobile Arena	The T-Mobile Arena broke ground in 2014 and opened in 2016. The arena property covers about 16 acres, the building is 650,000 square feet, has seating for 17,500 for NHL Hockey (Vegas Golden Knights), and it hosts up to 150 events annually.[19]	Past – Arena opened in 2016	Northeast quadrant of I-15 Tropicana Interchange

[19] Source: http://www.t-mobilearena.com/arena-information/quick-facts

Table 3-17. Past, Present, and Reasonably Foreseeable Projects

No.	Project	Project Description	Status of Project	Location
2	I-15 South Corridor Improve-ments	NDOT and FHWA completed an EA in 2008 to improve 12 miles of the I-15 corridor south of the Strip, including the following major elements: widening I-15 to ten lanes from Tropicana Avenue to Sloan Road; constructing new interchanges at Bermuda Road, Starr Avenue, and Cactus Avenue; reconstructing the interchange at Sloan Road; and widening Las Vegas Boulevard to six lanes within the project limits.	Past/Future – I-15 was widened from Tropicana Avenue to Silverado Ranch Boulevard; Cactus Avenue interchange constructed; Starr Avenue interchange under construction (anticipated completion September 2019); Las Vegas Boulevard widened north from St. Rose Parkway. Sloan Road and Bermuda Road still to be developed.	I-15 Las Vegas Boulevard Corridor from Tropicana Avenue to Sloan Road
3	Project NEON	Project NEON is widening 3.7 miles of I-15 between Sahara Avenue and the "Spaghetti Bowl" interchange in downtown Las Vegas. Major project elements include HOV connection between US 95 and I-15; conversion of I-15 express lanes to HOV lanes; reconstruction of Charleston Boulevard interchange; and MLK Boulevard realignment with a flyover at Charleston Boulevard.	Present – Construction completed August 2019	I-15 corridor between Sahara Avenue and I-15/US 95/I-515 interchange
4	Harmon to Valley View	Clark County Public Works is proposing transportation improvements within the resort corridor consisting of connecting Harmon Avenue and Valley View Boulevard with a grade separation over the Union Pacific Railroad (UPRR) tracks.	Present – Completing Construction	Harmon Avenue over UPRR tracks to Valley View Boulevard
5	Tropicana Widening	Clark County Public Works will add a westbound lane on Tropicana Avenue west of Polaris Avenue.	Future – To be constructed by 2025 per the Regional Transportation Plan (RTP)	Tropicana Avenue from Polaris Avenue to Decatur Boulevard
6	I-15 Flamingo to Sahara	NDOT initiated a Feasibility Study to identify future I-15 improvements, including widening, consistent with the lane configuration and operation of Project NEON and I-15 South.	Future – Feasibility Study in progress	I-15 between Flamingo Road and Sahara Avenue

Table 3-17. Past, Present, and Reasonably Foreseeable Projects

No.	Project	Project Description	Status of Project	Location
7	Raider's Stadium	Construction of 65,000-seat domed football stadium on 62-acre site adjacent to I-15, anticipated to open for the 2020 NFL season.	Future – Under Construction	West of I-15 between Russell Road and Hacienda Avenue
8	Monorail to Mandalay	The Las Vegas Monorail Co. received permission in 2017 from Clark County for a 1-mile extension of its route from the MGM Grand to Mandalay Bay.	Future – Completing financing, with estimated two years for construction and testing	MGM Grand to Mandalay Bay
9	*Virgin Trains USA* High Speed Rail	Brightline, the company that acquired rights to develop the former XpressWest (previously DesertXpress) high speed rail, has partnered with the Virgin Group to construct the 185-mile rail line between Las Vegas and Victorville, California. Under the original XpressWest plan, a dual-track line free of grade crossings would be built to Victorville, and this line could eventually be extended another 60 miles to Palmdale, CA where it would connect with the Los Angeles Metrolink commuter rail line.[20] Based on current planning, within the I-15 Tropicana study area the high speed rail line will leave the I-15 median around the Blue Diamond Road interchange, follow Dean Martin Drive, and terminate near the Flamingo Road interchange.	Future – Completing a NEPA Reevaluation of the Final Environmental Impact Statement (March 2011) and Record of Decision (July 2011) anticipated for 2020; start construction 2022; service to begin in 2024	Victorville, CA to Las Vegas, NV terminal station in SW quadrant of the I-15 Flamingo Road interchange

3.7.4 Cumulative Impacts Analysis

An assessment of potential cumulative impacts was conducted for those environmental resources or factors for which post-mitigation, non-significant, adverse impacts were identified. As such, it was determined that socioeconomic conditions, specifically traffic circulation and pedestrian safety, are the only environmental factors requiring analysis in order to determine if the project would result in a cumulative impact.

[20] Source: Las Vegas Review Journal (November 16, 2018), https://www.reviewjournal.com/business/tourism/richard-branson-virgin-to-partner-with-brightline-high-speed-rail-1528571/

Socioeconomic Conditions

Traffic Circulation

Overall, the proposed project would improve the affected area's traffic conditions by providing a reconfigured, higher capacity interchange and new HOV freeway connectivity for better traffic flow and less delay. The project would mitigate traffic congestion from a past project—the I-15 South Corridor Improvements (**Table 3-17**, Project No. 2)—where daily traffic backups occur south of the Tropicana Avenue interchange from the point the northbound collector-distributor (CD) road merges onto I-15 in a one-lane entrance configuration.

Additionally, the project will be forward-compatible with reasonably foreseeable future projects by providing sufficient width under the new Tropicana Avenue bridge to accommodate reconfiguration of the freeway mainline to match I-15 improvements being planned for Flamingo Road to Sahara Avenue (**Table 3-17**, Project No. 6).

However, the Preferred Alternative would impact traffic circulation in two areas. First, the HOV ramps to/from I-15 on the south side of the Harmon Avenue overpass are projected to accommodate nearly 2,000 buses and other multi-passenger vehicles during the afternoon peak hour by 2040, which will increase traffic on Harmon Avenue. Second, the project would relocate the

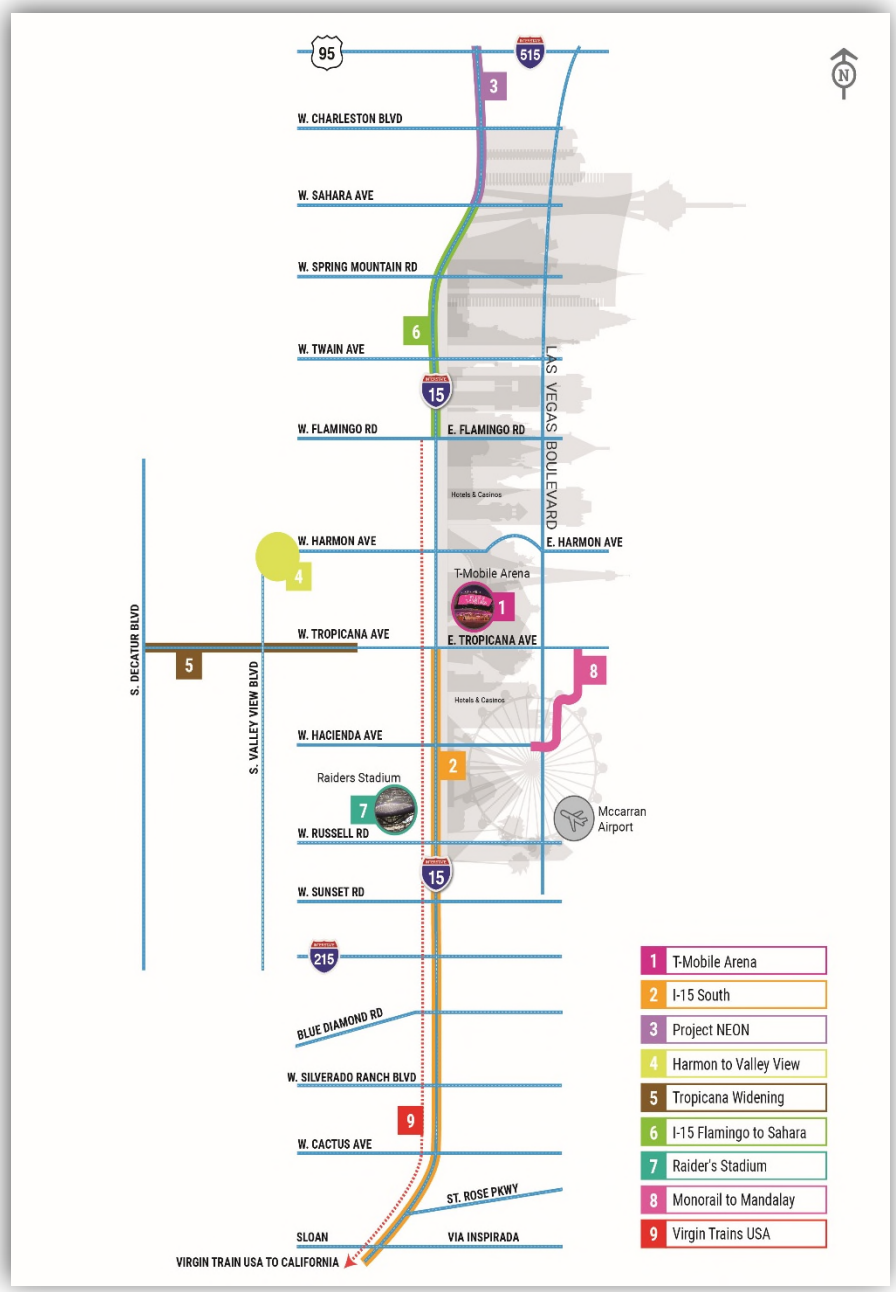


Figure 3-26. Past, Present, and Reasonably Foreseeable Future Projects

Dean Martin Drive north-south through movements from the existing Tropicana Avenue intersection, carrying them under Tropicana Avenue, and eliminating the left turn from Tropicana Avenue to Dean Martin Drive thereby changing access to local businesses.

Compared to the No-Build Alternative, the 2040 traffic projections with the new HOV ramp intersection on the Harmon Avenue bridge indicates that traffic passing by The Martin and Panorama Towers condominium complexes will decrease by approximately 180 vehicles in the afternoon peak hour in the peak direction of travel (westbound) and increase by the same amount of 180 vehicles in the off-peak direction of travel (eastbound). Therefore, there is no net change in the total amount of traffic adjacent to The Martin and Panorama Towers during the afternoon peak hour of traffic activity. Within this project's limits, the opening year 2020 No-Build Alternative traffic analysis network adds two new present projects to existing conditions: 1) the Harmon Avenue to Valley View Boulevard extension now under construction (**Table 3-17**, Project No. 4); and 2) the recent conversion of the I-15 Express Lanes (two lanes in each direction) into one general-purpose lane and one high-occupancy vehicle (HOV) lane in each direction as part of Project NEON (**Table 3-17**, Project No. 3). Thus, it can be concluded that construction of the Preferred Alternative, in addition to these two current projects, will not result in a cumulative increase in traffic volumes on Harmon Avenue through the residential area. Additionally, the decrease in traffic is in the peak westbound direction (relieving congestion), while the same increase in the non-critical eastbound direction better balances the volume of traffic between the peak and off-peak directions thereby improving operational efficiency of the Aldebaran and Harmon Avenues signalized intersection. Furthermore, Clark County has proposed a pedestrian improvement to add a crosswalk on the east leg of the intersection of Aldebaran and Harmon avenues. In summary, the traffic and circulation changes would not constitute a cumulative impact on traffic or pedestrians.

As described in **Chapter 2, Section 2.3**, eliminating the north-south through traffic movement on Dean Martin Drive at the Tropicana Avenue intersection by rerouting those lanes under Tropicana Avenue and removing the left turns from the existing interchange location with the Preferred Alternative will change traffic access to the businesses along Dean Martin Drive. Even with these changes, based on traffic volume projections for this project, by 2040 with the Preferred Alternative the Tropicana Avenue/Dean Martin Drive intersection will be one of three intersections[21] adversely affected, as indicated by intersection delay greater than 35 seconds compared to the No-Build Alternative. This impact will be the cumulative effect of the proposed project in combination with Clark County's planned future addition of a westbound lane on Tropicana Avenue from Polaris Avenue to Decatur Boulevard (**Table 3-17**, Project No. 5). However, this cumulative delay is not significant and the changes in access to affected businesses[22] is beneficial in the sense that the left turn and through movement backups and delays currently experienced at the Tropicana Avenue/Dean Martin Drive intersection are eliminated and business access can be further mitigated with business-specific signage. (See **Section 3.2** for discussion of changes in traffic circulation and access to businesses located in the northwest and southwest quadrants of the I-15 Tropicana Avenue interchange.)

[21] Based on the air quality screening analysis performed for this project the other two intersections impacted by the Preferred Alternative are: 1) the Tropicana Avenue/I-15 Northbound Ramp and 2) the Harmon Avenue/I-15 HOV Ramps.

[22] Hampton Inn, Chevron, In-N-Out, Home 2 Suites, and Townplace Suites.

Pedestrian Safety

The I-15 Tropicana Avenue interchange is widely viewed as the southern gateway to the Las Vegas Resort Corridor, McCarran Airport, and UNLV.[23] Given this strategic location, the area surrounding the interchange is experiencing the development of mega-projects supporting special events and regional transportation. These past, present, and reasonably foreseeable future projects are listed in **Table 3-17** and consist of T-Mobile Arena (Project No. 1), Raiders Stadium (Project No. 7), the Virgin Trains USA (Project No. 9) high speed rail terminal station being planned for construction at the I-15 Flamingo Road interchange, and extending the Las Vegas Monorail to Mandalay Bay (Project No. 8). Beyond the additional traffic generated by special events, which does not get included in the peak-hour traffic volumes used as the basis of design for the I-15 Tropicana improvements, all these mega-projects can generate substantial volumes of pedestrian foot-traffic requiring safe, secure sidewalk connectivity over and around I-15.

Both Tropicana and Harmon avenues provide corridors for pedestrian and bicycle[24] travel over I-15 to and from these event centers, casino properties, and transit hubs. Under the No-Build Alternative, the existing inadequate pedestrian sidewalks over the Tropicana and Harmon Avenue bridges would persist and thereby adversely impact pedestrian safety—a condition that will worsen over time as more of these mega projects are opened in the project area. This is a cumulative impact concern, given that in addition to general ongoing activities these event centers, casinos, and transit hubs will likely generate compounded volumes of pedestrian traffic at times when special events and arrival/departure schedules overlap.

As described in **Section 3.2.2**, the Preferred Alternative includes major improvements for pedestrian (and bicycle) circulation on both the Tropicana and Harmon avenue bridges over I-15. For the Tropicana Avenue bridge, the proposed project would replace an existing 5-foot sidewalk on the south side of the bridge with wider 10-foot-wide sidewalks on both sides of Tropicana Avenue and new, connected ADA-compliant pedestrian ramps would provide safe pedestrian access from Tropicana Avenue to T-Mobile Arena/Frank Sinatra Drive and there would be staircases to Dean Martin Drive. For the Harmon Avenue bridge, based on comments from stakeholders and the public during outreach for this EA the HOV ramp design was changed to connect Harmon Avenue to I-15 to and from the south—rather than to and from the north as originally planned, which would have impacted the existing sidewalk; a safety barrier rail would also be added to the sidewalk on the Harmon Avenue bridge under the Preferred Alternative.

Therefore, it can be concluded that the No-Build Alternative would have a cumulative impact on pedestrian safety at these critical access points over I-15 to and from the Resort Corridor. Whereas, the Preferred Alternative essentially mitigates this impact within the project area with its pedestrian-focused design elements.

[23] Las Vegas Review Journal, March 21, 2019, https://www.reviewjournal.com/business/stadium/las-vegas-stadium-officials-support-i-15-road-project-1623494/.

[24] Although Tropicana Avenue is not a designated bicycle route, and the proposed lanes will not provide room for bicycles, the wider sidewalks are desirable for shared pedestrian/bicycle travel over the bridge.

This page intentionally left blank.

Chapter 4. Agency Coordination and Public Involvement

This chapter discusses public involvement activities and coordination with local, state, and federal agencies and other stakeholders during preparation of the previous Feasibility Study and this Environmental Assessment (EA) for the proposed project.

4.1 Early Coordination for Feasibility Study

Agency and public outreach for the project began in 2015 as part of the I-15 Tropicana Interchange Feasibility Study process. A Steering Committee was comprised of management and staff from both public and private agencies. An Alternatives Development Workshop was held to identify existing problems, develop decision-making criteria, and identify potential alternative solutions related to the I-15 Tropicana interchange. Participants included the Federal Highway Administration (FHWA), Nevada Department of Transportation (NDOT), Clark County, and the Regional Transportation Commission of Southern Nevada (RTC). A Public Information Meeting was held on September 29, 2015 at the Hampton Inn Event Center. Conceptual solutions to meet the project goals were presented at the public meeting.

4.2 Federal and State Agency Coordination

Consultation with federal and state agencies was conducted as part of the project development process and is described below.

4.2.1 U.S. Army Corps of Engineers

The project would require a U.S. Army Corps of Engineers (USACE) 408 Permit and a USACE 404 Permit for improvements to the Tropicana Wash – North Branch Facility, which has been identified as a Waters of the U.S. A permit inquiries checklist was prepared and submitted to USACE in March 2019. An email from the USACE, dated April 25, 2019, decreed that a 404 and 408 permit would be required for the project. A pre-application meeting, with representatives from USACE, NDOT, Clark County, Clark County Regional Flood Control District and CA Group, was held on May 16, 2019.

4.2.2 Nevada State Historic Preservation Office

NDOT and FHWA consulted with the Nevada State Historic Preservation Office (SHPO) to determine if the project would have an adverse effect on cultural resources within the project's area of potential effects (APE). SHPO reviewed and approved the project screening form on May 22, 2018 and concurred with the proposed APE. Based on a field and literature survey conducted for the proposed project, it was concluded there are no historic properties within the APE; therefore, a finding of No Historic Properties Affected was recommended. SHPO concurred with this finding on January 17, 2019. (See all SHPO correspondence in **Appendix B**.)

4.3 Stakeholder Meetings

NDOT met with affected stakeholders to discuss the project and solicit feedback on the proposed improvements. Beginning in January 2018, multiple coordination meetings were held with the private stakeholders, local agencies, and local utility agencies and private utility companies listed below. Meeting minutes from the various stakeholder meetings and related email correspondence will be documented in the Stakeholder Meetings Summary section of the Public Outreach Summary Report.

Private Stakeholders

- Chevron/Terrible Herbst – 1 meeting, no written comments submitted
- In-N-Out – 4 meetings, written comments submitted
- Tiberti – 2 meetings, no written comments submitted
- Virgin Trains USA – 1 meeting, no written comments submitted
- Tropicana/Penn Gaming – 1 meeting, no written comments submitted
- MGM Resorts – 6 meetings, written comments submitted
- The Cosmopolitan – 1 meeting, no written comments submitted
- Raiders – 5 meetings, no written comments submitted
- Golden Palms/Home2Suites/TownPlace Suites – 2 meetings, no written comments submitted
- Las Vegas Stadium Authority – 1 meeting, no written comments submitted
- Wild Wild West/Station Casinos – 5 meetings, no written comments submitted
- Law Offices of Brian C. Padgett – 4 meetings, no written comments submitted
- Panorama Towers – 2 meetings, no written comments submitted
- The Martin – 2 meetings, no written comments submitted
- Budget Suites – 2 meetings, no written comments submitted
- Hampton Inn – 3 meetings, written comments submitted
- Terrible Herbst – 2 meetings, written comments submitted
- Jack in the Box – 1 meeting, no written comments submitted
- Wendy's – 2 meetings, no written comments submitted

Local Agencies

- Clark County Public Works Department – 6 meetings, no written comments submitted
- Regional Transportation Commission (FAST) – 2 meetings, no written comments submitted
- University of Nevada, Las Vegas – attended 1st public meeting, no written comments submitted
- McCarran International Airport – attended 1st public meeting, no written comments submitted

Local Utility Agencies and Private Utility Companies

- Clark County Water Reclamation District – 2 meetings
- Clark County Regional Flood Control District – 2 meetings
- Las Vegas Valley Water District – 2 meetings
- AT & T – 1 meeting
- Century Link – 2 meetings
- Cox Communications – 1 meeting
- Level 3 Communications– 1 meeting
- NV Energy Distribution / Transmission – 4 meetings
- Southwest Gas – 2 meetings

4.4 Public Involvement

4.4.1 Public Involvement Plan

A Public Outreach and Agency Coordination Plan (Outreach Plan) was prepared in November 2017. The purpose of the Outreach Plan is to identify the outreach efforts for NDOT to take during the environmental review process for the project. A key focus of the Outreach Plan is to facilitate awareness and understanding by the public and governmental agencies regarding the study process, key milestones, project development details, and decision points. The Outreach Plan describes the overall approach and coordination methods to be used to obtain public and agency insights during the environmental review process.

4.4.2 Public Information Meeting #1

Public Information Meeting #1 was held on January 30, 2018 at the Clark County Building Services Center, 4701 W. Russell Road, Las Vegas, Nevada. The meeting was held from 4:00 p.m. to 7:00 p.m. with a presentation at 5:30 p.m. An Intent to Study letter and Transportation Notice were mailed to approximately 3,770 recipients within the area bounded by Flamingo Road to the north, Las Vegas Boulevard to the east, Sunset Road to the south, and the Union Pacific Railroad to the west. Transportation notices (advertisement) were placed in the Las Vegas Review-Journal on January 16, January 29, and January 30, 2018. An online advertisement was placed on the Spanish language website for El Tiempo from January 22 through January 29, 2018. Additionally, approximately 500 notices were distributed to area businesses on January 25 and January 26, 2018.

Figure 4-1. Attendees at Public Information Meeting #1

Approximately 60 individuals attended the public information meeting (see **Figure 4-1**). Stakeholders attending the meeting included representatives from UNLV, McCarran Airport, and Panorama Towers. Attendees were provided with a meeting packet, which included a welcome letter, fact sheet, PowerPoint presentation, display boards, and comment form.

Attendees could provide comments by speaking with a court reporter, commenting during the question and answer session after the formal presentation, by completing the comment form, or by email after the meeting. The public comment period was open until March 6, 2018. There were no comment forms received at the meeting. Approximately 10 members of the public asked questions during the question and answer session that were recorded by the court reporter. Nine emails were received during the comment period. The Public Meeting Summary Report is included in **Appendix A**.

The meeting was also broadcast live via Facebook. As of July 15, 2019. The video had been viewed 548 times, with the actual post being viewed 1,282 times. Comments from two individuals were received via the live video.

4.4.3 Public Information Meeting #2

Figure 4-3. Attendees at Public Information Meeting #2 Listening to Presentation

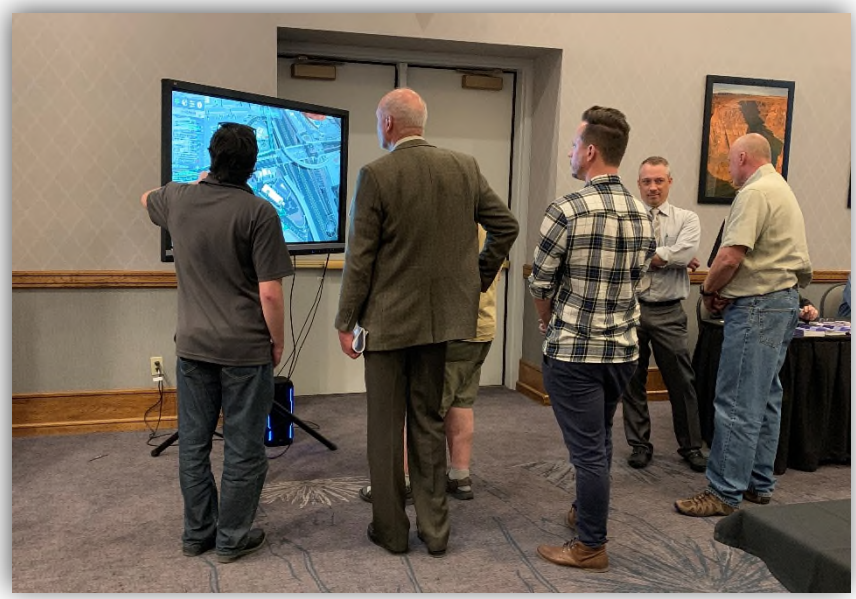


Figure 4-3. Attendees Viewing 3-D Model of Project

Public Information Meeting #2 was held on May 2, 2019 at the Hampton Inn Tropicana Event Center, 4975 S. Dean Martin Drive, Las Vegas, Nevada. The meeting was held from 4:00 p.m. to 7:00 p.m. with a presentation at 5:30 p.m. A Transportation Notice was mailed to approximately 4,077 recipients within the area bounded by Flamingo Road to the north, Las Vegas Boulevard to the east, Sunset Road to the south, and the Union Pacific Railroad to the west. Advertisements were placed in the Las Vegas Review-Journal on April 18, May 1, and May 2, 2019. An online advertisement was placed on the Spanish language website for El Tiempo from April 18 through May 2, 2019.

Approximately 60 individuals attended the second public information meeting (see **Figure 4-2**). Stakeholders attending the meeting included representatives from Clark County, RTC, and residents of Panorama Towers and The Martin. An interactive 3-D model of the project was available (see **Figure 4-3**). Team members were available to discuss specific features of the project with stakeholders using the 3-D model.

Attendees could provide comments by speaking with a court reporter, commenting during the question and answer session after the formal presentation, completing the comment form, or by email after the meeting. The public comment period was open until May 17, 2019. The Public Meeting Summary Report is included in **Appendix A**.

4.4.4 Summary of Public Comments

Members of the public had opportunities to provide comments and feedback at the two Public Information Meetings discussed in **Sections 4.4.2** and **4.4.3**. **Table 4-1** summarizes comments received during these meetings and provides responses.

Table 4-1. Summary of Public Comments Received at Public Information Meetings#1 and #2

Comment Summary	Response
January 30, 2018 Public Information Meeting	
Questions during Q&A period at meeting	
• What is the design-build process?	• Design-build is a construction process where the designer and contractor are on the same team, which allows for a shortened schedule.
• How will construction closures affect businesses?	• Access to businesses will be maintained during construction. NDOT will develop a plan to communicate with the general public, affected businesses, and property owners regarding construction schedule, street and sidewalk closers, and detours throughout construction. See **Section 3.2.3** Land Use and Socioeconomic Conditions Mitigation Measures.
• Does it make sense to implement HOV lanes in the I-15 corridor? Was this studied?	• The Southern Nevada HOV Study provides the justification for HOV lanes, and was updated in 2015 (and again in 2018 in response to comments received in preparation of this Environmental Assessment). See **Section 2.1.3.1** Multimodal Alternatives in the Environmental Assessment. The expanded HOV network on I-15 became operational in May 2019.
• Can Harmon Avenue and Hacienda Avenue handle the additional traffic from new HOV access?	• The project traffic study has documented the increase in traffic on Harmon Avenue. HOV access at Hacienda Avenue was eliminated as a result of concerns raised during preparation of the Environmental Assessment. The 2040 traffic projections with the new HOV ramp intersection on the Harmon Avenue bridge, when compared to the 2040 No-Build Alternative, also show that westbound traffic on Harmon Avenue by the Panorama Towers and The Martin condominiums will be reduced by approximately 180 vehicles in the afternoon peak hour; however, eastbound traffic will increase by approximately 180 vehicles in that same time period. Therefore, there is no net change in the total amount of traffic adjacent to The Martin and Panorama Towers during the afternoon peak hour of traffic activity. See **Section 2.4** for information on the predicted changes in traffic volumes on Harmon Avenue with the Preferred Alternative.

Table 4-1. Summary of Public Comments Received at Public Information Meetings#1 and #2

Comment Summary	Response
• Residents of Panorama Towers request to be involved in the project development process	• The project team has met multiple times with the homeowners association (HOA) and residents of both Panorama Towers and The Martin. Coordination with the HOA and residents will continue throughout the project development process. See **Section 4.3** Stakeholder Meetings for details.
• What is environmental justice?	• Environmental justice is the federal requirement to consider the impacts of a project to low-income or minority populations (see **Section 3.1.6** Environmental Justice).
• What is the anticipated level of service under the preferred alternative for Tropicana Avenue?	• Intersection delay and overall travel time are shown to be substantially reduced with the Preferred Alternative compared to the No-Build Alternative (see **Figure 2-12** and **Table 2-4**).
• What is being done to coordinate with the Raiders stadium project	• The project team is coordinating directly with the stadium project team and their traffic impact analysis. See **Section 4.3** Stakeholder Meetings for details.
• What are the pedestrian improvements along Harmon?	• A safety barrier rail will be added to the existing sidewalk along Harmon Avenue (see **Section 3.2.2** Impacts, Pedestrian Access).
• Are there any specific efforts or coordination for public transit related to these improvements?	• The RTC is member of the project Technical Advisory Committee (TAC) and has been involved in project development. Meetings have been held with the RTC to discuss the proposed project, impacts to transit routes, and accommodations for new transit improvements (bus turn outs on Tropicana Avenue).
• What is the project cost and how is it funded?	• The project cost is estimated to be between $185 and $191 million. Total funding programmed in the Statewide Transportation Improvement Program (STIP) is $202 million (see **Section 1.6** Project Cost).
• Would the project be expedited to accommodate the Raiders stadium?	• No. There is no anticipated schedule change to accommodate the stadium project.
Comments received during public comment period	
• Construction on I-15 should address transition from eastbound I-215 to northbound I-15.	• The I-15/I-215 system interchange is outside of the project limits. Improvements perceived as needed at the system interchange would be included as part of the I-15 South EA reevaluation project. This comment has been provided to the team working on that project.

Table 4-1. Summary of Public Comments Received at Public Information Meetings#1 and #2

Comment Summary	Response
• Residents of Panorama Towers request to be involved in the project development process.	• The project team has met multiple times with the HOA and residents of both Panorama Towers and The Martin. Coordination with the HOA and residents will continue throughout the project development process. See **Section 4.3** Stakeholder Meetings for details.
• Project should include pedestrian and bicycle facilities.	• The project includes improvements for pedestrian circulation on both the Tropicana Avenue and Harmon Avenue bridges over I-15. On Tropicana Avenue, the existing 5-foot sidewalk on the south side of the bridge would be replaced with 10-foot-wide sidewalks on both sides of Tropicana Avenue, connected to T-Mobile Arena/Frank Sinatra Drive and Dean Martin Drive. For the Harmon Avenue bridge, a safety barrier rail would be added to the existing sidewalk. See **Section 3.2.2** Impacts, Pedestrian Access for details.
• HOV lanes are an outdated concept and should be converted back to general use.	• The Southern Nevada HOV Study provides the justification for HOV lanes, and was updated in 2015 (and again in 2018 in response to comments received in preparation of this Environmental Assessment). The expanded HOV network on I-15 was made operational in May 2019. HOV lanes move more people using fewer vehicles, thereby providing increased capacity in the general-purpose lanes.
• If HOV ramps are on the north side of Harmon, how will pedestrian safety be maintained? Can a barrier rail be added to the sidewalk on Harmon? Please do not eliminate pedestrian access on Harmon.	• As a result of comments received at this public meeting, the 2018 Southern Nevada HOV Study Update reevaluation recommended a reconfiguration of the Harmon Avenue HOV ramps to the south side. This allows for the continuation of pedestrian access along the existing sidewalk on the north side of Harmon Avenue. A safety barrier rail would be added to the sidewalk.
May 2, 2019 Public Information Meeting	
Questions during Q&A period at meeting	
• Would it be possible to install a shade structure for pedestrians on Harmon Avenue?	• A safety barrier rail will be added to the existing sidewalk along Harmon Avenue. While a shade structure would be possible, it is currently not being considered as part of this project. The request has been forwarded to Clark County Public Works for consideration; however, it is not a policy of the County to shade public sidewalks.

Table 4-1. Summary of Public Comments Received at Public Information Meetings#1 and #2

Comment Summary	Response
Written comments received at meeting	
• Please provide the ability to turn left from the Panorama Towers north egress drive. This can be accomplished by removing approximately 20 feet of median island without any other changes.	• The comment has been discussed with Clark County Public Works by the project team. No action is proposed as part of this project. Removing the 20 feet of median island would create a potentially unsafe access very close to the existing intersection. The County recommended that the property prepare a proposal to reconfigure their driveway intersection in coordination with the adjacent property owner.
• On the Harmon overpass, it would be extremely beneficial to residents if the sidewalk included some kind of sun barrier or shade to protect pedestrians during the 155 degree sun.	• A safety barrier rail will be added to the existing sidewalk along Harmon Avenue. While a shade structure would be possible, it is currently not being considered as part of this project. The request has been forwarded to Clark County Public Works for consideration; however, it is not a policy of the County to shade public sidewalks.
Comment received during public comment period	
• Will pedestrian access on Harmon remain? Will it be made safer? How long will ramp construction last?	• Yes, pedestrian access will remain on Harmon Avenue. A safety barrier rail will be added to the existing sidewalk along Harmon Avenue. Construction of the HOV ramp is estimated to take between 5 to 9 months and is dependent upon the means and methods of the contractor. A contractor has not been selected.